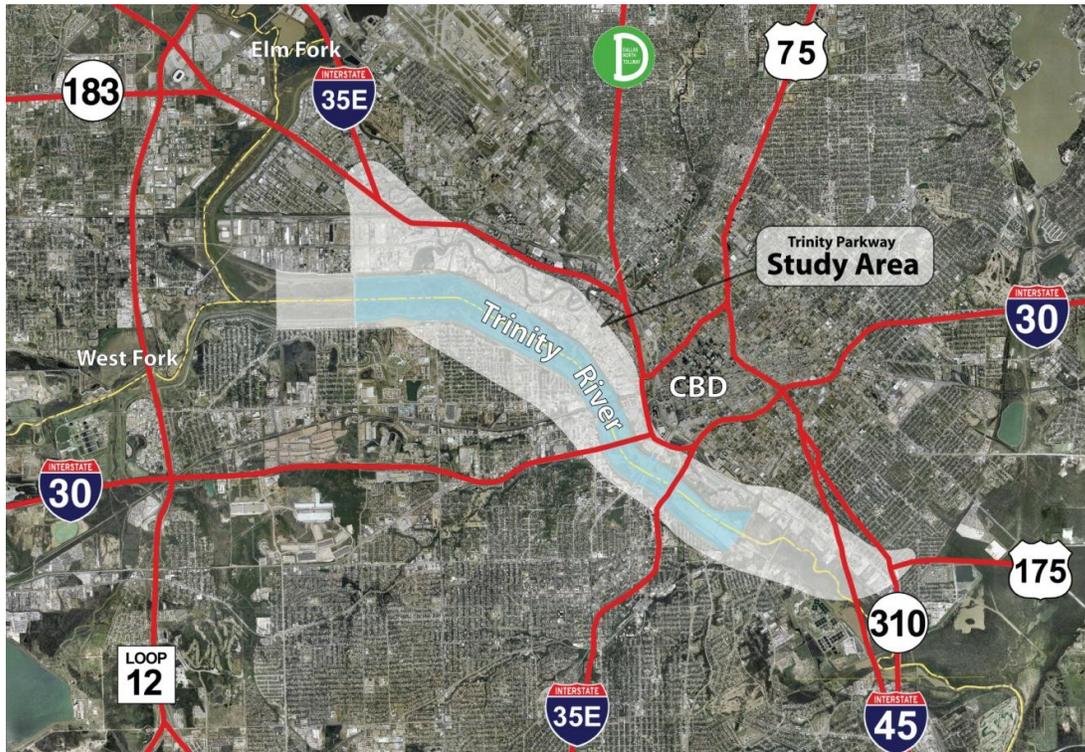


LIMITED SCOPE SUPPLEMENTAL TO THE
SUPPLEMENTAL DRAFT ENVIRONMENTAL
IMPACT STATEMENT

TRINITY PARKWAY

FROM IH-35E/SH-183 TO US-175/SH-310
DALLAS COUNTY, TEXAS



Executive Order 13274 Project
On August 18, 2004, the Trinity Parkway was designated as a Priority Project for expedited agency environmental review under EO 13274.



MARCH 2012

**TRINITY PARKWAY
FROM IH-35E/SH-183 TO US-175/SH-310, DALLAS COUNTY, TEXAS**

**LIMITED SCOPE SUPPLEMENTAL TO THE
SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT**

Submitted Pursuant to 42 USC 4332 (2)(c) and
40 CFR 230

By the:
U.S. Department of Transportation
Federal Highway Administration
Texas Department of Transportation
North Texas Tollway Authority

Cooperating Agencies:
U.S. Environmental Protection Agency
U.S. Army Corps of Engineers

3/7/12
Date of Approval

Salvador Deocampo
for Federal Highway Administration

0/6/12
Date of Approval

Carlos Swonke
for Texas Department of Transportation

3/6/12
Date of Approval

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for North Texas Tollway Authority

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Abstract: This Limited Scope Supplemental (LSS) to the Supplemental Draft Environmental Impact Statement (SDEIS) discusses new information and circumstances not presented in the initial Draft EIS (DEIS) or the February 2009 SDEIS that have bearing on the alternatives under consideration for the proposed Trinity Parkway project. Supplemental information includes new studies and analyses related to U.S. Army Corps of Engineers (USACE) Periodic Inspection Report No. 9 for the Dallas Floodway and compatibility of proposed Trinity Parkway alternatives with the Levee Remediation Plan developed by the City of Dallas in partnership with the USACE. In addition, enhanced information and analyses on the practicability of the reasonable alternatives in accordance with Executive Order (EO) 11988 (*Floodplain Management*) and EO 11990 (*Protection of Wetlands*) are presented. The LSS also contains additional information concerning historic resources and Section 106 consultation efforts.

Comments on the LSS are due 45 days from the date the Notice of Availability is published in the *Federal Register* and should be sent to the North Texas Tollway Authority, Plano, Texas.

Price per copy: \$125.00 (*additional shipping fees are not included in this price*).

**Limited Scope Supplemental to the
Supplemental Draft Environmental Impact Statement**

**Trinity Parkway
From IH-35E/SH-183 To US-175/SH-310, Dallas County, Texas**

FOREWORD

The National Environmental Policy Act of 1969 (NEPA) establishes a process that requires the preparation of detailed environmental documentation when federal actions are proposed with potentially significant environmental impacts. An Environmental Impact Statement (EIS) identifies the probable environmental consequences (beneficial and/or adverse) of each alternative, including ways to mitigate unavoidable impacts.

This Limited Scope Supplemental (LSS) to the Supplemental Draft Environmental Impact Statement (SDEIS) is consistent with the regulations of the U.S. Department of Transportation's (USDOT) Federal Highway Administration (FHWA) (23 Code of Federal Regulations (CFR) Part 771). These regulations prescribe the policies for implementing NEPA and the regulations of the federal Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508). This document is also consistent with the FHWA regulations governing metropolitan transportation planning (23 CFR Section (§) 450.318).

This LSS for the proposed Trinity Parkway project from Interstate Highway (IH)-35E/State Highway (SH)-183 to U.S. Highway (US)-175/SH-310 in the City of Dallas, Dallas County, Texas provides an update on important events affecting the proposed project that have occurred since the FHWA approved the SDEIS for circulation to government agencies and the general public on February 19, 2009. The LSS also contains supplemental information intended to enhance the analysis of alternatives presented in the SDEIS. The LSS has been prepared by the FHWA, the Texas Department of Transportation (TxDOT), and the North Texas Tollway Authority (NTTA) in cooperation with the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE) to provide new or additional information and analyses, which the decision makers and general public need prior to determining what, if any, federal action may be undertaken. Specifically, the following major items are included in the LSS:

- Update on the project development process;
- Results of further studies related to Dallas Floodway system deficiencies identified by the USACE on April 1, 2009, including any impacts of Trinity Parkway alternatives on levee remediation;

- Information for the Trinity Parkway alternatives under consideration related to “practicable” criteria applied under Executive Order (EO) 11990 (wetlands) and EO 11988 (floodplains); and
- Update on activities performed in compliance with Section 106 of the National Historic Preservation Act (NHPA).

This document was prepared in close coordination with the USACE, as it addresses resources that are within the USACE’s jurisdiction as defined by federal law. The following discussion provides additional background and reasoning for preparation of the LSS.

BACKGROUND AND REASONING FOR PREPARATION OF THE LSS

The CEQ has promulgated regulations implementing NEPA (40 CFR Part 1500). These regulations specify the requirements for preparing environmental impact statements by Lead Federal Agencies, as well as the roles and duties of Cooperating Agencies. Under 40 CFR Section 1501.6, a Federal Agency “which has jurisdiction by law, shall be a Cooperating Agency upon request of the Lead Agency.” The USACE has “jurisdiction by law” because the alternatives developed to implement the proposed project could affect land and/or water resources within or immediately adjacent to the Dallas Floodway - an existing federal flood control project. Potentially, each of these alternatives would require the USACE to issue permits under Section 404 of the Clean Water Act (CWA) (for discharge of dredged or fill material into waters of the U.S., including wetlands) and the Rivers and Harbors Act (RHA) of 1899 (for work in or affecting navigable waters). The USACE Trinity Regional Environmental Impact Statement Record of Decision (ROD) criteria and the Trinity River Corridor Development Certificate (CDC) process would also apply to the proposed project. The USACE would have authority under 33 U.S.C. 408 to ensure that the proposed project would not be injurious to the public interest and would not impact the flood control benefits provided by the Dallas Floodway.

The CEQ and USACE regulations pertaining to cooperating agencies “with jurisdiction by law” were established to ensure that NEPA documents prepared by a Lead Federal Agency, such as the FHWA, would also satisfy the NEPA requirements for the jurisdictional actions to be taken by the Cooperating Agency (in this case, the USACE). Consequently, these regulations emphasize close coordination between Lead and Cooperating Agencies throughout the development of an EIS, and require the Cooperating Agency to provide detailed input to ensure that the dual purpose of the NEPA documentation is met (40 CFR § 1501.6b and 33 CFR § 325.1b).

A Supplemental Draft EIS is required when new information or circumstances relevant to environmental concerns and bearing on the proposed action or its impacts would result in significant environmental impacts not evaluated in the EIS, and in some cases, may be required to address issues of limited scope

(23 CFR 771.130). Throughout the project development process, there has been coordination with the USACE in an effort to clarify and address the USACE environmental and technical issues of concern. On April 1, 2009, following the publication of the SDEIS, the USACE released the *Periodic Inspection Report, Dallas Floodway, Trinity River, Dallas, Dallas County, Texas* (Report No. 9). The USACE inspection report cited deficiencies in the Dallas Floodway levee system, including segments adjacent to Trinity Parkway Build Alternatives. Because the SDEIS was released prior to the USACE inspection report, it did not include a discussion of the reported deficiencies and any impacts these may have on the Trinity Parkway Build Alternatives. The inspection report was acknowledged during the May 5, 2009 Public Hearing presentation for the SDEIS. The FHWA, TxDOT, and NTTA stated their intent to further evaluate the levee deficiencies and a future levee remediation plan being developed by the City of Dallas and USACE as they may relate to Trinity Parkway, and present further information to the public prior to the Final Environmental Impact Statement (FEIS). In addition, prior to identifying a preferred alternative and releasing the FEIS, the FHWA sought an enhanced evaluation and another opportunity for public comment on the practicability of the Trinity Parkway alternatives in accordance with EO 11988 (*Floodplain Management*) and EO 11990 (*Protection of Wetlands*). While the issues of compatibility with levee remediation plans and practicability of the Trinity Parkway alternatives in light of potential impacts to floodplains and wetlands are the primary focal points of this LSS, supplemental information also includes a discussion of feasible design refinements implemented to avoid potential adverse impacts to historic properties and an update on Section 106 consultation. The FHWA has exercised its discretion under the CEQ and FHWA regulations and decided to supplement the SDEIS after determining that the purposes of NEPA would be furthered by doing so (40 CFR § 1502.9[c]((2)). This LSS, therefore, represents a collaborative effort with the USACE to develop NEPA documentation that would support the decisions and/or permitting action(s) that each agency would be required to make regarding the proposed project.

ORGANIZATION OF THE LSS AND NEXT STEPS

The organization, format, and content of this document were developed collaboratively among the FHWA, TxDOT, NTTA, and the USACE to provide sufficient information to briefly describe the proposed action, the reasons why a supplement has been prepared, and to address new information not presented in the SDEIS (23 CFR 771.130(a)). The structure of this document is as follows:

- **Executive Summary:** The summary briefly discusses important project issues.
- **Commonly Used Acronyms/Abbreviations**
- **Chapter 1 – Need and Purpose for Proposed Action:** This chapter discusses the project justification and provides an update on the project development process.
- **Chapter 2 – Alternatives Considered:** This chapter describes the alternatives under consideration and those alternatives that have been withdrawn from consideration.

- **Chapter 3 – Evaluation of the USACE *Dallas Floodway Periodic Inspection Report No. 9 and Levee Remediation Plan*:** This chapter describes the levee deficiencies identified by the USACE and provides an evaluation of Trinity Parkway compatibility with the levee remediation plan.
- **Chapter 4 – Enhanced Analysis of Practicability of the Reasonable Alternatives:** This chapter provides information on the practicability of the alternatives, considering pertinent factors identified in agency regulations and guidance documents.
- **Chapter 5 – Update on Consideration of Historic Properties and Compliance with Section 106 and Section 4(f):** This chapter describes additional historic resources survey efforts and Section 106 consultation that have occurred since the SDEIS.
- **Chapter 6 – List of Preparers**
- **Chapter 7 – Bibliography**

In accordance with the CEQ and FHWA regulations, this LSS will be circulated and processed in the same manner as the SDEIS (40 CFR § 1502.9(c)(4) and 23 CFR § 771.130(d)). After publishing a notice of availability (NOA) of the LSS, a public hearing will be held. Comments received from the public and government agencies during the SDEIS and LSS comment periods will be included in the FEIS, along with the responses to comments received (40 CFR § 1503.1(a)). Comments received from agencies and the public in connection with the initial public comment period for the DEIS (March-April 2005) were published in the SDEIS. To date, the FHWA has not recommended a preferred alternative. The FHWA will make a recommendation in the FEIS after evaluating the potential impacts resulting from the proposed project and considering the comments from all sources. Following publication of the FEIS, it is anticipated that a ROD would be issued by the FHWA in accordance with 23 USC Section 109(h), which directs that final project decisions be made in the best overall public interest.

(END OF CHAPTER)

EXECUTIVE SUMMARY

S-1 INTRODUCTION

The Trinity Parkway is a proposed new toll road located in the City of Dallas, Dallas County, Texas. The Trinity Parkway would provide a reliever route generally to the west of downtown Dallas, connecting from the IH-35E/SH-183 interchange in the north to the US-175/SH-310 interchange in the south, a distance of approximately 9 miles. The Federal Highway Administration (FHWA, lead federal agency), Texas Department of Transportation (TxDOT), North Texas Tollway Authority (NTTA), and the City of Dallas are project sponsors. The U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) are cooperating agencies.

The Environmental Impact Statement (EIS) for the proposed Trinity Parkway is being prepared pursuant to the National Environmental Policy Act (NEPA) and in compliance with NEPA regulations issued by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] Parts 1500-1508) and the FHWA (23 CFR Part 771). The NEPA regulations are a mandate for federal agencies to examine the potential environmental consequences of their proposals, consult with other agencies, document the analysis, and make the information available to the public prior to making a decision. An EIS presents detailed socioeconomic, environmental, and engineering information about a project so that the general public and federal, state, and local agencies can appropriately review and comment. Completion of the EIS process for the proposed Trinity Parkway, culminating with an anticipated Record of Decision (ROD) by the FHWA, would allow the proposed action to proceed to the final design phase unless the No-Build Alternative is selected.

S-2 THE RELATIONSHIP OF THE TRINITY PARKWAY SDEIS AND LSS

A Supplemental Draft Environmental Impact Statement (SDEIS) for the proposed Trinity Parkway project was circulated in 2009 (FHWA, 2009). A Public Hearing for the SDEIS was conducted on May 5, 2009 and public comments were received during the time period from March 20 through June 30, 2009. The current document, called a Limited Scope Supplemental (LSS), is a supplement to the SDEIS.

The FHWA's decision to prepare a LSS for the proposed Trinity Parkway was made in May 2009 in consultation with the other sponsoring agencies and the cooperating agencies, following the SDEIS Public Hearing (see **LSS Appendix A, Pages 8-11**). Several factors led to the development of this LSS. New information was released from the USACE, after the publication of the SDEIS, which triggered a need for further evaluation and public comment with respect to possible impacts of proposed Trinity Parkway alternatives to levee remediation associated with the Dallas Floodway levee system. In addition,

prior to recommending a preferred alternative and releasing a Final Environmental Impact Statement (FEIS), the FHWA sought an enhanced evaluation and another opportunity for public comment on the practicability of the Trinity Parkway alternatives in accordance with Executive Order (EO) 11988 (*Floodplain Management*, 1977) and EO 11990 (*Protection of Wetlands*, 1977). In accordance with 23 CFR 774 (*Parks, Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites [Section 4(f)]*) and prior to the FEIS, the FHWA also sought additional analysis in the LSS to assess whether or not there were feasible and prudent design refinements that could be made for the proposed Trinity Parkway alternatives to avoid the taking or use of resources protected under Section 4(f). In July 2010, federal legislation (Public Law No. 111-212) was passed exempting the FHWA from Section 4(f) requirements "for any highway project to be constructed in the vicinity of the Dallas Floodway, Dallas, Texas." The FHWA determined the above Section 4(f) exemption applied to the proposed Trinity Parkway project (see **LSS Appendix A**). However, supplemental information regarding historic-age resource surveys, a discussion of feasible design refinements to avoid potential adverse impacts to historic properties, and an update on Section 106 consultation efforts are provided in this LSS.

The analyses conducted for the SDEIS were based on data and methodologies associated with the long-range metropolitan transportation plan (MTP) *Mobility 2030*. The *Mobility 2030 - 2009 Amendment* was adopted by the Regional Transportation Council (RTC) of the North Central Texas Council of Governments (NCTCOG) on April 9, 2009, after the SDEIS was approved by the FHWA in February 2009. On February 1, 2011, the *Mobility 2030 - 2009 Amendment* and the Transportation Improvement Program (TIP), FY 2011-2014 TIP, were found to conform to the State Implementation Plan (SIP) (TCEQ, 2011). On March 10, 2011, a new MTP, *Mobility 2035*, was adopted by the RTC. On July 14, 2011, this new plan and the associated TIP (2011-2014 TIP, as amended) were found to conform to the SIP. Analyses for the subsequent FEIS will be conducted based on the current MTP at that time. During the FEIS preparation process and prior to issuance of a ROD by the FHWA, appropriate measures would be taken to ensure that the proposed project is consistent with the conforming MTP and the TIP/Statewide Transportation Improvement Program (STIP).

The LSS is organized into chapters that describe the proposed action and its need and purpose, the alternatives under consideration, the levee remediation actions developed by the City of Dallas and the compatibility of Trinity Parkway floodway alternatives with such remediation actions, the practicability of the Trinity Parkway alternatives, and the ongoing Section 106 consultation efforts.

The FHWA has decided to supplement the SDEIS in order to fully comply with the CEQ and the FHWA regulations implementing NEPA and to develop documentation to support the decisions that both the FHWA and USACE would be required to make regarding the proposed project. The information presented in this Executive Summary is discussed in more detail in the body of the LSS.

S-3 PROJECT DESCRIPTION

The NTTA proposes to design, construct, operate, and maintain a limited-access toll facility in the City of Dallas extending from the IH-35E/SH-183 interchange in the north to the US-175/SH-310 interchange in the south, a distance of approximately 9 miles. The proposed project would provide a needed reliever route and would be located generally west of the existing freeway loop that encircles downtown Dallas. The proposed facility would ultimately consist of six mixed-flow tolled mainlanes, local street interchanges, and interchanges between the tollway and freeways at the northern terminus, southern terminus, Woodall Rodgers Freeway, and IH-45 (see **LSS Chapter 2**). The number and configuration of interchanges vary among the Build Alternatives considered.

No recommendation of a preferred alternative is made in this LSS. During the public comment period, the regulatory agencies, the public, and other interested parties are invited to provide comments on the technical analyses presented in the LSS. All additional information and relevant comments will be evaluated and considered prior to recommending a preferred alternative in the FEIS.

S-4 NEED AND PURPOSE FOR ACTION

The proposed project is needed to address current and projected congestion problems and transportation system demands and deficiencies in the area. There is severe congestion in the “Canyon/Mixmaster” road system on the south and west sides of downtown Dallas comprising segments of IH-30, IH-35E and the IH-30/IH-35E interchange. Population and employment growth within the Dallas-Fort Worth metropolitan area during the last several decades, combined with other traffic generating factors, have led to the current levels of congestion in the vicinity of the Dallas Central Business District (CBD). The effects of this congestion - increased traffic accidents and rising costs due to travel delays - suggest the need to take action. Transportation problems in the study area also stem from a roadway network that is constrained in its ability to meet the mobility and access needs of the study area’s population, local commuters, through traffic, and major employment and public facilities. Regional population and employment growth projections, public and private development initiatives, local land use plans and policies, and an anticipated increase in trade-related trucking activity indicate that study area congestion problems would continue to worsen unless action is taken (see **SDEIS Section 1.7**).

The primary purpose of the Trinity Parkway project is to provide a safe and efficient transportation solution to manage traffic congestion and improve safety in the area of the Dallas CBD.

S-5 ALTERNATIVES CONSIDERED

The current planning for the Trinity Parkway has been developed from TxDOT's *Trinity Parkway Corridor Major Transportation Investment Study* (MTIS) published in March 1998 (TxDOT, 1998). The MTIS focused on transportation needs in the vicinity of the Dallas CBD and developed a seven point plan of action as follows:

1. Enhanced work trip reduction measures;
2. Bicycle and pedestrian facilities;
3. Enhanced transportation facility management;
4. Improvements to the Canyon, Mixmaster, and Lower Stemmons Freeway corridors;
5. Extension of Woodall Rodgers Freeway westward across the Dallas Floodway to connect to Singleton Boulevard and Beckley Avenue;
6. A continuous HOV system through the Canyon, Mixmaster, and Lower Stemmons corridors; and
7. A Trinity Parkway reliever route (proposed action).

The Trinity Parkway EIS focuses only on Item 7, the reliever route. Alternatives considered in this LSS for the Trinity Parkway include a No-Build and four Build Alternatives:

- Alternative 1 - No-Build
- Alternative 2A - Irving/Riverfront (Industrial) Boulevard - Elevated
- Alternative 2B - Irving/Riverfront (Industrial) Boulevard - At-Grade
- Alternative 3C - Combined Parkway - Riverside (Further Modified)
- Alternative 4B - Split Parkway - Riverside (Modified)

The other Build Alternatives (Alternatives 3A, 3B, 4A, and 5) evaluated in the Draft Environmental Impact Statement (DEIS) (FHWA, 2005a) and SDEIS have been eliminated from further consideration (see **LSS Section 2.2**) as they would not be feasible because of impacts to the Dallas Floodway levees and their potential to interrupt flood control operations. Correspondence among the FHWA, TxDOT, and the USACE documenting the process and the reasons these alternatives are not being advanced for further analysis in this LSS or the FEIS is presented in **LSS Appendix A**.

S-6 UPDATE ON THE STRATEGY FOR ENVIRONMENTAL PROCESSING OF THE TRINITY PARKWAY AND DALLAS FLOODWAY PROJECTS

On June 16, 1999, the FHWA, in cooperation with TxDOT, NTTA, and the City of Dallas, issued a Notice of Intent (NOI) to prepare the Trinity Parkway DEIS. The proposed Trinity Parkway alternatives are located in or around the Dallas Floodway, most notably Alternatives 3C and 4B that are located riverside of the floodway levees for some distance. On October 9, 2009, the USACE issued a NOI to prepare a DEIS seeking analysis of the potential environmental consequences of comprehensive proposed improvements for the Dallas Floodway system. The proposed Dallas Floodway project sponsored by the USACE in partnership with the City of Dallas consists of levee remediation, flood risk management, ecosystem restoration, and recreation enhancement. There are therefore two major federal actions potentially affecting the Dallas Floodway, the FHWA-sponsored EIS for the proposed Trinity Parkway and the USACE-sponsored EIS for proposed improvements to the Dallas Floodway.

The FHWA, USACE, TxDOT, NTTA and other involved agencies have defined a coordinated strategy for environmental processing of the Trinity Parkway project and other federal projects in the Dallas Floodway. The proposed strategy is intended to allow the Trinity Parkway and Dallas Floodway projects to be closely coordinated between the federal proponents to ensure that the spirit of NEPA is upheld and all impacts are fully considered before any federal action is determined.

In May 2009, leading up to the FHWA decision to require an LSS, representatives of the FHWA, USACE, EPA, TxDOT, NTTA, NCTCOG, Federal Emergency Management Agency (FEMA), and City of Dallas met to discuss projects proposed along the Trinity River corridor, how they relate to the Dallas Floodway, and required activities and standards to be met to conclude the projects. These and subsequent discussions among the partner agencies resulted in a revised strategy for environmental processing of the Trinity Parkway project and other projects in the Dallas Floodway. The revised strategy recognizes the primacy of flood protection in the Trinity River corridor and the geographic proximity of the proposed Trinity Parkway and Dallas Floodway projects, and re-affirms the commitment of the FHWA and the USACE to coordinate their efforts. This recognition and commitment does not alter the independent utility of these projects. The revised procedures (see **LSS Chapter 1**) replace those outlined in the SDEIS. The strategy is intended to facilitate timely development of the required environmental documents and allow the FHWA and USACE to make informed decisions in the context of the various regulations and requisite analyses applicable to each agency.

Technical committees and a partner agency executive team were established and convened on a monthly basis to facilitate close coordination and maintain compatibility of the federal agency processes. Critical future checkpoints established by the revised strategy in the event a Trinity Parkway riverside alternative

is recommended following publication of the LSS are that 1) the USACE Comprehensive System Analysis must provide reasonable assurance that a Trinity Parkway riverside alternative is technically sound and environmentally acceptable prior to Trinity Parkway FEIS completion, with the understanding that final USACE approval would be determined by the Chief of Engineers in accordance with 33 United States Code (USC) 408; and 2) before the USACE DEIS for the Dallas Floodway project can proceed to public hearing, the Trinity Parkway FEIS must recommend the FHWA's preferred alternative for incorporation in the USACE plan.

Subsequent to the circulation of the LSS and public and agency review and comment, the next expected steps for the proposed Trinity Parkway project are the publication of a FEIS. The FEIS will include responses to comments received on the SDEIS and the LSS. Following approval of the FEIS and publication of the notice of availability of the FEIS, it is anticipated that a ROD would be signed. A ROD would describe the selected alternative, explain the reasons and rationale for the decision, and summarize any mitigation measures and monitoring that would be incorporated into the project, assuming a build alternative is selected.

S-7 CITY OF DALLAS LEVEE REMEDIATION PLAN

LSS Chapter 3 discusses the USACE *Dallas Floodway Periodic Inspection Report No. 9* (USACE, 2007), which identified levee system deficiencies adjacent to Trinity Parkway Alternatives 3C and 4B. This chapter of the LSS discusses the development of levee remediation actions by the City of Dallas in response to Periodic Inspection Report No. 9 and also assesses compatibility of Alternatives 3C and 4B with such remediation actions. Based on the available information provided by the City, Alternatives 3C and 4B in the Dallas Floodway would be compatible with the City of Dallas proposed Levee Remediation Plan (both for the 100-Year and the Standard Project Flood Remediation Plans).

S-8 ANALYSIS OF PRACTICABILITY OF THE REASONABLE ALTERNATIVES

LSS Chapter 4 separately examines the Build Alternatives in light of a variety of factors used by federal agencies to evaluate the practicability of each alternative pursuant to EO 11990 regarding protection of wetlands and EO 11988 regarding floodplain management. **Table S-1** provides a summary of data relevant to evaluating practicability and facilitates making comparative distinctions among the Build Alternatives as to the listed factors. The recommendation of a preferred alternative will be based on the information discussed in **LSS Chapter 4** and summarized in **Table S-1** in combination with an evaluation of comments on the LSS and from a Public Hearing. The recommendation will be made after all pertinent factors have been weighed to determine the practicability of each alternative within the meaning of EO

11988 and EO 11990 and implementing regulations and guidance of the FHWA and the USACE, as further discussed in **LSS Chapter 4**.

TABLE S-1. SUMMARY OF PRACTICABILITY OF THE TRINITY PARKWAY BUILD ALTERNATIVES

Practicability Factors	Unit of Measure	Trinity Parkway Build Alternatives			
		2A	2B	3C	4B
Economic Impacts					
Estimated Total Tax Value Lost from Land Conversion ¹	\$ Millions	379.0	306.4	54.0	36.2
Estimated Annual Tax Revenue Lost from Land Conversion ²	\$ Millions	10.3	8.3	1.5	1.0
Estimated Businesses Displaced ³	Number	285 to 304	220 to 289	15 to 20	13 to 16
Estimated Jobs Impacted Due to Business Displacements ³	Number	6,437 to 6,640	6,182 to 6,655	72 to 203	62 to 187
Project Costs					
Estimated Construction Costs (Including Design and Agency Costs) ⁴	\$ Billions	1.76	1.35	1.27	1.35
Estimated ROW and Utility Relocation Costs	\$ Millions	601.0	520.3	142.1	103.2
Estimated Environmental Mitigation Costs ⁵	\$ Millions	48.2	45.2	16.3	15.8
Estimated Costs to Mitigate Levee Impacts	\$ Millions	---	---	30.0	50.0
Estimated Routine O&M Costs – Total ⁶ / Annualized	\$ Millions	78.1 / 1.5	233.0 / 4.5	232.6 / 4.5	227.2 / 4.4
Estimated Flood Damage Restoration Costs for >100-yr. Flood – Total / Annualized	\$	Negligible	Negligible	4.8 Million / 48,000 (cleanup and damage repair)	7.2 Million / 72,000 (cleanup and damage repair)
Estimated Revenue Loss from Downtime due to >100-yr. Flood – Total / Annualized	\$	Negligible	Negligible	3.6 Million / 36,000	3.6 Million / 36,000
Technology					
Major Technological Constraints ¹⁵	Yes/No	No	No	No	No
Logistics					
Estimated Time to Complete Construction After Anticipated ROD	Years	10	9	6.25	6.5
High Risk HazMat Sites ⁷	Number	34	35	17	16
Major Utility Constraints	Yes/No	Yes (relocate 52,000 linear ft. of water/sewer and 2 mi. of Oncor 345 kV line)	Yes (relocate 52,000 linear ft. of water/sewer, 2 mi. of Oncor 345 kV line, and the West Network Substation)	No	No
Estimated Net Borrow Material (cut/fill) Including Shrinkage	Cubic Yards	0.3 Million	0.9 Million	4.3 Million	6.7 Million

TABLE S-1. SUMMARY OF PRACTICABILITY OF THE TRINITY PARKWAY BUILD ALTERNATIVES

Practicability Factors	Unit of Measure	Trinity Parkway Build Alternatives			
		2A	2B	3C	4B
Locational Advantages					
Consistent with Local Plans	Yes/No	No	No	Yes	No
Impacts on Natural and Beneficial Values Served by Floodplains					
Woodlands Impacted	Acres	4.6	6.4	33.3	29.3
Maintained Grass Areas Impacted ⁸	Acres	11.8	31.1	468.1	573.1
Waters of the U.S., Including Wetlands, and Water Quality					
Waters of the U.S. Including Wetlands Impacted	Acres	4.3	9.1	90.9	110.6
Water Quality Impacts	Yes/No	Yes	Yes	Yes	Yes
Storm Water Runoff Abatement Needed	Yes/No	Yes	Yes	Yes	Yes
Fish and Wildlife Habitat Values					
Threatened and Endangered Species	Yes/No	No	No	No	No
Conservation					
Expected reduction in energy and fuel consumption	Yes/No	Yes	Yes	Yes	Yes
Needs and Welfare of the People					
Residential Relocations	Number	8	6	6	11
Commercial Displacements (Buildings)	Number	272	228	29	24
Community and Public Building Displacements	Number	5	11	0	0
Consistent with EJ Order and Title VI	Yes/No	Yes	Yes	Yes	Yes
Consistent with Location Favored by Majority of Stakeholders and General Public	Yes/No	No	No	Yes	No
Air Quality					
Projected CO Concentrations Below the NAAQS	Yes/No	Yes	Yes	Yes	Yes
MSATs – Expected Change ⁹	Decrease/ Increase	Decrease	Decrease	Decrease	Decrease
Traffic Noise					
Noise Receivers Impacted	Number	209	202	128	166
Impacts of Floods on Human Safety					
Tollway Area within 100-yr. (Base) Floodplain	Acres	55	76	297	418
Tollway Protected from 100-yr. Flood	Yes/No	Yes	Yes	Yes	Yes
Interferes with Floodway O&M ¹⁰	Yes/No	TBD	TBD	TBD	TBD
Proposed Condition Meets USACE Criteria for Valley Storage (100-yr. and SPF)	Yes/No	Yes	Yes	Yes	Yes

TABLE S-1. SUMMARY OF PRACTICABILITY OF THE TRINITY PARKWAY BUILD ALTERNATIVES

Practicability Factors	Unit of Measure	Trinity Parkway Build Alternatives			
		2A	2B	3C	4B
Proposed Condition Meets USACE Criteria Concerning Increase in Flood Elevation (100-yr. and SPF) ¹¹	Yes/No	Yes	Yes	No - 100-year (max. rise of 0.41 ft.) Yes – SPF (max. rise of 0.03 ft.) ¹¹	No (max. rise of 1.2 ft. for the 100-yr. and 0.71 ft. for the SPF)
Proposed Condition Meets USACE Criteria Concerning Erosive Water Velocity	Yes/No	Yes	Yes	Yes	Yes
Risks Associated with Implementation of the Action					
Adverse Impacts to Levee Integrity ¹⁶	Yes/No	TBD	TBD	TBD	TBD
Incompatible Development					
Induced Development in Floodplains or Wetlands	Yes/No	No	No	No	No
Aesthetics					
Visual Impacts ¹²	Low/Medium/High	High	Medium	Medium	Medium
Historic Values					
Archeological Historic Properties Impacted ¹³	Number	0	0	0	0
Non-Archeological Historic Properties with Adverse Effects ¹⁴	Number	0	0	1	0
Section 4(f) Involvement¹⁷	Yes/No	N/A	N/A	N/A	N/A
<p>Notes: CO = Carbon Monoxide; EJ = Environmental Justice; MSAT = Mobile Source Air Toxics; N/A = Not applicable; NAAQS = National Ambient Air Quality Standards; O&M = Operations and Maintenance; ROW = right-of-way; SPF = Standard Project Flood; TBD = To be determined.</p> <ol style="list-style-type: none"> Based on 2011 Dallas Central Appraisal District base property values for property needed for ROW. Based on 2011 tax rates for Dallas County, the City of Dallas, and Dallas Independent School District. Based on data from business records obtained from Dun & Bradstreet by the City of Dallas, Office of Economic Development, Research & Information Division (January 2010). It should be noted that some jobs and businesses could be permanently lost if displaced businesses are unable to relocate successfully and employees are unable to find similar work. These numbers do not factor in jobs that would be created by construction and operation of the tollway. The construction costs do not include the ROW and utility relocation costs, but do include the environmental mitigation costs shown separately. The construction costs for Alternatives 3C and 4B include costs for anticipated structural levee remediation features proposed to address pier penetrations of the Dallas Floodway levees that are also shown separately in the above table (see LSS Appendix D). The environmental mitigation costs include estimated asbestos abatement for displaced buildings, investigation/remediation for hazardous material sites, noise walls, and restoration costs for impacts to woodlands and waters of the U.S., including wetlands (see LSS Appendix D). These costs are estimated over a feasibility study 52-year period (2013 – 2065) based on standard practices for NTTA O&M. The estimates were developed based on best available information using conceptual schematics for each alternative and may vary from final O&M costs. Hazardous waste/material sites considered to have a high probability for contamination located within or adjacent to proposed ROW (see SDEIS Section 4.17). The figures for impacts to maintained grass areas for Alternatives 3C and 4B include an estimated 258 acres from proposed excavation sites for borrow material to be used for tollway embankment. The EPA predicts substantial future MSAT reductions as the agency's new on-road fuel and vehicle rules come into effect (Tier II, light-duty vehicle standard, Heavy-Duty Diesel Vehicle standards and low sulfur diesel fuel, and the EPA's proposed Off-Road Diesel Engine and Fuel Standard). These projected air emission reductions will be realized even with the predicted continued growth in vehicle miles traveled (EPA, 2001; EPA, 1999). Although the Build Alternatives have been designed to avoid interference with the USACE's and City's ability to operate and maintain the Dallas Floodway, the preferred alternative would be subject to further review in accordance with 33 USC 408 (Section 408). The final determination regarding whether the preferred alternative would interfere with floodway O&M would be made during the Section 408 process. 					

TABLE S-1. SUMMARY OF PRACTICABILITY OF THE TRINITY PARKWAY BUILD ALTERNATIVES

Practicability Factors	Unit of Measure	Trinity Parkway Build Alternatives			
		2A	2B	3C	4B
<p>11. The 1988 USACE ROD Hydrologic and Hydraulic criteria states that the following maximum allowable hydraulic impacts will be satisfied: No rise in the 100-year and the SPF water surface elevations. The criteria further states that this evaluation will be developed using reasonable judgment based on the degree of accuracy of the evaluation. The H&H analysis performed for Alternative 3C has revealed a maximum localized rise in the SPF water surface of 0.03 feet upstream of the Houston Street Bridge (see LSS Plate 4-25). With consideration for the small magnitude of the SPF rise, the location, and the very limited extent of the rise, it has been determined that for the SPF flood event, the 1988 ROD criteria has effectively been met. In the event that Alternative 3C or 4B is selected for further development, additional measures or project modifications to the preliminary design may be used to reduce or eliminate these water surface rises. However, the water surface rises determined in the preliminary design evaluations are not sufficient to eliminate these alternatives from further consideration. A Section 404/10 permit decision on the project cannot be made until the 1988 ROD criteria evaluation is complete.</p> <p>12. For the purpose of summarizing the visual impacts discussed in LSS Sections 4.1.4.16, 4.1.5.16, 4.1.6.16, and 4.1.7.16, the Build Alternatives were assigned an overall impact rating of low, medium or high. A low rating would represent a minimal visual change where the Build Alternative is somewhat visible, but consistent with the existing landscape. A medium rating represents a moderate visual change where the Build Alternative is considerably visible, but does not obscure the view of the landscape. A high rating represents a strong visual change where the Build Alternative would be highly visible, obscure views, and greatly alter the character of the landscape.</p> <p>13. TxDOT determined with concurrence from the SHPO that the proposed undertaking would not affect archeological historic properties as defined in 36 CFR 800.16(l) (see LSS Appendix B).</p> <p>14. See LSS Chapter 5, Section 5.5.25.</p> <p>15. For the purpose of this analysis, a major technological constraint was considered to be any insurmountable technological issue that would influence the constructability, operations, or maintenance of a particular Build Alternative.</p> <p>16. If a Build Alternative is recommended as the preferred alternative, the USACE is expected to exercise its design review authority under the Section 408 permit process to assure no adverse impacts to Dallas Floodway levees. See also LSS Sections 4.1.6.14 and 4.1.7.14 for potential benefits to levee stability from Alternatives 3C and 4B in segments with the roadway embankment alongside.</p> <p>17. Section 4(f) is shaded to denote for the reader that Section 4(f) is not applicable for this project pursuant to Section 405 of Public Law No. 111-212 (see LSS Section 5.1).</p>					

The information set forth in the above table enables comparison of the relative performance of each Build Alternative with respect to the federal criteria applicable to a determination regarding practicability. For example, Alternatives 2A and 2B have severe constraints relating to project costs, logistics, locational disadvantages, needs and welfare of the people, and aesthetics. Specifically, each of these two alternatives would cause hundreds of business displacements and, as a result, over 6,000 jobs would be expected to be impacted. In contrast, Alternatives 3C and 4B would have far fewer impacts regarding such factors but would require floodplain modifications and unavoidable wetland impacts within the Dallas Floodway, which are factors relevant in the evaluation of alternatives under both EO 11988 and EO 11990, as well as the federal regulations and guidance discussed in **LSS Chapter 4**. As mentioned above, findings regarding the practicability of the Build Alternatives will be included in the FEIS after considering public comments on the LSS and after applying all regulatory requirements for evaluating practicability.

S-9 SUPPLEMENTAL INFORMATION ON IMPACTS TO HISTORIC PROPERTIES

LSS Chapter 5 provides an update on efforts regarding historic properties since the publication of the SDEIS. An assessment has been conducted to identify historic properties potentially affected by the Trinity Parkway Build Alternatives. Pursuant to the 2005 Programmatic Agreement for Transportation Undertakings (PA-TU) among the FHWA, the Texas State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), and TxDOT (FHWA, 2005b), TxDOT determined in

January 2010, with concurrence from the SHPO, that the Area of Potential Effects (APE) does not contain archeological historic properties (36 CFR 800.16(l)), and thus the proposed undertaking would not affect archeological historic properties (see **LSS Appendix B**).

In October 2009, a non-archeological historic-age resource survey of the APE for Alternatives 2A, 2B, 3C, and 4B was completed (Ecological Communications Corporation, 2009). The survey consisted of identifying all pre-1966 buildings, structures, and objects located within the APE and examining associated groupings of buildings, structures, objects, and sites for potential historic districts. The survey did not resurvey the ROW area covered by the 2001 survey of potential building displacements (Norman Alston Architects, 2001) that was discussed in the DEIS and SDEIS. Based on the 2001 and 2009 surveys, and subsequent Section 106 consultation with the SHPO, a total of 24 properties (buildings, structures, objects, or districts) within the project APE are currently listed in or have been determined eligible for listing in the National Register of Historic Places (NRHP) (see **LSS Appendix B**).

The LSS involved the development and evaluation of design refinements for the four Build Alternatives currently under consideration to seek ways to avoid or minimize harm to non-archeological historic properties where these alternatives, as presented in the SDEIS, would likely cause adverse effects. The evaluation of the design refinements involved extensive coordination among technical staff representing the FHWA, TxDOT, NTTA, and the Texas Historical Commission (THC). The design refinements that received concurrence for implementation were the basis of the discussion of effects on historic properties included in this LSS and will be reflected in the FEIS.

TxDOT has determined, with concurrence from the SHPO, that Alternatives 2A, 2B, and 4B would have No Adverse Effect on non-archeological historic properties. Alternative 3C would have No Adverse Effect on 23 of the 24 non-archeological historic properties located in the project APE but would impact integrity of design, materials, and workmanship of the Continental Avenue Viaduct, resulting in an Adverse Effect. In the event Alternative 3C is recommended as the preferred alternative, mitigation measures for impacts to the Continental Avenue Viaduct would be developed by the FHWA and TxDOT, in consultation with the SHPO, and presented in the FEIS (see **LSS Appendix B**). In a letter dated November 29, 2011, the FHWA and TxDOT determined that the Dallas Floodway is not eligible for listing in the NRHP and continued formal Section 106 consultation for this resource. However, the THC issued a letter to the FHWA on December 30, 2011 stating the SHPO did not concur with this assessment and providing comments to support a conclusion that the Dallas Floodway is eligible for listing in the NRHP at the local level of significance in the areas of Engineering and Community Planning and Development, under Criterion A (see **LSS Appendix B**). Coordination with the SHPO will continue for this resource and an update on consultation efforts will be reflected in the FEIS.

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5-1 Proposed Trinity Parkway NRHP-Listed/-Eligible Properties within APE5-43

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COMMONLY USED ACRONYMS/ABBREVIATIONS

AAA	American Automobile Association
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
AT&SF	Atchison, Topeka, and Santa Fe
BVP	Balanced Vision Plan
CAA	Clean Air Act
CBD	Central Business District
CDC	Corridor Development Certificate
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CSJ	Control-Section-Job
CWA	Clean Water Act
CWWTP	Central Wastewater Treatment Plant
DART	Dallas Area Rapid Transit
dB	Decibel
dBA	Decibel (A-Weighed Scale)
DEIS	Draft Environmental Impact Statement
DFE	Dallas Floodway Extension
DFW	Dallas-Fort Worth
DISD	Dallas Independent School District
DNT	Dallas North Tollway
DOI	Department of Interior
DOT	Department of Transportation
e.g.,	exempli gratia (for example)
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ER	Engineering Regulation
ERCOT	Electric Reliability Council of Texas
ESA	Endangered Species Act
et al.	et alia (and others)
ETC	Electronic Toll Collection
Etc.	et cetera (and so forth)
FEIS	Final Environmental Impact Statement

FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FM	Farm-to-Market
FR	Federal Register
HOT	High-Occupancy Toll
HOV	High-Occupancy Vehicle or High-Occupant Vehicle
i.e.,	id est (that is)
IH	Interstate Highway
IH-20	Interstate Highway 20
IH-30	Interstate Highway 30
IH-35 E	Interstate Highway 35 East
IH-45	Interstate Highway 45
IH-635	Interstate Highway 635
ITS	Intelligent Transportation Systems
LPA	Locally Preferred Alternative
LPP	Locally Preferred Plan
LSS	Limited Scope Supplemental
MDCP	Maintenance Deficiency Correction Period
MHH	Margaret Hunt Hill
MIP	Master Implementation Plan
MKT	Missouri Kansas and Topeka Railroad
MLK	Martin Luther King, Jr.
MPH	Miles Per Hour
MSAT	Mobile Source Air Toxics
MTIS	Major Transportation Investment Study
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NCTCOG	North Central Texas Council of Governments
ND	Neighborhood District
NDD	Texas Natural Diversity Database
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NRHP	National Register of Historic Places
NTTA	North Texas Tollway Authority
O&M	Operations and Maintenance
PA	Programmatic Agreement

PA-TU	Programmatic Agreement for Transportation Undertakings
PL	Public Law
RHA	Rivers and Harbors Act of 1899
ROD	Record of Decision
ROW	Right-of-Way
RTC	Regional Transportation Council
SDEIS	Supplemental Draft Environmental Impact Statement
SH	State Highway
SH-183	State Highway 183
SH-310	State Highway 310
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SPF	Standard Project Flood
TCEQ	Texas Commission on Environmental Quality
TDM	Travel Demand Management
THC	Texas Historical Commission
TIF	Tax Increment Financing
TIP	Transportation Improvement Program
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TSM	Transportation System Management
TTA	Texas Turnpike Authority
TxDOT	Texas Department of Transportation
TxDOT-ENV	Texas Department of Transportation – Environmental Affairs Division
U.S.	United States
UP	Union Pacific
US-175	United States Highway 175
US-75	United States Highway 75
USACE	United States Army Corps of Engineers
USC	United States Code
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
WRDA	Water Resource Development Act
§	Section
®	Registered Trademark
°	Degree

[END OF COMMONLY USED ACRONYMS/ABBREVIATIONS]

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CHAPTER 1
Need and Purpose for Proposed Action

CHAPTER 1

NEED AND PURPOSE FOR PROPOSED ACTION

The Federal Highway Administration (FHWA), the Texas Department of Transportation (TxDOT), and the North Texas Tollway Authority (NTTA) have prepared this Limited Scope Supplemental (LSS) to the Supplemental Draft Environmental Impact Statement (SDEIS) as joint lead agencies for National Environmental Policy Act (NEPA) compliance for the proposed Trinity Parkway project. The FHWA is the lead federal agency for the study. The Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (USACE) have agreed to be cooperating agencies in the preparation of the Trinity Parkway Environmental Impact Statement (EIS), including this LSS.

This chapter describes the proposed project, the need and purpose for transportation improvements in the study area, and provides an overview of the planning context. The chapter also provides an update regarding the project development process that has been coordinated among the partner agencies since the publication of the SDEIS in February 2009. Certain sections of the SDEIS are incorporated by reference.

1.1 DESCRIPTION OF PROPOSED ACTION

The proposed project is located in the Dallas-Fort Worth (DFW) Metroplex of north central Texas. The study area is located on the west side of the Dallas Central Business District (CBD) in central Dallas County (see **Figure 1-1**). The study area includes the Dallas Floodway, a federal flood conveyance and levee system carrying the main stem drainage flows of the Trinity River. **Figure 1-2** shows the project study area and provides a reference for place names used throughout this LSS to the SDEIS.

FIGURE 1-1. REGIONAL STUDY AREA MAP

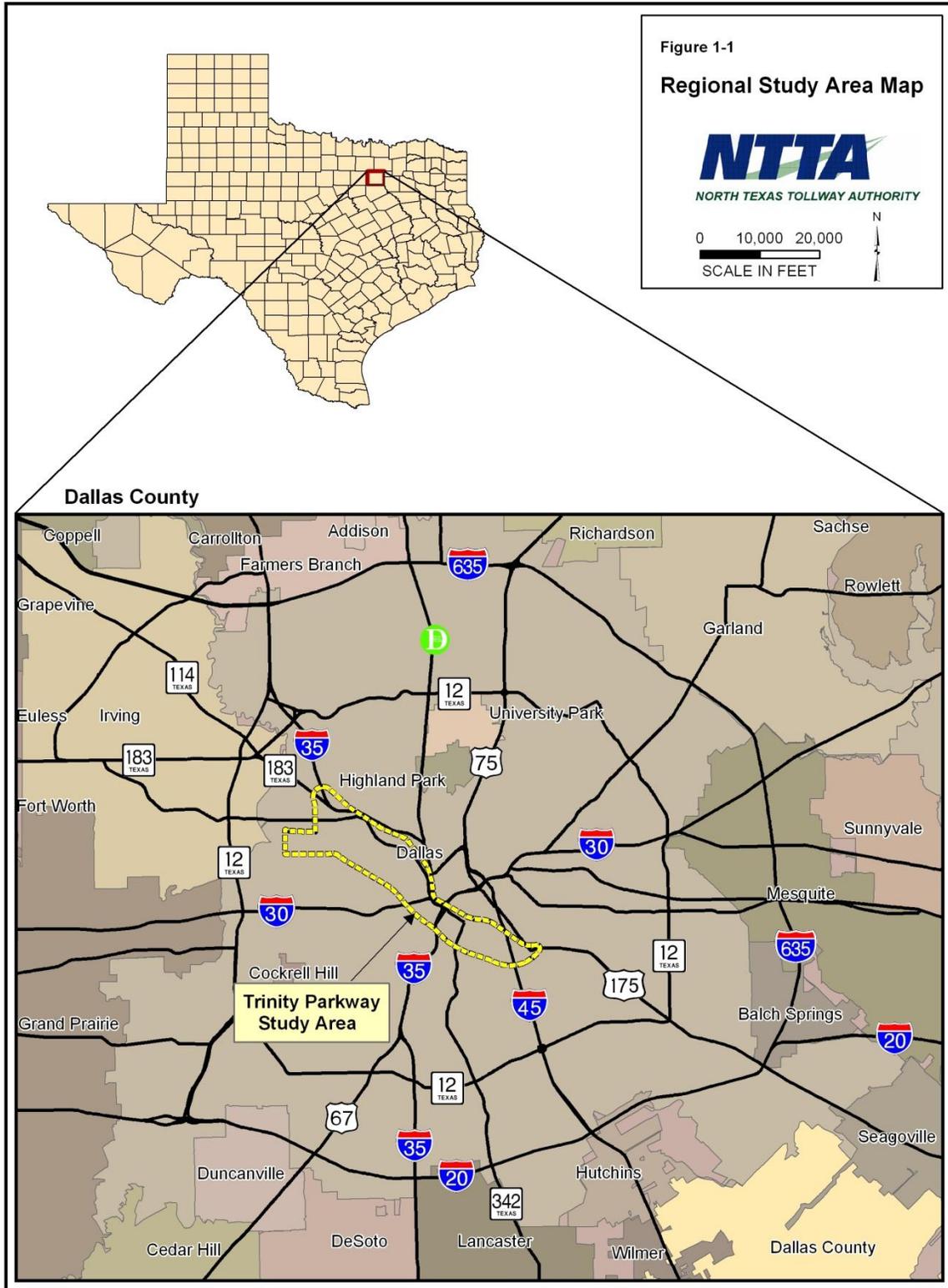
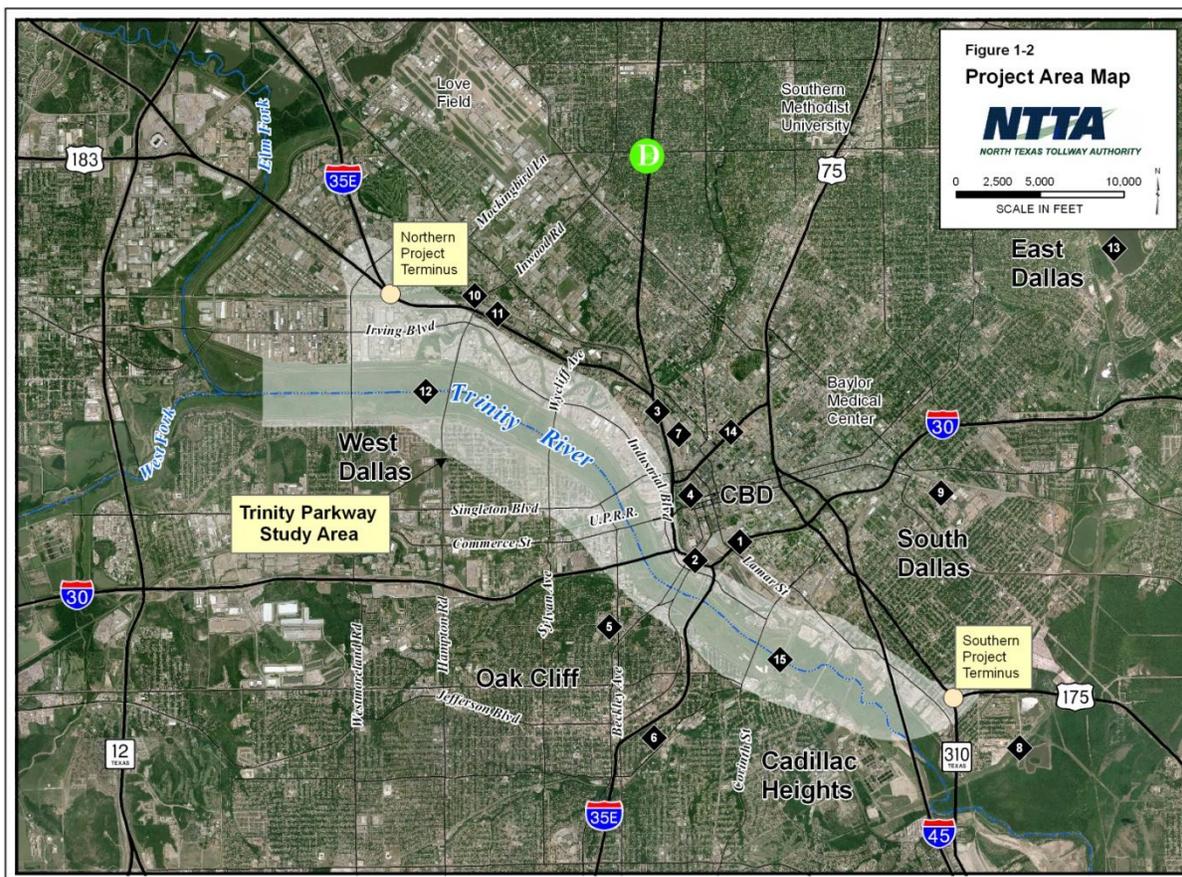


FIGURE 1-2. PROJECT STUDY AREA MAP



Places of Interest

- | | | |
|-------------------------------|------------------------------|-------------------------------|
| 1 - Canyon (IH-30) | 6 - Dallas Zoo | 11 - Dallas Market Center |
| 2 - Mixmaster (IH-35E/IH-30) | 7 - American Airlines Center | 12 - Dallas Floodway |
| 3 - Lower Stemmons (IH-35E) | 8 - Rochester Park | 13 - White Rock Lake |
| 4 - West End and Dealey Plaza | 9 - Fair Park | 14 - Woodall Rodgers Freeway |
| 5 - Methodist Medical Center | 10 - Parkland Hospital | 15 - DART Rail River Crossing |

The proposed project is the new construction of a limited-access toll facility from the IH-35E/SH-183 interchange (northern terminus) to the US-175/SH-310 interchange (southern terminus), a distance of approximately 9 miles, in the City of Dallas, Dallas County, Texas. The proposed project would provide a needed reliever route around the existing freeway loop which encircles downtown Dallas. The proposed project would ultimately consist of six mixed-flow mainlanes; local street interchanges; and interchanges between the tollway and freeways at the northern terminus, southern terminus, Woodall Rodgers Freeway, and IH-45. Additional interchange connections are included, but vary between each of the Build Alternatives under consideration (see **SDEIS Chapter 2 Alternatives Considered, Table 2-6 Interchange Access Comparison**). The facility is expected to have a posted speed of 55 miles per hour (mph), and access/service roads would be provided for areas affected by the discontinuation of an

existing street, or where property access must be restored. Electronic toll collection (ETC) facilities would be utilized, comprised of mainlane gantries, ramp gantries, and ancillary facilities (see **SDEIS Section 2.5.2 Toll Collection Facilities**).

The ultimate configuration of the Trinity Parkway would be six mainlanes throughout for each alternative considered. Actual construction of the project may be accomplished in sections, meaning that specific tollway segments may be completed and opened to traffic prior to the completion and opening of the entire length of the facility. Funding for the proposed project is anticipated to be provided by local, state, and federal sources, and through the collection of tolls. **Chapter 2 Alternatives Considered** of this LSS describes the alternatives considered throughout the planning process.

As presented in the SDEIS, the logical termini for the proposed project are the junctions at IH-35E/SH-183 and US-175/SH-310. The proposed action has independent utility and would not preclude other foreseeable transportation improvements.

The analyses conducted for the approved SDEIS were based on data and methodologies associated with the long-range metropolitan transportation plan (MTP) *Mobility 2030*. The *Mobility 2030 - 2009 Amendment* was adopted by the Regional Transportation Council (RTC) of the North Central Texas Council of Governments (NCTCOG) on April 9, 2009, after the SDEIS was approved by the FHWA in February 2009. On February 1, 2011, the *Mobility 2030 - 2009 Amendment* and the Transportation Improvement Program (TIP), FY 2011-2014 TIP, were found to conform to the State Implementation Plan (SIP). On March 10, 2011, a new MTP, *Mobility 2035*, was adopted by the RTC. On July 14, 2011, this new plan and the associated TIP (2011-2014 TIP, as amended) were found to conform to the SIP. In addition, the NCTCOG verified that the difference between the estimated average daily traffic (ADT) for the proposed project corridor based on the travel network in the *Mobility 2030 - 2009 Amendment* and the *Mobility 2035* plans would not be more than ± 15 percent. Analyses for the subsequent Final Environmental Impact Statement (FEIS) will be conducted based on the current MTP at that time. During the FEIS preparation process and prior to issuance of a Record of Decision (ROD) by the FHWA, appropriate measures would be taken to ensure that the proposed project is consistent with the conforming MTP and the TIP/Statewide Transportation Improvement Program (STIP).

1.2 NEED AND PURPOSE

Transportation improvements are necessary in the Trinity Parkway corridor to address current and projected transportation needs and facility deficiencies. The proposed project particularly focuses on managing congestion in the IH-30/IH-35E (Mixmaster) interchange on the west edge of downtown Dallas; the depressed segment of IH-30 (Canyon) south of the CBD; and the segment of IH-35E from the

Mixmaster north to the Dallas North Tollway (Lower Stemmons). The transportation needs in the Trinity Parkway study area, simply stated, are:

- There is insufficient transportation capacity (freeway lanes, city streets, transit, etc.) in the Canyon/Mixmaster area near downtown Dallas to carry needed trips flowing north-south (generally along IH-35E) and east-west (generally along IH-30). This is most evident in the morning and evening rush hours on weekdays, with the heaviest traffic flows northbound and westbound in the morning hours, and southbound and eastbound in the evening hours. On an average weekday, there is traffic congestion for more than 6 hours in the Canyon/Mixmaster, with average speeds as low as 20 mph during the peak hour. On a typical weekday morning, northbound traffic on IH-35E queues from the Dallas Zoo (12th Street) to the Dallas North Tollway exit, a distance of approximately 4.3 miles. Eastbound traffic begins to queue west of the Trinity River Bridge (Wycliff/Sylvan Avenue), with the queue continuing through the entire Canyon area on IH-30, a distance of approximately 3.3 miles. Similar queuing problems occur during the evening rush hours on IH-35E and IH-30 in the opposite directions.
- The traffic problems in the Canyon and Mixmaster are intensified by the layout of mainlanes, service roads, ramps, and surface streets in the area, which fail to properly provide for the routes and destinations of the traveling public. The types of secondary problems include forced lane changes, abrupt and unexpected merges, weaves, and exits, missing connections for direct freeway-to-freeway movements, high accident rates, and poor access for emergency response.

The need for action in the Trinity Parkway corridor is further described in the February 2009 **SDEIS Chapter 1, Section 1.7 (Need for Action)**. The problems in the corridor are the result of various urban influences, including high population growth, increased suburbanization, changing employment patterns, trade-related transportation, lack of alternative routes, and high use of single-occupant vehicles. These problems result in many effects, including slow travel speeds, extended hours of congestion, accidents, reduced air quality due to congestion, and poor attraction of businesses to adjacent areas. Population and economic growth projections for the region indicate that corridor congestion problems would continue to worsen unless action is taken.

Congestion in the Trinity Parkway corridor also slows travel for many miles along freeways feeding into the City center, such as IH-35E (Stemmons and South R.L. Thornton Freeways), IH-30 (Tom Landry Freeway and East R.L. Thornton Freeway), SH-183 (Airport Freeway), SH-114, and IH-45. Proposals for improving outlying segments of these freeways would not be entirely effective until traffic capacity is increased in and around the downtown area.

As discussed in the SDEIS, the proposed project alternatives, including the No-Build Alternative, are under consideration based on how well they meet the following project purposes:

- Improve mobility, manage congestion, increase safety, and accommodate future travel demands
- Minimize the physical, biological, and socioeconomic effects on the human environment
- Provide compatibility with local development plans
- Provide enhancement of modal interrelationships

The primary purpose of the Trinity Parkway project is to provide a safe and efficient transportation solution to manage traffic congestion and improve safety in the area of the Dallas CBD. An expanded discussion regarding the bulleted items above is presented in the February 2009 **SDEIS Chapter 1, Section 1.8 (Purposes of the Proposed Action)**.

The proposed project is included as part of a regional freeway/tollway plan in *Mobility 2035: The Metropolitan Transportation Plan for North Central Texas* (MTP), which is the regional transportation plan covering all modes of transportation and transportation system improvements. The proposed action is consistent with regional planning and congestion management strategies. The inclusion of the Trinity Parkway in the MTP indicates regional governmental support. Various municipalities and agencies such as the NCTCOG, TxDOT, Dallas Area Rapid Transit (DART), Dallas County, and the City of Dallas have demonstrated long-term support for the project.

1.3 TRINITY PARKWAY PROJECT DEVELOPMENT PROCESS

This section provides a description of past and future planning steps for the proposed action. It includes a brief overview of the planning context, starting with a description of other relevant agency actions in the Trinity Corridor that have an impact on the project development process for the Trinity Parkway, followed by the role of the Trinity Parkway Corridor Major Transportation Investment Study (MTIS) (TxDOT, 1998), Draft Environmental Impact Statement (DEIS), the SDEIS, and this LSS in project development. A discussion of activities related to the evolution of the project development strategy to date is also included in this section. An updated flowchart showing the coordinated process that would be followed by the partner agencies for evaluation of the proposed action and final decisions on the separate undertakings in the Trinity River corridor is presented in **LSS Section 1.3.4**.

1.3.1 Planning Context

As described in the Trinity Parkway SDEIS, several local, regional, state, and federal government agencies are in the process of planning, implementing, or constructing various projects within the Trinity Parkway study area. Representative agencies include the City of Dallas, Dallas County, TxDOT, the

NTTA, the NCTCOG, and the USACE. These projects include flood control, transportation, recreation, utilities, land use planning, and environmental restoration. A full list of projects within the project study area was provided in **SDEIS Section 4.24.2.7 Step 5 – Identify Other Reasonable Foreseeable Actions that May Affect Resources** (see **Tables 4-57 and 4-58**). Many of the proposed projects located within the Trinity River corridor have parallel planning processes, overlapping objectives, and a design and project approval process that require close coordination with the Trinity Parkway.

The City of Dallas “Trinity River Corridor project” is the overall name for a series of proposed projects along the Elm Fork and main stem of the Trinity River, supported by the City as part of an initiative to improve flood control, downtown access, aesthetic value, and the economic potential of the Trinity River Corridor and surrounding communities. This Trinity River Corridor project is widely publicized and is being managed by a consolidated interagency office at Dallas City Hall. The project elements are described in detail on the City of Dallas website: www.trinityrivercorridor.org.

The Dallas Floodway and proposed improvements by the City of Dallas and the USACE are given substantial emphasis in this LSS because the proposed Trinity Parkway alternatives and the City/USACE Floodway initiatives are subject to cooperative environmental documentation and processing due to geographic proximity as further described in **LSS Section 1.3.4**. Selection of a Trinity Parkway Build Alternative could potentially modify or alter an existing federal flood control project and would be subject to review and approval by the USACE in accordance with 33 U.S. Code (USC) 408 prior to construction. 33 USC 408 requires a determination by the Secretary of the Army (delegated to the Chief of Engineers, USACE) that the proposed alteration, permanent occupation, or use of a federal flood control project is not injurious to the public interest and will not impair its usefulness. Extensive coordination among the project partners has occurred especially in recent years to ensure the proposed Trinity Parkway project would not interrupt flood control operations or impact the existing Dallas Floodway levees. In the event a Trinity Parkway riverside alternative (Alternatives 3C and 4B) is selected, areas of continued coordination with the proposed City/USACE floodway improvements would include: 1) coordination of construction phasing to ensure protection of the levee system, 2) usage of borrow material from the floodway for tollway embankment, and 3) provision of uninterrupted access for floodway operations and maintenance, flood fighting, and surveillance. If one of the Trinity Parkway alternatives located on the landside of the Dallas Floodway levees (Alternatives 2A and 2B) is selected, coordination with the USACE is expected to include coordination involved with meeting regulatory requirements for sump crossings and avoiding construction conflicts in the area of the USACE Dallas Floodway Extension (DFE) project. The major City of Dallas/USACE undertakings planned for the Dallas Floodway are summarized below.

Dallas Floodway Extension Project

The USACE DFE project provides for an extension of flood protection improvements downstream of the existing south end of the Dallas Floodway levee system. Major components of the project include construction of a chain of wetlands to supplement overbank flow capacity and extension of the levee system to provide flood protection for developed areas. The levee extension would involve construction of levees along the Union Pacific Railroad (UPRR) parallel to Lamar Street from the area of the DART Bridge downstream to Rochester Park, and on the western edge of the floodplain around the Cadillac Heights neighborhood. Other elements of the project include recreation features, such as trails and access areas, as well as ecosystem restoration and environmental mitigation features. The DFE project has been separately processed through an EIS and a ROD for the project was signed on December 1, 1999 (USACE, 1999). The USACE produced a *Final Supplement No. 1* to the EIS for the DFE project in 2003 and concluded that nothing in the analysis indicated the recommended plan should be changed from the plan identified in the 1999 ROD.

The DFE project has independent purpose and utility, focused primarily on flood control and environmental restoration. It is intended to be separately funded by the City and the USACE, and would not require Trinity Parkway to be in place to be effective.

Dallas Floodway Project

The proposed Dallas Floodway project is a multipurpose project sponsored by the USACE in partnership with the City of Dallas, and consists of levee remediation, flood risk management, ecosystem restoration, and recreation enhancement within and adjacent to the Dallas Floodway. The City of Dallas has developed a conceptual master plan for extensive development of recreational, transportation, and environmental restoration elements for the Dallas Floodway known as *A Balanced Vision Plan (BVP) for the Trinity River Corridor* (City of Dallas, 2003). Section 5141 of the Water Resources Development Act (WRDA) of 2007 authorized the implementation of the City of Dallas BVP and Interior Drainage Plan components if the USACE determines they are technically sound and environmentally acceptable. On October 9, 2009, the USACE issued a Notice of Intent to prepare a DEIS in response to a U.S. Senate Committee on Environment and Public Works Resolution, dated April 22, 1988, and Section 5141 of the WRDA of 2007 seeking analysis of the potential comprehensive environmental consequences of the proposed improvements for the Dallas Floodway system (Federal Register [FR] Vol. 74, No. 195, Oct., 2009).

Proposed BVP alternatives for ecosystem restoration and recreation enhancement will be developed and evaluated based on ongoing fieldwork and data collection and past studies conducted by the Corps of Engineers, the City of Dallas, and regulatory agencies. Ecosystem restoration actions that will be evaluated in the DEIS include creating meanders within the Trinity River, restoring, protecting and

expanding the riparian corridor, improving aquatic habitat, creating riffle-pool complexes, and constructing wetlands. Recreation measures that will be evaluated include the West, Natural, and Urban lakes, terraced playing fields, multipurpose trails, whitewater facilities, pedestrian bridges, utilities, parking facilities, amphitheaters, promenade, concession pads, boat/canoe access points, and passive recreation features, such as interpretive guidance, media, and picnic areas. Proposed USACE and City of Dallas alternatives to address existing Dallas Floodway flood risk management and interior drainage concerns will be evaluated from both a non-structural and structural perspective. Non-structural measures that will be evaluated include acquisition and removal of structures or flood proofing of structures for protection from potential future flood damage. Structural measures that will be evaluated include levee height modification by fill or addition of flood walls, changes in interior drainage by enlarging storage areas or increasing widths and depths, removal of the existing Atchison, Topeka, and Santa Fe (AT&SF) Bridge, and/or a combination of these measures (FR Vol. 74, No. 195, Oct., 2009).

In regards to the USACE/City Dallas Floodway Project, it should be noted that a Statewide Transportation Enhancement Program (STEP) project utilizing a portion of the AT&SF Bridge as part of a bicycle and pedestrian trail (Santa Fe Trestle Trail) located within the Dallas Floodway is currently under construction with the legal requirement that the bridge must be open to the public for a period of 10 years. Removing the steel truss that spans the Trinity River and other bridge elements that are functional components of the trail would violate the agreement between the City of Dallas and TxDOT. The bridge has also been determined by TxDOT, with concurrence from the State Historic Preservation Officer (SHPO), to be eligible for listing in the National Register of Historic Places (NRHP). It is expected that the steel truss and sections of wooden trestle that are part of the trail project will remain.

As stated above, in conjunction with the BVP components, the Dallas Floodway project includes levee remediation, which is planned to address floodway system deficiencies identified during the periodic inspection performed by the USACE in 2007. The USACE DEIS for the Dallas Floodway project will include an assessment of the Levee Remediation Plan (and potential impacts) proposed to address deficiencies preventing the levees from accommodating the Standard Project Flood (SPF). It should be noted that the City of Dallas initiated a levee remediation study in 2009 to address floodway system deficiencies only to the extent of the levee's integrity with respect to the 100-year flood, and corrective plans developed with a purpose of regaining 100-year levee accreditation were evaluated in an Environmental Assessment processed separately from the USACE DEIS. Discussion concerning how the Trinity Parkway alternatives may relate to the levee remediation is presented in **LSS Section 3.2**.

In addition to the BVP elements and proposed USACE and City of Dallas alternatives to address existing flood risk management and interior drainage concerns, the ongoing USACE DEIS will evaluate several potential Section 408 projects proposed by other agencies for the Dallas Floodway. The Dallas Floodway

project development process as it relates to the Trinity Parkway project development process has evolved since the publication of the Trinity Parkway SDEIS, but retains its independent purpose and utility, and could proceed with or without the Trinity Parkway. **LSS Sections 1.3.3** and **1.3.4** provide additional information regarding the changes that occurred.

1.3.2 Overview of the Relationship of the Trinity Parkway MTIS, DEIS, SDEIS, and LSS

The decision-making process concerning the proposed Trinity Parkway project began with the Trinity Parkway Corridor MTIS (TxDOT, 1998). As described more fully in **LSS Section 2.1**, the recommendations from this study were adopted in March 1999 into the regional MTP (*Mobility 2020* and subsequent plans). The MTIS concluded with a recommended plan of action, which included the Trinity Parkway reliever route, Canyon-Mixmaster improvements, the Woodall Rodgers Extension, and several other elements. The proposed reliever route is being processed independently from, but in coordination with, the remaining elements of the MTIS recommended plan of action. These remaining elements are being addressed in separate NEPA documents prepared by others.

As project sponsor for the Trinity Parkway, the NTTA is assisting the FHWA with the NEPA process, which includes compliance with regulations and guidelines promulgated by the U.S. Council on Environmental Quality (CEQ) and the FHWA. These regulations and guidelines require a process ensuring that reasonable and feasible alternatives are evaluated and their related environmental impacts are thoroughly assessed. In June 1999, the NEPA project development process for the proposed action began with the public scoping and preparation of the DEIS. The documentation presented in the DEIS was prepared in accordance with the CEQ and FHWA regulations.

The sponsoring agencies, consisting of the FHWA, TxDOT, and NTTA, approved the Trinity Parkway DEIS for circulation on January 28, 2005. A public hearing was conducted on March 29, 2005, and the public comment period ran from February 11 through April 8, 2005. In late 2005, the FHWA in consultation with the sponsoring agencies and the cooperating agencies decided to prepare an SDEIS for the Trinity Parkway based on public and agency comments after determining the purposes of NEPA would be furthered by doing so. The contents of the DEIS were reproduced in their entirety in the SDEIS, along with new and revised material. The SDEIS currently serves as the primary document to facilitate review of the proposed action by federal, state, and local agencies, as well as the general public. The SDEIS details the need and purpose for the project, includes a discussion of the alternatives considered, and describes the anticipated social, economic, and environmental impacts associated with the proposed action along with potential mitigation measures. In addition, the SDEIS analyzed public and agency comments on the DEIS, and included public hearing transcripts and a summary and analysis of views (see **SDEIS Appendix G**). The sponsor agencies approved the SDEIS on February 19, 2009. A public

hearing on the SDEIS was held on May 5, 2009 and the extended comment period ran from March 20 through June 30, 2009.

Three factors led to the development of this LSS to the SDEIS. First, new information was released from the USACE after the publication of the SDEIS, which triggered a need for further evaluation and public comment on some of the proposed Trinity Parkway alternatives with respect to possible impacts to levee remediation and overall flood risk associated with the Dallas Floodway levees (see **LSS Chapter 3**). Second, prior to recommending a preferred alternative and releasing a FEIS, the FHWA sought an enhanced evaluation and another opportunity for public comment on the practicability of the Trinity Parkway alternatives in accordance with Executive Order (EO) 11988 (*Floodplain Management, 1977*) and EO 11990 (*Protection of Wetlands, 1977*). This analysis is contained in **LSS Section 4.1**. Third, in accordance with 23 CFR 774 (*Parks, Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites [Section 4(f)]*) and prior to publishing the FEIS, the FHWA sought additional analysis of feasibility and prudence to assess whether Trinity Parkway alternatives could avoid or would require the taking or use of resources protected under Section 4(f).

Although additional analysis under Section 4(f) was one of the deciding factors in the FHWA's reasoning for the need to prepare this LSS, federal legislation was passed during the development of the LSS that had implications for the proposed Trinity Parkway project in regards to Section 4(f) (Public Law No. 111-212). The legislation regarding Section 4(f) and an expanded description of the development of this LSS document is provided in **LSS Section 1.3.4**.

1.3.3 Trinity Parkway Development Strategy Prior to 2009 SDEIS Publication

This section outlines the previous strategy for development of the Trinity Parkway EIS, which has since been amended following the publication of the SDEIS. The FHWA originally recognized that there may be integration and coordination issues with foreseeable flood control and lake improvements proposed by the USACE and City of Dallas within the Dallas Floodway. However, the Trinity Parkway DEIS included alternative routes located within and outside the Dallas Floodway, and it was not possible to determine the degree of integration required with other proposed Dallas Floodway improvements, as they were less fully developed at the time. The original strategy involved a public hearing and comment period following the release of the Trinity Parkway DEIS, after which the FHWA, TxDOT, and the NTTA Board of Directors would recommend a preferred alternative. Dependent on the selection of alternatives, one of the following development strategies was expected:

1. If a Build Alternative was recommended within the Dallas Floodway, subsequent NEPA documentation would be developed, which would further address the lakes, flood control, environmental restoration, and recreational improvements proposed in the Dallas Floodway.
2. If a Build Alternative was recommended outside the Dallas Floodway, the FHWA/TxDOT/NTTA would proceed to finalization of the Trinity Parkway FEIS (i.e., an FEIS would be prepared) independent of the proposals by the USACE and the City of Dallas in the Dallas Floodway.
3. If the No-Build Alternative was recommended as the preferred alternative, the FHWA/TxDOT/NTTA would stop work on the Trinity Parkway EIS and pertinent study materials would be forwarded to the City of Dallas. The proposals by the USACE and City of Dallas in the Dallas Floodway would not be directly affected by this alternative, and would be processed independently.

The specific development strategies (Options 1, 2, and 3) were further described in a letter to the FHWA prepared and signed by representatives of the NTTA, the USACE, and the City of Dallas, dated January 29, 2003 (see **SDEIS Appendix A-1, Page 48**).

The involved agencies consulted extensively after publication and public comment on the 2005 DEIS. A decision was made to prepare the SDEIS, followed by another public hearing, postponing recommendation of a preferred Trinity Parkway alternative by the FHWA until after publication of the SDEIS and consideration of further public comment. To maintain a high degree of coordination between the Trinity Parkway EIS and the USACE's EIS for Dallas Floodway improvements, the FHWA agreed to become a Cooperating Agency with the USACE on the Dallas Floodway EIS, and the USACE agreed to become a Cooperating Agency with the FHWA on the Trinity Parkway EIS. By acting as cooperating agencies on each project and implementing, to the extent necessary or desirable, cooperative efforts to meet applicable regulatory requirements, the USACE and FHWA seek to assure a "hard look" under NEPA, as each agency proceeds toward final action.

1.3.4 Update on Trinity Parkway Development Process following the 2009 SDEIS Publication and Public Hearing

In 2009, after publication of the Trinity Parkway SDEIS, the USACE Fort Worth District and the City of Dallas released the *Periodic Inspection Report (Report No. 9), Dallas Floodway, Trinity River, Dallas, Dallas County, Texas* (USACE, 2007), which prompted a revision of the coordination process for the Trinity Parkway and the flood risk management initiatives, interior drainage plans, and other proposed development within the Dallas Floodway. The USACE Periodic Inspection Report No. 9 documented substantial deficiencies with the Dallas Floodway system which resulted in unacceptable ratings and subsequent de-certification of the Dallas Floodway levees (see **LSS Appendix A, Pages 1-2**). In addition

to numerous unacceptable ratings, the results of the inspection identified negative impacts during base flood (100-year event) conditions, which would jeopardize performance of flood protections to function as authorized (FR Vol. 74, No. 195, Friday, October 9, 2009). The levee de-certification resulted in an urgent need for the City of Dallas to recertify the levees in a timely manner in order to avoid the Federal Emergency Management Agency (FEMA) flood mapping of the areas containing homes and businesses protected by the levees. As the non-federal sponsor responsible for operation and maintenance of the Dallas Floodway system, the City's eligibility for rehabilitation assistance under Public Law (PL) 84-99 was also at risk. PL 84-99 provides funding assistance for repair of eligible flood control systems that are damaged during a flood. A levee system with an unacceptable rating is not eligible for future rehabilitation assistance until unacceptable maintenance deficiencies have been corrected. As a result, the City of Dallas, in partnership with the USACE, developed a Maintenance Deficiency Correction Period (MDCP) Plan and a Levee Remediation Plan for system-wide improvements to address the levee deficiencies and other issues within the Dallas Floodway.

The USACE Periodic Inspection Report No. 9 cited deficiencies in four levee systems in Dallas, including segments of the Dallas Floodway east and west levees adjacent to proposed Trinity Parkway Build Alternatives 3C and 4B. The Report was acknowledged at the May 5, 2009 Trinity Parkway SDEIS public hearing with the stated intent to further study the reported levee deficiencies as they relate to the Trinity Parkway Build Alternatives, coordinate any effects to the Levee Remediation Plan, and present further information to the public regarding the Trinity Parkway and the levees prior to the FEIS. In a June 24, 2009 letter to the TxDOT Environmental Affairs Division, the FHWA stated that the SDEIS, which was released prior to the USACE Periodic Inspection Report, did not include a discussion of the reported deficiencies and any impacts these might have on the Trinity Parkway Build Alternatives. Due to these and other issues requiring further evaluation, the FHWA decided on the LSS to supplement the current SDEIS (see **LSS Appendix A, Page 3**). The FHWA stated it would not recommend a preferred alternative in the LSS, so that the additional analyses from the LSS and subsequent public input could be evaluated prior to the official FHWA recommendation. The LSS, along with the SDEIS and other record documents, would be used to prepare an FEIS and ultimate decision document by the FHWA.

In addition to the FHWA requirement for further studies directly related to the USACE Periodic Inspection Report No. 9 and compatibility of Trinity Parkway Build Alternatives with the Levee Remediation Plan, the FHWA determined it was necessary to enhance certain information contained in the SDEIS before proceeding to the FEIS. In light of the potential impact from Trinity Parkway alternatives to floodplains, wetlands, and Section 4(f) resources, the FHWA determined the LSS should address whether each alternative could practicably be achieved and whether there are any feasible and prudent avoidance alternatives to the use of Section 4(f) resources. During the development of this LSS, events occurred that had implications for the proposed Trinity Parkway project in regards to Section 4(f). On July 29, 2010,

the President of the United States signed the Supplemental Appropriations Act, 2010 into law (Public Law No. 111-212). This federal legislation contained the following language, which was pertinent for the Dallas Floodway and Trinity Parkway:

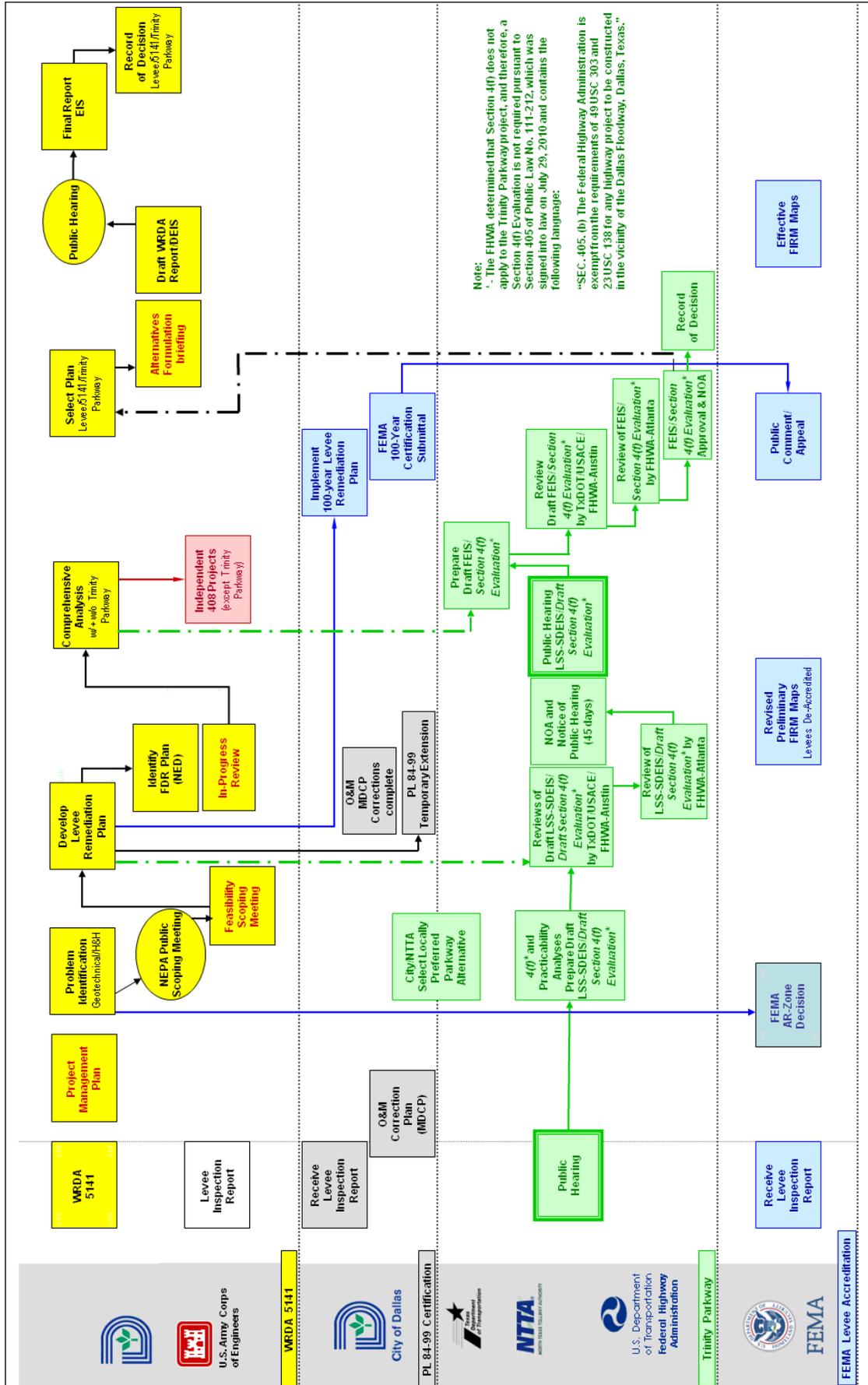
SEC. 405. (a) The Secretary of the Army shall not be required to make a determination under the National Historic Preservation Act of 1966 (16 U.S.C. 470, et seq.) for the project for flood control, Trinity River and tributaries, Texas, authorized by section 2 of the Act entitled "An Act authorizing the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes", approved March 2, 1945 [59 Stat. 18], as modified by section 5141 of the Water Resources Development Act of 2007 [121 Stat. 1253].

(b) The Federal Highway Administration is exempt from the requirements of 49 U.S.C. 303 and 23 U.S.C. 138 for any highway project to be constructed in the vicinity of the Dallas Floodway, Dallas, Texas.

Because of the above exemption, the FHWA determined that Section 4(f) requirements are not applicable to the proposed Trinity Parkway project, and as such, no further Section 4(f) evaluation for any public parks, recreation areas, wildlife or waterfowl refuges, or historic sites of national, state or local significance is required for this project (see **LSS Appendix A, Page 64**). Nevertheless, supplemental historic-age resource surveys and a more comprehensive evaluation of the historic context of the study area were provided for this LSS (see **Chapter 5**) in order to advance coordination under Section 106 of the National Historic Preservation Act (NHPA) [16 USC 470(f)] prior to the FEIS.

Leading up to the FHWA decision to require an LSS document, representatives of the FHWA, USACE, EPA, NTTA, TxDOT, NCTCOG, FEMA, and City of Dallas met on May 18 and 19, 2009 to discuss local and federal projects proposed along the Trinity River corridor and how they relate to the Dallas Floodway. The various federal agencies shared information with the NTTA, TxDOT, and City of Dallas regarding their approval processes for the proposed improvements and provided direction on required activities and standards to be met to conclude the projects. These and other subsequent discussions among local, state, and federal agencies resulted in a revised strategy for environmental processing of the Trinity Parkway project and other projects in or adjacent, parallel and near the Dallas Floodway. The revised strategy is depicted in **Figure 1-3**. The flowchart illustrated in **Figure 1-3** gives a general overview of key tasks and project development relationships among the various tasks.

FIGURE 1-3. AGENCY COORDINATION FLOWCHART



The revised strategy recognizes the primacy of flood protection in the Trinity River Corridor and the geographic proximity of the Trinity Parkway and Dallas Floodway projects, and re-affirms the commitment of the FHWA and the USACE to coordinate their efforts on these projects. This recognition and commitment does not alter the independent utility of these projects. The revised procedures replace those outlined in the January 29, 2003 interagency letter and are intended to better facilitate timely development of the required environmental documents for these actions, while enabling the public and agencies to better understand the proposed projects and their impacts. The strategy is intended to ultimately allow the FHWA and USACE to make an informed decision regarding these projects in the context of various regulations and requisite analyses applicable to the processes of each agency.

Technical committees and a partner agency executive team were established and monthly meetings held to facilitate dialogue, assure tasks were being completed in compliance with applicable regulatory requirements, and maintain consistency and compatibility of the federal agency processes. During the development of the LSS, the partner agencies participated in numerous meetings and workshops to discuss geotechnical, floodway, transportation, and historic resource issues, as well as progress on the NEPA documentation. Critical future checkpoints established by the revised agency coordination strategy are that 1) the USACE Comprehensive System Analysis for the Dallas Floodway project (see **LSS Section 1.3.1**) must provide reasonable assurance that a Trinity Parkway riverside alternative is technically sound and environmentally acceptable prior to Trinity Parkway FEIS completion; and 2) before the USACE DEIS for the Dallas Floodway project can proceed to public hearing, the Trinity Parkway FEIS must recommend the FHWA's preferred alternative for incorporation as the desired alternative in the USACE plan. These checkpoints are shown as dashed lines in **Figure 1-3**.

1.3.5 Discussion of the Section 404 Permit Process and the 33 USC 408 Approval Process

Part of the function of the project's NEPA process, including this LSS document, is to assist the USACE in meeting its regulatory decision-making responsibilities. As stated in the SDEIS, the USACE Fort Worth District intends to use the Trinity Parkway EIS, to the extent possible, to support its obligations under NEPA with respect to decisions related to Section 404 of the Clean Water Act (CWA) (33 USC Section 1344) and Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 USC Section 403) as they may apply to Trinity Parkway. An important aspect of the CWA Section 404 permit process and the RHA Section 10 permit process is the public interest review requirements of the USACE regulations governing regulatory evaluations of permits (see 33 CFR Section 320.4). This evaluation includes consideration of the need for the proposed project, whether there are reasonable alternative locations and methods to accomplish the objective of the project, and the extent to which the project would have beneficial and detrimental effects on the uses to which the area is suited. The evaluation of the probable impact which the proposed project may have on the public interest requires careful weighing of all those factors which

may be relevant, such as conservation, economics, aesthetics, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, water quality, energy needs, safety, considerations of property ownership, and, in general, the needs and welfare of the people. The specific weight the USACE gives to each factor is determined by its importance and relevance to the proposed action. The USACE must also consider the standards in the Section 404(b)(1) regulations issued by the EPA, 40 CFR Part 230. Under these regulations, the applicant must demonstrate that there is no "practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR Section 230.10(a)). These regulations further provide: "The term practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose" (40 CFR Section 230.3(q)).

Since the publication of the SDEIS, a Regional General Permit (RGP) 12 - Modifications and Alterations of Corps of Engineers Projects was developed and implemented. Activities authorized by RGP 12 are limited to the discharge of dredged or fill material into waters of the U.S., including wetlands, and work in, or affecting navigable waters of the U.S., associated with modification and alterations of Corps of Engineers projects that receive USACE approval under 33 USC 408 (Section 408) and meet the conditions of the RGP (USACE, 2010). RGP 12 could potentially be utilized as the Section 404/10 authorization for the proposed Trinity Parkway project. Because the project would disturb more than 0.5 acre of waters of the U.S., including wetlands, the Texas Commission on Environmental Quality (TCEQ) water quality certification pursuant to Section 401 of the CWA would be obtained during the Section 408 review process.

In addition to its obligations under Section 404, 33 USC 408 requires a determination by the Secretary of the Army that any proposed alteration, permanent occupation, or use of a federal flood control project is not injurious to the public interest and would not impair the usefulness of the federal works (USACE, 2006). In the event a Build Alternative is selected as the preferred alternative and that alternative could potentially modify or alter an existing federal flood control project, then the project will be evaluated in accordance with 33 USC 408 prior to construction. The Trinity Parkway NEPA documents, including this LSS, contain information to assist the USACE in its regulatory actions and decision making related to its flood control mission.

[END OF CHAPTER 1]

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CHAPTER 2
Alternatives Considered

CHAPTER 2

ALTERNATIVES CONSIDERED

This chapter presents and describes the alternatives considered for meeting the need and purpose for the Trinity Parkway, including those eliminated from further analysis. In accordance with guidelines provided in the FHWA Technical Advisory T6640.8A (FHWA, 1987), a reasonable number of alternatives within the reasonable range of alternatives have been evaluated. Because the alternatives were evaluated in a series of documents, this chapter summarizes the alternative development process.

2.1 MAJOR TRANSPORTATION INVESTMENT STUDY SUMMARY

A Trinity Parkway reliever route has been part of the long-range transportation plan in the Dallas area since the mid-1960s, and remains an integral component of current transportation plans and programs. A discussion of the history of the project and its predecessor proposals and proponents is presented in the February 2009 SDEIS (see **SDEIS Chapter 1, Section 1.3 Project History**).

In 1996, TxDOT initiated the Trinity Parkway Corridor MTIS, and the findings of the study were published in March 1998 (TxDOT, 1998) [TxDOT Dallas District, Control-Section-Job (CSJ) No. 0918-45-121,122]. MTIS procedures stress the integration of social, economic, and environmental considerations early in planning analyses and transportation decision making. The Trinity Parkway Corridor MTIS was completed in order to develop a locally preferred plan (LPP) to address transportation problems within the Trinity Parkway corridor, and to integrate with community plans and goals for the Dallas Floodway. The MTIS focused on transportation needs in the area of the Dallas CBD. The MTIS study area extended beyond downtown to cover a reasonable area of influence of the Canyon, Mixmaster, and Lower Stemmons segments on area transportation facilities.

The MTIS involved extensive public input, technical study and evaluation, and used a three-stage process to develop a recommended plan of action. The first stage identified the transportation demand on the roadway and rail transit system within the study area and analyzed conceptual improvements that might serve this demand. The second stage developed preliminary alternatives identified for further study from the first-stage. The third stage developed layouts of alternatives identified for further study from the second stage. Third stage alternatives were screened and combined to form a recommended plan of action. The criteria for screening alternatives included engineering constraints, ability to meet the project need, safety and operations, cost, stakeholder goals, impacts to natural resources, and social constraints.

The MTIS recommended plan of action was composed of seven elements, which included improvements to existing facilities, promoting alternative transportation modes, and new facility construction, as identified below:

1. Enhanced work trip reduction measures;
2. Bicycle and pedestrian facilities;
3. Enhanced transportation facility management;
4. Improvements to the Canyon, Mixmaster, and Lower Stemmons Freeway corridors;
5. Extension of Woodall Rodgers Freeway westward across the Dallas Floodway to connect to Singleton Boulevard and Beckley Avenue;
6. A continuous High-Occupancy Vehicle (HOV) system through the Canyon, Mixmaster, and Lower Stemmons corridors; and
7. A Trinity Parkway reliever route (proposed action in this LSS).

The MTIS concluded that all seven components of the recommended plan were needed and that no single measure, or combination of less than all seven measures, would meet the transportation demand and address the transportation problems. Various agencies, including the NTTA, TxDOT, DART, and the City of Dallas have taken responsibility for implementation of portions of the plan. For instance, Item 5 is being advanced by TxDOT and the City of Dallas as the "Margaret Hunt Hill" signature bridge over the Trinity River and part of Item 4 is being advanced by TxDOT as the "Dallas Horseshoe Project" to improve the Mixmaster and replace the IH-30 and IH-35E bridges over the Dallas Floodway (Note: the "Dallas Horseshoe Project" is a break-out project that was originally part of "Project Pegasus" which included improvements to sections of the depressed portion of IH-30 known as the Canyon and the portion of IH-35E from the Mixmaster to SH-183 known as Lower Stemmons; "Project Pegasus" remains part of the regional transportation plans, but has been deferred in *Mobility 2035* awaiting funding). Item 7 from the plan, the proposed Trinity Parkway reliever route, is the subject of this LSS to the SDEIS.

During the MTIS process, four potential corridors for this reliever route were considered in detail:

1. IH-35E;
2. Irving/Riverfront (Industrial) Boulevard;
3. The east Trinity River levee; and
4. The west Trinity River levee.

All of the corridors were considered between identical termini locations (IH-35E/SH-183 and US-175/SH-310). Several alternative cross sections and operational scenarios were developed for each of these four corridors. Alignments for the alternative cross sections and corridor components were selected based on three different, general strategies for providing needed capacity improvements:

1. Providing all HOV/High-Occupancy Toll (HOT) and general-use lane reliever capacity;
2. Providing only HOV/HOT capacity; and
3. Providing only general-use lane reliever capacity.

Tables 2-1 through 2-4 provide an abbreviated record of the range of alternatives considered. Additional information regarding these alternatives can be obtained from the MTIS published report.

TABLE 2-1. IH-35E (STEMMONS FREEWAY) CORRIDOR ALIGNMENTS

Alignment	Description
I35-1a	Four-lane elevated freeway with two at-grade HOV/HOT lanes and two additional general-purpose lanes (eight additional lanes total) with compensatory widening (55 feet on each side). Requires rebuilding IH-35E within project limits.
I35-1b	Eight-lane elevated freeway with two at-grade HOV/HOT lanes (10 additional lanes total) with minimal compensatory widening (12 feet on each side). Requires rebuilding IH-35E within project limits.
I35-2A	Two-lane elevated HOV/HOT lanes with two at-grade HOV/HOT lanes on IH-35E (four additional lanes total) with minimal compensatory widening (12 feet on each side). This alignment requires totally rebuilding existing IH-35E within the project limits.
I35-2b	Two-lane elevated HOV/HOT lanes with two at-grade HOV/HOT lanes (two additional lanes total). Takes two existing general-purpose lanes from IH-35E with no compensatory widening. Requires rebuilding existing IH-35E within project limits.
I35-3	Four-lane at-grade HOV/HOT lanes (four additional lanes total) with compensatory widening (36 feet on each side). This alignment requires totally rebuilding existing IH-35E within the project limits.
I35-4	Four-lane at-grade HOV/HOT lanes. Requires four existing general-purpose lanes from IH-35E with no compensatory widening.
I35-5a	Two-lane HOV/HOT lanes on elevated structure (two additional lanes total) with no widening required. Provides HOV/HOT capacity without taking or rebuilding any existing general-purpose lanes on IH-35E.
I35-5b	Two-lane at-grade HOV/HOT lanes on IH-35E. Takes two existing general-purpose lanes from IH-35E with no compensatory widening.
I35-5c	Two-lane at-grade HOV/HOT lanes on IH-35E (two additional lanes total) with compensatory widening. Requires rebuilding IH-35E within project limits.

TABLE 2-2. IRVING/RIVERFRONT (INDUSTRIAL) BOULEVARD CORRIDOR ALIGNMENTS

Alignment	Description
IND-1	Eight-lane elevated freeway with two elevated HOV/HOT lanes (10 additional lanes total) with compensatory widening (47 feet on each side). Existing Irving/Riverfront (Industrial) Boulevard remains in place. Requires reconstruction or double decking of lanes to connect back to the Mixmaster area.
IND-2	Four-lane at-grade freeway with four-lane at-grade HOV/HOT lanes and access roads (eight additional lanes total) with ROW widening (247 feet on one side). Existing Irving/Riverfront (Industrial) Boulevard replaced with access roads. Requires reconstruction or double decking of lanes at Mixmaster area.
IND-3	Eight-lane at-grade "super" thoroughfare with grade separation at major intersections (eight lanes replaced existing six lanes). Requires ROW widening of 20 feet on each side. Requires rebuilding existing Irving/Riverfront (Industrial) Boulevard within project limits.
IND-4	Four-lane elevated HOV/HOT lanes (four additional lanes total). Requires ROW widening of 12.5 feet on each side of the existing roadways. Existing Irving/Riverfront (Industrial) Boulevard remains in place.
IND-5	Two-lane elevated HOV/HOT lanes (two additional lanes total) on a "T" bridge within the existing median of Irving/Riverfront (Industrial) Boulevard. Requires no additional ROW. Existing Irving/Riverfront (Industrial) Boulevard remains in place.

TABLE 2-3. TRINITY RIVER LEVEE ALIGNMENTS

Alignments	Description
TL-1a, TL-1b, and TL-1c	Directional parkway along both levees (five lanes on each side with three reversible lanes). Requires reconstruction of 12 and 16 cross-street bridges, respectively.
TL-2A, TL-2b, and TL-2c	Conventional thoroughfare along the east or west levee (six lanes with median).
TL-3a, TL-3b, and TL-3c	Asymmetrical thoroughfare along both levees (six lanes on each side - four lanes in one direction and two in the opposite direction). Requires reconstruction of eight and 16 cross-street bridges respectively.
TL-4a, TL-4b, and TL-4c	Split freeway along both levees with southbound lanes on the west levee and northbound lanes on the east levee (four lanes on each side). Requires reconstruction of eight and 16 cross-street bridges, respectively.
TL-5a, TL-5b, and TL-5c	Full freeway section along the east levee (eight lanes). Requires reconstruction of six and eight cross-street bridges, respectively.
TL-7a, TL-7b, and TL-7c	Divided parkway along both levees (four lanes on each side). Requires reconstruction of eight and 16 cross-street bridges, respectively.
TL-6a, TL-6b, and TL-6c	HOV/HOT lanes along the east levee (two lanes). Requires reconstruction of six cross-street bridges each.
TL-8a, TL-8b, and TL-8c	Full freeway section along the east or west levee with two-lane HOV/HOT lanes (eight lanes total). Requires reconstruction of six and eight cross-street bridges, respectively.

TABLE 2-4. SOUTHERN TERMINUS

Alignment	Description
1 - Lamar Street	Full eight-lane parkway following the alignment of Lamar Street, with access roads replacing Lamar Street.
2 - Railroad	Full eight-lane parkway generally following the east side of the UPRR.
3 - East Levee	Full eight-lane parkway generally following the proposed east Lamar Levee extension.
4- Split West-East Levee	Split eight-lane parkway generally following the proposed Dallas Floodway levee extensions.
5 - Combined East Levee/Railroad	Full eight-lane parkway following the proposed east Lamar Levee extension down to Martin Luther King, Jr. Boulevard (MLK), then following the east side of the UPRR.

The MTIS roadway analysis concluded that an expansion of capacity on IH-35E to meet the reliever route's full travel demand was not practical, primarily due to excessive cost, extreme difficulties in carrying additional lanes through the Mixmaster, and adverse impacts on adjacent properties. The preferred approach was to place HOV/HOT lanes along IH-35E, to expand and improve the Canyon and Mixmaster to the extent practical due to physical constraints, and to seek additional capacity through a reliever along another route.

Based on the evaluation of social, economic, and environmental effects; construction and ROW costs; engineering considerations; and extensive agency/public involvement, a reliever route alternative located primarily within the Dallas Floodway was identified as the Locally Preferred Alternative (LPA) in the MTIS. However, the MTIS recognized that the selection of a reliever route would require subsequent studies. As anticipated, additional route alternatives along Irving/Riverfront (Industrial) Boulevard were included in the DEIS and SDEIS, and are carried forward in this LSS for more detailed consideration.

Some modifications have been made to the MTIS reliever road concept since 1998. The MTIS recognized the possibility of implementing the Trinity Parkway as a toll facility. Following completion of the MTIS in 1998, in view of substantial regional shortfalls and delays in funding of needed highway projects, local transportation funding agencies agreed to pursue the proposed project as a toll facility.

Toll facility implementation would involve jointly developing and financing the Trinity Parkway with a combination of tollway revenue bonds, City bonds, and federal and/or state transportation funds. In addition, during the development of the DEIS, the proposed Trinity Parkway was reduced to six mainlanes based on refined traffic volume projections and associated traffic capacity level of service analyses, public input, concerns regarding environmental impacts and costs due to the scale of an eight-lane facility (as presented in the MTIS), and also for compatibility with local plans.

2.2 SUMMARY OF DEIS/SDEIS ALTERNATIVES NOT ADVANCED

Building on the MTIS and the NEPA scoping process, the DEIS used the same corridors as the MTIS and analyzed six Build Alternatives as well as the No-Build Alternative. The SDEIS republished the DEIS along with additional information, and further modified certain alternatives for consideration, thus evaluating the No-Build and eight Build Alternatives.

The following section describes the alternatives evaluated in the DEIS and SDEIS that are not being advanced for further consideration. Based on correspondence with the USACE and further evaluation following the release of the SDEIS and subsequent public hearing (see **LSS Appendix A**), the alternatives described below would not be feasible due to their potential to interrupt flood control operations and because of proposed design features impacting the existing or planned expansion of the floodway levees.

Alternative 3A (Combined Parkway – Original)

The original Combined Parkway (Alternative 3A) was presented in concept in the July 1999 scoping meeting for the Trinity Parkway DEIS and was developed during the early stages of preparation of the DEIS. Alternative 3A was formed by combining the MTIS preliminary alignments TL-5a (north segment) and 5 (south segment) (see **Tables 2-3** and **2-4**), except that the mainlanes were modified to six lanes throughout. The alternative is called “Original” to differentiate it from the “modified” versions of the Combined Parkway (Alternatives 3B and 3C) which were generated in 2003 and 2007, respectively. As originally proposed, Alternative 3A was approximately 8.67 miles in length and would have required approximately 371 acres of ROW.

Alternative 3A was proposed to travel south from the IH-35E/SH-183 interchange, passing over Commonwealth Drive and Irving Boulevard, and reaching the Dallas Floodway in the area west of Hampton/Inwood Road. The alignment then turned southeast along the riverside of the Dallas Floodway east levee, following the riverside edge of the levee southeast to the DART light rail bridge. The alignment then crossed the levee and followed the landside of the future USACE DFE east levee extension (Lamar Levee) to IH-45. The route then turned east to the US-175/SH-310 interchange.

In the Dallas Floodway segment, the proposal for Alternative 3A was to place the tollway on an earthen embankment, typically set above the 100-year flood level. However, at existing bridge crossings of the floodway, the tollway profile was depressed to pass under the existing structures. At these locations, a flood separation wall was proposed to prevent inundation during a 100-year flood event. Alternative 3A would have required retaining walls to be placed on the levee-side of the tollway at depressed locations to accommodate a levee raise under consideration by the City of Dallas and USACE.

Alternative 3B (Combined Parkway – Modified)

Alternative 3B was added in the Trinity Parkway DEIS at the request of the City of Dallas in 2003. The alternative was developed as part of a planning study of the Trinity River corridor initiated by the City in 2002. The study was published in the BVP report. Alternative 3B was a variant of the original Combined Parkway (Alternative 3A) described above, distinguished by geometric changes that primarily consisted of deletion and modification of ramps in the general area of downtown Dallas and proposed City of Dallas floodway lakes. The City requested that Alternative 3B be included due to its reduced ramp intrusion in the Dallas Floodway area compared to Alternative 3A, and its revision of the tolling plan to exclude any mainlane toll gantries from the Dallas Floodway. As originally proposed, Alternative 3B was approximately 8.67 miles in length and would have required approximately 372 acres of ROW.

Alternative 4A (Split Parkway Riverside – Original)

Alternative 4A was formed by combining preliminary alignments TL-7a (north segment) and 5 (south segment) (see **Tables 2-3** and **2-4**), with the mainlanes modified to six lanes throughout. From the IH-35E/SH-183 interchange, this alternative was proposed to travel southwest, passing over Commonwealth Drive and Irving Boulevard, reaching the Dallas Floodway in the area west of Hampton/Inwood Road. Alternative 4A split at this point, with the southbound lanes bridging across the Trinity River to the riverside face of the west levee and the northbound lanes remaining on the riverside face of the east levee. The alignment remained in a split configuration along the Dallas Floodway to a point just east of IH-35E, where the tollway would have transitioned back to a combined configuration with the southbound lanes crossing from the west levee to the east on a bridge structure. The joining of the southbound and northbound lanes occurred on the east levee near Corinth Street. East of Corinth Street, Alternative 4A followed the identical route to the US-175/SH-310 interchange as described for Alternatives 3A and 3B. As proposed, Alternative 4A was approximately 8.84 miles in length and would have required approximately 462 acres of ROW.

In the Dallas Floodway segment, the tollway would have been placed on earthen embankments, typically set above the 100-year flood level to provide appropriate protection against inundation. However, similar to Alternatives 3A and 3B, sections of the tollway would be depressed to underpass the existing bridge structures crossing the floodway. At these locations, a flood separation wall along the riverside of the

tollway would be provided for 100-year flood protection. Alternative 4A would have required retaining walls to be placed on the levee-side of the tollway at depressed locations to accommodate the future levee raise under consideration.

Alternative 5 (Split Parkway – Landside)

Alternative 5 was formed by the combination of preliminary alignments TL-7c (north segment) and 5 (south segment) (see **Tables 2-3** and **2-4**), with the mainlanes modified to six lanes throughout. This alternative was a split configuration, with its route very similar to Alternative 4A with the exception of being located on the landside of the river levees. The landside location had two notable effects on the tollway installation:

1. The embankment set against the landside of the east and west Dallas Floodway levees would have been installed with retaining walls along much of its landside edge to avoid spillover of fill material into adjacent drainage sumps and private property; and
2. The effects on local arterial streets would have been more pronounced, requiring rebuilding and raising of substantial lengths of these streets at points of crossing.

Alternative 5 was approximately 8.90 miles in length and required approximately 372 acres of ROW.

Reasons for Elimination of Alternatives

Alternatives 3A, 3B, 4A, and 5 were presented in the February 2005 DEIS as reasonable alternatives. In October 2006, the USACE Fort Worth District provided comments on a draft version of the SDEIS provided to the District in July 2006. In the comments, the USACE raised several concerns about Trinity Parkway, specifically focusing on the Build Alternatives located in the Dallas Floodway as detailed in the February 2005 DEIS. The USACE expressed concern that these alternatives, as proposed, appeared to adversely impact operations and maintenance (O&M) requirements within the Dallas Floodway. The USACE concerns are summarized as follows:

- *The project must not interfere with the U.S. Army Corps of Engineers' or City of Dallas' ability to operate and maintain the Dallas Floodway, conduct flood fighting activities, or restore or improve the flood damage reduction capability of the federal project.*
- *No cuts, floodwalls, or retaining walls will be allowed that impact the existing or planned expansion of the Dallas Floodway or Dallas Floodway Extension levees.*

The February 2009 SDEIS noted that the USACE considered Alternatives 3A, 3B, and 4A unapprovable. The USACE confirmed in subsequent correspondence that Alternatives 3A, 3B, and 4A, as well as

Alternative 5 were not considered approvable due to the concerns outlined above. For these reasons, the alternatives have been eliminated from further analysis and consideration.

The feasibility of realigning or modifying Alternative 5 to address the USACE concerns was evaluated during the development of this LSS (see **LSS Appendix A, Pages 12-18, 25-26, and 34-40**). The evaluation involved shifting the mainlanes away from the levees and a limited analysis of potential impacts to provide the FHWA with quantitative data to support a decision regarding the viability of a modified version of Alternative 5. The analysis found that a shift away from the levees would result in a substantial increase in residential displacements in minority and low-income neighborhoods and substantially greater costs associated with ROW acquisition and relocation assistance. Consequently, the FHWA determined Alternative 5 could not be practicably modified to avoid adverse impacts to the levees as identified by the USACE (see **LSS Appendix A, Pages 50-51**).

2.3 SUMMARY OF THE NO-BUILD AND REASONABLE BUILD ALTERNATIVES

Four Build Alternatives presented in the SDEIS have been identified as reasonable for meeting the need and purpose of the Trinity Parkway. These are identified as Alternatives 2A, 2B, 3C, and 4B. **Plate 2-1** at the end of this chapter shows the alternatives on an aerial photograph. **Plates 2-2 through 2-5** show the schematic plans and typical cross sections for these alternatives.

In accordance with the FHWA Technical Advisory T6640.8A (FHWA, 1987), a reasonable number of alternatives within the reasonable range of alternatives are presented and evaluated in an EIS. This serves to simplify and focus the consideration of social, economic, and environmental impacts. To meet the FHWA requirements and in response to comments received from the public and agency officials during the DEIS and SDEIS process, the No-Build Alternative and the four Build Alternatives identified above are advanced for further consideration and analysis in this LSS.

Alternatives 2A and 2B were developed early in the study period. Alternatives 3C and 4B were added to the SDEIS based on agency consultation after the February 2005 publication of the DEIS. All of the Build Alternatives share common northern and southern termini. The northern terminus would be located at the Stemmons Freeway (IH-35E) interchange with John W. Carpenter Freeway (SH-183). The southern terminus would be at the US-175 interchange with SH-310. All of the proposed Build Alternatives would be designated as controlled-access toll roads (see **SDEIS Section 2.5 Tollroad Implementation Issues**), with grade separations at crossings of existing highways and local arterial streets. ETC would be implemented for Trinity Parkway to promote operational safety and efficiency. The facilities for toll collection would have a similar basic layout in each alternative, with mainlane toll gantries and ramp toll gantries in similar locations for each.

All alternatives advanced in this LSS are under equal consideration, and the recommendation of a preferred alternative will not be made until the results of the LSS circulation and the public involvement process have been fully evaluated. Summaries of the No-Build Alternative and the reasonable Build Alternatives are presented in **LSS Sections 2.3.1** through **2.3.5**.

2.3.1 No-Build - Alternative 1

The No-Build Alternative (Alternative 1) represents the case in which the Trinity Parkway is not constructed. The No-Build Alternative has the advantage of avoiding any adverse impacts associated with new construction, such as relocation, land use changes, and environmental disruption.

However, the MTP includes a Trinity Parkway reliever route, which is a key element to the functioning of the plan. Other transportation improvements identified in the MTP, including planned roadway and transit system improvements, bicycle/pedestrian, Intelligent Transportation Systems (ITS), and Transportation System Management (TSM)/Travel Demand Management (TDM) measures, may or may not be constructed, depending on project development and funding availability issues. Implementation of the No-Build Alternative would jeopardize the balance and efficiency of the entire transportation system by not addressing any of the stated project needs.

Although the No-Build Alternative avoids construction impacts, the problems associated with the lack of a northwest-southeast reliever route around downtown Dallas would remain. As discussed above, the MTIS concluded that, without construction of a reliever route, local transportation needs could not be met. This conclusion is supported by the DEIS and SDEIS as well. The costs associated with the No-Build Alternative along with the adverse impacts related to traffic congestion, such as air pollution, noise, and decreased pedestrian and vehicular safety could create an undesirable urban environment that would have more long-term adverse impacts than the short-term construction impacts. The costs of the No-Build Alternative include the following:

- Maintenance of the existing system - the longer improvements and/or reconstruction are postponed, the higher this figure becomes;
- Increased vehicle operating costs on under-designed, inadequate facilities;
- Increased tangible and intangible costs due to higher rates of accidents and incidents on existing facilities;
- The monetary value of time lost by motorists due to lower operating speeds, congested roadway conditions, and restricted maneuverability on area roadways;
- The intangible costs associated with the inconvenience for emergency services and annoyance for average motorists caused by the above deficiencies; and

- Increased costs of other planned improvements to the Canyon/Mixmaster/Lower Stemmons Corridors due to lack of the proposed action (Trinity Parkway) which could otherwise provide a detour route during construction.

2.3.2 Alternative 2A - Irving/Riverfront (Industrial) Boulevard - Elevated

Alternative 2A was formed by the combination of Trinity Parkway Corridor MTIS alignments IND-1 (north segment) and 1 (south segment) (see **Tables 2-2** and **2-4**). Alignment IND-1 was modified to exclude two elevated HOV/HOT lanes shown in the MTIS. These lanes are now planned along the IH-35E corridor. IND-1 was also narrowed (from eight lanes) in the northern segment to provide six mainlanes throughout. Alignment 1 (south segment) was modified from an at-grade version in the MTIS to an elevated version. The concept represented by Alternative 2A was double-deck lanes comprised of tollway mainlanes elevated above an existing arterial street.

As presented in the DEIS and SDEIS, Alternative 2A would travel south-west from the IH-35E/SH-183 interchange, passing over Commonwealth Drive, and turning to the south-east to follow Irving Boulevard. The route would follow Irving and Riverfront (Industrial) Boulevards for approximately 5.6 miles, passing south of downtown to Corinth Street. In this segment, the tollway would be installed as a double-deck structure, above the existing City streets. Irving/Riverfront (Industrial) Boulevards would be almost totally reconstructed with this alternative to resolve conflicts with the supporting structures for the tollway above. The roadways would nevertheless remain in service to serve local access and through traffic movement. South of Corinth Street, the route would follow a new alignment for approximately 1.2 miles, bending in an easterly direction to reach Lamar Street east of MLK. From this point, the route would travel south-east along Lamar Street as a double-deck structure, including an overpass of IH-45. The route then would turn east at Starks Street and follow it to the US-175/SH-310 interchange.

Figure 2-1 shows a layout map of the alignment. **Figure 2-2** shows a computer-generated rendering of Alternative 2A, with the bridgework graphically cut away to show the local street underneath. **Plate 2-2** at the end of this chapter provides the schematic plan and typical cross sections.

FIGURE 2-1. LAYOUT MAP, TRINITY PARKWAY ALTERNATIVE 2A

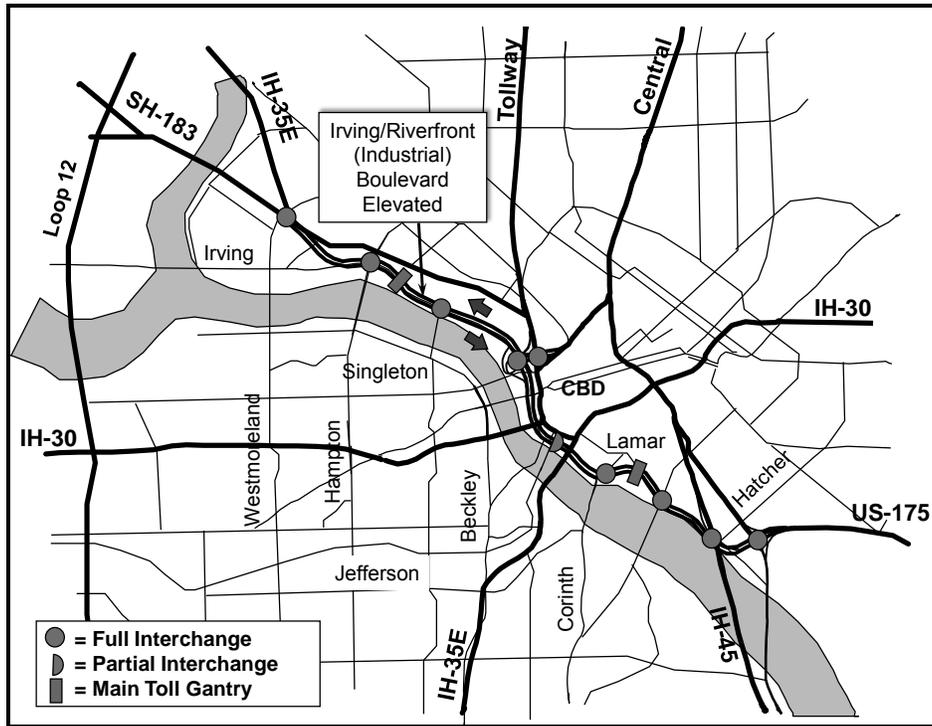


FIGURE 2-2. COMPUTER RENDERING, TRINITY PARKWAY ALTERNATIVE 2A
IRVING / RIVERFRONT (INDUSTRIAL) BOULEVARD – ELEVATED



There would typically be three lanes in each direction of travel (six lanes total), with the proposed tollway mainlanes each 12 feet in width. The proposed ROW would vary depending on the need for ramps, the locations of ancillary buildings, and other geometric considerations. The width would typically be 162 feet in segments with mainlanes, but no ramps. The width would typically be 232 feet in segments where entry or exit ramps are present. In segments built as a double-deck over City streets, the tollway structure would be elevated to provide 16.5 feet of clearance above the pavement surface. A standard concrete traffic barrier would separate northbound and southbound traffic on the tollway mainlanes, and paved shoulders would be provided adjacent to the inside and outside lanes.

The existing ROW on Irving/Riverfront (Industrial) Boulevards is typically 100 feet in width. Substantial property acquisition would be needed because the proposed tollway is wider than the existing road and because the tollway cannot precisely follow the existing centerlines of Irving/Riverfront (Industrial) Boulevards due to differences in design speed and curvature. Additional property acquisition would also be needed at specific locations due to the influence of ramps and ancillary buildings.

Alternative 2A would be approximately 8.83 miles in length, would require approximately 264 acres of ROW, and would cost approximately \$2.36 billion (2011 dollars) to construct. Major interchanges associated with Alternative 2A would include:

- Direct connections at IH-35E/SH-183 (northern terminus), US-175/SH-310 (southern terminus), Woodall Rodgers Freeway, and IH-45;
- Full diamond interchanges at Hampton/Inwood Road, Sylvan/Wycliff Avenue, Corinth Street, MLK, and Lamar Street/SH-310; and
- Half diamond interchange at the Houston/Jefferson Street Viaducts.

2.3.3 Alternative 2B - Irving/Riverfront (Industrial) Boulevard - At-Grade

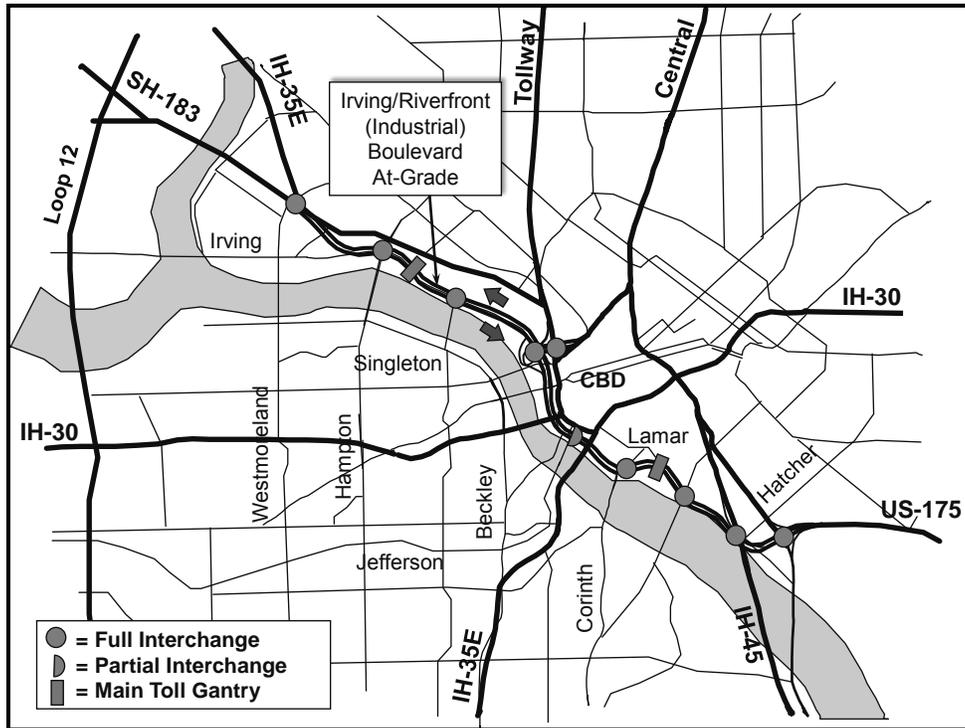
Alternative 2B was formed by the combination of the Trinity Parkway Corridor MTIS preliminary alignments IND-1 (north segment) and 1 (south segment) (see **Tables 2-2** and **2-4**). Alignment IND-1 was modified to be an at-grade facility and excludes two elevated HOV/HOT lanes, which are now planned along the IH-35E corridor. Similar to Alternative 2A, the proposed facility was modified to six mainlanes throughout. The existing lanes on Irving/Riverfront (Industrial) Boulevards and Lamar Street would be replaced as access (frontage) roads. The location of this alignment would be similar to Alternative 2A.

Alternative 2B would travel southwest from the IH-35E/SH-183 interchange, passing over Commonwealth Drive and turning to the south-east to follow Irving Boulevard. Similar to Alternative 2A, the route would

follow Irving and Riverfront (Industrial) Boulevards for approximately 5.6 miles to Corinth Street. However, in this segment, the tollway would be installed predominantly at-grade, with service roads provided to make up for the loss of the arterial streets. One-way service roads on each side of the tollway would serve local access and through traffic. South of Corinth Street, the route would follow a new alignment for approximately 1.2 miles, bending in an easterly direction to reach Lamar Street east of MLK. From this point, the route would travel southeast along Lamar Street as a double-deck structure, identical to that proposed for Alternative 2A. The southern terminus of Alternative 2B would be the same as Alternative 2A, with the route following Starks Street to the US-175/SH-310 interchange.

Figure 2-3 shows a route map of the alignment. **Figure 2-4** shows a computer-generated rendering of Alternative 2B. **Plate 2-3** at the end of this chapter provides the schematic plan and typical cross sections.

FIGURE 2-3. LAYOUT MAP, TRINITY PARKWAY ALTERNATIVE 2B



**FIGURE 2-4. COMPUTER RENDERING, TRINITY PARKWAY ALTERNATIVE 2B
IRVING / RIVERFRONT (INDUSTRIAL) BOULEVARD - AT-GRADE**



There would typically be three lanes in each direction of travel (six lanes total), with the proposed tollway mainlanes each 12 feet in width. The proposed ROW would vary depending on the need for ramps, the locations of ancillary buildings, and other geometric considerations. The width would typically be 300 feet in segments with mainlanes, but no ramps. The width would typically be 335 feet in segments where

entry or exit ramps are present. The tollway would overpass City arterial streets along this segment with the structures elevated to provide 16.5 feet clearance above the pavement surface. A standard concrete traffic barrier would separate northbound and southbound traffic, and paved shoulders would be provided adjacent to the inside and outside lanes.

The existing ROW on Irving/Riverfront (Industrial) Boulevard is typically 100 feet in width. Substantial property acquisition would be needed because the proposed tollway would be wider than the existing road and because the tollway cannot precisely follow the existing centerlines of Irving/Riverfront (Industrial) Boulevards due to differences in design speed and curvature. Additional property acquisition would also be needed at specific locations due to the influence of ramps and ancillary buildings.

Alternative 2B would be approximately 8.83 miles in length, would require approximately 350 acres of ROW, and would cost approximately \$1.87 billion (2011 dollars) to construct. Major interchanges associated with Alternative 2B would include:

- Direct connections at IH-35E/SH-183 (northern terminus), US-175/SH-310 (southern terminus), Woodall Rodgers Freeway, and IH-45;
- Full diamond interchanges at Hampton/Inwood Road, Sylvan/Wycliff Avenue, Corinth Street, MLK, and Lamar Street/SH-310; and
- Half diamond interchange at the Houston/Jefferson Street Viaducts.

2.3.4 Alternative 3C (Combined Parkway - Further Modified)

Alternative 3C was formed by combining the MTIS preliminary alignments TL-5a (north segment) and 5 (south segment) (see **Tables 2-3** and **2-4**), except that the mainlanes were modified to six lanes throughout. Alternative 3C is also distinguished from earlier versions of a combined parkway riverside alternative (Alternatives 3A and 3B) by changes made in response to the USACE consultation beginning in Fall 2006. Agency consultation was necessary following the February 2005 publication of the DEIS to address design concerns regarding the original versions of the Trinity Parkway riverside alternatives. The NTTA, TxDOT, and the FHWA entered into consultation with the USACE and City of Dallas representatives to attempt to resolve these concerns. The SDEIS reflected these consultations, including discussions regarding construction and operations in the Dallas Floodway (see **Sections 2.4.6 Trinity Parkway Construction in the Dallas Floodway** through **2.4.8 Facility Operations and Maintenance in the Dallas Floodway** of the SDEIS). The following summarizes the changes made for the development of Alternative 3C:

- Relocation of the tollway mainlanes in the area of downtown Dallas. Generally the tollway would be moved to the next available span under the cross street bridges, resulting in a shift of approximately 60 to 100 feet towards the river, to avoid the need for levee-side retaining walls.
- Ramps were deleted to Westmoreland Road to avoid possible adverse impacts to access and circulation for O&M, flood fighting and surveillance.
- The Trinity Parkway lanes are elevated at (i) the North Dallas Floodway Entry, (ii) the Woodall Rodgers Freeway connection (ramps), (iii) the Riverfront (Industrial) Boulevard connection (ramps), (iv) the South Dallas Floodway Exit, and (v) the IH-45 connection (ramps) to provide adequate vertical clearance over the levee top to allow City service vehicles to underpass the structures.
- Reinforced concrete diaphragm walls were added at crossing points (i) thru (v) listed above to offset any potential negative effects of levee penetrations. These walls would be subject to design review and concurrence by the USACE, but conceptually they would be located on the riverside edge of the levee top using reinforced slurry wall techniques and would extend down to rock or unweathered shale to cut off possible under-seepage. The walls would reinforce the levee but would be considered secondary to the levee itself in the flood protection system. Similar to the wall design, construction phase details would be subject to the USACE concurrence.
- The levee-side ramps at diamond interchanges to existing cross-street bridges, such as Hampton and Sylvan Avenue, were reconfigured to move the ramps closer to the mainlanes so they do not overlay the levee top. The ramps are now elevated using retaining walls and fill, in lieu of bridges, to avoid drill shaft penetrations of the levee.
- Gates and bridges were provided on the NB-WB ramp at IH-35E to facilitate access across/under the ramp by City maintenance personnel and vehicles.
- Longitudinal maintenance roads were replaced and reconnected in segments affected by the Trinity Parkway embankments.

From the IH-35E/SH-183 interchange, Alternative 3C would travel southwest, passing over Commonwealth Drive and Irving Boulevard, reaching the Dallas Floodway in the area west of Hampton/Inwood Road. The Alternative 3C alignment would turn south along the riverside of the east Dallas Floodway levee, with the mainlanes placed on an earthen embankment, typically set above the 100-year flood level to provide appropriate protection against inundation. However, at points where the alignment would meet existing bridge crossings of the Dallas Floodway, the tollway would be depressed to pass under the existing structures. At these locations, a flood separation wall along the riverside of the tollway would be provided to protect the tollway from inundation during a 100-year flood event. Additionally, pump stations would be provided to drain the low points of the tollway at times that the Trinity River is in flood stage.

The median of the tollway in the northern floodway segment, north of Sylvan Avenue, would be of sufficient width to allow up to 5 feet of vertical difference in grades between the northbound and southbound lanes without the use of retaining walls. This feature would allow the northbound lanes to be elevated above the grade of the southbound lanes in some areas, allowing northbound vehicle occupants to see the Dallas Floodway area more readily. At a point roughly midway between Sylvan Avenue and Continental Avenue, the alignment along the east levee would turn slightly towards the river so that at Continental Avenue, the mainlanes would be approximately 100 feet further away from the levee. The increased offset from the levee would be maintained for approximately 3 miles down to the DART rail crossing, with the offset varying from 60 to 100 feet based on the actual locations of columns under the existing cross street bridges. Due to the increased offset, the proposed mainlanes would be moved sufficiently away from the face of the existing levee so that a proposed raising of the levee tops (under consideration by the City of Dallas and USACE) could be constructed without the need for retaining walls.

South of the DART light rail bridge, Alternative 3C would be built on structure and offset approximately 50 feet from the riverside edge of the future USACE DFE east levee extension (Lamar Levee) up to a location approximately 1,500 feet downstream of MLK. At this point, the Trinity Parkway would cross to the landside of the levee, with the mainlanes elevated sufficiently to allow 15-foot clearance over the levee top for maintenance/emergency vehicle access. The alignment would follow the landside of the future DFE east levee to IH-45, where it would pass under the mainlanes of the Interstate. The route would then turn east, pass over Lamar Street, and follow Starks Street to the US-175/SH-310 interchange.

Figure 2-5 shows a route map of the alignment, and **Figure 2-6** shows a computer-generated rendering of Alternative 3C. **Plate 2-4** at the end of this chapter provides the schematic plan and typical cross sections as presented in the public hearing for the SDEIS. Note the typical sections show a proposed 4:1 embankment slope on the riverside of the proposed roadway. Embankments with 4:1 slopes are usual practice in highway and road installations in the North Texas region, including river crossings, which might be subject to periodic inundation. These relatively mild slopes have a high rate of success against failure in the soils of this region, even against surficial slides. The USACE-proposed improvements to the Dallas Floodway levees also include 4:1 slopes on the riverside (see **LSS Chapter 3**).

FIGURE 2-5. LAYOUT MAP, TRINITY PARKWAY ALTERNATIVE 3C PRESENTED IN THE SDEIS

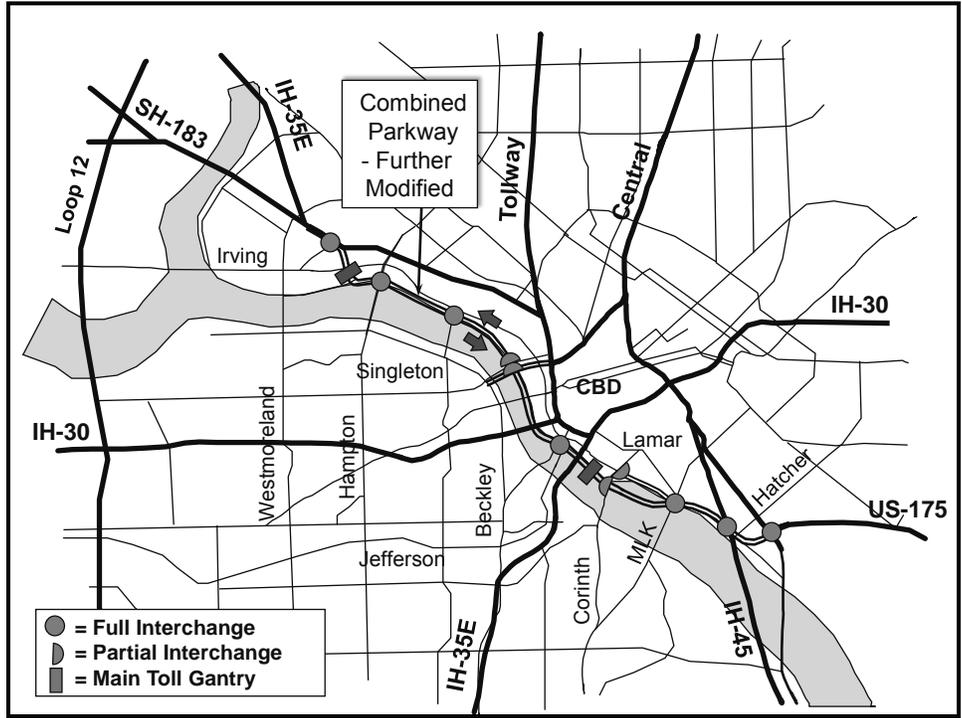


FIGURE 2-6. COMPUTER RENDERING, TRINITY PARKWAY ALTERNATIVE 3C COMBINED PARKWAY - FURTHER MODIFIED



The proposed tollway mainlanes would each be 12 feet in width. There would typically be three lanes in each direction of travel (six lanes total). Outside the Dallas Floodway, the tollway is proposed to be constructed on an acquired ROW. The ROW width would vary depending on the extent of bridge structures, the need for ramps and service roads, the locations of ancillary buildings, and other geometric considerations (see the typical sections on **Plate 2-4**). In the Dallas Floodway segment, the tollway

operations area is proposed to be established by an agreement with the City of Dallas, rather than fee simple acquisition. Paved shoulders would be provided adjacent to the inside and outside of the mainlanes. The center median would typically be protected on both sides by a standard concrete traffic barrier. In the segment near downtown Dallas, the inside shoulders would be reduced below the standard width of 10 feet in order to clear existing columns where the mainlanes would underpass the historic bridges Continental Avenue, Commerce Street, Corinth Street, and Houston Street.

Regarding roadway drainage, the northbound lanes of Alternative 3C would typically have flush shoulders with sheet flow drainage onto the adjacent grassed swales (see the typical sections on **Plates 2-4A, 2-4B**). Stormwater in these swales would be collected in inlets as needed and piped under the roadway out to discharge points at/near the riverside toe of the road embankments. The southbound lanes are expected to be partly drained by sheet flow over the shoulders and partly drained by inlet and pipe systems. In the normal (un-depressed) southbound lane segments on embankments, the water would sheet flow over the shoulders to the grassed embankment slopes. It is anticipated that a concrete flume would be built along the riverside toe of the embankment slopes to collect the stormwater to discharge points. In depressed segments under existing bridges, the flood separation wall (described above) would act as a curb and would contain the stormwater. In these segments, drainage inlets and pipes would be added as needed to control spread of stormwater onto the shoulders. As previously stated, pump stations are proposed at the sag points to collect and discharge stormwater from these depressed segments. All of the drainage discharge points for the northbound and southbound lanes would be coordinated with existing channels in the Dallas Floodway overbank.

Alternative 3C would be approximately 8.67 miles in length, would require approximately 379 acres of ROW, and would cost approximately \$1.42 billion (2011 dollars) to construct. Major interchanges associated with Alternative 3C would include:

- Direct connections at IH-35E/SH-183 (northern terminus), US-175/SH-310 (southern terminus), Woodall Rodgers Freeway Extension, (north-side only) and IH-45;
- Full diamond interchanges at Hampton/Inwood Road, Sylvan/Wycliff Avenue, Houston/Jefferson Streets, MLK, and Lamar Street/SH-310;
- Half diamond interchanges at Commonwealth Drive, Continental Avenue, and Corinth Street; and
- Direct connection to the Corinth Street/Riverfront (Industrial) Boulevard intersection via a braided ramp pair originating in the area of MLK.

2.3.5 Alternative 4B (Split Parkway Riverside - Modified)

Alternative 4B was formed by the combination of preliminary alignments TL-7a (north segment) and 5 (south segment) (see **Tables 2-3** and **2-4**), with the mainlanes modified to six lanes throughout. The features discussed above for Alternative 3C that were developed in consultation with the USACE beginning in Fall 2006 to address concerns regarding potential impacts to flood control operations and the floodway levees were also incorporated into the proposed design for Alternative 4B. These design elements distinguish Alternative 4B from the original version of the split parkway on the riverside of the Dallas Floodway levees presented in the DEIS (Alternative 4A).

From the IH-35E/SH-183 interchange, Alternative 4B would travel southwest, passing over Commonwealth Drive and Irving Boulevard, and reaching the Dallas Floodway in the area west of Hampton/Inwood Road. The mainlanes would be elevated at the crossing point of the Dallas Floodway levees to allow 15 feet vertical clearance between the low chord of the bridge structure and the top of future improved levee. This would result in the northbound mainlanes being elevated over the Hampton Road bridge. Around the east levee crossing, Alternative 4B would split, with the southbound lanes bridging across the Trinity River to the riverside face of the west levee and the northbound lanes remaining on the riverside face of the east levee. The alignment would remain in a split configuration along the Dallas Floodway to a point just east of IH-35E for a total split distance of approximately 5.4 miles.

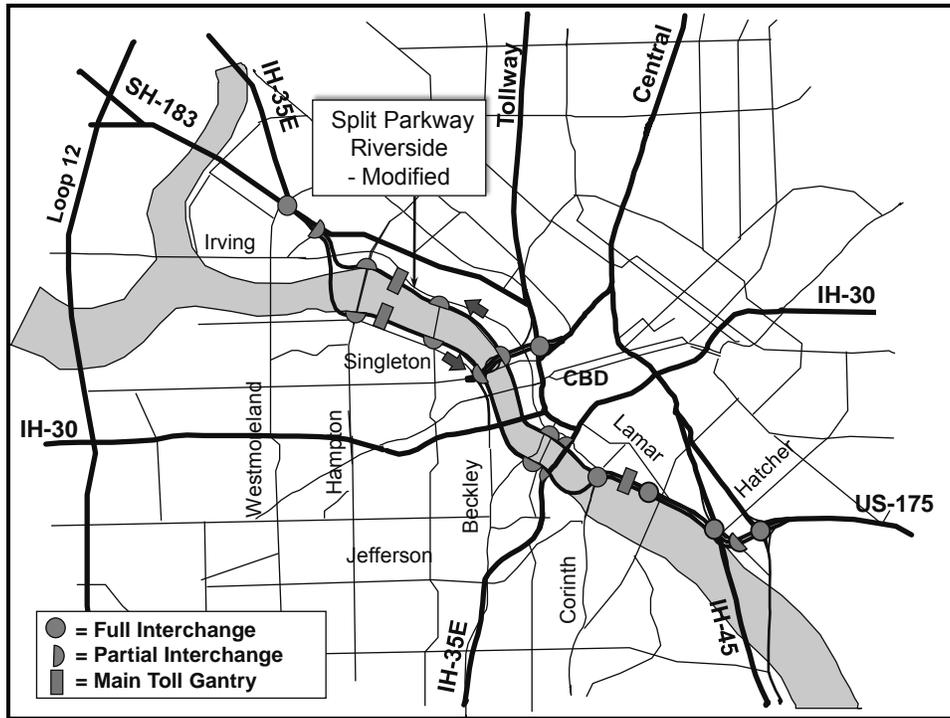
In the Dallas Floodway segment, the tollway would be placed on earthen embankments, typically set above the 100-year flood level to provide appropriate protection against inundation. However, at points where the alignment would meet existing bridge crossings of the Dallas Floodway, the tollway would be depressed to underpass the existing structures. At these locations, a flood separation wall along the riverside of the tollway would be provided to protect the tollway from inundation during a 100-year flood event. Additionally, pump stations would be provided to drain the low points of the tollway at times that the Trinity River is in flood stage.

At a point roughly midway between Sylvan Avenue and Continental Avenue, the alignments of both the northbound and southbound lanes would turn slightly towards the river so that at Continental Avenue, the mainlanes would be approximately 100 feet further away from the levee. The increased offset from the levee would be maintained for approximately 3 miles down to the DART rail crossing, with the offset varying from 60 to 100 feet based on the actual locations of columns under the existing cross street bridges. Similar to Alternative 3C, the offset from the face of the existing levee would accommodate a future raising and flattening of levees under consideration by the City of Dallas and USACE.

As stated above, the split configuration would end at a point east of IH-35E. The tollway would then transition back to a combined configuration with the southbound lanes crossing from the west levee to the east on a bridge structure. The joining of the southbound and northbound lanes would occur on the east levee near Corinth Street. East of Corinth Street, Alternative 4B would follow the identical route to the US-175/SH-310 interchange as described for Alternative 3C.

Figure 2-7 shows a route map of the alignment. **Figure 2-8** shows a computer-generated rendering of the northbound lanes of Alternative 4B. **Plate 2-5** at the end of this chapter provides the schematic plan and typical cross sections. Note the typical sections show a proposed 4:1 embankment slope on the riverside of the proposed roadway (adjacent to both northbound and southbound lanes). Embankments with 4:1 slopes are usual practice in highway and road installations in the North Texas region, including river crossings, which might be subject to periodic inundation. These relatively mild slopes have a high rate of success against failure in the soils of this region, even against surficial slides. The USACE-proposed improvements to the Dallas Floodway levees also include 4:1 slopes on the riverside.

FIGURE 2-7. LAYOUT MAP, TRINITY PARKWAY ALTERNATIVE 4B



**FIGURE 2-8. COMPUTER RENDERING, TRINITY PARKWAY ALTERNATIVE 4B
SPLIT PARKWAY - RIVERSIDE (ONLY NORTHBOUND LANES ARE SHOWN)**



The proposed tollway mainlanes would each be 12 feet in width. There would typically be three lanes in each direction of travel (six lanes total). The proposed ROW would vary depending on the need for ramps, the locations of ancillary buildings, and other geometric considerations. In the Dallas Floodway segment, the width would typically be 246 feet for each direction of travel (492 feet total), measured from the crest of each levee to the toe of the tollway embankment (note that the width includes some levee slopes, which may ultimately be the responsibility of the City of Dallas or USACE, rather than NTTA). In

the downtown segment, the width would expand to approximately 300 feet per side, 600 feet total. In long segments on structure, the ROW width would typically be 180 feet for a dual-direction tollway and 100 feet (per direction) for a single-direction tollway. A standard concrete traffic barrier would separate northbound and southbound traffic in areas of opposing traffic. Paved shoulders would be provided adjacent to the inside and outside lanes. In split segments, the center median area would be protected by a standard concrete traffic barrier. Additionally, in split segments, a 20-foot drainage swale would be located on the levee side of the tollway.

Regarding roadway drainage, the northbound and southbound lanes of Alternative 4B would typically have flush shoulders, adjacent to the Dallas Floodway levees, with sheet flow drainage onto grassed swales (see the typical sections on **Plates 2-5A, 2-5B**). Stormwater in these swales would be collected in inlets as needed and piped under the roadway out to discharge points at/near the riverside toe of the road embankments. In super-elevated sections, the lanes would cross-fall towards the riverside edge rather than towards the levee. These segments are expected to be partly drained by sheet flow over the shoulders and partly drained by inlet and pipe systems. In the normal (un-depressed) segments on embankments, the stormwater would sheet flow over the shoulders to the grassed embankment slopes. It is anticipated that a concrete flume would be built along the riverside toe of the embankment slopes to collect the stormwater to discharge points. In depressed segments under existing bridges, the flood separation wall (described above) would act as a curb and would contain the stormwater. In these segments, drainage inlets and pipes would be added as needed to control spread of stormwater onto the shoulders. Pump stations are proposed at the sag points to collect and discharge stormwater from these depressed segments. All of the drainage discharge points for the northbound and southbound lanes would be coordinated with existing channels in the Dallas Floodway overbank.

Alternative 4B would be approximately 8.84 miles in length, would require approximately 490 acres of ROW, and would cost approximately \$1.45 billion (2011 dollars) to construct. Major interchanges associated with Alternative 4B include:

- Direct connections at IH-35E/SH-183 (northern terminus), US-175/SH-310 (southern terminus), Woodall Rodgers Freeway Extension, and IH-45;
- Full diamond interchanges at Hampton/Inwood Road, Sylvan/Wycliff Avenue, Houston/Jefferson Streets, Corinth Street, MLK, and Lamar Street/SH-310; and
- Half diamond interchanges at Commonwealth Drive, Continental Avenue, and Commerce Street.

2.3.6 Design Refinements Under Consideration

The four Build Alternatives considered for further analysis in this LSS have undergone additional design refinements since the SDEIS to avoid/minimize impacts to historical resources in accordance with Section 106 guidelines. A series of design refinements were developed for each alternative in the immediate area of historic resources that are listed or determined eligible for listing in the National Register of Historic Places and where one or more Trinity Parkway alternatives, as presented in the SDEIS, would likely cause adverse effects. A summary of the design refinements and discussion of the impacts to each resource is provided in **Chapter 5** of this LSS.

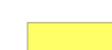
[END OF CHAPTER 2 EXCEPT FOR PLATES]

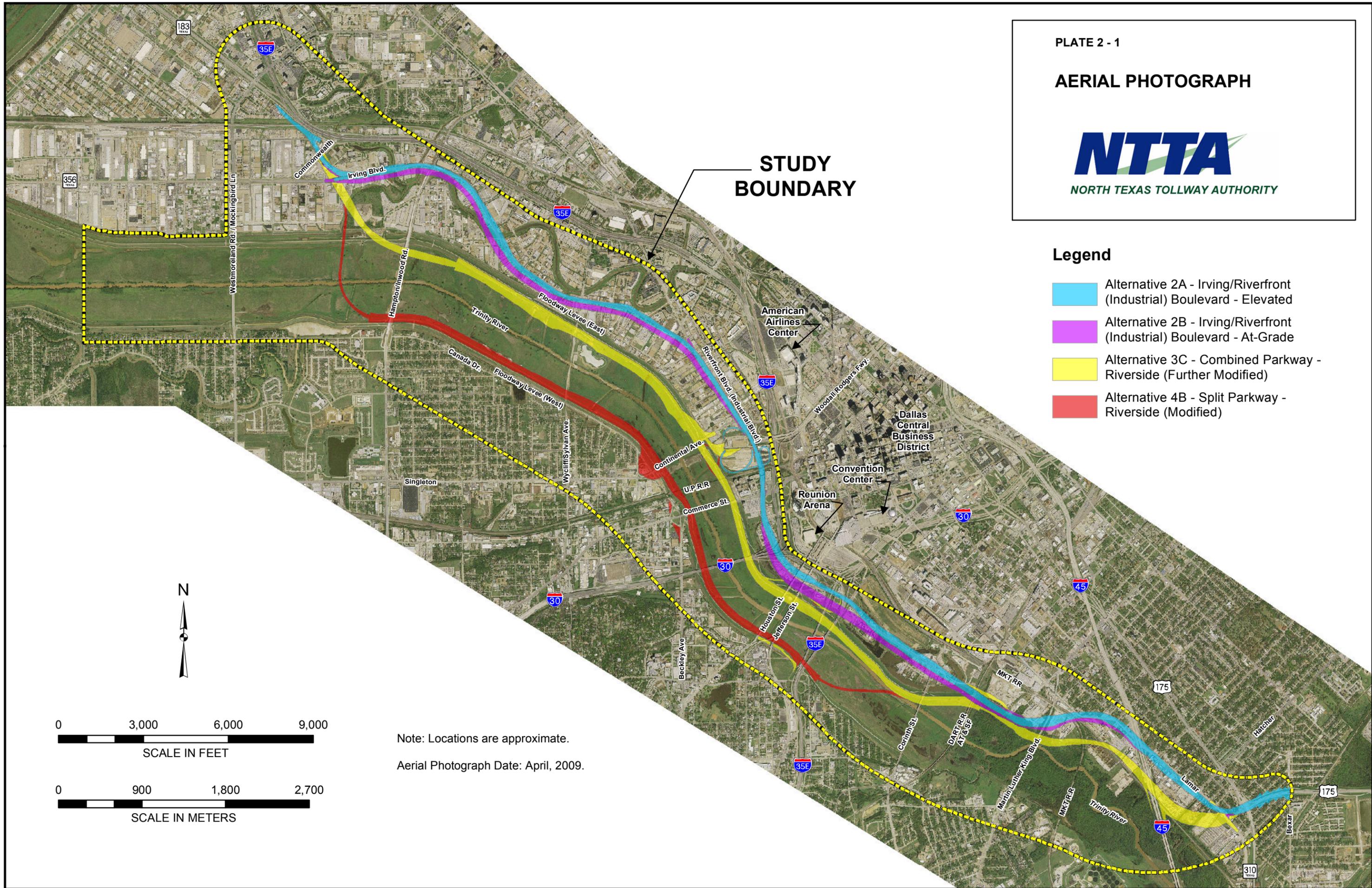
AERIAL PHOTOGRAPH



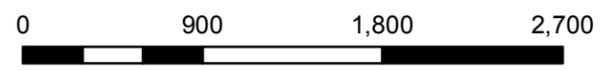
STUDY BOUNDARY

Legend

-  Alternative 2A - Irving/Riverfront (Industrial) Boulevard - Elevated
-  Alternative 2B - Irving/Riverfront (Industrial) Boulevard - At-Grade
-  Alternative 3C - Combined Parkway - Riverside (Further Modified)
-  Alternative 4B - Split Parkway - Riverside (Modified)

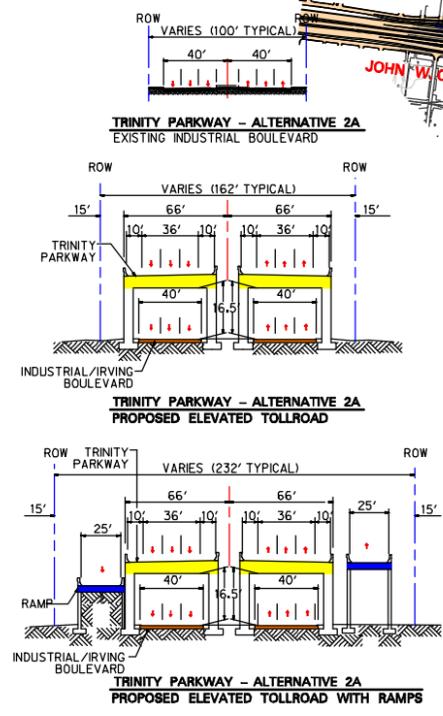
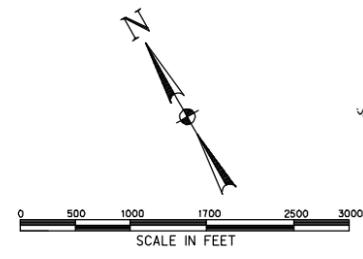


SCALE IN FEET



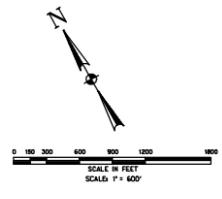
SCALE IN METERS

Note: Locations are approximate.
Aerial Photograph Date: April, 2009.

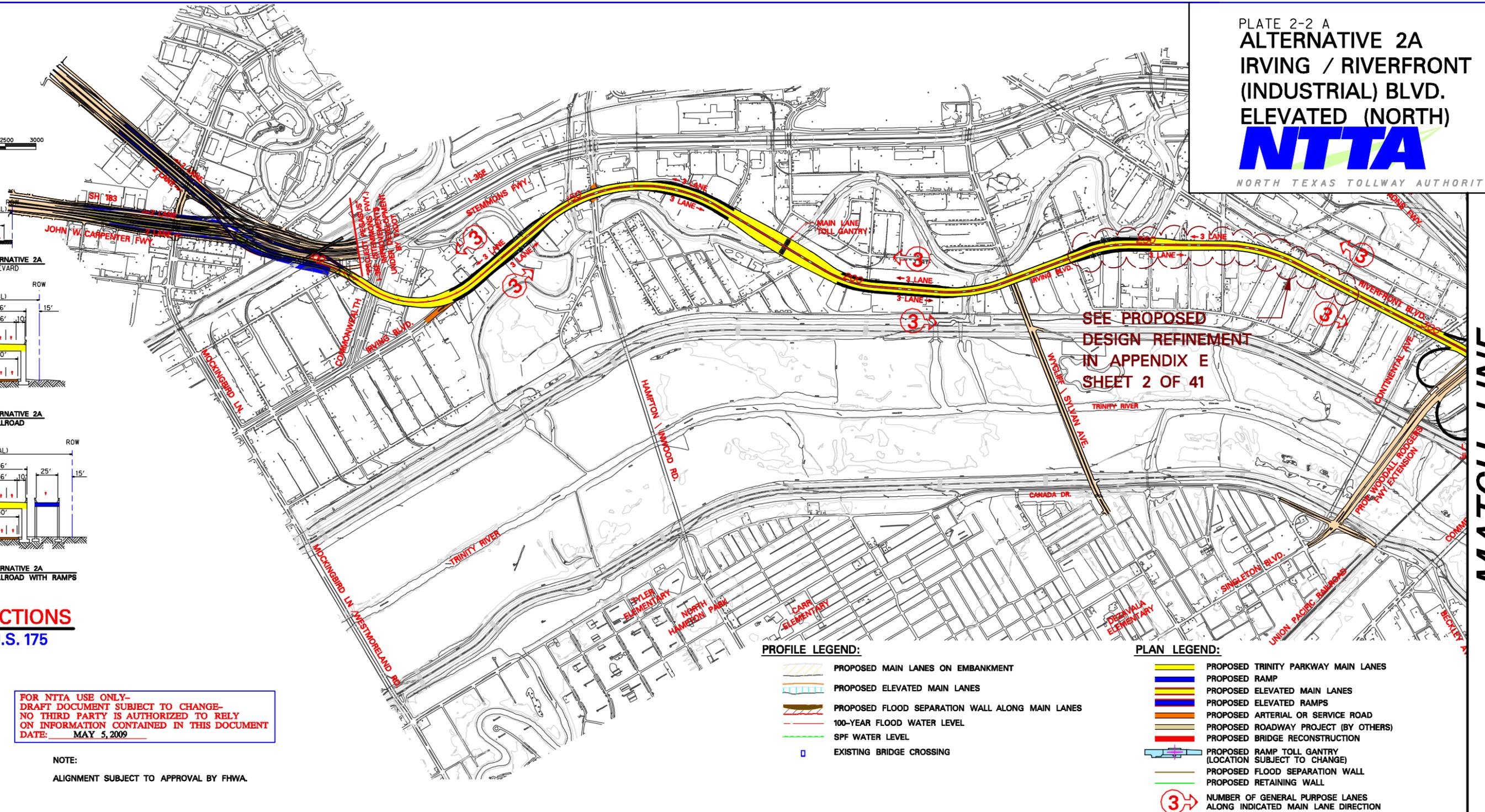


TYPICAL SECTIONS
 I-35E TO U.S. 175

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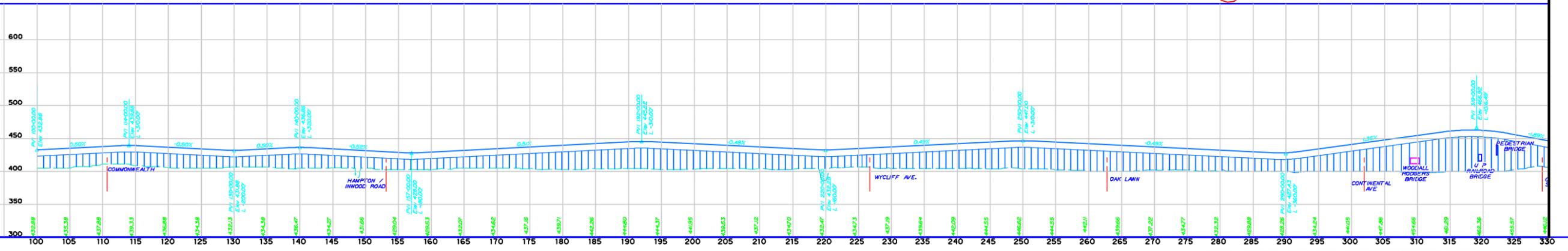


NOTE:
 ALIGNMENT SUBJECT TO APPROVAL BY FHWA.



- PROFILE LEGEND:**
- PROPOSED MAIN LANES ON EMBANKMENT
 - PROPOSED ELEVATED MAIN LANES
 - PROPOSED FLOOD SEPARATION WALL ALONG MAIN LANES
 - 100-YEAR FLOOD WATER LEVEL
 - SPF WATER LEVEL
 - EXISTING BRIDGE CROSSING

- PLAN LEGEND:**
- PROPOSED TRINITY PARKWAY MAIN LANES
 - PROPOSED RAMP
 - PROPOSED ELEVATED MAIN LANES
 - PROPOSED ELEVATED RAMPS
 - PROPOSED ARTERIAL OR SERVICE ROAD
 - PROPOSED ROADWAY PROJECT (BY OTHERS)
 - PROPOSED BRIDGE RECONSTRUCTION
 - PROPOSED RAMP TOLL GANTRY (LOCATION SUBJECT TO CHANGE)
 - PROPOSED FLOOD SEPARATION WALL
 - PROPOSED RETAINING WALL
 - NUMBER OF GENERAL PURPOSE LANES ALONG INDICATED MAIN LANE DIRECTION



MATCH LINE

PLATE 2-2 B
ALTERNATIVE 2A
 IRVING / RIVERFRONT
 (INDUSTRIAL) BLVD.
 ELEVATED (SOUTH)
NTTA
 NORTH TEXAS TOLLWAY AUTHORITY

PROFILE LEGEND:

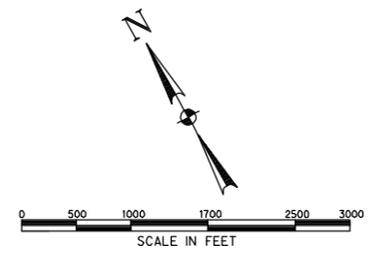
- PROPOSED MAIN LANES ON EMBANKMENT
- PROPOSED ELEVATED MAIN LANES
- PROPOSED FLOOD SEPARATION WALL ALONG MAIN LANES
- 100-YEAR FLOOD WATER LEVEL
- SPF WATER LEVEL
- EXISTING BRIDGE CROSSING

PLAN LEGEND:

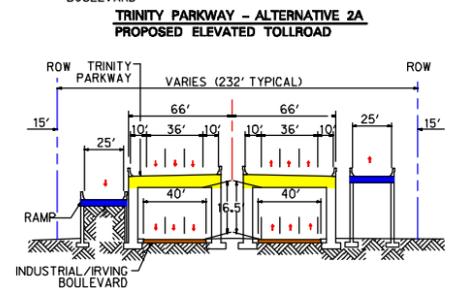
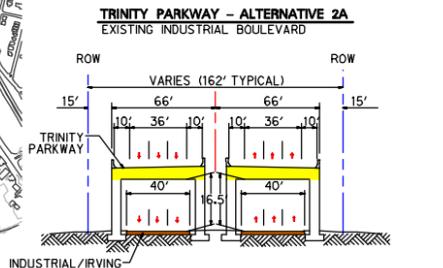
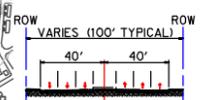
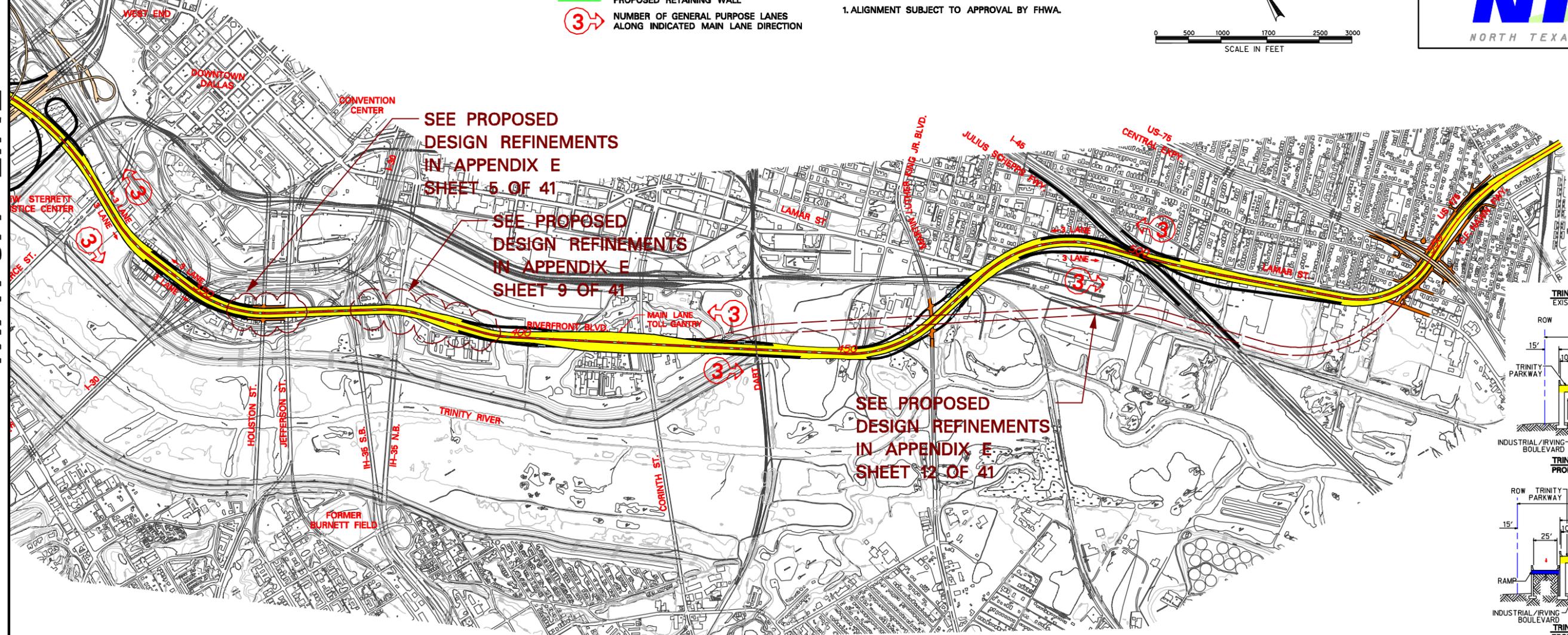
- PROPOSED TRINITY PARKWAY MAIN LANES
- PROPOSED RAMP
- PROPOSED ELEVATED MAIN LANES
- PROPOSED ELEVATED RAMPS
- PROPOSED ARTERIAL OR SERVICE ROAD
- PROPOSED ROADWAY PROJECT (BY OTHERS)
- PROPOSED BRIDGE RECONSTRUCTION
- PROPOSED RAMP TOLL GANTRY (LOCATION SUBJECT TO CHANGE)
- PROPOSED FLOOD SEPARATION WALL
- PROPOSED RETAINING WALL
- NUMBER OF GENERAL PURPOSE LANES ALONG INDICATED MAIN LANE DIRECTION

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 ON INFORMATION CONTAINED IN THIS DOCUMENT
 DATE: MAY 5, 2009

NOTES:
 1. ALIGNMENT SUBJECT TO APPROVAL BY FHWA.



MATCH LINE



TYPICAL SECTIONS
 I-35E TO U.S. 175

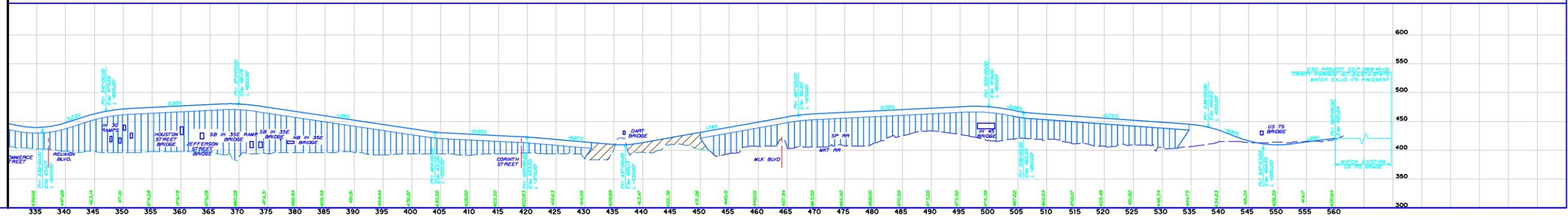
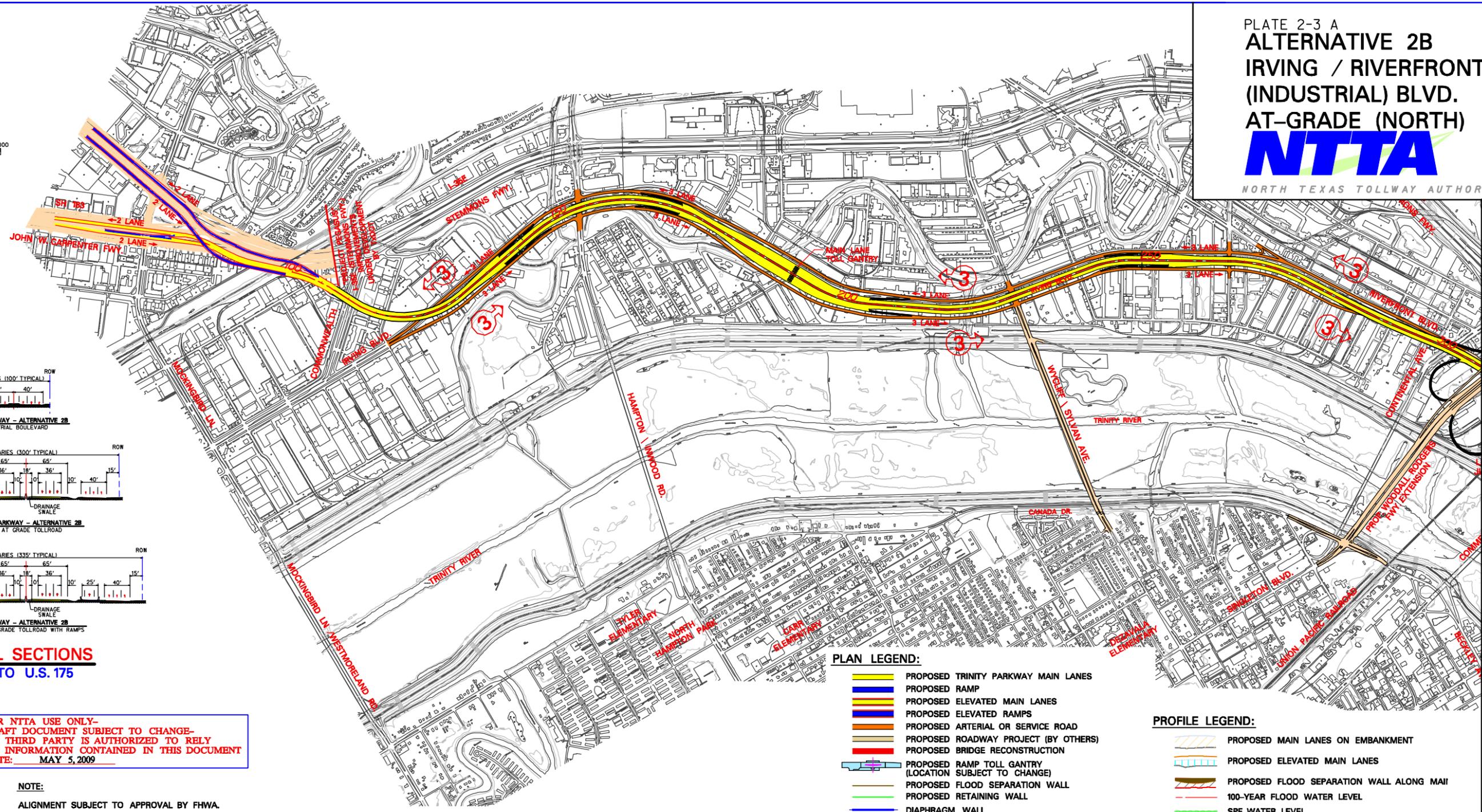
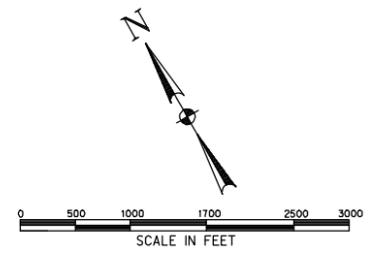
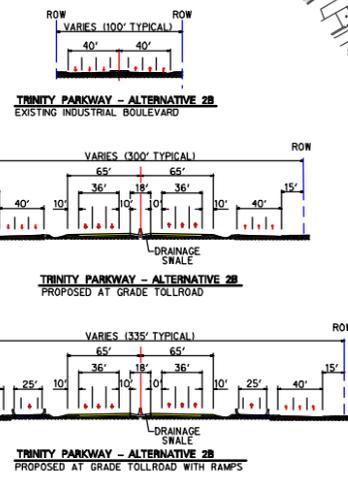


PLATE 2-3 A ALTERNATIVE 2B IRVING / RIVERFRONT (INDUSTRIAL) BLVD. AT-GRADE (NORTH)

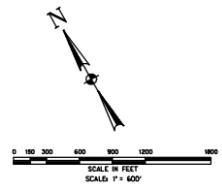


MATCH LINE



TYPICAL SECTIONS
I-35E TO U.S. 175

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ON INFORMATION CONTAINED IN THIS DOCUMENT
DATE: MAY 5, 2009



NOTE:
ALIGNMENT SUBJECT TO APPROVAL BY FHWA.

- PLAN LEGEND:**
- PROPOSED TRINITY PARKWAY MAIN LANES
 - PROPOSED RAMP
 - PROPOSED ELEVATED MAIN LANES
 - PROPOSED ELEVATED RAMPS
 - PROPOSED ARTERIAL OR SERVICE ROAD
 - PROPOSED ROADWAY PROJECT (BY OTHERS)
 - PROPOSED BRIDGE RECONSTRUCTION
 - PROPOSED RAMP TOLL GANTRY (LOCATION SUBJECT TO CHANGE)
 - PROPOSED FLOOD SEPARATION WALL
 - PROPOSED RETAINING WALL
 - DIAPHRAGM WALL
 - NUMBER OF GENERAL PURPOSE LANES ALONG INDICATED MAIN LANE DIRECTION

- PROFILE LEGEND:**
- PROPOSED MAIN LANES ON EMBANKMENT
 - PROPOSED ELEVATED MAIN LANES
 - PROPOSED FLOOD SEPARATION WALL ALONG MAIN LANE
 - 100-YEAR FLOOD WATER LEVEL
 - SPF WATER LEVEL
 - EXISTING BRIDGE CROSSING

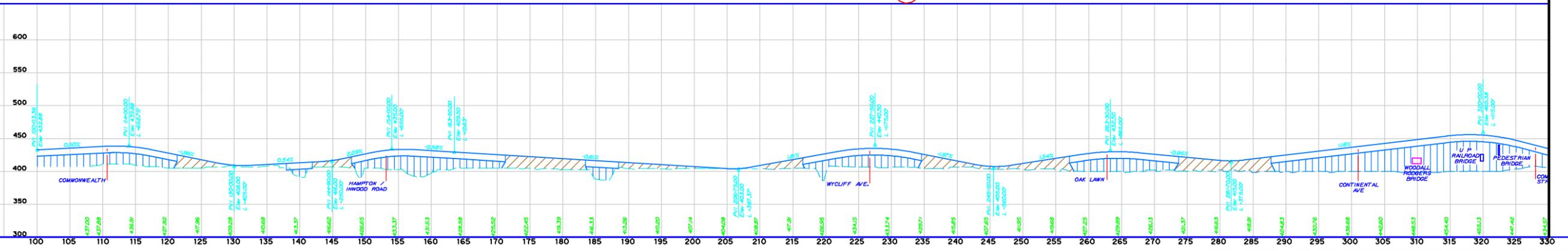


PLATE 2-3 B ALTERNATIVE 2B IRVING / RIVERFRONT (INDUSTRIAL) BLVD. AT-GRADE (SOUTH)



PLAN LEGEND:

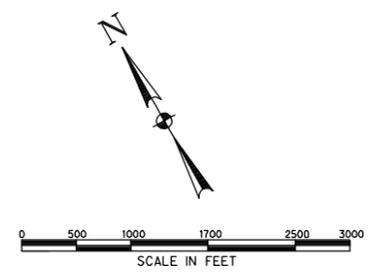
- PROPOSED TRINITY PARKWAY MAIN LANES
- PROPOSED RAMP
- PROPOSED ELEVATED MAIN LANES
- PROPOSED ELEVATED RAMP
- PROPOSED ARTERIAL OR SERVICE ROAD
- PROPOSED ROADWAY PROJECT (BY OTHERS)
- PROPOSED BRIDGE RECONSTRUCTION
- PROPOSED RAMP TOLL GANTRY (LOCATION SUBJECT TO CHANGE)
- PROPOSED FLOOD SEPARATION WALL
- PROPOSED RETAINING WALL
- DIAPHRAGM WALL
- 3 NUMBER OF GENERAL PURPOSE LANES ALONG INDICATED MAIN LANE DIRECTION

PROFILE LEGEND:

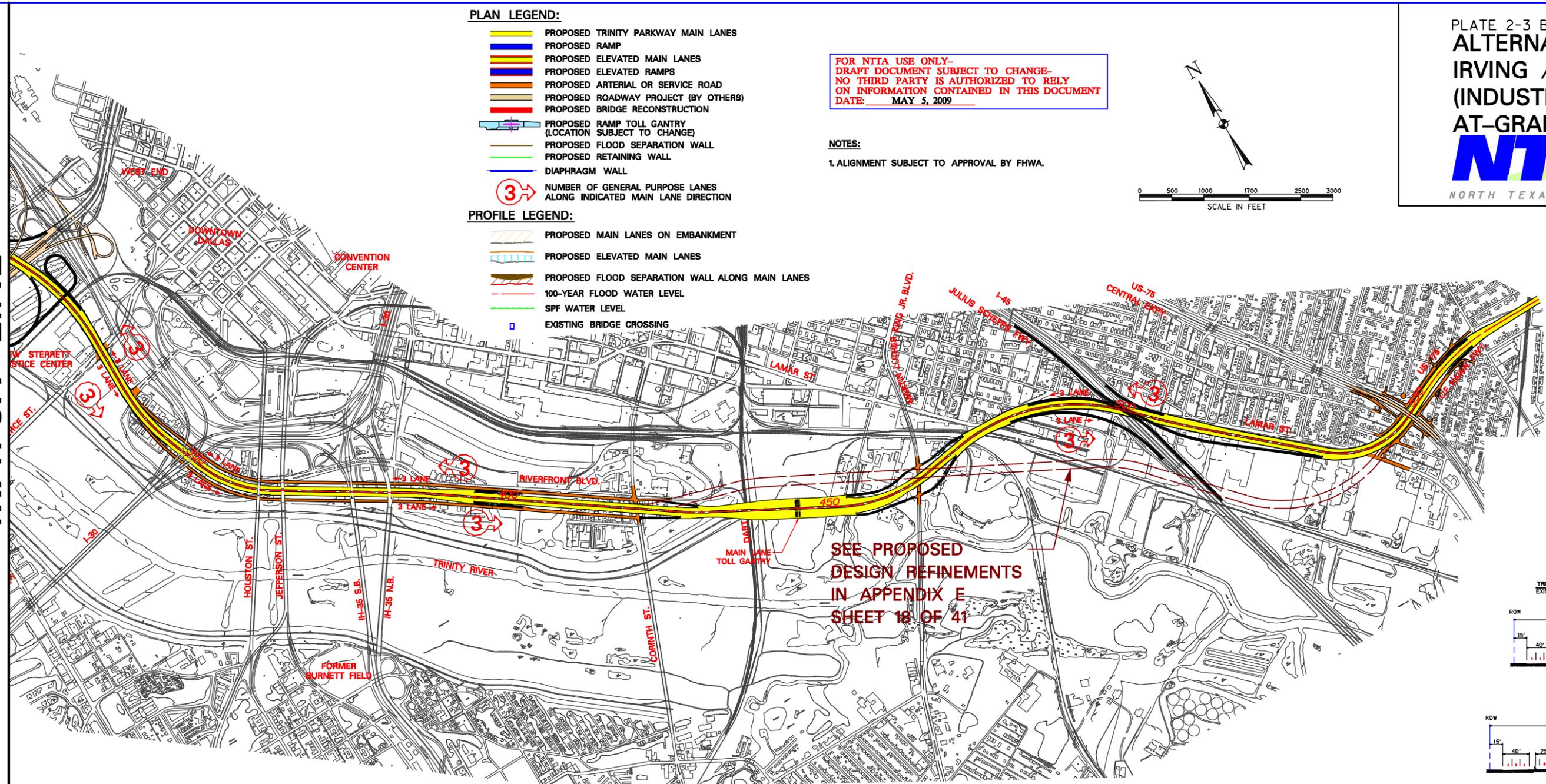
- PROPOSED MAIN LANES ON EMBANKMENT
- PROPOSED ELEVATED MAIN LANES
- PROPOSED FLOOD SEPARATION WALL ALONG MAIN LANES
- 100-YEAR FLOOD WATER LEVEL
- SPF WATER LEVEL
- EXISTING BRIDGE CROSSING

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ON INFORMATION CONTAINED IN THIS DOCUMENT
DATE: MAY 5, 2009

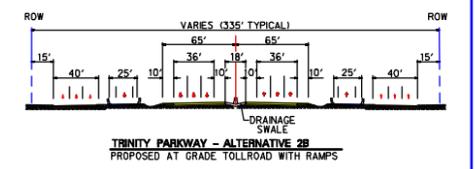
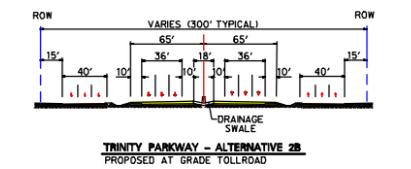
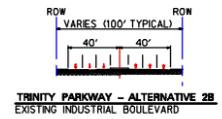
NOTES:
1. ALIGNMENT SUBJECT TO APPROVAL BY FHWA.



MATCH LINE



SEE PROPOSED
DESIGN REFINEMENTS
IN APPENDIX E
SHEET 18 OF 41



TYPICAL SECTIONS I-35E TO U.S. 175

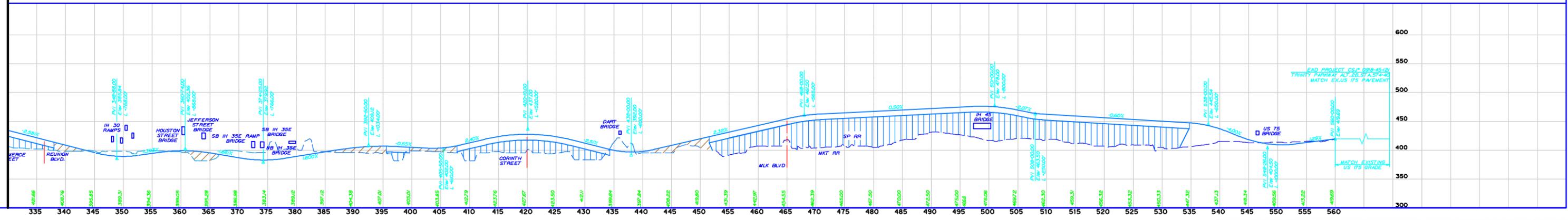
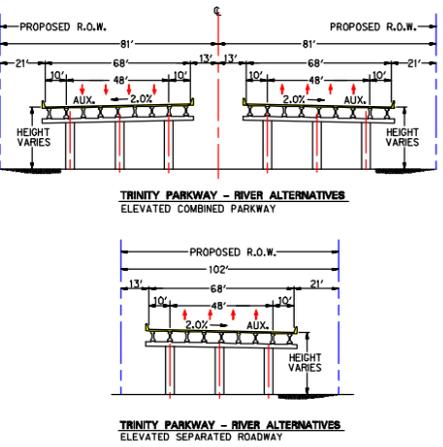
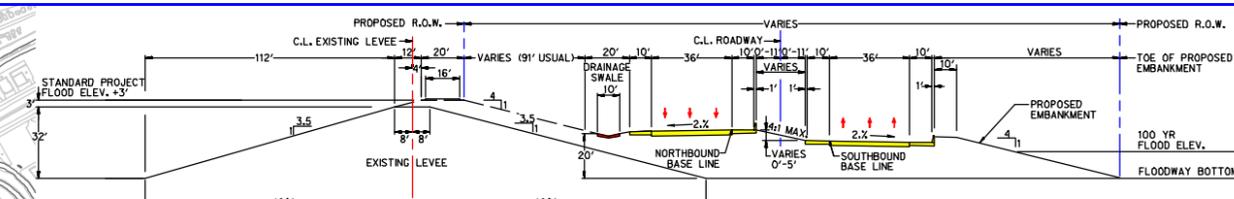
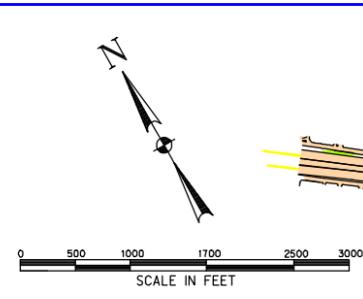


PLATE 2-4 A
**ALTERNATIVE 3C-COMBINED
 PARKWAY EAST LEVEE-
 FURTHER MODIFIED (NORTH)**



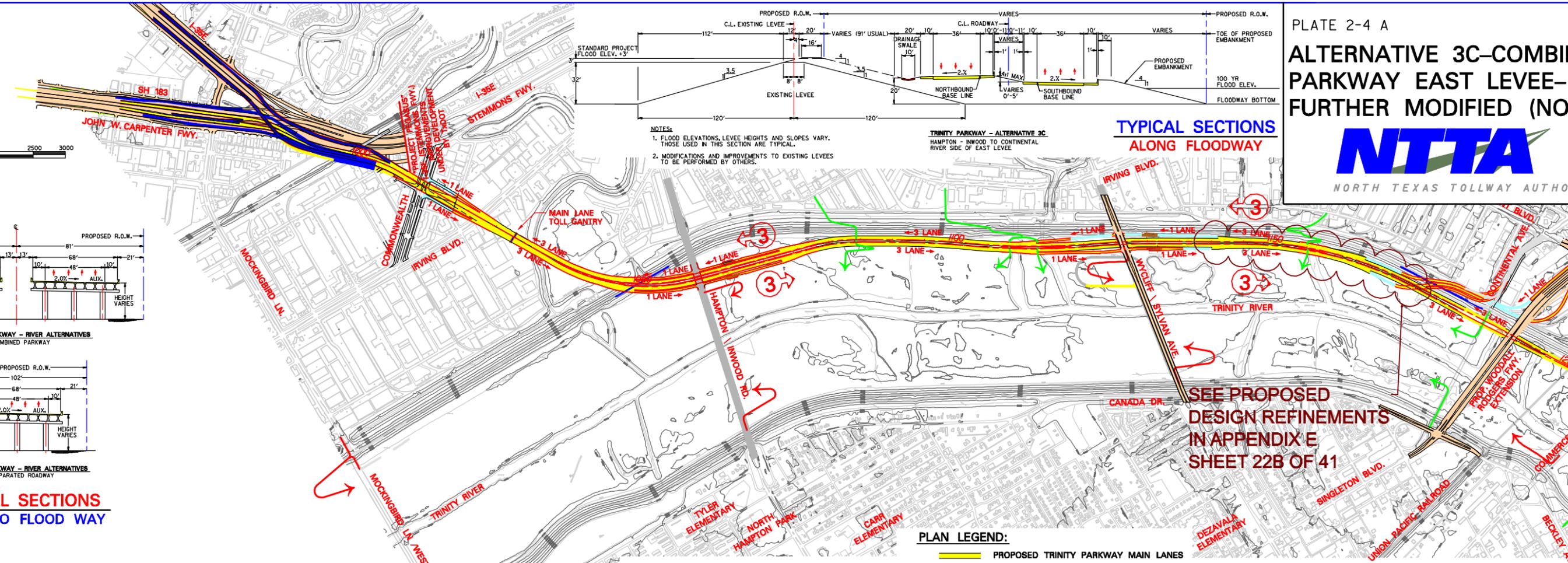
**TYPICAL SECTIONS
 I.H. 35E TO FLOOD WAY**

ALIGNMENT SUBJECT TO APPROVAL BY FHWA.

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 ON INFORMATION CONTAINED IN THIS DOCUMENT
 DATE: June 20, 2008**

NOTES:
 1. FLOOD ELEVATIONS, LEVEE HEIGHTS AND SLOPES VARY. THOSE USED IN THIS SECTION ARE TYPICAL.
 2. MODIFICATIONS AND IMPROVEMENTS TO EXISTING LEVES TO BE PERFORMED BY OTHERS.

**TRINITY PARKWAY - ALTERNATIVE 3C
 HAMPTON - INWOOD TO CONTINENTAL
 RIVER SIDE OF EAST LEVEE**



**SEE PROPOSED
 DESIGN REFINEMENTS
 IN APPENDIX E
 SHEET 22B OF 41**

PROFILE LEGEND:

- PROPOSED MAIN LANES ON EMBANKMENT
- PROPOSED ELEVATED MAIN LANES
- PROPOSED FLOOD SEPARATION WALL ALONG I
- 100-YEAR FLOOD WATER LEVEL
- SPF WATER LEVEL
- EXISTING BRIDGE CROSSING

PLAN LEGEND:

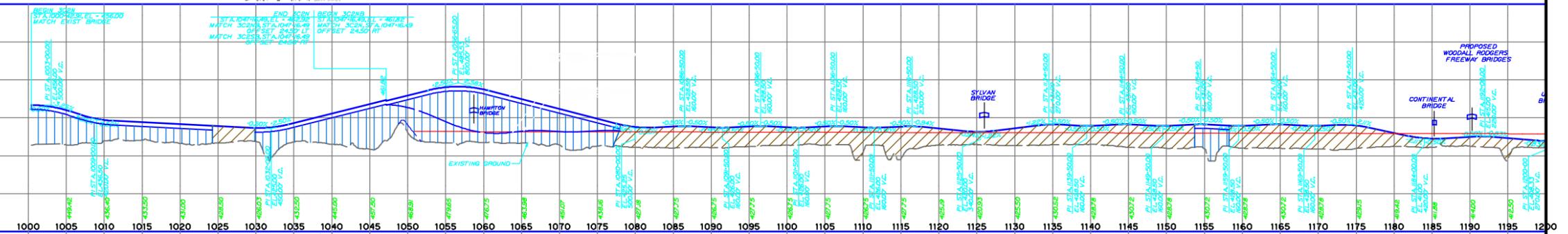
- PROPOSED TRINITY PARKWAY MAIN LANES
- PROPOSED RAMP
- PROPOSED ELEVATED MAIN LANES
- PROPOSED ELEVATED RAMPS
- PROPOSED ARTERIAL OR SERVICE ROAD
- PROPOSED ROADWAY PROJECT (BY OTHERS)
- PROPOSED BRIDGE RECONSTRUCTION
- PROPOSED RAMP TOLL GANTRY (LOCATION SUBJECT TO CHANGE)
- PROPOSED FLOOD SEPARATION WALL
- PROPOSED RETAINING WALL
- DIAPHRAGM WALL

3 NUMBER OF GENERAL PURPOSE LANES ALONG INDICATED MAIN LANE DIRECTION

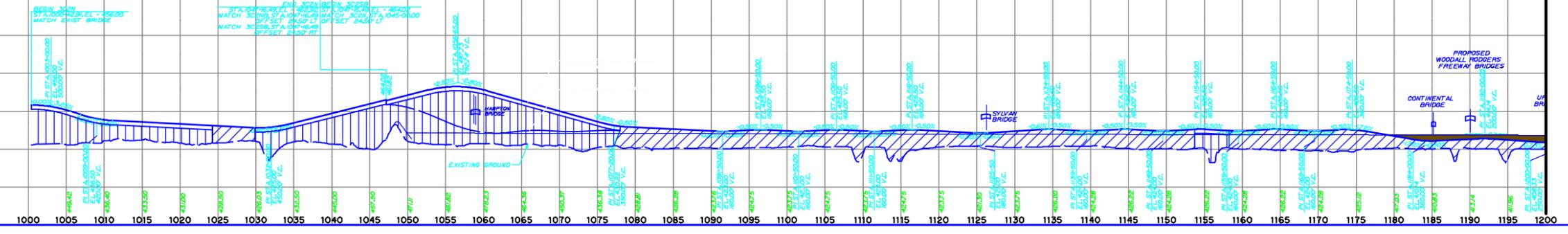
PARK ACCESS ROUTES:

- VEHICULAR / BICYCLE / PEDESTRIAN ACCESS RAMP (BY NTTA)
 - BICYCLE / PEDESTRIAN ACCESS BRIDGE (BY NTTA)
 - POSSIBLE VEHICULAR / BICYCLE / PEDESTRIAN ACCESS ROUTE (**)
 - POSSIBLE BICYCLE / PEDESTRIAN ACCESS ROUTE (**)
- (**) - SUBJECT TO PARK PLANNING & FUTURE DEVELOPMENT.

NORTHBOUND MAIN LANE PROFILE



SOUTHBOUND MAIN LANE PROFILE



MATCH LINE

PROFILE LEGEND:

- PROPOSED MAIN LANES ON EMBANKMENT
- PROPOSED ELEVATED MAIN LANES
- PROPOSED FLOOD SEPARATION WALL ALONG 100-YEAR FLOOD WATER LEVEL
- SPF WATER LEVEL
- EXISTING BRIDGE CROSSING

PLAN LEGEND:

- PROPOSED TRINITY PARKWAY MAIN LANES
- PROPOSED RAMP
- PROPOSED ELEVATED MAIN LANES
- PROPOSED ELEVATED RAMP
- PROPOSED ARTERIAL OR SERVICE ROAD
- PROPOSED ROADWAY PROJECT (BY OTHERS)
- PROPOSED BRIDGE RECONSTRUCTION
- PROPOSED RAMP TOLL GANTRY (LOCATION SUBJECT TO CHANGE)
- PROPOSED FLOOD SEPARATION WALL
- PROPOSED RETAINING WALL
- DIAPHRAGM WALL

PARK ACCESS ROUTES:

- VEHICULAR / BICYCLE / PEDESTRIAN ACCESS RAMP (BY NTTA)
 - BICYCLE / PEDESTRIAN ACCESS BRIDGE (BY NTTA)
 - POSSIBLE VEHICULAR / BICYCLE / PEDESTRIAN ACCESS ROUTE (***)
 - POSSIBLE BICYCLE / PEDESTRIAN ACCESS ROUTE (***)
- (***) - SUBJECT TO PARK PLANNING & FUTURE DEVELOPMENT.

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DATE: June 20, 2008**

NOTES:

- 1. ALIGNMENT SUBJECT TO APPROVAL BY FHWA.

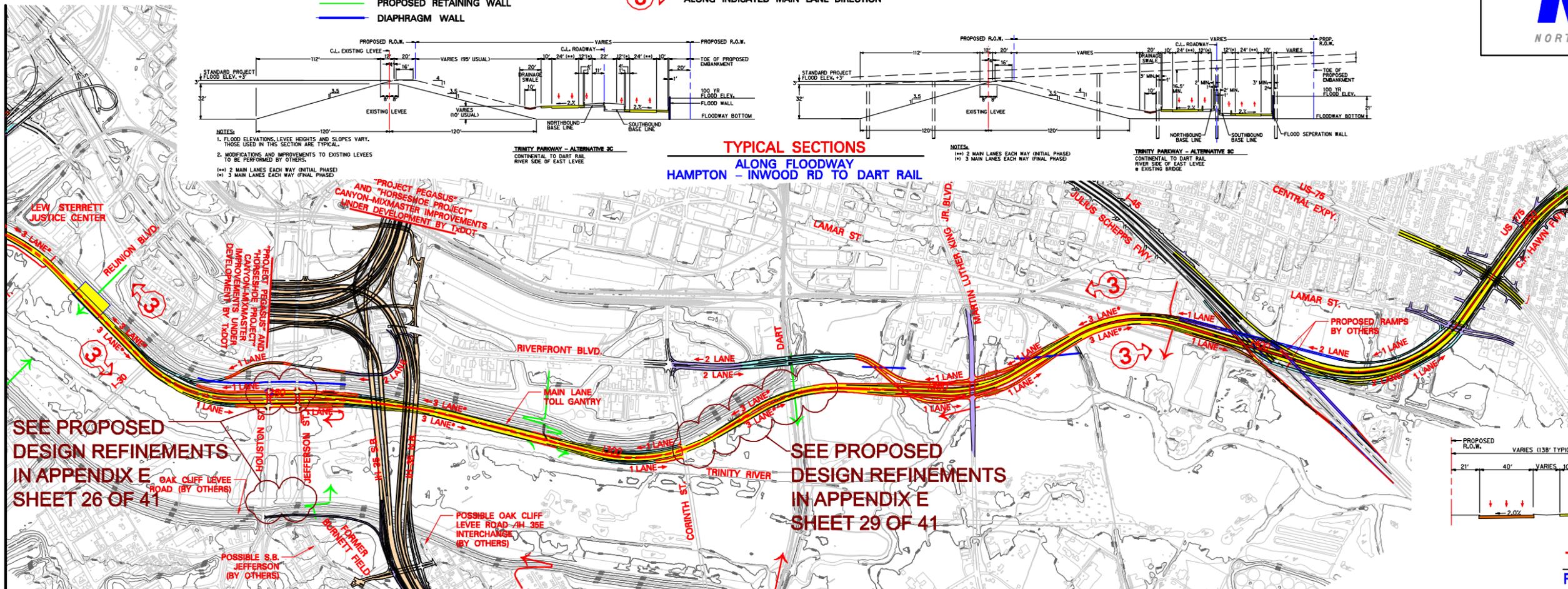


PLATE 2-4 B

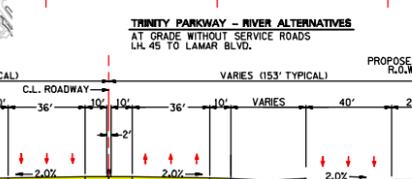
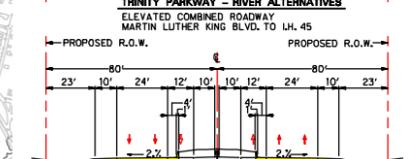
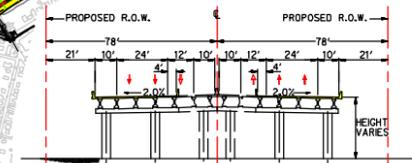
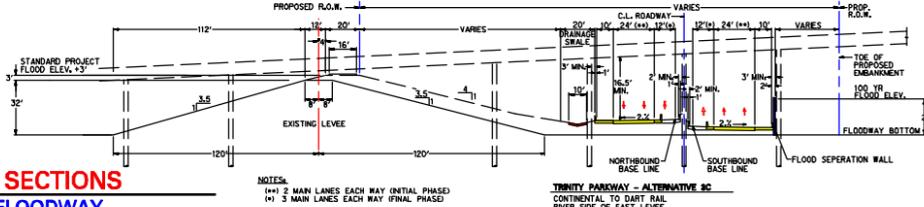
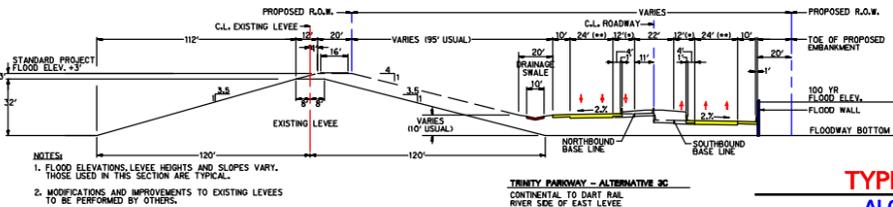
**ALTERNATIVE 3C-COMBINED
PARKWAY EAST LEVEL-
FURTHER MODIFIED (SOUTH)**



MATCH LINE



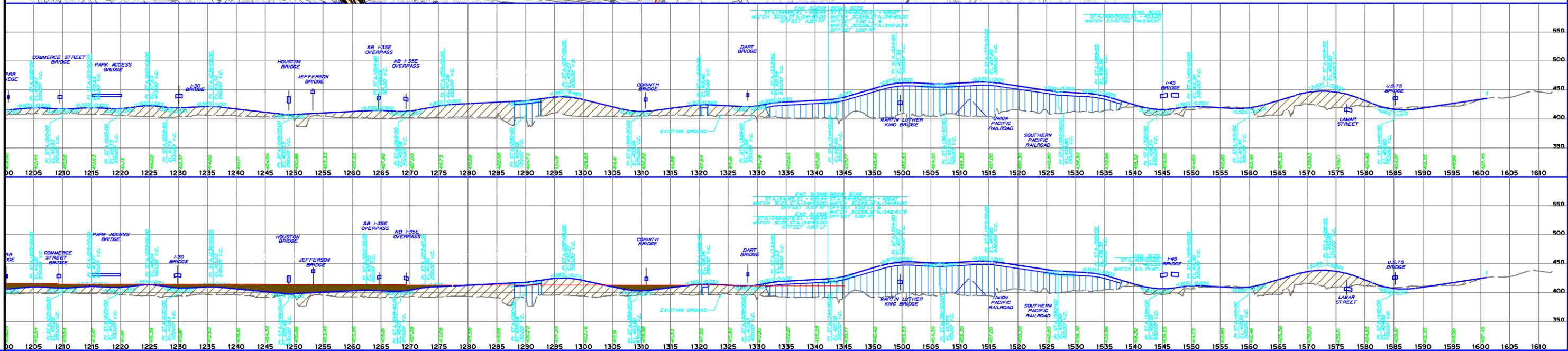
**TYPICAL SECTIONS
ALONG FLOODWAY
HAMPTON - INWOOD RD TO DART RAIL**



**TYPICAL SECTIONS
FLOODWAY TO U.S. 175**

SEE PROPOSED DESIGN REFINEMENTS IN APPENDIX E SHEET 26 OF 41

SEE PROPOSED DESIGN REFINEMENTS IN APPENDIX E SHEET 29 OF 41



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 ON INFORMATION CONTAINED IN THIS DOCUMENT
 DATE: AUGUST 17, 2007

NOTE:

THE FLOODWAY CROSS SECTION IS TYPICAL OF THE AREA BETWEEN THE HAMPTON ROAD AND CONTINENTAL AVENUE TRINITY RIVER CROSSINGS, LOOKING DOWNSTREAM. IT DOES NOT REPRESENT RAMPS, AUXILIARY LANES, OR MAIN LANE SUPER ELEVATION.

PLATE 2-4 C

**FLOODWAY SECTION FOR
 ALTERNATIVE 3C – COMBINED
 PARKWAY – FURTHER MODIFIED**



**COMBINED PARKWAY – MODIFIED
 SECTION LOOKING DOWNSTREAM (SOUTH)**



CENTER OF EXISTING TRINITY RIVER CHANNEL

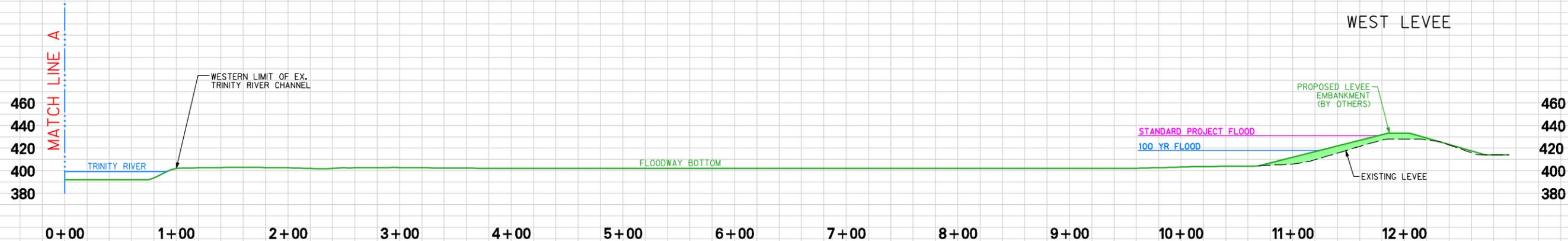
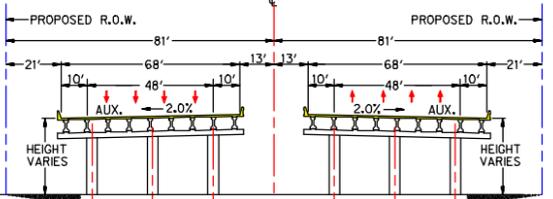
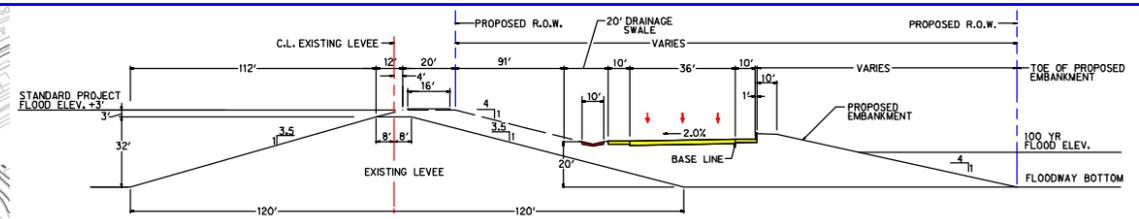
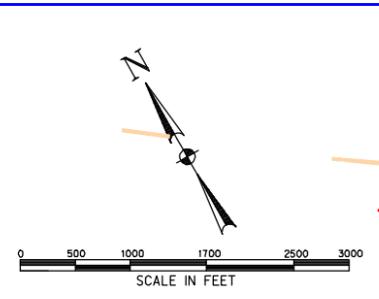
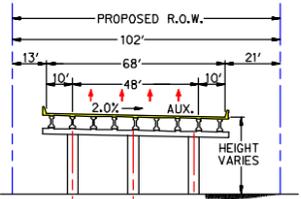


PLATE 2-5 A
**ALTERNATIVE 4B-
 SPLIT PARKWAY-RIVERSIDE
 MODIFIED (NORTH)**



TRINITY PARKWAY - RIVER ALTERNATIVES
 ELEVATED COMBINED PARKWAY



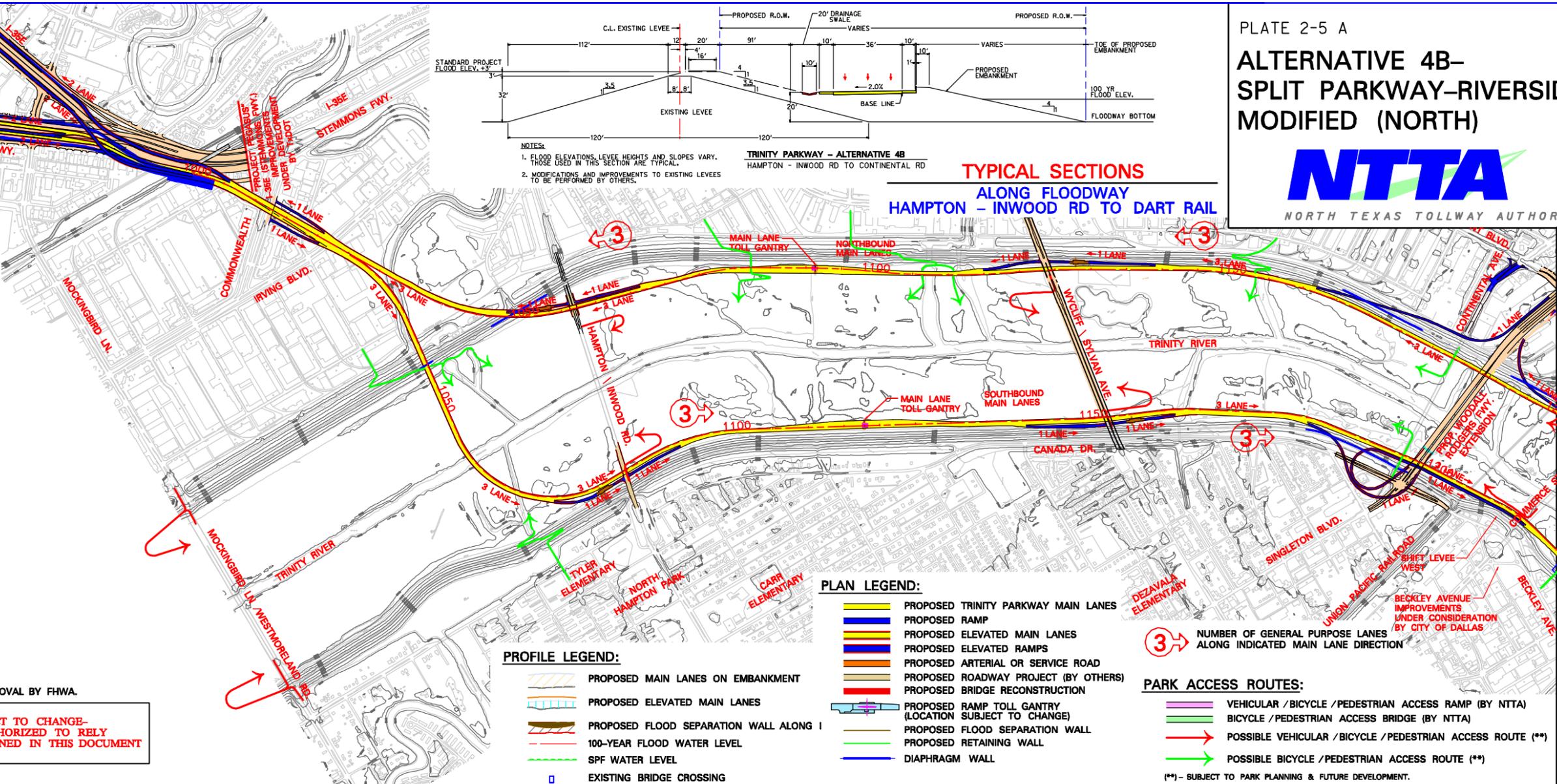
TRINITY PARKWAY - RIVER ALTERNATIVES
 ELEVATED SEPARATED ROADWAY

**TYPICAL SECTIONS
 I.H. 35E TO FLOOD WAY**

NOTE:
 ALIGNMENT SUBJECT TO APPROVAL BY FHWA.
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 ON INFORMATION CONTAINED IN THIS DOCUMENT
 DATE: June 20, 2008

TRINITY PARKWAY - ALTERNATIVE 4B
 HAMPTON - INWOOD RD TO CONTINENTAL RD

**TYPICAL SECTIONS
 ALONG FLOODWAY
 HAMPTON - INWOOD RD TO DART RAIL**



PLAN LEGEND:

- █ PROPOSED TRINITY PARKWAY MAIN LANES
- █ PROPOSED RAMP
- █ PROPOSED ELEVATED MAIN LANES
- █ PROPOSED ELEVATED RAMPS
- █ PROPOSED ARTERIAL OR SERVICE ROAD
- █ PROPOSED ROADWAY PROJECT (BY OTHERS)
- █ PROPOSED BRIDGE RECONSTRUCTION
- █ PROPOSED RAMP TOLL GANTRY (LOCATION SUBJECT TO CHANGE)
- █ PROPOSED FLOOD SEPARATION WALL
- █ PROPOSED RETAINING WALL
- █ DIAPHRAGM WALL

PROFILE LEGEND:

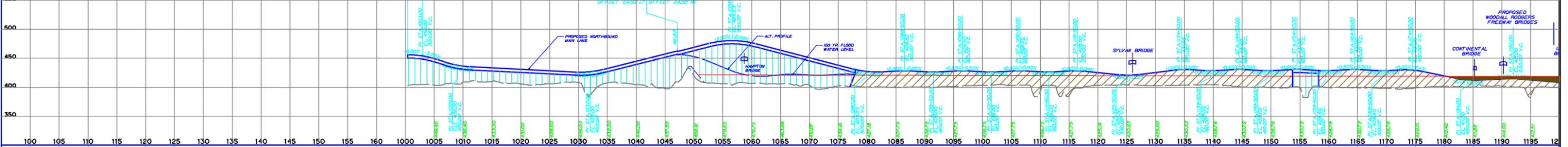
- ▨ PROPOSED MAIN LANES ON EMBANKMENT
- ▨ PROPOSED ELEVATED MAIN LANES
- ▨ PROPOSED FLOOD SEPARATION WALL ALONG I
- ▨ 100-YR FLOOD WATER LEVEL
- ▨ SPF WATER LEVEL
- ▨ EXISTING BRIDGE CROSSING

3 NUMBER OF GENERAL PURPOSE LANES
 ALONG INDICATED MAIN LANE DIRECTION

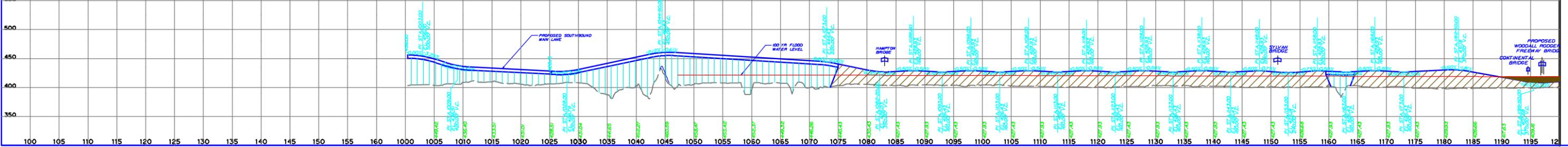
PARK ACCESS ROUTES:

- ▬ VEHICULAR / BICYCLE / PEDESTRIAN ACCESS RAMP (BY NTTA)
 - ▬ BICYCLE / PEDESTRIAN ACCESS BRIDGE (BY NTTA)
 - ➔ POSSIBLE VEHICULAR / BICYCLE / PEDESTRIAN ACCESS ROUTE (**)
 - ➔ POSSIBLE BICYCLE / PEDESTRIAN ACCESS ROUTE (**)
- (**) - SUBJECT TO PARK PLANNING & FUTURE DEVELOPMENT.

NORTHBOUND MAIN LANE PROFILE



SOUTHBOUND MAIN LANE PROFILE



MATCH LINE

PROFILE LEGEND:

- PROPOSED MAIN LANES ON EMBANKMENT
- PROPOSED ELEVATED MAIN LANES
- PROPOSED FLOOD SEPARATION WALL ALONG
- 100-YEAR FLOOD WATER LEVEL
- SPF WATER LEVEL
- EXISTING BRIDGE CROSSING

PLAN LEGEND:

- PROPOSED TRINITY PARKWAY MAIN LANES
- PROPOSED RAMP
- PROPOSED ELEVATED MAIN LANES
- PROPOSED ELEVATED RAMP
- PROPOSED ARTERIAL OR SERVICE ROAD
- PROPOSED ROADWAY PROJECT (BY OTHERS)
- PROPOSED BRIDGE RECONSTRUCTION
- PROPOSED RAMP TOLL GANTRY (LOCATION SUBJECT TO CHANGE)
- PROPOSED FLOOD SEPARATION WALL
- PROPOSED RETAINING WALL
- DIAPHRAGM WALL

PARK ACCESS ROUTES:

- VEHICULAR / BICYCLE / PEDESTRIAN ACCESS RAMP (BY NTTA)
- BICYCLE / PEDESTRIAN ACCESS BRIDGE (BY NTTA)
- POSSIBLE VEHICULAR / BICYCLE / PEDESTRIAN ACCESS ROUTE (*)
- POSSIBLE BICYCLE / PEDESTRIAN ACCESS ROUTE (**)
- NUMBER OF GENERAL PURPOSE LANES ALONG INDICATED MAIN LANE DIRECTION

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DRAFT DOCUMENT SUBJECT TO CHANGE-
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DATE: June 20, 2008

NOTES:

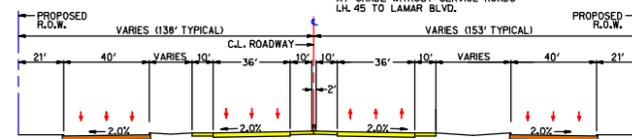
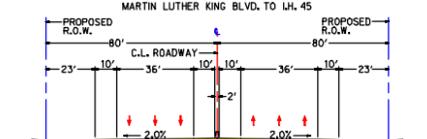
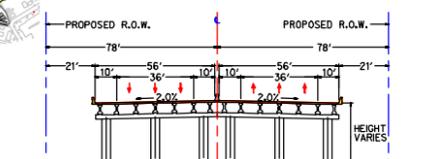
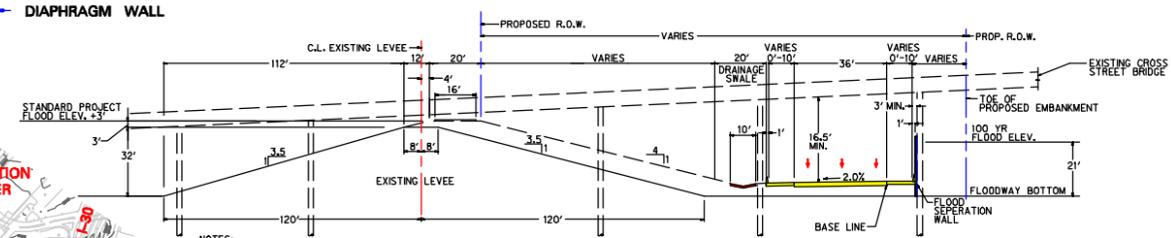
- 1. ALIGNMENT SUBJECT TO APPROVAL BY FHWA.

PLATE 2-5 B

**ALTERNATIVE 4B-
SPLIT PARKWAY-RIVERSIDE
MODIFIED (SOUTH)**

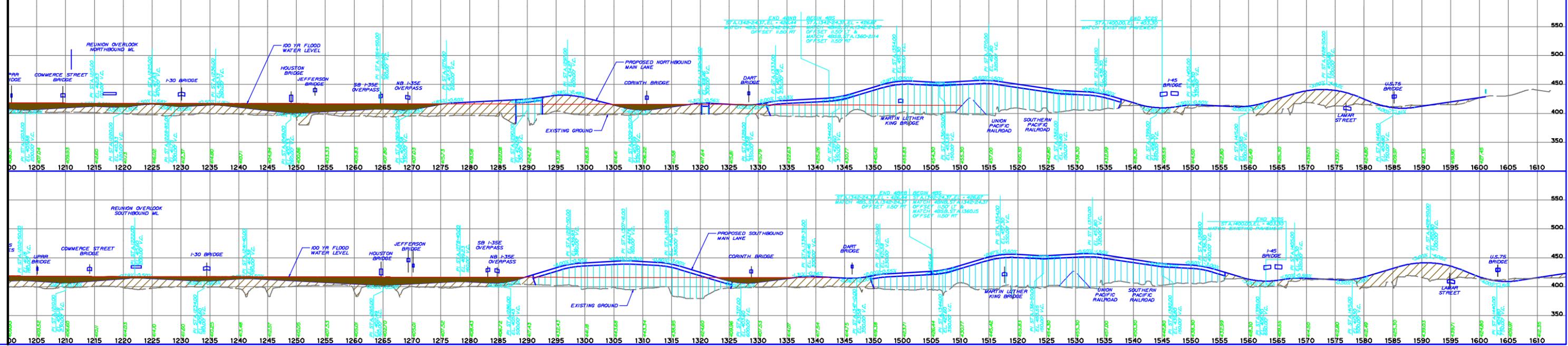
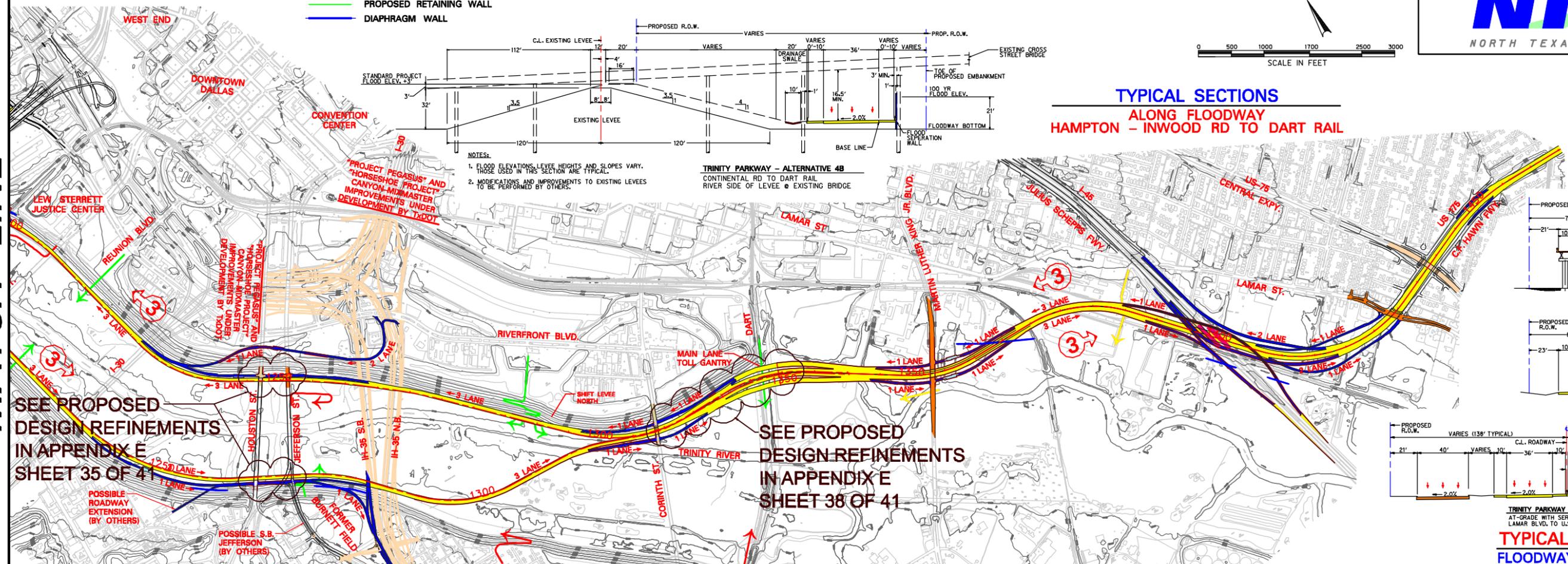


**TYPICAL SECTIONS
ALONG FLOODWAY
HAMPTON - INWOOD RD TO DART RAIL**



**TYPICAL SECTIONS
FLOODWAY TO U.S. 175**

MATCH LINE



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NOTE:

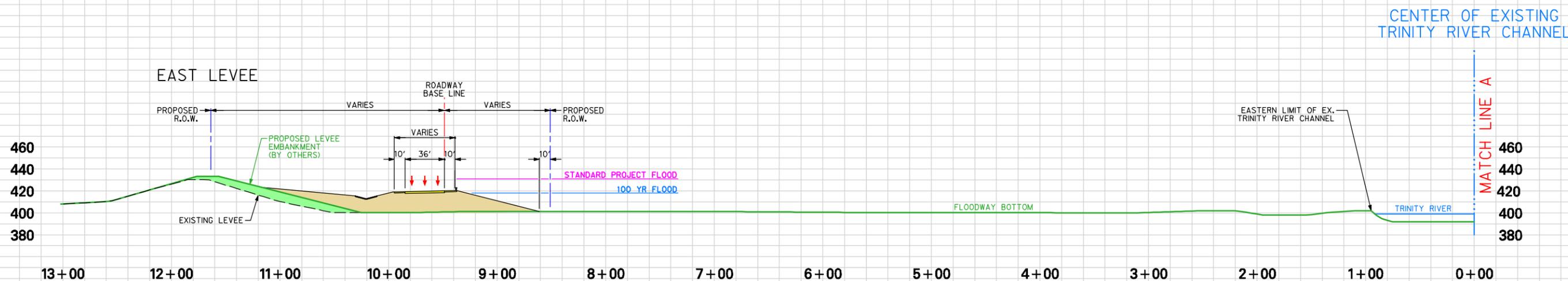
THE FLOODWAY CROSS SECTION IS TYPICAL OF THE AREA BETWEEN THE
 HAMPTON ROAD AND CONTINENTAL AVENUE TRINITY RIVER CROSSINGS,
 LOOKING DOWNSTREAM. IT DOES NOT REPRESENT RAMPS, AUXILIARY
 LANES, OR MAIN LANE SUPER ELEVATION.

PLATE 2-5 C

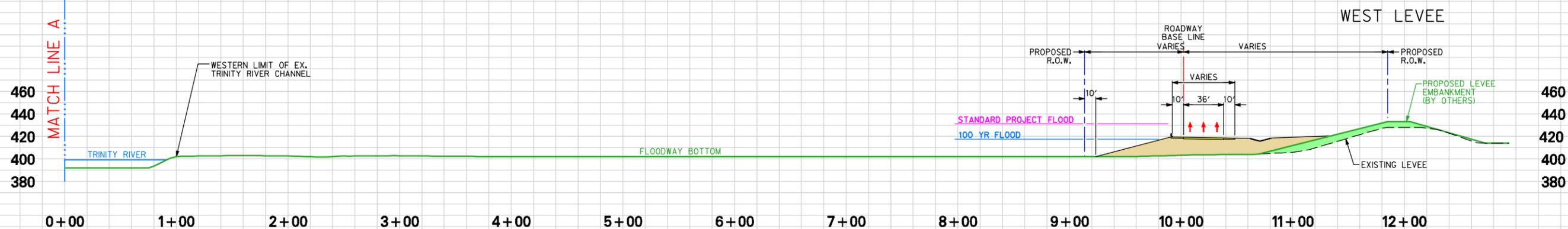
**FLOODWAY SECTION FOR
 ALTERNATIVE 4B - SPLIT
 PARKWAY - MODIFIED RIVERSIDE**



**SPLIT PARKWAY - RIVERSIDE
 SECTION LOOKING DOWNSTREAM (SOUTH)**



CENTER OF EXISTING
 TRINITY RIVER CHANNEL



CHAPTER 3

Evaluation of the USACE Dallas Floodway Periodic Inspection Report No. 9 and Levee Remediation Plan

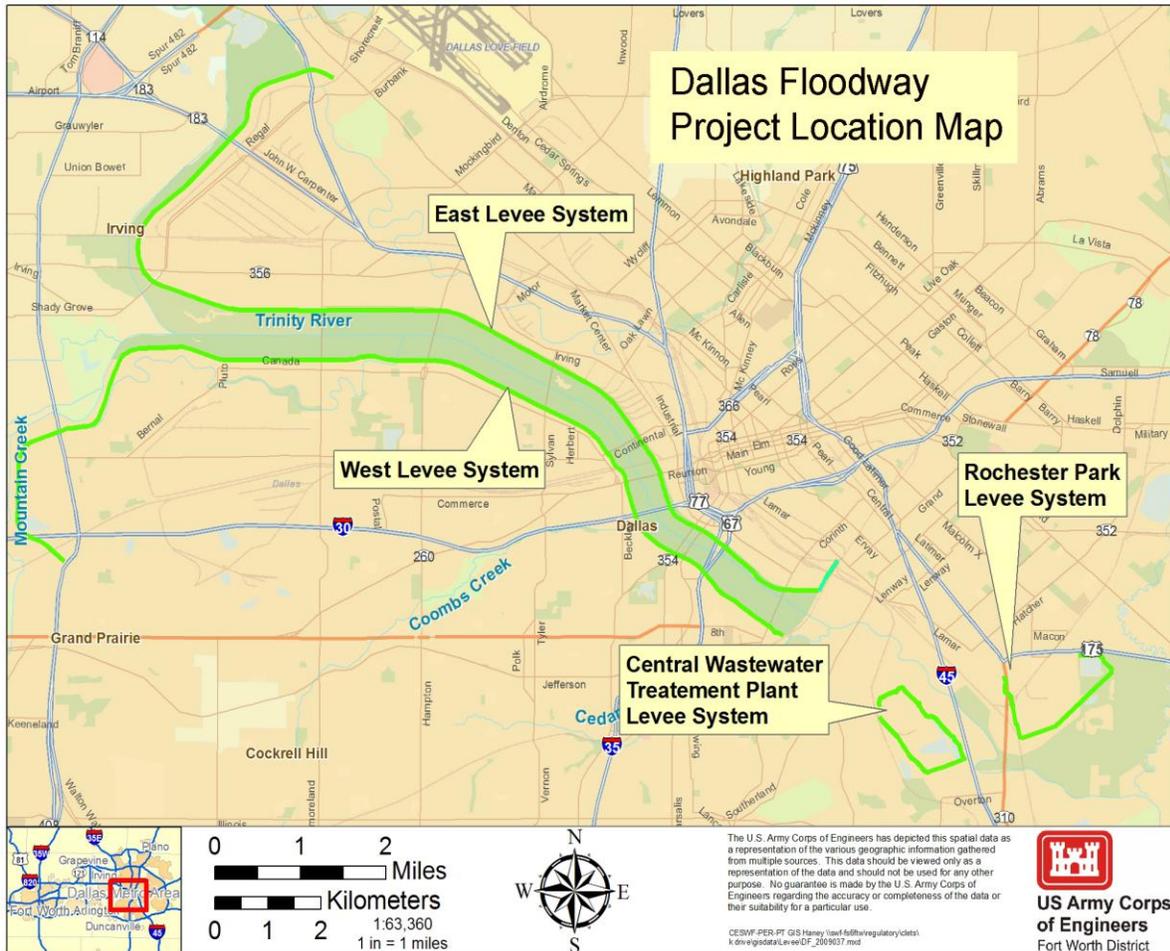
CHAPTER 3

EVALUATION OF THE USACE DALLAS FLOODWAY PERIODIC INSPECTION REPORT NO. 9 AND LEVEE REMEDIATION PLAN

3.0 INTRODUCTION AND RELEVANCE TO TRINITY PARKWAY

In December 2007, the USACE performed a periodic inspection of the Dallas Floodway system in accordance with its ER 1110-2-100, Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures (dated February 15, 1995), and Policy Guidance Letter, Periodic Inspection Procedures for the Levee Safety Program (dated December 17, 2008). The USACE *Periodic Inspection Report No. 9* was released to the public on April 1, 2009. **Figure 3-1** shows the levee segments considered in the USACE report, namely the east levee system, west levee system, Rochester Park levee system, and Central Wastewater Treatment Plant (CWWTP) levee system.

FIGURE 3-1. DALLAS LEVEES INCLUDED IN USACE PERIODIC INSPECTION REPORT NO. 9



Periodic Inspection Report No. 9 was the ninth such inspection of the Dallas levee system, made at approximately 5 year intervals since the 1960's, and the first for the Rochester and CWWTP levees. Concurrent with release of the report, the USACE Fort Worth District issued a March 31, 2009 letter (see **LSS Appendix A**) advising the City of Dallas Flood Control District that the East, West, Rochester and CWWTP levee systems were all given "unacceptable" ratings. Further, the USACE stated that its prior (2006) levee certification letter could no longer be used as a record of certification of the levee systems for the purposes of the National Flood Insurance Program for the base flood (100-year) event, and therefore the 2006 certification of the levee systems was officially withdrawn (see **LSS Appendix A, Pages 1-2**).

The USACE report was not addressed in the February 2009 SDEIS for the proposed Trinity Parkway project, because it was released after the SDEIS was published. However, the findings of the USACE Inspection Report could have potentially affected Trinity Parkway Alternatives 3C and 4B located in the Dallas Floodway. This is because improvements needed to bring the levees back into an "acceptable" rating may or may not be compatible with the roadway designs as developed in the SDEIS. To resolve this issue, the FHWA, TxDOT, and NTTA, as lead agencies for the Trinity Parkway proposal, made the following statement of position during the May 2009 Public Hearing for the SDEIS related to the new information in the inspection report:

"TxDOT, FHWA and NTTA will review the findings of the inspection report as they may relate to Trinity Parkway. The agencies will identify and develop further studies needed with respect to the levee conditions and its impact on the Trinity Parkway Floodway alternatives. The agencies will continue to coordinate with the City of Dallas and the Corps to develop remedial actions if needed. In the event a Floodway alternative is recommended for Trinity Parkway, further studies and initial results regarding the Parkway and the levees would be presented to the public in the future, but prior to the final EIS. These studies will be in addition to further Section 4(f) analysis and compliance with Executive Orders 11988 and 11990 (with respect to floodplain and wetlands)."

This chapter of the LSS is intended to discuss the development of levee remediation actions by the City of Dallas in response to *Periodic Inspection Report No. 9*. The chapter also assesses compatibility of the Trinity Parkway alternatives in the Dallas Floodway (Alternatives 3C and 4B) with such remediation actions, as well as any design changes that may need to be made to these alternatives to resolve compatibility issues. Alternatives 2A and 2B generally follow the alignment of Irving and Riverfront (Industrial) Boulevards on the landside of the east levee, and issues regarding compatibility with levee remediation actions are not anticipated for these two alternatives. Consequently, this chapter focuses on the levee system deficiencies and remediation as they may relate to Alternatives 3C and 4B.

3.1 LEVEE SYSTEM DEFICIENCIES ADJACENT TO TRINITY PARKWAY ALTERNATIVES

As outlined previously in **LSS Section 3.0**, the USACE *Periodic Inspection Report No. 9* covered four levee systems:

- East levee system of the Dallas Floodway (about 12 miles in length);
- West levee system of the Dallas Floodway (about 10 miles in length);
- Rochester Park levee system (about 3 miles in length); and
- CWWTP levee system (about 2.5 miles in length).

All four of these systems were reported with “unacceptable” deficiencies in the USACE Report. Trinity Parkway Alternatives 3C and 4B would be adjacent to the east levee for a distance of about 5.3 miles. Additionally, Alternative 4B would be adjacent to the west levee for a distance of about 4.1 miles (adjacent to the split southbound lanes.) The Rochester Park and CWWTP levee systems are not adjacent to any of the Build Alternatives. The 5.3-mile east levee segment and 4.1-mile west levee segment are the focus of this section of the LSS.

The USACE Inspection Report was based on field inspections made in December 2007. The inspections resulted in 230 observed field conditions of which 204 were rated either "minimally acceptable" or "unacceptable." Of the 230 items identified, 198 items were classified as operations/maintenance items and the remaining 32 items are considered to be addressed with future implementation of the Dallas Floodway and the Dallas Floodway Extension projects. The major items that resulted in an overall “unacceptable” rating included the following:

- Insufficient crest height rendering the east and west levees incapable of successfully accommodating the Standard Project Flood (SPF) without overtopping;
- Significant encroachments and penetrations that impact the integrity and performance of the levees, as well as inhibit access for O&M, surveillance and flood fighting purposes;
- Damaged gate closures;
- Unstable structures;
- Severe cracking of the levees (includes cracks in the soil that may appear);
- Erosion;
- Vegetation;
- Siltation; and
- Channel instability.

In addition to unacceptable ratings for the items listed above, it was determined that the Dallas Floodway does not meet current USACE design criteria regarding relevant factors of safety for embankment stability and seepage gradients.

In response to the USACE Report, the City of Dallas started an extensive geotechnical and engineering analysis of the four levee systems in 2009. The study team revisited all of the USACE-reported deficiency sites, and developed response plans for immediate needs. Many of the items in the original deficiency list were characterized as routine O&M issues, and the City of Dallas Flood Control District mobilized to repair and restore these in consultation with the USACE. The District prepared a Maintenance Deficiency Correction Period (MDCP) plan covering these items, and the USACE approved the MDCP plan on June 30, 2009. The O&M items and MDCP plan are discussed further in **Section 3.2** below. Other items in the deficiency list, such as improving the levee crest height and addressing seepage, were more complicated problems, and have required extensive geotechnical testing and engineering analysis to develop solutions. This work is addressed in **LSS Section 3.3 Levee Remediation Plan – Major Levee Deficiencies**.

3.2 LEVEE REMEDIATION PLAN – O&M ITEMS

City staff have identified 198 of the items in the *Periodic Inspection Report No. 9* as "O&M-Related" items. The City's master list of these items, and the status of the individual repairs is shown in **LSS Appendix C**. The following table categorizes the 198 items by repair types, and provides the number of occurrences for each:

TABLE 3-1. CITY OF DALLAS CATEGORIZED O&M REPAIRS

No.	Description	Occurrences
1	Animal Control (system-wide issue)	1
2	Closure Structures	10
3	Concrete Surfaces	3
4	Culverts/Discharge Pipes	5
5	Depressions/Rutting	5
6	Encroachments	30
7	Erosion/ Bank Caving	13
8	Fencing and Gates	2
9	Flap Gates/ Flap Valves/ Pinch Valves	4
10	Foundation of Concrete Structures	10
11	Intake and Discharge Pipelines	2
12	Monolith Joints	2
13	Other Metallic Items (Corrosion)	15
14	Pumping Plant Building Issues	26
15	Ponding Areas	1
16	Revetments other than Riprap	3
17	Riprap Revetments & Bank Protection	4
18	Riprap Revetments & Banks	2
19	Riprap Revetments of Inlet/ Discharge Areas	3
20	Settlement	1
21	Shoaling (sediment deposition)	1

TABLE 3-1. CITY OF DALLAS CATEGORIZED O&M REPAIRS

No.	Description	Occurrences
22	Slope Stability	6
23	Sluice / Slide Gates	2
24	Sod Cover	3
25	Structure	15
26	Sumps / Wet well	5
27	Tilting, Sliding or Settlement of Concrete and Sheet Pile Structures	3
28	Trash Racks (non-mechanical)	2
29	Unwanted Vegetation Growth (trees and brush)	10
30	Vegetation and Obstructions	9
	TOTAL	198

The City has completed and the USACE has approved 193 of the 198 items in the MDCP plan. **LSS Appendix C** includes a copy of a briefing memorandum on this topic given by city staff to the City's Trinity River Corridor Project Committee on May 13, 2011. The City intends to complete all of the necessary repairs in the MDCP plan, but expects the remaining five items will take several months to complete. The City has also instituted more frequent mowing cycles in the Dallas Floodway, and is working with other agencies (such as DART and TxDOT) to fix any identified problems with their facilities in the Dallas Floodway.

In regard to the proposed Trinity Parkway alternatives in the Dallas Floodway, 111 of the 198 deficiencies listed in **Table 3-1** are located on the east levee, and many of these are adjacent to Alternatives 3C and 4B. An additional 56 deficiencies listed in **Table 3-1** are located on the west levee, with several located adjacent to the southbound lanes of Alternative 4B. Based on representations by the City of Dallas, the Trinity Parkway project sponsors have taken the position that all of these items will be repaired by the City or other agencies prior to the FHWA taking final action on the proposed Trinity Parkway. Therefore, these items are not further analyzed in this LSS. It is noted however that many of the listed O&M repair items could be substantially modified in the event one of the Trinity Parkway alternatives in the Dallas Floodway is implemented. For instance, structures repaired under the current City effort may need to be further modified to accommodate the Trinity Parkway embankments; large areas of vegetation may be removed and replaced by new embankments; areas of concrete rip rap may be torn out and rebuilt in new locations because of the proposed Trinity Parkway improvements. These changes are included and anticipated in the plans and cost estimates included in the SDEIS. Further, as described in **SDEIS Chapter 2 (Alternatives Considered)**, all of this Trinity Parkway-related work would be subject to the prior review, approval, permitting and construction phase inspection by the USACE to assure maintenance of the flood control function.

3.3 LEVEE REMEDIATION PLAN – MAJOR LEVEE DEFICIENCIES

As stated in **LSS Section 3.1**, major items in the USACE deficiency list, such as improving the levee crest height and addressing under-seepage concerns, have required extensive geotechnical testing and engineering analysis to develop solutions. This work is addressed in this section. The section also assesses compatibility of the proposed Trinity Parkway alternatives with proposed major levee deficiency solutions. The major deficiencies are summarized as follows:

- Failure to provide sufficient crest height to accommodate the SPF;
- Existence of significant encroachments and penetrations that may impact levee integrity;
- Soil properties of the levees are prone to desiccation (cracking) during dry cycles that could weaken the levees; and
- Control of seepage through the levees.

The City of Dallas initiated a levee remediation study in 2009 to address these major deficiencies only to the extent of the levee's integrity with respect to the 100-year flood, as well as to coordinate a response to the O&M issues discussed in **LSS Section 3.2**. The main purpose of the levee remediation study was to identify and design improvements to the floodway system to result in 100-year levee accreditation. The levee remediation study does not have the purpose of addressing SPF levee deficiencies, which will be addressed by the ongoing Dallas Floodway EIS that is due to be completed in 2014. The City study included an extensive geotechnical boring program along the total 28 mile combined length of the east, west, Rochester Park, and CWWTP levees. Over this length, borings were provided along the levee tops, riverside toes and landside toes, and levee mid-slopes at a longitudinal spacing of no less than 500 feet. Additionally, data was gathered and considered from past levee construction records and studies.

Because of City priorities, the near-term plan is to restore the 100-year level of protection for the levee system to achieve FEMA 100-year accreditation. The longer-term plan is to address SPF major deficiencies within the Dallas Floodway system with the ongoing Dallas Floodway EIS and the subsequent USACE/City project for the Dallas Floodway. The 100-year and SPF events are discussed in detail in **SDEIS Section 4.13 Floodplain Impacts**. A 100-year flood is calculated to be the level of flood water expected to be equaled or exceeded at least once in a 100-year period. The 100-year flood is more accurately referred to as the "1% flood" because it is the event which has a 1% chance of being equaled or exceeded in any one-year time period. The SPF is an extreme event, typically used by the USACE in the analysis of levee systems. In the area of the Dallas Floodway, the SPF approximates an 800-year event.

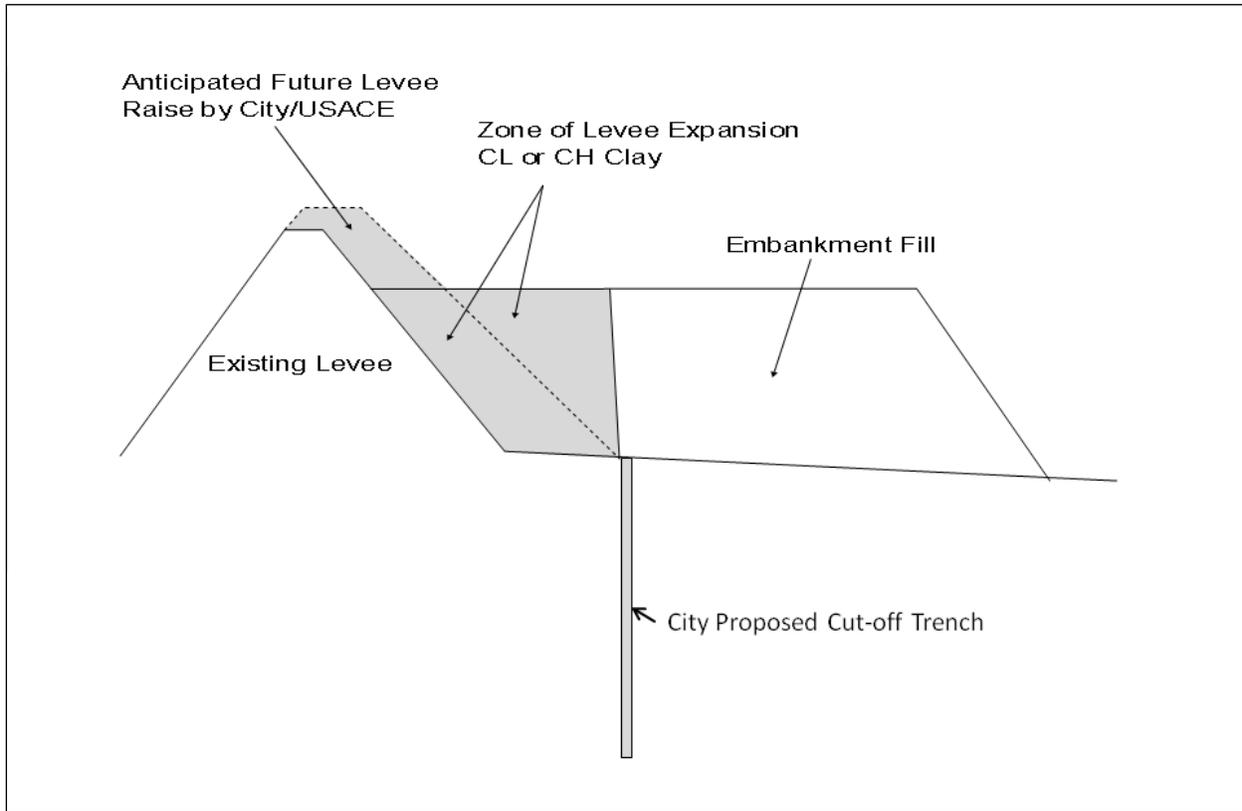
The discussion of compatibility which follows below is arranged around two major themes in the major deficiencies list: (i) seepage control and (ii) future improvement of the levees. **SDEIS Section 2.4.6, Trinity Parkway Construction in the Dallas Floodway**, includes provisions that the Floodway alternatives (Alternatives 3C and 4B) would provide undiminished access to all levee segments and floodway areas currently maintained by the Dallas Flood Control Division, as well as acknowledgement of the primacy of the flood control function. Therefore, these topics are not discussed further in this LSS.

3.4 LEVEE REMEDIATION PLAN – SEEPAGE CONTROL

Based on the best available information at the time of preparation of this LSS, the city plan for control of seepage through the levees incorporates levee cut-off trenches in selected segments of the Dallas Floodway, where the geotechnical testing has identified seepage concerns such as the existence of sand layers. The trenches are expected to be composed of native soils mixed with Bentonite clay and constructed using slurry trench methods. Bentonite is a highly impermeable clay, and its inclusion in the trench is intended to provide a barrier to migration of water under the levee. The trench is intended to intercept and cut off any sand seams or permeable strata under the levee, thereby preventing seepage which might otherwise threaten levee performance during floods.

As stated in **SDEIS Chapter 2 Alternatives Considered**, Alternatives 3C and 4B are proposed to be constructed on embankments alongside the Dallas Floodway levees, with the embankments offset sufficiently to allow future raising of the levee by the City/USACE. **SDEIS Figure 2-29** shows a conceptual cross section of the roadway embankments alongside the levees, showing proposed use of low permeability clay in the zones affected by the levee expansion. **Figure 3-2** below is identical to **SDEIS Figure 2-29**, except the city-proposed levee cut-off trench has been added to the section.

FIGURE 3-2. CITY-PROPOSED CUT-OFF TRENCH AND PROPOSED EMBANKMENTS FOR ALTERNATIVES 3C AND 4B



The city-proposed cut-off trench will be located approximately 50 to 80 feet from the levee toe along the east levee and a minimum of 25 feet from the levee toe along the west levee. However, the city-proposed cut-off trenches are expected to be in place prior to construction of the proposed Trinity Parkway. If a Trinity Parkway alternative is selected in the Dallas Floodway, the anticipated slurry trench does not appear to be an impediment to construction of the embankments and levee expansion. Therefore, the proposed Trinity Parkway alternatives would be compatible with the cut-off trenches proposed in the city plan.

The city's plan for control of seepage through the Dallas Floodway levees also includes a proposal to address seepage around foundations which penetrate the levees. There are multiple existing bridge crossings along the Dallas Floodway, all of which have pier penetrations through the levee down to the underlying shale formation (at depths ranging from approximately 50 feet to 100 feet below the base of the levee). The USACE Periodic Inspection Report No. 9 listed 18 existing bridges as having "unacceptable" pier encroachments. The deficiency relates to a concern that in-situ clay material might pull away from the surface of a drill shaft because of seasonal moisture variation, creating a void around the shaft which could propagate for some distance down into the levee. This void carries a potential for

creating a flow path, transporting seepage down into the levee and possibly intercepting a sand seam at depth.

Alternatives 3C and 4B include diaphragm walls as a seepage control measure at proposed bridge crossings. The diaphragm walls are described in **LSS Section 2.3.4** and shown in the plan view in the schematic plans (**LSS Chapter 2 Plates 2-4A/B and 2-5A/B**). The walls are further described in **SDEIS Section 2.3.9, 2006 USACE Consultation Regarding the Dallas Floodway Levees**. The proposed walls are 300 feet to 1,400 feet long, depending on the site, and cost on the order of \$1 million for each 100 feet length of wall. These walls are considered a worst case solution to the pier penetration issue. The walls would be expected to cut off seepage down to bedrock in the affected areas and would be designed to withstand floodwater loads in the unlikely event large parts of the levee were washed away.

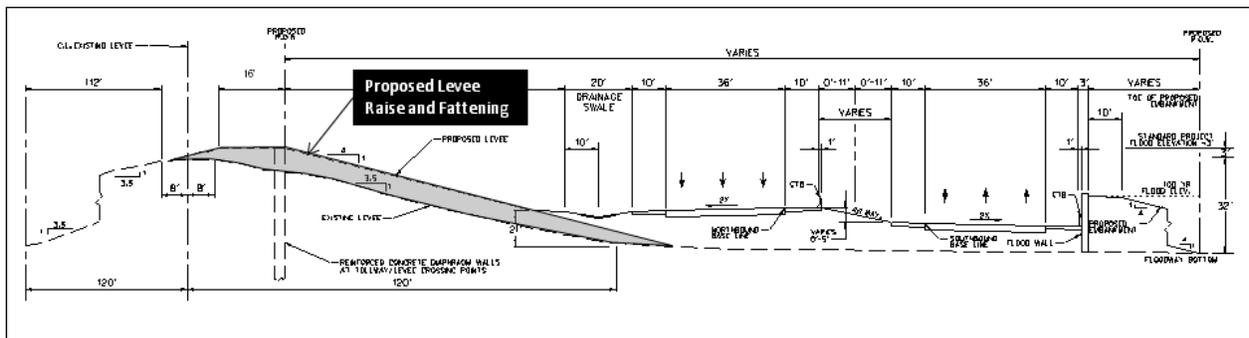
There is a possibility a different, less expensive solution to the pier penetration/seepage concerns may be implemented as the USACE further studies the condition (at existing or other proposed bridges) and develops solutions within the framework of the ongoing Feasibility Study and EIS for the Dallas Floodway. The USACE has approved pier penetrations at the Margaret Hunt Hill Bridge levee crossings under construction in 2011 and at the proposed Sylvan Avenue Bridge scheduled to begin construction in early 2012. For these projects, bridge columns located immediately landside of the levees included sand and concrete filter collars as redundant treatments to mitigate potential under-seepage along the interface between the concrete drilled shaft and adjacent clay soils. These levee crossings have also been reinforced with landside berms and French drains at the landside toe. If these kinds of solutions can be applied at the Trinity Parkway levee crossings, it is expected costs would be reduced from the costs for the diaphragm walls assumed in the LSS and SDEIS.

The proposed Trinity Parkway alternatives in the Dallas Floodway may affect filter collars at existing bridges because the proposed Trinity Parkway embankments would raise the ground elevations around individual piers. This can be resolved through appropriate design measures; the city-proposed collars could be left in place, they could be demolished and rebuilt closer to the new ground surface, or they could be extended with additional collar material up to the new ground surface. Such measures would be made at the time of design development, in the event a Trinity Parkway alternative in the Dallas Floodway is chosen, and would be subject to design review, permitting and construction oversight by the USACE. Therefore, the proposed Trinity Parkway would be compatible with the seepage collars if they are a component of the City/USACE final Levee Remediation Plan.

3.5 LEVEE REMEDIATION PLAN – FUTURE LEVEE GEOMETRY

Trinity Parkway Alternatives 3C and 4B are proposed to be constructed on embankments alongside the Dallas Floodway levees, with the embankments offset sufficiently from the existing levee face to allow future raising of the levee by the City/USACE. The Trinity Parkway schematic designs to date have assumed raising the levee to a height equivalent to SPF flood elevation plus 2 feet. The crown of the improved levee is assumed to be 16-feet wide, and the riverside slopes are assumed to be 4:1 (horizontal:vertical). The proposed embankment geometry is illustrated in **Figure 3-3**, which shows the Alternative 3C Typical Section, and **Figure 3-4**, which shows the Alternative 4B Typical Section. The embankment geometry is also shown on the Alternative 3C and 4B schematic designs in **LSS Chapter 2 Plates 2-4A/B and 2-5A/B**.

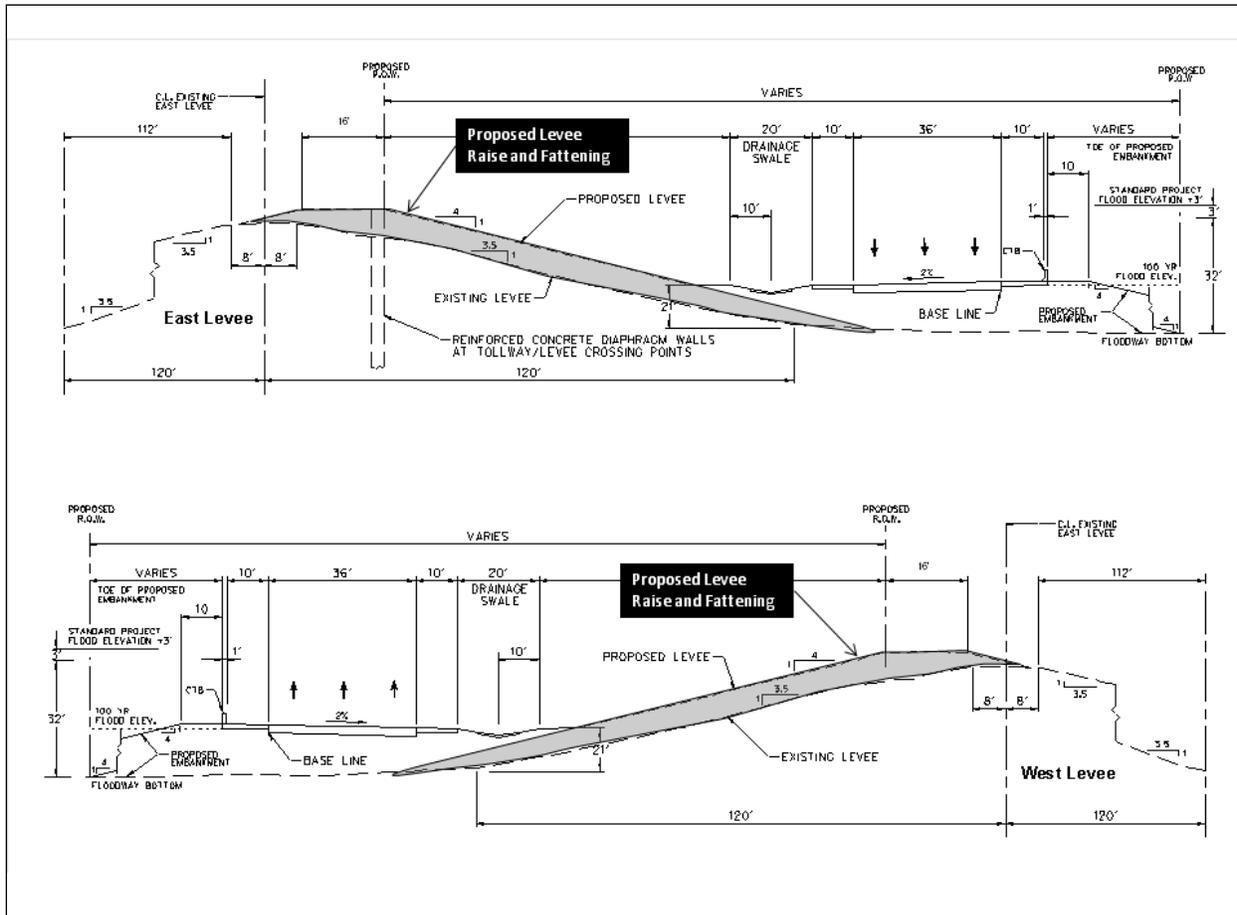
FIGURE 3-3. ALTERNATIVE 3C - COMBINED PARKWAY - (FURTHER MODIFIED) TYPICAL SECTION



Note:

1. There would typically be three main lanes of travel in each direction (six lanes total). Auxiliary lanes may be added in some segments, where required to properly accommodate merging areas between ramps. Flood elevations, levee heights, and slopes would vary. Those used in the section would be typical.

FIGURE 3-4. ALTERNATIVE 4B - SPLIT PARKWAY RIVERSIDE - MODIFIED TYPICAL SECTION



Note:

1. There would typically be three lanes of travel in each direction (six lanes total) with the northbound lanes adjacent to the east levee and the southbound lanes adjacent to the west levee. Auxiliary lanes may be added in some segments, where required to properly accommodate merging areas between ramps. The west levee section would be similar to the east levee section. Flood elevations, levee heights, and slopes would vary. Those used in the section would be typical.

The city and USACE work for the Levee Remediation Plan and the ongoing Dallas Floodway EIS (as described in **Section 3.3** above) included a fresh look at the design of future levee improvements, using the more extensive soil borings and geotechnical analysis done in 2009 - 2011. This new evaluation opened the possibility that the future levee height and slopes assumed for the Trinity Parkway floodway alternatives might change, possibly affecting the position of the roadway relative to the existing levees. On September 30, 2011, the Fort Worth District of the USACE issued a letter to the FHWA – Texas Division to provide an update on the levee remediation analyses done to date and to facilitate completion of this LSS. The letter (see **LSS Appendix A**) makes the following statement:

Based on the analysis done to date, no riverside slope stability problems have been identified for the existing Dallas Floodway levees. Given that the current riverside slopes are no flatter than 4:1 (horizontal: vertical), the levee improvement template currently being utilized in the Trinity Parkway alternative evaluation process, which assumes a

future two-foot levee raise with 4:1 riverside slopes, appears to be a reasonable assumption for use in the Limited Scope Supplement document, based on the best available information.

Based on the USACE letter, the proposed Trinity Parkway remains compatible with the anticipated future levee geometry. In the event one of the Trinity Parkway alternatives in the floodway is recommended as the preferred alternative, additional coordination with the USACE and the City will be required to ensure the roadway design remains compatible with final remediation plans for the levees.

3.6 SUMMARY DISCUSSION

Based on the analysis in **Sections 3.2** through **3.5** above using the best available information to date, Trinity Parkway Alternatives 3C and 4B in the Dallas Floodway would be compatible with the City of Dallas proposed Levee Remediation Plan.

[END OF CHAPTER 3]

CHAPTER 4

Enhanced Analysis of Practicability of the Reasonable Alternatives

CHAPTER 4

ENHANCED ANALYSIS OF PRACTICABILITY OF THE REASONABLE ALTERNATIVES

4.1 Evaluation of Practicability Under Executive Orders 11990 and 11988

4.1.1 Introduction

This section discusses the legislative and regulatory obligations of the FHWA and the USACE to conduct a practicable alternatives analysis with regard to floodplains and wetlands and provides the analysis required for the proposed Trinity Parkway project. As described in **Chapter 2 (Alternatives Considered)**, the analysis of alternatives in this LSS to the SDEIS for Trinity Parkway includes the No-Build and the following Build Alternatives:

- Alternative 2A – Irving/Riverfront (Industrial) Boulevard Elevated
- Alternative 2B – Irving/Riverfront (Industrial) Boulevard At-Grade
- Alternative 3C – Combined Parkway Riverside Further Modified
- Alternative 4B – Split Parkway Riverside Modified

All four Build Alternatives are expected to have effects on waters of the U.S., including wetlands, and therefore, would require a permit under Section 404 of the CWA and involve consideration of EO 11990 *Protection of Wetlands*. EO 11988 *Floodplain Management* also applies because Alternatives 3C and 4B are located primarily within the Dallas Floodway, as are minor portions of Alternatives 2A and 2B. Regulations implementing EO 11990 and EO 11988 require that for a selected project alternative, there is a demonstration that there is no “practicable alternative” to either the taking of wetlands or the occupying of floodplains.

LSS Section 4.1.2 provides a discussion of the legislative and regulatory standards, **LSS Section 4.1.3** provides the methodology used to evaluate practicability, and **LSS Sections 4.1.4** through **4.1.7** provide a practicability evaluation of each of the four Build Alternatives. Based on the FHWA guidance documents, “any alternative which does not meet the need for the project is not practicable” (FHWA, 1990). In the SDEIS, it was determined that the No-Build Alternative does not meet the need and purpose of the proposed action; therefore, the No-Build Alternative is excluded from the practicability discussion.

4.1.2 Legislative/Regulatory Context

4.1.2.1 Executive Order 11990 – Protection of Wetlands

EO 11990 *Protection of Wetlands* (42 Federal Register 26961, May 24, 1977) establishes a national policy "to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." Each Federal agency must minimize the destruction, loss, or degradation of wetlands, and preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. EO 11990 requires each federal agency, to the extent permitted by law, to avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds, "(1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use." The EO does not define "practicable," but provides the following explanation as to the relevant criteria for making a practicability determination: "In making this finding the head of the agency may take into account economic, environmental and other pertinent factors."

Section 6 of EO 11990 requires agencies to "issue or amend their procedures" to comply with the Order. Accordingly, the U.S. Department of Transportation (USDOT) Order 5660.1A issued its implementing policies, *Preservation of the Nation's Wetlands* (issued on August 24, 1978). The USDOT regulations are intended "to assure the protection, preservation, and enhancement of the nation's wetlands to the fullest extent practicable during the planning, construction, and operation of transportation facilities and projects." The USDOT policy states that economic, environmental and other factors may be taken into account in making a finding of no practicable alternative, and that "some additional cost alone will not necessarily render alternatives or minimization measures impractical, since additional cost would normally be recognized as necessary and justified to meet national wetland policy objectives." The USDOT regulations require that agencies with jurisdiction, the USACE in the case of Trinity Parkway, are to be consulted with for advice and assistance concerning any proposed wetland impacts.

In 1987, the FHWA addressed compliance with EO 11990 in the FHWA Technical Advisory T6640.8A *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (October 30, 1987). This FHWA guidance states that if "the preferred alternative is located in wetlands" then the "final EIS needs to contain the finding required by [EO] 11990 that there are no practicable alternatives to construction in wetlands."

In 2000, the FHWA issued a final rule that reiterates and further implements EO 11990 and USDOT Order 5660.1A (23 CFR Part 777 *Mitigation of Impacts to Wetlands and Natural Habitat*). This rule contains the following definition (23 CFR Section 777.2), "Practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics, in light of overall project purposes."

4.1.2.2 Section 404 of the Clean Water Act

In addition to EO 11990, Section 404 of the CWA authorizes the USACE to issue permits for the discharge of dredged or fill material into waters of the U.S., including wetlands. The USACE and the EPA rules address standards for protection of wetlands and permit criteria. Most pertinent here are the Section 404(b)(1) regulations promulgated by EPA that all permit applicants must satisfy. Under these regulations, the applicant must demonstrate that there is no "practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 CFR Section 230.10(a)). These regulations further provide: "The term practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose" (40 CFR Section 230.3(q)).

In addition to the Section 404(b)(1) regulations, the USACE applies its own regulations in consideration of Section 404 permit applications. Known as the "public interest review," the USACE's regulations provide for consideration and balancing of many criteria. As one of its general criteria for evaluating permit applications, the USACE states the following: "...The following general criteria will be considered in the evaluation of every application: (i) The relative extent of the public and private need for the proposed structure or work; (ii) Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work; and (iii) The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited" (33 CFR Section 320.4(a)(2)(i - iii)). Additional regulatory factors, not summarized here, are addressed in both the USACE and EPA Section 404 regulations.

4.1.2.3 Executive Order 11988 – Floodplain Management

EO 11988 *Floodplain Management* (42 Federal Regulation 26951, May 24, 1977) establishes a national policy "... to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative." EO 11988 states "if an agency has determined

to, or proposes to, conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse impacts and incompatible development in the floodplains. If the head of the agency finds that the only practicable alternative consistent with the law and with the policy set forth in this Order requires siting in a floodplain, the agency shall, prior to taking action, (i) design or modify its action in order to minimize potential harm to or within the floodplain, consistent with regulations issued in accord with Section 2(d) of this Order, and (ii) prepare and circulate a notice containing an explanation of why the action is proposed to be located in the floodplain.”

In 1979, the FHWA promulgated regulations in 23 CFR Part 650 – *Bridges, Structures, and Hydraulics*, Subpart A—*Location and Hydraulic Design of Encroachments on Flood Plains*. These regulations require that if a Build Alternative is recommended that substantially affects the base floodplain, an “Only Practicable Alternative Finding” would be required in the FEIS. These regulations contain the following definition, “*Practicable* shall mean capable of being done within reasonable natural, social, or economic constraints” (23 CFR Section 650.105(k)). The FHWA regulations cite five factors to be considered in location studies in floodplains, namely (i) risks associated with implementation of the action, (ii) impacts on natural and beneficial floodplain values, (iii) support of incompatible development, (iv) measures to minimize floodplain impacts, and (v) measures to restore and preserve the natural and beneficial floodplain values impacted by the action (23 CFR Section 650.111(c)(1-5)). Further, the FHWA regulations require a discussion of the practicability of alternatives to any significant encroachments to floodplains (meaning non-floodplain sites must be discussed), and a summary of the findings for both the floodplain and non-floodplain alternatives in the environmental documents.

The FHWA also discussed compliance with EO 11988 in the FHWA Technical Advisory T6640.8A *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (October 30, 1987). This FHWA guidance states that the DEIS needs to include an evaluation and discussion of practicable alternatives to the floodplain encroachment. Similar to the FHWA’s policy on complying with EO 11990, this Technical Advisory states that if the preferred alternative includes a floodplain encroachment having significant impacts, then the FEIS must include a finding that there are no practicable alternatives as required by 23 CFR [Part] 650, Subpart A.

The USACE policy regarding floodplains is included in its Public Interest Review section of 33 CFR Section 320.4 – *General Policies for Evaluating Permit Applications*, which includes the following provision regarding floodplain management, “In accordance with Executive Order 11988, the district engineer should avoid authorizing floodplain developments whenever practicable alternatives exist outside the floodplain. If there are no such practicable alternatives, the district engineer shall consider, as a means of mitigation, alternatives within the floodplain which will lessen any significant adverse impact to the floodplain.” (33 CFR Section 320.4(a)(l)(3)).

The USACE Engineering Regulation (ER) 1165-2-26 *Implementation of Executive Order 11988 on Flood Plain Management*, provides more information on EO 11988 as it relates to the USACE projects. The regulation states, “practicable is capable of being done within existing constraints. The test of what is practicable depends upon the situation and includes consideration of the pertinent factors, such as environment, cost or technology.” This ER also states, “The decision on whether a practicable alternative exists will be based on weighing the advantages and disadvantages of flood plain sites and non-flood plain sites.” The USACE guidance specifies that all reasonable factors should be taken into consideration when determining practicability. These factors include: conservation, economics, aesthetics, natural and beneficial values served by floodplains, impact of floods on human safety, locational advantage, the functional need for locating in the floodplain, historic values, various wildlife and habitat impacts, and, in general, the needs and welfare of the people.

In order to develop a framework of reasonable factors for the Trinity Parkway practicability analysis, the studies and information from the SDEIS were used as a basis for identifying issues discussed in this practicability analysis.

4.1.3 Methodology

Several aspects of EO 11990 and EO 11988 suggest they were intended for joint application (i.e., subject matter overlap, common terms, and the identical date of issuance). A 1978 CEQ Memorandum (CEQ, 1978) resolved this point by instructing federal agencies to jointly apply these Orders where wetland impacts occur within floodplains. Similarly, where two agencies such as the FHWA and USACE are cooperatively involved in a project with wetland and floodplain impacts, it also follows that both agencies’ policies implementing these Orders need to be addressed, as each agency must comply with its own regulations. Moreover, the FHWA’s wetlands policy adopted a definition of practicable that it intended to be consistent with the USACE wetlands regulations and the Section 404(b)(1) guidelines. The discussion in the following sections therefore combines the practicability discussions under both Orders as well as Section 404 of the CWA.

In order to facilitate consistent analyses between the agencies, the practicable Build Alternatives analysis for the Trinity Parkway is intended to encompass all of the Orders and agency regulations discussed in **LSS Section 4.1.2**. In addition, both the FHWA and USACE staffs have presented position papers outlining certain NEPA requirements as they apply to the Trinity Parkway. These documents are included in **LSS Appendix A**: (1) "U.S. Army Corps of Engineers, Fort Worth District, Position Paper on Implementation of Executive Order 11988 Floodplain Management and Practicable Alternatives Analysis for the Trinity Parkway Project" dated December 10, 2009, and (2) white paper provided by the FHWA on

May 19, 2009 titled "Trinity Parkway - FHWA Criteria for Project Approval." These guidance documents have helped inform the substance of the analysis.

Table 4-1 shows a master list of factors that have been considered in the Trinity Parkway practicability discussion. Central to each of the guidance documents is that while they identify factors, they do not prioritize factors. The practicability determination is made upon a weighing of the pertinent factors.

TABLE 4-1. EO 11990 AND EO 11988 PRACTICABILITY FACTORS

<p>Cost Constraints</p> <ul style="list-style-type: none"> 1) Economic impacts (short and long term) 2) Project costs (construction cost, ROW cost, operations and maintenance, environmental mitigation)
<p>Functional Constraints</p> <ul style="list-style-type: none"> 3) Consideration of existing technology 4) Consideration of logistics 5) Locational advantages (including any functional need for locating in the floodplain)
<p>Natural Constraints</p> <ul style="list-style-type: none"> 6) Natural and beneficial values served by floodplains (including measures to restore and preserve any natural and beneficial floodplain values impacted) 7) Waters of the U.S., including wetlands and water quality 8) Fish and wildlife habitat values (including threatened and endangered species) 9) Conservation
<p>Social Constraints</p> <ul style="list-style-type: none"> 10) Needs and welfare of the people (social impacts, transportation, relocations and displacements) 11) Air quality impacts 12) Traffic noise impacts 13) Impact of floods on human safety 14) Risks associated with implementation of the action 15) Incompatible development 16) Aesthetics 17) Historic values

The 17 factors listed in **Table 4-1** are discussed individually for each of the four Build Alternatives in the following **LSS Sections 4.1.4** (Alternative 2A) through **4.1.7** (Alternative 4B). Each section concludes with a brief discussion summarizing the factors that may be constraints affecting the practicability of each of the Build Alternatives.

4.1.4 Practicability of Alternative 2A - Irving/Riverfront (Industrial) Boulevard Elevated

As described in **Chapter 2**, Alternative 2A is distinguished from the other Build Alternatives by a proposed “double-deck” structure along Irving and Riverfront (Industrial) Boulevards and Lamar Street. The proposed tollway would be elevated above the existing streets, and the local streets would be reconstructed along the existing alignment at-grade. Alternative 2A would be approximately 8.83 miles in length, would occupy approximately 264 acres of ROW, and would cost approximately \$2.36 billion (2011 dollars) to construct. Major interchanges associated with Alternative 2A include:

- Direct connections at Stemmons Freeway (IH-35E)/SH-183 (northern terminus), US-175/SH-310 (southern terminus), Woodall Rodgers Freeway, and IH-45;
- Full diamond interchanges at Hampton/Inwood Road, Sylvan/Wycliff Avenue, Corinth Street, Martin Luther King Boulevard (MLK), and Lamar Street/SH-310; and
- Half diamond interchange at the Houston/Jefferson Street Viaducts.

See **LSS Section 2.3.2** for a detailed description, typical sections, layout map, and a computer generated rendering graphic of Alternative 2A.

4.1.4.1 Economic Impacts

Changes in existing land use to transportation use would have a negative impact on the local economy both in the short and long term if Alternative 2A is implemented. **SDEIS Section 4.6.2.2 (Local Economic Impacts)** provides an analysis of potential effects on the economy within the City of Dallas and Dallas County. In the short-term, Alternative 2A would have direct impacts during construction, particularly on remaining commercial buildings adjacent to the roadway. The impacts would primarily involve access and traffic circulation challenges over the construction period, which could negatively affect business activity.

In the long-term, direct impacts would occur where land and improvements are removed from the tax rolls. Alternative 2A would require the acquisition of land from 402 parcels, including 127 acres of privately owned land, and would displace 285 buildings. **Table 4-2** below provides a summary of the buildings displaced by type. **SDEIS Appendix C (Relocation Assistance Information)** provides a more detailed tabulation of the affected properties and buildings.

TABLE 4-2. ALTERNATIVE 2A ESTIMATED NUMBER AND DESCRIPTION OF DISPLACEMENTS

Type of Displacements	Number of Displacements
Residential Buildings	8
Commercial/ Industrial Buildings	272
Community / Recreation Centers	---
Pump Stations/ Levee Operations	1
Office Buildings	2
Police and Fire Station Buildings	---
Public Health Care Facilities	---
Schools	---
DISD Facility Buildings	2
Places of Worship	---
Cemeteries	---
Total	285

The estimates of tax base value loss and tax revenue loss due to ROW acquisition have been updated from the estimates provided in **SDEIS Section 4.6.2.2 (Local Economic Impacts)**. The information for Alternative 2A is presented below as **Table 4-3**. The total taxable value loss due to displacements and acquisition for Alternative 2A is estimated to be approximately \$379 million (2011 dollars), affecting tax collections for Dallas County, City of Dallas, and Dallas Independent School District (DISD).

TABLE 4-3. ALTERNATIVE 2A ESTIMATED TAX VALUE LOST

Entity	Percent Tax Rate (%)	Annual Tax Revenue Loss (2011 \$)	Total Tax Base (\$)	Percent Loss from Tax Base (%)
Dallas County	0.62377	\$2,364,092	\$155,514,580,710	0.2437%
City of Dallas	0.797	\$3,020,635	\$77,295,235,801	0.4903%
DISD	1.290347	\$4,890,423	\$74,661,069,947	0.5076%
Total Tax Value Lost: \$379,000,635				
Sources: Insight Research Corporation, 2011. 2011 tax rates and base property values, Dallas Central Appraisal District.				

Losses to the City tax base would accumulate for some time until redevelopment occurs. The property acquisitions tend to be of irregular shapes and sizes, resulting in surplus properties of similar irregular shapes and sizes scattered alongside the roadways. Due to the sizes and shapes, the process of assembly and reuse of the surplus parcels may take some time. The density or value of new buildings would have to be increased from current conditions in order to offset the net loss of 127 acres of mostly developed land that is privately owned.

According to information obtained from Dun & Bradstreet by the City of Dallas, Office of Economic Development, Research & Information Division (January 2010), the estimated number of businesses displaced by Alternative 2A as a result of the displacement of the commercial and industrial buildings shown in **Table 4-2** above would be expected to range from approximately 285 to 304 businesses. The number of businesses differs from the number of building displacements as some buildings are occupied by multiple businesses and some businesses occupy a complex comprised of multiple buildings. The approximate number of jobs affected by the business displacements would be expected to range from

6,437 to 6,640 jobs. Many of these jobs and businesses could be permanently lost if displaced businesses can not relocate within the same geographic area or decide for other reasons to cease operations and employees are unable to find similar work. In the short-term, there would be some local jobs created by construction and operation of the tollway.

4.1.4.2 Project Costs

Cost estimates for Alternative 2A are provided in **LSS Appendix D**, and include roadway construction, engineering, utility relocations, contingencies, ROW acquisition, environmental remediation and mitigation. The total estimated cost of Alternative 2A is \$2.36 billion (2011 dollars). The total cost negatively affects the practicability of this Build Alternative.

Construction Cost: Construction costs are high (\$1.76 billion of the \$2.36 billion total) because of the “double-deck” elevated structure proposed for this Build Alternative. The construction cost includes miscellaneous expenses such as traffic control (approximately \$109 million). Traffic control is substantial because construction occurs within a highly urbanized corridor. The construction cost also includes the costs for environmental mitigation, which is discussed separately below.

Environmental Mitigation Cost: The estimated cost for environmental mitigation is \$48.2 million. The cost includes vegetation enhancements (\$59,800), noise wall construction (\$2.8 million), mitigation for impacts to waters of the U.S. (\$58,800), and investigation and remediation for hazardous material sites (\$7.0 million). The highest portion of the cost is attributed to asbestos abatement (\$31.4 million) and demolition (\$6.8 million) of the numerous residential and commercial properties.

Right-of-Way and Utility Relocation Costs: Substantial property acquisition would be needed for Alternative 2A because the proposed tollway is wider than the existing road and because the alignment deviates from the existing centerlines of Irving and Riverfront (Industrial) Boulevards due to the differences in design speed and curvature. Additional property acquisition would also be needed at specific locations due to the influence of ramps and ancillary buildings. The estimated cost for ROW is approximately \$510.8 million. See **Table 4-2** for a list of the number and type of displacements associated with Alternative 2A. Utility relocation costs are approximately \$90.2 million. Notably, Alternative 2A requires relocation of approximately 2 miles of the new Oncor 345 kilovolts (kV) transmission line in the median of Irving Boulevard from Regal Row to Sylvan Avenue. See also **LSS Section 4.1.4.4 Consideration of Logistics**.

Operations and Maintenance Cost: O&M costs are not included in total project costs discussed above. These are separately reported in **LSS Appendix D**. The costs are estimated over a feasibility study 52-

year¹ period (2013 – 2065) based on standard NTTA O&M practices. The estimated O&M cost for Alternative 2A is \$78 million (2008 dollars). **LSS Appendix D** also reports the O&M costs escalated over a feasibility study 52-year period (2013 – 2065) based on standard practices for NTTA O&M. The escalated O&M costs are estimated at \$199 million assuming a 2.75 percent escalation rate over the 52-year period. These estimated O&M costs will be updated in the FEIS using current NTTA parameters.

4.1.4.3 Consideration of Existing Technology

In a practicability analysis, the purpose of evaluating existing technology is to identify any limitation that would influence the constructability, operations, or maintenance of a particular Build Alternative. Alternative 2A could utilize current engineering technology for roadway and related construction, and there appears to be no unusual or insurmountable technological issues with this Build Alternative. There is expected to be gradual adoption of new or improved technologies in the road building and toll collection fields over time. In general, any special technology for Alternative 2A is built into the cost estimates reported in **LSS Section 4.1.4.2** above.

4.1.4.4 Consideration of Logistics

This section identifies logistics issues related to the implementation of Alternative 2A, including impacts to project schedule and construction phasing. Information used in the discussion of logistics is taken from the **SDEIS Environmental Consequences Sections 4.5 (Relocation and Displacement Impacts), 4.17 (Hazardous/Regulated Materials), 4.18 (Utilities), and 4.20 (Temporary Impacts During Construction)**. In addition, implementation schedules have been developed for each Build Alternative in the LSS to assess time to completion. The estimated schedule for Alternative 2A is summarized below, with additional details provided in **LSS Appendix D**.

A major constraint influencing the practicability of Alternative 2A is the length of time from startup of engineering/construction activities until the Trinity Parkway could be fully open to traffic. This length of time is estimated to be unusually long (10 years) because of the large-scale, sequential tasks required for the construction process. The sequence of activities is depicted in **Table 4-4**, assuming a start date of January 1, 2013.

¹ The 52-year time frame is tied to the statutory limit of concession projects in Texas State law of 55 years, including project development. For cost estimating purposes, a three-year development/construction period was assumed, thus leaving 52 years for the O&M phase.

TABLE 4-4. ALTERNATIVE 2A LOGICAL SEQUENCE OF ACTIVITIES AFTER ANTICIPATED RECORD OF DECISION (ROD)

Activity	Begin Date	Completion Date
Preliminary Engineering ¹	First Quarter 2013	Third Quarter 2013
Select Consultant Team and Award ²	First Quarter 2013	Second Quarter 2013
Traffic and Revenue Studies ³	First Quarter 2013	Third Quarter 2013
Local, State and Federal Permitting ⁴	First Quarter 2013	First Quarter 2014
Surveys and Preliminary Environmental Work ⁵	Second Quarter 2013	Fourth Quarter 2015
ROW Acquisition and Relocations	First Quarter 2014	Fourth Quarter 2016
Municipal Setting Designation – Application /Approval	Second Quarter, 2015	Second Quarter, 2018
Property Cleanup, Asbestos Abatement and Demolition	Third Quarter 2015	Second Quarter 2018
Utility Relocations ⁶	Second Quarter 2015	Third Quarter 2018
Final Tollway Design ⁷	Third Quarter 2016	First Quarter 2018
Construction Bid and Award	Second Quarter 2018	Third Quarter 2018
Construction	Third Quarter 2018	First Quarter 2023
Notes: 1. 95 percent Schematic Update and Review by TxDOT and the FHWA, Prepare O&M Costs, Develop Market Valuation, Final Schematic Design Preparation and Approval, Interstate Access Study, Major Project Study, Design Criteria Manual 2. Includes ROW Surveyors and Acquisition Support, Environmental Phases I and II, Section Design and Review Engineers, Corridor Managers, Contract Administration, and Geotech 3. Includes Value Engineering Study 4. Includes Section 404 Permit 5. Includes Set/Recover Controls, Deed Research, Parcel Map Preparation 6. Includes design of utility relocations, bid, award and construct 7. Includes select and award consultant contracts		

As shown in **Table 4-4**, the Alternative 2A estimated time to completion is approximately 10 years, yielding an open-to-traffic date of First Quarter 2023. Alternative 2A would be constructed almost entirely on elevated structure and would only require approximately 0.3 million cubic yards (CY) of fill material to be furnished by the construction contractor. Activities that most influence the schedule for Alternative 2A include ROW acquisition and relocations, environmental investigations and demolition, utility relocations, and traffic and safety issues. These are discussed briefly below:

Right-of-way Acquisition and Relocations; Environmental Investigations and Demolition: As described in **LSS Section 4.1.4.1 Economic Impacts**, there would be numerous displacements and relocations associated with Alternative 2A. The number of impacted properties (approximately 402 total parcels affected and 285 building displacements) would affect the project schedule because of the time needed to survey the affected parcels and appraise/negotiate each acquisition. It is anticipated that some property owners in the ROW of Alternative 2A would oppose acquisition, leading to lengthy eminent domain

proceedings. The acquisitions also affect the schedule indirectly because there are several tasks that must follow sequentially, such as Environmental Site Assessments (ESAs; Phase 1 and Phase 2 ESAs as appropriate, including 34 high risk hazardous material sites), remediation, demolition, and utility relocations.

Utility Relocations: As listed in **Table 4-5**, the Alternative 2A corridor has extensive water lines, sanitary sewer lines, and high voltage electrical overhead transmission lines, which would need to be coordinated and cleared from the Alternative 2A ROW.

TABLE 4-5. ALTERNATIVE 2A POTENTIAL IMPACTS TO MAJOR UTILITIES

SDEIS Plate ID	Description of Major Utilities	Type of Impact
SDEIS Plate 3-11 Water Lines		
<i>Key to Symbols: R = Relocation (estimated linear feet)</i>		
W-1	48-inch concrete water line	R (1,600)
W-2	36-inch water line	R (500)
W-6	24-inch concrete water line	R (14,000)
W-7	20-inch cast-iron water line	R (9,100)
W-8	24-inch concrete water line	R (9,100)
W-9	66-inch concrete water line	R (6,000)
SDEIS Plate 3-12 Sanitary Sewer Lines		
<i>Key to Symbols: R = Relocation (estimated linear feet)</i>		
SS-3	60-inch sludge force main	R (6,000)
SS-4	12-inch concrete sanitary sewer	R (2,500)
SS-5	10-inch concrete sanitary sewer	R (2,000)
SS-6	12-inch sanitary sewer	R (1,200)
SDEIS Plate 3-13 Electrical - Overhead Transmission Lines		
<i>Key to Symbols: R = Relocation (estimated number of towers); A = Adjustment (estimated number of towers); kV = kilovolts (of electricity)</i>		
E-3	Oncor 138 kV trans. line	A (2)
E-5	Oncor 138 kV trans. line	R (1)
E-7	Oncor trans. line	R (1)
E-8	Oncor 138 kV trans. line	A (2)
E-9	Oncor trans. Lines (4)	R (2); A (6)
-	Oncor 345 kV (Irving Boulevard)	R(20) – 2 miles

As shown in **Table 4-5**, relocations total approximately 40,300 feet of major water lines, as well as 11,700 feet of sanitary sewers. No major natural gas lines, electrical substations, storm drainage pump stations, storm water outfalls, or storage sumps would be impacted by Alternative 2A. The major impact on logistics and schedule is believed to be the electric transmission lines in the corridor, particularly the 345 kV line listed in **Table 4-5**.

The Oncor 345 kV transmission line (completed in 2010) is located in the median of Irving Boulevard from Regal Row to Sylvan Avenue, and includes provision for a 138 kV line hung below the 345 kV conductors on the same poles. The pole line is positioned in the median of Irving Boulevard (rather than along either street ROW line) to provide sufficient horizontal clearance to properties and buildings located along both sides of the street. Both 138 kV and 345 kV lines would have to be rebuilt (new taller structures and

associated foundations) and possibly relocated as part of the Alternative 2A construction. The 345 kV line is particularly important because it provides an electrical source to two major switching stations serving the CBD and adjacent neighborhoods, portions of Oak Cliff, West Dallas, and the Stemmons Corridor, and also provides bulk power flow for the Texas electrical transmission grid.

The 345 kV electric transmission line adds to the logistics challenges of Alternative 2A because an alternative alignment analysis may be necessary and a replacement line must be fully installed in the new position, requiring acquisitions, demolitions, utility relocations, and partial road construction as pre-requisites. Also, once fully installed, the switch-over from the old line to the new line must be scheduled during periods of low electrical demand. For example, it is usual practice that no outages will be allowed during peak load season (April 1 - October 15). The Electric Reliability Council of Texas (ERCOT) has final authority over outage scheduling.

Traffic and Safety: Irving and Riverfront (Industrial) Boulevards are highly utilized roadways. Construction activities would result in traffic disruption in the project area. Construction would also temporarily affect local streets providing access to businesses and residents in the project area. In addition to temporary traffic disruptions (closures and detours), construction activity could contribute to periods of localized congestion. Safety and security issues may include temporary disruption of access for emergency and law enforcement vehicles. Heavy vehicle movements, possible hazardous waste excavation and transport, and construction site activity would also create potential safety concerns.

4.1.4.5 Locational Advantages (including any functional need for locating in the floodplain)

The obvious locational advantage for Alternative 2A is that it would avoid significant encroachment in the Dallas Floodway and would utilize existing transportation corridors. However, due to the density of the transportation network in the area, this is also a disadvantage.

Alternative 2A does not fully meet the project's need and purpose because it does not provide compatibility with local land use plans. As stated in **LSS Section 1.2**, one of the purposes of the proposed project is to provide compatibility with local development plans, and the location of Alternative 2A is inconsistent with these plans and the City's vision of the Trinity River Corridor to be the "front door" to the Dallas CBD (see **LSS Section 4.1.4.10 Needs and Welfare of the People**). The location of Alternative 2A (primarily outside the floodway) may also restrict development in some areas of the corridor because of its influence on the size and depth of developable land remaining in the corridor. For instance, parts of the northern segment would have Stemmons Freeway (IH-35E) and the Trinity Parkway running in close proximity for some distance. The influence in the Mixmaster area would be more pronounced, with IH-35E/IH-30 and the Trinity Parkway located directly adjacent to each other creating a

highway corridor almost 1,000 feet wide for a distance of nearly one mile between the Dallas CBD and the east levee.

Another disadvantage of the proposed location of Alternative 2A occurs in the area south of the Dallas CBD at the connections to South RL Thornton Freeway (IH-35E) and the Houston-Jefferson couplet. As shown in **Table 4-6**, Alternative 2A would have only a half diamond connection to Houston-Jefferson Street and no direct connection to South RL Thornton Freeway. The lack of connectivity to South RL Thornton Freeway (IH-35E) would be a shortcoming, meaning that commuters on South RL Thornton Freeway could not connect to Trinity Parkway and bypass the downtown Mixmaster interchange. This lack of a connection would be particularly critical in the event of traffic incidents in the Mixmaster and negatively affects the practicability of this alternative.

TABLE 4-6. ALTERNATIVE 2A INTERCHANGE ACCESS

Interchange Location	Type of Interchange
Stemmons Freeway (IH-35E)/SH-183	Direct Connection via Ramps
Commonwealth Drive	None
Hampton/Inwood Road	Full Diamond Interchange
Wycliff/Sylvan Avenue	Full Diamond Interchange
Continental Avenue	None
Woodall Rodgers Freeway	Direct Conn's SB-EB, WB-NB, NB-EB, and WB-SB
Commerce Street	None
Houston/Jefferson Street	Half Diamond Interchange
South RL Thornton Freeway (IH-35E)	None
Corinth Street	Full Diamond Interchange
MLK	Full Diamond Interchange
IH-45	Direct Connection via ramps
Lamar Street	None
SH-310	Half Diamond Interchange
US-175	Direct Mainlane Connection

SDEIS Section 2.3.12 (Access to IH-35E, US 175, and Corinth Street) lists various Dallas Council and community actions dating back to 1997 calling for provision of access from South RL Thornton Freeway (IH-35E) to Trinity Parkway. This access cannot be provided by Alternative 2A. The South RL Thornton Freeway interchange poses design and operational challenges, and it was determined that connecting ramps were not feasible for Alternatives 2A because of geometric constraints.

4.1.4.6 Natural and Beneficial Values Served by Floodplains

Natural and beneficial floodplain values include fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge (23 CFR 650, Subpart A). The Dallas Floodway is not utilized for forestry and agriculture, and Alternative 2A would have no impact on these types of values that are

sometimes associated with floodplains. Potential impacts of Alternative 2A on remaining floodplain values are discussed below.

Fish and wildlife diversity and density within floodplains strongly correlate with aquatic habitat and vegetation diversity considered along with the type, degree, and frequency of disturbances. Therefore, aquatic habitat and vegetation impacts are used as an indicator of potential impacts to fish and wildlife. **SDEIS Section 3.4.3 (Vegetation within the Study Area)** provides a breakdown of land cover types in the Trinity Parkway Study Area. The total study area is 7,036 acres, of which urban areas comprise 56 percent (3,907 acres), maintained grass areas comprise 31 percent (2,198 acres), bottomland and riparian forests comprise 4 percent (290 acres), and water features or aquatic habitats comprise 9 percent of the area (641 acres). The “maintained grass” acreage primarily comprises the Dallas Floodway, a facility which has been almost entirely re-graded and realigned from its former natural floodplain condition, and which is subject to periodic mowing by the City of Dallas. **Table 4-7** below shows a summary of vegetation impacts for Alternative 2A extracted from **SDEIS Section 4.9.2.2 (Vegetation Impacts)**.

TABLE 4-7. ALTERNATIVE 2A POTENTIAL IMPACTS TO VEGETATION

Type of Vegetation	Impacts (acres)
Woodland (Non-Wetland):	
Bottomland Hardwoods	4.6
Riparian Forest	---
Aquatic Habitats*:	
Waters of the U.S., Including Wetlands (acres)	4.3
Other (acres)	---
Maintained Grass Areas (acres)	
Total Undeveloped Areas Impacts (acres)	20.7
Notes:	
1. All quantities are shown in acres. Calculated areas are estimates only.	
2. Potential impacts to waters of the U.S., including wetlands, may occur from bridge column construction and can be addressed during final design.	
3. --- = No impact anticipated for this alternative.	
* = Includes impacts associated with drainage sumps, open water, and river channel, most would be spanned by bridges.	

Alternative 2A avoids the Dallas Floodway area except for a small segment in the southern part of the corridor downstream of Corinth Street. In this segment, there would be some impacts to the floodplain, including removal of habitat in the areas of hardwood forest (4.6 acres) and removal of maintained grass areas (11.8 acres). For the most part, Alternative 2A occupies developed land, with crossings of grassed and open water areas at manmade sumps in the corridor. Alternative 2A would not be expected to cause substantial impacts on floodplain values related to fish, wildlife movement, available open space, opportunities for scientific study, outdoor recreation potential, or groundwater recharge. Flooding conditions are expected to be unaffected because of the use of bridge crossings. See **SDEIS Section 4.13 (Floodplain Impacts)**.

4.1.4.7 Waters of the U.S., including Wetlands and Water Quality

An overview of the wetlands and other jurisdictional waters (e.g., rivers, creeks, and sumps) within the Study Area is presented in the **SDEIS Section 3.4.6 (Waters of the U.S., including Wetlands)**. The effect of Alternative 2A on wetlands is presented in **SDEIS Section 4.8 (Impacts to Waters of the U.S., including Wetlands)**. The SDEIS included a jurisdictional determination of waters of the U.S., including wetlands within the Dallas Floodway, which was approved by the USACE on June 19, 2006. In March 2011, a supplemental jurisdictional determination was submitted to the USACE requesting a reverification and time extension of the approval (Note: the delineated area for the Historic River Channel, which is currently utilized as sumps for storm water collection, increased slightly because the 2011 jurisdictional determination included drainage culverts connecting the sumps that were not included in the 2006 jurisdictional determination, resulting in a minor increase in the impacted acreage from the SDEIS). The USACE determined that there has not been a significant change in the location of waters of the U.S. from the date of the original approval and that an extension of the approved jurisdictional determination is in the public interest (see **LSS Appendix A**). As such, the approved jurisdictional determination is valid until March 24, 2016. The jurisdictional determination for the Dallas Floodway (USACE approved 2006 and 2011) was intended to provide a baseline for potential impacts to waters of the U.S. for the numerous Trinity River Corridor projects and was not limited to the scope of the proposed Trinity Parkway project. It should be noted that areas outside the geographic scope of the approved jurisdictional determination near the northern and southern termini of the Trinity Parkway project and along Irving and Riverfront (Industrial) Boulevards are occupied by urban development with low opportunity for the presence of aquatic features. However, aquatic features beyond the geographic scope of the approved jurisdictional determination were mapped in a manner consistent with USACE procedures for conducting jurisdictional determinations during the initial field investigations for the Trinity Parkway project. **Table 4-8** shows impact data for Alternative 2A.

TABLE 4-8. ALTERNATIVE 2A POTENTIAL IMPACTS TO WATERS OF THE U.S., INCLUDING WETLANDS

Emergent Wetlands	Forested Wetlands	Open Water - Intermittent*	Historic Trinity River Channel*	Intermittent Stream	Trinity River*	Total
--	1.38	--	2.83	0.13	--	4.34

Notes:

1. All quantities shown in acres. Calculated areas are estimates only. Impacts are expected from fill due to roadway construction.
 2. Expected impacts are based on the jurisdictional determination approved by the USACE on March 24, 2011 (File # SWF-2011-00049).
 3. -- = No impact anticipated for this alternative.
 4. The Historic Trinity River Channel refers to old meanders of the Elm Fork and West Fork Trinity River located outside the Dallas Floodway that consist of open channels with scattered tree growth surrounded by urban development. These old meanders are currently utilized as sumps to collect local storm water runoff that eventually drains into the Dallas Floodway.
- * Potential impacts to waters of the U.S., including wetlands, may occur from bridge column construction and can be addressed, minimized or possibly eliminated during final design.

As shown in **Table 4-8**, Alternative 2A would impact 4.34 acres of waters of the U.S. **SDEIS Section 7.4 (Measures to Minimize Impacts to Waters of the U.S., Including Wetlands)** provides further discussion of measures to avoid, minimize, or mitigate such impacts. A preliminary Section 404 mitigation plan is presented in **SDEIS Appendix J**. A more detailed review of impacts to waters of the U.S., including wetlands, and a refined mitigation plan for unavoidable impacts will be provided in the FEIS once a preferred alternative has been recommended. The NCTCOG entered into an agreement with the USACE in October 2008 to fund a position to expedite Section 404 permitting for regional projects, with a priority focus on regionally significant transportation projects (NCTCOG, 2009b). This agreement allowed the USACE to assign a dedicated staff person to expedite Section 404 permits, and the USACE legislative authority to enter into these agreements was recently extended through 2016.

The typical water quality concerns associated with construction activities are erosion and sedimentation. The potential for erosion and sedimentation is accelerated when vegetation is cleared in preparation for the construction of the roadway, as exposed ground is susceptible to erosion. Alternative 2A requires the crossing of several water bodies within the study area, mostly comprised of drainage sumps and tributaries leading to the Trinity River (see **LSS Plate 4-21**). The potential erosion and sedimentation are dependent upon local conditions (i.e., soil type, slope, and vegetation) and construction practices (see **SDEIS Sections 3.4.3 Vegetation within the Study Area; 3.5.3.3 Soils; 4.11 Topography, Geology, and Soils; 4.12 Water Quality Impacts; and 4.20 Temporary Impacts During Construction**). Bridge construction also has the potential to create soil erosion, which could affect sedimentation and turbidity of water. Eroded sediment may then redeposit downstream, resulting in the disruption of the aquatic ecosystem and water quality degradation. In addition, increased pavement area and vehicular traffic over the life of the project have the potential to discharge storm water pollutants to the water bodies and wetlands that could negatively impact the quality of surface water. Water quality impacts of construction would be reduced to acceptable levels by compliance with the regulatory standards of applicable construction stormwater management permits, and water quality related impacts of the paved roadway would also be managed in accordance with appropriate permit terms specified by regulatory agencies. Detailed discussions of federal and state permits related to the abatement of water quality impacts are found in **SDEIS Section 4.12 (Water Quality Impacts)** and **Section 7.2 (Measures to Minimize Impacts to Water Quality)**. Additional discussions in the SDEIS regarding regulatory controls of water quality impacts are included in **SDEIS Section 4.13.1 (CDC Process – Trinity River Main Stem), Section 7.4 (Measures to Minimize Impacts to Waters of the U.S., Including Wetlands), Section 7.5 (Measures to Minimize Impacts to Floodplains), Appendix H (Preliminary Section 404(b)(1) Guidelines Evaluation), and Appendix I (TCEQ Section 401 Water Quality Certification Questionnaire)**.

4.1.4.8 Fish and Wildlife Habitat Values

SDEIS Section 4.9 (Water Body Modification; Vegetation and Wildlife Impacts) presents a quantitative assessment of impacts to woodlands, aquatics, and grasslands, as well as threatened and endangered species. Much of the discussion centers on impacts to vegetation with riparian woodlands and aquatic habitat identified as “highest quality wildlife habitat.” As shown in **Table 4-7** in **LSS Section 4.1.4.6**, 20.7 acres of undeveloped areas, consisting mostly of maintained grass areas, would be impacted by Alternative 2A. No impacts on fish, agriculture, aquaculture, or forestry resources are expected from Alternative 2A.

As reported in **SDEIS Section 4.9.2.4 (Threatened and Endangered Species)**, no recent occurrences of federally or state listed threatened or endangered species have been identified in the project study area during field surveys. This was also confirmed through informal coordination with the U.S. Fish and Wildlife Service (USFWS), a search of the Natural Diversity Database (NDD) maintained by the Texas Parks and Wildlife Department (TPWD, 2007), and correspondence with other organizations considered to have special expertise related to wildlife and their habitat. In March 2009, the USFWS concurred that the proposed action is not likely to adversely affect any federally listed species.

4.1.4.9 Conservation

SDEIS Section 4.19 (Energy Requirements) and **Section 4.22 (Irreversible and Irrecoverable Commitments of Resources)** include general discussions regarding transportation-related energy use and the commitment of resources. For the implementation of Alternative 2A, energy, fuel, and materials consumption would occur during construction and operation. The highway construction materials that would be expended are not in short supply and therein construction would not adversely affect continued availability of similar resources. This alternative would operate as an all-electronic toll collection facility, which provides operational efficiencies to reduce stop and go traffic conditions. This would result in lower fuel/energy consumption. When correlating the measures of effectiveness in **SDEIS Section 4.4 (Transportation Impacts)** to energy use, managing congestion delay and vehicle hours traveled means lower fuel and energy use. The energy requirements associated with Alternative 2A are not considered functional constraints to practicability.

4.1.4.10 Needs and Welfare of the People

The Trinity Parkway is a high profile project that, for about the past 15 years, has involved numerous stakeholders and individuals along the corridor in the project development process. **Chapter 1** of this LSS summarizes this long process of project planning and evaluation. Effects of the proposed project on

the local community could be a major factor in determining practicability of Alternative 2A. Information used in the analysis of the impact of Alternative 2A on the needs and welfare of the people is presented in **SDEIS Section 4.1 (Land Use Impacts), Section 4.2 (Coordinated Planning and Design), Section 4.3 (Social Impacts), Section 4.4 (Transportation Impacts), Section 4.5 (Relocations and Displacement Impacts), Section 4.17 (Hazardous/Regulated Materials), and Section 4.20 (Temporary Impacts During Construction)**. Public comments on the SDEIS are also relevant to this discussion.

Social Impacts: **Table 4-2 in LSS Section 4.1.4.1** provides a summary of the residences, commercial buildings, and public facilities that would be relocated under Alternative 2A (a total of 285), and **SDEIS Appendix C (Relocation Assistance Information)** provides a detailed listing of the same. The numerous relocations have direct impacts to the neighborhoods and neighborhood districts in the project corridor. Of the 285 relocations, there would be 68 buildings in the Lower Stemmons Neighborhood District, 60 in the Design District, 41 in the Market/Technology Center area, 25 in the Trinity Industrial District, 25 in The Cedars, 18 in the Brookhollow Industrial Park, and 48 in the South Dallas Neighborhood District. In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, relocation assistance would be provided to any person, business, farm, or non-profit organization displaced as a result of the acquisition of real property for public use (see **SDEIS Appendix C**). Nevertheless, the acquisition of these properties could have adverse social consequences in the local community beyond a typical urban roadway project. For instance, the Dallas Design District is a collection of home interior businesses, which collectively advertise their goods and services as a destination shopping experience. Although the displaced businesses would receive appropriate relocation compensation, the remaining district may be impacted substantially. According to information obtained from Dun & Bradstreet by the City of Dallas, Office of Economic Development, Research & Information Division (January 2010), the total number of businesses displaced by Alternative 2A would range from approximately 285 to 304. These businesses provide employment for approximately 6,437 to 6,640 people who could lose their jobs permanently if displaced businesses are unable to relocate successfully.

Minority and low-income populations exist in the project area, and Alternative 2A has been evaluated for compliance with the EO 12898, FHWA Order 6640.23, and Title VI of the Civil Rights Act of 1964, as amended (see **SDEIS Section 4.3.3 Environmental Justice Considerations**). Beneficial and adverse impacts to minority and low-income populations have been identified, along with potential mitigation strategies, and there appear to be no disproportionately high or adverse impacts; therefore, Alternative 2A is considered to be consistent with the EO 12898 and FHWA Order 6640.23. Alternative 2A is similarly consistent with Title VI in that there is no evidence of discriminatory intent or effect.

General Public Opinion: Acceptance of a Riverfront (Industrial) Boulevard route by the City is not assured. **SDEIS Section 1.3 (Project History)** describes two well-publicized citywide elections in which Dallas citizens expressed support for a Trinity Parkway location within the Dallas Floodway:

- (i) May 2, 1998 - Dallas voters approved the issuance of General Obligation Bonds including \$84 million for the Trinity Parkway, a reliever route within the Dallas Floodway levee system (City of Dallas, 1998), and
- (ii) November 6, 2007 - Dallas voters rejected a petition calling for prohibition of construction, maintenance, or improvement of certain roadways (i.e. Trinity Parkway) within the Trinity River levees from Westmoreland Road to IH-45.

Alternative 2A, located primarily along Riverfront (Industrial) Boulevard and Irving Boulevard, is inconsistent with the majority of voters' opinions expressed in these elections that supported a Trinity Parkway location within the Dallas Floodway.

Stakeholder Opinions: Strong opposition to Alternative 2A was communicated during the official comment period for the SDEIS from March 20, 2009 to June 30, 2009. There were 165 statements submitted by the general public expressing concern that Alternative 2A would have "devastating impacts" (or similar) to the established businesses and residential communities in the area. Four council members and the Mayor submitted public comments opposed to Alternative 2A. Eight business associations, which represent hundreds of local businesses, also submitted comments in opposition to Alternative 2A. These local groups included Dallas Regional Chamber Transportation Council, Dallas Black Chamber of Commerce, DOWNTOWNDALLAS, Stemmons Corridor Business Association, The Real Estate Council, Trinity Improvement Association, Mixmaster Business Association, and the West Dallas Chamber of Commerce. Comments received from agencies and the public during the public comment period for the SDEIS will be included in the FEIS, along with responses to the comments received.

Key issues cited by the public as adverse impacts include: a high number of displacements and relocations, disruption of established businesses along Irving and Riverfront (Industrial) Boulevards, adverse impacts to community resources, and increased traffic on adjacent streets.

Future Land Use Plans: The Dallas City Council approved the renaming of Industrial Boulevard to "Riverfront Boulevard" in November 2008 and local business owners consider this a positive influence to support mixed-use redevelopment in the area. A section of Riverfront (Industrial) Boulevard from Cadiz Street to Continental Avenue (approximately 1.5 miles) is already under design by Dallas County, in cooperation with the City of Dallas, for reconstruction as a landscaped, bicycle and pedestrian-friendly parkway that will accommodate future streetcars. There is also on-going private development in the

corridor (although the pace may have slowed due to national economic conditions.) As reported in **SDEIS Section 3.1.1.1 (Local Land Use Plans/Policies)**, tax-increment financing (TIF) districts have been created for the Cedars and Design Districts to promote mixed-use redevelopment. Development includes commercial infill development in the Design District, as well as infill of residential lofts and similar development along the corridor. These new developments may increase the cost and complexity of needed acquisitions for Alternative 2A over time.

The City of Dallas has widely publicized its “Trinity River Corridor Project,” which is actually the name for a series of proposed projects that are along the main stem and Elm Forks of the Trinity River in Dallas. Since 2003, the City has planned for Trinity Parkway to have a combined parkway riverside layout, balancing the Trinity Parkway embankments with proposed excavation of lakes in the Dallas Floodway as part of the City’s Trinity River Corridor BVP (City of Dallas, 2003). Since 2007, the design work of the City’s Trinity Lakes Consultant Team has been based on this plan, impacting multiple design decisions such as physical layout of the lakes, trails, public spaces and access points, the hydraulic modeling, the earthworks plan, etc. While it is acknowledged that the City’s BVP must still be evaluated by the USACE and found to be environmentally acceptable and technically sound before the plan can be implemented, Alternative 2A would be inconsistent with current plans and therefore would not achieve one of the purposes of the project, which is to provide compatibility with local development plans.

Impacts on the Stemmons Deed Precedent. There has been a longstanding intent in Dallas to include a major roadway in the Dallas Floodway. Most notably, the 1972 donation of 930 acres of Dallas Floodway land to the City by Industrial Properties included the following language in the escrow agreement: “It is the desire of Industrial [Properties] and of the City that all such lands situated within the floodway as above described be made available for parks, open space, recreational, and transportation facilities as set out below,” ... “All of said lands so acquired... shall be used for parks, open space, recreational, transportation facilities, including roadways on and adjacent to the levees, and such uses as are necessarily incident to the navigation channel, and all of which uses shall be generally consistent with the concept of the Coordinated Plan For Open Space Development Of The Trinity River System of the Dallas Park Board dated December 9, 1969 and adopted by the Park Board and approved by the City Council on March 9, 1970.” (City of Dallas Park Board Resolution 72-0126, dated January 10, 1972) Further, the 1974 purchase of remaining lands in the Dallas Floodway by the City included this same provision regarding transportation facilities. Alternative 2A is not consistent with these historic and ongoing community intentions.

4.1.4.11 Air Quality Impacts

A traffic air quality analysis was performed for the proposed project to measure projected carbon monoxide (CO) levels as an indicator to determine whether local air quality would be adversely affected. As discussed in the **SDEIS Section 4.14 (Air Quality Impacts)**, for Alternative 2A the percentages of projected 2025 and 2030 concentrations for 1-hour and 8-hour CO would be below the National Ambient Air Quality Standards (NAAQS) threshold. Local concentrations of CO are not expected to exceed national standards at any time. A quantitative Mobile Source Air Toxics (MSATs) analysis was also performed for the proposed project (see **SDEIS Section 4.14.5 Mobile Source Air Toxics**). MSATs are expected to decrease over time due to the EPA's vehicle and fuel regulations. Based upon this assessment, air quality impacts do not appear to be a major practicability constraint for Alternative 2A.

This project is located within Dallas County, which is part of the EPA's designated nine-county serious² nonattainment area for the 2007 eight-hour ozone standard; therefore, the transportation conformity rule applies. The proposed project is included in the area's financially constrained long-range MTP (*Mobility 2035*) and the 2011-2014 TIP, as amended. The U.S. Department of Transportation (USDOT) (FHWA/Federal Transit Administration [FTA]) found the MTP and the TIP to conform to the SIP on July 14, 2011. Analyses for the subsequent FEIS will be conducted based on the current MTP at that time. During the FEIS preparation process and prior to issuance of a ROD by the FHWA, appropriate measures would be taken to ensure that the proposed project is consistent with the conforming MTP and the TIP/STIP.

4.1.4.12 Traffic Noise Impacts

As discussed in the **SDEIS Section 4.15 (Noise Impacts)**, existing and predicted traffic noise levels were modeled at receiver locations that represent the land use activity areas adjacent to Alternative 2A that may be impacted by traffic noise and may potentially benefit from feasible and reasonable noise abatement. The following paragraphs describe the impacts:

The southern terminus is an existing heavy traffic area with south US-75 connecting with US-175. Land use is single-family residential with a few retail/commercial facilities. Alternative 2A begins dropping from an elevated structure near the Lamar Street and Starks Avenue intersection to go under the US-175 bridge,

² On August 9, 2010, the EPA proposed to determine that the nine-county moderate eight-hour ozone non-attainment area for DFW did not attain the 1997 eight-hour ozone NAAQS by the June 15, 2010 attainment deadline set forth in the CAA and CFR for moderate non-attainment areas (75 FR 152, August 9, 2010) under Title 40 CFR Part 81. On January 19, 2011, the EPA reclassified the nine-county DFW non-attainment area from moderate to serious non-attainment for the 2007 eight-hour ozone standard.

merging with US-175 at the southern end of the project. In this area, 106 residences would have noise levels that exceed Noise Abatement Criteria (NAC) criteria in the design year (2030).

The northern terminus is an existing heavy traffic area at the IH-35E and SH-183 split. Land use is retail/commercial with a residential neighborhood known as Arlington Park located approximately 300 feet east of the existing freeways. In this area, Alternative 2A provides connecting ramps to the existing freeway system. Nineteen residences and one small playground/park (Sleepy Hollow Park) near the northern terminus would have noise levels that exceed NAC criteria in the design year.

In the central corridor from the Lamar Street and Starks Avenue intersection, Alternative 2A follows Lamar Street, Riverfront (Industrial) Boulevard, and Irving Boulevard toward the northern terminus. Land use is primarily retail/commercial/industrial along the corridor with the exception of a residential neighborhood located adjacent to Lamar Street between MLK and Starks Avenue. There are no predicted noise impacts to the retail/commercial/industrial areas adjacent to Alternatives 2A. A portion of the residential neighborhood (between IH-45 and Hatcher Street) is designated as the Colonial Hill Historic District. In this area, 83 residences would have noise levels that exceed NAC criteria in the design year. These impacts primarily occur along Lamar Street between MLK and Starks Avenue.

A noise wall analysis was performed for the impacted areas. Based on the analysis, noise walls were determined to be both feasible and reasonable only at the residential neighborhoods located at the southern terminus of the project. Noise walls in this area would reduce noise levels by at least 5 decibels (dBA) at impacted receivers. Noise walls to mitigate impacts to the areas further north along Lamar Street between MLK and Starks Avenue and at the northern terminus would not be reasonable and feasible. **SDEIS Plate 4-33** shows the noise impacted areas. The noise analysis and discussion regarding noise impacts and feasible and reasonable abatement measures will be updated in the FEIS in accordance with TxDOT's (FHWA approved) April 2011 Guidelines for Analysis and Abatement of Roadway Traffic Noise.

4.1.4.13 Impact of Floods on Human Safety

The subject of flooding is addressed in **SDEIS Section 4.13 (Floodplain Impacts)**. Alternative 2A would be located generally landside of the Dallas Floodway levees on land protected from river flooding by the levees, and protected from localized flooding by a system of sumps and pump stations which are part of the Dallas Flood Control District. The floodplain in the project area includes the floodway zone within the levees, as well as designated floodplain or floodway acreage not within the levees. **Table 4-9** summarizes the floodplain impacts of Alternative 2A.

TABLE 4-9. ALTERNATIVE 2A POTENTIAL IMPACTS TO FLOODPLAINS FROM FEMA FLOOD MAPPING

FEMA Flood Zone	Floodplain Impact (Acres)
Zone X (Levee Protected)	196
Zone AE (Floodway) Trinity River Main Stem	27
Zone AE (Floodway) Developed Areas	9
Zone AE (100-year) Developed Areas	19
Note: Calculated areas are estimates only.	
Source: FEMA, 2007 a-i, Preliminary Digital Flood Insurance Rate Map - Dallas County, Texas and Incorporated Areas.	

For Alternative 2A, the Zone X acreage reported in the table consists of lands protected from Trinity River floodwaters by the Dallas Floodway levees. In this case, FEMA defines Zone X (shaded) as "areas protected by levees from 100-year flood" (FEMA, 2007a-i). Such areas are not Special Flood Hazard Areas (inundated by 100-year flood). The various Zone AE acreages (55 total acres) reported in the table are sump and watercourse crossings, and a portion of the Dallas Floodway land crossed in the southern segment of the study area. These areas are designated by FEMA as Special Flood Hazard Areas. All of these crossings are elevated bridge crossings, and will be designed for no loss of floodwater conveyance or storage.

The effective Corridor Development Certificate (CDC) hydraulic models for the Main Stem of the Trinity River, which are used to evaluate project impacts for compliance with the 1988 USACE ROD criteria (USACE, 1988) and CDC requirements (NCTCOG, 2009a), reflect the federally authorized DFE project (Cadillac Heights and Lamar Levees) in the reach of the Trinity River downstream of the Atchison, Topeka, and Santa Fe (AT&SF) Railroad bridge. Alternative 2A would be located within the levee protected area on the landside of the existing Dallas Floodway east levee and the proposed Lamar Levee, except for elevated bridge crossings in the southern segment that would be designed to avoid increases in flood elevations and loss of valley storage. Therefore, it has been determined that Alternative 2A meets the 1988 ROD hydrologic and hydraulic criteria.

4.1.4.14 Risks Associated with Implementation of the Action

As an introductory comment, the "risks" discussed in this section are distinct from flooding risks discussed in the previous section. Rather this section focuses on levee stability issues in relation to the alternative under consideration. In this context, there is an inherent geotechnical "risk" of a levee failure, based on the physical layout of the levee, the materials and care used in its construction, the degree of maintenance, the underlying soil strata, the consequences of overtopping, etc. A risk analysis for the levees should answer whether these conditions would be unchanged, made worse, or made better in segments where a proposed Build Alternative comes in contact with a levee. Alternative 2A, as presented in the SDEIS, would cross the very south end of the Dallas Floodway east levee while crossing over the DART and AT&SF bridges. However, a design refinement developed since the publication of the

SDEIS for avoidance of historic resources (see **LSS Chapters 2 and 5**), which has received concurrence for implementation from the partner agencies, also provides a benefit of avoiding contact with the levee at this location. As a result, there is no discussion of risk associated with this Build Alternative.

4.1.4.15 Incompatible Development

The potential for induced development resulting from Trinity Parkway is presented in **SDEIS Section 4.24.1 (Indirect Impacts)**. The analysis identifies areas where natural, governmental, or other constraints would make future change in land use unlikely. **SDEIS Plate 4-38** is a “constraints map” depicting areas that would be unsuitable or unlikely for future development or redevelopment activities. The constraints map identifies the Dallas Floodway in its entirety and the related landside sump areas as being unsuitable or unlikely for development. The Indirect Impacts analysis is based on the presumption that any 100-year floodplain areas in the study area (including areas in the Dallas Floodway and the surrounding levee-protected lands) would be unavailable for development. Generally, the majority of the wetlands in the project area are within the Dallas Floodway and would unlikely be developed.

The protection of the Dallas Floodway and the related sump areas from development would be expected to be stringent because of the regulatory interest in the federal flood protection project. In the Dallas Floodway, the City ownership generally extends at least to the landside levee toes on both sides of the Dallas Floodway, and the regulatory interest may extend further landside based on actual public ownership or other development constraints, including building setbacks to assure levee stability. In the sump areas, the City’s land ownership extends at least from top of bank to top of bank. Accordingly, there will be no induced incompatible development in floodplains or wetlands in the project area due to the implementation of Alternative 2A.

4.1.4.16 Aesthetics

LSS Chapter 2 (Alternatives Considered) describes the routes and configurations of Alternative 2A, and **LSS Plates 2-2A and 2-2B** present engineering plans, roadway profiles and typical sections of Alternative 2A. **SDEIS Section 4.16 (Visual Impact Analysis)** provides a visual analysis for Alternative 2A following the FHWA visual impact assessment protocol (FHWA, 1988). Additionally, visualizations of Alternative 2A were displayed (as videos) at the Public Hearing for the Trinity Parkway DEIS in Dallas on March 29, 2005, and at the public hearing for the Trinity Parkway SDEIS in Dallas on May 5, 2009.

The project’s northern terminus is located at the Stemmons Freeway (IH-35E)/SH-183 interchange. Alternative 2A in this area would be primarily on elevated structure. Though not relevant to visual impacts as experienced by existing viewer groups, views from the northern terminus by motorists would include

vistas of the surrounding landscape. Views of Alternative 2A in this location would be largely from motorists traveling area roadways. Few existing nearby businesses and residents near the northern terminus would be visually impacted as views already include the existing freeways.

An at-grade section proposed for the southern terminus would link to the US-175/SH-310 interchange. Views from Alternative 2A by future motorists would provide limited vistas of the adjacent residential and commercial developments. The southern terminus would be a dominant visual feature for adjacent residential and commercial viewers. For many of the adjacent residents, Alternative 2A and/or noise walls associated with this alternative would serve as a visual and physical barrier running through their neighborhood.

Alternative 2A would be elevated above Irving and Riverfront (Industrial) Boulevards in the northern portion of the study area, where it would appear as a “double-deck” over the existing at-grade arterial roads. The roadway would be approximately 25 feet above the ground, and the underside of the bridgework would be visible to adjacent viewers, as shown in **Figure 4-1**.

FIGURE 4-1. VIEW ALONG RIVERFRONT (INDUSTRIAL) BOULEVARD FROM UNDER ALTERNATIVE 2A



Note: Looking northwest toward the Market Center Boulevard intersection.

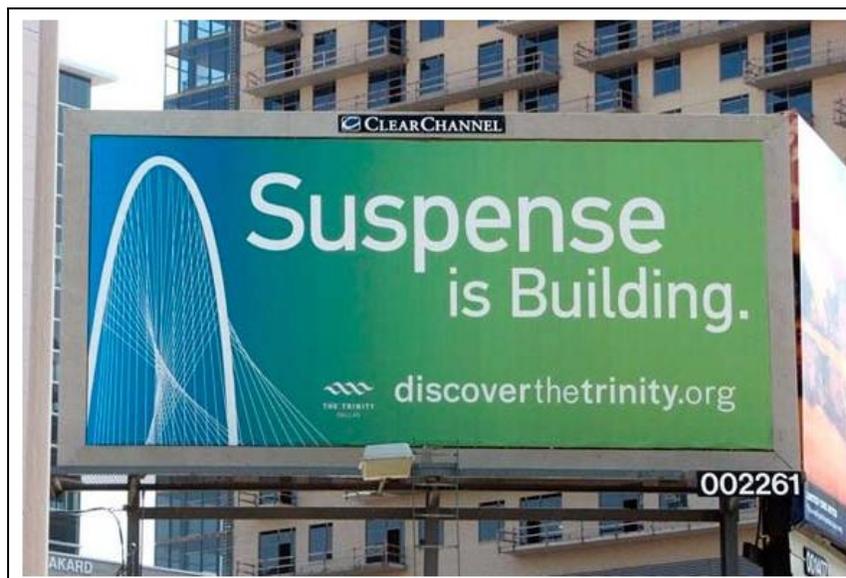
As it approaches downtown Dallas, Alternative 2A elevates to more than 50 feet above grade to clear Woodall Rodgers Freeway, and to more than 75 feet above grade to clear Houston-Jefferson and IH-35E. **LSS Plates 4-1 through 4-5** at the end of this chapter provide bird’s eye views of Alternative 2A in the

areas of (i) Hampton Road, (ii) Sylvan Avenue, (iii) Continental Street, (iv) Houston Street and (v) the DART bridge. (These plates are freeze-frames taken from the 3-D visualizations used in the May 2009 Public Hearing.)

As shown in **LSS Plates 4-3 and 4-4**, the elevation of the Alternative 2A mainlanes in the vicinity of downtown Dallas may affect sightlines to and from downtown and the Dallas Floodway landscape. Avoidance of elevated mainlanes at Woodall Rodgers Freeway by setting the road at-grade and modifying obstructions is impractical, because existing Riverfront (Industrial) Boulevard, the UPRR Main Line, the Woodall Rodgers Freeway and the proposed Trinity Parkway all intersect in close proximity requiring four-levels of interchanging movements.

As shown on **LSS Plate 4-3**, Alternative 2A requires elevated loop ramps to connect to Woodall Rodgers Freeway. These ramps introduce possible visual impacts to the Margaret Hunt Hill (MHH) Bridge by limiting or blocking views of the bridge from certain vantage points. The issue of visual intrusion was one of the concerns for the proposed design during development of the City's BVP (City of Dallas, 2003). The MHH Bridge, which began construction in 2009, was designed by internationally-known architect Santiago Calatrava, and is generally perceived as a "signature" piece and possibly a tourist attraction. For instance, a 2009 billboard and bus graphics advertising campaign by the Trinity Trust Foundation prominently features the bridge under the title "Suspense is Building" (see **Figure 4-2**).

FIGURE 4-2. SUMMER 2009 BILLBOARD ADVERTISING BY TRINITY TRUST FOUNDATION



Note: Image taken from the September 2009 Newsletter "My Trinity News" published by the City of Dallas, with billboard reported to be located on Dallas North Tollway in Dallas.

4.1.4.17 Historic Values

SDEIS Section 4.7 Cultural Resources and Parklands and **SDEIS Chapter 5 Draft Section 4(f) Evaluation** provide an evaluation of potential impacts to cultural resources with historic significance. **LSS Chapter 5** provides additional discussion of historic values. The discussion is not repeated here. Numerous historic-age resources are located within the Trinity Parkway project area, including properties, bridges, and districts that are listed in or eligible for the National Register of Historic Places (NRHP). Alternative 2A, as presented in the SDEIS, would involve potential adverse impacts to such resources. As part of the Section 106 process discussed further in **LSS Chapter 5**, an analysis of measures to avoid and minimize impacts to these resources was performed, which involved the development of design refinements to either completely avoid the resources or minimize impacts such that they are not considered to be adverse.

4.1.4.18 Summary of Practicability Assessment for Alternative 2A

Based on the individual assessments in **LSS Sections 4.1.4.1** through **4.1.4.17** above, the performance of Alternative 2A with respect to five factors summarized below may substantially affect its practicability. It is noted the alternative would be located outside the Dallas Floodway, and therefore would have the benefit of reduced impacts to floodplains and wetlands. Nevertheless, there are several disadvantages that could be impediments (either individually or collectively) for Alternative 2A to be considered a practicable alternative.

Project Costs: The total estimated cost of Alternative 2A is \$2.36 billion (2011 dollars). To illustrate the magnitude of this cost, by comparison, the total annual contract letting volume for the TxDOT is typically in the \$3 to \$6 billion range annually, representing hundreds of projects statewide. NTTA has not stated an amount that can be funded by toll-based revenue bonds on the Trinity Parkway. However, a very preliminary estimate in the \$0.5 to 1.0 billion range could be made, assuming 100,000 vehicles per day at a \$0.15 per mile toll rate at start-up, and escalating traffic, tolls and O&M costs over a 30 year period. Project costs that exceed the amount that can be financed through toll-based revenue bonds would have to be funded from other sources.

Logistics: A constraint influencing the practicability of Alternative 2A is the length of time from startup of engineering/construction activities until the Trinity Parkway could be fully open to traffic. This estimate is unusually long (10 years) because of the large-scale, sequential tasks which comprise the schedule. The time to completion is a critical element of the financing of a toll project because of the impact on the "interest clock" on construction bonds (i.e., increased interest paid to investors who purchase bonds to finance construction of the project), which would accumulate until toll collections begin. The major component of the project affecting logistics and schedule is the relocation of electric transmission lines in

the corridor, particularly the Oncor 345 kV line. While the project schedule would be refined during final design, it is not anticipated that such refinement would result in a significantly shorter schedule or affect the opening of the tollway.

Locational Disadvantages: The physical location of Alternative 2A in close proximity to the mainlanes of the Mixmaster causes restrictions on ramp access at the connections to South RL Thornton Freeway (IH-35E) and the Houston-Jefferson couplet. Alternative 2A would have only a half diamond connection to Houston-Jefferson, and no connection to South RL Thornton Freeway. The lack of connection to South RL Thornton Freeway would be a shortcoming, meaning that commuters on South RL Thornton Freeway could not connect to Trinity Parkway and bypass the downtown Mixmaster interchange. This lack of a connection would be particularly critical in the event of traffic incidents in the Mixmaster. The lack of connection also conflicts with certain Dallas Council actions and community desires dating back to 1997 calling for provision of access from South RL Thornton Freeway to Trinity Parkway.

Needs and Welfare of the People: Alternative 2A would not provide compatibility with local development plans. Acceptance of Alternative 2A by the City is not assured, and would be contrary to citywide votes held May 2, 1998 and November 6, 2007 in which Dallas citizens supported a Trinity Parkway location within the Dallas Floodway. Alternative 2A is inconsistent with the majority of voters' opinions expressed in these elections. Alternative 2A would require the acquisition of 127 acres of privately owned land and 285 buildings. Opposition to Alternative 2A was communicated during the official comment period for the SDEIS from March 20, 2009 to June 30, 2009. There were 165 statements submitted by the general public expressing concern that Alternative 2A would have "devastating impacts" (or similar) to the established businesses and residential communities in the area. Four council members and the Mayor submitted public comments opposed to Alternative 2A. Eight business associations also submitted comments in opposition to Alternative 2A.

Aesthetics: As it approaches downtown Dallas, Alternative 2A elevates to more than 50 feet above grade to clear Woodall Rodgers Freeway, and to more than 75 feet above grade to clear Houston-Jefferson and South RL Thornton Freeway (IH-35E). The Alternative 2A mainlanes in the vicinity of downtown Dallas may affect sightlines to and from the downtown and the proposed recreational areas in the Dallas Floodway. Additionally, proposed loop ramps to Woodall Rodgers Freeway introduce possible visual impacts to the MHH Bridge. The MHH Bridge, which began construction in 2009, was designed by internationally-known architect Santiago Calatrava, and is generally perceived as a "signature" piece and possibly a tourist attraction.

4.1.5 Practicability of Alternative 2B - Irving/Riverfront (Industrial) Boulevard At-Grade

As described in **Chapter 2**, Alternative 2B would be at-grade along Irving and Riverfront (Industrial) Boulevards. The existing street would be reconstructed into frontage roads for local access. The alignment would also follow Lamar Street in the southern segment. In this location, the proposed tollway would be elevated above Lamar Street, which would be reconstructed along the existing alignment at-grade. Alternative 2B would be approximately 8.83 miles in length, would occupy approximately 350 acres of ROW, and would cost approximately \$1.87 billion (2011 dollars) to construct. Major interchanges associated with Alternative 2B include:

- Direct connections at Stemmons Freeway (IH-35E)/SH-183 (northern terminus), US-175/SH-310 (southern terminus), Woodall Rodgers Freeway, and IH-45;
- Full diamond interchanges at Hampton/Inwood Road, Sylvan/Wycliff Avenue, Corinth Street, MLK, and Lamar Street/SH-310; and
- Half diamond interchange at the Houston/Jefferson Street Viaducts.

See **LSS Section 2.3.3** for a detailed description, typical sections, layout map, and a computer generated rendering graphic of Alternative 2B.

4.1.5.1 Economic Impacts

Changes in existing land use to transportation use would negatively affect the local economy both in the short and long term if Alternative 2B is implemented. **SDEIS Section 4.6.2.2 (Local Economic Impacts)** provides an analysis of potential effects on the economy within the City of Dallas and Dallas County. In the short-term, Alternative 2B would have direct impacts during construction, particularly on remaining commercial buildings adjacent to the roadway. The impacts would primarily involve access and traffic circulation challenges over the construction period, which could negatively affect business activity.

In the long-term, direct impacts would occur where land and improvements are removed from the tax rolls. Alternative 2B would require the acquisition of land from 380 parcels, including 206 acres of privately owned land, and would displace 245 buildings. **Table 4-10** below provides a summary of the buildings displaced by type. **SDEIS Appendix C (Relocation Assistance Information)** provides a more detailed tabulation of the affected properties and buildings.

TABLE 4-10. ALTERNATIVE 2B ESTIMATED NUMBER AND DESCRIPTION OF DISPLACEMENTS

Type of Displacements	Number of Displacements
Residential Buildings	6
Commercial/ Industrial Buildings	228
Community / Recreation Centers	---
Pump Stations/ Levee Operations Office Buildings	5
Police and Fire Station Buildings	2
Public Health Care Facilities	---
Schools	---
DISD Facility Buildings	4
Places of Worship	---
Cemeteries	---
Total	245

The estimates of tax base value loss and tax revenue loss due to ROW acquisition have been updated from the estimates provided in **SDEIS Section 4.6.2.2 (Local Economic Impacts)**. The information for Alternative 2B is presented below as **Table 4-11**. The total taxable value loss due to displacements and acquisition for Alternative 2B is estimated to be approximately \$306 million (2011 dollars), affecting tax collections for Dallas County, City of Dallas, and DISD.

TABLE 4-11. ALTERNATIVE 2B ESTIMATED TAX VALUE LOST

Entity	Percent Tax Rate (%)	Annual Tax Revenue Loss (2011 \$)	Total Tax Base (\$)	Percent Loss from Tax Base (%)
Dallas County	0.62377	\$1,911,239	\$155,514,580,710	0.1970%
City of Dallas	0.797	\$2,442,018	\$77,295,235,801	0.3964%
DISD	1.290347	\$3,953,639	\$74,661,069,947	0.4104%
Total Tax Value Lost: \$306,401,240				
Sources: Insight Research Corporation, 2011. 2011 tax rates and base property values, Dallas Central Appraisal District.				

Losses to the City tax base would accrue for some time until redevelopment occurs. The property acquisitions tend to be of irregular shapes and sizes, resulting in surplus properties of similar irregular shapes and sizes scattered alongside the roadways. Due to the sizes and shapes, the process of assembly and reuse of the surplus parcels may take some time. Finally, the density or value of buildings would have to be increased from current conditions in order to offset the net loss of 206 acres of developed land that is privately owned.

According to information obtained from Dun & Bradstreet by the City of Dallas, Office of Economic Development, Research & Information Division (January 2010), the estimated number of businesses displaced by Alternative 2B as a result of the displacement of the commercial and industrial buildings shown in **Table 4-11** above would range from approximately 220 to 289 businesses. The number of businesses differs from the number of building displacements as some buildings are occupied by multiple businesses and some businesses occupy a complex comprised of multiple buildings. The approximate

number of jobs affected by the business displacements would range from 6,182 to 6,655 jobs. In the short-term, there would be some local jobs created by construction and operation of the tollway.

4.1.5.2 Project Costs

Cost estimates for Alternative 2B are provided in **LSS Appendix D**, and include roadway construction, engineering, utility relocations, contingencies, ROW acquisition, environmental remediation and mitigation. The total estimated cost of Alternative 2B is \$1.87 billion (2011 dollars).

Construction Cost: Construction costs are \$1.35 billion of the \$1.87 billion total. The construction cost includes miscellaneous expenses such as traffic control (approximately \$109 million). Traffic control is substantial because construction occurs within a highly urbanized corridor. The construction cost also includes the costs for environmental mitigation, which is discussed separately below.

Environmental Mitigation Cost: The estimated cost for environmental mitigation is \$45.2 million. The cost includes vegetation enhancements (\$83,200), noise wall construction (\$2.8 million), mitigation for impacts to waters of the U.S. (\$127,400), and remediation for hazardous material sites (\$7.3 million). The highest portion of the cost is attributed to asbestos abatement (\$29.2 million) and demolition (\$5.7 million) of the numerous commercial and residential properties impacted by this Build Alternative.

Right-of-Way and Utility Relocation Costs: Substantial property acquisition would be needed for Alternative 2B because the proposed tollway is wider than the existing road and because the alignment deviates from the existing centerlines of Irving and Riverfront (Industrial) Boulevards due to the differences in design speed and curvature. Additional property acquisition would also be needed at specific locations due to the influence of ramps and ancillary buildings. The estimated cost for ROW is over \$437.8 million. See **Table 4-10** for a list of the number and type of displacements associated with Alternative 2B. Utility relocation costs are approximately \$82.5 million. Notably, Alternative 2B requires a relocation of approximately 2 miles of the new Oncor 345 kV transmission line in the median of Irving Boulevard from Regal Row to Sylvan Avenue, as well as relocation of the West Network Substation. See also **LSS Section 4.1.5.4 (Consideration of Logistics)**.

Operations and Maintenance Cost: O&M costs are not included in total project costs discussed above. These are separately reported in **LSS Appendix D**. The costs are estimated over a feasibility study 52-year period (2013 – 2065) based on standard NTTA O&M practices. The estimated O&M cost for Alternative 2B is \$233 million (2008 dollars). **LSS Appendix D** also reports the O&M costs escalated over a feasibility study 52-year period (2013 – 2065) based on standard practices for NTTA O&M. The

escalated O&M costs are estimated at \$594 million, assuming a 2.75 percent escalation rate over the 52-year period. These estimated O&M costs will be updated in the FEIS using current NTTA parameters.

4.1.5.3 Consideration of Existing Technology

Alternative 2B could utilize current engineering technology for roadway and related construction, and there appear to be no unusual or insurmountable technological issues with this Build Alternative (see **LSS Section 4.1.4.3**). There is expected to be gradual adoption of new or improved technologies in the road building and toll collection fields over time. In general, any special technology for Alternative 2B is built into the cost estimates reported in **LSS Section 4.1.5.2 (Project Costs)** above.

4.1.5.4 Consideration of Logistics

This section identifies logistics issues related to the implementation of Alternative 2B, including impacts to project schedule and construction phasing. Information used in the discussion of logistics is taken from the **SDEIS Environmental Consequences Sections 4.5 (Relocation and Displacement Impacts), 4.17 (Hazardous/Regulated Materials), 4.18 (Utilities), and 4.20 (Temporary Impacts During Construction)**. In addition, implementation schedules have been developed for each LSS Build Alternative to assess time to completion. The estimated schedule for Alternative 2B is summarized below, with additional details provided in **LSS Appendix D**.

A major constraint influencing the practicability of Alternative 2B is the length of time from startup of engineering/construction activities until the Trinity Parkway could be fully open to traffic. The length of time is estimated to be unusually long (9 years) because of the large-scale, sequential tasks required for the construction process. The sequence of activities is depicted in **Table 4-12**, assuming a start date of January 1, 2013.

TABLE 4-12. ALTERNATIVE 2B LOGICAL SEQUENCE OF ACTIVITIES AFTER ANTICIPATED ROD

Activity	Begin Date	Completion Date
Preliminary Engineering ¹	First Quarter 2013	Third Quarter 2013
Select Consultant Team and Award ²	First Quarter 2013	Second Quarter 2013
Traffic and Revenue Studies ³	First Quarter 2013	Third Quarter 2013
Local, State and Federal Permitting ⁴	First Quarter 2013	First Quarter 2013
Surveys and Preliminary Environmental Work ⁵	Second Quarter 2013	Fourth Quarter 2015
ROW Acquisition and Relocations	First Quarter 2014	Fourth Quarter 2016
Municipal Setting Designation – Application/Approval	Second Quarter 2015	Second Quarter 2018
Property Cleanup, Asbestos Abatement and Demolition	Third Quarter 2015	Second Quarter 2018
Utility Relocations ⁶	Second Quarter 2015	Third Quarter 2018
Final Tollway Design ⁷	Third Quarter 2016	First Quarter 2018
Construction Bid and Award	Second Quarter 2018	Third Quarter 2018
Construction	Third Quarter 2018	First Quarter 2022
<p>Notes:</p> <ol style="list-style-type: none"> 1. 95 percent Schematic Update and Review by TxDOT and the FHWA, Prepare O&M Costs, Develop Market Valuation, Final Schematic Design Preparation and Approval, Interstate Access Study, Major Project Study, Design Criteria Manual 2. Includes ROW Surveyors and Acquisition Support, Environmental Phases I and II, Section Design and Review Engineers, Corridor Managers, Contract Administration, and Geotech 3. Includes Value Engineering Study 4. Includes Section 404 Permit 5. Includes Set/Recover Controls, Deed Research, Parcel Map Preparation 6. Includes design of utility relocations, bid, award and construct 7. Includes select and award consultant contracts 		

As shown in **Table 4-12**, the Alternative 2B estimated time to completion is approximately 9 years, yielding an open-to-traffic date of First Quarter 2022. Alternative 2B would be constructed on a combination of embankment and elevated structure. Contractor furnished fill would be used for embankment needs and would require approximately 0.9 million CY of material. This volume of borrow material is considered typical for a project of this magnitude and would not be considered a logistical constraint. Activities that most influence the schedule for Alternative 2B include ROW acquisition and relocations, environmental investigations and demolition, utility relocations, and traffic and safety issues. These are discussed briefly below:

Right-of-way Acquisition and Relocations; Environmental Investigations and Demolition: As described in **LSS Section 4.1.5.1 (Economic Impacts)**, there would be numerous displacements and relocations associated with Alternative 2B. The number of impacted properties (approximately 380 total parcels affected and 245 building displacements) would affect the project schedule because of the time needed to survey the affected parcels and appraise/negotiate each acquisition. It is anticipated that some property owners in the ROW of Alternative 2B would oppose acquisition, leading to lengthy eminent domain proceedings. The acquisitions also affect the schedule indirectly because there are several tasks, which must follow sequentially, such as ESAs (Phase 1 and Phase 2 ESAs as appropriate, including 35 high risk hazardous material sites), remediation, demolition, and utility relocations.

Utility Relocations: As listed in **Table 4-13**, the Alternative 2B corridor has extensive water lines, sanitary sewer lines, high voltage electrical overhead transmission lines, and an electrical substation, which would need to be cleared from the Alternative 2B ROW.

TABLE 4-13. ALTERNATIVE 2B POTENTIAL IMPACTS TO MAJOR UTILITIES

SDEIS Plate ID	Description of Major Utilities	Type of Impact
SDEIS Plate 3-11 Water Lines		
<i>Key to Symbols: R = Relocation (estimated number of linear feet)</i>		
W-1	48-inch concrete water line	R (1,600)
W-2	36-inch water line	R (700)
W-6	24-inch concrete water line	R (14,000)
W-7	20-inch cast-iron water line	R (9,100)
W-8	24-inch concrete water line	R (9,100)
W-9	66-inch concrete water line	R (6,000)
SDEIS Plate 3-12 Sanitary Sewer Lines		
<i>Key to Symbols: R = Relocation (estimated number of linear feet)</i>		
SS-3	60-inch sludge force main	R (6,000)
SS-4	12-inch concrete sanitary sewer	R (2,500)
SS-5	10-inch concrete sanitary sewer	R (2,000)
SS-6	12-inch sanitary sewer	R (1,200)
SDEIS Plate 3-13 Electrical - Overhead Transmission Lines		
<i>Key to Symbols: R = Relocation (estimated number of towers); A = Adjustment (estimated number of towers); kV = kilovolts (of electricity)</i>		
E-3	Oncor 138 kV trans. line	R (1); A (1)
E-5	Oncor 138 kV trans. line	R (1)
E-7	Oncor trans. line	R (1)
E-8	Oncor 138 kV trans. line	R (1); A (1)
E-9	Oncor trans. lines (4)	R (2); A (6)
-	Oncor 345kV (Irving Boulevard)	R(20) 2 miles
SDEIS Plate 3-13 Electrical – Substations		
<i>Key to Symbols: R = Relocation</i>		
1	West Network Substation (Oncor)	R

As shown in **Table 4-13**, relocations total approximately 40,500 feet of major water lines and 11,700 feet of sanitary sewers. No major natural gas lines, storm drainage pump stations, storm water outfalls, or storage sumps would be impacted by Alternative 2B. The major impact on logistics and schedule is believed to be the electric transmission lines in the corridor, particularly the 345kV line listed in **Table 4-13**.

The Oncor 345 kV transmission line (completed in 2010) is located in the median of Irving Boulevard from Regal Row to Sylvan Avenue, and includes provision for a 138 kV line hung below the 345 kV conductors on the same poles. The pole line is positioned in the median of Irving Boulevard (rather than along either street ROW line) to provide sufficient horizontal clearance to properties and buildings located along both sides of the street. Both 138 kV and 345 kV lines would have to be rebuilt (new taller structures and associated foundations) and possibly relocated as part of the Alternative 2B construction. The 345 kV line is particularly important because it provides an electrical source to two major switching stations

serving the Dallas CBD and adjacent neighborhoods, portions of Oak Cliff, West Dallas, and the Stemmons Corridor, and also provides bulk power flow for the Texas electrical transmission grid.

The 345 kV electric transmission line adds to the logistics challenges of Alternative 2B because an alternative alignment analysis may be necessary and a replacement line must be fully installed in the new position, requiring acquisitions, demolitions, utility relocations and partial road construction as pre-requisites. Also, once fully installed, the switch-over from the old line to the new line must be scheduled during periods of low electrical demand. For example, it is usual practice that no outages will be allowed during peak load season (April 1 - October 15). The ERCOT has final authority over outage scheduling.

Traffic and Safety: Irving and Riverfront (Industrial) Boulevards are highly utilized roadways. Construction activities would result in traffic disruption in the project area. Construction would also temporarily affect local streets providing access to businesses and residents in the project area. In addition to temporary traffic disruptions (closures and detours), construction activity could contribute to periods of localized congestion. Safety and security issues may include temporary disruption of access for emergency and law enforcement vehicles. Heavy vehicle movements, possible hazardous waste excavation and transport, and construction site activity would also create potential safety concerns.

4.1.5.5 Locational Advantages

The obvious locational advantage for Alternative 2B is that it would avoid significant encroachment in the Dallas Floodway and would utilize existing transportation corridors. However, due to the density of the transportation network in the area, this is also a disadvantage.

Alternative 2B does not meet part of the project need and purpose because it does not provide compatibility with local land use plans. One of the purposes of the proposed project is to provide compatibility with local development plans, and the location of Alternative 2B is inconsistent with these plans and the City's vision of the Trinity River Corridor to be the "front door" to the Dallas CBD (see **LSS Section 4.1.5.10**). The location of Alternative 2B (primarily outside the floodway) may also restrict development in some areas of the corridor because of its influence on the size and depth of developable land remaining in the corridor. For instance, parts of the northern segment would have Stemmons Freeway (IH-35E) and the Trinity Parkway running in close proximity for some distance. The influence in the Mixmaster area would be more pronounced, with the Interstate and the Trinity Parkway located directly adjacent to each other creating a highway corridor almost 1,000 feet wide between the Dallas CBD and the east levee. The Alternative 2B ROW would occupy nearly all available developable land between Riverfront (Industrial) Boulevard and the east levee from Reunion Boulevard almost to Corinth Street, a distance in excess of 2 miles (see **LSS Plate 2-3B**).

Another disadvantage of the proposed location of Alternative 2B occurs in the area south of the Dallas CBD at the connections to South RL Thornton Freeway (IH-35E) and the Houston-Jefferson couplet. As shown in **Table 4-14**, Alternative 2B would have no connections to Houston-Jefferson Street or South RL Thornton Freeway. The lack of connection to South RL Thornton Freeway would be a substantial shortcoming, meaning that commuters on South RL Thornton Freeway could not connect to Trinity Parkway and bypass the downtown Mixmaster interchange. This lack of a connection would be particularly critical in the event of traffic incidents in the Mixmaster and negatively affects the practicability of this alternative.

TABLE 4-14. ALTERNATIVE 2B INTERCHANGE ACCESS

Interchange Location	Type of Interchange
Stemmons Freeway (IH-35E)/SH-183	Direct Connection via Ramps
Commonwealth Drive	None
Hampton/Inwood Road	Full Diamond Interchange
Wycliff/Sylvan Avenue	Full Diamond Interchange
Continental Avenue	None
Woodall Rodgers Freeway	Direct Conn's SB-EB, WB-NB, NB-EB, and WB-SB
Commerce Street	None
Houston/Jefferson Street	None
South RL Thornton Freeway (IH-35E)	None
Corinth Street	Full Diamond Interchange
MLK	Full Diamond Interchange
IH-45	Direct Connection via ramps
Lamar Street	None
SH-310	Half Diamond Interchange
US-175	Direct Mainlane Connection

SDEIS Section 2.3.12 (Access to IH-35E, US 175, and Corinth Street) lists various Dallas Council and community actions dating back to 1997 calling for provision of access from South RL Thornton Freeway (IH-35E) to Trinity Parkway. This access cannot be provided by Alternative 2B. The South RL Thornton Freeway interchange poses design and operational challenges, and it was determined that connecting ramps were not feasible for Alternatives 2B because of geometric constraints.

4.1.5.6 Natural and Beneficial Values Served by Floodplains

Natural and beneficial floodplain values include fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge (23 CFR 650, Subpart A). Potential impacts of Alternative 2B on floodplain values are discussed below.

Fish and wildlife populations within floodplains correlate with available habitat and are influenced by outside disturbances. Therefore, impacts to aquatic habitat and vegetation are used as an indicator of

potential impacts to fish and wildlife. **SDEIS Section 3.4.3 (Vegetation within the Study Area)** provides a breakdown of land cover types in the Trinity Parkway Study Area. The total study area is 7,036 acres, of which urban areas comprise 56 percent (3,907 acres), maintained grass areas comprise 31 percent (2,198 acres), bottomland and riparian forests comprise 4 percent (290 acres), and water features or aquatic habitats comprise 9 percent of the area (641 acres). The “maintained grass” acreage primarily comprises the Dallas Floodway, a facility which has been almost entirely re-graded and realigned from its former natural floodplain condition, and which is subject to periodic mowing by the City of Dallas. **Table 4-15** below shows a summary of vegetation impacts for Alternative 2B extracted from **SDEIS Section 4.9.2.2 (Vegetation Impacts)**.

TABLE 4-15. ALTERNATIVE 2B POTENTIAL IMPACTS TO VEGETATION

Type of Vegetation	Impacts (acres)
Woodland (Non-Wetland):	
Bottomland Hardwoods	6.4
Riparian Forest	---
Aquatic Habitats*:	
Waters of the U.S., Including Wetlands (acres)	9.1
Other (acres)	---
Maintained Grass Areas (acres)	31.1
Total Undeveloped Areas Impacts (acres)	46.6
Notes: 1. All quantities are shown in acres. Calculated areas are estimates only. 2. Potential impacts to waters of the U.S., including wetlands, may occur from bridge column construction and can be addressed during final design. 3. --- = No impact anticipated for this alternative. * = Includes impacts associated with drainage sumps, open water, and river channel, most would be spanned by bridges.	

Alternative 2B avoids the Dallas Floodway area except for a small segment in the southern part of the corridor downstream of Corinth Street. In this segment, there would be some impacts to the floodplain, including removal of habitat in the areas of hardwood forest (6.4 acres) and removal of maintained grass areas (31.1 acres). For the most part, Alternative 2B occupies developed land, with crossings of grassed and open water areas at manmade sumps in the corridor. Flooding conditions are expected to be unaffected because of the use of bridge crossings. See **SDEIS Section 4.13 (Floodplain Impacts)**.

4.1.5.7 Waters of the U.S., including Wetlands and Water Quality

An overview of the wetlands and other jurisdictional waters (e.g., rivers, creeks, and sumps) within the Study Area is presented in the **SDEIS Section 3.4.6 (Waters of the U.S., including Wetlands)**. The effect of Alternative 2B on wetlands is presented in **SDEIS Section 4.8 (Impacts to Waters of the U.S., including Wetlands)**. The SDEIS included a jurisdictional determination of waters of the U.S., including wetlands within the Dallas Floodway, which was approved by the USACE on June 19, 2006. In March 2011, a supplemental jurisdictional determination was submitted to the USACE requesting a reverification

and time extension of the approval (Note: the delineated area for the Historic River Channel, which is currently utilized as sumps for storm water collection, increased slightly because the 2011 jurisdictional determination included drainage culverts connecting the sumps that were not included in the 2006 jurisdictional determination, resulting in a minor increase in the impacted acreage from the SDEIS). The USACE determined that there has not been a significant change in the location of waters of the U.S. from the date of the original approval and that an extension of the approved jurisdictional determination is in the public interest (see **LSS Appendix A**). As such, the approved jurisdictional determination is valid until March 24, 2016. The jurisdictional determination for the Dallas Floodway (USACE approved 2006 and 2011) was intended to provide a baseline for potential impacts to waters of the U.S. for the numerous Trinity River Corridor projects and was not limited to the scope of the proposed Trinity Parkway project. It should be noted that areas outside the geographic scope of the approved jurisdictional determination near the northern and southern termini of the Trinity Parkway project and along Irving and Riverfront (Industrial) Boulevards are occupied by urban development with low opportunity for the presence of aquatic features. However, aquatic features beyond the geographic scope of the approved jurisdictional determination were mapped in a manner consistent with USACE procedures for conducting jurisdictional determinations during the initial field investigations for the Trinity Parkway project. **Table 4-16** below shows impact data for Alternative 2B.

TABLE 4-16. ALTERNATIVE 2B POTENTIAL IMPACTS TO WATERS OF THE U.S., INCLUDING WETLANDS

Emergent Wetlands	Forested Wetlands	Open Water - Intermittent*	Historic Trinity River Channel*	Intermittent Stream	Trinity River*	Total
--	2.52	--	6.40	0.20	--	9.12

Notes:

1. All quantities shown in acres. Calculated areas are estimates only. Impacts are expected from fill due to roadway construction.
2. Expected impacts are based on the jurisdictional determination approved by the USACE on March 24, 2011 (File # SWF-2011-00049).
3. -- = No impact anticipated for this alternative.
4. The Historic Trinity River Channel refers to old meanders of the Elm Fork and West Fork Trinity River located outside the Dallas Floodway levees that consist of open channels with scattered tree growth. These old meanders serve as sumps to collect local storm water runoff that eventually drains into the Dallas Floodway.

* Potential impacts to waters of the U.S., including wetlands, may occur from bridge column construction and can be addressed, minimized or possibly eliminated during final design.

As shown in **Table 4-16**, Alternative 2B would impact 9.12 acres of waters of the U.S. **SDEIS Section 7.4 (Measures to Minimize Impacts to Waters of the U.S., Including Wetlands)** provides further discussion of measures to avoid, minimize, or mitigate such impacts. A preliminary Section 404 mitigation plan is presented in **SDEIS Appendix J**. A more detailed review of impacts to waters of the U.S., including wetlands, and a refined mitigation plan for unavoidable impacts will be provided in the FEIS once a preferred alternative has been recommended. The NCTCOG entered into an agreement with the USACE in October 2008 to fund a position to expedite Section 404 permitting for regional projects, with a priority focus on regionally significant transportation projects (NCTCOG, 2009b). This

agreement allowed the USACE to assign a dedicated staff person to expedite Section 404 permits, and the USACE legislative authority to enter into these agreements was recently extended through 2016.

The typical water quality concerns associated with construction activities are erosion and sedimentation. The potential for erosion and sedimentation is accelerated when vegetation is cleared in preparation for the construction of the roadway, as exposed ground is susceptible to erosion. Alternative 2B requires the crossing of several water bodies within the study area, mostly comprised of drainage sumps and tributaries associated with the Trinity River (see **LSS Plate 4-22**). The potential erosion and sedimentation are dependent upon local conditions (i.e., soil type, slope, and vegetation) and construction practices (see **SDEIS Sections 3.4.3 Vegetation within the Study Area; 3.5.3.3 Soils; 4.11 Topography, Geology, and Soils; 4.12 Water Quality Impacts; and 4.20 Temporary Impacts During Construction**). Bridge construction also has the potential to create soil erosion, which could affect sedimentation and turbidity of water. Eroded sediment may then redeposit downstream, resulting in the disruption of the aquatic ecosystem and water quality degradation. In addition, increased pavement area and vehicular traffic over the life of the project have the potential to discharge storm water pollutants to the water bodies and wetlands that could negatively impact the quality of surface water. Water quality impacts of construction would be reduced to acceptable levels by compliance with the regulatory standards of applicable construction stormwater management permits, and water quality related impacts of the paved roadway would also be managed in accordance with appropriate permit terms specified by regulatory agencies. Detailed discussions of federal and state permits related to the abatement of water quality impacts are found in **SDEIS Section 4.12 (Water Quality Impacts)** and **Section 7.2 (Measures to Minimize Impacts to Water Quality)**. Additional discussions in the SDEIS regarding regulatory controls of water quality impacts are included in **SDEIS Section 4.13.1 (CDC Process – Trinity River Main Stem), Section 7.4 (Measures to Minimize Impacts to Waters of the U.S., Including Wetlands), Section 7.5 (Measures to Minimize Impacts to Floodplains), Appendix H (Preliminary Section 404(b)(1) Guidelines Evaluation), and Appendix I (TCEQ Section 401 Water Quality Certification Questionnaire)**.

4.1.5.8 Fish and Wildlife Habitat Values

SDEIS Section 4.9 (Water Body Modification; Vegetation and Wildlife Impacts) presents a quantitative assessment of impacts to woodlands, aquatics, and grasslands, as well as threatened and endangered species. Much of the discussion centers on impacts to vegetation with riparian woodlands and aquatic habitat identified as “highest quality wildlife habitat.” As shown in **Table 4-15 in LSS Section 4.1.5.6**, 46.6 acres of undeveloped areas, comprised mostly of maintained grass areas, would be impacted by Alternative 2B. No impacts on fish, agriculture, aquaculture, or forestry resources are expected from Alternative 2B.

As reported in **SDEIS Section 4.9.2.4 (Threatened and Endangered Species)**, no recent occurrences of federally or state listed threatened or endangered species have been identified in the project study area during field surveys. This was also confirmed through informal coordination with the USFWS, a search of the TPWD's NDD (TPWD, 2007), and correspondence with other organizations considered to have special expertise related to wildlife and their habitat. In March 2009, the USFWS concurred that the proposed action is not likely to adversely affect any federally listed species.

4.1.5.9 Conservation

SDEIS Section 4.19 (Energy Requirements) and **Section 4.22 (Irreversible and Irretrievable Commitments of Resources)** include general discussions regarding transportation-related energy use and the commitment of resources. For the implementation of Alternative 2B, energy, fuel, and materials consumption would occur during construction and operation. The highway construction materials that would be expended are not in short supply and therein construction would not adversely affect continued availability of similar resources. This alternative would operate as an all-electronic toll collection facility, which provides operational efficiencies to reduce stop and go traffic conditions. This would result in lower fuel/energy consumption. When correlating the measures of effectiveness in **SDEIS Section 4.4 (Transportation Impacts)** to energy use, managing congestion delay and vehicle hours traveled means lower fuel and energy use. The energy requirements associated with Alternative 2B are not considered functional constraints to practicability.

4.1.5.10 Needs and Welfare of the People

The Trinity Parkway is a high profile project that, for about the past 15 years, has involved numerous stakeholders and individuals along the corridor in the project development process. The long process of project planning and evaluation is summarized in **Chapter 1** of this LSS. Effects of the proposed project on the local community could be a major factor in determining practicability of the Alternative 2B. Information used in the analysis of the impact of Alternative 2B on the needs and welfare of the people is presented in **SDEIS Section 4.1 (Land Use Impacts)**, **Section 4.2 (Coordinated Planning and Design)**, **Section 4.3 (Social Impacts)**, **Section 4.4 (Transportation Impacts)**, **Section 4.5 (Relocation and Displacement Impacts)**, **Section 4.17 (Hazardous/Regulated Materials)**, and **Section 4.20 (Temporary Impacts During Construction)**. Public comments on the SDEIS Public are also relevant to this discussion.

Social Impacts: **Table 4-10** in **LSS Section 4.1.5.1** provides a summary of the residences, commercial buildings, and public facilities that would be relocated under Alternative 2B (a total of 245), and **SDEIS Appendix C (Relocation Assistance Information)** provides a detailed listing of the same. The numerous relocations have direct impacts to the neighborhoods and neighborhood districts in the project corridor. Of the 245 relocations, there would be 50 buildings in the Lower Stemmons Neighborhood District, 43 in the Design District, 17 in the Market/Technology Center area, 31 in the Trinity Industrial District, 49 in The Cedars, 14 in the Brookhollow Industrial Park, and 41 in the South Dallas Neighborhood District. In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, relocation assistance would be provided to any person, business, farm, or non-profit organization displaced as a result of the acquisition of real property for public use (see **SDEIS Appendix C**). Nevertheless, the acquisition of these properties could have adverse social consequences in the local community beyond a typical urban roadway project. For instance, the Dallas Design District is a collection of home interior businesses, which collectively advertise their goods and services as a destination shopping experience. Although the displaced businesses would receive appropriate relocation compensation, the remaining district may be impacted substantially. According to information obtained from Dun & Bradstreet by the City of Dallas, Office of Economic Development, Research & Information Division (January 2010), the total number of businesses displaced by Alternative 2B would range from approximately 220 to 289. These businesses provide employment for approximately 6,182 to 6,655 people who could lose their jobs permanently if displaced businesses are unable to relocate successfully.

Minority and low-income populations exist in the project area, and Alternative 2B has been evaluated for compliance with the EO 12898, FHWA Order 6640.23, and Title VI of the Civil Rights Act of 1964, as amended (see **SDEIS Section 4.3.3 Environmental Justice Considerations**). Beneficial and adverse impacts to minority and low-income populations have been identified, along with potential mitigation strategies, and there appear to be no disproportionately high or adverse impacts; therefore, Alternative 2B is considered to be consistent with the EO 12898 and FHWA Order 6640.23. Alternative 2B is similarly consistent with Title VI in that there is no evidence of discriminatory intent or effect.

General Public Opinion: Acceptance of a Riverfront (Industrial) Boulevard route by the City is not assured. **SDEIS Section 1.3 (Project History)** describes two well publicized citywide elections in which Dallas citizens expressed support for a Trinity Parkway location within the Dallas Floodway:

- (i) May 2, 1998 - Dallas voters approved the issuance of General Obligation Bonds including \$84 million for the Trinity Parkway, a reliever route within the Dallas Floodway levee system (City of Dallas, 1998), and

- (ii) November 6, 2007 - Dallas voters rejected a petition calling for prohibition of construction, maintenance, or improvement of certain roadways (i.e. Trinity Parkway) within the Trinity River levees from Westmoreland Road to IH-45.

Alternative 2B, located primarily along Riverfront (Industrial) Boulevard and Irving Boulevard, is inconsistent with the majority of voters' opinions expressed in these elections that supported a Trinity Parkway location within the Dallas Floodway.

Stakeholder Opinions: Strong opposition to Alternative 2B was communicated during the official comment period for the SDEIS from March 20, 2009 to June 30, 2009. There were 165 statements submitted by the general public expressing concern that Alternative 2B (also 2A) would have "devastating impacts" (or similar) to the established businesses and residential communities in the area. Four council members and the Mayor submitted public comments opposed to Alternative 2B. Eight business associations, which represent hundreds of local businesses, also submitted comments in opposition to Alternative 2B. These local groups included Dallas Regional Chamber Transportation Council, Dallas Black Chamber of Commerce, DOWNTOWN DALLAS, Stemmons Corridor Business Association, The Real Estate Council, Trinity Improvement Association, Mixmaster Business Association, and the West Dallas Chamber of Commerce. Comments received from agencies and the public during the public comment period for the SDEIS will be included in the FEIS, along with responses to the comments received.

Key issues that are important to the public that are viewed as adverse impacts include: a high number of displacements and relocations, disruption of established businesses along Irving and Riverfront (Industrial) Boulevards, adverse impacts to community resources, and increased traffic on adjacent streets.

Future Land Use Plans: Alternative 2B could not achieve one of the purposes of the project, which is to provide compatibility with local development plans. The Dallas City Council approved the renaming of Industrial Boulevard to "Riverfront Boulevard" in November 2008 and local business owners consider this a positive influence to support mixed-use redevelopment in the area. A section of Riverfront (Industrial) Boulevard from Cadiz Street to Continental Avenue is already under design by Dallas County, in cooperation with the City of Dallas, for reconstruction as a landscaped, bicycle and pedestrian-friendly parkway that will accommodate future streetcars. There is also on-going private development in the corridor, although the pace may have slowed due to national economic conditions. As reported in **SDEIS Section 3.1.1.1 (Local Land Use Plans/Policies)**, TIF districts have been created for the Cedars and Design Districts to promote mixed-use redevelopment. This includes infill development of the Design

District, and the infill of residential lofts and similar development along the corridor. These new developments may increase the cost and complexity of needed acquisitions for Alternative 2B over time.

The City of Dallas has widely publicized its “Trinity River Corridor Project,” which is actually the name for a series of proposed projects that are along the main stem and Elm Forks of the Trinity River in Dallas. Since 2003, the City has planned for Trinity Parkway to have a combined parkway riverside layout, balancing the Trinity Parkway embankments with proposed excavation of lakes in the Dallas Floodway as part of the City’s BVP. Since 2007, the design work of the City’s Trinity Lakes Consultant Team has been based on this plan, impacting multiple design decisions such as physical layout of the lakes, trails, public spaces and access points, the hydraulic modeling, the earthworks plan, etc. While it is acknowledged that the City’s BVP must still be evaluated by the USACE and found to be environmentally acceptable and technically sound before the plan can be implemented, Alternative 2B would be inconsistent with current plans.

Impacts on the Stemmons Deed Precedent. There has been a longstanding intent in Dallas to include a major roadway in the Dallas Floodway. Most notably, the 1972 donation of 930 acres of the Dallas Floodway land to the City by Industrial Properties included the following language in the escrow agreement: “*It is the desire of Industrial [Properties] and of the City that all such lands situated within the floodway as above described be made available for parks, open space, recreational, and transportation facilities as set out below,*” ... “*All of said lands so acquired... shall be used for parks, open space, recreational, transportation facilities, including roadways on and adjacent to the levees, and such uses as are necessarily incident to the navigation channel, and all of which uses shall be generally consistent with the concept of the Coordinated Plan For Open Space Development Of The Trinity River System of the Dallas Park Board dated December 9, 1969 and adopted by the Park Board and approved by the City Council on March 9, 1970.*” (City of Dallas Park Board Resolution 72-0126, dated January 10, 1972) Further, the 1974 purchase of remaining lands in the Dallas Floodway by the City included this same provision regarding transportation facilities. Alternative 2B is not consistent with these historic and ongoing community intentions.

4.1.5.11 Air Quality Impacts

A traffic air quality analysis was performed for the proposed project to measure projected CO levels as an indicator to determine whether local air quality would be adversely affected. As discussed in the **SDEIS Section 4.14 (Air Quality Impacts)**, for Alternative 2B the percentages of projected 2025 and 2030 concentrations for 1-hour and 8-hour CO would be below the NAAQS threshold. Local concentrations of CO are not expected to exceed national standards at any time. A quantitative MSATs analysis was also performed for the proposed project (see **SDEIS Section 4.14.5 Mobile Source Air Toxics**). MSATs are