# TECHNICAL PROVISIONS

# FOR THE

# HORSESHOE PROJECT

THE HORSESHOE
Fixin' the Mix

**By and Between**

**The Texas Department of Transportation**

**and**

**[Design-Build Contractor]**

**Dated as of: _____, 2012**

# Table of Contents

**1 GENERAL ..... 1-1**
1.1 Project Scope ..... 1-1
1.2 Limits of Construction and Lanes ..... 1-1
1.2.1 Mixmaster North ..... 1-2
1.2.2 Mixmaster South ..... 1-3
1.3 Project Requirements ..... 1-4
1.3.1 Compatibility with Ultimate Scope ..... 14
1.4 General Construction Requirements ..... 1-4
**2 PROJECT MANAGEMENT ..... 2-1**
2.1 Administrative Requirements ..... 2-2
2.1.1 Project Schedule ..... 2-2
2.1.2 Document Management ..... 2-10
2.2 Quality Management Plan ..... 2-11
2.2.1 General Requirements ..... 2-11
2.2.2 Quality Terminology ..... 2-12
2.2.3 Quality Management Organization ..... 2-12
2.2.4 Quality Policy ..... 2-12
2.2.5 Inspection and Testing ..... 2-12
2.2.6 Design Quality Management Plan ..... 2-14
2.2.7 Construction Quality Management Plan ..... 2-21
2.2.8 Maintenance Management Plan ..... 2-25
2.3 Comprehensive Environmental Protection Plan ..... 2-25
2.4 Public Information and Communications Plan ..... 2-25
2.5 Safety Plan ..... 2-26
2.6 TxDOT-Design-Build Contractor Communications Plan ..... 2-26
2.7 Right-of-Way Acquisition Plan ..... 2-26
2.8 TxDOT Offices, Equipment and Vehicles ..... 2-26
2.8.1 Computers and Equipment ..... 2-27
2.8.2 Core Offices ..... 2-28
2.8.3 Field Offices ..... 2-32
**3 PUBLIC INFORMATION AND COMMUNICATIONS ..... 3-1**
3.1 General Requirements ..... 3-1

3.2 Administrative Requirements ..... 3-1
3.2.1 Public Information and Communications Plan ..... 3-1
3.2.2 Public Information Coordinator ..... 3-3
3.2.3 Public Information Office ..... 3-4
3.2.4 Customer Groups ..... 3-4
3.2.5 Public Meetings ..... 3-5
3.2.6 Meeting Summaries ..... 3-5
3.2.7 Emergency Event Communications ..... 3-6
3.2.8 Disseminating Public Information ..... 3-6
**4 ENVIRONMENTAL ..... 4-1**
4.1 General Requirements ..... 4-1
4.2 Environmental Approvals ..... 4-1
4.2.1 New Environmental Approvals and Amended TxDOT-Provided Approvals ..... 4-1
4.2.2 Responsibilities Regarding Environmental Studies ..... 4-2
4.2.3 TxDOT Review and Approval of Design-Build Contractor Submissions ..... 4-2
4.2.4 TxDOT-Provided Approvals ..... 4-2
4.3 Comprehensive Environmental Protection Program (CEPP) ..... 4-2
4.3.1 Environmental Management System (EMS) ..... 4-3
4.3.2 Environmental Compliance and Mitigation Plan (ECMP) ..... 4-4
4.3.3 Environmental Protection Training Plan (EPTP) ..... 4-8
4.3.4 Hazardous Materials Management Plan (HMMP) ..... 4-10
4.3.5 Communication Plan (CP) ..... 4-11
4.3.6 Construction Monitoring Plan (CMP) ..... 4-11
4.3.7 Recycling Plan ..... 4-12
4.4 Environmental Personnel ..... 4-13
4.4.1 Environmental Compliance Manager (ECM) ..... 4-13
4.4.2 Environmental Training Staff ..... 4-14
4.4.3 Environmental Compliance Inspectors (ECI) ..... 4-14
4.4.4 Cultural Resource Management Personnel ..... 4-14
4.4.5 Natural Resource Biologist ..... 4-14
4.4.6 Water Quality Specialist ..... 4-14
4.4.7 Hazardous Materials Manager ..... 4-15
4.4.8 Property Access ..... 4-15
4.4.9 Dust Control ..... 4-15
4.4.10 Asbestos Containing Material (ACM) ..... 4-15

4.4.11 Lead Based Paint (LBP) ..... 4-15
**5 THIRD-PARTY AGREEMENTS ..... 5-1**
5.1 General Requirements ..... 5-1
5.2 Traffic Signals ..... 5-1
5.3 Roadway Illumination ..... 5-1
5.4 Other Affected Third Parties ..... 5-1
**6 UTILITY ADJUSTMENTS ..... 6-1**
6.1 General Requirements ..... 6-1
6.1.1 When Utility Adjustment is Required ..... 6-1
6.1.2 Certain Components of the Utility Adjustment Work ..... 6-1
6.1.3 Agreements between Design-Build Contractor and Utility Owners ..... 6-2
6.1.4 Recordkeeping ..... 6-3
6.2 Administrative Requirements ..... 6-3
6.2.1 Standards ..... 6-3
6.2.2 Communications ..... 6-4
6.2.3 Utility Adjustment Team ..... 6-4
6.2.4 Real Property Matters ..... 6-5
6.3 Design ..... 6-6
6.3.1 Design-Build Contractor's Responsibility for Utility Identification ..... 6-6
6.3.2 Technical Criteria and Performance Standards ..... 6-6
6.3.3 Utility Adjustment Concept Plans ..... 6-7
6.3.4 Utility Adjustment Plans ..... 6-7
6.4 Construction ..... 6-9
6.4.1 Reserved ..... 6-9
6.4.2 General Construction Criteria ..... 6-9
6.4.3 Inspection of Utility Owner Construction ..... 6-10
6.4.4 Scheduling Utility Adjustment Work ..... 6-10
6.4.5 Standard of Care Regarding Utilities ..... 6-11
6.4.6 Emergency Procedures ..... 6-11
6.4.7 Utility Adjustment Field Modifications ..... 6-11
6.4.8 Switch Over to New Facilities ..... 6-11
6.4.9 Record Drawings ..... 6-11
6.4.10 Maintenance of Utility Service ..... 6-12
6.4.11 Traffic Control ..... 6-12
6.5 Deliverables ..... 6-12

6.5.1 Maximum Number of Submittals ....6-12
6.5.2 Design-Build Contractor's Utility Tracking Report ....6-12
6.5.3 Utility Assembly Submittals ....6-13
6.5.4 FHWA Alternate Procedure ....6-14
**7 RIGHT-OF-WAY (ROW) ....7-1**
7.1 General Requirements ....7-1
7.2 Administrative Requirements ....7-1
7.2.1 Standards ....7-1
7.2.2 Software Requirements ....7-1
7.2.3 ROW Acquisition Plan ....7-2
7.2.4 Schedule and Review Procedures ....7-2
7.2.5 Design-Build Contractor's Project ROW Scope of Services ....7-3
7.2.6 Acquisition Process Summary ....7-4
7.2.7 ROW Personnel Qualifications ....7-4
7.2.8 Design-Build Contractor Conflict of Interest ....7-6
7.2.9 Meetings ....7-6
7.2.10 Documentation and Reporting ....7-6
7.2.11 Responsibilities of Design-Build Contractor ....7-7
7.2.12 Responsibilities of TxDOT ....7-8
7.2.13 TxDOT Project Monitor/Reviewer ....7-8
7.2.14 Responsibilities of the Office of the Attorney General ....7-8
7.3 Pre-Acquisition Activities ....7-9
7.3.1 Project ROW Surveying and Mapping ....7-9
7.3.2 Additional Reporting Requirements ....7-13
7.3.3 Title Services ....7-13
7.3.4 Introduction to Property Owners ....7-14
7.3.5 Appraisals ....7-14
7.3.6 Project ROW Acquisition Package Approval ....7-17
7.4 Acquisition Activities ....7-18
7.4.1 ROW Negotiations ....7-18
7.4.2 Relocation Assistance ....7-20
7.4.3 Closing Services ....7-23
7.4.4 Condemnation Support ....7-23
7.4.5 Clearance/Demolition of Project ROW ....7-25
7.4.6 Property Fence ....7-26

7.5 Early ROW Acquisition....7-27
**8 GEOTECHNICAL....8-1**
8.1 General Requirements....8-1
8.2 Design Requirements....8-1
8.2.1 Subsurface Geotechnical Investigation by Design-Build Contractor....8-1
8.2.2 Pavement Design....8-2
8.3 Construction Requirements....8-10
8.3.1 Pavement Materials Requirements....8-10
8.3.2 Construction Verification....8-12
**9 LAND SURVEYING....9-1**
9.1 General Requirements....9-1
9.2 Administrative Requirements....9-1
9.2.1 Standards....9-1
9.2.2 Right-of-Entry....9-1
9.2.3 Survey by TxDOT....9-1
9.3 Design Requirements....9-1
9.3.1 Units....9-1
9.3.2 Survey Control Requirements....9-1
9.3.3 Conventional Method (Horizontal & Vertical)....9-2
9.3.4 Right-of-Way Surveys....9-3
9.3.5 Survey Records and Reports....9-4
9.4 Deliverables....9-4
9.4.1 Survey Records....9-4
9.4.2 Final ROW Surveying and Mapping....9-5
9.4.3 ROW Monuments....9-5
9.4.4 Record Drawings and Documentation....9-5
**10 GRADING....10-1**
10.1 General Requirements....10-1
10.2 Preparation within Project Limits....10-1
10.3 Slopes and Topsoil....10-1
10.4 Sodding....10-2
**11 ROADWAYS....11-1**
11.1 General Requirements....11-1
11.2 Design Requirements....11-1
11.2.1 Control of Access....11-1

11.2.2 Roadway Design Requirements ..... 11-1
11.2.3 Roadway Design Deviations ..... 11-6
11.2.4 Miscellaneous Roadway Design Requirements ..... 11-8
**12 DRAINAGE ..... 12-1**
12.1 General Requirements ..... 12-1
12.2 Administrative Requirements ..... 12-1
12.2.1 Data Collection ..... 12-1
12.2.2 Coordination with Other Agencies ..... 12-2
12.3 Design Requirements ..... 12-3
12.4 Surface Hydrology ..... 12-4
12.4.1 Design Frequencies ..... 12-4
12.4.2 Storm Sewer Systems ..... 12-5
12.4.3 Stormwater Storage Facilities ..... 12-7
12.4.4 Hydraulic Structures ..... 12-7
12.5 Drainage Design Report ..... 12-11
12.6 Construction Requirements ..... 12-11
**13 STRUCTURES ..... 13-1**
13.1 General Requirements ..... 13-1
13.2 Design Requirements ..... 13-1
13.2.1 Design Parameters ..... 13-1
13.2.2 Bridge Design Loads and Load Ratings ..... 13-2
13.2.3 Bridge Decks and Superstructures ..... 13-3
13.2.4 Bridge Foundations ..... 13-4
13.2.5 Permanent Modifications to Existing Bridges ..... 13-5
13.2.6 Bridge Railing and Barriers ..... 13-5
13.2.7 Retaining Walls ..... 13-5
13.2.8 Noise/Sound Walls ..... 13-6
13.2.9 Drainage Structures ..... 13-6
13.2.10 Sign, Illumination, and Traffic Signal Supports ..... 13-6
13.2.11 Widenings ..... 13-6
13.2.12 Structures to be Used in Place or Rehabilitated ..... 13-6
13.3 Construction Requirements ..... 13-7
13.3.1 Concrete Finishes ..... 13-7
13.3.2 Structure Metals ..... 13-7
13.3.3 Steel Finishes ..... 13-7

13.3.4 Dallas Floodway ..... 13-7
**14 RAIL ..... 14-1**
14.1 General Requirements ..... 14-1
14.2 Railroad Design Standards ..... 14-1
14.3 Administrative Requirements ..... 14-1
14.3.1 Project Work Affecting Railroad Operations ..... 14-1
14.3.2 Agreement for Construction, Maintenance, and Use of Right-of-Way ..... 14-1
14.3.3 Operation Safety ..... 14-2
14.3.4 Railroad Right-of-Entry Agreement ..... 14-2
14.3.5 Design-Build Contractor Right-of-Entry Agreement ..... 14-2
14.3.6 Insurance Requirements ..... 14-2
14.4 Construction Requirements ..... 14-2
**15 AESTHETICS AND LANDSCAPING ..... 15-1**
15.1 General Requirements ..... 15-1
15.2 Administrative Requirements ..... 15-1
15.2.1 Aesthetics Concepts ..... 15-1
15.2.2 Aesthetics and Landscaping Plan ..... 15-2
15.2.3 Personnel ..... 15-2
15.3 Design Requirements ..... 15-3
15.3.1 Aesthetics Principles and Strategies ..... 15-3
15.3.2 Walls ..... 15-3
15.3.3 Bridges and Other Structures ..... 15-4
15.3.4 Trees, Shrubs, and Other Plant Materials ..... 15-4
15.3.5 Riprap ..... 15-4
15.3.6 Lighting ..... 15-4
15.3.7 Color Palette ..... 15-4
15.4 Construction Requirements ..... 15-5
15.5 Aesthetic and Landscaping Enhancements ..... 15-5
**16 SIGNING, DELINEATION, PAVEMENT MARKING, SIGNALIZATION, AND LIGHTIN1G ..... 16-1**
16.1 General Requirements ..... 16-1
16.2 Administrative Requirements ..... 16-1
16.2.1 Meetings ..... 16-1
16.3 Design Requirements ..... 16-1
16.3.1 Final Design ..... 16-1

16.3.2 Signing and Delineation ..... 16-1
16.3.3 Project Signs – Outside the Project ROW ..... 16-2
16.3.4 Advance Toll Information Signs ..... 16-2
16.3.5 Third-Party Signs ..... 16-2
16.3.6 Sign Support Structures ..... 16-2
16.3.7 Pavement Marking ..... 16-2
16.3.8 Signalization ..... 16-2
16.3.9 Lighting ..... 16-4
16.3.10 Visual Quality ..... 16-6
16.4 Construction Requirements ..... 16-6
16.4.1 Permanent Signing and Delineation ..... 16-6
16.4.2 Permanent Pavement Marking ..... 16-7
16.4.3 Permanent Signalization ..... 16-8
16.4.4 Permanent Lighting ..... 16-8
**17 INTELLIGENT TRANSPORTATION SYSTEMS ..... 17-1**
17.1 General Requirements ..... 17-1
17.2 Design Requirements ..... 17-1
17.2.1 ITS Communications Requirements ..... 17-1
17.2.2 Conduit ..... 17-1
17.2.3 CCTV Cameras ..... 17-2
17.2.4 Vehicle Detection ..... 17-2
17.2.5 Dynamic Message Signs (DMS) ..... 17-2
17.2.6 Lane Control Signals (LCS) ..... 17-3
17.2.7 Single-Line DMS (SDMS) ..... 17-3
17.2.8 Communication Hub Enclosures/Communication Cabinets ..... 17-3
17.3 Construction Requirements ..... 17-3
17.3.1 General ..... 17-3
17.3.2 Salvaging Existing Items ..... 17-3
17.3.3 Existing ITS Relocation ..... 17-3
**18 TRAFFIC CONTROL ..... 18-1**
18.1 General Requirements ..... 18-1
18.2 Administrative Requirements ..... 18-1
18.2.1 Traffic Management Plan ..... 18-1
18.3 Design Requirements ..... 18-2
18.3.1 Traffic Control Plans ..... 18-2

18.3.2 Restricted Hours ..... 18-16
18.3.3 Other TMP Requirements ..... 18-17
18.4 Construction Requirements ..... 18-17
18.4.1 Design-Build Contractor Responsibility ..... 18-17
18.4.2 Access ..... 18-17
18.4.3 Detours ..... 18-17
18.4.4 Local Approvals ..... 18-18
18.4.5 Pavement Markings ..... 18-18
18.4.6 Reinstatement of Utility Cuts ..... 18-18
18.4.7 Hauling Equipment ..... 18-18
18.4.8 Final Clean-Up ..... 18-18
18.4.9 Stockpiles ..... 18-18
**19 MAINTENANCE ..... 19-1**
19.1 General Requirements ..... 19-1
19.1.1 General Maintenance Obligations ..... 19-1
19.2 Maintenance Management Plan (MMP) ..... 19-1
19.2.1 Maintenance during Work ..... 19-2
**20 BICYCLE AND PEDESTRIAN FACILITIES ..... 20-1**
20.1 General Requirements ..... 20-1
20.2 Administrative Requirements ..... 20-1
20.3 Design Requirements ..... 20-1
20.3.1 Bicycle Facilities ..... 20-1
20.3.2 Pedestrian Facilities ..... 20-1
20.3.3 Final Design ..... 20-2
**21 TOLLING ..... 21-1**

# 1 GENERAL

## 1.1 Project Scope

The specific improvements to be completed by the Design-Build Contractor as part of the Horseshoe Project include the following facilities:

1. **Two Urban Direct-Connect Interchanges** within the general footprint of existing interchanges. The improvements will have complex geometry and connections to collector-distributor (C-D) roadways. The proposed three leg interchanges at IH 30 and IH 35E include direct connectors (fly-over ramps) to serve traffic heading northbound on IH 35E to westbound IH 30 and eastbound IH 30 to southbound on IH 35E; currently, this traffic must use Riverfront Boulevard.
2. **Arterial Connections** requiring special provisions at Riverfront Boulevard, Reunion Boulevard, Commerce Street, and Fleming Place.
3. **Collector-Distributor (C-D)** roadways along northbound and southbound IH 35E between Colorado St. and the Mixmaster South interchange, along IH 30 and IH 35E between the Mixmaster North interchange and Mixmaster South interchange, and operational improvements to the C-D along IH 30 between the Mixmaster South interchange and IH 45.
4. **Margaret McDermott Bridges** on IH 30. These consist of the eastbound and westbound frontage road bridges and integrated bike/pedestrian bridges for a length of approximately 1125 feet of the IH 30 portion of the Project. The bike/pedestrian components will be designed and engineered to 100% by Santiago Calatrava, LLC under contract with the City of Dallas. The Design-Build Contractor will be furnished with 100% drawings and specifications for this component of the Project. The eastbound and westbound frontage road components will be designed and engineered by the Design-Build Contractor to accommodate loads imposed on the frontage road bridges by the bike/pedestrian bridges. These loads will be furnished by Santiago Calatrava, LLC.

The Design-Build Contractor shall be responsible for design and construction of all areas included within the scope of the Project. The Design-Build Contractor shall be responsible for performing utility design and relocation for all utilities and shall acquire all ROW required to construct the Project.

## 1.2 Limits of Construction and Lanes

For the purposes of delineating project boundaries and lane requirements, the Horseshoe Project can be broadly divided into two sections at Houston Street. Mixmaster North consists of that portion of the project west and north of Houston Street, extending to Sylvan Avenue in the west on IH 30 and to south of Commerce Street on IH 35E to the north. Mixmaster South includes the portion of the project east and south of Houston Street, extending eastward on IH 30 to IH 45 and north of Eighth Street on IH 35E to the south.

The proposed limits of construction and travel lanes to be constructed are as follows:

### *1.2.1 Mixmaster North*

#### 1.2.1.1 IH 30 from Sylvan Avenue to Houston Street

*Between Sylvan Avenue and the existing Trinity River channel:*

- Four (4) eastbound general purpose lanes, transitioning to five (5) general purpose lanes. Four (4) westbound general purpose lanes at Sylvan Avenue, transitioning from six (6) westbound general purpose lanes.
- One (1) reversible managed lane at Sylvan Avenue, transitioning to/from the innermost east/westbound general purpose lanes east of Sylvan Avenue.
- Two (2) to three (3) frontage road lanes in each direction. Frontage road lanes will be restricted to two (2) lanes in each direction over the Trinity River. Westbound frontage road access will be provided to Hardwick Street. Eastbound frontage road access will be provided to Beckley Avenue.
- One (1) pedestrian/bicycle path in each direction (two (2) total paths) will be provided as part of the Margaret McDermott Signature Bridges over the Trinity River. These paths will connect to Beckley Avenue.
- Access shall be provided to Sylvan Avenue from the IH 30 general purpose lanes via the IH 30 frontage roads.

*Between the existing Trinity River channel and Houston Street:*

- All frontage road lanes crossing the Trinity River will connect to/from Riverfront Blvd. on the east side of the Trinity River. Riverfront Blvd. will be reconstructed at this location.
- Pedestrian/bicycle paths will connect to Riverfront Blvd.
- Eastbound general purpose lanes will transition to two (2) lanes. Westbound general purpose lanes will transition from three (3) lanes.
- Direct-connect ramps will be constructed from eastbound IH 30 to

  (a) northbound IH 35E (two (2) lanes);

  (b) eastbound Commerce Street (one (1) lane);

  (c) the south/eastbound C-D (one (1) lane); and

  (d) Colorado Blvd. (one (1) lane).

#### 1.2.1.2 IH 35E from Commerce Street to Houston Street

- Four (4) southbound general purpose lanes, transitioning to three (3) lanes. Six (6) northbound general purpose lanes at Commerce Street, transitioning from three (3) lanes.
- Two (2) reversible managed lanes, providing access to/from Reunion Blvd and north/southbound IH 35E, tying into the innermost general purpose lanes on IH 35E.
- Two (2) frontage road lanes adjacent to north/westbound C-D.
- Two (2) north/westbound C-D lanes at Houston Street, transitioning to one (1) lane.
- Direct-connect ramps will be constructed from

  (a) southbound IH 35E to westbound IH 30 (two (2) lanes);

  (b) southbound IH 35E to the south/eastbound C-D (two (2) lanes);

(c) Reunion Blvd. to the south/eastbound C-D (one (1) lane); and

(d) northbound IH 35E to the northbound IH 35E frontage road (one (1) lane).

### *1.2.2 Mixmaster South*

#### 1.2.2.1 IH 30 from Houston Street to Hotel Street

*Between Houston Street and Hotel Street:*

- Two (2) eastbound and three (3) westbound general purpose lanes.
- Direct-connect ramps will be constructed from the south/eastbound C-D to

  (a) the eastbound IH 30 C-D (two (2) lanes) and

  (b) Riverfront Blvd. (one (1) lane), transitioning to two (2) lanes.
- Direct-connect ramps will be constructed from the westbound IH 30 C-D to

  (a) westbound IH 30 (one (1) lane);

  (b) the southbound IH 35E C-D (one (1) lane);

  (c) southbound IH 35 E (two (2) lanes);

  (d) the north/westbound C-D (two (2) lanes); and

  (e) the westbound frontage road (one (1) lane).
- One (1) frontage road lane will be built to connect Hotel Street with the north/westbound frontage road. Entrance/egress will be provided to/from Memorial Drive and the westbound frontage road.

*Between Hotel Street and IH 45:*

- Three (3) westbound IH 30 C-D lanes, transitioning to four (4) lanes.
- Exit ramp from the northern Ervay Street exit ramp to the westbound IH 30 C-D (one (1) lane).
- Exit ramp from westbound IH 30 to the westbound IH 30 C-D (two (2) lanes).

#### 1.2.2.2 IH 35E from Houston Street to Eighth Street

*Between Houston Street and the existing Trinity River channel:*

- Three (3) southbound general purpose lanes, transitioning to five (5) lanes. Three (3) northbound general purpose lanes with one (1) auxiliary lane, transitioning to three (3) lanes.
- Two (2) reversible managed lanes adjacent to northbound IH 35E.
- Five (5) northbound C-D lanes and four (4) southbound C-D lanes with sidewalks in both directions.
- Direct-connect ramps will be constructed from

  (a) northbound IH 35E to westbound IH 30 (one (1) lane);

  (b) the northbound IH 35E C-D to northbound IH 35E general purpose lanes (one (1) lane);

  (c) the northbound IH 35E C-D to eastbound IH 30 (one (1) lane);

  (d) the northbound IH 35E C-D to the eastbound C-D road (one (1) lane),

(e) the northbound IH 35E C-D to Riverfront Blvd. (two (2) lanes, transitioning to three (3) lanes at the intersection with Riverfront Blvd.) and

(f) Riverfront Blvd. to the direct-connect ramp between eastbound IH 30 and Colorado Blvd. (one (1) lane).

*Between the existing Trinity River channel and Eighth Street:*

- Four (4) northbound general purpose lanes, transitioning to three (3) lanes. Four (4) southbound general purpose lanes with one (1) auxiliary lane.
- Two (2) northbound C-D lanes, transitioning to five (5) northbound lanes. Four (4) southbound C-D lanes, transitioning to three (3) lanes.
- The alignment of Colorado Blvd. will be adjusted and reconstructed at this location.
- One (1) reversible managed lane at Eighth Street, transitioning to two (2) lanes.
- Direct-connect ramps will be constructed from

  (a) northbound Fleming Place to the northbound IH 35E C-D (one (1) to two (2) lanes);

  (b) northbound IH 35E at Dale Street to the northbound IH 35E C-D (one (1) lane).
- The northbound IH 35E C-D will be reconstructed in this section from approximately Sixth Street northwards.
- Direct-connect ramps will be constructed from

  (a) northbound IH 35E to the northbound C-D north of Colorado Blvd. (two (2) lanes); and

  (b) the southbound IH 35E C-D to southbound IH 35E (one (1) lane).

## 1.3 Project Requirements

### *1.3.1 Compatibility with Ultimate Scope*

The Ultimate Scope of Work for the Project shall be the future improvements by others as depicted in the ultimate Pegasus Project that received schematic approval in 2005 (the "Ultimate Scope"). See Section 11.2.2 for additional information regarding Pegasus Project elements that must be accommodated. The Design-Build Contractor's Work shall be compatible with the Ultimate Scope.

The design documents furnished by Design-Build Contractor shall provide for a smooth transition from the Project's scope of Work to the Project's Ultimate Scope condition. Design-Build Contractor shall endeavor to minimize "throwaway" costs associated with improving the Project to meet the requirements of the future Ultimate Scope configuration. The Work shall provide for minimal disruption to traffic during the Ultimate Scope construction phase. Additionally, the Project scope of work shall be designed and built to minimize the cost associated with the future Ultimate Scope construction to the extent that Design-Build Contractor costs to construct the Project scope of work is not unreasonably increased.

## 1.4 General Construction Requirements

Design-Build Contractor shall perform design and construct the Project in compliance with requirements in TxDOT's *Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges.*

# 2 PROJECT MANAGEMENT

Design-Build Contractor shall establish and maintain an organization that effectively manages all Elements of the Work. This project management effort shall be defined by and follow the Project Management Plan (PMP), which is a collection of several management plan Elements (PMP Elements) describing discrete Elements of the Work as described in Table 2-1 below. The Project Management Plan is an umbrella document that describes Design-Build Contractor's managerial approach, strategy, and quality procedures to design and build the Project and achieve all requirements of the DBA Documents. Within the timelines for implementing each Element of the PMP, the plan shall include details of external auditing procedures.

**Table 2-1. Elements of the Project Management Plan**

| Chapter Title | Section of Book 2 That Defines the Chapter Requirements |
|---|---|
| **Project Administration** | Section 2 |
| **Quality Management Plan**<br>• **Design Quality Management**<br>• **Construction Quality Management**<br>• **Maintenance Management** | Sections 2 and 19 |
| **Comprehensive Environmental Protection Plan** | Section 4 |
| **Communications Plan**<br>• **Public**<br>• **Design-Build Contractor Entities**<br>• **Local Government and Stakeholders**<br>• **TxDOT** | Section 3 |
| **Safety Plan** | Section 2 |
| **TxDOT – Design-Build Contractor Communications Plan** | Section 2 |
| **Right-of-Way Acquisition Plan** | Section 7 |

A listing of documents to be included in the Project Management Plan is contained in Attachment 2-1, Project Management Plan Contents, which also indicates when each document must be submitted to TxDOT.

TxDOT will audit and monitor the activities described in the management plans to assess Design-Build Contractor performance. All commitments and requirements contained in the PMP shall be verifiable.

# 2.1 Administrative Requirements

## *2.1.1 Project Schedule*

### 2.1.1.1 General Requirements

The Project Schedule shall define the timeframe for completion of the Project and achievement of milestones, and be used to monitor progress and denote changes that occur during design and construction as well as serving to determine the amount due to the Design-Build Contractor for a progress payment, if applicable. Before the commencement of any Schedule Activity, the Design-Build Contractor shall submit a Project Baseline Schedule (PBS) in accordance with the Work Breakdown Structure (WBS). The planning, design, construction, and completion of the Work shall be undertaken and completed in accordance with the most recent Project Schedule approved by TxDOT.

### 2.1.1.2 Required Submittals

#### 2.1.1.2.1 **Project Baseline Schedule**

Design-Build Contractor shall use the Preliminary Project Baseline Schedule (PBS-1) submitted with the Proposal as a foundation to prepare a Project Baseline Schedule and shall submit a draft of the Project Baseline Schedule to TxDOT for review and approval. Approval of the Project Baseline Schedule (PBS-2) shall be a condition of NTP2. TxDOT will review the Project Baseline Schedule within 30 days of submission. In the event that TxDOT does not accept the Project Baseline Schedule, Design-Build Contractor shall revise and resubmit it with changes clearly identified. TxDOT will review each resubmission of the Project Baseline Schedule within 14 days of resubmission. Design-Build Contractor shall submit a single hardcopy of the Project Baseline Schedule on full-size (24” x 36”) color plot sheets, along with an electronic version of the schedule in its native format and Portable Document Format (PDF) for each submittal. Design-Build Contractor shall be responsible for updating scheduling software to maintain compatibility with current TxDOT-supported scheduling software. Compatible shall mean that the Design-Build Contractor-provided electronic file version of the Project Baseline Schedule may be loaded or imported by TxDOT using TxDOT’s scheduling software with no modifications, preparation, or adjustments. All scheduling software settings within the scheduling/leveling dialog box shall remain “default” unless otherwise approved by TxDOT. In addition, any changes to the scheduling software settings that alter the scheduling calculations shall be clearly identified and provided as part of the submittals.

The Project Baseline Schedule will be developed in stages beginning with the PBS-1. At each stage of PBS development, a new version will be created with more detail added. PBS-2 shall be progressed and updated monthly until PBS-3 is approved. PBS-3 shall be submitted sufficiently in advance to obtain approval within 90 days after DBA Effective Date. The approved PBS-3 shall be progressed and updated monthly until a subsequent version (PBS-3+) is approved.

PBS-3 and all subsequent schedule revisions (PBS-3+) shall be submitted sufficiently in advance to obtain approval prior to performing any utility relocation or construction activities changed in the revised baseline.

Design-Build Contractor shall submit to TxDOT a Revised Project Baseline Schedule with each Change Order and again within fourteen (14) days of the execution of the Change Order. All approved Change Orders shall be incorporated into the originally planned execution of the Work. TxDOT shall confirm in writing the approval of each Revised Project Baseline Schedule. The approved Project Baseline Schedule or current approved Revised Project Baseline Schedule shall remain in force until a subsequent Revised Project Baseline Schedule is approved by TxDOT.

The Project Baseline Schedule shall include a separate narrative report which describes, in general fashion, Design-Build Contractor’s proposed methods of operation for designing and constructing the

major portions of the Work required by the DBA Documents. The schedule narrative shall describe the general sequence of design and construction, the proposed Critical Path of the Project, and all Milestone Schedule Deadlines.

The Project Baseline Schedule shall include all major Work activities required under the DBA Documents, in sufficient detail to monitor and evaluate design and construction progress, from commencement of the Work to Final Acceptance of the Work. The Project Baseline Schedule shall also include activities for property acquisition, Utility Adjustments, permit acquisitions, and interfaces with other projects, localities, municipalities and other Governmental Entities. For each major activity, Design-Build Contractor shall indicate the duration (in Days) required to perform the activity and the anticipated beginning and completion date of each activity. In addition, the Project Baseline Schedule shall indicate the sequence of performing each major activity and the logical dependencies and inter-relationships among the activities.

The Project Baseline Schedule shall be organized consistent with the WBS, the minimum requirements of which are included as Attachment 2-2 – Work Breakdown Structure Requirements. In addition, PBS shall be cost and resource loaded in accordance with Attachment 2-2 – Work Breakdown Structure Requirements. Each Schedule Activity shall be mapped to one and only one of the WBS elements. Design-Build Contractor shall further develop and detail the base WBS in accordance with its specific Schedule Activities and retaining the ability to summarize to at least the same level as shown in the base WBS. Design-Build Contractor may add additional activities to the levels presented in Attachment 2-2 with TxDOT's written approval.

**Table 2-2. Schedule Level-of-Detail Requirements**

| Discipline | Detail | PBS-1 | PBS-2 | PBS-3+ |
|---|---|---|---|---|
| Right-of-Way Acquisition | WBS Level | 4 | All levels | All levels |
| | Cost Loading | No | No | No |
| | Resource Loading | No | No | No |
| | Maximum duration of Schedule Activity | No maximum | 20 Days[1] | 20 Days[1] |
| Preconstruction Submittals & Permitting | WBS Level | 4 | All levels | All levels |
| | Cost Loading | No | No | No |
| | Resource Loading | No | No | No |
| | Maximum duration of Schedule Activity | No maximum | 20 Days[1] | 20 Days[1] |
| Utility Coordination | WBS Level | 4 | All levels | All levels |
| | Cost Loading | No | No | No |
| | Resource Loading | No | No | No |
| | Maximum duration of Schedule Activity | No maximum | 20 Days[1] | 20 Days[1] |
| Design | WBS Level | 4 | All levels | All levels |
| | Cost Loading | No | No | No |
| | Resource Loading | No | No | No |
| | Maximum duration of Schedule Activity | No maximum | 20 Days[1] | 20 Days[1] |
| Utility Relocation | WBS Level | 5 | 5 | All levels |
| | Cost Loading | Yes | Yes | Yes |
| | Resource Loading | No | No | Yes |
| | Maximum duration of Schedule Activity | No maximum | No maximum | 20 Days[1] |
| Construction | WBS Level | 4 | 4 | All levels |
| | Cost Loading | No | Yes | Yes |
| | Resource Loading | No | No | Yes |
| | Maximum duration of Schedule Activity | No maximum | No maximum | 20 Days[1] |

[1]Or as otherwise approved by TxDOT.

At a minimum, all resource loading shall detail the number of crews and crew type. Prior to the inclusion of any crew in any Project Baseline Schedule, Design-Build Contractor shall provide TxDOT with the composition and production rate for each crew type.

The Project Baseline Schedule shall divide the Work into Schedule Activities with appropriate logic ties to show the Design-Build Contractor's overall approach to the planning, scheduling, and execution of the Work. All Work shall be divided into reasonable sections and shall be represented by Schedule Activities.

The duration and logical relationships of the Schedule Activities (or summaries at phase level) shall be based on the actual duration and relationships anticipated. Design-Build Contractor shall not use calendar dates or constraints to alter or modify scheduling logic unless such calendar dates or constraints are shown in the Technical Provisions or other DBA Documents.

Design-Build Contractor shall use standard and consistent Schedule Activity identification numbers, textual descriptions, and codes in all Project Baseline Schedule submittals, in a manner acceptable to TxDOT. Each Project Baseline Schedule submittal shall be clearly identified. Resubmissions of a Project Baseline Schedule shall use the same revision number as the original submission individually identified by a sequential appended letter (A, B, C, etc.), as an identification of a revised version.

Design-Build Contractor shall allocate the total Design-Build Contract price throughout the Schedule Activities in the Project Baseline Schedule. Such allocation shall accurately reflect Design-Build Contractor's cost for each Schedule Activity and shall not artificially inflate, imbalance, or front-load line items. The price of each Schedule Activity shall be all-inclusive and shall include all direct and indirect costs, overhead, risks, and profit. Cost information shall be included with Design-Build Contractor's first monthly Project Status Schedule Update.

Each milestone shall be separately identified, conform to the scheduling requirements set forth in the Contract Documents, and be assigned a "finish no later than" constraint date. Milestones shall not be used as controlling predecessor activities.

No unspecified milestones, constraints, Float suppression techniques, or use of Schedule Activity durations, logic ties, and/or sequences deemed unreasonable by TxDOT, shall be used in the Project Baseline Schedule. Each Project Baseline Schedule submittal shall clearly and individually define the progression of the Work within the applicable time frame by using separate Schedule Activities. The critical path shall be highlighted in red on all schedules to distinguish critical Schedule Activities from other Schedule Activities and Float shown for all Schedule Activities.

Float shall not be considered as time for the exclusive use of or benefit of either TxDOT or Design-Build Contractor but shall be considered as a jointly owned, expiring resource available to the Project and shall not be used to the financial detriment of either party. Any method utilized to sequester Float calculations will be prohibited without prior approval of TxDOT. Any schedule, including the Project Baseline Schedule and all updates thereto, showing an early completion date shall show the time between the scheduled completion date and the applicable Milestone Schedule Deadline as "Project Float."

The Project Baseline Schedule shall be used by the Parties for planning and monitoring the progress of the Work, as well as serving as the basis for determining the Payment Request amount that may be compensable to Design-Build Contractor. The updated Project Baseline Schedule shall show actual progress and not calculated progress. Approved logic changes and approved changes to the Agreement shall be incorporated into the Project Baseline Schedule.

The commodity, labor, or equipment quantity that the Schedule Activity value will be based on shall be indicated as a resource and only those resources actually available to the Design-Build Contractor shall be included. Labor-loading of activities may be based upon total number of workers, but, at a minimum total number of crews. Major construction equipment to be used by Design-Build Contractor and subcontractors at all tiers in prosecuting Work shall be assigned to applicable Schedule Activities. The quantity shall represent the estimated effort in-place for the Schedule Activity value.

Design-Build Contractor shall develop the WBS with clearly identifiable linkage to the Schedule of Values and Design-Build Contractor-designed Schedule Activities and phases represented in the Project Baseline Schedule. The Schedule Activity for each Work Element shall indicate the duration, timing, and logical relationship to other Work Elements, including to Schedule Activities other than the parent Schedule Activity of the particular Work Element. Schedule Activities shall be broken down minimally to Work Elements (for example, bridges shall be broken down into foundations, substructure, superstructure,

and decks). All Work shall be broken down to similar manageable Work Elements. For Mobilization Schedule Activities or Work Elements, Design-Build Contractor shall provide a list of Work items that are included in each Schedule Activity or Work Element.

The Project Baseline Schedule shall include a listing of all submittals as called out in the DBA Documents. Submittal activity durations shall include specific durations for TxDOT review and/or approval of Design-Build Contractor's submittals as called out elsewhere in the Agreement and these Technical Provisions.

With the exception of activities relating to Environmental Approvals by Governmental Entities, each Schedule Activity depicting Design-Build Contractor's operations shall have duration of not more than twenty (20) Days, and not less than one (1) Day, except as otherwise approved by TxDOT. All Schedule Activities, with the exception of the first and last activities, shall have a minimum of one predecessor and a minimum of one successor Schedule Activity.

The Project title and data date shall be displayed on all schedules, charts and diagrams. A legend shall be provided on all schedules, charts and diagrams which indicate the various symbols used and their meanings.

#### 2.1.1.2.2 **Project Status Schedule Updates**

Beginning with the first full month after NTP2, Design-Build Contractor shall submit to TxDOT Project Status Schedule Updates. The Project Status Schedule Updates shall be submitted monthly, as part of the monthly Progress Report and Payment Request, if applicable, until Final Acceptance of the Work.

The Project Status Schedule Updates shall accurately reflect the current status of the Project including all activities completed as of the effective date of the current PBS, recovery schedules, schedule revisions due to Relief Event Determinations and approved Change Orders, Design-Build Contractor's detailed schedule for completing the Work and all information and reporting required for the Project Schedule. At a minimum, the monthly Project Status Schedule Update(s) shall include the following current Work data:

- Detailed resource-loaded schedule of activities that clearly identify the Critical Path;
- If applicable, progress for the current Payment Request period for all Project activities; and
- Actual start and finish dates of Work, physical percent complete, and Days remaining for Work in progress.

The data date for use in calculating the Project Status Schedule Update shall be the first day of the following month. The Project Status Schedule Update shall accurately reflect updated progress as of the effective date of the updated PBS, forecast finish for in-progress Schedule Activities and reforecast early dates and late dates for remaining Schedule Activities and shall indicate the overall physically complete percent of the Project. If any actual dates are changed or corrected in any following month, a narrative must be included providing explanation of the change.

Time-scaled network diagrams shall be submitted, on at least a monthly basis, on sheets no larger than 22" x 34", using a scale that yields readable plots. The network diagrams shall be organized consistent with the Project WBS. Project activities shall be linked by logic ties and shown on their early dates. The Critical Path shall be highlighted and Float, where applicable, shown for all Project activities.

The monthly Project Status Schedule Update(s) shall include additional, separate, filtered lists of Project activities and work elements included in the Project Schedule to create the following reports:

- Coordinating with and accomplishing Work associated with Utilities,
- Bar chart schedule sorted by segment or section indicating the physical status of all activities as of date of the update,

- Graphical report, which compares Design-Build Contractor's progress to planned progress by segment or section, and major payment item/WBS,
- Design document submittals for the forthcoming period,
- Tabular report listing all activities with ten (10) days or less Float,
- Sixty-day (60) look ahead report on all TxDOT and Governmental Approvals required,
- Ninety-day (90) look ahead bar chart schedule sorted by WBS and activity early start dates,
- Monthly expenditure projections and cash expenditure curves by WBS,
- Critical items graphical report for each Critical Path sorted by activity early start date, and
- Time-scaled critical path network plot indicating the status of all activities as of the date of the update.

The reports shall be accompanied by a narrative progress report describing the status of the Project in detail including progress made that period; plans for the forthcoming period; all potential delays and problems; their estimated effect on the Project Schedule and overall completion, and whether on, ahead of or behind schedule.

TxDOT will review the monthly Project Status Schedule Update(s) for consistency with Design-Build Contractor's WBS and the current approved Project Schedule and for conformance with the DBA Documents. Design-Build Contractor shall correct any deficiencies and resubmit its monthly Project Status Schedule Update(s) with the Payment Request. TxDOT will notify Design-Build Contractor of corrections required within ten (10) Business Days of receipt of the Project Status Schedule Update(s).

TxDOT will use these updates to manage its activities to be responsive to Design-Build Contractor's Project Schedule, to analyze monthly progress payments to Design-Build Contractor, and to measure Design-Build Contractor's performance with respect to its plan for accomplishing the Work.

Design-Build Contractor shall submit a single hard copy of the Project Status Schedule Update in full-size color plot sheets, along with an electronic version of the schedule in its native format and PDF. Software settings shall not be changed or modified, for any schedule submissions, without prior TxDOT Approval. No changes in activity durations, calendar assignments, logic ties, or constraints will be allowed in the Project Status Schedule Update without the written approval of TxDOT.

#### 2.1.1.2.3 **Schedule of Values**

Concurrent with the Project Baseline Schedule, the Design-Build Contractor shall submit to TxDOT a complete Schedule of Values for all Payment Activities as described below for TxDOT's approval. TxDOT approval of the Schedule of Values shall be a condition of NTP2. In addition, no payment by TxDOT from the Public Funds Amount will be made until the Schedule of Values is approved by TxDOT.

The following pertains to presentation of the Schedule of Values:

a) The Payment Activities shall be organized and grouped according to the approved WBS with subtotals for each WBS item at each WBS Level. There can be one or more Payment Activities for each of the lowest (terminal) WBS elements in the WBS. For example, earthwork (WBS Level VI) could have one Payment Activity or multiple Payment Activities that roll up costs to the WBS Level VI element.

b) The Schedule of Values shall contain for each Payment Activity from the Project Baseline Schedule, the activity unique identification number, the activity description, the quantity, the applicable unit, unit price and scheduled value.

c) The Design-Build Contractor's project management, administration, design, contingencies and any allowance for inflation, profit and financing, as well as indirect site costs such as site cleanup and maintenance; temporary roads and access; off-site access roads; and security shall be prorated through all Payment Activities so that the sum of all the Schedule of Values line items equals the Total Project Construction Cost.

If it becomes necessary to add, combine, eliminate or modify any Payment Activities due to changes in the Work, a revised Schedule of Values as derived from a revised Project Baseline Schedule, shall be submitted 14 days after the respective Change Order, Relief Event or Compensation Event is executed, for acceptance by TxDOT.

2.1.1.2.4 **Progress Report**

Each month, beginning with the first full month after NTP2, the Design-Build Contractor shall submit to TxDOT the Progress Report. The Design-Build Contractor shall submit the Progress Report by close of business within seven (7) days following prior month's end. An electronic and printed copy of the entire Progress Report shall be submitted to TxDOT.

The Progress Report shall contain a narrative which shall include the following items:

a) Describe progress for each Section and the Project as a whole, including all phases of Work. Identify start date and completion dates on major areas of Work. Group the information based on the WBS.

b) Summarize QA/QC findings.

c) List any Change Orders that were identified or executed during the period. Include their status.

d) Identify any Relief Events or Compensation Events that were accepted during the period.

e) Identify Schedule Activities planned for the upcoming period.

f) Identify problems and issues that arose during the period and issues that remain to be resolved.

g) Summarize resolution of problems/issues raised in previous progress reports or resolved during the period.

h) Identify Critical Path issues and proposed resolution.

i) Provide a report on the Milestone Schedule Deadlines showing the schedule dates for the immediate prior month and current month. A narrative is required to explain why the dates have changed for variances greater than thirty (30) days.

j) Provide monthly expenditure projection curves for the total Project.

k) Identify requested and/or required TxDOT or Independent Engineer actions for the next month.

l) Provide digital progress photographs that accurately depict Project progress as outlined in the progress report narrative.

The Project Status Schedule Update shall be provided as part of the Progress Report using the following printouts:

a) Gantt chart sorted by Work areas indicating the physical status of all Schedule Activities as of the date of the update and comparing the Design-Build Contractor's progress to planned progress;

b) Gantt chart showing all critical Schedule Activities, sorted by early start dates;

c) Ninety-day look ahead Gantt chart showing all upcoming Submittals from the Design-Build Contractor and approvals required by TxDOT or Governmental Entities;

d) Ninety-day look ahead Gantt chart grouped by WBS and sorted by early start dates; and

e) Gantt chart that clearly identifies the longest path sorted by early start dates.

If any Progress Payment is to be submitted, it shall accompany the monthly Progress Report.

If requested by TxDOT, the Design-Build Contractor shall make all corrections to the monthly Progress Report and resubmit. If the Design-Build Contractor does not agree with TxDOT's comments, the Design-Build Contractor shall provide written notice of disagreement within seven (7) Days from the receipt of the comments.

2.1.1.2.5 **As-Built Schedule**

Upon completion of the Punch List, the Design-Build Contractor will submit the Project Status Schedule Update identified as the "as-built schedule". The "as-built schedule" shall reflect the exact manner in which the Work up to each Final Acceptance and described by the DBA Documents was actually performed (including start and completion dates, Schedule Activities, actual durations, sequences and logic). The "as-built schedule" shall be signed and certified by the Design-Build Contractor's Project Manager and the Design-Build Contractor's scheduler as being a true record of when the Work was actually performed. The "as-built schedule" that TxDOT determines is the correct and complete will be accepted as a condition of each Final Acceptance.

### 2.1.1.3 Revisions

If it becomes necessary to add, combine, eliminate, or modify Payment or Schedule Activities to reflect modifications to the Work, such changes shall be made through a Change Order, Compensation or Relief Event that has been provided by TxDOT, and therefore reflected in the Project Schedule. Revisions to the Project Schedule and consequent realignment of funds between Payment Activities may be requested by the Design-Build Contractor through a Change Request, Compensation or Relief Event Notices.

### 2.1.1.4 Time Impact Analysis

As part of a Potential Change Order (PCO) Notice based on a delay as set forth in the Agreement, the Design-Build Contractor shall submit to TxDOT a written time impact analysis illustrating the influence of each PCO. Each time impact analysis shall include a fragmentary network demonstrating how the Design-Build Contractor proposes to incorporate the change, delay, or Design-Build Contractor request into the current Project Status Schedule Update.

The time impact analysis shall demonstrate the time impact to each and every affected Schedule Activity in the current Project Status Schedule Update utilizing the most recent schedule update as the basis for the analysis. The date of the most recent schedule update shall be a date prior to the date the change is given to the Design-Build Contractor, the date the delay occurred, or the date the Design-Build Contractor submits a request for a change. The event times used in the time impact analysis shall include the most recent schedule update, or as adjusted by mutual agreement.

The time impact analysis Submittal shall include the details of the change, including added, changed or deleted data for Schedule Activities and logic. If the current Project Status Schedule Update is revised subsequent to submittal of a time impact analysis but prior to its acceptance, the Design-Build Contractor shall promptly indicate in writing to TxDOT the need for any modification to its time impact analysis.

Delays shall not automatically mean that an extension of any milestone is warranted or due to the Design-Build Contractor. TxDOT will accept time extensions associated with PCOs only to the extent that time adjustments to the Schedule Activity or Activities affected by the change or delay exceeds the total (positive or zero) Float of a critical Schedule Activity (or path) and extends the affected Milestones Schedule Deadline(s). In the case of multiple lines of negative Float, the change or delay must cause the affected path to exceed all others before a time extension will be granted.

The Design-Build Contractor shall submit one printed CPM schedule including all Schedule Activities affected by the time impact analysis, grouped and sorted by WBS and compared to the current Project Schedule Baseline. In addition, the Design-Build Contractor shall provide one electronic backup of the Project Schedule with the time impact analysis and a comprehensive narrative for each PCO Notice.

The Design-Build Contractor shall incorporate the results of the PCO from TxDOT into the Project Status Schedule Update for the next progress report.

#### 2.1.1.5 Recovery Schedule

If the Work is delayed on any Critical Path item for a period which exceeds the greater of either thirty (30) Days in the aggregate or that number of days in the aggregate equal to five (5) percent of the days remaining until Final Acceptance for the last Project Segment, the next Project Status Schedule Update shall include a recovery schedule demonstrating the proposed plan to regain lost Project Schedule progress and to achieve Final Acceptance of the last Project Segment by the specified date.

If the recovery schedule is required hereunder, the Design-Build Contractor shall have no right to receive settlement of a Payment Request until such time as the Design-Build Contractor has prepared and TxDOT has accepted such recovery schedule.

### *2.1.2 Document Management*

All electronic information submitted to TxDOT shall be searchable and legible.

#### 2.1.2.1 Document Storage and Retrieval Requirements

Design-Build Contractor shall establish and maintain an Electronic Document Management System (EDMS) to store, catalog, and retrieve all DBA Documents using the applicable control section job (CSJ) numbers. Unless otherwise directed by TxDOT, record retention shall comply with the requirements of the *Texas State Records Retention Schedule*, and shall be provided to TxDOT at the time of the expiration or earlier termination of the Agreement.

Maintenance records shall utilize the same format as TxDOT utilizes for its statewide asset inventory and condition assessments and shall be capable of being integrated into TxDOT's maintenance management systems.

Construction quality acceptance test results shall be automatically transmitted to TxDOT's I2MS system using TxDOT's extensible markup language (XML) web service. A sample is shown in Attachment 2-4, I2MS Test Form Fields. Design-Build Contractor shall coordinate with TxDOT to obtain the most current version prior to commencing construction quality acceptance testing. The responsible technician and his/her supervisor shall sign the daily test reports and the results of the daily tests shall be provided to TxDOT and the Independent Engineer within 48-hours after test completion.

In the provision of a document management system, the Design-Build Contractor shall:

a) Use data systems, standards and procedures compatible with those employed by TxDOT and implement any new operating practices required as a result of TxDOT's amendments to any such systems, standards and procedures.

b) Provide a secure location for any interface as may be provided by TxDOT, such that only authorized users have access and that it is protected from loss, theft, damage, unauthorized or malicious use.

c) Employ appropriate standards and procedures, and train Design-Build Contractor personnel to operate any TxDOT data management system which TxDOT may require in connection with the Project.

d) Provide a mechanism for the electronic transfer of metadata along with the associated portable document format (PDF) images for uploading into an EDMS employed by TxDOT.

To allow for disaster recovery, the Design-Build Contractor shall back-up and store all Project-related documents in a secure off-site area.

Design-Build Contractor shall provide TxDOT at Design-Build Contractor's expense, sufficient access to Design-Build Contractor's document control database as deemed necessary by TxDOT.

## 2.2 Quality Management Plan

Design-Build Contractor shall submit a comprehensive Quality Management Plan to TxDOT for approval that is consistent with and expands upon the preliminary Quality Management Plan submitted with the Proposal. The Quality Management Plan shall comply with ISO 9001:2000 for quality systems, quality plans and quality audits, or most current version, as updated by the International Standards Organization, as of the Proposal Due Date. Design-Build Contractor may elect to obtain formal ISO 9001 certification, but will not be required to do so. The Quality Management Plan shall also comply with the provisions of the TxDOT Design-Build Quality Assurance Program.

### *2.2.1 General Requirements*

Design-Build Contractor shall develop, implement, and maintain the Quality Management Plan for the Term. The Quality Management Plan shall describe the system, policies, and procedures that ensure the Work meets the requirements of the DBA Documents and provides documented evidence of same.

The complete Quality Management Plan shall incorporate the following features:

a) Design-Build Contractor shall make all quality records immediately available to TxDOT for review. Design-Build Contractor shall provide TxDOT with a copy of any and/or all quality records when requested.

b) The Quality Management Plan shall encompass all Work performed by Design-Build Contractor and Contractors of all tiers.

c) Design-Build Contractor shall submit to TxDOT the results of all internal audits within seven Days of their completion.

d) Design-Build Contractor shall promptly submit to TxDOT non-conformance reports both upon issuance and resolution.

The Quality Management Plan shall contain detailed procedures for Design-Build Contractor's quality control and quality assurance activities. Design-Build Contractor's quality process shall incorporate planned and systematic verifications and audits undertaken by an independent party. Design-Build Contractor shall conduct all quality control, quality assurance, performance verification, and design overlay and coordination among design disciplines, all in accordance with the Quality Management Plan and the requirements of the DBA Documents.

Inspections, reviews, and testing shall only be performed by personnel with appropriate training and qualifications, using appropriate equipment that is accurately calibrated and maintained in good operating condition at an AASHTO (AASHTO R18, "Establishing and Implementing a Quality System for Construction Materials Testing Laboratories") accredited facility, or at a facility with comparable accreditation (e.g., ISO 17025, "General Requirements for the Competence of Testing and Calibration Laboratories").

### *2.2.2 Quality Terminology*

Quality terminology, unless defined or modified elsewhere in the DBA Documents, shall have the meaning defined in ISO 9001. Terms used in ISO 9001 shall have the meanings defined below:

a) Organization: Design-Build Contractor's organization, including any Affiliates and Contractors.

b) Customers: the Users of the roadways, TxDOT, Customer Groups, and key stakeholders that have an adjacent property interest or connecting roadway.

c) Product: the Work.

### *2.2.3 Quality Management Organization*

Design-Build Contractor shall regularly maintain the Quality Management Plan to contain current versions of the following information:

a) The organizational chart that identifies all quality management personnel, their roles, authorities and line reporting relationships.

b) Description of the roles and responsibilities of all quality management personnel and those who have the authority to stop Work.

c) Identification of testing agencies, including information on each agency's capability to provide the specific services required for the Work, certifications held, equipment, and location of laboratories.

d) Resumes for all quality management personnel.

### *2.2.4 Quality Policy*

The Quality Management Plan shall contain a complete description of the quality policies and objectives that Design-Build Contractor will implement throughout its organization. The policy shall demonstrate Design-Build Contractor senior management's commitment to implement and continually improve the quality management system for the Work. QMP must describe CQAF personnel duties and provide a clear understanding of all testing and inspection roles and responsibilities.

### *2.2.5 Inspection and Testing*

The Quality Management Plan shall contain detailed descriptions of the inspection and test plans, including the timing and frequency of testing, that Design-Build Contractor will use to meet quality control and quality assurance requirements of the Work.

Design-Build Contractor shall revise its Quality Management Plan when its own quality management organization detects a systemic or fundamental non-conformance in the work performed or in the manner the Work is inspected or tested, or when TxDOT advises Design-Build Contractor of such a problem.

#### 2.2.5.1 TxDOT Construction Notices

On a weekly basis, Design-Build Contractor shall provide TxDOT with a rolling three-week inspection notice. The inspection notification shall include the fabrication schedule and planned construction activities for items where TxDOT is performing the fabrication inspection.

#### 2.2.5.2 Reporting, Recordkeeping, and Documentation

Design-Build Contractor shall develop and maintain inspection and testing records that include, but are not limited to:

a) Quality control inspection reports and process control material sampling/testing results and control charts shall be submitted to TxDOT within 24 hours following the inspection or test.

b) The Construction Quality Acceptance Firm (CQAF) shall maintain, electronically, a daily log of all inspections performed for both Design-Build Contractor and Subcontractor operations in a format acceptable to TxDOT and transmitted to TxDOT daily. The daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed. The responsible technician and supervisor shall sign the daily inspection reports. The results of the daily inspections shall be provided to TxDOT in an electronic format within 24 hours after the work shift.

c) The CQAF shall be responsible for establishing an electronic system for recording all material test results. The responsible technician and his/her supervisor shall sign the daily test reports. The results of the daily test shall be provided within one (1) Day of test completion.

d) The CQAF's inspection and materials quality program shall electronically deliver the laboratory and field test results to TxDOT in the database format provided in Attachment 2-2. This electronic reporting is intended to allow the Design-Build Contractor and TxDOT to make timely and accurate decisions on workmanship and material quality issues.

#### 2.2.5.3 Laboratory Requirements

Design-Build Contractor shall perform testing in accordance with, but not limited to:

a) Quality acceptance tests shall be conducted by the CQAF's testing laboratory identified in the CQMP that complies with the requirements of the AASHTO Accreditation Program (AAP) or other appropriate accreditation acceptable to TxDOT for the pertinent test. A copy of AAP accreditation certificate(s) shall be transmitted to TxDOT upon their receipt by the testing laboratory.

b) Equipment in all laboratories shall be calibrated prior to commencing any construction activities or when moved during construction and shall retain the calibration/certification by AASHTO, or TxDOT, as applicable for the duration of the Work.

c) Technicians used to provide testing services shall be certified in accordance with the DB Quality Assurance Programs for Construction.

#### 2.2.5.4 Supply Source and Material Quality

Quality of all materials shall conform to requirements contained in the DBA Documents and to any requirements of affected Utility Owners. The CQAF shall provide plant inspection and aggregate sampling and testing at concrete and asphalt plants. Manufacturers' test reports may supplement, but not replace, the QA inspections, sampling, testing and certification provisions.

#### 2.2.5.5 Responsibility and Authority of Design-Build Contractor Staff

Personnel assigned to perform inspection, testing, or monitoring of characteristics for acceptance shall not be those personnel performing or directly supervising the Work being accepted.

Design-Build Contractor's Construction Quality Control Manager and Construction Quality Acceptance Manager shall have no responsibilities in the production of the Work. Quality control staff shall only have responsibilities in monitoring the production quality of the Work and shall work independently of the quality assurance staff.

The Construction Quality Control Manager shall prepare a monthly report of the quality inspections and tests performed, results of such inspections and tests, and occurrences and resolution of non-conformance discoveries. Design-Build Contractor shall submit the monthly reports to TxDOT for review.

Design-Build Contractor's Construction Quality Control Manager and Construction Quality Acceptance Manager shall have the authority to stop Work for quality-related issues.

### *2.2.6 Design Quality Management Plan*

Design-Build Contractor shall prepare and submit to TxDOT for review and approval a Design Quality Management Plan (DQMP) that describes its policies, procedures, and staffing to manage design quality in accordance with the requirements of this Section 2.2.7.

#### 2.2.6.1 Released-for-Construction Documents

Design-Build Contractor shall submit to TxDOT all Released for Construction Documents in accordance with the submittal requirements of the Design Quality Management Plan. Design-Build Contractor's Released for Construction Documents shall comply with the requirements of the DBA Documents, and shall be detailed, complete, constructible, and shall allow verification of the design criteria and compliance with DBA Documents.

Not later than two Business Days after Design-Build Contractor has completed design of any particular Released for Construction Document, Design-Build Contractor shall submit the signed and sealed document to TxDOT.

The Design-Build Contractor shall prepare and provide all Project-related Submittals and documents using English units of measure.

The Design-Build Contractor shall furnish all Submittals by electronic copy in accordance with Section 2.1.2. Unless otherwise stated in the DBA Documents, the Design-Build Contractor shall provide to TxDOT four paper copies and a single electronic copy of each Submittal and at the same time provide to the DQAM four paper copies and a single electronic copy of each Submittal. Each Submittal shall have the signature of an authorized representative of the Design-Build Contractor, unless otherwise expressly stated for a particular Submittal. The electronic copy shall be in a suitable format (e.g. PDF) or in the format in which the Work was originally created unless stated otherwise in the DBA Documents.

The Design-Build Contractor shall include with each Submittal a transmittal cover sheet in a form acceptable to TxDOT.

The minimum sheet size for the Submittals shall be 8.5 inches by 11 inches. The maximum sheet size shall be 36 inches by 120 inches. Every page in a Submittal shall be numbered in sequence.

Each Submittal shall be full and complete and shall be assigned a unique, sequential number, clearly noted on the transmittal cover sheet. Original Submittal shall be assigned a unique numeric Submittal number. Revised Submittals shall bear an alphanumeric designation which consists of the unique Submittal number assigned to the original Submittal followed by a letter of the alphabet to represent that it is a subsequent Submittal of the original.

Any changes made on a revised Submittal, other than those made or requested by TxDOT, shall be identified and noted on the revised Submittal.

Design deliverables shall include a title block, consistent with the standard Project drawing format established as part of the Quality Management Plan, with the following information:

a) Date of issuance and including all prior revision dates.

b) Contract title and number.

c) The names of the Design-Build Contractor and applicable Affiliates.

d) Stage of development.

e) Reference to applicable Technical Documents and Amendments.

f) If required, review and acceptance or approval from a Governmental Entity, prior to submission to TxDOT.

g) Review stamp.

h) Action block space – All deliverables shall include a sufficient blank space in which the Design-Build Contractor may list required actions to be taken.

i) When calculations accompany drawings in a Submittal, cross-references from the body of the calculations to the individual drawing to which the pages of the calculations pertain.

j) Organization of the CAD drawings and associated documents in a logical manner, having a uniform and consistent appearance, and clearly depicting the intention of the design.

#### 2.2.6.2 Record Drawings and Documentation

Within ninety (90) Days of Final Acceptance of all or part of the Project, Design-Build Contractor shall submit to TxDOT a complete set of Record Drawings in hard copy and native electronic format for the portion of the project actually opened to traffic. The Record Drawings and Documentation shall be an organized, complete record of Plans and supporting calculations and details that accurately represent what Design-Build Contractor constructed.

Design-Build Contractor shall ensure that the Record Drawings reflect the actual condition of the constructed Work. Design-Build Contractor shall submit to TxDOT the electronic files used to prepare the Record Drawings and Documentation.

#### 2.2.6.3 DQMP General Requirements

The DQMP shall describe and include the following general requirements:

a) The quality control and quality review procedures for Professional Services products shall be organized by discipline (such as structural, civil, utilities). These procedures shall specify measures to ensure that appropriate quality requirements are specified and included in the Professional Services product and to control deviations from such requirements.

b) Specific quality control and quality review procedures, including all required forms and checklists, shall be specified for preparing, verifying and checking all Professional Services products to ensure that they are independently checked and back-checked in accordance with generally accepted engineering practices in the State of Texas and the requirements of the DBA Documents. The checking of structural design shall include a set of independent calculations, performed by the Design-Build Contractor's Design Firm for all structural elements.

c) The designer and checker shall be clearly identified on the face of all Final Design Documents. The DQMP shall also include specific procedures for verifying the Professional Services product along with any computer programs being used for such purposes. Design Documents shall be stamped, signed and dated by the engineer in responsible charge for that item, element, or phase of the Work.

d) Procedures shall be described for coordinating Professional Services performed by different individuals or firms working in the same area, in adjacent areas, or on related tasks to ensure that conflicts, omissions or misalignments do not occur between drawings or between the drawings and the specifications. This portion shall also include the coordination of the review, approval, release, distribution and revision of documents involving such parties.

e) Procedures shall: (i) ensure that Design-Build Contractor personnel are familiar with all the provisions of the DBA Documents concerning their respective responsibilities; (ii) provide for the education, training and certification, as appropriate, of personnel performing activities affecting or assessing the quality of the Work to assure that such personnel achieve and maintain reasonable proficiency; and (iii) ensure that the Work is performed according to the DQMP, generally accepted engineering practices in the State of Texas and the DBA Documents.

f) Procedures shall be established for meeting documentation requirements; the filing of design criteria, reports and notes, calculations, plans, specifications, schematics and supporting materials needed during the Final Design; and the specific responsibilities of personnel to satisfy these requirements. All Design Documents shall be maintained, organized and indexed by Design-Build Contractor and copies made available to TxDOT upon request.

**g)** Procedures and schedules for the PSQCM to perform audits of the Design Firm's quality control procedures under the DQMP.

### 2.2.6.4 Personnel and Staffing

*Professional Services Quality Control Manager*. Design-Build Contractor shall assign a Professional Services Quality Control Manager (PSQCM) who shall be responsible for management of quality control program for the design, environmental, ROW, Utilities and survey. The PSQCM shall not be involved with direct scheduling or production activities; and shall report directly to Design-Build Contractor's management team. The PSQCM shall see that the methods and procedures contained in the approved DQMP are implemented and followed by Design-Build Contractor design staff in the performance of the Work. The PSQCM shall be a Registered Professional Engineer.

*Design Quality Assurance Manager*. Design-Build Contractor shall assign an independent Design Quality Assurance Manager (DQAM) who shall be responsible for management of the quality assurance program for the design, environmental, ROW, Utilities and survey. The DQAM shall work for an independent Design Quality Assurance Firm (DQAF) hired by the Design-Build Contractor; and shall report jointly to TxDOT and the Design-Build Contractor's management team. The DQAM shall see that the methods and procedures contained in the approved DQMP are implemented and followed by Design-Build Contractor design staff in the performance of the Work. The DQAM shall be a Registered Professional Engineer. The DQAM shall not report to any person or party directly responsible for design or construction production.

*Personnel in Responsible Charge.* Design-Build Contractor shall designate (by name) the personnel in responsible charge for each item, element, or phase of the Work. The personnel in responsible charge shall possess the necessary registrations in the State of Texas and shall be personally responsible for directly supervising the Work and who will stamp, sign, and date the Professional Services product for a given item, element, or phase of the Work as applicable.

*Reviewing Professional Services.* The Design-Build Contractor personnel performing the quality control check of the Professional Services shall not be directly involved with the original development of the item, element, or phase being checked.

#### 2.2.6.4.1 **Design Quality Assurance Staff**

A quality assurance staff shall be provided under the direction of the DQAM to perform oversight and review of all design, environmental, ROW, Utilities and survey performed by any member of Design-Build Contractor's group.

The quality assurance staff shall be employees of the DQAF. The quality assurance staff shall be experienced in the various aspects of roadway design undertaken by the Design-Build Contractor. The training and experience of the quality assurance staff shall be commensurate with the scope, complexity, and nature of the design work to be reviewed. Qualifications shall include appropriate experience, certifications, training, and licensure. Design quality assurance staff shall report to the DQAM.

#### 2.2.6.4.2 **Design Quality Assurance Staff Levels**

The size of the quality assurance staff shall reflect the volume of quality assurance activities necessary for the Work in progress and shall be maintained in accordance with the approved DQMP. The DQAF staff

will perform quality assurance oversight and review typically performed by TxDOT on traditional projects.

The Design quality assurance staffing requirements shall be updated as necessary throughout the Term of Work to reflect changes in the actual design schedule. Design-Build Contractor shall ensure that adequate Design quality assurance staff is available and that DQMP activities are undertaken in a manner consistent with the Project Schedule and in a manner that will enable Design-Build Contractor to achieve the Substantial Completion and Final Acceptance deadlines.

Should TxDOT determine that Design-Build Contractor is not complying with DQMP because of lack of staff or ethical standards, TxDOT shall have the right, without penalty or cost, including time extensions or delay damages, to restrict Work efforts until appropriate levels of staffing consistent with the DQMP and satisfactory to TxDOT are obtained or TxDOT may contract with a separate firm to perform these services and withhold payment to Design-Build Contractor for such services.

#### 2.2.6.5 Professional Services Submittal Review Process

Design-Build Contractor shall conduct a series of working meetings with its Professional Services staff, the internal quality control of Design-Build Contractor staff, the DQAM and TxDOT to establish workflow processes and procedures to be utilized during the design review process that are consistent with the DBA Documents. The working meetings are also to develop an understanding on general design concepts such as geometrics, aesthetics, drainage, traffic control, and structures.

Design-Build Contractor and TxDOT shall collaborate and mutually agree upon (i) a list of proposed sections (i.e., Station x+xx to Station y+yy) for the Work; (ii) Professional Services packaging and content (such as drainage, individual structures, roadway, traffic sequencing, and others); (iii) a list of mandatory submittals; and (iv) a proposed submittal schedule. The Professional Services reviews shall be evenly scheduled over the duration of the Professional Services phase of the Work. Sections and packages shall be logically organized into manageable pieces and shall contain sufficient information and details to confirm Design-Build Contractor intent and to validate conditions. Design-Build Contractor shall obtain TxDOT's written approval of the sections, packages and contents, the schedule, and the methodology prior to making the first submittal.

The PSQCM shall chair the submittal reviews with TxDOT and the DQAM, and Design-Build Contractor shall maintain formal documentation of these meetings for TxDOT's audit.

The purpose of the submittal reviews is for TxDOT and the DQAM to review Professional Services products for general compliance with Project requirements, sound engineering practice, applicable Law, the Governmental Approvals and the DBA Documents. All submittals are subject to review and comment by persons designated in the Technical Provisions.

If the Design-Build Contractor and TxDOT cannot come to an agreement on the list of mandatory submittals, the following list shall be provided at minimum:

- Corridor Structure Type Study and Report submittals,
- Preliminary Bridge Layout submittals,
- Preliminary Design submittal,
- Final Design Submittal,
- Any deliverables described in the Technical Provisions,
- Exhibits Supporting Railroad Agreements, and
- Design Exceptions and Design Waiver Requests.

2.2.6.5.1 **Final Design Submittal**

The Final Design Submittal shall be submitted to TxDOT and the DQAM for general review and the PSQCM shall provide certification of compliance. Construction packages for individual Work items, elements or phases shall be organized such that the final document package can be assembled in a manner similar to the standard construction documentation typically provided to TxDOT for conventional project letting, as mutually agreed upon by Design-Build Contractor and TxDOT.

When Design-Build Contractor has completed the Final Design Submittal for an item, element, or phase and wishes to obtain TxDOT and DQAM concurrence of such a design, the PSQCM shall certify that:

a) The design meets all applicable requirements of the DBA Documents, applicable Law and the Governmental Approvals.

b) The design has been checked in accordance with Design-Build Contractor's approved DQMP.

c) The item or element is ready for construction.

d) Design-Build Contractor has obtained all required Final ROW, Governmental Approvals, and Utility Owner approvals.

The Final Design Submittal shall be complete Design Documents incorporating all of the design submittal review comments. All documentation, including copies of TxDOT's approval of deviations for design standards and/or Design Exceptions shall be provided with the Final Design Submittal.

Prior to certifying the above items, elements, or phases, and upon review and comment of the Final Design Submittal by TxDOT and the DQAM, PSQCM shall schedule a formal review with TxDOT and the DQAM.

2.2.6.5.2 **Formal Review**

PSQCM will conduct a formal review presentation to TxDOT and the DQAM at a location acceptable to TxDOT. The formal review presentation will be held following TxDOT and DQAM review and comment of the mandatory submittals.

At least five (5) Business Days prior to the applicable formal review presentation dates, Design-Build Contractor will assemble and submit drawings or other documents to TxDOT and the DQAM for information and review.

Draft minutes of formal review presentations shall be submitted to TxDOT and the DQAM by PSQCM within five (5) Business Days after completion of each review.

### 2.2.6.6 Resubmittal Process

Resubmittals of any design submittal may be required if deemed necessary by TxDOT or any Governmental Entities with jurisdiction over the Project. Each resubmittal must address all comments received from a prior submittal in a manner satisfactory to the commenting party. Submittals shall be resubmitted as many times as necessary to address comments from TxDOT or any Governmental Entity with jurisdiction over the project.

If TxDOT had requested additional information during the final formal review, PSQCM will conduct an additional formal review of the resubmitted items, elements, or phases. A copy of all correspondence relating to each submittal made to any Governmental Entity with jurisdiction over the project shall be concurrently provided to TxDOT.

### 2.2.6.7 Certification of Compliance

PSQCM shall verify that Design-Build Contractor obtained approval from applicable Governmental Entities and Utility Owners prior to the issuance of a "Certification of Compliance" designation of the

Design Documents by the PSQCM. Following issuance of a "Certification of Compliance" by the PSQCM, TxDOT and the DQAM shall review and provide written concurrence.

After Design-Build Contractor has incorporated the Final Design Submittal and/or the resubmittal of formal review comments into its design and all concerns and questions have been resolved to the satisfaction of TxDOT, Design-Build Contractor shall provide Final Design package to TxDOT and the DQAM. Design-Build Contractor as part of its Final Design package shall include all:

a) Design drawings,

b) Design calculations,

c) Design reports,

d) Specifications,

e) Electronic files,

f) Documentation required for all Final ROW,

g) Governmental Approvals, and

h) Utility Owner approvals.

TxDOT and the DQAM's concurrence with the PSQCM's certification of compliance will not constitute approval of the design or subsequent construction, nor relieve Design-Build Contractor of its responsibility to meet the requirements hereof. Irrespective of whether TxDOT provides Design-Build Contractor with the authority to begin construction on items, elements, or phases of the Work prior to completion of the design for the entire Project, Design-Build Contractor shall bear the responsibility to assure that construction meets the requirements of the DBA Documents, applicable Law and Governmental Approvals.

Construction on any item, element or phase covered by the PSQCM's certification of compliance of said item, element, or phase shall only progress to the extent covered by the Design Documents included in that statement except for the Work performed in accordance with Section 2.2.6.9 (Early Start of Construction). Prior to progressing further with construction of a certified package, Design-Build Contractor shall complete the next item, element or phase of design or complete the Final Design, and obtain TxDOT and the DQAM's concurrence, except for the Work performed in accordance with Section 2.2.6.9. Any items, elements or phases of design, subsequent to the certification of compliance from PSQCM, shall be checked and certified by the PSQCM in the same manner indicated above.

If TxDOT or the DQAM determines that the Final Design Documents do not meet the requirements of the DBA Documents, applicable Law and/or the Governmental Approvals, TxDOT or the DQAM will notify Design-Build Contractor in writing of any specific deficiencies in the Final Design Documents. Design-Build Contractor shall correct such deficiencies; modify the Final Design Documents; and, if necessary, modify construction upon receipt of TxDOT's comments.

If there is evidence that the DQMP procedures are not adequate, as evidenced by TxDOT or the DQAM's oversight reviews or problems during construction, TxDOT may, at its sole discretion, withhold payment for design and construction until sufficient DQPM procedures are in place. If construction is in progress, TxDOT may suspend ongoing Work represented by the deficient design and require correction of design and/or construction defects.

Design-Build Contractor shall provide quantity estimates for Work covered by Final Design Documents. The quantity estimates shall be in units consistent with the quality acceptance and quality review sampling and testing requirements in the DQMP.

### 2.2.6.8 Design Changes

Design-Build Contractor or TxDOT may initiate design changes. Design changes may occur either on items, elements, or phases undergoing construction or after Final Design. In order to process these types of changes, Design-Build Contractor shall submit, when the problem or change occurs, a Request for Information (RFI) for TxDOT's approval.

All design changes submitted under the RFI procedure shall undergo the same DQMP checks as the original design.

The designer responsible for the original design shall approve design changes during construction, or design changes to Final Design Documents in writing. If the original designer is no longer available, then after notification to the original designer, an experienced Registered Professional Engineer shall provide documentation of design changes. All plans, final submittals, specifications, calculations, and reports for design changes shall be stamped, signed and dated by an experienced Registered Professional Engineer. In all cases, the PSQCM shall certify in writing that the design change has been:

a) Designed in accordance with the requirements of the DBA Documents, applicable Law and the Governmental Approvals,

b) Checked in accordance with Design-Build Contractor's approved DQMP, and

c) Prepared consistently with other elements of the original design.

Design-Build Contractor shall request and schedule interim and final RFI formal design review(s) by TxDOT and the DQAM for all design changes made during construction or to the Final Design Plans. All changes made through the RFI process shall be documented in the As-Built drawings.

### 2.2.6.9 Early Start of Construction

The following will set forth the circumstances under which certain items, elements, or phases of the Work may be packaged by Design-Build Contractor to initiate an Early Start of Construction prior to obtaining TxDOT's concurrence of the Final Design for the item, element or phase. The "Early Start of Construction" requirements shall apply to any Work that is performed by Design-Build Contractor prior to receiving TxDOT and the DQAM's written concurrence with the PSQCM's certification of compliance of the Final Design Submittal for the Work. All such Work is performed at the sole risk of Design-Build Contractor. TxDOT does not consider any items as satisfying the DQMP requirements until the PSQCM has issued a certification of compliance and TxDOT and the DQAM has issued a written concurrence therewith.

TxDOT, at its sole discretion, may defer Early Start of Construction for any portions of the Work as requested by Design-Build Contractor.

Any Work constructed by Design-Build Contractor prior to receiving TxDOT and the DQAM's concurrence of the Final Design Submittal for the Work, and later determined to be unacceptable by TxDOT, in its sole discretion, shall be revised, removed or otherwise reconfigured to the satisfaction of TxDOT at Design-Build Contractor's sole cost and expense and without any consideration given to an extension of the Completion Deadline.

TxDOT and Design-Build Contractor shall agree on procedures for Early Start of Construction, which procedures shall, among other things, include a process for distributing construction documents signed and sealed by a Registered Professional Engineer to TxDOT and Design-Build Contractor's field staff. In order for Design-Build Contractor to proceed with early phases of construction of a portion of the Work, specific pertinent items of the design shall have been previously reviewed by TxDOT and comments from TxDOT shall have been transmitted to the Design-Build Contractor. For example, Early Start of Construction may be rough grading of a specific portion of the Project, for which specific pertinent items of the design may include:

a) Horizontal and vertical drainage system

b) Typical sections

c) Related elements of the drainage system

d) Related elements of the Traffic Control Plan specifically applicable during the term of the Early Start of Construction scope

e) Subsurface geotechnical investigations and recommendations

f) Slope stability analysis and recommendations

g) Preliminary structure general plans (if a structure is within the element or portion of the nonstructural Work)

h) Settlement monitoring program

i) Construction specifications

An Early Start of Construction shall be at the sole and complete risk of Design-Build Contractor, and does not release Design-Build Contractor from any of the requirements described in Section 2.2.7 (Construction Quality Management Plan). If, as a result of the review process, construction modification or changes to already completed Work elements performed under the Early Start of Construction are required, Design-Build Contractor shall make any and all construction modifications to already completed construction activities at its sole cost and expense without any entitlement to time extensions or adjustments in the Price.

### *2.2.7 Construction Quality Management Plan*

Design-Build Contractor shall construct the Work in accordance with the Released for Construction Documents, following a reasonable timeframe for TxDOT and DQAM review and comment, together with the relevant requirements and specifications of the DBA Documents.

Design-Build Contractor's Construction Quality Management Plan (CQMP) shall contain detailed procedures for the Design-Build Contractor's quality control and quality assurance activities. The CQMP shall be consistent with the applicable procedures contained in the current TxDOT *Contract Administration Handbook for Construction* and establish a clear distinction between quality control and quality acceptance activities and persons performing them. At a minimum, the CQMP shall specify:

a) Methods and procedures that clearly define the distinction/authority/responsibility for the administration of Design-Build Contractor's CQMP.

b) That Design-Build Contractor, Supplier, and Subcontractors designate an individual on each crew to be responsible for performing daily field inspections of their own Work and for preparing a daily QC report to document the inspection performed.

c) The review and approval of all Portland cement concrete and hot mix asphaltic concrete mix designs by a CQAF Registered Professional Engineer.

d) Methods and procedures to be utilized by Design-Build Contractor to obtain active participation of the work force in quality control operations to achieve a quality project; reporting forms to be used by the responsible quality control personnel shall be included.

e) A construction quality control organization and staffing plan. The period of time that the quality control staff member will be present on the site shall be shown, resumes of the Key Personnel shall be included, and the experience/knowledge/skill levels of the quality control support staff shall be stated.

f) CQAF organizational and staffing plans. The period of time that the quality acceptance staff member will be present on the site shall be shown; resumes of key staff members shall be included; and the required minimum knowledge, technical skills, and experience level of the personnel related to the various inspection functions, such as grading, drainage, pile-driving and structures inspections, that will occur on the Work shall be stated. The administrative/clerical support staff for maintenance and management of records/documents pertinent to quality acceptance for the CQMP activities shall be identified.

g) Procedures for inspecting, checking, and documenting the Work. Inspection, examinations and measurements shall be performed for each operation of the Work to assure quality.

h) Sampling and testing requirements of all materials during the production or manufacturing processes.

i) Procedures to ensure that all activities affecting the quality of the Work are accomplished under controlled conditions, using appropriate equipment for the task being performed.

j) Procedures to ensure that the education, training, and certification of personnel performing CQMP activities are achieved and maintained and that all Work is performed in accordance with the approved designs, plans, and specifications.

k) Procedures to ensure that critical elements of the Work are not started or continued without inspection and testing by the quality acceptance personnel on site. Inspection or hold points shall be identified and communicated to the CQAF, Construction Quality Control Manager (CQCM), and TxDOT. Procedures to proceed beyond inspection points shall be developed.

l) Description of specific procedures to ensure that all Work conforms to the requirements of the DBA Documents, Governmental Approvals and applicable Law, and the Design Documents, as well as that all materials, equipment, and elements of the Work will perform satisfactorily for the purpose intended.

m) Documents specify that all activities undertaken by or on behalf of Design-Build Contractor affecting the quality of the Work shall be prescribed and accomplished by documented instructions, procedures, and appropriate drawings. Such instructions, procedures and drawings shall include quantitative and qualitative criteria to be used to determine compliance.

n) Measures to ensure that purchased materials, equipment, and services conform to the DBA Documents, and Governmental Approvals, applicable Laws, Rules, and the Design Documents. These measures shall be consistent with Good Industry Practice and shall include provisions for source evaluation and selection, objective evidence of quality furnished by Subcontractors and Suppliers, inspection at the manufacture or vendor source, and examination of products upon delivery.

o) Procedures for identification and control of materials, equipment, and elements of the Work. These procedures shall be consistent with the Good Industry Practice to ensure that identification of the item is maintained by appropriate means, either on the item or on records traceable to the item, as necessary, throughout fabrication, erection, installation and use of the item.

p) Procedures to ensure that materials, equipment or elements of the Work that do not conform to requirements of the DBA Documents, the Governmental Approvals, applicable Law or the Design Documents are not used or installed. These procedures shall include identification, documentation, segregation, disposition and notification to TxDOT and, if appropriate, Governmental Entities and other affected third parties, as well as procedures for TxDOT to review Nonconforming Work.

q) Procedures for processing a Request for Information (RFI) to resolve discrepancies and/or questions in the plans and specifications so that all changes are documented and approved by Design-Build Contractor's design engineers, TxDOT and the DQAM.

r) Procedures to indicate, by the use of markings such as stamps, tags, labels, routing cards, or other suitable means, the status of inspections and tests performed upon individual items of the Work.

s) A program for inspection for each operation of all Work examinations, measurement and test of materials or elements of the Work to assure quality.

t) A program for coordination of all inspection and testing with the inspections and tests of Governmental Entities and Utility Owners.

u) A program to ensure performance of all testing required to demonstrate that all materials, equipment and elements of the Work will perform satisfactorily for the purpose intended and meet the standards specified in the DBA Documents. It shall specify written test procedures which include provision for ensuring that all prerequisites for the given test have been met and that adequate test instrumentation is available and used. The CQMP shall require test results be documented and evaluated to ensure that test requirements have been satisfied. The CQMP shall also demonstrate how the CQAF will track its testing frequencies to ensure compliance with the DBA Documents.

v) Procedures for reviewing and approving acceptance test results, categorizing test results in a manner acceptable to TxDOT, transmitting acceptance test results to TxDOT in a format acceptable to TxDOT for use in fulfilling its statistical validation requirements, and working collaboratively with TxDOT to resolve statistical non-validation between CQAF and TxDOT test results.

w) Measures to ensure that tools, gauges, instruments, and other measuring and testing devices used in activities affecting quality are properly maintained, controlled, calibrated, certified and adjusted at specified periods to maintain accuracy within industry standards.

x) Procedures to control the handling, storage, shipping, cleaning and preservation of materials and equipment to prevent damage or deterioration.

y) Procedures to ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, defective material and equipment, deviations and other Nonconforming Work are promptly identified and corrected. The procedures shall ensure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition and the corrective action taken shall be documented and reported to TxDOT in writing and to appropriate levels of Design-Build Contractor's management to ensure corrective action is promptly taken.

z) A comprehensive system of planned and periodic audits of Design-Build Contractor's CQMP to determine adherence to and the effectiveness of the CQMP. CQAF personnel shall perform the audits in accordance with the written procedures or checklists. Audit results shall be documented, reviewed, and acted upon by Design-Build Contractor. Follow-up action, including re-audit of deficient areas following corrective action, shall be taken where indicated.

aa) Measures to control the receipt and issuance of documents, such as instructions, procedures, training manuals and drawings, including changes thereto, which prescribe activities affecting quality. These measures shall ensure that approved documents, including authorized changes thereto, are reviewed for adequacy and approved for release by authorized personnel of Design-Build Contractor and are distributed to and used at the location where the prescribed activity is performed. Changes to documents shall be reviewed and approved by the same organizations that

performed the original review and approval unless TxDOT consents, in writing, to another responsible organization.

bb) The requirements and methods for controlling documents. Design-Build Contractor's document control system shall be compatible with TxDOT's.

cc) Procedures and personnel to be used to assure that specified instrumentation is installed and monitored in accordance with applicable specification.

dd) The form and distribution of certificates of compliance

ee) Procedures for quality acceptance in the CQMP with respect to checking and verifying the accuracy and adequacy of construction stakes, lines, and grades established by Design-Build Contractor.

### 2.2.7.1 Personnel and Staffing

#### 2.2.7.1.1 Construction Quality Control Manager (CQCM)

Design-Build Contractor shall assign an on-site Construction Quality Control Manager (CQCM) who shall be responsible for management of the quality control aspect of the CQMP. The CQCM shall not be involved with scheduling or production activities, and shall report directly to Design-Build Contractor's management team. The CQCM shall see that the methods and procedures contained in approved CQMP are implemented and followed by Design-Build Contractor and Subcontractors in the performance of the Work. The CQCM shall be a Registered Professional Engineer.

#### 2.2.7.1.2 Construction Quality Control Staff

Design-Build Contractor's and Subcontractors' construction work force are all considered to be members of Design-Build Contractor's quality control staff as each and every one is responsible for the quality of the Work. Personnel performing QC inspection shall ensure quality of workmanship and QC sampling/testing shall ensure that materials meet the required specifications prior to acceptance testing performed by the CQAF. Personnel responsible for performing quality control inspection shall be knowledgeable and receive training to perform their quality control duties. Generally, personnel performing quality control do not need to be certified or direct employees of the Design-Build Contractor, but personnel sampling/testing shall be knowledgeable in the testing methods and procedures and are preferred to be certified, but cannot be employees of the CQAF.

#### 2.2.7.1.3 Construction Quality Acceptance Manager (CQAM)

Design-Build Contractor's CQAF shall assign an on-site Construction Quality Acceptance Manager (CQAM) who shall be responsible for management of the quality acceptance aspect of the CQMP. The CQAM shall be a Registered Professional Engineer and shall be an employee of the CQAF. The CQAM shall report jointly to Design-Build Contractor's management team and TxDOT. The CQAM shall not report to any person or party directly responsible for design or construction production.

The CQAM shall review, approve, authorize, examine, interpret and confirm any methods or procedures requiring the "Engineers' review, approval, authorization, examination, interpretation, confirmation, etc." which are contained in the TxDOT Standards.

2.2.7.1.4 **Construction Quality Acceptance Staff**

A quality acceptance inspection and material sampling/testing staff shall be provided under the direction of the CQAM to perform inspection and material sampling/testing of all Work performed and materials incorporated into the Project by any member of Design-Build Contractor's group. If approved in writing in advance by TxDOT, qualified individuals who are employees of or retained by manufacturers, vendors or Suppliers may inspect certain portions of Work.

The quality acceptance inspection and testing staff shall be employees of the CQAF and shall have been trained in the applicable inspection and material sampling and testing procedures. The quality acceptance staff shall be experienced in highway inspection and material testing. The training and experience of the quality acceptance staff shall be commensurate with the scope, complexity, and nature of the activity to be controlled and tested. Qualifications shall include appropriate TxDOT or State Highway Agency certification for testing and inspection as well as nationally recognized certifications such as ACI certification in applicable inspection or testing activities. Construction quality acceptance staff shall report to the CQAM.

The quality acceptance staff shall provide oversight and perform audits of the quality control inspection and material sampling/testing operation.

The quality acceptance inspection staff shall check compliance of all material, equipment, construction, installations, and operations. Construction activities requiring continuous field quality acceptance inspection or sampling and testing, in the sole discretion of TxDOT, shall proceed only in the presence of assigned QA personnel. The CQMP shall identify those activities.

2.2.7.1.5 **Construction Quality Acceptance Staff Levels**

The size of the quality acceptance staff shall reflect the volume of quality acceptance activities necessary for the Work in progress and shall be maintained in accordance with the approved CQMP. The CQAF staff will perform quality acceptance oversight, inspection, and testing services typically performed by TxDOT on traditional projects, with the exception of monitoring testing.

The Construction quality acceptance staffing requirements shall be updated as necessary throughout the Term of Work to reflect changes in the actual construction schedule. Design-Build Contractor shall ensure that adequate Construction quality acceptance staff is available and that CQMP activities are undertaken in a manner consistent with the Project Schedule and in a manner that will enable Design-Build Contractor to achieve the Substantial Completion and Final Acceptance deadlines.

Should TxDOT determine that Design-Build Contractor is not complying with CQMP because of lack of staff, TxDOT shall have the right, without penalty or cost, including time extensions or delay damages, to restrict Work efforts until appropriate levels of staffing consistent with the CQMP and satisfactory to TxDOT are obtained or TxDOT may contract with a separate firm to perform these services and withhold payment to Design-Build Contractor for such services.

### *2.2.8 Maintenance Management Plan*

Section 19 (Maintenance) includes requirements for maintenance management.

## 2.3 Comprehensive Environmental Protection Plan

Section 4 (Environmental) includes requirements for environmental management.

## 2.4 Public Information and Communications Plan

Section 3 (Public Information and Communications) includes requirements for public information and communications.

## 2.5 Safety Plan

Design-Build Contractor shall be responsible for the safety of its personnel and of the general public affected by the Project.

Design-Build Contractor shall submit to TxDOT for approval a comprehensive safety plan ("Safety Plan") that is consistent with and expands upon the preliminary safety plan submitted with the Proposal. The Safety Plan shall fully describe Design-Build Contractor's policies, plans, training programs, Work Site controls, and Incident response plans to ensure the health and safety of personnel involved in the Project and the general public affected by the Project during the Term of the Agreement.

Design-Build Contractor's Safety Plan shall address procedures for immediately notifying TxDOT of all Incidents arising out of or in connection with the performance of the Work, whether on or adjacent to the Project.

## 2.6 TxDOT-Design-Build Contractor Communications Plan

Design-Build Contractor shall submit to TxDOT for approval a TxDOT–Design-Build Contractor Communications Plan (Communications Plan) that is consistent with and expands upon the preliminary communications plan submitted with the Proposal. Design-Build Contractor shall maintain and update the Communications Plan throughout the Term.

The Communications Plan shall describe the procedures for communication of Project information between Design-Build Contractor's organization and TxDOT.

The Communications Plan shall describe how Design-Build Contractor's organization will respond to unexpected requests for information, communicate changes or revisions to necessary Design-Build Contractor personnel, and notify affected stakeholders before and after changes are made to the DBA Documents.

## 2.7 Right-of-Way Acquisition Plan

Section 7 (Right-of-Way) includes requirements for right-of-way acquisition management.

The ROW Acquisition Survey Document Package shall be reviewed by an independent Registered Professional Land Surveyor (RPLS) for consistency and compliance with all applicable laws, standards, and requirements. The boundary location and the survey methods remain the responsibility of Design-Build Contractor, and are not part of this review process. The reviewing surveyor shall review the survey document package and return his comments to Design-Build Contractor in a timely manner. Design-Build Contractor shall revise and correct the documents in accordance with the reviewing surveyor's comments in a timely manner. TxDOT will not accept the ROW Acquisition Survey Document Package as complete until the reviewing surveyor has signed and sealed the compliance certificate (see Reference Information Documents).

## 2.8 TxDOT Offices, Equipment and Vehicles

Except where noted elsewhere in the Design-Build Documents, Design-Build Contractor and TxDOT shall co-locate for the Term of the Agreement to facilitate Project coordination and daily communication. The definition of "co-locate" for this Agreement is office space meeting the conditions of this Technical Provision that are near each other along or adjacent to the Project preferably within one-half (1/2) mile of the Project ROW and within three-eighths (3/8) mile of a DART train station or DART bus transfer station.

Design-Build Contractor shall provide TxDOT office space (i.e., available for occupancy) within sixty (60) Days of issuance of NTP1. The location, condition, and amenities of the office space for TxDOT are

subject to TxDOT's prior written approval. The office space requirements for the core office and the field offices are provided below.

### *2.8.1 Computers and Equipment*

The Design-Build Contractor shall provide, install, and maintain the following computers, peripherals, and software for the TxDOT office spaces:

- One computer with two flat panel monitors including all necessary peripherals for each personnel office area and the reception area in core and field offices.
- One computer and ceiling mounted projector with projector screen and a minimum 120-inch diagonal projected image for the large conference room.
- One computer and one wall mounted flat panel monitor (minimum 60-inch) with VGA/HDMI accessibility for the small conference room.
- Desktop computers shall be Dell XPS 8300 CPU's with two (2) Dell U2312HM flat panel monitors or equivalent.
- Laptop computers shall be a Dell XPS 15 with a Dell U2312HM flat panel monitor or equivalent.
- Projector shall be a Dell 1610HD or equivalent.
- Peripherals shall include at minimum, monitor stand, docking station for laptop computers, mouse, keyboard, extra battery for laptop computers, 12 volt charger for laptop computers and a carry bag for laptop computers.
- Necessary software required to perform TxDOT functions for the Project and be compatible with all other Microsoft software products, including Microsoft Windows 7 Professional, Microsoft Office Professional 2010, and Adobe Acrobat X Pro. Design-Build Contractor shall also provide TxDOT with a minimum of two (2) copies of Primavera 6 (P6) and a minimum of four (4) copies of MicroStation and GeoPak. The versions of all software, including Microsoft products (in the event of a new release), MicroStation, and GeoPak, provided to TxDOT shall be compatible with the version in use by the Design-Build Contractor’s staff and shall be no older than the version currently in use by TxDOT.
- The computers, monitors and peripherals shall be at least equal to the ones used by the Design-Build Contractor's staff.
- Two (2) Digital Video Cameras
- Six (6) iPad 2’s with Wi-Fi + 3G 64GB along with 3G service (or latest version available) and Zaggfolio keyboard case.
- Six (6) iPhone 4S’s along with service (or latest version available)
- High Speed Office Internet access
- All TxDOT computers, printers, plotters, copiers and scanners shall be connected via a local area network separate from the Design-Build Contractor’s network.

The Design-Build Contractor shall provide, install, and maintain the following telephones, servers, copiers and fax equipment, and premise wiring for the TxDOT office space:

- At least one (1) touch-tone telephone for each personal office area, each with a status indicator, access to all outside lines, and conference-call capability, including speakers for telephones in the enclosed office rooms.

- At least one (1) touch-tone conference telephone with satellite microphones for each conference room, each with a status indicator, caller ID, access to all outside lines, and conference-call capability.
- Provide AC/DC chargers and other cords as needed for cellular telephones, for each employee.
- Hardware and software will be compatible with that of Good Industry Practice and of the Design-Build Contractor's system interface.
- Full-scale color plotter capable of handling 36-inch roll plots, 36x24-inch plots and llx17-inch plots (core office only).
- One (1) high-speed color laser printer capable of handling llx17-inch prints.
- One (1) high-speed color photocopy machine capable of handling llx17-inch prints.
- One (1) facsimile transmission machine.
- One (1) color scanner capable of handling llx17-inch prints.
- All equipment shall be replaced and updated at least once every three (3) years or when the Design-Build Contractor upgrades, whichever comes first. A multipurpose piece of equipment capable of meeting multiple parts of the requirements above will be considered to meet the requirements.
- All office supplies including copier paper, toner, pens, pencils, notepads, and other miscellaneous office supplies.
- Provide and install the complete voice/data communications cabling system, which includes but is not limited to the EMT conduit, bridle rings, pull boxes, Category 5e UTP cable, Category 5e "RJ-45" UTP receptacles, Category 3 "RJ-11" UTP receptacles, receptacle boxes, cover plates, and multi-mode fiber optic cable. All cable shall be routed, terminated, labeled, and tested. Voice and data circuits shall be installed in conjunction with TSD and TxDOT Information Resources staff.
- Certify and state supplied components as functional before installation and bear all responsibility for replacement of parts at work commencement.
- Prepare test plan and submit before installation, test installed system and supply test results, and conform to all industry standard testing procedures
- Terminate all Category 5e UTP cable in 66M150 punch down blocks for voice cabling and terminate all Category 5e UTP data cable in data patch panels within the wiring closet.
- Each drop will contain two (2) data ports with RJ45 connectors and two (2) voice ports with RJ11 connectors.
- Provide all materials, as needed and required, to complete the installation of the cable plant which shall include all cable, connectors, patch panels, equipment rack(s), patch cables, face plates, punch down blocks, fiber optic cable, and other miscellaneous materials.

### *2.8.2 Core Offices*

Design-Build Contractor shall provide all space, facilities, and support elements necessary to design, construct, and maintain the TxDOT core office in accordance with the DBA Documents. Design-Build Contractor shall provide office space, not to exceed 6,000 square feet (SF), for TxDOT's design and Project management staff including, the General Engineering Contractor and other contract employees. If it is necessary to locate any of these elements of the Work off-site or outside of this office, Design-Build Contractor shall obtain TxDOT's prior written consent.

Design-Build Contractor shall provide a preliminary TxDOT facility area layout plan to TxDOT no later than seven (7) Days after NTP1. TxDOT will promptly review and comment on required modifications to

the layout within ten (10) days. Design-Build Contractor shall submit a final facility layout plan within ten (10) Days of receipt of TxDOT comments.

Design-Build Contractor shall have the TxDOT facility area available for move-in no later than sixty (60) days after NTP1.

### 2.8.2.1 TxDOT Facility Area and Items Provided by Design-Build Contractor

TxDOT office space shall be located within the same building or complex as Design-Build Contractor's office staff. TxDOT will be reasonable regarding re-use of existing space within Design-Build Contractor's current office facility, providing the space is contiguous and workable in TxDOT's sole discretion.

**Office Condition.** The offices shall be in good and serviceable condition, of at least the same quality as those of Design-Build Contractor's counterpart office space, and available for occupancy as specified herein. Both Parties shall participate in a facility condition survey prior to and at the completion of occupancy. TxDOT shall return possession of Design-Build Contractor-provided TxDOT facility area to Design-Build Contractor in essentially the same condition as when TxDOT occupied the facilities, except for reasonable wear and tear and except for alterations, or loss or damage caused by any member of Design-Build Contractor-Related Entity.

**Loss or Damage.** If office spaces, related facilities or fixtures are destroyed, damaged or stolen during the Work, in the TxDOT facility area, except as a direct result of willful misconduct of TxDOT or its personnel, Design-Build Contractor shall, at its cost and within ten (10) Business Days after the occurrence of such destruction or damage, repair those items to their original condition or replace them. However, in the case of lost, damaged, or stolen office equipment (e.g., computers, fax machines, copy machines, and printers) necessary for normal office operations, replacement shall occur within two (2) Business Days. If loss or damage is caused as a direct result of willful misconduct of TxDOT or its personnel, Design-Build Contractor shall replace the facilities noted herein within the time frames specified herein, and TxDOT shall reimburse Design-Build Contractor for actual, reasonable and documented costs incurred.

**Office Facilities and Equipment.** For the TxDOT facility area it provides, Design-Build Contractor shall:

1. General. Secure facility space, obtain all permits, install and pay for all utility services, and maintain the facilities as part of the Work.

2. Access and Security. Provide separate TxDOT entrance/exit(s) from building, which shall be secured with electronic door lock(s) plus a deadbolt lock. Design-Build Contractor shall provide security badge card access with locking doors running on time zone/holiday schedules for entry doors as well as other designated areas (e.g., server room, document storage, offices). Design-Build Contractor shall provide software for maintaining access to these areas, which will be owned and/or maintained by TxDOT's design and Project management staff.

3. Lighting and Electricity. Include with all interior spaces overhead lighting meeting OSHA, building, and electrical and energy code requirements for similar office space (provide nominal 30 foot candles of light at 30 inches above finish floor). Each office space shall have at least four duplex receptacles, with minimum circuit capacity of twenty (20) amperes.

4. Janitorial and Trash and Recycling Services. Provide daily janitorial service (except Saturdays, Sundays and Holidays) and maintain trash containers and trash pickup service for the building and site areas beyond the TxDOT facility area. This shall include, but not be limited to, sweeping and mopping floors, cleaning restrooms and break room, emptying wastebaskets, and periodic dusting. This service shall be paid for by Design-Build Contractor. Design-Build Contractor will pay for and procure janitorial services for the TxDOT facility area.

5. Exterior Maintenance. Maintain the exterior areas of office spaces, including access to parking areas.

6. Accessibility and Licensing. Meet all access requirements of the Texas Accessibility Standards, the Americans with Disabilities Act Accessibility Guidelines, as amended (42 USC §§12101, et seq.), and the applicable building code. Facility design plans shall be submitted to the Texas Department of Licensing and Regulation (TDLR) for review and approval as required by Section 16, Chapter 68 of the Texas Administration Code.

7. Restrooms, Break Room, and Entry Space. Provide access to women's and men's restrooms, break room space and building entry space, these spaces may be shared with Design-Build Contractor's office space/staff. These spaces and all TxDOT spaces shall have access 24 hours per day, 7 days per week, 365 days per year (24/7/365). In lieu of access to a common break room, Design-Build Contractor may provide a 200 SF break room/kitchen within the TxDOT space, with refrigerator with freezer compartment, ice machine, sink including waste disposer, microwave, and dishwasher. If the building does not have a general building vending area then the breakroom shall have vending machines and a standalone ice machine. The Design-Build Contractor shall provide coffee, tea, condiments, bottled water and other refreshments as provided to the Design-Build Contractor's staff. Break room/kitchen shall have storage closet (25 SF) and cabinets with drawers and counter tops. In the event that restrooms cannot be accessed from a common building entry/lobby, Design-Build Contractor may provide separate restrooms for the TxDOT facility area. In the event that it is necessary to locate a separate break room and/or restrooms within the TxDOT facility area, the 6,000 SF TxDOT space allocation may be required to be increased to accommodate these spaces.

8. HVAC. Provide electrical, heating, ventilation, and air conditioning (HVAC) systems capable of maintaining temperatures between 65 and 75 degrees Fahrenheit in all spaces, 24 hours per day, 7 days per week, 365 days per year (24/7/365), through the year. Server room shall have dedicated air conditioning/cooling system capable of maintaining temperatures between 65 and 70 degrees Fahrenheit, and 15% relative humidity.

9. Code Requirements. Meet all applicable building and fire code requirements.

10. Disposal and Removal. Be responsible for disposal or removal of all Design-Build Contractor-provided facilities and any facility and/or site restoration Work as required.

**Space Requirements.** Although actual spaces may vary slightly, the following nominal size requirements will apply, and the typical TxDOT facility area shall include the following elements:

1. Offices. Enclosed offices for TxDOT's management staff (nominal 150 SF each) 10 total (all with keyed door hardware).

2. Cubicles. Cubicle area spaces for administration staff (nominal 100 SF each) 10 total; (power supply and data and communication lines to cubicles may be provided through power pole drops).

3. Conference Rooms. Two (2) conference rooms (enclosed), one at nominal 12'x 20' (240 SF) and one at nominal 12'x 30' (360 SF). All shall have dimmable lighting; each conference room shall have one chair for every 24 SF of conference room space and a conference table of sufficient size for each chair.

4. Reception Area. Receptionist space with waiting area with seating for 4 visitors (nominal 200 SF); other furniture to be determined jointly by Design-Build Contractor and TxDOT.

5. Work Room. Work room (nominal 150 SF) with 30-inch high plastic laminate wall-mounted counters (15 lineal feet of counter). Work room shall be located near the center of the facility, and in close proximity to the receptionist space.

6. Storage and Filing. One (1) lockable space for storage and filing, nominal 10'x15' (150 SF).

7. Server Room. One (1) computer server room (100 SF) that has limited access and is locked via security card access. Server room shall be accessible via hallway entry not sharing any walls with the exterior of the building, and have no windows, a non-static floor covering, and at least three (3) dedicated 20-amp power circuits and one (1) 30-amp circuit. All patch panels (phone and data) shall be located within the designated server room. Temperature shall be maintained with a dedicated air conditioning/cooling system as defined above.

8. Parking Area. Parking area for at least thirty (30) vehicles (20 staff/10 visitors) that is reasonably level (all-weather surface and all-weather access).

9. Exterior Lighting. Sufficient exterior security lighting that is automatically activated at low light levels to maintain two (2) foot-candles of lighting within the building and parking areas of the site.

10. Corridors. Corridors within the TxDOT facility shall have a nominal width of 54 inches.

**Miscellaneous Requirements and Features.** The following shall be provided as noted:

1. Flooring. Carpeted flooring (nonstatic in server room).

2. Entry Access. Entry to TxDOT areas by electronic door hardware card access (not keyed), with U.P.S. on locks (fail closed).

3. Electrical Outlets. Each office and conference room shall have two (2 data, 1 com Cat 5E) outlets per room, and one (2 data, 1 com Cat 5E) outlet per cubicle, as well as outlets at designated printer, fax and copier locations and any and all shared areas (i.e., workroom, storage room, etc.). All data/voice outlets shall be installed next to power outlets.

4. HVAC. 24/7/365 HVAC as previously described.

5. Window Coverings. Horizontal mini-blinds (no drapes) for each exterior window.

6. Power Circuits. Provide dedicated electrical power circuits for copiers, and minimum of six (6) duplex receptacles with three (3) dedicated 20-amp circuits and one (1) 30-amp circuit for the server room.

7. Fire Extinguishers. Design-Build Contractor shall provide fire extinguishers, per fire code and fire marshal with jurisdiction.

8. Insurance. Insurance (obtained and provided by Design-Build Contractor) covering the use of the Project office by Design-Build Contractor and TxDOT in accordance with the terms of the underlying property use agreement with the property owner, but in no event shall the insurance be less than that required by the Agreement.

9. Vending Area. Design-Build Contractor shall provide access to general building vending area.

10. Utilities. Initial installation and monthly expense of all utilities paid by Design-Build Contractor except long-distance telephone service.

11. Emergency Contacts. 24-hour emergency contact to the Design-Build Contractor.

12. Furniture. Design-Build Contractor-provided allowance of $30,000 in the Price for furniture, which shall be obtained by Design-Build Contractor at the direction of TxDOT, and billed through Design-Build Contractor. At the end of the Project, Design-Build Contractor shall have ownership of the furniture and shall be entitled to the full salvage value of the furniture, with the right to retain or otherwise dispose of the furniture at its sole discretion, without any further accounting to TxDOT.

13. Cable Television. Provide basic cable television connections or service to public information office.

**Items Not Required.** The following items are not required:

1. Outside storage.

2. Electronic security system (other than electronic door access hardware).

### *2.8.3 Field Offices*

Design-Build Contractor shall provide field office space for the exclusive use of TxDOT's field construction staff for the Project as specified herein.

Subject to TxDOT's prior written approval, Design-Build Contractor shall provide separate facilities for TxDOT's resident engineer staff located within the same complex as Design-Build Contractor's field office. Should Design-Build Contractor elect to construct the Work using field offices other than the one specified, corresponding facilities shall be provided for TxDOT's exclusive use and shall be at least of the same quality as Design-Build Contractor's counterpart management and field staff.

Design-Build Contractor shall provide the field staff facilities at least ten (10) Business Days prior to starting any Work activity involving staff that will occupy the field staff facilities.

**Office Condition.** The field office(s) shall be in good and serviceable condition, of at least the same quality as those of Design-Build Contractor's counterpart management and field staff, respectively, and available for occupancy as specified herein. Both Parties shall participate in a facility condition survey prior to and at the completion of occupancy. TxDOT shall return possession of Design-Build Contractor-provided facilities to Design-Build Contractor in essentially the same condition as when TxDOT occupied the facilities, except for reasonable wear and tear and except for alterations, loss, or damage caused by any member of Design-Build Contractor-Related Entity.

**Loss or Damage.** If office space(s) or related facilities are destroyed, damaged or stolen during the Work, except as a direct result of willful misconduct of TxDOT or its personnel, Design-Build Contractor shall, at its cost and within ten (10) Business Days after the occurrence of such destruction or damage, replace those items that it had provided or repair them to their original condition; however, in the case of lost, damaged, or stolen office equipment (e.g., computers, fax machines, copy machines, printers, etc.) necessary for normal office operations, replacement shall occur within two (2) Business Days. If loss or damage is caused as a direct result of willful misconduct of TxDOT or its personnel, Design-Build Contractor shall replace the facilities noted herein within the timeframes specified herein, except that TxDOT shall reimburse Design-Build Contractor for actual, reasonable, and documented costs incurred.

**Office Facilities and Equipment.** For the facilities it provides, Design-Build Contractor shall:

1. General. Secure sites, obtain all site permits, install and pay for all utility services, and maintain the facilities as part of the Work.

2. Access and Security. Provide separate buildings or trailers for TxDOT staff that include at least two (2) entrances/exits, providing an 8' x 10' (minimum) covered area, from each building or trailer. Each entrance/exit shall be secured with a door lock plus a deadbolt lock.

3. Lighting and Electricity. Include with all interior spaces overhead lighting meeting the requirements of the Occupational Safety and Health Administration (OSHA) and of building and electrical codes for office space. Each office space shall have at least two (2) duplex receptacles. The minimum circuit capacity shall be twenty (20) amperes.

4. Janitorial and Trash Service. Provide daily janitorial service (except Saturdays, Sundays and Holidays) and maintain trash containers and trash pickup service. This will include, but not be limited to, sweeping and mopping floors, cleaning the toilet and lavatory, and emptying wastebaskets.

5. Exterior Maintenance. Maintain the exterior areas of office spaces, including access to parking areas.

6. Accessibility. Meet all access requirements of the Americans with Disabilities Act, as amended (42 USC §§12101, et seq.).

7. Utility Service. Provide potable water, sewer service, and electricity to the office facility.

8. HVAC. Provide heating, ventilation, and air conditioning (HVAC) systems capable of maintaining temperatures between 65 and 70 degrees Fahrenheit in all spaces through the year.

9. Code Requirements. Meet all local building and fire code requirements.

10. Disposal and Removal. Be responsible for disposal or removal of all Design-Build Contractor-provided facilities and any site restoration Work as required.

**Space Requirements.** Although actual space requirements will depend upon Work schedule and geographic locations of the field offices, a typical field office should include the following elements:

1. Offices. Enclosed offices for TxDOT's construction representative, TxDOT-designated construction manager and three other TxDOT or contract employees (150 SF each).

2. Offices/Cubicles. Offices or cubicles for up to eight (8) field engineer/inspection/administration staff (100 SF each).

3. Conference Rooms. Conference rooms (enclosed) (200 SF) and access to another conference room (350 SF).

4. Storage and Filing. Two (2) lockable spaces for storage and filing at each field office (a combined space of 150 SF).

5. Surveying Equipment Storage. Clean inside storage space for surveying equipment (80 SF).

6. Tool Shed. Shed for small tools and equipment (outside) (150 SF).

7. Site Amenities. A well-graded site for the office with access road, parking area, and security fence with lockable drive-in gates sufficient to enclose the office and parking area.

8. Staff Parking Area. A parking area for at least fifteen (15) vehicles that is reasonably level (all-weather surface and all-weather access) within the boundaries of a security fence.

9. Visitor Parking Area. An all-weather level surface outside the security fence to accommodate visitor parking (all-weather surface and all-weather access-minimum of 2,000 SF).

10. Security. A 24-hour security service or silent watchmen-type security system.

11. Exterior Lighting. Sufficient exterior security lighting that is automatically activated at low light levels to maintain two (2) foot-candles of lighting within the fenced field office site.

12. Window Security. Security bars on all windows.

13. Laboratory Facility. A completed facility suitable to accommodate a functioning portable lab (approximately 1500 SF) with a separate cure room (approximately 850 SF) and a large trash container adequately sized for disposal of laboratory generated waste materials.

14. Kitchen/Break Room. Each field office shall contain a 200 SF kitchen with storage closet (25 SF), cabinets with drawers and counter tops.

15. Restrooms. Two (2) restrooms (one(1) men’s and one (1) women’s) including toilets and sinks.

16. First Aid Facilities. Emergency first aid facilities.

17. Storage for nuclear density gauges shall be in accordance with Federal requirements.

**Items Not Required.** The following items are not required:

1. Laboratory Testing Equipment.

# 3 PUBLIC INFORMATION AND COMMUNICATIONS

## 3.1 General Requirements

It is vital to the success of the Project that TxDOT and Design-Build Contractor gain and maintain public support. The public will better support TxDOT and Design-Build Contractor if they are kept abreast of Project information in a timely manner, are notified in advance of potential impacts, have an opportunity to identify issues and recommend solutions, receive timely and appropriate feedback from Design-Build Contractor, and perceive a high-quality, well executed communications plan for keeping them informed, engaged, and educated.

Design-Build Contractor shall coordinate all public information communication plans with ongoing TxDOT public information activities to ensure that a consistent message is being distributed to the Customer Groups. Copies of all materials to be presented to the public or the media shall be provided to TxDOT at least three (3) Business Days prior to dissemination.

## 3.2 Administrative Requirements

### *3.2.1 Public Information and Communications Plan*

At least sixty (60) Days prior to NTP2, Design-Build Contractor shall submit to TxDOT for approval a comprehensive Public Information and Communications Plan (PICP), based upon the preliminary communications plan submitted with Design-Build Contractor's Proposal, which informs, educates, and engages the Customer Groups throughout every stage of the Project. The PICP shall identify specific outreach or engagement activities, the frequency of those activities, what modes of communication will be used and what process Design-Build Contractor will use in order to measure the effectiveness of the PICP. Submittal shall be in both hardcopy form and electronic format compatible with TxDOT software. TxDOT approval of the PICP shall be a condition of issuing NTP2.

In preparing this plan, Design-Build Contractor shall identify the Customer Groups and develop specific plans to respond to their concerns and needs in all respects regarding the Project. After incorporation of comments from TxDOT on the PICP, Design-Build Contractor shall implement the various activities and initiatives contained therein. Design-Build Contractor shall continually maintain the plan to ensure delivery of high-quality, well executed communications throughout the Term of the Agreement.

The PICP shall be flexible to capture the full magnitude of yet-to-be-determined impacts from Project activities such as design, construction, and maintenance, and the public's reaction to these and other impacts. The PICP shall also be resilient to successfully implement the outlined strategies, given the ever-changing desire for depth, breadth, and frequency of information by a variety of important Customer Groups such as the media, elected officials, and the general public.

The PICP shall include a general timeline listing public information activities for the Project over the entire Term of the Agreement. This timeline shall be used as an initial guide and shall be updated by Design-Build Contractor as the Project is implemented but no less than on a yearly basis.

TxDOT may audit Design-Build Contractor's performance of the activities set forth in the PICP. Design-Build Contractor shall make appropriate changes to the PICP as required to meet the findings of any audit or review and to suit the changing goals and needs of the Project. Design-Build Contractor shall cooperate with TxDOT to amend the PICP as required to suit circumstances as yet unknown, including public reaction to the impacts, real or perceived, from the Work and the depth, breadth and frequency of information necessitated by Customer Groups. Design-Build Contractor shall document the efforts and results of the PICP in measurable terms to clearly indicate compliance.

Design-Build Contractor shall provide sufficient qualified staffing to effectively implement the PICP.

In developing the PICP, Design-Build Contractor shall make appropriate provisions to achieve the following goals:

a) Gain and maintain support and/or informed consent from Customer Groups, building on existing community partnerships and communication networks.

b) Provide Customer Groups with opportunities for input.

c) Demonstrate to Customer Groups that the Project will be developed pursuant to a well-executed program.

d) Provide public information which facilitates alternative trip planning during construction.

e) Address the Project-specific concerns of Customer Groups, including but not limited to interests in Emergency Services vehicle access, business owner and patron driveway access, delivery access, adjacent neighborhood access, changes to bicycle and pedestrian access and neighborhood traffic patterns, changes to mobility access associated with the Americans Disability Act (ADA), changes to public transportation, construction noise and lighting, and ongoing noise issues.

To achieve these goals, Design-Build Contractor shall use, but not be limited to, the following implementation strategies:

*Customer Groups*

a) Develop a forum to coordinate on-going dialogue among Customer Groups, TxDOT, and Design-Build Contractor.

b) Prepare and distribute Project-related materials in a user friendly format to inform Customer Groups through appropriate means such as: meetings, interviews, media kits, news releases, telephone correspondence, newsletters, brochures, e-mail, hotlines, Highway Conditions Reports (HCRs), dynamic message boards, Web alerts, public opinion polls/surveys, videos, display booths, presentations, public access information kiosks, and special events.

c) Organize and manage meetings and communications with key elected officials, the general public, representatives of civic organizations, businesses, and special interest groups along the Project corridor (individually or in groups) for the purpose of building rapport with Customer Groups.

d) Respond to invitations and seek opportunities to attend meetings, conferences and other events at which Project information can be exchanged with Customer Groups.

e) Notify Customer Groups in advance of key Project ROW acquisition, construction, operations and maintenance activities, and communicate the potential impacts of these activities.

f) Develop, disseminate and display timely, high-quality, innovative, user-friendly, accurate and appropriate community information concerning the Project, including exhibits showing slope grading, drainage, bridge structures, retaining walls, sound walls, Project ROW acquisition, and aesthetic characteristics.

g) Develop and manage a public relations campaign and communication strategy to convey key messages, branding, and pertinent information about the Project.

h) At appropriate times and stages and as requested by TxDOT, coordinate tours of the Project.

i) Comply with the requirements of the 2011 Guidelines for Analysis and Abatement of Roadway Traffic Noise.

*Media*

a) Build on existing TxDOT media resources and/or create and develop advertising messages, including graphics, logos, and slogans.

b) Place Project-related messages in the appropriate media.

c) Develop and distribute public service announcements, paid advertising, news reports, and other communication materials as appropriate.

d) Manage media relations with key transportation and business reporters and prepare and distribute news releases and media kits.

e) Develop and implement communications plans that anticipate and attempt to minimize traffic impacts of public, special and seasonal events adjacent to the corridor that may draw large crowds through the Project limits.

*Environmental*

The PICP shall detail the communication hierarchy for information distribution related to the compliance with the Comprehensive Environmental Protection Plan, as described in Section 4 (Environmental). The PICP shall include names and contact information, including emergency contact information, and the preferred methods of routine, and emergency communication distribution.

Design-Build Contractor shall assign audit and quality assurance responsibilities to a member of his quality assurance team. The Public Information Coordinator shall not perform those duties because of the potential conflict of interest.

### *3.2.2 Public Information Coordinator*

Design-Build Contractor shall provide a Public Information Coordinator to lead Design-Build Contractor's responsibility for public involvement activities on a day-to-day basis throughout the Term of the Agreement. The Public Information Coordinator shall have a minimum of four years of relevant experience on projects of similar type and scope, and the ability to competently perform the following:

a) Serve as the primary point of contact between Design-Build Contractor and Customer Groups and act as clearinghouse for the receipt and response to written or verbal comments or complaints regarding the Project.

b) Lead the production, implementation, audit, quality control/quality assurance and update of the PICP.

c) Coordinate and supervise day-to-day activities of Design-Build Contractor's personnel in performing the activities described in the PICP.

d) Facilitate communication among Design-Build Contractor, TxDOT personnel (including TxDOT's Public Information Officers), and Customer Groups.

e) Interact with Customer Groups and represent the interests of the Project at associated meetings and other formal and informal events.

f) Develop a "first-hand feel" for Customer Groups' concerns and reactions regarding the Project and public information program and incorporate that knowledge into improving the PICP.

g) Liaise with the person assigned to coordinate the initial response to any Incident or Emergency and any Governmental Entity that may have jurisdiction in the Emergency.

### *3.2.3 Public Information Office*

Design-Build Contractor shall maintain a public information office for the Term of the Agreement. The hours of operation for this office shall be as outlined below. This office shall serve as the primary business location for the Public Information Coordinator and shall be conveniently located to the Project Site. The public information office shall facilitate the exchange of information between Design-Build Contractor and the public and provide a centralized location for residents and other Customer Groups to obtain information on the Project, including Project maps and Plans, alternative routes, lane closures, construction updates, community impacts, and commute options.

The public information office shall have readily available at least two conference rooms capable of hosting Customer Group meetings. The rooms shall be ADA-compliant, convenient to and accessible by Customer Groups, and appropriately supplied with electrical outlets, tables and chairs, and other basic equipment to meet meeting requirements. One of these rooms shall accommodate at least fifty (50) persons and another shall accommodate at least fifteen (15) persons.

During major construction, the minimum hours of operation of the public information office shall be as follows unless otherwise jointly agreed upon by TxDOT and the Design-Build Contractor.

| | |
|---|---|
| Wednesday and Friday: | 7:00 am – 7:00 pm |
| Monday, Tuesday, Thursday: | Closed |
| Saturday: | 9:00 am – Noon |
| Sunday: | Closed |

If there is an emergency or a need arises to better serve the Customer Groups, hours of operation may be required to be extended.

Design-Build Contractor shall provide reasonable access to the Project Site to give TxDOT-approved Customer Groups the opportunity to view the construction.

In addition to the services listed above, Design-Build Contractor shall provide a 24-hour telephone hotline, manned during normal business hours of the public information office, with a recorded message describing Emergency procedures after hours. Design-Build Contractor shall respond to voicemail messages left after hours within 24 hours of receiving the voicemail message.

### *3.2.4 Customer Groups*

The Public Information Coordinator shall actively engage, inform, and seek appropriate support from Customer Groups for the Project throughout every stage of the Project. Customer Groups shall include the following:

a) Media;

b) Governmental Entities, including regulatory and law enforcement agencies;

c) General public residing or working within the general vicinity of the Project, or traveling within or across the limits of the Project;

d) Business owners within or adjacent to the Project corridor;

e) Utilities, railroads, transportation authorities and providers (such as local airports, transit operators, toll authorities, and other highway concessionaires) affected by the Project; and

f) Neighborhood associations, community groups, and other organizations with special interest in the Project.

### *3.2.5 Public Meetings*

Design-Build Contractor shall organize and manage public meetings with the Customer Groups during design and construction activities.

The frequency of public meetings shall be addressed in Design-Build Contractor's PICP and will increase or decrease as needs arise to better inform and engage the Customer Groups. Design-Build Contractor shall propose a schedule of public meetings to TxDOT and then conduct the public meetings that, at a minimum, shall address Project construction and maintenance.

To maximize public participation, public meetings shall be advertised with sufficient advance notice in the appropriate media outlets, such as the *Texas Register*, local newspapers, and television and radio stations. Design-Build Contractor shall be solely responsible for meeting advertisement except that the *Texas Register* advertising shall be routed through TxDOT's Public Information Office.

During such meetings, Design-Build Contractor shall inform the participants of the Project's progress and discuss key issues as they emerge. Design-Build Contractor shall provide timely and useful information regarding subjects of interest to Customer Groups, including:

a) Design and construction issues affecting adjacent residential areas, frontage roads, local streets, and utilities, including such issues as Project ROW definition, Project ROW acquisition process, grading, drainage, access, lighting, aesthetics and noise, and retaining walls;

b) Street and roadway detour design and implementation;

c) Scheduling and duration of Work, including hours of construction;

d) Haul routes;

e) Methods to minimize noise and dust; and

f) Environmental mitigation measures.

Design-Build Contractor shall provide appropriate technical staff at public meetings, who are knowledgeable in the topics to be discussed and possess the ability to interact positively with the public. Design-Build Contractor shall notify TxDOT a minimum of 48 hours in advance of any meetings with the public. TxDOT reserves the right to attend any such meetings. When requested by TxDOT, Design-Build Contractor shall participate in and provide support for any meetings with Customer Groups called and conducted by TxDOT. When TxDOT decides to conduct such meetings, Design-Build Contractor shall share, in a readily manipulative form, all necessary information regarding potential Customer Groups at TxDOT's request. Design-Build Contractor shall bear all costs associated with meetings organized and managed by Design-Build Contractor.

### *3.2.6 Meeting Summaries*

For all meetings with Customer Groups which Design-Build Contractor conducts or directly participates in, Design-Build Contractor shall prepare meeting summaries within five (5) Business Days after the conclusion of such meetings. At a minimum, Design-Build Contractor shall include the following items in the meeting summary:

a) A complete list of attendees (including their affiliations, telephone numbers, and e-mail addresses);

b) Documentation of the exhibits, presentations and/or handouts available at the meeting;

c) Documentation of the issues discussed and any associated solutions; and

d) Description of remaining open issues and action items (including the person(s) responsible for follow-up and target date for resolution).

For any formal public meetings or open houses at which a court reporter is required, Design-Build Contractor shall also include detailed verbal transcripts in the summary. Design-Build Contractor shall submit draft versions of all meeting summaries to TxDOT for review before distributing final versions to the meeting attendees and appropriate Customer Groups.

### *3.2.7 Emergency Event Communications*

For all Emergency events, such as vehicle collisions, ice/snow conditions, and Hazardous Material spills, the Public Information Coordinator shall take timely and appropriate action to inform TxDOT and appropriate Customer Groups of all pertinent details. The Public Information Coordinator shall provide these details through the use of appropriate tools to ensure effective communication. These tools include, but are not limited to: dynamic message signs (DMS), TxDOT's Highway Conditions Report (HCR), email/Web alerts, telephone notification, facsimiles, and media releases/interviews, as appropriate. The Public Information Coordinator shall continue to provide updated information, as available and on a timely basis, until the Emergency no longer exists.

In the event of an unforeseen Emergency, timely notification shall mean as soon as practicable, but in no event longer than within one hour of the occurrence. If advanced warning is available for an Emergency event such as ice/snow, timely notification shall mean as soon as practicable, but in no event longer than within one hour of the time the information is available. In both situations, the Public Information Coordinator shall continue to provide updated information, as available and on a timely basis, until the Emergency no longer exists.

#### 3.2.7.1 Lane Closures

Subject to the lane closure restrictions set forth in Section 18 (Traffic Control), Design-Build Contractor shall provide TxDOT and appropriate Customer Groups a minimum of two (2) weeks advance notice for lane closures and/or traffic switches planned to be in effect longer than 24 hours, and a minimum of 48 hours advance notice for lane closures that are planned to be in effect less than 24 hours, using all appropriate tools as needed. The Public Information Coordinator shall input all lane closures (or an event that results in lane closures) into the TxDOT Highway Conditions Report.

For planned lane closures and Emergency event lane closures, as appropriate, Design-Build Contractor shall coordinate lane closures that may affect crossing TxDOT facilities with appropriate TxDOT district and area offices, as needed, to ensure that no conflicts occur. Design-Build Contractor shall provide advance notification of all lane closure notices to the appropriate TxDOT district and area office. TxDOT will provide appropriate contacts and information upon request.

### *3.2.8 Disseminating Public Information*

Design-Build Contractor shall prepare and distribute materials regarding Project-related subjects, using all appropriate methods, including, but not limited to: meetings, news releases, telephone correspondence, newsletters, email, hotlines, Highway Conditions Report, dynamic message signs, Web alerts, maps, displays, renderings, presentations, brochures, pamphlets, highway advisory radio, and video news releases.

Design-Build Contractor shall create a public Web site to convey Project-related information, including, but not limited to:

a) Contact information;

b) Project maps;

c) Frequently asked questions (FAQs);

d) Current Project activities addressing design, construction, and maintenance;

e) Timing of street and ramp closures and openings;

f) Recommended route alternatives during closures;

g) Newsletter and meeting materials;

h) Meetings and special events announcements and calendar;

i) Links to TxDOT Highway Conditions Reports;

j) Links to other related sites as deemed appropriate by TxDOT;

k) Comment form; and

l) Mailing list request form.

The Web site shall also contain other general Project-related information that enhances the engagement or education of the general public. Design-Build Contractor shall regularly review and update information on this public Web site throughout the Term of the Agreement to provide current and appropriate information and the Web site shall provide for question and feedback opportunities for public communication. Design-Build Contractor shall develop and implement a plan to make the Customer Groups aware of the Project Web site.

Design-Build Contractor shall also develop a downloadable mobile phone application for dissemination of Project information to the public. This application shall be made available for iPhone, Android, and Blackberry devices.

All written materials produced for Customer Groups shall follow the TxDOT *Style Guide* and/or other appropriate spelling/writing guidelines.

Design-Build Contractor, working collaboratively with TxDOT, shall assess the need for multi-lingual communications and, where appropriate, furnish Project-related materials in Spanish or other demographic adaptations.

# 4 ENVIRONMENTAL

## 4.1 General Requirements

The Design-Build Contractor shall deliver the environmental commitments required by the RFP, DBA Documents, Environmental Laws, Governmental Entities, Governmental Approvals, and all applicable federal and state Laws and regulations. To that end, the Design-Build Contractor shall develop, operate, and maintain a Comprehensive Environmental Protection Program (CEPP) for the Work to ensure environmental compliance with all applicable Environmental Laws and commitments. The Program shall obligate the Design-Build Contractor to protect the Environment and document the measures taken during the performance of the Work to avoid and minimize impacts on the Environment from the design, construction, maintenance, operation, and rehabilitation activities of the Project.

The Program shall be designed to incorporate all features and guidelines of ISO 14001. The Program shall effectively demonstrate in detail the Design-Build Contractor's knowledge of all applicable project-specific Environmental Approvals, issues, and commitments and applicable Environmental Laws as set forth in these Technical Provisions, and shall describe the processes that will be followed during the course of the Work to comply with those Environmental Approvals, issues, and commitments and Laws, as well as the documentation required to validate compliance. All monitoring and reporting activities shall be concise, consistent throughout the Term of the Agreement as applicable to the activities being performed, and in accordance with the requirements set forth in the Environmental Laws. The program shall also effectively describe the quality control and assurance measures that the Design-Build Contractor will implement to verify the compliance of the program with all applicable Environmental Laws.

The program shall establish and implement environmental permits, issues, and commitments consistent with the Environmental Approvals. The program shall establish a goal of zero environmental violations during the performance of all Work activities. However, should violations occur, the program shall set forth detailed processes for rectifying such violations in an appropriate and timely manner.

The Design-Build Contractor shall cause Work to comply with Environmental Approvals and compliance requirements for any additional actions throughout the Term of the Agreement. The Design-Build Contractor shall monitor and document Work activities so that documents providing evidence for compliance are available to TxDOT for inspection at any time.

The costs of all field laboratory and consulting work, including but not limited to Phases II to III environmental site assessments, related to Hazardous Materials will be considered part of the Hazardous Materials Allowance. In no event shall any Phase I Hazardous Materials investigation cost be included in the Hazardous Materials Allowance.

## 4.2 Environmental Approvals

### *4.2.1 New Environmental Approvals and Amended TxDOT-Provided Approvals*

TxDOT-Provided Approvals are based on the Project schematic and approved environmental document(s). Such approvals may require re-evaluation, amendment, supplement, or additional studies/reports as the Work progresses or in order to accommodate actions not identified in the Environmental Approvals or covered specifically by environmental documents, permits, and existing resource and regulatory agency coordination. Changes to the Project schematic or incorporation of Additional Properties into the Project shall require the validity of existing Environmental Approvals to be reassessed and may require new Environmental Approvals.

The Design-Build Contractor shall be responsible for coordination with Governmental Entities necessary to obtain new Environmental Approvals or amendments to the TxDOT-Provided Approvals except where TxDOT has agreements with Governmental Entities to perform such coordination.

The Design-Build Contractor shall be responsible for ensuring compliance with the conditions and schedules set forth in amendments to any TxDOT-Provided Approvals or new Environmental Approvals. TxDOT may, in its discretion, provide assistance in securing new Environmental Approvals or amendments to TxDOT-Provided Approvals.

### *4.2.2 Responsibilities Regarding Environmental Studies*

The Design-Build Contractor shall be responsible for conducting additional and/or continuing environmental studies based on the Project approved NEPA document and Project schematic.

The Design-Build Contractor shall be responsible for conducting environmental studies and re-evaluations caused by actions not identified in the Environmental Approvals, actions not covered specifically by existing resource and regulatory agency coordination, or incorporation of Additional Properties into the Project. The Design-Build Contractor shall be responsible for all coordination of environmental studies with appropriate Governmental Entities, except where TxDOT has agreements with Governmental Entities to perform such coordination.

### *4.2.3 TxDOT Review and Approval of Design-Build Contractor Submissions*

TxDOT reserves the right to review, comment on, require revisions to, and reject for resubmission documentation submitted for environmental compliance or Environmental Approvals. Documentation shall conform to current TxDOT submission standards and the requirements of all applicable Governmental Entities, laws, and regulations. TxDOT shall accept documentation meeting current submission standards. TxDOT shall return approved documentation to the Design-Build Contractor for submittal to the appropriate Governmental Entity in cases where the Design-Build Contractor performs coordination. TxDOT, acting reasonably, shall approve those submissions for which TxDOT signature or other approval is required. Documentation not meeting current submission standards or requirements of Governmental Entities will be returned to the Design-Build Contractor, and shall be revised by the Design-Build Contractor to meet standards or requirements.

### *4.2.4 TxDOT-Provided Approvals*

The TxDOT-Provided Approvals are:

1. Finding of No Significant Impact (FONSI); and
2. Initial Section 408 Approval;

## 4.3 Comprehensive Environmental Protection Program (CEPP)

As part of the PMP, the Design-Build Contractor shall develop and implement a Comprehensive Environmental Protection Program, applicable throughout the Term of the Agreement to establish the approach, requirements and procedures to be employed to protect the environment. The CEPP shall be developed in the form of a comprehensive environmental management system incorporating all features and guidelines outlined in ISO 14001. All component parts shall reflect in order of priority: impact avoidance, minimization and as last resort mitigation. The CEPP shall satisfy applicable FHWA, TxDOT, and resource agency requirements, including those detailed as commitments in any Environmental Approvals.

The CEPP shall be the overarching system by which the Design-Build Contractor shall cause environmental commitments made during the Environmental Approval and permitting processes, and

other environmental requirements to be carried forward and reflected, as appropriate, in the design and implemented throughout the Work. The Design-Build Contractor shall utilize the CEPP to track on-going issues, identify environmental compliances, non-compliances and identify actions required/taken to correct any such non-compliances.

At a minimum, the CEPP shall include the following component parts:

a) Environmental Management System (EMS);

b) Environmental Compliance and Mitigation Plan (ECMP);

c) Environmental Protection Training Plan (EPTP);

d) Hazardous Materials Management Plan (HMMP);

e) Communication Plan (CP);

f) Construction Monitoring Plan (CMP);

g) Recycling Plan (RP); and

h) Environmental team resumes.

The dates by which component parts comprising the CEPP are to be submitted for TxDOT approval are set forth in Attachment 2-1. Amendments and updates to the CEPP as necessary to address changing conditions and environmental requirements shall be in accordance with the procedures for amendments to the PMP.

### *4.3.1 Environmental Management System (EMS)*

The EMS shall be the overarching system by which the Design-Build Contractor shall cause environmental commitments made during the Environmental Approval and permitting processes, and other environmental requirements to be carried forward and reflected, as appropriate, in the design and implemented throughout the Work. The Design-Build Contractor shall utilize the EMS to track on-going issues, identify environmental compliances, non-compliances and identify actions required/taken to correct any such non-compliance.

The EMS shall establish a schedule for periodic CEPP review to ensure it is up to date. The EMS shall provide a means to track the reviews and results. At a minimum, the EMS shall require documents in the following list to be on file at the Site and available at any time for TxDOT review:

a) CEPP component parts;

b) Weekly Environmental Monitoring Reports;

c) Investigative Work Plans, Site Investigation Reports, Remedial Action Plans, and/or SGWMP as necessary for hazardous material discovery/remediation;

d) Wetlands Delineations and appropriate Section 404 Permit Application if changes to the design or temporary construction impacts are necessary;

e) Mitigation or resource monitoring reports, as required by resource-specific mitigation plans;

f) Designs for wetland and floodplain mitigation;

g) TPDES Construction General Permit (TXR150000), Notice of Intent (NOI);

h) TPDES Construction General Permit (TXR150000), Notice of Termination (NOT) for Work completed;

i) Storm Water Pollution Prevention Plan (SW3P) and amendments, as required to reflect Project development and staging, including off-site plans, controls and reporting from borrow sites, waste sites, and plant location sites;

j) Completed Permit applications and permits as issued;

k) Pre-Construction Inspection Report;

l) Training Documentation;

m) DBA

n) Contractor's final traffic noise analysis, if different than that included in the TxDOT-Provided Approvals; and

o) EPIC Sheets.

### *4.3.2* Environmental Compliance and Mitigation Plan (ECMP)

The ECMP shall document and fully detail compliance strategies and procedures to be employed to cause Work performance in accordance with requirements of applicable Environmental Laws and Environmental Approvals. This plan shall establish and/or document schedules, protocols, and methodologies to be used in accomplishing Work, with an emphasis on monitoring, reporting, corrective actions and adaptive management. The plan shall include a Compliance Action Plan (CAP). The CAP shall consist of a decision making matrix which will define the triggers for initiating or re-initiating environmental compliance actions for construction and maintenance activities including construction noise mitigation measures and the triggers for initiating mitigation measures. For each trigger, the CAP shall identify the appropriate type or level of environmental study or other compliance action necessary to ensure the ongoing validity of Project Environmental Approvals and commitments. In addition, the ECMP shall detail any mitigation required by Environmental Approvals and the Design-Build Contractor's approach to satisfying mitigation requirements, including mitigation requirements identified after completion of the ECMP.

The ECMP shall include the following components:

#### 4.3.2.1 Environmental Permits, Issues, and Commitments (EPIC) Sheets

The Design-Build Contractor shall develop and maintain EPIC construction plan sheets. Applicable permits and environmental commitments shall be identified on EPIC sheets and updated throughout the construction period to identify on-Site conditions.

EPIC sheets shall include the Environmental Commitments required to ensure that any discharge from the Project site into a sanitary sewer system complies with appropriate codes and standards of the sanitary sewer owner.

#### 4.3.2.2 Clean Water Act (CWA) - Sections 404 and 401: Waters and Wetlands of the United States

The Design-Build Contractor shall document how they will comply with the terms and conditions for Section 404 permit(s) issued to TxDOT by the USACE and associated Section 401 State Water Quality Certification(s) as administered by the TCEQ (Texas Commission on Environmental Quality) as well as any additional Section 404 permits and 401 certifications issued to the Design-Build Contractor during the life of the Project. Because USACE approval under Section 408 will be required, it is anticipated that this project will be authorized by RGP-12, *Modifications and Alterations of Corps of Engineers Projects*. Although USACE approval under Section 408 and subsequently Section 404 approval will be obtained through the RGP-12, a pre-construction notification will be required and construction activity shall not begin until notified in writing by the USACE that the project meets the terms and conditions of RGP-12, and any special conditions added by the USACE.

The documentation shall, at a minimum, include:

a) Process for training personnel to recognize Waters of the U.S. that fall under the jurisdiction of the USACE,

b) Process for communicating the terms and conditions of all USACE 404 permits and TCEQ 401 certifications,

c) Procedures for carrying out any required mitigation, and

d) Procedures for handling off-right-of-way Project Specific Locations (PSL) as required by all Section 404 permit(s) issued to either TxDOT or the Design-Build Contractor by the USACE.

#### 4.3.2.3 CWA - Section 402: Texas Pollutant Discharge Elimination System (TPDES)

The Design-Build Contractor shall document how they will comply with Section 402 of the CWA. The documentation shall include that the Design-Build Contractor has day-to-day operational control over activities necessary to ensure compliance with the Storm Water Pollution Prevention Plan (SW3P) and has the sole responsibility for any potential non-compliance issue. The documentation shall also include that the Design-Build Contractor is responsible for submitting an NOI to TCEQ. The documentation at a minimum shall include:

a) Process for training personnel on the requirements and conditions of the Texas Construction General Permits for Storm Water Discharges from Construction Sites (CGP),

b) Procedures for incorporating Additional Properties outside the original NEPA approved schematic and any off- right-of-way PSL within one linear mile of the project limits to comply with the CGP and the project's SW3P,

c) Procedures for handling non-compliance issues, and

d) Escalation procedures for SW3P items.

#### 4.3.2.4 Rivers and Harbors Act of 1899 - United States Code, Title 33

Design-Build Contractor shall document compliance with Sections 9, 10 and 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. Sections 401, 403, and 408, respectively) as follows:

a) Section 9 prohibits the construction of any dam or dike across any navigable water of the U.S. without approval of the plans by the USACE. Section 9 also pertains to bridges and causeways; however, the authority of the USACE with respect to bridges and causeways was transferred to the Secretary of Transportation under the Department of Transportation Act of October 15, 1966. On behalf of TxDOT, FHWA has coordinated with the U.S. Coast Guard (Coast Guard) who determined that this project qualifies for the exemption allowed under the Surface Transportation Authorization Act from Coast Guard permitting. The proposed project is also exempt from navigational lighting requirements. If conditions change or plans vary from what the Coast Guard reviewed, it is the responsibility of the Design-Build Contractor to coordinate further with the Coast Guard.

b) Section 10 prohibits the unauthorized obstruction or alteration of any navigable water of the U.S. This section provides that the construction of any structure in or over any navigable water of the U.S., or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the USACE. The Section 10 activity would be authorized under RGP-12, *Modifications and Alterations of Corps of Engineers Projects*.

c) Section 14 provides that any proposed modification to any existing USACE project must obtain permission from the Secretary of the Army by demonstrating that such proposed alternation or permanent use and occupation of the Federal flood control project is "not injurious to the public

interest and will not impair the usefulness of such work." In accordance with Section 14 requirements, any alteration of a USACE Public Works project requires USACE review and approval to ensure that the alteration does not adversely impact USACE Public Works (i.e., Dallas Floodway). USACE approval under Section 408 will be initiated by TxDOT; however, any subsequent revisions to the initial submittal package will be the responsibility of the Design-Build Contractor. If there are no appreciable changes to the preliminary design plans submitted for Section 408 approval, as determined by the USACE, the Design-Build Contractor will still be responsible for obtaining USACE Construction Approval prior to initiating construction activities within the Dallas Floodway. Although USACE approval under Section 408 may be provided, construction approval is also required and is the responsibility of the Design-Build Contractor.

#### 4.3.2.5 State Listed Species and Unregulated Habitat

Design-Build Contractor shall document how they will address state listed species and unregulated habitat. The documentation shall be in agreement with all MOUs and MOAs TxDOT has with the Texas Parks and Wildlife Department (TPWD) including the requirement for coordination with TPWD to be conducted by TxDOT. The documentation at a minimum shall include:

a) Process for communicating any commitments regarding state-listed species and unregulated habitat and

b) Procedures for complying with any commitments.

A survey of this project area confirmed the presence of a protected and state-listed freshwater mussel species, Texas pigtoe (*Fusconaia askewi*), in the Trinity River. Appropriate measures must be taken to prevent demolition and construction materials from falling into the Trinity River. Any temporary or permanent fill, or work occurring directly in these waters, will require prior coordination with TxDOT. To allow TxDOT to relocate all state-listed freshwater mussel species, Design-Build Contractor shall notify TxDOT a minimum of 30 days prior to the start of any construction activities within the levees on IH 30 and IH 35E.

#### 4.3.2.6 Endangered Species Act and Fish and Wildlife Coordination Act

Design-Build Contractor shall document how they shall comply with the Endangered Species Act (ESA) and the Fish and Wildlife Coordination Act (FWCA). The documentation shall reflect that coordination with U.S. Fish and Wildlife Service (USFWS) shall be conducted by TxDOT. The documentation shall, at a minimum, include:

a) Process for training personnel on the requirements of the ESA and FWCA;

b) Process for communicating any commitments regarding ESA and FWCA; and

c) Procedures for complying with any commitments including mitigation.

#### 4.3.2.7 Traffic Noise

The Design-Build Contractor shall document how they will address traffic noise mitigation. The documentation shall, at a minimum, include:

a) Process for carrying out traffic noise mitigation measures as identified and discussed in the approved NEPA document and schematic;

b) Process for carrying out traffic noise mitigation measures determined throughout the life of the project; and

c) Process to handle changes that may occur to proposed permanent traffic noise mitigation in the approved NEPA document and schematic.

To fulfill the commitments of the previously mentioned TxDOT-Provided Approvals the Design-Build Contractor shall be responsible for implementing all traffic noise mitigation measures to minimize construction impacts of the Work as prescribed in TxDOT-Provided Approvals and subsequent TxDOT-Provided Approvals secured by the Design-Build Contractor. The Design-Build Contractor acknowledges that TxDOT-Provided Approvals and permanent traffic noise mitigation is not proposed based on the schematic design and Schematic ROW; consequently the permanent traffic noise mitigation may be required if the Design-Build Contractor amends the design as the Work progresses. Such amendments shall be submitted to TxDOT for review and approval.

If traffic noise mitigation is required, Design-Build Contractor shall be responsible for public notification and involvement per TxDOT Guidelines for Analysis and Abatement of Roadway Traffic Noise and in accordance with Section 3 of the Technical Provisions. Design-Build Contractor shall allow fifteen (15) days for adjacent affected property comments after each Traffic Noise Workshop.

Design-Build Contractor shall be responsible for all coordination with adjacent property owners and Governmental Entities necessary to obtain all such amendments to TxDOT-Provided Approvals and for ensuring compliance with the conditions and schedules set forth in the amendment of any TxDOT-Provided Approvals.

#### 4.3.2.8 Water Well Impacts and Requirements

Design-Build Contractor shall document how they will address wells (such as municipal, domestic, irrigation, oil and gas, or monitoring and observations wells) encountered during the life of the project. The documentation shall include that the Design-Build Contractor is responsible for plugging and abandoning all wells in accordance with Item 103, Disposal of Wells, from TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, as well as that the Design-Build Contractor is responsible for any required remediation efforts. The documentation at a minimum shall include:

a) Process for training personnel on recognition of wells;

b) Procedures for handling wells; and

c) Procedures for handling contamination of a well that results from the Design-Build Contractor's work. Procedures shall include a requirement to notify TxDOT and with TxDOT's concurrence notify appropriate regulatory agency within 24 hours of the discovery.

#### 4.3.2.9 Cultural Resource Studies

Design-Build Contractor shall be responsible for ensuring compliance with cultural resource Laws on the Project through the Term of the Agreement. TxDOT shall perform consultation for the Project according to current procedures for implementing Section 106 of the National Historic Preservation Act (NHPA) and the Antiquities Code of Texas.

The removal of the existing interim IH 35E high occupancy vehicle crossover structure located between the Houston Street and Jefferson Boulevard viaducts south of the IH 30/IH 35E interchange (Mixmaster) will allow for the restoration of the Houston Street Viaduct southern railing to be restored to its previous appearance by "in-kind replica." The replacement of the railing shall comply with a mitigation plan set forth in a Texas Historical Commission (THC) coordination letter dated September 24, 1996. In addition, the removal of a staircase located along the northern railing of the Houston Street Viaduct south of the Mixmaster shall also result of the replacement of railing with "in-kind replica."

Subsequent to issuance of NTP1, Design-Build Contractor shall be responsible for performing any necessary cultural resource surveys, evaluations, testing, and mitigation in those areas outside the footprint of the Project ROW shown on the schematics as defined in the original NEPA Approval and within the area of potential effects. The Design-Build Contractor shall coordinate all necessary

Antiquities Permits through TxDOT. Antiquities Permits shall be obtained from THC for archeological surveys, testing, monitoring, and data recovery.

Design-Build Contractor shall document efforts to avoid impacts to cultural resources. that are listed on or determined to meet the eligibility criteria for listing to the National Register of Historic Places (NRHP) as specified in 36 CFR 60.4, or that are designated or determined to meet the criteria for designation as State Archeological Landmarks as specified in 13 TAC 26.8.

If evidence of a possible historic property is encountered during the course of the Work, the Design-Build Contractor shall immediately cease Work in the immediate area and contact TxDOT to initiate post-review discovery procedures under the provisions of the Programmatic Agreement among TxDOT, the State Historic Preservation Officer, FHWA, and Advisory Council on Historic Preservation (ACHP), as well as the MOU between TxDOT and the THC. The Design-Build Contractor shall undertake appropriate measures to protect the site from further intrusion to the extent feasible until an appropriate evaluation of the site can be made by a qualified representative. Work shall not be resumed in the area until the Design-Build Contractor receives notification and approval from TxDOT.

#### 4.3.2.10 Public Involvement

Design-Build Contractor shall document how they will comply with all public involvement requirements, including public involvement requirements specifically related to cultural resources. The documentation shall comply with all applicable requirements including, but not limited to, 43 TAC §2.4, Section 106 of the National Historic Preservation Act (36 CFR 800), Chapter 26 of the Texas Parks and Wildlife Code, the Civil Rights Act of 1964, and the Civil Rights Restoration Act of 1987. The documentation shall include that the Design-Build Contractor is responsible for conducting all public involvement requirements for the life of the project except where TxDOT has agreements with Governmental Entities to perform public involvement requirements. The documentation at a minimum shall include:

a) Process for handling public involvements requirements; and

b) Procedures for documenting public involvement.

#### 4.3.2.11 Standard Operating Procedures

Design-Build Contractor shall develop standard operating procedures for the following activities and include them in the ECMP:

a) Controlling dust during construction;

b) Mitigating vibration during construction;

c) Mitigating light intrusion on adjacent properties; and

d) Complying with jurisdictional waters and Section 404 permits.

### *4.3.3 Environmental Protection Training Plan (EPTP)*

The Design-Build Contractor shall develop and implement an Environmental Protection Training Plan that shall meet the minimum requirements set forth herein. The EPTP shall include methods and procedures documented in the ECMP to:

a) Educate every worker to:

   i. Recognize the overall importance of environmental issues to constructing, operating and maintaining a successful Project.

   ii. Appreciate the various environmental sensitivities of the Project.

b) Train every worker to:

i. Recognize environmentally sensitive resources that may be encountered during the Work.

ii. Avoid or take appropriate action to minimize environmental impacts from the Work.

iii. Know the required actions, practices, and procedures regarding regulated resources.

iv. Understand protocols for meeting environmental commitments for post-review discoveries.

c) Foster the Design-Build Contractor's management and supervisory personnel's attitude of commitment to the Project's environmental quality.

d) Convey to all workers the Design-Build Contractor's management commitment to the Project's environmental quality.

e) Convey to all workers TxDOT's and the Design-Build Contractor's commitment to zero tolerance for violations.

#### 4.3.3.1 EPTP Scope and Content

The goal of the EPTP is to educate Project personnel about the following:

a) Overall importance of environmental protection to the Project

b) Compliance responsibility and Governmental Entity authority including background and environmental issues regulatory overview.

c) Overview of the Design-Build Contractor’s environmental commitments and responsibilities at the Project level.

d) Worker responsibilities.

e) Wetlands identification.

f) Environmental Approvals terms and conditions including an overview of the provisions of the ESA, Migratory Bird Treaty Act, and SW3P.

g) Best Management Practices (BMPs) for environmental compliance, including pollution prevention, erosion, sedimentation, post construction controls, and dust control measures to maintain water and air quality.

h) Required mitigation measures.

i) Procedures and precautions in the event of spills of or discovery of Hazardous Materials or unknown chemicals or contamination.

j) Procedures and precautions in the event human skeletal remains or other archeological or paleontological resources are discovered.

k) Procedures regarding the relocation of historical markers (i.e. Texas Historic Commission Subject Markers, DAR OSR Markers, Texas Centennial Markers, Texas Highway Department Markers, and local/county markers).

l) Groundwater protection requirements.

m) CWA regulations and surface water protection requirements.

n) Overview of noise and residential impact reduction procedures.

o) Air quality requirements.

p) Penalties and/or fines for violations of and noncompliance with Environmental Approvals and Environmental Laws, including termination of employment.

Design-Build Contractor shall submit to TxDOT for review and approval course outlines containing learning objectives designed to achieve stated goals and suggested staff attendance for all anticipated training requirements through the Term of the Agreement. Course outlines shall be submitted within ninety (90) days after NTP1.

#### 4.3.3.2 EPTP Participation

Design-Build Contractor shall require all non-administrative employees to participate in the EPTP and shall keep accurate records documenting attendance, as well as materials presented.

#### 4.3.3.3 EPTP Schedule

Design-Build Contractor shall include activities for implementation of the EPTP in the Project Schedule. The length of training sessions and their frequency shall be sufficient to achieve the goals set forth above. Periodic training sessions at key times (e.g., prior to construction or major maintenance in sensitive areas or construction timing restrictions to protect threatened and/or endangered species) shall be used to update workers on specific restrictions, conditions, concerns, and/or requirements.

### *4.3.4 Hazardous Materials Management Plan (HMMP)*

Design-Build Contractor shall prepare an HMMP for the safe handling, storage, treatment and/or disposal of Hazardous Materials, whether encountered at or brought onto the Project Site by the Design-Build Contractor, encountered or brought onto the Project site by a third party, or otherwise, during the Term of the Agreement. The Design-Build Contractor shall submit the final Hazardous Materials Management Plan to TxDOT for review and approval in its good faith discretion within sixty (60) days of NTP1; approval of the Plan by TxDOT shall be a condition of commencement of Construction Work.

The HMMP shall include procedures compliant with all applicable Environmental Laws and include, at a minimum:

a) For all chemicals to be used on the Project, the Design-Build Contractor shall keep and update Material Safety Data Sheets (MSDS), per OSHA requirements, for the Term of the Agreement,

b) Designated individuals responsible for implementation of the plan,

c) Procedures for identifying and documenting potential contaminated sites which might impact Project development,

d) Procedures for mitigation of known contaminated sites anticipated to impact construction,

e) Procedures for mitigation of unanticipated contaminated sites encountered during construction,

f) Procedures for mitigation of contamination during the operation and maintenance of the Project,

g) Procedures for developing a detailed Spill Response Plan for the Term of the Project,

h) Process for training personnel for responding to and mitigating Incidents involving contamination or waste,

i) Provisions for appropriate storage and disposal of all waste encountered or disposed of on the Project for the Term,

j) Provision for a Hazardous Materials training module as an Element of the EPTP component of the CEPP,

k) Procedures for preparing an Investigative Work Plan (IWP) and Site Investigative Report (SIR) in the event that Hazardous Materials are discovered during construction; operations or maintenance activities, and

l) Identification and contact information for designated responsible individuals.

The HMMP shall include provisions for making all on-Site workers aware of and able to recognize the potential Hazardous Materials to which they may be exposed, limiting Contractors and other Site workers' exposure to Hazardous Materials and providing all necessary personal protection equipment to protect workers from exposure. The HMMP shall require Design-Build Contractor to provide any non-Design-Build Contractor personnel who visit the Project with the appropriate personal protection equipment.

The HMMP shall require that all personnel of Design-Build Contractor-Related Entities handling Hazardous Materials be trained and certified at least to the minimum requirements established under the current guidelines of OSHA 1910.120 (HAZWOPER Training).

Further, the HMMP shall include procedures for ensuring that all applicable certifications, licenses, authorizations and Governmental Approvals for the Design-Build Contractor personnel handling Hazardous Materials are current and valid through the duration of the Work.

#### 4.3.4.1 Investigative Work Plans (IWP) and Site Investigation Reports (SIR)

If Hazardous Materials are encountered within any of the Project ROW or Additional Properties used as Design-Build Contractor's staging area, field office site, plant sites, borrow site, or stockpile location, Design-Build Contractor shall prepare an investigation work plan that addresses the methods, techniques, and analytical testing requirements to adequately characterize the extent of the contaminated media (soil and/or groundwater) potentially impacting the Project. Design-Build Contractor shall locate and assess the likely source of contamination.

A Registered Professional Engineer and other qualified professionals, as needed, shall prepare the IWP and other necessary reports in accordance with applicable, relevant or appropriate Laws and guidance.

Upon satisfactorily completing the investigative work, Design-Build Contractor shall summarize the findings within an SIR and make recommendations regarding potential response actions necessary for Project development. Design-Build Contractor shall take Hazardous Materials contamination into account during all subsequent phases of Project development, including Additional Properties negotiation and acquisition, property management, design, and construction.

The SIR shall address the characterization of the impacted area; sampling efforts and findings; opportunities to avoid the contamination by adjusting the design; level of response action warranted if the contamination cannot be avoided; feasibility of initiating response actions prior to construction; pursuit of cost-reimbursement from responsible parties; the need for completing response actions concurrent with construction and nature of any special specifications and provisions necessary for incorporation into the Project.

Design-Build Contractor may initiate a preventative or corrective action after TxDOT review and approval of the SIR from appropriate Federal or State agencies.

### *4.3.5 Communication Plan (CP)*

The Design-Build Contractor shall develop a CP which describes in detail the communication hierarchy for information distribution related to the compliance with the CEPP. The CP will include names and contact information, including emergency contact information, and the preferred methods of routine, and emergency communication distribution.

### *4.3.6 Construction Monitoring Plan (CMP)*

The CMP shall identify times, locations, and other conditions where monitoring of construction activities are to be performed to maintain and cause compliance with Environmental Laws, Environmental Approvals, and the DBA Documents. The CMP shall establish and/or document schedules, protocols and methodologies to be used for monitoring Work with an emphasis on timely reporting, corrective actions and adaptive management. The CMP shall establish reporting procedures, identify reporting requirements

and establish controls for report distribution and records retention. All Environmental Monitoring Reports shall be made available for review by TxDOT at TxDOT's request. Should any non-compliance or violation be observed that represents an imminent danger to human health or the environment, the CMP shall include procedures to cause immediate notification of TxDOT.

Prior to NTP2, Design-Build Contractor and TxDOT shall jointly inspect existing facilities, structures, and environmentally sensitive areas in the vicinity of the Site but not included as part of the Work. Design-Build Contractor shall provide a minimum two-week (2) advance notice to TxDOT of this joint inspection. The inspection shall document the pre-construction condition of vegetation, streets, sidewalks, landscaping, residential and commercial property, creeks, storm drainage and infrastructure. The purpose of the inspection is to provide a point of reference from which TxDOT can determine if any facility, structure and environmentally sensitive area damaged during the Work is restored to its pre-construction condition. Design-Build Contractor shall document the inspection with a report that shall include photographs, sketches, maps, and narratives clearly depicting the pre-construction Site condition.

All photographs shall be archival quality and shall be accompanied by a caption describing the date; time of day; location and direction in photograph was taken. If the photograph shows existing damage, the damage must be clearly shown and noted in the caption. All sketches and maps must be no larger than 11"x17". All photographs must be 4"x6".

The post award inspection shall inspect the Municipal Separate Storm Sewer System (MS4) located within and adjacent to the Site. During the inspection, Design-Build Contractor shall note the following:

a) Storm drains, culverts, swales, and other components of the MS4 that Design-Build Contractor verified as free of floatable trash, silt, debris, and functioning as originally intended.

b) Storm drains or culverts that do not function or appear not to function as originally intended.

c) Siltation of culverts, concrete swales, and other components of the MS4.

d) The presence of construction on adjacent, up-gradient, or down-gradient properties. If construction on other properties is noted, Design-Build Contractor shall photographically document the general condition of these properties and their compliance with storm water regulations.

e) Pre-existing off-site tracking from the Site or surrounding properties.

f) Potential pre-existing contamination (i.e., any areas of soil discoloration or distressed vegetation).

g) Any other pre-existing condition that, by its nature, could be construed as a violation of the TPDES Construction General Permit.

During construction of the Project, Design-Build Contractor shall conduct a yearly inspection to monitor and repair any of the above mentioned deficiencies in the storm water system.

### *4.3.7 Recycling Plan*

The recycling plan shall document and fully detail the Design-Build Contractor's commitment to recycling, waste minimization and use of "green products" during all aspects of Work. The recycling plan shall document the Design-Build Contractor's recycling initiatives as well as methods and procedures for maximizing the use of recycled materials in all aspects of the Work. If recyclable materials shall be used in lieu of TxDOT approved construction and maintenance materials, the Design-Build Contractor shall follow the TxDOT specification DMS 11000.

## 4.4 Environmental Personnel

The Design-Build Contractor, acting through the Environmental Compliance Manager (ECM), shall designate an Environmental Team (ET), as detailed in this section, to prevent, minimize, and/or correct any violation of or noncompliance with Environmental Approvals. The ET shall include Environmental Training Staff, Environmental Compliance Inspectors (ECIs), Archeologist, Architectural Historian, Historian, Historical Architect, Natural Resource Biologist, Water Quality Specialist, and Hazardous Materials Manager. All of the ET shall be deemed other principal personnel.

In the CEPP, Design-Build Contractor shall establish a detailed approach, procedures and methods for:

a) Staffing and availability of ECM and all ET personnel.

b) ET staff response times during the Work.

### *4.4.1 Environmental Compliance Manager (ECM)*

Design-Build Contractor shall designate a full-time ECM for the Work. The ECM shall report and coordinate all issues directly with TxDOT and the Design-Build Contractor's Project Manager. In the event the ECM, in consultation with Design-Build Contractor's Project Manager and TxDOT, is unable to reach satisfactory resolution of environmental issues, the ECM shall provide written notification to the Design-Build Contractor and TxDOT outlining the concerns, actions taken in attempt to correct the concerns, and provide a recommendation as to the suggested course of action.

The ECM shall direct the work of the ET and shall monitor, document, and report the current status of environmental compliance for the Work. The ECM shall report immediately to TxDOT and the Design-Build Contractor any violation or non-compliance and shall include with any such report, the appropriate recommendations for corrective action including stoppage of Work.

The ECM shall coordinate with TxDOT, the Design-Build Contractor, and appropriate Governmental Entities. The ECM shall submit all necessary environmental documentation and monitoring reports to the appropriate Governmental Entities and when applicable, through TxDOT, to the extent necessary to maintain compliance with applicable Environmental Approvals.

Design-Build Contractor shall not have the ability to relieve the ECM of his or her duty without the written consent of TxDOT. Should Design-Build Contractor desire to replace ECM, Design-Build Contractor shall submit to TxDOT the resume of a replacement candidate. The replacement candidate shall be available fulltime within thirty (30) Days after delivery of TxDOT's written acceptance. In the absence of the Environmental Compliance Manager, Design-Build Contractor's Hazardous Materials Manager shall act as an interim Environmental Compliance Manager.

The ECM candidate shall have at least five (5) years' experience successfully managing environmental compliance of urban freeway construction. The qualifying experience used to evaluate an ECM candidate must include the following experience:

a) Developing and managing a SW3P;

b) Developing and managing a hazardous substance and petroleum products management plan;

c) Implementing environmental mitigation plans;

d) Providing environmental and personal protection training; and

e) Monitoring compliance with Section 404 Permit conditions.

The Environmental Compliance Manager's qualifying experience must demonstrate the Manager is familiar with:

a) The scope and terminology of ASTM E 1527-05, "Standard Practice for Environmental Site Assessment Process";

b) Provisions of the TPDES Construction General Permit (TXR 150000); and

c) Requirements of Section 404 and permit provisions.

### *4.4.2 Environmental Training Staff*

Under the direction of the ECM, the environmental training staff shall develop, schedule and conduct environmental awareness and environmental compliance training for the Design-Build Contractor's personnel. All training shall be in accordance with the requirements set forth in Section 4.2.3. Environmental Training Staff members shall have at least one (1) year of experience providing environmental compliance inspection for freeway construction.

### *4.4.3 Environmental Compliance Inspectors (ECI)*

The ECIs shall conduct on-Site environmental monitoring, prepare documentation, and report to the ECM daily all violations, compliance, and noncompliance with Environmental Approvals.

The ECI shall report immediately to the ECM any violation or non-compliance and shall include with any such reports, the appropriate recommendations for corrective action, including stoppage of Work.

The ECIs shall have at least one year operational control experience of SW3P activities.

### *4.4.4 Cultural Resource Management Personnel*

The ECM shall designate an Archeologist, Architectural Historian, Historian, and/or Historical Architect to provide expertise in monitoring impacts to cultural resources during the course of the Work.

The Cultural Resource Management Personnel shall meet the certification requirements of TxDOT Work Category, 2.8.1, "Surveys, Research and Documentation of Historic Buildings, Structures, and Objects", 2.9.1, "Historic Architecture", 2.10.1, "Archeological Surveys, Documentation, Excavations, Testing Reports and Data Recovery Plans", and 2.11.1, "Historical and Archival Research", as applicable.

### *4.4.5 Natural Resource Biologist*

The ECM shall designate a Natural Resource Biologist to provide expertise in monitoring impacts on wildlife and the natural environment during the course of the Work.

The Natural Resource Biologist shall meet certification requirement of TxDOT Work Category 2.6.1, "Protected Species Determination (Habitat)" and 2.6.3, "Biological Surveys".

### *4.4.6 Water Quality Specialist*

The ECM shall designate a Water Quality Specialist to provide expertise in permitting delineation, stormwater pollution prevention, and the protection of jurisdictional waters during the course of the Work.

The Water Quality Specialist shall have verifiable experience implementing SW3P and be able to demonstrate a working knowledge of the TPDES and MS4 permit requirements applicable to the Project.

The Water Quality Specialist shall meet the certification requirements of TxDOT Work Category 2.4.1, "Nationwide Permit" and TxDOT Work Category 2.3.1, "Wetland Delineation".

### *4.4.7 Hazardous Materials Manager*

The ECM shall designate a Hazardous Materials Manager to provide expertise in the safe handling of Hazardous Materials required to perform the Work and those that may be discovered/impacted during the duration of the Agreement. The Hazardous Materials Manager shall conduct appropriate activities such as the following:

a) Schedule and/or conduct training for the Design-Build Contractor's employees.

b) Verify all employee certifications prior to and required for any handling of Hazardous Materials.

c) Maintain records of all incidents involving Hazardous Materials and notify the ECM, TxDOT and appropriate authorities in writing of any such incidents.

The Hazardous Materials Manager shall be a qualified professional with 40-hour HAZWOPER certification and at least five (5) years' experience in similar projects in the following areas:

a) Experienced in developing IWPs, SIRs, and remedial action plans or equivalent reports necessary and acceptable to the TCEQ in material discovery and remediation efforts of Hazardous Materials.

b) Experienced in TCEQ guidance for the investigation and remediation of Hazardous Materials under the TCEQ Voluntary Cleanup Program and Texas Risk Reduction Program Rules.

The Hazardous Materials Manager shall meet the certification requirements of TxDOT Work Category 2.13.1, "Hazardous Materials Initial Site Assessment."

### *4.4.8 Property Access*

To fulfill the obligation of the TxDOT-Provided Approvals to maintain current access during and after construction, Design-Build Contractor shall make reasonable efforts to minimize the inconvenience to vehicles, bicycles and pedestrians during the Term of Agreement. The Design-Build Contractor shall maintain access to adjacent properties during construction and ensure that visibility of businesses is maintained.

### *4.4.9 Dust Control*

Design-Build Contractor shall institute dust control measures to minimize air quality impacts. The measures shall be adjusted as necessary based on construction traffic, forecasted wind speeds, and persistent dry weather conditions.

### *4.4.10 Asbestos Containing Material (ACM)*

It is Design-Build Contractor's responsibility to identify, inspect, notify, amend notifications as necessary, pay notification fees, and abate asbestos found on any structure, including but not limited to bridges and buildings, in accordance with appropriate or relevant regulations or guidance.

### *4.4.11 Lead Based Paint (LBP)*

It is Design-Build Contractor's responsibility to test, identify, inspect, notify, amend notifications as necessary, pay notification fees, and abate for LBP found on any structure, including but not limited to bridges and buildings, in accordance with appropriate or relevant regulations or guidance.

# 5 THIRD-PARTY AGREEMENTS

## 5.1 General Requirements

TxDOT has agreements with local Governmental Entities (third parties) along the Project corridor that define the requirements for construction, maintenance, and operation of traffic signals, illumination, and roadway maintenance. These agreements specify the local Governmental Entities' responsibilities and TxDOT's responsibilities with respect to the requirements and are provided in the Reference Information Documents.

For the purpose of the Contract, Design-Build Contractor will assume and execute TxDOT's responsibilities and duties as defined in the current and future agreements. Design-Build Contractor is responsible for providing TxDOT and Governmental Entities with all information necessary for it to fulfill TxDOT's responsibilities under these agreements.

In accordance with current and subsequent agreements requiring TxDOT to reimburse the local Governmental Entity for their role in operating and/or maintaining certain facilities, Design-Build Contractor shall reimburse TxDOT said costs. Design-Build Contractor shall make payment to TxDOT within thirty (30) days from receipt of TxDOT's request for payment.

## 5.2 Traffic Signals

New construction or modifications to the existing traffic signals are defined in Section 16 (Signing, Delineation, Pavement Marking, Signalization, and Lighting).

## 5.3 Roadway Illumination

Some local Governmental Entities may request continuous illumination along the frontage roads within the Project limits. Should such a request occur, additional agreements between TxDOT and the Governmental Entity will be required. Design-Build Contractor shall coordinate with and provide reasonable accommodations to the third party to carry out the installation, operations, and maintenance obligations as specified in such agreements.

For sections of continuous lighting specified by these additional agreements, safety lighting included in that section is considered a component of the overall system and responsibilities for said safety lighting shall be those in the terms of the additional agreement.

New construction or modifications to the existing illumination are defined in Section 16 (Signing, Delineation, Pavement Marking, Signalization, and Lighting).

## 5.4 Other Affected Third Parties

When Work interfaces with other third-party facilities, Design-Build Contractor is responsible for coordinating the Work with all third parties potentially affected by the Work. Design-Build Contractor shall prepare a plan, the Affected Third Parties Plan, which describes how the Design-Build Contractor will mitigate the impact of the Work upon potentially-impacted third parties, for TxDOT's review prior to initiating discussions with potentially-impacted third parties.

# 6 UTILITY ADJUSTMENTS

## 6.1 General Requirements

A number of existing Utilities are located within or in the vicinity of the Project ROW, some pursuant to statutory rights and some pursuant to property rights. Certain of those existing Utilities will need to be relocated or otherwise adjusted in order to accommodate the Project. This Section 6 establishes procedures and requirements for Utility Adjustments including such processes as coordination with Utility Owners, administration of the engineering, construction and other activities necessary for Utility Adjustments, and required documentation. This Section 6 references certain TxDOT forms for Design-Build Contractor's use in Utility Adjustments. Copies of those forms are included in Attachment 6.1, Utility Forms. Except as otherwise provided in this Section 6 or directed by TxDOT, whenever a TxDOT form is provided, Design-Build Contractor shall prepare all forms of the same type using the TxDOT form and is required to notify TxDOT of all changes to the forms for TxDOT's approval prior to execution by the Utility Owner.

Design-Build Contractor shall cause all Utility Adjustments necessary to accommodate construction, operation, maintenance and/or use of the Project in both its initial configuration and in its Ultimate Scope. TxDOT will assist Design-Build Contractor in the Utility Adjustment process, to the extent described in the DBA Documents. Some Utility Adjustments may be performed by the Utility Owner with its own forces and/or contractors and consultants (i.e., Owner-Managed); all others shall be performed by Design-Build Contractor with its own forces and/or Contractors and consultants (subject to any approval rights required by the Utility Owner for those working on its facilities) (i.e., Design-Build Contractor-Managed). The allocation of responsibility for the Utility Adjustment Work between Design-Build Contractor and the Utility Owners shall be specified in the Utility Agreements as described in Section 6.1.3.

Design-Build Contractor's obligations regarding reimbursement to Utility Owners for eligible costs of Utility Adjustment Work, and Design-Build Contractor's obligations regarding the accommodation of Utilities from and after the Service Commencement Date, are set forth in Section 6.8.6 of the Agreement.

This Section 6 does not address Utility services to the Project. Utility services to the Project shall be the subject of separate agreements between Design-Build Contractor and Utility Owners.

### *6.1.1 When Utility Adjustment is Required*

A Utility Adjustment may be necessary to accommodate the Project for either or both of the following reasons: (a) a physical conflict between the Project and the Utility, and/or (b) an incompatibility between the Project and the Utility based on the requirements in Section 6.2.1 (Standards), even though there may be no physical conflict. The physical limits of all Utility Adjustments shall extend as necessary to functionally replace the existing Utility, whether inside or outside of the Project ROW. Section 6.2.4.2 (Acquisition of Replacement Utility Property Interests) contains provisions that address the acquisition of easements for Utilities to be installed outside of the Project ROW.

Utilities may remain in their existing locations within the Project ROW if (a) the requirements of Section 6.2.1 (Standards) are met, and (b) the existing location will not adversely affect the construction, operation, safety, maintenance and/or use of the Project and Utility. The Utility Owner must agree to its facilities remaining in the existing locations.

### *6.1.2 Certain Components of the Utility Adjustment Work*

#### 6.1.2.1 Coordination

Design-Build Contractor shall communicate, cooperate, and coordinate with TxDOT, the Utility Owners and potentially affected third parties, as necessary for performance of the Utility Adjustment Work.

Design-Build Contractor shall be responsible for preparing (unless prepared by the Utility Owner) and securing execution (by Design-Build Contractor and the Utility Owner) of all necessary Utility Agreements.

All Utility Agreements must be approved by TxDOT prior to taking effect.

#### 6.1.2.2 Betterments

Replacements for existing Utilities shall be designed and constructed to provide service at least equal to that offered by the existing Utilities, unless the Utility Owner specifies a lesser replacement. Utility Enhancements are not included in the Work; however, any Betterment work furnished or performed by Design-Build Contractor as part of a Utility Adjustment shall be deemed added to the Work, on the date the Utility Agreement providing for same becomes fully effective. Design-Build Contractor shall perform all coordination necessary for Betterments.

#### 6.1.2.3 Protection in Place

Design-Build Contractor shall be responsible for Protection in Place of all Utilities impacted by the Project as necessary for their continued safe operation and structural integrity and to otherwise satisfy the requirements described in Section 6.2.1 (Standards). The Utility Owner must agree to all Protection in Place work that pertains to Utility Owner's facilities.

#### 6.1.2.4 Abandonment and Removal

Design-Build Contractor shall make all arrangements and perform all work necessary to complete each abandonment or removal (and disposal) of a Utility in accordance with the requirements listed in Section 6.2.1 (Standards), including obtaining Governmental Approvals and consent from the affected Utility Owner and any affected landowner(s), or shall confirm that the Utility Owner has completed these tasks. Abandonment of Utilities in place shall require approval by TxDOT.

#### 6.1.2.5 Service Lines and Utility Appurtenances

Whenever required to accommodate construction, operation, maintenance and/or use of the Project, Design-Build Contractor shall cause Service Line Adjustments and Utility Appurtenance Adjustments. The Service Lines shall have a definitive point of termination such as a meter or point of sale. On completion of these, Design-Build Contractor shall cause full reinstatement of the roadway, including reconstruction of curb, gutter, sidewalks, and landscaping, whether the Utility Adjustment Work is performed by the Utility Owner or by Design-Build Contractor.

### *6.1.3 Agreements between Design-Build Contractor and Utility Owners*

Except as otherwise stated in this Section 6 or in the Agreement, each Utility Adjustment shall be specifically addressed in a Project Utility Adjustment Agreement (PUAA) or in a Utility Adjustment Agreement Amendment (UAAA), as described elsewhere in this Section 6. Design-Build Contractor is responsible for preparing, negotiating (to the extent allowed by this Section 6), and obtaining execution by the Utility Owners, of all Utility Agreements, (including preparing all necessary exhibits and information about the Project, such as reports, Plans and surveys). A Utility Agreement is not required for any Utility Adjustment consisting solely of Protection in Place in the Utility's original location within the Project ROW, unless the Utility Owner is being reimbursed for costs incurred by it on account of such Protection in Place. If no reimbursement is required to the Utility Owner, a Utility Joint Use Acknowledgement and set of plans detailing UAR compliance is required pertaining to the Protection in Place work.

#### 6.1.3.1 Project Utility Adjustment Agreements (PUAA)

Design-Build Contractor shall enter into one or more PUAAs with each affected Utility Owner to define the design, material, construction, inspection, and acceptance standards and procedures necessary to

complete Utility Adjustments, as well as to define Design-Build Contractor's and the Utility Owner's respective responsibilities for Utility Adjustment costs and Utility Adjustment activities such as material procurement, construction, inspection, and acceptance. A PUAA may address more than one Utility Adjustment for the same Utility Owner. Additional Utility Adjustments may be added to an existing PUAA by a Utility Adjustment Agreement Amendment (UAAA).

Design-Build Contractor shall prepare each PUAA using the standard form of TxDOT Project Utility Adjustment Agreement (Owner-Managed) or TxDOT Project Utility Adjustment Agreement (Design-Build Contractor-Managed), Attachment 6-1, Utility Forms. Design-Build Contractor shall not modify the standard forms except by approval of TxDOT.

On issuance of NTP1, Design-Build Contractor shall begin negotiations with each affected Utility Owner to reach agreement on one or more PUAAs. Design-Build Contractor shall finalize the necessary PUAAs with each affected Utility Owner within a reasonable time period after issuance of NTP1. Design-Build Contractor shall include any proposed changes to a standard form (other than filling in blanks specific to a particular Utility Owner) in a Utility Owner-specific addendum. Each PUAA (including the Utility Adjustment Plans attached thereto) shall be subject to TxDOT review and approval as part of a Utility Assembly.

Language modification to a PUAA shall be approved by TxDOT prior to the submission of a Utility Assembly.

#### 6.1.3.2 Utility Adjustment Agreement Amendments

Except where Utility Adjustment Field Modifications are permitted pursuant to Section 6.4.7 (Utility Adjustment Field Modifications), modification of an executed PUAA or any component thereof, after it has been approved by TxDOT as part of a Utility Assembly, shall be stated in a Utility Adjustment Agreement Amendment (UAAA). A UAAA may be used only when the allocation of responsibility for the Utility Adjustment Work covered by that UAAA is the same as in the underlying Utility Agreement; otherwise, an additional PUAA will be required.

Each UAAA (including any Utility Adjustment Plans attached thereto) shall be subject to TxDOT's approval as part of a Supplemental Utility Assembly. Except as otherwise directed by TxDOT or provided in an applicable Utility Agreement, Design-Build Contractor shall prepare all UAAAs using the standard form included in Attachment 6-1, Utility Forms. Design-Build Contractor shall not modify the standard forms except by approval of TxDOT. Design-Build Contractor shall include any proposed changes to a standard form (other than filling in the blanks specific to a particular Utility Owner) in a Utility Owner specific addendum.

Language modification to a UAA shall be approved by TxDOT prior to the submission of the UAAA.

### *6.1.4 Recordkeeping*

Design-Build Contractor shall maintain construction and inspection records in order to ascertain that Utility Adjustment Work is accomplished in accordance with the terms and in the manner proposed on the approved Utility Adjustment Plans and otherwise as required by the DBA Documents and the applicable Utility Agreement(s).

## 6.2 Administrative Requirements

### *6.2.1 Standards*

All Utility Adjustment Work shall comply with all applicable Laws, Codes, Regulations and Technical Provisions of the DBA, including the Utility Adjustment Standards, the Utility Accommodation Rules (UAR), Dallas District Utility Requirements, the TxDOT *Utility Manual*, Section 6.8 of the Agreement, and the requirements specified in this Section 6.

### *6.2.2 Communications*

#### 6.2.2.1 Communication with Utility Owners

Design-Build Contractor is responsible for holding meetings and otherwise communicating with each Utility Owner as necessary to timely accomplish the Utility Adjustments in compliance with the DBA Documents. TxDOT shall be notified of all meetings and will participate in these meetings if requested by the Utility Owner or Design-Build Contractor, or otherwise as TxDOT deems appropriate.

Before distribution of any mass mailings to Utility Owners, Design-Build Contractor shall submit to TxDOT, twenty-one (21) Days in advance of distribution, for its review and comment the form, content, and addressees of any such mass mailings. For purposes of this Section 6, the term "mass mailing" means correspondence that is sent to 50 percent or more of Utility Owners within a three-week time period, and contains substantially the same content with respect to each Utility Owner.

#### 6.2.2.2 Meetings

At least three (3) Business Days in advance of each scheduled meeting, Design-Build Contractor shall provide notice and an agenda for the meeting separately to TxDOT and, if necessary, to the appropriate Utility Owner. Design-Build Contractor shall prepare minutes of all meetings and shall keep copies of all correspondence.

Design-Build Contractor shall prepare meeting minutes within five (5) Business Days after the conclusion of such meetings. At a minimum, Design-Build Contractor shall include the following items in the meeting minutes:

- A complete list of attendees (including their affiliations, telephone numbers, and e-mail addresses)
- Documentation of the issues discussed and any associated solutions
- Description of remaining open issues and action items (including the person(s) responsible for follow-up and target date for resolution)

Design-Build Contractor shall submit draft versions of all meeting minutes to TxDOT for review before distributing final versions to the meeting attendees and appropriate Customer Groups.

### *6.2.3 Utility Adjustment Team*

Design-Build Contractor shall provide a Utility Adjustment team with appropriate qualifications and experience for the Utility Adjustment Work. Design-Build Contractor shall provide the names and contact details, titles, job roles, and specific experience of the team members in the PMP. Specifically, Design-Build Contractor shall provide a Utility Manager (UM) and a Utility Design Coordinator (UDC), and a Design-Build Contractor Utility Coordinator (DUC) as described herein.

The UM's primary work responsibility shall be the performance of all Design-Build Contractor's obligations with respect to Utility Adjustments. The Utility Manager shall have a bachelor's degree, and have at least four years of relevant experience in coordinating and solving complex utility adjustments on highway improvement projects. The Utility Manager should be authorized by the Design-Build Contractor to approve all financial and technical modifications associated with utility adjustments, and modifications to the utility agreement.

The UDC shall be a Registered Professional Engineer. The UDC shall be responsible for coordinating the Utility Adjustment design with the overall highway design features during the planning, design, and construction phases of the Work.

The DUC shall hold a bachelor's degree and have at least five years of relevant experience in ROW and Utility coordination activities involving large transportation projects. The DUC will be responsible for

tracking and following the design-build contractor's activities and communicating the progress to the Design-Build Contractor. The DUC will assist with developing good working relationships with the Utility Owners and assisting the Design-Build contractor in all utility coordination matters.

### *6.2.4 Real Property Matters*

Design-Build Contractor shall provide the services described below in connection with existing and future occupancy of property by Utilities.

#### 6.2.4.1 Documentation of Existing Utility Property Interests -- Affidavits

For each Existing Utility Property Interest within the Project ROW claimed by any Utility Owner, Design-Build Contractor shall include an Affidavit of Property Interest in the applicable Utility Assembly, with documentation of the Existing Utility Property Interest (e.g., an easement deed) attached. Any such claim shall be subject to TxDOT's review as part of a Utility Assembly approval. Except as otherwise directed by TxDOT, Design-Build Contractor shall prepare all Affidavits of Property Interest using the standard forms included in Attachment 6-1, Utility Forms.

#### 6.2.4.2 Acquisition of Replacement Utility Property Interests

Each Utility Owner will be responsible for acquiring any Replacement Utility Property Interests that are necessary for its Utility Adjustments. Design-Build Contractor shall have the following responsibilities for each acquisition:

1. Design-Build Contractor shall coordinate with, and provide the necessary information to, each Utility Owner as necessary for the Utility Owner to acquire any Replacement Utility Property Interests required for its Utility Adjustments.
2. If any of Design-Build Contractor-Related Entities assists a Utility Owner in acquiring a Replacement Utility Property Interest, such assistance shall be by separate contract outside of the Work, and Design-Build Contractor shall ensure that the following requirements are met:
   a) The files and records must be kept separate and apart from all acquisition files and records for the Project ROW.
   b) The items used in acquisition of Replacement Utility Property Interests (e.g., appraisals, written evaluations and owner contact reports) must be separate from the purchase of the Project ROW.
   c) Any Design-Build Contractor-Related Entity personnel negotiating the acquisition of Replacement Utility Property Interests must be different from those negotiating the acquisition of Project ROW.

Design-Build Contractor is not responsible for Utility Owner condemnation proceedings.

#### 6.2.4.3 Relinquishment of Existing Utility Property Interests

Design-Build Contractor shall cause the affected Utility Owner to relinquish each Existing Utility Property Interest within the Project ROW, unless the existing Utility occupying such interest is either (i) remaining in its original location or (ii) being reinstalled in a new location still subject to such interest.

#### 6.2.4.4 Quitclaim Deeds

Except as otherwise directed by TxDOT, Design-Build Contractor shall prepare a Quitclaim Deed for each relinquishment of an Existing Utility Property Interest using TxDOT's standard form included in Attachment 6-1, Utility Forms. Each Quitclaim Deed shall be subject to TxDOT's approval as part of a Utility Assembly approval as described below.

Design-Build Contractor understands and expects that a Utility Owner will not relinquish any Existing Utility Property Interest until after the Utility Adjustment has been accepted by the Utility Owner in its

new location. Accordingly, instead of an executed Quitclaim Deed, the Utility Assembly for such a Utility Adjustment shall include a letter signed by the Utility Owner's authorized representative confirming that the interest will be quitclaimed upon completion of the Utility Adjustment, and a copy of the unsigned Quitclaim Deed. In these cases, Design-Build Contractor shall obtain the executed Quitclaim Deed within ninety (90) Days of completion of the Utility Adjustment or unless otherwise approved by TxDOT in writing. The Quitclaim Deed must be approved by TxDOT prior to recording.

#### 6.2.4.5 Utility Joint Use Acknowledgements

Design-Build Contractor shall prepare a Utility Joint Use Acknowledgment (UJUA) for:

1. Each Utility proposed to be relocated within the Project ROW
2. Each Utility proposed to remain in its existing location within the Project ROW
3. Any Existing Utility Property Interest located within the Project ROW that is not required to be relinquished pursuant to Section 6.2.4.3 (Relinquishment of Existing Utility Property Interests), and is not addressed in the foregoing clause (a) or clause (b)

Design-Build Contractor shall prepare all Utility Joint Use Acknowledgments using TxDOT's standard form included in Attachment 6-1, Utility Forms. Design-Build Contractor also shall prepare all required documentation to be included with each Utility Joint Use Acknowledgment.

Design-Build Contractor shall arrange for the Utility Owner to execute each Utility Joint Use Acknowledgment. Each Utility Joint Use Acknowledgment (executed by the Utility Owner) shall be subject to TxDOT's approval as part of a Utility Assembly.

#### 6.2.4.6 Documentation Requirements

Design-Build Contractor shall prepare, negotiate (to the extent permitted by this Section 6.2.4 (Real Property Matters), and obtain execution by the Utility Owner of (and record in the appropriate jurisdiction, if applicable) all agreements and deeds described in this Section 6.2.4, including all necessary exhibits and information concerning the Project (e.g., reports, Plans, and surveys). Each agreement or deed shall identify the subject Utility(ies) by the applicable Utility Assembly Number (*[four-digit number beginning with 0500]*), and shall also identify any real property interests by parcel number or highway station number, or by other identification acceptable to TxDOT.

## 6.3 Design

### *6.3.1 Design-Build Contractor's Responsibility for Utility Identification*

Design-Build Contractor bears sole responsibility for ascertaining, at its own expense, all pertinent details of Utilities located within the Project ROW or otherwise affected by the Project, whether located on private property or within an existing public ROW, and including all Service Lines.

Design-Build Contractor shall prepare and submit to TxDOT, no later than ninety (90) days after NTP2 or thirty (30) days before the first assembly package is submitted, a Utility Strip Map showing the information obtained and/or confirmed pursuant to this Section 6.3.1. Design-Build Contractor's Utility Strip Map shall show in plan view all Utilities within the Project ROW or otherwise impacted by the Project, in each case detailing the type of Utility facility (communication, gas, oil, water, etc.) size, material and the Utility Owner's name and contact information. The scale of the Utility Strip Map shall be 1"=100'. Design-Build Contractor shall update the information provided in the Utility Strip Map with SUE data and shall submit the same to TxDOT in accordance with the PMP.

### *6.3.2 Technical Criteria and Performance Standards*

All design plans for Utility Adjustment Work, whether furnished by Design-Build Contractor or by the Utility Owner, shall be consistent and compatible with the following:

a) The applicable requirements of the DBA Documents, including Section 6.2.1 (Standards)

b) The Project as initially designed

c) Any Utilities remaining in, or being installed in, the same vicinity

d) All applicable Governmental Approvals

e) Private approvals of any third parties necessary for such work

### *6.3.3 Utility Adjustment Concept Plans*

Design-Build Contractor shall prepare a proposed conceptual Utility design (a Utility Adjustment Concept Plan) for the Project (or proposed Utility Adjustment Concept Plans for various segments of the Project, as appropriate), showing the approximate location of each existing Utility, the existing Utilities to remain, proposed location of each Utility and Design-Build Contractor's Utility Adjustment recommendations.

In accordance with the PMP, Design-Build Contractor shall submit the proposed Utility Adjustment Concept Plans(s) to TxDOT for its review. The Utility Adjustment Concept Plan(s) shall be submitted in both tabular and plan formats. The plan(s) shall be color-coded and shall utilize a scale that clearly depicts all of the required information. Design-Build Contractor shall coordinate with the affected Utility Owners as necessary to obtain their respective concurrence with the Utility Adjustment Concept Plan(s) as initially submitted to TxDOT and with any subsequent revisions. The Utility Adjustment Concept Plan is a working document. Design-Build Contractor shall update the Utility Adjustment Concept Plan as the Work progresses.

### *6.3.4 Utility Adjustment Plans*

Utility Adjustment Plans, whether furnished by Design-Build Contractor or by the Utility Owner, shall be signed and sealed by a Registered Professional Engineer per governmental regulations and industry practice.

#### 6.3.4.1 Plans Prepared by Design-Build Contractor

Where Design-Build Contractor and the Utility Owner have agreed that Design-Build Contractor will furnish a Utility Adjustment design, Design-Build Contractor shall prepare and obtain the Utility Owner's approval of plans, specifications, and cost estimates for the Utility Adjustment (collectively, "Utility Adjustment Plans") by having an authorized representative of the Utility Owner sign the plans as "reviewed and approved for construction." The Utility Adjustment Plans (as approved by the Utility Owner) shall be attached to the applicable Utility Agreement, which Design-Build Contractor shall include in the appropriate Utility Assembly for TxDOT's approval.

Unless otherwise specified in the applicable Utility Agreement(s), all changes to Utility Adjustment Plans previously approved by the Utility Owner (excluding estimates, if the Utility Owner is not responsible for any costs) shall require written Utility Owner approval. Design-Build Contractor shall transmit any TxDOT comments to the Utility Owner, and shall coordinate any modification, re-approval by the Utility Owner and re-submit to TxDOT as necessary to obtain TxDOT's approval.

#### 6.3.4.2 Plans Prepared by the Utility Owner

For all Utility Adjustment Plans to be furnished by a Utility Owner, Design-Build Contractor shall coordinate with the Utility Owner as necessary to confirm compliance with the applicable requirements as referenced in Section 6.2.1. Those Utility Adjustment Plans shall be attached to the applicable Utility Agreement, which Design-Build Contractor shall include in the appropriate Utility Assembly for TxDOT's approval. Design-Build Contractor shall transmit any TxDOT comments to the Utility Owner, and shall coordinate any modification, review by Design-Build Contractor and re-submittal to TxDOT as necessary to obtain TxDOT's approval.

#### 6.3.4.3 Design Documents

Each proposed Utility Adjustment shall be shown in the Design Documents, regardless of whether the Utility Adjustment Plans are prepared by Design-Build Contractor or by the Utility Owner.

#### 6.3.4.4 Certain Requirements for Underground Utilities

Casing as specified in the Utility Accommodation Rules (UAR) shall be used for all underground Utilities crossing the Project ROW. However, high-pressure gas and liquid petroleum pipelines may be allowed to cross the Project ROW without steel casing as long as the requirements of the Utility Accommodation Rules are met. All high-pressure gas pipelines within the Project ROW shall comply with a design factor "F" = 0.6 or less as required by the class location of the pipeline. The Utility Owner is required to submit or approve the Barlows calculation(s) in writing to be included in the Utility Assembly.

#### 6.3.4.5 Utility Assemblies

Each Utility Adjustment in addition to each Utility remaining in place in the Project ROW and not requiring any Protection-in-Place or other Utility Adjustment shall be addressed in a Utility Assembly prepared by Design-Build Contractor and submitted to TxDOT for its review and comment, and for TxDOT's approval of any items for which this Section 6 requires TxDOT's approval. Temporary Adjustments that are installed within the final ROW must also be included with an assembly for TxDOT's prior approval unless TxDOT waives or allows other approval methods concerning Temporary Adjustments. Each Utility Adjustment shall be addressed in a full Utility Assembly, unless it is appropriate for a Supplemental Utility Assembly or Abbreviated Utility Assembly, as described below. Design-Build Contractor shall coordinate with the Utility Owner to prepare all components of each Utility Assembly. Completion of the review and comment process for the applicable Utility Assembly, as well as issuance of any required TxDOT approvals, shall be required before the start of construction for the affected Utility Adjustment Work.

Provisions governing the procedure for and timing of Utility Assembly submittals are in Section 6.5 (Deliverables).

All Utility Adjustments covered by the same initial PUAA can be addressed in a single full Utility Assembly.

Each set of the required Utility Assembly shall include the following:

a) A transmittal memo recommending approval and detailing any unique characteristics or information pertaining to the adjustment,

b) A completed Utility Assembly Checklist, and

c) A TxDOT-approved Utility Adjustment Agreement.

d) Plans which:

1. Show the existing and proposed Utility facilities;
2. Show existing and proposed grades for all utility crossings;
3. Show the existing and final ROW lines along with the Control of Access denial line;
4. Show an offset distance from the final ROW line to all longitudinal Utilities within the final ROW;
5. Present sufficient information to enable TxDOT to verify compliance with the UAR requirements for each Utility located within the final ROW, including highway design features;
6. Are folded to 8.5" x 11" size unless waived by TxDOT;

e) Estimate(s) from the Utility Owner (and also from Design-Build Contractor, where Design-Build Contractor is furnishing design and/or performing construction), which estimates shall, without limitation, detail material type and quantity (material quantities detailed on the estimates must correlate to the materials shown on the plans described in (d) above. The estimate must list the estimated amount of reimbursement to the Utility Owner, taking into consideration the betterment credit calculation, salvage credit and any applicable eligibility ratio;

f) A proposed Utility Joint Use Acknowledgement;

g) Statement of Work form, if applicable;

h) Affidavit(s) of Property Interest form (With property interest instrument of conveyance attached), if applicable;

j) A ROW map showing the existing and proposed utility facilities identified on a plan view. This ROW map will only be required to be included with TxDOT's copy of the Utility Assembly; and

k) All utility no conflict sign-off forms.

*Utility Adjustment Amendment Agreements (UAAA).* For each UAAA, Design-Build Contractor shall prepare an additional Utility Assembly for the relevant initial PUAA (an Assembly), covering all Utility Adjustments addressed in the UAAA. The UAAA Assembly shall contain a transmittal memo, Utility Assembly Checklist, proposed UAAA cost estimate, a proposed UAAA which has been executed by the Utility Owner and Design-Build Contractor (one original in each of the two original Supplemental Utility Assemblies), including all required attachments, and applicable revisions to the Utility Adjustment Plans, as well as Utility Joint Use Acknowledgement(s) and Affidavit(s) of Property Interest, if applicable. The transmittal memo shall briefly describe the desired amendment and explain why the amendment is necessary including an estimated start date and duration. Each of the foregoing items shall comply with the requirements for same described in Attachment 6.2, Utility Assembly and Tracking Report Requirements.

*Abbreviated Utility Assemblies.* Design-Build Contractor shall prepare an Abbreviated Utility Assembly for each Utility proposed to remain at its original location within the Project ROW that is not required to be addressed in a PUAA or UAAA, unless an Adjustment is required pursuant to Section 6.1.1. If Design-Build Contractor is reimbursing the Utility Owner any of its costs, a PUAA or UAAA is required. Each Abbreviated Utility Assembly shall contain a transmittal memo recommending that the subject Utility(ies) remain in place, a completed Utility Assembly Checklist, a certification from the Utility Owner approving leaving the Utility(ies) in place, as well as Utility Joint Use Acknowledgement(s) and Affidavit(s) of Property Interest, if applicable. Each of the foregoing items shall comply with the requirements for same described in Attachment 6-1, Utility Forms.

## 6.4 Construction

### *6.4.1 Reserved*

### *6.4.2 General Construction Criteria*

All Utility Adjustment construction performed by Design-Build Contractor shall conform to the requirements listed below. In addition, Design-Build Contractor is responsible for verifying that all Utility Adjustment construction performed by each Utility Owner conforms to the requirements described below. In case of nonconformance, Design-Build Contractor shall cause the Utility Owner (and/or its contractors, as applicable) to complete all necessary corrective work or to otherwise take such steps as are necessary to conform to these requirements.

a) All criteria identified in Section 6.3.2 (Technical Criteria and Performance Standards),

b) The Utility Adjustment Plans included in the Utility Agreement approved by TxDOT (other than Utility Adjustment Field Modifications complying with Section 6.4.7 (Utility Adjustment Field Modifications),

c) All Project safety and environmental requirements,

d) All pre-construction meeting requirements,

e) The ROW acquisition schedule described in Section 7 (ROW), and

f) Utilities standards provided in the Utility Agreement.

### *6.4.3 Inspection of Utility Owner Construction*

Design-Build Contractor shall set forth procedures in the PMP for inspection of all Utility Adjustment Work performed by Utility Owners (and/or their contractors) to verify compliance with the applicable requirements described in Section 6.4.2 (General Construction Criteria). Design-Build Contractor is responsible for Quality Control and Quality Assurance for all Work performed by the Utility Owners and/or their contractors.

### *6.4.4 Scheduling Utility Adjustment Work*

The Utility Adjustment Work (other than construction) may begin at any time following issuance of NTP1. Refer to Section 4.4.2 of the Agreement for the conditions to commencement of Utility Adjustment Construction Work by Design-Build Contractor. Design-Build Contractor shall not arrange for any Utility Owner to begin any demolition, removal, or other construction work for any Utility Adjustment until all of the following conditions are satisfied:

a) The Utility Adjustment is covered by an executed Utility Agreement (and any conditions to commencement of such activities that are included in the Utility Agreement have been satisfied);

b) Pre-construction meeting, in accordance with Section 6.2.2.2, shall be required after execution of the Utility Agreement and prior to commencement of any construction activities, unless otherwise approved by TxDOT.

c) Availability and access to affected Replacement Utility Property Interests have been obtained by the Utility Owner (and provided to Design-Build Contractor, if applicable);

d) If any part of the Utility Adjustment construction work that will affect the Project ROW, availability and access to that portion of the Project ROW has been obtained in accordance with the applicable requirements of the DBA Documents.

e) If applicable, the Alternate Procedure List has been approved by FHWA, and either (a) the affected Utility is on the approved Alternate Procedure List, as supplemented, or (b) the Utility Owner is on the approved Alternate Procedure List, as supplemented.

f) The review and comment process has been completed and required approvals have been obtained for the Utility Assembly covering the Utility Adjustment.

g) All Governmental Approvals necessary for the Utility Adjustment construction have been obtained, and any pre-construction requirements contained in those Governmental Approvals have been satisfied.

h) All other conditions to that Work stated in the DBA Documents have been satisfied.

### *6.4.5 Standard of Care Regarding Utilities*

Design-Build Contractor shall carefully and skillfully carry out all Work impacting Utilities and shall mark, support, secure, exercise care, and otherwise act to avoid damage to Utilities. At the completion of the Work, the condition of all Utilities shall be at least as safe and permanent as before.

### *6.4.6 Emergency Procedures*

Design-Build Contractor shall provide Emergency procedures with respect to Utility Adjustment Work in the PMP. Design-Build Contractor shall obtain Emergency contact information from, and establish Emergency procedures with each Utility Owner in the event of rupture, break, or damage to Utility Owner's Utility facilities.

### *6.4.7 Utility Adjustment Field Modifications*

Design-Build Contractor shall establish a procedure to be followed if a Utility Adjustment Field Modification is proposed by either Design-Build Contractor or a Utility Owner, after the Utility Assembly (which includes the Utility Adjustment Plans) has been approved. The procedure shall contain, at minimum, the following processes:

a) The Utility Owner's review and approval of a Utility Adjustment Field Modification proposed by Design-Build Contractor, or Design-Build Contractor's review and approval of a Utility Adjustment Field Modification proposed by the Utility Owner. The UAFM shall have approval prior to commencement of construction. All revisions shall be signed and sealed by a PE and formally submitted to TxDOT for review and approval;

b) Transmittal of Utility Adjustment Field Modifications to the appropriate construction field personnel; and

c) Inclusion of any Utility Adjustment Field Modifications in the Record Drawings for the Project.

Design-Build Contractor shall cause the procedure to be followed for all Utility Adjustment Field Modifications, whether the construction is performed by Design-Build Contractor or by the Utility Owner.

### *6.4.8 Switch Over to New Facilities*

After a newly-Adjusted Utility has been accepted by the Utility Owner and is otherwise ready to be placed in service, Design-Build Contractor shall coordinate with the Utility Owner regarding the procedure and timing for placing the newly-Adjusted Utility into service and terminating service at the Utility being replaced.

### *6.4.9 Record Drawings*

Design-Build Contractor shall provide Record Drawings to each Utility Owner for its Adjusted Utilities, in accordance with the applicable Utility Agreement(s).

Design-Build Contractor shall provide Record Drawings to TxDOT (regardless of whether design and/or construction of the subject Utilities was furnished or performed by Design-Build Contractor or by the Utility Owner). These drawings shall show the location of, and label as such, all abandoned Utilities, shall show and label all other Utilities, whether remaining in place or relocated, located within the Project ROW or otherwise impacted by the Project, and shall otherwise comply with Section 2 (Project Management). Design-Build Contractor shall provide the Record Drawings for each Adjustment to TxDOT not later than ninety (90) Days after Utility Owner acceptance as defined in the Utility Agreement, the Adjustment or before such earlier deadline as is specified elsewhere in the DBA Documents.

### *6.4.10 Maintenance of Utility Service*

All Utilities shall remain fully operational during all phases of construction, except as specifically allowed and approved in writing by the Utility Owner. Design-Build Contractor shall schedule Utility Adjustment Work in order to minimize any interruption of service, while at the same time meeting the Project Schedule and taking into consideration seasonal demands. Each Utility Adjustment or remain in place location must allow for adequate access to the Utility Facility that is agreed to by the Utility Owner.

### *6.4.11 Traffic Control*

Design-Build Contractor shall be responsible for the Traffic Management Plan. The Traffic Management Plan shall cover, all traffic control made necessary by for Utility Adjustment Work, whether performed by Design-Build Contractor or by the Utility Owner. Traffic control for Adjustments shall be coordinated with, and subject to approval by, the local agency(ies) with jurisdiction. Traffic control shall comply with the guidelines of the TMUTCD and of Section 18 (Traffic Control).

## 6.5 Deliverables

Design-Build Contractor shall time all submittals described in this section to meet the Project Schedule, taking into account the maximum number of submittals set forth in this Section 6.5 or, if not stated therein, then as stated in Section 3.1 of the Agreement. All deliverables shall conform to the standards required in the Project Management Plan.

### *6.5.1 Maximum Number of Submittals*

Design-Build Contractor shall coordinate all Submittals required pursuant to this Section 6.5, so as not to overburden TxDOT's staff and consultants. In each calendar week, Design-Build Contractor shall not submit more than:

a) Two (2) Utility Assemblies (excluding Supplemental or Abbreviated Utility Assemblies)

b) Two (2) of any documentation constituting any of the following:

- A modified or additional item submitted in response to TxDOT comments on a particular Utility Assembly
- A Quitclaim Deed
- Any other type of relinquishment document

c) Two (2) Supplemental Utility Assemblies; and

d) Two (2) Utility Adjustment Agreements, Amendment Assemblies.

Where the number of Submittals exceeds these limits, the Submittals shall be considered excess and TxDOT may defer its review of any such excess Submittals to a subsequent calendar week (or weeks), as necessary.

### *6.5.2 Design-Build Contractor's Utility Tracking Report*

Design-Build Contractor shall maintain a Utility Tracking Report in tabular form, listing all Utilities located within the Project ROW or otherwise potentially affected by the Project. Design-Build Contractor shall submit the Utility Tracking Report to TxDOT on a monthly basis in the format described below unless otherwise approved by TxDOT. The Utility Tracking Report shall, at a minimum, contain the following information for each utility:

a) The name of the Utility Owner and a unique tracking number starting with the prefix “Highway U-” followed by a four digit number starting with 0001- to be assigned by the Design-Build Contractor;

b) Utility size and type;

c) Location of the Utility based upon station and offset;

d) The proposed method of treatment;

e) State whether the adjustment will be Owner- or Design-Build Contractor-Managed;

f) Dates on which the PUAA/UAAA was executed by TxDOT, Utility Owner, Design-Build Contractor;

g) Dates on which the UJUA was executed by the Utility Owner and TxDOT;

h) The Utility Owner's existing right of occupancy of the right of way for each Utility (e.g. UJUA, permit, easement or combination);

i) Whether any Replacement Utility Property Interest will be necessary;

j) Estimated cost approved in the PUAA or UAAA;

k) Amounts and dates of payments made by the Design-Build Contractor to the Utility Owner, listing in each case the type of payment (final, partial or lump sum);

l) Scheduled start and completion date for construction of each adjustment;

m) Percent complete of construction; and

n) Whether any betterment is included in the adjustment.

The Utility Tracking Report shall also include a separate section for Replacement Utility Property Interest including each necessary Replacement Utility Property Interest with the names of property owners or parcel number(s), Utility Assembly Numbers, status of the acquisition, acquisition cost, and other information as necessary. Design-Build Contractor shall maintain this section of the Utility Tracking Report and submit to TxDOT in the same manner as all other portions of the Utility Tracking Report.

### *6.5.3 Utility Assembly Submittals*

The following procedure shall govern submittal and review of each Utility Assembly, including Supplemental and Abbreviated Utility Assemblies:

a) Before submitting a Utility Assembly to TxDOT, Design-Build Contractor shall:

- Verify that each subject Utility (or the Utility Owner) is on the approved Alternate Procedure List, if applicable;
- Submit the complete Utility Assembly to the quality control/quality assurance entity designated by Design-Build Contractor in accordance with the PMP; and
- Resolve all comments made by the quality control/quality assurance entity, coordinating with the Utility Owner as appropriate.

b) Design-Build Contractor shall submit to TxDOT three identical and complete originals of each Utility Assembly, each of which shall be bound and labeled "Design-Build Contractor Copy," "TxDOT Copy," or "Utility Owner Copy," as appropriate. The "TxDOT Copy" shall be color coded and shall include the Project ROW map with the existing and proposed Utility facilities identified on a plan view. These submittals shall be for TxDOT's review and comment, except for any components of the Utility Assembly for which TxDOT's approval is required by this Section 6.5.

TxDOT will review the Utility Assembly for compliance with the requirements of this Section 6.5.3, and within ten (10) Business Days will return the Utility Assembly to Design-Build Contractor with the appropriate notations pursuant to the Agreement to reflect its responses. Design-Build Contractor shall

transmit any TxDOT comments to the Utility Owner, and shall coordinate any modification, review and approval by the Utility Owner and re-submittal to TxDOT, as necessary to resolve all TxDOT comments and/or obtain TxDOT's approval, as applicable. Upon (a) TxDOT's approval of any Utility Assembly components for which TxDOT's approval is required, and (b) completion of the review and comment process for all other Utility Assembly components, TxDOT will sign three originals of any approved UJUA and of any other components of the Utility Assembly for which this Section 6 requires TxDOT's signature.

### *6.5.4 FHWA Alternate Procedure*

The Design-Build Contractor will develop the Alternate Procedure List that includes the utility owner's name, approximate station numbers and estimated cost. TxDOT will then submit to the FHWA the Alternate Procedure List in order to obtain FHWA authorization for federal reimbursement Promptly upon determining that any additional Utility Owner not referenced on the Alternative Procedure List is impacted by the Project, Design-Build Contractor shall submit to TxDOT all documentation as referenced above in order to update the Alternative Procedure List.

TxDOT will forward the approved Alternate Procedure List (and any amendments thereto) to Design-Build Contractor, promptly upon receipt of same from the FHWA.

# 7 RIGHT-OF-WAY (ROW)

## 7.1 General Requirements

Design-Build Contractor's obligations in respect of the acquisition of Project ROW are set forth in Section 6.1 of the Agreement.

This Section 7 sets forth the ROW activities assigned to Design-Build Contract, including pre-acquisition and acquisition activities, and designates which ROW activities TxDOT will conduct. This section also sets forth the requirements applicable to the Work assigned to Design-Build Contractor related to the acquisition of Project ROW. Design-Build Contractor shall provide all services necessary to acquire title to the Project ROW, in form and substance acceptable to TxDOT, in the name of the State; relocation of displaces; and clearance/demolition of the improvements from the Project ROW, as more fully described in the following sub-sections.

Except as otherwise set forth in the Agreement, Design-Build Contractor's Project ROW staff and/or Contractors will function as independent contractors while acquiring Project ROW, and not as an agent, representative, or employee of TxDOT.

If Design-Build Contractor obtains a Property Agreement to facilitate design, construction or maintenance in relation to the Project, Design-Build Contractor shall provide a copy of the agreement to TxDOT.

## 7.2 Administrative Requirements

### 7.2.1 *Standards*

Project ROW shall be acquired in accordance with State and federal Law and the practices, guidelines, procedures, and methods contained in the following as it pertains to Right-of-Way:

a) TxDOT *Right of Way Manual* Collection (available online at http://onlinemanuals.txdot.gov/manuals)

b) TxDOT *Access Management Manual* (available online at http://onlinemanuals.txdot.gov/manuals)

c) TxDOT *Survey Manual*

d) TxDOT *Appraisal and Review Manual*

Pursuant to the applicable federal regulations, Design-Build Contractor shall (i) acquire ROW parcels for the Project on behalf of the State, but without the direct participation of TxDOT, subject to TxDOT's rights of review, approval, and audit; (ii) certify acceptance of the TxDOT *Right of Way Manual*; (iii) provide adequate access to all occupied properties; (iv) maintain Utility service to occupied properties until relocation is complete; and (v) not permit open burning within 1000 feet of an occupied dwelling.

Design-Build Contractor shall maintain a complete and current set of the TxDOT *Right of Way Manual* Collection, Volumes 1 through 8 (available online at http://onlinemanuals.txdot.gov/manuals), TxDOT *Access Management Manual*, TxDOT *Appraisal and Review Manual*, and a current approved Project ROW map for public use. Any TxDOT forms referenced in this section shall be found in the TxDOT *Right of Way Manual* Collection or will be provided by TxDOT.

All Project ROW activities must be completed and documented in compliance with all applicable Laws, including the Uniform Act, and the rules and regulations implementing the Uniform Act.

### 7.2.2 *Software Requirements*

Design-Build Contractor shall employ software that is compatible with the software in use by TxDOT, or fully transferable to TxDOT's systems. Design-Build Contractor must supply and maintain a Web-based,

parcel-by-parcel database that incorporates the fields and information required by TxDOT's approved ROW tracking system: ROWIS. Design-Build Contractor must maintain and participate in any other required ROW tracking system required by the DBA Documents or otherwise agreed to by the parties. The database shall be fully accessible to Persons authorized by TxDOT.

### 7.2.3 *ROW Acquisition Plan*

Design-Build Contractor shall prepare a ROW Acquisition Plan in accordance with the requirements of this Section 7 and Section 2 (Project Management). The ROW Acquisition Plan shall set forth Design-Build Contractor's organization including names, titles and qualifications of Key Personnel and other Project ROW personnel, integration of the Project ROW schedule into the Project Schedule, interface between design and Project ROW activities, documentation and reporting, quality control procedures and quality review standards.

The ROW Acquisition Plan shall contain, as a minimum, the following:

a) The name of TxDOT-approved title company(ies) to be used for title services

b) The name and qualifications of the proposed ROW Acquisition Manager (ROW AM)

c) The resumes and qualifications for appraisers, appraisal reviewers, land planners, relocation agents, negotiators, real estate attorneys, eminent domain specialist and ROW personnel who shall have the minimum qualifications and experience specified in Section 7.2.7

The ROW Acquisition Plan shall establish the specific means by which Design-Build Contractor will:

a) Provide sufficient personnel to achieve, in accordance with the Project Schedule, the goals and milestones established for Project ROW acquisition, relocation assistance, appraisals and appraisal review, and clearance/demolition of the improvements from the Project ROW.

b) Provide administrative support.

c) Provide for Spanish translation, as necessary

d) Provide for visually-impaired or hearing-impaired translation, as necessary.

e) Provide documentation and reports.

f) Produce and distribute acquisition and relocation brochures as approved by TxDOT.

g) Establish, implement, and maintain quality control procedures and quality review standards for the acquisition for Project ROW.

h) Prevent fraud, waste, and mismanagement.

Design-Build Contractor shall update the ROW Acquisition Plan regularly, at least quarterly, in accordance with the DBA Documents.

### 7.2.4 *Schedule and Review Procedures*

The Project Schedule shall indicate the date to begin the acquisition of the Project ROW and the anticipated completion date of acquisition activities for each parcel. TxDOT shall be advised of all Additional Properties and temporary rights or interests in real property to be acquired by Design-Build Contractor. In developing the Project Schedule, Design-Build Contractor will give priority to the acquisition of parcels that have significant impact on the Project Schedule and/or affect the Critical Path as so indicated. The monthly status reports required by Section 2.1.1 shall provide updated projections for the acquisition date of each parcel.

In developing the Project Schedule, Design-Build Contractor shall incorporate adequate time periods for TxDOT review and approval of Acquisition Packages. TxDOT intends to review the completed Acquisition Packages as expeditiously as possible; however, for the purposes of the Project Schedule,

Design-Build Contractor shall assume that the reviews performed by TxDOT will require ten (10) Business Days for Acquisition Packages that Design-Build Contractor submits as final and complete in accordance with Section 7.3.6 (Project ROW Acquisition Package Approval), up to a maximum of ten (10) Acquisition Packages. Any Submittals that would require TxDOT to review more than ten (10) Acquisition Packages within any given ten (10) Business Day period shall be considered excess, and TxDOT may defer its review of any such Acquisition Packages to a subsequent ten (10) Business Day period (or periods as necessary). TxDOT will notify Design-Build Contractor of its election to defer any excess Acquisition Packages within ten (10) Business Days after receipt. The balance of Acquisition Packages in excess of ten (10) will be rolled over to the next ten (10) Business Day period and added to the Acquisition Package Submittals made by Design-Build Contractor in that period. When Design-Build Contractor submits more than ten (10) Acquisition Packages at any given time, Design-Build Contractor shall indicate the priority of review.

If TxDOT notifies Design-Build Contractor that any submitted Acquisition Package has a deficiency, Design-Build Contractor shall correct such deficiency and resubmit the package to TxDOT. Resubmissions shall be treated as a new Acquisition Package as described above. An Acquisition Package shall be deficient, as determined by TxDOT, if any of its components fails to meet any of the criteria established by this section for such component, or contains any material errors or omissions. Schedule delays resulting from inadequate or incomplete submissions of Acquisition Packages shall be the responsibility of Design-Build Contractor and will not be eligible for treatment as a Relief Event or Compensation Event.

TxDOT reserves the right to undertake additional review on Acquisition Packages that contain or identify facts or issues of an unusual nature or which do not clearly fit within TxDOT standards and will notify Design-Build Contractor in writing that the review period will be extended by an additional ten (10) Business Days before rendering a decision to Design-Build Contractor.

Design-Build Contractor may request TxDOT to do a preliminary review of the survey and appraisal before the complete Acquisition Package is submitted. TxDOT shall review the preliminary submission of the survey and appraisal and notify Design-Build Contractor of any deficiencies within ten (10) Business Days after TxDOT's receipt of such preliminary submission.

### 7.2.5 *Design-Build Contractor's Project ROW Scope of Services*

Design-Build Contractor shall complete all administrative activities and prepare all documentation sufficient for Design-Build Contractor to acquire the Project ROW. Design-Build Contractor shall obtain TxDOT's review and prior written approval of all Project ROW maps and surveys, appraisals, legal descriptions, acquisition documentation, purchase price, requests to acquire Project ROW, condemnation-related activities, and funding/closing procedures. TxDOT will (i) approve and return the Project ROW acquisition documentation, (ii) provide review comments for incorporation by Design-Build Contractor in accordance with Section 7.2.4 (Schedule and Review Procedures), or (iii) in the case of an Acquisition Package that is deficient, notify Design-Build Contractor of the deficiency(ies) to be corrected by Design-Build Contractor in accordance with Section 7.2.4 (Schedule and Review Procedures). Except as otherwise authorized by applicable State and federal policy and regulations for early acquisition and approved by TxDOT, Design-Build Contractor shall not proceed with acquisition of the Project ROW until the NEPA Approval is issued, public involvement procedures have been completed, and ROW maps and legal descriptions for the applicable constructible segment as established by the logical termini of the Project have been prepared and approved by TxDOT. TxDOT will provide a separate release for each approved segment. Further, Design-Build Contractor shall not commence any negotiations with landowners nor will TxDOT begin eminent domain procedures until the specific Acquisition Package for that particular parcel is approved by TxDOT.

If Design-Build Contractor and the landowner cannot negotiate an agreed-upon purchase price, acceptable to TxDOT, TxDOT will commence acquisition of the property through eminent domain procedures.

Design-Build Contractor shall not be permitted to commence any condemnation action through the statutory "Declaration of Taking" procedure without the express written consent of TxDOT. Consent may be withheld in TxDOT's sole and absolute discretion.

Design-Build Contractor shall not begin construction on any parcel of real estate unless property rights for the parcel have been conveyed and recorded in favor of TxDOT, possession has been obtained through eminent domain or any other method as provided for in Section 7.2.1 (Standards), or a Possession and Use Agreement has been validly executed and delivered by all necessary parties in accordance with Section 7.4.1 (Project ROW Negotiations).

### 7.2.6 *Acquisition Process Summary*

Design-Build Contractor's major activities with respect to the acquisition of the Project ROW include:

a) Project ROW surveying and mapping

b) Project ROW budget estimates and updates

c) Title services

d) Appraisal services

e) Appraisal review

f) Negotiations

g) Closing services

h) Relocation assistance

i) Condemnation support services

j) Clearance and demolition of Project ROW

k) Environmental due diligence

l) Documentation and document control

m) Progress reports

n) Project ROW administration and management

o) Project ROW quality management

p) Letter from Design-Build Contractor's design engineer certifying that the required Project ROW acquisition is necessary and that any proposed alternatives are not feasible or are cost prohibitive

q) Obtaining rights-of-entry, as necessary

### 7.2.7 *ROW Personnel Qualifications*

Design-Build Contractor's ROW Acquisition Manager shall have at least five years' experience managing the acquisition of transportation ROW projects for a condemning authority, be licensed as a real estate salesman or broker pursuant to the *Texas Real Estate License Act* or rules established by the Texas Real Estate Commission, be familiar with appraisal and appraisal report review pursuant to the Uniform Standards of Professional Appraisal Practice (USPAP), and be familiar with the Uniform Act and applicable Laws of the State of Texas.

Quality Control Specialist(s) – Design-Build Contractor shall designate a specific person(s) responsible for internal quality control and quality assurance. This individual will review all Design-Build Contractor deliverables associated with survey, title, appraisal, acquisition, relocation and eminent domain prior to the deliverable being delivered to TxDOT for review.

Appraiser and Appraisal Reviewer – Each appraiser and appraisal reviewers shall be licensed and certified in the State of Texas and shall have a minimum of five years' experience in appraising real property for eminent domain purposes, including partial taking appraisal, partial taking appraisal review and expert witness testimony. He or she must also have been actively and continuously engaged for at least three years immediately preceding his or her selection for this Project in appraisal work primarily in Dallas County, or as approved by TxDOT. The appraisers and the appraisal reviewers shall have separate and distinct duties, and appraisers must be employed by different firms from the appraisal reviewers. Each appraiser shall be required to submit three samples of previous appraisal work prepared for eminent domain purposes. All appraisers preparing and signing appraisals must be approved by TxDOT before performing any appraisals on the Project. If required by TxDOT, the appraiser will be required to demonstrate his/her skills at expert witness testimony.

Land Planner - Each land planner shall have a minimum of five years' experience in land planning including experience with expert witness testimony in eminent domain proceedings. He or she must also have been actively and continuously engaged for at least three years immediately preceding his or her selection for this Project in land planning work primarily in Dallas County , or as approved by TxDOT. Design-Build Contractor shall provide a minimum of two land planners to assist appraisers and complete land plans.

Relocation Agent - Each relocation agent shall have a minimum of three years' experience in relocation assistance for ROW projects pursuant to the Uniform Act. A relocation agent's responsibilities shall include the following: Determination of eligibility of all displacees, contacting all displacees and informing them of their benefits, maintaining a file of all documentation concerning the relocation of the displacees, and extending all relocation assistance advisory services.

Negotiator - Each ROW negotiator shall be licensed either as a real estate sales person or broker pursuant to the *Texas Real Estate License Act* or rules established by the Texas Real Estate Commission, and shall be familiar with appraisal and appraisal report review pursuant to the USPAP. The negotiator shall have a minimum of three years' experience in right-of-way negotiations. The ROW negotiator's responsibilities shall include the following: contact with property owners on the Project to discuss the acquisition of property needed for the Project, maintaining complete and accurate files of all transactions and contacts with the property owners and/or their representatives, and actively working toward a joint resolution to acquire the property with the property owner.

Eminent Domain Specialist – Each eminent domain specialist shall have a minimum of three years' experience with TxDOT procedures and policies as related to acquisition of property through the use of eminent domain. The eminent domain specialist must be well versed in all activities necessary with the acquisition of parcels through the TxDOT Eminent Domain process. This includes correctly completing all TxDOT forms including the RTE-49, filing the eminent domain forms, coordinating the hearing with all appropriate parties and ensuring that the Award of Special Commissioners is deposited into the registry of the Court and all notices sent to the appropriate parties.

Real Estate Attorney - Each real estate attorney shall be licensed by the State of Texas and shall have at least five years' experience in title review and curative matters. The real estate attorney's responsibilities shall include coordinating and clearing all title issues, and compliance assistance with State and federal acquisition requirements for the properties acquired for the Project.

ROW personnel shall have at least three years' experience in title review and curative matters. ROW personnel's responsibilities shall include, but not be limited to the following: maintain complete and accurate files of all transactions and contacts with the property owners and/or their representatives, coordinate and clear all title issues and assist at closing the properties acquired for the Project.

### 7.2.8 *Design-Build Contractor Conflict of Interest*

If at any time, Design-Build Contractor, or to the best of Design-Build Contractor's knowledge, any Design-Build Contractor-Related Entity directly or indirectly (i) acquires or has previously acquired any interest in real property likely to be parcels of the Project ROW or the remainders of any such parcels; (ii) loans or has previously loaned money to any interest holder in any real property likely to be a Project ROW parcel and accepts as security for such loan the parcel, or the remainder of any such parcel that is not a whole acquisition, or (iii) purchases or has previously purchased from an existing mortgagee the mortgage instrument that secures an existing loan against real property likely to be a Project ROW parcel, or the remainder of any such parcel, Design-Build Contractor shall promptly disclose the same to TxDOT. In the case of acquisitions, loans or mortgage purchases that occurred prior to the execution of the Agreement, such disclosure shall be made within ten (10) days after execution of the Agreement.

In the event that Design-Build Contractor, or any subsidiary or parent company of Design-Build Contractor, acquires a real property interest, whether title or mortgage, in parcels of the Project ROW, the real property interest acquired or a release of mortgage as the case may be, shall be conveyed to the State of Texas without the necessity of eminent domain.

Design-Build Contractor shall not acquire or permit the acquisition by Design-Build Contractor or any Design-Build Contractor-Related Entity of any real property interest in a Project ROW parcel, whether in fee title or mortgage, for the purpose of avoiding compliance with the Laws, practices, guidelines, procedures and methods described in Section 7.2.1 (Standards).

### 7.2.9 *Meetings*

Design-Build Contractor shall attend meetings as requested by TxDOT. At such meetings Design-Build Contractor shall provide exhibits, take minutes, and distribute to all attendees for review and comment. Minutes will not be finalized until all attendees agree on content. Meeting minutes shall be provided to TxDOT within five (5) Business Days from the date of the meeting. TxDOT will respond within five (5) Business Days or at the next occurrence of the meeting. Proposed agendas shall be provided three (3) Business Days prior to the meeting.

### 7.2.10 *Documentation and Reporting*

Design-Build Contractor shall provide TxDOT with all specific reports and supporting documentation for review and approval during the acquisition process. All correspondence with TxDOT and property owners relating to acquisition of real property shall include a heading with the following information (at a minimum):

a) County

b) Control Section Job (CSJ) number

c) Highway Designation

d) Project limits

e) Parcel number

f) Name of record owner(s)

In administering and managing its Project ROW activities, Design-Build Contractor shall:

a) Maintain parcel records on file of all aspects of the acquisition process in accordance with TxDOT requirements and applicable Law. Each parcel file shall include all documents required by the DBA Documents, the FHWA, and/or TxDOT.

b) Provide monthly summaries for the cost of Project ROW acquisition and related relocation assistance including amounts authorized and amounts paid on a parcel-by-parcel basis and budget forecasting on an overall Project basis as requested by TxDOT.

c) Maintain and electronically transmit to TxDOT, in a format acceptable to TxDOT, monthly status reports including appraisal, acquisition and relocation status of all parcels and activities related to Project ROW, acquisition and disposition of Additional Properties and acquisition and disposition of temporary easements or other property interests, and provide weekly (or as requested) updates to TxDOT.

d) Evaluate and report to TxDOT, Subcontractor status and performance on a monthly basis or more frequently as requested.

e) Prepare and submit electronically to TxDOT, on a monthly basis, a spreadsheet that contains Project ROW specific data required in order to complete the fields in TxDOT's ROWIS tracking software program or as directed by TxDOT.

f) Input and update parcel status in TxDOT approved Web-based tracking system or as directed by TxDOT.

### 7.2.11 *Responsibilities of Design-Build Contractor*

As set forth in Section 6.2 of the Agreement and as more fully described in this section, Design-Build Contractor shall be responsible for the costs of all services and preparation of all documentation for all Project ROW acquisition, easement acquisition, permitting and related relocation assistance for the Project. The Work related to Project ROW acquisition includes mapping, surveying, environmental assessment, testing and remediation, appraisal, appraisal review, negotiation, acquisition, procurement of title insurance, clearing of title, closing of acquisitions, condemnation support including expert witnesses required by TxDOT and/or the Attorney General's Office for all condemnation proceedings through special commissioner's hearings. The Design-Build Contractor shall also be responsible for all exhibits, transcripts, and photos associated with condemnation services and proceedings required by the Attorney General's Office through special commissioner's hearings through jury trials and appeals, relocation assistance, and clearance/demolition of improvements, as required.

Design-Build Contractor shall not contact the Attorney General's Office or an Assistant Attorney General handling a specific parcel that has been filed for eminent domain action or is in the process of settlement unless authorized by TxDOT.

Design-Build Contractor acknowledges that Design-Build Contractor has incorporated the value of saleable improvements into the Project ROW costs shown in the Base Case Financial Model and any Base Case Financial Model Updates, and Design-Build Contractor shall concurrently, with conveyance of the real property interest to the State of Texas, and without the necessity of further documentation executed by the State, obtain the rights to said saleable improvements. Design-Build Contractor shall not be entitled to a credit for any improvements retained by a property owner. Upon conveyance of the real property interest to the State of Texas, Design-Build Contractor shall comply with all applicable Laws with respect to relocation assistance and demolition.

Design-Build Contractor shall also be responsible for the costs of acquisition and documentation for the acquisition of any temporary right or interest in real property not necessary for the Project but that Design-Build Contractor deems advisable to acquire for work space, contractor lay-down areas, material storage areas, borrow sites, or any other convenience of Design-Build Contractor. Except as otherwise authorized by Law for temporary areas necessary for construction of the Project, TxDOT shall not be obligated to exercise its power of eminent domain in connection with Design-Build Contractor's acquisition of any such temporary right or interest, and TxDOT shall have no obligations or

responsibilities with respect to the acquisition, maintenance or disposition of such temporary rights or interests.

Design-Build Contractor shall pay the cost of, and shall be responsible for processing and issuing all payments of: agreed purchase prices or court awards and judgments; special commissioner's awards; relocation assistance payments; all legal, administrative, and incidental expenses of, or related to, Project ROW (including the purchase price of Project ROW for drainage and other required easements); and temporary easements or other interests in real property acquired for the Project.

Design-Build Contractor is responsible for the payment of all closing costs associated with the purchase of Project ROW in accordance with the Uniform Act and TxDOT policies.

### 7.2.12 *Responsibilities of TxDOT*

TxDOT will have the following responsibilities in connection with acquisition of Project ROW:

a) Except as otherwise set forth in this Section 7, provide final approval for all Acquisition Packages, relocation assistance payments, administrative settlement requests, negotiated settlement requests, court settlement requests, payments, and other approvals required by the DBA Documents, by the State, or by applicable Law within ten (10) Business Days after receipt of complete Acquisition Packages from Design-Build Contractor.

b) After receiving a complete condemnation packet from Design-Build Contractor in accordance with Section 7.4.4, TxDOT will submit a minute order request on the agenda of the next scheduled Texas Transportation Commission meeting; provided the completed condemnation package is submitted before the Commission's required deadline for eminent domain minute order requests.

c) TxDOT shall endeavor to reasonably accommodate a written request from Design-Build Contractor for early submission to the agenda of the Texas Transportation Commission. TxDOT will coordinate with the Office of the Attorney General to provide legal counsel to prepare and deliver to TxDOT the condemnation petition within twenty (20) Business Days after the Attorney General's receipt of the condemnation packet, including Commission minute order approval. TxDOT will deliver the condemnation petition to Design-Build Contractor within ten (10) Business Days after receipt of the condemnation petition from the Office of the Attorney General.

d) TxDOT will provide all coordination services between Design-Build Contractor and the Office of the Attorney General for prosecution of jury trials.

e) TxDOT will provide a ROW Administrator to serve as first point of contact for all Project ROW issues as set forth in 23 CFR § 710.313(d).

### 7.2.13 *TxDOT Project Monitor/Reviewer*

In addition to its review and approval authority as expressly set forth in other provisions of this Section 7, TxDOT may, at its sole discretion, audit and/or monitor the ROW activities and services performed by Design-Build Contractor. TxDOT may contract with independent consultants to assist it in fulfilling the audit/monitoring function provided that the audit authority is not delegated. In addition to any of the matters specifically required to be provided by Design-Build Contractor to TxDOT pursuant to the foregoing sections, Design-Build Contractor shall provide information to TxDOT as requested to assist in its review and assessment of the progress, timeliness, adequacy, or sufficiency of Design-Build Contractor's Project ROW activities.

### 7.2.14 *Responsibilities of the Office of the Attorney General*

The Office of the Attorney General, with the assistance of Design-Build Contractor and coordination of TxDOT, shall be responsible for implementing all necessary legal actions for acquiring and obtaining possession of the Project ROW (and any necessary temporary construction easements approved by

TxDOT for acquisition by condemnation) through the eminent domain process and eviction process. The responsibilities of the Office of the Attorney General will include:

a) Represent TxDOT as the State's Attorney of Record

b) Preparation of complete petitions for condemnation with the appropriate court for a cause number to be assigned

c) Coordination with TxDOT on all legal matters concerning acquisition processes, including negotiated settlements

d) Analysis of recommended parcel values and/or appraisal issues

e) Additional legal advice and opinions as needed by TxDOT

f) Special commissioners' hearings

g) Jury trials including determination of expert witnesses and all appeals

h) Preparation, obtaining, and filing of all necessary legal documentation for eviction of property owners or tenants.

## 7.3 Pre-Acquisition Activities

### 7.3.1 *Project ROW Surveying and Mapping*

Design-Build Contractor shall perform all Project ROW surveying and mapping and shall prepare all Project ROW documents in accordance with applicable TxDOT Standards, including the TxDOT *Right of Way Manual*, the TxDOT *Survey Manual*, and the TxDOT *GPS Users Manual*. Design-Build Contractor shall refer to the current *Manual of Practice* by the Texas Society of Professional Land Surveyors and the *US National Map and Accuracy Standards*. Design-Build Contractor shall refer to Section 9 (Land Surveying) for additional survey requirements.

The Project ROW map shall be prepared by Design-Build Contractor and submitted to TxDOT for review and approval. The Project ROW map may be prepared in separate constructible segments established by the logical termini of the Project. TxDOT shall have fifteen (15) Business Days for review of each submitted ROW map, each containing up to a maximum of twenty-five (25) parcels. Any submittals that would require TxDOT to review more than twenty-five (25) parcels within any given fifteen (15) Business Day period shall be considered excess, and TxDOT may defer its review of any such excess parcels to a subsequent fifteen (15) Business Day period (or periods as necessary).

Design-Build Contractor shall assemble an Acquisition Survey Document Package and deliver to TxDOT upon request of preliminary and/or final review. The Acquisition Survey Document Package shall include:

a) Three (3) half size right-of-way maps on paper, Scale 1"= 100' (11"X 17").

b) One (1) separate set of Originals signed and sealed by RPLS, legal and sketch, traverse closure sheet and a copy of the parent track deed and subdivision plat if tract is a platted lot.

c) Create CD with DGN Master File, Map Sheets, Excel Point List and Raw Data File and/or Field Notes.

d) One (1) full size right-of-way map on paper, Scale 1" = 50' (22"x34").

e) One (1) set of folders for each parcel, Parts 1 & 2, etc., would be considered one folder. With one (copy signed and sealed) legal description, sketch, closure sheet, parent tract deed and subdivision plat if tract is a platted lot (and bi-section if applicable) secured inside on the right side.

f) Three (3) copies (signed and sealed) of each legal and sketch.

Design-Build Contractor shall prepare all Project ROW surveying and mapping in accordance with the following supplemental specifications:

a) Design-Build Contractor shall assemble an Acquisition Survey Document Package. The Acquisition Survey Document Package shall include the Project ROW map, a parcel (metes and bounds) description, and a parcel plat, with a closure report for each of these three items for each of the parcels to be acquired. The latter three items shall be on standard 8½" x 11" bond paper. The Project ROW map sheets shall be on 22" x 34" paper. Each final submission to TxDOT shall include two sets of each document, unless otherwise directed. Each map sheet and document page shall have an "as of" date near the lower right hand corner. The parcel plat and parcel description for a given parcel should show identical "as of" dates.

b) The Parcel, as shown on the ROW map sheet and plat, shall show all areas of denied access according to the current TxDOT *Access Control Management Manual*.

c) The point of beginning (POB) shall be located on the proposed Project ROW line and shown in all documents with its centerline (survey baseline) station and offset.

d) The point of commencing (POC), where applicable, shall be a well-defined monument, and shall be tied to the POB by measured bearing and distance. The POC shall not be located on any proposed Project ROW line, or existing Project ROW line within the proposed Project ROW.

e) The centerline (survey baseline) station and offset shall be shown on the Project ROW map sheets for all significant points along the Project ROW line such as point of curvature (PC), point of tangency (PT), point of intersection (PI), point of compound curvature (PCC), and point of reverse curvature (PRC), and for property line intersections (PLI) with the Project ROW line, and for any other monumentation points on the Project ROW line.

f) The centerline (survey baseline) station and offset shall be shown in the parcel description and parcel plat at the beginning and ending, being the points with the lowest station and the highest station, of each parcel along the proposed Project ROW line.

g) Project ROW map sheets shall include all curve data, with the station and coordinates of the PI, and the stations at each end (PC, PT, PRC, PCC), for every centerline (survey baseline) curve on that map sheet.

h) Any existing ROW lines being incorporated into the proposed Project ROW, including intersecting rights-of-way, shall be surveyed and monumented (if not previously monumented).

i) All Project ROW maps (and on the title sheet) and all parcel descriptions (at the end of the description) shall include a notation that identifies the State Plane Coordinate System and UTM zones, datum (NAD83) (HARN) (2002), and the Project grid-to-surface coordinate adjustment factor.

j) A Project ROW map title sheet with signature blocks shall be produced for each portion of the Project. Design-Build Contractor shall sign the Project ROW map.

k) All Project ROW maps shall include a control sheet (or sheets), to show the primary survey control points with their location relative to the Project.

l) The parcel description and parcel plat documents shall all be referenced as parts of the exhibit recorded with the deed, so the pages shall be numbered accordingly. For example, if the parcel description is two pages, the parcel plat is one page, then the first page of the parcel description is denoted "Page 1 of 3", the parcel plat is denoted "Page 3 of 3".

m) Improvements within 100 feet outside of all proposed Project ROW shall be depicted on the Project ROW map sheets. All improvements should be current as of the date of the on-the-ground property survey.

n) All visible improvements (buildings and structures) within 25 feet outside of the proposed Project ROW line shall be located by an "on-the-ground" survey and documented on the Project ROW map sheets and the parcel plats by measured offset distance from the proposed Project ROW line. Clearly indicate which distances are surveyed on–the-ground.

o) Calculated points shall be shown by a symbol on the drawing, with their relationship to the found reference points.

p) All property, city, county, abstract, section, and survey lines shall be indicated appropriately. A map legend should clearly define the line styles and symbols used.

q) Upon final submittal from Design-Build Contractor of the Project ROW documents to TxDOT, Design-Build Contractor shall cause the surveyor to mark on the ground, using permanent and stable monuments as defined in Section 663.17 of the General Rules of Procedures and Practices of the Texas Board of Professional Land Surveying (TBPLS), all significant points along the Project ROW line, as described above, and all property line intersections with the Project ROW line. TxDOT requires these monuments to be a ½-inch iron rod, driven just below surface level, capped by a TxDOT-labeled aluminum cap (rod-and-cap monument).

r) Prior to acceptance of the ROW maps and surveys by TxDOT, Design-Build Contractor shall cause a TxDOT Type II monument to be set at all significant points on the Project ROW line and at intersections with existing Project ROW lines, replacing monuments as described above (construct according to TxDOT specifications), unless otherwise directed by TxDOT.

s) Design-Build Contractor shall cause a TxDOT Type II monument to be set at all significant points on the Project ROW line and at intersections with existing Project ROW lines, replacing monuments as described above, unless directed by TxDOT. Project ROW line intersections with property lines shall remain monumented by a ½-inch iron rod with a TxDOT aluminum cap (rod-and-cap monument).To reference all significant points along the centerline (survey baseline), Design-Build Contractor shall set a rod-and-cap monument; and upon completion of the Project ROW acquisition or as directed by TxDOT, Design-Build Contractor shall replace it with a TxDOT Type II monument, on the final Project ROW lines, perpendicularly left and right of each significant centerline point, regardless of the relative orientation of the final Project ROW line.

t) For any required revisions, Design-Build Contractor shall resubmit to TxDOT all documents pertaining to the parcel to reflect the most recent revision date, and shall add a notation on the appropriate documents to state briefly the reason for the revision.

u) Documents shall contain deed references (survey name, abstract number, volume and page or document number, grantee, and area) for all existing public right of way encountered within the Project limits. If there is no recorded information found, a note shall state "Based upon our research, there appears to be no recorded vesting deed for the public right-of-way as shown hereon".

v) The documents produced by the surveyor are the property of TxDOT, and release of any document shall be subject to TxDOT's prior written approval.

w) Design-Build Contractor shall cause the surveyor to include the denial of access line on the Project ROW map sheets and on the parcel plats, as required for controlled access facilities. Design-Build Contractor also shall cause the surveyor to describe the area of denied access in the parcel description and monument on the ground with a ½" iron rod with orange cap stamped "TxDOT ADL" the limits of the denial of access.

x) The Project ROW map and each parcel plat shall include a parcel information table containing the areas, expressed in square feet, of the following: 1) the parent ownership as stated in all adjoining record vesting deeds or converted from the stated record acreage in those vesting deeds; 2) the

parcel to be acquired as shown on the closure report for that parcel, and; 3) the remainder tract (item 1 minus item 2). If the parcel to be acquired consists of multiple parts, the Project ROW map shall show the net remainder. The parcel information table shall also contain the areas, expressed in acres, of the parent tract, the parcel to be acquired, and the remainder. This acreage (except stated record) shall be converted from the square footage as contained in the table. A note shall be included on the Project ROW map and on each parcel plat stating: "The acreage calculated and shown hereon is converted from the square footage shown hereon, and is for informational purposes only." Parcels with area less than one acre will not require acreage units to also be shown. All parcels, including parcels acquired by TxDOT or other Governmental Entity, shall be included on the Project ROW map.

y) Within the proposed Project ROW, all property owned by a city, county, or other local public agency (LPA) in fee or easement that does not have a vesting deed shall be identified by a parcel number and included on the Project ROW map. Design-Build Contractor shall cause the surveyor to prepare a parcel description and parcel plat for use as an exhibit in the Project ROW acquisition (property transfer) documents.

z) Design-Build Contractor shall cause an independent Registered Professional Land Surveyor (RPLS) to review the Acquisition Survey Document Package for consistency as to the information delineated thereon and for compliance with all applicable Technical Provisions and survey documents. The boundary location and the survey methods remain the responsibility of Design-Build Contractor, and are not part of this review process. TxDOT will have no obligation to accept the Acquisition Survey Document Package as complete until the reviewing RPLS has signed and sealed the compliance certificate (compliance certificate form to be provided by TxDOT).

aa) Parcel numbering shall follow the TxDOT *ROW Manual*. Parcels are to be numbered based upon the parent tract. Design-Build Contractor shall revise parcel numbering due to subsequent transactions as in the following example: From a 50-acre parent tract, with a proposed Project ROW acquisition parcel identified as Parcel 14, a 5-acre tract is sold which will also require Project ROW acquisition. The result is, Parcel 14 is "Not Used", and the two new Project ROW acquisition parcels are identified as Parcel 14A and 14B. If the property containing Parcel 14B sells a portion, then 14B is "Not Used" and the new Project ROW acquisition parcels are identified as Parcel 14C and 14D, etc. Design-Build Contractor shall not use the letter "E" to avoid confusion with easement designations. Parcel numbering shall be sensitive to the appraisal of the required parcels.

bb) Complicated portions of a Project ROW acquisition survey can cause the Project ROW Map to be very difficult to read. TxDOT's preferred solution is to create an additional Project ROW map sheet or sheets for details, curve data, general notes, etc. The primary page would still retain the whole property inset, record ownership data, and most of the usual information. The additional sheet(s) should be clearly referenced and be numbered as the next sequential page(s). Pages numbered with a letter added (for example: 6A, 6B) are for revisions and corrections. Design-Build Contractor shall use the preferred solution unless TxDOT approves an alternate method.

cc) An ownership sheet or sheets, containing an index to the information for all the parcels, shall be included and located near the beginning of the Project ROW map, after the title sheet and control sheet. The ownership sheet index shall include the parcel numbers, the names of the property owners, the vesting deed recording information, the record area of the parent tract, the area of parcel(s) to be acquired, the area of the remainder(s) left and right, the beginning and ending stations of the parcel along the Project ROW line, and the sheet number in the Project ROW map where the parcel is located.

dd) At property corners where more than one monument is found, a detail shall be provided to show the measured relationship between the monuments found and the monument set or held.

ee) Design-Build Contractor shall purchase all materials, supplies and all items necessary for proper survey monumentation. Design-Build Contractor may purchase Type II monuments from TxDOT. TxDOT shall make available for pick-up by Design-Build Contractor Type II monuments within seventy-five (75) Days after TxDOT receives from Design-Build Contractor a written order, specifying the number of monuments to be purchased. Payment for TxDOT-supplied monuments shall be due within thirty (30) Days after TxDOT delivers to Design-Build Contractor a written invoice. Design-Build Contractor may use these monuments only for this Project and shall be responsible for proper storage thereof.

ff) Design-Build Contractor at the request of the property owner or TxDOT shall re-stake the proposed ROW with ½" iron rod and aluminum cap.

gg) Design-Build Contractor shall provide sufficiency of design to determine the Ultimate Scope ROW need and produce ROW maps that delineate the proposed ROW and potential impacts to the remaining ROW. A design certification of ROW will be provided by the Design-Build Contractor for each parcel which confirms that the proposed ROW acquisition is adequate and necessary to construct and perform operations and maintenance on the Project and that other ROW acquisition alternatives are not feasible and/or cost prohibitive.

### 7.3.2 *Additional Reporting Requirements*

In addition to the Project ROW map, parcel description, and parcel plats, Design-Build Contractor shall provide the following reports and electronic files:

a) Monthly Parcel Report: Design-Build Contractor shall provide a report, prior to the first of the month, listing all parcel deletions, parcel additions, and parcel splits.

b) Monthly Progress Report: Design-Build Contractor shall provide a report of all survey activity that occurred over the previous month, including a two-week look ahead of anticipated survey activity.

c) CAD Files: Design-Build Contractor shall provide digital CAD files in MicroStation format which includes: property lines and/or existing ROW lines, as surveyed; proposed ROW lines; parcel numbers; resource files; level assignments; and plot files. Design-Build Contractor shall submit CAD files prior to submitting the first Acquisition Package, and provide updates as needed.

### 7.3.3 *Title Services*

With respect to title services, Design-Build Contractor shall comply with the applicable standards identified in Section 7.2.1, including the following requirements:

a) Select and contract with one or more title companies approved by TxDOT and deliver to TxDOT a five (5) year sales history, a preliminary title commitment or preliminary title report, and, if necessary or appropriate, copies of all underlying documents and a plot of all easements, including Existing Utility Property Interests, referenced therein for each parcel (including fee acquisitions, slope easements, other drainage and roadway ROW or easements and abandonment of utility easements) to be acquired by TxDOT for the Project. Each title report shall be dated not more than ninety (90) Days prior to the date of submittal to TxDOT of the Acquisition Package for such parcel. Design-Build Contractor shall, at its own cost, review each title report to ensure that it complies with the format required by the DBA Documents. Design-Build Contractor shall, at its own cost, retain the services of a real estate attorney, licensed and located in the State of Texas, to be available for title support and acquisition assistance. All title reports must be in the following required format: clearly indicate which exclusions and exceptions shall be deleted

upon acquisition of the subject parcel, and clearly indicate any required deliverables to the title company to clear identified exclusions and exceptions. Title reports shall be in accordance with Good Industry Practice. Design-Build Contractor shall notify the title company, by letter, which exceptions should be removed, including easements that (a) are appurtenant to and/or of benefit to the parcel but not included in the parcel to be acquired, and (b) are a burden on the parcel and not acceptable.

b) Review the preliminary title commitment or report to ensure that all current owners of record title are contacted and that negotiations or condemnation actions are conducted with all appropriate parties.

c) Work with the current owners of record title to each parcel or interest in a parcel or their designee and all other appropriate parties to clear any title exceptions or exclusions not acceptable to TxDOT.

d) Secure an owner's policy of title insurance in the amount of the total acquisition cost for each parcel from a title company acceptable to TxDOT for each parcel acquired, whether by deed or eminent domain judgment, insuring title as required by TxDOT. All Project ROW shall be acquired, and TxDOT's title in the Project ROW shall be insured, in fee simple absolute or easement interest as appropriate, free and clear of any and all liens and encumbrances. Design-Build Contractor shall pay the applicable title company for the cost of the title policies, including all endorsements thereto required by TxDOT. Title policies must be in a form and substance approved by TxDOT. Title to the Project ROW shall be insured in the name of the "State of Texas by and through the Texas Department of Transportation."

### 7.3.4 *Introduction to Property Owners*

Design-Build Contractor shall prepare and send out initial contact letters of introduction for both property owners and displacees. The letters shall clearly describe the Project, TxDOT's need for the owner's property, and shall include the name and telephone number of a Design-Build Contractor's representative. TxDOT's ROW Administrator or his/her designee will sign the letters on TxDOT letterhead. The forms for these letters shall be approved by TxDOT prior to use. Property owners or displaces unable to read or understand the notice must be given appropriate translation.

Design-Build Contractor shall prepare a copy of the State of Texas Landowner's Bill of Rights for each property owner and submit a copy to be included with the letter of introduction. The copy of the Bill of Rights shall be the latest version as shown on the Attorney General's Website, https://www.oag.state.tx.us/agency/Landowners_billofrights.pdf.

### 7.3.5 *Appraisals*

#### 7.3.1.1 Appraisal Services

Design-Build Contractor shall provide TxDOT with fair market value appraisals prepared by appraisers meeting the minimum qualifications established herein. All appraisals shall be prepared in conformance with applicable law (including the Uniform Act), and in accordance with professional appraisal methods and applicable TxDOT standards for all parcels to be acquired by TxDOT. Design-Build Contractor shall:

1. Select appraisers from TxDOT's list of approved fee appraisers and meeting the requirements specified in Section 7.2.7 (ROW Personnel Qualifications). TxDOT shall have final approval of the selection of each appraiser and appraisal reviewers submitted by Design-Build Contractor. Design-Build Contractor must identify and receive written approval of the appraiser who will be responsible for the appraisal work product and who will be signing the reports.

2. Establish personal pre-appraisal contact with each owner of record title and each occupant, and document all contacts utilizing forms provided by TxDOT.

3. If necessary, make a diligent effort to secure a written agreement between the record title owner and Design-Build Contractor granting TxDOT, Design-Build Contractor or assignees permission to enter the applicable parcel to be acquired (a "Right-of-Entry Agreement"). Design-Build Contractor may at its sole discretion and expense offer to pay reasonable compensation for any required Right-of-Entry Agreements. If Design-Build Contractor, after best efforts, is unable to secure a Right-of-Entry Agreement from the property owner, Design-Build Contractor shall provide documentation acceptable to TxDOT indicating conversations, correspondence, and efforts used to attempt to secure the Right-of-Entry Agreement.
4. Contact the record title owners or their designated representatives, in writing, to offer them the opportunity to accompany the appraiser on the appraiser's inspection of the parcel, and maintain a record of all such contacts in the parcel file.
5. Cause the appraiser to prepare a complete appraisal report for each parcel to be acquired to include the whole property, the portion to be acquired, and any damage to the remainder. It shall also include all improvements on the whole property, unless otherwise directed by TxDOT. The appraisal reports shall comply with and include all matters required by this section and TxDOT ROW related manuals, and shall satisfy the requirements of the USPAP in effect at the time the appraisal is submitted. Special analyses, studies or reports, as necessary, shall be made a part of each appraisal. The appraiser must use the most current edition of the standards referenced above and continually monitor these standards to ensure the appraisals conform to the most current requirements of professional appraisal practice. All appraisals shall utilize TxDOT Form ROW-A-5 - Real Estate Appraisal Report unless otherwise authorized by the TxDOT *Right of Way Manual* or TxDOT *Appraisal and Review Manual*; however, all appraisals for condemnation proceedings shall utilize TxDOT Form ROW-A-5 - Real Estate Appraisal Report.
6. Obtain and provide TxDOT with copies of all written leases, licenses and other occupancy agreements, including outdoor advertising/sign agreements, in order to identify lessees, licensee and other occupants with potential compensable interests in each parcel and to determine the value of each such interest.
7. Perform an evaluation of all outdoor advertising signs, as required, utilizing the appropriate forms as instructed by TxDOT.
8. Cause the appraiser(s) to testify as an expert witness(es) or provide expert witness(es) approved by TxDOT in special commissioners' hearings or eminent domain proceedings through jury trial and be available for depositions, other discovery, pre-hearing or pre-trial meetings and appeals, as directed by TxDOT. Design-Build Contractor shall also provide administrative and/or technical support for such proceedings as requested by TxDOT.
9. Coordinate with the review appraiser regarding corrections and/or additional information that may be required for a particular appraisal.
10. Cause a report to be prepared by an environmental professional that meets ASTM E-1527-05, Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process, or provide a report in a manner approved by TxDOT, documenting the environmental condition of each parcel, which may be based on field investigations and/or historical review, as appropriate for the particular parcel. The report shall be completed in coordination with the appraiser(s) and shall be available to the appraiser(s). A Phase I environmental site assessment or a report provided in a manner approved by TxDOT shall be performed for all properties. If it is determined that there is a potential environmental risk based on the Phase I report or other report then a Phase II investigation shall be performed. A Phase III investigation shall be performed if the Phase II report justifies it. The Phase III report must indicate the approximate cost to remediate the parcel to achieve its current use and its highest and best use. Prepare timely written

notification to TxDOT of any environmental or other concerns associated with the Project ROW or Additional Properties to be acquired that could require environmental remediation or other special attention or which would cause a report to be prepared.

11. Engage the services of, and cause, a land planner to perform, or otherwise assist in the preparation of, any and all appraisals that involve a parcel with a valuation analysis indicating a highest and best use that is other than the current use of such parcel, or as directed by TxDOT for certain other appraisals. Design-Build Contractor shall notify TxDOT in writing of each and every instance when the highest and best use of a parcel is different and TxDOT will determine to what degree land planner services will be utilized by Design-Build Contractor.

12. Cause the appraiser(s) to prepare updated appraisals, as well as updated appraisal reviews, when required by TxDOT or as needed during eminent domain proceedings. An updated appraisal package shall comply with USPAP, specifically the Statement on Appraisal Standards No. 7 (SMT-7) and Advisory Opinion, AO-3. The term "Update of an Appraisal" is defined as "an extension of a complete or limited appraisal and report relied on by a client for a prior business decision." At a minimum, the updated appraisal report shall include:

    - A letter of transmittal with a specific reference to the original appraisal report, any changes in market conditions, since the original appraisal, any changes in the subject property since the original appraisal, a statement of the current value or extension of the original value opinion and the listing of the current date of value.
    - An updated Page 1 from TxDOT Form ROW-A-5 – Real Estate Appraisal Report or Form ROW-A-6 – Real Estate Appraisal Report, as appropriate, with the current date of a recent inspection of the subject property and a current date of value. This form needs to have a current signature and date by both the appraiser and the reviewing appraiser in the appropriate spaces on the form.
    - Any qualifying and limiting conditions or general assumptions by the appraiser shall be clearly stated and attached.
    - A copy of the survey and legal description of the property being acquired, current photographs of the subject property, clearly showing the area being acquired, even though the original appraisal report contained photographs of the subject and the area of the acquisition. If there are significant changes to the subject property, the area being acquired, access to the remainder property, damages to the remainder(s), market conditions, the subject property's highest and best use from the previous appraisal or significant changes in the approaches to value, the property shall be reappraised using either TxDOT Form ROW-A-5 – Real Estate Appraisal Report, or, when approved by TxDOT, TxDOT Form ROW-A-6 – Real Estate Appraisal Report, depending on the report used for the original appraisal. Appraisers shall refer to Sections 6.03 and 6.04 of the TxDOT *Appraisal & Review Manual* for additional guidance. Design-Build Contractor shall follow these guidelines in producing updated appraisal reports and shall discuss specific updating requirements for any complex appraisals with TxDOT before beginning the assignment.

13. Prepare and deliver to TxDOT upon request, a copy of all file documents, as formally requested in discovery motions or request for production.

14. Complete and furnish, to the appraiser, TxDOT Form ROW-A-9 - Property Classification Agreement before appraisal is completed.

#### 7.3.1.2 Appraisal Review

In connection with appraisal review, Design-Build Contractor shall:

1. Select review appraisers from TxDOT's list of approved fee appraisers and meeting the requirements of Section 7.2.7. The review appraiser selected must follow the appraisal guidelines and procedures found in Chapter 4 of the TxDOT *ROW Appraisal & Review Manual*.
2. Determine, in consultation with TxDOT, if additional appraisal reports or technical expert reports are required. Initiate, review, and reconcile each report required.
3. Review all appraisal reports for each parcel to determine consistency of methodology, supporting documentation related to the conclusion reached, and compliance with TxDOT standards, as defined in Section 7.3.5.1 (Appraisal Services) and this Section 7.3.5.2 (Appraisal Review), the TxDOT *ROW Appraisal & Review Manua*l, the *Uniform Appraisal Standards and Federal Land Acquisitions* and the requirements of the Appraisal Foundation's USPAP in effect at the time the appraisal is reviewed. The review appraiser must use the most current edition of the standards referenced above and continually monitor these standards to ensure the appraisals conform to the most current requirement of professional appraisal practice.
4. Inspect the subject properties and the sale properties used in direct comparison for each appraisal being reviewed.
5. Upon completion of the review outlined above, the appraiser shall certify in writing to TxDOT that all required standards have been met. This certification will occur by signing on Page 1 of each TxDOT Form ROW-A-5 (Real Estate Appraisal Report) or TxDOT Form ROW-A-6 (Real Estate Appraisal Report) in the block provided. The review appraiser will also complete TxDOT Form ROW-A-10 (Tabulation of Values) to accompany each appraisal.
6. For appraisal updates, the review appraiser shall perform a complete review of the updated appraisal, re-inspecting the subject property and the sales used, as of the current date of value. The review appraiser shall follow the procedures outlined in the TxDOT *ROW Appraisal and Review Manual*. A new TxDOT Form ROW-A-10 (Tabulation of Values) will be required for each updated appraisal ordered by Design-Build Contractor.
7. In accordance with providing a Quality Control Specialist(s) as stated in Section 7.2.7, ensure that appraisal consistency and quality for the entire project is monitored for project-wide controls and consistency.

### 7.3.6 *Project ROW Acquisition Package Approval*

Acquisition Packages submitted by Design-Build Contractor for TxDOT's approval shall include the following items, prepared for each parcel in accordance with the requirements of this section:

1. A cover sheet setting forth the following information for each parcel.
   - Parcel number and number of parts
   - Station number
   - CSJ number
   - Location of parcel
   - Name of owner
   - County and/or other jurisdiction
   - Extent of acquisition (partial or whole acquisition)
   - Type of conveyance (fee, easement, etc.)
2. A complete legal description of the parcel adequate to effect the desired acquisition of the parcel, signed and sealed by an RPLS. A legal description and parcel plat is required for each parcel.

Control of access shall be addressed in all legal descriptions. All descriptions shall be in recordable form and shall be prepared in a form and manner acceptable to TxDOT in all respects.

3. The parcel plat, as prepared by the RPLS, and a half size (11" x 17") copy of the ROW map sheet(s) pertaining to the parcel, such plat to include control of access designations.
4. A title report, current within ninety (90) Days, including copies of all documents identified in the exceptions listed therein and a plot of all easements identified therein. The Acquisition Package shall include Design-Build Contractor's analysis of each preliminary title report or title commitment to determine potential problems and proposed methods to cure title deficiencies. Design-Build Contractor shall perform title curative Work. Design-Build Contractor shall provide TxDOT with copies of all curative documents.
5. A copy of the appraisal report with an effective date less than 180 Days and all supporting documentation.
6. A copy of the environmental site assessment and all amendments as described in Section 7.3.5.1 (Appraisal Services).
7. A real/personal property report detailing what items making up each parcel are classified as real estate, tenant-owned improvements or personal property. Particular attention shall be paid to items that have questionable classifications. A completed TxDOT Form ROW-A-9 (Property Classification Agreement).
8. Replacement Housing Calculations, notification of business eligibility, completed displacee interviews, all comparables used in estimating the Replacement Housing Calculations, and letter to displacee(s) explaining Replacement Housing Calculations. Calculations and replacement housing benefit package shall be prepared and reviewed by a qualified consultant, in conformance with TxDOT's standard relocation procedures and applicable to State and federal laws and regulations.
9. The proposed initial offer letter, memorandum of agreement, deed, and any other documents, which shall be prepared by Design-Build Contractor as required or requested by TxDOT, on Design-Build Contractor’s letterhead or as otherwise directed. TxDOT will provide the format for preparing these documents. Documents referred to in this section are standardized by TxDOT and modification of standardized documents shall be kept to a minimum. All changes are subject to approval by TxDOT in writing, in TxDOT’s sole discretion.
10. Any other required TxDOT forms, such as record of all contacts with the property owner or any party with a compensable interest.

No Acquisition Packages will be approved if performed or submitted by appraisers or agents not previously approved by TxDOT for this Project.

Upon TxDOT’s prior written approval of the Acquisition Package, Design-Build Contractor may proceed with the offer to the property owner.

## 7.4 Acquisition Activities

### 7.4.1 *ROW Negotiations*

Design-Build Contractor shall conduct all negotiations in accordance with the requirements of applicable Law. In conjunction with negotiations, Design-Build Contractor shall:

a) Within ten (10) Business Days of TxDOT's approval of the Acquisition Package, contact each property owner or owner's designated representative, in person where practical, to present the offer and deliver an appraisal report (not more than six (6) months old) and appropriate brochures. The approved appraisal shall be sent by certified mail, return receipt requested. A

copy of the appraisal report for the subject property shall be provided to the property owner or authorized representative at the time of offer. All appraisal reports produced or acquired by TxDOT relating specifically to the property owner's property and prepared in the ten (10) years preceding the date of the offer must also be delivered to the property owner. Design-Build Contractor shall also maintain a file record of receipt of appraisal signed by the property owner. Design-Build Contractor shall also maintain follow-up contacts and secure the necessary documentation and title curative Work upon acceptance of the purchase offer.

b) At the time of offer, produce and distribute to all property owners and displacees, TxDOT-approved informational brochures, as appropriate. The ROW brochures shall be purchased by Design-Build Contractor and shall include language about the use of the *Declaration of Taking* procedure if Design-Build Contractor anticipates requesting the utilization of this procedure by TxDOT anywhere within the Project.

c) Identify lessees, licensees, occupants, or other parties with potential compensable interests including outdoor advertising sign owners, and, if appropriate, after consultation with TxDOT, negotiate with such parties for the acquisition of their compensable interests.

d) Advise the property owners, lessee, licensees, occupants, and other holders of compensable interests, as applicable, of the administrative settlement process. Confer with and transmit to TxDOT's ROW Administrator any settlement request from property owners, lessees, licensees, occupants, or other holders of any compensable interest, as applicable, including a detailed recommendation from Design-Build Contractor in accordance with standards, manuals and procedures as defined in Section 7.2. Design-Build Contractor and TxDOT shall jointly determine whether to accept a settlement request. Delivery of the administrative settlement request and Design-Build Contractor's recommendation to TxDOT must occur within fifteen (15) Business Days following Design-Build Contractor's receipt of the administrative settlement request.

e) Design-Build Contractor, at its request or the request by TxDOT and/or the TxDOT Administrative Settlement Committee, may participate in the evaluation of the administrative settlement request and attend the committee meeting.

f) Design-Build Contractor shall provide a letter with the Administrative Settlement Committee's response to the property owner, lessee, licensee, occupant, or other holder of a compensable interest, as applicable. Design-Build Contractor shall deliver all settlement responses (if within reasonable proximity of the Project) by hand within three (3) Business Days after receipt. If this delivery method is not feasible, Design-Build Contractor shall mail (return receipt requested) response letters not more than three (3) Business Days following any decision by the TxDOT Administrative Settlement Committee. If Design-Build Contractor selects the mailing option, Design-Build Contractor shall make a telephone call to the property owner to discuss the settlement offer prior to mailing the response letter. The TxDOT ROW Administrator, on an as-needed basis, will convene the TxDOT Administrative Settlement Committee.

g) Notwithstanding an unsuccessful completion of the formal administrative settlement process, Design-Build Contractor may, in its sole discretion, engage in ongoing negotiations with the owners of compensable interests. Design-Build Contractor shall develop and incorporate in its ROW Acquisition Plan a procedure for these negotiated settlements. Said negotiations may continue until such time as the Texas Transportation Commission adopts a minute order authorizing the filing of a condemnation petition. Design-Build Contractor shall submit to TxDOT its recommendation of a negotiated settlement and obtain TxDOT's consent prior to acceptance of any settlement.

h) Provide timely (i.e., not more than ten (10) Business Days after inquiry) response to the verbal or written inquiries of any property owner, lessee, licensee, occupant or other holder of a compensable interest, as applicable.

i) Prepare a separate negotiator contact report for each meeting or conversation with any person (or their appointed representative(s) supported by a written confirmation of appointment) who has a compensable interest in each parcel on TxDOT Form ROW-N-94 – Negotiator's Report. Contact reports shall also be prepared for unsuccessful attempts to contact such persons.

j) Maintain a complete parcel file for each parcel. All original documentation related to the purchase of the real property interests will be maintained (housed separately from the relocation files) in conformance with TxDOT standards, manuals, and procedures, as defined in Section 7.2. All original Project ROW documents must be retained and properly secured in Design-Build Contractor's Project office or as otherwise approved by TxDOT. Signed original documents shall be forwarded to TxDOT periodically or as requested by TxDOT with a transmittal form during the acquisition process; provided, however, that all remaining original documents shall be forwarded upon completion of the acquisition of Project ROW for the Project.

k) Prepare and deliver documents of conveyance (including bisection clause and access clause, if applicable) to the property owner, lessee, licensee, occupant, or other holder of any compensable interest, as applicable, and obtain their execution of the same. All signatures on documents to be recorded shall be notarized in accordance with Texas law.

l) Pursue and obtain Possession and Use Agreements (PUA) concurrently with the parcel negotiations. The form of PUA will be provided by TxDOT and will contain provisions allowing for construction to commence while negotiations are finalized. Such agreements will be sought and negotiated by Design-Build Contractor strictly in accordance with the Law and only with the prior written consent of TxDOT. If Design-Build Contractor exercises the use of a TxDOT PUA, Design-Build Contractor must obtain a deed or commence action on condemnation proceedings by forwarding a condemnation packet to TxDOT for approval within six months from the date of the PUA.

m) Be open to all reasonable settlement requests (that comply with the regulations as outlined in this section) from the property owners, which are feasible and help expedite the Project ROW acquisition process. Design-Build Contractor acknowledges and understands that TxDOT encourages all positive and creative solutions which satisfy the property owner and promote the success of the Project.

n) Design-Build Contractor shall repair and deliver a final offer letter to the property owners, lessees, licensees, occupants, or other holders of any compensable interest, as applicable. The letter shall be on Design-Build Contractor's letterhead and shall be signed by the ROW Acquisition Manager. The final offer letter shall allow a property owner lessee, licensee, occupant or other holder of compensable interest at least fourteen (14) Days as the consideration time period to review the final offer. Design-Build Contractor shall submit to TxDOT, a copy of the final offer letter within two (2) Business Days after delivery to the property owner.

If the offer is not accepted, Design-Build Contractor shall follow the procedures established for condemnation.

### 7.4.2 *Relocation Assistance*

Design-Build Contractor shall coordinate and perform the administrative requirements necessary to relocate any occupants from Project ROW. All Work prepared by Design-Build Contractor with respect to relocation assistance shall be performed in accordance with applicable Law, including the Uniform Act and TxDOT standards, and in accordance with all provisions of this Agreement.

Design-Build Contractor shall maintain a relocation office (meeting ADA requirements) within reasonable proximity of the Project area as approved by TxDOT. At a minimum, the office hours of the relocation office shall be posted to meet the following timetables:

a) Monday thru Friday: 8:00 am to 5:00 pm

b) Saturday: 9:00 am and 12:00pm

c) Sunday: office may be closed

In addition to the office hours listed above, Design-Build Contractor shall be available to all displacees for relocation services at the convenience of the displacees.

Design-Build Contractor's major activities with respect to the relocation assistance of occupants from Project ROW include:

1. Prepare a Relocation Plan in accordance with the TxDOT *Right of Way Manual*, Volume 3, Chapter 8 (Relocation Program Planning and Construction).
2. Monitor relocation assistance activities.
3. Prevent fraud, waste and mismanagement.
4. Assist with all requests and be responsible for carrying out decisions made by TxDOT, the review/appeal process and judicial reviews.

Design-Build Contractor shall provide relocation assistance strictly in accordance with the Law, and, in particular, the Uniform Act and TxDOT standards. With respect to relocation assistance, Design-Build Contractor shall:

1. Provide written notice to all property owners, lessees, licensees, occupants, other holders of compensable interests, and other potential displacees regarding relocation assistance and produce and provide them with a relocation assistance brochure that has been approved by TxDOT. Design-Build Contractor shall perform relocation interviews, complete and maintain interview forms and discuss general eligibility requirements, programs, and services with potential displaces. Design-Build Contractor shall maintain a written record of all verbal contacts.
2. Give written notice of the pending acquisition to any non-eligible occupants. Any questions as to the eligibility of a potential displacee shall be directed in writing to TxDOT's ROW Administrator.
3. Contact and provide relocation assistance to those parties affected by the Project ROW acquisition and complete forms for all displacees, as required.
4. Locate, evaluate and maintain files on comparable available housing, commercial, retail, and industrial sites.
5. Calculate replacement supplement benefits.
6. Compute and submit requests for relocation rental/housing supplement to TxDOT prior to submission to relocatees. All relocation supplements shall be subject to TxDOT's written approval.
7. Perform a Decent, Safe and Sanitary (DSS) inspection for each replacement housing comparable, photograph the comparable and complete the DSS inspection form, TxDOT Form ROW-R116 (Replacement Housing Inspection).

8. Request at least two moving estimates from moving companies to effect relocation of personal property or consistent with the Uniform Act.
9. Prepare moving plan with appropriate photos, sketches and inventory of personal property to be moved.
10. Coordinate moves with displacees and moving companies in accordance with TxDOT standards and the Uniform Relocation Act.
11. Maintain relocation contact logs on a TxDOT Form ROW-R96-R (Relocation Advisory Assistance – Parcel Record).
12. Attend all closings on replacement properties, if requested by any party involved, and assure supplemental payments, if any, are properly distributed.
13. Process and compute increased interest payments on the mortgage of owner-occupied dwellings, as required.
14. Deliver to displacees a ninety (90) Day notice of eligibility letter simultaneous with the delivery of the relocation benefits package. Deliver a ninety (90) Day letter to displacees with the location of the comparable property used to compute the supplement.
15. Deliver a thirty (30) Day notice to displacees and property owners upon acquisition of Project ROW.
16. Notify TxDOT's ROW Administrator office immediately if a displacee has not moved after thirty (30) Day notice expires. Prepare a written recommendation to facilitate the displacee's move.
17. Be available for any appeals or hearings.
18. Prepare relocation payment claim submissions for all displacees and all relocation assistance benefits.
19. Verify DSS dwelling criteria on all replacement housing as selected by the displacees.
20. Secure dwellings and structures no later than ten (10) Days after vacancy and protect the Project ROW following acquisition and relocation.
21. Maintain a complete file, separate from acquisition files, on each displacee and make available for inspection.
22. Be responsible for all relocation activities that may occur after deposit of the special commissioner's award in the courts, including instances when a parcel referred to the Attorney General’s office for eminent domain also has a relocation issue.
23. Prepare all correspondence to the displacees or their representative(s) on Design-Build Contractor's designated relocation letterhead and have Design-Build Contractor’s correspondence signed by the Project ROW relocation specialist.
24. Deliver to each displacee the relocation assistance payments according to the TxDOT *Right of Way Separation of Duties* chart provided.
25. Assist the Attorney General's office with eviction proceedings. Serve notice of eviction proceedings to the occupant(s) of the property who have not complied with move dates.

Coordinate the eviction process with the local authorities and accompany the Sheriff's Department when the local authorities are carrying out eviction.

### 7.4.3 *Closing Services*

For purposes of closing services, Design-Build Contractor shall:

1. Submit a closing package to TxDOT for review a minimum of 24 hours prior to closing. The package shall include the following: (a) a reference to the disposition of any environmental matters; (b) updated title commitment, no more than fifteen (15) Days prior, with notations indicating the disposition of all schedule "C" items; (c) a copy of the executed warranty deed to be delivered; (d) a proposed closing statement indicating disposition of all proceeds; (e) a copy of any and all releases of liens; (f) a copy of any miscellaneous documents and other curative matters required to be delivered at closing and (g) a copy of the closing memorandum outlined in item 2 below.
2. Prepare the escrow agreement and closing documents, including a closing memorandum identifying all parties involved in the closing, and listing all documents to be executed and/or delivered in connection with the closing.
3. Attend closings; provide curative documents and exhibits as required and in conjunction with the applicable title company. Confirm that all conditions to closing are satisfied and notify TxDOT of all closing appointments.
4. Obtain an issued title policy based on the approved updated title commitment within thirty (30) Days following closing and transmit the same to TxDOT.
5. Obtain and deliver to TxDOT one certified copy of each instrument of conveyance immediately after closing, and provide a copy of the title policy to TxDOT within five (5) Business Days after receipt. Cause to be delivered to TxDOT a copy of the recorded deed within ten (10) Days after the title company receives the recorded deed.

### 7.4.4 *Condemnation Support*

Design-Build Contractor shall provide an individual or individuals having sufficient knowledge of the design of the Project to appear as an expert witness for testimony at the special commissioners' hearing or other proceedings. This individual(s) is also responsible for preparing exhibits as requested by TxDOT or the Office of the Attorney General in support of said testimony.

Design-Build Contractor shall support condemnation efforts as directed by TxDOT and further delineated as follows:

1. Notify TxDOT of any potential condemnation and document the reason(s) for condemnation including recommendations for property closure.
2. Conduct all applicable eminent domain-condemnation activities in accordance with the policies and procedures as described in the TxDOT *Right of Way Manual*, Volume 4: "Eminent Domain "; in the TxDOT *ROW Appraisal and Review Manual*, Chapter 7 "Eminent Domain-State Acquisition" or as revised; and in Chapter 21, Texas Property Code and Senate Bill 18.
3. After non-response or upon receipt of a copy of the rejected final offer from a property owner or other property right holder entitled to compensation, request an updated title report from the title company issuing the original title commitment.
4. Provide to TxDOT, within ten (10) Days following non-response or rejected certified mailing, notification thereof together with a signed and sealed parcel description and parcel plat, and a bisection clause and access clause, if necessary, with the clauses attached to a property exhibit containing the parcel description and parcel plat.

5. Use the information from the title report to join all parties having a property interest on applicable the TxDOT form. Spouses of property holders with compensable rights must also be joined.
6. Upon completion of TxDOT Form ROW-E49 (Request for Eminent Domain Proceedings), prepare a condemnation packet containing two (2) copies each of the following documents: the completed TxDOT form, negotiation logs, the updated title report not more than ninety (90) Days old, appraisal receipt acknowledgment, pre-appraisal contact sheet, signed and sealed field notes, parcel sketch, bisection clause and access clause exhibits (if necessary), initial offer letter and final offer letter reflecting latest appraisal, complete minute order request form (form to be provided by TxDOT), any correspondence sent by Design-Build Contractor or from the owner of the compensable interest or representatives, one (1) copy of the appraisal report not more than 180 Days old from the effective date of the appraisal report and evidence of a bona fide offer to the property owner. Submit two (2) complete condemnation packets to TxDOT's ROW Administrator for review and approval.
7. Send a copy of the complete petition to the title company and confirm with the title company that the appropriate parties were joined in the case and that no changes in title have occurred since the original litigation guaranty was issued.
8. File the petition for condemnation with the appropriate court clerk after a determination that a timely settlement is not feasible. Send a copy of the petition, by certified mail, return receipt requested, to the owner, lessee, licensee, occupant or other holder of compensable interest.
9. Coordinate and provide legal and technical support to the Attorney General's office, as required to facilitate filing the petition, assignment of a court, and setting of a hearing date.
10. Make available to TxDOT on behalf of the Attorney General's office an agent who will be expected to assist in making arrangements for conferences with witnesses prior to trial, filing the condemnation petition, informing the Attorney General's office as to the filing date of the petition and the case number assigned to the suit, and perform any other duties which will assist in the successful prosecution of the suit, including his or her attendance in court and filing necessary documents to complete all eminent domain proceedings.
11. Depending on the market conditions or if over six months have elapsed since the date of the initial offer, contact the attorney handling the case for TxDOT and confer about the advisability of preparing an updated appraisal. If it is determined that an updated or new appraisal is necessary or desirable, obtain such appraisal using the same procedures as described in Section 7.3.5.1 (Appraisal Services) above. Design-Build Contractor must also undertake appraisal review as described in Section 7.3.5.2 (Appraisal Review).
12. Coordinate with TxDOT on behalf of the Attorney General as to land planners and/or other expert witnesses as required by the Attorney General. Design-Build Contractor, at its cost, shall provide the land planner or other expert at the request of TxDOT or the Attorney General. The land planner or other expert report, if required, shall be completed and forwarded to the appraiser before the updated appraisal is completed.
13. Appear or provide for the appearance of expert witness(es) or fact witness(es) when requested by TxDOT or the Attorney General's Office. The appearances may include pre-commissioner's hearing preparations, special commissioner's hearings, and subsequent proceedings including jury trials and related proceedings.
14. Submit the updated appraisal to TxDOT and the attorney handling the case for TxDOT for review and approval, which review and approval shall occur within ten (10) Business Days of receiving the updated appraisal. TxDOT and Design-Build Contractor must approve any revised offer in writing prior to an offer letter being sent. If a revised offer is approved, prepare a final offer letter,

make the revised offer to the property owner or other holder of a compensable interest, as applicable, and submit a copy of the final offer letter to TxDOT for written approval.

15. Communicate with TxDOT as to the parcel status on a monthly basis and in the Project progress report or as requested by TxDOT.
16. Serve in person, a "Notice of Hearing" not later than twenty (20) Days before the date of the special commissioners' hearing or other hearings and notice requirements as directed or authorized by the court.
17. Call and send reminders letter two (2) to three (3) weeks in advance of any hearing to the assigned attorney, engineer, technical experts, appraiser, the commissioners, court reporter, and TxDOT's ROW Administrator concerning hearing dates.
18. Upon completion of the hearing, prepare TxDOT Form ROW-E73 (Data Sheet – Special Commissioners Hearing) and commissioners' time sheets. Design-Build Contractor shall make payment to all commissioners involved in the hearing and include payment for commissioners as part of general Project ROW services.
19. Coordinate and provide support to TxDOT's counsel and facilitate distribution of copies of award, prepare request for payment, and file notice of deposit. Design-Build Contractor shall coordinate with TxDOT on behalf of the Office of the Attorney General regarding expert witnesses needed to testify on behalf of the State at the special commissioners' hearing and subsequent proceedings including jury trials. At the request of the Office of the Attorney General or TxDOT, Design-Build Contractor shall provide and pay for all necessary expert witnesses including: engineering, land planners, real estate consultants, cost estimators, outdoor advertising sign experts and environmental consultants and Design-Build Contractor shall appear as expert witness or fact witness, as requested. Design-Build Contractor shall also make any Contractors available to appear as an expert witness or fact witness, as requested at the special commissioners' hearing or subsequent proceedings. The selection of all expert witnesses to be used for jury trials shall be determined by the Attorney General's Office.
20. Schedule and pay for all court reporter services, transcription costs, expert witness fees, exhibits, and exhibit workbooks as directed by TxDOT.
21. Be responsible for coordinating the pre-hearing meeting with TxDOT on behalf of the Attorney General's office and all others required for testimony or exhibit preparation. Design-Build Contractor shall require expert witnesses with all exhibits and documents to be present at a pre-hearing meeting.
22. Timely file and provide proper service of objections if requested by TxDOT after completion of the special commissioner's hearing and promptly provide evidence of filing and copies of all filed documents to TxDOT. Within three (3) days after objections have been filed, Design-Build Contractor, at its cost, shall order transcripts of such hearing.
23. Design-Build Contractor shall provide an individual or individuals having sufficient knowledge of the design of the project to appear as an expert witness for testimony at the Special Commissioners Hearing or other proceedings. This individual(s) is also responsible for preparing exhibits as requested by TxDOT or the Office of the Attorney General in support of said testimony. Exhibits shall be left in the custody of TxDOT at the close of the hearing.

### 7.4.5 *Clearance/Demolition of Project ROW*

Prior to demolition of any improvements, Design-Build Contractor shall provide to TxDOT, photographs of the property and all improvements, unless the special commissioner's hearing has been completed and objections have not been filed. Design-Build Contractor shall also have photos of personal property and

any other items of dispute in and of a quality suitable for presentation as evidence in court. Following acquisition or possession of any parcel of Project ROW, Design-Build Contractor shall:

1. Within ten (10) Days from acquisition of the property and improvements, secure and protect the buildings, improvements and fixtures on the Project ROW until they are disposed of or demolished. Design-Build Contractor shall board-up, mow, and winterize as required by TxDOT or applicable Law.
2. Coordinate with the owner and occupants to assure the clearance of personal property from the Project ROW, as applicable.
3. Provide for any insect and rodent control and initiate extermination as required to protect the adjacent properties and rid the Project ROW from infestations.
4. Secure Governmental Approvals required for demolition and environmental surveys or tests, and notify TxDOT in writing of all such activities.
5. To the extent required by Section 7.2.11 (Design-Build Contractor Responsibility for Costs), prepare necessary documentation for disposal of improvements, fixtures and buildings in accordance with applicable Laws and submit the same to TxDOT.
6. Provide written notification to TxDOT of any real and/or personal property remaining on the Project ROW after vacated by the occupants and not acquired as part of the acquisition.
7. Terminate all utility service(s) when appropriate.
8. Process all required forms, documents and permit applications in order to proceed with the timely demolition or removal of any and all improvements, buildings and fixtures located within the Project ROW, as applicable.
9. Demolish and/or remove all improvements.
10. Notify TxDOT upon completion of the demolition and clearance of the Project ROW, as applicable.

### 7.4.6 *Property Fence*

In connection with fences, Design-Build Contractor shall comply with the policies and procedures of the TxDOT *Right of Way Manual*, as well as the specifications found in the current TxDOT *Standard Specifications for Construction of Highways, Streets and Bridges*. Fencing standards for Design-Build Contractor-provided fencing shall conform to the overall aesthetics requirements found elsewhere in these DBA Documents and referenced standards.

#### 7.4.1.1 Property Fencing for Public Properties

Where public facilities now exist that are in high risk areas for public use (particularly those containing parks, sport areas, schools or any highly traveled pedestrian areas), Design-Build Contractor shall, at a minimum, construct a 6-foot-high chain-link fence with metal posts. Design-Build Contractor shall use Good Industry Practice in fencing public properties to control public access to the Project.

#### 7.4.1.2 Property Fencing for Private Properties

Design-Build Contractor shall instruct the appraiser to use the “Cost to Cure” format to compensate an owner of private property for a replacement fence when the Project ROW line leaves one or more unfenced remainder property(s) that were fenced before the taking. Compensation for the new fencing will be based upon the same type of fence as the property owner's existing fence.

When the property owner is paid through the appraisal process for the cost to rebuild the fence on the remainder property, Design-Build Contractor shall include in the memorandum of agreement or the purchase agreement for such property the following clause:

"It is further understood and agreed that the Grantor has been compensated for the construction of a new fence and shall be responsible for constructing the necessary fencing within thirty (30) Days from the date of closing. Grantor specifically understands and agrees that the fences are the property of the Grantor and they shall be liable and responsible for any reconstruction, maintenance, or adjustment with regard to such fencing."

Design-Build Contractor shall make reasonable and good faith efforts to ensure that the property owners, who have been compensated for fencing of the remainder properties, erect the fence in accordance with the construction schedule.

If necessary to maintain the Project construction schedule and to control unauthorized access to the Project ROW by the public or livestock, Design-Build Contractor shall be responsible for providing temporary fencing in cases where the property owner refuses to fence the property within the allotted timeframe.

After the property owner's retention period has expired and if any existing fencing remains, Design-Build Contractor shall remove the existing fences from the newly acquired Project ROW and will be responsible for all costs associated therewith.

## 7.5 Early ROW Acquisition

TxDOT shall notify the Design-Build Contractor if certain Project ROW parcels are scheduled to be acquired by Governmental Entities prior to issuance of NTP2. The Design-Build Contractor will be updated regularly on the status of the acquisition process for each parcel.

After NTP2, Design-Build Contractor shall be responsible for coordinating the scheduling of any remaining early Project ROW acquisition by other Government Entities with the Project Schedule. Based on the status of each parcel, TxDOT may require the Design-Build Contractor to complete the acquisition of certain parcels.

# 8 GEOTECHNICAL

## 8.1 General Requirements

Design-Build Contractor shall perform all geotechnical investigations, testing, research, and analyses necessary to effectively determine and understand the existing surface and subsurface geotechnical conditions of the Project ROW to be used by Design-Build Contractor to carry out the Work. Design-Build Contractor shall ensure the geotechnical investigations and analyses are both thorough and complete, so as to provide accurate information for the design of roadways, pavements, foundations, structures, large drainage structures, shoring, and other facilities that result in a Project that is safe and meets DBA requirements.

## 8.2 Design Requirements

### *8.2.1 Subsurface Geotechnical Investigation by Design-Build Contractor*

Design-Build Contractor shall determine the specific locations, frequency, and scope of all subsurface geotechnical investigations, testing, research, and analyses Design-Build Contractor considers necessary to provide a safe and reliable roadway, pavement, foundation, structure, and other facilities for the Project.

Design-Build Contractor shall prepare, implement, maintain, and amend, as needed, Geotechnical Engineering Reports documenting the assumptions, conditions, and results of the geotechnical investigation and analysis, including the following:

a) The geology of the Project area, including soil and/or rock types, and drainage characteristics

b) Field investigations and laboratory test results used to characterize conditions. Field investigations shall include descriptions of the soil/rock, Texas Cone Penetration test results, Standard Penetration Test, and RQD for rock. If laboratory testing is required than the results shall include moisture content, plasticity index, gradations for each major soil strata change, levels of shrink/swell potential, levels of sulfate (on-site and borrow), soil compressibility, and short-term and long-term strength tests and properties

c) A discussion of conditions and results with reference to specific locations on the Project

d) Design and construction parameters resulting from the geotechnical investigation and analysis, including parameters for the design of pavements, pipes, large drainage structures, shoring, structures including retaining walls, slopes, utilities, and embankments

e) Slope stability analyses for embankment and excavation slopes including both short-term (undrained) and long-term (drained) conditions, and discussion of design measures undertaken to ensure stability and safety of all slopes. The design minimum factor of safety required for global facility of a slope will be in accordance with the TxDOT Geotechnical Manual. The analysis shall consider the potential for long-term surficial slide failures common to high plasticity clays in Texas, and specific recommendations shall be provided to minimize their occurrence

f) Plan view locations of field sampling, boring logs and other field data, laboratory test results, calculations, and analyses that support design decisions

The report shall:

a) Ensure that adequate investigation, testing, analysis, design, mitigative measures and construction planning are applied to assess and provide for the effects of swell pressures from expansive soil

and rock materials on foundations and earth retaining structures. They shall address all design features and facility characteristics that could affect expansive soil behavior.

b) Provide design and construction parameters derived from geotechnical investigation.

c) Assess the corrosion potential of the soil and rock materials and conditions that will be encountered, and the impacts to planned surface and subsurface facilities.

Each Geotechnical Engineering Report, upon completion and including any later supplements or amendments, shall be submitted to TxDOT for review and comment.

### *8.2.2 Pavement Design*

Table 8-1 contains the pavement sections to be used throughout the Project, unless approved otherwise. Proposed Typical Sections are provided in Attachment 8-1.

**Table 8-1: Pavement Sections**

| IH 30 from Sylvan Avenue to the West Levee | | | |
|---|---|---|---|
| **Roadway** | **Surface** | **Base** | **Subgrade** |
| Mainlanes* | 13" CRCP | 4" Ty B PG 64-22 HMAC | 10" Lime Treated Subgrade at 5% |
| Ramps* | 13" CRCP | 4" Ty B PG 64-22 HMAC | 10" Lime Treated Subgrade at 5% |
| Frontage Roads | 9" CRCP | 4" Ty B PG 64-22 HMAC | 6" Lime Treated Subgrade at 5% |
| City Streets | 9" CRCP | 4" Ty B PG 64-22 HMAC | 6" Lime Treated Subgrade at 5% |
| **IH 35E from Eighth Street to the West Levee** | | | |
| **Roadway** | **Surface** | **Base** | **Subgrade** |
| Mainlanes | 13" CRCP | 4" Ty B PG 64-22 HMAC | 6" Lime Treated Subgrade at 4% |
| Collector Distributors | 13" CRCP | 4" Ty B PG 64-22 HMAC | 6" Lime Treated Subgrade at 4% |
| Ramps | 13" CRCP | 4" Ty B PG 64-22 HMAC | 6" Lime Treated Subgrade at 4% |
| Frontage Roads | 8" CRCP | 4" Ty B PG 64-22 HMAC | 6" Lime Treated Subgrade at 4% |
| City Streets | 8" CRCP | 4" Ty B PG 64-22 HMAC | 6" Lime Treated Subgrade at 4% |
| **Mixmaster**** | | | |
| **Roadway** | **Surface** | **Base** | **Subgrade** |
| Mainlanes | 13" CRCP | 4" Ty B PG 64-22 HMAC | 13" Lime Treated Subgrade at 7% |
| Direct Connectors | 13" CRCP | 4" Ty B PG 64-22 HMAC | 13" Lime Treated Subgrade at 7% |
| Collector Distributors | 13" CRCP | 4" Ty B PG 64-22 HMAC | 13" Lime Treated Subgrade at 7% |
| Ramps | 13" CRCP | 4" Ty B PG 64-22 HMAC | 13" Lime Treated Subgrade at 7% |
| Frontage Roads | 8" CRCP | 4" Ty B PG 64-22 HMAC | 6" Lime Treated Subgrade at 7% |
| City Streets | 8" CRCP | 4" Ty B PG 64-22 HMAC | 6" Lime Treated Subgrade at 7% |

*IH 30 Mainlanes and Ramps' surface will also include a 1 1/2" Porous Friction Course on top of the 13" CRCP from the beginning of the project to the Beckley bridge approach slab.

** Mixmaster includes:

1. IH 30 from the East Levee to west of IH 45
2. IH 35E from the East Levee to South of Commerce Street

Alternative pavement designs may be proposed, but will be approved by TxDOT at its sole discretion. The following guidelines shall be used for proposed alternative pavement designs. The TxDOT *Pavement Design Guide* shall be the basis for all alternative pavement designs for the Project, and is supplemented with the requirements contained within this document as identified in the paragraphs in this section. Where there are conflicts between the requirements in these two documents, the requirements in this document shall take precedence.

The number of ESALs and/or the traffic volumes to be used in the pavement designs shall be those provided in Attachment 8-2. Lane distribution factors for both flexible and rigid pavement designs shall be applied in accordance with the following criteria:

**Table 8-2. Lane Distribution Factors**

| Total Number of Lanes in One Direction | Lane Distribution Factor |
|---|---|
| One or two lanes | 1.0 |
| Three lanes | 0.7 |
| Four or more lanes | 0.6 |

Design-Build Contractor should expect that subgrade materials will vary throughout the Project limits. Design-Build Contractor shall verify that the materials encountered or imported meet the Effective Modulus of Subgrade Reaction, modulus, or other design subgrade support value as utilized for the structural section design. If the site subgrade materials have a lower value than used for any alternative pavement designs, Design-Build Contractor shall submit an adjusted pavement design for review and acceptance by TxDOT.

If the Design-Build Contractor elects to propose an alternative pavement design, the Design-Build Contractor shall prepare separate pavement designs, as applicable, for the following:

a) Mainline and ramp pavements;

b) Frontage road pavements;

c) Cross-road pavements;

d) Service driveways and parking areas; and

e) Temporary pavement construction areas.

Pavement design report(s) shall document the assumptions, considerations, and decisions contributing to Design-Build Contractor's pavement designs, including the following:

a) Pavement design details by location, including structural layer materials, general specifications, and thicknesses;

b) Life-cycle cost analysis, including the periods for resurfacing, reconstruction, and other rehabilitation measures and what these activities are likely to entail;

c) Relevant pavement evaluation data (structural and functional) and condition information on adjacent roads;

d) Site conditions which might influence the design and performance of pavements;

e) Relevant geotechnical data and drainage requirements including boring logs, laboratory soil test results, and active or passive drainage system design;

f) Design criteria used in determining the pavement design(s), including traffic loads, pavement material characterization, environmental conditions, and pavement design life; and

g) Other considerations used in developing the pavement design(s), including subgrade preparations and stabilization procedures.

h) User cost analysis associated with preventive maintenance, rehabilitation, and reconstruction work zones.

Design-Build Contractor shall submit the following to TxDOT for review:

a) Pavement Design Reports including any later supplements or amendments;

b) Verification of alternative pavement thickness designs;

c) Traffic Control Plans associated with subsurface geotechnical or pavement investigations;

d) A list of all geotechnical and pavement design software proposed for use; and

e) Verification plan for effective modulus of subgrade reaction.

#### 8.2.2.1 Methodology Enhancements

Recognizing that the development of pavement design methods, products, and procedures are under continuous enhancement within the pavement community, the Design-Build Contractor and TxDOT understand that new methods, procedures, and products may present opportunities for improved pavement design and management during the time frame of this Contract. Both parties mutually agree to consider the use of new design technologies provided that any such technologies and methods are agreed to by the Design-Build Contractor and approved by TxDOT in writing prior to final implementation.

#### 8.2.2.2 Related Pavement Materials Specifications

Unless otherwise specified herein, pavement material requirements are defined in the most current version of the TxDOT *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* (hereafter referred to as the TxDOT *Standard Specifications*) and per special provisions as provided these DBA Documents. Test procedures identified herein shall be the most current version identified in the Materials Test Procedures, AASHTO or ASTM standards or equivalent guidance as approved or provided by TxDOT.

#### 8.2.2.3 Pavement Type Selection

The following requirements shall be incorporated into the alternative pavement selection and design:

***Mainline Pavement.*** In the case of rigid pavement selection, only Continuously Reinforced Concrete Pavement (CRCP) pavement is acceptable for the mainline pavement.

***Shoulders.*** Pavement for the shoulders of all roadways shall be the same section (materials and depths) as the adjacent roadway pavement.

***Ramp Pavement.*** Ramp pavements shall be constructed with the same section (materials and depths) as the adjacent mainline pavement.

***Facility Access Parking.*** Facility access parking areas shall be Concrete Pavement Contraction Design (CPCD) with a minimum concrete thickness of eight (8) inches unless otherwise specified by the Owner.

##### 8.2.2.3.1 **Rigid Pavement**

***Design Specification***. Rigid pavement shall be designed in accordance with the TxDOT's *Pavement Design Guide* using the design inputs as summarized in the table below.

**Table 8-3. Rigid Pavement Design Inputs**

| | |
|---|---|
| 28 day Concrete Modulus of Rupture, psi | 620 |
| 28 day Concrete Elastic Modulus, psi | 5,000,000 |
| Effective Modulus of Subbase/Subgrade Reaction, psi/inch | 300 psi/inch max. |
| Serviceability Indices<br>▪ Initial Serviceability Index<br>▪ Terminal Serviceability Index | <br>4.5<br>2.5 |
| Load Transfer Coefficient | * |
| Drainage Coefficient | ** |
| Overall Standard Deviation | 0.39 |
| Reliability % | 95 |
| Design Traffic, 18 Kip Equivalent Single Axle Load (ESAL) | Attachment 8-2 |
| * Table 8-1, *TxDOT Pavement Design Guide, Revised January 2011*<br>** Table 8-2, *TxDOT Pavement Design Guide, Revised January 2011* | |

***Performance Life Requirements.*** The initial pavement structure shall be designed and analyzed for a performance period of 30 years.

***Effective Modulus of Subgrade Reaction***. The Effective Modulus of Subgrade Reaction (k in psi/in) is to be used for design and the value to be achieved at all times during construction activities.

***Potential Vertical Rise (PVR)***. Design-Build Contractor shall design the overall subgrade and pavement structure to have a PVR no greater than 1.0 inch as calculated in accordance with TEX-124-E from soil tests in a soil column 15 feet deep as measured from the proposed finished pavement grade. Alternatively, provide materials that result in an Effective Plasticity Index (PI) of less than 25 when calculated to a depth of 8 feet from finished pavement surface for mainline pavements, and to a depth of 7 feet from finished pavement surface for non-mainline pavements. Calculation and sampling requirements for determination of Effective PI are stated in Section 8.3.1 *Pavement Material Requirements*.

8.2.2.3.2 **Flexible Pavement**

***Design Methodology.*** For flexible pavement design, the Design-Build Contractor shall use the TxDOT online *Pavement Design Guide*. The pavement designs shall utilize either the TxDOT FPS 21 procedure or the 1993 *AASHTO Guide for the Design of Pavement Structures* and the latest version of the DARWin computer program, approved by AASHTO. All pavement thickness designs shall be checked using the Modified Texas Triaxial Class design method, and other analyses techniques necessary to prevent premature failure from rutting and fatigue.

***Performance Life Requirements.*** The design life for the Project will be based on the following:

a) *Mainline and Ramps.* A design life of 30 years shall be used with an initial performance period of at least 15 years.

b) *Frontage Road and Cross Roads.* A design life of 30 years shall be used with an initial performance period of 12 years when projected traffic loads are less than 1 million ESALs and 15 years for more than 1 million ESALs.

***Potential Vertical Rise***. Design-Build Contractor shall design the overall subgrade and pavement structure to have a PVR no greater than 1.5 inch for mainline and 1.5 inches for non-mainline pavements as calculated in accordance with Tex-124-E from soil tests in a soil column 15 feet deep as measured from the proposed finished pavement. Alternatively, provide materials that result in an Effective Plasticity Index of less than 25 when calculated to a depth of 8 feet from finished pavement surface for mainline and to a depth of 7 feet from finished pavement surface for non-mainline pavements. Calculation and sampling requirements for determination of Effective PI are stated in Section 8.3.1 *Pavement Material Requirements*.

***Design Modulus***. The Design-Build Contractor shall establish the design modulus using laboratory resilient modulus tests conducted on representative samples of the soils supporting the pavement structures. This design modulus shall be used for either the FPS 21 or AASHTO design procedures, and shall not exceed the Effective Resilient Modulus as described below. Design moduli shall be determined for other pavement layers where the maximum value does not exceed values established from methods and criteria stated below. Design moduli determined from methods identified are irrespective of the pavement design method used, where the material is placed in the pavement structure, and depth of the layer. When it is in the interest of TxDOT to use alternative methods for determining material moduli proposed by the Design-Build Contractor, justification and documentation shall be provided to demonstrate that an equivalent pavement structure will be provided.

***(a) Effective Resilient Modulus (MR).*** Effective Resilient Modulus testing is only applicable to subgrade materials; that is, natural subgrade or materials imported as embankment and are not stabilized. Determine the MR using the AASHTO laboratory test method T307 for subgrade soil samples over the Project, or segments of the Project, with an adjustment of test results for seasonal variations, per AASHTO *Guide for the Design of Pavement Structures, 1993*. Only load sequence number 7 of 15 (4 psi confining pressure, 4 psi maximum axial stress for Type 2 materials; 10 psi confining pressure, 10 psi maximum axial stress for Type 1 materials) will be used to determine the test result.

Where multiple layers of material are present, MR shall be determined for the predominant soil within three feet in depth from the finished pavement subgrade elevation. Where rock is the predominant subgrade and MR determination is not practical, a maximum MR of 25,000 psi may be assumed.

Run tests on samples at optimum moisture content (OMC), 2% dry of OMC, and 2% wet of OMC. Optimum moisture content shall be determined by the appropriate TxDOT compaction procedure; molding shall be governed by the appropriate method for the material tested as identified in AASHTO T307.

Distribute MR values as shown in Table 8-4 for the region in which the Design-Build Contractor will be constructing the project. Determine which distribution to apply by selecting the rainfall range appropriate for the project location from Figure 8-1.

**Table 8-4. Regional distribution of months used to determine Effective Resilient Modulus.**

| Region | Annual Rainfall Range | Moisture Content Weighting in Months | | |
|---|---|---|---|---|
| | | - 2% OMC | @ OMC | + 2% OMC |
| 1 | 0 – 12 | 6 | 4 | 2 |
| 2 | 12 – 24 | 4 | 4 | 4 |
| 3 | 24 – 36 | 2 | 5 | 5 |
| 4 | 36 – 48 | 2 | 4 | 6 |
| 5 | 48 – 56 | 0 | 3 | 9 |

***(b) Unbound Base and Subbase*** Only material meeting the definition of Unbound Base in Section 8.3.1 will be considered; all other unbound materials used as a pavement layer that do not meet this definition shall be considered subgrade/embankment. For materials meeting the requirements of Item 247, TxDOT *Standard Specifications*, the design modulus shall not exceed three times the Effective Resilient Modulus for the layer immediately below the unbound base or subbase layer, and shall not exceed 75,000 psi.

***(c) Stabilized Base***. Stabilized base materials shall meet the requirements of Stabilized Base in Section 8.3.1, or shall be considered a subgrade or subbase material that may require stabilization. The design moduli of stabilized base materials shall be established by the greater of: (a) the ratio of stress to strain in a near-linear portion of the loading curve during UCS testing, or (b) ten times the Effective Resilient Modulus for subgrade, whichever is greater. Refer to Table 8-4 for asphalt stabilized base moduli.

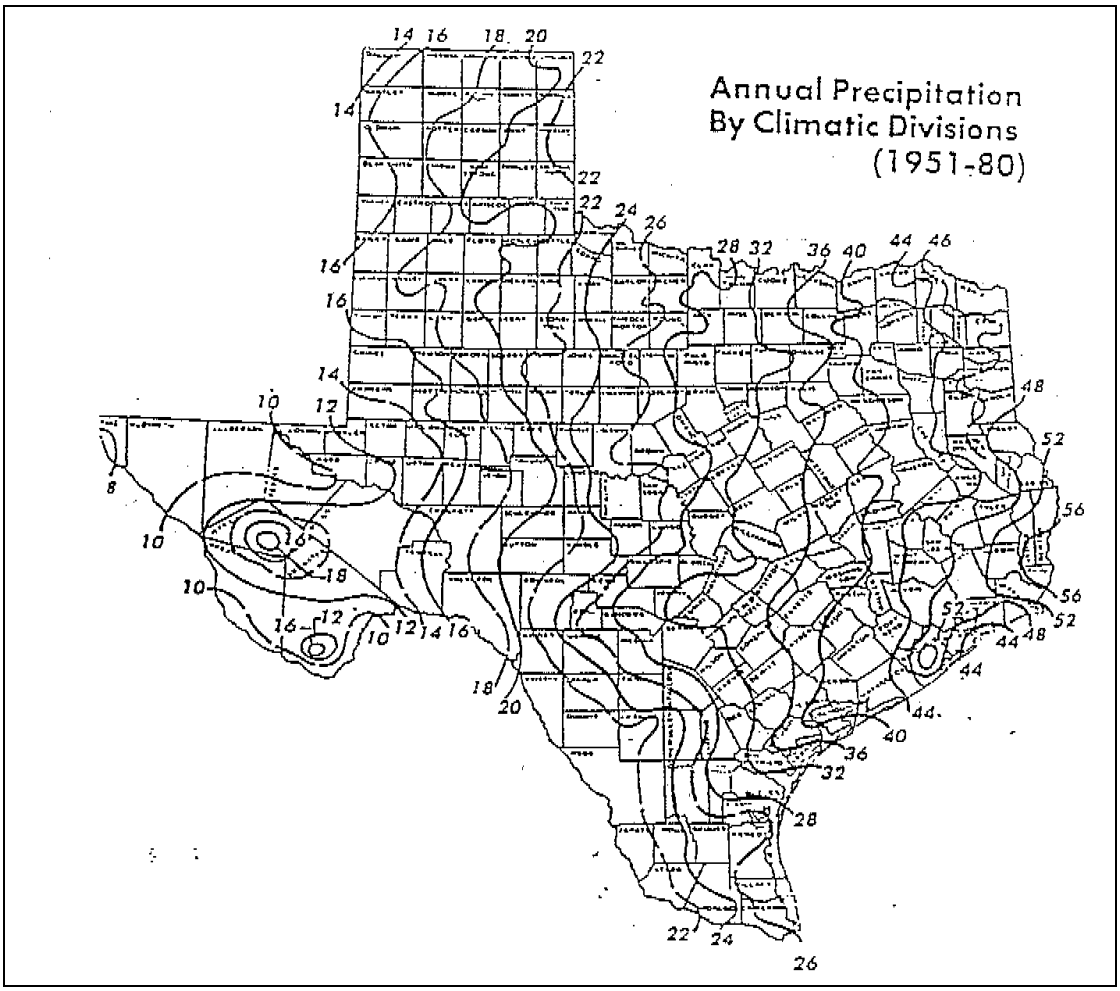


**Figure 8-1. Rainfall graph for determining regional soil testing requirements**

**(d)** ***Stabilized Subbase and Stabilized Subgrade*****.** Materials shall meet the requirements of Subbases in Section 8.3.1 or the material shall be regarded as subgrade material and may be subject to MR measurements. Stabilized subgrade and stabilized subbases may be incorporated as a structural layer and shall have a design modulus equal to the greater of: (a) the ratio of stress to strain in a near linear portion of the loading curve during UCS testing, or (b) two times the value of the Effective Resilient Modulus of the subgrade.

**(e)** ***Design Structural Values.*** Use Table 8-5 for structural material design values. For materials not listed, provide documented testing establishing the design value appropriate for the design procedure being used.

**Table 8-5. Design Structural Values**

| Material Type | 2004 Specification | Maximum Modulus for FPS 21 | AASHTO layer coefficient (max.) |
|---|---|---|---|
| Dense-Graded Hot Mix Asphalt | Item 341 | Combined HMA thickness:<br>≤8" use 500ksi<br>> 8.0" use 650ksi | <br>0.44<br>0.45 |
| Permeable Friction Course | Item 342 | 300 ksi | 0.30 |
| Performance Design Mixtures | Item 344 | Combined HMA thickness:<br>≤ 6.0" use 650ksi<br>6"<T≤8" use 700ksi<br>> 8.0" use 850ksi<br>RBL: 350ksi | <br>0.45<br>0.46<br>0.47<br>RBL: 0.40 |
| Stone-Matrix Asphalt | Item 346 | Same as Item 344 | Same as Item 344 |
| Unbound Base | Item 247, Grade 1 | *75ksi | 0.14 |
| Stabilized Base<br>▪ Cement<br>▪ Asphalt | <br>Items 275 and 276<br>Item 292 | <br>**200ksi<br>350 ksi | <br>0.16<br>0.34 |
| Stabilized Subgrade or Sub-base<br>▪ Hydrated Lime<br>▪ Cement | <br>Item 260<br>Item 275 | <br>*30ksi<br>*30ksi | <br>0.12<br>0.12 |

*Item 340 will not be allowed for any permanent HMA pavement.

** Maximum design values.

***Poisson's Ratio.*** Use 0.20 for cement stabilized or fly ash stabilized materials meeting the requirements of Items 275, 276 and 265 as defined in the most recent edition of the TxDOT *Standard Specifications*. Use 0.35 for all other materials not identified in the aforementioned Items; except for subgrade or embankment/fill materials, use 0.4.

***Truck Volumes.*** The percentage of truck traffic as well as the annual growth percentage in truck volumes shall be those which are provided in Attachment 8-2.

***Initial ADT and 20-yr projected ADT.*** The Initial ADT is the projected ADT when the Project is opened for public access is provided in Attachment 8-2. The ADT projected to occur 20 years after the Project is opened to public access is provided in Attachment 8-2.

***Initial Serviceability Index.*** The initial serviceability index for Mainline pavements and Collector-Distributor pavements on this Project shall be 4.5. Frontage road pavements shall use an initial serviceability index of 4.2.

***Serviceability Index (SI) after Overlay.*** The SI after overlay shall be 4.0.

***Terminal (Minimum Acceptable) Serviceability Index.*** The terminal serviceability index at the end of any performance period for this Project shall be 3.0 (mainline and frontage roads).

***Serviceability Index After a Structural Overlay (FPS design only).*** Where no level up course of HMA is placed prior to a single lift HMA overlay, use 4.0. Where a level up used or multiple HMA lifts, use 4.2.

***Design Reliability or Confidence Level.*** The reliability factor shall be 95% for mainline, ramps, frontage roads and cross roads.

***Maximum Period of Overlay.*** The maximum planning period for any overlay following the initial performance period of this Project shall not exceed 15 years. The minimum period shall be 8 years.

***Overall Standard Deviation (AASHTO design only).*** Use 0.49.

## 8.3 Construction Requirements

### *8.3.1 Pavement Materials Requirements*

The Design-Build Contractor shall incorporate the following requirements into the preparation of any alternative pavement designs, plans, quality control and quality assurance programs, and the field construction procedures. Subject to approval by TxDOT, alternate material specifications and construction requirements may be proposed by the Design-Build Contractor provided the objectives of the Project are met and an equivalent pavement structure is provided.

***Subgrade Material Composition.*** Design-Build Contractor shall furnish earth embankment that is mainly composed of material other than shale and material that is free from vegetation or other objectionable material. Material that is used in the top 10 feet of embankment that supports the pavement structure must meet the following requirements: maximum PI of 40 and minimum PI of 8.

The Design-Build Contractor shall analyze subgrade material composition, design the pavement structure, and perform necessary construction procedures to eliminate soluble sulfate induced heave. When soluble sulfates may present a potential for a reaction detrimental to the pavement structure, Design-Build Contractor shall submit alternate designs and/or construction procedures for TxDOT approval.

Furnish material containing sulfate at or below the threshold of 5000 parts per million (ppm). For material with sulfate levels greater than 3000 ppm, allow the mixture to mellow for at least three days, or as directed. Use the TxDOT "Guidelines for Treatment of Sulfate-Rich Soils and Bases in Pavement Structures" to assist with testing and detection and construction practices. No soil shall have additives introduced to such material that would cause a detrimental reaction to the pavement structure or its ride quality as measured by the International Roughness Index (IRI).

***Effective Plasticity Index (PI).*** The same method of determining Effective PI shall be used for both design and verification of design. Design-Build Contractor shall determine the Effective PI for unstabilized subgrade to the depth specified below finished pavement surface. The Effective PI shall be determined, using Tex-106-E, via a process that proportionately accounts for the plasticity contribution of the soil binder (material passing the #40 sieve) for each individual one foot layer, or portion thereof, to the depth specified. The Effective PI is ultimately a weighted average of the Plasticity Indices of the

material in the soil column analyzed. For example, the sum of all PI measurements representative of each one foot deep sample tested divided by the total depth designated by the pavement type. Use soil to the depth of eight (8) feet for mainline pavements and seven (7) feet for non-mainline pavements for calculation of Effective PI. Concrete, hot mix asphaltic concrete, stabilized base courses, granular base, and stabilized subgrade/embankment are considered to be non-swelling with no PI. Stabilized materials shall meet material requirements stated herein.

***Unbound Base.*** Provide the appropriate unbound base as recommended in the TxDOT Pavement Design Guide. A minimum placement thickness of six (6) inches is required.

***Stabilized Base.*** Stabilized base may either be modified with chemical additives or asphaltic binders. Materials to be stabilized shall meet the requirements of either Grade 1, Grade 2, or Grade 5 base as defined by Item 247 of the TxDOT *Standard Specifications* or appropriate special provisions, and shall have a minimum thickness of six (6) inches. Asphalt stabilized base material will meet the requirements of Item 292 of the TxDOT *Standard Specifications*. When chemical additives are used to stabilize base, Table 5 will be used to determine the stabilizer content. Stabilized base will be designed to achieve the unconfined compressive strength shown in Table 8-6 immediately following a 10-day capillary moisture conditioning. Moisture conditioning will be conducted in a similar method as that used in TEX-121-E.

**Table 8-6. Minimum and maximum retained unconfined compressive strength values to be achieved when using chemical additives for stabilization, by pavement type.**

| Pavement Type | Minimum UCS (psi) | Maximum UCS (psi) |
|---|---|---|
| Flexible Pavement | 300 | 500 |
| Rigid Pavement | 500 | 750 |

***Subbases.***

a) ***Granular Materials***. Materials classified by the Unified Soil Classification System as any of the following: GP, GM, SW, SP, SM, SC, ML, shall be stabilized if present within 30 inches of the finished pavement surface. The aforementioned materials may be used as a subbase and included as a structural layer when stabilized and meet the requirements of stabilized subbase as defined herein. These materials shall be stabilized, when required, to achieve a minimum layer thickness of 6 inches. Untreated granular base meeting the requirements of Item 247, Grade 1 or 2 may replace these materials without restriction.

b) ***Stabilized Subbase.*** Materials not included in Granular Materials above, do not meet the requirements of Item 247, TxDOT Standard Specifications, or materials that have a Plasticity Index (PI) value less than 25, may be stabilized and used as a structural layer. For structural layers, provide a minimum 6-inch thickness of compacted material. Stabilized subbase materials shall be designed to achieve not less than 100 psi unconfined compressive strength immediately following a 10-day capillary moisture conditioning. Moisture conditioning will be conducted in a similar method as that used in TEX-121-E. These materials shall be designed as defined in test methods used for the selected additive.

c) ***Stabilized Subgrade.*** If subgrade stabilization is used for purposes of providing a working platform then no structural benefits can be claimed and the stabilized subgrade shall not be included in the pavement design. For structural layers, provide a minimum 6-inch thickness of compacted material. If a structural layer is required, design and mold subgrade material with the desired additive using the TxDOT test method appropriate for the additive incorporated. The design shall achieve not less than 100 psi unconfined compressive strength immediately

following a 10-day capillary moisture conditioning conducted in a method similar to that used in TEX-121-E.

***Underseal.*** The Design-Build Contractor shall place a one (1) course surface treatment as an underseal directly on top of any untreated or treated base layer and/or prior to all hot mix asphalt concrete overlays.

***Base Course.*** The base course for all roadways utilizing flexible pavement design shall meet the requirements of Item 341 for regular dense-graded mixes, and Item 346 for Stone Matrix Asphalt (SMA) mixes. Item 340 will not be allowed for any permanent HMA pavement.

***Surface Course.*** The surface course for all roadways utilizing flexible pavement design shall be a minimum of 2 inches of asphaltic concrete pavement.

***Mix Selection.*** Where flexible pavement structures are selected, the final surface mix for mainline lanes and ramps shall be Stone Matrix Asphalt (SMA) meeting the requirements of Item 346 or a Permeable Friction Course (PFC) meeting the requirements of Item 342. Base course mixes underneath PFC final surface course mixes shall be SMA. The final surface mix for frontage roads and cross roads shall be Stone Matrix Asphalt (SMA) meeting the requirements of Item 346 when the combined HMA thickness is greater than 6.0 inches, or a regular dense-graded mix Type C or Type D meeting the requirements of Item 341 when the combined HMA thickness used is less than 6.0 inches.

### *8.3.2 Construction Verification*

***General.*** The independent Construction Quality Assurance Firm (CQAF) shall perform the Design-Build Contractor's quality acceptance. The construction verification tasks described below are part of the CQAF quality acceptance efforts.

***Effective Modulus of Subgrade Reaction.*** The Design-Build Contractor shall verify that the design effective modulus of subgrade reaction has been achieved through the field construction activities. This verification process shall include field sampling and testing activities designed to provide confirmation of the design effective modulus of subgrade reaction. This verification process shall be described in a plan that includes, but not limited to, the verification methodology, example calculations, reference documents, and frequency of field sampling and testing. The Design-Build Contractor shall submit this verification plan to the TxDOT for review and comment.

***Effective Resilient Modulus (MR).*** The Design-Build Contractor shall provide subgrade modulus verification testing in accordance with AASHTO T307. Retrieve a randomly selected verification sample at a minimum rate of one sample (three replicates per sample) for each 2500 linear feet of roadbed; where the roadbed has a dimensioned width greater than 100 feet, one additional sample will be collected and tested. Frontage and other access roads are sampled and tested independently if more than 100 feet separates the roadbeds or are not parallel to the mainline alignment. Additional samples shall also be taken at each location where a significant and recognizable change in subgrade material (a change in USCS classification) is encountered during grading operations.

Where multiple layers of material are present, MR shall be determined for the representative soil within three feet in depth from the finished pavement subgrade elevation. Where rock is the predominant subgrade and MR determination is not practical, a maximum MR of 25,000 psi may be assumed.

Regardless of the position of the layer or material sampled and tested, use only the AASHTO T307 load sequence number 7 of 15 for verification testing (4 psi confining pressure, 4 psi maximum axial stress for Type 2 materials; 10 psi confining pressure, 10 psi maximum axial stress for Type 1 materials). The MR results from this testing shall be compared to the Effective MR selected for use in designing the pavement structure, to confirm that the material meets the design criteria. If the materials fail to meet the criteria, Design-Build Contractor shall be responsible to take corrective action that is acceptable to the TxDOT.

***Effective Plasticity Index (PI).*** The Design-Build Contractor shall demonstrate to TxDOT that the specified design requirements are met by randomly selecting at least one location per 2,500 linear feet of roadbed and shall sample the subgrade materials to a depth below finished pavement surface as designated by the pavement design. Mainline roadbeds, ramps, and frontage roadbeds are considered independently. Sampling shall also take place when a recognizable change in the subgrade material is encountered during grading operations as determined by a change in Unified Soil Classification System classification.

The Design-Build Contractor shall provide for the testing of these materials in accordance with Tex-106-E to determine the Effective PI. The results shall be compared to design requirements to confirm that the strata meet the design criteria. If the materials fail to meet the criteria, Design-Build Contractor shall be responsible to take corrective action that is acceptable to TxDOT.

***Smoothness Specification.*** Smoothness of the pavement constructed shall conform to the requirements of TxDOT Item 585, Ride Quality for Pavement Surfaces, amended as cited below:

- *Article 585.3D.* Acceptance Plan and Pay Adjustments. The entire section is voided and replaced by the following:

  TxDOT will evaluate profiles based on the CQAF test results to determine acceptance and corrective action. Corrective action acceptable to TxDOT is required, at Design-Build Contractor's sole expense, for any 0.1-mile section that measures an average IRI in excess of 75 inches per mile for rigid pavements, or in excess of 65 inches per mile for flexible pavements. After making corrections, re-profile the pavement section to verify that corrections have produced the required improvements.

  Use diamond grinding or other methods approved by TxDOT to correct surface areas that have more than 1/8 inch variation between any two contacts on a 10-foot straightedge. Use diamond grinding or other approved methods to remove localized roughness as determined using an inertial profiler in accordance with TEX-1001-S. For asphalt concrete pavements, fog seal the aggregate exposed from diamond grinding.

- *Article 585.4.* Measurement and Payment. The entire section is voided.

# 9 LAND SURVEYING

## 9.1 General Requirements

Design-Build Contractor shall provide accurate and consistent land surveying and mapping necessary to support ROW acquisition, design, and construction of the Project.

Design-Build Contractor shall review existing survey data and determine the requirements for updating or extending the existing survey and mapping data. Design-Build Contractor is responsible for the final precision, accuracy, and comprehensiveness of all survey and mapping.

## 9.2 Administrative Requirements

### *9.2.1 Standards*

Design-Build Contractor shall ensure that all surveying conforms to the *General Rules of Procedures and Practices* of the Texas Board of Professional Land Surveying. Design-Build Contractor shall ensure that any person in charge of a survey field party is proficient in the technical aspects of surveying.

### *9.2.2 Right-of-Entry*

Design-Build Contractor shall secure written permission prior to entering any private property outside the ROW. It shall be Design-Build Contractor's sole responsibility to negotiate this permission and Design-Build Contractor shall be responsible for any and all damages and claims resulting from that ingress. Proper documentation of right-of-entry shall be maintained at all times by Design-Build Contractor.

### *9.2.3 Survey by TxDOT*

In performing surveys for other adjoining projects, TxDOT may need to verify and check Design-Build Contractor's survey work. Design-Build Contractor shall coordinate with TxDOT Design-Build Contractor's planned construction activities. Design-Build Contractor shall notify TxDOT within two (2) Business Days if TxDOT stakes and marks are altered or disturbed.

## 9.3 Design Requirements

### *9.3.1 Units*

All survey Work shall be performed in the U.S customary units system of measurement. Work shall conform to state plane coordinates. The surface adjustment factor for the Project is 1.000136506.

### *9.3.2 Survey Control Requirements*

Design-Build Contractor shall base all additional horizontal and vertical control on the Level 2 and Level 3 control provided by TxDOT.

Design-Build Contractor shall establish and maintain additional survey control as needed and final ROW monumentation throughout the duration of the Project. Design-Build Contractor shall tie any additional horizontal and vertical control for the Project to the TxDOT-supplied Primary (Level 2) or Secondary (Level 3) control network. If Design-Build Contractor chooses to use GPS methods, Design-Build Contractor shall meet the accuracy of the appropriate level of survey as defined in the TxDOT *GPS User's Manual* and shall utilize the primary survey control to be provided by TxDOT.

If Design-Build Contractor chooses to use Global Positioning System (GPS) methods, it shall utilize the primary survey control provided by TxDOT.

Design-Build Contractor shall establish and maintain a permanent survey control network. The control network should consist of, at a minimum, monuments set in intervisible pairs.

Monuments shall be TxDOT bronze survey markers installed in concrete and marked as directed by the most current edition of the TxDOT Survey Manual. Design-Build Contractor shall replace all existing survey monuments and control points disturbed or destroyed during execution of the Work. Design-Build Contractor shall make all survey computations and observations necessary to establish the exact position of all other control points based on the primary control provided.

Design-Build Contractor shall deliver to TxDOT a listing of all primary and secondary control coordinate values, original computations, survey notes, and other records, including GPS observations and analysis made by Design-Build Contractor as the data are available.

### *9.3.3 Conventional Method (Horizontal & Vertical)*

If Design-Build Contractor chooses to use conventional methods to establish additional horizontal control, Design-Build Contractor shall meet the accuracy of the appropriate level of survey as defined in the following tables.

#### 9.3.3.1 Horizontal Accuracy Requirements for Conventional Surveys

Horizontal control is to be established (at a minimum) on the Texas State Plane Coordinate System NAD 83.

**Table 9-1. Horizontal Accuracy Requirements**

| | Level 3 | Level 4 | Remarks and Formulae |
|---|---|---|---|
| Error of Closure | 1: 50,000 | 1:20,000 | Loop or between monuments |
| Allowable Angular Closure | ± 3" $\sqrt{N}$ | ± 8" $\sqrt{N}$ | $N$= number of angles in traverse |
| Accuracy of Bearing in Relation to Course * | ± 04” | ± 10” | Maximum for any course |
| Linear Distance Accuracy (Minimum Length of Line) | 1: 50,000 (2,500 feet) | 1: 20,000 (1,000 feet) | |
| Positional Tolerance of Any Monument | *AC*/50,000 | *AC*/20,000 | *AC* = length of any course in traverse |
| Adjusted Mathematical Closure of Survey (No Less Than) | 1:200,000 | 1:200,000 | |

* TxDOT policy requires all bearings or angles be based on the following source: Grid bearing of the Texas Coordinate System of 1983, with the proper zone and epoch specified.

#### 9.3.3.2 Vertical Accuracy Requirements for Conventional Surveys

Vertical control shall be established (at a minimum) on the North American Vertical Datum of 1988 (NAVD 1988).

**Table 9-2. Vertical Accuracy Requirements**

| | 1st ORDER | 2nd ORDER | 3rd ORDER | REMARKS AND FORMULAE |
|---|---|---|---|---|
| Error of Closure | 0.013 feet $\sqrt{K}$ | 0.026 feet $\sqrt{K}$ | 0.039 feet $\sqrt{K}$ | Loop or between control monuments |
| Maximum Length of Sight | 250 feet | 300 feet | | With good atmospheric conditions |
| Difference in Foresight and Backsight Distances | ±10 feet | ±20 feet | ±30 feet | Per instrument set up |
| Total Difference in Foresight and Backsight Distances | ±20 feet. per second | ±50 feet per second | ±70 feet per second | Per total section or loop |
| Recommended Length of Section or Loop | 2.0 miles | 3.0 miles | 4.0 miles | Maximum distance before closing or in loop |
| Maximum Recommended Distance Between Benchmarks | 2000 feet | 2500 feet | 3000 feet | Permanent or temporary benchmarks set or observed along the route |
| Level Rod Reading | ± 0.001 foot | ± 0.001 foot | ± 0.001 foot | |
| Recommended Instruments and Leveling Rods | Automatic or tilting w/ parallel plate micrometer precise rods | Automatic or tilting w/ optical micrometer precise rods | Automatic or quality spirit standard, quality rod | When two or more level rods are used, they should be identically matched |
| Principal Uses | Broad area control, subsidence or motion studies jig & tool settings | Broad area control, engineering projects basis for subsequent level work | Small area control, drainage studies, some construction and engineering | |

### *9.3.4 Right-of-Way Surveys*

Design-Build Contractor shall base all surveys on the horizontal and vertical control network provided by TxDOT.

#### 9.3.4.1 Accuracy Standard

In performing right-of-way surveys consisting of boundary locations, Design-Build Contractor shall meet the accuracy standards of the appropriate level of survey as defined in Table 9-3.

**Table 9-3. Chart of Tolerances**

| | URBAN / RURAL | URBAN BUSINESS DISTRICT | REMARKS AND FORMULAE |
|---|---|---|---|
| Error of Closure | 1:10,000 | 1:15,000 | Loop or between Control Monuments |
| Angular Closure | 15" $\sqrt{N}$ | 10" $\sqrt{N}$ | $N$ = Number of Angles in Traverse |
| Accuracy of Bearing in Relation to Source * | 20 " | 15 " | Sin $\alpha$ = denominator in error of closure divided into 1 (approx.) |
| Linear Distance Accuracy | 0.1 foot per 1,000 feet | 0.05 foot per 1,000 feet | Sin $\alpha$ x 1000 (approx.) where ± = Accuracy of Bearing |
| Positional Error of any Monument | *AC*/10,000 | *AC*/15,000 | *AC* = length of any course in traverse |
| Adjusted Mathematical Closure of Survey (No Less Than) | 1:50,000 | 1:50,000 | |

* TxDOT policy requires all bearings or angles be based on the following source: Grid bearing of the Texas Coordinate System of 1983, with the proper zone and epoch specified.

### *9.3.5 Survey Records and Reports*

Design-Build Contractor shall produce a horizontal and vertical control report including coordinate listing, maps showing control, preparation of standard TxDOT data sheets for all primary control, monument description and location description of all primary and secondary survey control points installed, marked and referenced along with a listing of the existing control used to create the installed control points. Control from adjoining, incorporated, or crossed roadway projects, which are currently in design, will be located and a comparison of the horizontal and vertical values will be shown. Design-Build Contractor shall provide survey records and reports to TxDOT upon request.

Design-Build Contractor may use an electronic field book to collect and store raw data. Design-Build Contractor shall preserve original raw data and document any changes or corrections made to field data, such as station name, height of instrument, or target. Design-Build Contractor shall also preserve raw and corrected field data in hardcopy output forms in a similar manner to conventional field book preservation.

Field survey data and sketches that cannot be efficiently recorded in the electronic field book shall be recorded in a field notebook and stored with copies of the electronic data.

All field notes shall be recorded in a permanently bound book. (Loose leaf field notes will not be allowed.) Design-Build Contractor shall deliver copies of any or all field notebooks to TxDOT upon request.

## 9.4 Deliverables

### *9.4.1 Survey Records*

Design-Build Contractor shall deliver to TxDOT, for its review and acceptance, a listing of all primary, secondary control coordinate values, original computations, survey notes and other records including GPS observations and analysis made by Design-Build Contractor within ninety (90) days of Final Acceptance.

### *9.4.2 Final ROW Surveying and Mapping*

Design-Build Contractor shall coordinate with TxDOT regarding the assignment of right-of-way Control Section Job (CSJ) numbers for each new mapping project.

The documents produced by the Surveyor, or the Surveyor's subcontractors, are the property of TxDOT, and release of any such document must be approved by TxDOT. All topographic mapping created by Design-Build Contractor shall be provided to TxDOT in digital terrain model format using the software and version thereof being used by TxDOT at the time the mapping is developed.

### *9.4.3 ROW Monuments*

Upon final submittal of the ROW documents to TxDOT, Design-Build Contractor shall set, using permanent and stable monuments as defined in Section 663.17 of the General Rules of Procedures and Practices of the Texas Board of Professional Land Surveying (TBPLS), all significant points along all ROW lines of the Project including the following:

a) Points of curvature (PCs);

b) Points of tangency (PTs);

c) Points of intersection (PIs);

d) Points of compound curvature (PCCs);

e) Points of reverse curvature (PRCs);

f) All intersecting crossroad ROW lines and all property line intersections with the ROW line. These monuments shall be ½-inch iron rods, driven just below surface level, capped by a TxDOT-labeled aluminum cap (rod-and-cap monument); and

g) All beginning and ending points of Control of Access (Denied) lines.

Upon completion of the ROW acquisition and all construction work, such that the final ROW lines will not be disturbed by construction, Design-Build Contractor shall replace all rod-and-cap monuments located on the final ROW line at all points of curvature (PCs), points of tangency (PTs), points of intersection (PIs), points of compound curvature (PCCs), and points of reverse curvature (PRCs), and all intersecting crossroad ROW lines, with TxDOT Type II monuments (constructed according to current TxDOT specifications). Design-Build Contractor shall monument with a TxDOT Type II monument all final ROW lines where the distance between such significant ROW line points exceeds 1500 feet. ROW line intersections with property lines shall remain monumented by a ½-inch iron rod with a TxDOT aluminum cap (rod-and-cap monument).

Design-Build Contractor shall purchase all materials, supplies, and other items necessary for proper survey monumentation.

### *9.4.4 Record Drawings and Documentation*

Design-Build Contractor shall submit the following as part of the Record Drawings and as a condition of Final Acceptance:

a) A listing of all primary and secondary control coordinate values, original computations and other records including Global Positioning System (GPS) observations and analysis made by Design-Build Contractor

b) Copies of all survey control network measurements, computations, unadjusted and adjusted coordinate and evaluation values; and

c) Survey records and survey reports.

Design-Build Contractor shall produce reports documenting the location of the as-built alignments, profiles, structure locations, Utilities, and survey control monuments. These reports shall include descriptive statements for the survey methods used to determine the as-built location of the feature being surveyed. Design-Build Contractor's as-built data shall include the coordinate types (x, y, and/or z) and feature codes in the same format in which the preliminary construction data was generated. Where data has been provided to Design-Build Contractor from TxDOT in an x, y, z only coordinate format, or z only coordinate format, Design-Build Contractor shall provide TxDOT with data in an x, y, z only coordinate format or z only coordinate format.

# 10 GRADING

## 10.1 General Requirements

Design-Build Contractor shall conduct all work necessary to meet the requirements of grading, including clearing and grubbing, excavation and embankment, removal of existing buildings, pavement and miscellaneous structures, subgrade preparation and stabilization, dust control, aggregate surfacing and earth shouldering, in accordance with the requirements of this Section 10.

Except where expressly provided in the Technical Provisions, Design-Build Contractor shall demolish or abandon in place, all existing structures within the Project ROW, including but not limited to, pavements, bridges, and headwalls that are no longer required for service, or are required to be treated as described in Section 4 (Environmental). Any features that are abandoned in place shall be removed to at least two (2) feet below the final finished grade or one (1) foot below the pavement subgrade and drainage structures. Design-Build Contractor shall ensure that abandoned structures are structurally sound after abandonment.

## 10.2 Preparation within Project Limits

Design-Build Contractor shall develop, implement, and maintain, for the Term, a Demolition and Abandonment Plan that considers types and sizes of Utilities and structures that will be abandoned during the Term. The plan shall ensure that said structures are structurally sound after the abandonment procedure. The plan shall be submitted to TxDOT for approval no later than sixty (60) days prior to the scheduled date for NTP2.

TxDOT reserves the right to require Design-Build Contractor, at any time to salvage and deliver to a location designated by TxDOT within the TxDOT District in which the Project is located, any TxDOT-owned equipment and materials in an undamaged condition. TxDOT reserves the right to require Design-Build Contractor to salvage and deliver to a reasonable location designated by TxDOT any ITS equipment and materials in an undamaged condition.

Unless otherwise specified by TxDOT, the material from structures designated for demolition shall be Design-Build Contractor's property. All material removed shall be properly disposed of by Design-Build Contractor outside the limits of the Project.

TxDOT reserves the right to remove buildings to level one finished floor or other appropriate condition on ROW acquired by TxDOT for the Project.

## 10.3 Slopes and Topsoil

Design-Build Contractor shall exercise Good Industry Practice regarding design limitations and roadside safety guidelines associated with the design of slopes along roadways. Design-Build Contractor shall adjust grading to avoid and minimize disturbance to the identified waters of the U.S.

Design-Build Contractor shall perform finished grading and place topsoil in all areas suitable for vegetative slope stabilization (and areas outside the limits of grading that are disturbed in the course of the Work) that are not paved. Design-Build Contractor shall use only materials and soils next to pavement layers that do not cause water or moisture to accumulate in any layer of the pavement structure. For areas outside Design-Build Contractor's limits of maintenance, Design-Build Contractor shall provide stable slopes. For slopes steeper than 4:1, Design-Build Contractor shall submit to TxDOT a slope stability analysis that demonstrates the adequacy of Design-Build Contractor's design. Design-Build Contractor shall submit the slope stability analysis to TxDOT for approval with the Released for Construction Documents.

## 10.4 Sodding

Block sod shall be placed at all grate inlets, manholes and culvert headwalls. Design-Build Contractor shall maintain all erosion and sediment controls in good working order. Design-Build Contractor shall stabilize disturbed areas on which construction activities have ceased temporarily or permanently, within 14 Days unless they are scheduled to resume within 21 Days. The areas adjacent to creeks and drainage ways have priority followed by devices protecting storm sewer inlets.

# 11 ROADWAYS

## 11.1 General Requirements

The objectives of the Project include the provision of a safe, reliable, cost-effective, and aesthetically-pleasing corridor for the traveling public. The requirements contained in this Section 11 provide the framework for the design and construction of the roadway improvements to help attain the Project objectives.

Design-Build Contractor shall coordinate roadway design, construction, and maintenance with other Elements of the Project to achieve the objectives of the Project. All design transitions to existing facilities shall be in accordance with the TxDOT Roadway Design Manual.

Where changes to the roadway geometrics result in revisions to the Project ROW, Design-Build Contractor is responsible for demonstrating the proposed change is an equally safe alternative as well as the initiation and progression of all environmental and public involvement processes in coordination with TxDOT. Design-Build Contractor shall perform all ROW services that are necessitated by proposed changes in accordance with the DBA Documents.

## 11.2 Design Requirements

Design-Build Contractor shall coordinate its roadway design with the design of all other components of the Project, including aesthetics. The Project roadways shall be designed to integrate with streets and roadways that are adjacent or connecting to the Project.

Design-Build Contractor shall design all Elements in accordance with the applicable design criteria and Good Industry Practice based on the Design Speeds for various Elements.

The Project roadways shall be designed to incorporate roadway appurtenances, including fences, noise attenuators, barriers, and hazard protection as necessary to promote safety and to mitigate visual and noise impacts on neighboring properties.

Design-Build Contractor shall complete the design of the Project roadways in accordance with the Schematic Design and Preliminary Design as shown in the Reference Information Documents.

### *11.2.1 Control of Access*

Unless shown to be deleted in the Project Schematic, Design-Build Contractor shall maintain all existing property accesses, including those not shown on the schematic, and shall not revise control of access without TxDOT review and the written agreement of the affected property owner.

### *11.2.2 Roadway Design Requirements*

Design-Build Contractor shall design the Elements of the Project to meet or exceed the geometric design criteria shown in Table 11-1 (Design Speeds) and Table 11-2 (Geometric Design Criteria). Additional roadway design guidance for the Design-Build Contractor's use is provided in the Dallas Horseshoe Design Summary Report located in the Reference Information Documents.

**Table 11-1: Design Speeds**

| Roadway | Roadway Classification | Design Speed |
|---|---|---|
| IH 30 EB Mainlanes | Urban Freeway | 50 MPH: Sta. 1087+49 to Sta. 1106+00; Sta. 1117+88 to Sta. 1125+74<br>60 MPH: Sta. 1030+75 to Sta.. 1087+49; Sta. 1106+00 to Sta. 1117+88 |
| IH 30 WB Mainlanes | Urban Freeway | 50 MPH: Sta. 1086+85 to Sta. 1107+00<br>60 MPH: Sta. 1033+24 to Sta. 1086+85; Sta. 1107+00 to Sta. 1126+29 |
| IH 35E NB Mainlanes | Urban Freeway | 50 MPH: Sta. 5047+00 to Sta. 5093+70<br>60 MPH: Sta. 5010+00 to Sta. 5047+00; Sta. 5093+70 to Sta. 5108+09 |
| IH 35E SB Mainlanes | Urban Freeway | 50 MPH: Sta. 5052+76 to Sta. 5093+70<br>60 MPH: Sta. 5010+00 to Sta. 5052+76; Sta. 5093+70 to Sta. 5108+09 |
| IH 30 HOV | Urban Freeway | 60 MPH |
| IH 35E HOV | Urban Freeway | 50 MPH: Sta. 5047+00 to Sta. 5100+38<br>60 MPH: Sta. 5013+75 to Sta. 5047+00 |
| Direct Connectors | Urban Freeway | 40 MPH |
| Slip Ramps | Urban Freeway | 40 MPH all Slip Ramps except: Ramp 1 (25 MPH), Ramp 6 (35 MPH), Ramp 30 10+00 to 12+00 (30 MPH) , Ramp 43 137+20 to 143+19 (25 MPH) |
| Loop Ramps | Urban Freeway | 25 MPH |
| Frontage Roads | Urban Arterial | 40 MPH |
| Collector Distributors | Urban Freeway | 40 MPH |
| Colorado Boulevard | Community Collector | 30 MPH |
| Beckley Avenue | Minor Arterial | 35 MPH |
| Riverfront Boulevard | Principal Arterial | 40 MPH |
| Avery Street | Minor Arterial | 35 MPH |
| Hardwick Street | Minor Arterial | 35 MPH |
| Fleming Place | Minor Arterial | 30 MPH |

**Table 11-2: Geometric Design Criteria**

| Items | Mainlanes | | HOV/Managed Lanes | | Direct Connectors | Collector Distributors | | |
|---|---|---|---|---|---|---|---|---|
| Roadway Classification | Urban Freeway | Urban Freeway | Urban Freeway | Urban Freeway | Urban Freeway | Urban Freeway | Urban Freeway | Urban Freeway |
| Design Speed | 60 mph | 50 mph | 60 mph | 50 mph | 40 mph | 40 mph | 35 mph | 30 mph |
| **Horizontal Alignment** | | | | | | | | |
| Stopping Sight Distance | 570' | 425' | 570' | 425' | 305' | 305' | 250' | 200' |
| Absolute Minimum Radius | 1340' | 835' | 1340' | 835' | 510' | 510' | 380' | 275' |
| Superelevation Rate | e(max) = 6% | e(max) = 6% | e(max) = 6% | e(max) = 6% | e(max) = 6% | e(max) = 6% | e(max) = 6% | e(max) = 6% |
| Superelevation Runoff | 0.45% relative gradient | 0.50% relative gradient | 0.45% relative gradient | 0.50% relative gradient | 0.58% relative gradient | 0.58% relative gradient | 0.62% relative gradient | 0.66% relative gradient |
| **Vertical Alignment** | | | | | | | | |
| Type of Terrain | Level | Level | Level | Level | Level | Level | Level | Level |
| Minimum and Maximum Grade Requirements | 0.35% min, 3% max | 0.35% min, 4% max | 0.35% min, 3% max | 0.35% min, 4% max | 0.35% min, 7% max | 0.35% min, 7% max | 0.35% min, 7% max | 0.35% min, 8% max |
| K Value for Crest Curves, min | 151 | 84 | 151 | 84 | 44 | 44 | 29 | 19 |
| K Value for Sag Curves, min | 136 | 96 | 136 | 96 | 64 | 64 | 49 | 37 |
| Grade change without a vertical curve | 0.50 % (Spline Grade) max | 0.50 % (Spline Grade) max | 0.50 % (Spline Grade) max | 0.50 % (Spline Grade) max | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max |
| Vertical Clearance | | | | | | | | |
| Roadways | 16' - 6" | 16' - 6" | 16' - 6" | 16' - 6" | 16' - 6" | 16' - 6" | 16' - 6" | 16' - 6" |
| Railroads | 23' - 0" | 23' - 0" | 23' - 0" | 23' - 0" | 23' - 0" | 23' - 0" | 23' - 0" | 23' - 0" |
| USACE Maintenance Road | 15'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" |
| Top of Levee | 7'-0" | 7'-0" | 7'-0" | 7'-0" | 7'-0" | 7'-0" | 7'-0" | 7'-0" |
| **Cross-Sectional Elements** | | | | | | | | |
| Widths of Travel Lanes | 12' | 12' | 12' | 12' | 1-lane:14', 2-lane:24' | 12' | 12' | 12' |
| Shoulder Widths | | | | | | | | |
| Inside | 10' | 10' | 1-lane:4' min, 2-lane: 2' min | 1-lane:4' min, 2-lane: 2' min | 2' RDWY, 4' STR | 4' | 4' | 4' |
| Outside | 10' | 10' | 1-lane:4' min, 2-lane: 4' min | 1-lane:4' min, 2-lane: 4' min | 8' | 8' | 8' | 8' |
| Cross Slope (Lane & Shoulder) | 2.0% min | 2.0% min | 2.0% min | 2.0% min | 2.0% min | 2.0% min | 2.0% min | 2.0% min |
| Clear Zone Width | 30' | 30' | N/A | N/A | 16' | 16' | 16' | 16' |
| Side Slopes | | | | | | | | |
| Within Clear Zone | 4:1 max | 4:1 max | N/A | N/A | 4:1 max | 4:1 max | 4:1 max | 4:1 max |
| Outside Clear Zone | 3:1 max | 3:1 max | N/A | N/A | 3:1 max | 3:1 max | 3:1 max | 3:1 max |
| Through guard rail | 10:1 max | 10:1 max | N/A | N/A | 10:1 max | 10:1 max | 10:1 max | 10:1 max |
| Sidewalk Width | N/A | N/A | N/A | N/A | N/A | CDs 35 - 6' barrier sep | N/A | N/A |

**Table 11-2: Geometric Design Criteria (cont.)**

| Items | Frontage Roads | Slip Ramps | | | | Loop Ramps |
|---|---|---|---|---|---|---|
| Roadway Classification | Urban Arterial | Urban Freeway | Urban Freeway | Urban Freeway | Urban Freeway | Urban Freeway |
| Design Speed | 40 mph | 40 mph | 35 mph | 30 mph | 25 mph | 25 mph |
| **Horizontal Alignment** | | | | | | |
| Stopping Sight Distance | 305' | 305' | 250' | 200' | 155' | 155' |
| Absolute Minimum Radius | 540' | 510 | 380' | 275' | 185' | 185' |
| Superelevation Rate | e(max) = 6% | e(max) = 6% | e(max) = 6% | e(max) = 6% | e(max) = 6% | e(max) = 6% |
| Superelevation Runoff | 0.58% relative gradient | 0.58% relative gradient | 0.62% relative gradient | 0.66% relative gradient | 0.70% relative gradient | 0.70% relative gradient |
| **Vertical Alignment** | | | | | | |
| Type of Terrain | Level | Level | Level | Level | Level | Level |
| Minimum and Maximum Grade Requirements | 0.35% min, 7% max | 0.35% min, 7% max | 0.35% min, 7% max | 0.35% min, 8% max | 0.35% min, 9% max | 0.35% min, 9% max |
| K Value for Crest Curves, min | 44 | 44 | 29 | 19 | 12 | 12 |
| K Value for Sag Curves, min | 64 | 64 | 49 | 37 | 26 | 26 |
| Grade change without a vertical curve | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max |
| Vertical Clearance | | | | | | |
| Roadways | 16' - 6" | 16' - 6" | 16' - 6" | 16' - 6" | 16' - 6" | 16' - 6" |
| Railroads | 23' - 0" | 23' - 0" | 23' - 0" | 23' - 0" | 23' - 0" | 23' - 0" |
| USACE Maintenance Road | 15'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" | 15'-0" |
| Top of Levee | 7'-0" | 7'-0" | 7'-0" | 7'-0" | 7'-0" | 7'-0" |
| **Cross-Sectional Elements** | | | | | | |
| Widths of Travel Lanes | 11'/12' with 14' outside shared use | 1-lane:14', 2-lane:24' | 1-lane:14', 2-lane:24' | 1-lane:14', 2-lane:24' | 1-lane:14', 2-lane:24' | 1-lane:14', 2-lane:24' |
| Shoulder Widths | | | | | | |
| Inside | 4' if no curb | 2' RDWY, 4' STR | 2' RDWY, 4' STR | 2' RDWY, 4' STR | 2' RDWY, 4' STR | 2' RDWY, 4' STR |
| Outside | 8' if no curb | 8' | 8' | 8' | 8' | 8' |
| Offset to face of curb | 1' min, 2' des | N/A | N/A | N/A | N/A | N/A |
| Cross Slope (Lane & Shoulder) | 2.0% min | 2.0% min | 2.0% min | 2.0% min | 2.0% min | 2.0% min |
| Monolithic Curbs | | | | | | |
| Inside | yes with curb offset | N/A | N/A | N/A | N/A | N/A |
| Outside | yes with curb offset | N/A | N/A | N/A | N/A | N/A |
| Clear Zone Width | 1.5' min/6.0' min to column | 16' | 16' | 16' | 16' | 16' |
| Side Slopes | | | | | | |
| Within Clear Zone | 1.5% max | 4:1 max | 4:1 max | 4:1 max | 4:1 max | 4:1 max |
| Outside Clear Zone | 3:1 max | 3:1 max | 3:1 max | 3:1 max | 3:1 max | 3:1 max |
| Through guard rail | 10:1 max | 10:1 max | 10:1 max | 10:1 max | 10:1 max | 10:1 max |
| Sidewalk Width | 6'-8' des. 5' min. | N/A | N/A | N/A | N/A | N/A |
| Border Width | 20' des, 15' min | N/A | N/A | N/A | N/A | N/A |
| **Intersections** | | | | | | |
| Corner Radi Cross Streets | 75' min | N/A | N/A | N/A | N/A | N/A |
| Corner Radi Driveways | 25' | N/A | N/A | N/A | N/A | N/A |

**Table 11-2: Geometric Design Criteria (cont.)**

| Items | Cross Streets | | | | |
|---|---|---|---|---|---|
| | Colorado | Beckley | Riverfront | Avery/Hardwick | Fleming |
| Roadway Classification | Community Collector | Minor Arterial | Principal Arterial | Minor Arterial | Minor Arterial |
| Design Speed | 30 mph | 35 mph | 40 mph | 35 mph | 30 mph |
| **Horizontal Alignment** | | | | | |
| Stopping Sight Distance | 200' | 250' | 305' | 250' | 200' |
| Absolute Minimum Radius | 230' | 345' | 490' | 345' | 230' |
| Superelevation Rate | e(max) = 4% | e(max) = 4% | e(max) = 4% | e(max) = 4% | e(max) = 4% |
| Superelevation Runoff | 0.66% relative gradient | 0.62% relative gradient | 0.58% relative gradient | 0.62% relative gradient | 0.66% relative gradient |
| **Vertical Alignment** | | | | | |
| Type of Terrain | Level | Level | Level | Level | Level |
| Minimum and Maximum Grade Requirements | 0.35% min, 9% max | 0.35% min, 7% max | 0.35% min, 7% max | 0.35% min, 7% max | 0.35% min, 9% max |
| K Value for Crest Curves, min | 19 | 29 | 44 | 29 | 19 |
| K Value for Sag Curves, min | 37 | 49 | 64 | 49 | 37 |
| Grade change without a vertical curve | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max | 1.0 % (Spline Grade) max |
| Vertical Clearance | | | | | |
| Roadways | 16' - 6" | 16' - 6" | 16' - 6" | 16' - 6" | 16' - 6" |
| **Cross-Sectional Elements** | | | | | |
| Widths of Travel Lanes | 12' with 14' outside shared use lane | 11'/12' with 14' outside shared use lane | 11' (separate cycle path behind curb) | 11'/12' with 14' outside shared use lane | 14' |
| Shoulder Widths | | | | | |
| Inside | N/A | N/A | N/A | N/A | 2' |
| Outside | N/A | N/A | N/A | N/A | 8' |
| Offset to face of curb | 2' | 1' minimum | 0.5' minimum | Varies 1'-3' | N/A |
| Median Width | flush | 10' flush | varies | N/A | N/A |
| Cross Slope (Lane & Shoulder) | 2.0% min | 2.0% min | 2.0% min | 2.0% min | 2.0% min |
| Monolithic Curbs | | | | | |
| Inside | yes | yes | yes | yes | yes |
| Outside | yes | yes | yes | yes | yes |
| Clear Zone Width | 1.5' min/6.0' min to column | 1.5' min/6.0' min to column | 1.5' min/6.0' min to column | 1.5' min/6.0' min to column | 1.5' min/6.0' min to column |
| Side Slopes | | | | | |
| Within Clear Zone | 1.5% max | 1.5% max | 1.5% max | 1.5% max | 1.5% max |
| Outside Clear Zone | 3:1 max | 3:1 max | 3:1 max | 3:1 max | 3:1 max |
| Through guard rail | 10:1 max | 10:1 max | 10:1 max | 10:1 max | 10:1 max |
| Border Width | 20' des, 15' min | 20' des, 15' min | 20' des | 20' des, 15' min | 20' des, 15' min |
| Landscape Width | N/A | N/A | 5.5' | N/A | N/A |
| Bike Trail Width | N/A | N/A | 6.5' | N/A | N/A |
| Sidewalk Width | 6' | 6' | 5.5' | 6' | N/A |
| **Intersections** | | | | | |
| Corner Radi Cross Streets | 75' min | 75' min | 75' min | 75' min | 75' min |
| Corner Rad Design Vehicle | 25' | 25' | 25' | 25' | 25' |

Design-Build Contractor shall coordinate, design and construct the improvements on crossing streets in accordance with the Governmental Entity having jurisdiction of said roadway.

The Design-Build Contractor shall design the Project to accommodate future improvements by others as depicted in the Ultimate Scope. The Design-Build Contractor shall demonstrate that the design is compatible with future desirable improvements included but not limited to the following locations:

a. Ramp from DC6 to Commerce St. (R12) must accommodate the future slip ramp (CD1 from the Ultimate Scope) from Reunion Boulevard to the IH 35E NB CD.
b. Ramp from DC6 to Commerce St. (R12) must provide a stub out to accommodate the future slip ramp to Spur 366 (R14 from the Ultimate Scope).
c. Ramp from IH 35E NB to Reunion Boulevard (R11) must provide a stub out to accommodate future Direct Connector to Spur 366 (DC2 from the Ultimate Scope).
d. Ramp from Reunion Boulevard to Collect Distributor 30 EB (R37) must provide a stub out to accommodate the future slip ramp (R28 from the Ultimate Scope).
e. Direct Connector from IH 35E SBML to IH 30 WBML (DC11) must provide interior stub out to accommodate future SB IH 35E direct connector
f. Direct Connector from IH 35E SBML to IH 30 WBML (DC11) must provide exterior stub out to accommodate future ramp from IH 35E SB FRTG (R25 from the Ultimate Scope).
g. Ramp from WB Commerce St to IH 30 EBML (30HOV) must provide an exterior stub out to accommodate the future HOV ramp from IH 35E HOV/M SB to IH 30 HOV/M WB (HOVR1 from the Ultimate Scope). *This interim entrance ramp will be partially reconstructed and converted to HOV access under a future project*.
h. CD 30 EB on the schematic ties to the existing CD compared to tying to the IH 30 EBML, as shown on the Ultimate Scope.
i. Ramp from IH 35E SB CD to IH 35E SBML (approaching the west levee) must accommodate for a future two lane entrance slip ramp.
j. IH 30 WBML bridge over the Trinity River must accommodate a future HOV/Managed lane on the interior.
k. Median between IH 30WBML and EBML must accommodate a future HOV/Managed lane.
l. Bike path along the IH 30 EBFR must provide a stub out west of Riverfront Boulevard to accommodate a future City of Dallas trail connection.
m. Direct Connector from IH 30 WBML to IH 35E NBML (DC7) bridge must accommodate grade separation for a future slip ramp from the future IH 30 WB Frontage Road to the IH 30 WBML (R10 from the Ultimate Scope).
n. IH 35E bridge over Colorado Boulevard must provide future width as shown on the Ultimate Scope.

Design-Build Contractor shall design and construct the IH 35E HOV lane terminus at Reunion Blvd. so that the future HOV operations can be automated.

### *11.2.3 Roadway Design Deviations*

The roadway schematic under review for environmental approval contains design exceptions to the geometric design criteria stated in Table 11-2. TxDOT will allow design exceptions at the following locations:

**Design Exceptions for Proposed Construction**

1. Reduced Shoulder Width
    a. Outside shoulder IH 30 WBML's (1 location from approximately STA 1018+00 to STA 1023+00)

   b. Inside shoulder IH 30 WBML's (1 location from approximately STA 1009+80 to STA 1039+00)
   c. Inside shoulder IH 30 EBML's (1 location from approximately STA 1009+80 to STA 1039+00.)
   d. Outside and inside and shoulder IH 30 WBCD (1 location from IH 30 WBML STA 1125+50 to STA 1152+83.43.)
   e. Outside and inside shoulder for slip ramp from IH 30 WBCD to IH 30 WBML's (1 location from the IH 30 WBCD to the IH 30 WBML's underneath the Hotel St./ RR bridge.)

2. Reduced Lane Width
   a. IH 30 WBML's (1 location from STA 1009+80 to STA 1050+94.)
   b. IH 30 EBML's (1 location from STA 1009+80 to STA 1050+94.)
   c. IH 30 WBCD (1 location from IH 30 WBML STA 1125+50 to STA 1152+83.43.)

3. Maximum Vertical Grade
   a. IH 30 EBML's (1 location from STA 1094+95 to STA 1102+75)
   b. IH 30 WBFR Ramp (1 location from STA 166+70 to STA 172+65)
   c. IH 35E SBML's (1 location from STA 5063+20 to STA 5070+60. )
   d. IH 35E NBML's (3 locations from STA 5049+40 to STA 5057+90, STA 5057+90 to STA 5067+45, and STA 5067+45 to STA 5077+60)
   e. IH 35E HOV/Managed Lane (1 location from STA 5067+70 to STA 5077+60)

4. Reduce Vertical Clearance
   a. WB Commerce St. to IH 30 WBML slip ramp (1 location - the minimum desirable vertical clearance value that cannot be obtained for the proposed WB Commerce St. to IH 30 WBML Ramp over existing Commerce St.)
   b. Collector distributor ramp from IH 35E SBML to IH 30 EB CD over collector distributor ramp from IH 35E NBML to IH 30 EBML (1 location- the minimum desirable vertical clearance value cannot be obtained )
   c. Slip ramp from IH 30 WBCD to IH 35E SBCD over slip ramp from IH 30 WBCD to IH 30 WBML (1 location- the minimum desirable vertical clearance value cannot be obtained)

**<u>Design Exception Documentation for Existing Conditions within Project Limits</u>**

5. Existing Vertical Clearance Documentation
   a. IH 30 EBML's at Hotel St./RR bridge (1 location)
   b. IH 30 EBCD at Hotel St./RR bridge (1 location)
   c. IH 30 WBML's at Hotel St./RR (1 location)
   d. IH 30 WBCD at Hotel St./RR, Unnamed RR (east of Hotel St.), Saint Paul St., Ervay St., Akard St., Cadiz St., Griffin St., DART RR, and Lamar St. bridges (9 locations)
   e. WB Commerce St. Ramp at IH 35E NBML's (1 location)

6. Existing Shoulder Width Documentation
   a. Inside shoulder IH 30 WBML's at Hotel St./RR bridge (1 location)
   b. Inside shoulder IH 30 EBML's at Hotel St./RR bridge (1 location)

Refer to the current Proposed Request for Design Exceptions Report for additional information.

### *11.2.4 Miscellaneous Roadway Design Requirements*

All roadside safety devices used on the Project shall meet current crash test and other safety requirements in accordance with TxDOT standards.

Driveways shall be designed in accordance with the guidelines, which will be considered requirements, specified in TxDOT's *Roadway Design Manual* – Appendix C, "Driveways Design Guidelines" to be functionally adequate for land use of adjoining property.

The border width, measured from back of curb, along frontage roads and crossing streets shall be 15 feet minimum unless specified otherwise.

Unless specified otherwise in these documents, all ramps, bullnoses, tie-ins and ramp terminals shall be located horizontally and vertically to accommodate the Ultimate Scope such that the Ultimate Scope can be implemented with little or no impact on traffic and/or rework.

# 12 DRAINAGE

## 12.1 General Requirements

Efficient performance of the drainage system is an integral part of the performance of the Project. Design-Build Contractor shall account for all sources of runoff that may reach the Project, whether originating within or outside the Project ROW, in the design of the drainage facilities.

If existing drainage patterns are revised during the Project design, then the Design-Build Contractor shall design and construct a solution that does not adversely impact property owners outside the ROW.

## 12.2 Administrative Requirements

### *12.2.1 Data Collection*

To establish a drainage system that complies with the requirements and accommodates the historical hydrologic flows in the Project limits, Design-Build Contractor is responsible for collecting all necessary data, including those elements outlined in this Section 12.2.1.

Design-Build Contractor shall collect available data identifying all water resource issues, including water quality requirements as imposed by State and federal government regulations; National Wetland Inventory and other wetland/protected waters inventories; in FEMA mapped floodplains; and official documents concerning the Project, such as the FEIS or other drainage and environmental studies. Water resource issues include areas with historically inadequate drainage (flooding or citizen complaints), environmentally sensitive areas, localized flooding, maintenance problems associated with drainage, and areas known to contain Hazardous Materials. Design-Build Contractor shall also identify watershed boundaries, protected waters, county ditches, areas classified as wetlands, floodplains, and boundaries between regulatory agencies (e.g., watershed districts and watershed management organizations).

Design-Build Contractor shall acquire all applicable municipal drainage plans, watershed management plans, and records of citizen concerns. Design-Build Contractor shall acquire all pertinent existing storm drain plans and/or survey data, including data for all culverts, drainage systems, and storm sewer systems within the Project limits. Design-Build Contractor shall also identify existing drainage areas that contribute to the highway drainage system and the estimated runoff used for design of the existing system.

Design-Build Contractor shall obtain photogrammetric and/or geographic information system (GIS) data for the Project limits that depicts the Outstanding National Resource Waters and/or impaired waters as listed by the TCEQ. Design-Build Contractor shall conduct surveys for information not available from other sources.

If documentation is not available for Elements of the existing drainage system within the Project limits and scheduled to remain in place, Design-Build Contractor shall investigate and videotape or photograph the existing drainage system to determine condition, size, material, location, and other pertinent information.

The data collected shall be taken into account in the Final Design of the drainage facilities.

Within thirty (30) Days of Substantial Completion, Design-Build Contractor shall submit to TxDOT, as part of the Record Drawings, a Drainage Design Report, which shall be a complete documentation of all components of the Project's drainage system. At a minimum, the Drainage Design Report shall include:

a) Record set of all drainage computations, both hydrologic and hydraulic, and all support data;

b) Hydraulic notes, models, and tabulations;

c) Storm sewer drainage report;

d) Bridge and culvert designs and reports for major stream crossings;

e) Pond designs, including graphic display of treatment areas and maintenance guidelines for operation;

f) Correspondence file; and

g) Drainage system data (location, type, material, size, and other pertinent information) in a suitable electronic format.

### *12.2.2 Coordination with Other Agencies*

Design-Build Contractor shall coordinate all water resource issues with affected interests and regulatory agencies. Design-Build Contractor shall document the resolutions of water resource issues.

The Design-Build Contractor shall provide to the local floodplain administrators all information and technical data needed to file Letters of Map Revision (LOMR) with FEMA.

Special coordination with local agencies and permits includes the following:

**Within The Dallas Floodway**- Drainage design must comply with the criteria specified in the USACE Record of Decision Regional Environmental Impact Statement Trinity River and Tributaries, dated April 29, 1988. This specific design criterion is documented in the Corridor Development Certificate (CDC) Manual- Trinity River Corridor- North Central Texas, Fourth Edition, July 2009. Hydraulic studies previously performed and anticipated to be approved by the United States Army Corps of Engineers (USACE) under the Section 408 process for the Project will be exempted by the City of Dallas (COD) and do not require a separate North Central Texas CDC permit. However, the Design-Build Contractor shall coordinate with the Fort Worth District of the USACE to confirm whether the proposed bridge structures are hydraulically consistent with those previously modeled. The Design-Build Contractor shall be responsible for performing and obtaining USACE approval if additional hydraulic analyses of the Trinity River are required by the USACE.

Design Build Contractor shall also be responsible for performing additional hydraulic analyses and securing appropriate approval/permits for construction of temporary structures within the Dallas Floodway not included in the Section 408 submittal to the USACE.

**Able Sump Ponds-** The City of Dallas operates the Able Pumping Station, sump ponds and culverts interconnecting them within the Project limits. Able Sump Ponds and pumping station improvements are proposed in the future. The Design-Build Contractor shall coordinate with the COD to ensure the Project does not prohibit these future improvements. The Project encroaches upon existing Able Sump Ponds 2 and 3. Impacts from the Project roadway embankment and structure elements shall not reduce the existing sump pond volume below elevation 392.5, which is the proposed sump improvements' 100-year annual recurrence interval water surface elevation. Detailed calculations will be required to validate no loss to existing sump pond storage volume as required above. The Design-Build Contractor shall be responsible for design and construction of additional pond storage capacity to offset any losses of existing volume from the Project. The Design-Build Contractor shall be responsible for design and construction of the interconnection culvert between Able Sump Ponds 2 and 3. The capacity of the interconnection culvert shall meet requirements of the City of Dallas. The proposed design of the additional sump pond capacity and interconnection culvert is subject to COD approval.

## 12.3 Design Requirements

Design-Build Contractor shall design all Elements of the drainage facilities in accordance with the applicable design criteria and Good Industry Practice. Local requirements, if more stringent than those of the DBA Documents, shall supersede other requirements and be handled with a third party agreement.

The design of drainage systems shall include reconfiguration of the existing drainage systems within the Project limits, and design of new and reconfigured storm drainage systems as required to meet the performance requirements as defined in this Section 12.

Design-Build Contractor shall provide facilities compatible with existing drainage systems and all applicable municipal drainage plans or approved systems in adjacent properties. Design-Build Contractor shall preserve existing drainage patterns wherever possible.

Elements of the existing drainage system within the Project limits scheduled to remain in place must meet hydraulic capacity requirements as detailed in this Section 12. If any Elements of the existing system do not comply with the requirements of Section 12 (Drainage) or Section 13 (Structures), those Elements shall be replaced by Design-Build Contractor. Existing drainage elements along IH 30 east of the Hotel Street/Railroad bridge (in the Canyon area), including under the Hotel Street/Railroad bridge, are exempt from this requirement. Revisions to existing drainage elements in the Canyon area must meet or exceed existing conditions.

Design-Build Contractor may make use of existing drainage facilities, provided overall drainage requirements for the Project are achieved and the combined drainage system functions as intended.

Design-Build Contractor shall base its Final Design on design computations and risk assessments for all aspects of Project drainage.

Design-Build Contractor shall design roadside open channels such that the profiles have adequate grade to minimize sedimentation.

Design-Build Contractor shall provide a drainage system that maintains or improves the existing drainage.

Design-Build Contractor shall comply with the TxDOT *Hydraulic Design Manual*, October 2011 Edition or current edition.

Design-Build Contractor shall utilize the TxDOT Dallas District Drainage Standards and TxDOT Statewide Drainage Standard Sheets, in that order of preference, for inlets, manholes, and additional details.

# 12.4 Surface Hydrology

## *12.4.1 Design Frequencies*

Design-Build Contractor shall use the design frequencies listed in Table 12-1 below.

**Table 12-1: Drainage Design Frequencies**

**Annual Exceedance Probability (AEP) Annual Recurrence Interval (ARI)**

| | Design AEP[1] (Design ARI) | | | | | Check Flood |
|---|---|---|---|---|---|---|
| **Functional Classification and Structure Type** | **50% (2-yr)** | **20% (5-yr)** | **10% (10-yr)** | **4% (25-yr)** | **2% (50-yr )** | **1% (100-yr)** |
| Highways (main lanes): | | | | | | |
| ♦ culverts | | | | | X | X |
| ♦ bridges | | | | | X | X |
| Principal arterials: | | | | | | |
| ♦ culverts | | | | X | | X |
| ♦ small bridges | | | | X | | X |
| ♦ Major River Crossings | | | | | X | X |
| Minor arterials and collectors (including frontage roads): | | | | | | |
| ♦ culverts | | | X | | | X |
| ♦ small bridges | | | | X | | X |
| ♦ Major River Crossings | | | | | X | X |
| Local roads and streets (off-system projects): | | | | | | |
| ♦ culverts | | | | | | |
| ♦ small bridges* | | | | | | |
| Storm drain systems on Interstate and controlled access | | | | | | |
| highways (main lanes): | | | | | | |
| ♦ inlets and drain pipe | | | X | | | |
| ♦ inlets for depressed roadways** | | | | | X | |
| Storm drain systems on other highways and frontage: | | | | | | |
| ♦ inlets and drain pipe | | X | | | | |
| ♦ inlets for depressed roadways** | | | | X | | |

| | Design AEP(1) (Design ARI) | Check Flood |
|---|---|---|

Notes:

* Small bridges are less than 50 feet in length.

** A depressed roadway provides nowhere for water to drain even when the curb height is exceeded. Curb height is defined as five (5) inches.

For structures extending under both Mainlanes and Frontage Roads the structure shall be designed to the Mainlane Annual Recurrence Interval.

Storm drains on facilities such as underpasses, depressed roadways, etc., where no overflow relief is available should be designed for the 2% AEP event.

All facilities except storm drains must to be evaluated to the 1% AEP event.

Able Sump Pond interconnection culverts shall be design to City of Dallas conveyance requirements.

(1) Structures within the Dallas Floodway of the Trinity River shall satisfy the 1988 Trinity River Record of Decision criteria.

#### 12.4.1.1 Hydrologic Analysis

Design-Build Contractor shall design for the future changes in land use that may affect the magnitude of runoff and therefore the design capacity of drainage structures. Design-Build Contractor shall incorporate anticipated changes in the basin land use, characteristics, or water operations into the hydrologic parameters. Design-Build Contractor shall design all drainage facilities to accommodate probable land use in accordance with the current City of Dallas development policy and proposed zoning maps.

Design-Build Contractor shall design drainage structure capacities for the frequencies for the maximum hydrologic conditions as described in Table 12-1, above.

Design-Build Contractor shall use the following criteria in developing runoff calculations:

***Run-off Coefficients:***
Pavement (Asphalt) = 0.9
Pavement (Concrete) = 0.9
Unpaved areas within the Project ROW = 0.7
For areas outside the ROW, use the methods in Chapter 4, Section 12 of the TxDOT *Hydraulic Design Manual*, October 2011 Edition for calculating the Run-off Coefficients

Minimum Time of Concentration, $T_C$ = 10 minutes

### *12.4.2 Storm Sewer Systems*

Where precluded from handling runoff with open channels by physical site constraints, or as directed in this Section 12, Design-Build Contractor shall design enclosed storm sewer systems to collect and convey runoff to appropriate discharge points.

Design-Build Contractor shall prepare a storm sewer drainage report encompassing all storm sewer systems that contains, at a minimum, the following items:

a) Drainage area maps for each storm drain inlet with pertinent data, such as boundaries of the drainage area, topographic contours, runoff coefficients, time of concentration, and land use with design curve number and/or design runoff coefficients, discharges, velocities, ponding, bypass flow and hydraulic grade line data;

b) Location and tabulation of all existing and proposed pipe and drainage structures. These include size, class or gauge, catch basin spacing, detailed structure designs, and any special designs;

c) Specifications for the pipe bedding material and structural pipe backfill on all proposed pipes and pipe alternates; and

d) Complete pipe profiles, including pipe size, type, and gradient; station offsets from the centerline of the roadway; length of pipe; class/gauge of pipe; and numbered drainage structures with coordinate location and elevations.

This report shall be a component of the Drainage Design Report.

Design-Build Contractor shall design all storm sewer systems such that the hydraulic grade line for the design frequency event is no higher than:

a) one (1) foot below the lip of gutter;

b) one (1) foot below the top of grate inlet; and

c) one (1) foot below the top of manhole cover.

The use of slotted barriers that allow stormwater runoff to flow under them and into adjacent travel lanes will not be allowed for permanent barriers. Slotted barriers may be used only for temporary conditions during construction.

Runoff within the jurisdiction of the USACE shall be conveyed in accordance with applicable laws and permits.

#### 12.4.2.1 Pipes

Storm sewer pipes with design flow velocities less than three (3) feet per second (fps) shall be designed for full flow at 80% of the internal diameter to account for sedimentation in the pipe. Other storm sewer pipes shall be designed using the full internal diameter. Storm sewers shall be designed to prevent surcharging of the system at the flow rate for the design year event. All storm sewers shall be designed and constructed to sustain all loads with zero deflection and shall have positive seals at the pipe joints.

Design-Build Contractor shall comply with the following requirements:

***Storm Drain Lines:***

All pipes shall be reinforced concrete. The minimum pipe size inside diameter shall be 24 inches. The minimum box culvert height, inside dimension, shall be three feet.

Storm sewer design will be non-pressure flow unless otherwise approved by the State.

Trunk lines may be designed through the inlets.

Pipe depth of cover: 1 ft. desirable, 6 inches minimum (top of pipe to bottom of treated subgrade)

- Lateral connection will be 45°/60° to trunk line in direction of flow.
- Pipe Slope: ≥0.50% Desirable, 0.30% Minimum
- Pipe Flow Velocities: 2 Fps Min, 12 Fps Max
- Outfall Velocity Criteria: 6 Fps Desirable, > 8 Fps Provide Outfall Protection

***Drop Inlets:***

- Maximum ponding depth shall be 1 foot for the design frequency
- Area Reduction Factor = 0.5
- Perimeter Reduction Factor = 0.5

***Manholes:***

- Maximum distance between manhole/access points shall be as specified in Chapter 10, Section 6 of the TxDOT *Hydraulic Design Manual*, October 2011 Edition

#### 12.4.2.2 Ponding

Design-Build Contractor shall design drainage systems to limit ponding to the widths listed below for the design frequency event:

**Table 12-2: Allowable Ponding Widths by Roadway Classification**

| Roadway Classification | Design Storm Allowable Ponding Width |
|---|---|
| Interstate, Controlled Access Highways | Shoulder width |
| Barrier-Separated Managed Toll Lanes:<br>Single Lane<br>Multiple Lanes | <br>Shoulder width<br>One travel lane width |
| Ramps, Direct Connectors | Shoulder width |
| Frontage Roads | One travel lane width |
| Minor Cross Streets | One travel lane width |

### *12.4.3 Stormwater Storage Facilities*

Design-Build Contractor shall complete preliminary design of the stormwater storage facilities to meet requirements for water quality, water quantity, and rate control, as determined by the Texas NPDES regulations. Local requirements, if more stringent, shall be handled by Design-Build Contractor with a third party agreement.

Design-Build Contractor shall ensure that stormwater storage facilities meet the requirements listed above by performing all required analyses. Such analyses shall include flood routing analysis, which includes a detailed routing analysis for ponds affected by significant environmental issues such as hazardous waste or groundwater concerns.

### *12.4.4 Hydraulic Structures*

The Design-Build Contractor shall utilize the following hydraulic design programs:

- GEOPAK Drainage or TxDOT WinStorm for the storm drain design
- FHWA HY-8 Version 7.2 for culvert design with BCAP used for broken back culvert design only.

#### 12.4.4.1 Culverts

Design-Build Contractor shall analyze existing and proposed culverts and drainage-ways impacted, replaced, or created by the Project design, for any localized flooding problems.

Where culvert design is influenced by upstream storage, the analysis of the storage shall be incorporated into the design of the culvert.

Design-Build Contractor shall use the following design criteria:

- The 100-YR ARI head water elevation will be no higher than then top of crown of the treated subgrade.
- The design year ARI head water elevation will be no higher than the top of curb of the headwall, or shall not exceed the top of the upstream ditch bank, whichever is lower.

- The maximum 100 year ARI water surface elevation at the Able Sump Ponds shall not exceed elevation 392.5
- Outfall Velocity Criteria: > 8 Fps Provide Outfall Channel Erosion Protection
- Include drop-off protection for all bridge class culverts

Culverts are classified as major or minor, as follows:

- Major Culvert: A culvert that provides an opening of more than 35 square feet in a single or multiple installations. A major culvert may consist of a single round pipe, pipe arch, closed-bottom box, or multiple installations of these structures placed adjacent or contiguous as a unit. Certain major culverts are classified as bridges when they provide an opening of more than 20 feet, measured parallel to the roadway; such culverts may be included in the bridge inventory. Bridge class culverts shall have a minimum rise of four (4) feet.
- Minor Culvert: Any culvert not classified as a major culvert.

Existing bridge class culverts with a sufficiency rating of less than 50 shall be classified as deficient.

#### 12.4.4.2 Bridges

All bridge hydraulic computations, designs, and recommendations shall be consistent with past studies and projects in the area by the USACE and other State or federal agency studies and projects.

Where bridge design is influenced by upstream storage, the analysis of the storage shall be considered in the design of the bridge.

#### 12.4.4.3 Ditches

Design-Build Contractor shall use the following drainage ditch design criteria:

***Ditches between roadways:***

- Design ARI = 10-year
- Flat-Bottom Ditch = 4-ft bottom width, 4:1 side slopes
- V-Ditch = 6:1 side slopes
- Minimum ditch slope = 0.5%

***Ditches next to ROW Line:***

- Minimum Ditch Slope = 0.5%
- Design ARI = 5-yr
- Flat Bottom Ditch- 4 feet bottom width, 4:1 side slopes
- V-Ditch: 6:1 side slopes
- Minimum Ditch Slope = 0.5%

All ditch lining type will be determined by the shear stress calculations for the design discharge procedure as contained in the TxDOT *Hydraulic Manual*.

Minimum 0.5 feet of freeboard shall be provided to the bottom of treated subgrade or to top of ditch, whichever is lower.

#### 12.4.4.4 Method Used to Estimate Flows

Design-Build Contractor shall ensure that the selected hydrologic method is appropriate for the conditions in the watershed.

For all crossings located within a FEMA studied floodplain (Zone AE) with peak flow information, Design-Build Contractor shall gather and utilize, as appropriate, the current effective model. For a crossing not located within a FEMA Zone AE but on the same waterway as a stream gauging station with a length of record of at least 25 years, Design-Build Contractor shall collect and use the flow data available from the station, as appropriate, to determine design flows within the following limitations, provided there is no major control structure (e.g., a reservoir) between the gauge and the Project:

a) For crossings near the gauging station on the same stream and watershed, use the discharge directly for a specific frequency from the peak stream flow frequency relationship.

b) For crossings within the same basin but not proximate to the gauging station, transposition of gauge analysis results is allowable.

c) For crossings not within a gauged basin, the peak-flow flood frequency shall be developed using data from a group of several gauging stations based on either a hydrologic region (e.g., regional regression equations), or similar hydrologic characteristics.

d) If no significant changes in the channel or basin have taken place during the period of record, the stream gauging data may be used. The urbanization character of the watershed must not be likely to change enough to affect significantly the characteristics of peak flows within the total time of observed annual peaks and anticipated service life of the highway drainage facility.

For crossings not located within a FEMA Zone AE or on a gauged waterway, Design-Build Contractor shall select the appropriate method for calculating the design flows based on site conditions, and Good Industry Practice.

#### 12.4.4.4.1 **Design Annual Recurrence Interval (ARI)**

Major River Crossings, bridges, culverts and storm drain systems shall be designed for the ARI corresponding to the functional classification of the associated roadway. The functional classification for each roadway is shown in Section 11.

Design-Build Contractor shall evaluate bridges for contraction scour and pier scour concerns and incorporate protection in accordance with Good Industry Practice. The Design-Build Contractor shall provide a scour analysis in accordance with TxDOT's *Geotechnical Manual* (Chapter 5-Section 5, Scour) for all new bridges. If necessary, the Design-Build Contractor shall provide countermeasures for any instability and scour problems in accordance with FHWA *Hydraulic Engineering Circular No. 23* Bridge and Scour and Stream Instability Countermeasures.

For interstate highways, the design flood to be used in the detailed design shall be the 50-year ARI.

Design-Build Contractor shall use the following bridge hydraulic design criteria:

- Minimum Freeboard for Design Event water surface elevation shall be 2 feet below bridge low beam, 100-yr ARI water surface elevation should clear the bridge low beam if practical.
- For bridges over the Trinity River Floodway and Levees the low chord shall be no lower than 10.2 feet over the water surface (WS) elevation for the Special Project Flood (SPF) event. This free board is comprised of 3.2-ft free board from the WS elevation to the top of the future levee plus 7.0-ft vertical clearance from the top of future levee to the bridge low chord. Low chords of long span girders required for the 4-span section over the existing and future Trinity River Channels and the future lakes within the Dallas Floodway are exempted from the minimum low chord elevation requirement.

#### 12.4.4.4.2 **Hydraulic Analysis**

Design-Build Contractor shall design riprap at abutments in accordance with the procedures outlined in HEC-23. For bridge abutments in urban areas, Design-Build Contractor shall install protection in accordance with the Project's aesthetic plan.

12.4.4.4.3 **Bridge/Culvert Waterway Design**

For existing crossings, Design-Build Contractor shall analyze the existing structure with the proposed flows to ensure the headwater does not exceed allowable. If this condition is not met, Design-Build Contractor shall design a replacement structure with sufficient capacity to pass the design-frequency flows and ensure the maximum headwater for any frequency event does not cause an adverse impact. Culvert extensions may increase the headwater elevation, but not above the maximum allowable headwater, with respect to adjacent property and floodplain concerns.

Bridge waterway design shall maintain the existing channel morphology through the structure, if possible.

12.4.4.4.4 **Bridge Deck Drainage**

Stormwater flowing toward the bridge shall be intercepted upstream from the approach slab. Runoff from bridge deck drainage shall be treated as required by TCEQ or other applicable regulation prior to discharge to the natural waters of the State.

Open deck drains are not permissible for bridges passing over other roadways, existing or future Trinity River channels and the Dallas Floodway levees. If ponding width limits require, runoff shall be conveyed in a closed system through the bridge columns to the roadway or floodway drainage system below. The bridge deck drainage system shall outlet at the bottom of the substructure either into a storm sewer system or into an open channel and in no case shall be allowed to discharge against any part of the structure. Grass swales or drainage channels will be required to divert discharge into the Dallas Floodway to the existing Trinity River channel or existing pump station outfall channels subject to approval by COD.

Stormwater runoff from bridge sidewalks physically separated from bridge roadway runoff is permissible into Dallas Floodway.

12.4.4.4.5 **Drainage Report for Major Stream Crossings**

Design-Build Contractor shall prepare a report for each major stream crossing. Major stream crossings are defined as waterways listed as a FEMA studied floodplain (Zone AE) or requiring a bridge or major culvert structure. The report shall include the detailed calculations and electronic and printed copies of the computer software input and output files, as well as a discussion about hydrologic and hydraulic analysis and reasons for the design recommendations. At a minimum, for each crossing the report shall include:

***FEMA Special Flood Hazard Area (SFHA):***

a) Firmette and

b) Discussion of SFHA and implications

***Hydrology:***

a) Drainage area maps with watershed characteristics, in hardcopy;

b) Hydrologic calculations (where computer software is used, both hardcopy and electronic input and output files); and

c) Historical or site data used to review computed flows.

***Hydraulics and Recommended Waterway Opening and/or Structure:***

a) Photographs of Site (pre- and post-construction);

b) General plan, profile, and elevation of recommended waterway opening and/or structure;

c) Calculations – hardcopy of output, as well as electronic input and output files for all computer models used for final analysis or for permit request, as well as summary of the basis of the models;

d) Cross-sections of waterway (Design-Build Contractor shall provide a hard copy plot, plus any electronic data used); and

e) Channel profiles.

***Scour Analysis:***

a) Channel cross-sections at bridge showing predicted scour;

b) Calculations and summary of calculations, clearly showing predicted scour and assumptions regarding bridge opening and piers used to calculate predicted scour;

c) Discussion of review of long-term degradation/aggradation and effects; and

d) Recommendation for abutment protection.

These reports shall be part of the Drainage Design Report.

Major stream crossings are waterways with a FEMA-studied SFHA or requiring a bridge class structure, which is defined as any bridge or a culvert with a total opening width greater than or equal to twenty (20) feet. Any other waterway will be by default a minor stream crossing.

## 12.5 Drainage Design Report

A preliminary Drainage Design Report shall be submitted with pre-final set of construction plans. The preliminary Drainage Design Report shall include at a minimum everything included in the Final Drainage Design Report. Within thirty (30) days of Service Commencement, Design-Build Contractor shall submit to TxDOT, as part of the record set documents, a Final Drainage Design Report, which shall be a complete documentation of all components of the Project's drainage system. At a minimum, the Report shall include:

a) Record set of all drainage computations, both hydrologic and hydraulic, and all support data;

b) Hydraulic notes, models, and tabulations;

c) Bridge and culvert designs and reports for major stream crossings including all items listed in Section 12.2.1;

d) Pond designs, including graphic display of treatment areas and maintenance guidelines for operation;

e) Correspondence file;

f) Drainage system data (location, type, material, size, and other pertinent information) in a suitable electronic format; and

g) Storm sewer drainage reports (if applicable).

## 12.6 Construction Requirements

Design-Build Contractor shall design drainage to accommodate construction staging. The design shall include temporary erosion control ponds and other Best Management Practices needed to satisfy the NPDES and other regulatory requirements. The water resources notes in the plans shall include a description of the drainage design for each stage of construction.

Design-Build Contractor shall maintain at a minimum the existing storage capacity of Able Sump Ponds 2 and 3 below elevation 392.5 throughout the duration of construction for the Project.

Design-Build Contractor shall design and construct swales or other hydraulic mitigation measures for the Trinity River as approved under the Section 408 permit or subsequent coordination between the Design-Build Contractor and the Fort Worth District of the USACE.

# 13 STRUCTURES

## 13.1 General Requirements

The structural Elements of the Project, including bridges, culverts, drainage structures, signage supports, illumination assemblies, traffic signals, retaining walls, and sound walls, shall be designed and constructed in conformance with the requirements of the DBA Documents and the current AASHTO LRFD Bridge Design Specifications, except where directed otherwise by the TxDOT Bridge Design Manual – LRFD and the TxDOT Geotechnical Manual, in order to provide the general public a safe, reliable, and aesthetically-pleasing facility. See Section 15 for Aesthetics Guidelines.

Design and construction of all bridge structures within and adjacent to the Dallas Floodway shall conform to the requirements set forth in the USACE Initial Section 408 Approval or New Section 408 Approval if required.

For bridges, walls, bridge class culverts, sign structures and other miscellaneous structures, a Corridor Structure Type Study and Report shall be submitted to TxDOT for review and comment prior to design of these Elements. At a minimum, structural concepts, details and solutions, soil parameters, hydraulics, environmental requirements, wetland impacts, safety, highway alignment criteria, constructability, aesthetics requirements, and continuity for the Project shall be evaluated in the Study and Report. Evaluation of existing structures that will be retained shall be included in the Study and Report. The Study and Report shall clearly define Design-Build Contractor's action to achieve a 100-year service life for Project bridges, walls, culverts and miscellaneous structures.

Design-Build Contractor shall submit to TxDOT an inventory and operating ratings of constructed structures with the Record Drawings.

## 13.2 Design Requirements

Design-Build Contractor shall obtain National Bridge Inventory (NBI) numbers from TxDOT for all bridges and bridge class culverts. The NBI numbers shall be shown on the applicable layout sheets of the Final Design Documents.

### *13.2.1 Design Parameters*

Unless otherwise noted, design for all roadway and pedestrian structural elements shall be based on the Load and Resistance Factor Design (LRFD) methodology included in TxDOT's *LRFD Bridge Design Manual* and as presented in the most recent AASHTO LRFD Bridge Design Specifications, including all interim revisions. Sidewalks shall be provided on bridge structures in accordance with Section 20 (Bicycle and Pedestrian Facilities).

Segmental bridges shall additionally conform to the requirements of AASHTO Guide Specifications for Design and Construction of Segmental Bridges.

Pedestrian bridges shall additionally conform to the requirements of AASHTO Guide Specifications for Design of Pedestrian Bridges.

The Design-Build Contractor shall proportion bridge spans to avoid uplift at supports.

Design-Build Contractor shall ensure that bridges crossing over waterways withstand a 100-year frequency event with no loss of structural integrity.

Bridges contained within the Project shall, at a minimum, be designed to accommodate the Project and all planned expansions or updates of each facility by its respective owner as designated in the owner's current transportation master plan. Alignments shall meet the requirements indicated in Section 11 for the functional classification of each roadway. Design-Build Contractor shall design bridge structures required

for the Interim Configuration, if applicable, to the total length and span arrangement required for the Ultimate Scope, including spanning future lanes that will be constructed below the structure as a part of the Ultimate Scope.

Design-Build Contractor shall design bridge structures to accommodate the Ultimate Scope and construct bridge structures to the width required for the Interim Configuration. Design-Build Contractor shall ensure that bridges constructed for the Interim Configuration can be widened to the Ultimate Scope width at a later date with minimal or no impact to aesthetics traffic operations and structural behavior.

Direct-connect structures shall be constructed to satisfy the Ultimate Scope. In locations where the Interim Configuration does not call for the construction of the direct-connect structures, Design-Build Contractor shall make provisions to accommodate the future construction.

Bridge span configurations within the Dallas Floodway shall conform to the following:

a) Design-Build Contractor designed bridges for IH 35E shall consist of four spans of generally equal lengths beginning at the west bank of the future Trinity River channel and ending at the east bank of existing Trinity River channel;

b) Design-Build Contractor designed bridges for IH 30 shall consist of four 250-ft long spans beginning and ending at locations established by the signature pedestrian/bicycle bridge plans provided by the City of Dallas;

c) Design-Build Contractor designed bridges for IH 30 and IH 35E shall utilize the same beam types for the four long span sections required in Items a) and b) above;

d) Design-Build Contractor designed bridges for IH 35E shall span the existing and future Trinity River channels and shall have bents located a sufficient distance away from top of existing and future channel banks so that armoring or other mitigation of channel banks is not required;

e) Design-Build Contractor shall design IH 30 Frontage Road Bridges to accommodate and resist lateral loads provided by the City of Dallas for the signature pedestrian/bicycle bridges;

f) Design-Build Contractor shall accommodate Alternative 3C of the proposed Trinity Parkway adjacent to the flood side of the East Levee of the Dallas Floodway as depicted on the preliminary bridge layouts; and

g) Design-Build Contractor shall provide a minimum of 7-ft vertical clearance from proposed low chord of bridge to top of future levee top maintenance road. Future top of levee maintenance road is Standard Project Flood Elevation (SPF) provided by the USACE plus 3.2 foot to top of 1-ft deep aggregate maintenance road with 0.2-foot centerline crown.

All electronic and paper files and calculations design notebooks shall be made available at TxDOT's request.

### *13.2.2 Bridge Design Loads and Load Ratings*

a) Live Loads

All roadway bridges and bridge class culverts shall be designed to accommodate the following live loads:

An HL-93 truck or a tandem truck plus lane load as defined in the AASHTO LRFD specifications shall be utilized for bridges except pedestrian bridges.

Sidewalks of vehicular bridges and pedestrian bridges shall be loaded in accordance with requirements in the AASHTO LRFD Bridge Design Specifications and the AASHTO Guide Specifications for Design of Pedestrian Bridges. In addition, all pedestrian bridges shall also be designed for an AASHTO H-10 truck live load (as defined in the AASHTO Standard

Specifications for Highway Bridges, 17th edition) to account for maintenance and emergency vehicles.

b) Additional Loads

Bridges (except pedestrian bridges) shall also be designed to accommodate a minimum future overlay load of 25 psf.

Design-Build Contractor shall provide to TxDOT both an inventory and an operating rating of the constructed structures using a form provided by TxDOT. Load ratings shall be in accordance with AASHTO's *Manual for Condition Evaluation of Bridges*.

### *13.2.3 Bridge Decks and Superstructures*

Fracture-critical members shall not be used for bridges without written authorization from TxDOT and if allowed by TxDOT, fracture-critical members shall be designed to allow full access for inspection.

The bridge type shall not be restricted to those typically used by TxDOT. Other types and components may be used, but will be allowed only if:

a) They have been accepted for general use by the Federal Highway Administration (FHWA); and

b) Design-Build Contractor can demonstrate that the design of the bridge type and components will meet the functional requirements and the original design intent of the Project.

(Note: Prestressed concrete beam types are limited to beam or girder shapes currently supported by TxDOT standard details and drawings. Type A, B, C, IV and VI beam types will not be allowed as they are no longer supported by TxDOT standards.)

Design-Build Contractor shall minimize the number of deck joints wherever possible. Design-Build Contractor shall locate joints to provide for maintenance accessibility and future replacement. Joints for all bridge structures shall be sealed.

Modular joints shall be used when anticipated movement exceeds five (5) inches and shall be designed and tested for fatigue loading.

Design-Build Contractor shall provide reinforcing steel with epoxy coating for the following bridge components: approach slab, slab, sidewalk, median, concrete traffic barrier, and rail. Epoxy coated reinforcing is not required for portions of rail or concrete traffic barrier not located on a bridge.

Design-Build Contractor shall incorporate the following additional superstructure corrosion protection measures:

a) 8.5-inch minimum concrete deck thickness with 2.5-inch clear cover to the top mat of reinforcing steel;

b) High Performance Concrete (HPC) for bridge deck slabs and rails; and

c) Class II (Penetrating) concrete surface treatment.

In addition, the air entrainment requirement for bridge deck slabs and rails will not be waived.

Design-Build Contractor shall design sidewalks to meet the criteria of the AASHTO Roadside Design Guide and protect sidewalks from vehicular impact by a TxDOT-approved bridge railing as required in the TxDOT *Bridge Railing Manual* based on roadway Design Speed. For the Project, pedestrian rail shall be used along structure pavement edges and installed to minimize damage to the pedestrian rail when accommodating future expansions.

To the extent possible, Design-Build Contractor shall make bridge superstructures, joints, and bearings accessible for long-term inspection and maintenance. Design-Build Contractor shall make open-framed superstructures accessible with walkways or by use of ladders or an under-bridge inspection truck.

Steel and concrete box girders and caps (substructure) shall be accessible without impacting traffic below; Design-Build Contractor shall make steel and concrete box girders and caps (substructure) with a minimum inside depth of six (6) feet to facilitate interior inspection. Design-Build Contractor shall include a minimum access opening of 3'-0" diameter into all cells and between cells of the girders to allow free flow of air during inspections. The outside access opening cover shall hinge to the inside of the box girder and caps (substructure). An electrical system (110V and 220V) shall be incorporated inside the box girder and caps (substructure) with lighting and power outlets. Design-Build Contractor shall install air-tight, sealed and locked entryways on all hatches and points of access.

Segmental bridges shall additionally conform to the following:

a) Segmental bridge decks shall use deck protection systems to prevent infiltration of corrosive agents into reinforcing in the superstructure. The deck protection system used shall be such that cracking is minimized and adequate bond strength is developed with the superstructure.

b) If monolithically cast overlay is used as part of the deck protection system, the Design-Build Contractor shall develop fully engineered design guidelines for the thickness of the monolithic concrete removed and replaced in a manner that keeps distress and changes in surface profile at the time of concrete removal to levels that do not reduce the structural integrity of the structure.

c) All expansion joints shall be sealed or drained. External tendons, if used, shall be protected with a water-tight duct jointing system.

d) The design, detail and construction of segmental bridges shall provide for the easy addition of supplemental post-tensioning.

### *13.2.4 Bridge Foundations*

Integral abutments, where the superstructure is structurally framed (either completely or partially) into the abutment, shall not be permitted. Mechanically Stabilized Earth (MSE) walls shall not serve as structural foundations for bridges on the Project and shall not be subjected to vertical loads from the bridges. Bridge approach slabs shall be designed and constructed to mitigate settlement immediately behind abutment backwalls.

Design-Build Contractor's bridge span arrangement and foundation locations shall accommodate the Ultimate Scope.

Structure foundations located within the limits of the future City of Dallas Trinity River Lakes shall be designed for the future conditions. Top of footing/bottom of column for bents located within the future Trinity Lakes shall be one foot minimum below the lower of the following:

a) Existing adjacent ground surface elevation;

b) Natural Lake (at IH 35E) normal operating pool elevation of 402; and

c) Urban Lake (at IH 30) minimum operating pool elevation of 398.

Design-Build Contractor shall coordinate with the City of Dallas to confirm current information is utilized for proposed river channel alignment, lakes footprints and water surface elevations.

Structure foundations to be located within 150 ft. of the existing Dallas Floodway levees toes of slope may require levee slope stability and under seepage analyses be performed if determined by the Fort Worth District of the USACE to be appreciably different from preliminary foundation layouts developed by TxDOT and included with the Section 408 submittal package. Design-Build Contractor shall be

responsible for performing and obtaining USACE approval if additional levee analyses are required by the USACE.

Structure foundations within the Dallas Floodway shall be designed to accommodate anticipated scour depths.

Design-Build Contractor shall maintain a minimum of 10'-0" horizontal clearance to Dallas Water Utility (DWU) facilities.

Spread footing foundations are not allowed for bridge structures.

### *13.2.5 Permanent Modifications to Existing Bridges*

The Design-Build Contractor shall make the following permanent modifications to existing bridges:

a) Remove existing stair tower and foundations on the Houston Street Viaduct that conflict with proposed Collector-Distributor 30. Construct in-kind concrete traffic rail to close existing opening for stairs. Remove all existing stair connections to bridge and restore concrete surfaces to match existing.

b) Construct in-kind concrete traffic rail on Houston Street Viaduct to close opening at existing HOV ramp connection.

c) Construct TxDOT standard bridge traffic railings to match existing on Jefferson Boulevard Viaduct to close openings at existing HOV ramp connections.

d) Construct bent cap beam and column modifications to the existing bridge structure between Houston Street and Jefferson Boulevard Viaducts for elevated access to the south end of the existing Reunion Parking Garage. The modifications shall accommodate the proposed northbound IH 35E frontage road and provide adequate sight distances for vehicles entering and exiting the existing parking garage at ground level.

### *13.2.6 Bridge Railing and Barriers*

Except for the Houston Street Viaduct rail to be replaced in-kind, all barrier systems used on the Project shall meet current crash test and other safety requirements as determined by TxDOT. All testing and associated costs for non-standard railings shall be the sole responsibility of Design-Build Contractor and shall be accomplished through a third party acceptable to TxDOT. A current list of standard railing in is provided in Attachment 13-1, TxDOT Standard Bridge Railing. Design-Build Contractor shall protect sidewalks from vehicular impact by using TxDOT-approved bridge railings. For Interim Configuration, pedestrian rail shall be used along structure pavement edges and installed to minimize future damage when accommodating the Ultimate Scope.

### *13.2.7 Retaining Walls*

The design of wall structures shall take into account live load surcharges. The Design-Build Contractor shall apply the appropriate live loading condition (vehicular, heavy rail, transit etc.) to which each wall is subjected. These live load surcharges shall be based on the latest AASHTO LRFD specifications, American Railway Engineering and Maintenance of Way Association (AREMA) specifications, or the requirements of the specific railroad and transit owner/operator, as appropriate.

Structural integrity of retaining walls shall be inspected and monitored in accordance with Good Industry Practice. Tolerances and mitigation measures shall be in accordance with the Maintenance Management Plan and Good Industry Practice.

The retaining wall layouts and typical sections shall address slope maintenance above and below the wall.

To the extent possible, Design-Build Contractor shall design and construct components of the Project to provide embankments without the use of retaining walls. Where earthen embankments are not feasible, Design-Build Contractor may use retaining walls.

Wall types and components will be allowed only if:

a) They have been accepted for general use by FHWA, and

b) Design-Build Contractor can demonstrate that the design of the wall type and components shall meet the functional requirements and the original design intent of the Project.

Metal walls, including bin walls and sheet pile walls, recycled material walls and timber walls are not allowed. Modular walls employing interlocking blocks shall not be used where surcharge loads from vehicular traffic are present.

If pipe culverts are to extend through the retaining walls or noise walls, the pipe shall be installed so that no joints are located within or under the wall.

No weep holes through the face of the retaining walls will be allowed, except at the base of the walls.

### *13.2.8 Noise/Sound Walls*

Design-Build Contractor shall design and construct the noise/sound walls to achieve the decibel reduction requirement in the NEPA Approval(s).

Panel design and construction shall limit the risk of falling debris resulting from traffic impacting the sound wall.

Timber sound walls are not allowed.

### *13.2.9 Drainage Structures*

In developing the design of drainage structures, Design-Build Contractor shall account for maximum anticipated loadings during the Project.

Energy dissipaters, if used, shall be considered as structural Elements.

### *13.2.10 Sign, Illumination, and Traffic Signal Supports*

Design-Build Contractor shall design overhead and cantilever sign supports to accommodate the Project. Cantilever and sign bridge supports shall be placed outside the clear zone or shall be otherwise protected by appropriate safety measures. Sign supports shall be provided at locations necessary to meet the signing requirements of the Project. Sign support foundations will not be allowed to penetrate the Dallas Floodway levee templates. In the event a sign support must be located over the levees, the Design-Build Contractor shall develop a solution to mount the supports to the bridge structure. Supports for bridge mounted illumination poles shall not be located more than 10’-0” away from centerline bearing of a bridge bent or abutment unless authorized by TxDOT.

### *13.2.11 Widenings*

Design-Build Contractor shall complete a load rating and condition survey of existing structures to be widened. Ratings shall be based on current TxDOT procedures.

### *13.2.12 Structures to be Used in Place or Rehabilitated*

For existing structures to be used in place or rehabilitated, Design-Build Contractor shall perform a pre-condition survey including the location, condition rating, appraisal rating, load rating, remaining service life, and recommended mitigation measures. Existing structures not shown on the approved schematic as

to be used in place or rehabilitated require approval and written authorization from TxDOT to be incorporated into the Project.

## 13.3 Construction Requirements

### *13.3.1 Concrete Finishes*

All concrete surfaces that do not have aesthetic treatments shall have a uniform texture and appearance. Color treatment, where required as an aspect of the aesthetic treatment of the concrete, shall be uniform in appearance. Ordinary Surface Finish as defined by the TxDOT *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* shall be applied to the following as a minimum:

a) Inside and top of inlets;

b) Inside and top of manholes;

c) Inside of sewer appurtenances;

d) Inside of culvert barrels;

e) Bottom of bridge slabs between girders or beams; and

f) Vertical and bottom of surfaces of interior concrete beams or girders.

### *13.3.2 Structure Metals*

Welding shall be in accordance with the requirements of the AASHTO/AWS D1.5 2010 Welding Code.

### *13.3.3 Steel Finishes*

All structural steel shall be protected. For structural steel to be painted, provide either paint System III or System IV as defined by the TxDOT *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* (latest version). The color for structural steel paint shall conform to the aesthetic scheme of the Project.

Weathering steel shall not be used.

### *13.3.4 Dallas Floodway*

The Design-Build Contractor shall at a minimum conform to those requirements listed on the preliminary Flood Emergency Operation Plan sheet and the Floodway Construction Notes sheet included with the Initial Section 408 Submittal to the USACE unless otherwise approved in writing by TxDOT and the USACE. The Design-Build Contractor shall be responsible for coordinating with TxDOT and USACE for completion and final approval of the Flood Emergency Operation Plan sheet and Floodway Construction Notes sheet.

# 14 RAIL

## 14.1 General Requirements

This section defines the criteria required for the Project to accommodate and/or design and construct (i) a potential rail corridor within, and/or (ii) facilities and structures for rail line(s) crossing, the Project ROW.

If the Project includes a rail corridor within the Project ROW, Design-Build Contractor shall prepare a geometric design for the rail corridor. Design-Build Contractor's PMP shall set forth an approach, procedures, and methods for the rail corridor design and construction meeting the requirements set forth in the DBA Documents.

## 14.2 Railroad Design Standards

The design for all railroad elements of the Project shall be based on the most recent American Railway Engineering and Maintenance of Way Association (AREMA) and the requirements of operating railroad. Design-Build Contractor's design shall minimize service interruptions to existing rail lines.

All work involving railroad companies, work on railroad Right-of-Way (ROW), and the development and execution of railroad programs shall be in accordance with State and federal law and the practices, guidelines, procedures and methods contained in the TxDOT Traffic Operations Manual, Railroad Operations Volume and *Amendments for the TxDOT's Traffic Operations Manual, Railroad Operations Volume*, February 2000. Additionally, the requirements of the owner of each facility crossed shall be compared to the requirements in the TxDOT manual, and the most restrictive criteria shall be utilized.

At highway-rail grade crossings, the roadway and drainage design parameters shall be maintained at the crossing with exception to the cross slope of the pavement which may be transitioned to match the grade across the rail line. The structural design of any Utilities, including drainage structures, installed by the Design-Build Contractor and crossing a rail line, shall be in accordance with the operating railroad's design criteria. Design-Build Contractor shall coordinate, design, and construct the construction staging, including any shooflies, with the operating railroad.

Design-Build Contractor's design shall minimize service interruptions to existing rail lines.

## 14.3 Administrative Requirements

### *14.3.1 Project Work Affecting Railroad Operations*

Should the Project cross a railroad right-of-way owned by an operating railroad, Design-Build Contractor shall coordinate the Work with the operating railroad. Design-Build Contractor shall be responsible for obtaining the required approvals, permits, and agreements as required for the railroad-related Work and shall coordinate the design and installation of all railroad warning devices and traffic signals with the appropriate Governmental Entities and operating railroads.

### *14.3.2 Agreement for Construction, Maintenance, and Use of Right-of-Way*

Whenever a license agreement for construction, maintenance, and use of railroad ROW (hereinafter called the "License Agreement") between the operating railroad and TxDOT is required, Design-Build Contractor shall prepare all the documentation required to obtain the License Agreement, including preparation of the License Agreement application on behalf of TxDOT, the Plans and specifications, making necessary modifications as required, and preparation of the License Agreement.

Design-Build Contractor shall submit the draft License Agreement to TxDOT for transmittal to the operating railroad. After all comments have been incorporated or satisfactorily resolved by Design-Build

Contractor, railroad, or TxDOT, Design-Build Contractor shall submit a complete and final License Agreement to TxDOT for execution.

### *14.3.3 Operation Safety*

Design-Build Contractor shall arrange with the operating railroad for railroad flagging as required. Design-Build Contractor shall comply with the operating railroad's requirements for contractor safety training prior to performing Work or other activities on the operating railroad's property.

### *14.3.4 Railroad Right-of-Entry Agreement*

In order to enter the operating railroad's right-of-way to perform the Work, Design-Build Contractor shall secure a railroad Right-of-Entry Agreement and shall coordinate the arrangements of the necessary agreements directly with the operating railroad.

Executed railroad agreements in entirety, shall be submitted as part of the Final Design Documents.

### *14.3.5 Design-Build Contractor Right-of-Entry Agreement*

Design-Build Contractor shall cooperate and coordinate with all operating railroads for access by the operating railroad and/or their agents to the rail ROW as necessary for rail maintenance and operations activities, inspection, repair and emergency responses.

### *14.3.6 Insurance Requirements*

Design-Build Contractor shall procure and maintain, prior to working adjacent to and entry upon operating railroad property, insurance policies naming TxDOT, TxDOT's Consultants, and railroad as named insured.

Design-Build Contractor shall obtain the following types of insurance:

1. Railroad Protective Liability Insurance Policy;
2. Comprehensive General Liability Insurance; and
3. Contractors' Protective Liability Insurance.

All insurance policies shall be in a form acceptable to the operating railroad. Copies of all insurance policies shall be submitted to TxDOT prior to any entry by Design-Build Contractor upon operating railroad property.

## 14.4 Construction Requirements

Design-Build Contractor shall comply with all construction requirements and specifications set forth by the operating railroad.

Design-Build Contractor shall be responsible for scheduling the work to be completed by operating Railroad as well as the work to be completed by its own forces. Design-Build Contractor shall be responsible for all costs associated with the Railroad/transit force account work.

# 15 AESTHETICS AND LANDSCAPING

## 15.1 General Requirements

This Section 15 defines requirements with which Design-Build Contractor shall design and construct aesthetic treatments for the roadway, structures, drainage, and landscaping Elements of the Project. Aesthetic treatments shall be designed to harmonize with the local landscape and architecture, as well as the developed themes of the local setting. Design-Build Contractor shall coordinate with local and State agencies to achieve this harmonization.

## 15.2 Administrative Requirements

This Section 15 presents minimum aesthetics and landscape design requirements for Project designs. For purposes of this Section 15, the following list of items will be considered the aesthetics Elements of the Project design:

a) Material, finish, color, and texture of bridge Elements

b) Materials, finish, and color of barriers and railings

c) Paved slope treatments

d) Finish, color, and texture of retaining and noise walls

e) Contour grading, slope rounding, channel treatments, and drainage

f) Sculptural and artistic features of other structures

g) Light fixtures and light color

h) Sidewalks, median, or pedestrian specialty paving, including material, finish, and color

i) Hardscape at interchanges and intersections

j) Gateway and wayfinding markers

k) Fencing

l) Signage – overhead, attached, and ground-mounted

m) Trees, shrubs, and other plant material

n) Any permanent building construction within the Project, including ancillary support, operational, and toll collections

### *15.2.1 Aesthetics Concepts*

Aesthetic elements shall be designed as corridor-wide enhancements. To the extent practicable, the aesthetic elements shall remain consistent in form, materials, and design throughout the length of the Project where applied.

Design-Build Contractor shall adhere to the approved Project Urban Design Technical Guidelines, which are hereby incorporated herein by this reference. If Design-Build Contractor develops and TxDOT approves an alternate aesthetic concept, Design-Build Contractor shall take primary responsibility for presenting said concept to City of Dallas for approval. Design-Build Contractor shall base this presentation on the principles, requirements, and strategies provided in Section 15.3 (Design Requirements). Design-Build Contractor shall, at its option, submit the three (3) preliminary aesthetic concepts to TxDOT for review and approval in TxDOT's discretion within sixty (60) Days of issuance of

NTP1 and before presenting the aesthetics concepts to the public. After meeting with the public, Design-Build Contractor shall prepare a final aesthetic concept and submit it to TxDOT for final approval.

### *15.2.2 Aesthetics and Landscaping Plan*

Unless an Aesthetic and Landscaping Plan is approved, all unpaved areas and areas not covered by permanent structures shall be sodded, except within the Dallas Floodway, which may be drill-seeded. If an alternate aesthetic or landscaping concept is proposed, Design-Build Contractor shall prepare an Aesthetics and Landscaping Plan in conformance with the Project's approved aesthetic concept for approval by TxDOT, in its good faith discretion. This Aesthetics and Landscaping Plan shall provide guidelines and requirements for the aesthetics design of the Project. The Aesthetics and Landscaping Plan shall include all elements to fully communicate the proposed aesthetic treatment to TxDOT.

The Aesthetic and Landscape Plan shall address all the aesthetic Elements of the Project with the production of the following plans:

- Aesthetic Plans
    - a) A master plan that will convey the layout of the various roadway conditions (e.g., depressed sections, elevated sections, at-grade roadways, bridges, control buildings, and cantilevered structural sections);
    - b) Drawings showing where site-specific elements are located (e.g., fences, signage, potential locations of community improvement opportunity areas, gateway markers, bridge enhancements, landscaping); and
    - c) Color schemes and their locations.
- Landscaping Plans
    - a) A plan that indicates plant palettes, locations of plants, plant types, and planting dates;
    - b) A maintenance program approved by TxDOT and the City of Dallas; and
    - c) Composite drawings of all utilities and easements that would interfere with landscaping, markers, or any other identified enhancements.

The Aesthetic and Landscaping Plan shall include all plans, elevations, perspectives, isometrics, etc., as needed to fully convey the aesthetic treatment.

Upon completion of the Aesthetic and Landscaping Plan, Design-Build Contractor shall consolidate the information, which establishes the requirements for engineering of the highway corridor aesthetics. The guidelines shall serve as the primary standard guidance necessary to produce the intended aesthetic form, function, and appearance of this and future similar projects.

Design-Build Contractor shall submit the Aesthetics and Landscaping Plan to TxDOT for review and approval in its good faith discretion within 120 Days of issuance of NTP1. The Aesthetics and Landscaping Plan approval shall be a condition of issuance of NTP2.

### *15.2.3 Personnel*

Design-Build Contractor shall provide a landscape architect, registered in the State of Texas, with a minimum five (5) years' experience in designing aesthetics and landscaping Elements for roadway projects of similar scope and size, to develop the Aesthetics and Landscaping Plan.

## 15.3 Design Requirements

### *15.3.1 Aesthetics Principles and Strategies*

Design-Build Contractor shall follow the guidelines and requirements of the approved Aesthetics and Landscaping Plan, as well as the aesthetics principles, requirements, and strategies established by TxDOT for the Project design, including the following:

a) Aesthetics shall not interfere with safety, constructability and maintenance requirements.

b) The Project design shall minimize impact on the existing natural environment to the extent possible.

c) The Project design shall emphasize and enhance the existing natural context and landscape to the fullest extent possible.

d) Simple geometric shapes for structures shall be used to the extent possible for continuity along the entire length of the Project.

e) All bridges and other structures shall be simplified in their design, and to the greatest extent possible, kept small in size, bulk, and mass.

f) All structures shall be carefully detailed so as to achieve the greatest level of aesthetic quality and fit within the regional context.

g) Color, texture, and form shall be used appropriately for all structures.

h) Graphics, signage, and lighting shall be consistent along the entire length of the Project.

i) Existing trees and natural features shall be preserved to the greatest extent possible.

j) Aesthetics Elements shall be fully integrated with the overall landscape design.

k) Visual quality of the landscape shall be consistent along the entire length of the Project.

l) Native-area and/or naturalized plant materials that exhibit good drought tolerance shall be used to the extent possible.

m) Aesthetic Elements shall be easy to maintain and resistant to vandalism and graffiti.

### *15.3.2 Walls*

Design-Build Contractor shall design noise/sound walls to be similar in color, texture, and style to those of retaining walls, and shall develop an aesthetics treatment that is consistent with other physical features such as structures, landscaping, and other highway components.

Design-Build Contractor shall apply aesthetic treatments to the vertical surfaces of retaining and noise/sound walls where the surface is visible from the roadway or adjacent houses. Consistent treatments shall be used for retaining and noise/sound walls that articulate the design themes established for the Project.

Design-Build Contractor shall pay special attention to aesthetic design Elements and utilize high aesthetic quality of finishes and materials at interchanges and approaches to toll collection points.

The Design-Build Contractor shall clearly detail and identify how wall patterns shall be incorporated into the chosen design solution.

The roadside face of noise walls shall have a consistent appearance throughout their length. The side of the noise walls facing away from the roadway may vary based upon community input gathered by the Design-Build Contractor.

### *15.3.3 Bridges and Other Structures*

All aesthetic treatments for structural Elements shall be coordinated with Design-Build Contractor's structural design team to facilitate constructability and maintain safety requirements. All substructure columns shall be consistent in form and texture, with similar shapes and details used for all bridges, in accordance with the Projects aesthetics concept.

No exposed conduits or drain pipes will be allowed on bents, columns, bridge beams, retaining walls, or any other visible surface.

Design-Build Contractor shall ensure that a constant superstructure depth is maintained throughout the bridge length for all bridges other than direct connection structures, braided ramps and the long span girders for the 4-span section of the bridges over the existing and future Trinity River Channels and future lakes within the Dallas Floodway. For direct connection structures and braided ramps, concrete beam spans shall be of constant depth throughout the structure. For the bridges across the Dallas Floodway, the long span girders shall be either constant depth or be symmetrical about centerline of bent for variable depth.

### *15.3.4 Trees, Shrubs, and Other Plant Materials*

All trees, shrubs, deciduous vines, and perennials shall comply with the applicable requirements of *ANSI Z60.1 American Standard for Nursery Stock*. Design-Build Contractor shall consult with the agricultural extension agent of the applicable county and TxDOT for recommended plant species lists. Design-Build Contractor shall use plant species native to the area or naturalized for the Project Site.

In order to monitor and control weeds, Design-Build Contractor shall provide weed control measures in the Aesthetics and Landscape Plan.

Vegetation provided as a part of Design-Build Contractor's Aesthetic and Landscaping plan, other than grassing, and erosion control measures, shall be incorporated with the following guidelines:

- Trees, if used, shall be placed in accordance with TxDOT's minimum clearance zones and shall be placed in the Facility ROW between mainlanes and frontage roads. Trees shall be a minimum of six (6) feet high and shall have a three (3) inch caliper minimum.
- The mature canopy shall not overhang the travel lane or shoulder of any part of the roadway.

### *15.3.5 Riprap*

Concrete paving shall be used in hard to reach mowing areas or under structures such as, but not limited to, areas between, near, or next to guard fence posts, sign posts, bent columns, retaining walls, freeway ramp gores, paved ditches, flumes, and ditch inlets to improve roadway appearance.

### *15.3.6 Lighting*

Design-Build Contractor shall design the aesthetic enhancement lighting with the following aesthetic criteria:

- One pole type for the entire corridor during the DB Phase and, to the extent practicable, the Operating Period. Design-Build Contractor shall provide a lighting layout plan that addresses each light fixture (i.e. roadside lighting, high mast lighting, under bridge fixture, etc.) and type of light fixture (i.e. LED lighting, point source lighting, HID, etc.)

### *15.3.7 Color Palette*

As part of the Aesthetics and Landscaping Plan, Design-Build Contractor shall submit a plan that indicates where each color is to be applied. This plan can be diagrammatic in nature, but shall list each

element and its colors. In addition to integrated colors, painting, and staining, Design-Build Contractor may use colored lighting in selected areas to add color.

## 15.4 Construction Requirements

Design-Build Contractor shall provide TxDOT sample panels a minimum of 60 Days in advance of starting construction of textured concrete surfaces. Design-Build Contractor shall construct sample panels in accordance with TxDOT *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* Item 427.4.B.2.d (Form Liner Finish) that comply with the principles, requirements, and strategies established by TxDOT and the approved Aesthetics and Landscaping Plan. TxDOT must review and approve the sample panels before any construction form liners may be ordered, obtained, or used. Design-Build Contractor shall provide sample panels having a textured portion at least 5.0 feet by 5.0 feet with a representative un-textured surrounding surface.

The approved sample panel shall be the standard of comparison for the production concrete surface texture.

For textured panels or concrete surfaces finished with a coating of paint or stain, Design-Build Contractor shall prepare a corresponding coated panel or surface area of an in-place Element for approval prior to the coating operation.

Color samples shall be provided from the Federal Standard 595B Colors Fan Deck, with the exception of the Margaret McDermott Bridges, which shall utilize the RAL Colors Fan Deck. All sample panels shall be representative of the actual panel that will be placed. Primary, secondary and accent colors shall be displayed.

## 15.5 Aesthetic and Landscaping Enhancements

The Design-Build Contractor shall provide adjacent Governmental Entities with the opportunity to enhance aesthetic and landscaping features consistent with the requirements herein. The capital and maintenance costs of the adjacent Governmental Entity's improvements (Aesthetic and Landscaping Enhancements) shall be the responsibility of the adjacent Governmental Entity. Design-Build Contractor shall coordinate the necessary arrangements directly with the appropriate local Governmental Entity for Aesthetic and Landscaping Enhancements within the local Governmental Entity's jurisdiction if so required by the Work.

Aesthetic and Landscaping enhancements shall be incorporated into the final aesthetic concept plan to be submitted to TxDOT for approval.

# 16 SIGNING, DELINEATION, PAVEMENT MARKING, SIGNALIZATION, AND LIGHTING

## 16.1 General Requirements

This Section 16 includes requirements with which Design-Build Contractor shall design, construct, and maintain all signing, delineation, pavement markings, signalization, and lighting, for the Project.

## 16.2 Administrative Requirements

### *16.2.1 Meetings*

Design-Build Contractor shall arrange and coordinate all meetings with local agencies that will assume responsibility for maintaining and operating traffic signals and roadway lighting. Design-Build Contractor shall provide TxDOT with notification of such meetings a minimum of 48 hours prior to the start of the meeting.

Design-Build Contractor shall arrange and coordinate all meetings with requesting agencies or individuals regarding special signs.

## 16.3 Design Requirements

The Design-Build Contractor shall design all signing, delineation, pavement marking, and signalization in accordance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD), National Electric Code (NEC), TxDOT's *Highway Illumination Manual* and TxDOT's *Standard Highway Sign Design for Texas* (SHSD), and TxDOT's Traffic Engineering Standard Sheets or TxDOT specifications.

### *16.3.1* Final Design

Design-Build Contractor shall advance the Final Design of the signing, delineation, pavement marking, signalization, and lighting based on the preliminary operational signing schematic received with the Proposal. If a preliminary operational signing schematic does not exist, Design-Build Contractor shall prepare and submit a preliminary operational signing schematic for review and approval by TxDOT and Federal Highway Administration (FHWA) prior to commencing Final Design. Before placing any signs, delineation, advance toll warning signs, third party signs, non-standard sign structures, pavement markings, traffic signals, and lighting, Design-Build Contractor shall provide TxDOT a layout indicating the proposed location of such items. Preliminary lighting layout should be developed in a roll type format with photometric curves and submitted to TxDOT for approval prior to commencing Final Design.

### *16.3.2 Signing and Delineation*

Design-Build Contractor shall design and install all signs as shown on the Final Design. Signs include new signs, as well as modifications to existing sign panels and structures. Design-Build Contractor's design shall include the locations of ground-mounted and overhead signs, graphic representation of all signs, proposed striping, delineation placement, guide sign and special sign details, and structural and foundation requirements. Signs shall be located in a manner that avoids conflicts with other signs, vegetation, dynamic message signs (DMS), lighting, and structures.

Design-Build Contractor shall ensure that signs are clearly visible, provide clear direction and information for users, and comply with all applicable TMUTCD requirements.

Design-Build Contractor shall review with TxDOT all requests for new signs, including traffic generators, or modifications of existing sign text. Such requests are subject to TxDOT's approval.

Design-Build Contractor's design of delineators and object markers shall comply with TMUTCD requirements.

Signs shall meet the requirements of TxDOT's *Standard Highway Sign Design for Texas*.

### *16.3.3 Project Signs – Outside the Project ROW*

For signs located outside the Project ROW but within a public ROW, Design-Build Contractor shall install the signs in existing rights-of-way controlled by local or other State agencies. Design-Build Contractor shall coordinate with appropriate Governmental Entities for the design and installation of such signs.

### *16.3.4 Advance Toll Information Signs*

*Reserved*

### *16.3.5 Third-Party Signs*

In addition to the warning, regulatory, and guide signs within the Project ROW, TxDOT or Governmental Entities may request that third-party signs, including logo signs, be installed by a third party. Design-Build Contractor shall coordinate and cooperate with any third party performing such work. TxDOT may solicit input from Design-Build Contractor in reviewing applications for new third-party signs, but will retain sole authority for approving installation of these signs. All costs associated with fabricating and installing these signs shall be borne by the sign applicant. If approved by TxDOT, TxDOT may require Design-Build Contractor to fabricate and/or install these signs as a TxDOT-Directed Change.

### *16.3.6 Sign Support Structures*

Design-Build Contractor shall determine foundation types and design sign foundations based upon geotechnical surveys/tests using Good Industry Practices. Designs for sign supports shall also comply with requirements in Sections 13 (Structures) and 15 (Aesthetics and Landscaping).

Design-Build Contractor shall design sign support structures to provide a vertical clearance of not less than 21'-0" between the roadway and the bottom of the sign.

### *16.3.7 Pavement Marking*

Design-Build Contractor shall ensure that the design and installation of all pavement markings comply with applicable TMUTCD requirements and TxDOT's Traffic Engineering Standard sheets.

Design-Build Contractor shall mark median noses of all raised islands and inside edges of exclusive turn lanes (channelized curbs) in accordance with the requirements of TMUTCD.

Design-Build Contractor shall use contrast markings for skip lines on the controlled access main lanes having light-colored pavement. Contrast markings consist of black background in combination with standard TMUTCD marking colors.

### *16.3.8 Signalization*

Traffic signal designs and modifications to existing traffic signals shall be completed in accordance with the current TxDOT standards and specifications, the TMUTCD, and the requirements of the appropriate Governmental Entity.

#### 16.3.8.1 Traffic Signal Requirements

Design-Build Contractor shall design and install fully-actuated permanent traffic signals at all TxDOT-authorized intersections within Project limits. In addition, Design-Build Contractor shall modify, as

appropriate, any existing traffic signals impacted by the Final Design. Design-Build Contractor shall coordinate with TxDOT and the appropriate Governmental Entities to define appropriate traffic signal design requirements, local agency oversight of Design-Build Contractor's Work, and final acceptance of traffic signals. Design-Build Contractor shall coordinate with the appropriate local Governmental Entities for synchronization of traffic signal networks.

New permanent traffic signals will be required at the following locations at project completion:

1. IH 30 EBFR at Riverfront Boulevard
2. IH 30 WBFR at Riverfront Boulevard

Replacement of the following existing traffic signals will be required at project completion:

1. IH 30 EBFR at Beckley Avenue

Temporary traffic signals will be required at the following locations throughout construction:

1. IH 30 EBFR at Riverfront Boulevard
2. IH 30 WBFR at Riverfront Boulevard

Design-Build Contractor shall provide interconnection systems between new or modified signals and any other signal system within the Project Site as required by TxDOT or the appropriate local Governmental Entity. Design-Build Contractor shall make existing signal systems compatible with the proposed interconnections. Design-Build Contractor shall ensure continuous communication with the traffic signal system within the Project Site, and shall provide all communication hardware/equipment for TxDOT or the appropriate local Governmental Entity to communicate with the signal systems within the Project Site.

Design will follow TxDOT and local government standards. Signal controllers will be provided by the local government.

Design-Build Contractor shall provide both pedestrian detectors and pedestrian signals at all traffic signals within the Project Site and shall comply with TxDOT's Accessible Pedestrian Signal (APS) Guidelines.

Design-Build Contractor is responsible for coordinating with TxDOT and preparing traffic signal agreements (or supplements thereto) for execution by TxDOT and the appropriate Governmental Entity having operation and/or maintenance responsibilities.

#### 16.3.8.2 Traffic Signal Timing Plans

Design-Build Contractor shall design signal timing plans for all new and modified traffic signals and shall submit to TxDOT for review. Design-Build Contractor shall coordinate and implement signal timing plans that optimize traffic flows and provide signal coordination with adjacent intersections and arterials for all existing and new traffic signals, modified signals, and interconnected signals. Signal timing maintenance will be provided by the local Governmental Entity. Design-Build Contractor is responsible for coordinating with the local Governmental Entity. Signal timing and phasing plans at diamond interchanges shall conform to the coordinated signal phasing and timing of the corridor.

Design-Build Contractor shall provide copies of all final implemented signal timing plans.

#### 16.3.8.3 Traffic Signal Warrants

As part of the Final Design process, Design-Build Contractor shall collect traffic data and prepare traffic warrant studies for intersections not signalized at the time of NTP1 and shall submit these signal warrant studies to TxDOT for review. The warrant studies shall address all signal warrant criteria in the TMUTCD. Design-Build Contractor shall make recommendations for new signal installations based on these warrant studies in consultation with TxDOT and the appropriate Governmental Entities. TxDOT will reasonably determine if a signal or modification is required, based upon the warrant study.

TxDOT will provide warrant studies for the following intersections:

1. IH 30 EBFR at Riverfront Boulevard
2. IH 30 WBFR at Riverfront Boulevard

All requests for signals within the Project ROW throughout the Term of the Agreement shall be subject to TxDOT approval.

Signal warrant studies shall be based on actual traffic and/or opening year traffic projections. If actual traffic volumes are not available, but opening year traffic is available, Design-Build Contractor shall use the procedure in Section 3.5 of the TxDOT Traffic Signals Manual to determine the volumes to be analyzed. If opening year traffic volumes are not available, opening year traffic volumes shall be calculated by applying a 50-percent reduction to the Design Year traffic projections. Design-Build Contractor shall conduct additional traffic signal warrant studies for all intersections located in the Project ROW, commencing six months after the Project is opened for traffic. If additional signals or modifications to existing signals are warranted, based on the traffic volumes obtained through these studies, Design-Build Contractor shall be responsible for installation of additional traffic signals or modification of previously-installed traffic signals. If, based on the above traffic counts, the need for a signal or signal modification is unclear, TxDOT will reasonably determine if the new signal or signal modification is required.

#### 16.3.8.4 Traffic Signal Support Structures

Design-Build Contractor shall coordinate with TxDOT and the appropriate Governmental Entities to determine the type of traffic signal support structures. Design-Build Contractor shall obtain the maintaining Governmental Entities' approval of traffic signal support structures to be used on new signal installations.

#### 16.3.8.5 Traffic Signal Systems

Design-Build Contractor shall provide communication between new or modified signals and the appropriate Governmental Entity's Central Control System as required by TxDOT or the appropriate Governmental Entity. Design-Build Contractor shall make existing signal systems compatible with the proposed traffic signal system. Design-Build Contractor shall ensure continuous communication with the traffic signal system within the Project Site, and shall provide all communication hardware/equipment for TxDOT or the appropriate Governmental Entity to communicate with the signal systems within the Project Site.

Design-Build Contractor shall coordinate with TxDOT and the appropriate Governmental Entities to determine the type of traffic signal support structures. Design-Build Contractor shall obtain the maintaining Governmental Entities' approval of traffic signal support structures to be used on new signal installations.

Design-Build Contractor shall provide to TxDOT, as part of the Final Design Documents, an Acceptance Test Plan (ATP) for all traffic signals. This ATP shall also be submitted to the appropriate Governmental Entity. The Design-Build Contractor shall conduct testing in accordance with the ATP and document those results to show conformance.

### *16.3.9 Lighting*

Design-Build Contractor shall provide roadway lighting along general purpose lanes, managed/HOV lanes, collector-distributor lanes, ramps, and any cross streets having existing illumination within the Project limits.

Design-Build Contractor shall prepare lighting studies that consider illumination levels, uniformity, and sources for the roadways, interchanges, and special areas. Design-Build Contractor shall maintain an

average horizontal luminance on the roadways as described below. Design-Build Contractor shall submit the photometric data results for all lighted areas within the Project limits to TxDOT for review.

All third-party requests for lighting within the Project Site shall be subject to TxDOT approval.

Design-Build Contractor shall provide an average-to-minimum uniformity ratio of 3:1 and design roadway lighting systems per the TxDOT *Highway Illumination Manual*,

Design-Build Contractor shall design the lighting system to minimize or eliminate illumination of areas outside the Project ROW. Design-Build Contractor shall design continuous and safety lighting systems in accordance with Chapters 5, 6, 7, and 9 of the TxDOT *Highway Illumination Manual*.

Luminaire poles and breakaway bases shall be designed in accordance with AASHTO's *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*. For all poles located within the clear zone of the roadways, Design-Build Contractor's design shall incorporate breakaway devices that are pre-qualified by TxDOT.

Design-Build Contractor shall place all understructure lighting in a configuration that minimizes the need for lane closures during maintenance.

Design-Build Contractor shall determine and design appropriate foundation types and lengths for permanent lighting structures.

Design-Build Contractor shall not place ITS cable, fiber-optic lines, signal conductors, or any other non-lighting related cables or conductors in the lighting conduit, ground boxes, or junction boxes.

Design-Build Contractor shall minimize the potential hazards of lighting poles through the careful consideration of mounting options and pole placements, including the following options:

- Placing mast arms on traffic signal poles
- Placing pole bases on existing or proposed concrete traffic barrier
- Placing poles behind existing or proposed concrete traffic barrier or metal beam fence
- Placing high mast lighting outside the clear zone, especially in roadway horizontal curves

Design-Build Contractor shall ensure that lighting structures comply with FAA height restrictions near airport facilities. In the event that proposed or existing luminaires, mast arms, or poles infringe into an airport's or heliport's base surface, Design-Build Contractor shall coordinate with the FAA and TxDOT to permit or relocate such structures. If FAA restrictions prohibit lighting structures from being placed in certain areas near an airport facility, Design-Build Contractor shall find alternative ways of providing the required level of lighting.

Design-Build Contractor shall coordinate with TxDOT and any appropriate Governmental Entities to determine and define additional illumination design preferences in accordance with the local maintenance entity.

#### 16.3.9.1 Additional Requirements

Additional requirements are as follows:

a) High-mast lighting must not infringe into residential areas adjacent to the Project ROW.

b) Design-Build Contractor must coordinate with the FAA regarding installation of obstruction lights, if any, on a case-by-case basis.

c) At a minimum, underground conduit in interchange areas or temporary detours shall not be less than 2" or Schedule 40 polyvinyl chloride (PVC);

d) The minimum conductor size shall be #8 AWG XHHW copper for main circuits and #12 AWG for underpass lighting on the load side of the fusible disconnect. Design-Build Contractor shall not use duct cable for illumination purposes.

e) Design-Build Contractor shall place bridge lighting brackets no more than ten (10) feet from abutments or bents; however, in special circumstances, the bridge lighting brackets may be placed a maximum of 20 feet from abutments and piers.

f) If overhead electric lines confine the placement of luminaires, Design-Build Contractor may use special davit-arm luminaires.

g) Minimum inside dimensions for ground boxes (TxDOT Type A) shall be 11.5 inches (width) by 21 inches (length) by 10 inches (depth).

h) Ground box covers shall be 2-inch-thick (nominal), non-conducting material and labeled "Danger High Voltage Illumination".

i) Riprap aprons shall be provided to ground boxes located in grassy areas.

j) Electrical services shall have an identification tag denoting a contact person or office in case of emergency or for maintenance, and the address and telephone number.

k) Electrical part of the installation shall be designed and installed in conformance with the National Electrical Code (NEC).

### *16.3.10 Visual Quality*

Notwithstanding the requirements of Section 16.3.7 (Signalization), Design-Build Contractor shall make a reasonable attempt to provide luminaires of equal height along the roadway.

Design-Build Contractor shall not use timber poles for permanent installation.

Design-Build Contractor shall re-sod or re-seed areas of construction disturbed by the installation of signs, traffic signal systems, or lighting systems after final installation.

## 16.4 Construction Requirements

### *16.4.1 Permanent Signing and Delineation*

Design-Build Contractor shall use established industry and utility safety practices to erect and remove signs located near any overhead or underground utilities, and shall consult with the appropriate Utility Owner(s) prior to beginning such Work. Design-Build Contractor shall stake each sign location in the field and provide TxDOT with 72 hours' notice prior to installation of any sign.

Design-Build Contractor shall leave all applicable advance guide signs and/or exit direction signs in place at all times and shall not obstruct the view of the signs to the motorist. Design-Build Contractor shall replace any other removed signs before the end of the work day.

Design-Build Contractor shall affix a sign identification decal to the back of all signs for inventory purposes and shall submit inventory information to TxDOT in a TxDOT-compatible format.

All installed signs are required to meet the minimum retro-reflectivity values specified in TMUTCD Table 2A-3 (Minimum Maintained Retroreflectivity Levels).

**Table 16-2. Retroreflectivity Values**

| Sign Colors | Sheeting Type (ASTM D4956-04) | | | | Additional Criteria |
|---|---|---|---|---|---|
| | I | II | III | VII, VIII, IX | |
| White on Green | W*; G _ | W*; G 15 | W*; G 25 | W 250; G 25 | Overhead |
| | W*; G 7 | W 120; G 15 | | | Ground-mounted |
| Black on Orange or Black on Yellow | Y*; O* | W _50; G 50 | | | See Note 1 |
| | Y*; O* | W 75; G 75 | | | See Note 2 |
| White on Red | W 35; R 7 | | | | See Note 3 |
| Black on White | W 50 | | | | — |

Notes:

The minimum maintained retro-reflectivity levels shown in this table are in units of candelas per lux per square meter (cd/lx/m$^2$), measured at an observation angle of 0.2° and an entrance angle of -4.0°.

1 For text and fine symbol signs measuring at least 1200 millimeters (mm) (48 inches) and for all sizes of bold symbol signs

2 For text and fine symbol signs measuring less than 1200 mm (48 inches)

3 Minimum Sign Contrast Ratio _ 3:1 (white retroreflectivity ÷ red retroreflectivity)

* This sheeting type should not be used for this color for this application.

Bold Symbol Signs

| | | |
|---|---|---|
| W1-1, -2 – Turn and Curve | W3-1 – Stop Ahead | W11-2 – Pedestrian Crossing |
| W1-3, -4 – Reverse Turn and Curve | W3-2 – Yield Ahead | W11-3 – Deer Crossing |
| W1-5 – Winding Road | W3-3 – Signal Ahead | W11-4 – Cattle Crossing |
| W1-6, -7 – Large Arrow | W4-1 – Merge | W11-5 – Farm Equipment |
| W1-8 – Chevron | W4-2 – Lane Ends | W11-6 – Snowmobile Crossing |
| W1-10 – Intersection in Curve | W4-3 – Added Lane | W11-7 – Equestrian Crossing |
| W1-11 – Hairpin Curve | W4-5 – Entering Roadway Merge | W11-8 – Fire Station |
| W1-15 – 270 Degree Loop | W4-6 – Entering Roadway Added Lane | W11-10 – Truck Crossing |
| W2-1 – Cross Road | W6-1, -2 – Divided Highway Plaques Begins and Ends | W12-1 – Double Arrow |
| W2-2, -3 – Side Road | | W16-5p, -6p, -7p – Pointing Arrow Plaques |
| W2-4, -5 – T and Y Intersection | W6-3 – Two-Way Traffic | |
| W2-6 – Circular Intersection | W10-1, -2, -3, -4, -11, -12 – Highway-Railroad Advance | W20-7a – Flagger |
| | | W21-1a – Worker |

Fine Symbol Signs – Symbol signs not listed as Bold Symbol Signs.

Special Cases

W3-1–Stop Ahead: Red retroreflectivity, 7

W3-2–Yield Ahead: Red retroreflectivity, 7, White retroreflectivity, 35

W3-3–Signal Ahead: Red retroreflectivity, 7, Green retroreflectivity, 7

W3-5–Speed Reduction: White retroreflectivity,_50

For non-diamond-shaped signs such as W14-3 (No Passing Zone), W4-4p (Cross Traffic Does Not Stop), and W13-1, -2, -3, -5 (Speed Advisory Plaques), use largest sign dimension to determine proper minimum retroreflectivity level.

### *16.4.2 Permanent Pavement Marking*

Design-Build Contractor shall meet the following minimum retroreflectivity values for edge line markings, centerline/no passing barrier line markings, and line markings when measured any time after three (3) days but not later than ten (10) days after application:

a) Type I, Thermoplastic, Pavement Markings:

- White markings: 250 millicandelas per square meter per lux (mcd/m2/lx)
- Yellow markings: 175 mcd/m2/lx

b) Type II, Paint & Beads, Pavement Markings:

- White markings: 175 mcd/m2/lx
- Yellow markings: 125 mcd/m2/lx

### *16.4.3 Permanent Signalization*

Design-Build Contractor shall coordinate with the Utility Owner(s) and ensure necessary power service is initiated and maintained for permanent signal systems. Design-Build Contractor shall ensure power is provided to all Design-Build Contractor-installed signals. Design-Build Contractor shall stake each pole location in the field and provide TxDOT with 72-hours' notice prior to installation of any foundation.

Design-Build Contractor shall provide TxDOT with copies of all signal warrant studies as required in this Section 16. Design-Build Contractor shall also provide copies of all final signal timing plans.

Before placing any permanent traffic signals, Design-Build Contractor shall provide to TxDOT a complete traffic signal design for TxDOT's review.

### *16.4.4* Permanent Lighting

Design-Build Contractor shall coordinate with the Utility Owner(s) and ensure power service is initiated and maintained for permanent lighting systems. Where the Work impacts existing lighting, Design-Build Contractor shall maintain existing lighting as temporary lighting during construction and restore or replace it prior to Substantial Completion. At all times during the Term, safe lighting conditions shall be maintained along the Project roadway. Design-Build Contractor shall stake each pole location in the field and provide TxDOT 72-hours' notice prior to installation of any foundation.

Design-Build Contractor shall remove all old illumination-related cable and conduit that does not have existing pavement or riprap above it; any existing illumination-related cable and conduit that is under the existing pavement or riprap may be abandoned.

Design-Build Contractor shall place all bore pits safely away from traffic, provide positive barrier protection, and provide necessary signs to warn of the construction area.

Design-Build Contractor shall contact Utility Owners regarding their specific required working clearance requirements.

Design-Build Contractor shall affix an identification decal on each luminaire, ground box, and electrical service maintained and/or operated by Design-Build Contractor for inventory purposes and shall submit inventory information to TxDOT in a TxDOT-compatible format. This identification shall denote that these are property of Design-Build Contractor and shall provide a contact phone number and address in the event of Emergency or necessary maintenance.

# 17 INTELLIGENT TRANSPORTATION SYSTEMS

## 17.1 General Requirements

An Intelligent Transportation System (ITS) is necessary for monitoring the Project's traffic flow and performance both during Construction and as a permanent installation. The Project ITS must accurately detect traffic and traffic operational conditions throughout the Project limits, and clearly communicate relevant and useful travel information to the people using the facility.

TxDOT currently operates an ITS network within the proposed Project limits. The Design-Build Contractor shall coordinate the ITS planning and implementation with TxDOT to ensure that the existing ITS system remains operational throughout the construction duration.

Design-Build Contractor shall be responsible for the planning, design, relocation, installation and maintenance of ITS during the duration of the construction project.

## 17.2 Design Requirements

Based on the results of this review and concurrence, Design-Build Contractor shall provide a complete and operational ITS network throughout the Project that is expandable as capacity is increased along the Project roadways, utilizes hardware and software components consistent and compatible with TxDOT in the manner described in this Section 17.2 and the other affected Governmental Entities, resistant to weather encountered in the Project area, and places components in locations that are not hazardous to Users. Design-Build Contractor shall prepare a preliminary ITS layout for review and concurrence by TxDOT to ensure adequate planning of the ITS implementation.

Design-Build Contractor shall sequence construction and relocation of existing ITS components to prevent lapses in TxDOT's receipt of video or data. The existing physical links and the proposed physical links shall be installed in separate physical conduits. Any modifications to the existing fiber optic cable or ITS field equipment due to conflicts shall be completed prior to the disconnection or removal of the existing system. Before removing existing ITS field equipment, the Engineer shall coordinate all activities necessary to maintain system operations during construction, including the installation of new ITS devices, relocating or replacing existing ITS devices, and connecting such ITS items to the existing network. The Engineer also shall ensure that any wireless ITS devices that are moved due to conflicts with proposed construction be placed at a location that will not compromise the integrity of the wireless communications path post-construction.

Design-Build Contractor shall provide safe ingress/egress areas and structures to accommodate authorized personnel access to ITS components for maintenance and operation activities.

### *17.2.1 ITS Communications Requirements*

Design-Build Contractor shall provide a communications network that has redundant routing capabilities. The communications network shall serve the highway ITS components along the highway Elements of the Project. Where necessary, as determined by TxDOT, Design-Build Contractor shall provide communication node buildings and cabinets to support the communications network.

### *17.2.2 Conduit*

Design-Build Contractor shall determine the type, quantity, and design of the conduit above and below ground, ground boxes, and all communication cable and electrical conductors to support the ITS network and operations.

Design-Build Contractor shall repair each communication cable or electrical conductor that is severed or otherwise rendered not usable.

### *17.2.3 CCTV Cameras*

Design-Build Contractor shall provide CCTV cameras for Incident verification and traffic management. The system of cameras shall accurately identify all vehicle(s) involved in an Incident or Emergency, the extent of vehicle(s) damage, and if applicable the likelihood of personal injury. Operation of the cameras shall result in no visual delay in response of the camera pan/tilt/zoom by a user.

#### 17.2.3.1 Equipment

Design-Build Contractor shall provide all necessary CCTV equipment, including color video camera unit, camera lenses, filters, control circuits, and accessories, camera housing, medium unit pan and tilt units, camera control receivers, video and camera control and power cable harnesses, connectors and coaxial cable, source ID generator, and a local control panel, when required. TxDOT has and will maintain primary control of this equipment.

Design-Build Contractor shall provide a analog video format and communications protocol at all connections with TxDOT systems. The format and protocol provided by Design-Build Contractor shall be compatible with systems in use by TxDOT, and if necessary convertible for use by TxDOT's in-place ITS network.

Initial installation shall conform to the requirements of Attachment 17-1 (TxDOT's Statewide Special Specifications 6025(04)).

#### 17.2.3.2 Placement

Design-Build Contractor shall provide overlapping roadway coverage by CCTV cameras for all highway lanes and intersecting cross streets within the Project limits to provide redundant camera field of view. CCTV cameras shall be placed to enable TxDOT to monitor traffic conditions on highway lanes, frontage roads, connecting facilities, and entrance and exit ramps, and messages displayed on any remotely-controlled dynamic message signs in the Project area. To provide a stable video image, Design-Build Contractor shall mount cameras on dedicated structures unless otherwise approved by TxDOT.

Distance between CCTV cameras shall not exceed 0.75 miles.

### *17.2.4 Vehicle Detection*

Design-Build Contractor shall provide permanent detection in each highway lane of the Project which will measure vehicle classification, vehicular volume, lane occupancy, and speed information on the roadway. The detectors shall be non-intrusive to the roadway users. Spacing for the permanent vehicle detection shall be no greater than 0.50 miles or, at a minimum, provide detection for all highway lanes at one location between interchanges, each entrance ramp lane, and each exit ramp lane.

Vehicle detection sensors shall measure vehicle speed for each vehicle passing the sensor and shall determine average speed and other metrics as determined by TxDOT. Design-Build Contractor may attach detection units to existing structures with prior concurrence from TxDOT. Where an existing structure is not available, or in lieu of attaching the detection unit to an existing structure, Design-Build Contractor shall install a mounting pole solely for the vehicle detector. Any mounting poles placed specifically for ITS items shall conform to TxDOT specifications for CCTV mounting poles.

### *17.2.5 Dynamic Message Signs (DMS)*

Design-Build Contractor shall provide a comprehensive network of electronic DMS using only light-emitting diode (LED) display technology.

Design-Build Contractor shall position each DMS to allow motorists to safely view the messages being displayed. Design-Build Contractor shall locate the DMS to comply with large guide sign spacing stated

in the TMUTCD. Design-Build Contractor shall ensure that all DMS characteristics, which include but are not limited to legibility, visibility and character height, also conform with the (TMUTCD).

DMS shall conform to the National Transportation Communications for ITS Protocol (NTCIP) for Dynamic Message Signs and shall demonstrate compliance before installation of DMS.

DMS shall be used to inform motorist of real-time traffic conditions, and to advise travelers of adverse road conditions and congestion. DMS shall be placed to provide a driver-friendly sign-viewing angle at each DMS location.

### *17.2.6 Lane Control Signals (LCS)*

*Reserved*

### *17.2.7 Single-Line DMS (SDMS)*

*Reserved*

### *17.2.8 Communication Hub Enclosures/Communication Cabinets*

Design-Build Contractor shall coordinate with TxDOT the locations and connections of all new ITS components to the existing ITS communication hub enclosures and communication cabinets covering the Project.

## 17.3 Construction Requirements

### *17.3.1 General*

Design-Build Contractor shall notify TxDOT thirty (30) days in advance of making connections to the existing TxDOT system.

Design-Build Contractor shall maintain the functionality of existing ITS communications during construction activities. Design-Build Contractor shall coordinate with Utility Owner(s) and ensure that power service is available for permanent ITS systems.

Design-Build Contractor shall replace the existing wireless ITS infrastructure, within the project limits, on IH30 (Tom Landry) with a system that communicates via fiber optic cable. A full complement of conduit shall extend across the proposed bridge over the Trinity River. The proposed fiber optic cable will extend to a point on IH30 (Tom Landry) where it will be spliced with the existing fiber optic cable in an existing ground box near IH30/Beckley Avenue. The Design-Build Contractor shall ensure that TxDOT installation guidelines are followed.

### *17.3.2 Salvaging Existing Items*

TxDOT reserves the right to require Design-Build Contractor, at any time, to salvage and deliver to a location designated by TxDOT within the TxDOT Dallas District, any TxDOT-owned equipment and materials in an undamaged condition. TxDOT reserves the right to require Design-Build Contractor to salvage and deliver to a reasonable location designated by TxDOT any ITS equipment and materials in an undamaged condition.

### *17.3.3 Existing ITS Relocation*

Design-Build Contractor shall relocate any existing ITS components, including, but not limited to, communication hubs, satellite buildings, CCTV cameras, DMSs, vehicle detection devices, fiber-links, associated structures, conduit, ground boxes, fiber optic cable, and all other associated cabling, as required to continue service from the existing components. Design-Build Contractor shall sequence

construction and relocation of existing ITS components, facilities, and systems to prevent lapses in TxDOT's receipt of video or data within the Project area. The existing physical links and the proposed physical links shall be in separate physical conduits.

Before removing existing ITS items and before beginning construction of segments without existing ITS, Design-Build Contractor shall perform all activities necessary to maintain system operations during construction, including installing new ITS items, relocating or replacing existing ITS items, and connecting such ITS items to the existing network.

# 18 TRAFFIC CONTROL

## 18.1 General Requirements

Design-Build Contractor shall design and construct the Project, in conformance with the requirements stated in this Section 18, to provide for the safe and efficient movement of people, goods, and services, through and around the Project, while minimizing negative impacts to Users, residents, and businesses. Design-Build Contractor shall coordinate with local government entities on the development of the Traffic Control Plan (TCP).

Facilities shall be designed and constructed to minimize negative impacts to adjacent properties. It shall be the responsibility of the Design-Build Contractor to coordinate with the appropriate Governmental Entity or property owner on each intersecting street or driveway closure.

During all phases, temporary or existing Intelligent Transportation System (ITS) equipment, street lights, and traffic signals shall remain in operation such that the new and existing equipment operate as a coherent system.

## 18.2 Administrative Requirements

### *18.2.1 Traffic Management Plan*

Design-Build Contractor shall prepare and implement a Traffic Management Plan (TMP) that includes the following items:

a) Descriptions of the qualifications and duties of the traffic engineering manager, traffic control coordinator, and other personnel with traffic control responsibilities;

b) Procedures to identify and incorporate the needs of transit operators, Utility Owners, Governmental Entities, local governmental agencies, Emergency Service providers, school districts, business owners, and other related Users, Customer Groups, or entities in the Project corridor and surrounding affected areas;

c) Procedures for obtaining acceptance of detours, road and lane closures and other traffic pattern modifications from applicable Governmental Entities, and implementing and maintaining those modifications;

d) Procedures for signing transitions during construction from one stage to the next and from interim to permanent signing;

e) Procedures for maintenance and replacement of traffic control devices, including pavement markings and traffic barriers, if used;

f) Procedures to regularly evaluate and modify, if necessary, traffic signal timings, and the procedures for the development, TxDOT approval, implementation, testing, and maintenance of all affected signals;

g) Procedures to coordinate with the appropriate Governmental Entities operating signal networks along the Project or Project detour routes to ensure temporary system compatibility, establish responsibilities for temporary signal installation, maintenance, operation, and removal, and coordinate traffic signal timing with local signal networks;

h) Procedures and process for the safe ingress and egress of construction vehicles in the work zone;

i) Provisions to provide continuous access to established truck routes and Hazardous Material (HazMat) routes, and to provide suitable detour routes, including obtaining any approvals required by the appropriate governmental entities for these uses;

j) Procedures to modify plans as needed to adapt to current Project circumstances including a contingency plan to alleviate unreasonable construction-related back-ups that can be implemented immediately upon notification from TxDOT;

k) Procedures to communicate TMP information to Design-Build Contractor's public information personnel and notify the public of maintenance of traffic issues in conjunction with the requirements of Section 3;

l) Descriptions of contact methods, personnel available, and response times for any deficiencies or Emergency conditions requiring attention during off-hours; and

m) Procedures for night work (from thirty minutes after sunset to thirty minutes before sunrise) to include a work zone light system design in accordance with NCHRP Report 498.

The TMP must be approved by TxDOT prior to the start of construction activities. Design-Build Contractor shall provide TxDOT sufficient time for review of, and comment on, the TMP. TxDOT retains the right to require revision and re-submittal of the TMP within a reasonable amount of time.

Changes to posted speed limits will not be allowed unless specific prior approval is granted by TxDOT.

## 18.3 Design Requirements

### *18.3.1 Traffic Control Plans*

Design-Build Contractor shall use the procedures in the TMP and the standards of the TMUTCD to develop detailed traffic control plans which provide for all construction stages and phasing, as well as all required switching procedures.

Design-Build Contractor shall produce a traffic control plan for each and every phase of Work that impacts traffic and involves traffic control details and shall coordinate with appropriate Governmental Entities on the development of the plan. Design-Build Contractor is responsible for obtaining all necessary permits from such local entities to implement the plans.

Each traffic control plan shall be submitted to TxDOT for review a minimum of fourteen (14) Days prior to implementation. This requirement is increased to twenty-one (21) Days for any traffic control plan involving the full closure of one or more directions of traffic on a given facility. The traffic control plan shall include details for all detours, traffic control devices, striping, and signage applicable to each phase of construction. Information included in the traffic control plans shall be of sufficient detail to allow verification of design criteria and safety requirements, including typical sections, alignment, striping layout, drop off conditions, and temporary drainage. The traffic control plans shall clearly designate all temporary reductions in speed limits. Changes to posted speed limits will not be allowed unless specific prior approval is granted by TxDOT.

Opposing traffic on a normally divided roadway shall be separated with appropriate traffic control devices in accordance with Good Industry Practice and TMUTCD based on roadway design speed**.**

Design-Build Contractor shall maintain signing continuity on all active roadways within or intersecting the Project at all times.

Throughout the duration of the Project, Design-Build Contractor shall ensure all streets and intersections remain open to traffic to the greatest extent possible by constructing the Work in stages. Design-Build Contractor shall maintain access to all adjacent streets and shall provide for ingress and egress to public and private properties at all times during the Project.

Design-Build Contractor shall prepare public information notices, in coordination with Section 3 (Public Information and Communications), in advance of the implementation of any lane closures or traffic switches. These notices shall be referred to as Traffic Advisories.

#### 18.3.1.1 Design Parameters for Traffic Control Plans

**Design Vehicle.** Turning movement on all local streets and driveways shall, at a minimum, provide similar characteristics as existing.

**Design Speed.** On Interstate and State Highways, the design speed shall be the existing posted speed limit, or greater, except for major alignment transitions, where the design speed may be reduced by ten (10) miles per hour (mph) if approved by TxDOT in its sole discretion.

**Number of Lanes.** The minimum number of lanes to be maintained shall be the number of lanes currently available on each facility. Lane closures on other roadways may be considered, within reason, so long as all traffic patterns and accesses are maintained.

**Lane Widths.** During construction, the minimum lane width for mainlanes, frontage roads and major crossing streets is 11 feet. For minor crossing streets, TxDOT may, in its sole discretion, allow 10-ft lanes in limited circumstances during construction for short distances after reviewing the Design-Build Contractor's traffic control plan.

**Shoulder.** A minimum one (1) foot offset from the edge of travel way to the edge of pavement or traffic barrier is required.

#### 18.3.1.2 Allowable Lane and Roadway Closures

Lane Closures will only be permitted when the Design-Build Contractor can demonstrate that the closure will provide clear benefit to the progress of the Work and may be approved or denied at TxDOT's sole discretion. Lane Closures must be coordinated with adjacent projects and priority shall be given to the closure submitted first.

**Lane Closure.** Except for Incidents or Emergencies, Liquidated Damages will be levied against Design-Build Contractor, as defined in the DBA, for the Lane Closures other than those permitted in Table 18-10.

Design-Build Contractor shall not reduce the number of roadway controlled access lanes below the number of roadway controlled access lanes shown in Table 18-10 during Time Period A. Design-Build Contractor may be permitted to lower the number of roadway lanes in each direction during other times provided that a minimum of two roadway controlled access lanes in each direction are maintained. Table 18-1 defines categories of time periods used on the Project.

**Table 18-1: Time Period Categories**

| | |
|---|---|
| Time Period A | Peak Traffic |
| Time Period B | High Traffic |
| Time Period C | Low Traffic (IH 30), Medium Traffic (IH 35E) |
| Time Period D | Low Traffic (IH 35E) |

Tables 18-2 through 18-9 assign time periods to each hour for each leg of IH 30 and IH 35E in the Project. For work involving the "Mixmaster" area between the two IH 30/IH 35E interchanges, the most restrictive time period for the roadway in question shall apply.

**Table 18-2: Time Period Assignments for Eastbound IH 30 East of Mixmaster and Two-Lane Roadways and Two-Lane Movements within Mixmaster**

| Hour\Day | Sunday | Monday-Thursday | Friday | Saturday |
|---|---|---|---|---|
| 0:00 | C | C | C | C |
| 1:00 | C | C | C | C |
| 2:00 | C | C | C | C |
| 3:00 | C | C | C | C |
| 4:00 | C | C | C | C |
| 5:00 | C | B | B | C |
| 6:00 | C | A | A | B |
| 7:00 | B | A | A | B |
| 8:00 | B | A | A | B |
| 9:00 | B | A | A | B |
| 10:00 | B | A | A | B |
| 11:00 | B | A | A | B |
| 12:00 | B | A | A | B |
| 13:00 | B | A | A | B |
| 14:00 | B | A | A | B |
| 15:00 | B | A | A | B |
| 16:00 | B | A | A | B |
| 17:00 | B | A | A | B |
| 18:00 | B | A | A | B |
| 19:00 | B | A | A | B |
| 20:00 | B | B | A | C |
| 21:00 | B | B | B | C |
| 22:00 | B | B | B | C |
| 23:00 | C | B | B | C |

**Table 18-3: Time Period Assignments for Westbound IH 30 East of Mixmaster**

| Hour\Day | Sunday | Monday-Thursday | Friday | Saturday |
|---|---|---|---|---|
| 0:00 | C | C | C | C |
| 1:00 | C | C | C | C |
| 2:00 | C | C | C | C |
| 3:00 | C | C | C | C |
| 4:00 | C | C | C | C |
| 5:00 | C | B | B | C |
| 6:00 | C | A | A | C |
| 7:00 | C | A | A | C |
| 8:00 | C | A | A | B |
| 9:00 | B | A | A | B |
| 10:00 | B | A | A | B |
| 11:00 | B | A | A | B |
| 12:00 | B | A | A | B |
| 13:00 | B | A | A | B |
| 14:00 | B | A | A | B |
| 15:00 | B | A | A | B |
| 16:00 | B | A | A | B |
| 17:00 | B | A | A | B |
| 18:00 | B | A | A | B |
| 19:00 | B | A | A | B |
| 20:00 | B | B | A | C |
| 21:00 | B | B | B | C |
| 22:00 | B | C | B | C |
| 23:00 | B | C | C | C |

**Table 18-4: Time Period Assignments for Eastbound IH 30 West of Mixmaster**

| Hour\Day | Sunday | Monday-Thursday | Friday | Saturday |
|---|---|---|---|---|
| 0:00 | C | C | C | C |
| 1:00 | C | C | C | C |
| 2:00 | C | C | C | C |
| 3:00 | C | C | C | C |
| 4:00 | C | C | C | C |
| 5:00 | C | C | C | C |
| 6:00 | C | A | A | C |
| 7:00 | C | A | A | C |
| 8:00 | C | A | A | C |
| 9:00 | C | A | A | B |
| 10:00 | C | A | A | B |
| 11:00 | C | A | A | B |
| 12:00 | B | A | A | B |
| 13:00 | B | A | A | B |
| 14:00 | B | A | A | B |
| 15:00 | B | A | A | B |
| 16:00 | B | A | A | B |
| 17:00 | B | A | A | B |
| 18:00 | B | A | A | B |
| 19:00 | B | B | A | B |
| 20:00 | B | B | B | C |
| 21:00 | B | B | B | C |
| 22:00 | C | C | B | C |
| 23:00 | C | C | B | C |

**Table 18-5: Time Period Assignments for Westbound IH 30 West of Mixmaster**

| Hour\Day | Sunday | Monday-Thursday | Friday | Saturday |
|---|---|---|---|---|
| 0:00 | C | C | C | C |
| 1:00 | C | C | C | C |
| 2:00 | C | C | C | C |
| 3:00 | C | C | C | C |
| 4:00 | C | C | C | C |
| 5:00 | C | C | C | C |
| 6:00 | C | A | A | C |
| 7:00 | C | A | A | C |
| 8:00 | C | A | A | C |
| 9:00 | C | A | A | B |
| 10:00 | C | A | A | B |
| 11:00 | C | A | A | B |
| 12:00 | B | A | A | B |
| 13:00 | B | A | A | B |
| 14:00 | B | A | A | B |
| 15:00 | B | A | A | B |
| 16:00 | B | A | A | B |
| 17:00 | B | A | A | B |
| 18:00 | B | A | A | B |
| 19:00 | B | B | A | B |
| 20:00 | B | B | B | C |
| 21:00 | B | B | B | C |
| 22:00 | C | C | B | C |
| 23:00 | C | C | B | C |

**Table 18-6: Time Period Assignments for Northbound IH 35E North of Mixmaster**

| Hour\Day | Sunday | Monday-Thursday | Friday | Saturday |
|---|---|---|---|---|
| 0:00 | D | D | D | D |
| 1:00 | D | D | D | D |
| 2:00 | D | D | D | D |
| 3:00 | D | D | D | D |
| 4:00 | D | D | D | D |
| 5:00 | D | C | C | D |
| 6:00 | D | A | A | C |
| 7:00 | D | A | A | C |
| 8:00 | D | A | A | C |
| 9:00 | D | A | A | C |
| 10:00 | C | B | B | C |
| 11:00 | C | B | B | B |
| 12:00 | C | B | B | B |
| 13:00 | C | B | B | B |
| 14:00 | C | B | B | B |
| 15:00 | C | B | B | B |
| 16:00 | C | A | A | B |
| 17:00 | C | A | A | B |
| 18:00 | C | A | A | B |
| 19:00 | C | C | C | C |
| 20:00 | C | C | C | C |
| 21:00 | D | C | C | C |
| 22:00 | D | C | C | D |
| 23:00 | D | D | C | D |

**Table 18-7: Time Period Assignments for Southbound IH 35E North of Mixmaster**

| Hour\Day | Sunday | Monday-Thursday | Friday | Saturday |
|---|---|---|---|---|
| 0:00 | D | D | D | D |
| 1:00 | D | D | D | D |
| 2:00 | D | D | D | D |
| 3:00 | D | D | D | D |
| 4:00 | D | D | D | D |
| 5:00 | D | D | D | D |
| 6:00 | D | A | A | D |
| 7:00 | D | A | A | C |
| 8:00 | D | A | A | C |
| 9:00 | D | A | A | C |
| 10:00 | C | B | B | B |
| 11:00 | C | B | B | B |
| 12:00 | C | B | B | B |
| 13:00 | C | B | B | B |
| 14:00 | C | A | A | B |
| 15:00 | C | A | A | B |
| 16:00 | C | A | A | B |
| 17:00 | C | A | A | B |
| 18:00 | C | A | A | B |
| 19:00 | C | A | A | B |
| 20:00 | C | C | A | C |
| 21:00 | D | C | C | C |
| 22:00 | D | C | C | D |
| 23:00 | D | C | C | D |

**Table 18-8: Time Period Assignments for Northbound IH 35E South of Mixmaster**

| Hour\Day | Sunday | Monday-Thursday | Friday | Saturday |
|---|---|---|---|---|
| 0:00 | D | D | D | C |
| 1:00 | D | D | D | D |
| 2:00 | D | D | D | D |
| 3:00 | D | D | D | D |
| 4:00 | D | D | D | D |
| 5:00 | D | C | C | D |
| 6:00 | D | A | A | C |
| 7:00 | C | A | A | B |
| 8:00 | C | A | A | B |
| 9:00 | C | A | A | B |
| 10:00 | B | B | B | B |
| 11:00 | B | B | B | B |
| 12:00 | B | B | B | B |
| 13:00 | B | B | B | B |
| 14:00 | B | B | B | B |
| 15:00 | B | B | B | B |
| 16:00 | B | B | B | B |
| 17:00 | B | B | B | B |
| 18:00 | B | B | B | B |
| 19:00 | B | B | B | B |
| 20:00 | B | B | B | B |
| 21:00 | C | B | B | B |
| 22:00 | C | C | C | B |
| 23:00 | D | C | C | C |

**Table 18-9: Time Period Assignments for Southbound IH 35E South of Mixmaster**

| Hour\Day | Sunday | Monday-Thursday | Friday | Saturday |
|---|---|---|---|---|
| 0:00 | D | D | D | C |
| 1:00 | D | D | D | D |
| 2:00 | D | D | D | D |
| 3:00 | D | D | D | D |
| 4:00 | D | D | D | D |
| 5:00 | D | D | D | D |
| 6:00 | D | C | C | C |
| 7:00 | C | B | B | C |
| 8:00 | C | B | B | B |
| 9:00 | C | B | B | B |
| 10:00 | B | B | B | B |
| 11:00 | B | B | B | B |
| 12:00 | B | B | A | B |
| 13:00 | B | B | A | B |
| 14:00 | B | A | A | B |
| 15:00 | B | A | A | B |
| 16:00 | B | A | A | B |
| 17:00 | B | A | A | B |
| 18:00 | B | A | A | B |
| 19:00 | B | A | A | B |
| 20:00 | C | B | B | B |
| 21:00 | C | B | B | B |
| 22:00 | C | C | B | B |
| 23:00 | D | C | C | C |

Liquidated Damages will be assessed for all Lane Closures, with the exception of those permitted in Table 18-10 and Table 18-11 (and only for the allowable durations listed in Table 18-11, as appropriate), in accordance with Section 17 of the Agreement, based upon the time periods shown in the above tables and corresponding amounts given in Exhibit 17 of the Agreement.

Design-Build Contractor shall seek TxDOT approval for any desired reduction in the current number of frontage road or arterial street lanes.

Table 18-11 shows allowable closures of cross-streets, exits, and High-Occupancy Vehicle (HOV) lanes with limited durations.

**Table 18-10: Minimum Number of Lanes and Movements to be Maintained during Construction**

| # | Origin | Via | Destination | Minimum Number of Lanes to be maintained |
|---|---|---|---|---|
| 1 | NB IH 35E | NB IH 35E | NB IH 35E | 2 Through Lanes |
| 2 | | | Colorado | 1 Lane Exit or Detour |

| | | | | |
|---|---|---|---|---|
| 3 | | | Riverfront | 1 Lane Exit (2 Lanes for at least 200' upstream of intersection) |
| 4 | | | Jefferson via HOV | 0 (with interim HOV lane end and transition to main lanes near Louisiana) |
| 5 | | | Reunion | 1 Lane Exit |
| 6 | | EB IH 30 | EB IH 30 | 2 Through Lanes either to EB IH 30 or EB IH 30 CD (or 1 lane to each) (If 2 Through Lanes only to EB IH 30, provide slip ramp east of Hotel Street to EB IH 30 CD) |
| 7 | | EB IH 30 CD | EB IH 30 CD | |
| 8 | | | Lamar/Griffin/Downtown | Maintain Routes or Detour |
| 9 | SB IH 35E | SB IH 35E | SB IH 35E | 2 Through Lanes |
| 10 | | | Commerce/Reunion | 1 Lane Exit to Commerce (Detour for Reunion if connector roadway closed) |
| 11 | | | Riverfront | 1 Lane Exit or Detour |
| 12 | | | Colorado | 1 Lane Exit or Detour |
| 13 | | | Fleming | 1 Lane Exit or Detour |
| 14 | | | Eighth Street | 1 Lane Exit |
| 15 | | | SB IH 35E HOV | 0 (with interim HOV lane entrance from main lanes near Marsalis) |
| 16 | | WB IH 30 | WB IH 30 | 2 Through Lanes from SB IH 35E to WB IH 30 |
| 17 | | | Post Office (Frontage Rd) | Maintain route to one exit located between Beckley and Sylvan |
| 18 | | | Sylvan | |
| 19 | | EB IH 30 | EB IH 30 | 2 Through Lanes either to EB IH 30 or EB IH 30 CD (or 1 lane to each) (If 2 Through Lanes only to EB IH 30, provide slip ramp east of Hotel Street to EB IH 30 CD) |
| 20 | | EB IH 30 CD | EB IH 30 CD | |
| 21 | | | Lamar/Griffin/Downtown | Maintain Routes or Detour |
| 22 | EB IH 30 | EB IH 30 | EB IH 30 | 2 Through Lanes |
| 23 | | | Beckley | 1 Lane Exit |
| 24 | | | Riverfront | 1 Lane Exit (2 Lanes for at least 200' upstream of intersection) |
| 25 | | | EB IH 30 HOV Exit | At completion of adjacent project, provide HOV exit to main lanes |
| 26 | | EB IH 30 CD | EB IH 30 CD | 1 Through Lane or Detour |
| 27 | | | Lamar/Griffin/Downtown | Maintain Routes or Detour |
| 28 | | NB IH 35E | NB IH 35E | 1 Through Lane with minimum 1000' of 2 lanes leading from IH 30 for storage |
| 29 | | | Commerce Street | 1 Lane Exit |
| 30 | WB IH 30/WB IH 30 CD/ Downtown | WB IH 30 | WB IH 30 | 2 Through Lanes |
| 31 | | | Post Office (Frontage Rd) | Maintain route to one exit located between Beckley and Sylvan |
| 32 | | | Sylvan | |
| 33 | | | WB IH 30 HOV | Maintain HOV lane entrance west of Beckley |
| 34 | | NB IH 35E | NB IH 35E | 1 Through Lane with minimum 1000' of 2 lanes leading from IH 30 for storage |
| 35 | | | Reunion/Commerce | 1 Lane Exit |
| 36 | | SB IH | SB IH 35E | 2 Through Lanes |

| | | | | |
|---|---|---|---|---|
| 37 | | 35E | Riverfront | 0 |
| 38 | | | Colorado | 1 Lane Exit or Detour |
| 39 | | | Fleming | 1 Lane Exit or Detour |
| 40 | | | Eighth Street | 1 Lane Exit |
| 41 | Commerce | WB IH 30 | WB IH 30 | 1 Lane Entrance or Detour |
| 42 | | SB IH 35E | SB IH 35E | 1 Lane Entrance |
| 43 | | EB IH 30 | EB IH 30 | 1 Lane Entrance or Detour |
| 44 | Riverfront | SB IH 35E | SB IH 35E | 1 Lane Entrance or Detour |
| 45 | | WB IH 30 | WB IH 30 | 1 Lane Entrance |
| 46 | | Riverfront | Riverfront | 4 Through Lanes (2 in each direction) |
| 47 | Colorado | NB IH 35E | NB IH 35E | 1 Lane Entrance or Detour |
| 48 | | SB IH 35E | SB IH 35E | 0 |
| 49 | | Colorado | Colorado | 2 Through Lanes (1 in each direction) or Detour |
| 50 | Beckley | Beckley | Beckley | 4 Through Lanes (2 in each direction) |
| 51 | Sylvan | EB IH 30 | EB IH 30 | 1 Lane Entrance |
| 52 | Reunion | SB IH 35E | SB IH 35E | 1 Lane Entrance or Detour |
| 53 | | | EB IH 30 | Maintain Route or Detour |
| 54 | IH 35E Pedestrian Walkway over Trinity River | | | Maintain pedestrian connection between Colorado and Riverfront via IH 35E bridges |

Detour routes are to be approved by TxDOT and Local Government Entities prior to implementation.

All detour durations should be minimized for the benefit of the traveling public.

Durations for detours in Table 18-10 that are not permitted for the duration of the Project are shown in Table 18-11.

**Table 18-11: Allowable Closures**

| # | Origin | Via | Destination | Description | Allowable Closure Duration (Consecutive Calendar Days) |
|---|---|---|---|---|---|
| 2 | NB IH 35E | NB IH 35E | Colorado | NB IH 35E access to Colorado east of IH 35E | 90 Days |
| 8 | NB IH 35E | EB IH 30 CD | Lamar/Griffin/Downtown | NB IH 35E access to downtown through the EB IH 30 CD | 90 Days |
| 10 | SB IH 35E | SB IH 35E | Commerce/Reunion | Closure of connector | 180 Days |

| | | | | | |
|---|---|---|---|---|---|
| | | | | from Commerce to Reunion | |
| 11 | SB IH 35E | SB IH 35E | Riverfront | SB IH 35E access to Riverfront | 180 Days |
| 12 | SB IH 35E | SB IH 35E | Colorado | SB IH 35E access to Colorado west of IH 35E | 90 Days |
| 13 | SB IH 35E | SB IH 35E | Fleming | SB IH 35E access to Jefferson via Fleming | 90 Days |
| 21 | SB IH 35E | EB IH 30 CD | Lamar/Griffin/Downtown | SB IH 35E access to downtown through the EB IH 30 CD | 180 Days |
| 26 | EB IH 30 | EB IH 30 CD | EB IH 30 CD | EB IH 30 access to the EB IH 30 CD | 180 Days |
| 27 | EB IH 30 | EB IH 30 CD | Lamar/Griffin/Downtown | EB IH 30 access to downtown through the EB IH 30 CD | 180 Days |
| 38 | WB IH 30 | SB IH 35E | Colorado | WB IH 30 access to Colorado west of IH 35E | 90 Days |
| 39 | WB IH 30 | SB IH 35E | Fleming | WB IH 30 access to Jefferson via Fleming | 90 Days |
| 41 | Commerce | WB IH 30 | WB IH 30 | Commerce access to WB IH 30 | 365 Days |
| 43 | Commerce | EB IH 30 | EB IH 30 | Commerce access to EB IH 30 | 90 Days |
| 44 | Riverfront | SB IH 35E | SB IH 35E | Riverfront access to SB IH 35E | 90 Days |
| 47 | Colorado | NB IH 35E | NB IH 35E | Colorado east of IH 35E access to NB IH 35E | 90 Days |
| 49 | Colorado | Colorado | Colorado | Colorado Through Movement | 365 Days |
| 52 | Reunion | SB IH 35E | SB IH 35E | Reunion access to SB IH 35E | 90 Days |
| 53 | Reunion | SB IH 35E | EB IH 30 | Reunion access to EB IH 30 | 90 Days |

Detour routes are to be approved by TxDOT and Local Government Entities prior to implementation.

Detouring of Movement 8 cannot occur simultaneously with detouring of Movement 27.

Detouring of Movement 10 cannot occur simultaneously with detouring of Movement 11.

Detouring of Movement 11 cannot occur simultaneously with detouring of Movement 21.

Detouring of Movement 12 cannot occur simultaneously with detouring of Movement 13.

Detouring of Movement 38 cannot occur simultaneously with detouring of Movement 39.

Detouring of Movement 44 cannot occur simultaneously with detouring of Movement 52.

During closure of the Colorado through movement, Fleming Place must have direct access to NB IH 35E.

All detour durations should be minimized for the benefit of the traveling public.

Liquidated Damages will be assessed for closures exceeding the allowable durations.

At no time shall traffic from Eastbound IH 30 (from west of Mixmaster) not be able to access the Commerce Street exit if prevented from accessing the Lamar and Griffin exits. Additionally, at no time shall traffic from Eastbound IH 30 (west of Mixmaster) be unable to access the Lamar and Griffin exits if prevented from accessing the Commerce Street exit.

At no time shall traffic from Northbound IH 35E (from south of Mixmaster) not be able to access the Reunion Boulevard exit if prevented from accessing the Lamar and Griffin exits (via IH 30). Additionally, at no time shall traffic from Northbound IH 35E (from south of Mixmaster) be unable to access the Lamar and Griffin exits (via IH 30) if prevented from accessing the Reunion Boulevard exit.

At no time shall both the Northbound IH 35E exit to Reunion Boulevard and the Eastbound IH 30 exit to Commerce Street be closed simultaneously.

The Southbound IH 35E to Eastbound Commerce Street exit shall remain open at all times.

At no time shall both the Northbound IH 35E exit to Colorado Boulevard and the Northbound IH 35E exit to East Eighth Street be closed simultaneously.

At no time shall both the Southbound IH 35E exit to Colorado Boulevard and the Southbound IH 35E exit to East Eighth Street be closed simultaneously.

The Eastbound IH 30 exit to Beckley Avenue shall remain open at all times.

One exit ramp from Westbound IH 30 to Sylvan Avenue shall remain open at all times.

The Eastbound IH 30 exit to Riverfront Boulevard and the Westbound IH 30 entrance from Riverfront Boulevard shall remain open at all times.

In order to close any portion of the IH 35E HOV lane, Design-Build Contractor will be required to make provision for an exit from the Northbound IH 35E HOV lane near Louisiana Street and an entrance to the Southbound IH 35E HOV lane near Marsalis Street similar to the condition shown in the as-builts of CSJ: 0261-03-036 which are included in the RID. These modifications must be coordinated with Dallas Area Rapid Transit.

If a bridge cannot be demolished safely within these requirements, roads may need to be closed and traffic detoured during the lowest-volume times. Design-Build Contractor shall seek TxDOT's approval for such traffic closures.

Any complete roadway closure will require a Traffic Control Plan to be submitted and approved by TxDOT.

**Driveway Closures.** Design-Build Contractor shall maintain a minimum of one (1) driveway per business at all times. For businesses with multiple driveways, when driveway closure is necessary to progress Work, no driveway may be closed for more than 30 consecutive days or more than 45 days in a 90-day period.

### 18.3.1.3 Detour Usage

Design-Build Contractor shall use State routes for detour routes, wherever applicable. If State routes are unavailable, Design-Build Contractor shall use local arterials, provided that Design-Build Contractor has obtained the necessary permits from the Governmental Entity having jurisdiction.

Design-Build Contractor shall provide motorists with guidance on diverting around the construction, detouring around specific construction sites, and traveling through the construction areas. This shall

include the installation and maintenance of temporary regional signs to divert traffic around the Project. Motorist guidance to and along detour routes shall be provided, together with regional guidance.

### *18.3.2 Restricted Hours*

#### 18.3.2.1 Holiday Restrictions

No Lane Closure that restricts or interferes with traffic shall be allowed from noon on the preceding day to 10:00 pm on the day after the following holiday schedule. TxDOT has the right to lengthen, shorten, or otherwise modify these restrictions as actual, or expected, traffic conditions may warrant.

a) New Year's Eve and New Year's Day (December 31 through January 1)

b) Easter Holiday Weekend (Friday through Sunday)

c) Memorial Day Weekend (Friday through Monday)

d) Independence Day (July 3 through noon on July 5)

e) Labor Day Weekend (Friday through Monday)

f) Thanksgiving Holiday (Wednesday through Sunday)

g) Christmas Holiday (December 23 through December 26)

#### 18.3.2.2 Event Restrictions

No Lane Closure that restricts or interferes with traffic shall be allowed for the regional events set forth below. TxDOT has the right to lengthen, shorten, or otherwise modify these restrictions as actual traffic conditions may warrant. TxDOT also has the right to modify the list of major events as they are added, rescheduled, or warranted.

- State Fair of Texas (no lane closures after 6:00 am on Fridays through 9:00 pm on Sundays; no full closures for any direction of any facility from opening day through the closing day);
- The University of Texas vs. University of Oklahoma Football Game (no lane closures beginning four hours prior to the event and ending three hours following event completion);
- Ticket City Bowl (no lane closures beginning three hours prior to the event and ending two hours following event completion);
- Dallas Mavericks Home Games (no lane closures beginning two hours prior to the event and ending two hours following event completion);
- Dallas Stars Home Games (no lane closures beginning two hours prior to the event and ending two hours following event completion);
- Major Events at the American Airlines Center with expected attendance exceeding 15,000 (no lane closures beginning two hours prior to the event and ending two hours following event completion);
- Major Downtown Dallas Events (restrictions will be considered on a case-by-case basis); and
- 2014 NCAA Final Four Tournament (no lane closures beginning at 6:00 am on the day prior to the first game and ending at 3:00 am following the completion of the last game).

Major Downtown Dallas Events are events currently unknown to TxDOT and will be handled on an individual basis as they arise. This category could include, but is not limited to, parades, major political events, major Arts District events, and large athletic events (such as marathons).

Should any lane closures violate the Event-related restrictions above, Liquidated Damages will be assessed based on the next higher Time Period than what would otherwise apply based upon those shown in Tables 18-1 through 18-9 (that is, a Time Period B violation will be assessed as a Time Period A violation, etc.).

### *18.3.3 Other TMP Requirements*

Additional Traffic Management Plan requirements are as follows:

- Design-Build Contractor shall notify the traveling public by placing changeable message signs a minimum of seven (7) Days in advance of actual roadway closure or major traffic modification. Where available and when possible, Design-Build Contractor shall coordinate and utilize Dynamic Message Signs on the regional ITS system.
- Design-Build Contractor shall utilize uniformed police officers to affect mainlane closures.

## 18.4 Construction Requirements

Construction shall be in accordance with Design-Build Contractor's TMP, the manufacturer's directions or recommendations where applicable, and the applicable provisions of the TMUTCD.

### *18.4.1 Design-Build Contractor Responsibility*

If at any time TxDOT determines Design-Build Contractor's traffic control operations do not meet the intent of the TMP or any specific traffic control plan, Design-Build Contractor shall immediately revise or discontinue such operations to correct the deficient conditions.

Design-Build Contractor shall provide TxDOT the names of the traffic control coordinator and support personnel, and the phone number(s) where they can be reached 24 hours per day, seven days per week.

### *18.4.2 Access*

Existing bicycle and pedestrian access and mobility shall be maintained parallel with the frontage roads and across all cross streets. Access to existing transit stop locations shall be maintained during construction or reasonable alternative locations shall be provided with equal or greater amenities as affected existing stop locations.

### *18.4.3 Detours*

Design-Build Contractor shall maintain all detours in a safe and traversable condition. A pavement transition, suitable for the posted speed of the section shall be provided at all detour interfaces.

Design-Build Contractor shall use State routes for detour routes, wherever applicable. If State routes are unavailable, Design-Build Contractor shall use local arterials, provided that Design-Build Contractor has obtained the necessary permits from the Governmental Entity having jurisdiction.

Design-Build Contractor shall provide motorists with guidance on diverting around the construction, detouring around specific construction sites, and traveling through the construction areas. This guidance shall include the installation and maintenance of temporary regional signs to divert traffic around the Project. Motorist guidance to and along detour routes shall be provided, together with regional guidance.

### *18.4.4 Local Approvals*

Design-Build Contractor shall communicate any ramp closure and staging analysis with the Governmental Entity having jurisdiction within the Project. When ramp movements are diverted or detoured along existing roads, Design-Build Contractor shall be responsible for any and all user costs that may be assessed for the use of these existing roads. This may include traffic operation analysis, temporary traffic control devices, and road user costs, all payable to the local road authority. Design-Build Contractor shall be responsible for obtaining the necessary approvals from agencies having jurisdiction over the routes used.

### *18.4.5 Pavement Markings*

Design-Build Contractor will be required to remove existing pavement markings that conflict with temporary or permanent pavement markings. These pavement markings shall be removed by any method that does not materially damage the surface or texture of the pavement. Pavement marking removal by over-painting is prohibited.

### *18.4.6 Reinstatement of Utility Cuts*

After installation of drainage structures, storm sewers, or any other public or private Utility facility by open cut beneath existing pavements carrying traffic during construction, the pavement shall be restored to provide a normal satisfactory riding surface.

### *18.4.7 Hauling Equipment*

Design-Build Contractor shall keep traveled surfaces used in its hauling operations clear and free of dirt or other debris that would hinder the safe operation of roadway traffic.

Rubber-tired equipment shall be used for moving dirt or other materials along or across paved surfaces.

Where Design-Build Contractor moves any equipment not licensed for operation on public highways on or across any pavement, Design-Build Contractor shall protect the pavement from all damage caused by such movement. Any damage caused by the operation of Design-Build Contractor shall be repaired at the expense of Design-Build Contractor.

All haul routes utilizing any street of an adjacent Governmental Entity shall be coordinated with the appropriate Governmental Entity.

### *18.4.8 Final Clean-Up*

Design-Build Contractor shall clear and remove from the site all surplus and discarded materials and debris of every kind and leave the entire Project in a smooth and neat condition, after any construction process.

### *18.4.9 Stockpiles*

Barricades and warning signs are to be placed at stockpiles to adequately warn motorists of a hazard in accordance with TxDOT's Traffic Engineering Standard sheets and the TMUTCD. No material stockpiles shall be located within the clear zone of any traveled lane, unless positive protection is provided.

# 19 MAINTENANCE

## 19.1 General Requirements

Design-Build Contractor shall maintain the Project in a manner that provides a safe and reliable transportation system for improved mobility.

### *19.1.1 General Maintenance Obligations*

Design-Build Contractor shall take all necessary actions to achieve the following:

a) Maintain the Project and Related Transportation Facilities in a manner appropriate for a facility of the character of the Project.

b) Minimize delay and inconvenience to Users and, to the extent Design-Build Contractor is able to control, users of Related Transportation Facilities.

c) Identify and correct all Defects and damages from Incidents.

d) Monitor and observe weather and weather forecasts to proactively deploy resources to minimize delays and safety hazards due to heavy rains, snow, ice, or other severe weather events.

e) Remove debris, including litter, graffiti, animals, and abandoned vehicles or equipment from the Project ROW.

f) Minimize the risk of damage, disturbance, or destruction of third-party property during the performance of maintenance activities.

g) Coordinate with and enable TxDOT and others with statutory duties or functions in relation to the Project or Related Transportation Facilities to perform such duties and functions.

h) Perform systematic Project inspections, periodic maintenance, and routine maintenance in accordance with the provisions of Design-Build Contractor's Maintenance Management Plan and Design-Build Contractor's Safety Plan.

Design-Build Contractor is responsible for providing all resources necessary for the performance of all activities in the Maintenance Management Plan.

The Performance and Measurement Table Baseline is included as Table 19-1.

## 19.2 Maintenance Management Plan (MMP)

Design-Build Contractor shall prepare a Maintenance Management Plan (MMP) that is consistent with the general maintenance obligations described in Section 19.1 (General Requirements) and defines the process and procedures for the maintenance of the Project for the Term of the Agreement. The MMP shall include performance requirements, measurement procedures, threshold values at which maintenance is required, inspection procedures and frequencies, and subsequent maintenance to address noted deficiencies, for each physical Element of the Project in accordance with Table 19-1, including impacts to Related Transportation Facilities. The MMP shall contain a plan for a pre-condition survey of existing elements to remain in place and require existing elements to be maintained to those conditions throughout the Term of the Agreement or until reconstructed. The MMP shall identify response times to mitigate hazards, permanently remedy, and permanently repair Defects. Response times shall be in accordance with the Performance and Measurement Table Baseline, or better. Design-Build Contractor shall differentiate response times for Defects that require prompt attention due to immediate or imminent damage or deterioration, excluding those items which have no impact on any parties other than Design-Build Contractor, and response times for other Defects. Design-Build Contractor shall update this plan as required, or at least annually.

The MMP shall include procedures for managing records of inspection and maintenance activities, including appropriate measures for providing protected duplication of the records. Inspection and maintenance records shall be kept for the Term of the Agreement and shall be provided to TxDOT at the time the Project is delivered to TxDOT, at either the expiration of the Term or earlier termination of the Agreement.

Design-Build Contractor shall submit the MMP to TxDOT for review and approval at least sixty (60) Days prior to the issuance of NTP2. Approval by TxDOT of the MMP shall be a condition of NTP2.

### *19.2.1 Maintenance during Work*

Design-Build Contractor shall be responsible for maintenance and repairs to any portion of the Work until Final Acceptance is issued in accordance with the Agreement. The Work shall include routine maintenance (such as litter pickup, mowing, and repair of third-party-damaged traffic control and safety devices), responding to emergencies and operational problems, and inspections and repairs required on an as-needed basis or as directed by TxDOT until issuance of Final Acceptance. Upon Final Acceptance, and provided that TxDOT does not implement a Capital Maintenance Agreement, TxDOT shall assume the maintenance obligations. If Design-Build Contractor fails to perform such maintenance within ten (10) Business Days of discovery of the need for the work, TxDOT reserves the right to perform such work as it deems necessary with its own forces, and/or to enter into special contracts for the maintenance of specific items.

## Table 19-1. Performance and Measurement Table Baseline

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br><br>**Hazard Mitiga-tion** | **Cat 1**<br><br>**Perma-nent Remedy** | **Cat 2**<br><br>**Perma-nent Repair** | | | |
| **1) ROADWAY** | | | | | | | | | |
| | | | | | | | **Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's *Pavement Management Information System Rater's Manual.* Unless otherwise stated, pavement performance measurement records relate to 0.5-mile sections as described in the *Pavement Management Information System Rater's Manual*.** | | |
| | 1.1 | Obstructions and debris | Roadway and clear zone free from obstructions and debris | 2 hrs | N/A | N/A | Visual Inspection | Number of obstructions and debris | Nil |
| | 1.2 | Pavement | All roadways have a smooth surface course (including bridge decks, covers, gratings, frames and boxes) with adequate skid resistance and free from Defects. | 24 hrs | 28 days | 6 months | **a) Pavement Condition Score**<br><br>Measurements and inspections necessary to derive Pavement Condition Score | Pavement Condition Score for 80% of Auditable Sections exceeding:<br><br>• Mainlanes, connector-distributor roads, and ramps – 90<br><br>• Frontage roads – 80 | <br><br><br>100%<br><br><br>100% |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| | 1.2 cont | | | 24 hrs | 28 days | 6 months | | Pavement Condition Score for each Auditable Section exceeding:<br>• Mainlanes, connector-distributor roads, and ramps – 80<br>• Frontage roads – 70 | 100%<br>100% |
| | | | | | | | **b) Ruts – Mainlanes, shoulders & ramps**<br>Depth as measured using an automated device in compliance with TxDOT Standards. | Percentage of wheel path length with ruts greater than ¼" in depth in each Auditable Section<br>• Mainlanes, connector-distributor roads, shoulders, and ramps – 3%<br>• Frontage roads – 10% | Nil<br>Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| | | | | | | | 10ft straight edge used to measure rut depth for localized areas. | Depth of rut at any location greater than 0.5” | Nil |
| | | | | | | | **c) Ride quality**<br>Measurement of International Roughness Index (IRI) according to TxDOT standard Tex-1001-S, Operating Inertial Profilers and Evaluating Pavement Profiles | For 80% of all Auditable Sections measured, IRI throughout 98% of each Auditable Section is less than or equal to:<br>• Mainlanes, connector-distributor roads, ramps – 95" per mile**<br>• Frontage roads – 120" per mile** | 100%<br>100% |
| | 1.2 cont | | | 24 hrs | 28 days | 6 months | ** To allow for measurement bias, an adjustment of -10 (minus ten) is made to IRI measurements for concrete pavements before assessing threshold compliance. | IRI measured throughout 98% of Auditable Section of less than or equal to:<br>• Mainlanes, connector-distributor roads, ramps 120" per mile**<br>• Frontage roads – 150" per | 100% |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| | | | | | | | | mile**<br>100% | |
| | 1.2<br>cont | | | | | | (Capital Asset Replacement Work and new construction subject to construction quality standards) | Mainlanes, connector-distributor roads, ramps, 0.1 mile average – 150" per mile**<br>Frontage roads, 0.1 mile average – 180" per mile** | 100%<br>100% |
| | | | | | | | 3-ft straightedge used to measure discontinuities | IRI measured throughout 98% of each lane containing a bridge deck in any Auditable Section , 0.1 mile average – 200" per mile**<br>Individual discontinuities greater than 0.75" | 100%<br>Nil |
| | | | | | | | **d) Failures**<br>Instances of failures exceeding the failure criteria set forth in the TxDOT PMIS Rater's Manual, including potholes, base failures, | Occurrence of any failure | Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br><br>**Hazard Mitiga-tion** | **Cat 1**<br><br>**Perma-nent Remedy** | **Cat 2**<br><br>**Perma-nent Repair** | | | |
| | | | | | | | punchouts and jointed concrete pavement failures | | |
| | | | | 24 hrs | 28 days | 6 months | **e) Edge drop-offs**<br><br>Physical measurement of edge drop-off level compared to adjacent surface | Instances of edge drop-off greater than 2" (Number) | Nil |
| | 1.2 cont | | | | | | **f) Skid resistance**<br><br>ASTM E 274 Standard Test Method for Skid Resistance Testing of Paved Surfaces at 50 MPH using a full scale smooth tire meeting the requirements of ASTM E 524 . | • Mainlanes, connector-distributor roads, shoulders and ramps – Number of sections investigated as to potential risk of skidding accident and appropriate remedial action taken where average Skid Number for 0.5-mile section of mainlanes, shoulders and ramps are in excess of 30. | 100% |
| | | | | | | | | • Frontage roads –Number of sections investigated as to potential risk of skidding accident and appropriate remedial action taken where average Skid Number for 0.5-mile section of frontage roads is in excess of 30. | 100% |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Cat 1 Hazard Mitiga-tion** | **Cat 1 Perma-nent Remedy** | **Cat 2 Perma-nent Repair** | | | |
| | 1.2 cont | | | | | | | When the Skid Number is below 25 and/or when required by the Wet Weather Accident Reduction Program, areas categorized as high risk, Contractor shall perform a site investigation and perform required corrective action. | 100% |
| | | | Road users warned of potential skidding hazards | 24hrs | 7days | N/A | **Skid resistance** (as above) | Instances where road users warned of potential skidding hazard where remedial action is identified. | 100% |
| | 1.3 | Crossovers and other paved areas | Crossovers and other paved areas are free of Defects | 24 hrs | 28 days | 6 months | **a) Potholes** | Potholes of low severity or higher (Number) | Nil |
| | | | | | | | **b) Base failures** | Base failures of low severity or higher (Number) | Nil |
| | 1.4 | Joints in concrete | Joints in concrete paving are sealed and watertight | 24 hrs | 28 days | 6 months | Visual inspection of joints | Length unsealed joints greater than ¼" | Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1 Hazard Mitiga-tion** | **Cat 1 Perma-nent Remedy** | **Cat 2 Perma-nent Repair** | | | |
| | 1.4 cont | | Longitudinal joint separation | 24 hrs | 28 days | 6 months | Measurement of joint width and level difference of two sides of joints | Joint width more than 1" or faulting more than ¼” | Nil |
| | 1.5 | Curbs | Curbs are free of defects | 24 hrs | 28 days | 6 months | Visual inspection | Length out of alignment | Nil |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 Hazard Mitiga-tion | Cat 1 Perma-nent Remedy | Cat 2 Perma-nent Repair | | | |
| **2) DRAINAGE** | | | | | | | | | |
| | 2.1 | Pipes and Channels | Each element of the drainage system is maintained in its proper function by cleaning, clearing and/or emptying as appropriate from the point at which water drains from the travel way to the outfall or drainage way. | 24 hrs | 28 days | 6 months | Visual inspection supplemented by CCTV where required to inspect buried pipe work | Length with less than 90% of cross section clear (feet) | Nil |
| | 2.2 | Drainage treatment devices | Drainage treatment and balancing systems, flow and spillage control devices function correctly and their location and means of operation is recorded adequately to permit their correct operation in Emergency. | 24 hrs | 28 days | 6 months | Visual inspection | Devices functioning correctly with means of operation displayed (Number) | 100% |
| | 2.3 | Travel Way | The travel way is free from water to the extent that such water would represent a hazard by virtue of its position and depth. | 24 hrs | 28 days | 6 months | Visual inspection of water on surface | Instances of hazardous water build-up | Nil |
| | 2.4 | Discharge systems | Surface water discharge systems perform their proper function and discharge to groundwater and waterways complies with the relevant legislation and permits. | 24 hrs | 28 days | 6 months | Visual inspection and records | Non-compliances with legislation | Nil |
| | 2.5 | Protected Species | Named species and habitats are protected. | 24 hrs | 28 days | 6 months | Visual inspection | Compliance with the requirement | 100% |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| **3) STRUCTURES** | | | | | | | | | |
| | 3.1 | Structures having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes | Substructures and superstructures are free of:<br>• graffiti<br>• undesirable vegetation<br>• debris and bird droppings<br>• blocked drains, weep pipes manholes and chambers<br>• blocked drainage holes in structural components<br>• defects in joint sealants<br>• defects in pedestrian protection measure<br>• scour damage<br>• corrosion of rebar<br>• paint system failures<br>• impact damage | 24 hrs | 28 days | 6 months | Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual. | Records as required in the TxDOT Bridge Inspection Manual<br><br>Occurrences of condition rating below seven for any deck, superstructure or substructure<br><br>All condition states to be one for all structure components | Nil<br><br>100% |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br><br>**Hazard Mitiga-tion** | **Cat 1**<br><br>**Perma-nent Remedy** | **Cat 2**<br><br>**Perma-nent Repair** | | | |
| | 3.2 | Structure components | i) Expansion joints are free of:<br>• dirt debris and vegetation<br>• defects in drainage systems<br>• loose nuts and bolts<br>• defects in gaskets<br>ii) The deck drainage system is free of all and operates as intended.<br>iii) Parapets are free of:<br>• loose nuts or bolts<br>• blockages of hollow section drain holes<br>• graffiti<br>• vegetation<br>• accident damage<br>iv) Bearings and bearing shelves are clean. | 24 hrs | 28 days | 6 months | Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge inspection Manual, and the Federal Administration's Bridge Inspector's Reference Manual.. | Records as required in the TxDOT Bridge Inspection Manual<br><br>Occurrences of condition rating below seven for any deck, superstructure or substructure<br><br>All condition states to be one for all structure components | Nil<br><br>100% |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1<br>Hazard Mitiga-tion | Cat 1<br>Perma-nent Remedy | Cat 2<br>Perma-nent Repair | | | |
| | 3.2 cont. | | v) Sliding and roller surfaces are clean and greased to ensure satisfactory performance. Additional advice contained in bearing manufacturers' instructions in the Structure Maintenance Manual is followed.<br>Special finishes are clean and perform to the appropriate standards.<br>vii) All non-structural items such as hoists and electrical fixings, operate correctly, are clean and lubricated as appropriate, in accordance with the manufacturer's recommendations, and certification of lifting devices is maintained | 24 hrs | 28 days | 6 months | | | |
| | 3.3 | Non-bridge class culverts | Non-bridge-class culverts are free of:<br>• vegetation and debris and silt<br>• defects in sealant to movement joints<br>• scour damage | 24 hrs | 28 days | 6 months | Visual inspection | Number with vegetation, debris and silt<br>Number with defects in sealant and movement joints<br>Number with scour damage | Nil<br>Nil<br>Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| | 3.4 | Gantries and high masts | Sign signal gantries, high masts are structurally sound and free of:<br>• loose nuts and bolts<br>• defects in surface protection systems<br>• graffiti | 24 hrs | 28 days | 6 months | Visual inspection | Number with loose assemblies<br>Number with defects in surface protection<br>Number with graffiti | Nil<br>Nil<br>Nil |
| | 3.5 | Load ratings | All structures maintain the design load capacity. | 24 hrs | 28 days | 6 months | Load rating calculations in accordance with the Manual for Bridge Evaluation and the TxDOT Bridge Inspection Manual.<br>Load restriction requirements as per the TxDOT Bridge Inspection Manual | Number of load restrictions for Texas legal loads (including legally permitted vehicles) | Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| **4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS** | | | | | | | | | |
| | 4.1 | Pavement markings | Pavement markings are:<br>• clean and visible during the day and at night<br>• whole and complete and of the correct color, type, width and length<br>• placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets | 24 hrs | 28 days | 6 months | a) Markings - General<br>Portable retroreflectometer, which uses 30 meter geometry meeting the requirements described in ASTM E 1710<br>Physical measurement | Length meeting the minimum retroreflectivity 175 mcd/sqm/lx for white<br>Length meeting the minimum retroreflectivity 125 mcd/sqm/lx for yellow<br>Length with more than 5% loss of area of material at any point<br>Length with spread more than 10% of specified dimensions. | 100%<br>100%<br>Nil<br>Nil |
| | | | | | | | b) Profile Markings<br>Visual inspection | Length performing its intended function and compliant with relevant regulations | |
| | 4.2 | Raised reflective markers | Raised reflective pavement markers, object markers and delineators are:<br>• clean and clearly visible<br>• of the correct color and type<br>• reflective or retroreflective as | 24 hrs | 28 days | | | | 100% |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br><br>**Hazard Mitiga-tion** | **Cat 1**<br><br>**Perma-nent Remedy** | **Cat 2**<br><br>**Perma-nent Repair** | | | |
| | | | TxDOT standard<br>• correctly located, aligned and at the correct level<br>• are firmly fixed<br>• are in a condition that will ensure that they remain at the correct level. | | | | | | |
| | 4.3 | Delineators & Markers | Object markers, mail box markers and delineators are:<br>• clean and visible<br>• of the correct color and type<br>• legible and reflective<br>• Straight and Vertical | 24 hrs | 28 days | 6 months | Visual inspection | Number of markers associated with road markings that are ineffective in any 10 consecutive markers. (Ineffective includes missing, damaged, settled or sunk)<br><br>[A minimum of four markers should be visible at 80' spacing when viewed under low beam headlights]<br><br>Uniformity (replacement rpms having equivalent physical and performance characteristics to adjacent markers). | Nil<br><br>100% |
| | | | | | | 6 months | Visual inspection | Number of object markers or delineators defective or missing | Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| **5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS** | | | | | | | | | |
| | 5.1 | Guard rails and safety barriers | All guardrails, safety barriers, concrete barriers, etc., are maintained free of Defects. They are appropriately placed and correctly installed at the correct height and distance from roadway or obstacles. Installation and repairs shall be carried out in accordance with the requirements of NCHRP 350 standards. | 24 hrs | 28 days | | | | |
| | 5.2 | Impact attenuators | All impact attenuators are appropriately placed and correctly installed | 24 hrs | 7 days | 6 months | Visual inspection | Length of road restraint systems correctly installed<br>Length free from defects<br>Length at correct height<br>Length at correct distance from roadway and obstacle | 100%<br>100%<br>100%<br>100% |
| | 5.2 cont | | | | | 6 months | Visual inspection | Number correctly placed and installed | 100% |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1 Hazard Mitiga-tion** | **Cat 1 Perma-nent Remedy** | **Cat 2 Perma-nent Repair** | | | |
| **6) TRAFFIC SIGNS** | | | | | | | | | |
| | 6.1 | General – All Signs | i) Signs are clean, correctly located, clearly visible, legible, reflective, at the correct height and free from structural and electrical defects | 24 hrs | 28 days | | | | |
| | | | ii) Identification markers are provided, correctly located, visible, clean and legible | | | 6 months | **a) Retroreflectivity**<br>Coefficient of retro reflectivity | Number of signs with reflectivity below the requirements of TxDOT's TMUTCD | Nil |
| | | | iii) Sign mounting posts are vertical, structurally sound and rust free | | | | **b) Face damage**<br>Visual inspection | Number of signs with face damage greater than 5% of area | Nil |
| | | | iv) All break-away sign mounts are clear of silt or other debris that could impede break-away features and shall have correct stub heights | | | | **c) Placement**<br>Visual inspection | Signs are placed in accordance with TxDOT's Sign Crew Field Book including not twisted or leaning | 100% |
| | 6.1 cont. | | v) Obsolete and redundant signs are removed or replaced as appropriate | | | | **d) Obsolete signs**<br>Visual inspection | Number of obsolete signs | Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br><br>**Hazard Mitiga-tion** | **Cat 1**<br><br>**Perma-nent Remedy** | **Cat 2**<br><br>**Perma-nent Repair** | | | |
| | | | vi) Visibility distances meet the stated requirements<br>vii) Sign information is of the correct size, location, type and wording to meet its intended purpose and any statutory requirements<br>viii) All structures and elements of the signing system are kept clean and free from debris and have clear access provided.<br>ix) All replacement and repair materials and equipment are in accordance with the requirements of the TMUTCD<br>x) Dynamic message signs are in an operational condition | | | | | | |
| | 6.2 | General - Safety critical signs | Requirements as 6.1, Plus:<br><br>"Stop," "Yield," "Do Not Enter," "One Way" and "Wrong Way" signs are clean legible and undamaged. | 2hrs | 1 week | | **e) Sign Information**<br>Visual inspection<br><br>**f) Dynamic Message Signs**<br>Visual inspection | Sign information is of the correct size, location, type and wording to meet its intended purpose<br><br>Dynamic message signs are fully functioning | 100%<br><br>100% |
| | 6.2<br>cont | | | | | 6 months | Visual inspection | Number of damaged Safety critical signs | Nil |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Cat 1 Hazard Mitigation** | **Cat 1 Permanent Remedy** | **Cat 2 Permanent Repair** | | | |
| **7) TRAFFIC SIGNALS** | | | | | | | | | |
| | 7.1 | General | i) Traffic Signals and their associated equipment are:<br>• clean and visible<br>• correctly aligned and operational<br>• free from damage caused by accident or vandalism<br>• correctly aligned and operational<br>ii) Signal timing and operation is correct<br>iii) Contingency plans are in place to rectify Category 1 defects not immediately repairable to assure alternative traffic control is provided during a period of failure | 2 hrs | 24 hrs | | | | |
| | 7.2 | Soundness | Traffic Signals are structurally and electrically sound | 24 hrs | 28 days | 6 months | **a) General condition**<br>Visual inspection<br>**b) Damage**<br>Visual inspection | Signals are clean and visible<br>Signals are undamaged | 100%<br>100% |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Cat 1 Hazard Mitiga-tion** | **Cat 1 Perma-nent Remedy** | **Cat 2 Perma-nent Repair** | | | |
| | | | | | | | **c) Signal timing**<br>Timed measurements<br>**d) Contingency plans**<br>Records Review | Installations have correct signal timings<br>Full contingency plans are in place | 100%<br>100% |
| | | | | | | 6 months | **a) Structural soundness**<br>Visual inspection | | |
| | 7.3 | Identification marking | Signals have identification markers and the telephone number for reporting faults are correctly located, clearly visible, clean and legible | N/A | 28 days | | **b) Electrical soundness**<br>Testing to meet NEC regulations | Inspection records showing safe installation and maintenance | 100% |
| | 7.4 | Pedestrian Elements and Vehicle Detectors | All pedestrian elements and vehicle detectors are correctly positioned and fully functional at all times | 24 hrs | 28 days | 6 months | Visual inspection | Inspection records showing identification markers and other information are easily readable | 100% |
| | | | | | | 6 months | Visual Inspection | Inspection records showing compliance | 100% |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| **8) LIGHTING** | | | | | | | | | |
| | 8.1 | Roadway Lighting – General | i) All lighting is free from defects and provides acceptable uniform lighting quality<br>ii) Lanterns are clean and correctly positioned<br>iii) Lighting units are free from accidental damage or vandalism<br>iv) Columns are upright, correctly founded, visually acceptable and structurally sound | 24 hrs | 28 days | | | | |
| | 8.2 | Sign Lighting | Sign lighting is fully operational | 24 hrs | 28 days | 6 months | **a) Mainlane lights operable**<br>Night time inspection or automated logs<br>**b) Mainlane lights out of action**<br>Night time inspection or automated logs | Number of sections with less than 90% of lights functioning correctly at all times<br>Instances of more than two consecutive lights out of action | Nil<br>Nil |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| | 8.3 | Electrical Supply | Electricity supply, feeder pillars, cabinets, switches and fittings are electrically, mechanically and structurally sound and functioning | 24 Hrs | 7 Days | 6 months | Night time inspection or automated logs | Instances of more than one bulb per sign not working | Nil |
| | 8.4 | Access Panels | All access panels in place at all times. | 24 Hrs | 7 Days | 1 Month | Testing to meet NEC regulations, visual inspection | Inspection records showing safe installation and maintenance | 100% |
| | 8.5 | High Mast Lighting | i) All high mast luminaries functioning on each pole<br>ii) All obstruction lights are present and working (if required)<br>iii) Compartment door is secure with all bolts in place<br>iv) All winch and safety equipment is correctly functioning and maintained without rusting or corrosion<br>(for structural requirements refer to Element Category 3) | 24 hrs | 48 hrs | 1 Month | Visual Inspection | Instances of missing access panels | Nil |
| | | | | | | 1 Month | Yearly inspection and night time inspections or automated logs | Instances of two or more lamps not working per high mast pole<br>Identification of other defects | Nil<br>Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1 Hazard Mitiga-tion** | **Cat 1 Perma-nent Remedy** | **Cat 2 Perma-nent Repair** | | | |
| **9) FENCES, WALLS AND SOUND ABATEMENT** | | | | | | | | | |
| | 9.1 | Design and Location | Fences and walls act as designed and serve the purpose for which they were intended | 24 hrs | 28 days | | | | |
| | 9.2 | Construction | Integrity and structural condition of the fence is maintained | 24 hrs | 28 days | 6 months | Visual Inspection | Inspection records showing compliance | 100% |
| | | | | | | 6 months | Structural assessment if visual inspection warrants | Inspection records showing compliance | 100% |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| **10) ROADSIDE MANAGEMENT** | | | | | | | | | |
| | 10.1 | Vegetated Areas – Except landscaped areas – General | Vegetation is maintained so that:<br>i) Height of grass and weeds is kept within the limits described for urban and rural areas. Mowing begins before vegetation reaches the maximum height. | 24 hrs | 7 days | | | | |
| | | | ii) Spot mowing at intersections, ramps or other areas maintains visibility of appurtenances and sight distance. | | | 28 days | **a) Urban areas**<br>Physical measurement of height of grass and weeds | Individual measurement areas to have 95% of height of grass and weeds between 5 in. and 18 in | 100% |
| | 10.1 cont. | | iii) Grass or vegetation does not encroach into or on paved shoulders, main lanes, sidewalks, islands, riprap, traffic barrier or curbs. | 24 hrs | 7 days | | **b) Rural areas**<br>Physical measurement of height of grass and weeds | Individual measurement areas to have 95% of height of grass and weeds between 5 in. and 30 in | 100% |
| | | | iv) An herbicide program is undertaken in accordance with the TxDOT Herbicide Manual to control noxious weeds and to eliminate grass in pavement or concrete. | | | | **c) Encroachment**<br>Visual inspection of instances of encroachment of vegetation | Occurrences of vegetation encroachment in each auditable section | Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| | | | v) A full width mowing cycle is completed after the first frost.<br>vi) Wildflowers are preserved utilizing the guidelines in the mowing specifications and TXDOT *Roadside Vegetation Manual*. | | | 28 days | **d) Wildflowers**<br>Visual Inspection with audit of process.<br>**e) Sight lines**<br>Visual inspection | Adherence to vegetation management manuals<br>Instances of impairment of sight lines or sight distance to signs | 100%<br>Nil |
| | 10.2 | Landscaped Areas | i) All landscaped areas are maintained to their originally constructed condition. Landscaped areas are as designated in the plans.<br>ii) Mowing, litter pickup, irrigation system maintenance and operation, plant maintenance, pruning, insect, disease and pest control, fertilization, mulching, bed maintenance, watering is undertaken as per FMP.<br>iii) The height of grass and weeds is kept between 2” and 8”. Mowing begins before vegetation reaches 8 in<br>iv) Damaged or dead vegetation is replaced. | 24 hrs | 7 days | | | | |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Cat 1 Hazard Mitiga-tion** | **Cat 1 Perma-nent Remedy** | **Cat 2 Perma-nent Repair** | | | |
| | 10.3 | Fire Hazards | Fire hazards are controlled | 24 hrs | 7 days | 28 days | Visual inspection | Inspection records showing compliance | 100% |
| | 10.4 | Trees, brush and ornamentals | i) Trees, brush and ornamentals on the right of way, except in established no mow areas, are trimmed in accordance with TxDOT standards.<br>ii) Trees, brush and ornamentals are trimmed to insure they do not interfere with vehicles or sight distance, or inhibit the visibility of signs.<br>iii) Dead trees, brush, ornamentals and branches are removed. Potentially dangerous trees or limbs are removed.<br>iv) All undesirable trees and vegetation are removed. Diseased trees or limbs are treated or removed by licensed contractors. | 24 hrs | 7 days | 28 days | Visual inspection | Instances of dry brush or vegetation forming fire hazard | Nil |
| | 10.5 | Wetlands | Wetlands are managed in accordance with the permit requirements | 24 hrs | 7 days | 28 days | Visual inspection | Inspection records showing compliance | 100% |
| | | | | | | 28 days | Visual inspection, assessment of permit issuers | Instances of permit requirements not met | Nil |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 Hazard Mitiga-tion | Cat 1 Perma-nent Remedy | Cat 2 Perma-nent Repair | | | |
| **11) REST AREAS AND PICNIC AREAS** | | | | | | | | | |
| | 11.1 | Rest areas and picnic areas | i) Picnic areas are clean and neat in appearance. | 24 hrs | 28 days | | | | |
| | | | ii) Trash barrels are painted and attached to their supports to prevent stealing. | | | 6 months | Inspection records showing compliance | Instances where 90% of measured area shall have grass and weeds height between 2 in. and 8 in. | 100% |
| | | | iii) Site free of any visible litter, all litter properly disposed. Litter removed from the picnic area grounds and barrels before being allowed to accumulate outside of the barrels. | 24 hrs | 28 days | | | Mowing shall begin before vegetation reaches 8 in. | 100% |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 Hazard Mitiga-tion | Cat 1 Perma-nent Remedy | Cat 2 Perma-nent Repair | | | |
| | 11.1 cont | | iv) All vehicles used in transporting litter are equipped to prevent the accumulated litt er from being strewn along the roadway. | | | 6 months | | Number of bare ground areas larger than 5 square feet | Nil |
| | | | v) Vegetation damaged due to improper or careless mowing and trimming operations or any other reason is replaced. | | | | | Number of prohibited, invasive or noxious weeds present. | Nil |
| | | | vi) Weeds, grass and other undesirable growth are removed from beds of plants and shrubs as needed. Trees and shrubs are trimmed neatly. All curbs and sidewalks are edged and repaired. | | | | | Occurrences of encroachment of vegetation or debris for more than two (2) inches onto any curb or sidewalk located throughout each rest area. | Nil |
| | | | vii) All picnic tables are clean, free of stains and free of any defect. | | | | | Occurrences of deviation of soil or mulch above or below the top of the curb. | Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| | 11.1 cont | | viii) All directional, informational, safety and any other type of signage is properly installed, contains accurate information and is visible from a reasonable distance. | | | | | Paved surfaces maintained clean and safe with minimal obstruction. | 100% |
| | | | ix) All striping is intact and all parking and travel areas are clearly marked. | | | | | Occurrences of undermining greater than 2” | Nil |
| | | | x) All curbs are in place and intact. | | | | | Number of unsealed cracks > ½ inch. | Nil |
| | | | | | | | | Number of lights fully functional. | 100% |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | **Cat 1 Hazard Mitigation** | **Cat 1 Permanent Remedy** | **Cat 2 Permanent Repair** | | | |
| **12) EARTHWORKS, EMBANKMENTS AND CUTTINGS** | | | | | | | | | |
| | 12.1 | Slope Failure | All structural or natural failures of the embankment and cut slopes of the Facility are repaired | 24 hrs | 28 days | | | | |
| | 12.2 | Slopes - General | Slopes are maintained in general conformance to the original graded cross-sections, the replacement of landscaping materials, reseeding and re-vegetation for erosion control purposes and removal and disposal of all eroded materials from the roadway and shoulders | 24 hrs | 28 days | 6 months | Visual inspection by geotechnical specialist and further tests as recommended by the specialist | Recorded instances of slope failure | Nil |
| | | | | | | 6 months | | Inspection records showing compliance | 100% |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| **13) ITS EQUIPMENT** | | | | | | | | | |
| | 13.1 | ITS Equipment – Maintenance | All ITS equipment is fully functional and housing is functioning and free of defects.<br>i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear.<br>ii) Steps, handrails and accesses are kept in a good condition.<br>iii) Access to all communication hubs, ground boxes, cabinets and sites is clear.<br>iv) All drainage is operational and all external fixtures and fitting s are in a satisfactory condition.<br>v) All communications cable markers, cable joint markers and duct markers are visible and missing markers are replaced.<br>vi) Backup power supply system is available at all times | 24 hrs | | 14 days | | | |
| | 13.2 | VES Equipment - Maintenance | All VES equipment is kept clean, the identification numbers are visible. | 24 hrs | 14 days | 1 month | Visual Inspection | Inspection records showing compliance | 100% |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 Hazard Mitiga-tion | Cat 1 Perma-nent Remedy | Cat 2 Perma-nent Repair | | | |
| | 13.3 | Dynamic Message Sign Equipment | Dynamic Message Signs are free from faults such as:<br>i) Any signal displaying an message which is deemed to be a safety hazard<br>ii) Failure of system to clear sign settings when appropriate.<br>iii) 2 or more contiguous sign failures that prevent control office setting strategic diversions<br>iv) Signs displaying an incorrect message. | 2 hrs | 24 hrs | 1 month | Visual Inspection | Inspection records showing compliance | 100% |
| | 13.4 | CCTV Equipment | CCTV Systems are free from faults that limit the availability of the operators to monitor the area network, such as:<br>i) Failure of CCTV Systems to provide control offices with access and control of CCTV images<br>ii) Failure of a CCTV camera or its video transmission system.<br>iii) Failure of a Pan / Tilt unit or its control system.<br>iv) Moisture ingress onto CCTV camera lens<br>v) Faults that result in significant degradation of CCTV images | 2 hrs | 24 hrs | 14 days | Defect measurement dependent on equipment | Inspection records showing compliance | 100% |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1**<br>**Hazard Mitiga-tion** | **Cat 1**<br>**Perma-nent Remedy** | **Cat 2**<br>**Perma-nent Repair** | | | |
| | 13.5 | Vehicle Detection Equipment | All equipment free of defects and operational problems such as:<br>i) Inoperable loops.<br>ii) Malfunctioning camera controllers. | 2 hrs | 24 hrs | 14 days | Defect measurement dependent on equipment | Inspection records showing compliance | 100% |
| | | | | | | 1 month | Defect measurement dependent on equipment<br><br>Traffic Detector Loops:<br>Loop circuit's inductance to be > 50 and < 1,000 micro henries.<br><br>Insulation resistance to be > 50 meg ohms. | Inspection records showing compliance<br><br>Instances of loops out of compliance | 100%<br><br>Nil |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
| | | | | Cat 1<br><br>Hazard Mitiga-tion | Cat 1<br><br>Perma-nent Remedy | Cat 2<br><br>Perma-nent Repair | | | |
| 14) TOLLING FACILITIES AND BUILDINGS (Not Used) | | | | | | | | | |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1 Hazard Mitiga-tion** | **Cat 1 Perma-nent Remedy** | **Cat 2 Perma-nent Repair** | | | |
| **15) AMENITY** | | | | | | | | | |
| | 15.1 | Graffiti | Graffiti is removed in a manner and using materials that restore the surface to a like appearance similar to adjoining surfaces | 24 hrs | 28 days | | | | |
| | | | | | | 6 months | All graffiti is considered a Category 1 defect | Inspection records showing compliance | 100% |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1 Hazard Mitiga-tion** | **Cat 1 Perma-nent Remedy** | **Cat 2 Perma-nent Repair** | | | |
| **16) SNOW AND ICE CONTROL** | | | | | | | | | |
| | 16.1 | Travel lanes | Maintain travel way free from snow and ice | 2hrs | N/A | | | | |
| | 16.2 | Weather Forecasting | weather forecast information is obtained and assessed and appropriate precautionary treatment is carried out to prevent ice forming on the travel way | 2hrs | N/A | N/A | Maximum 1 hr response time to complete manning and loading of spreading vehicles<br><br>Maximum 2 hrs from departure from loading point to complete treatment and return to loading point<br><br>Maximum 1 hr response time for snow and ice clearance vehicles to depart from base | Inspection records showing compliance | 100% |
| | 16.3 | Operational Plans | Operate snow and ice clearance plans to maintain traffic flows during and after snowfall and restore the travel way to a clear condition as soon as possible. | 2hrs | N/A | N/A | Operations plan details the process and procedures in place and followed | Inspection records showing compliance | 100% |
| | | | | | | N/A | Operations plan details the process and procedures in place and followed | Inspection records showing compliance | 100% |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1 Hazard Mitiga-tion** | **Cat 1 Perma-nent Remedy** | **Cat 2 Perma-nent Repair** | | | |
| **17) INCIDENT RESPONSE** | | | | | | | | | |
| | 17.1 | General | Respond to Incidents in accordance with Section 22. | 1 hr | N/A | | | | |
| | 17.2 | Hazardous Materials | For any hazardous materials spills, comply with the requirements of Section 22. | 1 hr | N/A | N/A | Response times met for 98% of incidents measured on a 1 year rolling basis.<br>No complaints from Emergency Services. | Inspection records showing compliance | 100% |
| | 17.3 | Structural assessment | Evaluate structural damage to structures and liaise with emergency services to ensure safe working in clearing the incident | 1 hr | N/A | N/A | FMP details the process and procedures in place and followed. | Inspection records showing compliance | 100% |
| | 17.4 | Temporary and permanent remedy | Propose and implement temporary measures or permanent repairs to Defects arising from the Incident.<br>Ensure the structural safety of any structures affected by the incident | 24 hrs | 28 days | N/A | Inspections and surveys as required by incident | Incident reports showing compliance | 100% |
| | | | | | | N/A | Review and inspection of the incident site | Auditable inspection records showing compliance | 100% |

| Performance and Measurement Table Baseline | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ELEMENT CATEGORY** | **REF** | **ELEMENT** | **PERFORMANCE REQUIREMENT** | **RESPONSE TO DEFECTS** | | | **INSPECTION AND MEASUREMENT METHOD*** | **MEASUREMENT RECORD*** | **TARGET** |
| | | | | **Cat 1 Hazard Mitiga-tion** | **Cat 1 Perma-nent Remedy** | **Cat 2 Perma-nent Repair** | | | |
| **18) CUSTOMER RESPONSE** | | | | | | | | | |
| | 18.1 | Response to inquiries | Timely and effective response to customer inquiries and complaints. | 48 hrs | 28 days | | | | |
| | | | | 48 hrs | 28 days | N/A | Contact the customer within 48 hours following initial customer inquiry. | Number of responses within specified times | 100% |
| | 18.2 | Customer contact line | Telephone line manned during business hours and 24 hour availability of messaging system. Faults to telephone line or message system rectified | 24 hrs | 28 days | N/A | Instances of line out of action or unmanned | Operations records showing non availability including complaints from public. | Nil |

**Performance and Measurement Table Baseline**

| ELEMENT CATEGORY | REF | ELEMENT | PERFORMANCE REQUIREMENT | RESPONSE TO DEFECTS | | | INSPECTION AND MEASUREMENT METHOD* | MEASUREMENT RECORD* | TARGET |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Cat 1 Hazard Mitiga-tion | Cat 1 Perma-nent Remedy | Cat 2 Perma-nent Repair | | | |
| **19) SWEEPING AND CLEANING** | | | | | | | | | |
| | 19.1 | Sweeping | i) Keep all channels, hard shoulders, gore areas, ramps, intersections, islands and frontage roads swept clean.<br>ii) Clear and remove debris from traffic lanes, hard shoulders, verges and central reservations, footways and cycle ways.<br>iii) Remove all sweepings without stockpiling in the right-of-way and dispose of at approved tip. | 24 hrs | 28 days | 6 months | Buildup of dirt, ice rock, debris, etc. on roadways and bridges not to accumulate greater than 24" wide or 1/2" deep | Inspection records showing compliance | 100% |
| | 19.2 | Litter | i) Keep the right of way in a neat condition, remove litter regularly<br>ii) Pick up large litter items before mowing operations.<br>iii) Dispose of all litter and debris collected at an approved solid waste site. | 24 hrs | 28 days | 6 months | No more than 20 pieces of litter per roadside mile shall be visible when traveling at highway speed. | Inspection records showing compliance | 100% |

# 20 BICYCLE AND PEDESTRIAN FACILITIES

## 20.1 General Requirements

This Section 20 includes requirements with which Design-Build Contractor shall design and construct all bicycle and pedestrian facilities for the Project. Design-Build Contractor shall ensure the bicycle and pedestrian facilities of this Project support TxDOT's commitment to integrate bicycle and pedestrian travel into Project development. Design-Build Contractor shall coordinate the Elements of this Project with the existing and planned trails and other facilities of local and county administrations for pedestrians and cyclists.

## 20.2 Administrative Requirements

If applicable, Design-Build Contractor shall maintain and keep operational all bicycle and pedestrian facilities during construction and throughout the Term of the Agreement.

## 20.3 Design Requirements

### *20.3.1 Bicycle Facilities*

Design-Build Contractor's facilities shall be consistent with the region's bicycle and pedestrian plan and accommodate existing bicycle paths and crossings, and on-street bicycle facilities. Design-Build Contractor shall coordinate with Governmental Entities to ensure consistency with existing and proposed bicycle facilities.

Design-Build Contractor's facilities shall meet the requirements of the AASHTO *Guide for the Development of Bicycle Facilities* and shall incorporate the following elements relating to bicycle facilities into the Design:

a) Alignment, profile, cross-section, and materials;

b) Points of connection to existing and proposed bicycle facilities;

c) Signing, signalization, and pavement markings;

d) Separation between bicycle facilities and the nearest travel lane;

e) Methods of illumination, where applicable; and

f) Requirements of the Aesthetics and Landscaping Plan.

### *20.3.2 Pedestrian Facilities*

Design-Build Contractor shall design, construct, and maintain sidewalks along the frontage roads and side streets where sidewalks currently exist and where required by State or federal regulations. Sidewalks and pedestrian facilities shall comply with the *Texas Accessibility Standards*. Design-Build Contractor shall install pedestrian signals and curb ramps at all existing and proposed signalized intersections. All pedestrian facilities shall be designed to incorporate ambulatory, visibility, and auditory needs of all users.

Design-Build Contractor is responsible for obtaining Texas Department of Licensing and Regulation (TDLR) reviews and approvals of pedestrian facility design and construction.

### *20.3.3 Final Design*

Design-Build Contractor shall incorporate into the Project Final Design the following elements relating to bicycle and pedestrian facilities:

a) Alignment, profile, cross-section, and materials;

b) Points of connection to existing and proposed bicycle and pedestrian facilities;

c) Signing, signalization, and pavement markings;

d) Separation between bicycle or pedestrian facilities and the nearest travel lane;

e) Methods of illumination, where applicable; and

f) Requirements of the Aesthetics and Landscaping Plan.

# 21 TOLLING

TxDOT will be responsible for the design and construction of future tolling elements. Design-Build Contractor shall coordinate with TxDOT in regards to future adjacent tolling projects.