Texas Department of Transportation

TECHNICAL PROVISIONS

FOR

SH 71 TOLL LANES

FROM PRESIDENTIAL BLVD TO EAST OF SH 130

Design-Build Project

Execution Version

August 29, 2014

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1 GENERAL

1.1 Project Scope

The Project scope includes the design and construction of improvements to State Highway (SH) 71 from Presidential Boulevard to just east of SH 130. The Work includes the construction of toll lanes, with grade-separated crossings at Farm to Market (FM) 973 and SH 130, general purpose lanes, at-grade ramps, and intersections improvements. The Project also includes the realignment of FM 973 from just south of the Colorado River to a point approximately 0.5 mile south of the current SH 71/FM 973 intersections. The FM 973 realignment portion of the Project is not tolled.

1.2 Project Description

The Work shall conform to the Basic Configuration defined in Exhibit 1 to the Design-Build Agreement (DBA) and be consistent with the Schematic Design contained in the Reference Information Documents. A description of the Work is provided below:

- Location: From Presidential Boulevard to just east of SH 130
- Length: Approximately 3.9 miles
- Number of toll lanes: 1 lane (excluding auxiliary lanes) in each direction as indicated on the Schematic Design
- SH 71 general purpose lanes: 2-3 lanes in each direction or as indicated on the Schematic Design
- Bridges:
    - Eastbound (EB)/Westbound (WB) over FM 973;
    - EB/WB over SH 130;
    - EB bridge widening over Presidential Boulevard;
    - WB bridge widening over Presidential Boulevard; and
    - EB bridge widening over Onion Creek.
- Existing bridge and retaining wall rehabilitation at the following locations:
    - Spirit of Texas Boulevard – WB Mechanically Stabilized Earth (MSE) wall West of Spirit of Texas Boulevard;
    - Spirit of Texas Boulevard – EB MSE wall West of Spirit of Texas Boulevard;
    - Spirit of Texas Boulevard – EB MSE wall East of Spirit of Texas Boulevard; and
- Spirit of Texas, Presidential, and Onion Creek bridges and bridge elements as recommended in the condition surveys.
- Retaining walls – new:
    - WB entrance ramp – WB wall East of Spirit of Texas Boulevard;
    - Shared used path – WB wall West of Terry Lane;
    - EB general purpose lane – EB wall West of FM 973;
    - Toll lanes – WB wall West of FM 973;
    - Toll lanes – WB wall East of FM 973; and

  - Toll lanes – EB wall West of FM 973.
- Ramps:
  - EB exit ramp to Presidential Boulevard;
  - EB entrance ramp from Presidential Boulevard;
  - WB exit ramp to Presidential Boulevard;
  - WB entrance from Presidential Boulevard;
  - EB exit ramp to SB SH 130/SH 71 EB;
  - EB exit ramp to northbound (NB) SH 130;
  - WB entrance ramp from SH 71 WB;
  - EB exit from toll lanes to SH 71 at Onion Creek; and
  - WB entrance from SH 71 to toll lanes at Onion Creek.
- Intersections:
  - FM 973 at SH 71 (to include from south of the Colorado River to south of SH 71);
  - Presidential Boulevard (mill and overlay);
  - Spirit of Texas Boulevard (mill and overlay);
  - SH 71 general purpose lanes at SH 130 (mill and overlay); and
  - The north to east turning movement at Spirit of Texas needs to be upgraded to accommodate the design vehicle specified in Attachment 11-1 (Roadway Design Criteria)
- Cross-over Removals:
  - Thornberry Road;
  - Golf Course Road;
  - Lyle Road;
  - Terry Lane;
  - Royster Avenue;
  - Fallwell Lane; and
  - Super Street Configuration.
- Turnarounds:
  - SH 71 EB to WB at FM 973;
  - SH 71 WB to EB at FM 973; and
  - SH 71 WB to EB at Presidential Boulevard.

1.2.1 Mandatory Scope

1.2.1.1 Limits of Works Description

The limits of the Work for the toll lanes and general purpose lanes shall be from approximately Presidential Boulevard to east of SH 130 as described below:

a. EB toll lane from Sta. 11071+90 to approximately Sta. 11220+09;

b. WB toll lane from Sta. 11071+90 to approximately Sta. 11220+09;

c. EB SH 71 from Sta. 11062+20 to east end of Onion Creek bridge; and

d. WB SH 71 from Sta. 11024+23 to west end of Onion Creek bridge.

1.2.1.2 Limits of Mill and Overlay Description

Part of this Project will be to mill and overlay existing pavement for the SH 71 general purpose lanes within the limits of work as described below:

a. EB SH 71 from Sta. 11062+20 to 11124+24;

b. WB SH 71 from Sta. 11024+23 to 11124+24;

c. EB SH 71 from Sta. 31177+34 to approximate EBTR Sta. 33+00;

d. EB SH 71 from west end of Onion Creek bridge to east end of Onion Creek bridge; and

e. WB SH 71 from Sta. 21179+20 to approximate WBTR Sta. 22+75.

Where overlays are present on existing bridges, DB contractor shall mill existing overlay to the deck surface. Any damage to the bridge during milling must be repaired by the contractor and approved by TxDOT.

1.3 Project Requirements

1.3.1 Compatibility with Existing Configuration

The design documents furnished by the Design-Build (DB) Contractor shall provide for a smooth transition from the Project's scope of Work to the existing configuration. DB Contractor shall coordinate with adjacent contractors along FM 973 to assure a seamless transition from proposed roadway to existing roadway conditions at all times. The DB Contractor will be responsible for removing final temporary transitions constructed by adjacent FM 973 contractors, connecting their proposed improvements to existing roadways. The DB Contractor shall also provide for minimal disruption to traffic operations throughout the performance of the Work.

1.3.2 3-D Design

1.3.2.1 General Requirements

The utilization of three dimensional (3-D) design is an integral part of the performance of the Project prior to, during construction, and throughout the Project's service life. Additionally, the implementation of 3-D design techniques is intended to improve quality, reduce risk, improve collaboration with Project stakeholders, provide an early focus toward technical review, and increase opportunity for innovation.

1.3.2.2 Design Requirements

The DB Contractor shall utilize 3-D methodologies and techniques to incorporate the Schematic Design into the DB Contractor's Project integrated design files. The DB Contractor's 3-D Design shall facilitate the coordination and accommodation of the ultimate scope and any asset management considerations as it relates to operations and maintenance.

1.3.2.3 Geometric Design Requirements

The DB Contractor shall create an integrated-model of the existing condition utilizing 3-D methodologies and techniques. The existing condition model shall include existing ground surface and certain subsurface elements (including, at a minimum: drainage structures, utilities, and bridge and wall foundations) utilizing data from light detection and ranging (LiDAR), sub-surface utility evaluation

(SUE), field surveys, and existing plans data collection; including currently available LiDAR or other existing ground surface data (.dtm or .tin format) provided by TxDOT.

The DB Contractor shall utilize 3-D methodologies and techniques to develop the geometric design and the 3-D design model for each proposed roadway and incorporate it into the Project's integrated design models. All geometric design shall be prepared in accordance with the Technical Provisions:

a. Refine and finalize horizontal and vertical alignments for all toll lanes, general purpose lanes, ramps, direct connectors, cross roads, pavement transitions, and tie-ins to existing lanes.

b. Determine horizontal and vertical clearances at grade separations, underpasses, and overpasses.

c. Develop superelevation and superelevation transition designs for each roadway. Verify rollover constraints are adequately addressed, including ramp, collector-distributor, and direct connector gore locations.

Integrated design model deliverables shall consist of 3-D MicroStation file(s) containing 3-D graphical elements (components, contours, superelevation transitions limits, and existing and proposed finish grade triangles) representative of the design model, and .dtm or .tin surface files.

The DB Contractor shall include existing and proposed 3-D Design features for the following elements of the Work in accordance with the Technical Provisions:

a. Roadway;

b. Drainage;

c. Structures (including, at a minimum: sufficient detail to show top of deck surface, structure type, bottom of beam surface, bent cap, piers, foundations (size and length), abutment, and retaining wall locations);

d. Utilities (including, at a minimum: xyz data for relocated and existing utilities to remain in place . Existing utilities to be abandoned in place do not need to be included);

e. Signing (including, at a minimum: overhead span or cantilever sign structure locations and structure type);

f. Lighting (including, at a minimum: pole and foundation locations);

g. Signals (including, at a minimum: controller, pole, and foundation locations); and

h. Toll Infrastructure (including, at a minimum: structure type (overhead span and cantilever); not to include detailed elements related to toll gantries or elements inside buildings).

1.3.2.4 Immersive 3-D Over the Shoulder Milestone Review Meetings

The DB Contractor shall present the Project 3-D design model to TxDOT and stakeholders at review meetings. The DB Contractor shall utilize software that allows for interactive visualization of the 3-D design model key features. The 3-D design model shall be completed to a sufficient level of detail that existing terrain, proposed design features, and existing infrastructure to remain in place can be viewed, analyzed, and discussed among participants. Review meetings shall occur prior to any design submittals to TxDOT.

The DB Contractor's 3-D design model shall be capable of providing the following minimum functionality during the immersive 3-D milestone review meetings:

- View the model and manipulate view settings to interactively change data display on the screen (e.g. pan, rotate, walk, fly, zoom, etc.);
- Measure distances and areas throughout all areas of the model;

- Reference baseline geometry, stationing, and existing and proposed right of way;
- Dynamically visualize key existing and proposed design features and detect conflicts/clashes amongst the following disciplines:
  a. Roadway;
  b. Drainage;
  c. Structures (sufficient detail to show top of deck surface, structure type, bottom of beam surface, bent cap, piers, foundations (size and length), abutment, and retaining wall locations);
  d. Utilities (existing and proposed);
  e. Signing (overhead span or cantilever sign structure locations and structure type);
  f. Lighting (pole and foundation locations);
  g. Signals (controller, pole, and foundation locations); and
  h. Toll infrastructure (e.g. structure type (overhead span or cantilever); not to include detailed elements related to toll gantries or elements inside buildings).

2 PROJECT MANAGEMENT

The DB 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 consists of project administration requirements and a collection of several management plan elements (PMP elements) describing discrete elements of the work as described in Table 2-1 (Elements of the Project Management Plan) below, and is a living document for the duration of this contract. The PMP is an umbrella document that describes the DB 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 Technical Provisions That Defines the Chapter Requirements
Administrative Requirements	Section 2
Quality Management Plan • **Design Quality Management** • **Construction Quality Management**	Sections 2 and 19
Safety Plan	Section 2
Risk Management Plan	Section 2
Communications Plan	Section 3
Comprehensive Environmental Protection Program	Section 4
Right Of Way Acquisition Plan	Section 7
Traffic Management Plan	Section 18
Maintenance Management Plan	Section 19

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

TxDOT shall audit and monitor the activities described in the management plans to assess the DB 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 serve to determine the amount due the DB Contractor for a progress payment, if applicable. Before the commencement of any Schedule Activity, the DB Contractor shall submit a Project Baseline Schedule (PBS) in accordance with the Work Breakdown Structure (WBS).

2.1.1.2 Required Submittals

2.1.1.2.1 Project Baseline Schedule

The DB Contractor shall use the Preliminary PBS (PBS-1) submitted with the Proposal as a foundation to prepare a PBS and shall submit a draft of the PBS to TxDOT for review and approval. Approval of the PBS (PBS-2) shall be a condition of Notice to Proceed 2 (NTP2).

The PBS 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. The approved PBS-3 shall be progressed and updated monthly until a subsequent version (PBS-3+) is approved.

The DB Contractor shall submit PBS-2 to TxDOT with a reasonable amount of time for TxDOT review prior to issuance of NTP2. TxDOT will review the PBS within fourteen (14) Days of submission. In the event that TxDOT does not accept the PBS, the DB Contractor shall revise and resubmit it with changes clearly identified. TxDOT will review each resubmission of the PBS within ten (10) Days of resubmission. The DB Contractor shall submit a single hardcopy of the PBS on full-size (11 inches x17 inches minimum, 24 inches x 36 inches maximum) color plot sheets, along with an electronic version of the schedule in its native format for each submittal. The DB Contractor shall be responsible for updating scheduling software to maintain compatibility with current TxDOT-supported scheduling software. Compatible shall mean that the DB Contractor-provided electronic file version of the PBS 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.

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

The DB Contractor shall submit to TxDOT a revised PBS within fourteen (14) Days after each Change Order, relief event, or compensation event is executed. All approved Change Orders, relief events, or compensation events shall be incorporated into the originally planned execution of the Work. TxDOT shall confirm in writing the approval of each revised PBS. The approved PBS or current approved revised PBS shall remain in force until a subsequent revised PBS is approved by TxDOT.

The PBS shall include a separate narrative report which describes, in general fashion, the DB 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 PBS 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 PBS shall also include activities for property acquisition, Utility

Adjustments, permit acquisitions, and interfaces with other projects, localities, municipalities and any Governmental Entity. For each major activity, the DB 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 PBS shall indicate the sequence of performing each major activity and the logical dependencies and inter-relationships among the activities.

The PBS shall be organized consistent with the WBS, the minimum requirements which are included as Attachment 2-2 (Work Breakdown Structure Requirements), WBS requirements, and cost and resource loaded in accordance with Table 2-2 (Schedule Level of Detail Requirements). Each Schedule Activity shall be mapped to one and only one of the WBS elements. DB Contractor shall further develop and detail the base WBS in accordance with its specific Schedule Activities while retaining the ability to summarize to at least the same level as shown in the base. DB Contractor may add additional activities to the levels presented in Attachment 2-2 (Work Breakdown Structure Requirements) 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	No	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 PBS, the DB Contractor shall provide TxDOT with a definition, the composition, and production rate for each crew type.

The PBS shall divide the Work into activities with appropriate logic ties to show the DB Contractor's overall approach to the planning, scheduling, and execution of the Work. All Work shall be divided into reasonable sections, at a minimum by eastbound SH 71 general purpose lane, westbound SH 71 general purpose lanes, toll lanes, FM 973 north of SH 71, FM 973 south of SH 71, FM 973 and SH 71 intersection, ramps, Presidential Boulevard bridge, eastbound Onion Creek bridge, mill and overlay construction, 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. The DB Contractor shall not use calendar dates or constraints to logically begin or complete any Schedule Activity unless such calendar dates or constraints are shown in the Technical Provisions or other DBA Documents.

The DB Contractor shall use standard and consistent Schedule Activity identification numbers, textual descriptions, and codes in all PBS submittals, in a manner acceptable to TxDOT. Each PBS submittal shall be clearly identified. Resubmissions of a PBS 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.

The DB Contractor shall allocate the total design-build contract price throughout the Schedule Activities in the PBS. Such allocation shall accurately reflect the DB 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 the DB Contractor's first monthly Project Status Schedule Update.

Each milestone shall be separately identified, conform to the scheduling requirements set forth in the DBA Documents, and be assigned a "finish no later than" constraint date.

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 PBS. Each PBS 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 the DB 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 PBS 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 PBS 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 the DB Contractor. The updated PBS shall show actual progress and not calculated progress. Approved logic changes and approved changes to the DBA Documents shall be incorporated into the PBS.

The materials, 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 DB 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 the DB Contractor and subcontractors at

all tiers in prosecuting Work shall be assigned to applicable activities. The quantity shall represent the estimated effort in-place for the Schedule Activity value.

The DB Contractor shall develop the WBS with clearly identifiable linkage to the Schedule of Values and the DB Contractor-designed Schedule Activities and phases represented in the PBS. 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, the DB Contractor shall provide a list of Work items that are included in each Schedule Activity or Work element.

The PBS 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 the DB Contractor's submittals as called out elsewhere in the DBA Documents and the Technical Provisions.

With the exception of activities relating to Environmental Approvals by any jurisdictional Governmental Entity, each activity depicting the DB 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 activities shown in the schedule, with the exception of the first and last activities, shall have a minimum of one predecessor and a minimum of one successor 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.

The DB Contractor shall coordinate with the Central Texas Regional Mobility Authority (the "Authority") toll System Integrator (SI) to incorporate work to be performed by the SI. The PBS shall include all activities of work to be performed by the SI to facilitate the timely installation of the SI improvements.

The completion deadline for the Critical Path items associated with the SI shall be complete no later than fifteen (15) Days prior to the Substantial Completion date. The Critical Path items associated with the SI shall not be considered complete until all Critical Path items have been installed, all systems and equipment testing have been successfully completed, the systems and equipment are ready for operation, and the Authority has delivered the written certification to TxDOT of Final Acceptance.

2.1.1.2.2 Project Status Schedule Updates

Beginning with the first full month after NTP2, the DB Contractor shall submit to TxDOT the 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, approved Change Orders, DB 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.
- 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 the updated progress as of the effective date of the updated PBS, forecast the finish for in-progress Schedule Activities, re-forecast early dates and late dates for the 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 inches x 34 inches, 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:

a. Coordinating with and accomplishing Work associated with any utility;

b. Bar chart schedule sorted by segment or section indicating the physical status of all activities as of date of the update;

c. Graphical report, which compares DB Contractor's progress to planned progress by segment or section, and major payment item/WBS;

d. Design document submittals for the forthcoming period;

e. Tabular report listing all activities with ten (10) Days or less of Float;

f. Sixty-day (60) look ahead report on all required TxDOT and Governmental Approvals;

g. Ninety-day (90) look ahead bar chart schedule sorted by WBS and activity early start dates;

h. Monthly expenditure projections and cash expenditure curves by WBS;

i. Critical Path items graphical report for each Critical Path sorted by activity early start date; and

j. 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 the DB Contractor's WBS and the current approved Project Schedule and for conformance with the DBA Documents. The DB Contractor shall correct any deficiencies and resubmit its monthly Project Status Schedule Update(s) with the payment request. TxDOT will notify the DB 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 the DB Contractor's Project Schedule, to analyze monthly progress payments to the DB Contractor, and to measure the DB Contractor's performance with respect to its plan for accomplishing the Work.

The DB Contractor shall submit a single hard copy of the Project Status Schedule Update in full-size ((11 inches x17 inches minimum, 24 inches x 36 inches maximum)) color plot sheets, along with an electronic version of the schedule in its native format. 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 PBS, the DB 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 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 PBS, the activity unique identification number, the activity description, the quantity, the applicable unit, unit price, and scheduled value; and

c. The DB 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 PBS, shall be submitted fourteen (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 DB Contractor shall submit to TxDOT the Progress Report. The DB 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 the progress for each section and the Project as a whole, including all phases of Work. Identify the start date and the completion dates on major areas of Work. Group the information based on the WBS;

b. Summarize the Quality Assurance (QA)/Quality Control (QC) findings;

c. List any Change Orders that were identified or executed during the period from the submission of the previous month's Progress Report to the submission of the current Progress Report, including their status;

d. Identify any relief events or compensation events that were accepted during the period from the submission of the previous month's Progress Report to the submission of the current Progress Report;

e. Identify Schedule Activities planned for the upcoming period;

f. Identify problems and issues that arose during the period from the submission of the previous month's Progress Report to the submission of the current Progress Report, and issues that remain to be resolved;

g. Summarize the resolution of the problems and issues raised in the previous Progress Reports or resolved during the period from the submission of the previous month's Progress Report to the submission of the current Progress Report;

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 actions for the next month; and

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 print outs:

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 DB Contractor's progress to planned progress;

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

c. Ninety-day (90) look ahead Gantt chart showing all upcoming Submittals from the DB Contractor and approvals required by TxDOT or any jurisdictional Governmental Entity;

d. Ninety-day (90) 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 DB Contractor shall make all corrections to the monthly Progress Report and resubmit. If the DB Contractor does not agree with TxDOT's comments, the DB 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 DB 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 DB Contractor's Project Manager and the DB Contractor's scheduler as being a true record of when the Work was actually performed. The "as-built schedule" that TxDOT determines is both correct and complete is a requirement for Final Acceptance.

2.1.1.2.6 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 DB Contractor through a change request, compensation, or relief event notices.

2.1.1.3 Time Impact Analysis

For every notice seeking time relief, the DB Contractor shall submit a written time impact analysis illustrating the influence of each delay event. Each time impact analysis shall include a fragmentary network demonstrating how the DB Contractor proposes to incorporate the change, delay, or DB 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 DB Contractor, the date the delay occurred, or the date the DB 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 DB 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 DB Contractor. TxDOT will accept time extensions associated with relief events or compensation events only to the extent that time adjustments to the Schedule Activity or Activities affected by the change or delay exceeds to 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 DB Contractor shall submit one printed Gantt chart, 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 DB Contractor shall provide one electronic backup of the Project Schedule with the time impact analysis and a comprehensive narrative for each relief request or compensation event Notice.

The DB Contractor shall incorporate the results of the relief event determination or compensation event from TxDOT into the Project Status Schedule Update for the next Progress Report.

2.1.1.4 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 DB Contractor shall have no right to receive settlement of a payment request until such time as the DB 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

The DB 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. EDMS shall be established and operational either within thirty (30) days of Notice to Proceed 1(NTP1), or prior to receiving first submittals from the DB Contractor, whichever comes first. 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 DBA Documents.

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 2-3 (I2MS Test Form Fields). The DB 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 within 48-hours after test completion.

In the provision of a document management system, the DB 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 DB Contractor personnel to operate any TxDOT data management system which TxDOT may require in connection with the Project; and

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 DB Contractor shall back-up all Project-related documents on a nightly basis and store all Project-related documents in a secure off-site area on a weekly basis.

The DB Contractor shall provide TxDOT at DB Contractor's expense, sufficient access to the DB Contractor's document control database as deemed necessary by TxDOT.

2.2 Quality Management Plan

The DB 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 9001:2008 for quality systems, quality plans and quality audits, or most current version, as updated by the International Standards Organization. The DB Contractor may elect to obtain formal ISO 9001 certification, but will not be required to do so. The DB Contractor Quality Management Plan shall comply with the requirements of current *TxDOT Design-Build Quality Assurance Program Implementation Guide*.

2.2.1 General Requirements

The DB 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. The DB Contractor shall make all quality records immediately available to TxDOT for review. The DB 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 the DB Contractor and DB Contractors of all tiers;
c. The DB Contractor shall submit to TxDOT the results of all Project quality audits within seven (7) Days of their completion; and
d. The DB Contractor shall promptly submit to TxDOT non-conformance reports both upon issuance and resolution.

The Quality Management Plan shall contain detailed procedures for the DB Contractor's quality control and quality assurance activities. The DB Contractor's quality process shall incorporate planned and systematic verifications and audits undertaken by an independent party. The DB 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, for each appropriate item of Work (items produced on and off the Project site) using appropriate equipment that is accurately calibrated and maintained in good operating condition at an AASHTO (AASHTO R18-10, *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: the DB 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

The DB 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 for products produced both on and off the Project site; and
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 the DB Contractor will implement throughout its organization. The policy shall demonstrate DB Contractor senior management's commitment to implement and continually improve the quality management system for the Work.

2.2.5 Design Quality Management Plan

The DB 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 2.2.5 and Attachment 2-1 (Project Management Plan Contents) of the Technical Provisions.

2.2.5.1 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 DB 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 shall also include the coordination of the review, approval, release, distribution, and revision of documents involving such parties;

e. Procedures shall: (1) ensure that DB Contractor personnel are familiar with all the provisions of the DBA Documents concerning their respective responsibilities; (2) 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 (3) 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, Schematic Design 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 the DB Contractor and copies made available to TxDOT upon request; and

g. Procedures and schedules for the Professional Services Quality Control Manager (PSQM) to perform audits of the design firm's quality control procedures under the DQMP.

2.2.5.2 Personnel and Staffing

2.2.5.2.1 Professional Services Quality Control Manager

The DB Contractor shall assign a PSQCM who shall be responsible for management of quality control program for the design, environmental, Right of Way (ROW), Utilities and survey. The PSQCM shall

not be involved with direct scheduling or production activities; and shall report directly to the DB Contractor's management team. The PSQCM shall see that the methods and procedures contained in the approved DQMP are implemented and followed by the DB Contractor design staff in the performance of the Work. The PSQCM shall be a Registered Professional Engineer.

2.2.5.2.2 Design Quality Assurance Manager

The DB 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, Utilities, and survey. The DQAM shall work for an independent Design Quality Assurance Firm (DQAF) hired by the DB Contractor; and shall report jointly to TxDOT and the DB Contractor's management team. The DQAM shall carry out assurance and audit functions as outlined in the DQMP. 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.

2.2.5.2.3 Personnel in Responsible Charge

The DB 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.

2.2.5.2.4 Reviewing Professional Services

The DB 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.

2.2.5.2.5 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, Utilities, and survey performed by any member of DB 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 DB 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.

2.2.5.2.6 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. The DB 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 the DB Contractor to achieve the Substantial Completion and Final Acceptance deadlines.

Should TxDOT determine that the DB Contractor is not complying with the 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 the DB Contractor for such services.

2.2.5.3 Professional Services Submittal Review Process

The DB Contractor shall conduct a series of working meetings with its Professional Services staff, the internal quality control of DB 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.

The DB Contractor and TxDOT shall collaborate and mutually agree upon (1) a list of proposed sections (i.e., Station x+xx to Station y+yy) for the Work; (2) Professional Services packaging and content (such as drainage, individual structures, roadway, traffic sequencing, and others); (3) a list of mandatory submittals; and (4) 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 DB Contractor intent and to validate conditions. The DB 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 the DB Contractor shall maintain formal documentation of these meetings for TxDOT's audit.

The purpose of the submittal reviews is for TxDOT 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 DB Contractor and TxDOT cannot come to an agreement on the list of mandatory submittals, the following list and compliance with 43 Tex. Admin. Code § 27.56 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.

2.2.5.3.1 Submittal Requirements

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

The DB Contractor shall furnish all Submittals by electronic copy in accordance with Section 2.1.2 (Document Management). Unless otherwise stated in the DBA Documents, the DB Contractor shall provide to TxDOT four (4) paper copies and a single electronic copy of each Submittal. Each Submittal shall have the signature of an Authorized Representative of the DB 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 DB 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 Submittals 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, including all prior revision dates;

b. Contract title and number;

c. The names of the DB 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 DB 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; and

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

2.2.5.3.2 Final Design Submittal

The Final Design Submittal shall be certified by the DQAM and submitted to TxDOT for general review. 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 the DB Contractor and TxDOT.

When the DB Contractor has completed the Final Design Submittal for an item, element, or phase and wishes to obtain TxDOT concurrence of such a design, the DQAM 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 the DB Contractor's approved DQMP;

c. The item or element is ready for construction; and

d. The DB Contractor has obtained all required 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.

2.2.5.3.3 Formal Review

The DQAM shall conduct a formal review presentation of the Final Design Submittal with TxDOT at a location acceptable to TxDOT prior to certification.

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

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

2.2.5.4 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, the DQAM 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.

2.2.5.5 Certification of Compliance

The DQAM shall verify that the DB 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 DQAM. Following issuance of a "Certification of Compliance" by the DQAM, TxDOT shall review and provide written concurrence and the DB Contractor shall proceed with issuing the Released for Construction Document.

After the DB 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, the DB Contractor shall provide Final Design package to TxDOT. The DB 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. Governmental Approvals; and

g. Utility Owner approvals.

TxDOT's concurrence with the DQAM's certification of compliance will not constitute approval of the design or subsequent construction, nor relieve the DB Contractor of its responsibility to meet the requirements hereof. Irrespective of whether TxDOT provides the DB 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, the DB 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 DQAM'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 2.2.5.8 (Early Start of Construction). Prior to issuing a Released for Construction Document and progressing further with construction of a certified package, the DB Contractor shall complete the next item, element, or phase of design, or complete the Final Design and obtain TxDOT's concurrence, except for the Work performed in accordance with Section 2.2.5.8. Any items, elements, or phases of design, subsequent to the certification of compliance from the DQAM, shall be checked and certified by the DQAM 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 the DB Contractor in writing of any specific deficiencies in the Final Design Documents. The DB 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 and audit reviews, respectively, 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.

The DB 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.

2.2.5.6 Released for Construction Documents

The DB Contractor shall submit to TxDOT all Released for Construction Documents in accordance with the submittal requirements of the Design Quality Management Plan. The DB 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 (2) Business Days after the DB Contractor has completed design of any particular Released for Construction Document, the DB Contractor shall submit the signed and sealed document to TxDOT.

2.2.5.7 Design Changes

The DB 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, the DB 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, a 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 a Registered Professional Engineer. In all cases, the DQAM 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 DB Contractor's approved DQMP; and

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

The DB 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. Design changes submitted under an RFI that are minor may not warrant interim review in addition to final formal design review(s) by TxDOT. Design changes eligible for a single review shall be defined in the DQMP and approved by TxDOT. All changes made through the RFI process shall be documented in the as-built drawings.

2.2.5.8 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 the DB 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 the DB Contractor prior to receiving TxDOT's written concurrence with the DQAM's certification of compliance of the Final Design Submittal for the Work. All such Work is performed at the sole risk of DB Contractor. TxDOT does not consider any items as satisfying the DQMP requirements until the DQAM has issued a certification of compliance and TxDOT 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 the DB Contractor.

Any Work constructed by the DB Contractor prior to receiving TxDOT'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 the DB Contractor's sole cost and expense and without any consideration given to an extension of the Completion Deadline.

TxDOT and the DB 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 the DB Contractor's field staff. In order for the DB 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 DB 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; and

i. Construction specifications.

An Early Start of Construction shall be at the sole and complete risk of the DB Contractor, and does not release the DB Contractor from any of the requirements described in Section 2.2.6 (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, the DB 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.

2.2.5.9 Record Drawings and Documentation

Within ninety (90) Days of Final Acceptance of all or part of the Project, the DB 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 the DB Contractor constructed.

The DB Contractor shall ensure that the Record Drawings reflect the actual condition of the constructed Work. The DB Contractor shall submit to TxDOT the electronic files used to prepare the Record Drawings and documentation.

2.2.6 Construction Quality Management Plan

The DB 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.

The DB Contractor's Construction Quality Management Plan (CQMP) shall contain detailed procedures for the DB Contractor's quality control and quality assurance activities for construction 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 the DB Contractor's CQMP;

b. That the DB 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 Construction Quality Acceptance Firm (CQAF) Registered Professional Engineer;

d. Methods and procedures to be utilized by the DB 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. 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;

i. 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;

j. 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, CQAM, and TxDOT. Procedures to proceed beyond inspection points shall be developed;

k. 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;

l. Documents specify that all activities undertaken by or on behalf of the DB 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;

m. 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;

n. 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;

o. 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;

p. Procedures for processing a RFI to resolve discrepancies and/or questions in the plans and specifications so that all changes are documented and approved by the DB Contractor's design engineers, DQAM and TxDOT;

q. 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;

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

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

t. 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;

u. 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;

v. 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;

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

x. 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 the DB Contractor's management to ensure corrective action is promptly taken;

y. A comprehensive system of planned and periodic audits of the DB 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 the DB Contractor. Follow-up action, including re-audit of deficient areas following corrective action, shall be taken where indicated;

z. 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 the DB Contractor and are distributed to and used at the location where the prescribed activity is performed. Changes to the 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;

aa. The requirements and methods for controlling documents. The DB Contractor's document control system shall be compatible with TxDOT's;

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

cc. The form and distribution of certificates of compliance; and

dd. 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 the DB Contractor.

2.2.6.1 Personnel and Staffing

2.2.6.1.1 Construction Quality Control Manager

The DB 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 the DB Contractor's management team. The CQCM shall see that the methods and procedures contained in approved CQMP are implemented and followed by the DB Contractor and Subcontractors in the performance of the Work. The CQCM shall be a qualified individual experienced in managing and overseeing all aspects of on-site construction quality control.

2.2.6.1.2 Construction Quality Control Staff

The DB Contractor and Subcontractors' construction work force are all considered to be members of the DB 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. Personnel performing quality control sampling/testing shall be knowledgeable in the testing methods and procedures and do not need to be certified or direct employees of the DB Contractor, but cannot be employees of the CQAF.

2.2.6.1.3 Construction Quality Acceptance Manager (CQAM)

The DB 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 the DB 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.

2.2.6.1.4 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 the DB 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.

2.2.6.1.5 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. The DB 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 the DB Contractor to achieve the Substantial Completion and Final Acceptance deadlines.

Should TxDOT determine that the DB Contractor is not complying with the 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 the DB Contractor for such services.

2.2.6.1.6 Responsibility and Authority of DB 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

The DB Contractor's CQCM, CQAM, and quality staff shall have no responsibilities in the production of the Work. Quality acceptance staff shall remain independent of the quality control staff.

The CQCM 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. The DB Contractor shall submit the monthly reports to TxDOT for review.

The DB Contractor's CQCM and CQAM shall have the authority to stop Work for quality-related issues.

2.2.6.2 Inspection and Testing

The CQMP shall contain detailed descriptions of the inspection and test plans, including the timing, quantities represented and frequency of testing that the DB Contractor will use to meet quality control and quality assurance requirements of the Work.

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

2.2.6.3 TxDOT Construction Notices

On a weekly basis, the DB Contractor shall provide TxDOT with a rolling three (3) week inspection notice. The inspection notification shall include the fabrication schedule and planned construction activities for items where TxDOT is performing the fabrication inspection.

2.2.6.4 Reporting, Recordkeeping, and Documentation

The DB 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 twenty-four (24) hours following the inspection or test;

b. The CQAF shall maintain, electronically, a daily log of all inspections performed for both the DB 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 twenty-four (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; and

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 2-3 (I2MS Test Field Forms). This electronic reporting is intended to allow the DB Contractor and TxDOT to make timely and accurate decisions on workmanship and material quality issues.

2.2.6.5 Laboratory Requirements

The DB 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 Construction Quality Management Plan (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; and

b. Equipment in all laboratories shall be certified prior to commencing any construction activities and shall retain the certification by AASHTO, or TxDOT, as applicable for the duration of the Work.

2.2.6.6 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.

2.3 Communications Plan

The DB Contractor shall submit to TxDOT for approval a Communications Plan that is consistent with and expands upon the preliminary communications plan submitted with the Proposal. The DB Contractor shall maintain and update the Communications Plan throughout the Term.

The Communications Plan shall describe the procedures for communication of Project information between the DB Contractor's organization and TxDOT. Section 3 (Public Information and Communications) includes requirements for developing and implementing the program in coordination with TxDOT.

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

2.4 Safety Plan

The DB Contractor shall be responsible for the safety of its personnel and of the general public affected by the Project.

The DB 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 the DB Contractor's staffing plan, 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 DBA Documents.

The DB 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.

2.5 Comprehensive Environmental Protection Plan

Section 4 (Environmental) includes requirements for environmental management.

2.6 Risk Management Plan

Attachment 2-1 (Project Management Plan Contents) includes requirements for risk management.

2.7 Right of Way Acquisition Plan

TxDOT has acquired the right of way, which it has determined to be sufficient for the Project. If the DB Contractor chooses to alter the roadway alignment in such a manner requiring additional ROW, the DB Contractor will be responsible for the acquisition cost for such parcels. The DB Contractor shall provide all services necessary to acquire title to the additional right of way, in form and substance acceptable to TxDOT, in the name of the State; relocation of displacements; and clearance/demolition of the improvements from the Project right of way.

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

2.8 Traffic Management Plan

Section 18 (Traffic Control) includes requirements for traffic management.

2.9 Maintenance Management Plan

Section 19 (Maintenance) includes requirements for maintenance management.

2.10 Offices, Equipment and Vehicles

Except where noted elsewhere in the DBA Documents, the DB Contractor and TxDOT shall co-locate for the term of the DBA Documents to facilitate Project coordination and daily communication. The

definition of "co-locate" for the DBA Document is office space meeting the conditions of this Technical Provision that are near each other along or adjacent to the Project within one (1) mile of the Project ROW, or as approved by TxDOT. At a minimum, the following DB Contractor's personnel shall be co-located with TxDOT:

- Project Manager, Design Manager, senior engineer, and at least one CADD technician during the design phase; and
- Project Manager and Construction Manager during the construction phase.

The DB Contractor shall provide TxDOT office space (i.e., available for occupancy) upon receipt 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.

2.10.1 Office Network and Systems

The DB Contractor shall provide, furnish, install, operate, and maintain the following for the TxDOT office spaces:

- A local area network (LAN) with a minimum two (2) 100 Mbps network drops for each personal office area and a minimum of four (4) 100 Mbps drops for each conference room. All drops shall have the ability to connect to the internet. The network shall allow for multiple virtual private network (VPN) connections/sessions. The network shall also provide full wireless ethernet (WiFi ®) coverage within the office. The wireless network shall be capable of 802.11 a/b/g/n;
- A touch-tone telephone system (with voice mail) with at least one (1) telephone, with speakers for each personal office area. Also provide at least one (1) telephone, with speakers and a minimum of one (1) satellite microphone for each conference room. The telephone system shall have the ability to host two (2) lines per telephone, access all outside lines, receive any incoming call, caller ID, conference-call capability (3-way calling), call forwarding, call transfer, hold, hold music, and send to voice mail functionality;
- Access to the DB Contractor's EDMS systems for file sharing, collaboration, reviews, and responses at each personal office area and within each conference room;
- High speed, highly reliable internet service(s) capable of providing a minimum download speed of 2 Mbps and a minimum upload speed of 1 Mbps per network drop with a minimum of three (3) concurrent download connections download and a minimum of two (2) concurrent upload connections;
- The ability to print to any printer from any network drop or wireless connection regardless of user domain. (I.e. TxDOT and others computers shall be able to print to any printer from any network drop.);
- Including all network equipment, racks, structured cabling, wall plates, jacks, patch panels, patch cords (including patch cables for each LAN and telephone drop in each personal office area and conference room, power assemblies and other appurtenances needed to meet the requirements contained within this Technical Provision;
- All hardware and software shall meet applicable industry standards and protocols;
- Provide on-site technical support eight (8) hours per day, five (5) days per week until the completion and close out of the Project;
- One (1) high-speed laser computer printer capable of handling 11 inches x17 inches prints;

- One (1) high-speed color printer capable of handling 11 inches x17 inches prints;
- One (1) high-speed color photocopy machine capable of handling 11 inches x17 inches prints;
- One (1) facsimile transmission machine;
- One (1) high-speed color scanner capable of handling 11 inches x17 inches prints;
- 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, toners, pens, pencils, notepads, and other miscellaneous office supplies;
- One hard copy of all TxDOT and AASHTO design manuals and standards as specified in the DBA Documents;
- Certify and state supplied components as functional before installation and will bear all responsibility for replacement of parts at work commencement; and
- Prepare test plan and submit before installation, test installed system and supply test results, and will conform to all industry standard testing procedures.

2.10.2 Core Office

The DB 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. The DB Contractor shall provide office space, not less than 2,000 SF, for TxDOT's design and Project management staff including, the General Engineering Consultant and other contract employees for a maximum of ten (10) persons. If it is necessary to locate any of these elements of the Work off-site or outside of this office, the DB Contractor shall obtain TxDOT's prior written consent.

The DB 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. The DB Contractor shall submit a final facility layout plan within ten (10) Days of receipt of TxDOT comments.

The DB Contractor shall have the TxDOT facility area available upon receipt of NTP1.

2.10.2.1TxDOT Facility Area and Items Provided by DB Contractor

The DB Contractor shall provide separate office space for the exclusive use of TxDOT's design and Project management staff in the TxDOT facility area as specified herein and subject to TxDOT's prior written approval. This office space shall be located within the same building or complex as the DB Contractor's office staff. TxDOT will be reasonable regarding re-use of existing space within the DB 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, at least of the same quality as those of the DB 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 DB Contractor-provided TxDOT facility area to the DB 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 the DB 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, the DB 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, the DB Contractor shall replace the facilities noted herein within the timeframes specified herein, and TxDOT shall reimburse the DB Contractor for actual, reasonable, and documented costs incurred.

Office Facilities and Equipment. For the TxDOT facility area it provides, DB Contractor shall:

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

b. Access and Security. Provide separate TxDOT entrance/exit(s) from building, which shall be secured with electronic door lock(s) plus a deadbolt lock. The DB 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., network/telecommunications, document storage, offices). The DB 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;

c. 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 (4) duplex receptacles, with minimum circuit capacity of twenty (20) amperes. In addition, each personal office area and conference room shall have a 1500 VA uninterruptible power supply (UPS). All LAN and Telephone system equipment and appurtenances shall have a UPS sized properly to be capable of providing up to one (1) hour of battery run time;

d. Janitorial and Trash 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 DB Contractor. DB Contractor will pay for and procure janitorial services for the TxDOT facility area;

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

f. 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;

g. 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 the DB Contractor's office space/staff. These spaces and all TxDOT spaces shall have access 24 hours per day, 7 days per week, and 365 days per year (24/7/365). In lieu of access to a common break room, the DB Contractor may provide a 200 SF break room/kitchen within the TxDOT space, with refrigerator with freezer compartment, sink, and microwave. Break room/kitchen will have storage closet (25 SF) and cabinets with drawers and counter tops. In the event that access to restrooms cannot be accessed from a common building entry/lobby, the DB Contractor may provide separate restrooms for the TxDOT facility area. In the event it is necessary to locate a

separate break room and/or restrooms within the TxDOT facility area, the 2,000 SF TxDOT space allocation may be required to be increased to accommodate these spaces;

h. 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, and 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;

i. Code Requirements. Meet all applicable building and fire code requirements; and

j. Disposal and Removal. Be responsible for disposal or removal of all the DB 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:

a. Offices. Enclosed offices for TxDOT's management staff (nominal 150 SF each), five (5) total with keyed door hardware;

b. Cubicles. Cubicle area spaces for administration staff (nominal 64 SF each), eight (8) total; (power supply and data and communication lines to cubicles may be provided through power pole drops);

c. Conference Rooms. One (1) conference room at nominal 12 feet x 25 feet (300 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;

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

e. Not Used;

f. Storage and Filing. One (1) lockable space for storage and filing, nominal 10 feet x15 feet (150 SF);

g. Network/Telecommunications Room. One (1) network/telecommunications room sized appropriately to meet ADA, OSHA, and NEC requirements as applicable. Temperature shall be maintained with a dedicated HVAC as defined above;

h. Parking Area. Parking area for at least twenty (20) vehicles (14 staff/6 visitors) that is reasonably level (all-weather surface and all-weather access);

i. 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; and

j. 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:

a. Flooring. Carpeted flooring (carpet not required in server room);

b. Entry Access. Entry to TxDOT areas by electronic door hardware card access (not keyed), with UPS on locks (fail closed);

c. Electrical Outlets. All data/voice outlets shall be installed next to power outlets;

d. HVAC. 24/7/365 HVAC as previously described;

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

f. 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;

g. Fire Extinguishers. The DB Contractor shall provide fire extinguishers, per fire code and fire marshal with jurisdiction;

h. Insurance. Insurance (obtained and provided by the DB Contractor) covering the use of the Project office by the DB 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 DBA Document;

i. Vending Area. The DB Contractor shall provide access to general building vending area;

j. Utilities. Initial installation and monthly expense of all utilities paid by the DB Contractor except long-distance telephone service;

k. Emergency Contacts. 24-hour emergency contact to the DB Contractor; and

l. Furniture. The DB Contractor-provided allowance of $15,000 in the Price for furniture, which shall be obtained by the DB Contractor at the direction of TxDOT, and billed through the DB Contractor. At the end of the Project, the DB 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.

2.10.3 Field Offices

The DB Contractor shall provide field office space for the exclusive use of TxDOT's field construction staff for the Project as specified herein. The field offices can be combined with the core office described in Section 2.10.2 as long as the combined offices meet the requirements of Sections 2.10.2 and 2.10.3.

Subject to TxDOT's prior written approval, the DB Contractor shall provide separate facilities for TxDOT's resident engineer staff located within the same complex as the DB Contractor's field office. Should the DB 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 the DB Contractor's counterpart management and field staff.

The DB 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, at least of the same quality as those of the DB 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 the DB Contractor-provided facilities to the DB 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 the DB 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, the DB 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, the DB Contractor

shall replace the facilities noted herein within the timeframes specified herein, except that TxDOT shall reimburse the DB Contractor for actual, reasonable, and documented costs incurred.

Office Facilities and Equipment. For the facilities it provides, the DB Contractor shall:

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

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

c. Lighting and Electricity. Include with all interior spaces overhead lighting meeting the requirements of the 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. In addition, each personal office area and conference room shall have a 1500 VA uninterruptible power supply (UPS). All LAN and Telephone system equipment and appurtenances shall have a UPS sized properly to be capable of providing up to one (1) hour of battery run time;

d. 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;

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

f. Accessibility. Meet all access requirements of the ADA, as amended (42 USC §§12101, et seq.);

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

h. 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;

i. Code Requirements. Meet all local building and fire code requirements; and

j. Disposal and Removal. Be responsible for disposal or removal of all the DB 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:

a. Offices. Enclosed offices for TxDOT's construction representative, TxDOT-designated construction manager and three (3) other TxDOT or contract employees (150 SF each);

b. Offices/Cubicles. Offices or cubicles for up to six (6) field engineer/inspection/ administration staff (64 SF each);

c. Conference Rooms. Conference room (enclosed) (200 SF);

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

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

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

g. 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;

h. Staff Parking Area. A parking area for at least ten (10) vehicles that is reasonably level (all-weather surface and all-weather access) within the boundaries of a security fence;

i. 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 1,000 SF);

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

k. 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;

l. Window Security. Security bars on all windows;

m. Laboratory Facility. A completed facility suitable to accommodate a functioning portable lab (approximately 1,000 SF);

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

o. Restrooms. Two (2) restrooms including toilets and sinks;

p. First Aid Facilities. Emergency first aid facilities; and

b. Network/Telecommunications Room. One (1) network/telecommunications room sized appropriately to meet ADA, OSHA, and NEC requirements as applicable. Temperature shall be maintained with a dedicated HVAC system as defined above.

3 PUBLIC INFORMATION AND COMMUNICATIONS

3.1 General Requirements

The objective of the Public Information and Communications Program is to maintain a high level of two way communication by informing and engaging local Governmental Entities, special interest groups, businesses, communities, and the general public about the Project status throughout the design and construction period. The DB Contractor will be responsible for developing and implementing the program in coordination with TxDOT. The DB Contractor shall coordinate all public information communications with ongoing TxDOT public information activities to ensure that a consistent message is being distributed to the Customer Groups. Consideration should be given to the Authority in the planning and implementation of the program. 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.

Customer Groups are defined as: media; Governmental Entities, including regulatory and law enforcement agencies; general public residing or working within the general vicinity of the Project, or traveling within or across the limits of the Project; business owners within or adjacent to the Project corridor; Utilities, railroads, transportation authorities and providers (such as local airports, transit operators, toll authorities, and other highway concessionaires) affected by the Project; neighborhood associations, community groups, and other organizations with special interest in the Project; and Other persons interested in the Project. Stakeholders will be added to this list as the Project progresses.

3.2 Administrative Requirements

3.2.1 Public Information and Communications Plan

DB Contractor shall work closely with TxDOT to prepare a Public Information and Communication Plan (PICP) that supports TxDOT in developing specific plans to respond to their concerns and needs in all respects regarding the Project. Within thirty (30) days of issuance of NTP1, TxDOT and DB Contractor shall jointly organize a communications planning workshop to discuss development of the PICP and to ensure the contents of the draft PCIP meet TxDOT expectations. TxDOT and DB Contractor will jointly develop a draft agenda and determine a suitable location for the workshop.

At least sixty (60) Days prior to NTP2, the DB Contractor shall submit to TxDOT for approval a comprehensive Public Involvement and Communications Plan (PICP), based upon the preliminary communications plan submitted with the DB Contractor's Proposal, which informs, educates, and engages the Customer Groups throughout every stage of the Project.

The PICP will include strategies and tactics, specific timelines, measures, and deliverables. The PICP shall specifically address:

- A detailed work plan;
- Key issues anticipated to be addressed through the life of the Project;
- Key messages to be used to communicate about the Project and address any key issues;
- Identify Customer Groups and develop specific plans to respond to their concerns and needs in all respects regarding the Project;
- How the public will be notified of construction, traffic detours, and potential impacts;
- Specific outreach and engagement activities, the frequency of those activities, and responsible parties for developing and implementing those activities;
- Communication tools and modes; and

- The strategies the DB Contractor will measure to determine the effectiveness of the PICP.

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

The DB Contractor shall provide sufficient qualified staffing to effectively implement 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.

The DB Contractor shall continually maintain the plan to ensure delivery of high-quality, well executed communications throughout the Term of the DBA Document. Together with the TxDOT's designated point of contact for the local Public Information Office and the point of contact for TxDOT's Office of Public Involvement, the DB Contractor shall periodically review the PICP on a basis not less than annually to forecast, plan, and coordinate updates in the plan and strategies needed to effectively accomplish the stated goals and objectives.

TxDOT may audit the DB Contractor's performance of the activities set forth in the PICP. The DB 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. The DB 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. The DB Contractor shall document the efforts and results of the PICP in measurable terms to clearly indicate compliance.

In developing the PICP, the DB 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. Establish and maintain effective two way communication between the community and TxDOT;

c. Provide Customer Groups with opportunities for input;

d. Respond promptly to public questions and issues within three (3) Business Days or as approved by TxDOT;

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

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

g. Provide public information, which facilitates alternative trip planning during construction;

h. 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 ADA, construction noise and lighting, and ongoing noise issues;

i. Build upon the TxDOT's positive reputation as a good partner to the community; and

j. Build upon the efforts of the successful communications program carried out during the environmental process and reinforce relationships with key stakeholders.

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

Public Information and Communications Strategies

a. Develop a forum to coordinate on-going dialogue among Customer Groups, TxDOT, and the DB 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, hotline, 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 as well as two way communication;

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

h. Comply with the requirements of the *Guidelines for Analysis and Abatement of Roadway Traffic Noise*; and

i. Comply with TxDOT *brand guidelines.*

Media

a. Develop and manage a public relations campaign and communication strategy to convey key messages, branding, and pertinent information about the Project regarding the local, regional, and state media;

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

c. Place Project-related messages in the appropriate media;

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

e. Manage media relations with key transportation and business reporters and prepare and distribute news releases and media kit; and

f. 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 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.

3.2.2 Project Status Report

The DB Contractor will report back to TxDOT on the status of the PICP on a regular basis.

- **Weekly**: The DB Contractor will send TxDOT a high-level weekly status report of public information and communications activities electronically. The report will feature metrics such as how many stakeholder meetings were held, how many phone calls on the hotline, etc. The document will be tailored as an internal document to track progress; and
- **Monthly**: The DB Contractor will create a monthly full color Project status report which provides essential information about the Project, including a listing of upcoming Project related activities and events. This document will be tailored as a public document to be forwarded on to Customer Groups, Elected Officials, etc. The DB Contractor will provide an electronic copy of the Monthly Project Status Report to the TxDOT.

3.2.3 Public Information Coordinator

The DB Contractor shall provide a Public Information Coordinator to lead the DB Contractor's responsibility for public involvement activities on a day-to-day basis throughout the Term of the DBA Document.

The Public Information Coordinator shall have a minimum of seven (7) 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 the DB Contractor and Customer Groups and act as clearinghouse for the receipt of 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 the DB Contractor's personnel in performing the activities described in the PICP;

d. Facilitate communication among the DB Contractor, TxDOT personnel (including TxDOT's public information officers and office of public involvement), Customer Groups, and Government Entities;

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. Prepare public exhibits, audiovisual presentations, and regular updated materials (ex. fact sheets, maps, collateral material);

h. 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; and

i. Coordinate with the TxDOT Austin District Public Information Officer (PIO) with all media inquiries and outreach.

To implement the PICP, the Public Information Coordinator should be supported by a staff with skills including graphic design and building informed consent.

3.2.4 Hotline

The DB Contractor shall provide a 24-hour telephone hotline, manned locally during normal business hours of the public information office, with a recorded message describing Emergency procedures after hours. The DB Contractor shall respond to voicemail messages left after hours within 24 hours of receiving the voicemail message. Hotline must be live in advance of the start of any field investigation work near homes and all construction activity.

3.2.5 Events

TxDOT wants to provide multiple opportunities for the public to be engaged in the Project in fun and informative settings including but not limited to:

Groundbreaking Ceremony: The DB Contractor will be required to participate in a groundbreaking ceremony to mark the beginning of the construction of the Project. The event will be comparable in scope to past TxDOT Austin District ground breaking events. At a minimum, the DB Contractor will supply the following elements for the groundbreaking ceremony:

- 30 ft x 30 ft tent
- 100 chairs
- Stage to fit under the tent
- Podium
- Sound system with two speakers, as approved by TxDOT
- 25 ceremonial shovels
- Mementos: budget $1000
- Refreshments: light breakfast foods, coffee, and water
- Invitations: email and mail (max # 300)
- Programs: print 200 full color 8.5x11 and fold
- 4 ft x 10 ft banner
- 6 tables

TxDOT will determine the attendees, arrange speakers for the event, and will handle execution of the ceremony. The DB Contractor will work with TxDOT to identify the location of the ceremony, assist with parking, logistics, and traffic control for the ceremony as directed by TxDOT.

Public Meetings: The DB 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 the DB Contractor's PICP and will increase or decrease as needs arise to better inform and engage the Customer Groups. The DB 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 local newspapers, and television and radio stations. The DB Contractor shall be solely responsible for meeting advertisement. TxDOT will review and approve all advertisements.

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

a. Design and construction issues affecting adjacent residential areas, 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.

The DB Contractor shall work with TxDOT to schedule public meetings at a time convenient for TxDOT. The DB Contractor shall notify TxDOT of any meetings with the public once the meeting date and time is confirmed, at least five (5) Business Days in advance. TxDOT reserves the right to attend any such meetings. When requested by TxDOT, the DB Contractor shall participate in and provide support for any meetings with the Customer Groups called and conducted by TxDOT. When TxDOT decides to conduct such meetings, the DB Contractor shall share, in a readily manipulative form, all necessary information regarding potential Customer Groups at TxDOT's request. The DB Contractor shall bear all costs associated with the meetings organized and managed by the DB Contractor.

Community Events: The DB Contractor will be required to host or support a minimum of fifteen (15) community events (such as kids' day or neighborhood barbecue) during the life of the Project aimed at providing communities with opportunities to learn firsthand about the Project and to thank nearby residents for their patience during the construction process. These fun events targeting the local community can include elements such as: construction safety presentations; information on the Project; hands on equipment demonstrations; giveaways; food, and refreshments. The DB Contractor will be responsible for planning, advertising, and executing the events in coordination with TxDOT. Depending on the specifics of the event, the DB Contractor will be responsible for providing construction equipment, personnel, giveaways, food, and refreshments.

Grand Opening Ceremony: The DB Contractor will be required to participate in a grand opening ceremony to mark the opening of the Project. The event should be comparable in scope to past TxDOT Austin District grand opening events. The DB Contractor will plan and coordinate the grand opening ceremony in coordination with the TxDOT Austin District.

At a minimum, the DB Contractor will provide the following elements for the grand opening:

- 30 ft x 30 ft tent
- 100 chairs
- Stage to fit under the tent
- Podium
- Sound system with two speakers, as approved by TxDOT
- Mementos: budget $1000
- Refreshments: light breakfast foods, coffee, and water
- Invitations: email and mail (max # 300)

- Programs: print 200 full color 8.5x11 and fold
- 4 ft x 10 ft banner
- 6 tables

The DB Contractor will work with TxDOT to identify the location of the ceremony, assist with parking, logistics, and traffic control for the grand opening ceremony as directed by TxDOT. TxDOT will determine the attendees, program, and speakers for the event, and will handle execution of the ceremony.

3.2.6 Meeting Summaries

For all meetings with the Customer Groups, which the DB Contractor conducts or directly participates in, the DB Contractor shall prepare meeting summaries within five (5) Business Days after the conclusion of such meetings. At a minimum, the DB 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, the DB Contractor shall also include detailed verbal transcripts in the summary. The DB 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 Communication Tools

The DB 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, social media, maps, displays, renderings, presentations, brochures, pamphlets, highway advisory radio, and video news releases. The DB Contractor, working collaboratively with TxDOT, shall assess the need for multi-lingual communication materials.

Project Website: The DB Contractor shall provide content to update the existing Project website to convey Project-related information, including, but not limited to:

a. DB Contractor 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. Newsletters;

h. Event calendar;

i. Materials presented at events;

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

k. Comment form that includes languages required under Texas Transportation Code §201.811 (a)(5);

l. Mailing list request form; and

m. ITS Video to Web.

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

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

The DB Contractor, working collaboratively with TxDOT, shall assess the need for multi-lingual communications online.

3.2.8 Lane Closures Notification

Subject to the lane closure restrictions set forth in Section 18 (Traffic Control), the DB 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 twenty-four (24) hours, and a minimum of forty-eight (48) hours advance notice for lane closures that are planned to be in effect less than twenty-four (24) hours, using all appropriate tools as needed. Tools should include website updates, social media, and media outreach. In addition, the DB Contractor shall be responsible for the rental and placement of portable messaging signs (dynamic and static) as required by the approved TCP plan to alert the public to traffic impacts/road closures. Messaging on the signs will be current and accurate at all times. 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, the DB 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. The DB 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.

3.2.9 Emergency Event Communications

For all Emergency events, such as vehicle collisions, ice/snow conditions, emergency evacuations 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: portable changeable message signs (PCMS), TxDOT's Highway Conditions Report, TxDOT Austin District Office Highway Advisory Report, email/web/social media 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 (1) 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 (1) 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.

3.3 Roles and Responsibilities

The PICP will be implemented by the TxDOT Austin District PIO, the TxDOT Oversight Team (TxDOT Strategic Projects Office and their General Engineering Consultant (GEC)), the TxDOT Office of Public Involvement (OPI), the Authority, and the DB Contractor.

TEAM	
AGENCY/FIRM	**TEAM MEMBERS**
TxDOT Owner	• Austin District PIO, [Responsible Party] • Strategic Projects Office (SPO), [Responsible Party] • Office of Public Involvement (OPI), [Responsible Party]
the Authority Owner	• [Responsible Party] • [Responsible Party]
Consultant SPO GEC	• [Responsible Party] • [Responsible Party]
Design-Builder DB Contractor	• [Responsible Party] • [Responsible Party]

4 ENVIRONMENTAL

4.1 General Requirements

The DB 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 DB 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 CEPP shall obligate the DB 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 CEPP shall be designed to incorporate all features and guidelines of ISO 14001. The CEPP shall effectively demonstrate in detail the DB 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, and consistent throughout the Term of the DBA Document 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 DB Contractor will implement to verify the compliance of the program with all applicable Environmental Laws.

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

The DB Contractor shall cause Work to comply with Environmental Approvals and compliance requirements for any additional actions throughout the Term of the DBA Document. The DB 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 design features illustrated in the Project Schematic Design and as presented in the National Environmental Policy Act (NEPA) document. Such approvals may require re-evaluation, amendment, or supplement as the Work progresses in order to accommodate actions not identified in the Environmental Approvals or covered specifically by existing resource agency coordination. Changes to the Project Schematic Design 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. A document containing the most recent NEPA Project description and a summary of the draft NEPA mitigation measures is provided in Attachment 4-1- Draft EA Commitments.

The DB 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. As a courtesy, the DB Contractor is required to extend an invitation to TxDOT for any meetings with Governmental Entities to discuss changes to the Project NEPA and permit documents.

The DB 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, at its discretion, provide assistance in securing new Environmental Approvals or amendments to TxDOT-Provided Approvals at the expense of the DB Contractor.

Per the Schematic Design, the eastbound SH 71 bridge, over Onion Creek, will be widened to the inside only, and all widening activities, including slope protection and landside approach slabs, shall anticipate and honor the environmental protection of the mollusks. It is extremely important that all municipal, state, and federal laws be followed in the protection of the mollusks at the Onion Creek bridge widening.

The DB Contractor shall prepare and submit the bridge layout and a drawing depicting a work zone footprint required for the construction activities within Onion Creek. These drawings shall be submitted a minimum of three (3) months in advance of any work to be performed within Onion Creek. TxDOT will perform the mitigation of the mollusks within the work zone footprint by September 2014

Construction at Onion Creek shall not begin until the DB Contractor has received notice from TxDOT that both the footprint has been approved and that the mollusk mitigation efforts by TxDOT have been completed.

4.2.2 Responsibilities Regarding Environmental Studies

The DB Contractor shall be responsible for conducting continuing environmental studies based on the Project approved NEPA document and Project Schematic Design.

The DB 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 agency coordination, or incorporation of Additional Properties into the Project. The DB 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. As a courtesy, the DB Contractor is required to extend an invitation to TxDOT for any meetings with Governmental Entities to discuss changes to the Project NEPA and permit documents.

4.2.3 TxDOT Review and Approval of DB 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 return approved documentation to the DB Contractor for submittal to the appropriate Governmental Entity in cases where the DB 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 DB Contractor, and shall be revised by the DB Contractor to meet standards or requirements.

4.2.4 TxDOT-Provided Approvals

The TxDOT-Provided Approvals are:

- SH 71 Environmental Assessment (EA) anticipated Finding of No Significant Impact (FONSI) May 2014; and
- FM 973 EA FONSI dated September 16, 2011.

4.3 Comprehensive Environmental Protection Program

As part of the PMP, the DB Contractor shall develop and implement a CEPP, applicable throughout the Term of the DBA Document 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 program 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 compensation. 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 program by which the DB 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 DB 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 Program (EPTP);

d. Hazardous Materials Management Plan (HMMP);

e. Communication Plan (CP);

f. Construction Monitoring Plan (CMP); and

g. Environmental team resumes.

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

4.3.1 Environmental Management System

The EMS shall be the overarching plan by which the DB 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 DB 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, and remedial action plans as necessary for hazardous material discovery/remediation;

d. Wetland delineations reports and appropriate Section 404 permit application if design changes require additional permanent or temporary construction impacts;

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

f. Designs for wetland and floodplain mitigation;

g. Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (TXR150000), Notice of Intent;

h. TPDES Construction General Permit (TXR150000), Notice of Termination 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. DB Contractor's final noise analysis, if different than that included in the TxDOT-Provided Approvals; and

n. Environmental Permits, Issues, and Commitments (EPIC) Sheets.

4.3.2 Environmental Compliance and Mitigation Plan

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 DB Contractor's approach to satisfying mitigation requirements, including mitigation requirements identified after completion of the ECMP.

The ECMP shall include the following components:

- **Environmental Permits, Issues, and Commitments Sheets**

The DB 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.

- **Clean Water Act - Sections 404 and 401: Waters and Wetlands of the United States**

The DB Contractor shall document how they will comply with the terms and conditions of Section 404 permit(s) issued to TxDOT by the U.S. Army Corps of Engineers (USACE) and associated Section 401 State Water Quality Certification(s) as administered by the Texas Commission on Environmental Quality (TCEQ), as well as any additional Section 404 permits and 401 certifications issued to the DB Contractor during the life of the Project. The documentation at a minimum shall 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 and other permits as necessary;

c. Procedures for carrying out any required mitigation; and

d. Procedures for incorporating additional properties outside the original NEPA approved Schematic Design and any off-right-of-way Project Specific Locations (PSL) as required by all Section 404 permit(s) issued to either TxDOT or the DB Contractor by the USACE.

The DB Contractor shall comply with all general and regional conditions set forth by authorized Section 404 Nationwide Permits as described in TxDOT-Provided Approvals.

- **Clean Water Act - Sections 402: Texas Pollutant Discharge Elimination System**

The DB Contractor shall document how they will comply with Section 402 of the Clean Water Act (CWA). The documentation shall include that the DB Contractor has day-to-day operational control over activities necessary to ensure compliance with the SW3P and has the sole responsibility for any potential non-compliance issues. The documentation shall also include that the DB Contractor is responsible for submitting a Notice of Intent (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 Design 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.

- **State Listed Species and Unregulated Habitat**

The DB Contractor shall document how they will address state listed species and unregulated habitat. The documentation shall be in agreement with all Memorandum of Understanding (MOU)'s and Memorandum of Agreement (MOA) 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 addressed in the NEPA Environmental Assessment Document, the MOUs between TxDOT and TPWD and coordination agreements with USFWS.

- **Endangered Species Act and Fish, Wildlife Coordination Act, and Migratory Bird Treaty Act**

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

a. Process for training personnel on the requirements of the ESA, FWCA, and MBTA;

b. Process for communicating any commitments regarding ESA, FWCA, and MBTA on the Project; and

c. Procedures for complying with any commitments including mitigation measures or activities.

In accordance with the MBTA, no vegetation or man-made structures containing active nests, eggs, or young shall be removed during construction. In the event migratory birds are encountered during construction, the DB Contractor shall make every effort to avoid adverse impacts to protected migratory birds, active nests, and their young. The DB Contractor shall remove all old migratory bird nests between October 1 and February 14 from any vegetation or structure where construction will occur. In addition, the DB contractor will be prepared to prevent migratory birds from building nests within applicable structures between February 15 and October 1. All proposed prevention methods shall be approved by a TxDOT Austin District Biologist prior to planned use.

- **Prevention of Migratory Bird Nesting**

It is anticipated that migratory birds, a protected group of species, may try to nest on bridges, culverts, vegetation, or gravel substrate, at any time of the year. The preferred nesting season for migratory birds is from February 15 through October 1. When practicable, schedule construction operations outside of the preferred nesting season. Otherwise, nests containing migratory birds must be avoided and no work will be performed in the nesting areas until the young birds have fledged.

- **Structures**

Bridge and culvert construction operations cannot begin until swallow nesting prevention is implemented, until after October 1 if it's determined that swallow nesting is actively occurring, or until it's determined swallow nests have been abandoned. If TxDOT installed nesting deterrent on the bridges and culverts, maintain the existing nesting deterrent to prevent swallow nesting until October 1 or completion of the bridge and culvert work, whichever occurs earlier. If new nests are built and occupied after the beginning of the work, do not perform work that can interfere with or discourage swallows from returning to their nests. Prevention of swallow nesting can be performed by one of the following methods:

a. By February 15, begin the removal of any existing mud nests and all other mud placed by swallows for the construction of nests on any portion of the bridge and culverts. The Engineer will inspect the bridges and culverts for nest building activity. If swallows begin nest building, scrape or wash down all nest sites. Perform these activities daily unless the Engineer determines the need to do this work more frequently. Remove nests and mud through October 1 or until bridge and culvert construction operations are completed; and

b. By February 15, place a nesting deterrent (which prevents access to the bridge and culvert by swallows) on the entire bridge (except deck and railing) and culverts.

- **Traffic Noise**

The DB Contractor shall document how they will address traffic noise mitigation. The documentation at a minimum shall include:

a. Process for carrying out noise mitigation measures as identified and discussed in the approved NEPA document and Schematic Design and any supplemental noise studies completed by DB Contractor; and

b. Process for carrying out noise mitigation measures determined throughout the life of the Project.

To fulfill the commitments of the previously mentioned TxDOT-Provided approvals, the DB Contractor shall be responsible for implementing all noise mitigation measures to minimize construction and long-term impacts of the Work as prescribed in TxDOT-Provided approvals and subsequent TxDOT-Provided Approvals secured by the DB Contractor. The DB Contractor acknowledges that TxDOT-Provided Approvals and proposed permanent noise mitigation are based on the Schematic Design and Schematic Design ROW; consequently the proposed permanent noise mitigation may require amending by the DB Contractor as the Work progresses. Such amendments shall be submitted to TxDOT for review and approval.

The DB Contractor shall be responsible for public notification and involvement per TxDOT *Guidelines for Analysis and Abatement of Highway Traffic Noise* and in accordance with Section 3 (Public Information and Communications). The DB Contractor shall allow fifteen (15) Days for adjacent affected property comments after each noise workshop.

The DB 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.

- **Water Well Impacts and Requirements**

The DB 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 DB 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 the DB 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 DB 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.

- **Cultural Resource Studies**

The DB Contractor shall be responsible for ensuring compliance with cultural resource Laws on the Project through the Term of the DBA Document. TxDOT shall perform consultation for the Project according to current procedures for implementing Section 106 of the National Historic Preservation Act, and the Antiquities Code of Texas.

Subsequent to issuance of NTP1, the DB 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 Schematic Design as defined in the original NEPA Approval and within the area of potential effects. The DB Contractor shall coordinate all necessary Antiquities Permits through TxDOT. Antiquities Permits shall be obtained from the Texas Historical Commission (THC) for archeological surveys, testing, monitoring, and data recovery.

The DB 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 Antiquities Landmarks as specified in 13 TAC 26.8.

If evidence of possible archeological or historical resources is encountered during the course of the Work, the DB 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 (PA) among TxDOT, SHPO, FHWA, and ACHP as well as the MOU between TxDOT and the THC. The DB 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 DB Contractor receives notification and approval from TxDOT.

- **Public Involvement**

The DB 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 DB 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.

- **Standard Operating Procedures**

The DB 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 wetlands permits.

4.3.3 Environmental Protection Training Program

The DB Contractor shall develop and implement an Environmental Protection Training Program 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:

- Recognize the overall importance of environmental issues to constructing, operating and maintaining a successful Project;
- Recognition of State or Federally Listed Species that could occur in the Project area; and
- Appreciate the various environmental sensitivities of the Project.

b. Train every worker to:

- Recognize environmentally sensitive resources that may be encountered during the Work;
- Avoid or take appropriate action to minimize environmental impacts from the Work;
- Know the required actions, practices, and procedures regarding regulated resources; and
- Understand protocols for meeting environmental commitments for post-review discoveries.

c. Foster the DB Contractor's management and supervisory personnel's attitude of commitment to the Project's environmental quality.

d. Convey to all workers, the DB Contractor's management commitment to the Project's environmental quality.

e. Convey to all workers, TxDOT's and the DB 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 DB Contractor’s environmental commitments and responsibilities at the Project level;

d. Worker responsibilities;

e. Wetlands and jurisdictional waters of the U.S. 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 (BMP)s 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 for ESA/FWCA compliance;

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, Texas Centennial Markers, TxDOT 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; and

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

The DB 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 DBA Document. Course outlines shall be submitted within ninety (90) Days after NTP1.

4.3.4 EPTP Participation

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

4.3.4.1 EPTP Schedule

The DB 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.

4.3.5 Hazardous Materials Management Plan

The DB 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 DB Contractor, encountered or brought onto the Project site by a third party, or otherwise, during the Term of the DBA Document. The DB Contractor shall submit the final HMMP 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 DB Contractor shall keep and update Material Safety Data Sheets (MSDS), per OSHA requirements, for the Term of the DBA Document;
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;
l. Identification and contact information for designated responsible individuals; and
m. Procedure for notifying TxDOT within two (2) hours of discovering Hazardous Materials.

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 the DB Contractor to provide any non-DB Contractor personnel who visit the Project with the appropriate personal protection equipment.

The HMMP shall require that all personnel of the DB 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 DB Contractor personnel handling Hazardous Materials are current and valid through the duration of the Work.

4.3.5.1 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 the DB Contractor's staging area, field office site, plant sites, borrow site, or stockpile location, the DB 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. The DB 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, the DB Contractor shall summarize the findings within a Site Investigation Report and make recommendations regarding potential response actions necessary for Project development. The DB 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 Site Investigation Report 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.

The DB Contractor may initiate a preventative or corrective action after TxDOT review and approval of the Site Investigation Report from appropriate Federal or State agencies.

4.3.6 Communication Plan

The DB 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.

4.3.7 Construction Monitoring Plan

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, the DB 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. The DB Contractor shall provide a minimum two (2)-week advance notice to TxDOT of this joint inspection. The post award 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 or mitigated according to the ECMP. The DB 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 which the 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 inches x 17 inches. All photographs must be 4 inches x 6 inches.

The post award inspection shall inspect the municipal separate storm sewer system located within and adjacent to the Site. During the inspection, the DB Contractor shall note the following:

a. Storm drains, culverts, swales, and other components of the municipal separate storm sewer system that the DB 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 municipal separate storm sewer system;

d. The presence of construction on adjacent, up-gradient, or down-gradient properties. If construction on other properties is noted, the DB 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); and

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

Following construction of the Project, the DB Contractor shall conduct a yearly inspection to monitor and repair any of the above mentioned deficiencies in the storm water system for the duration of the Warranty.

4.3.8 Recycling Plan

The recycling plan shall document and fully detail the DB Contractor's commitment to recycling, waste minimization and use of "green products" during all aspects of Work. The recycling plan shall document the DB 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 DB Contractor shall follow the TxDOT Material Specification DMS 11000.

4.4 Environmental Personnel

The DB 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 or noncompliance with Environmental Approvals. The ET shall include, on an as-needed basis, Environmental Training Staff, Environmental Compliance Inspectors (ECIs), a Natural Resource Biologist, a Water Quality Specialist, and a Hazardous Materials Manager. All of the ET shall be deemed other principal personnel. If a cultural background study reveals a high probability of encountering cultural resources, the ET shall also include an archeologist, architectural historian, historian or historical architect on an as-needed basis.

In the CEPP, the DB Contractor shall establish a detailed approach, procedures and methods for:

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

b. ET staff response times during the Work.

4.4.1 Environmental Compliance Manager

The DB Contractor shall designate a full-time ECM for the Work. The ECM shall report and coordinate all issues directly with TxDOT and the DB Contractor's Project Manager. In the event the ECM, in consultation with the DB Contractor's Project Manager and TxDOT, is unable to reach satisfactory resolution of environmental issues, the ECM shall provide written notification to the DB 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 DB 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 DB 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.

The DB Contractor shall not have the ability to relieve the ECM of his or her duty without the written consent of TxDOT. Should DB Contractor desire to replace ECM, the DB 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, the DB Contractor's Hazardous Materials Manager shall act as an interim Environmental Compliance Manager.

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 DB Contractor's personnel. All training shall be in accordance with the requirements set forth in Section 4.2.3 (TxDOT Review and Approval of DB Contractor Submissions). 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 ECM shall designate as needed ECIs, who shall conduct on-site environmental monitoring, prepare documentation, and report to the ECM daily all violations, compliance, and non-compliance with Environmental Approvals.

The ECIs 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, but not limited to stoppage of Work.

The ECIs shall have at least one (1) year operational control experience of SW3P activities.

4.4.4 Hazardous Materials Manager

The ECM shall designate as needed 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 DBA Document. The Hazardous Materials Manager shall conduct appropriate activities such as the following:

a. Schedule and/or conduct training for the DB Contractor's employees;

b. Verify all employees have required certifications prior to the handling of Hazardous Materials; and

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 forty (40) hour HAZWOPER certification and at least five years of 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; and

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.”

4.5 Property Access

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

4.6 Dust Control

The DB 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.

4.7 Asbestos Containing Material (ACM)

The DB Contractor shall identify, inspect, notify, amend notifications as necessary, pay notification fees and abate asbestos found on any existing structure to be modified by the DB Contractor, including but not limited to, bridges and buildings, in accordance with appropriate or relevant regulations or guidance.

The DB Contractor shall notify the Texas Department of State Health Services if asbestos is found during construction.

5 THIRD PARTY AGREEMENTS

5.1 General Requirements

TxDOT has existing agreements with local Governmental Entities along the Project corridor that define the requirements for construction, maintenance, and operation of traffic signals, illumination, bus facilities, tolling, 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 DBA Document, the DB Contractor will assume and execute TxDOT's responsibilities and duties as defined in the current and future agreements. The DB 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, the DB Contractor shall reimburse TxDOT the said costs. The DB Contractor shall make payment to TxDOT within thirty (30) days from receipt of TxDOT's request for payment.

The DB Contractor shall be responsible for providing all the necessary coordination, support activities, negotiations and revisions, and for all costs in connection with obtaining the required approvals for permits, agreements, and Right of Entry as required for the construction of the shared use path within the Austin-Bergstrom International Airport (ABIA) property. The DB Contractor shall prepare all the documentation required to obtain the permits and agreements including, but not limited to, Agreement with ABIA, Contractors Right of Entry along with any plans and specifications to be used in the Agreement, and other material, as required.

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).

The DB Contractor shall assume and execute TxDOT's responsibilities and duties as defined in Attachment 5-1 (Municipal Maintenance Agreement Operation and Maintenance of Traffic Signals) into operation of the permanent signal system.

5.2.1 Red Light Cameras

Not applicable.

5.3 Roadway Illumination

Some local Governmental Entities may request continuous illumination along the SH 71 general purpose lanes within the Project limits. Should this occur, additional agreements between TxDOT and the Governmental Entity will be required. The DB 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).

The DB Contractor shall assume and execute TxDOT's responsibilities and duties as defined in Attachment 5-2 (Municipal Maintenance Agreement Highway Lighting).

5.4 Other Affected Third Parties

When Work interfaces with other third party facilities, the DB Contractor is responsible for coordinating the Work with all third parties potentially affected by the Work. The DB Contractor shall prepare a plan, the Affected Third Parties Plan, which describes how the DB Contractor will mitigate the impact of the Work upon potentially impacted third parties. This plan shall require 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 (Utility Adjustments) 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 (Utility Adjustments) references certain TxDOT forms for the DB 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, the DB 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.

The DB Contractor shall cause all Utility Adjustments necessary to accommodate construction, operation, maintenance and/or use of the Project. TxDOT will assist the DB 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 the DB 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., DB Contractor-Managed). The allocation of responsibility for the Utility Adjustment Work between the DB Contractor and the Utility Owners shall be specified in the Utility Agreements as described in Section 6.1.3 (Agreements Between DB Contractor and Utility Owners).

The DB Contractor's obligations regarding reimbursement to Utility Owners for eligible costs of Utility Adjustment Work, and the DB Contractor's obligations regarding the accommodation of Utilities from and after the Substantial Completion Date, are set forth in Section 6.5 of the DBA Document. This Section 6 (Utility Adjustments) does not address Utility services to the Project. Utility services to the Project shall be the subject of separate agreements between the DB Contractor and Utility Owners.

The Project will be subject to 23 CFR Part 645 Subpart A and 23 CFR Section 635.410 (Buy America), and FHWA's associated policies. DB Contractor shall comply (and shall require the Utility Owners to comply) with 23 CFR Part 645 Subpart A and 23 CFR Section 635.410. DB Contractor acknowledges that without regard to whether such compliance is required, (a) it is not anticipated that DB Contractor will be eligible for FHWA reimbursement of any Utility Adjustment outlays, and (b) DB Contractor will not have any share in any reimbursement from FHWA or other federal financing or funding that TxDOT may receive on account of Utility Adjustments.

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: (1) a physical conflict between the Project and the Utility, and/or (2) 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 its existing location.

Existing utilities that cross the ROW and are located on an existing compensable property interest may be allowed to occupy the existing compensable property interest and cross at less than 90 degrees, up to 30 degrees, measured from the highway centerline station. The crossing may not bisect or cross through any connecting roadway intersection or other major highway design feature and must meet the requirements of the Utility Accommodation Rules (UAR), other than the 90 degree reference above. The affected Utility Owners must agree and approve all proposed Utility Adjustment plans.

6.1.2 Certain Components of the Utility Adjustment Work

6.1.2.1 Coordination

The DB 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. The DB Contractor shall be responsible for preparing (unless prepared by the Utility Owner) and securing execution (by the DB 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 the DB 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. The DB Contractor shall perform all coordination necessary for Betterments.

6.1.2.3 Protection in Place

The DB 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

The DB 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, the DB 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, the DB 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 DB Contractor.

6.1.2.6 Early Adjustments

Not applicable.

6.1.3 Agreements Between DB Contractor and Utility Owners

Except as otherwise stated in this Section 6 (Utility Adjustments) 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 (Utility Adjustments). The DB Contractor is responsible for preparing, negotiating (to the extent allowed by this Section 6 (Utility Adjustments)) 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 in accordance with Transportation Code 203.092, a Utility Joint Use Acknowledgement, certification form and set of plans detailing UAR compliance is required pertaining to the adjustment or Protection in Place work. However, if a Utility owner requests that the DB Contractor relocate a Utility, and the cost of that Utility Adjustment Work is the Utility Owner's sole responsibility, then the DB Contractor shall enter into a DB Contractor managed PUAA with the Utility Owner providing for the Utility Owner to be responsible for all costs of that Utility Adjustment Work.

6.1.3.1 Project Utility Adjustment Agreements (PUAA)

The DB Contractor shall enter into one (1) or more PUAAs with each affected Utility Owner that is reimbursable, or where the Utility Owner has requested the DB Contractor to perform the Utility Adjustment Work at the Utility Owner's cost. The PUAA shall define the design, material, construction, inspection, and acceptance standards and procedures necessary to complete Utility Adjustments, as well as to define DB 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).

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

On issuance of NTP1, the DB Contractor shall begin negotiations with each affected Utility Owner and reach agreement on one or more PUAAs that are determined to be reimbursable based on the utility owner having a compensable property interest in the land occupied by the facility to be relocated, or that are requested by Utility Owner to be performed by the DB Contractor at the Utility Owner's cost. The DB Contractor shall finalize the necessary PUAAs with each affected Utility Owner within a reasonable time period after issuance of NTP1. The DB 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 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, the DB Contractor shall prepare all UAAAs using the standard form included in Attachment 6-1 (Utility Forms). The DB Contractor shall not modify the standard forms except by approval of TxDOT. The DB 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

The DB 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, UAR and Technical Provisions of the DBA, including the Utility Adjustment Standards, the TxDOT *Utility Manual*, Section 6 of the Agreement, and the requirements specified in this Section 6 (Utility Adjustments).

6.2.2 Communications

6.2.2.1 Communication with Utility Owners

The DB 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 the DB Contractor or otherwise as TxDOT deems appropriate.

Before distribution of any mass mailings to Utility Owners, the DB Contractor shall submit to TxDOT twenty-one (21) Days in advance of distribution for its review and comment of the form, content, and addressees of any such mass mailings. For purposes of this Section 6 (Utility Adjustments), the term "mass mailing" means correspondence that is sent to 50 percent or more of Utility Owners within a three (3) -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, the DB Contractor shall provide notice and an agenda for the meeting separately to TxDOT and, if necessary, to the appropriate Utility Owner. The DB Contractor shall prepare minutes of all meetings and shall keep copies of all correspondence.

The DB Contractor shall prepare meeting minutes within five (5) Business Days after the conclusion of such meetings. At a minimum, the DB 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; and
- Description of remaining open issues and action items (including the person(s) responsible for follow-up and target date for resolution).

The DB 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

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

The UM's primary work responsibility shall be the performance of all the DB Contractor's obligations with respect to Utility Adjustments.

6.2.4 Real Property Matters

The DB 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, the DB 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, the DB 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. The DB Contractor shall have the following responsibilities for each acquisition:

a. The DB 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;

b. If any of DB 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 the DB Contractor shall ensure that the following requirements are met:

   - The files and records must be kept separate and apart from all acquisition files and records for the Project ROW;
   - 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; and
   - Any DB Contractor-Related Entity personnel negotiating the acquisition of Replacement Utility Property Interests must be different from those negotiating the acquisition of Project ROW.

The DB Contractor is not responsible for Utility Owner condemnation proceedings.

6.2.4.3 Relinquishment of Existing Utility Property Interests

The DB 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 (1) remaining in its original location, or (2) being reinstalled in a new location still subject to such interest.

6.2.4.4 Quitclaim Deeds

Except as otherwise directed by TxDOT, the DB 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.

The DB 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, the DB 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

The DB Contractor shall prepare a Utility Joint Use Acknowledgment (UJUA) for:

a. Each Utility proposed to be relocated within the Project ROW;

b. Each Utility proposed to remain in its existing location within the Project ROW; and

c. 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).

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

The DB 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

The DB 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 (Real Property Matters), 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 0001]*)(ex. US77-U-0001), 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 DB Contractor's Responsibility for Utility Identification

The DB 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.

The DB 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 (DB Contractor's Responsibility for Utility Identification). The DB 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 inch = 100 feet. The DB 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 the DB 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; and

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

6.3.3 Utility Adjustment Concept Plans

The DB 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 the DB Contractor's Utility Adjustment recommendations.

In accordance with the PMP, the DB 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. The DB 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. The DB Contractor shall update the Utility Adjustment Concept Plan as the Work progresses.

6.3.4 Utility Adjustment Plans

Utility Adjustment Plans, whether furnished by the DB Contractor or by the Utility Owner, shall be signed and sealed by a Registered Professional Engineer (PE) per governmental regulations and industry practice.

6.3.4.1 Plans Prepared by DB Contractor

Where the DB Contractor and the Utility Owner have agreed that the DB Contractor will furnish a Utility Adjustment design, the DB 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 the DB 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. The DB 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, the DB Contractor shall coordinate with the Utility Owner as necessary to confirm compliance with the applicable requirements as referenced in Section 6.2.1 (Standards). Those Utility Adjustment Plans shall be attached to the applicable Utility Agreement, which the DB Contractor shall include in the appropriate Utility Assembly for TxDOT's approval. The DB Contractor shall transmit any TxDOT comments to the Utility Owner, and shall coordinate any modification, review by the DB 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 the DB Contractor or by the Utility Owner.

6.3.4.4 Certain Requirements for Underground Utilities

Casing as specified in the 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 UAP 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 the DB Contractor and submitted to TxDOT for its review and comment, and for TxDOT's approval of any items for which this Section 6 (Utility Adjustments) 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 reimbursable 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. The DB 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;

c. A TxDOT approved Utility Adjustment Agreement;

d. Plans which;

- Show the existing and proposed Utility facilities,
- Show existing and proposed grades for all utility crossings,
- Show the existing and final ROW lines along with the Control of access denial line,
- Show an offset distance from the final ROW line to all longitudinal Utilities within the final ROW;
- 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; and
- Are folded to 8.5 inches x 11 inches size unless waived by TxDOT.

e. Estimate(s) from the Utility Owner (and also from the DB Contractor, where the DB 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;

i. 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

j. All utility no conflict sign off forms.

Utility Adjustment Amendment Agreements (UAAA). For each reimbursable UAAA, the DB 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 the DB 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 6-1 (Utility Forms).

Abbreviated Utility Assemblies. The DB Contractor shall prepare an Abbreviated Utility Assembly for each Utility proposed to remain at its original location within the Project ROW and is not required to be addressed in a PUAA or UAAA, unless an Adjustment is required pursuant to Section 6.1.1 (When Utility

Adjustment is Required). If the DB 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 the DB Contractor shall conform to the requirements listed below. In addition, the DB Contractor is responsible for verifying that all Utility Adjustment construction performed by each Utility Owner conforms to the requirements described below. In case of non-conformance, the DB 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

The DB 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). The DB 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 NTP2. Refer to Section 4.4.1 of the DBA Document for the conditions to commencement of Utility Adjustment Construction Work by DB Contractor. The DB 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 (Meetings), 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 the DB 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; and

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

6.4.5 Standard of Care Regarding Utilities

The DB 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

The DB Contractor shall provide Emergency procedures with respect to Utility Adjustment Work in the PMP. The DB 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

The DB Contractor shall establish a procedure to be followed if a Utility Adjustment Field Modification is proposed by either the DB 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 the DB Contractor, or the DB 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 Registered Professional Engineer 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.

The DB Contractor shall cause the procedure to be followed for all Utility Adjustment Field Modifications, whether the construction is performed by the DB 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, the DB 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

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

The DB Contractor shall provide Record Drawings to TxDOT (regardless of whether design and/or construction of the subject Utilities was furnished or performed by the DB Contractor or by the Utility Owner). These drawings shall show the location of, and label as such, all abandoned Utilities, and shall show and label all other Utilities, whether remaining in place or relocated, located within the Project ROW or otherwise impacted by the Project. Record Drawings shall comply with guidelines set forth in Section 2 (Project Management). The DB 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 DB Contractor 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. The DB 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

The DB Contractor shall be responsible for the Traffic Management Plan. The Traffic Management Plan shall cover, all traffic control made necessary by Utility Adjustment Work, whether performed by the DB 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 *Texas Manual on Uniform Traffic Control Devices* (TMUTCD) and Section 18 (Traffic Control).

6.5 Deliverables

The DB 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 (Deliverables) or, if not stated therein, then as stated in Section 3.1.2.3 of the DBA Document. All deliverables shall conform to the standards required in the Project Management Plan.

6.5.1 Maximum Number of Submittals

The DB Contractor shall coordinate all Submittals required pursuant to this Section 6.5 (Deliverables), so as not to overburden TxDOT's staff and consultants. In each calendar week, the DB 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; and
- 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 DB Contractor's Utility Tracking Report

The DB Contractor shall maintain a Utility Tracking Report (UTR) in tabular form, listing all Utilities located within the Project ROW or otherwise potentially affected by the Project. The DB 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 DB 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 DB Contractor Managed;

f. Dates on which the PUAA/UAAA was executed by TxDOT, Utility Owner, and DB 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 DB 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. The DB 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, the DB 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 the DB 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. The DB Contractor shall submit to TxDOT three (3) identical and complete originals of each Utility Assembly, each of which shall be bound and labeled "DB 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 (Deliverables).

TxDOT will review the Utility Assembly for compliance with the requirements of this Section 6.5.3 (Utility Assembly Submittals), and within ten (10) Business Days will return the Utility Assembly to the DB Contractor with the appropriate notations pursuant to Section 3.1.3 of the DBA Document to reflect its responses. The DB 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 (1) TxDOT's approval of any Utility Assembly components for which TxDOT's approval is required, and (2) 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 (Utility Adjustments) requires TxDOT's signature.

6.5.4 FHWA Alternate Procedure

The DB 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. The DB 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 the DB Contractor, promptly upon receipt of same from FHWA.

7 RIGHT OF WAY (ROW)

7.1 General Requirements

This Section 7 (ROW) sets forth the ROW activities assigned to the DB Contractor 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 the DB Contractor related to the acquisition of Project ROW. TxDOT will complete acquisition of Schematic ROW, by December 31, 2014. The DB Contractor will not be permitted access to unacquired parcels until granted permission from TxDOT. Refer to Table 7-1 (Schematic ROW Parcel Availability) for expected parcel acquisition availability to DB Contractor and the Parcel Acquisition Map found in the RIDs. TxDOT will complete clearance/demolition of the improvements within the Schematic ROW. The DB Contractor shall provide demolition of any driveways, slabs, and fences remaining on Schematic ROW.

If the DB Contractor chooses to alter the roadway alignment in such a manner requiring additional Project ROW, the DB Contractor will be responsible for the acquisition cost for such parcels. The DB Contractor shall provide all services necessary to acquire title to the additional ROW, in form and substance acceptable to TxDOT, in the name of the State; relocation of displacements; and clearance/demolition of the improvements from the Project ROW, as more fully described in the following sub-sections. The DB Contractor will be required to follow the TxDOT acquisition process should additional parcels be required.

The DB Contractor's Project ROW staff and/or Contractors staff will function as independent contractors while acquiring Project ROW, and not as an agent, representative, or employee of TxDOT except as otherwise set forth in the DBA.

If the DB Contractor obtains a property agreement to facilitate design, construction or maintenance in relation to the Project, the DB Contractor shall provide a copy of the agreement to TxDOT.

Table 7-1: Schematic ROW Parcel Availability

Expected acquisition time	Parcels
Acquired by conditional award	8-18, 21-24, 26, 27, 30, 34, 36-39, 41, 51, 56, 57, 58, 59, 60, 65-67, 71 & 72
Acquired by NTP1	29, 31, 32, 33, 35, 40, 42, 43, 45, 46, 48, 52, 53, 55, 61, 62, 63, 64 & 68-70*
Acquired after NTP1	19, 20, 25, 28, 44, 47, 49, 50 & 54

*Parcel 70 will be acquired by NTP 1. However, availability for construction activities is anticipated by November 2014.

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; and

d. TxDOT Appraisal and Review Manual.

Pursuant to the applicable federal regulations, the DB Contractor shall (1) 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; (2) certify acceptance of the TxDOT *Right of Way Manual*; (3) provide adequate access to all occupied properties; (4) maintain Utility service to occupied properties until relocation is complete; and (5) not permit open burning within 1,000 feet of an occupied dwelling.

The DB 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

The DB Contractor shall employ software that is fully compatible with the software in use by TxDOT, or fully transferable to TxDOT's systems. The DB 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. The DB 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

The DB Contractor shall prepare a ROW Acquisition Plan in accordance with the requirements of this Section 7 (ROW) and Section 2 (Project Management). The ROW Acquisition Plan shall set forth the DB 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); and

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 (ROW Personnel Qualifications).

The ROW Acquisition Plan shall establish the specific means by which the DB 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, visually impaired, or hearing impaired translation, as necessary;

d. Provide documentation and reports;

e. Produce and distribute acquisition and relocation brochures as approved by TxDOT;

f. Establish, implement, and maintain quality control procedures and quality review standards for the acquisition for Project ROW; and

g. Prevent fraud, waste, and mismanagement.

The DB 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 the DB Contractor. In developing the Project Schedule, the DB 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 (Project Schedule) shall provide updated projections for the acquisition date of each parcel.

In developing the Project Schedule, the DB 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, the DB Contractor shall assume that the reviews performed by TxDOT will require ten (10) Business Days for Acquisition Packages that the DB Contractor submits as final and complete in accordance with Section 7.3.6 (Project ROW Acquisition Package Approval), up to a maximum of fifty (50) Acquisition Packages. Any Submittals that would require TxDOT to review more than fifty (50) 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 the DB 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 fifty (50) will be rolled over to the next ten (10) Business Day period and added to the Acquisition Package Submittals made by DB Contractor in that period. When the DB Contractor submits more than ten (10) Acquisition Packages at any given time, the DB Contractor shall indicate the priority of review.

If TxDOT notifies the DB Contractor that any submitted Acquisition Package has a deficiency, the DB 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 the DB Contractor and will not be eligible for treatment as a Change Order.

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. TxDOT will notify the DB Contractor in writing that the review period will be extended by an additional ten (10) Business Days before rendering a decision to the DB Contractor.

The DB 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 the DB Contractor of any deficiencies within ten (10) Business Days after TxDOT's receipt of such preliminary submission.

7.2.5 DB Contractor's Project ROW Scope of Services

The DB Contractor shall complete all administrative activities and prepare all documentation sufficient for the DB Contractor to acquire the Project ROW. The DB 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 (1) approve and return the Project ROW acquisition documentation, (2) provide review comments for incorporation by DB Contractor in accordance with Section 7.2.4 (Schedule and Review Procedures), or (3) in the case of an Acquisition Package that is deficient, notify DB Contractor of the deficiency(ies) to be corrected by the DB 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, the DB 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, the DB 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 the DB 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. The DB 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.

DB 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 (ROW Negotiations).

7.2.6 Acquisition Process Summary

The DB 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 DB 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, and

q. Obtaining rights of entry, as necessary.

7.2.7 ROW Personnel Qualifications

The DB Contractor's ROW Acquisition Manager shall have at least (5) five years of 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) – DB Contractor shall designate a specific person(s) responsible for internal quality control and quality assurance. This individual will review all DB 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 (5) years of 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 Travis 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 (5) years of 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 (3) years, immediately preceding his or her selection for this Project, in land planning work primarily in Travis County or as approved by TxDOT. The DB Contractor shall provide a minimum of two (2) land planners to assist appraisers and complete land plans.

Relocation Agent – Each relocation agent shall have a minimum of three (3) years of 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 (3) years of experience in ROW 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 (3) years of 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 ROW-E-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 are 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 (5) years of 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 (3) years of 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 for properties acquired for the Project.

7.2.8 DB Contractor Conflict of Interest

If at any time, the DB Contractor or to the best of the DB Contractor's knowledge, any the DB Contractor-Related Entity directly or indirectly: (1) 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; (2) 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 (3) 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, the DB 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 DBA Document, such disclosure shall be made within ten days after execution of the DBA Document.

In the event that the DB Contractor, or any subsidiary or parent company of the DB 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.

The DB Contractor shall not acquire or permit the acquisition by the DB Contractor or any DB 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

The DB Contractor shall attend meetings as requested by TxDOT. At such meetings the DB Contractor shall provide exhibits, take minutes, and distribute the minutes 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

The DB 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. CSJ number;

c. Right of Way Control Section Job (RCSJ) Number;

d. Highway Designation;

e. Project limits;

f. Parcel number; and

g. Name of record owner(s).

In administering and managing its Project ROW activities, the DB 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; and

f. Input and update parcel status in TxDOT approved web-based tracking system, or as directed by TxDOT.

7.2.11 Responsibilities of DB Contractor

The DB 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, and 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 DB 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, jury trials, appeals, relocation assistance, and clearance/demolition of improvements, as required.

The DB 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.

The DB Contractor acknowledges that the DB 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 the DB 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. The DB 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, the DB Contractor shall comply with all applicable Laws with respect to relocation assistance and demolition.

The DB 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 the DB Contractor deems advisable to acquire for work space, contractor lay-down areas, material storage areas, borrow sites, or any other convenience of the DB 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 the DB 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.

The DB Contractor shall be responsible for processing and distributing 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.

The DB 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.

If the DB Contractor implements a design change, which in affect alters the control of access limits of an abutting property or properties, the DB Contractor will be responsible for informing TxDOT of the revision within five (5) Business Days. Except as otherwise set forth in this Section 7, the DB Contractor responsibilities include, but not limited to, the revision and implementation of the following items as set forth in Section 7 (ROW): ROW survey and map, parcel description, property appraiser's assessment, negotiations, title services, ROW documentation and administration, and payment to land owner.

The DB Contractors cost shall include all costs for additional ROW other than the parcels shown on the Schematic Design.

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 (ROW), 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 the DB Contractor.

b. After receiving a complete condemnation packet from the DB Contractor in accordance with Section 7.4.4 (Condemnation Support), 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 the DB 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 the DB 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 the DB 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 (ROW), TxDOT may, at its sole discretion, audit and/or monitor the ROW activities and services performed by the DB 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 the DB Contractor to TxDOT pursuant to the foregoing sections, the DB Contractor shall provide information to TxDOT as requested to assist in its review and assessment of the progress, timeliness, adequacy, or sufficiency of the DB 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 the DB 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; and

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

The DB 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 User's Manual*. The DB 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. The DB Contractor shall refer to Section 9 (Land Surveying) for additional survey requirements.

The Project ROW map shall be prepared by the DB 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. Any submittals that would require TxDOT to review more than ten (10) 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).

The DB 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 inches = 100 feet (11 inches x 17 inches);

b. One (1) separate set of originals signed and sealed by Registered Professional Land Surveyor (RPLS), legal descriptions and parcel sketch, traverse closure sheets, and a copy of the parent track deeds and subdivision plat if tract is a platted lot;

c. Create CD with DGN master file, map sheets, excel point list, raw data file, and/or field notes and scanned copies of the instruments of record or other pertinent documents;

d. One (1) full size right of way map on paper, Scale 1 inches = 50 feet (22 inches x 34 inches);

e. One (1) set of folders for each parcel, parts 1 & 2, etc., would be considered one (1) folder. With one (1) (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; and

f. Three (3) copies (signed and sealed) of each legal and sketch.

The DB Contractor shall prepare all Project ROW surveying and mapping in accordance with the following supplemental specifications:

a. The DB 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 inches x 11 inches bond paper. The Project ROW map sheets shall be on 22 inches x 34 inches paper. Each final submission to TxDOT shall include two (2) 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 or as reviewed and approved by TxDOT;

d. The point of commencing (POC), where applicable, shall be a well-defined monument or monument of record, 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), point of reverse curvature (PRC), 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, and 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) (1993 adj), or as shown on the current ROW maps, and the Project grid-to-surface coordinate adjustment factor or refer to Primary Project Controls provided by TxDOT (refer to Section 9.3 (Design Requirements));

j. A Project ROW map title sheet with signature blocks shall be produced for each portion of the Project. The DB 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 (2) pages, the parcel plat is one (1) 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 fifty (50) 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 the DB Contractor of the Project ROW documents to TxDOT, the DB 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 5/8-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, the DB 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. The DB 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 5/8-inch iron rod with a TxDOT aluminum cap (rod-and-cap monument). To reference all significant points along the centerline (survey baseline), the DB Contractor shall set a rod-and-cap monument; and upon completion of the Project ROW acquisition or as directed by TxDOT, the DB 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, the DB 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 ROW 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 ROW 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. The DB 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. The DB Contractor also shall cause the surveyor to describe the area of denied access in the parcel description and monument on the ground with a 5/8-inch iron rod with a TxDOT aluminum 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 Entities, 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. The DB 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. The DB Contractor shall cause an independent 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 the DB 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. The DB 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 (2) 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. The DB 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. The DB 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. The DB Contractor shall purchase all materials, supplies and all items necessary for proper survey monumentation. The DB Contractor may purchase Type II monuments from TxDOT. TxDOT shall make available for pick-up by the DB Contractor Type II monuments within seventy-five (75) Days after TxDOT receives from the DB 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 the DB Contractor a written invoice. The DB Contractor may use these monuments only for this Project and shall be responsible for proper storage thereof.;

ff. The DB Contractor, at the request of the property owner or TxDOT, shall re-stake the proposed ROW with 5/8-inch iron rod and aluminum cap; and

The DB 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 DB 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, the DB Contractor shall provide the following reports and electronic files:

a. Monthly Parcel Report: The DB 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: The DB Contractor shall provide a report of all survey activity that occurred during the previous month, including a two (2) week look ahead of anticipated survey activity; and

c. CADD Files: The DB Contractor shall provide digital CADD 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. DB Contractor shall submit CADD files prior to submitting the first Acquisition Package, and provide updates as needed.

7.3.3 Title Services

With respect to title services, the DB Contractor shall comply with the applicable standards identified in Section 7.2.1 (Standards), 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. The DB Contractor shall, at its own cost, review each title report to ensure that it complies with the format required by the DBA Documents. The DB 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. The DB Contractor shall notify the title company, by letter, which exceptions should be removed, including easements that (1) are appurtenant to and/or of benefit to the parcel but not included in the parcel to be acquired, and (2) 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; and

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. The DB 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

The DB 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 DB 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 displacees unable to read or understand the notice must be given appropriate translation.

The DB 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

7.3.5.1 Appraisal Services

The DB 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. The DB Contractor shall:

a. 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 the DB Contractor. The DB 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;

b. Establish personal pre-appraisal contact with each owner of record title and each occupant, and document all contacts utilizing forms provided by TxDOT;

c. If necessary, make a diligent effort to secure a written agreement between the record title owner and the DB Contractor granting TxDOT, the DB Contractor, or assignees permission to enter the applicable parcel to be acquired (a "Right of Entry Agreement"). DB Contractor may at its sole discretion and expense offer to pay reasonable compensation for any required Right of Entry Agreements. If the DB Contractor, after best efforts, is unable to secure a Right of Entry Agreement from the property owner, the DB Contractor shall provide documentation acceptable to TxDOT indicating conversations, correspondence, and efforts used to attempt to secure the Right of Entry Agreement;

d. 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;

e. 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. All appraisals for condemnation proceedings shall utilize TxDOT Form ROW-A-5 - Real Estate Appraisal Report;

f. 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;

g. Perform an evaluation of all outdoor advertising signs, as required, utilizing the appropriate forms as instructed by TxDOT;

h. 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. The DB Contractor shall also provide administrative and/or technical support for such proceedings as requested by TxDOT;

i. Coordinate with the review appraiser regarding corrections and/or additional information that may be required for a particular appraisal;

j. Cause a report to be prepared by an environmental professional that meets ASTM E-1527-05, Standard Practice for Environmental Site Assessments: Phase I 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;

k. 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. The DB 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 the DB Contractor;

l. 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 must include:

   i. 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;

   ii. 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;

   iii. Any qualifying and limiting conditions or general assumptions by the appraiser shall be clearly stated and attached;

   iv. 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. The DB 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;

m. Prepare and deliver to TxDOT upon request, a copy of all file documents, as formally requested in discovery motions or request for production; and

n. Complete and furnish, to the appraiser, TxDOT Form ROW-A-9 - Property Classification Agreement before appraisal is completed.

7.3.5.2 Appraisal Review

In connection with appraisal review, the DB Contractor shall:

a. Select review appraisers from TxDOT's list of approved fee appraisers and meeting the requirements of Section 7.2.7 (ROW Personnel Qualifications). The review appraiser selected must follow the appraisal guidelines and procedures found in Chapter 4 of the TxDOT ROW Appraisal & Review Manual;

b. Determine, in consultation with TxDOT, if additional appraisal reports or technical expert reports are required. Initiate, review, and reconcile each report required;

c. 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 Manual, 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;

d. Inspect the subject properties and the sale properties used in direct comparison for each appraisal being reviewed;

e. 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;

f. 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 the DB Contractor; and

g. In accordance with providing a Quality Control Specialist(s) as stated in Section 7.2.7 (ROW Personnel Qualifications), 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 the DB Contractor for TxDOT's approval shall include the following items, prepared for each parcel in accordance with the requirements of this section:

a. 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); and
- Type of conveyance (fee, easement, etc.);

b. 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;

c. The parcel plat, as prepared by the RPLS, and a half size (11 inches x 17 inches) copy of the ROW map sheet(s) pertaining to the parcel, such plat to include control of access designations;

d. 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 the DB Contractor's analysis of each preliminary title report or title commitment to determine potential problems and proposed methods to cure title deficiencies. The DB Contractor shall perform title curative work. The DB Contractor shall provide TxDOT with copies of all curative documents;

e. A copy of the appraisal report with an effective date less than 180 Days and all supporting documentation;

f. A copy of the environmental site assessment and all amendments as described in Section 7.3.5.1 (Appraisal Services);

g. A real/personal property report detailing the 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);

h. 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;

i. The proposed initial offer letter, memorandum of agreement, deed, and any other documents, which shall be prepared by the DB Contractor as required or requested by TxDOT, on the DB 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; and

j. 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, the DB Contractor may proceed with the offer to the property owner.

7.4 Acquisition Activities

7.4.1 ROW Negotiations

The DB Contractor shall conduct all negotiations in accordance with the requirements of applicable Law. In conjunction with negotiations, the DB 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. The DB Contractor shall also maintain a file record of receipt of appraisal signed by the property owner. The DB

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 the DB Contractor and shall include language about the use of the Declaration of Taking procedure if the DB 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, lessees, 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 the DB Contractor in accordance with standards, manuals and procedures as defined in Section 7.2 (Administrative Requirements). TxDOT shall determine whether to accept a settlement request. Delivery of the administrative settlement request and the DB Contractor's recommendation to TxDOT must occur within fifteen (15) Business Days following the DB Contractor's receipt of the administrative settlement request;

e. The DB 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. The DB Contractor shall provide a letter with the TxDOT Administrative Settlement Committee's response to the property owner, lessee, licensee, occupant, or other holder of a compensable interest, as applicable. The DB 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, the DB 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 the DB Contractor selects the mailing option, the DB 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, the DB Contractor may, in its sole discretion, engage in ongoing negotiations with the owners of compensable interests. The DB 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. The DB 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 (Administrative Requirements). All original Project ROW documents must be retained and properly secured in the DB 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 the DB Contractor strictly in accordance with the Law and only with the prior written consent of TxDOT. If the DB Contractor exercises the use of a TxDOT PUA, the DB 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. The DB Contractor acknowledges and understands that TxDOT encourages all positive and creative solutions which satisfy the property owner and promote the success of the Project; and

k. The DB Contractor shall prepare and deliver a final offer letter to the property owners, lessees, licensees, occupants, or other holders of any compensable interest, as applicable, no sooner than thirty (30) Days from the date of the offer letter in accordance with Senate Bill 18. The letter shall be on the DB 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. The DB Contractor shall submit to TxDOT, a copy of the final offer letter within two (2) days after delivery to the property owner.

If the offer is not accepted, the DB Contractor shall follow the procedures established for condemnation.

7.4.2 Relocation Assistance

The DB Contractor shall coordinate and perform the administrative requirements necessary to relocate any occupants from Project ROW. All Work prepared by the DB 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 DBA Document.

The DB 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 through Friday: 8:00 am to 5:00 pm;

b. Saturday: 9:00 am to 12:00 pm; and

c. Sunday: office may be closed.

In addition to the office hours listed above, the DB Contractor shall be available to all displacees for relocation services at the convenience of the displacees.

The DB Contractor's major activities with respect to the relocation assistance of occupants from Project ROW include:

a. Prepare a Relocation Plan in accordance with the TxDOT Right of Way Manual, Volume 3, Chapter 8 (Relocation Program Planning and Construction);

b. Monitor relocation assistance activities;

c. Prevent fraud, waste, and mismanagement; and

d. Assist with all requests and be responsible for carrying out decisions made by TxDOT, the review/appeal process, and judicial reviews.

The DB 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, the DB Contractor shall:

a. 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. The DB Contractor shall perform relocation interviews, complete and maintain interview forms and discuss general eligibility requirements, programs, and services with potential displacees. The DB Contractor shall maintain a written record of all verbal contacts;

b. 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;

c. Contact and provide relocation assistance to those parties affected by the Project ROW acquisition and complete forms for all displacees, as required;

d. Locate, evaluate, and maintain files on comparable available housing, commercial, retail, and industrial sites;

e. Calculate replacement supplement benefits;

f. 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;

g. Perform a Decent, Safe and Sanitary (DSS) inspection for each comparable replacement housing, photograph the comparable, and complete the DSS inspection form, TxDOT Form ROW-R116 (Replacement Housing Inspection);

h. Request at least two (2) moving estimates from moving companies to effect relocation of personal property or consistent with the Uniform Act;

i. Prepare moving plan with appropriate photos, sketches, and inventory of personal property to be moved;

j. Coordinate moves with displacees and moving companies in accordance with TxDOT standards and the Uniform Relocation Act;

k. Maintain relocation contact logs on a TxDOT Form ROW-R96-R (Relocation Advisory Assistance – Parcel Record);

l. Attend all closings on replacement properties, if requested by any party involved, and assure supplemental payments, if any, are properly distributed;

m. Process and compute increased interest payments on the mortgage of owner-occupied dwellings, as required;

n. 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;

o. Deliver a thirty (30) Day notice to displacees and property owners upon acquisition of Project ROW;

p. 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;

q. Be available for any appeals or hearings;

r. Prepare relocation payment claim submissions for all displacees and all relocation assistance benefits;

s. Verify DSS dwelling criteria on all replacement housing as selected by the displaces;

t. Secure dwellings and structures no later than ten (10) Days after vacancy and protect the Project ROW following acquisition and relocation;

u. Maintain a complete file, separate from acquisition files, on each displacee and make available for inspection;

v. 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;

w. Prepare all correspondence to the displacees or their representative(s) on the DB Contractor's designated relocation letterhead and have the DB Contractor's correspondence signed by the Project ROW relocation specialist;

x. Deliver to each displacee the relocation assistance payments according to the TxDOT Right of Way Separation of Duties chart provided; and

y. 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, the DB Contractor shall:

a. Submit a closing package to TxDOT for review a minimum of twenty-four (24) hours prior to closing. The package shall include the following: 1) a reference to the disposition of any environmental matters; 2) updated title commitment, no more than fifteen (15) Days prior, with notations indicating the disposition of all schedule "C" items; 3) a copy of the executed warranty deed to be delivered; 4) a proposed closing statement indicating disposition of all proceeds; 5) a copy of any and all releases of liens; 6) a copy of any miscellaneous documents and other curative matters required to be delivered at closing and 7) a copy of the closing memorandum outlined in item b below;

b. 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;

c. 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;

d. Obtain an issued title policy based on the approved updated title commitment within thirty (30) Days following closing and transmit the same to TxDOT; and

e. Obtain and deliver to TxDOT one (1) 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

The DB 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.

The DB Contractor shall support condemnation efforts as directed by TxDOT and further delineated as follows:

a. Notify TxDOT of any potential condemnation and document the reason(s) for condemnation including recommendations for property closure;

b. 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;

c. 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;

d. 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;

e. Use the information from the title report to join all parties having a property interest on applicable TxDOT form. Spouses of property holders with compensable rights must also be joined;

f. Upon completion of TxDOT Form ROW-E-49 (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 DB 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;

g. 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;

h. 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;

i. 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;

j. 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;

k. Depending on the market conditions, or if over (6) 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. DB Contractor must also undertake appraisal review as described in Section 7.3.5.2 (Appraisal Review);

l. Coordinate with TxDOT on behalf of the Attorney General as to land planners and/or other expert witnesses as required by the Attorney General. The DB 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;

m. 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;

n. Submit the updated appraisal to TxDOT and the attorney handling the case for TxDOT for review and approval. Review and approval shall occur within ten (10) Business Days of receiving the updated appraisal. TxDOT and the DB 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;

o. Communicate with TxDOT as to the parcel status on a monthly basis and in the Project Progress Report or as requested by TxDOT;

p. 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;

q. 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;

r. Upon completion of the hearing, prepare TxDOT Form ROW-E-73 (Data Sheet – Special Commissioner's Hearing) and commissioners' time sheets. The DB Contractor shall make payment to all commissioners involved in the hearing and include payment for commissioners as part of general Project ROW services;

s. Coordinate and provide support to TxDOT's counsel and facilitate distribution of copies of award, prepare request for payment, and file notice of deposit. The DB 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, the DB 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 the DB Contractor shall appear as expert witness or fact witness, as requested. The DB 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;

t. Schedule and pay for all court reporter services, transcription costs, expert witness fees, exhibits, and exhibit workbooks as directed by TxDOT;

u. 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. The DB Contractor shall require expert witnesses with all exhibits and documents to be present at a pre-hearing meeting;

v. 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, the DB Contractor, at its cost, shall order transcripts of such hearing; and

w. The DB 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 Commissioner's 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, the DB 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. The DB 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, the DB Contractor shall:

a. 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. The DB Contractor shall board-up, mow, and winterize as required by TxDOT or applicable Law;

b. Coordinate with the owner and occupants to assure the clearance of personal property from the Project ROW, as applicable;

c. Provide for any insect and rodent control and initiate extermination as required to protect the adjacent properties and rid the Project ROW from infestations;

d. Secure Governmental Approvals required for demolition and environmental surveys or tests, and notify TxDOT in writing of all such activities;

e. To the extent required by Section 7.2.11 (Responsibilities of DB Contractor), prepare necessary documentation for disposal of improvements, fixtures, and buildings in accordance with applicable Laws and submit the same to TxDOT;

f. 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;

g. Terminate all utility service(s) when appropriate;

h. 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;

i. Demolish and/or remove all improvements; and

j. Notify TxDOT upon completion of the demolition and clearance of the Project ROW, as applicable.

7.4.6 Property Fence

In connection with fences, the DB 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 the DB Contractor-provided fencing shall conform to the overall aesthetics requirements found elsewhere in these DBA Documents and referenced standards.
The DB Contractor shall relocate the City of Austin airport fence after construction of the shared use path to a new location acceptable by the City of Austin.

7.4.6.1 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), the DB Contractor shall, at a minimum, construct a 6-foot-high chain-link fence with metal posts. The DB Contractor shall use Good Industry Practice in fencing public properties to control public access to the Project.

7.4.6.2 Property Fencing for Private Properties

The DB 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(ies) 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, the DB 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."

The DB 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, the DB 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, the DB 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 DB Contractor if certain Project ROW parcels are scheduled to be acquired by Governmental Entities prior to issuance of any NTP. The DB Contractor will be updated regularly on the status of the acquisition process for each parcel.

After NTP, the DB 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 at its sole discretion may require the DB Contractor to complete the acquisition of certain parcels including the removal of improvements.

8 GEOTECHNICAL

8.1 General Requirements

The DB Contractor shall perform all geotechnical investigations, testing, research, and analysis necessary to effectively determine and understand the existing surface and subsurface geotechnical conditions of the Project ROW to be used by the DB Contractor to carry out the Work.

The DB Contractor shall ensure the geotechnical investigations and analyses are thorough and complete in order to provide accurate information for the design of roadways, pavements, foundations, retaining walls, structures, and other facilities to ensure a safe and reliable Project that meets the requirements of the DBA Documents.

All geotechnical work shall be performed in accordance with the current versions of the TxDOT *Geotechnical Manual*, TxDOT Pavement Design Guide and latest AASHTO or FHWA publications. In the event of a conflict among these standards related to geotechnical engineering, TxDOT standards shall take precedence.

8.2 Design Requirements

8.2.1 Subsurface Geotechnical Investigation by DB Contractor

The DB Contractor shall determine the scope of final geotechnical investigations for the Project. The final geotechnical exploration may include soil borings, test pits, rock coring, and pavement coring. The DB Contractor shall determine the specific locations, frequency, and scope of all subsurface geotechnical investigations, testing, research, and analysis necessary to design a safe and reliable roadway, pavement, foundation, structure, embankment, excavation, slope, and other facilities for the Project in accordance with the TxDOT and FHWA geotechnical requirements.

The DB Contractor shall utilize drilling and field investigation measures that safeguard groundwater from contamination, and shall be responsible for any mitigation or restoration associated with the geotechnical investigation work.

Visual pavement surveys, and other field testing including Falling Weight Deflectometer (FWD) testing shall also be performed as deemed necessary for pavement and rehabilitation designs.

The DB Contractor shall prepare and amend, as needed, their Geotechnical Engineering Reports documenting the assumptions, conditions, and results of the geotechnical investigation and analyses, 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, and RQD for rock. If laboratory testing is required, then 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 recommendations and construction parameters resulting from the geotechnical investigation and analysis, including parameters for the design of pavements, retaining walls, pipes, structures, slopes, and embankments in accordance with TxDOT and FHWA geotechnical requirements;

e. Slope stability analyses for embankment, excavation and retaining wall 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 stability of all slopes and walls shall 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. Quantitative settlement analyses that consider both total and differential settlements. Analyses shall consider compressibility of the proposed fill and the underlying soil and rock and shall estimate settlements associated with the loads from the fill and the proposed structures. These evaluations should include immediate compression, primary consolidation, secondary compression, hydro-compression, expansion, and any other pertinent characteristics.
g. Plan view locations of field sampling, boring logs and other field data, laboratory test results, calculations, and analyses that support design decisions;
h. Texas triaxial class for subgrade and borrow; and
i. Thicknesses for the SH 71 existing pavement to remain in place.

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 calculations, construction parameters and construction recommendations derived from geotechnical investigations for the design of structure foundations, pipes, pavements, slopes, embankments, and earth retaining structures;
c. Assess the corrosion potential of the soil and rock materials and conditions that will be encountered, and the impacts to planned walls, pavement, foundations, surface, and subsurface facilities; and
d. Layout of boring locations along corridor.

Each Geotechnical Engineering Report, upon completion and including any later supplements or amendments, shall be submitted to TxDOT for review and comment.

The DB Contractor shall submit final Geotechnical Engineering Reports, signed and sealed by a Registered Professional Engineer, to TxDOT for approval with the Released for Construction Documents.

8.2.2 Pavement Design

The DB Contractor shall design and construct all pavements, including temporary pavements, pavement widenings and, where applicable, maintain roadway pavements using Good Industry Practice and the subsurface geotechnical data collected by the DB Contractor. The design of sections for pavement widenings shall match the design of the existing adjacent pavement sections. To address constructability issues in areas of narrow widening, an alternate pavement design can be proposed pending TxDOT approval.

A rigid pavement section will not be permitted until the beginning of the full depth reconstruction as shown in the Schematic Design. The DB Contractor shall not use Permeable Friction Course (PFC) surface courses in the design of flexible pavements.

The pavement designs developed by the DB Contractor shall be signed and sealed by a Professional Engineer Registered in the State of Texas.

The DB Contractor shall include the proposed pavement designs for the Project in the Proposal and shall indicate the applicable roadway and station limits for each pavement design. The DB Contractor shall provide in the Proposal a tabulation of the design k-values, FWD data, resilient modulus, or other basis for the pavement thickness designs, and including station limits.

After the DB Contractor has completed its pavement investigations and analyses, the DB Contractor shall provide verification of the Proposal pavement designs for TxDOT review.

The TxDOT *Pavement Design Guide,* with its latest revisions, shall be the basis for all pavement designs for the Project, and is supplemented with the requirements contained within this document as identified in the paragraphs in this section.

The number of ESALs and/or the traffic volumes to be used in the pavement designs shall be those provided in Attachment 8-1 (ESAL Counts).

Table 8-1 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

The DB Contractor should expect that subgrade materials will vary throughout the Project limits. The DB Contractor shall provide testing results to verify that the materials encountered or imported meet the Effective Modulus of Subgrade Reaction, modulus, or other design subgrade support value, using the FWD modulus result, as utilized for the structural section design. If the site subgrade materials have a lower value than used for the Proposal-phase pavement designs, the DB Contractor shall submit an adjusted pavement design for review and acceptance by TxDOT.

Pavement design report(s) shall document the assumptions, considerations, and decisions contributing to the DB Contractor's pavement designs, including the following:

a. Pavement design details by location, including structural layer materials, general specifications, and thicknesses;

b. Where applicable, 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. Parameters used in the pavement design(s), including traffic loads, pavement material characterization, environmental conditions, and pavement design life;

g. Other considerations used in developing the pavement design(s), including subgrade preparations and stabilization procedures. Material selection justification shall also be provided;

h. Pavement design calculations; and

i. Layout of pavement boring locations.

The DB Contractor shall submit final pavement designs to TxDOT for approval with the Release for Construction Documents. The following shall be submitted:

a. Pavement Design Reports including any later supplements or amendments;

b. Verification of Proposal phase pavement thickness designs;

c. Verification plan for effective modulus of subgrade reaction (FWD and TTC); and

d. Material selection justification from surface to subgrade.

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 DB 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 DBA Document. Both parties mutually agree to consider the use of new design technologies provided that any such technologies and methods are agreed to by the DB 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 within 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 final pavement selection and design:

a. ***Toll lanes***. Toll lanes shall be Continuously Reinforced Concrete Pavement (CRCP) in accordance with the Schematic Design from the east abutment of the FM 973 overpass to the east abutment of the SH 130 overpass. Toll lanes adjacent to general purpose lanes shall be flexible pavement;

b. ***General Purpose Lanes***. Pavement shall be flexible pavement only;

c. ***Toll Zone.*** Pavement for the toll zone shall be rigid in accordance with CTRMA, *Fixed Price Tolling Standards*. Final design details used on the Project shall be submitted to TxDOT for acceptance;

d. ***Shoulders***. Pavement for the shoulders of all roadways shall be the same section (materials and depths) as the adjacent roadway pavement;

e. ***Ramp Pavement***. Except for the EB to NB exit ramp to the SH 130 direct connector which shall match the toll lane pavement section, ramp pavements shall be constructed with the same section (materials and depths) as the adjacent general purpose lane pavement; and

f. ***Cross Street Pavement***. Cross street pavements shall be flexible.

8.2.2.3.1 Rigid Pavement

Design Specification. Rigid pavement shall be designed in accordance with the TxDOT's *Pavement Design Guide* using its design inputs or other values justified to TxDOT's satisfaction by the DB

Contractor using test data. Continuously Reinforced Concrete Pavement (CRCP) pavement is mandatory for rigid pavement design on the toll lanes.

Performance Life Requirements. The design life for the Project will be based on the following:

a. *General Purpose Lanes, Toll Lanes and Ramps.* A design life of thirty (30) years shall be used

b. *Cross Roads.* A design life of thirty (30) years shall be used

Continuously Reinforced Concrete Pavement (CRCP). Continuously Reinforced Concrete Pavement may require longitudinal tining as approved by TxDOT. The current TxDOT Standards shall be utilized. Including, but not limited to:

CRCP(1)-13 "Continuously Reinforced Concrete Pavement, One Layer Steel Bar Placement".

CRCP(2)-13 "Continuously Reinforced Concrete Pavement, Two Layer Steel Bar Placement".

8.2.2.3.2 Flexible Pavement

Design Methodology. For flexible pavement design, the DB 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. *General Purpose Lanes, Toll Lanes and Ramps.* A design life of thirty (30) years shall be used with an initial performance period of at least fifteen (15) years. This requirement will not apply to existing pavement structures that are to be overlayed or widenings adjoining existing pavement structures; and

b. *Cross Roads.* A design life of thirty (30) years shall be used with an initial performance period of twelve (12) years when projected traffic loads are less than 1 million ESALs and fifteen (15) years for more than 1 million ESALs.

8.2.3 Shared Use Path Pavement and Structural Section Requirements

The shared use path pavement shall be concrete pavement and shall, at a minimum, be placed with the section defined below:

Pavement and Structural Section for Shared Use Path

Pavement	Reinforced Class A Concrete - 5"
Reinforcement	6" x 6" - W5 x W5 Welded Wire Mesh (sheets)
Flex Base	Item 247 FL BS (TYA GR 5 or GR 1) - 6"
Expansion Joints	Every 40 LF – Use Preformed 3/4" Fiber Expansion Joint Material (Ty 7) in accordance with DMS 6310
Control Joints	Sawcut control joints 1-1/4" deep every 10 LF
Embankment	Item 132 (ORD COMPACTION)

As shown in Attachment 15-1 Aesthetic Guidelines, the shared use path shall be designed with toe walls or ribbon curb with sufficient depth as to minimize undermining of the path substructure due to drainage runoff. At a minimum, toe walls or ribbon curb shall extend one inch below flex base or one inch into subgrade.

Note: For locations where the shared use path crosses driveways, a driveway design section shall be used.

The City of Austin will take ownership of the shared use path and associated improvements after Final Acceptance.

8.3 Construction Requirements

8.3.1 Pavement Materials Requirements

The DB Contractor shall incorporate the following requirements into the preparation of the initial pavement designs for the Proposal and the subsequent final pavement designs, plans, quality control and quality assurance programs, and the field construction procedures. Subject to approval by the TxDOT, alternate material specifications and construction requirements may be proposed by the DB Contractor provided the objectives of the Project are met and an equivalent pavement structure is provided.

Subgrade Material Composition. The DB 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, the DB Contractor shall submit alternate designs and/or construction procedures for TxDOT approval.

When quantities of soluble sulfates detected are greater than 500 ppm, the DB Contractor shall determine the source of the sulfate and whether there are greater concentrations existing or that would be created when pulverized in and surrounding the sampled location. 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. The DB 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 8 feet for general purpose lanes and toll lanes pavements and 7 feet for other 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 6 inches is required.

Swell pressure testing may be used to supplement the approach described above.

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 6 inches. Asphalt stabilized base material will meet the requirements of Item 292 of the TxDOT *Standard Specifications*. Item 292 may only be used in lieu of subbases, stabilized base, or unbound base. When chemical additives are used to stabilize base, Table 8-5 (Minimum and Maximum Retained Unconfined Compressive Strength Values to be Achieved when using Chemical Additives for Stabilization, by Pavement Type) will be used to determine the stabilizer content. Stabilized base will be designed to achieve the unconfined compressive strength shown in Table 8-5 (Minimum and Maximum Retained Unconfined Compressive Strength Values to be Achieved when using Chemical Additives for Stabilization, by Pavement Type) immediately following a ten (10) day capillary moisture conditioning. Moisture conditioning will be conducted in a similar method as that used in TEX-121-E.

Table 8-5 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, or 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 be used 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 twenty-five (25), may be stabilized and used as a structural layer. For structural layers, provide a minimum 8-inch thickness of compacted material. Stabilized subbase materials shall be designed to achieve not less than 100 psi unconfined compressive strength immediately following a ten (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. Follow the TxDOT's *Pavement Design Guide* stabilization guidelines; and

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 8-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 ten (10) day capillary moisture conditioning conducted in a method similar to that used in TEX-121-E. Follow the TxDOT's *Pavement Design Guide* stabilization guidelines.

Underseal. The DB 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 overlays.

Surface Course. The surface course for all roadways utilizing flexible pavement design shall be a minimum of 2 inches of asphaltic concrete pavement. Overlay on bridge shall be a maximum of two inches and tapered at the bridge approach and departure.

Mix Selection. Where flexible pavement structures are proposed, the final surface mix for general purpose lanes and ramps shall be Stone Matrix Asphalt (SMA) meeting the requirements of Item 346. The final surface mix for cross roads shall be Stone Matrix Asphalt (SMA) meeting the requirements of Item 346 when the combined HMA thickness is greater than 6 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 inches.

8.3.2 Construction Verification

General. The independent Construction Quality Assurance Firm (CQAF) shall perform the DB Contractor's quality acceptance. The construction verification tasks described below are part of the CQAF quality acceptance efforts.

When performing construction activities under or adjacent to existing structures or Utilities, the DB Contractor shall limit vertical settlements and ground deformations so as to not damage structures, including foundation elements, and/or Utilities. For those occurrences involving third party structures and Utilities, the DB Contractor shall coordinate excavation activities with Section 5 (Third Party Agreements) and 6 (Utility Adjustments). For those occurrences involving TxDOT's structures and Utilities, the DB Contractor shall coordinate excavation activities with TxDOT.

Effective Modulus of Subgrade Reaction. The DB 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 DB Contractor shall submit this verification plan to TxDOT for review and comment.

Effective Resilient Modulus, (MR). The DB Contractor shall provide subgrade modulus verification testing in accordance with AASHTO T307. Retrieve a randomly selected verification sample at a minimum rate of one (1) sample (three (3) replicates per sample) for each 2,500 linear feet of roadbed; where the roadbed has a dimensioned width greater than 100 feet, one (1) additional sample will be collected and tested. Access roads are sampled and tested independently if more than 100 feet separates the roadbeds or are not parallel to the general purpose lanes 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, the DB Contractor shall be responsible to take corrective action that is acceptable to TxDOT.

Effective Plasticity Index (PI). The DB Contractor shall demonstrate to TxDOT that the specified design requirements are met by randomly selecting at least one (1) 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. General purpose lane roadbeds and ramps 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 DB 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, the DB 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 Construction Quality Acceptance Firm (CQAF) test results to determine acceptance and corrective action. Corrective action acceptable to TxDOT is required, at the DB 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 achieved the required level of smoothness.

Use diamond grinding or other methods approved by TxDOT to correct surface areas that have more than 1/8 inch variation between any two (2) 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.

Smoothness Specification for state maintained overlay areas. The International Roughness Index (IRI) for overlay areas defined in Section 1.2.1.2 (Limits of Works Description) shall be reduced to 50% of the existing IRI upon completion of surface placement. When achieving 50% of the existing IRI is not feasible, a maximum IRI of 65 inches/mile shall be provided. Pretesting and posttesting shall be performed by the DB Contractor and results submitted to TxDOT for review.

9 LAND SURVEYING

9.1 General Requirements

The DB Contractor shall provide accurate and consistent land surveying and mapping necessary to support design and construction of the Project.

The DB Contractor shall review existing survey data and determine the requirements for updating or extending the existing survey and mapping data. The DB Contractor is responsible for the final precision, accuracy, and comprehensiveness of all survey and mapping.

9.2 Administrative Requirements

9.2.1 Standards

The DB Contractor shall ensure that all surveying conforms to the *General Rules of Procedures and Practices* of the Texas Board of Professional Land Surveying. The DB 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

The DB Contractor shall secure written permission prior to entering any private property outside the ROW. It shall be the DB Contractors' sole responsibility to negotiate this permission, and the DB 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 the DB Contractor.

9.2.3 Survey by TxDOT

In performing surveys for other adjoining projects, TxDOT may need to verify and check the DB Contractor's survey work. The DB Contractor shall coordinate with the DB Contractor of the adjoining project regarding planned construction activities. The DB 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 U.S. Survey Feet. Work shall conform to state plane coordinates. The surface adjustment factor for the Project is 1.00011 (Plane Coordinates x 1.00011 = Surface Coordinates).

9.3.2 Survey Control Requirements

The DB Contractor shall base all additional horizontal and vertical control on the control provided by TxDOT.

The DB Contractor shall establish and maintain additional survey control as needed throughout the duration of the Project. The DB Contractor shall tie any additional horizontal and vertical control for the Project to the TxDOT-supplied control network. If the DB Contractor chooses to use GPS methods, the DB Contractor shall meet the accuracy of the appropriate level of survey as defined in the TxDOT *Survey Manual* and shall utilize the survey control to be provided by TxDOT.

All survey control points shall be set and/or verified by a Registered Professional Land Surveyor licensed in the State of Texas.

Monuments shall be TxDOT Bronze-survey markers installed and marked as directed by the most current edition of the TxDOT *Survey Manual*. The DB 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.

The DB 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 DB Contractor as the data becomes available.

9.3.3 Conventional Method (Horizontal & Vertical)

If the DB Contractor chooses to use conventional methods to establish additional horizontal control, the DB 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.

	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).

	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

Not applicable.

9.3.4.1 Accuracy Standard

In performing right of way surveys consisting of boundary locations, the DB Contractor shall meet the accuracy standards of the appropriate level of survey as defined in the following table.

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 α = 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 α 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

The DB 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. The DB Contractor shall provide survey records and reports to TxDOT upon request.

The DB Contractor may use an electronic field book to collect and store raw data. The DB 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. The DB 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.) The DB Contractor shall deliver copies of any or all field notebooks to TxDOT upon request.

9.4 Construction Requirements

9.4.1 Units

All survey Work shall be performed in U.S Survey Feet. Work shall conform to state plane coordinates.

9.5 Deliverables

9.5.1 Survey Records

The DB 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 the DB Contractor within ninety (90) days of Final Acceptance.

9.5.2 Final ROW Surveying and Mapping

Not applicable.

9.5.3 ROW Monuments

Not applicable.

9.5.4 Record Drawings and Documentation

The DB 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 the DB Contractor;

b. Copies of all survey control network measurements, computations, unadjusted and adjusted coordinate ,and evaluation values; and

c. Survey records and survey reports.

The DB 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. The DB 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 the DB Contractor from TxDOT in an x, y, z only coordinate format, or z only coordinate format, the DB 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

The DB Contractor shall conduct all work necessary to meet the requirements of grading, including clearing and grubbing, excavation and embankment, removal of existing buildings, concrete slabs, fencing, pavement and miscellaneous structures, subgrade preparation and stabilization, dust control, aggregate surfacing, and earth shouldering, in accordance with the requirements of this Section 10 (Grading).

The DB 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 stabilized subgrade and drainage structures. The DB Contractor shall ensure that abandoned structures are structurally sound after abandonment.

10.2 Preparation within Project Limits

The DB 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 the DB 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 the DB Contractor to salvage and deliver to a reasonable location designated by TxDOT any Intelligent Transportation System (ITS) equipment and materials in an undamaged condition.

Unless otherwise specified by TxDOT, the material from structures designated for demolition shall be the DB Contractor's property. All material removed shall be properly disposed of by the DB Contractor outside the limits of the Project.

10.3 Slopes and Topsoil

The DB Contractor shall use the latest edition of the *AASHTO Roadside Design Guideline* regarding design limitations and roadside safety guidelines associated with the design of slopes along roadways. The DB Contractor shall adjust grading to avoid and minimize disturbance to any identified waters of the U.S.

The DB 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. The DB 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 the DB Contractor's limits of maintenance, the DB Contractor shall provide stable slopes. For slopes steeper than 4:1, the DB Contractor shall submit to TxDOT a slope stability analysis that demonstrates the adequacy of the DB Contractor's design. The DB Contractor shall submit the slope stability analysis to TxDOT for approval with the Released for Construction Documents.

10.4 Sodding

Not applicable.

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 (Roadways) provide the framework for the design and construction of the roadway improvements to help attain the Project objectives.

The DB Contractor shall coordinate roadway design, construction, and maintenance with other elements of the Project to achieve the objectives of the Project.

Where changes to the roadway geometrics result in revisions to the Project ROW, the DB 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. The DB Contractor shall perform all ROW services that are necessitated by proposed changes in accordance with the DBA Documents.

11.2 Design Requirements

The DB 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. All design transitions to existing facilities shall be in accordance with the May 1, 2010 TxDOT *Roadway Design Manual*.

The DB Contractor shall design all elements in accordance with the applicable design criteria and Good Industry Practice based on the Design Speeds for various elements. Specifically, the roadway geometric design shall be in accordance with the May 1, 2010 TxDOT *Roadway Design Manual*.

Unless otherwise specified in the DBA Documents, the roadway design shall be governed by current TxDOT policies, specifications, standards, manuals, guidelines, and technical memoranda, including all addenda, supplements, and revisions thereto. Generally, the design shall comply with the criteria established by TxDOT, and AASHTO. The current version (current version as of the issue date of the Proposal) of these references shall be used unless otherwise specified.

When no particular standard or criterion is specified in the DB Agreement, then the following hierarchy of standards applies:

- TxDOT Austin District;
- TxDOT;
- Texas Manual on Uniform Traffic Control Devices (TMUTCD);
- AASHTO; and
- Applicable local public agency standards.

In all cases, desirable values will be used. Minimum values may only be used with approval by TxDOT. The DB Contractor must provide justification for the usage of any minimum standard. Justification based solely of cost or schedule will not result in approval.

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.

From Toll Lane station 11165+00 to east of SH 130, the DB Contractor's design of the SH 71 Toll Lanes shall include one lane in each direction as illustrated in the SH 71 Toll Lanes Project Schematic Design. For this Project, SH 130 improvements shall include the future SH 130 rail corridor, SH 130 mainlanes, direct connectors (physical gore locations) connecting to and along SH 71.

If the DB Contractor's design at SH 130 is different than the SH 71 Toll Lanes Project Schematic Design, the DB Contractor shall submit an exhibit for TxDOT approval illustrating compatibility with SH 71 and SH 130 as required in Section 2.2.5.3.

The approved SH 130 schematic shall control SH 130 and direct connector geometric designs, while the SH 71 Toll Lane Project Schematic Design shall control SH 71 Toll Lane Project related improvements.

11.2.1 Control of Access

Unless shown to be deleted in the Project Schematic Design, the DB Contractor shall maintain all existing property accesses, including those not shown on the Schematic Design, 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

The DB Contractor shall design the elements of the Project to meet or exceed the geometric design criteria shown in Attachment 11-1 (Roadway Design Criteria) and specified in the May 1, 2010 TxDOT *Roadway Design Manual*.

The vertical clearance over SH 130 shall have a minimum 23 feet - 0 inches vertical clearance from the inside of the southbound SH 130 shoulder to the inside of the northbound SH 130 shoulder. The clearance is required for a potential future rail line down the center of SH 130 in accordance with the "Railroad Compatibility Report" for SH 130 Segment 3.

The DB Contractor shall coordinate, design, and construct the improvements on crossing streets in accordance with the Governmental Entity having jurisdiction of said roadway.

11.2.2.1 Superelevation

Existing superelevation in areas where ramps are to connect to existing pavement may be retained at existing superelevations. Superelevation transitions shall be designed and constructed such that zero percent cross-slopes will not occur when grades are flatter than 0.35 percent.

The DB Contractor shall remove existing crowns at overlay locations, except at existing bridge ends where a transition is required to match an existing crowned bridge section. The DB Contractor may not place HMAC on uncompacted ground on the shoulder edges; the DB Contractor, if necessary, shall extend and compact the existing base before placing HMAC and possibly re-grade the existing ditch per Attachment 11-1 (Roadway Design Criteria) slope requirements. The DB Contractor shall inspect and adjust existing guardrails for proper heights in overlay areas.

11.2.2.2 Roadway Widenings

Except as noted below, pavement widening shall be constructed by extending the existing pavement cross slope.

If proposed widening is sufficient to provide an additional travel lane, pavement superelevation on the new lane shall comply with the requirements of Attachment 11-1.

In areas where widening will require a cross slope break, the cross slope break shall occur within 1-foot of a proposed lane line. Extending the existing cross slope to the first lane line will be acceptable if the sawcut is past the center of the lane.

11.2.2.3 Roadway Design Deviations

Roadway design Deviations will require approval by TxDOT.

11.2.3 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 SH 71 general purpose lanes and crossing streets shall be 15 feet minimum unless specified otherwise.

12 DRAINAGE

12.1 General Requirements

Efficient performance of the drainage system is an integral part of the performance of the Project. The DB 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 and/or flows are revised during the Project design, then the DB Contractor shall design and construct a solution that does not have significant adverse impacts to property owners outside the ROW. Significant adverse impacts are defined as impacts that have the potential to increase risk to health and human safety, cause and/or exacerbate flooding of developed structures, or significantly increase water surface elevations on undeveloped properties.

The DB Contractor shall ensure and demonstrate that drainage design does not cause any material impact to offsite property owners in terms of developability or marketability of their property, or the DB Contractor must obtain the appropriate drainage easement. Any grading activities or drainage structures needed outside of the Schematic ROW require a permanent drainage easement.

The DB Contractor shall design drainage on all roadways along SH 71 to meet general purpose lanes drainage design criteria.

The DB Contractor must meet the requirements specified in this Section 12 along with the requirements of the TxDOT Hydraulic Design Manual, notwithstanding any differences in criteria which were applied in the *State Highway 71 Express Hydrologic and Hydraulic Report, Travis County, Texas* dated 2/4/14.

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, the DB Contractor is responsible for collecting all necessary data, including those elements outlined in this Section 12.2.1 (Data Collection).

The DB 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; FEMA mapped floodplains; and official documents concerning the Project, such as the EA 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. DB 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).

The DB Contractor shall acquire all applicable municipal drainage plans, watershed management plans, and records of citizen concerns. The DB 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. The DB 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.

The DB 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. The DB Contractor shall conduct surveys for information not available from other sources.

The DB Contractor will be responsible for creating an inventory of all existing drainage structures, culverts, and storm sewers within the Project corridor. The inventory must include the condition, size,

material, location, status, videotape or photographs, and other pertinent information. The DB Contractor shall verify that all existing drainage components that are to remain have adequate capacity and design life in accordance with TxDOT's procedures. If any of these existing drainage components are found to be hydraulically inadequate or found to have insufficient design life, they must be replaced.

The data collected shall be taken into account in the Final Design of the drainage facilities.

Within thirty (30) Days of Substantial Completion, the DB 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 including all geospatial data. If computations are in electronic format, the native format shall be submitted (e.g. Microsoft Office Excel *.xlsx, Mathcad *.xmcd);
b. Hydrology/Hydraulic notes, models, and tabulations. Models are to be submitted in native format (e.g. Winstorm file *.stm, HEC RAS *.prj, HEC HMS *.hms). Please note some programs such as HEC HMS generate multiple files which are essential to the overall model. All files should be included with the submittal to ensure the results match those in the record set;
c. Storm sewer drainage report;
d. Bridge and culvert designs and reports for major stream crossings;
e. Open channel design data;
f. Complete documentation of the DB Contractor's assessment of the potential for the Project to cause adverse impacts, including how adverse impacts are mitigated (if needed), and reasonable substantiation that the Project will not cause any significant adverse impacts.
g. Demonstration that the drainage design does not cause any material impact to offsite property owners in terms of developability or marketability of their property, or that the DB Contractor has obtained appropriate drainage easements.
h. Correspondence files which include;
    - Meeting minutes pertaining to drainage;
    - E-mail and letter correspondence with all Governmental Agencies pertaining to drainage and drainage studies;
    - Letters to all Government Agencies pertaining to drainage; and
i. Drainage system data (location, type, material, size, and other pertinent information) in a GIS data format for the existing system to remain in place and the proposed system constructed in conjunction with this Project.

12.2.2 Coordination with Other Agencies

The DB Contractor shall coordinate all water resource issues with affected stakeholders and regulatory agencies. The DB Contractor shall document the resolutions of water resource issues.

The DB Contractor shall coordinate with and provide to the local floodplain administrators all information and technical data relating to Work in or adjacent to the floodplain.

12.3 Design Requirements

The DB Contractor shall design all elements of the drainage facilities in accordance with the applicable design criteria and Good Industry Practice.

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 (Drainage). Modifications to existing drainage patterns should be minimized.

The DB 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. Elements of the existing drainage system determined by the DB Contractor to remain in place as part of the drainage system must meet the requirements as detailed in this Section 12 (Drainage).

Elements of the existing drainage system within the Project limits scheduled to remain in place must meet hydraulic capacity requirements as detailed in Section 12 (Drainage). If any elements of the existing system do not comply with the requirements of Sections 12 (Drainage) or 13 (Structures), those elements shall be replaced by DB Contractor.

The DB Contractor shall base its Final Design on design computations and risk assessments for all aspects of Project drainage.

The DB Contractor shall design roadside open channels such that the profiles have adequate grade to minimize sedimentation.

The DB Contractor shall make available to TxDOT, as part of the submittals, all native design files used in the hydrologic and hydraulic analyses used in preparing computations and plans. The native files for the models and analyses should represent the record set submitted.

12.3.1 Surface Hydrology

12.3.1.1 Design Frequencies

The DB Contactor shall use the design frequencies listed in Table 12-1 below.

12.3.1.2 Hydrologic Analysis

The DB Contractor shall design drainage structures which intercept and convey flow from offsite through the Project (e.g. cross-culverts), with sufficient capacity for the fully developed offsite condition. Only existing offsite detention facilities shall be included in the evaluation of fully developed offsite flows. Future design flows must be greater than or equal to existing flows from offsite areas which are conveyed through the Project ROW. Future offsite development will be determined using impervious cover values given in Table 12-2 associated with the current land zoning and reasonable assumptions for the decreased time of concentration. If a parcel has a zoning classification not listed in Table 12-2, the closest reasonable approximation shall be used based on values in Table 12-2. Internal drainage systems which convey flow intercepted from the Project shall be designed for the runoff from the Project and not for the ultimate development of transportation infrastructure within the Project ROW.

The DB Contractor shall ensure that no significant adverse impacts will result from the construction of the Project. The DB Contractor shall evaluate and document the analysis confirming that the proposed drainage improvements do not result in any significant adverse impacts.

The DB Contractor will be responsible for any mitigation required to ensure that the Project does not create any significant adverse impact. Restrictor plates in storm drain pipes for in-line detention will not be permitted. The DB Contractor is not responsible for evaluating or mitigating impacts which may be caused by future offsite development.

Use of underground storage facilities for mitigation of significant adverse impacts is prohibited.

The DB Contractor shall contain all increases in water surface elevation upstream of drainage structures which are due to changes between existing and post-Project conditions within ROW or drainage easements. The DB Contractor is not responsible for addressing inundation due to future offsite development.

Table 12-1: Drainage Design Summary Table

General purpose lanes & Toll Lanes	Drainage Analysis and Evaluation	Q2	Q5	Q10	Q25	Q50	Q100	Q500
	Design frequency for storm sewers, inlets, and laterals where emergency overflow is present. Allowable ponding width is the shoulder and 1/2 adjacent lane			X				
	Design frequency for storm sewers, inlets, and laterals for depressed roadway sections with no emergency overflow. Allowable ponding width is the shoulder.					X		
	Culverts and bridges shall be designed to convey a minimum 50-year storm without inundating the roadway pavement. Bridges shall provide two (2) feet of freeboard for the 50-year storm and one (1) foot of freeboard for the 100-year storm. The structure shall also be designed to accommodate the 500-year even without significant damage.					X	X	X
	All features of the roadway facility will be assessed under the 2, 10, 25, 50, & 100 year design storm to ensure no significant adverse impacts.	X		x	x	x	X	
FM 973	Design frequency for a storm sewer and roadside ditches where emergency overflow is present. Allowable ponding width is one lane.			X				
	Design frequency for storm sewers and inlets for a depressed roadway section with no emergency overflow. Allowable ponding width is one lane.				X			
	Design frequency for culverts shall be for a minimum of a 25-year storm.				X			
	All features of the roadway facility will be assessed under the 2, 10, 25, 50, & 100 year design storm to ensure no significant adverse impacts.	X		x	x	x	X	
City and County Cross-Streets Drainage	The general design criteria associated with intersecting City cross-street construction must comply with the local jurisdiction's criteria.							
	If no jurisdictional criteria exist:							
	Design frequency for storm sewers for urban roadway sections. Allowable ponding width is the depth and width that will allow passage of one (1) lane of traffic.			X				
	Design frequency for open channel and small culverts for rural roadway section.			X				
	Design frequency for inlets along depressed roadways. Allowable ponding width is the depth and width that will allow passage of one (1) lane of traffic.				X			
	Design frequency for culverts shall be for a minimum of a 10-year storm.			X				
	Design frequency for small bridges shall be for a minimum of a 25-year storm.				X			
	All features of the roadway facility will be assessed under the 2, 10, 25, 50, & 100 year design storm to ensure no significant adverse impacts.	X		x	x	x	X	
Shared Use Path	Design frequency for cross-drainage at locations crossing concentrated flow (e.g. roadside ditches, tributary channels), except at Onion Creek.		X					

Notes. * A depressed roadway provides nowhere for water to drain even when the curb height is exceeded. 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 must be evaluated to the 1% AEP event.

Table 12-2: Impervious Cover by Land Use Code/Zoning

Land Use	Major Group/Type	Impervious Cover (%)
CS	GENERAL COMMERICAL SERVICES	65
GR	COMMUNITY COMMERICAL	65
LI	LIMITED INDUSTRIAL SERVICES	65
LO	LIMITED OFFICE	65
MH	MOBILE HOMES	45
RR	RURAL RESIDENTIAL	25
SF	SINGLE FAMILY	45

12.3.2 Storm Sewer Systems

Where precluded from handling runoff with open channels by physical site constraints, or as directed in this Section 12 (Drainage), the DB Contractor shall design enclosed storm sewer systems to collect and convey runoff to appropriate discharge points.

The DB 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, best available topographic contours, runoff coefficients, time of concentration, and land use with design curve number and/or design runoff coefficients, discharges, velocities, ponding, and hydraulic grade line data;

b. Location and tabulation of all existing and proposed pipe and drainage structures. These include size, class or gauge, 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.

e. Complete documentation of the DB Contractor's assessment of the potential for the Project to cause adverse impacts, including how adverse impacts are mitigated (if needed) and reasonable substantiation that the Project will not cause any significant adverse impacts.

f. Demonstration that the drainage design does not cause any material impact to offsite property owners in terms of developability of their property, or that the DB Contractor has obtained appropriate drainage easements.

This report shall be a component of the Drainage Design Report.

DB Contractor shall design all storm sewer systems such that the hydraulic grade line for the design frequency event is at or below the flow line of:

a. Gutter depression for curb inlet;

b. The top of grate inlet; and

c. The top of manhole cover.

Runoff within the jurisdiction of the USACE shall be conveyed in accordance with applicable laws and permits.

"T" connections and "Y" connections in storm sewer systems are not allowed.

The use of slotted drains will not be allowed.

The DB Contractor will not be allowed to mitigate impacts by using restrictor plates or in-line detention facilities.

12.3.2.1 Pipes

The DB Contractor shall meet the requirements set forth in Chapters 10, Section 6 of the *TxDOT Hydraulic Design Manual*

Storm sewer pipes with design flow velocities less than 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. All storm sewers shall be designed and constructed to sustain all loads with zero deflection and shall have positive seals at the pipe joints.

All pipes shall be reinforced concrete pipe, with the exception of pipe drains for MSE walls.

The minimum pipe size inside diameter shall be 24 inches for laterals placed under pavement, and 24 inches for trunk lines.

12.3.2.2 Ponding

The DB Contractor shall design drainage systems to limit ponding to the widths listed in Chapter 10, Section 2 of the *TxDOT Hydraulic Design Manual*.

12.3.3 Miscellaneous Drainage Design Requirements

The DB Contractor shall design roadside ditches in accordance with Chapter 7, Section 3 of the *TxDOT Hydraulic Design Manual.*

Grate inlets within a roadway will not be allowed. Use of trench drains in driveways is permitted. No slotted drains shall be used on this Project.

12.3.3.1 Inlet Design Criteria

Inlets shall be placed in accordance with the criteria shown below in Table 12-2 and the *TxDOT Hydraulic Design Manual*:

Table 12-2: Inlet Design Criteria

Storm Drain Inlets	
Inlet Locations	1. On-grade: Place inlets to keep gutter ponding <= allowable. Carryover is acceptable. 2. Low points: Verify inlet location is at low point of vertical curve, not at P.I. Place flanking inlets both sides of low point at a maximum spacing of 100' from low point. 3. Redundant inlets: End of curb returns at intersection. 4. 100% flow interception: On pavement at end of ret. wall, at ramp gores, at intersections.

12.3.4 Stormwater Storage Facilities

The DB Contractor shall complete design of the stormwater storage facilities to meet requirements for water quality, water quantity, and rate control, as determined by the Texas NPDES regulations.

The DB 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.

12.3.5 Hydraulic Structures

12.3.5.1 Culverts

The DB Contractor shall analyze existing and proposed culverts and drainage-ways impacted, replaced, or created by the Project design, for any localized flooding problems.

For all culverts, the maximum allowable headwater elevation for the design frequency shall not exceed the low point at the applicable roadway edge of pavement.

Culverts are classified as major or minor, as follows:

- Major Culvert: A culvert that provides an opening of more than 35 SF in a single or multiple installations. A major culvert may consist of a single round pipe, pipe arch, open or closed-bottom box, bottomless arch, 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 width 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 4'.
- Minor Culvert: Any culvert not classified as a major culvert.

The minimum box culvert height, inside dimension, for all proposed box culverts shall be 3 feet. Existing box culverts that meet all other hydraulic requirements may be extended at their existing height.

12.3.5.2 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.

12.3.5.2.1 Method Used to Estimate Flows

The DB Contractor shall use methods outlined in the *TxDOT Hydraulic Design Manual* for flow determination.

12.3.5.2.2 Design Frequency

Major waterway crossings, bridges, culverts and storm drain systems shall be designed for the frequency corresponding to the functional classification of the associated roadway as shown in Table 12-1. The functional classification for each roadway is shown in Section 11 (Roadways).

The DB Contractor shall evaluate bridges for contraction scour and pier scour concerns and incorporate protection in accordance with Good Industry Practice. The DB Contractor shall provide a scour analysis in accordance with TxDOT's *Geotechnical Manual* (Chapter 5 – Section 5 Scour) for all bridges. If necessary, the DB 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 Experience Selection and Design Guidance*.

12.3.5.2.3 Hydraulic Analysis

The DB Contractor shall use the best available hydrologic and hydraulic models as design base models, if such models are available. For waterways which are mapped as FEMA Special Flood Hazard Areas, the DB Contractor must comply with TxDOT *Hydraulic Design Manual* procedures, including coordination with the local floodplain administrator(s) and use of the current effective models to create revised effective and proposed effective models. The DB Contractor must also ensure coordination with major adjacent developments which are pursuing a FEMA Letter of Map Revision during the project development period.

The DB Contractor shall design riprap at abutments in accordance with the procedures outlined in HEC-23. For bridge abutments in urban areas, the DB Contractor shall install protection in accordance with the Project's aesthetic plan.

12.3.5.2.4 Bridge/Culvert Waterway Design

For existing crossings to be modified by the DB Contractor, the DB Contractor shall analyze the existing structure with the proposed flows to ensure the headwater does not exceed allowable head water. If this condition is not met for the minimum frequency on the completed structures, the DB Contractor shall design a replacement structure with sufficient capacity to pass the required design-frequency flows and ensure the maximum headwater for the required frequency event does not cause a significant 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 minimize changes to the existing channel.

12.3.5.2.5 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 waterways or other roadways, except for the bridges over Onion Creek. If ponding width limits are exceeded on the bridge, then the runoff must be conveyed in a closed system through the bridge columns to the roadway 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.

12.3.5.2.6 Drainage Report for Major Stream Crossings

The DB Contractor shall prepare a report for each major stream crossing. Major stream crossings are defined as waterways listed as a FEMA-mapped Special Flood Hazard Area 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/parameterization including topography, both hardcopy and GIS format;

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 the 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 (the DB 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.

This report shall be a component 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 feet. Any other waterway will be by default a minor stream crossing.

12.3.6 Shared Use Path

The DB Contractor should design cross-drainage structures on the shared use path to pass the 5-year storm at concentrated flow locations such as ditches and locations where a roadway cross-drainage structure is located to convey flows under SH 71. The shared use path which crosses under SH 71 at Onion Creek is not required to conform to a specific frequency event for hydraulic performance.

12.4 Drainage Design Report

A preliminary Drainage Design Report shall be submitted with prefinal 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 Substantial Completion, the DB 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 12.3.5.2.6;

d. Correspondence file;

e. Drainage system data (location, type, material, size, and other pertinent information) in a suitable electronic format; and

f. Storm sewer drainage reports (if applicable);

g. Complete documentation of the DB Contractor's assessment of the potential for the Project to cause significant adverse impacts, including how adverse impacts are mitigated (if needed) and reasonable substantiation that the Project will not cause any significant adverse impacts.

h. Demonstration that the drainage design does not cause any material impact to offsite property owners in terms of developability of their property, or that the DB Contractor has obtained appropriate drainage easements.

i. GIS data.

12.5 Construction Requirements

The DB Contractor shall design drainage to accommodate construction staging. The design shall include temporary erosion control measures 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.

13 STRUCTURES

13.1 General Requirements

The structural elements of the Project, including bridges, culverts, drainage structures, signage supports, illumination assemblies, retaining walls, and sound walls, shall be designed and constructed in conformance with the requirements of the DBA Documents, 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. In all instances where TxDOT policies, specifications, standards, manuals, guidelines, and technical memoranda make reference to the TxDOT *Bridge Detailing Manual*, the DB Contractor shall reference and utilize the TxDOT *Bridge Detailing Guide* (August 2013) in lieu of the TxDOT *Bridge Detailing Manual*.

The structural elements of the Project also include repairing/rehabilitating the existing MSE walls at three corners along SH 71 at the Spirit of Texas Boulevard intersection. The DB Contractor shall install new walls along the outside of the existing MSE walls for the entire length of the existing wall at a minimum. The aesthetics of the new wall shall be in compliance with Section 15.

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 Corridor Structure Type 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 the DB Contractor's action to achieve traditional TxDOT service life for Project bridges, walls, culverts and miscellaneous structures.

The DB Contractor shall submit to TxDOT an inventory and operating ratings of constructed structures with the Record Drawings.

13.1.1 Structural Protection of Existing Underground 96" Sanitary Sewer

An existing 96 inch sanitary sewer is located down the center of the existing SH 71 ROW, west of the southerly leg of FM 973. This sanitary sewer is vertically positioned approximately 100 feet below the ground surface. The 96 inch sanitary sewer then turns in a northeasterly direction east of FM 973.

It is extremely critical that this sanitary sewer remain fully, and safely, operational throughout the term of the DBA Document. Any damage to this sanitary sewer will be unacceptable. The DB Contractor shall not only consider the effects of deep bridge foundations on the sanitary sewer, but shall also consider items such as roadway fill, surcharge fill, equipment (crane) loads, material storage, etc.

The DB Contractor shall identify all access points to the 96 inch sanitary sewer within the Project limits, survey the location of these access points, and provide the locations to TxDOT. The DB Contractor shall make every effort to design around these access points in order to maintain access to the line in the future. Should the access points require capping or adjustment, the DB Contractor shall coordinate with the owner in accordance with Section 6 for approval of the adjustment.

13.2 Design Requirements

The DB 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.

The DB Contractor shall stencil NBI numbers on all bridge structures. Place the NBI numbers on each side of the structure on the exterior beam closest to the abutment. Place the stencils on opposing corners of the structure.

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 *Bridge Design Manual – LRFD* and the most recent AASHTO *LRFD Bridge Design Specifications*, including all interim revisions.

Pedestrian bridges shall additionally conform to the requirements of AASHTO *Guide Specifications for Design of Pedestrian Bridges,* if such facilities are required.

The DB Contractor shall proportion bridge spans to avoid uplift at supports.

The DB Contractor shall ensure that bridges crossing over waterways withstand a 100-year frequency event with no loss of structural integrity.

Bridges crossing over 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.

The DB Contractor shall align all bridge bents in line with existing bents for all bridge widenings. Offsets between existing and proposed bridge alignments will not be allowed.

All electronic and paper files and calculation design notebooks shall be made available at TxDOT's request.

13.2.2 Bridge Design Loads and Load Ratings

Live Loads

All roadway bridges and bridge class culverts shall be designed to accommodate the following live loads:

a. An HL-93 truck or a tandem truck, plus lane load as defined in the AASHTO *LRFD Bridge Design Specifications* shall be utilized for bridges except pedestrian bridges; and

b. Pedestrian bridges and sidewalks of vehicular 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*, to account for maintenance and emergency vehicles.

The DB 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 type of bridge 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 FHWA; and

b. The DB Contractor can demonstrate that the design of the bridge type and components will meet the functional requirements of the Project.

Modular joints shall be used when anticipated movement exceeds 5 inches and shall be designed and tested for fatigue loading.

The DB Contractor shall minimize the number of deck joints wherever possible. The DB Contractor shall locate joints to provide for maintenance accessibility and future replacement. Match the existing bridge joint locations on bridge widenings.

The DB 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. Pedestrian rail shall be used along structure pavement edges unless pedestrian traffic is protected by an approved traffic rail.

To the extent possible, the DB Contractor shall make bridge superstructures, joints, and bearings accessible for long-term inspection and maintenance. The DB 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; the DB Contractor shall make steel and concrete box girders and caps (substructure) with a minimum inside depth of six (6) feet to facilitate interior inspection. The DB Contractor shall include a minimum access opening of 3 feet – 0 inch 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. The DB 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 DB 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; and

d. The design, detail, and construction of segmental bridges shall provide for the easy addition of supplemental post-tensioning.

The SH 71 bridge over SH 130 shall have a planar cross slope.

13.2.4 Bridge Foundations

Integral abutments, where the superstructure is structurally framed (either completely or partially) into the abutment, shall not be permitted. 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 or other settlement mitigation measures shall be designed and constructed to mitigate settlement immediately behind abutment backwalls.

Spread footing foundations are not allowed.

13.2.5 Bridge Railing and Barriers

The median barrier to be placed on the SH 71 bridge over SH 130 shall use a removable anchoring system which will meet the crashworthiness requirements of NCHRP Report 350 or AASHTO *Manual for*

Assessing Safety Hardware (MASH). The anchoring system shall be such that upon removal, there will be minimal destructive impacts to the bridge deck. In no way shall the removal of the median barrier anchoring system decrease the structural capacity of the bridge deck and/or increase long term maintenance.

All barrier systems used on the Project shall meet current crash test criteria as specified in NCHRP Report 350 or MASH and other safety requirements as determined by TxDOT. All testing and associated costs for non-standard railings shall be the sole responsibility of the DB Contractor and shall be accomplished through a third party acceptable to TxDOT. A current list of standard railing is provided in TxDOT *Bridge Railing Manual*. The DB Contractor shall protect sidewalks from vehicular impact by using TxDOT-approved bridge railings.

13.2.6 Retaining Walls

Wall types and components will be allowed only if:

a. They have been accepted for general use by FHWA, and

b. The DB Contractor can demonstrate that the design of the wall type and components shall meet the functional requirements of the Project.

Modular walls employing interlocking blocks shall not be used where surcharge loads from vehicular traffic are present.

The design of wall structures shall take into account live load surcharges. The DB Contractor shall apply the appropriate live loading condition (vehicular, heavy rail, transit etc.) that each wall is subjected to. These live load surcharges shall be based on the latest AASHTO *LRFD Bridge Design 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 layout shall address slope maintenance above and below the wall.

To the extent possible, the DB Contractor shall design and construct components of the Project to provide embankments without the use of retaining walls. Where earthen embankments are not feasible, the DB Contractor may use retaining walls. Metal walls, including bin walls and sheet pile walls, recycled material walls, and timber walls are not allowed.

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.

Perched walls will not be allowed. Existing perched walls being rehabilitated at Spirit of Texas may be retrofitted in place with final design details approved by TxDOT. The design must address the perched condition as well as the distress exhibited by the existing walls. The design can include either structural and/or geotechnical retrofit.

Outfalls for underdrains must be provided.

Retaining walls shall be placed at the edge of the general purpose lane shoulders.

Retaining walls shall end at-grade or riprap shall be used to avoid soil erosions.

Select Backfill used within the MSE wall reinforced volume shall conform to Ty A as determined by the test method TEX-110-E as noted under Item 423 of the TxDOT *Standard Specifications for Construction*

and Maintenance of Highways, Streets, and Bridges, 2004 edition. No gravel or sand is to be used as select backfill.

13.2.7 Noise/Sound Walls

Not used.

13.2.8 Drainage Structures

In developing the design of drainage structures, the DB Contractor shall account for maximum anticipated loadings.

Energy dissipaters, if used, shall be considered as structural elements.

13.2.9 Sign, Illumination, and Traffic Signal Supports

For bridges and walls longer than 500 feet, sign supports shall be provided at 500-foot intervals. The sign supports shall accommodate sign areas up to and including 16 SF. Cantilever and sign bridge supports shall be placed outside the clear zone or shall be otherwise protected by appropriate safety measures.

13.2.10 Widenings

The DB Contractor shall complete a load rating of existing structures to be widened. Ratings shall be based on current TxDOT procedures. For replacement of existing railings on widened decks, addition of utility loading, or other specified loads, the design shall not produce a net reduction in inventory, operating, or service load rating of existing portions of the proposed structure, without TxDOT approval, except at the following locations:

a. Presidential Blvd Median Barrier - A two (2) point reduction in net load rating in the Presidential Blvd structure will be allowed for the addition of new median barrier;

b. Onion Creek Widening – A two (2) point reduction in net load rating will be allowed for replacing T502 rail with T552 rail on the widened side of Onion Creek bridge.

13.2.11 Structures to be Used in Place or Rehabilitated

New general purpose lane structures will need to meet the requirements of this Section 13. For existing structures to be used in place or rehabilitated, TxDOT will provide condition surveys. The DB Contractor shall provide a design or procedure for the following condition survey recommendations to be completed by the DB Contractor and submit to TxDOT for review and approval:

a. Spirit of Texas bridge –

   i. Seal deck cracks per TxDOT Standard Specification, Item 780, "*Epoxy Injection*";

   ii. Repair spalls in the deck soffit at the overhangs in accordance with Item 429, "*Concrete Structure Repair*". Excavate behind and clean exposed rebar prior to patching.

   iii. Retaining wall rehabilitation as outlined in Section 13.2.6.

b. Presidential Blvd bridge – Dual guardrail in the median to be replaced with a concrete median barrier. Rail designs shall adhere to TxDOT's *Bridge Railing Manual*.

c. Onion Creek EB bridge –

   i. Replace all original bearing pads (Bent 3 to Abutment 12) with steel-laminated neoprene bearings meeting current TxDOT standards. Work shall be performed in accordance with Special Specification 4159, "*Replacing Elastomeric Bearing Pads*";

   ii. Steam clean and abrasive blast existing bearing seats as detailed in the condition reports before placing new bearing pads;

iii. Remove all excess asphalt and debris from the tops of the abutments and bent caps;

iv. Repair spall in the deck soffit at the north end of the west abutment overhang in accordance with Item 429, "*Concrete Structure Repair*". Excavate behind and clean exposed rebar prior to patching;

v. Add troweled depressions around new drain slots on the north side of the bridge and around existing drain slots on the south side of the bridge;

vi. Before replacing overlay,

1. Seal existing bridge construction joints using a fabric joint underseal system according to Item 356. Once asphalt paving operations are complete, saw cut a 1 inch deep by ½ inch wide joint at the construction joint and seal the joint opening with a Class 3, "Hot Poured Rubber.";

2. Rehabilitate existing armor joints with an approved Elastomeric Concrete Header Joint System.

13.2.12 Vertical and Horizontal Clearance for Structures

A minimum of 16 feet -6 inch vertical clearance shall be provided for all new bridges over or under existing or proposed roadways unless noted below. The actual vertical clearance shall be measured by the DB Contractor upon placement of superstructure and the measured vertical clearance shall be reported to TxDOT. All vertical clearances shall be field measured prior to fabrication of clearance signs.

A minimum of 23 feet – 0 inch vertical clearance shall be provided along the existing median of SH 130 for a potential future railroad. The 23 feet – 0 inch clearance shall extend from the SH 130 centerline to both outside rails of the double track identified in the Railroad Compatibility Report. The actual vertical clearance shall be measured by the DB Contractor upon placement of superstructure and the measured vertical clearance shall be reported to TxDOT.

The minimum vertical clearance at Presidential Boulevard shall meet the existing vertical clearance as measured in the field prior to construction. A reduction in the existing vertical clearance will not be permitted without TxDOT approval.

The minimum vertical clearance at the westbound to eastbound Presidential Boulevard U-turn shall be 15'7".

DB contractor shall incorporate requirements from the SH 130 Ultimate Schematic and Railroad Compatibility Report into all proposed improvements for SH 130. These requirements shall include at a minimum maintenance of a 56-foot clear zone centered along the proposed SH 130 rail alignment, and provision for the ultimate SH 130 facilities including proposed direct connection interchange elements, additional main lanes and/or HOV lanes including clear zone requirements for all proposed improvements.

13.2.13 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*, latest version, 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;

f. Vertical and bottom of surfaces of interior concrete beams or girders;

g. Wingwalls, headwalls, safety end treatments; and

h. Ripraps, mowstrips and flumes.

13.2.14 Structure Metals

Welding shall be in accordance with the requirements of the AASHTO/AWS DI.5 2010 Bridge Welding Code.

13.2.15 Steel finishes

All structure steel shall be weathering steel. The DB Contractor shall protect all components of the structure (superstructure and substructure) that are susceptible to corrosion and/or staining from weathering steel run-off.

14 RAIL

Not applicable.

15 AESTHETICS AND LANDSCAPING

15.1 General Requirements

This Section 15 defines requirements with which the DB Contractor shall design and construct aesthetic treatments for the roadway, structures, drainage and landscaping Elements of the Project.

TxDOT utilized a context sensitive solution approach to identify aesthetic elements and landscaping for the project. As a result Attachment 15-1 Aesthetic Guidelines were developed through significant coordination with the community and adjacent agencies. The DB Contractor shall incorporate the aesthetic and landscape treatments into the Final Design in accordance with Attachment 15-1 Aesthetic Guidelines and this Technical Provision.

15.2 Administrative Requirements

This Section 15 (General Requirements) presents minimum aesthetics and landscape design requirements for Project designs. For purposes of this Section 15 (General Requirements), the following list of items shall be developed and designed in accordance with Attachment 15-1 Aesthetic Guidelines:

a. Material, finish, color, shape 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 walls;
e. Contour grading, slope rounding, channel treatments, and drainage;
f. Sculptural and artistic features of other structures;
g. Sidewalks, median or pedestrian specialty paving, including material, finish and color (i.e., raised medians at FM 973);
h. Hardscape at interchanges and intersections;
i. Fencing;
j. Gantries;
k. Light fixtures, ambient light colors, and general layout conditions
l. Landscape planting and irrigation; and
m. SH 71 new construction at SH 130.

15.2.1 Aesthetics Concepts

Aesthetic elements shall be designed as corridor-wide enhancements. The aesthetic Elements shall be consistent with regard to form, materials, and design as set forth in Attachment 15-1 Aesthetic Guidelines and applied throughout the length of the Project Aesthetics and Landscaping Plans

The DB Contractor shall prepare an Aesthetics and Landscaping Plans in conformance with Attachment 15-1 Aesthetic Guidelines and submit to TxDOT for review and approval.

The DB Contractor shall implement the aesthetics and landscaping for the Project to be consistent with the approximate locations of the aesthetics and landscaping Elements shown in Attachment 15-1 Aesthetics Guidelines and the approved Aesthetics and Landscaping Plans.

The Aesthetics and Landscaping Plans shall include all elements to fully communicate the proposed aesthetic treatment to TxDOT and shall address:

Aesthetics

a. All plans, sections, elevations, perspectives, isometrics, etc., as needed to fully communicate the proposed aesthetic treatment to aesthetic Elements;

b. Drawings showing locations of site-specific elements (i.e., fences, signage, lighting, potential locations of community improvement opportunity areas, , bridge enhancements, landscaping, iconic Elements);

c. Drawing showing the location of existing and proposed Utilities as they relate to the location of aesthetic improvements, including composite drawings showing potential conflicts for proposed improvements; and

d. Drawings showing proposed color schemes and their locations.

Landscaping (planting and irrigation):

a. A plan indicating plan palettes, locations of plants, plant types, maximum planting slopes, and planting dates;

b. A maintenance program; and

c. Composite drawings of all utilities and easements that would interfere with landscaping markers, or any other identified enhancements.

The Aesthetic and Landscaping Plans shall include all plans, elevations, perspectives, isometrics, etc., as needed to fully convey the aesthetic treatment.

This Aesthetics and Landscaping Plans shall be presented in the following format:

a. 11 inches x 17 inches format;

b. Front sided only;

c. Three (3) paper copies, in color; and

d. Three (3) CD copies, with guidelines in portable document format (PDF).

The Aesthetics and Landscaping Plans shall be incorporated into the Final Design engineering drawings.

TxDOT approval of the Aesthetics and Landscape Plans is required prior to construction of any elements affected by the plan.

15.2.2 Personnel

The Aesthetics and Landscape Plans shall be developed under direct supervision of a professional landscape architect, registered in the State of Texas. The landscape architect shall have experience in designing aesthetics and landscaping Elements for roadway projects of similar scope and size.

15.3 Design Requirements

15.3.1 Aesthetics Principles and Strategies

The DB Contractor shall follow the guidelines and requirements of the approved Attachment 15-1 Aesthetic Guidelines, 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. SH 71 roadway including all structures from Spirit of Texas Drive through FM 973 will be designed to conform with Attachment 15-1 Aesthetic Guidelines

e. SH 71 bridges, retaining walls and other structures constructed within of the SH 130 interchange will follow the aesthetic design of SH 130.

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. Aesthetic elements shall be fully integrated with the overall landscape design;

k. Visual quality of the landscape shall be greater at intersections and consistent along the remainder of the Project's corridor;

l. Aesthetic elements shall be easy to maintain and resistant to vandalism and graffiti; and

m. Exposed aggregate finish shall not be used.

15.3.2 Walls

The DB Contractor shall apply aesthetic treatments in conformance with Attachment 15-1 Aesthetic Guidelines to the vertical surfaces of retaining walls where the surface is visible from the roadway.

The DB Contractor shall provide mock-ups (minimum 5' x 5') of all proposed retaining wall, hardscape and abutment wall surface treatments for TxDOT approval prior to construction.

The DB Contractor shall apply aesthetic treatments to the vertical surfaces of retaining walls in accordance with the Attachment 15-1 Aesthetic Guidelines.

The DB Contractor shall clearly detail and identify how wall patterns shall be incorporated.

15.3.3 Bridges and Other Structures

All aesthetic treatments for structural elements shall be coordinated with the DB Contractor's structural design team to facilitate constructability and maintain safety requirements. Substructure columns, abutments, bridge rails, and other structures shall be developed to comply with Attachment 15-1 Aesthetic Guidelines.

No exposed conduits or drain pipes will be allowed on bents, columns, bridge beams, retaining walls, or any other visible surface with the exception of tolling infrastructure components.

The DB Contractor shall ensure that a constant superstructure depth is maintained throughout the bridge length for all bridges.

15.3.4 Trees, Shrubs, and Other Plant Materials

The DB Contractor shall utilize plant species native to or naturalized in the Project region. The overall landscape design, including plant material type, sizes, density, and location, shall be approved by TxDOT. Plant material selection shall consider the soil conditions, slopes and watering requirements.

15.3.5 Maintenance and Establishment Period

The DB Contractor shall be responsible for the care of all plants installed on the Project, in accordance with the requirements of the current TxDOT Standard Specifications for a period of one (1) years after the date of Final Acceptance.

During the warranty and establishment period, the DB Contractor shall replace the plant materials when they are no longer in a healthy condition as determined by TxDOT, and make adjustments to the irrigation systems as directed by TxDOT. The DB Contractor shall make replacement plantings in the planting season, except as otherwise approved in writing by TxDOT. The DB Contractor shall remove dead plants within ten (10) Business Days of discovery, and the DB Contractor shall replace such plants during the next planting season. Replacements shall be of the same species and variety of the originally specified material, unless otherwise approved in writing by TxDOT, and shall be installed as specified by herein. If a replaced plant requires another replacement during the maintenance and establishment period, the new replacement shall also be covered for the maintenance and establishment period.

After Final Acceptance, TxDOT will review the completed landscape installation and irrigation systems with the DB Contractor on a quarterly basis during the roadside planting and establishment period. Plant material health, mulching, erosion controls and other maintenance concerns will be specifically noted. Replacement needs will be noted and directed to the DB Contractor during the roadside planting and establishment period.

If grassed areas develop major weed or erosion problems, the DB Contractor will correct the problems. The DB Contractor shall monitor and control weeds where necessary. Acceptance of vegetative establishment of all seeded areas will be required before Final Acceptance of Project. Acceptance will occur when grass has grown at least 2” high with 95% coverage provided no bare spots larger than one square foot exists. Watering shall continue until Final Acceptance.

15.3.6 Riprap

Concrete paving (hardscape and riprap) shall conform with the requirements of Attachment 15-1 Aesthetic Guidelines and should 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. The DB Contractor shall provide recommended mitigation measures for hard-to-reach mowing areas and submit to TxDOT for review and approval.

Where rock aggregates are deemed more appropriate, such as within detention areas, (where no pedestrians are present), it may be used as riprap. The DB Contractor shall identify proposed riprap structures in plan drawings and details.

15.3.7 Lighting

The DB Contractor shall design the aesthetic enhancement lighting with the following aesthetic criteria:

- One roadway luminaire pole type for the entire project;
- One shared use path lighting fixture type for the entire project; and
- Lighting layout plan that addresses each light fixture (safety lighting fixture, under bridge fixture, aesthetic enhancement fixture, shared used path fixture) and type of light fixture (i.e. LED lighting, point source lighting, HID, etc.)

15.3.8 Color Palette

The DB Contractor shall submit a plan in conformance with the Attachment 15-1 Aesthetic Guidelines that indicates where each color is to be applied. This plan can be diagrammatic in nature, but shall list each element and its color(s). TxDOT will review and provide final acceptance of color palette.

15.3.9 Intersection Hardscape

The DB Contractor shall use concrete pavers in all raised medians and other areas as shown on Attachment 15-1 Aesthetic Guidelines at the intersections and shared use path.

15.4 Construction Requirements

The DB Contractor shall provide TxDOT sample panels a minimum of sixty (60) Days in advance of starting construction of textured concrete surfaces. The DB 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 Attachment 15-1 Aesthetic Guidelines. TxDOT must review and approve the sample panels before any construction form liners may be ordered, obtained, or used. The DB 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, the DB 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. All sample panels shall be representative of the actual panel that will be placed. Primary, secondary, and accent colors shall be displayed.

Samples shall be provided for rock aggregates, if applicable. The DB Contractor's sample(s) shall be a minimum area of 2.0 feet by 2.0 feet at the specified depth.

15.5 Aesthetic Enhancements

The DB Contractor shall provide adjacent Governmental Entities the opportunity to enhance aesthetic and landscaping features consistent with the requirements herein. The capital and maintenance costs of the adjacent Governmental Entity improvements (Aesthetic Enhancements) shall be the responsibility of the adjacent Governmental Entity. The DB Contractor shall coordinate the necessary arrangements directly with the appropriate local Governmental Entity for aesthetic enhancements within the local Governmental Entity's jurisdiction, if so required by the Work.

Aesthetic 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 (Signing, Delineation, Pavement Marking, Signalization, and Lighting) includes requirements with which the DB 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

The DB Contractor shall arrange and coordinate all meetings with local agencies that will assume responsibility for maintaining and operating roadway lighting. The DB Contractor shall provide TxDOT with notification of such meetings a minimum of forty-eight (48) hours prior to the start of the meeting. TxDOT, in its discretion, may attend such meetings.

The DB Contractor shall arrange and coordinate all meetings with requesting agencies or individuals regarding special signs.

16.3 Design Requirements

The DB Contractor shall design all signing, delineation, pavement marking, and signalization in accordance with the latest *Texas Manual on Uniform Traffic Control Devices* (TMUTCD), TxDOT's *Standard Highway Sign Design for Texas* (SHSD), TxDOT's *Sign Crew Field Book*, TxDOT's *Signs and Markings Manual*, TxDOT's *Freeway Signing Handbook* and TxDOT's Traffic Engineering Standard Sheets and TxDOT specifications.
The DB Contractor shall develop signage for the shared use path in accordance with the AASHTO Guide for the Development of Bicycle Facilities and all other applicable criteria, including signage related to safety and detour during hazardous flooding conditions.

16.3.1 Final Design

The DB Contractor shall advance the Final Design of the signing, delineation, pavement marking, signalization, and lighting based on the preliminary operational signing and roadway Schematic Design received with the Proposal. Before placing any signs, delineation, third party signs, non-standard sign structures, pavement markings, and lighting, the DB Contractor shall provide TxDOT a layout indicating the proposed location of such items.

16.3.2 Signing and Delineation

The DB Contractor shall design and install all new signs based on their proposed design. The DB Contractor's design shall include the locations of ground-mounted and overhead signs, graphic representation of all signs, proposed pavement markings, 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.

The DB Contractor shall ensure that signs are clearly visible, provide clear direction and information for users, and comply with all applicable TMUTCD *and TxDOT* requirements.

The DB 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.

The DB Contractor's design of delineators and object markers shall comply with TMUTCD and TxDOT 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, the DB Contractor shall install the signs in existing rights-of-way controlled by local or other State agencies. The DB Contractor shall coordinate with appropriate Governmental Entities for the design and installation of such signs.

16.3.4 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. The DB Contractor shall coordinate and cooperate with any third party performing such work. TxDOT may solicit input from the DB 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 the DB Contractor to fabricate and/or install these signs as a TxDOT-Directed Change.

The company currently under contract with TxDOT for logo signs is Lone Star Logos, whose phone number is (866) 627-5646.

16.3.5 Sign Support Structures

The DB 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).

The DB Contractor shall design sign support structures to provide a vertical clearance of not less than 19 feet - 6 inch between the roadway and the bottom of the sign.

16.3.6 Pavement Marking

The DB Contractor shall ensure that the design and installation of all pavement markings comply with applicable TMUTCD requirements and TxDOT's Traffic Engineering Standard Sheets.

The DB 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 and TxDOT's Traffic Engineering Standard Sheets.

The DB Contractor shall use contrast markings for broken reflectorized pavement markings on the controlled access lanes. Contrast pavement markings shall be used on concrete pavement surfaces only. Contrast markings consist of black background in combination with standard TMUTCD marking colors.

Reflectorized pavement markings shall meet the retroreflectivity requirements described in TxDOT Special Specification 8251.

The DB Contractor shall use 6 inch broken reflectorized pavement markings on general purpose lanes and toll lanes. All other broken reflectorized pavement markings shall be 4 inches.

Reflectorized profile pavement markings shall be utilized on general purpose lane and toll lane edge lines as required by TMUTCD and TxDOT's Traffic Standard Sheets.

16.3.7 Signalization

Traffic signal designs and modifications to Presidential Boulevard. and FM 973 traffic signals shall be completed in accordance with the current TxDOT standards and specifications, the TMUTCD, and the requirements of the City of Austin.

16.3.7.1 Traffic Signal Requirements

The DB Contractor shall design and install fully-actuated permanent traffic signals at all TxDOT-authorized intersections within Project limits. In addition, the DB Contractor shall modify, as appropriate, any existing traffic signals impacted by the Final Design. The DB Contractor shall coordinate with TxDOT and the appropriate Governmental Entities to define appropriate traffic signal design requirements, local agency oversight of the DB Contractor's Work, and final acceptance of traffic signals. The DB Contractor shall coordinate with the appropriate Governmental Entities for synchronization of traffic signal networks.

The DB 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. The DB Contractor shall make existing signal systems compatible with the proposed interconnections. The DB 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.

New and/or modified traffic signal equipment and installation shall conform to the City of Austin standards and requirements.

Temporary and permanent traffic signal plans shall be reviewed and approved by TxDOT and the City of Austin prior to installation of the traffic signals. The DB Contractor shall purchase and install traffic signal equipment that is compatible with approved City of Austin equipment and systems.

The DB Contractor shall provide both pedestrian and vehicle detectors at all traffic signals within the Project

Site and shall comply with TxDOT's *Accessible Pedestrian Signal (APS) Guidelines*.

The DB Contractor shall remove and salvage all existing traffic signal equipment within the Project Site. The salvaged equipment shall be delivered to the appropriate Governmental Entity or TxDOT facility. The DB Contractor shall contact the appropriate shop supervisor in advance to make delivery arrangements.

The DB Contractor is responsible for preparing traffic signal agreements (or supplements thereto) for execution by TxDOT and the appropriate Governmental Entity having operation and/or maintenance responsibilities.

16.3.7.2 Traffic Signal Timing Plans

The DB Contractor shall design signal timing plans for all new and modified traffic signals and shall submit to TxDOT for review. The DB 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. Unless timing maintenance is otherwise provided by a Governmental Entity, the DB Contractor shall be responsible for updating signal timing as necessary to maintain optimized flow. Signal timing and phasing plans at diamond interchanges shall conform to the coordinated signal phasing and timing of the corridor.

The DB Contractor shall provide copies of all final implemented signal timing plans to TxDOT and the City of Austin.

16.3.7.3 Traffic Signal Warrants

As part of the Initial Design process, the DB Contractor shall collect traffic data and prepare new traffic warrant studies for both signalized intersections at Presidential Boulevard and FM 973 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 and TxDOT's Traffic Manual. The DB Contractor

shall make recommendations for signal installations based on these warrant studies in consultation with TxDOT and the City of Austin. TxDOT will determine if a new signal or signal modification is required, based upon the warrant study.

All requests for additional new traffic signals, other than Presidential Boulevard and FM 973, within the Project ROW throughout the Term of the DBA Documents, 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, the DB 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. 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.

16.3.7.4 Traffic Signal Support Structures

The DB Contractor shall coordinate with TxDOT and the appropriate Governmental Entities to determine the type of traffic signal support structures. The DB Contractor shall obtain the maintaining Governmental Entities' approval of traffic signal support structures to be used on new or modified signal installations.

16.3.7.5 Traffic Signal Systems

The DB Contractor shall provide interconnection systems between new or modified signals and any other signal system within 0.1 miles of the Project as required by TxDOT or the appropriate Governmental Entity. The DB Contractor shall make existing signal systems compatible with the proposed interconnections. The DB 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.

The DB 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 DB Contractor shall conduct testing in accordance with the ATP and document those results to show conformance.

16.3.8 Lighting

The DB Contractor shall provide safety roadway lighting along SH 71, at intersections, underpasses (including shared use path), and on and off ramps within the Project limits.

The DB Contractor shall remove all existing underpass lighting on the existing Presidential Boulevard Bridges over SH 71 and replace the existing lighting system with a new, complete lighting system including conduit, conductors, and luminaires.

The DB Contractor shall install underpass lighting over the proposed shared use path under the SH 71 Onion Creek bridges.

The DB Contractor shall prepare lighting studies that consider illumination levels, uniformity, and sources for the roadways, interchanges, and special areas. The DB Contractor shall maintain an average horizontal luminance on the roadways as described below. The DB Contractor shall provide the photometric data results for all lighted areas within the Project limits to TxDOT for review.

The DB Contractor is responsible for preparing lighting agreements (or supplements thereto) for execution by TxDOT and the appropriate Governmental Entity having operation and/or maintenance responsibilities.

All third-party requests for lighting within the Project Site shall be subject to TxDOT approval.

The DB Contractor shall design the lighting system to minimize or eliminate illumination of areas outside the Project ROW. The DB Contractor shall design safety lighting systems in accordance with Chapters 5, 6, 7, and 9 of the TxDOT *Highway Illumination Manual*. At all times during the Term of the DBA Documents, the DB Contractor shall maintain safe lighting conditions.

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, the DB Contractor's design shall incorporate breakaway devices that are pre-qualified by TxDOT.

The DB Contractor shall place all understructure lighting in a configuration that minimizes the need for lane closures during maintenance.

The DB Contractor shall determine and design appropriate foundation types and lengths for permanent lighting structures.

The DB 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.

The DB Contractor shall minimize the potential hazards of lighting poles through the careful consideration of mounting options and pole placements, including the following options:

- Placing pole bases on existing or proposed concrete traffic barrier; and
- Placing poles behind existing or proposed concrete traffic barrier or metal beam fence.

The DB Contractor shall ensure that lighting structures comply with the Federal Aviation Agency (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, the DB 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, the DB Contractor shall find alternative ways of providing the required level of lighting.

The DB Contractor shall coordinate with the appropriate electric power provider to establish locations for all power service drops.

All new and relocated illumination assemblies shall incorporate LED luminaires. The LED assembly and luminaires shall meet TxDOT Special Specification 8777. All new illumination shall operate at 120V and 240V line voltages.

Additional underpass lighting shall be provided for widened bridges if lighting studies identify a need. Replacement of underpass lighting will be required where existing underpass lighting is damaged. New lighting shall match existing underpass lighting type.

If new underpass lighting is provided across an entire bridge, use the following specification for 150 Watt lighting units:

- Housing. Aluminum housing with integral, weather-tight LED driver compartments and high performance aluminum heatsinks specifically designed for LED lighting application.
- Bug/debris resistant LED and Optical Assembly. IESNA Type II Short Distribution. 4300K Color Temperature (derating is acceptable).
- Ratings. UL listed, suitable for wet locations.
- Mounting. See RID(UP), compatible with Underpass Light Fixture Type 1 and Type 2 mounting shaft.

- Electrical. 120-277V 50/60 hz universal electronic driver. Integral surge protection per IEEE/ANSI C62.41.

16.3.8.1 Additional Requirements

Additional requirements are as follows:

a. The DB Contractor must coordinate with the FAA regarding installation of obstruction lights, if any, on a case-by-case basis;

b. The DB Contractor must coordinate with ABIA regarding continuous lighting for the shared use path; consideration should be given to low height fixtures that are shielded as to not create an issue for aircraft operations;

c. At a minimum, underground conduit in interchange areas or temporary detours shall not be less than 2 inches or Schedule 80 polyvinyl chloride (PVC); all other underground conduit installations shall not be less than 2 inches or Schedule 40 PVC;

d. The minimum conductor size shall be #8 AWG copper. The DB Contractor shall not use duct cable for illumination purposes;

e. The DB Contractor shall place bridge lighting brackets no more than 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, the DB Contractor may use special davit-arm luminaires;

g. Minimum inside dimensions for ground boxes shall be 15.25 inches (width) by 28.25 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. Lights 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); and

l. The DB Contractor shall design and install underpass lighting for any shared use paths in the Project area.

16.3.9 Visual Quality

Notwithstanding the requirements of Section 16.3.8 (Lighting), the DB Contractor shall make a reasonable attempt to provide luminaires of equal height along the roadway.

The DB Contractor shall not use timber poles for permanent installation.

The DB Contractor shall re-sod or re-seed areas of construction disturbed by the installation of signs or lighting systems after final installation.

16.4 Construction Requirements

16.4.1 Permanent Signing and Delineation

The DB 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. The DB Contractor shall stake each sign location in the field and provide TxDOT 72 hours notice prior to installation of any sign.

The DB 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. The DB Contractor shall replace any other removed signs before the end of the work day.

The DB 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 Table 16-1 (Minimum Maintained Retroreflectivity Levels).

Table 16-1: Minimum Maintained Retroreflectivity Levels

Sign Colors	Sheeting Type (ASTM D4956-04)				Additional Criteria
	I	II	III	VII, VIII, IX	
White on Green	W*; G ≥ 7	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
W1-3, -4 – Reverse Turn and Curve
W1-5 – Winding Road
W1-6, -7 – Large Arrow
W1-8 – Chevron
W1-10 – Intersection in Curve
W1-11 – Hairpin Curve
W1-15 – 270 Degree Loop
W2-1 – Cross Road
W2-2, -3 – Side Road
W2-4, -5 – T and Y Intersection
W2-6 – Circular Intersection
W3-1 – Stop Ahead
W3-2 – Yield Ahead
W3-3 – Signal Ahead
W4-1 – Merge
W4-2 – Lane Ends
W4-3 – Added Lane
W4-5 – Entering Roadway Merge
W4-6 – Entering Roadway Added Lane
W6-1, -2 – Divided Highway Plaques Begins and Ends
W6-3 – Two-Way Traffic
W10-1, -2, -3, -4, -11, -12 – Highway-Railroad Advance
W11-2 – Pedestrian Crossing
W11-3 – Deer Crossing
W11-4 – Cattle Crossing
W11-5 – Farm Equipment
W11-6 – Snowmobile Crossing
W11-7 – Equestrian Crossing
W11-8 – Fire Station
W11-10 – Truck Crossing
W12-1 – Double Arrow
W16-5p, -6p, -7p – Pointing Arrow Plaques
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

The DB Contractor shall meet the following minimum retroreflectivity values for edge line markings, centerline/no passing barrier line markings, and lane 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); and

- Yellow markings: 175 mcd/m2/lx.

b. Type II, Paint & Beads, Pavement Markings:

- White markings: 175 mcd/m2/lx; and
- Yellow markings: 125 mcd/m2/lx.

16.4.3 Permanent Signalization

The DB Contractor shall coordinate with the Utility Owner(s) and ensure necessary power service is initiated and maintained for permanent signal systems. The DB Contractor shall ensure power is provided to all the DB Contractor-installed signals.

The DB Contractor shall provide TxDOT with copies of all signal warrant studies as required in this Section 16 (Signing, Delineation, Pavement Marking, Signalization, and Lighting). The DB Contractor shall also provide copies of all final signal timing plans to TxDOT and City of Austin.

Before placing any permanent traffic signal equipment, the DB Contractor shall provide TxDOT a layout indicating the proposed location of such items. The DB Contractor shall stake each pole location in the field and provide TxDOT 72 hours notice prior to installation of any foundation

16.4.4 Permanent Lighting

The DB Contractor shall coordinate with the Utility Owner(s) and ensure power service is initiated and maintained for permanent lighting systems. During construction, the DB Contractor shall maintain all existing lighting as temporary lighting and restore or replace any lighting that is impacted prior to Substantial Completion. At all times during the Term, safe lighting conditions shall be maintained along the Project roadway and shared used path. The DB Contractor shall stake each pole location in the field and provide TxDOT 72 hours notice prior to installation of any foundation.

The DB 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.

The DB Contractor shall place all bore pits safely away from traffic, provide positive barrier protection, and provide necessary signs to warn of the construction area.

The DB Contractor shall contact Utility Owners regarding their specific required working clearance requirements.

The DB Contractor shall affix an identification decal on each luminaire, ground box, and electrical service maintained and/or operated by the DB 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 the DB 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

The Project ITS must be compatible with such in-place system(s) that TxDOT and other agencies (including other DB Contractors) are currently operating. The DB Contractor shall coordinate the ITS planning and implementation with TxDOT and other Governmental Entities that have roadways within or intersecting the Project.

The DB Contractor shall maintain and protect the use of the existing ITS functionality within the Project at all times, except for system crossovers that are approved by TxDOT.

The Project ITS shall conform to the Regional Data and Video Communications System (RDVCS) of TxDOT's LoneStar system. The functionality of the ITS shall be such that command and control of appropriate field devices is shared and exchanged with appropriate Governmental Entities.

The DB Contractor shall be responsible for the planning, design, and installation of safe and functional ITS for the Project using Good Industry Practice. All components of the ITS shall conform to the provisions of the National Transportation Communication for ITS Protocol (NTCIP).

The Project ITS shall operate under the TxDOT's LoneStar system and Center-to-Center (C2C) concept of operations. Communication and interoperability shall be achieved with the TxDOT Austin ITS center, such that with appropriate privileges, access to data, command, control and information sharing can occur. All communication and access of information shall occur in near real-time (within logistical restraints).

The DB Contractor shall include in its initial PBS and Project Status Schedule Updates a date by which TxDOT must provide the ITS equipment being provided by TxDOT pursuant to section 17.2.3. Such date must be 90 days prior to the DB Contractor's scheduled date of installation of such ITS equipment.

17.2 Design Requirements

The DB 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 (Design Requirements) 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. The DB Contractor shall prepare a preliminary ITS layout for review and concurrence by TxDOT to ensure adequate planning of the ITS implementation.

Subject to the specific requirements of this Section 17 (Intelligent Transportation Systems), the DB Contractor shall determine the number and specific locations of all ITS components based on Attachment 17-1 (Conceptual ITS Layout).

The DB Contractor shall provide safe ingress/egress areas and structures to accommodate authorized personnel access to ITS components for the installation of the communication system.

The DB Contractor shall provide cross section at all ITS devices and indicate duct bank locations in roadway cross sections.

17.2.1 ITS Communications Requirements

The communications network shall serve the highway ITS components along the highway elements of the Project.

The DB Contractor shall design and construct a fiber optic infrastructure which includes duct banks, conduit, junction boxes, and equipment slabs based on CTRMA and TxDOT specifications and plans shown in RID's. All duct banks shall be concrete encased per CTRMA and TxDOT specifications

The System Integrator (SI) will be responsible for the providing, installation, splicing, testing, and connecting all fiber optic cables, including splice cases, patch panels and incidental materials fiber optic markers and test stations for tolling equipment.

ITS fiber optic communications conduit infrastructure shall be dedicated to the ITS operation of the Project, however, it can share the same trench and/or conduit duct bank with the CTRMA tolling fiber optic communications conduit infrastructure. Fiber will be installed on the corridor as identified in Attachment 17-1 (Conceptual ITS Layout) and to the first main lane plaza on SH 130 north of the interchange of SH 71 and SH 130.

17.2.2 Connectivity

The DB Contractor shall repair each communication cable or electrical conductor that is severed or otherwise rendered not usable.

17.2.3 CCTV Cameras

For the limits between FM 973 and east of SH 130, the DB Contractor shall provide two (2) CCTV cameras for Incident verification, traffic management and construction 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. The DB Contractor shall illustrate viewing angles and occlusions from proposed and existing signing on proposed plan and profiles plans.

For the limits west of FM 973, TxDOT shall provide two (2) wireless CCTV cameras for Incident verification, traffic management and construction management. DB Contractor shall be responsible for the installation of wireless CCTV cameras. Wireless CCTV cameras shall be installed to 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. The DB Contractor shall illustrate viewing angles and occlusions from proposed and existing signing on proposed plan and profiles plans.

Equipment

The DB Contractor shall provide all necessary CCTV equipment to be used east of FM 973, including cameras, camera controls, cables, and connections. The DB Contractor shall provide all the equipment necessary for TxDOT secondary control of all CCTV cameras. The method of secondary control shall be in accordance with TxDOT standards and specifications.

The DB Contractor shall provide a digital video format and communications protocol at all connections with TxDOT systems. The format and protocol provided by the DB Contractor shall be compatible with systems in use by TxDOT, and if necessary convertible for use by TxDOT's in-place ITS network.

TxDOT shall provide all necessary wireless CCTV equipment to be used west of FM 973, including cameras, camera controls, cables, and connections.

17.2.3.1 Placement

The DB Contractor shall provide overlapping roadway coverage by CCTV cameras for all highway lanes and intersection 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 general purpose lanes, 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, the DB contractor shall mount cameras on dedicated structures unless otherwise approved by TxDOT.

The DB Contractor shall locate cameras as identified in Attachment 17-1 (Conceptual ITS Layout). These locations shall provide coverage of Presidential Boulevard, FM 973, and SH 130. Exact camera locations will be approved by TxDOT prior to any CCTV structure construction.

Distance between CCTV cameras shall not exceed 1.5 miles.

17.2.4 Radar Vehicle Sensing Device

The DB Contractor shall provide one (1) permanent Radar Vehicle Sensing Device capable of detecting each highway lane of the Project measuring vehicle classification, vehicular volume, lane occupancy, and speed information on the roadway. The Radar Vehicle Sensing Device shall be non-intrusive to the roadway users. The DB Contractor shall transmit wirelessly to TxDOT the raw data collected by the Radar Vehicle Sensing Device.

Radar Vehicle Sensing Device shall be located as identified in Attachment 17-1 (Conceptual ITS Layout). Exact Radar Vehicle Sensing Device location will be approved by TxDOT prior to construction.

17.2.5 Portable Changeable Message Signs (PCMS)

The DB Contractor shall provide, during the construction phase, two (2) electronic PCMS that can be remotely operated from the construction office. Location and placement shall be approved by TxDOT.

PCMS shall be used to inform motorists of the availability of alternate routes, and to advise travelers of adverse road conditions and congestion. PCMS shall be placed to provide a driver-friendly sign-viewing angle at each DMS location. The DB Contractor shall position each PCMS to allow motorists to safely view the messages being displayed.

17.2.6 Lane Control Signals (LCS)

Not applicable.

17.2.7 Dynamic Message Signs (DMS)

Working with TxDOT, the DB Contractor shall design and construct the foundations, structures, trusses and conduit for the installation of three (3) LED technology electronic DMS in locations shown in Exhibit 17-1.

The DB Contractor is responsible for all underground conduits from the power source to the DMS including junction boxes. The DB Contractor shall coordinate all work with the SI to determine the type, quantity and design of the conduit and ground boxes required to support the ITS network and other operations.

TxDOT will be responsible for providing, installing and connection of the DMS. DMS must be shown on signing layouts, plans and profiles to illustrate viewing angles and occlusions

17.2.8 DB Contractor Communication Hub Enclosures/Communication Cabinets

Not applicable.

17.3 Construction Requirements

17.3.1 General

The DB Contractor shall coordinate with Utility Owner(s) and ensure that power service is available for permanent ITS systems.

17.3.2 Salvaging Existing Items

Not applicable.

17.3.3 Existing ITS Relocation

Not applicable.

18 TRAFFIC CONTROL

18.1 General Requirements

The DB Contractor shall design and construct the Project, in conformance with the requirements stated in this Section 18 (Traffic Control), 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. The DB Contractor shall coordinate with local government entities on the development of the Traffic Control Plan (TCP).

It shall be the responsibility of the DB Contractor to gain approval from the appropriate Governmental Entity or property owner on each intersecting street or driveway closure.

The DB Contractor will also be required to coordinate their construction activities with the Del Valle school district to maintain existing bus stops and bus traffic through the Project limits.

During all phases, temporary or existing 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

The DB 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 DB Contractor's public information personnel and notify the public of maintenance of traffic issues in conjunction with the requirements of Section 3 (Public Information and Communications);

l. Descriptions of contact methods, personnel available, and response times for any deficiencies or Emergency conditions requiring attention during off-hours;

m. Procedures for night work (sundown to sun rise) to include a work zone light system design in accordance with NCHRP Report 498 – *Illumination Guidelines for Nighttime Highway Work;*

n. The DB 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 modifications. Where available and when possible, the DB Contractor shall coordinate and utilize Dynamic Message Signs on the regional ITS system; and

o. The DB Contractor shall utilize uniformed police officers to effect SH 71 lane closures.

The TMP must be approved by TxDOT prior to the start of construction activities. The DB 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.

If at any time, TxDOT, in its sole discretion, determines that construction-related back-ups become unreasonable, modifications to alleviate the congestion shall be taken immediately. The development and implementation of these contingency plans shall be at the DB Contractor's expense.

18.3 Design Requirements

18.3.1 Traffic Control Plans

The DB 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.

The DB 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. The DB 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 ten (10) Days prior to implementation. 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. Approved

traffic control devices can be found in the *Compliant Work Zone Traffic Control Device List* (CWZTCD list).

The DB Contractor shall maintain signing continuity on all active roadways within or intersecting the Project at all times.

Throughout the duration of the Project, the DB Contractor shall ensure all streets and intersections remain open to traffic to the greatest extent possible by constructing the Work in stages. The DB 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.

The DB Contractor shall prepare public information notices, in accordance 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.

High pedestrians traffic volumes exist within the Project limits as identified in the Texas Transportation Institute report titled "Pedestrian and Bicycle Study State Highway 71 – Del Valle Area". Equally as important as the safety of the road users travelling through the Project limits is the safety of pedestrians. The DB Contractor must accommodate the needs of the pedestrians, including those with disabilities, when preparing the traffic control plans. The following considerations must be addressed when temporary pedestrian pathways within the Project limits are designed:

- Provisions for continuity of accessible pedestrian paths should be incorporated into the traffic control plans;
- Access to CapMetro transit stops must be maintained;
- A smooth, continuous hard surface should be provided throughout the entire length of the temporary pedestrian facility,
- The geometry and alignment of the temporary facility shall comply with ADA requirements; and
- Blocked routs, alternate crossings, and sign and signal information must be communicated to pedestrians.

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) 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 general purpose lanes, and major crossing streets is 11 feet. For minor crossing streets, TxDOT may, in its sole discretion, allow 10 foot lanes in limited circumstances during construction for short distances after reviewing the DB Contractor's traffic control plan.

Shoulders. A minimum 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

Closures will only be permitted when the DB Contractor can demonstrate that the closure will provide clear benefit to the progress of the Work. Closures must be coordinated with adjacent projects and priority shall be given to the closure submitted first.

Lane Closure

The DB Contractor shall not reduce the number of roadway general purpose lanes along SH 71 below the current number of general purpose lanes during Peak Times. The DB Contractor may lower the number of roadway lanes in each direction during Off-Peak Times provided that a minimum of two (2) roadway general purpose lanes are provided in each direction.

The DB Contractor shall be required to maintain the correct number of FM 973 lanes at all times during construction. The DB Contractor shall seek TxDOT approval if a reduction in the current number of FM 973 lanes is required. The DB Contractor shall inform TxDOT fourteen (14) days in advance of commencing Work.

A full closure of Presidential Boulevard without coordination with ABIA and approval by TxDOT will not be permitted. The DB Contractor shall phase construction to maintain at least one (1) lane open in each direction at all times.

If bridge construction or demolition cannot be performed safely within these requirements, roads may need to be closed and traffic detoured during the lowest-volume times between the hours of 11:00 pm through 5:00 am. The DB Contractor shall seek TxDOT's approval for such traffic closures a minimum of twenty-one (21) days in advance of proposed closure.

Any complete roadway closure will require a Traffic Control Plan with appropriate detour routing to be submitted and approved by TxDOT.

The DB Contractor shall coordinate with the System Integrator (SI) and shall provide traffic control for the installation of the tolling system and ITS.

The DB Contractor will be required to provide the lane closures and traffic control measures required by the SI within the Project limits for the installation of the tolling system and ITS.

Driveway Closures. The DB Contractor shall maintain a minimum of one 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 thirty (30) consecutive days or more than forty-five (45) days in a ninety (90) day period.

18.3.1.3 Detour Usage

The DB Contractor shall use State routes for detour routes, wherever applicable. If State routes are unavailable, the DB Contractor shall use local roadways, provided that the DB Contractor has obtained TxDOT approval and the necessary permits from the Governmental Entity having jurisdiction.

The DB Contractor shall provide motorists with guidance on the use of alternate routes to divert traffic 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. Motorist guidance to and along detour routes shall be provided, together with regional guidance.

18.3.2 Restricted Hours

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:

- During

a. Austin City Limits Music Festival;

b. Circuit of the Americas Grand Prix Events;

c. South by Southwest;

d. Republic of Texas Rally;

e. Up to five (5) days (per year) of The Star of Texas Fair and Rodeo (as directed by TxDOT); and

f. On any other high traffic days or holidays (up to ten (10) days per year) as determined by TxDOT.

- For the following days or events, lane closures are not permitted after 3:00 PM on the day preceding and on the day of:

  a. University of Texas home football games; and

  b. University of Texas Graduation Day.

- No lane closure that restricts or interferes with traffic shall be allowed from noon on the day proceeding 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 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); and

  g. Christmas Holiday (December 23 through December 26).

The DB Contractor shall implement a Traffic Control Plan along FM 973 in accordance with the Texas Transportation Commission Minute Order number 113711 dated September 26, 2013 during certain Circuit of The Americas events. The DB Contract shall coordinate with adjacent contractors to implement the full limits of this traffic control.

18.3.3 Hurricane Evacuations

The DB Contractor shall provide a Hurricane Evacuation Plan by May 15th of each year, for TxDOT's approval. The Hurricane Evacuation Plan shall demonstrate how to keep three (3) lanes (or existing condition prior to construction), in each direction open to traffic within two (2) days of TxDOT's notification. The yearly approved Hurricane Evacuation Plan must be updated continuously throughout each Hurricane season to reflect changes due to the ongoing construction operation.

Hurricane Season is from June 1 through November 30. TxDOT will coordinate these restrictions at a minimum of 120-hours from any projected impact to the Texas coast.

No time charges will be made if TxDOT determines that work on the Project was impacted by the hurricane.

18.4 Construction Requirements

Construction shall be in accordance with the DB Contractor's TMP, the manufacturer's directions or recommendations where applicable, and the applicable provisions of the TMUTCD.

18.4.1 DB Contractor Responsibility

If at any time TxDOT determines the DB Contractor's traffic control operations do not meet the intent of the TMP or any specific traffic control plan, the DB Contractor shall immediately revise or discontinue such operations to correct the deficient conditions.

The DB Contractor shall provide TxDOT the names of the traffic control coordinator and support personnel, and the phone number(s) where they can be reached twenty-four (24) hours per day, seven (7) days per week.

18.4.2 Access

Existing bicycle and pedestrian access and mobility shall be maintained parallel with SH 71 and across all cross streets. Access to existing transit stop locations shall be maintained during construction or reasonable alternative locations shall be provided.

18.4.3 Detours

The DB 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. The DB Contractor shall repair any damages due to detour traffic onto local roads.

18.4.4 Local Approvals

The DB Contractor shall communicate any ramp closure and staging analysis with the Governmental Entity having jurisdiction within the Project. The existing ramp from eastbound SH 71 to SH 130 must be maintained open at all times except as provided below. The DB Contractor shall be responsible for any and all user costs that may be assessed for the closure of the SH 130 ramp. This may include traffic operation analysis, temporary traffic control devices, and road user costs, all payable to TxDOT.

The DB Contractor will be required to provide a two month notice including a written work plan detailing closures on SH 130 to allow for adequate coordination with the Central Texas Turnpike System.

It shall be the responsibility of the DB Contractor to gain approval from the appropriate Governmental Entity for all traffic control measures on each intersecting street.

18.4.5 Pavement Markings

The DB Contractor shall 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

The DB 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 the DB Contractor moves any equipment not licensed for operation on public highways on or across any pavement, the DB Contractor shall protect the pavement from all damage caused by such movement. Any damage caused by the operation of the DB Contractor shall be repaired at the expense of the DB 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

The DB 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. All material stockpiles shall not be located within the clear zone of any traveled lane, unless positive protection is provided.

19 MAINTENANCE

19.1 General Requirements

The DB 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

The DB 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 the DB 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; and

h. Perform systematic Project inspections, periodic maintenance, and routine maintenance in accordance with the provisions of the DB Contractor's Maintenance Management Plan and the DB Contractor's Safety Plan.

The DB 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 Attachment 19-1 (Performance and Measurement Table Baseline).

19.1.2 Maintenance Management Plan (MMP)

The DB 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 DBA Documents. 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 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. The DB 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 the DB Contractor, and response times for other defects. The DB 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 DBA Documents 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 DBA Documents.

The DB 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.

19.1.3 Maintenance During Work

The DB Contractor shall be responsible for maintenance and repairs to any portion of the Work until Final Acceptance is issued in accordance with the DBA Documents. The Work shall include 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. If DB 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. Upon Final Acceptance, and provided that TxDOT does not implement a Capital Maintenance Agreement, TxDOT shall assume the maintenance obligations.

20 BICYCLE AND PEDESTRIAN FACILITIES

20.1 General Requirements

This Section 20 (General Requirements) includes requirements with which the DB Contractor shall design and construct all shared use paths and pedestrian facilities for the Project. The DB Contractor shall ensure the shared use path and pedestrian facilities of this Project support TxDOT's commitment to integrate bicycle and pedestrian travel into Project development. The DB 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. When working in City of Austin ROW, the DB Contractor shall comply with all appropriate Laws such as, but not limited to City of Austin Tree Ordinance requirements.

20.2 Administrative Requirements

The DB Contractor shall maintain and keep operational all shared use paths and pedestrian facilities during construction and throughout the Term of the DB Contract.

20.3 Design Requirements

20.3.1 Bicycle Facilities

The DB Contractor shall be consistent with the region's bicycle and pedestrian plan and Attachment 20-1, (TTI Pedestrian and Bicycle Study State Highway 71 – Del Valle Area). The DB Contractor shall coordinate with Governmental Entities to ensure consistency with regional multi-modal facilities. The DB Contractor will be responsible for securing all agreements with ABIA for the construction of the shared use path within the airport property.

The DB Contractor's facilities shall meet the requirements of the AASHTO *Guide for the Development of Bicycle Facilities* as they relate to the design of shared use paths and shall incorporate the following elements relating to shared use path facilities into the Design:

a. Alignment, profile, cross-section and materials;
b. Points of connection to proposed multi-modal facilities;
c. Signing, signalization, and pavement markings;
d. Separation between shared use path facilities and nearest travel lane;
e. Methods of illumination, where applicable; and
f. Requirements submitted in the Aesthetics and Landscaping Plan.

20.3.2 Pedestrian Facilities

The DB Contractor shall design, construct, and maintain sidewalks along the FM 973 and side streets where sidewalks currently exist and where shown on the Schematic Design. Sidewalks and pedestrian facilities shall comply with the *Texas Accessibility Standards*. The DB Contractor shall install pedestrian signals, crosswalks, and curb ramps at all signalized intersections. All pedestrian facilities shall be designed to incorporate ambulatory, visibility, and auditory needs of all users and shall include the following elements related to pedestrian facilities:

a. Alignment, profile, cross-section and materials;
b. Points of connection to pedestrian facilities;
c. Signing, signalization, and pavement markings;
d. Separation between sidewalks facilities and nearest travel lane;

e. Methods of illumination, where applicable; and
f. Requirements submitted in the Aesthetics and Landscaping Plan.

The use of raised concrete islands may be considered for providing refuge for crossing pedestrians.

All pedestrian/bicycle facilities must be designed in accordance with the latest *Americans with Disabilities Act Accessibility Guidelines* (ADAAG).

The DB Contractor is responsible for obtaining TDLR reviews and approvals of pedestrian facility design and construction.

The DB Contractor will be responsible for installing all new bus stops as shown in the RIDs.

21 TOLLING

21.1 Contractor's Responsibilities

The DB Contractor's responsibilities, relating to the toll systems, fall into four (4) general areas: site, subgrade, at grade, and above grade. All construction materials shall be in accordance with these Technical Provisions. The DB Contractor shall not use any experimental or previously unapproved materials for incorporation into the Project.

The DB Contractor is responsible for the toll system infrastructure design and construction as defined in Attachment 21-1 (Toll Facility Responsibility Matrix). This matrix sets out the DB Contractor primary, support and coordination responsibilities for this work.

The DB Contractor will be required to tie the new duct banks on SH 71 into the existing TxDOT duct banks at the intersection of SH 130 and SH 71. The SI will pull all the fiber to the first mainlane toll plaza on SH 130 north of SH 71 (about 5 miles).

Construction of the fiber optic cable shall be dedicated to the operation of the Project and shall not be comingled with other roadway systems.

Site: Working with the SI, the DB Contractor must design, procure, and/or construct various site infrastructure elements, including Toll Zone foundations and above ground equipment slabs to support the installation of the toll collection system. The DB Contractor will be responsible for bringing the power source to the Project at the ROW line for supporting all tolling and network equipment.

Subgrade: Working with the SI, the DB Contractor shall design and construct conduits and duct banks systems for communication and power distribution systems. The DB Contractor is responsible for all underground conduits from the power source to the gantries including junction boxes. The SI is responsible for all communication fiber. Subgrade items including, but not limited to, utilities, gantry foundations, and drainage systems shall be coordinated with and accommodate the SI's toll collection system. Unless otherwise specified herein, the Work shall be governed by TxDOT and the Authority standards and specifications. The DB Contractor is responsible to coordinate with the SI and include the toll collection systems subgrade requirements into the Project Design.

At Grade: Working alongside the SI, the DB Contractor shall design and construct various at grade elements including, but not limited to, pavement sections, site work, power source to support the installation of the toll collection system, and all junction boxes, conduit, and duct banks. The DB Contractor shall construct, as part of the Work, all paving and roadway work, and special pavement sections at the Toll Zone areas in accordance with CTRMA – *Fixed Price Tolling Standards.* The DB Contractor shall design and construct primary power service and the facilities required to support the emergency natural gas generator backup electrical service systems, as per the SI requirements, if natural gas is available. The DB Contractor is responsible for lightning protection, and electrical grounding systems. Working with the SI, the DB Contractor shall design and construct the concrete slabs to support the environmentally controlled roadside cabinets that house and support the physical components of the toll collection system.

Above Grade: Working with the SI, the DB Contractor shall design and construct various above grade elements, including but not limited to, gantry columns, gantry truss to support the installation of the toll collection system, equipment support framing on gantry truss, construction of the roadway, and other miscellaneous civil works. The gantries to include lightning protection and supporting frame to hold toll collection equipment in accordance with the SI requirements. The DB Contractor shall design and install all signage related to each tolling location. The DB Contractor shall design and construct gantries and toll

equipment supports as per the SI requirements. All guide, warning, regulatory, and special toll signs pertaining to the Work shall be in accordance with TxDOT standards and the TMUTCD.

Special Considerations: Working with the SI, the DB Contractor must design and construct facilities that will accommodate the installation and operation of the electronic toll collection system. It is the responsibility of the DB Contractor to fully integrate the SI's plans and schedule, provide qualified and experienced designers and be aware of various constraints and considerations within the toll collection system. The DB Contractor must coordinate with the SI to facilitate the timely installation of the Authority improvements.

The DB Contractor shall complete the following items of the Work prior to the SI commencing installation:

- Final pavement through the Toll Zone (500 feet on each side of the Toll Zone with unobstructed access);
- Complete Toll Zone;
- Complete duct banks and conduits in vicinity of Toll Zone location;
- Installation of permanent power;
- Support foundations required for SI equipment installations;
- Roadside cabinet slabs; and
- Lightning protections and grounding systems.

The DB Contractor shall complete the following items of the Work prior to the SI commencing acceptance testing:

- Complete paving for the Project;
- Complete duct banks for the Project; and
- Complete lighting for the Project,

The DB Contractor is responsible for providing enough time prior to Substantial Completion of the Project to accommodate all SI installation and operational testing.

22 OPERATIONS (ROADWAY)

Not applicable.

23 OPERATIONS (TOLLING)

23.1 General

To support the toll system components and communication between the Toll Zone and the Authority's back-office operations, the DB Contractor shall provide:

a. Conduit – At the Toll Zone, below grade conduit is required to support power delivery;

b. Duct banks – A Duct banks is required along the entire length of the Project. Lateral conduits are required to reach the Toll Zone, to support connectivity with adjacent facilities and to support various tolling components along the road; and

c. Tolling Equipment and Mounting Brackets – Working closely with the SI, the DB Contractor must design gantries to support tolling equipment and mounting brackets to be provided and installed by the SI. The SI shall be responsible for the installation and termination of the fiber optic cables in the Duct banks required for the toll system, including fiber optic cable laterals and all fiber and communications required at the Toll Zone.

23.2 Subgrade Infrastructure

Design and construction of all conduits and duct banks s shall be in accordance with:

a. NESC;

b. NEC (NFPA 70) National Electrical Code;

c. TXDOT Electrical Design Standards and Details; and

d. SI requirements.

The DB Contractor is responsible for all below grade electrical facility grounding circuit and lightning protection system conductors. The electrical facility grounding design shall comply with:

a. NFPA 780 Standard for the Installation of Lightning Protection Systems;

b. NEC (NFPA 70) National Electrical Code;

c. NESC C2 National Electrical Safety Code;

d. USDA RUS Bulletin 1751F802 Electrical Protection Grounding Fundamentals; and

e. TXDOT Electrical Design Standards and Details.

Design and construction of conduit and equipment in support of communication services shall be in accordance with:

a. USDA RUS Bulletin 1751F-640 Design of buried plant, physical considerations;

b. NEC (NFPA 70) National Electrical Code;

c. TXDOT Electrical Design Standards and Details; and

d. SI requirements.

23.3 At-Grade Infrastructure

Horizontal Alignment. The toll approach and departure areas shall be located in a relatively straight segment of roadway enabling adequate sight distance for identification on approach.

Cross Slope. Through the toll collection area the lanes shall have a 2% minimum cross slope. Adequate care should be taken to ensure the roadway drains properly with no ponding or sheet flow.

Pavement. Pavement shall be in accordance with CTRMA- *Fixed Price Tolling Standards*. Concrete pavement requires reinforcement with non-steel components within the Toll Zone.

Parking Lot and Driveway. Not required.

Bonding and Grounding. The DB Contractor is responsible for all electrical facility grounding circuits and lightning protection systems and conductors. All conductors entering the toll facility shall be protected, bonded, and grounded to route lighting strike currents away from all electrical and electronic systems. The DB Contractor shall design and construct the electrical facility grounding system in accordance with:

a. NFPA 780 Standard for the installation of Lightning Protection Systems;

b. IEEE 142 Recommended Practices for Grounding of Industrial and Commercial Power Systems;

c. NEC (NFPA 70) National Electrical Code;

d. NESC C2 National Electrical Safety Code;

e. USDA RUS Bulletin 1751F802 Electrical Protection Grounding Fundamentals; and

f. TXDOT Electrical Design Standards and Details.

Electrical Service. The DB Contractor is responsible for all electrical power services, feeder and branch circuit components, apparatuses, and conductors. The DB Contractor shall design and construct primary service systems as per the SI requirements. The DB Contractor shall design and construct all electrical service, feeder and branch circuits as per:

a. NEC (NFPA 70) National Electrical Code;

b. NFPA 37 Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines;

c. IEEE C62.41 IEEE Guide on the Surge Environment in Low-Voltage (1,000 V and Less) AC Power Circuits;

d. USDA RUS Bulletin 1751E-320 Emergency generating and charging equipment;

e. TxDOT Electrical Design Standards and Details;

f. NFPA 99 for generators in healthcare facilities;

g. Emergency Power Supply System: NFPA 110, Level 2; and

h. SI requirements.

Communications. The DB Contractor shall design and construct conduits and the Duct banks for communication services to support the installation of the toll collection system in accordance with:

a. USDA RUS Bulletin 1751F-640;

b. IEEE 62.64 Standard Specifications for Surge Protectors Used in Low-Voltage Data, Communications, and Signaling;

c. Executed DBA Documents;

d. NEC (NFPA 70) National Electrical Code;

e. TXDOT Electrical Design Standards and Details; and

f. SI requirements.

23.4 Above Grade Structures for Electronic Toll Collection (ETC) System

The DB Contractor shall design and construct the required structures to support the installation and operation of the toll system. The DB Contractor's toll system structures shall be in accordance with CTRMA – *Fixed Price Tolling Standards*.

Equipment Enclosures. Equipment enclosures will be used to house the toll collection equipment and ITS components. Working with the SI, the DB Contractor will establish the precise location. The remote equipment enclosures shall meet the SI's mechanical, electrical, environmental, and security requirements.

Gantries. Both the toll lanes and ramp locations require gantries to mount antennas, cameras, vehicle separation equipment, and other toll system components. Working with the SI, the DB Contractor will establish the precise locations for each of the gantry structures. Foundation, Tower and Truss design shall be in accordance with TxDOT OSBs requirements.

Signage. The DB Contractor shall be responsible for the design and construction of the toll facility signage.

23.5 DB Contractor's Coordination Responsibilities

The DB Contractor shall coordinate the design and construction with the SI to accommodate the design and systems operating software, and ensure the Project schedule incorporates the time required to design, construct, procure, integrate, and test all equipment to be used by the Authority during tolling operations and maintenance of the Project.

a. Coordinating closely with the SI to assure the DB Contractor's design corresponds with the SI's requirements; and

b. Provide a monthly schedule clearly incorporating the SI's work and testing.

Prior to Substantial Completion, the Authority will perform a controlled test of all system elements as they relate to the tolling operations. The DB Contractor shall be responsible for incorporating a period of time, for controlled testing of all system elements related to toll operations.

Final tolling operations for the Project, after Final Acceptance, will solely be the responsibility of the Authority or a third party vendor assigned by the Authority. The DB Contractor responsibility for coordination of tolling operations will cease upon completion of a successful test and Authority acceptance of all system components.

24 TOLL SYSTEM INTEGRATOR'S RESPONSIBILITIES

24.1 Toll Systems

The SI will have the responsibility for the design, procurement, and installation of the toll system and required communications.

The SI will have the responsibility for the design, procurement, and installation of the tolling equipment, cameras and antennas which includes:

a. Video tolling cameras, antennas, mounting brackets, cabling and camera programming and configuration;

b. Inductive loops, loop wiring, loop detection hardware and software;

c. Network switch, equipment racks and cabling; and

d. Supporting systems and buildings

The SI will have the responsibility for the design and installation of the fiber optic cable infrastructure for the Project and fiber optic infrastructure connections.

The SI will have the responsibility for the design, procurement, and installation of the supporting electrical systems sufficient for the operation of the communications and network equipment.

The SI will have the responsibility for the design, procurement, installation and maintenance of the network hardware, required server and storage systems at the Authority data center for this Project.

24.2 Facilities Security System

The SI will have the responsibility for the design, procurement, and installation of the security system for the toll system.

24.3 Final Acceptance

Final tolling operations for the Project, after Final Acceptance, will solely be the responsibility of the Authority or a third party vendor assigned by the Authority.