TEXAS DEPARTMENT OF TRANSPORTATION

TECHNICAL PROVISIONS

FOR

Southern Gateway Project

December 19, 2016

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SECTION 1.0 GENERAL

1.1 Project Description

The purpose of the Project is to design, construct, and potentially maintain an approximately 5.1-mile section, of Interstate Highway 35E ("I-35E") from Colorado Boulevard to south of the I-35E/US 67 interchange (with transition work extending north to approximately Reunion Boulevard) and an approximately 4.9-mile section of U.S. Highway ("US") 67 from the I-35E/US 67 interchange to I-20 in Dallas County, Texas.

The approximate limits of the Work shall be as shown in the TxDOT Schematic Design developed in coordination with the Environmental Assessment for the Project.

1.2 Project Scope

DB Contractor shall be responsible for all Work required for performance of design and construction of all areas included within the scope of the Project. The DB Contractor shall be responsible for performing utility design and relocation for all utilities and shall acquire all Remaining Project ROW required to construct the Project.

As further described in Section 2.1.3 of the Agreement, any material change to the Project Elements listed as Basic Configuration must be submitted for TxDOT review and written approval.

1.2.1 Basic Configuration

The Work shall conform to the Basic Configuration and be consistent with the TxDOT Schematic Design. DB Contractor shall design and construct the Elements described below:

a) Section 1:

- Full reconstruction of I-35E from near Colorado Boulevard to south of the I-35E/US 67 split, approximately 5.1 miles in length.
  - Reconstruction of the existing eight general purpose lanes to ten general purpose lanes.
  - Reconstruction of the existing one reversible High Occupancy Vehicle ("HOV") lane to two reversible non-tolled managed express lanes.
  - Reconstruction of the discontinuous frontage roads and four lane frontage roads to four to six lane frontage roads.
- Incidental improvements extending 1.3 miles north of Colorado Boulevard or as required to accommodate the transition into the Horseshoe Project.
- Full reconstruction of US 67 from I-35E to south of Kiest Boulevard as shown on the TxDOT Schematic Design.
  - Reconstruction of the existing 4 general purpose lanes to six general purpose lanes.
  - Reconstruction of the existing one reversible HOV lane to one reversible non-tolled managed express lane.

b) Section 2A: Widening the existing US 67 pavement from south of Kiest Boulevard to I-20, approximately 4.9 miles in length.

   - Reconfiguration of the existing two concurrent HOV lanes to one reversible non-tolled managed express lane (to include new construction or reconstruction as necessary to achieve the specified requirements).

   - Widening of the existing pavement to accommodate an additional general purpose lane in each direction for a total of six general purpose lanes.

c) Local Enhancements:

   - I-35E mainlane, express lane, and ramp design that provides clearance necessary to install all signage, utilities, fire protection, ventilation equipment, and other appurtenances beneath the ultimate deck plaza superstructure whether these elements are constructed by the DB Contractor or others.

   - Construction of the deck plaza structure elements as specified in Section 22 of the Technical Provisions.

1.3 Transitions to Adjacent Infrastructure, Roadways, and Facilities

DB Contractor shall design and construct transitions and interconnections to be compatible and uniform at interfaces with adjacent infrastructure, roadway, and facilities and related appurtenances. All connections and tie-in points shall be designed according to the standards and requirements of the Persons having jurisdiction.

DB Contractor shall coordinate with Persons, including other contractors, performing work at or adjacent to the Site to provide seamless transitions from the Project to any work proposed, being developed, or existing. DB Contractor shall remove any temporary transitions which are not intended to accommodate permanent traffic operations connecting the proposed improvements to existing roadways and shall restore all areas within the Work or impacted by the Work.

DB Contractor shall minimize disruption to traffic operations and adjacent property access throughout the performance of the Work.

1.4 General Construction Requirements

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

1.5 3D Design Files

Although the development of three-dimensional models are not expressly required as part of the Project, any three-dimensional models developed shall be delivered to TxDOT with the Record Documents.

1.6 Offices, Equipment, and Vehicles

Except where noted elsewhere in the Agreement, DB Contractor and TxDOT shall co-locate until Final Acceptance to facilitate Project coordination and daily communication. The definition of "co-locate" for the Term of the Agreement is office space meeting the conditions of these Technical Provisions that are within one-half mile of the Project ROW, or as approved by TxDOT.

DB Contractor shall provide TxDOT office space (i.e., available for occupancy) within sixty Days of issuance of NTP1. The office space requirements for the Project office are provided below.

1.6.1 Office Network and Systems

DB Contractor shall, for each TxDOT representative, provide, furnish, install, operate, and maintain the following for the TxDOT core and field office spaces:

(a) A local area network (LAN) with a minimum two 100 megabits per second (Mbps) network drops for each personal office area and a minimum of four 100 Mbps drops for each conference room. DB Contractor shall connect all TxDOT computers, printers, plotters, copiers and scanners via a local area network separate from DB Contractor's network. 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 (Wi-Fi ®) coverage within the office. The wireless network shall be capable of 802.11 a/b/g/n/ac;

(b) A touch-tone telephone system (with voice mail) separate from DB Contractor's system with at least one telephone, with speaker, for each personal office area. Also provide at least one telephone, with speakers, and a minimum of one satellite microphone for each conference room. The telephone system shall have the ability to host two lines per telephone, access all outside lines, receive any incoming call, caller identification, conference-call capability (three-way calling), call forwarding, call transfer, hold, hold music, and send to voice mail functionality;

(c) Access to DB Contractor's electronic document management system (EDMS) systems for file sharing, collaboration, reviews, and responses at each personal office area and within each conference room;

(d) One laptop docking station compatible with TxDOT staff's computers with two flat panel widescreen monitors, including all necessary peripherals, for each personnel office area and the reception area in the Project office. Monitors shall be Dell U2415 flat panel monitors or equivalent with prior TxDOT approval;

(e) Peripherals shall include at minimum, monitor stand, docking station for laptop computers, wireless mouse, and wireless keyboard. DB Contractor shall provide one external hard drive with not less than two terabytes of memory per external hard drive;

(f) Three laptop computers for use by TxDOT's field staff. Laptops shall be new systems with at least a one year manufacturer's warranty. Minimum configuration for the laptop computers shall consist of no less than four GB internal ram, 500 GB hard drive, two (2.0) GHz dual core processors operating on a 64-bit platform. The system shall include not less than: internal Wi-Fi, graphics processor, audio card, an HDMI port, at least three USB ports; / specifications, operating systems and software shall generally be the same as those used by technical staff on DB Contractor's team;

(g) Each computer shall be configured and tested with the following minimum ordinary software requirements. Brand names are provided as examples, equally capable and compatible software can be installed with TxDOT's prior approval. Latest version or latest edition software shall be defined as the latest commercially available software at the time of the execution of DB Contractor's contract, or issuance of NTP1, whichever is later:

(i) Microsoft Windows 10;

(ii) Microsoft Office Professional latest edition (Office, PowerPoint, Outlook, Excel);

(iii) Adobe Acrobat reader (latest version);

(iv) Google Earth (free version);

(v) Internet Explorer and Google Chrome;

(vi) Anti-virus software with latest updates;

(vii) DVD software driver compatible with the shared external DVD drive;

(viii) Software driver and backup software compatible with the shared external hard drive; and

(ix) Document management software required to access DB Contractor's client facing document library (as applicable).

(h) One computer and ceiling mounted high definition projector with projector screen and a minimum 120-inch diagonal projected image for the large conference room;

(i) One computer and one wall mounted flat panel monitor (minimum 60-inch) with VGA/HDMI accessibility for the small conference room;

(j) The computers, monitors and peripherals shall be at least equal to the ones used by DB Contractor's staff;

(k) Six iPad Air 2 (or latest version available), with Wi-Fi + Cellular, 64 gigabyte (GB) capacity along with 4G/LTE cellular service and Otterbox Defender Series protective case or equivalent;

(l) Six iPhone 7 (or latest version available) 64GB, with 4G/LTE cellular service, Otterbox Defender Series cases and car chargers;

(m) High speed, highly reliable internet service(s) capable of providing a minimum download speed of 18 Mbps and a minimum upload speed of 18 Mbps per network drop, with a minimum of three concurrent download connections and a minimum of two concurrent upload connections;

(n) The ability to print to any printer listed in this Section 1.6.1 from any network drop or wireless connection regardless of user domain (e.g. TxDOT and others computers shall be able to print to any printer listed in this Section 1.6.1 from any network drop);

(o) Include 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 these Technical Provisions;

All hardware and software shall meet applicable industry standards and protocols;

(p) Provide on-site technical support eight (8) hours per day, five days per week until the completion and close out of the Project;

(q) Color plotter capable of handling 36-inch roll plots, 36x24-inch plots and 11x17-inch plots (core office only);

(r) One high-speed color laser computer printer capable of handling 11 inches x 17 inches prints for core office and one for field office;

(s) One high-speed color photocopy machine capable of handling 11 inches x 17 inches prints for core office and one for field office;

(t) One high-speed color scanner capable of handling 11 inches x 17 inches prints for core office and one for field office;

A multipurpose piece of equipment capable of meeting multiple parts of the requirements above will be considered to meet the requirements;

(u) One paper shredder or secure paper shredding service for core office; and

(v) All office supplies, including copier paper, toners, pens, pencils, notepads, and other miscellaneous office supplies requested by TxDOT.

DB Contractor shall certify and state supplied components as functional before installation and will bear all responsibility for replacement of parts at work commencement. DB Contractor shall prepare test plans for all parts and components and submit, before installation, test installed systems and supply test results, in conformance with industry standard testing procedures.

1.6.2 Core Office

DB Contractor shall provide all space, facilities, and support Elements necessary to design, construct, and maintain the TxDOT Project office in accordance with the Agreement. DB Contractor shall provide office space, not greater than 6,000 square feet (SF), for TxDOT's design and Project management staff, including, other contract employees. If it is necessary to locate any of these Elements of the Work off-Site or outside of this office, DB Contractor shall obtain TxDOT's prior written consent.

DB Contractor shall provide TxDOT office space (i.e., available for occupancy) within 60 days following issuance of NTP1. The location, condition, and amenities of the office space for TxDOT are subject to TxDOT's prior written approval. DB Contractor shall provide a preliminary TxDOT facility area layout plan to TxDOT no later than 7 days after NTP1. TxDOT will promptly review and comment on required modifications to the layout within ten days. DB Contractor shall submit a final facility layout plan within ten days of receipt of TxDOT comments.

1.6.2.1 TxDOT Facility Area and Items Provided by DB Contractor

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 DB Contractor's office staff. TxDOT will be reasonable regarding re-use of existing space within DB Contractor's current office facility, provided that the space is contiguous and workable in TxDOT's sole discretion.

1.6.2.2 Office Condition

The offices shall be in good and serviceable condition, at least of the same quality as those of 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 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 a DB Contractor-Related Entity.

1.6.2.3 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, DB Contractor shall, at its cost and within ten 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 Business Days. If loss or damage is caused as a direct result of willful misconduct of TxDOT or its personnel, DB Contractor shall replace the facilities noted herein within the timeframes specified herein, and TxDOT shall reimburse DB Contractor for actual, reasonable, and documented costs incurred.

1.6.2.4 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. 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). 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 Occupational Safety and Health Administration (OSHA), building, electrical, and energy code requirements for similar office space (provide nominal 30 foot candles of light at 30 inches above finish floor). Each office space shall have at least four duplex receptacles, with minimum circuit capacity of twenty (20) amperes. In addition, each personal office area and conference room shall have a 1,500 Volt-ampere (VA) uninterruptible power supply (UPS). All LAN, telephone system equipment, and appurtenances shall have a UPS sized properly to be capable of providing up to one 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 shall 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.) (ADA), 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 Title 16, Chapter 68 of the Texas Administrative Code (TAC);

(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 DB Contractor's office space/staff. These spaces and all TxDOT spaces shall have access 24 hours per day, seven days per week, and 365 days per year (24/7/365). In lieu of access to a common break room, DB Contractor may provide a 200 SF break room/kitchen within the TxDOT space, with refrigerator with freezer compartment, sink, and microwave. If the building does not have a general building vending area then DB Contractor shall furnish the break room with vending machines and a standalone ice machine. The DB Contractor shall provide coffee, tea, condiments, bottled water and other refreshments as provided to the DB Contractor's staff. 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, 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 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, 24/7/365, 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 DB Contractor-provided facilities and any facility and/or site restoration Work as required.

1.6.2.5 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, unless otherwise approved by TxDOT), six total with keyed door hardware, desk, desk chair, book case, file cabinet, credenza, and guest desk chair;

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

(c) Conference Rooms. Two (2) conference rooms (enclosed), one at nominal 12'x 20' (240 SF) and one at nominal 12'x 30' (360 SF). All shall have dimmable lighting; each conference room shall have one chair for every 24 SF of conference room space and a conference table of sufficient size to accommodate number of chairs required. Reception Area. Receptionist space with waiting area with seating for two visitors (nominal 200 SF);

(d) Storage and Filing. One lockable space for storage and filing, nominal [15 feet x 10 feet (150 SF)];

(e) Server Room. One computer server room (150 SF) that has limited access and is locked via security card access. Server room shall be accessible via hallway entry not sharing any walls with the exterior of the building, and have no windows, a non-static floor covering, a standard 7'-19" rack and at least three dedicated 20-amp power circuits and one 30-amp circuit. All patch panels (phone and data) shall be located within the designated server room. Temperature shall be maintained with a dedicated air conditioning/cooling system as defined above;

(f) Parking Area. Parking area for at least 20 vehicles that is reasonably level (all-weather surface and all-weather access);

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

(h) Corridors. Corridors within the TxDOT facility shall have a nominal width of 54 inches.

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

(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 duplex receptacles with three dedicated 20-amp circuits and one 30-amp circuit for the server room;

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

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

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

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

(k) Monthly Services. DB Contractor shall procure and pay directly to the vendor for janitorial, trash, recycling, and secure document shredding services;

(l) Emergency Contacts. 24-hour emergency contact to DB Contractor;

(m) Furniture. DB Contractor-provided allowance of $15,000 in the Price for additional furniture not listed in the requirements of this Section 1.6.2, which additional furniture shall be obtained by DB Contractor at the direction of TxDOT, and billed through DB Contractor. Cubicles, cubicle furnishings and field office furniture are to be provided independent of the furniture allowance. At the end of the Project, 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; and

(n) Cable Television. Provide cable television connections and service to each flat screen television.

1.6.2.7 Tenant Improvements Plan

DB Contractor shall provide TxDOT with a preliminary office space floor plan and preliminary layout of furniture and fixtures for review and approval prior to beginning tenant improvements.

Prior to commencing construction of TxDOT's Core Office space, DB Contractor shall submit for TxDOT's approval final wiring and circuitry plans, office furniture and equipment layout, a lighting plan, and a parking plan for TxDOT's project management and contract staff vehicles.

1.6.3 Field Office

DB Contractor shall provide all space, facilities, and support elements necessary to conduct field operations to complete the Work in accordance with the Contract Documents. DB Contractor shall provide office space for TxDOT's Project management acquisition staff including, the Program Manager and other contract employees. The field office shall be located within one mile of the Project ROW.

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 1.6.2 as long as the combined offices meet the requirements of Sections 1.6.2 and 1.6.3.

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

Prior to commencing construction of TxDOT's field office space, DB Contractor shall submit for TxDOT's approval final wiring and circuitry plans, office furniture and equipment layout, a field office floor plan, a lighting plan, and a parking plan for TxDOT's Project management and contract staff vehicles.

Concurrent with NTP1, DB Contractor is authorized to begin work on the field office space. Final completion of TxDOT's field office space, including all punch list items, shall occur before TxDOT shall issue NTP2.

In regard to field offices for TxDOT field construction staff, DB Contractor shall ensure the following conditions are achieved:

1.6.3.1 Office Condition

The field office shall be in good and serviceable condition meeting all ADA and local government regulatory criteria for safe a workspace environment, at least of the same quality as those of 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 DB Contractor-provided facilities to 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 DB Contractor-Related Entity.

1.6.3.2 Loss or Damage

If office space(s) or related facilities, furniture, or fixtures that are provided by DB Contractor are destroyed, damaged, or stolen during the Work, except as a direct result of willful misconduct of TxDOT or its personnel, DB Contractor shall, at its cost and within ten 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) necessary for normal office operations, replacement shall occur within two Business Days. If loss or damage is caused as a direct result of willful misconduct of TxDOT or its personnel, DB Contractor shall replace the facilities noted herein within the timeframes specified herein, and TxDOT shall reimburse DB Contractor for actual, reasonable, and documented costs incurred.

1.6.3.3 Field Office Facilities and Equipment

For the facilities it provides, DB Contractor shall:

(a) General. Secure sites, obtain all site permits, install and pay for all utility services, and maintain the facilities clean and in good working order as part of the Work;

(b) Access and Security. Provide separate buildings or trailers for TxDOT staff that include at least two entrances/exits, providing an 8 foot x 10 foot (minimum) covered entrance 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 OSHA and of building and electrical codes for office space. Each office space shall have at least two duplex receptacles. The minimum circuit capacity shall be 20 amperes;

(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 ADA;

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

(h) Heating Ventilation and Air Conditioning (HVAC). Provide electrical and HVAC systems capable of maintaining temperatures between 65 and 75 degrees Fahrenheit in all spaces, 24/7/365, through the year. [Server room \ Network/Telecommunications Room] shall have dedicated air conditioning/cooling system capable of maintaining temperatures between 65 and 70 degrees Fahrenheit, and 15% relative humidity. Temperature controls for TxDOT's field office space shall be placed in an appropriate location within TxDOT's secured area;

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

(j) Disposal and Removal. Be responsible for disposal or removal of all DB Contractor-provided facilities and any site restoration Work as required;

(k) Networking. Provide a secured wireless network with encryption, operating at both 2.4 and 5 gigahertz (GHz) with 802.11a/b/g/n protocols; and

(l) Internet. Provide three T1 lines with a connection speed of 12 Mbps or greater at NTP1.

1.6.3.4 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 with lockable doors for TxDOT's construction representative, TxDOT-designated construction manager and three other TxDOT or contract employees (five offices at 150 SF each, unless otherwise approved by TxDOT), with keyed door hardware, desk, desk chair, book case, file cabinet, credenza and guest chair;

(b) Offices/Cubicles. Offices or cubicles for up to five field engineer/inspection/ administration staff (60-80 SF each);

(c) Conference Rooms. One enclosed conference room of not less than (200 SF) and access to another common conference room (350 SF);

(d) Storage and Filing. Two lockable spaces for storage and filing at each field office (a combined space of 200 SF);

(e) 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;

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

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

(h) Security. A 24-hour security service or silent watchmen-type security system;

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

(j) Window Security. Security bars on all exterior windows;

(k) Laboratory Facility. A completed facility suitable to accommodate a functioning portable lab (approximately 1,500 SF) with a separate cure room (approximately 850 SF) and a large trash container adequately sized for disposal of laboratory generated waste materials, located immediately adjacent to the Independent Quality Firm (IQF) laboratory required in Section 2.2.7.4;

(l) Kitchen/Break Room. Each field office shall contain a 300 SF kitchen with storage closet (25 SF), cabinets with drawers and counter tops. Kitchen shall be equipped as described above for the core office;

(m) Restrooms. Two restrooms including toilets and sinks; and

(n) First Aid Supplies. Provide emergency first aid supplies in accordance with DB Contractor's Safety Plan.

1.6.3.5 Miscellaneous Requirements and Features

DB Contractor shall provide the following:

(a) Flooring. Carpeted flooring for offices (nonstatic in server room). All other rooms shall/may be tiled;

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

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

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

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

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

(g) Fire Extinguishers. Fire extinguishers, per fire code and fire marshal with jurisdiction;

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

(i) Utilities. Initial installation and monthly expense of all utilities paid by DB Contractor except long distance telephone service;

(j) Emergency Contacts. 24-hour emergency contact to DB Contractor; and

(k) Furniture. DB Contractor shall provide furniture for each office and cubicle in the field office. Field office furniture shall include L-shaped desk, chairs, and filing cabinet.

1.7 Submittals

All submittals described in Section 1 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 1-2. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 1-2: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Section 1			
Material changes to the Project Elements listed as Basic Configuration	Prior to commencing Final Design	Review and Approval	1.2
3D Design Files	Prior to Final Acceptance	For Information	1.5
Preliminary TxDOT Facility Area Layout Plan	Within 7 days after NTP1	Review and Comment	1.6.2
Final TxDOT Facility Area Layout Plan	Within 10 days after receipt of TxDOT comments	Review and Approval	1.6.2
TxDOT core office space available for occupancy	Within 60 days after NTP1	N/A	1.6.2

Submittals	Submittal Schedule	Department Action	Reference Section
Tenant Improvement Plan	Prior to beginning tenant improvements	Review and Approval	1.6.2
Final wiring, circuitry, furniture, equipment, floor plan, lighting, and parking plans for TxDOT field office space	Prior to commencing construction of TxDOT's field office space	Approval	1.6.3
TxDOT field office space final completion	Before NTP2	N/A	1.6.3

SECTION 2.0 PROJECT MANAGEMENT

DB Contractor shall establish and maintain an organization that effectively manages all elements of the Work. The 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 components (PMP components) shown in Table 2-1 below and as described in this Section 2.

The PMP is an umbrella document that describes DB Contractor's managerial approach, strategy, and quality procedures for the design and construction of the Project. The PMP shall achieve all requirements of the Contract Documents and is a living document for the duration of the Term. The PMP shall include the representations in Exhibit 2 of the Agreement consistent with Section 1.2.2 of the Agreement. Within the timelines for implementing each component of the PMP, the plan shall include details of external auditing procedures.

Table 2-1: Components of the Project Management Plan

Component Title	Section of Technical Provisions That Defines Component Requirements
Project Administration	Section 2.1
Quality Management Plan **Professional Services Quality Management Plan** **Construction Quality Management Plan**	Section 2.2
Public Information and Communications Plan	Section 2.3 and Section 3
Safety and Health Plan	Section 2.4
Comprehensive Environmental Protection Plan	Section 2.5 and Section 4
TxDOT – DB Contractor Communications Plan	Section 2.6
Right of Way Acquisition Management Plan	Section 2.10 and Section 7
Traffic Management Plan	Section 2.8 and Section 18
Maintenance Management Plan	Section 2.9, Section 19, and Attachment 19-4

DB Contractor shall include in the PMP all components described in Table 2-1, and shall meet the submittal requirements of Table 2-2.

DB Contractor shall ensure all commitments and requirements contained in the PMP are verifiable and shall allow TxDOT to audit the plans and monitor the activities described in the PMP at all times to assess DB Contractor performance.

2.1 Administrative Requirements

Within 30 days after issuance of NTP1, DB Contractor shall submit for TxDOT approval the project administration component of the PMP (other than the Project Baseline Schedule (PBS), which shall be subject to the requirements of Section 2.1.1) that meets the requirements of this Section 2.1.

DB Contractor shall include in the project administration component procedures for updating all components of the PMP and quality control to establish and encourage continuous improvement. These shall include:

(l) Procedures for preparation of amendments and submission of amendments to any part of the PMP;

(m) Auditing and management review of DB Contractor's own activities under the PMP;

(n) Auditing and management review of Subcontractor's activities and management procedures; and

(o) Procedures to facilitate review and audit by TxDOT and consultants.

In addition, the Project Administration component of the PMP shall include procedures for establishing required Plans not specifically stated in this Section 2 inclusive of the PMP.

2.1.1 Project Schedule

2.1.1.1 General Requirements

DB Contractor shall create a complete and logical Project Schedule that represents DB Contractor's plan for managing and executing the Work. The Project Schedule shall be used to: plan the Work; define the timeframe for completion of the Project; provide milestones of major Submittals; monitor progress; form the basis for progress payments; and to measure the impact of changes that occur during design and construction.

The scheduling software employed by DB Contractor shall be compatible with the current scheduling software employed by TxDOT as of the Effective Date (currently Primavera P6). DB Contractor shall provide an electronic file version of the schedule capable of being directly imported by TxDOT using TxDOT's scheduling software.

If separate short-term look-ahead schedules are prepared using a different tool, DB Contractor shall submit these short-term look-ahead schedules to TxDOT and assure they align accurately with the overall Project Schedule.

2.1.1.2 Project Baseline Schedule (PBS)

2.1.1.2.1 Staged Schedule Development

As the design is developed, it is intended that the Project Schedule shall represent the most accurate information known. Accordingly, a three staged schedule development process shall be used as follows:

(a) **Preliminary Project Baseline Schedule - PBS1**: Submitted with Proposal.

(b) **Project Baseline Schedule - PBS2:** DB Contractor shall use PBS1 as a foundation to prepare PBS2. The schedule shall be fully developed to at least the most detailed work breakdown structure (WBS) levels shown in Attachment 2-1 for the entire Project, and shall be cost loaded in accordance with Section 2.1.1.2.2.8. For the Project administration, ROW acquisition, design and Utility coordination WBS levels, the maximum activity durations will be 20 days unless approved by TxDOT. No resource loading will be required for these WBS levels. For the Utility relocation and construction WBS levels, the maximum activity duration will

be 40 days unless approved by TxDOT. No resource loading will be required for these WBS levels until PBS3. Upon approval, DB Contractor shall update PBS2 monthly until PBS3 is reviewed and approved.

(c) **PBS3:** DB Contractor shall not commence Construction Work until PBS3 is approved by TxDOT. The minimum level of detail to develop the schedule for the construction and Utility relocations WBS levels are shown in Attachment 2-1. For the construction and Utility relocation WBS levels, the maximum activity duration is 20 days unless approved by TxDOT. The construction and Utility relocation activities shall be resource loaded in accordance with Section 2.1.1.2.2.7. PBS3, once approved by TxDOT, will be the Project Baseline Schedule used for tracking progress and monitoring the impact of changes.

2.1.1.2.2 Schedule Requirements

The schedule shall include all major activities of Work required by the Contract Documents. It shall also include Submittal activities and Submittal review activities for TxDOT's and all third party reviews, such as for Government Approvals and Utility Owner reviews, which require an approval, acceptance, or concurrence.

The schedule shall indicate the sequence of performing each major activity and the logical dependencies and inter-relationships among the activities, and shall provide a sufficient number of activities to assure adequate planning to allow monitoring and evaluation of progress and, if applicable, payments.

2.1.1.2.2.1 WBS and Activity Coding

DB Contractor shall organize the schedule in accordance with the WBS presented in Attachment 2-1. Additional WBS elements and/or levels may be added with TxDOT's approval.

DB Contractor shall supplement the WBS organization with Project level activity codes that allow Project activities to be sorted by type of work, phase, location of work, and responsibility or as mutually agreed to by DB Contractor and TxDOT. Only Project level activity codes shall be utilized unless otherwise approved by TxDOT. If required, specific Project level activity codes shall be assigned as presented in Attachment 2-1 along with the required WBS.

2.1.1.2.2.2 Activities

For each activity in the Project Schedule, DB Contractor shall:

(a) Assign a unique identification number;

(b) Provide a logical activity description so that the scope of Work is identifiable and progress on each activity can be measured. The scope and location of the Work shall be included in the activity description, and a list of abbreviations used in activity descriptions shall be provided by DB Contractor if requested;

(c) Assign quantities of Work to construction activities;

(d) For the Payment Activities identified on Attachment 2-1 assign values as further described in Section 2.1.1.2.2.8;

(e) Provide a duration based on the quantity divided by a reasonable anticipated production rate and a list of anticipated production rates for major Work elements. Inclement weather days shall not be accounted for in the activity durations;

(f) Include separate activities for cure time and assign to a cure calendar, unless otherwise approved by TxDOT;

(g) Use the activity "Percent Complete Type" setting in P6 of "Physical Percent Complete", unless otherwise approved by TxDOT; TxDOT approval time should be set to calendar days and set to "Duration % Complete", as this is a set time of review; and

(h) Assign a predecessor and successor relationship for each activity, except for NTP1 and Substantial Completion milestone(s).

2.1.1.2.2.3 Calendars

Through the use of calendars, DB Contractor shall incorporate seasonal weather conditions into the schedule, using a ten to 100 year average from the closest station provided by the National Oceanic and Atmospheric Administration, for Work that may be influenced by adverse weather conditions. A seven day/week cure calendar for curing activities shall be included. DB Contractor shall adequately represent non-work days for activities with limitations such as Utility shutdown, work seasons, and landscape seasons. Non-work periods shall also be incorporated.

DB Contractor shall set up all calendars as Project specific. Global calendars shall not be used unless otherwise approved by TxDOT.

2.1.1.2.2.4 Constraints and Milestones

DB Contractor shall identify each Completion Deadline with a milestone and assign a "Finish On or Before" constraint date. No other constraints are allowed without TxDOT approval.

DB Contractor shall include additional milestones in the schedule to define significant events such as Notices to Proceed (NTPs), start and finish of major segments/areas/regions of work, major traffic changes, and coordination points with outside entities.

2.1.1.2.2.5 Schedule Calculation Settings

The default schedule calculation settings in Primavera shall be used, except that critical activities shall be defined as the "Longest Path".

2.1.1.2.2.6 Float and Float Suppression

As identified in Section 4.3.2 of the Agreement, all Float contained in the Project Schedule, as shown in the Preliminary Project Baseline Schedule or as generated thereafter, shall be considered a Project resource available to either Party or both Parties as needed to absorb delays caused by any event, or to achieve schedule milestones, interim completion dates or Completion Deadlines.

DB Contractor shall not sequester Float through the use of excessive lags, extended durations, calendar manipulation, intangible relationships, or any other such methodology.

2.1.1.2.2.7 Resource Loading and Leveling

For all construction activities, resources shall be incorporated at a crew level into the schedule when required. DB Contractor shall provide a list of crews separate from the schedule, and shall identify the composition of and production rate for each crew type. The crews shall be defined as a labor resource type and shall be assigned to appropriate activities.

The schedule option of leveling resources shall only be used with prior notification and concurrence of TxDOT.

2.1.1.2.2.8 Cost Loading, Payment Activities and Schedule of Values

DB Contractor shall submit the Schedule of Values to TxDOT for review and approval with PBS2 as described in Section 2.1.1.2.3.2. Once reviewed and approved by TxDOT, DB Contractor shall not change the Schedule of Values without written approval from TxDOT.

Upon the execution of a Change Order, DB Contractor shall revise the Schedule of Values and submit to TxDOT for approval with the next Project Schedule Update.

The Schedule of Values shall comply with the following requirements:

(a) No individual value for a Payment Activity in the Schedule of Values shall exceed $1.0 million unless otherwise approved by TxDOT;

(b) Values shall be allocated only to task-dependent Payment Activities for which completion progress can be measured and tracked;

(c) Values shall not be allocated to TxDOT activities;

(d) Price should be capable of reporting by CSJ at WBS Level 2; and

(e) Values shall not be artificially inflated, imbalanced, or front loaded when allocated to the Payment Activities.

DB Contractor shall submit procedures for addressing payment for unincorporated materials and cost loading modifications for TxDOT's review and approval.

2.1.1.2.3 PBS2 and PBS3 Narrative and Submittal

DB Contractor shall prepare and submit a narrative report for the initial PBS2 and PBS3 submittals in accordance with the following requirements. Updates and revisions to these schedules have separate narrative requirements.

2.1.1.2.3.1 PBS2 Narrative Requirements

DB Contractor shall provide a schedule narrative that addresses the following in the order listed. The narrative shall:

(a) Describe the plan and approach to each of the major elements of work: ROW acquisition, design, Utilities, additional third party coordination, and construction. A discussion of the schedule uncertainty shall be included in each of the major elements;

(b) Describe the Critical Path;

(c) Describe the activity identification naming convention and provide a guide to acronyms and abbreviations used in activity descriptions;

(d) Provide a list of activities with durations exceeding the limits required in Section 2.1.1.2.1, as well as an explanation for using a longer duration. Activities exceeding the limits must have written approval from TxDOT;

(e) Describe the approach to setting up the calendars used in the schedule, including adverse weather assumptions, and nighttime and shift work. The source of historical inclement weather data used in defining weather dependent work calendars shall also be provided;

(f) Describe the milestones and constraints used and the completion dates as they relate to the Completion Deadlines in the Agreement;

(g) Describe the use of leads and lags in the schedule;

(h) Describe activity coding methodology;

(i) Describe how resources were addressed in the schedule, as well as resource limitations. A comprehensive list of planned resources including number of crews, crew composition, and expected crew production rates shall be provided for all construction activities; and

(j) Describe how the Price was allocated to the Payment Activities. A graph showing three cumulative cash flow curves shall be provided: one based on the early dates; one based on the late dates; and one based on the Maximum Payment Schedule.

As an attachment to the schedule narrative, DB Contractor shall provide the following for verifying the electronic copy of the schedule is the same as the schedule presented in the narrative:

1. 11 inches x 17 inches longest path plot in a Portable Document Format (PDF); and

2. Copy of the schedule calculation log in a PDF.

All schedule plots shall include: the Project title, the schedule file name, the data date, a page number, and a legend indicating the various symbols used and their meanings.

2.1.1.2.3.2 PBS2 Submittal Requirements

DB Contractor shall submit PBS2 within the timeframe stated in Table 2-2. DB Contractor shall submit the following with the PBS2 schedule:

(a) One copy of the Schedule of Values with the Price allocated to the Payment Activities as described in Section 2.2.1.2.2.8. In order to facilitate the schedule cost loading, this may be submitted prior to the schedule submission;

(b) One electronic copy of the narrative report in a PDF; and

(c) One electronic copy of the schedule in the Primavera.xer format.

2.1.1.2.3.3 PBS3 Narrative Requirements

DB Contractor shall provide a schedule narrative that describes, in addition to any update or amendment to the PBS2 narrative, the following in the order listed:

(a) How resources were addressed in the schedule and any resource limitations, including a list of planned resources with number of crews, crew composition, and expected crew production rates;

(b) The plan and approach to the construction of the Project and Utility relocations; and

(c) The longest/Critical Path.

As an attachment to the schedule narrative, provide the following for verifying the electronic copy of the schedule is the same as the schedule presented in the narrative:

1. 11 inches x 17 inches longest path plot in a PDF; and

2. Copy of the schedule calculation log in a PDF.

Include on all schedule plots the Project title, the schedule file name, the data date, and a legend indicating the various symbols used and their meanings.

2.1.1.2.3.4 PBS3 Submittal Requirements

Prior to the commencement of Construction Work, DB Contractor shall obtain TxDOT review and approval of PBS3. DB Contractor shall submit the following with the PBS3 schedule:

(a) The narrative report in PDF;

(b) The narrative report without attachments in Word format; and

(c) The schedule in Primavera.xer format.

2.1.1.2.4 TxDOT Review and Approval

TxDOT will review the schedule submittal and within 21 calendar days of submission, return it to DB Contractor as approved, approved with comments to be addressed in the following Project Schedule Update, or returned for resubmission within ten days from the date of receipt by DB Contractor. DB Contractor shall repeat the Submittal process until receiving TxDOT approval of the Project Schedule.

TxDOT's review and approval of the Project Schedule is for conformance to the requirements of the Contract Documents and does not relieve DB Contractor of any responsibility for meeting any Completion Deadlines. Review and approval does not expressly or by implication warrant, acknowledge, or admit the reasonableness of the logic or durations of the Project Schedule. If DB Contractor fails to define any element of work, activity, or logic and TxDOT's review does not detect this omission or error, DB Contractor is responsible for correcting the error or omission.

DB Contractor is solely responsible for planning and executing the Work and for providing sufficient materials, equipment, and labor to guarantee completion of the Project in accordance with the Contract Documents and Completion Deadlines.

2.1.1.3 Project Schedule Updates

2.1.1.3.1 Update Requirements

DB Contractor shall submit the Project Schedule Update monthly with actual start and finish dates for completed activities, and physical percent complete and remaining durations for activities in progress. The data date for each Project Schedule Update shall be the day after the progress period for payments closes. Logic changes shall be implemented consistent with the retained logic method of scheduling to allow out-of-sequence Work to proceed. DB Contractor

shall submit the Project Schedule Update with the monthly Progress Report. A Project Schedule Update (whether or not such update has been approved by TxDOT) does not constitute a revision to the Project Schedule. Refer to Section 2.1.1.4 for the process by which revisions to the Project Schedule shall be submitted and approved by TxDOT.

2.1.1.3.1.1 Acceptable Schedule Changes

Acceptable scheduling changes in a Project Schedule Update include: logic adjustments to address out of sequence Work, splitting of activities to address significant periods of inactivity for payment purposes and changes to cost loading of activities below the WBS level of Payment Activities.

DB Contractor shall not revise descriptions to represent a different scope than originally intended. No changes in activity durations, activity cost loading at the WBS level of Payment Activities or higher, calendar assignments, logic ties, or constraints will be allowed without TxDOT's written concurrence. These are considered revisions to the Project Baseline Schedule. An activity identification number can only be used once. DB Contractor shall not delete an activity and then create a new activity at a later date utilizing the same activity identification number.

2.1.1.3.1.2 Acceptable Cost Loading Changes in an Update

The splitting of Payment Activities for payment purposes will be allowed provided that justification is submitted, reviewed, and approved by TxDOT. DB Contractor shall ensure planned budget values match the Price (as may be modified by a Change Order) at all times.

2.1.1.3.2 Project Schedule Update Narrative and Submittal Requirements

DB Contractor shall provide a narrative with each Project Schedule Update Submittal. The narrative shall:

(a) Include a comparison between last month's longest/Critical Path and current month's longest/Critical Path, with an explanation for any slippage or gains in Completion Deadlines;

(b) Describe Work performed during the progress period with explanation of deviations between the Work planned or scheduled and the Work performed for the period, and explain any adjustments made to correct actual dates that were prior to the current update period;

(c) Include a table of contract milestones and major interim milestones reflecting current completion dates compared to the completion dates shown in the Project Baseline Schedule;

(d) Describe changes made to the schedule in terms of acceptability for an update and the effect the changes had on the Critical or near Critical Paths;

(e) Include a look-ahead at Work to be accomplished during the next month, with a focus on Critical Path items; and

(f) Include a description of potential Project issues that may impact the schedule. A discussion of the following shall be included: how critical each issue is and how much float it has; and DB Contractor's Plans on how to mitigate, avoid or resolve the issue.

A discussion of problems or delay in the Project Schedule Update narrative shall not relieve DB Contractor of complying with contractual requirements regarding notification and documentation of claims.

DB Contractor shall include the following as attachments to the Project Schedule Update narrative:

1. Longest path schedule plot organized by WBS and sorted by early start in a PDF;

2. Schedule plot comparing DB Contractor's actual monthly progress to the previous month's planned progress, organized by WBS in a PDF;

3. A 30-day look-ahead schedule layout in a PDF;

4. Monthly expenditure projections in the Attachment 2-1 format;

5. Updated actual cumulative cash flow curve plotted along with the three cumulative cash flow curves: one based on the early dates; one based on the late dates; and one based on the Maximum Payment Schedule required in Section 2.1.1.2.3; and

6. Other layouts or reports as agreed upon or requested by TxDOT.

DB Contractor shall submit the following with the monthly Project Schedule Update:

i. The narrative report with attachments in a PDF;

ii. The narrative report without attachments in Word format; and

iii. The schedule in Primavera xer format.

2.1.1.3.3 TxDOT Review and Approval

TxDOT will review the Project Schedule Update submittal within 10 business days of submission, return it to DB Contractor as approved, approved with comments to be addressed in the following Project Schedule Update, or returned for resubmission within ten days from the date of receipt by DB Contractor. DB Contractor shall repeat the submittal process until receiving TxDOT acceptance of the Project Schedule. Approval of the Project Schedule Update is required prior to payment of the associated Draw Request.

TxDOT's review and approval of the Project Schedule Update is for conformance to the requirements of the Contract Documents only and does not relieve DB Contractor of any responsibility for meeting any Completion Deadlines. Review and approval does not expressly or by implication warrant, acknowledge, or admit the reasonableness of the logic or durations of the Project Schedule. If DB Contractor fails to define any element of work, activity, or logic and TxDOT's review does not detect this omission or error, DB Contractor is responsible for correcting the error or omission.

2.1.1.4 Schedule Revisions

2.1.1.4.1 DB Contractor Schedule Revisions

DB Contractor shall submit proposed revisions to the Project Schedule using a copy of the latest approved Project Schedule Update. DB Contractor shall not include updates and proposed

revisions to the Project Schedule within the same Submittal. All changes to the schedule, other than allowed in Section 2.1.1.3, will be considered proposed revisions.

2.1.1.4.2 Change Order Revisions

Upon receipt of a Request for Change Proposal, DB Contractor shall incorporate the proposed change into a copy of the latest approved Project Schedule Update using Steps 1 and 2 of the Time Impact Analysis (TIA) process, provided in Section 2.1.1.5. The potential time impact which may result from the change shall be assessed by DB Contractor.

DB Contractor shall allocate agreed Change Order amounts into the Schedule of Values and the Project Schedule Update immediately following the execution date of the Change Order. The amount of each Change Order shall be assigned to unique "Change Modification" activities in the Schedule of Values.

2.1.1.4.3 Recovery Schedule Revision

When required in accordance with Section 4.5 of the Agreement, DB Contractor shall prepare and submit a "Recovery Schedule" demonstrating the proposed plan to recover schedule slippage and to achieve the Completion Deadlines. The recovery plan shall be explained in writing and submitted in Primavera xer format.

Time periods for TxDOT approval or rejection of the Recovery Schedule, for re-submittal after rejection and for incorporation of an approval Recovery Schedule into the Project Schedule are contained in Section 4.5.2 of the Agreement.

2.1.1.4.4 Revision Submittal Requirements

The following shall be submitted with the proposed revision to the Project Schedule:

(a) A written revision analysis report providing the reason for the revisions, the scope and changes made to the schedule, and a description of the resulting effects on the schedule including any changes to the Critical or near Critical Paths;

(b) Schedule plots and/or comparison analysis to the update prior to the revision showing the changes that were made in a PDF; and

(c) The revised schedule in Primavera.xer format.

2.1.1.4.5 TxDOT Review and Approval

TxDOT will review the schedule revision or Change Order revision Submittal within 10 Business Days after Submittal and return it to DB Contractor as: approved, approved with comments to be addressed in the following Project Schedule Update, or returned for resubmission within ten days from the date of receipt by DB Contractor. DB Contractor shall repeat the Submittal process until receiving TxDOT approval of the revision to the Project Schedule.

In the event the time impact of a Change Order revision cannot be agreed upon, DB Contractor shall continue tracking the change in accordance with Steps 3 and 4 of the TIA process and report findings.

2.1.1.5 Time Impact Analysis

DB Contractor shall submit to TxDOT a TIA as part of a PCO Notice for an impact that may potentially cause Project delay as set forth in the Contract Documents and when requested by TxDOT for evaluating the potential time impact of Change Orders under consideration.

If TxDOT requests a TIA, it shall be submitted by DB Contractor within the timeframe specified in Table 2-2. Submission of a TIA does not relieve DB Contractor of complying with all contractual requirements regarding notification and documentation of PCOs and actual Change Orders.

Time extensions will only be considered when the total and Project Float are absorbed and the Completion Deadline(s) is delayed.

Each TIA shall consist of the following steps:

Step 1: Establishing the status of the Project before the impact by using the Project Schedule Update with the closest data date prior to the impact, or as adjusted by mutual agreement to the date the impact began;

Step 2: Estimating the duration of the impact, determining appropriate logic, and insertion of the impact activity or activities into the Project Schedule Update used in Step 1, and predicting the effect of the impact on the schedule;

Step 3: Tracking the effects of the impact on the schedule during its occurrence. Identifying and measuring the effect of mitigation efforts taken by either DB Contractor or TxDOT; and

Step 4: DB Contractor shall establish the status of the Project after the impact is complete and identify any ongoing mitigation efforts being taken;

Steps 1 and 2 shall be submitted to TxDOT with a PCO, or as soon as there is constructive notice of a potential time impact. Step 3 shall be incorporated into Project Schedule Updates until the impact is complete. Step 4 shall be submitted to TxDOT no later than 30 days after the completion of an impact. If Step 4 is not submitted within 30 days, the issue will be considered as having no time impact.

A TIA shall consist of a report with accompanying schedules used in the analysis in Primavera .xer format. The report shall:

(a) Identify the scope and timeline for the impact(s) being analyzed;

(b) Identify the schedules used in the analysis;

(c) Identify the schedule approach to modeling the time impact including the addition of activities, relationships, modifications to calendars, or application of constraints, and include a plot of the portion of the schedule showing the model;

(d) Describe the impact or potential impact by comparing Step 1 to Step 2;

(e) Describe the results of mitigation efforts taken through Step 3;

(f) Describe any other potential mitigation efforts that may be taken to avoid impact;

(g) Describe the status of the Project after the impact is over; and

(h) Include schedule plots illustrating the analysis and documentation supporting dates, timelines, and entitlement.

2.1.1.6 As-Built Schedule

Upon completion of the Punch List, DB Contractor shall submit a final update which will be considered the as-built schedule.

2.1.2 Progress Report

Each month, beginning with the first full month after NTP2, DB Contractor shall submit to TxDOT a monthly Progress Report. An electronic and printed copy of the entire Progress Report shall be submitted to TxDOT.

The Progress Report shall include, at a minimum, the Project Schedule Update narrative and the Submittal requirements described in Section 2.1.1.3.2 in addition to the following items:

(a) A list of any Change Orders that were identified or executed during the progress period and their status;

(b) Identification and status of issues that arose during the progress period and a summary of resolutions or issues that remain to be resolved;

(c) Status of Project ROW acquisition, and a description of the survey activity performed and condemnation support services provided as described in Sections 7.2.6, 7.3.2 and 7.4.4;

(d) Summary description of DB Contractor maintenance activities in accordance with Section 19.4; and

(e) Identification of requested and/or required TxDOT actions for the next month.

DB Contractor shall also provide digital progress photographs that accurately depict Project progress as outlined in the Progress Report narrative.

If requested by TxDOT, DB Contractor shall make all corrections to the monthly Progress Report and resubmit. If DB Contractor does not agree with TxDOT's comments, DB Contractor shall provide written notice of disagreement.

2.1.3 Management Organization and Personnel

The project administration component of the PMP shall contain DB Contractor's organizational diagram and the names, contact detail, titles, and job descriptions of Key and any other DB Contractor principal personnel. DB Contractor's management organizational structure and personnel shall meet the organizational and reporting requirements in this Section 2.1.3 and as described in the Contract Documents.

In addition, the project administration component of the PMP shall contain procedures to establish how DB Contractor will manage Subcontractors.

2.1.3.1 DB Contractor Project Manager

DB Contractor shall employ a Project Manager (PM) responsible for the overall design, construction, maintenance, contract administration, safety, and environmental compliance on behalf of DB Contractor during the Term. The PM shall be in the position to take full responsibility for the prosecution of the Work and will act as a single point of contact on all matters on behalf of DB Contractor during the Term. The PM shall be assigned to the Project full time and co-located/on-Site until Substantial Completion. The Project Manager shall be employed by either: (a) an Equity Member, Lead Engineering Firm or Lead Contractor; (b) a controlled subsidiary of such Equity Member, Lead Engineering Firm or Lead Contractor; (c) if the Lead Engineering Firm or Lead Contractor is a joint venture, a member of such joint venture that will perform at least thirty percent (30%) of the relevant work or a controlled subsidiary of such joint venture member; or (d) a parent company of an Equity Member.

2.1.3.2 Design Manager

DB Contractor shall employ a Design Manager responsible for ensuring the Design Work is completed and design criteria requirements are met. The Design Manager shall be co-located/on-Site whenever design activities for the Project are being performed. The Design Manager shall be a Registered Professional Engineer (PE). The Design Manager shall report to DB Contractor's PM. The Design Manager shall be employed by either: (a) an Equity Member, Lead Engineering Firm or Lead Contractor; (b) a controlled subsidiary of such Equity Member, Lead Engineering Firm or Lead Contractor; (c) if the Lead Engineering Firm or Lead Contractor is a joint venture, a member of such joint venture that will perform at least thirty percent (30%) of the relevant work or a controlled subsidiary of such joint venture member; or (d) a parent company of an Equity Member.

2.1.3.3 Construction Manager

DB Contractor shall employ a Construction Manager responsible for ensuring that the Project is constructed in accordance with these Technical Provisions. The Construction Manager shall be assigned to the Project full time and co-located/on-Site until Substantial Completion. The Construction Manager shall report to DB Contractor's PM. The Construction Manager shall be employed by either: (a) an Equity Member, Lead Engineering Firm or Lead Contractor; (b) a controlled subsidiary of such Equity Member, Lead Engineering Firm or Lead Contractor; (c) if the Lead Engineering Firm or Lead Contractor is a joint venture, a member of such joint venture that will perform at least thirty percent (30%) of the relevant work or a controlled subsidiary of such joint venture member; or (d) a parent company of an Equity Member.

2.1.4 Document Management

The project administration chapter of the PMP shall contain procedures for document management including the manner in which records will be maintained in compliance with the Technical Provisions and any specific systems DB Contractor will use.

All electronic information submitted to TxDOT shall be searchable and legible. The PMP shall describe the controls exercised by DB Contractor to ensure that: documents (including the PMP itself) undergo relevant review and approval prior to release; users have access to current versions of documents; versions of documents are identified; obsolete or superseded documents are so marked and prevented from unintended use; and changes to documents undergo same level of review and approval. Document management plan shall include quality control (QC)/quality assurance (QA) processes.

2.1.4.1 Document Storage and Retrieval Requirements

DB Contractor shall establish and maintain an Electronic Content Management System (ECMS) to store, catalog, and retrieve all Agreement documents using the applicable CSJ numbers. ECMS shall be established and operational either within 30 days after NTP1, or prior to receiving first Submittals from DB Contractor, whichever comes first. The ECMS shall be compatible with SharePoint, and all Submittals shall be submitted to TxDOT through TxDOT's SharePoint site. 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 of the Term or earlier termination of the Agreement.

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. 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. Access to 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, 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 that TxDOT may require in connection with the Project; and

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

To allow for disaster recovery, DB Contractor shall back-up all Project-related documents on a nightly basis. On a weekly basis, DB Contractor shall back-up and store all Project-related documents in a secure off-site location.

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

2.1.4.2 Professional Services Submittal Requirements

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

DB Contractor shall furnish electronic copies of all Submittals. The electronic copies shall be provided in a useable format or in the format in which the Work was originally created.

DB Contractor shall include with each Submittal a transmittal cover sheet in a form acceptable to TxDOT.

The minimum sheet size for the Submittals (other than plan Submittals) shall be 8.5 inches by 11 inches. The maximum sheet size for the Submittals (other than plan Submittals) shall be 18

inches by 120 inches. Plan Submittals shall be 11 inches by 17 inches. Every page in a Submittal shall be numbered in sequence.

Unless otherwise directed by TxDOT, DB Contractor shall provide two hard copies of all Submittals.

Each Submittal shall be full and complete and shall be assigned a unique, sequential number, clearly noted on the transmittal cover sheet. 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 QMP, with the following information:

(a) Date of issuance and including all prior revision dates;

(b) Contract title and number;

(c) The names of DB Contractor and applicable Affiliates and DB Contractor Related Entities;

(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 Submittals shall include a sufficient blank space in which 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 Quality Management Plan

DB Contractor shall prepare and submit a comprehensive Quality Management Plan (QMP) to TxDOT for approval. The QMP shall describe the authority and responsibility for the administration of the QMP and describe how all requirements of the Contract Documents will be met. The QMP shall be consistent with and expand upon the quality approaches and commitments submitted with the Proposal and shall be conformed and updated annually. DB Contractor shall revise its QMP within 14 days of TxDOT or DB Contractor detection of a substantial or systemic problem related to the Work, or as directed by TxDOT. Submissions of

the QMP and all updates to the QMP shall include both a clean copy and a copy tracking all changes since the previous approval.

The QMP shall consist of the Professional Services Quality Management Plan (PSQMP) and the Construction Quality Management Plan (CQMP). These distinct plans shall be coordinated with one another such that common quality management system requirements such as document control, process auditing, and corrective and preventive action can be addressed with a single approach. The QMP shall comply with the requirements of current TxDOT *Quality Assurance Program for CDA/Design-Build Projects with a Capital Maintenance Agreement with Three Optional 5-Year Terms (QAP for DB Projects)*.

2.2.1 General Requirements

DB Contractor shall develop, implement, and maintain the QMP for the Term. The QMP shall describe the system, policies, and procedures that ensure the Work meets the requirements of the Contract Documents and provide documented evidence of same. The QMP shall encompass all Work performed by DB Contractor and DB Sub-contractors of all tiers.

The QMP shall contain detailed procedures for DB Contractor's QC and QA activities. DB Contractor's quality process shall incorporate planned and systematic verifications and audits undertaken by an independent party. DB Contractor shall conduct all QC, QA, performance verification, and design overlay and coordination among design disciplines, all in accordance with the QMP and the requirements of the Contract 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*).

DB Contractor shall regularly maintain the QMP 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. Personnel relationships relating to quality shall comply with the descriptions in this Section 2.2;

(b) Names, contact details, titles, description of roles responsibilities, and specific experience of all quality management Key Personnel, for other principal 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 used, and location of laboratories for products produced both on and off the Project Site; and

(d) Identification of what products or services are to be subcontracted, updated when new Subcontractor or Supplier contracts are implemented.

QMP procedures shall: (i) ensure DB Contractor personnel, including Subcontractor personnel, are familiar with all the provisions of the Contract Documents concerning their respective responsibilities; (ii) provide for the education, training and certification, as appropriate, of

personnel performing activities affecting or assessing the quality of the Work to assure such personnel achieve and maintain reasonable proficiency; and (iii) ensure the Work is performed according to the QMP, Good Industry Practice, and the Contract Documents. DB Contractor shall plan the training required for each individual and maintain a register demonstrating the QMP training record of all personnel affecting quality.

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

2.2.2 DB Contractor's Senior Management Reviews

DB Contractor's senior management shall conduct a management review of the quality program identified in the QMP at least quarterly, and more frequently if necessary or upon written request by TxDOT. Senior management shall mean DB Contractor personnel who provide resources and delegate authority and who coordinate, direct, and control DB Contractor's Project Manager and DB Contractor's organization. TxDOT shall be invited to participate in the senior management reviews. Management reviews shall focus on ensuring continued suitability and effectiveness in satisfying the project requirements and DB Contractor's stated quality policy and objectives as stated in the QMP. DB Contractor shall provide TxDOT five days' notice prior to holding senior management review meetings.

Each senior management review shall document, in a Report on the QMP Effectiveness, and assess, at a minimum: the results of DB Contractor and TxDOT audits; corrective and preventive actions taken; trends in nonconformances; stakeholder feedback; status of previous management review actions; timeliness of responses and resolutions; and quality management successes and failures. The output of senior management reviews shall include any decisions and actions related to: improvement of the effectiveness of the QMP and its processes; improvement of the Work; and resource needs.

As one of the inputs to measurement of the performance of the QMP, DB Contractor shall monitor, record, and act upon all communication from TxDOT and third parties regarding the performance of DB Contractor. The methods for obtaining and using this information shall be described in the QMP.

2.2.3 DB Contractor Auditing

The QMP shall define the responsibilities and requirements for planning audits, conducting audits, establishing records, and reporting results. Audit planning shall take into consideration the risk to quality of the processes and areas to be audited, as well as the results of previous audits. Audit planning shall define the audit scope, frequency, and status, and be documented in a rolling 12 month schedule. Planned and periodic audits shall be undertaken to determine adherence to and the effectiveness of the QMP and other management plans (e.g. Safety and Health Plan, Traffic Management Plan, etc.) The procedure for conducting audits shall describe the use of checklists of requirements, objective evidence, competent auditors independent of the scope of work being audited, and the audit result workflow through to re-audit and close-out of findings. Audit results shall be documented, reviewed, and acted upon by DB Contractor. DB Contractor shall submit to TxDOT the results of all Project quality audits within seven days of their completion.

2.2.4 Control of Nonconforming Work

The QMP shall describe the approach to ensure Nonconforming Work is identified and controlled to prevent its unintended use or delivery. This shall include identification,

documentation, segregation, correction, and notification to TxDOT and, if appropriate, Governmental Entities and other third parties that are affected. This approach shall describe how DB Contractor will seek TxDOT formal approval of DB Contractor's proposed resolution to Nonconforming Work, in accordance with the Contract Documents. Resolutions to Nonconforming Work that specify a deviation from Contract Documents (e.g., accept as is), or repair shall be approved by the Engineer of Record (EOR), the applicable QA manager, and by TxDOT. The EOR shall evaluate the effect of the proposed disposition on the performance, safety, durability, and long-term maintenance of the project and the specific element affected. All instances of Nonconforming Work shall be documented separately and their resolution recorded through the use of a nonconformance report. All instances of Nonconforming Work shall be summarized in a nonconformance log with sequential numbering. Requests for information or other forms may not be used in place of a nonconformance report.

2.2.5 Corrective and Preventive Action

The QMP shall describe the approach to eliminate the causes of actual and potential nonconformances in order to prevent occurrence or recurrence. The procedure shall define the requirements for:

(a) Reviewing nonconformances and TxDOT written complaints;

(b) Determining the causes of actual and potential nonconformances, and TxDOT written complaints;

(c) Evaluating the need for action to ensure nonconformances and written complaints do not recur or occur. Actions should be appropriate to the effects of the actual or potential nonconformances;

(d) Determining and implementing action needed;

(e) Records of the results of action taken; and

(f) Reviewing the effectiveness of the action taken.

2.2.6 Professional Services Quality Management Plan

DB Contractor shall prepare a PSQMP that describes its policies, procedures, and staffing (including Subcontractors) to manage Professional Services quality in accordance with the requirements of this Section 2.2.6. The PSQAM shall oversee the implementation of the PSQMP. TxDOT approval of the PSQMP shall be a condition of the commencement of Design Work.

2.2.6.1 PSQMP General Requirements

The PSQMP shall include all necessary forms, schedules, and requirements checklists, which may be documented in appendices. The PSQMP shall include, at a minimum, a procedure for each of the following processes needed to deliver the Professional Services:

(a) Management approach, stages of design, responsibilities, QC/QA procedures (described separately), reviews, timing, procedure or reference standard, and resulting records for all Professional Services Submittals;

(b) Contract deviations to ensure variances from Contract Documents occur only with TxDOT's approval;

(c) Validation of applicable use of computer programs and checking of inputs;

(d) Interface reviews to ensure consistency and prevention of coordination errors, conflicts, omissions, or misalignments between individuals, agencies, utility owners, disciplines, firms, other projects, existing facilities, project stages, segments, systems, etc. This shall include or reference the coordination of the review, approval, release, distribution, and revision of documents affecting such parties;

(e) Conformance checking to ensure the correct requirements are being utilized;

(f) Accuracy checking to ensure Professional Services output is correct;

(g) Format checking to ensure conformance with appearance requirements, such as CADD, calculations, and specification language;

(h) Independent calculations, without reference to the Designer's calculations, to establish the structural adequacy and integrity of critical items, elements or portions of the Work mutually agreed upon by DB Contractor and TxDOT. The PSQMP shall identify items, elements, or portions of the Work to receive an independent calculation check and the resulting records, as well as an outline of the process for resolving differences between the independent calculations and the designer's calculations;

(i) Constructability reviews to ensure the feasibility and accessibility of all items, elements or portions of the Work;

(j) Scope checking to verify the completeness of Submittals;

(k) External (TxDOT and third party) reviews to obtain input and expedite close-out of comments;

(l) QA hold point release, including verification of conformance with procedures for every Submittal, and defined approach to spot checking Submittals;

(m) Shop drawing reviews;

(n) Maintaining accurate, timely and current documentation of design and design changes from initial release through to Record Documents. A current set of plans and specifications, inclusive of all changes shall be available at all points of use;

(o) Systems that will be used for meeting the documentation requirements for design criteria, reports and notes, calculations, Plans, specifications, schematic design, and all supporting materials needed during the Final Design. Include the specific responsibilities of personnel to satisfy these requirements;

(p) Maintaining, organizing, and indexing all Design Documents. Copies shall be made available to TxDOT upon request; and

(q) PSQAM auditing, including audit scheduling, of the Design Firm's QC procedures under the PSQMP.

2.2.6.2 Professional Services Quality Personnel and Staffing

2.2.6.2.1 Professional Services Quality Control Manager

DB Contractor shall assign a Professional Services Quality Control Manager (PSQCM) who shall be responsible for management of the QC program for the Professional Services. The PSQCM shall not be involved with direct scheduling or delivery production activities and shall report directly to DB Contractor's Project Manager. The PSQCM shall ensure that the methods and procedures contained in the approved PSQMP are implemented and followed in the performance of the Work. The PSQCM shall be a Registered PE and shall have relevant Professional Services QC management experience on projects of similar type and scope.

The PSQCM shall have authority to stop Work.

The PSQCM shall be employed by either: (a) an Equity Member, Lead Engineering Firm or Lead Contractor; (b) a controlled subsidiary of such Equity Member, Lead Engineering Firm or Lead Contractor; (c) if the Lead Engineering Firm or Lead Contractor is a joint venture, a member of such joint venture that will perform at least thirty percent (30%) of the relevant work or a controlled subsidiary of such joint venture member; or (d) a parent company of an Equity Member.

2.2.6.2.2 Engineer of Record

The engineers in responsible charge of each item, element, or phase of the Work shall possess the necessary licenses and registrations in the State of Texas and shall be personally responsible for directly supervising the Work. The named engineers shall sign and seal the Professional Services product for a given item, element, or phase of the Work as applicable.

2.2.6.2.3 Reviewing Professional Services

DB Contractor personnel performing the QC check of the Professional Services shall not be directly involved with the original development of the item, element, or phase being checked.

2.2.6.2.4 Professional Services Quality Assurance Manager

DB Contractor shall assign a PSQAM who shall be responsible for the management of the QA program for the Professional Services, and for carrying out assurance and audit functions as described in the Professional Service Quality Management Plan. Individual will report jointly to TxDOT's and to DB Contractor's executive management teams, and have authority to stop Work. Must be a Professional Engineer with relevant Professional Services quality assurance management experience on projects of similar type and scope. The PSQAM must be employed by an independent Professional Services Quality Assurance Firm.

The PSQAM shall have authority to stop Work.

2.2.6.2.5 Professional Services Quality Assurance Staff

The QA staff shall be provided under the direction of the PSQAM to perform oversight and review of all professional services including design, environmental, Utilities, and survey.

The QA staff shall be experienced in the respective aspects of professional services undertaken by DB Contractor. The training and experience of the QA staff shall be commensurate with the scope, complexity, and nature of the Work to be reviewed. Qualifications shall include appropriate experience, certifications, training, and licensure. Professional Services QA staff shall report to the PSQAM.

2.2.6.2.6 Professional Services Quality Assurance Staff Levels

The size of the QA staff shall reflect the volume of QA activities necessary for the Work in progress and shall be maintained in accordance with the approved PSQMP. The QA staff shall perform QA oversight and review typically performed by TxDOT on traditional projects.

The Professional Services QA staffing requirements shall be updated as necessary throughout the Term to reflect changes in the actual design schedule. DB Contractor shall ensure that adequate Professional Services QA staff is available and that PSQMP activities are undertaken in a manner consistent with the Project Schedule and in a manner that will enable DB Contractor to achieve the Substantial Completion Deadline and Final Acceptance Deadline.

2.2.6.3 Stages of Design Development

DB Contractor shall cause all work items, elements, or portions of the Work for each buildable unit packaged as described in this Section 2.2.6.3 to pass through all stages of design development, in the order specified below.

(a) Preliminary Design – Plans, specifications, and reports which capture all major items, elements or portions of the Work such that DB Contractor can demonstrate a comprehensive understanding of the Project;

(b) Final Design – The complete and final Design Documents along with the required certifications and documentation showing all TxDOT comments from prior design stages have been addressed in accordance with Section 3.1.7.2 of the Agreement;

(c) Released for Construction (RFC) – the Final Design issued for the purpose of construction after all prior comments by TxDOT have been addressed to TxDOT's reasonable satisfaction; and

(d) Record Documents – an organized, complete record of Plans, supporting calculations, and details that accurately reflect the actual condition of the constructed Work.

2.2.6.3.1 Submittal Preparation

DB Contractor shall prepare as part of the PSQMP a project specific Design Submittal Preparation Manual to document the formatting and CADD requirements of all Plans, specifications, reports, calculations, and Record Documents. The manual shall follow the TxDOT PS&E Preparation Manual, modified as necessary to suit the needs of DB Contractor and the Project.

DB Contractor shall host a workshop with TxDOT in order to present its Design Submittal Packaging Plan containing: (i) a list of proposed sections (i.e., Station x+xx to Station y+yy) for the Work; (ii) Professional Services packaging and content (i.e. drainage, individual structures, roadway, traffic sequencing, and others); (iii) a list of mandatory Submittals; and (iv) a proposed Submittal schedule. The Professional Services reviews shall be evenly scheduled over the duration of the design phase of the Work. Sections and packages shall be logically organized into buildable units and shall contain sufficient information and details to confirm DB Contractor intent and to validate conditions. 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 Design Manager shall conduct a series of working meetings with its Professional Services staff, the internal DB Contractor QC staff, the PSQAM, and TxDOT to establish workflow processes and procedures to be utilized during the design review process that are consistent with the Contract Documents.

DB Contractor shall conduct weekly technical working group meetings with its design staff, its QC staff, its QA staff, and TxDOT to discuss general design concepts, approaches, and application of design standards. DB Contractor shall develop, distribute, and maintain records of these meetings.

2.2.6.3.2 Pre-Submittal Workshop and Q & A

At TxDOT's direction, DB Contractor shall conduct a Pre-Submittal Workshop, at a location and for a duration acceptable to TxDOT, no later than five days before the scheduled date for each Final Design Submittal. Workshops may be conducted during standard weekly meetings. In the event a Pre-Submittal Workshop is requested, DB Contractor shall prepare supporting materials which shall include, at a minimum, a description of the content and scope of the Submittal and the technical disciplines and items that are the subject of the Submittal. Supporting information shall also include a list of items that will need to be integrated into the design but are not yet advanced to the same stage as the subject Submittal, an explanation of the design status, and a plan detailing how integration will be assured.

DB Contractor shall conduct an additional Pre-Submittal Workshop repeating the process with respect to all or part of a previous Submittal if, in TxDOT's opinion, the original presentation did not provide sufficient detail to conduct a review of the Submittal.

2.2.6.3.3 Preliminary Design Submittal

DB Contractor shall provide its Preliminary Design package to TxDOT prior to development of the Final Design Package. DB Contractor, as part of its Preliminary Design package, shall include all plans, specifications, and reports which capture all major items, elements or portions of the Work such that DB Contractor can demonstrate a comprehensive understanding of the Project, including:

(a) Verification of Project ROW requirements;

(b) Substantiation of design concepts including thorough site investigation and analysis of Site conditions;

(c) Identification of applicable standards and validation of design concept constructability; and

(d) Identification of design and construction interfaces including materials and equipment used.

2.2.6.3.4 Final Design Submittal

After DB Contractor has incorporated review comments into its design and all concerns and questions have been resolved to the satisfaction of TxDOT, DB Contractor shall provide its Final Design package to TxDOT. DB Contractor, as part of its Final Design package, shall include all:

(a) Design drawings;

(b) Design calculations;

(c) Design reports;

(d) Specifications;

(e) Copies of TxDOT's approval of deviations for design standards and/or Design Exceptions;

(f) Design Manager certification that the design meets all applicable requirements of the Contract Documents, applicable Law and Governmental Approvals and that all required Governmental Approvals and Utility Owner approvals required for design have been obtained; and

(g) PSQAM certification that the design has been checked in accordance with the approved PSQMP and that the Design Documents incorporate all of the Submittal review comments from previous Submittals.

DB Contractor shall obtain TxDOT review and written concurrence with the Design Manager's certification when issuing the Released for Construction Documents.

TxDOT's concurrence with the Design Manager's certification of compliance shall not constitute approval of the design or subsequent construction, nor will it relieve DB Contractor of its responsibility to meet the requirements hereof. Irrespective of whether TxDOT provides 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, DB Contractor shall bear the responsibility to assure that construction meets the requirements of the Contract Documents, applicable Law, and Governmental Approvals.

Any items, elements, or phases of design, subsequent to the certification of compliance shall be checked and certified by the Design Manager and verified by the PSQAM in the same manner indicated above.

If TxDOT or the PSQAM determines that the Released for Construction Documents do not meet the requirements of the Contract Documents, applicable Law and/or the Governmental Approvals, TxDOT or the PSQAM will notify DB Contractor in writing of any specific deficiencies in the Released for Construction Documents. DB Contractor shall correct such deficiencies; modify the Released for Construction Documents; and, if necessary, modify construction such that the Work is in compliance with the Contract Documents.

2.2.6.3.5 Resubmittal Process

Resubmittals of any design Submittal may be required if deemed necessary by TxDOT or any Governmental Entities with jurisdiction over the Project. TxDOT will provide notification of the requirement to resubmit, in accordance with Section 3.1 of the Agreement. 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. A copy of all correspondence relating to each Submittal made to any Governmental Entity with jurisdiction over the Project shall be concurrently provided to TxDOT.

2.2.6.3.6 Released for Construction Documents

After DB Contractor has completed design of any particular Released for Construction Document, DB Contractor's PM or designee approved by TxDOT shall submit to TxDOT

Released for Construction Documents in accordance with the Submittal requirements of the PSQMP. Released for Construction Documents shall include the required certifications for the Final Design and shall be signed and sealed by an Engineer of Record. DB Contractor's Released for Construction Documents shall comply with the requirements of the Contract Documents, shall be detailed, complete, constructible, and shall allow verification of the design criteria and compliance with the Contract Documents.

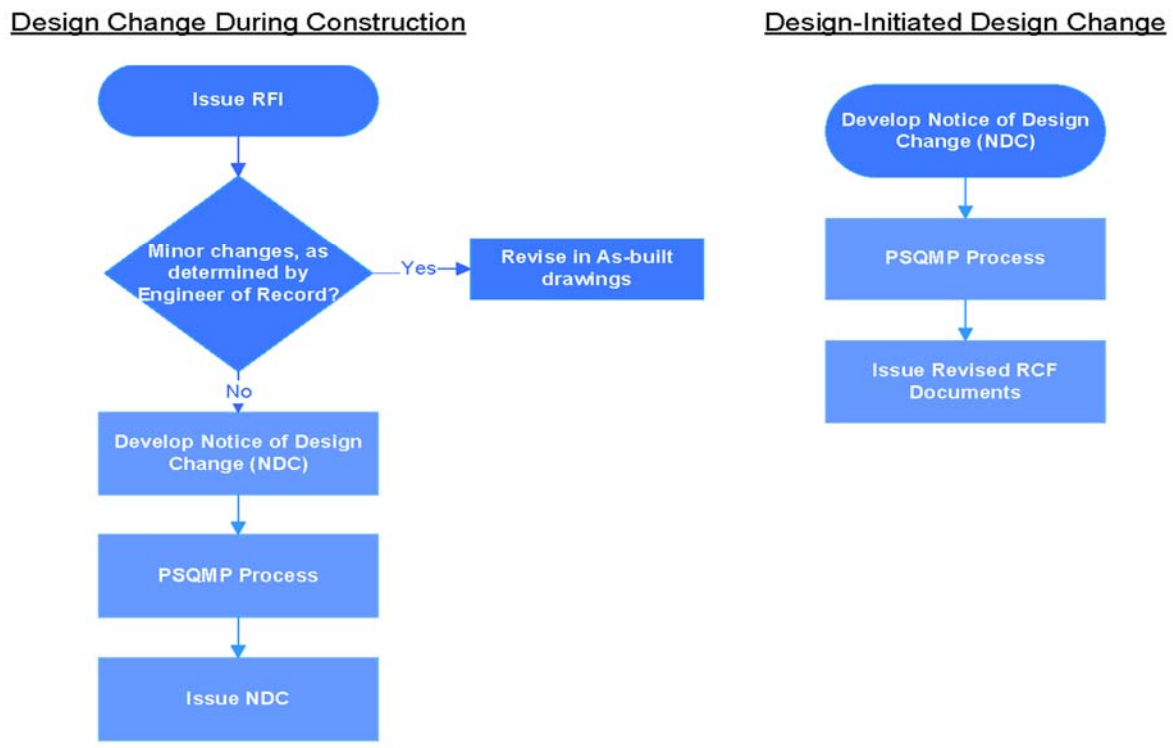
Released for Construction Documents are required for all Construction Work that will be permanently incorporated into the Project and shall also be required for temporary structural items, elements, or portions of Work to be identified by DB Contractor with in the Design Submittal Packaging Plan.

2.2.6.4 Design Changes

2.2.6.4.1 Design Changes during Construction

Design changes to previously submitted Released for Construction Documents are allowed in accordance with this Section 2.2.6.4. In every instance in which DB Contractor intends to construct the Work or has constructed the Work that deviates from the Released for Construction Documents, DB Contractor shall submit to the Engineer of Record a Request for Information (RFI) and include, at a minimum, the plan set and sheet number containing the proposed design change, a brief description of the requested or required design change, and the reason why the item of concern cannot be or was not constructed in accordance with the Released for Construction Documents. DB Contractor cannot resolve Nonconforming Work solely through the use of an RFI.

RFIs that constitute minor changes to the Work and need not initiate a design change or modified calculations shall be used to transfer that information to the as-built drawings. Minor design changes shall be those not needing specialized expertise, not in nonconformance with the project requirements and not materially affecting design intent. Those design changes that require redesign or modified calculations shall be progressed as a Notice of Design Change (NDC). The Engineer of Record, in accordance with the PSQMP, shall determine if an NDC is necessary. DB Contractor shall provide TxDOT a copy of the Engineer of Record's responses to all RFIs prior to implementation. The PSQAM shall review RFIs to ensure that they comply with the QMP. DB Contractor shall also include updated calculations, specifications and reports for all changes, as applicable in the NDC.



2.2.6.4.2 Design-Initiated Design Changes

DB Contractor may, in an effort to add clarity or address concerns with previously submitted Released for Construction Documents, issue a NDC. NDCs shall undergo the same PSQMP processes as the original design including submittal to TxDOT for review and concurrence.

2.2.6.4.3 Responsibilities of Engineer of Record

All plans, specifications, calculations, and reports for design changes shall be signed, and sealed by a Registered Professional Engineer in accordance with applicable Law. Every design change shall be:

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

(b) Checked in accordance with the approved PSQMP; and

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

2.2.6.4.4 Design Change Processes

DB Contractor shall define in its CQMP and PSQMP its process for:

(a) Communication between its construction and design teams regarding inquiries and design changes consistent with provisions in this Section 2.2.6.4;

(b) Notifications and submittal to TxDOT of RFIs and NDCs;

(c) Determination by the Engineer of Record of whether a design change shall follow the NDC process or shall only be captured in as-built drawings; and

(d) Identification of third parties impacted by a design change.

2.2.6.5 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 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 DB Contractor prior to receiving TxDOT's written concurrence with the Design Manager'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 PSQMP requirements until the Design Manager 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 DB Contractor.

Any Work constructed by DB Contractor prior to receiving TxDOT's concurrence of the Design Manager's certification of the Final Design Submittal for the Work, and later determined to be unacceptable by TxDOT as described in Section 3.1.8 of the Agreement, shall be revised, removed, or otherwise reconfigured to the satisfaction of TxDOT at DB Contractor's sole cost and expense and without any consideration given to an extension of the Completion Deadline.

TxDOT and DB Contractor shall agree on procedures for Early Start of Construction procedures which shall, among other things, include a process for distributing Construction Documents, signed and sealed by a Registered PE, to TxDOT and DB Contractor's field staff. 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 (TCP) 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 DB Contractor, and does not release DB Contractor from any of the requirements described in Section 2.2.7. 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, 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.

2.2.6.6 Record Documents

DB Contractor shall submit to TxDOT a complete set of Record Documents in hard copy and native electronic format for the portion of the Project actually opened to traffic. The Record Documents shall be an organized, complete record of Plans and supporting calculations and details that accurately represent what DB Contractor constructed.

DB Contractor shall ensure that the Record Documents reflect the actual condition of the constructed Work prepared from the Released for Construction Documents including any modifications resulting from approved design changes. DB Contractor shall submit to TxDOT the electronic files, used to prepare the Record Documents.

2.2.7 Construction Quality Management Plan

DB Contractor shall prepare a CQMP that describes its policies and procedures to manage Construction Work quality (including that of subcontractors) consisting of construction QC and QA activities and materials acceptance procedures in accordance with TxDOT's *QAP for DB Projects.* TxDOT approval of the CQMP shall be a condition of the commencement of Construction Work. The CQMP shall include all necessary forms, schedules, and checklists. These may be documented in appendices. The Independent Quality Firm (IQF) shall oversee the implementation of the CQMP.

2.2.7.1 CQMP General Requirements

DB Contractor shall construct the Work in accordance with the Released for Construction Documents, or as modified by approved design changes.

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 QC and QA activities and persons performing them.

In addition to the relevant contents required in the QAP for DB Projects, the CQMP shall clearly address and include, at a minimum, the following:

(a) A construction QC organizational and staffing plan, which shall include the period of time that the QC staff member will be present on the Site and the experience/knowledge/skill levels of the QC staff;

(b) IQF organizational and staffing plans, which shall include the period of time that the IQF staff member will be present on the Site, a process for transitioning inspectors on and off the field based on construction schedule and workload, a process for ensuring sufficient inspection staff for the amount of work being performed, 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. The administrative/clerical support staff for maintenance and management of records/documents pertinent to quality assurance for the CQMP activities shall be identified;

(c) Procedures to ensure that education, training, and certification of personnel performing CQMP activities is achieved and records maintained and that all Work is performed in accordance with the Construction Documents and Contract Documents;

(d) Procedures to ensure that DB Contractor, Suppliers, and Subcontractors designate individuals on each crew responsible for performing daily field inspections of their own Work and for preparing a daily QC report to document the inspection performed. Report forms to be used by the responsible QC personnel shall be included;

(e) Requirements that all activities undertaken by or on behalf of 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;

(f) Procedures to ensure that elements of the Work are not started or continued without formal communication with IQF personnel. Inspections and hold points shall be identified and communicated to the Independent Quality Firm Manager (IQFM), Construction Quality Control Manager (CQCM), and TxDOT. Procedures to proceed beyond the inspection or hold points shall be developed. The hold points shall include, at a minimum, those described in Attachment 2-4. Milestones shall be established at convenient opportunities to inspect the Work and to prevent significant cost of correction. No work may be covered until it has been subject to a hold point acceptance by QA personnel. The IQFM and TxDOT may agree to modify established hold points to meet the needs of the project;

(g) Procedures for inspecting, checking, and documenting the Work. An inspection plan based on critical Work items or elements of the Work identified in the current PBS, and shall discuss number of inspections and when the inspections will occur. The CQMP shall contain detailed descriptions of the following items in inspection plans, test plans, and checklists:

(i) the minimum requirements;

(ii) the responsibility;

(iii) the activity to be tested/inspected;

(iv) the quantities represented;

(v) the group/laboratory to perform the test/inspection;

(vi) the timing and frequency of test/inspection including whether it is incoming, in-process, hold point or final inspection/test;

(vii) the test/inspection procedure or reference standard;

(viii) the specified requirement reference; and

(ix) the records that demonstrate conformance;

And shall describe the procedures for the documentation and reporting of such test plans, inspection plans, and checklists;

(h) Procedures for identification and control of materials, equipment, and elements of the Work. These procedures shall ensure that identification of an 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;

(i) Procedures to ensure that materials, equipment or elements of the Work that do not conform to requirements of the Contract 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;

(j) Procedures for processing an RFI to resolve discrepancies and questions on the Plans and specifications so that all changes are documented and approved by the Engineer of Record;

(k) Procedures for processing an NDC including review and comment by TxDOT;

(l) 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;

(m) 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 Contract Documents. It shall specify written test procedures which include provisions 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;

(n) 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;

(o) Procedures for sampling and testing of all materials during the production and manufacturing processes that ensure that only materials meeting the specifications are supplied for ultimate incorporation into the Work;

(p) Procedures to control the handling, storage, shipping, cleaning, and preservation of materials and equipment to prevent damage or deterioration;

(q) Procedures to ensure 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.

(r) 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 DB Contractor and are distributed to and used at the location where the prescribed activity is performed.

(s) Procedures for checking and verifying the accuracy and adequacy of construction stakes, lines, and grades

(t) Procedures for (i) obtaining and reviewing documentation such as material invoices, pre-approved material test results, shop drawings; (ii) ensuring quality staff and TxDOT have the latest and correct set of Plans and/or 3-D model; and (iii) documenting QA inspections, including which requirements were inspected and verified;

(u) Pre-activity construction meetings to ensure all parties responsible for the quality of the Work have a common understanding of the requirements, the design intent, the applicable Design Documents, and procedures, laws, and regulations related to the Work. Pre-activity construction meetings shall be held for all significant activities and repeated whenever there are significant changes in personnel or working conditions, and when there has been a significant lapse of time since the activity was last undertaken. The applicable designer(s) and TxDOT shall be invited;

(v) Procedures describing the form and distribution of certificates of compliance; and

(w) Procedures for Warranty Work to control the identification and resolution of warranty issues.

2.2.7.2 Construction Quality Personnel and Staffing

2.2.7.2.1 Construction Quality Control Manager

DB Contractor shall assign a CQCM who shall be responsible for management of the QC program for the Construction Work. The CQCM shall not be involved with scheduling or production delivery activities, and shall report directly to DB Contractor's Project Manager. The CQCM shall ensure the methods and procedures contained in the approved CQMP are implemented and followed in the performance of the Work. The CQCM shall have relevant construction quality control management experience on projects of similar type and scope. CQCM shall be co-located and on-Site during periods of construction unless TxDOT approves of a field representative to fulfill CQCM's day-to-day functions.

The CQCM or field representative as described above shall have authority to stop Work.

The CQCM shall be employed by either: (a) an Equity Member, Lead Engineering Firm or Lead Contractor; (b) a controlled subsidiary of such Equity Member, Lead Engineering Firm or Lead Contractor; (c) if the Lead Engineering Firm or Lead Contractor is a joint venture, a member of such joint venture that will perform at least thirty percent (30%) of the relevant work or a controlled subsidiary of such joint venture member; or (d) a parent company of an Equity Member.

2.2.7.2.2 Construction Quality Control Staff

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

2.2.7.2.3 Independent Quality Firm Manager

DB Contractor shall assign an independent IQFM who shall be responsible for management of the QA program for the Construction Work. The IQFM shall be employed by an independent IQF and report jointly to the TxDOT Project Manager and DB Contractor's senior management team. The IQFM shall carry out assurance and audit functions as described in the CQMP. The IQFM 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, or similar TxDOT approved standards. The IQFM shall be a Registered PE. and shall have relevant construction quality assurance experience on projects of similar type and scope. The IQFM shall be co-located and on-site beginning at NTP2 until Final Acceptance.

The IQFM shall have the authority to stop Work.

2.2.7.2.4 IQF Staff

An IQF inspection and material sampling/testing staff shall be provided under the direction of the IQFM to perform inspection and material sampling/testing of all aspects of the Work performed and materials incorporated into the Project by any member of DB Contractor's staff.

The IQF inspection and testing staff shall be employees of the IQF and shall have been trained in the applicable inspection and material sampling and testing procedures. The IQF staff member shall be qualified and experienced relevant to the inspection or test they perform. The training and experience of the IQF 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 American Concrete Institute certification in applicable inspection or testing activities. Construction IQF staff shall report to the IQFM.

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

2.2.7.2.5 IQF Staff Levels

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

The IQF staffing requirements shall be updated as necessary throughout the Term to reflect changes in the actual construction schedule. DB Contractor shall ensure that adequate construction IQF staff is available and that CQMP activities are undertaken in a manner consistent with the Project Schedule and in a manner that will enable DB Contractor to achieve the Substantial Completion deadline and Final Acceptance deadline.

2.2.7.2.6 Responsibility and Authority of Quality Staff

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

DB Contractor's IQFM and IQF staff shall remain independent of the production Work and of the QC staff.

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

2.2.7.3 TxDOT Construction Look-Aheads

On a weekly basis, DB Contractor shall update and provide TxDOT with a rolling three-week look-ahead schedule consistent with the current PBS and showing the anticipated start and finish of Work activities. The look-ahead schedule shall include fabrication activities and planned construction activities. Anticipated inspection activities, review by third parties, and all associated hold points will be shown in the look-ahead schedules for each of the Work activities.

2.2.7.4 Laboratory Requirements

IQF laboratory equipment in all laboratories shall be certified according to the requirements of the TxDOT *QAP for DB Projects* prior to commencing any construction activities and shall retain the certification for the duration of the Work.

2.2.7.5 Supply Source and Material Quality

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

2.2.7.6 Hold Points

DB Contractor shall allow inspection of each hold point in accordance with the TxDOT *QAP for DB Projects*. Failure on the part of TxDOT to conduct any tests or inspections at a hold point does not relieve the DB Contractor of its responsibility to meet all the requirements of the Contract Documents.

2.3 Public Information and Communications Plan

Section 3 includes requirements for public information and communications management.

2.4 Safety and Health Plan

DB Contractor shall be responsible for the safety and health of its personnel and of the general public affected by the Project. DB Contractor shall prepare and submit to TxDOT for review and concurrence a comprehensive Safety and Health Plan that is consistent with and expands upon the preliminary Safety and Health Plan submitted with the Proposal. All members of DB Contractor's team shall adhere to DB Contractor's Safety and Health Plan.

DB Contractor shall take full account of the unique attributes of this Project in preparing the Safety and Health Plan, including but not limited to, the urban environment, and the size and scope of the Project. The Safety and Health Plan shall fully describe DB Contractor's policies, plans, training programs, Work Site controls, and Incident response plans to ensure the safety and health of personnel involved in the Project and the general public affected by the Project. The Safety and Health Plan shall cover all phases of the Work, and DB Contractor shall review, evaluate, and update such plan as often as necessary to reflect relevant changes during the Term. The Safety and Health Plan shall contain, at a minimum, the following provisions described below.

2.4.1 Safety Management

DB Contractor shall identify the personnel and responsible staff who will implement, maintain, and enforce the Safety and Health Plan policies, plans, and training programs in the Safety and Health Plan. At a minimum, DB Contractor shall provide a full time on-the-job Safety Manager. The Safety Manager's qualifications, at a minimum, shall include:

(a) Ten years of progressive heavy construction experience, five years of which must be safety management experience on complex, heavy civil projects.

(b) Current certification as a Construction Health and Safety Technician (CHST) by the Board of Certified Safety Professionals, or current certification as a Certified Safety & Health Official (CSHO) may be substituted for two years of safety management experience. CHST and CHSO certifications are not required if the Safety Manager has at least five years of safety management experience.

(c) Current certification for having completed the Occupational Safety and Health Administration (OSHA) #500 – Trainer Course in OSHA Standards for Construction.

(d) Current certification for CPR and First Aid.

(e) Current certification for having completed training for flaggers in the work zone and work zone traffic control.

The Safety Manager shall report directly to DB Contractor's senior management team. The Safety Manager shall have authority to stop all Work on the Project. The Safety Manager shall be employed by either: (a) an Equity Member, Lead Engineering Firm or Lead Contractor; (b) a controlled subsidiary of such Equity Member, Lead Engineering Firm or Lead Contractor; (c) if the Lead Engineering Firm or Lead Contractor is a joint venture, a member of such joint venture that will perform at least thirty percent (30%) of the relevant work or a controlled subsidiary of such joint venture member; or (d) a parent company of an Equity Member.

The Safety and Health Plan shall define the role and responsibilities of the Safety Manager and safety staff, the hierarchical relationship between the Safety Manager and other managers, supervisors, and employees, and how responsibility and accountability for safety will be incorporated at all levels on the Project.

The Safety and Health Plan shall set forth the obligations of all personnel in adhering to the Safety and Health Plan, as well as establish and communicate clear goals for safety, security, and health, including defined objectives for meeting the goals. Requirements for evaluating the effectiveness of policies and measuring success in meeting the goals and objectives of the Safety and Health Plan shall be set forth in the Safety and Health Plan and an environment and means for continuous evaluation and improvement shall be established to achieve the Safety and Health Plan goals and to identify deficiencies so that the goals and objectives can be revised as needed to improve the safety and health of DB Contractor's personnel and of the general public affected by the Project.

The Safety and Health Plan shall set forth Incident response plans to ensure the safety and health of personnel involved in the Project and the general public affected by the Project. In addition, the Safety and Health Plan shall set forth 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.

2.4.2 Worksite and Jobsite Analysis

The Safety and Health Plan shall establish a reliable system for allowing employees to notify management personnel about conditions that appear hazardous, and to receive timely and appropriate responses, without fear of reprisal.

DB Contractor shall keep readily available at DB Contractor's Project office Site an updated summary of Work related Incidents, which may include, at a minimum, a board promoting the number of consecutive Incident-free days.

2.4.3 Hazard Prevention and Personal Safety

The Safety and Health Plan shall set forth: (i) the methods and procedures to identify and detail all hazards that may be encountered by personnel while performing the Work, and (ii) practices and procedures that have been developed and implemented to address prevention of identified hazards. DB Contractor shall establish a communications protocol to ensure all employers and employees are aware of hazards in all areas and how to deal with them appropriately. Means shall be provided to evaluate all anticipated and unanticipated activities, and address potential hazards related to these activities.

DB Contractor shall provide the means to ensure personnel understand and comply with safe work practices and procedures through training, positive reinforcement, correction of unsafe performance, and if necessary, enforcement through a clearly communicated disciplinary system established within the Safety and Health Plan.

DB Contractor shall handle Hazardous Materials in compliance with Section 6.9 of the Agreement and the applicable requirements of these Technical Provisions.

2.4.4 Training

DB Contractor shall establish methods within the Safety and Health Plan to identify, develop, and provide relevant training for employees and supervisors designed to ensure that all employees understand and are aware of the hazards to which they may be exposed, and are aware of the proper methods for avoiding the hazards.

DB Contractor shall establish methods within the Safety and Health Plan to identify, develop, and provide supervisory training programs to ensure supervisors understand the key role they play in job Site safety and to enable them to carry out their safety and health responsibilities effectively; to analyze the Work under their supervision to anticipate and identify potential hazards; and to maintain physical protection in their work areas, including the establishment of policies that ensure each employee is provided with the equipment necessary to complete assigned tasks safely.

The Safety and Health Plan shall set forth the procedures to plan and prepare for Emergencies, and to conduct training and Emergency drills.

2.4.5 Drug Free Work Zone

The Safety and Health Plan shall set forth the policies and procedures to require adherence to a 100% drug/alcohol free work zone.

2.4.6 Incident and Emergency Management

DB Contractor shall establish procedures within the Safety and Health Plan to achieve at a minimum, the following:

(a) Maintenance of communication for the exchange of information between DB Contractor, TxDOT, and other involved agencies;

(b) Coordinated support through interaction with local, State, and federal Governmental Entities, as well as other entities, for safe and efficient construction;

(c) Discussion and coordination with Emergency response, traffic control, security, and operational issues affecting construction of the Project, and associated system feeders and exits;

(d) Procedures to update participating agencies regarding status of construction of the Project, and associated system feeders and exits, to assure safe and timely response to Emergency events. As a minimum, this shall include off-Site and on-Site traffic routing changes, and changes to Site access, fire suppression system modifications and in-service availability of standpipes or fire suppression water supply, if applicable, and changes in the Work that may create a greater likelihood of occurrence of a particular type of Emergency;

(e) Procedures for notifying TxDOT of Incidents arising out of or in connection with the performance of the Work; and

(f) Compliance with the local hurricane evacuation plan.

2.5 Comprehensive Environmental Protection Plan

Section 4 includes requirements for environmental management.

2.6 TxDOT-DB Contractor Communications Plan

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

The TxDOT-DB Contractor Communications Plan shall describe the procedures for communication of Project information including notification of Incidents affecting the Project or the traveling public between DB Contractor's organization and TxDOT. The TxDOT-DB Contractor Communications Plan shall describe how 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 Contract Documents.

2.7 Right of Way Acquisition Management Plan

Section 7 includes the requirements for ROW acquisition management.

2.8 Traffic Management Plan

Section 18 includes the requirements for traffic management.

2.9 Maintenance Management Plan during Construction

Section 19 includes the requirements for maintenance management.

2.10 Submittals

Submittals described in Section 2 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth on Table 2-2. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 2-2: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Section 2			
PMP – Project Administration Component	Within 30 days after NTP1	Approval	2.1
Schedule of Values	Submitted with Project Baseline Schedule PBS2 and PBS3 and updated whenever a Change Order is agreed	Approval	2.1.1.2.2.8
Project Baseline Schedule (PBS2)	Prior to issuance of NTP2	Approval	2.1.1.2.3.2
Project Baseline Schedule (PBS3)	Prior to Commencement of Construction	Approval	2.1.1.2.3.4
Project Schedule Updates	Monthly after initial PBS2 and PBS3 submittals and as part of the Progress Report	Approval	2.1.1.3
Schedule revisions – • DB Contractor revisions • Change Order revisions • Recovery Schedule revisions	As necessary	Approval	2.1.1.4
Time Impact Analysis	As necessary; within 15 days of receiving the request from TxDOT	Approval	2.1.1.5
As-Built Schedule	Prior to Final Acceptance	Approval	2.1.1.6
Progress Report	Monthly with Draw Request	Review and Acceptance	2.1.2
Written notice of disagreement with TxDOT Progress Report comment	Within seven days from the receipt of TxDOT comments	Review and Acceptance	2.1.2
Progress Report resubmission	As necessary	Review and Acceptance	2.1.2
Revisions to the QMP	1. Within 14 days of detection of a substantial or systemic problem; and 2. As directed by TxDOT Prior to implementation	Approval	2.2
Quality records	When requested	For Information	2.2.1

Table 2-2: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Senior management review meeting minutes	Quarterly, within 14 days of meeting	For Information	2.2.2
Report on QMP effectiveness	Quarterly, within two weeks of senior management review	For Information	2.2.2
Results of Project quality audits	Within seven days of completion	For Information	2.2.3
DB Contractor Non-conformance Reports	Within 48 hours of both issuance and resolution	For Information	2.2.4
Responses to TxDOT Nonconformance reports	Within 48 hours of receipt	Review and comment	2.2.4
PMP – Professional Services Quality Management Plan	Prior to submitting design packages for TxDOT review	Approval	2.2.6
Copies of all Design Documents	Upon TxDOT request	For Information	2.2.6.1
Design Submittal Packaging Plan	Prior to the first Professional Services Submittal	Approval	2.2.6.3.1
Technical Working Group meeting minutes	Upon Request	For Information	2.2.6.3.1
Pre-Submittal Workshop meeting invitations, supporting materials, and agendas	5 Business Days prior to the workshop	For Information	2.2.6.3.2
Pre-Submittal Workshop meeting minutes	Upon Request	For Information	2.2.6.3.2
Preliminary Design package	Prior to development of the Final Design package	Review and comment	2.2.6.3.3
Design Exceptions and design standards deviations	Prior to Final Design Submittal	Approval	2.2.6.3.4
Design Manager's certification	With RFC Documents	Concurrence	2.2.6.3.4
Final Design Submittal	As Agreed upon with TxDOT	Review and comment	2.2.6.3.4
RFC Documents	As Agreed upon with TxDOT	Concurrence	2.2.6.3.6
Requests for Information and copies of Engineer of Record’s determination of NDC	As necessary, access to TxDOT prior to implementation	For Information	2.2.6.4.1
Early Start of Construction procedures	Prior to Work	Concurrence	2.2.6.5
Record Documents	Prior to Final Acceptance	For Information	2.2.6.6

Table 2-2: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Manufacturers' warranties, guarantees, instruction sheets, parts lists, and other product data	With the Record Documents	For Information	
PMP – Construction Quality Management Plan (CQMP)	Approval prior to NTP2	Approval	2.2.7
IQFM's Monthly Quality Report	Monthly during Construction Period	Review and Comment	2.2.7.2.6
Construction Look ahead schedule	Weekly	For information	2.2.7.3
PMP – Safety and Health Plan	Approval prior to NTP2	Concurrence	2.4
PMP – TxDOT – DB Contractor Communications Plan	Approval prior to NTP2	Approval	2.6

SECTION 3.0 PUBLIC INFORMATION AND COMMUNICATIONS

3.1 General Requirements

In coordination with TxDOT, DB Contractor shall be responsible for developing and implementing a public information and communication program in order 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.

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.

3.2 Administrative Requirements

On a schedule mutually agreed upon between DB Contractor and TxDOT's public information officer, DB Contractor shall meet regularly with TxDOT's public information officer and Customer Groups to coordinate efforts.

DB Contractor shall provide to TxDOT complete copies of all materials to be presented to the public or the media at least three Business Days prior to dissemination.

3.2.1 Public Information and Communications Plan

DB Contractor shall submit to TxDOT for approval a comprehensive Public Information and Communications Plan (PICP) as part of the PMP, based upon the preliminary public information and communications plan submitted with DB Contractor's Proposal, which informs, educates, and engages the Customer Groups throughout the Project. The PICP shall be submitted in both hardcopy form and electronic format compatible with TxDOT software.

Following issuance of NTP1, DB Contractor shall organize a communications planning workshop with TxDOT to discuss development of the PICP and to ensure the contents of the PICP meet TxDOT expectations. TxDOT and DB Contractor will jointly develop an agenda and determine a suitable location for the workshop.

The PICP shall identify specific outreach or engagement activities, the frequency of those activities, the modes of communication that will be used, and the processes that will be used in order to measure the effectiveness of the PICP.

DB Contractor shall identify the Customer Groups and develop specific plans to respond to their concerns and needs regarding the Project. DB Contractor shall continually maintain the plans to ensure delivery of high-quality, well-executed communications from approval of the PICP to the end of the Term.

The PICP shall be flexible enough to capture the full magnitude of yet-to-be-determined impacts from Project activities and the public's reaction to these and other impacts.

Together with TxDOT's designated point of contact for the local public information office, DB Contractor shall periodically review the PICP (at least annually) to forecast, plan, and coordinate updates in the plan and strategies needed to effectively accomplish the stated goals and objectives. DB Contractor shall make appropriate changes to the PICP for TxDOT's approval

as required to suit the changing goals and needs of the Project and 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 PICP shall include a general timeline that lists public information activities throughout the Project. This timeline shall be used as an initial guide and shall be updated by DB Contractor as the Project is implemented but no less than on an annual basis.

DB Contractor shall provide sufficient qualified staff to effectively implement the PICP.

In developing the PICP, DB Contractor shall develop appropriate provisions to achieve the following requirements:

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

(b) Provide Customer Groups with regular opportunities for input early and often throughout the development process.

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

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

(e) Provide public information that facilitates alternative trip planning during construction.

(f) Address the Project-specific concerns of Customer Groups, including interests in Emergency Services vehicle access, business owner and patron driveway access, delivery access, adjacent neighborhood access, changes to bicycle and pedestrian access and neighborhood traffic patterns, changes to mobility access associated with the *Americans with Disabilities Act* (ADA), construction noise and lighting, and ongoing noise issues.

(g) Develop procedures and policies addressing any Third Party Claims as further described in Section 3.2.8.

To achieve these goals, DB Contractor shall use, but not be limited to, the implementation strategies described in Sections 3.2.1.1 through 3.2.1.2.

3.2.1.1 Public Information and Communication

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

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

(c) Organize and manage meetings and communications with Customer Groups. Meetings can be held on an ad hoc basis or, as appropriate, on a regular basis as established in consultation with TxDOT.

(d) Attend events and meetings when invited 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 Work being performed, including 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, noise walls, Project ROW acquisition, and aesthetic characteristics.

(g) Develop and manage a public relations campaign and communication strategy to convey key messages, branding, and pertinent information about the Project. Include Work elements, timing, and durations. Provide contact information for inquiries by Customer Groups.

(h) As requested by TxDOT, coordinate and perform tours of the Project.

(i) Comply with the latest requirements of the TxDOT *Guidelines for Analysis and Abatement of Roadway Traffic Noise*.

(j) Develop materials and make arrangements for multi-lingual groups when it can be reasonably anticipated that material will be presented to multi-lingual Customer Groups.

(k) Communicate impacts and Project design for accommodation of pedestrians and bicyclists throughout the Project.

(l) Develop 3-D drive-thru videos and renderings of the project, as directed by TxDOT, to accurately depict the proposed project to interested stakeholders and community groups.

(m) Compile database of all Customer Group contacts and make readily available to TxDOT in an easily accessible format.

3.2.1.2 Media

(a) Utilize existing TxDOT media resources if available to create and develop advertising messages, including graphics, logos, and slogans.

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

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

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

(e) Develop and implement communications plans that anticipate and minimize traffic impacts on the Project from public, special, and seasonal events.

(f) Monitor local, state, and national media coverage for accuracy and to gauge local opinion. Coordinate with TxDOT regarding any inaccurate information. Respond in a method, time, form, and message approved by TxDOT to such inaccurate information as soon as possible but no later than within one day.

(g) Document and make available Project-specific media clips to the entire Project team.

(h) Employ the use of an internet based communications, media alert, press release, and special list notifications system/service that provides information in real time with an up-to-date database of major media contacts in the area and subscriber lists.

3.2.1.3 Communication Hierarchy

The PICP shall detail the communication hierarchy for information distribution. The PICP shall include DB Contractor names and contact information, including emergency contact information and the preferred methods of routine and emergency communication distribution.

3.2.2 Public Information Coordinator

DB Contractor shall provide a Public Information Coordinator to lead DB Contractor's public information activities on a day-to-day basis throughout the Term. The Public Information Coordinator shall have recent, 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 DB Contractor and Customer Groups, be responsible for the dissemination of Project information, and serve as the clearinghouse for the receipt of and response to written or verbal comments or complaints regarding the Project.

(b) Coordinate all interactions with elected officials or their representatives with TxDOT's Public Information Office and its Government Relations Office.

(c) Lead the production, implementation, quality control, and update of the PICP.

(d) Coordinate and supervise day-to-day activities of DB Contractor's personnel in performing the public information activities described in the PICP.

(e) Facilitate communication among DB Contractor, TxDOT personnel (including TxDOT's public information officers), and Customer Groups.

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

(g) Develop a clear understanding for Customer Groups' concerns and reactions regarding the Project and public information program and incorporate that knowledge into improving the PICP.

(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.

(i) Liaise with the appropriate staff and customer groups as appropriate to outline the impacts and benefits of the Project in relation to parks and pedestrian/bicyclist access.

(j) Create and manage a Customer Group database. Allow TxDOT access to the database as requested.

(k) Speak fluent English and speak fluent Spanish or have a Spanish translator available at all times.

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

3.2.3 Public Information Office

DB Contractor shall maintain a public information office for the Term. The hours of operation for this office shall be as outlined below. This office shall serve as the primary business location for the Public Information Coordinator and shall be conveniently located within one mile of the Project site. The public information office shall provide a centralized location for residents and other Customer Groups to obtain information on the Project, including Project maps and Plans, fact sheets, alternative routes, lane closures, construction updates, community impacts, and commute options.

The public information office shall have readily available two conference rooms capable of hosting meetings with Customer Groups. The rooms shall be ADA-compliant, convenient to and accessible by Customer Groups, and appropriately supplied with electrical outlets, tables, and chairs, and other equipment to meet meeting requirements. One of these rooms shall accommodate at least 50 persons and another shall accommodate at least 15 persons. DB Contractor shall provide sufficient parking to accommodate use of the public information office.

During design and construction, the minimum hours of operation of the public information office shall be as follows:

(a)	Monday-Friday	8 a.m. – 5 p.m. and by appointment
(b)	Saturday	By appointment
(c)	Sunday	Closed

DB Contractor shall extend hours of operation to appropriately service Customer Groups.

In addition to the services listed above, DB Contractor shall provide a 24-hour telephone hotline that is manned locally during the public information office's normal business hours and that provides a recorded message describing Emergency procedures after hours. DB Contractor shall respond to voicemail messages left after hours within 48 hours of receiving the voicemail message. DB Contractor's Public Information Coordinator shall log the messages, responses, day and time of message, and day and time of response.

3.2.4 Meetings with the Public and Customer Groups

DB Contractor shall organize and manage meetings with the general public and Customer Groups during the Term and will develop with TxDOT the list of meeting and event invitations.

The PICP shall address the frequency of such meetings, which frequency must be increased or decreased as needs arise to better inform and engage the Customer Groups. From time to time, upon TxDOT's request, DB Contractor shall modify its meeting schedule to better inform and engage the Customer Groups.

To maximize public participation, DB Contractor shall advertise meetings hosted by DB Contractor a minimum of two weeks in advance. Advertisement shall include utilization of e-alerts, social media, and the Project website, and in the appropriate media outlets, such as the Texas Register, local newspapers, and television and radio stations, or via media advisories and media releases. DB Contractor is solely responsible for creating all meeting advertisements.

During such meetings, DB Contractor shall inform participants of the Project's progress and discuss key issues as they emerge. 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, frontage roads, local streets, and utilities (including such issues as the Project ROW definition, the 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;

(f) Environmental mitigation measures, including noise wall meetings; and

(g) Other environmental issues.

DB Contractor shall notify TxDOT a minimum of 15 Business Days in advance of any meetings with the public. TxDOT reserves the right to attend any such meetings. When requested by TxDOT, DB Contractor shall participate in and provide support for any meetings with the Customer Groups scheduled and conducted by TxDOT. When TxDOT decides to conduct such meetings, DB Contractor shall share, in a readily manipulatable form, all necessary information regarding potential Customer Groups at TxDOT's request.

3.2.5 Meeting Summaries

For all meetings which DB Contractor conducts or directly participates in, DB Contractor shall prepare meeting summaries. DB Contractor shall submit draft versions of all meeting summaries to TxDOT for review and comment in readily accessible form (e-mail, Project intranet site, or file sharing site) upon request. TxDOT comments shall be incorporated before distributing final versions to the meeting attendees and appropriate Customer Groups. At a minimum, DB Contractor shall include the following items in each meeting summary:

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

(b) Documentation of the exhibits, presentations and 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 date for action or resolution).

For any formal public meetings or open houses at which a court reporter is required, DB Contractor shall also include detailed oral transcripts in the summary.

3.2.6 Emergency Event Communications

For all Emergency events, including major vehicle collisions, severe weather conditions, and Hazardous Material spills, the Public Information Coordinator shall take timely and appropriate action to inform TxDOT and Customer Groups of all pertinent details. The Public Information Coordinator shall provide these details through the use of appropriate tools to ensure effective communication. These tools include, but are not limited to: dynamic message signs (DMS), TxDOT's Highway Conditions Report, email/Web/text alerts, telephone notification, 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 Emergency, timely notification shall mean as soon as practicable, but in no event longer than within one hour of the occurrence. DB Contractor shall follow TxDOT's general guidelines requiring notification when an Emergency results in delays for motorists in traffic extending beyond 20 minutes. If advanced warning is available for an Emergency event such as ice/snow, timely notification shall mean as soon as practicable, but in no event longer than within one hour of the time the information is available. In both situations, the Public Information Coordinator shall continue to provide updated information, as available and on a timely basis, until the Emergency no longer exists.

3.2.7 Disseminating Public Information

DB Contractor shall prepare and distribute public information using all appropriate methods, including materials for meetings, news releases, telephone correspondence, newsletters, emails, text messages, mobile device applications, hotlines, Highway Conditions Report, dynamic message signs, web alerts, maps, displays, renderings, presentations, milestone events, business owner taskforce meetings, open houses, brochures, pamphlets, highway advisory radio, video news releases, and other social media services as direct by TxDOT. Copies of draft public information materials shall be submitted to TxDOT. TxDOT shall have a period of five Business Days to review and comment in advance of final editing. After incorporation of TxDOT comments to the satisfaction of TxDOT, DB Contractor shall provide complete copies of all final materials to TxDOT at least three Business Days prior to dissemination.

DB Contractor shall create a public 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) Newsletter and meeting materials;

(h) Meetings and special events announcements and calendar;

(i) Links to TxDOT Highway Conditions Reports;

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

(k) Job opportunities;

(l) Subcontractor information;

(m) Comment form;

(n) Mailing list request form;

(o) Historical archive of photos taken during construction;

(p) Renderings or video animations of the Project, as appropriate; and

(q) Published materials in Spanish and other languages as needs warrant and in consultation with TxDOT.

Website design and creative development shall be coordinated with TxDOT's Communications Division to ensure TxDOT brand management and concurrence. The website shall also contain other general Project-related information that enhances the engagement or education of the general public. DB Contractor shall regularly review and update information on this public website as it becomes available throughout the Project to provide current and appropriate information and the website shall provide for question and feedback opportunities for public communication. DB Contractor shall develop and implement a plan to make the Customer Groups aware of the Project website.

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

DB Contractor shall track all incoming comments, inquiries, and requests for information related to the Project. The following information shall be collected with each contact, and a summary of all contacts (after removing information obtained in response to items (a)-(d) below) shall be reported to TxDOT on a monthly basis:

(a) Name of individual;

(b) Address (not required);

(c) Phone number;

(d) E-mail address;

(e) Subject matter;

(f) Specific comment, question or request;

(g) Date of comment, question or request; and

(h) Response given.

DB Contractor shall track requests for language assistance services and provide information to TxDOT each quarter for TxDOT's use, including for its inclusion in the Office of Civil Rights' Limited English Proficiency Report.

3.2.8 Third Party Claims

3.2.8.1 Claims against Third Parties by DB Contractor

As part of the PICP, DB Contractor shall prepare policies related to its pursuit of claims against third parties for damage caused to the Project, including procedures for sensitive handling of claims in which there is death or injury, and processes to keep TxDOT informed of the status of such claims against third parties.

3.2.8.2 Third Party Claims against DB Contractor

Other than the case of a Third Party Claim that DB Contractor has notified TxDOT to be, and TxDOT has accepted, as a shared liability in accordance with Section 18.2.8 of the DBA, in no case will TxDOT accept any liability for Third Party Claims in connection with damage to persons or property in connection with the Project.

In accordance with Section 18.2.1 of the DBA, TxDOT will forward to DB Contractor any claims or complaints it receives from the public in connection with the Project. DB Contractor shall be responsible for resolving all claims and complaints, whether received directly or forwarded by TxDOT, appropriately and in a timely manner and shall retain a record of the actions DB Contractor has taken with respect to each such claim or complaint.

If DB Contractor determines that neither DB Contractor nor any DB Contractor-Related Entity is responsible for the damage, DB Contractor shall notify the complainant of this position promptly by certified mail and shall retain a copy of all correspondence. All documentation, including a copy of logs and claims, shall be available for inspection by TxDOT upon request. The PICP shall include the following with regard to Third Party Claims:

(a) Procedures to respond immediately to public complaints related to damages and to act promptly to resolve claims for damage to vehicles, persons and property caused by the Work (e.g. construction activities) or as a result of the condition of the Project (e.g., broken windshields, damaged tires or damaged vehicle paint).

(b) Procedures for prompt response to complaints from the public related to dust, noise and other nuisance caused by the Work, and policies and procedures to mitigate public complaints, including carwash service vouchers, air filters, etc.

(c) Procedures to log all complaints, dates and times of claims and occurrences, contact information (including the name, address, telephone number, and e-mail address of complainant), name of the respondent, any requirements from the complainant, whether the complaint is satisfied, and whether the claim has been or will be forwarded to DB Contractor's insurance carrier.

3.3 Submittals

All submittals described in Section 3 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth on Table 3-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 3-1: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Section 3			
PICP – Public Information and Communications Plan	Prior to NTP 2	Approval	3.2.1
Draft agenda for the communication planning workshop	Following NTP1	Review and comment	3.2.1
Updates to the PICP as listed in Section 3.2.1	As required, at least annually	Approval	3.2.1
Media responses as listed in Section 3.2.1.2	Within one day of release	Approval	3.2.1.2
Draft meeting summaries	Upon Request	Review and comment	3.2.5
Final meeting summaries (to TxDOT and meeting attendees)	Upon Request	For information	3.2.5
Drafts of all materials to be presented to the public/media	At least 5 Business Days prior to final editing	Review and comment	3.2.7
Final copies of all materials to be presented to the public/media	At least 3 Business Days prior to dissemination	For information	3.2.7
Website design elements	5 Business Days prior to publishing	Review and acceptance	3.2.7
Public comment/inquiry log	Monthly	For information	3.2.7
Language assistance log	Quarterly	For information	3.2.7
Copy of claims and complaints documentation, logs, and record of the actions	Upon request	For information	3.2.8.2

SECTION 4.0 ENVIRONMENTAL

4.1 General Requirements

DB Contractor shall deliver the Environmental Commitments required by the Request for Proposals (RFP), Contract Documents, Environmental Laws, Governmental Entities, Environmental Approvals (including all TxDOT-Provided Approvals), all other Governmental Approvals, and all applicable Laws and regulations. To that end, 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 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 incorporate all features and guidelines of ISO 14001. The CEPP shall effectively demonstrate in detail DB Contractor's knowledge of all applicable Project-specific Environmental Approvals, issues, commitments, and applicable Environmental Laws including those 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, commitments, and Laws, as well as the documentation required to validate compliance. All monitoring and reporting activities shall be:

(a) Concise and consistent throughout the Term;

(b) Applicable to the activities being performed; and

(c) In accordance with the requirements set forth in the Agreement, the Environmental Approvals and applicable Environmental Laws.

The CEPP shall also effectively describe the quality control and assurance measures that DB Contractor will implement to verify the compliance of the program with all applicable Environmental Laws.

The CEPP shall define procedures for obtaining environmental permits and implementing procedures, and commitments consistent with the Environmental Approvals, any revised Approvals and permits, and TxDOT environmental policies. 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 Work shall comply with Environmental Approvals and compliance requirements for any additional actions throughout the Term. DB Contractor shall monitor and document Work activities so that documents providing evidence for compliance are available to TxDOT for inspection at any time.

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 Environmental Approvals. Such approvals may require re-evaluation, amendment, supplement or additional studies and reports 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 TxDOT 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.

DB Contractor is responsible for coordination with Governmental Entities necessary to obtain New Environmental Approvals except where TxDOT has agreements with Governmental Entities to perform such coordination. DB Contractor is required to extend an invitation to TxDOT for any meetings it has with Governmental Entities to discuss changes to the NEPA Approvals and permit documents.

DB Contractor is responsible for ensuring compliance with the conditions and schedules set forth in amendments to any TxDOT-Provided Approvals or New Environmental Approvals.

4.2.2 Responsibilities Regarding Environmental Studies

DB Contractor is responsible for conducting continuing environmental studies based on the NEPA Approvals and the TxDOT Schematic Design.

DB Contractor is 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. DB Contractor is responsible for all coordination of environmental studies with appropriate Governmental Entities, except where TxDOT has agreements with Governmental Entities to perform such coordination. 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 that is submitted for environmental compliance or Environmental Approvals. Documentation shall conform to current TxDOT submission standards and the requirements of all applicable Governmental Entities and applicable Laws. TxDOT shall return approved documentation to DB Contractor for submittal to the appropriate Governmental Entity in cases where DB Contractor performs coordination. TxDOT, acting reasonably, shall approve those submissions for which TxDOT signature or other approval is required. TxDOT approvals of such submissions are not subject to the review time limitations in the Contract Documents. Documentation not meeting current submission standards or requirements of Governmental Entities will be returned to DB Contractor, and shall be revised by DB Contractor to meet standards or requirements.

4.2.4 TxDOT-Provided Approvals

For TxDOT-Provided Approvals, see Exhibit 4 to the Agreement.

4.3 Comprehensive Environmental Protection Program

As part of the PMP, DB Contractor shall develop and implement a CEPP, applicable throughout the Term 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, mitigation. The CEPP shall satisfy applicable FHWA, TxDOT and resource agency requirements, including those detailed as commitments in any Environmental Approvals.

The CEPP shall outline the overarching plan by which DB Contractor shall meet all environmental commitments made during the Environmental Approval and permitting processes and any other environmental requirements. All environmental requirements and commitments shall be reflected, as appropriate, in the design and implemented throughout the Work.

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

(d) Environmental Management System (EMS);

(e) Environmental Compliance and Mitigation Plan (ECMP);

(f) Environmental Protection Training Program (EPTP);

(g) Hazardous Materials Management Plan (HMMP);

(h) Communication Plan (CP);

(i) Construction Monitoring Plan (CMP);

(j) Recycle Plan (RP); and

(k) 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 for amendments to the PMP.

4.3.1 Environmental Management System

The EMS is a system of documented plans and procedures in which the roles and responsibilities for the execution of environmental activities are clearly defined including the interaction between those processes. DB Contractor shall utilize the EMS to track on-going issues, identify environmental compliances and non-compliances, and identify actions required/taken to correct any non-compliance.

The EMS shall establish a schedule for periodic CEPP reviews 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 (SIRs), and remedial action plans as necessary for hazardous material discovery and remediation;

(d) Wetland delineations reports and appropriate Section 404 authorized permit application(s);

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

(f) Design and coordination for wetlands, stream, 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; and

(m) DB Contractor's final traffic noise analysis, if different than that included in the TxDOT-Provided Approvals.

4.3.2 Environmental Compliance and Mitigation Plan

The ECMP shall discuss the methods DB Contractor will employ to accomplish the goal of zero environmental violations for the project. The ECMP shall document and fully detail compliance strategies and procedures to be employed by DB Contractor to cause Work performance in accordance with requirements of applicable Environmental Laws and Environmental Approvals. This plan shall establish and 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 DB Contractor's approach to satisfying mitigation requirements, including mitigation requirements identified after completion of the ECMP.

The ECMP shall include the following components as described below.

4.3.2.1 Environmental Permits, Issues, and Commitments Sheets

DB Contractor shall develop and maintain Environmental Permits, Issues, and Commitments (EPIC) construction plan sheets. Applicable permits, issues, and environmental commitments shall be identified on EPIC sheets and updated throughout the Term to identify on-Site conditions.

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

4.3.2.2 Clean Water Act – Sections 404 and 401: Waters and Wetlands of the United States

TxDOT-Provided Approvals may identify Section 404 impacts associated with Project improvements. Based on the NEPA Approvals, the temporary and permanent Section 404 impacts are anticipated to be authorized by Nationwide Permit 14 – Linear Transportation Projects without a Preconstruction Notification.

DB Contractor shall, based on final design, assess impacts to each potentially jurisdictional feature. Based on results of assessment, and if required, DB Contractor shall update the related Section 404 impacts associated with the Project and perform all Work required to procure the necessary Section 404 permits and Section 401 certifications from the U.S. Army Corps of Engineers (USACE) and Texas Commission on Environmental Quality (TCEQ). DB Contractor shall determine Project mitigation requirements, prepare a mitigation plan per 33 CFR Part 332, and deliver all required mitigation.

DB Contractor is responsible for the maintenance and monitoring of any permittee-responsible mitigation sites for the term stipulated within the USACE approved mitigation plan. Project mitigation options shall be provided in accordance with the TxDOT Memorandum dated June 17, 2013 regarding TxDOT's mitigation procurement policy. All coordination with the USACE regarding Section 404 permitting and mitigation shall be disclosed to TxDOT for review and comment before submission to USACE.

DB Contractor shall document how they will identify Section 404 impacts, obtain required Section 404 permits, and comply with the terms and conditions of the Section 404 permits and 401 certifications issued to DB Contractor during the life of the Project. At a minimum, the documentation 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 identifying Section 404 impacts associated with the Project;

(c) Process for obtaining required Section 404 permits;

(d) Process for communicating the terms and conditions of all Section 404 permits and TCEQ 401 certifications and other permits as necessary;

(e) Procedures for carrying out any required Environmental Commitments and mitigation; and

(f) Procedures for incorporating additional properties outside the original NEPA approved TxDOT 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 DB Contractor by the USACE.

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

4.3.2.3 Clean Water Act – Section 402: Texas Pollutant Discharge Elimination System

DB Contractor shall document how it will comply with Section 402 of the Clean Water Act (CWA). The documentation shall provide that 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 provide that DB Contractor is responsible for submitting a Notice of Intent (NOI) and Notice of Termination (NOT) to TCEQ. At a minimum, the documentation shall include:

(a) Process for training personnel on the requirements and conditions of the Texas Construction General Permits (GCP) for storm water discharges from Construction Sites;

(b) Procedures for incorporating Additional Properties outside the original NEPA approved TxDOT 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;

(d) Escalation procedures for SW3P items;

(e) Procedures for meeting all applicable Municipal Separate Storm Sewer System (MS4) requirements; and

(f) Procedures for implementing detention Best Management Practices (BMP).

4.3.2.4 Rivers and Harbors Act of 1899 – U.S.C., Title 33

The Trinity River and the Historic Trinity River Channel are considered navigable waterways. However, no construction activities would occur within the project section crossing these features. A navigational clearance under the General Bridge Act of 1946 and Section 9 of the Rivers and Harbors Act of 1899 (administered by the US Coast Guard (USCG)), and Section 10 of the Rivers and Harbors Act of 1899 (administered by the U.S. Army Corps of Engineers (USACE)) would not be required as the proposed project would not construct a bridge across a navigable waterway. Coordination with the USCG (for Section 9 and the General Bridge Act) and the USACE (for Section 10) would not be required.

4.3.2.5 State Listed Species and Unregulated Habitat

DB Contractor shall comply with all state laws and regulations relating to state listed threatened and endangered species. Prior to construction, DB Contractor shall review the applicable and most current state threatened and endangered species list to determine if changes to the list (including, but not limited to, addition of species, changes to species habitat range and species listing status) have occurred since authorization of the applicable Environmental Approvals. DB Contractor shall identify all state listed species that have the potential to exist within the Project limits and determine the extent of Project impacts to the listed species during final design. DB Contractor shall perform field surveys to determine the presence of all the state listed species considered to incur impacts by the Project. If the field surveys reveal that state listed species are present within the Project limits, and adverse impacts will occur, DB Contractor shall work with TxDOT to develop mitigation approaches. DB Contractor shall prepare any materials needed for coordination or consultation with regulatory agencies, at TxDOT's direction. TxDOT will conduct coordination or consultation with the applicable state agencies regarding mitigation

for the Project. DB Contractor is responsible for any mitigation requirements identified from regulatory agency coordination/consultation.

4.3.2.5.1 Threatened and Endangered Species/Species of Greatest Conservation Need

DB Contractor shall avoid harming wildlife within the entire project area. DB Contractor shall utilize best management practices (BMPs) from the TxDOT/Texas Parks and Wildlife Department (TPWD) Programmatic Agreement (PA) for the listed species that could occur within the study area. DB Contractor shall use wildlife-friendly erosion and sediment control BMPs to stabilize disturbed areas where applicable. DB Contractor shall adhere to the BMPs included which were included in the EPIC sheets.

4.3.2.5.2 Vegetation and Habitat

According to the Project's NEPA Approvals, approximately 1.67 acres of riparian habitat could be permanently impacted as a result of the construction of the proposed project. DB Contractor shall use minimization and avoidance mitigation practices to preserve vegetation communities within the Project to the greatest extent possible. The TxDOT-Provided Approval identified vegetation impacts and compensatory mitigation requirements for Project improvements utilizing the September 1, 2013 TxDOT and TPWD Memorandum of Understanding (MOU).

DB Contractor shall reassess unavoidable impacts to all vegetation communities based on the final design through a Tier I Site Assessment as described in Section 2.205 of the September 1, 2013 MOU. DB Contractor shall document and coordinate the results of these impact findings with TxDOT. TxDOT shall determine the need for further coordination/consultation with applicable agencies, and perform such coordination. Furthermore, TxDOT in consultation with TPWD shall determine the need for further assessment of impacts to vegetation communities associated with the Project. DB Contractor shall prepare the materials necessary to coordinate with applicable agencies, at TxDOT's direction. DB Contractor is also responsible for performing additional assessments as required through agency consultation. DB Contractor shall deliver all best management practices and/or mitigation identified during the coordination/consultation process.

DB Contractor shall reseed/re-vegetate all areas of bare ground in accordance with TxDOT standards and Executive Order (EO) 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping.

4.3.2.6 Endangered Species Act, Fish and Wildlife Coordination Act and Migratory Bird Treaty Act

DB Contractor shall document how it will 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. At a minimum, the documentation 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.

4.3.2.6.1 Federally Listed Species

DB Contractor shall comply with all federal laws and regulations as related to federally listed threatened and endangered species. Prior to construction, DB Contractor shall review the applicable and most current federal threatened and endangered species list to determine if changes to the lists (including, but not limited to, addition of species, changes to species habitat range, and species listing status) have occurred since authorization of the applicable Environmental Approvals. DB Contractor shall identify all federally listed species with potential to exist within the Project limits and determine the extent of Project impacts to the listed species during final design. DB Contractor shall perform field surveys to determine the presence of all the federally listed species considered to incur impacts by the Project. If it is determined that federally listed species are present within the Project limits, and adverse impacts will occur, DB Contractor shall work with TxDOT to develop mitigation approaches. DB Contractor shall prepare any materials needed for coordination or consultation with regulatory agencies, at TxDOT's direction. TxDOT will conduct coordination or consultation with the applicable federal agencies for the Project. DB Contractor is responsible for any mitigation requirements identified from regulatory agency coordination/consultation.

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, DB Contractor shall make every effort to avoid adverse impacts to protected migratory birds, active nests, and their young. DB Contractor shall remove all old migratory bird nests between October 1 and February 15 from any vegetation or structure where construction will occur. In addition, DB Contractor shall 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 TxDOT prior to planned use.

4.3.2.7 Traffic Noise

The traffic noise walls proposed for construction will be determined by TxDOT through the public involvement process (polling of adjacent property owners and noise workshops) during the environmental phase of the project, before contract award. DB Contractor shall construct proposed noise walls in the early construction phases of the Project to help minimize construction noise.

To fulfill the commitments of the TxDOT-Provided Approvals, DB Contractor is 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 Environmental Approvals secured by DB Contractor. DB Contractor acknowledges that TxDOT-Provided Approvals and proposed permanent noise mitigation are based on the TxDOT Schematic Design, Schematic ROW, and polling of adjacent property owners (public involvement); consequently, if design changes or additional ROW become necessary, applicable noise analyses may require re-assessment and the proposed permanent noise mitigation may require amending by DB Contractor as the Work progresses. Such amendments shall be submitted to TxDOT for review and approval.

In the event that DB Contractor's design requires a re-assessment of the traffic noise impacts, DB Contractor shall submit to TxDOT for review and approval how it will address traffic noise

mitigation and how it will perform public involvement associated with noise mitigation (noise workshops). At a minimum, the documentation shall include:

(a) Process for carrying out noise workshops and noise mitigation measures as identified and discussed in any supplemental noise studies completed by DB Contractor;

(b) Processes for carrying out noise mitigation measures determined throughout the Term;

(c) Process for carrying out noise mitigation measures determined throughout the life of the Project; and

(d) Process to handle changes that may occur to proposed permanent noise mitigation in the TxDOT-Provided Approval and TxDOT Schematic Design.

DB Contractor is responsible for public notification of affected property owners, the surveying/balloting of affected property owners, and final design of approved noise barriers. If noise walls are warranted or new noise walls are proposed, DB Contractor shall perform all noise workshops per the TxDOT 2011 *Guidelines for Analysis and Abatement of Highway Traffic Noise* and in accordance with Section 3. DB Contractor shall submit to TxDOT for review and approval all results of noise workshops prior to design of noise walls. DB Contractor is 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 any amendment of any TxDOT-Provided Approvals.

4.3.2.8 Water Well Impacts and Requirements

DB Contractor shall document how they will address wells, including, municipal, domestic, irrigation, oil and gas, unplugged, or monitoring and observations wells, encountered during the life of the Project. The documentation shall include that DB Contractor is responsible for plugging and abandoning all wells in accordance with Item 103, Disposal of Wells, from TxDOT *Standard Specifications*, as well as DB Contractor is responsible for any required remediation efforts. At a minimum, the documentation 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 DB Contractor's work. Procedures shall include a requirement to notify TxDOT and with TxDOT's concurrence notify appropriate regulatory agencies within 24 hours of the discovery.

4.3.2.9 Cultural Resource Studies

DB Contractor shall be responsible for ensuring compliance with cultural resource Laws and any project Environmental Commitments on the Project through the Term. 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, DB Contractor is 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 TxDOT Schematic Design as defined in the TxDOT-

Provided Approval and within the area of potential effects. 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.

DB Contractor shall document efforts to avoid impacts to cultural resources that are listed on or determined to meet the eligibility criteria for listing on 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, 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 Advisory Council on Historic Preservation (ACHP), as well as the MOU between TxDOT and the THC. 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 DB Contractor receives notification and approval from TxDOT.

4.3.2.10 Public Involvement

DB Contractor shall document how it 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 provide that 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. At a minimum, the documentation shall include:

(a) Process for handling public involvements requirements; and

(b) Procedures for documenting public involvement.

4.3.2.11 Standard Operating Procedures

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

(a) Controlling dust during construction;

(b) Mitigating noise and vibration during construction;

(c) Mitigating light intrusion on adjacent properties;

(d) Managing contaminated soil and groundwater, especially during excavation, treatment, storage, transportation, and disposal;

(e) Preventing, controlling, and mitigating fugitive noxious or toxic vapors or particulate matter (dust), contaminated soil, and contaminated groundwater during disturbance of noxious or hazardous materials and media;

(f) Coordinating and communicating with potentially affected public prior to initiating work that may generate emissions or discharges that could cause public concern;

(g) Managing material coated with lead based paint during demolition, storage, transport, and disposal;

(h) Managing asbestos containing material during testing, treatment, storage, and removal;

(i) Managing all other hazardous materials that may be encountered;

(j) Identifying protected species habitat, and providing species surveys;

(k) Identifying impacts to special and unique vegetation habitats, and providing mitigation for such impacts; and

(l) Identifying Section 404 impacts and complying with issued Section 404 permits for the Project.

4.3.3 Environmental Protection Training Plan

DB Contractor shall develop and implement an Environmental Protection Training Program (EPTP) that meets the minimum requirements set forth herein. The EPTP shall include methods and procedures documented in the ECMP to:

(a) Educate every worker before they begin Work on the Project to:

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

(ii) Recognition of State or Federally-Listed Species that could occur in the Project area; and

(iii) Appreciate the various environmental sensitivities of the Project.

(b) Train every worker to:

(i) Recognize environmentally sensitive resources that may be encountered during the Work;

(ii) Avoid or take appropriate action to minimize environmental impacts from the Work;

(iii) Know the required actions, practices, and procedures regarding regulated resources; and

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

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

(d) Convey to all workers, DB Contractor's management commitment to the Project's environmental quality; and

(e) Convey to all workers, TxDOT's and 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 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 for protection of specific vegetation;

(l) Procedures for waste reduction and recycling;

(m) Procedures regarding the relocation of historical markers (i.e. Texas Historical Markers, 1936 Texas Centennial markers, TxDOT markers, DAR Insignia markers, and local/county markers);

(n) Groundwater protection requirements;

(o) CWA regulations and surface water protection requirements;

(p) Overview of noise and residential impact reduction procedures;

(q) Air quality requirements; and

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

DB Contractor shall submit to TxDOT course outlines containing learning objectives designed to achieve stated goals and suggested staff attendance for all anticipated training requirements through the Term. Course outlines shall be submitted prior to NTP2.

4.3.4 EPTP Participation

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.

In addition to English, the workers must be provided the opportunity to receive their training and training materials in Spanish.

4.3.4.1 EPTP Schedule

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, major maintenance in sensitive areas, or construction timing restrictions to protect Threatened or Endangered Species) shall be used to update workers on specific restrictions, conditions, concerns, and/or requirements.

4.3.5 Hazardous Materials Management Plan

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

The HMMP shall provide the identification and contact information for designated responsible individuals in the management of Hazardous Materials and include procedures compliant with all applicable Environmental Laws and include, at a minimum:

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

(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;

(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 Investigation Report (SIR) in the event that Hazardous Materials are discovered during construction; operations or maintenance activities;

(l) Procedures for maintaining appropriate communication with the public regarding the planned handling and unplanned Incidents involving contamination or Hazardous Materials;

(m) Identification and contact information for designated responsible individuals; and

(n) Procedure for notifying TxDOT within two 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 Subcontractors and other Site workers' exposure to Hazardous Materials, and providing all necessary personal protection equipment to protect workers from exposure. The HMMP shall require DB Contractor to provide any non-DB Subcontractor personnel who visit the Project with the appropriate personal protection equipment.

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

4.3.5.1 Investigative Work Plans and Site Investigation Reports

If Hazardous Materials are encountered within any of the Project ROW or Additional Properties used as DB Contractor's staging area, Project office site, plant sites, borrow site, or stockpile location, 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. 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, DB Contractor shall summarize the findings within a SIR and make recommendations regarding potential response actions necessary for Project development. 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 SIR shall address the following:

(a) The characterization of the impacted area;

(b) Sampling efforts and findings;

(c) Opportunities to avoid the contamination by adjusting the design;

(d) Level of response action warranted if the contamination cannot be avoided;

(e) Feasibility of initiating response actions prior to construction;

(f) Pursuit of cost-reimbursement from responsible parties;

(g) The need for completing response actions concurrent with construction; and

(h) The nature of any special specifications and provisions necessary for incorporation into the Project.

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

4.3.6 Communication Plan

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 contact information for use in an Emergency, and the preferred methods of routine communication, and communication during an Emergency.

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 Contract 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, 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. DB Contractor shall provide a minimum two-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. 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 MS4 located within and adjacent to the Site. During the inspection, DB Contractor shall note the following:

(a) Storm drains, culverts, swales, and other components of the MS4 that 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 MS4;

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

Within 90 days following Substantial Completion, DB Contractor shall conduct an inspection to monitor and repair any of the above mentioned deficiencies in the storm water system. DB Contractor shall complete all repairs as a condition of Final Acceptance.

4.3.8 Not used

4.3.9 Recycling Plan

The recycling plan shall document and fully detail DB Contractor's commitment to recycling, waste minimization, and use of "green products" during all aspects of Work. The recycling plan shall document 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, DB Contractor shall follow the TxDOT Material Specification DMS 11000. The recycling plan shall be submitted as part of the CEPP in accordance with the requirements set forth in this Section 4.3.9.

4.4 Environmental Personnel

DB Contractor, acting through the Environmental Compliance Manager (ECM), shall designate an Environmental Team (ET), as detailed in this section, to prevent, minimize, and 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 licensed Professional Geoscientist, 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, 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

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

Should DB Contractor desire to replace ECM, DB Contractor shall submit a replacement candidate in accordance with Section 7.4 of the Agreement.

The ECM shall have experience successfully managing environmental compliance of urban highway construction, including:

(a) Developing and managing a SW3P;

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

(c) Implementing environmental mitigation plans;

(d) Providing environmental and personal protection training; and

(e) Monitoring compliance with Section 404 Permit conditions.

The qualifying experience for the ECM must demonstrate the individual is familiar with:

1. The scope and terminology of ASTM E 1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process;

2. Provisions of the TPDES CGP (TXR 150000); and

3. Requirements of Section 404 and permit provisions.

4.4.2 Environmental Training Staff

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

4.4.3 Environmental Compliance Inspectors

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 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 or impacted during the Term. The Hazardous Materials Manager shall conduct appropriate activities such as the following:

(a) Schedule and conduct training for 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 40 hour HAZWOPER certification and at least five years of experience in similar projects in the following areas:

1. 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

2. Experienced in TCEQ guidance for the investigation and remediation of Hazardous Materials under the TCEQ Voluntary Cleanup Program, Texas Risk Reduction Program, and the TCEQ Petroleum Storage Tank Rule.

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

4.4.5 Cultural Resource Management Personnel

The ECM shall designate an archeologist, architectural historian, historian, and historical architect to provide expertise in monitoring impacts to cultural resources during the course of the Work.

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

4.4.6 Natural Resource Biologist

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

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

4.4.7 Not used

4.4.8 Not used

4.4.9 Water Quality Specialist

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

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

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

4.5 Property Access

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

4.6 Dust Control

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.

Dust control measures shall include a combination of watering, chemical stabilization, and construction vehicle speed reduction (not to exceed 20 mph).

DB Contractor shall identify and discontinue all dust creating construction activities when winds reach a constant velocity of 25 mph or more.

DB Contractor shall keep concrete traffic barriers and any other elements that can cause accumulation of dust, sand and debris (such as retaining walls, bridge columns, and drainage walls) within the Project limits clean of dust, sand and debris during construction.

DB Contractor shall prevent, control, and mitigate fugitive noxious or toxic vapors or particulate matter (dust) during disturbance of noxious or hazardous materials and media.

4.7 Asbestos Containing Material/Lead Base Paint

Bridge and building demolition will be required for the Project. DB Contractor shall test for asbestos containing material (ACM) and lead base paint (LBP) on the existing bridge structures and building structures to be removed.

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

DB Contractor shall provide TxDOT any inspection reports, proposed abatement plan, and/or report documenting abatement (as necessary).

DB Contractor shall notify the Texas Department of State Health Services of bridge demolitions or building structures 10-working days prior to the scheduled demolition.

4.8 Other Hazardous Materials

DB Contractor shall test, identify, inspect, notify, amend notifications as necessary, pay notification fees, and abate for any other hazardous materials encountered within the project limits, in accordance with appropriate or relevant regulations or guidance.

DB Contractor shall take appropriate measures to prevent the spillage of hazardous materials in the construction areas. All construction materials used for the Project shall be removed as soon as the work schedule permits. DB Contractor shall initiate early regulatory agency coordination during project development.

4.9 Submittals

All Submittals described in Section 4 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth on Table 4-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 4-1: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Section 4			

Submittals	Submittal Schedule	Department Action	Reference Section
PMP – Comprehensive Environmental Protection Program (CEPP)	Prior to NTP2	Approval prior to commencement of Design Work	4.3
Environmental Monitoring Reports	Upon Request	For Information	4.3.1
Investigative Work Plans	As necessary	Review and acceptance	4.3.1 4.3.5.1
Site Investigation Reports	As necessary	Review and acceptance	4.3.1 4.3.5.1
Remedial Action Plans	As necessary	Review and acceptance	4.3.1 4.3.5.1
Wetland Delineations	Prior to construction	Review and acceptance	4.3.1 4.3.2.2.2
Section 404 Permit Application	As necessary/prior to construction	Review and acceptance	4.3.1 4.3.2.2.2
Mitigation/Resource Monitoring Reports	As necessary	For information	4.3.1
TPDES CGP/NOI	Prior to construction	For information	4.3.1 4.3.2.3
TPDES CGP NOT	Upon Substantial Completion	For information	4.3.1
SW3P	Upon Request	For information	4.3.1 4.3.2.3
Pre-construction Inspection Report	Prior to construction	For information	4.3.1
Final Noise Analyses	As necessary	Review and approval	4.3.1 4.3.2.6
EPICs	Prior to construction	Review and acceptance	4.3.1 4.3.2.1
Federal, state, and local correspondence	As necessary	For information	4.3.1
Course outlines as listed in Section 4.3.3.1	Prior to NTP 2	For Information	4.3.3.1
Final Hazardous Materials Management Plan (HMMP)	Prior to NTP2	Review and Approval	4.3.5
Asbestos Containing Material / Lead Base Paint inspection reports, proposed abatement plan, and report documenting abatement	As necessary	Review and acceptance	4.7

SECTION 5.0 THIRD-PARTY AGREEMENTS

5.1 General Requirements

TxDOT has existing agreements with certain local and federal Governmental Entities with respect to the Project corridor. These agreements define additional requirements for construction, operations, and facility maintenance. TxDOT anticipates the need for additional agreements with local Governmental Entities for the operation of traffic signals, illumination, and roadway maintenance along the corridor. These agreements do and will specify the local Governmental Entities' responsibilities and TxDOT's responsibilities with respect to the requirements.

5.2 Traffic Signals

New construction or modifications to the existing traffic signals are defined in TP Section 16.

5.3 Roadway Illumination

Some local Governmental Entities may request continuous illumination along the access roads within the Project Limits. Should this occur, additional agreements between TxDOT and the Governmental Entity will be required. DB Contractor shall coordinate with and provide reasonable accommodations to the third-party designated to carry out the installation, operations, and maintenance obligations as specified in such agreements. Design and construction of additional illumination by DB Contractor will be handled in accordance with terms of the Agreement.

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

New construction or modifications to the existing illumination are defined in Section 16.

5.4 Other Affected Third Parties

DB Contractor is responsible for coordination and cooperation with all third parties affected by the Work, except as specifically provided otherwise.

5.5 Submittals

All deliverables described in Section 5 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 5-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 5-1: Submittals to the Department

Deliverables	Deliverable Schedule	Department Action	Reference Section
Section 5			
none			

SECTION 6.0 UTILITY ADJUSTMENTS

6.1 General Requirements

A number of existing Utilities are located within or in the vicinity of the Project ROW, some pursuant to statutory rights and some pursuant to property rights. Certain of those existing Utilities will need to be relocated or otherwise adjusted in order to accommodate the Project. This Section 6 establishes procedures and requirements for Utility Adjustments including such processes as coordination with Utility Owners, administration of the engineering, construction, and other activities necessary for Utility Adjustments and required documentation. This Section 6 references certain TxDOT forms for DB Contractor's use in Utility Adjustments. Copies of those forms are included in Attachment 6-1. Except as otherwise provided in this Section 6 or directed by TxDOT, whenever a TxDOT form is provided, DB Contractor shall prepare all forms of the same type using the TxDOT form and obtain TxDOT approval of all changes to the forms prior to execution by the Utility Owner.

DB Contractor shall cause all Utility Adjustments necessary to accommodate construction, operation, maintenance, and/or use of the Project. Some Utility Adjustments may be performed by the Utility Owner with its own employees and/or contractors and consultants (i.e., Owner-Managed); all others shall be performed by DB Contractor with its own employees and/or Subcontractors and consultants (subject to any approval rights required by the Utility Owner for those working on its facilities) (i.e., DB Contractor-Managed). The Utility Agreement shall specify the allocation of responsibility for the Utility Adjustment Work between DB Contractor and the Utility Owners as described in Section 6.1.3 (Agreements Between DB Contractor and Utility Owners).

The Project will be subject to 23 CFR Part 645 Subpart A, 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. TxDOT Form 1818 Buy America (Material Statement) is required for all work performed for the Utility Owner prior to the Utility Owners receiving final payment from DB Contractor or TxDOT to document compliance with Buy America requirements, as identified in Attachment 6-1, if applicable. DB Contractor's obligations regarding reimbursement to Utility Owners for eligible costs of Utility Adjustment Work, and DB Contractor's obligations regarding the accommodation of Utilities from and after service commencement date, are set forth in Sections 6.8.1.1 and 6.8.6 of the Agreement.

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

6.1.1 When Utility Adjustment is Required

A Utility Adjustment may be necessary for the following reasons: (a) a physical conflict between the Project and the Utility, or (b) an incompatibility between the Project and the Utility based on the requirements in Section 6.2.1 (Standards), even though there may be no physical conflict. The physical limits of all Utility Adjustments shall extend as necessary to functionally replace the existing Utility, whether inside or outside of the Project ROW. Section 6.2.4.2 (Acquisition of Replacement Utility Property Interests) contains provisions that address the acquisition of Replacement Utility Property Interests 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, (b) the existing location will not adversely affect the construction, operation, safety, maintenance, or intended use of the Project and Utility, and (c) the Utility Owner agrees to the Utility remaining in its existing location.

Existing Utilities that are not in physical conflict with the project that cross a roadway centerline at less than 90 degrees may remain in the existing alignment. The existing Utilities may remain, be relocated in place, or be protected in place in these areas only if all other conditions of the Utility Accommodation Rules (UAR) are met and the affected Utility Owners agree and approve all proposed Utility Adjustment plans.

6.1.2 Certain Components of the Utility Adjustment Work

6.1.2.1 Coordination

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. DB Contractor shall be responsible for preparing and securing execution (by DB Contractor and the Utility Owner) of all necessary Utility Agreements.

All Utility Agreements must be approved by TxDOT prior to taking effect and prior to any Utility Adjustment construction related activity.

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 DB Contractor as part of a Utility Adjustment shall be deemed added to the Work, on the date the Utility Agreement becomes effective, as set forth in Section 6.8.2 of the Agreement. DB Contractor shall perform all coordination necessary for Betterments.

6.1.2.3 Protection in Place

DB Contractor shall be responsible for Protection in Place of all Utilities impacted by the Project as necessary for the continued safe operation and structural integrity of each Utility, and to satisfy the requirements described in Section 6.2.1 (Standards). For each impacted Utility, DB Contractor shall obtain Utility Owner's approval of DB Contractor's proposed Protection in Place prior to beginning Construction Work.

6.1.2.4 Abandonment and Removal

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. Utility facilities that will be abandoned in place must be clearly identified in the Utility Assembly plans and shall require approval by TxDOT. The Utility Assembly plans must detail the method of abandonment to be utilized for TxDOT to determine if UAR requirements are met. The plans must also detail the age, condition, material type, active status and size of each Utility. If a Utility is to be abandoned, the plans shall (i) state that the Utility Owner continues to own and maintain the abandoned Utility facility and keep records of its location, and (ii) include a certification from the Utility Owner stating that the facility doesn't contain nor is composed of hazardous/contaminated materials. Voids and abandoned pipe beneath the ROW are prohibited and only allowed at TxDOT's discretion. In accordance with jurisdictional requirements or as directed by TxDOT, all voids must be filled with cement slurry or backfilled, and any pipe to be abandoned in place must be grout filled and capped.

6.1.2.5 Service Lines and Utility Appurtenances

Whenever required to accommodate construction, operation, maintenance, or use of the Project, DB Contractor shall cause Service Line Adjustments and Utility Appurtenance

Adjustments. Each Service Line shall have a definitive point of termination such as a meter or point of sale. On completion of these, 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.

6.1.3 Agreements Between DB Contractor and Utility Owners

Except as otherwise stated in this Section 6 or in the Agreement, DB Contractor shall address each Utility Adjustment in a Project Utility Adjustment Agreement (PUAA) or in a Utility Adjustment Agreement Amendment (UAAA), as described elsewhere in this Section 6. DB Contractor is responsible for preparing, negotiating (to the extent allowed by this Section 6) and obtaining execution by the Utility Owners of all Utility Agreements, (including preparing all necessary exhibits and information about the Project, such as reports, Plans and surveys).

A Utility Agreement is not required for any Utility work consisting solely of Protection in Place in the Utility's original location within the Project ROW, unless the Utility Owner is being reimbursed for costs incurred by it on account of such Protection in Place. If no reimbursement is required to the Utility Owner, a Utility Joint Use Acknowledgment or Utility Installation Request, Form 1082, as required in Section 6.2.4.5 and plans detailing UAR compliance is required pertaining to the Adjustment or Protection in Place work. If a Utility Owner requests that DB Contractor relocate a Utility and the cost of that Utility Adjustment is the Utility Owner's sole responsibility in accordance with Transportation Code 203.092, then 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)

DB Contractor shall enter into one or more PUAAs with each affected Utility Owner to define the design, material, construction, inspection, and acceptance standards and procedures necessary to complete Utility Adjustments, and to define DB Contractor's and the Utility Owner's respective responsibilities for Utility Adjustment costs and activities, including 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).

DB Contractor shall prepare each PUAA using the TxDOT form SPD-ROW-U-PUAA-OM (Owner-Managed) or SPD-ROW-U-PUAA-DM (DB Contractor-Managed), included in Attachment 6-1. DB Contractor shall not modify the forms except by approval of TxDOT.

Promptly following issuance of NTP1, DB Contractor shall begin negotiations with each affected Utility Owner to reach agreement on one or more PUAAs and UAAAs. DB Contractor shall finalize the necessary PUAAs with each affected Utility Owner within a reasonable time period after issuance of NTP1. DB Contractor shall include any proposed changes to the form (other than filling in the blanks specific to a particular Utility Owner) in a track-change format that clearly identifies the changes and the party requesting the change. Each PUAA (including the Utility Adjustment Plans attached thereto) shall be subject to TxDOT review and approval as part of a Utility Assembly.

DB Contractor shall obtain approval by TxDOT of any language modification to a PUAA by the Utility Owner and DB Contractor.

6.1.3.2 Utility Adjustment Agreement Amendments (UAAA)

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 parent 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. Except as otherwise directed by TxDOT or provided in an applicable Utility Agreement, DB Contractor shall prepare all UAAAs using the form included in Attachment 6-1. DB Contractor shall include any proposed changes to the form (other than filling in the blanks specific to a particular Utility Owner) in a Utility Owner-specific addendum.

DB Contractor shall obtain TxDOT approval of all changes to a UAAA prior to execution by the Utility Owner.

6.1.4 Recordkeeping

DB Contractor shall maintain construction and inspection records in order to ascertain and demonstrate that Utility Adjustment Work is accomplished in accordance with the approved Utility Adjustment Plans and as required by the Contract 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 (including, but not limited to 43 TAC, Part 1, Chapter 21, Subchapter C, Utility Accommodation Rules), Regulations and Technical Provisions of the Agreement, including the Utility Accommodation Rules (UAR), the Dallas District Utility Specifications, the TxDOT *ROW Utility Manual*, Section 6.8 of the Agreement, and the requirements specified in this Section 6.

6.2.2 Communications

6.2.2.1 Communication with Utility Owners

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 Contract Documents.

DB Contractor shall notify TxDOT of all meetings, and TxDOT may participate in these meetings if requested by the Utility Owner or DB Contractor or otherwise as TxDOT deems appropriate.

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

6.2.2.2 Meetings

At least three Business Days in advance of each scheduled meeting, DB Contractor shall provide notice and an agenda for the meeting separately to TxDOT and to the appropriate Utility Owner unless otherwise provided. DB Contractor shall prepare minutes of all meetings and shall keep copies of all correspondence.

DB Contractor shall prepare meeting minutes within five Business Days after the conclusion of each meeting. At a minimum, DB Contractor shall include the following items in the meeting minutes:

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

(b) Documentation of the issues discussed and any associated solutions or resolutions

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

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

DB Contractor shall provide a Utility Adjustment team whose members have all appropriate qualifications and experience to perform the Utility Adjustment Work. DB Contractor shall provide a list of the names and contact details, titles, job roles and specific experience of the team members in the PMP. Specifically, DB Contractor shall provide a Utility Manager (UM) and a Utility Design Coordinator (UDC) to manage all aspects of the Utility Adjustment process. If DB Contractor assigns the construction activities to a Subcontractor or Affiliate, DB Contractor shall provide a DB Contractor Utility Coordinator (DUC) as described herein.

The UM's primary work responsibility shall be the performance of all DB Contractor's obligations with respect to Utility Adjustments. The UM shall have a bachelor's degree and have relevant experience in coordinating and solving complex Utility Adjustments on highway improvement projects. DB Contractor shall authorize the UM to approve all financial and technical modifications associated with Utility Adjustments and modifications to the Utility Agreement.

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

If applicable, the DUC shall hold a bachelor's degree and have relevant experience in ROW and Utility coordination activities involving large transportation projects. The DUC will be responsible for tracking and following DB Contractor's Affiliate's and Subcontractor's activities and communicating the progress to DB Contractor. The DUC will assist with developing good working relationships with the Utility Owners and assisting DB Contractor in all Utility coordination matters.

6.2.4 Real Property Matters

DB Contractor shall provide the services described below in connection with the 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, 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, DB Contractor shall prepare all Affidavits of Property Interest using the forms included in Attachment 6-1.

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

(a) 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; and

(b) If any DB Contractor-Related Entity assists a Utility Owner in acquiring a Replacement Utility Property Interest, such assistance shall be by separate contract outside of the Work, and DB Contractor shall ensure that the following requirements are met:

(i) The files and records must be kept separate and apart from all acquisition files and records for the Project ROW;

(ii) 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

(iii) Any DB Contractor-Related Entity personnel negotiating the acquisition of Replacement Utility Property Interests must be different from those negotiating the acquisition of the Project ROW.

DB Contractor is not responsible for Utility Owner condemnation proceedings except for DB Contractor's cost share set forth in Section 6.8.6 of the Agreement. The Utility Owner is responsible for utilizing its authority for condemnation proceedings for all Replacement Utility Property Interests.

6.2.4.3 Relinquishment of Existing Utility Property Interests

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

6.2.4.4 Quitclaim Deeds

Except as otherwise directed by TxDOT, DB Contractor shall prepare a Quitclaim Deed for each relinquishment of an Existing Utility Property Interest using the TxDOT form included in Attachment 6-1. Each Quitclaim Deed is subject to TxDOT's approval.

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 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, with a copy of the unsigned Quitclaim Deed. In these cases, DB Contractor shall obtain the executed Quitclaim Deed within 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 DB Contractor recording such deed in the local real property records.

6.2.4.5 Utility Joint Use Acknowledgments and Utility Installation Request, Form 1082 Requirements

DB Contractor shall prepare a Utility Joint Use Acknowledgment (UJUA) for each Utility that will remain within the boundaries of its Existing Utility Property Interest location within the Project ROW. DB Contractor shall prepare all UJUAs using the TxDOT form included in Attachment 6-1. DB Contractor also shall prepare all required documentation to be included with each UJUA.

DB Contractor shall arrange for the Utility Owner to execute each UJUA or Utility Installation Request, Form 1082, which shall be subject to TxDOT's written approval as part of a Utility Assembly.

DB Contractor shall prepare a Utility Installation Request, Form 1082, for each Utility that will remain or be relocated within the Project ROW and is not located within an Existing Utility Property Interest held by the Utility Owner.

6.2.4.6 Documentation Requirements

DB Contractor shall prepare, negotiate (to the extent permitted by this Section 6.2.4), and obtain execution by the Utility Owner of (and record in the appropriate jurisdiction, if applicable) all agreements and deeds described in this Section 6.2.4, including all necessary exhibits and information concerning the Project (e.g., reports, Plans and surveys). Each agreement or deed shall identify the subject Utility(ies) by the applicable Utility Assembly Number 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

DB Contractor bears sole responsibility for locating and identifying, at its own expense, all Utilities, including all Service Lines, within the Project ROW or otherwise affected by the Project, whether located on private property or within an existing public ROW.

DB Contractor shall prepare and submit to TxDOT a Utility strip map showing the information obtained and confirmed pursuant to this Section 6.3.1. DB Contractor's Utility strip map shall show in plan view all Utilities within the Project ROW and those outside of the Project ROW which are otherwise impacted by the Project. The map shall detail the type of Utility facility (e.g., communication, gas, oil, water, etc.) size, material, and the Utility Owner's name and contact information. The scale of DB Contractor's Utility strip map shall be 1" = 100'. DB Contractor shall verify and update the information provided in the RID Utility Strip Map with SUE data obtained by DB Contractor and incorporate into DB Contractor's Utility strip map.

6.3.2 Technical Criteria and Performance Standards

DB Contractor shall ensure that all design plans for Utility Adjustment Work, whether furnished by DB Contractor or by the Utility Owner, are consistent and compatible with the following:

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

(b) The Project design;

(c) Any existing and proposed Utility facility;

(d) All applicable Governmental Approvals; and

(e) Private approvals of all third parties necessary for such Work

6.3.3 Utility Adjustment Concept Plans

DB Contractor shall prepare and submit to TxDOT, 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 in accordance with Section 6.3.1 (DB Contractor's Responsibility for Utility Identification), the existing Utilities to remain, the proposed location of each Utility, and DB Contractor's Utility Adjustment recommendations.

In accordance with the PMP, DB Contractor shall submit the proposed Utility Adjustment Concept Plan(s) to TxDOT for its review. The Utility Adjustment Concept Plan(s) shall be submitted in both tabular and plan formats. The tabular format shall identify and numerically list each Utility conflict and each associated Utility. The plan(s) shall be color-coded and shall utilize a scale that clearly depicts all of the required information. DB Contractor shall coordinate with each affected Utility Owner as necessary to obtain its respective concurrence with the Utility Adjustment Concept Plan(s) and with any subsequent revisions. The Utility Adjustment Concept Plan is a working document and DB Contractor shall modify the plan as more project information becomes available. DB Contractor shall make the updated Utility Adjustment Concept Plans available to TxDOT upon request. Each executed PUAA or UAAA will identify and approve the Utility location.

6.3.4 Utility Adjustment Plans

DB Contractor shall ensure that all Utility Adjustment Plans, whether furnished by DB Contractor or by the Utility Owner, are signed and sealed by a Registered Professional Engineer (PE), unless waived by TxDOT at its discretion and as allowed by governmental regulations and industry practice.

6.3.4.1 Plans Prepared by DB Contractor

In the event that DB Contractor and the Utility Owner have agreed that DB Contractor will furnish a Utility Adjustment design, 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 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. DB Contractor shall transmit any TxDOT comments to the Utility Owner and shall coordinate any modification, re-approval by the Utility Owner and re-submittal to TxDOT as necessary to obtain TxDOT's approval.

6.3.4.2 Plans Prepared by the Utility Owner

For all Utility Adjustment Plans furnished by a Utility Owner, 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). Utility Owner prepared Utility Adjustment Plans shall be

attached to the applicable Utility Agreement, which DB Contractor shall include in the appropriate Utility Assembly for TxDOT's approval. DB Contractor shall transmit any TxDOT comments to the Utility Owner and shall coordinate any modification, review by DB Contractor, and re-submittal to TxDOT as necessary to obtain TxDOT's approval.

6.3.4.3 Design Documents

Each existing Utility and each proposed Utility Adjustment shall be shown in the Design Documents, regardless of whether the Utility Adjustment Plans are prepared by 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 UAR 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 in writing the Barlow's Formula calculation(s) to be included in the Utility Assembly.

Underground communication facilities, including multiple conduits, that cross the roadway, including side roads, shall be encased in Schedule 80 PVC or SDR 11 HDPE pipe as long as it is one continuous piece.

Refer to Section 14 – Rail for design requirements for underground Utilities within the potential railroad corridor.

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 DB Contractor and submitted to TxDOT for its review and comment and for TxDOT's approval of any items for which this Section 6 requires TxDOT's approval. Temporary Adjustments that are installed within the Project ROW must also be included with an assembly for TxDOT's prior approval, unless TxDOT waives or allows other approval methods concerning temporary Adjustments. Each Utility Adjustment shall be addressed in a full Utility Assembly, unless it is appropriate for a Utility Adjustment Agreement Amendment or Abbreviated Utility Assembly, as described below. 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 (Submittals).

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

Each Utility Assembly shall include the following:

(a) A transmittal memo recommending approval and detailing any unique characteristics or information pertaining to the Adjustment. The transmittal memo shall also describe any applicable amendment (UAAA) and explain why the amendment is necessary;

(b) A completed Utility Assembly Checklist;

(c) A TxDOT approved Utility Adjustment Agreement;

(d) Plans which:

(i) Show the existing and proposed Utility facilities;

(ii) Show existing and proposed grades for all Utility crossings;

(iii) Show the existing and Project ROW lines along with the control of access denial line;

(iv) Show an offset distance from the Project ROW line to all longitudinal Utilities within the Project ROW;

(v) Present sufficient information to enable TxDOT to verify compliance with the UAR requirements for each Utility located within the Project ROW, including highway design features; and

(vi) Are folded to 8.5 inch x 11 inch size, unless waived by TxDOT.

(e) Estimate(s) from the Utility Owner (and also from DB Contractor, where 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), labor and engineering. The estimate must list and identify the estimated amount of reimbursement to the Utility Owner, taking into consideration the Betterment credit calculation, salvage credit and any applicable eligibility ratio. The estimated cost(s) associated with DB Contractor's internal coordination costs and overheads shall not be included in this estimate;

(f) A proposed Utility Joint Use Acknowledgment (UJUA) or Utility Installation Request, Form 1082;

(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, unless otherwise approved by TxDOT; and

(j) All Utility No Conflict Sign-Off Forms.

Utility Adjustment Agreement Amendments. For each UAAA, 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 all requirements listed in (a) through (j) as identified in this Section 6.3.4.5.

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

Section 6.1.1 (When Utility Adjustment is Required). If 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 set of plans detailing UAR compliance, a completed Utility Assembly Checklist, a certification from the Utility Owner approving leaving the Utility(ies) in place, as well as Utility Joint Use Acknowledgment(s) or Utility Installation Request, Form 1082 as required in Section 6.2.4.5, Utility No Conflict Sign-Off Forms, 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.

6.4 Construction

6.4.1 Reserved

6.4.2 General Construction Criteria

All Utility Adjustment construction performed by DB Contractor shall conform to the requirements listed below. In addition, 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 nonconformance, 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) Utility(ies) standards provided in the Utility Agreement.

6.4.2.1 Reinstatement of Utility Cuts

After installation of drainage structures, storm sewers or any other public or private Utility facility by open cut across existing pavements, the pavement shall be restored and maintained to a normal satisfactory riding surface equal to or better than the existing.

6.4.3 Inspection of Utility Owner Construction

DB Contractor shall set forth procedures in the PMP for inspection of all Utility Adjustment Work performed by Utility Owners (and its contractors) to verify compliance with the applicable requirements described in Section 6.4.2 (General Construction Criteria). DB Contractor is responsible for quality control and quality assurance for all Work performed by the Utility Owners and its contractors.

6.4.4 Scheduling Utility Adjustment Work

The Utility Adjustment Work (other than construction) may begin at any time following issuance of NTP1. Refer to Section 4.4 of the Agreement for the conditions to commence construction of Utility Adjustment Construction Work by DB Contractor. 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, 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 DB Contractor, if applicable);

(d) If any part of the Utility Adjustment construction work 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 Contract Documents;

(e) If applicable, the Alternate Procedure List has been approved by TxDOT, as authorized by the 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 Contract Documents have been satisfied.

6.4.5 Standard of Care Regarding Utilities

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 restored to existing condition.

6.4.6 Emergency Procedures

DB Contractor shall provide emergency procedures with respect to Utility Adjustment Work in the PMP. DB Contractor shall obtain emergency contact information, establish emergency procedures with each Utility Owner and immediately notify the Utility Owner in the event of rupture, break or damage to the Utility Owner's Utility facilities.

6.4.7 Utility Adjustment Field Modifications

DB Contractor shall establish a procedure in the Utility Management Plan to address a Utility Adjustment Field Modification (UAFM) as proposed by either DB Contractor or a Utility Owner, after the Utility Assembly (which includes the Utility Adjustment Plans) has been approved. The procedure shall provide, at minimum, the following:

(a) The Utility Owner's review and approval of a UAFM proposed by DB Contractor, or DB Contractor's review and approval of a UAFM proposed by the Utility Owner. DB Contractor shall obtain all required approvals of the UAFM prior to commencement of construction. All revisions shall be signed and sealed by a Registered Professional Engineer (PE), unless waived by TxDOT at its discretion;

(b) Transmittal of UAFMs to the appropriate construction field personnel; and

(c) Any UAFMs in the Record Drawings for the Project.

DB Contractor shall cause the procedure to be followed for all UAFMs, whether the construction is performed by 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 ready to be placed in service, DB Contractor shall coordinate with the Utility Owner regarding the procedure and timing for placing the newly adjusted Utility into service and terminating service of the Utility being replaced.

6.4.9 Record Drawings

DB Contractor shall provide Record Drawings to each Utility Owner for its adjusted Utilities where the Utility Adjustment Work was performed by DB Contractor. For the purpose of this Section 6, Record Drawings means construction drawings and related documentation revised to show significant changes made during the construction process, usually based on marked-up Released for Construction Documents furnished by DB Contractor, also known as as-built plans.

DB Contractor shall provide Record Drawings to TxDOT (regardless of whether design and/or construction of the subject Utilities was furnished or performed by DB Contractor or by the Utility Owner). As-built drawings shall show the location of all abandoned Utilities, shall show and label all other Utilities (both remaining in place and relocated) that are located within the Project ROW or impacted by the Project, and shall comply with Section 2 (Project Management). DB Contractor shall provide the Record Drawings for each Adjustment to TxDOT prior to Final Acceptance.

Prior to Final Acceptance, DB Contractor shall provide to TxDOT a plan view of all final Utility facility locations (both Owner-Managed and DB Contractor-Managed) that include Utilities that remained in place, were adjusted in place or relocated. The plan view must detail the Utility facility horizontal alignment with highway stationing, ROW lines, roadway features, Utility Owners name, Utility facility type, size and Utility Assembly Number. This overall inventory set of plans is separate from the individual Record Drawing plans required for each Utility Assembly.

6.4.10 Maintenance of Utility Service and Access

All Utilities shall remain fully operational during all phases of construction, except as specifically allowed and approved in writing by the Utility Owner. 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 during construction and after completion of the Project. All access and access locations to the Utility facility must be agreed to by TxDOT and the Utility Owner.

6.4.11 Traffic Control

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

6.5 Submittals

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 or, if not stated therein, then as stated in Section 3.1 of the Agreement. All Submittals shall conform to the standards required in the Project Management Plan.

All submittals described in Section 6 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 6-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, and Adobe Acrobat files, unless otherwise indicated.

6.5.1 Maximum Number of Submittals

DB Contractor shall coordinate all Submittals required pursuant to this Section 6.5. In each ten Business Day period, DB Contractor shall not submit more than:

(a) Five Utility Assemblies (excluding Abbreviated Utility Assemblies); and

(b) Five of any other Submittals required under this Section 6 and requiring TxDOT review and approval.

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 ten Business Day period, as necessary.

6.5.2 DB Contractor's Utility Tracking Report

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. DB Contractor shall submit the UTR to TxDOT on a monthly basis in the format described below unless otherwise approved by TxDOT. The UTR shall, at a minimum, contain the following information for each Utility:

(a) The name of the Utility Owner and the Utility Assembly Number;

(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, the Utility Owner and DB Contractor;

(g) Dates on which the UJUA or Utility Installation Request, Form 1082, was executed by the Utility Owner and TxDOT;

(h) The Utility Owner's existing right of occupancy of the ROW 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/UAAA;

(k) Amounts and dates of payments made by 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;

(n) Whether any Betterment is included in the Adjustment; and

(o) Whether TxDOT Form 1818 (Buy America Material Statement) is required for each Adjustment.

The UTR 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. DB Contractor shall maintain this section of the UTR and submit to TxDOT in the same manner as all other portions of the UTR.

6.5.3 Utility Assembly Submittals and Final Closeout Procedures

The following procedures shall govern Submittal, review and final closeout of each Utility Assembly, including UAAA and Abbreviated Utility Assemblies:

(a) Before submitting a Utility Assembly to TxDOT, DB Contractor shall:

(i) Verify that each subject Utility (or the Utility Owner) is on the approved Alternate Procedure List, if applicable;

(ii) Submit the complete Utility Assembly to the quality control/quality assurance entity designated by DB Contractor in accordance with the PMP and the PSQMP; and

(iii) Resolve all comments made by the quality control/quality assurance entity, coordinating with the Utility Owner as appropriate.

(b) DB Contractor shall submit to TxDOT three 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.

(c) DB Contractor shall submit to TxDOT a Utility Assembly Submittal log with each Submittal or group of Submittals. The Utility Assembly Submittal log shall establish the review priority.

(d) TxDOT will review the Utility Assembly for compliance with the requirements of this Section 6.5.3, and within ten Business Days will return the Utility Assembly to DB Contractor with the appropriate notations pursuant to Section 3.1 of the Agreement to reflect its responses. 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 (a) TxDOT's approval of any Utility Assembly components for which TxDOT's approval is required, and (b) completion of the review and comment process for all other Utility Assembly components, TxDOT will sign three originals of any approved UJUA and of any other components of the Utility Assembly for which this Section 6 requires TxDOT signature.

(e) DB Contractor shall provide closeout information and documentation within 90 days after each Utility has been relocated, fully reimbursed and accepted by the Utility Owner. The closeout information shall contain the following:

(i) The Utility Agreement form (PUAA, UAAA, et al);

(ii) Record Drawings ("as-built") plans;

(iii) UJUA or Form 1082;

(iv) Quitclaim form (D-15-30);

(v) Actual cost and summary of the Adjustment; and

(vi) TxDOT Form 1818 Buy America Material Statement.

DB Contractor shall address conditions of approval, if any, for each Utility Assembly prior to completing the final closeout procedure.

6.5.4 FHWA Alternate Procedure

DB Contractor shall develop the Alternate Procedure List that includes the Utility Owner's name, approximate station numbers and estimated cost of Utility Adjustments. TxDOT is authorized by the FHWA to utilize the Alternate Procedure process. Upon receipt of the required information, TxDOT shall then consider and approve the list and notify DB Contractor. Promptly upon determining that any additional Utility Owner not referenced on the Alternate Procedure List is impacted by the Project, DB Contractor must submit to TxDOT all documentation as referenced above in order to amend the Alternate Procedure List.

Table 6-1: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Section 6			
Any proposed changes to the provided TxDOT ROW Utility forms	As necessary	Approval	6.1
ROW-U-1818 (Buy America Material Statement), if applicable	Prior to the Utility Owners receiving final payment from DB Contractor or TxDOT	Information	6.1
Project Utility Adjustment Agreement	Prior to commencing utility relocation	Approval	6.1.3.1
Modification to a Project Utility Adjustment Agreement	As necessary	Approval	6.1.3.1
Utility Adjustment Agreement Amendments	Prior to commencing utility relocation	Approval	6.1.3.2 & 6.3.4.5
Any mass mailings to Utility Owners	21 Days in advance of distribution	Review and Comment	6.2.2.1
Meeting Agendas	3 Business Days in advance of each scheduled meeting	Information	6.2.2.2
Meeting Minutes	Upon Request	Review and Comment	6.2.2.2
Executed Quitclaim Deeds	1. Prior to recording deed in local real property records, and 2. Within 90 Days of completion of Utility Adjustment, or unless otherwise directed by TxDOT in writing	Information	6.2.4.4
DB Contractor's Utility Strip Map	Upon Completion	Review and information	6.3.1
Utility Adjustment Concept Plan(s)	Upon Completion	Review and, if applicable, Comment	6.3.3
Utility Assemblies	Prior to start of the affected Utility Adjustment Work	Approval	6.3.4.5
Abbreviated Utility Assemblies	As necessary	Approval	6.3.4.5
Set of Record Drawings and overall plan view maps of final Utility locations	Prior to Final Acceptance	Review, Comment, and if applicable, Approval	6.4.9 & 6.5.3
Individual Record Drawing plans	Prior to Final Acceptance	Approval	6.4.9 & 6.5.3
Utility Tracking Report (UTR)	Monthly	Information	6.5.2
Closeout information and documentation	Prior to Final Acceptance	Information	6.5.3

Table 6-1: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Alternate Procedure List	Prior to commencement of any demolition, removal or other construction work for any Utility Adjustment	Approval	6.5.4

SECTION 7.0 RIGHT OF WAY (ROW)

7.1 General Requirements

DB Contractor's obligations in respect of the acquisition of Project ROW are set forth in Section 6 of the Agreement.

This Section 7 sets forth the ROW activities assigned to 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 DB Contractor related to the acquisition of Project ROW. DB Contractor shall provide all services necessary to acquire title to the Project ROW, in form and substance acceptable to TxDOT, in the name of the State; relocate displacees; and clear/demolish improvements from the Project ROW, as more fully described in the following sub-sections.

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

DB Contractor shall provide TxDOT copies of all property agreements it obtains to facilitate design, construction or maintenance in relation to the Project. No conveyance documents shall be used for the purpose of Construction Work other than a Possession and Use Agreement (PUA), a deed, or an award, unless otherwise approved by TxDOT.

7.2 Administrative Requirements

7.2.1 Standards

DB Contractor shall acquire all Project ROW in accordance with State and Federal Law and the practices, guidelines, procedures, and methods contained in the following:

(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 ROW Appraisal and Review Manual.

Pursuant to the applicable Federal regulations, DB Contractor shall (i) acquire ROW parcels for the Project on behalf of the State, but without the direct participation of TxDOT, subject to TxDOT's rights of review, approval, and audit; (ii) utilize the TxDOT *Right of Way Manual*; (iii) provide adequate access to all occupied properties; (iv) maintain Utility service to occupied properties until relocation is complete; and (v) not permit open burning within 1,000 feet of an occupied dwelling.

DB Contractor shall maintain a complete 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 *ROW Appraisal and Review Manual*, and a current approved Project ROW map for public use. DB Contractor's complete set of ROW Manuals shall

be current at the time of contract execution. Any TxDOT forms referenced in this section may be found in the TxDOT *Right of Way Manual* Collection or will be provided by TxDOT.

All real estate activities of the Project ROW must be completed and documented in compliance with all applicable Laws, including the Uniform Act, the rules and regulations for implementing the Uniform Act, and 23 CFR 710 governing the use of Federal funds for acquisition, management and disposal of real property.

7.2.2 Software Requirements

DB Contractor shall utilize software that is fully compatible with the software in use by TxDOT, or fully transferable to TxDOT's systems, including TxDOT's interactive SharePoint site (for uploading, review, document retrieval, etc.). DB Contractor must supply and maintain a parcel-by-parcel status information that incorporates the fields and information required by TxDOT's ROW tracking system: ROWIS. DB Contractor must maintain and participate in any other required ROW tracking system required by the Contract Documents. The database shall be fully accessible to Persons authorized by TxDOT.

7.2.3 ROW Acquisition Management Plan

DB Contractor shall prepare a ROW Acquisition Management Plan in accordance with the requirements of this Section 7. The ROW Acquisition Management Plan shall set forth:

(a) DB Contractor's main contractual arrangements;

(b) DB Contractor's organizational structure covering the activities to be performed in accordance with the Contract Documents;

(c) Arrangements for coordinating and managing staff interaction with TxDOT and its consultants, and description of approach to coordinating work of off-site personnel;

(d) DB Contractor's organization, including names, contact details, titles, job roles, and qualifications of Project ROW and Key Personnel and other Project ROW personnel;

(e) Integration of the Project ROW schedule into the Project Baseline Schedule; the Project ROW schedule shall contain logic linked ROW acquisition and relocation assistance activities on a parcel-by-parcel basis, including adequate time periods for TxDOT review and condemnation activities in accordance with this Section 7;

(f) Interfacing between DB Contractor, Subcontractors and the IQF during Project ROW acquisition, including interface between design, Project ROW activities, and quality review processes;

(g) Responsibilities of Subcontractors and Affiliates, DB Contractor's overall control procedures for Subcontractors, including consultants and subconsultants, and steps taken to ensure Subcontractors and Suppliers meet the obligations imposed by their respective Subcontracts;

(h) Environmental controls including:

  (i) Control of the interface between environmental requirements (including Hazardous Materials and demolition) and Project ROW acquisition activities;

(ii) Applicable procedures for the Hazardous Materials Management Plan (HMMP) in accordance with Section 4;

(iii) Reference to relevant component parts of the Comprehensive Environmental Protection Plan (CEPP) into the ROW Acquisition Management Plan;

(i) Procedures describing how the principal activities will be performed during the Project ROW acquisition, whether directly undertaken or subcontracted;

(j) Documentation and reporting, including management procedures in compliance with Section 2;

(k) Quality control procedures and quality review standards to establish and encourage continuous improvement; and

(l) Audit procedures including name, title, roles, and responsibilities of supporting quality management staff reporting to the person with defined authority.

The ROW Acquisition Management Plan shall contain, at a minimum, the following:

1. The name of TxDOT approved title company(ies) to be used for title services;
2. The name and qualifications of the proposed ROW Acquisition Manager (ROW AM); and
3. The resumes and qualifications for appraisers, appraisal reviewers, land planners, relocation agents, negotiators, real estate attorneys, eminent domain specialist and ROW personnel specified in Section 7.2.7 (ROW Personnel Qualifications).

The ROW Acquisition Management Plan shall describe the specific means by which DB Contractor shall:

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 language, visually impaired, or hearing impaired translation, as necessary;

D. Provide documentation and reports and the manner in which records will be maintained in compliance with the Technical Provisions, including any systems DB Contractor will use;

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 to ensure accuracy, completion, and quality in Submittals to TxDOT and Governmental Entities;

G. Prevent fraud, waste and mismanagement; and

H. Perform all items in this Section 7.

DB Contractor shall update the ROW Acquisition Management Plan regularly, at least quarterly, in accordance with the Contract Documents and when any changes occur to the personnel required by Section 7.2.7 (ROW Personnel Qualifications).

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. DB Contractor shall advise TxDOT of all Additional Properties and temporary rights or interests in real property to be acquired by DB Contractor. In developing the Project Schedule, DB Contractor shall give priority to the acquisition of parcels that have significant impact on the Project Schedule or affect the Critical Path. 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, DB Contractor shall incorporate adequate time periods for TxDOT review and approval of Acquisition Packages and Condemnation Packages. TxDOT intends to review the completed Acquisition Packages and Condemnation Packages as expeditiously as possible; *however,* for the purposes of the Project Schedule, DB Contractor shall assume that the reviews performed by TxDOT will require ten Business Days for Acquisition Packages and Condemnation Packages (collectively) that DB Contractor submits as final and complete in accordance with Section 7.3.6 (Project ROW Acquisition Package Approval) and Section 7.4.4 (Condemnation Support), up to a maximum of five Acquisition Packages and Condemnation Packages (collectively), unless otherwise directed by TxDOT. Any Submittals that would require TxDOT to review more than five Acquisition Packages and Condemnation Packages (collectively) within any given ten Business Day period shall be considered excess, and TxDOT may defer its review of any such Acquisition Packages and/or Condemnation Packages to a subsequent ten Business Day period (or periods as necessary). TxDOT will notify DB Contractor of its election to defer any excess Acquisition Packages and/or Condemnation Packages within ten Business Days after receipt. The balance of Acquisition Packages and Condemnation Packages (collectively) in excess of five will be rolled over to the next ten Business Day period and added to the Acquisition Package and Condemnation Package Submittals made by DB Contractor in that period. When DB Contractor submits more than five Acquisition Packages and Condemnation Packages (collectively) at any given time, DB Contractor shall indicate the priority of review.

DB Contractor shall also assume that the reviews performed by TxDOT will require ten Business Days for the following Submittals: payment Submittals, relocation Submittals, administrative settlement Submittals, and closing Submittals, up to a maximum of five submissions for each type of Submittal noted above, in addition to the Acquisition Packages and Condemnation Packages. With the combination of the above, these Submittals shall not exceed 25 total submissions, in any given ten Business Day period.

If TxDOT notifies DB Contractor that any submitted Acquisition Package and/or Condemnation Package have a deficiency, DB Contractor shall correct such deficiency and resubmit the package to TxDOT. Resubmissions shall be treated as a new Acquisition Package and Condemnation Package (collectively) as described above. An Acquisition Package and/or Condemnation 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 and/or Condemnation Packages shall be the responsibility of DB Contractor and will not be eligible for treatment as a Change Order.

TxDOT reserves the right to undertake additional review on Acquisition Packages and/or Condemnation Packages that contain or identify facts or issues of an unusual nature or which do not clearly fit within TxDOT standards and will notify DB Contractor in writing that the review period will be extended by an additional ten Business Days before rendering a decision to DB Contractor.

DB Contractor may request TxDOT to perform a preliminary review of the survey, Project ROW map and appraisal before the complete Acquisition Package is submitted. TxDOT may elect in its sole discretion to review the preliminary submission of the survey, map and appraisal, and notify DB Contractor of any deficiencies after TxDOT's receipt and review of such preliminary submission. Unless otherwise directed by TxDOT, there will be no time limits associated with these preliminary reviews.

7.2.5 DB Contractor's Project ROW Scope of Services

DB Contractor shall complete all administrative activities and prepare all documentation sufficient for DB Contractor to acquire the Project ROW. 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 (a) approve and return the Project ROW acquisition documentation, (b) provide review comments for incorporation by DB Contractor in accordance with Section 7.2.4 (Schedule and Review Procedures), or (c) in the case of an Acquisition Package that is deficient, notify DB Contractor of the deficiency(ies) to be corrected by 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, 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 NEPA approved highway segment. Further, DB Contractor shall not commence any negotiations with landowners, and TxDOT will not begin eminent domain procedures until after the specific Acquisition Package for that particular parcel is approved by TxDOT.

If DB Contractor and the landowner cannot negotiate an agreed-upon conveyance by deed acceptable to TxDOT, DB Contractor shall recommend for TxDOT to commence acquisition of the property through eminent domain procedures. TxDOT will initiate eminent domain procedures at its discretion. DB Contractor shall not recommend any condemnation action through the statutory "Special Deposit and Possession" procedure. TxDOT will not acquire any property through the condemnation process via the "Special Deposit and Possession" procedure.

Neither DB Contractor nor its Subcontractors shall begin construction of any type 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 executed and delivered by all necessary parties in accordance with Section 7.4.1 (ROW Negotiations), and all requirements under the Uniform Act have been met (including relocation assistance in accordance with Section 7.4.2).

7.2.6 Acquisition Process Summary

DB Contractor's major activities with respect to the acquisition of the Project ROW include:

(a) Project ROW surveying and mapping;

(b) Project ROW and Utility cost 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

DB Contractor's ROW Acquisition Manager (ROW AM) shall have at least five years' experience managing the acquisition of transportation ROW projects for a condemning authority, be licensed as a real estate salesman or broker pursuant to the *Texas Real Estate License Act* or rules established by the Texas Real Estate Commission, be familiar with appraisal and appraisal report review pursuant to the Uniform Standards of Professional Appraisal Practice (USPAP), and be familiar with the Uniform Act and applicable Laws of the State of Texas.

Quality Control Specialist(s) – DB Contractor shall designate a specific person(s) responsible for internal quality control. This individual shall 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 years' experience in appraising real property for eminent domain purposes, including partial taking appraisal, partial taking appraisal review and expert witness testimony. Each individual must have been actively and continuously engaged for at least three years immediately preceding their selection for this Project in appraisal work primarily in the county(ies) where the Project is located, and as approved and precertified 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 and precertified by TxDOT before performing any appraisals on the Project. If required by TxDOT, the appraiser will be required to demonstrate his or her skills at expert witness testimony.

Land Planner – Each land planner shall have a minimum of five years' experience in land planning including experience with expert witness testimony in eminent domain proceedings. Each individual must have been actively and continuously engaged for at least three years immediately preceding selection for this Project in land planning work primarily in the county(ies) where the Project is located, or as approved and precertified by TxDOT. DB Contractor shall provide a minimum of two land planners to assist appraisers and complete land plans.

Relocation Agent – Each relocation agent shall have a minimum of three years' experience in relocation assistance for ROW projects pursuant to the Uniform Act. A relocation agent's responsibilities shall include the following: determination of eligibility of all displacees, contacting all displacees and informing them of their benefits, maintaining a file of all documentation concerning the relocation of the displacees, and extending all relocation assistance advisory services.

Negotiator – Each ROW negotiator shall be licensed as either a Real Estate Sales Agent or broker pursuant to the *Texas Real Estate License Act* or rules established by the Texas Real Estate Commission, and shall be familiar with appraisal and appraisal report review pursuant to the USPAP. The negotiator shall have a minimum of three years' experience in right of way negotiations. The ROW negotiator's responsibilities shall include the following: contact with property owners on the Project to discuss the acquisition of property needed for the Project, maintaining complete and accurate files of all transactions and contacts with the property owners and their representatives, and actively working toward a joint resolution to acquire the property with the property owner.

Eminent Domain Specialist – Each eminent domain specialist shall have a minimum of three years' experience with TxDOT procedures and policies as related to acquisition of property through the use of eminent domain. The eminent domain specialist must have demonstrated experience 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 sent to the appropriate parties.

Real Estate Attorney – Each real estate attorney shall be licensed by the State of Texas and shall have at least five years' experience in title review and curative matters. The real estate attorney's responsibilities shall include coordinating and clearing all title issues, and compliance assistance with State and Federal acquisition requirements for the properties acquired for the Project.

ROW personnel shall have at least three years' experience in title review and curative matters. ROW personnel's responsibilities shall include, but not 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, to the best of DB Contractor's knowledge, any DB Contractor-Related Entity directly or indirectly (a) 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, (b) has any financial

interest in any real property likely to be a Project ROW parcel, or the remainder of any such parcel that is not a whole acquisition, or (c) 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, 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 Agreement, such disclosure shall be made within ten days after execution of the Agreement.

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

DB Contractor shall not acquire or permit the acquisition by 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

DB Contractor shall attend meetings as requested by TxDOT. At such meetings 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. DB Contractor shall provide meeting minutes to TxDOT upon request. TxDOT will respond within five Business Days or at the next occurrence of the meeting. DB Contractor shall provide proposed agendas three Business Days prior to each meeting.

7.2.10 Documentation and Reporting

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) Control Section Job (CSJ) number;

(c) Right of Way Control Section Job (RCSJ) number;

(d) Federal Project Number (if applicable);

(e) Highway designation;

(f) Project Limits;

(g) Parcel number;

(h) Name of record owner(s); and

(i) DB Contractor shall utilize TxDOT's approved naming convention for all electronic files and reporting fields.

In administering and managing its Project ROW activities, DB Contractor shall:

1. 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 Contract Documents, FHWA, and TxDOT.

2. 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 cost forecasting on an overall Project basis as requested by TxDOT.

3. Maintain and electronically transmit to TxDOT, in a format acceptable to TxDOT, monthly status reports including appraisal, acquisition, eminent domain and relocation status of all parcels and activities related to Project ROW, acquisition and disposition of Additional Properties, acquisition and disposition of temporary easements and other property interests, and provide weekly (or as requested) updates to TxDOT.

4. Evaluate and report to TxDOT, Subcontractor status and performance on a monthly basis or more frequently as requested.

5. 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.

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

7.2.11 Responsibilities of DB Contractor

As set forth in Section 6 of the Agreement and as more fully described in this section, 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, relocation advisory assistance and determination of relocation benefits to be provided, procurement of title insurance, clearing of title, closing of acquisitions, and condemnation support including expert witnesses required by TxDOT or the Office of the Attorney General for all condemnation proceedings. DB Contractor shall also be responsible for all expert witness testimony, exhibits, transcripts, and photos associated with condemnation services and proceedings required by the Office of the Attorney General or TxDOT for Special Commissioner's hearings, jury trials and appeals, through Final Acceptance of the construction project or through any comprehensive lease, maintenance or operation agreement Term periods, whichever is longer.

DB Contractor shall not contact the Office of the Attorney General 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.

DB Contractor acknowledges that it has incorporated the value of saleable improvements into DB Contractor's Project ROW costs, and DB Contractor shall concurrently, with conveyance of the real property interest to the State, and without the necessity of further documentation executed by the State, obtain the rights to said saleable improvements. TxDOT has received the benefit of the saleable value of the improvements by a reduced DB Contractor price. 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, DB Contractor shall comply with all applicable Laws with respect to relocation assistance and demolition.

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

DB Contractor shall be responsible for processing payment Submittals for request of payments 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.

DB Contractor is responsible for the payment of and all closing costs associated with the purchase of Project ROW in accordance with the Uniform Act and TxDOT policies. TxDOT shall be responsible for the purchase price of title insurance for Project ROW in accordance with Section 6.2.1 of the Agreement.

DB Contractor's cost shall include all costs not paid by TxDOT.

DB Contractor shall be responsible for submitting the completed files in accordance with the closeout procedures as defined by TxDOT within 90 days of the completed ROW parcel activity. DB Contractor shall provide the following documentation including, but not limited to:

(a) Appraisal report(s) (initial appraisal and all other issued appraisal reports, approved and not approved, with most recent appraisal report on top);

(b) Original conveyance document(s) (PUA(s), deed(s), easement(s), judgment(s), Award of Commissioners);

(c) Original Title Insurance Policy or Attorney's Certificate;

(d) Memorandum of Agreement; and

(e) Negotiator's Certificate.

For relocation and general correspondence, the following shall be included:

1. Relocation files (in chronological order);
2. Offer Letters;
3. Negotiator Reports and Contact Sheets;
4. General correspondence; and
5. All other documentation regarding the parcel.

7.2.12 Responsibilities of TxDOT

TxDOT will have the following responsibilities in connection with acquisition of Project ROW:

(a) Except as otherwise set forth in this Section 7, provide final approval for all Acquisition Packages, Condemnation Packages, and payment Submittals, relocation eligibility, relocation appeals, relocation Submittals, administrative settlement Submittals, closing Submittals, court settlement requests, and other approvals required by the Contract Documents, by the State, or by applicable Law subject to submission requirements and timelines in Section 7.2.4 (Schedule and Review Procedures).

(b) After receiving a complete Condemnation Package from DB Contractor in accordance with Section 7.2.4 (Schedule and Review Procedures) and 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 ten Business Days before the Commission's required deadline for eminent domain minute order requests.

(c) After receiving a complete payment Submittal from DB Contractor in accordance with Section 7.2.4 (Schedule and Review Procedures) and Section 7.4.6 (Payment Submittal), TxDOT will submit a payment request to the Comptroller's Office. Upon receipt of the State warrant, TxDOT will relay the State warrant to DB Contractor within five Business Days.

(d) TxDOT will coordinate with the Office of the Attorney General to provide legal counsel to prepare and deliver to TxDOT the condemnation petition within 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 DB Contractor within ten Business Days after receipt of the condemnation petition from the Office of the Attorney General. If e-filing is not applicable, DB Contractor shall follow the standard procedures as described in the TxDOT *Right of Way Manual*.

(e) If applicable, TxDOT will provide all e-filed documents to DB Contractor as part of DB Contractor's support of the condemnation process and invoice DB Contractor for all e-filed charges. DB Contractor is responsible for reimbursing TxDOT all e-filed invoices. If e-filing is not applicable, DB Contractor shall follow the standard procedures as described in the TxDOT *Right of Way Manual*.

(f) TxDOT will provide all coordination services between DB Contractor and the Office of the Attorney General for prosecution of jury trials.

(g) TxDOT will provide a ROW Administrator to serve as the point of contact for all Project ROW issues as set forth in 23 CFR § 710.313(d).

(h) TxDOT will review and approve the completed, final closeout files in accordance with the closeout procedures.

7.2.13 TxDOT Project Monitor/Reviewer

In addition to its review and approval authority as expressly set forth in other provisions of this Section 7, TxDOT may, at its discretion, audit and monitor the ROW activities and services performed by 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 components specifically required to be provided to TxDOT, DB Contractor shall provide information to TxDOT as requested to assist in its review and assessment of the progress, timeliness, adequacy and sufficiency of 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 DB Contractor and coordination of TxDOT, will 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) If applicable, e-file condemnation documents and coordinate delivery of filed documents with TxDOT;

(d) Coordination with TxDOT on all legal matters concerning acquisition processes, including negotiated settlements;

(e) Analysis of recommended parcel values and/or appraisal issues;

(f) Additional legal advice and opinions as needed by TxDOT;

(g) Special Commissioners' hearings;

(h) Jury trials including determination of expert witnesses and all appeals; and

(i) 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

DB Contractor shall perform all Project ROW surveying and mapping and shall prepare 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* for any Additional Properties. 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*. DB Contractor shall refer to Section 9 (Land Surveying) for additional survey requirements.

The Project ROW map shall be prepared by 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 ten Business Days for review of each submitted ROW map, each containing up to a maximum of 25 parcels. Any Submittals that would require TxDOT to review more than 25 parcels within any given ten Business Day period shall be considered excess, and TxDOT may defer its review of any such excess parcels to a subsequent ten Business Day period (or periods as necessary).

DB Contractor may use Acquisition Survey Documents prepared by TxDOT, if available, for the purpose of performing ROW acquisition work at DB Contractor's risk.

DB Contractor shall assemble an Acquisition Survey Document to be included in the submission of the Acquisition Package. The Acquisition Survey Document shall include:

(a) Three half size right of way maps on paper, Scale 1" = 100' (11" X 17");

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

(c) A 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 full size right of way map on paper, Scale 1" = 50' (22" X 34");

(e) One set of folders for each parcel, Parts 1 & 2, etc., would be considered one folder. With one copy (signed and sealed) legal description, sketch, closure sheet, parent tract deed and subdivision plat if tract is a platted lot (and bi-section, if applicable) secured inside on the right side;

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

(g) One separate set (copies) of legal and sketch of each parcel for TxDOT records;

(h) One separate set (copies) of legal and sketch of each parcel for Title Company; and

(i) One separate set of originals legal and sketch signed and sealed by a RPLS to be kept in mapping files.

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

1. DB Contractor shall assemble an Acquisition Survey Document. The Acquisition Survey Document 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 8 ½" X 11" bond paper. The Project ROW map sheets shall be on 22" X 34" paper. Each final submission to TxDOT shall include two sets of each document, unless otherwise directed. Each map sheet and document page shall have an "as of" date near the lower right hand corner. The parcel plat and parcel description for a given parcel should show identical "as of" dates.

2. The ROW map sheet and plat shall show all areas of denied access for the parcel according to the current TxDOT *Access Control Management Manual* and amendments.

3. 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.

4. 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.

5. The centerline (survey baseline) station and offset shall be shown on the Project ROW map sheets for all significant points along the Project ROW line such as point of curvature (PC), point of tangency (PT), point of intersection (PI), point of compound curvature (PCC), and point of reverse curvature (PRC), and for property line intersections (PLI) with the Project ROW line, and for any other monumentation points on the Project ROW line.

6. 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.

7. Project ROW map sheets shall include all curve data, with the station and coordinates of the PI, and the stations at each end (PC, PT, PRC, PCC), for every centerline (survey baseline) curve on that map sheet.

8. Any existing ROW lines being incorporated into the proposed Project ROW, including intersecting right of way, shall be surveyed and monumented (if not previously monumented).

9. 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)).

10. A Project ROW map title sheet with signature blocks shall be produced for each portion of the Project. DB Contractor shall sign the Project ROW map.

11. All Project ROW maps shall include a control sheet(s), to show the primary survey control points with their location relative to the Project.

12. The parcel description and parcel plat documents shall all be referenced as parts of the exhibit recorded with the deed, so the pages shall be numbered accordingly. For example, if the parcel description is two pages, the parcel plat is one page, and then the first page of the parcel description is denoted “Page 1 of 3”, the parcel plat is denoted “Page 3 of 3”.

13. 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.

14. All visible improvements (buildings and structures) within 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.

15. Calculated points shall be shown by a symbol on the drawing, with their relationship to the found reference points.

16. 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.

17. Upon final submittal from DB Contractor of the Project ROW documents to TxDOT, 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).

18. Prior to acceptance of the ROW maps and surveys by TxDOT, 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.

19. As part of the survey process, DB Contractor shall cause a TxDOT Type II monument to be set at all significant points such as PCs, PTs, angle points and at 1,500 foot intervals along tangent sections 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). A TxDOT Type II monument shall be set on the Project ROW lines, perpendicularly left and right of each significant centerline point, regardless of the relative orientation of the final Project ROW line.

20. For any required revisions, 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.

21. Documents shall contain deed references (survey name, abstract number, volume and page or document number, grantee, and area) for all existing public right of way encountered within the Project limits. If there is no recorded information found, a note shall state “Based upon our research, there appears to be no recorded vesting deed for the public right of way as shown hereon”.

22. 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.

23. 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. 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” iron rod with a TxDOT aluminum cap stamped “TxDOT ADL” the limits of the denial of access.

24. The Project ROW map and each parcel plat shall include a parcel information table containing the areas, expressed in square feet, of the following: 1) the parent ownership as stated in all adjoining record vesting deeds or converted from the stated record acreage in those vesting deeds; 2) the parcel to be acquired as shown on the closure report for that parcel; and 3) the remainder tract (item 1 *minus* item 2). If the parcel to be acquired consists of multiple parts, the Project ROW map shall show the net remainder. The parcel information table shall also contain the areas, expressed in acres, of the parent tract, the parcel to be acquired, and the remainder. This acreage (except stated record) shall be converted from the square footage as contained in the table. A note shall be included on the Project ROW map and on each parcel plat stating: “The acreage calculated and shown hereon is converted from the square footage shown hereon, and is for informational purposes only.” Parcels with area less than one acre will not require acreage units to also be shown. All parcels, including parcels acquired by TxDOT or other Governmental Entity, shall be included on the Project ROW map.

25. Within the proposed Project ROW, all property owned by a city, county, or other local public agency 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. 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.

26. DB Contractor shall cause an independent RPLS to review the Acquisition Survey Document 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 DB Contractor, and are not part of this review process. TxDOT will have no obligation to accept the Acquisition Survey Document as complete until the reviewing RPLS has signed and sealed the compliance certificate (compliance certificate form to be provided by TxDOT).

27. Parcel numbering shall follow the TxDOT *Right of Way Manual*. Parcels are to be numbered based upon the parent tract. 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 parent tract is sold which will also require Project ROW acquisition. The result is, Parcel 14 is "Not Used", and the two new Project ROW acquisition parcels are identified as Parcel 14A and 14B. If the property containing Parcel 14B sells a portion, then 14B is "Not Used" and the new Project ROW acquisition parcels are identified as Parcel 14C and 14D, etc. 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.

28. 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. DB Contractor shall use the preferred solution unless TxDOT approves an alternate method.

29. 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.

30. 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.

31. DB Contractor shall purchase all materials, supplies and all other items necessary for proper survey monumentation. DB Contractor may purchase Type II monuments from TxDOT. TxDOT shall make available for pick-up by DB Contractor Type II monuments within 75 Days after TxDOT receives from DB Contractor a written order, specifying the number of monuments to be purchased. Payment for TxDOT-supplied monuments shall be due within 30 Days after TxDOT delivers to DB Contractor a written invoice. DB Contractor may use these monuments only for this Project and shall be responsible for proper storage thereof.

32. DB Contractor, at the request of the property owner or TxDOT, shall re-stake the proposed ROW with a flagged wooden stake.

Design Certification. DB Contractor shall provide sufficiency of design to determine the ROW need and produce ROW maps that delineate the proposed ROW and potential impacts to the remaining ROW. DB Contractor shall provide a design certification of ROW 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, DB Contractor shall provide the following reports and electronic files:

(a) Monthly Parcel Report: a report, prior to the first of the month, listing all parcel deletions, parcel additions, and parcel splits;

(b) Monthly Progress Report: a report of all survey activity that occurred during the previous month, including a two-week look ahead of anticipated survey activity; and

(c) CAD Files: digital CAD files in MicroStation format which include 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 CAD files prior to submitting the first Acquisition Package and provide updates as needed.

7.3.3 Title Services

With respect to title services, 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 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 90 Days prior to the date of submittal to TxDOT of the Acquisition Package for such parcel. DB Contractor shall, at its own cost, review each title report to ensure that it complies with the format required by the Contract Documents. 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. DB Contractor shall notify the title company, by letter, which exceptions should be removed, including easements that (a) are appurtenant to and/or of benefit to the parcel but are not included in the parcel to be acquired, and (b) are a burden on the parcel and not acceptable.

(b) Review the preliminary title commitment or report to ensure that all current owners of record title are contacted and that negotiations or condemnation actions are conducted with all appropriate parties.

(c) Work with the current owners of record title to each parcel or interest in a parcel or their designee and all other appropriate parties to clear any title exceptions or exclusions not acceptable to TxDOT.

(d) Secure an owner's policy of title insurance in the amount of the total acquisition cost, to include the cost of the property, improvements and damages to the remainder of the property, 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. 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 Transportation Commission".

7.3.4 Introduction to Property Owners

DB Contractor shall provide TxDOT the current property owner list, with addresses, and shall pay for the distribution of initial contact letters of introduction to 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 designee will sign the letters on TxDOT letterhead. The forms for these letters will be approved by TxDOT prior to use. DB Contractor shall provide translation for property owners or displacees unable to read or understand the notices.

DB Contractor shall furnish a copy of the State of Texas Landowner's Bill of Rights for each property owner for inclusion with the letter of introduction. The copy of the Bill of Rights shall be the latest version as shown on the Office of Attorney General website, https://www.texasattorneygeneral.gov/agency/Landowners_billofrights.pdf.

7.3.5 Appraisals

7.3.5.1 Appraisal Services

DB Contractor shall provide TxDOT with market value appraisals prepared by appraisers meeting the minimum qualifications established herein. DB Contractor shall ensure that all appraisals are 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. DB Contractor shall:

(a) Select appraisers from TxDOT's list of pre-certified fee appraisers 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 DB Contractor. 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 DB Contractor granting TxDOT, DB Contractor or assignees permission to enter the applicable parcel to be acquired (a "Right of Entry Agreement"). DB Contractor may, at its discretion and expense, offer to pay reasonable compensation for any required Right of

Entry Agreements. If DB Contractor, after best efforts, is unable to secure a Right of Entry Agreement from the property owner, 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 and attempts to contact 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 USPAP 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. In very limited situations and with written permission from TxDOT on a per parcel basis, the appraiser may utilize TxDOT form ROW-A-6 for less complicated parcels. All appraisals must be performed utilizing guidance from the TxDOT *Right of Way Manual* and the 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 that are not already included in the Title Commitment.

(g) Perform an evaluation of all outdoor advertising signs, as required, utilizing the appropriate forms as instructed by TxDOT. The forms shall be completed and executed by the outdoor advertising sign owner.

(h) For all parcels to be acquired that have off-premise outdoor advertising signs (sign structure), the preliminary appraisal package or the appraisal in the Acquisition Package, submitted for TxDOT approval, must include:

(i) Completed and executed appropriate TxDOT forms; and

(ii) If applicable, the value of the sign structure as a real property fixture.

Unless the appraiser is advised that the owner of an impacted (displaced) sign structure has elected to relocate the sign structure as personal property, DB Contractor shall prepare a valuation of the sign structure.

(i) 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 in accordance with the TxDOT *Right of Way Manual* and USPAP. DB Contractor shall also provide administrative and/or technical support for such proceedings as requested by TxDOT.

(j) Coordinate with the review appraiser regarding corrections and additional information that may be required for a particular appraisal.

(k) Cause a report to be prepared by an environmental professional that meets the qualifications set forth in ASTM E-1527-13, Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process, documenting the environmental condition of each parcel, which may be used on field investigations and/or historical review, as appropriate for the particular parcel. As directed by TxDOT, DB Contractor shall submit a summary report of the Phase I site assessment. Upon completion, the report shall be made 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 and submitted with the Acquisition Package. If it is determined that there is a potential environmental risk based on the Phase I report or other reports, then a Phase II investigation shall be performed and submitted to TxDOT before a payment request is submitted for the purchase of the parcel or a Condemnation Package is submitted for approval. 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. DB Contractor shall 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. In the event that DB Contractor has exhausted all means possible and is unable to access the properties to perform an Environmental Site Assessment Phase II and/or III, DB Contractor may submit the Acquisition Package and Condemnation Package without the Environmental Site Assessment reports. However, DB Contractor shall be responsible for performing and receiving approval from TxDOT for all required Environmental Site Assessments after possession of the property has been obtained through condemnation before commencement of construction.

(l) Engage the services of, and cause, a land planner to perform or otherwise assist in the preparation of, any and all appraisals. The land planner shall be involved with all parcels with a valuation analysis indicating a highest and best use that is other than the current use of such parcels, or as directed by TxDOT, for certain other appraisals. 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 DB Contractor.

(m) 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 and Advisory Opinion, AO-3. At a minimum, the updated appraisal report or new assignment 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 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 the TxDOT form ROW-A-5 – Real Estate Appraisal Report. Appraisers shall refer to the TxDOT *ROW Appraisal and Review Manual* for additional guidance. DB Contractor shall follow these guidelines in producing updated appraisal reports or new assignments and shall discuss specific updating requirements for any complex appraisals with TxDOT before beginning the assignment.

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

(o) Complete with the property owner and furnish, to the appraiser and Relocation Agent, TxDOT form ROW-A-9 – Property Classification Agreement, before appraisal is completed.

7.3.5.2 Appraisal Review

In connection with appraisal review, DB Contractor shall:

(a) Select review appraisers from TxDOT's list of pre-certified fee appraisers meeting the requirements of Section 7.2.7 (ROW Personnel Qualifications). The review appraiser selected must follow the appraisal guidelines and procedures found in the TxDOT *ROW Appraisal and 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 and Review Manual*, the *Uniform Appraisal Standards of 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 review appraiser shall certify in writing to TxDOT that all required standards have been met. This certification will occur by signing on Page 1 of the TxDOT form ROW-A-5 – 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 or new assignments, the review appraiser shall perform a complete review of the updated or new appraisal, re-inspecting the subject property and the comparable 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 or new assignment.

(g) DB Contractor's Quality Control Specialist(s) as referred to in Section 7.2.7 (ROW Personnel Qualifications), shall 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 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:

(i) Parcel number and number of parts;

(ii) Station number;

(iii) CSJ number;

(iv) Federal Identification Number (if applicable);

(v) Location of parcel;

(vi) Name of owner;

(vii) County and/or other jurisdiction;

(viii) Extent of acquisition (partial or whole acquisition); and

(ix) 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 a 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" X 17") 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 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 DB Contractor's analysis of each preliminary title report or title commitment to determine potential problems and proposed methods to cure title deficiencies. DB Contractor shall perform title curative work. 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.

(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 (TxDOT form ROW-A-9 – Property Classification Agreement) 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.

(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.

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

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

7.4 Acquisition Activities

7.4.1 ROW Negotiations

DB Contractor shall conduct all negotiations in accordance with the requirements of applicable Law. In conjunction with negotiations, DB Contractor shall:

(a) Within ten 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 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 initial offer. All appraisal reports produced or acquired by TxDOT relating specifically to the property owner's property and prepared in the ten years preceding the date of the offer must also be delivered to the property owner. DB Contractor shall also maintain a file record of receipt of appraisal signed by the property owner. 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 and the State of Texas Landowner's Bill of Rights as updated on the Office of the Attorney General's website:

https://www.texasattorneygeneral.gov/agency/Landowners_billofrights.pdf.

(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 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 DB Contractor's recommendation to TxDOT must occur within 15 Business Days following DB Contractor's receipt of the administrative settlement request.

(e) DB Contractor, at its request or the request by TxDOT or the TxDOT Administrative Settlement Committee, may participate in the evaluation of the administrative settlement request and attend the committee meeting.

(f) DB Contractor shall provide a letter stating the TxDOT Administrative Settlement Committee's response to the property owner, lessee, licensee, occupant, or other holder of a compensable interest, as applicable. DB Contractor shall deliver all settlement responses (if within reasonable proximity of the Project) by hand within three Business Days after receipt. If this delivery method is not feasible, DB Contractor shall mail (return receipt requested) response letters not more than three Business Days following any decision by the TxDOT Administrative Settlement Committee. If DB Contractor selects the mailing option, DB Contractor shall contact 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, DB Contractor may engage in ongoing negotiations with the owners of compensable interests. DB Contractor shall develop and incorporate in its ROW Acquisition Management 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. DB Contractor shall submit its recommendation to TxDOT of a negotiated settlement and obtain TxDOT's consent prior to acceptance of any settlement.

(h) Provide timely (i.e., not more than ten 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 other 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 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 shall be sought and negotiated by DB Contractor strictly in accordance with the Law and only with the prior written consent of TxDOT. If DB Contractor exercises the use of a TxDOT PUA, 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. No other conveyance documents shall be used for the purpose of Construction Work unless otherwise approved by TxDOT.

(m) Consider 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. 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.

(n) 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. The letter shall be on 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 14 Days as the consideration time period to review the final offer. DB Contractor shall submit to TxDOT, a copy of the final offer letter within two days of delivery to the property owner.

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

7.4.2 Relocation Assistance

DB Contractor shall coordinate and perform the administrative requirements necessary to relocate any occupants and personal property from Project ROW and certain remainders, as authorized by TxDOT. All Work prepared by 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 Agreement.

DB Contractor shall be available to all displacees for relocation services at the convenience of the displacees.

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

1. Prepare a Relocation Plan in accordance with the TxDOT *Right of Way Manual*, Volume 3, Chapter 8 (Relocation Program Planning and Construction) within 90 Days after receipt of NTP1, as part of an updated ROW Acquisition Management Plan.

2. Monitor relocation assistance activities and provide advisory services.

3. Prevent fraud, waste and mismanagement.

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

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, 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. DB Contractor shall perform relocation interviews, complete and maintain interview forms and discuss general eligibility requirements, programs, and services with potential displacees. 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 replacement housing comparable, photograph the comparable and complete the DSS inspection form, TxDOT form ROW-R116 – Replacement Housing Inspection.

H. Obtain at least two 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 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 90 Day notice of eligibility letter simultaneously with the delivery of the relocation benefits package. Deliver a 90 Day letter to displacees with the location of the comparable property used to compute the supplement.

O. Deliver a 30 Day notice to displacees and property owners upon Possession of Project ROW.

P. Notify TxDOT, in writing, when displacee has vacated or abandoned the affected dwelling or structure. In addition, insure displacee has removed all personal property from the Project ROW.

Q. Notify TxDOT's ROW Administrator office immediately if a displacee has not moved after 30 Day notice expires. Special effort and consideration should be extended to the displacees in the move out process. If the displacees have not moved from the State owned ROW and eviction is necessary, DB Contractor must provide written request to TxDOT to begin eviction proceedings. The request must include written evidence of the due diligence efforts to vacate the displacees. Prepare a written recommendation to facilitate the displacee's move.

R. Be available for any appeals or hearings.

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

T. Verify DSS dwelling criteria on all replacement housing as selected by the displacees.

U. Secure dwellings and structures no later than ten Days after vacancy and protect the Project ROW following acquisition and relocation. It is DB Contractor's responsibility to insure that all occupied and vacated improvements maintain insurance coverage or assume liability through completion of demolition.

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

W. 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 Office of the Attorney General for eminent domain also has a relocation issue. Relocation computations shall be adjusted based on the approved administrative settlement and court award.

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

Y. Deliver to each displacee the relocation assistance payments according to the TxDOT *Right of Way Manual*, Volume 3 – Relocation Assistance – Chapter 4 Program Administration – Section 1 Procedures – Delivery of Payment.

Z. Assist TxDOT and the Office of the Attorney General 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, DB Contractor shall:

(a) Submit a closing Submittal to TxDOT for review a minimum of 24 hours prior to closing. Closing Submittals shall include the following:

(i) A reference to the disposition of any environmental matters;

(ii) Updated title commitment, no more than 15 Days prior, with notations indicating the disposition of all schedule "B" and "C" items;

(iii) A copy of the executed warranty deed to be delivered;

(iv) A proposed closing statement indicating disposition of all proceeds;

(v) A copy of any and all release(s) of liens;

(vi) A copy of any miscellaneous documents and other curative matters required to be delivered at closing; and

(vii) 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 and transmit to TxDOT a copy of the issued title insurance policy and recorded conveyance document based on the approved updated title commitment within 45 Days following closing.

7.4.4 Condemnation Support

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 is also responsible for preparing

exhibits as requested by TxDOT or the Office of the Attorney General in support of said testimony.

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; in Chapter 21 of the 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 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 the 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 copies each of the following documents: the completed TxDOT form, negotiation logs, the updated title report not more than 30 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 the 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 copy of all the appraisal reports and evidence of a bona fide offer to the property owner. Submit two complete Condemnation Packages 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. In counties that require e-filing, the Office of the Attorney General will e-file as appropriate and provide a copy of the petition to TxDOT. DB Contractor shall record the lis pendens in deed records with the appropriate county. No later than three Business Days from the date of filing, DB Contractor shall send a copy of the petition and lis pendens, by certified mail, return receipt requested, to the owner, lessee, licensee, occupant or other holder of compensable interest. DB Contractor shall provide a copy of the petition and lis pendens to TxDOT.

(i) Coordinate and provide technical support to TxDOT, as required to facilitate filing the petition. The Office of the Attorney General will file petitions as required by law. DB Contractor shall provide the location and setting of a hearing date.

(j) Make available to TxDOT on behalf of the Office of the Attorney General an agent who will be expected to assist in making arrangements for conferences with witnesses prior to trial, filing the condemnation petition, informing all parties 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 six months have elapsed since the date of the initial offer, contact TxDOT and TxDOT will contact the Assistant Attorney General 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). 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 Office of the Attorney General as to land planners and/or other expert witnesses as required by the Office of the Attorney General. DB Contractor, at its cost, shall provide the land planner or other expert at the request of TxDOT or the Office of 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 Office of the Attorney General. The appearances may include pre-commissioner's hearing preparations, Special Commissioner's hearings, subsequent proceedings including jury trials and related proceedings and as other needs arise.

(n) Submit the updated appraisal or new assignment to TxDOT for review and approval. Once approved, TxDOT shall transmit the approved appraisal to the Office of the Attorney General. TxDOT must approve any updated appraisals or new assignments. If an updated appraisal or new assignment is approved offer is approved, notify the property owner or other holder of a compensable interest, as applicable, and submit a copy to TxDOT.

(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 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 reminder letters two to three 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. 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. 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, 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 DB Contractor shall appear as expert witness or fact witness, as requested. DB Contractor shall also make any Subcontractors available to appear as an expert witness or fact witness, as requested at the Special Commissioners' hearing or subsequent proceedings up to Final Acceptance of the construction project and through any maintenance agreement periods. The selection of all expert witnesses to be used for jury trials shall be determined by the Office of the Attorney General.

(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 Office of the Attorney General and all others required for testimony or exhibit preparation. 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 citations if objections are filed after completion of the Special Commissioner's hearing and promptly provide evidence of filing and copies of all filed documents to TxDOT. As directed by TxDOT and the Office of the Attorney General, DB Contractor, at its cost, shall order transcripts of such hearing.

(w) 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 is also responsible for preparing exhibits as requested by TxDOT and 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

In the event that the ROW map provided by TxDOT shows buildings enchroaching on state ROW and the enchroachment is shown at a location where TxDOT is not acquiring ROW then the existing building shall remain in place. For locations where TxDOT is acquiring ROW, prior to demolition of any improvements, DB Contractor shall provide to TxDOT photographs of the property and all improvements. If legal proceedings are initiated, all photos of personal property and any other items of dispute shall be in and of a quality suitable for presentation as evidence in court. Following acquisition or possession of any parcel of Project ROW, DB Contractor shall:

(a) Within ten Days from vacancy of the property, secure and protect the buildings, improvements and fixtures on the Project ROW until they are disposed of or demolished. DB Contractor shall board-up, mow, fumigate 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, notify TxDOT in writing of all such activities, and provide copies of such Governmental Approvals to TxDOT.

(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 abandoned personal property remaining on the Project ROW.

(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.

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

7.4.6 Payment Submittal

DB Contractor must submit a payment Submittal for any item that is a TxDOT payment responsibility as outlined in this Section 7. A payment Submittal shall consist of:

(a) Completed payment request forms for each type of payment;

(b) All required appropriate documents as shown on each payment request form; and

(c) Form AP-152 (Tax Payer Identification Number).

The State's warrant will be returned to DB Contractor's ROW Acquisition Manager (ROW AM).

7.4.7 Property Fence

In connection with fences, DB Contractor shall comply with the policies and procedures of the TxDOT *Right of Way Manual*, as well as the specifications found in the TxDOT Standard Specifications. Fencing standards for DB Contractor-provided fencing shall conform to the overall aesthetics requirements found elsewhere in these Contract Documents and referenced standards.

7.4.8 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), DB Contractor shall construct similar like fence as in the preexisting condition or, at a minimum, construct a 6-foot-high chain-link fence with metal posts if no fence was in the preexisting condition. DB

Contractor shall use Good Industry Practice in fencing public properties to control public access to the Project.

7.4.9 Property Fencing for Private Properties

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 (1) 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, DB Contractor shall include the following clause in the memorandum of agreement or the purchase agreement for such property:

> "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 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."

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, 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, 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 will notify DB Contractor if certain Project ROW parcels are scheduled to be acquired by TxDOT or Governmental Entities prior to NTP2. TxDOT will update DB Contractor regularly on the status of the acquisition process for each parcel.

DB Contractor shall complete the acquisition process for Project ROW parcels not acquired by TxDOT and coordinate the scheduling of all remaining Project ROW acquisitions.

7.6 Submittals

All Submittals described in Section 7 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 7-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 7-1: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Section 7			
PMP – ROW Acquisition Management Plan	After NTP1 but prior to making offers	Approval	7.2.3
Updates for the projected acquisition of each parcel	Monthly	Approval	7.2.4
Meeting Agendas	Three Business Days prior to each meeting	Information	7.2.9
Meeting Minutes	Upon Request	Review and Comment	7.2.9
All specific reports and supporting documentation during acquisition process	Prior to Acquisition Package submission, Condemnation Package submission, and as often as requested by TxDOT Final reports and supporting documentation to be provided with retirement of all acquisition, relocation, condemnation, and property management files	Approval	7.2.10
Cost Summaries	Monthly	Information	7.2.10(2)
Status Reports	Monthly	Information	7.2.10(3)
Status Updates	Weekly or as requested	Information	7.2.10(3)
Subcontractor Status Report	Monthly or as requested	Information	7.2.10(4)
ROWIS compatible spreadsheet of ROW data	Monthly	Information	7.2.10(5)
Completed closeout files	Within 90 days of the completed ROW parcel activity	Review, Comment, and Approval	7.2.11
Project ROW map	Part of the Acquisition Survey Document	Approval	7.3.1
Acquisition Survey Document	As part of any Acquisition Package	Approval	7.3.1
Design Certification	As part of any Acquisition Package	Information	7.3.1
Monthly Parcel Report	Monthly	Information	7.3.2(a)
Monthly Progress Report	Monthly	Information	7.3.2(b)
ROW CAD Files	Prior to submission of the first Acquisition Package	Information	7.3.2(c)
TxDOT Introduction letter and Landowner Bill of Rights to Property Owners and Displacees	After ROW PMP approval but prior to ROW acquisition	Approval and signature	7.3.4

Table 7-1: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Appraisal Reports	Prior to submission of the first Acquisition Package, and as requested	Approval	7.3.5
TxDOT form ROW-R-LOAS (Relocation Assistance Notification of Outdoor Advertising Signs) to Property Owners and Displacees, including supporting documentation	After ROW PMP approval but prior to ROW acquisition	Approval and signature	7.6.5.1(h)
Acquisition Packages	Prior to delivering the offer to each property owner	Approval	7.3.6
Administrative Settlement Submittals	As necessary, within 15 Business Days following receipt of the administrative settlement request.	Approval	7.4.1
Relocation Assistance Submittals	As part of the respective parcel's Acquisition Package or separately	Approval	7.4.2
Relocation Plan	After NTP1, as part of a ROW Acquisition Management Plan update prior to commencement of ROW acquisition	Approval	7.4.2(1)
Closing Submittals	Minimum of 24 hours prior to closing	Approval	7.4.3
Condemnation Packages	Prior to TxDOT submission to TTC for a minute order	Approval	7.4.4
Payment Submittals	As necessary	Approval	7.4.6

SECTION 8.0 GEOTECHNICAL

8.1 General Requirements

DB Contractor shall perform all investigations, testing, research, and analysis necessary to effectively determine and understand the existing surface and subsurface conditions within the Project ROW needed to carry out the Work.

DB Contractor shall ensure the geotechnical investigations and analyses are both thorough and complete, to provide accurate information for the design of roadways, pavements, foundations, structures, embankments, excavations, slopes, temporary special shoring, and other facilities that result in a Project that meet the requirements of the Contract Documents.

All geotechnical work shall be performed in accordance with the latest versions of the TxDOT *Geotechnical Manual* and the TxDOT *Pavement Design Guide*.

DB Contractor shall comply with TxDOT's *Pavement Design Guide* and this Section 8 for the pavement design and validation process. Where there is a conflict between the requirements of these documents, the requirements in the Technical Provisions shall take precedence.

8.2 Geotechnical Investigation

8.2.1 Geotechnical Investigation for Pavement Design

DB Contractor shall determine the specific locations, frequency, and scope of all subsurface investigations, testing, research, and analysis necessary to design a safe and reliable pavement foundation for the Project in accordance with TxDOT's geotechnical requirements in TxDOT's *Pavement Design Guide* and this Section 8. DB Contractor shall take all soil borings within and along the proposed roadbed alignment.

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.

DB Contractor shall prepare and amend, as needed, its Geotechnical Engineering Reports documenting the assumptions, conditions, and results of the geotechnical investigation and analyses in accordance with TxDOT's *Pavement Design Guide*.

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

DB Contractor shall submit the final Geotechnical Engineering Report and the Pavement Design Report to TxDOT for approval with the Released for Construction Documents. Each report shall be signed and sealed by a Registered Professional Engineer.

8.2.1.1 PVR Requirements for Rigid and Flexible Pavement

DB Contractor shall design the new pavement to have a PVR no greater than 1.5 inches for main lanes, express lanes, and ramps and 2.0 inches for frontage roads and city streets as calculated in accordance with TEX-124-E. Widening of existing US 67 mainlane and frontage road pavements in Section 2A in accordance with Section 8.4.1.3 will not be subject to PVR requirements.

DB Contractor shall calculate PVR using the Excel workbook in Tex-124-E. DB Contractor shall sample and use existing soil column to a depth of 8 feet as measured from the bottom of the CRCP base layer when assuming dry soil conditions in all layers or 16 feet as measured from the bottom of the CRCP base layer when using in-situ moisture conditions, in calculation of PVR.

If calculated PVR of the in-situ conditions or assumed dry conditions exceed the maximum allowable levels, DB Contractor shall determine the depth of mitigation required to comply with PVR limits and implement mitigation measures to comply with PVR requirements. Any mitigation measures shall take into account fluctuations of the water table. At a minimum, DB Contractor shall utilize the following mitigation measures, which may be used independently or in combination:

(a) Where chemical soil treatment is used, it shall be in accordance with TxDOT's *Guidelines for Modification and Stabilization of Soils and Base for Use in Pavement Structures*. Only material meeting the definition of treated subgrade or treated subbase in Section 8.3 shall be used to provide a permanently treated subgrade.

(b) Undercut, remove, and replace expansive soils with select fill subbase.

Adopting mitigation measures does not excuse DB Contractor from meeting Performance Requirements set forth in the Capital Maintenance Agreement.

8.2.1.2 Soil Testing Requirements

DB Contractor shall use TxDOT's *Pavement Design Guide* to determine the frequency of subgrade soil survey exploration for use in determining plasticity index, liquid limit, moisture content, organic content, sulfate concentration, soil classification, and calculating PVR (Tex-124-E) as it relates to pavement design. Borings shall terminate at the depth recommended in the PVR evaluation below the bottom of the proposed surface elevation and sampling will be performed with Shelby tubes or a continuous sampler system.

DB Contractor shall develop the scope of testing and the evaluation for analyzing the subgrade and existing pavement structure to supplement the Pavement Design Report. DB Contractor shall use the TxDOT test procedures in Table 8-1 to characterize the subgrade soils or borrow material for pavement design:

Table 8-1: Soil Exploration & Testing

Testing	Properties
Dynamic Cone Penetration (DCP) (ASTM D6951)	Subgrade Soil Shear Strength
Soil Classification (Tex-104-106-E, Tex-110-E, Tex-142-E)	Plasticity, Particle Distribution, Percent Binder and Soil Classification
Soil Mineralogy (Tex-145-E, Tex-148-E)	Sulfate Content (ppm) and Percent Organic Content
Soil Treatment Design (Tex-120-E, Tex-121-E, Tex-127-E)	Target Stabilizer Content, Compressive Strength, Max. Dry Density, and Optimum Moisture Content

8.2.2 Geotechnical Investigation for Other Elements

The subsurface investigation shall include but not be limited to soil borings, test pits, rock coring and pavement coring. DB Contractor shall determine the specific locations, frequency, and depth of test holes in accordance with the guidelines in TxDOT's *Geotechnical Manual*. The scope of the subsurface geotechnical investigations shall include field and laboratory testing, research, and analysis that DB Contractor considers necessary to provide a safe and reliable roadway, embankment and cut slopes, bridge foundations, noise and sign structures, drainage structures, temporary and permanent retaining walls, excavation support systems, and any other facilities for the Project.

The depth of test hole should be adequate for the anticipated structure foundation type and loading, excavation depths, and scour.

Groundwater monitoring methods and durations should be adequate to determine groundwater levels and their impacts on the design and construction. DB Contractor shall employ field investigation measures that avoid groundwater contamination and shall be responsible for all mitigation and restoration associated with the geotechnical investigations.

DB Contractor shall prepare and amend, as needed, its 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 rock types, and drainage characteristics.

(b) Descriptions of field investigations and laboratory test results used to characterize subsurface conditions. Boring logs shall be provided, including descriptions of the soil/rock, Texas Cone Penetration test results, in-situ test results, and percent recovery and Rock Quality Designation (RQD) for rock cores. TxDOT's Drilling Log Form 513 shall be used as required by TxDOT's *Geotechnical Manual*.

(c) Laboratory testing shall include moisture content, plasticity index, gradations for each major soil strata change, levels of shrink/swell potential, soil corrosivity, soil compressibility, compaction characteristics (Proctor tests), resilient modulus tests, short-term and long-term strength tests and properties in accordance with TxDOT and ASTM geotechnical testing standards. Other field exploration and laboratory testing shall be performed as appropriate.

(d) A discussion of surface and subsurface site conditions and testing results with reference to specific locations on the Project.

(e) Design and construction parameters resulting from the geotechnical investigation and analysis.

(f) Discussions of structure foundation type selection considerations, including suitability of subsurface conditions, anticipated loads, scour, and construction staging. As required by TxDOT's *Geotechnical Manual*, bridge foundations shall consist of either drilled shafts or piling.

(g) Geotechnical analyses for foundations of drainage structures, bridge structures, sign structures, retaining walls, noise walls, and embankments. The analyses shall include

recommended bearing strata, deep foundation length and evaluations of bearing capacities and predicted settlements.

(h) Slope stability analyses for embankment and excavation, including roadway section, 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 retaining walls shall be in accordance with TxDOT's *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.

(i) Evaluation of applicable retaining wall types including design and constructability considerations, evaluation of both temporary and permanent retaining walls, and analyses to evaluate the stability of the walls and to ensure that the minimum factors of safety required by TxDOT's *Geotechnical Manual* have been achieved.

(j) Quantitative settlement analyses are intended to predict the post-construction settlements at the finished ground surface. These analyses shall consider both total and differential settlements. Quantitative settlement analyses shall consider the compressibility of the proposed fill and the underlying soil and rock and their potential for settlement due to the weight of the fill and the weight of proposed structures. These evaluations shall consider but not be limited to primary consolidation, secondary compression, hydro-compression, and expansion. Settlement analyses shall be performed for all approach embankments to grade separation and other bridge structures. The maximum differential settlement between the approach embankment and the bridge is 1 inch.

(k) Recommendations for instrumentation and monitoring of settlement, stability, vibrations, etc. during construction as required to achieve safe and reliable construction staging and to ensure safety of existing facilities and travelling public.

(l) Plan view of field sampling locations (field test plan), boring logs, and other field data, laboratory test results, calculations, and analyses that support design decisions.

The report shall:

1) Document that adequate investigation, testing, analysis, design, mitigating measures, and construction planning are applied to assess and provide for the effects of swell pressures from expansive soil and rock materials on foundations, pipes, and earth retaining structures;

2) Provide design and construction parameters derived from geotechnical investigations for the design of structure foundations, pipes, pavements, slopes, embankments, detention ponds and earth retaining structures; and

3) Assess the corrosion potential of the soil and rock materials and conditions that will be encountered, and the impacts to planned surface and subsurface facilities.

DB Contractor shall submit to TxDOT for review and comment each Geotechnical Engineering Report, including any later supplements or amendments to such report.

8.3 Pavement Materials Requirements

DB Contractor shall incorporate the following requirements into the pavement designs, plans, quality control and quality assurance programs, and the field construction procedures.

8.3.1 Subgrade Material Composition

DB Contractor shall analyze subgrade material composition and perform necessary construction procedures to address the following subgrade soil limitations.

(a) ***Sulfate Content.*** DB Contractor shall mitigate soluble sulfate induced heave by reducing soluble sulfate concentration to a level under 3000 ppm. DB Contractor shall follow Tex-145-E for measuring sulfate contents. When quantities of soluble sulfates detected are greater than 3000 ppm, DB Contractor shall determine the source of the sulfates and whether there are even greater concentrations in the general proximity or that would be created when materials are pulverized in and surrounding the sampled location. DB Contractor shall use the TxDOT *Guidelines for Treatment of Sulfate-Rich Soils and Bases in Pavement Structures* and TxDOT *Standard Specification Items 260, 265 and 275* for testing and detection and integrate these procedures with construction practices.

(b) ***Organic Content.*** DB Contractor shall evaluate subgrade soils for organic content using Tex-148-E and in accordance with general guidelines given in Chapter 3, Section 2 (Geotechnical Investigation for Pavement Structures) of TxDOT's *Pavement Design Guide*, considering soil variability within the Project limits. If the organic content of the soils are greater than 1%, DB Contractor will determine the appropriate type and quantity of additives to compensate for these organic levels to obtain minimum subgrade treatment requirements. As a minimum, stabilizer contents shall meet the requirements of Tex-121-E, Part III.

8.3.2 Treated Subgrade

For lime treatment, the subgrade may only be considered treated when designed in accordance with Part I of Tex-121-E. For cement treatment, DB Contractor shall meet the requirements of Part I of Tex-120-E. For lime-fly ash treatment, DB Contractor shall meet the requirements of Tex-127-E. If subgrade treatment does not conform to these requirements, then the treated subgrade shall not be included in the pavement design. To use the treated layer as part of the proposed pavement structure DB Contractor shall use TxDOT's *Guidelines for Modification and Stabilization of Soils and Base for Use in Pavement Structure*.

When swelling soils are present, DB Contractor shall stabilize the moisture conditions in the pavement structure by extending the treated subgrade at least four feet beyond the edge of the pavement.

8.3.3 Treated Base

Treated base may be modified with cement, lime, lime-fly ash, or asphaltic binders.

Base materials to be treated shall meet the specifications for the type and grade specified in accordance with TxDOT *Standard Specification Item 247*. Treated base shall be compacted using density control. For other stabilizers, DB Contractor shall meet the requirements set forth in the applicable TxDOT *Standard Specification*.

When cement is used to treat the base materials, DB Contractor shall determine the target cement content meeting the minimum and maximum unconfined compressive strength (UCS)

and 24-hour submerged strength requirements shown in Table 8-3 when tested in accordance with Tex-120-E.

Table 8-3: Minimum and Maximum Strength Values to be Achieved when using Cement for Treatment, by Pavement Type

Pavement Type	Minimum 7-day UCS (psi)	Maximum 7-day UCS (psi)
Flexible Pavement	300	500
Rigid Pavement	500	No max.

When lime is used to treat the base materials, DB Contractor shall determine the required lime content using Tex-121-E.

When lime-fly ash is used to treat the base materials, DB Contractor shall determine the required lime-fly ash content using Tex-127-E.

When asphalt is used to treat the base materials, DB Contractor shall determine the required asphalt content using an approved TxDOT *Standard Specification*.

When swelling soils are present, DB Contractor shall stabilize the moisture conditions in the pavement structure by extending the treated base and subbase for at least four feet beyond the edge of pavement.

For rigid pavements, the treated base shall extend a minimum two feet outside the edge of pavement to provide a stable area for the paving equipment.

8.3.4 Tack Coat

For flexible pavements, DB Contractor shall place a non-tracking tack coat using an approved TxDOT *Standard Specification* directly beneath the final surface course in accordance to the applicable specification for the final surface. No tack will be required if HMACP is on a freshly laid seal coat free of objectionable material such as moisture, dirt, sand, organic material, and other loose impediments as determined by the CQCM.

8.3.5 Surface Mix Type

Where flexible pavement structures are used, the surface mix of mainlane pavement and ramp pavement shall be either Stone-Matrix Asphalt (SMA), Permeable Friction Course (PFC), or Thin Overlay Mixture (TOM) meeting TxDOT *Standard Specification Items 342, 346,* or *347*. DB Contractor shall obtain components for the surface mix material from a vendor listed at http://www.txdot.gov/business/resources/producer-list.html.

The performance-graded asphalt binder in the asphalt mixture directly beneath the surface mixture will have the same high temperature performance grade as the asphalt surface layer. The minimum thickness of this layer will be 2.0 inches.

8.3.6 Underseal

DB Contractor shall place a one course surface treatment as an underseal directly on top of any untreated or treated base layer and prior to all hot mix asphalt concrete overlays. A prime coat complying with TxDOT *Standard Specification Item 310* may be applied to any untreated or treated base layer as an alternative underseal for new HMA paving.

8.4 Design

8.4.1 New Pavement

8.4.1.1 Design Traffic Considerations

Corridor traffic data is provided in the RID. The RID: "Southern Gateway Approved Traffic with Line Diagrams" shall be deemed a minimum acceptable traffic volume and composition to be used by DB Contractor for the purpose of pavement design. The minimum ESAL value to be used for the Section 1 mainlane pavement design is 161,327,000. The minimum ESAL value to be used for Section 1 frontage road pavement design shall be proportional to the mainlane pavement ESAL by comparing mainlane and frontage road traffic volumes. DB Contractor shall not be entitled to rely on the corridor traffic data for the purpose of meeting the performance requirements of these Technical Provisions or the CMA. The final pavement design shall be a DB Contractor risk regardless of whether the actual traffic volume and composition exceeds that identified in the RID.

8.4.1.2 Subgrade Considerations

For flexible pavement, DB Contractor is responsible for determining the design value for subgrade using testing as desired, only after they inform TxDOT of the method prior to commencement of construction.

8.4.1.3 Pavement Type Requirement

The following requirements shall be incorporated into the final pavement design:

1. Section 1 - All new full reconstruction pavement within Section 1 shall be a rigid pavement design consisting of continuously reinforced concrete paving.
    a. The mainlane pavement section (materials and depths) shall be consistent throughout Section 1.
    b. The express lanes pavement section shall be the same section (materials and depths) as the adjacent mainlane pavement.
    c. The pavement section of the ramps may be designed for ramp specific traffic volumes, but all ramps within Section 1 shall be the same section (materials and depths).
    d. The shoulders pavement section of all roadways shall be the same section (materials and depths) as the adjacent roadway pavement.
    e. The mainlanes, express lanes, ramps, and shoulders shall consist of a Next Generation Concrete Surface by applying diamond grinding and grooving techniques on new and existing pavement surfaces as described in 2014 Special Specification 3012 located in the RID.
    f. The frontage road pavement section (materials and depths) shall be consistent throughout Section 1.
    g. City street pavement sections shall be a rigid pavement design per TxDOT's *Pavement Design Guide* consisting of continuously reinforced concrete paving.
2. Section 2A - Widening of the existing US 67 pavement shall be concrete paving and shall match the existing concrete pavement section including type of concrete paving and subgrade (materials and depths). Matching the existing concrete paving section does not relieve the DB Contractor of the performance requirements prescribed in the

CMA. DB Contractor may propose an alternate pavement section to be approved by TxDOT.

a. The express lanes pavement section shall be the same section (materials and depths) as the adjacent mainlane pavement.
b. The pavement section of the ramps may be designed for ramp specific traffic volumes, but all ramps within Section 2A shall be the same section (materials and depths).
c. The shoulders pavement section of all roadways shall be the same section (materials and depths) as the adjacent roadway pavement. All existing asphalt shoulders shall be removed and replaced to match the existing concrete pavement section including type of concrete paving and subgrade (materials and depths).
d. The existing mainlanes, mainlane widenings, express lanes, ramps, and shoulders shall consist of a Next Generation Concrete Surface by applying diamond grinding and grooving techniques on new and existing pavement surfaces as described in 2014 Special Specification 3012 located in the RID.
e. The frontage road pavement section (materials and depths) shall match the existing pavement section including type of concrete paving and subgrade (materials and depths).
f. City street pavement sections shall be a rigid pavement design per TxDOT's *Pavement Design Guide* consisting of continuously reinforced concrete paving.

8.4.1.4 Required Pavement Design Reports

The pavement designs developed by DB Contractor shall be signed and sealed by a Registered Professional Engineer.

In addition to those requirements in TxDOT's *Pavement Design Guide*, Pavement Design Report(s) shall document the assumptions, considerations, and decisions contributing to DB Contractor's pavement designs, including:

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

(b) Relevant pavement evaluation data (structural and functional) and condition information on adjacent roads;

(c) Site conditions which might influence the design and performance of pavements;

(d) Relevant geotechnical data and drainage requirements, including boring logs, laboratory soil test results, and active or passive drainage system design;

(e) Design criteria used in determining the pavement design(s), including traffic loads, pavement material characterization, environmental conditions, and pavement design life; and

(f) Other considerations used in developing the pavement design(s), including subgrade preparations and stabilization procedures.

DB Contractor shall include the proposed pavement designs for the Project in its Final Plans and shall indicate the applicable roadway and station limits for each pavement design.

8.4.1.5 Flexible Pavement Design Requirements

DB Contractor shall use FPS 21 software as the sole design methodology for flexible pavements. DB Contractor shall check all pavement thickness designs using the Modified Texas Triaxial design method, and other analyses methods necessary to prevent premature failure from subgrade rutting and fatigue. DB Contractor shall use design values recommended by TxDOT's *Pavement Design Guide*, Chapter 5, except as noted below.

8.4.1.5.1 Minimum Layer Thickness

Minimum layer thickness for all unbound materials used in flexible pavement designs shall be 6.0 inches.

8.4.1.5.2 Pavement Analysis Period (Design Life)

DB Contractor shall use 30 years for all pavement types. The pavement section to be used for pavement widening within Section 2A shall match the existing pavement section and does not require a 30 year design life.

8.4.1.5.3 Minimum time to 1st overlay

DB Contractor shall use 15 years for main lane and ramp designs, and 12 years for all other lanes.

8.4.1.5.4 Reliability Level

DB Contractor shall use Level 'C' (95%) for all pavement designs.

8.4.1.5.5 Design Moduli

Design moduli shall not exceed the maximum values in Table 8-4, as established from methods and criteria stated below, and in accordance with layer thickness specified in Table 8-4.

Table 8-4: Design Structural Values for HMA Asphalt Pavements

Material Type	**TxDOT *Standard Specification*(s)**	**Maximum Modulus for TxDOT FPS 21**
Dense-Graded Hot Mix Asphalt	Item 341 (for permanent pavement)	Combined HMA thickness: ≤ 4.0" use 500 ksi > 4.0" use 650 ksi
Permeable Friction Course (PFC)	Item 342	300 ksi
Superpave Mixtures	Item 344	Combined HMA thickness: ≤ 4.0" use 650 ksi 4.0" < T ≤ 6.0" use 750 ksi > 6.0" use 850 ksi
Stone-Matrix Asphalt	Item 346	Same as Item 344
Thin Overlay Mixtures (TOM)	Item 347	Same as Item 344 (maximum thickness of 1.0")
Thin Bonded Wearing Course	Item 348	Same as Item 344
Flexible Base (Unbound Base)	Item 247, Grades	*75 ksi (no more than 4X the

Material Type	TxDOT *Standard Specification*(s)	Maximum Modulus for TxDOT FPS 21
	1-2 or 5	untreated subgrade modulus)
Treated Base	Item 275	*150 ksi
	Item 276	*200 ksi
	Foam or Emulsion	*150 ksi
	Item 292	*300 ksi
Treated Subgrade or Subbase	Item 260	*35 ksi**
	Item 275	*35 ksi**

* Maximum design values.

**Minimum modulus value for perpetual pavement design must be 35 ksi

8.4.1.6 Rigid Pavement Design Requirements

DB Contractor shall use the design procedures outlined in TxDOT's *Pavement Design Guide, January 2011 edition,* as the design methodology for all rigid pavement design. DB Contractor shall use design values shown in Table 8-5 and recommended by TxDOT's *Pavement Design Guide, January 2011 edition*, Chapter 8, and the applicable current TxDOT *Roadway Standard Specifications* for joint and reinforcement design. DB Contractor shall select one of the following base layer combinations:

a. Four inches of hot-mix asphalt (HMA) or asphalt treated base (ATB); or

b. A minimum of one-inch hot-mix asphalt bond breaker over six inches of cement treated base meeting the requirements of TxDOT *Standard Specification Item 276*.

Table 8-5 Rigid Pavement Design Input Values

28 day Concrete Modulus of Rupture, psi	620
28 day Concrete Elastic Modulus, psi	5,000,000
Effective Modulus of Subbase/Subgrade Reaction, psi/inch	300 psi/inch max.
Serviceability Indices ▪ Initial Serviceability Index ▪ Terminal Serviceability Index	 4.5 2.5
Load Transfer Coefficient	*
Drainage Coefficient	**
Overall Standard Deviation	0.39
Reliability %	95
Design Traffic, 18 Kip Equivalent Single Axle Load (ESAL)	Southern Gateway Approved Traffic in RID
Load Distribution Factor	***

* Table 8-1, TxDOT *Pavement Design Guide*, Revised January 2011

** Table 8-2, TxDOT *Pavement Design Guide*, Revised January 2011

** Table 8-3, TxDOT *Pavement Design Guide*, Revised January 2011

The maximum concrete pavement thickness of 13 inches as specified in TxDOT's *Pavement Design Guide, January 2011 edition,* may be increased at the option of the DB Contractor. The DB Contractor must meet the performance requirements prescribed in the CMA regardless of the concrete pavement thickness.

8.4.1.6.1 Pavement Analysis Period (Design Life)

DB Contractor shall use 30 years for all rigid pavement types and locations.

8.4.2 Existing Pavement Areas and Rehabilitation Pavement Areas

8.4.2.1 Existing Pavement Areas

The Project includes areas of pavement along US 67 within which DB Contractor may:

(a) Retain the full depth of the existing concrete pavement structural section in place at Substantial Completion; and

(b) Retain the existing surfacing course (if any) in place as the surfacing course at Substantial Completion (even if the existing surfacing course does not meet the smoothness requirements set forth in Section 8.5.1), provided that:

(i) All pavement within the existing pavement areas continues to meet the Performance Requirements in Table 19-1 (Baseline Performance and Measurement Table During Construction);

(ii) The existing mainlanes, mainlane widenings, express lanes, ramps, and shoulders shall consist of a Next Generation Concrete Surface by applying diamond grinding and grooving techniques on new and existing pavement surfaces as described in Special Specification 3012 located in the RID; and

(iii) The existing pavement structure has not been damaged by the Construction Work.

If either of (i) or (ii) above is not met, DB Contractor shall repair any damage and perform rehabilitation to restore the pavement within existing pavement areas.

Refer to CMA Exhibit 2 for DB Contractor's maintenance responsibilities within existing pavement areas.

8.4.2.2 Rehabilitation Pavement Areas

Prior to Substantial Completion, full depth concrete repairs shall be completed on the existing US 67 paving as needed per Technical Provision Section 19.

8.5 Construction Quality

The IQF shall perform independent material testing, inspection, and audits of the CQMP.

When performing construction activities under or adjacent to existing structures or utilities, DB Contractor shall limit vertical settlements and ground deformations so as to not damage structures, including foundation elements and utilities.

For those occurrences involving third party structures and Utilities, DB Contractor shall coordinate excavation activities in accordance with Sections 5 and 6 of the Technical

Provisions. For those occurrences involving TxDOT's structures and Utilities, DB Contractor shall coordinate excavation activities with TxDOT.

All testing required in TxDOT's Specifications and TxDOT's *Guide Schedule for Sampling and Testing* shall be conducted for each pavement layer except where superseded by these Technical Provisions.

8.5.1 Smoothness Specification

Smoothness of the pavement constructed shall conform to the requirements of TxDOT *Standard Specification Item 585, Ride Quality for Pavement Surfaces*, amended as cited below:

Article 585.3.4 Acceptance Plan and Payment Adjustments. The entire section is voided and replaced by the following:

Only Surface Test Type B permitted; corrective action acceptable to TxDOT is required, at 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, including rigid pavements receiving the Next Generation Surface Concrete Surface treatment, in excess of 65 inches per mile for flexible pavements, or for correction of local roughness. After making corrections, re-profile the pavement section to verify that corrections have achieved the required level of smoothness.

For asphalt concrete pavements, DB Contractor shall fog seal the aggregate exposed from diamond grinding.

Article 585.4 Measurement and Payment. The entire section is voided.

8.6 Submittals

Submittals described in Section 8 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 8-5. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 8-5: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Section 8			
Preliminary Geotechnical Engineering Reports	With applicable design submittals	Review and comment	8.2.1 and 8.2.2
Final Geotechnical Engineering Report	With RFC Documents	Approval	8.2.1 and 8.2.2
Preliminary Pavement Design Reports	Prior to inclusion of pavement section in the design submittals	Review and Comment	8.4.1.4
Final Pavement Design Report	With the RFC Documents	Approval	8.2.1 and 8.4.1.4

SECTION 9.0 LAND SURVEYING

9.1 General Requirements

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

DB Contractor shall review existing survey data and determine the requirements for updating or extending the existing survey and mapping data as required to complete its Work. DB Contractor is responsible for the final precision, accuracy, and comprehensiveness of all survey and mapping.

9.2 Administrative Requirements

9.2.1 Standards

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

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

9.2.3 Survey by TxDOT

In performing surveys for other adjoining projects, TxDOT may need to verify and check DB Contractor's survey work. DB Contractor shall coordinate with the adjoining project regarding planned construction activities. DB Contractor shall notify TxDOT within two Business Days if TxDOT stakes and marks are altered or disturbed.

9.3 Design Requirements

9.3.1 Units

All survey Work shall be performed in the U.S customary units system of measurement. Work shall conform to state plane coordinates. The surface adjustment factor for the Project is 1.000136506.

9.3.2 Survey Control Requirements

DB Contractor shall base all additional horizontal and vertical control on the Level 2 and Level 3 control provided by TxDOT. DB Contractor shall be responsible for tying into TxDOT Continuous Operating Reference Stations (CORS) vertical control and local monumentation. DB Contractor shall verify owner provided survey control.

DB Contractor shall establish and maintain additional survey control, as needed, and Project ROW monumentation throughout the duration of the Project. DB Contractor shall tie any additional horizontal and vertical control for the Project to the TxDOT-supplied Primary (Level 2)

or Secondary (Level 3) control network. If DB Contractor chooses to use GPS methods, DB Contractor shall meet the accuracy of the appropriate level of survey as defined in the TxDOT *GPS User's Manual* and shall utilize the primary survey control provided by TxDOT.

DB Contractor shall establish and maintain a permanent survey control network. The control network should consist of, at a minimum, monuments set in intervisible pairs at spacing of no greater than three miles.

Monuments shall be TxDOT bronze survey markers installed in concrete and marked as directed by the TxDOT *Survey Manual*. DB Contractor shall replace all existing survey monuments and control points disturbed or destroyed during execution of the Work. 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.

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 upon request.

9.3.3 Conventional Method (Horizontal & Vertical)

If DB Contractor chooses to use conventional methods to establish additional horizontal control, 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, North-central (TX4202), NAD83 (2011) Epoch 2010 and according to the appropriate level of survey as defined below in Table 9-1.

Table 9-1: Horizontal Accuracy Requirements

	TSPS First Order	TSPS Second Order	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
	TSPS First Order	**TSPS Second Order**	**Remarks and Formulae**
Adjusted Mathematical Closure of Survey (No Less Than)	1:200,000	1:200,000	

Notes: 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), (Geoid 12A) and according to the appropriate level of survey as defined below in Table 9-2.

Table 9-2: Vertical Accuracy Requirements

	1st ORDER	2nd ORDER	3rd ORDER	REMARKS AND FORMULAE
Error of Closure	0.013 feet $\sqrt{K}$	0.026 feet $\sqrt{K}$	0.039 feet $\sqrt{K}$	Loop or between control monuments
Maximum Length of Sight	250 feet	300 feet		With good atmospheric conditions
Difference in Foresight and Backsight Distances	±10 feet	±20 feet	±30 feet	Per instrument set up
Total Difference in Foresight and Backsight Distances	±20 feet per second	±50 feet per second	±70 feet per second	Per total section or loop
Recommended Length of Section or Loop	2.0 miles	3.0 miles	4.0 miles	Maximum distance before closing or in loop
Maximum Recommended Distance Between Benchmarks	2000 feet	2500 feet	3000 feet	Permanent or temporary benchmarks set or observed along the route
Level Rod Reading	± 0.001 foot	± 0.001 foot	± 0.001 foot	

	1st ORDER	2nd ORDER	3rd ORDER	REMARKS AND FORMULAE
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

DB Contractor shall base all surveys on the horizontal and vertical control network provided by TxDOT.

DB Contractor shall coordinate with TxDOT regarding the assignment of RCSJ numbers for each new mapping project.

The documents produced by DB Contractor, or its Subcontractors, are the property of TxDOT, and release of any such document must be approved by TxDOT. All topographic mapping created by DB Contractor shall be provided to TxDOT in digital terrain model format using the software and version thereof being used by TxDOT at the time the mapping is developed. Two sets of all mapping shall be provided, one each to the TxDOT Dallas District office surveyors. Mapping shall be provided so as to allow a minimum of 20 Days for TxDOT review and comment. DB Contractor shall obtain and address all TxDOT District office comments to TxDOT's satisfaction prior to signing maps.

In preparing the property description, the following will be required:

(g) Scanned copies of the deeds on USB Flash Drive and a graphics file of the Abstract Map; and

(h) Scanned copies of the field notes, control sketches, and a graphics file of all field survey data.

The Surveyor shall submit the following interim mapping products:

(i) A Preliminary ROW layout to determine if there are any changes to the proposed ROW; and

(j) An initial copy of the ROW map for review purposes.

9.3.4.1 Accuracy Standards

In performing right-of-way surveys consisting of boundary locations, DB Contractor shall meet the accuracy standards of the appropriate level of survey as defined below in Table 9-3.

Table 9-3: Chart of Tolerances

	URBAN/RURAL	URBAN BUSINESS DISTRICT	REMARKS AND FORMULAE
Error of Closure	1:10,000	1:15,000	Loop or between Control Monuments
Angular Closure	15" $\sqrt{N}$	10" $\sqrt{N}$	*N* = Number of Angles in Traverse
Accuracy of Bearing in Relation to Source *	20"	15"	Sin 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

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. The report shall provide control from adjoining, incorporated, or crossed roadway projects that are currently in design, and show a comparison of the horizontal and vertical values. DB Contractor shall provide survey records and reports to TxDOT upon request.

DB Contractor may use an electronic field book to collect and store raw data. 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. 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.) 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 the U.S customary units system of measurement. Work shall conform to state plane coordinates, surface coordinates. The surface adjustment factor for the Project is described in Section 9.3.1.

9.4.2 Survey Records

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 DB Contractor prior to Final Acceptance.

9.4.3 Construction Surveys

DB Contractor shall perform all construction surveys in accordance with the design requirements.

9.4.4 Project ROW Surveying and Mapping

DB Contractor shall coordinate with TxDOT regarding the assignment of right-of-way Control Section Job (CSJ) numbers for each new mapping project.

All ROW Surveying and Mapping documents are the property of TxDOT, and release of any such document to a third party must be approved by TxDOT in writing. An electronic copy of all topographic mapping created by DB Contractor shall be provided to TxDOT in digital terrain model format. Electronic files shall be compatible with software used by TxDOT at the time the mapping is developed.

9.4.5 ROW Monuments

Upon final submittal of the ROW documents to TxDOT, DB Contractor shall set, using permanent and stable monuments as defined in Section 663.17 of the General Rules of Procedures and Practices of the Texas Board of Professional Land Surveying (TBPLS), all significant points along all ROW lines of the Project including the following:

(a) Points of curvature (PCs);

(b) Points of tangency (PTs);

(c) Points of intersection(PIs);

(d) Points of compound curvature(PCCs);

(e) Points of reverse curvature(PRCs);

(f) All intersecting crossroad ROW lines and all property line intersections with the ROW line. These monuments shall be 1/2-inch iron rods, driven just below surface level, capped by a TxDOT-labeled aluminum cap (rod-and-cap monument); and

(g) All beginning and ending points of Control of Access (denied) lines.

Upon completion of the ROW acquisition and all Construction Work, such that the final ROW lines will not be disturbed by construction, DB Contractor shall replace all rod-and-cap monuments located on the final ROW line at all points of curvature (PCs), points of tangency (PTs), points of intersection (PIs), points of compound curvature (PCCs), and points of reverse curvature (PRCs), and all intersecting crossroad ROW lines, with TxDOT Type II monuments (constructed according to TxDOT specifications). DB Contractor shall monument with a TxDOT Type II monument all final ROW lines where the distance between such significant ROW line points exceeds 1,500 feet. ROW line intersections with property lines shall remain monumented by a 1/2-inch iron rod with a TxDOT aluminum cap (rod-and-cap monument). The ROW monuments shall be set by a survey crew working under the direction of a Registered Professional Land Surveyor, licensed to practice in Texas.

DB Contractor shall purchase all materials, supplies, and other items necessary for proper survey monumentation.

DB Contractor shall submit updated maps with the monumentation information. (This is for final monumentation set, for example, type II, and type of monuments set, etc.) All deed recording information to be added to the map sheets in the ownership blocks on the map sheets.

9.4.6 Record Drawings and Documentation

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 DB Contractor;

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

(c) Survey records and survey reports;

(d) Parcels for the ROW maps will be delivered in GPK format;

(e) Electronic files and paper copies of the ROW maps will be delivered to TxDOT; and

(f) The final ROW maps submittal consisting of the graphics files and two sets of the paper copy of the ROW maps, exhibits showing the metes and bounds description and parcel plat, signed and sealed by the Surveyor. The required geo-referenced parcel data (features) will be submitted for all existing and revised parcels in ArcGIS 10 format or the current version in use by the State, and in the format of the TxDOT ROW Geo-Database Template "ROW_Parcels_Edits."

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. 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 DB Contractor from TxDOT in an x, y, z only coordinate format, or z only coordinate format, DB Contractor shall provide TxDOT with data in an x, y, z only coordinate format or z only coordinate format.

9.5 Submittals

All submittals described in Section 9 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 9-4. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 9-4: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Section 9			
Right of Entry documentation	Upon request	For Information	9.2.2
Survey records as listed in Section 9.3.2	Upon request	For Information	9.3.2
Verification of owner provided survey control	Within 30 Days of NTP2	For Information	9.3.2
All topographic mapping created by DB Contractor	Prior to signing maps	Review and Comment	9.3.4
A horizontal and vertical control report	Upon request	For Information	9.3.5
Survey records and reports as listed in Section 9.3.5	Upon request	For Information	9.3.5
Copies of all field notebooks	Upon request	For Information	9.3.5
Survey records as listed in Section 9.4.2	Prior to Final Acceptance	Review and acceptance	9.4.2
ROW Surveying and Mapping documents	Upon completion but prior to Final Acceptance	Approval	9.4.4
Updated mapping with any ROW monument information	Upon completion of the ROW acquisition and all Construction Work	For Information	9.4.5
Record Drawings and Documentation	As a condition of Final Acceptance	For Information	9.4.6

SECTION 10.0 GRADING

10.1 General Requirements

DB Contractor shall conduct all Work necessary to meet the requirements for grading, including clearing and grubbing, excavation and embankment, removal of existing buildings, concrete slabs, pavement and miscellaneous structures, subgrade preparation and stabilization, dust control, aggregate surfacing, and earth shouldering, in accordance with the requirements of this Section 10 and TxDOT Standard Specifications.

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. Any features that are abandoned in place shall be removed to an elevation at least the lower of two feet below the final finished grade or one foot below the pavement subgrade and drainage structures. DB Contractor shall ensure that abandoned structures are structurally sound after abandonment.

10.2 Preparation within Project Limits

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 prior to NTP2.

TxDOT reserves the right to require DB Contractor, at any time to salvage and deliver to a location designated by TxDOT within the TxDOT District, in which the portion of the Project is located, any TxDOT-owned equipment and materials in an undamaged condition. TxDOT reserves the right to require DB Contractor to salvage and deliver to a reasonable location designated by TxDOT any ITS equipment and materials in an undamaged condition.

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

10.3 Slopes and Topsoil

DB Contractor shall exercise Good Industry Practice regarding design limitations and roadside safety guidelines associated with the design of slopes along roadways.

DB Contractor shall perform finished grading and place topsoil to an adequate depth 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. 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. DB Contractor shall provide stable slopes.

For designated construction easements and other approved project specific locations outside DB Contractor's limits of maintenance, DB Contractor shall provide stable slopes.

For slopes steeper than 4:1, DB Contractor shall submit to TxDOT a slope stability analysis that demonstrates the adequacy of DB Contractor's design. DB Contractor shall submit the slope stability analysis to TxDOT for approval prior to final submittal.

Slopes that are to remain unpaved must accommodate mower access from the frontage road. Where access for mowing and maintenance operations cannot be provided from the frontage road, slopes must be paved with concrete riprap unless DB Contractor receives prior approval from TxDOT for an alternative access point.

10.4 Sodding

Block sod shall be placed at all grate inlets, manholes and culvert headwalls. DB Contractor shall maintain all erosion and sediment controls in good working order. DB Contractor shall stabilize disturbed areas on which construction activities have ceased temporarily or permanently, within 14 Days unless they are scheduled to resume within 21 Days. The areas adjacent to creeks and drainage ways have priority followed by devices protecting storm sewer inlets.

10.5 Submittals

All submittals described in Section 10 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 10-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 10-1: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Section 10			
Demolition and Abandonment Plan	Prior to NTP2	Approval	10.2
Slope stability analysis	Prior to Final submittal	Approval	10.3

SECTION 11.0 ROADWAYS

11.1 General Requirements

Project objectives include the provision of a safe, reliable, cost-effective, and aesthetically-pleasing corridor for the traveling public. The requirements contained in this Section 11 provide the framework for the design and construction of the roadway improvements to help attain the Project objectives.

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

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

11.1.1 Lead Roadway Design Engineer

DB Contractor shall employ a Lead Roadway Design Engineer responsible for ensuring the design of the roadway is completed and design criteria requirements are met. The Lead Roadway Design Engineer shall be a Registered Professional Engineer (PE) and be responsible for coordinating interdisciplinary design reviews in cooperation with leaders of other disciplines. The Lead Roadway Design Engineer or a Registered Professional Engineer reporting directly to the Lead Roadway Design Engineer shall be the engineer of record for the design of the roadway Elements.

11.2 Design Requirements

DB Contractor shall coordinate its roadway design with the design of all other elements 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 TxDOT *Roadway Design Manual*.

DB Contractor shall design all Elements in accordance with the applicable design criteria and Good Industry Practice based on the Design Speeds as shown in Table 11-1.

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.

DB Contractor shall complete the design of the Project roadways in accordance with the TxDOT Schematic Design.

11.2.1 Control of Access

Unless shown to be denied in the TxDOT Schematic Design, DB Contractor shall maintain all existing property accesses, including those not shown on the TxDOT Schematic Design, and shall not revise control of access without TxDOT review and the written agreement of the affected property owner. DB Contractor shall design new and revised exit and entrance ramps to meet the desirable spacing requirements between ramps and driveways, side streets, or cross streets listed in TxDOT's *Roadway Design Manual*. In locations where the desirable

spacing cannot be achieved, channelization methods shall be implemented per TxDOT's *Roadway Design Manual*.

DB Contractor must coordinate with landowner when tying-in to private property; must replace necessary signs, mailboxes, fences, and landscape features and coordinate all access.

11.2.2 Roadway Design Requirements

DB Contractor shall design the Elements of the Project to meet or exceed the geometric design criteria shown in Table 11-1 (Design Speeds) and Table 11-2 (Geometric Design Criteria), with the exclusion of the roadway design exceptions listed in Section 11.2.2.2, in order to meet the Project objectives stated in Section 11.1.

Table 11-1: Design Speeds

Roadway	Roadway Classification	Design Speed
I-35E Mainlanes	Urban Freeway	60 MPH
US 67 Mainlanes	Urban Freeway	60 MPH
I-35E Managed Lane and Managed Lane Ramps	Urban Freeway	60 MPH
US 67 Managed Lane and Managed Lane Ramps	Urban Freeway	60 MPH
Ramps	Urban Freeway	40 MPH
Loop Ramps (US 67 at Loop 12)	Urban Freeway	25 MPH
Frontage Roads	Urban Arterial	40 MPH
Cross Streets	Various	30 MPH

Table 11-2: Geometric Design Criteria

Items	Mainlanes	Managed Lane	Ramps	Frontage Roads	Loop Ramps	Cross Streets
Roadway Classification	Urban Freeway	Urban Freeway	Urban Freeway	Urban Arterial	Urban Freeway	Varies
Design Speed (mph)	60 mph	60 mph	40 mph	40 mph	25 mph	30 mph
Horizontal Alignment						
Stopping Sight Distance (ft)	570	570	305	305	155	200
Absolute Minimum Radius (ft) **[1]**	1330	1330	485	533	144	250
Absolute Minimum Radius w/o Superelevation (ft) **[1]**	11100	11100	5230	762	2290	333
Superelevation Rate (%) **[1]**	e(max) = 6%	e(max) = 6%	e(max) = 6%	N/A	e(max) = 6%	N/A
Superelevation Runoff (%)	0.45% relative gradient	0.45% relative gradient	0.58% relative gradient	0.58% relative gradient	0.70% relative gradient	0.66% relative gradient
Vertical Alignment						
Type of Terrain	Level	Level	Level	Level	Level	Level
Minimum and Maximum Grade Requirements **[2]**	0.35% min, 3% max	0.35% min, 3% max	0.35% min, 7% max	0.35% min, 7% max	0.35% min, 9% max	0.35% min, 8% max
K Value for Crest Curves, min	151	151	44	44	12	19
K Value for Sag Curves, min **[3]**	136	136	64	64	26	37
Grade change without a vertical curve	0.50 % (Spline Grade) max	0.50 % (Spline Grade) max	1.0 % (Spline Grade) max	1.0 % (Spline Grade) max	1.0 % (Spline Grade) max	1.0 % (Spline Grade) max
Vertical Clearance						
Roadways	16'-6"	16'-6"	16'-6"	16'-6"	16'-6"	16'-6"
Railroads	23'-0"	23'-0"	23'-0"	23'-0"	23'-0"	23'-0"
Cross-Sectional Elements						
Widths of Travel Lanes	12'	12'	1-lane:14', 2-lane:24'	11' with 14' outside shared use	1-lane:14', 2-lane:24'	11' with 3' buffer to bicycle lane and 5' bicycle lane
Shoulder Widths **[4]**						
Inside	10'	1-lane:4' min, 2-lane: 2' min	2' rdwy/4' str	N/A	2' rdwy/4' str	N/A
Outside	10'	1-lane:4' min, 2-lane: 10' min	6' rdwy/8' str	N/A	6' rdwy/8' str	N/A
Offset to face of curb	N/A	N/A	N/A	1'	N/A	1'
Cross Slope (Lane & Shoulder) **[5]**	2.5% min	2.5% min	2.0% min	2.0% min	2.0% min	2.0% min
Monolithic Curbs						
Inside	N/A	N/A	N/A	yes	N/A	yes
Outside	N/A	N/A	N/A	yes	N/A	yes
Clear Zone Width	30'	N/A	16'	4.0' min from curb face	16'	4.0' min from curb face
Side Slopes						
Within Clear Zone	4:1 max	N/A	4:1 max	1.5% max	4:1 max	1.5% max
Outside Clear Zone	3:1 max	N/A	3:1 max	3:1 max	3:1 max	3:1 max
Through guard rail	10:1 max	N/A	10:1 max	10:1 max	10:1 max	10:1 max
Sidewalk Width	N/A	N/A	N/A	6' (from back of curb)	N/A	See Schematic Design
Border Width	15' min	N/A	N/A	15' min	N/A	15' min
Intersections						
Intersection Sight Distance **[6]**	N/A	N/A	N/A	325'	N/A	475'
Cross Streets Corner Radii Design Vehicle	N/A	N/A	N/A	WB-62	N/A	WB-62
Driveways Corner Radii	N/A	N/A	N/A	25' min.	N/A	25' min.

Notes:

[1] Ramp superelevation rates, as related to curvature and design speed, should reference "Table 3-21: Superelevation Range for Curves on Connecting Roadways" and Frontage Roads and Cross Streets should reference "Table 2-5: Minimum Radii and Superelevation for Low-Speed Urban Streets" of the TxDOT Roadway Design Manual.

[2] Per AASHTO, ramp upgrades for design speed of 40 mph should be limited to 6 percent.

[3] TxDOT's Roadway Design Manual allows comfort control criteria of about 50% of required sag vertical curve lengths at reserved locations with lighting. Comfort control criteria k values will be allowed at locations denoted on the TxDOT Schematic Design as "Requires Lighting."

[4] On mainlane ramps, if sight distance restrictions are present due to horizontal curvature, the shoulder width on the inside of the curve may be increased to 8 ft and the shoulder width on the outside of the curve decreased to 2 ft (RDWY) or 4 ft (STR).

[5] US 67 cross slope may match existing cross slope.

[6] Intersection sight distance to be determined by the various cases shown in AASHTO.

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

DB Contractor shall design and construct the I-35E and US 67 non-tolled reversible managed express lanes so that operations are automated including an automated barrier gate and a vehicle arresting barrier, as described further in Technical Provisions Section 17.

11.2.2.1 Superelevation

In areas where proposed ramps are to connect to existing pavement, DB Contractor's design may retain existing superelevation if appropriate. Pavement widening may be constructed by extending the existing pavement cross slope. Superelevation transitions shall be designed and constructed such that zero percent cross-slopes will not occur on grades flatter than 0.10 percent.

11.2.2.2 Roadway Design Deviations

The TxDOT Schematic Design under review for environmental approval contains design exceptions to the geometric design criteria stated in Table 11-2. No design exceptions will be allowed in Segment 1 (full reconstruction of I-35E from Colorado Boulevard to past the US 67 interchange). TxDOT will allow design exceptions at the following locations as further described in the Design Exception Report:

Design Exceptions for Proposed Construction

1. Reduced Lane Width
    a. US 67 NB (all) general purpose lanes at Loop 12 from 67-GP-N STA 665+50 to STA 690+63 (2513 ft.)
    b. US 67 SB (inside lane) general purpose lane at Red Bird Lane from 67-GP-S STA 577+44 to STA 591+16 (1372 ft.)

2. Reduced Shoulder Width
    a. Outside Shoulder US 67 NB general purpose lanes at Loop 12 from 67-ML STA 665+63 to STA 681+14 (1551 ft.)
    b. Inside Shoulder US 67 NB general purpose lanes at Loop 12 from 67-ML STA 664+67 to STA 690+51 (2584 ft.)
    c. Inside Shoulder US 67 SB general purpose lanes at Red Bird Lane from 67-GP-S1 STA 574+65 to STA 594+17 (1853 ft.)
    d. Inside Shoulder US 67 SB general purpose lanes at SB Bridge over Polk Street from 67 ML STA 703+33 to STA 709+56 (623 ft.)
    e. Outside Shoulder of SB bypass at Loop 12 from 67-BP-S-12 STA 33+00 to STA 38+00 (500 ft.)
    f. Outside Shoulder of NB bypass at Loop 12 from 67-BP-N-12 STA 17+00 to STA 24+00 (700 ft.)

3. Reduced Vertical Clearance
    a. US 67 NB/SB Bridges over Camp Wisdom
    b. US 67 NB/SB Bridges over Hampton
    c. US 67 NB/SB Bridges over Swansee
    d. EB/WB Loop 12 Bridges over US 67
    e. US 67 NB/SB Bridges over Pentagon
    f. US 67 NB/SB Bridges over Polk

Design Exception Documentation for Existing Conditions within Project Limits

4. Vertical Alignment (Grade)
    a. US 67 ML from STA 545+00 to STA 556+00
    b. US 67 ML from STA 562+00 to Sta. 572+13.80
    c. US 67 NBFR from STA 661+25 to STA 664+75
    d. US 67 NBFR from STA 563+00 to STA 569+00
    e. US 67 ML from STA 603+50 to STA 611+50
    f. US 67 SBFR at Swansee Street
    g. US 67 south of Pentagon SBFR
    h. US 67 south of Pentagon NBFR
    i. US 67 SBFR from STA 701+25 to STA 704+50
    j. US 67 ML from STA 697+75 to STA 706+00
    k. Camp Wisdom Road at US 67 from STA 11+25 to STA 11+75

5. Superelevation
    a. US 67 Northbound general purpose lanes at STA 655+21.10
    b. US 67 Northbound general purpose lanes at STA 684+18.01
    c. US 67 Northbound general purpose lanes at STA 701+82.75
    d. US 67 Northbound general purpose lanes from STA 715+02.85 to STA 726+30
    e. US 67 Southbound general purpose lanes at STA 655+37.22
    f. US 67 Southbound general purpose lanes at STA 684+18.37
    g. US 67 Southbound general purpose lanes at STA 701+59.46
    h. US 67 Southbound general purpose lanes from STA 715+01.55 to STA 726+30

Refer to the Design Exception Report associated with the TxDOT Schematic Design for additional information.

11.3 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 frontage roads and crossing streets shall be 15 feet minimum unless shown otherwise on the TxDOT Schematic Design.

11.4 Submittals

All submittals described in Section 11 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 11-3. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 11-3: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Section 11			
None			

SECTION 12.0 DRAINAGE

12.1 General Requirements

In the design of the drainage facilities, DB Contractor shall account for all sources of runoff that may reach the Project, whether originating within or outside the Project ROW.

DB Contractor shall design the Project, including all drainage facilities, such that the revised or newly constructed drainage system will not increase flooding to properties outside the Project ROW. If existing drainage patterns or flows are revised during the Project design, DB Contractor shall design and construct a solution that does not have adverse impacts to property owners outside the Project ROW. Adverse impacts for the purposes of this Section 12 are defined as impacts that have the potential to increase risk to health and human safety, cause or exacerbate flooding of developed structures, or increase water surface elevations on undeveloped properties.

DB Contractor's drainage design shall include assessments of pre- and postconstruction conditions, as well as assessments of conditions during construction staging. DB Contractor shall ensure and demonstrate that its drainage design does not cause any material impact to off-Site property owners in terms of developability or marketability of their property. DB Contractor shall obtain the appropriate drainage easement at its own cost if easement is deemed necessary and has not previously been obtained by TxDOT. Grading activities and drainage structures needed outside of the Project ROW require a construction or perpetual easement as appropriate.

DB Contractor shall meet the requirements specified in this Section 12 along with the requirements of the TxDOT *Hydraulic Design Manual*.

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, DB Contractor is responsible for collecting all necessary data, including those elements outlined in this Section 12.2.1.

DB Contractor shall collect all applicable data identifying all water resource issues, including water quality requirements as imposed by State and federal government regulations; National Wetland Inventory and other wetland/protected waters inventories; in FEMA mapped floodplains; and official documents concerning the Project, such as the 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, floodplains, and boundaries between regulatory agencies (e.g., watershed districts and watershed management organizations).

DB Contractor shall acquire all applicable municipal drainage plans, watershed management plans, and records of citizen concerns. DB Contractor shall acquire all pertinent existing storm drain plans and existing survey data, including data for all culverts, drainage systems, and storm drain systems within the Project Limits. 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.

DB Contractor shall obtain photogrammetric and geographical information system (GIS) data within the Project Limits that depicts the "Outstanding National Resource Waters" (ONRW) and impaired waters as listed by the TCEQ. DB Contractor shall conduct surveys for information not available from other sources.

DB Contractor shall create an inventory of all existing drainage facilities including structures, culverts, ditches, and storm drains within the Project corridor. The inventory must include the condition, size, material, location, status, videotape or photographs, and other pertinent information. DB Contractor shall verify that all existing drainage components that are to remain have adequate capacity and design life as defined in this Section 12 and Section 13 of the Technical Provisions. If any Elements of the existing system do not comply with the requirements of this Section 12 or Section 13 of the Technical Provisions, DB Contractor shall improve those Elements to meet requirements of this Section 12 and Section 13 of the Technical Provisions.

The data collected shall be used in the design of the drainage facilities.

Within 30 Days of Substantial Completion, DB Contractor shall submit to TxDOT, as part of the Record Documents, a Drainage Design Report, which shall be a complete documentation of all components of the Project's drainage system. At a minimum, the Drainage Design Report shall include:

a) Record set of all drainage computations, both hydrologic and hydraulic, and all support data;

b) Hydraulic notes, models, and tabulations;

c) Storm drain drainage report;

d) Bridge and culvert designs and reports for major stream crossings;

e) Pond designs, including graphic display of treatment areas and maintenance guidelines for operation;

f) Correspondence file; and

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

12.2.2 Coordination with Other Agencies

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

While coordinating design with TxDOT, DB Contractor shall make every effort to design the Project in a manner to avoid Conditional Letters of Map Revision (CLOMR) and Letters of Map Revision (LOMR). If a map revision is found to be warranted, DB Contractor shall prepare the required documentation, perform the necessary calculations and design, and provide to the local floodplain administrators all information and technical data needed to file a CLOMR/LOMR with FEMA.

DB Contractor shall meet with the local floodplain administrator and submit all drainage crossings and outfalls for their review.

Drainage areas and structures that fall under the jurisdiction of the USACE shall comply with all USACE requirements. DB Contractor shall coordinate review and approval of the design and construction, if necessary, with the USACE. DB Contractor shall be responsible for obtaining applicable USACE permits.

In areas surrounding railroad facilities, DB Contractor shall coordinate the drainage design with the TxDOT Dallas District Railroad Coordinator and the appropriate railroad owner in accordance with Section 14.

12.3 Design Requirements

DB Contractor shall design all Elements of the drainage facilities in accordance with this Section 12, the applicable design criteria, Good Industry Practice and the TxDOT *Hydraulic Design Manual*.

The design of proposed drainage systems shall meet the performance requirements as defined in this Section 12. 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 required. Should a proposed drainage system tie to an existing drainage system, the connecting existing system shall also be designed and reconfigured, as necessary, to ensure the proposed system meets the performance requirements as defined in this Section 12 or Section 13 while maintaining or improving the performance of the connected existing drainage system.

Modifications to existing drainage patterns should be minimized. If existing drainage patterns or flows are revised during the Project design, DB Contractor shall design and construct a solution that does not have significant adverse impacts on property owners outside the Project ROW. DB Contractor bears full responsibility for the final design and its effects on property owners outside the Project ROW.

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

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

DB Contractor shall provide a drainage system that maintains or improves the existing drainage.

DB Contractor shall utilize the TxDOT Statewide Precast Drainage Standard Sheets and TxDOT Dallas District Drainage Standards in that order of preference, for inlets, manholes, and additional details.

DB Contractor shall make available to TxDOT, as part of the Submittals, all native design files used in the hydrologic and hydraulic analyses to prepare computations and plans. Such native files include input and output data from Storm Water Management Model (SWMM), Hydraulic Engineering Centers River Analysis System (HEC-RAS), or HY-8 Models, culvert hydraulic computations, drainage area reports, and rational method, NRCS Method or Regional Regression equations. 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

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

12.3.1.2 Hydrologic Analysis

DB Contractor shall ensure that no adverse drainage impacts will result from the construction of the Project. DB Contractor shall evaluate and document the analysis confirming that the proposed drainage improvements do not result in any adverse impacts. Flood damage potential for the completed Project shall not exceed pre-Project conditions.

DB Contractor is responsible for any mitigation required to ensure that the Project does not create any adverse impact. DB Contractor shall design for future changes in land use allowable under current City of Dallas development policy and proposed zoning maps that may affect the magnitude of runoff and therefore the design capacity of drainage structures. DB Contractor shall incorporate anticipated changes in the basin land use, characteristics, or water operations into the hydrologic parameters. DB Contractor shall design all drainage facilities to accommodate probable land use in accordance with the current City of Dallas development policy and proposed zoning maps.

DB Contractor shall design drainage structures that intercept and convey flow from off-Site through the Project (e.g., cross-culverts), with sufficient capacity to accommodate existing off-site conditions and future changes in land use allowable under current City of Dallas development policy and proposed zoning maps. DB Contractor is not responsible for mitigating unforeseen impacts or issues that could not have been anticipated at the time of design, which could be caused by future off-Site development.

DB Contractor shall design drainage structure capacities for the frequencies for the maximum hydrologic conditions as described in Table 12-1, below.

DB Contractor shall use the following criteria in developing runoff calculations:

Run-off Coefficients:

Pavement (Asphalt) = 0.9

Pavement (Concrete) = 0.9

Unpaved areas within the Project ROW = 0.7

For areas outside the Project ROW, use the methods in Chapter 4, Section 12 of the TxDOT *Hydraulic Design Manual* for calculating the Run-off Coefficients

Minimum Time of Concentration, Tc = 10 minutes

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

DB Contractor's base hydraulic model shall reflect the most current as-built conditions.

Internal drainage systems constructed as part of the Project that convey flow intercepted from the Project shall be designed to accommodate future expansion drainage requirements.

Table 12-1: Drainage Design Summary Table					
	Design AEP (Design ARI)				
Functional classification and structure type	50% (2-yr)	20% (5-yr)	10% (10-yr)	4% (25-yr)	2% (50-yr)
Freeways (main lanes):					
Culverts					X
Bridges+					X
Principal arterials:					
Culverts				X	
Small bridges+				X	
Major river crossings+					X
Minor arterials and collectors (including frontage roads):					
Culverts			X		
Small bridges+				X	
Major river crossings+					X
Local roads and streets:					
Culverts			X		
Small bridges+			X		
Storm drain systems on interstates and controlled access highways (main lanes):					
Inlets, drain pipe, and roadside ditches			X		
Inlets, drain pipe for depressed roadways*					X

	Design AEP (Design ARI)				
Functional classification and structure type	**50% (2-yr)**	**20% (5-yr)**	**10% (10-yr)**	**4% (25-yr)**	**2% (50-yr)**
Storm drain systems on other highways and frontage roads:					
Inlets, drain pipe, and roadside ditches		**X**			
Inlets, drain pipe for depressed roadways*				**X**	

Table 12-1 notes:

All facilities, including storm drain systems, must be evaluated to the check flood/1% AEP (100-yr) flood event. The purpose of the check flood evaluation is to ensure the safety of the drainage structure and downstream development by identifying significant risk to life or property in the event of capacity exceedance.

All features of the roadway facility shall be assessed under the 2, 5, 10, 25, 50 yr storm event to ensure no significant adverse impacts.

For structures extending underneath both mainlanes and frontage roads the structure shall be designed to the mainlane design AEP.

*** A depressed roadway provides nowhere for water to drain even when the curb height is exceeded. The I-35E mainlanes from 8th Street to north of Cedar Creek are considered depressed. The I-35E mainlanes from south of Cedar Creek to north of Saner are considered depressed.**

+ It may be necessary to calculate the 4% (25-yr), 2% (50-yr), 0.5% (200-yr), or 0.2% (500-yr) AEP for scour computations. See the TxDOT *Geotechnical Manual*: *Chapter 5, Section 5.*

12.3.2 Storm Drain Systems

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

DB Contractor shall prepare a storm drain drainage report encompassing all storm drain systems that contains, at a minimum, the following items:

(a) Detailed table of contents and narrative of design methodology;

(b) 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;

(c) Location and tabulation of all existing and proposed pipe and drainage structures. These include size, class and gauge, detailed structure designs, and all special designs;

(d) Specifications for the pipe bedding material and structural pipe backfill on all proposed pipes and pipe alternates;

(e) 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;

(f) Complete documentation of 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; and

(g) Demonstration that the drainage design does not cause any material impact to offsite property owners or that DB Contractor has obtained appropriate drainage easements.

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

DB Contractor shall design all storm drain systems such that the hydraulic grade line for the design frequency event is no higher than one foot below:

(h) Gutter depression for curb inlet;

(i) The top of grate inlet; and

(j) The top of manhole cover.

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

The gutter depression used for curb and grate combination inlets shall not encroach into the travel lane if the gutter depression exceeds the normal cross slope.

The use of slotted drains or trench drains will not be allowed unless approved by TxDOT.

The use of slotted barriers that allow stormwater runoff to flow into adjacent travel lanes will not be allowed for permanent barriers in Section 1. Slotted barrier may be used for permanent barrier along the express lane in Section 2A. Slotted barrier may also be used for temporary conditions during construction. DB Contractor will not be allowed to mitigate impacts by using restrictor plates for in-line detention facilities.

12.3.2.1 Pipes

DB Contractor shall meet the requirements set forth in Chapter 10, Section 7 of the TxDOT *Hydraulic Design Manual*, July 2016 Edition.

Storm drain pipes shall be designed to maintain a minimum velocity of three feet per second whenever feasible. If design flow velocities less than three feet per second are unavoidable, pipes shall be designed for full flow at 80% of the internal diameter to account for sedimentation in the pipe. Pipes shall be designed to achieve a maximum velocity of 12 feet per second in the pipe. All storm drains shall be designed and constructed to sustain all external loads with zero deflection and shall have positive seals at the pipe joints.

All pipes shall be reinforced concrete pipe. The minimum pipe size inside diameter shall be 24 inches. The minimum pipe size inside diameter of a discrete drainage system may be less than 24 inches if the drainage system is tying to an existing system that is in good condition and is adequate size to properly convey the flow. The existing system must meet the performance requirements in Sections 12 and 13 of the Technical Provisions. The minimum box culvert height, inside dimension, shall be three feet.

Storm drain design will be non-pressure flow unless otherwise approved by the State.

Trunk lines may be designed through the inlets.

Pipe depth of cover: 1 ft. desirable, 6 inches minimum (top of pipe to bottom of treated subgrade)

• Pipe Slope: ≥0.50% Desirable, 0.30% Minimum

• Pipe Flow Velocities: 3 Fps Min, 12 Fps Max

• Outfall Velocity Criteria: 6 Fps Desirable, > 8 Fps Provide Outfall Protection

12.3.2.2 Ponding

DB Contractor shall design drainage systems to limit ponding to the widths defined in Table 12-2 below for the design frequency event:

Table 12-2: Allowable Ponding Widths by Roadway Classification

Roadway Classification	Design Storm Allowable Ponding Width
Interstate, Controlled Access Highways	Shoulder width
Barrier-Separated Managed Express Lanes: Single Lane Multiple Lanes	 Shoulder width One travel lane width
Ramps, Direct Connectors	Shoulder width
Frontage Roads	One travel lane width

Minor Cross Streets	One travel lane width

Maximum carryover is 0.5 cfs.

12.3.3 Miscellaneous Drainage Design Requirements

DB Contractor shall design mainlane cross structures (culverts and bridge openings) in accordance with the TxDOT *Hydraulic Design Manual.*

(a) Design mainlanes and shoulders such that each is above the 1% AEP WSE for the 100-year storm event for the entire project; and

(b) Examine water surface elevations to assure that the Project will not cause any adverse impacts to adjacent properties. A rise in water surface elevation can be considered as having no impact if the rise is contained within the Project ROW and drainage easements.

12.3.3.1 Inlet Design Criteria

DB Contractor shall place inlets in accordance with the criteria shown below and the TxDOT *Hydraulic Design Manual.*

Design Drop Inlets for the following criteria:

- *Maximum ponding depth shall be 1 foot for the design frequency*
- *Area Reduction Factor = 0.5*
- *Perimeter Reduction Factor = 0.5*

12.3.4 Stormwater Storage Facilities

DB Contractor shall complete design of the stormwater storage facilities (SWSF) to meet requirements for water quality, water quantity, and rate control, as determined by the National Pollutant Discharge Elimination System (NPDES) regulations. Types of SWSF include ponds, basins, and any other facilities employed to detain or retain quantities of stormwater for a given period of time.

DB Contractor shall perform analyses including a detailed routing analysis for SWSF affected by significant environmental issues, such as hazardous waste or groundwater concerns.

12.3.4.1 SWSF Locations

DB Contractor shall analyze and develop SWSF locations and all applicable SWSF information and coordinate these with TxDOT. DB Contractor shall design a Stormwater Management Plan that accounts for any regional SWSF.

12.3.4.2 Inlets and Outlets

DB Contractor shall design and construct the SWSF inlets to be above the vertical limits of the dead sediment storage volume. DB Contractor shall design and construct SWSF to prevent circuiting and discharge of floating debris (e.g., have a skimmer baffle). The maximum available outflow shall be limited to the existing 1% peak flow.

12.3.4.3 SWSF Depth and Shape

DB Contractor shall design and construct the SWSF depth and shape to include a length-to-width ratio of 3:1.

Any length-to-width ratio variation shall require review and concurrence by TxDOT prior to completion of 100% design. A 10 foot bench, with a 10:1 slope or flatter, must be provided at the normal water level for safety and maintenance. In addition, DB Contractor shall comply with the rules contained in the Aggregate Quarry and Pit Safety Act which can be viewed at:

http://www.txdot.gov/inside-txdot/division/maintenance/quarry.html

12.3.4.4 Freeboard and Spillway

A minimum of two feet of vertical freeboard above the design flood elevations shall be provided on SWSF. All SWSF must have an emergency spillway sized to carry events beyond the 100-year event.

12.3.4.5 Design Details

DB Contractor shall include all inlet and outlet details, skimmers, and emergency spillway designs in the design. Design must address safety and measures to secure access to SWSF.

12.3.4.6 Flood Routing

DB Contractor shall perform flood routing analyses and submit calculations to the reviewing authorities, such as municipalities, TCEQ, and USACE for approval.

12.3.4.7 Environmental Issues

DB Contractor shall include special analysis and documentation for SWSF affected by environmental issues, such as hazardous waste or groundwater concerns.

12.3.4.8 Documentation

DB Contractor shall include a graphic display (both paper and electronic format) showing what areas are treated by each SWSF with the design calculations provided to TxDOT. The display must also show those areas not treated.

12.3.4.9 Special Ditch Grades

DB Contractor shall be responsible for the design of both normal and special ditch sections, as needed. When necessary, ditch linings shall be designed by DB Contractor according to Hydraulic Engineering Center (HEC)-15. Open channels shall be designed to minimize sedimentation.

12.3.5 Hydraulic Structures

12.3.5.1 Culverts

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

DB Contractor shall use the following design criteria:

• The 100-YR ARI head water elevation will be no higher than then top of crown of the treated subgrade.

• The design year ARI head water elevation will be no higher than the top of curb of the headwall, or shall not exceed the top of the upstream ditch bank, whichever is lower.

As feasible, culverts shall be designed to achieve a minimum tailwater velocity of two feet per second, or a maximum tailwater velocity of eight feet per second. In the event the maximum desirable tailwater velocities are exceeded, velocity-reducing devices and outfall channel erosion protection shall be included in the design in order to reduce erosion at the culvert outlets. DB Contractor shall receive approval from TxDOT prior to the installation and use of velocity-reducing devices.

Culverts are classified as major or minor, as follows:

(a) 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. Culverts are classified as bridges when they provide an opening measured along the center of the roadway of more than 20 feet between spring lines of arches, or extreme ends of the openings for multiple box culverts; such culverts shall be included in the bridge inventory. Bridge class culverts shall have a minimum rise of four (4) feet and design shall include drop-off protection. Major culverts should be analyzed using HEC-RAS.

(b) Minor Culvert: Any culvert not classified as a major culvert.

The minimum box inside culvert height dimension for all proposed box culverts shall be 3 feet. Existing box culverts that have inside height dimensions of less than 3 feet but that meet all other hydraulic requirements may be extended at their existing height.

The culvert hydraulic analysis shall include a thorough investigation of field conditions and appropriate survey data to develop hydraulic models to: evaluate water surface elevations, velocities and floodplain boundaries. DB Contractor shall coordinate with the local Floodplain Administrator and FEMA in order to satisfy all floodplain permitting requirements.

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.

12.3.5.3 Ditches

DB Contractor shall use the following drainage ditch design criteria:
Ditches between roadways:

- Design ARI = 10-year
- Flat-Bottom Ditch = 6-ft bottom width, 4:1 side slopes
- V-Ditch = 6:1 side slopes
- Minimum ditch slope = 0.5%

Ditches next to ROW Line:

- Minimum Ditch Slope = 0.5%
- Design ARI = 5-yr
- Flat Bottom Ditch = 6-ft bottom width, 4:1 side slopes
- V-Ditch = 6:1 side slopes
- Minimum Ditch Slope = 0.5%

All ditch lining types will be determined by the shear stress calculations for the design discharge procedure as contained in the TxDOT *Hydraulic Manual*.
Minimum 0.5 feet of freeboard shall be provided to the bottom of treated subgrade or to top of ditch, whichever is lower.

12.3.5.4 Method Used to Estimate Flows

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

12.3.5.4.1 Design Frequency

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

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

DB Contractor shall calculate the peak discharge for both existing and proposed conditions. Water surface profiles for design and check flood conditions shall be determined.

12.3.5.4.2 Hydraulic Analysis

DB Contractor shall use the most comprehensive available hydrologic and hydraulic models as design base models. For waterways mapped as FEMA Special Flood Hazard Areas (SFHA), 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. DB Contractor must also coordinate with major adjacent developments that are pursuing a LOMR during the initial development period.

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

12.3.5.4.3 Bridge/Culvert Waterway Design

For existing crossings, DB Contractor shall analyze the existing structure using the proposed flows to ensure the headwater does not exceed allowable headwater elevations, as defined in Table 12-1. If the proposed drainage produces headwater elevations greater than those

allowed by Table 12-1, DB Contractor shall design and construct 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 exceed that of the corresponding event for the current condition. Culvert extensions may increase the headwater elevation, but not above the maximum allowable headwater.

When designing a bridge over waterways, DB Contractor design shall minimize changes to the existing channel. Bridge waterway design shall maintain the existing channel morphology through the structure. An existing bridge spanning a waterway shall not be replaced with a structure of a lesser total span than the original structure. New bridges spanning a waterway shall not result in a narrowing of the existing channel.

12.3.5.4.4 Bridge Deck Drainage

Stormwater flowing toward the bridge shall be intercepted upstream from the approach slab. Runoff from bridge deck drainage shall be treated as required by TCEQ and other applicable regulation prior to discharge to the natural waters of the State.

Open deck drains and slotted rail are not permissible for new bridges passing over waterways or other roadways. If ponding width limits are exceeded on the new bridges, 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 drain system or into an open channel. In no case shall stormwater be discharged against any part of the structure.

12.3.5.4.5 Drainage Report for Major Stream Crossings

DB Contractor shall prepare a drainage report for each major stream crossing. Major stream crossings are defined as waterways listed as a FEMA SFHA or requiring a bridge class structure, as defined in Section 12.3.5.1.a. Any other waterway will be a minor stream crossing. The report shall include the detailed calculations, electronic and printed copies of the computer software input and output files, a discussion about hydrologic and hydraulic analysis, and reasons for the design recommendations. The report shall follow the Hydraulic Report Guidelines referenced and outlined in the TxDOT Hydraulic Manual Chapter 3, Section 5 under "Special Documentation Requirements for Projects crossing NFIP designated SFHA". At a minimum, for each crossing the report shall include:

12.3.5.4.5.1 FEMA SFHA

(a) FIRMette;

(b) Discussion of SFHA and implications, and

(c) Flood Plain Permit, if required by City or County.

12.3.5.4.5.2 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;

12.3.5.4.5.3 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 (DB Contractor shall provide a hard copy plot, plus any electronic data used); and

(e) Channel profiles.

12.3.5.4.5.4 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.

DB Contractor shall provide bridge hydraulic summary sheets and bridge scour envelope sheets with projected scour calculation summaries for every bridge crossing a waterway in the Record Documents.

12.4 Drainage Design Report

A preliminary Drainage Design Report shall be submitted with Preliminary Design Plans. The preliminary Drainage Design Report shall include at a minimum everything included in the Drainage Design Report as described in this Section 12. Prior to construction of any drainage Element, DB Contractor shall submit a preliminary Drainage Design Report for each drainage Element to TxDOT.

DB Contractor shall submit to TxDOT, as part of the Record 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 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 original format in which the computations were executed shall be submitted, such as .xlsx for Microsoft Office Excel;

(b) Hydrology/Hydraulic notes, models, and tabulations. Models are to be submitted in the original electronic format (e.g., GeoPak Drainage file *.gdf, HEC-RAS *.prj, Hydraulic Engineering Centers Hydrologic Modeling System [HEC-HMS] *.hms). Please note some

programs such as HEC-HMS generate multiple files which are essential to the overall model. All files shall be included with the Submittal to ensure the results match those in the record set;

(c) Storm drain drainage reports;

(d) Bridge and culvert designs and reports for major stream crossings, including all the items listed in Section 12.3.5.4.5;

(e) Open channel design data;

(f) SWSF designs, including graphic display of treatment areas and maintenance guidelines for operation;

(g) Complete documentation of 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 or increase to damage to properties outside the Project ROW;

(h) Demonstration that DB Contractor has obtained appropriate drainage easements;

(i) Correspondence files which include:

(i) Meeting minutes pertaining to drainage;

(ii) Email and letter correspondence with all Governmental Entities pertaining to drainage and drainage studies, including any issued floodplain permits; and

(iii) Letters to all Governmental Entities pertaining to drainage;

(j) 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;

(k) Exhibits demonstrating the compatibility of the drainage design with the future expansion configuration; and

(l) SWSF Designs, including graphic display or treatment areas.

12.5 Construction Requirements

DB Contractor shall design drainage to accommodate construction staging. The design shall include temporary erosion control measures and other BMPs 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, including temporary drainage Element.

12.6 Submittals

All submittals described in Section 12 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 12-3. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 12-3: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Section 12			
All native design files used in the hydrologic and hydraulic analyses to prepare computations and plans	Upon Request	Review and comment	12.3
Preliminary Drainage Design Report	Prior to construction of any drainage Element	Review and comment	12.3 12.4
Hydraulic summary sheets and bridge scour envelope sheets with projected scour calculation summaries for every bridge crossing a waterway	As part of the Record Documents	Review and comment	12.3.5.4.5
Final Drainage Report	Prior to Final Acceptance	Review and comment	12.2.1 12.4

SECTION 13.0 STRUCTURES

13.1 General Requirements

The structural Elements of the Project, including bridges, culverts, drainage structures, signage supports, illumination assemblies, traffic signals, retaining walls, and noise barriers, shall be designed and constructed in conformance with the requirements of the Contract Documents, AASHTO's *Load and Resistance Factor Design* (*LRFD) Bridge Design Specifications* except where directed otherwise by TxDOT's *Bridge Design Manual – LRFD* and TxDOT's *Geotechnical Manual*, in order to provide the general public a safe, reliable, and aesthetically-pleasing facility.

DB Contractor shall design bridges, retaining walls, noise barriers, and sign structures in conformance with the approved aesthetic schemes, guidelines, and standards throughout Section 1 and Section 2A as identified in Section 15.

Throughout the term of the agreement, DB Contractor shall allow access to TxDOT bridge inspectors performing National Bridge Inspection Standards (NBIS) inspections. DB Contractor shall coordinate with TxDOT 90 days prior to opening any new bridge to traffic to allow for the intial NBIS inspection by TxDOT.

13.1.1 Lead Structural Engineer

DB Contractor shall employ a Lead Structural Engineer responsible for overseeing the design and construction of all structural elements of the Project such that each is complete and design requirements are met. The Lead Structural Engineer shall be a Registered Professional Engineer responsible for coordination of interdisciplinary design reviews in cooperation with leaders of other disciplines. The Lead Structural Engineer or a Registered Professional Engineer reporting directly to the Lead Structural Engineer shall be the engineer of record for the design of all structural elements on the Project.

13.2 Design Requirements

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. The Corridor Structure Type Study and Report shall clearly define DB Contractor's action to achieve a 100-year service life for new Project bridges, walls, culverts and miscellaneous structures. Evaluation of existing structures along US 67 within the project limits that will be retained shall be included in the Corridor Structure Type Study and Report. DB Contractor shall replace all existing structures along I-35E.

13.2.1 National Bridge Inventory Reporting Procedures

Upon completion of the bridge layout during the design phase, DB Contractor shall coordinate with the appropriate TxDOT District Bridge Engineer to obtain National Bridge Inventory (NBI) numbers for all bridges and bridge class culverts. This will require an approved bridge layout and completion of the Permanent Structure Number (PSN) Request Form. The NBI numbers shall be shown on the applicable layout sheets of the Final Design Submittal.

DB Contractor shall stencil NBI numbers on all bridge structures and shall stencil bent numbers for bridges with four or more spans. The NBI numbers and bent numbers shall be placed at locations directed by TxDOT.

13.2.2 Design Parameters

Unless otherwise noted, design for all roadway structural elements shall be based on the LRFD methodology included in TxDOT's *Bridge Design Manual – LRFD*, TxDOT bridge design guidance and recommendations listed at http://www.txdot.gov/inside-txdot/division/bridge/specifications.html and the AASHTO *LRFD Bridge Design Specifications*.

Design of foundations shall be in compliance with provisions of TxDOT's *Geotechnical Manual*.

Design of rehabilitation of existing structures along US 67 or unmodified portions of existing structures not originally designed to LRFD provisions will be governed by their original design requirements as defined in AASHTO's *Standard Specifications for Highway Bridges,* but never less than HS-20 loading. Design of widening of existing structures along US 67 shall be based on the LRFD methodology included in TxDOT's *Bridge Design Manual- LRFD*, HL-93 loading.

Sidewalks and future bicycle lanes shall be provided on bridge structures as shown in the TxDOT Schematic Design. DB Contractor shall design sidewalks to meet the criteria of the AASHTO *A Policy on Geometric Design of Highways and Streets*. Bridge widths shall meet the typical sections shown on the TxDOT Schematic Design. Bridge span lengths within Section 1 shall at a minimum span the typical section widths of the city streets shown on the TxDOT Schematic Design, including future construction by others. Bridge span lengths within Section 2A may matching existing span lengths.

Steel bridge design shall comply with TxDOT *Preferred Practices for Steel Bridge Design, Fabrication, and Erection*.

Corrosion protection measures shall be in accordance with TxDOT Bridge Division and the respective District's practices. These can be found at: http://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/district_corrosion.pdf.

Segmental bridges shall conform to the requirements of AASHTO's *Guide Specifications for Design and Construction of Segmental Concrete Bridges*.

DB Contractor shall inspect all structures along US 67 to be reused, widened, lengthened, or modified in accordance with AASHTO's *Manual for Bridge Evaluation* and TxDOT's *Bridge Inspection Manual*.

Hydraulic design shall be in accordance with the provisions of Section 12.

Structural design of signs, luminaires, and traffic signals shall be in accordance with AASHTO's *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*.

Falsework, shoring, and other temporary supports shall be designed in accordance with AASHTO's *Guide Design Specifications for Bridge Temporary Works*.

Load ratings shall be in accordance with AASHTO's *Manual for Bridge Evaluation* and TxDOT's *Bridge Inspection Manual*.

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

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

All electronic and hard copies of files and design calculations shall be made available at TxDOT's request during design and construction. All files and calculations (bridge design notes) shall be submitted with the Record Documents in accordance with Bridge Division's Procedure for Archiving Bridge Design Notes, located in the RID and the requirements of Section 2. DB Contractor shall submit load rating calculations including input and output files for all new or widened bridges and all new or widened bridge class culverts.

13.2.3 Bridge Design Loads and Load Ratings

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

New Construction: A Vehicular Design Load designated HL-93 consisting of the Design Truck or the Design Tandem, and the Design lane load as defined in the AASHTO *LRFD Bridge Design Specifications* shall be utilized for bridges. Sidewalks of vehicular bridges shall be loaded in accordance with requirements in the AASHTO *LRFD Bridge Design Specifications.*

Existing Bridge Structures along US 67: Existing bridge structures to remain in place along US 67 shall be rehabilitated to a load rating equivalent to the original design load rating.

Existing Bridge Class Culverts along US 67: Existing bridge class culverts to remain in place along US 67 shall be rehabilitated to a load rating equivalent to the original design load rating.

Widenings along US 67: HL-93 for widening and HS-20 for existing portion (designate both existing and widening loading on bridge layouts).

13.2.4 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 be restricted to those typically used by TxDOT.

Modular joints shall not be used without written authorization from TxDOT. If allowed, modular joints shall only be used when anticipated movement exceeds five inches and shall be designed and tested for fatigue loading including the anchorage system.

DB Contractor shall minimize the number of bridge deck joints. DB Contractor shall locate joints to provide for maintenance accessibility and future replacement. Joints for all grade separation structures shall be sealed.

DB Contractor shall provide reinforcing steel with epoxy coating for the following bridge components: approach slab, bridge deck, sidewalk, median, concrete traffic barrier, and rail. Epoxy coated reinforcing is not required for portions of rail or concrete traffic barrier not located on a bridge. Galvanized reinforcing is an acceptable alternative to the epoxy coated steel in the concrete traffic barrier and rail.

For bridge widenings along US 67, existing uncoated reinforcing in the bridge deck exposed during bridge deck removal shall receive an abrasive blast cleaning followed closely by an application of BASF Emaco P25, Sika Armatec 110 EpoCem, or Euclid Duralprep A.C. Perform all work in accordance with manufacturer's specifications. Cleaning and coating operations must be performed no more than 7 days prior to placement of the concrete. In the event more than 7 days is required between initial coating and bridge deck placement, the contractor shall apply a second coat of the same material used initially to the bars approximately 1 day prior to placement of the concrete.

DB contractor shall incorporate the following additional superstructure corrosion protection measures:

a) 8.5-inch minimum concrete bridge deck thickness with 2.5-inch clear cover to the top mat of reinforcing steel; and

b) High Performance Concrete (HPC) for bridge deck, approach slabs, rails, sidewalks, and medians.

In addition, DB Contractor shall not waive the air entrainment requirement for all bridge deck, approach slabs, and rails.

To the extent possible, DB Contractor shall make bridge superstructures, joints, and bearings accessible for long-term inspection and maintenance. DB Contractor shall make open-framed superstructures accessible with walkways or by use of ladders or an under-bridge inspection truck.

DB Contractor shall embed all conduit. No exposed conduit will be allowed on bents, columns, bridge beams, retaining walls, or any other visible surface.

Box girders and caps (substructure) shall be accessible without impacting traffic below; DB Contractor shall make concrete box girders and caps (substructure) with a minimum inside depth of six feet to facilitate interior inspection. 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. DB Contractor shall install air-tight, sealed and locked entryways on all hatches and points of access. Steel box girders shall meet the guidelines in TxDOT's *Preferred Practices for Steel Bridge Design, Fabrication, and Erection*.

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, 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.

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

13.2.5 Bridge Substructure

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.

At cross streets, overpass bridge structures shall clear span all intersection pavement including through lanes and turn lanes on the Project within Section 1 and match existing span lengths for bridge widenings within Section 2A. Bridge foundations and columns may be located between the cross street pavement and U-turns.

Spread footing foundations are not allowed.

DB Contractor shall utilize High Performance Concrete in the following substructure components: abutments, bents, and columns.

DB Contractor shall maintain a minimum of 10'-0" horizontal clearance to Dallas Water Utility (DWU) facilities unless approved otherwise by DWU.

13.2.6 Bridge Railing and Barriers

All barrier systems used on the Project shall meet current crash test criteria as specified in National Cooperative Highway Research Program (NCHRP) Report 350 or the AASHTO *Manual for Assessing Safety Hardware* and other safety requirements as determined by TxDOT. All testing and associated costs for non-standard railings shall be the sole responsibility of DB Contractor and shall be accomplished through a third party acceptable to TxDOT. A current list of standard railing is provided in the TxDOT *Bridge Railing Manual*. Single slope traffic railing (SSTR) shall be utilized on bridge structures. For bridge structures to be widened along US 67, bridge railing must meet the above requirements on both the widened and non-widened bridge edges. For bridge structures along US 67 that do not require widening, bridge railing does not need to be ugraded to meet the above requirements.

13.2.7 Retaining Walls

The type of retaining wall shall be restricted to those typically used by TxDOT.

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

Metal walls, including bin walls and sheet pile walls, recycled material walls, and timber walls are not allowed.

The design of wall structures shall take into account live load surcharges. 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 AASHTO *LRFD Bridge Design*

Specifications, American Railway Engineering and Maintenance-of-Way Association (AREMA) *Manual for Railway Engineering*, 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 (MMP) and Good Industry Practice.

The retaining wall layout shall address slope maintenance above and below the wall.

The top of the retaining wall leveling pad shall be located a minimum of 2 feet below proposed ground.

The length of earth reinforcements for MSE retaining walls shall be a minimum of either 8'-0" or 70% of the wall height, whichever is greater. Earth reinforcement length is measured perpendicular to the wall. Adjust skewed earth reinforcements as necessary to obtain required length. Wall height is the distance from the top of the leveling pad to the finished grade at the top of the wall.

To the extent possible, 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, DB Contractor may use retaining walls.

If pipe culverts are to extend through the retaining walls or noise barriers, the pipe shall be installed so that no joints in the pipe are located within two feet of face of wall.

Pipe for storm drain systems will not be allowed to run longitudinally within the MSE retaining wall earth reinforcement zone.

No weep holes through the face of the retaining walls will be allowed, except at the base of the walls.

Underdrains are required and shall be a minimum of eight inches with cleanouts at a maximum of 300-foot spacing. Outfalls for underdrains shall be provided.

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

13.2.8 Noise Barriers

DB Contractor shall design and construct all noise barriers to achieve the decibel reduction requirements in the NEPA approval(s) and the aesthetic requirements in Section 15.

DB Contractor shall design and construct panels to limit the risk of falling debris resulting from traffic impacting the noise wall.

Timber noise barriers are not allowed.

13.2.9 Drainage Structures

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

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

DB Contractor shall analyze existing drainage structures for capacity and as necessary retrofit or replace elements to accommodate any additional loads, settlements, and/or other structural impacts associated with the Project.

13.2.10 Sign, Illumination, and Traffic Signal Supports

DB Contractor shall design overhead and cantilever sign supports to accommodate the Project. Cantilever and sign bridge supports shall be placed outside the clear zone or shall be otherwise protected by appropriate safety measures. Sign supports shall be provided at locations necessary to meet the signing requirements of the Project. Supports for bridge mounted illumination poles shall not be located more than 10'-0" away from centerline bearing of a bridge bent or abutment unless approved by TxDOT.

13.2.11 Rehabilitation of Structures to be Widened, Extended, or Reused along US 67

The following structures are to be widened, extended, or reused along US 67 and shall be rehabilitated:

Table 13-1: Bridges to be Rehabilitated

STRUCTURE NUMBER (NBI #)	FEATURE CROSSED	FACILITY CARRIED
18-057-0261-03-008	SOUTH PRONG OF FIVE MILE CREEK	US 67 SBFR
18-057-0261-03-013	FIVE MILE CREEK	US 67 NBFR
18-057-0261-03-019	SOUTH PRONG OF FIVE MILE CREEK	US 67 NBFR
18-057-0261-03-021	HAMPTON	US 67 SBML
18-057-0261-03-022	HAMPTON	US 67 NBML
18-057-0261-03-023	SWANSEE	US 67 SBML
18-057-0261-03-024	SWANSEE	US 67 NBML
18-057-0261-03-026	FIVE MILE CREEK	US 67 SBFR
18-057-0261-03-027	FIVE MILE CREEK/PENTAGON	US 67 SBML
18-057-0261-03-028	FIVE MILE CREEK/PENTAGON	US 67 NBML
18-057-0261-03-030	POLK ST	US 67 SBML
18-057-0261-03-031	POLK ST	US 67 NBML
18-057-0261-03-045	CAMP WISDOM	US 67 SBML
18-057-0261-03-046	CAMP WISDOM	US 67 NBML
18-057-0261-03-047	US 67	RED BIRD LN
18-057-0261-03-048	SOUTH PRONG OF FIVE MILE CREEK	US 67 SBML
18-057-0261-03-049	SOUTH PRONG OF FIVE MILE CREEK	US 67 NBML
18-057-0261-03-104	US 67	LOOP 12 EB
18-057-0261-03-105	US 67	LOOP 12 WB

Bridge Condition Rating Summary located in the RID contains a table that provides the most current condition ratings for structures.

For existing structures along US 67 to be widened, extended, or reused, DB Contractor shall perform a condition survey including condition rating, load rating, remaining service life and recommended rehabilitation. DB Contractor shall submit a rehabilitation report to TxDOT for approval 60 Days prior to performing rehabilitation activities on the bridge.

Any component with a condition rating less than 7 as determined in the condition survey and any other defects discovered by DB Contractor shall be rehabilitated. DB Contractor shall perform inspections using inspectors, pre-approved by TxDOT, with previous experience inspecting TxDOT bridge inventory. The inspectors shall confirm rehabilitation has achieved a minimum condition rating of 7 for each structural component at Substantial Completion.

DB Contractor shall clean and repair existing expansion joints and provide new seals full width of existing and widened structures including all existing open joints.

DB Contractor shall inspect all existing bridge bearings. As necessary, DB Contractor shall rehabilitate, repair, or replace existing bridge bearings to accommodate design loads and expansion.

DB Contractor shall patch and repair concrete spallings, concrete delaminations, clean and repair exposed reinforcing, seal cracks and repair or replaced structurally damaged elements of existing structures.

DB Contractor shall remove rust, clean, and paint all existing steel bridge superstructures and associated steel bridge bearings. DB Contractor shall perform a paint condition assessment for all painted structures prior to any rehabilitation activities. Recommendations to leave any existing coatings intact shall be submitted to TxDOT for approval.

Full bridge deck replacements shall consist of a minimum of 8.5” thick class S concrete bridge deck. Bridge beams/girders and substructures shall be rehabilitated or replaced as required to support the new bridge deck load in combination with live load specified in Section 13.2.2.

13.3 Construction Requirements

Construction shall be in accordance with TxDOT Standard Specifications.

13.3.1 Concrete Finishes

All concrete surfaces that do not have aesthetic treatments shall have a uniform texture and appearance. Color treatment, where required as an aspect of the aesthetic treatment of the concrete, shall be uniform in appearance. Where the following do not have aesthetic treatments as identified in Section 15, Ordinary Surface Finish as defined by the TxDOT Standard Specifications shall be applied 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 decks between girders or beams;

(f) Vertical and bottom of surfaces of interior concrete beams or girders;

(g) Wingwalls and headwalls;

(h) Riprap, mowstrips and flumes; and

(i) Traffic railing.

13.3.2 Structure Metals

Welding shall be in accordance with the requirements of the AASHTO/American Welding Society D1.5 *Bridge Welding Code* and TxDOT Standard Specification Item 448, Structural Field Welding.

13.3.3 Steel Finishes

All steel girders shall be uncoated weathering steel. Except for weathering steel, all structural steel shall be protected. The color for structural steel paint shall conform to the aesthetic schemes of the Project.

If weathering steel is used, 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.

13.3.4 Steel Erection

Steel Erection shall be in accordance with AASHTO/NSBA Steel Bridge Collaboration S10.1-2014. Inspection of steel erection will include oversight by TxDOT personnel.

13.4 Submittals

All submittals described in Section 13 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 13-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 13-1: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Section 13			
Corridor Structure Type Study and Report	Prior to the design of bridges, walls, bridge class culverts, sign structures and other miscellaneous structures	Review and comment	13.2
All electronic and paper files and calculations design notebooks	Upon request	For information	13.2.2
Rehabilitation report for existing structures	60 Days prior to performing rehabilitation activities	Approval	13.2.11
Recommendations to leave any existing coatings intact	Prior to any rehabilitation activities	Approval	13.2.11

SECTION 14.0 RAIL

14.1 General Requirements

This section defines the criteria required to design and construct rail corridors, rail facilities, rail structures, and rail line crossings within the Project ROW.

The Project includes a rail corridor crossing within the Project ROW as depicted on the TxDOT Schematic Design. If required, DB Contractor shall prepare a geometric design for the rail corridor. DB Contractor's PMP shall set forth an approach, procedures, and methods for the rail corridor design and construction meeting the requirements set forth in the Contract Documents.

DB Contractor shall ensure that the Project does not negatively impact the safety of railroad operations. DB Contractor shall coordinate the Work with the railroad to avoid impacts to railroad operations, except as specifically approved by the railroad. DB Contractor shall be responsible for all fees, flagging charges, and inspection charges required by the railroad.

14.2 Railroad Design Standards

The design for all railroad elements of the Project shall be based on the American Railway Engineering Maintenance of Way Association (AREMA) Manual for Railway Engineering and the requirements of the operating railroad. DB Contractor's design shall minimize service interruptions to existing rail lines.

All Work involving railroad companies, Work on railroad ROW, and the development and execution of railroad programs shall be in accordance with:

- The respective railroad;
- State and federal Law;
- The practices, guidelines, procedures, and methods contained in TxDOT's *Traffic Operations Manual*.

Additionally, the requirements of the owner of each facility crossed shall be compared to the requirements in the TxDOT manual and the most restrictive criteria shall be utilized.

At highway-rail grade crossings, the roadway and drainage design parameters shall be maintained at the crossing with exception for the cross slope of the pavement, which may be transitioned to match the grade across the rail line.

DB Contractor's design shall minimize service interruptions to existing rail lines.

The structural design of any Utilities, including drainage structures, installed by DB Contractor and crossing a rail line, shall be in accordance with the operating railroad's design criteria. DB Contractor shall coordinate with the operating railroad the design and construction of the construction staging, including any shooflies.

14.2.1 Design Criteria

DB Contractor shall avoid placement of temporary or permanent project components inside railroad ROW to the extent possible. Any such placements inside railroad ROW require approval of the operating railroad. DB Contractor shall be responsible for attaining required approvals.

14.3 Administrative Requirements

14.3.1 Railroad Agreements

DB Contractor shall be responsible for obtaining the required approvals, permits, and agreements as required for the Work, including any railroad-related Work.

DB Contractor shall be responsible for executing any required payment agreements with the railroad to reimburse the railroad for required activities during construction, such as flagging and inspection. These agreements shall be between DB Contractor and the railroad.

For any preliminary activities on railroad ROW, DB Contractor shall be responsible for executing any necessary agreements with the railroad to enter railroad property and authorize railroad to provide flagging.

[Construction and Maintenance (C&M) Agreements shall be between TxDOT, DB Contractor, the appropriate railroad company and appropriate Governmental Entities and may take 12 months or more to obtain from the railroad company. Current approved templates for TxDOT/railroad company agreements are available from the TxDOT Rail Division at Rail-Highway.Section@txdot.gov.]

The following agreements may be required based upon the railroad's requirements:

(a) Preliminary Engineering – Most railroads require preliminary engineering agreements in order to proceed with the development and review of plans. These agreements shall be between DB Contractor and the railroad. DB Contractor shall prepare and be responsible for executing any required preliminary engineering agreements with the railroad to reimburse the railroad for preliminary engineering and estimating performed by the railroad or consultant(s) included attending project meetings, reviewing and approving designs, and developing any necessary cost estimates;

(b) [License to Cross and C&M Agreement (License Agreement) – DB Contractor shall prepare the draft agreement to be executed between railroad, DB Contractor and TxDOT. A License to Cross railroad ROW is normally required when the highway project involves a new crossing or grade separation of the railroad. A separate easement agreement may be obtained in lieu of the License to Cross. DB Contractor shall prepare all the documents required to obtain the License Agreement, including preparation of the plans and specifications and estimates, making necessary modifications as required on behalf of TxDOT. DB Contractor shall submit the draft License Agreement to TxDOT for transmittal to the railroad. TxDOT shall have the opportunity to comment on any submittals, and DB Contractor shall respond to all comments in writing. TxDOT will not proceed with the C&M Agreement until sufficient resolution is reached on all comments. After all comments have been incorporated or satisfactorily resolved by any or all of DB Contractor, railroad or TxDOT, DB Contractor shall submit a complete and final agreement to TxDOT for execution. This railroad agreement shall include provisions for each party's access to the facilities for regular inspection, maintenance as well as emergency repairs as required]; and

(i) Aerial Easements (for grade separations only) –DB Contractor may be required by the railroad company to enter into a separate easement agreement to obtain aerial rights to cross railroad ROW. If an aerial easement is required, the "License" portion of the C&M Agreement will be modified to identify the aerial easement as the right to cross railroad ROW with the new highway facility; and

(ii) Temporary Construction Easements – DB Contractor may be required to purchase a temporary construction easement for the railroad company. This requirement will be stipulated in and be a part of the C&M Agreement.

(c) Railroad's Contractor Right-of-Entry Agreements (Texas approved versions only) – In order to enter the railroad's ROW to perform the Work, DB Contractor or its Subcontractor shall secure a railroad Right of Entry agreement and shall coordinate the arrangements of the necessary agreements directly with the railroad.

All executed agreements shall be submitted in their entirety as part of the Record Documents.

14.3.2 Operation Safety

DB Contractor shall arrange with the operating railroad for railroad flagging as required. DB Contractor shall comply with the operating railroad's requirements for contractor safety training prior to performing Work or other activities on the operating railroad's property and shall maintain current registration prior to working on railroad property.

If not detailed in the respective railroad's Right of Entry agreement, or if not directed otherwise by the respective railroad, DB Contractor shall notify the respective railroad representative at least ten Business Days in advance of DB Contractor commencing its Work and at least 30 Business Days in advance of any Work by DB Contractor in which any person or equipment will be within 25 feet of any track, or will be near enough to any track that any equipment extension such as, but not limited to, a crane boom will reach within 25 feet of any track. No Work of any kind shall be performed, and no person, equipment, machinery, tool(s), material(s), vehicle(s), or thing(s) shall be located, operated, placed, or stored within 25 feet of any track(s) unless authorized by the railroad. Upon receipt of such 30-Day notice, the railroad representative will determine and inform DB Contractor whether a flagman need be present and whether DB Contractor needs to implement any special protective or safety measures.

14.3.3 DB Contractor Right of Entry Agreement

DB Contractor shall cooperate and coordinate with all operating railroads for access by the operating railroad and/or their agents to the rail ROW as necessary for rail maintenance and operations activities, inspection, repair and emergency responses.

14.3.4 Insurance Requirements

If any railroad impacted by the Project requires insurance in addition to that required by the Agreement, DB Contractor shall procure such additional insurance at its own cost.

14.4 Construction Requirements

DB Contractor shall comply with all construction requirements and specifications set forth by the operating railroad and shall invite the appropriate railroad company to pre-construction meetings for work performed within the railroad's ROW.

DB Contractor shall be responsible for scheduling the Work to be completed by operating railroad, as well as the Work to be completed by its own forces. DB Contractor shall be responsible for all costs associated with its performance of the obligations in the railroad agreements, including any amendments, change orders, or force account work under such agreements.

The operation of the railroad and the affiliated railroads (those running through the railroad property in particular), and the operations of the lessees, licensees, and other lawful occupants of the railroad property, shall have absolute priority over the performance of construction for the Project. DB Contractor shall coordinate with the railroads to coordinate the Work with the operations of the railroads.

14.4.1 Flagging

DB Contractor shall arrange for railroad flagging, as required by the railroad company, to ensure the safe passage of rail traffic throughout the Project Limits affecting railroad ROW.

14.5 Submittals

All submittals described in Section 14 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 14-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 14-1: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Section 14			
License Agreement Documentation	Prior to obtaining the License Agreement	Review and comment	14.3.1
Copy of the fully executed railroad agreement	Prior to performing any work within the affected Railroad ROW	For Information	14.3.1
Copies of all additional or modified insurance policies	Prior to any entry upon operating railroad property	For Information	14.3.4

SECTION 15.0 AESTHETICS AND LANDSCAPING

15.1 General Requirements

This Section 15 defines requirements with which DB Contractor shall design and construct aesthetic treatments for the roadway, structures, drainage, and landscaping elements of the Project. Aesthetic treatments shall be designed to harmonize with the local landscape and architecture, as well as the developed themes of the local settings.

This Section 15 presents minimum aesthetics and landscape design requirements for Project designs. For purposes of this Section 15, the following list of items will be considered the aesthetics elements of the Project design:

(a) Material, finish, color, 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 and noise/sound walls;

(e) Contour grading, slope rounding, channel treatments, and drainage;

(f) Sculptural and artistic features of other structures;

(g) Sidewalks, medians, or pedestrian specialty paving, including material, finish, and color;

(h) Hardscape at interchanges and intersections;

(i) Gateway and wayfinding markers;

(j) Fencing;

(k) Signage – overhead, attached, and ground-mounted;

(l) Any permanent building construction within the Project, including ancillary and operational support;

(m) Light fixture, ambient light colors, and general layout conditions; and

(n) Landscape plant materials.

15.1.1 Aesthetics Concepts

Aesthetic elements shall be designed as corridor-wide enhancements. To the extent practicable, the aesthetic elements shall remain consistent in form, materials, and design throughout the length of the Project where applied.

DB Contractor shall adhere to the approved Southern Gateway Project Corridor Aesthetics Technical Guidelines, which are hereby incorporated by this reference. It shall be understood that with TxDOT approval, the concepts for components of the Project corridor may need to be adapted to the Site specific conditions of the Project.

DB Contractor may develop an alternate aesthetic concept for TxDOT approval. Approval or rejection of said concept will be at TxDOT's sole discretion. DB Contractor shall base an alternative aesthetic concept on the principles, requirements, and strategies provided in Section 15.3 (Construction Requirements). DB Contractor shall, at its option, submit three preliminary aesthetic concepts to TxDOT for review and approval before presenting the aesthetics concepts to the public. After meeting with the public, DB Contractor shall prepare a final aesthetic concept and submit it to TxDOT for final approval.

15.1.2 Aesthetics and Landscaping Plan

Unless an alternate Aesthetics and Landscaping Plan is approved, all unpaved areas and areas not covered by permanent structures shall be sodded. If an alternate aesthetic or landscaping concept is proposed, DB Contractor shall prepare an Aesthetics and Landscaping Plan in conformance with the Project's approved aesthetic concept for approval by TxDOT, in its reasonable discretion. The Aesthetics and Landscaping Plan shall provide guidelines and requirements for the aesthetics design of the Project. The Aesthetics and Landscaping Plan shall include all elements to fully communicate the proposed aesthetic treatment to TxDOT. The Aesthetics and Landscaping Plan shall meet the requirements of all standards and documents identified or otherwise specified within this Section 15.

The Aesthetics and Landscaping Plan shall include all elements to fully communicate the proposed aesthetic treatment to TxDOT and shall address:

15.1.2.1 Aesthetics

DB Contractor shall provide:

(a) All plans, sections, elevations, perspectives, isometrics, etc., as needed to fully communicate the aesthetic treatment and approach to aesthetic elements, including: walls, noise/sound walls, bridges, traffic rail, landscape pavers, and signage structures;

(b) A master plan that will convey the layout of the various roadway conditions (i.e., depressed sections, elevated sections, at-grade roadways, bridges, cantilevered structural sections);

(c) Drawings showing locations of Site-specific elements (i.e., fences, signage, colored lighting, potential locations of TxDOT approved community improvement opportunity areas, gate way markers, bridge enhancements, and landscaping); and

(d) Drawings showing color schemes and their locations.

15.1.2.2 Landscaping

DB Contractor shall provide:

(e) A plan that indicates plant palettes, plant size and locations, plant specifications, planting specifications and staking details, soil preparation plan, and planting dates;

(f) An establishment program meeting the requirements of TxDOT Specification Item 193 Landscape Establishment;

(g) A maintenance program approved by TxDOT and the City of Dallas; and

(h) Composite drawings of all utilities and easements that would interfere with landscaping, markers, or any other identified enhancements.

The Aesthetics and Landscaping Plan shall include all plans, elevations, perspectives, isometrics, details etc., as needed to fully convey the aesthetic treatment. Soil preparation plans, landscape staking, mulching, and other aspects of plant installation and maintenance for all Segments of the Project shall comply with all TxDOT specifications and special provisions noted therein.

Upon completion of the Aesthetics and Landscaping Plan, DB Contractor shall consolidate the information, which establishes the requirements for engineering of the highway corridor aesthetics. The Aesthetics and Landscaping Plan shall serve as the primary standard guidance necessary to produce the intended aesthetic form, function, and appearance of this and future similar projects.

TxDOT approval of the Aesthetics and Landscaping Plan is required prior to construction of any elements affected by this Plan.

15.1.3 Personnel

DB Contractor shall provide a landscape architect, registered in the State of Texas, with experience in designing aesthetics and landscaping elements for roadway projects of similar scope and size, to develop the Aesthetics and Landscaping Plan. DB Contractor Landscape Architect shall remain involved from the beginning of the Aesthetics and Landscaping Plan, through construction, and shall ensure continuity and compliance with the Aesthetic and Landscaping Plans and applicable TxDOT and TxDOT District office standards and these Technical Provisions.

DB Contractor's landscape architect shall coordinate with the District's landscape architect, or the otherwise TxDOT appointed designee, for the TxDOT Dallas District office, throughout design and construction relative to compliance with the aforementioned plans, guidelines, and standards. DB Contractor's landscape architect shall coordinate in advance with the TxDOT District landscape architect or their designee the scheduling for associated Aesthetics and Landscaping Plan design review and aesthetic and landscape construction activities, commencing with a meeting at the respective District's offices to be requested by DB Contractor in advance of the commencement of landscape and aesthetics design.

15.2 Design Requirements

15.2.1 Aesthetics Principles and Strategies

DB Contractor shall follow the guidelines and requirements of the approved Aesthetics and Landscaping Plan as well as the aesthetics principles, requirements, and strategies established by TxDOT for the Project design, including the following:

(a) Aesthetics shall not interfere with safety, constructability, and maintenance requirements;

(b) The Project design shall minimize impact on the existing natural environment to the extent possible;

(c) The Project design shall emphasize and enhance the existing natural context and landscape to the fullest extent possible;

(d) Simple geometric shapes for structures shall be used to the extent possible for continuity along the entire length of the Project;

(e) All bridges and other structures shall be simplified in their design, and to the greatest extent possible, kept small in size, bulk, and mass;

(f) All structures shall be carefully detailed so as to achieve the greatest level of aesthetic quality and conform to the approved *Aesthetic and Landscaping Plan*;

(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 native trees and established naturalized trees and natural features shall be preserved to the greatest extent possible;

(j) Aesthetic elements shall be fully integrated with the overall structure and landscape design;

(k) Visual quality of the landscape shall be consistent along the entire length of the Project;

(l) Native-area and/or naturalized plant materials that exhibit good drought tolerance shall be used to the extent possible;

(m) Aesthetic elements shall be easy to maintain and resistant to vandalism and graffiti; and

(n) Aesthetic elements shall conform to the approved *Aesthetic and Landscaping Plan*.

15.2.2 Walls and Sign Columns

DB Contractor shall design noise/sound walls to be similar in color, texture, style, and aesthetic treatment to retaining walls consistent with the approved *Aesthetic and Landscaping Plan*. DB Contractor shall apply aesthetic treatments to the vertical surfaces of retaining and noise/sound walls where the surface is visible from the roadway or adjacent residential dwelling units. Consistent treatments shall be used for retaining and noise/sound walls and exposed concrete column sign support structures that articulate the design themes established. DB Contractor shall clearly detail and identify how wall patterns shall be incorporated into the chosen design solution.

The roadside face of noise/sound walls shall have a consistent appearance throughout their length. The side of the noise/sound walls facing away from the roadway may vary based upon TxDOT approved conceptual and final design and, if so directed by TxDOT, community input gathered by DB Contractor.

15.2.3 Bridges and Other Structures

All aesthetic treatments for structural Elements shall be coordinated with DB Contractor's structural design team to facilitate constructability and maintain safety requirements. All substructure columns, abutments, bridge rails, and other structures shall be consistent in form and texture within their respective project Sections 1 and 2A, with similar shapes and details used for all bridges, in accordance with the approved *Aesthetic and Landscaping Plan.*

No exposed conduits or drain pipes will be allowed on bents, columns, bridge beams, retaining walls, or any other visible surface.

DB Contractor shall ensure that a constant superstructure depth is maintained throughout the bridge length consisting entirely of steel girders or concrete beams. For superstructures where both steel girders and concrete beams are used transition from concrete beams to steel girders may be accomplished by dapped end girders and concrete beam spans shall be of constant depth throughout the structure.

15.2.4 Trees, Shrubs, and Other Plant Materials

All trees, shrubs, deciduous vines, and perennials shall comply with the applicable requirements of *ANSI Z60.1 American Standard for Nursery Stock*. DB Contractor shall consult with the agricultural extension agent of the applicable county and TxDOT for recommended plant species lists. DB Contractor shall utilize plant species native to or naturalized in the Project region. The overall landscape design, including plant types, sizes, density, and locations, shall be approved by TxDOT. Plants shall be selected considering the soil conditions, slopes and watering requirements. In order to monitor and control weeds, DB Contractor shall provide weed control measures in the Aesthetics and Landscape Plan.

Vegetation provided as a part of DB Contractor's Aesthetic and Landscaping plan, other than grassing, and erosion control measures, shall be incorporated with the following guidelines:

- Trees, if used, shall be placed in accordance with TxDOT's minimum clearance zones and shall be placed in the Project ROW between mainlanes and frontage roads. Trees shall be a minimum of six feet tall and shall have a three inch caliper minimum; and
- The mature canopy shall not overhang the travel lane or shoulder of any part of the roadway.

15.2.5 Riprap, Paving and Pavers

Concrete paving or landscape pavers shall be used in hard-to-reach mowing areas or under structures such as, but not limited to, areas between, near, or next to guard fence posts, bent columns, retaining walls, freeway ramp gores, paved ditches, flumes, and ditch inlets to improve roadway appearance.

Concrete riprap and landscape pavers shall be applied per the approved *Aesthetic and Landscaping Plan.*

15.2.6 Color Palette

. DB Contractor shall submit a plan that indicates where each color is to be applied. This plan can be diagrammatic in nature, but shall list each element and its colors. In addition to

integrated colors, painting, and staining, DB Contractor may use colored lighting in selected areas to add color.

15.2.7 Lighting Aesthetics

DB Contractor shall design the aesthetic enhancement lighting with the following aesthetic criteria:

(o) One pole type for the entire corridor. DB Contractor shall provide a lighting layout plan that addresses each light fixture (i.e., roadside lighting, high mast lighting, and under bridge fixture) and type of light fixture (i.e., Light Emitting Diode (LED) lighting, point source lighting, and High Intensity Discharge lamps).

15.3 Construction Requirements

DB Contractor shall provide TxDOT sample panels within the timeframe stated in Table 15-2. DB Contractor shall construct sample panels in accordance with Item 427.4.3.5 (Form Liner Finish) of TxDOT Standard Specifications that comply with the principles, requirements, and strategies established by TxDOT and the approved Aesthetics and Landscaping Plan and TxDOT District Standards. TxDOT must review and approve the sample panels before any construction form liners, paint, or landscape pavers may be ordered, obtained, or used. DB Contractor shall provide sample equivalent to the size of the panels that will be installed when constructed 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, DB Contractor shall prepare a corresponding coated panel or surface area of an in-place element for approval prior to the coating operation.

All sample panels shall be representative of the actual panel that will be placed. Primary, secondary, and accent colors shall be displayed.

15.4 Aesthetic and Landscaping Enhancements

If requested by TxDOT, 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 any TxDOT approved adjacent Governmental Entity improvements (aesthetic and landscaping enhancements) shall be the responsibility of the adjacent Governmental Entity. If TxDOT requires, DB Contractor shall coordinate the necessary arrangements directly with the appropriate local Governmental Entity for aesthetic enhancements within the local Governmental Entity's jurisdiction. DB Contractor shall coordinate with the Utility Owner(s) and ensure power service is initiated and provided/maintained for all irrigation controllers and aesthetic lighting within the Project Limits during the D&C period.

Aesthetic enhancements shall be incorporated into the aesthetic concept to be submitted in plan form to TxDOT for approval.

15.5 Local Enhancements

The City of Dallas has requested Local Enhancements in the form of a public green space over the I-35E mainlanes and express lanes from Marsalis Avenue to Ewing Avenue. The proposed

site plan for the public green space will be provided with the Final RFP. The elevation of the mainlanes and express lanes must accommodate a full deck/cap over the mainlanes. The deck/cap over the mainlanes would likely be considered a tunnel and therefore require ventilation, lighting, fireproofing, and waterproofing. An exhibit showing the limits of the proposed Local Enhancements is located in the RID.

15.6 Submittals

All submittals described in Section 15 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 15-2. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 15-2: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Section 15			
Preliminary aesthetic concepts	As needed	Review and comment	15.1.1
Final aesthetic concept	As needed	Approval	15.1.1
Aesthetics and Landscaping Plan	As needed	Approval	15.1.2
Textured panel samples	30 Days in advance of starting construction of textured concrete surfaces and landscape pavers	Approval	15.3

SECTION 16.0 SIGNING, DELINEATION, PAVEMENT MARKING, SIGNALIZATION, AND LIGHTING

16.1 General Requirements

This Section 16 includes requirements with which DB Contractor shall design, construct, maintain, all signs, delineation, pavement markings, signals, and lighting for the Project.

16.2 Administrative Requirements

16.2.1 Meetings

DB Contractor shall arrange and coordinate all meetings with local Governmental Entities that will assume responsibility for maintaining and operating traffic signals and roadway lighting. DB Contractor shall provide TxDOT with notification of such meetings a minimum of 48 hours prior to the start of the meeting. TxDOT, in its discretion, may attend such meetings.

DB Contractor shall arrange and coordinate all meetings with requesting Governmental Entities or individuals regarding special signs.

16.3 Design Requirements

DB Contractor shall design all signing, delineation, pavement marking, and signalization in accordance with the TMUTCD and TxDOT's *Standard Highway Sign Designs for Texas* (SHSD), TxDOT's *Freeway Signing Handbook,* TxDOT's *Sign Crew Field Book,* TxDOT's Traffic Engineering Standard Sheets and TxDOT Standard Specifications.

DB Contractor shall design all illumination (lighting) in accordance with the TxDOT's *Highway Illumination Manual* (HIM), National Electrical Code (NEC), AASHTO *Roadway Lighting Design Guide*, TxDOT's Traffic Engineering Standard Sheets, and TxDOT specifications.

DB Contractor shall incorporate into its design the wrong-way driving countermeasure concepts shown in the TxDOT Dallas District's "Signing and Signal Layout Details" located in the RID.

16.3.1 Final Design

DB Contractor shall submit for review and approval a preliminary operational signing schematic. Design of the signing, delineation, pavement marking, signalization, and lighting shall be based on the approved preliminary operational signing schematic. Before placing any signs, delineation, non-standard sign structures, pavement markings, traffic signals, and lighting, DB Contractor shall provide TxDOT a layout indicating the proposed location of such items. DB Contractor shall prepare a preliminary lighting layout, in a roll type format with photometric curves, and submit this to TxDOT for approval prior to commencing Final Design.

16.3.2 Signing and Delineation

DB Contractor shall design and install all signs as shown on the Release for Construction Documents. Signs include new signs, as well as modifications to existing sign panels and structures. The use of existing sign structures by DB Contractor shall be subject to TxDOT approval. DB Contractor shall confirm the suitability of existing sign structures considered for use and shall be responsible for necessary modifications. DB Contractor's design shall include the locations of ground-mounted and overhead signs, graphic representation of all signs, proposed striping, delineation placement, guide sign and special sign details, and structural and

foundation requirements. Signs shall be located in a manner that avoids conflicts with other signs, vegetation, DMS, lighting, and structures.

DB Contractor shall ensure that signs are clearly visible, provide clear direction and information for users, and comply with all applicable TMUTCD requirements.

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.

DB Contractor's design of delineators and object markers shall comply with TMUTCD requirements.

Signs shall meet the requirements of TxDOT's SHSD.

DB Contractor shall replace signs, including school signs and flashers, affected by the local street improvements.

16.3.3 Project Signs – Outside the Project ROW

For signs located outside the Project ROW but within a public ROW, DB Contractor shall install the signs in existing rights of way controlled by local Governmental Entities or other State Governmental Entities. DB Contractor shall coordinate with appropriate Governmental Entities for the design and installation of such signs.

16.3.4 Not Used

16.3.5 Third-Party Signs

In addition to the warning, regulatory, and guide signs within the Project ROW, TxDOT or Governmental Entities may request that third-party signs, including logo signs, be installed by a third party. DB Contractor shall coordinate and cooperate with any third party performing such work. TxDOT may solicit input from 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 will be borne by the sign applicant. If approved by TxDOT, TxDOT may require DB Contractor to fabricate and/or install these signs as a TxDOT-Directed Change.

16.3.6 Sign Support Structures

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 Section 13 and Section 15 of the Technical provisions.

DB Contractor shall design sign support structures to provide a vertical clearance of not less than 25 feet from the highest point of the roadway to the centerline of the truss. Additionally, there shall be a vertical clearance of not less than 18 feet 6 inches between any point on the roadway and the bottom of the sign.

DB Contractor shall design all overhead sign structures for Zone 4, 70 mph wind zone as shown in the TxDOT Wind Velocity and Ice Zones Standard.

DB Contractor's design shall also incorporate the following requirements:

(a) Guide signs, excepting supplemental and traffic generator signs, shall not be ground-mounted alongside roadways with more than two lanes in a given direction;

(b) Guide signs shall not be mounted to bridges without TxDOT Approval (this excludes signs shown as bridge-mounted on the TxDOT Schematic Design); and

(c) Guide signs for Wheatland Rd. along Northbound US 67 shall not be ground-mounted.

16.3.7 Pavement Markings

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.

DB Contractor shall use contrast markings for skip lines on the controlled access main lanes where light-colored pavement does not provide sufficient contrast with the markings. Contrast markings consist of black background in combination with standard TMUTCD marking colors as indicated in the TxDOT Contrast and Shadow Pavement Markings standard CPM(1)-14.

DB Contractor's design shall also incorporate the following requirements:

(a) Dallas District SOP 126-11 "Striping for Controlled and Non-controlled Access Roadways."

16.3.8 Signalization

Traffic signal designs and modifications to existing traffic signals shall be completed in accordance with TxDOT Standard Specifications, the TMUTCD, and the requirements of the appropriate Governmental Entity.

16.3.8.1 Traffic Signal Requirements

DB Contractor shall design and install new or modified existing fully-actuated temporary and permanent traffic signals at all TxDOT-authorized intersections within Project Limits that are impacted by the Traffic Control Plan and/or Final Design. DB Contractor shall maintain all signals modified by DB Contractor from the time at which it is modified through Final Acceptance. DB Contractor shall coordinate with TxDOT and the appropriate Governmental Entities to define appropriate traffic signal design requirements, local agency oversight of DB Contractor's Work, and final acceptance of traffic signals. DB Contractor shall coordinate with the appropriate Governmental Entities for synchronization of traffic signal networks.

DB Contractor shall provide 1" conduit leading to cable service pole for cable interconnect at all new or modified signals within the Project Limits. DB Contractor shall install communications hardware/equipment provided by the City of Dallas in order for the City of Dallas to communicate with each new or modified signal from their traffic management center. The hardware/equipment shown in the [draft] signals force account agreement in the RID will be provided at no cost to DB Contractor. DB Contractor shall install these items and acquisition/installation of all necessary hardware/equipment not shown in the [draft] signals force account agreement in the RID.

DB Contractor shall coordinate design and implementation of new or modified traffic signals with TxDOT and the City of Dallas to ensure compatibility with the existing traffic signal network.

DB Contractor shall purchase and install traffic signals that meet the requirements of TxDOT and the City of Dallas. DB Contractor shall install controller cabinets, controller cabinet assemblies, radar detection panels, and battery backup units furnished by the City of Dallas. Signal equipment designated to be furnished by the City of Dallas will be provided at no cost to DB Contractor. A list of furnished signal equipment is included in the signals force account agreement located in the RID. DB Contractor shall install all signal equipment furnished by the City of Dallas and shall purchase and install any additional signal equipment necessary for traffic signal operation that is not furnished by the City of Dallas.

TxDOT authorized intersections requiring new (or full replacement) permanent traffic signals are:

(a) Illinois Ave. at I-35E NBFR;

(b) Illinois Ave. at I-35E SBFR;

(c) Marsalis Ave. at I-35E NBFR;

(d) Marsalis Ave. at I-35E SBFR;

(e) Ewing Ave. at I-35E NBFR;

(f) Ewing Ave. at I-35E SBFR;

(g) E. 8th Street at I-35E NBFR;

(h) E. 8th Street at I-35E SBFR;

(i) 12th Street at I-35E NBFR;

(j) 12th Street at I-35E SBFR;

(k) Kiest at I-35E NBFR; and

(l) Kiest at I-35E SBFR.

DB Contractor shall modify other existing signals, when appropriate and as necessitated by the Project. This includes, but is not limited to, Beckley Ave. at Twelfth St.

New or modified traffic signal equipment shall be compatible with existing equipment currently used by the City of Dallas.

DB Contractor shall provide both pedestrian and vehicle detectors at all traffic signals within the Site impacted by construction and shall comply with TxDOT's *Traffic Signals Manual*: *Accessible Pedestrian Signal Guidelines*.

DB Contractor's design shall also incorporate the following requirements:

(a) Design mast arms, poles, heads and foundations in accordance with TxDOT standards;

(b) Use black Polycarbonate Signal Heads (no fewer than one signal head per lane) with LED signal indications and black aluminum, non-vented backplates;

(c) Use timber poles only for temporary signals;

(d) Use controllers, cabinets, and battery backup units provided by City of Dallas (with agreed upon advance notice provided to City of Dallas);

(e) Install radar presence and advance detection systems, with advance detection only required for approaches with posted speed limits greater than or equal to 45 mph and presence detection required for all approaches;

(f) Use 1”-4” conduits for electrical and communications as required by design and recommended by City of Dallas;

(g) Comply with the Utility Accommodation Rules for proper cover of conduit;

(h) Comply with TxDOT Electrical Detail (ED) Standard Sheets;

(i) Use LED safety lighting on traffic signal poles; and

(j) Provide training for city staff on all new Accessible Pedestrian Signal units.

16.3.8.2 Traffic Signal Timing Plans

DB Contractor shall design signal timing plans for all new and modified traffic signals and shall submit to City of Dallas for review. DB Contractor shall coordinate and implement signal timing plans that optimize traffic flows and provide signal coordination with adjacent intersections and arterials for all new and modified signals. Unless timing maintenance is otherwise provided by a Governmental Entity, 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.

DB Contractor shall provide copies of all final implemented signal timing plans to the appropriate Governmental Entity.

16.3.8.3 Traffic Signal Warrants

As part of the Final Design process, DB Contractor shall collect traffic data and prepare traffic warrant studies for proposed signalized intersections not signalized at the time of NTP1, including those listed in Section 16.3.8.1, and shall submit these signal warrant studies to TxDOT for review. The warrant studies shall address all signal warrant criteria in the TMUTCD. DB Contractor shall make recommendations for new signal installations based on these warrant studies in consultation with TxDOT and the appropriate Governmental Entities. TxDOT will reasonably determine if a signal or modification is required, based upon the warrant study.

All requests for signals within the Project ROW throughout the Term of the Agreement shall be subject to TxDOT approval. Requests for signals shall include supporting traffic warrant studies and traffic signal plans prepared in accordance with the TMUTCD and TxDOT standards.

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, DB Contractor shall use the procedure in Chapter 3 Section 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. DB Contractor shall conduct additional traffic signal warrant studies for all

intersections located in the Project ROW, commencing six months after the Project is opened for traffic. If additional signals or modifications to existing signals are warranted, based on the traffic volumes obtained through these studies, DB Contractor shall be responsible for installation of additional traffic signals or modification of previously-installed traffic signals. If, based on the above traffic counts, the need for a signal or signal modification is unclear, TxDOT will reasonably determine if the new signal or signal modification is required.

16.3.8.4 Traffic Signal Support Structures

DB Contractor shall coordinate with TxDOT and the appropriate Governmental Entities to determine the type of traffic signal support structures. DB Contractor shall obtain the appropriate Governmental Entities' approval of traffic signal support structures to be used on new and modified signal installations.

Designs for traffic signal support structures shall also comply with requirements in Section 13 of the Technical Provisions.

16.3.8.5 Traffic Signal Systems

DB Contractor shall provide interconnection (using local cable company) between new or modified signals and the City of Dallas Traffic Management Center for traffic signal monitoring and control. DB Contractor shall ensure continuous communication with these new or modified signals.

DB Contractor shall provide to TxDOT an Acceptance Test Plan (ATP) for all traffic signals. This ATP shall also be submitted to the appropriate Governmental Entity. DB Contractor shall conduct testing in accordance with the ATP and document those results to show conformance.

16.3.9 Lighting

DB Contractor shall provide continuous illumination, utilizing high mast lighting, throughout the Project. Existing conventional lighting shall be removed. New conventional lighting shall only be used at locations where high mast lighting cannot provide the required photometric coverage or there are FAA height restrictions. Conventional lighting shall be used on cross streets.

DB Contractor shall provide LED fixtures for high mast lighting and LED fixtures for conventional roadway lighting and under bridges at underpass/overpass locations throughout the project. Underpass lighting will be limited to locations with existing underpass lighting or to locations with new structures (or widened structures) greater than or equal to 100 feet in width.

DB Contractor shall design the lighting, where necessary, through the entire project limits to prevent measureable spillage outside the Project ROW and onto the adjacent properties using either cut-off shields or tightly-controlled photometrics combined with appropriate mounting height. DB Contractor shall submit a lighting plan and light spillage measurements for the entire project limits to TxDOT for review and Approval as part of the Final Design submittal. In addition, the overflow of light onto any surface area outside of the Project ROW shall not exceed 10 percent of the average horizontal illumination as defined in the TxDOT *Highway Illumination Manual*.

DB Contractor shall prepare lighting plans that consider illumination levels, uniformity, and sources for the roadways, interchanges, and special areas. DB Contractor shall maintain an average horizontal luminance on the roadways as described below. DB Contractor shall submit

the photometric data results for all lighted areas within the Project limits to TxDOT for review and Approval as part of the Final Design submittal. The submittal shall include all input data.

Lighting along cross streets shall be provided in locations where lighting systems are currently provided within the Project limits. All third-party requests for lighting within the Site shall be subject to TxDOT Approval.

DB Contractor shall provide lighting designs to meet criteria listed in Table 3-5a of the AASHTO Roadway Lighting Design Guide on all traveled roadways to be illuminated. Traveled roadways include: mainlanes, interchanges, ramps, ramp terminals, and frontage road intersections with cross streets.

DB Contractor shall design lighting systems in accordance with the TxDOT *Highway Illumination Manual*. All design and construction shall comply with the latest TxDOT CAD Standard Plans and Specifications. At all times during the Term of the Agreement, DB Contractor shall maintain safe lighting conditions along the Project roadway.

Conventional 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, DB Contractor's design shall incorporate breakaway devices that are pre-qualified by TxDOT. Any high mast lighting poles shall meet TxDOT Standards and Specifications.

DB Contractor shall place all understructure lighting in a configuration that minimizes the need for Lane Closures during maintenance.

DB Contractor shall determine and design appropriate foundation types and lengths for permanent lighting structures.

DB Contractor shall not place ITS cables, fiber-optic lines, traffic signal conductors, or any other non-lighting related cables or conductors in the lighting conduit, ground boxes, or junction boxes.

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 luminaire mast arms on traffic signal poles;
- Placing pole bases on existing or proposed concrete traffic barrier;
- Placing poles behind existing or proposed concrete traffic barrier or metal beam fence; and
- Placing high mast lighting outside the clear zone, especially in roadway horizontal curves.

DB Contractor shall place all understructure lighting in a configuration that minimizes the need for Lane Closures during maintenance. 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. DB Contractor shall ensure that lighting structures comply with Federal Aviation Administration (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, 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, DB Contractor shall find alternative ways of providing the required level of lighting.

DB Contractor shall provide to TxDOT an ATP for all illumination. This ATP shall also be submitted to the appropriate Governmental Entity. DB Contractor shall conduct testing in accordance with the ATP and document those results to show conformance.

16.3.9.1 Additional Requirements

Additional requirements are as follows:

(a) At a minimum, underground conduit in interchange areas or temporary detours shall not be less than two inches or Schedule 40 PVC; all other underground conduit installations shall not be less than two inches or Schedule 40 PVC;

(b) The minimum conductor size shall be #8 AWG copper on roadway and #12 AWG on underpass lights. DB Contractor shall not use duct cable for illumination purposes;

(c) DB Contractor shall place bridge lighting brackets no more than ten 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;

(d) Non-standard light pole design shall be submitted to TxDOT for approval. For light poles with a base 25 feet above the elevation of surrounding terrain, DB Contractor shall electronically submit design calculations and shop drawings to TxDOT, Bridge Division;

(e) Minimum dimensions for ground boxes shall be as shown on TxDOT standard ED(4)-14;

(f) Ground box covers shall be 2-inch-thick (nominal), non-conducting material and labeled “Danger High Voltage Illumination;”

(g) Riprap aprons shall be provided around all ground boxes and high mast light poles not otherwise protected with concrete;

(h) 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;

(i) Electrical part of the installation shall be designed and installed in conformance with the NEC, TxDOT standards and Specifications;

(j) Seal all conduit ends with lighting circuits with at least three feet of polyurethane foam approved by the Engineer that will not adversely affect other plastic materials or corrode metals – alternate methods of wire theft prevention may be submitted for approval; and

(k) Seal ground boxes for lighting circuits with polyurethane foam approved by the Engineer that will not adversely affect other plastic materials or corrode metal – alternate methods of wire theft prevention may be submitted for approval.

16.3.10 Visual Quality

Notwithstanding the requirements of Section 16.3.8, DB Contractor shall provide luminaires of equal height along the roadway.

DB Contractor shall not use timber poles for permanent installation.

DB Contractor shall re-sod or re-seed areas of construction disturbed by the installation of signs, traffic signal systems, or lighting systems after final installation.

16.4 Construction Requirements

16.4.1 Permanent Signing and Delineation

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.

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. DB Contractor shall replace any other removed signs before the end of the work day.

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 for inclusion into the Maintenance Management System (MMS).

All installed signs are required to meet the minimum retro-reflectivity values specified in TMUTCD *Table 2A-3 (Minimum Maintained Retroreflectivity Levels)*. Signs located adjacent to the existing frontage roads are not subject to this requirement unless they are impacted by construction.

16.4.2 Permanent Pavement Marking

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 days, but not later than ten days after application:

(a) Type I, Thermoplastic, Pavement Markings:

(i) White markings: 250 millicandelas per square meter per lux (mcd/m2/lx); and

(ii) Yellow markings: 175 mcd/m2/lx.

(b) Type II, Paint & Beads, Pavement Markings:

(iii) White markings: 175 mcd/m2/lx; and

(iv) Yellow markings: 125 mcd/m2/lx.

16.4.3 Permanent Signalization

DB Contractor shall coordinate with the Utility Owner(s) and ensure necessary power service is initiated and maintained for permanent signal systems. DB Contractor shall ensure power is provided to all DB Contractor-installed signals.

DB Contractor shall provide TxDOT with copies of all signal warrant studies as required in this Section 16. DB Contractor shall also provide copies of all final signal timing.

Before placing any permanent traffic signals, DB Contractor shall provide TxDOT a layout indicating the proposed location of such items.

During the test period, DB Contractor must provide a contact that can handle emergency calls 24 hours/day for all new signals.

16.4.4 Permanent Lighting

DB Contractor shall coordinate with the Utility Owner(s) and ensure power service is initiated and maintained for permanent lighting systems. Where the Work impacts existing lighting, DB Contractor shall maintain existing lighting as temporary lighting during construction and restore or replace prior to Substantial Completion of the Segment. At all times during the Term of the Agreement, safe lighting conditions shall be maintained along the Project roadway.

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 conduit that is under the existing pavement or riprap may be abandoned. Existing conductors shall be removed.

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.

DB Contractor shall contact Utility Owners regarding their specific required working clearance requirements.

DB Contractor shall affix an identification decal on each electrical service indicating service address as well as all required information shown on the Electrical Detail (ED) standard sheets.

16.4.5 Reference Markers

DB Contractor shall place reference markers in accordance with the Texas Reference Marker System and mile markers approximately one mile apart. DB Contractor shall set reference markers and/or mile markers according to the TMUTCD. Once placed, DB Contractor shall inventory and record reference markers with GPS. DB Contractor shall provide this information to TxDOT in Microsoft Excel format.

16.5 Submittals

All submittals described in Section 16 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 16-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 16-1: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Section 16			
Notification of meetings with local Governmental Entities	At least 48 hours prior to the start of the meeting	For Information	16.2.1
A preliminary operational signing schematic	Prior to commencing Final Design	Review and Approval	16.3.1
A proposed sign, delineation, traffic signal, lighting, etc. layout	Before placing any such items	Review and Approval	16.3.1
Traffic signal timing plans	As part of the Final Design Submittal	Review and comment	16.3.8.2
Copies of all final implemented signal timing plans	With Record Drawings	For Information	16.3.8.2
Signal warrant studies	As part of the Final Design Submittal	Review and comment	16.3.8.3
Acceptance Test Plan (ATP) for all traffic signals	As part of the Final Design Submittal	Review and comment	16.3.8.5
Lighting plan and light spillage measurements	As part of the Final Design Submittal	Review and Approval	16.3.9
A computer generated light level array for all lighted areas within the Project Limits	As part of the Final Design Submittal	Review and comment	16.3.9
Acceptance Test Plan (ATP) for all illumination	As part of the Final Design Submittal	Review and comment	16.3.9
Non-standard light pole design	As required	Approval	16.3.9.1(d)
Reference Markers inventory and record reference	Once placed	For Information	16.4.5

SECTION 17.0 INTELLIGENT TRANSPORTATION SYSTEMS

17.1 General Requirements

An ITS is necessary for monitoring the Project's traffic flow and performance both during construction and as a permanent installation. The Project ITS must accurately detect traffic and traffic operational conditions throughout the Project Limits, and clearly communicate relevant and useful travel information to the Users.

TxDOT operates an ITS network within and/or in the direct vicinity of the Project Limits. DB Contractor shall connect the Project ITS that it provides to the existing ITS network while fulfilling all requirements herein. The Project ITS must be compatible with such in-place system(s) that TxDOT and other entities (government or private) are currently operating. DB Contractor shall coordinate the ITS planning and implementation with TxDOT and other Governmental Entities that have roadways within or intersecting the Project. Upon Final Acceptance, TxDOT will operate the ITS and continue to do so during the Maintenance Term.

DB Contractor shall maintain and protect any existing ITS functionality to include communications networks within the Project until Final Acceptance, except during force majeure events, periods of system maintenance or system crossovers, or other periods approved by TxDOT.

The Project ITS shall conform to TxDOT and Dallas District Standards, and have physical connections with the existing TxDOT ITS communications network on major freeways. The functionality of the ITS shall be such that command and control of appropriate field devices is shared and exchanged with appropriate Governmental Entities.

DB Contractor shall be responsible for the planning, design, installation, testing, and operations support 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). DB Contractor shall maintain ITS interoperability over the Term with TxDOT's DalTrans TMC and other Governmental Entities systems.

The Project ITS shall operate under the Regional ITS Architecture. DalTrans shall be the main Traffic Management Center (TMC) for this Project. Communication and interoperability shall be achieved with other TMCs in the region, such that with appropriate privileges, access to data, command, control, and information sharing can occur among centers. All communication and access of information shall occur in near real-time (within logistical restraints).

The following list includes, but is not limited to, ITS elements with the most recent special specifications:

(a) ITS System Support Equipment – SS6003;

(b) Intelligent Transportation System (ITS) Fiber Optic Cable – SS6007;

(c) Intelligent Transportation System (ITS) Ground Mounted Cabinet – Provides for furnishing, fabricating, delivering, installing, and testing ITS ground mounted cabinets of the various types and sizes at locations shown on the plans or as directed. Replaces SS 6008(14), "ITS Field Equipment". (Change Memo: de-08-15). Statewide Use. SS6008;

(d) Closed Circuit Television (CCTV) Field Equipment – SS6010;

(e) Multi-duct Conduit System – SS6016;

(f) Fiber Optic RS-232 Data Modem – SS6015;

(g) Communication Building (Environmental) (8 feet x 12 feet) (One-time use) – SS6499;

(h) Communication Hub Building – SS6017;

(i) Dynamic Message Sign System SS6028;

(j) Radar Vehicle Sensing Device – SS6029 & SP6029-001;

(k) Intelligent Transportation System (ITS) Pole with Cabinet –SS6064;

(l) Automated Barricade Gate (2004 SS2055); and

(m) Vehicle Arresting Barrier (2004 SS2056).

17.2 Design Requirements

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 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.

Prior to beginning ITS efforts, DB Contractor shall conduct an ITS workshop with TxDOT, and affected Governmental Entities (per TxDOT's direction) to:

(a) Confirm TxDOT's operational requirements;

(b) Review DB Contractor's survey of existing ITS infrastructure and condition assessment;

(c) Discuss concepts, identify potential resolutions for Site-specific issues (as identified by DB Contractor);

(d) Determine communication requirements;

(e) Determine requirements for design;

(f) Determine requirements for construction including security considerations (burying of ground boxes, welding ground boxes shut, etc.);

(g) Determine requirements for construction and coordination of activities with adjacent roadways;

(h) Confirm requirements of other affected parties and Governmental Entities; and

(i) Address other topics as needed to ensure the design meets all requirements herein.

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, DB Contractor shall determine the number and specific locations of all ITS components. The ITS shall consist of all equipment necessary to implement the ITS described in this Section 17.2.

DB Contractor shall provide safe ingress/egress areas and structures to accommodate authorized personnel access to ITS components for maintenance and operation activities. Unless approved by TxDOT, ITS components shall be placed in locations that allow maintenance without a lane closure.

All components of the ITS shall conform to the provisions of the NTCIP and be compatible with the latest version of TxDOT's Software that is operational at *DalTrans TMC.*

All ITS devices and associated mountings shall meet the 80 mph wind load design standards. CCTV poles shall have a minimum height of 60 feet.

The installed ITS equipment shall provide TxDOT accurate and reliable data and quality video images, and accurate control of field devices from DalTrans on a real-time basis 24 hours a day, 7 days a week. Real-time is defined as correct data being available at DalTrans within 30 seconds of being processed or the correct response of a field component within one millisecond of the command being sent.

DB Contractor shall be responsible for ensuring the CCTV, DMS, SDMS, vehicle detection systems, gates, and vehicle arresting barriers meet the reliability requirements specified in the TxDOT statewide and/or Dallas District Standards, as well as any standard publications provided by TxDOT at the time of actual Design Work. The design and construction requirements, together with the design criteria presented in the most current TxDOT statewide and/or TxDOT Dallas District specifications, as well as any standard publications provided by TxDOT at the time of the actual Design Work, define the minimum standards and scope that must be met by DB Contractor.

Any recommended modifications to the specifications shall be presented by DB Contractor to TxDOT and shall be subject to TxDOT approval.

DB Contractor is responsible for designing and constructing lightning protection, grounding, and surge suppression for each ITS structure and equipment cabinet. Ground mounted equipment cabinets next to ITS support structures will not be allowed and must be mounted to the support structure. DMS, SDMS, and VAB cabinets may be ground mounted.

DB Contractor shall be responsible for the design, installation, and provision of power required to operate the ITS devices, including all utility costs until Final Acceptance by TxDOT, at which time the utilities will be transferred to TxDOT.

17.2.1 DB Contractor ITS Communications Requirements

DB Contractor shall provide a communications network that has redundant routing capabilities. The communications network shall serve the highway ITS components along the highway Elements of the Project. Where necessary, as determined by TxDOT, DB Contractor shall provide communication node buildings and cabinets to support the communications network.

The current TxDOT communications network backbone is single-mode fiber optic cable network.

Each field network switch shall provide a primary and secondary fiber path of two fibers each from the field cabinet to separate satellite buildings. The maximum number of Layer 2 field network switches forming a network path between an end device (TxDOT ITS) and a satellite building based data aggregating Layer 3 network switch shall not exceed 12. The calculated data throughput assigned to any sub-network path shall not exceed 50% of the path's throughput capacity. Calculations for bandwidth usage shall be provided during the preliminary design efforts.

New devices and any existing devices interconnected during Project implementation shall not be assigned within the same network path or otherwise daisy-chained to avoid possible inconsistencies in communication protocols.

DB Contractor shall install two 48 strand single-mode fiber optic cables in the duct bank. One shall be utilized as main trunkline and the other for hub-to-hub. No splicing of the trunkline fiber is allowed unless approved by TxDOT. Pull boxes shall be spaced at each ITS device location, satellite building and a maximum of every 700 feet along the Project corridor. DB Contractor is responsible for confirming that 48 strands of fiber can support the proposed ITS deployment and providing additional fiber at no cost to TxDOT, as needed, to ensure that no more than 50% of the throughput capacity of a sub-network path is exceeded. Type I ground boxes shall be utilized for longitudinal runs without branch connections. Type II ground boxes shall be used in all other locations unless approved by TxDOT.

DB Contractor shall provide terminal servers, video encoders, media converters, Ethernet switches, associated cabling, and modems to establish communications as required. Video encoding shall meet MPEG-4 standards and be compatible with TxDOT's traffic management system software requirements for TxDOT CCTV.

DB Contractor shall submit proposed fiber termination charts to TxDOT for approval.

17.2.2 Conduit

DB Contractor shall recommend, with TxDOT's concurrence the type, quantity, and design of the conduit above and below ground, ground boxes, all communication cables, and electrical conductors to support the ITS network and operations. No exposed conduit sections will be permitted. All sections shall have a minimum of 42 inches of cover over all ITS conduit except:

(a) Where boring is required to cross under intersections; and

(b) In the case of large bridge crossings, built into the bridge structure.

DB Contractor shall install bored conduit below the base layer of pavement structure. TxDOT approval will be required for any placement on existing structures. DB Contractor shall provide separate conduits for general ITS communication and general ITS power. For trunk lines, two 3-inch Schedule 40 conduits and one 4-inch multiduct shall be used. For branches to devices, two 3-inch Schedule 40 conduits shall be used. For branches to power sources, one 2-inch Schedule 40 conduit shall be used.The percent fill per conduit shall not exceed 30% of the fill capacity. With TxDOT's concurrence, additional conduits or increased conduit dimension shall be provided should the capacity requirements be exceeded. The location of spare conduits shall be coordinated with TxDOT during design and may be located in the same trench as the

trunkline and hub-to-hub conduits. A #8 bare electrical conductor wire for detection shall be placed in trunk lines.

DB Contractor shall maintain adequate separation (generally at least ten feet) between proposed conduits and any existing TxDOT or other entity's installation for construction, maintenance, and repair.

DB Contractor shall repair each existing communication cable or electrical conductor that is severed or otherwise rendered not usable within 72 hours.

DB Contractor shall provide materials and use construction methodology that, at a minimum, meets the most current or applicable TxDOT statewide and TxDOT Dallas District specifications, including placement of a trace wire within the conduit, placing locator tape and installing above ground markers, and providing the required 42 inches or more of cover. DB Contractor shall provide alternatives to TxDOT to improve TxDOT's current practices for securing ground box lids and are subject to TxDOT approval.

17.2.3 CCTV Cameras

DB Contractor shall provide CCTV cameras for Incident verification and traffic management. The system of cameras shall accurately identify all vehicle(s) involved in an Incident or Emergency, the extent of vehicle(s) damage, and if applicable the likelihood of personal injury. Operation of the cameras shall result in no visual delay in response of the camera pan/tilt/zoom by a user.

The CCTV cameras that shall be provided by DB Contractor will be utilized extensively during the reversible Express Lane operations and shall be installed in a manner such as to allow this use. Specifically, the cameras will be used to visually sweep the Express Lanes and access ramps to remotely verify that there are no vehicles or obstructions within the Express Lanes, and to verify the status of the gates and messages.

17.2.3.1 Equipment

DB Contractor shall provide all necessary CCTV equipment, including cameras, camera controls, cables, and connections. DB Contractor shall provide all the equipment necessary for TxDOT control of all CCTV cameras. The method of control shall be in accordance with TxDOT standards and specifications.

DB Contractor shall provide a digital video format and communications protocol at all connections with TxDOT systems. The format and protocol provided by DB Contractor shall be compatible with systems in use by TxDOT DalTrans TMC and if necessary convertible for use by TxDOT's in-place ITS network.

17.2.3.2 Placement

DB Contractor shall provide overlapping roadway coverage by CCTV cameras for all highway lanes and intersecting cross streets within the Project Limits to provide redundant camera field of view. CCTV cameras shall be placed to enable TxDOT to monitor traffic conditions on highway lanes, access roads, connecting facilities, entrance and exit ramps, and messages displayed on any remotely-controlled DMS in the Project area. To provide a stable video image, DB Contractor shall mount cameras on dedicated structures unless otherwise approved by TxDOT.

Distance between CCTV cameras shall not exceed 0.5 miles; however, DB Contractor is responsible for placing cameras to ensure 100% coverage. 100% coverage shall be defined as no blind spots for any reason, including but not limited to: trees, bridge structures, horizontal or vertical alignment, overhead or side mounted sign structures. Additionally, each CCTV camera shall be able to view the CCTV camera immediately upstream and downstream from itself unless approved otherwise by TxDOT.

17.2.3.3 Video Requirements

DB Contractor shall provide state-of-the-art CCTV cameras that meet the requirements of the applicable TxDOT statewide and TxDOT Dallas District Standards. At any time prior to Final Acceptance, should any CCTV cameras fail to meet the latest TxDOT statewide and TxDOT Dallas District Standards at the time of design, DB Contractor shall replace such cameras within 48 hours of discovery of lack of compliance.

17.2.3.4 Operating Requirements

DB Contractor shall provide cameras with built-in heaters, mounting structure, and related equipment capable of operating within the following weather conditions:

(a) Wind load of 80 mph without permanent damage to mechanical and electrical equipment;

(b) Ambient temperature range of -35 degrees Fahrenheit to +140 degrees Fahrenheit;

(c) Relative humidity range not to exceed 95 percent within the temperature range of +40 degrees Fahrenheit to +110 degrees Fahrenheit; and

(d) Humidity range of 0 to 100 percent condensing.

17.2.3.5 Control Requirements

DB Contractor shall supply CCTV equipment on this Project which is fully compatible with the existing CCTV control systems operated from DalTrans by the Lonestar software system. In order to prove compatibility and operability of CCTV systems submitted for use on this Project, DB Contractor shall deliver one complete set of CCTV equipment to TxDOT for testing by DalTrans information technology personnel as part of the equipment submittal and approval process. Allow a minimum of 30 days for testing by TxDOT ITS personnel. Submit the CCTV equipment for testing no later than 60 days after completion of TxDOT submittal review. The equipment submitted for testing must be fully assembled and in a fully operational condition. Configure all equipment submitted for testing as is intended for use on the Project. Prototype equipment will not be allowed. The equipment will be interconnected to the existing CCTV control system and must be fully operational using that system. No modifications to the existing CCTV control system will be made to accommodate the submitted CCTV equipment. To be considered fully operational, as a minimum, the equipment must correctly respond to the following commands:

(a) Pan left;

(b) Focus far;

(c) Pan right;

(d) Iris override;

(e) Tilt up;

(f) Iris open;

(g) Tilt down;

(h) Iris close;

(i) Zoom in;

(j) Camera power (latching);

(k) Zoom out;

(l) Pan tilt position preset; and

(m) Focus near.

Upon completion of installation, DB Contractor shall test the communications link installed between the satellite building and the CCTV field equipment locations. DB Contractor shall perform the test at all CCTV locations on the Project.

DB Contractor shall use a test signal generator and a video monitor to demonstrate the ability of the video signal link to transmit a National Television System Committee compliant video signal from the CCTV cabinet to the satellite building. After completion of testing with the signal generator, connect the CCTV camera to the link and use a video monitor at the satellite building to verify the presence of a National Television System Committee compliant video signal. No degradation of the video signal must be discernible using the video monitor.

Connect a laptop computer containing TxDOT-supplied CCTV control software on the link and use to demonstrate the ability to control all CCTV functions outlined in the specifications.

DB Contractor shall supply all test equipment, cabling, and connectors necessary for performing the tests by DB Contractor.

The equipment must be fully operational using the existing control system from TxDOT Dallas District. Equipment which in any manner is not fully operational with the control system will be considered as not passing the test. Equipment which does not pass the test will be allowed one opportunity for retesting. The retest must occur within 30 days after the initial test. All issues of non-compliance and all discrepancies must be resolved before commencing the second test. Equipment which is not able to be retested within 30 days, or which does not pass the second test, will be rejected and cannot be used on the Project. No additional time or compensation will be granted for the testing of the CCTV equipment. Successful testing of the CCTV equipment must be completed prior to any construction activities at the CCTV locations. No camera poles, cabinets, or any other CCTV related equipment shall be installed until CCTV equipment testing is successfully completed.

17.2.4 Vehicle Detection

DB Contractor shall provide permanent, high definition microwave radar detection in each highway lane of the Project that measures vehicle classification, vehicular volume, lane

occupancy, and vehicle speed information on the roadway. The detectors shall be non-intrusive to the roadway users. Spacing for the permanent vehicle detection shall be no greater than one-half mile in each highway lane in the Project, and, at a minimum, provide detection for all highway lanes at one location between interchanges, each entrance ramp lane, and each exit ramp lane. DB Contractor shall locate the devices on the side of the Project nearest the largest shoulder so as to limit the potential interference of the concrete traffic barrier on detecting vehicles and collecting information.

Vehicle detection sensors shall determine vehicle speed for each vehicle passing the sensor. The sensors shall provide raw speed data (volume, speed, lane occupancy, and vehicle classification counts) and direction of travel for all lanes. Additionally, the sensors (or the software controlling the sensors) shall be capable of determining vehicles traveling in the wrong direction. For sensors that collect data across multiple lanes of traffic, data shall be collected and provided by lane. In areas where a sensor would have to collect data on more than 12 lanes of traffic or over distances/widths greater than 250 feet, DB Contractor shall provide additional detectors as required. TxDOT shall be able to adjust the frequency rates that the data files are provided by device.

DB Contractor shall install a mounting pole solely for the vehicle detector or a vehicle detector and CCTV may share a pole. Any mounting poles placed specifically for ITS items shall conform to TxDOT specifications for CCTV mounting poles and must adhere to minimum vertical clearance requirements. DB Contractor shall provide all necessary support structures, equipment, including, but not limited to, vehicle detection system devices, controls, cables, and connections.

17.2.5 Dynamic Message Signs

DB Contractor shall provide a comprehensive network of electronic DMS as needed to satisfy the operational requirements using only LED display technology. The DMS shall operate as part of an overall regional system. DB Contractor shall provide TxDOT full control of DMS messaging.

DB Contractor shall position each DMS to allow motorists to safely view the messages being displayed. DB Contractor shall locate the DMS to comply with large guide sign spacing stated in the TMUTCD.

DMS shall be used to inform motorist of the availability of alternate routes, and to advise travelers of adverse road conditions and congestion. DMS shall be placed to provide a driver-friendly sign-viewing angle at each DMS location.

Location and placement of DMS shall be approved by TxDOT. DMS shall have the ability to be controlled using the latest TxDOT's DMS operating system being used by the TxDOT Dallas District.

DMS shall be mounted using a T-mount and located so that main lane closures are not needed to maintain the sign. DMS site shall be accessible in all weather conditions. Access pads shall be provided if necessary to support maintenance. DB Contractor shall provide DMS, which use LED display technology and support full matrix amber, excluding existing DMS being relocated within the Project. All DMS shall have two amber beacons installed along the DMS top that may be controlled remotely from DalTrans by TxDOT. DMS used shall conform to the TxDOT special specification NTCIP for DMS and shall demonstrate compliance before installation of DMS.

DB Contractor shall provide all necessary dynamic message signs, support structures and equipment, including, but not limited to, DMS devices, controls, cables, and connections.

DB Contractor shall not impact the operation of any existing DMS within the Project during construction absent approval from TxDOT.

Existing DMS are located near the following locations:

(a) Northbound I-35E at Ann Arbor;

(b) Northbound I-35E at Overton (HOV lane operations);

(c) Northbound I-35E at Kiest (HOV lane operations);

(d) Northbound I-35E at Marsalis;

(e) Southbound I-35E at Louisiana;

(f) Northbound US 67 at Swansee;

(g) Northbound US 67 at Loop 12 (HOV lane operations); and

(h) Northbound U S67 at Pentagon (HOV lane operations).

The existing DMS currently used for HOV lane operations will not be needed after the HOV lane closes for construction and these pieces of equipment are to be relocated or removed and returned to TxDOT. Existing DMS shall be maintained in the other locations and relocated in the vicinity as necessary to accommodate proposed construction. DMS are to be provided in the following additional locations:

(a) Northbound US 67 at Camp Wisdom and

(b) Southbound US 67 at Hampton.

DB Contractor shall use the additional DMS being removed to eliminate downtime for relocation of the existing DMS affected by construction.

DB Contractor shall be responsible for any rehabilitation necessary for the on-site re-use of existing DMS.

17.2.6 Not Used

17.2.7 Single-Line DMS (SDMS)

The SDMS shall be utilized to disseminate the status of the Express Lanes (e.g. open or closed). These DMS panels will be mounted to the static signs for advanced traveler information signs.

DB Contractor shall place SDMS over travel lanes on existing or proposed overhead sign structures on managed and mainline roadways. The SDMS shall be amber line matrix and be able to display at least 8 characters of 18” standard 5x7 font capable of displaying “OPEN” and “CLOSED” as appropriate.

For the advanced traveler information sign SDMS, DB Contractor shall provide and install all necessary support structures and equipment, including, but not limited to, SDMS devices, controls, cables, connections, and network equipment.

DB Contractor provided and installed SDMS shall have the ability to be controlled using the latest TxDOT SDMS operating system being used at DalTrans.

17.2.8 Communications Hub Enclosures/Communications Cabinets/Environmental Communications Buildings

DB Contractor shall coordinate with TxDOT the connection of all new ITS components to any existing ITS communication hub enclosures and communication cabinets covering the Project or adjacent to the Project such that regional communications, including connectivity to Dallas District ITS network, can be established.

Connectivity to Dallas District ITS network will be facilitated by fiber connectivity to an existing network at Satellite Building #4 (located near I-35E and Reunion Blvd), Satellite Building #5 (located near I-20 and US 67), and Satellite Building #6 (located near I-35E and I-20) depending on component location. Components located along I-35E south of the interchange with US 67 shall be routed to Satellite Building #6. Components located along US 67 (other than at I-35E) shall be routed to Satellite Building #5. All other components, including those along I-35E from the US 67 interchange north to the northern Project limits, shall be routed to Satellite Building #4. TxDOT will make necessary arrangements for dark fiber allocation outside the Project Limits. DB Contractor shall provide all necessary network switching hardware as required.

17.2.9 Access Control System (ACS)

To remain consistent with the access control system designed for other regional reversible Express Lane facilities, the ACS at each access location shall consist of a series of automated barricade gates on each side of a vehicle arresting barrier (VAB).

The automated barricade gate includes, but is not limited to the following:

- Gate support frame with built-in anchoring base;
- Gate swing arm;
    - Gates shall not be operated wirelessly unless approved by TxDOT.
- Horizontal FHWA approved NCHRP 350 crash tested swing gate;
- Electrical linear actuator equipped with:
    - End of travel limit switches;
    - Mechanical overload protection; and
    - Hand crank manual override.
- Electrical components and associated equipment:
    - Power control circuit for actuator operation;
    - 12 VDC battery charger;
    - Full gate light power management and flashing logic; and
    - The equipment shall be capable of using a generator in the event of a power loss.
- Pushbutton Control Panel (remote)

These gates shall be hardwired together at a given entrance or exit location.

At least one gate shall be installed on either side of the VAB at the end of the concrete traffic barrier so that a vehicle will encounter at least one gate if trying to enter or exit the Express Lanes against the flow of traffic.

The VAB is used to prohibit motor vehicles from entering a closed highway. The VAB must safely decelerate and stop a vehicle in accordance with NCHRP 350 guidelines, Test Level 3. Vehicles shall be limited to light cars up to busses with a maximum speed of 60 MPH and 40 MPH, respectively. The VAB includes, but is not limited to the following:

- Vehicle restraining mechanism;
- Structural frame;
- Lifting mechanism; and
- Local controls.

The restraining mechanisms consist of, as a minimum, two energy-absorbing devices on either side of a restraining net. The devices travel with the lifting-lowering mechanism to open or close a road and have bi-directional vehicle stopping ability. The restraining net has high strength impact capacity and has a reflective stop sign attached to both sides of the net. The net entraps the vehicle and transfers the force of the impact to the energy-absorbing devices.

Both the gates and the VAB shall be connected to the ITS network and controllable in an automated manner both with systems in use by TxDOT at DalTrans and locally using a hand-held device capable of controlling all control access systems. Each device shall also be able to be lowered and raised manually.

Modifications to concrete traffic barrier, pavement, or other civil elements may be required to accommodate the gate and VAB devices. DB Contractor is required to incorporate these modifications.

DB Contractor shall consult with TxDOT prior to incorporating modifications to the TxDOT Schematic Design that could impact the number or configuration of gates and VABs.

DB Contractor is required to have the gates and VAB connected to, and controlled by, the software in use by/from/at DalTrans. DB Contractor shall bear responsibility for making their components work with the existing software and shall make modifications necessary to accomplish this. SDMS, gates, and VAB shall be connected and controlled in a way that they cannot be in conflicting/contradictory states; for example, SDMS states that the Express Lanes are open when the gates and VAB are closed. This conflict monitoring controller shall be NTCIP compliant with all configuration files provided to, and property of, TxDOT. System shall be capable of providing a confirmation message regarding the open/closed status to TxDOT at DalTrans.

Communications equipment for the gates and VAB at a given entrance or exit location may be housed in the same cabinet. SDMS communications equipment shall be housed separately. The maximum proximity of the communication cabinet to the VAB and gates shall be 300 feet.

17.3 Construction Requirements

17.3.1 General

DB Contractor shall notify TxDOT in advance of making connections to the existing TxDOT system.

DB Contractor shall maintain any existing ITS communications functionality during construction activities. Required functionality can be accomplished by phasing construction to establish new equipment locations prior to removal of existing location, allowing minimal service interruption of no more than four hours for any disruption associated with communications and 72 hours for the transfer of devices from existing to new locations, or by use of portable equivalents for ITS devices, such as trailer mounted DMS, sensors or CCTV, positioned to allow removal of devices while new locations are constructed.

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

DB Contractor shall salvage any existing ITS equipment removed during construction of the Project, deliver to a location (or multiple locations) within the TxDOT Dallas District as specified by TxDOT, and stockpile as requested by TxDOT, all in an undamaged condition. Except for the existing detection device, and associated equipment, immediately south of the SB exit to Saner, all existing radar detection devices shall be removed from the Project and returned to TxDOT as described in this Section 17.3.2.

17.3.3 Existing ITS Relocation

DB Contractor shall relocate any existing ITS components, including hubs, satellite buildings, CCTV cameras, DMSs, detection devices, and fiber-links, as required to continue service from the existing components. DB Contractor shall sequence construction and relocation of existing ITS components, facilities, and systems to prevent lapses in TxDOT's receipt of video or data within the Project area. The existing physical links and the proposed physical links shall be in separate physical conduits.

Before removing existing ITS items and before beginning construction of segments without existing ITS, DB Contractor shall perform all activities necessary to maintain system operations during construction, including installing new ITS items, relocating or replacing existing ITS items, and connecting such ITS items to the existing network.

Existing CCTV cameras that are operational and meet current TxDOT requirements may be reused within the Project.

DB Contractor shall relocate the existing detection device, and associated equipment, located immediately south of the SB exit to Saner, to maintain this device's functionality during construction, and shall undertake calibration activities for this device, as directed by TxDOT. This device is not part of the TxDOT Dallas District network.

17.3.4 ITS Implementation Plan

DB Contractor shall provide an ITS Implementation Plan for approval as part of the Final Design Submittal to demonstrate system interoperability with other TMCs in the region, as well as compatibility with the operational procedures for command and control of devices, sharing of data, and priority control that various parties will assume under different operating conditions of the corridor and surrounding roadway system. The ITS Implementation Plan shall include the following:

(a) Functional design plan;

(b) Communications analysis report;

(c) Operational and requirements report; and

(d) ATP.

The functional design plan shall show each device's relationship in the overall functional design of the ITS and proposed roadway system. This functional design plan shall include the location of devices, technology and functional specifications of devices, and any unique design elements that are necessary to achieve the desired functionality or space restrictions.

The communications analysis report shall document the communications design. This report shall show all ITS field devices, their flow through all communications mediums, and throughput within the ITS. This shall include communications between any involved Governmental Entities. The report shall contain a narrative describing the information to be transmitted, as well as a high level plan for its use. Communications diagrams shall be provided showing the location of any communication hubs (existing or proposed), any planned fibers (source as well as identification tag), modem/transceiver equipment planned at field equipment cabinets, and other equipment deemed necessary to functionally operate the ITS.

The operational and requirements document for the ITS shall describe the functional capability of the system and the method and level of integration. The document shall describe in detail the design of the system, hardware and software to be utilized, functional capabilities, command and control, data sharing capabilities, and priority use of devices by multiple agencies. In developing the operational and requirements document, DB Contractor is required to hold scoping meetings with TxDOT such that requirements are defined to achieve interoperability with other TMCs, and priority logic and information for command, control, and data sharing is created to enable effective management and Incident response along the corridor, as well as regionally.

For each component of the ITS, an ATP shall assure proper operation, control, and response of each device meeting the functional requirements. DB Contractor shall implement the ATPs and provide certified documentation that its requirements have been met prior to operational use of the ITS.

As part of the ATP, DB Contractor shall prepare a system acceptance procedure prior to start of construction to assure proper operation, control, and response of each device as part of the overall ITS, including the overall operating system and software. DB Contractor shall conduct the procedure and provide certification that the ITS effectively meets the required functional requirements. DB Contractor shall provide this certification prior to Substantial Completion.

DB Contractor shall provide the CCTV secondary control equipment and design to TxDOT for approval a minimum of six months prior to Substantial Completion.

17.3.5 End-to-End Testing

DB Contractor shall provide notice and coordinate with TxDOT to allow for end-to-end testing of the ITS. Testing will occur during the 21 calendar Day period prior to Substantial Completion and shall provide TxDOT Dallas District staff with an opportunity to conduct full system tests, conduct daily operations to confirm operation plans and standard operating procedures, and to otherwise prepare for operational use of the facility. End-to-end testing will also occur after hours and on weekends. DB Contractor and TxDOT shall have completed all their testing, training of TxDOT staff, and acceptance requirements for DB Contractor installed ITS devices, satellite buildings, communication and electrical networks, and generators prior to the start of end-to-end testing.

DB Contractor shall be responsible, at a minimum, for the following:

(a) Coordinating the end-to-end testing with TxDOT to ensure that there will be no conflicts between TxDOT, their affiliated contractors, and DB Contractor's staff;

(b) Providing temporary advance signing (if needed) stating that the facility is closed and testing occurring;

(c) Providing maintenance of traffic/traffic control at all necessary locations for a maximum of five full Days, which could include evenings and weekends and may not be consecutive;

(d) Providing access to the facility for authorized TxDOT staff and contractors; and

(e) Repairing any issues found with DB Contractor's work within one Calendar Day unless otherwise approved by TxDOT.

DB Contractor shall not expect to have access to, nor conduct work within, the Project during the end-to-end testing, with the exception of providing services as described above. TxDOT may, at its own discretion, provide DB Contractor access to the Project to conduct work outside the services described above.

17.3.6 Record Documents

The Record Documents shall include the construction drawings, as well as catalog sheets for all equipment and components. DB Contractor shall maintain for the Term records of all updates and modifications to the system.

For each component of the ITS, all computer codes and software shall be available to TxDOT.

17.4 Submittals

All submittals described in Section 17 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 17-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 17-1: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Section 17			
A preliminary ITS layout	Prior to commencement of detailed design for ITS	Review and acceptance	17.2
Any recommended modifications to the ITS specifications	At least 2 weeks prior to the ITS workshop	Approval	17.2
Proposed fiber termination charts	As required	Approval	17.2.1
Alternative practices to improve securing ground box lids	At least 2 weeks prior to the ITS workshop	Approval	17.2.2
One complete set of CCTV equipment for testing	Deliver for testing within 60 days after review by TxDOT and prior to installation	Approval	17.2.3.5
Location and placement of Dynamic Message Signs	As part of the Final Design Submittal	Approval	17.2.5
Notification of intent to make connections to the existing TxDOT system	At least 30 days in advance of making the connections	For information	17.3.1
Any salvaged existing ITS equipment	As required	N/A	17.3.2
CCTV secondary control equipment and design	Six months prior to Substantial Completion	Approval	17.3.4
ITS Implementation Plan	As part of the Final Design Submittal	Approval	17.3.4
Notice/coordination to allow for end-to-end testing of the ITS	No later than 90 days prior to Substantial Completion	For information	17.3.5
Equipment and Component catalog sheets	As part of the Record Documents	For information	17.3.6
All computer codes, device configuration files, and software for each component of the ITS	As part of the Record Documents	For information	17.3.6

SECTION 18.0 TRAFFIC CONTROL

18.1 General Requirements

DB Contractor shall design, construct, and maintain the Project, in conformance with the requirements stated in this Section 18, to provide for the safe and efficient movement of people, goods, and services through and around the Project, while minimizing negative impacts to Users, residents, and businesses.

DB Contractor is responsible for gaining Approval from TxDOT, the appropriate Governmental Entity and property owner for each intersecting street or driveway closure.

During all phases, temporary or existing Intelligent Transportation System (ITS) equipment, street lights, and traffic signals shall remain in operation such that the new and existing equipment operate as a coherent system.

18.1.1 Lead Maintenance of Traffic (MOT) Engineer

DB Contractor shall employ a Lead MOT Engineer responsible for ensuring all MOT plans are completed and design criteria are met. The Lead MOT Engineer shall be a Registered Professional Engineer with relevant experience overseeing the development of MOT plans on highway projects of similar size and scope. Individual will work with MOT Manager to coordinate with TxDOT, DB Contractor, and appropriate Governmental Entities.

18.2 Administrative Requirements

18.2.1 Traffic Management Plan

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 Lead Maintenance of Traffic Engineer, and other personnel with traffic control responsibilities;

b) Procedures to identify and incorporate the needs of transit operators, Utility Owners, Governmental Entities, Emergency Services providers, school districts, business owners, and other related Users, Customer Groups or entities in the Project corridor and surrounding affected areas as it relates to the use of roadway networks;

c) Procedures for developing Traffic Control Plans (TCPs), including implementing and maintaining detours, road and Lane Closures, and other traffic pattern modifications with detailed phasing and steps showing the different traffic control phasing;

d) Procedures for obtaining approval of TCPs from TxDOT and applicable Governmental Entities including review of TCP submittal timeframes;

e) Procedures for signing transitions from one phase to the next and from temporary to permanent signing;

f) Procedures for maintenance and replacement of traffic control devices, including pavement markings and traffic barriers, and transitions from one phase to the next and from temporary to permanent placement;

g) Procedures to regularly evaluate and modify traffic signal timings, in coordination with local Governmental Entities and TxDOT;

h) Procedures for the development, implementation, testing, and maintenance of all affected signals in cooperation with local Governmental Entities and TxDOT;

i) Procedures and process for the safe work zone ingress and egress;

j) Provisions to provide continuous access to established truck routes and Hazardous Material routes, and to provide suitable detour routes, including obtaining any approvals required by TxDOT and the appropriate Governmental Entities for these uses;

k) Procedures to modify TCPs as needed to adapt to current Project circumstances including a contingency plan to alleviate unreasonable construction-related delays that can be implemented immediately upon notification from TxDOT;

l) Procedures to communicate TMP information to DB Contractor's and TxDOT's public information personnel and notify the public of maintenance of traffic issues in conjunction with the requirements of Section 3;

m) Descriptions of contact methods, a list of TxDOT and DB Contractor personnel contacts, and anticipated response times for any deficiencies or Emergency conditions requiring attention during off-hours in compliance with the approved TxDOT- DB Contractor Communications Plan; and

n) Procedures for night Work (thirty minutes after sunset to thirty minutes before sunrise) to include a work zone light system design in accordance with NCHRP Report 498.

DB Contractor shall coordinate with TxDOT and local Governmental Entities regarding the development of the TMP. DB Contractor shall participate in traffic management coordination meetings scheduled by TxDOT or its representatives.

DB Contractor shall submit the TMP as a part of the PMP as required in Section 2.2 of the Technical Provisions

18.3 Design Requirements

18.3.1 Traffic Control Plans

DB Contractor shall use the procedures in the TMP, TxDOT standard drawings, and TMUTCD requirements to develop detailed TCPs, that provide for all construction phasing, as well as all required switching procedures. TCPs are required for the Work during the Term of the Agreement and for the duration of the Warranty Term.

DB Contractor shall provide TxDOT with a TCP concept presentation for approval at or near 30% design status but prior to TCP plan sheet development. DB Contractor shall utilize PowerPoint and roll plots to convey this concept at a TCP concept presentation meeting. Approval of the concept does not indicate automatic approval of the subsequent plan sheets, nor does it authorize DB Contractor to implement the concept in the field.

DB Contractor shall produce a TCP for 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. DB Contractor is responsible for obtaining all necessary permits

required to implement the plans. TCPs shall be designed, signed, sealed, and dated by a Registered PE in the State of Texas.

18.3.1.1 Traffic Control Plan Requirements and Restrictions

Each TCP shall be submitted to TxDOT for review and approval a minimum of fourteen days prior to implementation. This requirement is increased to twenty-one days for full closures of any direction of a roadway. The TCP shall include details for allowable time and duration of Lane Closure, all detours, traffic control devices, striping, and signage applicable to each phase of construction. Information included in the TCPs shall be of sufficient detail to allow verification of design criteria and safety requirements, including typical sections showing lane width, concrete traffic barrier and barrel placement, alignment, striping layout, drop off conditions, and temporary drainage.

The TCPs 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. DB Contractor should have no expectation that speed limit reductions will be granted and should design the Project in such a way as to allow for existing posted speed limits to remain in place during construction. On Interstate and US Highways, the minimum design speed shall be ten miles per hour (mph) under the existing posted speed limit, except for major alignment transitions, where the design speed may match that of the existing alignment geometry. TCPs meeting this design speed standard do not require a change in the posted speed limit. Advisory speed plaques shall be used as appropriate.

Opposing traffic on a 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 TxDOT's *Compliant Work Zone Traffic Control Device List*. Traffic control that involves the physical separation of contiguous lanes of the same roadway component (i.e., general purpose or access road lanes) traveling in the same direction will not be allowed.

DB Contractor shall identify a designated route for trucks/Hazardous cargo.

DB Contractor shall maintain signing and striping continuity on all active roadways within or intersecting the Project at all times. DB Contractor shall maintain existing overhead signing within the Project throughout the construction duration. DB Contractor shall use temporary overhead signing structures when existing overhead signing structures cannot be maintained.

Throughout the duration of the Project, DB Contractor shall ensure all streets and intersections remain open to traffic to the greatest extent possible by constructing the Work in phases except as shown on pre-approved TCP. 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.

DB Contractor shall coordinate with the respective landowners and tenants and also secure written permission prior to disrupting access to parking facilities, unless previously provided by TxDOT.

DB Contractor shall prepare public information notices, in accordance with Section 3 of the Technical Provisions, in advance of the implementation of any Lane Closures or traffic switches. These notices shall be referred to as Traffic Advisories. DB Contractor shall also notify the traveling public by placing changeable message signs a minimum of seven Days in advance of

actual roadway closure or major traffic modifications. Where available and when possible, DB Contractor shall coordinate and utilize DMS on the regional ITS system.

DB Contractor shall utilize uniformed police officers with jurisdiction in the area to effect Lane Closures. DB Contractor is responsible for noting the requirement for uniformed police officers in TCPs when Lane Closure is applied. DB Contractor is responsible for the costs associated with the use of uniformed police officers.

18.3.1.2 Design Parameters for Traffic Control Plans

Design Vehicle. Turning movements on all local streets and driveways shall be designed to a minimum turning radius of a WB-62 design vehicle unless otherwise approved by TxDOT, and provide the same operational characteristics as their existing conditions or better.

Design Speed. On Interstate and US Highways, the minimum design speed shall be ten miles per hour (mph) under the existing posted speed limit, except for major alignment transitions utilizing existing alignment geometry, where the design speed may match that of the existing alignment geometry.

Number of Lanes. The minimum number of lanes to be maintained shall be as described in Section 18.3.1.3. Lane Closure requests by DB Contractor on adjacent, connecting, or crossing facilities may be considered for Approval by TxDOT in its sole discretion, and may be acceptable, so long as all traffic patterns and accesses are maintained.

Lane Widths. During construction, the minimum lane width shall be 11 feet. TxDOT may, in its sole discretion, allow 10 foot lanes in limited circumstances, for short distances, after reviewing DB Contractor's proposed TCP.

Shoulders. A minimum one foot offset from the edge of travel way to the edge of pavement or traffic barrier is required. Work on shoulder without positive protective barriers during peak hours, including setting of barrier during peak hours, constitutes a Lane Closure and requires TxDOT approval.

18.3.1.3 Minimum Number of Lanes and Allowable Lane and Roadway Closures

Lane Closures will only be permitted as part of a TCP when DB Contractor can demonstrate that the Lane Closure will provide clear benefit to the progress of the Work and may be approved or denied by TxDOT in its sole discretion. Lane Closures must be coordinated with adjacent projects. When simultaneous requests for traffic control are received from DB Contractor, adjacent projects, and Governmental Entities, TxDOT will give priority to the closure submitted first. DB Contractor shall gain approval from local Governmental Entities for closures on city streets and seek TxDOT's approval for such Lane Closures.

The safety of workers and the traveling public must be the first consideration when determining the appropriate time to implement a Lane Closure. At a minimum, DB Contractor shall inform the PIO of all Lane Closures that will affect mobility so they can inform the public, Emergency Services, schools, etc. as needed.

The following TxDOT standards, specifications, procedure manuals, and references apply for all Lane Closures:

- *Texas Manual of Uniform Traffic Control Devices* (TMUTCD);
- TxDOT Traffic Control Plan (TCP) standards;
- TxDOT Barricade and Construction (BC) standards; and

- TxDOT Standard Specifications Item 502 (Barricades Signs and Traffic Handling).

For planned Lane Closures, DB Contractor shall coordinate Lane Closures that may affect crossing TxDOT facilities with appropriate TxDOT Project staff, as needed, to ensure that no conflicts occur. DB Contractor shall provide advance notification of all Lane Closure notices to the appropriate TxDOT Project staff.

The minimum number of lanes and movements to be maintained during construction are listed below. Reference should be made to Exhibit 17 to the Agreement for the Lane Rental Fees and Liquidated Damages for Lane Closures. Time Period A Lane Closures are not eligible for the Lane Rental Bank provisions.

Minimum Number of Lanes and Movements to be Maintained during Construction

Permitted closures below are intended to be single closures with durations not exceeding the number of days indicated. Should DB Contractor temporarily re-open an impacted roadway, time charges remain in effect. That is, the total number of days provided below is to be taken as the number of days allowed from the first time the roadway is closed until it permanently opens.

Section 1 - Southbound I-35E:

1. 4 continuous adjacent thru lanes must remain open from Colorado Boulevard to the US 67 split where 3 lanes must continue south on I-35E and 2 lanes must continue south on US 67. Splitting the 4 continuous adjacent thru lanes around bridge columns or other objects will not be allowed.
2. The reversible I-35E HOV lane may be closed as soon as construction within the existing HOV lane commences.
3. The southbound frontage road from Colorado Boulevard to Beckley Avenue may be reduced to 1 lane except at signalized intersections. A minimum of 2 lanes must be maintained for 200 feet at the approach to a signalized intersection. Access to all properties must be maintained.
4. The southbound I-35E exit to 8th Street must remain open throughout construction.
5. The southbound I-35E exit to Fleming (currently signed as Jefferson) may be closed as soon as construction near the existing exit commences.
6. The entrance ramp from 8th Street to the southbound I-35E mainlanes must remain open until the entrance ramp from Colorado Boulevard to the southbound I-35E mainlanes is opened.
7. The southbound I-35E exits to Ewing Avenue and Marsalis Avenue must remain open until the Marsalis Avenue u-turn is operational. Once the Marsalis Avenue u-turn is operational, the Marsalis exit may be closed permanently. The exit to Ewing Avenue must remain open.
8. The entrance ramp from Marsalis Avenue to the southbound I-35E mainlanes must remain open throughout construction.
9. The southbound I-35E exit to 12th Street/Beckley Avenue must remain open throughout construction.
10. The southbound I-35E exit to Zang Boulevard may be closed as soon as construction near the existing exit commences.

11. The entrance ramp from Zang Boulevard to the southbound I-35E mainlanes may be closed once an entrance ramp from 12th Street is open to the southbound I-35E mainlanes.
12. The southbound I-35E exit to Illinois Avenue must remain open throughout construction. A minimum of 2 lanes must be maintained for 200 feet at the approach of the signalized intersection.
13. The entrance ramp from Illinois Avenue to the southbound I-35E mainlanes must remain open throughout construction.
14. The southbound I-35E exit to Saner Avenue may be closed as soon as construction near the existing exit commences.
15. The southbound US 67 exit to Kiest Boulevard or the southbound I-35E exit to Kiest Boulevard must remain open throughout construction. A minimum of 2 lanes must be maintained for 200 feet at the approach of the signalized intersection.
16. The southbound frontage road from Saner Avenue to Kiest Boulevard may be closed if the existing exit to Saner Avenue is open along with the exit to Kiest Boulevard.
17. The entrance ramp from Kiest Boulevard to the southbound I-35E mainlanes must remain open throughout construction.
18. The southbound I-35E exit to Loop 12 West/Ann Arbor Avenue must remain open throughout construction.

Section 1 - Northbound I-35E:

1. 4 continuous adjacent thru lanes from the junction with US 67 to Colorado Boulevard. 2 lanes will originate from northbound I-35E and 2 lanes will originate from northbound US 67. Splitting the 4 continuous adjacent thru lanes around bridge columns or other objects will not be allowed. 3 continuous adjacent thru lanes are required south of the junction with US 67, and 1 of those lanes may terminate by becoming the exit ramp to Kiest Boulevard.
2. The reversible I-35E HOV lane may be closed as soon as construction within the existing HOV lane commences.
3. The northbound frontage road from Marsalis Avenue to Colorado Boulevard may be reduced to 1 lane except at signalized intersections. A minimum of 2 lanes must be maintained for 200 feet at the approach to a signalized intersection. Access to all properties must be maintained.
4. The northbound I-35E exit to Beckley Avenue/Overton road must remain open throughout construction.
5. The northbound I-35E exit to Kiest Boulevard must remain open throughout construction.
6. The entrance ramp from Kiest Boulevard to the northbound I-35E mainlanes must remain open throughout construction.
7. The northbound I-35E exit ramp to Saner Avenue must remain open throughout construction.
8. The northbound entrance ramp from Saner Ave to I-35E may be closed as soon as construction near the existing entrance commences.

9. The northbound I-35E exit to Illinois Avenue must remain open throughout construction. A minimum of 2 lanes must be maintained for 200 feet at the approach of the signalized intersection.
10. The entrance ramp from Illinois Avenue to the northbound I-35E mainlanes must remain open throughout construction.
11. The northbound I-35E exit to Zang Boulevard/Beckley Avenue must remain open until the exit to 12th Street is opened.
12. The entrance ramp from Beckley Avenue/12th Street to the northbound I-35E mainlanes must remain open throughout construction.
13. The northbound I-35E exit to Marsalis Avenue must remain open until the exit to 12th Street is open and the northbound frontage road from 12th Street to Marsalis Avenue is open. A minimum of 2 lanes must be maintained for 200 feet at the approach of the signalized intersection.
14. The entrance ramp from Ewing Avenue to the northbound I-35E mainlanes must remain open throughout construction.
15. The northbound I-35E exit to 8th Street must remain open throughout construction.
16. The northbound I-35E exit to Colorado Boulevard must remain open throughout construction.
17. The entrance ramp from 8th Street to the northbound I-35E mainlanes must remain open throughout construction.

Section 2A - Southbound US 67:

1. 2 continuous adjacent thru lanes must remain open from the I-35E split to I-20. Splitting the 2 continuous adjacent thru lanes around bridge columns or other objects will not be allowed.
2. The concurrent US 67 HOV lanes may be closed as soon as construction within the existing HOV lanes commence.
3. The southbound frontage road from Kiest Boulevard to I-20 may be reduced to 1 lane except at signalized intersections. A minimum of 2 lanes must be maintained for 200 feet at the approach to all signalized intersections except Camp Wisdom where 2 lanes must be maintained for a minimum of 400 feet and a right turn lane must be maintained. Access to all properties must be maintained.
4. The entrance ramp from Kiest Boulevard to the southbound US 67 mainlanes may be closed for up to 90 days. During the closure of the entrance ramp from Kiest Boulevard to the southbound US 67 mainlanes, the entrance ramp from Polk Street to the southbound US 67 mainlanes must be open.
5. The southbound US 67 exit to Polk Street may be closed for up to 90 days. During the closure of the southbound US 67 exit to Polk Street, the southbound US 67 exit to Kiest Boulevard must be open.
6. The entrance ramp from Polk Street to the southbound US 67 mainlanes may be closed for up to 90 days. During the closure of the entrance ramp from Polk Street to the southbound US 67 mainlanes, the entrance ramp from Loop 12 to the southbound US 67 mainlanes must be open.
7. The southbound US 67 exit to Loop 12 must remain open throughout construction.

8. The entrance ramp from Loop 12 to the southbound US 67 mainlanes must remain open throughout construction.
9. The southbound US 67 exit to Hampton Road must remain open throughout construction.
10. The southbound US 67 exit to Red Bird Lane may be closed for up to 90 days. During the closure of the southbound US 67 exit to Red Bird Lane, the southbound US 67 exit to Hampton Road must be open.
11. The entrance ramp from Red Bird Lane to the southbound US 67 mainlanes must remain open throughout construction.
12. The southbound US 67 exit to Camp Wisdom Road must remain open throughout construction.
13. The southbound US 67 exit to Wheatland Road must remain open throughout construction.
14. The southbound US 67 exits to I-20 must remain open throughout construction.

Section 2A - Northbound US 67:

1. 2 continuous adjacent thru lanes must remain open from I-20 to the I-35E split. Splitting the 2 continuous adjacent thru lanes around bridge columns or other objects will not be allowed.
2. The concurrent US 67 HOV lanes may be closed as soon as construction within the existing HOV lanes commence.
3. The northbound frontage road from I-20 to Kiest Boulevard may be reduced to 1 lane except at signalized intersections. A minimum of 2 lanes must be maintained for 200 feet at the approach to all signalized intersections except Camp Wisdom where 2 lanes must be maintained for a minimum of 400 feet. Access to all properties must be maintained.
4. The I-20 ramps to the northbound US 67 mainlanes must remain open throughout construction.
5. The entrance ramp from Camp Wisdom Road to the northbound US 67 mainlanes must remain open throughout construction.
6. The northbound US 67 exit to Red Bird Lane/Hampton Road must remain open throughout construction.
7. The entrance ramp from Red Bird Lane to the northbound US 67 mainlanes may be closed for up to 90 days. During the closure of the entrance ramp from Red Bird Lane to the northbound US 67 mainlanes, the entrance ramp from Hampton Road to the northbound US 67 mainlanes must be open.
8. The northbound US 67 exit to Loop 12 East/Pentagon Parkway must remain open throughout construction.
9. The northbound US 67 exit to Loop 12 West must remain open throughout construction.
10. The entrance ramp from Loop 12 to the northbound US 67 mainlanes must remain open throughout construction.
11. The northbound US 67 exit to Polk Street may be closed for up to 90 days. During the closure of the northbound US 67 exit to Polk Street, the northbound US 67 exit to Loop 12 East/Pentagon Parkway must be open.

12. The entrance ramp from Polk Street to the northbound US 67 mainlanes may be closed for up to 90 days. During the closure of the entrance ramp from Polk Street to the northbound US 67 mainlanes, the entrance ramp from Kiest Boulevard to the northbound I-35E mainlanes must be open.

Frontage Roads and Cross Streets. Frontage road and cross street Lane Closures are only allowed when approved by TxDOT, in its sole discretion. The minimum number of lanes and movements to be maintained for city streets during construction is listed below.

Section 1 - City Streets:

1. Colorado Boulevard- a minimum of 1 thru lane in each direction must remain open throughout construction.
2. 8th Street- a minimum of 2 thru lanes in each direction must remain open during the school year. A minimum of 1 thru lane in each direction must remain open during the school's summer break.
3. 10th Street may be closed as soon as construction near the existing crossing commences.
4. Ewing Avenue- a minimum of 1 thru lane plus a left turn lane in each direction must remain open.
5. Marsalis Avenue- a minimum of 2 thru lanes in each direction must remain open.
6. 12th Street on-ramp over the I-35E mainlanes may be closed if the Beckley Avenue bridge over the I-35E mainlanes is open and has direct access to the northbound I-35E mainlanes.
7. Beckley Avenue may be closed if the 12th Street bridge over the I-35E mainlanes is open and the existing northbound I-35E exit to Zang Boulevard is open. When Beckley Avenue is not closed, a minimum of 1 thru lane in each direction must remain open.
8. Clarendon Drive- a minimum of 1 thru lane in each direction must remain open throughout construction.
9. Brookhaven Drive- a minimum of 1 thru lane in each direction must remain open throughout construction.
10. Louisiana Avenue may be closed for up to 365 days.
11. Illinois Avenue- a minimum of 2 thru lanes in each direction must remain open throughout construction.
12. Saner Avenue- a minimum of 1 thru lane in each direction must remain open throughout construction.
13. Kiest Boulevard- a minimum of 2 thru lanes in each direction must remain open throughout construction. A left turn lane from westbound Kiest Boulevard to the southbound frontage road must remain open throughout construction.
14. Overton Road may be closed for up to 365 days.

Section 2A - City Streets:

1. Polk Street- a minimum of 2 thru lanes plus a left turn lane in each direction must remain open throughout construction.
2. Pentagon Parkway- a minimum of 1 thru lane in each direction must remain open throughout construction.

3. Loop 12- a minimum of 2 thru lanes plus a left turn lane in each direction must remain open throughout construction.
4. Swansee Street- a minimum of 1 thru lane in each direction must remain open throughout construction.
5. Hampton Road- a minimum of 2 thru lanes plus a left turn lane in each direction must remain open throughout construction.
6. Red Bird Lane- a minimum of 2 thru lanes plus a left turn lane in each direction must remain open throughout construction.
7. Camp Wisdom Road- a minimum of 3 thru lanes plus a left turn lane in each direction must remain open throughout construction. A single lane may be closed in each direction during off peak hours if approved by TxDOT. The northbound to southbound u-turn at Camp Wisdom may be closed for up to 180 days.

18.3.2 Lane Closures and Liquidated Damages for Lane Closures

Except for Incidents or Emergencies, Liquidated Damages for Lane Closures and Lane Rental Fees, as appropriate, will be levied against DB Contractor, as defined in the Contract Documents.

DB Contractor shall not reduce the number of roadway controlled access lanes below the number of roadway controlled access lanes required above in Section 18.3.1.3 during Time Period A. Reference should be made to Exhibit 17 to the Agreement for the Lane Rental Fees and Liquidated Damages for Lane Closures. Time Period A Lane Closures are not eligible for the Lane Rental Bank provisions.

Table 18-5 shows the Time Periods for each of the hours of the day for mainlanes. These periods are referenced in this Section 18 and in Exhibit 17 to the Agreement and are used to determine Lane Rental Fees and Liquidated Damages for Lane Closures.

Table 18-5 Period Per Hour of the Day

Hour/Day	Sunday	Monday-Thursday	Friday	Saturday
0:00	C	C	C	C
1:00	C	C	C	C
2:00	C	C	C	C
3:00	C	C	C	C
4:00	C	C	C	C
5:00	C	A	A	C
6:00	C	A	A	C
7:00	C	A	A	B
8:00	B	A	A	B
9:00	B	A*	A	B
10:00	B	A*	A	B
11:00	B	A*	A	B
12:00	B	A*	A	B
13:00	B	A*	A	B
14:00	B	A*	A	B

15:00	B	A	A	B
16:00	B	A	A	B
17:00	B	A	A	B
18:00	B	A	A	B
19:00	B	A	A	B
20:00	B	A	A	B
21:00	C	C	B	C
22:00	C	C	B	C
23:00	C	C	C	C

Single-lane mainlane closures of I-35E north of the I-35E/US 67 interchange during "A" hours will be treated as Time Period B and will be assessed Lane Rental Fees according to Time Period B, with Lane Rental Bank provisions being applicable. If the closures begin prior to 9:00am and/or remain in place past 2:59pm, or if more than one lane is closed, Liquidated Damages for Lane Closures according to Time Period A will apply. No other mainlane closures are allowed during these hours.

Liquidated Damages for Lane Closures and Lane Rental Fees, as appropriate, will be assessed for all Lane Closures, in accordance with Section 17 of the Agreement, based upon the time periods shown in the above tables and corresponding amounts given in Exhibit 17 to the Agreement.

Driveway Closures. DB Contractor is responsible for coordinating with the property owner on driveway closures. DB Contractor shall maintain a minimum of one driveway per business at all times.

Lane Rental Fees and Liquidated Damages for Lane Closures will be assessed in accordance with the Agreement when access to any property, public or private, is restricted in contradiction to a TCP.

Detour Usage. DB Contractor shall use State routes for detour routes, wherever applicable. If State routes are unavailable, DB Contractor shall use local streets provided that DB Contractor has obtained the necessary permits from the Governmental Entity having jurisdiction. DB Contractor shall take necessary action to restore or rebuild all detour routes to as good as or better than pre-construction condition in accordance with the requirements of the Governmental Entity having jurisdiction.

DB Contractor shall provide detour signs to guide the traffic around the construction, detouring around specific construction sites, and traveling through the construction areas. This shall include the installation and maintenance of temporary detour signs and changeable message signs to divert traffic around the Project.

18.3.3 Restricted Hours

Holiday Restrictions

No Lane Closure that restricts or interferes with traffic shall be allowed during the following holiday schedule. TxDOT has the right to lengthen, shorten, or otherwise modify these restrictions as actual, or expected, traffic conditions may warrant.

a) New Year's Eve and New Year's Day (12:00pm on December 31 through 10:00pm on January 1)

b) Easter Holiday Weekend (12:00pm on Friday through 10:00pm on Sunday)

c) Memorial Day Weekend (12:00pm on Friday through 10:00pm on Monday)

d) Independence Day (12:00pm on July 3 through 12:00pm on July 5)

e) Labor Day Weekend (12:00pm on Friday through 10:00pm on Monday)

f) Thanksgiving Holiday (12:00pm on Wednesday through 10:00pm on Sunday)

g) Christmas Holiday (12:00pm on December 23 through 10:00pm on December 26)

TxDOT may, by notice to DB Contractor, lengthen, shorten, add to, or otherwise modify the restricted period and duration for any event.

Event Restrictions

No Lane Closure that restricts or interferes with traffic shall be allowed for the regional events set forth below. TxDOT has the right to lengthen, shorten, or otherwise modify these restrictions as actual traffic conditions may warrant. TxDOT also has the right to modify the list of major events as they are added, renamed, rescheduled, or as warranted.

- State Fair of Texas (no Lane Closures after 6:00 am on Fridays through 9:00 pm on Sundays; no full closures for any direction of any facility from opening day through the closing day except for at night during hours that the State Fair of Texas is closed);
- The University of Texas vs. University of Oklahoma Football Game (no lane closures beginning four hours prior to the event and ending three hours following event completion);
- Dallas Zoo Special Events, including but not limited to Dollar Days and Safari Nights (no Lane Closures beginning one hour prior to the Zoo opening time and ending one hour after the Zoo has closed); and
- Major Downtown Dallas Events (restrictions will be considered on a case-by-case basis).

Major Downtown Dallas Events are events currently unknown to TxDOT and will be handled on an individual basis as they arise. This category could include, but is not limited to, parades for sports championships, major political events, major Arts District events, and large athletic events (such as marathons).

Should any Lane Closures violate the event-related restrictions above, Liquidated Damages for Lane Closures and Lane Rental Fees, as appropriate, will be assessed based on the next higher Time Period than what would otherwise apply based upon those shown in Table 18-5 (that is, a Time Period B violation will be assessed as a Time Period A violation, etc.).

18.4 Construction Requirements

Construction of the traffic control elements shall be in accordance with 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 DB Contractor's traffic control operations do not meet the intent of the TMP or the specific TCP, DB Contractor shall immediately revise or discontinue such operations to correct the deficient conditions.

DB Contractor shall provide TxDOT the names of the MOT Manager and support personnel, including a backup coordinator in the event the primary coordinator is unavailable, and the phone number(s) where they can be reached 24 hours per day, seven days per week.

18.4.2 Access

Existing bicycle and pedestrian access and mobility shall be maintained parallel with the frontage roads and across all cross streets. Access to existing transit stop locations shall be maintained during construction or reasonable alternative locations shall be coordinated with and approved by transit operators.

18.4.3 Detours

DB Contractor shall maintain all detours in a safe and traversable condition. A pavement transition, suitable for the posted speed and accounting for the vertical and horizontal geometry of the section shall be provided at all detour interfaces.

18.4.4 Local Approvals

DB Contractor shall communicate all ramp closures and staging analyses with each Governmental Entity having jurisdiction for roads that may be affected by the Project. When ramp movements are diverted or detoured along existing roads, DB Contractor shall be responsible for any and all user costs and schedule risk that may be assessed for the use of these existing roads. This may include traffic operation analysis, temporary traffic control devices, and road user costs. DB Contractor is responsible for obtaining the necessary Approvals from agencies having jurisdiction over the routes used.

18.4.5 Pavement Markings and Signing

DB Contractor shall remove existing pavement markings and/or signs that conflict with temporary or permanent pavement markings. These pavement markings and signs shall be removed by any method that does not materially damage the existing elements or facilities. Pavement marking removal by over-painting is prohibited. DB Contractor shall not use temporary tape at any time during the project.

DB Contractor is responsible for temporary signing outside of the Project limits required for the Project.

DB Contractor shall utilize existing, temporary, or proposed sign structures to mount temporary or proposed guide signs above freeway main lanes where there are at least three main lanes in

a given direction. DB Contractor shall maintain existing overhead signing within the Project throughout the construction duration.

DB Contractor shall maintain safe travelling conditions of all roadways used outside the project limits including routes to fabrication facilities, plants and haul roads.

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 a structure acceptable to TxDOT or the Governmental Entity having jurisdiction over the affected area and restore it to a riding surface equal to or better than the existing surface.

18.4.7 Hauling Equipment

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. Excess dirt or debris shall be swept or removed from the job site with regular cleaning and sweeping at least twice a day.

In the event that DB Contractor moves any equipment not licensed for operation on public highways on or across any pavement, DB Contractor shall protect the pavement from all damage caused by such movement. Damage caused by DB Contractor shall be repaired at the expense of DB Contractor.

All haul routes utilizing any street of an adjacent Governmental Entity shall be used only after coordinating with the appropriate Governmental Entity.

18.4.8 Final Clean-Up

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 clean, smooth, and neat condition after each 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.

18.5 Submittals

All Submittals described in Section 18 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 18-7. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 18-7: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Section 18			
Traffic Management Plan	Prior to NTP2	Approval	18.2.1
Traffic Control Plan concept presentation (meeting)	Prior to TCP plan sheet development	Approval	18.3.1
Traffic Control Plans	At least 14 Days prior to implementation	Approval	18.3.1
Requests for a Lane Closure	At least 48 hours in advance of the proposed closure	Approval	18.3.1
Notice of a Lane Closure to TxDOT PIO	By 3:15 p.m. the day prior to all road closures	For Information	18.3.1.3
Lane Closure Notice (LCN) for: (i) full roadway closures, and (ii) Lane Closures and/or traffic switches planned to be in effect longer than 24 hours	At least 7 Days prior to the publication of any notices or placement of any traffic control devices	Approval	18.3.1.3
Lane Closure Notice (LCN) for: (i) lane closures that are planned to be in effect less than 24 hours	At least 48 hours prior to the publication of any notices or placement of any traffic control devices	Approval	18.3.1.3

SECTION 19.0 MAINTENANCE

19.1 General Requirements

19.1.1 General Maintenance Obligations

Throughout the period between NTP2 and Final Acceptance, DB Contractor shall be responsible for and shall carry out Maintenance Work within the Maintenance Limits. DB Contractor shall establish and maintain an organization that effectively manages all Maintenance Work in a manner set forth in the approved Maintenance Management Plan during construction (MMP) and the requirements of the Contract Documents. DB Contractor shall:

(a) coordinate activities of other entities with interests or activities within the Maintenance Limits;

(b) conduct daily patrols of all lanes of the Project within the Maintenance Limits to identify conditions that are unsafe or have the potential to become unsafe if not corrected, conditions that could threaten the infrastructure, and to attend to existing or changing conditions;

(c) minimize delay and inconvenience to Users and, to the extent DB Contractor is able to control, users of related transportation facilities;

(d) identify and correct all Defects and damages from Incidents;

(e) monitor and observe weather and weather forecasts to proactively deploy resources to minimize delays and safety hazards due to high winds, severe thunderstorms, tornadoes, heavy rainfall and flooding, hail, snow, ice, or other severe weather events;

(f) remove debris, including litter, graffiti, animals, and abandoned vehicles or equipment from the Project ROW;

(g) minimize the risk of damage, disturbance, or destruction of third-party property during the performance of Maintenance Work;

(h) 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;

(i) perform Maintenance Work including inspections, Incident response, traffic control, and routine maintenance in accordance with the Maintenance Management Plan (MMP) and the Contract Documents; and

(j) promptly investigate reports or complaints received from all sources.

19.1.2 Scope of Maintenance Work and Interfaces with TxDOT and Third Parties

The Maintenance Work shall apply to all Elements identified in Attachment 19-1 (Baseline Performance and Measurement Table During Construction) as follows:

(a) until traffic is on newly reconstructed pavement, the Performance Requirements of Element Category 0: “Roadway - Existing Pavement within the Maintenance Limits” apply;

(b) immediately upon completion and opening to traffic of new roadway, the Performance Requirements of Element Category 1: “Roadway - New Alignments on Reconstructed Pavement” in Attachment 19-1 also take effect; and

(c) Performance Requirements of Element Categories 2 through 19 apply to all areas within the Maintenance Limits including existing pavement areas and newly reconstructed pavement areas from NTP2 through Final Acceptance.

Nothing in this Section 19 shall excuse DB Contractor from satisfying all requirements for new construction applicable at Substantial Completion and Final Acceptance, including the smoothness requirements in Section 8.5.1 of the Technical Provisions.

TxDOT will retain maintenance responsibilities for Elements in place or operating prior to the Proposal Due Date within the Maintenance Limits (the "existing Elements") until NTP 2.

TxDOT's maintenance responsibilities from the Proposal Due Date until NTP 2 will be limited to routine maintenance of each existing Element and will not include preventive maintenance or major maintenance as such items are defined in TxDOT's Maintenance Management Manual.

DB Contractor shall coordinate with TxDOT to achieve a smooth transition of maintenance activities from TxDOT in the period between NTP1 and NTP2. Starting at NTP2, DB Contractor shall perform all necessary Maintenance Work to comply with the Performance Requirements.

DB Contractor shall coordinate Maintenance Work with TxDOT and other Governmental Entities having adjacent maintenance responsibilities to minimize disruption to Users.

19.1.3 Maintenance Limits

The initial Maintenance Limits are provided in the document titled "Maintenance Limits during Construction" included in the Reference Information Documents. DB Contractor shall prepare and submit updated Maintenance Limits consistent with the DB Contractor's Final Design as part of the MMP during construction for TxDOT's review and approval. DB Contractor shall periodically validate that the Maintenance Limits are correctly and clearly identified in the field and shall liaise with TxDOT and Governmental Entities at least annually to review the Maintenance Limits, identify any jurisdictional gaps or inefficiencies and recommend solutions.

19.2 Maintenance Management

19.2.1 Maintenance Management Plan during Construction

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 Agreement. The MMP shall include performance requirements, measurement procedures, threshold values at which maintenance is required, inspection procedures and frequencies, and subsequent maintenance to address noted deficiencies, for each physical Element of the Project in accordance with Attachment 19-1, including impacts to Related Transportation Facilities. The MMP shall contain a plan for a pre-condition survey of existing elements and require existing elements to be maintained to those conditions throughout the Term of the Agreement or until reconstructed, and shall also include a plan for Incident response. The pre-condition survey shall include a video drive-thru of every roadway alignment within the Maintenance Limits. TxDOT should be given the opportunity to participate in the pre-condition survey which shall be completed as a condition to NTP2. All records for the pre-condition survey should be made available to TxDOT upon request. The MMP shall identify response times to mitigate hazards, permanently remedy, and permanently repair Defects. Response times shall be in accordance with the Performance and Measurement Table Baseline, or better. Design-Build Contractor shall differentiate response times for Defects that require prompt attention due to immediate or imminent damage or deterioration, excluding those items which have no impact on any parties

other than Design-Build Contractor, and response times for other Defects. Design-Build Contractor shall update this plan as required, or at least annually.

The MMP shall include procedures for managing records of inspection and maintenance activities, including appropriate measures for providing protected duplication of the records. Inspection and maintenance records shall be kept for the Term of the Agreement and shall be provided to TxDOT upon request.

In accordance with [Section 2.1.1.4] of the Agreement, and consistent with Section 2 of the Technical Provisions, DB Contractor shall submit the MMP for TxDOT's sole discretion approval. DB Contractor shall update the MMP as required.

19.2.2 Maintenance during Work

Design-Build Contractor shall be responsible for maintenance and repairs to any portion of the Work until Final Acceptance is issued in accordance with the Agreement. The Work shall include routine maintenance (such as litter pickup, mowing, and repair of third-party-damaged traffic control and safety devices), responding to Emergencies and operational problems, and inspections and repairs required on an as-needed basis or as directed by TxDOT until issuance of Final Acceptance. Upon Final Acceptance, TxDOT shall assume the maintenance obligations (except for landscape maintenance during the establishment period in accordance with Good Industry Practice); provided, however, that if TxDOT issues Maintenance NTP1 under the CMA, DB Contractor shall be responsible for the Maintenance Services pursuant to the terms of the CMA Documents. If Design-Build Contractor fails to perform such maintenance within ten (10) Business Days of discovery of the need for the work, TxDOT reserves the right to perform such work as it deems necessary with its own forces, and/or to enter into special contracts for the maintenance of specific items.

19.2.3 Maintenance Manager

DB Contractor shall assign a Maintenance Manager who shall be responsible for:

(a) implementing the maintenance obligations in this Section 19 and the MMP;

(b) causing the Maintenance Work to be performed in accordance with the Contract Documents;

(c) causing all maintenance personnel and resources performing Maintenance Work to be available and properly trained;

(d) the health and safety of personnel delivering the Maintenance Services and the general public affected by the Project; and

(e) coordinating with TxDOT and other entities during Incidents and Emergencies.

The Maintenance Manager shall meet or exceed the qualifications and experience established in the Proposal Commitments (Exhibit 2 to the Agreement).

The Maintenance Manager shall be available whenever Maintenance Work is performed.

19.3 Performance Requirements

19.3.1 Performance and Measurement Table

The Performance and Measurement Table shows for each Element:

(a) a performance objective;

(b) the Defect Remedy Periods for each category of Defect;

(c) inspection and measurement methods;

(d) measurement records; and

(e) Targets.

For each measurement record DB Contractor is required to achieve or exceed the stated Target, otherwise a Defect exists that shall be remedied or repaired as further described in this Section 19.

19.3.2 Defect Identification, Recording and Categorization

19.3.2.1 Definitions

In this Section 19 and as shown on the Performance and Measurement Table:

(a) hazard mitigation is an action taken by DB Contractor to mitigate a hazard to Users or imminent risk of damage or deterioration to property or the environment such that the Category 1 Defect no longer exists;

(b) permanent remedy is an action taken by DB Contractor to restore the condition of an Element following hazard mitigation of a Category 1 Defect; and

(c) permanent repair is an action taken by DB Contractor to restore the condition of an Element for which a Category 2 Defect has been recorded.

19.3.2.2 Defects Identified by DB Contractor or Third Party

Whenever the DB Contractor identifies, becomes aware of or is notified by a third party of a Defect, DB Contractor shall establish a system to record details of the associated Element, the nature and categorization of the Defect and the proposed timing and details of hazard mitigation, permanent remedy and permanent repair of the Defect. DB Contractor shall categorize each Defect, based upon its determination as to whether it represents:

(a) an immediate or imminent health or safety hazard to Users or road workers;

(b) a risk of immediate or imminent structural failure or deterioration;

(c) an immediate or imminent risk of damage to a third party's property; or

(d) an immediate or imminent risk of damage to the environment.

Should a Defect meet any of the above criteria, DB Contractor shall record it as a Category 1 Defect. Any other Defect not meeting the foregoing criteria shall be assigned as a Category 2 Defect. DB Contractor shall provide training to all relevant personnel on the categorization of Defects. DB Contractor shall maintain a record of the circumstances of the Defect and how it was categorized. DB Contractor shall facilitate the review by TxDOT of Defects recorded by the DB Contractor and shall enable TxDOT to flag any Defect where TxDOT disagrees with any attribute or categorization assigned by the DB Contractor.

19.4 Maintenance Obligations

19.4.1 Incident and Emergency Management

As part of the MMP for Maintenance Work, DB Contractor shall prepare and implement an Incident and Emergency Management Plan (IEMP).

Where an Incident or Emergency has a negative impact on the operation of the Project, DB Contractor shall clear obstructions and repair damage to the Project, such that the Project is returned to normal operating standards and safe conditions as quickly as possible in

accordance with the requirements of Section 2.4.6 of the Technical Provisions (Incident and Emergency Management).

Where liquid or soluble material spills are involved, DB Contractor shall take all necessary measures to minimize pollution of waterways or groundwater. Where structural damage to structures is suspected, DB Contractor shall cause that a suitably qualified bridge engineer or specialist inspector is available to evaluate the structure and to advise on temporary repairs and shoring needed to provide safe clearance of the Incident or Emergency. Where such an Incident or Emergency involves a personal injury, DB Contractor shall not remove any vehicle or other item that may assist a potential investigation by Emergency Services until authorized to do so by emergency personnel or first responders.

19.4.2 Weather Related Events

DB Contractor shall report to TxDOT information on weather-related events which may cause unsafe driving conditions such as ice, sleet, snow, floods or high winds and shall use available resources to maintain the roadway in as safe a condition as possible during winter events.

DB Contractor shall maintain the travel way free of snow and ice in compliance with the Performance Requirements in Attachment 19-1. The presence or forecast of snow or ice shall be assessed as a Category 1 Defect (Hazard Mitigation) and shall be addressed immediately by DB Contractor upon detection or upon being informed of the condition(s).

19.4.3 Severe Weather Evacuation

DB Contractor shall prepare and train its staff for evacuation and shall assist TxDOT in the event that an evacuation is implemented, in accordance with the Severe Weather Evacuation Plan (SWEP).

19.4.4 Maintenance Document Management

For all Maintenance Records, DB Contractor shall follow the document storage and retrieval requirements set forth in Section 2.1.4 of the Technical Provisions. DB Contractor's document management system shall be compatible with SharePoint ®.

DB Contractor shall cause all Maintenance Records and Project-related documents to be stored along with accurate information on the location consistent with reference markers in accordance with the TRM, so that all data and records can be retrieved by reference marker and Performance Section.

Unless otherwise directed by TxDOT, record retention shall comply with the requirements of the Texas State Records Retention Schedule.

19.4.5 Safety

DB Contractor shall establish and implement safety and health procedures for Maintenance Work in compliance with Section 2.4 of the Technical Provisions and in accordance with the Maintenance Safety Plan.

19.4.6 Communication

DB Contractor shall establish and implement communication procedures for Maintenance Work in compliance with Section 2.6 and Section 3 of the Technical Provisions.

19.4.7 Hazardous Materials Management

DB Contractor shall establish and implement Hazardous Materials Management procedures for Maintenance Work in compliance with Section 4.3.5 of the Technical Provisions and in accordance with the Hazardous Materials Management Plan (HMMP).

19.4.8 Environmental Compliance and Mitigation

DB Contractor shall establish and implement environmental compliance and mitigation procedures for Maintenance Work in compliance with Section 4.3.2 of the Technical Provisions.

19.4.9 Traffic Management

DB Contractor shall establish and implement traffic management procedures for Maintenance Work in compliance with Section 18 of the Technical Provisions.

19.5 Submittals

All submittals described in Section 19 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 19-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 19-1: Submittals to the Department

Submittal	Submittal Schedule	Department Action	Reference Section
Section 19			
Maintenance Management Plan (MMP)	Prior to NTP2	Approval	TP 19.2.1
MMP Updates	As required, or at least annually	Approval	TP 19.2.1
Maintenance Record of proposed remedy	Promptly where action is proposed	Approval	TP 19.3.2

SECTION 20.0 BICYCLE AND PEDESTRIAN FACILITIES

20.1 General Requirements

This Section 20 includes requirements with which DB Contractor shall design and construct all bicycle and pedestrian facilities for the Project as shown on the TxDOT Schematic Design. DB Contractor shall design and construct all bicycle and pedestrian facilities consistent with TxDOT policies and guidelines. 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.

20.2 Administrative Requirements

DB Contractor shall maintain equivalent connectivity on all bicycle and pedestrian facilities during construction and throughout the Term.

20.3 Design Requirements

20.3.1 Bicycle Facilities

Facilities shall be consistent with the region's bicycle and pedestrian plan and accommodate existing bicycle paths and crossings, and on-street bicycle facilities. DB Contractor shall coordinate with Governmental Entities and TxDOT to ensure consistency with existing and proposed bicycle facilities.

Facilities shall meet the requirements of the *AASHTO Guide for the Development of Bicycle Facilities* and shall incorporate the following Elements relating to bicycle facilities into the Design:

(a) Alignment, profile, cross-section, and materials;

(b) Points of connection to existing and proposed bicycle facilities;

(c) Crosswalk and pedestrian ramp locations and details;

(d) Signing, signalization, and pavement markings;

(e) Separation between bicycle facilities and the nearest travel lane;

(f) Methods of illumination, where applicable, indicating light fixture locations and types;

(g) Methods of separation, including barrier and/or fence type and height; and

(h) Requirements of the Aesthetics and Landscaping Plans.

20.3.2 Pedestrian Facilities

DB Contractor shall design, construct, and maintain pedestrian facilities where required by state and federal regulations. Sidewalks and pedestrian facilities shall comply with ADA, the *Texas Accessibility Standards* and Texas Department of Licensing and Regulation (TDLR). DB Contractor shall install pedestrian signals and curb ramps at all existing and proposed signalized intersections within Project Limits and as impacted by Project construction. DB

Contractor shall coordinate with Governmental Entities and TxDOT to ensure consistency with existing and proposed pedestrian facilities.

DB Contractor's facilities shall meet the requirements of the *AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities*, and shall include the following Elements relating to pedestrian facilities:

(a) Alignment, profile, cross-section, and materials;

(b) Points of connection to existing and proposed pedestrian facilities;

(c) Crosswalk and pedestrian ramp locations and details;

(d) Signing, signalization, and pavement markings;

(e) Separation between pedestrian facilities and the nearest travel lane;

(f) Methods of illumination, where applicable, indicating light fixture locations and types;

(g) Methods of separation, including barrier and/or fence type and height; and

(h) Requirements of the Aesthetics and Landscaping Plans.

DB Contractor is responsible for obtaining TDLR reviews and approvals of pedestrian facility design and construction.

20.4 Submittals

All Submittals described in Section 20 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 20-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 20-1: Submittals to the Department

Submittals	Submittal Schedule	Department Action	Reference Section
Section 20			
None			

SECTION 21.0 NOT USED

SECTION 22.0 LOCAL ENHANCEMENTS

22.1 General

The City of Dallas has planned for local enhancements in the form of a recreational deck plaza over the I-35E mainlanes (general purpose, non-tolled express, and ramps) extending from Ewing Avenue to Marsalis Avenue along the I-35E alignment (the "Local Enhancements").

TxDOT has included the Local Enhancements Conceptual Plan in the Reference Information Documents (RIDs) which illustrates the intent of the ultimate Local Enhancements deck plaza (the "Ultimate Deck Plaza") including surface features, services, finish, and amenities.

DB Contractor shall design and construct the Local Enhancements deck plaza structure as established in the LE Work Package. The surface facilities and amenities shown on the Local Enhancements Conceptual Plan will be constructed by others after Substantial Completion.

The LE Base Scope includes the Professional Services design to determine clearances necessary to install all signage, utilities, fire protection equipment, ventilation equipment and other appurtenances beneath the Ultimate Deck Plaza from Marsalis Avenue to Ewing Avenue.

The LE Scope Items that may be include in the LE Work Package are described below and further defined in this Section 22 of the Technical Provisions.

- Phase I and Phase II limits are depicted on the Local Enhancements Conceptual Plan located in the RID.
- Deck foundations include the drilled shafts needed to support the deck plaza structure at the abutments and interior bents. The limits for the foundations shall be to the proposed finished grade of the adjacent roadway alignment.
- Storm water collection facility includes the fire suppression retention tank needed for the Ultimate Deck Plaza structure.
- Deck substructure abutments/exterior walls include the abutment caps and abutment walls for the deck plaza structure.
- Deck substructure interior bents/interior walls include the interior bents including columns and cap and the interior walls to control the airflow on each side of the express lanes.
- Deck superstructure includes the beams with an open-trench system, cast-in-place deck at locations on the Local Enhancements Conceptual Plan depicting structures, cast-in-place deck at all locations other than the open-trenches, and precast concrete panels to cover the open-trench system.
- Accommodation for ventilation, fireproofing, and underpass/emergency lighting includes all necessary sleeves, conduits, boxes, and other appurtenances needed to be located within the structure to facilitate future installation of ventilation, fireproofing, and underpass/emergency lighting elements by others when the Ultimate Deck Plaza is completed.

22.2 Deck Plaza Design

22.2.1 General

DB Contractor shall design the Local Enhancements deck plaza structure for the appropriate soil, embankment, pedestrian and vehicular loadings, material requirements, and construction procedures as required for such structures in accordance with the Technical Provisions and the Local Enhancements Conceptual Plan. DB Contractor shall design and construct the structural elements of the deck plaza in conformance with the requirements of the Contract Documents, AASHTO's Load and Resistance Factor Design (LRFD) Bridge Design Specifications, except where directed otherwise by TxDOT's Bridge Design Manual – LRFD, and TxDOT's Geotechnical Manual, in order to provide the general public a safe, reliable, and aesthetically-pleasing facility.

DB Contractor shall design and construct all other elements of the deck plaza structure in accordance with the Technical Provisions, current TxDOT policies and procedures, design manuals, TxDOT Standard Specifications, Special Specifications, Special Provisions, and applicable City of Dallas Codes and Ordinances.

DB Contractor shall design the Ultimate Deck Plaza structure to include proper setbacks and clearances for all fire and life safety elements and systems irrespective of the portion of the deck plaza required to be constructed as part of the LE Work Package.

22.2.2 Proposed Construction

DB Contractor shall construct the portion of the Ultimate Deck Plaza structure defined in the LE Work Package. The deck plaza structure shall support the facilities and amenities as shown on the Local Enhancements Conceptual Plan.

DB Contractor shall design all elements of the deck plaza structure as required to accommodate all systems, including those to be constructed by others as part of the Ultimate Deck Plaza. DB Contractor's design shall account for all loading conditions, equipment sizes and locations, space accommodation, future constructability, and future maintenance of the facility and associated systems.

DB Contractor's design and the required agency system approvals required for deck plaza construction shall be completed and submitted for approval in accordance with Section 22.21. DB Contractor's plans shall clearly show clearances for systems including, but not limited to, ventilation indicating clearances for jet fan supports and functional working clearances from all obstructions including structural elements, variable message signs, lighting and other elements.

22.2.3 Future Construction of Ultimate Deck Plaza

DB Contractor shall design and construct all foundations, substructures, abutment/walls, sleeves, blockouts, conduits, and other appurtenances required for the completion of the Ultimate Deck Plaza structure, extension of utilities, and associated facilities. DB Contractor shall perform all Work in a manner compatible with the Ultimate Deck Plaza and shall include details to demonstrate that the design is compatible with the Ultimate Deck Plaza. DB Contractor shall demonstrate that no part of the Project will need to be demolished or replaced to accommodate the Ultimate Deck Plaza with the exception of the following elements:

- That portion of the Marsalis Avenue bridge deck supporting u-turn traffic, including the cantilever portion of the south-bound frontage road associated with the u-turn;
- The aesthetic column treatment which would conflict with construction of a continuous bent wall; and

- Any concrete cap, protection device, or other protective element constructed with the LE Work Package and designed for removal.

Notwithstanding any requirements included in other provisions of the Contract Documents, in the event that the Ultimate Deck Plaza structure is not required to be completed as part of the LE Work Package, the portion of the Marsalis Avenue bridge shown to become part of the Ultimate Deck Plaza in the Local Enhancements Conceptual Plan shall be designed and constructed to carry traffic in the interim condition with accommodations for future removal of the bridge deck. Girders shall be designed and constructed so as to support the Ultimate Deck Plaza, including accommodations for tree pits as shown on the Local Enhancements Conceptual Plan.

22.2.4 Mainlane Design Modifications

DB Contractor shall design to allow clearance necessary to install all signage, utilities, fire protection equipment, ventilation equipment, and other appurtenances beneath the Ultimate Deck Plaza superstructure whether these elements are included in the LE Work Package or constructed by others as part of the Ultimate Deck Plaza. DB Contractor shall ensure that vertical clearance of 16'-6" will be maintained above the entire roadway to the lowest point of the deck plaza superstructure including any facilities or systems. Facilities or systems include, but are not limited to, roadway signing, lighting, message signs, ventilation (including jet fans and mounting brackets), fire protection, and fire suppression systems. DB Contractor shall include functional working clearances for the ventilation elements such as fans, supports, and other equipment from all obstructions including structural elements, variable message signs, lighting and other elements. DB Contractor's design shall ensure that appropriate horizontal clearances are maintained on each side of the general purpose lanes and non-tolled managed express lanes to all such facilities upon completion of the Ultimate Deck Plaza.

DB Contractor shall provide preliminary and final Roadway Clearance Submittals including all information regarding horizontal and vertical clearances for the Ultimate Deck Plaza structure which is subject to review, comment, and approval. DB Contractor shall provide all information relevant to TxDOT and any Governmental Entity review to ensure that the roadway and systems meet the requirements of the Contract Documents.

DB Contractor's design shall maintain gravity drainage systems for all facilities, except as permitted for the fire suppression retention tank facilities in accordance with Section 22.8.1 and Section 22.12.

DB Contractor shall include in its design and construction a pair of barrier gates (TxDOT Standard BG-11) within 50 feet south of Marsalis and a pair of barrier gates north of Ewing as part of the managed lanes.

22.3 Deck Plaza Substructure

22.3.1 Abutment/Walls

DB Contractor shall design and construct the abutment/walls required to support the Ultimate Deck Plaza as shown on the Local Enhancements Conceptual Plan. If the Ultimate Deck Plaza structure is not required to be constructed under the LE Work Package, the abutment/walls shall be designed and constructed to support and accommodate the installation of the Ultimate Deck Plaza superstructure, concrete deck, and associated appurtenances without demolition or removal of the abutment/wall elements constructed under the LE Work Package, except as allowed in Section 22.2.3.

The abutment/walls shall be reinforced concrete members consisting of a concrete abutment cap with precast wall fascia or a single cast-in-place abutment/wall, each supported on concrete

drilled shafts or spread footings. Abutment/wall fascia panels shall be founded at least 2 feet - 0 inches below the general purpose lane pavement and shall extend upward to within 1 foot - 0 inches of the bottom of the superstructure. The abutment/walls shall be provided with an appearance consistent with the aesthetic features of the overall Project retaining walls including texture, color, and finish.

In the event that the LE Work Package only requires the construction of abutment/wall foundations or the partial construction of abutment/walls, DB Contractor shall install a mechanical butt-splice assembly (sleeve-threaded mechanical coupler or equivalent) for each reinforcement bar to be extended as part of the Ultimate Deck Plaza construction. The mechanical butt-splice assembly shall be corrosion resistant and capable of allowing full tension development of each reinforcement bar. The corrosion protection shall be installed in such a manner as to be easily removed by others as part of the Ultimate Deck Plaza construction and allow connection to the butt-splice assembly without damaging the assembly.

DB Contractor shall install all necessary sleeves, conduits, boxes, and other appurtenances in the abutment/walls for all utilities, drainage, illumination, irrigation, fire protection, ventilation, and electrical systems constructed as part of the LE Work Package and to facilitate the future installation of such elements by others to meet the requirements of the Ultimate Deck Plaza including support for the surface features and amenities shown on the Local Enhancements Conceptual Plan. All conduit and sleeves shall be installed inside of the abutment/wall or behind the wall fascia panels. Conduit shall not be attached to the exterior of the abutment/walls. All sleeves and conduit passing through an abutment/wall shall be installed in accordance with Section 22.19.

22.3.2 Bent/Walls

DB Contractor shall design and construct bent/walls to support the Ultimate Deck Plaza on each side of the non-tolled express lanes. If the Ultimate Deck Plaza is not required to be constructed as part of the LE Work Package, the bent/walls shall be designed and constructed to support and accommodate the installation of the Ultimate Deck Plaza superstructure, concrete deck, and associated appurtenances without demolition or removal of the bent/wall elements required to be constructed as part of the LE Work Package, except as allowed by Section 22.2.3.

The bent/walls shall be reinforced concrete members consisting of a concrete bent cap with precast wall fascia on each side or a single cast-in-place bent wall each supported on a drilled shaft or spread footing foundation. Bent/wall fascia panels shall be founded at least 2 feet - 0 inches below the general purpose lane pavement and shall extend upward to within 1 foot - 0 inches of the bottom of the superstructure. The bent/walls shall be provided with an appearance consistent with the aesthetic features of the overall Project retaining walls including texture, color, and finish.

In the event that the LE Work Package only requires the construction of bent/wall foundations or the partial construction of bent/walls, DB Contractor shall provide and install a mechanical butt-splice assembly (sleeve-threaded mechanical coupler or equivalent) for each reinforcement bar to be extended as part of the Ultimate Deck Plaza construction. The mechanical butt-splice assembly shall be corrosion resistant and capable of allowing full tension development of each reinforcement bar. The corrosion protection shall be installed in such a manner as to be easily removed by others as part of the Ultimate Deck Plaza construction and allow connection to the butt-splice assembly without damaging the assembly.

If the LE Work Package includes construction of the bent/wall foundations only, DB Contractor shall place the top of the bent/wall foundation such that it is flush with the bottom of the pavement section adjacent to the bent/wall.

Emergency access doors shall be installed in the bent/walls constructed as part of the LE Work Package in accordance with Section 22.14.

DB Contractor shall install sleeves, conduits, boxes, and other appurtenances in the bent/walls for the installation of all utilities, drainage, illumination, irrigation, fire protection, ventilation, and electrical systems required to be constructed as part of the LE Work Package. DB Contractor shall install all conduit and sleeves inside of the bent/walls and not attached to the exterior of the bent/walls. All sleeves and conduit passing through a bent/wall shall be installed in accordance with Section 22.19.

22.4 Deck Plaza Superstructure

22.4.1 General

DB Contractor shall design and construct the deck plaza superstructure in accordance with the Technical Provisions and the information shown on the Local Enhancements Conceptual Plan.

The superstructure shall be designed to support the fill material, plantings, surface structures, and other facilities shown on the Local Enhancements Conceptual Plan. The superstructure shall consist of an 8.5 inch minimum depth concrete deck. The concrete deck shall include a 2 inch minimum sealed joint at each end abutting the adjacent Ewing Avenue and Marsalis Avenue bridges as required.

DB Contractor shall design the deck plaza superstructure to support the surface structures and amenities by others on top of the deck as shown on the Local Enhancements Conceptual Plan.

DB Contractor shall design and construct a superstructure and concrete deck system which incorporates an open trench system to allow access to the superstructure beneath the concrete deck to allow others to install utilities, conduits, electrical systems, other elements, and allow the planting of trees as shown on the Local Enhancements Conceptual Plan. The open trench system width shall not be less than 8 feet measured perpendicular to the girders. The spacing of the open trench systems shall not exceed 25 feet measured perpendicular to the girders. DB Contractor shall install a precast concrete panels to cover the entire open-top trench system supported on continuous seals to eliminate surface drainage intrusion into the trench system prior to turning over the deck surface to others. The exposed surface of the precast concrete panels shall be flush with the cast in place deck elements. Internal drainage elements shall be installed in the trench system to eliminate water from the trench system.

DB Contractor shall install a continuous layer of waterproofing applied along the sides and bottom of the open-top trench system in accordance with TxDOT Standard Specification 458 – Waterproofing Membranes for Structures consistent with the applied surface and the protection type required for the anticipated traffic and loading.

22.4.2 Deck Drainage

DB Contractor shall design and construct the deck plaza superstructure with a surface drainage conduit system capable of removing all surface water before and after the installation of the fill material, plantings, and other surface structures by others. The surface drainage conduit system shall be designed as a gravity flow system to carry the drainage off the structure utilizing conduits beneath the concrete deck within the open trench system and outfall off the superstructure connecting to an inlet box or drainage manhole. Adequate cleanouts shall be installed in the surface drainage conduit system throughout the system which are accessible

from the concrete deck in a manner that the cleanouts can be extended by others to the Ultimate Deck Plaza surface. The surface drainage conduit system located within the open trench system may utilize polyvinyl-chloride pipe (PVC) with a minimum diameter of 8 inches rather than reinforced concrete pipe (RCP).

DB Contractor shall design and construct the surface drainage conduit system in accordance with Section 12 of the Technical Provisions. The surface drainage conduit system shall be installed in accordance with Section 22.19.

22.5 Deck Surface

DB Contractor shall design and construct a superstructure and deck surface that will accommodate the installation of fill material and plantings of grass, trees, bushes, other small vegetation, as well as the installation of food service structures, restrooms, fountains, and other amenities as shown on the Local Enhancements Conceptual Plan.

DB Contractor shall demonstrate that its design and construction of the deck plaza structure would not hinder or interfere with the installation of the facilities and amenities shown on the Local Enhancements Conceptual Plan to be constructed by others. The deck may not be penetrated by a ventilation shaft or structure.

DB Contractor shall install an 8 foot tall security fence encompassing the entire deck surface including one vehicle accessible gate capable of being locked. The security fence shall be installed in a manner to allow removal of the fence without causing damage to the deck.

DB Contractor shall slope the deck surface to adequately drain surface water from the deck through the surface drainage conduit system.

22.6 Tree Pits

DB Contractor shall design and construct the superstructure to accommodate installation of the trees by others in tree pits as part of the open trench system noted in Section 22.4.1 and as shown on the Local Enhancements Conceptual Plan.

22.7 Ventilation

DB Contractor shall design and construct elements for a ventilation system beneath the deck plaza to be complete and functional upon completion of the Ultimate Deck Plaza structure. DB Contractor shall adjust the limits of roadways, walls, and deck plaza superstructure as required to allow for clearances in accordance with Section 22.2.4. DB Contractor shall design and construct all the elements for the ventilation system where required to be constructed as part of the LE Work Package.

Where a complete ventilation system is not required as a part of the LE Work Package, DB Contractor shall install the sleeves, blockouts, conduits, electrical power capacity, and other appurtenances throughout the deck plaza superstructure to allow for installation of such systems by others with the Ultimate Deck Plaza. All conduit, boxes, sleeves, and equipment for the ventilation system shall be supported and installed in accordance with Section 22.19.

DB Contractor shall perform all the ventilation analyses incorporating the entire enclosed roadway conditions by the construction of the Ultimate Deck Plaza superstructure and the adjacent underpass bridges at Ewing Avenue and Marsalis Avenue. Traffic cell configuration with intermediate ramps requires the implementation of computational fluid dynamic (CFD) engineering analysis tool for a prediction of most probable conditions of tenability the ventilation system can establish. The Design Fire Load (DFL) shall be based on a substantiating analysis of fixed fire suppression reduction of the DFL that is reviewed and approved by the City of Dallas and the Dallas Fire-Rescue Department. Any fire size reduction below 300 MW shall be

based on an engineering analysis considering a fixed fire suppression system with approval from the City of Dallas and the Dallas Fire Department.

The Engineer responsible for providing the fire hazard analysis shall be a fire protection or mechanical engineer licensed in the State of Texas with demonstrated experience performing fire hazard analyses on projects of similar size and scope. The Engineer providing the structural fire durability analysis shall be a fire protection or mechanical engineer licensed in the State of Texas with demonstrated experience performing structural fire durability analyses on projects of similar size and scope. DB Contractor shall base the time/temperature curve reduction for fire durability analysis on an engineering analysis considering a fixed fire suppression system with approval from the City of Dallas and the Dallas Fire-Rescue Department.

DB Contractor shall design and construct the ventilation system to include all elements required for emergency pedestrian routes/exits from beneath the deck plaza and the Ewing Avenue and Marsalis Avenue bridges in accordance with National Fire Protection Association - Standard for Road Tunnels, Bridges, and Other Limited Access Highways (NFPA 502).

22.7.1 Emergency Ventilation Calculations

DB Contractor shall furnish complete engineering analysis according to NFPA 502 demonstrating the ventilation system equipment type, capacity and dimensional sizing requirements and other safety system requirements. The analysis shall include confirmation of the DFL along with the City of Dallas and the Dallas Fire-Rescue Department concurrence with the DFL and a coordinated multi-agency incident operations plan. The system shall be designed for the Ultimate Deck Plaza condition including the Ewing Avenue and Marsalis Avenue underpass bridge structures and DB Contractor shall use this information to establish the final roadway elevations, drainage requirements, and other features based on the deck plaza superstructure depth.

The DFL selection shall be coordinated with structural analysis for fire durability as required in NFPA 502. The design shall include documentation of concurrence by the City of Dallas, the Dallas Fire-Rescue Department, and approval of the DFL, including the basis for the DFL, and all fire safety systems installed with as part of the LE Work Package or to be installed with the Ultimate Deck Plaza.

22.7.2 Normal Operations Ventilation Calculations

DB Contractor shall furnish complete engineering analyses demonstrating the ventilation system design features and operation requirements that will establish safe normal and congested operating environment beneath the deck plaza superstructure during the interim and ultimate conditions, at key sensitive receptor locations outside the deck plaza superstructure where pollutant concentrations may exceed governmental guidelines.

The calculations shall clearly establish the operating equipment and respective capacities to be installed both as part of the LE Work Package and with the Ultimate Deck Plaza.

22.7.3 Submittals

DB Contractor shall provide a preliminary and final Ventilation System Analysis, Emergency and Normal Operations Submittals and a Fire Durability Submittals including all information regarding ventilation system design and the fire durability design respectively for the LE Work Package and Ultimate Deck Plaza conditions. DB Contractor shall provide all information relevant to TxDOT and any Governmental Entity review to ensure that the systems meet the requirements of the Contract Documents.

22.7.4 Mandatory References and Codes

DB Contractor shall design and install the ventilation system(s) in accordance with the current editions of the following references and codes:

(a) City of Dallas Code, Chapter 30, Noise

(b) City of Dallas Code, Chapter 16, Fire

(c) International Code Council, International Fire Code (2012)

(d) National Fire Protection Association (NFPA), NFPA 502, Standard for Road Tunnels, Bridges, and Other Limited Access Highways

(e) Air Movement and Control Association International, Inc. (AMCA), AMCA 202, Troubleshooting

(f) AMCA 201, Fans and Systems

(g) AMCA 203, Field Performance Measurement of Fan Systems

(h) AMCA 250, Laboratory Methods of Testing Jet Tunnel Fans for Performance

(i) AMCA 301-06, Methods for Calculating Fan Sound Ratings from Laboratory Test Data

(j) ANSI/ASHRAE Standard 149-2013 (RA 2013), Laboratory Methods of Testing Fans Used to Exhaust Smoke in Smoke Management Systems

(k) NFPA 70, National Electrical Code

(l) National Institute for Occupational Safety and Health (NIOSH), Guideline for Nitric Oxide

(m) World Road Association (PIARC), Guidelines for Nitric DiOxide exposure

(n) Federal Highway Administration (FHWA)/Environmental Protection Agency (EPA), Guidelines for Carbon Monoxide exposure

22.8 Fire Protection

DB Contractor shall design and construct elements for a fire protection system beneath the deck plaza designed for the Ultimate Deck Plaza condition. Hazardous cargo is not restricted from I-35E beneath the deck plaza facility and the DFL and time/temperature curve shall be based on the hazardous cargo traffic on I-35E including combustible and flammable materials. DB Contractor shall adjust the limits of roadways, walls, and deck plaza superstructure as required to allow for clearances in accordance with Section 22.2.4.

Where the ultimate fire protection system is not required as part of the LE Work Package, DB Contractor shall accommodate the fire protection system for the Ultimate Deck Plaza by installing the sleeves, blockouts, piping, and other appurtenances throughout the superstructure and walls to facilitate future installation of the electrical and mechanical conduits necessary to operate and maintain the fire protection system for the Ultimate Deck Plaza. All conduit, boxes, sleeves, and equipment for the fire protection system shall be installed in accordance with Section 22.19.

DB Contractor shall furnish fire dynamics analysis sufficient for demonstrating overhead sprinkler impacts on fire heat release rate from a fire protection engineer licensed in the State of Texas with demonstrated experience performing such analyses on projects of similar size and scope. Any fire size reduction below 300 MW shall be based on an engineering analysis

considering a fixed fire suppression system with approval from the City of Dallas and the Dallas Fire-Rescue Department. If a fixed fire suppression deluge sprinkler system is utilized, detailed hydraulic calculations shall be provided to demonstrate water delivery flow and pressure, and fire pump selection parameters, if required, sufficient for large flow capacity requirements of deluge zones.

DB Contractor shall provide a preliminary and final Fire Dynamics Analysis Submittals including all information regarding the fire analyses for the LE Work Package and Ultimate Deck Plaza conditions. DB Contractor shall provide all information relevant to TxDOT and any Governmental Entity review to ensure that the systems meet the requirements of the Contract Documents.

DB Contractor shall furnish and install all elements required for fire emergency ingress/egress evacuation system(s) required for the LE Work Package and Ultimate Deck Plaza conditions including, but not limited to, emergency walkways, signage, and emergency access doors in accordance with Section 22.14 and NFPA 502.

22.8.1 Fire Protection Standpipe and Fire Suppression System

DB Contractor shall furnish complete engineering analysis according to NFPA 502, NFPA Standard for the Installation of Standpipe and Hose Systems (NFPA 14), and other applicable codes demonstrating the standpipe system pipe sizing and configuration. DB Contractor shall design and install the system to satisfy the initial operational standpipe system requirements of the initial configuration, which may be a partial deck or limited access depressed roadway, as well as the Ultimate Deck Plaza in accordance with the final LE Work Package. The fire standpipe and fire suppression system shall be coordinated with Section 22.7 for capacity and the DFL. When located within the limits of the Ultimate Deck Plaza, DB Contractor shall install all standpipes and valves in a niche in the walls unless otherwise approved.

DB Contractor shall install the facilities necessary to extend the local water system to service any fire hydrant(s) within the required distance for standpipe and fire suppression connections in accordance to NFPA 502 including sleeves throughout the deck plaza superstructure, abutment/walls, and bent/walls and casing pipe beneath the frontage road in accordance with Section 22.19.

Where the fire standpipe and fire suppression system for the Ultimate Deck Plaza is not required to be constructed as part of the LE Work Package, DB Contractor shall install casing pipe beneath the frontage road and sleeves in the deck plaza superstructure, abutment/walls, and bent/walls to facilitate the installation of the fire standpipe and fire suppression system for the Ultimate Deck Plaza by others in accordance with Section 22.19.

If fire suppression additives such as foam or surfactant agents, such as aqueous film forming foam (AFFF) are utilized in the fire suppression system design, DB Contractor shall coordinate the underpass drainage system, and other impacted drainage systems with TxDOT, other environmental agencies, and shall address any requirements to mitigate environmental impacts created by harmful ingredients creating undesirable conditions such elevated biological oxygen demand (BOD) or other harmful effects.

The underpass drainage system design shall be configured to include the ability to route the runoff to a fire suppression retention tank during a fire incident and emergency response while bypassing the fire suppression retention tank under normal operating conditions. DB Contractor shall include in the underpass drainage system all necessary components, such as remote control valves, lift pumps, and other components necessary for the proper collection and

management of runoff during an emergency event. DB Contractor shall coordinate the design with TxDOT to ensure that installation of the fire suppression retention tank and associated connection pipes and valves do not require the interruption of I-35E traffic for maintenance of any system component. DB Contractor shall size any such fire suppression retention tank to account for fire suppression flows (including AFFF, if utilized) along with potential bulk flammable liquid spill from a hazardous cargo carrier.

The fire protection standpipe system configuration is estimated to consist of a manually charged dry standpipe system but the final standpipe system configuration will be subject to the approval of the City of Dallas and the Dallas Fire-Rescue Department.

DB Contractor shall provide preliminary and final Fire Suppression System Submittals including all information regarding the fire standpipe and suppression systems for the LE Work Package and Ultimate Deck Plaza conditions. DB Contractor shall provide all information relevant to TxDOT and any Governmental Entity review to ensure that the systems meet the requirements of the Contract Documents.

22.8.2 Mandatory References and Codes

DB Contractor shall design and install the fire standpipe and fire suppression system(s) in accordance with the current editions of the following references and codes:

(a) NFPA 502, Standard for Road Tunnels, Bridges, and Other Limited Access Highways

(b) NFPA 14, Standard for the Installation of Standpipe and Hose Systems

(c) NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances

(d) NFPA 1963, Standard for Fire Hose Connections

(e) NFPA 10, Standard for Portable Fire Extinguishers

(f) NFPA 72, National Fire Alarm and Signaling Code

(g) NFPA 13, Standard for the Installation of Sprinkler Systems

22.9 Fireproofing

DB Contractor shall install fireproofing material beneath the deck plaza superstructure to protect the superstructure, conduits, and other facilities sufficient to provide protection against the effects of the DFL and other emergency events that DB Contractor established as the basis of design for fireproofing to accommodate the Ultimate Deck Plaza. The fireproofing system and materials shall meet the performance requirements of the mandatory references and codes according to the DFL, allowance for hazardous cargo, and the other requirements listed in Section 22.8 as may be modified with the approval of the City of Dallas and the Dallas Fire-Rescue Department.

22.9.1 Mandatory References and Codes

DB Contractor shall design and install the fireproofing system in accordance with the current editions of the following references and codes:

(a) NFPA 502, Standard for Road Tunnels, Bridges, and Other Limited Access Highways

22.10 Fire Alarm and SCADA

DB Contractor shall install the fire alarm and SCADA systems according to the mandatory references and codes including but not limited to fire detection, alarm processing, ventilation system operation and traffic control. The manual and automatic fire alarm systems and SCADA systems shall be connected to a traffic signal warning system and electronic message boards in accordance with NFPA 502 to warn approaching traffic from travelling under the deck plaza when a traffic incident is detected as required in Section 22.11.

Where the fire alarm and SCADA systems for the Ultimate Deck Plaza are not required to be constructed as part of the LE Work Package, DB Contractor shall install the sleeves, blockouts, conduits, electrical power capacity, and other appurtenances throughout the deck plaza superstructure to facilitate installation of the fire alarm and SCADA systems for the Ultimate Deck Plaza.

The Fire Alarm and SCADA system and materials shall meet performance requirements of mandatory references and codes according to the DFL, allowance for hazardous cargo, and the other requirements listed in Section 22.8 as may be modified with the approval of the City of Dallas and the Dallas Fire-Rescue Department.

DB Contractor shall provide preliminary and final Fire Alarm & SCADA System Submittals including all information regarding the fire alarm and SCADA systems for the LE Work Package and Ultimate Deck Plaza conditions. DB Contractor shall provide all information relevant to TxDOT and any Governmental Entity review to ensure that the systems meet the requirements of the Contract Documents.

22.10.1 Mandatory References and Codes

DB Contractor shall design and install the fire alarm and SCADA systems in accordance with the current editions of the following references and codes:

(a) NFPA 502, Standard for Road Tunnels, Bridges, and Other Limited Access Highways

(b) NFPA 72, National Fire Alarm and Signaling Code

(c) NFPA 70, National Electric Code

22.11 Traffic Warning System

DB Contractor shall design and construct a traffic warning system for when a traffic accident or other incident occurs beneath the deck plaza or the Ewing Avenue and Marsalis Avenue bridges. The traffic warning system shall include, but not be limited to, illuminated signals, electronic illuminated signs, electronic message boards, and other devices meeting the requirements of the NFPA 502 to adequately warn approaching traffic of hazardous conditions beneath the deck plaza structure and the Ewing Avenue and Marsalis Avenue bridges when conditions are unsafe on the I-35E general purpose lanes, non-tolled express lanes, and on-ramps.

Where the traffic warning system for the Ultimate Deck Plaza is not required to be constructed as part of the LE Work Package, DB Contractor shall install sleeves, boxes, blockouts, and other appurtenances throughout the superstructure and adjacent retaining walls, railing, and pavement to facilitate the installation of the ultimate traffic warning system by others in accordance with the NFPA 502. The traffic warning system shall be connected to the fire alarm and SCADA systems as required in Section 22.10. The sleeves, boxes, conduit, and other appurtenances of the traffic warning system shall be installed in accordance with Section 22.19.

DB Contractor shall provide preliminary and final Traffic Warning System Submittals including all information regarding the traffic warning system for the LE Work Package and Ultimate Deck Plaza conditions. DB Contractor shall provide all information relevant to TxDOT and any Governmental Entity review to ensure that the systems meet the requirements of the Contract Documents.

22.12 Underpass Drainage System

DB Contractor shall install an underpass drainage system for the roadway beneath the deck plaza sufficient to remove the roadway drainage in accordance with Section 12 of the Technical Provisions and incorporate features to meet the requirements of the fire suppression system for the deck plaza. The underpass drainage system design shall account for the roadway cross slope and placement of the associated drainage inlets consistent with the fire suppression requirements of the deck plaza. All drainage inlets and conveyance structures on such underpass drainage system shall be constructed of noncombustible materials in compliance with NFPA 502. Hazardous cargo is not restricted from the project roadway and the underpass drainage system shall be designed to address a flammable liquid impulse discharge fire scenario.

If DB Contractor's fire suppression system design includes additives such as foam or surfactant agents, the underpass drainage system shall be designed in accordance with Section 22.8.1.

22.12.1 Mandatory References and Codes

DB Contractor shall provide underpass drainage design in accordance with the current editions of the following references, codes, and manuals:

(a) NFPA 502, Standard for Road Tunnels, Bridges, and Other Limited Access Highways

(b) TxDOT Hydraulics Manual

(c) TxDOT Roadway Design Manual

22.13 Illumination

22.13.1 General

DB Contractor shall design and construct elements for illumination systems beneath the deck plaza superstructure with the Project in conformance with current TxDOT illumination policies and procedures, and the TxDOT Highway Illumination Manual. All illumination sleeves, conduit, electrical boxes, and other appurtenances shall be installed in accordance with Section 22.19.

22.13.2 Underpass Illumination

DB Contractor shall design and construct an illumination system beneath the deck plaza superstructure. DB Contractor shall design and construct a complete illumination system to perform adequately in daylight and night-time conditions meeting the minimum illuminance levels as required beneath the deck plaza constructed with the Project for both the LE Work Package condition, if any, and the Ultimate Deck Plaza condition.

For the portion of the Ultimate Deck Plaza not constructed as part of the LE Work Package, DB Contractor shall install sleeves, blockouts, electrical boxes, conduit, and other appurtenances to facilitate the installation, operation, and maintenance of the underpass illumination. DB Contractor shall construct all empty conduit and electrical boxes with non-metallic pull rope to facilitate the installation of future wiring.

The Ewing Ave and the Marsalis Avenue bridge structures shall receive an underpass illumination system consistent with the illumination system beneath the deck plaza superstructure.

DB Contractor shall provide preliminary and final underpass illumination plans for the LE Work Package and Ultimate Deck Plaza conditions for review, comment, and approval with the overall illumination submittals for the Project.

22.13.3 Mandatory References and Codes

DB Contractor shall design and install the underpass illumination system(s) in accordance with the current editions of the following references, codes, and manuals:

(a) Illuminating Engineering Society (IES), Tunnel Lighting (ANSI approved), RP-22

(b) NFPA 502, Standard for Road Tunnels, Bridges, and Other Limited Access Highways

(c) TxDOT Illumination Manual

22.14 Emergency Access Doors

DB Contractor shall install emergency access doors in the bent/walls required to be constructed as part of the LE Work Package. The access doors shall be of steel construction and comply with the requirements of the Steel Door Institute "Specifications for Standard Steel Doors and Frames (SDI 100). The access doors shall be installed above the concrete railing and meet the requirements of NFPA 502 for the Ultimate Deck Plaza.

22.15 Water

DB Contractor shall install sleeves through the abutment/walls and a casing pipe beneath the frontage road in accordance with Section 22.19 to facilitate the installation of all water piping by others for the water services for the facilities and amenities shown on the Local Enhancements Conceptual Plan.

DB Contractor shall connect to the local water main(s) for the fire standpipe and fire suppression systems, in coordination with the Dallas Water Utilities and the Dallas Fire-Rescue Department, and install the connection(s) to the local water system, sleeves, piping, valves, and other appurtenances necessary to provide service to fire hydrant(s) for fire suppression in accordance with Section 22.8.1. Where a fire standpipe and fire suppression system is not required with the LE Work Package, DB Contractor shall install sleeves through the abutment/walls and a casing pipe beneath the frontage road in accordance with Section 22.19 and all sleeves in the deck plaza superstructure, abutment/walls, and bent/walls to facilitate the installation of such systems by others.

DB Contractor shall construct all sleeves, boxes, piping, blockouts, and other appurtenances for water piping in accordance with the requirements of the Dallas Water Utilities (DWU) and the latest edition of the North Central Texas Council of Governments (NCTCOG), Standard Specifications for the Public Works Construction.

22.16 Sewer

DB Contractor shall install sleeves through the abutment/walls and a casing pipe beneath the frontage road in accordance with Section 22.19 to facilitate the installation of all sewer piping by others for the sewer services for the facilities and amenities shown on the Local Enhancements Conceptual Plan.

DB Contractor shall construct all sleeves for sewer piping in accordance with the requirements of the Dallas Water Utilities (DWU) and the latest edition of the North Central Texas Council of Governments (NCTCOG), Standard Specifications for the Public Works Construction.

22.17 Natural Gas

DB Contractor shall install sleeves through the abutment/walls and a casing pipe beneath the frontage road in accordance with Section 22.19 to facilitate the installation of all natural gas piping by others for the facilities and amenities shown on the Local Enhancements Conceptual Plan.

DB Contractor shall construct all sleeves for natural gas piping by others in accordance with the requirements of the Dallas Fuel Gas Code, NFPA, and NCTCOG Standard Specifications for the Public Works Construction.

22.18 Electrical

DB Contractor shall design and construct the electrical services required for the underpass, including but not limited to, required illumination systems and power supplies for systems and equipment beneath the deck plaza structure required to be constructed as part of the LE Work Package in accordance with this Section 22 of the Technical Provisions.

DB Contractor shall install sleeves in the abutment/walls to facilitate the installation, operation, and maintenance of the electrical systems by others required for facilities on top of the deck plaza as shown on the Local Enhancements Conceptual Plan.

DB Contractor shall install sleeves, boxes, blockouts, and other appurtenances throughout the superstructure and a casing pipe beneath the frontage road to facilitate the installation of emergency power system(s) as required in accordance with the NFPA 502.

If the Ultimate Deck Plaza is not required to be constructed as part of the LE Work Package, DB Contractor shall install all sleeves in the abutment/walls, bent/walls, and superstructure and a casing pipe beneath the frontage road both for systems to be installed with the LE Work Package and to facilitate the installation of such systems by others as part of the Ultimate Deck Plaza.

All sleeves, boxes, conduit, casing pipe, and other appurtenances of all electrical system(s) shall be installed in accordance with Section 22.19.

DB Contractor shall provide preliminary and final Emergency Power System Submittals including all information regarding the emergency power system for the LE Work Package and Ultimate Deck Plaza conditions. DB Contractor shall provide all information relevant to TxDOT and any Governmental Entity review to ensure that the systems meet the requirements of the Contract Documents.

22.19 System Support

DB Contractor shall install all sleeves, conduit, boxes, and supports for all systems in a secure manner without incurring any settlement or unintentional movement. The elements shall be constructed with proper expansion/contraction capabilities using the appropriate supports and expansion joints in accordance with ASME B31.9, Dallas Water Utilities Design and Construction Standards and the TxDOT Standard Specifications, Special Specifications, and Special Provisions, and Standards. Anchor systems utilizing adhesives is not permitted to support utilities, lighting, ventilation, or any other needed system from the underside of the deck plaza superstructure.

For any system required to be constructed as part of the LE Work Package or to be provided by others which must pass beneath the frontage road pavement for connection, DB Contractor shall install a steel casing pipe. The steel casing pipe shall extend for the entire width of the frontage road crossing and extend from 2 feet – 0 inches beyond the inside back of curb to 2 feet – 0 inches beyond the sidewalk on the outside of the frontage road. Where the outside surface of the abutment/wall is located within 3 feet – 0 inches of the inside back of curb, the steel casing pipe shall extend through a sleeve in the abutment/wall.

For any system required for facilities outside the limits of the deck plaza required to be constructed as part of the LE Work Package, any such sleeve and casing pipe shall be moisture protected and capped on each end. Sleeves may penetrate through the abutment backwall or beneath the abutment cap between drill shafts as long as the sleeve is accessible in the finished and final condition, but the sleeve and resulting system may not penetrate the exposed face of wall.

22.20 Damages/Repair

DB Contractor shall repair or replace any structures, utilities, or other elements that are damaged by negligence or that fail to work in a proper manner including not performing appropriate utility location investigations. DB Contractor shall repair all damage to any precast units as required to match the undamaged surfaces.

22.21 Submittals

All submittals described in Section 22 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth on Table 22-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

In addition to the submittals listed below, if the LE Work Package includes both phase I and phase II, DB Contractor shall submit for review and approval a tunnel inspection manual/procedure per the National Tunnel Inspection Standards and the Tunnel Operations, Maintenance, Inspection and Evaluation Manual.

Table 22-1: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Section 22			
Roadway Clearance Submittal (Preliminary)	With Preliminary Roadway Plans Submittal	Review and Comment	22.2
Roadway Clearance Submittal (Final)	With Final Roadway Plans Submittal	Approval	22.2
Ventilation System Analysis, Emergency and Normal Operations Submittal (Preliminary)	With Preliminary Roadway Plan Submittal	Review and Comment	22.7
Ventilation System Analysis, Emergency and Normal Operations Submittal (Final)	With Final Roadway Plan Submittal	Approval	22.7

Table 22-1: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
Fire Durability Submittal (Preliminary)	With Preliminary Roadway Plans Submittal	Review and Comment	22.7
Fire Durability Submittal (Final)	With Final Roadway Plan Submittal	Approval	22.7
Fire Dynamics Analysis Submittal (Preliminary)	With Preliminary Roadway Plans Submittal	Review and Comment	22.8
Fire Dynamics Analysis Submittal (Final)	With Final Roadway Plans Submittal	Approval	22.8
Fire Suppression System Submittal (Preliminary)	With Preliminary Roadway Plans Submittal	Review and Comment	22.8
Fire Suppression System Submittal (Final)	With Final Roadway Plans Submittal	Approval	22.8
Fire Alarm & SCADA System Submittal (Preliminary)	With Preliminary Roadway Plans Submittal	Review and Comment	22.10
Fire Alarm & SCADA System Submittal (Final)	With Final Roadway Plans Submittal	Approval	22.10
Traffic Warning System Submittal (Preliminary)	With Preliminary Roadway Plans Submittal	Review and Comment	22.11
Traffic Warning System Submittal (Final)	With Final Roadway Plans Submittal	Approval	22.11
Emergency Power System Submittal(Preliminary)	With Preliminary Roadway Plans Submittal	Review and Comment	22.18
Emergency Power System Submittal(Final)	With Final Roadway Plan Submittal	Approval	22.18