



Texas Department of Transportation

DESIGN-BUILD SPECIAL PROVISIONS

Items 10-28

January 2, 2019

Design-Build Special Provision to Item 10

General



Item 10, “General,” of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

10.1.1 Core Office

Section 10.1.1 of the Design-Build Specifications, “Core Office,” is supplemented by the following:

The following requirements apply to the Core Office described in Section 10.1.1.

10.1.1.4 Core Office Space Requirements

Section 10.1.1.4 of the Design-Build Specifications, “Core Office Space Requirements,” is added:

Although actual spaces may vary slightly, the following nominal size requirements will apply, and the typical TxDOT facility area shall include the following Elements:

- **Offices.** Enclosed offices for TxDOT’s management staff (nominal 150 SF each, unless otherwise approved by TxDOT), four total with keyed door hardware, desk, desk chair, book case, file cabinet, credenza, and guest desk chair;
- **Cubicles.** Cubicle area spaces for administration staff (nominal 64 SF each), six total; (power supply and data and communication lines to cubicles may be provided through power pole drops);
- **Conference Rooms.** One conference room (enclosed) at nominal 12 feet x 25 feet (300 SF); All shall have dimmable lighting; conference rooms shall have a 60-inch minimum flat panel monitor with VGA/HDMI accessibility; each conference room shall have one chair for every 24 SF of conference room space and a conference table of sufficient size for each chair;
- **Reception Area.** Receptionist space with waiting area with seating for six visitors (nominal 200 SF); other furniture to be determined jointly by DB Contractor and TxDOT;
- **Work Room.** Work room (nominal 150 SF) with 30-inch high plastic laminate wall-mounted counters (15 linear feet of counter). Work room shall be located near the center of the facility, and in close proximity to the receptionist space.
- **Storage and Filing.** One lockable space for storage and filing, nominal 15 feet x 20 feet (300 SF);
- **Server Room.** One computer server room (150 SF or larger to meet ADA, OSHA, and NEC requirements as applicable) 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.
- **Parking Area.** Parking area for at least 16 vehicles (10 staff/6 visitors) that is reasonably level (all-weather surface and all-weather access); a portion of the available parking area must accommodate an 8’ vehicle height. If covered parking is available, no less than two covered parking spaces shall be made available to TxDOT.
- **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
- **Corridors.** Corridors within the TxDOT facility shall have a nominal width of 54 inches.

10.1.1.5 Core Office Miscellaneous Requirements and Features

Section 10.1.1.5 of the Design-Build Specifications, "Core Office Miscellaneous Requirements and Features," is added:

The following shall be provided as noted:

- Flooring. Carpeted flooring (carpet not required in server room);
- Entry Access. Entry to TxDOT areas by electronic door hardware card access (not keyed), with UPS on locks (fail closed);
- Electrical Outlets. All data/voice outlets shall be installed next to power outlets;
- HVAC. 24/7/365 HVAC as previously described;
- Window Coverings. Horizontal mini-blinds (no drapes) for each exterior window;
- 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;
- Fire Extinguishers. DB Contractor shall provide fire extinguishers, per fire code and fire marshal with jurisdiction;
- 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;
- Vending Area. DB Contractor shall provide access to general building vending area;
- Utilities. Initial installation and monthly expense of all utilities paid by DB Contractor except long-distance telephone service;
- Monthly Services. DB Contractor shall procure and pay directly to the vendor for janitorial, trash, recycling, and secure document shredding services.
- Emergency Contacts. 24-hour emergency contact to DB Contractor; and
- Furniture. DB Contractor-provided allowance of \$15,000 in the Price for additional furniture not listed in the requirements of this Section 10.1.1, which shall be obtained by DB Contractor at the direction of TxDOT, and billed through DB Contractor. 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.
- Cable Television. Provide cable television connections and service to each flat screen television.

10.1.2.4 Field Office Space Requirements

Section 10.1.2.4 of the Design-Build Specifications, "Field Office Space Requirements," is added:

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:

- Offices. Enclosed offices with lockable doors for TxDOT's construction representative, TxDOT-designated construction manager and one other TxDOT or contract employees (three 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;
- Offices/Cubicles. Offices or cubicles for up to six field engineer/inspection/ administration staff (60-80 SF each);
- Conference Rooms. One enclosed conference room of not less than (350 SF) and access to another common conference room (350 SF);
- Server room. One (1) Server room, matching the requirements of the Core Office server room.
- Storage and Filing. Two lockable spaces for storage and filing at each field office (a combined space of 200 SF);
- Surveying Equipment Storage. Clean inside storage space for surveying equipment (80 SF);

- Tool Shed. Outside shed for small tools and equipment (outside) (200 SF);
- 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;
- 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;
- 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);
- Security. A 24-hour security service or silent watchmen-type security system;
- 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;
- Window Security. Security bars on all exterior windows;
- Laboratory Facility. A completed facility suitable to accommodate a functioning portable lab (approximately 2,500 SF) located immediately adjacent to the Independent Quality Firm (IQF) laboratory required in Section 4.4 of the TxDOT QAP for Design-Build Projects;
- 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;
- Restrooms. Two restrooms including toilets and sinks; and
- First Aid Supplies. Provide emergency first aid supplies in accordance with DB Contractor's Safety Plan.

10.1.2.5 Field Office Miscellaneous Requirements and Features

Section 10.1.2.5 of the Design-Build Specifications, "Field Office Miscellaneous Requirements and Features," is added:

The following shall be provided:

- Flooring. Carpeted flooring for offices (nonstatic in server room). All other rooms shall be tiled;
- Entry Access. Entry to TxDOT areas by electronic door hardware card access (not keyed), with UPS on locks (fail closed);
- 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;
- HVAC. 24/7/365 HVAC as previously described;
- Window Coverings. Horizontal mini-blinds (no drapes) for each exterior window;
- 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;
- Fire Extinguishers. DB Contractor shall provide fire extinguishers, per fire code and fire marshal with jurisdiction;
- 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;
- Utilities. Initial installation and monthly expense of all utilities paid by DB Contractor except long distance telephone service;
- Emergency Contacts. 24-hour emergency contact to DB Contractor; and
- Furniture. DB Contractor-provided allowance of \$15,000 in the Price for additional furniture not listed in the requirements of this Section 10.1.2, which shall be obtained by DB Contractor at the direction of TxDOT, and billed through DB Contractor. 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.

10.1.3 Office Network and Systems

Section 10.1.3 of the Design-Build Specifications, "Office Network and System," is added:

DB Contractor shall, for each TxDOT representative, provide, furnish, install, operate, and maintain the following for the TxDOT office spaces described in Section 10.1.

- 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. 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;
- A touch-tone telephone system (with voicemail) with at least one telephone, with speakers, 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;
- 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;
- One computer with two flat panel monitors, including all necessary peripherals for each personnel office area and the reception area in the Project office. These computers shall be laptops with docking stations;
- Peripherals shall include at minimum, monitor stand, docking station for laptop computers, mouse, keyboard, 16 gigabyte thumb drive, extra battery for laptop computers, wireless internet for laptop computers, and carry bag for laptop computers; for every eight (8) laptops, the DB Contractor shall provide one external DVD drive and one external hard drive with not less than two terabytes of memory per external hard drive;
- Laptops shall be new systems with at least a one-year manufacturer's warranty. Minimum configuration for the laptop shall consist of no less than four GB internal ram, 500 GB hard drive, 2.8 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;
- Each laptop 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 the DB Contractor's contract, or issuance of the first Notice to Proceed, whichever is later:
 - Windows 10 or latest edition of operating system
 - Microsoft Office Professional latest edition (Office, PowerPoint, Outlook, Excel)
 - Adobe Acrobat reader (latest version)
 - Google Earth (free version)
 - Internet Explorer and Google Chrome
 - Anti-virus software with latest updates
 - DVD software driver compatible with the shared external DVD drive
 - Software driver and backup software compatible with the shared external hard drive.
 - Document management software required to access the DB Contractor's client facing document library (as applicable)
- The DB Contractor shall provide the following additional software packages for TxDOT's use. TxDOT shall direct the DB Contractor as to which computers these software packages are to be

installed. During the course of the Project, the DB Contractor may be required to move one or more of these additional software packages between computers.

- Four copies of Bentley's MicroStation latest version
- Four copies of OpenRoads
- Four copies of Adobe Acrobat Professional latest version
- Three iPad Pro (latest version available), or equal, with Wi-Fi + Cellular, 128 gigabyte (GB) capacity along with 4G/LTE cellular service, protective case with key pad and Apple Pencil;
- One GoPro Hero4 Black Edition (latest version available), or equal;
- High speed, highly reliable internet service(s) capable of providing a minimum download speed of 100 Mbps and a minimum upload speed of 20 Mbps per network drop, with a minimum of three concurrent download connections and a minimum of two concurrent upload connections;
- The ability to print to any printer listed in this Section 10.1.3 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 10.1.3 from any network drop);
- 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 Special Provisions;

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

- Provide on-site technical support eight hours per day, five days per week until the completion and close out of the Project;
- One high-speed laser computer printer capable of handling 11 inches x 17 inches prints for core office and one for field office;
- One high-speed color printer capable of handling 11 inches x 17 inches prints for core office and one for field office;
- One high-speed color photocopy machine capable of handling 11 inches x 17 inches prints for core office;
- 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 meet the requirements;

- One paper shredder or secure paper shredding service for core office;
- One commercial grade three-hole punch for core office and one for field office;
- One commercial grade GBC binder (or equal) for core office;
- All office supplies, including copier paper, toners, pens, pencils, notepads, and other miscellaneous office supplies; and
- One hard copy of all TxDOT and AASHTO design manuals and standards as specified in the Agreement for core office.

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 plan for all parts and components and submit, before installation, test installed systems and supply test results, in conformance with industry standard testing procedures.

10.1.4 Required Software during Construction Activities

The DB Contractor shall utilize a mobile based, web hosted, collaborative design-construction productivity software solution (such as PlanGrid or an equivalent) allowing real-time access to and management of design and construction documents. The DB Contractor must purchase and provide licenses to DB Contractor staff, and 20 copies for TxDOT staff and TxDOT's consultants for the Term of the DBC. Utilization will cover the course of the Design Work and Construction Work. This software application will be used to

view drawings, specs and documents in the field and facilitate collaboration between project stakeholders. The software solution must meet the following technical requirements:

- All features and Project documents uploaded in the system must be available offline in the event that there is no wireless connection.
- The solution must be compatible with iOS, Windows and Androids operating systems and devices.
- The solution must be able to export an as-built set upon Final Completion. This as-built must be complete with documents, photos and hyperlinks embedded in the set.
- The solution must be capable of being used during post construction operations and maintenance phases.
- After final completion, the solution should be handed to the operations and maintenance team for post construction coordination.
- The solution must be able to provide a detailed audit trail of all parties collaborating in the application. This includes date/time stamp of any mark-ups, photos, issues, RFIs and punch list items.
- The solution must auto-tag sheet disciplines to distinguish different trade drawings.
- Vendor must be able to support each project and customer with a dedicated sales representative for rollout.
- DB Contractor must require subcontractor parties to utilize the awarded solution.
- The awarded vendor must offer training/consulting on the software solution as needed during the project.

10.3 Design Visualization

Section 10.3 of the Design-Build Specifications, "Design Visualization," is added:

DB Contractor shall provide accurate three-dimensional models that depict the Project. Completed models shall represent realism and aesthetic attributes of the existing conditions and the proposed Project. DB Contractor shall add roadway design details to the model that are not normally provided at the stage of TxDOT Schematic Design and verify that the TxDOT Schematic Design complies with design guidelines presented in the TxDOT *Roadway Design Manual*, Texas MUTCD, the AASHTO *Green Book*, the AASHTO *Roadside Design Guide*, and the AASHTO *Guide for the Development of Bicycle Facilities* or applicable standards listed in these Special Provisions.

The design visualization models shall show existing and proposed design conditions either separately or combined in the same display. Based on specific Project requirements the final design visualization deliverables may include photo-matched renderings, rendered plan view layouts, and animated sequences.

DB Contractor shall provide, along with the Record Drawings, a three-dimensional CADD model of the completed Project and any work product generated during the modeling process, such as site photographs, textures, material assignments, and additional terrain information. All CADD data should be in electronic format and native to TxDOT's CADD architecture using Bentley Systems, Inc. MicroStation (MicroStation) to provide complete compatibility between the DB Contractor and TxDOT.

DB Contractor shall collect, review, and evaluate all of the available existing data pertaining to the Project and prepare the design visualization models to reflect current design requirements. The data shall include MicroStation design files, GEOPAK geometry files, existing terrain models, and digital ortho photography. DB Contractor shall field verify the existing and proposed condition of design visualization models for dimensional accuracy and realism.

Resulting animations for design visualization purposes do not have to be native MicroStation, but do need to be capable of viewing on any device with minimal support to, or effort by TxDOT.

All CADD data and associated files, in native form, shall be submitted by the DB Contractor to TxDOT as part of their final deliverable.

10.3.1 Design Visualization Services – Photo Rendering and Exhibits

Section 10.3.1 of the Design-Build Specifications, “Design Visualization Services – Photo Rendering and Exhibits,” is added:

DB Contractor shall provide photo renderings of no more than twelve locations to be determined by TxDOT at the 30% and 90% design stages, or as directed by TxDOT, but not to exceed 24 renderings total. DB Contractor shall submit the completed renderings to TxDOT within 30 days of TxDOT’s request.

DB Contractor shall coordinate with TxDOT the location of the photographs. DB Contractor shall take a minimum of two existing condition photographs at each of the twelve locations. These photographs will serve as the basis for the photo-renderings.

DB Contractor shall provide two mounted "before" images and two mounted "after" static 3-D photo matched images of proposed design Elements at each of the twelve locations.

10.4 Submittals

Section 10.4 of the Design-Build Specifications, “Submittals,” is added:

All submittals described in this Special Provision to Item 10 shall be in accordance with the schedule and for the purpose (e.g., 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 TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Preliminary TxDOT facility area layout plan	After NTP1	Review and Comment	10.1.1
Final TxDOT facility area layout plan	10 days after receipt of TxDOT comments	Review and approval	10.1.1
Final wiring and circuitry plans, office furniture and equipment layout, a field office floor plan, a lighting plan, and a parking plan	Prior to commencing construction of TxDOT’s field office	Approval	10.1.2
3-D design files	Upon Request	For Information	10.2
Proposed 3-D design file naming conventions	Prior to Implementation	Review and Approval	10.2.1

Table 10-1: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Project 3-D model with proposed striping, all CADD files associated with the 3-D model, and updated Utility Adjustment Concept Plans	Prior to every 3-D milestone review meeting	For Information	10.2.2
Additional OpenRoads, ITL, XML, DXF, ICM, and DTM design files	As Necessary	For Information	10.2.3
Electronic construction i-models	Upon Request	For Information	10.2.3
Project Photo Renderings	At 30% and 90% design stages or as directed by TxDOT and within 30 days of request	For Information	10.3.1

Design-Build Special Provision to Item 11

Public Information and Communications



Item 11, “Public Information and Communications,” of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

11.2.4 Public Information Office

Section 11.2.4 of the Design-Build Specifications, “Public Information Office,” is replaced with the following:

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 30 persons and another shall accommodate at least 10 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:

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

DB Contractor shall extend hours of operation to appropriately accommodate 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.

11.2.5 Meetings with the Public and Customer Groups

Section 11.2.5 of the Design-Build Specifications, “Meetings with the Public and Customer Groups,” is supplemented by the following:

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, 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.

11.2.8 Disseminating Public Information

Section 11.2.8 of the Design-Build Specifications, “Disseminating Public Information,” is supplemented by the following:

DB Contractor shall create a public website to convey Project-related information, including:

- DB Contractor contact information;
- Project maps;
- Frequently asked questions (FAQs);
- Current Project activities addressing design, construction, and maintenance;
- Timing of street and ramp closures and openings;
- Recommended route alternatives during closures;
- Newsletter and meeting materials;
- Meetings and special events announcements and calendar;
- Links to TxDOT Highway Conditions Reports;
- Links to other related sites as deemed appropriate by TxDOT;
- Job opportunities;
- Subcontractor information;
- Comment form;
- Mailing list request form;
- Historical archive of photos taken during construction;
- Renderings or video animations of the Project, as appropriate; and
- 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 through the TxDOT Project Manager 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.

11.3 Submittals

Section 11.3 of the Design-Build Specifications, “Submittals,” is supplemented by the following:

Table 11-1: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Public website design	Prior to construction	Review and comment	11.2.8

Design-Build Special Provision to Item 12

Environmental



Item 12, "Environmental," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

12.2.4 TxDOT-Provided Approvals

Section 12.2.4 of the Design-Build Specifications, "TxDOT Provided Approvals," is supplemented by the following:

A document containing a summary of the NEPA commitments and mitigation measures is provided in Attachment 12-1.

12.3.5 Natural Resource Biologist

Section 12.3.5 of the Design-Build Specifications, "Natural Resource Biologist," is added:

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 requirements of TxDOT Work Category 2.6.1, "Protected Species Determination (Habitat)" and 2.6.3, "Biological Surveys".

12.6.1 Asbestos Containing Material/Lead Base Paint

Section 12.6.1 of the Design-Build Specifications, "Asbestos Containing Material/Lead Base Paint," is added:

Bridge and building demolition will be required for the Project. TxDOT will test for asbestos containing material (ACM) and lead base paint (LBP) on building structures to be removed and the existing bridge structures to be removed or widened as shown on the TxDOT Schematic Design.

DB Contractor shall notify TxDOT, amend notifications as necessary, pay notification fees, and abate asbestos and lead based paint 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 for TxDOT approval the proposed abatement plan and/or a mitigation 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.

12.7 Submittals

Section 12.7 of the Design-Build Standard Specifications, "Submittals," is supplemented by the following:

Table 12-1: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Asbestos/lead based paint abatement plan	Prior to demolition of any bridges or buildings containing asbestos and/or lead based paint	Approval	12.6.1
Asbestos/lead based paint mitigation report	Prior to demolition of any bridges or buildings containing asbestos and/or lead based paint	Approval	12.6.1

Design-Build Special Provision to Item 13

Third-Party Agreements



Item 13, "Third-Party Agreements," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

13.1 General Requirements

Section 13.1 of the Design-Build Specifications, "General Requirements," is supplemented by the following:

Third party agreements for which DB Contractor shall assume and execute TxDOT's responsibilities and duties are described in Exhibit 8 to the DBA.

Design-Build Special Provision to Item 14

Utility Adjustments



Item 14, "Utility Adjustments," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

14.3.1 DB Contractor's Responsibility for Utility Identification

Section 14.3.1 of the Design-Build Specifications, "DB Contractor's Responsibility for Utility Identification," is supplemented by:

DB Contractor shall submit the Utility Strip Map for approval within (i) 90 days after NTP2 or (ii) 30 days before the first assembly package submission.

14.3.3 Utility Adjustment Concept Plans

Section 14.3.3 of the Design-Build Specifications, "Utility Adjustment Concept Plans," is supplemented by:

DB Contractor shall submit the initial Utility Strip Map for approval within (i) 90 days after NTP2 or (ii) 30 days before the first assembly package submission.

14.3.4.5.2 Abbreviated Utility Assemblies

Section 14.3.4.5.2 of the Design-Build Specifications, "Abbreviated Utility Assemblies," is replaced with:

DB Contractor shall prepare and submit for approval 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 14.1.1. 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 UJUA(s) or Utility Installation Request, Form 1082 as required in Section 14.2.4.5 and Affidavit(s) of Property Interest, if applicable. Each of the foregoing items shall comply with the requirements for same described in Attachment 14-1 (Utility Adjustment Forms).

14.4.9 Record Drawings

Section 14.4.9 of the Design-Build Specifications, "Record Drawings," is replaced with:

DB Contractor shall provide Record Drawings for approval to each Utility Owner for its adjusted Utilities where the Utility Adjustment Work was performed by DB Contractor. For the purpose of this Item 14, Record Drawings means construction drawings and related documentation revised to show significant changes made during the construction process, usually based on marked-up Final Design 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). Record 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 Item 4, "Scope of Work", of the General Conditions. DB Contractor shall provide the Record Drawings for each Adjustment to TxDOT prior to Final Acceptance.

Prior to Final Acceptance, DB Contractor shall provide for approval 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.

14.5

Submittals

Section 14.5 of the Design-Build Specifications, "Submittals," is replaced with the following:

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 14.5 or, if not stated therein, then as stated in Section 5.2.1.2.1 of the General Conditions. All Submittals shall conform to the standards required in the Project Management Plan. Any deliverable submitted by DB Contractor to TxDOT for review after 11:59 a.m. will be considered as submitted on the next business day.

All submittals described in this Item 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, and Adobe Acrobat files, unless otherwise indicated.

Table 14-1: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Any proposed changes to the provided TxDOT DB ROW Utility forms	As necessary	Approval	14.1
PMP – Utility Management Plan	Within 30 Days after NTP1	Approval prior to issuance of NTP2	14.1 and 4.2.9
Project Utility Adjustment Agreement	After NTP2, based on DB Contractor schedule	Approval	14.1.3.1
Utility Adjustment Agreement Amendments	After NTP2 based on DB Contractor schedule	Approval	14.1.3.2
Any mass mailings to Utility Owners	21 Days in advance of distribution	Review and Comment	14.2.2.1
Meeting Agendas	3 Business Days in advance of each scheduled meeting	Information	14.2.2.2
Meeting Minutes	Draft meeting minutes 5 Business Days after the conclusion of the meeting and prior to final distribution	Review and Comment	14.2.2.2
Affidavit of Property Interest	As part of the applicable Utility Assembly	Approval	14.2.4.1
Draft Quitclaim Deeds	Prior to submission of Utility Assembly	Approval	14.2.4.4
Letter of Confirmation (relinquishment of interest once Adjustment completed) from Utility Owner and/or Utility Owner's authorized representative, if applicable	In the applicable Utility Assembly, including copy of unsigned Approved Draft Quitclaim Deed	Approval	14.2.4.4
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	Approval	14.2.4.4
Utility Joint Use Acknowledgments	In the applicable Utility Assembly	Approval	14.2.4.5
Utility Installation Request, Form 1082	In the applicable Utility Assembly	Approval	14.2.4.5
DB Contractor's Utility Strip Map	Within (i) 90 days after NTP2 or (ii) 30 days before the first assembly package submission	Review and information	14.3.1

Table 14-1: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Utility Adjustment Concept Plan(s)	Within (i) 90 days after NTP2 or (ii) 30 days before the first assembly package submission (this plan is a working document and shall be continuously updated and modified as more project information becomes available) or (iii) upon TxDOT request	Review and, if applicable, Comment	14.3.3
Utility Adjustment Plans	In the applicable Utility Assembly	Approval	14.3.4.1 & 14.3.4.2
Utility Assemblies	Approval required prior to start of the affected Utility Adjustment Work	Approval	14.3.4.5
Temporary Adjustments	In the applicable Utility Assembly, if applicable, unless TxDOT waives/allows other method	Approval	14.3.4.5
Abbreviated Utility Assemblies	As necessary	Approval	14.3.4.5 and 14.3.4.5.2
Overall plan view maps of final Utility locations	Prior to Final Acceptance	Approval	14.4.9 & 14.5.3
Individual Record Drawing plans	In the applicable Utility Assembly, and at Project closeout	Approval	14.4.9 & 14.5.3
Utility Tracking Report (UTR)	Monthly	Information	14.5.2
Closeout information and documentation	Within 90 days after each Utility has been relocated, fully reimbursed and accepted by the Utility Owner	Information	14.5.3
Alternate Procedure List	Prior to commencement of any demolition, removal or other construction work for any Utility Adjustment	Approval	14.5.4

14.5.1 Maximum Number of Submittals

Section 14.5.1 of the Design-Build Specifications, "Maximum Number of Submittals," is replaced by the following:

DB Contractor shall coordinate all Submittals required pursuant to this Section 14.5. In each 10 Business Day period, DB Contractor shall not submit more than:

- Two Utility Assemblies (excluding Abbreviated Utility Assemblies); and
- Two of any other Submittals required under this Item 14 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 10 Business Day period, as necessary.

Design-Build Special Provision to Item 15

Right of Way (ROW)



Item 15, "Right of Way (ROW)," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

15.5 Early ROW Acquisition

Section 15.5 of the Design-Build Specifications, "Early ROW Acquisition", is replaced with the following:

TxDOT will continue to advance ROW acquisition to provide access for purposes of performing Construction Work for all the Schematic ROW. The DB Contractor will be updated regularly on the status of the acquisition process for each parcel.

15.6 Submittals

Section 15.6 of the Design-Build Specifications, "Submittals," is added:

Submittals described in Item 15 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 15-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated. Any deliverable submitted by DB Contractor to TxDOT for review after 11:59 a.m. will be considered as submitted on the next Business Day.

Table 15-1: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
PMP – ROW Acquisition Management Plan	Within 30 Days after NTP1; Quarterly	Approval prior to issuance of NTP2	15.2.3 and 4.2.10
Meeting Agendas	Three Business Days prior to each meeting	Information	15.2.9
Meeting Minutes	Within five Business Days from the date of the meeting	Review and Comment	15.2.9
Cost Summaries	Monthly	Approval	15.2.10
Status Reports	Monthly	Approval	15.2.10
Status Updates	Weekly or as requested	Information	15.2.10
Subcontractor Status Report	Monthly or as requested	Approval	15.2.10
ROWIS compatible spreadsheet of ROW data	Monthly	Approval	15.2.10
Completed closeout files	Within 90 days of the completed ROW parcel activity	Approval	15.2.11
Project ROW map	Part of the Acquisition Survey Document	Approval	15.3.1
Acquisition Survey Document	As part of any Acquisition Package	Approval	15.3.1
Monthly Parcel Report	Monthly	Information	15.3.2
Monthly Progress Report of ROW survey activity	Monthly	Information	15.3.2
ROW CAD Files	Prior to submission of the first Acquisition Package	Information	15.3.2

Table 15-1: Submittals to TxDOT

Submittals	Submittal Schedule	Department Action	Reference Section
ROW CAD Files Updates	As needed	Information	15.3.2
Five-year sales history, a preliminary title commitment or preliminary title report, copies of all underlying documents and a plot of all easements, including Existing Utility Property Interests, referenced therein for each parcel	As part of the Acquisition Package	Information	15.3.3
TxDOT Introduction letter and Landowner Bill of Rights to Property Owners and Displacees	After ROW Acquisition Management Plan approval	Approval and signature	15.3.4
Appraisal Reports	Prior to submission of the first Acquisition Package, and as requested	Approval	15.3.5
Acquisition Packages	Prior to delivering the offer to each property owner	Approval	15.3.6
Administrative Settlement Submittals	As necessary	Approval	15.4.1
Relocation Assistance Submittals	As part of the respective parcel's Acquisition Package or separately	Approval	15.4.2
Relocation Plan	Within 90 Days after NTP1, as part of a ROW Acquisition Management Plan update	Approval prior to commencement of Construction Work	15.4.2
Closing Submittals	Minimum of 24 hours prior to closing	Approval	15.4.3
Condemnation Packages	Prior to TxDOT submission to TTC for a minute order	Approval	15.4.4
Payment Submittals	As necessary	Approval	15.4.6

Design-Build Special Provision to Item 16

Geotechnical



Item 16, "Geotechnical," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

16.2.2 Geotechnical Investigation for Other Elements

Section 16.2.2 of the Design-Build Specifications, "Geotechnical Investigation for Other Elements," is supplemented by the following:

- All bridge foundations shall consist of drilled shafts. Piling shall not be used.

16.3.5 Surface Mix Type

Section 16.3.5 of the Design-Build Specifications, "Surface Mix Type," is replaced with the following:

Where flexible pavement structures are used, the surface mix shall be Stone-Matrix Asphalt (SMA) meeting *TxDOT Standard Specification Item 346*. 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.

16.3.6 Select Fill Material

Section 16.3.6 of the Design-Build Specifications, "Select Fill Material," is added:

Material used as embankment material in the top two feet below the bottom of flexible base shall be such as to produce a well-bonded embankment and shall have a minimum PI of 8 and a maximum PI of 30.

16.3.7 Underseal

Section 16.3.7 of the Design-Build Specifications, "Underseal," is added:

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.

16.3.8 Antistripping

Section 16.3.8 of the Design-Build Specifications, "Antistripping," is added:

Hydrated lime shall be added as an antistripping additive between the rates of 1.0 % minimum and 2.0% maximum by weight for asphalt concrete pavements. This shall meet the requirements of *TxDOT Standard Specification Items 341, 344, and 346*. If the Hamburg Wheel Test cannot be met within these limits, Liquid Antistripping agents as approved by the IQFM may be used in conjunction with lime.

16.4.1.3.2 Pavement Analysis Period (design life)

Section 16.4.1.3.2 of the Design-Build Specifications, "Pavement Analysis Period (design life)," is replaced with the following:

DB Contractor shall use 30 years for all new flexible pavement types and locations.

16.4.1.3.5 Design Moduli

Section 16.4.1.3.5 of the Design-Build Specifications, "Design Moduli," is replaced with the following:

Design moduli shall not exceed the maximum values in Table 16-3, as established from methods and criteria stated below, and in accordance with layer thickness specified in Table 16-3

Table 16-3: Design Structural Values for HMA Asphalt Pavements

Material Type	TxDOT Standard Specification(s)	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
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 (SMA)	Item 346	Same as Item 344
Thin Bonded Friction Courses	Item 348	Same as Item 344
Flexible Base (Unbound Base)	Item 247, Grades 1-2, 4 or 5	*45 ksi (no more than 4X the untreated subgrade modulus)
Treated Base	Item 275	*75 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

***If used, Item 247 Grade 4, shall be TY E complying with the requirements of "Item 247 General Note" provided in the RID

16.4.1.4 Rigid Pavement Design Requirements

Section 16.4.1.4 of the Design-Build Specifications, "Rigid Pavement Design Requirements," including all subsections, is omitted.

16.4.1.5 Design Traffic Considerations

Section 16.4.1.5 of the Design-Build Specifications, "Design Traffic Considerations" is added:

The corridor traffic data will be provided in the RID and shall be deemed a minimum acceptable traffic volume and composition to be used by DB Contractor for the purpose of pavement design for the mainlanes. DB Contractor is responsible for determining appropriate traffic to be used as a minimum for the design of cross street, frontage road, and driveway pavements. DB Contractor shall not be entitled to rely on the corridor traffic data in the RID for the purpose of meeting the Performance Requirements of the DBC or CMC. 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.

16.4.1.6 Pavement Type Requirement

Section 16.4.1.6 of the Design-Build Specifications, "Pavement Type Requirements," is added:

The following requirements shall be incorporated into the final pavement design:

16.4.1.6.1 Mainlanes

Section 16.4.1.6.1 of the Design-Build Specifications, "Mainlanes," is added:

DB Contractor shall utilize a flexible pavement design for the project mainlanes adhering to the requirements of the Design-Build Specifications and the TxDOT Pavement Manual. The mainlane pavement shall be a minimum thickness of eleven inches of asphalt on twelve inches of flexible base.

16.4.1.6.2 Frontage Roads (and Turnarounds)

Section 16.4.1.6.2 of the Design-Build Specifications, "Frontage Roads (and Turnarounds)" is added:

DB Contractor shall utilize a flexible pavement design for the project frontage road and turnaround pavement adhering to the requirements of the Design-Build Specifications and the TxDOT Pavement Manual. Frontage road and turnaround pavement design shall, at a minimum, match the pavement structure of the existing pavement.

16.4.1.6.3 Ramps

Section 16.4.1.6.3 of the Design-Build Specifications, "Ramps," is added:

Ramp pavements shall be constructed with the same section (materials and depths) as the adjacent mainlane pavement.

16.4.1.6.4 Cross Streets

Section 16.4.1.6.5 of the Design-Build Specifications, "Cross Streets", is added:

DB Contractor shall utilize a flexible pavement design for the project cross street pavement adhering to the requirements of the Design-Build Specifications and the TxDOT Pavement Manual. Cross street pavement design shall, at a minimum, match the pavement structure of the existing pavement.

16.4.1.6.5 Shoulders

Section 16.4.1.6.6 of the Design-Build Specifications, "Shoulders," is added:

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

16.4.2 Rehabilitation Pavement Areas

Section 16.4.2 of the Design-Build Specifications, "Rehabilitation Pavement Areas," is added:

The Project includes areas of pavement, the maximum extents of which are defined within Exhibit 1 of the DBA as the "Rehabilitation Pavement Areas", within which DB Contractor may retain some or all of the existing pavement cross section in place, provided that:

- At minimum, a new surfacing course shall be provided meeting or exceeding the smoothness requirements of Section 16.5.2;
- At Substantial Completion, all pavements within Rehabilitation Pavement Areas meet or exceed the Performance Requirements set forth in CMA Standard Specification Item 9; and
- The rehabilitated pavement design meets or exceeds the design criteria specified in Section 16.4.2.1 below.

If any of the above are not met, DB Contractor shall perform further rehabilitation or shall design and construct new pavement in accordance with Section 16.4.1, as necessary to achieve the specified conditions before Substantial Completion.

16.4.2.1 Rehabilitation Pavement Areas Design Criteria

Section 16.4.2.1 of the Design-Build Specifications, "Rehabilitation Pavement Areas Design Criteria," is added:

DB Contractor shall meet or exceed the following criteria:

- The minimum thickness for of the asphalt overlay shall be 2 inches.
- The minimum pavement design life shall be 20 years following Substantial Completion for flexible rehabilitation pavement design.
- Design moduli and minimum layer thicknesses for new materials used in flexible rehabilitation pavement design per Section 16.4.1.3.1 and Section 16.4.1.3.5.
- Design values for rigid rehabilitation pavement for new materials per Section 16.4.1.4.
- Corridor traffic data will be provided in the RID. The data provided in the RID shall be deemed a minimum acceptable traffic volume, composition and growth rate to be used by DB Contractor for the purpose of rehabilitation pavement design. DB Contractor shall not be entitled to rely on the corridor traffic data for the purpose of meeting the performance requirements of the DBC the CMC. 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.

16.4.2.2 Rehabilitation Pavement Areas Process and Requirements

Section 16.4.2.2 of the Design-Build Specifications, "Rehabilitation Pavement Areas Process and Requirements," is added:

This section provides guidelines on determining the structural capacity of existing facilities and the requirements for generating pavement designs which incorporate existing structures.

DB Contractor shall follow these of the TxDOT *Pavement Manual*:

- | | |
|-------------|--|
| Ch. 3 Sec 2 | Geotechnical Investigations for Pavement structures |
| Ch. 4 Sec 4 | Non-Destructive Evaluation of Pavement Structural Properties |
| Ch. 7 | Flexible Pavement Rehabilitation |
| Ch. 10 | Rigid Pavement Rehabilitation |

DB Contractor shall submit a pavement design report describing all analyses, data, policies, and other considerations used to design the structural aspects of the proposed pavement. The pavement rehabilitation designs developed by DB Contractor shall be part of the pavement design report, and include the following:

- Narrative discussing the overall objective, site particulars (location, facility type, soil conditions and drainage considerations), current pavement condition surveys conclusions, and recommended pavement structure.
- Soils map of the project area with a brief description of each type of soil located within each Rehabilitation Pavement Area. Provide information pertaining to shrink/swell potential, soil soluble sulfate content and plasticity.
- Results of non-destructive testing to characterize the existing structural condition. As a minimum, both an FWD and GPR survey shall be undertaken. The TxDOT MODULUS software summary or back calculation results are required. For existing rigid pavements, a report on the load transfer efficiency of representative joints and cracks. GPR survey results shall be used to show section uniformity and to identify possible subsurface defects, which will be validated by field coring.

- Results from field sampling to ensure materials quality and thickness, and adequate samples for any lab testing required to modify existing layers.
- Results from lab testing if any in-place stabilization is to be recommended. DB Contractor shall follow the design recommendations and criteria in TxDOT stabilization guidelines and TxDOT Standard Specifications (including Special Specifications).
- Design input values and output reports:
 - For flexible pavement rehabilitation, DB Contractor shall use TxDOT FPS 21, Modified Texas Triaxial design check, and mechanistic checks for fatigue cracking and rutting.
 - For rigid pavement rehabilitation, DB Contractor shall use design procedures outlined in the TxDOT *Pavement Manual*.
- Existing and proposed typical sections. For the proposed structure, clearly define the various pavement layers, thickness, and materials with TxDOT *Standard Specifications*. Also identify localized weaker areas that will need special treatment and/or replacement. For the existing structure, sections should be as detailed as possible. Proposed or existing positive drainage systems should be indicated on the typical sections.
- Structural strength validation plan. For roadway which incorporate existing roadway materials, the design report shall include a construction validation plan to demonstrate that the completed roadway has adequate capacity to carry the proposed design traffic.
- A concise summary of recommended pavement rehabilitation designs based on the data, analyses, and procedures.
- Appendices. Additional appendices (results of borings, material lab tests, raw PMIS data, life-cycle cost analysis, drainage analysis, Dynamic Cone Penetrometer (DCP) data, design exception approvals, etc.), as needed.

16.4.2.3 Use of Shoulders to Carry Construction Traffic

Section 16.4.2.3 of the Design-Build Specifications, "Use of Shoulders to Carry Construction Traffic," is added:

DB Contractor shall perform a structural evaluation of all shoulders proposed to carry mainlane traffic during construction. DB Contractor shall use the non-destructive testing and field sampling described above for this structural evaluation. The pavement design report shall include the results of a shoulder evaluation.

16.4.2.4 Pavement Widening

Section 16.4.2.4 of the Design-Build Specifications, "Pavement Widening," is added:

For widening of existing pavement sections, DB Contractor shall provide documentation of criteria and rationale for the construction approaches selected to widen sections. DB Contractor shall comply with the TxDOT Pavement Manual, historical performance, and TxDOT District guidelines when designing the widened sections and selecting construction approaches. If DB Contractor's pavement design of the widened section does not match the existing section, DB Contractor shall submit an analysis to address concerns about blocking subsurface moisture flow and to minimize the risk of failure of the construction joint between the different pavement structures.

For widened section areas that will be used as a travel lane, DB Contractor shall develop a full pavement design report for that lane following the guidelines given in the pavement design section. In that report, DB Contractor shall also provide a structural evaluation of the existing travel lanes and existing shoulders to ensure they are adequate to carry the design traffic loads.

Longitudinal construction joints along the existing and new pavement sections shall be placed within six inches from the final in-service lane stripe or the center of the lane. Geotextiles or stress absorbing membrane interlayer (SAMI) shall be placed over the widening joint to delay reflective cracking prior to performing asphalt overlays only.

For all widened sections, the interface between the new widened pavement and the existing pavement shall provide a uniform surface of the same material type across all adjacent lanes. In areas where an existing asphalt surface is in place and widening is required, a new surface course overlay will be required over the existing and widened pavements, with the surface HMA longitudinal joint offset from the underlying layers' longitudinal joint by at least 6 inches.

16.5.2 Smoothness Specification

Section 16.5.2 of the Design-Build Specifications, "Smoothness Specification," is replaced with the following:

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 Pay 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, in excess of 65 inches per mile for mainlane flexible pavements, in excess of 75 inches per mile for frontage roads and cross streets, or for correction of local roughness. After making corrections, re-profile the pavement section to ensure that corrections have achieved the required level of smoothness. It is recommended to conduct profiler measurements when a HMA layer is directly below the final surface to identify need for corrective action prior to final HMA lift in order to obtain desired IRI on final surface.

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.

All travel lanes constructed within the project limits and areas identified as travel lanes in the facility's ultimate configuration shall be tested in accordance with TxDOT *Standard Specifications* as Travel Lanes.

16.7 Submittals

Section 16.7 of the Design-Build Specifications, "Submittals," is added:

All submittals described in this Special Provision to Item 16 shall be in accordance with the schedule and for the purpose (e.g., approval, review and comment, for information) set forth in Table 16-4. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 16-4: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Traffic control plans associated with subsurface pavement investigations	Prior to performing any investigations	In accordance with Section 24	16.2.1
Preliminary Geotechnical Engineering Reports	10 Business Days prior to commencement of applicable Design Work	Review and Comment	16.2.1 and 16.2.2

Table 16-4: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Final Geotechnical Engineering Report	10 Business Days prior to commencement of applicable Construction Work	Approval	16.2.1 and 16.2.2
Preliminary Pavement Design Reports	10 Business Days prior to commencement of applicable Design Work	Review and Comment	16.4.1
Final Pavement Design Report	10 Business Days prior to commencement of applicable Construction Work	Approval	16.4.1
FWD data	As part of the daily QC inspection and test reports described is the TxDOT QAP for DB Projects and upon TxDOT request	Information	16.6

Design-Build Special Provision to Item 17

Land Surveying



Item 17, "Land Surveying," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

17.3.5 Units

Section 17.3.5 of the Design-Build Specifications, "Units," is added:

All survey Work shall be performed in the U.S customary units system of measurement. Work shall conform to Texas State Plane Coordinate System, South Zone (4205), NAD83 (1711) Epoch 2010. The surface adjustment factor for the Project is 1.00004.

Design-Build Special Provision to Item 18

Grading



Item 18, "Grading," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

18.1 General Requirements

Section 18.1 of the Design-Build Specifications, "General Requirements," is supplemented by the following:

Grading Work shall include 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.

Design-Build Special Provision to Item 19

Roadways



Item 19, "Roadways," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

19.2 Design Requirements

Section 19.2 of the Design-Build Specifications, "Design Requirements," is supplemented by the following:

DB Contractor shall design the elements of the Project to meet or exceed the geometric design criteria shown in Table 19-1 (Geometric Design Criteria).

In addition, 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.

Table 19-1: Geometric Design Criteria^{1,3}

	Mainlanes	Direct Connectors ²	Ramps	Frontage Roads	Cross Streets
Functional Classification	Urban Freeway	Freeway Ramp	Freeway Ramp	Urban Collector	Urban Collector
Design Speed	60 ¹⁻² / 70 ¹⁻⁶⁹ mph	40 ^a & b / 45 ^c mph	45 mph	45 mph	45 mph
Stopping Sight Distance	570 ¹⁻² / 730 ¹⁻⁶⁹ ft	305 ^a & b / 360 ^c ft	360 ft	360 ft	360 ft
Horizontal Alignment Criteria:					
Maximum Curvature (Min Radius)	3390 ft	750 ^a / 900 ^b / 1060 ^c ft	810 ft	810 ft	810 ft
Superelevation – e(max)	6 %	6 %	6 %	6 %	6 %
Maximum Curvature (Min Radius) w/o Superelevation	14100 ft	5230 ^a & b / 6480 ^c ft	6480 ft	6480 ft	6480 ft
Vertical Alignment Criteria:					
Maximum Gradient	3 %	4 %	4 %	4 %	4 %
Minimum Gradient	0.35 %	0.35 %	0.35 %	0.35 %	0.35 %
Crest (min K-Value)	247	84	61	61	61
Sag (min K-Value)	181	96	79	79	79
Maximum Algebraic Difference w/o Vertical Curve	0.5 %	1.0 %	1.0 %	1.0 %	1.0 %
Min Vertical Clearance – Roadway	18.5 ft	18.5 ft	18.5 ft	16.5 ft	16.5 ⁴ & ⁵ ft
Min Vertical Clearance – Railroad	23 ft 4 in	23 ft 4 in	23 ft 4 in	23 ft 4 in	23 ft 4 in
Cross Section Criteria:					
Lane Widths	12 ft	12 ft	14 ft	12 ft	12 ft
U-turn Width	N/A	N/A	N/A	25 ft (min)	25 ft (min)
Inside Shoulder Widths	10 ft	4 ft ⁶	2 ft (rdwy) 4 ft (str)	0 ft	N/A
Outside Shoulder Widths	10 ft	10 ft ⁶	6 ft (rdwy) 8 (str)	2 ft	N/A
Pavement Cross Slope ⁵	2.0 %	2.0 %	2.0 %	2.0 %	2.0 %
Side Slope Within Clear Zone	6:1	N/A	6:1	6:1	6:1

	Mainlanes	Direct Connectors ²	Ramps	Frontage Roads	Cross Streets
Side Slope Outside Clear Zone	4:1	N/A	4:1	4:1	4:1
Curb Offset	N/A	N/A	1 ft either side	1 ft either side	1 ft either side
Clear Zone Width	30 ft	16 ft	16 ft	6 ft (curbed)	6 ft (curbed)
Intersection Horizontal and Vertical Criteria:					
Corner Radii	N/A	N/A	N/A	60 ft	60 ft
Design Vehicle (Intersection)	N/A	N/A	N/A	WB-50	WB-50
Preferred Corner Geometry	N/A	N/A	N/A	Simple	Simple

Notes:

- Should there be a conflict between the TxDOT RDM and Table 19-1, Table 19-1 shall govern.
- Items with note “a” apply to Direct Connector 1; items with note “b” apply to Direct Connectors 2 and 3; items with note “c” apply to Direct Connector 4; (Direct Connector numbers are defined in the in DBA Exhibit 1 and on the TxDOT Schematic Design).
- Design values apply to new/widened pavement. For pavement areas where only Rehabilitation (overlay) is required, existing values may be maintained and the lane striping shall be in accordance with the TxDOT Schematic Design.
- For new bridges over roadways (excluding bridges to be widened) listed as part of TxDOT’s Texas Highway Freight Network, the minimum vertical clearance shall be 18.5 feet.
- To reduce sheet flow hazards, the mainlane pavement will require a cross slope break at mid-point or at the lane line. The typical section cross slope break shall be .02 ft/ft to .025 ft/ft.

19.2.1 Superelevation

Section 19.2.1 of the Design-Build Specifications, “Superelevation,” is supplemented by the following:

Superelevation transitions shall be designed and constructed such that to avoid zero percent cross slopes will not occur at locations of geometric vertical profile sags.

19.2.3 Roadway Design Deviations

Section 19.2.3 of the Design-Build Specifications, “Roadway Design Deviations,” is added:

- The westbound auxiliary lane outside shoulder on the I-2 mainlanes over Veterans Blvd. is allowed to match the existing shoulder width.
- On direct connectors, inside and outside shoulder widths may be reversed to increase stopping sight distance.
- Existing bridges to be widened shall maintain, at a minimum, the existing vertical clearances or 16.5’, whichever is lower.
- On I-2, the existing horizontal radii may remain at the following locations:
 - WBML from Sta. 2366 to Sta. 2382
 - EBML from Sta. 1361 to Sta. 1389

19.2.4 Design Exceptions for Proposed Construction

Section 19.2.4 of the Design-Build Specifications, “Design Exceptions for Proposed Construction,” is added:

There are no design exceptions allowed on this Project.

19.2.5 Design Exception Documentation for Existing Conditions within Project limits

Section 19.2.5 of the Design-Build Specifications, "Design Exception Documentation for Existing Conditions within Project Limits," is added:

There are no design exceptions currently on this project.

19.2.6 Miscellaneous Roadway Design Requirements

Section 19.2.6 of the Design-Build Specifications, "Miscellaneous Roadway Design Requirements," is added:

The elevation of the I-2 mainlane PGL at Sugar Rd. shall not exceed 3 feet above the proposed vertical profile shown in the Schematic Design.

DB Contractor shall coordinate, design, and construct the Project to accommodate future cross street improvements as defined in Attachment 19-1.

DB Contractor shall use Pharr District Standards with their design. District standards can be found at <http://www.dot.state.tx.us/phr/specinfo/standard.htm>.

Design-Build Special Provision to Item 20

Drainage



Item 20, "Drainage," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

20.1 General Requirements

Section 20.1 of the Design-Build Specifications, "General Requirements," is supplemented by the following:

If proposed design results in increased headwater elevations at cross drainage structures, a drainage easement will be required, only if water extends beyond the ROW. The easement shall encompass the area of inundation for the 100 year design storm.

All applicable cross drainage structures shall be FEMA Floodplain compliant.

Regional Regression equations shall only be used as approved by the TxDOT Pharr District Hydraulic Engineer.

DB Contractor shall remove all abandoned drainage structures. DB Contractor may plug and abandon existing pipe under undisturbed sections of mainlane, ramp and frontage pavement.

DB Contractor shall not install, place, or construct new drainage structures under any railroad tracks along the Project limits.

A forensic structural evaluation shall be performed by the DB Contractor on existing drainage systems which will remain in place. TxDOT shall determine if repair or replacement will be required.

20.2.1 Hydraulic Data Collection

Section 20.2.1 of the Design-Build Specifications, "Hydraulic Data Collection," is supplemented by the following:

DB Contractor shall coordinate with the Hidalgo County Drainage District and the applicable Hidalgo County Irrigation District(s) to ensure that the Project design complies with each District(s) requirements.

20.3 Design Requirements

Section 20.3 of the Design-Build Specifications, "Design Requirements," is supplemented by the following:

It is not the intent of this Project to reconstruct the frontage road drainage system in the frontage road Rehabilitation Pavement Areas defined under Section 2.4.1 of Exhibit 1 of the Design-Build Agreement.

20.3.1.1 Design Frequencies

Section 20.3.1.1 of the Design-Build Specifications, “Design Frequencies,” is replaced with the following:

DB Contractor shall use the design frequencies listed in Table 20-1 below:

Table 20-1: Drainage Design Summary Table

	Drainage Analysis and Evaluation	Q2	Q5	Q10	Q25	Q50	Q100	Q500
Mainlanes and Ramps	Design frequency for storm sewers, inlets, and laterals where emergency overflow is present. Maximum ponding width shall be the width of the shoulder.			X				
	Design frequency for storm sewers, inlets, and laterals for depressed (geometric sag) roadway sections with no emergency overflow. Maximum ponding width shall be the width of the shoulder.					X		
	All Bridge Class structures shall be designed such that bridge low chords are set at a minimum of 1.5-feet above the 1% AEP WSE.						X	
	The 500-year storm shall be calculated and analyzed for scour, as required in Section 20.3.5.4.1.							X
Frontage Roads (New Pavement)	Design frequency for all storm sewer inlets shall be the 10 year storm. Maximum ponding width shall be 12 feet.			X				
	Design frequency for storm sewers, inlets, and laterals for depressed (geometric sag) roadway sections with no emergency overflow. Allowable ponding width is the shoulder.					X		
	All Bridges Class Structures shall be designed such that bridge low chords are set at a minimum of 1.5-feet above the 4% AEP WSE. The 500-year storm shall be calculated and analyzed for scour, as required in Section 20.3.5.4.1.				X			X
	All non-bridge class culverts, excluding FEMA controlled floodplains, shall be designed to convey the 10-year storm, and the maximum allowable headwater elevation for the design frequency shall not exceed 1.5 feet below the edge of pavement low point of the applicable roadway.			X				

Drainage Analysis and Evaluation		Q2	Q5	Q10	Q25	Q50	Q100	Q500
City and County Cross-Streets	Design frequency for storm sewers for urban roadway sections. Maximum ponding width shall be the width that will allow passage of one lane of traffic.		X					
	Design frequency for open channel and small culverts for rural roadway section. Culverts shall be designed to convey the 10-year storm, and the maximum allowable headwater elevation for the design frequency shall not exceed 1.5 feet below the edge of pavement low point of the applicable roadway.			X				
	Design frequency for inlets along depressed roadways. Allowable ponding width is the depth and width that will allow passage of one lane of traffic.				X			
<p>Notes: A depressed roadway provides nowhere for water to drain even when the curb height is exceeded. Storm drains on facilities such as underpasses, depressed roadways, etc., where no overflow relief is available shall be designed for the 2% annual exceedance probability (AEP) event (Q50) with the exception of City and County Cross Streets, as defined above in the table.</p> <p>For City and County Cross Streets, if the local government has different requirements than those shown in the table above, the local government requirements prevail.</p> <p>All facilities except storm drains shall be evaluated for the 1% AEP event (Q100). If a feature is within the floodplain, it should be assessed for 20% AEP (Q5), 10% AEP (Q10), 4% AEP (Q25), and 2% AEP (Q50) as well as the 1% AEP.</p> <p>For FEMA regulated floodplains, it may not be desirable to design roadway above the 100-year storm.</p> <p>The existing drainage system may remain in Frontage Road Rehabilitation Pavement Areas.</p>								

20.3.1.2 Hydrologic Analysis

Section 20.3.1.2 of the Design-Build Specifications, “Hydrologic Analysis,” is replaced with the following:

Hydrologic calculations for off-site run-off shall include the assumption that any undeveloped area adjacent to the Project ROW will be developed as commercial use for the first 150 feet adjacent to the Project ROW. 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 the 150-foot strip of land adjacent to the Project ROW modeled for commercial-use development.

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.

Roadside ditch velocity restrictors are allowed only at outfall locations and only as needed to mitigate excessive outflow velocities.

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 temporary drainage system and proposed drainage improvements do not result in any adverse impacts. Flood damage potential for the Project, while under construction and when completed, shall not exceed pre-Project conditions.

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 = 0.35
 - For areas outside the Project ROW, use the methods in Chapter 4 of the TxDOT Hydraulic Design Manual for calculating the Run-off Coefficients
- Minimum Time of Concentration, T_c = 10 minutes
- Use of underground storage facilities for detention and/or retention for mitigation of adverse impacts is prohibited.
- DB Contractor’s base hydraulic model shall reflect the most current as-built conditions.

20.3.2 Storm Drain Systems

Section 20.3.2 of the Design-Build Specifications, “Storm Drain Systems,” is supplemented by the following:

Place manholes or combination manholes and inlets wherever necessary for clean-out and inspection purposes. See Chapter 10, Section 6 of the *TxDOT Hydraulic Design Manual* for the manhole spacing criteria.

Pipe connections from inlets to trunk lines, on retaining walls, shall be vertical. No horizontal pipe connections or systems will be allowed.

The use of “T” connections and “Y” connections in storm sewer systems is not permitted unless approved in writing by TxDOT.

Proposed drainage systems which connect to existing drainage systems shall be analyzed and documented as a complete system, designed from most upstream point to downstream outfall locations.

Water surface elevations above drop inlet grates shall not exceed 6 inches, unless otherwise approved by TxDOT.

Where possible, storm drain systems shall be “gravity flow” designs; with the hydraulic grade line less than the top of pipe. Pressure flow design may be used at locations where the Engineer of Record can demonstrate pressure flow is un-avoidable, or may provide benefit to the project.

Existing slotted drains may remain in place if in good condition and adequately sized to meet the drainage requirements.

The existing drainage system may remain in Frontage Road Rehabilitation Pavement Areas.

20.3.2.1 Pipes

Section 20.3.2.1 of the Design-Build Specifications, “Pipes,” is replaced by the following:

DB Contractor shall meet the requirements set forth in Chapter 10 of the TxDOT *Hydraulic Design Manual*.

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. DB Contractor shall provide water-tight connections such as rubber gaskets or other methods for all reinforced concrete pipe.

All new pipes shall be reinforced concrete pipe, with the exception of pipe drains for mechanically stabilized earth (MSE) walls. On mainlanes, ramps, frontage roads, driveways, and cross-streets, 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 this Item 20 and Item 21, “Structures”. If an existing pipe is less than 24 inches, is adequately sized to meet the drainage requirements, and is in good condition, then it may remain in place unless the pavement above the pipe is disturbed. If the pavement above a pipe (that is less than 24 inches in diameter) is disturbed, the pipe must be replaced with a minimum 24 inch pipe.

Storm drain design will be non-pressure flow unless otherwise approved by TxDOT.

Trunk lines may be designed through the inlets.

- Pipe depth of cover: 1 foot desirable; 6 inches minimum (top of pipe to bottom of treated subgrade)
- Pipe slope: $\geq 0.50\%$ desirable; 0.10% minimum
- Pipe flow velocities: 3 fps minimum; 12 fps maximum
- Outfall velocity criteria: 6 fps desirable; > 8 fps provide outfall protection

20.3.3 Miscellaneous Drainage Design Requirements

Section 20.3.3 of the Design-Build Specifications, “Miscellaneous Drainage Design Requirements,” is supplemented with the following:

DB Contractor’s design shall not include any existing or proposed culverts or drainage pipes (including any associated inlets, manholes, etc.) parallel and beneath braided ramp embankment or retaining walls.

20.3.3.1 Inlet Design Criteria

Section 20.3.3.1 of the Design-Build Specifications, “Inlet Design Criteria,” is replaced with the following:

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 6 inches for the design frequency

Area Reduction factors and Perimeter reduction factors shall not be used in this project.

DB Contractor shall place inlets in accordance with the criteria listed in Table 20-3 below:

Table 20-3: Inlet Design Criteria

Storm Drain Inlets	
Inlet Locations	<ol style="list-style-type: none"> 1. On-grade: Place inlets to keep gutter ponding less than or equal to maximums, as defined in Section 20.3.2.2 of the Design-Build Specifications. Carryover is acceptable. 2. Low points: Inlet shall be located at low point of vertical curve. Place flanking inlets both sides of low point. 3. Redundant inlets: Inlets shall be located at ends of curb returns at intersections and adjacent bridge ends to intercept carry-over flow from bridges. 4. 100% flow interception: On pavement at end of retaining wall and end of bridges, at ramp gores, at intersections. 5. Inlets shall be placed outside the travel lanes.

20.3.4 Stormwater Storage Facilities

Section 20.3.4 of the Design-Build Specifications, “Stormwater Storage Facilities,” is supplemented by the following:

An analysis was performed to determine the preliminary number of recommended SWSF using ponds and roadside ditches. The results are reported in the H&H Report contained in the RIDs. DB Contractor shall be responsible for determining the final size, number and locations of ponds. DB Contractor shall use the ponds and roadside ditches to accommodate the required storage volume and satisfy NPDES requirements/ regulations.

20.3.4.3 SWSF Depth and Shape

Section 20.3.4.3 of the Design-Build Specifications, “SWSF Depth and Shape,” is replaced by the following:

DB Contractor shall design and construct the SWSF depth and shape to include a length-to-width ratio of 3:1 for the ponds.

Any length-to-width ratio variation of the ponds 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 for the ponds 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>

20.3.5.1 Culverts

Section 20.3.5.1 of the Design-Build Specifications, “Culverts,” is replaced by the following:

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 the 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.

FEMA floodplain compliance and flood prevention of private property supersedes overtopping of the roadway and/or designing top of crown elevations above the 100-yr ARI.

Culverts shall be designed to maintain a minimum velocity of two feet per second, if feasible. If design flow velocities less than two feet per second are unavoidable, culvert shall be designed for full flow at 80% of the internal diameter to account for sedimentation in the culvert. Culverts shall be designed to achieve a maximum velocity of 12 feet per second in the culvert. The minimum box culvert height, inside dimension, shall be three feet.

For all mainlane and ramp culverts, the maximum allowable headwater elevation for the design frequency shall not exceed 1.5 feet below the edge of pavement of the applicable roadway.

Culverts shall be designed to achieve a minimum tailwater velocity of 2 fps, and a maximum tailwater velocity of 10 fps, as feasible. Outfall velocities greater than 10 fps may require velocity-reducing devices and outfall channel erosion protection 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.

To protect private property, SWMM, or equivalent 2-D modeling method, will be required if traditional 1-D design methods result in increased headwater elevations at bridges and cross drainage culvert locations to determine limits of drainage easements. HECRAS 2-D modeling is an acceptable alternative to SWMM.

Culverts are classified as major or minor, as follows:

- Major Culvert: A culvert that provides an opening of more than 35 SF in a single or multiple installations. A major culvert may consist of a single round pipe, pipe arch, open or closed-bottom box, bottomless arch, or multiple installations of these structures placed adjacent or contiguous as a unit. 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 4 feet and design shall include drop-off protection. Major culverts should be analyzed using HEC-RAS.
- 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.

20.3.5.3

Ditches

Section 20.3.5.3 of the Design-Build Specifications, "Ditches," is replaced by the following:

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.

Ditches between roadways:

- Design ARI = 10-year
- Flat-Bottom Ditch = 6-foot bottom width, 4:1 side slopes
- V-Ditch = 6:1 side slopes
- Minimum ditch slope = 0.10%

Ditches next to ROW line:

- Design ARI = 5-year
- Flat Bottom Ditch = 6-foot bottom width, 4:1 side slopes
- V-Ditch = 6:1 side slopes
- Minimum Ditch Slope = 0.10%

20.3.5.4.1 Design Frequency

Section 20.3.5.4.1 of the Design-Build Specifications, "Design Frequency," is supplemented by the following:

Regional Regression equations shall not be used for any bridge class, cross drainage, or FEMA floodplain compliance analysis.

NRCS method shall be used for all FEMA floodplain compliance analysis.

The DB Contractor shall propose increased bridge lengths (a larger bridge opening) as first design priority in mitigating for scour and/or erosion issues.

Large aggregate bridge abutment protection, in lieu of concrete riprap, may be used to reduce scour but only second to first increasing the bridge length and opening, as feasible.

20.3.5.4.4 Bridge Deck Drainage

Section 20.3.5.4.4 of the Design-Build Specifications, "Bridge Deck Drainage," is supplemented by the following:

Bridge deck drain grates shall be positioned directly against bridge rail barriers in order to minimize carry-over flow. Bridge designers shall design bents and girder spacing to allow for proper positioning of deck drain grates and openings against bridge rail barriers.

Design-Build Special Provision to Item 21

Structures



Item 21, "Structures," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

21.2 Design Requirements

Section 21.2 of the Design-Build Specifications, "Design Requirements," is supplemented by the following:

The Corridor Structure Type Study and Report shall clearly define DB Contractor's action to achieve a 75-year service life for new Project bridges, walls, culverts and miscellaneous structures.

Structures crossing a railroad must span the entire railroad ROW.

21.2.4 Bridge Decks and Superstructures

Section 21.2.4 of the Design-Build Specifications, "Bridge Decks and Superstructure," is supplemented by the following:

The DB Contractor shall use the following superstructure components and parameters for the design of the direct connectors and the overpasses:

- For concrete beams on new bridges, TxDOT Standard Tx Girders, depth determined by design;
- For concrete beams on existing bridges to be widened, any TxDOT standard beam type is allowed;
- For new bridges, varied structural depths within individual structures for the overpasses are not allowed except where concrete spans change to steel spans, at the railroad, and at S. Jackson Rd to accommodate the future widening;
- Sealed expansion joints;
- Multi-plate steel girders, if required by design;
- Single slope traffic rail (SSTR); and
- The use of fracture critical components is not allowed.

The use of Precast Concrete Panels for Overhangs is not allowed.

21.2.5 Bridge Substructure

Section 21.2.5 of the Design-Build Specifications, "Bridge Substructure," is supplemented by the following:

At cross streets, overpass bridge structures shall clear span all intersection pavement including through lanes and turn lanes on the Project. Bridge foundations and columns may be located between the cross-street pavement and U-turns.

Spread footing foundations are not allowed.

For bridge widenings, the DB Contractor shall protect new and existing columns in accordance with the TxDOT Bridge Design Manual.

The DB Contractor shall use the following substructure components and parameters for the design of the direct connectors and the overpasses:

- Cast-in-place or precast bent caps;
- Monolithic cast-in-place concrete pedestals to accommodate varying bridge depths;

- Hammerhead inverted “T” concrete bent caps with single column for braided ramps and direct connectors;
- Post-tension caps, if required by design;
- Concrete straddle bents, if required by geometry;
- Concrete columns supported by concrete cap on a multi-drilled shaft foundation;
- Drilled shaft foundations.

The use of cast-in-place, multi-column bents are allowed. The use of steel bent caps are not allowed. Unless stated otherwise by TxDOT, the use of formliners are permitted.

21.2.7 Retaining Walls

Section 21.2.7 of the Design-Build Specifications, “Retaining Walls,” is supplemented by the following:

Other types and components of retaining walls may be used, but will be allowed only if:

- DB Contractor can demonstrate that the design of the wall type and components shall meet the functional requirements of the Project; and
- DB Contractor provides the appropriate certifications from the PSQAF and IQF verifying that an independent review of the walls has been performed and that the walls have been designed and constructed to engineering standards appropriate to the Site conditions.

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 use of formliners is permitted. With TxDOT’s approval, the DB Contractor may use another device.

21.2.8 Noise Barriers

Section 21.2.8 of the Design-Build Specifications, “Noise Barriers,” is supplemented by the following:

Any damage to noise barriers caused by DB Contractor-Related Entities shall be repaired in accordance with TxDOT Standard Specifications. Damage caused by third parties shall be repaired in accordance with the Agreement.

Panel design and construction shall limit the risk of falling debris resulting from traffic impacting the noise wall.

Timber noise barriers are not allowed.

21.2.9 Drainage Structures

Section 21.2.9 of the Design-Build Specifications, “Drainage Structures,” is supplemented by the following:

In developing the design of drainage structures, DB Contractor shall account for projected loads for the Project.

21.2.10 Sign, Illumination, and Traffic Signal Supports

Section 21.2.10 of the Design-Build Specifications, “Sign, Illumination, and Traffic Signal Supports,” is supplemented by the following:

For bridges and walls longer than 500 feet, sign supports shall be provided at 500-foot intervals. The sign supports shall accommodate sign areas up to and including 16 SF.

21.2.11 Rehabilitation of Structures to be Widened, Extended, or Reused

Section 21.2.11 of the Design-Build Specifications, "Rehabilitation of Structures to be Widened, Extended, or Reused," is supplemented by the following:

The following structures are to be widened, extended, or reused and shall be rehabilitated:

Table 21-1: Bridges to be Widened, Extended or Reused

STRUCTURE NUMBER (NBI #)	FEATURE CROSSED	FACILITY CARRIED
21-109-0-0039-17-276	S. McColl Rd.	I-2 WBML
21-109-0-0039-17-275	S. McColl Rd	I-2 EBML
21-109-0-0039-17-271	E. Jackson Ave.	I-2 WBML
21-109-0-0039-17-272	E. Jackson Ave.	I-2 EBML
21-109-0-0039-17-263	Veterans Blvd./ I Rd.	I-2 EBML
21-109-0-0039-17-261	FM 1426 (Nebraska St.)	I-2 EBML
21-109-0-0255-08-076	E. Sioux Rd.	US 281 NBML

Note: Varying beam depths are permitted for these structures for the purpose of maintaining existing vertical clearance.

Bridge Condition Rating Summary located in the RIDs contains a table that provides the most current condition ratings for structures.

For bridge widenings, conventional reinforcement shall be utilized. Where bridge decks are less than 8.5 inches, the DB Contractor shall widen the structure with an 8 inch deck thickness to match the existing.

21.3 Construction Requirements

Section 21.3 of the Design-Build Specifications, "Construction Requirements," is supplemented by the following:

21.3.1 Steel Finishes

Section 21.3.1 of the Design-Build Specifications, "Steel Finishes," is added:

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.

The color for structural steel paint shall conform to the aesthetic schemes of the Project.

21.3.2 Structure Metals

Section 21.3.2 of the Design-Build Specifications, "Structure Metals," is added:

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.

21.3.3 Steel Erection

Section 21.3.3 of the Design-Build Specifications, "Steel Erection," is added:

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.

The DB Contractor shall only consider bolted splices, welded splices are not allowed.

21.3.5 Construction Quality

Section 21.3.5 of the Design-Build Specifications, "Construction Quality," is added:

The IQF shall perform Thermal Integrity Profiler (TIP) testing of drilled shafts in accordance to ASTM D 7949, except as noted below.

21.3.5.1 TIP Testing

The DB Contractor shall supply all materials and equipment required to perform TIP tests. Equipment to perform the test shall have the following minimum requirements:

- Probe or wire options: A computer based TIP data acquisition system for (a) display of signals during data acquisition (probe option only), or (b) to monitor temperature versus time after casting (wire option only).
- Probe only option:
 - Thermal probe with four (4) infrared sensors equally spaced at 90° around the perimeter that read temperatures of the tube wall to within 1°F accuracy. The probes shall be less than 1.25 in. in diameter and shall freely descend through the full depth of properly installed access tubes in the drilled shafts;
 - One depth encoder sensor to determine probe depths;
 - Ability to collect data at user specified depth increments.
- Wire only option: Ability to collect data at user defined time intervals (typically 15 to 60 min.)

21.3.5.2 Test Result Reporting

The IQF shall prepare a written report as part of the test results to include the following:

- Graphical Displays. Provide graphical displays of all temperature measurements (probes and wires) versus depth.
- Significant Temperature Deviations. Report indication of unusual temperatures, particularly significantly cooler local deviations of the average at any depth from the overall average over the entire length, in either probe or thermal wire measurements.
- Overall Average Temperature. This temperature is proportional to the average radius computed from the actual total concrete volume installed (assuming a consistent concrete mix throughout). Radius at any point can be then determined from the temperature at that point compared to the overall average temperature.
- Temperature Variation. Report variations in temperature between tubes (at each depth) which in turn correspond to variations in cage alignment. Where concrete volume is known, report the cage alignment or offset from center.

- Shaft Specific Information. Report shaft specific construction information (e.g. elevations of the top of shaft, bottom of casing, bottom of shaft, etc.) when available. These values should be noted on all pertinent graphical displays.

21.3.5.3

Testing

The DB Contractor shall conduct the following forty (40) TIP tests, as noted below at the following locations:

- Braided ramps – 2 tests per ramps (6 total)
- All direct connectors - 5 per Direct Connector (20 total)
- US 281 Overpass – 4 tests
- Bus 83/Jackson Road Overpass – 10 tests

This item measured by each successful test that is approved by the IQFM.

Design-Build Special Provision to Item 22

Rail



Item 22, "Rail," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

22.1 General Requirements

Section 22.1 of the Design-Build Specifications, "General Requirements," is supplemented by the following:

DB Contractor shall be responsible for all fees, flagging charges, and inspection charges required by the railroad.

22.1.1 Insurance Requirements

Section 22.1.1 of the Design-Build Specifications, "Insurance Requirements," is added:

If any railroad impacted by the Project requires insurance in addition to that required by the Contract Documents, DB Contractor shall procure such additional insurance at its own cost.

22.3.1 Railroad Agreements

Section 22.3.1 of the Design-Build Specifications, "Railroad Agreements," is supplemented by the following:

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.

22.3.2 Operation Safety

Section 22.3.2 of the Design-Build Specifications, "Operation Safety," is supplemented by the following:

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-Business 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.

22.4 Construction Requirements

Section 22.4 of the Design-Build Specifications, "Construction Requirements," is supplemented by the following:

22 – I-2/I-69C Interchange

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.

DB Contractor shall comply with the TxDOT’s standard sheets for railroad work found at the following link:

<https://www.txdot.gov/inside-txdot/division/rail/requirements.html>

The TxDOT standard sheet titled “Railroad Requirements for Bridge Construction” is modified as follows:

The minimum Construction Clearance Envelope for Union Pacific Railroad is set at 15’-0”.

22.5

Submittals

Section 22.5 of the Design-Build Specifications, “Submittals,” is supplemented by the following:

Table 22-1: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Copies of all additional or modified insurance policies	Prior to any entry upon operating railroad property	For Information	22.1.1

Design-Build Special Provision to Item 23

Aesthetics and Landscaping



Item 23, “Aesthetics and Landscaping,” of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

23.1 General Requirements

Section 23.1 of the Design-Build Specifications, “General Requirements,” is replaced by the following:

This Item 23 presents the minimum aesthetics and landscape design requirements for the Project. To assure sufficient attention is given to aesthetics on the Project, an aesthetic allowance has been established per Section 4.1.1 of the Design-Build Agreement. This allowance will be used solely for aesthetic treatments and aesthetic enhancements that are above the base elements described below and that are included in the standard design and construction requirements for the aesthetic element(s). For example, an enhanced (aesthetic) bridge rail may be proposed on the Project. However, the aesthetic allowance will cover only the aesthetic enhancement cost above the cost of providing a standard bridge rail. The DB Contractor is responsible for the cost of providing the standard bridge rail.

Base elements are those standard elements or features that are required to satisfy TxDOT design criteria, TxDOT Standards and TxDOT Standard Specifications. Base elements will not be paid for as part of the Aesthetics Allowance. For purposes of this Project, the following list of items will be considered base elements of the Project:

- Removal of existing trees and vegetation;
- Removal and transplant of all impacted Palm trees within the Project corridors, within 5 miles of the Project limits to an area approved by TxDOT;
- Removal and resetting of existing, Welcome to Pharr, San Juan and McAllen signs;
- Landscaping parabolic walls to be removed, replaced and redesigned per the new interchanges
- Mitigation (replacement of the same or greater size than existing) for damage to existing trees;
- Native seeding;
- Topsoiling;
- Project grading to achieve project requirements;
- Permanent and temporary erosion control;
- Permanent and temporary dust control;
- Materials and finish, including standard form liners and texture, of all bridge elements required for the project, including (but not limited to) railings/parapets, fine surface finish, colored to match base color, columns, abutment walls, girders, fencing, etc., as outlined in the Column Form Liner Details found in the RIDs;
- Materials and finish, including standard form liners and texture, of all retaining, sound or freestanding walls required, vertical rustication is standard finish treatment used for these elements, as detailed in the Retaining Wall Architectural Details and the Sound Wall Architectural Details found in the RIDs;
- Materials and finish of all signals and sign poles;
- Roadway striping, including crosswalks;
- Corridor theme color paint, stain, and integral pigment applied to all new structures and any existing structures impacted by the Project;
- Costs of maintenance of ROW for trash, debris, and graffiti removal; and
- Cost for design of project including development of Aesthetics Concepts, and Aesthetics and Landscape Plan.

Aesthetic elements are those enhanced elements or features that are TxDOT design criteria, TxDOT Standards and TxDOT Standard Specifications. Aesthetic elements will be paid for as part of the aesthetics allowance. For purposes of this Project, the following items will be considered the aesthetic elements of the Project:

- Aesthetic treatments of barriers and railings, this may include material, finish, color and texture;
- Aesthetic treatments of light poles and mast arms;
- Irrigation and irrigation sleeving, above that required for mitigation, or considered, under elements, as listed in Item 23;
- Material finish and color of light poles and mast arms, ambient lighting colors.

23.1.1 Aesthetics Concepts

Section 23.1.1 of the Design-Build Specifications, “Aesthetics Concepts,” is supplemented by the following:

DB Contractor shall coordinate with Local Government Entities and TxDOT to develop an Aesthetics Concept that is considered above the TxDOT minimum requirement, as listed in Item 23. Project Corridor Aesthetics Technical Guidelines, contained in the RIDs which are hereby incorporated by this reference.

The DB Contractor shall meet with all appropriate Governmental Entity staff to identify desired aesthetic treatments and enhancements to be implemented in the aesthetics concepts for the Project. TxDOT shall be invited and provided a 48-hour advance notice to all meetings Governmental Entities. With input from meeting(s) with Governmental Entities, the DB Contractor shall prepare one aesthetics concept for the Project that provide design intent and estimated costs for these concepts for presentation to Governmental Entities. It shall be understood that these concepts will need to be adapted to site specific conditions. Before presenting the aesthetics concepts to the Governmental Entities, the DB Contractor shall meet with and review the proposed aesthetics concepts with TxDOT. The DB Contractor shall present the final aesthetics concepts to all appropriate Governmental Entity. The DB Contractor shall base this presentation on the principles, requirements and strategies in Section 23.2. After meeting with the Governmental Entity, the DB Contractor shall prepare a final aesthetics concept and submit it to TxDOT for approval. The approved aesthetics concept shall be incorporated into the Aesthetics and Landscaping Plan for TxDOT approval.

The DB Contract shall refer to the following aesthetics RIDs as a basis of their designs:

- Concrete Form Liner Details
- Retaining Wall Architectural Detail
- Retaining Wall Details
- Retaining Wall State Seal and Map Detail
- Sound Wall Architectural Detail

23.1.2.2 Landscaping

Section 23.1.2.2 of the Design-Build Specifications, “Landscaping,” is supplemented by the following:

DB Contractor’s establishment program must meet the requirements of TxDOT *Standard Specification Item 193 Landscape Establishment*

DB Contractor’s maintenance program must be approved by TxDOT and shall incorporate any existing agreements between TxDOT and the Governmental Entities.

23.1.3 Personnel

Section 23.1.3 of the Design-Build Specifications, “Personnel,” is supplemented by the following:

DB Contractor’s landscape architect developing the Aesthetics and Landscaping plan must have experience in designing aesthetics and landscaping elements for roadway projects of similar scope and size.

DB Contractor's landscape architect shall coordinate with the District's landscape architect, or the otherwise TxDOT appointed designee, for the TxDOT 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 Pharr District's offices to be requested by DB Contractor in advance of the commencement of landscape and aesthetics design.

23.2.3 Bridges and Other Structures

Section 23.2.3 of the Design-Build Specifications, "Bridges and Other Structures," is supplemented by the following:

All substructure columns, abutments, bridge rails, and other structures shall be consistent in form and texture, with similar shapes and details used for all bridges, in accordance with the approved Aesthetic and Landscaping Plan.

DB Contractor shall ensure that a constant superstructure depth is maintained throughout the bridge length consisting entirely of concrete girders. Varying beam depths are allowed for certain widened bridges as specified in Section 21.2.11.

For superstructures where both steel girders and concrete beams are used, the depth of steel beams may vary from the concrete beam depths, and transitions from concrete beams to steel girders may be accomplished by dapped end girders.

23.2.4 Trees, Shrubs, and Other Plant Materials

Section 23.2.4 of the Design-Build Specifications, "Trees, Shrubs, and Other Plant Materials," is supplemented by the following:

DB Contractor shall consult with the agricultural extension agent of Hidalgo County and TxDOT for recommended South Texas native plant species lists.

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.

The DB Contractor shall use trees native to the cities of Pharr, McAllen and San Juan.

Native trees shall be a minimum of six feet tall and shall have a three inch caliper minimum.

Native trees, if used, shall be placed in the Project ROW between mainlanes and frontage roads. The mature tree canopy shall not overhang the travel lane or shoulder of any part of the roadway.

23.2.6 Color Palette

Section 23.2.6 of the Design-Build Specifications, "Color Palette," is added:

DB Contractor shall submit a color palette 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, as approved by TxDOT.

23.2.7 Lighting Aesthetics

Section 23.2.7 of the Design-Build Specifications, “Lighting Aesthetics,” is added:

DB Contractor shall design one pole type for the entire corridor.

DB Contractor shall provide a lighting layout plan that addresses each light fixture, and type of light fixture (i.e., LED, lighting, point source lighting, and High Intensity Discharge lamps).

23.3 Construction Requirements

Section 23.3 of the Design-Build Specifications, “Construction Requirements,” is supplemented by the following:

DB Contractor shall give the Governmental Entities a reasonable opportunity to salvage existing landscaping and aesthetic elements prior to construction in the applicable working area.

23.4 Aesthetic and Landscaping Enhancements

Section 23.4 of the Design-Build Specifications, “Aesthetic and Landscaping Enhancements,” is supplemented by the following:

The capital and maintenance costs of any TxDOT approved adjacent Governmental Entity improvements (aesthetic and landscaping enhancements) beyond what is described as the aesthetics elements herein, shall be the responsibility of the adjacent Governmental Entity.

23.5 Submittals

Section 23.5 of the Design-Build Specifications, “Submittals,” is supplemented by the following:

Table 23-1: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Locations of transplanted Palm Trees	As part of the Aesthetics and Landscaping Plan (part of the Final Design Submittal)	Approval	23.1
Preliminary aesthetics concepts	As needed	Review and comment	23.1.1
Final aesthetic concept	As part of the Final Design Submittal	Approval	23.1.1
Aesthetics and Landscaping Plan	As part of the Final Design Submittal	Approval	23.1.2
Color Palette Plan	As part of the Final Design Submittal	Review and comment	23.1.1
Lighting Layout Plan	As part of the Final Design Submittal	Approval	23.2.7

Design-Build Special Provision to Item 24

Signing, Delineation, Pavement Marking, Signalization, and Lighting



Item 24, "Signing, Delineation, Pavement Marking, Signalization, and Lighting," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

24.3.1 Final Design

Section 24.3.1 of the Design-Build Specifications, "Final Design," is supplemented by the following:

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.

Any proposed traffic signal improvements shall be based on projected volumes and turning movements outlined in the project's IAJR.

24.3.4 Third-Party Signs

Section 24.3.4 of the Design-Build Specifications, "Third-Party Signs," is supplemented by the following:

All costs associated with fabricating and installing these signs will be borne by the sign applicant.

24.3.5 Sign Support Structures

Section 24.3.5 of the Design-Build Specifications, "Sign Support Structures," is supplemented by the following:

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 21 feet between any point on the roadway and the bottom of the sign.

DB Contractor shall design all overhead sign structures for 100 mph wind. Large roadside sign supports shall be designed for 80 mph winds.

Guide signs shall not be mounted to bridges without TxDOT approval.

24.3.7 Pavement Markings

Section 24.3.7 of the Design-Build Specifications, "Pavement Markings," is supplemented by the following:

For mainlane pavement markings, solid edgelines and skip lines (lane line markings) shall be six inches wide. For conditions such as lane drops and ramps, refer to the TxDOT Engineering Standard Sheets.

Frontage road lane configurations will change as a result of ramp modifications, particularly at signalized intersections.

DB Contractor shall use contrast markings for skip lines on the controlled access mainlanes 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 Engineering Standard Sheets.

24.3.8.1 Traffic Signal Requirements

Section 24.3.8.1 of the Design-Build Specifications, "Traffic Signal Requirements," is supplemented by the following:

DB Contractor's design shall also incorporate the following requirements:

- DB Contractor shall provide both pedestrian, when applicable, and vehicle detectors at all traffic signals within the Site complying with TxDOT's *Traffic Signals Manual: Accessible Pedestrian Signal Guidelines*.
- Use Polycarbonate Signal Heads with LED signal indications and black aluminum, non-vented backplates. Number of signal heads and place shall comply with the requirements of the TMUTCD.
- Temporary signals may use timber poles, as well as existing or proposed steel poles.
- 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. Loop detection can be used, however, VIVDS will not be allowed as a detection system.
- Use LED safety lighting on traffic signal poles.
- DB Contractor shall replace existing signals and related equipment, when adjustments to existing signals are necessitated by the Project Traffic Control Plan and/or Final Design. This includes S. Jackson Rd. at I-2, S. Jackson Rd at BUS 83, and Sugar Rd at I-2.
- New traffic signal equipment shall be compatible with existing equipment currently used by TxDOT.
- DB Contractor shall purchase and install traffic signals and related equipment that meet the requirements of TxDOT.
- Use 4" PVC conduits for traffic signal conductor and 2" PVC for power as required by the design, TxDOT Standards, TxDOT Standard Specifications and TxDOT Engineering Standard Sheets. Schedule 40 PVC shall be used for conduit installed by open trench and Schedule 80 PVC shall be used for conduit installed by bore.
- DB Contractor shall submit its signal timing plan design for all new and modified traffic signals to TxDOT for review and approval prior to implementation.

24.3.8.3 Traffic Signal Warrants

Section 24.3.8.3 of the Design-Build Specifications, "Traffic Signal Warrants," is omitted.

24.3.8.5 Traffic Signal Systems

Section 24.3.8.5 of the Design-Build Specifications, "Traffic Signal Systems," is supplemented by the following:

DB Contractor shall salvage any existing signalization equipment removed during construction of the Project, deliver to the TxDOT Pharr District headquarters, and stockpile as requested by TxDOT, in its existing condition.

24.3.9 Lighting

Section 24.3.9 of the Design-Build Specifications, "Lighting," is supplemented by the following:

DB Contractor shall provide continuous illumination, utilizing high mast lighting along I-2 between Jackson Ave. and Veterans Blvd; and along I-69C between Ferguson Ave. and I-2. All high mast lighting shall be new; existing high mast structures shall not be reused or relocated. Continuous illumination using conventional lighting shall be used in the areas outside the limits listed for high mast lighting, and locations where high mast lighting cannot provide the required photometric coverage or there are FAA height restrictions. Additionally, conventional lighting shall be used on ramps and cross streets not covered by high mast lighting.

DB Contractor shall provide LED fixtures for high mast lighting, 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 measurable 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.

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 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
- Placing high mast lighting outside the clear zone, especially in roadway horizontal curves

24.3.9.1 Lighting Infrastructure

Section 24.3.9.1 of the Design-Build Specifications, "Lighting Infrastructure," is added:

At a minimum, underground conduit installations, including interchange areas or temporary detours shall, not be less than two inches or Schedule 40 PVC. Bored conduit shall be Schedule 80 PVC.

No exposed conduits will be allowed on bents, columns, exterior or bottom surface of bridge beams, retaining walls, or any other visible surface.

Exposed conduit will be allowed under the bridge deck.

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.

DB Contractor shall place bridge lighting brackets no more than ten feet from abutments or bents.

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.

Minimum dimensions for ground boxes shall be as shown on TxDOT standard ED (4)-14. Use Type A boxes for illumination systems.

Ground box covers shall be 2-inch-thick (nominal), non-conducting material and labeled “Danger High Voltage Illumination”.

Riprap aprons shall be provided around all ground boxes and high mast light poles not otherwise protected with concrete.

Lights shall have an identification tag denoting a contact person or office in case of Emergency or for maintenance, including address and telephone number.

Electrical part of the installation shall be designed and installed in conformance with the NEC, as well as TxDOT Standards and TxDOT Standard Specifications.

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.

Seal ground boxes for lighting circuits with 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.

DB Contractor shall salvage any illumination equipment removed during construction of the Project, deliver to the TxDOT Pharr District headquarters (unless directed otherwise), and stockpile as requested by TxDOT, all in an undamaged condition with the exception of high mast lighting poles, for which the DB Contractor shall assume full responsibility of proper disposal. DB Contractor shall salvage any functional high-mast lighting LED fixtures removed during construction of the Project, deliver to the TxDOT Pharr District headquarters, and stockpile as requested by TxDOT, all in an undamaged condition.

24.4 Construction Requirements

Section 24.4 of the Design-Build Specifications, “Construction Requirements,” is supplemented by the following:

The DB Contractor shall also conduct all Work for this Item 24 in accordance with the requirements of the following, located in the RID for this project:

- TxDOT Pharr District Standard “Traffic Signal Construction Details”
 - “Controller Foundation and Loop Detector Installation” August 2016
 - “Miscellaneous Details” August 2016
 - “Miscellaneous Details” April 2017
 - “Miscellaneous Details” April 2010

24.4.1 Permanent Signing and Delineation

Section 24.4.1 of the Design-Build Specifications, “Permanent Signing and Delineation,” is supplemented by the following:

Existing signs located within the Project limits that do not meet the minimum retro-reflectivity values specified in TMUTCD Table 2A-3 (Minimum Maintained Retroreflectivity Levels) shall be replaced by the DB Contractor.

DB Contractor shall stake each sign location in the field and provide TxDOT 72 hours notice prior to installation of any sign.

24.4.3 Permanent Signalization

Section 24.4.3 of the Design-Build Specifications, "Permanent Signalization," is supplemented by the following:

During the test period, DB Contractor must provide a contact person that can handle emergency calls 24 hours/day for all new or replaced signals.

DB Contractor shall stake each signal location in the field and provide TxDOT 72 hours notice prior to installation of any foundation.

24.4.4 Permanent Lighting

Section 24.4.4 of the Design-Build Specifications, "Permanent Lighting," is supplemented by the following:

DB Contractor shall remove existing conductors that are part of any illumination-related removals.

DB Contractor shall stake each sign location in the field and provide TxDOT 72 hours notice prior to installation of any foundation.

24.5 Submittals

Section 24.5 of the Design-Build Specifications, "Submittals," is supplemented by the following:

Table 24-1: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Preliminary lighting layout	Prior to commencing Final Design	Review and Approval	24.3.1
Proposed sign, delineation, non-standard sign structures, pavement markings, traffic signals, and lighting layout	As part of the Final Design Submittal	Review and Approval	24.3.1
Signal timing plan design for all new and modified traffic signals	Prior to implementation	Review and Approval	24.3.8.1
Traffic Signal Plans	As part of the Final Design Submittal	Review and comment	24.3.8.2
Lighting plan and light spillage measurements	As part of the Final Design Submittal	Review and Approval	24.3.9
Photometric data results for all lighted areas within the Project Limits	As part of the Final Design Submittal	Review and comment	24.3.9
Acceptance Test Plan (ATP) for all illumination	As part of the Final Design Submittal	Review and comment	24.3.9
Third-Party request for lighting with the Site	As needed	Review and Approval	24.3.9

Table 24-1: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Non-standard light pole design	As required	Review and Approval	24.3.9.1
Notice of installation of any sign	72 hours prior to installation	For Information	24.4.1
Notice of installation of any signal foundation	72 hours prior to installation	For Information	24.4.3
Notice of installation of any lighting foundation	72 hours prior to installation	For Information	24.4.4
Reference Marker record	After placement of all markers	For Information	24.4.5

Design-Build Special Provision to Item 25

Intelligent Transportation Systems



Item 25, “Intelligent Transportation Systems,” of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

25.1 General Requirements

Section 25.1 of the Design-Build Specifications, “General Requirements,” is supplemented by the following:

All proposed ITS devices must be compatible with the latest version of TxDOT’s Lonestar Traffic Management software used by Pharr District Headquarters.

The following list includes, but is not limited to, ITS elements with the most recent special specifications:

- ITS System Support Equipment – SS6003;
- Electronic Components – SS6006;
- Intelligent Transportation System (ITS) Fiber Optic Cable – SS6007;
- Intelligent Transportation System (ITS) Ground Mounted Cabinet – SS6008;
- Rack Mounted Electronic Equipment Cabinets – SS6009;
- Closed Circuit Television (CCTV) Field Equipment – SS6010;
- Multi-duct Conduit System – SS6016;
- Communication Hub Building – SS6017;
- Dynamic Message Sign System (Install) – SS6028;
- Fiber Optic Video Transmission Equipment – SS6035;
- Intelligent Transportation System (ITS) Pole with Cabinet – SS6064;
- Environmentally Controlled Communication Building – SS6128;
- Fiber Optic Transceiver – SS6184; and
- Intelligent Transportation System (ITS) Ground Box - SS6186.

25.2 Design Requirements

Section 25.2 of the Design-Build Specifications, “Design Requirements,” is supplemented by the following:

Unless otherwise specified, all ITS devices and associated mountings shall be designed to meet the 100mph wind load shown in TxDOT Engineering Standard Sheets as stipulated in Section 25.2.3.4.

The installed ITS equipment shall provide TxDOT accurate and reliable data, quality video images, and accurate control of field devices on a real-time basis 24 hours a day, 7 days a week. Real-time is defined as correct data being available 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, and vehicle detection systems meet the reliability requirements specified in the most current TxDOT Standard Specifications, as well as any standard publications provided by TxDOT as of the Proposal Due Date. The design and construction requirements, together with the design criteria presented in the most current TxDOT Standard Specifications, as well as any standard publications provided by TxDOT at the time of Proposal Due Date, define the minimum standards and scope that must be met by DB Contractor.

25.2.1 DB Contractor ITS Communications Requirements

Section 25.2.1 of the Design-Build Specifications, “DB Contractor ITS Communications Requirements,” is supplemented by the following:

The current TxDOT communications network consists of a 24 strand single-mode fiber cable extending from the Pharr District Headquarters building to the center of the existing I-2/I-69C interchange within 2" PVC conduit. One existing camera at the interchange is controlled over this fiber, other ITS components throughout the Project limits and other areas of the District operate on wireless technologies.

DB Contractor shall install a 96-strand single mode fiber optic cable in the conduit system. The trunk line fiber may only be spliced at the communication hubs 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 96 strands of fiber can support the proposed ITS deployment and shall provide 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 2 ground boxes with aprons and polymer lids shall be utilized unless otherwise approved by TxDOT.

DB Contractor shall connect the proposed conduit system to the existing conduit that enters the Pharr District Headquarters building.

DB Contractor shall provide terminal servers, video encoders, media converters, and modems to establish communications as required. Video encoding shall meet MPEG-4 standards, or per other recommendations provided by TxDOT's TRF Division at the time of actual design work, and be compatible with TxDOT's traffic management system software requirements for TxDOT CCTV.

Communications to proposed DMS signs on project may be achieved through cellular modem.

25.2.2

Conduit

Section 25.2.2 of the Design-Build Specifications, "Conduit," is supplemented by the following:

ITS devices shall be powered by dedicated services which are separate from traffic signals, illumination, and other devices. No exposed conduit sections will be permitted. All sections shall have a minimum of 48 inches of cover over all ITS conduit except:

- Where boring is required to cross under intersections; and
- In the case of the bridge span crossing the railroad at Jackson Rd./BUS 83, the conduit shall be built into the bridge structure.

A #8 bare electrical conductor wire for detection shall be placed in the fiber trunk line. Trunk line conduit shall be three-inch diameter. The conduit from the trunk line to the ITS device locations may be a minimum of 2-inch diameter conduit if cable size permits.

DB Contractor shall provide materials and use construction methodology that, at a minimum, meets the most current or applicable TxDOT statewide specifications, including placement of a trace wire within the conduit, placing locator tape and installing above ground markers, and providing the required 48 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. 25.2.3 CCTV Cameras

Section 25.2.3 of the Design-Build Specifications, "CCTV Cameras," is supplemented by the following:

CCTV cameras shall meet requirements of SS 6010 and applicable TxDOT standard sheets.

25.2.3.2

Placement

Section 25.2.3.2 of the Design-Build Specifications, "Placement," is supplemented by the following:

CCTV cameras shall not be mounted on DMS structures.

Camera pole structures shall meet 130-mph wind requirements as shown in the TxDOT ITS standard sheets.

Distance between CCTV cameras shall not exceed 1 mile; however, DB Contractor is responsible for placing cameras to ensure 100% coverage.

A CCTV camera shall be placed at each project end to maximize coverage into areas outside of the project limits.

25.2.3.4 Operating Requirements

Section 25.2.3.4 of the Design-Build Specifications, "Operating Requirements," is supplemented by the following:

- Wind load of 100-mph without permanent damage to mechanical and electrical equipment.

25.2.3.5 Control Requirements

Section 25.2.3.5 of the Design-Build Specifications, "Control Requirements," first paragraph is replaced by the following:

DB Contractor's schedule must allow for 30 days of testing to be performed by the DB Contractor in the presence of TxDOT ITS Personnel. CCTV equipment testing must occur no later than 60 days after completion of TxDOT submittal review. The equipment must be assembled and fully operational using the vendor software utilized by Pharr District Headquarters as well as TxDOT's Lonestar software. Prototype equipment will not be allowed. DB Contractor shall perform all testing with TxDOT ITS personnel present, to be scheduled in advance, at the central site as directed in Item 25. DB Contractor shall perform all testing to achieve full operation of the Project's ITS Elements using the existing CCTV control system. No modifications to the existing CCTV control system will be made to accommodate the submitted CCTV equipment. Equipment which in any manner is not fully operational with the control system will be considered as not passing the test. To be considered fully operational, as a minimum, the equipment must respond to the following commands:

- Pan left
- Focus far
- Pan right
- Iris override
- Tilt up
- Iris open
- Tilt down
- Iris close
- Zoom in
- Camera power (latching)
- Zoom out
- Pan tilt position preset
- Focus near

25.2.4 Vehicle Detection

Section 25.2.4 of the Design-Build Specifications, "Vehicle Detection", is omitted.

25.2.5 Dynamic Message Signs

Section 25.2.5 of the Design-Build Specifications, "Dynamic Message Signs," is replaced with the following:

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 which must be achieved using TxDOT's Lonestar Traffic Management System.

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.

Location and placement of DMS shall be approved by TxDOT. All DMS shall be visible and legible via CCTV cameras.

DMS shall be mounted on overhead sign bridges or cantilever overhead sign supports, where feasible to incorporate based on the overall signing plan of the project. DMS signs shall be placed over the roadway for visibility. 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 graphics and color. DMS used shall conform to the TxDOT special specification NTCIP for DMS and shall demonstrate compliance before installation of DMS. DMS shall meet TxDOT TRF Division specifications, shall be from one the approved evaluated manufacturers at the time of design, and shall be compatible with the existing DMS system in the District as well as TxDOT's Lonestar traffic management software.

DMS cabinet placement shall be positioned to allow maintenance operators view of the DMS.

DMS shall be placed at each approach and departure to the interchange direct connectors to manage traffic effectively.

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 maintain any existing DMS functionality within the Project during construction and shall not impact the operation of any existing DMS within the Project during construction absent approval from TxDOT.

25.3.1 General

Section 25.3.1 of the Design-Build Specifications, "General," is supplemented by the following:

The DB Contractor shall also conduct all Work for this Item 25 in accordance with the requirements of the:

- Statewide TxDOT Special Specifications as noted in Section 25.1, or most current at the time of Proposal Due Date.
- TxDOT Engineering Standard Sheets, most current at the time of actual design work.

25.3.2 Existing ITS Relocation

Section 25.3.2 of the Design-Build Specifications, "Existing ITS Relocations," is replaced with the following:

DB Contractor shall remove any existing ITS components, including hubs, satellite buildings, DMSs, detection devices, and fiber-links, except for items listed under Section 25.3.6. DB Contractor shall sequence removal 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 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, replacing existing ITS items, and connecting such ITS items to the existing network.

25.3.4 End-to-End Testing

Section 25.3.4 of the Design-Build Specifications, "End-to-End Testing," is supplemented by the following:

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 Day period prior to Substantial Completion of each and shall provide TxDOT with an opportunity to witness and 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 during off-peak hours or on weekends.

25.3.6 Salvaging Existing Items

Section 25.3.6 of the Design-Build Specifications, “Salvaging Existing Items,” is added:

Ensure the existing cameras at the I-2/I-69C interchange remain in operation until impacted by construction activities to provide TxDOT video feed of construction activities. Existing camera to be salvaged and returned to the Pharr District upon removal, in existing condition.

Various existing ITS components, sensors and cabinets within the project limits are outdated and can be removed and disposed of by the DB contractor. The proposed ITS design shall consist of all new equipment such as conduit, ground boxes, fiber optic cable, DMS and CCTV.

25.4 Submittals

Section 25.4 of the Design-Build Specifications, “Submittals,” is replaced with the following:

All submittals described in this Special Provision to Item 25 shall be in accordance with the schedule and for the purpose (e.g., approval, review and comment, for information) set forth in Table 25-1. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 25-1: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
A preliminary ITS layout	Within 60 days after issuance of NTP1	Review and acceptance	25.2
Termination charts	Prior to Implementation	Approval	25.2.1
Any recommended modifications to the ITS specifications	At least 2 weeks prior to the ITS and toll design workshop	Approval	25.2
Alternative practices to improve securing ground box lids	At least 2 weeks prior to the ITS and toll design workshop	Approval	25.2.2
Location and placement of Dynamic Message Signs	As part of the Final Design Submittal	Approval	25.2.5
Notification of intent to make connections to the existing TxDOT system	At least 30 days in advance of making the connections	For information	25.3.1
Any salvaged existing ITS equipment	As required	N/A	25.3.6
ITS Implementation Plan	As part of the Final Design Submittal	Approval	25.3.3
CCTV secondary control equipment and design	Prior to Substantial Completion	Approval	25.3.3
Notice of end-to-end testing	Prior to Implementation	For information	25.3.4
All computer codes and software for each component of the ITS	As part of the Record Documents (Prior to Final Acceptance of each Section or Segment)	For information	25.3.5

Design-Build Special Provision to Item 26

Traffic Control



Item 26, "Traffic Control," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

26.2.1 Traffic Control Plans

Section 26.2.1 of the Design-Build Specifications, "Traffic Control Plans," is supplemented by the following:

- **Design Vehicle.** Turning movements on all local streets and driveways shall be designed to a minimum turning radius of a *WB-50* design vehicle, or designed based on the existing vehicle types utilizing the local street or driveway as approved by TxDOT. The design shall provide the same operational characteristics as the existing conditions or better.
- **Number of Lanes.** The minimum number of lanes to be maintained shall be as described in Section 26.2.2.2. 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 12 feet. TxDOT may, in its sole discretion, allow 11 foot lanes in limited circumstances, for short distances, after reviewing DB Contractor's proposed TCP.
- **Shoulders.** A minimum two-foot offset from the edge of travel way to the edge of pavement or traffic barrier is required. For traffic barrier, a minimum of one foot will be allowed, if approved by TxDOT, except when 11' lanes are used. 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.

26.2.2.1 Allowable Lane and Roadway Closures

Section 26.2.2.1 of the Design-Build Specifications, "Allowable Lane and Roadway Closures," is added:

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. by 10:00 a.m. the day prior to all road closures.

Prior to implementing any Lane Closure, DB Contractor shall provide TxDOT information to input lane closure information into the Highway Conditions and Reporting System (HCRS).

The following TxDOT Standards, TxDOT Standard Specifications, and TxDOT Engineering Standard Sheets 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).

Any full roadway closure or lane closures shall require a TCP showing signing and striping with appropriate detour routing and time of proposed closure. The TCP shall be submitted to and approved by TxDOT. TCP shall be coordinated with all affected local Government Entities. DB Contractor shall demonstrate to TxDOT and affected local Governmental Entities that the reduction in lanes is acceptable based on current traffic counts.

When Lane Closures are necessary, DB Contractor shall use the public information and communication methods available to inform the appropriate Customer Groups in accordance with the requirements of Item 11, "Public Information and Communications".

For planned Lane Closures, DB Contractor shall coordinate with TxDOT regarding Lane Closures that may affect crossing TxDOT facilities to ensure that no conflicts occur. DB Contractor shall provide advance notification of all Lane Closure notices to TxDOT Project staff.

DB Contractor shall submit a request for all Lane Closures at least 14 days in advance of the proposed Lane Closure for approval by TxDOT. DB Contractor shall issue a Lane Closure Notice (LCN) to TxDOT and affected Governmental Entities a minimum of 14 days prior to the publication of any notices or placement of any traffic control devices for the following: (i) full roadway closures, and (ii) Lane Closures and/or traffic switches planned to be in effect longer than 24 hours. DB Contractor shall also issue a LCN to TxDOT and affected Government Entities a minimum of 48 hours prior to the publication of any notices or placement of any traffic control devices associated with Lane Closures that are planned to be in effect for less than 24 hours. The LCN shall contain the estimated date, time, duration, and location of the proposed Work requiring the Lane Closure and/or traffic switches.

If an Emergency condition should occur, DB Contractor shall notify TxDOT and Customer Groups immediately in accordance with the requirements of Item 11, "Public Information and Communications". For non-TxDOT controlled facilities, DB Contractor shall immediately notify the controlling Governmental Entity. DB Contractor shall keep TxDOT and affected Governmental Entities informed of any and all changes or cancellations of proposed Lane Closures prior to the date of their implementation.

DB Contractor shall provide a contingency plan showing how Lane Closure modifications will be implemented and identify the specific actions to alleviate congestion. If, at any time, permitted Lane Closure backups become unreasonable, such that motorist delay is greater than twenty minutes, modifications to alleviate this congestion shall be taken immediately, including reopening the lane as soon as possible. If DB Contractor does not immediately implement the approved contingency plan, the congestion would be considered a Lane Closure and is subject to Lane Closure Liquidated Damages per the time period described in Exhibit 15 of the DBA.

The minimum number of lanes and movements to be maintained during construction are listed below. Refer to Exhibit 15 of the DBA for the Lane Rental Fees and Liquidated Damages for Lane Closures.

26.2.2.2 Minimum Number of Lanes and Movements to be Maintained during Construction

Section 26.2.2.2 of the Design-Build Specifications, "Minimum Number of Lanes and Movements to be Maintained during Construction," is added:

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.

- I-2 and I-69C: Two lanes in each direction open at all times. Full closures will only be allowed during Period C as specified in Exhibit 15 of the DBA, for activities such as girder placement, deck

panel placement, bridge slab pours and bridge removal. Full closures are subject to TxDOT approval.

- Direct connectors: Full closures will be allowed as follows:
 - On any Direct Connector during Period C (as specified in Section 26.2.2.5 and Exhibit 15 to the DBA) for construction activities involving removal of existing direct connectors and beam placement; and
 - On Direct Connector #1 during the construction of the new structure; and
 - On Direct Connectors #2, #3, and #4 during the construction of the tie-in points to the I-2 and I-69C mainlanes.

The maximum number of days allowed for Direct Connectors #1, #2, #3, or #4 to be closed during construction, other than the Period C closures permissible under the first bullet above, shall be 550 Days, cumulatively. One full “Day” will be assessed when any direct connector is closed in Time Period B or Time Period A within a 24-hour period. No more than one of the four Direct Connectors may be closed during the same time period. Closures are subject to TxDOT approval.

- Frontage roads and cross streets: 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.
- Cross Streets: At least one lane of traffic in each direction to be provided at all times. Full closures are restricted to girder placement, deck panel placement, bridge slab pours and bridge removal. Full closures are subject to TxDOT approval.
- Frontage Roads: One lane minimum to remain open at all times. Full closures are restricted to girder placement, deck panel placement, bridge slab pours and bridge removal.

26.2.2.3

Holiday Restrictions

Section 26.2.2.3 of the Design-Build Specifications, “Holiday Restrictions,” is added:

No Lane Closure that restricts or interferes with traffic shall be allowed during the following holiday schedule. No additional lane or ramp closure that restricts or interferes with traffic shall be allowed. TxDOT has the right to lengthen, shorten, or otherwise modify these restrictions as actual, or expected, traffic conditions may warrant.

- New Year’s Eve and New Year’s Day (12:00pm on December 31 through 10:00pm on January 1)
- Spring Break Weeks (a two-week period each year, to be determined by TxDOT in its reasonable discretion in December of the previous year).
- Easter Holiday Weekend (12:00pm on Friday through 10:00pm on Sunday)
- Memorial Day Weekend (12:00pm on Friday through 10:00pm on Monday)
- Independence Day (12:00pm on July 3 through 12:00pm on July 5)
- Labor Day Weekend (12:00pm on Friday through 10:00pm on Monday)
- Thanksgiving Holiday (12:00pm on Wednesday through 10:00pm on Sunday)
- 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.

Should any Lane Closures violate the holiday-related restrictions above, Liquidated Damages for Lane Closures will be assessed based on the next higher Time Period than what would otherwise apply based upon those shown in Table 26-1 (that is, a Time Period B violation will be assessed as a Time Period A violation, etc.).

26.2.2.4 Event Restrictions

Section 26.2.2.4 of the Design-Build Specifications, “Event Restrictions,” is added:

No Lane Closure that restricts or interferes with traffic shall be allowed for the regional events set forth below. No additional lane or ramp closure that restricts or interferes with traffic shall be allowed. 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.

- Any events held within a three-mile radius of any point along the length of the corridor with an expected attendance greater than 20,000 (restricted from three hours before the start of the event to three hours after the end of the event);
- Within one-mile radius of major retail traffic generators (i.e., malls) (Thanksgiving Day thru January 2);

Major events currently unknown to TxDOT 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 will be assessed based on the next higher Time Period than what would otherwise apply based upon those shown in Table 26-1 (that is, a Time Period B violation will be assessed as a Time Period A violation, etc.).

26.2.2.5 Lane Closures and Liquidated Damages for Lane Closures

Section 26.2.2.5 of the Design-Build Specifications, “Lane Closures and Liquidated Damages for Lane Closures,” is added:

Except for Incidents or Emergencies, Liquidated Damages for Lane Closures will be levied against DB Contractor, in accordance with Section 8.6.2 of the General Conditions.

DB Contractor shall not reduce the number of roadway controlled access lanes below the number of roadway controlled access lanes required above in Section 26.2.2.2 during Time Period A. Refer to Exhibit 15 of the DBA for the Liquidated Damages for Lane Closures.

Table 26-1 shows the time periods for each of the hours of the day for mainlanes. These periods are referenced in this Item 26 and in Exhibit 15 of the DBA and are used to determine Liquidated Damages for Lane Closures.

Table 26-1 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

Hour/Day	Sunday	Monday-Thursday	Friday	Saturday
4:00	C	C	C	C
5:00	C	C	C	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	C	A	B
21:00	C	C	B	C
22:00	C	C	B	C
23:00	C	C	C	C

Liquidated Damages for Lane Closures will be assessed for all Lane Closures in accordance with Section 8.6.2 of the General Conditions, based upon the time periods shown in the above table and corresponding amounts given in Exhibit 15 of the DBA.

26.2.2.6 Ramp Closures

Section 26.2.2.6 of the Design-Build Specifications, "Ramp Closures," is added:

For continuous frontage road sections, ramp closures are allowed, with TxDOT approval, provided that an alternative ramp that maintains the same access is provided.

When ramp movements are diverted or detoured along existing roads, DB Contractor shall be responsible for any and all costs that may be assessed for the use of these existing roads. This may include an operational analysis, temporary traffic control devices, road user costs, and any other costs associated with impacts to local facilities to the satisfaction of the TxDOT and/or Governmental Entity having jurisdiction.

No two adjacent ramp closures may occur at the same time.

26.2.2.7 Cross Streets

Section 26.2.2.7 of the Design-Build Specifications, "Cross Streets," is added:

For any proposed cross street closure, DB Contractor shall provide a TCP including a detour plan and obtain approval from TxDOT and any local Government Entities affected by the closure. When a cross street is closed, the adjacent cross street must remain open and have a minimum of one lane in each direction.

26.2.2.8 Driveway Closures

Section 26.2.2.8 of the Design-Build Specifications, "Driveway Closures," is added:

DB Contractor is responsible for coordinating with the property owner on driveway closures. DB Contractor shall maintain access to a minimum of one driveway per business at all times. For businesses with multiple driveways, when driveway closure is necessary to progress Work, no driveway may be closed for more than 30 consecutive days or more than 45 days in a 90-day period without written approval of the property owner. No two consecutive driveways shall be closed at the same time without the written permission of TxDOT and the Property Owner(s).

Lane Rental Fees and Liquidated Damages for Lane Closures will be assessed in all Lane Closures in accordance with Section 8.6.2 of the General Conditions when access to any property, public or private, is restricted in contradiction to a TCP.

26.2.2.9 Additional Requirements

Section 26.2.2.9 of the Design-Build Specifications, "Additional Requirements," is added:

Upon commencement of construction, DB Contractor shall maintain diligent progression of Work adjacent to closed traffic lanes.

DB Contractor shall reopen closed traffic lanes during planned or actual periods of inactive Construction Work greater or equal to five Days.

Inclement weather should be considered when planning the Work. No temporary lane closures will be allowed during inclement weather condition.

26.3 Construction Requirements

Section 26.3 of the Design-Build Specifications, "Construction Requirements," is supplemented by the following:

The DB Contractor shall also conduct all Work for this Item 26 in accordance with the following:

- Advance signage at project limits shall be erected and remain in place until Final Acceptance.

- The DB Contractor shall ensure that all implemented traffic control measures are maintained in a clean and functional condition at all times, including maintenance due to acts of vandalism or accident. The DB Contractor shall have adequate replacement traffic control devices available, at all times, to replace those damaged within 24 hours of notification.
- Private driveways shall be constructed during same construction phase as adjacent roadway pavement.
- Barricades, signs, channelizing devices and other traffic handling devices shall be adjusted or shifted, as necessary and approved by the Lead MOT Design Engineer to fit field conditions. The Lead MOT Design Engineer and Lead MOT Implementation Manager may implement additional traffic control measures beyond those shown on the TCP as required to maintain traveling public, pedestrian and contractor safety during construction.
- The DB Contractor shall cover existing signs that conflict with proposed traffic control. The covering of these signs shall be with a material meeting the requirements of TxDOT standards and specifications and attached to the sign in a manner which will present a neat appearance and not damage the sign.
- When connecting proposed roadway and/or detour pavement to sections of existing pavement being used by traffic, or when constructing proposed pavement adjacent to existing pavement being used by traffic (not protected by temporary traffic barrier) and such operations result in a drop-off of more than two inches, the contractor shall construct a compacted embankment with a maximum 3:1 (H:V) slope adjacent to the lane open to traffic. The compacted embankment shall be removed and reconstructed as required with each construction operation (pavement layer) until the drop-off between adjacent surfaces is less than two inches. Signs CW8-9aT or CW8-11 and a four-foot wide desirable (two-foot wide minimum) lateral buffer zone will be required. Such work shall be performed expeditiously during daylight hours.
- Use a power broom when cleaning the roadway as needed.
- Protect exposed pits that must remain open during non-working hours as per OSHA requirements.

26.3.3

Detours

Section 26.3.3 of the Design-Build Specifications, “Detours,” is supplemented by the following:

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.

In accordance with the requirements of Item 27, “Maintenance”, if the pavement used in detours deteriorates to such poor condition that it presents a hazard, then modifications to the detours must be implemented until the hazard is corrected or the detour is removed.

26.3.10

Changes to Roadway Height and Width Restrictions

Section 26.3.10 of the Design-Build Specifications, “Changes to Roadway Height and Width Restrictions,” is added:

DB Contractor shall report any changes in the height or width of roadway restrictions during the Term of the DBA. The reporting shall be made via email to the Texas Department of Motor Vehicles (TxDMV) at mcd_permit-restriction-@txdmv.gov, with an email copy to TxDOT at Lynette.Villarreal@txdot.gov for locations in the Pharr District, and the TxDOT PM using the TxDMV Permit Restriction Application form shown in Attachment 26-X. Any changes to the height or width of the roadway restrictions and increase to

the restriction requires a minimum of 14 days advance notice while decrease or removal of the restriction must be reported no later than the next business day following the change.

Upon placement of the first beam over a roadway, DB Contractor shall notify the TxDOT PM, Area Office, District Bridge Section, and the local Governmental Entities of the field measured vertical clearance of newly set beams no later than the following business day.

The height and width shall be reported in feet and inches, and the distances in miles to the nearest 0.25 mile or from the nearest intersection.

DB Contractor shall provide advance signing for vertical clearance with clearance height three inches less than field measured clearance along traveled roadway, or as dictated by the requirements of the current TxDOT policy.

26.4 Submittals

Section 26.4 of the Design-Build Specifications, "Submittals," is supplemented by the following:

All Submittals described in this Item 26 shall be in accordance with the schedule and for the purpose (approval, review and comment, for information) set forth in Table 26-2. Acceptable electronic formats include Microsoft Word, Microsoft Excel, or Adobe Acrobat files, unless otherwise indicated.

Table 26-2: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
Traffic control plan concept presentation (meeting)	Prior to TCP plan sheet development	Approval	26.2.1
Notice of a Lane Closure to TxDOT PIO	By 10:00 a.m. the day prior to all road closures	For information	26.2.2
Traffic Control Plans	At least 14 Days prior to implementation or 21 Days if the plan includes full closures of any direction of a roadway	Approval	26.2.2
Requests for a Lane Closure	At least 48 hours in advance of the proposed closure	Approval	26.2.2.1
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 14 Days prior to the publication of any notices or placement of any traffic control devices	Approval	26.2.2.1

Table 26-2: Submittals to TxDOT

Submittals	Submittal Schedule	TxDOT Action	Reference Section
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	26.2.2.1

Design-Build Special Provision to Item 27 Maintenance



Item 27, "Maintenance," of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

None.

Design-Build Special Provision to Item 28

Bicycle and Pedestrian Facilities



Item 28, "Bicycle and Pedestrian Facilities" of the Design-Build Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

28.3.2 Pedestrian Facilities

Section 28.3.2 of the Design-Build Specifications, "Pedestrian Facilities," is supplemented by the following:

DB Contractor shall design and construct new, continuous sidewalks along on all frontage roads, except within areas of railroad ROW. DB Contractor shall use Pharr District Standards with their design. District standards can be found at <http://www.dot.state.tx.us/phr/specinfo/standard.htm>.

Sidewalks may be constructed flush against the curb or a minimum of 5.5 feet offset from the curb. Sidewalks constructed offset from the curb shall have a minimum width of 5 feet unless otherwise approved by TxDOT at specific locations and sidewalks constructed flush against the curb shall have a minimum width of 6 feet. DB Contractor shall design sidewalks constructed across concrete driveways with a minimum concrete thickness of 6 inches. In all other areas, sidewalks shall have a minimum concrete thickness of 4 inches. DB Contractor's design and construction shall include any necessary modifications to existing driveways along the frontage roads for the new sidewalks to comply with ADA, Texas Accessibility Standards and TLDR. DB Contractor shall be responsible for the removal of existing sidewalks along the frontage