

**Texas Department of Transportation**  
**Texas Turnpike Authority**  
**PROGRAMMATIC**  
**COMPREHENSIVE DEVELOPMENT AGREEMENT**  
**BOOK 2B**

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# 1 GENERAL

## 2 PROJECT MANAGEMENT

Developer shall establish and maintain an organization that effectively manages all Elements of the Work. This Project management effort will be defined and guided by the Project Management Plan, which is a collection of several management plan Elements describing discrete Elements of the Work. The Project Management Plan is an umbrella document that describes the Developer’s managerial approach, strategy, and quality procedures to design, build, operate, and maintain the Project and achieve all requirements of the CDA Documents.

The structure of the Project Management Plan is outlined in Table 2-1.

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

<b>PMP Chapter</b>	<b>Chapter Title</b>	<b>Section of Book 2 That Define the Chapter Requirements</b>
<b>1</b>	<b>Project Administration</b>	Section 2
<b>2</b>	<b>Quality Management</b>	Section 2
2A	Design Quality Management	Section 2
2B	Construction Quality Management	Section 2
2C	Maintenance Management Plan	Section 2; Section 19
2D	Operations Management Plan	Section 2; Section 22
<b>3</b>	<b>Environmental Management</b>	Section 4
<b>4</b>	<b>Public Information and Communications (PIC)</b>	Section 3
<b>5</b>	<b>Safety</b>	Section 2
<b>6</b>	<b>Communications Management</b>	Section 2
<b>7</b>	<b>Right of Way Acquisition Management</b>	Section 7
<b>8</b>	<b>Cost Management</b>	Section 2

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

TxDOT and the Independent Engineer will audit and monitor the activities described in the management plans to assess Developer performance. All statements contained in the PMP shall be of an auditable nature.

As the Work progresses, certain portions of the Work will commence in the Operating Period, other portions will transition into the Operating Period, and other portions will still be in the DB phase. Unless specified otherwise in the CDA Documents, management plan documents shall clearly differentiate between the management activities during the DB phase and Operating Period, and address the appropriate transition issues when the Developer shifts from the DB phase to the Operating Period.

## **2.1 Project Administration**

### **2.1.1 Project Schedule**

#### **2.1.1.1 General Requirements**

The Parties recognize the importance of the Project Schedule for defining the time-frame for the completion of the Project and the achievement of the milestones. The Parties also recognize the importance of the Project Schedule in monitoring the progress of the Project and denoting changes that occur during design and construction.

#### **2.1.1.2 Required Submittals**

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

Developer shall use the preliminary schedule submitted with the Proposal as a foundation to prepare a Project Baseline Schedule and shall submit it to TxDOT for review and approval. Approval of the Project Baseline Schedule shall be a condition of NTP2. Developer shall submit a single hard copy of the Project Baseline Schedule in full-size color plot sheets, along with a backup disk of the schedule in electronic format. Scheduling software shall be as outlined in Book 2, and the Developer shall be responsible for updating scheduling software to maintain compatibility with current TxDOT-supported scheduling software.

The Project Baseline Schedule shall include a separate narrative report which describes, in general fashion, the Developer's proposed methods of operation for designing and constructing the major portions of the Work required by the CDA Documents. The schedule narrative shall describe the general sequence of design and construction, the proposed Critical Path of the Project, and all Milestone Schedule Deadlines.

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

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

With the exception of activities relating to Environmental Approvals by Governmental Entities, each activity depicting the Developer's operations shall have duration of not more than 20 Days, and not less than one Day, except as otherwise approved by TxDOT. All activities shown in the schedule, with the exception of the first and last activities, shall have a minimum of one predecessor and a minimum of one successor activity.

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

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

Developer shall update, on at least a monthly basis, the approved Project Baseline Schedule to reflect the current status of the Project, including approved Change Orders.

Each Project Status Schedule Update shall accurately reflect all activities completed as of the effective date of the update schedule. Each Project Status Schedule Update shall indicate the overall completion percentage of the Project.

Developer shall submit a single hard copy of the Project Status Schedule Update in a single copy in full-size color plot sheets along with a backup disk of the schedule in electronic format.

No changes in activity durations, calendar assignments, logic ties, or constraints will be allowed in the Project Status Schedule Update without the written approval of TxDOT.

The Project Status Schedule Update shall include a schedule narrative report which describes the status of the Project in detail.

### **2.1.1.2.3 Renewal Work Schedule**

Before Service Commencement can occur, Developer shall expand and complete the preliminary Renewal Work Schedule submitted with the Proposal and submit it to TxDOT for review. The Renewal Work Schedule shall be sufficiently detailed to indicate the timing of periodic maintenance activities, rehabilitation activities and other Renewal Work, planned Capacity Improvements, and planned Upgrades, and shall be consistent with the requirements contained in Sections 19 and 22.

## **2.1.2 *Document Management***

Developer shall establish and maintain an electronic document control system to store, catalog, and retrieve all Project-related documents in a format compatible with Texas Reference Marker System. Unless otherwise directed by TxDOT, record retention shall comply with the requirements of the Texas State Records Retention Schedule, and shall be provided to TxDOT at the time of the expiration or earlier termination of the Agreement.

## **2.2 *Quality Management***

Developer shall submit a comprehensive Quality Management Plan to TxDOT for approval that is consistent with and expands upon the preliminary Quality Management Plan submitted with the Proposal. The preliminary Quality Management Plan is set forth in Section 2.2 of Book 2 The Quality Management Plan shall be consistent with ISO 9001, 2000 version, or more current versions as updated by the International Standards Organization. Developer may elect to obtain formal ISO 9001 certification, but will not be required to do so.

### **2.2.1 *General Requirements***

The Quality Management Plan shall describe the system, policies, and procedures that address the Work and provide documented evidence that the Work was performed in accordance with the CDA Documents.

The complete Quality Management Plan shall incorporate the following features:

- Developer shall make all quality records immediately available to TxDOT and the Independent Engineer for review. Developer shall provide TxDOT or the Independent Engineer with a copy of any and/or all quality records when requested.
- The Quality Management Plan shall capture all Work performed by the Developer and Contractors of all tiers.
- Developer shall submit to the Independent Engineer and TxDOT the results of all internal audits within seven Days of their completion,
- Developer shall promptly submit to the Independent Engineer and TxDOT non-conformance reports upon their issuance and resolution.



- TxDOT will issue a non-conformance report if TxDOT discovers an item of Work that does not comply with CDA Documents.

As outlined in Table 2-1, the Quality Management Plan is organized into four discrete chapters. The requirements for “Right of Way Acquisition” are contained in [Section 7](#). The requirements for the “Design Quality Management,” “Construction Quality Management,” and “Maintenance Management Plan” and “Operations Management Plan” are contained in this [Section 2](#).

The Quality Management Plan shall contain detailed procedures for the Developer’s quality control and quality assurance activities. Developer’s quality process shall incorporate planned and systematic activities undertaken by an independent party. Developer shall conduct all quality control, quality assurance, performance verification, and design overlay and coordination among design disciplines, all in accordance with the Quality Management Plan and the requirements of the CDA Documents.

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

### **2.2.2 Quality Terminology**

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

- Organization: the Developer’s organization, including any Affiliates and Contractors.
- Customers: the Users of the roadways, TxDOT, Customer Groups, and key stakeholders that have an adjacent property interest or connecting roadway.
- Suppliers: Contractors.
- Product: the Work.
- Quality control: the part of quality management focused on fulfilling quality requirements.
- Quality Management Plan: the Quality Management Plan described in this [Section 2](#).

### **2.2.3 Quality Management Organization**

Developer shall regularly maintain the Quality Management Plan to contain current versions of the following information:

- The organizational chart that identifies all quality management personnel, their roles, authorities and line reporting relationships.
- Description of the roles and responsibilities of all quality management personnel and those who have the authority to stop Work.
- Identification of testing agencies, including information on each agency’s capability to provide the specific services required for the Work, certifications held, equipment and location of laboratories.
- Resumes for all quality management personnel.

### **2.2.4 Quality Policy**

The Quality Management Plan shall contain a complete description of the quality policies and objectives that the Developer will implement throughout its organization. The policy shall demonstrate the Developer senior management’s commitment to implement and continually improve the quality management system for the Work.

### **2.2.5 Systems and Procedures**

The Quality Management Plan shall contain detailed systems and procedures the Developer will implement, including the following:

- Control of quality records;
- Management reviews;
- Resource allocation;
- Measurement of customer satisfaction;
- Control of nonconforming products and services;
- Internal audits;
- A process to seek continual improvement of the Quality Management Plan.

### **2.2.6 Inspection and Testing**

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

Developer shall revise its Quality Management Plan when its own quality management organization detects a repeating or fundamental non-conformance in the work performed or in the manner the Work is inspected or tested, or when either the Independent Engineer or TxDOT advises the Developer of such a problem.

### **2.2.7 Responsibility and Authority of Developer Staff**

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

Developer's Quality Manager and quality assurance staff shall have no responsibilities in the production of the Work. Quality control staff shall only have responsibilities on the production of the Work and shall remain independent of the quality assurance staff.

The Quality Manager and quality assurance staff shall prepare a monthly report of the quality inspections and tests performed, results of such inspections and tests, and occurrences and resolution of non-conformance discoveries. Developer shall submit the monthly reports to the Independent Engineer and TxDOT for review.

Developer's Quality Manager, quality assurance manager, and quality control manager(s) shall have the authority to stop Work for quality-related issues.

### **2.2.8 Design Quality Management**

Developer's Final Design shall not deviate from but shall expand upon the preliminary design submitted with the Developer's Proposal.

#### **2.2.8.1 Design Submittals**

Not later than two Business Days after the Developer completes design of any particular released for construction document, and the Developer has reviewed and checked the design in accordance with the Quality Management Plan, and the Developer's Registered Professional Engineer has signed and sealed the document, the Developer shall submit the signed and sealed document to TxDOT. Developer's Released for Construction Document shall comply with the CDA Documents, and shall be detailed, complete, constructible, and shall allow verification of the design criteria and compliance with CDA Documents.

#### **2.2.8.2 Record Drawings and Documentation**

Within 90 Days of Service Commencement of all or part of the Project, the Developer shall submit to TxDOT a complete set of Record Drawings for the portion of the Project actually opened to traffic. The

Record Drawings and Documentation shall be an organized, complete record of Plans and supporting calculations and details that accurately represent what the Developer constructed.

Developer shall ensure that the Record Drawings reflect the actual condition of the constructed Work.

### **2.2.9 ROW Survey Quality Management**

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

### **2.2.10 Construction Quality Management**

Developer shall construct the Work in accordance with the Released for Construction Documents, following a reasonable timeframe for TxDOT review and comment, together with the relevant requirements and specifications of the CDA Documents.

The construction Quality Management Plan shall contain detailed procedures for the Developer's quality control and quality assurance activities. Developer's construction operations must incorporate quality processes as part of its Quality Management Plan, including planned and systematic activities undertaken by a party independent of the construction process. Developer is to undertake all quality control, quality assurance, and performance verification testing in accordance with the Quality Management Plan and the requirements set out in the CDA Documents.

## **2.3 Operations Management**

Section 22 includes requirements for operations management.

## **2.4 Maintenance Management**

Section 19 includes requirements for maintenance management.

## **2.5 Environmental Management**

Section 4 includes requirements for environmental management.

## **2.6 Public Information and Communications**

Section 3 includes requirements for public information and communications.

## **2.7 Safety Plan**

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

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

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

## **2.8 Management of Communications between Developer and TxDOT**

Developer shall submit a comprehensive communications plan (“Communications Plan”) to TxDOT for approval that is consistent with and expands upon the preliminary communications plan submitted with the Proposal. Developer shall maintain and update the Communications Plan as the DB phase and O Operating Period progress.

The Communications Plan shall describe the processes and procedures for communication of Project information between the Developer’s organization and TxDOT.

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

## **2.9 Right of Way Acquisition Management**

Section 7 includes requirements for right of way acquisition management.

## **2.10 Cost Management**

Book 2 addresses requirements for Project cost management and reporting necessary for publicly-funded or subsidized projects.

## 3 PUBLIC INFORMATION AND COMMUNICATIONS

### 3.1 General Requirements

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

This [Section 3](#) describes the requirements with which the Developer shall comply during the Term of the Agreement regarding the provision of information and communication with the Customer Groups.

### 3.2 Administrative Requirements

#### 3.2.1 Public Information and Communications Plan

At least 60 days prior to NTP2, Developer shall submit, for TxDOT approval, a comprehensive Public Information and Communications Plan (PICP), based upon the preliminary communications plan submitted with the Developer's Proposal, which informs, educates, and engages the Customer Groups throughout every stage of the Project. Submittal shall be in both hard-copy form, and electronic format compatible with TxDOT software. TxDOT approval of the PICP shall be a condition of issuing NTP2. In preparing this plan, Developer shall identify the Customer Groups and develop specific plans to respond to their concerns and needs in all respects regarding the Project. After incorporation of comments from TxDOT on the plan, Developer shall implement the various activities and initiatives contained therein. Developer shall continually maintain the plan to ensure delivery of high-quality, well executed communications throughout the Term of the Agreement.

In developing the PICP, Developer shall make appropriate provisions to achieve the following:

#### *Public liaison*

- Gain and maintain public support, building on existing community partnerships and communication networks.
- Provide the public with opportunities for input.
- Demonstrate to the public that the Project will be developed pursuant to a well-executed program.
- Notify the public in advance of key Project ROW acquisition, construction, operations, and maintenance activities and communicate the potential impacts of these activities.
- Develop, disseminate and display timely, high quality, innovative, user-friendly, accurate and appropriate community information including exhibits showing slope grading, drainage, bridge structures, retaining walls, sound walls and Project ROW acquisition.
- Develop and manage a public relations campaign and communication strategy to convey key messages, branding and pertinent information about the Project.

#### *Customer Groups*

- Develop a forum to coordinate on-going dialogue among Customer Groups, TxDOT, and Developer.
- Prepare and distribute Project-related materials in a user friendly format to inform Customer Groups through appropriate means such as: meetings, interviews, media kits, news releases, telephone correspondence, newsletters brochures, e-mail, hotlines, Highway Conditions Report (HCR), dynamic message boards, web alerts, public opinion polls/surveys, videos, display booths, presentations, public access information kiosks, and special events.

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

#### *Media*

- Build upon existing TxDOT media resources and/or create and develop advertising messages, including graphics, logos and slogans.
- Place Project-related messages in the appropriate media.
- Develop and distribute public service announcements, paid advertising, news reports.
- Manage media relations with key transportation and business reporters and prepare and distribute news releases and media kits.

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

The PICP shall include a general timeline listing public information activities for the Project over the entire Term of the Agreement.

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

Developer shall provide sufficient qualified staffing to effectively implement the PICP.

#### **3.2.2 Public Information Coordinator**

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

- Provide the primary point of contact between Developer and the public and act as clearinghouse for the receipt and response to written or verbal complaints regarding the Project.
- Lead the production, implementation, audit, quality control/quality assurance and update of the PICP.
- Coordinate and supervise day-to-day activities of Developer's personnel in performing the activities described in the PICP.
- Facilitate communication among Developer, TxDOT personnel including TxDOT's Public Information Officers, and Customer Groups.
- Interact with affected Customer Groups and represent the interests of the Project at associated public meetings and other formal and informal occasions.
- Develop a "first-hand feel" for public concerns and reactions regarding the Project and public information program and incorporate that knowledge into improving the PICP.
- Liaise with the person assigned to coordinate the initial response to any Incident or Emergency as set forth in Section 22 and any Governmental Entity that may have jurisdiction in the Emergency.

### **3.2.3 Public Information Office**

Developer shall maintain a public information office for the Term of the Agreement. The hours of operation for this office shall be as outlined in Section 3.2.3 of Book 2. This office shall serve as the primary business location for the Public Information Coordinator and shall be conveniently located to the Project Site. The public information office shall facilitate the exchange of information between the Developer and the public and provide a centralized location for residents and other Customer Groups to obtain information on the Project, including Project maps and Plans, alternative routes, lane closures, construction updates, community impacts, and commute options.

In addition to the services listed above, Developer shall provide a 24-hour telephone hotline, manned during normal business hours of the public information office, with a recorded message describing Emergency procedures after hours.

### **3.2.4 Customer Groups**

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

- Media
- Governmental Entities, including regulatory and law enforcement agencies
- General public residing or working within the general vicinity of the Project, or traveling within or across the limits of the Project
- Business owners within or adjacent to the Project corridor
- Utilities, railroads, transportation authorities and providers (such as local airports, transit operators, toll authorities, and other highway concessionaires) affected by the Project

### **3.2.5 Public Meetings**

A key element to developing and implementing the PICP shall be the organization and management by the Developer of meetings with the Customer Groups during design and construction activities.

During such meetings, Developer shall inform the public of the Project's progress and discuss key issues as they emerge. Developer shall provide timely and useful information regarding subjects of interest to the public, including:

- Design and construction issues affecting adjacent residential areas, frontage roads, local streets, and utilities, including such issues as Project ROW definition, Project ROW acquisition process, grading, drainage, and noise and retaining walls
- Street and roadway detour design and implementation
- Scheduling and duration of Work, including hours of construction
- Haul routes
- Methods to minimize noise and dust
- Environmental mitigation measures

Developer shall notify TxDOT a minimum of 48 hours in advance of any meetings with the public. TxDOT reserves the right to attend any such meetings. When requested by TxDOT, Developer shall participate in any meetings with the public called and conducted by TxDOT by providing necessary support. When TxDOT decides to conduct such meetings, Developer shall share, in a readily manipulatable form, all necessary information regarding potential Customer Groups at TxDOT's request at no cost to TxDOT.

### **3.2.6 Meeting Minutes**

For all meetings with the public which the Developer conducts or directly participates in, Developer shall prepare meeting minutes within five Business Days after the conclusion of such meetings. At a minimum, Developer shall include the following items in the meeting minutes:

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

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

### **3.2.7 Emergency Event Communications**

For all Emergency events, such as vehicle collisions, ice/snow conditions, and Hazardous Material spills, the Public Information Coordinator shall take timely and appropriate action to inform TxDOT and appropriate Customer Groups of all pertinent details. The Public Information Coordinator shall provide these details through the use of appropriate tools to ensure effective communication. These tools include: dynamic message signs (DMS), TxDOT's Highway Conditions Report (HCR), email/Web alerts, telephone notification, facsimiles, and media releases/interviews, as appropriate. The Public Information Coordinator shall continue to provide updated information, as available and on a timely basis, until the Emergency no longer exists.

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

#### **3.2.7.1 Lane Closures**

Subject to the lane closure restrictions set forth in Section 18 and in Section 22, Developer shall provide TxDOT and appropriate Customer Groups a minimum of two weeks advance notice for lane closures and/or traffic switches planned to be in effect longer than 24 hours, and a minimum of 24 hours advance notice for lane closures that are planned to be in effect less than 24 hours, using all appropriate tools as needed. The Public Information Coordinator shall input all lane closures (or an event that results in lane closures) into the TxDOT HCR.

### **3.2.8 Disseminating Public Information**

In addition to the communication of information regarding Emergency events and lane closures, Developer's PICP shall also provide for the effective use of appropriate tools to inform, engage, and educate the Customer Groups. Developer shall prepare and appropriately distribute materials regarding Project-related subjects, using all appropriate methods, including: meetings, news releases, telephone correspondence, newsletters, email, hotlines, HCR, dynamic message signs, Web alerts, maps, displays, renderings, presentations, brochures, and pamphlets.

Developer shall create a public Web site to convey Project-related information, including:

1. Contact information
2. Project maps
3. Frequently asked questions (FAQs)
4. Current Project activities addressing design, construction, maintenance, and operations
5. Timing of street and ramp closures and openings



6. Recommended route alternatives during closures
7. Special events calendar
8. Links to TxDOT HCRs
9. Links to other related sites as deemed appropriate by TxDOT

The Web site shall also contain other general Project-related information that enhances the engagement or education of the general public. Developer shall regularly review and update information on this public Web site throughout the Term of the Agreement to provide current and appropriate information.

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

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

## 4 ENVIRONMENTAL

### 4.1 General Requirements

Developer shall comply with the requirements of the Environmental Commitments, CDA Documents, Environmental Laws, Governmental Entities, Governmental Approvals, and all applicable federal and state Laws and regulations (Environmental Requirements). To that end, Developer shall develop, submit for TxDOT approval, operate, and maintain a Comprehensive Environmental Protection Program (CEPP) for the Work to ensure compliance with all Environmental Laws and commitments. The CEPP shall obligate Developer to protect the environment and document the measures taken during the performance of the Work to avoid and minimize impacts on the Environment from the design, construction, maintenance, operation, and rehabilitation activities of the Project. The CEPP shall effectively demonstrate Developer's comprehensive knowledge of the environmental scope as set forth in Book 2, and shall describe the processes that will be followed during the course of the Work to comply with those Environmental Approvals, issues, and commitments and Laws. All monitoring and reporting activities shall be concise, consistent throughout the Term of the Agreement as applicable to the activities being performed, and in accordance with the requirements set forth in the Environmental Laws.

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

Developer shall monitor and document Work activities to validate full compliance with the Environmental Requirements.

### 4.2 Environmental Approvals

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

TxDOT-Provided Approvals are based on the Project schematic contained therein. Such approvals may require re-evaluation, amendment, or supplement as the Work progresses or in order to accommodate actions not identified in the TxDOT-Provided Approvals or covered specifically by existing resource agency coordination. Changes by the Developer to the Project design from what is contained in the Project schematic or incorporation of Additional Properties into the Project may trigger re-assessment of the TxDOT-Provided Approvals.

Developer will be responsible for coordination with Governmental Entities necessary to obtain new Environmental Approvals or amendments to the TxDOT-Provided Approvals except where TxDOT has agreements with Governmental Entities to perform such coordination. In cases where TxDOT has such agreements, Developer remains responsible for all other work associated with obtaining the new Environmental Approvals.

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

#### 4.2.2 *TxDOT Review and Approval of Developer Submissions*

Developer shall be required to submit all documentation for environmental compliance, including permit applications, in accordance with the Compliance Action Plan as described in Section 4.3.2. For those documents for which TxDOT approval is required, documentation that complies with current TxDOT

submission standards will be approved by TxDOT. TxDOT may reject any documents that do not comply with current TxDOT submission standards. Any rejected documents shall be revised and re-submitted for TxDOT approval. Approval by TxDOT does not assure approval by other Governmental Entities.

TxDOT will return approved documentation to the Developer for submittal to the appropriate Governmental Entity in cases where the Developer performs coordination.

### **4.3 Comprehensive Environmental Protection Program (CEPP)**

As part of the PMP, Developer shall develop and implement a Comprehensive Environmental Protection Program, applicable throughout the Term of the Agreement to establish the approach, requirements and procedures to be employed to protect the environment. All component parts shall reflect in order of priority: impact avoidance, minimization and as last resort mitigation. The CEPP shall satisfy applicable FHWA, TxDOT and resource agency requirements, including those detailed as commitments in any Environmental Approvals.

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

- Environmental Management System (EMS),
- Environmental Compliance and Mitigation Plan (ECMP),
- Environmental Protection Training Plan (EPTP),
- Hazardous Materials Management Plan (HMMP),
- Communication Plan (CP),
- Construction Monitoring Plan (CMP),
- Recycling Plan (RP).

TxDOT approval of the CEPP is a condition of NTP2. Amendments and updates to the CEPP as necessary to address changing conditions and Environmental Requirements shall be in accordance with the procedures for amendments to the PMP.

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

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

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

The ECMP shall document and fully detail compliance strategies and procedures to be employed to cause Work performance in accordance with requirements of applicable Environmental Requirements. This plan shall establish and/or document schedules, protocols, and methods to be used in accomplishing Work, with an emphasis on monitoring, reporting, corrective actions and adaptive management. In addition, the ECMP shall detail any mitigation required by Environmental Approvals and the Developer's approach to satisfying mitigation requirements, including mitigation requirements identified after completion of the ECMP.

The ECMP shall include the following components:

##### **4.3.2.1 Compliance Action Plan (CAP)**

The CAP shall consist of a decision making matrix which will define the triggers for initiating or re-initiating environmental compliance actions for construction and maintenance activities. For each trigger,

the CAP will identify the appropriate type or level of environmental study or other compliance action necessary to ensure the ongoing validity of Project Environmental Approvals and commitments.

#### **4.3.2.2 Environmental Permits, Issues, and Commitments (EPIC) Sheets**

Developer shall develop and maintain EPIC sheets. Applicable permits and environmental commitments shall be identified on EPIC sheets and updated throughout the Term to identify on-Site conditions.

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

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

- Process for training personnel to recognize Waters of the U.S. that fall under the jurisdiction of the USACE,
- Process for communicating the terms and conditions of all USACE 404 permits and TCEQ 401 certifications,
- Procedures for carrying out any required mitigation,
- Procedures for handling off-right-of-way Project Specific Locations (PSL) as required by all Section 404 permit(s) issued to either TxDOT or the Developer by the USACE.

#### **4.3.2.4 Clean Water Act - Sections 402: Texas Pollutant Discharge Elimination System (TPDES)**

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

- Process for training personnel on the requirements and conditions of the Texas Construction General Permits for Storm Water Discharges from Construction Sites (CGP),
- Procedures for incorporating additional properties outside the original NEPA approved schematic and any off- right-of-way PSL within one linear mile of the project limits to comply with the CGP and the project's SW3P,
- Procedures for handling non-compliance issues,
- Escalation procedures for SW3P items.

#### **4.3.2.5 State Listed Species and Unregulated Habitat**

- Process for communicating any commitments regarding state listed species and unregulated habitat,
- Procedures for complying with any commitments.

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

Developer shall document how they shall comply with the Endangered Species Act (ESA) and the Fish and Wildlife Coordination Act (FWCA). The documentation shall reflect that coordination with U.S.

Fish and Wildlife Service (USFWS) shall be conducted by TxDOT. The documentation at a minimum shall include:

- Process for training personnel on the requirements of the ESA and FWCA,
- Process for communicating any commitments regarding ESA and FWCA,
- Procedures for complying with any commitments including mitigation.

#### **4.3.2.7 Traffic Noise**

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

- Process for carrying out noise mitigation measures as identified and discussed in the approved NEPA document and schematic,
- Process for carrying out noise mitigation measures determined throughout the life of the project,
- Process to handle changes that may occur to proposed permanent noise mitigation in the approved NEPA document and schematic.

#### **4.3.2.8 Well Impacts and Requirements**

Developer shall document how they will address wells (such as municipal, domestic, irrigation, oil and gas, or monitoring and observations wells) encountered during the life of the project. The documentation at a minimum shall include:

- Process for training personnel on recognition of wells,
- Procedures for addressing wells,
- Procedures for addressing contamination of a well that results from the Developer's work. Procedures shall include a requirement to notify TxDOT and the appropriate regulatory agencies.

#### **4.3.2.9 Cultural Resource Studies**

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

Subsequent to issuance of NTP1, Developer shall be responsible for performing any necessary cultural resource surveys, evaluations, testing, and mitigation in those areas outside the footprint of the Project ROW shown on the schematics as defined in the original NEPA Approval and within the area of potential effects. Developer shall coordinate all necessary Antiquities Permits through TxDOT. Developer shall be responsible for obtaining Antiquities Permits from the Texas Historical Commission (THC) for archeological surveys, testing, monitoring, and data recovery.

Developer shall document efforts to avoid impacts to cultural resources. that are listed on or eligible for inclusion in the National Register of Historic Places (NRHP), or that are designated as State Archeological Landmarks.

If evidence of a possible historic property is encountered during the course of the Work, Developer shall immediately cease Work in the immediate area and contact TxDOT to initiate post-review discovery procedures under the provisions of the PA among TxDOT, SHPO, FHWA, and ACHP as well as the MOU between TxDOT and the THC. Developer shall undertake appropriate measures to protect the site from further intrusion to the extent feasible until an appropriate evaluation of the site can be made by a

qualified representative. Work shall not be resumed in the area until Developer receives notification and approval from TxDOT.

#### **4.3.2.10 Public Involvement**

Developer shall document how it will comply with all public involvement requirements, including public involvement requirements specifically related to cultural resources. The documentation shall include that the Developer is responsible for conducting all public involvement requirements for the life of the project except where TxDOT has agreements with Governmental Entities to perform public involvement requirements. The documentation at a minimum shall include:

- Process for addressing public involvements requirements,
- Procedures for documenting public involvement,
- Procedures for summarizing public involvement comments.

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

Developer shall develop and implement an Environmental Protection Training Program that shall meet the minimum requirements set forth herein. The EPTP shall include methods and procedures documented in the ECMP to:

- Educate every non-administrative worker to:
  - a. Recognize the overall importance of environmental issues to constructing, operating and maintaining a successful Project.
  - b. Appreciate the various environmental sensitivities of the Project.
- Train every non-administrative worker to:
  - a. Recognize environmentally sensitive resources that may be encountered during the Work.
  - b. Avoid or take appropriate action to minimize environmental impacts arising from the Work.
  - c. Know the required actions, practices, and procedures regarding regulated resources.
- Foster Developer's management and supervisory personnel's attitude of commitment to the Project's environmental quality.
- Convey to all workers, Developer's management commitment to the Project's environmental quality.
- Convey to all workers, TxDOT's and Developer's commitment to zero tolerance for violations.

#### **4.3.3.1 EPTP Scope and Content**

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

- Overall importance of environmental protection to the Project
- Compliance responsibility and Governmental Entity authority including background and environmental issues regulatory overview.
- Overview of Developer's environmental commitments and responsibilities at the Project level.
- Worker responsibilities.
- Wetlands identification.
- Environmental Approvals terms and conditions including an overview of the provisions of the ESA, Migratory Bird Treaty Act, and Stormwater Pollution Prevention Program (SW3P).
- BMPs for environmental compliance, including pollution prevention, erosion, sedimentation, and dust control measures to maintain water and air quality.

- Required mitigation measures.
- Procedures and precautions in the event of spills of or discovery of Hazardous Materials or unknown chemicals or contamination.
- Procedures and precautions in the event human skeletal remains or other archeological or paleontological resources are discovered.
- Procedures regarding the relocation of historical markers (i.e. Texas Historic Commission Subject Markers, DAR OSR Markers, Texas Centennial Markers, Texas Highway Department Markers, and local/county markers).
- Groundwater protection requirements.
- CWA regulations and surface water protection requirements.
- Overview of noise and residential impact reduction procedures.
- Air quality requirements.
- Penalties and/or fines for violations of and noncompliance with Environmental Approvals and Environmental Laws, including termination of employment.

#### **4.3.3.2 EPTP Participation**

Developer shall require all employees to participate in the EPTP and shall keep accurate records documenting attendance, as well as materials presented.

#### **4.3.3.3 EPTP Schedule**

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

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

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

The Hazardous Materials Management Plan shall include procedures compliant with all applicable Environmental Laws and include, at a minimum:

- For all chemicals to be used on the Project, Developer shall keep and update Material Safety Data Sheets (MSDS), per OSHA requirements, for the Term of the Agreement.
- Designated individuals responsible for implementation of the plan,
- Procedures for identifying and documenting potential contaminated sites which might impact Project development,
- Procedures for mitigation of known contaminated sites anticipated to impact construction,
- Procedures for mitigation of unanticipated contaminated sites encountered during construction,

- Procedures for mitigation of contamination during the operation and maintenance of the Project,
- Procedures for developing a detailed Spill Response Plan for the Term of the Project,
- Process for training personnel for responding to and mitigating Incidents involving contamination or waste
- Provisions for appropriate storage and disposal of all waste encountered or disposed of on the Project for the Term.
- Provision for a Hazardous Materials training module as an Element of the EPTP component of the CEPP.
- Procedures for preparing an Investigative Work Plan (IWP) and Site Investigative Report (SIR) in the event that Hazardous Materials are discovered during construction; operations or maintenance activities.
- Identification and contact information for designated responsible individuals.

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

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

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

#### ***4.3.5 Communication Plan (CP)***

In coordination with the requirements of Section 3, Developer shall develop a CP which describes in detail the communication hierarchy for information distribution related to the compliance with the CEPP. The CP will include names and contact information, including emergency contact information, and the preferred methods of routine, and emergency communication distribution.

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

The CMP shall identify times, locations, and other conditions where monitoring of construction activities are to be performed to maintain and cause compliance with Environmental Laws, Environmental Approvals, and the CDA Documents. The CMP shall establish and/or document schedules, protocols and methods to be used for monitoring Work with an emphasis on timely reporting, corrective actions and adaptive management. The CMP shall establish reporting procedures, identify reporting requirements and establish controls for report distribution and records retention. Should any non-compliance or violation be observed that represents an imminent danger to human health or the environment, the CMP shall include procedures to cause immediate notification of TxDOT.

#### ***4.3.7 Recycling Plan***

The recycling plan shall document and fully detail the Developer's commitment to recycling, waste minimization and use of "green products" during all aspects of Work. The recycling plan shall document the Developer's recycling initiatives as well as methods and procedures for maximizing the use of recycled materials in all aspects of the Work. If recyclable materials shall be used in lieu of TxDOT



approved construction and maintenance materials, Developer shall follow the TxDOT specification DMS 11000.

#### **4.4 Environmental Personnel**

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

In the CEPP, Developer shall set forth an approach, procedures and methods for:

- Staffing and availability of ECM and all ET personnel.
- ET staff response times during the Work.

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

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

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

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

##### **4.4.2 Environmental Training Staff**

Under the direction of the ECM, the environmental training staff shall develop, schedule and conduct environmental awareness and environmental compliance training for the Developer's personnel. All training shall be in accordance with the requirements set forth in Section 4.2.3.

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

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

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

##### **4.4.4 Cultural Resource Management Personnel**

The ECM shall designate an Archeologist, Architectural Historian, Historian, and/or Historical Architect as specified in Book 2, Section 4 to provide expertise in monitoring impacts to cultural resources during the course of the Work.

##### **4.4.5 Natural Resource Biologist**

The ECM shall designate a Natural Resource Biologist as specified in Book 2, Section 4 to provide expertise in monitoring impacts on wildlife and the natural environment during the course of the Work.

#### ***4.4.6 Water Quality Specialist***

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

#### ***4.4.7 Hazardous Materials Manager***

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

- Schedule and/or conduct training for the Developer's employees.
- Verify all employee certifications prior to and required for any handling of Hazardous Materials.
- Maintain records of all incidents involving Hazardous Materials and notify the ECM, TxDOT and appropriate authorities in writing of any such incidents.
- Experienced in developing IWPs, SIRs, and remedial action plans or equivalent reports necessary and acceptable to the TCEQ in material discovery and remediation efforts of Hazardous Materials.
- Experienced in TCEQ guidance for the investigation and remediation of Hazardous Materials under the TCEQ Voluntary Cleanup Program and Texas Risk Reduction Program Rules.

## **5 Third Party Agreements**

## 6 UTILITY ADJUSTMENTS

### 6.1 General Requirements

A number of existing Utilities are located within or in the vicinity of the Project ROW, some pursuant to statutory rights and some pursuant to property rights. Certain of those existing Utilities will need to be relocated or otherwise Adjusted in order to accommodate the Project. This Section 6 establishes procedures and requirements for Adjusting Utilities including such processes as coordination with Utility Owners, administration of the engineering, construction and other activities necessary for Utility Adjustments, and required documentation. This Section 6 references certain TxDOT forms for the Developer's use in Adjusting Utilities. Copies of those forms are included in Attachment -7 - Utility Forms. Except as otherwise provided in this Section 6 or directed by TxDOT, whenever a TxDOT form is provided in Attachment 7, Developer shall prepare all forms of the same type using the TxDOT form.

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

Developer's obligations regarding reimbursement to Utility Owners for eligible costs of Utility Adjustment Work, and the Developer's obligations regarding the accommodation of Utilities from and after the Service Commencement Date, are set forth in Section 6.1 of Book 2.

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

#### 6.1.1 *When Utility Adjustment is Required*

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

Utilities may remain in their existing locations within the Project ROW, if (a) the requirements of Section 6.2.1 – Standards are met, and (b) the existing location will not adversely affect the construction, operation, safety, maintenance and/or use of the Project.

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

*Coordination.* Developer shall communicate, cooperate, and coordinate with TxDOT, the Utility Owners and potentially affected third parties, as necessary for performance of the Utility Adjustment Work. Developer shall be responsible for preparing (unless prepared by the Utility Owner) and securing execution (by Developer and the Utility Owner) of all necessary agreements. All such executed Utility Agreements must be approved by TxDOT prior to taking effect.

All executed Utility Agreements between the Developer and Utility Owners must be approved by TxDOT prior to taking effect.

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

*Protection in Place.* Developer shall be responsible for Protection in Place of all Utilities impacted by the Project as necessary for their continued safe operation and structural integrity and to otherwise satisfy the requirements described in Section 6.2.1 - Standards.

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

*Service Lines and Utility Appurtenances.* Whenever required to accommodate construction, operation, maintenance and/or use of the Project, Developer shall cause Service Line Adjustments and Utility Appurtenance Adjustments. On completion of these, Developer shall cause full reinstatement of the roadway, including reconstruction of curb, gutter, sidewalks, and landscaping, whether the Utility Adjustment Work is performed by the Utility Owner or by Developer.

*Early Adjustments.* Early Adjustments, if any, are addressed in Book 2, Section 6..

### **6.1.3      *Reserved***

### **6.1.4      *Agreements Between Developer and Utility Owners***

Except as otherwise stated in this Section 6 or in the Agreement, each Utility Adjustment shall be specifically addressed in a Master Utility Adjustment Agreement (MUAA) or in a Utility Adjustment Agreement Amendment (UAAA). Developer is responsible for preparing, negotiating (to the extent allowed by this Section 6), and obtaining execution by the Utility Owners, of all Utility Agreements, (including preparing all necessary exhibits and information about the Project, such as reports, Plans and surveys). A Utility Agreement is not required for any Utility Adjustment consisting solely of Protection in Place in the Utility's original location within the Project ROW, unless the Utility Owner is being reimbursed for costs incurred by it on account of such Protection in Place.

#### **6.1.4.1    *Master Utility Adjustment Agreements (MUAA)***

Developer shall enter into one or more MUAAs with each affected Utility Owner to define the design, material, construction, inspection, and acceptance standards and procedures necessary to complete Utility Adjustments, as well as to define the Developer's and the Utility Owner's respective responsibilities for Utility Adjustment costs and Utility Adjustment activities such as material procurement, construction, inspection and acceptance. A MUAA may address more than one Utility Adjustment for the same Utility Owner. Additional Adjustments may be added to an existing MUAA by a Utility Adjustment Agreement Amendment (UAAA).

Developer shall prepare each MUAA using the standard form of TxDOT Master Utility Adjustment Agreement (Owner-Managed) or TxDOT Master Utility Adjustment Agreement (Developer-Managed), copies of which are in Attachment 7 – Utility Forms.

Promptly following issuance of NTP1, Developer shall begin negotiations with each affected Utility Owner to reach agreement on one or more MUAAs. Developer shall use good faith efforts to finalize a MUAA with each affected Utility Owner within a reasonable time period after issuance of the NTP1. Developer shall include any proposed changes to a standard form (other than filling in blanks that are specific to a particular Utility Owner) in a Utility Owner-specific addendum. Each MUAA (including the

Utility Adjustment Plans attached thereto) shall be subject to TxDOT review and approval as part of a Utility Assembly.

#### **6.1.4.2 Utility Adjustment Agreement Amendments**

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

Each UAAA (including any Utility Adjustment Plans attached thereto) shall be subject to TxDOT's approval as part of a Supplemental Utility Assembly. Except as otherwise directed by TxDOT or provided in an applicable Utility Agreement, Developer shall prepare all UAAAs using the standard form included in Attachment 7 -- Utility Forms.

#### **6.1.5 Recordkeeping**

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

### **6.2 Administrative Requirements**

#### **6.2.1 Standards**

All Utility Adjustment Work shall comply with all applicable Laws, these Technical Provisions, the Utility Adjustment Standards applicable pursuant to Section 7.5 of the Agreement, and the requirements specified in this Section 6.

#### **6.2.2 Communications**

##### **6.2.2.1 Communication with Utility Owners: Meetings and Correspondence**

Developer is responsible for holding meetings and otherwise communicating with each Utility Owner as necessary to timely accomplish the Utility Adjustments in compliance with the CDA Documents. TxDOT will participate in these meetings if requested by the Utility Owner or the Developer or otherwise as TxDOT deems appropriate.

At least three Business Days in advance of each scheduled meeting, Developer shall provide notice and an agenda for the meeting separately to TxDOT and the appropriate Utility Owner. Developer shall prepare minutes of all meetings with Utility Owners and shall keep copies of all correspondence between Developer and any Utility Owner.

Developer shall submit to TxDOT for its review and comment the form, content and addressees of any mass mailings to Utility Owners, in accordance with Book 2 before distribution. For purposes of this Section 6.2.2.1, the term “mass mailing” means correspondence that is sent to 50 percent or more of Utility Owners within a three week time period, and contains substantially the same content with respect to each Utility Owner.

#### **6.2.3 Utility Adjustment Team**

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

The UM's primary work responsibility shall be the performance of all Developer's obligations with respect to Utility Adjustments. The Utility Manager shall have a bachelor's degree, and have at least four years of relevant experience in coordinating and solving complex utility adjustments on highway improvement projects.

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

#### **6.2.4 Real Property Matters**

Developer shall provide the services described below in connection with existing and future occupancy of property by Utilities.

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

For each Existing Utility Property Interest within the Project ROW claimed by any Utility Owner, Developer shall include an Affidavit of Property Interest in the applicable Utility Assembly, with documentation of the Existing Utility Property Interest (e.g., an easement deed) attached. Any such claim shall be subject to TxDOT's review as part of its Utility Assembly review. Except as otherwise directed by TxDOT, Developer shall prepare all Affidavits of Property Interest using the standard forms included in Attachment 7 -- Utility Forms.

##### **6.2.4.2 Acquisition of Replacement Utility Property Interests**

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

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

Developer is not responsible for Utility Owner condemnation proceedings.

##### **6.2.4.3 Relinquishment of Existing Utility Property Interests**

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

##### **6.2.4.4 Quitclaim Deeds**

Except as otherwise directed by TxDOT, Developer shall prepare a Quitclaim Deed for each relinquishment of an Existing Utility Property Interest using TxDOT's standard form included in Attachment 7 -- Utility Forms. Each Quitclaim Deed shall be subject to TxDOT's review as part of a Utility Assembly as described below.

Developer understands and expects that a Utility Owner will not relinquish any Existing Utility Property Interest until after the Adjusted Utility has been accepted by the Utility Owner in its new location. Accordingly, instead of an executed Quitclaim Deed, the Utility Assembly for such a Utility Adjustment shall include a letter signed by the Utility Owner's authorized representative confirming that the interest will be quitclaimed upon completion of the Utility Adjustment, and a copy of the unsigned Quitclaim Deed. In these cases, Developer shall obtain the executed Quitclaim Deed promptly upon completion of the Utility Adjustment.

#### **6.2.4.5 Utility Joint Use Acknowledgements**

Developer shall prepare a "Utility Joint Use Acknowledgment" for:

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

Except as otherwise directed by TxDOT in its sole discretion, Developer shall prepare all Utility Joint Use Acknowledgments using TxDOT's standard form included in Attachment 7 -- Utility Forms. Developer also shall prepare all required documentation to be included with each Utility Joint Use Acknowledgment.

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

#### **6.2.4.6 Documentation Requirements**

Developer shall prepare, negotiate (to the extent permitted by this Section 6.2.4 – Real Property Matters), and obtain execution by the Utility Owner of (and record in the appropriate jurisdiction, if applicable) all agreements and deeds described in this Section 6.2.4, including all necessary exhibits and information concerning the Project (e.g., reports, Plans and surveys). Each agreement or deed shall identify the subject Utility(ies) by the applicable Utility Assembly Number (*[4 digit Number beginning with 0500]*), and shall also identify any real property interests by parcel number or highway station number, or by other identification acceptable to TxDOT.

### **6.3 Design**

#### **6.3.1 Developer's Responsibility for Utility Identification**

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

Developer shall prepare and submit to TxDOT, in accordance with the PMP, a Utility Strip Map showing the information obtained and/or confirmed pursuant to this Section 6.3.1. Developer's Utility Strip Map shall show in "plan view" all of the Utilities within the Project ROW or otherwise impacted by the Project, in each case detailing the type of Utility facility (communication, gas, oil, water, etc.) and the Utility Owner's name and contact information. The scale of the Utility Strip Map shall be as set forth in Book 2. Developer shall update the information provided in the Utility Strip Map with SUE data and shall submit the same to TxDOT in accordance with the PMP.

#### **6.3.2 Technical Criteria and Performance Standards**

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

- The applicable requirements of the CDA Documents, including Section 6.2.1 – Standards;



- The Project as initially designed and constructed as well as the Ultimate Configuration
- Any Utilities remaining in, or being installed in, the same vicinity;
- All applicable Governmental Approvals;
- Private approvals of any third parties necessary for such work.

### **6.3.3 Utility Adjustment Concept Plans**

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

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

### **6.3.4 Utility Adjustment Plans**

Utility Adjustment Plans, whether furnished by Developer or by the Utility Owner, shall be signed and sealed by a Registered Professional Engineer (PE).

#### **6.3.4.1 Plans Prepared by Developer**

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

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

#### **6.3.4.2 Plans Prepared by the Utility Owner**

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

#### **6.3.4.3 Design Documents**

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

#### **6.3.4.4 Certain Requirements for Underground Utilities**

Casing as specified in the Utility Accommodation Rules (UAR) shall be used for all underground Utilities crossing the Project ROW. However, high-pressure gas and liquid petroleum pipelines may be allowed to cross the Project ROW without steel casing as long as the requirements of the Utility Accommodation

Rules are met. All high pressure gas pipelines within the Project ROW shall comply with a design factor “F” = 0.6.

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

#### **6.3.4.5 Utility Assemblies**

Each Utility Adjustment (as well as each Utility remaining in place in the Project ROW and not requiring any Protection in Place or other Utility Adjustment) shall be addressed in a Utility Assembly prepared by the Developer and submitted to TxDOT for its review and comment, and for TxDOT’s approval of any items for which this Section 6, including Attachment 7 -- Utility Forms and Attachment 8 – Utility Assembly and Tracking Report Requirements, requires TxDOT’s approval. Each Utility Adjustment shall be addressed in a full Utility Assembly, unless it is appropriate for a Supplemental Utility Assembly or Abbreviated Utility Assembly, as described below. Developer shall coordinate with the Utility Owner to prepare all components of each Utility Assembly. Completion of the review and comment process for the applicable Utility Assembly, as well as issuance of any required TxDOT approvals, shall be required before the start of construction for the affected Utility Adjustment Work .

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

All Utility Adjustments covered by the same initial MUAA shall be addressed in a single full Utility Assembly, which shall include all items described in Attachment 8 – Utility Assembly and Tracking Report Requirements. .

*Supplemental Utility Assemblies.* For each UAAA, Developer shall prepare a supplement to the Utility Assembly for the relevant initial MUAA (a "Supplemental Utility Assembly"), covering all Utility Adjustments addressed in the UAAA. The Supplemental Utility Assembly shall contain a transmittal memo, Utility Assembly Checklist, proposed UAAA cost estimate, a proposed UAAA which has been executed by the Utility Owner and Developer (one original in each of the two original Supplemental Utility Assemblies), including all required attachments, and applicable revisions to the Utility Adjustment Plans, as well as Utility Joint Use Acknowledgement(s) and Affidavit(s) of Property Interest, if applicable. The transmittal memo shall briefly describe the desired amendment, and explain why the amendment is necessary. Each of the foregoing items shall comply with the requirements for same described in Attachment 8 – Utility Assembly and Tracking Report Requirements.

*Abbreviated Utility Assemblies.* Developer shall prepare an Abbreviated Utility Assembly for each Utility proposed to remain at its original location within the Project ROW that is not required to be addressed in a MUAA or UAAA, or for a group of such Utilities. Each Abbreviated Utility Assembly shall contain a transmittal memo recommending that the subject Utility(ies) remain in place, a completed Utility Assembly Checklist, a certification from the Utility Owner approving leaving the Utility(ies) in place, as well as Utility Joint Use Acknowledgement(s) and Affidavit(s) of Property Interest, if applicable. Each of the foregoing items shall comply with the requirements for same described in Attachment 8 – Utility Assembly and Tracking Report Requirements. .

## **6.4 Construction**

### **6.4.1 Reserved**

### **6.4.2 General Construction Criteria**

All Utility Adjustment construction performed by the Developer shall conform to the requirements listed below. In addition, Developer is responsible for verifying that all Utility Adjustment construction performed by each Utility Owner conforms to the requirements described below. In case of nonconformance, Developer shall cause the Utility Owner (and/or its contractors) , as applicable) to

complete all necessary corrective work or to otherwise take such steps as are necessary to conform to these requirements.

1. All criteria identified in Section 6.3.2 – Technical Criteria and Performance Standards;
2. The Utility Adjustment Plans included in the Utility Agreement approved by TxDOT (other than Utility Adjustment Field Modifications complying with Section 6.4.7 - Utility Adjustment Field Modifications);
3. All Project safety and environmental requirements;
4. The right-of-way acquisition schedule described in Section 7 - ROW.

#### **6.4.3 Inspection of Utility Owner Construction**

In the PMP, Developer shall set forth procedures for inspection of all Utility Adjustment Work performed by Utility Owners (and/or their contractors) to verify compliance with the applicable requirements described in Section 6.4.2 - General Construction Criteria.

#### **6.4.4 Scheduling Utility Adjustment Work**

The Utility Adjustment Work (other than construction) may begin at any time following issuance of NTP1. Refer to Section 6.4.4 of Book2 for the conditions to commencement of Utility Adjustment Construction Work by Developer; and Developer shall not arrange for any Utility Owner to begin any demolition, removal, or other Construction Work for any Utility Adjustment until all of the following conditions are satisfied:

1. The Utility Adjustment is covered by an executed Utility Agreement (and any conditions to commencement of such activities that are included in the Utility Agreement have been satisfied);
2. Availability and access to any affected Replacement Utility Property Interest has been obtained by the Utility Owner (and provided to the Developer, if applicable);
3. If any part of the Construction Work for the Utility Adjustment will affect the Project ROW, the condition set forth in Section 6.4.4 of Book 2 has been satisfied;
4. If applicable, the Alternate Procedure List has been approved by FHWA, and either (a) the affected Utility is on the approved Alternate Procedure List, as supplemented, or (b) the Utility Owner is on the approved Alternate Procedure List, as supplemented
5. The review and comment process has been completed and any required approvals have been obtained for the Utility Assembly covering the Utility Adjustment ;
6. All Governmental Approvals necessary for the Utility Adjustment construction have been obtained, and any pre-construction requirements contained in those Governmental Approvals have been satisfied; and
7. Any other conditions to that work stated in the CDA Documents have been satisfied.

#### **6.4.5 Standard of Care Regarding Utilities**

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

#### **6.4.6 Emergency Procedures**

Developer shall provide Emergency procedures with respect to Utility Adjustment Work in the PMP. Developer shall obtain Emergency contact information from, and establish Emergency procedures with each Utility Owner.

#### **6.4.7 Utility Adjustment Field Modifications**

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

1. The Utility Owner's review and approval of a Utility Adjustment Field Modification proposed by the Developer, or the Developer's review and approval of a Utility Adjustment Field Modification proposed by the Utility Owner;
2. Submittal of plans for the proposed Utility Adjustment Field Modification to TxDOT for its review and comment;
3. Transmittal of Utility Adjustment Field Modifications to the appropriate construction field personnel;
4. Inclusion of any Utility Adjustment Field Modifications in the Record Drawings for the Project.

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

#### **6.4.8 *Switch Over to New Facilities***

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

#### **6.4.9 *Record Drawings***

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

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

#### **6.4.10 *Maintenance of Utility Service***

All Utilities shall remain fully operational during all phases of construction, except as specifically allowed and approved in writing by the Utility Owner. Developer shall schedule Utility Adjustment Work in order to minimize any interruption of service, while at the same time meeting the Project Schedule and taking into consideration seasonal demands.

#### **6.4.11 *Traffic Control***

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

### **6.5 *Deliverables***

Developer shall time all Submittals described in this section to meet the Project Schedule, taking into account TxDOT's designated review and response time set forth in Section 6.5 of Book 2. All deliverables shall conform to the standards required in the Project Management Plan.

#### **6.5.1 *Maximum Number of Submittals***

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

1. Two Utility Assemblies (excluding Supplemental or Abbreviated Utility Assemblies)
2. Two of any documentation constituting any of the following:

- A modified or additional item submitted in response to TxDOT comments on a particular Utility Assembly
  - A Quitclaim Deed
  - Any other type of relinquishment document
3. Two Supplemental Utility Assemblies;
  4. Two Abbreviated Utility Assemblies.

Where the number of Submittals exceed these limits, the requirements of Section 6.5.1 of Book 2 shall apply.

### **6.5.2 Developer's Utility Tracking Report**

Developer shall maintain a Utility Tracking Report in tabular form, listing all Utilities located within the Project ROW or otherwise potentially affected by the Project. The Utility Tracking Report shall include the items specified in Attachment 8.

Developer shall submit the Utility Tracking Report to TxDOT and update it periodically in accordance with the PMP.

### **6.5.3 Utility Assembly Submittals**

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

1. Before submitting a Utility Assembly to TxDOT, Developer shall:
  - Verify that each subject Utility (or the Utility Owner) is on the approved Alternate Procedure List, if applicable;
  - Submit the complete Utility Assembly to the quality control/quality assurance entity designated by the Developer in accordance with the PMP; and
  - Resolve all comments made by the quality control/quality assurance entity, coordinating with the Utility Owner as appropriate.
2. Developer shall submit to TxDOT three identical and complete originals of each Utility Assembly (each of which shall be bound and labeled "Developer Copy", " TxDOT Copy", or "Utility Owner Copy", as appropriate), complying with the requirements of Section 6.5.3 of Book 2. These submittals shall be for TxDOT's review and comment, except for any components of the Utility Assembly for which TxDOT's affirmative approval is required by this Section 6.5.

TxDOT will review the Utility Assembly for compliance with the requirements of this Section 6.5.3, and within ten Business Days shall return the Utility Assembly to the Developer with the appropriate notations (pursuant to Section 6.5.3 of Book 2) to reflect its responses. Developer shall transmit any TxDOT comments to the Utility Owner, and shall coordinate any modification, review and approval by the Utility Owner and re-submittal to TxDOT, as necessary to resolve all TxDOT comments and/or obtain TxDOT's approval, as applicable. Upon (a) TxDOT's approval of any Utility Assembly components for which TxDOT's approval is required, and (b) completion of the review and comment process for all other Utility Assembly components, TxDOT will sign three originals of any approved UJUA and of any other components of the Utility Assembly for which this Section 6 requires TxDOT's signature.

## 7 RIGHT OF WAY (ROW)

### 7.1 General Requirements

Developer's obligations in respect of the acquisition of Project ROW are set forth in Section 7.4 of the Agreement.

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

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

### 7.2 Administrative Requirements

#### 7.2.1 Standards

Project ROW shall be acquired in accordance with State and federal Law and the practices, guidelines, procedures and methods contained in the following:

- TxDOT *Right of Way Manual* Collection (available online at <http://manuals.dot.state.tx.us>)
- TxDOT *Access Management Manual* (available online at <http://manuals.dot.state.tx.us>)
- TxDOT *Survey Manual*
- TxDOT *Appraisal and Review Manual*
- TxDOT *Project Development Process Manual*
- FHWA's *Right-of-Way Project Development Guide* (as contained in FAPG).

The requirements, practices, guidelines, procedures, and methods set forth in these manuals are further modified and supplemented herein. If any discrepancies are found between the requirements set forth above, the more stringent requirement will be applied and followed. Developer must obtain advance written approval from TxDOT for any Deviation from said requirements.

For purposes of this section, it is understood that references in the above-described TxDOT manuals to TxDOT personnel, District personnel, District, District Engineer, ROW Division, Director of the ROW Division, and other similar TxDOT employees or titles involved in the acquisition process shall be deemed to mean Developer and its authorized agents. It is the intent of this provision to allow Developer to acquire ROW parcels for the Project on behalf of the State utilizing the procedures described in the above-described TxDOT manuals, but without the direct participation of TxDOT employees; subject to TxDOT's rights of review, approval, audit and enforcement described in the CDA Documents.

Pursuant to the applicable federal regulations, Developer shall (i) certify acceptance of the TxDOT *Right of Way Manual*; (ii) provide adequate access to all occupied properties; (iii) maintain utility service to occupied properties until relocation is complete; and (iv) not permit open burning within 1000 feet of an occupied dwelling.

Developer shall maintain a complete and current set of the TxDOT *Right of Way Manual* Collection, Volumes 1 through 8 (<http://manuals.dot.state.tx.us/dynaweb>), TxDOT *Access Management Manual* (<http://manuals.dot.state.tx.us/dynaweb>), TxDOT *Appraisal and Review Manual*, and a current approved Project ROW map for public use. Any TxDOT forms referenced in this section shall be found in the TxDOT *Right of Way Manual* Collection or will be provided by TxDOT.

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

### **7.2.2 Software Requirements**

Developer shall employ software that is compatible with the software in use by TxDOT, or fully transferable to TxDOT's systems. As of the Effective Date, the version in use by TxDOT is the most current version of MicroStation® and supporting electronic data in GEOPAK for electronic drawings, and Microsoft Word format for all reports and documents, or fully transferable. Developer must supply and maintain a web-based parcel by parcel database that incorporates the fields and information required by TxDOT's approved ROW tracking system: ROWIS. Developer must maintain and participate in any other required ROW tracking system required by the CDA Documents or otherwise agreed to by the parties. The database shall be fully accessible to Persons authorized by TxDOT.

### **7.2.3 ROW Acquisition Plan**

Developer shall prepare a ROW Acquisition Plan in accordance with the requirements of this S7 and Section 2. The ROW Acquisition Plan shall set forth Developer's organization including names, titles and qualifications of Key Personnel and other Project ROW personnel, integration of the Project ROW schedule into the Project Schedule, interface between design and Project ROW activities, documentation and reporting, quality control procedures and quality review standards.

The ROW Acquisition Plan shall contain, as a minimum, the following:

1. The name of TxDOT approved title company(ies) to be used for title services,
2. The name and qualifications of the proposed ROW Acquisition Manager (ROW AM), and
3. The resumes and qualifications for appraisers, appraisal reviewers, land planners, relocation agents, negotiators, real estate attorneys, and ROW personnel who shall have the minimum qualifications and experience specified in Section 7.2.7.

The ROW Acquisition Plan shall establish the specific means by which Developer will:

- Provide sufficient personnel to achieve, in accordance with the Project Schedule, the goals and milestones established for Project ROW acquisition, relocation assistance, appraisals and appraisal review, and clearance/demolition of the improvements from the Project ROW.
- Provide administrative support.
- Provide for Spanish, visually impaired, or hearing impaired translation, as necessary.
- Provide documentation and reports.
- Produce and distribute acquisition and relocation brochures as approved by TxDOT.
- Establish, implement, and maintain quality control procedures and quality review standards for the acquisition for Project ROW.
- Prevent fraud, waste and mismanagement.

Developer shall update the ROW Acquisition Plan regularly, at least quarterly, in accordance with the CDA Documents.

### **7.2.4 Schedule and Review Procedures**

The Project Schedule shall indicate the date to begin the acquisition of the Project ROW and the anticipated completion date of acquisition activities for each parcel. TxDOT shall be advised of all Additional Properties and temporary rights or interests in real property to be acquired by Developer. In developing the Project Schedule, Developer will give priority to the acquisition of parcels that have significant impact on the Project Schedule and/or affect the Critical Path as so indicated. The monthly status reports required by Section 2.1.1 shall provide updated projections for the acquisition date of each parcel.

In developing the Project Schedule, Developer shall incorporate adequate time periods for TxDOT review and approval of Acquisition Packages. TxDOT intends to review the completed Acquisition Packages as

expeditiously as possible; however, for the purposes of the Project Schedule, Developer shall assume that the reviews performed by TxDOT will require ten Business Days for Acquisition Packages that Developer submits as final and complete in accordance with Section 7.3.6 – Project ROW Acquisition Package Approval, up to a maximum of three Acquisition Packages. Any Submittals that would require TxDOT to review more than three Acquisition Packages within any given ten Business Day period shall be considered excess, and TxDOT may defer its review of any such Acquisition Packages to a subsequent ten Business Day period (or periods as necessary). TxDOT will notify Developer of its election to defer any excess Acquisition Packages within ten Business Days after receipt. The balance of Acquisition Packages in excess of three will be rolled over to the next ten Business Day period and added to the Acquisition Package Submittals made by Developer in that period. When Developer opts to submit more than one Acquisition Package at any given time, Developer shall indicate the priority of required review in order to meet the Project Schedule.

If TxDOT notifies Developer that any submitted Acquisition Package has a deficiency, Developer shall correct such deficiency and resubmit the package to TxDOT, which resubmissions shall be treated as a new Acquisition Package as described above. An Acquisition Package shall be deficient, as determined by TxDOT, if any of its components fails to meet any of the criteria established by this section for such component, or contains any material errors or omissions. Delays to schedule resulting from inadequate or incomplete submissions of Acquisition Packages shall be the responsibility of Developer and will not be eligible for treatment as a Relief Event or Compensation Event.

TxDOT reserves the right to undertake additional review on Acquisition Packages that contain or identify facts or issues of an unusual nature or which do not clearly fit within TxDOT standards and will notify Developer in writing that the review period will be extended by an additional ten Business Days before rendering a decision to Developer.

Developer may request TxDOT to do a preliminary review of the survey and appraisal before the complete Acquisition Package is submitted. TxDOT shall review the preliminary submission of the survey and appraisal and notify Developer of any deficiencies within five Business Days after TxDOT's receipt of such preliminary submission.

### ***7.2.5 Developer's Project ROW Scope of Services***

Developer shall complete all administrative activities and prepare all documentation sufficient for Developer to acquire the Project ROW. Developer shall obtain TxDOT's review and prior written approval of all Project ROW maps and surveys, appraisals, legal descriptions, acquisition documentation, purchase price, requests to acquire Project ROW, condemnation-related activities and funding/closing procedures. TxDOT will (i) approve and return the Project ROW acquisition documentation, (ii) provide review comments for incorporation by Developer in accordance with Section 7.2.4 - Schedule and Review Procedures, or (iii) in the case of an Acquisition Package that is deficient, notify Developer of the deficiency(ies) to be corrected by Developer in accordance with Section 7.2.4 – Schedule and Review Procedures. Except as otherwise authorized by applicable State and federal policy and regulations for early acquisition and approved by TxDOT, Developer shall not proceed with acquisition of the Project ROW until the NEPA Approval is issued, public involvement procedures have been completed, and ROW maps and legal descriptions for the applicable constructible segment as established by the logical termini of the Project have been prepared and approved by TxDOT. TxDOT will provide a separate release for each approved segment. Further, Developer shall not commence any negotiations with landowners nor will TxDOT begin eminent domain procedures until the specific Acquisition Package for that particular parcel is approved by TxDOT.

If Developer and the landowner cannot negotiate an agreed upon purchase price, acceptable to TxDOT, TxDOT will commence acquisition of the property through eminent domain procedures. Developer shall not be permitted to commence any condemnation action through the statutory “Declaration of Taking”



procedure without the express written consent of TxDOT, which consent may be withheld in TxDOT's sole and absolute discretion.

Developer shall not begin construction on any parcel of real estate unless property rights for the parcel have been conveyed and recorded in favor of TxDOT, possession has been obtained through eminent domain or any other method as provided for in Section 7.2.1, or a Possession and Use Agreement has been validly executed and delivered by all necessary parties in accordance with Section 7.4.1 – Project ROW Negotiations.

### **7.2.6 Acquisition Process Summary**

Developer's major activities with respect to the acquisition of the Project ROW include:

- Project ROW surveying and mapping
- Project ROW budget estimates and updates
- Title services
- Appraisal services
- Appraisal review
- Negotiations
- Closing services
- Relocation assistance
- Condemnation support services
- Clearance and demolition of Project ROW
- Environmental due diligence
- Documentation and document control
- Progress reports
- Project ROW administration and management
- Project ROW quality management
- Letter from Developer's design engineer certifying that the required Project ROW acquisition is necessary and that any proposed alternatives are not feasible or are cost prohibitive
- Obtaining rights of entry, as necessary

### **7.2.7 ROW Personnel Qualifications**

Developer's ROW Acquisition Manager shall have at least five years experience managing the acquisition of transportation right of way projects for a condemning authority, be licensed as a real estate salesman or broker pursuant to the Texas Real Estate Act or rules established by the Texas Real Estate Commission, be familiar with appraisal and appraisal report review pursuant to the Uniform Standards of Professional Appraisal Practice (USPAP), and be familiar with the Uniform Act and applicable Laws of the State of Texas.

Each Appraiser and appraisal reviewers shall be licensed and certified in the State of Texas and shall have a minimum of five years experience in appraising real property for eminent domain purposes, including partial taking appraisal, partial taking appraisal review and expert witness testimony. He or she must also have been actively and continuously engaged for at least three years immediately preceding his or her selection for this Project in appraisal work primarily in \_\_\_\_\_County(ies), Texas. The appraisers and the appraisal reviewers shall have separate and distinct duties, and appraisers must be employed by different firms from the appraisal reviewers. Each appraiser shall be required to submit three samples of previous appraisal work prepared for eminent domain purposes. All appraisers preparing and signing appraisals must be approved by TxDOT before performing any appraisals on the Project. If required by TxDOT, the appraiser will be required to demonstrate his/her skills at expert witness testimony.

Each land planner shall have a minimum of five years experience in land planning and expert witness testimony in eminent domain proceedings. He or she must also have been actively and continuously

engaged for at least three years immediately preceding his or her selection for this Project in land planning work primarily in \_\_\_\_\_County(ies), Texas. There shall be a minimum of two land planners who will be available to assist appraisers and provide complete land plans.

Each relocation agent shall have a minimum of three years experience in relocation assistance for right of way projects pursuant to the Uniform Act. A relocation agent's responsibilities shall include the following: Determination of eligibility of all displacees, contacting all displacees and informing them of their benefits, maintaining a file of all documentation concerning the relocation of the displacees, and extending all relocation assistance advisory services.

Each ROW negotiator shall be licensed either as a real estate sales person or broker pursuant to the Texas Real Estate Act or rules established by the Texas Real Estate Commission, and shall be familiar with appraisal and appraisal report review pursuant to the USPAP. The negotiator shall have a minimum of three years experience in right of way negotiations. The ROW negotiator's responsibilities shall include the following: contact with property owners on the Project to discuss the acquisition of property needed for the Project, maintain complete and accurate files of all transactions and contacts with the property owners and/or their representatives, and actively work toward a joint resolution to acquire the property with the property owner.

Each real estate attorney shall be licensed by the State of Texas and shall have at least five years experience in title review and curative matters. The real estate attorney's responsibilities shall include the following: coordinate and clear all title issues, and compliance assistance with State and federal acquisition requirements for the properties acquired for the Project.

ROW personnel shall have at least three years experience in title review and curative matters. ROW personnel's responsibilities shall include, but not be limited to the following: maintain complete and accurate files of all transactions and contacts with the property owners and/or their representatives, coordinate and clear all title issues and assist at closing the properties acquired for the Project.

### **7.2.8 Developer Conflict of Interest**

If at any time, Developer or to the best of Developer's knowledge, any Developer-Related Entity directly or indirectly (i) acquires or has previously acquired any interest in real property likely to be parcels of the Project ROW or the remainders of any such parcels; (ii) loans or has previously loaned money to any interest holder in any real property likely to be a Project ROW parcel and accepts as security for such loan the parcel, or the remainder of any such parcel that is not a whole acquisition, or (iii) purchases or has previously purchased from an existing mortgagee the mortgage instrument that secures an existing loan against real property likely to be a Project ROW parcel, or the remainder of any such parcel, Developer shall promptly disclose the same to TxDOT. In the case of acquisitions, loans or mortgage purchases that occurred prior to the execution of the Agreement, such disclosure shall be made within ten days after execution of the Agreement.

In the event that Developer, or any subsidiary or parent company of Developer, acquires a real property interest, whether title or mortgage, in parcels of the Project ROW, the real property interest acquired or a release of mortgage as the case may be, shall be conveyed to the State of Texas without the necessity of eminent domain.

Developer shall not acquire or permit the acquisition by Developer or any Developer-Related Entity of any real property interest in a Project ROW parcel, whether in fee title or mortgage, for the purpose of avoiding compliance with the Laws, practices, guidelines, procedures and methods described in Section 7.2.1 - Standards.

### **7.2.9 Meetings**

Developer shall attend meetings and provide exhibits as requested by TxDOT.

### **7.2.10 Documentation and Reporting**

Developer shall provide TxDOT with all specific reports and supporting documentation for review and approval during the acquisition process. All correspondence with TxDOT and property owners relating to acquisition of real property shall include the following information (at a minimum) as a heading:

- County
- Control Section Job (CSJ) number
- Highway Designation
- Project limits
- Parcel number
- Name of record owner(s)

In administering and managing its Project ROW activities, Developer shall:

1. Maintain parcel records on file of all aspects of the acquisition process in accordance with TxDOT requirements and applicable Law. Each parcel file shall include all documents required by the CDA Documents, the FHWA, and/or TxDOT.
2. Provide monthly summaries for the cost of Project ROW acquisition and related relocation assistance including amounts authorized and amounts paid on a parcel-by-parcel basis and budget forecasting on an overall Project basis as requested by TxDOT.
3. Maintain and electronically transmit to TxDOT, in a format acceptable to TxDOT, monthly status reports including appraisal, acquisition and relocation status of all parcels and activities related to Project ROW, acquisition and disposition of Additional Properties and acquisition and disposition of temporary easements or other property interests, and provide weekly (or as requested) updates to TxDOT.
4. Evaluate and report to TxDOT, Contractor status and performance on a monthly basis or more frequently as requested.
5. Prepare and submit electronically to TxDOT, on a monthly basis, a spreadsheet that contains Project ROW specific data required in order to complete the fields in TxDOT's ROWIS tracking software program or as directed by TxDOT.
6. Input and update parcel status in TxDOT approved web based tracking system or as directed by TxDOT.

### **7.2.11 Developer Responsibility for Costs**

As set forth in [Section 7.4.3](#) of the Agreement and as more fully described in this section, Developer shall be responsible for the costs of all services and preparation of all documentation for all Project ROW acquisition, easement acquisition, permitting and related relocation assistance for the Project. The Work related to Project ROW acquisition includes mapping, surveying, environmental assessment, testing and remediation, appraisal, appraisal review, negotiation, acquisition, procurement of title insurance, clearing of title, closing of acquisitions, condemnation support including expert witnesses required by TxDOT and/or the Attorney General's Office for all condemnation proceedings from special commissioner's hearings through jury trials, all fees and expenses for exhibits, transcripts, and photos associated with condemnation services and proceedings required by the Attorney General's Office from special commissioner's hearings through jury trials and appeals, relocation assistance, and clearance/demolition of improvements, as required.

Developer and TxDOT acknowledge that Developer has incorporated the value of saleable improvements not retained by the property owner into the Project ROW costs shown in the Financial Model and that Developer, subject to the property owner's waiver of the right to retain, shall concurrently with conveyance of the real property interest to the State of Texas, and without the necessity of further documentation executed by the State, obtain the rights to said saleable improvements. Developer shall not be entitled to a credit for any improvements retained by a property owner. To the extent required, TxDOT shall execute a transfer of title of the improvements within the acquired Project ROW to

Developer as soon as legally permissible and in accordance with applicable Laws with respect to the same. Upon conveyance of the real property interest to the State of Texas, Developer shall comply with all applicable Laws with respect to relocation assistance and demolition.

Developer shall also be responsible for the costs of acquisition and the costs of all services and preparation of all documentation for the acquisition of any temporary right or interest in real property that is not necessary for the Project but that Developer deems advisable to acquire for work space, contractor lay-down areas, material storage areas, borrow sites, or any other convenience of Developer. Except as otherwise authorized by Law for temporary areas that are necessary for construction of the Project, TxDOT shall not be obligated to exercise its power of eminent domain in connection with Developer's acquisition of any such temporary right or interest, and TxDOT shall have no obligations or responsibilities with respect to the acquisition, maintenance or disposition of such temporary rights or interests.

Developer shall pay the cost of, and shall be responsible for processing and issuing all payments of: agreed purchase prices or court awards and judgments; special commissioner's awards; relocation assistance payments; all legal, administrative and incidental expenses of, or related to, Project ROW (including the purchase price of Project ROW for drainage and other required easements); and temporary easements or other interests in real property acquired for the Project.

Developer is responsible for the payment of all closing costs associated with the purchase of Project ROW in accordance with the Uniform Act and TxDOT policies.

#### **7.2.12 Responsibilities of TxDOT**

TxDOT shall have the following responsibilities in connection with acquisition of Project ROW:

10. Except as otherwise set forth in this section, provide final approval for all Acquisition Packages, relocation assistance payments, administrative settlement requests, negotiated settlement requests, court settlement requests, payments and other approvals required by the CDA Documents, by the State or by applicable Law within ten Business Days after receipt of complete Acquisition Packages from Developer.
11. After receiving a complete condemnation packet from Developer in accordance with Section 7.4.4, TxDOT will submit a minute order request on the agenda of the next scheduled Texas Transportation Commission meeting; provided the completed condemnation package is submitted before the Commission's required deadline for eminent domain minute order requests.
12. TxDOT shall endeavor to reasonably accommodate a written request from Developer for early submission to the agenda of the Texas Transportation Commission in accordance with Section 7.2.12 of Book 2.
13. TxDOT will coordinate with the Office of the Attorney General to provide legal counsel to prepare and deliver to TxDOT the condemnation petition within 20 Business Days after the Attorney General's receipt of the condemnation packet, including Commission minute order approval. TxDOT shall deliver the condemnation petition to Developer within ten Business Days after receipt of the condemnation petition from the Office of the Attorney General.
14. TxDOT will provide all coordination services between Developer and the Office of the Attorney General for prosecution of jury trials.
15. TxDOT will provide a ROW Administrator to serve as first point of contact for all Project ROW issues as set forth in 23 CFR § 710.313(d).

#### **7.2.13 TxDOT Project Monitor/Reviewer**

In addition to its review and approval authority as expressly set forth in other provisions of this section, TxDOT may, at its sole discretion, audit and/or monitor the ROW activities and services performed by Developer. TxDOT may contract with independent consultants to assist it in fulfilling the audit/monitoring function provided that the audit authority is not delegated. The foregoing does not limit

the authority of the Independent Engineer to audit the Project ROW activities and services of the Developer.

In addition to any of the matters specifically required to be provided by Developer to TxDOT pursuant to the foregoing sections, Developer shall provide information to TxDOT as requested to assist in its review and assessment of the progress, timeliness, adequacy, or sufficiency of Developer's Project ROW activities.

### **7.2.14 Responsibilities of the Office of the Attorney General**

The Office of the Attorney General, with the assistance of Developer and coordination of TxDOT, shall be responsible for implementing all necessary legal actions for acquiring and obtaining possession of the Project ROW (and any necessary temporary construction easements approved by TxDOT for acquisition by condemnation) through the eminent domain process and eviction process. The responsibilities of the Office of the Attorney General will include:

1. Preparation of complete petitions for condemnation with the appropriate court for a cause number to be assigned
2. Coordination with TxDOT on all legal matters concerning acquisition process, including negotiated settlements
3. Provide analysis of recommended parcel values and/or appraisal issues
4. Provide any additional legal advice and opinions as needed by TxDOT
5. Special commissioners' hearings
6. Jury trials including determination of expert witnesses and all appeals
7. Prepare, obtain and file all necessary legal documentation for eviction of property owners or tenants.

## **7.3 Pre-Acquisition Activities**

### **7.3.1 Project ROW Surveying and Mapping**

Developer shall perform all Project ROW surveying and mapping and shall prepare all Project ROW documents in accordance with applicable TxDOT Standards, including the TxDOT *Right of Way Manual*, the TxDOT *Survey Manual*, and the TxDOT *GPS Manual*. Developer shall refer to the current *Manual of Practice* by the Texas Society of Professional Land Surveyors and the *US National Map and Accuracy Standards*. Developer shall refer to Section 9 of these Technical Provisions for additional survey requirements.

The Project ROW map shall be prepared by Developer and submitted to TxDOT for review and approval. The Project ROW map may be prepared in separate constructible segments established by the logical termini of the Project. TxDOT shall have 15 Business Days for review of each submitted ROW map, up to a maximum of 30 parcels. Any submittals that would require TxDOT to review more than 30 parcels in a ROW map within any given 15 Business Day period shall be considered excess, and TxDOT may defer its review of any such excess parcels to a subsequent 15 Business Day period (or periods as necessary).

Developer shall make submission of the Acquisition Packages in conformance with Section 7.3.6 - Project ROW Acquisition Package Approval.

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

1. Developer shall assemble an Acquisition Survey Document Package. The Acquisition Survey Document Package shall include the Project ROW map, a parcel (metes and bounds) description, and a parcel plat, with a closure report for each of these three items for each of the parcels to be acquired. The latter three items shall be on standard 8½" x 11" bond paper. The Project ROW map sheets shall be standard 22" x 34". Each final submission to TxDOT shall include two sets of

each document, unless otherwise directed. Each map sheet and document page shall have an "as of" date near the lower right hand corner. The parcel plat and parcel description for a given parcel should show identical "as of" dates.

2. The Parcel, as shown on the ROW map sheet and plat shall show all areas of denied access according to the current TxDOT *Access Control Management Manual*.
3. The point of beginning (POB) shall be located on the proposed Project ROW line and shown in all documents with its centerline (Survey Baseline) station and offset.
4. The point of commencing (POC), where applicable, shall be a well-defined monument, and shall be tied to the POB by measured bearing and distance. The POC shall not be located on any proposed Project ROW line, or existing Project ROW line within the proposed Project ROW.
5. The centerline (survey baseline) station and offset shall be shown on the Project ROW map sheets for all significant points along the Project ROW line such as point of curvature (PC), point of tangency (PT), point of intersection (PI), point of compound curvature (PCC), and point of reverse curvature (PRC), and for property line intersections (PLI) with the Project ROW line, and for any other monumentation points on the Project ROW line.
6. The centerline (survey baseline) station and offset shall be shown in the parcel description and parcel plat at the beginning and ending, being the points with the lowest station and the highest station, of each parcel along the proposed Project ROW line.
7. Project ROW map sheets shall include all curve data, with the station and coordinates of the PI, and the stations at each end (PC, PT, PRC, PCC), for every centerline (survey baseline) curve on that map sheet.
8. Any existing ROW lines that are being incorporated into the proposed Project ROW, including intersecting rights of way, shall be surveyed and monumented (if not previously monumented).
9. All Project ROW maps (and on the title sheet) and all parcel descriptions (at the end of the description) shall include a notation that states the State Plane Coordinate System and UTM zones, datum (NAD83) (HARN) (2002), and the Project grid-to-surface coordinate adjustment factor.
10. A Project ROW map title sheet with signature blocks shall be produced for each portion of the Project. Developer shall sign the Project ROW map.
11. All Project ROW maps shall include a control sheet (or sheets), to show the primary survey control points with their location relative to the Project.
12. The parcel description and parcel plat documents shall all be referenced as parts of the exhibit that is recorded with the deed, so the pages shall be numbered accordingly. For example, if the parcel description is two pages, the parcel plat is one page, then the first page of the parcel description is denoted "Page 1 of 3", the parcel plat is denoted "Page 3 of 3".
13. Improvements within 100 feet outside of all proposed Project ROW shall be depicted on the Project ROW map sheets. All improvements should be current as of the date of the on-the-ground property survey.
14. All visible improvements (buildings and structures) within 25 feet outside of the proposed Project ROW line shall be located by an "on-the-ground" survey and documented on the Project ROW map sheets and the parcel plats by measured offset distance from the proposed Project ROW line. Clearly indicate which distances are surveyed on-the-ground.
15. Show calculated points by a symbol on the drawing, with their relationship to the found reference points.
16. All property, city, county, abstract, section, and survey lines shall be indicated appropriately. A map legend should clearly define the line styles and symbols used.
17. At the final submittal of the Project ROW documents to TxDOT, Developer shall cause the surveyor to mark on the ground, using permanent and stable monuments as defined in Section 663.17 of the General Rules of Procedures and Practices of the Texas Board of Professional Land Surveying (TBPLS), all significant points along the Project ROW line, as described above, and all property line intersections with the Project ROW line. TxDOT requires these monuments to

- be a ½-inch iron rod, driven just below surface level, capped by a TxDOT-labeled aluminum cap (rod-and-cap monument).
18. Upon completion of the Project ROW acquisition or as directed by TxDOT, Developer shall replace rod-and-cap monuments which were set at the significant ROW line points as described above, with TxDOT Type II monuments (constructed according to TxDOT specifications).
  19. To communicate the intent of TxDOT and the surveyor to replace the set rod-and-cap monuments with TxDOT Type II monuments at some future time, Developer shall cause the surveyor to indicate wording to that effect in the parcel descriptions, and on the parcel plats and Project ROW map sheets. An example of such wording would be “set ½-inch iron rod with TxDOT aluminum cap (to be replaced with a TxDOT Type II monument after right of way acquisition is complete)”.
  20. Upon completion of the Project ROW acquisition or as directed by TxDOT, Developer shall cause a TxDOT Type II monument to be set at all significant points on the Project ROW line and at intersections with existing Project ROW lines, replacing monuments as described above, unless otherwise directed by TxDOT. Project ROW line intersections with property lines shall remain monumented by a ½-inch iron rod with a TxDOT aluminum cap (rod-and-cap monument).
  21. Developer shall cause the surveyor to set additional rod-and-cap monuments for the final Project ROW lines, at a point on curve or a point on line, where the distance between significant Project ROW line points as described above exceeds 1,500 feet. Developer shall replace each rod-and-cap monument with a TxDOT Type II monument upon completion of the Project ROW acquisition or as directed by TxDOT.
  22. To reference all significant points along the centerline (survey baseline), Developer shall cause to be set a rod-and-cap monument; and upon completion of the Project ROW acquisition or as directed by TxDOT, Developer shall replace it with a TxDOT Type II monument, on the final Project ROW lines, perpendicularly left and right of each significant centerline point, regardless of the relative orientation of the final Project ROW line.
  23. For any required revisions, Developer shall resubmit to TxDOT all documents pertaining to the parcel to reflect the most recent revision date, and shall add a notation on the appropriate documents to state briefly the reason for the revision.
  24. Documents shall contain deed references (survey name, abstract number, volume and page or document number, grantee, and area) for all existing public right of way encountered within the Project limits. If there is no recorded information found, a note shall state “Based upon our research, there appears to be no recorded vesting deed for the public right of way as shown hereon”.
  25. The documents that are produced by the surveyor are the property of TxDOT, and release of any document shall be subject to TxDOT’s prior written approval.
  26. Developer shall cause the surveyor to include the control of access line on the Project ROW map sheets and on the parcel plats, as required for controlled access facilities. Developer also shall cause the surveyor to describe the area of denied access in the parcel description.
  27. The Project ROW map and each parcel plat shall include a parcel information table containing the areas, expressed in square feet, of the following: 1) the parent ownership as stated in all adjoining record vesting deeds or converted from the stated record acreage in those vesting deeds; 2) the parcel to be acquired as shown on the closure report for that parcel, and; 3) the remainder tract (item 1 minus item 2). If the parcel to be acquired consists of multiple parts, the Project ROW map shall show the net remainder. The parcel information table shall also contain the areas, expressed in acres, of the parent tract, the parcel to be acquired, and the remainder. This acreage (except stated record) shall be converted from the square footage as contained in the table. A note shall be included on the Project ROW map and on each parcel plat stating: “The acreage calculated and shown hereon is converted from the square footage shown hereon, and is for informational purposes only.” Parcels with area less than one acre will not require acreage units to also be shown.

28. Within the proposed Project ROW, all property owned by a city, county, or other local public agency (LPA) in fee or easement that does not have a vesting deed shall be identified by a parcel number and included on the Project ROW map. Developer shall cause the surveyor to prepare a parcel description and parcel plat for use as an exhibit in the Project ROW acquisition (property transfer) documents.
29. Developer shall cause an independent Registered Professional Land Surveyor (RPLS) to review the Acquisition Survey Document Package for consistency as to the information delineated thereon and for compliance with all applicable Technical Provisions and TxDOT Documents. The boundary location and the survey methods remain the responsibility of Developer, and are not part of this review process. TxDOT will have no obligation to accept the Acquisition Survey Document Package as complete until the reviewing RPLS has signed and sealed the compliance certificate (compliance certificate form to be provided by TxDOT).
30. Parcel numbering shall follow the TxDOT *ROW Manual*. Parcels are to be numbered based upon the parent tract. Developer shall revise parcel numbering due to subsequent transactions as in the following example: From a 50-acre parent tract, with a proposed Project ROW acquisition parcel identified as Parcel 14, a 5-acre tract is sold which will also require Project ROW acquisition. The result is, Parcel 14 is “Not Used”, and the two new Project ROW acquisition parcels are identified as Parcel 14A and 14B. If the property containing Parcel 14B sells a portion, then 14B is “Not Used” and the new Project ROW acquisition parcels are identified as Parcel 14C and 14D, etc. Developer shall not use the letter “E” to avoid confusion with easement designations. Parcel numbering shall be sensitive to the appraisal of the required parcels.
31. Complicated portions of a Project ROW acquisition survey can cause the Project ROW Map to be very difficult to read. TxDOT’s preferred solution is to create an additional Project ROW map sheet or sheets for details, curve data, general notes, etc. The primary page would still retain the whole property inset, record ownership data, and most of the usual information. The additional sheet(s) should be clearly referenced and be numbered as the next sequential page(s). Pages numbered with a letter added (for example: 6A, 6B) are for revisions and corrections. Developer shall use the preferred solution unless TxDOT approves an alternate method.
32. An ownership sheet or sheets, containing an index to the information for all the parcels, shall be included and located near the beginning of the Project ROW map, after the title sheet and control sheet. The ownership sheet index shall include the parcel numbers, the names of the property owners, the vesting deed recording information, the record area of the parent tract, the area of parcel(s) to be acquired, the area of the remainder(s) left and right, the beginning and ending stations of the parcel along the Project ROW line, and the sheet number in the Project ROW map where the parcel is located.
33. At property corners where more than one monument is found, a detail shall be provided to show the measured relationship between the monuments found and the monument set or held.
34. Developer shall purchase all materials, supplies and all items necessary for proper survey monumentation. Developer may purchase Type II monuments from TxDOT. TxDOT shall make available for pick-up by Developer Type II monuments within 75 days after TxDOT receives from Developer a written order, specifying the number of monuments to be purchased. Payment for TxDOT-supplied monuments shall be due within 30 days after TxDOT delivers to Developer a written invoice. Developer may use these monuments only for this Project and shall be responsible for proper storage thereof.

### **7.3.2 Additional Reporting Requirements**

In addition to the Project ROW map, parcel description and parcel plats, Developer shall provide the following reports and electronic files:

- Monthly Parcel Report: Developer shall provide a report, prior to the first of the month, listing all parcel deletions, parcel additions, and parcel splits.



- Monthly Progress Report: Developer shall provide a report of all survey activity that occurred over the previous month, including a two week look ahead of anticipated survey activity.
- CAD Files: Developer shall provide digital CAD files in MicroStation format which includes: property lines and/or existing ROW lines, as surveyed; proposed ROW lines; parcel numbers; resource files; level assignments; and plot files. Developer shall submit CAD files prior to submitting the first Acquisition Package, and provide updates as needed.

### **7.3.3 Title Services**

With respect to title services, Developer shall comply with the applicable standards identified in Section 7.2.1, including the following requirements:

1. Select and contract with one or more title companies approved by TxDOT and deliver to TxDOT a five year sales history, a preliminary title commitment or preliminary title report and, if necessary or appropriate, with copies of all underlying documents and a plot of all easements, including Existing Utility Property Interests, referenced therein for each parcel (including fee acquisitions, slope easements, other drainage and roadway ROW or easements and abandonment of utility easements) to be acquired by TxDOT for the Project. Each title report shall be dated not more than 180 Days prior to the date of submittal of the Acquisition Package for such parcel to TxDOT. Developer shall, at its own cost, review each title report to ensure that it complies with the format required by the CDA Documents. Developer shall, at its own cost, retain the services of a real estate attorney, licensed and located in the State of Texas, to be available for title support and acquisition assistance. All title reports must be in the following required format: clearly indicate which exclusions and exceptions shall be deleted upon acquisition of the subject parcel, and clearly indicate any required deliverables to the title company to clear identified exclusions and exceptions. Title reports shall be in accordance with Good Industry Practice. Developer shall notify the title company, by letter, which exceptions should be removed, including easements that (a) are appurtenant to and/or of benefit to the parcel but not included in the parcel to be acquired, and (b) are a burden on the parcel and not acceptable.
2. Review the preliminary title commitment or report to ensure that all current owners of record title are contacted and that negotiations or condemnation actions are conducted with all appropriate parties.
3. Work with the current owners of record title to each parcel or interest in a parcel or their designee and all other appropriate parties to clear any title exceptions or exclusions not acceptable to TxDOT.
4. Secure an owner's policy of title insurance in the amount of the total acquisition cost for each parcel from a title company acceptable to TxDOT for each parcel acquired, whether by deed or eminent domain judgment, insuring title as required by TxDOT. All Project ROW shall be acquired, and TxDOT's title in the Project ROW shall be insured, in fee simple absolute or easement interest as appropriate, free and clear of any and all liens and encumbrances. Developer shall pay the applicable title company for the cost of the title policies, including all endorsements thereto required by TxDOT, which title policies must be in form and substance approved by TxDOT. Title to the Project ROW shall be insured in the name of the "State of Texas by and through the Texas Department of Transportation".

### **7.3.4 Introduction to Property Owners**

Developer shall prepare and send out initial contact letters of introduction for both property owners and displacees. The letters shall clearly describe the Project, TxDOT's need for the owner's property, and shall include the name and telephone number of a Developer's representative. TxDOT's ROW Administrator or his/her designee will sign the letters on TxDOT letterhead. The forms for these letters shall be approved by TxDOT prior to its use. Property owners or displacees unable to read or understand the notice must be given appropriate translation.

### 7.3.5 Appraisals

#### 7.3.5.1 Appraisal Services

Developer shall provide TxDOT with fair market value appraisals prepared by appraisers meeting the minimum qualifications established herein. All appraisals shall be prepared in conformance with applicable law (including the Uniform Act), and in accordance with professional appraisal methods and applicable TxDOT standards for all parcels to be acquired by TxDOT. Developer shall:

1. Select appraisers from TxDOT's list of approved fee appraisers and meeting the requirements specified in Section 7.2.7 - ROW Personnel Qualifications. TxDOT shall have final approval of the selection of each appraiser and appraisal reviewers submitted by Developer. Developer must identify and receive written approval of the appraiser who will be responsible for the appraisal work product and who will be signing the reports.
2. Establish personal pre-appraisal contact with each owner of record title and each occupant, and document all contacts.
3. If necessary, make a diligent effort to secure a written agreement between the record title owner and Developer granting TxDOT, Developer or assignees permission to enter the applicable parcel that is to be acquired (a "Right of Entry Agreement"). Developer may at its sole discretion and expense offer to pay reasonable compensation for any required Right of Entry Agreements. If Developer, after best efforts, is unable to secure a Right of Entry Agreement from the property owner, Developer shall provide documentation acceptable to TxDOT indicating conversations, correspondence, and efforts used to attempt to secure the Right of Entry Agreement.
4. Contact the record title owners or their designated representatives, in writing, to offer them the opportunity to accompany the appraiser on the appraiser's inspection of the parcel, and maintain a record of all such contacts in the parcel file.
5. Cause the appraiser to prepare a complete appraisal report for each parcel to be acquired to include the whole property, the portion to be acquired, and any damage to the remainder. It shall also include all improvements on the whole property, unless otherwise directed by TxDOT. The appraisal reports shall comply with and include all matters required by this section and TxDOT ROW related manuals, and shall satisfy the requirements of the USPAP in effect at the time the appraisal is submitted. Special analyses, studies or reports, as necessary, shall be made a part of each appraisal. The appraiser must use the most current edition of the standards referenced above and continually monitor these standards to ensure the appraisals conform to the most current requirements of professional appraisal practice. All appraisals shall utilize TxDOT Form ROW-A-5 - Real Estate Appraisal Report unless otherwise authorized by the TxDOT *Right of Way Manual* or TxDOT *Appraisal and Review Manual*; provided, however, that all appraisals for condemnation proceedings will utilize TxDOT Form ROW-A-5 - Real Estate Appraisal Report.
6. Obtain and provide TxDOT with copies of all written leases, licenses and other occupancy agreements, including outdoor advertising/sign agreements, in order to identify lessees, licensee and other occupants with potential compensable interests in each parcel and to determine the value of each such interest.
7. Perform an evaluation of all outdoor advertising signs, as required, utilizing the appropriate forms as instructed by TxDOT.
8. Cause the appraiser(s) to testify as an expert witness(es) or provide expert witness(es) approved by TxDOT in special commissioners' hearings or eminent domain proceedings through jury trial and be available for depositions, other discovery, pre-hearing or pre-trial meetings and appeals, as directed by TxDOT. Developer shall also provide administrative and/or technical support for such proceedings as requested by TxDOT.
9. Coordinate with the review appraiser regarding corrections and/or additional information that may be required for a particular appraisal.

10. Cause a report to be prepared by an environmental professional that meets ASTM E-1527-00, documenting the environmental condition of each parcel, which may be based on field investigations and/or historical review, as appropriate for the particular parcel. The report shall be completed in coordination with the appraiser(s) and shall be available to the appraiser(s). An “environmental site assessment Phase I” shall be performed for all properties. If it is determined that there is a potential environmental risk based on the Phase I report then a Phase II investigation shall be performed. A Phase III investigation shall be performed if the Phase II report justifies it. The Phase III report must indicate the approximate cost to remediate the parcel to achieve its current use and its highest and best use. Prepare timely written notification to TxDOT of any environmental or other concerns associated with the Project ROW or Additional Properties to be acquired that could require environmental remediation or other special attention or which would cause a report to be prepared.
11. Engage the services of, and cause, a land planner to perform, or otherwise assist in the preparation of, any and all appraisals that involve a parcel with a valuation analysis indicating a highest and best use that is other than the current use of such parcel, or as directed by TxDOT for certain other appraisals. Developer shall notify TxDOT in writing of each and every instance when the highest and best use of a parcel is different and TxDOT will determine to what degree land planner services will be utilized by Developer.
12. Cause the appraiser(s) to prepare updated appraisals, as well as updated appraisal reviews, when required by TxDOT or as needed during eminent domain proceedings. An updated appraisal package shall comply with USPAP, specifically the Statement on Appraisal Standards No. 7 (SMT-7) and Advisory Opinion, AO-3. The term “Update of an Appraisal” is defined as “an extension of a complete or limited appraisal and report relied on by a client for a prior business decision.” At a minimum, the updated appraisal report must include:
  - A letter of transmittal with a specific reference to the original appraisal report, any changes in market conditions, since the original appraisal, any changes in the subject property since the original appraisal, a statement of the current value or extension of the original value opinion and the listing of the current date of value.
  - An updated Page 1 from TxDOT Form ROW-A-5 – Real Estate Appraisal Report or Form ROW-A-6 – Real Estate Appraisal Report, as appropriate, with the current date of a recent inspection of the subject property and a current date of value. This form needs to have a current signature and date by both the appraiser and the reviewing appraiser in the appropriate spaces on the form.
  - Any qualifying and limiting conditions or general assumptions by the appraiser shall be clearly stated and attached.
  - A copy of the survey and legal description of the property being acquired, current photographs of the subject property, clearly showing the area being acquired, even though the original appraisal report contained photographs of the subject and the area of the acquisition. If there are significant changes to the subject property, the area being acquired, access to the remainder property, damages to the remainder(s), market conditions, the subject property’s highest and best use from the previous appraisal or significant changes in the approaches to value, the property shall be reappraised using either TxDOT Form ROW-A-5 – Real Estate Appraisal Report, or, when approved by TxDOT, TxDOT Form ROW-A-6 – Real Estate Appraisal Report, depending on the report used for the original appraisal. Appraisers shall refer to Sections 6.03 and 6.04 of the TxDOT *Appraisal & Review Manual* for additional guidance. Developer shall follow these guidelines in producing updated appraisal reports and shall discuss specific updating requirements for any complex appraisals with TxDOT before beginning the assignment.
13. Prepare and deliver to TxDOT upon request, a copy of all file documents, as formally requested in discovery motions or request for production.

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

### **7.3.5.2 Appraisal Review**

In connection with appraisal review, Developer shall:

1. Select review appraisers from TxDOT's list of approved fee appraisers and meeting the requirements of Section 7.2.7. The review appraiser selected must follow the appraisal guidelines and procedures found in Chapter 4 of the TxDOT Appraisal & Review Manual.
2. Determine, in consultation with TxDOT, if additional appraisal reports or technical expert reports are required. Initiate, review, and reconcile each report required.
3. Review all appraisal reports for each parcel to determine consistency of methodology, supporting documentation related to the conclusion reached, and compliance with TxDOT standards, as defined in Section 7.3.5.1 - Appraisal Services and this Section 7.3.5.2 - Appraisal Review, TxDOT *Appraisal & Review Manual*, the Uniform Standards and Federal Land Acquisitions and the requirements of the Appraisal Foundation's USPAP in effect at the time the appraisal is reviewed. The review appraiser must use the most current edition of the standards referenced above and continually monitor these standards to ensure the appraisals conform to the most current requirement of professional appraisal practice.
4. Inspect the subject properties and the sale properties used in direct comparison for each appraisal being reviewed.

Upon completion of the review outlined above, the appraiser shall certify in writing to TxDOT that all required standards have been met. This certification will occur by signing on Page 1 of each TxDOT Form ROW-A-5 – Real Estate Appraisal Report or TxDOT Form ROW-A-6 – Real Estate Appraisal Report in the block provided. The review appraiser will also complete TxDOT Form ROW-A-10 - Tabulations of Value to accompany each appraisal.

For appraisal updates, the review appraiser will perform a complete review of the updated appraisal, re-inspecting the subject property and the sales used, as of the current date of value. The review appraiser will follow the procedures outlined in the TxDOT *Appraisal & Review Manual*. A new TxDOT Form ROW-A-10 - Tabulations of Value will be required for each updated appraisal ordered by Developer.

### **7.3.6 Project ROW Acquisition Package Approval**

Acquisition Packages submitted by Developer for TxDOT's approval shall include the following items, prepared for each parcel in accordance with the requirements of this section:

1. A cover sheet setting forth the following information for each parcel.
  - Parcel number and number of parts
  - Station number
  - CSJ number
  - Location of parcel
  - Name of owner
  - County and/or other jurisdiction
  - Extent of acquisition (partial or whole acquisition)
  - Type of conveyance (fee, easement, etc.)
2. A complete legal description of the parcel adequate to effect the desired acquisition of the parcel, signed and sealed by an RPLS. A legal description and parcel plat is required for each parcel. Control of access shall be addressed in all legal descriptions. All descriptions shall be in recordable form and shall be prepared in a form and manner acceptable to TxDOT in all respects.
3. The parcel plat, as prepared by the RPLS, and a half size (11" x 17") copy of the ROW map sheet(s) pertaining to the parcel, such plat to include control of access designations.

4. A title report, current within 180 Days, including copies of all documents identified in the exceptions listed therein and a plot of all easements identified therein. The Acquisition Package shall include Developer's analysis of each preliminary title report or title commitment to determine potential problems and proposed methods to cure title deficiencies. Developer shall perform title curative Work. Developer will provide TxDOT with copies of all curative documents.
5. A copy of the appraisal report and all supporting documentation.
6. A copy of the environmental site assessment and all amendments as described in Section 7.3.5.1 - Appraisal Services.
7. A real/personal property report detailing what items making up each parcel are classified as real estate, tenant-owned improvements or personal property. Particular attention shall be paid to items that have questionable classifications. A completed TxDOT Form ROW-A-9 - Property Classification Agreement.
8. Replacement Housing Calculations, notification of business eligibility, completed displacee interviews, all comparables used in estimating the Replacement Housing Calculations, and letter to displacee(s) explaining Replacement Housing Calculations. Calculations and replacement housing benefit package shall be prepared and reviewed by a qualified consultant, in conformance with TxDOT's standard relocation procedures and applicable to State and federal laws and regulations.
9. The proposed initial offer letter, memorandum of agreement, deed, and any other documents, which shall be prepared by Developer as required or requested by TxDOT, on Developer's letterhead or as otherwise directed. TxDOT will provide the format for preparing these documents. Documents referred to in this section are standardized by TxDOT and modification of standardized documents shall be kept to a minimum, and all changes are subject to approval by TxDOT in writing, in TxDOT's sole discretion.
10. Any other required TxDOT forms, such as record of all contacts with the property owner or any party with a compensable interest.

No Acquisition Packages will be approved if performed or submitted by appraisers or agents that have not been previously approved by TxDOT for this Project.

Upon TxDOT's prior written approval of the Acquisition Package, Developer may proceed with the offer to the property owner.

## **7.4 Acquisition Activities**

### **7.4.1 ROW Negotiations**

Developer shall conduct all negotiations in accordance with the requirements of applicable Law. In conjunction with negotiations, Developer shall:

1. Within ten Business Days of TxDOT's approval of the Acquisition Package, contact each property owner or owner's designated representative, in person where practical, to present the offer and deliver an appraisal report and appropriate brochures. A copy of the appraisal report for the subject property shall be provided to the property owner or authorized representative at the time of offer. Developer shall also maintain a file record of receipt of appraisal signed by the property owner. Developer shall also maintain follow-up contacts and secure the necessary documentation and title curative Work upon acceptance of the purchase offer.
2. At the time of offer, produce and distribute to all property owners and displacees, TxDOT-approved informational brochures, as appropriate. The ROW brochures shall be purchased by Developer and shall include language about the use of the Declaration of Taking Procedure if the Developer anticipates requesting the utilization of this procedure by TxDOT anywhere within the Project.

3. Identify lessees, licensees, occupants, or other parties with potential compensable interests including outdoor advertising sign owners, and, if appropriate, after consultation with TxDOT, negotiate with such parties for the acquisition of their compensable interests.
4. Advise the property owners, lessee, licensees, occupants, and other holders of compensable interests, as applicable, of the administrative settlement process. Confer with and transmit to TxDOT's ROW Administrator any settlement request from property owners, lessees, licensees, occupants, or other holders of any compensable interest, as applicable, including a detailed recommendation from Developer in accordance with standards, manuals and procedures as defined in Section 7.2. Developer and TxDOT shall jointly determine whether to accept a settlement request. Delivery of the administrative settlement request and Developer's recommendation to TxDOT must occur within five Business Days of Developer's receipt of the administrative settlement request.
5. Developer, at its request or the request by TxDOT and/or the TxDOT Administrative Settlement Committee, may participate in the evaluation of the administrative settlement request and attend the committee meeting.
6. Developer shall provide a letter with the Administrative Settlement Committee's response to the property owner, lessee, licensee, occupant, or other holder of a compensable interest, as applicable. Developer shall deliver all settlement responses (if within reasonable proximity of the Project) by hand within three Business Days after receipt. If this delivery method is not feasible, Developer shall mail (return receipt requested) response letters not more than three Business Days following any decision by the TxDOT Administrative Settlement Committee. If Developer selects the mailing option, Developer shall make a telephone call to the property owner to discuss the settlement offer prior to mailing the response letter. The TxDOT ROW Administrator, on an as needed basis, will convene the TxDOT Administrative Settlement Committee.
7. Notwithstanding an unsuccessful completion of the formal administrative settlement process, Developer may, in its sole discretion, engage in ongoing negotiations with the owners of compensable interests. Developer shall develop and incorporate in its ROW Acquisition Plan a procedure for these negotiated settlements. Said negotiations may continue until such time as the Texas Transportation Commission adopts a minute order authorizing the filing of a condemnation petition. Developer shall submit to TxDOT its recommendation of a negotiated settlement and obtain TxDOT's consent prior to acceptance of any settlement.
8. Provide timely (i.e., not more than ten Business Days after inquiry) response to the verbal or written inquiries of any property owner, lessee, licensee, occupant or other holder of a compensable interest, as applicable.
9. Prepare a separate negotiator contact report for each meeting or conversation with any person (or their appointed representative(s) supported by a written confirmation of appointment) who has a compensable interest in each parcel on TxDOT Form ROW-N-94 – Negotiator's Report. Contact reports shall also be prepared for unsuccessful attempts to contact such persons.
10. Maintain a complete parcel file for each parcel. All original documentation related to the purchase of the real property interests will be maintained (housed separately from the relocation files) in conformance with TxDOT standards, manuals, and procedures, as defined in Section 7.2. All original ROW documents must be retained and properly secured in Developer's Project office or as otherwise approved by TxDOT. Signed original documents shall be periodically forwarded to TxDOT with a transmittal form during the acquisition process; provided, however, that all remaining original documents shall be forwarded upon completion of the acquisition of Project ROW for the Project.
11. Prepare and deliver documents of conveyance (including bisection clause and access clause, if applicable) to the property owner, lessee, licensee, occupant, or other holder of any compensable interest, as applicable, and obtain their execution of the same. All signatures on documents to be recorded shall be notarized in accordance with Texas law.

12. Pursue and obtain Possession and Use Agreements (PUA) concurrently with the parcel negotiations. The form of PUA will be provided by TxDOT and will contain provisions allowing for construction to commence while negotiations are finalized. Such agreements will be sought and negotiated by Developer strictly in accordance with the Law and only with the prior written consent of TxDOT. If Developer exercises the use of a TxDOT PUA, Developer must obtain a deed or commence action on condemnation proceedings by forwarding a condemnation packet to TxDOT for approval within six months from the date of the PUA.
13. Be open to all reasonable settlement requests (that comply with the regulations as outlined in this section) from the property owners, which are feasible and help expedite the Project ROW acquisition process. Developer acknowledges and understands that TxDOT encourages all positive and creative solutions which satisfy the property owner and promote the success of the Project.
14. Developer shall prepare and deliver a final offer letter to the property owners, lessees, licensees, occupants, or other holders of any compensable interest, as applicable. The letter shall be on Developer's letterhead and shall be signed by the ROW Acquisition Manager. Developer shall submit to TxDOT, a copy of the final offer letter within two days after delivery to the property owner.
15. If the offer is not accepted, Developer shall follow the procedures established for condemnation.

#### **7.4.2 Relocation Assistance**

Developer shall coordinate and perform the administrative requirements necessary in order to relocate any occupants from Project ROW. All Work prepared by Developer with respect to relocation assistance shall be performed in accordance with applicable Law, including the Uniform Act and TxDOT standards, and in accordance with all provisions of this Agreement.

Developer shall maintain a relocation office (handicap accessible) within reasonable proximity of the Project area as approved by TxDOT. At a minimum, the office hours of the relocation office shall be posted to meet the following timetables:

- Monday thru Friday - 8:00 am to 5:00 pm
- Saturday - 9:00 am to 12:00 pm
- Sunday - office shall be closed

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

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

1. Prepare a "Relocation Plan" in accordance with the TxDOT *Right of Way Manual*, Volume 3, Chapter 8 - Relocation Program Planning and Construction.
2. Monitor relocation assistance activities.
3. Prevent fraud, waste and mismanagement.
4. Assist with all requests and be responsible for carrying out decisions made by TxDOT, the review/appeal process and judicial reviews.

Developer shall provide relocation assistance strictly in accordance with the Law, and, in particular, the Uniform Act and TxDOT standards. With respect to relocation assistance, Developer shall:

1. Provide written notice to all property owners, lessees, licensees, occupants, other holders of compensable interests, and other potential displacees regarding relocation assistance and produce and provide them with a relocation assistance brochure, which has been approved by TxDOT. Developer shall perform relocation interviews, complete and maintain interview forms and discuss general eligibility requirements, programs, and services with potential displacees. Developer shall maintain a written record of all verbal contacts.

2. Give written notice of the pending acquisition to any non-eligible occupants. Any questions as to the eligibility of a potential displacee shall be directed in writing to TxDOT's ROW Administrator.
3. Contact and provide relocation assistance to those parties affected by the Project ROW acquisition and complete forms for all displacees, as required.
4. Locate, evaluate and maintain files on comparable available housing, commercial, retail, and industrial sites.
5. Calculate replacement supplement benefits.
6. Compute and submit requests for relocation rental/housing supplement to TxDOT prior to submission to relocatees. All relocation supplements shall be subject to TxDOT's written approval.
7. Perform a Decent, Safe and Sanitary (DSS) inspection for each replacement housing comparable, photograph the comparable and complete the DSS inspection form, TxDOT Form ROW-R-116 - Replacement Housing Inspection.
8. Request at least three moving estimates from moving companies to effect relocation of personal property.
9. Prepare moving plan with appropriate photos, sketches and inventory of personal property to be moved.
10. Coordinate moves with displacees and moving companies in accordance with TxDOT standards and the Uniform Relocation Act.
11. Maintain relocation contact logs on a TxDOT Form ROW-R-96-R – Relocation Advisory Assistance – Parcel Record.
12. Attend all closings on replacement properties, if requested by any party involved, and assure supplemental payments, if any, are properly distributed.
13. Process and compute increased interest payments on the mortgage of owner-occupied dwellings, as required.
14. Deliver to displacees a 90 Day notice of eligibility letter simultaneous with the delivery of the relocation benefits package. Deliver a 90 Day letter to displacees with the location of the comparable property used to compute the supplement.
15. Deliver a 30 Day notice to displacees and property owners upon acquisition of Project ROW.
16. Notify TxDOT's ROW Administrator office immediately if a displacee has not moved after 30 Day notice expires. Prepare a written recommendation to facilitate the displacee's move.
17. Be available for any appeals or hearings.
18. Prepare relocation payment claim submissions for all displacees and all relocation assistance benefits.
19. Verify DSS dwelling criteria on all replacement housing as selected by the displacees.
20. Secure dwellings and structures no later than ten Days after vacancy and protect the Project ROW following acquisition and relocation.
21. Maintain a complete file, separate from acquisition files, on each displacee and make available for inspection.
22. Be responsible for all relocation activities that may occur after deposit of the special commissioner's award in the courts, including instances when a parcel referred to the Attorney General's office for eminent domain also has a relocation issue.
23. Prepare all correspondence to the displacees or their representative(s) on Developer's designated relocation letterhead and have the Developer's correspondence signed by the Project ROW relocation specialist.
24. Deliver to each displacee the relocation assistance payments according to the TxDOT Right of Way Separation of Duties chart provided.
25. Assist the Attorney General's office with eviction proceedings. Serve notice of eviction proceedings to the occupant(s) of the property who have not complied with move dates.



Coordinate the eviction process with the local authorities and accompany the Sheriffs Department when the local authorities are carrying out eviction.

### **7.4.3 Closing Services**

For purposes of closing services, Developer shall:

1. Prepare the escrow agreement and closing documents, including a closing memorandum identifying all parties involved in the closing, and listing all documents to be executed and/or delivered in connection with the closing.
2. Attend closings; provide curative documents and exhibits as required and in conjunction with the applicable title company. Confirm that all conditions to closing are satisfied and notify TxDOT of all closing appointments.
3. Coordinate with TxDOT and the applicable title company to obtain an updated title commitment within 24 hours prior to closing and then obtain an issued title policy based on the approved updated title commitment within 30 Days following closing and transmit the same to TxDOT.
4. Obtain and deliver to TxDOT one certified copy of each instrument of conveyance immediately after closing, and provide a copy of the title policy to TxDOT within five Business Days after receipt. Cause to be delivered to TxDOT a copy of the recorded deed within ten Days after the title company receives the recorded deed.

### **7.4.4 Condemnation Support**

Developer shall support condemnation efforts as directed by TxDOT and further delineated as follows:

1. Notify TxDOT of any potential condemnation and document the reason(s) for condemnation including recommendations for property closure.
2. Conduct all applicable eminent domain-condemnation activities in accordance with the policies and procedures as described in the TxDOT *Right of Way Manual*, Volume 4: "Eminent Domain "; in the TxDOT *Appraisal and Review Manual*, Chapter 6 "Eminent Domain-State Acquisition" or as revised; and in Chapter 21, Texas Property Code.
3. After non-response or upon receipt of a copy of the rejected final offer from a property owner or other property right holder entitled to compensation, request an updated title report from the title company issuing the original title commitment.
4. Provide to TxDOT, within ten Days following non-response or rejected certified mailing, notification thereof together with a signed and sealed parcel description and parcel plat, and a bisection clause and access clause, if necessary, with the clauses attached to a property exhibit containing the parcel description and parcel plat.
5. Use the information from the title report to join all parties having a property interest on applicable TxDOT form. Spouses of property holders with compensable rights must also be joined.
6. Upon completion of TxDOT Form ROW-E-49 – Request for Eminent Domain Proceedings, prepare a condemnation packet containing two copies each of the following documents: the completed TxDOT form, negotiation logs, the updated title report not more than 90 Days old, appraisal receipt acknowledgment, pre-appraisal contact sheet, signed and sealed field notes, parcel sketch, bisection clause and access clause exhibits (if necessary), final offer letter reflecting latest appraisal, complete minute order request form (form to be provided by TxDOT), any correspondence sent by Developer or from the owner of the compensable interest or representatives, one copy of the appraisal report not more than 90 Days old, and proof of good faith negotiations. Submit two complete condemnation packets to TxDOT's ROW Administrator.
7. Send a copy of the complete petition to the title company and confirm with the title company that the appropriate parties were joined in the case and that no changes in title have occurred since the original litigation guaranty was issued.
8. File the petition for condemnation with the appropriate court clerk after a determination that a timely settlement is not feasible.

9. Coordinate and provide legal and technical support to the Attorney General's office, as required to facilitate filing the petition, assignment of a court, and setting of a hearing date.
10. Make available to TxDOT on behalf of the Attorney General's office an agent who will be expected to assist in making arrangements for conferences with witnesses prior to trial, filing the condemnation petition, informing the Attorney General's office as to the filing date of the petition and the case number assigned to the suit, and perform any other duties which will assist in the successful prosecution of the suit, including his or her attendance in court and filing necessary documents to complete all eminent domain proceedings.
11. Depending on the market conditions or if over six months have elapsed since the date of the initial offer, contact the attorney handling the case for TxDOT and confer about the advisability of preparing an updated appraisal. If it is determined that an updated or new appraisal is necessary or desirable, obtain such appraisal using the same procedures as described in Section 7.3.5.1 - Appraisal Services above. Developer must also undertake appraisal review as described in Section 7.3.5.2 - Appraisal Review.
12. Coordinate with TxDOT on behalf of the Attorney General as to land planners and/or other expert witnesses as required by the Attorney General. Developer, at its cost, shall provide the land planner or other expert at the request of TxDOT or the Attorney General. The land planner or other expert report, if required, shall be completed and forwarded to the appraiser before the updated appraisal is completed.
13. Appear or provide for the appearance of expert witness(es) or fact witness(es) when requested by TxDOT or the Attorney General's Office. The appearances may include pre-commissioner's hearing preparations, special commissioner's hearings, and subsequent proceedings including jury trials and related proceedings.
14. Submit the updated appraisal to TxDOT and the attorney handling the case for TxDOT for review and approval, which review and approval shall occur within ten Business Days of receiving the updated appraisal. TxDOT and Developer must approve any revised offer in writing prior to an offer letter being sent. If a revised offer is approved, prepare a final offer letter, make the revised offer to the property owner or other holder of a compensable interest, as applicable, and submit a copy of the final offer letter to TxDOT for written approval.
15. Communicate with TxDOT as to the parcel status on a monthly basis and in the Project progress report or as requested by TxDOT.
16. Serve in person, a "Notice of Hearing" at least 11 Days prior to the date of the special commissioners' hearing or other hearings and notice requirements as directed or authorized by the court.
17. Call and send reminders letter two to three weeks in advance of any hearing to the assigned attorney, engineer, technical experts, appraiser, the commissioners, court reporter, and TxDOT's ROW Administrator concerning hearing dates.
18. Upon completion of the hearing, prepare TxDOT Form ROW-E-73 – Data Sheet – Special Commissioners Hearing and commissioners' time sheets. Developer shall make payment to all commissioners involved in the hearing and include payment for commissioners as part of general Project ROW services.
19. Coordinate and provide support to TxDOT's counsel and facilitate distribution of copies of award, prepare request for payment, and file notice of deposit. Developer shall coordinate with TxDOT on behalf of the Office of the Attorney General regarding expert witnesses needed to testify on behalf of the State at the special commissioners' hearing and subsequent proceedings including jury trials. At the request of the Office of the Attorney General or TxDOT, Developer shall provide and pay for all necessary expert witnesses including: engineering, land planners, real estate consultants, cost estimators, outdoor advertising sign experts and environmental consultants and Developer shall appear as expert witness or fact witness, as requested. Developer shall also make any Contractors available to appear as an expert witness or fact witness, as

requested at the special commissioners' hearing or subsequent proceedings. The selection of all expert witnesses to be used for jury trials shall be determined by the Attorney General's Office.

20. Schedule and pay for all court reporter services, transcription costs, expert witness fees, exhibits, and exhibit workbooks as directed by TxDOT. All documents and exhibits used in the special commissioner's hearings shall be submitted to TxDOT within 20 Days after completion of such hearing.
21. Be responsible for coordinating the pre-hearing meeting with TxDOT on behalf of the Attorney General's office and all others required for testimony or exhibit preparation.
22. Timely file and provide proper service of objections if requested by TxDOT after completion of the special commissioner's hearing and promptly provide evidence of filing and copies of all filed documents to TxDOT. Within three days after objections have been filed, Developer, at its cost, shall order transcripts of such hearing.

#### **7.4.5 Clearance/Demolition of Project ROW**

Prior to demolition of any improvements, Developer shall provide to TxDOT, photographs of the property and all improvements, unless the special commissioner's hearing has been completed and objections have not been filed. Developer shall also have photos of personalty and any other items of dispute in and of a quality suitable for presentation as evidence in court. Following acquisition or possession of any parcel of Project ROW, Developer shall:

1. Secure and protect the buildings, improvements and fixtures on the Project ROW until they are disposed of or demolished. Developer shall board-up, mow, and winterize as required by TxDOT or applicable Law.
2. Coordinate with the owner and occupants to assure the clearance of personal property from the Project ROW, as applicable.
3. Provide for any insect and rodent control and initiate extermination as required to protect the adjacent properties and rid the Project ROW from infestations.
4. Secure Governmental Approvals required for demolition and environmental surveys or tests, and notify TxDOT in writing of all such activities.
5. To the extent required by Section 7.2.11 – Developer Responsibility for Costs, prepare necessary documentation for disposal of improvements, fixtures and buildings in accordance with applicable Laws and submit the same to TxDOT.
6. Provide written notification to TxDOT of any real and/or personal property remaining on the Project ROW after vacated by the occupants and not acquired as part of the acquisition.
7. Terminate all utility service(s) when appropriate.
8. Process all required forms, documents and permit applications in order to proceed with the timely demolition or removal of any and all improvements, buildings and fixtures located within the Project ROW, as applicable.
9. Demolish and/or remove all improvements.
10. Notify TxDOT upon completion of the demolition and clearance of the Project ROW, as applicable.

#### **7.4.6 Property Fence**

In connection with fences, Developer shall comply with the policies and procedures of the TxDOT *Right of Way Manual*, as well as the specification found in the current TxDOT *Standard Specifications for Construction of Highways, Streets and Bridges*. Fencing standards for Developer-provided fencing shall conform to the overall aesthetics requirements found elsewhere in these CDA Documents and referenced standards.

##### **7.4.6.1 Property Fencing for Public Properties**

Where public facilities now exist that are in high risk areas for public use (particularly those containing parks, sport areas, schools or any highly traveled pedestrian areas), Developer shall, at a minimum,

construct a six feet high chain link fence with metal posts. Developer shall use Good Industry Practice in fencing public properties to control public access to the Project.

#### **7.4.6.2 Property Fencing for Private Properties**

Developer shall instruct the appraiser to use the “Cost to Cure” format to compensate an owner of private property for a replacement fence when the Project ROW line leaves one or more unfenced remainder property(s) that were fenced before the taking. Compensation for the new fencing will be based upon the same type of fence as the property owner's existing fence.

When the property owner is paid through the appraisal process for the cost to rebuild the fence on the remainder property, Developer shall include in the memorandum of agreement or the purchase agreement for such property the following clause:

"It is further understood and agreed that the Grantor has been compensated for the construction of a new fence and shall be responsible for constructing the necessary fencing within 30 Days from the date of closing. Grantor specifically understands and agrees that the fences are the property of the Grantor and they shall be liable and responsible for any reconstruction, maintenance, or adjustment with regard to such fencing."

Developer shall make reasonable and good faith efforts to ensure that the property owners, who have been compensated for fencing of the remainder properties, erect the fence in accordance with the construction schedule.

If necessary to maintain the Project construction schedule and to control unauthorized access to the Project ROW by the public or livestock, Developer shall be responsible for providing temporary fencing in cases where the property owner refuses to fence the property within the allotted timeframe.

After the property owner's retention period has expired and if any existing fencing remains, Developer shall remove the existing fences from the newly acquired Project ROW and will be responsible for all costs associated therewith.

## 8 GEOTECHNICAL

### 8.1 General Requirements

Developer shall perform all geotechnical investigations, testing, research, and analysis necessary to effectively determine and understand the existing surface and subsurface geotechnical conditions of the Project ROW to be used by the Developer to carry out the Work. Developer shall ensure the geotechnical investigations and analyses are both thorough and complete, so as to provide accurate information for the design of roadways, pavements, foundations, structures, and other facilities that result in a Project that is safe, and meets operational standards and Handback Requirements. Key requirements in this regard can be found in this [Section 8](#), as well as in [Sections 4, 11, and 22](#).

### 8.2 Design Requirements

#### 8.2.1 *Subsurface Geotechnical Investigation by Developer*

Developer shall determine the specific locations, frequency, and scope of all subsurface geotechnical investigations, testing, research, and analysis the Developer considers necessary to support the design of a safe and reliable roadway, pavement, foundation, structure, and other facilities for the Project.

Developer shall prepare and amend, as needed, Geotechnical Engineering Reports documenting the assumptions, conditions, and results of the geotechnical investigation and analysis, including the following:

- The geology of the Project area, including soil and/or rock types
- Field investigations and laboratory test results used to characterize conditions, including moisture content, plasticity index, gradations for each major soil strata change, levels of shrink/swell potential, and levels of sulfate (on-site and borrow)
- A discussion of conditions and results with reference to specific locations on the Project
- Design and construction parameters resulting from the geotechnical investigation and analysis, including parameters for the design of pavements, pipes, structures, slopes, and embankments
- Plan view locations of field sampling, boring logs and other field data, laboratory test results, calculations, and analyses that support design decisions

Each Geotechnical Engineering Report, upon completion, shall be submitted to TxDOT for review and comment.

If environmentally-sensitive conditions are encountered during the subsurface exploration activities, Developer shall undertake appropriate actions in accordance with [Section 4](#).

#### 8.2.2 *Pavement Design*

Developer shall design, construct, and maintain roadway pavements using Good Industry Practice and the subsurface geotechnical data collected by the Developer. Roadway pavements shall meet the operation standards and requirements contained in [Sections 19 and 22](#).

Developer shall prepare a pavement design report for record that documents the assumptions, considerations, and decisions contributing to the Developer's pavement design, including the following:

- Pavement design details by location, including structural layer materials, general specifications, and thicknesses
- Lifecycle management analysis, including the periods for resurfacing, reconstruction, and other rehabilitation measures and what these activities are likely to entail
- Relevant pavement evaluation data (structural and functional) and condition information on adjacent roads

- Site conditions
- Relevant geotechnical data and drainage requirements
- Design criteria used in determining the pavement design(s), including annual average daily traffic, percentage heavy vehicles, cumulative traffic loading, pavement material strength factors, and pavement design life
- Design methods adopted in developing the pavement design(s) and the rationale for their selection
- Other considerations used in developing the pavement design(s)
- The pavement for main lanes and ramps shall be designed using the functional highway classification(s) defined in Book 2

For roadways adjacent to and crossing the Project that are disturbed by the construction activities of the Project, Developer shall, at a minimum, match the in-place surface type and structure of the existing roadways. Developer shall design all tie-in work to avoid differential settlement between the existing and new surfaces.

## 9 LAND SURVEYING

### 9.1 General Requirements

Developer shall provide accurate and consistent land surveying and mapping necessary to support right of way acquisition, design, and construction of the Project.

Developer must review existing survey data and determine the requirements for updating or extending the existing survey and mapping data. Developer will be responsible for the final precision, accuracy, and comprehensiveness of all survey and mapping.

#### 9.1.1 *Right-of-Entry*

Developer shall secure written permission prior to entering any private[?] property outside the ROW. It shall be the Developers' sole responsibility to negotiate this permission and the Developer shall be responsible for any and all damages and claims resulting from that ingress. Proper documentation of right-of-entry shall be maintained at all times by the Developer.

### 9.2 Design Requirements

#### 9.2.1 *Units*

All survey Work shall be performed in the U.S customary units system of measurement.

#### 9.2.2 *Survey Control Requirements*

Developer shall ensure that all surveying conforms to all applicable surveying laws and the Professional Land Surveying Practices Act and must follow the *General Rules of Procedures and Practices* of the Texas Board of Professional Land Surveying. Developer shall ensure that any person in charge of a survey field party is proficient in the technical aspects of surveying.

Developer shall base all additional horizontal and vertical control on the Level 2 and Level 3 control provided by TxDOT.

Developer shall establish and maintain additional survey control as needed and final ROW monumentation throughout the duration of the Project.

Developer shall tie any additional horizontal and vertical control for the Project to the TxDOT-supplied Primary (Level 2) or Secondary (Level 3) control network. If Developer chooses to use GPS methods, Developer shall meet the accuracy of the appropriate level of survey as defined in the TxDOT *GPS User's Manual*.

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

#### 9.2.3 *Conventional Method (Horizontal & Vertical)*

If Developer chooses to use conventional methods to establish additional horizontal control, Developer shall meet the accuracy of the appropriate level of survey as defined in the following tables. Horizontal control is to be established (at a minimum) on the Texas State Plane Coordinate System NAD 83.

Vertical control shall be established (at a minimum) on the North American Vertical Datum of 1988 (NAVD 1988).

	Level 3	Level 4	Remarks and Formulae
Error of Closure	1: 50,000	1:20,000	Loop or between monuments
Allowable Angular Closure	$\pm 3'' \sqrt{N}$	$\pm 8'' \sqrt{N}$	$N$ = number of angles in traverse
Accuracy of Bearing in Relation to Course *	$\pm 04''$	$\pm 10''$	Maximum for any course
Linear Distance Accuracy (Minimum Length of Line)	1: 50,000 (2,500 feet)	1: 20,000 (1,000 feet)	
Positional Tolerance of Any Monument	$AC/ 50,000$	$AC/20,000$	$AC$ = length of any course in traverse
Adjusted Mathematical Closure of Survey (No Less Than)	1: 200,000	1: 200,000	

**9.2.3.1 Horizontal Accuracy Requirements for Conventional Surveys**

\* TxDOT policy requires all bearings or angles be based on the following source: Grid bearing of the Texas Coordinate System of 1983, with the proper zone and epoch specified.

**9.2.3.2 Vertical Accuracy Requirements for Conventional Surveys**

	1 <sup>st</sup> ORDER	2 <sup>nd</sup> ORDER	3 <sup>rd</sup> ORDER	REMARKS AND FORMULAE
Error of Closure	0.013 feet $\sqrt{K}$	0.026 feet $\sqrt{K}$	0.039 feet $\sqrt{K}$	Loop or between control monuments.
Maximum Length of Sight	250 feet	300 feet		With good atmospheric conditions.
Difference in Foresight and Backsight Distances	$\pm 10$ feet	$\pm 20$ feet	$\pm 30$ feet	Per instrument set up.
Total Difference in Foresight and Backsight Distances	$\pm 20$ feet. per second	$\pm 50$ feet per second	$\pm 70$ feet per second	Per total section or loop.
Recommended Length of Section or Loop	2.0 miles	3.0 miles	4.0 miles	Maximum distance before closing or in loop.



Maximum Recommended Distance Between Benchmarks	2000 feet	2500 feet	3000 feet	Permanent or temporary benchmarks set or observed along the route
Level Rod Reading	± 0.001 foot	± 0.001 foot	± 0.001 foot	
Recommended Instruments and Leveling Rods	Automatic or tilting w/ parallel plate micrometer precise rods	Automatic or tilting w/ optical micrometer precise rods	Automatic or quality spirit standard, quality rod	When two or more level rods are used, they should be identically matched
Principal Uses	Broad area control, subsidence or motion studies jig & tool settings	Broad area control, engineering projects basis for subsequent level work	Small area control, drainage studies, some construction and engineering	

**9.2.4 Right of Way Surveys**

Developer shall base all surveys on the horizontal and vertical control network provided by TxDOT.

**9.2.4.1 Accuracy Standard**

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

**CHART OF TOLERANCES**

	<b>URBAN / RURAL</b>	<b>URBAN BUSINESS DISTRICT</b>	<b>REMARKS AND FORMULAE</b>
Error of Closure	1:10,000	1:15,000	Loop or between Control Monuments
Angular Closure	15" $\sqrt{N}$	10" $\sqrt{N}$	$N$ = Number of Angles in Traverse
Accuracy of Bearing in Relation to Source *	20 sec.	15 sec.	$\sin \alpha$ = denominator in error of closure divided into 1 (approx.)
Linear Distance Accuracy	0.1 foot per 1,000 feet	0.05 foot per 1,000 feet	$\sin \alpha \times 1000$ (approx.) where $\pm$ = Accuracy of Bearing
Positional Error of any Monument	$AC/10,000$	$AC/15,000$	$AC$ = length of any course in traverse

Adjusted Mathematical Closure of Survey (No Less Than)	1:50,000	1:50,000	
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\* TxDOT policy requires all bearings or angles be based on the following source: Grid bearing of the Texas Coordinate System of 1983, with the proper zone and epoch specified.

**9.2.5 Survey Records and Reports**

Developer may use an electronic field book to collect and store raw data. Developer shall preserve original raw data and document any changes or corrections made to field data, such as station name, height of instrument, or target. Developer shall also preserve raw and corrected field data in hardcopy output forms in a similar manner to conventional field book preservation.

Field survey data and sketches that cannot be efficiently recorded in the electronic field book shall be recorded in a field notebook and stored with copies of the electronic data.

All field notes shall be recorded in a permanently bound book (loose leaf field notes will not be allowed). Developer shall deliver copies of any or all field notebooks to TxDOT upon request.

**9.3 Construction Requirements**

**9.3.1 Units**

All survey Work shall be performed in the U.S customary units system of measurement.

**9.3.2 Construction Surveys**

Developer shall ensure that all surveying conforms to all applicable surveying laws and the Professional Land Surveying Practices Act and must follow the *General Rules of Procedures and Practices* of the Texas Board of Professional Land Surveying. Developer shall ensure that any person in charge of a survey field party is proficient in the technical aspects of surveying.

**9.4 Deliverables**

**9.4.1 Final ROW Surveying and Mapping**

Developer shall coordinate with TxDOT regarding the assignment of right of way Control Section Job (CSJ) numbers for each new mapping project.

The documents produced by the Surveyor, or the Surveyor’s subcontractors, are the property of TxDOT, and release of any such document must be approved by TxDOT.

**9.4.2 ROW Monuments**

Upon final submittal of the ROW documents to TxDOT, the Surveyor shall have marked on the ground, using permanent and stable monuments as defined in Section 663.17 of the General Rules of Procedures and Practices of the Texas Board of Professional Land Surveying (TBPLS), all significant points along all ROW lines of the Project including the following:

- Points of curvature (PCs)
- Points of tangency (PTs)
- Points of intersection (PIs)
- Points of compound curvature (PCCs)
- Points of reverse curvature (PRCs)
- All intersecting crossroad ROW lines and all property line intersections with the ROW line. These monuments shall be ½-inch iron rods, driven just below surface level, capped by a TxDOT-labeled aluminum cap (rod-and-cap monument)

- All beginning and ending points of Control of Access (Denied) lines
- Points of tangency (PTs)

Upon completion of the ROW acquisition and all construction grading work, such that the final ROW lines will not be disturbed by construction, Developer shall replace all rod-and-cap monuments located on the final ROW line at all points of curvature (PCs), points of tangency (PTs), points of intersection (PIs), points of compound curvature (PCCs), and points of reverse curvature (PRCs), and all intersecting crossroad ROW lines, with TxDOT Type II monuments (constructed according to current TxDOT specifications). Developer shall monument with a TxDOT Type II monument all final ROW lines where the distance between such significant ROW line points exceeds 1500 feet. ROW line intersections with property lines shall remain monumented by a 1/2-inch iron rod with a TxDOT aluminum cap (rod-and-cap monument).

Developer shall purchase all materials, supplies, and other items necessary for proper survey monumentation.

## **10 GRADING**

### **10.1 General**

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

Developer shall demolish or abandon in place, all existing structures within the Project ROW, including but not limited to, pavements, bridges, headwalls, which are no longer required for service, or are required to be treated as described in Section 4. Any features that are abandoned in place shall be removed to at least two feet below the final finished grade.

### **10.2 Preparation within Project Limits**

Developer shall prepare and maintain, for the Term, a Demolition and Abandonment Plan that considers type and sizes of Utilities and drainage structures that will be abandoned during the Term. The plan shall ensure that said structures are structurally sound after the abandonment procedure. The plan shall account for conditions in the Ultimate and Interim Configurations.

TxDOT reserves the right to require the Developer, at any time to salvage and deliver to a location designated by TxDOT within the TxDOT District in which the Project is located, any TxDOT-owned equipment and materials in an undamaged condition. TxDOT reserves the right to require the Developer to salvage and deliver to a reasonable location designated by TxDOT any ITS equipment and materials in an undamaged condition.

### **10.3 Slopes and Topsoil**

Developer shall exercise Good Industry Practice regarding design limitations and roadside safety guidelines associated with the design of slopes along roadways. Developer shall adjust grading in order to minimize disturbance to the identified waters of the U.S.

Developer shall perform finish grading and place topsoil in all areas suitable for vegetative slope stabilization (and areas outside the limits of grading that are disturbed in the course of the Work) that are not paved.

### **10.4 Sodding**

Block sod shall be placed at all grate inlets, manholes and culvert headwalls.

### **10.5 Deliverables**

**10.5.1 Released for Construction Document**

The Demolition and Abandonment Plan shall be submitted to TxDOT for approval no later than 60 days prior to the scheduled date for NTP2.

## 11 ROADWAYS

### 11.1 General Requirements

The objectives of the Project include the provision of a safe, reliable, cost-effective, and aesthetically-pleasing corridor for the traveling public. The requirements contained in this Section 11 provide the framework for the design and construction of the roadway improvements to help attain the Project objectives. Key requirements, in this regard, can be found in this Section 11, as well as in Sections 8 and 12.

Developer shall coordinate roadway design, construction, maintenance, and operation with other Elements of the Project to achieve the objectives of the Project.

### 11.2 Design Requirements

Developer shall coordinate its roadway design with the design of all other components of the Project, including aesthetics. The Project roadways shall be designed to integrate with streets and roadways that are adjacent or connecting to the Project.

Developer shall design all Elements in accordance with the design criteria and Good Industry Practice based on the Design Speeds for various Elements.

The Project roadways shall be designed to incorporate roadway appurtenances, including fences, noise attenuators, barriers, and hazard protection as necessary to promote safety and to mitigate visual and noise impacts on neighboring properties.

The Design Hour Volumes (DHV) for the Design Year are summarized in Book 2, Section 11. Developer shall complete the design of the Project roadways in a manner that meets or exceeds performance requirements shown in Table 11-1 below for both AM and PM Peak Hour DHV for the Design Year. Level of Service shall be calculated by the Developer using methods acceptable to TxDOT.

**Table 11-1: Roadway Performance Requirements**

Roadway Element	Performance Criterion	Performance Measure
Mainlanes	Level of service	LOS C or better
Ramps, Loops, Direct Connectors, Auxiliary Lanes	Level of service of merge, diverge and weaving maneuvers	LOS C or better
Frontage Roads, City Streets	Level of service	LOS C or better
Signalized Intersections	Overall V/C, LOS 95th percentile queues	V/C < 0.85 LOS C or better Queues shall not exceed available storage during critical time period (1)
	Individual movements V/C, LOS, 95th percentile queues	V/C < 0.90 LOS D or better Queues shall not exceed available storage during critical time period (1)

Notes:

(1) “Available Storage” does not include length provided for deceleration purposes. Critical time period may be either AM or PM Peak Hours on weekdays, or other time periods or days as dictated by the location and traffic conditions.

**11.2.1 Control of Access**

Unless shown in the Project schematics for the Ultimate Configuration to be deleted, Developer shall maintain all existing property accesses, including those not shown on the schematic, and shall not revise control of access without TxDOT review and the written agreement of the affected property owner.

## 12 DRAINAGE

### 12.1 General Requirements

Efficient performance of the drainage system is an integral part of the performance of the Project. In that context, all sources of runoff, both within and outside the Project ROW, must be accounted for in the design of the drainage facilities.

### 12.2 Administrative Requirements

#### 12.2.1 Data Collection

To establish a hydraulic system that complies with requirements and accommodates the historical hydrologic flows in the Project limits, Developer is responsible for collecting all necessary data, including those elements outlined in this Section 12.2.1.

Developer shall collect available data identifying all water resource issues, including water quality requirements as imposed by State, and federal government regulations; National Wetland Inventory and other wetland/protected waters inventories; local floodplain requirements in FEMA-regulated floodplains; and official documents concerning the Project, such as the FEIS or other drainage and environmental studies. Local requirements, if more stringent, shall be handled with a third party agreement. Water resource issues include areas with historically inadequate drainage (flooding or citizen complaints), environmentally sensitive areas, localized flooding, maintenance problems associated with drainage and areas known to contain Hazardous Materials. Developer shall also identify watershed boundaries, protected waters, county ditches, areas classified as wetlands, floodplains, and boundaries between regulatory agencies (e.g., watershed districts and watershed management organizations).

Developer shall acquire all applicable municipal drainage plans, watershed management plans, and records of citizen concerns. Developer shall acquire existing storm drain plans and/or survey data, including data for all culverts, drainage systems, and storm sewer systems within the Project limits. Developer shall also identify existing drainage areas that contribute to the highway drainage system and the estimated runoff used for design of the existing system.

Developer shall obtain photogrammetric and/or geographic information system (GIS) data for the Project limits that depicts the outstanding resource value waters and/or impaired waters. Developer shall conduct surveys for information not available from other sources.

If documentation is not available for Elements of the existing drainage system within the Project limits and scheduled to remain in place, Developer shall videotape or photograph the existing drainage system to determine condition, size, material, location, and other pertinent information.

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

#### 12.2.2 Coordination with Other Agencies

Developer shall coordinate all water resource issues with affected interests and regulatory agencies. Developer shall document the resolutions of water resource issues.

### 12.3 Design Requirements

Developer shall design all Elements of the drainage facilities in accordance with the design criteria and Good Industry Practice.

The design of drainage systems shall include reconfiguration of the existing drainage systems within the Project limits, and design of new and reconfigured storm drainage systems as required to meet the performance requirements as defined in this Section 12.



Developer shall provide facilities compatible with existing drainage systems and all applicable municipal drainage plans or approved systems in adjacent properties. Developer shall preserve existing drainage patterns wherever possible.

Elements of the existing drainage system within the Project limits scheduled to remain in place must meet hydraulic capacity requirements as detailed in Book 2, Section 12. If any Elements of the existing system do not comply with the requirements of Section 12 or Section 13, those Elements shall be replaced by the Developer.

Developer may make use of existing drainage facilities, provided overall drainage requirements for the Project are achieved.

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

Developer shall design roadside open channels such that the profiles have adequate grade to limit sedimentation.

**12.3.1 Surface Hydrology**

**12.3.1.1 Design Frequencies**

Developer shall use the design frequencies listed in Table 12-1 below.

**Table 12-1: Drainage Design Frequencies**

Functional Classification and Structure Type	Design					Check Flood
	2	5	10	25	50	100
Highways (main lanes):						
◆ culverts					X	X
◆ bridges					X	X
Principal arterials:						
◆ culverts			X			X
◆ small bridges			X			X
◆ major river crossings					X	X
Minor arterials and collectors (including frontage roads):						
◆ culverts		X				X
◆ small bridges			X			X
◆ major river crossings				X		X
Local roads and streets (off-system projects):						
◆ culverts	X					X
◆ small bridges	X					X
Storm drain systems on Interstate and controlled access highways (main lanes):						
◆ inlets and drain pipe			X			X
◆ inlets for depressed roadways*					X	X
Storm drain systems on other highways and frontage:						
◆ inlets and drain pipe	X					X
◆ inlets for depressed roadways*				X		X
Notes.						
* A depressed roadway provides nowhere for water to drain even when the curb height is exceeded.						

### **12.3.1.2 Hydrologic Analysis**

Developer shall design the drainage system to accommodate the ultimate development of the drainage areas. Flood damage potential for the completed Project shall not exceed pre-Project conditions.

### **12.3.2 Storm Sewer Systems**

Where precluded from handling runoff with open channels by physical site constraints, or as directed in Section 12 of Book 2, Developer shall design enclosed storm sewer systems to collect and convey runoff to appropriate discharge points.

Developer shall prepare a storm sewer drainage report for the entire storm sewer systems that shall contain, at a minimum, the following items:

- Drainage area maps for each storm drain inlet with pertinent data, such as boundaries of the drainage area, topographic contours, runoff coefficients, time of concentration, and land use with design curve number and/or design runoff coefficients, discharges, velocities, ponding, and hydraulic grade line data.
- Location and tabulation of all existing and proposed pipe and drainage structures. These include size, class or gauge, catch basin spacing, detailed structure designs, and any special designs.
- Specifications for the pipe bedding material and structural pipe backfill on all proposed pipes and pipe alternates.
- Complete pipe profiles, including pipe size, type and gradient; station offsets from the centerline of the roadway; length of pipe; class/gauge of pipe; and numbered drainage structures with coordinate location and elevations.

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

#### **12.3.2.1 Pipes**

Storm sewer pipes with design flow velocities less than three fps shall be designed for full flow at 80% of the internal diameter to account for sedimentation in the pipe. Other storm sewer pipes shall be designed using the full internal diameter. Storm sewers shall be designed to prevent surcharging of the system at the flow rate for the design year event. All storm sewers shall be designed and constructed to sustain all loads with zero deflection and shall have positive seals at the pipe joints.

#### **12.3.2.2 Ponding**

Developer shall design drainage systems to limit ponding, in both Ultimate Configuration and interim configuration, to the widths listed below for the design frequency event:

- one-half the width of the outer lane for the main lanes of interstate and controlled access highways;
- the width of the outer lane for major highways (which are highways with two or more lanes in each direction) and frontage roads;
- a width and depth that will allow the safe passage of one lane of traffic for minor highways.

### **12.3.3 Stormwater Storage Facilities**

Developer shall complete preliminary design of the stormwater storage facilities to meet requirements for water quality, water quantity, and rate control, as determined by the Texas NPDES regulations. Local requirements, if more stringent, shall be handled with a third party agreement.

Developer shall ensure that stormwater storage facilities meet the requirements listed above by performing all required analyses. Such analyses shall include flood routing analysis, which includes a detailed routing analysis for ponds affected by significant environmental issues such as hazardous waste or groundwater concerns.

### **12.3.4 Hydraulic Structures**

#### **12.3.4.1 Culverts**

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

Where culvert design is influenced by upstream storage, the analysis of the storage shall be incorporated into the design of the culvert.

For all culverts, the maximum allowable headwater elevation for the design frequency shall not exceed one foot below the shoulder PI elevation of the roadway low point.

#### **12.3.4.2 Bridges**

All hydraulic computations, designs, and recommendations shall be consistent with past studies and projects in the area by the USACE and other State or federal agency studies and projects.

Where bridge design is influenced by upstream storage, the analysis of the storage shall be considered in the design of the bridge.

##### **12.3.4.2.1 Method Used to Estimate Flows**

Developer shall ensure that the selected hydrologic method is appropriate for the conditions in the watershed.

For all crossings located within a FEMA Flood Insurance Study (FIS) with peak flow information, Developer shall gather and utilize, as appropriate, the flow information provided in the FIS and any subsequent Letters of Map Revision (LOMR) for estimating flow.

For a crossing on the same waterway as a stream gauging station with a length of record of at least 25 years, Developer shall collect and use the flow data available from the station, as appropriate, to determine design flows within the following limitations, provided there is no major control structure (e.g., a reservoir) between the gauge and the Project:

- For crossings near the gauging station on the same stream and watershed, use the discharge directly for a specific frequency from the peak stream flow frequency relationship.
- For crossings within the same basin but not proximate to the gauging station, transposition of gauge analysis results is allowable.
- For crossings not within a gauged basin, the peak-flow flood frequency shall be developed using data from a group of several gauging stations based on either a hydrologic region (e.g., regional regression equations), or similar hydrologic characteristics.
- If no significant changes in the channel or basin have taken place during the period of record, the stream gauging data may be used. The urbanization character of the watershed must not be likely to change enough to affect significantly the characteristics of peak flows within the total time of observed annual peaks and anticipated service life of the highway drainage facility.

For crossings not located within a FEMA FIS or on a gauged waterway, Developer shall select the appropriate method for calculating the design flows based on site conditions, and Good Industry Practice.

##### **12.3.4.2.2 Design Frequency**

Major river crossings, bridges, culverts and storm drain systems shall be designed for the design-year frequency corresponding to the functional classification of the associated roadway. The functional classification for each roadway is shown in [Section 11](#) in Book 2.

Developer shall evaluate bridges for contraction scour and pier scour concerns and incorporate protection in accordance with Good Industry Practice.

For interstate highways, the minimum overtopping flood to be used in the detailed design shall be the 50-year frequency.

#### **12.3.4.2.3 Hydraulic Analysis**

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

#### **12.3.4.2.4 Bridge/Culvert Waterway Design**

For existing crossings, Developer shall analyze the existing structure with the proposed flows to ensure the headwater does not exceed that of the current conditions. If this condition is not met, Developer shall design a replacement structure with sufficient capacity to pass the design-frequency flows and ensure the maximum headwater for any frequency event does not exceed that of the corresponding event for the current condition. Culvert extensions may increase the headwater elevation, but not above the maximum allowable headwater, with respect to adjacent property and floodplain concerns.

Bridge waterway design shall maintain the existing channel morphology through the structure, if possible.

#### **12.3.4.2.5 Bridge Deck Drainage**

Runoff from bridge decks shall be carried off the bridge and into the adjacent roadway drainage system. The roadway drainage design shall include bridge approach drains to intercept gutter flow at each end of the bridge. Stormwater flowing toward the bridge shall be intercepted upstream from the approach slab. Runoff from bridge deck drainage shall be treated as required by TCEQ regulation prior to discharge to the natural waters of the State.

Open deck drains are not permissible for bridges passing over waterways or other roadways. If ponding width limits require, runoff shall be conveyed in a closed system through the bridge columns to the roadway drainage system below.

#### **12.3.4.2.6 Drainage Report for Major Stream Crossings**

Developer shall prepare a report for each major stream crossing. The report shall include the detailed calculations and electronic and printed copies of the computer software input and output files, as well as a discussion about hydrologic and hydraulic analysis and reasons for the design recommendations. At a minimum, for each crossing the report shall include:

##### Hydrology

- Drainage area maps with watershed characteristics, hardcopy
- Hydrologic calculations (where computer software is used, both hardcopy and electronic input and output files)
- Historical or site data used to review computed flows

##### Hydraulics and Recommended Waterway Opening and/or Structure

- Photographs of Site (pre- and post-construction)
- General plan, profile, and elevation of recommended waterway opening and/or structure
- Calculations – hardcopy of output, as well as electronic input and output files for all computer models used for final analysis or for permit request, as well as summary of the basis of the models
- Cross-sections of waterway (Developer shall provide a hard copy plot, plus any electronic data used)
- Channel profiles

##### Scour Analysis

- Channel cross-sections at bridge showing predicted scour
- Calculations and summary of calculations, clearly showing predicted scour and assumptions regarding bridge opening and piers used to calculate predicted scour
- Discussion of review of long-term degradation/aggradation and effects

- Recommendation for abutment protection

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

## **12.4 Construction Requirements**

Developer shall design drainage to accommodate construction staging. The design shall include temporary erosion control ponds and other Best Management Practices needed to satisfy the NPDES and other regulatory requirements. The water resources notes in the plans shall include a description of the drainage design for each stage of construction.

## **12.5 Deliverables**

Within 30 days of Service Commencement, Developer shall submit to TxDOT, as part of the record set documents, a Drainage Design Report, which shall be a complete documentation of all components of the Project's drainage system. At a minimum, the Report shall include:

- Record set of all drainage computations, both hydrologic and hydraulic, and all support data.
- Hydraulic notes, models, and tabulations
- Bridge and culvert designs and reports for major stream crossings
- Pond designs, including graphic display of treatment areas and maintenance guidelines for operation
- Correspondence file
- Drainage system data (location, type, material, size, and other pertinent information) in a suitable electronic format

## 13 STRUCTURES

### 13.1 General Requirements

The structural Elements of the Project, including bridges, culverts, drainage structures, signage supports, illumination assemblies, traffic signals, retaining walls, and sound walls, shall be well-designed and well-constructed in conformance with the design requirements and Good Industry Practice, in order to provide the general public a safe, reliable, and aesthetically-pleasing facility. Key requirements in this regard can be found in this [Section 13](#), as well as in [Sections 8, 12, and 15](#).

### 13.2 Design Requirements

#### 13.2.1 Design Parameters

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

Bridges crossing over the Ultimate Configuration shall, at a minimum, be designed to accommodate the Ultimate Configuration and all planned expansion or update of each facility by its respective owner as designated in the owner's current transportation master plan as included in the reference documents, while still maintaining the required horizontal and vertical clearances. Alignments shall meet the requirements indicated in Book 2, [Section 11](#) for the functional classification of each roadway. Developer shall design bridge structures required for the interim configuration, if applicable, to the total length and span arrangement required for the Ultimate Configuration, including spanning future lanes that will be constructed below the structure as a part of the Ultimate Configuration.

Developer shall design bridge structures to accommodate the Ultimate Configuration and construct bridge structures to the width required for the interim configuration. Developer shall ensure that bridges constructed for the interim configuration can be widened to the Ultimate Configuration width at a later date with minimal or no impact to aesthetics and traffic.

Direct-connect structures shall be constructed to satisfy the Ultimate Configuration. In locations where the interim configuration does not call for the construction of the direct-connect structures, Developer shall make provisions to accommodate the future construction.

#### 13.2.2 Bridge Design Loads and Load Ratings

Developer shall provide to TxDOT both an inventory and an operating rating of the constructed structures using a form provided by TxDOT. Load ratings shall be in accordance with AASHTO's *Manual for Condition Evaluation of Bridges*.

#### 13.2.3 Bridge Decks and Superstructures

Timber bridges, masonry bridges, and structural plate arches shall not be permitted. Bridges shall not use intermediate hinges.

Developer shall minimize the number of deck joints wherever possible. Developer shall locate joints to provide for maintenance accessibility and future replacement.

Developer shall protect sidewalks from vehicular impact by a TxDOT-approved bridge railing as required in the TxDOT Bridge Railing Manual based on roadway Design Speed. For interim configuration, pedestrian rail shall be used along structure pavement edges and installed to minimize future damage when accommodating the Ultimate Configuration.

To the extent possible, Developer shall make bridge superstructures, joints, and bearings accessible for long-term inspection and maintenance. Developer shall make open-framed superstructures accessible with walkways or by use of ladders or an under-bridge inspection truck. Where not possible, the Elements shall conform to the Handback Requirements.

Developer shall install locked entryways on all hatches and points of access.

#### **13.2.4 Bridge Foundations**

Developer's bridge span arrangement and foundation locations shall accommodate the Ultimate Configuration.

Developer shall not use spread footings in locations with scour potential.

#### **13.2.5 Bridge Railing and Barriers**

All barrier systems used on the Project shall meet current crash test requirements as determined by TxDOT. All testing and associated costs for non-standard railings shall be the sole responsibility of the Developer and shall be accomplished through a third party acceptable to TxDOT. TxDOT will provide a current list of standard railing in Book 2, Section 13.2.5 and will provide updated lists upon request. Developer shall protect sidewalks from vehicular impact by using TxDOT-approved bridge railings. For interim configuration, pedestrian rail shall be used along structure pavement edges and installed to minimize future damage when accommodating the Ultimate Configuration.

#### **13.2.6 Retaining Walls**

To the extent possible, Developer shall design and construct components of the interim configuration and Ultimate Configuration to provide embankments without the use of retaining walls. Where earthen embankments are not feasible, Developer may use retaining walls.

Metal walls, including bin walls and sheet pile walls, recycled material walls and timber walls shall not be permitted.

If pipe culverts are to extend through the retaining walls or noise walls, the pipe shall be installed so that no joints are located within or under the wall.

No weep holes through the face of the retaining walls will be allowed, except at the base of the walls.

#### **13.2.7 Noise/Sound Walls**

Developer shall design and construct the noise/sound walls to achieve the decibel reduction requirement in the NEPA Approval(s).

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

Timber sound walls shall not be permitted.

#### **13.2.8 Drainage Structures**

In developing the design of drainage structures, Developer shall account for maximum anticipated loadings in both the interim configuration and Ultimate Configuration.

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

#### **13.2.9 Sign, Illumination, and Traffic Signal Supports**

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

Developer shall design overhead and cantilever sign supports to accommodate the Ultimate Design configuration. Cantilever and sign bridge supports shall be placed outside the clear zone or shall be otherwise protected by appropriate safety measures.



### **13.3 Construction Requirements**

#### **13.3.1 Concrete Finishes**

Concrete finishes shall comply with the performance requirements as stated in Book 2.

#### **13.3.2 Structure Metals**

Welding shall be in accordance with the requirements of the ANSI/AASHTO/A WS DI. 5-96 Bridge Welding Code.

### **13.4 Deliverables**

Developer shall submit an inventory and operating ratings of constructed structures with the record set of documents.

## 14 RAIL

### 14.1 General Requirements

This section defines the criteria required for the Project to accommodate and/or design and construct (i) a potential rail corridor within, and/or (ii) facilities and structures for rail line(s) crossing, the Project ROW.

Developer shall prepare a geometric design for the potential rail corridor. Developer's PMP shall set forth an approach, procedures and methods for the potential rail corridor design and construction to the requirements set forth in Book 2.

Developer shall demonstrate, with the submittal of the Final Design Documents, the potential rail corridor design reasonably accommodates and is compatible with the requirements of the Ultimate Configuration.

### 14.2 Railroad Design Standards

Developer shall prepare the geometric design of the railroad Elements incorporating the usual and customary design standards and operating requirements of the American Railway Engineering and Maintenance of Way Association (AREMA) and each of the operating railroads that has or is expected to have an agreement with TxDOT.

Developer's design shall minimize service interruptions to existing rail lines.

At highway-rail grade crossings, the roadway and drainage design parameters shall be maintained at the crossing with exception to the cross slope of the pavement which may be transitioned to match the grade across the rail line.

Section details shall be as shown in Book 2. Construction details and specifications shall conform to the requirements shown in Book 2.

### 14.3 Project Work Affecting Railroad Operations

Should the Project cross a railroad right of way owned by an operating railroad, Developer shall coordinate the Work with the operating railroad.

#### 14.3.1 Railroad Agreement

Developer shall be responsible for obtaining the required approvals, permits, and agreements as required for the Work, including any railroad related Work.

#### 14.3.2 Agreement for Construction, Maintenance and Use of Right of Way

Whenever a license agreement for construction, maintenance and use of railroad right-of-way (hereinafter called the "License Agreement") between the operating railroad and TxDOT is required, Developer shall prepare all the documentation required to obtain the License Agreement, including preparation of the License Agreement application on behalf of TxDOT, the Plans and specifications, making necessary modifications as required, and preparation of the License Agreement.

Developer shall submit the draft License Agreement to TxDOT for transmittal to the operating railroad. After all comments have been incorporated or satisfactorily resolved by either Developer, railroad or TxDOT, Developer shall submit a complete and final License Agreement to TxDOT for execution.

#### 14.3.3 Operation Safety

Developer shall arrange with the operating railroad for railroad flagging as required. Developer shall comply with the operating railroad's requirements for contractor safety training prior to performing Work or other activities on the operating railroad's property.

#### ***14.3.4 Railroad Right of Entry Agreement***

In order to enter the operating railroad's right-of-way to perform the Work, Developer shall secure a railroad Right of Entry Agreement and shall coordinate the arrangements of the necessary agreements directly with the operating railroad.

#### ***14.3.5 Developer Right of Entry Agreement***

Developer shall cooperate and coordinate with all operating railroads for access by the operating railroad and/or their agents to the rail right-of-way as necessary for rail maintenance and operations activities.

#### ***14.3.6 Insurance Requirements***

Developer shall procure and maintain, prior to working adjacent to and entry upon operating railroad property, insurance policies naming TxDOT, TxDOT's Consultants, and railroad as named insured.

Developer shall obtain the following types of insurance:

1. Railroad Protective Liability Insurance Policy
2. Comprehensive General Liability Insurance
3. Contractors' Protective Liability Insurance.

All insurance policies shall be in a form acceptable to the operating railroad. Copies of all insurance policies shall be submitted to TxDOT prior to any entry by the Developer upon operating railroad property.

### **14.4 Construction Requirements**

Developer shall comply with all construction requirements and specifications set forth by the operating railroad.

Developer shall be responsible for scheduling the work to be completed by operating Railroad as well as the work to be completed by its own forces. Developer shall be responsible for all costs associated with the railroad/transit force account work.

## 15 AESTHETICS AND LANDSCAPING

### 15.1 General Requirements

Aesthetics play a significant role in tolled facilities. As paying customers, motorists expect a higher standard for all Elements of the Project, including aesthetic value. This Section 15 defines requirements with which the Developer shall design and construct aesthetic treatments for the roadway, structures, drainage, and landscaping Elements of the Project. Aesthetic treatments shall be designed to harmonize with the local landscape and architecture, as well as the developed themes of the local setting. Developer shall coordinate with local and State agencies to achieve this harmonization.

### 15.2 Administrative Requirements

This Section 15 presents minimum aesthetics and landscape design requirements for Project designs. For purposes of this Section 15, the following list of items will be considered the aesthetics Elements of the Project design:

- Material, finish, color, and texture of bridge Elements
- Materials, finish, and color of barriers and railings
- Paved slope treatments
- Finish, color, and texture of retaining and noise walls
- Contour grading, slope rounding, channel treatments, and drainage
- Sculptural and artistic features of other structures
- Sidewalks, median or pedestrian specialty paving, including material, finish, and color
- Hardscape at interchanges and intersections
- Fencing
- Signage – overhead, attached, and ground mounted
- Gantries
- Any permanent building construction within the Project, including ancillary support, operational, and toll collections

#### 15.2.1 *Aesthetics Concepts*

Developer shall prepare three aesthetics concepts of the Project for presentation to local communities and Customer Groups. Developer shall base this presentation on the principles, requirements, and strategies provided in Section 15.3. Before presenting the aesthetics concepts to the public, Developer shall meet and review the proposed aesthetics concepts with TxDOT. After meeting with the public, Developer shall prepare a final aesthetic concept and submit it to TxDOT for approval.

#### 15.2.2 *Aesthetics and Landscaping Plan*

Developer shall prepare a plan for aesthetics and landscaping (“Aesthetics and Landscaping Plan”) for approval by TxDOT, in its good faith discretion. This Aesthetics and Landscaping Plan shall provide guidelines and requirements for the aesthetics design of the Project. The Aesthetics and Landscaping Plan shall include all elements to fully communicate the proposed aesthetic treatment to TxDOT.

Developer shall submit the final aesthetic concept to TxDOT for review and approval in its good faith discretion within 60 Days of issuance of NTP1.

Developer shall submit the Aesthetics and Landscaping Plan to TxDOT for review and approval in its good faith discretion within 120 Days of issuance of NTP1. The Aesthetics and Landscaping Plan shall be a condition of issuance of NTP2.

### **15.2.3 Personnel**

Developer shall provide a landscape architect, with a minimum 5 years experience in designing aesthetics and landscaping Elements for roadway projects of similar scope and size, to develop the Aesthetics and Landscaping Plan.

## **15.3 Design Requirements**

### **15.3.1 Aesthetics Principles and Strategies**

Developer shall follow the guidelines and requirements of the approved Aesthetics and Landscaping Plan, as well as the aesthetics principles, requirements, and strategies established by TxDOT for the Project design, including the following:

- The Project design shall minimize impact on the existing natural environment to the extent possible.
- The Project design shall emphasize and enhance the existing natural context and landscape to the fullest extent possible.
- Simple geometric shapes for structures shall be used to the extent possible for continuity along the entire length of the Project.
- All bridges and other structures shall be simplified in their design, and to the greatest extent possible kept small in size, bulk, and mass.
- All structures shall be carefully detailed so as to achieve the greatest level of aesthetic quality and fit within the regional context.
- Color, texture, and form shall be used amply for all structures.
- Graphics, signage, and lighting shall be consistent along the entire length of the Project.
- Existing trees and rock outcroppings shall be preserved to the greatest extent possible.
- Aesthetics Elements shall be fully integrated with the overall landscape design.
- Visual quality of the landscape shall be consistent along the entire length of the Project.
- Native-area and/or naturalized plant materials that exhibit good drought tolerance shall be used to the extent possible.
- Aesthetic Elements shall be easy to maintain and resistant to vandalism and graffiti.

### **15.3.2 Walls**

Developer shall design noise/sound walls to be similar in color, texture, and style to those of retaining walls, and shall develop an aesthetics treatment that is consistent with other physical features such as structures, landscaping, and other highway components.

Developer shall apply aesthetic treatments to the vertical surfaces of retaining and noise/sound walls where the surface is visible from the roadway or adjacent houses. Consistent treatments shall be used for retaining and noise/sound walls that articulate the design themes established for the Project.

Developer shall pay special attention to aesthetic design Elements and utilize high aesthetic quality of finishes and materials at interchanges and approaches to toll collection points.

### **15.3.3 Bridges and Other Structures**

All aesthetic treatments for structural Elements shall be coordinated with the Developer's structural design team to facilitate constructability and maintain safety requirements.

No exposed conduits or drain pipes will be allowed on bents, columns, bridge beams, or any other visible surface.

#### ***15.3.4 Trees, Shrubs, and Other Plant Materials***

All trees, shrubs, deciduous vines, and perennials shall comply with the applicable requirements of *ANSI Z60.1 American Standard for Nursery Stock*.

Developer shall use plant species native to the area or naturalized for the Project Site. Developer shall consult with the agricultural extension agent of the applicable county and the TxDOT landscape architect for recommended plant species lists.

### **15.4 Construction Requirements**

Developer shall provide TxDOT sample panels a minimum of 10 days in advance of starting construction of textured concrete surfaces. Developer shall construct sample panels in accordance with TxDOT *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* Item 427.4.B.2.d (Form Liner Finish) that comply with the principles, requirements, and strategies established by TxDOT and the Aesthetics and Landscaping Plan. TxDOT will review and approve the sample panels before any construction form liners may be ordered, obtained, or used. Developer shall provide sample panels having a textured portion at least 5.0 feet by 5.0 feet with a representative un-textured surrounding surface.

The approved sample panel shall be the standard of comparison for the production concrete surface texture.

For textured panels or concrete surfaces finished with a coating of paint or stain, Developer shall prepare a corresponding coated panel or surface area of an in-place Element for approval prior to the coating operation.

Color samples shall be provided from the Federal Standard 595B Colors Fan Deck.

## **16 SIGNING, DELINEATION, PAVEMENT MARKING, SIGNALIZATION, AND LIGHTING**

### **16.1 General Requirements**

This Section 16 includes requirements with which the Developer shall design, construct, and maintain all signing, delineation, pavement markings, signalization, and lighting, for the Project. Key requirements in this regard can be found in this Section 16, as well as in Sections 4, 8, 13, and 15.

### **16.2 Administrative Requirements**

#### **16.2.1 Meetings**

Developer shall arrange and coordinate all meetings with all local agencies that will assume responsibility for maintaining and operating traffic signals and roadway lighting. Developer shall provide TxDOT with notification of such meetings a minimum of 48 hours prior to the start of the meeting. TxDOT, in its discretion, may attend such meetings.

Developer shall arrange and coordinate all meetings with requesting agencies or individuals regarding special signs.

### **16.3 Design Requirements**

#### **16.3.1 Final Design**

Developer shall advance the Final Design of the signing, delineation, pavement marking, signalization, and lighting based upon any preliminary design or “Preliminary Operational Signing Schematic” in Book 2. If a “Preliminary Operational Signing Schematic” does not exist, Developer shall prepare a draft plan to TxDOT for review and approval prior to commencing Final Design.

#### **16.3.2 Permanent Signing and Delineation**

Developer shall design and install all signs as shown on the Final Design. Signs include new signs, as well as modifications to existing sign panels and structures. Developer’s design shall include the locations of ground-mounted and overhead signs, graphic representation of all signs, proposed striping, delineation placement, guide sign and special sign details, and structural and foundation requirements. Signs shall be located in a manner that avoids conflicts with other signs, vegetation, DMS, lighting, and structures.

Developer shall ensure that signs are clearly visible, provide clear direction and information for users, and comply with all applicable TMUTCD requirements.

Developer shall review with TxDOT all requests for new signs, including traffic generators, or modifications of existing sign text. Such requests are subject to TxDOT’s approval.

#### **16.3.3 Project Signs – Outside the Project ROW**

For signs located outside of the Project ROW but within a public ROW, Developer shall install the signs in existing rights-of-way controlled by local or other State agencies. Developer shall coordinate with applicable Governmental Entities for the design and installation of such signs.

#### **16.3.4 Advance Toll Information Signs**

For advance toll information signs, Developer shall be responsible for determining sign locations and foundation types, and design and installation of the new signs.

Developer shall use Good Industry Practice in determining the locations for advance toll information signs. At a minimum, advance toll information signs shall be installed at the following locations:

- At all locations where an existing roadway provides the traveling public access to the Project

- Prior to all entrance ramps to the Project

### **16.3.5 Third-Party Signs**

In addition to the warning, regulatory, and guide signs within the Project ROW, TxDOT or Governmental Entities may request that third-party signs, including logo signs, be installed by a third party. Developer shall coordinate and cooperate with any third party performing such work. TxDOT may solicit input from the Developer in reviewing applications for new third-party signs, but will retain sole authority for approving installation of these signs. All costs associated with fabricating and installing these signs shall be borne by the sign applicant. TxDOT may require the Developer to fabricate and/or install any of these signs as a TxDOT-Directed Change.

### **16.3.6 Sign Support Structures**

Developer shall determine foundation types and design sign foundations based upon geotechnical surveys/tests using Good Industry Practices. Designs for sign supports shall also comply with requirements in Sections 13 and 15.

### **16.3.7 Permanent Pavement Marking**

Developer shall ensure that the design and installation of all pavement markings comply with applicable TMUTCD requirements.

Developer shall mark median noses of all raised islands and inside edges of exclusive turn lanes (channelized curbs) in accordance with the requirements of TMUTCD.

### **16.3.8 Permanent Signalization**

#### **16.3.8.1 Traffic Signal Requirements**

Developer shall design and install fully-actuated permanent traffic signals at all TxDOT-authorized intersections within Project limits. In addition, Developer shall modify, as appropriate, any existing traffic signals impacted by the Final Design. Developer shall coordinate with TxDOT and the applicable Governmental Entities to define appropriate traffic signal design requirements, local agency oversight of the Developer's Work, and final acceptance of traffic signals. Developer shall coordinate with local communities for synchronization of traffic signal networks.

Developer shall provide interconnection systems between new or modified signals and any other signal system within the Project Site as required by TxDOT or the applicable local Governmental Entity. Developer shall make existing signal systems compatible with the proposed interconnections. Developer shall ensure continuous communication with the traffic signal system within the Project Site, and shall provide all communication hardware/equipment for TxDOT or the applicable local Governmental Entity to communicate with the signal systems within the Project Site.

Developer shall provide both pedestrian and vehicle detectors at all traffic signals within the Project Site.

#### **16.3.8.2 Traffic Signal Timing Plans**

Developer shall coordinate and implement signal timing plans that optimize traffic flows and provide signal coordination with adjacent intersections and arterials for all existing or new traffic signals, modified signals, and interconnected signals. Unless timing maintenance is otherwise provided by a local Governmental Entity, Developer shall be responsible for updating signal timing as necessary to maintain optimized flow.

#### **16.3.8.3 Traffic Signal Warrants**

As part of the Final Design process, Developer shall collect traffic data and prepare traffic warrant studies for intersections that are not signalized at the time of NTP1. The warrant studies shall address all signal warrant criteria in the TMUTCD. Developer shall make recommendations for new signal installations



based on these warrant studies in consultation with TxDOT and the local Governmental Entities. TxDOT will reasonably determine if a signal or modification is required, based upon the warrant study.

All requests for signals within Project ROW throughout the Term of the Agreement shall be subject to TxDOT approval.

Signal warrant studies shall be based on actual traffic and/or opening year traffic projections. If opening year traffic volumes are not available, opening year traffic volumes shall be calculated by applying a 50-percent reduction to the design year traffic projections. Developer shall conduct additional traffic signal warrant studies for all intersections located in the Project ROW, commencing six months after the Project is opened for traffic. If additional signals or modifications to existing signals are warranted, based on the traffic volumes obtained through these studies, Developer shall be responsible for installation of additional traffic signals or modification of previously-installed traffic signals. If, based on the above traffic counts, the need for a signal or signal modification is unclear, TxDOT will reasonably determine if the new signal or signal modification is required.

#### **16.3.8.4 Traffic Signal Support Structures**

Developer shall coordinate with TxDOT and the local Governmental Agencies to determine the type of traffic signal support structures. Developer shall obtain the maintaining agency's approval of traffic signal support structures to be used on new signal installations.

#### **16.3.9 Permanent Lighting**

Developer shall provide continuous roadway lighting along the highway main lanes, managed lanes, ramps, and cross streets within the Project limits.

Developer shall prepare lighting studies that consider illumination levels, uniformity, and sources for the roadways, interchanges, and special areas. Developer shall maintain an average horizontal luminance on the roadways as described in Book 2,

All third party requests for lighting within the Project Site shall be subject to TxDOT approval.

Developer shall provide an average to minimum uniformity ratio of 3.1 with a minimum lux of 1.85 and an average lux of 6.5 to 8.6 on all traveled roadways to be illuminated. Traveled roadways include: tolled lanes, general use lanes, HOV lanes, auxiliary lanes, ramps, frontage roads and ramp terminal intersections with cross streets.

Developer shall design the lighting system to minimize or eliminate illumination of areas outside the Project ROW.

Luminaire poles and breakaway bases shall be designed in accordance with AASHTO's *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*. For all poles located within the clear zone of the roadways, Developer's design shall incorporate breakaway devices that are pre-qualified by TxDOT.

Developer shall place all understructure lighting in a configuration that minimizes the need for lane closures during maintenance.

Developer shall determine and design appropriate foundation types and lengths for permanent lighting structures.

Developer shall not place ITS cable, fiber-optic lines, signal conductors, or any other non-lighting related cables or conductors in the lighting conduit, ground boxes, or junction boxes.

Developer shall minimize the potential hazards of lighting poles through the careful consideration of mounting options and pole placements, including the following options:

- Placing mast arms on traffic signal poles

- Placing pole bases on existing or proposed concrete traffic barrier
- Placing poles behind existing or proposed concrete traffic barrier or metal beam fence
- Placing high mast lighting outside the clear zone, especially in roadway horizontal curves

Developer shall ensure that lighting structures comply with FAA height restrictions near airport facilities. In the event that proposed or existing luminaires, mast arms, or poles infringe into an airport's or heliport's base surface, Developer shall coordinate with the FAA and TxDOT to permit or relocate such structures. If FAA restrictions prohibit lighting structures from being placed in certain areas near an airport facility, Developer shall find alternative ways of providing the required level of lighting.

### ***16.3.10 Visual Quality***

Notwithstanding the requirements of Section 16.3.8, Developer shall make a reasonable attempt to provide luminaires of equal height along the roadway.

## **16.4 Construction Requirements**

### ***16.4.1 Permanent Signing and Delineation***

Developer shall use established industry and utility safety practices to erect and remove signs located near any overhead or underground utilities, and shall consult with the appropriate Utility Owner(s) prior to beginning such Work.

Developer shall leave all applicable advance guide signs and/or exit direction signs in place at all times and shall not obstruct the view of the signs to the motorist. Developer shall replace any other removed signs before the end of the work day.

Developer shall affix a sign identification decal to the back of all signs for inventory purposes and shall submit inventory information to TxDOT in a TxDOT-compatible format.

### ***16.4.2 Permanent Pavement marking***

Refer to Book 2, Section 16.

### ***16.4.3 Permanent Signalization***

Developer shall coordinate with the Utility Owner(s) and ensure necessary power service is initiated and maintained for permanent signal systems. Developer shall ensure power is provided to all Developer-installed signals.

### ***16.4.4 Permanent Lighting***

Developer shall coordinate with the Utility Owner(s) and ensure power service is initiated and maintained for permanent lighting systems. Where the Work impacts existing lighting, Developer shall maintain existing lighting as temporary lighting during construction and restored or replaced by the Developer prior to the commencement of the Operations and Maintenance period.

Developer shall place all bore pits safely away from traffic, provide positive barrier protection, and provide necessary signs to warn of the construction area.

Developer shall contact Utility Owners regarding their specific required working clearance requirements.

Developer shall affix an identification decal on each luminaire, ground box, and electrical service maintained and/or operated by the Developer for inventory purposes and shall submit inventory information to TxDOT in a TxDOT-compatible format. This identification shall denote that these are property of the Developer and shall provide a contact phone number and address in the event of Emergency or necessary maintenance.

## **16.5 Deliverables**

All deliverables shall be presented to TxDOT in both hard-copy, and electronic form compatible with TxDOT software.

### ***16.5.1 Permanent Signing and Delineation***

Before placing any permanent signs, delineation, advance toll warning signs, third-party signs, or non-standard sign structures, Developer shall provide TxDOT a layout indicating the proposed location of such items.

### ***16.5.2 Permanent Pavement Marking***

Before placing any permanent pavement markings, Developer shall provide TxDOT a layout indicating the proposed location of such items.

### ***16.5.3 Permanent Signalization***

Developer shall provide TxDOT with copies of all signal warrant studies as required in this Section 16..

Before placing any permanent traffic signals, Developer shall provide TxDOT a layout indicating the proposed location of such items.

### ***16.5.4 Permanent Lighting***

Before placing any permanent lighting, Developer shall provide TxDOT a layout indicating the proposed location of such items.

## 17 INTELLIGENT TRANSPORTATION SYSTEMS

### 17.1 General Requirements

An Intelligent Transportation System (ITS) is necessary for monitoring the Project's traffic flow and performance. The Project ITS must accurately detect traffic and traffic operational conditions throughout the Project limits, and clearly communicate relevant and useful travel information to the people using the facility.

TxDOT may already be operating an ITS network that will need to connect to the new system provided by the Developer. The Project ITS must be compatible with such in-place system(s) that TxDOT and other agencies (including other developers) are currently operating. Effective ITS planning and implementation will require significant coordination by the Developer with TxDOT and other Governmental Entities that have roadways within or intersecting the Project.

### 17.2 Design Requirements

Developer shall provide a complete and operational ITS network throughout the Project that is expandable as capacity is increased along the Project roadways, utilizes hardware and software components consistent and compatible with TxDOT in the manner described in this Section 17.2 and the other affected Governmental Entities, resistant to weather encountered in the Project area, and places components in locations that are not hazardous to people using the facility.

Subject to the specific requirements of this Section 17, Developer shall determine the number and specific locations of all ITS components.

Developer shall provide safe ingress/egress areas and structures to accommodate authorized personnel access to ITS components for maintenance and operation activities.

#### 17.2.1 ITS Communications Requirements

Developer shall provide a communications network that has redundant routing capabilities. The communications network shall serve the highway ITS components along the highway Elements of the Project. Where necessary, as determined by TxDOT, Developer shall provide communication node buildings and cabinets to support the communications network.

#### 17.2.2 Conduit

Developer shall determine the type, quantity, and design, of the conduit above and below ground, ground boxes, and all communication cable and electrical conductors to support the ITS network and operations.

Developer shall repair each communication cable or electrical conductor that is severed or otherwise rendered not usable.

#### 17.2.3 CCTV Cameras

Developer shall provide CCTV cameras for Incident verification and traffic management.

##### 17.2.3.1 Equipment

Developer shall provide all necessary CCTV equipment, including cameras, camera controls, cables, and connections.

Developer shall provide a digital video format and communications protocol at all connections with TxDOT systems. The format and protocol provided by the Developer shall be compatible with systems in use by TxDOT, and if necessary convertible for use by TxDOT's in-place ITS network.

##### 17.2.3.2 Placement

Developer shall provide overlapping roadway coverage by CCTV cameras for all highway lanes to provide redundant camera field of view. CCTV cameras shall be placed to enable the Developer or

TxDOT to monitor traffic conditions on highway lanes, frontage roads, connecting facilities, and entrance and exit ramps, and messages displayed on any remotely-controlled dynamic message signs in the Project area. To provide a stable video image, Developer shall mount cameras on dedicated structures unless otherwise approved by TxDOT.

### **17.2.3.3 Video Requirements**

Developer shall provide state-of-the-art CCTV cameras that meet the requirements of this Section 17.2.3.3. Should any CCTV cameras fail to meet any of the following criteria, Developer shall replace such cameras within 48 hours of discovery of lack of compliance.

- Solid state design with digital signal processing (DSP) for digital zoom
  - for auto/manual long-term integration (exposure) control, with built-in frame buffer
  - for auto-focus; for built-in I.D. generator, with white letters and black outline
- Conformance to a minimum of NTSC video output and EIA-170A standards
- No less than 30 frames per second (fps) color
- Able to produce clear, low-bloom, low-lag video pictures under all conditions, from bright sunlight to nighttime scene illumination of 0.02 foot-candles
- Maintenance of color quality by a continuous, through-the-lens, automatic, white balance for color temperatures from 2850 degrees Kelvin to greater than 5100 degrees Kelvin, with less than 10 IRE units unbalance
- Aspect ratio of 4:3
- Zero geometric distortion
- Signal to noise distortion of 55 dB with AGC off
- Built-in auto focus and auto iris
- Overexposure protection to prevent permanent damage to cameras when pointed at strong light sources, including the sun, for brief periods of time

### **17.2.3.4 Operating Requirements**

Developer shall provide cameras with built-in heaters, mounting structure, and related equipment capable of operating within the following weather conditions:

- Wind load of 80 mph without permanent damage to mechanical and electrical equipment
- Ambient temperature range of -35 degrees Fahrenheit to +130 degrees Fahrenheit
- Relative humidity range not to exceed 95 percent within the temperature range of +40 degrees Fahrenheit to +110 degrees Fahrenheit
- Humidity range of 0 to 100 percent condensing

### **17.2.3.5 Control Requirements**

Developer shall provide cameras and related equipment capable of operating with the following pan-tilt unit requirements:

- Vertical movement of + 40 degrees to – 90 degrees
- Horizontal movement of 360 degrees
- Tilt speed of 20 degrees per second
- Pan speed of 100 degrees per second
- Simultaneous pan and tilt
- RS-232 serial communications

### **17.2.4 Vehicle Detection**

Developer shall provide permanent detection in each highway lane of the Project that measures vehicle classification, vehicular volume, lane occupancy, and speed information on the roadway. The detectors shall be non-intrusive to the roadway users. Spacing for the permanent vehicle detection shall be no

greater than 0.75 miles in each highway lane in the Project, or, at a minimum, provide one detector in each highway lane between interchanges.

Developer may attach detection units to existing structures with prior concurrence from TxDOT. Where an existing structure is not available, or in lieu of attaching the detection unit to an existing structure, Developer shall install a mounting pole solely for the vehicle detector. Any mounting poles placed specifically for ITS items shall conform to TxDOT specifications for CCTV mounting poles

### ***17.2.5 Dynamic Message Signs (DMS)***

Developer shall provide a comprehensive network of electronic DMS.

Developer shall position each DMS to allow motorists to safely view the messages being displayed. Developer shall locate the DMS to comply with large guide sign spacing.

DMS shall be used to inform motorist of the availability of alternate routes, and to advise travelers of adverse road conditions and congestion. DMS shall be placed to provide a driver-friendly sign-viewing angle at each DMS location.

### ***17.2.6 Lane Control Signals (LCS)***

Developer shall place LCS over through travel lanes on existing or proposed overhead sign structures. Maximum spacing of LCS shall not exceed one mile.

## **17.3 Construction Requirements**

### ***17.3.1 General***

Developer shall notify TxDOT 30 days in advance of making connections to the existing TxDOT system.

Developer shall maintain existing ITS communications functionality during construction activities.

### ***17.3.2 Salvaging Existing Items***

TxDOT reserves the right to require the Developer, at any time to salvage and deliver to a location designated by TxDOT within the TxDOT District in which the Project is located, any TxDOT-owned equipment and materials in an undamaged condition. TxDOT reserves the right to require the Developer to salvage and deliver to a reasonable location designated by TxDOT any ITS equipment and materials in an undamaged condition.

### ***17.3.3 Existing ITS Relocation***

Developer shall relocate any existing ITS components, including hubs, satellite buildings, CCTV cameras, DMSs, detection devices, and fiber-links, as required to continue service from the existing components. Developer shall sequence construction and relocation of existing ITS components, facilities, and systems to prevent lapses in TxDOT's receipt of video or data within the Project area. The existing physical links and the proposed physical links shall be in separate physical conduits.

Before removing existing ITS items and before beginning construction of segments without existing ITS, Developer shall perform all activities necessary to maintain system operations during construction, including installing new ITS items, relocating or replacing existing ITS items, and connecting such ITS items to the existing network.

## 18 TRAFFIC CONTROL

### 18.1 General Requirements

Developer shall design, construct, operate and maintain the Project, in conformance with the requirements stated in this Section 18.

### 18.2 Administrative Requirements

#### 18.2.1 Traffic Management Plan

Developer shall prepare and implement a Traffic Management Plan (TMP) that includes the following items:

- Descriptions of the qualifications and duties of the traffic engineering manager and other personnel with traffic control responsibilities
- Procedures to identify and incorporate the needs of transit operators, Utility Owners, Governmental Entities, local governmental agencies, Emergency Service providers, school districts, business owners, and other related Users, Customer Groups or entities in the Project corridor and surrounding affected areas
- Procedures for obtaining acceptance of detours, road and lane closures and other traffic pattern modifications from applicable Governmental Entities, and implementing and maintaining those modifications
- Process for signing transitions during construction from one stage to the next and from interim to permanent signing
- Procedures for maintenance and replacement of traffic control devices, including pavement markings and traffic barriers, if used
- Process to regularly evaluate and modify, if necessary, traffic signal timings, and the procedures for the development, TxDOT approval, implementation, testing, and maintenance of all affected signals
- Procedures to coordinate with the appropriate Governmental Entities operating signal networks along the Project or Project detour routes to insure temporary system compatibility, establish responsibilities for temporary signal installation, maintenance, operation and removal, and coordinate traffic signal timing with local signal networks
- Procedures and process for the safe ingress and egress of construction vehicles in the work zone
- Provisions to provide continuous access to established truck routes and Hazardous Material (HazMat) routes, and to provide suitable detour routes, including obtaining any approvals required by the appropriate governmental entities for these uses
- Procedures to modify plans as needed to adapt to current Project circumstances
- Procedures to communicate TMP information to the Developer's public information personnel and notify the public of maintenance of traffic issues in conjunction with the requirements of Book 2, Section 3
- Descriptions of contact methods, personnel available, and response times for any deficiencies or Emergency conditions requiring attention during off-hours.

The TMP must be approved by TxDOT prior to the start of construction activities Developer shall provide TxDOT sufficient time for review of, and comment on, the TMP. TxDOT retains the right to require revision and re-submittal of the TMP within a reasonable amount of time.

## **18.3 Design Requirements**

### **18.3.1 Traffic Control Plans**

Developer shall use the procedures in the TMP and the standards of the TMUTCD to develop detailed traffic control plans which provide for all construction stages and phasing, as well as all required switching procedures.

Developer shall produce a traffic control plan for each and every phase of Work which impacts traffic and involves traffic control details. Each traffic control plan shall be submitted to TxDOT for review a minimum of 10 Days prior to implementation. The traffic control plan shall include details for all detours, traffic control devices, striping, and signage applicable to each phase of construction. Information included in the traffic control plans shall be of sufficient detail to allow verification of design criteria and safety requirements, including typical sections, alignment, striping layout, drop off conditions, and temporary drainage. The traffic control plans shall clearly designate all temporary reductions in speed limits. Changes to posted speed limits will not be allowed unless specific prior approval is granted by TxDOT.

Opposing traffic on a normally divided roadway shall be separated with appropriate traffic control devices as described in Section 18 of Book 2.

Developer shall maintain signing continuity on all active roadways within or intersecting the Project at all times.

Throughout the duration of the Project, Developer shall ensure all streets and intersections remain open to traffic to the greatest extent possible by constructing the Work in stages. Developer shall maintain access to all adjacent streets and shall provide for ingress and egress to public and private properties at all times during the Project.

Developer shall prepare public information notices, in coordination with Section 3, in advance of the implementation of any lane closures or traffic switches. These notices shall be referred to as Traffic Advisories.

## **18.4 Construction Requirements**

Construction shall be in accordance with the Developer's Traffic Management Plan, the manufacturer's directions or recommendations where applicable, and the applicable provisions of the TMUTCD.

### **18.4.1 Developer Responsibility**

If at any time TxDOT determines the Developer's traffic control operations do not meet the intent of the Traffic Management Plan or any specific traffic control plan, Developer shall immediately revise or discontinue such operations to correct the deficient conditions.

Developer shall provide TxDOT the names of the Traffic Control Coordinator and support personnel, and the phone number(s) where they can be reached 24 hours per day, seven days per week.

### **18.4.2 Access**

Existing bicycle and pedestrian access and mobility shall be maintained parallel to the Frontage Roads and across all cross streets. Access to existing transit stop locations shall be maintained during construction or reasonable alternative locations shall be provided.

### **18.4.3 Detours**

Developer shall maintain all detours in a safe and traversable condition. A pavement transition, suitable for the posted speed of the section shall be provided at all detour interfaces.



## 19 Maintenance

### 19.1 General Requirements

Developer shall maintain the Project in a manner that provides a safe and reliable transportation system for improved mobility.

#### 19.1.1 General Maintenance Obligations

Developer shall take all necessary actions to achieve the following:

- Maintain the Project and Related Transportation Facilities in a manner appropriate for a facility of the character of the Project.
- Minimize delay and inconvenience to Users and, to the extent Developer is able to control, users of Related Transportation Facilities.
- Identify and correct all Defects and damages from Incidents
- Monitor and observe weather and weather forecasts to proactively deploy resources to minimize delays and safety hazards due to heavy rains, snow, ice or other severe weather events.
- Remove debris, including litter, graffiti, animals, and abandoned vehicles or equipment from the Project ROW.
- Minimize the risk of damage, disturbance to or destruction of third party property during the performance of maintenance activities.
- Coordinate with and enable TxDOT and others with statutory duties or functions in relation to the Project or Related Transportation Facilities to perform such duties and functions.
- Perform systematic Project inspections, periodic maintenance, and routine maintenance in accordance with the provisions of Developer's Maintenance Management Plan and Developer's Safety Plan.

Developer is responsible for providing all resources necessary for the performance of all activities in the Maintenance Management Plan.

### 19.2 Maintenance Management Plan (MMP)

Developer shall prepare a Maintenance Management Plan (MMP) that is consistent with the general maintenance obligations described in Section 19.1 and defines the process and procedures for the maintenance of the Project for the Term of the Agreement. The MMP shall include performance requirements, measurement procedures, and threshold values at which maintenance is required for each physical Element of the Project in accordance with Section 19.4, including impacts to Related Transportation Facilities. Inspection procedures and frequencies, and subsequent maintenance to address noted deficiencies of the physical Elements shall also be included, in accordance with the requirements of Section 19.5. The MMP shall identify response times to mitigate hazards, permanently remedy, and permanently repair Defects, which shall, at a minimum, be in accordance with the Performance and Measurement Table Baseline. Developer shall differentiate response times for Defects that require prompt attention due to immediate or imminent damage or deterioration, excluding those items which have no impact on any parties other than Developer, and response times for other Defects. Developer shall update this plan as required, or at least annually.

Developer shall submit the MMP to TxDOT for review and approval at least 60 Days prior to the issuance of NTP2. Approval by TxDOT of the MMP shall be a condition of NTP2.

The MMP shall include procedures for managing records of inspection and maintenance activities, including appropriate measures for providing protected duplication of the records. Inspection and maintenance records shall be kept for the Term of the Agreement and shall be provided to TxDOT at the time the Project is delivered to TxDOT, at either the expiration of the Term or earlier termination of the Agreement.

## **19.3 Highway Location and Data Requirements**

### **19.3.1 Texas Reference Marker System (TRMS)**

Developer shall implement the Texas Reference Marker System.

### **19.3.2 Establishment of Auditable Sections**

Developer shall establish Auditable Sections referenced to the Texas Reference Marker System. Developer shall prepare plans identifying the Auditable Sections and shall submit to TxDOT for approval as a condition of NTP2. The plans shall identify the boundaries of each Auditable Section and shall cross reference to an inventory describing each Element of the Facility contained within each Auditable Section.

### **19.3.3 Maintenance Management Information System (MMIS)**

Developer shall implement a computer based Maintenance Management Information System (MMIS) to record inventory, failures, repairs, maintenance activities and inspections performed. Developer shall enter all of the physical Elements into the MMIS with Element identifications (IDs) consistent with those descriptions and units of measure used by TxDOT. All information shall be recorded in a consistent manner and shall be searchable by individual attribute.

The MMIS shall include relevant physical Element information including but not limited to, location, equipment nomenclature, serial number, name, date of installation, technician ID, type of failure, date-time of failure, date-time of response to the site and date-time time returned to service, preventive maintenance work, scheduled work, work repair code, failure and repair history, and statistical data on Mean Time Between Failure (MTBF) and Mean Time To Repair (MTTR). The MMIS shall be configured to report work by TxDOT function code, physical Element, reference marker, crew and unit of measurement.

The MMIS shall be capable of reporting system performance on a geographical basis to demonstrate compliance with operational and maintenance requirements. The MMIS shall incorporate a Geographical Information System (GIS), which shall use the same database engine as the MMIS and shall use the MMIS for display of physical Element information. All physical Elements shall be recorded on the MMIS. The physical Element locations are to be accurate to within one foot in 100 feet. The information displayed geographically shall include pavement condition measurements, maintenance limits, average daily traffic and truck counts, work performed by roadway segment, type of work, crew/contractor, etc., and any other information relevant to the construction, operation, maintenance and renewal of the facility.

When a physical Element is constructed, installed, maintained, inspected, modified, replaced or removed, the MMIS shall be updated within three days of completion of such work. Defects shall be recorded on the MMIS within 3 days of them coming to the attention of Developer. All other recording requirements shall be recorded on the MMIS within 15 days of completion or occurrence of the relevant activity.

The MMIS shall be fully populated and operational prior to the Service Commencement date and kept updated and operational for the duration of the Agreement. Developer shall provide equipment, facilities and training necessary to permit remote, real-time, dedicated high-speed access to the MMIS, via one terminal each, for TxDOT and the Independent Engineer. Developer shall handover the MMIS and everything required for its operation to TxDOT, or other entity as directed by TxDOT, upon expiration or earlier termination of the Agreement and Lease.

## **19.4 Performance Requirements**

In the Maintenance Management Plan (MMP), Developer shall set forth annually, for TxDOT approval, a Performance and Measurement Table which shall, except where indicated below, be consistent with Performance and Measurement Table Baseline.

The first such submittal of the Performance and Measurement Table shall be submitted for TxDOT approval as a condition of NTP2. The Performance and Measurement Table shall set forth the following information:

Heading in Attachment 19-1A - Performance and Measurement Table Baseline	Contents of Developer's submitted Performance and Measurement Table
Element	As Attachment 19-1A
Element Category	As Attachment 19-1A
Performance Requirements	As Attachment 19-1A
Response to Defects	As Attachment 19-1A
Inspection and measurement method	Subject to proposed amendment by Developer as part of annual submittal of MMP
Measurement record	Subject to proposed amendment by Developer as part of annual submittal of MMP
Target	As Attachment 19-1A

In its annual submittals of the Performance and Measurement Table, Developer shall propose for TxDOT's approval such amendments to the inspection and measurement methods and measurement records as are necessary to cause these to comply with Good Industry Practice and the Technical Provisions.

Within these Technical Provisions, reference to the Performance and Measurement Table means the latest approved version of the Performance and Measurement Table as included within Developer's MMP.

Failure to meet a Performance Requirement, whether through failure to meet the Target for any relevant measurement record, or for any other reason, shall be deemed to be a Defect. Whenever a Defect is identified, either by Developer's inspections, by TxDOT, by the Independent Engineer or any third party, Developer shall act to remedy and repair the Defect as described in the following section.

## 19.5 Inspections

Developer shall cause trained and competent personnel to plan and implement a program of inspections of the Project which:

- Verifies the continuing safety of the Project for Users.
- Prioritizes Defects requiring immediate and urgent attention because they are likely to create a danger or serious inconvenience to Users (Category 1 Defects).
- Identifies Category 2 Defects to be included for repair either within Developer's annually recurring highway maintenance and repair program or as Renewal Work.
- Is responsive to reports or complaints received from Customer Groups.
- Takes account of Incidents and Emergencies affecting the Project.
- Monitors the effects of extreme weather conditions.
- Collates data to monitor performance of the Project and to establish priorities for future maintenance operations and Renewal Work.

Developer shall ensure that personnel performing inspections of road pavements and structures are certified as inspectors and/or raters in accordance with the Technical Documents.

### **19.5.1 Inspection Frequency**

Developer shall establish inspection procedures and carry out inspections so that:

- All Category 1 Defects are identified and repaired such that the hazard to Users is mitigated within the period given in the column entitled “Category 1 Hazard Mitigation” in the Performance and Measurement Table.
- All Category 1 Defects are identified and permanently remedied within the period given in the column entitled “Category 1 Permanent Remedy” in the Performance and Measurement Table.
- All Category 2 Defects excluding those items which have no impact on any parties other than Developer are identified and permanently repaired within the period given in the column entitled “Category 2 Permanent Repair” in the Performance and Measurement Table.

The periods stated in the Performance and Measurement Table under each of the above headings shall be deemed to start upon the date Developer first obtained knowledge of, or first reasonably should have known of, the defect. For this purpose Developer shall be deemed to first obtain knowledge of the failure not later than the date of delivery of the initial notice to Developer. Developer shall investigate reports and complaints on the condition of the Project received from all sources. Developer shall record these as O&M Records together with details of all relevant inspections and actions taken in respect of Defects, including temporary protective measures and repairs.

### **19.5.2 Inspection Standards**

In performing inspections to identify Category 1 and Category 2 Defects, Developer shall, for any Element defined in the column entitled “Element” on the Performance and Measurement Table, conform at a minimum to the inspection standards set forth for that Element in the column entitled “Inspection and Measurement Method” on the Performance and Measurement Table.

### **19.5.3 General Inspections**

Developer shall perform General Inspections in accordance with the MMP so that the repairs of all Defects are included in planned programs of work.

O&M Records in respect of General Inspections shall include details of the manner of inspection (e.g. center lane closure or shoulder), the weather conditions and any other unusual features of the inspection.

General Inspections shall be performed such that Category 2 Defects are identified and repaired within the period shown in the Performance and Measurement Table or, if the defect is not specified in the Performance and Measurement Table, within six months of the Defect occurring; provided that Defects which require special equipment to identify or are listed under the heading of Specialist Inspections in Section 19.1 below may have different identification periods.

### **19.5.4 Specialist Inspections**

Developer shall undertake Specialist Inspections for Elements listed in Table 19-1A below and shall include the inspection results as O&M Records.

**Table 19-1A – Specialist Inspections**

<b>Element</b>	<b>Frequency</b>
Roadway	Annual survey of pavement condition for the entire Facility, including main lanes, ramps, and frontage roads, undertaken using automated condition survey equipment to measure all necessary criteria including: ruts, skid resistance and ride quality according to the inspection and measurement methods set forth in the Performance and Measurement Table.

Element	Frequency
Bridges	Inspections and load rating calculations at the frequency specified in the Technical Documents. In addition, NBIS inspections as per FHWA regulations and at the frequency specified in FHWA regulations.
Electrical supplies to lighting, signs, traffic signals and communications equipment	Inspections as required by FHWA or electrical regulations.
Toll equipment	Inspections as required by the equipment manufacturer.

### **19.5.5 Developer Audit Inspections**

Developer shall undertake detailed inspections of randomly selected Auditable Sections for audit purposes (the "Developer's Audit Inspections") at least once quarterly. On each occasion that a Developer's Audit Inspection is undertaken, it shall include at least five percent of the total available Auditable Sections. Developer shall assess the condition of each Element of the Project, as set forth in the column entitled "Element" on the Performance and Measurement Table using the inspection and measurement method set forth in the column entitled "Inspection and Measurement Method". Developer's Audit Inspections shall include physical inspection of those Elements that are safely accessible without traffic control. Where the measurement method would require specialist equipment or would require traffic lane closures to implement, Developer shall assess the condition of the relevant Element by reference to the current O&M Records held in Developer's database.

Developer shall create a new O&M Record for each Element physically inspected in accordance with the column entitled "Measurement Record" on the Performance and Measurement Table. Developer's Audit Inspections shall be undertaken to a schedule agreed with the Independent Engineer on Auditable Sections randomly selected by the Independent Engineer. The Independent Engineer shall be given the opportunity by seven days notice, to accompany Developer when it undertakes the physical inspections associated with the Audit Inspection.

In taking over operations and maintenance of existing facilities Developer shall establish the Asset Condition Score for the existing facilities by initiating Audit Inspections of existing facilities 90 days after NTP 2. TxDOT will make available any Maintenance Records in their possession that will assist in establishing the Asset Condition.

### **19.5.6 Asset Condition Score by Developer**

Within ten days of the quarterly Developer's Audit Inspections, Developer shall assess its achievement of the Performance Requirements by self scoring against the Targets set forth on the Performance and Measurement Table.

Developer shall report quarterly to TxDOT and the Independent Engineer an Asset Condition Score to include, for each Element Category, all of the Auditable Sections inspected in the most recent Developer's Audit Inspection. Developer shall assess the Asset Condition Score according to the measurement criteria set forth in Table 19-1B below.

**Table 19-1B Asset Condition Score Criteria for Element Categories**

(Reported quarterly for each Element Category for all inspected Auditable Sections)

Score	Criteria
5	<ul style="list-style-type: none"> <li>Targets for individual Elements are almost entirely met (95% to 100% compliance with the relevant Targets for each Element within each Auditable Section), and</li> <li>Is fully functional and in nearly new condition, meeting or exceeding Performance Requirement.</li> </ul>
4	<ul style="list-style-type: none"> <li>Targets for individual Elements are substantially met (90% or greater compliance with the relevant Targets for each Element within each Auditable Section), and</li> <li>Is functional and in good condition, meeting Performance Requirement.</li> </ul>
3	<ul style="list-style-type: none"> <li>Targets for individual Elements are mostly met (80% or greater average compliance with the relevant Targets for each Element within each Auditable Section), and</li> <li>Is in fair condition, but suggesting need for early replacement, renewal or repair of individual Element and/or maintenance or operation improvement action to meet Performance Requirement.</li> </ul>
2	<ul style="list-style-type: none"> <li>Targets for individual Elements are barely met (Less than 75% average compliance with the relevant Targets for each Element within each Auditable Section), or</li> <li>In poor condition demonstrating need for immediate replacement, renewal or repair of individual Element and/or immediate change to PMP.</li> </ul>
1	<ul style="list-style-type: none"> <li>Targets for individual Elements are not met (less than 50% average compliance with the relevant Targets for each Element within each Auditable Section), or</li> <li>In very poor condition demonstrating need for immediate replacement, renewal or repair of individual Element and/or immediate change to PMP.</li> </ul>

## Notes to Table 19-1B:

- The Asset Condition Score for any Element Category is calculated as the lowest compliance score for any Element within the Element Category. The calculation of percentage compliance is demonstrated by the following example:  
Assume there are 520 Auditable Sections, of these 5%, or 26 are audited each quarter. There are eight Targets to be assessed for Element “pavement markings”. There are therefore,  $8 \times 26 = 208$  measurement records for pavement markings. If 200 of these measurement records meet the Target, there would be 96% compliance and a score of five assigned for that Element. However, if one of the remaining Elements in the Element Category achieves only 90% compliance, the Asset Condition Score would be four.
- The mean compliance score across elements in any Element Category is calculated to 1 decimal point and also recorded.
- Where a measurement record relates to a service measured over time or an Element that is not represented in more than 25% of Auditable Sections then the score will be based on the total service and not a 5% random sample. This applies to the performance measurement of Element Categories; Structures, Traffic Signals, Incident Response, Customer Service, Snow and Ice

Control, Facility Buildings and Toll Equipment or other Element Categories meeting the above criteria identified following establishment of the Auditable Sections.

4. Pavement Condition Score is a component of Asset Condition Score for Element Category “Pavement”, but Pavement Condition Score shall also be reported annually for the entire Project.
5. Developer acknowledges that Asset Condition Score is a mechanism to benchmark the performance of the Project against the performance of other similar facilities and that TxDOT may, during the Term, alter the Asset Condition Score criteria to reflect Good Industry Practice.

Each Asset Condition Score of less than three or mean Element compliance score of less than 3.5 (for any Element Category) is deemed a Noncompliance, see Exhibit 17 of the Agreement.

Where specific measurement criteria are not provided in the Performance and Measurement Table, Developer shall use Good Industry Practice to assess the Asset Condition Score against the general criteria stated in the table above.

## **19.6 Handback Requirements**

Developer shall prepare a plan (“Handback Plan”) that contains the methodologies and activities that will be undertaken or employed to ensure that the Handback Requirements in the Agreement are achieved at the end of the Term of the Agreement. Developer shall submit the Handback Plan, including a Residual Life Methodology plan, to TxDOT for and review and approval at least 60 months before the anticipated expiration of the Term or earlier termination of the Agreement.

Developer shall perform all inspections and work necessary to meet or exceed the Residual Life requirements contained in Table 19-2 by the time of Handback of the Project to TxDOT.

Not later than 90 days before delivery of the Project to TxDOT, Developer shall perform a final Residual Life Inspection that covers all physical Elements within the Project, whether or not Renewal Work has been performed for a particular Element.

Within 30 days following performance of the final Residual Life Inspection, Developer shall submit to TxDOT, for review and approval, the findings of the inspection, Residual Life test results, and Residual Life calculations.

At the point of Handback, Developer shall certify that all physical Elements of the Project comply with the Residual Life requirements defined in the Agreement.

For any Element of the Project for which a required final Residual Life is not specified in the following Table 19-2, the Element shall have a required final Residual Life equal to the documented serviceable life of the Element or five years, whichever is less.

Table 19-2

Element Category	Required Final Residual Life (yrs)	Element Category	Required Final Residual Life (yrs)	Element Category	Required Final Residual Life (yrs)
<b>Structures</b>		<b>Road Pavement</b>		<b>Ancillary</b>	
Reinforced concrete	50	Main lanes	10	Earthwork slopes	50
Pre-stressed concrete	50	Ramps/direct connectors	10	Metal beam guard rail	10
Structural steelwork	50	Frontage/access roads	10	Concrete barrier	20
Weathering steel	50	Toll plaza approaches	10	Impact attenuators	10
Corrugated steel	50	Local/collector roads	10	Lighting columns	10
Corrosion protection for structural steelwork	10	High mast lighting	10	Overhead signs	10
Deck surfacing	10			Traffic signal housings and mountings	10
Deck joints	10	<b>Building and Maintenance Facilities</b>	25	Fences	10
Bearings	30			Manhole covers, gratings, frames, and boxes	50
Railing	50	<b>Toll Collection and TM Facilities</b>		curbs and gutters	10
Sign / signal gantries	50			Lanterns (lamps/luminaires)	
Retaining walls	50	<b>Drainage</b>		Roadside traffic signs	
Noise Walls	50	Underground storm sewer systems	50	Pavement markings	
Traffic signal poles	10	Culverts	50	Delineators	
High mast lighting	10	Ditches	10		
		Inlets	50		



## **Attachment 19-1A**

# **Texas Department of Transportation Technical Provisions Performance and Measurement Table Baseline**

**Performance and Measurement Table Baseline**

ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
<b>1) ROADWAY</b>									
				Unless stated otherwise, measurements shall be conducted using procedures, techniques, and measuring equipment consistent with TxDOT's Pavement Management Information System Rater's Manual Unless otherwise stated pavement performance measurement records relate to 0.5 mile sections as described in the PMIS Rater's Manual.					
	1.1	Obstructions and debris	Roadway and clear zone free from obstructions and debris	2 hrs	N/A	N/A	Visual Inspection	Number of obstructions and debris	Nil
	1.2	Pavement	All roadways have a smooth and quiet surface course (including bridge decks, covers, gratings, frames and boxes) with adequate skid resistance and free from Defects.	24 hrs	28 days	6 months	a) <b>Pavement Condition Score</b> Measurements and inspections necessary to derive Pavement Condition Score	Pavement Condition Score for 80% of Auditable Sections exceeding: • Mainlanes and ramps – 90 • Frontage roads - 80	100% 100%
								Pavement Condition Score for each Auditable Section exceeding: • Mainlanes and ramps – 80	100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 2	Cat 3			
				Cat 1 Hazard Mitigation	Cat 2 Permanent Repair				
							<ul style="list-style-type: none"> <li>Frontage roads – 70</li> </ul>	100%	
							<p><b>b) Ruts – Mainlanes, shoulders &amp; ramps</b> Depth as measured using an automated device in compliance with TxDOT Standards.</p> <p>10ft straight edge used to measure rut depth for localized areas.</p> <p><b>c) Ride quality</b> Measurement of International Roughness Index (IRI) according to TxDOT standard Tex-1001-S, Operating Inertial Profilers and Evaluating Pavement Profiles</p>	<p>Percentage of wheel path length with ruts greater than ¼” in depth in each Auditable Section</p> <ul style="list-style-type: none"> <li>Mainlanes, shoulders and ramps – 3%</li> <li>Frontage roads – 10%</li> </ul> <p>Depth of rut at any location greater than 0.5”</p>	<p>Nil</p> <p>Nil</p> <p>Nil</p>
							<p>For 80% of all Auditable Sections measured, IRI throughout 98% of each Auditable Section is less than or equal to:</p> <ul style="list-style-type: none"> <li>Mainlanes, ramps – 95*** inches per mile</li> <li>Frontage roads – 120*** inches per mile</li> </ul>	<p>100%</p> <p>100%</p>	

Performance and Measurement Table Baseline								
ELEMENT CATEGORY	REF ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
			Cat 1	Cat 2	Cat 1 Permanent Mitigation			
	1.2 cont		24 hrs	28 days	6 months	<p>** To allow for measurement bias, an adjustment of -10 (minus ten) is made to IRI measurements for concrete pavements before assessing threshold compliance.</p> <p>(Renewal Work and new construction subject to construction quality standards)</p> <p>3ft straight edge used to measure discontinuities</p>	<p>IRI measured throughout 98% of Auditable Section of less than or equal to:</p> <ul style="list-style-type: none"> <li>Mainlanes, ramps 120** inches per mile</li> <li>Frontage roads – 150** inches per mile</li> </ul> <p>Mainlanes, ramps, 0.1 mile average – 150** inches per mile</p> <p>Frontage roads, 0.1 mile average – 180** inches per mile</p> <p>IRI measured throughout 98% of each lane containing a bridge deck in any Auditable Section , 0.1 mile average – 200** inches per mile</p> <p>Individual discontinuities greater than 0.75”</p>	<p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p> <p>Nil</p>
			<p><b>d) Failures</b> Instances of failures exceeding the failure criteria set forth in</p>			<p>Occurrence of any failure</p>	Nil	

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 1	Cat 2			
				Hazard Mitigation	Permanent Remedy	Permanent Repair			
							the TxDOT PMIS Rater's Manual, including potholes, base failures, punchouts and jointed concrete pavement failures		
				24 hrs	28 days	6 months	<b>e) Edge drop-offs</b> Physical measurement of edge drop-off level compared to adjacent surface	Instances of edge drop-off greater than 2" (Number)	Nil
							<b>f) Skid resistance</b> ASTM E 274 Standard Test Method for Skid Resistance Testing of Paved Surfaces at 50 MPH using a full scale smooth tire meeting the requirements of ASTM E 524 .	<ul style="list-style-type: none"> <li>Mainlanes, shoulders and ramps – Number of sections investigated as to potential risk of skidding</li> <li>appropriate remedial action taken where average Skid Number for 0.5 mile section of mainlanes, shoulders and ramps are in excess of 30.</li> </ul>	100%
								<ul style="list-style-type: none"> <li>Frontage roads –Number of sections investigated as to potential risk of skidding</li> <li>accident and appropriate remedial action taken where average Skid Number for 0.5 mile section of frontage roads is in excess of 30.</li> </ul>	100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 1 Hazard Mitigation	Cat 2 Permanent Repair			
				24hrs	7days	N/A		<ul style="list-style-type: none"> <li>When the Skid Number is below 25 and/or when required by the Wet Weather Accident Reduction Program, areas categorized as high risk, the Concessionaire shall perform a site investigation and perform required corrective action.</li> </ul>	100%
			Road users warned of potential skidding hazards	24hrs	7days	N/A	<b>Skid resistance</b> (as above)	Instances where road users warned of potential skidding hazard where remedial action is identified.	100%
	1.3	Crossovers and other paved areas	Crossovers and other paved areas are free of Defects	24 hrs	28 days	6 months	<b>a) Potholes</b>  <b>b) Base failures</b>	Potholes of low severity or higher (Number)  Base failures of low severity or higher (Number)	Nil  Nil
	1.4	Joints in concrete	Joints in concrete paving are sealed and watertight  Longitudinal joint separation	24 hrs	28 days	6 months	Visual inspection of joints  Measurement of joint width and level difference of two sides of joints	Length unsealed joints greater than ¼”  Joint width more than 1” or faulting more than ¼”	Nil  Nil

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 2	Cat 1			
	1.5	Curbs	Curbs are free of defects	24 hrs	28 days	Permanent Mitigation Repair	Visual inspection	Length out of alignment	Nil

\* - Items in these columns shall be reviewed annually by Developer as part of the MMP to comply with Technical Documents and/or Good Industry Practice.

2) DRAINAGE									
2.1		Pipes and Channels	Each element of the drainage system is maintained in its proper function by cleaning, clearing and/or emptying as appropriate from the point at which water drains from the travel way to the outfall or drainage way.	24 hrs	28 days	6 months	Visual inspection supplemented by CCTV where required to inspect buried pipe work	Length with less than 90% of cross section clear (feet)	Nil
2.2		Drainage treatment devices	Drainage treatment and balancing systems, flow and spillage control devices function correctly and their location and means of operation is recorded adequately to permit their correct operation in Emergency.	24 hrs	28 days	6 months	Visual inspection	Devices functioning correctly with means of operation displayed (Number)	100%
2.3		Travel Way	The travel way is free from water to the extent that such water would represent a hazard by virtue of its position and	24 hrs	28 days	6 months	Visual inspection of water on surface	Instances of hazardous water build-up	Nil

<b>Performance and Measurement Table Baseline</b>								
ELEMENT CATEGORY	ELEMENT REF	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
			Cat 1	Cat 2	Cat 1			
		depth.						
	2.4	Discharge systems perform their proper function and discharge to groundwater and waterways complies with the relevant legislation and permits.	24 hrs	28 days	6 months	Visual inspection and records	Non-compliances with legislation	Nil
	2.5	Named species and habitats are protected.	24 hrs	28 days	6 months	Visual inspection	Compliance with the requirement	100%
<b>3) STRUCTURES</b>								
	3.1	Structures having an opening measured along the centre of the roadway of more than 20 feet between undercopings of abutments or springlines of arches or extreme ends of openings or multiple boxes	24 hrs	28 days	6 months	Inspection and assessment in accordance with the requirements of federal National Bridge Inspection Standards (NBIS) of the Code of Federal Regulations, 23 Highways – Part 650, the TxDOT Bridge inspection Manual, and the Federal Administration’s Bridge Inspector’s Reference Manual.	Records as required in the TxDOT Bridge Inspection Manual  Occurrences of condition rating below seven for any deck, superstructure or substructure  All condition states to be one for all structure components	Nil  100%





Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 1	Cat 2			
			<p>in the Structure Maintenance Manual is followed.                      Special finishes are clean and perform to the appropriate standards.                      vii) All non-structural items such as hoists and electrical fixings, operate correctly, are clean and lubricated as appropriate, in accordance with the manufacturer's recommendations and certification of lifting devices is maintained.</p>	Hazard Mitigation	Permanent Remedy	Permanent Repair			
	3.3	Non-bridge class culverts	<p>Non-bridge-class culverts are free of:</p> <ul style="list-style-type: none"> <li>• vegetation and debris and silt</li> <li>• defects in sealant to movement joints</li> <li>• scour damage</li> </ul>	24 hrs	28 days	6 months	Visual inspection	<p>Number with vegetation, debris and silt</p> <p>Number with defects in sealant and movement joints</p> <p>Number with scour damage</p>	<p>Nil</p> <p>Nil</p> <p>Nil</p>
	3.4	Gantries and high masts	<p>Sign signal gantries, high masts are structurally sound and free of:</p> <ul style="list-style-type: none"> <li>• loose nuts and bolts</li> <li>• defects in surface protection systems</li> </ul>	24 hrs	28 days	6 months	Visual inspection	<p>Number with loose assemblies</p> <p>Number with defects in surface protection</p>	<p>Nil</p> <p>Nil</p> <p>Nil</p>

Performance and Measurement Table Baseline								
ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
			Cat 1	Cat 1	Cat 2			
				Hazard Mitigation	Permanent Repair			
		<ul style="list-style-type: none"> <li>graffiti</li> </ul>					Number with graffiti	
	3.5	Load ratings	24 hrs	28 days	6 months	Load rating calculations in accordance with the Manual for Bridge Evaluation and the TxDOT Bridge Inspection Manual. Load restriction requirements as per the TxDOT Bridge Inspection Manual	Number of load restrictions for Texas legal loads (including legally permitted vehicles)	Nil
<b>4) PAVEMENT MARKINGS, OBJECT MARKERS, BARRIER MARKERS AND DELINEATORS</b>								
	4.1	Pavement markings	24 hrs	28 days	6 months	a) Markings - General which uses 30 meter geometry meeting the requirements described in ASTM E 1710	Length meeting the minimum retroreflectivity 175 mcd/sqm/tx for white  Length meeting the minimum retroreflectivity 125 mcd/sqm/tx for yellow	100%  100%
		<ul style="list-style-type: none"> <li>Pavement markings are:                             <ul style="list-style-type: none"> <li>clean and visible during the day and at night</li> <li>whole and complete and of the correct color, type, width and length</li> <li>placed to meet the TMUTCD and TxDOT's Pavement Marking Standard Sheets</li> </ul> </li> </ul>				Physical measurement	Length with more than 5% loss of area of material at any point	Nil

Performance and Measurement Table Baseline								
ELEMENT CATEGORY	REF ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
			Cat 1	Cat 1	Cat 2			
			Cat 1 Hazard Mitigation	Cat 1 Permanent Remedy	Cat 2 Permanent Repair			
						b) Profile Markings Visual inspection	Length with spread more than 10% of specified dimensions. Length performing its intended function and compliant with relevant regulations	Nil  100%

  

\* - Items in these columns shall be reviewed annually by Developer as part of the MMP to comply with Technical Documents and/or Good Industry Practice.

4.2	Raised reflective markers	Raised reflective pavement markers, object markers and delineators are: <ul style="list-style-type: none"> <li>• clean and clearly visible</li> <li>• of the correct color and type</li> <li>• reflective or retroreflective as TxDOT standard</li> <li>• correctly located, aligned and at the correct level</li> <li>• are firmly fixed</li> <li>• are in a condition that will ensure that they remain at the correct level.</li> </ul>	24 hrs	28 days	6 months	Visual inspection	Number of markers associated with road markings that are ineffective in any 10 consecutive markers. (Ineffective includes missing, damaged, settled or sunk)  [A minimum of four markers should be visible at 80' spacing when viewed under low beam headlights]	Nil  100%
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Performance and Measurement Table Baseline								
ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
			Cat 1	Cat 2	Permanent Repair			
4.3	Delineators & Markers	Object markers, mail box markers and delineators are: <ul style="list-style-type: none"> <li>• clean and visible</li> <li>• of the correct color and type</li> <li>• legible and reflective</li> <li>• Straight and Vertical</li> </ul>	24 hrs	28 days	6 months	Visual inspection	Number of object markers or delineators defective or missing	Nil
<b>5) GUARDRAILS, SAFETY BARRIERS AND IMPACT ATTENUATORS</b>								
5.1	Guard rails and safety barriers	All guardrails, safety barriers, concrete barriers, etc.) are maintained free of Defects. They are appropriately placed and correctly installed at the correct height and distance from roadway or obstacles. Installation and repairs shall be carried out in accordance with the requirements of NCHRP 350 standards.	24 hrs	28 days	6 months	Visual inspection	Length of road restraint systems correctly installed  Length free from defects  Length at correct height  Length at correct distance from roadway and obstacle	100%  100%  100%  100%
5.2	Impact attenuators	All impact attenuators are appropriately placed and correctly installed	24 hrs	7 days	6 months	Visual inspection	Number correctly placed and installed	100%
<b>6) TRAFFIC SIGNS</b>								
6.1	General – All Signs	i) Signs are clean, correctly located, clearly visible, legible, reflective, at the correct height and free from	24 hrs	28 days	6 months	a) <b>Retroreflectivity</b> Coefficient of retro reflectivity	Number of signs with reflectivity below the requirements of TxDOT's TMUTCD	Nil

Performance and Measurement Table Baseline								
ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
			Cat 1	Cat 1 Hazard Mitigation	Cat 2 Permanent Repair			
		structural and electrical defects						
		ii) Identification markers are provided, correctly located, visible, clean and legible						Nil
		iii) Sign mounting posts are vertical, structurally sound and rust free						100%
		iv) All break-away sign mounts are clear of silt or other debris that could impede break-away features and shall have correct stub heights						Nil
* - Items in these columns shall be reviewed annually by Developer as part of the MMP to comply with Technical Documents and/or Good Industry Practice.								
6.1 cont.		v) Obsolete and redundant signs are removed or replaced as appropriate vi) Visibility distances meet the stated requirements vii) Sign information is of the correct size, location, type and wording to meet its intended purpose and any					e) <b>Sign Information</b> Visual inspection	Sign information is of the correct size, location, type and wording to meet its intended purpose 100%
							f) <b>Dynamic Message Signs</b> Visual inspection	Dynamic message signs are fully functioning 100%

Performance and Measurement Table Baseline								
ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
			Cat 1	Cat 1 Hazard Mitigation	Cat 2 Permanent Repair			
		statutory requirements viii) All structures and elements of the signing system are kept clean and free from debris and have clear access provided. ix) All replacement and repair materials and equipment are in accordance with the requirements of the TMUTCD x) Dynamic message signs are in an operational condition						
	6.2	General - Safety critical signs	2hrs	1 week	6 months	Visual inspection	Number of damaged Safety critical signs	Nil
<b>7) TRAFFIC SIGNALS</b>								
	7.1	General	2 hrs	24 hrs	6 months	a) <b>General condition</b> Visual inspection b) <b>Damage</b> Visual inspection c) <b>Signal timing</b> Timed measurements	Signals are clean and visible Signals are undamaged Installations have correct signal timings	100% 100% 100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	ELEMENT REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 2	Cat 1			
			ii) Signal timing and operation is correct iii) Contingency plans are in place to rectify Category 1 defects not immediately repairable to assure alternative traffic control is provided during a period of failure	Hazard Mitigation	Permanent Repair		d) Contingency plans Records Review	Full contingency plans are in place	100%
	7.2	Soundness	Traffic Signals are structurally and electrically sound	24 hrs	28 days	6 months	a) Structural soundness Visual inspection b) Electrical soundness Testing to meet NEC regulations	Inspection records showing safe installation and maintenance	100%
	7.3	Identification marking	Signals have identification markers and the telephone number for reporting faults are correctly located, clearly visible, clean and legible	N/A	28 days	6 months	Visual inspection	Inspection records showing identification markers and other information are easily readable	100%
	7.4	Pedestrian Elements and Vehicle Detectors	All pedestrian elements and vehicle detectors are correctly positioned and fully functional at all times	24 hrs	28 days	6 months	Visual Inspection	Inspection records showing compliance	100%

\* - Items in these columns shall be reviewed annually by Developer as part of the MMP to comply with Technical Documents and/or Good Industry Practice.



Performance and Measurement Table Baseline									
ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET	
			Cat 1	Cat 1	Cat 2				
			Cat 1 Mitigation	Permanent Remedy	Permanent Repair				
<b>8) LIGHTING</b>									
8.1	Roadway Lighting – General	i) All lighting is free from defects and provides acceptable uniform lighting quality ii) Lanterns are clean and correctly positioned iii) Lighting units are free from accidental damage or vandalism iv) Columns are upright, correctly founded, visually acceptable and structurally sound	24 hrs	28 days	6 months	a) <b>Mainlane lights operable</b> Night time inspection or automated logs  b) <b>Mainlane lights out of action</b> Night time inspection or automated logs	Number of sections with less than 90% of lights functioning correctly at all times  Instances of more than two consecutive lights out of action	Nil  Nil	
8.2	Sign Lighting	Sign lighting is fully operational	24 hrs	28 days	6 months	Night time inspection or automated logs	Instances of more than one bulb per sign not working	Nil	
8.3	Electrical Supply	Electricity supply, feeder pillars, cabinets, switches and fittings are electrically, mechanically and structurally sound and functioning	24 Hrs	7 Days	1 Month	Testing to meet NEC regulations, visual inspection	Inspection records showing safe installation and maintenance	100%	
8.4	Access Panels	All access panels in place at all times.	24 Hrs	7 Days	1 Month	Visual Inspection	Instances of missing access panels	Nil	

<b>Performance and Measurement Table Baseline</b>									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 1 Hazard Mitigation	Cat 2 Permanent Repair			
	8.5	High Mast Lighting	i) All high mast luminaries functioning on each pole ii) All obstruction lights are present and working (if required) iii) Compartment door is secure with all bolts in place iv) All winch and safety equipment is correctly functioning and maintained without rusting or corrosion (for structural requirements refer to Element Category 3)	24 hrs	48 hrs	1 Month	Yearly inspection and night time inspections or automated logs	Instances of two or more lamps not working per high mast pole  Identification of other defects	Nil  Nil
<b>9) FENCES, WALLS AND SOUND ABATEMENT</b>									
	9.1	Design and Location	Fences and walls act as designed and serve the purpose for which they were intended	24 hrs	28 days	6 months	Visual Inspection	Inspection records showing compliance	100%
	9.2	Construction	Integrity and structural condition of the fence is maintained	24 hrs	28 days	6 months	Structural assessment if visual inspection warrants	Inspection records showing compliance	100%
<b>10) ROADSIDE MANAGEMENT</b>									

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 1	Cat 2			
	10.1	Vegetated Areas – Except landscaped areas – General	<p>Vegetation is maintained so that:</p> <ul style="list-style-type: none"> <li>i) Height of grass and weeds is kept within the limits described for urban and rural areas. Mowing begins before vegetation reaches the maximum height.</li> <li>ii) Spot mowing at intersections, ramps or other areas maintains visibility of appurtenances and sight distance.</li> <li>iii) Grass or vegetation does not encroach into or on paved shoulders, main lanes, sidewalks, islands, riprap, traffic barrier or curbs.</li> </ul>	24 hrs	7 days	28 days	<p><b>a) Urban areas</b> Physical measurement of height of grass and weeds</p> <p><b>b) Rural areas</b> Physical measurement of height of grass and weeds</p> <p><b>c) Encroachment</b> Visual inspection of instances of encroachment of vegetation</p>	<p>Individual measurement areas to have 95% of height of grass and weeds between 5 in. and 18 in</p> <p>Individual measurement areas to have 95% of height of grass and weeds between 5 in. and 30 in</p> <p>Occurrences of vegetation encroachment in each auditable section</p>	100%
	10.1 cont.		<ul style="list-style-type: none"> <li>iv) A herbicide program is undertaken in accordance with the TxDOT Herbicide Manual to control noxious weeds and to eliminate grass in pavement or concrete.</li> </ul>	24 hrs	7 days	28 days	<p><b>d) Wildflowers</b> Visual Inspection with audit of process.</p>	Adherence to vegetation management manuals	100%

\* - Items in these columns shall be reviewed annually by Developer as part of the MMP to comply with Technical Documents and/or Good Industry Practice.

Performance and Measurement Table Baseline								
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS		INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 2			
				Cat 1 Hazard Mitigation	Cat 2 Permanent Repair			
			v) A full width mowing cycle is completed after the first frost.  vi) Wildflowers are preserved utilizing the guidelines in the mowing specifications and TXDOT <i>Roadside Vegetation Manual</i> .			e) <b>Sight lines</b> Visual inspection	Instances of impairment of sight lines or sight distance to signs	Nil

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 1 Mitigation	Cat 2 Permanent Repair			
	10.2	Landscaped Areas	<p>i) All landscaped areas are maintained to their originally constructed condition. Landscaped areas are as designated in the plans.</p> <p>ii) Mowing, litter pickup, irrigation system maintenance and operation, plant maintenance, pruning, insect, disease and pest control, fertilization, mulching, bed maintenance, watering is undertaken as per FMP.</p> <p>iii) The height of grass and weeds is kept between 2“ and 8”. Mowing begins before vegetation reaches 8 in</p> <p>iv) Damaged or dead vegetation is replaced.</p>	24 hrs	7 days	28 days	Visual inspection	Inspection records showing compliance	100%
	10.3	Fire Hazards	Fire hazards are controlled	24 hrs	7 days	28 days	Visual inspection	Instances of dry brush or vegetation forming fire hazard	Nil

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 1	Cat 2			
	10.4	Trees, brush and ornamentals	i) Trees, brush and ornamentals on the right of way, except in established no mow areas, are trimmed in accordance with TxDOT standards. ii) Trees, brush and ornamentals are trimmed to insure they do not interfere with vehicles or sight distance, or inhibit the visibility of signs. iii) Dead trees, brush, ornamentals and branches are removed. Potentially dangerous trees or limbs are removed. iv) All undesirable trees and vegetation are removed. Diseased trees or limbs are treated or removed by licensed contractors.	24 hrs	7 days	28 days	Visual inspection	Inspection records showing compliance	100%
	10.5	Wetlands	Wetlands are managed in accordance with the permit requirements	24 hrs	7 days	28 days	Visual inspection, assessment of permit issuers	Instances of permit requirements not met	Nil
<b>11) REST AREAS AND PICNIC AREAS</b>									

Performance and Measurement Table Baseline								
ELEMENT CATEGORY	REF ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
			Cat 1	Cat 2	Cat 2			
	11.1	Rest areas and picnic areas	24 hrs	28 days	6 months	Inspection records showing compliance	Instances where 90% of measured area shall have grass and weeds height between 2 in. and 8 in.  Mowing shall begin before vegetation reaches 8 in.	100%
		i) Picnic areas are clean and neat in appearance.  ii) Trash barrels are painted and attached to their supports to prevent stealing.	Hazard Mitigation	Permanent Repair				
	11.1 cont	iii) Site free of any visible litter, all litter properly disposed. Litter removed from the picnic area grounds and barrels before being allowed to accumulate outside of the barrels.  iv) All vehicles used in transporting litter are equipped to prevent the accumulated litter from being strewn along the roadway.	24 hrs	28 days	6 months		Number of bare ground areas larger than 5 square feet  Number of prohibited, invasive or noxious weeds present.	Nil  Nil

\* - Items in these columns shall be reviewed annually by Developer as part of the MMP to comply with Technical Documents and/or Good Industry Practice.

Performance and Measurement Table Baseline										
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET	
				Cat 1	Cat 1 Hazard Mitigation	Cat 2 Permanent Repair				
			v) Vegetation damaged due to improper or careless mowing and trimming operations or any other reason is replaced.						Occurrences of encroachment of vegetation or debris for more than two (2) inches onto any curb or sidewalk located throughout each rest area.	Nil
			vi) Weeds, grass and other undesirable growth are removed from beds of plants and shrubs as needed. Trees and shrubs are trimmed neatly. All curbs and sidewalks are edged and repaired.						Occurrences of deviation of soil or mulch above or below the top of the curb.	Nil
			vii) All picnic tables are clean, free of stains and free of any defect.						Paved surfaces maintained clean and safe with minimal obstruction.	100%
			viii) All directional, informational, safety and any other sign is properly installed, contains accurate information and is visible from a reasonable distance.						Occurrences of undermining greater than 2"	Nil
			ix) All striping is intact and all parking and travel areas are clearly marked.						Number of unsealed cracks > ½ inch.	Nil



Performance and Measurement Table Baseline								
ELEMENT CATEGORY	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
			Cat 1	Cat 1	Cat 2			
			Cat 1 Hazard Mitigation	Permanent Remedy	Permanent Repair			
		x) All curbs are in place and intact.					Number of lights fully functional.	100%
<b>12) EARTHWORKS, EMBANKMENTS AND CUTTINGS</b>								
12.1	Slope Failure	All structural or natural failures of the embankment and cut slopes of the Facility are repaired	24 hrs	28 days	6 months	Visual inspection by geotechnical specialist and further tests as recommended by the specialist	Recorded instances of slope failure	Nil
12.2	Slopes - General	Slopes are maintained in general conformance to the original graded cross-sections, the replacement of landscaping materials, reseeded and re-vegetation for erosion control purposes and removal and disposal of all eroded materials from the roadway and shoulders	24 hrs	28 days	6 months		Inspection records showing compliance	100%

\* - Items in these columns shall be reviewed annually by Developer as part of the MMP to comply with Technical Documents and/or Good Industry Practice.

**13) ITS and ETCS EQUIPMENT**

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 2	Cat 1			
	13.1	ETCS Equipment – Maintenance	All ITS and ETCS equipment is fully functional and housing is functioning and free of defects. i) All equipment and cabinet identification numbers are visible, sites are well drained and access is clear. ii) Steps, handrails and accesses are kept in a good condition. iii) Access to all communication hubs, ground boxes, cabinets and sites is clear, iv) All drainage is operational and all external fixtures and fittings are in a satisfactory condition. v) All communications cable markers, cable joint markers and duct markers are visible and missing markers are replaced. vi) Backup power supply system is available at all times	24 hrs	14 days	1 month	Visual Inspection	Inspection records showing compliance	100%
	13.2	VES Equipment - Maintenance	All VES equipment is kept clean, the identification numbers are visible.	24 hrs	14 days	1 month	Visual Inspection	Inspection records showing compliance	100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 2	Cat 1			
	13.3	Dynamic Message Sign Equipment	Dynamic Message Signs are free from faults such as: i) Any signal displaying an message which is deemed to be a safety hazard ii) Failure of system to clear sign settings when appropriate. iii) 2 or more contiguous sign failures that prevent control office setting strategic diversions iv) Signs displaying an incorrect message.	2 hrs	24 hrs	14 days	Defect measurement dependent on equipment	Inspection records showing compliance	100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 1	Cat 2			
	13.4	CCTV Equipment	CCTV Systems are free from serious faults that significantly limit the availability of the operators to monitor the area network, such as: i) Failure of CCTV Systems to provide control offices with access and control of CCTV images ii) Failure of a CCTV camera or its video transmission system. iii) Failure of a Pan / Tilt unit or its control system. iv) Moisture ingress onto CCTV camera lens v) Faults that result in significant degradation of CCTV images	2 hrs	24 hrs Hazard Mitigation Permanent Repair	14 days Permanent Repair	Defect measurement dependent on equipment	Inspection records showing compliance	100%
	13.5	Vehicle Detection Equipment	All equipment free of defects and operational problems such as; i) Inoperable loops. ii) Malfunctioning camera controllers.	2 hrs	24 hrs	1 month	Defect measurement dependent on equipment	Inspection records showing compliance Instances of loops out of compliance	100% Nil

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<b>Performance and Measurement Table Baseline</b>									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 2	Cat 1			
<b>14) TOLLING Facilities and Buildings (Not Used)</b>									
<b>15) AMENITY</b>									
	15.1	Graffiti	Graffiti is removed in a manner and using materials that restore the surface to a like appearance similar to adjoining surfaces	24 hrs	28 days	6 months	All graffiti is considered a Category 1 defect	Inspection records showing compliance	100%
<b>16) SNOW AND ICE CONTROL</b>									
	16.1	Travel lanes	Maintain travel way free from snow and ice	2hrs	N/A	N/A	Maximum 1hr response time to complete manning and loading of spreading vehicles Maximum 2hrs from departure from loading point to complete treatment and return to loading point Maximum 1hr response time for snow and ice clearance vehicles to depart from base	Inspection records showing compliance	100%
	16.2	Weather Forecasting	weather forecast information is obtained and assessed and appropriate precautionary treatment is carried out to prevent ice forming on the	2hrs	N/A	N/A	Operations plan details the process and procedures in place and followed	Inspection records showing compliance	100%

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 2	Cat 1			
			travel way						
	16.3	Operational Plans	Operate snow and ice clearance plans to maintain traffic flows during and after snowfall and restore the travel way to a clear condition as soon as possible.	2hrs	N/A	N/A	Operations plan details the process and procedures in place and followed	Inspection records showing compliance	100%
<b>17) INCIDENT RESPONSE</b>									
	17.1	General	Respond to Incidents in accordance with Section 22.	1 hr	N/A	N/A	Response times met for 98% of incidents measured on a 1 year rolling basis. No complaints from Emergency Services.	Inspection records showing compliance	100%
	17.2	Hazardous Materials	For any hazardous materials spills, comply with the requirements of Section 22.	1 hr	N/A	N/A	FMP details the process and procedures in place and followed.	Inspection records showing compliance	100%
	17.3	Structural assessment	Evaluate structural damage to structures and liaise with emergency services to ensure safe working in clearing the incident	1 hr	N/A	N/A	Inspections and surveys as required by incident	Incident reports showing compliance	100%
	17.4	Temporary and permanent remedy	Propose and implement temporary measures or permanent repairs to Defects arising from the Incident. Ensure the structural safety of any structures affected by the	24hrs	28 days	N/A	Review and inspection of the incident site	Auditable inspection records showing compliance	100%

Performance and Measurement Table Baseline								
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS		INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 2			
			incident	Hazard Mitigation	Permanent Repair			
<b>18) CUSTOMER RESPONSE</b>								
	18.1	Response to inquiries	Timely and effective response to customer inquiries and complaints.	48 hrs	28 days	N/A	Number of responses within specified times	100%

\* - Items in these columns shall be reviewed annually by Developer as part of the MMP to comply with Technical Documents and/or Good Industry Practice.

18.1 cont				48 hrs	28 days	N/A	All work resulting from customer requests is scheduled within 48 hours of customer contact. Follow-up contact with the customer within 72 hours of initial inquiry. All customer concerns/requests are resolved to TxDOT's satisfaction within 2 weeks of the initial inquiry.	
18.2	Customer contact line	Telephone line manned during business hours and 24 hour availability of messaging system. Faults to telephone line or message system rectified		24 hrs	28 days	N/A	Instances of line out of action or unmanned	Operations records showing non availability including complaints from public.
<b>19) SWEEPING AND CLEANING</b>								
								nil

Performance and Measurement Table Baseline									
ELEMENT CATEGORY	REF	ELEMENT	PERFORMANCE REQUIREMENT	RESPONSE TO DEFECTS			INSPECTION AND MEASUREMENT METHOD*	MEASUREMENT RECORD*	TARGET
				Cat 1	Cat 1	Cat 2			
	19.1	Sweeping	i) Keep all channels, hard shoulders, gore areas, ramps, intersections, islands and frontage roads swept clean, ii) Clear and remove debris from traffic lanes, hard shoulders, verges and central reservations, footways and cycle ways iii) Remove all sweepings without stockpiling in the right of way and dispose of at approved tip.	24 hrs	28 days	6 months	Buildup of dirt, ice rock, debris, etc. on roadways and bridges not to accumulate greater than 24 in. wide or 1/2 in. deep	Inspection records showing compliance	100%
	19.2	Litter	i) Keep the right of way in a neat condition, remove litter regularly ii) Pick up large litter items before mowing operations. iii) Dispose of all litter and debris collected at an approved solid waste site.	24 hrs	28 days	6 months	No more than 20 pieces of litter per roadside mile shall be visible when traveling at highway speed.	Inspection records showing compliance	100%

\* - Items in these columns shall be reviewed annually by Developer as part of the MMP to comply with Technical Documents and/or Good Industry Practice.



## 20 BICYCLE AND PEDESTRIAN FACILITIES

### 20.1 General Requirements

This Section 20 includes requirements with which Developer shall design and construct all bicycle and pedestrian facilities for the Project. Developer shall ensure the bicycle and pedestrian facilities of this Project support TxDOT's commitment to integrate bicycle and pedestrian travel into Project development. Developer shall coordinate the Elements of this Project with the existing and planned trails and other facilities of local and county administrations for pedestrians and cyclists.

### 20.2 Design Requirements

#### 20.2.1 *Bicycle Facilities*

Developer's facilities shall be consistent with the region's bicycle and pedestrian plan, and accommodate existing bicycle paths and crossings, and on-street bicycle facilities. Developer shall coordinate with Governmental Entities to ensure consistency with existing and proposed bicycle facilities.

#### 20.2.2 *Pedestrian Facilities*

Developer shall design, construct, and maintain sidewalks along the frontage roads and side streets where sidewalks currently exist and where required by State or federal regulations. Sidewalks shall comply with the *Texas Accessibility Standards*. Developer shall install pedestrian signals and curb ramps at all existing and proposed signalized intersections. All pedestrian facilities must be designed to incorporate ambulatory, visibility and auditory needs of all users.

Developer shall be responsible for obtaining Texas Department of Licensing and Regulation (TDLR) reviews and approvals of pedestrian facility designs and construction and costs associated with those reviews and inspections.

#### 20.2.3 *Final Design*

Consistent with the preliminary design submitted with the Proposal, Developer shall incorporate into the Project Final Design, the following elements relating to bicycle and pedestrian facilities:

- alignment, profile, cross-section, and materials
- points of connection to existing and proposed bicycle and pedestrian facilities
- signing, signalization, and pavement markings
- separation between bicycle or pedestrian facilities and the nearest travel lane
- methods of illumination, where applicable
- requirements of the Aesthetics and Landscaping Plan

## 21 TOLLING

### ELECTRONIC TOLL COLLECTION SYSTEM REQUIREMENTS

#### 21.1 General Requirements

In the PMP, Developer shall set forth an approach, procedures and methods for an Open Road Toll (ORT) Electronic Toll Collection System (ETCS).

Developer shall include the ETCS design in the Final Design Documents and shall submit it in accordance with the PMP and CDA Documents. Developer shall demonstrate that its ETCS design is capable of serving the Ultimate Configuration.

Developer shall design, develop, test, integrate, deploy, operate and maintain the ETCS to properly transmit to TxDOT a record of the tolls due from all Users in accordance with the toll rate policy and methodology set forth in the Agreement. Developer shall provide data to, and receive data from, TxDOT by means of the ETCS so as to enable TxDOT to maximize collection of all toll payments from Users in a timely, accurate and efficient manner.

#### 21.2 Design Requirements

Developer shall prepare the ETCS design in accordance with the requirements of this Section 21 and all applicable TxDOT Standards. Developer shall specifically identify, within the PMP, proposed Deviations from the requirements of this Section 21 and TxDOT Standards.

#### 21.3 ETCS Design and Operational Criteria

##### 21.3.1 ETCS Infrastructure Requirements

1. Mainlane Tolling (MT)  
MT shall be located such that all User vehicles are assessed a toll.
2. Ramp Tolling (RT)  
RT shall be located such that all User vehicles are assessed a toll. Gantry configurations, lane ETCS equipment and roadside installations shall be fully compatible and interchangeable with MT installations.
3. Utility and Personnel Access-way (UPA)  
The UPA shall be designed to accommodate safe and secure access to all components of the MT and RT assembly for service/maintenance and repairs.

Design and installation of the landscaping at all toll facility locations shall be in accordance with Section 15 of these technical provisions.

##### 21.3.2 ETCS Functional Requirements

1. ETCS  
The ETCS shall accurately assign the toll due for each vehicle based on the User Classification and the toll rate determined according to the toll rate policy and methodology set forth in the Agreement.

The ETCS shall detect all vehicles that pass through each Tolling Zone either on the traffic lanes or on the shoulder, and generate a Transponder Transaction, a Video Transaction, or both, for each vehicle.

For each vehicle carrying a properly mounted, valid, working transponder that passes through the Tolling Zone on the traffic lanes, the ETCS shall correctly read from each transponder and produce a Transponder Transaction.

Where ETCS is unable to generate a valid Transponder Transaction, the ETCS shall capture images of the front and rear license plate of each vehicle that passes through the Tolling Zone and shall generate a Video Transaction. For each Video Transaction, ETCS shall produce a transaction record that identifies the reason a valid Tag Transponder Transaction could not be generated. ETCS shall interface with the CSC Host to receive and transmit daily and periodic updates of the status of each transponder, to send Transponder Transactions and Video Transactions, and to receive transponder/license plate association data.

The ETCS shall interface with the CSC Host in accordance with the approved Interface Control Document (ICD).

The ETCS shall be interoperable with all transponders issued by tolling authorities sanctioned by the State of Texas.

#### 2. User Classification Sub-system (UCS)

The UCS shall accurately classify each vehicle passing through the Tolling Zone, according to the User Classification. UCS shall detect whether a vehicle is present, count the number of axles on the vehicle or determine the shape of the vehicle in order to determine the User Classification, and have the ability to accurately distinguish individual vehicles.

#### 3. Video Exception Sub-system (VES)

Digitized text shall include both plate number and jurisdiction of issue for all license plates of all Users, including motorcycles.

### **21.4 Advance Toll Information Signs**

Developer shall design, install, operate and maintain advance toll information signs in accordance with TxDOT standards.

Developer shall submit to TxDOT for review, no later than 90 days before start of construction, a layout of the Project identifying the proposed locations and details (including proposed wording) of all advance toll information signs. Signs shall be located to provide maximum visibility to Users and situated:

- At all RTF locations providing User access to the Project
- Prior to all entrance ramps to the Project

Developer shall consult with TxDOT and shall obtain graphic design of the current TxDOT logo or logos that Developer shall integrate into the design and fabrication of guide and trailblazer signs.

### **21.5 ETCS Performance Requirements**

ETCS shall meet the Performance Requirements stated in Table 21-1A.

Table 21-1A - Tolling Zone Functional Availability

<i>Function</i>		<i>Functional Availability Requirement</i>		
Vehicle detection, transponder read capability, and transaction processing		≥ 99.96%		
Video image capture capability		≥ 99.50%		
Vehicle classification capability		≥ 98.00%		
Ref	Parameter	Requirement	Measurement Method	Performance Requirement
1	Vehicle detection and transaction processing success rate	For all vehicles passing through the tolling zone, a tag transaction or image transaction is reliably produced.	Detection success rate is defined as the total number of toll transactions recorded and transmitted through the ETCS, expressed as a percentage of the total number of vehicles passing through all tolling zones. A maximum of one toll transaction per vehicle shall be considered for each vehicle, whether a tag transaction or image transaction.	>99.80%
2	Transponder read success rate	For all vehicles carrying a valid, properly mounted transponder and passing through the tolling zone, a correct tag transaction is reliably produced.	Transponder read success rate is defined as the number of tag transactions correctly generated, expressed as a percentage of all vehicles carrying a valid, properly mounted transponder and passing through a tolling zone.	>99.95%

Ref	Parameter	Requirement	Measurement Method	Performance Requirement
3	License plate image reliability success rate	For Image transactions, the license plate images produced by the image capture system shall be human-readable and reliably contain images from which both plate number and issuing jurisdiction can be read.	The license plate image reliability success rate is defined as the number of readable plate images in which both plate number and jurisdiction of issue are discernable and can be converted unambiguously to text by an operator, expressed as a percentage of the total number of plate images that Developer is required to obtain (excluding plate images for ineligible vehicles, <i>see Note 1</i> ).	>98.00%

Note 1: Ineligible vehicles are those for which a video image is obtained that due only to one or more of the following conditions cannot be reliably read by the human eye:

- a) The vehicle either has no license plate or it is not mounted in the legally required position
- b) The license plate is covered by dirt or snow rendering it unreadable
- c) The license plate is damaged, bent or broken rendering it unreadable
- d) The license plate is blocked by an object carried by the vehicle (such as a plate frame, overhanging cargo or a trailer towing ball)
- e) The license plate is blocked by something in the lane such as a person or another vehicle.

Developer shall conduct an annual performance audit to verify that system reliability and accuracy has not degraded below the requirements stated herein.

No more than 30 days after the performance audit has been completed, Developer shall submit a report of the results. The report shall include, at least, the following:

- a) A summary of the overall testing methodology and test results
- b) An explanation of, and remedy for, any system deficiencies
- c) An appendix containing the detailed test procedures, results, and data used in evaluating the system's operational performance

## 22 Operations

### 22.1 General Requirements

The responsibility of the Developer for operations Work will begin at Service Commencement and continue for the Term of the Agreement. Developer shall institute an effective operations management system to monitor the condition of the Project and each Element within the Project and institute an effective maintenance program to comply with the performance measures established in the Maintenance Management Plan.

### 22.2 General Operations Obligations

Developer shall prepare a plan (“Operations Management Plan”), which shall set forth in detail, at a minimum, the approach, procedures, and implementation for the following:

- Employment and training of competent personnel to carry out all aspects of the Operations Management Plan
- Coordination of activities of other entities with interests within the Project limits
- Monitoring the condition and operational performance of the Project
- Incident response, management and reporting,
- Traffic operations restrictions, including periods of lane closure restrictions
- Tolling integration with other tolling agencies
- Standard operating and communication procedures for Emergency preparation, response, and recovery, including impacts from extreme weather conditions
- Planning and coordination with all affected Governmental Entities, including Emergency Services
- Liaison with any Traffic Management Centers that TxDOT or other entities may establish
- Analysis of vehicular accident patterns to identify safety issues and implement cost effective solutions to maximize safety
- Identification, containment and disposal of Hazardous Materials spills
- Prompt investigation of reports or complaints received from all sources
- Policing of the Project

Developer shall submit the Operations Management Plan to TxDOT for approval at least 60 days prior to Service Commencement; approval of the plan by TxDOT shall be a condition of Service Commencement. Maintenance and operation activities will transition from TxDOT to the Developer in accordance with the requirements listed in Section 22.2 of Book 2.

Developer is to prepare the following reports on a quarterly basis, except as noted below:

- Incident Reports: For each Incident, the report shall identify the nature of the Incident, time, date, location, parties involved, and actions taken. For Incidents involving deaths, a report shall be submitted to TxDOT within 24 hours of the Incident.
- Non-Conformance Reports: For each material Defect in the Project Elements, the report shall identify the location, the nature and cause of the material Defect and the steps that will be, or have been, taken to address the material Defect.
- Traffic Reports: Each traffic report shall summarize traffic volumes along the Project on a daily, weekly, and monthly basis.
- Maintenance Work Report: Each maintenance work report is to describe the following:
  - Inspections conducted, including the date and type of inspection
  - Material Defects or damage identified, including the date, infrastructure component, details of material Defect or damage

- Details of the maintenance work carried out
- Quality conformance summary (i.e., the results of a quality program).
- Environmental monitoring activities, as required in [Section 4](#)
- Rehabilitation plans (annually): Description of the rehabilitation program conducted in the previous year and updates to the five-year rehabilitation plan to describe the planned rehabilitation Work and identify any changes from the previous plan
- Operations plans (annually): updates to the Operations Management Plan, including planned operating procedures and any changes from the previous operations plan

Upon request, Developer shall also provide TxDOT any technical documentation it maintains regarding the operations or maintenance Work.

## **22.3 Operation of the Project**

### **22.3.1 Corridor Management**

Developer shall coordinate access to the Project by companies and Governmental Entities that have a legitimate need to work within the Project ROW, including Utility operators.

### **22.3.2 Condition Preservation**

To protect the traveling public and other Users from unsafe pavement surface conditions and to facilitate drainage, Developer shall remove accumulations of dirt, sand and/or gravel from the roadways, shoulders, curbs, intersections, traffic islands, and bicycle and pedestrian paths and along medians and/or roadside barriers throughout the year, as necessary to provide a safe, clean, free-draining condition. Developer shall ensure traffic control measures are implemented in accordance with the TMUTCD during pavement cleaning operations so that hazardous conditions are not created for the traveling public and other Users.

### **22.3.3 Patrols**

Developer shall conduct regular patrols of all lanes of the facility, to identify conditions that are unsafe or have the potential to become unsafe; to identify conditions that could threaten the infrastructure; and attend to existing or changing conditions. Patrols must be conducted at least once every twenty-four hours during normal operating conditions, but no less frequently than every two hours during significant weather events.

### **22.3.4 ITS Operations**

Developer shall provide TxDOT with primary access to and control of all DMS, CCTV, and vehicle detection systems placed on and data/video generated from the general use lanes.

Developer shall have primary access to and control of all DMS, CCTV, and vehicle detection systems placed on and data/video generated from the managed lanes.

TxDOT will provide the Developer with secondary access to vehicle detector data, DMS status data, and CCTV video generated by systems placed on the general use lanes.

Developer shall provide TxDOT with secondary access to vehicle detector data and CCTV video generated by systems placed on the managed lanes.

Secondary access to data shared between TxDOT and the Developer shall be through a center-to-center interface, conforming to the most current technology being used by TxDOT.

ITS operations and equipment shall be limited to real-time traffic information, public service announcements, construction/maintenance lane closures, and Incident notifications. Developer shall not engage in commercial use or selling of ITS data, equipment, or space.

**22.3.5 Traffic Control and Incident Management**

Developer shall manage access and use of the Project, including access and use by vehicles, cyclists and pedestrians.

In the event of an Incident, Developer shall provide traffic management and cooperate with responding agencies, police, and Emergency Services, as appropriate, depending on the nature of the Incident.

Developer shall train its personnel who may be involved in Incident management and traffic management in accordance with all Laws.

**22.3.6 Policing**

Developer shall coordinate Project policing requirements with the appropriate law enforcement agencies to provide a level of policing consistent with that provided on other similar facilities.

Should the Developer require additional policing over and above this level, Developer shall be responsible for negotiating this additional service at no additional cost to TxDOT.