

Module 7

Preliminary Engineering, Design, and PS&E

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Section 1

Overview

The TxDOT District Office project development staff is the primary contact point for the Local Government (LG) for development and approval of engineering plans, specifications and estimates and release of the project to construction. If the Local Government is developing engineering plans, specifications and estimates, the Local Government will transmit the plans to the TxDOT District staff and the District will send the plans to Austin for final review. The responsible engineering divisions in Austin ((Design Division (DES), Traffic Operations Division (TRF), and Bridge Division (BRG)) coordinate final approval of highway and enhancement projects and release of the projects to construction by the State or the Local Government. The Local Government will not usually work directly with the responsible engineering divisions, unless specific technical issues need to be resolved.

This module is divided by broad functional topics as follows:

Section 2 – Procurement of Professional Services

Section 3 – Design Schematic and Layouts

Section 4 – Design

Section 5 – Letter of Authority

The “Overview” in each section presents general information and guidance, followed by topics containing more detailed information divided into 3 types of procurement, design-bid-build, design-build, and concession. They describe procurement matters relating to engineering services as well as detailing the processes needed to release projects for construction. Refer to Module 12 “Procurement of Other Goods and Services” for procurement procedures for material and equipment.

Section 2

Procurement of Professional Services

Overview

The LG may use professional providers for engineering design and construction management, architecture, or surveying. Professional providers are defined as professional engineers, registered architects, or registered professional land surveyors in Texas Government Code, Chapter 2254, Subchapter A, the Professional Services Procurement Act. This law requires a two step process in selecting, and negotiating costs for contracts with professional providers.

Selection of a professional provider must conform to federal and state law if cost reimbursement is desired. The use of a provider by the LG for detailed design and PS&E is an eligible, reimbursable cost in accordance with the local participation rules which are found in Title 43, Texas Administrative Code, §§15.50 et seq. as long as the selection procedures have been previously agreed to by TxDOT, and the use of a provider is included in the advance funding agreement (AFA).

If the LG wishes to use the TxDOT selection process and will seek reimbursement for eligible costs, it needs to contact and coordinate with the TxDOT district office. TxDOT's *Engineering, Architectural and Surveying Services Manual* includes the federal and state requirements for the selection and use of private providers, and may be used for guidance when implementing TxDOT procedure for design-bid-build. For design/build the selection procedures can be found in Title 43, Texas Administrative Code, §§27 Subchapter A.

The LG's procedures must be reviewed and approved, in writing, by the appropriate TxDOT district. TxDOT administration must approve the LG to administer the engineering work unless the LG is *not* seeking reimbursement for the cost. The LG should submit its selection procedures to the district as early as possible in order not to delay the project. To ensure timely approval, the procedure should be submitted to TxDOT at least three weeks prior to selection of the provider. Any resulting contracts between the LG and provider prior to the execution of the contract must receive prior TxDOT approval. Any contract amendments or supplemental agreements that extend the contract amount or time by 25% or more should also be sent to the local district office for review and approval.

Consultant Selection

General A “consulting service” is the service of studying or advising a public agency under a contract that does not involve the traditional relationship of employer and employee. These services are defined in Texas Government Code §2254.021 et seq. (§2155.001) and are exempt from the competitive requirements of the Purchasing Act. Consulting services are often used as an extension of the public agency’s staff.

Federal Regulation

- a. 23 CFR 172 – Requirements to be followed if federal funds are used for procurement or reimbursement of engineering services.
 - i. Qualifications-based competitive selection is the primary method. Price is not to be used as a factor in the analysis and selection. Small purchase or non-competitive negotiation procedures may be used in limited situations with FHWA approval.
 - ii. Compensation based on cost plus a percentage of cost or percentage of construction cost is not acceptable.
 - iii. The contracting agency must prepare written procedures for each method of procurement it proposes to utilize and submit for FHWA approval. TxDOT’s Consultant Selection Process complies with this requirement.
 - iv. Recipients of federal funds must approve the written procedures and all revisions for their sub recipients. TxDOT is the recipient of federal funds and the LG is the sub recipient

State Regulation

- a. Texas Administrative Code, Title 43, Part 1, Chapter 9, Subchapter C – Establishes TxDOT’s standard procedures for selection and contract management of architectural, professional engineering, and land surveying service providers for transportation projects. Sections 30-31, 33-37, and 39 have application to procurement by local governments when state or federal funds are used on the project.
- b. Texas Government Code 2254 – Provides procurement requirements for professional services by all governmental entities.
 - i. Must procure architectural, engineering or land surveying services through a qualifications-based selection process.
 - ii. Negotiate with the most qualified provider for a fair and reasonable price.

- iii. If a satisfactory contract cannot be negotiated, formally terminate negotiations. Then select the next highest qualified provider and attempt to negotiate a contract for a fair and reasonable price.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG:
 - i. Must submit their proposed consultant selection process to TxDOT for approval. The process must comply with federal and state law and address all of the components listed in the section “Using LG Procedures” of this module.
 - ii. Must submit proposed agreements between LG and consultant for TxDOT approval prior to execution.
- b. For projects off the state highway system with no state or federal funds, the LG must comply with applicable regulations, such as Texas Government Code 2254. They may use a procedure based on the TxDOT Consultant Selection Process in Texas Administrative Code, Title 43, Part 1, Chapter 9, Subchapter C or use their own procedures.

LG Responsibilities

- a. For design-bid-build projects with state or federal funds and/or on the state highway system regardless of funding source:
 - i. Develop consultant selection process that complies with state and federal regulations and submit process for TxDOT approval.
 - ii. Follow approved process when selecting consultant.
 - iii. Submit proposed agreements with consultants to TxDOT for approval prior to execution.
- b. For design-build and concession projects with state or federal funds and/or on the state highway system regardless of funding source, follow terms of approved Request for Proposals or Project Development Agreement with TxDOT.
- c. For projects off the state highway system with no state or federal funds, follow LG procedures.

TxDOT District Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system, the District:

- i. Must review and approve the LG's consultant selection process. The District may contact DES for assistance as needed.
 - ii. Must review and approve proposed agreements between the LG and consultant.
- b. There is no monitoring for projects off the state highway system with no state or federal funds.

Section 3

Design Schematics and Layout

Overview

The Local Government (LG) is strongly encouraged to submit preliminary layouts for TxDOT's review and approval. This will ensure that the LG is utilizing the appropriate design criteria for the project. The early coordination will prevent any misunderstandings regarding project requirements and therefore, helps the LG avoid the risk of costly re-design later in project development.

In general, schematic design will be required for most roadway construction projects. This normally involves a scaled plan view geometric layout showing horizontal alignment with associated profile grade alignment for roadways. In addition, for roadway projects, typical sections, pavement designs and bridge layouts must be submitted to TxDOT for approval prior to completing the schematic layout portion of preliminary design. Specialty projects such as building projects may require something other than a schematic. This will involve scaled plan views, elevations and typical wall details, floor plans for structures.

The LG should also submit a listing of the design guidelines to be utilized during construction. Acceptable guidelines are those issued by AASHTO's *A Policy of Geometric Design of Highways and Streets*, TxDOT's *Roadway Design Manual*, *Texas Manual on Uniform Traffic Control Devices* (TMUTCD), American Institute of Architects (AIA), etc. If the LG does not use TxDOT's or other approved guidelines, their guidelines must be submitted to TxDOT for review and approval. *It is important to note, however, that the established guidelines are the minimum acceptable guidelines.* Variations in elements of approved guidelines may be permitted, but they must be submitted to TxDOT with a request for a Design Exception/Waiver as detailed in the *Roadway Design Manual*. The TxDOT PS&E submittal data sheet, "*Proposed Basic Design Data Form, Form 1002*" or a similar form may be used to submit the selected design criteria for the project.

In addition, TxDOT's *Pavement Design Manual* and *Bridge Project Development Manual* will provide valuable information in performing design activities. The local government must clearly identify the design guidelines for use on the project, and where TxDOT guidelines, such as electrical codes for building construction in Transportation Enhancement Projects, have not been adopted, the local government must secure prior written approval from TxDOT. Ideally, these guidelines and code sources are identified in the Advance Funding Agreement (AFA). Roadway and bridge projects for example may present circumstances where the design guidelines can not be met for one or more design elements in the proposed projects preliminary design. In order to avoid delaying project development, the local agency coordinates and submits a written request for a design exception, as early as it is identified, to TxDOT staff for review and approval. The local government is encouraged to coordinate with TxDOT district staff to ensure that all design considerations are met.

Environmental Issues, Permits and Commitments will need to be considered in the schematic layout. These Issues, Permits and Commitments must be incorporated where applicable into the preliminary layouts and ultimately into the detail design for the construction plans before receiving final TxDOT construction approval. The submission for final geometric layouts and plans requires signing, sealing and dating by a licensed professional engineer or architect in the state of Texas.

Geometric Schematic

General The geometric schematic is a drawing of a computed roadway alignment of the preferred alternate. It shows features such as location of interchanges, ramps, and number and arrangement of lanes. The schematic also conveys information to the public during meetings and hearings. TxDOT lists elements of the schematic in their *Roadway Design Manual*.

Federal Regulation

- a. There are no federal regulations that require development of a geometric schematic.

State Regulation

- a. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT manuals, procedures, standards, and guidelines. For RMA, toll and pass-through financed projects, preliminary design information must be submitted for TxDOT review and approval when the design is approximately 30% complete.

Required Practices

- a. For design-bid-build projects with state or federal funds and/or on the state highway system regardless of funding source, the LG:
 - i. Must prepare and submit a geometric schematic for new location or added capacity projects and for projects requiring control of access or an Environmental Impact Statement. The schematic must contain all information required by TxDOT's *Roadway Design Manual*.
 - ii. May develop schematics or other design information for other projects and gain TxDOT concurrence to facilitate final plans review and approval.
- b. For design-build and concession projects, there is no requirement for the LG to develop and submit a geometric schematic unless otherwise specified in the agreement with TxDOT.
- c. For projects off the state highway system with no state or federal funds, the LG may follow their own procedures.

LG Responsibilities

- a. For design-bid-build projects with state or federal funds and/or on the state highway system regardless of funding source, develop geometric schematic and submit to TxDOT for new location or added capacity projects and projects requiring control of access or an Environmental Impact Statement.
- b. For design-build and concession projects, when specified by the agreement, develop geometric schematic and submit to TxDOT.
- c. For all projects off the state highway system with no state or federal funds, follow LG procedures.

TxDOT District Responsibilities

- a. For projects requiring submission of a geometric schematic, the District must review the schematic for conformance with approved design criteria and other TxDOT policies and forward to DES for approval. For projects with a Pass-through financing arrangement, the District has authority to approve the geometric schematic but may request assistance from DES as needed.
- b. There is no monitoring for projects off the state highway system with no state or federal funds and other projects that do not require submission of a geometric schematic.

Section 4

Design

Overview

This section covers the design phase of projects and discusses a delegation of authority by the FHWA to TxDOT in administration of FHWA funds. As discussed in TxDOT's *Roadway Design Manual*, different design guidelines apply to the design of new construction (4R), Rehabilitation (3R) and Restoration (2R) projects. The LG works with TxDOT to determine which guidelines apply before beginning design.

The following external publications in their current edition may be used for reference in conjunction with TxDOT's *Roadway Design Manual*.

- ◆ *A Policy of Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials (AASHTO)
- ◆ *AASHTO Standard Specifications for Highway Bridges*
- ◆ *Roadside Design Guide*, AASHTO.
- ◆ *Highway Capacity Manual*, Transportation Research Board (TRB).
- ◆ *Guide for the Development of Bicycle Facilities*, AASHTO.
- ◆ *Texas Accessibility Standards*, Texas Department of Licensing and Regulation.
- ◆ *Americans with Disabilities Act Accessibility Guidelines (ADAAG) – US Access Board*.

Access Management

General An “access connection” is a facility for entry and/or exit such as a driveway, street, road, or highway that connects to the highways under the jurisdiction of a public entity. “Access control” is the enforcement of specified authorization rules based on positive identification of the user and the systems they are permitted to access.

Proper access management assists in protecting the substantial public investment in transportation by preserving roadway efficiency and enhancing traffic safety, thus reducing the need for expensive improvements. Further, access management can significantly reduce traffic accidents, personal injury, and property damage. TxDOT policy and procedures for managing access to the state highway system is contained in TxDOT's *Access Management Manual*. Additional information may be found in TxDOT's *Roadway Design Manual*.

Federal Regulation

- a. 23 USC 111 – Prohibits states from allowing additional access points to the interstate system without the prior approval of the Secretary of Transportation. FHWA policy may be found in the February 11, 1998 Federal Register, pages 7045-7047 or at FHWA's website.
- b. Other than specifying design criteria for federally funded projects, there are no specific regulations addressing access management. However, FHWA assumes a role to encourage and advance the development of state and local access management policies, guidelines, and procedures for the management of facilities; and integrate these into established planning, policy and design processes

State Regulation

- a. Texas Administrative Code, Title 43, Chapter 11, Subchapter C – Provisions for approval of access connections to state highways. Includes granting authority to municipalities to develop and use their own access management plan.
- b. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT procedures, standards, and guidelines

Required Practices

- a. For routes on the Interstate Highway System, the LG must develop justification for new or revised access in conformance with the requirements of TxDOT's *Roadway Design Manual* and submit to TxDOT for coordination with FHWA.
- b. For routes on the state highway system the LG must:
 - i. Obtain access permits from TxDOT unless a municipality has assumed that authority.
 - ii. Assure all designs include access control as provided in TxDOT's *Roadway Design Manual* and *Access Management Manual*, such as purchase of access rights at freeway ramp terminals and number and locations of access points.

- c. Municipalities may request authority to use their own access management guidelines in lieu of TxDOT's to determine appropriate access connection locations within that municipal jurisdiction, except where the Department controls the access.
- d. A municipality or Metropolitan Planning Authority (MPO) may develop an access management plan for a specified state highway segment in coordination with TxDOT.
- e. For projects off the state highway system, the LG may provide access as allowed in their procedures.

LG Responsibilities

- a. For all projects on the state highway system regardless of funding source, the LG must:
 - i. Develop justification for new or revised access to Interstate system and transmit to TxDOT for coordination with FHWA.
 - ii. Obtain access permits from TxDOT unless LG has authority.
 - iii. Assure design complies with TxDOT's *Roadway Design Manual* and *Access Management Manual* (or LG access management guidelines if they have been approved for use).
 - iv. Submit request to use LG access management guidelines on state highway system, if desired.
 - v. Submit approved permits to TxDOT.
- b. For all projects off the state highway system regardless of funding source, the LG will provide access as allowed by the LG's procedures.

TxDOT District Responsibilities

- a. For routes on the Interstate Highway System, the District must review the LG's access justification for completeness and transmit to DES with a recommendation for approval and coordination with FHWA.
- b. For routes on the state highway system, the District:
 - i. Issues access permits unless a municipality requests authority to issue permits within their municipal jurisdiction.
 - ii. Approves and documents deviations from TxDOT's *Access Management Manual* for TxDOT-issued permits.
 - iii. Has authority to review a municipality's proposed permitting procedures for compliance with TxDOT's *Access Management Manual* and transfer the

- access permitting function to a municipality within the municipality's jurisdiction.
 - iv. Coordinate with a municipality or MPO in development of an access management plan for a specific highway segment.
 - v. Retains a copy of all approved access permits, including those approved by a municipality.
 - vi. Periodically assesses a municipality's compliance with TxDOT's *Access Management Manual*, including requirements to coordinate deviations.
- c. There is no monitoring for routes off the state highway system.

Design Concept Conference

General The Design Concept Conference is a meeting of key individuals to establishing fundamental aspects of a project. The conference facilitates agreement to basic project features by concerned parties and enhances relationships between those parties. A conference should be held as early in the project development process as feasible and should include all parties that provide information for the project and have the ability to influence the project development schedule. TxDOT practices and procedures for design conferences are available in TxDOT's *Project Development Process Manual*. The manual has a downloadable link to the Design Summary Report to aid in conducting the conference and documenting agreements reached at the conference.

Federal Regulation

- a. There are no federal regulations requiring design conferences.
- b. 23 USC 639(h)(4) (as added by SAFETEA-LU, Section 6002) – The project sponsor must convene a meeting of all participating agencies to resolve issues that could delay completion of the environmental review process.

State Regulation

- a. There are no state regulations that require design conferences.

Required Practices

- a. For all Design-bid-build projects with state or federal funds and/or all design-bid-build projects on the state highway system regardless of funding source, the LG is strongly encouraged to follow the principals of Design Concept Conference as

outlined in the TxDOT *Project Development Process Manual* to facilitate agreement to basic project features by all concerned parties before significant resources are expended on detailed design. This is particularly important for those projects where the LG is required to submit preliminary design information to TxDOT at 30% design completion and/or submit final plans to TxDOT for approval before beginning construction. Not having early TxDOT concurrence may lengthen the final review and approval process. Use of the Design Summary Report format is suggested to formally document agreements reached at the conference. TxDOT's *Project Development Process Manual* has a downloadable link to the Design Summary Report

- b. There is no requirement to conduct a Design Concept Conference for Design-build and Concession projects.
- c. For projects with no federal or state funds off the state system, the LG may follow their own processes.

LG Responsibilities

- a. For all design-bid-build projects with state or federal funds and/or on the state highway system regardless of funding source, consider conducting a design concept conference. Prepare Design Summary Report to document conference results.

TxDOT District Responsibilities

- a. For project with a design concept conference, review Design Summary Report for compliance with applicable standards. Forward DSR to DES for approval and advise DES of proposed conference meeting date. Send staff with appropriate expertise to represent TxDOT at the Design Concept Conference and advise DES of any changes discussed at the conference. For projects with a Pass-through Financing arrangement, the District approves the DSR but may contact DES for assistance as needed.
- b. There is no monitoring for projects that do not have a Design Concept Conference.

ADAAG/TAS Compliance

General State and federal statutes protect the rights of individuals with disabilities. For transportation purposes, the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) and the Texas Accessibility Standards (TAS) provide the majority of criteria on which compliance is based. The Texas Department of Licensing and Regulation (TDLR) is the regulatory agency charged with monitoring compliance with the TAS. The U.S. Departments of Justice and Transportation are responsible for enforcement of the ADA. If there are pedestrian elements with a total cost of \$50,000 or more on a project, the public entity must submit the plans to TDLR for review prior to the start of construction. Further, a final inspection and approval of the project by TDLR is required.

Federal Regulation

- a. 28 CFR Part 35 – Nondiscrimination On The Basis Of Disability In State And Local Government Services
 - i. Prohibits discrimination on the basis of disability by public entities.
 - ii. Requires that design and construction of new and altered facilities by, on behalf of, or for the use of a public entity shall be designed and constructed in such manner that the facility is readily accessible to and usable by individuals with disabilities.
 - iii. Established the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) (appendix A to 28 CFR part 36) as a standard for compliance except that the elevator exemption contained at section 4.1.3(5) and section 4.1.6(1)(k) of ADAAG shall not apply. Departures from particular requirements by the use of other methods shall be permitted when it is clearly evident that equivalent access to the facility is thereby provided.
 - iv. Requires that alterations to historic properties shall comply, to the maximum extent feasible, with section 4.1.7 of ADAAG. If it is not feasible to provide physical access to an historic property in a manner that will not threaten or destroy the historic significance of the building or facility, alternative methods of access shall be provided pursuant to the requirements of Sec. 35.150.
 - v. Requires:
 1. Newly constructed or altered streets, roads, and highways must contain curb ramps or other sloped areas at any intersection having curbs or other barriers to entry from a street level pedestrian walkway.

2. Newly constructed or altered street level pedestrian walkways must contain curb ramps or other sloped areas at intersections to streets, roads, or highways.
 - vi. Requires public entities to ensure that communications with members of the public with disabilities are as effective as communication with others.
- b. 49 CFR 37 – Prohibits discrimination against an individual with a disability in connection with the provision of transportation services. It also provides requirements for the construction or alteration of transportation facilities by the following entities, whether or not they receive federal financial assistance:
- i. Any public entity that provides designated public transportation or intercity or commuter rail transportation;
 - ii. Any private entity that provides specified public transportation; and
 - iii. Any private entity that is not primarily engaged in the business of transporting people but operates a demand responsive or fixed route system

State Regulation

- a. Texas Government Code, Chapter 469 – State law to ensure that each building and facility subject to this chapter is accessible to and functional for persons with disabilities without causing the loss of function, space, or facilities. This chapter relates to nonambulatory and semi ambulatory disabilities, sight disabilities, hearing disabilities, disabilities of coordination, and aging.
 - i. Sec. 469.052 – The Texas Commission of Licensing and Regulation shall adopt standards, specifications, and other rules under this chapter that are consistent with standards, specifications, and other rules adopted under federal law.
 - ii. Sec. 469.101 – All plans and specifications for the construction of or for the substantial renovation or modification of a building or facility must be submitted to the Texas Department of Licensing and Regulation for review and approval if:
 1. the building or facility is subject to this chapter; and
 2. the estimated construction cost is at least \$50,000.
- b. Texas Accessibility Standards (TAS) – Sets standards for accessibility to: public buildings and facilities; privately owned buildings and facilities leased or occupied by state agencies; places of public accommodation; and commercial facilities by individuals with disabilities. Subject buildings and facilities are addressed in more detail in 16 TAC §68.20. These standards are to be applied during the design, construction, and alteration of such buildings and facilities to

the extent required by regulations issued by the Texas Department of Licensing and Regulation.

- c. 16 TAC §68.31 – Establishes a variance procedure to address requests to waive or modify an accessibility standard.
- d. 16 TAC §68.102 – Updated rules applicable to projects within the public right-of-way. Estimated cost of construction is based on the pedestrian elements only. Clarifies specific issues related to sidewalks, curb ramps and handrail.
- e. Texas Occupations Code, Title 6, § 1001.452(5) – A licensed engineer is subject to disciplinary action under Section 1001.451 for a failure to timely provide plans or specifications to the Texas Department of Licensing and Regulation (TDLR) as required by Article 9102, Revised Statutes

Required Practices

- a. All projects, regardless of cost, must comply with the provisions of the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG), the Texas Accessibility Standards (TAS) and 16 TAC §68.102.
- b. Variances to the TAS must be approved by TDLR.
- c. Public meetings, hearings and project websites must be accessible and ensure effective communication with members of the public with disabilities.
- d. The LG is responsible for submitting plans and specifications to the Texas Department of Licensing and Regulation for public right-of-way projects with pedestrian elements estimated to cost at least \$50,000, building or facilities projects and hike/bike trail projects.
- e. Inspection of completed work is covered in LGPP Module 11.

LG Responsibilities

- a. For all projects, the LG must:
 - i. Ensure all transportation facilities are in compliance.
 - ii. Submit plans to TDLR for public right-of-way projects with pedestrian elements estimated to cost at least \$50,000, building or facilities projects and hike/bike trail projects.

TxDOT District Responsibilities

- a. For projects requiring TxDOT approval of the PS&E and/or all projects on the state highway system, the District must assure that the LG has submitted the plans to TDLR for approval prior to approving the PS&E for letting.

- b. There is no monitoring for projects off the state highway system if no state or federal money is involved.

Design Criteria

General “Design criteria” is defined as those basic elements in Chapter 2 of TxDOT’s *Roadway Design Manual* (i.e. horizontal and vertical alignment, sight distance) and those elements that depend on scope of work and functional classification in Chapters 3-8 of the *Roadway Design Manual* (i.e. design speed, lane width, structure width). They include both the “controlling” and “non-controlling” criteria for which design exceptions, waivers, and variances must be considered as listed in Chapter 1, Section 2 of TxDOT’s *Roadway Design Manual*.

Federal Regulation

- a. 23 CFR 625.3(a)(1) – Projects on the National Highway System are to be designed and constructed to standards FHWA- approved standards. 23 CFR 625.3(d) advises that the standards are applicable regardless of the source of funds.
- b. 23 CFR 625.3(a)(2) – Federally funded projects not on the National Highway System must be designed, constructed, operated, and maintained in accordance with State laws, regulations, directives, safety standards, design standards, and construction standards.

State Regulation

- a. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT procedures, standards, and guidelines. For RMA, toll and pass-through financed projects, preliminary design information must be sent to TxDOT for review and approval when the design is approximately 30% complete.
- b. Texas Transportation Code 222.104 – Allows TxDOT to enter into an agreement with public or private entities that provides for the payment of pass-through tolls for the design, development, financing, construction, maintenance, or operation of a toll or non-toll facility on the state highway system. The agreement must provide that a municipality, county, regional mobility authority, or regional tollway authority is required to meet state design criteria, unless TxDOT grants an exception.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG must develop the project using design criteria in the *TxDOT Roadway Design Manual*. Functional classification must be based on the TxDOT Functional Classification map. Traffic data for selection of design criteria will be developed in accordance with the Design Level of Service section of this module.
- b. The AASHTO *Guide for the Development of Bicycle Facilities* is the guide for design of bicycle lanes and bicycle paths. (Refer to TxDOT's *Roadway Design Manual* for more information). Sidewalk and Pedestrian elements are further discussed in the *Roadway Design Manual*. Refer to section on ADAAG and TAS Compliance.
- c. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, where state statutes allow the LG to suggest alternate design criteria, the LG must submit the criteria with a written justification to TxDOT for approval. This approval should be secured early in the project development process to avoid having to make significant changes. The Design Concept Conference section of this module suggests submission of a Design Summary Report (DSR). The DSR must include design criteria selected.
- d. By TxDOT policy, page 3, Form 1002 is the official place where design criteria are documented. For all projects with state or federal funds, and/or all projects on the state highway system regardless of funding source, the LG must submit a completed Form 1002 for TxDOT approval. A link to a downloadable Form 1002 can be found in the *TxDOT PS&E Preparation Manual*.
- e. For projects off the state system and no state or federal funds, the LG may select design criteria in accordance with their own practice. Use of recognized design criteria from industry groups such as AASHTO is recommended.

LG Responsibilities

- a. For all design-bid-build projects with state or federal funds, and/or on the state highway system regardless of funding source:
 - i. Select design criteria to be used based on TxDOT Functional Classification and applicable traffic.
 - ii. Include design criteria on Design Summary Report and submit to TxDOT.
 - iii. Request TxDOT approval of any proposed changes to approved design criteria.

- b. In addition to the above, appropriate design criteria for design-build projects will be listed in the Request for Proposals.
- c. For concession projects with state or federal funds and on the state highway system regardless of funding source, in the Technical Provisions will include desirable design criteria based on the Project Development Agreement with TxDOT.
- d. For all projects off the state highway system with no state or federal funds, use design criteria as established by local practice.

TxDOT District Responsibilities

- a. For all projects with state or federal funds and/or projects on the state highway system regardless of funding source, assure that the LG selects the proper functional classification and uses acceptable traffic data.
- b. Review Design Summary Report and Form 1002 for proper design criteria and transmit to Design Division.
- c. For projects with a Pass-through Financing arrangement, the District approves the project design criteria but may contact DES for assistance as needed.
- d. There is no monitoring for projects off the state highway system with no state or federal funds.

Design Level of Service

General Level of service (LOS) is a measure of traffic flow and congestion. As defined in the *Highway Capacity Manual* - A qualitative measure describing operational conditions within a traffic stream; generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Level of service is designated in letter format; from LOS A (Free Flow) to LOS F (Forced Flow). An LOS analysis determines the LOS for a particular facility usually for three time periods. These periods include existing, construction year, and design year (usually 20 years past the construction year) conditions. Three levels of analysis include planning, design, and operational analysis. A planning LOS analysis involves little detail and is used for preliminary facility sizing. A design LOS analysis is more detailed and tends to be used for sizing a facility given specific traffic and roadway conditions. An operational LOS analysis is typically used to assess current conditions so that improvements can be developed to improve flow. An operational LOS analysis is usually the most detailed.

Selecting a Design Level of Service is a conscientious attempt to reasonably accommodate traffic in the design year. Most designs are based on LOS C (Stable Flow) or LOS D (Bordering on Unstable Flow).

Federal Regulation

- a. 23 CFR 625.2 – Plans and specifications for projects on the National Highway System (NHS) shall provide for a facility that will adequately serve the existing and planned future traffic of the highway in a manner that is conducive to safety, durability, and economy of maintenance, and to conform to the particular needs of each locality.
- b. 23 CFR 625.3 – Federally funded projects not on the NHS are to be designed in accordance with State directives and design standards.

State Regulation

- a. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT manuals, procedures, standards, and guidelines. For RMA, toll and pass-through financed projects, preliminary design information must be sent to TxDOT for review and approval when the design is approximately 30% complete.

Required Practices

- a. For new construction and reconstruction projects with state or federal funds and/or all projects on the state highway system, the LG must select a design level of service that conforms to the ranges listed in TxDOT's *Roadway Design Manual*. Projected traffic volumes for projects on the state highway system will be as furnished by the TxDOT Transportation Planning and Programming Division (TPP). Projected traffic volumes for projects off the state highway system will be furnished by the LG. Projected traffic volumes will be based on a design year 20 years from completion of construction unless otherwise directed or approved by TxDOT. For concession projects, Design Hourly Volume will be furnished by TxDOT and will be listed in the contract documents.
- b. For projects off the state highway system and no state or federal funds, the LG may select a design level of service in accordance with their own procedures. Projected traffic volumes and design year may also be developed as the LG desires.
- c. Design level of service does not apply to 3R, 2R, preventive maintenance, or special projects.

LG Responsibilities

- a. For all design-bid-build and design-build projects with state or federal funds and/or on the state highway system regardless of funding source:

- i. Select design level of service from TxDOT's Roadway Design Manual for new construction or reconstruction projects.
 - ii. Develop capacity analysis using Highway Capacity Manual and submit to TxDOT for concurrence.
- b. For concession projects with state or federal funds and on the state highway system regardless of funding source:
 - i. Calculate Level of Service using methods acceptable to TxDOT
 - ii. Design roadways in a manner that meets or exceeds performance measures shown in technical requirements.
- c. For all projects off the state highway system with no state or federal funds, follow local practice.

TxDOT District Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system:
 - i. Request projected traffic data from the TPP and furnish to the LG.
 - ii. Review LG's selected level of service for compliance with TxDOT's Roadway Design Manual.
 - iii. Review LG's capacity analysis for conformance with the Highway Capacity Manual
 - iv. Request assistance from DES as appropriate. DES review and approval is not required.
- b. There is no monitoring for projects with no state or federal funds off the state highway system.

Exceptions to Design Criteria

General Selection of design criteria is covered in another section of this module. All reasonable effort must be made to produce a project that meets the established design criteria. However, there may be occasions when one or more design elements do not meet requirements. Exceptions may be granted as an engineering decision if properly documented and supported.

There are three situations where formal approval must be given; design exceptions, design waivers, and design variances. Exceptions cover deviation from specific “controlling” criteria established by federal regulation. Waivers cover deviation from “non-controlling” criteria, those values listed as specific, numerical criteria but not one of the listed “controlling” criteria. Variances cover deviations from the Texas Accessibility Standards. The Texas Department of Licensing and Regulation is the approving authority for variances. The approval authority for exceptions and waivers is established by policy and by agreement between the LG and TxDOT.

Federal Regulation

- a. 23 CFR 625.3(f) – Approval may be given on a project-by-project basis to designs that do not conform to the minimum specified criteria. The determination may be made only after giving due consideration to all project conditions such as maximum service and safety benefits for the dollar invested, compatibility with adjacent sections of roadway and the probable time before reconstruction of the section due to increased traffic demands or changed conditions.

State Regulation

- a. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT procedures, standards, manuals, and guidelines. TxDOT may be requested to approve deviations from criteria for specific elements. For RMA, toll and pass-through financed projects, preliminary design information must be sent to TxDOT for review and approval when the design is approximately 30% complete.
- b. Texas Transportation Code 222.104 – Allows TxDOT to enter into an agreement with public or private entities that provides for the payment of pass-through tolls for the design, development, financing, construction, maintenance, or operation of a toll or non-toll facility on the state highway system. The agreement must provide that a municipality, county, regional mobility authority, or regional tollway authority is required to meet state design criteria, unless TxDOT grants an exception.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG must request TxDOT approval of

exceptions to “controlling criteria” as outlined in TxDOT’s *Roadway Design Manual*. “Controlling criteria” are those elements listed for the different categories of construction projects (i.e., 4R, 3R, 2R, or Special Facilities) in the *Roadway Design Manual*. The LG must request TxDOT approval of an exception if minimum requirements for a bicycle lane in the *AASHTO Guide for the Development of Bicycle Facilities* cannot be met.

- b. For all projects with state or federal funds and/or all projects on the state highway system, the LG must request TxDOT approval of exceptions to criteria in a “noncontrolling category” as outlined in TxDOT’s *Roadway Design Manual*. The LG must request TxDOT approval of an exception if minimum requirements for a bicycle path (shared use path) in the *AASHTO Guide for the Development of Bicycle Facilities* cannot be met. These exceptions are referred to as “Design Waivers” in the *Roadway Design Manual*.
- c. For projects where the LG must request TxDOT approval, documentation must be submitted on a “Request for Design Exception” form available from TxDOT.
- d. For concession projects, the LG is expected to provide a design that meets criteria in the Technical Provisions of the concession agreement.
- e. For all projects off the state highway system with no state or federal funds, the LG may process exceptions to design criteria in accordance with their local practice.
- f. For all projects where the design guidelines specified in the Texas Accessibility Standards are not met, the LG must submit a design variance to the Texas Department of Licensing and Regulation for approval.

LG Responsibilities

- a. For all design-bid-build and design-build projects with state or federal funds and/or on the state highway system regardless of funding source:
 - i. Prepare justification for exceptions to “controlling and noncontrolling” criteria and submit “Request for Design Exception” to TxDOT for approval.
 - ii. Prepare justification for exceptions when minimum requirements in *AASHTO Guide for the Development of Bicycle Facilities* are not met and submit to TxDOT for approval.
 - iii. Prepare justification for exceptions to TAS criteria and submit to TDLR for approval.
 - iv. Include approved design exceptions on Form 1002.
- b. For concession projects with state or federal funds and/or on the state highway system regardless of funding source, provide design meeting “desirable” criteria

as specified in Technical Provisions unless otherwise approved by TxDOT in the Project Development Agreement.

- c. For all projects off the state highway system with no state or federal funds, process design exceptions using LG process.

TxDOT District Responsibilities

- a. For projects where the LG must request TxDOT approval of a design exception or waiver, review the “Request for Design Exception” documentation for completeness and reasonableness. Submit design exceptions to DES or BRG with the District’s recommendation for action. The District approves requests for design waivers but may contact DES for assistance as needed.
- b. For all projects where TxDOT will review and approve the final PS&E, assure that the plans either meet the required criteria or have an approved exception, including when TAS standards are not met.
- c. There is no monitoring for projects where TxDOT does not approve exceptions, except to assure compliance with ADAAG and TAS when TxDOT approves the PS&E.

Hydraulic Design

General TxDOT’s Hydraulic Design process is contained in the *Hydraulic Design Manual*. Selection of design frequency is dependent on functional classification and type of drainage structure. Coordination with the US Federal Emergency Management Agency (FEMA) is part of the hydraulic design process.

Federal Regulation

- a. 23 CFR 650A – Describes procedures for the location and hydraulic design of highway encroachments on flood plains.
 - i. Minimum standards for hydraulic studies are listed.
 - ii. 650.115(a)(2) requires that the design flood for encroachments by through lanes of Interstate highways shall not be less than the flood with a 2-percent chance of being exceeded in any given year (50-year design frequency).
- b. The Non-regulatory supplement, Attachment 2, lists the procedures for coordinating highway encroachments on floodplains with the Federal Emergency Management Agency (FEMA).

State Regulation

- a. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT manuals, procedures, standards, and guidelines. For RMA, toll and pass-through financed projects, preliminary design information must be sent to TxDOT for review and approval when the design is approximately 30% complete.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG must comply with provisions of TxDOT's *Hydraulic Design Manual*. In particular:
 - i. Select a design frequency, including check frequency in conformance with Chapter 5, Section 3 of TxDOT's *Hydraulic Design Manual* for the type of structure and functional classification of the roadway. Functional classification must be based on the TxDOT Functional Classification map.
 - ii. The LG is responsible for all FEMA coordination activities and documentation.
- b. The LG must include hydraulic studies and drainage area maps to TxDOT with the 30% submission.
- c. For all projects off the state highway system with no state or federal funds, the LG may perform hydraulic design in accordance with their practices.

LG Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source:
 - i. Design-bid-build
 1. Comply with TxDOT's *Hydraulic Design Manual*.
 2. Coordinate with FEMA.
 3. Include hydraulic studies and drainage area maps with 30% submission to TxDOT.
 - ii. Design-build
 1. Select design frequency from TxDOT's *Hydraulic Design Manual*.
 2. Coordinate with FEMA.
 - iii. Concession
 1. Design drainage in accordance with project design criteria, Technical Provisions, and Good Engineering Practice.
 2. Submit Drainage Report to TxDOT containing all elements in the Technical Provisions.

- b. For all projects off the state highway system with no state or federal funds, follow LG procedures.

TxDOT District Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the District will review the LG's design for compliance with the *Hydraulic Design Manual*.
- b. There is no monitoring for projects off the state highway system with no state or federal funds.

Landscape Development

General The transportation system is a network of highways, trails, railroads, airports, transmission lines, pipelines, canals, and waterways set in the landscape. The goal of the transportation designer is to fit the highway or other facility into the adjacent landscape in a way that is complementary to, and enhances, the existing landscape. Achieving this goal requires consideration of natural, ecological, aesthetic, economic, and social influences related to that landscape.

Federal Regulation

- a. 23 CFR 752.4 – Landscape development must be in general conformity with accepted concepts and principles of highway landscaping and environmental design. In urban areas, new and major reconstructed highways and completed Interstate and expressway sections are to be landscaped as appropriate for the adjacent existing or planned environment. In rural areas, new and major reconstructed highways should be landscaped as appropriate for the adjacent environment. Landscaping projects shall include, but not be limited to the planting of native wildflower seeds or seedlings or both, unless a waiver is granted.

State Regulation

- a. Texas Administrative Code, Title 22, Chapter 1, Subchapter G – Prohibits the practice of landscape architecture by someone who does not hold a certificate of registration issued by the Texas Board of Architectural Examiners.

- b. Texas Administrative Code, Title 43, Chapter 11, Subchapter D – Requires that TxDOT develop a Green Ribbon Master Plan (landscaping and aesthetics) for cities with a population over 100,000. A local government may provide resources for the program.
- c. Texas Government Code 2166.404 – Requires use of xeriscape practices on state-owned facilities.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG:
 - i. Must assure that landscape plans be developed under the supervision of a person holding a certificate of registration as a landscape architect issued by the Texas Board of Architectural Examiners. All landscape plans and specifications must be sealed by a Landscape Architect registered in the State of Texas.
 - ii. Must submit samples of all architectural treatments for sound and retaining walls to TxDOT for approval before incorporating into the project.
 - iii. Is encouraged to consider guidelines for common structural elements in TxDOT's *Landscape and Aesthetics Design Manual*.
 - iv. Follow the concepts in TxDOT's Green Ribbon Master Plan if applicable.
- b. For all projects off the state highway system with no state or federal funds, the LG may follow local practices.

LG Responsibilities

- a. For projects with state or federal funds and/or on the state highway system regardless of funding source:
 - i. Assure landscape development plans are prepared under supervision of landscape architect licensed in Texas.
 - ii. Assure landscape plans and specifications are sealed by a Landscape Architect licensed by the State of Texas.
 - iii. Consider recommendations for design treatments in TxDOT *Landscape and Aesthetics Design Manual*.
 - iv. Include specifications requiring submission of samples to TxDOT for design-bid-build and design-build projects. Concession projects must comply with provisions of Technical Specifications.
- b. For all projects off the state highway system with no state or federal funds, follow LG procedures.

TxDOT District Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system, the District must:
 - i. Provide Green Ribbon Master Plan to LG if applicable.
 - ii. Review landscape plans and specifications for compliance with TxDOT policy
 - iii. Review and approve samples of architectural treatments submitted by LG
 - iv. Request assistance from DES as appropriate.
- b. There is no monitoring for projects off the state highway system with no state or federal funds.

Longitudinal Barriers, including Bridge Rail

General A barrier is the longitudinal system located on either bridges, medians, or along the roadside that is used to shield vehicles from potential hazards or work areas. There is a national standard to assure that only those barriers that meet certain crash test criteria are installed.

Federal Regulation

- a. 23 CFR 625.3(a)(1) – Projects on the National Highway System are to be designed and constructed to standards FHWA-approved standards. 23 CFR 625.3(d) advises that the standards are applicable regardless of the source of funds.
- b. 23 CFR 625.3(a)(2) – Federally funded projects not on the National Highway System must be designed, constructed, operated, and maintained in accordance with State laws, regulations, directives, safety standards, design standards, and construction standards.
- c. Non Regulatory Supplement to 23 CFR 625 includes National Cooperative Highway Research Program (NCHRP) Report 350, *Recommended Procedures for the Safety Performance Evaluation of Highway Features* in the list of publications that are FHWA to provide valuable information in attaining good design. FHWA policy requires that all roadside appurtenances such as traffic barriers, barrier terminals and crash cushions, bridge railings, sign and light pole supports, and work zone hardware used on the National Highway System meet the performance criteria contained in the NCHRP 350 or the latest crash testing criteria adopted by AASHTO.

State Regulation

- a. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT procedures, standards, and guidelines. For RMA, toll and pass-through financed projects, preliminary design information must be sent to TxDOT for review and approval when the design is approximately 30% complete.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG must provide longitudinal barriers meeting the latest version of following TxDOT manuals and standards:
 - i. *Bridge Railing Manual*
 - ii. *Roadway Design Manual*, Chapter 7, Section 1
 - iii. *Roadway Design Manual*, Appendix A (Demonstrate consideration of the order of priority for treating obstacles in Section 2.)
 - iv. Roadway Standards
 - v. Bridge StandardsBarriers and all appurtenances must have TxDOT acceptance of compliance with NCHRP 350.
- b. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG must incorporate TxDOT Standard Plans into the construction contract and must use TxDOT standard specifications or TxDOT-approved equivalent specifications.
- c. For all projects with state or federal funds and/or all projects on the state highway system, the LG must indicate the type of bridge rail to be used on the bridge layouts. See Bridge Layouts section in Module 10.
- d. For all projects off the state highway system with no state or federal funds, the LG may provide longitudinal barriers in accordance with their standard practice.

LG Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source:
 - i. Design-bid-build and design-build
 1. Provide barriers that meet current TxDOT Manuals and standards.
 2. Use TxDOT standard plans and specifications in PS&E unless otherwise approved by TxDOT.
 - ii. Design-bid-build only – Show type of rail on bridge layouts.
 - iii. Concession

1. Provide bridge railings and barriers meeting current crash test requirements.
 2. Provide testing as necessary or use TxDOT-approved barrier.
- b. For projects off the state highway system with no state or federal funds, follow LG procedures.

TxDOT District Responsibilities

- a. For projects requiring the LG to submit bridge layouts, assure that the type of bridge rail shown complies with TxDOT's *Bridge Railing Manual*. Process acceptable bridge layouts as shown in Bridge Layout section in Module 10.
- b. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, assure that all longitudinal barriers comply with TxDOT manuals, standards, and policy. For projects requiring TxDOT approval of the PS&E, assure plans incorporate TxDOT Standard Plan sheets and that specifications are comparable to TxDOT specifications before submitting the PS&E to DES. For projects with a pass-through financing arrangement, the District approves the PS&E but may contact DES, BRG, and TRF as appropriate for assistance.

Pavement Design

General Development of a long-lasting pavement with minimal maintenance is an important part of the project development process as pavement costs are a significant part of an agency's budget. Road user costs can also be significant if a pavement requires frequent lane closures for maintenance.

Federal Regulation

- a. 23 CFR 626.3 – Pavements must be designed to accommodate current and predicted traffic needs in a safe, durable, and cost effective manner.
- b. Non-regulatory Supplement to 23 CFR 626 – Even though a particular pavement design procedure is not specified, each State is expected to use a design procedure that is appropriate for its conditions. The State may use the design procedures outlined in the "AASHTO *Guide for Design of Pavement Structures*," or it may use other pavement design procedures that, based on past performance or research, are expected to produce satisfactory pavement designs.

State Regulation

- a. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT manuals, procedures, standards, and guidelines. For RMA, toll and pass-through financed projects, preliminary design information must be sent to TxDOT for review and approval when the design is approximately 30% complete.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG must use the pavement design methods in TxDOT's *Pavement Design Guide*. Use of an "experience/performance" based procedure requires prior concurrence of the TxDOT District Pavement Engineer.
 - i. Projected traffic volumes for projects on the state highway system will be as furnished by the TxDOT Transportation Planning and Programming Division (TPP). Projected traffic volumes will be based on a performance period of 20 years for flexible pavement design and a performance period of 30 years for rigid pavement design unless otherwise directed or approved by TxDOT. Projected traffic volumes for projects off the state highway system will be furnished by the LG for a design period in accordance with their local practice.
 - ii. Geotechnical investigations and reports must generally comply with the principals in the TxDOT's *Pavement Design Guide*.
- b. For all projects off the state highway system with no state or federal funds, the LG may follow their own pavement design procedures.

LG Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source:
 - i. Design-bid-build and design-build
 1. Request traffic data from the TxDOT District.
 2. Perform geotechnical investigation and develop Geotechnical Report.
 3. Prepare Pavement Design Report under direction of a Texas-licensed PE and submit to TxDOT for approval.
 - ii. Concession
 1. Prepare pavement design report.
 2. Design roadway pavements using Good Engineering Practice.

- b. For all projects off the state highway system with no state or federal funds, follow LG procedures.

TxDOT District Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system, except concession projects, the District Pavement Engineer must approve all pavement designs.
 - i. Request projected traffic data from the TPP and furnish to the LG.
 - ii. Review the Pavement Design Report to assure pavement designs meet TxDOT's *Pavement Design Guide*.
 - iii. Assure that the pavement design selected addresses issues in the geotechnical investigation.
 - iv. Provide technical assistance to the LG as requested.
 - v. Request assistance from the Construction Division, Materials & Pavements Section (CST-M&P) as needed.
- b. For concession projects, the District Pavement Engineer may review the developer's pavement design report as desired if allowed by agreement with TxDOT.
- c. There is no monitoring for projects off the state highway system with no state or federal funds.

Road Closure / Detour Plans

General Construction often requires detours or road closures. It is important to coordinate detours and closures with the entities responsible for both the road being detoured or closed and the road traffic is expected to use.

Federal Regulation

- a. 23 CFR 630.1006 – Each state must implement a policy for the systematic consideration and management of work zone impacts on all federally funded projects.
- b. 23 CFR 630.1012 – Each project must have a Transportation Management Plan or a Traffic Control Plan. The plan must be consistent with Part 6 of the MUTCD and with the work zone hardware recommendations in Chapter 9 of the American Association of State Highway and Transportation Officials (AASHTO) *Roadside Design Guide*.

State Regulation

- a. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT procedures, standards, and guidelines.

Required Practices

- a. For all projects on the state highway system or off the state highway system where traffic is to be detoured onto the state highway system, the LG must submit a request to TxDOT for approval before implementing the closure. The request must contain all of the provisions listed in Task 5740 of TxDOT's *Project Development Process Manual*.
- b. For projects off the state highway system that do not detour traffic onto the state highway system, the LG may approve detour plans and closures in accordance with LG procedures.

LG Responsibilities

- a. For all projects on the state highway system or off the state highway system where traffic is to be detoured onto the state highway system regardless of funding source:
 - i. Design-bid-build and design-build projects
 1. Develop road closure / detour plan request following Task 5740 of TxDOT's *Project Development Process Manual*.
 2. Submit request to TxDOT before advertising for receipt of bids (or implementing road closure / detour for design-build).
 3. Secure TxDOT approval before deviating from approved plan
 - ii. Concession projects
 1. Develop Traffic Management Plan and submit for TxDOT approval.
 2. Follow provisions of approved Traffic Management Plan
- b. For projects off the state highway system when traffic will not be detoured onto state highway system, follow LG procedures.

TxDOT District Responsibilities

- a. For all projects on the state highway system or off the state highway system where traffic is to be detoured onto the state highway system, the District must review the LG's request for compliance with Task 5740 of TxDOT's *Project Development Process Manual*. Approval of the LG's request is by the TxDOT District Engineer.

- b. There is no monitoring for projects off the state highway system that do not detour traffic onto the state highway system.

Specifications / Special Provisions

General Specifications and special provisions are an integral part of the contract between the contracting entity and the contractor. Clear, simple language is an important element.

Federal Regulation

- a. 23 CFR 630.205(b) – Plans and specifications are to describe the location and design features and the construction requirements in sufficient detail to facilitate the construction and contract control of the project.
- b. 23 CFR 630.205(e) and 635.309(a) – FHWA authorization to advertise for receipt of bids will not be given until the plans specifications, and estimate (PS&E) has been approved.
- c. 23 CFR 635.411 – Prohibits reference to proprietary materials in specifications unless supported by an approved public interest finding.
- d. Non-regulatory supplement to 23 CFR 630B contains guidelines for the preparation of the PS&E. Definitions for standard specifications, special specifications, and special provisions are given. NOTE: FHWA approves TxDOT standard specifications, special specifications, and special provisions for use on federally funded projects.

State Regulation

- a. Texas Administrative Code 43 – Requires use of latest TxDOT Standard Specifications, Special Specifications, and Special Provisions for projects on the state highway system. (NOTE: The latest TxDOT Standard Specifications, Special Specifications, and required Special Provisions are available at TxDOT's web site.) If the LG does not want to use TxDOT specifications, they may request TxDOT approval of alternate specifications for:
 - i. Projects with a pass-through financing arrangement
 - ii. Regional Mobility Authority projects that connect to the state highway system
 - iii. Toll projects covered by Chapter 27, Subchapter B.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG must either adopt the latest TxDOT Standard Specifications, Special Specifications, and required Special Provisions or request TxDOT approval of alternate, equivalent specifications for projects with a pass-through financing arrangement, Regional Mobility Authority projects, or Toll projects covered by Texas Administrative Code, Title 43, Chapter 27, Subchapter B.
 - i. For contract administration Items 1-9, the LG must insert their name in place of TxDOT if adopting TxDOT Standard Specifications. This may be accomplished by special provision.
 - ii. For contract administration Items 1-9 where the LG desires to propose alternate specifications, the LG must assure their proposed specifications address all issues and comply with state and federal statutes to the same degree as TxDOT Standard Specification Items 1-9. To assist this effort, the LG will use a checklist furnished by TxDOT. Proposed specifications must be submitted to TxDOT at 60% design completion to give TxDOT sufficient time for review and comment. Later submissions may delay TxDOT issuance of authority to proceed with the next phase of the project. The LG's submission must contain a description of how the LG meets all the items on the checklist. **The checklist is currently under development by TxDOT's Design Division.**
- b. For projects with federal funds, the LG must submit a public interest determination for TxDOT approval before specifying proprietary materials or processes. See Module 11, Patented-Proprietary Products for more information.
- c. For projects off the state highway system with no state or federal funds, the LG may use their own specifications

LG Responsibilities

- a. For design-bid-build and design-build projects with state or federal funds and/or on the state highway system regardless of funding source:
 - i. Adopt latest TxDOT Standard Specifications, Special Specifications, and required Special Provisions or submit alternate specifications for TxDOT approval if allowed by state regulation.
 - ii. Do not specify proprietary materials or processes unless approved by TxDOT

- b. For concession projects with state or federal funds, and on the state highway system regardless of funding source, comply with terms of Project Development Agreement with TxDOT.
- c. For projects off the state highway system with no state or federal funds, follow LG procedures.

TxDOT District Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system, the District:
 - i. Must review standard specifications, special specifications, and special provisions developed by the LG for compliance with state and federal statutory requirements and TxDOT policy. If the PS&E is to be approved at the Division level, the specifications should be submitted to DES prior to preliminary plan submittal at 60% completion. Additional review time will be needed for TxDOT to thoroughly review the local government's specifications for compliance with all federal and state requirements. The transmittal must include assurance that the District has reviewed the specifications and determined they meet TxDOT standards and policies.
 - ii. Must review the PS&E package to assure that the LG includes the latest TxDOT Standard Specifications, Special Specifications, and required Special Provisions. Refer to section on Letter of Authority / FPAA for PS&E review and processing.
- b. For projects with federal funds, the District must review the LG's public interest determination for reasonableness before sending to DES for approval. For projects with a pass-through financing arrangement, the District approves the public interest determination but may contact DES for assistance as needed.
- c. There is no monitoring for projects off the state highway system with no state or federal funds.

Storm Water Pollution Prevention Plans

General Water pollution degrades surface waters making them unsafe for drinking, fishing, swimming, and other activities. As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

Federal Regulation

- a. 23 CFR 650B – Requires control of erosion, abatement of water pollution, and prevention of damage by sediment deposition from all federally funded construction projects.
- b. 40 CFR 122 – Implements the National Pollutant Discharge Elimination System (NPDES). Requires a permit be obtained. Develop of a Storm Water Pollution Prevention Plan is one of the permit requirements.

State Regulation

- a. Texas Administrative Code, Title 30, Chapter 205 – Authorization for the Texas Commission on Environmental Quality to implement the Texas Pollutant Discharge Elimination System (TPDES) as administrator of the NPDES.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG must develop a Storm Water Pollution Prevention Plan (SWPPP) in conformance with TxDOT's *Storm Water Management Guidelines for Construction Activities*. Checklists are available from the TxDOT Environmental Affairs Division web site. EPA templates are available at their web site.
- b. For projects off the state highway system with no state or federal funds, the LG is responsible for compliance with the TPDES in accordance with their own practices.

LG Responsibilities

- a. For design-bid-build and design-build projects with state or federal funds and/or on the state highway system regardless of funding source, prepare SWPPP in conformance with TxDOT *Storm Water Management Guidelines for Construction Activities*.
- b. For concession projects with state or federal funds, and on the state highway system regardless of funding source:
 - i. Develop SWPPP sheets prior to any construction activities.
 - ii. Advise TxDOT when final stabilization and construction activities have taken place. (This step is only necessary if there are state or federal funds on the project.)
- c. For projects off the state highway system with no state or federal funds, comply with TPDES in accordance with LG practices.

TxDOT District Responsibilities

- a. For projects where TxDOT must approve the PS&E, the District should review the SWPPP for conformance with the *Storm Water Management Guidelines for Construction Activities*.
- b. There is no monitoring for projects where TxDOT does not review and approve the PS&E.

Value Engineering

General Value Engineering (VE) is the systematic application of recognized techniques which identify the function of a product or service, establish a value for that function, and provide the necessary function reliability at the least overall cost. VE studies are required on federally funded projects on the Federal-aid system with an estimated cost over \$25 million, and bridge projects with an estimated cost over \$20 million. This requirement must be fulfilled before construction is authorized.

Federal Regulation

- a. 23 CFR 627.1 – A value engineering study must be performed for all federally funded projects with an estimated cost over \$25 million and for all federally funded bridge projects with a total estimated cost over \$20 million. (NOTE: Section 1904 of SAFETEA-LU changed the applicability from “NHS” to “\$20

million and on the federal-aid system” but the Code of Federal Regulations has not been updated to reflect the new statutory language.)

- b. 23 CFR 627.5(e) – For design-build projects, the requirement to conduct a value engineering study must be fulfilled prior to release of the Request for Proposals.

State Regulation

- a. There are no state regulations that require the application of value engineering techniques to construction projects.

Required Practices

- a. For federally funded projects on the Federal-aid system with an estimated cost over \$25 million and all federally funded bridge projects with a total estimated cost over \$20 million, the LG must conduct a value engineering study before requesting authorization to advertise for receipt of bids or to release a Request for Proposals.
- b. Value engineering studies are not required for concession projects.

LG Responsibilities

- a. For all federally funded projects on routes functionally classified above a Rural Minor Collector, conduct value engineering study prior to request to advertise for receipt of bids (or prior to release of Request for Proposals for design-build projects) if the estimated project cost is over \$25 million, or over \$20 million for bridge projects.

TxDOT District Responsibilities

- a. For projects requiring a value engineering study, assist the LG as requested and coordinate any issues with DES.

Section 5

Letter of Authority

Overview

The state Letter of Authority (SLOA) is a form that must be issued on all projects whether the work is competitively bid or performed by the local LG Government. The SLOA must be signed and dated prior to advertisement of the project. Federal-aid projects require a three-week advertisement period. State law prescribes that state-funded projects be advertised for two consecutive weeks prior to receipt of bids. The SLOA issue dates are reflected in the PS&E Review and Processing Schedule.

A Federal Project Authorization and Agreement (FPAA) is also required for all federally funded projects. The primary function of this form is to obligate federal funds for the project by phases. By completion of the FPAA form, federal funds are authorized through an agreement with the Federal Highway Administration (FHWA) for reimbursement of the approved costs.

23 USC 323(c) allows “persons” to donate funds, materials, or services in connection with a Federal-aid project. Preliminary engineering is considered to be a service. TxDOT may credit the fair market value of donated engineering services to the State share of the project. However, the donation must be a service needed for the project. 23 USC 323(e) notes that a local government may contribute funds and materials for credit, but not services. If a local agency proposes to apply the cost they paid for consultant services to the non-Federal share, the local agency must follow an approved consultant selection process meeting 23 CFR 172. This requirement applies whether or not the local agency incurred the cost for these services before their intention to seek Federal funds for construction.

Coordination with FAA

General The Federal Aviation Administration (FAA) is responsible for assuring the safety of air traffic. One major concern is interference with navigational airspace, such as possible encroachments in take-off and landing patterns. Documentation of satisfactory coordination with FAA must be provided before a project may be authorized for construction.

Federal Regulation

- a. 14 CFR Part 77 – Contains rules for objects affecting navigational airspace

- i. Section 77.13 – Lists scenarios which require notification of the Federal Aviation Administration before construction or modification.
 - ii. Section 77.17 – Specifies minimum timing of notification and use of FAA Form 7460-1.
- b. 23 CFR 620A – Requires coordination of highway and airport developments between FHWA and the Federal Aviation Administration (FAA) to insure that airway-highway clearances are adequate for the safe movement of air and highway traffic and that the expenditure of public funds for airport and highway improvements is in the public interest.
- c. Non-regulatory supplement to 23 CFR 620A – Any federally funded project within 2 miles of an airport should be carefully examined to determine if there is a possibility for conflict and if coordination is required

State Regulation

- a. There are no state regulations that require coordination with FAA.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG must determine if the proposed project requires coordination with FAA. If coordination is required, the LG must prepare FAA Form 7460-1 and submit to FAA for action. Additional information and instructions are available in TxDOT's *PS&E Preparation Manual*.
- b. The LG must mark and light obstructions according to the standards in the latest FAA Advisory Circular 70/7460-1K.
- c. Forms and Advisory Circulars are available at the FAA web site.

LG Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source:
 - i. Complete FAA Form 7460-1 as required and submit to FAA.
 - ii. Mark and light obstructions as shown in FAA Advisory Circular 70/7040-1K.
 - iii. Additional responsibilities for design-bid-build:
 1. Determine proximity of project to airport using a USGS map.
 2. Complete Airport Coordination section of Design Summary Report.

- iv. Additional responsibilities for design- build – Include provision for FAA coordination in Request for Proposals.
- v. Additional responsibilities for concession – Include provision for FAA coordination in Technical Provisions.
- b. Follow LG procedures for projects off the state highway system with no state or federal funds.

TxDOT District Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the District must:
 - i. Assure that objects are lighted and marked as required by FAA Advisory Circular 70/7460-1K.
 - ii. Assure FAA coordination is complete before TxDOT takes action on the LG's request to authorize the next phase of work.
- b. There is no monitoring for projects off the state highway system with no state or federal funds.

Environmental Permits, Issues, and Commitments (EPIC)

General During the environmental process covered in Module 5, commitments are often included in the environmental document. These commitments must be carried through the project development and construction stages to assure full compliance with state and federal environmental regulations. TxDOT's *Environmental Manual* is the primary resource on TxDOT's environmental process.

Federal Regulation

- a. 23 CFR 635.309(j) – The PS&E may not be approved until FHWA (or TxDOT) has determined that appropriate measures have been included in the PS&E to ensure that conditions and commitments made in the development of the project to mitigate environmental harm will be met.
- b. 23 CFR 771 – Federal Highway Administration (FHWA) regulations concerning environmental actions
 - i. Paragraph 105(d) – Measures necessary to mitigate adverse impacts identified during the environmental process must be incorporated into the project.

- ii. Paragraph 109(b) – The applicant for federal funds is responsible for implementing those mitigation measures stated as commitments in the environmental documents prepared pursuant to this regulation.
 - iii. Paragraph 109(d) – TxDOT is responsible for ensuring that the project is constructed in accordance with and incorporates all committed environmental impact mitigation measures listed in approved environmental documents unless TxDOT requests and receives written FHWA approval to modify or delete such mitigation features.
- c. 23 CFR 772.111(g) – The PS&E will not be approved unless those noise abatement measures which are reasonable and feasible are incorporated into the plans and specifications.

State Regulation

- a. Texas Administrative Code, Title 43, §2.20 – Unless otherwise approved by TxDOT a public or private entity requesting state or federal funds is responsible for compliance with environmental regulations. One responsibility is to submit documentation to TxDOT showing that all EPIC is complete or will be completed including copies of permits or other approvals required prior to construction.
- b. Texas Administrative Code, Title 43, §26.33 – For projects that connect to the state highway system, the Regional Mobility Authority is fully responsible for ensuring that all EPIC are addressed in project design.
- c. Texas Administrative Code, Title 43, §27.56 – For projects where a public or private entity is eligible to request financial assistance for toll facilities, the requestor is fully responsible for ensuring that all EPIC are addressed in project design.
- d. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT procedures, standards, and guidelines. For RMA, toll and pass-through financed projects, preliminary design information must be sent to TxDOT for review and approval when the design is approximately 30% complete.

Required Practices

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the LG:
 - i. Must include a description of how permits will be handled with the “30% complete” submittal to TxDOT.
 - ii. Must follow procedures in the TxDOT *Environmental Manual*.

- iii. Must include EPIC sheets in the contract plans using the format in the latest standard plan sheet available at TxDOT's web site.
- b. For all projects off the state highway system with no state or federal funds, the LG must follow through on environmental commitments. The LG may use their own process for assuring that commitments are implemented.

LG Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source:
 - i. Design-bid-build
 - 1. Describe how permits will be handled with 30% submission to TxDOT.
 - 2. Follow TxDOT *Environmental Manual*.
 - 3. Include EPIC sheet in PS&E using standard sheet from TxDOT web site.
 - ii. Design-build
 - 1. Follow TxDOT *Environmental Manual*.
 - 2. Describe how environmental commitments are to be implemented in request for final design and construction approval.
 - iii. Concession
 - 1. Develop, operate, and maintain a comprehensive environmental protection program to ensure compliance with all applicable Environmental commitments and laws.
 - 2. Comply with conditions of permits obtained by project administrator.
- b. For all projects off the state highway system with no state or federal funds, assure environmental commitments are implemented using LG process.

TxDOT District Responsibilities

- a. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the District must:
 - i. Review 30% plan submission and determine if permit management is reasonable.
 - ii. Assure EPIC sheets are included in PS&E.
- b. There is no monitoring for projects off the state highway system with no state or federal funds.

Funding Overruns

General One provision of the agreement between a local government and TxDOT is the funding arrangement. State and federal funding from TxDOT must be limited to the agreement amount unless the agreement is modified.

Federal Regulation

- a. There are no specific federal regulations concerning funding overruns. FHWA executes a project agreement with TxDOT on all federally funded projects.

State Regulation

- a. Texas Administrative Code, Title 43, §15.52 – Requires a written agreement between TxDOT and a local government when the local government is providing financial assistance for a highway improvement project. One provision of the interagency agreement is funding.
- b. Texas Administrative Code, Title 43, Chapter 5 – Provides for agreements between TxDOT and other entities which include funding arrangements and responsibilities:
 - i. §5.56 – Pass-through Fares and Tolls
 - ii. §5.74 – Transportation Development Credit Program
 - iii. §5.88 – Private Activity Bonds.

Required Practices

- a. For projects with state or federal funds, the LG must follow the terms of the project agreement executed with TxDOT. TxDOT will not provide additional funds for overruns unless such funding is contained in the agreement.
- b. For projects with no state or federal funds, the LG is responsible for all funding overruns.

LG Responsibilities

- a. For all projects with state or federal funds:
 - i. Follow terms of project agreement with TxDOT.
 - ii. Provide additional funding for overruns unless such funding is contained in the agreement.
- b. For all projects with no state or federal funds, provide funding for all overruns.

TxDOT District Responsibilities

- a. For projects with state or federal funds, the District:
 - i. Is responsible for collecting funds and tracking the status of the project agreement as discussed in LGPP Module 3.
 - ii. Should advise the LG of their responsibilities when funding overruns become apparent.
 - iii. Must assure proper distribution of funds at project close-out in accordance with the project agreement.
- b. There is no monitoring for projects with no state or federal funds.

Letter of Authority/Federal Procurement Authorization Agreement

General The Letter of Authority / Federal Procurement Authorization Agreement (LOA / FPAA) is the document that tells the local government they may proceed with various phases of a project and commits expenditure of state or federal funds. Costs incurred by the local government prior to the date of the LOA / FPAA are not eligible for reimbursement. TxDOT issues the LOA / FPAA in response to a written request from the LG. Depending on the phase of work, the LG must fulfill certain requirements before the authorization may be issued. For example, the PS&E must be approved before a design-bid-build project may be advertised for receipt of bids.

Federal Regulation

- a. 23 CFR 630 Subpart A – Requires that TxDOT obtain authorization from FHWA before work begins on any federally funded project.
- b. 23 CFR 630 Subpart B – Prescribes procedures to be followed for preparation, submission, and approval of plans, specifications and estimates (PS&E), and supporting documents for federally funded projects.
- c. 23 CFR 635 Subpart C – Requires authorization before a federally funded project may be advertised for receipt of bids. PS&E approval is a pre-requisite of authorization for design-bid-build projects. For design-build projects, FHWA's approval of the Request for Proposals document will constitute the FHWA's project authorization.

State Regulation

- a. Texas Administrative Code, Title 43 – Projects on the state highway system must be designed in accordance with TxDOT manuals, procedures, standards, and guidelines.
- b. Texas Administrative Code, Title 43 – The PS&E must be approved by TxDOT prior to advertisement for receipt of bids for projects on the state highway system.

Required Practices

- a. The TxDOT Divisions are responsible for issuing all Letters of Authority (LOA) and for processing all Federal Procurement Authorization Agreements (FPAAs).
- b. For all projects requiring TxDOT approval, the PS&E must be submitted to TxDOT at least 20 weeks prior to the proposed letting date. For projects with a pass-through financing arrangement, the time frame for LG submission of the PS&E to TxDOT may be less than 20 weeks prior to the proposed letting date if agreeable to the local TxDOT District.
 - i. The format and content of the PS&E will be as described in TxDOT's *PS&E Preparation Manual*. In particular, the LG must follow Chapter 5.
 - ii. The number of copies to submit will be as shown in TxDOT's Form 1002, available as a MS Word document in the Design Division section of TxDOT's web site.
- c. For all projects with state or federal funds and/or all projects on the state highway system regardless of funding source:
 - i. The LG must obtain TxDOT approval of the final PS&E before advertising the project for receipt of bids (design-bid-build).
 - ii. The LG must obtain TxDOT approval of the Request for Proposals prior to release (design-build).
 - iii. The LG must request TxDOT concurrence with the Technical Provisions (Concession projects).
- d. For all projects off the state highway system with no state or federal funds, the LG issues the authorization to proceed with the next phase of the project in accordance with their procedures.

LG Responsibilities

- a. For projects with state or federal funds, and/or on the state highway system regardless of funding source:
 - i. Design-bid-build
 1. Submit final PS&E for TxDOT approval.

2. Request TxDOT authorization to advertise for receipt of bids.
3. Do not bill cost incurred prior to date of authorization.
- ii. Design-build
 1. Submit Request for Proposals (RFP) and other documentation for TxDOT approval.
 2. Request TxDOT authorization to issue RFP.
 3. Do not bill cost incurred prior to date of authorization.
- iii. Concession
 1. Submit Technical Provisions and proposed concession agreement for TxDOT approval.
 2. Request TxDOT approval to execute concession agreement.
 3. Do not bill cost incurred prior to date of authorization.
- b. For all projects off the state highway system with no state or federal funds, issue authorization to proceed with next phase of work in accordance with LG procedures.

TxDOT District Responsibilities

- a. For projects with state or federal funds and/or all projects on the state highway system regardless of funding source, the District:
 - i. Will review the PS&E for all required specifications and bidding documents.
 - ii. Forward the PS&E to the responsible Division (Design Division (DES), Traffic Operations Division (TRF) or Bridge Division (BRG)) with the District's recommendation for final review and processing prior to the authorization at least 10 weeks prior to the proposed letting date.
 - iii. For projects with a pass-through financing arrangement, the District approves the PS&E, but still forwards the authorization request to DES for preparation of the LOA / FPAA.
 - iv. Must seek approval from the appropriate Division to proceed if there is no state or federal funding.
- b. There is no monitoring for projects off the state highway system with no state or federal funds.

Right-of-way and Utility Certification

General Ideally, all right-of-way is acquired and utilities adjusted before construction begins. This gives the contractor unrestricted access to the project and minimizes the potential for delays during construction. On occasion, it is prudent to start construction prior to having all right-of-way and utility issues resolved. In this case, the status of acquisition and adjustment must be presented to TxDOT before TxDOT issues authorization to proceed with construction. The status includes a reasonable date by which acquisition and adjustment is anticipated. It is important that these dates be accurate, as the anticipated dates become part of the construction contract and delays can lead to contractor claims and additional project costs.

Encroachments are features within the right-of-way that are privately owned. Encroachment may remain if approved in writing, otherwise they must be removed before construction is completed and the work accepted.

Federal Regulation

- a. 23 CFR 635.307 – Prior to authorization to advertise for receipt of bids, right-of-way clearance and utility work must be so coordinated with the physical construction that no unnecessary delay or cost for the physical construction will occur. Right-of-way clearance and utility work performed separately from the contract for the physical construction of the project are to be accomplished in accordance with provisions of the applicable federal regulation.
- b. 23 CFR 635.309 – For design-bid-build projects, a request for authorization to advertise for receipt of bids must include several statements / certifications:
 - i. That either all right-of-way clearance or utility work has been completed or that all necessary arrangements have been made for it to be undertaken and completed as required for proper coordination with the physical construction schedules.
 - ii. All individuals and families have been relocated to decent, safe and sanitary housing or the State has made available to relocatees adequate replacement housing in accordance with the provisions of current Federal Highway Administration (FHWA) directive(s). Additional required information is outlined.
 - iii. Right-of-way has been acquired or will be acquired in accordance with the current FHWA directive(s) covering the acquisition of real property or that acquisition of right-of-way is not required.

- iv. Statements relative to relocation advisory assistance and payments.
- v. That the provisions of 23 CFR 645.119(b) have been fulfilled where utility facilities are to use and occupy the right-of-way.
- c. 23 CFR 635.309(p) – For design-build projects, the following certifications must accompany a request to authorize final design and construction:
 - i. Either all right-of-way and utility work has been completed or that all necessary arrangements will be made for the completion of right of way and utility work.
 - ii. If right-of-way and/or utility services are to be included as part of the design-builder's scope of work, then the Request for Proposals document must include:
 - 1. A statement concerning scope and current status of the required services;
 - 2. A statement which requires compliance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970, as amended, and 23 CFR part 710.
- d. 23 CFR 710.403(a) – All real property within a federally-aided facility must be devoted to highway use unless alternate use has been approved. Approval for encroachments to remain may be given if the encroachment does not interfere with the safe, free flow of traffic.

State Regulation

- a. Texas Administrative Code, Title 43 – Projects must be designed in accordance with TxDOT procedures, standards, and guidelines.
- b. State law prohibits an encroachment to exist without formal agreements with the owner of the encroachment. TxDOT *Right of Way Manual*, Volume 2 Chapter 5, Section 21.

Required Practices

- a. For all projects, the LG is responsible for acquiring right-of-way and arranging for utility adjustments unless this work is performed by TxDOT.
- b. For design-bid-build projects with state or federal funds and other projects where TxDOT must approve the final PS&E, the LG must:
 - i. Show approximate utility locations on the plan and profile sheets in accordance with TxDOT's *PS&E Preparation Manual*;
 - ii. Show existing and proposed right-of-way lines, including control of access lines;

- iii. Provide right-of-way, relocation assistance, utility, and encroachment certifications with the PS&E submission as outlined in TxDOT's *PS&E Preparation Manual*. The certifications must be signed by an authorized representative of the LG. Certification templates are available from TxDOT;
 - iv. Develop special provisions advising potential bidders of the status of right-of-way and utilities, including anticipated clearance and availability dates that match those in the signed certification;
 - v. Assure TxDOT that any additional cost, including extensions of contract time, caused by delays in acquiring right-of-way or adjusting utilities beyond the certification dates will be borne by the LG.
- c. For design-build projects where TxDOT must authorize the LG to proceed with final design and construction, the LG must provide the certifications required by 23 CFR 635.309(p) to TxDOT
- d. For concession projects, the LG is responsible for assuring compliance with the Technical Provisions of the concession agreement. In general, the concessionaire acquires right-of-way using standards in TxDOT manuals specified in the Technical Provisions and coordinates with utilities using TxDOT's *Utility Manual* for guidance.
- e. For projects with no state or federal funds off the state highway system where TxDOT does not approve the final PS&E or authorize the LG to proceed to final design and construction, the LG will coordinate right-of-way and utility issues using their own procedures.

LG Responsibilities

- a. For projects with state or federal funds, and/or on the state highway system regardless of funding source:
 - i. Design-bid-build
 - 1. Assure that the successful contractor can reasonably prosecute work considering right-of-way and utility work to be accomplished during construction.
 - 2. Include outstanding right-of-way and utility work in PS&E.
 - 3. Submit applicable certifications with final PS&E.
 - ii. For design-build projects, submit applicable certifications with request to proceed with final design and construction
 - iii. For concession projects, certifications are not required. See Module 6, Right-of-Way, Other Land, and Utilities for compliance with regulations.

- b. For projects off the state highway system with no state or federal funds, follow LG procedures.

TxDOT District Responsibilities

- a. For projects where TxDOT either approves the final PS&E or authorizes the LG to proceed to final design and construction, the District must review the LG’s certifications for reasonableness before sending the PS&E or request to proceed to DES for approval. Reasonableness includes:
 - i. Right-of-way acquisition and utility coordination complies with the applicable policies and procedures.
 - ii. Anticipated acquisition or adjustment dates are achievable for the stage of acquisition or adjustment.
 - iii. The contractor is able to reasonably prosecute work given the potential coordination issues.
 - iv. The PS&E describes the right-of-way and utility situation in a manner that potential bidders can understand and prepare a bid.
- b. For projects with a pass-through financing arrangement, the District approves the PS&E and certifications, but may contact the appropriate Division for assistance as needed.
- c. There is no monitoring for projects with no state or federal funds off the state highway system where TxDOT does not approve the final PS&E or authorize the LG to proceed to final design and construction.