

**ATTACHMENT 60 – ANSWERS TO STANDARD SET OF QUESTIONS BY THE
TEXAS DOT**
(35 pages)

Texas DOT

May 6, 2008

Italics represent the responses by the Texas DOT.

1. What was your procedure in reviewing consultant engineering bridge plans in the early 1960's? What is your procedure in reviewing consultant engineering bridge plans today?

We did not have many, if any, consultant engineering bridge plans in the 1960's. Based on discussions with TxDOT retirees, the review process in place in 1960 was essentially the same as today. Consultant engineering bridge plans are reviewed in the Plan Review Branch in conjunction with the Bridge Design Section, the Geotechnical and the Construction Branches, both under the Field Operations Section. Each section or branch reviews the plans with respect to their area of expertise but most also have some degree of knowledge with respect to the other areas. For example, many of the bridge construction engineers have some bridge design experience and vice versa. It is important to note that District Offices have varying levels of bridge engineering expertise. All bridge projects designed by consultants under contract with a District will have undergone 30%, 60%, 90%, and 100% complete reviews by District personnel before the job is submitted to the Bridge Division for our review and processing.

2. How do you ensure the QA/QC process of a consultant engineering firm is adequate? In the early 1960's and today? What procedures are in-place to ensure that the consultant does not submit an inadequate design?

1. Consultant selection is based on qualifications. Firms must be pre-certified in the areas they intend to contract. (See Attachments A & B ~ Precertification General requirements and minimum requirements documents.) In addition, qualifications of the major task leaders are typically the single most important selection criteria. Firms are also selected based on their experience with similar projects.

2. Evaluation of the consultants QA/QC is another major selection criteria in the consultant selection process.

3. Consultants are required to make submittals that demonstrate the use of an established QA/QC process. (See Attachment C ~ Memorandum dated June 15, 2006 from Amadeo Saenz on quality of deliverables.)

4. For significant structures, TxDOT has historically reviewed design calculations for critical portions of the design. Recent examples include the design of the San Antonio "Y" segmental bridges, the cable-stayed Veteran's Memorial (Neches River) Bridge on SH87 the Cable-stayed Fred Harman Bridge. For these projects, Bridge Division personnel requested and reviewed design calculations to substantiate the consultants design at critical stages in the project.

5. The Texas Engineering Practice Act makes the Engineer of Record ultimately responsible for protecting the public health, safety, and welfare. (See Attachment D for summary of Engineering Board Rules.)

3. What does the Texas DOT consider a red-flag item when reviewing consultant engineering bridge plans? What follow-up action is taken to address the red-flag item? Describe the level of detail the Texas DOT uses in reviewing consultant engineering bridge plans?

All bridge plans are routed through the Bridge Design Section and Geotechnical Section of the Field Operations Branch and in addition those projects involving bridge rehabilitation are routed through the Construction Branch of the Field Operations Section. All errors that are detected are addressed in conjunction with the districts and the consultant. The consultant sends new corrected plan sheets usually through the districts to Austin. Red-flag items are unusual details that do not fit into a standard practice. An example is discontinuous reinforcing steel in the exterior corners of frame or cantilever-type bent caps.

4. Does the Texas DOT review consultant engineering bridge plans concurrently with the FHWA Division Office? Does the Texas DOT review the consultant plans with the expectation that FHWA will be performing a similar type of review?

In accordance with the Federal/State oversight agreement the FHWA reviews a few selected projects from each district. TxDOT follows all Federal policies when preparing and reviewing PS&E without expectation of the FHWA performing a similar type of review. TxDOT does not consider the FHWA review as a substitute for our own internal review process.

5. What are the qualifications of the Texas DOT personnel who conduct the review of consultant engineering bridge plans?

All bridge projects are reviewed by Professional Engineers (PE's). Professional Engineers in the Plan Review Branch of the Project Development Section review the plans and coordinate the review of bridge plans with other PE's in the Design Section and Field Operations Section. At the current time, the average number of years experience of the PE's performing these reviews in the Bridge Division is between 15 and 20 years. Two of the Bridge Division's plan reviewers are engineering technicians, however, they are never the sole reviewers for a project nor are they tasked with structural review. (See Attachment E ~ PS&E Review Flowchart.)

6. What is the percentage of bridge design work that is done in-house versus the percentage that is done by consultant engineering firms?

60% in-house. The remainder by TxDOT consultants.

7. Describe the structure of the Texas DOT? Is the bridge office centrally organized? How many district bridge offices are located in the state? Are consultant engineering bridge plans reviewed at the central office or district bridge office?

The Bridge Division is located in Austin and assists 25 districts around the state with the development of bridge plans. Only some of the larger districts, i.e., Dallas, El Paso, Fort Worth, Houston, and San Antonio have bridge sections of their own that perform bridge design and structural review. The five districts that have bridge sections review the plans prepared by the

district or their consultants before sending the plans to Austin for final PS&E review. All sets of PS&E are submitted by the districts to the Design Division in Austin for letting regardless of who designed the bridge. The Design Division coordinates the review of all bridge plans with the Bridge Division before the project is cleared to be let for construction. The Plan Review Branch of the Project Development Section in the Bridge Division coordinates the review within the Bridge Division (see number 3 above). (See Attachment F ~ TxDOT Organization Chart.)

In addition, the TxDOT Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges, Article 7.8 and SP007-445 covers heavy loads and stockpiling of materials. Usually Bridge Division will review the submitted calculations and respond to the district with approval recommendations.

Printer-Friendly Page:http://www.dot.state.tx.us/services/design/precertification_process/precert_info.htm

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**TEXAS DEPARTMENT OF TRANSPORTATION****General Information for Precertification**

- A firm must be precertified prior to being awarded a professional services contract with TxDOT. In order to become precertified, firms must go through the precertification application process. Firms that have never been precertified with TxDOT before should start on the [New to TxDOT](#) page. Otherwise, precertified firms can update current information by using the [CCIS Online System](#) or the [PDCSystem](#).
- Precertification is based on employee projects. TxDOT precertifies individuals based on prior work experience. An employee demonstrates his or her work experience by describing the work done on projects in the past. Precertification is then granted or denied based on this information.
- Once an employee is precertified in a work category, the firm employing that person is then automatically precertified in that category. If only one person employed by a firm is precertified in a particular category and that person leaves the firm, their precertification leaves with them.
- Precertification information can be updated at any time. Click [here](#) for instructions on how to update precertification information.
- If precertification is denied in one or more categories, it may be re-applied for. Click [here](#) for details on how to re-apply.
- Precertification is required for all work categories that constitute 5% or more of the work on a contract. Work categories involved in proposed contracts will be detailed in the Notice of Intent (NOI). A listing of current NOI's is advertised on the TxDOT Web site and on the [Electronic State Business Daily](#) (ESBD – formerly the Texas Marketplace). Click [here](#) to link to current NOI's for professional services.
- As of April 2, 2001 it is no longer required to renew precertification. Once precertification is granted, it is permanent. Once a firm's employee becomes precertified in a category, the firm is then precertified in that category.
- TxDOT has sixty (60) days to review a precertification application once it has been submitted.

TxDOT's Precertification Process

ATTACHMENT "B" Precertification Requirements by Category

The Texas Department of Transportation precertifies providers and sub-providers in the following technical work categories in accordance with the listed certification requirements. A firm may only use an individual who is employed by that firm at the time of submittal for precertification. The experience used to meet requirements may be either prior to or after licensure unless otherwise stated in a specific category. Such licenses or registrations shall be those issued by the appropriate professional licensing board.

Group 1 - Transportation Systems Planning

Work Category	Category Description	Certification Requirements
1.1.1	<u>Policy Planning</u> - This category includes the investigation and development of transportation planning and strategies to meet current or future needs at the state or local level.	The firm must employ: <ul style="list-style-type: none"> one professional engineer with training and experience in areas directly related to policy planning; or one planner with training and experience in areas directly related to policy planning.
1.2.1	<u>Systems Planning</u> - This category includes development of state or local transportation plans to create complete integrated systems to support movement of people and goods.	The firm must employ: <ul style="list-style-type: none"> one professional engineer with training and experience in areas directly related to systems planning; or one planner with training and experience in areas directly related to systems planning.
1.3.1	<u>Subarea/Corridor Planning</u> - This category includes the study of the feasibility of all modes of transportation corridors at the state or local level to determine the cost effectiveness of the various alternatives to meet specific goals and may include actual route location as a final product.	The firm must employ: <ul style="list-style-type: none"> one professional engineer with training and experience in areas directly related to subarea/corridor planning; or one planner with training and experience in areas directly related to subarea/corridor planning.
1.4.1	<u>Land Planning/Engineering</u> - This category includes planning and engineering in support of assessing the impacts that proposed transportation improvements may have on public and private property.	The firm must employ: <ul style="list-style-type: none"> one professional engineer with training and experience in comprehensive planning or areas directly related to assessing impacts to private property; or one planner with training and experience in comprehensive planning or areas directly related to assessing impacts to private property.
1.5.1	<u>Feasibility Studies</u> - This category includes investigation of programs or specific projects to determine if they are cost effective and meet the department's desired goals.	The firm must employ one professional engineer who has: <ul style="list-style-type: none"> proficiency in civil engineering; and

		<ul style="list-style-type: none"> completed a minimum of two feasibility studies.
1.6.1	<u>Major Investment Studies</u> - This category includes the investigation of modal and financing alternatives for major transportation projects at the state or local level.	<p>The firm must employ:</p> <ul style="list-style-type: none"> one professional engineer with proficiency in civil engineering and experience or education in urban planning and economic, or environmental impact assessment; and one person with a bachelor's degree in physical or a natural science with related experience.

Group 2 - Environmental Studies

Work Category	Category Description	Certification Requirements
2.1.1	<u>Traffic Noise Analysis</u> -This category includes the performance of a traffic noise analysis for a roadway project.	<p>The firm must employ one person with:</p> <ul style="list-style-type: none"> a bachelor's degree or equivalent experience in environmental studies, urban planning, civil or environmental engineering, or a related field; and demonstrated experience in use/application of Traffic Noise Guidelines, traffic noise modeling software, and appropriate sound measuring equipment through the accurate completion of a traffic noise analysis for a minimum of two highway projects at the FONSI level or above.
2.2.1	<u>Air Quality Analysis</u> - This category includes the performance of an air quality analysis for a roadway project.	<p>The firm must employ one person with:</p> <ul style="list-style-type: none"> a bachelor's degree or equivalent experience in environmental studies, urban planning, civil or environmental engineering, or a related field; and demonstrated experience in use/application of air quality guidelines and air quality modeling software through the accurate completion of an air quality analysis for a minimum of two highway projects at the FONSI level or above.
2.3.1	<u>Wetland Delineation</u> – This category includes the performance of a wetland delineation according to the United States Army Corps of Engineers requirements.	<p>The firm must employ one person with:</p> <ul style="list-style-type: none"> a minimum of one year of field experience in wetland delineation; and completion of a Wetland Training Institute or an equivalent one week wetland delineation class.
2.4	United States Army Corps of Engineers Permits - This category includes the following permits:	
2.4.1	<u>Nationwide Permit</u>	The firm must employ one person with working knowledge of the nationwide permit process and a minimum of one year of experience in nationwide permit determination.

2.4.2	<u>§404 (Title 33, United States Code §1344) Individual Permits</u> (including mitigation and monitoring).	The firm must employ one person with working knowledge of the individual §404 Permit process, with one year of experience, and who has applied for and received one individual permit.
2.4.3	<u>U. S. Coast Guard and U.S. Army Corps of Engineers §10 (Title 33, United States Code §403) Permits</u>	The firm must employ one person with one year of experience and working knowledge of the Rivers and Harbors Act, §10 who has applied for and received one navigation-related permit.
2.5.1	<u>Water Pollution Abatement Plan</u> - This category includes geologic field assessment and the preparation of pollution abatement plans as they relate to the Edwards Aquifer Rules.	The firm must employ one person with: <ul style="list-style-type: none"> • a background in geology, environmental studies, civil or environmental engineering, or a related field; and • working knowledge of the Edwards Aquifer rules.
2.6	Protected Species Coordination - This category includes the following types of biological issues and coordination.	
2.6.1	<u>Protected Species Determination (Habitat)</u> -This category involves the determination of the potential presence or absence of a protected species or important habitat.	The firm must employ one person: <ul style="list-style-type: none"> • with knowledge of currently protected species and/or habitats, and a demonstrated ability to perform basic inventory work sufficient to comply with FHWA National Environmental Protection Act (NEPA) requirements.
2.6.2	<u>Impact Evaluation Assessments.</u> - This category requires demonstrated ability to use habitat and species determination and biological survey data to analyze impacts to biological resources.	The firm must employ one person: <ul style="list-style-type: none"> • with demonstrated ability to prepare a biological impact analysis for NEPA documentation or to support the Federal Endangered Species Act (ESA) Section 7 consultations, including the preparation of a biological assessment, or ESA Section 10.a permit applications.
2.6.3	<u>Biological Surveys</u> -This category requires demonstration of ability to conduct biological resource field studies.	The firm must employ one person: <ul style="list-style-type: none"> • with demonstrated ability to survey the project site and classify the vegetation community, list animal species associated with that community and identify special habitat features within the community; who has required state and federal permits; and with experience in appropriate survey protocols for specific protected species
2.7.1	<u>§4(f) (Title 23, United States Code of Federal Regulations §771.135) and/or §6(f) (Title 49, United States Code §303) Evaluations</u> – This category includes §4(f) evaluations, identified in the Department of Transportation Act of 1966, which are conducted when right of way is acquired from publicly owned parks, recreation areas, wildlife or waterfowl refuges, or historic sites, and §6(f)	The firm must employ one person: <ul style="list-style-type: none"> • with a minimum of one year of experience in applying §4(f) and/or §6(f) requirements; • who has completed a minimum of one successful evaluation; and • who has received FHWA or other federal agency approval.

	evaluations which apply (applies) when federal land and water conservation funds are used for improvements to the site.	
2.8.1	<p><u>Surveys, Research and Documentation of Historic Buildings, Structures, and Objects</u></p> <p>– This category includes surveys, research, and documentation efforts carried out in accordance with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (Volume 48 of the Federal Register, 44716) to comply with §106 (Title 16, United States Code §470f) of the national Historic Preservation Act of 1966, as amended, and other state and federal historic preservation related laws and regulations. Associated activities include: delineation of the area of potential effects for projects with the potential to affect historic properties; field surveys and photographic and written documentation on historic properties located within a project's area of potential effects; development of historic contexts that provide an organizational and thematic format for evaluating historic properties; determination of National Register eligibility for identified historic properties; preparation of historic documentation on affected properties in accordance with the documentation requirements of the Historic American Buildings Survey and the Historic American Engineering Record; evaluation of the effect of projects on significant properties; and the development of management and preservation plans for historic properties.</p>	<p>The firm must employ one person with experience working with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (Volume 48 of the Federal Register, 44716), 36 CFR Part 800, and documentation requirements of the Historic American Buildings Survey and Historic American Engineering Record and:</p> <ul style="list-style-type: none"> • a master's degree in architectural history, historic preservation or a closely related field, with course work in American architectural history and a minimum of one year of direct experience performing surveys, research or documentation of historic buildings, structures, and objects; • a bachelor's degree in architectural history, historic preservation or a closely related field, with course work in American architectural history and a minimum of two years of direct experience performing surveys, research or documentation of historic buildings, structures, and objects; or • a minimum of ten years of direct experience performing surveys, research, or documentation of historic buildings, structures, and objects, including scholarly publications and presentations at professional meetings.
2.9.1	<p><u>Historic Architecture</u> - This category includes architectural work to ensure compliance with Secretary of the Interior's Standards for Historic Preservation projects (Volume 48 of the Federal Register, 44716). Associated activities include detailed investigations of historic structures, preparation of historic structure research reports, preparation of plans and specifications for historic preservations projects,</p>	<p>The firm must employ a registered architect:</p> <ul style="list-style-type: none"> • with a minimum of two years of full-time experience managing historic preservation projects; or • with a minimum of one year of full-time experience managing historic preservation projects and completion of a minimum of one year of graduate study in preservation architecture.

	development of management plans for individual properties, and preparation of measured drawings for affected historic properties.	
2.10.1	<u>Archeological Surveys, Documentation, Excavations, Testing Reports and Data Recovery Plans</u> – This category includes: reconnaissance or intensive archeological surveys performed in accordance with the criteria listed in the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation (1982), Reports Relating to Archeological Permits in the Rules of Practice and Procedure for the Antiquities Code of Texas, and performance standards as outlined in the Council of Texas Archaeologists (CTA) Guidelines; documentation of operations that use archeological techniques to obtain and record evidence of human activity or behavior important in history or prehistory; testing and preparation of testing reports to describe the results of work following the investigation and evaluation of archeological sites and/or other historic properties; and data recovery plans that address appropriate strategies and methodologies for excavation and data recovery.	<p>The firm must employ a principal investigator:</p> <ul style="list-style-type: none"> • with a master’s degree in archeology, anthropology, or closely related field, who has a minimum of one year of full-time professional experience or equivalent specialized training in archeological research or administration; • who has a minimum of one year of supervised field and analytic experience in archeology; • who is a professional archeologist who meets the standards of a principal or co-principal investigator, as defined by state standards, with a minimum of one year of full-time professional experience at a supervisory level in archeological resources; • who has served as principal or co-principal investigator on a minimum of five archeological projects, or equivalent scope that were successfully completed under the jurisdiction of the National Historical Preservation Act, the Antiquities Code of Texas, or an equivalent law in another state; and • who has the equipment and personnel necessary to perform the work.
2.11.1	<u>Historical and Archival Research</u> - This category includes historical and archival research on historic properties or historic archeological sites, the development of research designs to guide historical research efforts, and the development of historic contexts to provide an organizational and thematic format for further research and evaluation of historic properties and historic archeological sites.	<p>The firm must employ one person with:</p> <ul style="list-style-type: none"> • a master’s degree in history or a closely related field with a minimum of one year of full-time experience in historical research, writing, teaching, or other demonstrated professional historical activity and archival research and documentation; or • a bachelor’s degree in history or a closely related field with a minimum of two years of full-time experience in research, writing, teaching, interpretation, or other demonstrated professional activity with an academic institution, historical organization or agency, museum, or other professional institution, and a minimum of one year of experience managing historical and archival research.
2.12.1	<u>Socio-Economic and Environmental Justice Analyses</u> - This category includes: analyzing U. S. Census data for the affected area; identifying changes in land use, land values, and the local tax	<p>The firm must employ one person with:</p> <ul style="list-style-type: none"> • a bachelor’s degree in sociology, economics, urban planning, engineering, or a related field described in this category;

	<p>base; identifying impacts to the business environment to include relocations, construction period impacts, accessibility issues, and effects to employees and customers; estimating the number and type of residential relocations; identifying the availability of comparable replacement housing in accordance with the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970; identifying impacts to community cohesion and the effects to public facilities and services; and identifying and addressing disproportionately high and adverse health and environmental impacts to minority populations and low-income populations in accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations (February 11, 1994).</p>	<ul style="list-style-type: none"> • a minimum of one year of full-time experience performing socio-economic analysis for environmental documents; and • knowledge of applicable federal, state, and local regulations.
2.13.1	<p><u>Hazardous Materials Initial Site Assessment</u> - This category includes the performance of an initial site assessment to identify known or possible hazardous materials and determine the potential for encountering them during project development. The assessment shall be in general accordance with the American Society for Testing and Materials Environmental Site Assessment standard practices, ASTM 1528 and 1527, or satisfy due diligence and appropriate inquiry requirements under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The appropriate level of inquiry for assessing existing and previous land use, regulatory databases (list search) and files, site visit and/or field surveys, and interviews shall be made with consideration of project design and right of way requirements. This category also includes the determination of whether additional research or investigation is necessary during subsequent stages of project development.</p>	<p>The firm must employ one person with:</p> <ul style="list-style-type: none"> • a minimum of one year of experience performing Phase I environmental site assessments/hazardous material assessments; and • working knowledge of pertinent federal, state and local environmental laws and regulations, ASTM standard practices for environmental site assessments, and hazardous material assessments/investigations.
2.14.1	<p><u>Environmental Document Preparation</u> – This category includes the preparation of</p>	<p>The firm must employ one person:</p>

	<p>environmental documents for transportation projects as identified in §2.43©, (d) and (e) of this title (relating to Highway Construction Projects – State Funds).</p>	<ul style="list-style-type: none"> • with a bachelor’s degree or equivalent experience in environmental studies, urban planning, civil or environmental engineering, or a related field, and with knowledge of pertinent federal, state, and local environmental regulations; • in responsible charge of the review and preparation of, and/or participation in any management that developed five or more moderate to large projects which were approved as environmental assessment-FONSI; or • in responsible charge of the review and preparation of, and/or participation in any management that developed 10 or more small to moderate projects which were approved as environmental assessment-FONSI; or • in responsible charge of the review and preparation of, and/or participation in any management that developed one project which was approved as an environmental impact statement.
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Group 3 - Schematic Development

Work Category	Category Description	Certification Requirements
	<p>The firm must employ sufficient production staff to perform the work described in the following categories.</p>	
3.1.1	<p><u>Route Studies and Schematic Design (Minor Roadways)</u> - This category includes the preliminary alignment and layout of minor roadways as described in Category 4.1.1.</p>	<p>The firm must employ one professional engineer with a minimum of three years experience in:</p> <ul style="list-style-type: none"> • design of minor roadways; and • capacity and level of service analysis.
3.2.1	<p><u>Route Studies and Schematic Design (Major Roadways)</u> - This category includes the preliminary alignment and layout of major roadways as described in Category 4.2.1.</p>	<p>The firm must employ a minimum of one professional engineer with three years experience in:</p> <ul style="list-style-type: none"> • design of major roadways; and • capacity and level of service analysis.
3.3.1	<p><u>Route Studies and Schematic Design (Complex Highways)</u> - This category includes the preliminary alignment and layout of complex highways as described in Category 4.3.1.</p>	<p>The firm must employ one professional engineer with a minimum of:</p> <ul style="list-style-type: none"> • five years experience in the area of complex highway design; and • one year of experience in capacity and level of service analysis.
3.4.1	<p><u>Minor Bridge Layouts</u> - This category includes the preliminary alignment and layout of minor bridges as described in Category</p>	<p>The firm must employ one professional engineer with a minimum of three years experience in:</p>

	5.1.1.	<ul style="list-style-type: none"> • design of minor roadways; and • capacity and level of service analysis.
3.5.1	<u>Major Bridge Layouts</u> - This category includes the preliminary alignment and layout of major bridges as described in Category 5.2.1.	<p>The firm must employ one professional engineer with a minimum of:</p> <ul style="list-style-type: none"> • three years experience in design of major roadways; and • one year of experience in capacity and level of service analysis.
3.6.1	<u>Multi-Level Interchange and Exotic Bridge Layout</u> - This category includes the preliminary alignment and layout of multi-level interchanges as described in Category 5.3.1 and 5.4.1.	<p>The firm must employ one professional engineer with a minimum of:</p> <ul style="list-style-type: none"> • five years experience in complex highway design; and • one year of experience in capacity and level of service analysis.

Group 4 - Roadway Design

Work Category	Category Description	Certification Requirements
	The firm must employ sufficient production staff to perform the work described in the following categories.	
4.1.1	<u>Minor Roadway Design</u> - This category includes the design of small urban and rural roadways involving repair, resurfacing, and rehabilitation that do not include major reconstruction, and urban and rural roadways that involve substantial capacity improvements. Associated activities include utility relocation and miscellaneous minor design services.	The firm must employ one professional engineer with a minimum of three years of roadway design experience on two projects.
4.2.1	<u>Major Roadway Design</u> - This category includes design of urban and rural roadways that involve major reconstruction or substantial capacity improvements through a developed area. Associated activities include utility relocation plans, stormwater permits, maintenance of traffic plans, and traffic engineering applications.	The firm must employ one professional engineer with a minimum of three years of roadway design experience on two separate projects.
4.3.1	<u>Complex Highway Design</u> - This category includes the design of	The firm must employ one professional engineer with a minimum of four years experience in complex highway

	expressways, limited access facilities, diamond interchanges, freeways, and new roadway and reconstruction work on complex projects including complex geometrics. Associated activities include substantial drainage evaluation and design features, traffic engineering applications, utility relocation plans, and maintenance of traffic plans.	design on two separate projects.
4.4.1	<u>Major Freeway Interchanges and Direct Connectors</u>	The firm must employ one professional engineer with a minimum of five years experience in design of a minimum of two separate projects involving major freeway interchanges and direct connectors.

Group 5 – Bridge Design

Work Category	Category Description	Certification Requirements
	The firm must employ sufficient production staff to perform the work described in the following categories.	
5.1.1	<u>Minor Bridge Design</u> - This category includes the design of conventional, non-complex bridges, bridge replacements, simple bridge widening, railroad overpasses, non-standard retaining walls, and pedestrian bridges.	The firm must employ one professional engineer with a minimum of two years structural bridge design experience after licensure as a professional engineer.
5.2.1	<u>Major Bridge Design</u> - This category includes the design of bridges with complex geometry, complexity of design, spans less than 350 feet, non-conventional substructures, substructures requiring ship impact design, design of dolphins for bridge pier protection, railroad underpasses, complex bridge widening, steel truss spans, and concrete arch bridges.	The firm must employ one professional engineer with a minimum of five years of structural bridge design experience after licensure as a professional engineer.
5.3.1	<u>Multi-Level Interchange Design</u> - This category includes design of bridges with three levels or more.	The firm must employ one professional engineer with a minimum of seven years of structural bridge design experience in multi-level interchanges after licensure as a professional engineer.
5.4.1	<u>Exotic Bridge Design</u> - This category includes the design of bridges with spans greater than 350 feet, suspension bridges, cable-stayed bridges, precast, post-tensioned segmental bridges, bridges requiring unique analytical methods, and movable bridges.	The firm must employ one professional engineer with a minimum of seven years of structural bridge design experience in exotic bridge design after licensure as a professional engineer.

Group 6 - Bridge Inspection

Work Category	Category Description	Certification Requirements
	The firm must employ sufficient National Highway Institute (NHI) trained bridge inspectors and other technical personnel as required to perform inspection of bridges included in this category.	
6.1.1	<u>Routine Bridge Inspection</u> - This category includes the inspection of on-system and off-system bridges, inspection and load rating for culverts, pre-stressed beam bridges, cast-in-place concrete bridges, steel girder bridges, steel truss bridges, and timber bridges.	<p>The firm must employ:</p> <ul style="list-style-type: none"> • a project manager who is a registered professional engineer, is qualified for registration as a professional engineer under the laws of a state, or has a minimum of 10 years experience in bridge inspection assignments in a responsible capacity and has completed the comprehensive NHI training course "Safety Inspection of In-service Bridges;" and • a team leader who has the qualifications specified for the project manager in subdivision (i) of this subparagraph, or a minimum of five years of experience in bridge inspection assignments in a responsible capacity and has completed the comprehensive NIH training course "Safety Inspection of In-service Bridges," or is currently certified as a Level III or IV Bridge Safety Inspector under the National Institute for Certification in Engineering Technologies (NICET).
6.2.1	<u>Complex Bridge Inspection</u> - This category includes the inspection of on-system and off-system bridges, inspection and load rating for precast segmental structures, steel arch structures, cable stayed structures, fracture critical inspections, and movable bridges.	<p>The firm must employ:</p> <ul style="list-style-type: none"> • one professional engineer, to serve as project manager, with a minimum of seven years of bridge inspection or design experience, including one year of inspection or design of bridges included in this category, and who has completed the comprehensive NHI training course "Safety Inspection of In-service Bridges;" and • a person to serve as the inspection team leader who has a minimum of six years of experience in bridge inspection or design, including one year of inspection or design of bridges included in this category, and who has completed the comprehensive NHI training course "Safety Inspection of In-service Bridges" .

Group 7 - Traffic Engineering and Operations Studies

Work Category	Category Description	Certification Requirements
7.1.1	<u>Traffic Engineering Studies</u> - This category is defined as the study of the traffic operations of a roadway. Associated activities include preparation of or performance of traffic counts, signal warrants, collision diagrams, travel time and delay, capacity and level of service analysis, intersection analysis,	The firm must employ one professional engineer with demonstrated experience performing traffic engineering studies.

	signing, and pavement marking.	
7.2.1	<u>Highway-Rail Grade Crossing Studies</u> - This category includes the study of the operations of highway-rail grade crossings. Associated activities include preparation of or performance of corridor analysis, diagnostic inspections to determine appropriate type and location of active warning devices, advance warning signs and pavement markings, and other geometric or operational improvements.	The firm must employ one professional engineer with demonstrated experience performing highway-rail grade crossing studies.
7.3.1	<u>Traffic Signal Timing</u> - This category includes analysis, development, and implementation of timing for traffic signals. Associated activities include data collection, intersection analysis, computerized timing programs (development of phase intervals and sequence), and timing implementation.	A firm must employ: <ul style="list-style-type: none"> • one professional engineer with demonstrated experience in traffic signal timing and the application and interpretation of traffic flow and signal timing models; and • sufficient personnel with experience using traffic engineering software applications, loading timings into field equipment, and loading databases into central computers for retiming.
7.4.1	<u>Traffic Control Systems Analysis, Design and Implementation</u> - This category includes the use of electrical engineering, electronics engineering, computer science and traffic engineering to analyze, design, and implement real-time traffic control systems.	The firm must employ: <ul style="list-style-type: none"> • one professional engineer with experience in activities associated with traffic control systems; and • sufficient production staff to perform these activities.
7.5.1	<u>Intelligent Transportation System</u> - This category includes conducting ITS planning studies. Associated activities include the study of transportation systems, identification of ITS applications to mitigate transportation problems, development of short term and long term ITS implementation plans, and assessment of the impact of ITS projects on the transportation system.	The firm must employ: <ul style="list-style-type: none"> • one professional engineer with a background in transportation engineering and experience in activities associated with the development of ITS; and • sufficient production staff to perform these activities.

Group 8 - Traffic Operations Design

Work Category	Category Description	Certification Requirements
8.1.1	<u>Signing, Pavement Marking and Channelization</u> - This category includes the design and preparation of plans for signing, pavement marking, and channelization.	The firm must employ one professional engineer with a minimum of two years experience in this category.
8.2.1	<u>llumination</u> - This category	The firm must employ one professional engineer:

	includes the design and preparation of plans for continuous roadway lighting, safety lighting, underpass lighting, tunnel lighting, and high mast lighting.	<ul style="list-style-type: none"> a minimum of two years experience in design and production of illumination plans meeting IESNA and AASHTO guidelines; and demonstrated experience in electrical engineering and the National Electric Code.
8.3.1	<u>Signalization</u> - This category includes the design and preparation of plans for traffic signalization.	The firm must employ one professional engineer with a minimum of two years experience in the design and production of traffic signalization.
8.4.1	<u>ITS Control Systems Analysis, Design and Implementation</u> - This category of work includes the use of transportation engineering, electronics engineering, and computer science to analyze, design and implement transportation control systems. Associated activities include system performance and cost analysis, system hardware and software design, communication system design, development of management plans, supervision of system installation and operation, system testing and debugging, preparation of system documentation, and the training of operations personnel.	The firm must employ: <ul style="list-style-type: none"> one professional engineer, with a background in electrical engineering, system engineering, or software engineering, with a minimum of two years experience in either the design and production of ITS plans or the operation of ITS; and sufficient personnel with experience in systems engineering, communications, system integration, or software development for ITS applications and ITS equipment.
8.5.1	<u>Highway-Rail Grade Crossings</u> - This category includes the design and preparation of plans for active warning devices, advance warning signs, pavement markings, and other geometric or operational improvements at highway-rail crossings.	The firm must employ one professional engineer with a minimum of two years experience in this category.

Group 9 – Bicycle and Pedestrian Facilities

Work Category	Category Description	Certification Requirements
9.1.1	<u>Bicycle and Pedestrian Facility Development</u> - This includes the design of bicycle and pedestrian facilities.	The firm must employ: <ul style="list-style-type: none"> one professional engineer with a minimum of one year of experience in the design of bicycle and pedestrian facilities, and with knowledge of drainage design; and sufficient production staff to perform these activities.

Group 10 - Hydraulic Design and Analysis

Work Category	Category Description	Certification Requirements
10.1.1	<u>Hydrologic Studies</u> - This category includes rainfall, runoff determination, reservoir routing, and channel routing.	The firm must employ one professional engineer with: <ul style="list-style-type: none"> a minimum of two years experience in analysis of complex watersheds.
10.2.1	<u>Basic Hydraulic Design</u> - This category includes storm drain systems, culverts, sedimentation filtration systems, and detention/retention ponds.	The firm must employ one professional engineer with: <ul style="list-style-type: none"> a minimum of two years experience in hydrologic analysis, hydraulic design, and storm water quality evaluation.
10.3.1	<u>Complex Hydraulic Design</u> - This category includes hydraulic design of bridges over waterways, flood plain analysis, and channel modifications.	The firm must employ one professional engineer with: <ul style="list-style-type: none"> a minimum of two years experience in river geomorphology, sediment transport and scour analysis, flood plain analysis, river training techniques, and federal and state regulations and permit compliance.
10.4.1	<u>Pump Stations-Hydraulics</u> - This category includes the design of pump stations for conveyance of storm waters.	The firm must employ: <ul style="list-style-type: none"> one professional engineer with a minimum of two years experience in hydrologic analysis and storm drain and pump station design.
10.4.2	<u>Pump Stations-Electrical</u> – This category includes the design of pump motor control centers, controls, generators, and large distribution equipment stations for conveyance of storm water.	The firm must employ one professional engineer with: <ul style="list-style-type: none"> a minimum of five years experience in the design of large motor control centers and generating equipment, the National Electrical Code, and control systems.
10.4.3	<u>Pump Stations-Structures</u> – This category includes the structural design of walls, roofs, foundations, and wells of pump stations for conveyance of storm water.	The firm must employ one professional engineer with: <ul style="list-style-type: none"> a minimum of two years of structural pump stations design experience.
10.5.1	<u>Bridge Scour Evaluations and Analysis</u> - This category includes hydrologic analysis, channel and bridge hydraulic analysis and sediment transport modeling for evaluating the potential for scour of bridges.	The firm must employ one professional engineer with: <ul style="list-style-type: none"> a minimum of two years experience, after licensure as a professional engineer, in river geomorphology, sediment transport and scour analysis, and flood plain analysis.

Group 11 - Construction Management

Work Category	Category Description	Certification Requirements
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The firm must employ sufficient technical personnel with construction engineering inspection experience to staff projects under this category of work.		
11.1.1	<u>Roadway Construction Management and Inspection</u> - This category includes the performance of construction management duties for all categories of roadways and highways, and minor bridges as described in Category 5.1.1.	The firm must employ one professional engineer with a minimum of two years of responsible charge experience as a project engineer on roadway and bridge construction projects.
11.2.1	<u>Major Bridge Construction, Management and Inspection</u> - This category includes the performance of construction management duties for major bridges, multi-level interchanges, and exotic bridges as described in Category 5.2.1.	The firm must employ one professional engineer with a minimum of two years demonstrated major bridge construction experience after licensure as a professional engineer.

Group 12 - Materials Inspection and Testing

Work Category	Category Description	Certification Requirements
12.1	<u>Material Testing</u> - The firm must have available in-house equipment and employ qualified, certified staff necessary to perform the work specified in this category.	
12.1.1	<u>Asphaltic Concrete</u> - This category includes testing of asphaltic concrete material.	The firm must employ one professional engineer with a minimum of three years of experience in testing roadway construction materials and a minimum of one person with the proper Hot Mix Asphalt Specialist Certification (Level 1A minimum).
12.1.2	<u>Portland Cement Concrete</u> - This category includes testing of Portland cement concrete.	The firm must employ one professional engineer with a minimum of three years of experience in testing roadway and bridge construction materials, and one person with the proper concrete certification (ACI certification Grade 1).
12.2.1	<u>Plant Inspection and Testing</u> - This category includes inspection of the following types of facilities and inspection of materials and finished products within these facilities: fabrication plants, mines and quarries, mills, refineries, processors, and producers.	The firm must employ: <ul style="list-style-type: none"> one professional engineer with a minimum of three years of responsible experience in inspection and testing bridge and roadway construction materials; and sufficient technical personnel with construction engineering experience to properly staff this type of work.

Group 14 – Geotechnical Services

Work Category	Category Description	Certification Requirements
14.1.1	<u>Soil Exploration</u> - This category includes acquisition and reporting of subsurface material to be used	The firm must: <ul style="list-style-type: none"> employ one professional engineer with a minimum

	for the planning, design, construction, and performance of transportation facilities. The field classification of materials and acquisition of soil and rock samples is also included.	<p>of one year demonstrated experience in the activities normally associated with the category under consideration; and</p> <ul style="list-style-type: none"> • have available the equipment necessary to perform the work.
14.2.1	<u>Geotechnical Testing</u> – This category includes sampling and conducting tests on soil and rock according to the department's approved procedures for the purpose of classifying materials and/or identifying their physical properties.	<p>The firm must:</p> <ul style="list-style-type: none"> • employ one professional engineer with a minimum of one year demonstrated experience in the activities normally associated with the category under consideration; and • have available in-house equipment and employ qualified staff necessary to perform the work.
14.3.1	<u>Transportation Foundation Studies</u> - This category includes producing reports which contain selection of the type and depth of foundation for bridges, retaining walls, signs, and other types of transportation foundations. Working with bearing capacity, predicted settlement, stabilization, and construction on soft ground will be required.	The firm must employ one professional engineer with a minimum of three years demonstrated experience in the activities normally associated with this category.
14.4.1	<u>Building Foundation Studies</u> -This category includes producing reports which contain selection of the type and depth of foundation for buildings. Working with bearing capacity, predicted settlement, stabilization and construction on soft ground will be required.	The firm must employ one professional engineer with a minimum of three years demonstrated experience in the activities normally associated with this category.

Group 15 - Surveying and Mapping

Work Category	Category Description	Certification Requirements
15.1	<u>Right of Way Surveys</u> - This category includes the performance of on the ground surveys and preparation of parcel maps, legal descriptions, and right of way maps.	The firm must employ one registered professional land surveyor and two technical personnel, all with demonstrated experience in the applicable category of work and the following subcategories:
15.1.1	<u>Survey</u>	
15.1.2	<u>Parcel Plats</u>	
15.1.3	<u>Legal Descriptions; and</u>	
15.1.4	<u>Right of Way Maps</u>	
15.2.1	<u>Design and Construction Survey</u> - This category includes performance of surveys associated with the gathering of survey data for topography, cross-sections, and other related work in order to design a project, or during layout	<p>The firm must:</p> <ul style="list-style-type: none"> • employ one registered professional land surveyor with a minimum of one year experience in roadway construction staking; • employ sufficient staff to undertake the

	and staking of projects for construction.	<p>requirements normally associated with this type of work; and</p> <ul style="list-style-type: none"> • employ sufficient technical production staff to perform this type of work. • have available the proper equipment to perform the work
15.3.1	<u>Aerial Mapping</u> - This category involves the collection and reduction of aerial survey data, and preparation of site maps and topographic maps. Associated activities include category 15.4.1.	<p>The firm must:</p> <ul style="list-style-type: none"> • employ sufficient lead technical personnel with a minimum of five years of experience each in aerial mapping; • have available the proper equipment meeting national mapping standards and other equipment required to perform the work; and • employ significant technical production staff to perform this type of work.
15.4.1	<u>Horizontal and Vertical Control for Aerial Mapping</u> - This category involves the establishment of the horizontal and vertical control for aerial mapping.	<p>The firm must:</p> <ul style="list-style-type: none"> • employ one registered professional land surveyor; • have available the proper equipment to perform the work; and • employ sufficient staff to undertake the requirements normally associated with this type of work.
15.5.1	<u>State Land Surveying</u> - This category includes the performance of land surveying associated with “the location or relocation of original land grant boundaries and corners; the calculation of area and the preparation of field note descriptions of both surveyed and unsurveyed land or any land in which the state or the public free school fund has an interest; the preparation of maps showing such survey results; and the field notes and/or maps of which are to be filed in the General Land Office,” as quoted in the Surveyors Act.	The firm must employ one licensed state land surveyor with demonstrated experience in state land surveying as defined in the category description.

Group 16 – Architecture

Work Category	Category Description	Certification Requirements
Buildings and other structures		
16.1.1	<u>Architecture</u> – This category includes architectural services for buildings and other related structures such as, but not limited to, radio towers, fuel island	The firm must employ sufficient project management and technical staff to provide services normally associated with this type of work. The firm must employ one registered architect with a minimum of two years experience in the areas identified.

	canopies equipment slabs, equipment and/or material storage structures.	
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Group 18 – Miscellaneous

Work Category	Category Description	Certification Requirements
18.1.1	<p><u>Value Engineering</u></p> <p>- This category includes the study of transportation related projects or selected processes by multi-disciplined teams to determine the most cost effective use of resources to accomplish the given functions.</p>	<p>The firm must employ:</p> <ul style="list-style-type: none"> • one professional engineer who: <ul style="list-style-type: none"> ○ is a certified value specialist with experience in the value engineering process and team leadership related to transportation projects as evidenced by having conducted a minimum of five transportation related value engineering studies, including one freeway project exceeding \$20 million initial estimated cost; ○ has taught a minimum of two transportation related value engineering classes in the last five years; and ○ has knowledge of and experience with federal, state, and local regulations, public involvement, professional engineering standards, project management, and cost estimating related to transportation projects; and • sufficient production staff to perform transportation related value engineering team leadership, produce final value engineering study reports, and teach classes on the principles and practices of value engineering.
18.2.1	<p><u>Subsurface Utility Engineering</u></p> <p>– This category involves the determination of vertical and horizontal locations of subsurface utilities by non-destructive methods</p>	<p>The firm must:</p> <ul style="list-style-type: none"> • employ one professional engineer with at least two years experience in subsurface utility engineering; • have available the proper equipment to accomplish non-destructive investigation methods to obtain horizontal and vertical locations of subsurface utilities and related subsurface utility engineering tasks.



MEMORANDUM

TO: District Engineers
Directors of TP&D
Thomas Bohuslav, P.E.
John Campbell, P.E.
Randy Cox, P.E.
Carlos Lopez, P.E.
Dianna Noble, P.E.
Jim Randall, P.E.
Phil Russell, P.E.
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DATE: June 15, 2006

FROM: Amadeo Saenz, Jr., P.E. 

SUBJECT: Expectation and Delivery of Quality Deliverables

The Texas Department of Transportation (TxDOT) is currently spending between three- and four-hundred million dollars annually on consultant services. The letting volume for FY 2006 is expected to exceed \$5 billion. Consultant-developed plans account for 50 to 60 percent of this volume of work. In addition to PS&E development, TxDOT relies heavily on consultant services for nearly all project development phases prior to PS&E.

The means for acquiring these services is primarily through the qualifications-based selection process for professional services. This process results in either a specific or indefinite deliverable contract including negotiated scope, rates, and level of effort. The scope of work is the most critical component of the contract for determining what the provider is obligated to do, how they will do it, and what the actual deliverables will be. Clear identification of the deliverables expected is paramount, but the appropriate review and acceptance of deliverables submitted is critical to the ongoing efficiency and success of the project through subsequent phases.

TxDOT has an internal responsibility to review deliverables, provide comments, and coordinate with the provider through final acceptance of a deliverable. Perfection is not expected. Review and comments are an expected step in the process and are the responsibility of the project manager.

TxDOT is not, however, responsible for serving as quality control for the providers. TxDOT expects quality work and is continually promised quality work from marketing calls to the selection process through delivery of the products. Evidence of the quality

work should be at the time a deliverable is submitted for review and not after multiple iterations of comments. Providers are expected to exercise quality control before the submittal of a deliverable whether it is interim, draft, or final.

Quality control is simply reviewing, checking, and making necessary revisions to the deliverable prior to submittal. It is not expected that it be performed by the most senior person in the company, but by someone who has the expertise to review and comment on the content and presentation of the product. It is expected that for any deliverable, a provider should have some evidence of their internal review and mark-up of that deliverable as preparation for submittal.

As a means of ensuring that deliverables are being reviewed prior to submittal, it is recommended that project managers consider, where appropriate, identifying as part of the deliverable, the submittal of the provider's internal mark-up (red-lines) or comments developed as part of their quality control step. The submission of this information is not intended to be additional information that TxDOT must review or check. The required submission of the information forces the provider to take the step, as promised, and provides TxDOT the assurance that the deliverable was reviewed prior to submittal as expected. When identified in advance, the actual deliverable should not be accepted as complete without the evidence of quality control. The submittals should be clearly labeled as the provider's internal mark-ups.

For example, if a provider's contract scope requires them to submit a deliverable at 30, 60, 90, and 100 percent complete, the provider should have a red-lined set of the 30 percent deliverable that they addressed internally before submitting to TxDOT. When the actual 30 percent deliverable is submitted, it should also include the red-lined set. TxDOT is not expected to and should not attempt to check the actual deliverable against the mark-up. TxDOT project managers and staff involved in the process must understand that the mark-ups are work products that are used to develop a submittal. TxDOT's focus should be on the actual submittal and not the mark-up. The request for the mark-up, again, is to ensure that the provider reviews their own work and work of subproviders before submittal.

Another example is with written documents. Contract scopes should typically identify a draft and final deliverable of a written report or document. At the time a draft is submitted for TxDOT review, the provider should also submit their internal mark-up of the document as it was reviewed for quality control purposes. TxDOT is not expected to review the draft document against the mark-up. TxDOT's focus should be on reviewing and commenting on the actual draft deliverable.

It is not necessary to keep the mark-ups submitted by the provider. In many cases the provider may choose to submit the original mark-ups rather than a copy because of the difficulty of reproduction. It is expected that the provider would be interested in having the documents back. Descriptive documentation of what was submitted, such as the submittal memo, should be maintained.

TxDOT project managers should exercise judgment and be reasonable in how the request for and coordination of receiving this additional information is implemented. It is not expected that it be required for all deliverables. Identification of deliverables where this would be implemented is left to the discretion of the project managers.

Providers should not interpret the request for evidence of internal review as additional work. Providers should be reviewing their products internally as a routine order of business.

TxDOT continues to make great strides toward meeting the transportation challenges of the state. Whether produced internally or externally, TxDOT is committed to maintaining and achieving the highest quality standards. Your participation in this effort is appreciated.

Please provide this information to project managers and contract administrators. If you have any questions, contact Camille Thomason, Director of the Design Division – Consultant Contract Office, at (512) 416-2263.

cc: Mark A. Marek, P.E.
Camille Thomason, P.E.
Janice Mullenix
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CONSUMER INFORMATION

COVERING

THE TEXAS ENGINEERING PRACTICE ACT

AND

BOARD RULES OF PRACTICE AND PROCEDURE

This pamphlet has been prepared in compliance with
Section 1001.251 of the Texas Engineering Practice Act
(CHAPTER 1001, TEXAS OCCUPATIONS CODE)



TEXAS BOARD OF PROFESSIONAL ENGINEERS

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TEXAS BOARD OF PROFESSIONAL ENGINEERS

CONSUMER INFORMATION PAMPHLET

The Texas Board of Professional Engineers has prepared this pamphlet as a convenience to the general public. The provisions of the Law and Board rules have been condensed for ready reference. Special emphasis has been placed on compliance and enforcement matters. A form has been provided to assist in filing a complaint against an engineer for alleged violations. The complete text of the Texas Engineering Practice Act (Act) and the Board rules is available in booklet form and on the Board's website at <http://www.tbpe.state.tx.us>. If additional information is needed concerning any particular section of the law or to file a complaint, please contact the Board office.

1. THE LAW.

The 1937 engineer's registration law was significantly amended in 1965 and is cited as the Texas Engineering Practice Act (CHAPTER 1001, TEXAS OCCUPATIONS CODE). The Act has since had various amendments to include recommendations from the "Sunset" review process in 1981, with the latest revisions effective January 2, 2000. By Legislative intent, in order to protect the public health, safety, and welfare, the practice of engineering is entrusted only to those persons duly licensed and practicing under the Act. Only licensed engineers may call themselves or be otherwise designated as "any kind of an engineer" or use the term "engineer" or any variations thereof as a professional, business, or commercial title, name, representation, claim, asset, or means of advantage or benefit.

The Act prohibits unlicensed persons from practicing, offering or attempting to practice engineering; the direct or indirect use of proscribed engineering terms; or the receipt of any fee or compensation or promise of same for performing, offering, or attempting to perform any part of engineering as defined by the Act. Licensed engineers must properly identify themselves as such by using one of the following identifications after their name: "Engineer, Professional Engineer, or P.E." They must affix their official seal to the engineering documents when issued; abide by the Act, rules, and standards of conduct and ethics; and maintain their license in an active, unexpired status. While only those licenses that have been expired for less than two years can be renewed by payment of late penalty fees, the late renewals are not retroactive.

The Act requires that licensed engineers be employed to design and supervise engineering construction of public works exceeding \$8,000 in cost if electrical or mechanical engineering is involved, or if the cost exceeds \$20,000 and electrical or mechanical engineering is not involved. Engineers are also required when erecting, constructing, enlarging, altering or repairing, or drawing plans and specifications for the engineering involved in private buildings which exceed certain exempted criteria in the Act, basically that which exceeds 5,000 square feet of total floor area. The Act contains several specific but

limited exemptions from the requirement for professional licensure, provided the persons performing the specified functions are not represented to the public as engineers.

2. THE BOARD.

The Texas Board of Professional Engineers was created by the Texas Legislature in 1937 and is authorized and required to license those individuals who are qualified to practice engineering as one of the learned professions. A full complement of the Board consists of six engineers and three public members, all appointed by the governor. Board meetings are conducted at least quarterly and are open to the public. The Board is authorized and empowered to make and enforce rules necessary to perform its duties, govern its own proceedings, regulate the practice of engineering, and to establish standards of conduct and ethics for engineers, insuring strict compliance with and enforcement of the enabling law. It is authorized to investigate alleged violations of law and its rules for compliance purposes, but it does not have inspection responsibilities or the capacity to “police” the engineering profession and the industries affected by the practice of engineering. Reliance in this regard is placed on the profession, public officials, and concerned citizens.

3. THE RULES

The Board has adopted various rules concerning licensing and examinations, conduct and ethics, compliance and enforcement, and contested case hearings. These rules have been codified under the numbering system for the Texas Administrative Code. Business entities that offer or provide consulting engineering services to the public of Texas or that makes a representation of offering or providing engineering services through the use of “Engineering” terms in the business name are required by the Act to register with the Board. A retainer or independent contractor relationship of a license holder does not legitimize the hiring firm. License holders are required to apprise the Board of each change of business association as it occurs. Multiple company offices are required to be supervised by a license holder. Texas engineers are not licensed by disciplines, but they are usually recognized by the major branch in which they qualified at the time of licensure. Engineers must seal, sign, and date engineering plans and documents when issued, but they may not seal subject matter in which they are not qualified by education or experience to form a dependable judgment. Sealing the unsupervised work product of another who is neither an employee nor a subordinate is considered a violation of the Act, contributing to the unauthorized practice of engineering by unlicensed individuals.

4. COMPLIANCE AND ENFORCEMENT.

The Board hired its first investigator in 1968, and inquiries of law and rule infractions have been pursued primarily to obtain voluntary compliance, with litigation and formal administrative hearings reserved as a last resort or for the more serious situations. The majority of complaints and investigations involve misrepresentations rather than outright unlicensed practice affecting life and property. Effective September 1, 1987, other public officials who enforce laws, ordinances, codes or regulations that affect the practice of engineering have certain responsibilities for accepting sealed engineering documents and reporting violations of the Act to proper authorities.

5. INTERPRETATIONS.

The State Attorney General has rendered several significant opinions interpreting the Engineering Practice Act by which the Board is guided. Opinion C-691 supports the prohibition of unlicensed individuals publicly using titles such as “sales engineer” and other similar designations. Opinion C-791 clarifies that public school buildings are public works necessarily involving structural, electrical, and mechanical engineering requiring engineers in their design and supervision of construction. Opinion H-372 concludes that a private association of engineers and its members are prohibited from using the term “engineers” in a manner that tends to create an impression that unregistered individuals are licensed engineers. Opinion H-201 differentiates the duties and titles of a county road engineer and a road administrator, the former required to be a registered engineer. Opinion H-1104 reinforces the teaching of engineering as the practice of engineering wherein academic engineering titles may be regulated by the Board. Opinion MW-384 clarifies the so called “industry exemption” for unlicensed individuals, concluding that the Act does not exempt persons employed in industry as engineers from the operations or the scope of the Act. Opinion MW-568 permits engineers to use the title of architectural engineer without violating the Architects Practice Act. Opinion JM-482 interprets Art. 6252-13c, V.T.C.S., to require a license revocation for a felony conviction which includes incarceration.

Opinion JM-693 (with subsequent letter of clarification) permits state Licensed Air Conditioning and Refrigeration Contractors to “design” systems, without compromising the Engineering Practice Act as it applies to air conditioning contracting. Design in that sense has been defined by the Board to include layouts, fittings, drawings, and the translating of specifications, calculations, sketches, and other documents developed by engineers, into working drawings to assist the contractor in the installation, alteration or modification of various systems covered by his license. Opinion JM-1189 in essence prohibits public entities from awarding “design/build” contracts for the construction of public works on the basis of competitive bidding where architectural or engineering services comprise a component of the contract; that is, the professional design services have to be completed before construction bidding takes place. Opinion DM-161 concludes that the statute regulating the practice of architecture does not prohibit a licensed professional engineer from preparing plans and specifications, the preparation of which requires the application of engineering principles and the interpretation of engineering data, for new public buildings used for education, assembly, or office occupancy and the construction costs exceed \$100,000.

Four of the Board’s injunctive cases have resulted in case law decisions cited by attorneys and the courts as precedent interpretations. In the Dalton, Hinds & O’Brien Engineering Co. case (382 S.W.2d 130), the appeals court noted that the legislature has expressly provided that the practice of engineering may be carried on by a corporation requiring only that the agency by which such professional engineering services are actually rendered be registered engineers; that nothing in the Texas Business Corporation Act is inconsistent with this express provision of Section 17 of the Engineering Practice Act, Article 3271a, Vernon’s Annotated Civil Statutes, which is now designated as Section 1001.405, Chapter 1001, Texas Occupations Code. The fact that the name of the corporation happens to include the last names of persons interested in the corporation who are not registered as engineers does not convey the impression that such individuals are entitled to act as professional engineers. In the Tackett case (466 S.W.2d 332), the appeals court ruled that the Board could enjoin Carl Tackett from using the trade name Television Engineering Company because he was not a registered engineer. His business was misrepresented to the public, and though his sales and service activities were exempt from

registration requirements, they could not be represented as engineering. In the Wichita Engineering Company case (504 S.W.2d 606), the appeals court noted this was not an engineering business and ruled the Board's injunction to prohibit "engineering" in the corporate name to be a valid exercise of the state's police powers, and the Act did not violate either constitutional prohibitions on retroactive law or impairment of contracts. In the Kilpatrick case (610 S.W.2d 867), the appeals court affirmed an injunction against Don Kilpatrick from using the business name of Plastic Engineering & Sales Corp. for similar reasons found in the Wichita decision.

6. SANCTIONS.

The Board may, as the circumstances warrant, deny an application for licensure or shall suspend or revoke a license, probate a suspension, refuse to renew a license, issue formal and informal reprimands and/or impose an administrative penalty against any license holder who is determined by the Board to be censurable for certain specified conduct. Such conduct includes any fraud or deceit in obtaining a license; any gross negligence, incompetency or misconduct in the practice of professional engineering; retaliation by an applicant against a reference for the applicant; a violation of the Act or a Board rule; and failure to provide plans and specifications for review as required by the Elimination of Architectural Barriers Law. These actions are in addition to the right to seek injunctive relief in the civil courts for violations of the Act or Board rules, or misdemeanor convictions for violations of the Act by anyone. Complaints, which do not warrant any of the above actions, will be dismissed.

The Board may also, as the circumstances warrant, enter into a Voluntary Compliance Agreement, issue a Cease and Desist Order, impose an administrative penalty, file an injunctive suit, or file a criminal complaint to resolve inquiries/complaints against unlicensed individuals, firms, partnerships or other entities who the Board has determined to have violated the Act.

7. COMPLAINT POLICIES.

The Board intends to be fair and reasonable in the application and enforcement of the Act and its rules, with the gravity of a situation dictating the type of disposition and severity of action. Investigations will be pursued on sufficient and probable cause based on written complaints to which the knowledgeable person does not have to swear, although an affidavit is always preferred when a license holder is the subject of the complaint. The Board is rarely responsive to anonymous or hearsay complaints.

The Board considers any matter requiring investigative activity before its resolution to be a complaint situation, whether initiated by the Board or in response to an outside source. Complaints are considered to be of two general types. The first type involves an unlicensed person or entity allegedly violating a provision of the Act or Board rules. Under many circumstances, the complainant does not get further involved during the investigation or disposition phases. The second type concerns a license holder whose conduct or activities are alleged to be contrary to some provision of the Act or a Board rule. Due to the subjective nature of some ethical rules, and the relationship of the knowledgeable complainant to the involved engineer in many situations, the successful disposition of an inquiry usually depends in some manner on the complainant's continued cooperation.

Complainants are not expected to investigate, per se, any violative situation, but they are expected to be cooperative and familiar enough with the “who, what, where, when, why, and how” of the matter to register a valid complaint. The Board is not responsible for proving the basis of a complainant’s allegations but will develop additional information upon which to base appropriate action. Requests for Board action should not be considered completely in lieu of any other legal remedy available. The Board will not be used as a collection agency or intervenor in fee disputes.

8. UNLICENSED INDIVIDUALS.

When an unlicensed person or business entity is suspected of violating the Act or Board rules, the incident should be reported to the Board in writing. Sufficient facts, circumstances, and identification of known witnesses and public records or other evidentiary materials should be submitted to fairly support the alleged offense. These situations may include the actual unlicensed practice of engineering, the offer to perform engineering services, the use of an engineering title, or use of an engineering term in a corporate or assumed business name, any of which may be evidenced by plans, specifications, stationery, brochures, directories, advertising, billings, or any other means of communicating with the public. Also, certificates of license holders and engineer seals have been known to be forged by unlicensed individuals.

9. LICENSED ENGINEERS.

When a license holder’s conduct and activities display evidence of gross negligence, incompetency or misconduct, or a violation of the Act or Board rules, the situation should be reported to the Board in writing. The section of law or particular rule involved should be revealed before charges are filed, and the facts must be sufficiently presented and documented to fairly evidence the violation alleged and to allow for a defense.

Although licensed holders can be enjoined by the Board or be prosecuted on misdemeanor charges, most investigations of engineers are approached as though some administrative action affecting their license will be considered by the Board. An engineer whose license has expired but is still renewable remains a license holder for the purpose of taking administrative action. Disciplinary guidelines assist the Board in evaluating and disposing of similar violations with the similar sanctions, including sufficient flexibility to vary from a suggested course of action depending on the facts and circumstances of each individual case. Since the revocation of a license is the ultimate punitive action available to the Board, procedures from the outset should conform to the due-process rights of the accused. The Board has devised a complaint form that facilitates the presentation of a charge in line with the requirements of the Administrative Procedure and Texas Register Act (Art. 6252-13a, V.T.C.S.) and related Board rules for contested case hearings.

When the Board proposes to take administrative action against a license holder, he will be so notified and offered the opportunity to have an informal conference with the staff to present mitigative information in his defense and show compliance with all requirements of law. If an agreed settlement cannot be reached, the matter must be resolved by a formal hearing conducted for the Board by the State Office of Administrative Hearings (SOAH) under the provisions of Article 6252-13f, V.T.C.S.

After a request for rehearing is denied, a Board action may be appealed to a District Court for review of the record and sanction.

10. PUBLIC INFORMATION.

Anyone may communicate with the Board, attend Board and committee meetings, or visit its office in Austin to obtain information about licensure, acquire application forms and guidance, determine the licensure status of any individual, seek information about the Board's enforcement policies, or file a complaint. A free information booklet is available which contains the full text of the Texas Engineering Practice Act and the Board's Rules of Practice and Procedure. A biennial roster of licensed engineers is available at a minimal cost.



