

## Precertification Work Categories

Prime providers and subproviders may be precertified in the technical groups and categories in accordance with the listed 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	Category	Group Description	
		Category Description	Certification Requirements
1	1	<b>Transportation Systems Planning</b>	
	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"> <li>• one Professional Engineer with training and experience in areas directly related to policy planning; or</li> <li>• one planner with training and experience in areas directly related to policy planning.</li> </ul>
	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"> <li>• one Professional Engineer with training and experience in areas directly related to systems planning; or</li> <li>• one planner with training and experience in areas directly related to systems planning.</li> </ul>
	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"> <li>• one Professional Engineer with training and experience in areas directly related to subarea/corridor planning; or</li> <li>• one planner with training and experience in areas directly related to subarea/corridor planning.</li> </ul>
	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"> <li>• one Professional Engineer with training and experience in comprehensive planning or areas directly related to assessing impacts to private property; or</li> <li>• one planner with training and experience in comprehensive planning or areas directly related to assessing impacts to private property.</li> </ul>
	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"> <li>• proficiency in civil engineering; and</li> <li>• completed a minimum of two feasibility studies.</li> </ul>
	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.	The firm must employ one Professional Engineer with proficiency in civil engineering and experience or education in urban planning and economic, or environmental impact assessment.

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1	1.7.1	<u>Traffic Demand Modeling</u> - This category includes the development of socioeconomic data, socioeconomic forecasts, networks, traffic analysis zones (TAZs), freight input data, calibration and validation of travel demand model, sensitivity analysis, alternatives analysis, development of model documentation and training modules necessary for travel demand model development for regional, statewide, and corridor analysis of passenger and freight movements.	The firm must employ one individual with a minimum of five years of experience in travel demand modeling.
	1.8.1	<u>Public Involvement</u> - This category includes comprehensive services in planning, scheduling, coordinating, conducting, documenting, and exhibit preparation for public involvement activities. These public involvement activities include but are not limited to Meetings with Affected Property Owners (MAPOs), public meetings, public hearings, and stakeholder meetings, as well as developing media packets, maintaining public contact lists, public comment inventories, and associated summary reports.	The firm must employ one public information professional with a minimum of five years of experience in providing oversight on public involvement activities for transportation projects.
2	2	<b>Environmental Studies</b>	
	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 that has:</p> <ul style="list-style-type: none"> <li>• taken a noise modeling, intensive course comparative to ENV 115 offered by TxDOT or an equivalent training course. (Specify the training provider, the course name, and date of completion.); and</li> <li>• a bachelor's degree or equivalent experience in environmental studies, urban planning, civil or environmental engineering, or a related field; and</li> <li>• demonstrated experience in applying 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.</li> </ul>
	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 that has:</p> <ul style="list-style-type: none"> <li>• a bachelor's degree or equivalent experience in environmental studies, urban planning, civil or environmental engineering, or a related field; and</li> <li>• demonstrated experience in use/application of air quality guidelines and current air quality modeling software through the accurate completion of an air quality analysis for a minimum of two highway projects.</li> </ul>

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2	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 that has:</p> <ul style="list-style-type: none"> <li>• a minimum of one year of field experience in wetland delineation according to USACE requirements; and</li> <li>• field experience in wetland delineation within the past five (5) years; and</li> <li>• prepared and submitted at least one delineation report that has been verified by the USACE; and</li> <li>• completed a one week wetland delineation class. (Specify the training provider, the course name, and date of completion.)</li> </ul>
	2.3.2	<u>Conditional/Functional Assessment</u> - This category includes the performance of a conditional/functional assessment according to the United States Army Corps of Engineers (USACE) requirements.	The firm must employ one person who has conducted and completed a minimum of one conditional/functional assessment in Texas in accordance to the respective USACE district.
	2.4	<b>United States Army Corps of Engineers Permits</b> - 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>Clean Water Act §404 (Title 33, United States Code §1344) Permits (including mitigation and monitoring).</u>	<p>The firm must employ one person that has:</p> <ul style="list-style-type: none"> <li>• a minimum of one year of experience in §404 Permit determinations; and</li> <li>• prepared and submitted at least one Pre-Construction Notification (PCN) for a Nationwide or other general permit that has been verified by the USACE; or</li> <li>• applied for and received at least one individual permit (IP) for the USACE.</li> </ul>
	2.4.3	<u>U. S. Coast Guard (General Bridge Act) and U.S. Army Corps of Engineers (Section 10) (Title 33, United States Code §403) Permits</u>	<p>The firm must employ one person that has:</p> <ul style="list-style-type: none"> <li>• a minimum of one year of experience and working knowledge of the Rivers and Harbors Act, (Section 9 &amp; 10); and</li> <li>• applied for and received one navigation-related permit under Section 9 or Section 10 of the Rivers and Harbors Act.</li> </ul>
	2.5.1	<u>Geological Assessment for Edwards Aquifer Recharge Zone</u> - This category includes conducting a geologic field assessment and the preparation of a geological assessment report in support of a water pollution abatement plan (WPAP) as it relates to the Edwards Aquifer Rules.	<p>The firm must employ one person who:</p> <ul style="list-style-type: none"> <li>• is a Texas licensed professional geoscientist who has training and experience in groundwater hydrology and related fields that enable that individual to make sound professional judgments regarding the identification of sensitive features located in the recharge zone or transition zone (30 TAC 213.3); and</li> <li>• has prepared at least one geological assessment for a water pollution abatement plan in accordance with 30 TAC 213.5.</li> </ul>

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2	2.6	<b>Protected Species Coordination</b> - This category includes the following types of biological issues and coordination.	
	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 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 completing five Biological Technical Reports describing impacts to biological resources, or five Biological Evaluation Forms with associated field work.
	2.6.4	<u>Biological Evaluations/Assessments</u> - This category involves the determination of potential effects to federally protected species and development of consultation documentation.	The firm must employ one person: <ul style="list-style-type: none"> <li>with demonstrated experience in preparing Endangered Species Act (ESA) consultation documents and experience consulting with United States Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS) under section 7 or section 10 of the ESA; and</li> <li>who has prepared at least three Biological Evaluations (BE) in support of ESA section 7 informal consultations and received letters of concurrence from USFWS or NMFS; or</li> <li>who has prepared at least one Biological Assessment (BA) in support of ESA section 7 formal consultation and received a Biological Opinion (BO) from USFWS or NMFS; or</li> <li>who has applied for and received at least one ESA section 10(a)(1)(B) incidental take permit from USFWS or NMFS.</li> </ul>
	2.7.1	<u>Parks, Recreational Areas, and Refuges §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 a use of a Section 4(f) property is required from publicly owned parks, recreation areas, or wildlife or waterfowl refuges and §6(f) evaluations which apply when federal land and water conservation funds are used for improvements to the site.	The firm must employ one person that has: <ul style="list-style-type: none"> <li>taken a Section 4(f) training course taught by NHI (National Highway Institute), NPI (National Preservation Institute), or a comparable training class offered by TxDOT; and</li> <li>completed a minimum of one successful Parks individual, programmatic, or net benefit §4(f) evaluation; or</li> <li>completed a minimum of two Parks de minimis §4(f) evaluations and received FHWA or other federal agency approval.</li> </ul>
	2.7.2	<u>Historic Sites §4(f) (Title 23, United States Code of Federal Regulations §771.135) Evaluations</u> - This category includes §4(f) evaluations, identified in the Department of Transportation Act of 1966, which are conducted when a use is acquired from historic sites.	The firm must employ one person with experience under requirements of the Secretary of the Interior's Standards and Guidelines for History or Historic Architecture, 36 CFR 61, who meets qualifications for historians, architectural historians, or closely related professions such as cultural geographers, preservation planners, or landscape historians, as defined in the SOI Standards and 13 TAC Chapter 26. The employee must have completed: <ul style="list-style-type: none"> <li>a minimum of one successful Historic Sites individual, programmatic, or net benefit §4(f) evaluation or a minimum of two Historic Sites de minimis §4(f) evaluations and received FHWA or other federal agency approval; and</li> <li>a Section 4(f) training course taught by NHI (National Highway Institute) or NPI (National Preservation Institute)</li> </ul>

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2	2.10.1	<p><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>	<p>The firm must employ a principal investigator:</p> <ul style="list-style-type: none"> <li>• 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;</li> <li>• who has a minimum of one year of supervised field and analytic experience in archeology;</li> <li>• 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; and</li> <li>• 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.</li> </ul>
	2.12.1	<p><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 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>	<p>The firm must employ one person with:</p> <ul style="list-style-type: none"> <li>• a bachelor’s degree from an accredited academic institution; and</li> <li>• experience performing socio-economic and environmental justice analysis for a minimum of five CEs approved by the agency with jurisdiction; or a minimum of two environmental assessments that received a FONSI; or a minimum of one environmental impact statement that was approved by a Record of Decision</li> </ul>

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2	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, and to determine and implement measures early to avoid or minimize involvement with substantially contaminated properties.</p>	<p>The firm must employ one person with:</p> <ul style="list-style-type: none"> <li>• a minimum of three years of experience performing Phase I environmental site assessments or initial hazardous material assessments; and a working knowledge of pertinent federal, state, and local environmental laws and regulations, ASTM standard practices for environmental site assessments, and hazardous material assessments/investigations.</li> </ul>
	2.14.1	<p><u>Environmental Document Preparation</u> - This category includes the preparation of environmental documents for transportation projects as identified in §2.43(c), (d), and (e) of this title (relating to Highway Construction Projects - State Funds).</p>	<p>The firm must employ one person that has:</p> <ul style="list-style-type: none"> <li>• a bachelor's degree in environmental studies, urban planning, civil or environmental engineering, or a related field; and</li> <li>• progressively responsible experience in the preparation of environmental documents for compliance with NEPA or an equivalent state environmental law and/or within a regulatory agency review and managing environmental documents for compliance with NEPA or an equivalent state environmental law; and</li> <li>• managed the preparation of, or served as a major task manager in the preparation of, a minimum of five EA or EIS environmental documents or ten CE environmental documentation projects for transportation.</li> </ul>

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2	2.15.1	<p><u>Historical Research of Extant Historic Buildings, Structures, Landscapes, and Objects</u> - This category includes research efforts carried out in accordance with the Secretary of the Interior's Standards and Guidelines for Historic Preservation (Volume 48 of the Federal Register, 44716) to comply with §106 (54 USC 306108) of the National Historic Preservation Act of 1966, as amended, and other state and federal historic preservation related laws and regulations. Associated activities include: historical and archival research on historic properties; development of research designs to guide historical research efforts; development of historic contexts to provide an organized format for further research and evaluation of historic properties; and preparation of historic documentation on affected properties in accordance with the history and building/structure documentation requirements of the Historic American Buildings Survey, the Historic American Engineering Record, or Historic American Landscape Survey Level I or II.</p>	<p>The firm must employ one person with experience under requirements of the Secretary of the Interior's Standards and Guidelines for History or Historic Architecture, 36 CFR 61, who meets qualifications for historians, architectural historians, or closely related professions such as cultural geographers, preservation planners, or landscape historians, as defined in the SOI Standards and 13 TAC Chapter 26. Required:</p> <ul style="list-style-type: none"> <li>• a master's degree in architectural history, historic preservation, or a closely related field, and must include course work in American architectural history and a minimum of one year of direct experience performing research or documentation of historic buildings, structures, and objects; or</li> <li>• a bachelor's degree in architectural history, historic preservation, or a closely related field, and must include course work in American architectural history and a minimum of two years of direct experience performing research or documentation of historic buildings, structures, and objects; or</li> <li>• a minimum of ten years of demonstrated experience performing research, or documentation of historic buildings, structures, and objects, including substantial contribution through research and publication to the body of scholarly knowledge in the field of architectural history or a related field. Also must have course work in American architectural history.</li> </ul>
	2.15.2	<p><u>Historical Surveys and Documentation of Historic Buildings, Structures, Landscapes and Objects</u> - This category includes surveys and documentation efforts carried out in accordance with the Secretary of the Interior's Standards and Guidelines for Historic Preservation (Volume 48 of the Federal Register, 44716) to comply with §106 (54 USC 306108) 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; 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 principal investigator:</p> <ul style="list-style-type: none"> <li>• with a master's degree in architectural history, historic preservation, or a closely related field, and must include course work in American architectural history and demonstrated experience performing research or documentation of historic buildings, structures, and objects; OR a bachelor's with the above requirements and a minimum of two years of demonstrated experience performing research or documentation of historic buildings, structures, and objects; OR a minimum of ten years of demonstrated experience performing research, or documentation of historic buildings, structures, and objects, including substantial contribution through research and publication to the body of scholarly knowledge in the field of architectural history or a related field; and</li> <li>• who has served as principal or co-principal investigator on a minimum of five non-archeological, historical resource projects 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</li> <li>• with range of direct involvement in administration, supervision and performance of fieldwork, research, writing, or other technical functions. Must also demonstrate survey project management performance, report production direction, finalizing recommendations of eligibility and effects under §106 (54 USC 306108) of the National Historic Preservation Act of 1966, and responsibility addressing errors and omissions.</li> </ul>
3	3	<b>Schematic Development</b>	

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3	3.2.1	<u>Route Studies and Schematic Design</u> - This category includes the preliminary alignment and layout of roadways as described in Category 4.2.1.	The firm must employ one Professional Engineer with a minimum of three years of experience in: <ul style="list-style-type: none"> <li>• design of roadways; and</li> <li>• capacity and level of service analysis.</li> </ul>
4	4	<b>Roadway Design</b>	
	4.2.1	<u>Roadway Design</u> - This category includes design of urban and rural roadways that involve repair, resurfacing, rehabilitation, 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.
	4.4.1	<u>Freeway Interchanges</u>	The firm must employ one Professional Engineer with a minimum of three years of experience in the design of interchanges.
	4.5.1	<u>Constructability Review</u> - This category includes providing independent quality review of the plans, specifications, and estimates (PS&E) package to ensure constructability of all roadway and structural elements. This work will include, but not be limited to: review sequence of work and traffic control plan, roadway and structure plans, temporary and permanent drainage, and storm water pollution prevention plan (SW3P); ensuring compliance with environmental permits, issues and commitments (EPIC); identification of utility conflicts; ensuring accuracy and appropriate use of bid items, quantities, general notes, standard and special specifications, special provisions, contract schedule, and standard sheets; and providing detailed comments in an approved format.	The firm must employ one licensed Professional Engineer with minimum of five years of experience in highway design and in providing oversight on roadway and bridge construction projects.
	4.6.1	<u>3-D Design Visualization Services</u> - This category includes services for the preparation of design-level mapping and topographically accurate 3-D visualizations and animation of transportation facilities for use in public presentations.	The firm must employ one individual with a minimum of three years of experience in developing 3-D visualizations and animations of transportation facilities for public presentations. In addition, this individual must have completed 3-D design visualizations and animations for a minimum of one urban freeway or interchange project.
5	5	<b>Bridge Design</b>	



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5	5.2.1	<u>Bridge Design</u> - This category includes the design of conventional and non-conventional, non-complex and complex bridges, bridge replacements, complex and simple bridge widenings, railroad overpasses and underpasses, non-complex and complex superstructure and substructure design, and pedestrian bridges. This category also includes the design of bridges with substructures requiring ship impact design, design of dolphins for bridge pier protection, and steel truss spans. This category includes non-standard retaining wall design, but cannot be the only project type listed to obtain 5.2.1 precertification.	The firm must employ one Professional Engineer with a minimum of five years of structural bridge design experience.
	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 five years of structural bridge design experience including a minimum of three Multi-Level Interchange Design projects.
	5.5.1	<u>Bridge Class Culvert, Non-Bridge Class Culvert, and Inlet Design</u> - This category includes the structural design of bridge class culverts, non-bridge class culverts, and inlets.	The firm must employ one Professional Engineer with a minimum of three years of structural bridge design experience in bridge class culvert, non-bridge class culvert, and inlet design.
6	6	<b>Bridge Inspection</b> - 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.	

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6	6.1.1	<p><u>Routine Bridge Inspection Team Leader</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>	<p>The firm must employ: one team leader who has one of the following qualifications:</p> <ol style="list-style-type: none"> <li>1. is a Professional Engineer in the state of Texas, who has successfully completed National Highway Institute (NHI) training course # 130055, "Safety Inspection of In-Service Bridges", and has a minimum of one year experience in National Bridge Inspection Standards (NBIS) bridge inspections; or</li> <li>2. has a minimum of five years of bridge inspection experience, and has successfully completed National Highway Institute (NHI) training course # 130055, "Safety Inspection of In-Service Bridges"; or</li> <li>3. has been certified as a Level III or IV Bridge Safety Inspector under the National Society of Professional Engineer's program for National Certification in Engineering Technologies (NICET), and has successfully completed NHI training course # 130055, "Safety Inspection of In-Service Bridges"; or</li> <li>4. has all of the following: <ol style="list-style-type: none"> <li>a. a bachelor's degree in engineering from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology; and</li> <li>b. successfully passed the National Council of Examiners for Engineering and Surveying Fundamentals of Engineering examination; and</li> <li>c. a minimum of two years of bridge inspection experience; and</li> <li>d. has successfully completed NHI training course # 130055, "Safety Inspection of In-Service Bridges"; or</li> </ol> </li> <li>5. has all of the following: <ol style="list-style-type: none"> <li>a. an associate's degree in engineering or engineering technology from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology; and</li> <li>b. a minimum of four years of bridge inspection experience; and</li> <li>c. has successfully completed NHI training course # 130055, "Safety Inspection of In-Service Bridges"</li> </ol> </li> </ol>
	6.1.2	<p><u>Routine Bridge Inspection Project Manager</u> - This category includes the oversight of the inspection and documentation of on-system and off-system bridges and 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>	<p>The project manager must have the following:</p> <ul style="list-style-type: none"> <li>• is a Professional Engineer in the state of Texas; and</li> <li>• has a minimum of seven years of experience in performing National Bridge Inspection Standards (NBIS) bridge inspections or management of NBIS bridge inspection contracts; and</li> <li>• has successfully completed National Highway Institute (NHI) training course # 130055, "Safety Inspection of In-Service Bridges".</li> </ul>

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6	6.2.1	<u>Complex Bridge Inspection Team Leader</u> - This category includes the inspection of on-system and off-system bridges and 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: one team leader who has all of the following qualifications:</p> <ul style="list-style-type: none"> <li>• meets the certification requirements defined for a team leader in Category 6.1.1; and</li> <li>• 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</li> <li>• has successfully completed the comprehensive National Highway Institute (NHI) training course #130055, "Safety Inspection of In-Service Bridges"; and</li> <li>• has completed NHI #130078 "Fracture Critical Inspection Techniques for Steel Bridges" course.</li> </ul>
	6.2.2	<u>Complex Bridge Inspection Project Manager</u> - This category includes the oversight of the inspection and documentation 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 project manager must have the following:</p> <ul style="list-style-type: none"> <li>• is a Professional Engineer in the state of Texas; and</li> <li>• has a minimum of seven years of experience in performing National Bridge Inspection Standards (NBIS) inspections, or a minimum of seven years of experience in management of NBIS bridge inspection contracts, or a minimum of seven years of bridge design which includes a minimum of one year of experience in inspection or design of the types of bridges included in this category; and</li> <li>• has successfully completed National Highway Institute (NHI) training course # 130055, "Safety Inspection of In-Service Bridges"; and</li> <li>• has successfully completed NHI #130078 "Fracture Critical Inspection Techniques for Steel Bridges" course.</li> </ul>
	6.3.1	<u>Tunnel Inspection Team Leader</u> - This category includes the inspection and load rating of on-system and off-system tunnels of any construction method.	<p>The firm must employ: one team leader who has all of the following qualifications:</p> <ul style="list-style-type: none"> <li>• is a Professional Engineer in the state of Texas; and</li> <li>• has successfully completed the National Highway Institute (NHI) training course # 130110, "Tunnel Safety Inspection"; and</li> <li>• has a minimum of one year of experience in either National Tunnel Inspection Standards (NTIS) or National Bridge Inspection Standards (NBIS) bridge inspections.</li> </ul>
	6.3.2	<u>Tunnel Inspection Project Manager</u> - This category includes the oversight of the inspection, documentation, and load rating of on-system and off-system tunnels of any construction method.	<p>The project manager must have the following:</p> <ul style="list-style-type: none"> <li>• is a Professional Engineer in the state of Texas; and</li> <li>• has a minimum of seven years of experience in performing NTIS or NBIS inspections or management of NTIS or NBIS bridge inspection contracts, including a minimum of one year of complex tunnel or complex bridge inspection experience; and</li> <li>• has successfully completed the comprehensive National Highway Institute (NHI) training course #130110, "Tunnel Safety Inspection".</li> </ul>

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		Category Description	Certification Requirements
6	6.4.1	<u>Underwater Bridge Inspection Team Leader</u> - This category includes diving to conduct underwater bridge inspections of on-system and off-system bridges.	The firm must employ: <ul style="list-style-type: none"> <li>one team leader who has the qualifications defined for a team leader in Category 6.1.1; and</li> <li>who has a commercial diver certification with a minimum of two years underwater bridge inspection experience.</li> </ul>
	6.5.1	<u>Non-Destructive Testing</u> - This category includes the performance of various types of non-destructive testing on structural steel members on in-service structures.	The firm must employ one individual with a minimum of five years of experience in performing various types of non-destructive testing on structural steel members on in-service structures. This individual must also be a Level 2 certified NDT inspector, certified by The American Society for Nondestructive Testing (ASNT).
7	7	<b>Traffic Engineering and Operations Studies</b>	
	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, signing, and pavement marking.	The firm must employ one Professional Engineer with demonstrated experience performing traffic engineering 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.	The firm must employ: <ul style="list-style-type: none"> <li>one Professional Engineer with demonstrated experience in traffic signal timing and the application and interpretation of traffic flow and signal timing models; and</li> <li>who has experience using traffic engineering software applications, loading timings into field equipment, and loading databases into central computers for retiming.</li> </ul>
	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 one Professional Engineer with experience in the analysis, design, and implementation of real-time traffic control systems.
	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 one Professional Engineer with experience in transportation engineering and experience in activities associated with the development of ITS
8	8	<b>Traffic Operations Design</b>	

Group	Category	Group Description	
		Category Description	Certification Requirements
8	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 three years of experience in this category.
	8.2.1	<u>Illumination</u> - This category includes the design and preparation of plans for continuous roadway lighting, safety lighting, underpass lighting, tunnel lighting, and high mast lighting.	The firm must employ one Professional Engineer with: <ul style="list-style-type: none"> <li>a minimum of three years of experience in design and production of illumination plans meeting IESNA and AASHTO guidelines; and</li> <li>experience in electrical engineering and the National Electric Code.</li> </ul>
	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 three years of 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"> <li>one Professional Engineer, with a background in electrical engineering, system engineering, or software engineering, with a minimum of three years of experience in either the design and production of ITS plans or the operation of ITS; and</li> <li>who has experience in systems engineering, communications, system integration, or software development for ITS applications and ITS equipment.</li> </ul>
	8.6.1	<u>Rail-Highway Design</u> - This category includes the study of the operations of rail-highway crossings. Associated activities include diagnostic inspections with railroad companies, and design and analysis of corridors, railroad protective devices, advance warning signs and pavement markings, traffic signal preemption, geometric or operational improvements, bridge widenings, and grade separations.	The firm must employ one Professional Engineer with a minimum of three years of experience performing design, analysis, and studies of highway-rail grade crossings.
9	9	<b>Bicycle and Pedestrian Facilities</b>	
	9.1.1	<u>Bicycle and Pedestrian Facility Development</u> - This includes the design of bicycle and pedestrian facilities.	The firm must employ one Professional Engineer with a minimum of one year of experience in the design of bicycle and pedestrian facilities who also has knowledge of drainage design.
10	10	<b>Hydraulic Design and Analysis</b>	
	10.1.1	<u>Hydrologic Studies</u> - This category includes rainfall/runoff determination, reservoir/detention/channel routing, and stream gauge analysis.	The firm must employ one Professional Engineer with a minimum of five years of experience in hydrologic analysis.

Group	Category	Group Description	
		Category Description	Certification Requirements
10	10.2.1	<u>Roadway Hydraulic Design</u> - This category includes hydraulic analysis and design for storm drain systems, roadside channels, and culverts. This category also includes detention and water quality design.	The firm must employ one Professional Engineer with a minimum of five years of experience in hydraulic analysis, design, and state/federal permitting in the tasks associated with this category.
	10.3.1	<u>Bridge Hydraulic Design</u> - This category includes hydraulic analysis and design for bridge class structures over waterways and floodplains. This category also includes minor channel modifications.	The firm must employ one Professional Engineer with a minimum of five years of experience in hydraulic analysis, design, and state/federal permitting in the tasks associated with this category.
	10.4.1	<u>Storm Water Pump Station-Hydraulic Design</u> - This category includes site considerations and hydrology, pump station storage, pump configuration and mass curve routing, and discharge lines and pump selection.	The firm must employ one Professional Engineer with a minimum of five years of experience in hydraulic analysis and design of pump stations.
	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 a minimum of five years of 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 a minimum of three years of experience in the design of structural pump stations.
	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 a minimum of five years of experience in river geomorphology, sediment transport and scour analysis, and flood plain analysis.
	10.6.1	<u>Coastal Hydraulic Design</u> – This category includes: wave mechanics, determination of tides and water levels, revetment design for coastal embankments, wave loads on rigid structures, coastal geology and sediments, roadway overwash, shoreline change and stabilization, tidal inlets, and tidal scour of bridges. This category also includes providing technical or regulatory support for Coast Guard, FEMA, and USACE permits.	The firm must employ one Professional Engineer with a minimum of five years of experience in coastal engineering in the tasks associated with this category.
	10.7.1	<u>Riverine Hydraulic Design</u> – This category includes the design of river and stream hydraulic projects with stream stability and restoration components. Additionally includes construction management and inspection of these hydraulic projects.	The firm must employ one Professional Engineer with a minimum of five years of experience in hydraulic analysis, design, and state/federal permitting in the tasks associated with this category.

Group	Category	Group Description	
		Category Description	Certification Requirements
10	10.8.1	<u>Federal Emergency Management Agency (FEMA) Regulations and Permits</u> – This category includes providing technical or regulatory support on FEMA topics such as floodway modeling or application for FEMA map revisions (CLOMR and LOMR).	The firm must employ one Professional Engineer with five years of experience with FEMA map revisions. This individual must also be nationally accredited as a Certified Floodplain Manager (CFM).
11	11	<b>Construction Management</b>	
	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 bridges as described in Category 5.2.1.	The firm must employ one Professional Engineer with a minimum of three years of responsible charge experience as a project engineer on roadway and bridge construction projects.
	11.2.1	<u>Bridge Construction, Management, and Inspection</u> - This category includes the performance of construction management and inspection duties for bridges and multi-level interchanges, as described in Categories 5.2.1 and 5.3.1.	The firm must employ one Professional Engineer with a minimum of three years of experience in the construction of bridges.
	11.3.1	<u>Construction Superintendent</u> - This category involves oversight of construction inspection to ensure roadways, bridges, drainage structures and related structures, traffic control, and environmental requirements are built in accordance with plans and specifications. This category includes tracking work progress, resolving problems, and leading the work of professional and technical employees in construction.	The firm must employ one construction superintendent who has a minimum of five years of experience in construction inspection, including a minimum of three years of experience as a construction project manager.
	11.4.1	<u>Environmental Inspections</u> - This category includes conducting environmental inspections at roadway construction project sites for Storm Water Pollution Prevention Plan (SW3P), the Environmental Permits Issues and Commitments (EPIC) Sheet, Construction General Permit (CGP), and District Standard Operating Procedures (SOP).	The firm must employ one individual with a minimum of five years of construction storm water inspection experience. The person must have a working knowledge of the Texas Commission on Environmental Quality's development and storm water quality Best Management Practices.
	11.5.1	<u>Construction Scheduling Project Manager</u> - This category involves management of construction project scheduling, analysis, and review. This category includes managing the task leads for highway construction projects using the critical path method technique for project scheduling.	The firm must employ one Professional Engineer with a minimum of five years of responsible charge experience in managing scheduling for a highway construction project using the critical path method technique. This individual must be knowledgeable and experienced in the critical path method techniques used in highway construction using Primavera or equivalent. This individual must also be knowledgeable and experienced in one of the following schedule comparison software such as Claim Digger, Schedule Analyzer, Acumen Fuse, or equivalent performing the following: <ul style="list-style-type: none"> <li>• scheduling and tracking a project's progress;</li> <li>• identifying the schedule activities that control the overall construction time or the critical path;</li> <li>• identifying and measuring the impact any change has on a project schedule; and</li> <li>• providing recommendations to resolve the time, scope, and cost aspects of project changes or delays.</li> </ul>

Group	Category	Group Description	
		Category Description	Certification Requirements
11	11.6.1	<u>Construction Schedule Support – General</u> - This category includes the performance of scheduling, analyzing, monitoring, and evaluating highway construction project progress using the critical path method technique for project scheduling.	<p>The firm must employ one individual with a minimum of three years of responsible charge experience in scheduling, analyzing, monitoring, and evaluating a construction project progress using the critical path method technique. This individual must be knowledgeable and experienced with the critical path method techniques used in highway construction using Primavera or equivalent. This individual must also be knowledgeable and experienced in one of the following schedule comparison software such as Claim Digger, Schedule Analyzer, Acumen Fuse, or equivalent performing the following:</p> <ul style="list-style-type: none"> <li>• scheduling and tracking a project’s progress;</li> <li>• identifying the schedule activities that control the overall construction time or the critical path;</li> <li>• identifying and measuring the impact any change has on a project schedule; and</li> <li>• Providing recommendations to resolve the time, scope, and cost aspects of project changes or delays.</li> </ul>
	11.7.1	<u>Construction Schedule Support – Relating to Scheduling of Roadway Design</u> - This category includes providing technical support for the performance of analyzing, monitoring, and evaluating roadway construction project progress, with emphasis on roadway design elements, using the critical path method technique for project scheduling.	The firm must employ one Professional Engineer with a minimum of three years of experience in roadway design on two separate projects. Experience may include design of urban and rural roadways that involve repair, resurfacing, rehabilitation, major reconstruction, or substantial capacity improvements. Associated activities include project scheduling, substantial drainage evaluation and design features, traffic engineering applications, utility relocation plans, and maintenance of traffic plans. This individual must be knowledgeable and experienced in the critical path method techniques used in highway construction using Microsoft Project and Primavera or equivalent.
	11.8.1	<u>Construction Schedule Support – Relating to Construction Management of Projects Including Bridges or Multi-Level Interchanges</u> - This category includes providing technical support for the performance of analyzing, monitoring, and evaluating highway construction project progress, with emphasis on construction management and inspection elements for projects including bridges or multi-level interchanges, using the critical path method technique for project scheduling.	The firm must employ one Professional Engineer with a minimum of three years of responsible charge experience as a project engineer on roadway construction projects, and three years of bridge construction experience. Roadway project experience may include the performance of construction management duties, including scheduling, for all categories of roadways and highways. Bridge construction experience may include the performance of construction management duties, including scheduling, for bridges and multi-level interchanges. This individual must be knowledgeable and experienced in the critical path method techniques used in highway construction using Microsoft Project and Primavera or equivalent.
12	12	<b>Materials Inspection and Testing</b>	
	12.1	<b>Material Testing</b> - The firm must employ qualified, certified staff necessary to perform the work specified in this category.	
	12.1.1	<u>Asphaltic Concrete Production</u> - This category includes testing of asphaltic concrete material in a laboratory.	<p>The firm must employ one individual who has:</p> <ul style="list-style-type: none"> <li>• A minimum of three years of experience in testing roadway construction materials; and</li> <li>• The proper Hot Mix Asphalt Specialist Certification (Level 1A).</li> </ul>
	12.1.2	<u>Portland Cement Concrete</u> - This category includes testing of Portland cement concrete material in a laboratory.	<p>The firm must employ one individual who has:</p> <ul style="list-style-type: none"> <li>• A minimum of three years of experience in testing roadway and bridge construction materials; and</li> <li>• The proper concrete certification (ACI certification Strength).</li> </ul>



Group	Category	Group Description	
		Category Description	Certification Requirements
12	12.1.3	<u>Materials Engineering</u> – This category includes materials engineering for roadway and bridge construction materials.	The firm must employ one Professional Engineer with a minimum of three years of experience in testing roadway and bridge construction materials.
	12.1.4	<u>Asphaltic Concrete Placement</u> - This category includes testing of asphalt concrete materials in the field.	The firm must employ one individual who has: <ul style="list-style-type: none"> <li>• a minimum of three years of experience in testing roadway construction materials; and</li> <li>• the proper Hot Mix Asphalt Specialist Certification (Level 1B).</li> </ul>
	12.1.5	<u>Portland Cement Concrete Placement</u> - This category includes testing of Portland cement concrete material in the field.	The firm must employ one individual who has: <ul style="list-style-type: none"> <li>• a minimum of three years of experience in testing roadway and bridge construction materials; and</li> <li>• the proper concrete certification (ACI Certification Grade 1).</li> </ul>
	12.1.6	<u>Embankment/Subgrade/Backfill/Base Production</u> – This category includes testing of embankment, subgrade, backfill, and/or base material in a laboratory.	The firm must employ one individual who has: <ul style="list-style-type: none"> <li>• a minimum of three years of experience in testing roadway construction materials; and</li> <li>• the proper Materials Analyst Specialist Certification (SB101 minimum).</li> </ul>
	12.1.7	<u>Embankment/Subgrade/Backfill/Base Placement</u> – This category includes the testing of embankment, subgrade, backfill, and/or base material in the field.	The firm must employ one individual who has: <ul style="list-style-type: none"> <li>• a minimum of three years of experience in testing roadway construction materials; and</li> <li>• the proper Materials Analyst Specialist Certification (SB102).</li> </ul>
	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 one Professional Engineer with a minimum of three years of responsible experience in inspection and testing of bridge and roadway construction.
	12.3.1	<u>Coatings Inspection and Material Testing Project Manager</u> - This category includes providing comprehensive monitoring and inspection, material testing, and related consultation services for cleaning and coating contracts on department structures maintained statewide including: monitoring contractors’ operations to ensure compliance with quality control plans, project requirements, and federal, state, and local environmental and worker safety regulations; performing quality assurance tests; witnessing and documenting results of quality control tests performed by contractors; monitoring contractors’ waste sampling, testing, characterization, labeling, storage and disposal practices; and providing engineering services when specifically requested by TxDOT.	The firm must employ one project manager: <ul style="list-style-type: none"> <li>• who has experience providing inspection oversight and management including: developing and implementing site-specific inspection plans for each assigned project according to the NACE International and SSPC: The Society for Protective Coatings industry standards for coatings inspection; verifying qualifications of inspectors; and providing continuing education, training, and general guidance to inspectors; and</li> <li>• is certified by NACE International as NACE Level 3 Coating Inspector or certified by SSPC as a BCI Level 2 Coating Inspector; and</li> <li>• has experience on at least three bridge painting projects involving lead abatement.</li> </ul>

Group	Category	Group Description	
		Category Description	Certification Requirements
12	12.3.2	<p><u>Coatings Inspection and Material Testing Task Leader</u> - This category includes providing inspection and material testing services for cleaning and coating contracts on department structures maintained statewide. Material testing services include: coating characterization as determined by such tests as percent solids, sag, viscosity, zinc loading, and other applicable methods; paint chip analysis as determined by resin determination, heavy metal analysis, percent cure, FTIR; blister solution analysis; GC; soil analysis for heavy metals; and analysis of air monitoring cartridges for heavy metals.</p>	<p>The firm must employ one individual who:</p> <ul style="list-style-type: none"> <li>• has minimum of three years of experience inspecting performing coatings inspection and materials testing; and</li> <li>• is certified by NACE International as NACE Level 3 Coating Inspector or certified by SSPC as a BCI Level 2 Coating Inspector; and</li> <li>• has experience on at least one bridge painting project involving lead abatement.</li> </ul>
14	14	<b>Geotechnical Services</b>	
	14.1.1	<p><u>Soil Exploration</u> - This category includes acquisition and reporting of subsurface material to be used 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>	<p>The firm must employ one Professional Engineer with a minimum of one year of experience in the activities normally associated with this category.</p>
	14.2.1	<p><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>	<p>The firm must employ one Professional Engineer with a minimum of one year of experience in the activities normally associated with this category.</p>
	14.3.1	<p><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.</p>	<p>The firm must employ one Professional Engineer with a minimum of three years of experience in the activities normally associated with this category.</p>
	14.4.1	<p><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.</p>	<p>The firm must employ one Professional Engineer with a minimum of three years of experience in the activities normally associated with this category.</p>

Group	Category	Group Description	
		Category Description	Certification Requirements
14	14.5.1	<u>Evaluation &amp; Design of Geotechnical Related Structures</u> - This category includes producing reports on the evaluation of and/or preparing design recommendations for any of the following: slope failures; rock cuts; stability analyses of existing and proposed retaining walls; highway rest area pavements and buildings; ferry landings and associated structures; bridge foundations; overhead sign foundations; high mast illumination foundations; and other transportation related structural foundations. The work will include the following: bearing capacity, predicted settlement, stabilization, stability analyses, shear strength parameters, influence of water conditions, foundation repair measures, foundation design, and repair measures.	The firm must employ one licensed Professional Engineer with a minimum of five years of experience as a project manager or task leader in the evaluation and the design of the geotechnical related structures listed in this category.
15	15	<b>Surveying and Mapping</b>	
	15.1.1	<u>Right of Way Surveys</u> - This category includes performance of on the ground surveys to establish land boundaries, preparation of parcel descriptions and parcel plats, and preparation of right of way maps.	The firm must employ one registered Professional Land Surveyor with current registration in the State of Texas who has a minimum of one year of experience in right of way surveying.
	15.2.1	<u>Design Survey</u> - This category includes performance of surveys associated with the gathering of survey data for topography, cross-sections, and other related work required for the design a project.	The firm must employ one registered Professional Land Surveyor with current registration in the State of Texas who has a minimum of one year of experience in surveying for design.
	15.2.2	<u>Construction Survey</u> - This category includes performance of surveys associated with layout and staking of a project for construction.	The firm must employ one registered Professional Land Surveyor with current registration in the State of Texas who has a minimum of one year of experience in roadway construction staking.
	15.3	<b>Mapping</b> - This category includes geospatial data collection and mapping by means of aerial photogrammetry, terrestrial (close-range) photogrammetry, terrestrial LiDAR, mobile LiDAR, airborne LiDAR, and other remote sensing technologies.	
	15.3.1	<u>Aerial Photogrammetry</u>	The firm must employ one American Society for Photogrammetry and Remote Sensing (ASPRS) Certified photogrammetrist.
	15.3.2	<u>Terrestrial Photogrammetry</u>	The firm must employ one of the following: <ul style="list-style-type: none"> <li>• one American Society for Photogrammetry and Remote Sensing (ASPRS) Certified Photogrammetrist; or</li> <li>• one ASPRS Certified Mapping Scientist - Remote Sensing; or</li> <li>• one Registered Professional Land Surveyor with current registration in the State of Texas.</li> </ul>

Group	Category	Group Description	
		Category Description	Certification Requirements
15	15.3.3	<u>Terrestrial LiDAR</u>	The firm must employ one Registered Professional Land Surveyor with current registration in the State of Texas with a minimum of one year of experience in terrestrial LiDAR data acquisition and processing.
	15.3.4	<u>Mobile and Airborne LiDAR</u>	The firm must employ one Registered Professional Land Surveyor with current registration in the State of Texas or one American Society for Photogrammetry and Remote Sensing (ASPRS) Certified Mapping Scientist, LiDAR. This individual must have: <ul style="list-style-type: none"> <li>• a minimum of one year of experience in mobile LiDAR data acquisition and processing; or</li> <li>• a minimum of one year of experience in airborne LiDAR data acquisition and processing.</li> </ul>
	15.3.5	<u>Horizontal and Vertical Control</u> - This category involves the establishment of horizontal and vertical control for survey projects.	The firm must employ one registered Professional Land Surveyor with current registration in the State of Texas with a minimum of one year of experience in control surveying.
	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 results; and the field notes and/or maps of which are to be filed in the General Land Office,” as quoted in the Professional Land Surveying Practices Act.	The firm must employ one Licensed State Land Surveyor with a minimum of 3 years of experience in state land surveying as defined in the category description.
16	16	<b>Architecture</b> – 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 canopies, equipment slabs, and equipment and/or material storage structures.	The firm must employ one Registered Architect with a minimum of three years of experience in the areas identified in this category.
	16.2.1	<u>Building and Facilities Architecture</u> - This category includes architectural studies, analyses, cost estimating, designs, facility condition assessments, assessment and correction of building envelope issues, master planning, and other related tasks to support the construction of new buildings and the repair or renovation of existing buildings, facilities, site work, and infrastructure.	The firm must employ one Registered Architect, with a minimum of five years of experience in the activities associated with this category.
	16.3.1	<u>Landscape Architecture</u> - This category includes the design of the landscape including vegetation, irrigation, hardscape, sidewalks, trails, and miscellaneous site features for new and renovated facilities.	The firm must employ one Registered or Licensed Landscape Architect, with a minimum of five years of experience in designing landscaping including vegetation, irrigation, hardscape, sidewalks, and miscellaneous site features.
17	17	<b>Facilities Engineering</b>	

Group	Category	Group Description	
		Category Description	Certification Requirements
17	17.1.1	<u>Structural Engineering</u> - This category includes the design and investigation of the structural aspects of buildings, structures, site improvements, and foundations for new and renovated facilities. This category also includes geotechnical investigation and design related to the structural design of foundations.	The firm must employ one Professional Engineer with a minimum of five years of experience designing buildings, structures, site improvements, and foundations, including the investigation and correction of compromised foundations.
	17.2.1	<u>Mechanical Engineering</u> - This category involves mechanical engineering studies, analyses, designs, and other related tasks in support of buildings, facilities and infrastructure, including, but not limited to, design of piping, heating, ventilation, and air conditioning systems (HVAC) for new and renovated facilities.	The firm must employ one Professional Engineer with a minimum of five years of experience in Mechanical Engineering including performing mechanical engineering studies, analyses, designs and other related tasks in support of buildings, facilities and infrastructure, including, but not limited to design of piping, heating, ventilation, and air conditioning systems (HVAC) for new and renovated facilities.
	17.3.1	<u>Plumbing Engineering</u> - This category involves design of piping systems and plumbing for buildings, facilities, and infrastructure for new and renovated facilities.	The firm must employ one Professional Engineer with a minimum of five years of experience in design of piping systems and plumbing for buildings, facilities, and infrastructure for new and renovated facilities.
	17.4.1	<u>Electrical Engineering</u> - This category includes the design of electrical distribution systems, site and facility illumination systems, fire alarms, communication networks (voice and data), site and facility security systems, performance of arc flash studies, and interfacing with utility providers for new and renovated facilities.	The firm must employ one Professional Engineer with a minimum of five years of experience designing and specifying fire alarm systems, electrical distribution systems, site and facility illumination systems, voice and data communication networks, performance of arc flash studies, and site and facility security systems for commercial and industrial buildings and properties.
	17.5.1	<u>Civil Engineering</u> - This category includes, but is not limited to, the design of drainage systems, site grading, surface and subsurface utilities, on-site sewage treatment facilities, water supply systems (including wells), interfacing with water and wastewater providers, and other site features for new and renovated facilities.	The firm must employ one Professional Engineer with a minimum of five years of experience in Civil Engineering with drainage systems, site grading, surface and subsurface utilities, on-site sewage treatment facilities, water supply systems including wells, and other site features for new and renovated facilities.
	17.6.1	<u>Hazardous Building Materials Assessment (Asbestos)</u> - This category includes hazardous building materials inspection for asbestos-containing materials, risk assessment, analyses, testing, removal design, removal monitoring, and other related tasks in support of new and renovated buildings, facilities, and infrastructure.	The firm must be a licensed asbestos consultant agency and employ one licensed asbestos consultant with a minimum of five years of experience in survey of public buildings for asbestos containing materials, preparation of plans and specifications for asbestos removal, monitoring asbestos removal, and other related tasks in support of new and renovated buildings, facilities, and infrastructure.
	17.6.2	<u>Hazardous Building Materials Assessment (Lead)</u> - This category includes hazardous building materials inspection for lead materials, risk assessment, analyses, testing, removal design, removal monitoring, and other related tasks in support of new and renovated buildings, facilities, and infrastructure.	The firm must employ one certified industrial hygienist with a minimum of three years of experience in performing lead risk assessments to determine whether renovation, demolition, and remodeling activities may pose a lead hazard and other related tasks in the support of renovation or demolition of buildings, facilities, and infrastructure.
18	18	<b>Utility Engineering</b>	

Group	Category	Group Description	
		Category Description	Certification Requirements
18	18.2.1	<u>Subsurface Utility Engineering</u> - This category involves the determination of vertical and horizontal locations of subsurface utilities by non-destructive methods.	The firm must employ one Professional Engineer with a minimum of three years of experience in subsurface utility engineering investigations.
	18.3.1	<u>Utility Adjustment Coordination</u> - This category involves holding utility coordination meetings with individual utility companies, coordination and communication with utilities, and utility agreement and billing preparation.	The firm must employ one individual with a minimum of three years of experience in utility coordination and agreement preparation as a lead worker.
	18.4.1	<u>Utility Engineering</u> - This category involves utility conflict identification as determined from utility engineering investigations, roadway design plans, and coordination with TxDOT engineers and utility companies. Also includes the evaluation of alternatives, in addition to review of utility plans for compatibility of proposed utility adjustments and installations with the highway design features, compliance with utility accommodation rules, and reasonableness of cost. May include public meetings for involvement of utility companies in the cooperative process and conflict resolution.	The firm must employ one Professional Engineer with a minimum of three years of experience in utility engineering.
	18.5.1	<u>Utility Construction Management and Verification</u> - This category involves utility adjustment monitoring, including utility installation verification, records management, and status reporting.	The firm must employ one Professional Engineer with a minimum of three years of experience in utility construction management and verification.
	18.6.1	<u>Utility Management &amp; Coordination Oversight</u> - This category involves oversight of others holding utility coordination meetings with individual utility companies, coordination, and communication with utilities and utility agreement and billing preparation.	The firm must employ one individual with a minimum of three years of experience in utility coordination and agreement preparation.
19	19	<b>Miscellaneous</b>	
	19.1.1	<u>Value Engineering</u> - 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.	The firm must employ one Professional Engineer who: <ul style="list-style-type: none"> <li>• 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 three transportation related value engineering studies.</li> <li>• 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.</li> </ul>