



SCOPE OF SERVICES

Solicitation Number: CLMP200

Project Name: 2017 Construction Materials, Geotechnical, and Forensic Engineering Services Rotation List

PROJECT FOR:

CITY OF AUSTIN, PUBLIC WORKS DEPARTMENT, THROUGH ITS CAPITAL CONTRACTING OFFICE

PROJECT TITLE:

2017 CONSTRUCTION MATERIALS, GEOTECHNICAL, AND FORENSIC ENGINEERING SERVICES RL

OBJECTIVES OF THE PROJECT

The City of Austin (City) anticipates contracting with qualified firms for an approximate two (2) year period to provide construction materials, geotechnical, and forensic engineering services in the following three (3) categories:

- **Category 1: Construction Materials Testing**
Conduct investigations, evaluations and testing of soils, aggregates, structural steel welding and erections, asphaltic concrete and Portland cement concrete, as needed, for roadways, utilities, buildings, parking lots and other engineered structures.
- **Category 2: Geotechnical Engineering**
Conduct geotechnical engineering services and provide subsurface investigations for streets, utilities, buildings, parking lots, and other engineered structures.
- **Category 3: Forensic Engineering**
Conduct forensic engineering services to assist the City in determination of the cause of material failures and to provide recommendations on how to correct the problem. Work may involve special tests including petrography, scanning electron microscopy, x-ray diffractometry, and x-ray spectroscopy evaluations for streets, utilities, buildings, parking lots, and other engineered structures. The work may also require expert witness testimony services regarding the results of the forensic investigation.

BACKGROUND

The City currently has service agreements with 14 firms to provide construction materials, geotechnical, and, forensic engineering services. It is anticipated that the authorized funding for the existing "Geotechnical, Construction Materials, and Forensic Engineering Services Rotation List" will be expended by February 2017.

This Request for Qualifications (RFQ) will be open to all qualified local engineering consulting firms and will encompass construction materials, geotechnical, and forensic engineering services. The City intends to select all firms meeting the minimum qualifications outlined in the RFQ.

ANTICIPATED SERVICES:

The selected firms will provide professional services for one, two, or all three of the following categories. Firms should indicate the desired category or categories in the statement of qualifications.

- **Category 1: Construction Materials Testing**

The City anticipates a combination of services required for designated site-specific development and building construction projects for both City Capital Improvement Program projects and certain privately-funded developer projects. The services associated with this category will typically include laboratory and field testing of construction materials and preparations of testing and inspection reports. The City requires the selected firms to provide “call-out” sampling, laboratory and field investigations, and preparation of reports indicating whether or not the materials meet the requirements of the Construction Documents. Work in this area may include one or more of the following: soil, rock, concrete, Hot Mix Asphalt Concrete (HMAC), welding, and flexible base stockpiles.

- **Category 2: Geotechnical Engineering**

The City anticipates a combination of services for Geotechnical Engineering for Capital Improvements Program projects including subsurface exploration, laboratory and field-testing of soil and rock, and geotechnical engineering analyses and recommendations. Firms selected for this category will be expected to:

- Conduct field investigations of subsurface soil and rock.
- Perform standard laboratory tests to determine soil and rock properties and accurately depict existing subsurface conditions.
- Perform specialized tests such as hardness and abrasivity, and other special tests as required.
- Prepare written reports that contain facts (such as laboratory test results and subsurface exploration observations), interpretations (such as shrink/swell potential, stratigraphy, geologic structural features and the presence of groundwater), and recommendations (such as excavation methods, preferred pipe bedding materials, influence of groundwater, influence of adjacent structures, preferred types of foundations, allowable loads, and permissible slopes) appropriate for the type of investigation. The reports shall contain project location maps, boring location maps, geotechnical (geological) profiles, boring logs, and other exhibits as required. Reports shall be submitted in both electronic format as well as bound paper documents. Typical projects will involve sampling, laboratory and field-testing, and geotechnical engineering analyses for street pavement structural design, building foundations, wastewater and drainage tunnels, utility trenches, roadway embankments, embankment dams, and landslides. Other services, such as field inspections of drilled piers and other foundation excavations, may also be required under this category as determined on a project-by-project basis.

- **Category 3: Forensic Engineering**

The City anticipates that the firms selected for Forensic Engineering will provide all services related to determining the causes of failure of constructed structures, including providing expert witness testimony if a project enters litigation. The services associated with this category will typically include:

- Field sampling and engineering observation.
- Laboratory and field-testing.
- Materials engineering evaluations and investigations using petrography, x-ray diffractometry, scanning electron microscopy, x-ray spectroscopy, and other analytical test methods.
- Determine scope of tests and data required to assess the cause of failure.
- Evaluation of all collected data and determination of the cause of failure.
- Preparation and submittal of a report with findings and recommendations to the City of Austin Law Department as a document with attorney-client privilege.

In responding to this offering, firms will prioritize the categories of work in which they wish to provide services. It is anticipated that each firm could be selected to provide services in one or more of the above categories. Firms will be advised to designate only those categories in which they are qualified/certified to provide services. When a firm designates a specific category, the firm must be able to document a capability to provide all of the services required in the designated category either by themselves or through a subcontractor.

MINIMUM QUALIFICATIONS

Statements of qualifications not demonstrating that all of the following minimum qualifications are met may be rejected as non-responsive. Firms shall demonstrate that these qualifications are met via Forms A, B, C, D or other forms as identified in the criteria.

General

- The nature of the work requires selected firms to respond to urgent requests associated with the schedules of other City construction projects. Therefore, the City requires that the selected firms will presently have a permanent, fully-operational, organized and fully-functional, established laboratory facility and offices that are located in the Austin Metropolitan Statistical Area and staffed by local personnel. The selected firms shall document in the Evaluation Criteria that they have provided services for a minimum of three (3) years prior to the date of this RFQ of the same type as specified in the selected category.
- The City requires that field sampling and explorations, laboratory and field testing, and engineering analyses and investigations for all Category 1 (Construction Materials Testing) and Category 2 (Geotechnical Engineering) services will be directed by a registered Professional Engineer licensed in the State of Texas, who is identified as the firm's project manager or project professional assigned permanently to the Austin facility and whose specialty and recent experience is in the category for which the firm will provide services to the City.

- The City requires that the selected firms for Category 3 (Forensic Engineering) services will be directed by a registered Professional Engineer licensed in the State of Texas, who is identified as the firm’s project manager and whose specialty and recent experience is in the specific area of engineering for which the firm will provide forensic engineering services to the City. The project manager must be the local, primary contact for proposals and for resolving quality of service issues and issues related to the firm’s contractual relationship with the City. With approval from the City Rotation List Manager, it may be acceptable for the firm to assign a project professional from another of the firm’s offices in the United States.

Laboratory Accreditation

- The City requires the laboratories that provide services under all categories to be accredited/certified by the American Association for Laboratory Accreditation (A2LA) or the American Association of State Highway and Transportation Officials (AASHTO) Accreditation Program (AAP) at time of submittal of the Proposal.
- The City requires the laboratories that provide services under Category 1 (Construction Materials Testing) and Category 2 (Geotechnical Engineering) to meet the requirements of American Society for Testing and Materials (ASTM) E329, D3740, and C1077, and to be accredited in the tests and procedures listed in Tables 1 through 5 below.
- The City requires the laboratories that provide services under Category 3 (Forensic Engineering) to meet the requirements of the American Society for Testing and Materials (ASTM) E543, to be accredited by a laboratory accreditation authority, to be nationally recognized for the expertise of the professional and technical staff as evidenced by publication of articles in industry technical journals and magazines concerning forensic studies of construction materials, or must have fully-documented, comparable demonstration of qualifications and experience.
- The City requires the laboratories that provide services in the specific area of HMAC testing to meet the requirements of American Society for Testing and Materials (ASTM) E329 and D3666 and to be accredited in those tests and procedures listed in Tables 3, 4, and 5. In addition, before being given any HMAC testing assignments, the laboratory must have previously completed the City’s side-by-side testing program or be TxDOT approved.
- The City requires the laboratories that provide flexible base stockpile testing services be accredited in TxDOT 116E and 117E.

Table 1. SOIL TESTS AND PROCEDURES

ASTM	AASHTO	TxDOT	TITLE
D421	T87	Tex-101-E	Practice for Dry Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants
D422	T88	Tex-110-E	Test Method for Particle-Size Analysis of Soils
D698	T99	Tex-113-E	*Laboratory Compaction Characteristics and Moisture-Density Relationship of Base Materials and Cohesionless sand

D698	T99	Tex-114-E	*Laboratory Compaction Characteristics and Moisture-Density Relationship of Subgrade & Embankment Soils
D1140	T11	Tex-111-E	*Determination of Amount of Material in Soils Finer Than the 75- μ m (No. 200) Sieve
D2216	T265	Tex-103-E	*Determination of Moisture Content in Soil Materials
D1557	T180		Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 lbf/ft ³ (2,700 kN/m/m ³))
D2217	T146	Tex-101-E	Practice for Wet Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants
D2487		Tex-142-E	Classification of Soils for Engineering Purposes (Unified Soil Classification System)
D2488		Tex-141-E	Practice for Description and Identification of Soils (Visual-Manual Procedure)
D2922	T238	Tex-115-E Part II	Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D3017	T239	Tex-115-E Part II	Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
D4318	T89	Tex-104-E	*Determination of Liquid Limit of Soils
D4318	T90	Tex-105-E	*Determination of Plastic Limit of Soils
D4318	T90	Tex-106-E	*Method of Calculating the Plasticity Index of Soils
		Tex-121-E	*Soil Lime Compression Test

* Title from TxDOT Manual; all others titles are from ASTM Standards

Table 2. CONCRETE TESTS AND PROCEDURES

ASTM	AASHTO	TxDOT	TITLE
C31	T23	Tex-447-A	Practice for Making and Curing Concrete Test Specimens in the Field
C39	T22	Tex-418-A	Test Method for Compressive Strength of Cylindrical Concrete Specimens
C78	T97	Tex-448-A	Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
C138	T121	Tex-417-A	Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete
C143	T119	Tex-415-A	Test Method for Slump of Hydraulic Cement Concrete
C172	T141	Tex-407-A	Practice for Sampling Freshly Mixed Concrete
C231	T152	Tex-416-A	Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
C617	T231	Tex-450-A	Practice for Capping Cylindrical Concrete Specimens
C1064		Tex-422-A	Test Method for Temperature of Freshly Mixed Portland Cement Concrete

Table 3. AGGREGATE TESTS AND PROCEDURES

ASTM	AASHTO	TxDOT	TITLE
C40	T21	Tex-408-A	Test Method for Organic Impurities in Fine Aggregates for Concrete
C88	T104	Tex-411-A	Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
C117	T11	Tex-406-A	Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
C127	T85	Tex-403-A	Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
C128	T84	Tex-403-A	Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
C131	T96	Tex-410-A	Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
C136	T27	Tex-401-A	Test Method for Sieve Analysis of Fine and Coarse Aggregates
C142	T112	Tex-413-A	Test Method for Clay Lumps and Friable Particles in Aggregates
C566	T255		Test Method for Total Evaporable Moisture Content of Aggregate by Drying
C702	T248		Practice for Reducing Samples of Aggregate to Testing Size
D75	T2	Tex-400-A	Practice for Sampling Aggregates
D2419	T176	Tex-203-F	Test Method for Sand Equivalent Value of Soils and Fine Aggregate

Table 4. ASPHALTIC MATERIAL TESTS AND PROCEDURES

ASTM	AASHTO	TxDOT	TITLE
D4318	T90	Tex-106-E	*Method of Calculating the Plasticity Index of Soils
		Tex-107-E	*Determination of Bar Linear Shrinkage of Soils
		Tex-200-F	*Sieve Analysis of Fine and Coarse Aggregates
D5	T49		Test Method for Penetration of Bituminous Materials
D36	T53		Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)
D113	T51		Test Method for Ductility of Bituminous Materials
D140	T40	Tex-222-F	Practice for Sampling Bituminous Materials
D244	T59		Test Methods for Emulsified Asphalts
D402	T78		Test Method for Distillation of Cut-Back Asphaltic (Bituminous) Products
D1754	T179		Test Method for Effect of Heat and Air on Asphaltic Materials (Thin-Film Oven Test)
D1856	T170	Tex-211-F	Test Method for Recovery of Asphalt From Solution by Abson Method
D2170	T201		Test Method for Kinematic Viscosity of Asphalts (Bitumens)
D2171	T202		Test Method for Viscosity of Asphalts by Vacuum Capillary Viscometer
D3142	T227		Test Method for Density of Liquid asphalts (Hydrometer Method)

* Title from TxDOT Manual; all other titles are from ASTM Standards

Table 5. HOT MIX ASPHALT TESTS AND PROCEDURES

ASTM	AASHTO	TxDOT	TITLE
D979	T168	Tex-222-F	Practice for Sampling Bituminous Paving Mixtures
D1560	T246	Tex-208-F	Test Methods for Resistance to Deformation and Cohesion of Bituminous Mixtures by Means of Hveem Apparatus
D2041	T209	Tex-227-F	Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
D2172	T164	Tex-210-F	Test Methods for Quantitative Extraction of Bitumen From Bituminous Paving Mixtures
D2726	T166	Tex-207-F	Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Saturated Surface-Dry Specimens
D3203	T269		Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
D5444			Test Method for Mechanical Size Analysis of Extracted Aggregate

Technician Certification

The City requires that technicians performing the services below be certified as indicated below:

- Soil and Rock – Technicians performing *soil and rock testing* must be certified as a National Institute for Certification in Engineering Technologies (NICET) Level II Associate Engineering Technician or higher in soils technology.
- Concrete – Technicians performing *concrete testing* must be certified as an American Concrete Institute (ACI) Concrete Field Testing Technician Grade I and/or NICET Level II Associate Engineering Technician in Concrete.
- Hot Mix Asphalt Concrete (HMAC) – Technicians performing *HMAC testing* must be certified as a Texas Hot Mix Asphalt Pavement Association Level 1A, HMA Plant Operations Specialist, or higher.
- Flexible Base Stockpiles – Technicians sampling, inspecting, and testing *flexible base stockpiles* must be under the supervision of a certified NICET-Level III Engineering Technician or higher in soils technology.
- Structural Steel – Technicians inspecting and testing *structural steel* must be certified American Welding Society (AWS) Welding Inspectors and/or a certified American Society for Nondestructive Testing (ASNT) NDT Level II, or higher.
- Corrosion Coating – Technicians inspecting and testing *corrosion coating* must be certified National Association of Corrosion Engineers (NACE) Corrosion Inspector or must have documented comparable, demonstrated qualifications and experience.
- Geotechnical Engineering – Technicians performing *geotechnical engineering* must be certified as a NICET Level II Associate Engineering Technician or higher in soils technology.

Professional Staff

The City requires that engineers performing services will meet the following requirements:

- Services under Category 1 (Construction Materials Testing) will be performed under the direction of a registered Professional Engineer, licensed in the State of Texas, who is permanently assigned to the Austin area office and has a minimum of five (5) years of experience in construction materials testing similar in type and scope of services described herein.
- Services under Category 2 (Geotechnical Engineering) will be performed under the direction of a registered Professional Engineer, licensed in the State of Texas, who is permanently assigned to the Austin area office and has a minimum of five (5) years of experience in conducting geotechnical investigations in the Austin area or in an area with similar geologic materials and conditions.
- Services under Category 3 (Forensic Engineering) will be performed under the direction of a registered Professional Engineer, who has a minimum of five (5) years of experience in the type of forensic studies required by the City.

Support Staff and Equipment

The City requires that firms providing “call-out” testing services under Category 1 (Construction Materials Testing) will:

- Provide full-time dispatching capabilities so that City inspectors can schedule testing with the dispatcher during normal business hours with a single telephone call. (The City will not assign work to laboratories that rely, even infrequently, on voice-mail messages for receiving incoming calls to schedule testing.)
- Provide two-way radio or cellular telephone communications capabilities for each technician for dispatching purposes and for communications with City inspectors.
- Employ a full-time, permanent laboratory manager who is responsible for oversight of laboratory operations and who can be contacted during normal business hours by the City inspector for updates on laboratory tests results and schedules.

The City requires that firms providing services under Category 2 (Geotechnical Engineering) will:

- Provide subsurface investigations under the direction of a driller with a minimum of 5 years’ experience in sampling soils and rock in the Austin area or in an area with similar geologic materials and conditions.
- Provide drill rigs capable of sampling soils intermittently using a split spoon and continuously using thin-walled tubes in soil and double tube core barrels in rock, with wire line capability.
- Locate the borings relative to the Texas State Plane Coordinate System, Central Zone, NAD 83/93 datum.
- Establish top of borehole elevations with, at a minimum, a GPS device (Trimble ProXRS or equivalent) capable of providing a vertical positional accuracy of less than 1 meter, relative to the NAVD 88 datum.
- Backfill boreholes with bentonite/cement mixture and repair pavement structure as needed.
- When directed by the Engineer, convert boreholes to groundwater observation wells.

PROPOSED PROJECT SCHEDULE:

The anticipated total completion time for this agreement is approximately two years from the date of City Council resolution authorizing negotiation and execution of the Professional Services Agreements. Project-specific schedules, if applicable, will be developed mutually by the City and the consultant’s project manager/engineer.

PROPOSED PROCUREMENT SCHEDULE

Submittal Due Date:	August 3, 2016
Council (Anticipated):	November 3, 2016
Contracts Executed:	January 2017

COST ESTIMATE AND DISTRIBUTION OF WORK:

The total funding authority for this project is **\$10,000,000** to be distributed among the qualified firms.

The City anticipates selecting all qualified local firms to perform the proposed services. The City anticipates that each firm will be given assignments within the category that they are selected and will cumulatively equal a common base dollar amount. The City anticipates the following assignment of funds for the three (3) categories:

Category 1: Construction Materials Testing	\$ 7,500,000
Category 2: Geotechnical Engineering	\$ 1,600,000
Category 3: Forensic Engineering	<u>\$ 900,000</u>
TOTAL:	\$10,000,000

When any of the selected firms ceases to practice in Austin during the contract period, or when the City elects to terminate its agreement with any of the selected firms, the remaining work will be distributed to the remaining firms.

MAJOR AND OTHER SCOPES OF WORK:

Below is a list of the major scopes of work that the City has identified for this project. ****There must be representation for all major scopes of work listed in the prime’s statement of qualifications. The experience of the firms listed to perform the Major Scopes of Work, whether a subconsultant or prime firm, will be evaluated under Consideration Item 6 – Major Scopes of Work – Comparable Project Experience.***

In addition, the City has identified Other Scopes of work that MAY materialize during the course of the project. The City does not guarantee that the scopes listed under Other Scopes of work will materialize on this contract. If the prime consultant intends to enter into a subconsulting agreement on a scope of work not listed below, the prime consultant is required to contact SMBR and request an updated availability list of certified firms in each of the scopes of work for which the prime consultant intends to utilize a subconsultant.

Major Scopes of Work*

- Construction Material Testing
- Geotechnical Engineering
- Forensic Engineering

Other Scopes of Work

None

Notes

- Participation at the prime or subconsultant level may create a conflict of interest and thus necessitate exclusion from any contracts resulting from the work performed in the design phase.
- If the City determines that a conflict of interest exists at the prime or subconsultant level, the City reserves the right to replace/remove the prime or instruct the prime consultant to remove the subconsultant with the conflict of interest and to instruct the prime consultant to seek a post-award change to the prime consultant's compliance plan as described in City Code § 2-9B-23. Such substitutions will be dealt with on a case-by-case basis and will be considered for approval by Small and Minority Business Resources (SMBR) in the usual course of business. The City's decision to remove a prime or subconsultant because of a conflict of interest shall be final.
- Construction Inspection and Public Information and Communications are **NOT** a subconsultant opportunity on this rotation list. These services will be performed in-house or under a separate contract, if needed, and will be determined when project assignment is made.
- For Subproject assignments that include construction activities performed by the CONSULTANT or Subconsultants, workers shall be paid not less than the prevailing wage rates, as referenced in Section 0830.
([http://www.austintexas.gov/sites/default/files/files/00830_05-03-16 .pdf](http://www.austintexas.gov/sites/default/files/files/00830_05-03-16.pdf))
- A consultant performance evaluation will be performed on all professional services contracts. This evaluation will be conducted at the end of each assignment completion for those projects.