



PROFESSIONAL SERVICES PROCUREMENT BULLETIN 2006-04 STATEWIDE/ GEOTECHNICAL ENGINEERING & LABORATORY TESTING

COUNTY	Statewide
ROUTE	N/A
DISTRICT	Statewide
ITEM NO	N/A
PROJECT DESCRIPTION	Statewide Geotechnical Engineering and Laboratory Testing
PROJECT MANAGER	William Broyles, P.E.
USER DIVISION	Structural Design
APPROXIMATE FEE	\$750,000 upset limit (per contract)
PURPOSE AND NEED	<p>To provide geotechnical engineering and laboratory testing services; to help expedite the completion of projects and effectively handle estimated workload, on a statewide basis during FY 2007 and 2008.</p> <p>Some projects may require limited surveying and roadway design necessary to prepare a complete set of roadway plans for the design of landslide and rockfall corrections. A pre-qualified subconsultant may be used on these projects. Prequalification in the areas of Rural Roadway Design and Surveying and/or the name of the subconsultant are not required to be identified in the Response to Announcement; these issues will be addressed at a later time.</p>
PROJECT LENGTH	N/A

METHOD OF DESIGN N/A

DBE REQUIREMENT N/A

AVAILABLE STUDIES N/A

PROJECT FUNDING State and Federal Funding

SCOPE Services will be performed in general accordance with the KYTC Geotechnical Manual and other applicable KYTC and/or FHWA documents, with exceptions, clarifications, or additions identified during negotiations and/or on a project-by-project basis. The services will include, but are not necessarily limited to the following:

CONVENTIONAL GEOTECHNICAL ENGINEERING ANALYSES: Slope Stability, Settlement, Deep Foundation, Wave Equation Driveability, Negative Skin Friction, Bearing Capacity, and Retaining Wall.

SEISMIC GEOTECHNICAL ENGINEERING ANALYSES: Simplified Seismic Site Response, Equivalent-Linear One-Dimensional Site Response, Liquefaction, Earthquake Induced Settlement, Pseudo-Static Seismic Slope Stability.

DRAFTING: Preparing Microstation CADD drawings of roadway soil profile sheets, embankment and cut stability sheets, structure subsurface data sheets, geotechnical note sheets, and other related drafting.

PRELIMINARY PLANS: Boring, Laboratory Testing, and Engineering Analysis Plans.

MEETINGS: Preliminary, Rock Core, Interim, and Final Meetings.

REPORTS: Writing and publishing Geotechnical Engineering Reports in hard copy and electronic format in accordance with applicable sections of the Geotechnical Guidance Manual.

SCOPE

LOGGING ROCK CORES

GEOTECHNICAL LABORATORY TESTING: Refer to the *Summary of Laboratory Tests and Specified Production Rates* below for a list of laboratory tests. Tests included in items 1-11 in this schedule may be required on a regular basis; Items 12-19 will be used rarely. Upon request, provide laboratory test reports according to KYTC format.

RURAL ROADWAY DESIGN AND SURVEYING: Performing Rural Roadway Design and Surveying as necessary to prepare a complete set of roadway plans for the design of landslide and rockfall corrections.

ENVIRONMENTAL N/A

PHOTOGRAMMETRIC SERVICES N/A

STRUCTURE DESIGN N/A

TRAFFIC N/A

GEOTECHNICAL SERVICES Consultant will provide geotechnical engineering and laboratory testing services.

RURAL ROADWAY DESIGN Consultant may be required to provide rural roadway design on some projects.

SURVEYING Consultant may be required to provide surveying on some projects.

The Department reserves the option to modify the selected consultant's agreement to include any necessary engineering and/or related services for this project. At this time, the firm(s) will be pre-qualified by the Department in this required area(s).

Four (4) firms will be selected to provide these services. The contract period is each firm receiving a one-year contract with the option of extending this period for (1) year. The firms will be placed in a pool, randomly drawn and listed in consecutive order (1-4). This order will determine the numerical order in which projects will be offered to firms on a rotating basis. Firms will not be offered an additional project until the remaining firms on the list have been offered a project. If a firm declines to accept a project, that firm shall not be eligible to accept another project until the remaining firms on the list are offered a project. If a firm declines a project or does not respond to an invitation to perform services for a project within 7 calendar days, documentation shall be placed in the project file and the next firm on the list shall be offered the project. If the next firm on the list declines, the project shall be offered to the next firm, etc.

The selected firms must be capable of performing a variety of geotechnical engineering and laboratory testing services. A few projects may require capability of performing surveying and rural roadway design.

All selected firms must have staffs who demonstrate proficiency in the field of geotechnical engineering and laboratory testing for transportation facilities on highway projects for KYTC and/or federal, local or other state governmental agencies; experience on challenging projects and applicable continuing education are desirable. The firms must clearly demonstrate qualifications, experience, and capabilities in the areas below; they may not necessarily meet all these criteria, but the criteria do represent a benchmark.

ADDITIONAL STAFF QUALIFICATIONS

- One or more Professional Geologists, licensed in Kentucky, with two or more years of experience in engineering geology on highway projects for KYTC and/or for federal, local, or other state governmental agencies, and licensed to practice in Kentucky.
- One or more CADD operators proficient with Microstation, with one or more years of experience in geotechnical drafting on highway projects for KYTC and/or federal, local or other state governmental agencies.
- Laboratory staff meeting the proficiency requirements necessary for AASHTO Accreditation according to AASHTO R18.

Conventional Geotechnical Engineering Experience & Capabilities

- Preparing geotechnical submittals in accordance with KYTC format, including: Boring, Laboratory Testing, and Engineering Analysis Plans; Cost Estimates and Invoices for Engineering and Laboratory Testing Services.
- Preparing CADD drawings including roadway soil profile sheets, embankment and cut stability sheets, structure subsurface data sheets, geotechnical note sheets, and other related drawings in accordance with KYTC format, with the capability of preparing full size 22"x36" and reduced size 11"x17" CADD drawings.
- Preparing and Interpreting Subsurface Logs in accordance with KYTC format.
- Preparing Geotechnical Engineering Reports for roadways and structures in accordance with KYTC format.
- Analyzing and/or designing embankments, soil and rock cuts, reinforced soil slopes, and landslide and rockfall corrections for transportation facilities.
- Performing geotechnical engineering analyses for shallow and deep foundations (e.g. driven piles and drilled shafts) and retaining structures (e.g. cantilever, mechanically stabilized earth, tieback, and soil nail walls) for transportation facilities.
- Monitoring geotechnical construction of transportation facilities, including but not limited to: compaction of embankments and soil subgrades, excavation for roadway cuts

and structure foundations, construction of retaining structures, and installation of deep foundations.

- Interpreting data from geotechnical instrumentation installed in slopes, retaining walls, deep foundations and other related facilities.

Seismic Geotechnical Engineering Experience & Capabilities

- Performing seismic geotechnical engineering analyses for the design of bridges, embankments, dams, and/or other major structures, including: Simplified Seismic Site Response, Equivalent-Linear One Dimensional Site Response, Liquefaction, Earthquake Induced Settlement, Pseudo-Static Slope Stability, and other related analyses.

Geotechnical Laboratory Qualifications & Capabilities

- AASHTO Accreditation (R18) for the following AASHTO test methods: T87, T88, T89, T90, T100, T193, T208, T216, T296, T297, T265; and capable of performing KM 64-501 (CBR by Kentucky Method) KM 64-513 (Slake Durability), KM 64-514(Jar Slake), and ASTM D 2938 or KM 64-523 (Unconfined Compression Test on Rock).
- Refer to the Schedule of Laboratory Tests and Fees below for a list of laboratory tests. The selected firms will be expected to have the capability to perform tests included in Items 1-11 in this schedule. Items 12-19 may be used on rare occasions; so, the capability to perform these tests is desirable, but not necessary in order to be selected to receive a contract. Firms should indicate which tests they are capable of performing in their response.

Payment Schedule

The hourly rates for engineering and laboratory testing services will be based on the current audited hourly rates, including overhead and applicable escalation factors, plus an operating margin of 10% for engineering and 15% for laboratory testing. The Geotechnical Branch may specify classifications of personnel for engineering tasks on a project-by-project basis.

The overhead rate will be determined by an external audit and as agreed by the Division of Program Performance. The overhead rate used in the negotiations will be acceptable for invoicing until the final audit is conducted after the work has been completed. Payment may be adjusted in accordance with the final audit.

For engineering services, the Department will pay for the actual hours worked, up to the specified ceiling rates (maximum allowable hours); time records will be required. For laboratory testing services, the Department will pay the specified production rates per unit; time records will not be required. The production rates (hours per unit of work) are specified below in the *Summary of Specified Ceiling Rates for Engineering Tasks* and the *Summary of Laboratory Tests and Specified Production Rates*.

There may be project-specific exceptions for engineering tasks if pre-approved in writing.

The Department will reimburse the consultant for any direct cost expenses pre-approved in writing at the actual cost (with receipts) plus 10% markup.

Professional Liability Insurance

Firms must provide proof of \$1,000,000 of professional liability insurance in order to receive a statewide geotechnical engineering and laboratory testing contract.

PREQUALIFICATION REQUIREMENTS

GEOTECHNICAL
SERVICES

- Engineering
- Laboratory Testing

PROJECT SCHEDULE & MILESTONES

RESPONSE DATE	February 8, 2006 4:30 p.m. (Frankfort Time)
SELECTION COMMITTEE DATE MEETING	February 22, 2006
TENTATIVE DEADLINE FOR CONSULTANT FEE PROPOSAL	March 9, 2006
CONTRACT NEGOTIATIONS	March 23, 2006
NOTICE TO PROCEED	July 1, 2006
COMPLETION OF SERVICES	June 30, 2008

The selected consultant is expected to meet the scheduled milestone dates.

EVALUATION FACTORS

1. Relative experience of consultant personnel assigned to project team with highway projects for KYTC and/or federal, local, or other state governmental agencies. (10 points)
2. Capacity to comply with project schedule. (10 points)
3. Past record of performance on project of similar type and complexity. (10 points)
4. Project approach and proposed procedures to accomplish the services for the project. (10 points)
5. Consultant has Kentucky offices where work is to be performed. (2 points)

75% - 100% of work accomplished in Kentucky offices - 2 points

26% - 74% of work accomplished in Kentucky offices - 1 point

0% - 25% of work accomplished in Kentucky offices - 0 points

SELECTION COMMITTEE MEMBERS

1. Bart Asher, P.E., User Division
2. Michael Carpenter, P.E., User Division
3. TBA, Secretary's Pool
4. TBA, Secretary's Pool
5. TBA, Governor's Pool

Summary of Specified Ceiling Rates for Engineering Tasks

	Task	Maximum Allowable Hours *		
		CADD Operator **	Project Engineer **	Project Manager/ Senior Engineer **
1	Slope Stability (per analysis)	N/A	4.0	0.5
2	Settlement (per analysis)	N/A	5.0	1.0
3	Deep Foundation (per analysis)	N/A	5.0	1.0
4	Wave Equation Driveability (per analysis)	N/A	5.0	1.0
5	Negative Skin Friction (per analysis)	N/A	3.0	0.5
6	Bearing Capacity (per analysis)	N/A	4.0	0.5
7	Retaining Wall (per analysis)	N/A	6.0	1.0
8	Drafting (per sheet)	7.0	1.0	N/A
9	Logging Rock Cores (per hour) ***	N/A	N/A	N/A

* These hours apply to most projects; however, there may be project-specific exceptions, if pre-approved in writing.

** Typical personnel are listed and may vary depending on the firm's personnel classification system. The Geotechnical Branch may specify classifications of personnel on a project-by-project basis.

*** Logging rock cores will be paid for the actual number of hours for a geologist to log the cores, with a minimum rate of 250 feet per 8-hour day.

The maximum allowable hours for the following tasks will be negotiated for each project.

- Preliminary Plans
- Preliminary Meetings
- Rock Core Meetings
- Interim Meetings
- Final Meetings
- Report Writing
- Publication of Reports

The maximum allowable hours for specialty or out-of-the-ordinary tasks such as those below will be negotiated for each project.

- Tieback or Soil Nail Retaining Wall Analyses
- Analyses for Abnormally Large Fills (i.e. > ≈ 200 ft.)
- Analyses for Abnormally Deep Foundations (i.e. > ≈ 150 ft.)
- Seismic Analyses
- Tunnel Analyses

Any other miscellaneous tasks will be discussed on a project-specific basis.

Summary of Laboratory Tests and Specified Production Rates

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	Test Description	Applicable Test Method(s) * and/or Comments	Pay Unit	Hours **
1	Moisture Content	T265	Test	0.2
2	Soil Classification	KM519, T89, T90, T100 & Classify (plastic soil)	Sample	3.7
3	Wash Gradation	D 1140, % Finer than #200 Sieve, Gradation, & Classify (non-plastic soil)	Sample	1.0
4	Moisture-Density, CBR, & Soil Classification	KM511, KM501, KM519, T89, T90, T100	Sample	9.6
5	Moisture-Density	KM 511	Sample	3.1
6	Slake Durability Index & Jar Slake Test	KM513, KM514	Sample	1.2
7	Unconfined Compression Test on Soil	KM522	Test	1.0
8	Unconfined Compression Test on Rock	KM523 or D2938 w/ stress-strain curve, includes sawing and capping sample	Sample	2.0
9	One-Dimensional Consolidation Test	T216	Test	8.9
10	CU Triaxial Test w/ Pore Pressure Measurements	KM502	Test (1 stress path)	6.1
11	UU Triaxial Test	KM521	Test	1.9
12	Direct Shear Test	T236	Test (1 normal force)	3.5
13	Remolding Sample for Permeability or Triaxial Testing	Includes moisture adjustments, Remolding, & extrusion	Sample	1.0
14	Constant Head Permeability Test on Granular Soil	D2434	Test	5.0

15	Falling Head Permeability Test on Cohesive Soil (Flexible Wall)	D5084	Test	8.0
16	Falling Head Permeability Test on Rock (Flexible Wall)	D5084	Test	16.5
17	CU Triaxial Test w/ Pore Pressure Measurements (Large Scale)	T297, aggregate, 6 inch dia. X 12 inch	Test (1 stress path)	10.0
18	Direct Shear Test (Large Scale)	T236, aggregate, 18 inch x 18 inch	Test (1 normal force)	10.0
19	Resilient Modulus Test	T307	Test	10.0

* T = AASHTO Test Methods, D = ASTM Test Methods, KM = Kentucky Methods

** Specified hours are for a laboratory technician or the firm's equivalent personnel classification, as approved by the Geotechnical Branch.