

MACOMB COUNTY DEPARTMENT OF ROADS REQUEST FOR PROPOSAL (RFP #051319)

SCOPE OF SERVICES FOR GEOTECHNICAL ENGINEERING FOR VARIOUS AND AS-NEEDED BRIDGE STRUCTURES

May 13, 2019

The Macomb County Department of Roads (MCDR) is seeking proposals from qualified consulting engineering firms (Consultant) to perform geotechnical engineering services for bridge structures on local agency owned bridges. Work must conform to current American Association of State Highway and Transportation Officials (AASHTO), the Michigan Department of Transportation (MDOT), and Federal Highways Administration (FHWA) practices, guidelines, policies, and standards. This is termed "Geotechnical Engineering Services." This project will be under the direction of the MCDR Project Engineer (PE) identified below representing the bridge owner (Owner). This selection is for as-needed structures within Macomb County. The selected Consultant will be required to provide a cost proposal prior to being authorized on any geotechnical services.

I. MCDR PROJECT ENGINEER

Scott Wanagat, P.E.
Macomb County Department of Roads
Project Engineer
Phone: (586) 463-8671
Email: swanagat@rcmcweb.org

II. LOCATION

The potential project sites are situated in various locations within Macomb County. Locations will be given as necessary per the project schedule of Macomb County Department of Roads to be determined at a later date.

III. WORK DESCRIPTION

- 1) The Geotechnical Engineering Services work may include, but is not limited to: subsurface exploration, in-situ testing, laboratory testing, geotechnical analysis, geotechnical instrumentation, and providing reports and recommendations using the latest AASHTO LRFD Bridge Design Specifications. Additionally, required services may include Standard Penetration Test (SPT), undisturbed soil sampling, and the ability to perform standard geotechnical field and laboratory testing (gradation analysis, classification, shear strength, consolidation testing, vane shear testing, water level monitoring, etc.).

- 2) The report shall include, but not be limited to the following items:
- a) Subsurface soil and groundwater conditions, including visual and laboratory classification and relevant test results for each soil stratum
 - b) Appropriate foundation type(s) for support of the proposed bridge
 - c) LRFD vertical and lateral nominal resistance values for deep foundations, including driven H-pile and drilled pier foundations
 - d) Nominal bearing resistance (q_n), represented graphically by plotting nominal bearing resistance (q_n) versus effective footing width (B').
 - e) Strength limit state resistance factor for bearing resistance (ϕ_b) and sliding resistance (ϕ_τ)
 - f) Nominal bearing resistance (q_n) based on Bearing Failure – Strength Limit State and Tolerable Settlement Criteria – Service Limit State
 - g) Foundation construction methods to reduce ground vibration
 - h) Monitoring methods to assure ground vibration levels are within tolerable levels
 - i) Estimated and minimum required tip elevations for deep foundations
 - j) Estimated total and differential settlements associated with the proposed foundations
 - k) Estimated lateral earth loads on proposed abutment walls
 - l) Groundwater control in construction excavations, including cofferdam recommendations
 - m) D50 and D84 particle size values for use in scour analyses
 - n) Site grading operations for site development, including allowable temporary slope cuts, temporary support of vertical cuts, groundwater control measures, permanent design of embankment fill slopes and requirements for engineered fill and backfill placement
 - o) Other subsurface conditions which may impact design and construction of the proposed bridge
- 3) The report is to be submitted to the MCDR Project Engineer in PDF format.
- 4) Borings shall extend a minimum of 10-feet into the bearing strata (hardpan).

IV. CONSULTANT RESPONSIBILITIES

The Consultant will perform geotechnical design services for each identified site on a “lump sum” basis. All services will be based on the intermittent needs of the Department and work will be authorized under a separate authorization for each service.

Upon request, the Consultant must be prepared to thoroughly investigate, analyze and

prepare geotechnical recommendations for design and construction. The Consultant must demonstrate experience in complex soil mechanics analysis for transportation related applications using the latest AASHTO LRFD Bridge Design Specifications, such as settlement, sliding block slope stability, rotational slope stability, lateral squeeze of foundation soil slope stability, bridge foundations (both shallow and deep), ground modification, and retaining structures. Experience demonstrating these types of geotechnical analyses on MDOT and County projects is preferred.

The Consultant must furnish all services and labor necessary to conduct and complete the requirements for geotechnical design services as described herein. The Consultant must furnish all materials, equipment, supplies, and incidentals necessary to perform this service. If drilling sub-consultants are to be used to fulfill these requirements, the names and contact information of these companies must be listed in the proposal.

At the start of the project, the Consultant must meet with the MCDR Project Engineer to review the project, location of data sources, contact persons, and review of relevant MCDR operations. The Consultant must review and clarify project issues, data needs and availability, and the sequence of events and team meetings that are essential to complete the Geotechnical Investigation by the project plan completion date.

The Consultant must deliver all computer files associated with the project in their native format (spreadsheets, CAD files, etc.) as directed by the MCDR Project Engineer. It is preferred that the Consultant use the current version of Bentley Micro-Station for CAD applications.

In addition, the Consultant must obtain soil boring elevations and locations utilizing conventional survey methods and/or a Global Positioning System (GPS) unit (northing, easting, latitude & longitude). Coordinates must be in the Michigan State Plane Coordinate System (NAD 83), elevations in the Vertical Datum (NAVD 1988), and longitude and latitude in the WGS 1984 Datum.

Within the proposal, describe the company's Quality Assurance and Quality Control (QA/QC) process and how it would apply to a typical MCDR geotechnical engineering project.

The geotechnical design services must be performed to the satisfaction of MCDR and consistent with applicable professional standards as stated below:

- 1) The Consultant's principal contact with the Department must be through the designated Project Engineer.
- 2) The services described herein are financed with public funds. The Consultant must comply with applicable Federal and State laws, rules, and regulations.

- 3) The Consultant will perform field operations in accordance with OSHA and MIOSHA regulations and accepted safety practices.
- 4) The Consultant is responsible for maintaining traffic during all operations. The Consultant's method of maintaining traffic must be in accordance with the MUTCD and the MDOT maintaining traffic details. In addition, The Vendor is responsible for obtaining up to date access permits and pertinent information for tasks in MCDR Right of Way (ROW).
- 5) The Consultant will demonstrate knowledge of and performance in compliance with the standard practices of the Department, and all manuals and guidelines needed to carry out the work in an appropriate manner. All portions of the subsurface investigation must be in accordance with current LRFD Bridge Design Specifications standards, ASTM Standards, MDOT's "Geotechnical Investigation and Analysis Requirements for Structures" report dated March 2004 and MDOT's "Uniform Field Soil Classification System (Modified Unified Description)". These last two documents can be found on MDOT's public website.
- 6) The Consultant is responsible for locating utilities by calling MISS DIG (800-482-7171) and is also responsible for locating utilities not on the MISS DIG system. Additionally, the Consultant is to notify the Project Engineer three working days prior to starting work.
- 7) The Consultant will notify the Project Engineer, in writing, prior to any personnel changes from those specified in the Consultant's original approved proposal.

V. CONSULTANT PAYMENT

This will be a "LUMP SUM"(per bridge) type contract based on each structure with payment upon the completion of all services required on each bridge. At the beginning of each project, the Consultant will prepare a proposed cost estimate based upon hours required to complete the project in accordance with the Consultant's fee schedule for personnel, equipment, and services. The Lump Sum price for each structure will include all of the engineering costs and expenses to investigate and analyze a given bridge as well as provide the report(s) required above. No added cost will be paid for overtime, weekend, or holiday work. The Consultant will be required to obtain written authorization from MCDR prior to completing any additional work or hours beyond the initial price quote.

MCDR reserves the right to request services on other projects located in the County under the conditions of this "as-needed" scope of services.

For as-needed services, full time services may not be required on all projects at all times as they will be based on the intermittent needs of MCDR. It must be noted that

this is not a guarantee that MCDR will use the Consultant's services for as-needed work.

The Consultant must submit all invoices to the MCDR Project Engineer for approval. Payment will be monthly based on the sites complete to that date. The Consultant will be required to submit a final invoice by October 4, 2019, for services completed but not paid through September 30, 2019, to coincide with MCDR fiscal year end.

All invoices will be numbered sequentially and will indicate the invoice period. They must also indicate the Bridge Structure ID number, the Macomb County Department of Roads job number, and the agreement number. All invoices include time sheets for all staff engaged on the project during that time period and must list the specific bridges completed.

All invoices will be sent to: Macomb County Department of Roads
Attn: Scott Wanagat, P.E.
117 S. Groesbeck Hwy
Mt. Clemens, MI 48043
swanagat@rcmcweb.org

Questions pertaining to billing and payment may be directed to MCDR Project Engineer at 586-463-8671.

VI. PROPOSAL DEADLINE

All proposals must be submitted electronically to the Project Engineer, Scott Wanagat at swanagat@rcmcweb.org no later than June 4, 2019, at 5:00 pm. A Qualified Based Selection will be used to determine the project award. Please submit a fee schedule for services and staff to be considered as well.