

# **SERVICE PREQUALIFICATION CLASSIFICATIONS AND BRIEF DESCRIPTIONS**

## Construction and Technology Support Area

### **Aggregate Testing**

Provide aggregate testing services for MDOT.

### **Asbestos Investigations**

Provide asbestos building inspection services to satisfy Federal NESHAP asbestos inspection requirements for bridges and buildings slated for renovation or demolition. (*Act 135 is for asbestos abatement service licensing*)

### **Bituminous Pavement Inspection**

Provide bituminous pavement inspection services including but not limited to yield calculations, temperature checks, width and alignment checks, joint layouts, visual inspection of the pavement mat, slope and grade checks, traffic control operations related to paving, sampling and core location determination, witnessing of ride quality and contractor workmanship

### **Hot Mix Asphalt (HMA) Plant Inspection & Testing-**

Provide HMA plant inspection, sampling and testing services for MDOT.

### **Hot Mix Asphalt (HMA) Technician Testing Assistance**

Provide HMA technician, sampling and testing services for MDOT utilizing MDOT facilities and laboratory equipment.

### **Bridge Construction Engineering**

Provide construction engineering, inspection and testing services on new and rehabilitation bridge projects. This includes project administration; inspection; quality control testing and reporting; measurement, computation, and documentation of quantities; reporting and record keeping; and finalizing all project documentation; for construction work to be performed by the Construction Contractor until completion of work by the Construction Contractor and acceptance of the Project and construction engineering services by the Department.

### **Bridge Load Rating Analysis**

Perform Highway Bridge Load Rating Engineering Services for MDOT

### **Bridge Painting Inspection**

Provide inspection services for partial and full painting of bridges.

### **Bridge Project Scoping**

Bridge Scoping Consultant services consists of evaluating various repair alternatives for a prescribed set of bridges and recommending the optimum rehabilitation or treatment. Work includes performing a detailed physical inspection of the bridge(s), collecting rehabilitation quantities, developing a cost estimate for the repair work, and writing a report to adequately convey the physical condition of the bridge, specific areas in need of repair, and repair options considered.

### **Bridge Safety Inspection**

Provide bridge safety inspection services according to the National Bridge Inspection (NBI) Program for MDOT. This pre-qualification is for "Routine" inspections as defined by AASHTO of

typical interstate and trunkline bridges. Additional requirements will apply to unique or structurally complex bridges, and fracture critical or damaged bridges as the case warrants.

### **Capital Preventative Maintenance**

Provide construction engineering, inspection, and testing services for preventive maintenance projects. This includes project administration; inspection; measurement, computation, and documentation of quantities; reporting and record keeping; and finalizing all project documentation for construction work performed by the Construction Contractor until completion of work by the Construction Contractor and acceptance of the Project and construction engineering services by the Department.

### **Construction Staking**

Staking of horizontal and vertical control and generation of staking data needed for road, bridge and sewer work.

### **Density Inspection & Testing**

Provide density inspection and acceptance testing for density on structure backfill, structure embankment, engineered embankment, and pavement support structure in accordance with MDOT procedures and specifications.

### **Engineering Assistance**

Provide specialty engineering assistance services for MDOT.

### **Geotechnical Engineering Services**

Provide geotechnical engineering services for transportation infrastructure (structure, roadway, and appurtenance). This work may include, but is not limited to: subsurface exploration, in-situ soil testing, laboratory strength and classification testing, Geotechnical analysis and recommendations, and Geotechnical instrumentation.

### **Portland Cement Concrete Inspection & Testing**

Provide Portland cement concrete inspection and testing services for MDOT.

### **Remediation**

Provide environmental clean up services at sites of soil and groundwater contamination with the goal of achieving environmental closure.

### **Underground Storage Tank Removal**

Provide excavation and removal services for regulated underground storage tanks encountered on MDOT Right of Way or at MDOT operated facilities.

### **Road Construction Engineering**

Provide construction engineering, inspection and testing services on new and rehabilitation road projects. This includes project administration; inspection; quality assurance testing and reporting; measurement, computation, and documentation of quantities; reporting and record keeping; and finalizing all project documentation; for construction work to be performed by the Construction Contractor until completion of work by the Construction Contractor and acceptance of the Project and construction engineering services by the Department.

### **Preliminary Site Investigation (Environmental)**

Provide soil and groundwater investigation services to determine the location and concentration of environmental contamination.

## **Technical Assistance**

Provide specialty technical assistance services for MDOT's project documentation procedures including project close outs, local agency project oversight, and office technician services. (These services do not include full Construction Engineering (Road and Bridge) or Inspection and Testing services).

## **Traffic & Safety Inspection Services**

Provide inspection services for proper design, placement, uniformity, and operation of traffic control and safety devices for MDOT and FHWA compliance. This includes inspection of pavement markings, traffic signal support structures, signing, guardrails, impact attenuators, work zone traffic control setup and removal operations, etc.

## **Underwater Bridge Inspection**

Provide underwater bridge inspection services using divers to assess submerged components of bridge structures for MDOT.

## Design Services Group

### **Building and Structure Design**

Consultant services to provide architectural design services for MDOT projects. Architectural projects may include rest areas, field offices, garages, maintenance buildings, sound walls, weigh stations, and other structures associated with MDOT operations. Consultant should be staffed to provide design services for a complete building, including mechanical, structural and electrical components

### **Complex Bridges**

Curved girders, multi-level structures, long spans - over 90m (300 feet), spliced concrete girders, steel box girders, concrete segmental box girders, etc. Consultant and Staff experience in this category reflect exposure to various structure types. Consultant and staff should have experience with new construction, as well as bridge rehabilitation.

### **Complex Urban Freeway Design**

Urban limited access freeways with enclosed drainage, grade separations, urban and freeway-to-freeway interchanges, service roads, retaining walls, noise walls, etc.

### **Freeway Lighting**

Consultant services for freeway lighting design. Lighting on the freeway (limited access only) may be (conventional, median, tower/high mast, tunnel or under bridge). Design of lighting for local roads and state trunk lines does not require this pre-qualification.

### **Geodetic Control and Leveling**

Surveys for the purpose of establishing Horizontal geodetic control meeting Federal Geodetic Control Subcommittee (FGCS) 1<sup>st</sup> order standards or better, and Geodetic differential leveling techniques meeting FGCS 2<sup>nd</sup> order class 1 standards or better; Blue Booking techniques as defined by FGCS/NGS (National Geodetic Survey) <http://www.ngs.noaa.gov/FGCS/BlueBook/>.

### **Hydraulics**

Water surface profile modeling, retention/detention basin design, scour and stream stability analysis, scour counter measure design, structural best management practices design, storm sewer design, hydrologic analysis of stormwater conveyance systems and drainage studies.

## **Hydraulic Surveys**

Surveys for the purpose of measuring watercourse and drainage cross-section dimensions; water elevations; structure crossing opening dimensions; building location and basement elevations; horizontal and vertical control.

## **Intelligent Transportation Systems**

Intelligent Transportation Systems (ITS) – The use of technology to improve operations of surface transportation systems including highways and arterials.

## **Landscape Architecture**

Consultant services to provide Landscape Architectural Design services for MDOT projects, Landscape Architectural services incorporating Context Sensitive Solutions in their plans that include landscaping and site work associated with rest area buildings, streetscapes, roadside plantings, field offices, garages, maintenance buildings, sound walls, weigh stations, and other structures associated with MDOT operations.

## **Moveable Span Bridges**

Complete structural, electrical, and mechanical designs of Moveable Span Bridges

## **Municipal Utilities**

Design of water systems, sanitary sewer, and on-site sewage disposal systems for MDOT projects.

## **Photogrammetric Control Surveys**

Surveys for the purpose of establishing geodetic and photogrammetric control; capable of meeting FGCC second order class I standards; use of GPS, Ground traverse, differential leveling techniques; familiarity with least squares analysis of survey measurement.

## **Photogrammetry**

Task will include the ability to perform Aerial photography; Analytical Aerial Triangulation; aerial map compilation; merging of aerial mapping with ground survey data; orthometric photo rectification; all supporting maps and documentation.

## **Project Development Studies**

Consultant services to provide location/design/engineering studies of alternatives that are evaluated in conjunction with social, economic and environmental effects to determine the selection of an alignment and design features.

## **Pump Station Design**

Consultant services for pump station design. Pre-qualification requires expertise in structure, hydraulics and hydrology, mechanical, electrical, HVAC and all other disciplines required for the complete design of a pump station.

## **Railroad Bridges**

Structures carrying railroads over roadways.

## **Right-of-Way Surveys**

Surveys for the purpose of determining the location of legal roadway alignment; location of right-of-way boundaries; location of adjacent property and plat boundaries; interpretation of property descriptions; writing property descriptions; government corner location, re-establishment and recording; ROW Staking and monumentation.

## **Road Design Surveys**

Surveys for the purpose of Topographic mapping; alignment determination; utility location; drainage studies; government corner and property location; safety management and traffic control; establishment of horizontal and vertical control for project design and construction; all supporting maps and documentation. *Right-Of-Way pre-qualification is a definite plus. Without it, a firm will be denied projects that include USPLSS and Right Of Way issues.*

## **Roads & Streets**

3R work on non-freeways which include mill & resurface, bridge approach work, concrete joint repair, safety upgrades, shoulder widening, shoulder paving or other work along existing alignment within the existing ROW, including log plans.

## **Roadway Rehabilitation & Rural Freeways**

4R work including major reconstruction projects on non-freeway roadways and 3R & 4R rural freeway mill & resurface/reconstruct projects in rural and suburban areas with grade separations, interchanges, ramp acceleration & deceleration lanes. The work may include geometric improvements, drainage improvements, revised horizontal and vertical alignments, utility conflicts, ROW acquisition and complex staging up to and including full boulevard construction/reconstruction on a new alignment.

## **Short & Medium Span Bridges**

Multi-Span bridges; span lengths to 300 feet, includes small span bridges and Box Culverts.

## **Specialty Walls/Slopes**

Counterfort walls, mechanically stabilized earth, stabilized slopes, soil nailing, etc.

## **Structure Surveys**

Surveys for the purpose of bridge structure dimensions; underclearance, elevations of footings, abutments, piers; including sketches and pictures as well as topographic mapping; alignment determination; utility location; drainage studies; government corner and property location; safety management and traffic control; establishment of horizontal and vertical control for project design and construction; all supporting maps and documentation. *Right-Of-Way prequalification is a definite plus. Without it, a firm will be denied projects that include USPLSS and right of way issues.*

## **Value Engineering**

A systematic multi-discipline team review of function, cost, and worth to identify where these are out of balance and to develop alternatives to increase value in a product or service by accomplishing the same function more effectively. Value Engineering is not a cost reduction, which saves money by not providing the original function.

## **Wetland Design**

Consultant services to provide Wetland Design for MDOT wetland mitigation and design projects located within MDOT Right-Of-Way (ROW).

## Transportation Planning Services Group

### **Botanical and Endangered Plant Assessment**

The type of work performed by Consultants prequalified for botanical and endangered plant assessment includes: being able to perform surveys of proposed transportation projects to identify plants species, assess their population size and describe their critical habitat by type, size and quality. The Consultant must be able to identify all species of plants that are known to occur in Michigan and the surrounding Great Lakes Region. This also includes all plants that are on either the federal list of threatened (T), endangered (E) or candidate species as well as the state list for all T/E/special concern species. The ability to assess the population size of any listed species identified and the habitat attributes that are required in its life cycle and ecology. The educational, training, and work experience required to conduct botanical surveys and impact evaluations are principally concentrated in the science of Botany with a special emphasis in plant taxonomy and plant ecology. The services of an engineer are not required.

Research shall be conducted and compiled by a person meeting the professional qualifications set forth in *36 CFR 61 - Appendix A for Historian or Architectural Historian*.

### **Environmental Assessment and Impact Statements – Surface Transportation**

The types of work performed by Consultants pre-qualified in this classification include the identification, analyses, and documentation of potential impacts of proposed surface transportation projects. The Consultant should have thorough familiarity with Federal Highway Administration Technical Advisory T 6640.8A and other regulations and guidance memoranda regarding preparation of environmental assessments and impact statements. Working familiarity with applicable social, economic, and environmental considerations to be evaluated and analyzed is a requirement. The Consultant should have technical expertise on staff to clearly differentiate and define the significance of various impacts. Ability to prepare and complete a readable and understandable document is essential. *Interdisciplinary team is required for performance of these tasks*, because they involve education, training, and experience working in the biological, earth, social, and behavioral sciences, and engineering fields.

### **Geographic Information Systems**

Work in the GIS field requires a general knowledge of geography, navigation, computing, database management, photogrammetry, cartography, and statistical analysis. *It does not require any specific knowledge of engineering.*

### **Historic Archaeology**

The types of work performed by Consultants prequalified for Historic Archaeology includes being able to perform professional historic archaeological research, land-use histories, Phase I Archaeological Site Location Surveys of historic archaeological resources, Phase II Archaeological Site Evaluation of historic archaeological resources, Phase III Archaeological Site Mitigations of historic archaeological resources. Meet or surpass requirements of Section 106 of the National Historic Preservation Act of 1966, as amended, to professionally perform historic archaeological work; determine National Register of Historic Places eligibility for prehistoric archaeological properties; and, using archaeologists whose professional qualifications for performance of historic archaeology meets or surpasses the Secretary of the Interior's regulations (48-FR-44738-9).

## **Noise Assessment/Abatement**

The types of work performed by Consultants pre-qualified for noise assessment and abatement include written descriptions of noise sensitive areas (residences, school, parks, etc.) affected by a proposed project; measurement and documentation of the extent of the impact (in decibels) at each sensitive area, including a comparison of the predicted noise levels with both the FHWA noise criteria and the existing noise levels; descriptions and discussion of noise abatement measures which have been considered for each impacted area and those measures that are reasonable and feasible and that would likely be incorporated in the proposed project; and descriptions and discussion of noise impacts for which no prudent solution is reasonably available and why. *The services of an engineer are not required.*

## **Prehistoric Archaeology**

The types of work performed by Consultants prequalified for Prehistoric Archaeology includes being able to perform professional prehistoric archaeological research, land-use histories, Phase I Archaeological Site Location Surveys of prehistoric archaeological resources, Phase II Archaeological Site Evaluation of prehistoric archaeological resources, and Phase III Archaeological Site Mitigations of prehistoric archaeological resources. Meet or surpass requirements of Section 106 of the National Historic Preservation Act of 1966, as amended, to professionally perform prehistoric archaeological work; determine National Register of Historic Places eligibility for prehistoric archaeological properties; and, using archaeologists whose professional qualifications for performance of prehistoric archaeology meets or surpasses the Secretary of the Interior's regulations (48-FR-44738-9).

## **Reconnaissance/Intensive Level Survey**

In Michigan, an Intensive Level Survey is conducted in those areas of the state where some information already is available on historically and architecturally significant properties and their significance is recognized. This type of survey *photodocuments* specific buildings, structures, sites, objects, and districts, assesses the eligibility of individual properties and districts for the National Register of Historic Places, and recommends whether or not Determinations of Eligibility are needed for important resources. An Intensive Level Survey may be combined with a Reconnaissance Level Survey. Research shall be conducted and compiled by a person meeting the professional qualifications set forth in 36 CFR 61 – *Appendix A for Historian or Architectural Historian*.

The type of work performed by Consultants prequalified for Intensive Level Surveys include the collection of National Register quality historic research, and using the research results to develop historic contexts represented by the specified individual properties and districts within the project area. The Consultant will also conduct field work following Secretary of Interior Standards & Guidelines for Historic Preservation, which will include the review and analysis of any previous surveys, mapping, photography, and the delineation of historic district boundaries. The Consultant will perform post-fieldwork research and develop national register evaluations for buildings and structures within the project/district boundaries. Finally, the Consultant will organize the collected field data and research into a usable format following the instructions provided in the *State Historic Preservation Office Manual for Historic and Architectural Surveys in Michigan*, or other format specified by MDOT, but always including the production of building/structure/district inventory cards following the Ruskin database system or specified equivalent.

The types of work performed by Consultants prequalified for Reconnaissance Level Surveys includes conducting *windshield surveys* to determine buildings, structures, and/or districts that are potentially eligible for listing on the National Register of Historic Places, conducting research to determine historical contexts based on national register standards, providing maps showing the project Area of Potential Effect (A.P.E.) and buildings, structures, and/or districts within and/or overlapping the A.P.E., photographing resources within the A.P.E. and producing historic resources inventories following the Ruskin database system or approved equivalent. The Consultant will also generate a report in a usable format determined by MDOT. Commonly

Reconnaissance Surveys included Intensive Level Surveys of specified resources but is typically used to determine if an Intensive Survey is warranted.

### **Wetland Assessment**

The types of work performed by Consultants prequalified for wetland assessment includes being able to identify wetlands by type, delineate their boundaries, assess their values and functions, assess the impact of a transportation project on the wetland, identify alternatives to taking the wetlands and develop procedures to mitigate for any wetlands loss. The Project Manager and/or Principle Investigator must be certified as a Professional Wetland Scientist.

### **Wildlife and Endangered Species Assessment**

The type of work performed by Consultant prequalified for wildlife and endangered animal assessment includes: being able to perform surveys of proposed transportation projects to identify animal species, assess their population size and describe their critical habitat by type, size, and quality. The Consultant must be able to identify all species of animals that are known to occur in Michigan and the surrounding Great Lakes Region. This also includes all animals that are on either the federal list of threatened (T), endangered (E) or candidate species as well as the state list for all T/E/special concern species. The ability to assess the population size of any listed species identified and the habitat attributes that are required in its life cycle and ecology. The educational, training, and work experience required to conduct animal surveys and impact evaluations are principally concentrated in the science of zoology, terrestrial and aquatic ecology and fisheries and wildlife management. The services of an engineer are not required.

### **Real Estate**

#### **Outdoor Advertising**

Provide outdoor advertising inventory/inspection services, including regulation of the number and placement of billboards and the preparation of hearing packages for MDOT.

#### **Subsurface Utility Engineering**

Provide Subsurface Utility Engineering (SUE) to accurately identify, characterize, and map underground utilities early in the development of a highway project.

#### **Utility Coordination**

Provide utility coordination for proposed MDOT road/bridge projects, during the design phase, which include identifying existing/proposed utility owners and their facilities, analyzing and resolving conflicts between utility facilities and proposed construction, documenting meetings, discussions, decisions and other efforts associated with utility coordination and developing strategies and contract documents in order to avoid potential conflicts during construction.

### **Traffic and Safety Services Group**

#### **Maintaining Traffic Plans and Provisions**

Consultant services to develop maintaining traffic plans and provisions. Including but not limited to the following examples of such designs: highways, streets, airports, and pay-parking lots.

#### **Pavement Marking Plans**

Design services for pavement marking plans. Including but not limited to the following examples of such design: highways, streets, airports, and pay-parking lots.

#### **Permanent Freeway Traffic Signing Plans**

Consultant services to develop permanent freeway traffic signing plans. Including but not limited to freeway signing design.

## **Permanent Non-Freeway Traffic Signing Plans**

Consultant services of development of Permanent Non-freeway traffic signing plans. Including but not limited to the design of Non-Freeway Signing.

## **Safety Studies**

Safety analysis Consultant services including but not limited to the following examples of such services: crash analysis encompassing statewide and local intersection surveillance, 3R/4R safety reviews, corridor safety reviews, corridor safety studies, deer crash analysis, motor carrier safety analysis, project improvement effectiveness analysis, and litigation data assistance.

## **Traffic Capacity Analysis and Geometric Studies (formerly Traffic Operation Studies)**

Consultant services to provide operational studies including but not limited to capacity analysis. Also, provide the expertise to make recommendations on geometric elements addressing access management and intersection, interchange, and freeway improvements and/or upgrades.

## **Traffic Signal Design**

Design services of electronic/electrical devices. Including but not limited to the following examples of such designs: traffic signals, overhead flashing beacons, sign opticals, and interconnect methods including radio, hardwire, and fiber optic.

## **Complex Traffic Signal Operations**

Consultant services for traffic signal operations including but not limited to the following examples of such services: warrant analysis for traffic signal installation, phasing studies of new/existing electrical devices, and retiming of traffic signal corridors and individual locations. This also includes recommendations for geometric configurations to accommodate operations of devices. Example projects for this classification are long corridor or region wide retiming projects, up to 100 signals or more. They also include traffic impact studies for private developments or any other signal analyses on state trunkline. They may or may not require signal warrant analyses.

## **Simple Traffic Signal Operations**

Consultant services for traffic signal operations including but not limited to the following examples of such services: warrant analysis for traffic signal installation, phasing studies of new/existing electrical devices, and retiming of traffic signal corridors and individual locations. This also includes recommendations for geometric configurations to accommodate operations of devices. Example projects for this classification are traffic impact studies for private developments or any other signal analyses on state trunkline that include a **maximum of 3 signals**. These may or may not require signal warrant analyses and may also include time-space analysis of proposed or existing signals within an existing signalized corridor. **For any engineering study including more than 3 traffic signals, the Consultant must be pre-qualified in Complex Traffic Signal Operations.**