

**ARCHITECT & ENGINEERING SERVICES SOLICITATION  
SCOPE OF WORK**

- a. **Roadway Design:** Perform design, and prepare plans, special provisions, cost estimates and bid documents for construction of streets and roads. Perform streetlight and traffic signal designs to upgrade streetlights and traffic signals within the project limits. The consultant will perform streetlight and traffic signal designs. Provide innovative storm drainage designs to improve the quality of storm water. Perform design for safety improvements. Provide maintenance of traffic plan for safe vehicular and pedestrian traffic during construction. Project plans may involve several street locations for resurfacing, reconstruction and upgrading (substandard streets with asphalt or no curbs). Part of the roadway design work may also include traffic engineering enhancement, multimodal access improvement, streetscape and landscaping, and low impact storm water design. : Develop and provide innovative streetscape designs that increase the soil volume available for street trees as well as drawings and specifications for best practices related to tree box designs. Develop permeable alternatives for sidewalk materials that improve the regrowing conditions for street trees. Provide innovative designs for LID, green infrastructure, and street trees and tree boxes. Develop, incorporate, and review street tree elements and concepts and tree box designs for DDOT project. Develop, incorporate and review tree protection concepts and specifications.
- b. **Bridge Design:** Perform structural analyses and design of bridge and other related structures and prepare plans, special provisions, cost estimates and bid documents for construction of bridges and structures as per the latest AASHTO specifications and the District Department of Transportation standards and design manuals. Project plans may involve including adjacent street or roadway design. Perform design for safety improvements. Provide Bridge and other structures architectural services by preparing, developing, and/or reviewing architectural drawings, and preliminary structural analysis and design of bridges and other structures; prepare, develop or review landscape and streetscape drawings for adjacent street or roadway; develop, incorporate, and review urban design elements and concepts in bridges, retaining walls, fence, barriers, sign structures, bridge lightings and other structures on DDOT projects. Perform streetlight and traffic signal designs within the project limits. The same electrical consultant will perform streetlight and traffic signal designs. Provide maintenance of traffic plans for safe vehicular and pedestrian traffic during construction.
- c. **Constructability Review and Miscellaneous Design Services:** Review of the design drawings, specifications, estimate of quantities and cost estimates for completeness, accuracy, conformance with District Department of Transportation (DDOT) standards, ease of construction, construction phasing, construction scheduling, project safety, conflicts with existing utilities, affect of construction on adjacent properties, maintenance of traffic and ease of future maintenance and operations. Emergency inspections of bridges, culverts and highway structures, including but not limited to appurtenant electrical and mechanical systems and make recommendation for immediate actions. Review shop drawings, working drawings and material specifications for conformance with the design plans. Perform miscellaneous emergency engineering and design services.
- d. **Construction Engineering and Management Services:** Provide management support and related services for construction of bridges and roadway projects. Provide a competent staff to assist the District's personnel in the inspection and coordination of the project during construction phase. Oversee the construction activities to ensure that the quality of

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materials and workmanship meet or exceed the District standards. Maintain accurate records of field measurements, record of materials, documentations and payments. Provide all equipment and materials necessary, including office equipment, surveying equipment, testing equipment, communication equipment, transportation for project business, and office supplies.

- e. **Traffic Engineering (Streetlight and Traffic Signal)**: Coordinate traffic signal and streetlight design. Perform traffic signal and streetlight design and preparation of plans, specifications and estimates for the following types of projects:

Designs for specific citywide programs to enhance signal efficiency and operation.

Traffic signal design to complement specific bridge and roadway construction plans.

Traffic signal design to satisfy a need unrelated to construction.

Installation, removal and/or relocation of street lights in connection with road and bridge improvement projects; upgrading street and alley lights and conversion of series circuit street lighting system.

Traffic signal design generally includes the design and preparation of plans, specifications and estimates for:

Installing new traffic signals.

Relocating, replacement or upgrading existing traffic signals.

Complementing various maintenance of traffic or detour stages.

Installing new or rerouting existing traffic signal system communications cable and supporting hardware.

Reconfiguring street intersections with channelizing islands to control and direct traffic movements.

- f. **Geotechnical Investigations and Studies**: Perform soil borings, boring logs, test cores, laboratory tests, analyses and recommendations for appropriate action.

- g. **Survey and Mapping**: Prepare surveys for mapping and referencing the bridges, structures and roadways, including all features within and adjacent to the project limits necessary for successful construction of the project. Perform the following assigned specific engineering tasks but not limited to topography, Topographical maps, cross sections, Horizontal Control, Traverse Points, Global Positioning Survey Permission, Survey Limits and Final Plans.

- h. **Environmental Engineering Investigations and Studies**: Conduct studies to determine the environmental impact of proposed transportation facilities, including impacts on air quality, water quality, noise, neighborhood impacts and impacts on cultural resources. Environmental studies shall be consistent with Federal requirements under the National Environmental Policy Act (NEPA) and Section 4 (f) requirements. The consultant shall collect environmental data related to Department transportation projects, evaluate environmental impacts, prepare draft reports, maps, and other documents to describe anticipated environmental impacts, develop environmental mitigation recommendations, when appropriate, and document all research and findings in draft and final report. Environmental studies shall be conducted with appropriate public notification and opportunity for public participation. Conduct environmental studies consistent with local Environmental Policy Act requirements.

- i. **Transportation Planning Studies:** Conduct studies to determine transportation needs of residents, businesses and visitors to the District of Columbia, including, but not limited to strategic plans, truck or freight management plans, parking evaluation and plans, pedestrian and bicycle plans, scenario planning, demand modeling, Transportation Demand Management, environmental documents, alternatives analysis, major transportation facility plans, such as roadways, bicycle paths, recreation trails, transportation facilities, transportation assets and inventories and traffic studies, and parking demand and management.

Traffic studies contemplated by the Department include but are not limited to the intelligent transportation systems, traffic calming, signal timing, neighborhood conditions, traffic counts, origin and destination studies, calculate levels of service, collect and evaluate crash statistics, determine the traffic carrying capacity of roadways, and collect other information on existing traffic conditions and level of traffic congestion. Identify and evaluate nearby transit service, including bus and rail access. Identify and evaluate proposed development projects in the study area and determine daily and peak hour traffic generated by the new development. Calculate modal splits for employees, visitors, and customers, to determine the impact on local streets, sidewalks and other transportation facilities. Offer recommendations, identify alternatives and provide other related technical assistance.

Perform economic and financial evaluations of transportation policy and capital proposals to make sound investment decisions and assure coordination with community development policies and objectives.

Prepare preliminary design plans to demonstrate the physical characteristics and operating characteristics of proposed transportation facilities. Prepare computer simulations showing operating characteristics of proposed alternative traffic solutions. Develop artist renderings and design visualization using computer simulations, assist Department in preparing for and recording the results of alternative design charettes with community groups and businesses and scheduling, conducting and recording meetings to gauge public sentiments on proposed transportation projects.

- j. **Transportation Research and Technology Transfer:** Conduct research studies and analyses and evaluations of current and experimental practices to identify state-of-the-art technologies and procedures that can be utilized in the District of Columbia (District) to improve mobility, safety, and efficiency, and conserve resources. Prepare reports that evaluate alternative technologies and methodologies and their applicability in the District. Conduct analyses of new demonstration projects to evaluate their effectiveness and efficiency in meeting design goals and Department objectives.

- k. **Public Participation and Partnering:** Develop and implement public participation and partnering programs associated with Department of Transportation studies, plans and construction projects. The work to be performed by the consultant shall include the development of public participation work plans, the preparation of materials for use at public meetings, including maps, brochures, power point presentations, videos, an independent project specific website that can stand alone and also linked back to the DDOT website, the development of computer simulation models that describe the potential impacts of transportation projects. The consultant shall also prepare project mailing lists of stakeholder groups and interested parties, develop project web sites, and other methods of communicating project information to the public, assist in the scheduling and conduct public meetings and design charettes. Develop public surveys,

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purchase media notices and advertising, develop artwork and scripts. Develop public education campaign materials related to transportation issues that can be televised as written script or full video's on the local Public Broad Cast Channels and local media channels. and evaluation reports on the effectiveness of the campaign.

The consultant shall also assist in the development and implementation of "partnering" activities, including the development of Memoranda of Agreement with private organizations and other public agencies to share responsibilities in the development and implementation of projects. The consultant shall provide technical support in the Department's negotiations with private organizations and other public agencies in the development of joint transportation projects.

- l. Bicycle and Pedestrian Studies, Planning and Design:** Collect data and information regarding bicycle and pedestrian services and facilities. Prepare draft and final reports regarding bicycle routes and trails and pedestrian facilities to promote the safe and efficient movement of individuals with sufficient data to support its findings. Develop policies and plans to promote bicycle and pedestrian safety. Plan and design bicycle and facilities.
  
- m. Railroad Consulting Technical Services:** The services required relate to those railroads operating on the rail system of the United States, for example, CSX and Amtrak. Subjects in which technical consulting and planning advisor services may be required include:

  - Assessment of rail carrier interests and positions
  - Advice regarding railroad operations and facilities
  - Identification of D.C. railroad objectives and interests
  - Negotiations with railroads
  - Rail line abandonments
  - Surface Transportation Board actions
  - Assistance in preparing communications with federal agencies regarding railroad matters
  - Estimation of costs related to railroad construction and maintenance
  
- n. Urban Design:** Prepare, develop, and review urban design of DDOT projects. Develop streetscapes for DDOT projects. Develop, incorporate, and review urban design elements and concepts in roadway design for DDOT projects. Develop, incorporate, and review urban design and architectural elements and concepts in bridge design for DDOT projects. Develop, incorporate, and review concepts of urban design elements, architectural elements, and public art for retaining walls. Develop architectural elements for street furnishings. Develop, incorporate, and review urban design elements and concepts for bicycle and pedestrian bridges and facilities. Develop, incorporate, and review urban design elements and concepts for parking facilities. Develop and review signage. Develop, incorporate, and review landscaping elements and concepts for DDOT projects. Provide graphic design for DDOT projects. Provide architectural design for DDOT projects. Develop, incorporate, and review urban design, architectural, and landscaping elements and concepts for Riverfronts. Develop and review Public Art for DDOT projects. Develop and review low impact development and green design concepts for DDOT projects.

- o. Pavement Management and Infrastructure Data Collection Services:**  
Provide a comprehensive pavement condition (distress, ride quality, and skid) data collection and analysis service using the latest state-of-the-art technology. Be able to perform both destructive and non-destructive condition assessment. Use collected information and analyze existing pavement material and condition and recommend appropriate action plan. Present data both in raw and processed format per the Department's standards and polices for integrating with existing systems. Provide infrastructure asset data (asset type, dimensions, exact location, etc) collection services. Information needs to be collected in a format approved by the Department. Perform pavement, pavement material, and related analysis and system improvement studies.
- p. Right of Way Services:** Prepare right-of-way plans, manage the acquisition process such as clearances, determination of ROW needs, ROW authorization, Relocation Assistance, ROW changes, government land permission/permits, utility clearance, and supply expert services for the acquisition process
- q. Intelligent Transportation Systems (ITS):** Provide ITS services in software, hardware, telecommunications, and ITS subsystems. ITS services cover ITS systems development, integration and maintenance, including Traffic Management Center (TMC) – software/hardware, video walls, closed circuit television (CCTV), traffic signals, Highway Advisory Radios, Roadway Weather Information Systems, traffic detectors, telecommunications, new technology market study and deployments. The scope also extends to traffic simulation, Geographic Information System (GIS), ITS/Commercial Vehicle Operations (CVO) and Commercial Vehicle Information systems Network (CVISN), traffic signal optimizations, cost benefit studies, ITS architecture, systems engineering management plan, Web applications, performance measures and ITS transit. Work can include all phases in the systems engineering life cycle with applications in ITS.
- r. Subsurface Utility Engineering (SUE):** SUE responsibilities include highly efficient, nondestructive engineering incorporating civil engineering, surface geophysics, surveying and mapping, non destructive vacuum excavation and asset management technologies to identify and classify quality levels of existing subsurface utility data as well as mapping the locations of underground utilities. SUE will also involve field investigations, test holes, plotting design, engineering analysis and recommendations relative to impacts on existing or proposed utilities. Four levels of SUE will be required:  
Quality Level A – Precise horizontal and vertical location of utilities obtained by the actual exposure and subsequent measurement of surface utilities  
Quality Level B – Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities  
Quality Level C – Information obtained by surveying and plotting visible above-ground utility features  
Quality Level D – Information derived from existing records or oral recollections.

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- s. **Building Design:** Prepare architectural, structural, mechanical, plumbing, electrical and hazmat abatement drawings and specifications. Will prepare necessary permit applications for building permits, erosion and sediment control plan and stormwater permit. Will develop necessary Heating, Ventilation and Air Conditioning (HVAC) design plans as well as electrical and lighting design plans.
  
- t. **CADD Services and Manuals:** Generate Microstation & Geopack drawings and /or standards including DDOT workspace; prepare CADD drawings using GIS, Microstation, and Geopack for roadway, bridge, traffic signal, streetlight, sign structures, retaining walls, foundations, and other structures. Prepare design standards, manuals and procedures. Prepare standards for centralized documentation system and process.