

**A. OVERVIEW**

1. The Consultant will perform preliminary and final roadway design-related services on various types of roadway improvement projects including those designed to Resurfacing, Restoration and Rehabilitation (3R), and New and Reconstruction standards. Services may include, but are not limited to, the following:
  - a. Project Scope Reviews and Alignment Alternative Analysis
  - b. Preparing Scoping and Alternative Analysis Reports
  - c. Preliminary Engineering including, but not limited to, the following tasks:
    - 1) Engineering, Geodetic, and Land Surveys
    - 2) Roadway horizontal and vertical alignment
    - 3) Pavement geometrics
    - 4) Earthwork quantities
    - 5) Drainage design/hydraulic analysis
    - 6) Storm sewer and culvert design
    - 7) Alternatives Analysis as required for 404 permits and flood plain permits
    - 8) Erosion Control
    - 9) ADA design and compliance
    - 10) Guardrail layout
    - 11) Retaining wall layout
    - 12) Utility coordination
    - 13) Right of Way Design
    - 14) Quantity calculations
    - 15) Construction and Traffic Phasing
    - 16) Traffic Control design
    - 17) Construction Staking calculations
    - 18) Preparation of Final Plans, Specifications, and Estimates
    - 19) Field inspections (Plan-in-Hand's, field review of existing conditions, etc.)
  - d. Public Involvement
  - e. Construction Consultation services
  - f. Support in Value Engineering activities
2. Project management services include managing the flow of information and the project details between the Roadway Design Consultant and other consultants selected by NDOT to perform work on other phases of the project. It is NDOT's intent that the Roadway

Design Consultant be primarily responsible for ensuring communication leading to the production of project deliverables, up to and including, the documents necessary for bid letting (PS&E) for assigned projects. Work performed by other consultants may include, but is not necessarily limited to: Environmental Services, Wetland Delineations and Mitigations, Bridge Design, and Hydraulic Studies. Project information and deliverables will be managed by the Consultant in such a manner that each consultant providing support services has access to all project related information necessary to provide their services. This includes such information as surveys, roadway and bridge design plans, right of way design, and hydraulic studies. The NDOT will be the Coordinating Professional, as defined in Neb. Rev. Stat. § 81-3437.

3. On federally funded projects, the Consultant's roadway design will be accomplished in coordination with the Environmental Specialists assigned to the project (either NDOT personnel or an assigned Environmental Services Consultant) to assure the National Environmental Protection Act (NEPA) process is followed accurately and completely during the design process.

**B. QUALIFICATIONS, KNOWLEDGE AND EXPERIENCE**

1. All work shall be completed by or under the direct supervision of a Nebraska licensed professional civil engineer. The consultant firm shall use engineers experienced with all aspects of roadway design related to the services to be provided.
2. The Consultant shall have a working knowledge of and use, when applicable, the following non-exclusive list of references:
  - a. A Policy on Geometric Design of Highways and Streets 2011 (AASHTO)
  - b. Access Control Policy to the State Highway System, 2006 (or latest) (NDOT)
  - c. Americans with Disabilities Act Accessibility Guidelines
  - d. Design Process Outline (NDOT)
  - e. Drainage Design & Erosion Control Manual, 2006 (or latest) (NDOT)
  - f. Highway Capacity Manual 2010 (HCM2010), Transportation Research Board
  - g. Local, State and federal laws and regulations that pertain to roadway design
  - h. Manual on Uniform Traffic Control Devices (FHWA), 2009 Edition
  - i. MUTCD - Nebraska 2011 Supplement to the MUTCD
  - j. Nebraska Minimum Design Standards – Counties, Municipalities, State - 2010 (or most current) (Nebraska Administrative Code Title 428; Rules and Regulations of the Board of Public Roads Classifications and Standards
  - k. National Environmental Protection Act (NEPA) process
  - l. Preliminary Survey Manual (NDOT)
  - m. Roadside Design Guide, 2011 (AASHTO)
  - n. Roadway Design Manual, 2010 (or latest) (NDOT)
  - o. Standard and Special Plans Manual (NDOT)
  - p. Standard Specifications for Highway Construction 2007 (or latest edition) (NDOT)
  - q. Traffic Control Devices Handbook, 2001 (or latest) (ITE)

- r. United States Access Board Guidelines, Standards, and Publications
3. Pre-certification as a NEPA consultant is not required for these services; however the consultant needs to demonstrate an understanding of the importance of coordinated project development with the NEPA process is an important aspect of their qualifications to perform this work.

**C. SOFTWARE AND EQUIPMENT REQUIREMENTS**

1. The Consultant's design and drafting software and design files must be compatible with NDOT's design and drafting software. Information on NDOT's design protocol can be found on NDOT's website on the Roadway Design page; <http://roads.nebraska.gov/business-center/design-consultant/>.
2. The Consultant's design must be accomplished using the design software GEOPAK version SS4 or later but no later than that in use by NDOT. The consultant's design must follow NDOT's drafting procedures, guidelines, and file naming convention using the appropriate version of MicroStation CAD software. Consultant's use of an earlier version of GEOPAK OpenRoads may be approved for specific activities with written permission of NDOT and at NDOT's sole discretion.
3. In many cases, projects will require that a 3D model be generated using GEOPAK OpenRoads technology.
4. Reports and documents must be submitted in a form compatible with Microsoft Office products unless otherwise directed.
5. The Consultant will provide all software and computer equipment required to complete the work including any analysis software required to perform the bridge design work.

**D. EXPECTATIONS FOR THE DELIVERABLES**

1. The consultant shall provide to NDOT acceptable final plans, specifications and estimates (PS&E) for use in a bid letting and construction of the project. The Consultant shall seal and sign the final plans and applicable deliverables in accordance with the Nebraska Engineers and Architects Regulation Act. Consultant shall also provide to NDOT all applicable supporting documentation and reports as described in the Task Order.
2. Plans and special provisions shall be developed in compliance with the manuals, guidelines and specifications as listed in the Qualifications, Knowledge and Experience section, paragraph B.
3. Consultant shall submit to the NDOT roadway design plans at the following stages, when applicable: before the plan-in-hand field inspection, before public meetings, at 90% completion stage, and final PS&E package. Deliverables must be completed and submitted in accordance with the schedule set out in the Task Order.
4. Deliverables must be submitted in hard copy and electronic form as outlined in the Task Order.
5. Submittals will be reviewed and approved by NDOT. Consultant shall address all issues raised by NDOT's review and make all necessary changes to the work.