

**NON-PROJECT / NON-TASK SPECIFIC GENERAL ENGINEERING SCOPE OF WORK –  
Colorado Department of Transportation Headquarters and Regions 1 through 5**

**CONTRACT ADMINISTRATION:**

REGION TRANSPORTATION DIRECTOR: TONY DEVITO COLORADO DEPARTMENT OF  
TRANSPORTATION REGION 1 2000 S. HOLLY DENVER, CO  
80222

REGION TRANSPORTATION DIRECTOR: TOM WRONA COLORADO DEPARTMENT OF  
TRANSPORTATION REGION 2 905 ERIE AVENUE, PUEBLO,  
COLORADO 81001

REGION TRANSPORTATION DIRECTOR: DAVE ELLER COLORADO DEPARTMENT OF  
TRANSPORTATION REGION 3 222 SOUTH SIXTH STREET,  
GRAND JUNCTION, CO 81501

REGION TRANSPORTATION DIRECTOR: JOHNNY OLSON COLORADO DEPARTMENT  
OF TRANSPORTATION REGION 4 1420 2<sup>ND</sup> STREET GREELEY,  
COLORADO 80631

REGION TRANSPORTATION DIRECTOR: KERRIE NEET COLORADO DEPARTMENT OF  
TRANSPORTATION REGION 5 3803 NORTH MAIN AVE.  
DURANGO, CO 81301

DIRECTOR OF STAFF SERVICES SCOTT MCDANIEL COLORADO DEPARTMENT OF  
TRANSPORTATION HEADQUARTERS 4201 EAST ARKANSAS,  
DENVER, CO 80222

General administration of this contract will be delegated to the respective Region Program Engineer involved with this consultant selection process. Active day to day administration and monitoring of contract task orders will be delegated to the Region(s) Resident Engineers responsible for the work described within each task order. Some of these services must be provided under the direct supervision of a Colorado-licensed Professional Engineer (PE) or Professional Land Surveyor (PLS).

Type of work may include all or parts of the following activities:

- A. General Engineering Services -The scope for general engineering services may include but shall not necessarily be limited to: Provide conceptual drawings, graphs, data collection, or charts for the Region's planning, environmental, or other units as needed.
  - a. Conduct or update studies for transportation, environmental, NEPA etc.
  - b. Provide support for region planning activities, including assistance with public meetings and/or public information including handouts, website support or development, and public meeting presentations.
  - c. Provide design support for off systems or other modes of transportation alternatives.
  - d. Provide drafting support or CADD services. All CADD work for CDOT will be conducted using Bentley products including Microstation, Inroads Software, and ProjectWise latest versions used by CDOT.
  - e. Provide lighting plans and analysis.

## Statewide General Engineering NPS Scope of Work- March 2014

- f. Provide support research or search county, state or other areas for records or documents relevant to the project or task.
  - g. Provide scoping services.
  - h. Provide scheduling in MS Project or other scheduling software as requested.
  - i. Provide funding guidance and or support including grant applications.
  - j. Prepare, provide support, coordinate Innovative Contracting documents or supporting information.
  - k. Provide Program Management support and/or financial planning as requested.
  - l. Provide support, preparation, or guidance for Grant Applications including economic analysis.
  - m. Provide Local Agency/Enhancement project support, oversight, and/or guidance.
  - n. Write, review, and/or provide guidance or expertise related to manual preparation or guidance documents.
  - o. Provide/prepare training, advice, or guidance as requested.
  - p. Provide or acquire design services as required to complete tasks not specifically defined in the outline, but that may be required by specific task order.
  - q. Provide Independent Cost Estimates
  - r. Provide Constructability Reviews
- B. Bridge/Structural Design Activities -The scope of work for bridge/structural design activities may include:
- a. Provide design services for various transportation structures or portions of transportation structures.
  - b. Furnish detailing services including drafting and quantity calculations for various transportation structures or portions of transportation structures.
  - c. Inspect and rate transportation bridges.
  - d. Provide bridge design and detailed review of work performed by other designers.
  - e. Provide wall design and detailed review of work performed by other designers.
  - f. Provide structural selection reports and structure selection studies.
  - g. Provide a structure concept study.
  - h. Obtain structural data
  - i. Provide foundation investigation reports
  - j. Coordinate with outside agencies; for example, railroad agencies
  - k. Obtain structural data.
  - l. Provide foundation investigation reports.
- C. Roadway Design Activities -The scope of work for roadway design activities may include:
- a. Provide design services including quantity calculations for the various components of roadway construction, which could include intersection layout, interchanges, signals, structures, lighting, landscaping, irrigation design, ditch design, waterline, erosion control, and sanitary sewer design.
  - b. Conduct plan, specification, and cost estimate checking and/or quality control.
  - c. Furnish detailing and drafting services utilizing MicroStation and Inroads Software, latest CDOT adopted versions utilizing CDOT format. Other software products required for design services and communication of information are Microsoft Office products such as Word, Excel, Power Point. In addition Project Wise, Sharepoint, or FTP sites may be required for

## Statewide General Engineering NPS Scope of Work– March 2014

- file sharing. Other formats or software products may be required for specific tasks such as traffic modeling or truck turning movements.
- d. Attend and/or conduct meetings as needed such as scoping reviews, design office reviews, field inspection reviews, and final office reviews and provide minutes as appropriate.
  - e. Prepare (PS&E Package) final plans, specifications and provide the CDOT project manager with detailed estimates that can be entered into CDOT Transport application system at any point in the project.
  - f. Prepare revisions under-advertisement to plans or specifications when necessary.
  - g. Design and layout of intersections and interchanges.
- D. Hydrology Activities -The scope of work for the hydrology activities may include:
- a. Collect historical drainage data.
  - b. Establish drainage basin data.
  - c. Select run-off parameters and predict peak flow.
- E. Hydraulics Design Activities -The scope of work for hydraulics design activities may include:
- a. Furnish the size and location of drainage structures.
  - b. Furnish storm sewer design.
  - c. Furnish erosion protection design and NPDES requirements.
  - d. Furnish design and quantity calculations for drainage structures including irrigation and permanent BMP's for surface drainage.
  - e. Design of water and waste water systems.
  - f. Irrigation system designs including, but not limited to, typical ditches, traveling gun irrigation systems and other center pivot systems.
  - g. Design, advise, or plan for MS4 compliant facilities and calculations and/or plan preparation as needed.
  - h. FEMA Flood Mapping Revisions and Amendments
- F. Traffic Engineering Activities -The scope of work for traffic engineering activities may include:
- a. Collect traffic data.
  - b. Perform traffic studies or analyses including traffic modeling.
  - c. Perform in-field inventories of traffic control device locations and conditions.
  - d. Furnish design and quantity calculations necessary to prepare signal, signing or pavement marking plans.
  - e. Furnish detailing and drafting services.
  - f. Attend meetings such as field inspection and final office review or others as requested.
  - g. Prepare construction signing plans and schedules.
  - h. Prepare final plans and specifications.
  - i. Perform passing zone analysis to validate or update current striping logs or plans.

## Statewide General Engineering NPS Scope of Work- March 2014

- G. Landscape Architectural Activities -The scope of work for landscape architectural activities may include:
- a. Provide estimates of quantities of native seeding and mulching for the FIR plans.
  - b. Determine most economic landscape alternative, finalize concept, and complete the plan.
  - c. Verify that an acceptable safe recovery distance exists between traveled way and all trees to be planted.
  - d. Coordinate all special permits that may be required.
  - e. Coordinate ROW requirements.
  - f. Write Special Provisions and submit to the CDOT/PM with the completed roadside plans.
  - g. Submit the approved plan/special provisions to the Design Engineer for inclusion in the Project Plans.
  - h. Verify availability of plant materials and submit letter to the CDOT/PM certifying that designated plants are available.
  - i. Provide recommendations for alternative landscape designs and recommendations for Best Management Practices for temporary and permanent erosion protection.
  - j. Prepare Storm Water Management Plan (SWMP) Sheets with BMP locations and quantity calculations for each phase of construction.
- H. Noise Study -The scope of work for noise study activities may include:
- a. Predict or measure present noise levels.
  - b. Analyze noise levels for all alternatives, including the no-build. Noise level models will be made with at least CDOT's stamina noise computer model or better. Distances at which noise levels exceed acceptable levels will be determined for each alternate and plotted on corridor maps.
  - c. Identify locations where noise abatement measures are needed, determine which measure is feasible and cost effective, and estimate construction and maintenance costs.
  - d. Prepare a noise assessment report for acceptance by CDOT.
- I. Value Engineering (VE) -The scope of work for value engineering activities may include:
- a. Conduct VE meetings and provide minutes. The VE meetings should be considered for the following efforts:
    - i. Brain Storming
    - ii. Evaluating alternatives upon meeting the project purposes and need
    - iii. Recommend alternatives based upon: -Most benefit to purpose and need -Minimal or mitigatable impacts -Constructibility -Cost -Best overall response to constraints and concerns
  - b. Collect and compile VE cost and workhour data.
  - c. Provide Final VE Report.
- J. Materials and Geotechnical Services for Design -The scope of work for design services include:
- a. Provide field sampling and testing of existing pavements and soils necessary for proper pavement design as per the CDOT Pavement Design Manual.
  - b. Perform boring and subsurface geotechnical investigations for Structure Selection Reports.

## Statewide General Engineering NPS Scope of Work– March 2014

- c. Provide testing results used in the design process that are certified by a professional engineer.
  - d. Provide other materials and geotechnical services, including but not limited to pavement design, pavement justification reports, life cycle cost analysis, subsurface investigations, instrumentation, foundation reports, landslide evaluations, MSE wall designs, soil nail designs and retaining wall designs
- K. Environmental Services -The scope of work for environmental services may include:
- a. Review environmental conditions, determine required permits.
  - b. Delineation and mitigation recommendations of wetlands.
  - c. Prepare and/or review environmental documents for CDOT projects.
  - d. Conduct and prepare environmental surveys and clearance reports.
  - e. Preparation and processing of Nationwide and Individual Section 404 permits.
- L. Utility Services -The scope of work for Utility Services may include:
- a. Survey/Research existing utilities.
  - b. Map existing and relocated utilities
  - c. Assist or facilitate utility agreements
  - d. Coordinate and discuss utility impacts with utility companies
  - e. Prepare exhibits or other support as needed for utilities
- M. Design Services under construction – the Scope of Work for design services under construction may include:
- f. Review of actual subsurface conditions to verify structural design.
  - g. Review and approval of shop drawings.
  - h. Changes in design based on field conditions.
  - i. Services as needed per PE stamp requirements on design drawings.
  - j. Answer questions as needed on plans and specifications.
  - k. Claim and schedule analysis.
  - l. Analysis of VE proposals.
  - m. Analysis of construction phasing false work, shoring, methods statements, and CPM schedules (Microsoft Project and/or Primavera).
  - n. Analysis of bridge demolition plans, girder erection plans, structural stability, Project Safety Management Plans, and Safety Critical work.
  - o. Field Visits, Meeting attendance, and re-design as needed.
- N.. Surveying -The scope of work for surveying activities may include:
- a. Obtain Right of Entry if needed
  - b. Perform surveys related to the horizontal and vertical alignment of the project.
  - c. Perform GPS control survey.
  - d. Perform topographical surveys.
  - e. Perform cross section surveys.
  - f. ROW support for design.

## Statewide General Engineering NPS Scope of Work- March 2014

- g. Perform utility surveys (includes potholing).
  - h. Perform wetland survey.
  - i. Prepare project control diagram.
  - j. Perform LIDAR surveys.
- O. Photogrammetric Mapping
- P. Right-of-Way Plan Preparation -The scope for right-of-way plan preparation may include:
- a. Retrieve ownership/Title commitments as needed
  - b. Determine parcels.
  - c. Write parcel legal descriptions.
  - d. Determine parcel size.
  - e. Prepare R.O.W. plan tabulation sheet.
  - f. Prepare R.O.W. plan sheets.
  - g. Prepare monument tabulation sheets.
  - h. Prepare land survey control diagram.
  - i. Prepare total ownership maps.
- Q. Other Services -As requested by the Regions and specified in the task orders other services not specified above may be requested on an as needed basis. The scope of work for these services will include the details of the needs.