

2009/2010 DISCIPLINE DESCRIPTION LIST

ARCHITECTURE:

Building Architecture:

Design and construction administration of new buildings, renovations of existing buildings and facilities. The discipline also includes feasibility studies, historic renovation, interior design, landscape and asbestos abatement.

Civil Engineering (Building Site):

Design and construction engineering involving site planning, drainage, geotechnical and landscaping of NDOT facilities; material and construction processes testing of building construction/renovation projects include concrete testing, soil compaction testing, building material testing, water testing, asbestos and lead paint testing. civil design work, project and or building inspection and materials and testing work.

Mechanical Engineering:

Design and construction administration for NDOT new and renovation projects and investigates and produces reports on mechanical systems.

Structural Engineering (Building):

Design and construction administration of NDOT facilities, surveys and investigates structural issues and produces reports/recommendations on NDOT facilities.

BRIDGE:

Bridge Inventory and Inspection:

Inventory and inspection of existing bridge in accordance with National Bridge Inspection Standards (NBIS).

Structural Design (Bridge):

Structural analysis and design of highway related structures including: New or replacement interchange or grade separation structures; Rehabilitation, widening and seismic retrofit of existing structures; Special signal, lighting and hydraulic structures; Earth retaining structures and sound walls.

Structural Steel Fabrication Inspection*:

Shop and field inspection and Non-Destructive Testing of structural steel members, including welding, bolting and painting operations; preparation of inspection/test reports, as applicable.

Underwater Bridge Inspection:

Services may include, but are not limited to: underwater routine NBI and PONTIS inspections of selected bridges located throughout Nevada, including diving inspection and engineering report preparation; in-depth, special and/or emergency underwater bridge inspections throughout Nevada which may arise during the performance period, including both diving inspection and engineering report preparation. All diving work is to be conducted in compliance with OSHA 29 CFR 1910 Subpart "T"-Commercial Diving Operations and Association of Diving Contractors International [DAS1] "CONSENSUS STANDARDS for Commercial Diving Operations".

CONSTRUCTION:

Constructability Evaluation:

Optimum use of construction knowledge and experience in the planning, design, procurement and field operations to evaluate both bid ability and build ability of NDOT construction contracts.

Construction Claims Support:

Claims evaluation, analysis, identification of potential claim issues, research, evaluation of fault and providing recommendations; evaluation and enhancements of existing NDOT claims procedures and processes; claims mitigation techniques and training.

Construction Engineering Services (Augmentation of NDOT Crews):

Construction inspection, field testing construction surveying, field office staffing and project documentation of work necessary to ensure NDOT contracts are constructed in conformance with the plans, specifications, special provisions and the NDOT policies and procedures for contracts administered by NDOT Resident Engineers.

Construction Engineering Services (Full Administration):

Full field administration and contract field management, including a Resident Engineer, construction surveying, field office staffing, project documentation, inspection and testing of work necessary to ensure NDOT contracts are constructed in conformance with the plans, specifications, special provisions and the NDOT policies and procedures.

Construction Scheduling:

Services may include, but are not limited to: (1) Perform the following evaluations on Contractor Critical Path Method (CPM) Schedules utilizing appropriate Primavera Scheduling Software: Formal review of baseline construction schedule to assure proper planning for project; Formal review of monthly schedule updates to measure progress and identify problem areas; Formal review of weekly schedules to monitor ongoing critical path to assist management team in monitoring review of submittals and contractor requests for information; Recording and documenting schedule notes including progress and delays; Maintenance of accurate as-built schedule to facilitate expeditious resolution of contract issues and (2) Develop conceptual CPM schedules for projects in development to assist the NDOT in construction scheduling and projections and (3) Project Scheduling Training: Education and training of client employees in the proper use of Primavera Scheduling Software (P3, Suretrack) for the development and review of construction CPM schedules.

Partnering Facilitator*:

Facilitate partnering sessions between NDOT and contractors for selected NDOT construction contracts.

DESIGN:

Landscape Architecture (Highway):

Perform design services to address landscape and aesthetic requirements on Nevada's highways.

Roadway Design (Freeway):

Perform design services for resurfacing, rehabilitation and restoration (3R) projects, reconstruction (4R) projects, capacity improvements or new construction projects on freeway facilities.

Roadway Design (Non-Freeway):

Perform design services for resurfacing, rehabilitation and restoration (3R) projects, reconstruction (4R) projects, capacity improvements or new construction projects on non-freeway facilities.

ENVIRONMENTAL:

Air Quality Studies:

Air Quality studies, analysis and reports to include in the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted.

Architectural History:

Architectural History studies, analysis and reports to include in the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted.

Asbestos Study:

Asbestos studies, analysis and reports to include in the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted.

Hazardous Materials/Wastes:

Studies, analysis and reports to include in the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted.

Industrial Hygiene*:

Studies, analysis and reports to include in the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted.

National Environmental Policy Act (NEPA) Processing:

Includes coordination and development of NEPA document from initial Scoping through Regulatory approval to receipt of an action document (ROD or FONSI) from the Federal Highway Administration (FHWA).

Noise Studies/Social/Economic Studies:

Noise studies, analysis and reports to include in the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted. Studies, analysis and reports to include in the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted.

Prehistoric/Historic Archeology:

Studies, analysis and reports to include in the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted.

Threatened and Endangered Species:

Studies, analysis and reports to include the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted.

Water Quality Studies:

Studies, analysis and reports to include in the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted. and monitoring studies.

Wetland Studies:

Studies, analysis and reports to include in the NEPA process. Includes coordination and development of Regulatory approval and mitigation measures as warranted.

HUMAN RESOURCES:

Safety and Loss Control*:

Conduct inspections or field surveys and/or research and develop policies, procedures or reports necessary to support NDOT's safety program pursuant to applicable State and federal safety regulations and requirements. Develop comprehensive, technically accurate and professionally written documents that are logical in their presentation and easily understood by persons not associated with the particular functional area addressed. Develop and/or present various safety training and educational programs to NDOT and contractor staff in conformance with NDOT policy and State and federal regulations and requirements.

HYDRAULICS:

Bridge Hydraulics and River Mechanics:

Perform geomorphic studies, sediment transport studies, one or two dimensional analysis of bridge openings, bridge scour analysis, design of scour countermeasures, design of river training systems and design of temporary and permanent erosion control/water quality facilities.

Drainage Design:

Perform design services for roadway drainage facilities, regional flood control facilities, temporary and permanent erosion control/water quality facilities and hydraulic modeling of bridges over waterways. Assist with emergency or unanticipated tasks, including: providing technical support during a flood, investigating flooding/ drainage/erosional problems, performing field investigations, dealing with drainage related maintenance and construction problems, reviewing drainage aspects of NDOT's occupancy permit applications, etc.

Erosion Control/Water Quality:

Perform design services for roadway drainage facilities and temporary/permanent erosion control/water quality facilities.

INTERMODAL PLANNING:

Statewide Multimodal Planning*:

The planning division is responsible for the development of the federally required long-range 20 year transportation plan in accordance with Title 23 Highways Code of Federal Regulations (CFR) 450.100 through 450.214- inclusive, and, Title 23 Highways United States Code (USC) section 135. Public involvement and outreach is a requirement in this process as defined in the referenced CFR and USC. Other responsibilities include multimodal regional planning, small urban planning and assisting communities with master plan development.

LOCATION:

Aerial Photo Film Scanning*:

Photogrammetric Scanner: a roll feed photogrammetric grade-scanning device must be used to create an uncompressed .tif standard image files. It should be located and operated in a thermostatically controlled, dust free environment with a stable power source. The scanner must not come in contact with the film while the film is in motion moving from frame to frame. Normal scanning resolutions requested are 12.5 microns = 1993 dpi or 18 microns = 1411 dpi. File Naming Convention: image scans will be named with NDOT flight number, under bar, frame #'s, as shown in the example of flight number 2785 below. The frame number comes from the camera's photo number on the film. 2785_0103.tif ,2785_0104.tif. Aerial Project Deliverables: Scanned images are uncompressed .tif files used in the photogrammetry, GIS ortho, and mosaicking processes. The images are delivered to NDOT on DVD-R diskettes or a portable hard drive provided.

Aerial Photo Flights*:

Services include photographing engineer mapping and reconnaissance photo flights and the processing of the aerial film requested for the project. Camera criteria: large format aerial survey film camera must have a nominal focal length of 153 mm with format dimensions of 230 x 230 mm. The camera must have a certificate and show that the camera has been calibrated by the USGS within three years and is current. Photography criteria: the photographic condition must be clear with minimal chop, be within forward and side overlap, crab and tilt requirements and must comply with all American Society of Photogrammetry and Remote Sensing (ASPRS) specifications and standards.

MAINTENANCE and OPERATIONS:

ITS Design and Planning:

ITS Design will consist of, but not be limited to, use of transportation engineering, electronics engineering and computer science to analyze, design and implement transportation control systems. Associated activities include system performance and cost analysis, system hardware design, communication system design, development of management plans, supervisor of system installation and operation, system testing and debugging, preparation of system documentation and the training of operations personnel; ITS Planning will consist of, but not be limited to, the study of transportation systems, identification of ITS applications to mitigate transportation problems, development of short and long term ITS implementation plans and assessment of the impact of ITS projects on the transportation system.

ITS Inspection and Maintenance*:

Development and preparation of Statewide contracts for maintenance of Intelligent Transportation System (ITS) devices such as Roadway Weather Information System (RWIS) stations, ramp meters, etc.; Construction inspections of signals, lighting and ITS as described in Section 623.01.01 of the NDOT Standard Specifications, to include, but not limited to, Dynamic Message Signs (DMS), RWIS stations, ramp metering systems, traffic signals, master control assemblies and controller cabinets.

Traffic Operational Analysis Investigation and Studies:

Work consists of providing professional services utilizing traffic techniques in accordance with the standards set forth by the Federal Highway Administration in the Manual on Uniform Traffic Control Devices (MUTCD 2003 or current edition) and the Nevada Department of Transportation's Access Management System and Standards (July 1999 or current edition). Traffic Engineering Studies may include but are not limited to, traffic impact studies, signal warrant analysis; operational analysis using approved micro simulation software and techniques for evaluating sight distance, speed zoning and traffic calming. All work has to be approved by a Nevada Professional Engineer (PE).

MATERIALS:

Geotechnical Engineering:

Services may include, but are not limited to conducting geotechnical explorations, laboratory tests, analysis and design; analysis and design may include topics such as slope stability, deep and shallow foundations, cantilever walls, soil nail walls, tie back walls and MSE walls; providing geotechnical reports; providing notes and drawing details to be incorporated in the contract documents and reviewing contract documents.

Material Sampling and Testing:

Services may include, but are not limited to performing bituminous mixture designs; testing bituminous mixtures; testing asphalt binders; sampling and testing concrete aggregates; testing concrete cylinders; chemical analysis and strength testing of cement samples; chemical analysis of flyash, lime and other construction materials; testing reinforcing bars; conduct ASR testing of concrete aggregate samples; and testing material site aggregates.

OPERATIONS ANALYSIS:

Value Analysis:

Value Analysis is defined as the systematic application of recognized techniques by multi-disciplined team(s) to identify the function of a product or service; establish a worth for that function; generate alternatives through the use of creative thinking; and provide the needed functions, reliably, at the lowest overall cost. Value Analysis may be defined in other ways, as long as the definition contains the following three (3) basic precepts: (1) An organized review to improve value by using multi-disciplined teams of specialists knowing various aspects of the problem being studied; (2) A function oriented approach to identify the essential functions of the system, product, or service being studied and the costs associated with those functions and (3) Creative thinking which uses recognized techniques to explore alternate ways of performing the functions at a lower cost or to otherwise improve the design, service, or product. All consultants conducting Value Analysis Studies for the NDOT must have on staff a Nevada Registered P.E. and a Certified Value Specialist, as defined by SAVE International. The Certified Value Specialist must lead the Value Analysis Study.

PROJECT MANAGEMENT:

Program and Project Management Support*:

Assist with program/project management duties including: Portfolio Management; Project integration, scope, time, cost, quality, human resource, communications, risk and procurement management; Assist with development of project management plan & project finance plans; Provide technical support in change management, process improvement, team building, partnering, facilitation, conflict resolution, and public outreach; Provide technical support in innovative contracting, value analysis, project delivery methods (design-bid-build, design-bid, public-private-partnerships) and cost estimate validation process; and other duties in support of program/project management activities.

RIGHT-OF-WAY:

Appraisal/Appraisal Review*:

Provide appraisals in accordance with the NDOT Right-of-Way Manual, the Uniform Standards of Professional Appraisal Practice (USPAP), 49 CFR 24.103 and, to the extent appropriate, the Uniform Appraisal Standards for Federal Land Acquisitions. Departure is permitted only under the provisions of the USPAP Departure Rule with the concurrence of NDOT. A complete appraisal is required at all times. The format and level of documentation for an appraisal report depend on the complexity of the appraisal problem. Complex property assignments are to be reported in a self-contained, narrative format. A summary report in conformance with USPAP Standards Rule 2-2(b) or a restricted use report in conformance with USPAP Standards Rule 2-2(c) is permitted in cases, which, by virtue of their low value or simplicity, do not require the in-depth analysis and presentation necessary in a self-contained appraisal report. A summary report may be acceptable on complex property assignments on a case-by-case basis as determined by NDOT. All appraisal reviews must conform to the policies contained within the NDOT Right-of-Way Manual, the Uniform Standards of Professional Appraisal Practice (USPAP), 49 CFR 24.103, and, to the extent appropriate, the Uniform Appraisal Standards for Federal Land Acquisitions. Departure is permitted only under the provisions of the USPAP Departure Rule with the concurrence of NDOT.

Subsurface Utility Engineering (SUE) Services:

Consultant to perform complete designating and locating of all subsurface utilities, which are located within the project limits. The SUE Consultant shall provide all equipment, personnel and supplies need to perform the before mentioned service in 2 phases. The first phase or Designation Phase will consist of identifying and surveying the exact horizontal location of all surface and subsurface utilities within the project limits. The second phase or Locating Phase will consist of obtaining precise horizontal and vertical location of all subsurface utilities by excavating a test hole using vacuum extraction or comparable nondestructive equipment so as to cause no damage to the utility facility.

Utility Coordinator:

The Utility Coordinator will be responsible for all facets of utility relocation efforts associated with NDOT projects. All utility coordination efforts will be in compliance with the Code of Federal Regulations Title 23 and Nevada Administrative Code Chapter 408. All relocation efforts will be managed through the Utility Coordinator. Contact and coordination efforts with all utility and railroad agencies will be made as early as possible to allow for the maximum amount of time to identify and address utility conflicts. Designate and locate all utility facilities within the highway project limits. The identification of utility facilities may require the use of Subsurface Utility Engineering, up to and including Quality Level A information. Once conflicts with utility facilities are identified, coordinate all relocation activities, including but not limited to, the review of all utility relocation design plans and schedules, procure and evaluate documentation used to prove prior rights status, prepare agreements necessary for the reimbursement of eligible utility relocation costs, provide inspection of the actual relocation of utilities to insure compliance with all NDOT requirements and contractual obligations.

TRAFFIC and SAFETY:

Safety Studies/Road Safety Audits:

Will consist of providing professional services in conducting Road Safety Audits (RSA). The road safety Audit is a formal safety evaluation of planned or existing roadways by an independent, multidisciplinary audit team. The team looks for potential safety hazards that may affect any type of road user and suggests measures to mitigate those safety issues. The audit team is composed of transportation professionals and individuals with special safety skills from federal, state and local transportation personnel. Associated activities include selecting the RSA team leader and team members, conducting field reviews (both day and night) and preparing the audit report with cost estimate and cost effectiveness analysis.

Signal and Lighting Design/Signal, Striping and Traffic Control Design:

Providing professional services for both traffic signal and roadway lighting design. Work related to traffic signals will consist of, but not be limited to, traffic signal systems analysis, traffic signal systems design and implementation/Work consists of providing professional services utilizing traffic techniques in accordance with the standards set forth by the Federal Highway Administration in the Manual on Uniform Traffic Control Devices (MUTCD) (2003 or current edition), Standard Highway Signs (2002 or current edition), the Nevada Department of Transportation's Standard Plans for Road and Bridge Construction (2003 or current edition) and Nevada Supplement to the Standard Highway Signs (1997 or current edition). Signing may include, but is not limited to, temporary signs, permanent signs, sign structures and post selection and bracing. Striping may include, but is not limited to, temporary striping, permanent striping, pavement marking symbols, traffic delineators and crosswalks. Traffic Control Design 7 shall address all traffic control during construction of the project including, but not limited to, work zone traffic control, temporary detours, temporary signing, temporary pavement markings, public awareness and coordination with local agencies. All work has to be approved by a Nevada Professional Engineer (PE) except Traffic Control plans, which have to be approved by a certified Professional Traffic Operations Engineer (PTOE) or have certification as Traffic Control Supervisor by the American Traffic Safety Services Association (ATSSA).

* Denotes a Non-Engineering Discipline and requires a Statement of Qualifications.
Engineering Discipline requires a Standard Form 330