



**STATE OF NEVADA**  
**Department of Administration**  
**Division of Human Resource Management**

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**CLASS SPECIFICATION**

<u>TITLE</u>	<u>GRADE</u>	<u>EEO-4</u>	<u>CODE</u>
<b>SUPERVISOR, PROFESSIONAL ENGINEER</b>	<b>42*</b>	<b>B</b>	<b>6.207</b>
<b>PROFESSIONAL ENGINEER</b>	<b>40*</b>	<b>B</b>	<b>6.226</b>

**BENCHMARK DESCRIPTIONS**

The following benchmark descriptions are representative examples of how positions are classified at each level but they are not intended to be all-inclusive. Allocation of new or existing positions not described below must be determined by a review of the nature and complexity of work performed; the knowledge, skills and abilities required; independence/supervision received; scope of responsibility/consequence of error; authority to take action/decision-making; and personal contacts necessary to complete work.

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**SUPERVISOR, PROFESSIONAL ENGINEER**

**DEPARTMENT OF TRANSPORTATION (NDOT)**

**Construction Division:** Supervise and manage the Administrative Section of the division to ensure compliance with the applicable documentation requirements of NDOT construction contracts; review and process contract change orders; prepare billings for third parties; review processing of bi-weekly contractor payments; review construction contract final reports and final payments; provide documentation training for construction field personnel.

Develop agreements with consultants to provide contract administration for NDOT construction contracts, augment construction crews with personnel and equipment, constructability reviews of projects, construction claims support and partnering facilitator. Negotiate with consultants on construction contract administration costs, write agreements, review invoices, bill and process payments for work performed.

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES**

**Division of Environmental Protection:** Supervise and manage the overall environmental program activities of a branch in an assigned area within the division:

***Air Pollution Control/Bureau of Air Quality Planning: Permits Branch-*** Manage the permit approval program for major sources of air pollution by directing staff review of major source applications. Manage the review and implementation of federal and State air pollution control regulations. Review proposed engineering designs for air pollution control devices to determine soundness of the engineering design and the level of emissions reduction. Analyze, develop and review proposed legislation to determine impacts on the State's Air Pollution Control program; prepare memoranda assessing impacts of proposed legislation; and propose new regulations and legislation governing air pollution.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Working knowledge of:** chemical and mechanical engineering principles such as gas and fluid flow laws; environmental terminology; reading and evaluating flow diagrams of processes, blueprints, construction drawings, plot plans and topographical maps; physical and chemical phenomena such as latent heat of vaporization; and electrical wiring. **General knowledge of:** the nature of the criteria for pollutants and air

\* Reflects a 2-grade, special salary adjustment authorized by the 2001 Legislature to improve recruitment and retention.

**BENCHMARK DESCRIPTIONS (cont'd)**

**SUPERVISOR, PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)**

**Division of Environmental Protection (cont'd)**

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application): (cont'd)  
toxins including their impacts on living organisms, biological systems and the environment. **Ability to:** analyze complex technical data such as ambient sulfur dioxide concentrations for determining source apportionment; evaluate engineered systems and industrial processes; write technical reports; make presentations before commission hearings, courtrooms, and enforcement conferences.

***Compliance and Enforcement Branch-*** Manage the branch by reviewing and monitoring the grant performance enforcement requirements of the United States Environmental Protection Agency (EPA) to ensure compliance with Nevada sources; determine source compliance and issue Notices of Violation and Stop Orders if a source is out of compliance; and review new and existing federal and State regulations and air quality permits issued to determine if a regulation or permit is enforceable. Review engineering designs for air pollution control devices and monitoring systems to determine soundness of the engineering design; review engineering test reports to verify that testing procedures have been conducted in accordance with EPA methods and prepare a summary of the review and letter of acceptance or deficiencies in the testing.

Prepare and conduct enforcement conferences with sources found in violation and negotiate compliance schedules for corrective action; prepare and present administrative stipulations and orders containing corrective actions, civil fines, and compliance schedules before the State Environment Commission (SEC) for approval.

***Corrective Actions: Underground Storage Tank (UST), Leaking Underground Storage Tank (Leaking UST), and Remediation Branches-*** Manage the operation of the UST and Leaking UST branches by supervising Professional Engineers and Environmental Scientist staff; assign, direct and evaluate the work performance of program staff; develop policies, regulations and standards in conformance with federal and State requirements; report programs' status to the EPA; and assist with the preparation and management of federal grants, State budgets and contracts. Provide testimony before the SEC, the State Petroleum Fund Board to Review Claims, and other public hearings and meetings.

Manage the UST Operational Compliance program using an inspection strategy that ensures conformance with federal and State requirements. Determine UST system compliance; if facilities are out of compliance, issue documentation, prepare and conduct enforcement conferences with facilities, and negotiate compliance schedules for corrective action.

Assess, investigate, and evaluate the release of chemicals into the environment from UST and non-UST sources, which may adversely affect public health or environmental quality; review and analyze corrective action and monitoring reports, engineering plans and technology, cost of remediation and necessity of work to be performed; and write report findings and decisions to responsible parties. Conduct site reconnaissance and prepare preliminary assessment reports to include engineering evaluations, technical writing and construction of figures, diagrams and maps. Provide support to emergency response events based on reports of spills or incidents.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):  
**Working knowledge of:** engineering principles pertaining to construction, hydrology, soils engineering and properties of hazardous materials engineering as applied to corrective action technologies.

***Mining Regulation/Reclamation: Mining Regulation Branch-*** Administer branch activities effectively and efficiently within established time frames and in accordance with State statutes, regulations and division

**BENCHMARK DESCRIPTIONS (cont'd)**

**SUPERVISOR, PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)**

**Division of Environmental Protection (cont'd)**

***Mining Regulation/Reclamation: Mining Regulation Branch-*** (cont'd)

policies and procedures. Supervise a staff consisting of engineers, environmental scientists, and support personnel; assign, direct and evaluate the work performance of staff; manage recruitment and the development and training of staff; prepare and administer branch budget; and coordinate activities with division staff and other State, local, and federal agencies. Propose new and revised statutes and regulations. Provide testimony on the Mining Regulation program before the SEC, Legislature, and other public hearings and meetings. Oversee compliance and enforcement to achieve effective conformity of mining facilities with applicable State laws. Represent the division in a courteous and professional manner while providing clear and accurate information to the public.

***Waste Management: Hazardous Waste and Chemical Accident Prevention Branches-*** Manage the permitting or oversight of programs for hazardous waste treatment, storage and disposal, or chemical accident prevention; direct the inspection program and coordinate the enforcement for hazardous waste or chemical management facilities; attend enforcement conferences with staff and violator to assess technical adequacy of violator's response to the violation cited in the enforcement action; testify in court or before the SEC during civil or criminal enforcement cases; and manage the corrective action program for remediation of sites contaminated with hazardous waste.

Analyze, develop and review proposed legislation and regulations to determine impacts on State hazardous waste or chemical accident prevention program; prepare memoranda assessing impacts of proposed legislation; and propose new regulations and legislation governing hazardous waste or chemical management facilities.

Administer grants and prepare biennial budgets; originate draft work plans and negotiate with the EPA on work tasks to be performed with grant funds; write work plans detailing the tasks and budget for each element to include permitting and inspecting facilities; supervise the preparation of quarterly reports; meet with EPA staff for mid-year and end-of-year evaluations of staff grant commitments; and negotiate with the EPA for extensions or alternative tasks due to changes in State priorities.

***Water Pollution Control: Permits Branch-*** Plan, organize, schedule and oversee branch operations; develop regulations and policies for review and approval of the Bureau Chief and the Division Administrator to promote changes in policy that will further protect the water quality of the State; and issue water pollution control discharge permits after reviewing the area wide Water Quality Management Plan to verify that proposed discharges meet the conditions of the plan. Evaluate proposed water treatment processes to determine what limits need to be placed in the discharge permit; review the cost effectiveness of the treatment process; determine the mixing zone requirements; and prepare and send out public notices, mailing lists and fact sheets to inform the public and other government agencies of the division's intent to issue the permit.

Prepare annual budgets and work plans for submission to the EPA and Division Administrator to ensure that funding is obtained in a timely manner.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Working knowledge of:** hydrology, groundwater transport, and treatment technologies. **General knowledge of:** statistical tests used to assess groundwater data in determining if an increase in contaminant has occurred.

***Water Quality Planning: Water Quality Standards Branch-*** Manage the branch, staff, and federal grants, and ensure surface water quality is protected in accordance with State and federal law. Develop water quality standards by proposing revisions to regulations; solicit response to proposed regulations from businesses,

**BENCHMARK DESCRIPTIONS (cont'd)**

**SUPERVISOR, PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)**

**Division of Environmental Protection (cont'd)**

***Water Quality Planning: Water Quality Standards Branch-*** (cont'd)

governmental agencies and the public; and present proposed regulations to the SEC. Review water quality data and revise Nevada's impaired waters list as necessary. Compute maximum daily pollutant loads to surface waters and determine waste load allocations for dischargers so reductions will result in compliance with water quality standards contained in the Nevada Administrative Code.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Working knowledge of:** hydrology systems; State statutes, laws, and regulations regarding water rights and water planning. **Ability to:** perform advanced hydraulic and hydrologic related calculations.

***Safe Drinking Water:*** Plan, organize, and manage the Bureaus' engineering section. Ensure projects are reviewed and responded to within prescribed time frames. Answer questions and provide information to the general public, local governments and the engineering community pertaining to functions and activities related to the Bureau. Prepare language for inclusion in Requests for Proposal and select contractors to perform work for the Bureau. Provide quarterly or annual reports to EPA as required.

Research statutes, codes, standards, technical publications and reports for the purpose of revising and or developing regulations. Conduct workshops to solicit comments from the public, local governments, utilities, and other stakeholders regarding proposed regulations; address and incorporate comments received as appropriate in proposed regulations. Submit proposed regulations to the State Environmental Commission for adoption; implement and enforce adopted regulations.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at the time of application):

**Working knowledge of:** civil and geotechnical engineering related to water system design, water treatment, groundwater hydrology, compliance with water quality issues and regulation associated with the Safe Drinking Water Act; Regulations For Public Water Systems (NAC 445A.450 to 445A.6731), and Planning and Zoning, Subdivision of Land (NAC Chapter 278).

**Division of State Parks:** Manage and coordinate engineering staff, assign projects, and monitor progress of projects and staff assignments. Prepare budget estimates for the Chief of Planning and Development. Assist the Chief of Planning and Development with the administration of grants for projects.

Manage all phases of construction administration for division projects; supervise or perform construction layout and staking to provide contractors with the necessary data for construction; coordinate the efforts of park staff, utility companies, other agencies, special interest groups and contractors; conduct on-site inspections to verify the quality of work meets the specification requirements; negotiate and prepare contracts and change orders with contractors; manage project budgets which may include multiple funding sources with differing requirements; set up final inspections when near completion; prepare a Notice of Completion to be published and recorded with the County Recorder; prepare reproducible record drawings of all changes to the original plans made during construction; and meet with field staff to review problems and recommend design or procedure changes.

Manage planning and project design; supervise and perform topographic and hydrologic field surveys; supervise or perform the reduction of raw survey data to numerical data used to prepare base sheets for plans; prepare conceptual designs and review them with staff; prepare preliminary designs that conform to various regulatory agencies' requirements; prepare applications and submittals for regulatory agency reviews; meet and negotiate with regulatory agencies; obtain all necessary permits for construction; and prepare final plans,

**BENCHMARK DESCRIPTIONS (cont'd)**

**SUPERVISOR, PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)**

**Division of State Parks: (cont'd)**

specifications and construction estimates and place engineer's seal on the plans in accordance with NRS 625.230.

Provide engineering expertise by reviewing the work of other designers within the Planning and Development Section and making recommendations regarding the engineering feasibility of their designs; review and make recommendations regarding reports, proposed legislation and regulations with respect to their impact on the development and maintenance of park facilities; review boundary surveys and legal descriptions; and review technical reports and manufacturer's information regarding engineering issues, items or products.

Manage solicitation of proposals, selection and negotiation of consultant contracts; review consultants' designs, plans and specifications, and administer consultant contracts.

Manage the administration of water rights permits for all State parks and recreation areas; prepare and submit water rights applications to the State Engineer's office to obtain the use of any surface or underground water source; develop the water source and file a Proof of Completion with the State Engineer's office; file Proofs of Beneficial Use and maps with the State Engineer's office to show the place and manner of diversion, all works, and place and manner of use; file Extensions of Time when necessary; maintain a file of water use records for each park, and monitor parks' water usage.

Prepare engineering analysis of dam break floods for inclusion in Emergency Action Plans as required by the Division of Water Resources and NRS 535 for dams owned by State Parks. Review Emergency Action Plans and submit to the Division of Water Resources and perform periodic and emergency dam inspections.

**ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):**

**Working knowledge of:** project management, sewer and water distribution system design, earthwork, septic system design, roadway design, drainage design, estimating, specification writing, procedures for water rights filings. **General knowledge of:** civil engineering design, site utility systems, hydrology, fluid mechanics, hydraulics, soils, construction materials, simple structures, engineering economics, and Nevada Water Law. **Ability to:** bid, negotiate, prepare and manage consultant and construction contracts; produce engineering designs, drawings and specifications for bidding and construction; and layout complex work in the field.

**Division of Water Resources:** Plan, organize, schedule and oversee either the activities involved in water rights applications or conduct hearings, preparation of rulings and track the division's performance indicators.

***Water Right Applications-*** Coordinate work activities that influence the progress of the publication review to anticipate, detect and resolve possible difficulties to avoid delay and expedite selected applications and implement special requirements when needed. Direct the review of applications for publication to ensure quality and quantity of work completed, proper application of procedures, practices and methods, and compliance with review and publication requirements; interpret the intent of standards and requirements and advise on appropriate action to resolve problems and unusual conditions that deviate from the norm.

***Hearings and Rulings-*** Track the division's performance indicators to ensure appropriate standards are met. Work with the Chief of Appropriations and Deputy State Engineers to assign staff various duties to maximize efficiency. Conduct hearings on protested applications, cancelled permits, forfeitures, and adjudications to develop a complete record by obtaining evidence testimony and recommend to the State Engineer the correct course of action. Write rulings for the State Engineer's signature, by considering the record of evidence in a case. Review draft rulings from engineering staff to maintain consistency in the form and quality of the State Engineer's rulings.

**BENCHMARK DESCRIPTIONS (cont'd)**

**SUPERVISOR, PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)**

**Division of Water Resources: (cont'd)**

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Working knowledge of:** hydrologic systems. **General knowledge of:** State statutes, laws, customs and usage regarding water rights and water planning. **Ability to:** perform advanced hydraulic, hydrologic and other engineering related calculations.

**DEPARTMENT OF PUBLIC SAFETY**

**State Fire Marshal Division:** Plan, organize, schedule and oversee the Plans Review Section; review and approve construction plan designs and specifications of State, city, county and private facilities to ensure plan designs and specifications meet fire codes and regulations regarding hazardous materials storage, use and protection. Work with industry to ensure compliance with regulations regarding hazardous materials storage and use protection; and advise architects, engineers and contractors in the proper construction and protection of facilities.

Inspect State, city, county and private facilities to ensure required code compliance for construction as well as hazardous materials storage and use protection. Provide professional engineering expertise to division staff, State and local agencies' staff, and facilities' management staff, in fire protection, building construction and hazardous materials storage and use protection.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Working knowledge of:** federal and State environmental laws relating to testing labs, construction, and the use, storage, and transportation of hazardous materials.

**DEPARTMENT OF WILDLIFE**

Coordinate with staff, plan, budget for projects pertaining to department facilities, housing, dams, water rights, land holdings, and environmental and hazardous materials. Testify before the Legislature and the State Public Works Board when necessary regarding departmental engineering projects; and supervise engineering and paraprofessional staff.

Oversee department capital improvement and facility maintenance projects and coordinate projects with Public Works. Develop in-house designs for selected department construction projects. Manage solicitation of proposals, selection and negotiation of consultant contracts; review consultants' designs, plans and specifications, and administer consultant contracts in accordance with NRS 338, 339, 341 and 625.

Oversee Federal Aid Boat Access and Clean Vessel Act grant programs and prepare grant applications and documents required.

Provide professional engineering expertise to department staff; make recommendation regarding the feasibility of proposed projects; review and make recommendations regarding reports, proposed legislation and regulations with respect to their impact on the development and maintenance of department facilities; review boundary surveys and legal descriptions.

Manage department water rights permits. Prepare and submit water rights applications to the State Engineer's office to obtain the use of surface or underground water sources; develop the water source and file a Proof of Completion, Proofs of Beneficial Use and maps with the State Engineer's office to show the place and manner of diversion, all works, and place and manner of use; file extensions when necessary.

**BENCHMARK DESCRIPTIONS (cont'd)**

**SUPERVISOR, PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF WILDLIFE (cont'd)**

Prepare and maintain Emergency Actions Plans for department's dams and perform engineering analysis of dam break floods for inclusion in these plans as required by the Division of Water Resources and NRS 535, and perform periodic and emergency dam inspections.

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**PROFESSIONAL ENGINEER**

**DEPARTMENT OF TRANSPORTATION**

**Districts:** Investigate and analyze traffic flow and the placement of traffic control devices including signs, traffic signals and pavement markings; analyze existing roadway conditions and traffic patterns to determine if modifications are required and initiate needed modifications and changes to improve the safety of the roadway. Make recommendations on overall concepts and phasing for traffic control. Review traffic control plans to ensure proper design and approve for use on State roadways. Review encroachment permits within area of expertise as part of the district's approval process. Review plans and traffic studies to ensure safety and appropriateness of proposed design to mitigate impact on State roadways.

Require design changes as necessary; recommend approval or denial; review temporary encroachment permits and recommend approval or require design changes for work in the State right-of-way, traffic impact studies, to ensure designs meet department standards. Approve or require design changes in order to prevent impact to State roadways.

**Materials Division: Concrete Operations, Roadbed Design, and Geotechnical-** Develop and recommend implementation of new concepts for pavement design, concrete materials, and geotechnical design and analysis.

Conduct field investigations to obtain quantitative and qualitative information for pavement and foundation designs. Perform structural design or highway structural sections; develop geotechnical designs. Perform comprehensive geological and/or geotechnical engineering analyses to propose specific design and construction recommendations, with special emphasis placed upon the mitigation of geotechnical problems and geologic hazards.

Write specifications for new products, design procedures, and contract plans; review special provisions and plans prior to advertisement to ensure proper specifications and special details have been included; review technical information for approval of products for use in highway projects.

Work with a variety of computer software to perform pavement structural designs, geotechnical designs, manipulate and organize data, improve the process of project prioritization selection, optimize the design of pavement structural sections and prepare reports.

Write technical and engineering reports, and prepare agreements for research projects. Represent the Materials Division at meetings and conferences.

**ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):**

**Working knowledge of:** geology, geomorphology, geophysics, seismology, ground water hydrology and seepage, earthquake engineering, and geo-textile engineering; fluid, rock and soil mechanics and associated testing equipment. **Ability to:** inspect and analyze geotechnical engineering designs; perform sub-surface sampling and testing; use geologic field techniques to obtain geologic information; use geologic compass to measure rock discontinuities.

**BENCHMARK DESCRIPTIONS (cont'd)**

**PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF TRANSPORTATION (cont'd)**

**Road Design Division: Hydraulics Section-** Conduct hydrologic studies to include evaluating drainage basin, stream channel, and meteorological precipitation events. Identify design flow rates and characteristics using appropriate hydrologic methods. Design hydraulic facilities including open channels, storm drains, culverts, bridge openings, energy dissipaters, diversion structures, and detention basins. Evaluate river stability and bridge scour. Design river training systems and scour countermeasures. Design water quality facilities including sand/oil separators, retention basins, filters, check dams, and sediment traps. Design temporary and permanent erosion control facilities using appropriate and best management practices.

Review hydrologic studies, internal designs, consultant designs, planning documents, cost estimates, occupancy permit applications, surplus property requests, new products, new procedures, agreements, correspondence, proposals and guidelines related to hydraulic features.

Assist in coordination of one or more of the following programs or activities: bridge scour program, water quality and erosion control program, Lake Tahoe environmental improvement program, Clear Creek erosion control program, consultant administration, internal design services, and provide technical support services to NDOT districts. Assist in submitting funding applications; prepare funding agreements; program projects and ensure inclusion of program elements in the STIP and NDOT annual work program.

Coordinate project activities with other divisions and public agencies to ensure requirements on hydraulic projects are addressed; research cost and availability of supplies and products to be used on project; represent the department at public hearings to inform the public and receive comments about upcoming projects; participate in and perform site investigations to determine construction feasibility and hydraulic design features; and participate in value engineering studies of proposed projects to explore cost saving alternatives.

Research and monitor drainage, water quality, erosion control concepts, techniques, products and facilities. Resolve erosion and flooding complaints from the public.

**ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):**

**Working knowledge of:** hydrology, open channel flow, fluid mechanics and statistics, storm drain, culvert and channel design; energy dissipater design and water surface profile determination; mechanics of materials and soil to calculate pipe strengths. **Ability to:** draw scale plan and profile views of proposed hydraulic structures; calculate lengths, surface areas, volumes and weights so that cost estimates can be made; read and interpret aerial photographs, topographic maps and highway plans.

**Consultant Management Section-** Plan, organize and coordinate the design of transportation projects with consultants, department staff, public agencies, private entities, the public, and project shareholders; and lead project team. Draft inter-local, cooperative, and consultant agreements and task orders. Develop preliminary design and construction cost estimates or direct consultants to do so. Participate in scope and design cost negotiations with consultants; review and approve consultant invoices throughout a project and evaluate consultant performance. Review consultant and public agency construction plans to ensure department policies, procedures, and standards are followed and the necessary approvals obtained. Represent the department or division at public and project meetings. Establish and manage a balance of project scope, budget, schedule, and quality; help ensure obligation of transportation funding.

**ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):**

**Ability to:** develop cost estimates for the bidding and construction process.

**Intergovernmental Program Section-** Plan, organize and coordinate the completion of transportation projects with public agencies, department staff and other project stakeholders. Draft legal agreements or supplemental agreements with governmental agencies on individual projects. Coordinate with internal divisions and public



**BENCHMARK DESCRIPTIONS (cont'd)**

**PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF TRANSPORTATION (cont'd)**

**Road Design Division: Hydraulics Section- (cont'd)**

***Intergovernmental Program Section-* (cont'd)**

agencies to determine and address requirements on projects completed under the Stewardship Program. Represent the department at public and project meetings. Review consultant and public agency construction plans, bid documents and cost estimates to ensure federal guidelines and requirements are being met and the necessary approvals are acquired. Review contract change orders from local agencies. Review and approve public agency invoices throughout the life of a project.

**Structural Division: Bridge Design Section-** Prepare preliminary designs of new bridges and major modifications of existing bridges; perform preliminary structural analysis to ensure the integrity of initial structural elements; prepare preliminary cost estimates for each structure type based on a comparison of initial cost, constructability, safety, maintainability and aesthetic value; develop a preliminary plan sheet showing basic geometric and structural features of selected structural type; and distribute approved preliminary plan sheet to appropriate agencies and divisions.

Prepare final design on structural design projects which include new bridges, widening and/or rehabilitation of existing bridges, seismic retrofit of substandard bridges, retaining walls, traffic signalization structures, hydraulic and maintenance structures.

Coordinate project activities with departmental divisions and various private and public agencies to determine and address their requirements on projects; contact manufacturers, suppliers and fabricators to obtain information regarding the availability and cost of products intended for use on projects; participate in public hearings to inform the public and receive comments about upcoming projects related to the division; participate in preliminary site investigations with other division representatives to determine construction feasibility and structural design features; and participate in value analysis studies of proposed projects to investigate cost saving alternatives.

Check structural analysis and designs of others to ensure accuracy and compliance with department standards and review the working drawings of contract plans to ensure accuracy of details, compliance with department standard practice and feasibility of construction; check shop drawings for construction projects and assist in solving structural related construction problems. Assign and review work of rotational engineers and engineering student aids and train assigned staff in the operations of the division to include policies and procedures.

***Contract Administration/Technical Support Section:*** Perform a majority of the day-to-day work related to the administration of contracts with consultant engineering firms. Work daily with consultants; perform initial engineering review and evaluation of all structural design products prepared by the consultant; review consultant's periodic progress reports and invoice payments; serve as point of contact for project meetings and discussions; prepare project correspondence; and provide the majority of the detailed work to ensure the department meets its project responsibilities under the terms of the consultant agreement. Gather, synthesize, evaluate, and implement changes in structural design technology; provide plan checking for the Bridge Design Section and provide structural designs on special projects.

**ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):**

**Detailed knowledge of:** structural analysis and design methods and the proper application of these methods to pre-stressed concrete, reinforced concrete, steel, timber and masonry; civil and structural terminology.

**Working knowledge of:** basic principles of physics, mechanics of materials, static, and structural dynamics.

**General knowledge of:** chemistry and metallurgy and their relation to engineering materials. **Ability to:**

**BENCHMARK DESCRIPTIONS (cont'd)**

**PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF TRANSPORTATION (cont'd)**

**Structural Division: Bridge Design Section-** (cont'd)

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application): (cont'd)  
apply knowledge of structural analysis and design methods properly during the course of design and construction of projects.

**Bridge Inspection/Maintenance Section:** Identify new, replaced and rehabilitated bridges to maintain an up-to-date inventory of all bridges in the State and map the location of each bridge for future scheduling purposes; develop inventory records for all new, replaced or rehabilitated bridges; perform structural analysis to determine inventory and operating load ratings required by federal law for inclusion in the inventory; and update existing bridge inventory files to comply with federal requirements and provide updated data to local and regional federal offices and other interested agencies.

Perform and document bridge inspections, deficiencies and maintenance strategies to determine bridge condition ratings for the National Bridge Inventory and determine the prioritization of budgets for bridge maintenance.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Detailed knowledge of:** bridge inspection principles and techniques. **Working knowledge of:** bridge design and construction procedures and terminology; basic principles of physics and engineering mechanics' and their application to structural analysis and design. **General knowledge of:** the American Association of State Highway and Transportation Officials' standard specifications for highway bridges; the department's standard specification for road and bridge construction.

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES**

**Division of Environmental Protection:** Coordinate, plan, organize, schedule and oversee environmental engineering processes for program activities of a branch within the division.

**Air Quality Planning: Permitting Branch-** Coordinate the permitting of sources under the Prevention of Significant Deterioration, Title V and minor source permitting programs; conduct in-depth reviews of applications to determine the adequacy of the proposal to meet applicable State and federal air quality standards and requirements; develop emissions estimates; review engineering designs for air pollution control devices and associated emission to determine soundness of the engineering design; conduct air dispersion modeling analyses; draft permit conditions; and coordinate special projects.

**Planning Branch-** Evaluate and coordinate the development, adoption and implementation of new air quality regulations. Conduct specialized air quality modeling analyses; develop, test, implement and/or maintain computer programs to support assigned functions.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Working knowledge of:** chemical and mechanical engineering principles such as gas and fluid flow laws, electrical systems associated with monitoring equipment, calibration techniques and the use of specialized tools such as voltmeters. **General knowledge of:** the fundamental nature of the criteria pollutants and air topics, including their impacts on the environment and living organisms.

**Corrective Actions: Leaking Underground Storage Tank (UST) and Remediation Branches-** Perform Leaking UST and Remediation case oversight; develop policies, regulations and standards in conformance with federal and State requirements; develop status reports of programs to the United States Environmental

**BENCHMARK DESCRIPTIONS (cont'd)**

**PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)**

**Division of Environmental Protection: (cont'd)**

***Corrective Actions: Leaking Underground Storage Tank (UST) and Remediation Branches-*** (cont'd)

Protection Agency (EPA); and provide testimony on the program before the State Environmental Commission (SEC), State Petroleum Fund Board to Review Claims and other public hearings and meetings.

Assess, investigate and evaluate the release of chemicals into the environment from UST and non-UST systems, which may adversely affect public health or environmental quality; review and analyze corrective action and monitoring reports, engineering plans and technology, cost of remediation and necessity of work to be performed; and report findings and decisions to responsible parties. Conduct site reconnaissance and prepare preliminary assessment reports to include engineering evaluations, technical writing, and construction of figures, diagrams and maps. Provide support to emergency response events, spills or incidents.

***Mining Regulation/Reclamation: Mining Regulation Branch-*** Process water pollution control permits and prepare fact sheets, notices of intent to issue or deny application, notices of final decision and responses to comments regarding public notices. Conduct field inspections to implement regulations governing water pollution control; establish the need for additional monitoring and permit limitations; conduct investigations that include sampling and recognizing incidents of regulatory noncompliance; provide technical advice and guidance; and prepare accurate inspection reports based on findings with emphasis on engineering design, construction operation and closure to include recommendations.

Administer enforcement/compliance process by establishing a record of facts; compare conditions with laws and regulations for environmental and legal ramifications; substantiate noncompliance; write a record of finding to list non-compliance activities; establish a dialogue to resolve environment concerns with minimal formal administrative action; and initiate enforcement action to correct environmental degradation and deter further damage.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Ability to:** apply engineering principles, practices and nomenclature to environmental regulations; communicate effectively during adverse situations and persuade for implementation of regulations; write legally binding permits.

***Waste Management: Hazardous Waste, Chemical Accident Prevention and Solid Waste Branches-*** Process permits and prepare fact sheets, notices of intent to issue or deny application, notices of final decision and responses to comments regarding public notices. Conduct field inspections to implement regulations governing facilities; establish the need for additional monitoring and permit limitations; conduct investigations that include sampling and recognizing incidents of regulatory noncompliance; provide technical advice and guidance; prepare accurate inspection reports including recommendations based on findings, with emphasis on engineering design, construction operation and closure. Administer enforcement/compliance process by establishing a record of facts; compare conditions with laws and regulations for environmental and legal ramifications; substantiate noncompliance; write a record of finding to list noncompliance activities; establish a dialogue to resolve environmental concerns with minimal formal administrative action; and initiate enforcement action to correct environmental degradation and deter further damage.

***Water Pollution Control: Permits Branch-*** Perform site evaluation and characterization, research water quality data and the hydrology to determine which surface water and/or groundwater aquifer will be impacted by the discharge; research topographic maps and demography of proposed discharge; conduct on-site inspections to determine if incidental impacts are probable or if additional discharges need to be permitted; determine location for monitoring wells; meet with local government officials to address concerns regarding

**BENCHMARK DESCRIPTIONS (cont'd)**

**PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)**

**Division of Environmental Protection: (cont'd)**

***Water Pollution Control: Permits Branch-*** (cont'd)

the permitting process; and issue water pollution control discharge permits. Develop regulations and policies, prepare annual budgets and work plans for submittal to the EPA to secure funding.

***Technical Services Branch-*** Develop an annual inspection schedule of all wastewater treatment plants in the State; perform compliance inspections of permitted wastewater treatment plants, and treatment plants under construction for compliance with specifications and/or violations of regulations; prepare written inspection reports; investigate and document violations of discharge permits or the Nevada Water Pollution Control Law. Review and approve documents, reports and studies related to the development of wastewater treatment plants projects to verify compliance with State law and conformance with proven design criteria and division policy; review and approve operation and maintenance manuals developed for specific treatment plants; review and approve plans, specifications and locations for groundwater monitoring wells, piezometers and other monitoring devices used to record trends in groundwater quality at the site of the treatment plants; and attend design review meetings with representatives of the treatment plants and consulting engineers to clarify review comments, discuss alternatives and resolve conflicts. Administer agency grants for training and outreach assistance for rural wastewater treatment plant operators and managers of rural wastewater utilities. Supervise the review and approval of subdivision maps within the State to ensure that adequate sanitary wastewater treatment and disposal facilities for housing developments are provided in accordance with State law. Manage the issuance of storm water permits and the completion of compliance inspections for regulated storm water discharge facilities within the State.

***Water Quality Planning: Planning and Standards Branch-*** Develop work plans to direct efforts of the watershed focus group including identification of ongoing projects, data gaps, additional research, monitoring and other activities needed to meet goals; facilitate implementation of work plans; manage selected technical contracts supporting the watershed efforts; organize and lead meetings of the watershed group and solicit input from stakeholders. Develop through modeling or other scientific means total maximum daily pollutants loads (TMDL) for surface waters. Prepare water body assessments, which include use attainability analysis, monitoring plans, implementation plans, and source assessments. Analyze water quality data for trends and comparison to water quality standards.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Working knowledge of:** wastewater treatment principles and practice.

***Safe Drinking Water:*** Review and approve engineering plans and specifications for subdivisions, public drinking water systems including wells, springs, surface water treatment facilities, drinking water treatment plants, water storage tanks, pumping stations, and piping for water system infrastructure. Provide necessary information for the permitting process of public drinking water systems in the State. Ensure compliance with public drinking water quality standards, water quality monitoring and regulations required by the Safe Drinking Water Act as described in 40 CFR. Perform routine sanitary survey inspections of permitted water systems and ensure correction of any noted water system deficiencies.

Evaluate the risk to public drinking water sources (wells, springs, intakes) from identified potential contamination sources.

Review and provide recommendations regarding NDEP AB 198 Grant Program applications for specified projects as assigned. Conduct research and prepare variances and exemptions submitted to the State

Environmental Commission for consideration of regulatory relief. Provide professional consultation to the

**BENCHMARK DESCRIPTIONS (cont'd)**

**PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)**

***Safe Drinking Water:*** (cont'd)

private and public sector to enhance and promote public health, sanitation, and safety in the State.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at the time of application):

**Working knowledge of:** civil engineering design, water treatment processes, groundwater hydrology, the Surface Water Treatment Rule, and the Nevada Revised Statutes/ Nevada Administrative Code.

**Division of State Parks:** Develop engineering designs for State Parks projects; present conceptual designs to the design team in order to select a preferred alternative for design; prepare detailed designs, estimates and specifications of the option selected during the conceptual design process in order to develop contract documents; and prepare the final design which will solve the given problem in an efficient manner, be easy to maintain, and meet all applicable codes and regulations. Prepare applications and submittals for regulatory agency reviews; obtain all necessary permits for construction. Solicit proposals, select, and negotiate consultant contracts; review consultants' designs, plans and specifications and administer contracts.

Prepare a contract which will govern the construction of the project to include compliance with all applicable federal, State and local regulations; prepare and distribute notice inviting bids to inform potential bidders on how they may obtain a copy of the specifications, the time and place of the pre-bid meeting, and the date, time and place of the bid opening; manage the distribution of plans and specifications to ensure fairness in the bidding process; conduct the bid opening in order to select a contractor to construct the project; negotiate and execute a contract; administer the construction program in order to complete the project within schedule and budget; negotiate and prepare change orders; perform field inspections and final inspections; prepare and publish a notice of completion; verify that all legal requirements governing termination of the construction contract have been met in order to process the contractor's final billing and close out the contract; document changes to park facilities; prepare operating manuals of newly installed facilities; and conduct a meeting with all interested personnel to review the project and recommend procedural or design changes to avoid problems on future projects.

Provide technical oversight and expertise by overseeing construction performed by field staff to ensure compliance with all codes, regulations and policies governing construction within State Parks; provide technical expertise in civil engineering to designers and planners from different backgrounds to ensure technical adequacy of their work; and plan and oversee field surveys, mapping, soil tests, and other engineering services in support of smaller projects being constructed by field staff.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Working knowledge of:** sewer and water distribution system design; earthwork; septic system design; roadway design; and drainage design. **General knowledge of:** civil engineering design; site utility systems; engineering economics; applicable codes and regulations. **Ability to:** produce engineering designs, drawings and specifications for bidding and construction.

**Division of Water Resources:** Develop forecasts of water demands for future needs of the State by projecting future growth trends based on analysis of past growth in population, agriculture and mining, and combining projected trends with available water use data to identify areas where additional water supplies will be needed in the future and to develop courses of action and feasible alternatives to meet demands; and develop estimates of available water supply for use in the various groundwater aquifers and river systems in the State.

Prepare technical reports concerning the results of water demand forecasts by writing a draft text, developing tables, generating figures, and editing corrections and updates to the text.

**BENCHMARK DESCRIPTIONS (cont'd)**

**PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES (cont'd)**

**Division of Water Resources: (cont'd)**

Take claims of vested water rights (Grandfather W.R. pre-1905); evaluate for historical accuracy and prepare a Preliminary Order of Determination; hold hearings on objectives; prepare a Final Order of Determination and testify in District Court as to hydrographic findings, historical documents and crop water consumption; and prepare an abstract of claims and Final Decree for the District Judge's signature.

Perform review of proofs of beneficial use, reject any that have discrepancies and return to the sender for corrective action, distribute copies of the proofs of beneficial use and cultural maps appraised as technically correct to the appropriate offices or field investigation teams, and maintain and update documents' records, verify accuracy of proofs of beneficial use and cultural maps by performing field investigations.

Perform technical and statutory review of water right applications to determine whether the application is acceptable to be filed and published for public notice or if it must be returned for correction. Review the more complex and controversial water rights applications and prepare tentative permit terms and conditions to include supporting map, division records, engineering reports and maps, and water right abstracts to determine the availability of water, any conflict with existing water rights, and any detrimental effect upon public interest. Review work of lower level staff members.

Oversee the Truckee River mapping sections and Truckee River Report of Conveyance or Ownership of Water Rights. Perform data analysis, regional hydrology studies, well interference testing and inventory of pumpage. Perform safety inspection of existing dams and prepare report of findings and recommendations to owners and interested parties. Assist implementing and enforcing water well and related well drilling regulations.

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Working knowledge of:** Nevada Water Law, rulings and orders of the State, regulations for the drilling of water wells and related drilling, interstate compacts, intrastate water agreements and federal government water policies; procedures to conduct hearings. **Ability to:** perform surveying and hydrographic engineering calculations; write concise and factual draft rulings of the State Engineer or analytical reports to advise the State Engineer on water related issues.

**DEPARTMENT OF HEALTH AND HUMAN SERVICES**

**Health Division: Bureau of Health Protection Services-** Review and approve engineering plans and specifications, the construction of swimming pools and spas, public accommodations, State Public Works Board projects and schools, jails, food and drink establishments, recreational vehicle parks and individual wastewater disposal systems in order to code the standards which apply to the design for the purpose of protecting the public and the environment from dangerous health impacts and promote proper sanitation and safety in the product.

Research statutes, codes, standards, technical publications and reports for the purpose of revising and/or developing regulations which, after obtaining comments from public and local governments and from public hearings, are submitted to the State Board of Health for adoption.

Perform inspection, investigation and enforcement functions to ensure the promotion of acceptable standards of public health, sanitation, cleanliness and safety by inspecting the construction and operation of facilities and systems regulated by the State Board of Health to determine compliance with the design and applicable regulations; investigate deviations to determine the facts, causal factors, responsibility for the problem and the severity of degradation; prescribe corrective action and/upon satisfactory correction, remove restrictions.

**BENCHMARK DESCRIPTIONS (cont'd)**

**PROFESSIONAL ENGINEER (cont'd)**

**DEPARTMENT OF HEALTH AND HUMAN SERVICES (cont'd)**

**Health Division: Bureau of Health Protection Services- (cont'd)**

Provide professional consultation to the private and public sector and at engineering functions to enhance and promote public health, sanitation, cleanliness and safety in the State.

These Benchmark Descriptions are used for classification, recruitment and examination purposes. It is not to be considered a substitute for work performance standards for positions assigned to this class.

	<u>6.207</u>	<u>6.226</u>
ESTABLISHED:	7/1/93P 8/31/92PC	7/1/93P 8/31/92PC
REVISED:	11/17/93UC	11/17/93UC
REVISED:	6/29/95UC	6/29/95UC
REVISED:	7/1/01LG	7/1/01LG
REVISED:	11/8/05PC	11/8/05PC