

HIGHWAY DESIGNER I

DESCRIPTION: Under general supervision of a Registered Professional Engineer, performs technical engineering design work of moderate scope and complexity in the calculation and preparation of plans for minor projects or for portions of other projects for highways, and related civil or transportation engineering projects; performs related work as required.

EXAMPLES OF WORK: (A position may not be assigned all the duties listed, nor do the listed examples include all the duties that may be assigned.)

Prepares design plans for entire minor construction projects, which includes the design of resurfacing, restoration, and rehabilitation projects with minor roadway widening and culvert extensions; or minor new and reconstruction, which is the design of short segments of reconstructed roadway.

Performs design tasks on portions of major projects, as assigned, to assist the project designer(s).

Computes dimensions, curves, areas, volumes, profile grades, elevations, quantities, and distances to establish exact information upon which to determine locations, quantities, types and sizes of construction materials and land to be used in projects.

Revises diagrams, data and information on plans, design standards, and charts to correct errors, discrepancies, and obsolete portions of construction plans.

Completes plan-in-hand report forms.

Transfers survey data, sketches, and information to plans.

Draws property and right-of-way boundaries along existing and proposed highway centerlines and survey lines on plats, plans, and aerial photographs.

Cross-checks the calculations, detailed drawings, and finished plans prepared by co-workers to ensure completeness, accuracy, and adherence to standard specifications.

Communicates with co-workers to interpret plans or guidelines, solve problems, and obtain clarification of design concepts or survey data.

FULL PERFORMANCE KNOWLEDGE, ABILITIES AND SKILLS REQUIRED: (These may be acquired on the job and are needed to perform the work assigned.)

Knowledge of: Nebraska Department of Roads (NDOR) Roadway Design Standards and AASHTO Roadway Design Standards; limited knowledge of Nebraska Standard Specifications for Highway Construction; very limited knowledge of hydraulics and hydrology; the development process of a complete set of plans including how to prepare designs, utilize standard specifications, and tabulate data in chart form; format, contents, and use of plans, manuals, and project files including appropriate lettering styles, widths, and sizes required or use on a variety of plans.

HIGHWAY DESIGNER I (continued)

Ability to: perform mathematical calculations including geometry, algebra, and trigonometry manually or with the aid of a calculator or computer; read, understand, and interpret the terminology and symbols used in survey notes, plans, and aerial photographs; detect errors, discrepancies, and omissions through examination of detailed drawings, tabulations, calculations and notes; accurately transfer information in numerical, written, or sketched form from sources such as legal descriptions, survey notes, aerial photographs, and preliminary sketch sheets to plans; understand land descriptions including units of measure and bearings.

Skill in: use and care of assigned equipment.

ENTRY KNOWLEDGE, ABILITIES, AND SKILLS REQUIRED: (Applicants will be screened for possession of these through written, oral, performance, and/or other evaluations.)

Knowledge of: mathematics including algebra, geometry, and trigonometry; basic engineering terminology.

Ability to: understand engineering survey notes; read design plans, illustrate ideas in two and three dimension drawings, charts, and graphs; legibly print numbers and letters and accurately draw curves and lines; communicate with other personnel to resolve differences and convey ideas.

Skill in: operating CAD equipment.

JOB PREPARATION GUIDELINES: (Entry knowledge, abilities, and/or skills may be acquired through, BUT ARE NOT LIMITED TO, the following coursework/training and/or experience.)

Any combination of training and/or experience that will enable the incumbent to possess the required knowledge, skills, and abilities. A general qualification guideline for positions in this class is a high school education or the equivalent AND education or experience in drafting, engineering, or highway construction.