

HIGHWAY BRIDGE DESIGNER I

DESCRIPTION: Under limited supervision of a structural designer, performs technical engineering geometric (not structural) design work in the calculation and preparation of plans for bridges and related civil or structural engineering projects; performs related work as required.

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

Prepares plans as directed by the structural designer for assigned bridge construction projects.

Computes dimensions, curves, profile grades, elevations and distances necessary for overall bridge layout and ensures proper fit of all bridge components.

Revises data and information on plans, design standards, and the Bridge Office Policies and Procedures Manual.

Transfers survey data, sketches and information to plans.

Develops plans for continuous concrete-slab bridges using data charts and standard plans.

Communicates with co-workers to ensure proper preparation of plans, to solve problems, and to obtain clarification of design projects.

Reviews shop plans for general compliance and agreement with contract plans.

Develops, drafts, and files county standard bridge plans.

Fills requests for county standards from consultants and county agencies.

Revises plans as directed by the structural designer, including investigating the exact nature of the problem, recommending a solution, and revising the plans for the corrective action taken.

Cross-checks calculations and details prepared by co-workers to ensure completeness, accuracy, and adherence to standards.

Reviews consultant hydraulic reports for state and county systems including verifying hydraulic computations and compliance with applicable hydraulic analysis guidelines/contract; evaluates flood plain risks/impacts, field inspection, documentation, and reporting comments.

Assists with preparations for consultant negotiation meetings by compiling required information.

Develops computer-stored master sheets.

Develops standard details.

HIGHWAY BRIDGE DESIGNER I (continued)

Provides liaison with Roadway Design and other divisions, discussing design problems and identifying potential situations.

Responds to questions from fabricators and contractors.

Prepares plans for concrete box culverts.

Assists with scour critical bridge inspection and processing as a member of the inter-disciplinary scour inspection team, by providing physical assistance in measuring, offering judgements of conditions, and related input.

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

Knowledge of: NDOR Bridge Design Standards and Bridge Office Policies and Procedures Manual (B.O.P.P.); moderate knowledge of "Nebraska Standard Specifications for Highway Construction"; pertinent parts of "NDOR Roadway Design Standards" and "AASHTO Standard Specifications for Highway Bridges."

Ability to: detect errors, discrepancies and omissions through examination of detailed drawings, calculations and notes; accurately transfer information in numerical, written or sketched form from sources such as survey notes, preliminary sketch sheets and design computations to design plan sheets; read, understand and interpret the terminology and symbols used in roadway plans, traffic signing and lighting plans.

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

Knowledge of: basic engineering terminology; the development process of a complete set of plans including how to prepare designs by utilizing standard bridge base sheets and details.

Ability to: understand engineering survey notes; read bridge design plans; illustrate leads in two and three dimensional drawings; legibly print numbers and letters and accurately draw curves and lines; communicate with other personnel to resolve differences and convey ideas; read, understand, and interpret the terminology and symbols used in survey notes and plans.

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, abilities and skills. A general qualification guideline for positions in this class is high school education or equivalent AND education or experience in detailing engineering, or related bridge construction.