

STATE OF WISCONSIN  
CLASSIFICATION SPECIFICATION

STRUCTURAL ENGINEER - TRANSPORTATION  
CLASSIFICATION SERIES

I. INTRODUCTION

A. Purpose of This Classification Specification

This classification specification is the basic authority under ER 2.04, Wis. Adm. Code, for making classification decisions relative to present and future professional structural engineering positions within the Department of Transportation. This classification specification is not intended to identify every duty which may be assigned to positions, but is intended to serve as a framework for classification decision-making in this occupational area.

Classification decisions must be based on the “best fit” of the duties within the existing classification structure. The “best Fit” is determined by the majority (i.e., more than 50%) of the work assigned to and performed by the position when compared to the class concepts and definitions of this specification or through other methods of position analysis. Position analysis defines the nature and character of the work through the use of any or all of the following: definition statements; listing of areas of specialization; representative examples of work performed; allocation patterns of representative positions; job evaluation guide charts, standards or factors; statements of inclusion and exclusion; licensure or certification requirements; and other such information necessary to facilitate the assignment of positions to the appropriate classification.

B. Inclusions

This classification specification encompasses positions providing professional structural engineering duties and expertise in the planning, evaluation, analysis and design of structures. The positions perform structural engineering work related specifically to the planning, design, maintenance and rating of bridges, box culverts, overhead roadway traffic signage, and other transportation system components where an analysis of the distribution of loads, stresses and strength is required. Positions are located in the Division of Transportation System Development, Bureau of Structures. Positions included in this series must meet the Qualifications prescribed under Section I. C.

C. Qualifications

Positions included in this series have duties and responsibilities of such a nature that it is required (by federal or state law or by position review and analysis) that the incumbent have one of the following:

- Registration as a Professional Engineer as determined by the Department of Safety and Professional Services per s.443.04, Wis. Stats.;
- A specific record, issued by the professional engineering section of the Department of Safety and Professional Services, showing 4 years or more of experience in engineering

work of a character satisfactory to the professional engineering section and satisfactory completion of the fundamentals of engineering exam;

- Have graduated from a recognized college or university with a degree in a related engineering field such as electrical, mechanical, civil or environmental engineering ; OR
- Have equivalent professional training and practical experience so as to be deemed a professional engineer as defined by the Department of Safety and Professional Services per s. 443.01, Wis. Stats. and also deemed to be qualified to engage in professional engineering practice as determined by the Department of Safety and Professional Services per s. 443.04 or 443.05, Wis. Stats.

Positions not having duties and responsibilities which require such credentials shall be allocated to a different classification.

Positions at the Structural Engineer Advanced level are in responsible charge of engineering related documents and therefore are required to have a professional engineer designation per WI Statutes 443.

D. Exclusions

Excluded from this classification series are the following types of positions:

1. Positions which meet the definition "Management" and "supervisor" as defined in s. 111.81(13) and (19), Wis. Stats., as administered and interpreted by the Wisconsin Employment Relations Commission.
2. Positions which do not require that the incumbent perform professional engineering duties and be a professional engineer by background and training for the successful performance of the tasks assigned to the position.
3. Positions which perform civil engineering duties which are not related to the planning, design and rating of structures and are more appropriately classified in the civil engineer transportation classification series.
4. Positions which are not located at the Department of Transportation.
5. All other positions which are more appropriately identified by other classification specifications.

E. Entrance Into and Progression Through This Series

Employees enter positions within this classification series by meeting the qualifications under Section I. C. and by competition. Progression to the senior level will occur through reclassification. Progression to the advanced level may occur through reclassification based on logical and gradual changes to a position's duties and responsibilities.

## II. DEFINITIONS

A. Definition of terms used in this classification specification

1. Project: A well-defined sequence of activities that, when completed, result in a tangible product. Tangible products for structures can include: bridges, highway overpasses, box culverts, retaining walls, over road signage and noise barriers.
2. Project Manager: The person having primary responsibility over the scope, schedule, budget, resources and overall project quality. The project manager will consider advice and alternative solutions from team members, functional managers, and central office support units to meet the project objectives. The project manager may have one or more project leaders reporting to them.
3. Project Team: An interdisciplinary team made up of staff from departmental functional areas as well as external stakeholders as appropriate to the scope of the project. The project team is led by the project manager and works together to create and carry out the project plan. Individual team members may be active or inactive as the project progresses through different phases.
4. Project Leader: The person having responsibility for coordinating and performing project activities in a functional area under the direction of a Project Manager. Project Leaders may also review and coordinate consultant prepared plans under the direction of a Project Manager.

## **B. Classification Definitions**

### **STRUCTURAL ENGINEER - TRANSPORTATION**

Positions work under close, progressing to limited supervision. Civil and structural engineering principles and practices have been learned prior to entrance to this series. The primary emphasis is in developing skills in working with and/or understanding the program, state systems, agencies, public user group(s), and the mechanics of the structural engineering program. Positions receive specific guidelines and instructions on work assignments, and the supervisor determines the priorities and provides clearly defined objectives. Emphasis is in developing an understanding of statutes, rules, regulations, administrative codes and standards required for structural engineering and applying them. Initial work assignments are well defined and of short-term duration. Over time the work assignments will become more difficult, and the employee is expected to exercise judgment in determining specifics and priorities. The supervisor or project manager reviews the work to determine completeness, accuracy, and adherence to policy. Positions may assist Project Managers on review and coordination of consultant prepared plans, work directly with outside consultants and engineers without the supervisor, and may have assignments that cross program lines and participate on project teams.

### **STRUCTURAL ENGINEER – TRANSPORTATION - SENIOR**

Positions at this level work under general supervision. The work assignments the employee is expected to complete include the full range and scope of their specific project(s) or program duties. Positions at this level have extensive authority in carrying out and independently implementing their assigned responsibilities. The work at this level requires a high degree of interpretation and creativity in evaluating structural engineering aspects of new technologies. Positions at this level make decisions independent of supervisory oversight; function as a project leader with the work being reviewed after the decisions have been made. Position may also assist Project Managers on review and coordination of consultant prepared plans, work directly with outside consultants and engineers without the supervisor, and may have assignments that cross program lines, and participates on project teams.

**STRUCTURAL ENGINEER – TRANSPORTATION - ADVANCED**

This is the objective level for positions in the Division of Transportation System Development Bureau of Structures, which under general policy review; provide advanced professional structural engineering expertise in their assigned structural engineering program/project(s). Positions at this level function as the primary structural engineer for a specific aspect of a department program/project(s) or function as a technical expert serving as a structural program engineer. Structural engineer positions at this level perform the most complex, difficult, and advanced structural engineering work which includes multi- and cross-program issues, and which often include policy-making responsibilities. Employees at this level have engineering responsibilities that require continually high-level contacts with public and private officials and engineers/engineering consultants on highly sensitive and complex structural engineering reviews. The engineering knowledge at this level includes a broader combination than found at the senior level. Assignments are broad in scope and continually require the incumbent to use independent judgment in making professional engineering decisions. Positions at this level make independent decisions and perform work in response to program needs as interpreted by the employee with little or no review of the work by the supervisor. Participate on project teams.

**C. Functional Area Descriptions**

**Structures Design Program:** Determine structure requirements for preliminary structure plans; evaluate hydraulic studies responsible for the structural engineering load evaluation of structures, the engineering evaluation and replacement criteria for structures; design all types of DOT bridges and related structures including long-span bridges, curved and highly skewed bridges, and complicated railroad, movable span, over highway signs, and pedestrian bridges; design bridge rehabilitation and structural repairs; design noise barriers, foundations and retaining structures in problem soils; communicate frequently with regional staff, FHWA, and the public; prepare economic studies and cost comparisons for materials, structure types, and alternate standard details; advise and train personnel in the current application of design practices, details, and standards for various types of highway structures; review consultant designed structures; approve special modifications; train and coach consultant project members; evaluate consultants' performance; provide specialized review of contract plans and proprietary fabrication drawings for structures including, but not limited to, retaining walls, noise barriers, over road signage, pedestrian bridges and precast culverts/small bridge systems; provide engineering support for the design of buried structures and examine plans to ensure completeness and accuracy for bidding and construction proposes.

**Structure Maintenance and Inspection Program:** Coordinate the bridge maintenance and inspection program for all state, county, city, and township bridges within the assigned area of the state; lead and inspect state-maintained bridges on state trunk highways, off-system bridges on city streets, sign bridges, bridges on state-owned railroad corridors, interstate bridges at state boundaries and other structures over state roads; review inspection reports and develop repair work priority needs; develop an annual and biennial budget for structures in assigned area and schedule time to accomplish project and prepare annual special bridge maintenance budget and 5-Year long-range bridge maintenance program.

**Structural Development Program:** Coordinate and develop the civil and structural engineering design systems, plans and goals; write new or evaluate and update existing civil and structural engineering design systems; determine deficiencies or errors and make improvements; develop design concepts, design methods, engineering theory, details or other criteria into civil and structural engineering design systems; develop projects related to bridge manuals and standards

and create new or evaluate and update existing text for the Bridge Design and Design System User Manuals and structural standard details including recommending policy and procedures, and incorporate recommendations into manuals and standards; create new or evaluate and update existing structure design charts, design curves, graphs, tables, structure design example problems; prepare economic studies and cost comparisons; advise and train regional personnel and act as the technical consultant regarding bridge related products, materials, standard details, bridge manuals, bridge preservation, engineering design policies and procedures, current AASHTO specifications and design system applications; perform design or analysis of unique or complex structures; review and evaluate research reports, studies, and investigations; research, evaluate, and recommend the implementation of new structural engineering design theories, maintain research files, manufacturer's product files, and the engineering reference library; perform the analysis of structure deterioration curves, and the establishment of the annual structure cost needs; perform structural analysis, ratings, and prepare Finite Element Models for the use in rating structures for the life of the structures; prepare rating data files in use for the structural evaluation program and its use with the Division of Motor Vehicle oversize and overweight program.

### III. ADMINISTRATIVE INFORMATION

This classification series was created effective June 30, 2013, and announced in Bulletin OSER-0327-MRS/SC to describe positions that perform structural engineering work at the Department of Transportation. These positions were formerly part of the Civil Engineer Transportation classification series and were removed to better align the work with the needs of the department.

This classification series was modified effective April 24, 2022, and announced in Bulletin DPM-~~XXXX~~0572-CC/SC to include positions formerly classified within the Civil Engineer-Transportation classification series working on the Structure Maintenance and Inspection program and to make other general updates in the definition section.

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