

Effective Date: October 12, 1997
Modified Effective: August 6, 2007
Modified Effective: July 18, 2010
Modified Effective: June 30, 2013

**STATE OF WISCONSIN
CLASSIFICATION SPECIFICATION**

**CIVIL 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 civil engineering positions within the Department of Transportation. Positions allocated to this classification series perform duties that are professional in nature as defined in s. 111.81(15), Wis. Stats. 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 civil engineering duties and expertise for multi-modal transportation programs. The positions perform engineering work in such areas as technical services, planning, design, construction, operation and maintenance of transportation facilities. 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 that require such credentials shall be allocated to a different classification series.

Positions at the Civil Engineer Transportation Advanced level in the Division of Transportation System Development 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. "Management" and "supervisor" positions 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 located at the Department of Transportation, Bureau of Structures that perform structural engineering work related to the planning and design of structures and are more appropriately classified in the structural engineer 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 competitive examination. 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. Program Leader: An employee who is the technical expert for a specific area(s) and who may have some program oversight to ensure uniformity within a specific engineering area(s).
2. Project: A well-defined sequence of activities that, when completed, result in a tangible product. Tangible products can include: wetland bank plans; right-of-way plats; signing, marking, and signal plans; maintenance plans; pavement reports; development of a bridge or road design; construction of a transportation improvement project.
3. 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. May have one or more project leaders reporting to them.
4. 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.
5. Project Leader: The person having responsibility for coordinating and performing project activities in a functional area under the direction of a Project Manager.

B. Classification Definitions

CIVIL ENGINEER - TRANSPORTATION

Positions work under close, progressing to limited supervision. Civil 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 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 in the program area 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 engineering judgment in determining specifics and priorities. The supervisor or project manager reviews the work to determine completeness, accuracy, and adherence to policy. Positions may work directly with outside consultants and engineers without the supervisor and may have assignments that cross program lines, and participates on project teams.

CIVIL ENGINEER - TRANSPORTATION - SENIOR

This is the objective level for positions in the Division of Transportation System Development Regional Offices that function 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 their assigned responsibilities involving independently implementing the assigned responsibilities. The work at this level requires a high degree of interpretation and creativity in evaluating engineering aspects of new technologies. Positions at this level make decisions independent of supervisory oversight;

function as a project or program leader with the work being reviewed after the decisions have been made. Positions participate on project teams.

CIVIL ENGINEER - TRANSPORTATION - ADVANCED

This is the objective level for positions in the Division of Transportation System Development statewide bureaus and the Division of Transportation Investment Management, which under general supervision and policy review, provide advanced professional engineering expertise in their assigned program/project(s). Positions at this level function as the primary engineer for a specific aspect of a department program/project(s) or function as a program engineer in responsible charge of major projects within an assigned geographic area, or are in responsible charge of multiple complex projects. Engineer positions at this level perform the most complex, difficult, and advanced 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 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. Participates on project teams.

In the Division of Transportation System Development, Regional Offices, the Civil Engineer Transportation Advanced (CET Adv) level is a professional engineer responsible for managing projects or programs, in their assigned area of expertise, ranging from simple to complex using a program management process to ensure milestones are met and key tasks are performed to standards. The CET Adv has authority to delegate and monitor work assignments and resource allocations on the assigned group of projects or programs to other staff under their direction. The CET Adv, as a Project Manager, manages all aspects of the project or program and is considered delegated with the primary project management decision-making authority, second to the supervisor.

As a Project Manager in the Project Development Section, the advanced engineer performs all of the following on assigned projects: scopes out consultant contract requirements and activities; provides engineering direction to consultants regarding scope, standards, and quality; monitors resources (staff and budget) on multiple and/or large complex projects and recommends resource changes to supervisor; establishes project budgets such as non-let, delivery, consultant, and let contract estimates; reviews and recommends change orders; approves contract modifications up to \$25,000; and signs a variety of plans and documents.

C. Functional Area Descriptions

Division of Transportation Investment Management

Bureau of Aeronautics - Airport Development Program: Provide consultation and advice to communities in the preparation and update of their 5-Year Airport Improvement Program; assist communities with airport planning needs; plan, program and schedule all improvement projects for assigned airports; assist airport sponsors in meeting federal rules and regulations to ensure eligibility for federal funding; coordinate airport zoning, airspace reviews, design and construction activities; coordinate environmental and land acquisition issues; direct and

approve consultant activities in planning, design and construction on airport projects, approve pavements and accept work for all assigned projects.

Bureau of Aeronautics - Airport Planning Program: Develop, analyze and monitor the statewide 5-Year Improvement Program; analyze, prioritize and recommend requests for state and federal funding with respect to constraints including biennial budget and federal limitations in special funding categories; monitor and report status of federal and state funds; assist in development of guidelines to extend and refine development of programs and distribution of funds; prepare annual program publication and quarterly status report to FAA on Grant Programs; review and analyze specific requests and proposals for program changes; provide consultation and advice to airport owners in program development and planning activities and assist airport owners in preparation of their improvement programs; work with airport owners, development engineers and FAA to identify airport needs, formulate projects and petition for projects; provide guidance to airport owners on zoning and other matters to ensure eligibility for federal and state aid.

Bureau of State Highway Programs – Program Development and Analysis: Develop and maintain data, analytical methods and administrative processes to evaluate, approve, prioritize and schedule projects proposed for the Backbone and Major Highway Programs; evaluate and recommend approval, disapproval or modifications for projects related to concepts and costs; perform special engineering studies required to evaluate best value asset management methodology related to Six-Year Highway Improvement Program; develop and refine program guidelines; monitor development and implementation of the Department's Six Year Highway Improvement Program, including the Major projects, Existing Highway (3R), State Bridges, Interstate (I4R), Roadside Facilities and Safety components; provide guidance, counsel and technical support to regional offices; ensure compliance with program guidelines; identify priority areas of state highway improvement needs; develop data, analyses and methodologies for establishing and refining program policies, guidelines and implementation procedures; prepare biennial publications, monthly status reports and policy and procedure manuals; review and approve requests and proposals for program changes and analyze changes to funding; collect and maintain comprehensive pavement condition data; provide pavement management expertise to develop and maintain pavement management software to produce viable pavement improvement alternatives for planning level use in WisDOT's asset management system – MetaManager; provide pavement management expertise and analysis for detailed project level analysis; oversee the development and maintenance of pavement analysis tools in the Wisconsin System for Local Roads (WISLR); provide staff and technical support to various committees and commissions.

Bureau of Transit, Local Roads, Railroads, and Harbors - Railroad Design and Construction Program: Provide railroad design and construction expertise and specialized design services to Regional Offices and consultants regarding railroad operations and railroad impacts on street and highway improvement alternatives; develop or evaluate railroad infrastructure alternatives and evaluation of project cost; advise and assist project managers and consultants in making and completing conceptual and contractual arrangements with railroads for work at crossings including surface reconstruction, installation and/or upgrading of warning devices, construction of grade separation structures, and acquisition of needed interests in lands; negotiate with railroads in completing necessary agreements, stipulations and other arrangements with railroads in all WisDOT highway and railroad projects; represent the Department at public hearings before the Office of Commissioner of Railroads (OCR) on proceedings related to changes at crossings, justification of improvement alternatives, cost sharing issues and other matters; review contract special provisions to ensure proper notice to contracts of railroad arrangements on projects.

Division of Transportation System Development Regional Offices

DTSD Regions - Electrical Operations Program: Coordinate and monitor electrical projects maintaining highly specialized electrical and traffic operations facilities; develop plans for traffic operations and maintenance projects including budget recommendations; monitor and analyze costs of operations; design complicated traffic signals, lighting and traffic control plans; administer, install, maintain, and operate urban area computerized interconnected time of day traffic responsive traffic signal system; direct layout of lighting and signals projects and use computer simulations models for analysis and improvement of signal system and integrated corridor operations.

DTSD Regions - Highway Access Management Program: Oversee access management for the state trunk highway network in the region; advise project development teams on the purchase of access rights and ensure compliance with the Statewide Access Management Plan; negotiate highway jurisdictional transfers with local units of government; perform special studies relating to statewide system plans, freeway access, and local land use transportation issues; develop, initiate, manage and implement statutory access control projects; review abutting subdivision plats, other land use change proposals and developments abutting the state trunk highway system, ensuring that sound engineering principles are applied and traffic impacts mitigated.

DTSD Regions - Local Programs: Development, implementation, and management of the Region's Local Programs; explain application requirements and deadlines to local units of government; pre-scope and define the project concept, cost, and environmental documentation required for design authorization; review and recommend approval of State/Municipal Project Agreements to ensure conformance with engineering practices and with statewide cost participation policy; analyze individual project data to ensure the integrity of the schedules and funding; explain annual project information to MPOs; provide guidance and oversight to consultants in delivering local project plans and letting documents; provide approval for PS&E documents, work orders, negotiations, contract modifications and prior approvals for local projects; coordinate with local units of government and provide oversight of engineering practices to fulfill responsible charge for federal aid projects in the Local Program.

DTSD Regions - Maintenance Program: Develop and administer the regional maintenance program including winter maintenance, preventative maintenance, roadway and roadside maintenance, regulation management, and hazardous waste management; monitor and evaluate maintenance operations to ensure consistency and uniformity with state policy and engineering standards; oversee engineering integrity of roadside facilities; evaluate engineering; research into development of new practices in roadway, winter and related maintenance activities; serve as liaison to Division of Emergency Management local offices, review damages and make recommendations on repairs when a catastrophe or natural disaster affects the integrity of STH system; recommend and assist in development of long range improvement plans; assess maintenance operations for engineering integrity; establish and administer maintenance contracts; recommend and evaluate policies and guidelines; conduct statistical analyses; maintain communications and coordination within regional offices, statewide bureaus, counties, local governments and officials, Federal Highway Administration (FHWA), legislature, and the general public.

DTSD Regions - Materials Program: Prepare sampling and testing guides for material quality control construction projects; approve construction material certifications and field reports; inspect and approve asphalt and concrete plants and laboratory testing of materials; evaluate

pits and quarries as sources of aggregate; perform Independent Quality Assurance and testing program requirements; perform manufacturing plant inspections (aggregates, asphalt, concrete pipe, metal pipe, brick and block); provide expert guidance to construction personnel in construction problems relating to concrete and asphalt and solve problems relating to material quality and material mixes; coordinate and maintain the region density testing programs of soils, asphalt pavements and concrete deck overlays; provide materials specification development for plan preparation; promote uniform regional materials policies; serve as materials contact for regional staff, consultant personnel, statewide bureaus staff, transportation industries, FHWA, and other governmental agencies; investigate field materials problems and provide solutions; certify acceptability of the materials and document all construction related projects finals; coordinate materials research activities.

DTSD Regions - Pavement Design Program: Prepare pavement design reports including pavement structure requirements necessary for plan preparation and special provisions development based upon evaluation of the existing pavements, soil types, and engineering characteristics; conduct life cycle cost analysis to select the cost effective pavement types; perform WisDOT and AASHTO method calculations to determine the appropriate pavement and base coarse thickness and research pavement maintenance and serviceability characteristics; review, evaluate, and approve consultant pavement reports and pavement designs; coordinate with Soil Engineer all pavement boring activities; meet with industry representatives regarding methods related to pavement structures and construction, evaluate their potential, and recommend implementation; provide engineering consulting services relative to pavement design to other staff; participate in conflict resolution processes with either contractors or consultants as appropriate regarding pavement design or construction issues; assist planning/programming personnel in developing computerized logic for suggesting short and long-term pavement needs; assist in the Pavement Management and Pavement Structural design functions in developing treatment logic for the Pavement Preservation Policy.

DTSD Regions - Planning Engineering Studies Program: Perform engineering studies on enumerated Major Projects, on highways identified for official mapping as an officially designated freeway/expressway under WI Statute 84.295(10), on jurisdictional transfer life cycle compensation determinations, or any other type of planning study where high level, detailed highway, traffic, and operational engineering is required to meet the federal and state guidelines, statutes, and policies for an approved study under NEPA, WEPA, or other pertinent state and federal regulations. Job duties are responsible to develop, monitor and report project schedules, budgets, issues and resources; direct project surveys and studies, meet and coordinate with property owners, public officials, and agencies regarding projects; prepare contract change orders and amendments and administer consultant contracts; complete environmental and preliminary design reports; coordinate with all functional areas and resolve project conflicts; apply engineering and quality principles, the statewide scoping process and design standards to adequately complete the study project; complete the preliminary design plans and specifications on schedule and on budget; oversee, review and compute vertical and horizontal alignment; size and length of drainage structures; all estimate of quantities, costs, detailing of plans, drawing provisions of the contract, the construction time analysis necessary for the successful approval of a engineering study within the prescribed change management goals for project approval.

DTSD Regions – Project Development Program: Develop, monitor and report project schedules, budgets, issues and resources; direct project surveys and studies, meet and coordinate with property owners, public officials, and agencies regarding projects; ensure all project permits are secured and filed; prepare contract change orders and amendments and administer consultant contracts; complete environmental and design reports; coordinate with all

functional areas and resolve project conflicts; apply engineering and quality principles, the statewide scoping process and design standards to adequately complete the project; complete the design plans and specifications on schedule and on budget; oversee, review and compute vertical and horizontal alignment; calculate size and length of drainage structures; prepare and/or review all estimates of quantities, costs, detailing of plans, drawing provisions of the contract and the construction time analysis; mentor employees involved with project development; ensure the inspection of contractor work, compliance with plans and specifications, documentation and testing of construction materials and oversee the complete administration of construction contracts by WisDOT and consultant staff; computation and assurance of final pay quantities and submittal of intermediate and final pay estimate.

DTSD Regions - Safety Programs: Development, implementation, management, and coordination of the Region's Safety Programs, Transportation Economic Assistance (TEA), Statewide Multi-Modal Improvement programs (SMIP), and the congestion management and air quality program; explain application requirements and deadlines to potential sponsors; recommend program requests to appropriate work units; review and recommend approval of State and Municipal Project Agreements to ensure conformance with engineering practices and with statewide cost participation policy; analyze the individual project data to ensure the integrity of the schedules and funding; explain annual project information to MPOs; and recommend approval of the annual MPO TIP.

DTSD Regions - Six-Year Program: Development, implementation, and management of the six-year program; analyze the State Trunk Highway system deficiencies and needs to identify candidate projects; prioritize projects to establish the preliminary program; prescope and define the project concept, cost and environmental documentation required for design authorization; review and recommend approval of State/Municipal Project Agreements to ensure conformance with engineering practices and with the statewide cost participation policy; analyze the program to ensure the integrity of the schedule and funding; explain annual WisDOT project information to Metropolitan Planning Organizations (MPOs); and recommend approval of the annual MPO Transportation Improvement Program (TIP).

DTSD Regions - Soils Program: Prepare soil reports; recommend solutions to problems relating to soil behavior and subsurface conditions; evaluate consultant prepared plans and techniques for adequacy of the soils related items; provide information to design staff in preparation of project pavement design report; prepare pedologic and geologic mapping; provide recommendations during negotiations and administration of geotechnic related consultant contracts; meet with industry representatives regarding methods related to geotechnic situations and their construction, evaluate their potential, and recommend implementation; develop and implement geotechnic subsurface investigations for transportation facilities including evaluating project to determine investigative needs, coordinating analyses, formulating design alternatives and solutions, making recommendations and preparing written report; perform coordination with all necessary personnel to complete investigations; perform and/or coordinate other geotechnic studies including slope stability and consolidation analyses, geosynthetic designs, and marsh treatments and crossings; evaluate field soils problems to determine investigative needs, contributing conditions and conduct investigations, testing and analysis to formulate solutions; develop and implement or coordinate geotechnic instrumentation programs including determining required program and equipment, installation of equipment, collection of data, analysis and formation of recommendations; review consultant geotechnical engineering reports and provide technical assistance and training to personnel in geotechnic applications to projects and new technology.

DTSD Regions – Stormwater Program: Perform erosion control and storm water analysis as related to the regions facilities development activities; provide professional engineering consultation to departmental staff and consultants on erosion and storm water impacts; analyze and work with the Statewide Bureaus, Bureau of Technical Services, to evaluate current and proposed legislation related to erosion control, storm water management issues, conduct field reviews and analysis.

DTSD Regions - Structure Maintenance and Inspection Program: Coordinate the bridge maintenance and inspection program for all state, county, city, and township bridges within the region; 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 and schedule time to accomplish project and prepare annual special bridge maintenance budget and 5-Year long-range bridge maintenance program.

DTSD Regions – Traffic Programs: Conduct traffic engineering investigations and studies, write reports and make recommendations for traffic designs and engineering improvements that enhance safety and traffic management on urban, suburban and rural freeway systems; analyze traffic operations at specific locations and use traffic management techniques to make recommendations to regulate and improve traffic flow on freeway and non-freeway locations including roundabout analysis, and signal operations refinements; perform consultative and advisory services for the design, construction, and maintenance sections for improvement projects; provide advice on the use of traffic control devices; perform analysis and make recommendations for various traffic related items such as freeway traffic management, intersection capacity, traffic signals, delay studies, parking restriction, work zone traffic control and others; use computer simulation models for analysis and improvements or operations and safety; conduct road safety audits and speed zone studies; may represent the Region on County traffic committees and coordinate with central office and FHWA liaisons.

DTSD Region – Utility Program: Serve as primary resource for engineering analysis and decision-making expertise regarding utility coordination and permitting; oversee relocation, modification and adjustment of utility facilities and permitting; perform quality control and engineering oversight of the utility program associated with the regional transportation improvement program; apply broad knowledge of engineering design, real estate, utility conflict identification and resolution, utility compensation, scheduling, budgeting, and construction associated with highway improvement projects; resolve utility design and construction conflicts.

Division of Transportation System Development Statewide Bureaus

Bureau of Highway Maintenance – Highway Maintenance, Roadside Management and Roadside Facilities Programs: Assist with administering the state trunk highway maintenance program; monitor and evaluate statewide maintenance operations to ensure consistency and uniformity with Highway Maintenance Manual policy and engineering standards; oversee planning, design, and construction of rest areas and safety weight enforcement facilities; evaluate engineering plans for utility and general purpose installations; conduct research on new practices in roadway, winter and other maintenance activities; be responsible for statewide programs such as winter maintenance including salt acquisition and storage, roadside management, roadside facilities, outdoor advertising control program, utility and other right of way accommodation; serve as liaison to the Division of Emergency Management, review damages and make recommendations on repairs when a catastrophe or natural disaster affects

the integrity of the STH system, coordinate cost recovery for emergency repairs; assess maintenance operations for engineering integrity; develop policies and guidelines related to highway maintenance expectation, performance standard, and engineering procedures; review legislation and draft administrative rules; establish and administer consultant contracts; exercise professional engineering judgment and expertise requiring extensive communications and coordination with regional offices, other statewide bureaus and divisions, other state agencies, FHWA, legislature, and others.

Bureau of Project Development - Contract Development Program: Review and edit contract specification; ensure the plans and contract specifications are in agreement and conform to department policies and standards; coordinate with other units to achieve FHWA authorization for advertising and construction of federal aid projects and delivery of completed bidding proposals for printing and distribution to potential bidders in accordance with approved letting schedules; develop and maintain Standardized Special Provisions (STSP's) for preparing Plans, Specifications, and Estimates (PS&E's) and for providing guidance to DOT and consultant personnel in the preparation and review of PS&E's; review, analyze and coordinate the consultant selection and contract negotiation process.

Bureau of Project Development – Proposal Management Program: Monitor, evaluate and improve the processes used to develop engineer estimates for transportation improvement projects; lead statewide estimating group; monitoring bidding and economic trends and develop guidelines for engineers; analyze estimating indexes and identify and monitor market data sources; administer price escalation bid items and create analytical reports for use during the awards process and for monitoring bid trends; provide engineering analysis for prequalification process including providing input into capacity and capabilities of contractors; complete other engineering tasks in a lead role including training on areas of expertise.

Bureau of Project Development - Standards Development Program: Advise and assist with the formulation, implementation, and maintenance of the Department's standard procedures, criteria, and guides for the geometric design of highways and streets; develop, write, publish and maintain in the Facilities Development Manual standard procedures and criteria for the geometric design of highways and streets; formulate, prepare, write, revise, edit, and publish the Standard Specifications for Structure and Highway Construction, Special Provisions, and other documents; formulate, prepare, write, revise, edit, and publish in the Construction and Materials Manual standard procedures for contract administration of highway contracts; investigate and evaluate the effectiveness of current design procedures, criteria, guides, and practices and develop/recommend appropriate improvements; develop, maintain, and publish standard detail drawings in the Facilities Development Manual; evaluate products to examine their cost-effectiveness and potential for application; develop and maintain guidance, standards, policies and procedures related to drainage, erosion control and storm water quality; develop, implement, train and provide engineering technical support of design methods for engineers using Computer Aided Engineering (CAE) tool for developing transportation improvement projects; research, develop, recommend and implement design methods, policies, procedures, standards and technologies using CAE tools; evaluate research information relative to highway engineering for implementation and/or technology transfer to others; participate on technical committees as the staff specialist on highway design criteria, standard specifications, hydraulic design, and construction administration procedures; provide technical guidance and support to region and statewide bureau staff; provide engineering technical training to staff.

Bureau of Technical Services - Access Management and Utility Coordination Programs: Develop, maintain and implement statewide access management and/or utility coordination policies, specifications and procedures required in order to develop and complete highway

improvement projects, and to control and manage the state trunk highway system; provide technical assistance to region access and utility coordinators and oversee statewide access and/or utility programs; advise statewide bureau and region directors and managers in regard to access and/or utility issues, and coordinate the resolution of problems and conflicts; provide training to region staff members and consultants and coordinate training; represent WisDOT in correspondence, meetings and discussions with property owners, utility providers and other public agencies.

Bureau of Technical Services - Environmental, Air and Noise Programs: Perform erosion control and storm water analysis as related to statewide multi-modal transportation facilities development activities and/or analyze air and noise quality; provide professional engineering consultation to departmental staff and consultants on erosion and storm water, air quality, and noise analysis applications and techniques and on other civil engineering methods which appear to have environmental impacts; analyze and evaluate current and proposed legislation related to erosion control, storm water management issues, noise or air quality; review, analyze and evaluate multi-modal engineering and environmental documents from regions and other state agencies; conduct field reviews and analysis.

Bureau of Technical Services - Geodetic and Photogrammetric Engineering Program: Coordinate all activities related to geodesy, engineering surveying, land surveying, and photogrammetry including Global Positioning System (GPS) surveying methods, geodetic control (Height Modernization, WisCORS), geodetic references, conventional surveying methods, transportation project plats, photogrammetric positioning, digital terrain modeling, and laser scanning (LiDAR) in support of planning, design, construction, and maintenance of transportation improvement projects; serve as primary technical expert to internal and external agencies to address related hardware, software, technical issues, logistics, standards, specifications, procedures, policies, new technologies, and applications; develop and implement research objectives to improve work processes; develop, coordinate and provide training, documentation, and technical support; investigate, develop, publish, implement, and revise standards, specifications and policies; develop, manage, and maintain the vertical, horizontal, and gravitational geodetic control network in support of the Wisconsin Spatial Reference System (WSRS) and its inclusion in the National Spatial Reference System (NSRS); develop, implement, and maintain a geodetic control inventory and geodetic mark maintenance program; direct technical staff engaged in the data acquisition, data analysis, and data submittal phases of geodetic, engineering and photogrammetric positioning; develop, implement and maintain a photogrammetric quality control and assurance program; compute and analyze geodetic, engineering, and photogrammetric positioning data; coordinate, develop, administer, and execute consultant contracts for photogrammetric products/services and geodetic control; advise Regions on contract language for specialized surveying and mapping methods; coordinate the department's survey equipment evaluation process which supports the statewide purchasing of surveying equipment.

Bureau of Technical Services - Geotechnical Program: Develop and implement geotechnical subsurface investigations for various transportation facilities including bridges, box culverts, retaining walls, embankments and airfields including evaluating the project to determine investigative needs, coordinating the field drilling and sampling program, directing the laboratory testing, performing the required analyses, formulating design alternatives and solutions, making recommendations and documenting with written report; perform other detailed geotechnical studies including slope stability and consolidation analyses, geosynthetic designs and marsh treatments and crossings; evaluate field soils-related problems to determine investigative needs, contributing conditions and conduct appropriate levels of investigation, testing and analysis to formulate solutions; develop and implement geotechnical

instrumentation programs including determining the required program and equipment, installation of equipment, collection of data, analysis and formation of recommendations; develop geotechnical engineering reports, provide technical assistance and develop/present training to staff; participate in geotechnical-related research activities; coordinate with other DOT staff, consultants, FHWA, academia, and industry representatives on geotechnical issues; review Regional and consultant geotechnical report/projects; develop geotechnical-related specifications and plan details; review and update geotechnical portions of various Departmental manuals/guides.

Bureau of Technical Services - Pavement Program: Assist and advise engineers in the development and maintenance of standard pavement structure design procedures, criteria and guidelines for transportation facilities; meet with industry representatives regarding methods related to pavement structures and their design, construction and maintenance; evaluate industry proposals, and recommend implementation; develop and update existing procedures/guidelines for the Facilities Development Manual; evaluate pavement structure design software; provide engineering consulting services relative to pavement design to other department staff; coordinate statewide Local Force Accounts expenditures and develop pavement maintenance strategies; assist in analyses and dispute resolution of pavement-related issues; develop and implement work plans for pavement-related research studies; collect, review, analyze data and prepare reports for these research projects; participate on Departmental research teams and share results with local, state and national interests; review pavement research studies/reports created outside WisDOT; investigate new pavement technologies and products and recommend implementation; coordinate with other WisDOT staff, consultants, FHWA, SHRP, academia, municipalities and industry representatives on pavement issues; prepare reports for pavement-related proposals and issues for WisDOT Secretary's office, legislators and news media as appropriate; manage and oversee the Department's pavement warranty program.

Bureau of Technical Services - Quality Assurance Program: Promote, develop and implement Quality Control/Quality Assurance concepts into aspects of road and bridge contracts; study materials used in construction; compute asphalt and concrete mix design, modulus of elasticity, expansion and contraction effects on steel and concrete, the freeze/thaw cycle effects and fineness modulus; utilize knowledge of cement, aggregate base course analysis, permeability concepts of soil and pavement, and aggregate effects of heat and cold on various materials for use in specification development with industry and WisDOT; utilize knowledge of soil properties and analysis, soil identification, atterberg limits determination and analysis, AASHTO testing methods, expansion factors, confined triaxial compression tests, permeability testing, slope stability and geology used on all specification development with industry and WisDOT; determine the computation and overburden of concrete and steel tension and compression; understand the relationship to pre-stress concrete beams, static's and dead loads, live loading on subgrade for test rolling, rutting, shear stress on soils, area of influence of live load and pre-stress concrete beams; revise and implement computerized record keeping for construction materials; a laboratory certification program, and make necessary revisions to Federally required programs.

Bureau of Traffic Operations – Systems Operations and Electrical Engineering: Facilitate the implementation of the modal divisions integrated information technology vision for system operations, incident management, emergency transportation operations and Intelligent Transportation Systems (ITS) program goals; develop and recommend solutions to the most complex technological problems; coordinate the development of a program of information technology projects to assist staff in meeting business goals; coordinate/manage individual information technology projects which develop and implement engineering standards, policies, and procedures for global engineering systems; use advanced level civil engineering knowledge

in the area of incident management and emergency transportation operations, ITS and systems engineering and a high level of job knowledge in facility development to serve as an in-depth expert and technical consultant for a variety of architectures of information technology (data, organization, technology, and applications); use interpretation and creativity as well as a thorough knowledge of automation systems to partner with other Bureaus, Divisions, state and local governmental agencies, and private organizations in identifying, documenting, and implementing standards and promote communications and statewide consistency across organization units.

Bureau of Traffic Operations – Traffic Engineering Programs: Act as liaison with regional offices regarding traffic activities; develop and interpret standards, policies and procedures; monitor and report on program and project progress; provide technical assistance and information in review of preliminary and final plans and specifications; provide guidance to regional offices in traffic engineering such as design, installation, use, and maintenance of traffic control devices, traffic regulations, and operational geometric design and identification and alleviation of high accident and hazardous highway configuration; review advance planning of location and traffic controls for detours and construction operations; review traffic projects, plans and special provisions for conformance to standards; monitor progress of projects and provide quality assurance for conformance to specifications; participate in final inspection of projects; provide technical and professional assistance to local units of government to install, operate and maintain traffic control devices and systems and develop detail drawings for traffic control; identify problems and issues and provide solution; review PS&E submittal; develop, foster, monitor and participate in multi-disciplinary teams to review highway facilities in the latter stages of construction; identify locations, design details, traffic control or regulatory measures; recommend remedial measures; investigate, review, and make recommendations on new products and applications; organize and provide training to WisDOT staff, local units of government, consultants, contractors, utilities and others on design application, operation and maintenance of work zone traffic control systems and devices; review requests for approval of traffic signals and traffic regulations and recommend approval or disapproval; evaluate effectiveness of or results of change in traffic regulations; develop and formulate policy; program responsibilities include statewide work zone traffic control and safety, traffic signs and markings, intelligent transportation systems and traffic feature maintenance.

III. ADMINISTRATIVE INFORMATION

This classification series was created effective October 12, 1997, and announced in Bulletin CC/SC-74 to describe positions that perform civil engineering work at the Department of Transportation. The creation of this classification resulted from the Governor's Human Resource Reform Commission recommendation to simplify the classification system. This action resulted in the abolishment of the Civil Engineer - Transportation classification series (class codes 26701 through 26705). This classification was modified effective August 05, 2007 and announced in bulletin OSER-0166-MRS/SC to reflect the change in organizational structure of the Department of Transportation and to update the qualification section to reflect current requirements of advanced level positions in the Division of Transportation System Development. This classification was modified effective July 18, 2010 and announced in bulletin OSER-0268-CLR/SC to reflect changes in policy related to movement within the series and to update language in the functional areas. This classification was modified effective June 30, 2013 and announced in Bulletin OSER-0327-MRS/SC to remove the work performed by structural engineers that are now defined in a different classification series and to reflect changes to bureau names and update functional areas.

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