

**MONTGOMERY COUNTY GOVERNMENT
ROCKVILLE, MARYLAND
CLASS SPECIFICATION**

**Code No. 004033
Grade 20
FLSA: N**

CIVIL WORKS DESIGNER

DEFINITION OF CLASS:

This is advanced level work involving technical, paraprofessional design engineering for the origination, development, analysis and evaluation of design options and plan preparation. Employees in this class have contact with engineers, architects, contractors, consultants, the general public, and related County personnel to coordinate accomplishment of design related assignments, exchange of information, provision of technical advice and/or guidance, and resolution of problems. An incumbent offers limited direct service or assistance to the public.

An employee in this class is responsible for creating, developing, analyzing, and preparing and presenting recommendations concerning design options, and for preparing design drawings for the maintenance, alteration, or construction of all aspects of selected projects (or portions of same), of the Montgomery County Transportation System (i.e., roads, bridges, storm drainage systems, park and ride lots, sidewalks, and bikeways). The work requires extensive use of state-of-the-art computer equipment and sophisticated engineering software. Incumbents independently plan and carry out assignments based on defined objectives, priorities, and deadlines, accepted engineering principles and practices, and instructions as to conceptual decisions on plans. Completed work is reviewed for conformance to standard engineering procedures, project goals, and objectives. Guidelines include basic civil engineering principles, County design criteria and standards, State rules and regulations pertaining to facility design, applicable industry standards and practices, and numerous engineering design and related computer program manuals. Work is characterized by the presence of engineering standards which are applied to nonstandard situations requiring modification and/or adaptation of methods, approaches and/or procedures. The complexity of this work involves basic technical engineering applications and computer processing of engineering data. A wide range of processes and methods are applied in order to obtain, download, and develop survey and utility data; interpret digitized data from various sources; and manipulate large computer data files. Complexity is further characterized by the presence of technical engineering-related problems, encountered during design development, which are unique to the project site (i.e., physical and topographical restrictions, utility conflicts, and environmental considerations) and require development, analysis and evaluation of several options for the determination of design features. The impact of this work is realized through the creation of plan designs which affect the specific design features of assigned transportation related projects, the scheduling of bridge and road projects within established budget controls, and the safety of the traveling public. The work is primarily sedentary and involves little or no exposure to hazards. Work is performed primarily in an office setting, but does involve occasional field visits.

EXAMPLES OF DUTIES: (Illustrative Only)

- Recommends placement of design features for several diverse projects utilizing paraprofessional design engineering applications and computer processing capabilities.

- Determines amount of topographic data required for a project and manipulates the data to remove errors and to transfer/organize automated design data in computer files.
- Creates topographic three-dimensional background picture of existing field conditions to be used as the basis for making design decisions for assigned projects.
- Obtains utility plans (i.e., water, sewer, cable television, gas, and electric), plats, deeds and field located property corners and topographical data; develops digitized computer model of existing conditions upon which to develop and evaluate design features for new projects.
- Generates multiple options for the placement of design features utilizing computer engineering and design software (e.g., SOFTDESK AdCADD Civil/Survey and AUTOCAD).
- Calculates and incorporates into the design drawings such features as the horizontal and vertical alignments, storm drain profiles, and superelevation transition.
- Develops final design drawings for construction of limited scope projects which may include roads, bridges, sidewalks, bikeways, and other related projects.
- Develops various sections and details of construction plans such as plan and profile sheets, structural details, drainage area maps, structure and pipe schedules, curve data tables, earthwork summary tables, and sediment control plans and details.
- Examines, evaluates, and prepares recommendations (including alternative options) concerning the feasibility and impact of modifications to specific design features.
- Prepares cost analyses and construction cost estimates and other contract documentation.
- Provides design recommendations with sketches, calculations, and estimates to engineers within the office to determine final project parameters.
- Creates property record plats for use in the acquisition of right-of-way.
- Creates displays for public meetings or presentations to the County Council, M-NCPPC, and other regulatory agencies.
- Performs other related duties.

KNOWLEDGE, SKILLS AND ABILITIES:

- Knowledge of complex mathematics and basic civil engineering practices and techniques in order to do basic engineering computations for the design of roads, bridges, storm drains, rights-of-way and similar projects; to develop and analyze engineering design options; and to resolve design problems.
- Knowledge of and skill in the use of computer hardware and software (e.g., engineering design software, computer aided design and drafting programs) to access and manipulate data, and to generate engineering drawings and design plan alternatives.
- Knowledge of applicable County, State, and Federal laws, codes, and regulations pertaining to civil engineering applications and design plans which support construction of Montgomery County roads, bridges, storm drainage systems, sidewalks, and bikeways.
- Ability to read, interpret and utilize different types of engineering plans and specifications (e.g., bridge, roadway, gas, electric, water, Metro, cable, telephone, etc.), and to convey their meaning to others.
- Ability to prepare technical reports and to effectively present findings both orally and in writing.
- Ability to independently plan and coordinate work.
- Ability to work with coworkers, contractors, engineers, County employees, and citizens to obtain, clarify, and provide information, and to provide advice or guidance.
- Ability to attend meetings or perform other assignments at locations outside the office.

MINIMUM QUALIFICATIONS:

Experience: Extensive (seven (7) years) experience in an applicable technical engineering field that has

required the application of principles of complex mathematics (e.g., advanced algebra, geometry, and trigonometry) and basic civil engineering practices and techniques.

Education: Completion of high school or High School Certificate of completion recognized in the State of Maryland.

Equivalency: An equivalent combination of education and experience may be substituted.

LICENSE: None.

PROBATIONARY PERIOD:

Individuals appointed to this class will be required to serve a probationary period of six (6) months, during which time performance will be carefully evaluated. Continuation in this class will be contingent upon successful completion of the probationary period.

MEDICAL EXAM PROTOCOL: Core Exam.*

*Core Exam with Drug Screen for positions in the Department of Transportation (DOT).

Class Established: May, 1996

Revised: April, 2010

August, 2013

October, 2014

Medical Protocol per OMS Review: April, 2022