MICHIGAN CIVIL SERVICE COMMISSION

JOB SPECIFICATION

TRANSPORTATION ENGINEER

JOB DESCRIPTION

Employees in this job complete and oversee a variety of professional engineering assignments in one or more specialized areas of transportation systems and programs involving research, planning, design, technology, materials, construction, traffic safety, traffic operations, and maintenance of highways, bridges, airports, railways, and related structures and technological devices and applications.

There are four classifications in this job.

Position Code Title - Transportation Engineer-E

Transportation Engineer 9

This is the entry level. As a trainee, the employee carries out a range of professional transportation engineering assignments while learning the methods of the work.

Transportation Engineer 10

This is the intermediate level. The employee carries out an expanding range of professional transportation engineering assignments in a developing capacity.

Transportation Engineer P11

This is the experienced level. The employee performs a full range of professional transportation engineering assignments in a full-functioning capacity. Considerable independent judgement is required to carry out assignments that have significant impact on services or programs. Guidelines may be available, but require adaptation or interpretation to determine appropriate courses of action.

Position Code Title - Transportation Engineer-A

Transportation Engineer 12

This is the advanced level. The employee may function as a lead worker or senior worker. At this level, employees are responsible for overseeing the work assignments of other professionals or have regular assignments which have been recognized by Civil Service as having significantly greater complexity than those assigned at the experienced level.

NOTE: Employees generally progress through this series to the experienced level based on satisfactory performance and possession of the required experience.

JOB DUTIES

NOTE: The job duties listed are typical examples of the work performed by positions in this job classification. Not all duties assigned to every position are included, nor is it expected that all positions will be assigned every duty.

Prepares and checks detail plans, design calculations, cost estimations and recommendations prepared by other engineers for completeness, mathematical accuracy and conformity to engineering practices and standards.

Compiles and analyzes engineering data and prepares conclusions and recommendations.

Designs and prepares preliminary and final plans for highways, bridges, drainage structures, municipal utilities, roadway lighting, traffic control devices, intelligent transportation systems (ITS), and miscellaneous highway facilities.

Provides input for the development and maintenance of traffic management policies and procedures.

Uses technology to monitor traffic flow and conditions.

Discusses plans, specifications and work schedules with contractors, utility companies and other governmental agencies.

Focus on operational improvements that can maintain and restore the performance of the existing transportation system before extra capacity is needed.

May perform or oversee the survey, staking, layout and inspection of construction projects.

Participates in studies to determine sufficiency of existing highway systems and structures and programming of future construction.

Planning and coordination for the development and deployment of Connected and Automated Vehicles technologies.

Estimates cost of projects and writes contracts and specifications for labor, materials and equipment.

Develops preliminary engineering treatments to determine construction feasibility and estimated costs.

Investigates traffic problems and recommends methods to improve traffic flow and safety.

Meets with representatives of private industry, local organizations and citizens to discuss proposed highway construction activity.

Interprets contracts, specifications and plans to contractors, subordinates and the public.

Recommends construction methods best suited to soil types encountered.

Prepares final layout drawings and stress calculations.

Prepares studies and completes designs of highway structures of all classifications.

Develops data for public review, hearings or informational meetings.

Determines the validity and reliability of testing methods and procedures.

Prepares hydrologic/hydraulic studies and reports for use in the design of highway structures.

May serve as quality assurance engineer reviewing plans, testing or construction for highway projects.

In a training capacity, conducts survey and inspection on construction projects.

Uses computers to carry out, track and troubleshoot work assignments.

Maintains records and prepares reports and correspondence related to the work.

Performs related work as required.

Additional Job Duties

Transportation Engineer 12 (Lead Worker)

Oversees the work of professional staff by making and reviewing work assignments, establishing priorities, coordinating activities, and resolving related work problems.

Transportation Engineer 12 (Senior Worker)

Performs on a regular basis professional transportation engineering assignments which are recognized by Civil Service as more complex than those assigned at the experienced level.

JOB QUALIFICATIONS

Knowledge, Skills, and Abilities

NOTE: Some knowledge in the area listed is required at the entry level, developing knowledge is required at the intermediate level, considerable knowledge is required at the experienced level, and thorough knowledge is required at the advanced level.

Knowledge of engineering principles and practices used in the location design, construction and maintenance of all types of highways, bridges and related structures.

Knowledge of highway laws, codes, standards and specifications pertaining to highway engineering and costs.

Knowledge of materials, methods and techniques used in the design, construction and maintenance of highways, bridges and related structures.

Knowledge of the procedures and practices applied in the inspection and testing of materials used in highway and bridge construction and the design of such materials.

Knowledge of intelligent transportation and traffic management systems technology and applications.

Knowledge of traffic operations theory and practice.

Knowledge of engineering office practices and procedures.

Ability to make mathematical computations and design engineering projects.

Ability to use engineering instruments and tools including computers and engineering workstations.

Ability to read and interpret engineering plans, specifications and technical reports.

Ability to maintain records and prepare reports and correspondence related to the work.

Ability to communicate effectively with others.

Ability to maintain favorable public relations.

Additional Knowledge, Skills, and Abilities

Transportation Engineer 12 (Lead Worker)

Ability to organize and coordinate the work of others.

Ability to set priorities and assign work to other professionals.

Working Conditions

Some jobs require an employee to work outdoors as well as in an office or a laboratory.

Physical Requirements

The job duties may require an employee to traverse rough terrain.

Education

Possession of a bachelor of science degree in engineering.

Experience

Transportation Engineer 9

No specific type or amount is required.

Transportation Engineer 10

One year of professional engineering experience involved in transportation systems and programs equivalent to a Transportation Engineer 9.

Transportation Engineer P11

Two years of professional engineering experience involved in transportation systems and programs equivalent to a Transportation Engineer, including one year equivalent to a Transportation Engineer 10.

Transportation Engineer 12

Three years of professional engineering experience involved in transportation systems and programs equivalent to a Transportation Engineer, including one year equivalent to a Transportation Engineer P11.

Alternate Education and Experience

Transportation Engineer 9 - 12

Possession of a registered professional engineer license as required by the State of Michigan may be substituted for 6 months of experience at the Transportation Engineer 9-12 levels. This substitution may only be used once for any employee for qualification of appointment or early reclassification.

Special Requirements, Licenses, and Certifications

None

NOTE: Equivalent combinations of education and experience that provide the required knowledge, skills, and abilities will be evaluated on an individual basis.

JOB CODE, POSITION TITLES AND CODES, AND COMPENSATION INFORMATION

Job Code	Job Code Description
TRANSENG	TRANSPORTATION ENGINEER

Position Title	Position Code	Pay Schedule
Transportation Engineer-E	TRAENGE	H21-004
Transportation Engineer-A	TRAENGA	H21-013

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