

## **JOB SPECIFICATIONS**

### **REGISTERED PROFESSIONAL ENGINEER**

#### **MINIMUM QUALIFICATIONS:**

##### **EDUCATION:**

Possession of a Bachelor's degree in civil engineering or structural engineering from an accredited college or university approved by the Engineer's Council for Professional Development and/or approved by the Maryland State Board of Registration for Professional Engineers.

Persons currently registered as Professional Engineers in the State of Maryland or in a state with comparable requirements, are considered to have also met the educational requirements.

##### **EXPERIENCE:**

Five (5) years as a Project Engineer, Resident Engineer or equivalent, involved in highway engineering on bridge and roadway construction projects.

##### **CONDITIONS OF EMPLOYMENT:**

Employee must be in good health and physically able to perform the duties required of the positions.

**TRANSPORTATION ENGINEER I**  
**Code 8439      Salary Grade 0014**

**I.      CLASSIFICATION DEFINITION:**

This is entry level professional civil engineering work applying engineering theories, principles, and standards to a variety of engineering projects and processes. In a learning capacity, assists with engineering projects; operates CADD; trains on software applications in the division assigned; assists in preparation of supporting documentation for engineering projects; reviews plans and specifications; conducts material testing evaluation and quality assurance and conducts construction inspection under the direction of a higher level engineer. Positions in this class do not supervise, but may provide direction and guidance to technicians.

This is a training level for inexperienced civil engineers with career progression occurring into specialized areas such as bridge, port, hydraulics, traffic, materials, highway, rail and airport engineering.

Employees receive close to moderate supervision from a higher level engineer or engineering supervisor. Work is performed in an office setting and in the field; work may require physical inspection of job sites.

Positions assigned to the Transportation Engineer I classification are entry level positions distinguished from the Transportation Engineer II by closer supervision and by the requirement to develop engineering knowledge and skills.

**II.      MINIMUM QUALIFICATIONS:**

**Education:** Possession of a Bachelor's degree in engineering from an accredited college or university.

**Experience:** None required.

**Note:**

Persons currently registered as Professional Engineers in the State of Maryland, or in a state with comparable requirements, are considered to have met the education requirements.

**Licenses, Registrations and Certificates:**

Employees in this classification may be assigned duties which require the operation of a motor vehicle. Employees assigned such duties will be required to possess a motor vehicle operator's license valid in the State of Maryland.

**III. EXAMPLES OF WORK: (Examples are illustrative only)**

Performs preliminary engineering work for projects and studies;  
Conducts engineering feasibility studies; assists in the preparation of required supporting documentation for engineering projects;  
Reviews and comments on design submittals from consulting engineers to ensure compliance with standards and regulations; meets with consultants to resolve problems;  
Reviews assigned areas of plans to ensure compliance with contracts, regulations and engineering standards;  
Assists in preparing engineering designs, plans and specifications using a variety of software and manual methods and cost estimates for the construction of roads, bridges, communications systems, traffic management systems, construction and maintenance heavy equipment, storm drains, rail, buildings and other transportation facilities;  
May participate in public hearings, right of way acquisitions, finalizing plans and drafting specifications;  
Prepares and maintains public works installation and project records and reports;  
Performs other related duties.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of professional engineering principles, practices and methods;  
Knowledge of design principles, strength of materials and stress analysis required in planning construction/rehabilitation projects;  
Knowledge of computer applications relative to engineering projects;  
Knowledge of construction standards and regulations;  
Knowledge of maps, deeds, plats and plans;  
Ability to prepare basic plans, specifications, cost estimates and engineering reports;  
Ability to maintain a variety of technical records and adapt records systems for computerization;  
Ability to make basic engineering computations and drawings;  
Ability to communicate effectively and prepare technical reports;  
Ability to establish and maintain effective working relationships with other employees, engineers, architects and the general public;  
Ability to provide guidance and direction to technicians;  
Ability to physically perform essential duties.

**V. SPECIAL REQUIREMENT:**

Applicants may be subject to a background check which may impact employment. A history of arrest or conviction is not an automatic disqualification to employment. Applicants, who are considered for work at the Maryland Aviation Administration, are subject to an extensive pre-employment security background check as required by the Federal Aviation Administration, Federal Aviation Regulation Part 107.

**Date Adopted:** July 1, 1997

**Date Revised:** July 1, 2008

**APPROVED:** \_\_\_\_\_  
**Director, Office of Human Resources**

## **TRANSPORTATION ENGINEER II**

**Code 0116                  Salary Grade 0016**

### **I. CLASSIFICATION DEFINITION:**

This is experienced level professional civil engineering work applying engineering theories, principles and standards to a variety of engineering projects and processes in highway, traffic, construction, structural, rail, port, airport, maintenance, materials, or other transportation areas. Positions in this class do not supervise, but may provide direction and guidance to technicians in all engineering functions necessary to prepare engineering plans, designs, specifications and cost estimates.

Employees receive moderate supervision from a higher level engineer or engineering supervisor. Work is performed in an office setting and in the field; work may involve physical inspection of job sites.

Positions assigned to the Transportation Engineer II classification are experienced positions distinguished from the Transportation Engineer I by greater independent decision making and by the requirement to apply a greater range of engineering knowledge and skills.

### **II. MINIMUM QUALIFICATIONS:**

**Education:** Possession of a bachelor's degree in engineering from an accredited college or university.

**Experience:** One year of experience in professional engineering.

#### **Notes:**

1. Additional work experience in professional engineering, or in technical engineering at the journey level or above, may be substituted on a year for year basis for the required education.
2. Possession of a Master's Degree in engineering may be substituted for the required experience.
3. Persons currently registered as Professional Engineers in the State of Maryland, or in a state with comparable requirements, are considered to have met the education requirements.

**Licenses, Registrations and Certificates:**

Employees in this classification may be assigned duties which require the operation of a motor vehicle. Employees assigned such duties will be required to possess a motor vehicle operator's license valid in the State of Maryland.

**III. EXAMPLES OF WORK: (Examples are illustrative only)**

Prepares engineering designs, plans, specifications and cost estimates for the construction/rehabilitation of roads, bridges, communications systems, traffic management systems, construction and maintenance equipment, storm drains, rail, buildings and other transportation facilities;

Participates in public hearings, finalizing plans, drafting specifications, etc.;

Reviews and comments on design submittals from consulting engineers to ensure compliance with standards and regulations;

Meets with consultants to resolve problems;

Reviews plans and specifications for transportation facilities submitted for new construction, rehabilitation or improvements to ensure compliance with contracts, regulations, engineering standards;

Prepares and maintains a variety of engineering documents including plans, specifications, contracts, maps and standards;

Reviews and comments on maintenance contract submittals to ensure compliance with standards and regulations;

Meets with contractors to resolve problems;

May serve as project manager on routine engineering projects; conducts field work, surveys, research, preliminary and final design; determines construction quantities; writes proposals; prepares contract documents, right of way and easement descriptions; provides engineering detail for environmental impact statements and develops cost estimates;

Coordinates projects among outside agencies, property owners and other divisions within the agency;

Prepares reports and memos describing the project and conducts inspections of work, as needed;

Answers inquiries from other agencies, interested parties and the public regarding engineering projects;

Maintains and prepares public works installation and project records and reports;

Provides information to and works with architects, engineers, contractors and developers to ensure adherence to proper standards and codes;

Conducts research, evaluates and makes recommendations regarding proposed and existing laws, standards and policies; writes contracts for engineering services;

Prepares requests for proposals; participates in selecting engineering consultants and contractors;

Serves as project liaison with the project construction engineer during the construction phase; makes changes and additions to the construction plans as needed;

Conducts studies and research to analyze and project present and future needs as they relate to engineering designs and solutions to current and anticipated problems; provides data and other information to interested groups;

Attends a variety of meetings; may provide testimony at formal hearings or in court;

Performs other related duties.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of professional civil engineering principles, practices and methods;

Knowledge of design principles, strength of materials and stress analysis required in planning construction/rehabilitation projects;

Knowledge of computer applications relative to engineering projects;

Knowledge of construction standards and regulations;

Knowledge of maps, deeds, plats and plans;

Ability to prepare accurate plans, specifications, cost estimates and engineering reports;

Ability to maintain a variety of technical records and adapt records systems for computerization;

Ability to make accurate engineering computations and drawings;

Ability to communicate effectively and prepare technical reports;

Ability to establish and maintain effective working relationships with other employees, engineers, architects and the general public;

Ability to provide direction and guidance to technicians;

Ability to physically perform essential duties.

**V. SPECIAL REQUIREMENT:**

Applicants may be subject to a background check which may impact employment. A history of arrest or conviction is not an automatic disqualification to employment. Applicants, who are considered for work at the Maryland Aviation Administration, are subject to an extensive pre-employment security background check as required by the Federal Aviation Administration, Federal Aviation Regulation Part 107.

**Date Adopted:** July 1, 1997

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**Director, Office of Human Resources**

**TRANSPORTATION ENGINEER III**  
**Code 0117                  Salary Grade 0017**

**I.        CLASSIFICATION DEFINITION:**

This is journey level professional civil engineering work applying engineering theories, principles and standards to a variety of complex engineering projects and processes in highway, traffic, construction, structural, rail, port, airport, maintenance, materials or other transportation areas. Employees in these positions may serve as project managers and provide guidance and direction to a project team and consultants, or supervise assigned engineering technicians or may have journey level expertise in either a broad range of engineering areas or a specialized area.

Employees receive general supervision from a higher level engineer or engineering supervisor. Work is performed in an office setting and in the field; work may require physical inspection of job sites.

Positions assigned to the Transportation Engineer III classification are journey level positions distinguished from the Transportation Engineer II by the responsibility for project management or supervisory duties or the independent handling of more complex engineering projects requiring greater independent decision making and a broad range of engineering knowledge and skills.

**II.        MINIMUM QUALIFICATIONS:**

**Education:** Possession of a bachelor's degree in engineering from an accredited college or university.

**Experience:** Two years experience in professional engineering.

**Notes:**

1. Additional work experience in professional engineering, or in technical engineering at the journey level or above, may be substituted on a year for year basis for the required education.
2. Possession of a Master's Degree in engineering may be substituted for one year of the required experience.
3. Persons currently registered as Professional Engineers in the State of Maryland, or in a state with comparable requirements, are considered to have met the education requirements.

**Licenses, Registrations and Certificates:**

1. Employees of the Maryland Transportation Authority may be required to possess an Engineer-In-Training License from the Department of Labor, Licensing and Regulation.
2. Employees in this classification may be assigned duties which require the operation of a motor vehicle. Employees assigned such duties will be required to possess a motor vehicle operator's license valid in the State of Maryland.

**III. EXAMPLES OF WORK: (Examples are illustrative only)**

Prepares engineering designs, plans, specifications and cost estimates for the construction/ rehabilitation of roads, bridges, communications systems, traffic management systems, storm drains, rail, buildings and other transportation facilities;

Participates in public hearings, finalizes plans, drafts specifications, etc.;

Administers consultant contracts including approving monthly invoices and progress payments;

Reviews and comments on design submittals from consulting engineers to ensure compliance with standards and regulations; meets with consultants to resolve problems;

Assists and conducts the review and evaluations of Consultant Technical Proposals and Extra Work Requests;

Reviews plans and specifications for transportation facilities submitted for new construction, rehabilitation or improvements to ensure compliance with contracts, regulations, engineering standards;

Prepares and maintains a variety of engineering documents including plans, specifications, contracts, maps, standards, etc.;

Serves as project manager for the installation of communications systems;

Reviews and comments on maintenance contract submittals to ensure compliance with standards and regulations; communicates with contractors to resolve problems;

Serves as project manager on routine engineering projects; conducts field work, surveys, research, preliminary and final design; determines construction quantities; writes proposals; prepares contract documents, right of way and easement descriptions; provides engineering detail for environmental impact statements; develops cost estimates; coordinates project among outside agencies, property owners and other divisions within the agency;

Prepares reports and memos describing the project; conducts inspections of work as needed;

Answers inquiries from other agencies, interested parties and the public regarding engineering projects;

Maintains and prepares public works installation and project records and reports;

Provides information to and works with architects, engineers, contractors and developers to ensure adherence to proper standards and codes;

Conducts research; evaluates and makes recommendations regarding proposed and existing laws, standards and policies; writes contracts for engineering services; prepares requests for proposals; participates in selecting engineering consultants and contractors;

Serves as project liaison with the project construction engineer during the construction phase; makes changes and additions to the construction plans as needed;

Analyzes capacity, planning and highway system performance data and prepares traffic projections;

Conducts studies and research to analyze and project present and future needs as they relate to engineering designs and solutions to current and anticipated problems;  
Provides data and other information to interested groups;  
Attends a variety of meetings;  
May provide testimony at formal hearings or in court;  
May plan, organize, coordinate, schedule, assign and evaluate the work of engineering technicians;  
Provides training and work performance counseling as needed;  
Performs other related duties.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of professional civil engineering principles, practices and methods;  
Knowledge of design principles, strength of materials and stress analysis required in planning construction/rehabilitation projects;  
Knowledge of computer applications relative to engineering projects;  
Knowledge of construction standards and regulations;  
Knowledge of effective supervisory methods and practices;  
Skill in reading maps, deeds, plats and plans;  
Skill in preparing accurate plans, specifications, cost estimates and engineering reports;  
Skill in making accurate engineering computations and drawings;  
Ability to maintain a variety of technical records and adapt records systems for computerization;  
Ability to plan, organize, coordinate, assign and evaluate the work of engineering technicians and other support staff;  
Ability to communicate effectively and prepare technical reports;  
Ability to establish and maintain effective working relationships with other employees, engineers and architects and the general public;  
Ability to physically perform essential duties.

**V. SPECIAL REQUIREMENT:**

Applicants may be subject to a background check which may impact employment. A history of arrest or conviction is not an automatic disqualification to employment. Applicants, who are considered for work at the Maryland Aviation Administration, are subject to an extensive pre-employment security background check as required by the Federal Aviation Administration, Federal Aviation Regulation Part 107.

**Date Adopted:** July 1, 1997  
**Date Revised:** July 1, 2001  
**Date Revised:** July 1, 2008

**APPROVED:** \_\_\_\_\_  
**Director, Office of Human Resources**

## **TRANSPORTATION ENGINEER IV**

**Code 0516**

**Salary Grade 0018**

### **I. CLASSIFICATION DEFINITION:**

This is senior or advanced level professional civil engineering work applying engineering theories, principles and standards to a variety of complex engineering projects and processes in highway, traffic, construction, structural, rail, port, airport, maintenance, materials, or other transportation areas. Employees in these positions may serve as project manager and provide guidance and direction to a project team and consultants, or supervise assigned engineering technicians or may apply advanced knowledge in a specialized technical area such as hydraulics or environmental design, or in a broad range of engineering areas. Positions assigned to this classification may serve as team leaders over lower level professional engineers, technicians, and/or consultants that perform engineering functions necessary to prepare construction plans, specifications and cost estimates.

Employees receive general supervision from a higher level engineer or manager. Work is generally performed in an office setting and in the field; work may require physical inspection of job sites.

Specific position allocation to this level is determined by application of the Position Appraisal Method of Job Evaluation and the point to grade conversion contained in the Transportation Engineer July 1, 2008 ASR classification standards.

### **II. MINIMUM QUALIFICATIONS:**

**Education:** Possession of a bachelor's degree in engineering from an accredited college or university.

**Experience:** Four years experience in professional engineering.

#### **Notes:**

1. Additional work experience in professional engineering, or in technical engineering at the journey level or above, may be substituted on a year for year basis for the required education.
2. Possession of a Master's Degree in engineering may be substituted for one year of the required experience.
3. Persons currently registered as Professional Engineers in the State of Maryland, or in a State with comparable requirements, are considered to have met the education requirements.

**Licenses, Registrations and Certificates:**

1. Employees of the Maryland Transportation Authority may be required to possess an Engineer-In-Training License from the Department of Labor, Licensing and Regulation.
2. Employees in this classification may be assigned duties which require the operation of a motor vehicle. Employees assigned such duties will be required to possess a motor vehicle operator's license valid in the State of Maryland.

**III. EXAMPLES OF WORK: (Examples are illustrative only)**

Performs the most complex and varied engineering project coordination functions;  
Plans, organizes, coordinates, schedules, assigns and evaluates the work of subordinate engineers and technicians; provides training and work performance counseling as needed;  
Prepares engineering studies, designs, plans, specifications and cost estimates for the construction, rehabilitation or maintenance of roads, bridges, storm drains, rail, buildings and other transportation facilities; participates in public hearings, finalizes plans, drafts specifications, etc.;  
Administers consultant contracts including approval of monthly invoices and progress payments;  
Reviews and comments on design submittals from consulting engineers to ensure compliance with standards and regulations; meets with consultants to resolve problems;  
Assists in and conducts the review and evaluation of Consultant Technical Proposals and Extra Work Requests;  
Reviews plans and specifications for transportation facilities submitted for new construction, rehabilitation or improvements to ensure compliance with contracts, regulations and engineering standards;  
Prepares and maintains a variety of engineering documents including plans, specifications, contracts, maps and standards;  
Prepares designs, plans, specifications and cost estimates for communications and traffic management systems, or construction and maintenance equipment;  
Serves as project manager on large and/or complex engineering projects; conducts field work, surveys, research, preliminary and final design; determines construction quantities; writes proposals; prepares contract documents, right of way and easement descriptions; provides engineering detail for environmental impact statements and develops cost estimates;  
Coordinates projects among outside agencies, property owners and other divisions within the agency; prepares reports and memos describing the project; conducts inspections of work as needed;  
Answers inquiries from other agencies, interested parties and the public regarding engineering projects;  
Maintains and prepares public works installation and project records and reports;  
Provides information to and works with architects, engineers, contractors and developers to ensure adherence to proper standards and codes;  
Conducts research, evaluates and makes recommendations regarding proposed and existing laws, standards and policies; writes contracts for engineering services; prepares requests for proposals;  
Participates in selecting engineering consultants and contractors;

Serves as project liaison with the project construction engineer during the construction phase;  
makes changes and additions to the construction plans as needed;  
Conducts studies and research to analyze and project present and future needs as they relate to engineering designs and solutions to current and anticipated problems;  
Provides data and other information to interested groups;  
Attends a variety of meetings;  
May provide testimony at formal hearings or in court;  
Performs other related duties.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of professional civil engineering principles, practices and methods;  
Knowledge of design principles, strength of materials and stress analysis required in planning construction /rehabilitation projects;  
Knowledge of computer applications relative to engineering projects;  
Knowledge of construction standards and regulations;  
Knowledge of effective supervisory methods and practices;  
Skill in reading maps, deeds, plats and plans;  
Skill in preparing accurate plans, specifications, cost estimates and engineering reports;  
Skill in making accurate engineering computations and drawings;  
Ability to maintain a variety of technical records and adapt records systems for computerization;  
Ability to plan, organize, coordinate, assign and evaluate the work of lower level engineers, engineering technicians and other support staff;  
Ability to communicate effectively and to prepare technical reports;  
Ability to establish and maintain effective working relationships with other employees, engineers and architects and the general public;  
Ability to physically perform essential duties.

**V. SPECIAL REQUIREMENT:**

Applicants may be subject to a background check which may impact employment. A history of arrest or conviction is not an automatic disqualification to employment. Applicants, who are considered for work at the Maryland Aviation Administration, are subject to an extensive pre-employment security background check as required by the Federal Aviation Administration, Federal Aviation Regulation Part 107.

**Date Adopted:** July 1, 1997  
**Date Revised:** July 1, 2001  
**Date Revised:** July 1, 2008

**APPROVED:** \_\_\_\_\_  
**Director, Office of Human Resources**

## **TRANSPORTATION ENGINEER V**

**Code 2706**

**Salary Grade 0019**

### **I. CLASSIFICATION DEFINITION:**

This is team leader and expert level civil engineering work performing complex engineering projects and processes in highway, traffic, construction, structural, rail, port, airport, maintenance, materials or other transportation areas. Some employees serve as team leader on large and complex engineering projects leading and directing multi-disciplinary project teams with professionals and consultants, others may be assigned administrative and managerial responsibility for an organizational unit overseeing technical work functions. Other positions independently perform expert level duties within one or more highly specialized areas within the field of Transportation Engineering such as highway, bridge, airport, rail, port, facility design, traffic or hydraulics.

Employees receive general supervision from a higher level engineering manager. Work is performed in an office setting and in the field; work may require physical inspection of job sites.

Specific position allocation to this level is determined by application of the Position Appraisal Method of Job Evaluation and the point to grade conversion contained in the Transportation Engineer July 1, 2008 ASR classification standards.

### **II. MINIMUM QUALIFICATIONS:**

**Education:** Possession of a bachelor's degree in engineering from an accredited college or university.

**Experience:** Five years experience in professional engineering.

#### **Notes:**

1. Additional work experience in professional engineering, or in technical engineering at the journey level or above, may be substituted on a year for year basis for the required education.
2. Possession of a Master's Degree in engineering may be substituted for one year of the required experience.
3. Persons currently registered as Professional Engineers in the State of Maryland, or in a State with comparable requirements, are considered to have met the education requirements.

#### **Licenses, Registrations and Certificates:**

1. Employees in this class may be required to possess a Professional Engineer, Land Surveyor or Property Line Surveyor License.
2. Employees of the Maryland Transportation Authority may be required to possess an Engineer-In-Training License from the Department of Labor, Licensing and Regulation.

3. Employees in this classification may be assigned duties which require the operation of a motor vehicle. Employees assigned such duties will be required to possess a motor vehicle operator's license valid in the State of Maryland.

**III. EXAMPLES OF WORK: (Examples are illustrative only)**

Plans, organizes, coordinates, schedules, assigns and evaluates the work of subordinate engineers and technicians; provides training and work performance counseling as needed;

Serves as project manager on large and complex engineering projects; conducts field work, survey, research, preliminary and final design; determines construction quantities; writes proposals; prepares contract documents, right of way and easement descriptions; provides engineering detail for environmental impact statements and develops cost estimates;

Prepares engineering designs, plans, specifications and cost estimates for the construction/rehabilitation of roads, bridges, storm drains, rail, buildings and other transportation facilities; participates in public hearings, finalizes plans, drafts specifications, etc.;

Administers consultant contracts including approval of monthly invoices and progress payments;

Reviews and comments on design submittals from consulting engineers to ensure compliance with standards and regulations; meets with consultants to resolve problems;

Supervises and conducts the review and evaluation of Consultant Technical Proposals and Extra Work Requests;

Reviews plans and specifications for roads, bridges, storm drainage, buildings and other facilities submitted for new construction, rehabilitation or improvements to ensure compliance with contracts, regulations and engineering standards;

Prepares and maintains a variety of engineering documents including plans, specifications, contracts, maps and standards;

Prepares designs, plans, specifications and cost estimates for communications maintenance and repair and traffic management systems;

Prepares specifications and cost estimates for construction and maintenance equipment;

Coordinates Emergency Operations Center Team activation and operation;

Coordinates projects among outside agencies, property owners and other divisions within the agency; prepares reports and memos describing projects; conducts inspections of work as needed;

Answers inquiries from other agencies, interested parties and the public regarding engineering projects;

Maintains and prepares public works installation and project records and reports;

Provides information to and works with architects, engineers, contractors and developers to ensure adherence to proper standards and codes;

Conducts research, evaluates and makes recommendations regarding proposed and existing laws, standards and policies; writes contracts for engineering services; prepares requests for proposals; participates in selecting engineering consultants and contractors;

Serves as project liaison with the project construction engineer during the construction phase; makes changes and additions to the construction plans as needed;

Conducts studies and research to analyze and project present and future needs as they relate to engineering designs and solutions to current and anticipated problems;

Provides data and other information to interested groups;

Attends a variety of meetings;

May provide testimony at formal hearings or in court.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of professional civil engineering principles, practices and methods;  
Knowledge of design principles, strength of materials and stress analysis required in planning construction/rehabilitation projects;  
Knowledge of computer applications relative to engineering projects;  
Knowledge of construction standards and regulations  
Knowledge of effective supervisory methods and practices;  
Skill in reading maps, deeds, plats and plans;  
Skill in preparing accurate plans, specifications, cost estimates and engineering reports;  
Skill in making accurate engineering computations and drawings;  
Ability to maintain a variety of technical records and adapt records systems for computerization;  
Ability to plan, organize, coordinate, assign and evaluate the work of engineering technicians and other support staff;  
Ability to communicate effectively and to prepare technical reports;  
Ability to establish and maintain effective working relationships with other employees, engineers, architects and the general public;  
Ability to physically perform essential duties.

**V. SPECIAL REQUIREMENT:**

Applicants may be subject to a background check which may impact employment. A history of arrest or conviction is not an automatic disqualification to employment. Applicants, who are considered for work at the Maryland Aviation Administration, are subject to an extensive pre-employment security background check as required by the Federal Aviation Administration, Federal Aviation Regulation Part 107.

**Adopted:** July 1, 1997  
**Revised:** July 1, 2001  
**Revised:** July 1, 2008

**APPROVED:** \_\_\_\_\_  
**Director, Office of Human Resources**

**TRANSPORTATION ENGINEERING MANAGER I**

**Code 0515**

**Salary Grade 20**

**TRANSPORTATION ENGINEERING MANAGER II**

**Code 2707**

**Salary Grade 21**

**I. CLASSIFICATION DEFINITION:**

This is supervisory, administrative and managerial transportation engineering work over engineers applying engineering theories, principles and standards to a variety of complex engineering projects and processes in highway, traffic, construction, structural, rail, port, airport, maintenance, materials, or other transportation areas. These managers are typically section managers, assistant division managers, or are assigned area-wide responsibility. Work includes managing and coordinating work assignments of the unit, setting standards and providing quality assurance reviews and coordinating work with other divisions. Staff level, non-supervisory nationally recognized expert positions may also be assigned to these levels. Positions assigned to this class may require expert level knowledge within one or more highly specialized areas within the field of Transportation Engineering such as highway, bridge, airport, rail, port, facility design, traffic, or hydraulics.

Employees receive managerial supervision from a higher level engineering manager or administrative official.

Specific position allocation to these levels is determined by application of the Position Appraisal Method of Job Evaluation and the point to grade conversion contained in the Transportation Engineer July 1, 2008 ASR classification standards.

**II. MINIMUM QUALIFICATIONS:**

**Education:** Possession of a bachelor's degree in engineering from an accredited college or university.

**Experience:** Seven (I), Eight (II) years experience in professional engineering, including (for the II level only) one year of supervisory or consultant management experience.

**Notes:**

1. Additional work experience in professional engineering, or in technical engineering at the journey level or above, may be substituted on a year for year basis for the required education.
2. Possession of a Master's Degree in engineering may be substituted for one year of the non-supervisory experience.

3. Persons currently registered as Professional Engineers in the State of Maryland, or in a state with comparable requirements, are considered to have met the education requirements.

**Licenses, Registrations and Certificates:**

1. Employees in this class may be required to possess a Professional Engineer, Land Surveyor, or Property Line Surveyor License.
2. Employees in this classification may be assigned duties which require the operation of a motor vehicle. Employees assigned such duties will be required to possess a motor vehicle operator's license valid in the State of Maryland.

**III. EXAMPLES OF WORK: (Examples are illustrative only)**

Plans, manages, organizes, coordinates, supervises and evaluates the work of a major division or subdivision of professional engineers; oversees training and work performance counseling as needed;

Manages the preparation of engineering designs, plans, specifications and cost estimates for the construction/rehabilitation of roads, bridges, communication systems, traffic management systems, construction and maintenance equipment, storm drains, rail, buildings and other transportation facilities; participates in public hearings; approves the finalizing of plans and specifications;

Manages the administering of consultant contracts;

Manages the review of design submittals from consulting engineers to ensure compliance with standards and regulations; meets with consultants to resolve problems;

Manages the review of plans and specifications for transportation facilities submitted for new construction, rehabilitation or improvements to ensure compliance with contracts, regulations and engineering standards;

Manages the preparation and maintenance of a variety of engineering documents including plans, specifications, contracts, maps and standards;

Assures effective project management of a variety of engineering projects;

Assures the effective conduct of administrative and fiscal activities, including proper documentation, contract and budget monitoring;

Answers inquiries from other agencies, interested parties and the public regarding engineering projects;

Assures the proper maintenance of a variety of records pertaining to public works installations and projects; prepares reports related to the work;

Manages and coordinates research and evaluation of proposed and existing laws, standards and policies;

Manages and oversees the preparation of contracts for engineering services, requests for proposals and related documents; oversees the selection of engineering consultants and contractors;

Initiates and manages special studies and research to analyze and project present and future needs as they relate to engineering designs and solutions to current and anticipated problems;

Directs or supervises special projects as needed;

Prepares a variety of correspondence and technical reports and attends a variety of meetings related to the work;

Provides technical guidance and advice to other employees and other agencies;  
Attends and makes presentations at public hearings, seminars and conferences;  
Performs other related duties.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of professional transportation engineering principles, practices and methods;  
Knowledge of design principles, strength of materials and stress analysis required in planning construction/rehabilitation projects;  
Knowledge of computer applications suitable to engineering projects;  
Knowledge of construction standards and regulations;  
Knowledge of effective managerial methods and practices;  
Ability to organize and coordinate human and material resources in the carrying out of large and complex program activities;  
Ability to assure program effectiveness, including the organization and maintenance of records and proper documentation;  
Ability to assure the effective application of proper engineering standards and principles to the work;  
Ability to plan, organize, coordinate, assign and evaluate the work of subordinate professional supervisors;  
Ability to communicate effectively and prepare technical, complex reports;  
Ability to establish and maintain effective working relationships with other employees, engineers and architects, representatives of other agencies and the general public;  
Ability to physically perform essential duties.

**V. SPECIAL REQUIREMENT:**

Applicants may be subject to a background check which may impact employment. A history of arrest or conviction is not an automatic disqualification to employment. Applicants, who are considered for work at the Maryland Aviation Administration, are subject to an extensive pre-employment security background check as required by the Federal Aviation Administration, Federal Aviation Regulation Part 107.

**Date Adopted:** July 1, 1997  
**Date Revised:** July 1, 2008  
**Date Revised:** June 9, 2014

**APPROVED:** \_\_\_\_\_  
**Office, Director of Human Resources**

**TRANSPORTATION ENGINEERING TECHNICIAN I**

**Code 8446**

**Grade Band 07-08**

**I. CLASSIFICATION DEFINITION:**

This is the entry level of work performing a variety of technical engineering support tasks. Specific duties depend on job assignments and may include, in a learning capacity, inspecting construction and maintenance projects; performing tests on soils and materials; evaluating methods for maintenance operations; serving on a survey crew; drafting design details, maintenance contract specifications and construction notes; calculating quantities for construction projects and maintenance activities; preparing Computer Aided Design and Drafting (CADD) plans, maps, or right of way plats; and collecting and recording traffic and planning data. Employees in this class do not supervise.

Work is performed under the continuing supervision of an engineer or higher level technical employee. Working conditions vary depending on assignments and are performed in the office or in the field during survey and inspection assignments with exposure to varying weather conditions and rough terrain and requirements for walking, standing, bending, and lifting loads weighing up to 80 lbs.; may require working in close proximity with traffic on Maryland highways; requires hand/eye coordination in the efficient operation of computers and other office machines, survey and other equipment. Employees in this classification may also be required to work various shifts and on weekends depending on assignments. Employees in some positions in this classification will be required to travel and be available for work in any part of the State, subject to change of assignment, as work requires.

Positions assigned to the Transportation Engineering Technician I classification are entry-level positions distinguished from the Transportation Engineering Technician II by closer supervision and less complex tasks.

**II. MINIMUM QUALIFICATIONS:**

**Education:** Graduation from a standard high school or possession of a high school equivalency certificate.

**Experience:** None

**Licenses, Registrations and Certificates:**

1. Employees in this classification may be assigned duties that require the operation of a motor vehicle. Employees in some positions in this classification may be required to possess a motor vehicle operator's license valid in the State of Maryland. A CDL license may be required for some positions.

2. Employees in this classification may be required to possess Federal Highway Administration (FHWA) certification for inspection of In-Service Bridges, or have the ability to acquire this certificate within a given time period.
3. Employees in this classification may be required to achieve certification in field testing procedures in concrete, soil aggregate and Hot Mix Asphalt within a given time period.

**III. EXAMPLES OF WORK:** (Examples are illustrative only)

Learns to draft plans, plats and topographic maps for engineering improvements and installations using CADD and manual processes;  
Learns to compute quantities for contract items for use in preparing project cost estimates;  
Operates surveying equipment and assists in recording measurements and other data;  
Assists in locating centerlines and property lines;  
Assists in setting grade stakes and other markers and reference points;  
Assists in inspection of construction and maintenance projects;  
Assists in the inspection of existing roadways, structures and facilities;  
Assists in performing in-service bridge inspections in accordance with FHWA criteria;  
Conducts basic tests after a period of training and/or state sponsored materials testing certification or assists in conducting tests on soils, asphalt, cements/concrete, aggregates, bituminous products, metal products and industrial coatings;  
Assists in conducting traffic studies; observes real-time traffic conditions and records data;  
Examines details and accuracy of accident reports for various studies and compiles various accident data reports;  
Assists in developing mapping and chart support graphics for the Consolidated Transportation Program (CTP), the Statewide Planning Research Program (SPR) and other programs;  
Maintains records pertaining to highway and other public works installations; updates maps, plats and other records using computerized and manual processes;  
Researches records to determine property ownership and obtain information;  
Assists in the annual review of highways and roadsides at the shop, district, and statewide levels to determine the quality of highway maintenance;  
Assists with drafting maintenance contract specifications;  
Assists in analyzing and evaluating maintenance activities;  
Assists in developing manuals and other publications to be used as guides for maintenance field operations;  
Performs other related duties.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of the principles of basic mathematics;  
Ability to learn drafting techniques;  
Ability to learn how to operate survey equipment;  
Ability to learn basic functions on computer and keyboard;  
Ability to learn how to operate microfilm machine;  
Ability to establish and maintain effective working relationships with other employees and the general public;  
Ability to understand and carry out instructions;  
Ability to communicate effectively;

Ability to physically perform essential duties;  
Ability to perform basic mathematical computations.

**V. SPECIAL REQUIREMENTS:**

Employees in this classification may be considered “Essential Employees” and may be required to sign and agree to all policies and procedures relating to “Essential Employee” status.

**Date Revised:** December 16, 2003

**APPROVED:** \_\_\_\_\_  
**Director, Office of Human Resources**

## TRANSPORTATION ENGINEERING TECHNICIAN II

Code 8447

Grade Band 09-10

### **I. CLASSIFICATION DEFINITION:**

This is the experienced level of work performing a variety of technical engineering support tasks. Employees perform transportation engineering survey, inspection, design, materials testing, data collection, minor traffic studies and administrative duties. Specific duties depend on job assignments and may include inspecting construction and maintenance projects; performing tests on soils and materials; evaluating methods for maintenance operations; serving on a survey crew; drafting design details, maintenance contract specifications and construction notes; calculating quantities for construction projects and maintenance activities; preparing Computer Aided Design and Drafting (CADD) plans, maps, or right of way plats; and collecting and recording traffic and planning data. Employees in this class do not supervise, but may provide instructions to less experienced employees.

Work is performed under the supervision of an engineer, or higher level technical employee. Working conditions vary depending on assignments and are performed in the office or in the field during survey and inspection assignments with exposure to varying weather conditions and rough terrain and requirements for walking, standing, bending, and lifting loads weighing up to 80 lbs.; may require working in close proximity with traffic on Maryland highways; requires hand/eye coordination in the efficient operation of computers and other office machines, survey and other equipment. Employees in this classification may also be required to work various shifts and on weekends depending on assignment. Employees in some positions in this classification may be required to travel and be available for work in any part of the State, subject to change of assignment, as work requires.

Positions assigned to the Transportation Engineering Technician II classification are experienced level positions distinguished from the Transportation Engineering Technician I by the requirement to apply a greater range of technical knowledge to a broader range of tasks.

### **II. MINIMUM QUALIFICATIONS:**

**Education:** Graduation from a standard high school or possession of a high school equivalency certificate.

**Experience:** One year of experience in technical engineering related work in the areas of design, traffic, construction, materials testing, engineering surveys, maintenance, or planning.

**Notes:**

1. Applicants may substitute education in a civil engineering curriculum at an accredited college or university at the rate of 30 semester credit hours for the year of the required experience.
2. Applicants who possess an Associates Degree in Engineering, Construction Management or Surveying or Surveying Technology from an accredited community college, college or university are considered to have met the experience requirement.

**Licenses, Registrations and Certificates:**

1. Employees in this classification may be assigned duties that require the operation of a motor vehicle. Employees in some positions in this classification may be required to possess a motor vehicle operator's license valid in the State of Maryland. A CDL license may be required for some positions.
2. National Institute for Certification in Engineering Technologies (NICET) certification, in-house certifications or state-sponsored, material-testing certification may be required for some positions.
3. Employees in this classification may be required to possess Federal Highway Administration (FHWA) certification for inspection of In-Service Bridges, or have the ability to acquire this certificate within a given time period.
4. Employees in this classification may be required to possess an American Society for Non-Destructive Testing Level I Certification.
5. Employees in this classification may be required to achieve certification in field testing procedures in concrete, soil aggregate and Hot Mix Asphalt within a given time period.

**III. EXAMPLES OF WORK: (Examples are illustrative only)**

Operates electronic and mechanical equipment related to drafting, surveying, materials testing, and sampling and inspection; records measurements and other data;  
Operates surveying equipment to locate centerlines and property lines; sets grade stakes and other markers;  
Performs field inspections of construction and maintenance projects and of existing roadways, structures and facilities;  
Conducts intermediate tests on soils, asphalt, cements/concrete, aggregates, bituminous products, metal products and industrial coatings;  
Maintains records pertaining to highway and public works installations;  
Updates maps, plats and other records using computerized and manual processes;  
Drafts plans, plats and topographic maps for various engineering improvements and installations using CADD and manual processes;  
Computes quantities for contract items for use in preparing project cost estimates;  
Compiles traffic data for incorporation into traffic projects;

Performs in-service bridge inspections in accordance with FHWA criteria;  
Functions as front rod technician on a survey party;  
Researches land records to determine property ownership and to obtain other information;  
Conducts ongoing studies of maintenance activities;  
Drafts maintenance contract specifications;  
Assists in an annual review of highway and roadsides at the shop, district, and statewide levels to determine the quality of highway maintenance;  
Creates accident collision diagrams via various CADD computer software programs;  
Produces accident rates and comparative statewide average rates for study sections;  
Manually compiles data for High Accident Intersections (HAI) studies, and prepares corresponding accident summaries and collision diagrams;  
Responds to District Office's data requests;  
Reviews study area via videolog;  
Performs other related duties.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of basic engineering principles, practices, and methods;  
Knowledge of CADD drafting using Microstation or other engineering software;  
Knowledge of the inspections conducted on construction projects;  
Knowledge of algebra, geometry, and the principles of basic mathematics used in engineering drawing and drafting;  
Knowledge of the properties of various structural metals, primarily iron, steel and aluminum, and the inspection of products produced from those metals;  
Skill in the operation of electronic and mechanical equipment used in performing technical engineering support tasks;  
Ability to learn new computer skills and data processing procedures;  
Ability to perform basic mathematical computations used in engineering drawing and drafting;  
Ability to maintain records and adapt record systems for computerization;  
Ability to establish and maintain effective working relationships with other employees and the general public;  
Ability to communicate effectively;  
Ability to interpret, analyze or prepare maps, deeds, plats, and plans;  
Ability to physically perform essential duties.

**V. SPECIAL REQUIREMENTS:**

Employees in this classification may be considered "Essential Employees" and may be required to sign and agree to all policies and procedures relating to "Essential Employee" status.

**Date Revised:** December 16, 2003

**APPROVED:** \_\_\_\_\_

**Director, Office of Human Resources**

## TRANSPORTATION ENGINEERING TECHNICIAN III

Code 8448

Grade Band 11-12

### I. CLASSIFICATION DEFINITION:

This is the journey level of work performing a variety of engineering support tasks. Employees perform transportation engineering survey, inspection, design, materials testing, data collection, traffic analysis and administrative duties. Specific duties depend on job assignments and may include inspecting construction and maintenance projects; conducting roadway and bridge inspections; evaluating methods for maintenance operations; performing tests on soils and materials; serving on a survey crew; drafting design details, maintenance contract specifications, and construction notes; calculating quantities for construction projects and maintenance activities; preparing Computer Aided Design and Drafting (CADD) plans, maps, or right of way plats; collecting and recording traffic data and conducting traffic studies; and compiling planning data for reports. Employees in this class may serve as a Project Manager on small sized construction projects, or may serve as an experienced rodman on a survey crew. Employees in this class may supervise, and may serve as a lead worker over a crew and may be expected to give guidance and assistance to less experienced employees.

Work is performed under the general supervision of an engineer, surveyor, or higher level technical employees. Work conditions vary depending on assignments and are performed in the office or in the field during survey and inspection assignments with exposure to varying weather conditions and rough terrain and requirements for walking, standing, bending, and lifting loads weighing up to 80 pounds; may require working in close proximity with traffic on Maryland highways; requires hand/eye coordination in the efficient operation of computers and other office machines, survey equipment and the like. Employees in this position may be required to work various shifts and on weekends depending on assignment. Employees in some positions in this classification may be required to travel and be available for work in any part of the State, subject to change of assignment, as work requires.

Positions assigned to the Transportation Engineering Technician III classification function as journey level positions distinguished from the Transportation Engineering Technician II by the ability to perform more complex tasks requiring greater technical knowledge.

### II. MINIMUM QUALIFICATIONS:

**Education:** Graduation from a standard high school or possession of a high school equivalency certificate.

**Experience:** Three years of experience in technical engineering related work in the areas of design, traffic, construction, materials testing, engineering surveys, maintenance, or planning.

**Notes:**

1. Applicants may substitute education in a civil engineering curriculum at an accredited college or university at the rate of 30 semester credit hours for each year of the required experience.
2. Applicants who possess an Associates Degree in Engineering, Construction Management or Surveying or Surveying Technology from an accredited community college, college or university are considered to have met two years of the required experience.

**Licenses, Registrations and Certificates:**

1. Employees in this classification may be assigned duties that require the operation of a motor vehicle. Employees in some positions in this classification may be required to possess a motor vehicle operator's license valid in the State of Maryland. A CDL license may be required for some positions.
2. National Institute for Certification in Engineering Technologies (NICET) certification, in-house certifications or state-sponsored, material-testing certification may be required for some positions.
3. Employees in this classification may be required to possess Federal Highway Administration (FHWA) certification for inspection of In-Service Bridges, or have the ability to acquire this certificate within a given time period.
4. Employees in this classification may be required to possess an American Society for Non-Destructive Testing Level I Certification.
5. Employees in this classification may be required to achieve certification in field testing procedures in concrete, soil aggregate and Hot Mix Asphalt within a given time period.

**III. EXAMPLES OF WORK: (Examples are illustrative only)**

Performs CADD and hand drafting of highway plans, right of way plats and mosaics, highway design and topographic features requiring reduction of field notes and the application of survey information, using computerized and manual processes;  
Develops and updates various road plans, right of way plats and maps;  
Checks deed, estate and tax records to establish property lines;  
Performs field inspections to monitor road conditions, bridges, road construction and traffic projects, and material used in road construction and repair;  
Performs in-service bridge inspections in accordance with FHWA criteria;  
Prepares project specifications on transportation projects;  
Reviews construction, maintenance or traffic projects for compliance with project specifications;  
Participates in traffic control utility relocation activities;

Collects samples, conducts tests and evaluates test results on soils, asphalt, cements/concrete, aggregates, bituminous products, metal products and industrial coatings;  
Performs inspection and testing at materials supplier facilities;  
Performs calculations to establish design, contract quantities and cost estimates;  
Assists in developing construction notes and placing notes on contract documents;  
Compiles field notes, completes preliminary drawings, and plot plans, profiles, and elevations;  
Uploads and edits field survey data files;  
Performs preliminary processing to check and correct field survey data;  
Performs surface model and contouring to create digital terrain models (DTM's);  
Creates electronic topographic mapping using CADD software;  
Assists in performing field reviews to assure accuracy of topographic mapping;  
Researches, develops and maintains computerized and manual records, logs, and maps relating to assigned duties;  
Operates electronic and mechanical equipment relating to drafting, surveying, materials testing and sampling and inspection;  
Conducts ongoing studies of maintenance activities;  
Drafts maintenance contract specifications;  
Assists in an annual review of highways and roadsides at the shop, district, and statewide levels to determine the quality of highway maintenance;  
Assists in the development of software programs for monitoring budget expenditures;  
Participates in field reviews for various studies and analyses, and creates condition diagrams via CADD computer programs;  
Prepares written correspondence for various data requestors (local police, government agencies, the media, the general public, other SHA departments, etc.);  
Conducts moderately complex traffic studies;  
Performs other related duties.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of basic engineering principles, practices, and methods;  
Knowledge of CADD drafting using Microstation or other engineering software;  
Knowledge of design criteria, construction standards and inspection methods and techniques;  
Knowledge of algebra, geometry and the principles of basic mathematics used in engineering design, drawing and drafting;  
Knowledge of Temporary Traffic Control Standards, National Electrical and Safety Codes, and Manual on Uniform Traffic Control Devices;  
Knowledge of Federal Highway Regulations and Criteria for Coding In-Service Bridge conditions;  
Knowledge of AASHTO and ASTM test specifications and methods;  
Knowledge of the American Welding Society specifications for structures and bridges;  
Knowledge of human factors relating to traffic control design and driver performance;  
Skill in the operation of electronic and mechanical equipment used in performing technical engineering support tasks;  
Ability to learn new computer skills and data processing procedures;  
Ability to interpret, analyze, or prepare maps, deeds, plats, and plans;

Ability to perform basic mathematical computations used in engineering design, drawing and drafting;

Ability to maintain records and adapt records systems for computerization;

Ability to read and create blueprints and engineering drawings and plans, using CADD or manual processes;

Ability to update computer design files, maps and other records;

Ability to establish and maintain effective working relationships with other employees and the general public;

Ability to communicate effectively;

Ability to physically perform essential duties.

**V. SPECIAL REQUIREMENTS:**

Employees in this classification may be considered "Essential Employees" and may be required to sign and agree to all policies and procedures relating to "Essential Employee" status.

**Date Revised: December 16, 2003**

**APPROVED:** \_\_\_\_\_

**Director, Office of Human Resources**

## TRANSPORTATION ENGINEERING TECHNICIAN IV

Code 8449

Grade Band 13-14

### **I. CLASSIFICATION DEFINITION:**

This is the senior technical or supervisory level of work performing a variety of engineering support tasks. Specific duties depend on job assignments and may include serving as Project Engineer for medium sized construction and maintenance projects; coordinating complex maintenance activities; performing advanced design work involving complex calculations and computations and geometric design elements; performing advanced tests on soils and materials; supervising a crew engaged in basic technical engineering activities; serving as instrument person on a survey crew; developing complex maintenance contract specifications; designing and coordinating major traffic control devices and management projects; and serving as a field crew chief for planning projects or maintaining advanced data systems in support of planning programs. Employees in some positions in this classification do not supervise, but may serve as lead workers. The employee is expected to give guidance and assistance to less experienced employees and may supervise a project, crew or unit.

Work is performed under the general supervision of an engineer, surveyor, or higher level technical employee. Work conditions vary depending on assignments and are performed in the office or in the field during survey and inspection assignments with exposure to varying weather conditions and rough terrain and requirements for walking, standing, bending, and lifting loads weighing up to 80 pounds; may require working in close proximity with traffic on Maryland highways; requires hand/eye coordination in the efficient operation of computers and other office machines, survey equipment and the like. Employees in this classification may be required to work various shifts and on weekends depending on assignment. Employees in some positions in this classification may be required to travel and be available for work in any part of the State, subject to change of assignment, as work requires.

Positions in the Transportation Engineering Technician IV classification are distinguished from the Transportation Engineering Technician III classification by the performance of senior technical or supervisory work requiring greater technical knowledge and skills.

### **II. MINIMUM QUALIFICATIONS:**

**Education:** Graduation from a standard high school or possession of a high school equivalency certificate.

**Experience:** Five years of experience in technical engineering related work in the areas of design, traffic, construction, materials testing, engineering surveys, maintenance, or planning.

**Notes:**

1. Applicants may substitute education in a civil engineering curriculum at an accredited college or university at the rate of 30 semester credit hours for each year of the required experience, up to a maximum of three years.
2. Applicants who possess an Associates Degree in either Engineering, Construction Management or Surveying or Surveying Technology from an accredited community college, college or university are considered to have met two years of the five year experience requirement.

**Licenses, Registrations and Certificates:**

1. Employees in this classification may be assigned duties that require the operation of a motor vehicle. Employees in some positions in this classification may be required to possess a motor vehicle operator's license valid in the State of Maryland. A CDL license may be required for some positions.
2. National Institute for Certification in Engineering Technologies (NICET) Certification or other in-house certifications may be required for some positions.
3. Employees in this classification may be required to possess Federal Highway Administration (FHWA) certification for inspection of In-Service Bridges, or have the ability to acquire this certificate within a given time period.
4. Employees in this classification may be required to possess an American Society for Non-Destructive Testing Level II Certification.
5. Employees in this classification may be required to achieve certification in field testing procedures in concrete, soil aggregate and Hot Mix Asphalt within a given time period.

**III. EXAMPLES OF WORK: (Examples are illustrative only)**

Operates electronic and mechanical equipment required in surveying, drafting and design, field inspection, and materials testing;

Reviews and comments on design submittals from consulting engineers to ensure compliance with standards; meets with consultants to resolve problems;

Provides information to and works with architects, engineers, contractors, developers, and the like to ensure adherence to proper standards and codes;

Oversees or performs plan preparation and review during construction and maintenance of roadways, structures and traffic control devices for conformance to plans and specifications;

Schedules and directs the work of construction inspectors assigned to construction and maintenance projects;

Compiles, documents, and reviews construction reports including cost and other data; reviews special provisions, design agreements, and continuity of plans as necessary; assists in determining if contract plans adhere to current standards and practices;

Drafts plans, plats and drawings for various engineering improvements and installations using CADD and manual processes;

Prepares construction drawings based on engineer's notes, survey notes, field and record research, and engineering calculations;

Updates maps, plats, and other engineering records based on "as built," survey notes and other information;

Computes project quantities, curve data, elevations and profiles;

Performs traverse adjustments and coordinate geometry computations to produce final adjustment traverse coordinates;

Monitors contractors, producers, and fabricators and assures quality control of materials used in the construction of roadways, bridges and facilities; assures materials used meet state specifications;

Oversees material testing programs in permanent and portable labs and at material supplier facilities;

Performs as instrument person on survey assignments and acts as Party Chief in his/her absence;

Maintains records pertaining to public works installations and projects; prepares reports related to the work;

Oversees the advertisement of major maintenance contracts;

Oversees roadway evaluations/studies;

Compiles, documents, and reviews maintenance reports/studies including costs and other data, determining if maintenance contracts adhere to current maintenance practices and standards;

Assists in the clearance of utilities and other underground obstructions prior to subsurface explorations;

Assists in locating subsurface features through the use of preliminary engineering design documents and/or the use of electronic geographical positioning equipment;

Performs hydrographic surveys of shipping channels and berths;

Establishes horizontal and vertical controls for hydrographic surveys;

Determines tide adjustments and edits hydrographic surveys;

Compiles comprehensive analytical reports for various Project Planning/miscellaneous studies;

Attends project planning meetings and Public Hearings/Workshops;

Performs before and after accident studies;

Provides comprehensive reports pertaining to accident corridor studies;

Prepares charts and graphs for projects using various computer programs;

Performs other related duties.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of basic engineering principles, practices, and methods;

Knowledge of CADD drafting using Microstation or other engineering software;

Knowledge of surveying, including use of instruments and equipment;

Knowledge of design and right of way plat criteria, construction standards and inspection methods and techniques;

Knowledge of InRoads, Geopak or other related engineering software in the use of design activities;

Knowledge of geodetic control processing software and CADD software;

Knowledge of Temporary Traffic Control Standards, National Electrical and Safety Codes, and Manual on Uniform Traffic Control Devices;

Knowledge of Federal Highway Regulations and Criteria for Coding In-Service Bridge conditions;  
Knowledge of statistical principles;  
Knowledge of algebra, geometry, and the principles of basic mathematics used in engineering design, drawing and drafting;  
Knowledge of the inspection techniques for welding and fabrication of structural products including non-destructive testing methods and the American Welding Society Welding Code;  
Knowledge of AASHTO and ASTM test specifications and methods;  
Knowledge of human factors as they relate to transportation issues;  
Knowledge of effective supervisory methods and practices;  
Skill in reading and interpreting complex engineering drawings and computations;  
Skill in the operation of electronic and mechanical equipment used in performing technical engineering support tasks;  
Skill in reading and creating blueprints and engineering drawings, right of way plats and plans, using CADD or manual processes;  
Skill in interpreting, analyzing or preparing maps, deeds, plats, and plans;  
Ability to instruct and train lower-level technicians in coordinate geometry calculations and CADD processing;  
Ability to maintain a variety of technical records and adapt records systems for computerization;  
Ability to update computer design files, maps and other records;  
Ability to establish and maintain effective working relationships with other employees and the general public;  
Ability to communicate effectively;  
Ability to physically perform essential duties.

**V. SPECIAL REQUIREMENTS:**

Employees in this classification may be considered "Essential Employees" and may be required to sign and agree to all policies and procedures relating to "Essential Employee" status.

**Date Revised: December 16, 2003**

**APPROVED:** \_\_\_\_\_  
**Director, Office of Human Resources**

## TRANSPORTATION ENGINEERING TECHNICIAN V

Code 8450

Grade 0015

### **I. CLASSIFICATION DEFINITION:**

This is the advanced technical or senior project management level of work performing a variety of complex engineering support tasks. Some positions in this classification are responsible for supervising staff. Specific duties depend on job assignments and may include serving as Project Engineer for large sized construction and maintenance projects; overseeing complex maintenance activities; serving as Assistant Project Engineer on major bridge and highway design projects; overseeing the development and performance of advanced soils and materials testing programs; serving as party chief on a survey crew, or exploration crew; overseeing the development and advertisement of maintenance contracts, overseeing budget allocations statewide; or designing and coordinating major design and planning and traffic management projects. The employee is expected to give guidance and assistance to less experienced employees and may supervise a project team, crew or unit. Supervision is not a requirement when highly specialized expertise can be documented.

Work is performed under the general direction of an engineer, or other professional employee. Work conditions vary depending on assignments and are performed in the office or in the field during survey and inspection assignments with exposure to varying weather conditions and rough terrain and requirements for walking, standing, bending, and lifting loads weighing up to 80 pounds; may require working in close proximity with traffic on Maryland highways; requires hand/eye coordination in the efficient operation of computers and other office machines, survey equipment and the like. Employees in this classification may be required to work various shifts and on weekends depending on assignments. Employees in some positions in this classification may be required to travel and be available for work in any part of the State, subject to change of assignment, as work requires.

Specific position allocation to this level is determined by application of the Position Appraisal Method of Job Evaluation.

### **II. MINIMUM QUALIFICATIONS:**

**Education:** Graduation from a standard high school or possession of a high school equivalency certificate.

**Experience:** Eight years of experience in technical engineering related work in the areas of design, traffic, construction, materials testing, engineering surveys, maintenance, or planning.

**Notes:**

1. Applicants may substitute education in a civil engineering curriculum at an accredited college or university at the rate of 30 semester credit hours for each year of the required experience, up to a maximum of three years.
2. Applicants who possess an Associates Degree in either Engineering, Construction Management or Surveying or Surveying Technology from an accredited community college, college or university are considered to have met two years of the eight year experience requirement.

**Licenses, Registrations and Certificates:**

1. Employees in this classification may be assigned duties that require the operation of a motor vehicle. Employees in some positions in this classification may be required to possess a motor vehicle operator's license valid in the State of Maryland. A CDL license may be required for some positions.
2. National Institute for Certification in Engineering Technologies (NICET) certification, in-house certifications or state-sponsored, material-testing certification may be required for some positions.
3. Employees in this classification may be required to possess Federal Highway Administration (FHWA) certification for inspection of In-Service Bridges, or have the ability to acquire this certificate within a given time period.
4. Employees in this classification may be required to achieve certification in field testing procedures in concrete, soil aggregate and Hot Mix Asphalt within a given time period.

**III. EXAMPLES OF WORK: (Examples are illustrative only)**

Oversees or performs plan review, field inspections, and field investigations during design, construction and maintenance of roadways, structures and traffic control devices for conformance to plans and specifications;

Operates electronic and mechanical equipment required in surveying, drafting and design, field inspection, and materials testing;

Researches a variety of electronic and mechanical equipment in carrying out surveying, drafting and design and materials sampling and testing;

Provides information to and works with architects, engineers, contractors and developers to ensure adherence to standards and codes;

Conducts or participates in project milestone review meetings on transportation related projects;

Prepares correspondence to respond to or inform the public, elected officials, federal, state or local government agencies of project information;

Schedules and directs the work of construction inspectors assigned to construction and maintenance projects;

Monitors contract performance and project status for major construction and maintenance projects;

Develops and oversees material testing programs in permanent and portable labs and at material supplier facilities;

Monitors contractors, producers, and fabricators and assures quality control of materials used in the construction of roadways, bridges and facilities, and assures materials used meet state specifications;

Directs the preparation of plans, plats and drawings for various engineering improvements and installations, prepares construction drawings based on engineer's notes, survey notes, field and records research, and engineering calculations, updates maps, plats, and other engineering records based on "as built," survey notes and other information, and conducts engineering surveys as needed;

Compiles quantities and reviews construction reports and other data;

Creates complex horizontal and vertical alignments using Computer Aided Design and Drafting (CADD) and coordinate geometry software;

Provides technical guidance and support to office and field personnel concerning design, survey, software, hardware and procedures;

Oversees the development of CADD plans, plats and other project documents;

Prepares and reviews special provisions, design agreements, and continuity of plans as necessary, and assists in determining if contract plans are complete;

Performs complex design and survey calculations to translate raw data into information for the design and construction of public works and other transportation-related projects;

Maintains records and prepares reports pertaining to public works installations and projects;

Compiles, documents, and reviews maintenance reports/studies including costs and other data, determining if maintenance contracts adhere to current maintenance practices and standards;

Oversees and is responsible for the clearance of utilities and other underground obstructions prior to subsurface exploration;

Oversees and is responsible for locating subsurface features through the use of preliminary engineering design documents and/or the use of electronic geographical positioning equipment;

Reviews, evaluates and approves Quality Control plans submitted by material producers and fabricators;

Performs hydrographic surveys of shipping channels and berths;

Establishes horizontal and vertical controls for hydrographic surveys;

Determines tide adjustments and edits hydrographic surveys;

Provides data, analysis, recommendations and corrective measures for Environmental Impact Studies;

Reviews work of other employees;

Performs multi-fatal accident analysis;

Performs other related duties.

**IV. REQUIRED KNOWLEDGE, SKILLS AND ABILITIES:**

Knowledge of basic engineering principles, practices, and methods;  
Knowledge of CADD using Microstation, manual drafting and surveying;  
Knowledge of design criteria, construction standards and inspection methods and techniques;  
Knowledge of statistical principles;  
Knowledge of algebra, geometry and the principles of basic mathematics used in engineering design, drawing and drafting;  
Knowledge of AASHTO and other policies and procedures used in the design and construction of transportation projects;  
Knowledge of Temporary Traffic Control Standards, National Electrical and Safety Codes, and Manual on Uniform Traffic Control Devices;  
Knowledge of the principles and standards of highway, bridge and interchange design including geometrics, hydraulics, capacity, economics and traffic assignments;  
Knowledge of materials and construction methods as they apply to the design of transportation projects;  
Knowledge of Federal Highway Regulations and Criteria for Coding In-Service Bridge conditions;  
Knowledge of Federal Aid regulations;  
Knowledge of AASHTO and ASTM test specifications and methods;  
Knowledge of effective supervisory methods and practices;  
Skill in interpreting, analyzing, or preparing maps, deeds, plats, and plans;  
Skill in operating computers using Microstation and other related engineering software;  
Skill in the maintenance and operation of electronic and mechanical equipment used in performing complex technical engineering support tasks;  
Skill in reading and creating blueprints and engineering drawings, right of way plats, and plans, using CADD or manual processes;  
Skill in reading and interpreting complex engineering drawings and computations;  
Ability to streamline and optimize complex design, surveying and mapping processes;  
Ability to place complex traffic control devices and systems in operation;  
Ability to maintain a variety of technical records and adapt records systems for computerization;  
Ability to update computer design files, maps and other records;  
Ability to establish and maintain effective working relationships with other employees and the general public;  
Ability to prepare correspondence for transportation projects informing the public, elected officials and others about project specific data;  
Ability to communicate effectively;  
Ability to physically perform essential duties.

**V. SPECIAL REQUIREMENTS:**

Employees in this classification may be considered “Essential Employees” and may be required to sign and agree to all policies and procedures relating to “Essential Employee” status.

**Date Revised:** December 16, 2003

**APPROVED:** \_\_\_\_\_  
**Director, Office of Human Resources**

## **VERTICAL CONSTRUCTION INSPECTOR**

### **MINIMUM QUALIFICATIONS:**

**EDUCATION:** Graduation from a standard high school or possession of a State high school equivalence certificate.

It is preferred that employees in this classification have accreditations from a building trade, i.e. mechanical (HVAC), electrical, plumbing, roofing, or have completed an apprenticeship in one of the aforementioned trades.

Employees with state licensure in any of the aforementioned trades are considered to have met the education requirements.

Employees with BS or higher degrees in architecture or architectural engineering are considered to have met the education requirements.

**EXPERIENCE:** Employees in this classification shall have a minimum of four (4) years' experience in specialized building construction inspection in one or more of the following fields: mechanical (HVAC), electrical, plumbing, or roofing.

### **CONDITIONS OF EMPLOYMENT:**

Applicants shall be in good health and physically able to perform the duties required of the position.

Applicants must be able to read, write, comprehend, and fluently speak the English language.

Applicants must have a valid driver's license. Applicants must have use of a vehicle to travel to, from and while on the project site.

Candidates must be willing to travel and be available for work in any geographical area within scope.

Candidates are subject to change of assignment as work requires. Candidates may also be required to work various shifts and on weekends depending on assignments.

All individuals supplied by the Consultant must also complete the SHA CORE Training courses prior to beginning work. These courses are Americans with Disabilities Act (ADA) Awareness, Diversity Awareness, Limited English Proficiency (LEP), Sexual Harassment Prevention and Awareness, and Workplace and Domestic Violence Awareness.

### **ESSENTIAL REQUIREMENTS OF WORK:**

High level of expertise in at least one of the aforementioned areas of vertical construction, with basic knowledge of other areas. A high level of expertise in OSHA standards and regulations, mainly those involved with vertical construction, i.e. fall protection. Capable of understanding and enforcing contract documents. Capable of working cooperatively with others.

### **NATURE OF WORK:**

Work will entail inspection of facilities/building new construction, renovation, and maintenance projects. Employee will be inspecting all aspects of construction including but not limited to HVAC, electrical, plumbing, roofing, and structural. Employee will interpret engineering & architectural drawings and contract specifications to ensure that contractor is working according to plan. Employee will maintain a relationship with the design engineer to use as a resource for answering contractor's Requests for Information (RFIs). Employee will be able to perform monthly contractor's schedule reviews and will provide regular schedule and milestone updates to the managing District. Employees in this classification may be Construction Project Engineers (CPEs) or inspectors. As such, work may or may not be performed under the supervision of another and may include the supervision of one or more inspectors.