



# TDOT Engineering Technician

## **AGENCY OVERVIEW AND PROGRAM FOCUS**

Transportation is so basic that many of us overlook its overwhelming importance in our daily lives. Practically everything used in our homes, offices, or schools across Tennessee – from furniture to food items to clothing – requires a large and complex transportation network. The Tennessee Department of Transportation provides citizens of Tennessee and travelers with one of the best transportation systems in the country. TDOT is a multimodal agency with responsibilities in building and maintaining roads, aviation, public transit, waterways, railroads, cycling and walking. Our involvement ranges from airport improvements to funding transit buses to planning for river ports.

## **SUMMARY**

The Engineering Technician Series at TDOT is responsible for planning, designing, constructing, preserving, operating, and maintaining the transportation systems within the State of Tennessee. The Engineering Technician series provides technical support and guidance to divisions within the department as well as providing assistance to consultants, contractors, suppliers, federal and state agency partners, local governments, transit agencies, aviation partners, utilities, and developers in the contracting, permitting, development and construction of transportation assets statewide.

## **GENERAL POSITION DESCRIPTION**

### **TDOT Engineering Technician**

The Engineering Technician classification denotes participation in the first year of the TDOT Graduate Transportation Engineer (GTE) Program. As part of a mandatory two-year program that includes rotations in core and elective disciplines, this position will train under the direction of other engineers to develop a foundational knowledge of TDOT's technical requirements and to apply engineering principles to the life cycle of a project. Upon completion of each rotation, an evaluator will determine if the required competency level has been achieved. After fulfilling the required competencies for each rotation during the first half of the GTE Program curriculum, the Engineering Technician will promote to the Engineering Technician 1 level in the career path series.

### **TDOT Engineering Technician 1**

The Engineering Technician 1 must have completed the first half of the mandatory two-year TDOT Graduate Transportation Engineer (GTE) Program curriculum. In the second half, the Engineering Technician 1 will continue rotations in core and elective disciplines, under the immediate direction of other engineers, to develop a foundational knowledge of TDOT's technical requirements and to apply engineering principles to the life cycle of a project. Upon completion of each rotation, an evaluator will determine if the required competency level has been achieved. After fulfilling the required



competencies for each rotation during the second half of the GTE Program curriculum, the Engineering Technician 1 will promote to the Engineering Technician 2 level in the career path series and should pursue the desired available TDOT positions for which they are best qualified.

### **TDOT Engineering Technician 2**

The Engineering Technician 2 will work under the general direction of other engineers and will be responsible for functioning within and being accountable to the project team. The Engineering Technician 2 will be required to apply critical thinking and independent problem-solving skills within their technical discipline and will coordinate with project team members to assist with navigating the increasing complexity of projects. The Engineering Technician 2 role must incorporate the department's vision and ethics into their work practices. The Engineering Technician 2 will promote to the Engineering Technician 3 level in the career path series upon achieving the required competencies established for the specific discipline.

### **TDOT Engineering Technician 3**

The Engineering Technician 3 requires the aggregate of skill sets developed throughout the Engineering Technician series. The Engineering Technician 3 will be responsible for projects having a moderate degree of complexity and risk. Collaboration with diverse project teams to implement innovative solutions are required in this position. The Engineer Technician 3 is expected to work independently and with minimal supervision within their technical discipline, being fully accountable for prioritizing, meeting project schedules, maintaining budgets, eliminating constructability issues, and mitigating maintenance concerns. The Engineer Technician 3 position is expected to solve project challenges by turning data into actionable decisions, ensuring the project remains within the pre-determined scope, schedule, and budget. The Engineering Technician 3 serves as a mentor and trains engineering staff within their area of discipline to ensure succession planning and to retain core competencies within TDOT. The Engineering Technician 3 role must incorporate the department's vision and ethics into their work practices.

### **RESPONSIBILITIES**

The essential duties for Engineering Technician, I, II, and III include:

- Understand and apply engineering techniques, procedures, and design criteria in accordance with technical manuals to develop and/or implement detailed specifications for projects
- Work to understand criteria and key components of technical disciplines within the Project Delivery Network (PDN)
- Utilize various software platforms in designing and maintaining transportation systems
- Ensure quality of work product meets or exceeds standards
- Assist with implementing proactive solutions for engineering concerns to ensure the needs of the project are met



- Work to ensure project continuity through collaboration and effective communication with the project team and internal stakeholders
- Submit updates to schedules to document the progress of projects through the project life cycle
- Work to identify infrastructure issues of transportation components for maintenance, repair, safety, environmental, and operational needs
- Work to plan, develop, and assemble transportation infrastructure plans and supporting documents with the latest CADD computer technology

Additional duties for Engineering Technician II, and III include:

- Responsible for the completion of applicable project deliverables in the planning, design, and construction phase, and for the identification of issues that might impact critical path work items on complex projects
- Identify transportation infrastructure issues and provide solutions for maintenance, repair, safety, environmental, and operational needs
- Design and graphically depict project components by creating plans for TDOT projects utilizing department specifications for complex projects
- Identify conflicts in the proposed design, including constructability and maintainability concerns, make recommendations, and coordinate on proactive solutions with other disciplines while ensuring the needs of the project are met within the pre-determined scope, schedule, and budget
- Work to determine and implement design criteria that applies a context sensitive approach to complex projects for which risk is highest, balancing both safety and cost effectiveness with environmental factors and community input

Additional duties for Engineering Technician III include:

- Provide technical guidance, training, and mentorship to others within the project team or discipline group
- Develop and implement innovative processes and design elements that will improve efficiency and safety

**QUALIFICATIONS** (Education must be from an accredited institution.)

Education and Experience:

**TDOT Engineering Technician:** Bachelor's or Master's Degree in Engineering, Construction Project Management, or Concrete Industry Management

**TDOT Engineering Technician 1:** Bachelor's or Master's Degree in Engineering, Construction Project Management, or Concrete Industry Management and 1 Year of Demonstrated Competency in planning, developing and/or constructing projects



**TDOT Engineering Technician 2:** Bachelor's Degree in Engineering, Construction Project Management, or Concrete Industry Management and 2 Years of Demonstrated Competency in planning, developing and/or constructing projects

OR

Master's Degree in Engineering, Construction Project Management, or Concrete Industry Management and 1 Year of Demonstrated Competency in planning, developing and/or constructing projects

**TDOT Engineering Technician 3:** Bachelor's Degree in Engineering, Construction Project Management, or Concrete Industry Management and 3 Years of Demonstrated Competency in planning, developing and/or constructing projects

OR

Master's Degree in Engineering, Construction Project Management, or Concrete Industry Management and 2 Years of Demonstrated Competency in planning, developing and/or constructing projects

**Knowledge, Skills, Abilities, Competencies (KSACs):**

The required KSACs for Engineering Technician, I, II, and III include:

- Knowledge of engineering principles, potentially within a specific discipline as they relate to transportation projects
- Knowledgeable in the use of computers and applicable programs, applications, and systems
- Skilled in basic technical writing
- Ability to communicate effectively, while interacting with internal and external stakeholders in a professional and courteous manner
- Ability to manage time to ensure assignments are completed
- Ability to use critical thinking to problem solve and make informed decisions
- Ability to learn technical concepts and apply those concepts to work
- Ability to follow verbal and written instructions
- Ability to conduct work with a high degree of accuracy

Additional KSACs for Engineering Technician II and III include:

- Skilled in strong technical writing
- Ability to work within a project team
- Ability to manage time and prioritize work items to ensure project assignments are completed

Additional KSACs for Engineering Technician III include:

- Ability to resolve conflicts, coach, and mentor others, and support a culture of accountability, collaboration, and accomplishment
- Ability to coordinate with the Project Manager and Project Team to proactively identify and resolve complex, multidisciplinary issues which may impact project scope, schedule, and/or budget