



# Transportation Engineering Specialist

## **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 Transportation Engineering Specialist Series at TDOT is responsible for planning, designing, constructing, preserving, operating, and maintaining the transportation systems within the State of Tennessee. The Engineering Specialist 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**

### **Transportation Engineering Specialist 1**

The Engineering Specialist 1 classification denotes participation in the first half of TDOT's Graduate Transportation Engineering (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 Specialist 1 will promote to the Engineering Specialist 2 level in the career path series.

### **Transportation Engineering Specialist 2**

The Engineering Specialist 2 must have completed the first half of the mandatory two-year TDOT Graduate Transportation Engineering (GTE) Program curriculum. In the second half, the Engineering Specialist 2 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 Specialist 2 will promote to the Engineering Specialist 3 level in the career path series and should pursue the desired available TDOT positions for which they are best qualified.

### **Transportation Engineering Specialist 3**

The Engineering Specialist 3 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 Specialist 3 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 projects ranging in complexity from a moderate to intermediate level. The Engineering Specialist 3 role must incorporate the department's vision and ethics into their work practices. The Engineering Specialist 3 will promote to the Engineering Specialist 4 level in the career path series upon achieving the required competencies established for the specific discipline.

### **Transportation Engineering Specialist 4**

The Engineering Specialist 4 requires the aggregate of skill sets developed throughout the Engineering Specialist series. The Engineering Specialist 4 will be responsible for projects ranging from intermediate complexity to the highest degree of complexity and risk for TDOT. Collaboration with diverse project teams to implement innovative solutions are required in this position. The Engineer Specialist 4 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 Specialist 4 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 Specialist 4 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 Specialist 4 role must incorporate the department's vision and ethics into their work practices.

### **RESPONSIBILITIES**

The essential duties for Engineering Specialist 1, 2, 3, and 4 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 Specialist 3, and 4 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 Specialist 4 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.)

**Transportation Engineering Specialist 1:** Bachelor's or Master's Degree in Engineering, Construction Project Management, or Concrete Industry Management

**Transportation Engineering Specialist 2:** 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

**Transportation Engineering Specialist 3:** 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

**Transportation Engineering Specialist 4:** 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 Specialist 1, 2, 3, and 4 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 Specialist 3, and 4 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 Specialist 4 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



# Transportation Engineer

## **AGENCY OVERVIEW AND PROGRAM FOCUS**

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## **SUMMARY**

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

The Transportation Engineer provides discipline specific technical expertise to multidisciplinary project teams as part of a matrix management structure, both in the Region and statewide. Positions within this classification resolve complex or unique technical challenges to ensure the successful completion of a project. The Transportation Engineer has a key role in ensuring that a project is completed within the agreed scope, schedule, and budget that is in alignment with the Department's Work Program. This classification requires a professional engineering license and is expected to sign and seal applicable documents for construction, increasing the efficiency in plans preparation activities for the department. This classification serves as a mentor and trains engineering staff. The Transportation Engineer is expected to take an active role in staying relevant and engaged as part of their specific discipline, adapting new technologies and best practices in driving TDOT's transportation projects forward. The Transportation Engineer will be expected to contribute to the project team by defining expectations for how the project team manages risk, communicates as a team, delivers quality products, and navigates changes throughout the life of the project.



## **RESPONSIBILITIES**

1. Serve as a subject matter expert in applicable discipline specific project activities
2. Coordinate with the Project Manager and Project Team within the structure of a matrix organization regarding potential impacts to the scope, schedule, and/or budget
3. Perform applicable discipline specific activities as outlined in the Project Delivery Network (PDN)
4. Assist with multidisciplinary reviews for projects as part of the Quality Assurance process
5. Design, implement, and operate Transportation Systems Management and Operations (TSM&O) strategies including the application of emerging technologies
6. Participate in Risk Management Assessments and implement risk mitigation strategies
7. Identify conflicts in proposed designs, make recommendations, and coordinate proactive solutions with other disciplines to ensure the needs of the project are met
8. Participate in the scope development, selection, and administration of consultant contracts on all phases of the project
9. Attend and represent the department in public meetings, appropriately addressing customer needs and concerns
10. Serve as a mentor in supporting career development and cultivating communication and leadership skills of others at TDOT

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

Education and Experience: Bachelor's degree in engineering, active status with the State of Tennessee as a professional engineer and 4 years of demonstrated competency in developing and/or constructing transportation projects

## **KNOWLEDGE, SKILLS, ABILITIES, AND COMPETENCIES (KSACs):**

- Knowledge of engineering principles within a specific discipline and how they relate to transportation projects
- Knowledge of state and federal regulations/requirements for development and construction of transportation projects
- Ability to identify and mitigate risk associated with transportation projects
- Skilled in using critical thinking to problem solve and make informed decisions independently
- Ability to learn technical concepts and apply those concepts to work
- Ability to communicate effectively, with excellent verbal/written and public speaking skills, and to interact with others in a professional and courteous manner, including internal/external stakeholders, consultants, landowners, and governmental agencies
- Ability to resolve conflicts, coach and motivate others, build high-performing teams, and create a culture of accountability, collaboration, and accomplishment



# Senior Transportation Engineer

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The Senior Transportation Engineer provides discipline specific technical expertise to multidisciplinary project teams as part of a matrix management structure, both in the Region and statewide for increasingly complex projects. The Senior Transportation Engineer resolves novel or unique technical challenges to ensure the successful completion of increasingly complex projects. This classification requires a professional engineering license and is expected to sign and seal applicable documents for construction, increasing the efficiency in plans preparation activities for the department. This classification serves as a mentor and trains engineering staff. The Senior Transportation Engineer is expected to take an active role in staying relevant and engaged as part of their specific discipline, adapting new technologies and best practices in driving TDOT's transportation projects forward.

The Senior Transportation Engineer must contribute to divisional technical committees within the assigned area of technical expertise and is expected to provide innovative answers for resolution of complex issues. The Senior Transportation Engineer will be expected to contribute to the project team by defining expectations for how the project team manages risk, communicates as a team, delivers quality, and navigates changes throughout the life of the project.



## **RESPONSIBILITIES**

1. Serve as a subject matter expert in applicable discipline specific project activities
2. Coordinate with the Project Manager and Project Team within the structure of a matrix organization regarding potential impacts to the scope, schedule, and/or budget
3. Perform applicable discipline specific activities as outlined in the Project Delivery Network (PDN) on increasingly complex projects
4. Assist with multidisciplinary reviews for projects as part of the Quality Assurance process
5. Design, implement, and operate Transportation Systems Management and Operations (TSM&O) strategies including the application of emerging technologies
6. Perform Risk Management Assessments and implement risk mitigation strategies
7. Identify conflicts in proposed designs, make recommendations, and coordinate proactive solutions with other disciplines to ensure the needs of the project are met
8. Manage the construction bid letting process by creating contract proposal books, establishing contract completion dates, providing concurrence on bid letting proposals, executing the final contracts through the awards process, and assisting with electronic bidding
9. Participate in the scope development, selection, and administration of consultant contracts on all phases of the project
10. Attend and facilitate public meetings as a representative of the department, appropriately addressing customer needs and concerns
11. Lead and participate in divisional technical committees
12. Serve as a mentor in supporting career development and cultivating communication and leadership skills of others at TDOT

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

Education and Experience: Bachelor's degree in engineering, active status with the State of Tennessee as a professional engineer, and 6 years of demonstrated competency in developing and/or constructing transportation projects

## **KNOWLEDGE, SKILLS, ABILITIES, AND COMPETENCIES (KSACs):**

- Knowledge of state and federal regulations/requirements for development and construction of transportation projects
- Ability to identify and mitigate risk associated with transportation projects
- Skilled in using critical thinking to problem solve and make informed decisions independently
- Ability to research and explore innovative technical concepts and develop uses for how to apply those concepts to transportation projects





- Ability to communicate effectively, with excellent verbal/written and public speaking skills, and to interact with others in a professional and courteous manner, including internal/external stakeholders, consultants, landowners, and governmental agencies
- Ability to resolve conflicts, coach and motivate others, build high-performing teams, and create a culture of accountability, collaboration, and accomplishment
- Skilled in advanced technical writing



## Region Transportation Engineer

### **AGENCY OVERVIEW AND PROGRAM FOCUS**

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### **SUMMARY**

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

The Region Transportation Engineer provides discipline specific technical expertise to multidisciplinary project teams as part of a matrix management structure for exceedingly complex projects and regional programs having the greatest degree of risk. The Region Transportation Engineer resolves unusual or novel technical challenges to ensure the successful completion of exceedingly complex projects and regional programs. The Region Transportation Engineer addresses design and constructability concerns and changes that could result in change orders and contractor claims. This classification requires a professional engineering license and is expected to sign and seal applicable documents for construction, increasing the efficiency in plans preparation activities for the department. This classification serves as a mentor and trains engineering staff. The Region Transportation Engineer is expected to take an active role in staying relevant and engaged as part of applicable disciplines, adapting new technologies and best practices in driving TDOT's transportation projects forward.

The Region Transportation Engineer must contribute to statewide technical committees within their area of technical expertise and provide innovative solutions for resolution of complex issues. The Region Transportation Engineer will be expected to contribute to the project team by defining expectations for how the project team manages risk, communicates as a team, delivers quality, and navigates changes throughout the life of the project.



## **RESPONSIBILITIES**

1. Serve as a subject matter expert in specific project activities in applicable disciplines
2. Coordinate with the Project Manager and Project Team within the structure of a matrix organization regarding potential impacts to the scope, schedule, and/or budget
3. Perform specific activities in applicable disciplines as outlined in the Project Delivery Network (PDN) on exceedingly complex projects and regional programs having the highest degree of risk
4. Assist with multidisciplinary reviews for projects as part of the Quality Assurance process
5. Implement Transportation Systems Management and Operations (TSM&O) strategies including the application of emerging technologies for the region
6. Participate in Risk Management Assessments and implement risk mitigation strategies
7. Identify conflicts in proposed designs, make recommendations, and coordinate proactive solutions with other disciplines to ensure the needs of the project are met
8. Manage the construction bid letting process by creating contract proposal books, establishing contract completion dates, providing concurrence on bid letting proposals, executing the final contracts through the awards process, and assisting with electronic bidding
9. Participate in the scope development, selection, and administration of alternative delivery contracts on all phases of the project
10. Attend and facilitate public meetings as a representative of the department, appropriately addressing customer needs and concerns
11. Lead and participate in statewide technical committees
12. Serve as a mentor in supporting career development and cultivating communication and leadership skills of others at TDOT

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

Education and Experience: Bachelor's degree in engineering, active status with the State of Tennessee as a professional engineer, and 8 years of demonstrated competency in developing and/or constructing transportation projects

## **KNOWLEDGE, SKILLS, ABILITIES, AND COMPETENCIES (KSACs)**

- Knowledge of the multiple project delivery methods, including design/bid/build and alternative delivery
- Knowledge of state and federal regulations/requirements for development and construction of transportation projects
- Ability to identify and mitigate risk associated with transportation projects
- Skilled in using critical thinking to problem solve and make informed decisions independently



- Ability to research and explore innovative technical concepts and develop uses for how to apply those concepts to transportation projects
- Ability to communicate effectively, with excellent verbal/written and public speaking skills, and to interact with others in a professional and courteous manner, including internal/external stakeholders, consultants, landowners, and governmental agencies
- Ability to resolve conflicts, coach and motivate others, build high-performing teams, and create a culture of accountability, collaboration, and accomplishment
- Skilled in advanced technical writing



# Statewide Transportation Engineer

## **AGENCY OVERVIEW AND PROGRAM FOCUS**

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## **SUMMARY**

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

The Statewide Transportation Engineer is a recognized subject matter expert in their discipline. This position works with project teams to resolve novel or unique technical challenges to ensure the successful completion of exceedingly complex projects and statewide programs. The Statewide Transportation Engineer collaborates with the Asset Management Division to provide technical assistance in the development of TDOT asset management targets and spend plans. This classification develops technical guidance within their discipline that addresses recurring issues on projects and programs to increase efficiency, reduce risk, extend the asset lifecycle, and reduce the overall cost. This classification serves as a mentor and trains engineering staff within their area of discipline to retain the needed core competency within TDOT. The Statewide Transportation Engineer is expected to take an active role in staying relevant and engaged as part of their specific discipline, adapting new technologies and best practices in driving TDOT's transportation projects forward.

The Statewide Transportation Engineer must contribute to national technical committees within their area of technical expertise and provide innovative solutions for resolution of complex issues. The Statewide Transportation Engineer will be expected to contribute to the project team by defining expectations for how the project team manages risk, communicates as a team, delivers quality, and navigates changes throughout the life of the project.



## **RESPONSIBILITIES**

1. Serve as a subject matter expert in applicable discipline specific project activities
2. Research, develop, and implement discipline specific technical guidance to address recurring issues on projects and programs
3. Coordinate with the Project Manager and Project Team within the structure of a matrix organization regarding potential impacts to the scope, schedule, and/or budget
4. Perform applicable discipline specific activities as outlined in the Project Delivery Network (PDN) on exceedingly complex projects and statewide programs having the highest degree of risk
5. Assist with multidisciplinary reviews for projects as part of the Quality Assurance process on exceedingly complex projects and statewide programs
6. Participate in the development of the systems plan for Transportation Systems Management and Operations (TSM&O) strategies including the application of emerging technologies
7. Participate in Risk Management Assessments and implement risk mitigation strategies
8. Identify conflicts in proposed designs, make recommendations, and coordinate proactive solutions with other disciplines to ensure the needs of the project are met in all phases of the project
9. Manage the construction bid letting process by creating contract proposal books, establishing contract completion dates, providing concurrence on bid letting proposals, executing the final contracts through the awards process, and assisting with electronic bidding
10. Participate in the scope development, selection, and administration of alternative delivery contracts on all phases of the project
11. Attend and facilitate public meetings as a representative of the department, appropriately addressing customer needs and concerns
12. Lead and participate in national technical committees
13. Review draft legislative language that could potentially impact TDOT's ability to deliver projects and programs and provide the Executive Leadership Team feedback on potential ways to mitigate these impacts
14. Serve as a mentor in supporting career development and cultivating communication and leadership skills of others at TDOT

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

Education and Experience: Bachelor's degree in engineering, active status with the State of Tennessee as a professional engineer, and 12 years of demonstrated competency in developing and/or constructing transportation projects



**KNOWLEDGE, SKILLS, ABILITIES AND COMPETENCIES (KSACs):**

- Knowledge of the multiple project delivery methods, including design/bid/build and alternative delivery
- Knowledge of state and federal regulations/requirements for development and construction of transportation projects
- Ability to identify and mitigate risk associated with transportation projects
- Skilled in using critical thinking to problem solve and make informed decisions independently
- Ability to research and explore innovative technical concepts and develop uses for how to apply those concepts to transportation projects
- Ability to communicate effectively, with excellent verbal/written and public speaking skills, and to interact with others in a professional and courteous manner, including internal/external stakeholders, consultants, landowners, and governmental agencies
- Ability to resolve conflicts, coach and motivate others, build high-performing teams, and create a culture of accountability, collaboration, and accomplishment
- Skilled in advanced technical writing
- Skilled in review and assessment of draft legislative language