

## Who we are:

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. The Department of Transportation has approximately 3,500 employees with four statewide region facilities in Knoxville, Chattanooga, Nashville, and Jackson.



### **Hydraulics Design Transportation Engineer** Engineering Division – Hydraulics Design Section \$102,300 annually

#### **Job Overview**

The Hydraulics Design Transportation Engineer provides hydraulics design technical expertise to HQ Design teams. This position collaborates with Project Teams by identifying potential design challenges and implementing statewide acquired knowledge that focuses on ensuring quality deliverables, minimizing variability, and increasing the safety and performance of TDOT's transportation system. The Hydraulics Design Transportation Engineer position requires a professional engineering license and is expected to sign and seal applicable construction plans.

The Hydraulics Design Transportation Engineer ensures Department policies, technical guidance, and procedures are incorporated into hydraulics design deliverables and assists in implementing the Quality Assurance Program as part of the Region's preconstruction activities. This position must effectively articulate technical engineering concepts through training, mentoring, and collaborating as part of a matrix organization.

#### **Essential Job Responsibilities**

Strengthen Region Preconstruction design teams by providing technical expertise and support in matters related to complex or unique hydraulics design-related challenges to allow Preconstruction staff to perform their roles effectively and efficiently, optimizing the Team's ability to successfully address unanticipated challenges.

Routinely and independently design and prepare preliminary and final plans for the hydraulic structures and miscellaneous highway facilities varying in complexity using TDOT's current software programs. Design and prepare contract documents utilizing inspection reports, existing plans, field reviews, and electronic survey data for hydraulic and miscellaneous highway facility construction projects according to American Association of State Highway and Transportation Officials (AASHTO) and TDOT's current manuals and guides for design. Participate in project meetings and field inspections to facilitate troubleshooting of existing design and construction concerns and conditions. Provide recommendations for the scope of work, construction methodologies, traffic concerns, and recommendations for materials and special equipment.

Verify compliance with the Quality Management policy with respect to Hydraulics Design elements to reduce plan errors and re-work, right-of-way delays, construction delays, and contractor claims. Assist the Quality Teams by providing reviews in alignment with the PDN and TDOT's Quality Assurance Program, identifying potential constructability concerns in proposed designs and making recommendations for

proactive solutions with other disciplines to ensure the project's needs are met. Follow TDOT Quality Management processes for deliverables through all project phases, supporting effective team Utilization Percentages. Approve Functional Design Plans as necessary throughout the design process.

Routinely collaborate with Region Design Teams and Asset Management to identify and document knowledge on industry best practices to avoid past errors and ensure TDOT project successes. Assist with modifications to all applicable policies, procedures, design standards, specifications, and special provisions. Maintain knowledge of applicable design codes and any future changes relevant to the hydraulics discipline by participating in learning opportunities.

Contribute to Project Teams as part of a matrix organization by providing hydraulics design expertise, assisting in creating learning opportunities, and defining expectations for how the Project Team manages risk; assisting in developing the project vision in alignment with Asset Management; assisting in defining critical goals and intended outcomes for the scope, schedule, budget, and quality in coordination with the Project Manager related to hydraulics design elements; participating in Risk Management Assessments; providing input at all applicable project milestones per the Project Delivery Network (PDN); assisting in support of Project Management staff with respect to the Hydraulics Design Scope of Work in collaboration with TDOT Environmental, TDOT Maintenance, and TDOT Construction; applying context-sensitive hydraulics design methodologies; attending public meetings as a Department representative to assist with addressing stakeholder concerns; effectively coordinating with other disciplines within TDOT to address all potential hydraulics elements as part of the Functional Design Plans development per the PDN; providing approvals on hydraulics design-related products and deliverables, when applicable; and proactively assessing risk factors related to legal aspects, public relations and safety for hydraulics design elements. Collaborate with the project team through proactive engagement for early recognition and mitigation of design-related concerns.

Provide exceptional customer service to both internal and external customers, including mentoring and technical guidance related to hydraulics design, coordinating with other disciplines as part of a matrix organization, exercising effective listening skills, providing prompt responses, maintaining complete and accurate documentation, and communicating effectively.

Remain current and engaged on revisions to design codes, standards, and guidelines related to hydraulics design elements, adapt new technologies and best practices that drive TDOT's transportation projects forward, and assist in implementing policies and procedures related to hydraulics design. Collaborate on innovative strategies used as best practices for statewide quality assurance needs. Remain current on Hydraulic Design related industry trends and national best practices by participating in events for AASHTO, FHWA, industry associations, and other appropriate organizations. Continue to grow skills for 1-D, 2-D, scour modeling, and CAD designer tools, and familiarity with the FHWA toolbox for hydraulics.

Collaborate with the Hydraulics Design Manager to assist the TDOT Technical Training Director in the development of training that addresses acquired knowledge, including technical elements and emerging technologies related to Hydraulics Design for the purpose of improving team performance, creating a stronger understanding of hydraulics elements as they relate to the transportation industry, inspiring new ideas, and developing skills. Assist in ensuring training materials for innovative practices related to Hydraulic Design are incorporated into current policies and manuals.

Assist in the development of a Consultant Acquisition Plan (CAP) for Hydraulics Design services and assist in the oversight of external partners by serving on technical review committees, including assisting with RFP development, attending project-specific marketing meetings, assisting with determining scoring criteria, assisting with project information sessions when applicable, serving as a scorer as part of the consultant acquisition process, and attending de-briefs for consultants where usable feedback must be provided.

Assist in ensuring Hydraulics Design deliverables are consistent, predictable, and repeatable to maintain consistently high levels of achievement, mitigate risk, and establish a track record of success by implementing statewide policy, data collection, processing standards, specifications, and direction. Utilize best practices and TDOT policy for the incorporation of hydraulics design elements, including access to acquired knowledge across the Regions.

### **Qualifications**

- Bachelor's degree in Civil Engineering, Environment Engineering, or related field
- 4 years of demonstrated competency in developing and/or constructing transportation projects

### **Necessary Special Qualifications**

- Licensed Professional Engineer (PE)

### **Ideal Candidate**

The Hydraulics Design Transportation Engineer is advanced in all aspects of hydraulics design. They possess strong attention to detail and are committed to improving safety and performance. With a wealth of technical expertise, they offer unique solutions to hydraulics design challenges. The Hydraulics Design Transportation Engineer's analytical skills allow them to predict and prevent issues before they become problematic, ensuring efficient and reliable transportation designs. They possess excellent communication and collaboration skills, which enable them to effectively communicate complex technical information with stakeholders at all levels.