

Combating Workforce Development Issues: Delaware's Engineering Outreach Program

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A bridge design engineer gives a tour of a recently completed bridge. All Photos: Delaware Department of Transportation.

For years, the civil engineering industry in Delaware has faced an array of workforce development issues, including an unflattering and inaccurate public perception of engineers and the industry, workforce retention challenges, and lack of diversity in the workforce. Today, the Delaware Department of Transportation (DelDOT) is committed to an engineering outreach program to address these issues.

Identifying Workforce Challenges

Engineering is often perceived to be

A project engineer gives a science, technology, engineering, and math presentation to second graders.

a profession characterized by social awkwardness, with the typical engineer being viewed as “nerdy” or “robotic.” In fact, while engineering is a highly technical field, it also requires creative thinking and collaborative skills to solve real-world problems.

Like many state agencies, DelDOT has struggled with its public image. A negative public perception can make it increasingly difficult to attract quality engineers toward careers with the department. Changing stereotypes surrounding engineers and public-sector

work is a major challenge being faced across the industry.

While employee retention is a problem that public agencies have faced for decades, DelDOT has recently had to navigate disproportionately high turnover in the engineering sector as employees have moved to the private sector or retired. In such an experience-driven field, this level of turnover results in a significant loss of institutional knowledge, increased project costs, and project delays.

Civil engineering in the United States has historically not been a demographically diverse career field. According to 2025 U.S. Bureau of Labor survey data,¹ 78% of people employed as civil engineers are white and only about 22% are female. This lack of diversity can limit innovation and hinder career advancement. Homogeneous teams tend to approach challenges with the same perspectives, which can limit the creativity required to develop new solutions or new materials. The absence of minorities and women creates a shortage of role models and mentors, which in turn can stifle the flow of talent, especially into senior management.





Members of the Delaware Department of Transportation's Bridge Design team host a Lego competition at Delaware State Fair, where they speak with competition participants, parents, and other people from all around Delaware about the agency's bridge design work.



Students test their final bridge structures at the Delaware Bridge Design Competition.

Until civil engineering adopts a truly inclusive and diverse model, the industry will continue to fall short of its potential. While DelDOT has taken great strides to rectify this disparity through its outreach efforts, a lack of diversity remains an issue.

Engineering Outreach: How It Started

DelDOT's Bridge Design section has been actively participating in student outreach with schools throughout the state for more than 10 years. However, this effort was not always as prolific and widespread as it is today. What started as a simple idea from a project engineer working on a highly publicized project is

now a statewide effort led by members of DelDOT's Bridge Design team. During the construction of the Charles W. Cullen Bridge, a cable-stayed structure spanning the Indian River Inlet south of Dewey Beach, Craig Stevens, one of the project's construction managers, saw an opportunity to use the bridge to educate Delaware's public.

Stevens began giving tours of the project to local representatives, community groups, and students in the area. These tours were a way of educating people about the project, but they also served a broader purpose by showcasing the field of civil engineering and its impact on

the world and presenting DelDOT employees in a more positive light. By allowing the public to see firsthand how engineering and the hard work by state employees shape their communities, the outreach efforts helped to generate a sense of goodwill toward the department as a whole.

Inspired by the popularity of the project tours, a team of Bridge Design engineers began giving presentations and conducting hands-on activities at elementary, middle, and high schools throughout the state. Today, these presentations cover an array of topics related to bridge construction and the work being performed by DelDOT employees around the state. The intent of these presentations is to continue to generate interest in the field of civil engineering and foster a sense of community.

Engineering Outreach: How It's Going

Today, DelDOT Bridge Design team members give dozens of science, technology, engineering, and math (STEM) presentations and reach more than 2000 students each year. In addition to the bridge engineering presentations, the Bridge Design team participates in career days, interactive STEM activities, and career fairs. These outreach efforts increase awareness of the agency's work around the state, generate interest in the field of engineering and other STEM careers, and offer a recruitment path for potential interns and future employees. Through these outreach efforts, DelDOT's goal is to interact with students who may not realize that these career opportunities



Participants, teachers, and supporters of the seventh Delaware Bridge Design Competition in 2026.



Students present their designs to a panel of practicing engineers at the Delaware Bridge Design Competition.

exist. Instead of targeting groups already likely to pursue engineering, DelDOT uses a broad outreach approach to expose as many students as possible to civil engineering. This work is guided by the principle that the unique backgrounds and experiences of these students can positively shape the engineering industry. While it is important to spark the initial interest in the field, DelDOT recognizes the need to maintain that interest throughout students' educational journeys. For this reason, DelDOT staff engage with students and mentor them as they progress through their academic pathways.

To further cultivate curiosity in engineering among Delaware's students, DelDOT holds a statewide bridge design competition based on a national competition developed by the American Association of State Highway and Transportation Officials. The event, which was first held in 2018, is a hands-on engineering competition for middle school and high school students interested in STEM fields. The program encourages such students to address real-world problems and aims

to inspire them to consider careers in transportation and civil engineering. Students are assigned a specific bridge type and tasked with preparing a research-based proposal, designing and detailing drawings using computer-aided drafting (CAD) software, creating a balsa wood bridge model, and presenting their efforts to a panel of practicing engineers.

The Delaware Bridge Design Competition is an inclusive event for schools throughout the state. There is no limit to the number of participants a school can register, and participation in the event comes at no cost to any of the schools. Because this event is free to students, schools that may not otherwise have the financial means to incorporate engineering into their curriculum can participate.

In 2018, the competition had 32 students from 5 schools. In its second year, excitement surrounding the competition ballooned, and participation grew to more than 200 students from 25 schools. Interest in the competition has continued to increase, with more than 400 students from throughout the state now participating. Over the years, almost 50% of the state's middle schools and high schools have participated. The success of the Delaware Bridge Design Competition is made possible through

the support of DelDOT volunteers, partnering consultant volunteers, and the educators whose goal of teaching STEM-related concepts to students aligns with DelDOT's outreach efforts. The competition has also become a networking opportunity for students by providing them with direct contact with industry professionals.

While the impact of these outreach efforts on students cannot be quantified, they have undeniably helped to spark an interest in civil engineering throughout Delaware's schools. DelDOT has hired multiple interns and eventual full-time staff members as a direct result of the Bridge Design team's STEM outreach and the Delaware Bridge Design Competition. The department believes that these community engagement efforts improve perceptions of the public sector, bolster interest in STEM-related career fields, and contribute to a sustainable pipeline for future engineers at DelDOT.

Reference

1. U.S. Bureau of Labor Statistics. 2026. "Labor Force Statistics from the Current Population Survey: Employed People by Detailed Occupation, Sex, Race, and Hispanic or Latino Ethnicity." Last modified February 20, 2026. <https://www.bls.gov/cps/cpsaat11.htm>. 

Participants, teachers, and supporters of the seventh Delaware Bridge Design Competition in 2026.

