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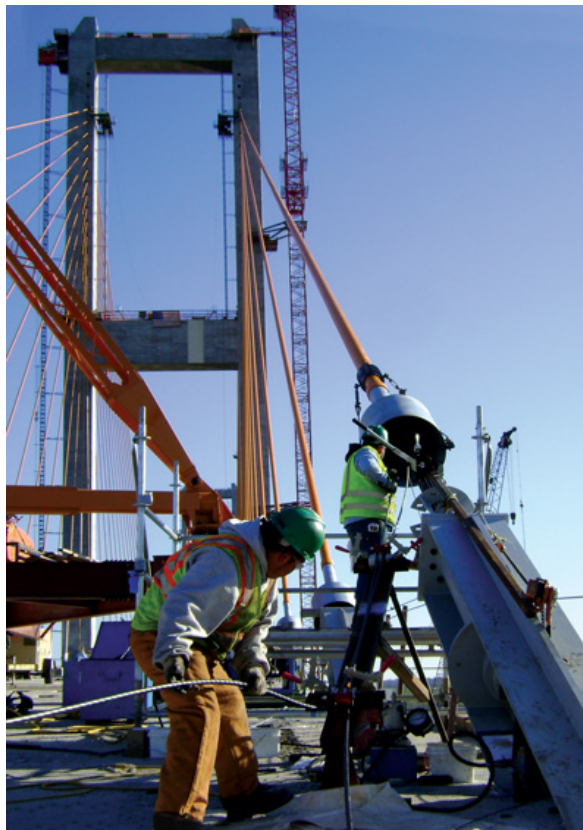
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Help Wanted

by Clark Martin and Alexandra Dudley

The transportation industry is leading the effort to recruit and train workers to fill a growing number of jobs. The future of transportation depends on these endeavors.



Matthew Cullen, Louisville Paving and Construction

A well-trained workforce is critical to completing transportation construction projects throughout the United States, such as this bridge under construction in Louisiana, and to maintaining the transportation system.

The transportation system in the United States is a cornerstone of the country's economic growth and prosperity. The system facilitates travel for work, school, and other everyday needs for mobility. The efficiency of the transportation system is dependent

on the skills, knowledge, and abilities of the workforce that develops, delivers, and manages its many operations. However, today's transportation workforce is facing several challenges, including difficulty in filling job openings.

The retirement of workers from the "baby boom" generation, an increase in competition from other industries, and new technologies that are driving the need for enhanced skill sets are among the primary factors driving the critical need for new skilled workers. A highly skilled workforce is necessary to address the rapidly evolving areas of automation, information technology, autonomous vehicle technologies, intelligent transportation systems, environmental stewardship, facility and system design, and an expanding global economy.

In August 2015, the U.S. Departments of Transportation, Education, and Labor released a joint report titled *Strengthening Skills Training and Career Pathways Across the Transportation Industry*. The report analyzes future job needs in the transportation industry. According to the report, the transportation industry will need to hire 4.6 million workers from 2012 to 2022—the equivalent of 1.2 times the size of the current workforce. Of those 4.6 million workers, 417,000 jobs are projected to be related to industry growth and 4.2 million are related to separations, which includes retirements, occupational transfers, and other exits from the industry.

In addition to hiring, the industry must ensure that the new hires are well-trained and prepared to deliver the Nation's transportation system.

The Demographic Cliff

In 2014, approximately 53 percent of transportation workers were over the age of 45 years. As the majority of the transportation workforce nears full retirement age, further workforce challenges emerge. Baby boomers (those born between 1946 and 1964) have already begun leaving the workforce. By 2024, they will be between the ages of 60 and 78.

Not only is the retirement of the baby boomer generation already leading to a significant number of job openings, but it also will mean loss of valuable knowledge and experience. As baby boomers retire, younger workers need to fill their jobs. However, not enough workers are completing the training and educational programs required to fill these positions, posing a challenge for the transportation industry. Without a sufficient number of skilled workers, the industry will have difficulty designing, constructing, and maintaining an efficient, effective, and safe transportation system.

Through 2022, projected annual job openings are approximately 68 percent greater than the number of individuals who are completing transportation-related education and training programs each year. This disparity highlights the gap that the transportation industry needs to address to meet anticipated industry demand. Without effective action, the industry will continue to experience a shortage of qualified workers with the skills necessary to fill the projected job vacancies.

The highway sector has its own set of workforce challenges. U.S. travelers rely on U.S. highways. The National Highway System has more than 4 million miles (6.4 million kilometers) and slightly more than 144,000 bridges. To better understand the highway construction industry's workforce challenges, the Associated General Contractors of America (AGC) conducts an annual survey of its member companies. The 2016 survey, which received more than 1,400 responses, showed that construction firms throughout the country are struggling to fill open positions and hire a sufficient number of qualified workers to meet their needs. Difficulty filling positions directly impacts firms' ability to deliver projects on time and potentially delays repairs needed on the transportation system.

Contractor Job Openings by Position Type

Position	Percent of Firms Struggling to Fill Openings
Carpenters	60
Electricians	53
Concrete Workers	49
Laborers	44
Equipment Operators	43
Cement Masons	42
Iron Workers	40
Truck Drivers	36

Source: Associated General Contractors of America, 2016 Workforce Survey.

"Putting new workforce development measures in place will make it easier for construction firms to keep pace with growing public- and private-sector demand," says Stephen E. Sandherr, chief executive officer of AGC.

Focused Efforts

To avert a potential crisis, the Federal Highway Administration is working in conjunction with other public agencies and private companies and organizations to attract, educate, train, and retain a qualified highway construction workforce. Many government agencies, local organizations, and employers have formed partnerships, developed training and educational programs, and filled job openings. Continued collaboration and leveraging of resources will be necessary to meet future demands for skilled labor.



Proper construction techniques, such as the girder setting shown here, require specialized skill sets for the transportation workforce.

Through its Center for Transportation Workforce Development, FHWA is bringing together key partners to develop and implement a focused effort: the Highway Construction Workforce Pilot. This pilot program is a joint effort with the American Association of State Highway and Transportation Officials (AASHTO), Associated General Contractors of America, American Road & Transportation Builders Association (ARTBA), U.S. Department of Labor's (DOL) Employment and Training Administration, State and local workforce development boards, and other local labor and workforce development organizations. The effort aims to identify, train, and place individuals in high-need highway construction jobs in 12 pilot locations throughout the country. The pilot program will support on-the-job training criteria in highway construction occupations and will explore how to more effectively link qualified applicants with workforce opportunities in highway construction. AASHTO, AGC, ARTBA, DOL, and FHWA established the Highway Construction Workforce Pilot and are working together as the National Partners Group.

"We know there are a lot of people out there who would excel in these jobs, but finding those individuals has been a challenge," says Brian Deery, senior director in AGC's Highway & Transportation Division. "Our partners on the [workforce development] side can help us with that. The pilot program shows a lot of promise to change the way we address workforce development in the highway construction industry."

The partners have selected six cities (Atlanta, GA; Dallas, TX; Denver, CO; Los Angeles, CA; Pittsburgh, PA; and St. Louis, MO) and six States (Alabama, Arizona, Connecticut, Idaho, Rhode Island, and South Dakota) to participate in the pilot. The locations were chosen based on consideration of several factors, including workforce data, a mix of cities and States, union and nonunion operations, State or local association member organization, and established relationships with State or local workforce development boards.

"The highway infrastructure is critical to our way of life, and there are a lot of good jobs in the highway industry," says Byron Zuidema, deputy assistant secretary for the DOL Employment and Training Administration. "Partnering with the industry to make better use of the publicly funded workforce development system will help job seekers receive the skills and training they need to get placed in those jobs."

How does the pilot program work? At the local level, contractors identify the high-need job occupations they are struggling to fill. Workforce development boards (WDBs) and other local labor organizations identify available training programs and resources, as well as potential participants. Through the pilot program, individuals learn a skill or build on existing skills to begin or enhance a career in the transportation industry, and employers have a larger, more qualified hiring pool to fill their open jobs and complete projects.

Workforce Initiatives by the Department of Labor

To address anticipated workforce challenges facing the Nation as a whole, the U.S. Department of Labor (DOL) has funded several initiatives.

American Apprenticeship Grants. To streamline the efforts of employers, organized labor groups, nonprofits, local governments, and educational institutions, in 2015 the White House, through DOL, awarded \$175 million in grants to 46 public-private partnerships. The grantees are expected to train and hire at least 34,000 apprentices in high-growth and high-tech industries over 5 years.

America's Promise Job-Driven Training Grants. In November 2016, DOL announced \$111 million in America's Promise grants to 23 regional workforce partnerships in 28 States to connect more than 21,000 Americans to education and in-demand jobs.

Trade Adjustment Assistance Community College and Career Training Grant Program. In partnership with the U.S. Department of Education, DOL is helping adults acquire the skills, degrees, and credentials required for high-wage and high-skill employment while also meeting employers' needs. These multiyear grants provide community colleges and other institutions of higher education with funding to expand and improve education and career training programs that can be completed in 2 years or less, are suited for workers who are eligible for training under the TAA [Trade Adjustment Assistance] for Workers program, and prepare participants for employment in high-wage and high-skill occupations.

Some pathways to highway construction careers are direct referrals of qualified applicants, WDB-provided skills upgrading or training leading to unsubsidized employment, on-the-job training opportunities, apprenticeship programs, and Job Corps or other youth-development programs. There may also be incumbent worker training or other customized training for current workers, and pathways to help workers progress further in their careers.

"By connecting industry and DOL resources, and making the pilot project a local effort, the partners can positively impact workforce development in each location," says Tony Furst, FHWA's chief innovation officer and director of the FHWA Office of Innovative Program Delivery. Furst also leads the Highway Construction Workforce Pilot for FHWA. "Through these connections, the industry workforce needs will be more effectively and efficiently addressed, and individuals will have the opportunity to start or to build a career for themselves."

Partnering Makes It Possible

Through the Highway Construction Workforce Pilot, FHWA intends to establish effective working relationships between highway construction interests and the workforce system to identify and advance successful workforce development practices and procedures that cities and States throughout the United States can replicate. The National Partners Group will provide direction and oversight of the pilot project, and a National Operations Group will assist coordination with the city and State working groups that will manage program operations in each pilot location.

Jim Tymon, chief operations officer for AASHTO, represents the association in the National Partners Group. "AASHTO and our State DOT member organizations are excited to work with FHWA and the leading highway contractor organizations, AGC and ARTBA, and their member companies on this critical issue," he says. "AASHTO and State DOTs clearly recognize the importance of a capable highway construction workforce to the timely and efficient delivery of highway projects. We believe the Highway Construction Workforce Pilot will set a new, better defined approach to workforce development in our business, and AASHTO is committed to the program."



Matthew Cullen, Louisville Paving and Construction

Developing a variety of workforce programs will be necessary to address the skills gap and provide for a well-trained and qualified transportation workforce. This construction crew is preparing the bridge for the deck construction stage.

During the course of the project, the National Operations Group will develop a "playbook" that will include specific project plans, best practices, and challenges to aid other locations in their workforce development programs. The objective is for the pilot project to serve as the foundation to institutionalize relationships in workforce development in the highway construction industry.

"We have highway projects in every State and just about every local area of the country," says Rich Juliano, senior vice president of strategic initiatives and managing director of the contractors division at ARTBA, who represents the association on the pilot project. "The city/State pilot location approach will be a good opportunity to adjust our efforts to the specific circumstances in each area. We expect to learn a lot from the pilot project that can be applied to workforce development in support of other highway projects throughout the United States."

Workforce Development At FHWA

In addition to the Highway Construction Workforce Pilot, FHWA is working on other efforts to develop workforce programs and fill the skills gap. In May 2016, FHWA created the Center for Transportation Workforce Development to emphasize workforce issues in the transportation industry. The center provides national leadership, coordination, and assistance to develop and support workforce initiatives throughout the education continuum of K-12, community colleges, universities, and professional development. The workforce center is one of four program-aligned centers that make up the FHWA Office of Innovative Program Delivery. The other centers are the Center for Accelerating Innovation, the Center for Local Aid Support, and the Center for Innovative Finance Support.

"The Federal Highway Administration will continue to focus leadership on areas most critical to the transportation industry and system," says FHWA Acting Deputy Administrator Butch Waidehlich. "And with the new workforce center, we have an organization that will provide leadership in working with key partners in transportation, education, and other workforce interests to leverage activities and resources to enhance transportation workforce development."

Matthew Cullen, Louisville Paving and Construction



A sharp focus and precise workmanship, such as that demonstrated by these workers installing a girder splice, is critical to maintaining the public trust in delivering the Nation's highway program.

The center helps to manage the Highway Construction Work-force Pilot and several other work-force development efforts including the FHWA On-the-Job Supportive Services Program, Eisenhower Fellowship Program, National Summer Transportation Institute Program, Garrett A. Morgan Technology and Transportation Education Program Clearinghouse for K–12 programs, and the five Region Transportation Workforce Centers.

"The increasing focus and leadership on workforce development that the FHWA workforce center provides will improve workforce development at all levels," says Virginia "Ginny" Tsu, director of the Center for Transportation Workforce Development. "Expanding our relationships in workforce development with key partners including DOL through the pilot program, and bringing together the existing FHWA workforce programs provides a powerful combination of resources and assets to make a real difference in workforce development."

An Expanded Effort: Region Centers

In 2014, FHWA created five regional transportation workforce centers—collectively known as the National Network for the Transportation Workforce—to establish a network-driven approach to developing and retaining a highly skilled and effective transportation workforce. Although the regional centers do not provide training, they engage organizations and existing programs to establish new strategic partnerships and promote best practices to educators, employers, and those on the transportation career pathway. For more information on the National Network for the Transportation Workforce, see "Connecting the Employment Dots" in the November/December 2015 issue of Public Roads.

"The region workforce centers provide an important network for workforce development that can help identify and facilitate implementation of value-added workforce development programs," says Glenn McRae, director of the Northeast Region Workforce Center based at the University of Vermont. "We are able to work within and across transportation, education, and training interests for the greater benefit of transportation workforce development. Collectively, the National Network for the Transportation Workforce has already established more than 100 partnerships with transportation and education groups for substantive workforce activities. We will continue to work with FHWA and other key partners to improve workforce development throughout the education continuum."

Regional Transportation Workforce Centers

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Source: FHWA.

FHWA recently awarded the National Network for the Transportation Workforce, a cooperative agreement for the National Transportation Career Pathways Initiative, to research and develop career pathways in the key discipline areas of environment, safety, operations, planning, and engineering. Led by the Southwest Transportation Workforce Center located at the California State University, Long Beach, the program will identify key occupations, as well as gaps between available training, education, and experiential learning programs.

The program also will identify elements necessary to develop a highly skilled workforce in each of the five discipline areas. In collaboration with key stakeholders, the National Network for the Transportation Workforce will develop career pathways at technical schools, community colleges, and universities to help fill the skills gap and train individuals in the key occupations.

The National Network for the Transportation Workforce began work on the Career Pathways Initiative, a 2-year program, in October 2016. The Southwest Region Workforce Center will lead a demonstration project in at least one technical school, community college, and university for the planning discipline. The other region workforce centers will complete their work on competencies, curriculum, experiential learning, and design demonstration projects for the disciplines they are managing.

"We need to better align the transportation workforce demand of private and public sector transportation organizations with the workforce supply efforts of education, training, and workforce development," says Tom O'Brien, director of the Southwest Transportation Workforce Center. "A lot of work needs to be done, and the National Network for the Transportation Workforce is looking forward to working with key partners across the transportation, education, and workforce communities on the National Transportation Career Pathways Initiative."



Matthew Cullen, Louisville Paving and Construction

Attracting younger workers to the transportation industry will be crucial to filling job openings over the next 10 years. These workers will help deliver a safe and efficient transportation system, including constructing new infrastructure.

A Present and Growing Need

With the highway industry bracing for shortages of available workers, now is the time for efficient and effective programs focused on recruiting, training, placing, and retaining workers, as well as efforts to better prepare the next generation of workers for transportation jobs.

Positions in the highway industry can lead to promising careers and opportunities for advancement. Although 4-year degrees often are not required for transportation careers, some training and education is necessary to have the skills required for most positions. Current workers and potential new hires in the transportation industry need to have access to and awareness of the available training programs that can help them develop skills to further their careers.

The need will continue to grow as more baby boomers retire and new technologies emerge. The transportation industry must continue to focus on training younger workers and providing them with the necessary knowledge, skills, and experience to deliver a safe, efficient, and effective highway system.

Clark Martin is a program manager for the FHWA Center for Transportation Workforce Development, part of the Office of Innovative Program Delivery. He is a lead manager for FHWA workforce programs and initiatives including the five FHWA-sponsored Region Transportation Workforce Centers, the Highway Construction Workforce Pilot, and the National Transportation Career Pathways Initiative. Martin is a graduate of the University of Maryland with a B.A. in political science.

Alexandra Dudley is a business analyst in the FHWA Center for Transportation Workforce Development. She is very involved with the Highway Construction Workforce Pilot, Region Transportation Workforce Centers, and the National Transportation Career Pathways Initiative. She holds a B.A. in economics and history from William & Mary and an M.S. in commerce from the University of Virginia.

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