

CTE: THE KEY TO ECONOMIC DEVELOPMENT

Construction & Architecture:

Made up **8%**
of U.S. GDP in 2015¹

Employ more than
6.8 million workers²

Expect **3.5** trillion
in non-residential construction
activity through 2020³

What is the pathway to these
fulfilling and essential careers?

Career and Technical Education!



Association for Career and Technical Education
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Construction & Architecture

Providing the foundation for the built environment, construction and architecture:

- Include residential, commercial, infrastructure and industrial construction for buildings, bridges, dams, highways, refineries, plants and mills
- Are vital to the strength and success of the economy
- Require highly skilled craft professionals

What jobs are available in construction and architecture?

More than 5.7 million workers will be needed through 2020 in non-residential construction, yet the expected available construction workforce during this period will only be 4.7 million, resulting in a deficit of at least 1 million workers.⁴ Crafts expected to be in highest demand are carpenters, masons, pipefitters, heavy equipment operators, electricians and welders.⁵ In addition, demand will increase for architects, landscape architects and civil engineers because of the need for new construction projects for a growing population as well as the expanding green building sector.⁶

Skilled craft professionals continue to earn top dollar, with salaries starting above the national median wage.⁷ This includes average annual salaries of more than \$65,000 for tower crane operators, power generation technicians, power line workers, combo welders and instrumentation technicians.⁸ When factors like project location and an individual's industry credentials and experience are taken into account, salaries are even higher. In fact, project managers and supervisors can earn as much as \$226,000 annually.⁹ In addition, there are opportunities for overtime, bonuses and other incentives.

A variety of pathways lead to construction careers, including secondary CTE programs, community colleges, four-year universities, industry training programs and registered apprenticeships, while architecture typically requires at least a bachelor's degree.¹⁰ Many companies look for individuals with industry-recognized certifications that can be obtained through education or industry training. Certain occupations, such as building inspectors and contractors, may also be regulated by the state.¹¹ Employees in construction and architecture use technical, academic and employability skills to design and build structures and infrastructure systems; install and maintain electrical and instrumentation systems; and ensure compliance with building codes and ordinances, among other activities. Examples of construction and architecture careers include:

- pipe welders
- construction supervisors
- civil engineers
- carpenters
- heavy equipment operators
- instrumentation technicians
- mobile crane operators
- electricians



Endnotes

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Connecting Education and Careers

How does CTE prepare the construction and architecture workforce?

Career and technical education prepares high school, postsecondary and adult students for careers in construction and architecture through:

- The national Career Clusters® Framework—including Career Clusters and pathways in Architecture and Construction, Manufacturing, and Business Management and Administration—which outlines course progressions that help students explore career options and prepare for college and career success
- CTE courses in civil engineering, architecture, carpentry, masonry, construction estimating, residential wiring and related topics, integrated with rigorous academics
- Work-based learning experiences, such as training and/or apprenticeship programs with the Associated Builders and Contractors and Associated General Contractors of America¹²
- Career and technical student organization enrichment experiences, such as SkillsUSA competitions in carpentry, masonry, architectural drafting and electrical construction wiring and Technology Student Association contests in architectural renovation, structural design and engineering, and computer-aided design¹³
- Opportunities to earn stackable industry-recognized credentials, including postsecondary certificates and degrees as well as certifications such as NCCER and American Design Drafting Association certifications¹⁴

What are promising programs in construction and architecture?

The North Carolina Department of Public Instruction (NCDPI), recognizing industry demand for a skilled workforce, adopted NCCER curricula for their CTE construction programs in 2010. Currently, NCDPI offers high school students training in carpentry, construction technology, electrical, HVAC, masonry, plumbing, welding and weatherization. Each curricular area is carefully reviewed by industry, construction-related associations and workforce development agencies, and partners serve on advisory committees, mentor students, provide materials and judge competitions. To date, nearly 20,000 students have earned NCCER credentials, and construction students are part of the reason the state's CTE programs boast a graduation rate of 94 percent. College credit is available through NCDPI's partnership with the North Carolina Community College System, where students can continue their education in building construction technology, carpentry, masonry, plumbing and architectural technology, among other areas.¹⁵

On the Gulf Coast, almost 800 construction manager positions are projected to come available each year.¹⁶ At San Jacinto College in Texas, students can prepare for a career in this field through the school's construction management technology program. The program trains students in commercial, industrial, residential and infrastructure construction management, with a focus on green construction. Students have the opportunity to work on their own construction projects, conducting pricing and procurement, cost scheduling, estimating and general oversight, and to retrofit existing buildings for improved energy usage and waste reduction. In addition to a certificate of technology or associate of applied science degree, graduates are qualified to earn Occupational Safety and Health Administration (OSHA) 10-hour certification and U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Green Associate certification.¹⁷

This Sector Sheet will be the focus of one of ACTE's Microdocs.
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