

CTE: THE KEY TO ECONOMIC DEVELOPMENT

Construction & Architecture:

Employ more than **7.3** million people ¹

Made up **4.3%** of U.S. GDP in 2020²

Was valued at **\$1.365** trillion in 2019³

What is the pathway to these fulfilling and essential careers?

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?

The United States has an aging infrastructure in need of repair and renewal. A skilled workforce will be in high demand in coming years to meet the country's infrastructure needs. Currently, the Associated General Contractors of America reports difficulty filling open positions with qualified staff, and by 2031 a projected 41% of the construction workforce will have retired.⁴ Occupations expected to be in highest demand include carpenters, masons, heavy equipment operators, boilermakers, electricians, ironworkers, pipefitters, painters and sheet metal workers.⁵ In addition, there is a growing demand for new green construction and retrofitting existing buildings, which is driving the need for architects, construction managers, technicians, solar energy installation managers and plumbers, among other green jobs.⁶

Skilled craft professionals continue to earn top dollar, with salaries starting above the national median wage. This includes annual salaries of \$65,000 and up for workers with less than a bachelor's degree, such as millwrights, electricians, crane operators, survey engineers and safety technicians.⁷ When factors like project location and an individual's industry credentials and experience are taken into account, salaries can be even higher. In fact, project managers have an annual median wage of about \$94,000.⁸ 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, industry training programs and registered apprenticeships, while working in architecture typically requires an associate or bachelor's degree. 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 states. Employees in construction and architecture use technical, academic and employability skills to design and build structures, install and maintain electrical infrastructure, ensure compliance with building codes and ordinances, and manage projects, among other activities. Examples of construction and architecture careers include:

- pipe welders
- construction supervisors
- civil engineering technicians
- project managers
- heavy equipment operators
- instrumentation technicians
- mobile crane operators
- electricians



Endnotes

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14. University of Hawai'i News. (July 7, 2020). *National construction industry award for Honolulu CC Assistant Professor*. Retrieved from <https://www.hawaii.edu/news/2020/07/07/takeya-construction-industry-award/>

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, framing carpentry, masonry, construction estimating, residential wiring, commercial construction, construction management and related topics, integrated with rigorous academics
- Business-education partnerships, like the collaboration between Central Arizona College and Sundt Construction that has resulted in customized pathways taught by adjunct instructors from the company⁹
- Career and technical student organization enrichment experiences, such as SkillsUSA and Technology Student Association competitive events
- Opportunities to earn stackable industry-recognized credentials, including postsecondary certificates and degrees as well as industry certifications such as NCCER, National Association of Home Builders (NAHB) designations and LEED Green Associate¹⁰

What are promising programs in construction and architecture?

The **Construction Careers Academy (CCA)** in San Antonio, Texas, was created in 2009 to fill talent shortages and improve workforce development in the construction sector. Students can choose between six different majors: electrical/HVAC, plumbing/pipefitting and welding, construction management, carpentry, applied engineering, and architecture and design. CCA requires its instructors to have industry experience and be NCCER certified. While in the program, students can earn over 800 apprenticeship hours in plumbing, electrical or carpentry areas, as well as industry certifications.¹¹ In addition, students can earn college credit through a dual enrollment program with St. Philip's College. The academy also partners with many employers that serve on an advisory board and provide internships, job shadowing and field trips. Sixty percent of graduates from the school go onto postsecondary education, while 40% enter directly into construction-related occupations.¹²

Honolulu Community College offers an Architecture, Engineering and Construction Technologies (AEC) program that prepares students for immediate employment as architectural or engineering drawing technicians and for opportunities in construction management, kitchen and bath design, solar energy planning, construction estimating, land surveying and more. Students choose either an architectural technology track or a construction management track; each leads to a two-year Associate of Science degree or a shorter postsecondary certificate. In addition to state-of-the-art technical training, students must complete at least 40 hours of AEC-related community or school service.¹³ AEC students have competed in national competitions and won numerous awards locally from the NAHB Residential Construction Management Competition. The AEC program is also home to award-winning assistant professor Norman Takeya, recipient of the 2020 Construction Management Association of America Mark Hasso Educator of the Year Award.¹⁴ According to Takeya, local businesses frequently refer students to the program, provide internship opportunities, and hire and promote AEC graduates.

