Civil Engineering Technicians

SOC Code 17-3022 • Projected Growth (2020)

Description

What Civil Engineering Technicians Do

Civil engineering technicians help civil engineers plan and design the construction of highways, bridges, utilities, and other major infrastructure projects. They also help with commercial, residential, and land development.

Duties

- Read and review project blueprints to determine dimensions of structures
- Confer with their supervisors about preparing plans and evaluating field conditions
- Inspect project sites and evaluate contractors' work to detect problems with a design
- Help to ensure that projects conform to design specifications and applicable codes
- Develop plans and estimate costs for installing systems and operating facilities
- Prepare reports and document project activities and data

Training Opportunities Linked to Those Jobs

(Degree Types and Colleges/Universities)

How to Become a Civil Engineering Technician

Although not always required, an associate's degree in civil engineering technology is preferred for civil engineering technicians. It is best to seek programs that ABET (formerly the Accreditation Board for Engineering and Technology) has certified.

Education and Training

Prospective civil engineering technicians should take as many high school science and math courses as possible to prepare for programs in engineering technology after high school.

Employers generally want engineering technicians to have an associate's degree from an ABET-accredited program, although the degree is not always required. Engineering technology programs are also available at technical or vocational schools that award a postgraduate certificate or diploma.

Courses at technical or vocational schools may include engineering, design, and computer software. To complete an associate's degree in civil engineering technology, students also usually need to take other courses in liberal arts and the sciences.

Workers with less formal engineering technology training need to learn some skills on the job.

In contrast to civil engineering technicians, civil engineering technologists need a bachelor's degree in civil engineering technology to master and apply high-level principles of civil engineering in their work.

Certification

Certification is not needed to enter this occupation, but it can help technicians advance their careers. The National Institute for Certification in Engineering Technologies (NICET) is one of the primary organizations overseeing certification for civil engineering technicians.

Certification as a technician requires an exam and documentation, including a work history, recommendations, and, for most programs, supervisor verification of specific experience.

Certification as a technologist requires a bachelor's degree in engineering technology. There is no additional exam for basic engineering technologist certification, but documentation, including a work history and endorsements, is required for advanced levels.

NICET requires technicians and technologists to update their skills and knowledge through a recertification process that encourages continuing professional development.

Advancement

Civil engineering technicians can advance in their careers by learning to design systems for a variety of projects, such as storm sewers and sanitary systems. It is also useful for civil engineering technicians to become proficient at reading graphic plans of proposed utility projects, called profiles.

Important Qualities

Critical-thinking skills. Civil engineering technicians, as assistants to civil engineers, must help the engineers spot problems to avoid wasting time, effort, and funds.

Math skills. Civil engineering technicians use mathematics for analysis, design, and troubleshooting in their work.

Monitoring skills. Civil engineering technicians sometimes have to go to job sites and assess a project for the engineer. Therefore, they must know what to look for and how best to report back to the engineer overseeing the project.

Prioritizing skills. Pressures from deadlines mean that technicians must quickly see which types of information are most important.

Problem-solving skills. Like civil engineers, civil engineering technicians help design projects to solve a particular problem. Technicians must be able to understand and work with all the related systems involved in building a project.

Reading skills. Civil engineering technicians carry out plans and designs for projects that a civil engineer has approved. They must be able to understand all the reports about these designs.

Writing skills. Civil engineering technicians are often asked to relay their findings in writing. The reports must be well organized and clearly written.

Postsecondary Education

Texas Southmost College	South Texas College	Texas State Technical College	The University of Texas at Brownsville	The University of Texas - Pan American
	Associated of Science in Engineering		Bachelors of Science in Engineering Physics	Bachelors of Science in Civil Engineering

Local Employers

Amaya Surveying CO	Brownsville		Rios Surveying CO	San Benito
Casa Engineering	Harlingen		Texas State Technical College	Harlingen
Mundo Engineering	La Feria		Vasquez Surveying	Brownsville

Career Options

(Specific Job Types)

- Engineering Technician
- Civil Engineering Technician
- Civil Engineering Designer
- Engineering Assistant
- Transportation Engineering Technician
- Civil Designer
- Engineering Specialist
- Civil Engineering Assistant
- Construction Analyst
- Design Technician

Salary Ranges

Wages for **Civil Engineering Technicians**

Location	Pay Period	2012 10%	25%	Median	75%	90%
United States	Hourly	$14.63	$17.80	$22.87	$28.42	$34.52
	Yearly	$30,400	$37,000	$47,600	$59,100	$71,800
Texas	Hourly	$13.70	$16.12	$19.64	$24.70	$29.56
	Yearly	$28,500	$33,500	$40,900	$51,400	$61,500
Brownsville-Harlingen, TX MSA	Hourly	$12.71	$14.34	$17.12	$20.67	$23.82
	Yearly	$26,400	$29,800	$35,600	$43,000	$49,500

Professional Associations linked to the Careers

For more information about civil engineering technicians, visit
Pathways to Technology

For more information about accredited programs, visit
ABET

For more information about certification, visit
American Society of Certified Engineering Technicians
National Institute for Certification in Engineering Technologies

Sources

The information provided in this document was collected from the following sources:

- Occupational Outlook Handbook (http://www.bls.gov/ooh/)
- O*NET OnLine (http://www.onetonline.org/)
- Texas CARES (http://www.texascaresonline.com/)
- CareerOneStop (http://www.careeronestop.org/)

Civil Engineering Technicians

Cluster Overview: Planning, managing, and providing scientific research and professional and technical services including laboratory and testing services, and

Career Goal (O*NET Code): (17-3022) - Civil engineering technicians help civil engineers plan and design the construction of highways, bridges, utilities, and other major infrastructure projects. They also help with commercial, residential, and land development.

SUGGESTED COURSEWORK

Middle School	8th	***HS Courses:***	(Local districts may list high school credit courses here)
High School	9th	***Core Courses:***	English I Algebra I World Geography L anguages other than English I Biology
		Career-Related Electives:	Introduction to Engineering Design
	10th	***Core Courses:***	English II Geometry World History La
		Career-Related Electives:	Principles of Engineering
	11th	***Core Courses:***	English III Algebra II United States History Professional Communications
		Career-Related Electives:	Digital Electronics
	12th	***Core Courses:***	English IV Government/Economi cs
		Career-Related Electives:	Engineering Design and Development, Civil Engineering Design and Architecture, Computer

EXTENDED

Curricular Experiences:

Camp SOAR-Aerospace Engineering-Texas A&M University
Aerospace Academy-San Jacinto College
Proje
ct
Lead
the
Way
Skill
s
USA
Technology Student Association
The Infinity Project

Career Learning Experiences:

Career
Preparation
Job

Extracurricular Experiences:

Destination ImagiNation
High School Students
United with NASA
International Bridge
Building Contest
Marine Advanced Technology
Education Center
National Engineering Design
Competition
UIL Academic Competitions
Aerospace Summer Camps

Service Learning Experiences:

Campus
Service

COLLEGE CREDIT OPPORTUNITIES -- High School

Students should take Advanced Placement (AP), International Baccalaureate (IB), dual credit, Advanced Technical Credit (ATC), or locally articulated credit courses, if possible. List those courses that count for college credit on your campus.

How to Become a Civil Engineering Technician

Although not always required, an associate's degree in civil engineering technology is preferred for civil engineering technicians. It is best to
seek programs that ABET (formerly the Accreditation Board for Engineering and Technology) has certified

Career Options:

Professional Associations: Pathways to Technology ABET

Postsecondary		**Texas Southmost College** **South Texas College** **Texas State Technical College**	• Engineering Technician • Civil Engineering Technician Specialist • Civil Engineering Designer Engineering Assistant • Engineering Assistant Analyst • Transportation Engineering Technician Technician	• Civil Designer • Engineering • Civil • Construction • Design	American Society of Certified Engineering Technicians
		Associated of Science in Engineering			
		University of Texas at Brownsville **University of Texas - Pan American**			
		Bachelors of Science in Engineering Physics Engineering Bachelors of Science in Civil			

Students may select other elective courses for personal enrichment purposes.

This plan of study serves as a guide, along with other career planning materials, for pursuing a career path and is based on the most recent information as of 2012. All plans meet high school graduation requirements as well as college entrance