



# Construction Engineering Management

February 2018

Prepared by the Los Angeles/Orange County Center of Excellence for Labor Market Research

## Program Recommendation

This report was compiled by the Los Angeles/Orange County Center of Excellence to provide regional labor market data for the program recommendation of construction engineering management. This report can help determine whether there is demand in the local labor market that is not being met by the supply from programs of study (CCC and non-CCC) that align with this occupation group.

Based on the data, the COE has mixed feelings about the construction engineering management program in the Los Angeles County region. Reasons include:

- Through 2022 there is forecasted to be a 1% decline in construction engineering management related jobs; however, two of the analyzed occupations have an increase in jobs
- 86% of students are employed within six months after completing a construction engineering management related program
- While the majority of job advertisements listed a preference for candidates with a Bachelor's degree, between 33% and 55% of the industry workforce has some postsecondary education
- Only one college in Los Angeles County appears to have the Civil and Construction Management Technology program

## Occupation Codes and Descriptions

Currently, there are four occupations in the standard occupational classification (SOC) system related to the study of construction engineering management. The occupation titles and descriptions, as well as reported job titles are included in Exhibit 1.

**Exhibit 1 – Occupations, description, and sample job titles**

SOC Code	Title	Description	Sample of Reported Job Titles
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	Directly supervise and coordinate activities of construction or extraction workers.	Construction Foreman, Construction Superintendent, Construction Supervisor, Field Supervisor, Foreman, Job Superintendent, Project Superintendent, Site Superintendent, Superintendent, Supervisor

17-3022	Civil Engineering Technicians	Apply theory and principles of civil engineering in planning, designing, and overseeing construction and maintenance of structures and facilities under the direction of engineering staff or physical scientists.	Civil Designer, Civil Engineering Assistant, Civil Engineering Designer, Civil Engineering Technician, Design Technician, Engineer Technician, Engineering Assistant, Engineering Specialist, Engineering Technician, Transportation Engineering Technician
11-9021	Construction Managers	Plan, direct, or coordinate, usually through subordinate supervisory personnel, activities concerned with the construction and maintenance of structures, facilities, and systems. Participate in the conceptual development of a construction project and oversee its organization, scheduling, budgeting, and implementation. Includes managers in specialized construction fields, such as carpentry or plumbing.	Concrete Foreman, Construction Area Manager, Construction Foreman, Construction Manager, Construction Superintendent, General Contractor, Job Superintendent, Project Executive, Project Manager, Project Superintendent
47-4011	Construction and Building Inspectors	Inspect structures using engineering skills to determine structural soundness and compliance with specifications, building codes, and other regulations. Inspections may be general in nature or may be limited to a specific area, such as electrical systems or plumbing.	Building Code Administrator, Building Inspection Engineer, Building Inspector, Building Official, Combination Building Inspector, Construction Inspector, Construction Materials Testing Technician, Elevator Inspector, Inspector, Plumbing Inspector

Source: O\*NET Online

## Current and Future Employment

In Los Angeles County, the number of jobs related to construction engineering management are expected to decrease by 1% over the next five years. More than 2,600 job opportunities will be available annually for this group of occupations through 2022 due to certain occupations' new job growth and replacement need (e.g., retirements). Exhibit 2 contains detailed employment projections data for these occupations.

**Exhibit 2 – Five-year projections for construction engineering management occupations**

SOC	Occupation	2017 Jobs	2022 Jobs	2017 - 2022 Change	2017 - 2022 % Change	Annual Openings
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	13,340	13,471	131	1%	1,391
11-9021	Construction Managers	11,337	10,967	(370)	(3%)	774
47-4011	Construction and Building Inspectors	2,756	2,843	87	3%	316
17-3022	Civil Engineering Technicians	1,888	1,800	(88)	(5%)	157
	<b>Total</b>	<b>29,321</b>	<b>29,081</b>	<b>(240)</b>	<b>(1%)</b>	<b>2,638</b>

Source: Economic Modeling Specialists International (EMSI)

## Earnings

In Los Angeles County, the entry-level average wage for occupations related to construction engineering management is between \$13.60 and \$22.24 per hour, which is above the MIT Living Wage<sup>1</sup> estimate of \$13.54 per hour for a single adult. The average annual earnings for this occupation group in the region is between \$62,423 and \$79,119 per year, assuming full-time employment.

Exhibit 3 contains hourly wages and annual average earnings for these occupations. Entry-level hourly earnings is represented by the 10<sup>th</sup> percentile of wages, median hourly earnings is represented by the 50<sup>th</sup> percentile of wages, and experienced hourly earnings is represented by the 90<sup>th</sup> percentile of wages, demonstrating various levels of employment.

<sup>1</sup> MIT Living Wage Calculator. <http://livingwage.mit.edu/>

**Exhibit 3 – Earnings for construction engineering management occupations**

SOC	Occupation	Entry-Level Hourly Earnings	Median Hourly Earnings	Experienced Hourly Earnings	Average Annual Earnings
17-3022	Civil Engineering Technicians	\$22.24	\$39.46	\$51.34	\$79,119
47-4011	Construction and Building Inspectors	\$18.34	\$38.42	\$49.12	\$74,771
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	\$13.96	\$29.42	\$49.78	\$62,423
11-9021	Construction Managers	\$13.60	\$22.76	\$62.83	\$66,200

Source: Economic Modeling Specialists International (EMSI)

**Employer Job Postings**

In this research brief, real-time labor market information is used to provide a more nuanced view of the current job market, as it captures job advertisements for occupations relevant to the field of study. Employer job postings are consulted to understand who is employing in the field of construction engineering management, and what they are looking for in potential candidates. To identify job postings related to construction engineering management, the occupations listed in Exhibit 1 were used.

*Top Occupations*

In 2017, there were 3,865 job ads for occupations related to construction engineering management. Most of the postings (76%) were for construction managers (2,931 job postings). There were 3,510 job postings for the same cluster of occupations in 2016, and 3,357 job postings in 2015.

**Exhibit 4 – Top occupations by number of job postings (n=3,865)**

SOC Code	Occupation	Job Postings, Full Year 2017
11-9021	Construction Managers	2,931
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	524
47-4011	Construction and Building Inspectors	249
17-3022	Civil Engineering Technicians	141

Source: Labor Insight/Jobs (Burning Glass)

*Top Titles*

The top titles appearing in construction engineering management job ads are listed in Exhibit 5. Construction manager is the most common job title – appearing in 31% of all relevant job postings (1,186 out of 3,865 postings).

**Exhibit 5 –Job titles (n=3,865)**

<b>Title</b>	<b>Job Postings, Full Year 2017</b>
Construction Manager	1,186
Construction Superintendent	406
Superintendent	210
Engineering Technician	78
Inspector	76
Construction Inspector	69
Director of Construction	59
Construction Foreman	41
Field Supervisor	40
Site Supervisor	36
Commercial Construction Superintendent	35
Senior Project Manager	30
Assistant Manager	28

Source: Labor Insight/Jobs (Burning Glass)

*Top Employers*

Exhibit 6 lists the major employers hiring professionals in construction engineering management. Top employers postings job ads included Porch, Jacobs Engineering Group Incorporated, STV Group Incorporated, Edison International, CBRE, Shawmut Design And Construction, Next Page, and Vanir Construction Management Incorporated. The top worksite cities in the region for these occupations were Los Angeles, Long Beach, and Pasadena.

**Exhibit 6 – Top employers (n=1,739)**

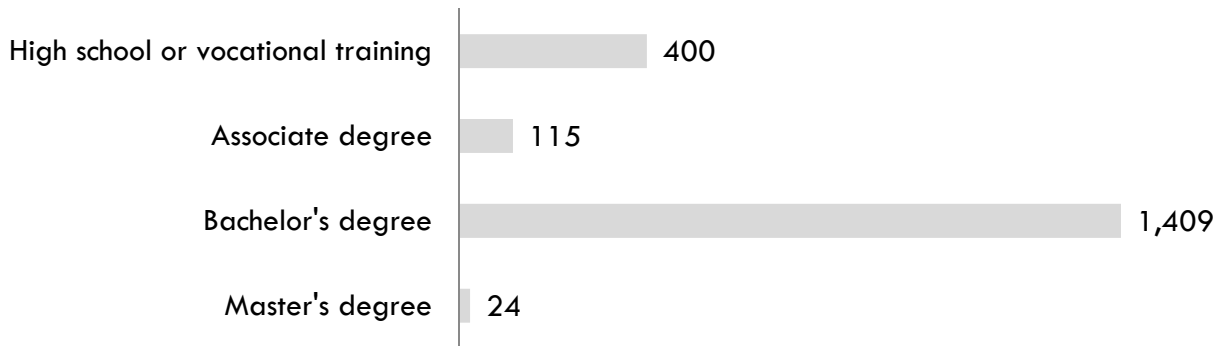
<b>Employer</b>	<b>Job Postings, Full Year 2017</b>
Porch	34
Jacobs Engineering Group Incorporated	32
STV Group Incorporated	32
Edison International	31
CBRE	27
Shawmut Design And Construction	27
Next Page	24
Vanir Construction Management Incorporated	23
Kal Krishnan Consulting Services	22
AECOM Technology Corporation	21
Arcadis	18

Source: Labor Insight/Jobs (Burning Glass)

*Advertised Education Levels*

Exhibit 7 displays the education level requested by employers in online job ads. The majority of employers were looking for a candidate with a Bachelor’s degree. Approximately 50% of job postings did not specify a level of education.

**Exhibit 7 – Education requirements listed in construction engineering management job ads (n=1,948)**



Source: Labor Insight/Jobs (Burning Glass)

**Education and Training**

Exhibit 8 shows the typical entry-level education requirement for the occupations of interest, along with the typical on-the-job training, and percentage of workers in the field who hold a community college award or have completed some postsecondary courses. Between 33% and 55% of the workforce in the four occupations has completed some community college education as their highest level of education.

**Exhibit 8 – Education and training requirements**

SOC	Occupation	Typical entry-level education	Typical on-the-job training	% of Community College Award Holders or Some Postsecondary Coursework
17-3022	Civil Engineering Technicians	Associate degree	None	55%
47-4011	Construction and Building Inspectors	High school diploma or equivalent	Moderate-term on-the-job training	45%
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	High school diploma or equivalent	None	33%
11-9021	Construction Managers	Bachelor's degree	Moderate-term on-the-job training	33%

Source: Economic Modeling Specialists International, Bureau of Labor Statistics Employment Projections (Educational Attainment)

Currently, one community college in Los Angeles County trains students in civil and construction management technology. Exhibit 10 displays the annual awards conferred at the college training in this field. It is important to note that an award is not equivalent to a single person in search of a job opening, since a student may earn more than one award (e.g. an associate degree and a certificate).

Between 2013 and 2016, the total annual average community college awards conferred was one across one program: Civil and Construction Management Technology (0957.00).

**Exhibit 10 – CCC Student Awards (by TOP and College)**

TOP Code	Program	College	2013-2016 Annual Average			Total Average CC Awards
			2013-14 Awards	2014-15 Awards	2015-2016 Awards	
0957.00	Civil and Construction Management Technology	LA Valley	0	1	1	1
<b>Total</b>			<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>

Source: California Community Colleges Chancellor’s Office MIS Data Mart

**Student Outcomes**

The CTE LaunchBoard provides student outcome data on the effectiveness of CTE programs. The following student outcome information was collected from exiters of the Civil and Construction Management Technology Taxonomy of Program (TOP) code (0957.00) in Los Angeles County for the 2014-15 academic year.

- The median annual wage after program completion is \$55,112
- 79% of students are earning a living wage
- 86% of students are employed within six months after completing a program

Source: CTE LaunchBoard

**Sources**

O\*Net Online, Labor Insight/Jobs (Burning Glass), Economic Modeling Specialists International (EMSI), MIT Living Wage Calculator, Bureau of Labor Statistics (BLS) Education Attainment, California Community Colleges Chancellor’s Office Management Information Systems (MIS) Data Mart, and CTE LaunchBoard

## Notes

Data included in this analysis represents the labor market demand for positions most closely related to construction engineering management. Standard occupational classification (SOC) codes were chosen based on the national education level required for employment (associate degree and postsecondary certificate) as well as the proportion of current workers who hold a community college award or have had some community college training. This selection process narrows the labor market analysis to the most relevant employment opportunities for students with community college education and/or training.

Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study and should not be used to establish current job openings, because the numbers may include duplicate job postings or postings intended to gather a pool of applicants. Real-time labor market information can signal demand and show what employers are looking for in potential employees, but is not a perfect measure of the quantity of open positions.