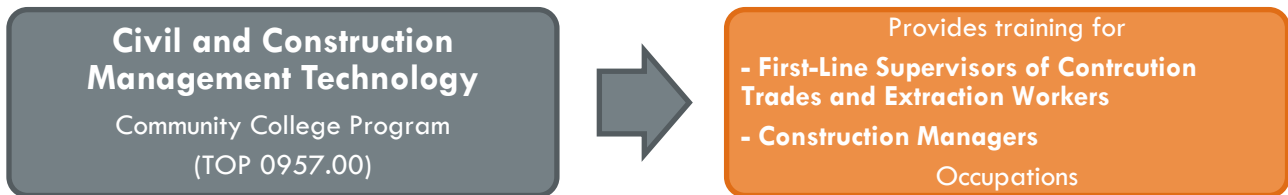


Civil and Construction Management Technology

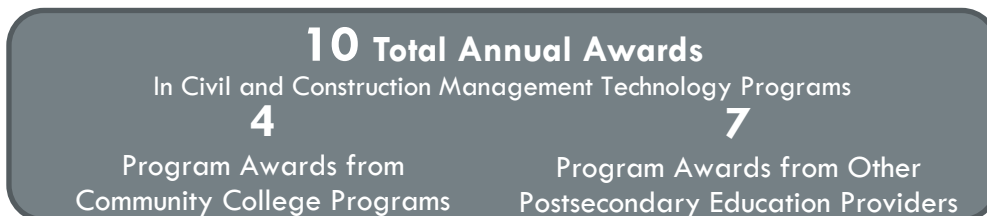
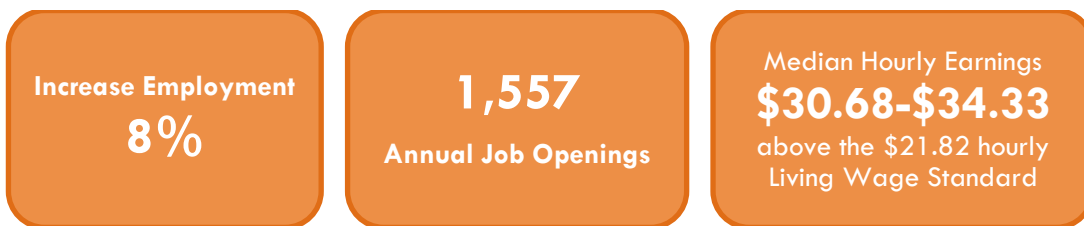
Inland Empire/Desert Region (Riverside and San Bernardino counties)

This workforce demand report uses state and federal job projection data developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to verify their current employment needs.

Summary



Over the next five years (2021-2026), construction management employment is projected to



The Inland Empire/Desert Centers of Excellence

 **Recommends**

Civil and Construction Management Technology Program Expansion to meet the need for more workers in the region

Introduction

This report provides labor market occupational demand and wage research and postsecondary program outcomes related to civil and construction management technology. California Community College civil and construction management technology programs (TOP 0957.00) prepare students for employment through instruction related to the application of procedures and techniques related to civil and construction management, including estimating and bidding, scheduling and control, inspection, building systems,

construction practices, quality control, labor and safety practices. These programs include public works management (Taxonomy of Programs, 2012). The knowledge, skills, and abilities trained by civil and construction management technology programs lead to the following occupations, further referred to as the construction management occupational group.

- Construction Managers (11-9021)
- First-line Supervisors of Construction Trades and Extraction Workers (47-1011)

In 2021, there were 14,882 construction management jobs in the region. Employment for the construction management occupational group is projected to increase by 8% through 2026; 1,557 job openings are projected annually. Exhibit 1 displays the job counts, five-year projected job growth, job openings, and the share of incumbent workers aged 55 years and greater in the region.

Exhibit 1: Five-year projections for the construction management occupational group, Inland Empire/Desert Region, 2021-2026

Occupation	2021 Jobs	2026 Jobs	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
First-Line Supervisors of Construction Trades and Extraction Workers	8,551	9,023	6%	4,694	939	31%
Construction Managers	6,330	7,055	11%	3,089	618	33%
Total	14,882	16,078	8%	7,783	1,557	32%

Source: Lightcast 2022.2

An online job advertisement (ad) search for construction management jobs was conducted to reveal the employers seeking these workers, including the time it takes to fill positions, earnings information, and in-demand skills. Exhibit 2 shows the number of job ads posted during the last 12 months and the regional and statewide average time to fill this job. On average, employers in the local region fill online job ads for the construction management occupational group in 39 days, the same as the statewide average time to fill. Time to fill information indicates that employers in the region likely face similar challenges filling open positions as other employers in California.

Exhibit 2: Job ads and time to fill, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Job Ads	Regional Average Time to Fill (Days)	Statewide Average Time to Fill (Days)
Construction Managers	1,229	38	39
First-Line Supervisors of Construction Trades and Extraction Workers	417	42	39

Occupation	Job Ads	Regional Average Time to Fill (Days)	Statewide Average Time to Fill (Days)
Total	1,646	39	39

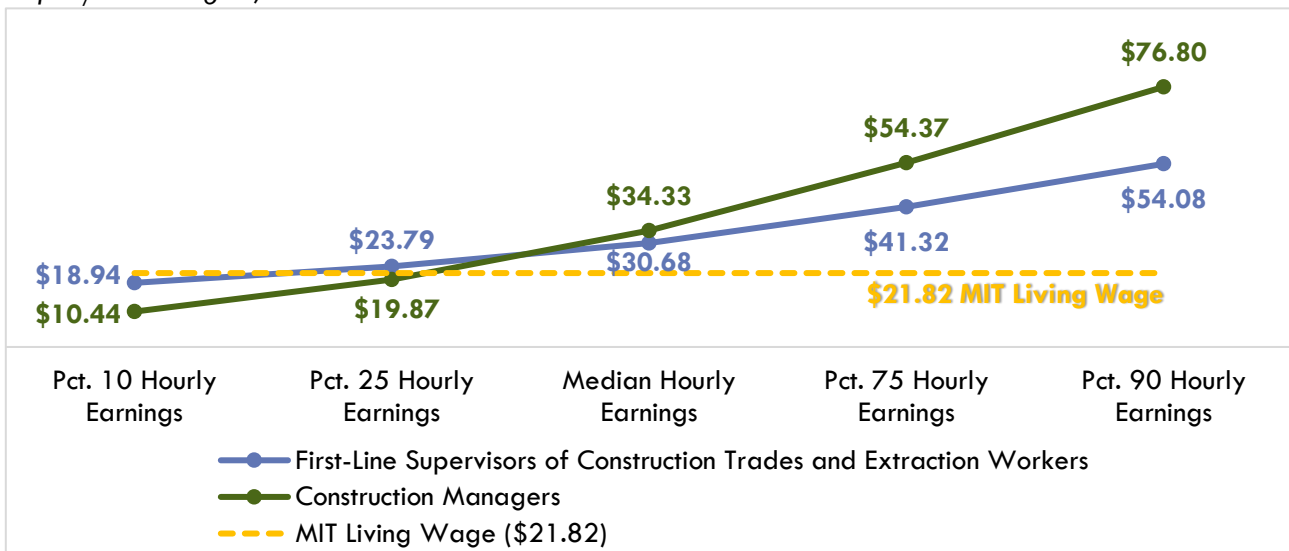
Source: Burning Glass – Labor Insights

Earnings and Benefits

Community colleges should ensure their training programs lead to employment opportunities that provide a living wage. The MIT living wage calculator estimates that an individual must earn \$21.82 per hour or \$45,386 annually in California (Glasmeier, 2022).

Exhibit 3 displays the hourly earnings for the construction management occupational group. The median hourly earnings for the construction management occupational group are above the living wage standard, indicating that at least 50% of workers in this occupational group earn a living wage.

Exhibit 3: Hourly earnings by percentile for the construction management occupational group, Inland Empire/Desert Region, 2021



Source: Lightcast 2022.2

Benefits information, provided in the occupational guides developed by the California Labor Market Information Division, reveals that employers typically provide workers in the construction management occupational group with medical, dental, life, and vision insurance and vacation, holidays, and retirement plans (Detailed Occupational Guides, 2022).

Advertised Salary from Online Job Ads

Exhibit 4 displays online job ad salary data for the construction management occupational group over the last 12 months. Online job ad salary information reveals that employers are willing to pay the construction management occupational group between \$68,000 and \$81,000 annually, above the region's \$45,386

annual (\$21.82 hourly) living wage standard. Consider the salary information with caution since only 53% (871 out of 1,646) of online job ads for these occupations provided salary information. The salary figures are prorated to reflect full-time, annual wage status.

Exhibit 4: Advertised salary information, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Number of job ads	Real-Time Salary Information				Average Annual Salary
		Less than \$35,000	\$35,000 to \$49,999	\$50,000 to \$74,999	More than \$75,000	
Construction Managers	638	5%	11%	27%	57%	\$81,000
First-Line Supervisors of Construction Trades and Extraction Workers	233	3%	12%	55%	30%	\$68,000

Source: Burning Glass – Labor Insights

Employers, Skills, Education, and Work Experience

Exhibit 5 displays the employers that posted the most job ads during the last 12 months. Displaying employer names provides insight into where students may find employment after completing a program. ESP Construction posted the most job ads for the construction management occupational group in the region.

Exhibit 5: Employers posting the most job ads for the construction management occupational group, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Top Employers	
Construction Managers (n=1,229)	<ul style="list-style-type: none"> • ESP Construction • CDM Smith • MasTec Inc 	<ul style="list-style-type: none"> • Lennar Corporation • Stronghold Engineering • MDC Holdings
First-Line Supervisors of Construction Trades and Extraction Workers (n=417)	<ul style="list-style-type: none"> • HCI Incorporated • Boudreau Pipeline • Sunrun 	<ul style="list-style-type: none"> • VCI Construction LLC • MasTec Inc • KB Home

Source: Burning Glass – Labor Insights

Exhibit 6 lists a sample of specialized and employability skills employers seek when looking for workers to fill positions in the construction management occupational group. Specialized skills are occupation-specific skills that employers request for industry or job competency. Employability skills are foundational skills that transcend industries and occupations; this category is often referred to as "soft skills." The skills requested in job ads may be utilized to guide curriculum development.

Exhibit 6: Sample of in-demand skills from employer job ads, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Specialized skills	Employability skills
Construction Managers (n=1,181)	<ul style="list-style-type: none"> Project Management Budgeting Scheduling Occupational Health and Safety Quality Assurance and Control 	<ul style="list-style-type: none"> Communication Skills Organizational Skills Planning Teamwork/Collaboration Detail-Oriented
First-Line Supervisors of Construction Trades and Extraction Workers (n=365)	<ul style="list-style-type: none"> Scheduling Occupational Health and Safety Budgeting Project Management Quality Assurance and Control 	<ul style="list-style-type: none"> Communication Skills Physical Abilities Planning Organizational Skills Problem Solving

Source: Burning Glass – Labor Insights

Exhibit 7 displays the typical entry-level education, educational attainment, and minimum advertised education requirements for the construction management occupational group. According to the Bureau of Labor Statistics, between 31%-32% of incumbent workers in this field hold a community college-level of educational attainment; "some college, no degree," and an "associate degree." Between 44% and 79% of job ads for the construction management occupational group sought candidates with a high school diploma or vocational training.

Exhibit 7: Typical entry-level education, educational attainment, and minimum advertised education requirements, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Typical Entry-Level Education Requirement	CC-Level Educational Attainment*	Number of Job Ads	Real-Time Minimum Advertised Education Requirement		
				High school or vocational training	Associate degree	Bachelor's degree or higher
Construction Managers	Bachelor's degree	32%	792	44%	5%	51%
First-Line Supervisors of Construction Trades and Extraction Workers	High school diploma or equivalent	31%	181	79%	7%	14%

Source: Lightcast 2022.2, Burning Glass – Labor Insights

*Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework

Exhibit 8 displays the work experience typically required to enter each occupation and the real-time work experience requirements from employer job ads. Between 57% and 60% of employers sought construction management workers with three to five years of previous work experience.

Exhibit 8: Work experience required and real-time work experience requirements, Inland Empire/Desert Region, July 2021 through June 2022

Occupation	Work Experience Typically Required	Real-Time Work Experience			
		Number of job ads	0 – 2 years	3 – 5 years	6+ years
Construction Managers	None	928	20%	57%	23%
First-Line Supervisors of Construction Trades and Extraction Workers	Five years or more	305	27%	60%	13%

Source: Lightcast 2022.2, Burning Glass – Labor Insights

Student Completions and Programs Outcomes

Exhibit 9 displays student completions for civil and construction management technology (TOP 0957.00) programs over the last three academic years (2018-21). Over the last three academic years, regional community colleges have issued nearly four awards annually in civil and construction management technology programs. Program completion and student outcome methodologies are found in the appendix.

Exhibit 9: 2018-21, Annual average community college awards for civil and construction management technology programs, Inland Empire/Desert Region, Academic Years 2018-2021

TOP 0957.00 – Civil and Construction Management Technology (Local Program Title)	Academic Year 2018-19	Academic Year 2019-20	Academic Year 2021-21	Total CC Annual Average Awards, Academic Years 2018-21
College of the Desert (Construction Management, Real Estate Development)				4
Associate Degree	1	5	3	3
Certificate 18 < 30 semester units	1	0	0	0
Certificate 16 < 30 semester units	0	0	1	0
Norco College (Construction Management)	-	-	-	0
Victor Valley College (Construction Management)	-	-	-	0
Total	2	5	4	4

Source: MIS Data Mart, COCI

California program outcome data may provide useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibit 10.

Exhibit 10: 0957.00 – Civil and construction management technology strong workforce program outcomes

Strong Workforce Program Metrics: 0957.00 – Civil and Construction Management Technology Academic Year 2018-19, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2019-20)	47	3,004
Completed 9+ career education units in one year (2019-20)	53%	33%
Perkins Economically disadvantaged students (2019-20)	98%	70%
Students who attained a noncredit workforce milestone in a year (2019-20)	-	76%
Students who earned a degree, certificate, or attained apprenticeship (2019-20)	-	126
Transferred to a four-year institution (transfers)	-	52
Job closely related to the field of study (2017-18)	-	74%
Median annual earnings (all exiters)	\$33,364	\$57,454
Median change in earnings (all exiters)	23%	24%
Attained a living wage (completers and skills-builders)	55%	71%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 11 displays awards that other postsecondary education providers reported in construction management, general programs (52.2001). Completion data is compiled from the Integrated Postsecondary Education Data System (IPEDS) for the most recent three years. One other regional postsecondary education provider has issued nearly seven awards annually over the last three academic years.

Exhibit 11: Other educational providers construction management, general program, three-year annual average credentials in the region

52.2001 – Construction Management, General	Associate Degree	Other Educational Providers Annual Average Credentials, Academic Years 2017-2020
San Joaquin Valley College-Ontario	7	7
Total	7	7

Source: IPEDS

Summary of Findings

The knowledge, skills, and abilities trained by civil and construction management technology programs (TOP 0957.00) lead to two distinct occupations, collectively referred to as the construction management occupational group. The construction management occupational group is expected to have 1,557 annual job openings and increase employment by 8% over the next five years. The median hourly earnings for construction management occupations are above the MIT living wage standard (\$21.82), indicating that at least 50% of workers in this occupational group earn a living wage.

Community college civil and construction management technology programs (0957.00) have issued nearly four awards annually over the last three academic years. Other postsecondary education providers have issued nearly seven awards annually in programs related to construction management. Combined, postsecondary education providers in the region have issued ten awards annually in programs related to construction management.

The Centers of Excellence recommends expanding programs related to civil and construction management technology to meet the demand for these workers in the region. Colleges considering this program should have a strong partnership with construction employers to document their demand for workers and the skills needed for students to work in this field shortly after exiting the program.

Contact

Michael Goss
Paul Vaccher
Centers of Excellence, Inland Empire/Desert Region
michael.goss@chaffey.edu
August 2022

References

Burning Glass Technologies. (2022). *Labor Insights/Jobs*. Retrieved from <https://www.burning-glass.com/>

California Community Colleges Chancellor's Office. LaunchBoard. (2022). *California Community Colleges LaunchBoard*. Retrieved from <https://www.calpassplus.org/Launchboard/Home.aspx>

California Community Colleges Chancellor's Office. LaunchBoard. (2022a). *Strong Workforce Program Metrics Data Element Dictionary*. Pg. 3. Retrieved from <https://www.calpassplus.org/MediaLibrary/calpassplus/launchboard/Documents/SWP-DED.PDF>

California Community Colleges Chancellor's Office. (2022). *Chancellor's Office Curriculum Inventory (COCI), version 3.0*. Retrieved from <https://coci2.ccctechcenter.org/programs>

California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. (2022). *Data Mart*. Retrieved from <https://datamart.cccco.edu/datamart.aspx>

California Community Colleges Chancellor's Office, Curriculum and Instructional Unit, Academic Affairs Division. (2012). *Taxonomy of Programs, 6th Edition, Corrected Version*. Retrieved from <https://www.cccco.edu/-/media/CCCO-Website/About-Us/Divisions/Digital-Innovation-and-Infrastructure/Research/Files/TOPmanual6200909corrected12513.ashx?la=en&hash=94C709CA83C0380828415579395A5F536736C7C1>

Carnevale, A. P., Jayasundera, T., & Repnikov, D. (n.d.). Understanding Online Job Ads Data. Retrieved from <https://cew.georgetown.edu/wp-content/uploads/2014/11/OCLM.Tech.Web.pdf>

Glasmeyer, A. K. (2022). Massachusetts Institute of Technology. Living Wage Calculator. *Living Wage Calculation for California*. Retrieved from <https://livingwage.mit.edu/states/06>

Labor Market Information Division. Employment Development Department of California. (2022). *Detailed Occupational Guides*. Retrieved from <https://www.labormarketinfo.edd.ca.gov/OccGuides/Search.aspx>

Lightcast. (2022). *Datarun 2022.2*. Retrieved from <https://www.economicmodeling.com/>

National Center for O*NET Development. (2022). *O*NET OnLine*. Retrieved from <https://www.onetonline.org/>

U.S. Department of Education. Institute of Education Sciences, National Center for Education Statistics. *Integrated Postsecondary Education System (IPEDS)*. (2022). Retrieved from <https://nces.ed.gov/ipeds/use-the-data>

Appendix: Occupation definitions, sample job titles, five-year projections, and earnings for construction management occupations

Occupation Definitions (SOC code), Education and Training Requirement, Community College Education Attainment

Construction Managers (11-9021)

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.

Sample job titles: Concrete Foreman, Construction Area Manager, Construction Foreman, Construction Manager, Construction Services Manager, Construction Superintendent, Job Superintendent

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: Between one and twelve months on-the-job training

Work Experience: None

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 32%

First-Line Supervisors of Construction Trades and Extraction Workers (47-1011)

Directly supervise and coordinate activities of construction or extraction workers.

Sample job titles: Coal Mine Production Foreman, Construction Foreman, Construction Supervisor, Electrical Supervisor, Field Operations Supervisor, Field Supervisor, Insulation Foreman, Roustabout Field Supervisor, Sheet Metal Foreman, Site Superintendent

Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: None

Work Experience: Five years or more

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 31%

Appendix: Methodology

Exhibit 9 displays the average annual California Community College (CCC) awards conferred during the three academic years between 2018 and 2021 from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variations that might be present in a single year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from California's Employment Development Department's Unemployment Insurance database records. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2022a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS), administered by Santa Rosa Junior College (LaunchBoard, 2022a).

Job ad data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that "just 30 to 40 percent of openings for candidates with some college or an associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014). Online job ads often do not reveal employers' hiring intentions; it is unknown if employers plan to hire one or multiple workers from a single online job ad or collecting resumes for future hiring needs. A closed job ad may not be the result of a hired worker.

Table 1. 2021 to 2026 job growth, wages, entry-level education, training, and work experience required for the construction management occupational group in the Inland Empire/Desert Region (Riverside and San Bernardino Counties combined)

Occupation (SOC)	2021 Jobs	5-Year Change	5-Year % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage (10 th to 90 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Entry-Level Education & On-The-Job-Training	Work Experience Required
First-Line Supervisors of Construction Trades and Extraction Workers (47-1011)	8,551	472	6%	939	\$18.94 to \$54.08	\$30.68	\$71,000	High school diploma or equivalent & None	Five years or more
Construction Managers (11-9021)	6,330	725	11%	618	\$10.44 to \$76.80	\$34.33	\$86,400	Bachelor's degree & 1-12 months	None
Total	14,882	1,197	8%	1,557	-	-	-	-	-

Source: Lightcast 2022.2