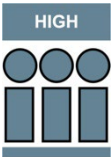


Infrastructure Construction Trades Occupations

Labor Market Analysis: San Diego County

August 2026

Summary

NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED LEVEL(S) OF EDUCATION
 Proceed with Caution	 	 	☐ Doctorate Degree ☐ Master's Degree ☐ Bachelor's Degree ☐ Associate degree ☐ Some College or Certificate ☒ HS Diploma or Equivalent ☒ Less Than a HS Diploma ☐ Apprenticeship
SUPPORT FOR PROGRAM MODIFICATION?	NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING	NUMBER OF ANNUAL JOB OPENINGS	
 	HIGH 	HIGH 	

The San Diego & Imperial Center of Excellence (COE) developed this brief to assist the region's community colleges with strategic planning and program development. *Infrastructure Construction Trades Occupations* include "Construction Laborers," "Electricians," "Operating Engineers and Other Construction Equipment Operators," "Plumbers, Pipefitters, and Steamfitters," and "Welders, Cutters, Solderers, and Brazers." According to available data, *Infrastructure Construction Trades Occupations* in San Diego County have a labor market demand of 3,281 annual job openings (while average demand for a single occupation in San Diego County is 540 annual job openings), and six institutions supply 880 awards for these occupations. This brief recommends proceeding with caution when developing a new program and supports a program modification because 1) there is a supply gap; 2) a high number of annual job openings exist for these occupations; and 3) entry-level wages are above the living wage. However, typical education ranges from no formal credential to high school, which may limit the need for a new community college program.

Introduction

This report provides labor market information in San Diego County for the following occupational codes in the Standard Occupational Classification (SOC) system:¹

- **Construction Laborers** (SOC 47-2061): Perform physical construction tasks involving concrete, demolition, rehabilitation, material handling, site preparation, and general site work.
- **Electricians** (SOC 47-2111): Install, maintain, and repair electrical distribution systems, motors, pumps, panels, wiring, and related equipment.
- **Operating Engineers and Other Construction Equipment Operators** (SOC 47-2073): Operate construction equipment used for excavation, grading, lifting, trenching, and site preparation.
- **Plumbers, Pipefitters, and Steamfitters** (SOC 47-2152): Assemble, install, and repair process piping, treatment lines, valves, fixtures, and mechanical connections.
- **Welders, Cutters, Solderers, and Brazers** (SOC 51-4121): Use welding, cutting, soldering, and brazing equipment to fabricate and repair piping, tanks, structures, and equipment.

For the purpose of this report, these occupations are referred to as *Infrastructure Construction Trades Occupations*.

¹ The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for collecting, calculating, and disseminating data. [bls.gov/soc](https://www.bls.gov/soc)

Projected Occupational Demand

Between 2025 and 2030, businesses in San Diego County will need to hire **3,281** employees annually to fill new jobs and backfill positions made vacant through turnover and retirement (Exhibit 1). Construction Laborers account for the largest share of demand, with **1,108** annual openings. Overall employment is projected to increase by **1,570** jobs, or **five percent**, during the five-year period.

Exhibit 1: Number of Jobs for Infrastructure Construction Trades Occupations (2025-2030)²

Occupational Title	2025 Jobs	2030 Jobs	2025-2030 Net Jobs Change	2025-2030 % Jobs Change	Annual Job Openings (Demand)
Construction Laborers	12,797	13,164	367	3%	1,108
Electricians	9,373	10,234	861	9%	1,005
Operating Engineers and Other Construction Equipment Operators	3,542	3,629	87	2%	309
Plumbers, Pipefitters, and Steamfitters	5,816	6,063	247	4%	533
Welders, Cutters, Solderers, and Brazers	3,344	3,352	8	0%	326
Total	34,872	36,443	1,570	5%	3,281

Earnings

According to traditional labor market information (LMI), entry-level hourly earnings for *Infrastructure Construction Trades Occupations* range from **\$19.43** to **\$32.33** (Exhibit 2).³

Exhibit 2: Hourly Earnings for Infrastructure Construction Trades Occupations in San Diego County⁴

Occupational Title	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Operating Engineers and Other Construction Equipment Operators	\$32.33	\$39.82	\$60.17
Electricians	\$27.90	\$36.00	\$48.48
Plumbers, Pipefitters, and Steamfitters	\$27.77	\$34.28	\$44.88
Welders, Cutters, Solderers, and Brazers	\$23.86	\$29.74	\$36.83
Construction Laborers	\$19.43	\$26.00	\$33.25

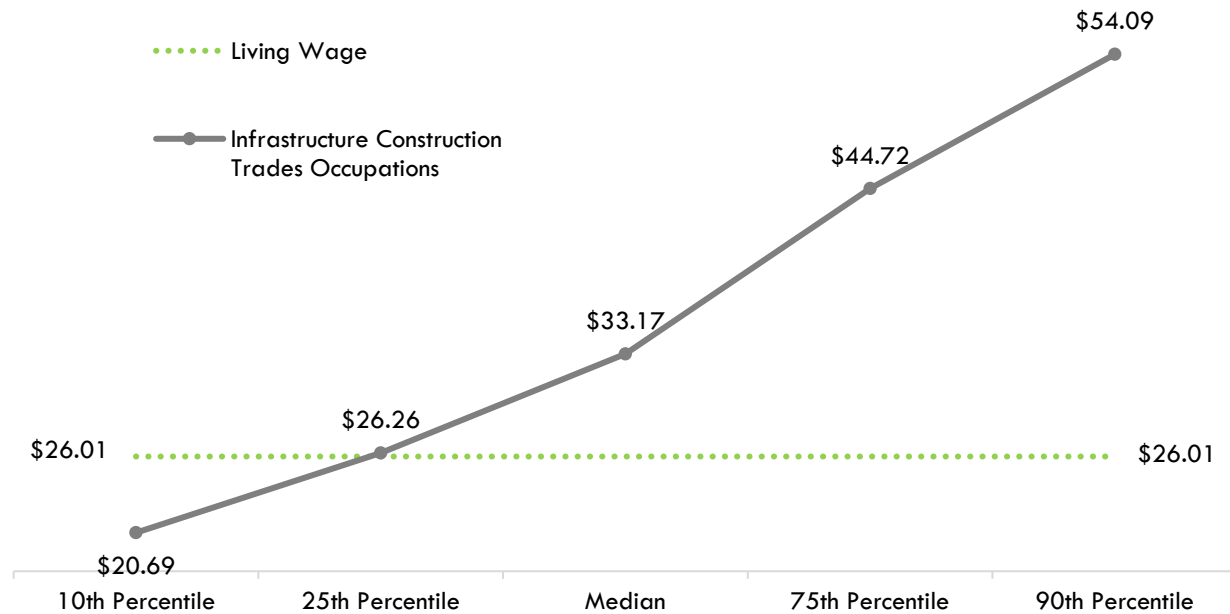
² Lightcast Q3 2026; QCEW, Non-QCEW, Self-Employed.

³ Traditional LMI is generally historical data captured by the U.S. Bureau of Labor Statistics or the California Employment Development Department. It may not reflect recent technological, economic, or legislative changes.

⁴ Lightcast Q3 2026; QCEW, Non-QCEW, Self-Employed.

On average, entry-level hourly earnings for employed *Infrastructure Construction Trades Occupations* are \$26.26—or approximately \$54,619 annually. This is above the living wage of \$26.01 per hour for a single adult in San Diego County (Exhibit 3).⁵⁶

Exhibit 3: Average Hourly Earnings for Infrastructure Construction Trades Occupations in San Diego County⁷⁸



In online job postings, employers also advertised between \$29 and \$31 per hour between January 1, 2023 and December 31, 2025 for *Infrastructure Construction Trades Occupations* in San Diego County (Exhibit 4). This suggests that employer-advertised wages in online job postings were above the entry-level wages reported in traditional labor market information and increased over the period analyzed.⁹

⁵ Annualized salaries assume a full-time position with 2,080 work hours. Multiplying the hourly wage by 2,080 yields the annual salary.

⁶ Center for Women's Welfare, University of Washington. The Self-Sufficiency Standard for California 2024.

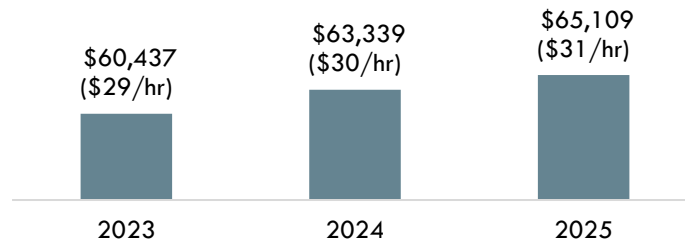
selfsufficiencystandard.org/california

⁷ The 10th and 25th percentiles may be considered entry-level wages; the 75th and 90th percentiles may be considered experienced wages.

⁸ Lightcast Q3 2026; QCEW, Non-QCEW, Self-Employed.

⁹ Lightcast Q3 2026; Job Posting Analytics, January 2023 through December 2025.

**Exhibit 4: Entry-Level Advertised Salaries in Online Job Postings for
Infrastructure Construction Trades Occupations in San Diego County (2023–2025)**



Expected Level of Education

According to traditional LMI reported to the California Employment Development Department and U.S. Bureau of Labor Statistics, *Infrastructure Construction Trades Occupations* typically require either **no formal educational credential** or a **high school diploma or equivalent** for entry-level employment (Exhibit 5).¹⁰

Exhibit 5: National Educational Attainment for *Infrastructure Construction Trades Occupations*¹¹

Occupational Title	Typical Entry-Level Education
Electricians	High school diploma or equivalent
Operating Engineers and Other Construction Equipment Operators	High school diploma or equivalent
Plumbers, Pipefitters, and Steamfitters	High school diploma or equivalent
Welders, Cutters, Solderers, and Brazers	High school diploma or equivalent
Construction Laborers	No formal educational credential

Similarly, a **high school diploma or GED** was the most requested listed educational requirement in online job postings for *Infrastructure Construction Trades Occupations* in San Diego County between January 1, 2023 and December 31, 2025. Employers also requested the certifications shown in Exhibit 6, including security clearances, OSHA General Industry cards, and journey-level trade qualifications.¹²

¹⁰ Lightcast Q3 2026; QCEW, Non-QCEW, Self-Employed.

¹¹ Lightcast Q3 2026; QCEW, Non-QCEW, Self-Employed.

¹² Lightcast Q3 2026; Job Posting Analytics, January 2023 through December 2025.

**Exhibit 6: Top Certifications for Infrastructure Construction Trades Occupations
in San Diego County in Online Job Postings (2023–2025)¹³**

- | | |
|---------------------------------------|---|
| 1. Security Clearance | 5. Commercial Driver’s License (CDL) |
| 2. Secret Clearance | 6. Journeyman Electrician |
| 3. 10-Hour OSHA General Industry Card | 7. Cardiopulmonary Resuscitation (CPR)
Certification |
| 4. Journeyman Plumber | 8. CDL Class A License |

Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes. There are *six* TOP codes and *six* CIP codes related to *Infrastructure Construction Trades Occupations* (Exhibit 7).

Exhibit 7: Related TOP and CIP Codes for Infrastructure Construction Trades Occupations¹⁴

TOP or CIP Code	TOP or CIP Program Title
TOP 0947.00	Diesel Technology
TOP 0947.30	Heavy Equipment Operation
TOP 0952.00	Construction Crafts Technology
TOP 0952.20	Electrical
TOP 0952.30	Plumbing, Pipefitting and Steamfitting
TOP 0956.50	Welding Technology
CIP 46.0302	Electrician
CIP 46.0415	Building Construction Technology/Technician
CIP 46.0503	Plumbing Technology/Plumber
CIP 47.0605	Diesel Mechanics Technology/Technician
CIP 48.0508	Welding Technology/Welder
CIP 49.0202	Construction/Heavy Equipment/Earthmoving Equipment Operation

¹³ Lightcast Q3 2026; Job Posting Analytics, January 2023 through December 2025.

¹⁴ This brief uses a conservative estimate of program supply based on the six TOP and six CIP codes listed in Exhibit 7.

According to TOP data, three community colleges supply the region with awards for these occupations: Palomar College, San Diego College of Continuing Education, and San Diego Miramar College. According to CIP data, three non-community colleges supply the region with awards: CET-San Diego, UEl College-Chula Vista, and UEl College-Oceanside. Combined, the six institutions confer an average of 880 awards annually (Exhibit 8). Displayed subgroup totals may differ by one due to rounding.

**Exhibit 8: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions
(Program Year 2021–22 Through Program Year 2024–25 Average)**

TOP or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY22-23 to PY24-25)	Other Educational Institutions 3-Yr Annual Average Awards (PY21-22 to PY23-24)	Total Average Supply (PY21-22 to PY24-25)
0947.00	Diesel Technology	22	0	22
	Palomar	9	0	
	• Associate degree	3	0	
	• Certificate 30 < 60 units	6	0	
	San Diego Miramar	13	0	
	• Certificate 30 < 60 units	1	0	
	• Certificate 16 < 30 units	12	0	
0952.20	Electrical	39	0	39
	Palomar	39	0	
	• Certificate 30 < 60 units	39	0	
0952.30	Plumbing, Pipefitting and Steamfitting	192	0	192
	San Diego College of Continuing Education	192	0	
	• Noncredit award 288 < 480 hours	20	0	
	• Noncredit award 96 < 144 hours	171	0	
0956.50	Welding Technology	154	0	154
	Palomar	44	0	
	• Associate degree	10	0	
	• Certificate 30 < 60 units	13	0	
	• Certificate 6 < 18 units	21	0	

TOP or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY22-23 to PY24-25)	Other Educational Institutions 3-Yr Annual Average Awards (PY21-22 to PY23-24)	Total Average Supply (PY21-22 to PY24-25)
	San Diego College of Continuing Education	110	0	
	• Noncredit award 480 < 960 hours	15	0	
	• Noncredit award 288 < 480 hours	95	0	
46.0302	Electrician	0	318	318
	CET-San Diego	0	5	
	• Certificate 1 < 2 years	0	5	
	UEI College-Chula Vista	0	227	
	• Certificate 1 < 2 years	0	227	
	UEI College-Oceanside	0	86	
	• Certificate 1 < 2 years	0	86	
46.0415	Building Construction Technology/Technician	0	68	68
	CET-San Diego	0	68	
	• Certificate 1 < 2 years	0	68	
48.0508	Welding Technology/Welder	0	87	87
	CET-San Diego	0	87	
	• Certificate 1 < 2 years	0	87	
			Total	880

Demand vs. Supply

Comparing labor demand with labor supply suggests that there is a **supply gap** for these occupations in San Diego County, with **3,281** annual openings and **880** average annual awards—a gap of **2,401** workers. Comparatively, there are **32,193** annual openings in California and **10,033** annual awards, suggesting a statewide supply gap of **22,160** workers (Exhibit 9).^{15,16}

Exhibit 9: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

	Demand (Annual Openings)	Supply (Average Annual Awards)	Supply Gap or Oversupply
San Diego	3,281	880	2,401
California	32,193	10,033	22,160

Please note: This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.

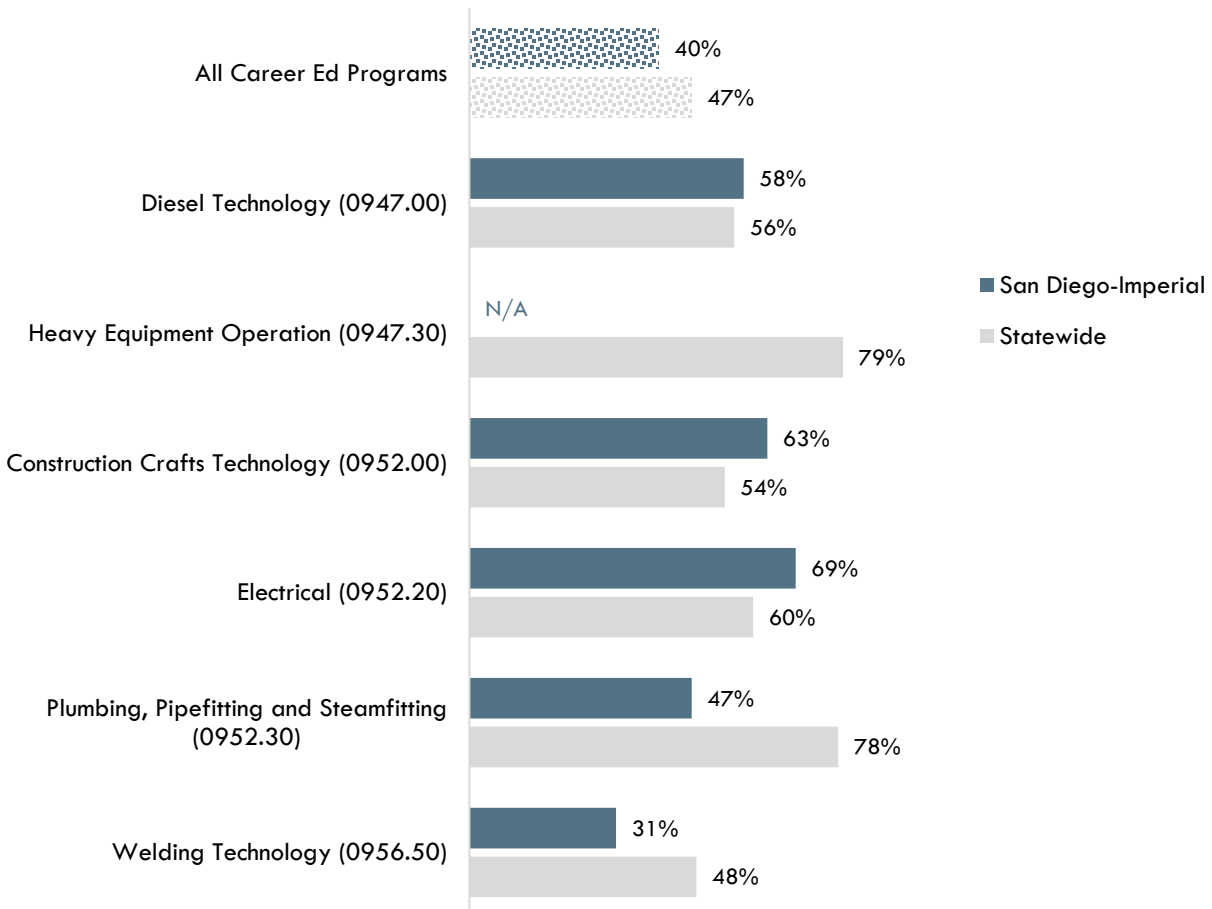
¹⁵ San Diego County and California demand data are from Lightcast Q3 2026 projections for 2025–2030. Community college award data are from the California Community Colleges Chancellor's Office MIS Data Mart; other postsecondary award data are from the Integrated Postsecondary Education Data System.

¹⁶ California Community Colleges Centers of Excellence. Supply and Demand Tables. coeccc.net/our-resources

Student Outcomes and Regional Comparisons

According to the California Community Colleges DataVista, available San Diego-Imperial outcomes show that 31% to 69% of students earned a living wage after completing a related program, compared with 48% to 79% statewide. The comparable rates for all Career Education programs were 40% in the region and 47% statewide (Exhibit 10).¹⁷

Exhibit 10: Percentage of Students Who Earned a Living Wage by Program, PY2023–24¹⁸



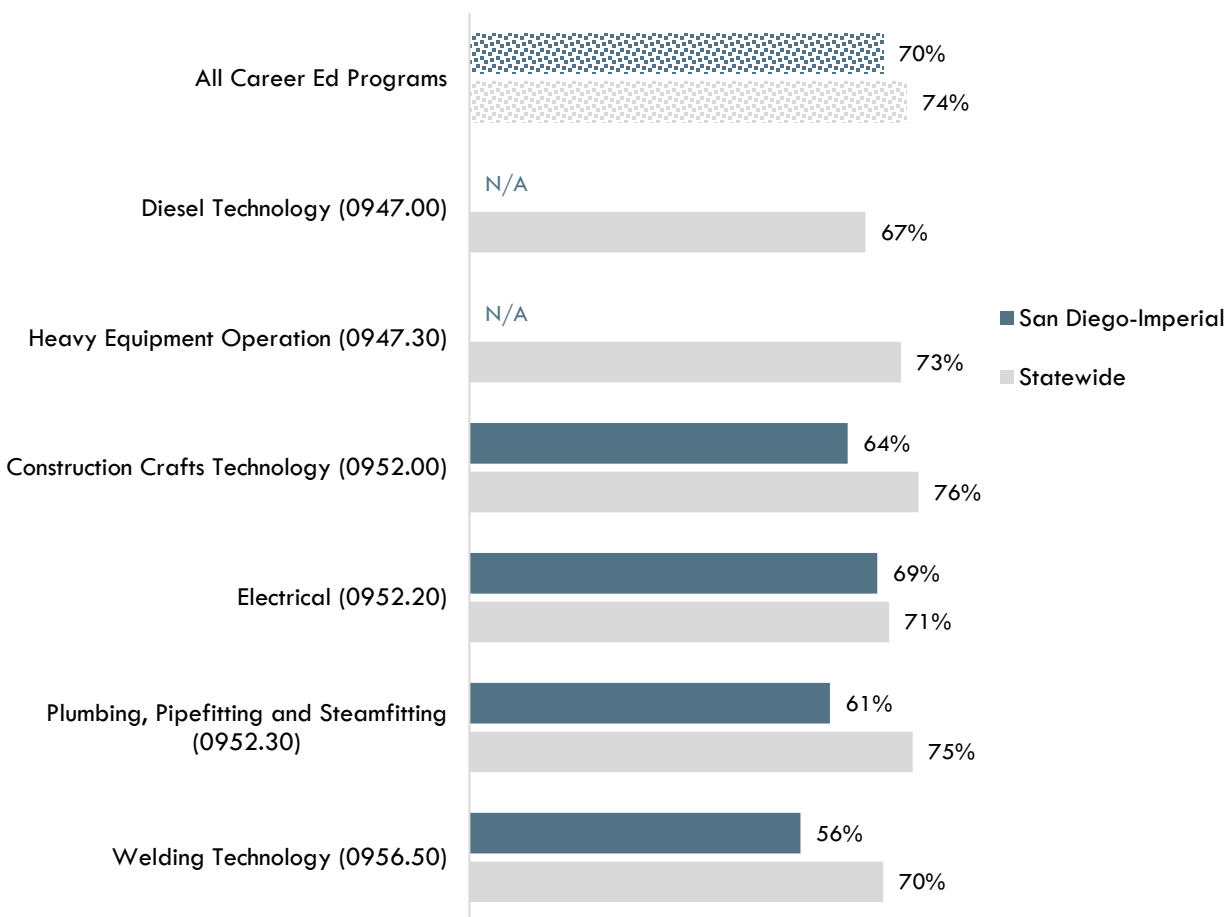
"N/A" indicates insufficient data.

¹⁷ California Community Colleges DataVista. datavista.cccco.edu

¹⁸ Most recent year with available data is Program Year 2023–24. The measure reports the percentage of completers and skills builders who exited and attained a living wage.

According to DataVista, available San Diego-Imperial outcomes show that 56% to 69% of students reported a job closely related to their field of study after completing a related program, compared with 67% to 76% statewide. The comparable rates for all Career Education programs were 70% in the region and 74% statewide (Exhibit 11).¹⁹

**Exhibit 11: Percentage of Students in a Job Closely Related to Field of Study
by Program, PY2022–23²⁰**



"N/A" indicates insufficient data.

¹⁹ California Community Colleges DataVista. datavista.cccco.edu

²⁰ Most recent year with available data is Program Year 2022–23. The measure reports the percentage of CTE Outcomes Survey respondents employed in the same or a similar field as their program of study.

Employers

Between January 1, 2023 and December 31, 2025, the top employers in San Diego County for *Infrastructure Construction Trades Occupations* included [General Dynamics](#), [Epsilon Systems Solutions](#), [Huntington Ingalls Industries](#), [Delphinus Engineering](#), and [Happy Plumbing](#), based on online job postings (Exhibit 12).

Exhibit 12: Top Employers for *Infrastructure Construction Trades Occupations* in San Diego County²¹

Top Employers	
• General Dynamics • Epsilon Systems Solutions • Huntington Ingalls Industries • Delphinus Engineering • Happy Plumbing	• United States Department of Defense • Vci Construction • Serco • United States Navy • Naval Facilities Engineering Command

Skills

Exhibit 13 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2023 and December 31, 2025.

Exhibit 13: Top Skills for *Infrastructure Construction Trades Occupations* in San Diego County²²

Specialized Skills	Soft Skills	Software Skills
• Plumbing • Hand Tools • Lifting Ability • Construction • Power Tool Operation • Blueprinting • Electrical Wiring • Good Driving Record • Electrical Systems	• Communication • Troubleshooting • Customer Service • Operations	• N/A

²¹ Lightcast Q3 2026; Job Posting Analytics, January 2023 through December 2025.

²² Lightcast Q3 2026; Job Posting Analytics, January 2023 through December 2025. Skills must populate in at least 10% of job postings to be listed.

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Important Disclaimers

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the California Community Colleges Centers of Excellence (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.