Architecture and Architectural Occupations

Labor Market Analysis: San Diego County

March 2023

Summary

NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED EDUCATION FOR MAJORITY OF OCCUPATIONS ANALYZED
Proceed with New Program (green circle)	☑ / ☒	☑ / ☒	☐ 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**	**MEDIUM**	

This brief provides labor market information about *Architecture and Architectural Occupations* to assist the San Diego and Imperial Counties Community Colleges with program development and strategic planning. *Architecture and Architectural Occupations* include "Architectural and Civil Drafters" and "Civil Engineering Technologists and Technicians." According to available labor market information, *Architecture and Architectural Occupations* in San Diego County have a labor market demand of 260 annual job openings (while average demand for a single occupation in San Diego County is 245 annual job openings), and eight institutions supply 101 awards for these occupations, suggesting that there is a supply gap in the labor market. On average, entry-level and median wages are above the living wage. This brief recommends that the colleges proceed with developing a new program and supports a program modification because 1) there is a supply gap in San Diego County; 2) entry-level earnings for this occupation are above the living wage; and 3) there is a medium number of annual job openings.

Introduction

This report provides labor market information in San Diego County for the following occupational codes in the Standard Occupational Classification (SOC)[1] system:
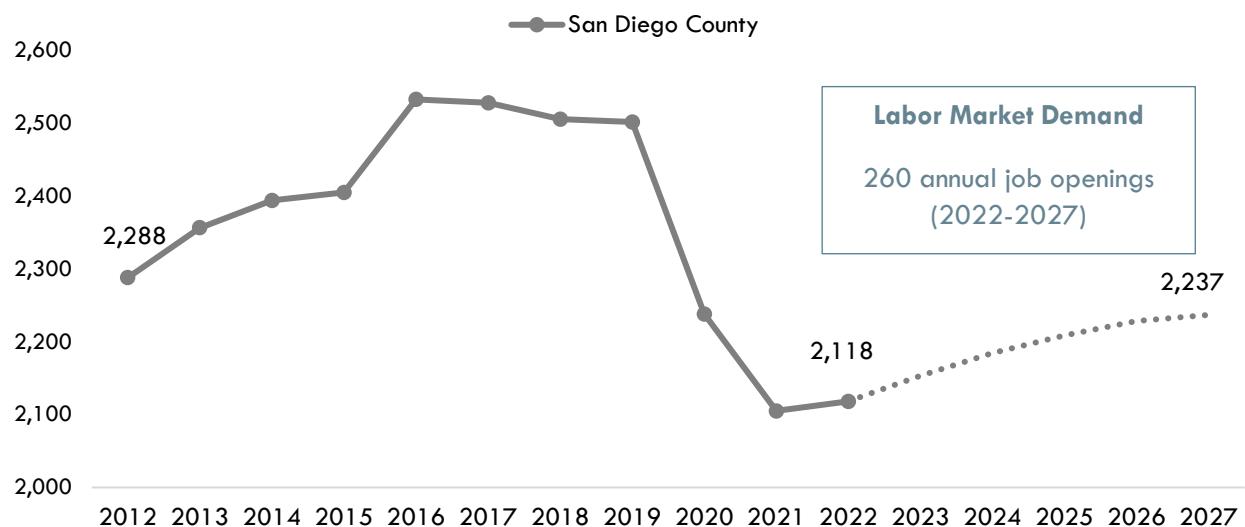
- **Architectural and Civil Drafters** (SOC 17-3011): Prepare detailed drawings of architectural and structural features of buildings or drawings and topographical relief maps used in civil engineering projects, such as highways, bridges, and public works. Use knowledge of building materials, engineering practices, and mathematics to complete drawings.
- **Civil Engineering Technologists and Technicians** (SOC 17-3022): 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.

For the purpose of this report, these occupations are referred to as *Architecture and Architectural Occupations*.

Projected Occupational Demand

Between 2022 and 2027, *Architecture and Architectural Occupations* are projected to increase by 119 net jobs or six percent (Exhibit 1a). Employers in San Diego County will need to hire 260 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

Exhibit 1a: Number of Jobs for *Architecture and Architectural Occupations* (2012-2027)[2]

Labor Market Demand

260 annual job openings (2022-2027)

San Diego County

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[1] The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. bls.gov/soc.
[2] Lightcast 2023.01; QCEW, Non-QCEW, Self-Employed.

Exhibit 1b disaggregates the projected number of jobs change by occupation. "Architectural and Civil Drafters" are projected to have the most labor market demand between 2022 and 2027, with 176 annual job openings.

Exhibit 1b: Number of Jobs for *Architecture and Architectural Occupations* in San Diego County (2022-2027)[3]

Occupational Title	2022 Jobs	2027 Jobs	2022 - 2027 Net Jobs Change	2022-2027 % Net Jobs Change	Annual Job Openings (Demand)
Architectural and Civil Drafters	1,389	1,457	68	5%	176
Civil Engineering Technologists and Technicians	729	780	51	7%	84
Total	2,118	2,237	119	6%	260

Earnings

Exhibit 2a disaggregates hourly earnings by occupation. The entry-level hourly earnings for *Architecture and Architectural Occupations* range from $28.50 to $29.01.

Exhibit 2a: Hourly Earnings for *Architecture and Architectural Occupations* in San Diego County[4]

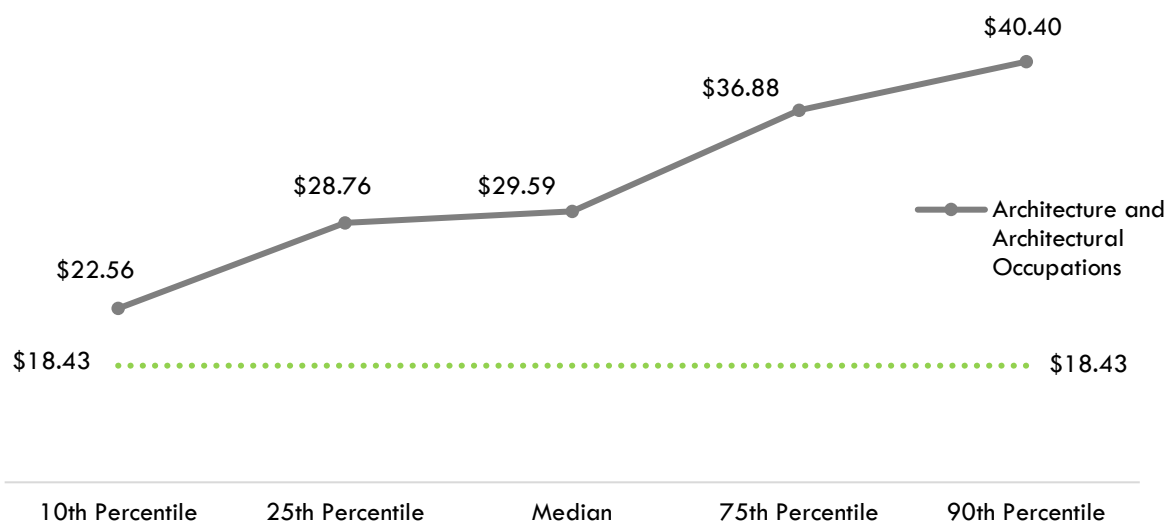| Occupational Title	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Architectural and Civil Drafters	$29.01	$29.69	$36.74
Civil Engineering Technologists and Technicians	$28.50	$29.49	$37.01

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[3] Lightcast 2023.01; QCEW, Non-QCEW, Self-Employed.
[4] Lightcast 2023.01; QCEW, Non-QCEW, Self-Employed.

On average, the entry-level hourly earnings for *Architecture and Architectural Occupations* are $28.76; this is more than the living wage for a single adult in San Diego County, which is $18.43 per hour (Exhibit 2b).[5]

Exhibit 2b: Average Hourly Earnings[6] for *Architecture and Architectural Occupations* in San Diego County[7]

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.[8] There are four TOP codes and eight CIP codes related to *Architecture and Architectural Occupations* (Exhibit 3).

Exhibit 3: Related TOP and CIP Codes for *Architecture and Architectural Occupations*[9]

TOP or CIP Code	TOP or CIP Program Title
TOP 0201.00	Architecture and Architectural Technology
TOP 0953.00	Drafting Technology
TOP 0953.10	Architectural Drafting
TOP 0953.20	Civil Drafting
CIP 04.0401	Environmental Design/Architecture
CIP 04.0901	Architectural Technology/Technician

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[5] "Family Needs Calculator (formerly the California Family Needs Calculator)," Insight: Center for Community Economic Development, last updated 2021. insightcced.org/family-needs-calculator/.

[6] 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.

[7] Lightcast 2023.01; QCEW, Non-QCEW, Self-Employed.

[8] TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data).

[9] This brief uses a conservative estimate of program supply and only calculates awards from the TOP codes in Exhibit 3.

TOP or CIP Code	TOP or CIP Program Title
CIP 15.0101	Architectural Engineering Technology/Technician
CIP 15.1301	Drafting and Design Technology/Technician, General
CIP 15.1302	CAD/CADD Drafting and/or Design Technology/Technician
CIP 15.1303	Architectural Drafting and Architectural CAD/CADD
CIP 15.1304	Civil Drafting and Civil Engineering CAD/CADD
CIP 50.0404	Industrial and Product Design

According to TOP data, six community colleges supply the region with awards for these occupations: Cuyamaca College, MiraCosta College, Palomar College, San Diego City College, San Diego Mesa College, and Southwestern College. According to CIP data, two non-community-college institutions supply the region with awards: National University and Newschool of Architecture and Design (Exhibit 4).

Exhibit 4: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions (Program Year 2017-18 through Program Year 2020-21 Average)

TOP6 or CIP Code	TOP6 or CIP Program Title	3-Yr Annual Average CC Awards (PY18-19 to PY20-21)	Other Educational Institutions 3-Yr Annual Average Awards (PY17-18 to PY19-20)	3-Yr Total Average Supply (PY17-18 to PY20-21)
0201.00	Architecture and Architectural Technology	**46**	**0**	**46**
	• MiraCosta	9	0	
	• Palomar	7	0	
	• San Diego Mesa	15	0	
	• Southwestern	15	0	
0953.00	Drafting Technology	**40**	**0**	**40**
	• MiraCosta	17	0	
	• Palomar	19	0	
	• San Diego City	0	0	
	• Southwestern	4	0	
0953.10	Architectural Drafting	**11**	**0**	**11**
	• Cuyamaca	5	0	
	• Palomar	6	0	

TOP6 or CIP Code	TOP6 or CIP Program Title	3-Yr Annual Average CC Awards (PY18-19 to PY20-21)	Other Educational Institutions 3-Yr Annual Average Awards (PY17-18 to PY19-20)	3-Yr Total Average Supply (PY17-18 to PY20-21)
15.0101	Architectural Engineering Technology/Technicians	**0**	**0**	**0**
	• National University	0	0	
50.0404	Industrial and Product Design	**0**	**4**	**4**
	• Newschool of Architecture and Design	0	4	
			Total	**101**

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply[10] suggests that there is a supply gap for these occupations in San Diego County, with 260 annual openings and 101 awards. Comparatively, there are 2,612 annual openings in California and 1,673 awards, suggesting that there is also a supply gap across the state[11] (Exhibit 5).

Exhibit 5: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

	Demand (Annual Openings)	Supply[12] (Total Annual Average Supply)	Supply Gap or Oversupply
San Diego	260	101	**159**
California	2,612	1,673	**939**

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.

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[10] Labor supply can be found from two different sources: Lightcast or the California Community Colleges Chancellor's Office MIS Data Mart. Lightcast uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.
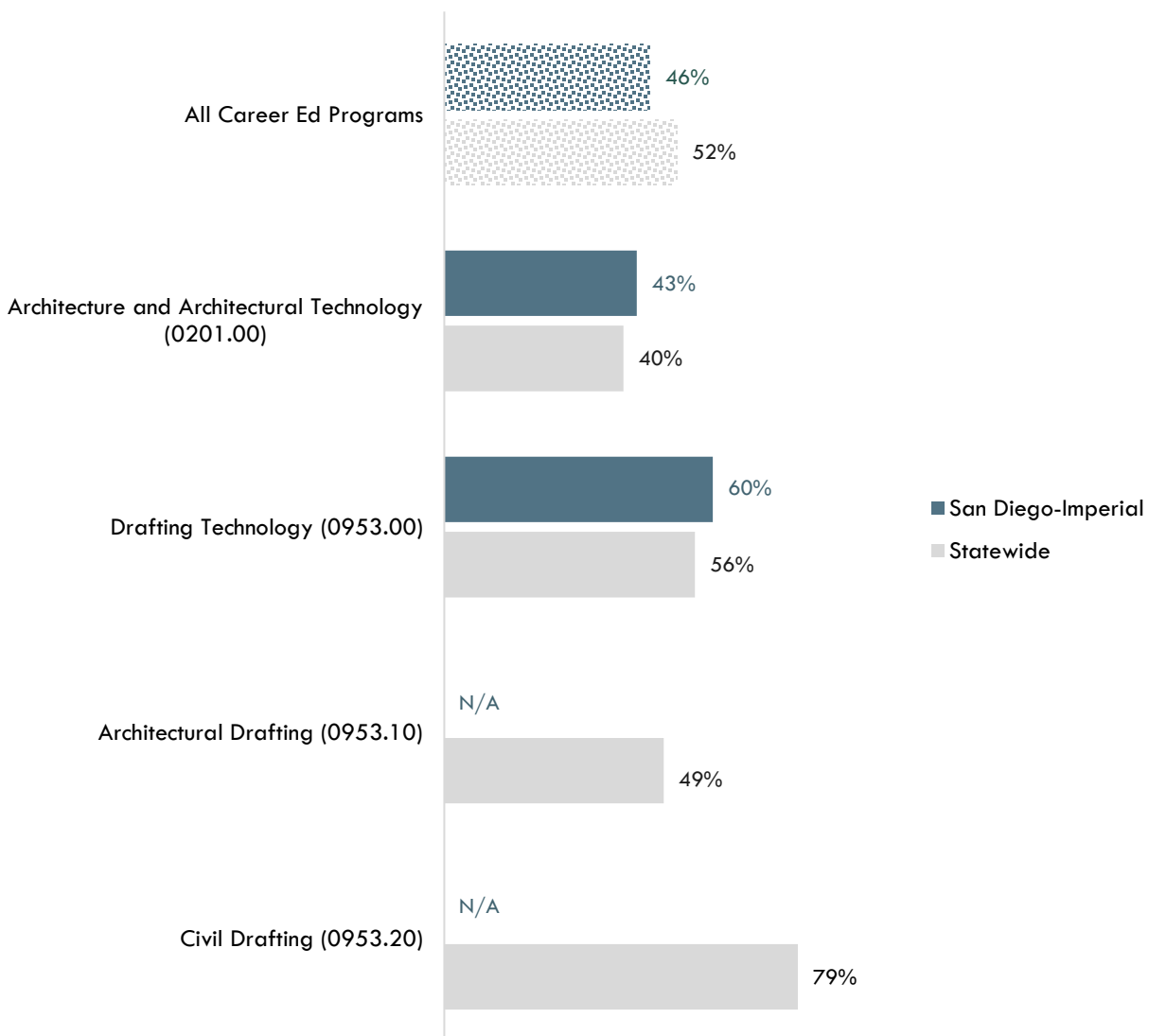[11] "Supply and Demand," Centers of Excellence Student Outcomes, https://coeccc.net/our-resources/.
[12] Awards included: associate degree; award <1 year; award 1<2 years; and postsecondary awards.

Student Outcomes and Regional Comparisons

According to the California Community Colleges LaunchBoard, 43 to 60 percent of students in the San Diego-Imperial region earned a living wage after completing a program related to *Architecture and Architectural Occupations,* compared 40 to 79 percent statewide and 52 percent of students in Career Education programs in general across the state (Exhibit 6a).[13]

Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program, PY2019-20[14]

"N/A" indicates insufficient data

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[13] "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.
[14] Most recent year with available data is Program Year 2019-20. Among completers and skills builders who exited, the percentage of students who attained a living wage.

According to the California Community Colleges LaunchBoard, 50 to 60 percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a program related to *Architecture and Architectural Occupations,* compared to 65 to 71 percent statewide and 73 percent of students in Career Education programs in general across the state (Exhibit 6b).[15]

Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study by Program, PY2018-19[16]

Bar chart data:

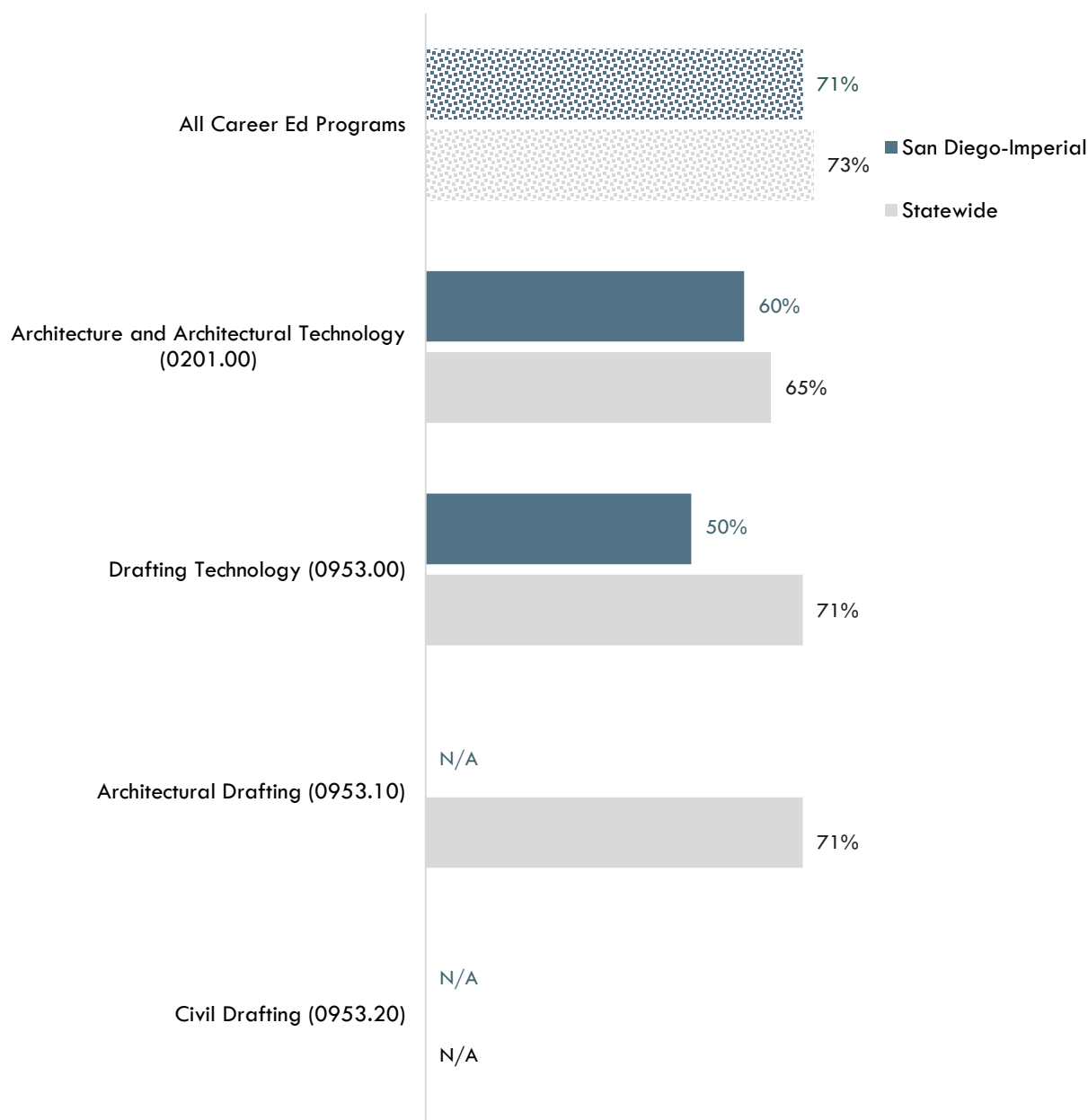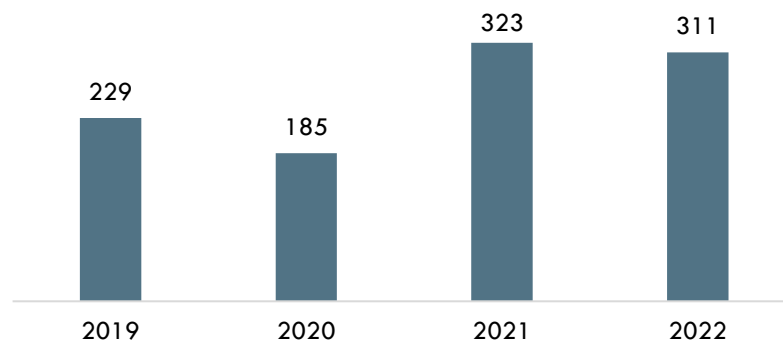| Program	San Diego-Imperial	Statewide
All Career Ed Programs	71%	73%
Architecture and Architectural Technology (0201.00)	60%	65%
Drafting Technology (0953.00)	50%	71%
Architectural Drafting (0953.10)	N/A	71%
Civil Drafting (0953.20)	N/A	N/A

"N/A" indicates insufficient data

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[15] "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.
[16] Most recent year with available data is Program Year 2018-19. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. Between 2018 and 2022, there was an average of 262 online job postings per year for *Architecture and Architectural Occupations* in San Diego County (Exhibit 7). Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (see Exhibit 1b). While this brief includes online jobs postings data to help with curriculum development, the community colleges should note that this type of data is impacted by several variables: employers may post a position multiple times to increase the pool of applicants; a job posting can remain posted after a business decides not to fill a position; or an employer may use one posting to fill multiple positions, for example.

Exhibit 7: Number of Online Job Postings for *Architecture and Architectural Occupations* in San Diego County (2018-2022)[17]

[17] Lightcast; "Job Posting Analytics." 2018-2022.

Top Employers

Between January 1, 2020 and December 31, 2022, the top five employers in San Diego County for *Architecture and Architectural Occupations* were UtiliQuest, GPAC, Spectrum, Naval Facilities Engineering Command, and Actalent based on online job postings (Exhibit 8).

Exhibit 8: Top Employers for *Architecture and Architectural Occupations* in San Diego County[18]

Top Employers	
• UtiliQuest	• Jobot
• GPAC	• Acet
• Spectrum	• Coffman Engineers
• Naval Facilities Engineering Command	• Tetra Tech
• Actalent	• Aerotek

Education, Skills, and Certifications

Architecture and Architectural Occupations have a national educational attainment of an associate degree (Exhibit 9a).

Exhibit 9a: National Educational Attainment for *Architecture and Architectural Occupations*[19]
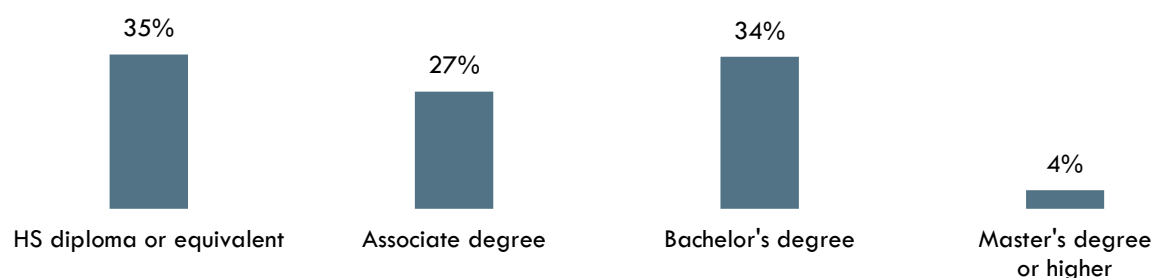
Occupational Title	Typical Entry-Level Education
Architectural and Civil Drafters	Associate degree
Civil Engineering Technologists and Technicians	Associate degree

[18] Lightcast; "Job Posting Analytics." 2020-2022.
[19] Lightcast 2023.01; QCEW, Non-QCEW, Self-Employed.

Based on online job postings between January 1, 2020 and December 31, 2022 in San Diego County, employers posted a high school diploma or equivalent and a bachelor's degree as the most requested educational requirement for *Architecture and Architectural Occupations* (Exhibit 9b).[20]

Exhibit 9b: Educational Requirements for *Architecture and Architectural Occupations* in San Diego County[21]

35% — HS diploma or equivalent
27% — Associate degree
34% — Bachelor's degree
4% — Master's degree or higher

*May not total 100 percent due to rounding

Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2020 and December 31, 2022.

Exhibit 10: Top Skills for *Architecture and Architectural Occupations* in San Diego County[22]

Specialized Skills	Soft Skills	Software Skills
• AutoCAD • Computer-Aided Design • Construction • Autodesk Revit • Civil Engineering • AutoCAD Civil 3D • Hand Tools • Architectural Drawing • Telecommunications • Building Codes • Underground Utilities • Surveying • Cable Television • Construction Management • Excavation	• Communications • Management • Planning • Detail Oriented • Operations • Research • Customer Service • Problem Solving • Microsoft Office • Writing • Coordinating • Verbal Communication Skills • Self-Motivation • Mathematics • Quality Control	• AutoCAD • Autodesk Revit • AutoCAD Civil 3D • Microsoft Excel • MicroStation • Microsoft Word • Geographic Information Systems • Microsoft Outlook • SketchUp • Microsoft PowerPoint • Design Software • Autodesk • Operating Systems • Adobe Photoshop • SolidWorks

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[20] Lightcast; "Job Posting Analytics." 2020-2022.
[21] "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified April 9, 2021. bls.gov/emp/tables/educational-attainment.htm.
[22] Lightcast; "Job Posting Analytics." 2020-2022.

Exhibit 11 lists the top certification that appeared in online job postings between January 1, 2020 and December 31, 2022.

Exhibit 11: Top Certification for *Architecture and Architectural Occupations* in San Diego County[23]

Top Certification in Online Job Postings
1. Security Clearance
2. Engineer in Training
3. LEED Accredited Professional (AP)
4. Secret Clearance
5. ACI Concrete Field-Testing Technician
6. Land Surveyor in Training
7. Professional Engineer
8. Airframe & Powerplant (A&P) Certificate
9. NICET Certification (National Institute for Certification in Engineering Technologies)
10. CDL Class C License
11. Licensed Professional Engineer
12. American Concrete Institute (ACI) Certification
13. American Institute of Certified Planners (AICP) Certification
14. Soils Special Inspector
15. AVIXA Certified Technology Specialist

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[23] Lightcast; "Job Posting Analytics." 2020-2022.

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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 Centers of Excellence for Labor Market Research (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.