

Labor Market Analysis: 0201.00/Architecture and Architectural Technology

Architecture: Basic Skills - Certificate requiring 8 to fewer than 16 semester units

Los Angeles Center of Excellence, June 2023

Summary

Program Endorsement:	Endorsed: All Criteria Met <input checked="" type="checkbox"/>	Endorsed: Some Criteria Met <input type="checkbox"/>	Not Endorsed <input type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Living Wage: (Entry-Level, 25th)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Emerging Occupation(s)			
Yes <input type="checkbox"/>		No <input checked="" type="checkbox"/>	

The Los Angeles Center of Excellence for Labor Market Research (LA COE) prepared this report to provide regional labor market supply and demand data related to three middle-skill occupations:

- **Architectural and Civil Drafters (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.¹
- **Electrical and Electronics Drafters (17-3012)** Prepare wiring diagrams, circuit board assembly diagrams, and layout drawings used for the manufacture, installation, or repair of electrical equipment.²
- **Mechanical Drafters (17-3013)** Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.³

Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.⁴ This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.

¹ [Drafters : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics \(bls.gov\)](#)

² [Drafters : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics \(bls.gov\)](#)

³ [Drafters : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics \(bls.gov\)](#)

⁴ The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

Based on the available data, there appears to be a supply gap for these three drafting occupations in the region. Furthermore, entry-level wages exceed the self-sufficiency standard wage in both Los Angeles and Orange counties, the Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry level education for all three occupations. **Therefore, due to all the criteria being met, the LA COE endorses this proposed program.** Detailed reasons include:

Demand:

- **Supply Gap Criteria** – Over the next five years, **1,069 jobs are projected to be available annually** in the region due to new job growth and replacements, **which is more than the three-year average of 577 awards conferred** by educational institutions in the region.
- **Living Wage Criteria** – Within Los Angeles County, all three occupations have **entry-level wages above the self-sufficiency standard hourly wage** (\$18.10/hour).⁵
- **Educational Criteria** – The Bureau of Labor Statistics (BLS) lists an **associate degree** as the **typical entry-level education** for all three drafting occupations in this report.
 - Furthermore, the national-level educational attainment data indicates **between 53% and 57% of workers in the field have completed some college or an associate degree.**

Supply:

- There are **20 community colleges** in the greater LA/OC region that issue awards related to drafting, conferring an average of **517 awards annually** between 2018 and 2021.
- Between 2017 and 2020, there was an average of **60 awards conferred annually** in related training programs by non-community college institutions throughout the greater LA/OC region.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for the drafting occupations in this report. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to increase by 1% through 2026. There will be more than 1,000 job openings per year through 2026 due to job growth and replacements.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties⁶

Geography	2021 Jobs	2026 Jobs	2021-2026 Change	2021-2026 % Change	Annual Openings
Los Angeles	6,007	5,959	(48)	(1%)	657
Orange	3,406	3,580	174	5%	411
Total	9,412	9,539	126	1%	1,069

⁵ Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California. For more information, visit: <http://selfsufficiencystandard.org/california>.

⁶ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Wages

The labor market endorsement in this report considers the entry-level hourly wages for these drafting occupations in Los Angeles County as they relate to the county's self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the greater LA/OC region. Detailed wage information, by county, is included in Appendix A.

Los Angeles County

All three occupations have entry-level wages above the self-sufficiency standard wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$20.98 and \$26.09. Experienced workers can expect to earn wages between \$36.17 and \$38.03.

Exhibit 2: Earnings for Occupations in LA County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Architectural and Civil Drafters (17-3011)	\$22.39	\$28.45	\$36.17	\$59,200
Electrical and Electronics Drafters (17-3012)	\$26.09	\$29.05	\$38.03	\$60,400
Mechanical Drafters (17-3013)	\$20.98	\$27.87	\$37.41	\$58,000

*rounded to the nearest \$100

Orange County

All three occupations have entry-level wages above the self-sufficiency standard wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages are in a range between \$22.22 and \$28.18. Experienced workers can expect to earn wages between \$37.95 and \$39.12.

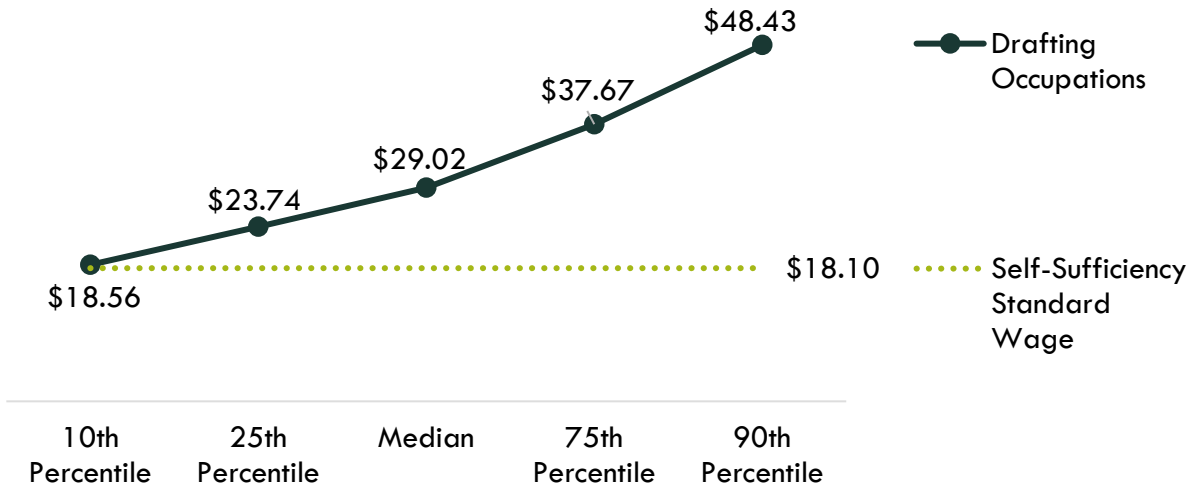
Exhibit 3: Earnings for Occupations in Orange County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Architectural and Civil Drafters (17-3011)	\$23.98	\$30.27	\$38.28	\$63,000
Electrical and Electronics Drafters (17-3012)	\$28.18	\$30.29	\$39.12	\$63,000
Mechanical Drafters (17-3013)	\$22.22	\$28.81	\$37.95	\$59,900

*rounded to the nearest \$100

On average, the entry-level earnings for the occupations in this report are \$23.74; this is above the living wage for one single adult in Los Angeles County (\$18.10). Exhibit 4 shows the average wage for the occupations in this report, from entry-level to experienced workers.

Exhibit 4: Average Hourly Earnings for Drafting Occupations in LA/OC



Job Postings

There were 1,645 online job postings related to drafters listed in the past 12 months. Exhibit 5 displays the number of job postings by occupation. The majority of job postings (38%) were for *mechanical drafters*, followed by *electrical and electronics drafters* (35%) and *architectural and civil drafters* (27%). The highest number of job postings were for drafters, electrical designers, mechanical designers, civil designers, and CAD drafters. The top skills were computer-aided design software such as AutoCAD, Autodesk Revit, and SolidWorks, followed by construction, electrical engineering, and architectural drawing. The top three employers, by number of job postings, in the region were all staffing companies: Actalent, Jobot, and Randstad.

Exhibit 5: Job postings by occupation (last 12 months)



Educational Attainment

The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for all three drafter occupations in this report. Furthermore, the national-level educational attainment data indicates between 53% and 57% of workers in the field have completed some college or an associate degree. Of the 52% of drafter job postings listing a minimum education requirement in the greater Los Angeles/Orange County region, 16% (140) requested high school or vocational training, 35% (300) requested an associate degree, and 49% (415) requested a bachelor’s degree.

Educational Supply

Community College Supply

Exhibit 6 shows the annual and three-year average number of awards conferred by community colleges in programs that have historically trained for the occupations of interest. The colleges with the most completions in the region are Mt. San Antonio, East LA, and Cerritos.

Exhibit 6: Regional community college awards (certificates and degrees), 2018-2021

TOP	Program	College	2018-19 Awards	2019-20 Awards	2020-21 Awards	3-Year Average
0201.00	Architecture and Architectural Technology	Cerritos	24	44	28	32
		Citrus	3	6	6	5
		Compton	2	-	-	1
		East LA	57	25	16	33
		El Camino	14	21	5	13
		Glendale	6	6	3	5
		LA Harbor	5	4	4	4
		LA Pierce	9	4	16	10
		LA Trade-Tech	11	8	7	9
		LA Valley	1	3	4	3
		Long Beach	14	13	11	13
		Mt San Antonio	97	51	61	70
		Pasadena	16	18	12	15
		Rio Hondo	12	3	3	6
		LA Subtotal	271	206	176	218
		Fullerton	5	12	4	7
		Orange Coast	40	59	38	46
		Saddleback	15	8	3	9
		OC Subtotal	60	79	45	61
		Supply Subtotal/Average			331	285
0953.00	Drafting Technology	Cerritos	35	14	9	19
		Citrus	13	15	12	13
		East LA	36	7	20	21
		El Camino	21	9	7	12
		LA Harbor	3	-	-	1
		LA Pierce	5	2	8	5
		LA Valley	1	3	-	1
		Long Beach	-	1	-	0
		Mt San Antonio	42	23	32	32
		Pasadena	5	6	6	6

TOP	Program	College	2018-19 Awards	2019-20 Awards	2020-21 Awards	3-Year Average
		Rio Hondo	14	13	8	12
		LA Subtotal	175	93	102	123
		Fullerton	5	4	10	6
		Golden West	57	9	4	23
		Irvine	2	10	6	6
		Saddleback	1	2	1	1
		Santa Ana	15	27	30	24
		OC Subtotal	80	52	51	61
		Supply Subtotal/Average	255	145	153	184
0953.10	Architectural Drafting	Citrus	-	2	1	1
		Long Beach	7	9	5	7
		Rio Hondo	8	9	6	8
		LA Subtotal	15	20	12	16
		Fullerton	3	1	1	2
		Santa Ana	3	1	2	2
		OC Subtotal	6	2	3	4
		Supply Subtotal/Average	21	22	15	19
0953.20	Civil Drafting	Rio Hondo	1	3	3	2
		LA Subtotal	1	3	3	2
		Irvine	1	3	1	2
		OC Subtotal	1	3	1	2
		Supply Subtotal/Average	2	6	4	4
0953.30	Electrical, Electronic, and Electro-Mechanical Drafting	Glendale	2	2	-	1
		LA Subtotal	2	2	-	1
		Supply Subtotal/Average	2	2	-	1
0953.40	Mechanical Drafting	Glendale	5	11	13	10
		LA Pierce	1	-	-	0
		LA Valley	5	9	5	6
		Long Beach	8	10	7	8
		LA Subtotal	19	30	25	25
		Irvine	4	5	3	4
		OC Subtotal	4	5	3	4
		Supply Subtotal/Average	23	35	28	29
		Supply Total/Average	634	495	421	517

Non-Community College Supply

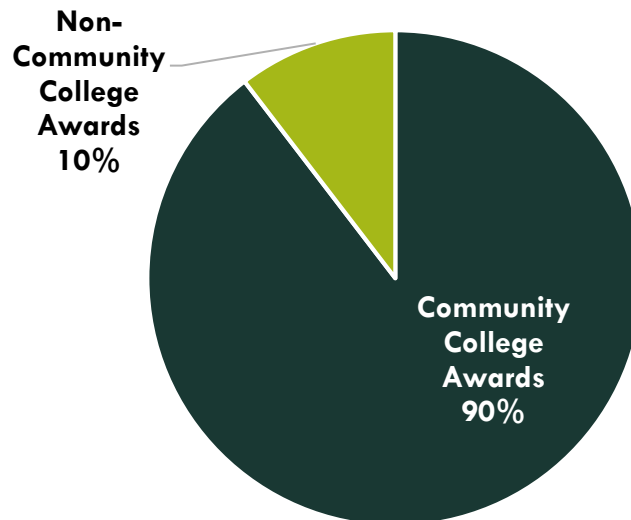
For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that provide training programs for drafting occupations. Exhibit 7 shows the annual and three-year average number of awards conferred by these institutions in relevant programs. Due to different data collection periods, the most recent three-year period of available data is from 2017 to 2020. Between 2017 and 2020, non-community college institutions in the region conferred an average of 60 sub-baccalaureate awards. Sub-baccalaureate awards include associate degrees, postsecondary awards, and other academic awards.

Exhibit 7: Regional non-community college awards, 2017-2020

CIP	Program	Institution	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
15.0303	Electrical, Electronic, and Communications Engineering Technology/Technician	California State Poly. Univ.-Pomona	48	42	43	44
		CSU-Long Beach	22	12	11	15
15.0399	Electrical/Electronic Engineering Technologies/Technicians, Other	Southern California Institute of Technology	1	-	1	1
Supply Total/Average			71	54	55	60

Exhibit 8 shows the proportion of community college awards conferred in LA/OC compared to the number of non-community college awards for the programs in this report. Nine out of ten awards conferred in these programs are awarded by community colleges in the LA/OC region.

Exhibit 8: Community College Awards Compared to Non-Community College Awards in LA/OC Region, 3-Year Average



Appendix A: Occupational demand and wage data by county

Exhibit 9. Los Angeles County

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Architectural and Civil Drafters (17-3011)	3,938	3,973	35	1%	465	\$22.39	\$28.45	\$36.17
Electrical and Electronics Drafters (17-3012)	841	823	(18)	(2%)	79	\$26.09	\$29.05	\$38.03
Mechanical Drafters (17-3013)	1,227	1,162	(65)	(5%)	114	\$20.98	\$27.87	\$37.41
Total	6,007	5,959	(48)	(1%)	657	-	-	-

Exhibit 10. Orange County

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Architectural and Civil Drafters (17-3011)	2,307	2,454	147	6%	302	\$23.98	\$30.27	\$38.28
Electrical and Electronics Drafters (17-3012)	470	488	18	4%	48	\$28.18	\$30.29	\$39.12
Mechanical Drafters (17-3013)	629	638	9	1%	61	\$22.22	\$28.81	\$37.95
Total	3,406	3,580	174	5%	411	-	-	-

Exhibit 11. Los Angeles and Orange Counties

Occupation (SOC)	2021 Jobs	2026 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	% Age 55 and older*	Typical Entry-Level Education
Architectural and Civil Drafters (17-3011)	6,245	6,427	182	3%	768	25%	Associate degree
Electrical and Electronics Drafters (17-3012)	1,311	1,312	0	0%	126	31%	Associate degree
Mechanical Drafters (17-3013)	1,856	1,800	(57)	(3%)	175	33%	Associate degree
Total	9,412	9,539	126	1%	1,069	-	-

*The average percentage of workers age 55 and older across all occupations in the greater LA/OC region is 27%. Mechanical drafters have a larger share of older workers, which typically indicates greater replacements needs to offset the amount of impending retirements.

Appendix B: Sources

- O*NET Online
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor’s Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women’s Welfare, University of Washington
- Chancellor’s Office Curriculum Inventory (COCI 2.0)

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