

**Program Endorsement Brief: 0201.00/Architecture and Architectural Technology**  
**Micro-Structure Design Technology**  
 Orange County Center of Excellence, April 2021

**Summary Analysis**

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

The Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data related to two middle-skill occupations: *architectural and civil drafters* (17-3011), and *electrical and electronics drafters* (17-3012). Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.<sup>1</sup> 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.

Based on the available data, there does not appear to be a supply gap for these two drafting occupations in the region; however, the oversupply is within the COE's acceptable margin (25% over or under the number of annual job openings) and is therefore considered "supply met" rather than a "supply gap". However, the Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for the occupations in this report, and entry-level wages exceed the living wage in both Los Angeles and Orange counties. **Therefore, due to some of the criteria being met, the COE endorses this proposed program.** Detailed reasons include:

**Demand:**

- **Supply Gap Criteria** – Over the next five years, there is projected to be **641 jobs available annually** in the region due to new job growth and replacements, **which is less than the 722 conferred annually** by educational institutions in the region.
  - The labor market information suggests that the **supply has been met for this occupation within the LA/OC region** since the average number of annual awards (supply) is within the COE's 25% margin of annual job openings (demand).

<sup>1</sup> 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.

- **Living Wage Criteria** –Within Orange County, **all of the annual job openings for these drafting occupations have entry-level wages above the county’s living wage** (\$17.36/hour).<sup>2</sup>
- **Educational Criteria** –The Bureau of Labor Statistics (BLS) lists an **associate degree as the typical entry-level education for both of these drafting occupations**.
  - Furthermore, the national-level educational attainment data indicates **between 31.2% and 33% of workers in the field have completed some college or an associate degree**.

#### Supply:

- There are **20 community colleges** in the LA/OC region that issue awards related to architectural and/or electrical drafting, conferring an average of **592 awards annually** between 2016 and 2019.
- Between 2014 and 2017, there was an average of **130 awards conferred annually** in related training programs by non-community college institutions throughout the region.

#### Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for these drafting occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 2% through 2024. There will be nearly 650 job openings per year through 2024 due to job growth and replacements.

*This report includes employment projection data by Emsi which uses EDD information. Emsi’s projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy, during the projection period, will be at approximately full employment. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, it may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Therefore, the projections included in this report do not take the impacts of COVID-19 into account.*

**Exhibit 1: Occupational demand in Los Angeles and Orange Counties<sup>3</sup>**

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	3,791	3,839	48	1%	404
Orange	2,184	2,238	54	2%	237
<b>Total</b>	<b>5,975</b>	<b>6,077</b>	<b>102</b>	<b>2%</b>	<b>641</b>

<sup>2</sup> Living wage data was pulled from California Family Needs Calculator on 1/21/2021. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

<sup>3</sup> 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 Orange County as they relate to the county's living wage. Los Angeles County wages are included below in order to provide a complete analysis of the LA/OC region. Detailed wage information, by county, is included in Appendix A.

**Orange County**—All of the annual openings for these drafting occupations have entry-level wages above the living wage for one adult (\$17.36 in Los Angeles County). Typical entry-level hourly wages are in a range between \$25.37 and \$25.84. Experienced workers can expect to earn wages between \$37.63 and \$43.93, which are higher than the living wage estimate. Orange County's average wages are above the average statewide wage of \$32.03 for these occupations.

**Los Angeles County**—All of the annual openings for these drafting occupations have entry-level wages above the living wage for one adult (\$15.04 in Los Angeles County). Typical entry-level hourly wages are in a range between \$24.45 and \$24.87. Experienced workers can expect to earn wages between \$36.39 and \$42.82, which are higher than the living wage estimate. Los Angeles County's average wages are slightly below the average statewide wage of \$32.03 for these occupations.

## **Job Postings**

There were 427 online job postings related to these drafting occupations listed in the past 12 months. The highest number of job postings were for plumbing designers, CAD drafters, truss designers, PCB designers, and electrical designers. The top skills were: Computer Aided Drafting/Design (CAD), Revit, electrical design, building codes, and shop drawings. The top three employers, by number of job postings, in the region were: Tetra Tech, KPFF Consulting Engineers, and ME Engineers Incorporated.

*It is important to note that the job postings data included in this section reflects online job postings listed in the past 12 months and does not yet demonstrate the impact of COVID-19. While employers have generally posted fewer online job postings since the beginning of the pandemic, the long-term effects are currently unknown.*

## **Educational Attainment**

The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for both of these drafting occupations. Furthermore, the national-level educational attainment data indicates between 31.2% and 33% of workers in the field have completed some college or an associate degree. Of the 33% of these drafting job postings listing a minimum education requirement in Los Angeles/Orange County, 50% (71) requested a high school diploma and 50% (71) requested an associate degree.

## **Educational Supply**

**Community College Supply**—Exhibit 2 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Architecture and Architectural Technology (0201.00), Drafting Technology (0953.00), Architectural Drafting (0953.10), and Electrical, Electronic, and Electro-Mechanical Drafting (0953.30). The colleges with the most completions in the region are: Mt. San Antonio, East LA, and Cerritos. Over the past 12 months,

there were four other related program recommendation requests from regional community colleges.

**Exhibit 2: Regional community college awards (certificates and degrees), 2016-2019**

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
0201.00	Architecture and Architectural Technology	Cerritos	20	17	24	20
		Citrus	-	2	3	2
		Compton	-	-	2	1
		East LA	25	34	57	39
		El Camino	21	35	14	23
		Glendale	3	4	6	4
		LA Harbor	10	5	5	7
		LA Pierce	4	8	9	7
		LA Trade	9	8	11	9
		LA Valley	2	4	1	2
		Long Beach	12	10	14	12
		Mt San Antonio	67	82	97	82
		Pasadena	5	11	16	11
		Rio Hondo	13	19	20	17
		LA Subtotal	191	239	279	236
		Fullerton	9	8	5	7
		Orange Coast	43	82	40	55
		Saddleback	14	12	15	14
		OC Subtotal	66	102	60	76
		Supply Subtotal/Average			257	341
0953.00	Drafting Technology	Cerritos	41	48	35	41
		Citrus	2	6	13	7
		East LA	33	38	36	36
		El Camino	11	15	21	16
		LA Harbor	2	1	3	2
		LA Pierce	8	7	5	7
		LA Valley	2	4	1	2
		Mt San Antonio	45	34	42	40
		Pasadena	-	21	5	9
		Rio Hondo	9	93	14	39
		LA Subtotal	153	267	175	198
		Fullerton	8	11	5	8

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
		Golden West	17	18	57	31
		Irvine	5	-	2	2
		Saddleback	-	2	1	1
		Santa Ana	20	23	15	19
		OC Subtotal	50	54	80	61
Supply Subtotal/Average			203	321	255	260
0953.10	Architectural Drafting	Citrus	1	-	-	0
		Long Beach	12	8	7	9
		LA Subtotal	13	8	7	9
		Fullerton	-	4	3	2
		Santa Ana	3	3	3	3
		OC Subtotal	3	7	6	5
Supply Subtotal/Average			16	15	13	15
0953.30	Electrical, Electronic, and Electro-Mechanical Drafting	Glendale	7	6	2	5
		LA Subtotal	7	6	2	5
Supply Subtotal/Average			7	6	2	5
Supply Total/Average			483	683	609	592

**Non-Community College Supply**—For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs for architectural and/or electrical drafting occupations. Exhibit 3 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Codes: Drafting and Design Technology/Technician, General (15.1301), CAD/CADD Drafting and/or Design Technology/Technician (15.1302), and Industrial Product Design (50.0404). Due to different data collection periods, the most recent three-year period of available data is from 2014 to 2017. Between 2014 and 2017, four-year colleges in the region conferred an average of 130 awards annually in related training programs.

**Exhibit 3: Regional non-community college awards, 2014-2017**

CIP Code	Program	College	2014-2015 Awards	2015-2016 Awards	2016-2017 Awards	3-Year Award Average
15.1301	Drafting and Design Technology/ Technician, General	ITT Technical Institute-Orange	38	-	-	13
		ITT Technical Institute-San Dimas	19	-	-	6
		ITT Technical Institute-Sylmar	7	-	-	2
		ITT Technical Institute-Torrance	12	-	-	4
		Los Angeles ORT College-Van Nuys Campus	1	-	-	0
15.1302	CAD/CADD Drafting and/or Design Technology/ Technician	ITT Technical Institute-San Dimas	2	-	-	1
		Los Angeles ORT College-Los Angeles Campus	-	-	10	3
		Los Angeles ORT College-Van Nuys Campus	-	11	9	7
		Argosy University-The Art Institute of California-Hollywood	7	8	12	9
50.0404	Industrial and Product Design	Argosy University-The Art Institute of California-Orange County	20	13	19	17
		California State University-Long Beach	18	21	39	26
		FIDM-Fashion Institute of Design & Merchandising-Los Angeles	-	-	41	14
		Otis College of Art and Design	30	24	28	27
		Supply Total/Average		154	77	158

**Appendix A: Occupational demand and wage data by county**

**Exhibit 4. Orange County**

<b>Occupation (SOC)</b>	<b>2019 Jobs</b>	<b>2024 Jobs</b>	<b>5-Yr Change</b>	<b>5-Yr % Change</b>	<b>Annual Openings</b>	<b>Entry-Level Hourly Earnings (25<sup>th</sup> Percentile)</b>	<b>Median Hourly Earnings</b>	<b>Experienced Hourly Earnings (75<sup>th</sup> Percentile)</b>
Architectural and Civil Drafters (17-3011)	1,726	1,770	44	3%	188	\$25.84	\$30.70	\$37.63
Electrical and Electronics Drafters (17-3012)	458	468	10	2%	50	\$25.37	\$31.37	\$43.93
<b>Total</b>	<b>2,184</b>	<b>2,238</b>	<b>54</b>	<b>2%</b>	<b>237</b>			

**Exhibit 5. Los Angeles County**

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Architectural and Civil Drafters (17-3011)	2,999	3,049	51	2%	321	\$24.87	\$29.63	\$36.39
Electrical and Electronics Drafters (17-3012)	793	790	(3)	(0%)	83	\$24.45	\$30.49	\$42.82
<b>Total</b>	<b>3,791</b>	<b>3,839</b>	<b>48</b>	<b>1%</b>	<b>404</b>			

**Exhibit 6. Los Angeles and Orange Counties**

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings
Architectural and Civil Drafters (17-3011)	4,725	4,819	94	2%	509
Electrical and Electronics Drafters (17-3012)	1,250	1,258	8	1%	133
<b>Total</b>	<b>5,975</b>	<b>6,077</b>	<b>102</b>	<b>2%</b>	<b>641</b>

#### **Appendix B: Sources**

- O\*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor's Office Curriculum Inventory (COCI 2.0)

For more information, please contact:

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