The Impact of Industrialized Construction on the Construction Workforce: Jobs and Skill Profiles from over 500 Industrialized Construction Job Postings

Rachel Lebedinsky, Rebecca Ciraulo, Hannah Bastian, Valerie Nubbe – Guidehouse
Julia Sullivan, Sarah Truitt – National Renewable Energy Laboratory (NREL)
Adam Parker – RMI

ABSTRACT

Industrialized construction leverages industrial, manufacturing-based production methods to build or retrofit buildings more efficiently and at a lower cost than traditional onsite construction. Common industrialized construction methods include offsite construction and assembly of modular buildings, development of prefabricated building panels and components, and onsite construction automation. Despite the growth of the industrialized construction industry, there has been limited research exploring the impact it will have on the construction workforce, particularly in terms of in-demand skills and occupations. Current research suggests that certain skills will become more important like product design and transportation logistics, and entirely new expertise will be needed like robotics engineering and lean manufacturing.

This paper shares findings from a research review of over 500 job postings from 46 industrialized construction companies. It presents aggregated data relating to most prevalent job categories, in-demand skills, required education and experience levels, and whether companies have a focus on sustainability and energy efficiency. The paper also outlines the benefits industrialized construction brings to the construction workforce, strategies companies are using to draw applicants into the industry, and larger workforce trends on the shift from onsite construction to more offsite industrialized construction methods, including geographic trends.

Introduction

The U.S. Department of Energy launched the Advanced Building Construction (ABC) Initiative in 2019 to modernize and streamline building retrofit and construction processes that facilitate the integration of high-performance and low-carbon solutions in the U.S. building stock. The ABC Initiative seeks to increase the usage of Industrialized Construction (IC) processes to drastically increase the speed and scale of high-performance, low-carbon building retrofits and new construction.

Currently, little research exists on the IC workforce and what's needed to contribute to long term IC industry growth. For the public and private sectors to make informed investments and decisions, they need to know more about the current state of the IC workforce and what positions and skills are in demand.

This document provides a baseline analysis of in-demand jobs at IC companies in the volumetric modular, panelized construction, and construction component industries. It explores the types of jobs they are currently seeking to fill along with the associated skills, abilities, education, and experience required. This information gives insight into the growing IC industry

workforce and what employee positions and qualities are in demand. This analysis is meant to be a single snapshot of the IC workforce in 2023.

Key Findings

- Small and medium-sized IC companies are looking to grow.
  - 74% of job postings were from companies with less than 200 employees.
- The IC industry has a large focus on sustainability and energy efficiency.
  - 66% of job postings were from companies focused on sustainability, energy efficiency, or both.
- The IC job postings found were concentrated in California, Pennsylvania, Texas, and Arizona.
  - These 4 states combined made up 46% of all IC job postings, with 103 of 513 postings found in California. Data collection was conducted through a nationwide search, suggesting these four states may have the highest concentration of IC jobs.
- Trades, administrative, and engineering roles were the most common IC job postings.
  - 35% of postings were in the trade category and 21% were in the administrative category.
  - 9% of job postings were for sales roles, 8% were for engineering roles, and 8% were for production workers.
- IC has a growing demand for multiskilled workers.
  - 55% of trade roles were for general workers as opposed to specific trades.
- Most IC job postings were for entry level and staff level positions.
  - 69% of postings were at the staff level with generally 0-5 years of experience required.
- IC salaries varied greatly by position type and education/experience required.
  - Software and mechanical/electrical engineering roles had the highest average annual salary estimates ($153k and $125k) while roles for trades and machinery, robotics, & maintenance had the lowest ($49k and $36k).
  - Further research on salaries in IC job postings should consider evaluation of how salaries vary depending on geographical region, local cost of living estimates, and union vs. non-union positions.

Advantages of IC Jobs

- There is a low barrier to entry to the IC industry and an emphasis on on-the-job training.
  - 49% of positions did not require experience and 71% of positions did not require higher education.
  - 36% of positions did not require experience or higher education.
  - 25% of positions did not require any skills, abilities, or prior knowledge.
- IC may allow for a wider range of applicants than traditional construction.
  - Only 19% of jobs required physical abilities and 13% of trade jobs required previous trade experience.
- Many IC jobs have higher salaries than national averages.

    - When comparing average IC salaries to BLS national average salaries, results showed that average IC engineering salaries were 22% higher, IC production worker salaries were 25% higher, and other IC trades were 23% higher.
    - Salary analysis did not normalize for location and cost of living, which should be considered in future analysis.
- Many IC companies offer additional and unique benefits.
    - Example benefits include 4-day work weeks, reliable hours, off-peak commuting hours, flexible working hours, consistent work locations, stock options, tuition reimbursement, free meals, gym memberships, and more.
    - Job postings that market reliable hours support claims that IC workers can work more hours compared to onsite workers because their schedules are not impacted by weather.

Jobs Baseline Analysis

Overview of Data

Data on IC job postings was collected from June to July 2023 from IC companies found through the ABC Collaborative and additional research on modular/prefabrication companies in the U.S. A total of 46 IC companies were found to have active job postings during this period. The 513 active job postings from these companies were recorded and analyzed to provide an overview of the current state of IC industry workforce. More information on the companies, the methodology of this study, and key definitions can be found in the Appendix.

These companies were also categorized in various ways, including by size, location of headquarters, and construction type. Specifically, companies were categorized as operating within volumetric modular construction, panelized construction, prefabricated components, or a combination of these. These parameters allow for a more nuanced understanding of the current IC job market and where opportunities exist. Table 6 in the Appendix: Methodology shows the full list of companies, the number of job postings, the construction type(s), and location of the company headquarters.

Figure 1 demonstrates the number of job postings by company size[1] and construction type. More information is available in Table 7 in the Appendix: Methodology. Overall, 34 IC companies (74%) with job postings fit into the small-medium classification (less than 200 employees). Similarly, these small and medium-sized companies had a total of 381 job postings (74%). Noticeably, the large companies had less job postings on average than the medium or small companies. In addition, nearly all the jobs posted by companies in the very large category were offered by companies working solely on panelized construction. The figure also highlights that most of the companies and job postings were from small and medium-sized volumetric modular companies.

[1] Small, medium, large, and very large companies are defined as having 1-50,51-200, 201-1000, and 1001+ employees respectively.

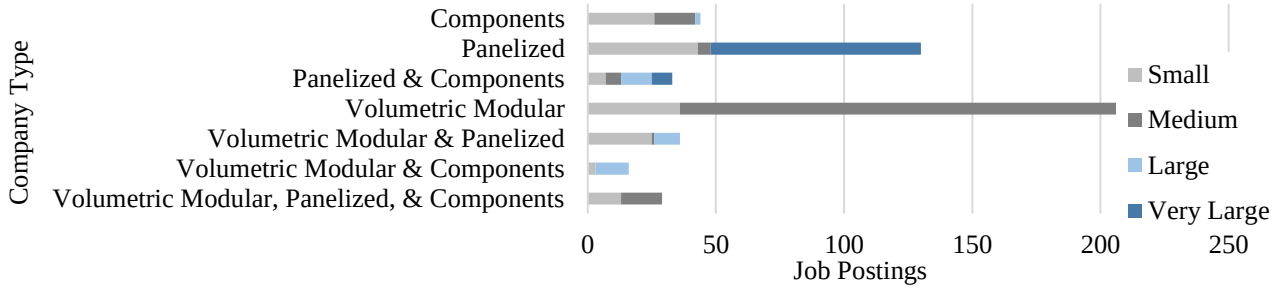

Figure 1. Number of Job Postings by Company Size and Type

Sustainability and Energy Efficiency Focus

Each company was classified by having a focus on energy efficiency, sustainability, both, or neither. The categories were determined by reviewing each company's website and descriptions of their products and construction practices. The definitions used for "sustainability" and "energy efficiency" for this study can be found in the Appendix: Methodology.

Most IC job postings found were from IC companies focused on sustainability, energy efficiency, or both. As shown in Figure 2, 65% (30 companies) were categorized as focusing on either sustainability, energy efficiency, or both. These companies were spread throughout the country in 17 different states. Similarly, 66% of the job postings (340 total) were from companies categorized as focusing on either sustainability, energy efficiency, or both (see Figure 3). Further research could investigate how the geographic location of the company impacts their sustainability and energy efficiency focus, especially considering local and state codes.

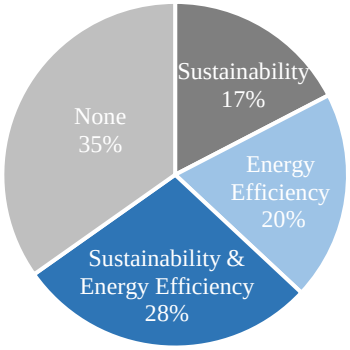

Figure 2. Companies by Sustainability and Energy Efficiency Focus

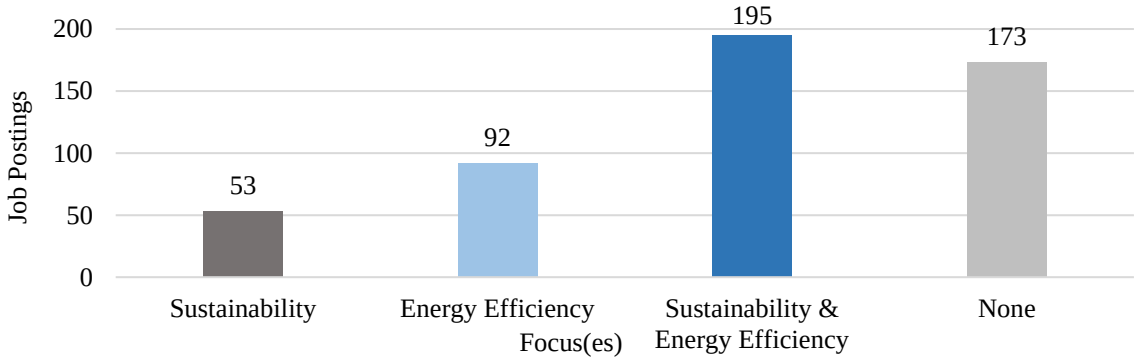

Figure 3. Job Postings by Sustainability and Energy Efficiency Focus

Location of Jobs

To better understand the geographic distribution of IC workforce growth in the U.S., the location (state) of each job posting was noted. Most of the job postings reviewed (95%) were specific to a city/state. 10 job postings (2%) had various states listed and another 15 postings (3%) were fully remote opportunities.

In the data reviewed, the top five states for IC job postings were California, Pennsylvania, Texas, Arizona, and South Carolina. These 5 states represent 51% of all IC job postings found. Figure 4 shows a map of the U.S. with a scale indicating the amount of job postings found per state. The job posting locations often aligned with the manufacturing plants of the largest IC companies and the IC companies with new or expanding manufacturing plants.

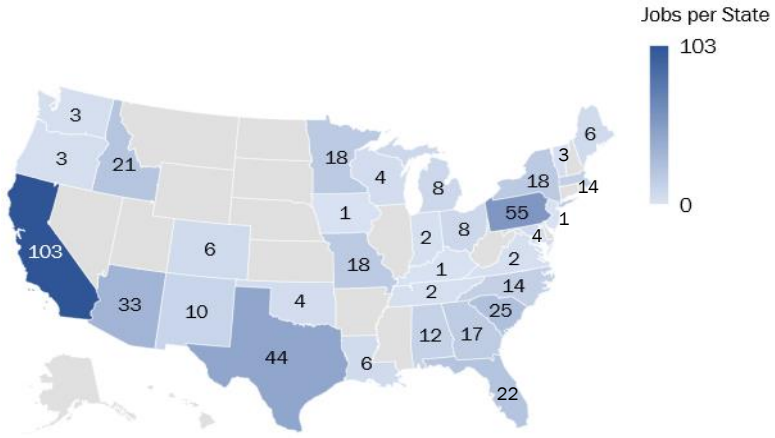

Figure 4. Number of Job Postings per State

For comparison, data from the U.S. Bureau of Labor Statistics (BLS) from May 2022 – May 2023 shows that the states with the greatest construction jobs growth were (in order) Texas, New York, Ohio, Oregon, and Michigan (AGCA 2023); and the states with the most manufacturing job growth were (in order) Texas, Ohio, Florida, Missouri, and Washington (ASU 2023). Texas is the only state in the top five for employment growth across IC, traditional construction, and manufacturing.

Job Categories

To gather more information on the types of jobs available, each job was categorized into 10 common job types in the IC industry, as described in the Appendix: Methodology.

Figure 5 shows the number of job postings by the 10 job categories identified. The most common job category was trades (35%) followed by administrative roles (21%). By company size, very large companies had the highest proportion of trades and administrative job postings at 43% and 30%, respectively,[2] while medium sized companies had the highest proportion of project management and coordination job postings at 23%.[3] Of the trade roles, 27% of positions

[2] These percentages are for total job postings for very large companies only.
[3] This percentage is for the total job postings for medium sized companies only.

were for general laborers while the remaining listings were for specific trades like plumbing, welding, roofing, and machine operators. By location, Arizona had the highest proportion of trade job postings (55%), Texas had the highest proportion of administrative job postings (45%), and California had the highest proportion of job postings in project management and coordination (25%).

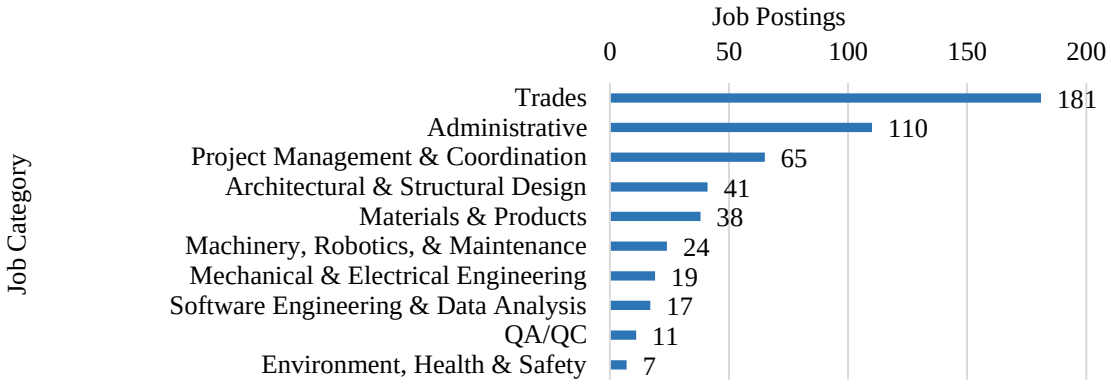

Figure 5. Number of Job Postings by Job Category

Figure 6 shows the most common job posting titles with 10 or more occurrences in the dataset. Though job posting titles varied, jobs related to sales (primarily homes sales) were the most common posting with a total of 44 (9%). Engineering jobs (software, system design, electrical, structural, mechanical, etc.) and production worker jobs were also very common with 43 job postings each (8%). The highest number of engineering postings were in California (12), and the highest number of sales roles were in Texas (16).

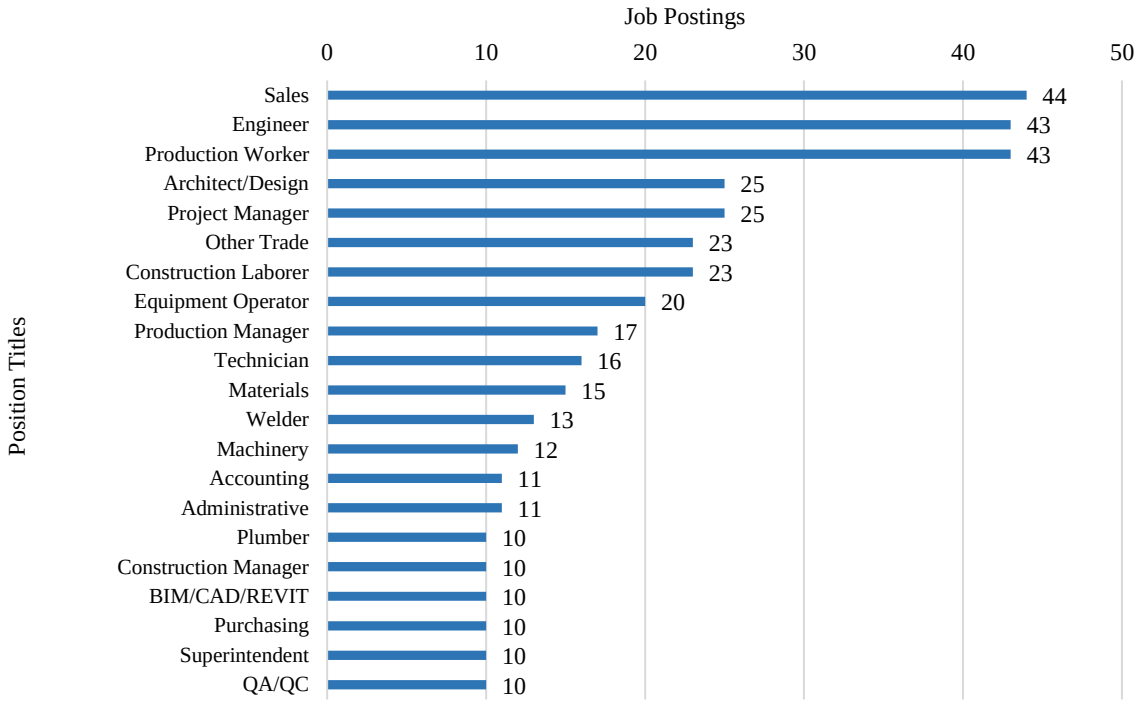

Figure 6: Number of Job Postings by Position Title

Skills

Most of the job postings (75%) listed various skills, abilities, and knowledge the company requires or strongly prefers candidates to possess. This information was collected and standardized into a set of 94 skills and abilities. Figure 7 shows the 20 most commonly required skills/abilities amongst the 513 job postings. The relative occurrence of each skill or ability can provide insight about the type of workers being recruited into IC. The most common job posting requirements were for physical abilities, construction process knowledge, and experience using hand/power tools.

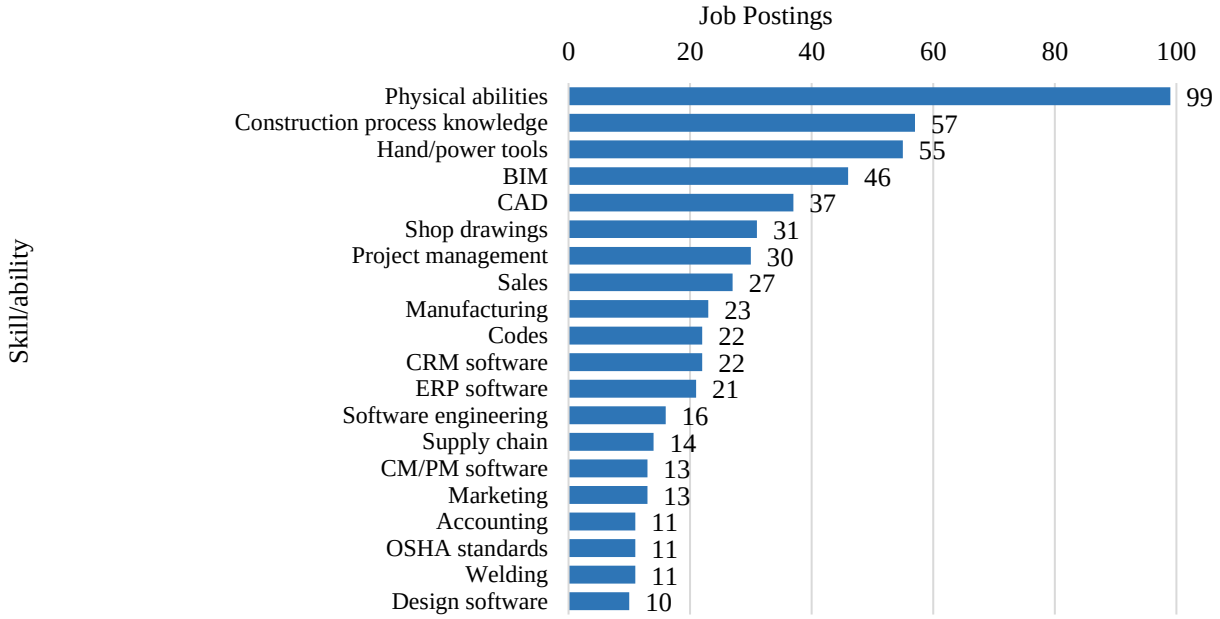

Figure 7. Skill and Ability Prevalence Across Job Postings

The physical ability requirement generally includes standing and walking, lifting and carrying up to 50lbs, being able to work indoors and outdoors, and more. Although it was the most common, physical abilities were mentioned in only 19% of the job postings (or 26% of the postings that listed required skills). This indicates an opportunity for the emerging IC industry to be more inclusive of women and people with physical disabilities that may prohibit potential employees from working in onsite construction.

Another pattern the industry is seeing is an increasing demand for multiskilled workers in IC (Rayan et al. 2022). 55% of the trade jobs found were for general labor roles that might require learning and performing multiple trade roles within an IC factory or offsite site (e.g., production worker, general laborer, production builder) as opposed to specific trade roles (e.g., carpenter, plumber, welder). Further, only 13% of the trade jobs found required previous skills in a particular trade and 25% of jobs listed no required skills. This indicates an emphasis on on-the-job training and education and an opportunity for workers without construction experience or skills to join the IC workforce from other industries.

In addition, the required skills varied greatly by the job category of the position. For trades job postings, the most commonly required skills/abilities are physical abilities, hand/power tool experience, shop drawings knowledge, and manufacturing knowledge. Project management roles often require construction process knowledge and project management experience, while architectural and structural design roles typically require BIM and CAD experience.

Education and Experience

The job postings varied in terms of position level, required experience, and required education. Position levels were defined as staff, senior staff, and management based on the job description and requirements (see Appendix: Methodology for full descriptions). Intern and executive positions were not included as they totaled 7 of the 513 job postings. Management positions that had no listed experience requirements were also not included, as they likely implicitly require experience and would skew the data.

Figure 8 below displays the minimum required years of experience by position level.[4] Most of the job postings (69%) were identified at the staff level. Of these staff level jobs, 58% did not list any experience requirements, and 30% require 1-3 years of experience. Only 22 of the jobs found (4%) were identified at the senior staff level, meaning the conclusions drawn from the data are weaker than from other levels. The senior staff positions all required at least 3 years of experience, with almost half of the positions (45%) requiring 5 years of experience. Management positions had a wide range of experience requirements. Positions on the lower end include assistant project managers, materials managers, and sales managers. Positions that required more (10+ years) experience include construction managers, finance managers, superintendents, and directors.

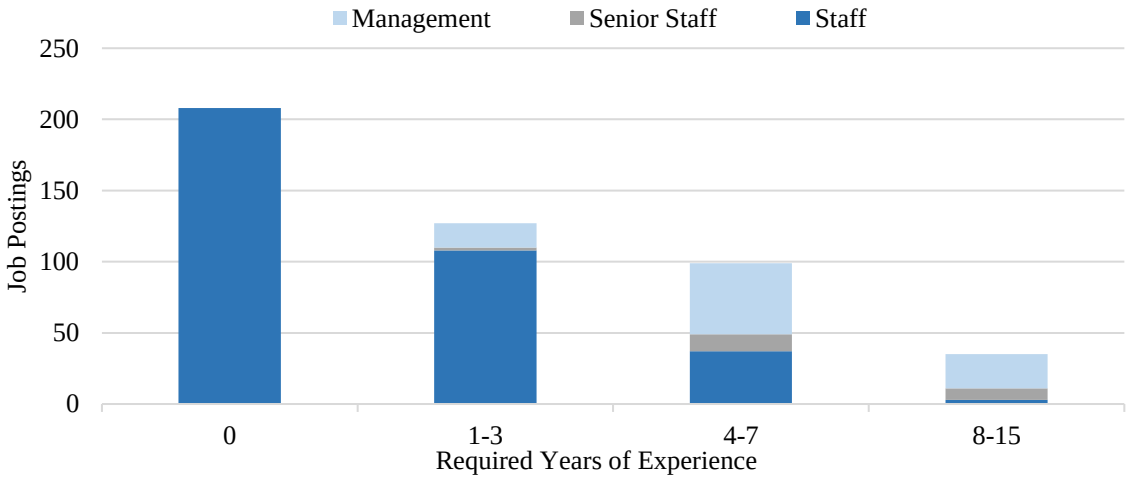

Figure 8. Minimum Required Years of Experience by Position Level

[4] Note: For jobs with a range of required experience, the minimum was taken. The groups in the graph should be interpreted as "job postings with 1, 2, or 3 required years of experience," etc.

Figure 9 displays the minimum required education by position level. The vast majority (80%) of staff jobs either did not specify an education requirement or required a high school diploma/GED. Over two thirds (77%) of the senior staff positions require a bachelor's degree or more, compared to 15% of staff positions. However, the job categories are not equally represented between these two position levels. 64% of the senior staff positions are in the engineering and architecture fields, which typically require bachelor's degrees and potentially master's degrees and licenses depending on the role.

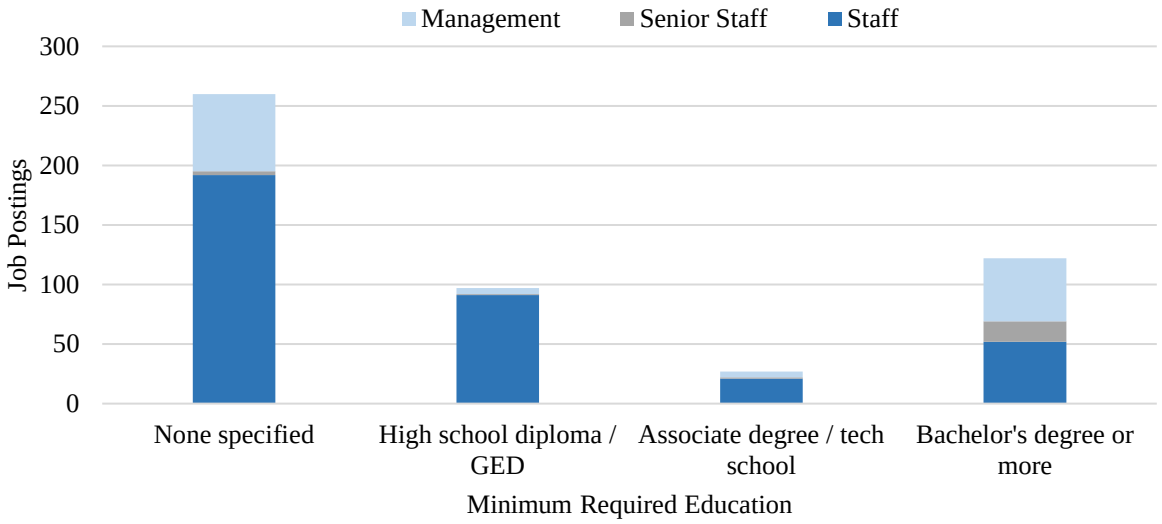

Figure 9: Minimum Required Education by Position Level

Overall, the results of this analysis showed that the IC industry has substantial opportunities available for applicants without the desire or opportunity to pursue higher education and with little or no experience in the industry. 250 of the 513 positions found (49%) did not specify any required experience. In addition, 55% of management positions and 71% of total positions did not specify any higher education requirements. Together, there were 187 job postings (36%) that required no experience and no higher education. Even considering some positions that have implicit requirements for experience and education, this is a high portion of jobs that could field entry-level applicants or applicants without higher education.

Salaries and Wages

About one third (33% or 171) of the postings provided an estimated salary range, with 79 of these being in California (46%). Each salary range was converted to an average estimate by taking the average of the range, and all hourly salaries were converted to annual by assuming full time employment (40 hr./week). Though this data was limited due to the small sample size and differences in cost of living, it is helpful to be able to compare salary estimates between different job postings and to compare IC salaries to national averages for similar types of jobs.

As shown in Figure 10, two types of engineering roles—Software Engineering & Data Analysis and Mechanical & Electrical Engineering—had the highest annual salary estimates while the roles in Trades and Machinery, Robotics, & Maintenance had the lowest average

salaries. The data also showed that jobs requiring a bachelor's or master's degree had estimated average salaries of over twice those of roles requiring a high school diploma or GED ($107k and $50k, respectively). Similarly, average annual salaries went up significantly for roles requiring more years of experience: $63k for 0 years of experience; $77k for 1-3 years of experience; $88k for 4-6 years of experience; and $116k for 7-10 years of experience.[5]

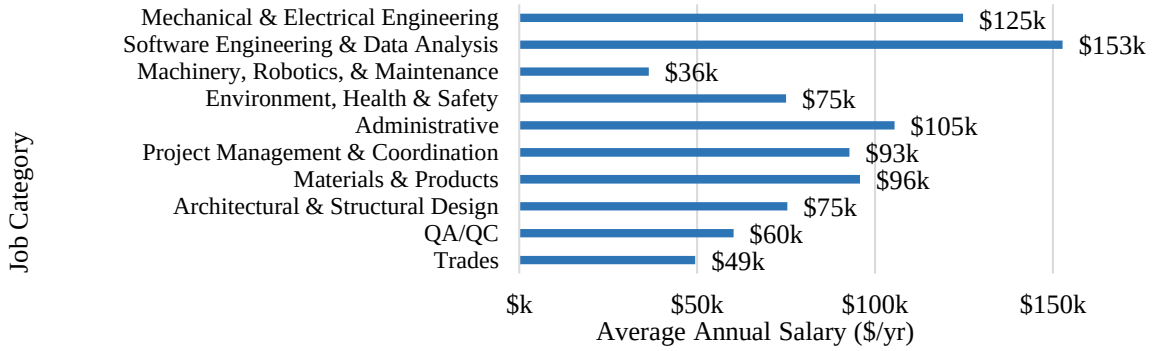

Figure 10: Average Annual Salary by Job Category

To understand how IC salaries compare to national averages for the most common job posting titles, additional data was collected from the BLS website from Occupational Employment and Wages, May 2022.[6] Table 8 in the Appendix: Methodology shows the labor descriptions that were used from the BLS data for comparison purposes to the IC position titles, as well as the data sources. Figure 11 below shows the most common IC job posting average salaries compared to BLS national average salaries from 2022. Many IC job postings showed higher salaries than national average BLS salaries: IC engineering salaries were 22% higher, IC production worker salaries were 25% higher, other IC trades were 23% higher, and sales roles were 13% higher than nation average BLS salaries. In contrast, IC architect/designer salaries were around 20% lower than the national BLS average. However, this comparison does not consider regional differences in salaries based on differences in cost of living.

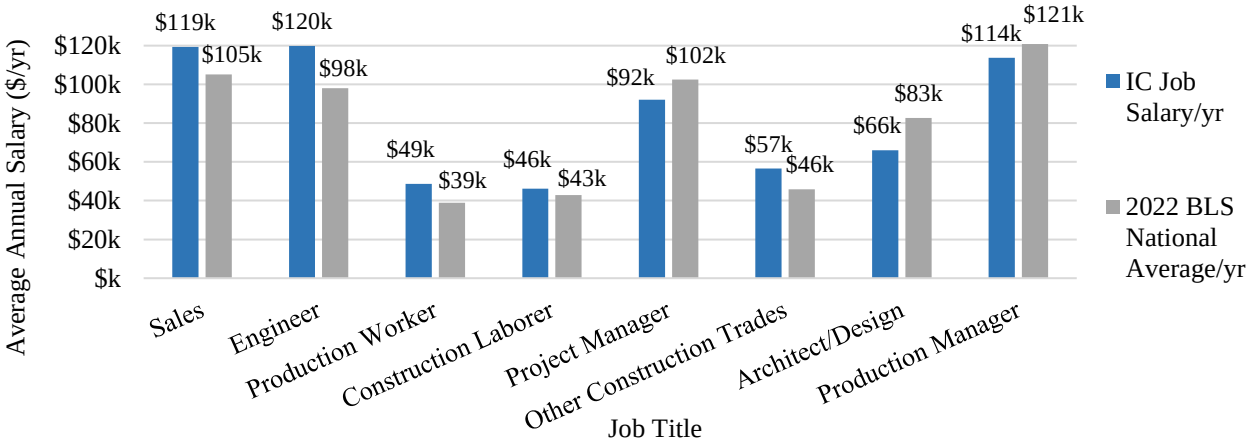

Figure 11: Average IC and National Average Salaries

[5] Note: For jobs with a range of experience required, the median value was taken.
[6] Available online here: https://www.bls.gov/oes/current/oes_ma.htm

Industrialized Construction Company Benefits

The shortage of labor in the construction industry means IC companies likely need to use innovative tactics to draw employees. Example benefits were collected from each company's website or job postings. 31 of 46 companies (67%) had listed benefits. While most of these companies offer typical benefits like 401k matching, insurance plans, and vacation, some companies offer more unique benefits like off-peak commuting hours, flexible working hours, free meals, gym memberships, and more. A total of 4 companies offered education/tuition reimbursement and 4 companies offered stock purchasing options.

Additionally, 5 of the 46 companies found offer 4-day work weeks. This is a draw for most employees in the workforce who typically work 5 days per week or more, especially in onsite construction. Similarly, one company has shifted working hours so that the commutes to and from the factory occur earlier than rush hour, saving travel time. These two strategies allow employees to have more time at home, a better work/life balance, or even another job if desired.

Many companies also emphasize the consistency of IC jobs. Most of the work occurs at the same location, at the same times every day, and in the same indoor "weather" (some companies specifically advertise their temperature-controlled facilities). Workers in onsite construction are subject to unpredictable and harsh weather, changing locations and commuting times, and potentially inconsistent workflows throughout the year.

Limitations & Next Steps

There are several limitations to this study that should be noted. The scope of this jobs baseline does not cover every U.S. IC company or every available IC job in the U.S. For each company, available job postings were recorded only on the day they were looked at, and the amount/type of jobs posted for any company can vary significantly from day to day. In addition, a company may use a single job posting to hire multiple individuals (e.g., one BIM Modeler job post may be used to hire any number of BIM Modelers). Some companies also stated they are hiring and provided an email address for inquiries but did not have any job postings listed online. Since not all companies have an equal amount of job postings, the results are not equally representative of each company. In addition, a few companies do not perform exclusively in the IC space. Some of the positions from these companies may not be representative of positions in the IC industry as a whole. Position levels and categories were determined subjectively based on the job titles and descriptions. Interpretations of the resulting data and analysis should account for the variable nature of the data collection process.

A significant limitation to this analysis is that many job postings did not include all the relevant data points, and the lack thereof can skew the results. For example, many management positions listed no explicit requirement for years of experience, although many of these positions inherently require previous experience.

The data collected and analyzed in this study was also limited as it was collected over a short time period (June-July 2023). In the future, this study could be expanded by collecting additional data over a longer time period (1 year or more) or getting access to organizations with extensive job posting databases, like the Department of Labor, to more comprehensively show the available jobs in the IC industry and to be able to include a wider range of companies. Future studies could also include web scraping techniques to ensure a more comprehensive search. In

addition to exploring more IC jobs, similar efforts could be done amongst traditional onsite construction and/or manufacturing companies to be able to compare the data found and draw more conclusions and comparison between the industries. Additionally, gaps in the data could be closed by conducting interviews and further research with IC companies to gather additional information that is not included explicitly on their website or in their job postings.

There were several interesting topics we came across in the research that would be worthwhile to investigate further. One of these is the company benefits offered by IC companies. These benefits are offered to draw employees to companies, but further research is needed to understand if these additional and unique benefits draw and/or retain more employees. The analysis also showed higher than average annual salaries for many IC roles; however, because this data was very limited, further data collection and analysis is needed to determine whether this accurate considering regional and local differences in salaries based on cost of living.

Another topic is the role automation plays in the categories discussed in this report. The automation level of a company is a spectrum and is difficult to quantify based on websites and job descriptions. A larger study could explore whether the automation level of a company affects the number of roles offered, the types of roles, the skills being demanded, and more.

This study is a brief snapshot of a complex topic. There are several analyses that can be done to further understand the growing IC workforce.

Appendix

Table 1: Key Definitions

Industrialized Construction	Refers to the use of industrial, manufacturing-based principles and production methods to streamline new construction and retrofit processes including product and system manufacturing, business models, workforce, installation, and more.
Volumetric Modular Construction	A type of offsite construction where 3D modules are fabricated offsite and then transported to construction sites and assembled with other modules into buildings.
Panelized Construction	A type of offsite construction where wall, ceiling, and/or floor panels are fabricated offsite and then transported to construction sites and assembled with other panels and/or components into buildings.
Prefabricated Components	Encompass a wide range of building components that are fabricated offsite and then transported to construction sites and assembled with other panels and/or components into buildings. These components can include roof trusses, windows, doors, cabinetry, and more.
Onsite Construction	Business as usual – the historical and typical method of building construction where most, if not all construction is completed onsite from individual materials.

Methodology

The findings in this report are constrained to the data acquired during the June-July 2023 job search period. 513 active job postings for jobs in the IC industry in the U.S. were found and reviewed. These postings were collected from a total of 46 companies. The websites of many other IC companies in the U.S. were reviewed, but they either were not hiring or did not have any active U.S. job postings on their website. The data was organized, synthesized, and paired with other research to provide insights about the IC workforce.

Data in the report was collected from IC companies found through the ABC Collaborative and additional research on modular/prefabricated companies in the U.S. To be included, the company had to operate within volumetric modular construction, panelized construction, and/or prefabricated components. They also had to have active job postings in the U.S., either on their own website or an external job board. The tables below show what information was collected from each job posting and how the data was synthesized.

Table 2: IC Company and IC Job Posting Information Collected

Company Information Collected	**Job Posting Information Collected**
Company type (volumetric modular, panelized, and/or components) Whether the company has a sustainability and/or energy efficiency focus or emphasis Company size (# of employees) Benefits offered to employees and any unique draws Location of headquarters	Position title Position level Required education Required years of experience Required certifications Required skills, abilities, and knowledge Salary/hourly wage Location

Table 3: Position Category Descriptions

To increase the usability of the data, each job was assigned a position category.

Administrative	Positions that are not specific to construction or IC like accounting, sales, IT, HR, legal, and more
Architectural & Structural Design	Positions in architecture, structural engineering, Building Information Modeling (BIM) design, and more
Environment, Health & Safety	Positions in environmental, health, and/or safety assurance and training
Machinery, Robotics & Maintenance	Positions involving installing, maintaining, and servicing equipment, machines, robots, and facilities
Materials & Products	Positions in inventory management, purchasing, shipments, estimating, supply chain, and product development
Mechanical and Electrical Engineering	Positions in mechanical engineering, electrical engineering, and MEP system design
Project Management & Coordination	Positions in managing and coordinating construction projects and tasks
QA/QC	Positions in quality inspection, assurance, and control
Software Engineering & Data Analysis	Positions in software engineering, coding, programming, and data analysis
Trades	Positions in the trades including general labor, carpentry, plumbing, electrical, framing, HVAC, masonry, painting, welding, fabrication, and more

Table 4: Position Level Descriptions

To increase the usability of the data, each job was assigned a position level.

Intern	Positions that are not full-time
Staff	Positions that are entry level, require zero or limited experience, and/or have no management responsibilities

Senior Staff	Positions that specify they are at senior level and require more experience and responsibilities than their staff level counterparts
Management	Positions that manage people and projects including project managers, supervisors, superintendents, foremen, department directors, and more
Executive	Positions in the C-Suite and VPs

Table 5: Sustainability and Energy Efficiency Descriptions

Each company was categorized as having a "sustainability" and/or "energy efficiency" focus for their construction practices, or "none".

Sustainability	No waste, waste recycling, reduced water usage, use of low-carbon materials (renewable/bio-based or recycled), and/or sustainable plant operations (efficiency, onsite renewables, etc.)
Energy Efficiency	Going above energy code requirements including advanced insulation, heat pumps HVAC and water heating, LED lighting, and/or net-zero emissions
None	None of these practices listed above or explicitly discussing that their buildings/homes met minimum energy code requirements

Table 6: Companies and Job Postings Reviewed

This table lists each company found during the data collection period that was included in this study. It includes each company type (volumetric modular, panelized, and/or components), the company size category, the state of the company's headquarters, and the number of job postings collected from each company. The average number of job postings per company was 11.2 and the median number was 5. One company, Champion Home Builders, had significantly more job postings than all other companies, at a total of 111. The next highest number of postings were 59 and 43, by MiTek and Volumetric Building Companies, respectively. Note: for many companies, the headquarters location is not the same location as the manufacturing plants or construction projects where the job postings are located.

Company	Construction Type	Size Category	Location (HQ)	# of Jobs
Champion Home Builders	Volumetric Modular	Very Large	Michigan	111
MiTek	Components	Very Large	Missouri	59
Volumetric Building Companies (VBC)	Volumetric Modular & Components	Large	Pennsylvania	43
Impresa Building Systems	Volumetric Modular	Small	South Carolina	25
Villa	Volumetric Modular	Medium	California	22
Guerdon	Volumetric Modular	Large	Idaho	18
Veev	Panelized	Large	California	16
Z Modular	Volumetric Modular	Medium	Alabama	16
AVA	Volumetric Modular	Medium	Minnesota	14
Westchester Modular Homes	Volumetric Modular	Medium	New York	14
Blox	Volumetric Modular	Large	Alabama	13
S2A Modular	Volumetric Modular	Medium	California	13
Panel Built, Inc.	Volumetric Modular & Panelized	Large	Georgia	11
B. Public Prefab	Panelized	Small	New Mexico	10
MODLOGIQ	Volumetric Modular, Panelized, & Components	Medium	Pennsylvania	10
Sto	Panelized & Components	Very Large	Georgia	10
Connect Homes	Volumetric Modular	Medium	California	9
Icon Legacy Custom Modular Homes LLC	Volumetric Modular	Medium	Pennsylvania	9
Commodore Homes	Volumetric Modular & Components	Very Large	Indiana	8
Crate Modular	Volumetric Modular	Medium	California	7

Alpen	Components	Medium	Colorado	5
GO Logic	Panelized	Small	Maine	5
Hercuwall	Panelized	Small	Arizona	5
Mammoth Prefab	Panelized	Small	Ohio	5
Plant Prefab	Volumetric Modular & Panelized	Medium	California	5
Aro Homes	Panelized & Components	Small	California	4
Blueprint Robotics	Panelized	Medium	Maryland	4
Clark Pacific	Panelized & Components	Very Large	California	4
Plantd Materials	Components	Small	North Carolina	4
Agorus	Panelized & Components	Medium	California	3
DACO	Components	Small	Washington	3
Modern Living Solutions/Greystar	Volumetric Modular, Panelized, & Components	Very Large	Pennsylvania	3
Palomar Modular Buildings	Volumetric Modular	Small	Texas	3
Reframe Systems	Volumetric Modular	Small	Massachusetts	3
Autovol	Volumetric Modular	Large	Idaho	2
ConXTech	Components	Medium	California	2
Dextall	Panelized	Medium	Virginia	2
FreMarq Innovations	Panelized & Components	Small	Wisconsin	2
Industrialized Construction Solutions	Panelized & Components	Small	Arizona	2
Mighty Buildings	Panelized & Components	Medium	California	2
Samara	Volumetric Modular	Small	California	2
Improve Group	Volumetric Modular & Panelized	Medium	New Mexico	1
Juno	Components	Small	California	1
Modular Mechanical Solutions	Components	Small	Massachusetts	1
Par-Kut International	Volumetric Modular	Small	Michigan	1
Timber HP	Components	Medium	Maine	1

Table 7: Size Categories of Companies Found in Data

The size of the company was collected from various sources. A total of 13, or 28% of companies in the data had information about their employee count on their website or job posting(s). For the other 33 companies (72%), employee counts were taken from the companies' LinkedIn "About" page, where companies input their own employee count in ranges that LinkedIn allows (e.g., 2-10, 11-50, etc.). Based on the distribution of the data that was collected, the size categories defined below were created. The table also includes total number of job postings found for each company size category and the average number of job postings by company size.

Company Size Category	**Number of Employees**	**IC Companies in Dataset**	**Total Job Postings**	**Average Job Postings by Size Category**
Small	1-50	16	153	10
Medium	51-200	18	228	13
Large	201-1000	6	42	7
Very Large	1000+	6	90	15

Table 8: IC Common Position Titles Comparison with BLS Position Titles

This shows the labor descriptions that were used from the BLS data for comparison purposes to the IC job position titles, as well as the data sources from the BLS data from May 2022.

IC Position Title Description	**BLS Position Title Description**	**BLS Data Source**
Sales – new home sales	Real Estate Agent – Residential Building Construction	BLS, May 2022

Engineer – software, electrical, mechanical, civil, manufacturing, system design	Civil Engineers – Architectural, Engineering, and Related Services	BLS, May 2022
Production Worker – IC manufacturing	Production Workers – General	BLS, May 2022
Construction Laborer – IC general	Construction Laborer – Residential Building Construction	BLS, May 2022
Project Manager – IC manufacturing	Project Management Specialists – Nonresidential Building Construction	BLS, May 2022
Other Construction Trades – roofing, shingles, flooring, general, finisher, fabricator, etc.	Construction Laborer – Construction Specialty Trade Contractors	BLS, May 2022
Architect/Design – IC general	Architect – Residential Building Construction	BLS, May 2022
Production Manager – IC manufacturing	Industrial Production Managers – General	BLS, May 2022

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