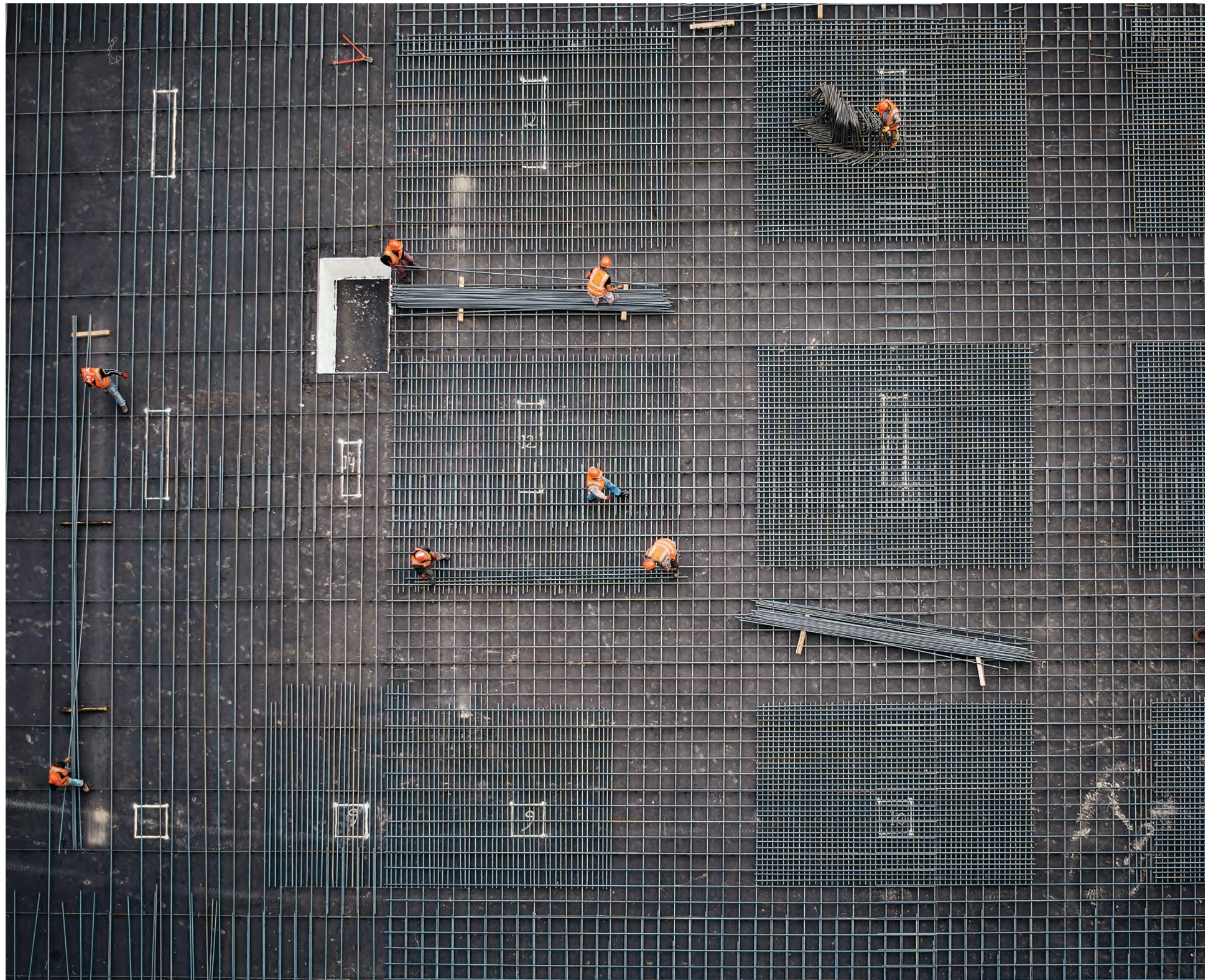


Skilled Labor

Exploring solutions to the construction industry's labor shortage.

by Paulina Lagos, AIA, and Sophia Razzaque, AIA, NOMA



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Like two roads diverging in a yellow wood, the separation between architect and builder was demarcated in the first modern treatise on the theory and practice of architecture, titled *On the Art of Building in Ten Books*, by Leon Battista Alberti and written between 1443 and 1452. Alberti’s architectural theory makes a clear distinction between the “lineaments,” the precise lines and angles that are the organized characteristics of a building as perfected in the imagination of the architect, and the material presence of a building as executed by others based on the architect’s complete and exhaustive drawings. Distinct from the medieval craftsman who was a builder and thinker, Alberti’s foundational theory is the basis for the modern architectural profession, one that has, perhaps wrongly, elevated the intellectual value of the architect above that of the builder. But what is the consequence of this pre-established value system? The oversimplified result is that architects are not builders: architects think, and builders build.

This idea has been challenged recently, however. Any seasoned architect will agree that no construction drawings are exhaustively complete, that great architecture requires close collaboration between the client, the architect, the builder, and the contributions of hundreds of individual skilled laborers to achieve a project of the highest quality. Yet, today that triad of collaboration is in jeopardy, as the construction industry faces a massive labor shortage topping half a million workers. What does that mean for practicing architects in the state and the profession at large?

In Texas, the construction industry contributed \$106 billion, an amount equal to 4.4 percent of the state’s GDP, to the overall economy in 2023, according to data published by the Associated General Contractors (AGC). The Texas Triangle—the region bounded by Dallas–Fort Worth, Austin, San Antonio, and Houston—has quickly become one of the most active construction markets in the US. These data make sense considering that roughly two-thirds of Texans live in this geographic area, representing a younger, faster-growing, and increasingly diverse population. Research by J.H. Cullum Clark in his essay “The Texas Triangle: An Emerging Metropolitan Model in the Lone Star State” suggests that the principal driver of this growth is migration from elsewhere in the US combined with an increase in immigrant inflows.

Despite strong economic activity last year, the construction industry cites significant concerns around rising interest rates, economic slowdown, direct labor costs, materials costs, and most notably an insufficient supply of workers and worker quality. Based on data from a 2023 Workforce Survey, the AGC reported that 85 percent of firms had difficulty filling hourly skilled craft positions, impeding the industry’s recovery. “We are constantly struggling to find qualified plumbers, electricians, sheet metal workers, carpenters, and a host of other trades. When you do find them, their skill level is below what it was 10–15 years ago, which requires more oversight from the trades as well as the general contractor to ensure the desired quality is being met,” says Jake Snyder, director of preconstruction at Hoar Construction, which is currently the construction manager at risk for Lake | Flato’s Bee Cave Public Library near Austin. According to a model developed by Associated Builders and Contractors, the construction industry will need to attract an estimated 546,000 additional workers on top of the average pace of hiring to meet the demand for skilled labor.

For many projects, the combination of high demand and skilled labor scarcity drives the construction industry to build faster and more cheaply, often outsourcing specialty components to skilled laborers in other countries. Bespoke design and craftsmanship are increasingly reserved for costly architecture firms or clients who can afford them. Matt Pagliasotti, AIA, Jordan Foster Construction project manager for Snohetta’s new Children’s Museum in El Paso, agrees: “From an architectural perspective, I believe the decreased availability of the labor resource has the potential to put great architecture out of reach for most

clients and designers. As excellence in craftsmanship becomes rarer and more expensive to obtain, the ability to bring thoughtful and provocative design to life will become more and more out of reach for all but those with near limitless financial resources.”

In Austin, a healthy appetite for high-end custom residential work in addition to the renewed call for more affordable housing is turning most larger scale low-rise commercial lots into mixed-use developments and apartment complexes. Meanwhile, student housing towers built next to the University of Texas are creating their own miniature downtown as seen from the MoPac Expressway driving north. This demand, along with the skilled labor shortage, has resulted in growing construction costs year after year for the better part of a decade. With property values skyrocketing as well, it’s becoming difficult to insure a home for what it would cost to rebuild it after a catastrophic event.

Some developers are turning to new design methods to tackle the housing and labor shortage. Juno is a company that has developed a proprietary building system that uses repeatable components that can be easily reconfigured or adapted to suit a specific site or local codes. According to their website, the simple-to-use yet sophisticated system helps expedite layout and planning, accelerates building schedules, and makes material sourcing more predictable. Emily Mills, head of growth at Juno explains: “On our Juno East Austin project, once the mass timber panels for the building’s structural system arrived at our construction site, the five-story, 24-room multifamily structure was assembled in five weeks with a lean crew of only five people. Each floor was installed faster than the previous one, because our workforce was able to iterate and streamline construction of subsequent floors.”

How did we get here? Short of blaming Alberti, the COVID-19 pandemic is easily blamed, though somewhat incorrectly, for many of today’s challenges. While the pandemic contributed to and accelerated the skilled labor shortage, by driving 40 percent of workers of all ages out of the industry, the construction industry was already struggling to find enough workers to keep up pace with demand.

According to the AGC, the federal government’s failure to pass immigration reform, combined with a significant funding gap between collegiate education and career or technical education tracks, means very few new workers are entering the construction labor pool, either

domestically or from other countries. The more experienced and skilled workforce is reaching retirement age, and there is a teacher shortage in career and technical education. Societal change has given rise to the younger generations’ diminished interest in entering the skilled trades due to “a disproportionate and oftentimes misplaced emphasis on higher education as the sole means to success,” according to Pagliasotti. “The shift in society and culture has largely stopped respecting the individual contributions of the working class, which historically has been a critical building block of a given society’s forward momentum, and a detrimental fascination with the prospect of success without sacrifice [has become commonplace].”

Access to formal training programs is also out of reach for undocumented workers in Texas and across the country. Language barriers, lack of formal education, and legal status exclude many construction workers from receiving the formal training they need to increase their skill level and wages and ultimately from a career pathway. Hundreds of thousands of undocumented workers, who often have decades of experience and informal training that could be readily enhanced with formal training, could meet the state’s labor needs as it grows. It’s a missed opportunity for the industry.

To better understand what it means to come to the US legally for work, we spoke to Annie Banerjee, an immigration lawyer practicing in Houston. She noted the lack of visa categories for people who want to come to the US for work in industries like construction. There are basically three options, and none work well to help ease this worker shortage.

The H-2B visa for Temporary Non-Agricultural Workers is one, but this is meant for one-time use for the duration of a specific project or for seasonal work. It is also limited to a specified quota of 66,000 allowable spots available per year. This category does not lend itself to the dynamic realities of the construction industry’s timelines or needs. It has also led to exploitative practices by employers who know that workers depend on their visas to stay in the country and sometimes pay workers less than the agreed wage.

A person could also apply for a Green Card as a skilled or unskilled worker, but the process requires an employer to petition for the potential employee to come to the US which means they must have already met and offered them employment. Once the application is submitted with all required paperwork and fees paid, it typically

takes 18 to 24 months to receive the Green Card. This process is too time-consuming and expensive for employers and does not give companies quick access to available trades people as the immediate need arises. It is also unlikely that companies will commit to hiring in this manner for a two-year projection into the future.

The third option is when a refugee comes to the US seeking asylum because of fear of persecution based on race, religion, nationality, etc. in their country of origin. Refugees are allowed to come into the country for protection while they file for asylum. However, they are not allowed to work for 180 days once they have filed for employment authorization, and any approval of the authorization is terminated if asylum ultimately is not granted. Without a legal solution that works for the construction industry, as many as 50 percent of construction workers are estimated to be undocumented, according to a report by Workers Defense Project. Undocumented workers labor under dangerous conditions for lower pay than US-born workers and are more susceptible to wage theft and workplace abuses. Additionally, they are less likely to receive adequate safety training, and a disproportionate number of immigrant workers die working in the construction industry. They lack an awareness of US worker protection agencies, such as the Occupational Safety and Health Administration (OSHA), the Texas Workforce Commission, and the National Labor Relations Board.

Last year, we had the opportunity to visit Mexico City during a retreat for the TxA Publications Committee. While there, we visited several architects’ offices and were surprised to learn about how the architect’s role functioned in the construction process there. In contrast to the US, the concept of an exhaustive set of construction drawings to be issued to a general contractor prior to awarding the project is uncommon. Architect Alessandro Arienzo of LANZA noted that his office provides details and drawings as needed, but that the skilled laborers they work with lead the process of bringing their designs to life with their direction.

Project engineer Michael Blau inspects the ceiling finish inside a skylight at La Nube Children’s Museum in El Paso.

PHOTO BY PAULINA LAGOS, AIA





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Understanding our current labor shortage, what legal pathways currently exist, and how little they do to address the real need the industry has for skilled construction laborers, as well as knowing that there is a rich history of craft and skilled labor that still exists in our neighboring country of Mexico, it seems prudent for our profession to shine a light on this issue. Architects should support the Associated General Contractors of America, whose website openly declares its support for comprehensive immigration reform and successful legislation that will strengthen national security, create a fair and efficient employment verification system, and establish a program for temporary guest workers to meet future workforce needs in less skilled sectors.

Understanding that this is not an issue that will quickly change course, contractors are beginning to take steps to address these challenges in the short term. Many firms are boosting pay and benefits to entice more workers and retain current staff. During a panel discussion at an industry event last year hosted by Bisnow, the heads of two major general contractors—Turner Construction and JE Dunn—praised Austin Community College for their training programs. They noted the need for more high schools to similarly support those interested in the construction industry. Programs like the ACE Mentor Program, a no-cost after school program that prioritizes workforce development for the design and construction industry, have begun forming up across the country.

Jake Snyder thinks that this move away from education in the skilled trades is one of the root causes of the shortage. “We pushed an entire generation into college and away from blue collar work. This is the result,” says Snyder. “[There were and continues to be] too few kids coming out of high school and joining an apprenticeship program or simply signing up to work for a trade in the field. It was looked down upon, and kids who elected to go this route were almost thought of as ‘less than’ the kids who decided to go to college.”

Companies also noted additional challenges including the changing environment of a job site and how construction workers deserve better working conditions, access to healthier food options, air-conditioned restrooms, etc. They’re also investing in technology to make their operations more efficient and less vulnerable to supply chain issues and labor shortages. Construction firms are increasingly advocating for prefabricated and modular building technologies that have the capacity to reduce construction time by 30 to 50 percent and help reduce the need for onsite workers. 3D-printing is pushing

the boundaries of traditional construction and opening new design possibilities for architects and engineers. There is also the potential for AI to help with things like clash detection of drawings and checking on-site layouts and rough-ins against the drawings. Trae Compton, vice president at Linbeck explains, “Our target this year is robotic layout of walls and in-wall rough-in, plus robotic pilot holes in concrete structures for overhead rough-in. Both technologies can run continuously and overnight. We hope it enhances quality control and reduces tedious man-hours.” These types of solutions, as AI becomes more capable and prominent, will potentially help with efficiencies and allow contractors to meet the growing demands that are getting harder and harder to meet with the available workforce.

Construction is big business in Texas. And the worker shortage can’t be good for business. If contractors and architects can agree on one thing, among all the things we dispute daily, it’s that the biggest detriment to projects due to the labor shortage is the decrease in quality. Fortunately, more is being done to advocate for the construction industry. Perhaps given the exorbitant cost of a college education today, younger people will consider alternative paths into the AEC industry. Acknowledging the important role immigrant labor plays in Texas will also help in bringing about better immigration solutions that support workers who can not only close the gap in employment but are crucial to the long-term sustainability of Texas’s economic and social well-being.

As architects and AIA members, we need to recognize our role in shining a light on these issues and doing our part as individuals in the profession to advocate at the local, state, and national levels for policies on a range of issues. These include policies that will support those seeking alternative means of education as pathways into the AEC industry, bolster our public education system and support teachers of all levels, uphold workers’ rights, and enact comprehensive immigration reform. We must also continue to value our partners in construction and maintain a culture of collaboration and cooperation between design professionals and those in the field who turn design into reality.

Paulina Lagos, AIA, is a principal at Exigo Architecture in El Paso and was the 2019 president of AIA El Paso.

Sophia Razzaque, AIA, NOMA, is an associate at Lake|Flato Architects in Austin and the 2024 president of AIA Austin.