

2016 ACE Awards

Category 2: Meeting the Challenge of a Difficult Job – Specialty Contractor

Specialty Contractor: Concrete Frame Associates, LLC

Project Name: SkyHouse Denver

“Do you want to build the fastest high-rise in Denver?” Concrete Frame Associates (CFA) Project Manager Ben Breslin remembers clearly his invitation to lead SkyHouse Denver. Constructed on a tight downtown lot, with noise ordinances and restricted work and delivery schedules, and despite delays from snow and high winds, the superstructure for this 278-foot tall, 26-story apartment building was completed in a remarkable 24 weeks. Both the apartment building and a separate 484-space parking garage were completed on time and within budget, thanks to CFA’s ability to accomplish a monumental construction cycle of pouring out a new floor every three days – a full 40% faster than the industry standard of five days.

Developed as an “affordable luxury” option for millennials priced out of downtown housing, SkyHouse offers a variety of amenities. An urban infill project built to Energy Star sustainability standards, the complex also offers vehicle charging stations, bike storage, and a “bike kitchen” (dedicated repair space), plus a dog walk area and washing station. The entire apartment building is approximately 395,000 total square feet.

The building’s exterior presents a pleasing rhythm, its glass skin accented by slender vertical lines created by the exposed concrete columns and apartment balconies. Sixteen architectural columns, including four signature “bat wing” columns at corner units were built as part of each floor. Carefully detailed with a pattern of aesthetic tie holes and a series of reveals, they added another layer of complexity to the already rigorous project.

Solutions of Special Projects

To keep a project in such a prime location affordable to younger renters without impacting quality, SkyHouse depends on efficiency in design and lean construction. Its high-rise configuration, which creates 354 rentable units to offset real estate costs is one piece of the solution. To help contain construction costs, which likewise would impact rental rates, the

owner worked closely with the team to develop a three-day cycle that put the entire effort on a high-speed track.

Constructed via an assembly line method, a typical floor plate of 14,500 square feet was broken into three separate slab pours. Every day, approximately 5,000 sf of slab, its corresponding walls, columns, as well as all the mechanical, electrical, and plumbing work would pour. Construction activities were planned by 15-minute intervals and as CFA Superintendent Geronimo Valtierra remembers, “If you got even a half-hour behind, it was like losing a day on another job.”

With no room for error, everyone on the construction team had to possess not only exceptional knowledge, skills, and stamina, but a drive to deliver consistently high-quality work in such a short timeframe. Breslin credits Valtierra, who worked tirelessly alongside the crew to keep everything on track. “Geronimo was really the key. When he heard about the job, he was the first to volunteer. He stepped up, and he knocked it out of the park.” Valtierra adds, “Nobody wanted this job because of the schedule. But I knew we could do it.”

Excellence in Project Execution and Management

During the planning stages, CFA had to determine the optimal crew size and structure that would provide adequate manpower at all times without overcrowding or incurring unnecessary overtime. For most of the project, CFA ran a 22-man crew (35 at the busiest point) working nine-hour days. No double shifts and no swing shifts, though one vertical crew was staggered to minimize inevitable downtime spent waiting on other trades. At the start, Breslin says, “we thought we might be working 60 or 70 hours.” Through precise planning and scheduling, teamwork, and increasing efficiencies, the average work week was a surprisingly low 45 hours.

With multiple trades (approximately 100 workers) working at the same time on the same 14,500 sf floor, coordination and sequencing were key. On a typical day, recalls Valtierra, “We’d pour the slab the afternoon before, so in the morning we could start the column layout and the stripping crew could get the trusses ready. By 8 am, we needed to have at least six columns set, so that by 3 pm the 85-ft.-long flying truss tables would be stripped and reset.” This allowed all other trades to work unimpeded on the newly formed deck.

Logistics also required significant effort. The project site is squeezed between existing buildings and fronts four major streets, including Broadway. One of the busiest intersections in Denver, with heavy vehicular and pedestrian traffic, including guests and visitors to the luxury hotel The Brown Palace, it offered plenty of scheduling challenges and virtually no laydown area. All the concrete forms were built offsite, delivered as needed, and then flown into place using a crane. Since the crane had to fly the trusses directly over heavily trafficked roads and sidewalks, limiting crane picks was an important safety and schedule objective. This also required pre-planning that led to decisions like making forms larger to minimize the number of crane picks over the busy streets. Breslin says, “Getting the forms – some were 85 ft. long and 20 ft. wide -- from Aurora to downtown Denver was a big job itself. It involved a lot of red tape, some hoops, and a police escort.”

Construction Innovations/State-of-the-Art Advancement

As on all CFA projects, industry best practices and processes were followed – including a custom-designed steel form built especially for the “bat wing” columns. Advanced technology and mobile devices supported the real-time, ongoing communication coordination the project demanded. But for the most part, Sky House Denver’s tremendous success was due to teamwork and the brainpower and sweat of dedicated, skillful people. Strict adherence to schedule, diligent sequencing, personal accountability, and a fierce determination to succeed by meeting the client’s goals were the team’s most important tools. The fact that the superstructure was completed with zero lost-time accidents in a remarkable timeframe of 24 weeks reflects on the people who built it.

Environmental and Safety

Safety is always a priority, but on a high-rise it merits special attention. On SkyHouse, it was a proactive, central component of every day. A full-time onsite safety manager daily conducted an inspection of all job site equipment and all work. An intense, ongoing safety program ensured all personnel were properly trained and performing every task safely. Rooted in CFA’s strong safety culture, SkyHouse finished with nearly 50,000 hours with zero lost-time injuries.

Excellence in Client Service and/or Contribution to Community

To meet the owner's goals of schedule and quality, CFA knew they needed to set an example for the subcontractor team. Working collaboratively, all trades developed a rhythm; after a short learning curve, they completed a pour every day – for two months straight.

But meeting schedule wasn't enough. With the project's luxury finishes and unique architectural touches, quality was crucial -- and rework was not an option. As Jared Hoeflich, Project Executive for General Contractor Swinerton Builders, puts it, "It was a bit of a Swiss watch to make this work. It's not just accomplishing schedules, but doing it all efficiently." To avoid delays, work had to be completed right the first time. The repetitive nature and extremely fast pace, the crowded site conditions, and the constant stress of meeting schedule might have fostered errors due to mental or physical fatigue. CFA provided incentives such as periodic lunches and bonuses that helped motivate the crews. Swinerton Project Manager Adam Lulay says, "Everybody really focused on their niche and perfected their task. We got very proficient and reduced human error."

Add to all of this another challenge: winter. In Denver, a winter build means severe cold, ice, and snow are bound to be factors, on top of the high winds common to downtown, especially 10 or 11 floors off the ground. The flying truss operation and crane occasionally had to shut down for an hour or two due to wind, but overall, delays were minimal. Aside from several intense snow days, the team poured in all weather to keep schedule. Says Hoeflich, "The team really sucked up the additional challenge of the weather and accomplished the owner's schedule."

SkyHouse Denver contributes to the urban environment as an example of thoughtful infill. When the project was announced, replacing a parking lot, urban planner Ken Schroepel wrote in his influential DenverInfill blog, "the repair of Downtown Denver's urban fabric continues." Located where the diagonal downtown street grid meets the metro street grid (aligned N-S-E-W), the site occupies a prominent five-way intersection of four major streets – Broadway/Lincoln, East 18th Avenue, Tremont, and 18th Street. With neighbors including The Brown Palace, Philip Johnson's Wells Fargo Center, and historic Trinity Church, the empty lot was once nominated "one of the five worst parking lots in Denver" by DenverInfill.

Completed on time, within budget, and now a welcome addition to the neighborhood, SkyHouse has been a success all-around – thanks to a team dedicated to achieving all project goals. Hoeflich sums it up. “We have a very long-standing relationship with CFA, and what I’ve really appreciated all along is their flexibility and commitment to looking at things in a different way to always get to the end game.”









