

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

Contractor: Encore Electric

Project Name: Pikes Peak Summit House

Pikes Peak is one of the most iconic mountains in the United States, achieving its fame in the lore of explorers and songwriters. Now construction teams have made it more iconic by building the monumental Pikes Peak Summit House at 14,115 feet above sea level, the highest elevation project being built in North America right now. With general contractor partner GE Johnson, Encore Electric has worked through all phases of design and construction on this project. If the challenge of working at high elevation wasn't enough, the project team has ambitions to achieve the Living Building Challenge. This sustainability certification is extremely difficult to achieve and only a small number of buildings in the world have accomplished this level of sustainability, including the Bullitt Center in Washington and The R.W. Kern Center in Massachusetts.

Pikes Peak is the only fourteener - a mountain with 14,000 feet of elevation - that is accessible to everyone regardless of age or fitness level, according to the US Forest Service. It is also likely the most world-renowned. "We all have individual relationships with Pikes Peak," said Oscar Martinez, District Ranger for the US Forest Service. "In design, we'll be capturing the essence of the mountains - locally, nationally and internationally." The project achieved just that, but it was not without considerable challenge.

To begin with, extreme project elevation has impacted the entire construction process, from submittals to the types of materials that can be installed to extreme weather. Encore Electric relocated the primary power feeds out of the footprint of the new building to allow for excavation to begin. Due to high altitude, every craftsperson is required to pass a very involved fitness test prior to receiving a badge to enter the project site.

Weather proved a constant challenge on the site, as one can imagine on a project at 14,000 feet. From snow to wind, and rain to heat, electricians encountered nearly every type of weather during the project. During May 2020, there were days when the project team had to deal with nearly a dozen feet of snow that fell the night before. Project team members had to carpool to the top, and apprentices had to meet at an early hour, drive together to the top, work all day at altitude and then go to school at night.

“I was excited and kind of nervous (when I heard about working on Pikes Peak),” said Christian Thompson, 2nd year apprentice. “I know working at 14,000 feet isn’t something that’s done every day. It’s definitely not easy.”

“It’s a little difficult, just because of the altitude. It gets a little hard to breathe sometimes,” said Antonio Santana, 3rd year apprentice. “This is probably one of the coolest job sites I’ve ever been on.”

Steve Young was the project superintendent for the Pikes Peak Summit Complex for Encore Electric. Young spoke to the challenge and significance of this projects. “This project represents Encore Electric’s unique ability to provide a world-class product to the customer in nothing short of extreme environments,” Young said.

The limited space at altitude requires a substantial effort to enlist Encore Electric’s prefabrication department to keep the on-site workers from becoming too strained. Because of the tight space of the site and its position on the very roof of Colorado, the prefabrication team built hundreds of boxes, fixtures and conduit bends in the Encore Electric facility in Englewood, Colorado, and had them shipped to the site by truck. This effectively saved hundreds of thousands of dollars for the project and hundreds of manhours that would have otherwise had to be spent at altitude. Fitness and personal health played a very active role in daily work, as employees were effectively reduced to 50% of what they are capable of doing at lower elevations. The thin air issues were also combined with the need to wear a mask during the global COVID pandemic.

Another high-elevation challenge that often gets overlooked is transporting tools and material to the site. While working on a remote job site is fairly common for Encore Electric, this commute requires specialty trucks that are capable of navigating the tight switchbacks and steep grades.

The visibility of these projects extends beyond the City of Colorado Springs, as this type of construction has never been attempted at such high elevation. Every aspect of the build is unexplored territory, from the below-grade precast concrete structure to the unique challenge of sustainable construction material requirements outlined as the Living Building Challenge.

“I do believe this project is one that Encore should be proud to have, and I personally feel fortunate to have such an iconic building visible from Denver to Pueblo right in my backyard,” Young added.

Preconstruction Manager Colby Foos recalls the beginning of the Pikes Peak project in 2015. “It has required many years of planning, budgeting, and preparations along with our operations team in order to move this project forward,” he said. “Managing a budget for a project that could go well past anybody’s predictions for escalation was challenging.”

From a technical perspective, the Central Utility Plant that fed the existing building (which was operational until the new one was built) sat right in the footprint of where the new Summit House is located. The preconstruction team ingeniously put the Central Utility Plant (wastewater tanks, freshwater tanks, and electrical) into 40-foot Connex trailers prefabbed in Colorado Springs, and located them next to the existing Summit House, to keep things operational until the new building was complete. The team also took the existing generator and put it in a weatherproof enclosure for their backup needs.

Encore Electric also ran into another challenge during the construction of the Summit House: when you rely heavily on technology like iPads, tablets, and digital construction management tools, how do you get Wi-Fi on the top of a fourteener to operate all that technology?

Encore Electric found the solution by teaming with Circle Computer Resources (CCR), a company that provides connectivity and technology solutions. Together, Encore Electric and CCR beamed a signal from the top of the Encore Electric Colorado Springs office building nearly 14 miles to the top of Pikes Peak.

It works by taking the existing internet connection in the office and installing point-to-point microwave radios on both the roof of the Encore Electric building and the roof of the Pikes Peak Summit House. By distributing the incoming signal from the top of Pikes Peak via wireless access points on the construction site, the tablets, iPads, and digital construction management tools had the access to the Internet that they required to work properly and efficiently.

“We’ve had a relationship with CCR for the past several years. After noodling on this a bit, I happened to look up at Pikes Peak as I walked out of the Colorado Springs office earlier this year and realized we have line of sight directly to the job site from there,” said Kevin Gaines, Information Technology Manger for Encore Electric. “This matches our dedication to providing solutions for ‘All Things Power, Technology and Energy’ and we love it when we have the opportunity to think outside the box, just like our project teams do for our customers every day.”

Pikes Peak is high, and as you can imagine with the construction going on, didn't have reliable access to the Internet, a key need to tap into the technology needed for construction. Installing this technology continued to help Encore Electric bring this project to life for Colorado Springs and Pikes Peak visitors.

Despite the abundant challenges, the project team always remained passionate and excited about the work on this unique project. Encore Electric had exactly zero accidents on the project, and that perfect safety record stands out as a major accomplishment for the team.

"It really has been a fun and challenging project," said Foos.

The Summit Complex was completed in June 2021. As the new visitor center welcomes guests, it provides them with a historical experience and education around the significance of Pikes Peak to the region. There is also a large dining area with panoramic views of the Front Range, from Colorado Springs to Pueblo, a gift shop, and an expansive raised walkway system around the entire summit area.











