

PROJECT SPOTLIGHT

ALABASTER CAVERNS - FREEDOM, OK





INTENSE LIGHTING'S V-RAIL SYSTEM LIGHTS THE WAY AT ALABASTER CAVERNS STATE PARK



"Selecting the LED V-Rail System from Intense Lighting was the right choice for this project. We're all very pleased with the outcome. We had a great installation and we're confident this system will last for many years to come."

*- Cy Nowkhah - Engineer
Flynt & Kallenberger.*

In what has to be the "most unique" project application to date, Intense Lighting's LED V-Rail Gen 2 System is now lighting the way for visitors to Oklahoma's Alabaster Caverns State Park. Located in rural, western Oklahoma, it is the largest gypsum cave in the world open to the public. It uniquely features massive boulders of alabaster and a fine-grained mass of gypsum seen in pink, white and even a rare black.

For more than a decade, visitors relied on a T-5 fluorescent handrail system to better traverse the 330 steps down into the cave that extends $\frac{3}{4}$ of a mile long. However, the system began to corrode due to the extreme alkaline properties of the gypsum in the ground. Posts became structurally unsound. These issues, compounded with maintenance troubles that included lamps constantly burning out and lenses coming off the handrails quickly became a safety hazard and made the need for a new system all too apparent.

In 2010, the Oklahoma Department of Tourism decided to call in Cy Nowkhah, an engineer and project manager with Flynt & Kallenberger Engineering in Broken Arrow, OK whom they had worked with in the past. They asked him to design a new lighting system and find the right product line for a better handrail solution. He turned to colleague Bob Smith of Smith Lighting Sales in Oklahoma City for ideas. Bob had intimate knowledge about the problems and hardships of installing illuminated handrails in this complicated maze of stairways carved out of rock, having been involved with the first installation. That installation lasted months and required a factory technician to be on site. On top of that, almost every section of rail had to be modified to fit.

This time, Smith immediately suggested Intense Lighting's LED V-Rail system. Since LED's have no ultra-violet spectrum, it would eliminate any moss growth and the system could operate almost maintenance free for many years. The V-Rail system is also designed to be field cut, a benefit when dealing with the unique conforming issues found inside a living cave. It was obvious that the V-Rail system addressed all the challenges posed in this job.

Tom Elam, Intense Lighting's VP of Sales, was asked to assist because of the unique challenges installing in a cave environment were sure to bring. "We came in and initially proposed an aluminum post to get everything above ground level in order to prevent corrosion," Elam says. "Our system allowed for an integral Lutron Hi-lume® driver, which was required for the project. The LED system needed to be compatible with the existing Lutron Hi-lume® fluorescent control system. This control system allows each stairway section to be illuminated separately, which helps guide visitors along



the timed tour. People are now able to experience the cave with a minimum use of artificial light. With the use of the V-Rail system, they can see and appreciate the cave's unique alabaster, while walking safely on well-lit, but slippery, and often muddy stairs. An added bonus is that the stairway illumination only occurs where and when people are present and then it is dimmed down once they leave."

Although the job was designed with the original V-Rail system that features aluminum posts for cost reasons, engineers at Intense Lighting, after further review, came up with the solution to utilize 316 corrosion-resistant stainless steel posts. By doing so, they could still include the utilize the integral Lutron drivers. "This option was a much stronger, long-term solution for this project, which also eased the installation concerns and minimized the intrusion of concrete pads throughout the cave," explains Elam.

Once everything was approved, Nowkhah drew up the engineering guidelines and handed the installation portion of the job over to Jason Bridgeman of BridgePoint Electric. "This was definitely the most unique and rewarding job we've ever done," says Bridgeman, whose four-man team actually camped out on the site for several weeks during the installation. "We normally work with new construction and commercial projects, so we were actually quite excited to work in a cave. It was extremely challenging because nothing is square or level inside and it was difficult to get exact measurements. We also had to be sensitive to the natural environment, so we could only take a minimal amount of tools down with us at a time, and if you forgot your electrical tape, you had to figure on a half-mile walk all the way back up to the truck!"

Because of environmental sensitivities, no cutting could be done inside the cave, so that meant at least 10-12 trips a day per man up and down all those stairs during the installation process. The team also had to deal with other challenges such as bats regularly flying into their faces, side-stepping rattle snakes that lived near the cave's entrance, and working around an ongoing stream of tourists. "However, with Oklahoma temperatures hovering at 105 degrees in August, it was actually a pleasure to work inside the constant 50-degree coolness of the cave," says Bridgeman.

He also explained that once the team got a good feel for how the system needed to work and how it all went together, they created an effective assembly line process and the installation went like clockwork. "Because of the convenient, modular system of V-Rail and the pre-engineering plans from Cy were so detailed, it allowed us to install about 50 feet a day," says Bridgeman. "We actually installed the entire 610 feet of handrails ahead of schedule and the entire project was completed within three and a half weeks vs. the estimated six weeks."

Bob Smith was extremely pleased with the team work he saw throughout the entire process. "You couldn't have had three better people on a team for such a complicated project like this one," he says. "I also can't say enough about Tom Elam's dedication. Tom came out to the job site at least six times and took care of every little detail. We even had people from the factory coming out to supervise the installation and make sure we had all the measurements correct. Intense Lighting's dedication really made this job go much smoother and easier."

Smith is so impressed with the outcome of this project that he has identified it as one of his top 12 of the year out of the more than 1,000 his company typically completes. "The Alabaster Caverns job will definitely be featured in our 2013 Lighting Sales Calendar because it turned out absolutely fabulous!"

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ALABASTER CAVERNS STATE PARK

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