



SAIA SCAFFOLD & ACCESS
INDUSTRY ASSOCIATION



Florence Lake Dam

SAVE THE DAMS: CARPI TECH AND BEE ACCESS PRODUCTS TO THE RESCUE

The inaugural Scaffold & Access Industry Association (SAIA) Suspended Access Project of the Year award was presented to Bee Access Products for their work that helped to preserve the Florence Lake Dam in California.

By Tom DeJong



The platforms were assembled onshore, lifted onto pontoons with a fork lift, and then floated into position.

The Florence Lake Dam in the Sierra Nevada mountains of California was built by the Southern California Edison Company as part of the “Big Creek” Hydroelectric Project. The dam, sitting 7,328 feet above sea level, is 190 feet high, and the reservoir storage capacity is 64,406 acre-feet. The project, completed in 1926, provides electric power, flood control, irrigation, and recreation for the public.

Dams that were built in the early 1900s generally have a lifespan of about 80 years; with proper maintenance and spot repairs, their life can be extended many more years. Eventually however, corrosion will take its toll, and when they start leaking, conventional concrete repair is rendered ineffective. That is where Carpi Tech and Bee Access came to the rescue.

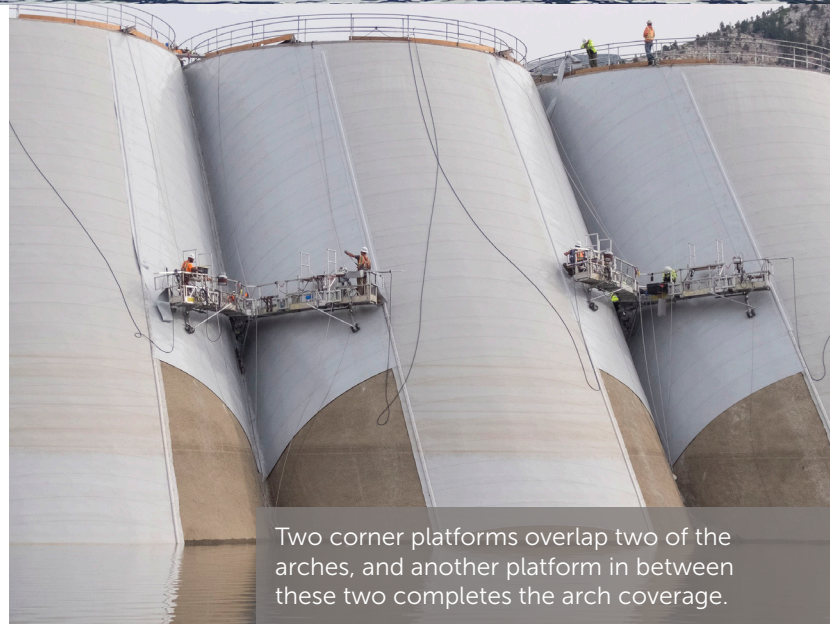
Carpi Tech, a Swiss company with several subsidiaries worldwide, including Carpi USA, has developed custom-designed geomembranes. The geomembranes are installed in large sheets stored on rolls.

The sheets are pulled down from the rolls and placed on the surface with a small overlap. The overlapped seams are then welded together using heat guns and rollers to make a solid and impermeable water barrier with a design life of 50-plus years.

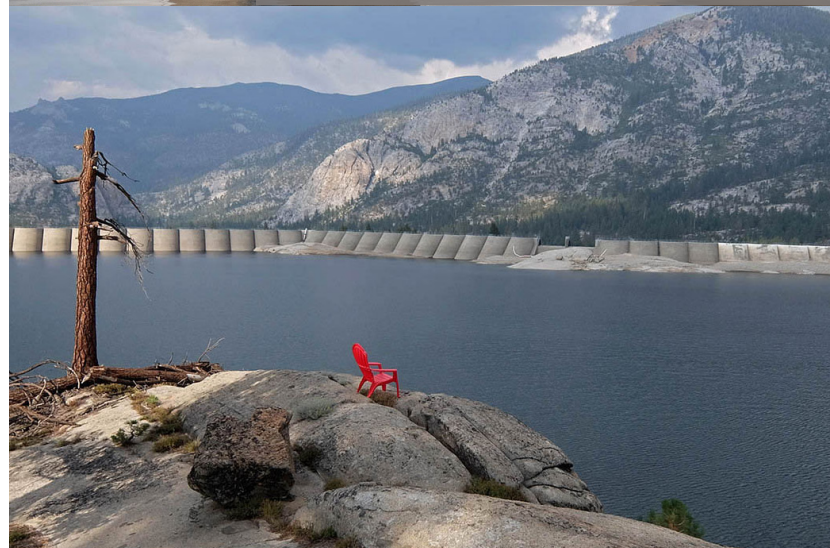
In 2014, Southern California Edison Company contracted Carpi USA to install geomembranes on 22 of the 58 arches of the Florence Lake Dam. Carpi enlisted the help of Bee Access Products and Elevator LLC to provide the right access solutions during this four-year project.

The Florence Lake Dam presented several unique challenges:

- Accessibility. Due to the remote location and elevation, the access road through the mountains is long and narrow, and the width of any load is restricted to 8 feet.
- Campsite logistics and wildlife. A large campsite had to be set up each year, with housing for the 30-plus workers.



Two corner platforms overlap two of the arches, and another platform in between these two completes the arch coverage.





Top: Outrigger beam with L-clamp
Bottom: Beam with rigging collar and angles support brackets anchored into the concrete



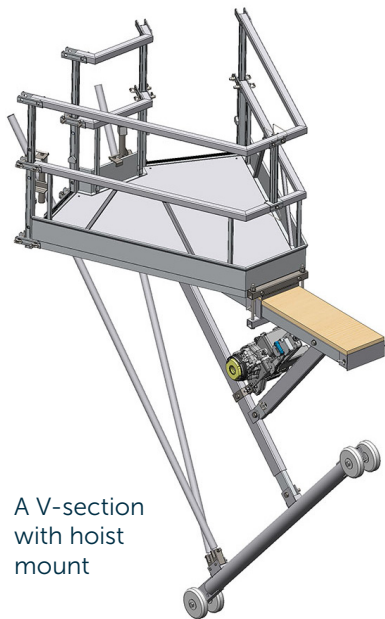
Aerial view of the access provided in the narrow spring lines



- Water levels. The lake could not be fully drained until the final phase of the job; during the first three years, the access platforms had to be put on pontoons and floated into position to do the upper parts.
- Façade structure and shape. The arches are steeply inclined and very large, more than 150 feet high with a 55-foot arc length to be lined, with narrow spring lines of 8 to 12 inches. Custom components had to be designed to provide access to all areas. Smaller platforms were not an option due to the 24-foot width requirement of the geomembranes.
- Power. Generators had to be brought in to run the three phase hoists, and special precautions were taken to keep the electric cables from coming into contact with the water.
- Safety. Greg Bartelt, the job supervisor for Carpi USA, had to develop a site-specific safety plan, and daily safety meetings needed to be conducted.

Bartelt worked closely with Tom Dejong and Brian Andrews from Bee Access as well as Jay Balibrea with Elevator LLC to make sure their access needs were fully understood and properly designed. The plan was to do each arch in three sections.

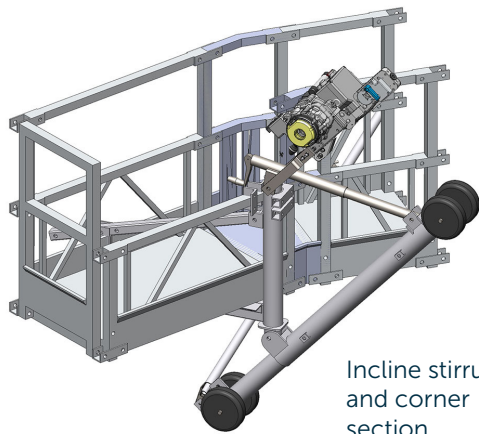




A V-section with hoist mount

Bee Access Products and Carpi USA had previously worked together successfully on eight other dam projects with access challenges.

For the center section, they used a relatively standard corner platform, but with special corners and two special stirrups. For the left and right sections, V-shaped corner platforms utilizing standard components were mixed with a custom



Incline stirrup and corner section

designed V-section, special corner sections, three special stirrups, and accessories.

Elevator furnished the rental of standard platform components, and custom rigging equipment was designed by Bee Access to match the shape of the arches. Bee Access designed the following components from scratch using 3D modeling:

- A V-section with hoist mount, stand-off wheel bracket, and scaffold plank mount to get deep into the spring lines.
- Corner sections, adjustable from 0-30 degrees in 2.5-degree increments to be able to precisely follow the multiple radius arch.
- Incline stirrups that were adjustable in three angles, the arch incline, the arch radius, and the platform corner section angles. In addition, a flexible hoist mount had to be incorporated, and installation from a floating pontoon had to be taken into account.
- A step-up deck section.
- Various accessories such as scaffold-plank front brackets.

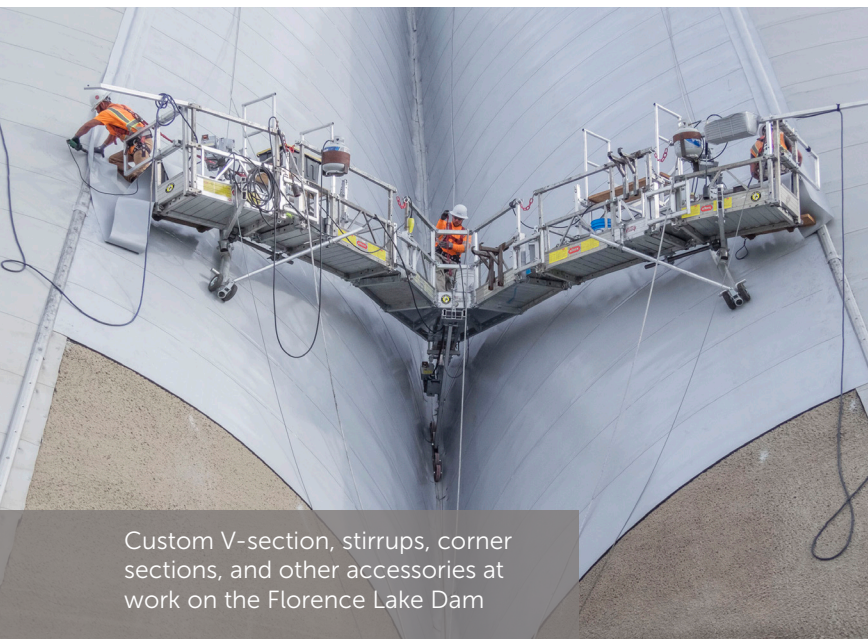
- A beam with L-clamp to mount to the top and back of the arch.
- A beam with center-hanging bracket and angled supports to suspend the center hoist.
- Anchor plates to tie off the lifelines.

After the design phase, Bee Access built prototypes and shipped them to the site, where Bartelt and his crew conducted a mock set-up. The field trial resulted in some design and layout changes, after which the system worked as intended. Bee Access went into full production on all components and shipped everything to arrive just before work began.

The Bee Access equipment has been on the Florence Lake Dam site for four years now and will continue to be used through completion this year. Bartelt and his crew have been able to access the required areas, and the job will be completed on schedule. •

About the Author

Tom DeJong is Vice President of Bee Access Products in West Palm Beach, FL. Contact him at (561) 616-9003, or tom@beeaccess.com.



Custom V-section, stirrups, corner sections, and other accessories at work on the Florence Lake Dam