



Use of Boulderscape Saves Time & Money for Massive Retaining Walls Along New Jersey Roadway

by Julie Taylor

Running like a ribbon through the beautiful countryside of New Jersey with its rolling hills and heavily wooded areas one will find Hwy 18, a major roadway through the Garden State. Like many Boulderscape projects, this one began a few years ago when the company first received a call in late 2005. The New Jersey Department of Transportation (NJDOT) was requesting information about the use of Boulderscape for a series of retaining walls that needed to be constructed along the highway.

A designer hired by the NJDOT originally had planned to use cast in-place concrete retaining walls with a formliner process to create the retaining walls with a rock-like finish. Paresh Patel of Conti Enterprises was the general contractor on the job. Conti's objective was to find the best way to construct these retaining walls within the project's budget and timeline and still achieve the desired look. Luckily, he was familiar with the work of Boulderscape. "We were going to use cast-in-place walls, but by using a shotcrete process and the folks at Boulderscape, we knew we could save time & money and create a natural-looking finished product in the end," says Patel.

Steve Jimenez, Senior VP of Commercial Sales was asked to send photos of past projects, especially those in colder climates to assure the DOT staffers that Boulderscape's system of creating beautiful, natural-

looking finishes with shotcrete was just as reliable as poured concrete or cast-in-place and other traditional retaining wall treatments found today. Although the use of shotcrete has been popular for several years, it's still a fairly new concept as an architectural application in the eastern part of the U.S. Many contractors and engineers are more familiar with a guniting procedure where a mixture of sand and concrete is applied dry and then water is applied at the end. However, the use of shotcrete is much more structurally viable.

"The approval process took almost three months after Boulderscape met the NJDOT's testing standards and provided a 15'x12' mock-up showing the type of geology they would use as a finish," says Jimenez. "In this instance, we went with a fractured sandstone finish using colors such as black and burgundy with some orange in it to give it a rusted look, which is typical of the natural geology in the area.

"Everyone on the committee loved the mock-up and that's what really sold us," says Patel. Conti could not have changed the original plans for cast-in-place walls to shotcrete walls without great co-operation from NJDOT's Resident Engineer Tony Bene.

By Boulderscape getting involved earlier in the process they were able to install a structural shotcrete wall and shoot it on instead of forming it, which is a more expensive process traditionally used in the area. The largest wall of the project was 15K sf with both a lower and an upper wall. The lower level was a soldier pile wall which was vertically driven straight down every eight feet. Lagging boards were slid between each girder to the height of the wall. As much as 14 inches of shotcrete was applied to replace the cast-in place section, or structural part of the wall before Boulderscape's crew then came in and attached wire mesh for the architectural finish.

The upper wall was a soil nail wall with 1.5 inch thick nails found every few feet that were solidly grouted into the holes drilled into the hillside. Conti's subcontractor for Soil Nails added a layer of reinforcement wire mesh, put on a four-inch thick temporary layer of shotcrete and then placed the steel plates over the nails and screwed each one down with a nut. Boulderscape then hung wire mesh on soil nail heads and shotcrete the wall with architectural finish.

"Years ago it was all about creating something that would last at least several decades without much concern about how it looked," says Jimenez. "But in the last seven years, we've noticed that the emphasis has shifted to creating aesthetically beautiful walls that are also eco-friendly and in harmony with their natural surroundings. In this case, the two-tier wall design is ideal because the cracks we created and the two different wall levels aid in the bonding of vine and other vegetation that would typically occur in nature."

Finally, it was time for the architectural finish work. But now it was the middle of winter, which added to the installation challenge. According to Jimenez, shotcrete can't be applied when the temperature is below 45 degrees. The Boulderscape crew was facing temperatures right around 18 degrees. In order to move forward, Conti built tents and placed heaters inside to maintain required temperature for shotcrete and Boulderscape crew invested three full work days blanketing the wall like a circus tent, keeping it sloped to avoid snow pileups and installing three, 40-foot boom lifts along the wall with heaters to get the temperature up to 65 degrees. Ironically, it was snowing outside, but warm inside the tents and under the blankets. The crew would start on the right side of the wall, shoot 40 feet out to the top and keep working up and down the wall until the job was completely finished. The heaters had to stay on every night to maintain the proper temperatures. "The job took two and a half months to complete, but it was eight months later before the crew came back to stain the walls once most of the other work was completed," says Jimenez. "Along with the retaining walls, Boulderscape was asked to shoot structural architectural under bridges further down the highway using a different design application based on the different structure of the walls," he says. "We used the same natural geology but it turned into more of a geological architectural showcase, as if our geology was framed to give it an entirely different look from the rest of the project. It turned out extremely well," Jimenez adds.

The original design focused on the soil nail retaining wall with a geological finish by Boulderscape. Conti took that original idea, and by thinking outside the box, changed the look on four other nearby retaining

walls. Conti directed Boulderscape to use shotcrete for the structural portion of the walls and complete them with a geological finish by adding just 4” of extra shotcrete. “It was very nice working with Steve and the field crew,” says Patel. “Everything went really well despite the weather challenges and I would definitely recommend them again.”

For more information call: 949-661-5087 or visit www.boulderscape.com.