Coal Combustion Product Type
Fly Ash

Project Name
Placement of BAPS Temple Foundation Mat

Project Location
Robbinsville, New Jersey

Project Participants
Silvi Concrete, Sahara Sand, Riverside Construction Materials, GivenHansco

Project Completion Date
2013

Project Summary
Construction of the BAPS Hindu American Religious Center in Robbinsville, New Jersey, is a multi-stage project that is ongoing. It is being built on a 162-acre site that will house, among other structures, a teaching and recreational facility, a visitor’s center, a youth activity center, and a temple. The final phase is the construction of the Swaminarayan Akshardham Mahamandir, which at approximately 150 feet in height will be the tallest BAPS temple in the world upon its completion.

Project Description
Construction of the Swaminarayan Akshardham Mahamandir, which is expected to take over a decade, involves the importation and assembly by master craftsmen onsite of heavy stone masonry and ornate hand-carved marble statues. The temple is intended to stand for 10,000 years. As such, the project required placement of a foundation durable enough to underpin such a massive and long-lived structure.

Plans called for the placement of a four-foot-deep, 49,000-square-foot foundation—covering more than 1.1 acres. A 50/50 fly ash-to-cement ratio was selected for the mix, which Fairless Hills, Pennsylvania-based Silvi Concrete executed in one continuous 7,200-yard placement.

Owing to the size of the placement and a relative shortage of fly ash in the Northeast at the time of the placement, Silvi stockpiled 55 tractor-trailer loads of fly ash over the course of several weeks in advance of the job, storing it in portable blimps. On the day of the job, the company mustered 106 trucks and utilized three central mix plants—some located as far away as 35 miles—for the 12-hour-long placement. To avoid any risk of running out of water during the placement—which would have meant having to rip out millions of dollars in concrete and rebar and start over—Silvi loaded up an 8,000-gallon water truck to use in an emergency.

Beginning at 5:45 am on October 26, 2013, ready-mix trucks delivered and emptied a full load of concrete at the jobsite every 66 seconds. Keeping to that schedule was critical, as drivers were legally permitted to work only 12 hours per day. To keep the pace up, Silvi arranged to have areas left open between the pumps where mixers could deposit concrete directly into the foundation.

The job, which was completed without interruption, represents the largest placement in the company’s history—and one of the largest in the history of the state of New Jersey. Use of the high-volume fly ash mix allowed the massive concrete foundation mat to cure in 30 days without danger of cracking.