

Shotcrete: A Versatile Construction Method When You Need to Get a Job Done Quickly

by Chris Zynda

What do you do when need to complete a project on an abbreviated schedule? Here is an example of a Joseph J. Albanese, Inc., project where time constraints were severe and shotcrete helped get the job completed on time.

The job featured is the front entrance to a movie theater with underground parking that had to be completed within 30 days. Included in the scope of work were the demolition of the existing structure; new construction of a water feature,

wall ramps, sidewalks, and paving; and the repair of the roadside curbs, gutters, and street.

This job had architectural concrete walls, waterfalls, and handicap ramps. There were



The footing of one of the areas being poured along with the demolition of the parking area (approximately 25 days to complete the project)



A fast single-forming system. Forming detail was used at the top of wall along with a chamfer used for the screed point. Note the 2 x 4 in. (51 x 102 mm) timber at the face of the wall for placement of lights. Fiberglass rods were used for the top of the wall elevation to produce the radius at the top of wall. This project had a series of walls and ramps, and as soon as one set of walls was completed, the forms went up for another



Simple wall forming was used at the radius wall on the right. All the wall slopes and gutters were constructed with 4000 psi (25 MPa) shotcrete



Two means of material placement were used on this job. Concrete pumping (above) was used in some elements by taking the nozzle off at areas to be vibrated. The pump-and-shoot approach (below) was used on most of the vertical work



approximately 600 lineal ft (183 m) of 8 ft (2.4 m) high architectural concrete walls with stairs, ramps, and rails for a commercial building per ADA requirements. Completing the walls with conventional cast-in-place concrete was out of the question. Given the time constraints, a double-engineered form for cast-in-place concrete construction would extend the project beyond the allowable 30-day time window.



The team of masons needed to complete a project of this type on schedule



A completed section of the water feature. Areas shown were completed monolithically using both pump and vibrate and shooting techniques



Areas of the walls and ramps all constructed using the shotcrete process (this work was completed in one day). All the walls have a trowel finish with tooled chamfer at top. The only sacking done on the project is on the form side. Smooth form plywood was used so sacking was kept to a minimum, saving another week on the schedule

It was thus decided to use shotcrete with a single-form system to construct all the walls, including the water feature and all radius walls using smooth form plywood with hardware cloth for areas where forms were left in place.

The key to a timely completion of this project was to think things out ahead of time along with considering the forms, shotcrete mixture, and setup.



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