

Up Against a Wall

Project time crunch turns contractor to shotcreting walls for greater efficiency



During construction of the Atlantic Times Square mixed-use development project in Monterey Park, CA, the concrete contractor is taking the route of shotcreting the walls to realize added efficiency. With the “green-friendly” shotcrete process, forms are set on only one side of the wall; the nozzleman shoots shotcrete into the open side; and the crew hand-finishes the exposed side. The forms are then pulled and reused to set the next wall on this particular job

The tight construction deadline of the Atlantic Times Square project, a large-scale, mixed-use development in Monterey Park, CA, put the concrete contractor literally up against a wall to build the project’s walls faster and place the concrete slabs at high speed. To solve both challenges, the contractor CS Concrete Solutions Inc., of Mission Viejo, CA, turned to uncommon construction techniques and high-performance equipment to step up the pace.

“We’re shotcreting the walls with greater speed than possible with block construction or poured-in-place,” says Marty Vasquez, General Superintendent of Concrete Solutions, “and we’re relying on a Thom-Katt trailer-mounted pump to handle all the shotcrete work under an aggressive schedule. Plus, we’re using Putzmeister boom

pumps for their extremely high outputs in placing the concrete faster for the slab work.”

The need for speed is critical on the Atlantic Times Square project. It is considered one of the largest projects under construction in the Los Angeles area today and one that requires highly efficient construction methods to achieve its targeted winter 2009 opening.

To help meet the fast-track completion date, Concrete Solutions is depending on the state-of-the-art equipment and prompt services of three key subcontractors: Global Shotcrete, Inc., of Ventura, CA, to supply the high-performance trailer-mounted pumps; Fleming Concrete Pumping Inc. of Santa Ana, CA, to provide the high-volume truck-mounted concrete boom pumps; and Cemex, to deliver the specified concrete mixture from its two local plants in Los Angeles and Azusa, CA. The \$200 million project is under the direction of general contractor Pan Construction Inc. of Rosemead, CA.

Unbelievable Size

The Atlantic Times Square project is under construction in the heart of Monterey Park. Residents and visitors will soon enjoy the convenience of the first mixed-use development in the San Gabriel Valley.

Developer Kam Sang Company Inc. of Arcadia, CA, has specifically designed the huge complex to satisfy the need for retail and residential space in one place. Inspired by Times Square in New York City, the center stretches a full city block adjacent to the I-10 San Bernardino Freeway.

Offering more than 230,000 ft² (21,368 m²) of retail and entertainment space, the complex will be anchored by a 14-screen AMC Theater Cineplex and 24-Hour Fitness, as well as a mixture of national and local businesses. The enclosed community also integrates 210 luxury condominiums and parking for 1640 vehicles.

The magnitude of the job site is difficult to comprehend. With three levels below grade and six levels above, it is about the size of six football



The Thom-Katt TK 50HP trailer pump is on the job site twice a week, shooting 80 to 130 yd³ (61 to 99 m³) of shotcrete during an average 8- to 10-hour day



Numerous walls are being placed with shotcrete, including the exterior walls around the perimeter of the large 330,000 ft² (30,658 m²) complex, plus all major interior walls

fields. Therefore, the sheer volume of concrete to be pumped, in addition to the incredible number of walls to shotcrete, underscores the importance of reliable, high-performance pumping equipment to meet an important completion date.

Shotcreting Speed

Traditionally, concrete walls are either constructed of concrete masonry units (CMUs) or poured-in-place. For this project, however, the contractor is taking a rather unusual approach and is instead using shotcrete to construct the interior and exterior walls. The technique is significantly improving efficiency to meet the demanding deadline.

“If there’s a wall to be done on this major job, we’re shooting it with shotcrete,” owner Joe Able of Global said. “The speed of shotcreting allows contractors to push jobs forward faster than other alternatives. Plus, the setup process is ‘green-friendly’ because only half the wooden forms are needed and can be reused several times over.”

For this particular job, poured-in-place walls would have been the typical choice, consisting of a reinforcing bar core and using two braced wooden forms and then pouring concrete in place from the top.

With the shotcrete process, however, wooden forms are set on only one side of the wall instead of two and formed all the way to the top instead of in stages; the same amount of reinforcing bar is used. This process is reducing labor costs and cutting the amount of material required roughly in

half. Additionally, precious space on the job site is saved because the crew works from only one side of the wall—an important benefit on the extremely congested construction site.

Once the forms are set, the nozzleman shoots shotcrete into the open side of the forms and the crew hand-finishes the exposed side. Then the forms are pulled and reused to set the next wall.

“It’s just so much faster to shotcrete the walls, and there’s plenty of them to shoot on this major project,” Vasquez said. “There’s the structural exterior walls around the perimeter of the 330,000 ft² (30,658 m²) complex, plus all the interior walls, which include three levels of underground parking, a retail level, and five residential floors. Global is doing a great job while paying attention to all the details.”

Shooting 80 to 130 yd³ (61 to 99 m³) of shotcrete during an average 8- to 10-hour day, Global is on the job site about twice a week with their Thom-Katt TK 50HP. Putzmeister has renamed the model “Katt-Kreter” to call attention to the unit’s special shotcreting features. The pump has plenty of power. It is capable of outputs up to 54 yd³ (41 m³) an hour and maximum pressures to 1450 psi (9997 KPa). Therefore, it can pump the 5000 psi (34.5 MPa) mixture. Because of the unit’s shotcreting capabilities, Global has two of the same model in its fleet. “We’re relying on our Thom-Katts because the pumps just don’t break down,” Able said, “and that’s a ‘must’ because we’re doing such a substantial amount of shooting on this particular job.”



Fleming Concrete Pumping of Santa Ana, CA, is expected to pump over 65,000 total yd³ (49,696 m³) of concrete for the footings, columns, and slabs upon the project's completion



With its high-performance trailer pump and shotcreting expertise, Global Shotcrete of Ventura, CA, plans to shoot approximately 4000 total yd³ (3058 m³) of shotcrete for the walls on the large-scale project

Gaining Popularity

Although shotcrete is not the norm for placing commercial walls in southern California, Global has handled various jobs in this manner before. The prominent Atlantic Times Square project, however, is their largest single project to date using this distinctive approach and, consequently, it should ultimately help the shotcrete method gain wider acceptance.

Able started his shotcrete business 3 years ago, initially renting equipment and then buying two Putzmeister trailer pumps. Able states, "Although shotcrete is only a small percentage of our industry today, our company has been experiencing explosive growth." Able further stated, "The popularity of shotcreting is definitely catching on with contractors, as they are finding it an attractive alternative in saving time and money."

Able does note that "although the growth of shotcreting offers our business a great opportunity, it is extremely hard work and each day brings unexpected challenges to tackle."

Keeping Up the Pace

While the walls are getting the shotcrete treatment, the footings, columns, and slabs are being pumped with concrete. Fleming Concrete Pumping has been on the job with almost every boom pump size in the company's extensive fleet, ranging up to 63Z-meters.

Due to the especially crowded job site conditions, setup of the boom pumps often takes place in the street or in specific areas on the job site that are far from the point of concrete placement. Therefore, the longer reach of the 63Z-meter is favored for extending its boom 203.75 ft (62 m) vertically and 190.58 ft (58 m) horizontally to access the pours. Plus, all the boom pump models, whether with a .16H and .20H pump cell, can deliver the high concrete volumes the contractor demands.

"For the decks, we're pumping around 190 yd³ (145 m³) an hour with the .16H pump cell on our 63Z-meter," Alan Fleming, co-owner of Fleming, said. This is providing the contractor with the high outputs required, as it just shy of the pump cell's maximum 210 yd³ (160 m³) an hour output.

Vasquez said the minimum pour is 22,000 ft² (2044 m²), using about 900 yd³ (688 m³) of concrete, so high volume pumps are needed to place the concrete quickly. "It ultimately saves us a tremendous amount of man hours," he said.

Totally Fast, Totally Efficient

To meet a fast-paced project completion, more than 65,000 total yd³ (49,696 m³) of concrete will be pumped and about 4000 total yd³ (3058 m³) of shotcrete placed while using the advanced technology of today's pumping equipment to handle the job at high speed.