



Miami on the Rise

A luxury Miami high rise created a concrete pumping challenge — how to achieve a vertical lift of 700 feet? Here's how the pumper did just that.

If you're an avid golfer, the place to be is Augusta, Georgia or Pebble Beach, California. If you're a surfer, The Pipeline in Oahu is your dream destination. If you pump high rise structures for a living—and do it extremely well—you definitely want to be in Miami. Here, a couple of dozen tower cranes are a common site and the skyline is the second fastest growing in the U.S., surpassed only by New York City.

Not surprisingly, seasoned concrete contractor Florida Concrete Unlimited (FCU) is in the right place at the right time, capitalizing on both its good location and its expertise. Currently wrapping up pumping for a 56-story ultra-luxury condo building, the Miami-based company recently showed why they're the go-to source for this type of work, starting out with an impressive 14,000-yard mat pour and then taking it to the next level by using truck pumps with detached booms to achieve vertical lifts of 700 feet. Who would expect anything less in the "Magic City"?

STARTING AT THE BOTTOM

The real name for this upscale project on Miami's Sunny Isles Beach is The Residences by Armani/Casa, and that Armani name should serve notice that this is not just another in a seemingly unending series of impressive high rise construction projects. Need proof? Whoever purchases the 6,000 square foot, \$15 million penthouse is rewarded with, among other perks, a trip to Italy to meet the building's namesake in person, Giorgio Armani.

Jason Goff, FCU's president, has had plenty on his plate since starting construction on this iconic structure. "Our portion of the project started back in January of 2017 with a massive foundation pour," says Goff. "The mat was 14 feet thick and heavily laden with about 2,000 tons of rebar. Utilizing three Schwing S61 SX truck-mounted concrete pumps and a pair of S46 SX models, we were able to put down more than 14,000 cubic yards of standard 8,000-psi concrete with an eight-inch slump in about 20 hours."



Right: For the foundation mat, a fleet of 100 ready mixed trucks working two shifts fed three Schwing S61 SX truck-mounted concrete pumps and a pair of S46 SX models, pumping more than 14,000 cubic yards of concrete in about 20 hours.

three of which are Schwing pumps," Goff says. "Annually, we perform about \$25 million in pumping and finishing contracts of all sizes. However, over the years, through a reputation for providing quality high rise work with some of the biggest developers in the area, that part of the business has really taken off and comprises the majority of our work today."

He adds that, although his father technically retired several years ago, Jim still manages to stay involved with the business he created. "Dad and I talk almost every day and sit down monthly to look at the financials," says Jason. "I worked hard to earn his trust and am grateful that I have it."

GETTING DETACHED

With the Armani/Casa foundation slab poured, the team set its sights skyward. To best accommodate the structure's roughly 25,000-square-foot surface area, Goff, after consulting with general contractor Coastal Construction, decided that a pair of custom-built S 41 SX truck-mounted concrete pumps—each powered by a 425hp 2020H-6 pump kit and featuring a detachable boom option—was the answer. Based on both the structure's design and personal preference, Goff also chose the manufacturer's self-climbing octagonal mast to support the boom, which when mounted and fully extended, offers 121 feet of placing reach. Goff says that flying the Generation 2 placing booms up for mounting was also fast and easy—a by-product of its newly-reduced weight of less than 13,000 pounds.

"Because we do so much high rise work, we felt that going with the detachable booms made the most sense," he says. "Right now, even though we have probably 20 placing booms at work throughout south Florida, we also do a lot more traditional pumping work like house pads, larger industrial slabs and so on. The detach allows us to service both types of projects."

Obviously, making that happen was challenging. The concrete supplier, Supermix, had a fleet of about 100 trucks working two shifts, feeding the pumps continuously until the pour wrapped up—some 20 hours after its start. The mat pour was scheduled on a weekend to best deal with both Miami traffic and the availability of ready mixed trucks and personnel.

However, the batch plant's north Miami location—relatively close to the beaches—meant traffic remained an issue at times. All told, some 1,500 truckloads of concrete were delivered. As impressive as that part of the project was, it only set the stage for what was to come.

BUSINESS PICKS UP

Obviously, Goff and FCU are no strangers to this type of work, nor to concrete work in general. Founded more than 44 years ago by Jim Goff, Jason's father, the company grew steadily through the mid-1970s, 1980s and 1990s. After Jason joined the business, it has grown at an even faster pace.

"Today, we have about 300 employees. We operate out of two south Florida locations—Miami and Ft. Myers—and we own 45 concrete pumps ranging in size from 28 to 65 meters, all but



At the Armani/Casa project, FCU proved that a 700-foot vertical push using a truck-mounted pump was not only feasible but extremely effective.

It's worth noting that on all their high rise projects, the pumper utilizes three placing boom managers and one operations manager to oversee them. Two of the three placing boom managers drive SPTO 4000 pump trucks outfitted with hose and fitting kits, tools, welders, fuel and so on, as their company vehicles.

"If you are regularly pumping high and hard on multiple jobs as we are, you will likely encounter some pump-related issue," said Goff. "With our approach, if the placing boom manager can't solve the problem, he has an immediate answer—the backup pump that he is driving. He can simply switch the diversion valve over and plug in. It's an effective solution—in the past, we've had a pump fail and the contractor literally didn't even realize it. That redundancy not only keeps production up—it also enhances our reputation for dependability."

WHEN GOOD GETS BETTER

When considering the detach boom, Goff said their only real concern was whether or not the truck-mounted 39-meter detachable boom pump could make that huge 700-foot vertical push. They consulted with Schwing's engineers, who made some key



Despite working over rebar from one of the structure's cores, the placing booms were able to access all parts of each 25,000-square-foot floor.

modifications to the pump kit, including bringing the standard nine-inch cylinders down to eight inches to increase the overall pressure on the concrete. The modifications were effective; custom-built pump kits plumbed on piston side can produce 1,827-psi on the concrete with a maximum output of 138 cubic yards per hour at 28 strokes per minute. At the Armani/Casa project, they were getting system pressures of 3,626 psi at 700 feet.

"That tells me we could have pumped even higher if we needed to—we were very impressed," says Goff. "Each floor consisted of two core walls, four elevator shafts and a pair of stairwells. In addition, we also pumped 2'x5" and 4'5"x3' columns, as well as two-foot-tall shear walls with thicknesses up to 3'6". That represented about 550 yards of concrete for the vertical work and 750 yards in the flatwork. The booms were ideal for accessing every area of the job, and it showed in production. We were getting rates of around 65 yards per hour on the upper floors and 80 yards per hour on the lower floors. Even at the upper levels, we were regularly completing a floor per week."

At the highest elevations, the mix design on the Armani/Casa project was a 7,500-psi mid-range mix, with an average six-inch

In addition to the slab itself, each floor consisted of two core walls, four elevator shafts, a pair of stairwells, and columns, as well as two-foot-tall shear walls with thicknesses up to 3'6".

slump. To deal with Miami's heat and an economic environment in which ice is cost-prohibitive, Supermix used an ADVA 120 high-range water reducer. "We went all the way to the top without losing a single section of the five-inch diameter pipe. We're happy with that."

LIFE AT THE TOP

Even though The Residences by Armani/Casa will not be ready for occupancy for some time yet, the pumper's work on the project recently came to a completion with a topping-off ceremony hosted by the developers, a joint venture between Miami-based Dezer Development and The Related Group. According to Goff, from a personal perspective, this project was something of a test to see what could be done with a truck-mounted pump, and it passed the test with flying colors.

"There doesn't seem to be any indication that a slowdown in high rise development in this area will be happening anytime soon," he said. "We are fortunate that we are the concrete contractor of choice for so many of the big names in development, but that puts even more pressure on us to continue to perform



and meet their expectations. Having successfully completed a 700-foot vertical push using truck pumps, we now have yet another option available to help us do that." CP

Specs:

Owners: Dezer Development and The Related Group—Miami, Florida

General Contractor: Coastal Construction—Miami, Florida

Pumping Contractor: Florida Concrete Unlimited—Miami, Florida

Architect: Cesar Pelli

Equipment: Schwing S 46 SX and S 61 SX truck-mounted concrete pumps with placing booms; Schwing S 41 SX concrete pump with detachable boom.