

**PRECAST CONCRETE AIDS PROJECT TIMETABLES AS SPEED OF CONSTRUCTION DEMANDS HIT A NEW HIGH**

# Gulf contractors turn to precast as a time saver

Contractors often say that they cannot build fast enough to meet the demands of the GCC construction boom. But, with the heavyweight help of precast solutions, projects can now fast-track like never before. *Zoe Naylor* reports.



**Rock hard: The Quay wall on the Creek extension project is being constructed using precast mass concrete gravity blocks with crush rock foundations.**

In the rush to complete building work on time, a growing number of the region's contractors are turning to precast concrete solutions.

Technological advances mean that precast can be used on a range of projects from beams and wall systems to marina pontoons and tower construction. And in a part of the world where skilled labour is often in short supply, this type of concrete is fast proving its worth.

"Precast takes less resources, which is good because it's difficult to get skilled workers here in the Emirates," says Elias Seraphim, Gulf Precast's technical and commercial manager.

Gulf Precast is currently in negotiations to carry out the precast works for the US \$1 billion mixed-use Al Barari development in Dubai, which includes the walls, slabs and construction of 330 villas.

According to Seraphim there are a number of reasons why precast is particularly suitable for this project: "Time is one advantage, as is quality. Since precast is factory-made, it is fabricated under strict quality control using the best materials."

The repetitive nature of the project (330 villas of four different types) is another reason to use precast. "We will make the moulds as opposed to using wooden shutters, and cast all our panels in steel moulds, as it gives much better finish," says Seraphim.

"By manufacturing on site and taking the finished product straight to site there's no time wastage. Everything can be erected immediately by crane, which makes for a smoother operation."

Gulf Precast has two factories in Abu Dhabi and two in Dubai, with a total capacity of around 1000m<sup>3</sup> per day.

If successful in its Al Barari bid, Gulf Precast will have a mere

24 months to finish the whole job — which means handing over around 10 to 15 villas per month.

But according to Seraphim, this is an achievable target: "Precast saves at least 30% on the construction time. It also saves on manpower — on a site like Al Barari, if you construct the villas in the conventional way you'd need around 5000 workers. But with precast, 500 workers will be more than enough."

Other construction sites Gulf Precast is currently supplying include slabs for the Dubai Mall and the Al Wahda mall in Abu Dhabi. It also supplied Jumeirah Beach Towers and all the slabs for Ibn Battuta mall.

According to Seraphim, one of the most challenging projects was providing the prestressed beams for the 3 km-long ceiling of the new Dubai airport tunnel: "As each beam was 30 m long, the main challenge was the weight of the tunnel — the beams each weighed between 60 and 100 tonnes."

Gulf Precast is now turning its attention to environmentally-friendly projects such as precast underground rubbish storage tanks. The idea is to make the rubbish collection in Dubai underground, thus avoiding the risk of bacteria and sickness.

"We're currently developing some ideas with partners for a system that involves burying the garbage tanks in precast concrete coffins approximately 2 m underground," explains Seraphim. The liner will be removed hydraulically when the tank needs emptying, and will then be replaced underground.

Marinas are another area where precast concrete is making an impact. Septech Emirates recently won the contract to supply a precast marina at the Barr Al Jissah Resort & Spa in Muscat, Oman.

The 60-plus berth Unifloat floating concrete system will be custom-built and installed by Septech.

“When we build marinas, we individually engineer them for their durability. In this instance, we’ve recommended Unifloat floating concrete pontoons because the conditions are not suited to the traditional use of steel piles,” says David Heffernan, MD, Septech Emirates.

Septech Emirates has a US \$10 million facility in Sharjah to manufacture the floating pontoons.

“Unifloat is a fully encased concrete floating pontoon system specifically designed for each application,” explains Heffernan. “We don’t have one design that goes into every marina — we do an engineered study for every application. We will then design and build it with an inner core of Styrofoam, completely encased in reinforced concrete.”

According to Heffernan, concrete marinas require less maintenance than the timber or lightweight aluminium systems that are often sold in the region.

Using precast also means the design is more flexible: “We’re not limited to certain sizes or generic designs — we can be very specific,” says Heffernan. The concrete also increases the marine life in the marinas. The concrete pontoons promote the growth of barnacles, which then act as a protection layer.

In addition to its marina division, Septech Emirates supplies the municipalities with precast concrete infrastructure for manholes, water tanks, holding tanks and chambers. “We supply precast water tanks for a lot of the Emaar projects,” says Heffernan.

“Our precast concrete modular sewage treatment plants are also very popular and have been installed at Al Maha desert resort in Dubai, as well as Festival City.”

Another of the region’s major precast suppliers is United Precast Concrete. “We find there are many benefits of using precast, such as the quality of the final product, the speed of construction and the saving that can be made on weight,” says Tom Kjær, CEO, United Precast Concrete.

United Precast Concrete is currently supplying 1050 villas at Arabian ranches, 490 villas at the Meadows, as well as the new Ikea hypermarket at Festival City.

“Using precast helps resolve a lot of contractors’ problems,” says Kjær. “The savings on manpower can probably boost turnover by two to three times by using precast solutions,” he adds.

One of the most ambitious construction projects currently underway in the region is the Dubai Creek extension. The quay wall will consist of precast mass concrete gravity block construction with crush rock foundation and rear core filling. It will then be completed with bollards and a block paved circulation corridor.

The on-site concrete batching plant is currently under construction and Q-Mix will be the suppliers. There is one precasting yard dedicated solely for the casting of blocks. At present, the precasting yard has been sized to produce an average of 80 blocks per day for the total of over 21 000 blocks required for stage one of the project.

Halcrow are the engineers on the Creek extension project, and have also worked on quay walls in Sharjah as well as Dubai Marina.

According to Shreedhar Natarajan, resident engineer at Halcrow, one of the advantages of using precast for quay walls is the flexible nature of the blocks: “It allows for making changes to features later on, such as when we come to do the other infrastructure we can move blocks around to make it more feasible.

“You can also control settlement, plus precast looks a lot nicer and is quicker from a contractor’s point of view,” he adds.

Precast brings a number of construction advantages such as increased strength and load bearing capacity, not to mention faster installation times. Another clear benefit is quality control — since precast is manufactured in a stable and controlled factory environment it is not at the mercy of on-site conditions.