

SIMPLIFY CONSTRUCTION WITH PRECAST METHODOLOGY

By: R.G. Candiah

The precast concrete industry in Malaysia is growing at a rapid pace due to the continuing usage of precast concrete being of consistent quality, economical, flexible and reliable. Despite being adopted for many years now, smaller contractors are still ignorant of the advantages of precast concrete.

Precast concrete is defined as concrete components (for example, wall panels) of a building which are fabricated in a factory and then transported to the site of construction.

According to A. Letchumanan, Senior Manager of the Technical Department at the operating company of ACP Industries Berhad, contractors currently

prefer using precast concrete as opposed to cast in-situ as it brings numerous advantages. The advantages include durability, time saving, less wet work and a cleaner and safer work site due to a much reduced necessity for falseworks.

Precast concrete will provide more reliable long-term performance in extremely harsh conditions that could destroy lesser materials. In comparison to the traditional method of building, precast concrete is more resistant to deterioration from weather extremes, chemical attack, fire, accidental damage and the determined efforts of vandals.

Letchumanan said precasting concrete in a factory environment



allows the manufacturer to exercise precise control over all the variables, which affect durability, strength and appearance. Dense impermeable concrete can be readily produced at the factory by carefully controlling the materials, slump, water/cement ratio and the curing process.

"Precast concrete components lend themselves to fast construction schedules. Precast manufacturing can proceed in advance while site preparation is underway. Precast units can be delivered to the jobsite and installed the moment they are needed in any weather, he said adding that fast construction means earlier completion and the resulting cost savings.

It also enables earlier occupancy and reduced financing costs. If planned really well, it is like "Just-In-Time" where once you have completed your foundation or whilst the foundation is being done, the precast manufacturer has already started production of the precast concrete units in the factory," he said.

"If, for instance, a drainage structure in the middle of the road, using the conventional way of cast in-situ, traffic has to be diverted. Furthermore, the contractors will have to wait long hours before they can open the given road," he said adding that in-situ concrete generally needed a duration of 1-2 weeks for maturing.

According to Letchumanan, the usage of precast concrete is quite mature in Malaysia where infrastructure and the building sector are concerned but it is still in its infancy stages in other areas of construction. He said the railway industry too was gradually adopting the usage of precast concrete.

The double tracking project from Rawang to Ipoh uses prestressed concrete sleepers and cable troughs. Precast manufacturers in Malaysia are currently producing approximately 700,000 sleepers for this project and demand is expected to continue.

Letchumanan said transportation was one of the constraints in the precast industry as road conditions and logistics governed it.

Precast concrete products can be transported if the size and proportions of the precast product fits the transport vehicle.

"Precast products are confined by the length of the trailer while the width

has to be approximately 2.4m," he said adding that if items were to big, it would be split up into a few segments and then jointed together at the construction site.

He said there was a need to standardise the units or products as standard structural shapes such as precast culverts, floor double tees, bridge beams, box girders and wall panels can be mass-produced at low cost.

"We can re-use the mould again and again and this will benefit the end user with lower cost. Once a different size is requested, it then becomes "tailor-made" which becomes more expensive, unless volume justifies", he said.

Standardisation would also enable

contractors to benefit from ready stock in the factory.

Letchumanan said manufacturers of precast concrete were moving more towards mechanisation requiring less labour but stressed that standardisation of precast concrete products was important in order to mechanise and automate the manufacturing process.

He added that precast concrete was better manufactured in a factory due to dedicated facilities instead of on-site in order to control quality and workmanship test of product prior to delivery.

"Many contractors want to do precast on-site as it is cheaper benefiting from lesser transport cost and nil sales tax," he said adding that

casting on site was risky as there is no stringent requirements as to quality control.

In a factory controlled environment, precasters can implement good manufacturing practices, which ensures quality and fulfils customer satisfaction. ■



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