

INFRASTRUCTURE



Precast box girders of Metro Rail Project are fabricated in a construction yard and transported to the site for joining together by pre-stressing steel.

PRECAST AND PLACE-CAST CONCRETE

Concrete is the second most consumed material in the world after water. It is estimated that every year 21 billion tonnes of concrete are consumed globally by 7 billion people. This large volume of concrete is used for making buildings, bridges, tunnels, roads, ports, and other infrastructures. Based on the place of casting, concrete is divided into place-cast or cast-in-place or cast-in-situ concrete and precast concrete.

During construction, site-specific forms are made and then concrete is poured into these forms to give the shape of the structural elements. This traditional technique of concreting at place is called place-cast concrete. On the other hand, structural elements can be fabricated at a factory or a construction yard and then transported to the construction site after adequate curing. This technique of offsite production of concrete is called precast concrete.

Because of bad weather, it is very difficult to control overall quality of place-cast concrete. Moreover, bad weather delays the schedule of the project and results in additional costs to the project. Precast concrete eliminates these problems as it is manufactured in a controlled environment, ensuring extreme accuracy in quality, strength, and fine aesthetics. Due to these various advantages of precast concrete over place-cast concrete, the consumption of precast concrete is increasing globally. It is expected that the global precast concrete market will be worth USD 150 billion by 2025 with a growth rate of about 6 percent. The following advantages of precast concrete can be noted over place-cast concrete:

- Precast concrete is manufactured in a controlled factory environment. Therefore, the desired quality of concrete can be achieved.
- As the production of structural

members is replicated in precast industries, the cost is reduced.

- Bad weather may hamper time schedule and quality of place-cast concrete.
- Less amount of labour is required in precast concrete. More skilled labour is required in place-cast concrete.
- Precast members can be installed immediately after delivery at the site. There is no waiting time at site.
- Due to the repeatability of precast production, it's easy to make many copies of the same product. By maximising repetition, it is possible to get



Dr Md Tarek Uddin

plenty of value from a mold and a set-up.

- In precast concrete, accelerated curing to get strength early (even by several hours) is possible by increasing temperature and maintaining sufficient humidity.
- The precast elements can be produced with the desired shape, surface finish and texture with accuracy.
- The precast structures can be dismantled, when required, and they can then be suitably reused elsewhere.
- The transport and storage of various ingredients of concrete for place-cast concrete work are eliminated when precast members are adopted.

- The amount of scaffolding and formwork is considerably reduced in precast concrete.

- In precast concrete, due to the controlled nature—from materials to consolidation to curing—it is possible to make extremely durable concrete. The waste of materials will also be reduced in precast concrete. These will certainly help toward sustainability of construction materials.

The following disadvantages of precast concrete can also be noted over place-cast concrete:

- The precast elements may be damaged during transport, if not handled properly.
- It is difficult to produce satisfactory monolithic connections between the precast members.
- It is necessary to arrange for special equipment and vehicles for lifting and moving the precast units.
- The economy achieved in precast construction is partially balanced by the amount to be spent in transport and handling of precast members. It therefore becomes necessary to locate the precast factory at such a place that transport and handling charges can be brought down to a minimum.

Rise in population, rapid urbanisation, and robust economic growth are the major macroeconomic drivers of the precast construction market in Bangladesh. However, high initial cost and logistical and material handling damages are anticipated to be the challenges for the growth of this market in Bangladesh.

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Construction sector looks to thrive on higher demand

STAFF CORRESPONDENT

The construction sector passed a good year in 2018 and looks to perform even better this year on the back of speeding up of implementation of major infrastructure projects.

"2018 was good for us as there had been no sharp increase in the prices of raw materials," said Munir Uddin Ahmed, president of the Bangladesh Association of Construction Industry (BACI).

Prices of raw materials such as cement, stones, sand, and bricks were more or less stable, he said. However, steel prices rose sharply in the year compared to 2017 before getting stable.

Steel consumption exceeded 55 lakh tonnes last year up from 40 lakh tonnes a year ago on the back of fast-expanding development activities as well as fast-tracking of implementation of mega projects.

"The steel sector has benefited from expanding economic activities. The growth was good in 2018 as the use of steel products increased," said SK Masadul Alam Masud, a former chairman of the Bangladesh Auto Re-Rolling and Steel Mills Association (BARSMA).

Cement sales rose to about 33 million tonnes in the year, the highest on record, from about 30 million tonnes posted annually in recent years.

Cement consumption grew 12 percent in 2018, way ahead of 8 percent to 10 percent average annual growth recorded in the last decade, said Md Shahidullah, vice president of the Bangladesh Cement Manufacturers Association.

"The demand and supply of bricks are growing at 3 to 5 percent per year, which is satisfactory," said Mohammad Azad Hossain, an official of the Bangladesh Brick Manufacturing Owners' Association. There are about 7,000 brickfields in Bangladesh, each producing 30 lakh pieces of bricks per year.

Liakat Ali Bhuiyan, first vice-president of the Real Estate & Housing Association of Bangladesh (REHAB), said last year was better for the real estate sector compared to 2017.

But in the last few months of 2018, the sector did not perform well compared to other months in the year, said Toufiq M Seraj, managing director of Sheltech (Pvt.) Ltd.

"The demand for building materials is very high at the moment because of a large number of government projects as well as individual usage," he said.

The banking sector has bumped up its lending to the construction sector on the back of the government's mega project implementation spree.

As of September last year, credit flow to the construction sector stood at Tk 80,000 crore, up 20.24 percent from a year earlier, according to data from the central bank. The sector accounted for 9.44 percent of total outstanding loans in the private sector.

The sector also faces challenges.

Although Bangladesh is self-sufficient, or close to it, in cement and billets, it still requires imports of raw materials for these products. The prices of industrial raw materials globally are projected to remain flat year-on-year. However, the projected depreciation of the taka is likely to lead to increased costs for construction materials.

"Given the projected depreciation of the taka and steady prices of industrial raw materials, construction costs in Bangladesh are likely to rise in 2019," said the Asian Infrastructure Investment Bank (AIIB) in January.

Masud of BARSMA hopes that the steel sector's growth will be repeated in 2019 as there is no hint of panic in the international market.

"But at home, bank interest rates are out of our control. The dollar price is showing an upward movement and if the current trend continues, there may be an unstable situation."

"As the election is now over, there is political stability. So, we expect the market to be better this



year than last year," said Alamgir Shamsul Alamin, president of REHAB.

Seraj of Sheltech said because of the downward trend of the bank interest rate, inquiries from customers have gone up.

"This will pick up until June. If the budget takes some business-friendly measures, the sector will get better."

Mainuddin Monem, deputy managing director of Abdul Monem Limited, the country's leading construction firm, said there should be more progress in terms of implementation of projects in the construction sector. "More financing, skilled human resources, and technology transfer are needed."

BACI's Ahmed hopes 2019 would be even better for the construction sector as the government has been implementing a number of major projects.

He called for cutting value-added tax and other taxes slapped on the imports of construction raw materials as well as the tax on imports of capital machinery. Because of the high tax and VAT, construction firms can't make much profit and sometimes even operate at a loss, he said.

Ahmed said there should be a provision of domestic preference in the public tenders for infrastructure development so that local firms can compete with foreign firms while bidding for a project.

There should be a provision for price adjustment for local construction firms if the tenure of a project goes past 18 months like it is done in the case of foreign firms, said Ahmed.

The BACI chief called for the application of VAT calculator formulated by the National Board of Revenue and published on its website, instead of the traditional method.

THE EXPORT LEADER

Crown Cement has achieved National Export Trophy thrice for its outstanding performance in cement export. Demand for Crown Cement is gradually increasing at home and abroad for its quality. With the export of Crown Cement, Bangladeshi products are also getting the fame. In addition, Crown Cement is contributing to the national development through foreign currency earning. It's a pride for Bangladesh.

