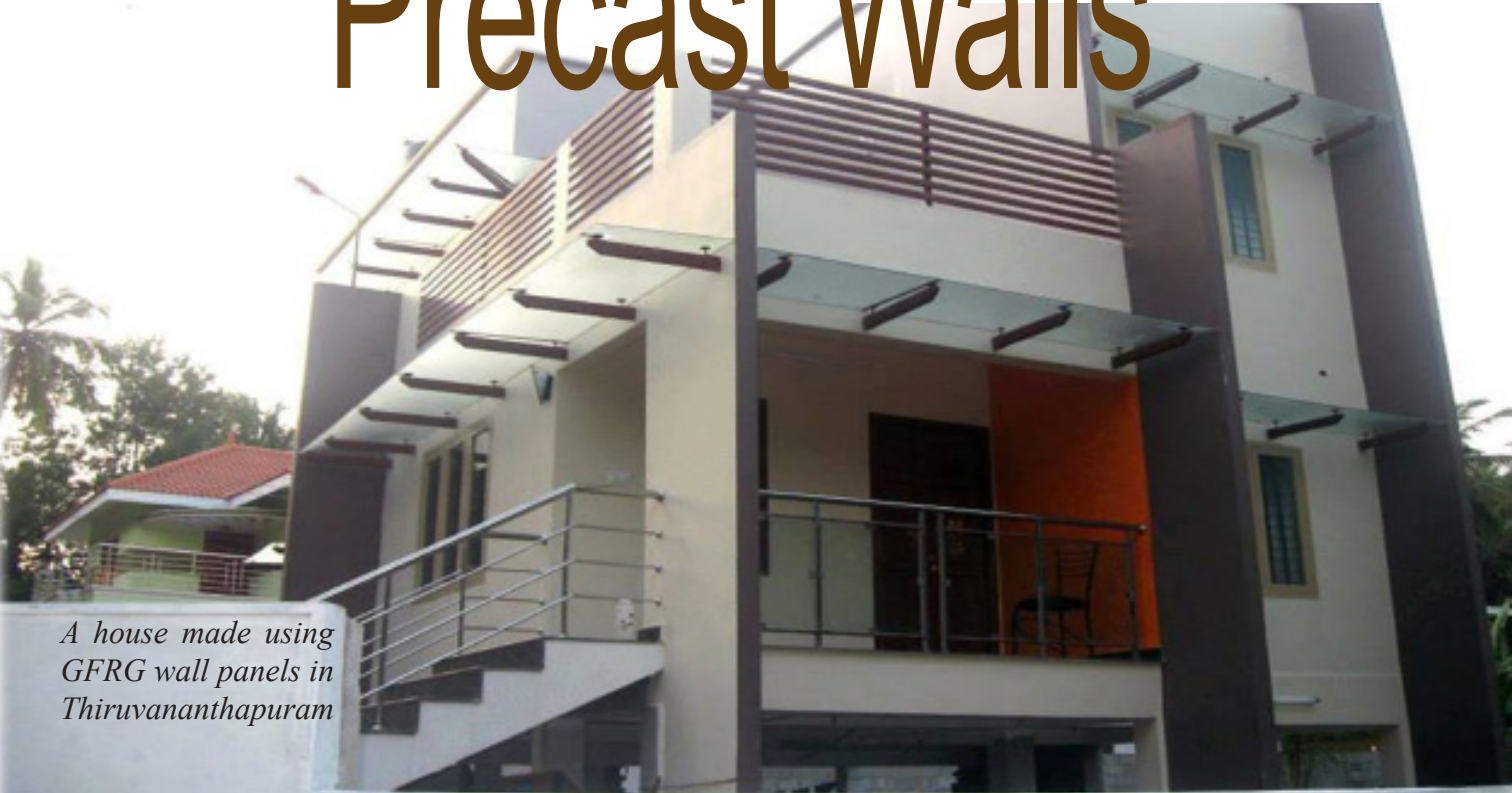


Precast Walls



A house made using GFRG wall panels in Thiruvananthapuram

Want to construct a home economically in less time? Go for precast walls.

Precast construction practices are being used widely across the world. It has been a different story in India though. But that is all set to change with Glass Fibre Reinforced Gypsum (GFRG) wall panels getting popular in the country.

Gypsum, a mineral found naturally on the earth's surface has always been among the best-known building materials. The pyramids of Egypt that have survived the vagaries of nature for centuries used gypsum mortars. But its low load bearing strength inhibited its use for structural applications and of late the use of gypsum was limited just to applications in interior design.

Today technology has changed all that. Gypsum is being reinforced with glass fibres to increase its strength and to make it capable of bearing loads.

FACT-RCF Building Products Ltd (FRBL), a joint venture between FACT and Rashtriya Chemicals & Fertilisers Ltd, Mumbai has been producing GFRG wall panels for quite some time now.

FRBL manufactures the wall panels from high-quality plasters, using advanced technology sourced from Australia. Glass fibre rowings are inlaid in the wall panels during the moulding process to give them extra strength. As a result, they gain the ability to withstand loads. That makes them suitable for use in structural applications.

Applications of GFRG walls

GFRG walls panels have a wide range of applications both in residential and commercial buildings. They can be used as load bearing walls, partitions, compound walls and even as roof slabs.

The wall panels are 12m long, 3m wide and 124 mm thick. The panels are cellular in form – they have cavities of 230mm width and 94 mm depth. The internal ribs that separate the cavities are 20mm thick while the external skin has a thickness of 14-18 mm.

Buildings up to eight stories high can be constructed using GFRG walls. Reinforced concrete pillars can be cast inside the cavities for increasing the structural strength of high-rise buildings. In smaller buildings, the cavities could be filled with sand or light weight concrete, to increase the stability of the walls. The cavities also act as conduits for pipes and electrical wires making plumbing and wiring very easy.

It is estimated that the panels can reduce cement usage by 50 percent, steel usage by 30 percent and sand usage by



GFRG wall panels being placed with the help of cranes

76 percent. Labour is reduced by 62 percent and construction time by 82 percent. Overall construction cost is expected to be lesser by one-fourth when one uses GFRG wall panels.

Strength and certifications

The GFRG Panel was chosen as the Global gypsum product of the year in 2009 and has been recognised by the UN Habitat for “Good Practices for sustainable housing”. IIT Madras has tested and constructed a two-storey building using GFRG walls on its campus and predicts that the building will have a lifespan of 60 years. It has also prepared the structural design manual for buildings using GFRG walls. The panels have been tested and approved by Structural Engineering Research Centre of CSIR for the construction of buildings in earthquake-prone areas. The product has also been approved by the Building Material and Technology Promotion Council.

Installation

One has to plan for the use of the GFRG walls right from the start of the project. The use of the panels reduce the structural weight of the building substantially and hence a proper design can help reduce the cost significantly.

Using GFRG panel design guidelines, engineers prepare the engineering drawings indicating the plan layout, cross section reinforcements, set down, edge details, and plumbing and wiring diagrams. A cutting drawing, showing the sizes of the different wall units has to be provided to FRBL to enable it to cut the wall panels into smaller sizes as per the requirements of the clients. Minor cuts can also be done at the work site itself.

“One has to be fully ready with the drawings and materials before starting the construction. The windows and doors all have to be ready before the

Mechanical Properties

Uni-axial compressive strength : 160kN/m
 Uni-axial tensile strength : 160kN/m
 Ultimate shear strength : 21.6kN/m
 Momentum capacity – rib parallel to span : 2.1kNm/m
 Momentum capacity – rib perpendicular to span : 0.88kNm/m
 Water absorption < 5%
 Fire resistance : 700- 1000° C
 Unit weight : 45kg/m²

GFRG walls panels can be used as load bearing walls, partitions, compound walls and even as roof slabs

walls are installed. The position of the electrical fittings and pipe fittings has to be decided beforehand. It is difficult to make changes to the plan once the wall panels have been cut accordingly,” says Mr Salim Hamsa, who is building a 2,500 sq ft home at Pallikkara, near Ernakulam using GFRG wall panels.

The foundation is then laid and the cast plinth beam erected with starter bars embedded in it. The pre-cut wall panels are then positioned on the foundation af-

ter a water sealant is applied. A 12m * 3m GFRG wall weighs about 1600 kgs and it requires the services of a crane to put it in place. So make sure that your work site is accessible by cranes, from at least two sides before you decide on using GFRG wall panels.

The walls are held in position by the starter bars that project from the foundation belt. The cellular cavities are filled if needed. Plumbing and wiring are then carried out. Doors, window frames and sunshades are attached and the joints are sealed and waterproofed.

The roof is mounted next. The panels can also be used as suspended floor and roof formwork. For this purpose, the panel is placed on top of the ring beam, one side of its cellular cavity is cut and concrete micro-beams are cast inside it. A thin layer of concrete is then cast over the roof surface over which tiles or other flooring material are laid.

The panels are crack-free and smoother than masonry walls and provide a high-quality finish. Plastering is not required and paint can be directly applied to the panel surface.

The GFRG wall panels cost Rs 999/- per sq m. FRBL has sold more than 4 lakh sq m of GFRG walls till now. It delivers the wall panels across the state and also in the neighbouring states of Tamil Nadu and Karnataka. It has also got orders from Sri Lanka and the Gulf for its product.

Many individuals and institutes in the state such as the Malayalam University at Tirur, SAFI Boys hostel at Malappuram, Educare Dental college girls hostel at Malappuram, and the factory building of M/s. JJ Confectionaries at Kolenchery have adopted this method of construction.

For more information contact : Mr MP Varghese, Officer - Marketing, FRBL : 9446335304

Advantages of GFRG Wall Panels

1. Light weight and accurate - Substantial reduction in structural weight of the building.
2. Load Bearing
3. Reduces construction time
4. Saves Space
5. Environment Friendly – uses only 50 per cent of energy and has very low CO₂ emissions
6. Heat and fire resistant
7. Termite resistant
8. Better earthquake resistance – exhibits superior ductile qualities than unreinforced masonry.
9. Savings on material and labour
10. High quality finish – crack-free and smoother than concrete /masonry walls.

Quality First

Sub-standard Chinese steel floods Indian market; poses safety risks



Go to any supermarket today, and you can see them flooded with cheap, low-quality Chinese products. But when products such as steel rebars, which have to last a lifetime and more, come with questionable quality, it is better to be cautious.

During the last decade, China became the biggest producer of steel in the world thanks to its government's focus on increasing its steel manufacturing capacity. But the sad fact is that, in the relentless pursuit of capacity, quality suffered. The situation is so bad that the Australian Steel Institute issued a warning about the safety standards of steel products being imported, especially from China. They also want Chinese steel manufacturers to be accredited by a third party.

The going is getting much tougher today. Global steel demand declined 3 percent, in 2015. Chinese demand saw a bigger fall of 5.4 percent. Stocks have piled up in Chinese steel plants, forcing them to dump steel into markets abroad



The Australian Steel Institute issued a warning about the safety standards of steel products being imported, especially from China

at dirt cheap rates. India, where steel demand grew even as it declined elsewhere, is indeed an attractive target.

Unlike China, India had focussed on the quality of the steel it produced. The collective efforts of BIS and steel factories had improved the quality of TMT steel produced in the country. The country had mandated that TMT steel bars used for concrete reinforcement be manufactured by BIS licensed factories and bear the Standard ISI Mark.

But, certain importers and steel suppliers are importing substandard and

non-standard Deformed Steel Bars from China that do not bear the ISI Mark. They import such bars using certain ITC (HS) Codes for Alloy Steel, which does not require mandatory BIS certification.

Some local manufacturers went a step further. They tied up with sick Chinese steelmakers. Remember, it is the worst factories that turn sick first, when the economy slows down. They make their products at these sick factories, stamp the ISI mark on them, and sell them in India, under their brand name. To them, it doesn't matter if the Chinese factories do not have the ability to produce quality steel, or the necessary certifications. All that matters is quick profits.

Such bars can pose a grave danger to human life if used in construction. Using cheap, sub-standard bars could cause the structures built using them to collapse. The Indian government has imposed a 20% safeguard duty and a minimum import price to protect the country. But that will not deter many sick Chinese steel makers, who play the volume game, and are not concerned with quality.

It is a deadly game in which lives are at stake. Customers must see through this game and continue to buy products from well-known brands.



How cool is your AC?

The summer is at its peak. Make sure that your air conditioner is too

Come summer and more and more people rely on air conditioners to keep them cool. But then the heat is such that many a time the air-conditioners fail to cope up. Here are some tips to keep your air conditioners in top condition when you need it the most.

1. Service the air-conditioner regularly to ensure that they operate at their peak. Make sure that you:

- Clean the AC's filters. The filters get clogged over time, as they trap

the dust particles in the air. Thus, the airflow gets blocked, reducing the efficiency of the filters.

- Clean drain channels thoroughly, with the help of a wire.
- Clean outdoor coils – Dust settles on the coils, preventing them from coming into contact with the air that is to be cooled. Ensure that there are no obstructions in front of cooling coil/air supply and behind the condenser coil.

- Ensure that the AC has the prescribed amount of refrigerant.
- Ensure that the ducts outside are well insulated.

2. Lighten the load

Many electrical appliances produce heat when they are working. Operating them during the cooler times of the day can help reduce the load on the air-conditioner. Using exhaust fans to remove hot air from kitchens and baths is also a good practice.

Dreams come true

There is good news, in fact, a series of them, for would-be home buyers

Home, sweet home. That dream needn't be just a dream for those planning to buy a new home! The government has taken a series of steps to make life easier for them. First, the Indian Parliament passed the Real Estate (Regulation & Development) Bill, 2015, to protect the interests of home buyers. Then came the budget which provided more exemptions to home buyers and builders. And finally, the RBI too did its part, reducing interest rates further by 25 basis points.

Buying an apartment was a risky proposition for customers in the country, till now. Unscrupulous builders often diverted funds, delayed projects and made arbitrary changes in layout plans to suit them - to the detriment of their unsuspecting clients. All these could soon be a thing of the past, with the Real Estate (Regulation & Development) Bill, 2015 coming into force.

Regulator for the real estate sector

The Bill establishes a regulator for the real estate sector. It mandates the creation of the State Real Estate Regulatory Authority (RERA), to govern both residential and commercial real estate transactions. The regulator could be approached for redressal of grievances against any builder.

From now on all projects of 500 square metres and above or more than eight apartments will have to register with the proposed regulator. The developers will have to post all information regarding the project such as project

plan, layout, government approvals, land title status, subcontractors to the project and the schedule for completion with RERA and then pass this information on to the consumers. They must specify the timeframe for completion of projects and stick to it, or be ready to pay penalties at the same rate they charge homebuyers for delayed payments.

The law also makes carpet area the standard unit to sell homes and makes the practice of selling projects on the basis of super built-up area - which includes stairs, lift, corridors and the like - illegal.

The bill stipulates that 70 percent of the money collected for a project be kept in a separate account and be used only for that purpose. It also has a provision for penalising builders for the delay in completion of housing projects. The developer will be liable to pay the consumer the same interest as the EMI being paid by him/her.

The bill is expected to push out unscrupulous builders and speculators from the sector. That could, in turn, mean lower demand for land and consequently lower prices.

Tax exemptions

The Union Budget for 2016, also gave

home buyers reason to cheer. It provided first time home buyers with an additional deduction of Rs 50,000 on interest for a loan up to Rs 35 lakh, sanctioned in 2016-17, where house cost does not exceed Rs 50 lakh.

The budget also gave builders some reasons to rejoice. It gave a push to affordable housing by allowing 100 per cent deduction for profits to housing projects building homes up to 30 sq metres in the four metro cities and 60 sq

Advantage homebuyers

Regulator for real-estate sector
Income Tax exemptions for home buyers
Reduction in interest rates

metres in other cities. It also exempted construction of affordable houses up to 60 sq metres under any scheme of the central or state government including PPP schemes from service tax.

RBI cuts interest rates - home loans to get cheaper

Reserve Bank of India's decision to cut the repo rate (the rate at which it lends to commercial banks) by 25 basis points, is another positive for the sector. RBI has brought down the rates by 150 basis points since January 2015. But the banks have reduced the housing loan rates by up to 80 basis points only. They are yet to fully pass on the benefit to customers as they are bogged down by NPAs.

Experts expect the banks to start reducing rates in the coming quarters as their NPA woes decline.




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