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Precast construction as a sustainable building method in the United Arab Emirates

I am working on a very prestigious project in Sharjah, United Arab Emirates (UAE) as a procurement manager. My company, Tech Construction, a subsidiary of Tech Group Pvt JSC, has been awarded the construction of 295 Villas in a development facility which comprises high rise residential building, five-star hotels, parks and luxurious villas. Sustainability was also a target, with the company complying with UAE government efforts toward increasing sustainability.

A precast construction method was proposed and submitted to the client, which was accepted with the client reiterating interests in sustainability. Furthermore, the materials chosen for components such as windows, doors, curtain walls and pergolas, were selected with the life cycle cost, maintenance and weather conditions of UAE considered. While these steps, from both client and contractor, played a vital role in promoting sustainability, this approach will attract conscious buyers, cautious of life cycle and maintenance costs and energy efficiency.

The technique of precast construction has a positive impact economically. All components are made in precast factories which are then transported to site for erection. This has reduced raw material wastage at site and reduces the negative environmental and economic costs of transportation through requiring fewer trips, furthered by the subcontractor's selection of a factory close to the construction site.

Insulation panels placed on external walls alongside thermally efficient windows and curtain walls reduces heat transfer in and out of the villas. Although a higher cost initially, this investment will offset higher energy cost in future.

UAE has very hot weather for most of the year making it difficult for workers to work outside during the day without negatively impacting health which in turn impacts the progress of work. By adopting precast construction methods, the impact of weather on workers is reduced through components being made within factories, thus reducing the required time outside.

This technique allows the wastage of material to be controlled, and the use of hollow core slabs reduces the quantity of concrete required for the overall project. While this is putting an impact in economic sustainability it is playing a vital role in carbon reduction during the concrete production. Furthermore, production and installation of insulated panels will significantly impact the heat transfer in and out of the villas hence saving energy, making the whole project energy efficient.

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