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Flood Precast 2.4m Super Wideslab Case Study

The Gateway Lincoln Student Accommodation

PROJECT TEAM

Main Contractor: Kier Construction Central

Engineer: TBA

Architect: TBA

The Gateway flats are entirely new student accommodations which were originally conceptualised by the Kier Construction Group. After careful negotiations with the developer, the build was temporarily mothballed due to the fact that the project exceeded budgetary limits. Thus, Flood Precast was contacted to analyse the precast concrete proposal with an aim to reduce the overall costs to the client and begin the actual construction.

The original design encompassed 13,800 square meters of hollow-core concrete which was 150 millimetres deep. This consisted of no less than eight levels of steel framing and six stair cores to serve seven stories. Schematics of the ground-floor footprint and the roadside elevation were likewise provided.

Drawing of ground floor footprint and road side elevation during construction.

There are several reasons which were presented to the Kier Group in regards to the commercial, design and construction benefits experienced through the use of Flood Precast Super Wideslab concrete. Let us examine a handful of the most relevant.

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A REDUCTION IN THE STEEL REQUIRED

Each of the 458 bedrooms were individually serviced by a bathroom pod. The opening through the floor of these units was 500 square millimetres. To accommodate the aperture on the original 1.2-metre hollowcore design, each opening was trimmed out with two structural members. Each was typically six meters long and 500 millimetres wide. The Flood Precast Super Wideslab configuration was able to be arranged so that a 2.4-meter unit could be positioned at each pod opening. Thus, the openings could be managed with this 2.4-meter width without the use of any additional trimming beams.

There were two notable benefits from this approach. First, this equated to massive cost savings in reference to the reduced tonnage of steel required. Secondly, labour was drastically curtailed. The elimination of some 900no individual steel members shaved approximately three weeks off of the steel frame erection programme.

Example of pod opes on Flood Super Wideslab with trimmer beams eliminated.

A CLASS B SOFFIT FINISH SUITABLE FOR DIRECT DECORATION

One of the architectural requirements stipulated in the original specifications was for a Class B soffit to be installed within each one of the 458 bedrooms. Unfortunately, the Kier Group found that there were no existing hollowcore procedures which were able to accommodate for this need. Our Super Wideslab Precast is produced by a wet manufacturing process on steel beds. This was a viable solution. Not only could the task be accurately completed, but the 2.4-meter planks reduced the number of visible joints within the rooms by an impressive 50%.

Example of Flood Precast Super Wideslab soffits PRIOR to painting.

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NON-STANDARD SPLAYED UNITS

The original building plan consisted of a square block and a curved block. The curved block accounted for two-thirds of the entire floor area. This required bespoke precast units to follow the outline of the building. Forming this in traditional extruded hollowcore meant casting a rectangular unit and after casting cutting the required splay or curve from the plank.

The off cuts need to be costed within the unit rate of the precast plank along with the associated cutting and recycling. Such cuts added to the overall cost of the project (time, man hours and recycling).

However, Flood Precast Super Wideslab is wet cast. In simpler terms, each unit is specifically designed for a certain location within an individual project. Slabs are first marked out on the steel beds by a CAD computerised plotter. This unique shape is then shuttered within the production bed to meet bespoke dimensions. Elements such as splays, notches or curves can be accommodated prior to physical casting. This saves waste, provides a great deal of flexibility and drastically reduces costs.

Building profile that required precast flooring units to suit.

SPEED OF PRECAST ERECTION PROGRAMME.

As with all projects, time is money. With our 2.4m wide planks it meant that each plank fitted was twice the size of a traditional 1.2m wide hollowcore unit. This in turn means that the precast erection time is half that of hollowcore. Assuming a standard 30no lift per day by tower crane it dropped the piece count from 1875 units to 937. Based on 30 lifts per day takes 31no days from the precast erection programme saving on crane time / costs and following on trades programmes.

Erection of 2.4m wide Super Wideslab with tower crane.

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23RD December 2014

Flood Flooring Limited
Hilltown,
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IRELAND

Ref: Gateway Student Accommodation

To whom it may concern,

Flood Flooring ltd were appointed to design, manufacture, supply and install the wide slab pre-cast concrete planks and 6no pre-cast stairs for the Gateway Student Accommodation in Lincoln.

From the initial design stages through to the completion of the works on site Flood Flooring maintained a very helpful, professional and competent manner. Flood flooring personnel worked well with all the Kier staff and the design team to deliver a high quality product in a safe manner and within the programme constraints.

During their time on site Flood Flooring faced some challenges, all of which were dealt with in a proactive and organised manner. This attitude was consistent throughout Flood Flooring management structure and extended to the operatives on site carrying out the installation works.

In addition to their contracted works Flood Flooring also offered extensive advice regarding the temporary propping of the planks to ensure that the Kier site team adopted the most suitable method of temporary works to allow for the structural topping by others.

I would like to offer thanks to all Flood Flooring personnel for their efforts to ensure that the works were delivered successfully at Gateway. Particular thanks goes to Martin Darby who was the key contact for the Kier team and was happy to assist with whatever queries we threw at him.

This is the second project I have worked with Martin Darby and the Flood Flooring team and it has been a pleasure to have worked with such a professional team whom are willing to work together to help achieve the end goal. For future projects I would welcome the opportunity to work with Flood Flooring again and strongly recommend Flood Flooring to any site team to use as a supplier and/or sub-contractor.

Yours Faithfully

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