

Royal Canal Park

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Royal Canal Park - Modern Precast Mixed Development

One of the common criticisms of new housing developments is the failure to provide essential facilities as an integral part of the development. This criticism cannot be made of 'Royal Canal Park', a mixed development centred around well constructed and attractively designed precast apartment dwellings. Royal Canal Park, forms part of the 107 acre site at Pelletstown, one of the largest remaining development sites on the outskirts of Dublin, which will consist of two town centres one being developed by Castlethorn Construction Ltd. and the other by Ballymore Construction Projects Ltd. Conveniently serviced by rail links, this imaginative development currently being completed at Royal Canal Park, has been designed in conjunction with award winning architects McCrossan O'Rourke Manning, with high quality precast elements supplied by the Concast Precast Group.

Ballymore Construction Projects Ltd., first became involved in major residential developments in the 1990's when they constructed mixed developments in London's Canary Wharf. Ballymore's broad experience was a key factor in developing the brief for the 'residential

town centre' which is currently under construction at Royal Canal Park. The brief was developed within Dublin County Council guidelines, based on medium-rise living accommodation with careful planning of facilities, integration with the existing rail infrastructure and use of the canal as an amenity. The overall plan for the development incorporates, modern well-serviced housing, underground and surface parking, crèche facilities, commercial areas, gym and leisure facilities, bus and rail links, cycle lanes, community facilities and landscaped green spaces and walkways.

The Architect's design brief was to develop modern, high quality precast concrete buildings, including town-houses, apartments and retail facilities. McCrossan O'Rourke, Manning's proposal included buildings from 3 to 7 storeys in height, incorporating penthouse units and terraces, constructed using precast cross-wall construction and pre-finished precast panels. The use of flexible panel components and ornate cladding panels is one of the key features of the design.

Concast's precast cross-wall system was selected on the basis of its technical merits and the company's proven ability to supply

quality product on time. Concast's previous experience, including prestigious apartment developments in Dublin's docklands area, also meant that they could bring additional know-how to the project. Benefits of the system include the structural efficiency of the frame and the absence of 'structural downstands' which maximises floor to floor heights. Longitudinal stability is achieved by the external panels and diaphragm action back to the lift cores and stair wells.

The structural elements of the building were designed by John Moylan & Associates, Consulting Engineers, in conjunction with the Concast's in-house precast engineering team. The design utilised 'transfer beams' to create open plan spaces and varying floor levels in commercial areas at ground level, with cross-walls superimposed at first floor and subsequent floor levels to create apartment dwellings.

One of the interesting structural aspects is the use of precast panels as part of the load-bearing structure. Load-bearing panels are designed as multi-functional structural elements, supporting their own self-weight and the weight of panels positioned above, as well as floors, roofs and balconies. They are also designed to





Precast Units by the
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resist wind loads against the elevations of the building. The functional flexibility of the panels, greatly reduces the need for beam & column elements which simplifies the design and reduces costs. The ability to alter the shapes of the panels and the location of walls further enhances design flexibility. Because of its many advantages, this form of precast cross-wall construction is increasingly being utilised across Europe and America, for an entire range of building types, from residential to high-rise apartment and office blocks.

A combination of precast Wideslab and Hollowcore flooring units were used throughout the building depending on load/span requirements. Precast flooring units deliver inherent fire resistance and good acoustics, both of which are essential in multi-storey, multi-occupancy buildings. Precast stair units are used throughout. Other precast elements include precast basements, which were adopted as a labour saving device and to facilitate speed of

The Physical Properties of Precast Homes

Some of the value-added benefits of precast concrete construction are provided by the properties of the concrete itself:

- **Thermal insulation:** The use of precast concrete wall panels throughout the structure provides significant cost savings. As concrete absorbs and releases heat slowly, acting like a storage heater, it remains cool in the day and releases heat at night.
- **Fire resistant:** The design is a standard one-hour rating in line with BS8110, which increases up to 3 hours where a 200mm wall panel is used. Also the precast stairs, provides an essential escape route, in the event of a fire. These fire ratings are inbuilt in concrete components, without the need for any additional fireproofing and insulating materials which are heavily relied upon on by lightweight structures such as timber frame.
- **Acoustic Insulation:** Concrete has excellent sound absorption properties. This is particularly vital in medium & high rise residential structures, where sound insulation is essential for comfortable living. Concrete structures can easily be designed to greatly reduce both impact and airborne noise.
- **Strength:** Concrete is naturally strong, so concrete wall panels can be designed as load bearing structures.

construction. In most apartment blocks, precast basements are used as underground car parking to supplement car parking provision at ground level.



The architects selected textured, pre-finished wall panels as the main elevational element. A special ornate panel was used at parapet level to give rhythm to the elevation, while at the same time concealing the roof level. Careful attention was paid to the use of colour which is predominantly beige with hints of terracotta and brown. The colour selection is relaxing and complimentary to the surrounding natural environment. Joints in the elevation were kept to a minimum on the external units. Where a small panel appearance was required for design reasons, this was achieved by using 'dummy joints' or grooves. Recesses were incorporated during production to accommodate flashing details, while chamfered edges were used throughout to soften the line of the panel edges and to create a greater tolerance



for panel alignment. Windows and doors are fitted into accurately formed opes which create a thermally efficient seal.

Speed of construction is a key benefit of precast which can offer a 20% saving in construction time over traditional construction methods. The first phase of Royal Canal Park consists of approximately 520 homes, with an average of six precast units being completed each week. Savings in the construction programme are brought about by modular construction and because site works can proceed whilst precast units are being manufactured in factory conditions, which are unaffected by inclement weather.

Precast construction is by far the best solution for complex mixed developments. The quality of the finished product, particularly in terms of fire and sound

performance, is far superior to lightweight prefabricated options and this is why precast is featuring more and more in residential, multi-storey, multi-occupancy buildings throughout Ireland. The ability of precast to offer a combination of cross wall and column & beam construction, whereby open plan spaces and basement car parking can be readily accommodated, is a huge advantage. Precast produces durable, low maintenance accommodation. The biggest winner in the end of the day is the consumer, who enjoys value for money and the security of a sound investment.

Royal Canal Park Project Team

Project Management - Ballymore Construction Projects Ltd.
 Master Plan Architects - CZWG Architects
 Architects - McCrossan, O'Rourke & Manning
 Consulting Engineers - John Moylan & Associates
 Precast Concrete Manufacturer - Concast Precast Group