Project Fact Sheet

St. Patrick's National School - Diswellstown

PROJECT: St. Patrick's National School - Diswellstown

Projects	St. Patrick's National School - Diswellstown
Value	€7.5 million
Client	Department of Education
Stage	Complete
Completion Date	February 2006
Description	Design & Build of National School

FACTFILE

In February 2005, the Department of Education and Science awarded ABM Design and Build the contract to design and construct a new 24 classroom school to serve as St. Patrick's National School in Diswellstown, Dublin 15.

PROJECT DETAILS

This project involved the design and build of a new national school comprising three individual blocks interlinked by corridors. The design incorporated two no. three-storey buildings housing classrooms and ancillary plant and equipment rooms. In total the building forms a teaching area of 24 no. classrooms, each with IT facilities, kitchen areas, an administration area with offices, meeting and staff rooms and a general purpose hall / gymnasium. Site facilities include outdoor teaching courtyards, play areas, car and bicycle parking and site development works such as landscaping and the provision of services.

ABM DESIGN & BUILD

Project Fact Sheet

Upon award of the contract, ABM reviewed the Department of Education and Science's general arrangement requirements for the school and from this, developed a design. As the layout of the school was modular in nature, a precast construction system emerged as the most suitable construction solution for the school. A precast concrete system was selected over traditional methods owing to the efficiencies that could be brought to the project for example reductions in site traffic, waste and labour.

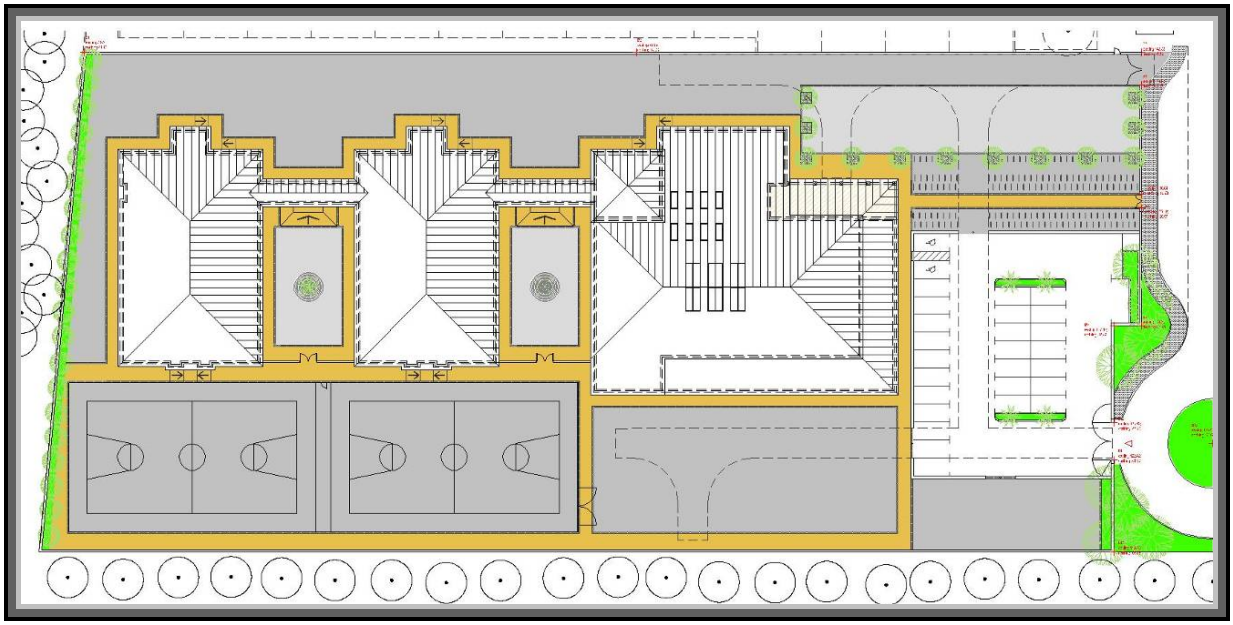

Image 1 – Computer generated image of site plan

By using the precast system, the need for approximately 6,000sqm of block work, plasterwork and ancillary labour was also reduced. As a result, a shorter construction program was devised, mainly due to the speed of erection and fixing of the precast system and the reduction in labour.

The building was constructed with a traditional build outer leaf and precast panels used for the internal leaf and floor slab. The internal finish of the 200mm thick precast wall panel was smooth which eradicated the need for plastering and as a consequence reducing associated on-site labour and construction time.

Both the wall and floor panels were fully designed and engineered prior to their arrival on-site. The precast wall system was produced in a controlled environment where high quality and uniformity can be achieved with a greater degree of success. This is largely due to the fact that typical variables associated with traditional construction which can affect quality i.e. temperature, humidity, material quality & craftsmanship are eradicated when manufacturering takes place offsite. Off-site production of this precast system was carried out by Banagher Concrete under very stringent standards.

Other advantages of using precast concrete walls and floors on this project were as follows:

- The strength of precast concrete gradually increases over time. Other materials can deteriorate, experience creep and stress relaxation, lose strength and/or deflect over time. Studies have shown that precast concrete products can provide a service life in excess of 100 years.
- Precast concrete walls are noncombustible and can achieve a high fire rating. Also, concrete does not lose its structural capacity in the event of a fire nearly as quickly as a steel option would.
- Precast concrete increases efficiency because weather will not delay production. In addition, weather conditions on-site do not significantly affect the schedule because it requires less time to install precast panels compared with other construction methods, such as cast-in-situ concrete.

It is evident from the successful completion of the school that any size project can be accommodated using precast solutions, hence ABM's decision to use similar systems on future projects when suitable. Additionally, because precast systems are designed and manufactured for simple connection, many of the components can be installed in a short space of time. Once the window and roof systems are complete, the envelope of a building can be made 'watertight' allowing internal finishes to begin.
All civil works were carried out in accordance with the National Roads Authority's guidelines and parameters.

Image 2 - Precast wall system erected at ground floor level

Image 3 - Precast wall system erected to two storeys

Image 4 - Precast wall system erected to three storeys

Image 5 - Precast wall system with prefabricated roof truss

Project Fact Sheet

Image 6 – Elevation with view of Play Areas and Outdoor Teaching Area beyond.

Wherever possible, off-site fabrication of the internal components were used such as pre-hung door sets, internal wall partitions, kitchenettes, cubicles, and heating pipe work runs. 24mm double glazed units consisting of thermally broken aluminum profiles extruded from aluminum alloy and complying with BS1474 were installed during the same installation period as the prefabricated roof truss system and composite Kingspan KS1000 Kingzip roof panels.

Sustainability

Precast concrete products contribute greatly to the sustainability of the building and the protection of the environment during construction. On this project, there was no need to order raw materials such as reinforcing steel and concrete, there was no need to spend time setting up formwork, placing concrete or waiting for the concrete to cure. This significantly reduced site waste and also meant less transport was required to/ from the site than would normally be necessary with a traditionally built structure.

Precast concrete products arrive on-site ready to install and although precast concrete is quite heavy, nearly all other competing materials require equivalent or heavier machinery for handling and installation.
After water, concrete is the most frequently used material on earth. It is nontoxic, environmentally safe and composed of natural materials.

St. Patrick's National School was successfully completed and handed over to the Department of Education in February 2006.

ABM Design & Build
Unit 2B Feltrim Business Park,
Drynam Road, Swords, Co. Dublin.

Tel: +353 (0)1 890 0919
Fax: +353 (0)1 890 0932
Email: design&build@abmeurope.com