



## Project Fact Sheet

St. Patrick's National School - Diswellstown

### PROJECT

St. Patrick's National School - Diswellstown

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

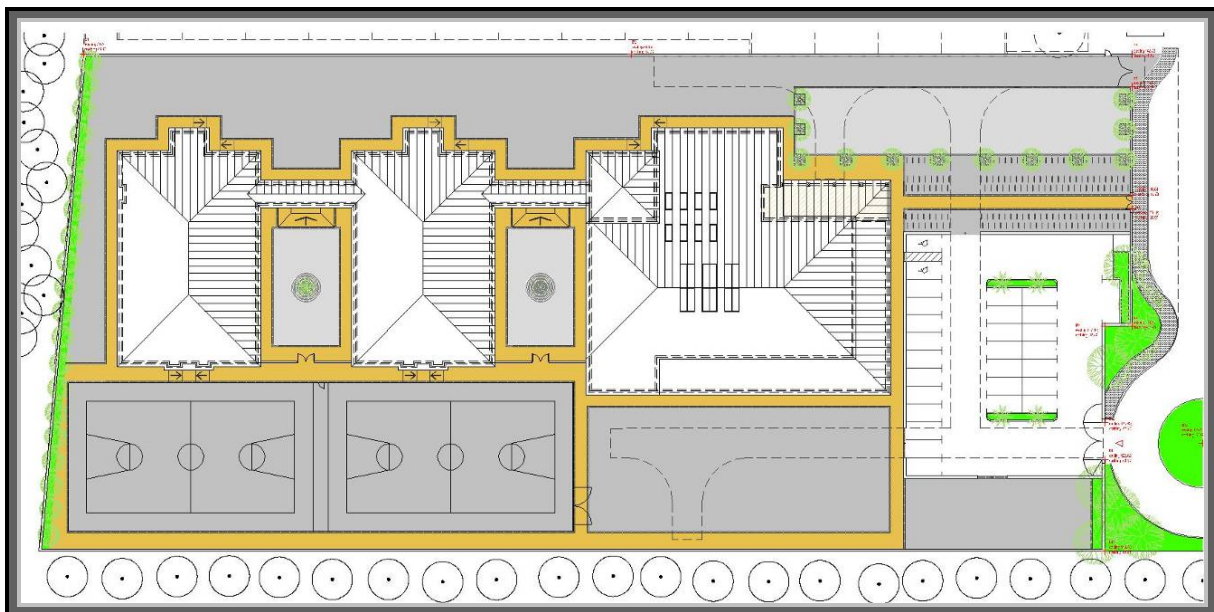
### PROJECT DETAILS

#### National School

In February 2005, The Department of Education and Science awarded ABM Design and Build to construct St. Patrick's National School in Diswellstown, Dublin 15.

The development of the project consisted of:

Design and build of a new national school which comprised of three individual blocks linked by glazed corridors. The design incorporated two three storey buildings housing the classrooms and ancillary plant and equipment rooms. In total the building forms a teaching area of 24 classrooms, administration sector and general purpose hall / gymnasium. The site facilities include play areas, car & bicycle parking and landscaping. Upon award of the pre-designed contract ABM reviewed the schools proposed general arrangements and design which were modular in nature. This lent itself to a precast construction system solution. The precast concrete system was chosen over traditional methods in order to reduce the construction programme and on-site labour. This system reduced the need for approximately 6,000sqm of block work & plasterwork and ancillary labour.





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Image 1 – Computer generated image of site plan

The new system programme proposals were of advantage to the client mainly due to speed of construction. This concrete system consisted of a wide slab floor and wall system which was fully designed and engineered before formation. The wall system was located on the internal leaf of the building. The internal finish of the 200mm thick precast wall panel was smooth which eradicated the need for plastering which in turn was attributed to the speed of the programme. The precast wall system was produced in a controlled environment where the manufacturers exhibited high quality and uniformity. Typical variables associated with traditional construction which affect quality were eradicated from this project i.e. temperature, humidity, material quality & craftsmanship. These were all eliminated as the system was created off-site in Banagher Concrete under stringent standards.



Image 2 – Artists impression of Proposed School

The advantages of using precast concrete walls on this project were:

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. The Precast concrete walls are noncombustible. Also, concrete does not lose its structural capacity nearly as quickly as a steel option would.



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Precast concrete increases efficiency because weather will not delay production. In addition, weather conditions on-site do not significantly affect the schedule. This is because it requires less time to install precast 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. Additionally, because precast systems are designed and manufactured for simple connection, many of the components were installed in a short time and once the windows and roof systems were complete, the building was 'watertight' allowing internal finishes to begin. All civil works were carried out in accordance with the National Roads Authority's guidelines and parameters.



Image 3 - Image indicating precast wall system at ground floor level



Image 4 - Image indicating precast wall system showing two storeys



Image 5 - Image indicating precast wall system showing three storeys



Image 6 - Image indicating precast wall system with prefabricated roof truss



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Image 7 - Indicating completed project

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. Glazing consisting of thermally broken aluminum profiles extruded from aluminum alloy complying with BS1474 with 24mm double glazed units were installed during the same installation period of the composite roof panel system which consisted of Kingspan KS1000 Kingzip roof panel on prefabricated roof truss system.

Precast concrete products arrived at the site ready to install and although precast concrete is quite heavy, nearly all other competing materials also require machinery for handling and installation.

There was no need to order raw materials such as reinforcing steel and concrete, and there was no need to expend time setting up forms, placing concrete or waiting for the concrete to cure. This in turn produced a more sustainable approach whereby reducing the amount of construction traffic which would usually be necessary with a traditionally built structure.

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.



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