

Steel gives lesson in efficient design

In the first of two articles highlighting the educational sector in Northern Ireland, NSC reports on a steel-framed scheme bringing together two schools from across the religious divide.

Bringing schools from different communities together under one roof to support peacebuilding has been successfully applied across Northern Ireland for more than 40 years.

Today, there are 72 integrated schools in the region, with many more planned. They are either grant-maintained, whereby the schools are created by parent groups, or controlled integrated, which means schools have been formed from existing establishments via a process known as 'transformation'.

Designed around a similar ethos, the Ballycastle Shared Education Centre is a £72M scheme that will offer modern, state-of-the-art facilities funded primarily through the UK Government's Fresh Start Programme for Shared and Integrated Education.

The completed scheme will accommodate 1,180 pupils and will be shared between Ballycastle High School, and Cross & Passion College.

Both existing schools will be replaced and ultimately demolished as part of the overall project, with the main campus being constructed adjacent to

Ballycastle High School, on land previously used as playing fields.

Outdoor facilities will be replaced by new sports pitches and a changing room pavilion to be built on the nearby Cross & Passion site. Meanwhile, a new sports building will also be located on the Ballycastle High School site.

Helping the local populace, the sports facilities will be available for community use outside of school hours on evenings, weekends and holidays.

Stephen Boyle, Project Sponsor for the Education Authority (EA), says: "The Ballycastle scheme is unique in that it involves a number of key stakeholders, all of whom have shown great commitment in getting the project to the stage where we now see construction well underway.

"Keeping everyone focused on the end goal has been very important as we strive to deliver the scheme for the benefit of current and future generations of children, and young people in the Ballycastle area."

Construction work on the scheme officially began in early May 2024, with a sod-cutting ceremony held

a month later in June. It is a phased programme, running on two existing sites, with the main campus building expected to be complete by May 2026 and the overall scheme in Summer 2027.

Working on behalf of main contractor Heron Bros., Walter Watson is fabricating, supplying, and erecting 1,150t of steelwork for the new campus buildings.

The main educational building will comprise of separate classroom wings for each school, plus a significant number of shared spaces. It consists of a number of inter-linked blocks, which are arranged into a square, with the middle area accommodating a courtyard.

Because the site has a significant fall in levels, a 4m-high retaining wall has had to be constructed, which splits the main school building from east to west, into high and lower sections. The school's steel frame is also separated by a double row of columns and a movement joint near to the retaining wall's location.

As well as constructing the retaining wall, preliminary works completed prior to the steel

FACT FILE**Ballycastle Shared Education Centre**

Main client: Department of Education,
Council for Catholic Maintained Schools,
Education Authority, Causeway Coast &
Glens Borough Council

Architect: McAdam Design

Main contractor: Heron Bros.

Structural engineer: Albert Fry Associates

Steelwork contractor: Walter Watson

Steel tonnage: 1,150t



The majority of the scheme consists of two and three-storey elements.

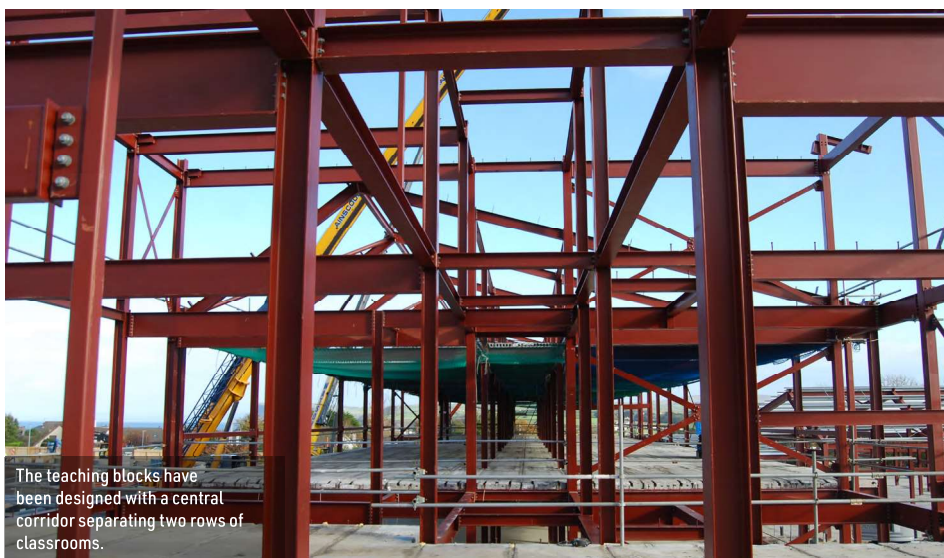
Why steel?

More often than not, new schools in Northern Ireland are constructed with a steel frame, with beams either supporting **metal decking** or precast planks.

A number of factors work in favour of a steel-framed solution, including **flexibility**; the ability to create long column-free spans, which is important in sport and assembly halls, and speed of construction.

According to project engineers, Albert Fry Associates, for the Ballycastle Shared Education Centre, a value engineering exercise was undertaken early in the design process. A number of framing solutions, including all concrete options, were considered and a steel frame with **precast upper floors** was the most cost effective solution.

"As well as cost, steelwork provides a quicker and easier construction programme," says Albert Fry Associates' Engineer Jeff Fegan. "With a concrete frame, there would be a need for more temporary works and more deliveries." ■



The teaching blocks have been designed with a central corridor separating two rows of classrooms.



As well as shared spaces, each of the two schools will have its own teaching block.

frame erection programme starting, included the installation of foundations. Above the wall, on the higher parts of the school, the steelwork is founded on piles, installed to a depth of 10m, while the lower section of the building, where the ground is a little better, the frame is supported on concrete pads.

The majority of the school buildings are two-storeys high, with the exceptions being two areas where the school wings traverse the retaining wall, and connect high and low areas. These parts of the building comprise a couple of three-storey link areas. Meanwhile, along the southern elevation, there is a single-storey element, known as the annex that will accommodate the technology & design department.

The upper floors are formed with steel beams supporting precast hollowcore planks. Coordination between the company installing the precast units and steelwork **erection** team is key to successfully completing the scheme.

Walter Watson General Manager Structural Division Trevor Irvine, says: "The precast contractor's team follow-on behind our erectors,

who have to leave out purlins and remove bracings to allow the planks to be installed. Once the planks are in, we reinstate the **bracings** and connect the remaining purlins."

Based around a predominantly regular grid pattern, with most columns spaced at 5.8m centres, the majority of the school blocks are designed with central corridor, separating two rows of classrooms.

However, not all of the rooms are the same size, and so there are a number of areas where column lines do not match between ground and first floor. In these areas, transfer beams have been installed, to support the off-grid columns.

Within the main educational building, the main entrance zone, on the higher part of the site, is not based around the standard grid.

This block accommodates two multi-purpose halls, to be used for school assemblies and sport. A series of 16m-long roof beams create this large column-free space.

A similar **long-span** arrangement is used to form the sports building, which is located adjacent to the main educational building entrance, on its own plot.

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This large building features a series of 17.4m-long rafters, brought to site as complete sections, which form the necessary open-plan spaces.

Summing up, the EA's Head of Shared Education and Sectoral Support, Paul Close, says: "The commitment of school leaders, teachers, pupils, and the wider community, to drive this project, has resulted in a new world-class Shared Education Campus being developed in Ballycastle. The Campus will help strengthen collaborative working, provide huge opportunities for the local area and improve the learning experience for all pupils going forward." ■