Back to school

Structural steelwork is proving to be the ideal framing solution for a school rebuilding programme near Newtownards in Northern Ireland.

Visualisation of the new school.

FACT FILE
Strangford Integrated College, Newtownards
Main client: **Education Authority**
Architect: **Ostick + Williams**
Main contractor: **Felix O'Hare**
Structural engineer: **Taylor & Boyd**
Steelwork contractor: **Walter Watson**
Steel tonnage: **700t**

Steelwork erection proceeds on one of the school's four wings.

The need to rebuild and/or refurbish the current stock of schools and colleges is a requirement in all areas of the UK.

A large number of schools, which were built in the 1960s and 70s, are now regarded as being no longer fit for purpose and are being rebuilt as part of the Government's school rebuilding programme. Since 2021, more than 500 projects have been announced, with plans afoot to start at least 50 of these projects every year for the next decade.

In Northern Ireland, an £80M tranche of 15 new build and refurbishment school projects was announced last May (2024), adding to the numerous schemes which are already underway across the region.

One of these underway schemes is Strangford Integrated College, which is a co-educational secondary school for 800 pupils, based in the village of Carrowdore, near Newtownards in County Down.

Initially announced in 2016, construction work began early in 2024 on the £30M new build project, which is taking shape adjacent to the existing premises.

Clare Foster, Principal of Strangford Integrated College says: "Since we opened our doors in 1997, we have continued to grow in numbers and reputation, and it is time for this new building on our existing site. This will enable us to provide students with access to high-quality integrated education in a modern, state-of-the-art, energy-efficient building in which our young people will continue to thrive and flourish."

Like the majority of new school projects in Northern Ireland and throughout the rest of the UK, a steel-framed solution has been chosen for this project.

Speed of construction, the ability to form long-span and flexible teaching spaces, and a programme with a minimum of disruption and noise, were all factors in the choosing this framing method.

The purpose-built school has four wings that are up to 30m-long and include single-storey, two-storey and three-storey elements. They are all connected to a central core building, but because of the length of each wing the four link areas have a double row of columns either side of an expansion joint.

The new build will accommodate bright modern classrooms and facilities for all subjects including science, technology, art & design, drama and modern languages, enhancing the integrated education of students for years to come.

Near to the teaching blocks, the project also includes a stand-alone sports hall, adding to and complementing the school's outdoor facilities, which will include three playing fields and four tennis courts.

A phased programme has been adopted for the project, whereby approximately two-thirds of the new school is initially being built. The remainder, which includes the sports hall, will start next year (2025) as it will be built on land currently occupied by parts of the existing school and cannot proceed until a partial demolition package has been concluded.

This means one wing will be erected in the second phase, and the area where it connects to the already erected frame will need to be temporarily propped to provide some stability until the steelwork is completed.

The initial phase of the works includes building on land previously used as playing fields. Prior to the steel frame erection starting, pad and strip foundations were installed.

Above the ground floor slab, the areas with two and three-storeys are formed with steel beams supporting metal decking and a concrete topping, creating a composite flooring solution.

Although each wing has a similar design, whereby two rows of classrooms are divided by a central corridor, the teaching spaces vary in size and layout, and this has had a bearing on the overall steel design.

"The internal column grid pattern is not regular and is dictated by the varying sizes of the classrooms," explains Taylor & Boyd Engineer Norman Cromie. "In areas where the column lines do not match up with the floor above, transfer beams are installed to support the steelwork."

The largest classes, to be used for technology, are located in a single-storey element which forms the south-eastern wing of the school.

Similar to all of the wings, the technology area's steelwork is stabilised by a combination of portal frames and cross bracings, which are predominantly positioned in partition walls. Additional bracings are also located around each of the four wing's stair cores.

Another area that features a significant amount of bracing is the central core and link building. This two-storey high building sits in the middle

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of the school and acts as a circulation area, as it contains two staircases and the main entrance.

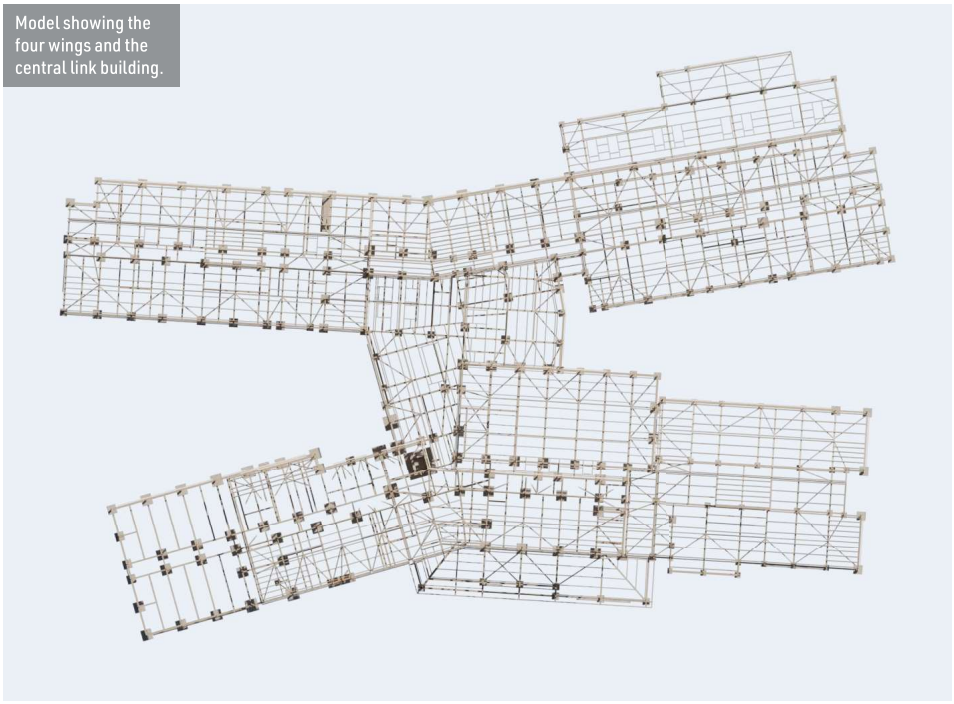
The entrance foyer is a large, column-free space created with a series of 14m-long roof beams.

A similar arrangement of roof rafters also creates the assembly hall, which is also accommodated within the central link building.

The longest spans on the entire project are in the stand-alone sports hall. One of the last parts of the steelwork package to be erected, the 39m-long hall will feature a series of 18.3m-long trusses to create the necessary column-free activity space. An attached, single-storey block will accommodate changing room facilities.

The long-span trusses and rafters, in the sports hall, foyer and assembly hall will also be left exposed in the completed scheme, adding some architectural interest to the school.

Once the school buildings are complete in 2026, and students and staff have decamped into their new teaching spaces, the final phase of the project will see the remaining old school structures demolished, with most of the land converted into a car park. ■



Model showing the four wings and the central link building.