Steel goes back to school

Structural steelwork is providing the construction solution for a new school for children and young people with special educational needs and/or disabilities (SEND).

Located just outside of the town of Towcester, West Northamptonshire Council is constructing a much-needed SEND school that will cater for children and young people between the ages of four to 18 with autistic spectrum conditions (ASC), speech, language and communication needs (SLCN), as well as those with severe learning difficulties (SLD).

Tiffield Academy has been designed to physically accommodate 250 pupils, although it will operate to an admissions number of 230, with the remaining 20 places expected to be filled through emergency placements or other extenuating factors.

Commenting on the project, Councillor Fiona Baker, Cabinet Member for Children, Families, Education, says: "It is positive to see work underway at the Tiffield site as we know these additional spaces are very much needed and will make a significant difference to the children and young people who will attend the school, as well as their families. This school will offer an engaging environment and excellent teaching and learning facilities to help our students learn, develop and connect.

"This is a step forward and is part of our wider programme of creating 600 new specialist places locally, as we continue to see a high demand for SEND places to meet the needs of our children and young people."

Construction work for the project started onsite in January (2024), with an extensive groundworks and demolition phase. The plot was previously occupied by an old 1960s-built school, which closed down a few years ago. Most of these buildings had to be demolished before the new school building could be built.

A plateau was also formed on the previously sloping site, which then allowed foundations to be installed in readiness for the steel frame erection.

A steel framed solution is generally considered to be a lighter option than alternative builds, and so taking this into account along with the fact that the ground conditions are deemed to be good, the project team only had to install shallow pad and strip foundations.

Steelwork was also chosen for its speed of construction. The entire steel frame was erected by steelwork contractor William Haley Engineering in less than two months.

Once the frame was up, it then allowed the numerous follow-on trades to get started onsite and thereby helping the school project stay on schedule for its opening.

The school building has been designed as a three-storey structure, featuring general and practical teaching spaces, a lift for upper-floor access, calm rooms, intervention rooms, and group rooms. Classrooms for younger pupils will be located close to sensory rooms.

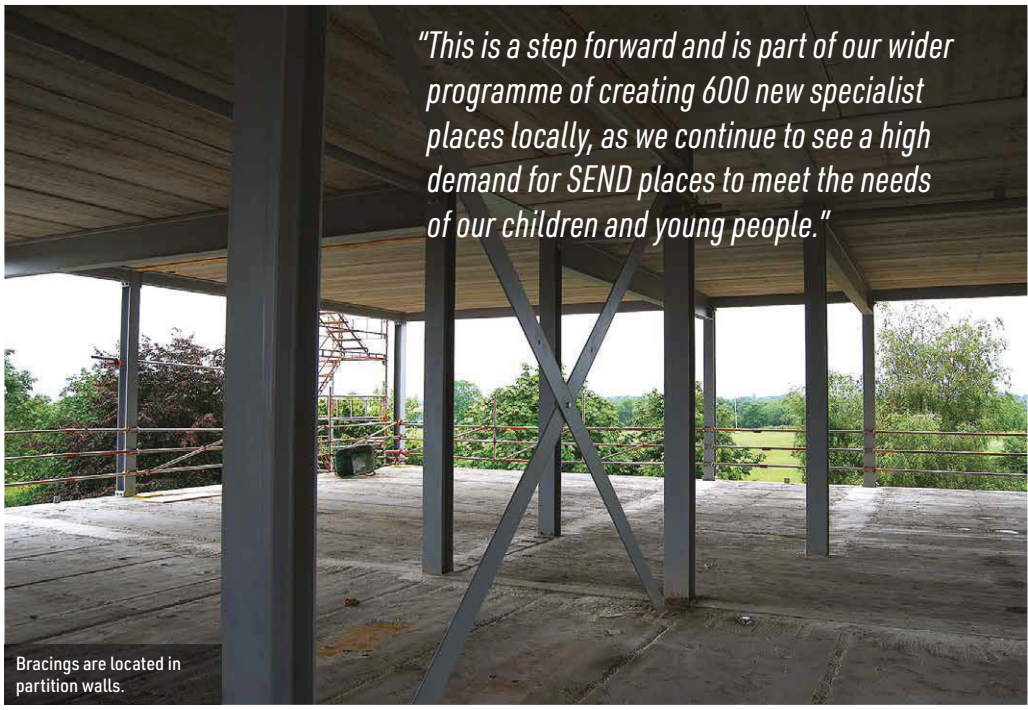
Two halls, accommodated within a centrally-positioned double-height space, will provide space for physical activities, music and drama, while they could also be used as two dining spaces for groups of pupils.

The design allows the teaching spaces to be arranged around the central space on each of the building's three floors. The longest elevations – east and west – have classrooms on both sides of a corridor, some rooms facing outwards and the others abutting the double-height halls. The shorter north and south elevations only have teaching spaces along the outer zone of the corridor, as the inner zone accommodates store rooms and a precast lift and stair core on the north.

For the majority of the school, the steelwork is based around a regular 7.5m grid pattern,

Speed of construction was one of the main reasons for choosing a steel framed solution.

As the ground is generally good, steel columns have been installed on pad foundations.



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Bracings are located in partition walls.

FACT FILE
Tiffield Academy, Towcester
Main Client: **West Northamptonshire Council**
Architect: **Associated Architects**
Main contractor: **Willmott Dixon**
Structural engineer: **Hexa Consulting**
Contract administrator and quantity surveyor: **RG&P**
Steelwork contractor: **William Haley Engineering**
Steel tonnage: **280t**

which creates the desired column-free teaching spaces. To this end, internal columns are generally located in one of the corridor partition walls.

Throughout the scheme, the steel beams support precast planks, a flooring solution that was chosen because of the required spans.

All of the building services are positioned below the bottom flange of the internal steel members. Within the corridors, which accommodate the main service runs, the beams are recessed into the slab, in order to create more space, so the services do not intrude into the floor-to-ceiling heights.

Slightly longer spans of 11m-long have been formed in the central double-height halls space, by omitting some columns and using slightly deeper beam sections.

As the halls are surrounded by the three-storey structure, its roof creates a sunken space that will accommodate an outdoor terrace for staff and pupils, alongside a plant deck. Both areas will be separated by a partition.

The school's roof is also formed with precast planks and for ease of construction, all of the project's concrete units (floor and roof) were installed by William Haley Engineering as part of its erection programme.

The building was split into three phases for the steelwork programme. Once each area had been fully erected, the flooring units were then installed using the same mobile crane, negating the need for another trade to come onsite with its own lifting equipment.

Providing the structure with its stability, together with the diaphragm action of the completed floors, bracing primarily located in partition walls, creates a series of braced bays.

This design helped reduce the amount of temporary bracing that needed to be installed during the erection sequence, as the majority of the frame was self-supporting and stable once up.

The Tiffield Academy, which will be run by the Greenwood Academies Trust, is set to be open in time for the autumn 2025 term. ■

The school will provide a much-needed boost for the local area's special educational needs.