Steel goes high in Sutton

The new sixth form block is prominently positioned on Cheam Road.

Structural steelwork has provided the framing solution for a new sixth form building, creating the centrepiece for a school redevelopment masterplan.

Sutton High School in south London is in the midst of a wide-ranging redevelopment programme with phase 3 currently underway.

The multi-phase project led by the Girls' Day School Trust, aims to expand and enhance the school, creating more capacity and an improved environment for students.

Completed work from the previous phases has included the retrofitting of some Victorian-era buildings, and the expansion of the dining and sports facilities.

Accounting for the majority of the latest phase of work, a new steel-framed state-of-the-art sixth form centre is being constructed, which will allow the school to cater for an anticipated growth in senior pupil numbers.

Head of Sutton High School, Beth Dawson, says: "We are committed to offering our girls the very best, and this new sixth form building is a testament to that. By combining eco-friendly design with outstanding facilities, we're creating a space where our students can thrive, both academically and personally. This building will not only inspire learning but also encourage well-being and innovation."

Work on phase 3 began in late 2024 when main contractor Life Build Solutions demolished the school's old music building, which freed-up space for the new development. A groundworks programme was then undertaken that included the installation of piled foundations as well as the infrastructure for ground source heat pumps, which will provide a renewable and high-efficiency heating solution for the new building.

Once the groundworks had been completed, the footprint of the building and the immediate surrounding area was prepared for the forthcoming steel erection. In order to help keep the steel programme on schedule and guard against any potential inclement weather, aggregates were used to create a level and dry surface for the cranes and MEWPs to operate on.

All of the construction work is being carried out within a 'live' environment, as the school's functioning buildings surround the site on three sides. Noise restrictions are in place during the day, while the site is securely separated from the rest of the estate.

The school summer holidays offered the project team an opportunity to carry out some other phase 3 work. An outdoor staircase and new pathways were created, which will link the new building into the school grounds.

The project has a clear focus on sustainability. As well as renewable heating, the building's green credentials will be boosted by an array of solar panels, a green roof and its choice of construction materials, such as structural steelwork.

"The material's speed of construction and the ability to efficiently create the clear spans we wanted for the teaching spaces, meant steelwork was the obvious choice for this scheme," says Life Build Solutions Site Manager, Darryl King.

The advantages of steelwork also include the fact that it is manufactured offsite in a safe environment (minimising construction waste) and arrives onsite in manageable, pre-painted and easily installed sections. It creates buildings that are flexible and easily adapted if future requirements change, while the material can be recycled and reused if and when the structure is demolished.

Measuring 37m-long x 22m-wide, the sixth form building is a standalone three-storey structure, positioned at the front of the school premises, adjacent to a main thoroughfare (Cheam Road).

Steelwork contractor Gorge Fabrications erected the steel frame in a four-week programme, using a single mobile crane and two MEWPs. As the confined site has little room for material storage, the steel was delivered to site on a just-in-time basis, whereby each truckload was erected the same day.

"We're proud of the seamless execution achieved on this project, which once again highlights the depth of expertise within our delivery team - particularly in managing multi-storey steelwork within constrained town centre environments," says Steve Mintchev, Director at Gorge Fabrications.

The steel frame is arranged around a regular column grid pattern, creating three similar

The upper level of the block features a higher floor-to-ceiling height and a sloping roof.

FACT FILE
Sutton High School Phase 3
Main client: **Girls' Day School Trust**
Architect: **LTS Architects**
Main contractor: **Life Build Solutions**
Structural engineer: **Integral Engineering Design**
Steelwork contractor: **Gorge Fabrications**
Steel tonnage: **165t**

"The material's speed of construction and the ability to efficiently create the clear spans we wanted for the teaching spaces, meant steelwork was the obvious choice for this scheme."

floorplates. Each floor has two rows of column-free rooms (north overlooking Cheam Road and south facing the school's gardens) that are separated by a centrally-positioned corridor.

Designed to accommodate 150 students, the building's rooms will include a ground floor café, a gym and three floors of modern seminar spaces and classrooms.

According to LTS Architects, the teaching spaces are arranged to suit their positions. Those facing north provide formal teaching spaces, with more controlled environmental performance to recognise the acoustic constraint of facing the busy road.

To the south, more open, collaborative teaching space is achieved with the opportunity to open up and take advantage of the school's landscape. This design ethos is achieved via a series of balconies along the southern elevation.

The first floor has a balcony that extends along the full length of the elevation, overlooking a new landscaped garden, which is being created as part of the phase 3 package.

The balcony's overhang also creates a ground floor colonnade, which will be used as another sheltered outdoor teaching and break-out space.

Two further balconies are located on the second floor. These two smaller outdoor spaces are positioned at either end of the southern façade.

All of the outdoor spaces have been formed with weather-resistant and fully-galvanized steelwork, which is connected to the main frame via a series of Farrat thermal breaks. As part of its steelwork package, Gorge has also fabricated and installed the balustrades for all of the building's balconies and staircases.

As well as balconies, some of the second floor, which will accommodate art and photography classrooms, will also benefit from a higher floor-to-ceiling height, created by the building's mono-pitched roof.

Most of the building will have large windows, allowing plenty of natural light into the rooms, but on the uppermost floor there will be even more illumination provided by roof lights.

Some of the longest and heaviest steel beams (up to 8.5m-long and weighing 1.4t each) have been installed to create the sloping roof.

Access to the two upper floors is via precast staircases that are positioned at either end of the building. Providing the stability to the steel frame, cross bracing is located around the stairwells, as well as in some perimeter walls.

Throughout the structure, steel beams support a precast flooring solution for the two upper floors, while the roof is formed with metal decking.

Some beams had to be left out when the frame was being erected, creating openings for the precast planks to be installed. These gaps were subsequently filled in by Gorge on a return visit, once the floors had been installed.

The new sixth form building is due to be complete by Summer 2026. Once pupils and staff have decamped into their new and completed block, Life Build Solutions will begin the redevelopment of the old sixth form building, creating a replacement for the previously demolished music centre. ■

To the rear of the completed building, a new landscaped garden is being created.