Commendation

4 Angel Square, NOMA, Manchester

PROJECT TEAM

Architect: **SimpsonHaugh**
Structural Engineer: **Buro Happold**
Steelwork Contractor: **Billington Structures Ltd**
Main Contractor: **Bowmer + Kirkland**
Client: **MEPC**

Judges' comment

This operational net zero, BREEAM 'Outstanding', 22,000m² office building utilises long-span cellular beams to create a column free interior environment. In a nod to the sightlines of the main road, the four upper floors are offset, a challenge that was structurally achieved using fabricated transfer beams and cantilevers. A well-run project that successfully met the client's brief.

4 Angel Square, north of Manchester city centre, is an operational net zero contemporary office building. It is situated in NOMA's thriving business district and exemplifies the commitment to creating sustainable, healthy workplaces for the future.

The demand for Grade A office space led the client to request a speculative development, with flexibility as a key requirement. This guided the design philosophy to focus on external aesthetics and internal simplicity to meet the client's demands. These requirements were met through long-spans, creating open column-free internal environments on each floor, and minimising transfer structures. The final design offers approximately 22,000m^2 of space, with office floor plates ranging around 1,800m^2.

Steel was the optimal choice of material for this type of structure, consisting of an 11-storey composite steel frame, stabilised by a central reinforced concrete core, with columns only about the perimeter. The floor plate also pivots around a central point on the north and south elevations at the seventh floor, requiring a transfer structure to distribute the load between the differing frame arrangements.

By utilising long-span cellular beams, ranging from around 12-15m, the design team incorporated the services into the structural depth, achieving high floor-to-ceiling heights and minimising the impact on the overall height of the building while increasing the material efficiency of the frame.

During the early stages of design, the change in geometry on the upper floors of the building presented challenges in optimising the column grid. However, through productive coordination with the architect and the wider design team, the geometry of the building evolved to accommodate an efficient structure while also realising the vision of the architect and client.

One of the key architectural features of the building is the 'twist' on the seventh floor, resulting in the north and south façade columns moving in plan. A series of fabricated transfer beams and cantilevers, up to 1m in depth, facilitate this step in columns and transfer the loads to the column grid below. Several options were explored to meet the geometry and serviceability requirements. The chosen and most efficient option was to utilise the steel beams and columns in these overhangs and backspan bays as a Vierendeel cantilever, engaging the structural depth of all four floors above.

Angel Square excels as a sustainable office building, marked by LETI Pioneer and NABERS UK 5-star goals, BREEAM 'Outstanding', Fitwel '2 Star', WiredScore, and ActiveScore 'Platinum' recognitions.