

One Centenary Way, Birmingham

PROJECT TEAM

Architect: **Glenn Howells Architects**
Structural Engineer: **Ramboll**
Steelwork Contractor: **BHC Ltd**
Main Contractor: **Sir Robert McAlpine Ltd**
Client: **MEPC**



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Spanning the A38 dual carriageway, the steel-framed, 13-storey, One Centenary Way is the first building to be constructed in phase two of Birmingham's £1.2Bn Paradise development.

Containing 6,286t of structural steelwork, the project is a stand-out commercial building featuring an exoskeleton on all four elevations. The expressed and exposed nature of the steel frame also extends to the interior of the building, where columns, beams and connections are also on display. Below ground level, the steelwork is no less impressive as just over 60% of the total

footprint of the building is sat on top of a series of trusses that span the A38 dual carriageway tunnel, a key transport artery through the city. In addition, the site overlays a major services tunnel.

One Centenary Way is an important building for both the Paradise masterplan and Birmingham, not least for its green credentials, but it is the first commercial exoskeleton building in the region.

Approximately 1,950t of structural steelwork was used to fabricate the 12 storey-high trusses, which are up to 34.5m-long

and weigh up 130t. Fabricated at BHC's Lanarkshire facility, the trusses were transported to site as complete sections, measuring up to 6.15m-wide. Once on site, a 1,200t-capacity mobile crane, one of the largest in the UK, erected each of the trusses.

Although the trusses were delivered and lifted into place as individual items, 10 of them are installed as pairs, tied together in-situ with cross members, as this configuration was better suited to transferring the loads from the building above to the foundations below. The exceptions are two single trusses at either end.

The trusses form part of the basement level and their top chords help form a platform to support the majority of the building's structural frame. One of the building's two basement levels is accommodated within the trusses' depth. This upper basement floor houses a well-equipped and accessible cycle hub for the whole estate. With up to 350 spaces, this is Birmingham's first city centre major cycle hub offering associated facilities including showers and locker rooms together with servicing and bike hire. The part of this floor level that is not within the trusses accommodates a retail basement area and vehicular ramps for the car parking that is also located in the basement.

The project's steel frame was fundamental to realising the development potential of the site and is architecturally celebrated in the form of Vierendeel exoskeleton frames, which provide lateral and vertical support to the building. Due to the tight site constraints, a typical load-bearing core with columns going into the ground to hold the building up and give it stability was not an option.

As well as the stability provided by the exoskeleton, there is also a centrally-positioned steel braced core that provides some stability. The exoskeleton on its own doesn't provide enough stiffness for the overall structure, so the two stability systems work in tandem. The project used a steel core instead of a concrete one, as the former offered a lighter solution. This was important, as the core had to be positioned on top of the trusses, so it could sit in a central position within the building and thereby satisfy the desired internal office layout.

The Vierendeel exoskeleton is formed with a series of vertical and horizontal steel sections forming 12m-wide rectangular boxes. The rectangles incorporate 3m-wide horizontal windows, encased within an exposed structural steel façade. The interior of the building offers large office floorplates, as well as retail space at ground floor level. The column grid is based around a 12m x 9m spacing, as this layout requires minimal internal columns, while also providing the desired modern open-plan office layout.

Cellular beams have been used throughout to accommodate the building services within their depth. They support metal decking, which along with a concrete topping forms a composite flooring solution for every level above the ground floor slab.

As well as retail, the ground floor also has a triple-height reception area with a floor-to-ceiling height exceeding 9.5m. To accommodate this much higher and impressive reception area, the first floor does not cover the entire building footprint. The upper floors have a standard 3.8m floor-to-ceiling height.



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Another unique feature of the building is the lantern area that sits on top of One Centenary Way. The lantern is made up of 504 individual glass units with 576 reflective backing screens. The screens are controlled by a control panel that allows over one million colours to be chosen, meaning the building can play its part in supporting and highlighting key dates and causes.

One Centenary Way is a truly exemplary building that will become one of the city's major landmarks. There's nothing else quite like it in terms of design and it will not only mark out Paradise, but also this whole area of the city centre.

Judges' comment

This elegant, exposed steel structure springs off a system of trusses spanning a busy road tunnel. Despite depths of over 6m and the biggest weighing 130t, the trusses were transported to site and installed fully assembled. The result is a high-quality office building with excellent sustainability credentials which has helped transform this area into a pedestrian friendly campus.