

ANNEX 3-B

Case study

MANCHESTER'S SPINNINGFIELDS OFFICE BUILDING

This major urban regeneration project in Manchester provides high quality office space using long span composite construction with a “climate” glazed wall which provides regulation of internal temperature.

MANCHESTER’S SPINNINGFIELDS OFFICE BUILDING



A striking addition to Manchester’s city centre will provide the Royal Bank of Scotland with a landmark 12,000 m² headquarters building, and a further 35,000 m² customer enquiries centre in the same locality.

Known as No. 1 Spinningfields, the prestige site gave an opportunity for a ‘statement’ building with a fully glazed façade and inclined columns at ground floor, reflecting the modern architecture of other notable projects in steel in the city.

Architect RHWL designed both buildings to be light and airy using long span cellular beams and introduced a ‘climate wall’ into the south facing façade of No 1 Spinningfields in order to reduce solar gain and to save on energy consumption.

The Customer Enquiries Centre, known as No 1 Hardman Boulevard is the larger of the two buildings and has a 10 storey high atrium and open plan floors accessing into the atrium space. The headquarters building is 8storeys

high and is sufficiently lightweight so that pairs of upper columns are supported on inclined legs to reduce the apparent scale of the building to improve customer interaction at the ground floor.

Design and build contractor, Sir Robert McAlpine, was appointed after a two stage building process with partner Severfield Reeve, who was responsible for the 1,100 and 3,300 tonnes of fabricated steelwork in both buildings.

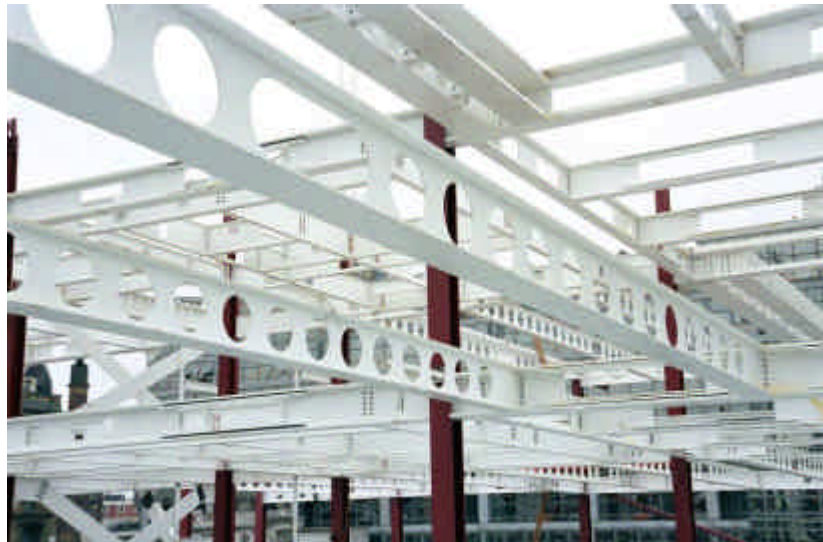
The floor structure consists of 800 tonnes of cellular beams with regular, circular and elongated openings for services. These openings gave maximum flexibility in service ducting for the fan-coil air-conditioning system. This was important to assist in the later client fit-out.

Application Benefits

- Long span cellular beams - Service integration in a beam depth of 600 mm
- Speed of construction to meet tight programme
- 'Climate wall' improves energy efficiency
- Inclined columns at ground floor
- Off-site intumescent coatings for this headquarters building

Project Data

Client:	Allied London Properties for Royal Bank of Scotland
Architect:	RHWL Partnership
Consulting Engineer:	Babtie (for contractor) Waterman Gore (for client)
Contractor:	Sir Robert McAlpine Ltd
Steelwork:	Severfield-Reeve Ltd



Steelwork with multiple service openings

Construction Details

The cellular steel beams were designed for spans of 9 to 16 m and comprised regular circular openings of 400 mm diameter. These beams were fabricated from steel plate as asymmetric sections for efficient composite design.

Elongated openings were also provided along major duct routes. Some beams were tapered to reduce their depth at their connection with the inclined tubular columns along the façade. The floor-ceiling height was 2.7 m and the overall floor-floor height was only 3.9 m to meet planning requirements for the overall building height.

The fully glazed façade was designed using prefabricated glass panels and mullions that were attached to brackets built into the composite slab. One the south facing wall of No 1 Spinningfields, a triple layer 'climate wall' was introduced which consists (from the inside) of; double glazing, a 150 mm cavity incorporating retractable blinds, and outer single glazing. Solar tracking sensors control

the movement of the blinds and of the air in the cavity in order to reduce solar gain.

The fire protection strategy in this building was satisfied by off-site applied intumescent coatings suitable for 90 minutes fire resistance. This technique speeded up the construction process by reducing the programme implications of more traditional protection materials.

The Severfield-Reeve steel fabrication package also included the supply and installation of steel decking in the composite flooring which reduced the demand on the two tower cranes. The steelwork was erected in only 12 and 24 weeks for the two buildings out of a 2 year construction programme.