NUMBER 2 ST PETER’S SQUARE  
MANCHESTER, UK

In the heart of Manchester, this project involved the development of a new build, Grade A office space, replacing a cluster of 1930-1980s properties. The highly constrained city centre location, adjacent to a listed building with surrounding utilities and public access, meant the project faced a number of challenges, while the civic importance and heritage of the site set the precedent for a high quality, landmark building. The new building is 12 storeys above ground with 157,000sq/ft of office space and 5,142sq/ft of retail space, over a two-storey basement providing car parking.

A key driver of the client’s brief was the provision of flexible, column-free accommodation, capable of multi-purpose usage. To achieve this, long-span composite steel beams were utilised to form the floor plates and support a profiled metal deck, spanning an impressive 18m from the core to the perimeter columns and forming the above ground suspended floor levels, a major project differentiator from other office developments in the city. Limiting the structural zones in the floor and facade and integrating services optimised floor to ceiling heights and fenestrations, maximising daylight to create the light and expansive interior spaces the client required, and reducing the energy needed for artificial lighting as part of the building’s low carbon strategy.

Conversely, the expressed structural design of the ground floor realises the architect’s vision of a ground level colonnade, the spatial experience maximised with the first floor set back from the perimeter and hung from above. This creates a beautiful partitioned public realm, a significant addition to the busy city centre. A similar arrangement is adopted at level 10, with transfer beams supporting the setback columns above to provide a high value terrace space overlooking the civic heart of Manchester, while also responding to the planners’ concerns on massing.

CLIENT  
Mosley Street Ventures

ARCHITECT  
SimpsonHaugh and Partners

PROJECT VALUE  
£40 million

DURATION  
2008-2017

SERVICES PROVIDED BY BUROHAPPOLD  
Structural engineering, facade engineering
As well as implementing passive design principles to maximise natural light, our engineers used various other techniques to make the project and building as sustainable as possible. The team worked to ensure optimal material usage, utilising the basement's contiguous piled wall as part of the temporary works, before integrating this into the final structure. Long-span composite Fabsec floor beams minimised the steel tonnage required, while approximately 4500m³ of demolition waste was re-used for the temporary works piling mat and cement replacements comprised approximately 25% of the concrete mix to meet CEMII specified criteria. After an initial options appraisal, the composite metal deck slab was selected due to its BRE Green Guide rating of A+. These measures saw 2 St Peter’s Square achieve a BREEAM rating of ‘Excellent’ at Design Stage, with the project on track to confirm this Post-Construction.

Our design response also involved the provision of a deeply revealed, pre-cast concrete façade, subject to stringent air and acoustic testing. The facade was appropriated to suit the site’s civic/historic surroundings, its fine tracery design complimenting the architectural detail of the Town Hall, which faces Number 2 St Peter’s Square. However, supporting the facade presented a number of engineering challenges and required an innovative installation solution. Each unit was constructed in 6m wide by 4m high mega-panels, with the building gables including the intricate tracery, making them the heaviest units at approximately 12 tonnes per panel. Collaborating with the site team, the extent of frame movement under the facade loading was meticulously calculated throughout the build phases. The erection involved temporary propping, released gradually to avoid dynamic response in the structure. During the de-prop, the load in the prop was monitored by the site team and compared to the calculated load, resulting in its successful removal.

The basement design also added greater complexity to the project. Initially, a single storey basement plan was developed, adjacent to a listed building with no historical foundation data. At this relatively shallow depth, the core foundation would need to be piled to reach the Sherwood Sandstone bedrock, where the loads could be transferred to the ground. In a cost benefit exercise, our engineers explored an alternative two-storey basement option. The re-design provided additional, sought after car parking and brought the basement slab much closer to the rock head, allowing the central core to be founded on a raft directly on the rock. This negated the need for a separate piling rig mobilisation, ensuring optimal material usage and economy of design, leading the client to instruct the change.

Despite facing several engineering challenges, our team’s collaborative and innovative approach resulted in the successful delivery of this complex project. 2 St Peter’s Square has regenerated a prime site in central Manchester, providing an exemplar office build and the latest in modern structural thinking, significantly enhancing the city centre’s public realm.