

COMMERCIAL ROAD, LONDON

CLIENT - Regal London
PROJECT MANAGER - Regal London
ARCHITECT - LSI Architects
STRUCTURAL ENGINEER - Terrell Group
M&E ENGINEER - FHPP
SPECIALIST STRUCTURAL FRAME
CONTRACTOR – PCE Limited
PCE were responsible for the Design,
Manufacture and Construction of the
14 storey structure using:

- Precast concrete columns
- Precast concrete wall units for stair and lift shaft cores
- Precast concrete stairs and landings
- Structural steel Deltabeams with reinforced insitu concrete
- Pre-stressed concrete solid floor units
- Brick faced precast concrete insulated sandwich panels
- Placement of bathroom pods and plasterboard

PCE CONTRACT VALUE - £4M



Introduction

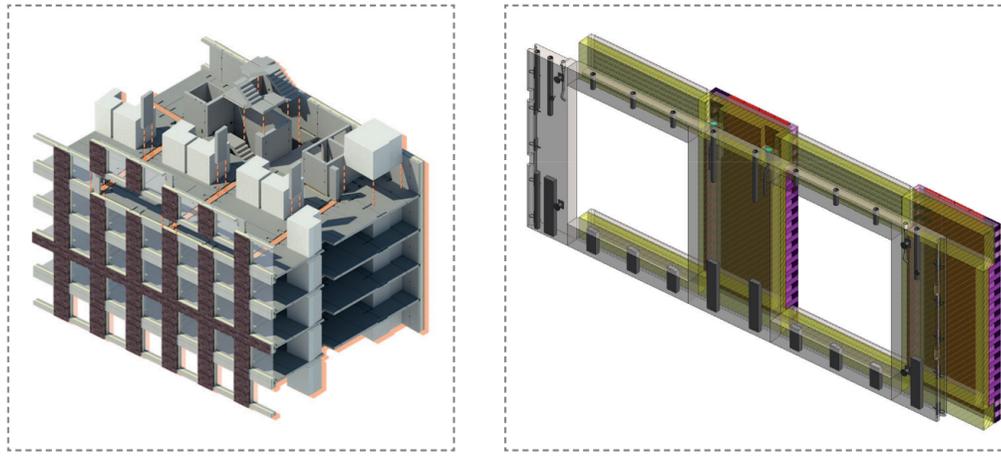
PCE Ltd was appointed by property developer Regal London to design and build an offsite engineered HybridFMA structural solution using their Trademark protected hyTower® Building System for a 14 storey aparthotel in Whitechapel, London, for lease to the StayCity Wilde hotel chain.

hyTower® was the clients preferred structural system solution for the frame and building façades for the project, which provided them with all the benefits of PCE's HybridFMA approach including delivering speed, quality, value and a safe assembly method on site by PCE's directly employed in-house multi skilled site team. Suitable for taller projects hyTower® had already been used to provide structural frames to a height of 66 metres. The finished aparthotel contains 156 bedrooms over thirteen levels with the Ground Floor being used as recreational areas for the users of the building. This project is the second Wilde Chain Aparthotel in the centre of London and features a café, gym and facilities in each bedroom to cater for long and short stay guests. Inspired by the wit and wisdom of Oscar Wilde, each apartment has been carefully curated in the most considered and creative way that's stylish, sophisticated, playful, practical, unique in personality and alive with Irish spirit.



Hybrid hyTower Structure

The flexibility of PCE's 'kit of parts' approach enabled the vertical joints between façade components to be strategically placed in the deep window returns which minimise the visibility of joint lines in keeping with buildings in the surrounding area. Horizontal joints are hidden in the reconstituted stone fenestrations, set back in the ribbed pattern to create a seamless appearance. Where elevations are close to adjacent buildings and without windows they have been recessed to create texture to the façade. The hyTower® design approach uses the latest digital methods for structural analysis, modelling and production of detailed working drawings to ensure accurate co-ordination with other specialist design input, incorporating M&E component requirements to be cast into the precast concrete elements, reduction in waste and efficient programme control from the design process, through offsite manufacturing to final onsite construction completion.



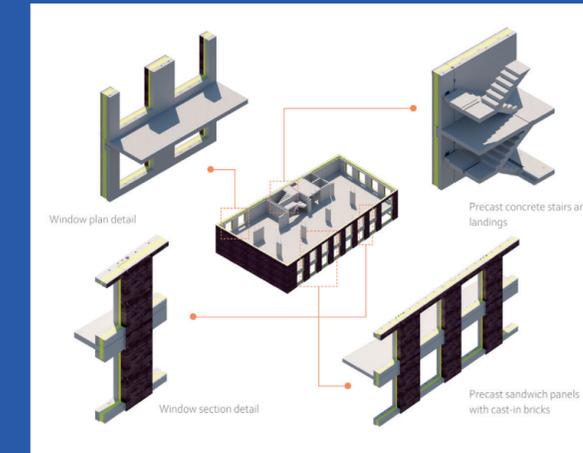
Project Features

Structural steel Deltabeams, acting compositely with insitu reinforced concrete, span between the precast concrete walls and columns supporting solid prestressed concrete floor units spanning up to 6.5 metres without the need for any insitu concrete structural topping. The resulting hyTower® floor structure does not have any downstands minimizing overall floor thicknesses and ensuring a more efficient M&E distribution design within the structure as well as allowing follow on trades earlier access than would occur with other more traditional insitu concrete construction methods. One of the key architectural requirements for this project was the aesthetics of the structural façade, allowing the new structure to be in keeping with the established surrounding area encouraging a seamless transition between old and new. The façade consists of a series of offsite manufactured brick faced precast concrete sandwich panels which were designed to not only provide the structural performance but also to achieve the acoustic, thermal and fire performance requirements for the building. Each sandwich panel consists of two leaves of concrete, one of which forms the external architectural face, whilst the internal leaf takes the structural loads required. Separating both leaves is a thickness of insulation, with the external leaf being tied to the internal using a carbon fibre composite tie system which passes through the insulation. Being carbon fibre, the requisite tie strength is achieved making the two outer leaves and the insulation one structural component, without causing thermal cold bridging. The insulation provided is European Class A1+ fire rated ensuring that the façade solution is non-combustible whilst also meeting the thermal performance requirements. To achieve the aesthetic appearance necessary, brick slips were cast into the external leaf concrete face and the joints pre-pointed to replicate a traditional brickwork façade, with all the quality and programme benefits associated with offsite manufacture.



Key Metrics

- 156 apartment high rise 14 storey building structurally delivered in just 17 weeks
- Defect Free
- Completed with just 9,500 hours activity on site by PCE's multi disciplinary site team
- ZERO reportable accidents reflects the Health and Safety benefits of the system
- NO requirement for any external scaffolding
- 1st fix M&E integrated into structural components during their offsite manufacture
- Removal of plasterboard finishes to apartment dividing walls with the precast concrete finishes being directly decorated
- Progressive pre-positioning of bathroom pods and materials onto each floor level ready for following trades
- Deliveries to this busy constricted city centre site reduced by over 30%
- Environmentally friendly solution with a significant reduction in embodied carbon compared to the original Insitu Concrete design



A further significant key benefit of the hyTower® system façade solution is that window frames and glazing are pre-installed off-site into the brick-faced sandwich panels and this, with other minimal temporary weathering measures, ensured a virtually weather tight structure as soon as the assembly of each level was complete, again ensuring minimal site waste and ensuring speed of assembly. Erection of the units on site dramatically reduces working at height safety risks negating the requirement for any façade external access during construction.

Project Delivery

The city centre site was very challenging logistically with space at an absolute premium thus PCE's strategy to complete as much works off-site as possible was key to the success of the build programme.

This speed of construction of the total of 1,364 structural components was only made possible through PCE's relentless pursuit of operational excellence at every stage of the HybridFMA delivery process which led the onsite delivery team, of only just 11 multi-skilled construction operatives, to continually refine and optimise the construction programme at an elemental level. Rigorous pre-planning of the works along with a strategy of moving many tasks that would traditionally be carried out on-site, to being completed off-site at the system component manufacturing factories, allowed on-site construction assembly operations to be optimised and the originally planned 7 working day construction cycle per floor to be reduced to just 5 days.

This achievement resulted in PCE being able to release 12 bedrooms and all the associated communal areas of one floor each week for Regal London to commence fit-out works.

