

Status Park, Heathrow Structural Summary

Introduction

Scott White and Hookin's remit was to provide preliminary structural layout and member size information to the Architect Collado Collins for planning purposes for a proposed six storey hotel on the existing Status Park site at Heathrow. The plan form of the hotel is L-shaped and it will provide will provide space for multiple bedrooms with en-suite bathrooms at each floor level as well as an entrance lobby, reception, café, kitchen, store, laundry, staff room, bin store and plant rooms at ground floor level.

Structural Summary

The new building form lends itself to a structural frame solution and it is the view of SWH that the optimum construction method would be to adopt a cast in-situ reinforced concrete frame with flat slab floor construction. The advantages and disadvantages of this method of construction are as follows:

Advantages

- Shallow floor depths.
- Monolithic structure provides inherent robustness and horizontal and vertical ties as required for disproportionate collapse.
- Flat slab construction maximises below slab service void.
- Complex shapes and junctions can be easily accommodated
- Complete flexibility on the location of lightweight internal walls at each storey which can be changed if required in future.
- Inherent fire protection.
- Inherent environmental protection.
- Relatively short lead in period with contractor.
- Material cost is spread throughout the project.

Disadvantages

- Heavy form of construction potentially impacting on foundations.
- Relatively slow method of construction.
- Risk of impact on construction program by adverse weather conditions.
- Frame is open to the elements until the cladding is installed.
- Delivery of concrete to site needs to be managed especially in busy traffic periods.

Structural Frame

The initial setting out of the columns has been arranged to suit the Architects general arrangement drawings and to provide columns which generally extend through the full height of the structure; the benefit of this is that there is no requirement for any transfer structure which would be significant and would reduce the useable service void below the slabs for M+E services. The columns have been set out on a 4.8m x 3.8m grid typically. Which arranges them to suit the wall layout. This is indicated on the two floor plans appended.

The main stability of the frame is provided by the concrete shear walls around the two stairwells and double lift shaft. Reinforcement within the flat slabs and columns tie the structure together with the floor plates

acting as diaphragms providing robustness and the necessary horizontal tying capacity for disproportionate collapse requirements and transferring horizontal loads to the ground via the vertical shear walls.

1st to 5th Floors and Roof Construction

225mm thick reinforced concrete flat slabs, two way spanning between reinforced 350mm x 350mm perimeter columns and 600mm x 250mm internal concrete columns and 300mm thick shear walls. Screed and insulation are anticipated on top of the flat slab.

Ground Floor

A suspended reinforced concrete slab has been considered spanning onto ground beams subject to findings of an onsite ground investigation.

Foundations

Foundation type is to be confirmed on receipt of an onsite ground investigation.

Initial Loading Assumptions

The loading assumed is as follows:

Dead Roof

Slab SW	-	6.25kN/m ²
Paving	-	2.20kN/m ²
Waterproofing	-	0.50kN/m ²
Ceiling	-	0.15kN/m ²
Services	-	0.15kN/m ²

Dead Floors

Slab SW	-	6.25kN/m ²
Screed	-	1.80kN/m ²
Ceiling	-	0.15kN/m ²
Services	-	0.15kN/m ²
Block partitions	-	2.50kN/m ²

Imposed

Floors	-	4.00kN/m ²
Roof	-	0.75kN/m ²

Appendix

W02269-SWH-ZZ-GF-DR-S-0001 - Ground Floor Indicative General Arrangement
W02269-SWH-ZZ-01-DR-S-0002 - First Floor Indicative General Arrangement

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