

# Royal Centre for Defence Medicine Residence

## Birmingham

### Project Details

Client	St Modwen
Structural Engineer	Nolan Associates
Main Contractor	Galliford Try Partnerships
Architect	Glancy Nichols Architects
Cost	£24 million
Duration	18 Months

#### Project Details

The Royal Centre for Defence Medicine residence project comprises a 6 Storey reinforced concrete building, containing 180 ensuite bedrooms, supported on a first floor transfer structure to provide open spaces for a dining room, bar and gym below. Nolan Associates were appointed by main contractor, Galliford Try Partnerships, for the structural and civil engineering design.

The residence is for the use of the military service personnel of the Royal Centre for Defence Medicine, which is based at the nearby Queen Elizabeth Hospital .



Rendered Image Showing Finished Structure



Rendered Image Showing Finished Structure

### Construction Photographs



The slip-formed central lift and stair core



Steel fixing at the 450mm thick transfer slab



Cross walls under construction at Level 1



Table forms being lifted into position



Open areas at Ground Floor



The front elevation under construction

### Design Principles

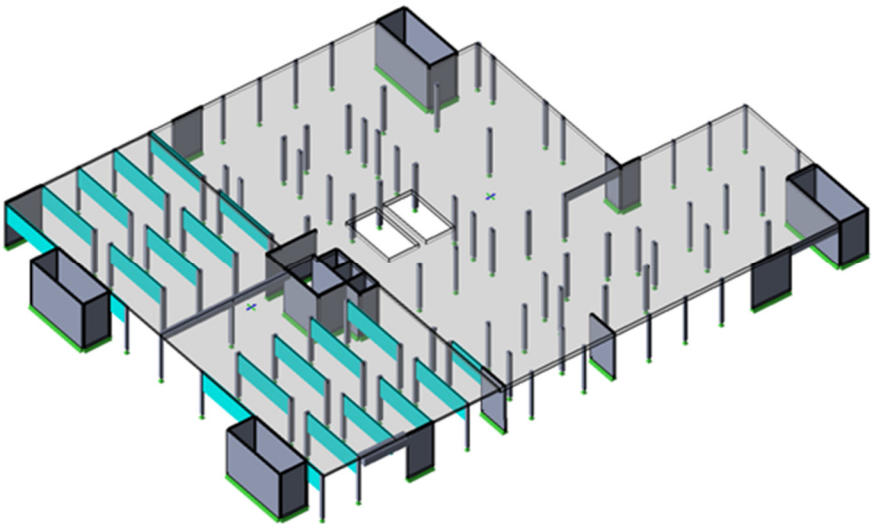
The upper levels have a regular layout with concrete cross walls in between bedrooms. Various options were considered for the construction of the cross walls with in-situ reinforced concrete being the main contractor's preferred choice for economic reasons. The upper level floors are one-way spanning concrete slabs.

In order to provide clear communal areas at ground floor level, the first floor slab is a 450 millimetre thick concrete transfer slab over about two thirds of the plan area. The transfer slab supports the crosswalls above on an irregular layout of columns. The slab was analysed using the finite element software package, Tekla Structural Designer. The analysis model is shown below.

In the remaining third of the plan area, where a regular column layout was achievable, the concrete slab was reduced to 200 millimetres thick and was hung from the first floor cross walls which act as deep beams.

Lateral stability is provided by the 4 stair cores, at each end of the building, and the central stair/lift core.

The foundations are continuous flight auger concrete piles which transfer the load to the ground by being socketed into the weak sandstone at depths of 5 to 10 metres below ground level.



The Level 1 transfer slab analysis model in Tekla Structural Designer