

Nou Palau Blaugrana

Barcelona

Details

Architect	HOK + TAC Arquitectes
Developer	Futbol Club Barcelona
Location	Barcelona
Cost	-
Area	20.171m ²
Year	2016

Description

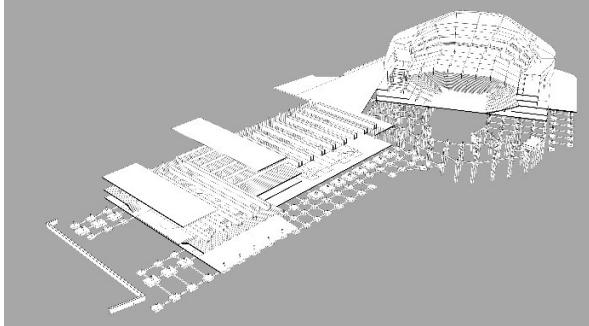
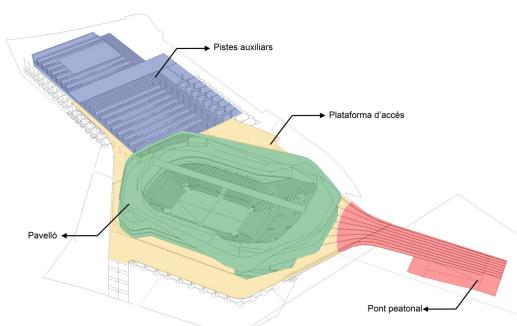
The project involves redeveloping the area of the FCB currently occupied by the mini estadi to include the Nou Palau Blaugrana, a basketball arena with a capacity for 10.000 people., the training courts, an ice rink and a pedestrian bridge.

The proposed structure for the arena consists of reinforced concrete beams designed to hold the seating, columns and slabs. The building for the auxiliary courts is divided into 3 blocks by movement joints. The structural solution consists of PT beams, prefab slabs and RC columns

The foundations are shallow given the good condition of the soil. Their design takes into account the existing piles in the ground from previous constructions.

Role

As the senior engineer in the project I took part in defining the structural concept. I supervised the calculation models of the engineers in the team. I liaised with the client attending all design meetings. We adapted the project to the modifications as requested by the client minimising the number of repetitions as possible. I prepared and gave the presentations as necessary



Yurban Hotel

Barcelona

Details

Architect	BCRA Arquitectes
Developer	Sogaman Residencial SL
Location	Barcelona
Cost	-
Area	3.600M2
Year	2015

Description

The project consists of the refurbishment of an existing building in the centre of Barcelona.

The structure of the hotel was designed to align with the architectural vision whilst maintaining the main structural elements of the existing building. The existing structure had to be reinforced to comply with the actual design codes and the change of use and consequent change of loads. Different techniques were used such as carbon fibre mesh, concrete filling of iron columns and others.

The foundations also had to be reinforced to support the new loads.

Role

As the senior engineer in the project I carried out the calculations for the reinforcement required in the building. I developed bespoke calculation spreadsheets. I carried out the load take down and checked the capacity of all existing primary and secondary structural elements against the current design codes. I attended all design meetings and the weekly site visits with the design team and contractor and client. I solved problems on site.



Casa Mas Gener

Barcelona

Details

Architect	bxd arquitectura
Developer	Tocs Urbans SL
Location	Sant Cugat
Cost	-
Area	-
Year	2016

Description

A private family house 100% industrialised and of very low energy consumption.

The concept was to adapt a nordic passive house to the mediterranean climate.

The house was been awarded "The Architecture Masterprize 2018" prize in the "Green Architecture" category.

The house is built with CLT wood structure and with a big ventilated façade. The timber structure sits on a reinforced concrete basement.

Role

As the senior engineer in the project I was involved in the early stages of the conception with a very close understanding of the architectural aspiration. I led the early stages of the structural design with special attention on the façade and balconies.



TGV Station

Rabat

Details

Architect	Cabinet Melehi
Developer	ONCF
Location	Rabat, Marrocco
Cost	70.000.000€
Area	17.071m ²
Year	2015



Description

A new train station and shopping centre for the city of Rabat. A rectangular building on plan divided into three blocks and designed for earhtquake loading.

The building structure bridges over the rail tracks and taking into consideration the local construction abilities it was conceived in reinforced concrete slabs with downstand beams.

A singular roof designed as a tri-dimensional steel structure with bespoke supports as it was conceived as a single structure supports on three separate blocks.



Role

As the senior engineer in the project I attended all design teams meetings and liaised with the local engineers in Marrocco. I presented the structural concept in several meetings and discussed singular details with the technical control team in Paris. I supervised the calculations carried out by the team of engineers and managed the timings and deadlines internally. I kept track of the budget and deadlines for the project.

Hammam Salihine Resort

Algeria

Details

Architect	BIP Architecture
Developer	Gestion Turistique Biskra
Location	Biskra, Algeria
Cost	-
Area	26.014m ²
Year	2014

Description

The project consists of the refurbishment of a hotel resort in Argelia. The resort includes a spa, private villas, restaurants, shopping mall and a cinema.

The resort needed architectural and structural interventions at all levels. The existing structure needed repairs as well as complying with the new design building codes including the seismic loads which the existing structure had not been designed to withstand.

The project also included redefining the landscaping architecture.

Role

Along with the project associate I identified the structural pathologies in the existing buildings. The pathologies were organised and grouped and the repairs required for each one specified in detail.



Hammam Righa Resort

Algeria

Details

Architect	BIP Architecture
Developer	Gestion Thermale Hammam Righa
Location	Hammam Righa, Algeria
Cost	-
Area	51.690M2
Year	2013

Description

The project consists of the refurbishment of an existing hotel resort in Argelia as well as the design of a new sports centre with indoor and outdoor swimming pools.

The high architectural aspiration and the condition of the existing buildings meant the project was a real challenge for the structural engineer. Innovative concepts and reinforcements were designed to achieve the architectural goals.

The project also included redefining the landscaping architecture.

Role

I led a team of young engineers to complete the project on time and budget. I summarised the algerian design codes and defined a calculation path for all engineers to follow on the different structural typologies and buildings. Also, I defined the CAD standards to match the local drawing criteria. The lack of information on the existing structure was a challenge and the timing constraints too. A successful project in a very short time!



Natura Bissé Headquarters

Details

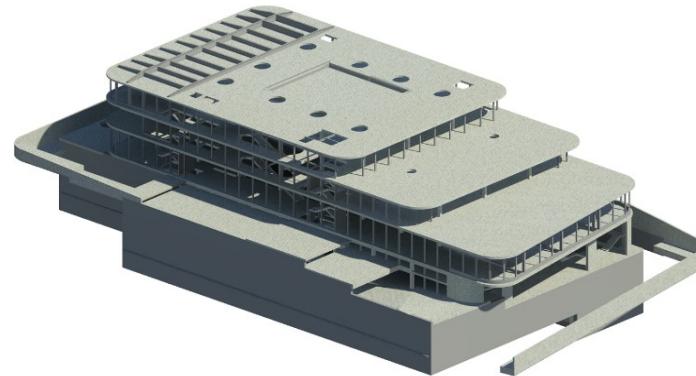
Architect	TDB Arquitectura
Developer	Natura Bissé
Location	Catalonia
Cost	5.000.000€
Area	23.340m ²
Year	2017

Description

The logistics-corporate building has an assorted and complex structural typology due to the different planned uses: logistics, production, laboratory and offices.

The structure has been resolved with long-span PT slabs to ensure the flexibility and versatility of the building's spaces. The slabs are supported by concrete columns inside the construction and a array of steel columns on the perimeter on each floor.

The project has many large overhangs and double and triple heights that are resolved by mixed steel-concrete structures and PT concrete.



Role

I took part of the structural concept definition and helped resolve the large spans and cantilevers. I supervised the calculations and attended the design team meetings.

On this project the architectural vision was very ambitious and the structure very challenging.

Easy Hotel

Barcelona

Details

Architect	Corada Figueres
Developer	Easy Hotels
Location	Catalonia
Cost	9.255.132€
Area	7.567m ²
Year	2017

Description

The project consists in the design of a new building for the first EASY HOTEL in Spain. Part of the building has 9 floors while the other part has 4 floors. In addition, it has a basement floor for parking in the whole plot.

The structure is composed of RC slabs with a variable thickness between 30cm and 37cm according to the spans and the uses for each floor. The vertical structure has reinforced concrete columns and walls located on a regular mesh. The building has a reinforced concrete core that resists most of the horizontal actions.

The basement containment is design with diaphragm RC walls and the foundation with piles given the soil characteristics the presence of the water table.

Role

I attended the design meetings and liaised with the client and project management team. I supervised the structural calculations and led the engineering team to meet the deadlines on time.



IES Serra Noet

Berga

Details

Architect	Fabregat & Fabregat
Developer	Department of Education
Location	Berga (Catalunya)
Cost	5.850.000€
Area	3.500m ²
Year	2016

Description

A newbuilt school in Berga, Catalunya. The school consists of three independent buildings, two single storey and a three-storey one.

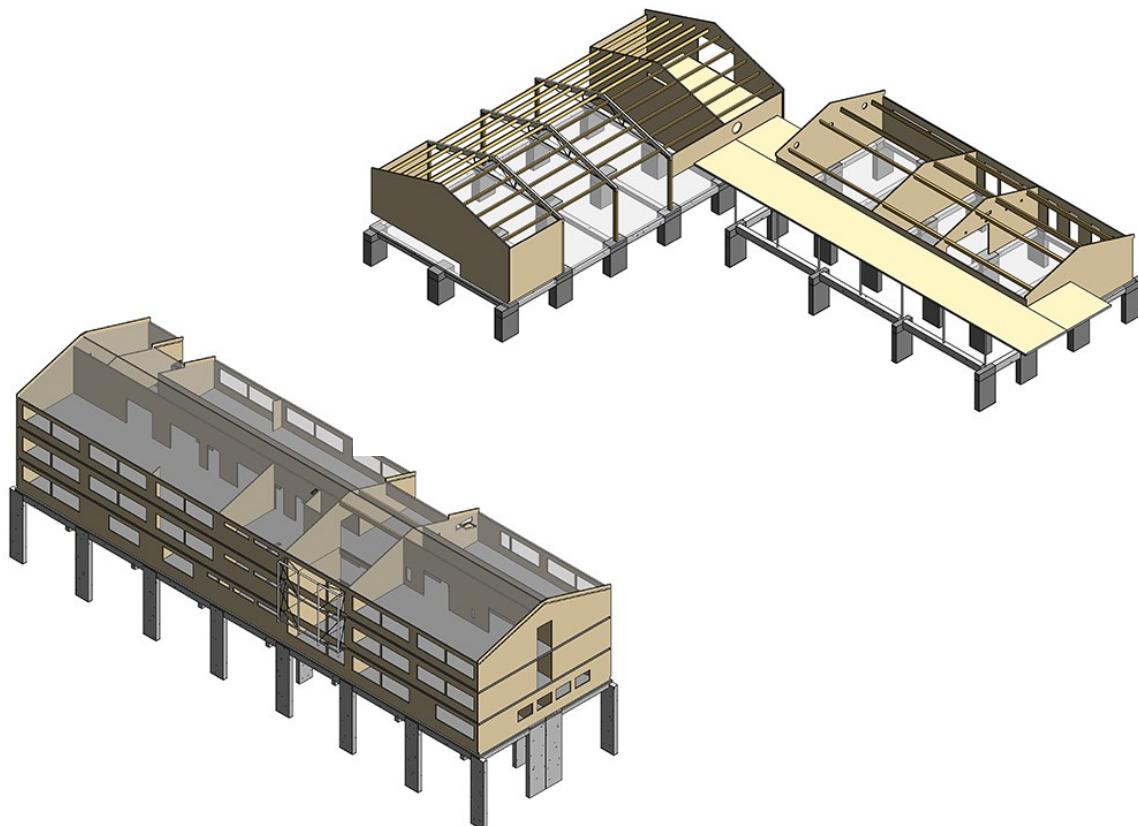
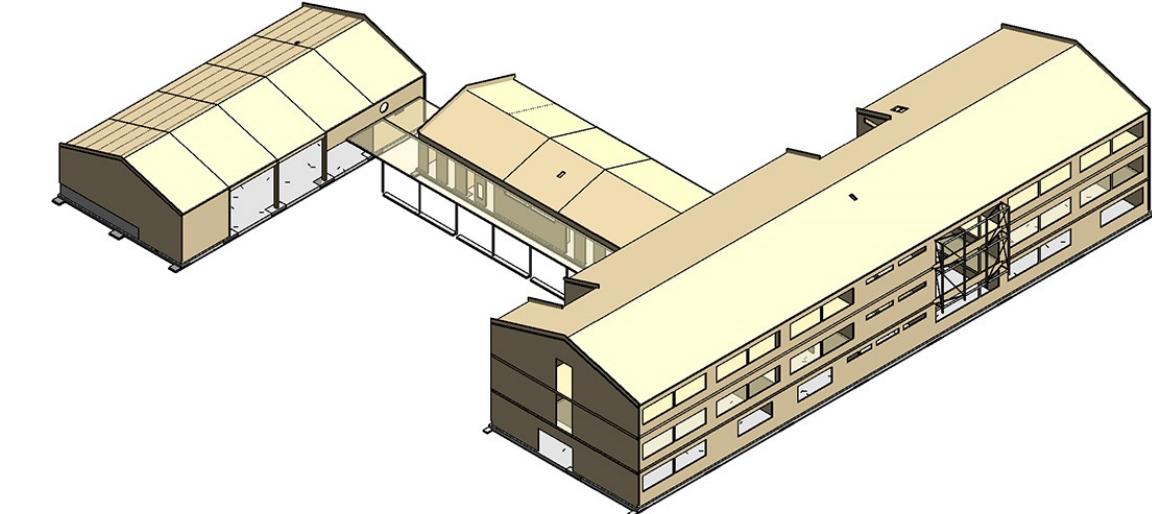
The particularity of this building is that it is entirely designed and built with cross laminated timber panels including slabs and load bearing walls. In singular points laminated beams and columns were used as required. The staircase is also built using the same timber panels.

Due to the low bearing capacity of the soil in the top layers, the foundations were designed to reach the resistant layer.

The whole project was carried out using BIM technology.

Role

As the senior engineer in the project I took part in defining the structural elements in complete alignment with the architect given that the structure and the architecture are one. I attended the key stage presentations with the department of education. I prepared and gave the presentations as necessary and gave a lecture on the structural applications of cross laminated timber panels.



New Street Station

Birmingham

Details

Architect	FOA
Developer	Network Rail
Location	Birmingham
Cost	£600.000.000
Area	10.500m ²
Year	2015

Description

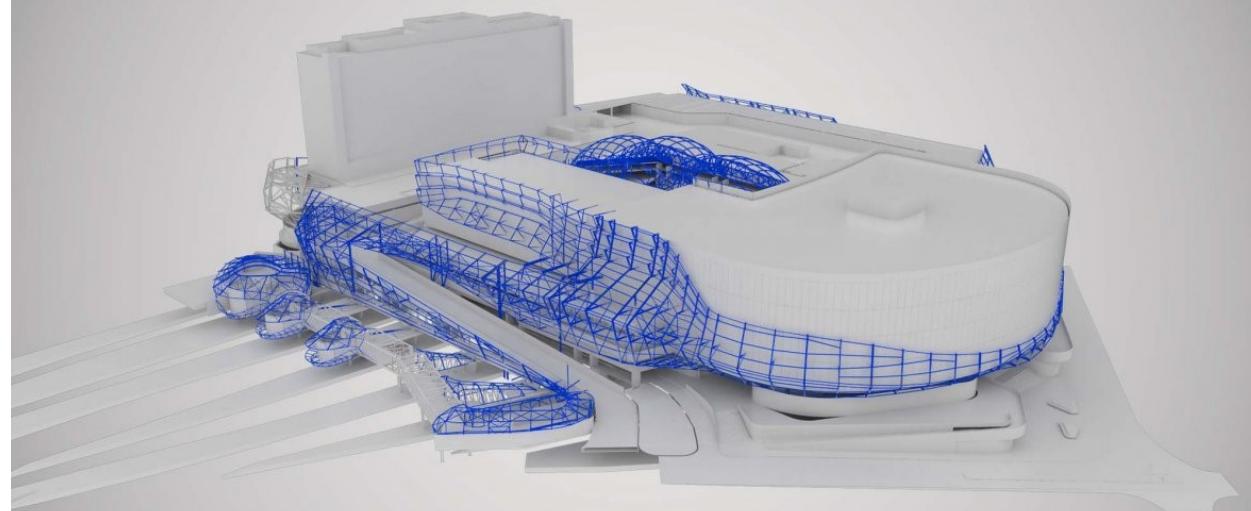
The project consisted of refurbishing an outdated train station in central Birmingham.

A brand new central atrium space running directly over the subterranean platforms and concourse required the steel roof above to span up to 40 m. The design includes huge wishbone-shaped arched trusses that support lightweight ETFE pillows to allow light to flow into the station, transforming the shopping experience.

The façade is tied to an existing 1960s building. Information was lacking about the original building and great understanding of the original structural concept was required.

Role

As a design engineer in the project I studied the existing structure in detail to be able to understand the concept and update it to meet the current design codes. I collaborated in the design and calculations of the atrium and coordinated the overall project.



DRL10 Pavilion

London

Details

Architect	Alan Dempsey Alvin Huang
Developer	Architectural Association
Location	London
Cost	£300.000
Area	-
Year	2008

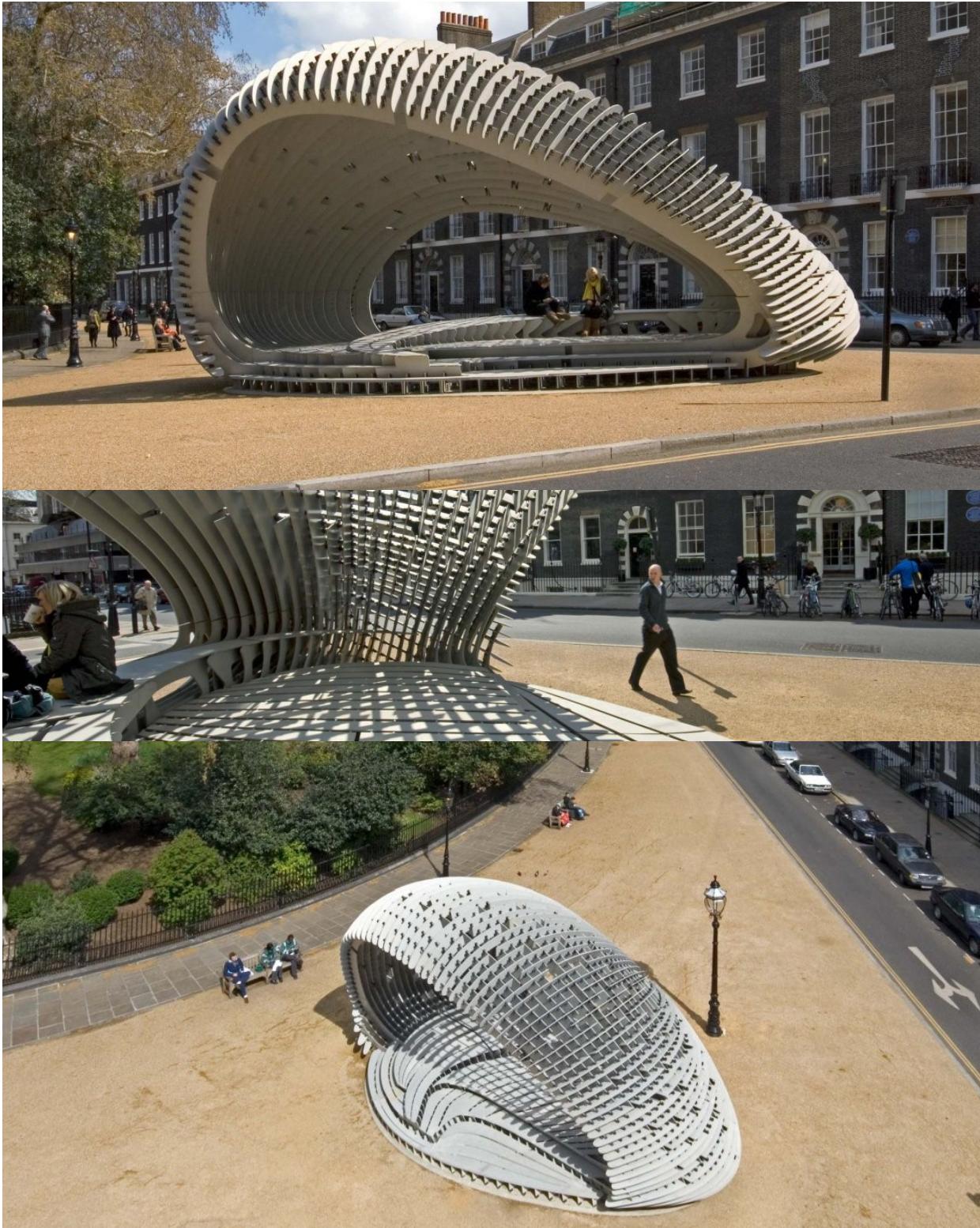
Description

The DRL TEN pavilion needed to be a temporary, small-scale, freestanding structure without anchoring into the ground; in essence, a building project that was developed as a prototype for a new kind of architecture.

The structure explored the structural potential of 13 mm-thick glass-fibre-reinforced concrete panels. Physical testing of the material and scripting was carried out to create a finite element model of the structure that replicated the material behaviour under the stresses to which it would be subject in such an unusual shape. Curved panels were cut out of standard 1.2 m × 3.6 m flat panels normally used as cladding elements fed directly to the manufacturer using 3D computer modelling.

Role

As a design engineer in the project I participated in the structural concept and the design team meetings. I carried out the physical testing of the material at a university in Germany, designed and tested the rubber joints and looked at the construction sequence and the structural behaviour in the different phases of construction.



Six Pancras Square

London

Details

Architect	Wilmette Ass. & Adamson Ass.
Developer	Axa Real State
Location	London
Cost	£78.000.000
Area	49.400m ²
Year	2015

Description

The new building is part of the prestigious Pancras Square development in King's Cross. The building itself features a reinforced concrete frame to upper ground floor level, the remainder constructed from steel and designed as column free, delivering efficient and flexible workspaces with spans in excess of 13 m.

The structural grid features spans of up to 13.5 m, constructed with 130 mm concrete floor slabs poured onto profiled metal deck, working compositely with 630 mm-deep cellular steel beams, specified to keep the structure as lightweight as possible.

We modelled the structure to ensure vibrations were within acceptable limits.

Role

As a design engineer I carried out the calculations for the foundations, the floor slabs, the composite beams and checked the floor vibrations.

I attended design team meetings and liaise with the architect, QS, ME and the rest of the team. Worked to tight deadlines under pressure.



Athlete's Village

London

Details

Architect	DSDHA
Developer	Olympic Delivery Authority
Location	London
Cost	£75.000.000
Units	401
Year	2012

Description

Comprising 401 residential units between them, a twelve-storey plot on N09 and the adjacent ten-storey plot on N10.

The design was kept as simple as possible. In N09 the structure consisted of a concrete frame construction using three cores for lateral stability. The chosen cladding were precast concrete panels. The cantilevered balconies were broken down into standard modules, avoiding expensive bespoke construction.

We specified GGBS in the concrete mix, thus reducing the cement content by up to 36% and hence also the carbon footprint.

Role

I was given responsibility for the site supervision of the Plot N09 of the Village. I attended weekly site visits to ensure the structure was built to its standard. I liaised with the experts from the concrete institute as problems arised on site. Also, I attended several meetings with the ODA as vibrations on the balconies became a critical issue. I carried out response analysis for vibrations on balcony models.

