



GROUP CEO

Daniel Leech

An aerial night view of London, showing the River Thames winding through the city. The Tower Bridge is illuminated and spans the river. The city lights are visible in the background under a dark, cloudy sky.

OVERVIEW

Digital Blueprint: Proven Methods for Transformation and Growth

— WWW.TDSG.CO.UK —



DESIGN4
STRUCTURES



TDS



CONSTRUCTION
& DESIGN
CENTRE OF EXCELLENCE

Technical Design Services Group

www.tdsg.co.uk | 01952 225835 | enquiries@tdsmidlands.co.uk

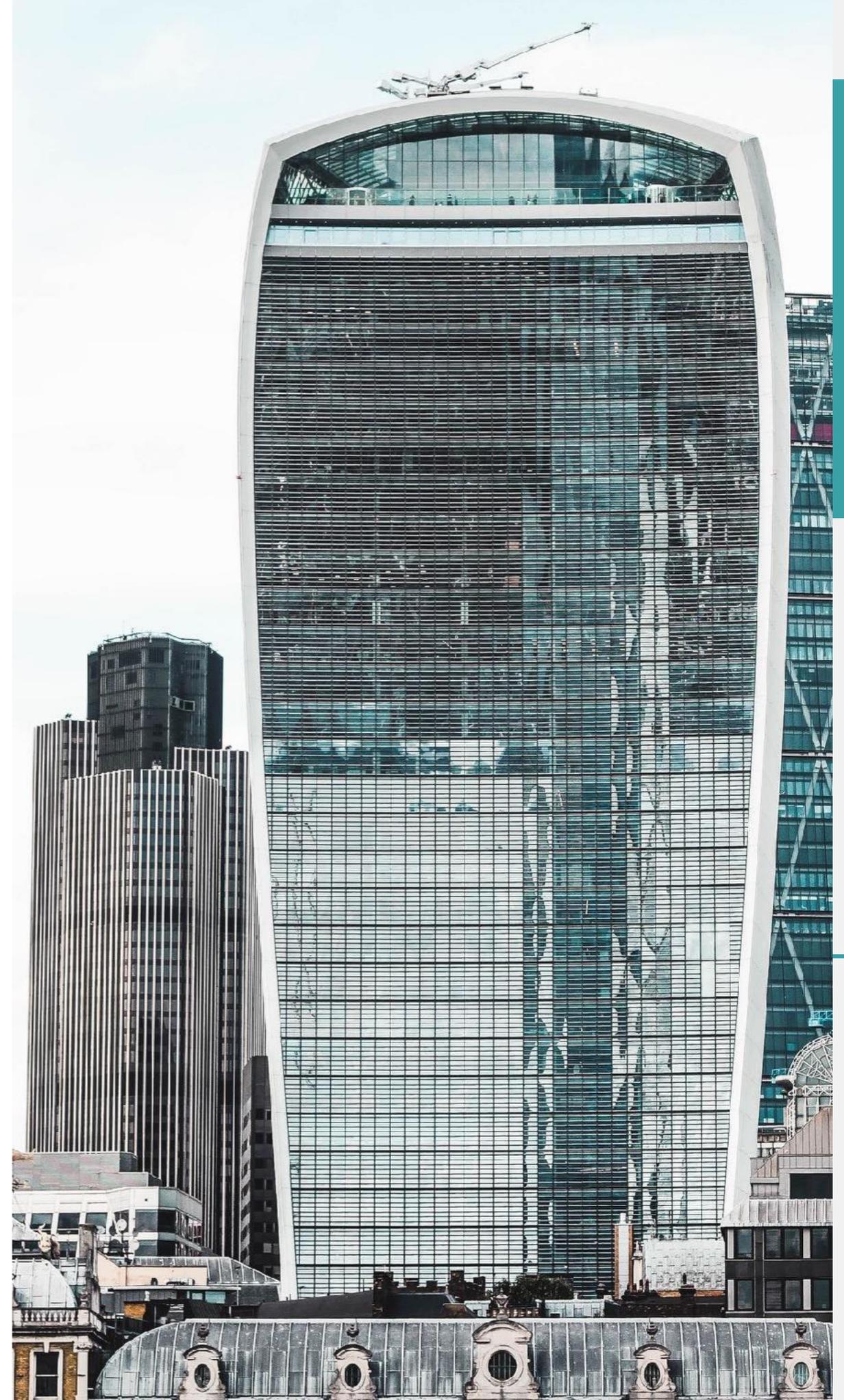


At the heart of our business we
have specialists who care

Established:
1992

Offices in:
Telford, Central London & Greece

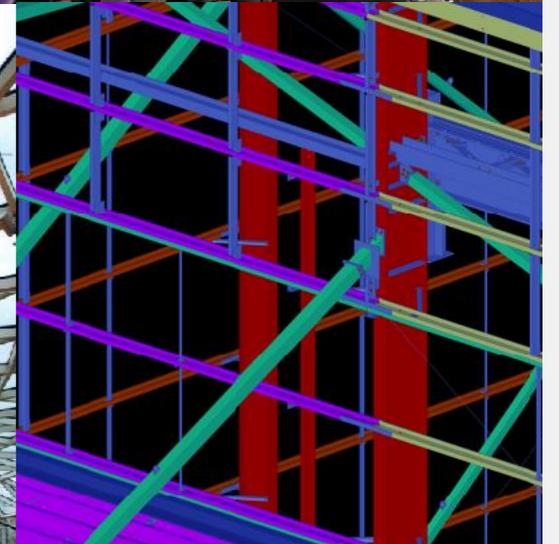
- Specialists in Structural Steelwork, Architectural Metalwork & Light Gauge Modular Building Projects
- Owner Managed
- BIM Level 2 Compliant Since 2012
- 30 Tekla Stations
- UK Tekla Model of the Year Winners: 2016, 2017, 2018 & 2019
- Global Tekla Model of the Year Finalists: 2016, 2017 & 2018
- Top 100 Apprenticeship Employer
- Certified ISO 9001
- £10m PI cover
- BSI BIM Level 2 Accreditation



Services

We are very proud of our technical team of experienced experts, many of which have over 25 years experience of CAD design across all aspects of the built environment.

- Structural Steelwork
- Architectural Metalwork
- Offsite
- BIM
- Structural Engineering
- Training
- Tekla





We are creative structural engineers, solving problems and shaping the world around us.

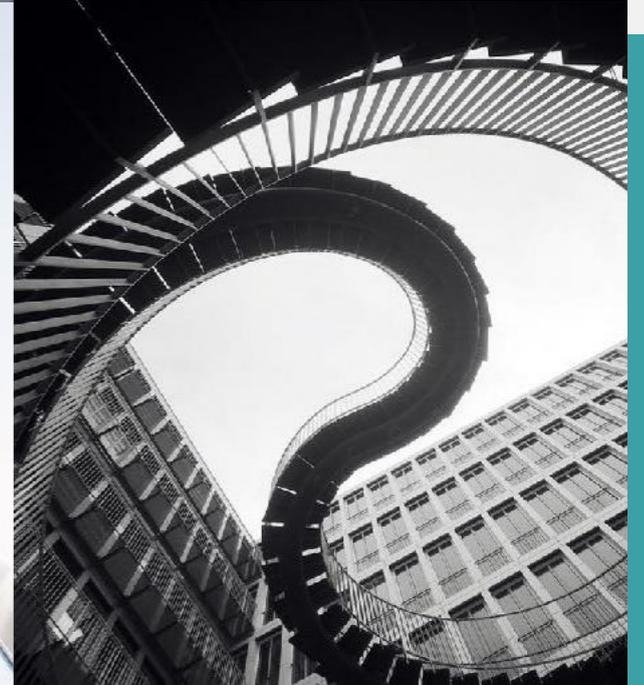
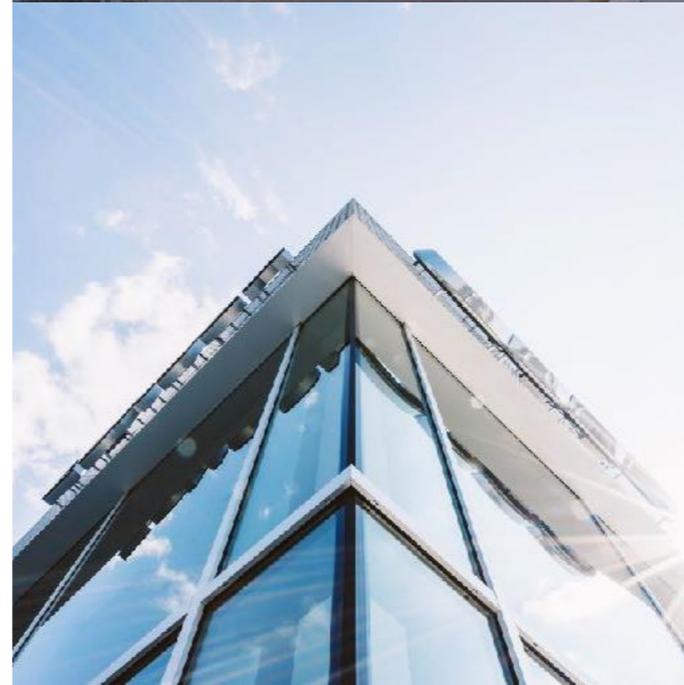
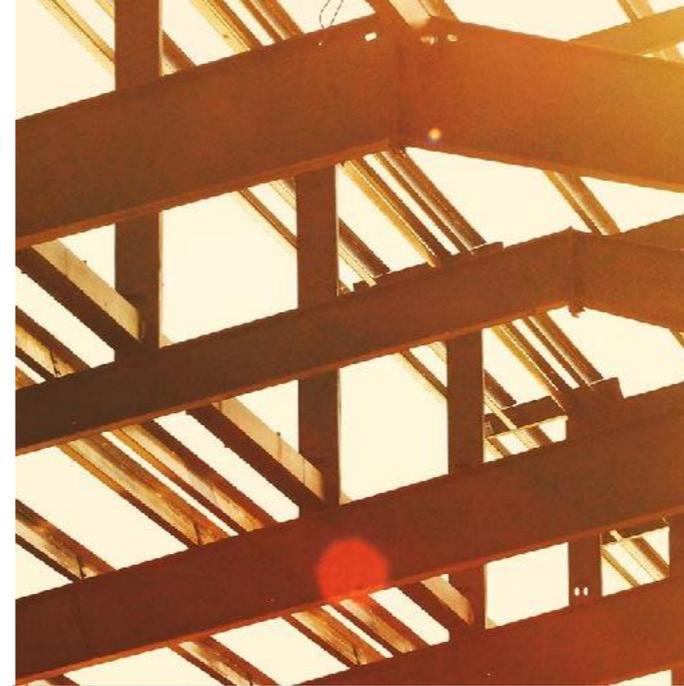
Our aim is to continue the development of a collaborative approach to project delivery, with exciting forward-thinking designers, architects and clients.



Services

Embracing a digital, collaborative way of working to advance the built environments.

- Structural Engineering
- Infrastructure Design
- DFMA (Design for Manufacture and Assembly)
- BIM
- Construction Engineering
- Architectural Aluminum & Glazed Curtain Walling
- Architectural Metalwork, Balconies & Stairs





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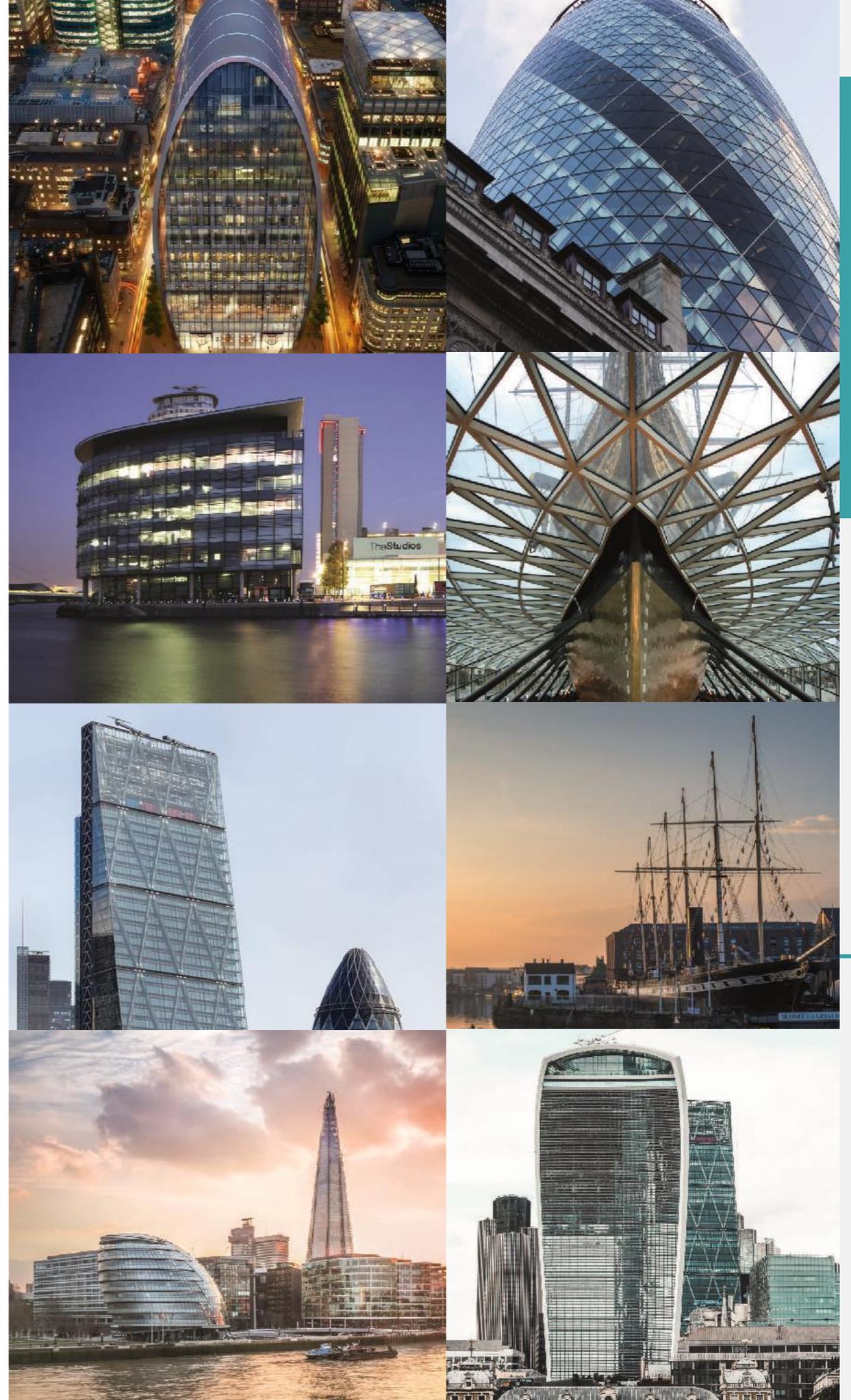
An award-winning training provider of Apprenticeships in digital design for the engineering and construction industries.



- Existing Qualifications too generic
- FE colleges struggling to provide training to meet the needs of the industry
- Vocationally driven – 16 weeks of work ready training
- Delivered by industry experts in collaboration with knowledge based academics
- Using software and technology to attract talent
- OFSTED outstanding
- Free to employers (10% contribution under new funding framework)
- Apprenticeship Levy paying companies already taking part

Legacy Projects

TDS are proud to have been involved in a number of exciting projects over the last few years.



An aerial view of the London skyline, featuring prominent skyscrapers like The Shard and the Gherkin, with a teal color overlay across the entire image.

UK Projects

The Project

Green Park House, Bath Spa University

Type
Student Accommodation

Project Architect
Stride Treglown

Services
Offsite Construction

Engineers
Ramboll

Client
Elements Europe

The Aim

- To create student accommodation for Bath University
- 450 pods within a former derelict residential care home
- Fulfillment of different types of pods, manufactured offsite
- Combine the expertise of our clients in offsite manufacturing with our own in 3D modelling with Tekla



IMAGE
Berkeley Homes via Elements Europe

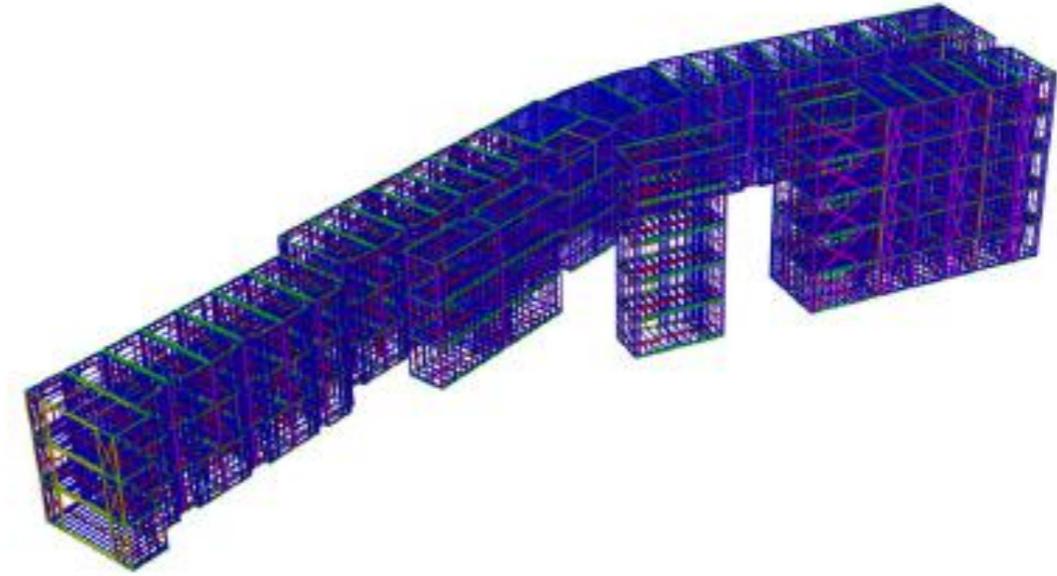
Scope of Services

- Structural frames
- Howick connections - light steel frame infill panels
- Howick data
- Connection plates
- Holding down plates
- Room modules, featuring bedrooms, kitchens, living rooms and bathrooms
- HRS members for cladding support
- Cassettes build-up to form room layouts
- Roof structure
- Parapets
- General Arrangement and Fabrication Drawings



IMAGE:
crescent-photography.com via Elements Europe





Outcome

Utilising our experience in offsite construction and working together with Elements Europe, our team have been able to provide the concise and exact detailing required for the drawings to be put into fabrication. The combination of our expertise in 3D modelling with Tekla, with our client's expertise in offsite manufacturing, meant together we were able to complete a large and complex job to everyone's great satisfaction.

The Project

Addiscombe Grove, London Borough of Croydon

Type
Residential

Project Architect
Metropolitan Workshop

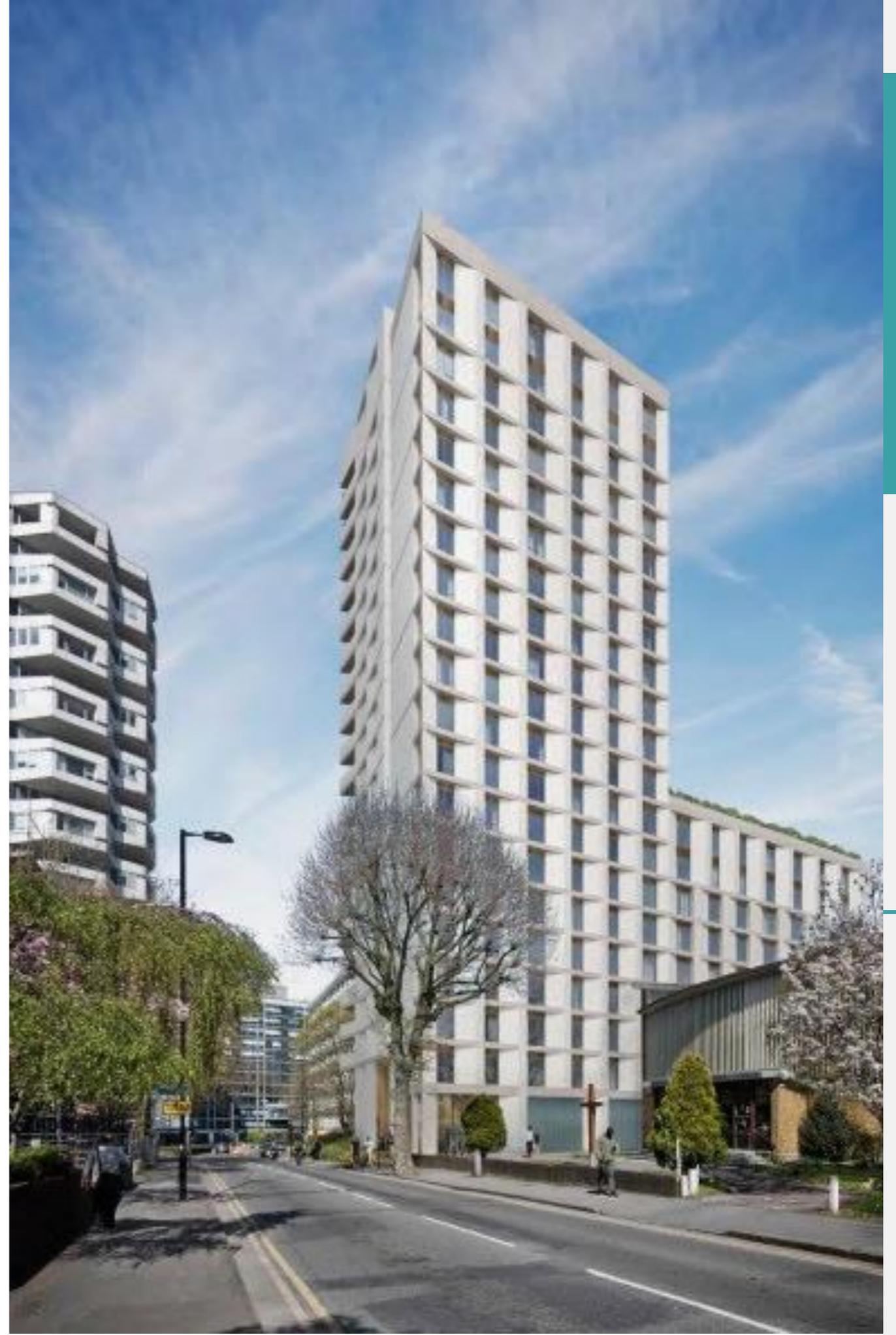
Services
Offsite Construction

Engineers
Tellett Engineering
Consultants Ltd

Client
Elements Europe

The Aim

- To create affordable housing in central London
- 21-storey modular apartment block
- Tallest developments to date, manufactured offsite
- Methods to improve efficiency in terms of time and cost

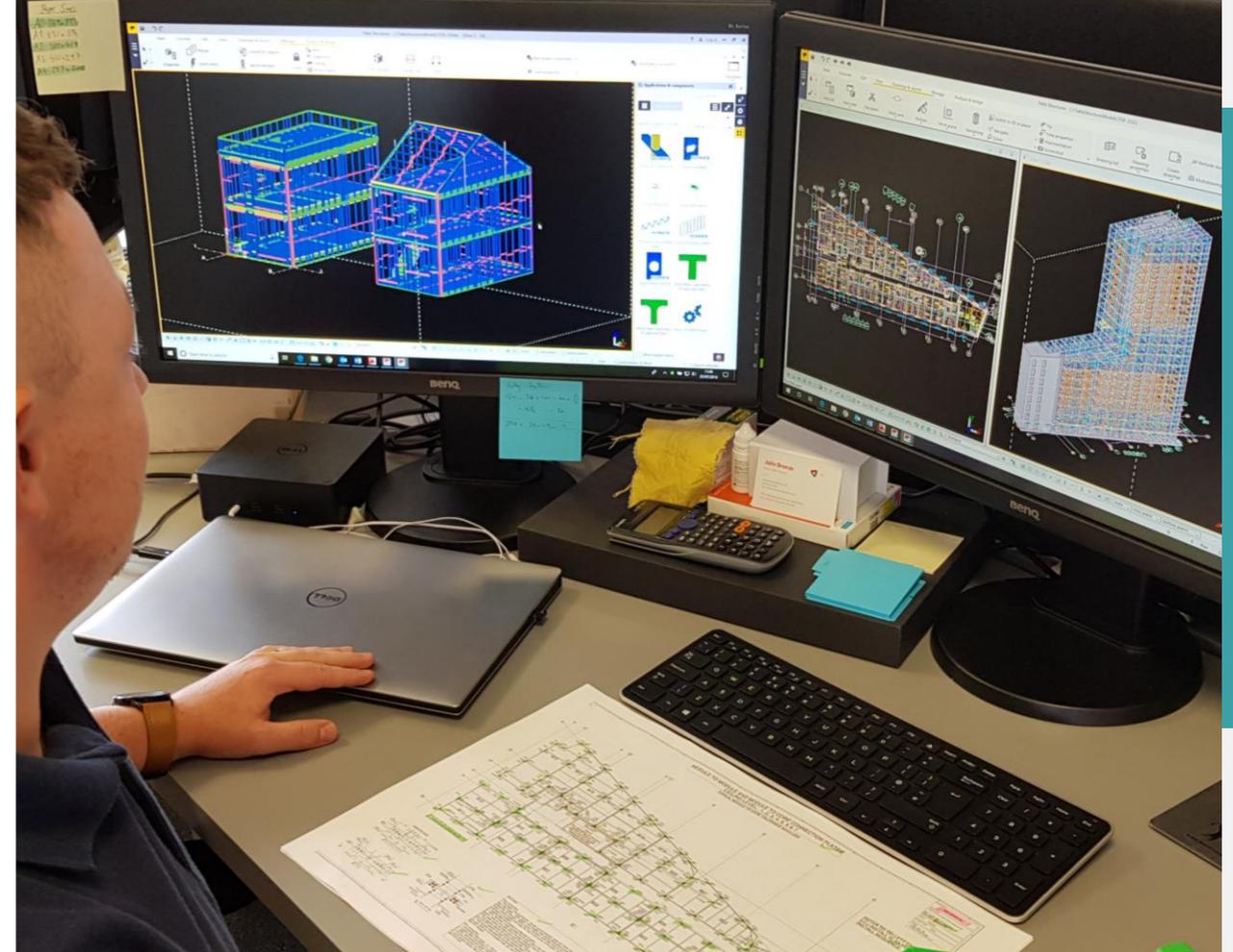


Scope of Services

- Structural frames
- Howick connections - light steel frame infill panels forming room layouts
- Connection plates
- Holding down plates
- Room modules, featuring bedrooms, kitchens, living rooms and bathrooms
- HRS members for cladding support

At present, the development is still in its early stages and as it progresses, we will also be tasked with detailing the following:

- Corridor cassettes
- Roof structure
- Balconies
- Parapets





Outcome

Utilising our experience in offsite construction and working together with Elements Europe, our team have been able to provide the concise and exact detailing required for the drawings to be put into fabrication. Our expert knowledge of the construction methods used will help to maintain the efficiency of these methods, which will in turn help to keep the project within budget and protect the affordable aspect of these modular apartments.

The Project

Concept design – provide quality housing solutions to meet client’s needs, using Modern Methods of Construction (MMC)

Type

Residential

Services

Structural Engineering, Construction Engineering, DFMA, and BIM

The Aim

To assist in producing the design for a single dwelling unit, which could be used to assess the potential of adding off-site housing to its current UK and ROI product range.





Flexibility of the Design

One of the key design considerations was scalability, enabling the initial scheme to be suitably adapted to meet a future range of needs: for example by easily incorporating an accessible ground floor shower room. The four volumetric modules were designed to be largely self-contained; this aids the factory production process and reduces installation work and time on site. The external walls have been designed to allow for a range of finishes to be adopted to suit location or market preference.

Scope of Services

- Structural steel frame design
- Structural foundation design
- Lifting strategy design
- Steelwork connection design
- Fabrication Level of Detail (LOD5) output
- Building Information Model deliverable

BIM Services

- **Common Data Environment (CDE)**
Used 'Viewpoint For Projects' cloud collaboration solution
- **BIM & Project Co-ordination**
Through application of BIM processes in accordance with PAS 1192:2
- **Co-ordination of the Design Between Disciplines**
Weekly data drops to allow federation of the BIM models
- **Clash Detection**
Solibri Model Checker and BCF (BIM Collaboration Format) reports to track progress, & manage the process
- **File Share Format - IFC using 'Open BIM' philosophy**
- **EIR / BEP / MIDP or TIDP**
- **Software**
Tekla Structures : Structural BIM authoring
Tekla Tedds : Structural design calculations
Revit Architecture : Architectural BIM authoring
Revit MEP : Mechanical and electrical BIM authoring



Testimonial

“Through the early engagement of design consultants with proven BIM capabilities we were able to assemble a team of designers who could deliver a fast track design, using the latest digital processes and software technologies available. This ultimately provided for a very open and transparent design process, where all of the 3D models were shared using an ‘open BIM’ philosophy to ensure a highly developed and co-ordinated design solution was achieved.

Within a very short space of time we had a full structural and steel frame design that was developed to a manufacturing level of detail, which had been fully co-ordinated with all building services and the architectural layouts. Without the skills, knowledge, and application of the latest digital construction processes we could not have achieved what we did in such a short space of time.”

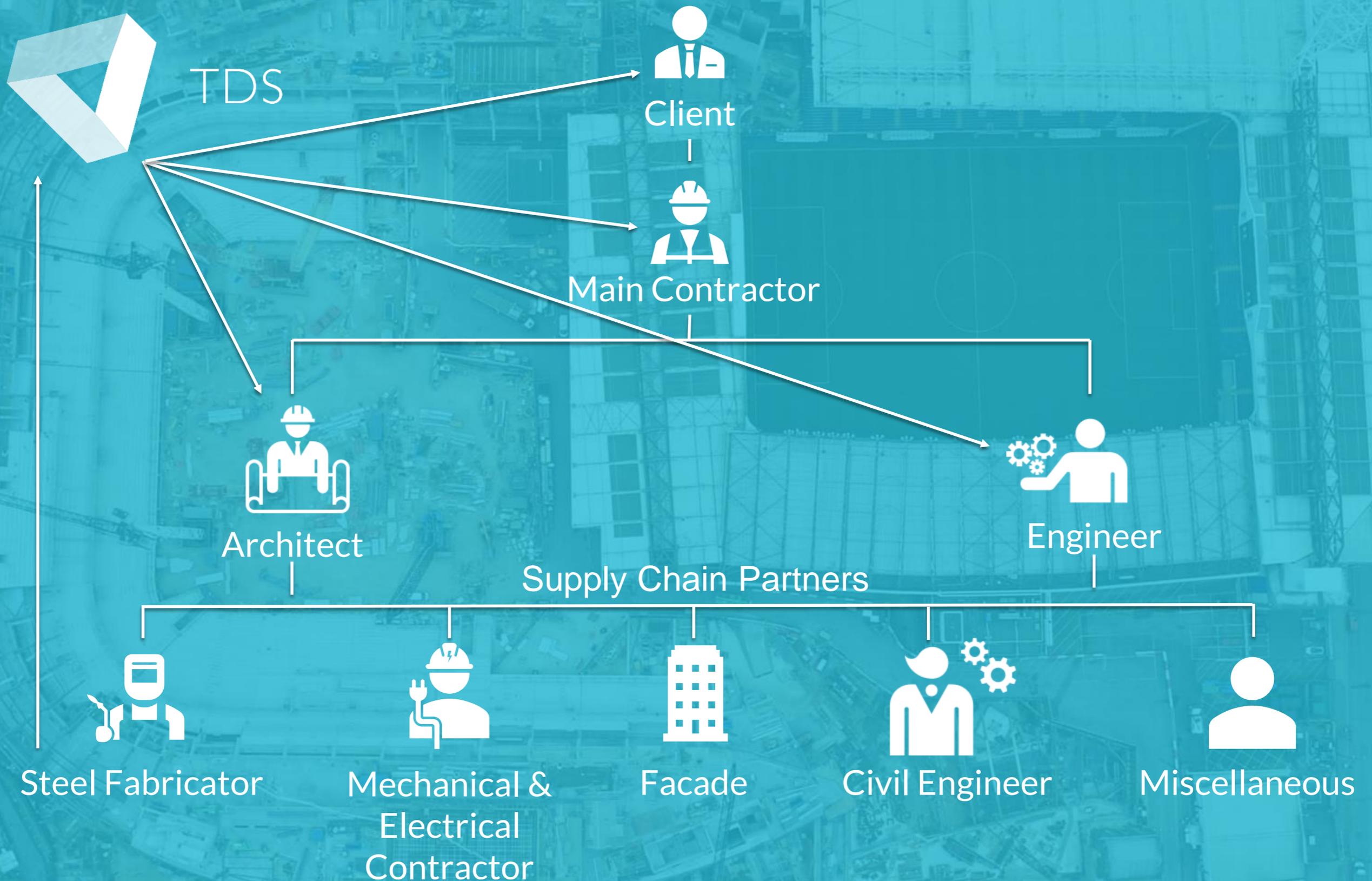
Innovation Manager, Confidential Client

Outcome

In summary, the ultimate outcome is for our client to finalise a concept design that would facilitate further investigation by the company into the feasibility to enter into the offsite housing market.

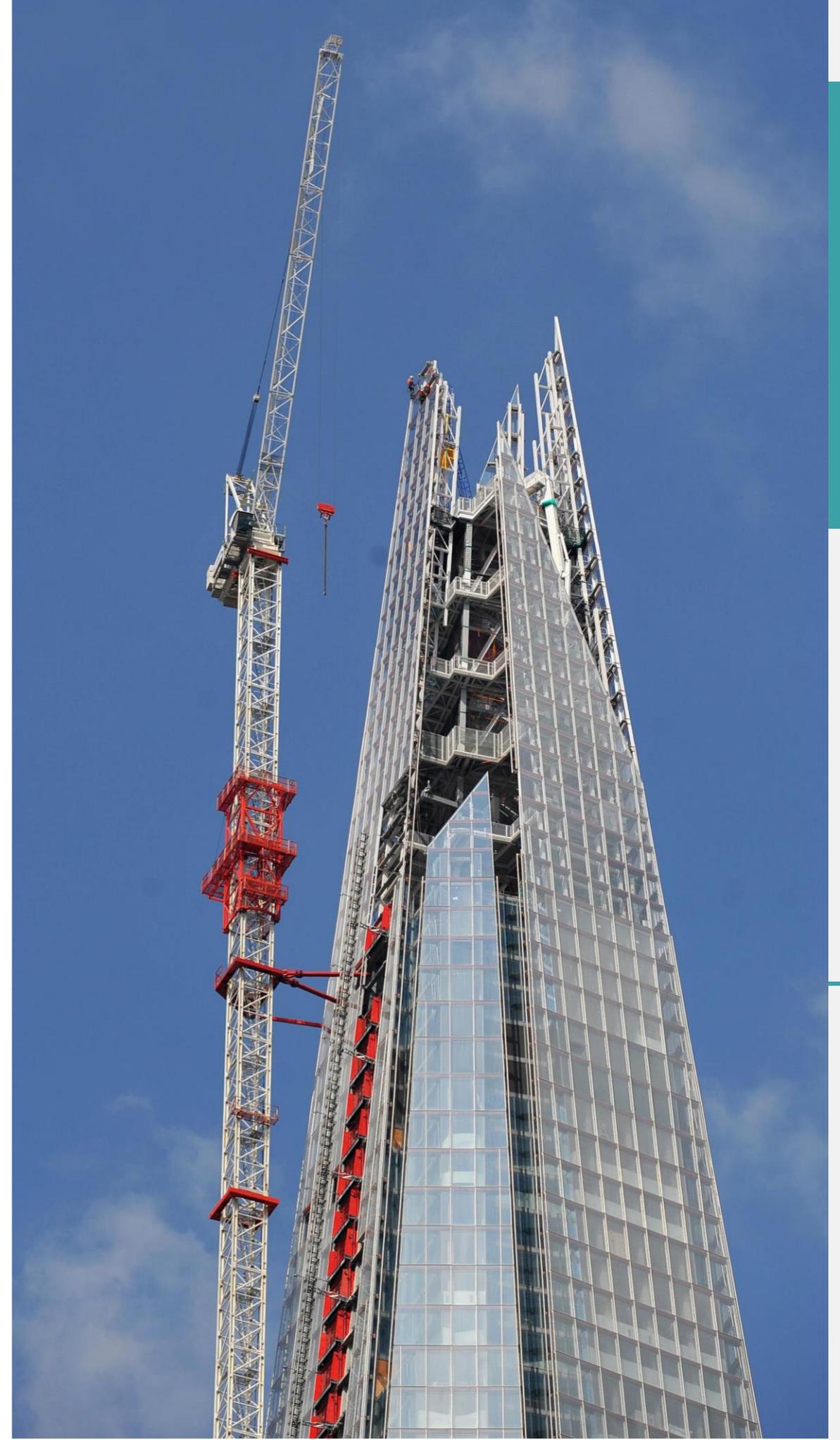


Current UK Procurement Model



Current UK Procurement Challenges

- UK construction industry risk averse
- Culture of blame
- Nationwide skills shortages
- Slow up-take in construction technology solutions
- Poor change control discipline
- Low productivity and predictability





TDS



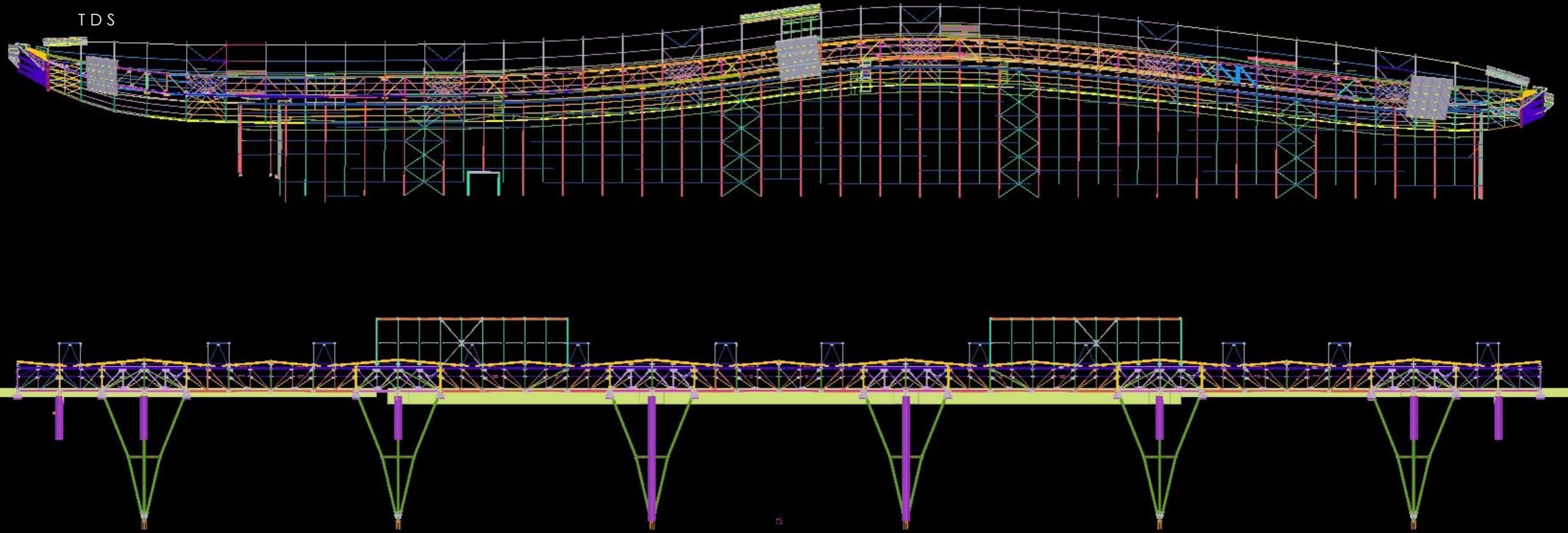
Issues are eradicated for Hong Kong International Airport

Hong Kong International Airport - An Exemplar of Digital Collaboration

1. Client - HKIAA
2. Architect - Aedas
3. Consulting Engineer - AECOM



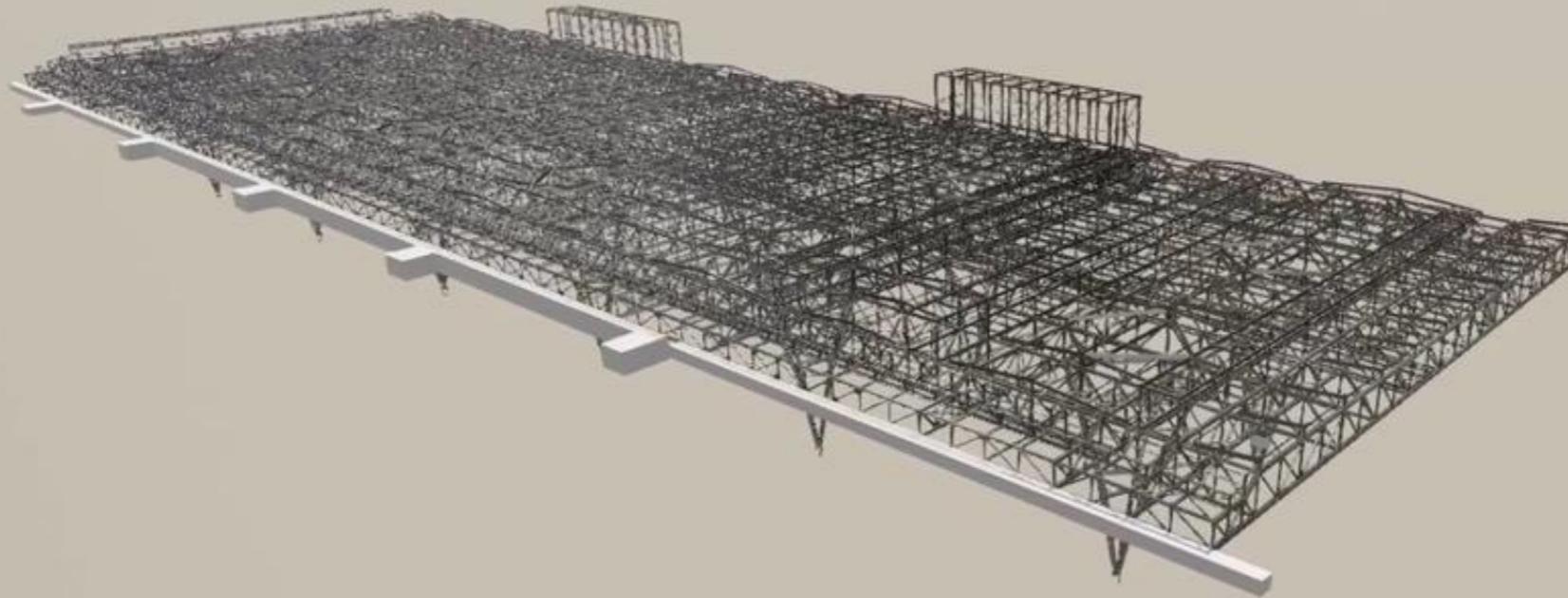
TDS



The Brief

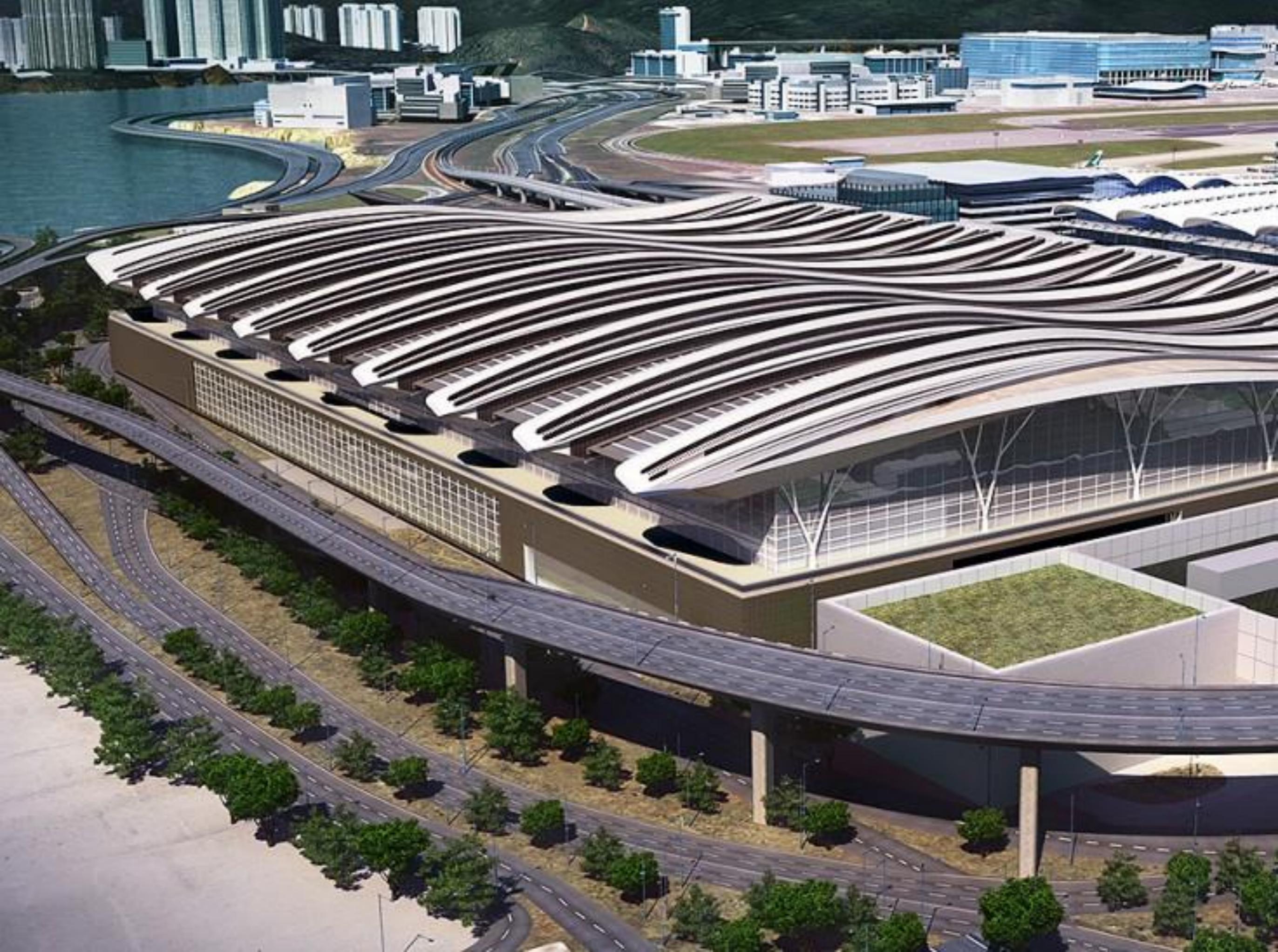
- Design4Structures Collaboration with AECOM
- Steel to Steel and Concrete to Steel Connection Design
- Manufacture led Design Intent

TDS Involvement



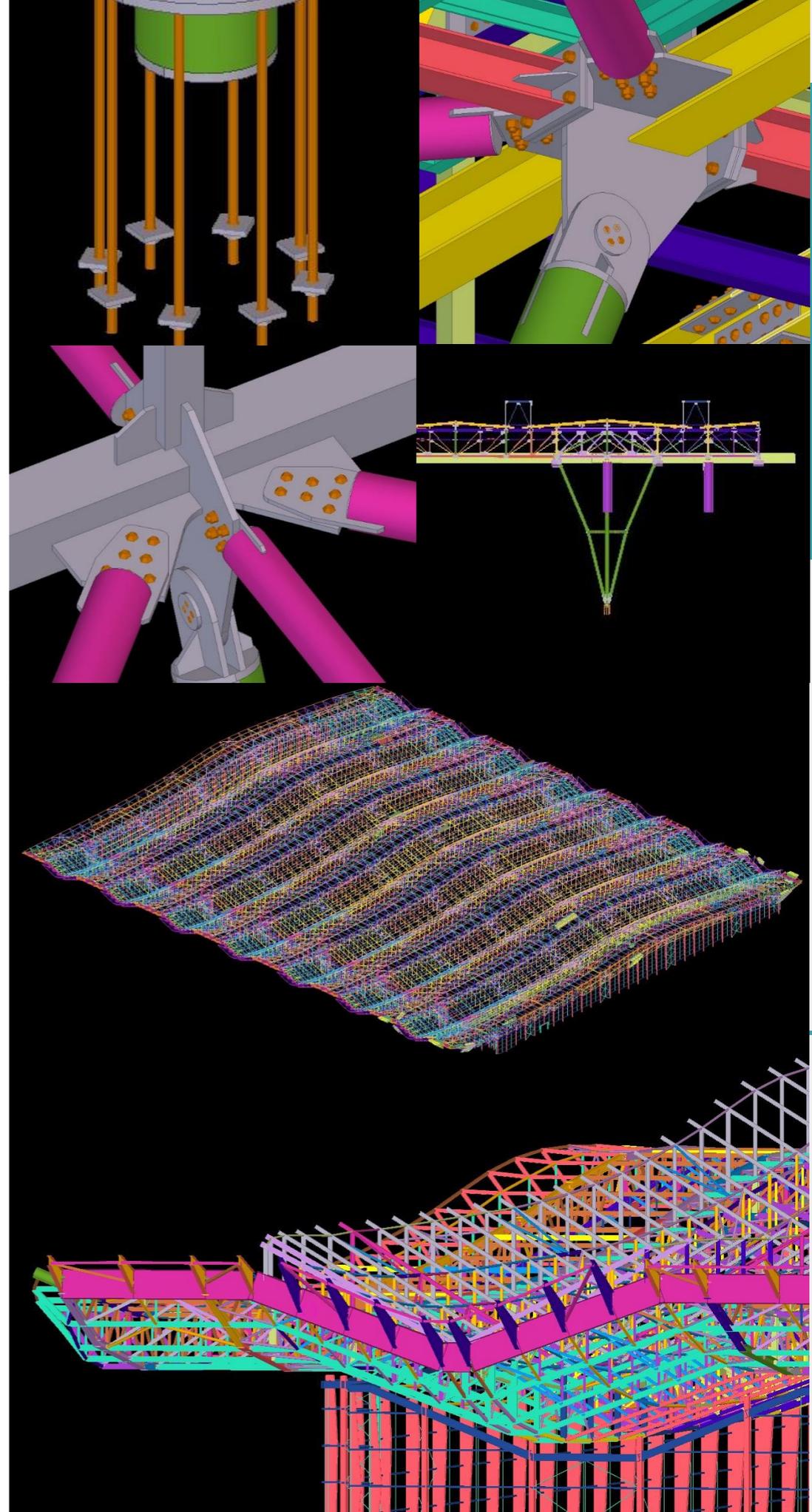
- TDS Appointed for Specialist 3D Structural Modeling
- IFC file issues by architect and Engineer
- TDS to challenge the design from a manufacturing perspective
- TDS to challenge the design from a manufacturing perspective

- Creation of fully connected LOD 400 Tekla model of all associated steelwork
- Full geometry check
- Request for Information (RFI's), Technical Queries (TQ's) – managed in Trimble Connect
- No design liability



Client Benefits

- Designed for Manufacture and Assembly (DFMA)
- Digital asset created for supply chain price certainty
- Minimilised extra work orders and contract variations
- Reduced risk of contractual conflict
- Improved speed efficiency and accuracy
- Increased potential for **Offsite Manufacture**



A large, modern glass and steel atrium with a grid ceiling and people walking. The scene is viewed through a semi-transparent blue overlay. The ceiling features a complex grid of dark lines with small circular lights at the intersections. The walls and floor are made of glass and steel, reflecting the light. In the background, a large, curved structure is visible, possibly a train or a modern building entrance. People are seen walking in various directions, some carrying bags or briefcases. The overall atmosphere is clean, bright, and futuristic.

THE FUTURE...

Any Questions?



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