



Integrated Modelling

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Director



Bornhorst & Ward

- Structural & Civil Engineers, 65 staff
- Based in Brisbane
- Started using Revit in early 2005
- 100% Revit documentation since start of 2007

BORNHORST + WARD

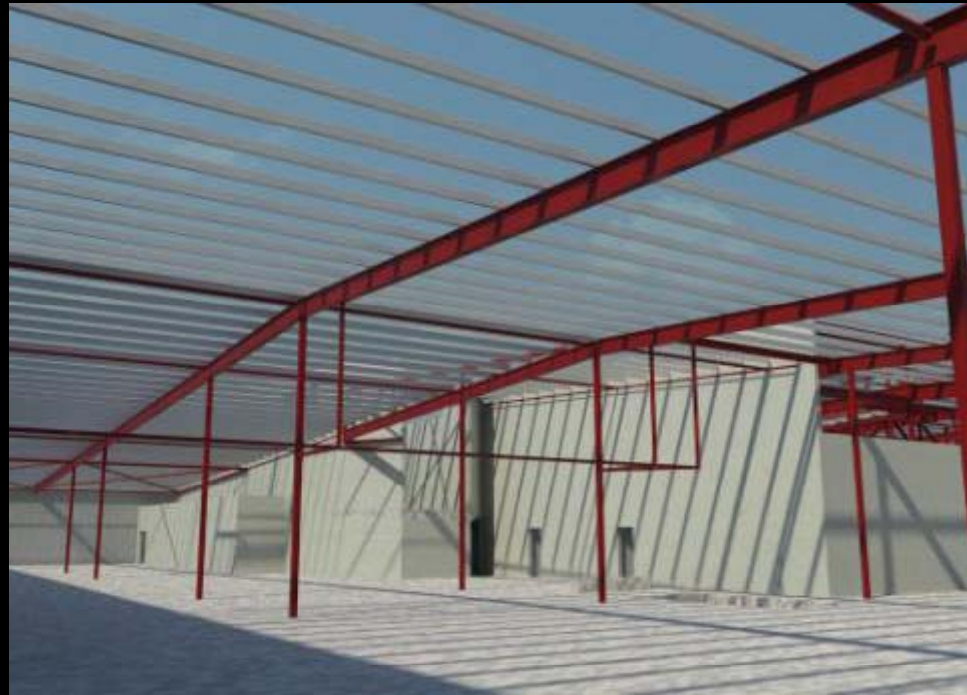
CONSULTING ENGINEERS

CIVIL AND STRUCTURAL

Why use integrated modelling?



Build it twice



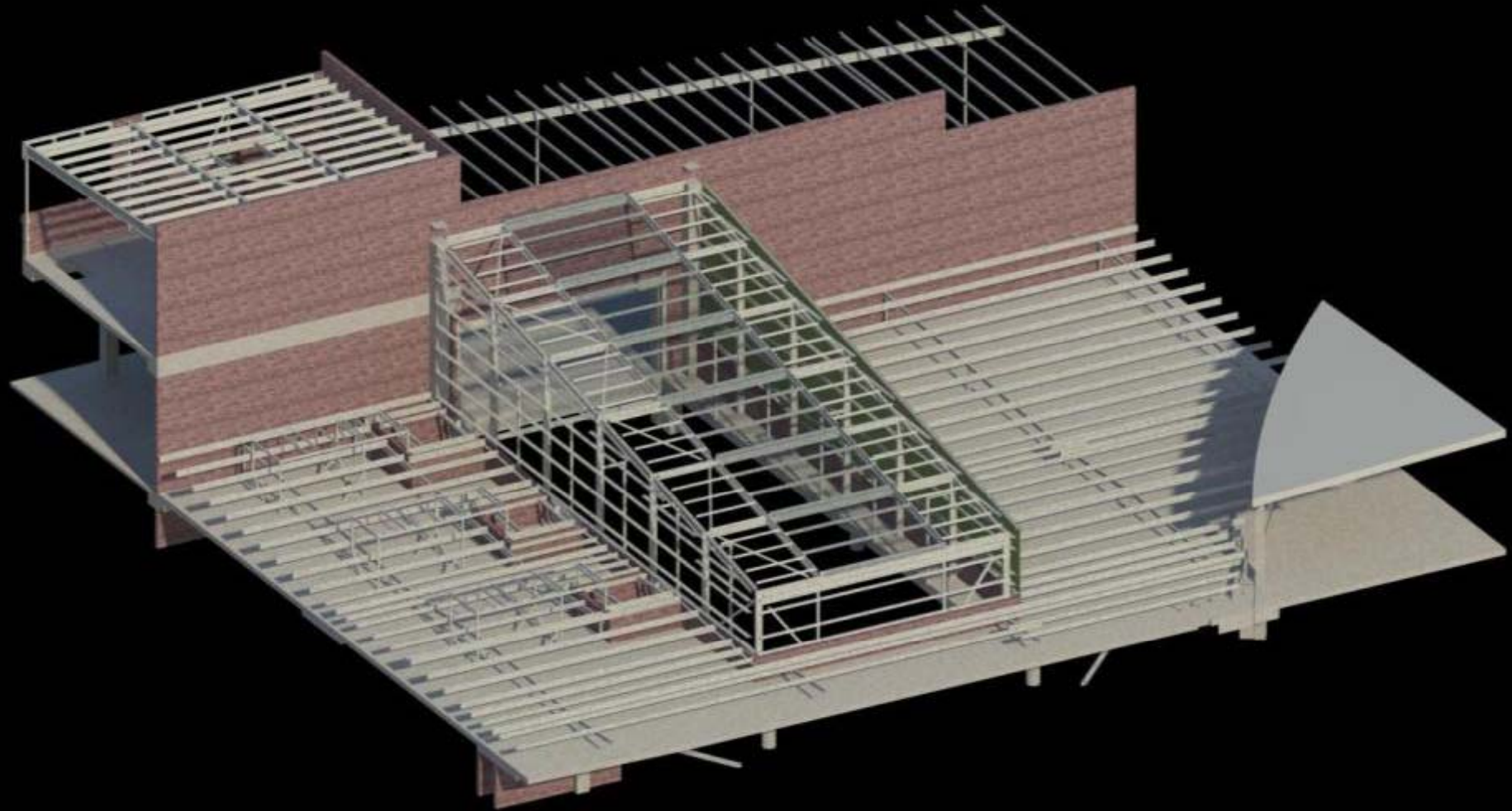
Build it twice



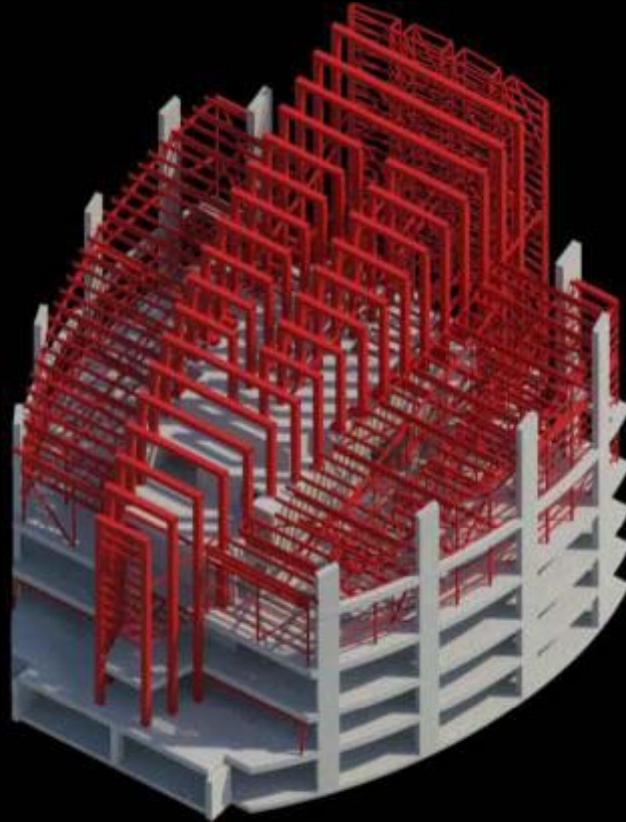
Build it twice



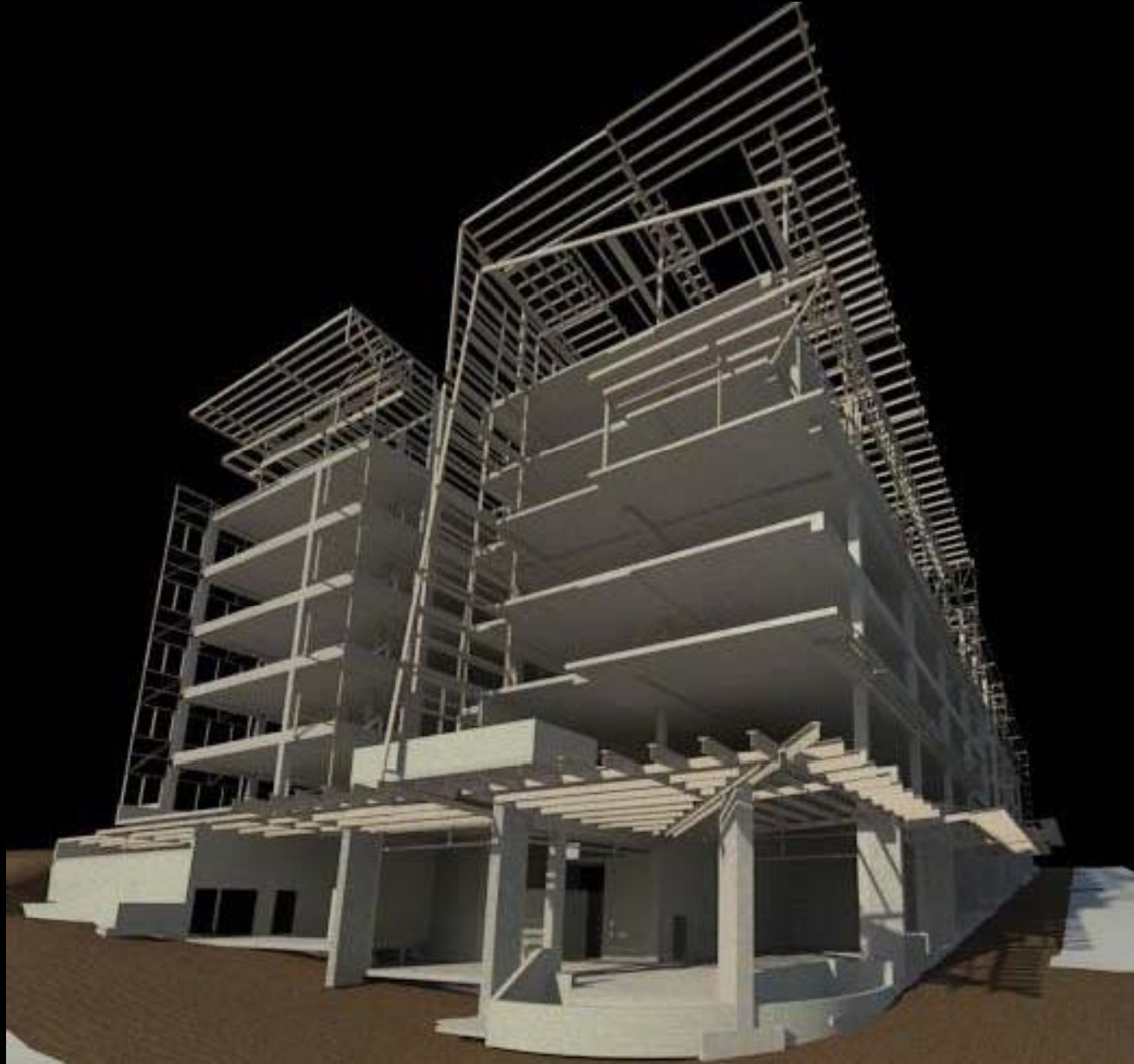
Visualisation



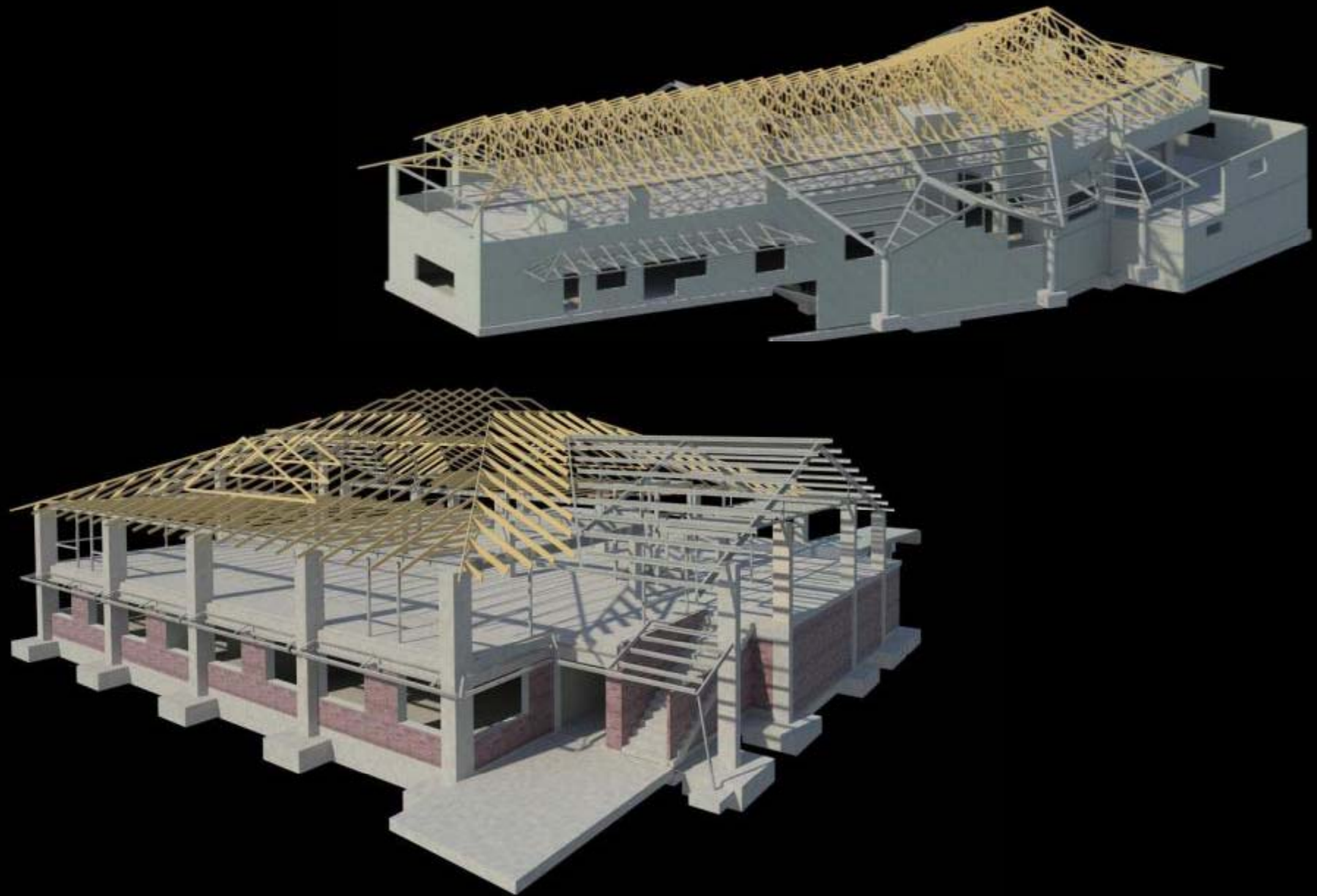
Visualisation



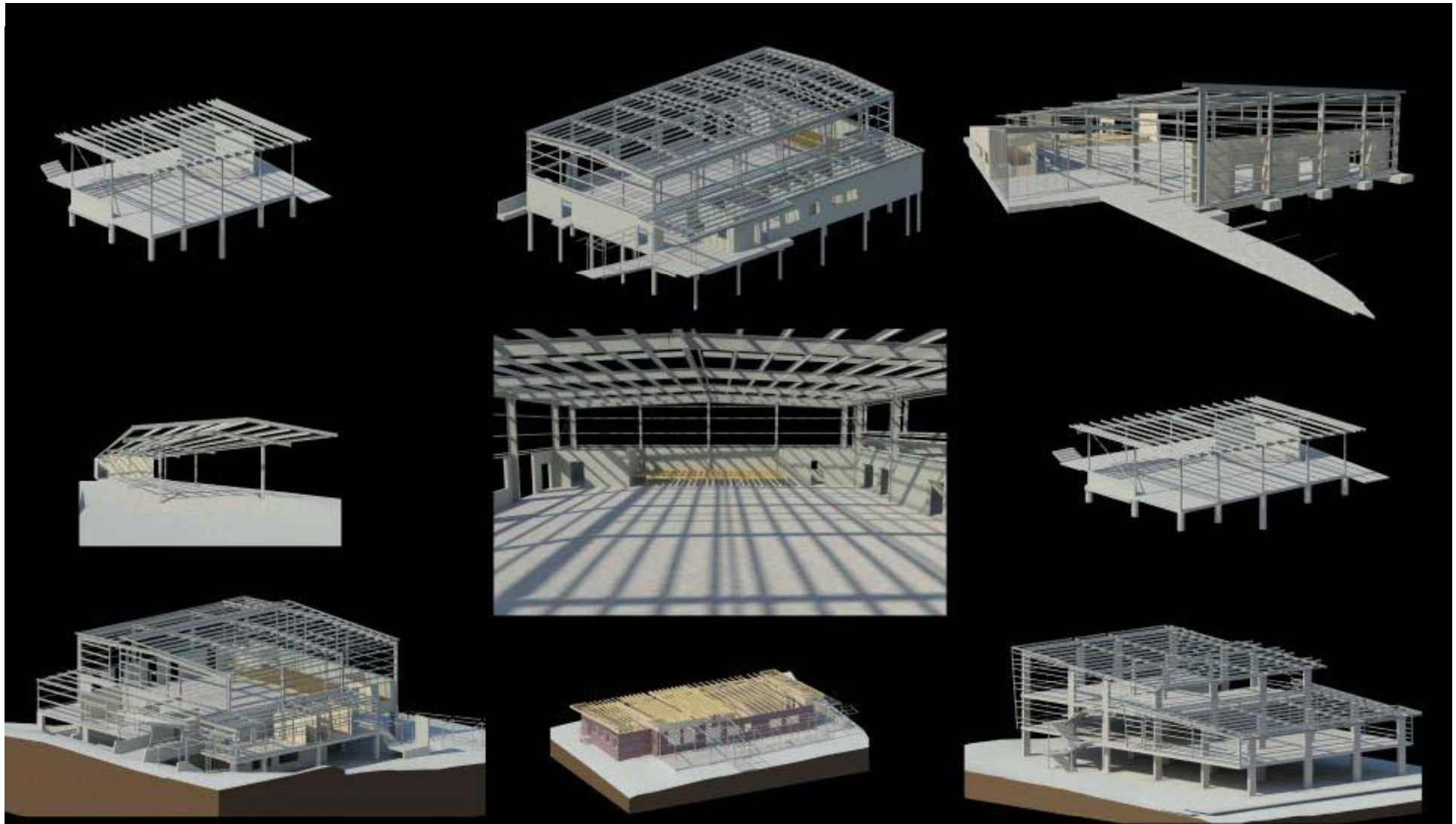
Visualisation



Visualisation



Visualisation



Visualisation



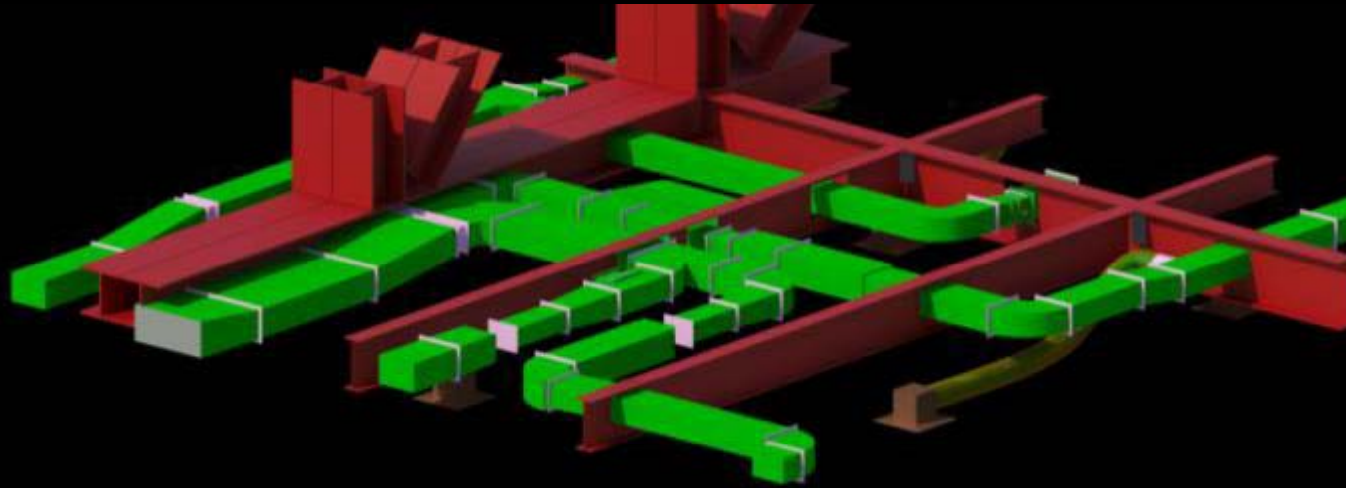
Visualisation

Better Documentation

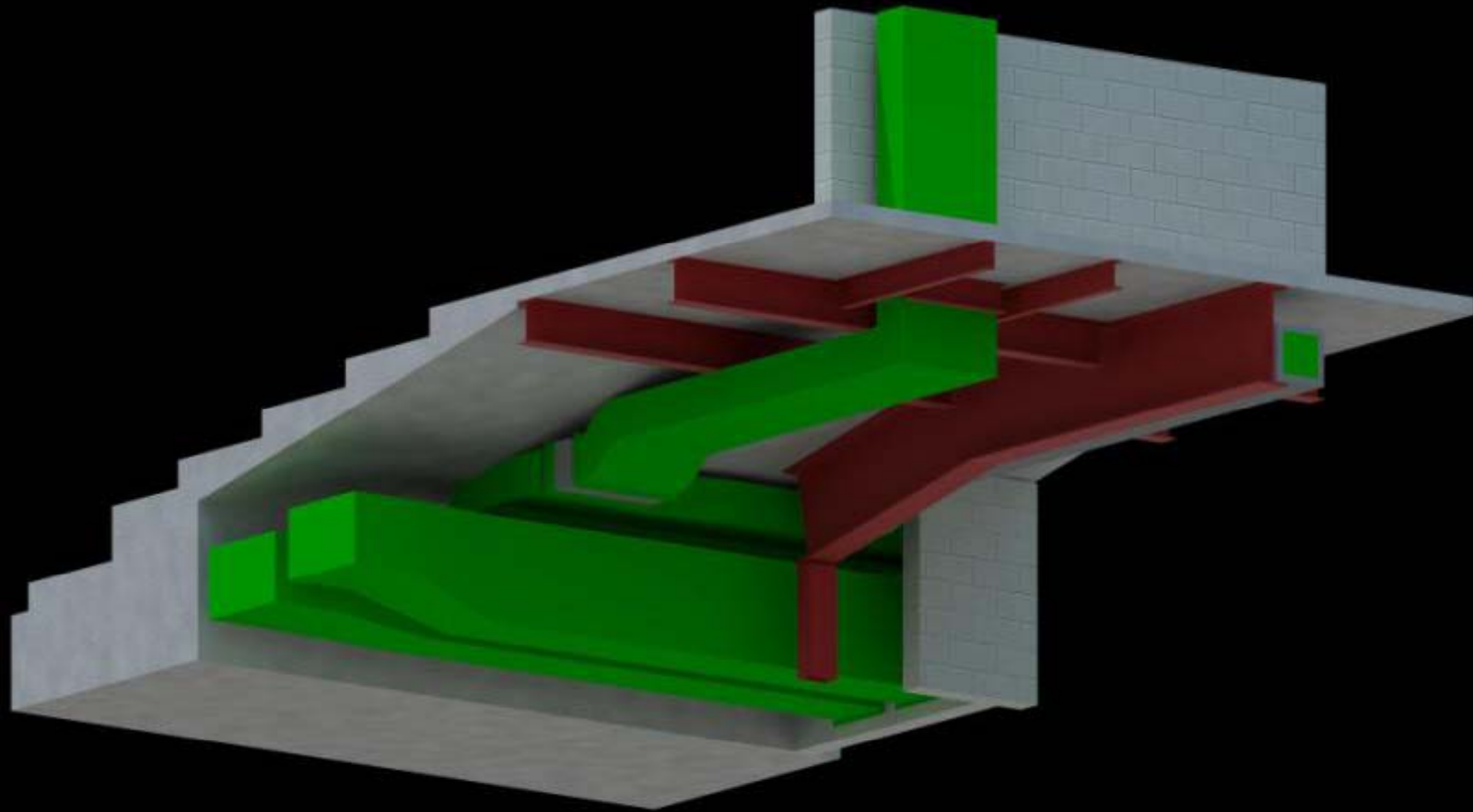




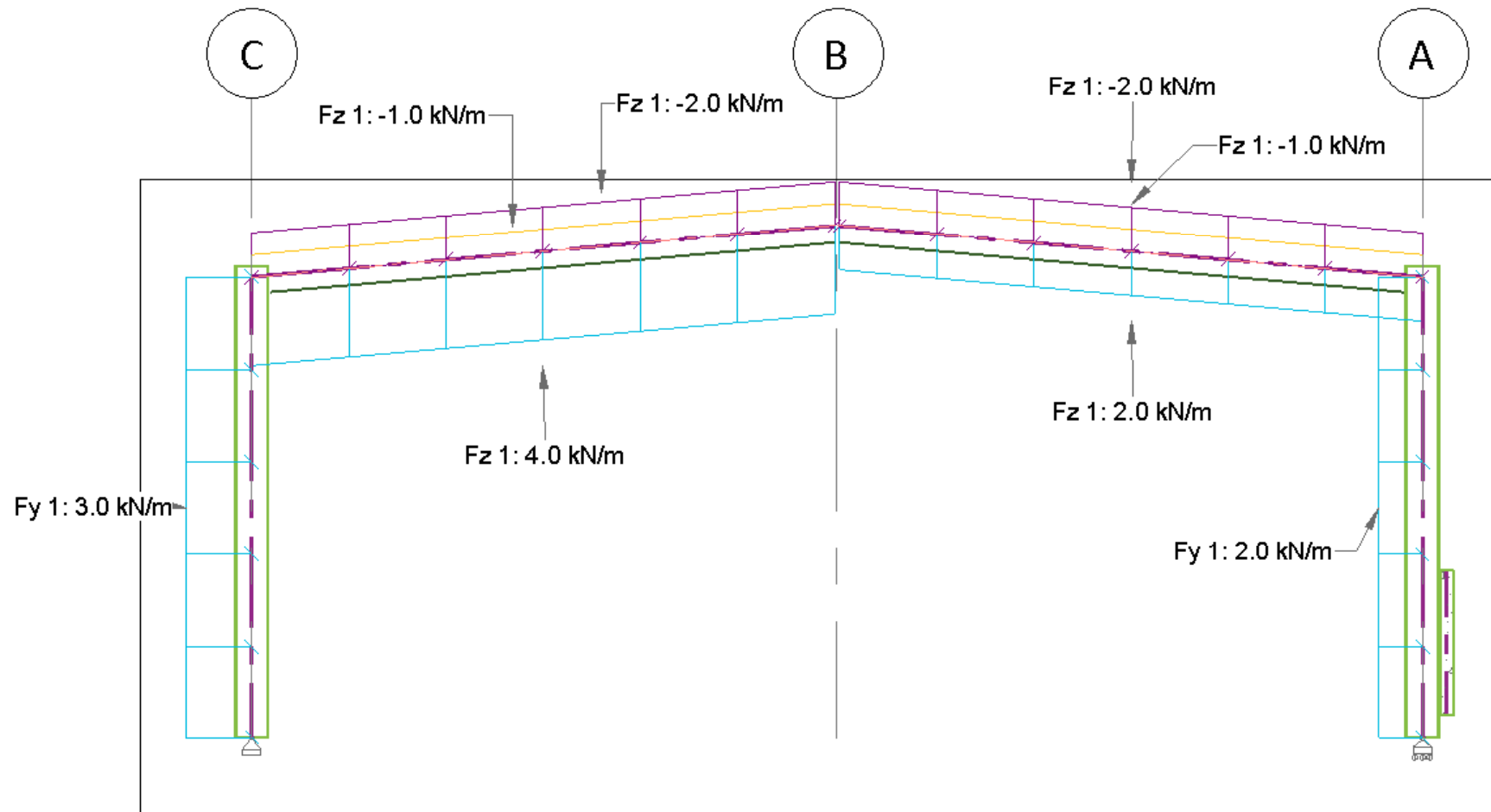
BIM/3D modelling requires a building being documented to be completely documented.



But completely documenting a building has its advantages – the "hard parts" previously overlooked now have to be sorted out, models from different disciplines can be overlaid to better identify clashes



By modelling in 3D we were able to demonstrate that the steel solution worked. All the services were accommodated



BIM - Design

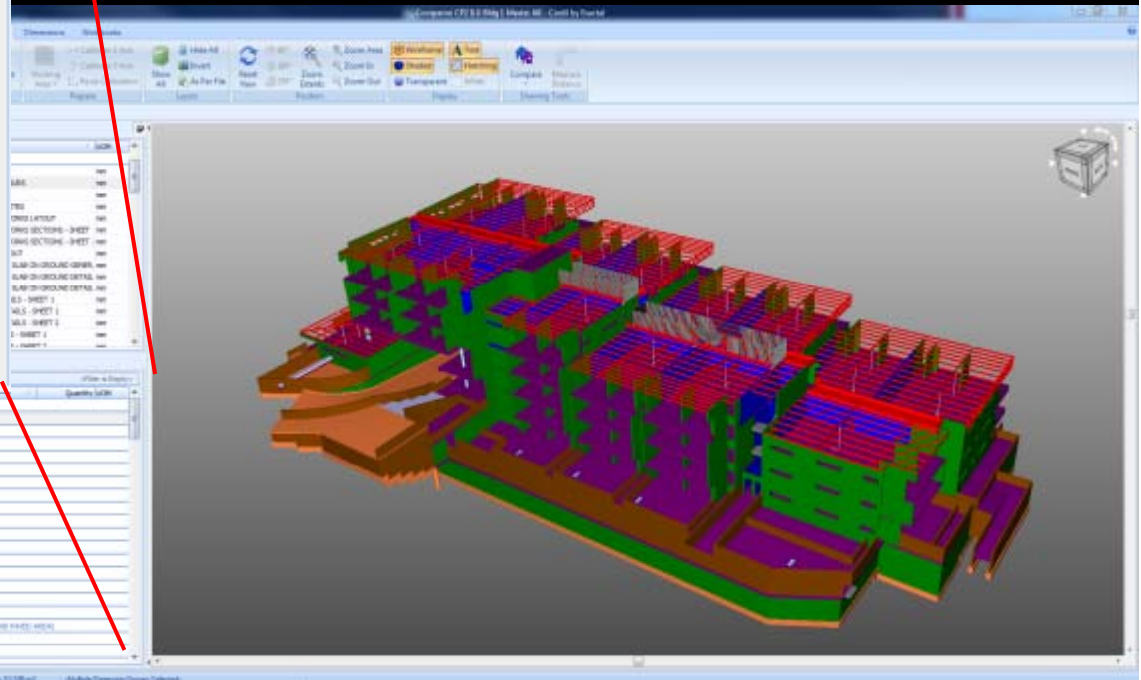
Dimension Groups Dimensions

Click to Filter <Filter is Empty>

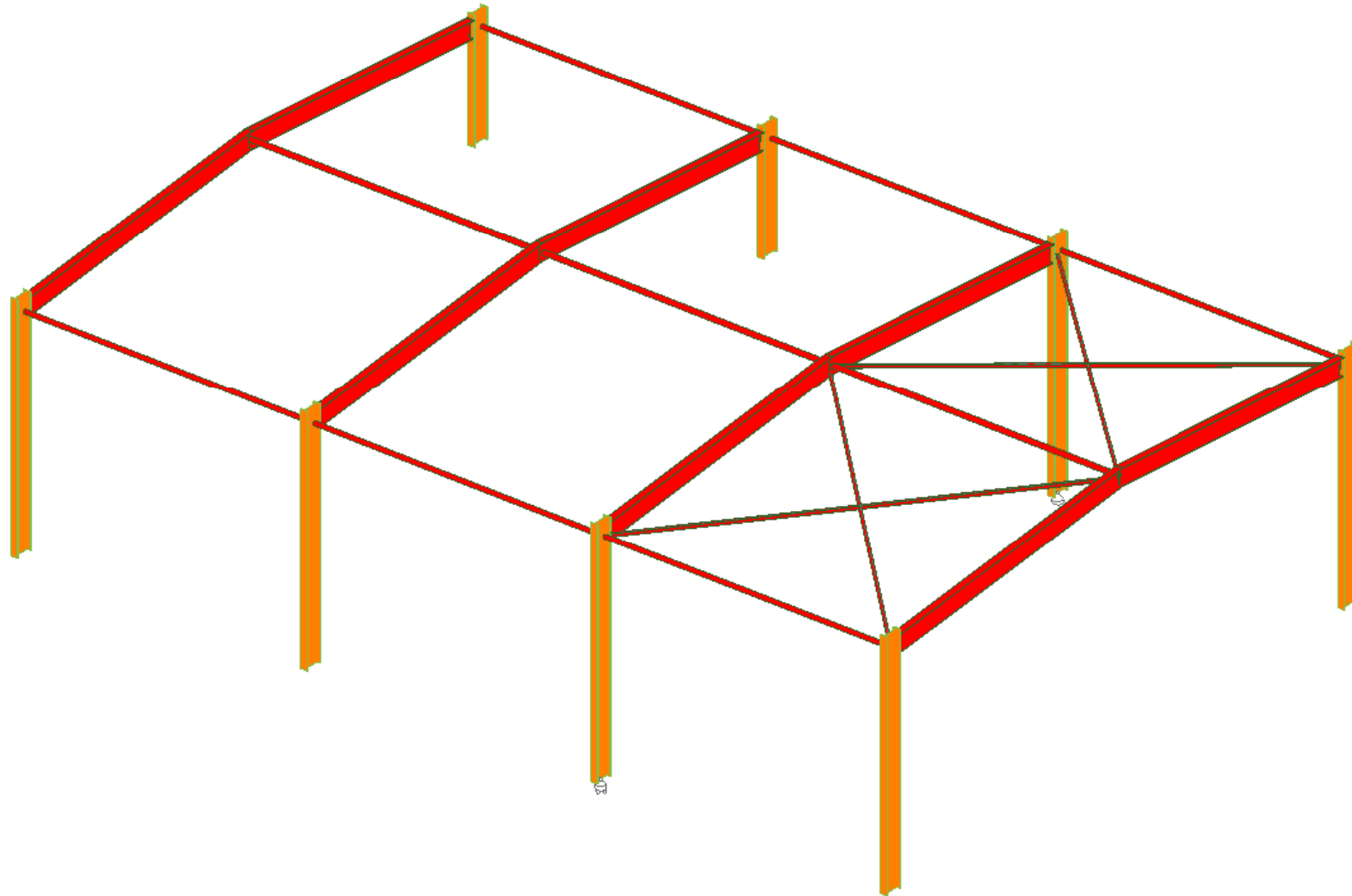
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+ 00 GFA		
+ 01 SUBSTRUCTURE		
+ 02 COLUMNS		
+ 03 UPPER FLOORS		
+ 04 STAIRCASE		
+ 04 STAIRS		
+ 05 ROOF		
+ 06 EXTERNAL WALLS		
+ 08 EXTERNAL DOORS		
+ 09 INTERNAL WALLS		
+ 10 INTERNAL SCREENS		
+ 11 INTERNAL DOORS		
+ 12 WALL FINISHES		
+ 13 FLOOR FINISHES		
+ 14 CEILING FINISHES		
+ 15 FITMENTS		
+ 22 - ROADS, FOOTPATHS AND PAVED AREAS		
+ 32 SITE PREPARATION		
+ 36 LANDSCAPING		

Quantity List

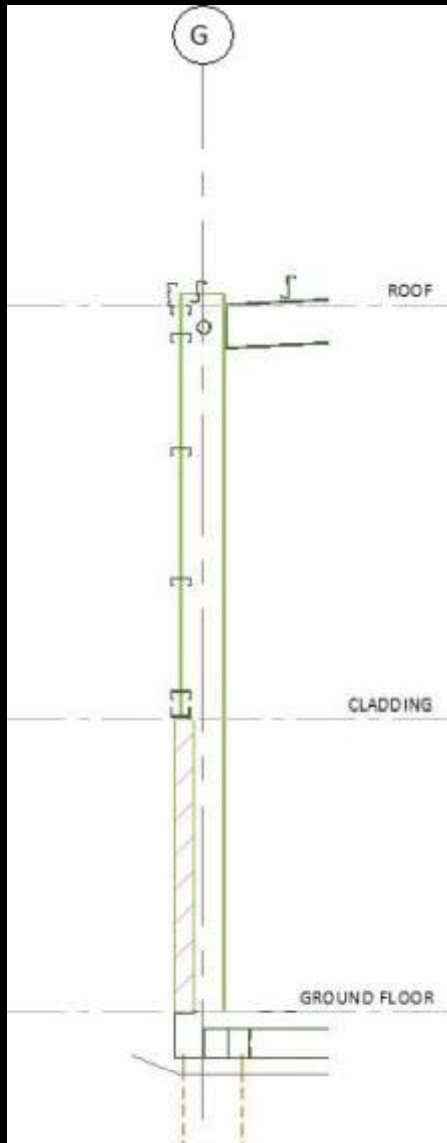
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01 SUBSTRUCTURE	100
02 COLUMNS	100
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04 STAIRCASE	100
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05 ROOF	100
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08 EXTERNAL DOORS	100
09 INTERNAL WALLS	100
10 INTERNAL SCREENS	100
11 INTERNAL DOORS	100
12 WALL FINISHES	100
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36 LANDSCAPING	100



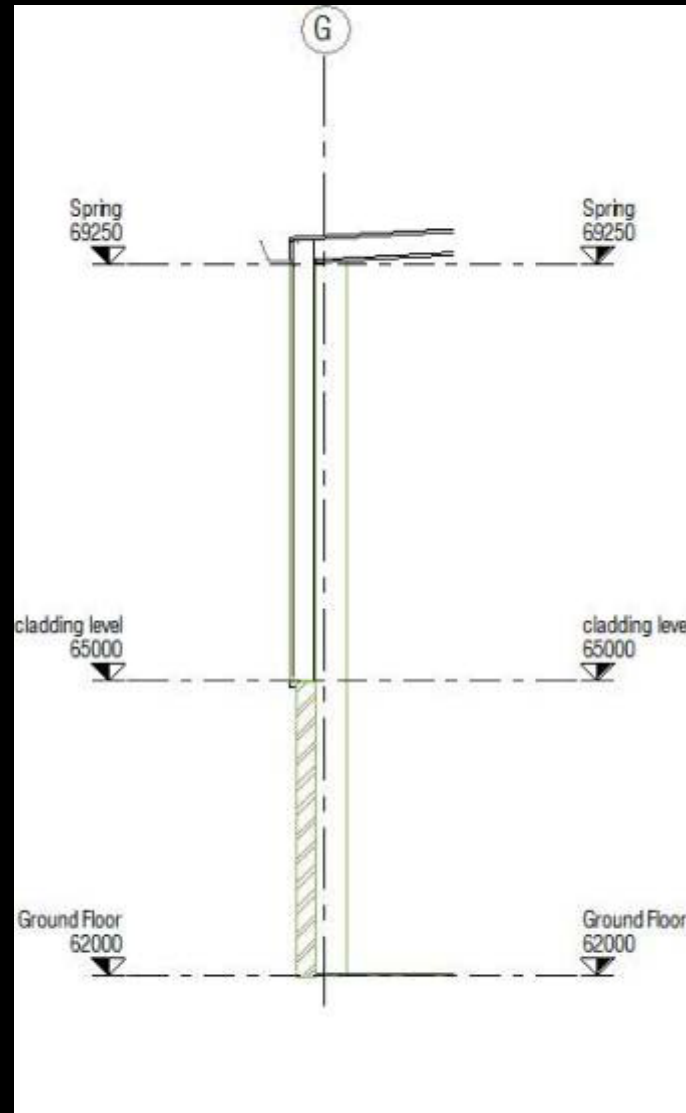
BIM with QS



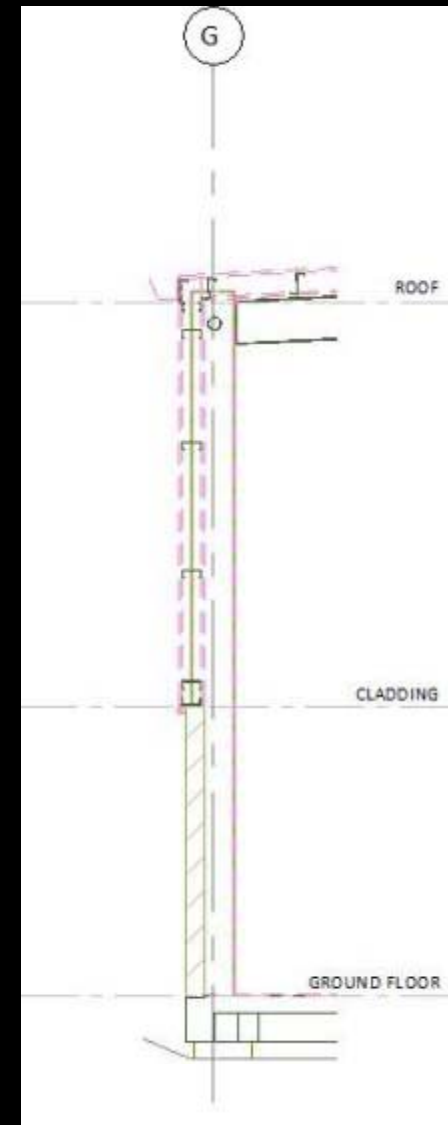
BIM - FINISHES



Structural model

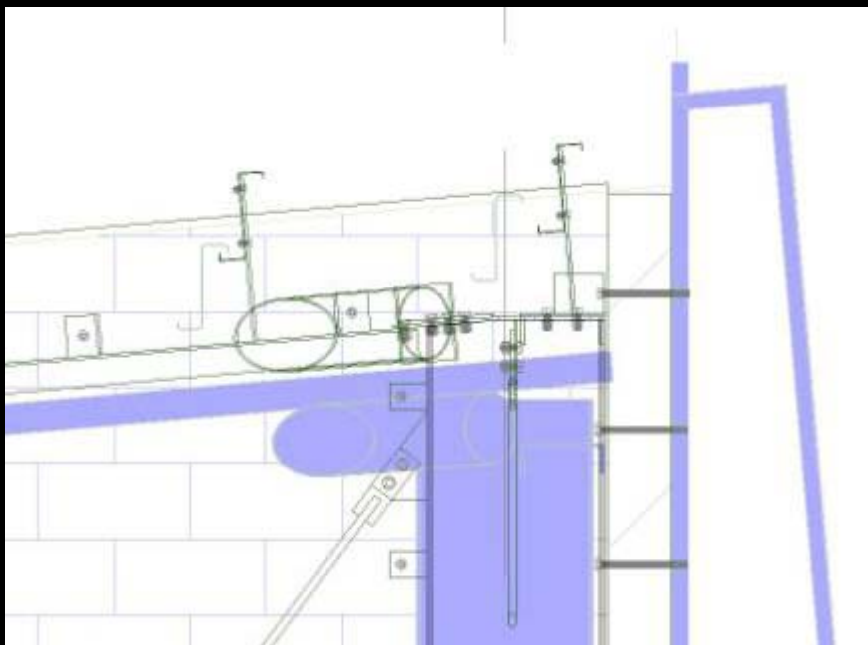
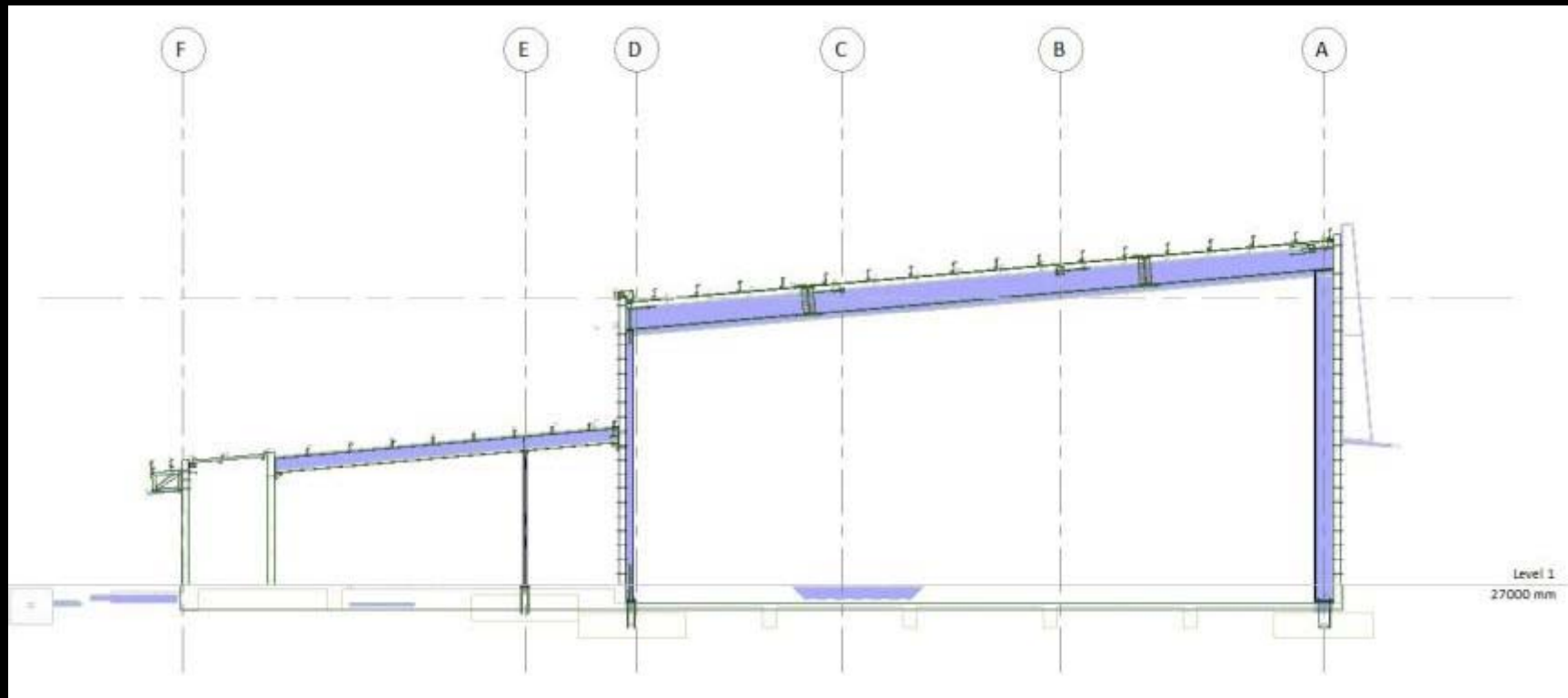


Architectural model

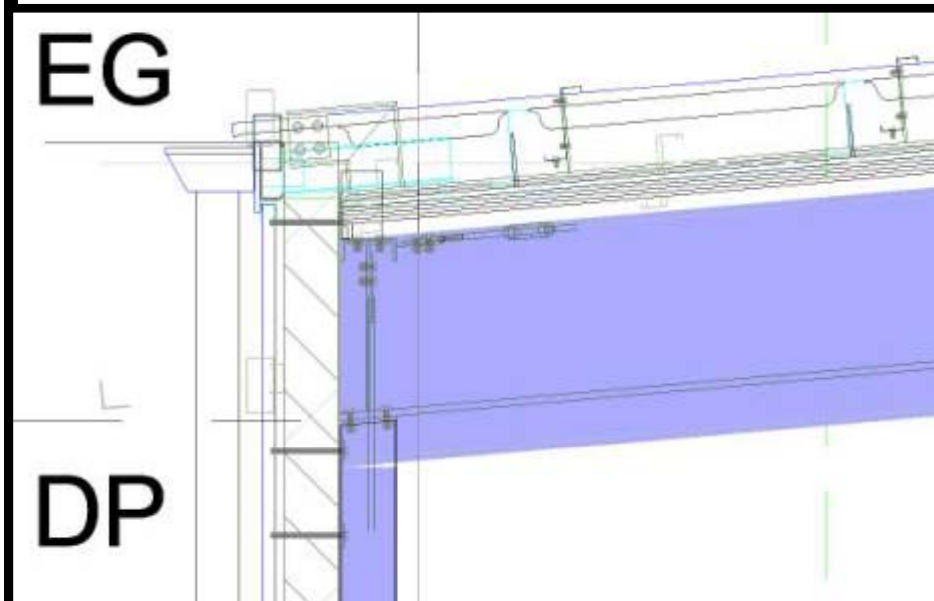
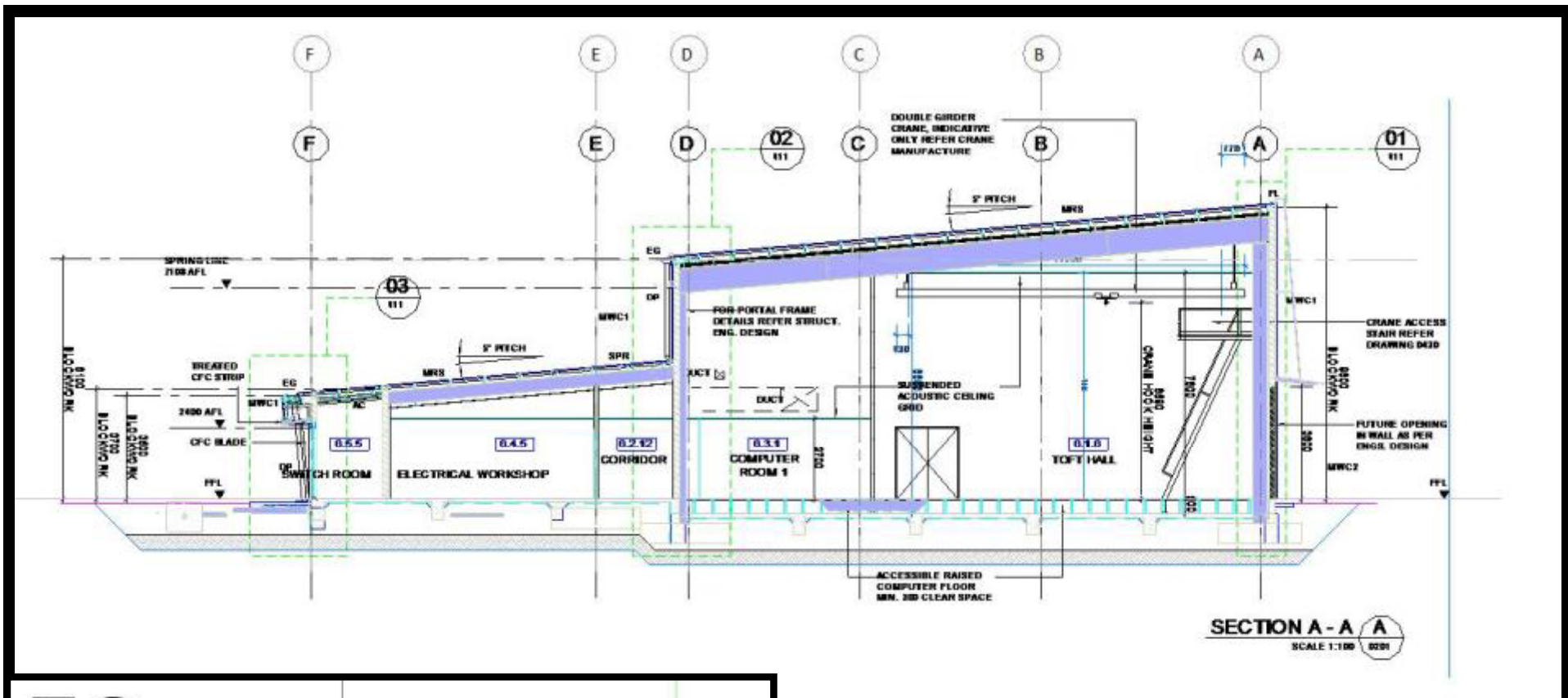


Combined section
shown on drawings

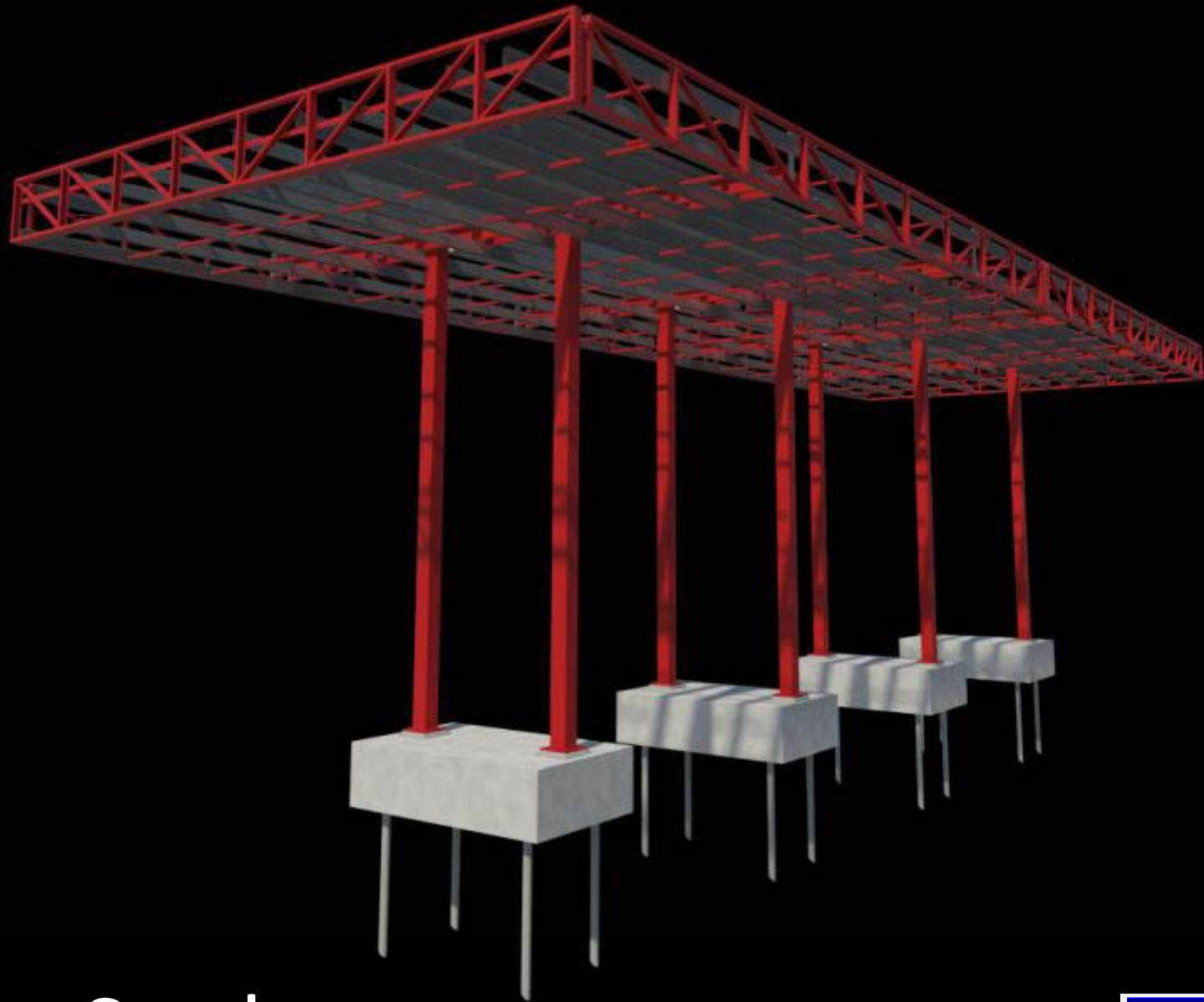
Collaboration



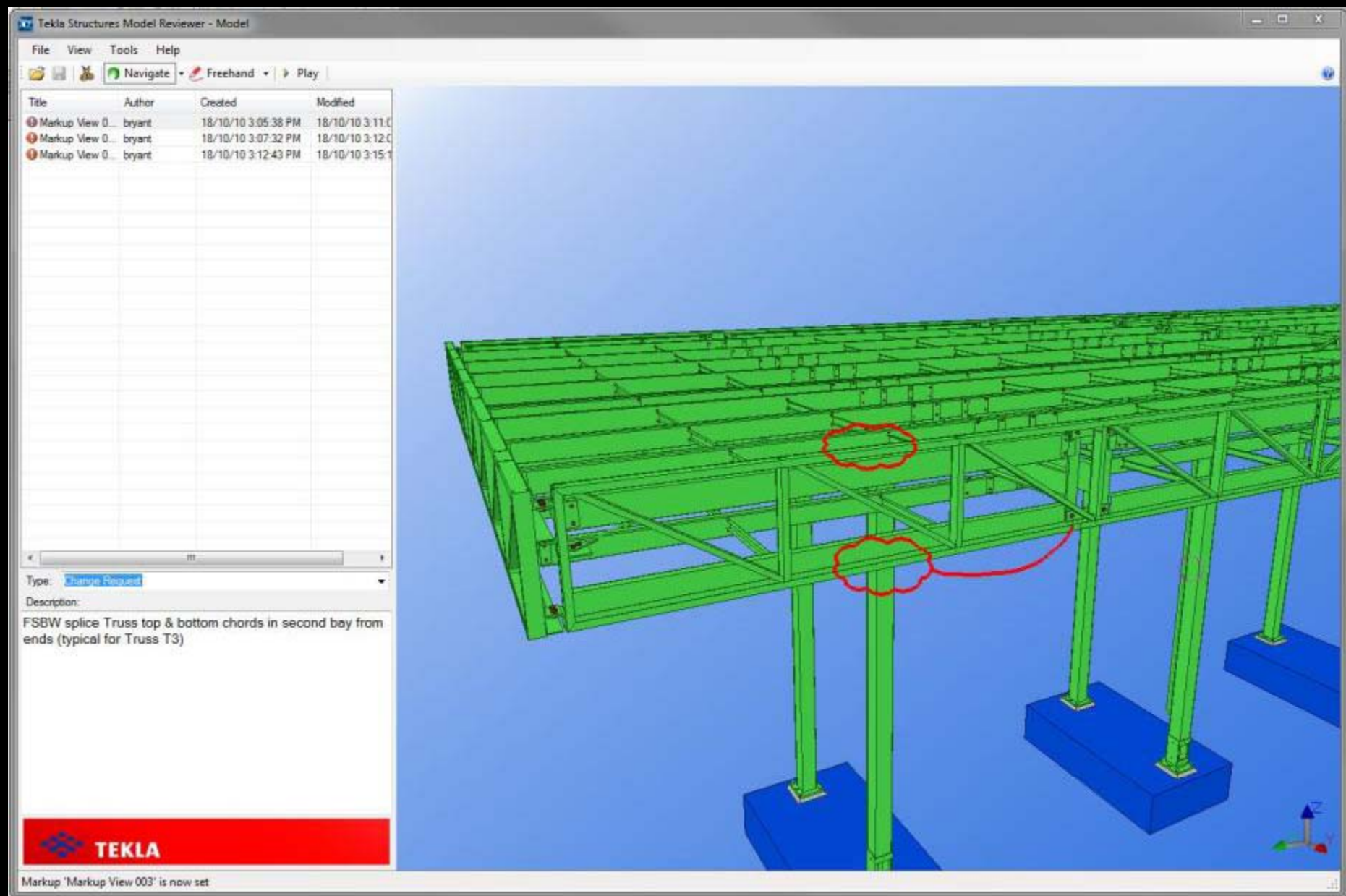
This is why we need
BIM



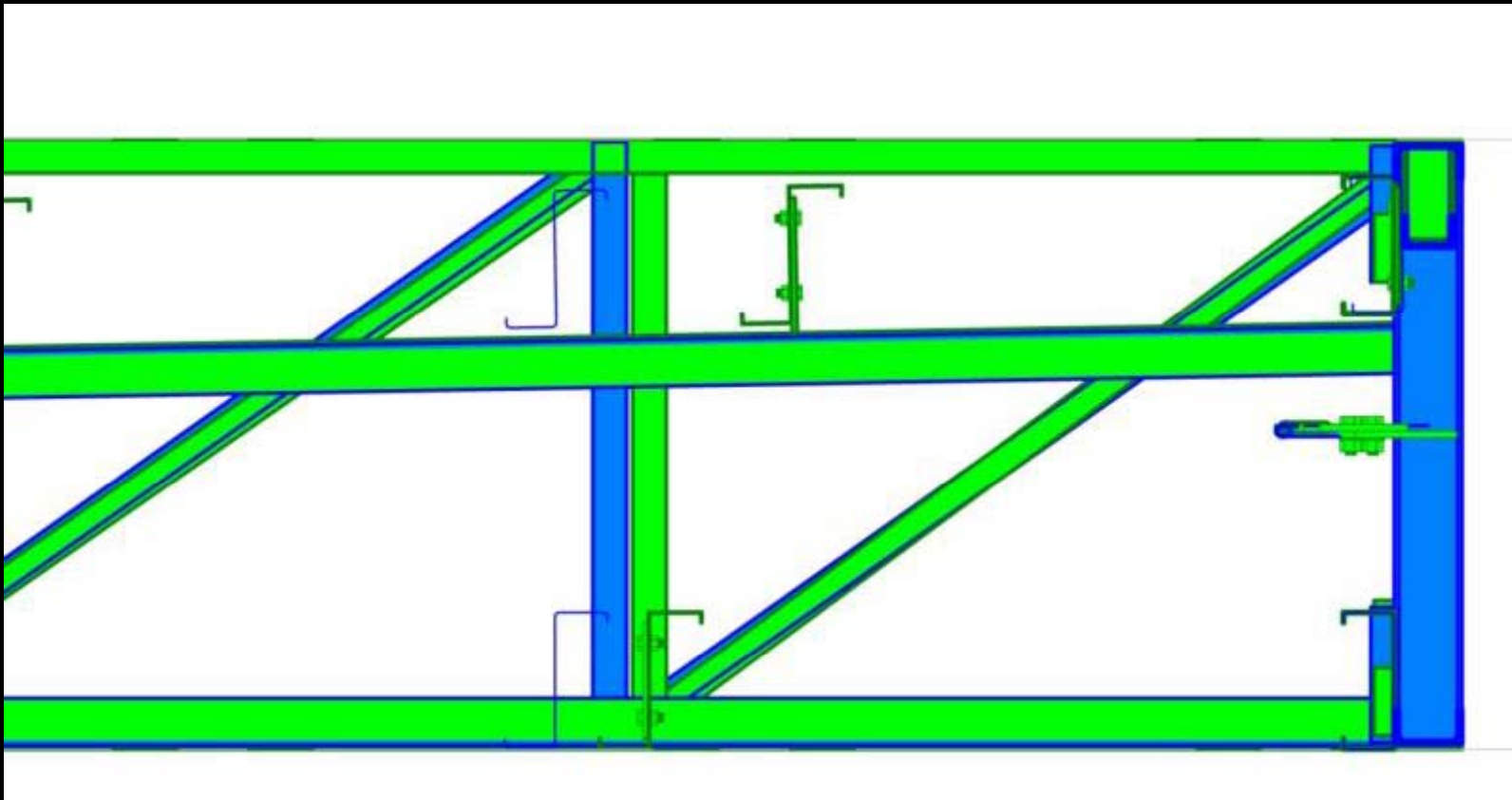
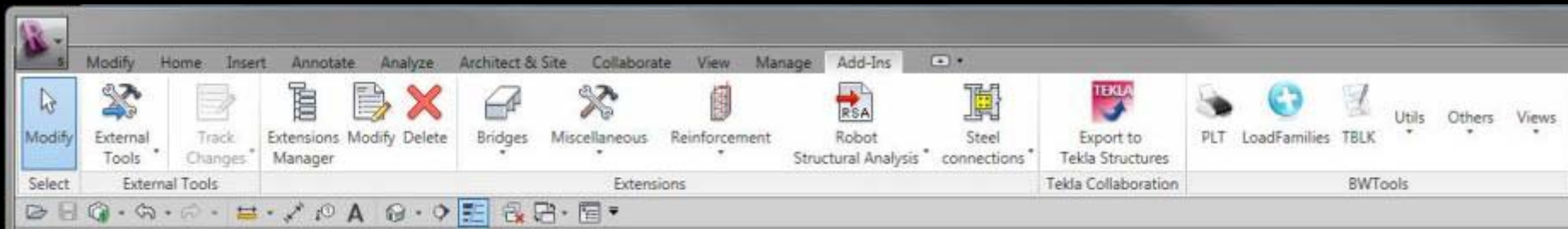
Well
Coordinated
Documentation



A Case Study



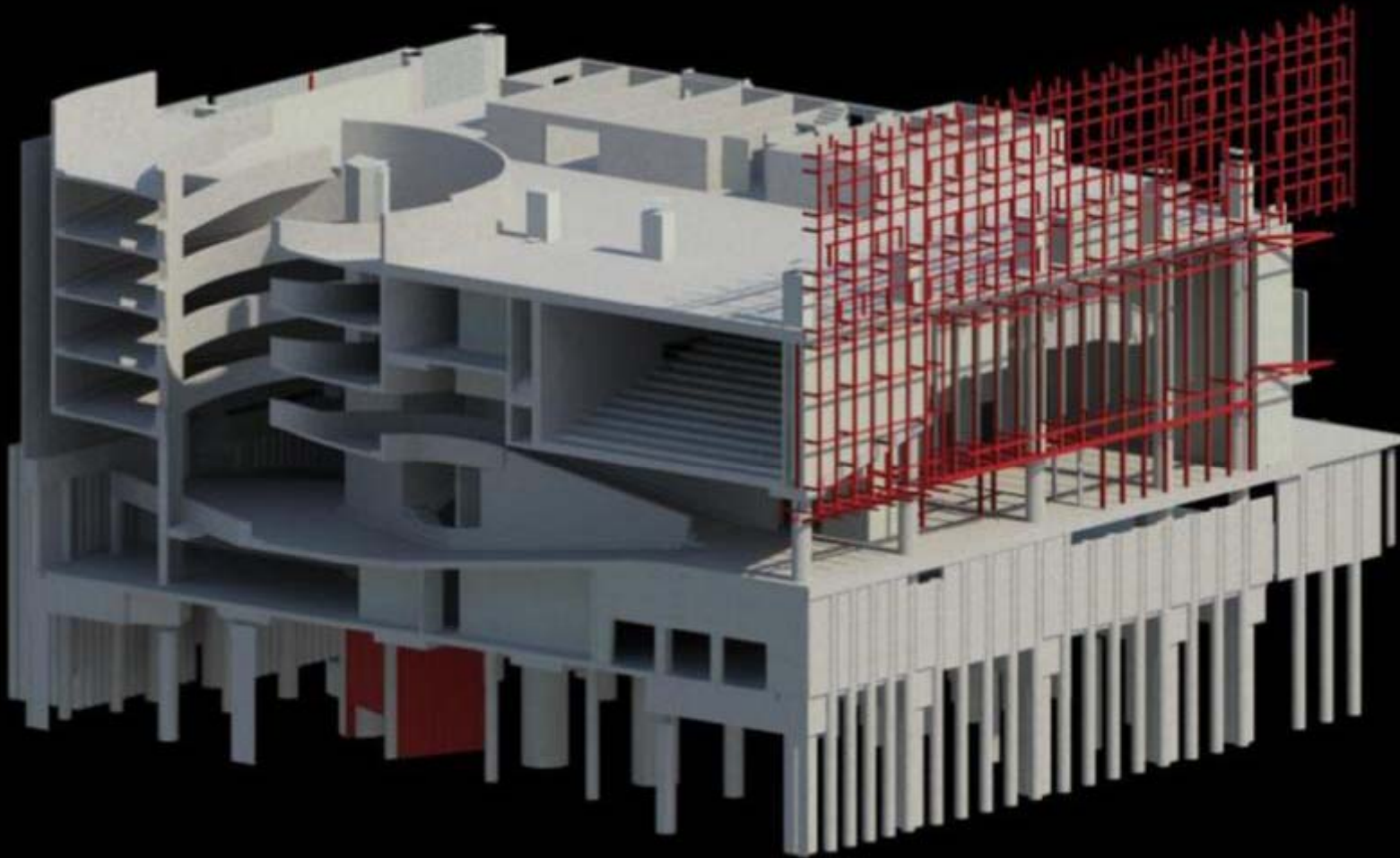
A Case Study



A Case Study

Implementation

- It takes time
- Training – sharing knowledge
- Need new standards, procedures
- Engineering Design & Documentation will merge with Steel Detailing (Somehow????)
- It is only a tool to solve the problem, it will not solve the problem
- Trust, Communication, Commitment



Thank You

- Preparing design models for efficient transfer to 3D steel detailing models
- Resolving issues in transferring documents from Revit to Tekla Structures and other 3D steel detailing packages
- Managing late design changes
- Identifying design changes in 3D design models to assist steel detailers
- Dealing with ownership of Revit design libraries
- Benefits of sharing 3D model information – time & cost savings
- Commercial arrangements between designers and steel detailers