



Civic Engineers

Timber Engineering Challenge, Opportunity & Joy

STA Conference April 2024



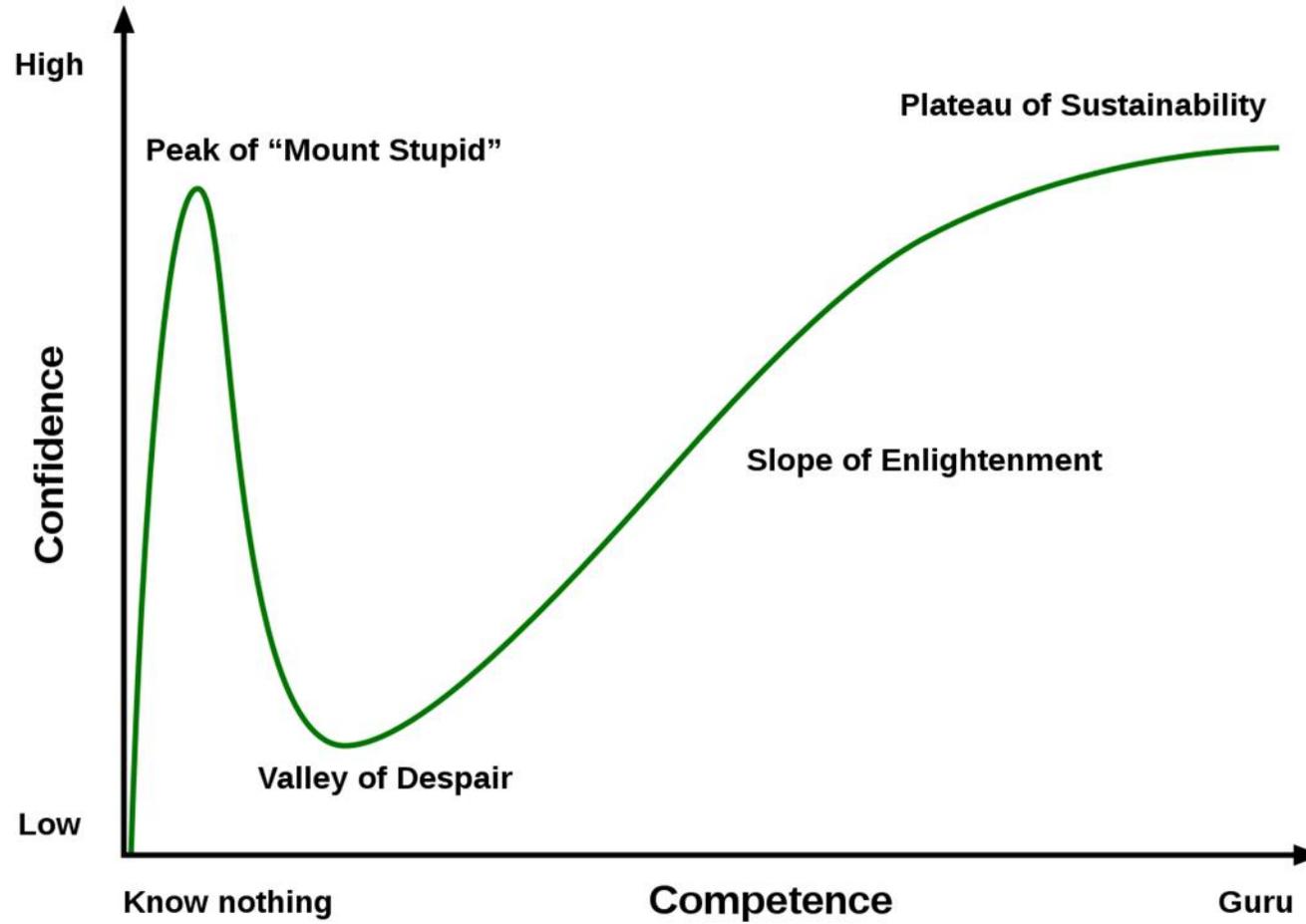


Julian Broster
Managing Director and Co-Founder
Civic Engineers



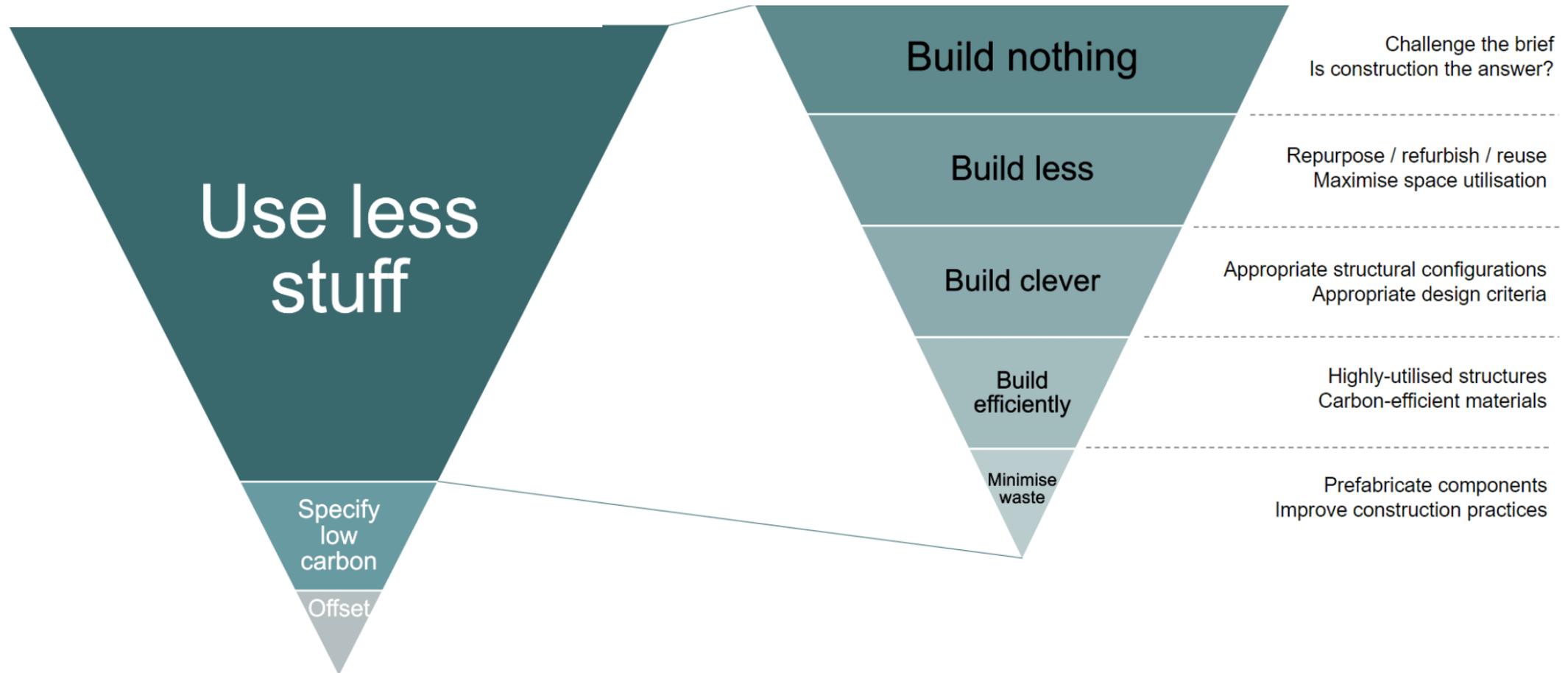


Dunning-Kruger Effect

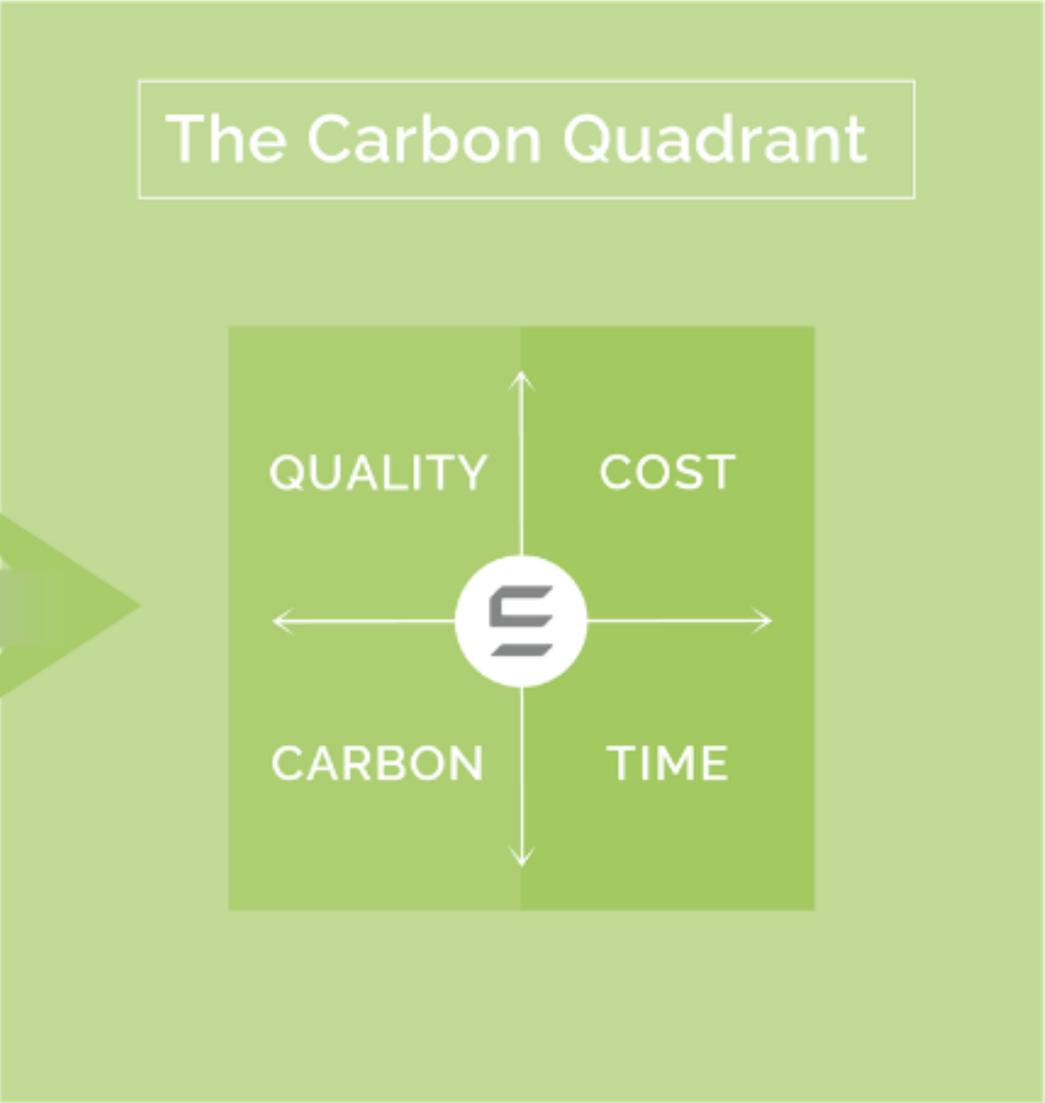
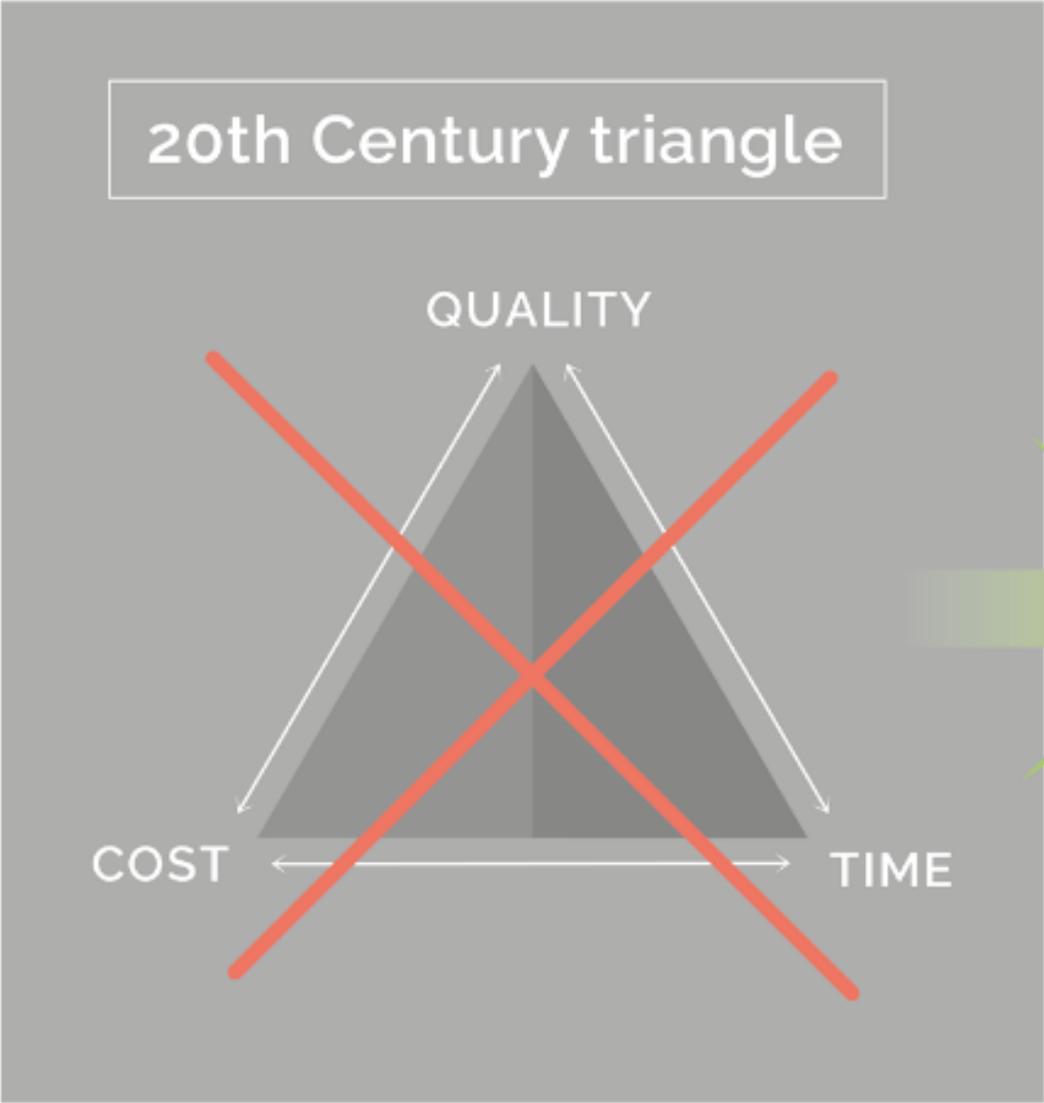




What is Low Carbon Design?



Changing Metrics - The Value of Low-Carbon Design



Net Zero Carbon Challenges ... Delayed Regulation



An industry-proposed amendment to
The Building Regulations 2010

Whole life carbon

INDUSTRY-PROPOSED DOCUMENT

Z1 Carbon assessments
Z2 Carbon intensity

Disclaimer: This document is not part of the Building Regulations. It has been produced by and in conjunction with the construction industry as proof of concept in order to demonstrate one way in which embodied carbon could be introduced into UK regulation. For accompanying commentary on this document, visit www.part-z.uk, or contact hello@part-z.uk

Proposal revision 1
26 April 2022

A proposal from the construction industry

Bill started in the House of Commons

- 1st reading
- 2nd reading**
- Committee stage
- Report stage
- 3rd reading

Bill in the House of Lords

- 1st reading
- 2nd reading
- Committee stage
- Report stage
- 3rd reading

Final stages

- Consideration of amendments
- Royal Assent

Key

- Complete
- In progress
- Not applicable
- Not yet reached

UK Parliament > Business > Legislation > Parliamentary Bills > Carbon Emissions (Buildings) Bill

Carbon Emissions (Buildings) Bill

Private Members' Bill (under the Ten Minute Rule)

Originated in the House of Commons, Session 2021-22

Last updated: 15 March 2022 at 10:53

Details News Stages Publications

This Bill was withdrawn on 14 March 2022

Long title

A Bill to require the whole-life carbon emissions of buildings to be reported; to set limits on... and for connected purposes.

House of Commons

UK Parliament > Business > Legislation > Parliamentary Bills > Carbon Emissions (Buildings) Bill > Stages > 2nd reading

Carbon Emissions (Buildings) Bill

2nd reading

Session 2022-23

Records

Looking for a marshalled list of amendments? Please go to [publications](#).

Sitting 25 November 2022

There are no publications for this sitting yet.

Sitting 24 February 2023

What is second reading?

Debate on general principles of the Bill

AJ Architects' Journal

COMPETITIONS BUILDINGS SPECIFICATION ARCHITECTS PRACTICE MAGAZINES LIBRARY PODCASTS EVENTS

Opinion Competition wins RetroFirst Climate change RIBA Grenfell Tower AJ Small Projects

Embodied carbon bill makes a comeback in Parliament

23 JUNE 2022 • BY WILL HURST

Jerome Mayhew MP has reintroduced a private...



TIMBER DEVELOPMENT UK

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Timber Knowledge Sheet

Category
Emission

Audience
Architect | Designer | Engineer

Theme
Sustainability

Author
Charles Law

Cover Image
Wood Awards (Wood Gallery) |
Dagge Photography

KNOWLEDGE LIBRARY

2024 Embodied Carbon Data for Timber Products

All materials have an embodied carbon value, which reflects the emissions from all stages of production, use and end of life. These data are normally captured in the form of a verified EPD. 

This Knowledge Sheet includes weighted average A1-A4 embodied carbon data for a number of common timber products and outlines the methodology for calculating these.

TIMBER POLICY

Understanding low carbon policies for timber construction

by Waugh Thistleton Architects

Published by Timber Development UK

NEW MODEL BUILDING EVIDENCE

What's holding timber construction back...

ADDING 4 STOREYS
STEEL/CLT FRAME
TO EXISTING 3
STOREY R.C. FRAME

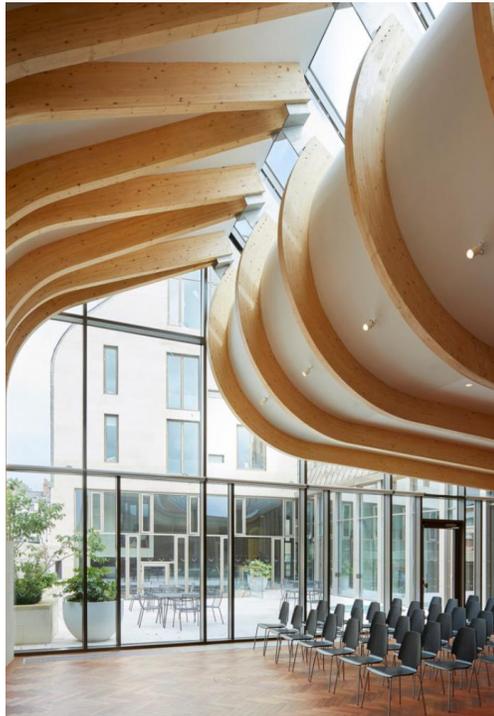


OUT NOW!

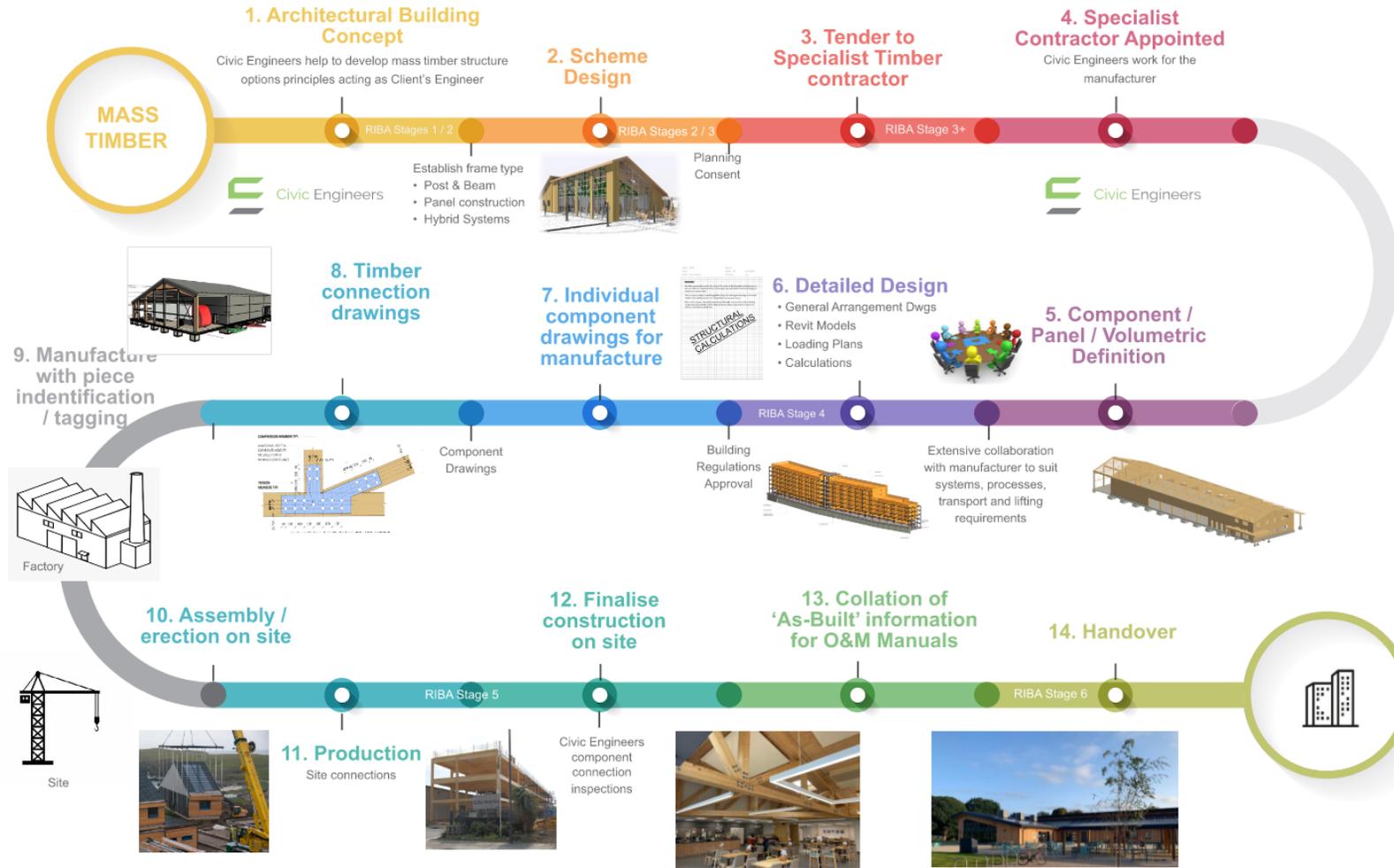
The Mass Timber
Insurance Playbook:
A guide to insuring mass timber buildings

ASBP The Alliance
for Sustainable
Building Products

Co-funded by Philo Collow and Jim Glickling.
Funded by Built by Nature, Marsh, and Zurich
Resilience Solutions.



Timber engineering approach

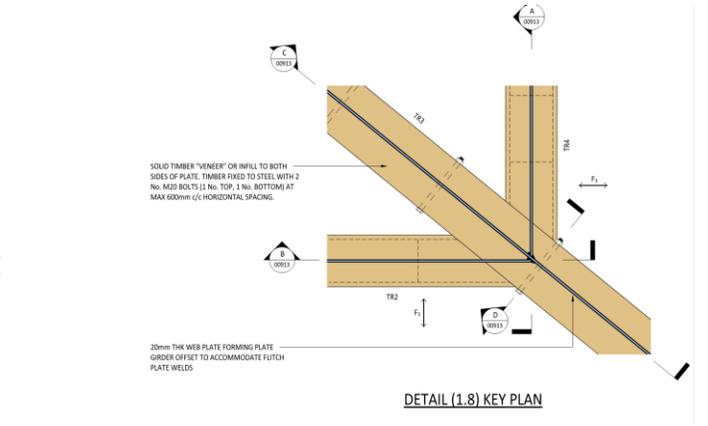
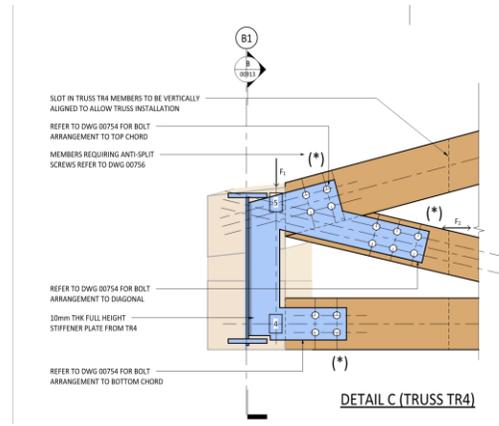


Case Study 1 : Delamere Forest



Delamere Forest Visitor's Centre

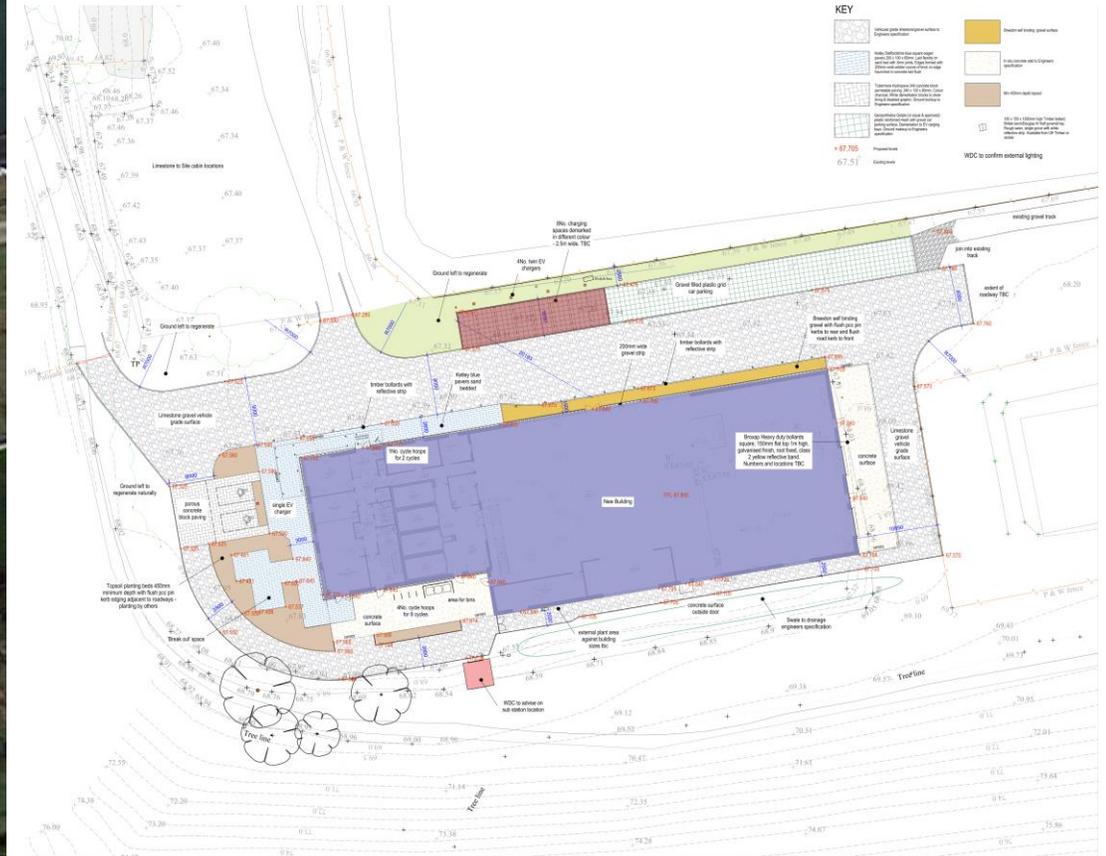




Lobsack Seed Store Facility for the Woodland Trust



EXISTING SITE

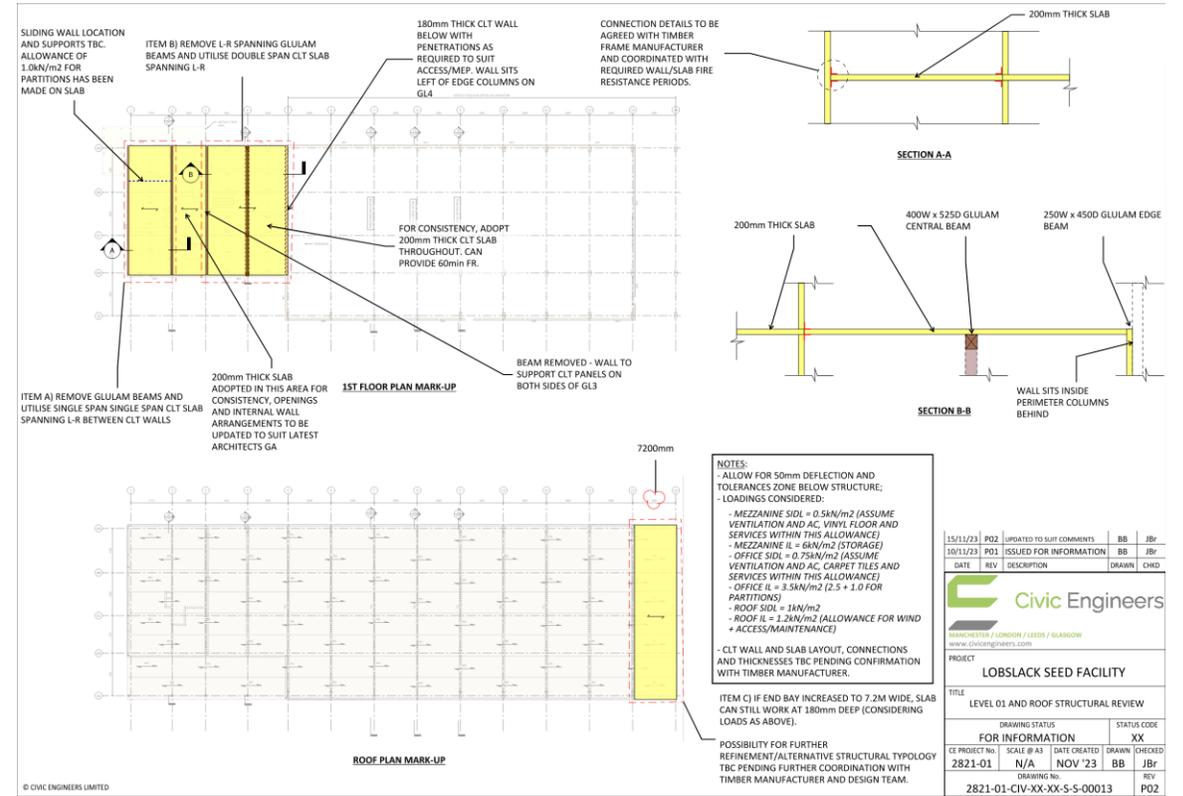
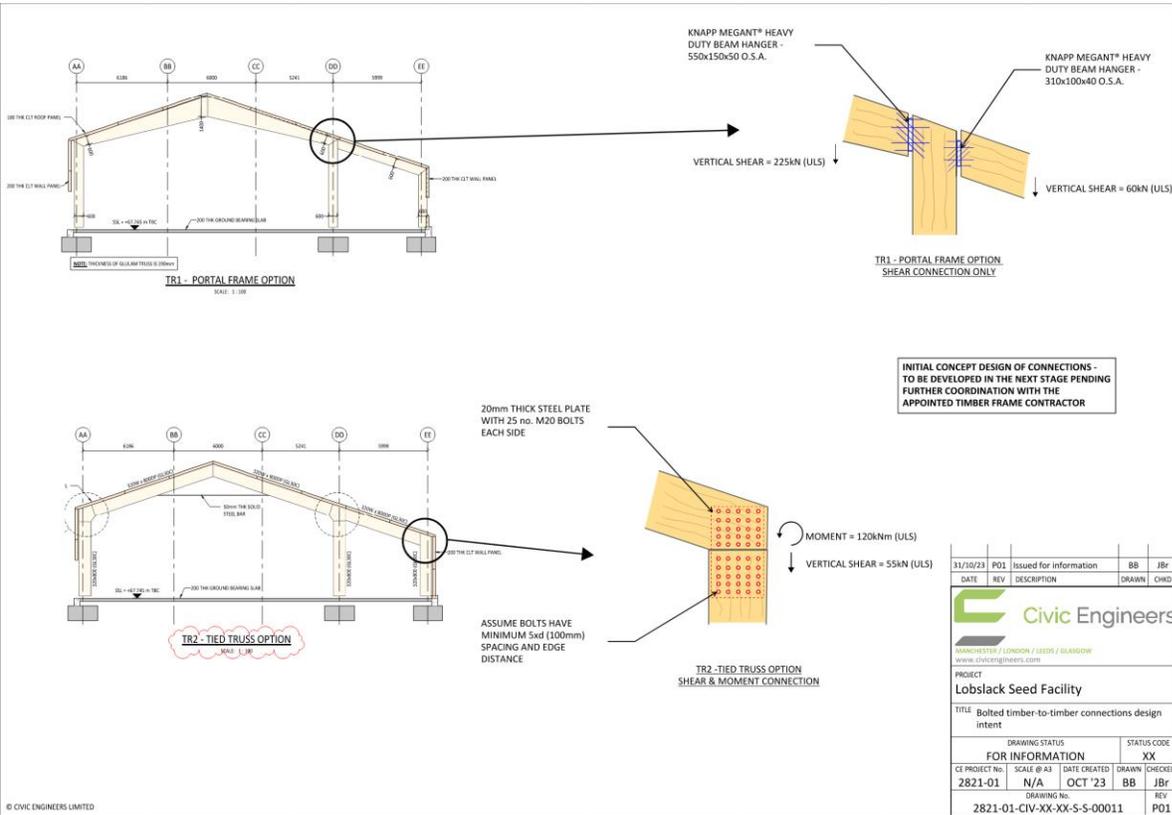


PROPOSED PLAN

Mass timber framing and CLT slabs



Frame and Connection Design



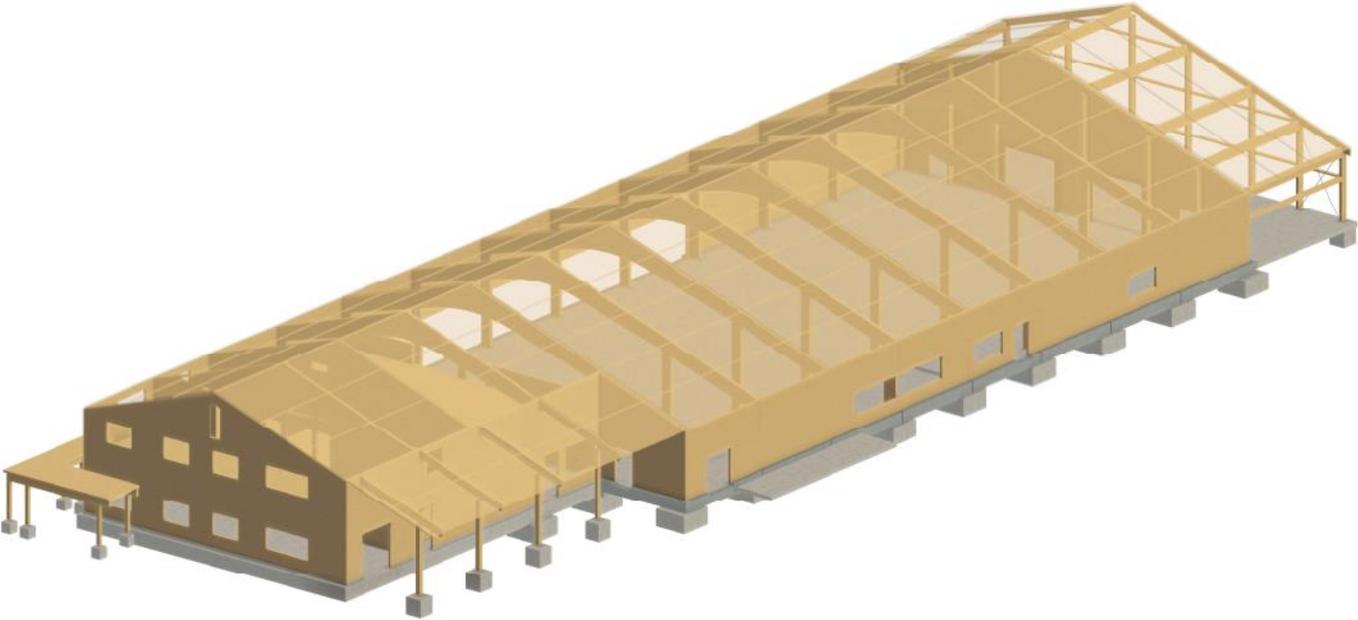
Structure



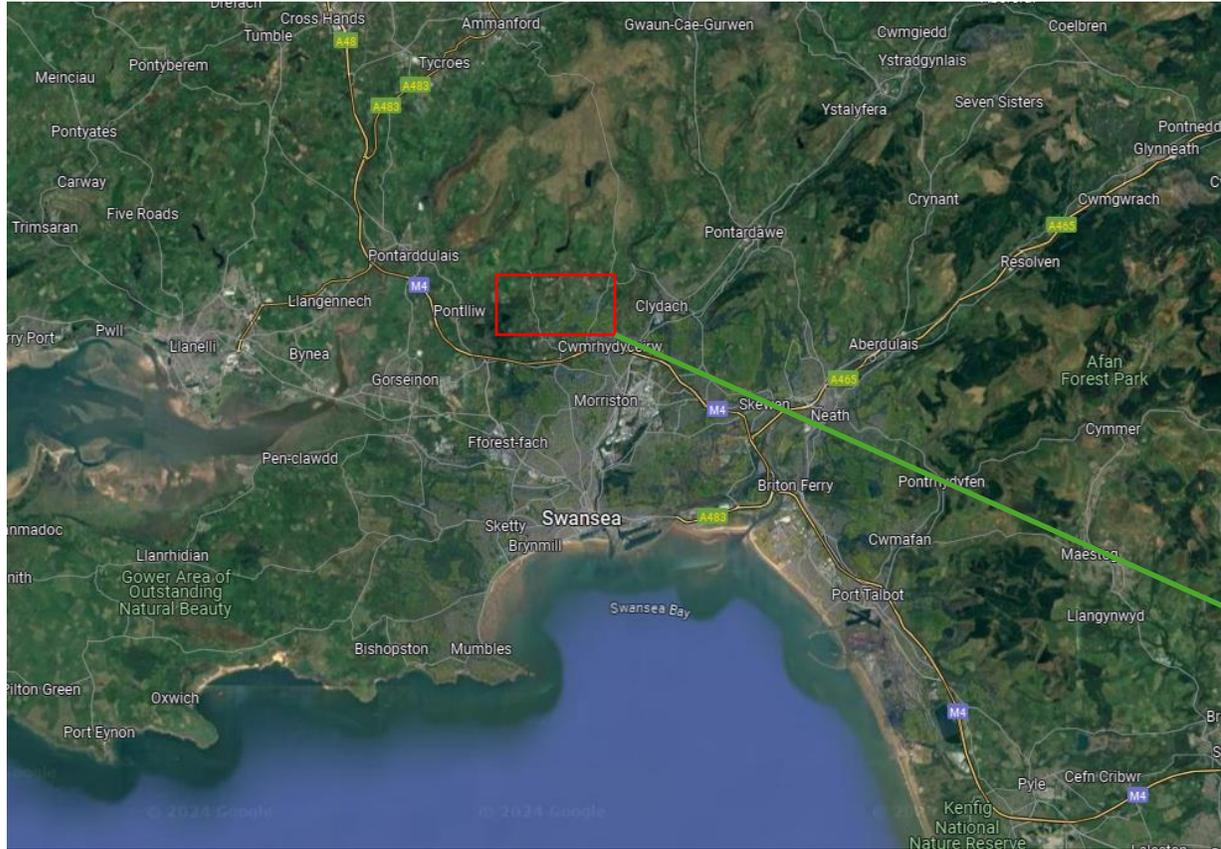
CLT (WALLS, FLOORS AND ROOF)



GLULAM (BEAMS, TRUSSES AND COLUMNS)



Case Study 2 - Castle Square, Swansea

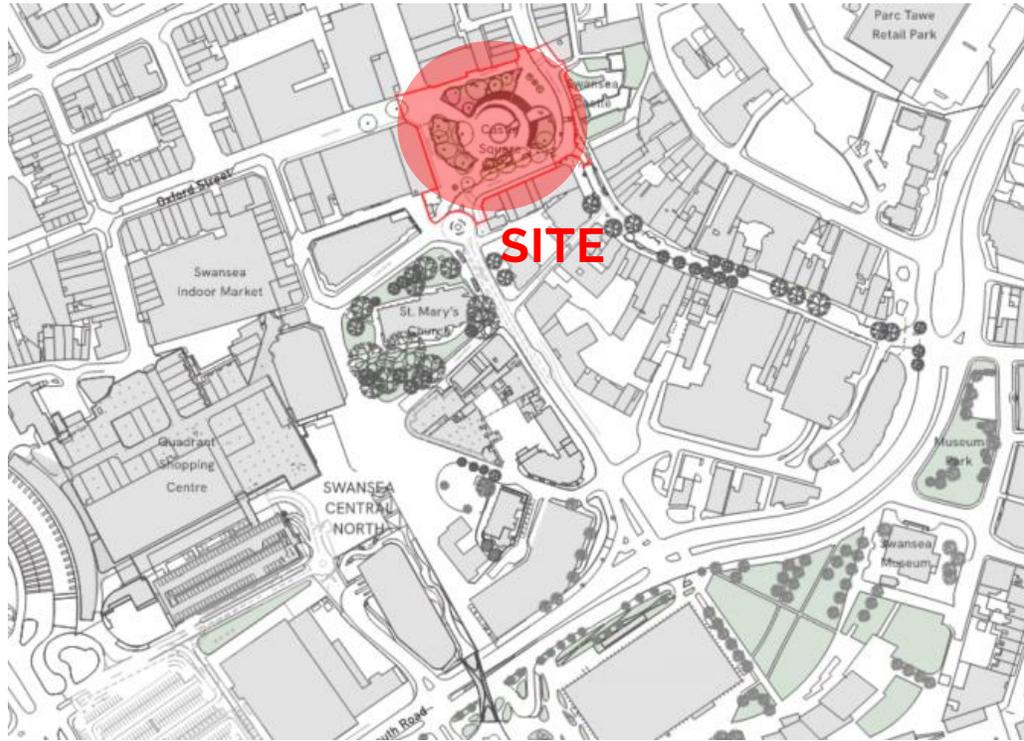


Swansea City Centre, between Princess Way, Castle Bailey Street and Caer Street



The Project





The Spaces



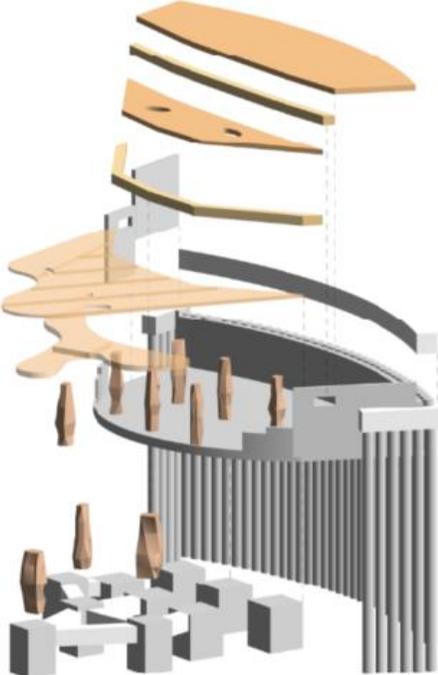
PAVILION A



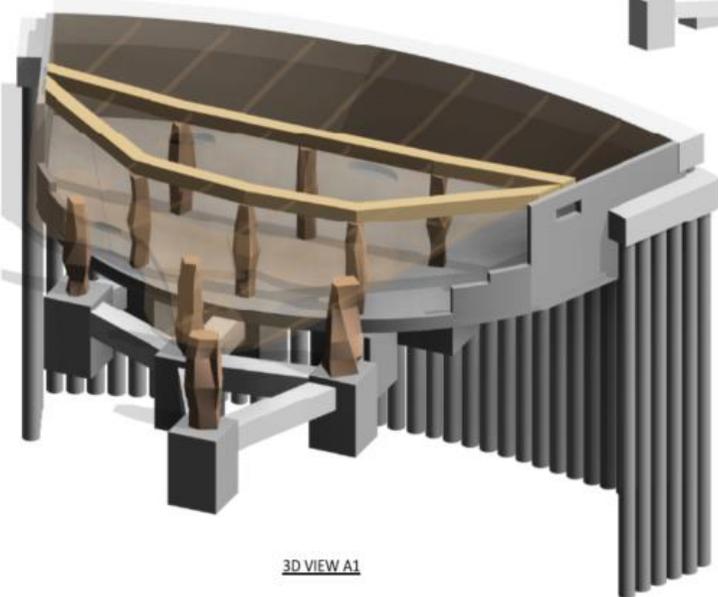
PAVILION A

CLT Panels

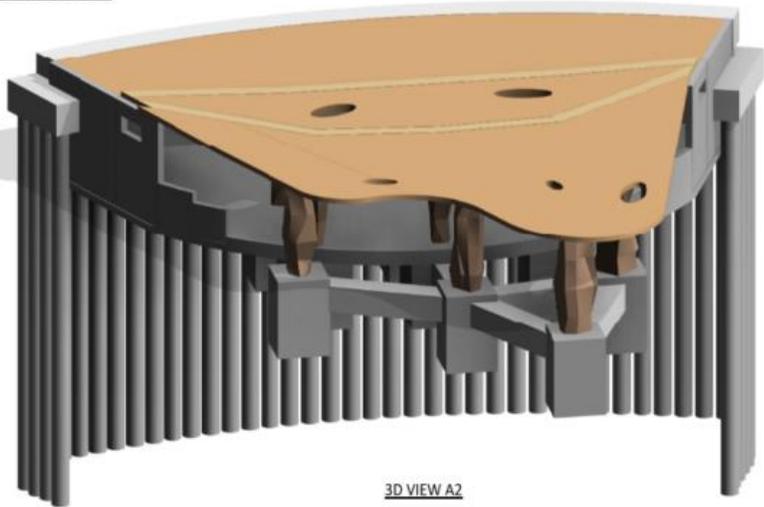
Glulam Beams



DISPLACEMENT VIEW



3D VIEW A1



3D VIEW A2

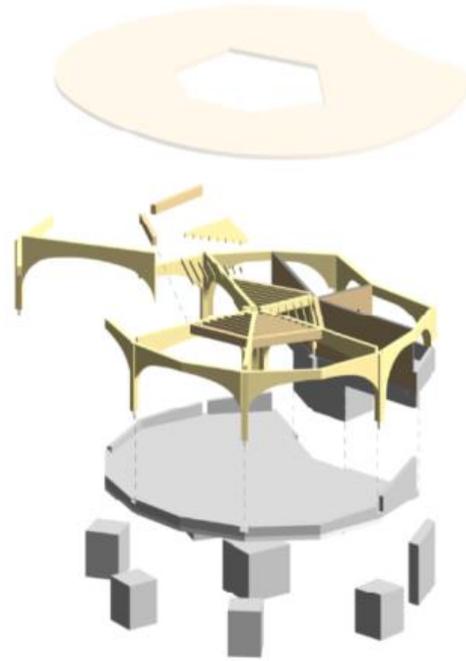
The Spaces



PAVILION B

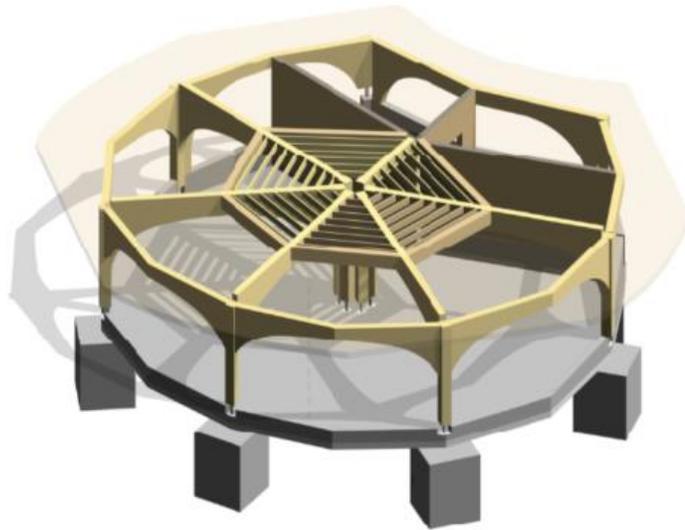


PAVILION B

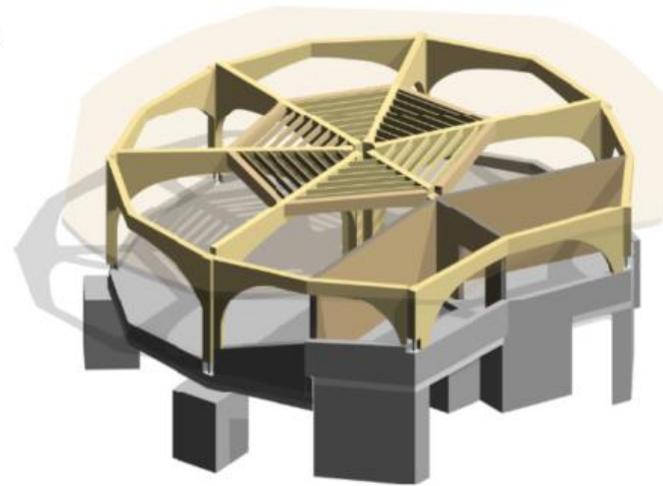


DISPLACEMENT VIEW

Curved Glulam Frames
Central Glulam Columns
Radial Joisted Roof

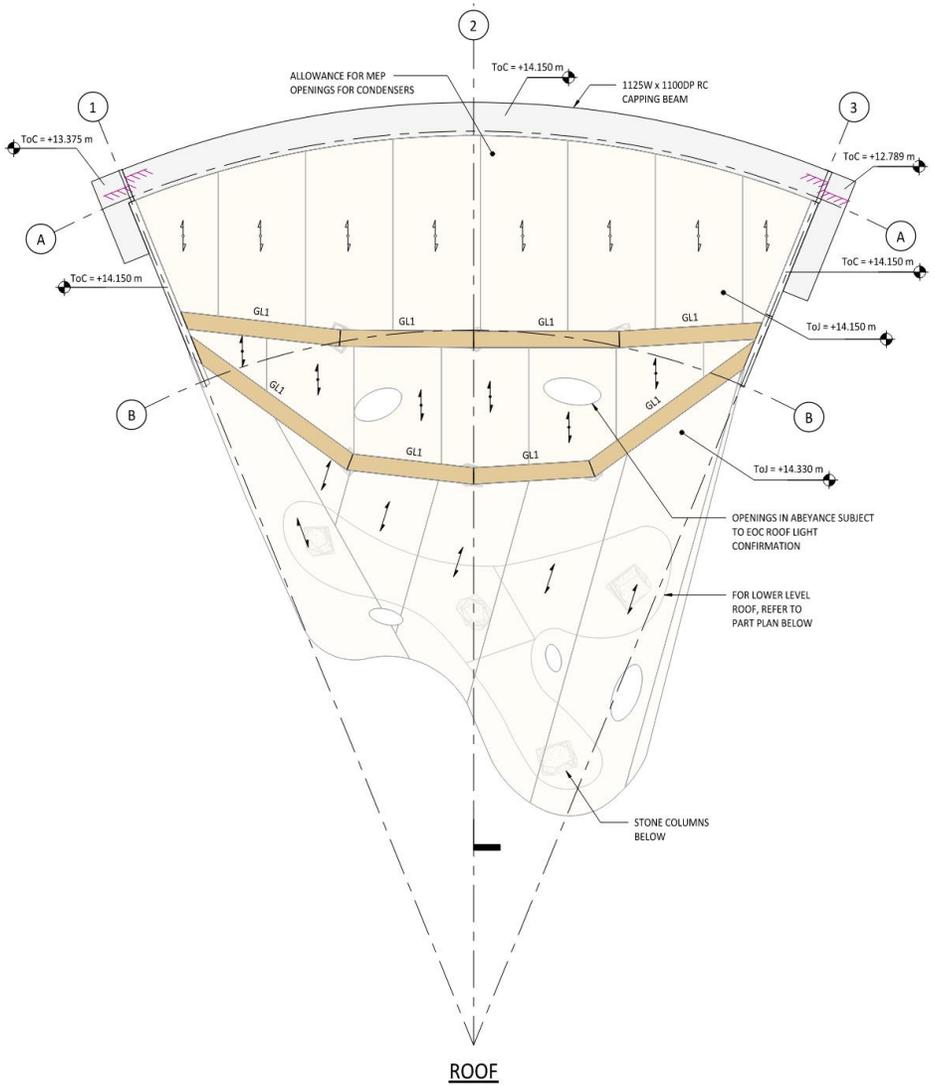


3D VIEW B1

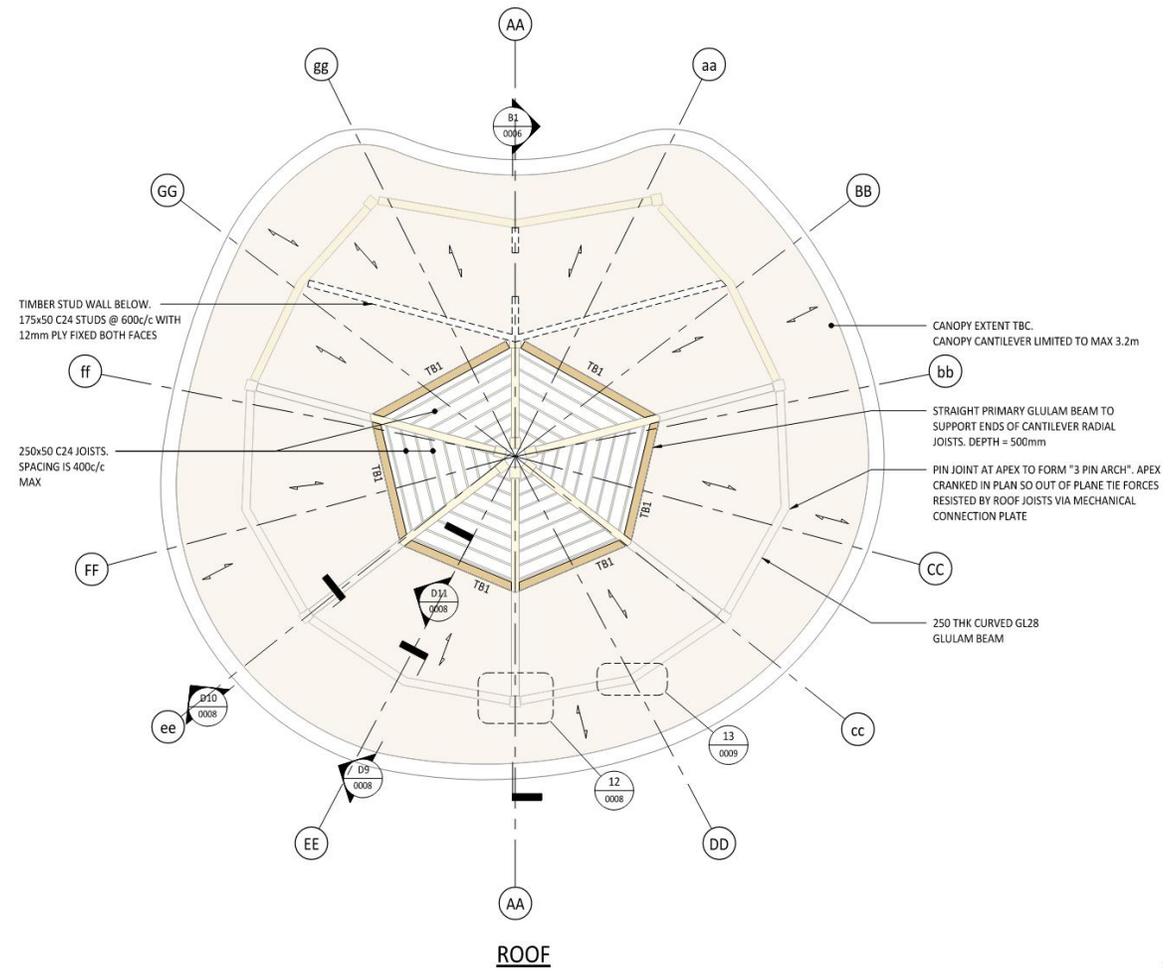


3D VIEW B2

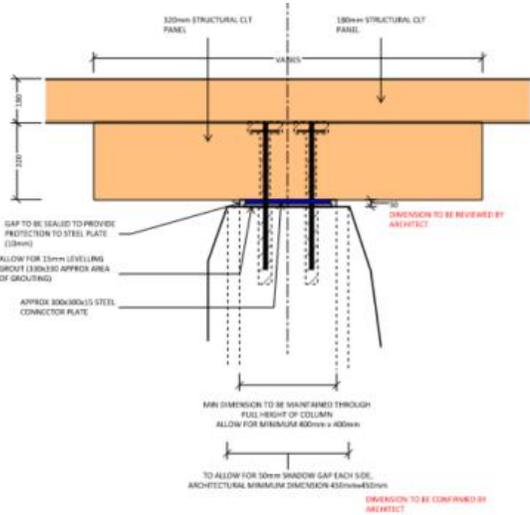
Technical Design



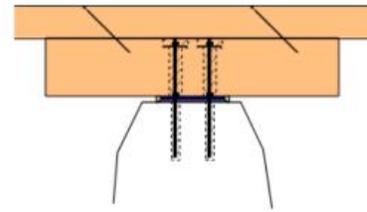
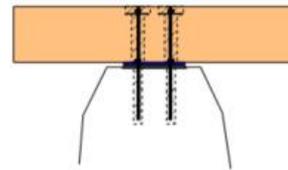
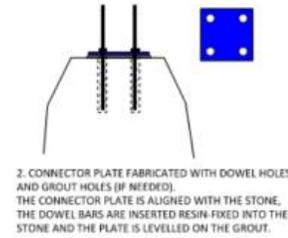
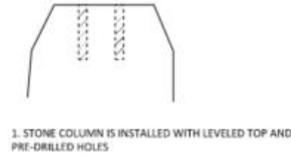
PAVILION B



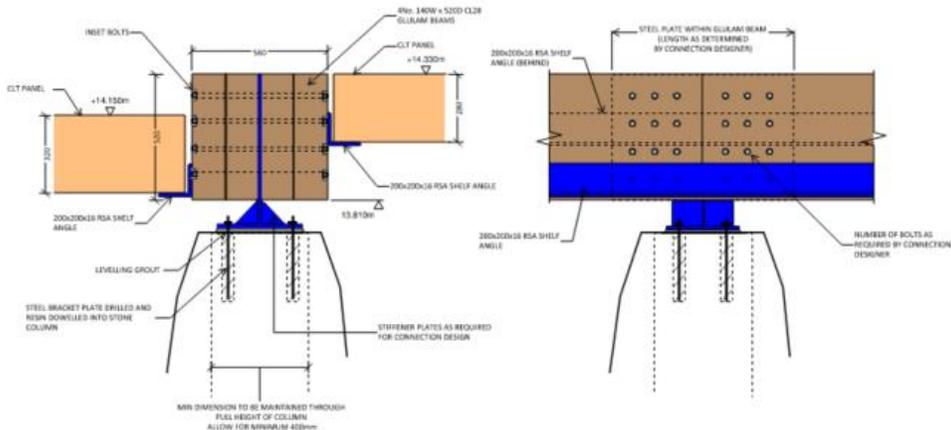
Stone / Timber detailing



STONE COLUMN TO CLT ROOF CONNECTION
(EXTERNAL)
SCALE 1:50 @ A1



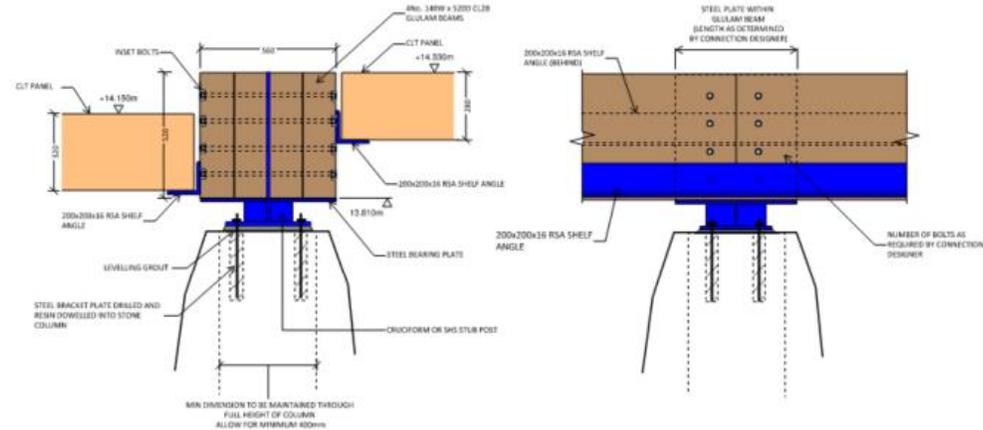
INDICATIVE CONSTRUCTION SEQUENCE
1/15



STONE COLUMN TO ROOF CONNECTION (INTERNAL)
SECTION
SCALE 1:10 @ A1

STONE COLUMN TO ROOF CONNECTION (INTERNAL)
ELEVATION
SCALE 1:10 @ A1

INDICATIVE CONNECTION DETAIL AS STAGE 3 PROPOSALS



STONE COLUMN TO ROOF CONNECTION (INTERNAL)
SECTION
SCALE 1:10 @ A1

STONE COLUMN TO ROOF CONNECTION (INTERNAL)
ELEVATION
SCALE 1:10 @ A1

ALTERNATIVE INDICATIVE "KNIFE PLATE" CONNECTION DETAIL

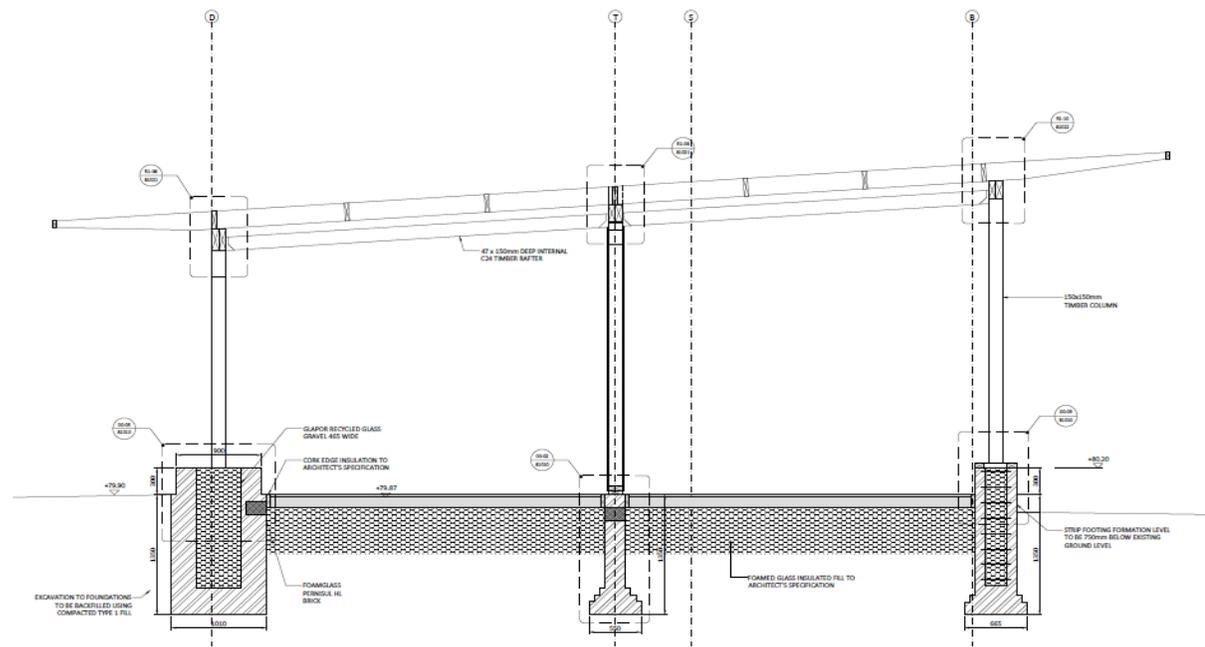
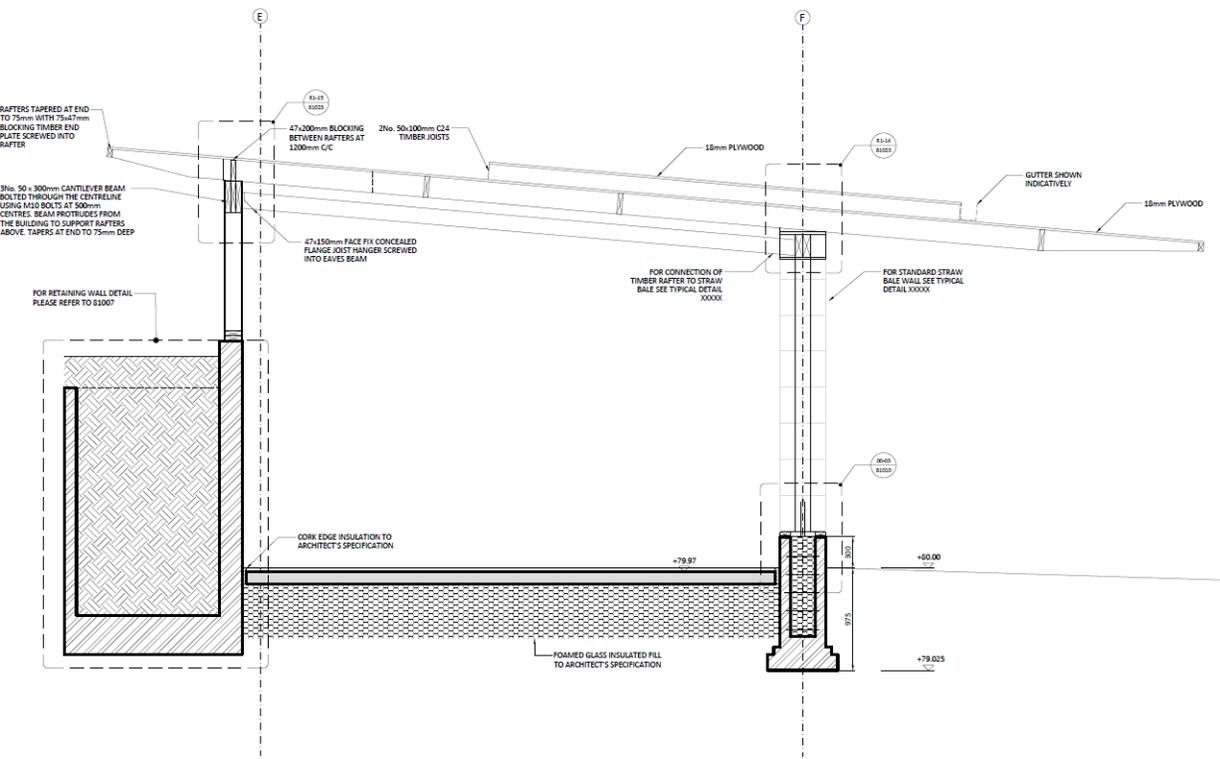
Case Study 3 : National Trust - Shugborough Estate Visitor Centre





Oak Tree





Recently Completed - Forest School, Staffordshire





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Leeds
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Glasgow
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TIMBER ENGINEERING

Challenge

Opportunity

Joy

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THANK YOU