



**MODULAR
MATTERS**

e elements europe
proud part of the **GS** E&C family

A Hybrid Approach to High Rise Modular Construction

By Stuart Marshall
Head of UK & Global Sales
Elements Europe


SMITH'S
GARDEN





proud part of the **GS** E&C family

Offsite construction specialists who are passionate about creating a **sustainable future** for construction.



proud part of the **GS** E&C family

Our Family

GS Group was incorporated in 2004 and officially split from LG Group in 2005 to focus on Energy, Construction and service businesses with the corporate vision of value no.1 GS.

GS & LG Split Overview

Year 1969



LG

2005



GS



LG

- Service
- Energy
- Construction

- Electronics
- Chemicals
- Telecom

About GS Group

(as of Dec. 2023)

Total Asset (USD)	\$61 Billion
Sales Revenue (USD)	\$44 Billion
8th Largest Conglomerate in Korea ("20)	

1 USD = 1,088 KRW

GS Holdings



Where are we?



Elements Europe
Hadley Castle Works
Hadley
Telford
TF1 6AA

240,000 Sqft



elements europe

proud part of the **GS** E&C family



- Turnkey/Main Contractor
- Designed, engineers & manufactured in-house
- Fully co-ordinated programme



- High rise residential
- Student accommodation & hotels
- Fully finished & commissioned in the factory
- Meet specification requirements



- Structural Framing System (SFS)
- Load Bearing
- Pod & Panel solution

Adding Pre-manufactured Value
Creating Sustainable futures



Our approach to modular

We specialise in providing volumetric modules for mid to high rise developments for a range of different sectors such as:

- Residential Apartments
- Student Accommodation
- Hotels



“We manufacture fully volumetric room modules to our client’s specification and have the experience to deliver innovative solutions to complex builds in the residential, hotel, student accommodation and care home sectors.”



Case Study

East Road, London



239

bedroom hotel-
Motel One



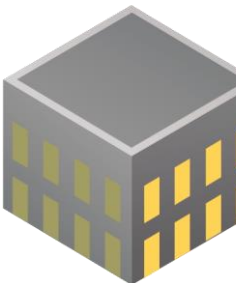
22

5 levels of office space
below 17 levels of a 4*
hotel (16 modular) plus 3
basement layers



240

Room modules to be
manufactured in Telford
from May 2023



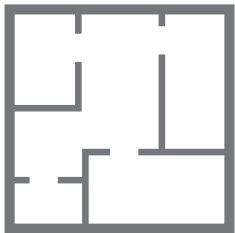
698 sqft

Ground floor
footprint, city
centre location.



Case Study

Creekside Wharf, Greenwich



249

One and two-bed apartments



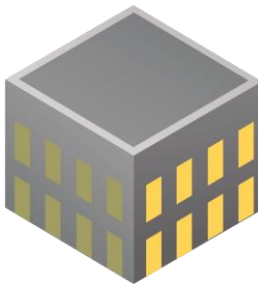
23

Storeys in the highest tower,
with block one at 12 storeys.



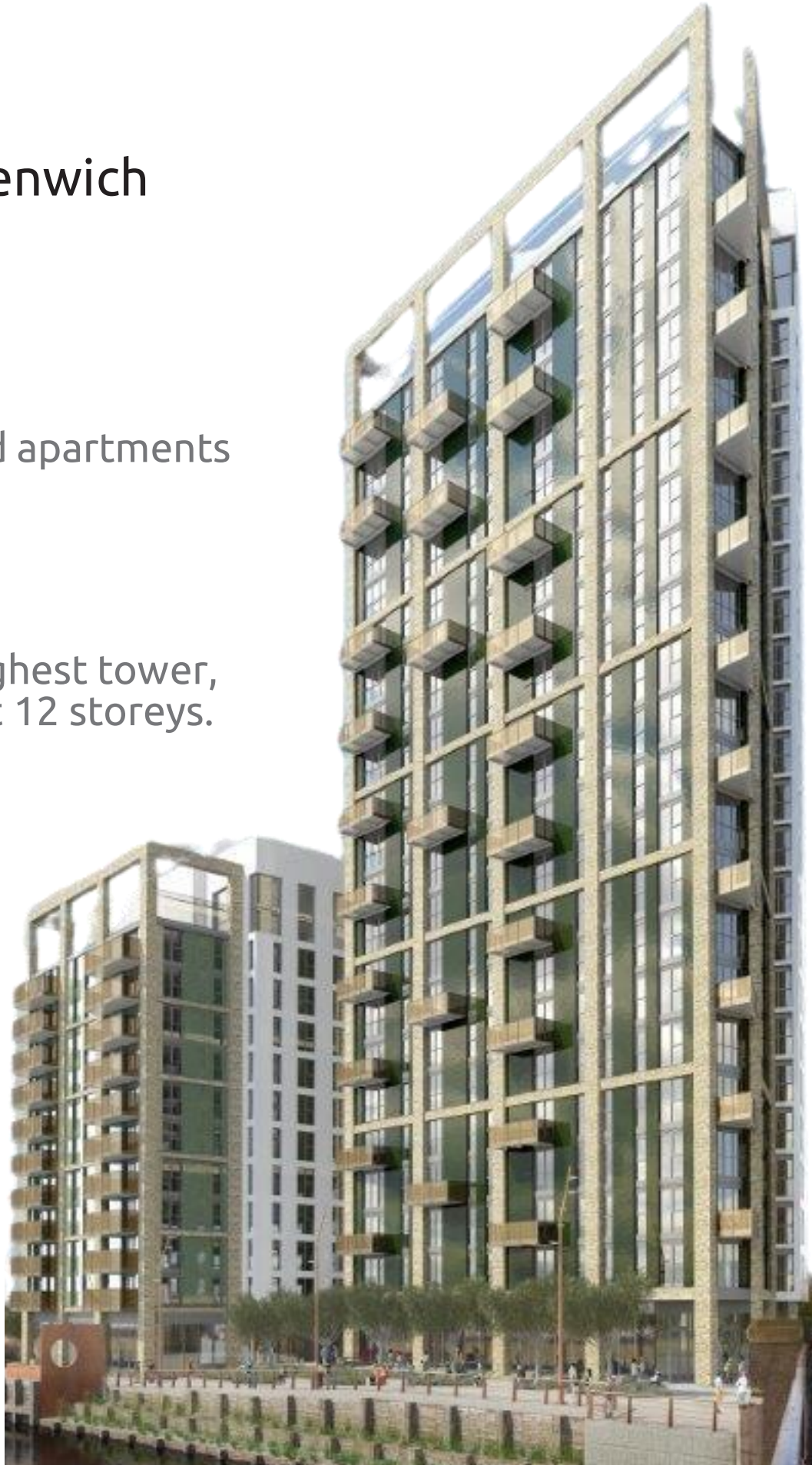
653

Room modules
manufactured and
completed in 2018



2

High rise
apartment
blocks



Case Study

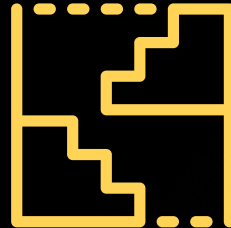
Smith's Garden, Birmingham



Full turnkey offsite manufacturing solution



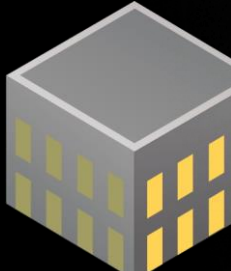
544
Spacious one-, two- and three-bedroom apartments, plus 6 townhouses



26
Storeys in the tallest block within this project.



1156
Room modules to be manufactured in Telford from January 2024



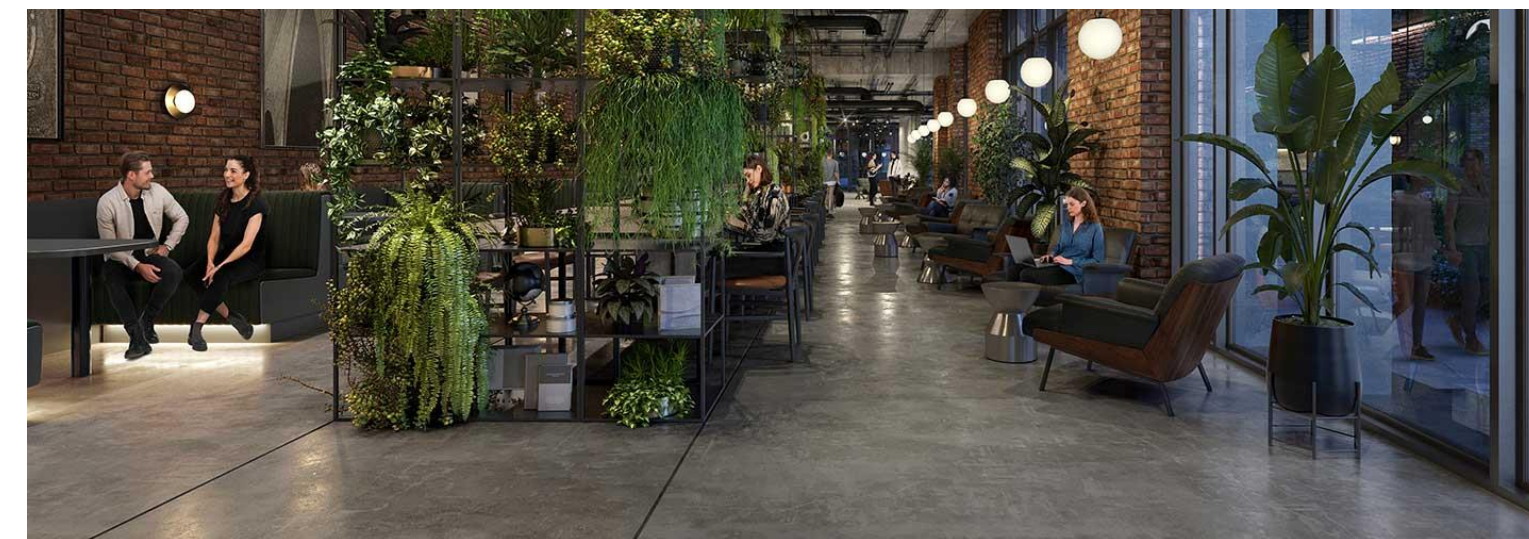
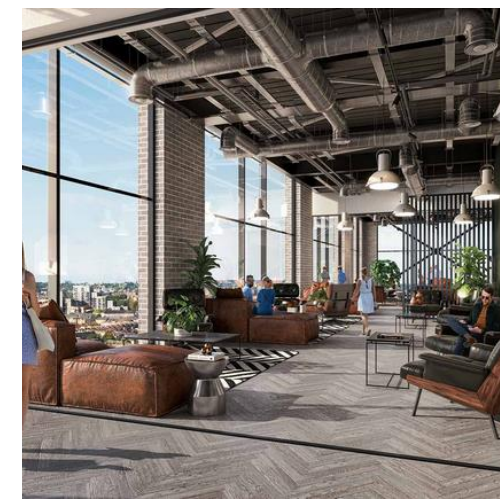
6
Separate apartment blocks centered around 1-acre private garden.



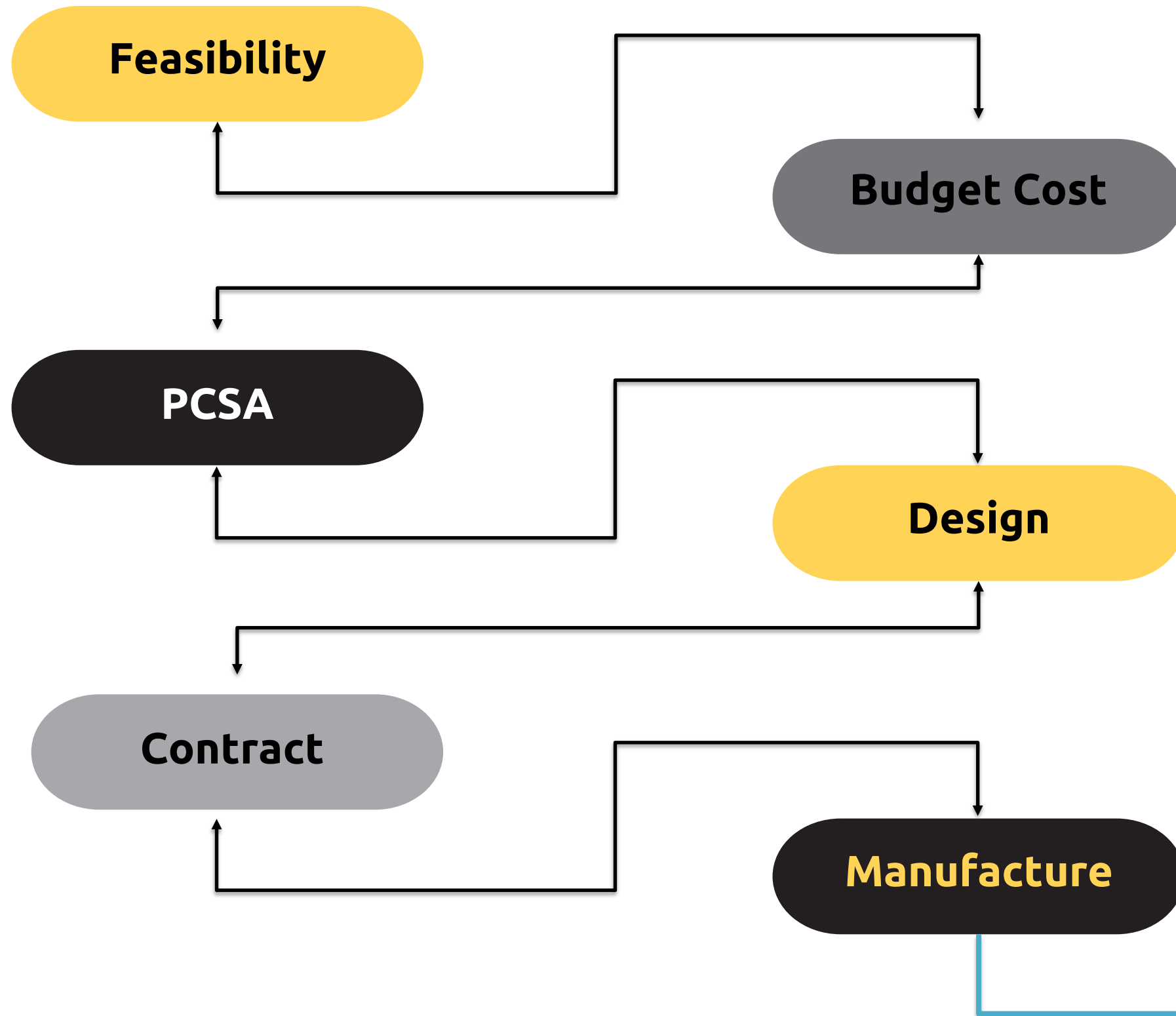
Inspired by Design Created through Innovation

Acting as both the main contractor and offsite manufacturer, Elements Europe will deliver a full turnkey solution to the scheme. The **4-acre** island site will be transformed into a residential destination, branded Smith's Garden, with **550** spacious one, two and three-bedroom apartments in **6** separate blocks centred around 1 acre of private garden, the tallest block being **26**-storey.

This project represents a significant milestone in the construction sector, incorporating innovative techniques and technologies to enhance efficiency, sustainability and affordability.



A Hybrid Approach to High Rise




SMITH'S
GARDEN



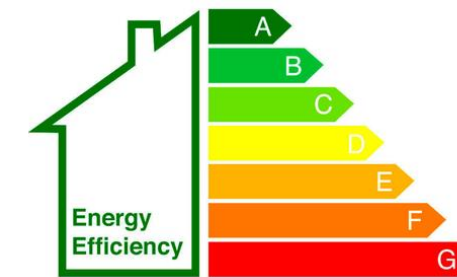
Client Priorities - ESG

Innovation is what drives our thinking, and we work hard to continuously offer our clients choice, whilst maintaining **system standardisation**.

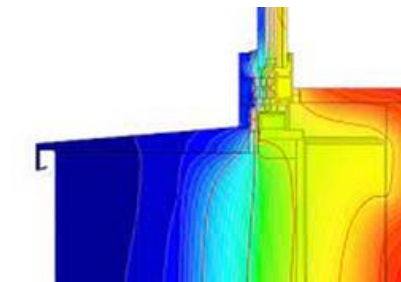
Making positive changes in quality & efficiency

Our Commitment & Credentials

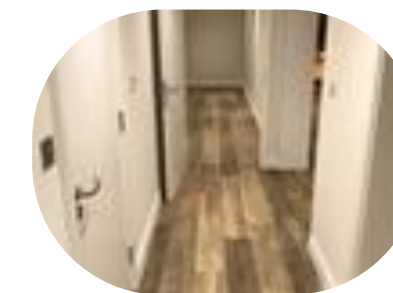
- Increasing the use of sustainable off grid energy production in our manufacturing facilities.
- Manufacturing in a controlled environment, reducing waste through design, waste segregation and recycling.
- Minimising energy in transport and logistics by the use of electric vehicles and plant.
- Designing to Future Homes Standards and Zero Carbon Homes.
- Provision of Energy Performance Certificates for our products.
- Training and development of a diverse workforce creating a sustainable resource for the future.
- Cloud based real time production management systems for auditing performance, delivery and risk management.
- Reducing, re-using and recycling initiatives throughout our manufacturing process



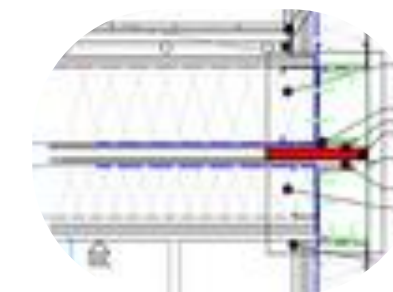
The best EPC rating, achieving reduced Operational Carbon



Reduced air leakage and lower fuel bills - reduced operational carbon



Robust wall construction ensuring reduced operational carbon.



Separate floor and ceiling structure for each apartment improving insulation.



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Innovation is what drives our thinking, and we work hard to continuously offer our clients choice, whilst maintaining **system standardisation**.

Making positive changes in quality & efficiency

56% Fewer overall vehicular movements

3775 Less vehicular movements in congested Birmingham

35% Less construction waste

25% Reduced on site carbon consumption

35%⁺⁺ Less embodied carbon

up to **25%** Less operation emissions



Client Priorities - Fire

We are committed to creating safe living environments, ensuring we meet the best quality certifications for modular fire testing.

Safety is our element

The module walls are designed to achieve a **120 minute** fire rating from inside of the module out to the external wall. This is created by using a multiple layer plasterboard system.

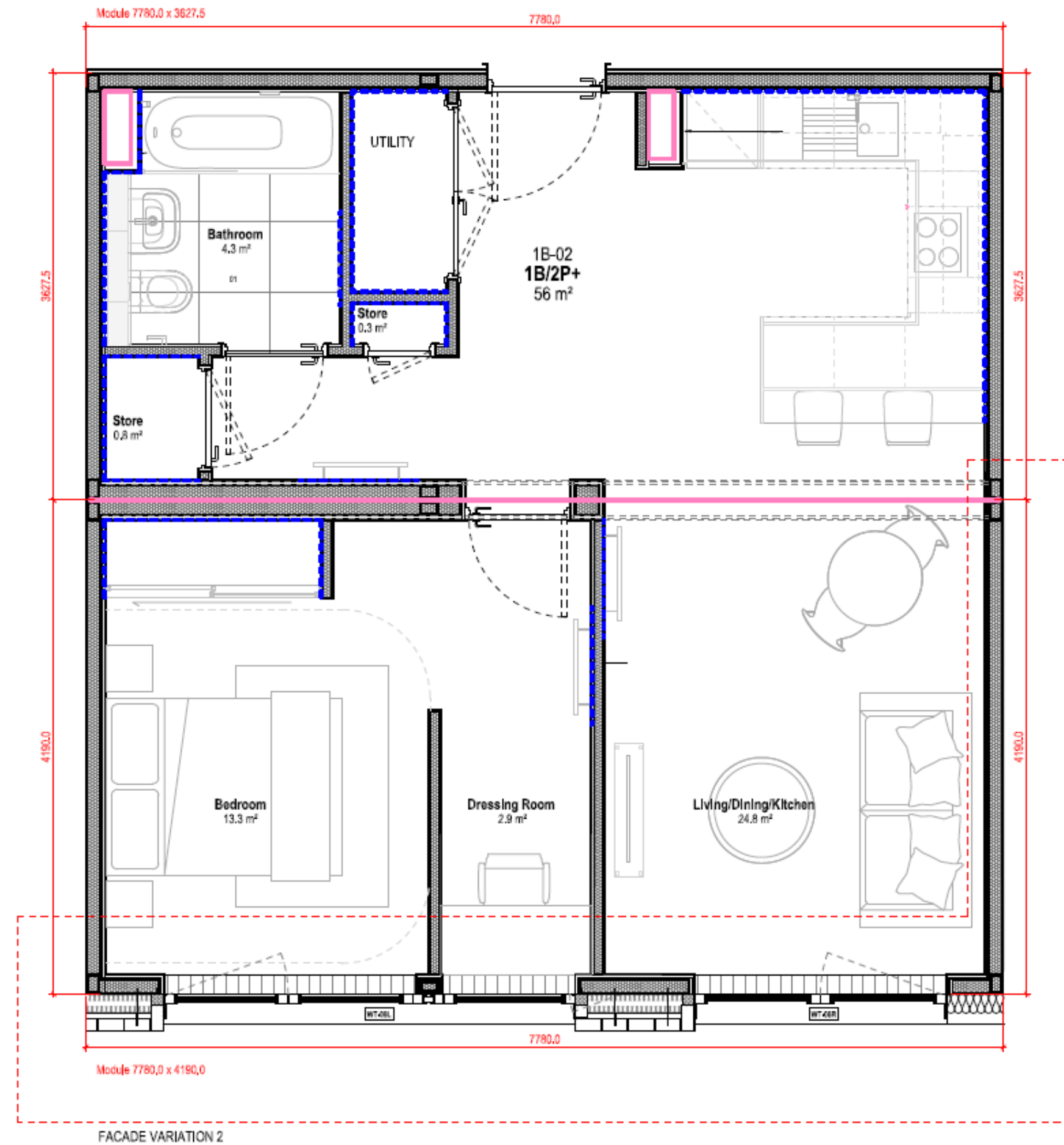
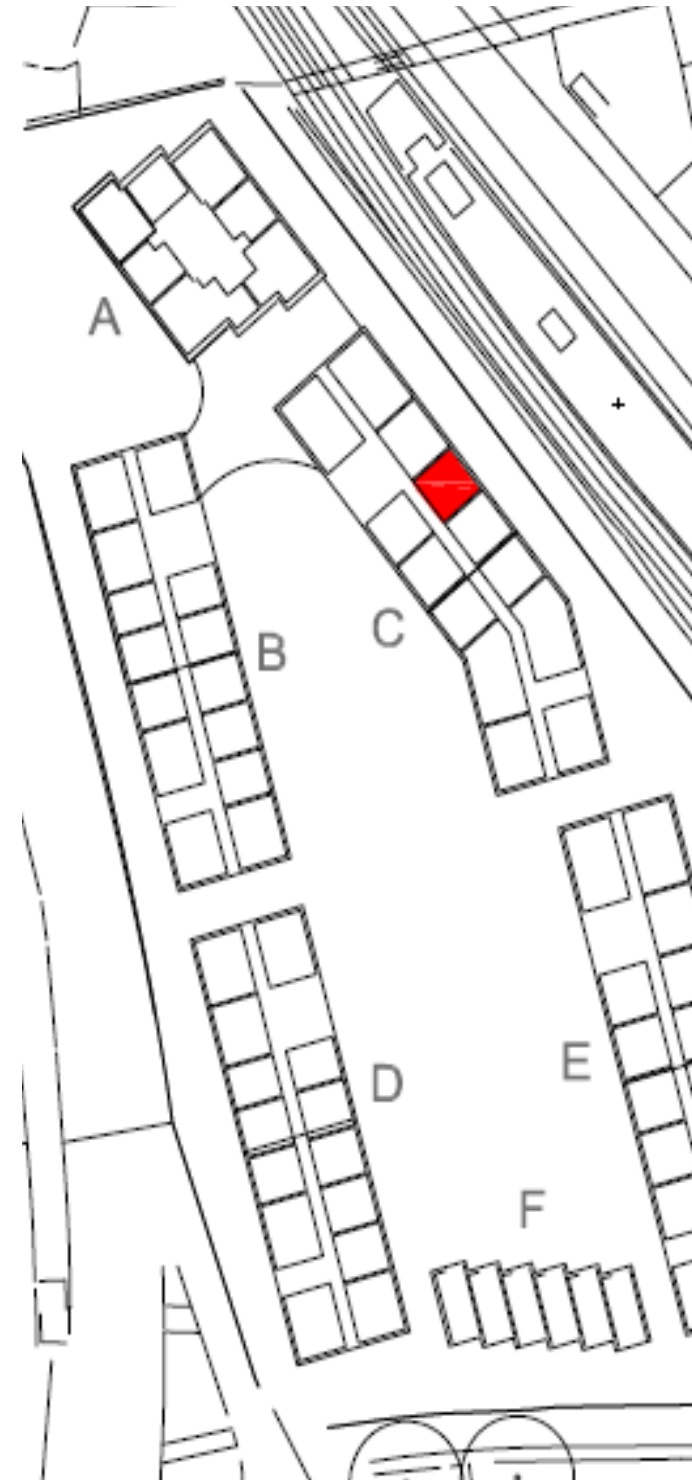
The module floor/ceiling is designed to achieve **120 minute** fire rating between dwellings, this is created using a build up tested by the BRE.

WSP were commissioned by Elements Europe to undertake an independent 3rd Party review of the structural fire engineering provisions to the modular systems used for Addiscombe Grove, Croydon, which have been designed to meet the functional requirements of the Building Regulations to F120.

WSP was commissioned by EE to set out the testing strategy for module fire tests which were completed in Q4 2022 to comply with the F120 rating.

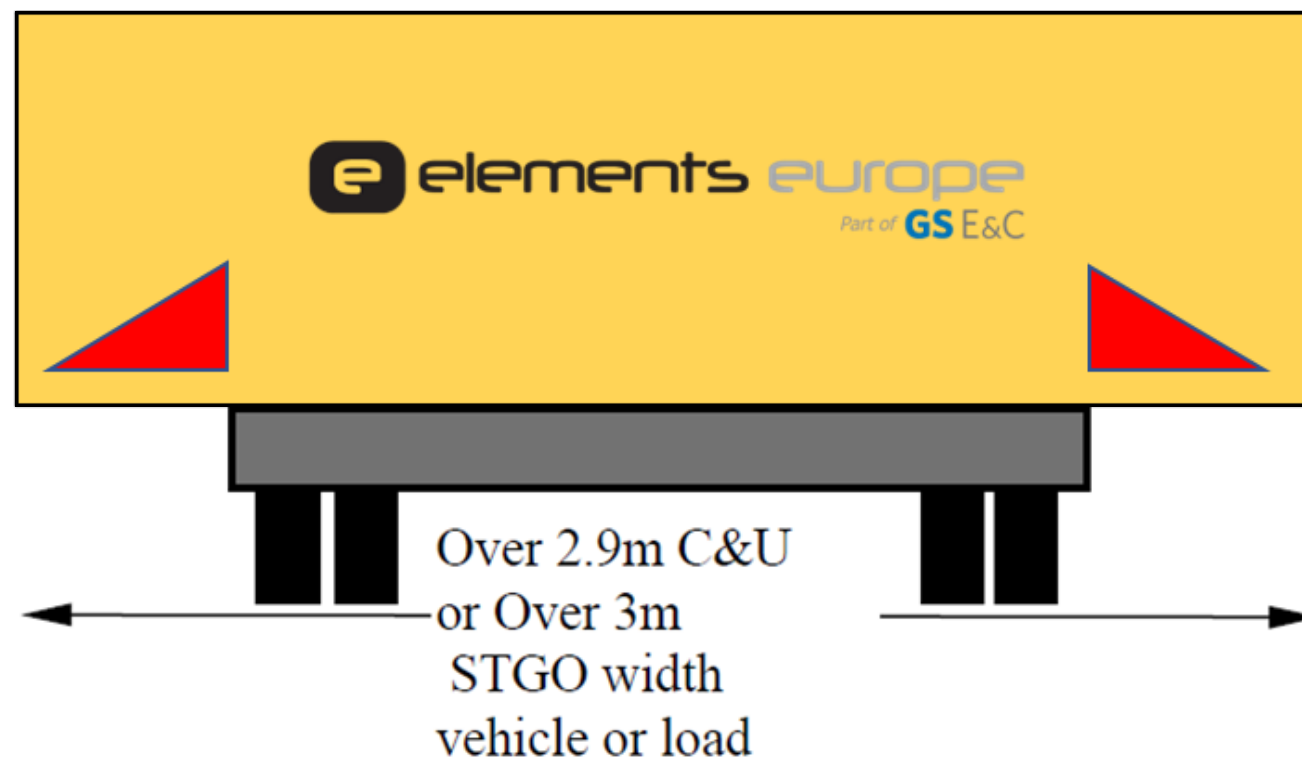


Design Principles

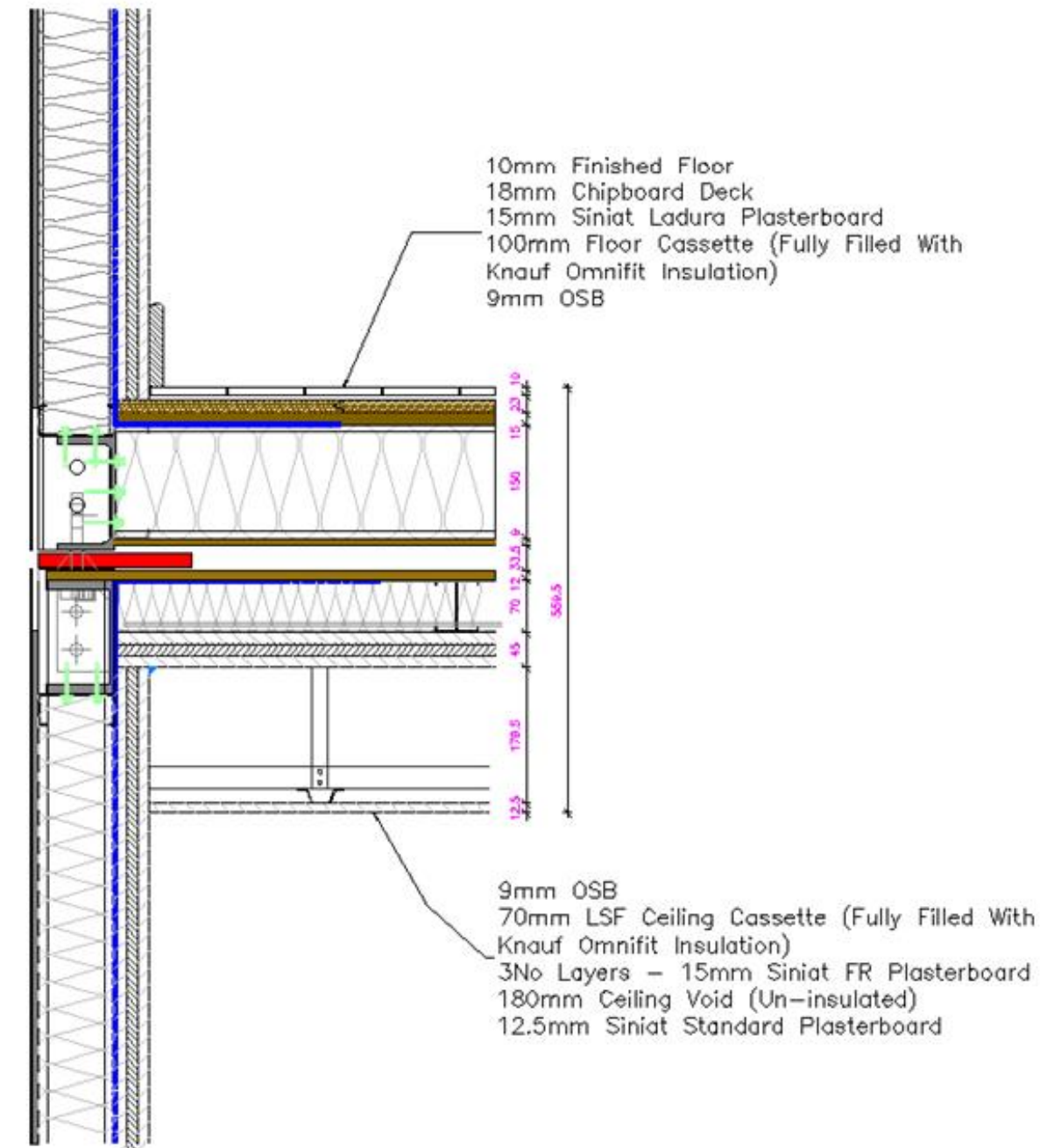
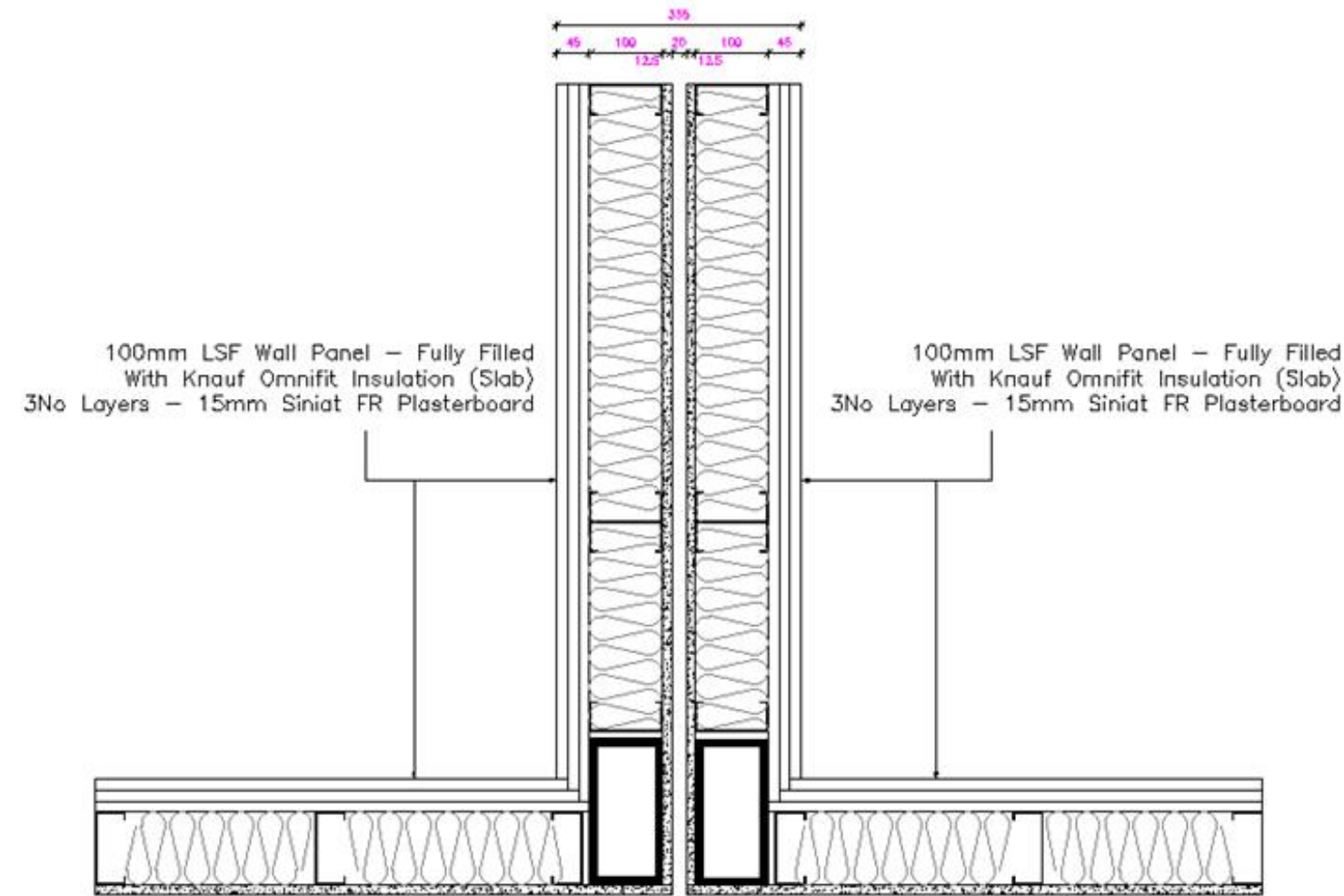


Modular Transport - Design Restrictions

Standard articulated lorry



Design Principles



Module To Module

The modules are connected together using connection plates. By using connection plates it allows for a weld-free tie laterally with vertical tying via bolts between ceiling and floor beams. They are typically manufactured from 15mm S275 grade steel plate designed by our structural engineer.



Design Principles



Module Structural Frame

Hot Rolled Steel Frame (HRS) – Primary

The modules primary frame is manufactured using S275 grade HRS steel designed by our structural engineers and manufactured in house.

Light Steel Frame (LSF) – Infill Panels

The modules secondary frame is manufactured from typically 100mm light steel framed designed and engineered by our structural engineer and rolled in house.



Finished modules



THANK YOU



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