

MODERN METHODS OF CONSTRUCTION

AN ASSIGNED CERTIFIER'S PERSPECTIVE

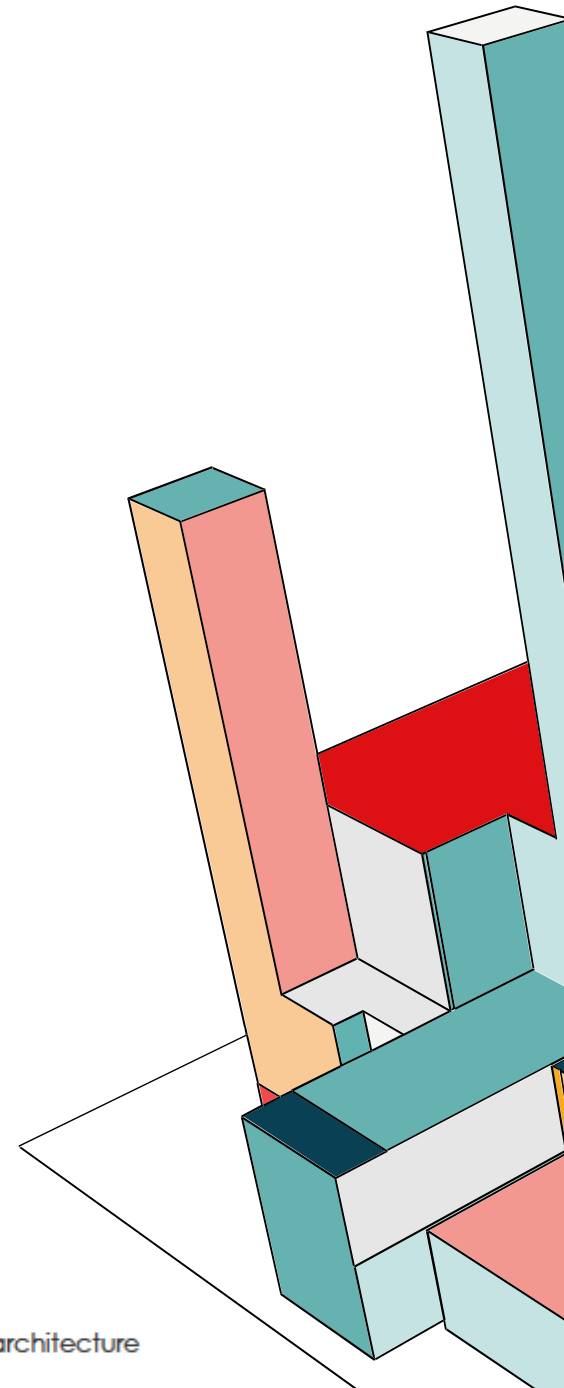
MICHAEL BROWNE, C.Eng. M.I.E.I. M.I. Struct. E.

JANUARY 2024

bbaarchitecture

OVERVIEW

- Processes undertaken by the Assigned Certifier:
 - Initial Project Enquiry
 - Choice of Build Method
 - Considerations of Various Methods
 - Valid Certification
 - Detail Design & Construction
 - Foundations
 - Site Inspections
 - Example: Insulated Concrete Formwork
 - Completion
 - Conclusion
 - Efficient Building Materials
 - Summary



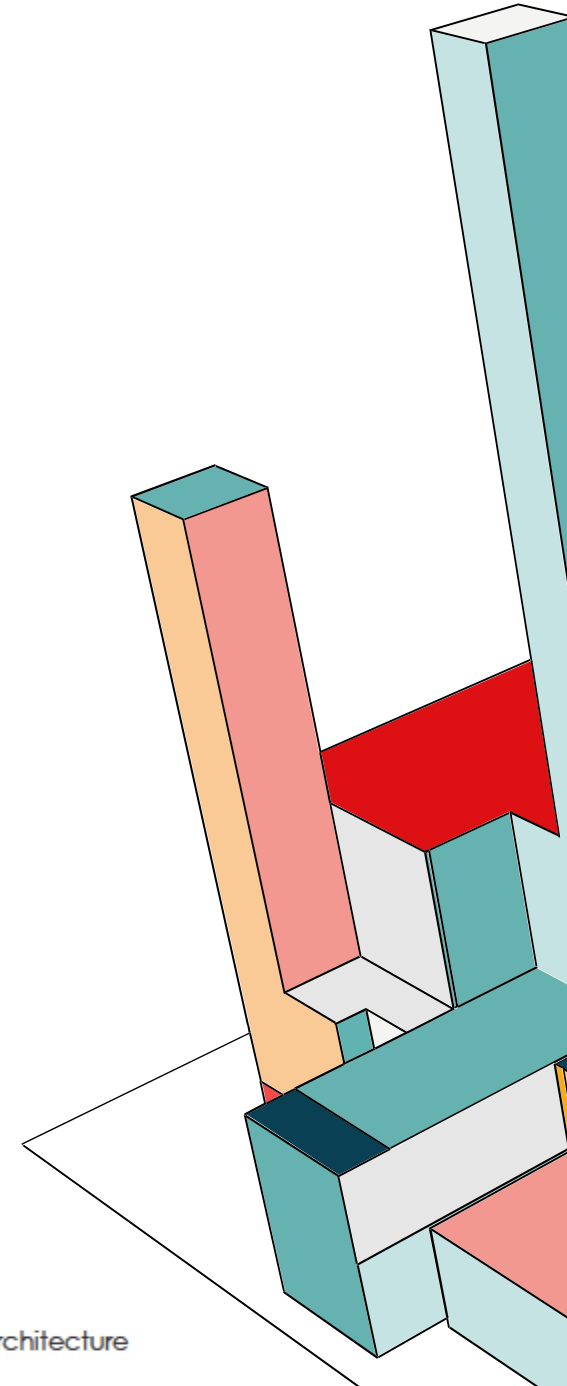
INITIAL PROJECT ENQUIRY

- New project for construction:
 - Planning permission obtained by BBA
 - OR
 - Client-bought site with planning permission
- First question:
 - **What is the proposed build method?**



CHOICE OF BUILD METHOD

- Choice is wide
- Some developers will know their preferred method
 - Once we start developing proposal, certificates may or may not be missing
- Others may seek advice from BBA
- Options are wide and varied, and getting wider



CHOICE OF BUILD METHOD

- Various Build Methods:

- **Traditional**

- **Timber Frame**

- Fast, but possible long lead in times
 - Variations from suppliers

- **EWI (External Wall Insulation) on:**

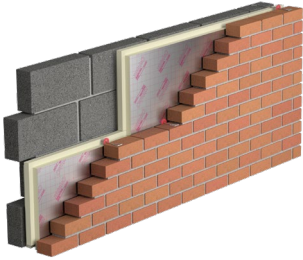
- Masonry – hollow/solid wall/LGS/SFS/etc.
 - Reasonably fast

- **ICF (Insulated Concrete Formwork)**

- Various suppliers with subtle differences in approval system
 - Contractor in control
 - Allows more flexibility

- **LGS (Light Gauge Steel)**

- Quick on site
 - Possible long lead in time during detail design stage



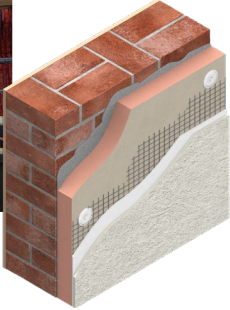
Traditional



Timber Frame



EWI



ICF



LGS



CHOICE OF BUILD METHOD

- Various Build Methods:

- **Apartments**

- Concrete frame + SFS
- LGS
- Insulated + precast concrete floors
- Structural Steel

- **Poured Concrete Walls**

- 3/4 storey houses + EWI

- **Twin Wall Construction**

- Fast

- **Timber 3 Storey Duplexes**

- Masonry – solid wall/LGS/SFS/etc.

- **LGS with Cement Board and EWI**

- **CLT (Cross Laminated Timber) Panels**

Not an exhaustive list

Concrete frame + SFS



Masonry + Timber
Frame Duplexes



CLT



CONSIDERATIONS OF VARIOUS METHODS

- Choice of build affects Assigned Certifier in designing and drawing the selected system
 - ie. Time
- Considerations include:
 - Is system/material certified?
 - Do we have details already drawn for this system?
 - Standardisation
 - Cost benefits
- Known systems give us, as the Assigned Certifier, comfort also.



CONSIDERATIONS OF VARIOUS METHODS

VALID CERTIFICATION

- Are products / systems certified?
- Are certificates Irish, European or British?
- **Selected method – certified method**



IRISH AGREEMENT BOARD
 CERTIFICATE NO. 20/0415
 Altherm Build Ltd,
 Unit F, Airport Business Campus,
 Santry, Dublin 9
 T: +353 (0)1 842 2823
 E: info@altherm.ie
 W: www.altherm.ie

Altherm Insulating Concrete Formwork System

Système pour construction Bausystem

NSAI Agreement (Irish Agreement Board) is designated by Government to issue European Technical Approvals. NSAI Agreement Certificates establish proof that the certified products are "proper materials" suitable for their intended use under Irish site conditions, and in accordance with the Building Regulations 1997 to 2019.



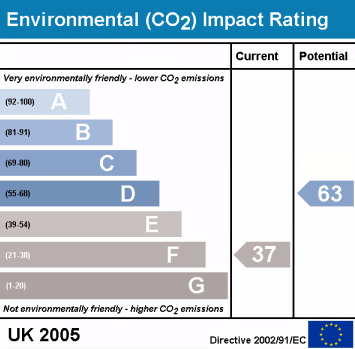
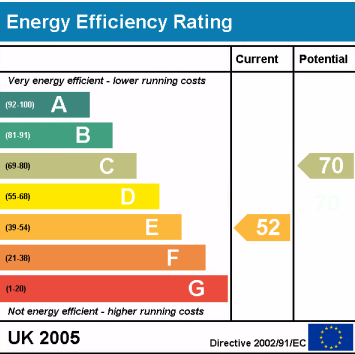
PRODUCT DESCRIPTION:
 This Certificate relates to the Altherm Insulating Concrete Formwork (ICF) System, which consists of modular interlocking expanded polystyrene (EPS) building blocks (graphite enhanced) for permanent formwork for the construction of in-situ concrete walls. Each block (form) is based on two EPS panels with polypropylene connectors moulded into the polystyrene panels and spaced 300/350mm vertically. The Pariso Mince external render system is applied to the external polystyrene insulation of the Altherm ICF System as the external finish. Plasterboard slabs are screw-fixed to the polypropylene connectors as an internal finish. In the opinion of NSAI, the Altherm ICF System as described in this Certificate, complies with the requirements of the Building Regulations 1997 to 2019.

USE:
 The Altherm ICF System is certified for use in the construction of buildings of up to five storeys

(15m) in height in purpose groups 1(a), 1(b) and 1(d) as defined in Technical Guidance Document to Part B Volume 2 of the Building Regulations 1997 to 2019, and for use up to six storeys (18m) in height in purpose groups 1(c), 2(a), 2(b), 3, 4(a) and 5 as defined in TGD to Part B of the Building Regulations 1997 to 2019. The system has been assessed for use as load bearing and non-load bearing walls in the construction of specifically designed buildings. Fire and sound rated walls may also be constructed using the system.

MANUFACTURE AND MARKETING:
 The product is manufactured and marketed by: Altherm Build Ltd., Unit F Airport Business Campus, Santry, Dublin 9.

Readers are advised to check that this Certificate has not been withdrawn or superseded by a later issue by contacting NSAI Agreement, NSAI, Santry, Dublin 9 or online at <http://www.nsaibuild.ie>



BREEM[®] Code for a Sustainable Built Environment. www.breem.com

BREEM In-Use
 The assessment of the common areas of:
 Mahon Point Shopping Centre
 Mahon Point Shopping Centre,
 Mahon
 Cork
 ROI
 Ireland

has been carried out according to Technical Manual:
BREEM International In-Use: Commercial Version 6
 by a Licensed Assessor for:
 Deka Immobilien Investment GmbH
 Facilities Manager: Savills

Total area of assessment: 10668 m²
 Certificate Number: BIU00001625-3.0 Issue: 3.0

The assessment process is certified by BRE Global Limited in accordance with the requirements of Scheme Document SD6063.

Asset Performance: 73.3% Easlar
 Licensed Assessor Company
 Amanda Gallagher
 Assistant Director
 BAUD0506
 Assistant Director

Management Performance: 72.6% Excellent
 15 Jun 2023
 Date of Issue
 15 Jun 2026
 Valid Until

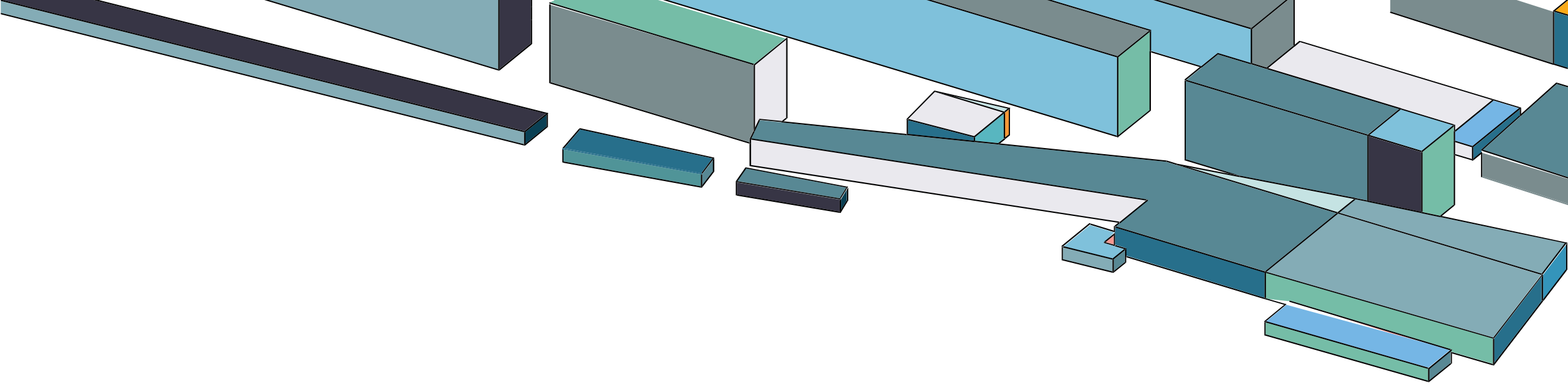
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NSAI Standards Irish Standard I.S. 440:2009+A1:2014

Timber frame construction, dwellings and other buildings (including amendment 1, consolidated)

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BBA have been affected by fraudulent certificates in the past

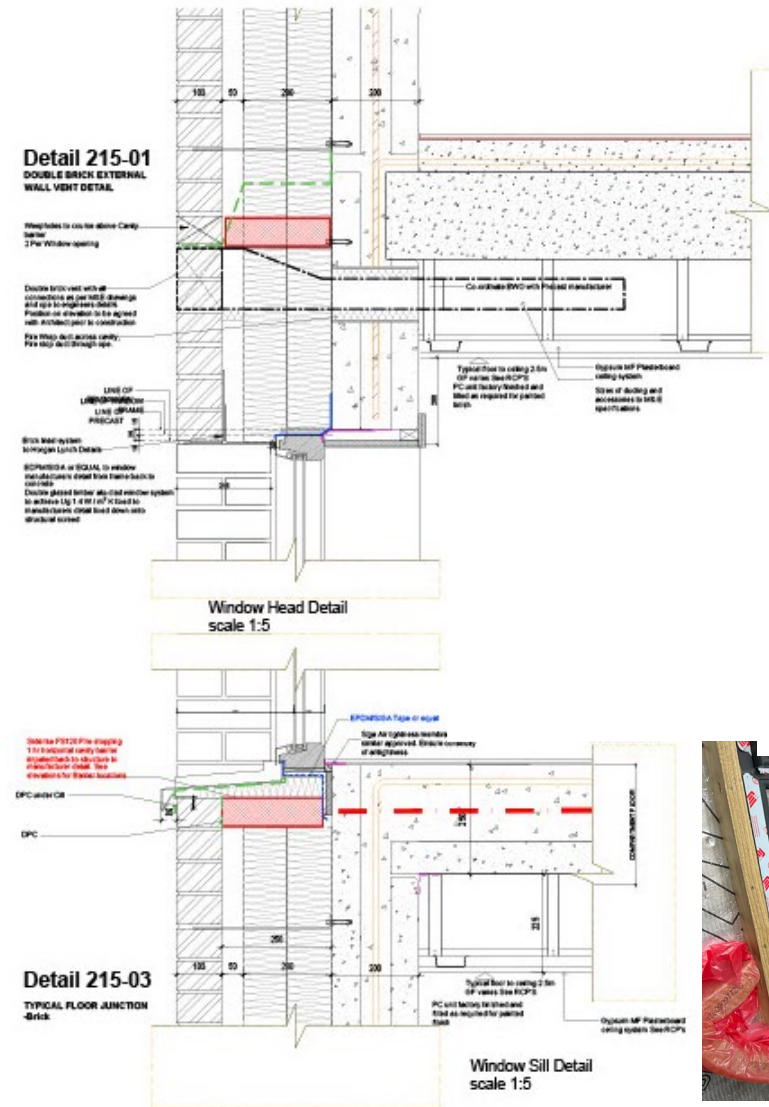


DETAIL DESIGN & CONSTRUCTION

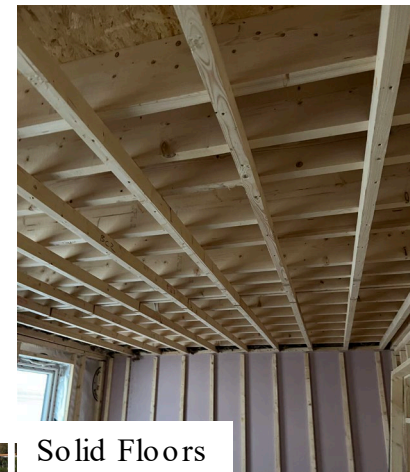
DETAIL DESIGN & CONSTRUCTION

DEVIL IN THE DETAIL

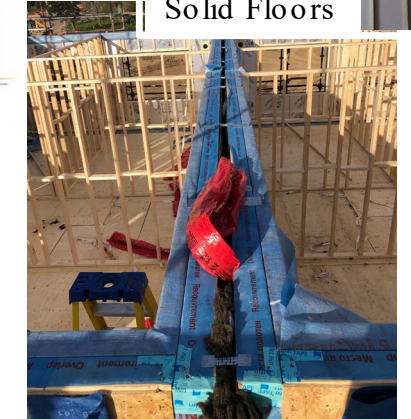
- Different timber suppliers – different details
 - Solid floors
 - Web joists – fire issues with 2/3 storey - beware
 - Fire bags supplied
 - Fire stopping
- Modular systems – certifications?
 - Some do, some don't
- ICF – Insulated Concrete Formwork



Twin Wall Construction



Solid Floors



Cavity Barrier



Fire Bags

DETAIL DESIGN & CONSTRUCTION

FOUNDATIONS

- Strip foundations
- Improved Ground Stabilisation
- Raft foundations
 - We have found raft foundations to be **very quick**
 - Raft – EWI (Citywest)
 - Raft – ICF (Rathdrum)
 - Raft – Timber Frame (Newcastle)







Recent build with raft foundations + ICF – Rathdrum

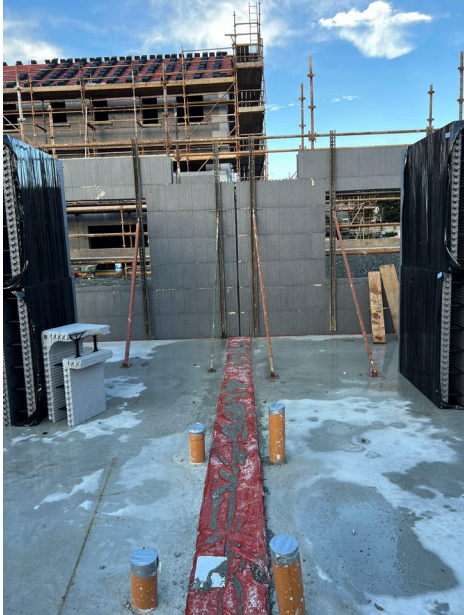


Recent build with raft foundations + timber frame – Newcastle

DETAIL DESIGN & CONSTRUCTION

SITE INSPECTIONS

- Some very good contractors, some less experienced
- Workmanship
 - Technically experienced trades people required
 - Build in accordance with issued details



DETAIL DESIGN & CONSTRUCTION

SITE INSPECTIONS

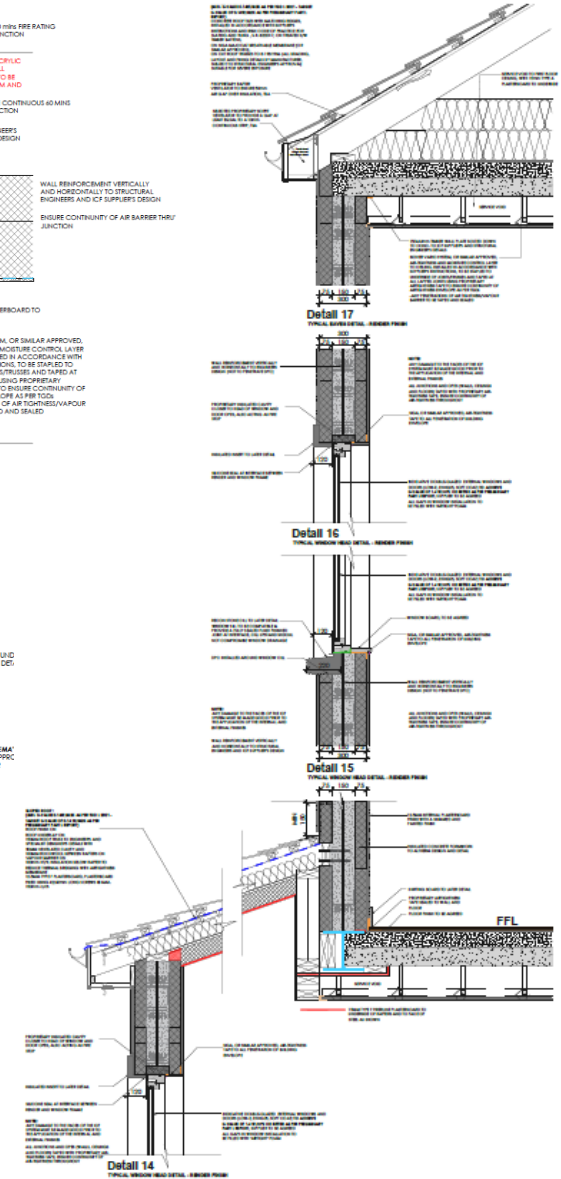
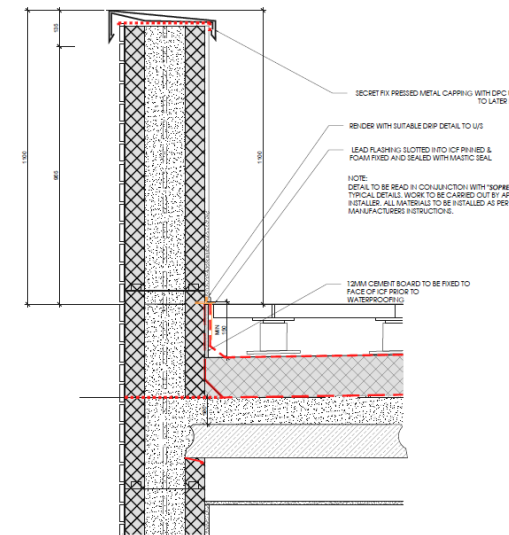
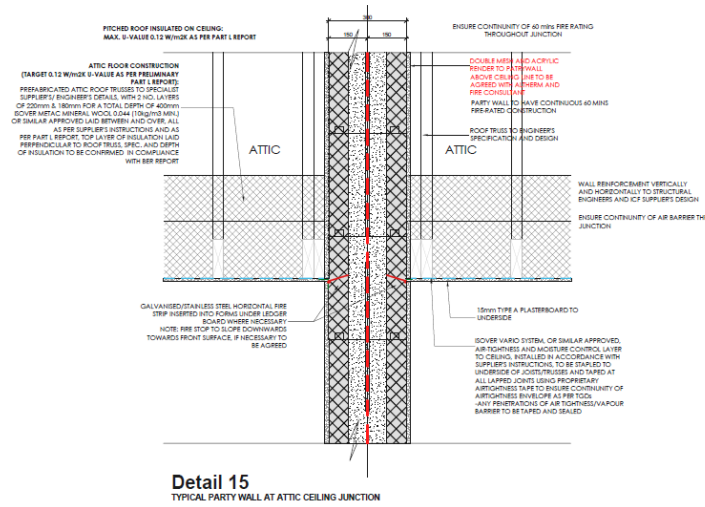
Roof cladding
System

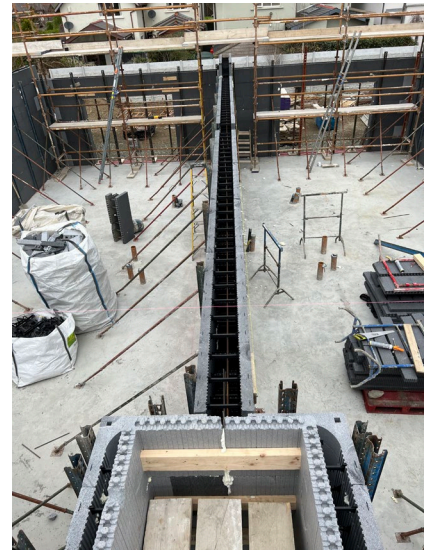


DETAIL DESIGN & CONSTRUCTION

INSULATED CONCRETE FORMWORK

- Certificates / System
- Party wall in attic
- U-Values
- Lack of ACDs so thermal modelling may be required and FRSI calculations to avoid condensation risk
- Weathering
 - Cappings
 - Balconies
 - Abutments
 - Lead Flashings
- Fire
 - Correct details
- NSAI Certification is good but lack of certified details is an issue. Set of ACDs would be very useful.

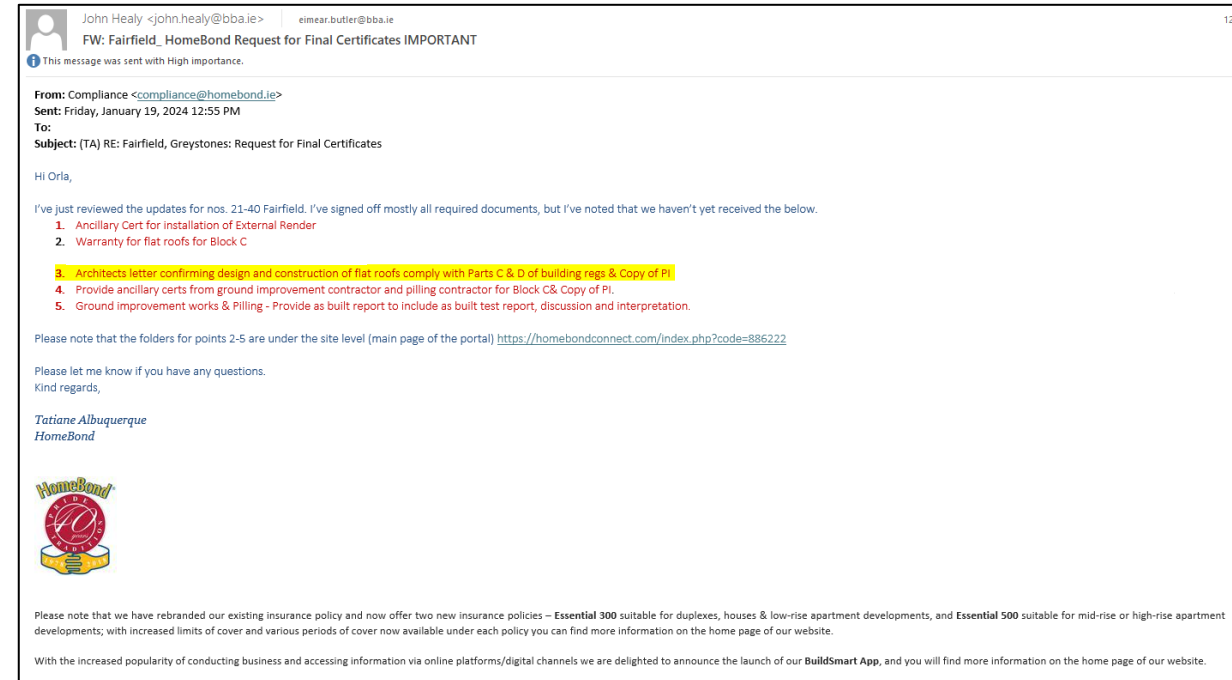






COMPLETION (CCC STAGE)

- Collation of information to obtain Certification of Completion and Compliance (CCC)
- Post CCC
 - Third Party insurers may ask for information
 - Roofing systems - trouble getting agreement with insurers
- Record post CCC insurer asked for compliance with Past C/D
- Exposure of P.I Insurance



CONCLUSION

EFFICIENT BUILD METHODS

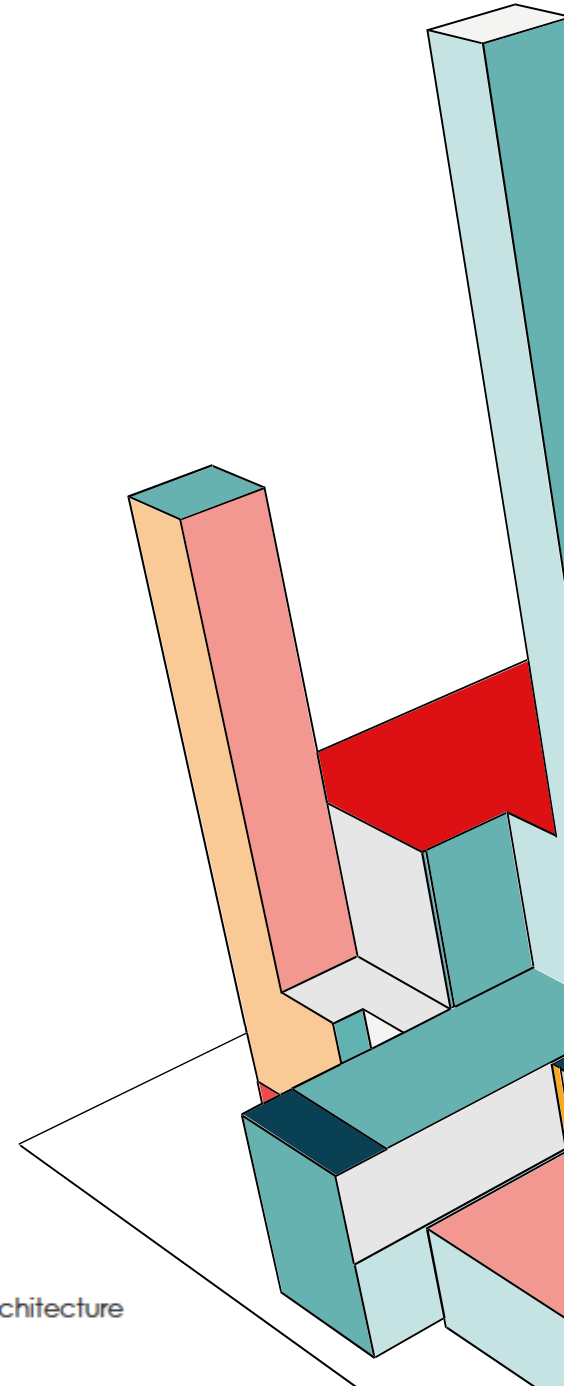
- Housing
 - Raft + Timber Frame
 - Raft + ICF
- Apartments
 - Concrete frame + SFS
 - ICF + precast concrete
 - LGS
 - Twin wall
- Duplexes
 - Masonry / timber frame
 - ICF / concrete floors
 - 3-storey timber frame
 - LGS

SUMMARY

The processes undertaken by the Assigned Certifier:

- Choice of method
 - Correct paperwork & certifications for products and systems
- Proper detail design
- Site inspections
 - Technically experienced trades people required
- Obtain CCC
- Third Party Insurance - may require further information
- Limit exposure of P.I Insurance

Welcome to the life of an Assigned Certifier!



THANK YOU

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