External Walls

Notes:

Every project can have different requirements, we therefore highly recommend confirming build-ups with your local authority and architect as soon as possible to ensure fire, acoustic and thermal requirements are met. Any inaccuracy in the information is not the responsibility of Counterbalance or contributors of this guidance.

counterbalance

External Walls

Guidance Notes - Summary

The purpose of this chapter is to ensure an realistic approach is adopted at the beginning of a project in relation to external walls build-ups and thickness. Counterbalance recommends in the UK the use of **500mm width for external walls** to allow for flexibility in the design when the external wall build-up is unknown, safe guarding the design from material changes in the future. These build-ups do not allow for any steps in facade but do allow for flexibility in the window/door position. We recommend, however, for the latter to be positioned in line with the insulation to reduce cold-bridging.

Thermal Requirements

We would advise that all new buildings should operate at net zero carbon. Currently, we believe Passivhaus design principles are the best method of achieving this goal. The building fabric is a very important factor in achieving Passivhaus certification and we would recommend aiming for a u-value of **0.13 W/m^{2}k for New Build** subject to the overall design. This will also safeguards against any changes in thermal requirements following any future revisions in Approved Document Part L.

For house extension projects on existing properties we believe this is an unrealistic goal and perhaps a thankless task. Therefore, we believe the England Building Regulations target of **0.18 W/m^{2}k for Extensions** is suitable unless you are looking to upgrade the whole building to modern day standards which is not always possible or viable for every project.

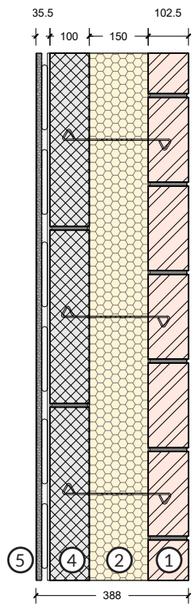
Fire Performance Requirements

Under the new Approved Document Part B all elements within the external wall build-up must only use non-combustible materials that achieve European Classification A2-s1, d0 or Class A1 when the building height is over 11m. Exemptions are possible under regulation 7 paragraph (3) Refer to Approved Document Part B2 paragraph 12.9-12.14. These should be read in conjunction with Part B2 Section 13 for fire resistance requirements in relation to distance from boundaries. It is advised to discuss and reach agreements with your client and Building Control before specifying any combustible materials to ensure compliance. We would recommend any building above 3 floors and with multiple dwellings should ensure all external wall elements are non-combustible to minimise the fire risk as well as insurance/compliance issues.

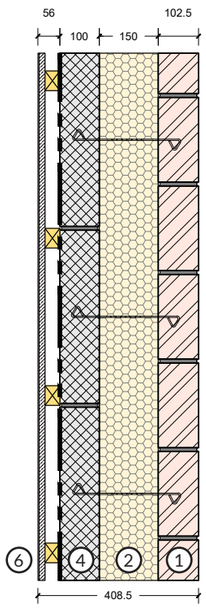
Existing Building (Refurbishment & Extensions)

0.18 W/m²K

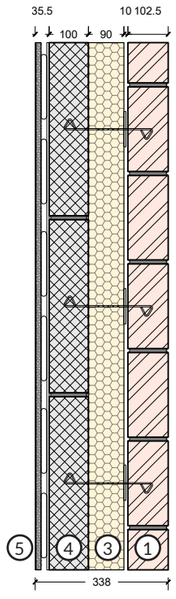
Full-Fill Mineral Wool
150mm Insulation



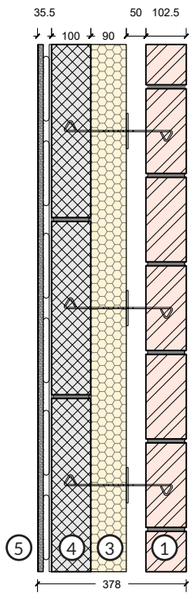
Full-Fill Mineral Wool
150mm Insulation
(Low Carbon)



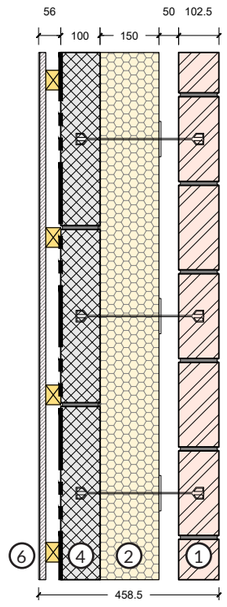
Partial-Fill PIR
90mm Insulation
10mm Cavity



Partial-Fill PIR
90mm Insulation
50mm Cavity



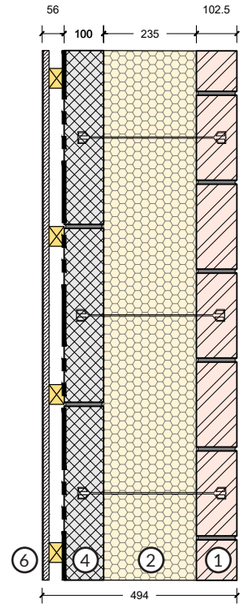
Partial-Fill Mineral Wool
150mm Insulation with
(Low Carbon)



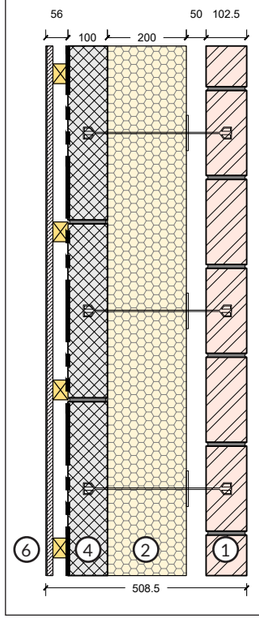
New Build Homes

0.13W/m²K

Full-Fill Mineral Wool
235mm Insulation



Partial-Fill Mineral Wool
200 mm Insulation



External Walls - Brick & Block

Brick - Masonry Block Inner Leaf

01 – Facing Brickwork (102.5mm)

Where possible use reclaimed or low carbon bricks. Mortar pointing and brick bond type are project specific, edit where appropriate. If brickwork continues below ground, specific a frost resistant brick F2, S2 classification.

Ancon RT2 225 Wall Ties - 100mm Cavity
Ancon RT2 275 Wall Ties - 150mm Cavity
Ancon TEPLO-BF 325 Wall Ties - 200mm Cavity
Ancon TEPLO-BF 375 Wall Ties - 235mm Cavity

02 – Mineral Wool Insulation (150/200/235mm)

Full-Fill - 150mm Knauf DriTherm Cavity Slab 32
Full-Fill - 235mm Knauf DriTherm Cavity Slab 32
(150mm & 85mm Slabs)
Partial Fill - 200mm Rockwool NyRock Cavity 032

03 – PIR Insulation (100/150/235mm)

Partial-Fill - 90mm Kingspan Kooltherm K106 Cavity Board
(10mm Cavity)
Partial-Fill - 90mm Kingspan Kooltherm K108 Cavity Board
(50mm Cavity)

04 – Blockwork (100mm)

If inner leaf is a load bearing wall, refer to your structural engineer to specify density/strength/thickness of blocks.

100mm Airtec Seven Block 7.3N

05 – Plasterboard / Vapour Control Layer

Standard British Gypsum Plasterboard on Dabs consists:
6mm Parge Coat - Gyproc Soundcoat Plus
15mm Gyproc DriWall Adhesive
12.5mm Wallboard Plasterboard
2.5mm Plaster Skim

(Moisture resistant plasterboard to be used in bathrooms, utility cupboards and kitchens)

06 – Wood Wool Board / Vapour Control Layer

Passive Purple Intelligent Membrane
Timber Battens 38x50mm
15mm Skanda Savolit Plus Wood Wool Board
3mm Adaptavate Breathaplasta Skim

Cost Comparison

Existing Building (Extensions) 0.18 W/m²K

- Full-Fill Mineral Wool 150mm Insulation-£246.94 per m2
- Full-Fill Mineral Wool 150mm Insulation (Low Carbon)-£272.93 per m2
- Partial-Fill PIR-90mm Insulation 10mm Cavity-£267.63 per m2
- Partial-Fill PIR-90mm Insulation 50mm Cavity-£272.27 per m2
- Partial-Fill Mineral Wool-150mm Insulation with (Low Carbon)-£291.05 per m2

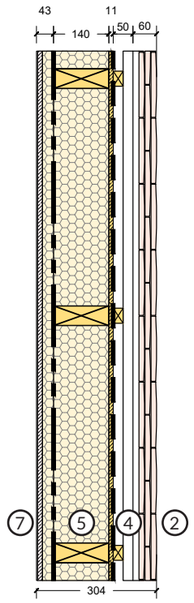
New Build Homes 0.13W/m²K

- Full-Fill Mineral Wool-235mm Insulation-£309.74 per m2
- Partial-Fill Mineral Wool-200 mm Insulation-£322.86 per m2

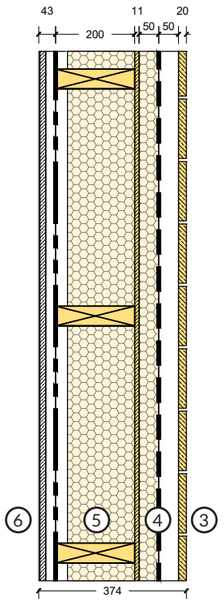
Existing Building (Extensions)

0.18 W/m²K

Clay Hanging Tiles - Timber Frame
PIR Insulation



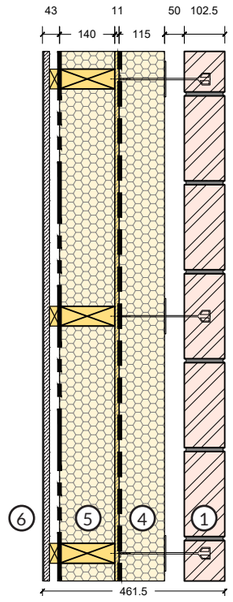
Timber Cladding - Timber Frame
Mineral Wool Insulation



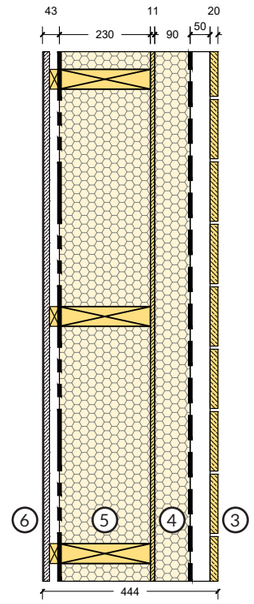
New Build Homes

0.13W/m²K

Brick Finish - Timber Frame
Mineral Wool Insulation



Timber Cladding - Timber Frame
Mineral Wool Insulation



External Wall - Timber Frame

Clay Hanging Tiles / Timber Cladding / Brick Finish - Timber Frame

01 – Facing Brickwork (102.5mm)

Where possible use reclaimed or low carbon bricks. Mortar pointing and brick bond type are project specific, edit where appropriate. If brickwork continues below ground, specific a frost resistant brick F2, S2 classification.

Ancon TEPLO-BFL-5-230 Wall Ties - 165mm Cavity

02 – Clay Hanging Wall Tiles (60mm)

60mm Zone for Hanging Wall Tiles

Fixed by Nails to Treated Timber Battens (Class 1)

(50mm Ventilation Zone)

03 – Timber Cladding (20mm)

20mm Zone for Timber Cladding (Vertical or Horizontal)

Fixed by nails to Treated Timber Battens (Class 1)

(50mm Ventilation Zone)

04 – VCL & Insulation (100/150/235mm)

Existing Homes (Extensions)

Breather Membrane - Pro Clima Solitex Fronta Quattro (Hanging Tiles)

Breather Membrane - Pro Clima Solitex Fronta Quattro with 50mm Rockwool Flexi (Timber Cladding)

New Build Homes

Breather Membrane - Pro Clima Solitex Fronta Humida with 115mm Rockwool NyRock Rainscreen (Brick Finish)

Breather Membrane - Pro Clima Solitex Fronta Quattro with 90mm Rockwool Flexi (Timber Cladding)

05 – Timber Frame & Boarding / Insulation

Confirm Structural Timber Framing System thickness with Structural Engineer - Residential applications are typically between 140mm to 250mm with 11mm OSB 3 Boarding.

Existing Building (Extensions)

100mm Kingspan Kooltherm K112 (Hanging Tiles)

170mm Rockwool Flexi (Timber Cladding)

New Build

140mm Rockwool NyRock Frame Slab 032 (Brick)

230mm Rockwool Flexi (Timber Cladding)

06 – Wood Wool Board / Vapour Control Layer

VCL Pro Clima Intello Plus

Timber Battens 25x50mm

15mm Skanda Savolit Plus Wood Wool Board

3mm Adaptavate Breathaplasta Skim

(Moisture resistant plasterboard to be used in bathrooms, utility cupboards and kitchens)

07 – Plasterboard / Vapour Control Layer

VCL Pro Clima Intello Plus

37.5mm Kingspan Kooltherm K118

3mm Adaptavate Breathaplasta Skim

Cost Comparison

Existing Building (Extensions) 0.18 W/m²

- Clay Hanging Tiles-PIR Insulation-£208.88 per m2
- Timber Cladding-Mineral Wool-£304.23 per m2

New Build Homes 0.13W/m²K

- Brick Finish-Mineral Wool-£348.01 per m2
- Timber Cladding-Mineral Wool-£322.43 per m2