Better

The general public has a low expectation when it comes to the quality of new build homes in the United Kingdom. This view is supported by snagging companies where on average 160 snags per property our found. (6) The HomeOwners Alliance reported that almost 9 in 10 of new build homeowners want a snagging retention system to withhold funds to house builders until they rectify faults, showing the seriousness of the problem and the extent homeowners want the government to go to improve the quality of homes in the UK. (7)

Counterbalance has made recommendations in the following chapter to help improve the quality of homes in the UK.

counterbalance

Snagging Retention System

Snagging Retention System

Moving into a new home is a stressful time, made even worse by discovering hundreds of snags, faults and defects in your brand new home. No other industry would treat their customers in this manner. Imagine getting a brand new car with scratches and dents all over it, its unimaginable. Quite often it can be difficult to get house builders to even acknowledge the snags let alone fix them and when they do it is common for snag lists to take up to a year to fix.

Quite often homeowners feel like they are due compensation for the inconvenience and stress caused by the process but find it difficult with the current legal system to successfully claim any money. Once the homeowner moves into their new home the developer-client relationship disappears with the complaints process, at times feeling like you're talking to a brick wall.

It is why Counterbalance believes the government should bring in a "Snagging Retention System" which would offer all buyers of new homes the right to retain a minimum 2.5% of their purchase price for six months to give time for snags and defects to be made good. We believe this will incentivise builders to firstly get all snags and defects completed before the owner moves in and secondly if any snags or defects are found they will be promptly made good. If the developer does not fix them within an agreed period, the homeowner can use the money to fix the issues themselves. An independent government body would need to be set-up to administer claims but would give the buyer a mechanism to claim compensation.

Example: (ONS - UK House Price Index: February 2021)

Average House Price (England) - £266,532 (2.5%) = £6,663.30
Average House Price (London) - £496,000 (2.5%) = £12,400.00

Floor to Ceiling Heights

Notes:

The following information has been produced to help understand the relevant policy requirements of floor to ceiling heights in residential dwellings within England, as well as the implications of typical construction build-ups to ensure an adequate floor to floor height can be used for pre-planning uses when finishes and construction method are typically unknown.

Further to this, Counterbalance believes that best practice should be used wherever possible and architects should go beyond policy to help improve the quality of homes being designed. A series of recommendations are put forward with this in mind.

Every project is different and could have different requirements, and therefore we highly recommend confirming build-ups with the relevant consultants as soon as possible to ensure the desired floor to ceiling heights are met. Any inaccuracy in the information is not the responsibility of Counterbalance or contributors of the guidance. The guidance provided has materialised from previous project experience and best practice guidance at the time of issue.

counterbalance

Floor to Ceiling Heights

Current Floor to Ceiling Height Policy

Technical housing standards – nationally described space standard (2015) states:

"The minimum floor to ceiling height is 2.3m for at least 75% of the Gross Internal Area"

However, this policy was not incorporated into the building regulations. Instead it may be imposed by Local Planning Authorities as a planning condition.

The London Plan 2021 by the Greater London Authority (GLA) states:

"A minimum ceiling height of 2.5m for at least 75 per cent of the gross internal area is required."

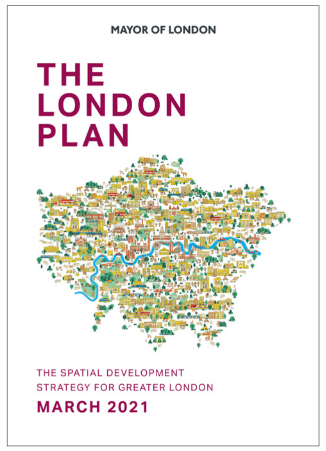
Again, this policy is not mandatory for London Boroughs to use but can rather be imposed by Local Planning Authorities as a planning condition.

Counterbalance Conclusion

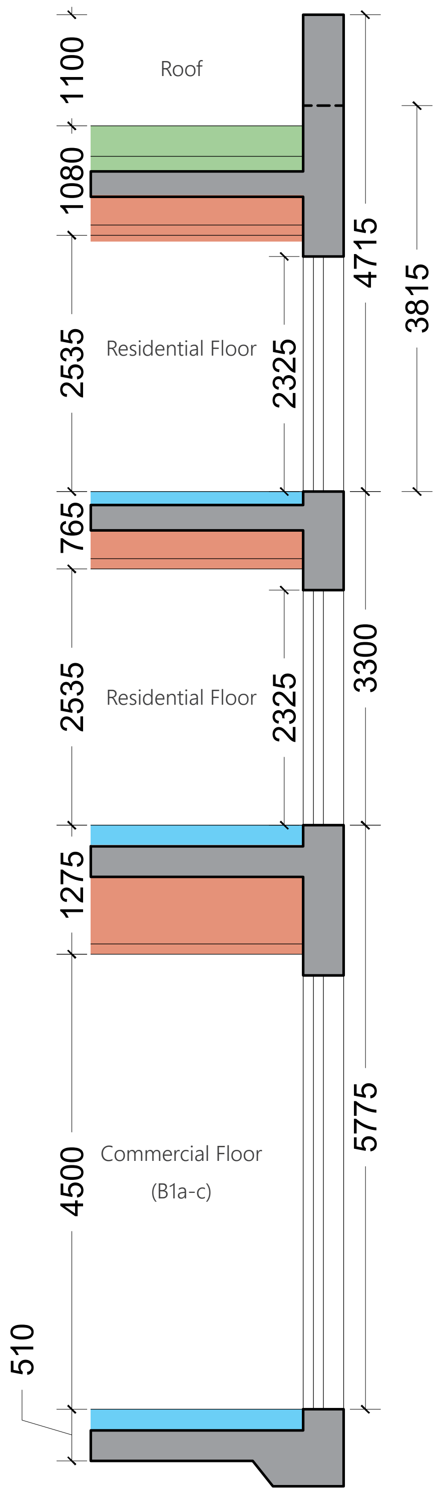
Generous floor to ceiling heights allow for a sense of place and design quality which improves daylight penetration, ventilation and cooling, reducing the urban heat island effect. Counterbalance believes that 2.5m floor to ceiling heights for all habitable rooms provides a fair balance between the additional construction costs and the health advantages of increasing floor to ceiling heights. All other rooms including bathrooms, utility and storage spaces should achieve 2.4m.

To ensure housing is of adequate quality within London and England this policy should be incorporated within building regulations. The next page sets out recommended floor to floor dimensions to be used at early stages of a project to achieve 2.5m floor to ceiling heights.

Technical Housing Standards Nationally Described Space Standard March 2015



The London Plan, March 2021



Recommended Heights

Typical Floor to Floor Dimensions

Residential Floor to Ceiling Heights

The diagram to the left demonstrates the required floor to floor heights needed to allow for floor to ceiling heights of 2500mm in habitable rooms and 2400mm in all other rooms.

Our recommended heights allow for various construction methods and provide greater flexibility in the future when build-ups are unknown with the added benefit of enjoying generous floor to ceiling heights.

The minimum heights should only be used when various conditions are agreed with your client and design team as they have implications on cost, structural design and construction methods.

Commercial - Floor to Ceiling Heights

There are no standards/policy for commercial units as they are very dependent on the end user / use class, however, the following is a good starting point at feasibility stage, but heights should be confirmed by the client or sales agents.

Ground Floor

B1a Office / Low Cost Workspace

- 3300mm (Minimum) 3600mm (Recommended)

B1c – Small-medium scale light industrial

- 4500mm (Minimum) 5500mm (Recommended)

1st Floor

B1a Office / Low Cost Workspace

- 2750mm (Minimum) 3000mm (Recommended)

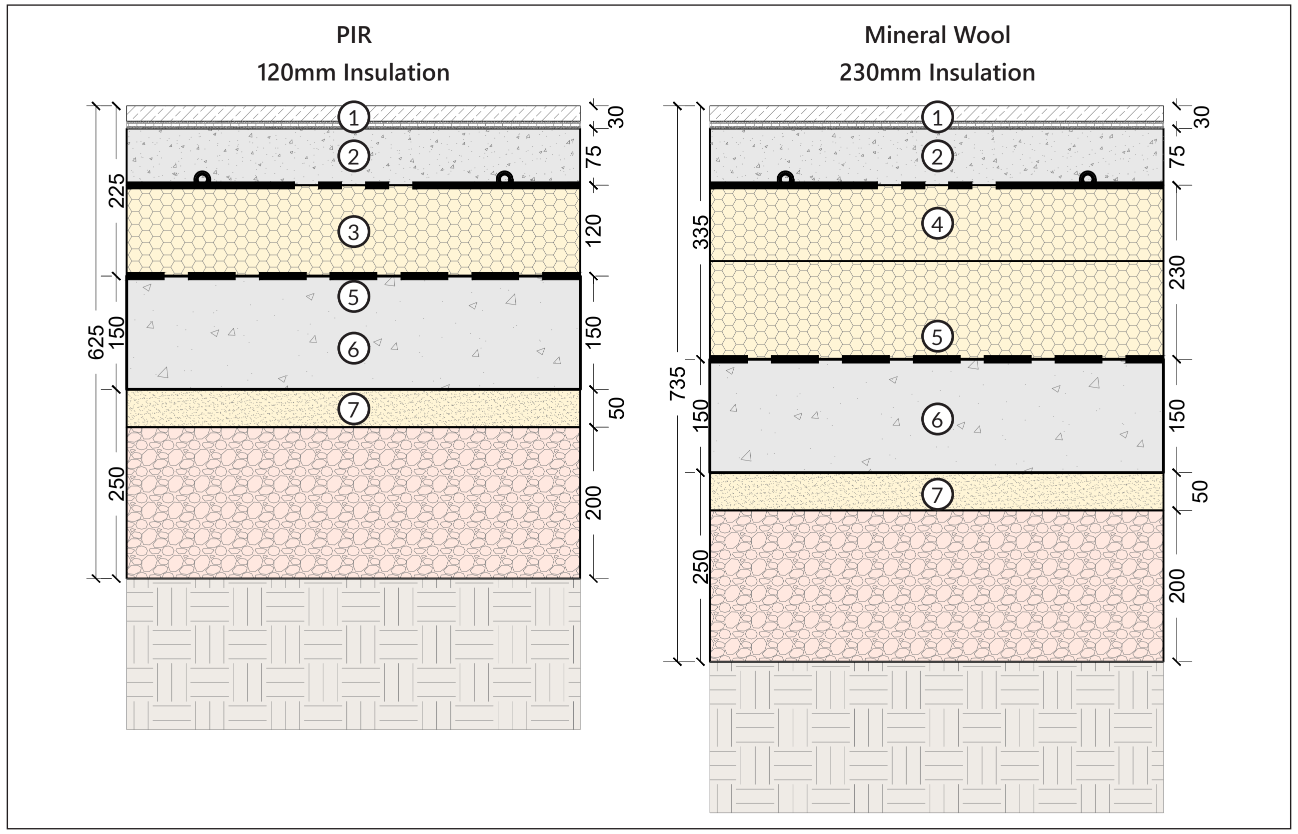
Brick Dimensions

Floor to Floor dimensions have been rounded up to brick coursing, floors can be reduced if an alternative material is being used. If the external material is un-known maintain brick dimensions until known.

(215 x 102.5 x 65mm UK Standard Brick Size)

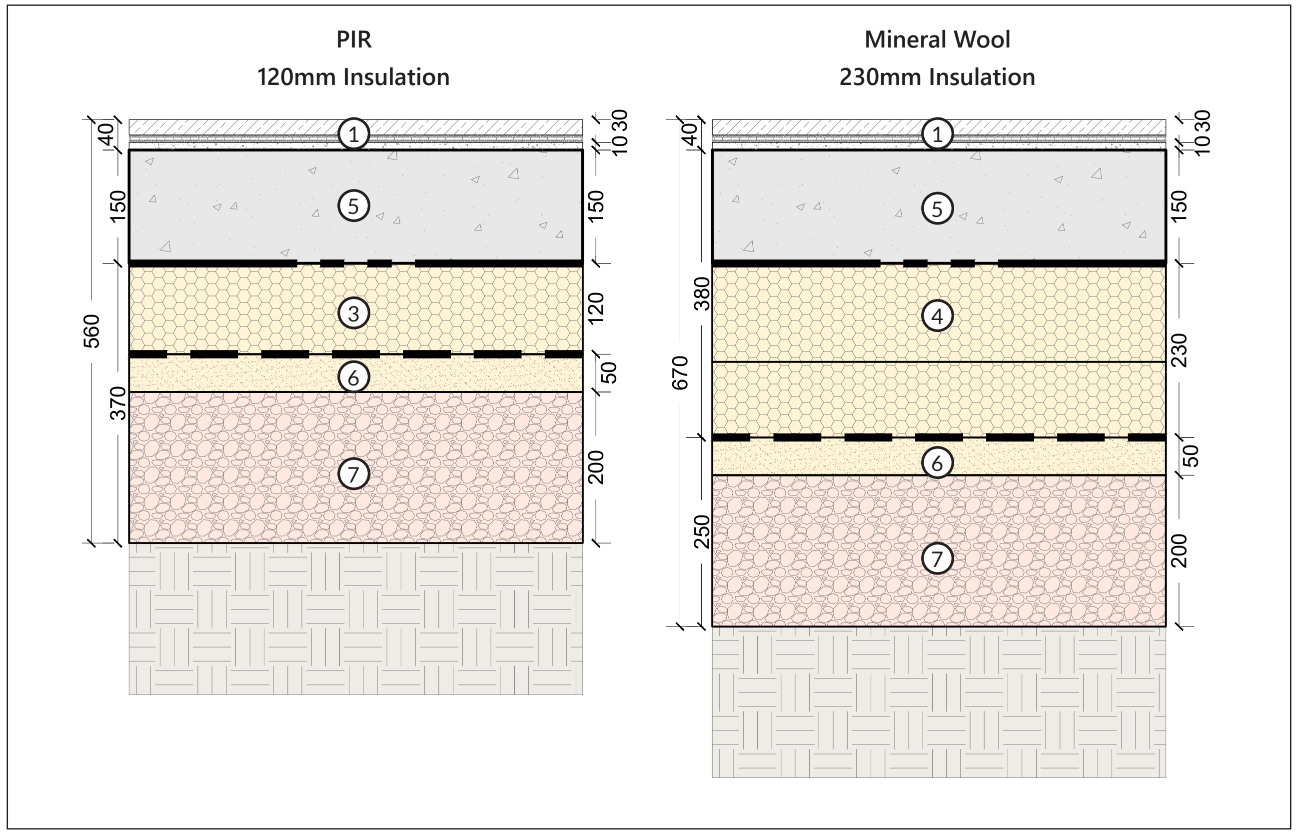
Ground Floor Concrete Floors - Insulation Above Concrete Slab

0.13 W/m²K - (New Build 50m2 / Extensions up to 60m2 - 10x6m)



Ground Floor Concrete Floors - Insulation Below Concrete Slab

0.13 W/m²K - (New Build 50m2 / Extensions up to 60m2 - 10x6m)



Residential Ground Floor Build-up

Ground Floor Residential Build-up

01 - Floor Finish Zone (30mm)

Timber or Tiles: Maximum 20mm Board/Tile with 10mm Adhesive & Dimtra Matt

Solid wood flooring is not recommended for installations over UFH. Always check with manufacturer to ensure the selected Solid or Engineered Wood Flooring is approved for use over UFH. Check to see if a decoupling membrane is required as this will add 3mm within the floor finish zone.

Carpet: Typically, 10mm Underlay / 10mm Carpet

Combined TOG value of the carpet and underlay should not exceed 2.5 tog.

Underlay Layer - When installing certain flooring as floating installation, a suitable polythene slip membrane beneath is essential. Check with manufacturer of flooring.

02 - Screed/UFH (60mm to 85mm Zone)

Unbonded Sand & Cement Screed - Minimum: 85mm

- *75mm (65mm K-Screed – potentially more expensive)*
- *10mm structural slab building tolerances*

DMP – 500 Gauge Polythene Layer

It is recommended to include a moisture suppressant layer within the subfloor. This layer must be incorporated beneath the heat source and fully supported from beneath.

03 - PIR Insulation (120mm)

120mm Insulation (Kingspan K103 or Similar)

04 - Mineral Wool Insulation (230mm)

230mm Insulation (Rockwool Thermal or Similar)

05 - Waterproofing Layer

DPM - Visqueen Radon R400 Membrane

06 - Concrete (150mm)

Range from 150mm to 200mm

(Confirm with Structural Engineer)

07 - Sand & Sub-base (250mm)

50mm Sand Binding

200mm MOT Type 01 Sub-base (Compressed)

Cost Comparison

Concrete - Insulation Above Slab 0.13 W/m²K

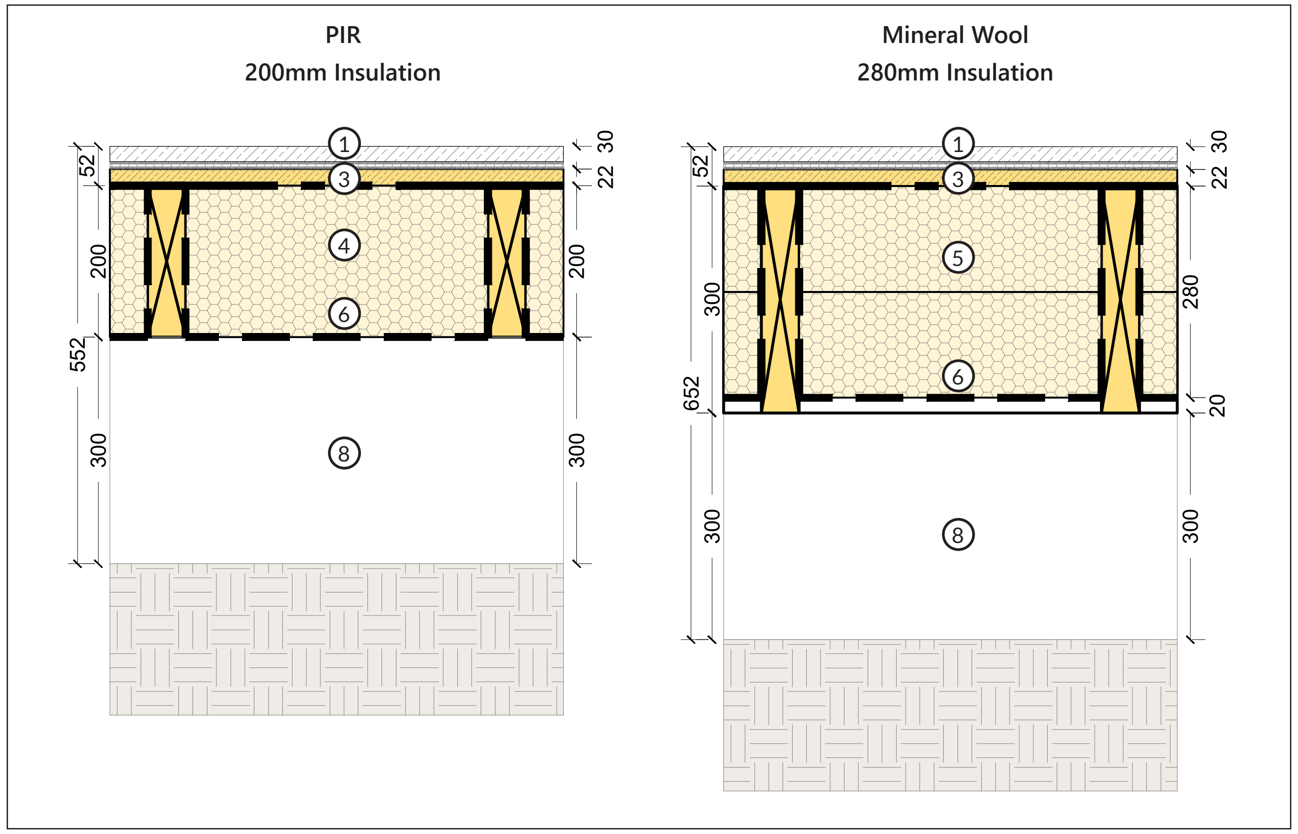
- PIR Insulation - £222.49 per m2
- Mineral Wool Insulation - £284.28 per m2

Concrete - Insulation Below Slab 0.13 W/m²K

- PIR Insulation - £212.49 per m2
- Mineral Wool Insulation - £274.28 per m2

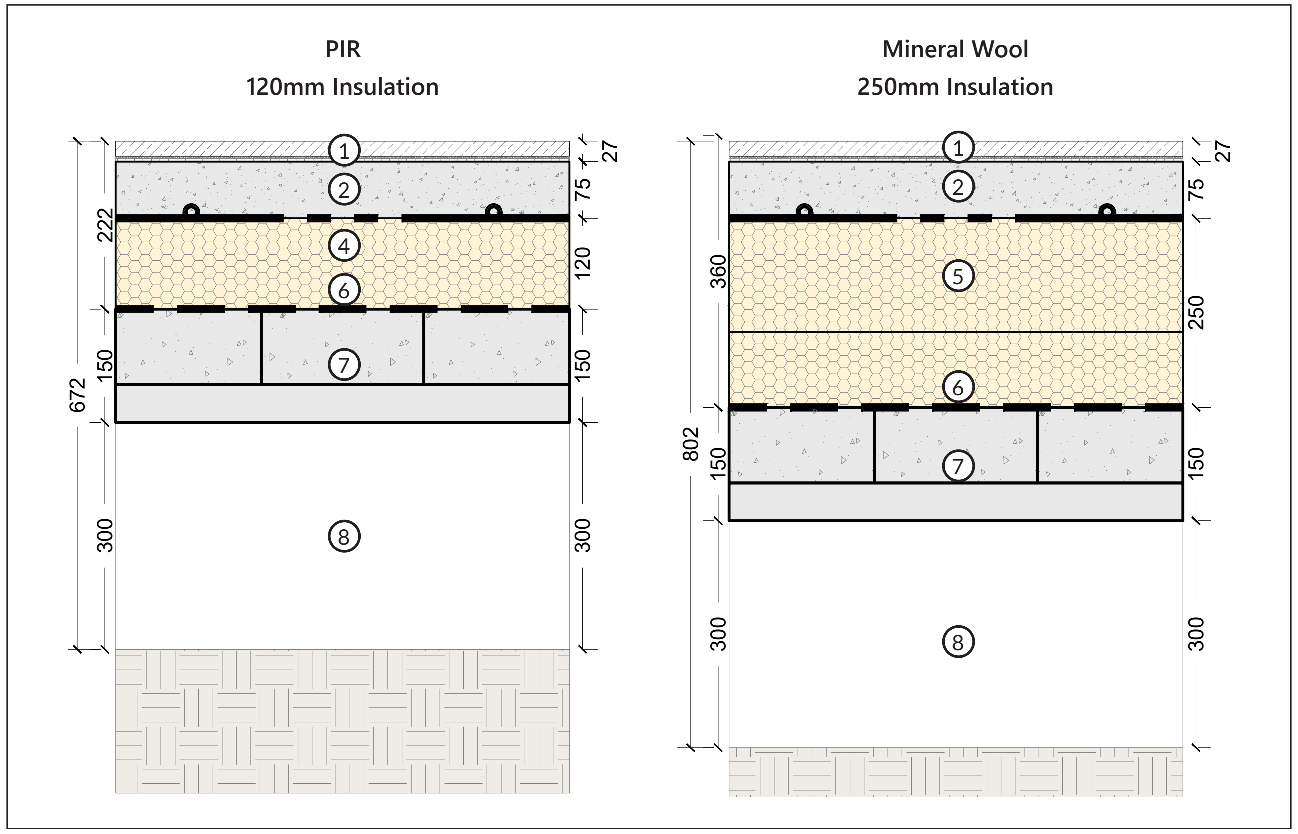
Ground Floor Timber Floors - Insulation Between Joists

0.13/14 W/m²K - (New Build 50m2 / Extensions up to 60m2 - 10x6m)



Ground Floor Block & Beam Floors - Insulation Above Blocks

0.13 W/m²K - (New Build 50m2 / Extensions up to 60m2 - 10x6m)



Residential Ground Floor Build-up

Ground Floor Residential Build-up

01 - Floor Finish Zone (30mm)

Timber or Tiles: Maximum 20mm Board/Tile with 10mm Adhesive & Dimtra Matt

Solid wood flooring is not recommended for installations over UFH. Always check with manufacturer to ensure the selected Solid or Engineered Wood Flooring is approved for use over UFH. Check to see if a decoupling membrane is required as this will add 3mm within the floor finish zone.

Carpet: Typically, 10mm Underlay / 10mm Carpet

Combined TOG value of the carpet and underlay should not exceed 2.5 tog.

Underlay Layer - When installing certain flooring as floating installation, a suitable polythene slip membrane beneath is essential. Check with manufacturer of flooring.

02 - Screed/UFH (60mm to 85mm Zone)

Unbonded Sand & Cement Screed - Minimum: 85mm

- *75mm (65mm K-Screed – potentially more expensive)*
- *10mm structural slab building tolerances*

DMP – 500 Gauge Polythene Layer

It is recommended to include a moisture suppressant layer within the subfloor. This layer must be incorporated beneath the heat source and fully supported from beneath.

03 - Timber Joists & Desk (22/ 200 or 300mm)

22mm T&G MR Chipboard Flooring TG4 with VCL

200mm Timber Joist to Structural Engineers Specification

300mm Timber Joist to Structural Engineers Specification

04 - PIR Insulation (200mm)

200mm Insulation (Celotex XR400 or Similar)

120mm Insulation (Kingspan K103 or Similar)

05 - Mineral Wool Insulation (280mm)

280mm Insulation (Rockwool Flexi or Similar)

250mm Insulation (Rockwool Thermal or Similar)

06 - Waterproofing Layer

DPM - Visqueen Radon R400 Membrane

07 - Concrete Block & Beam (150mm)

150mm Block & Beam System

(Length, Size & Strength to be confirmed with SE)

08 - Void (300mm)

Min 300mm Ventilation Void

Cost Comparison

Timber - Insulation Between Joists 0.13 W/m²K

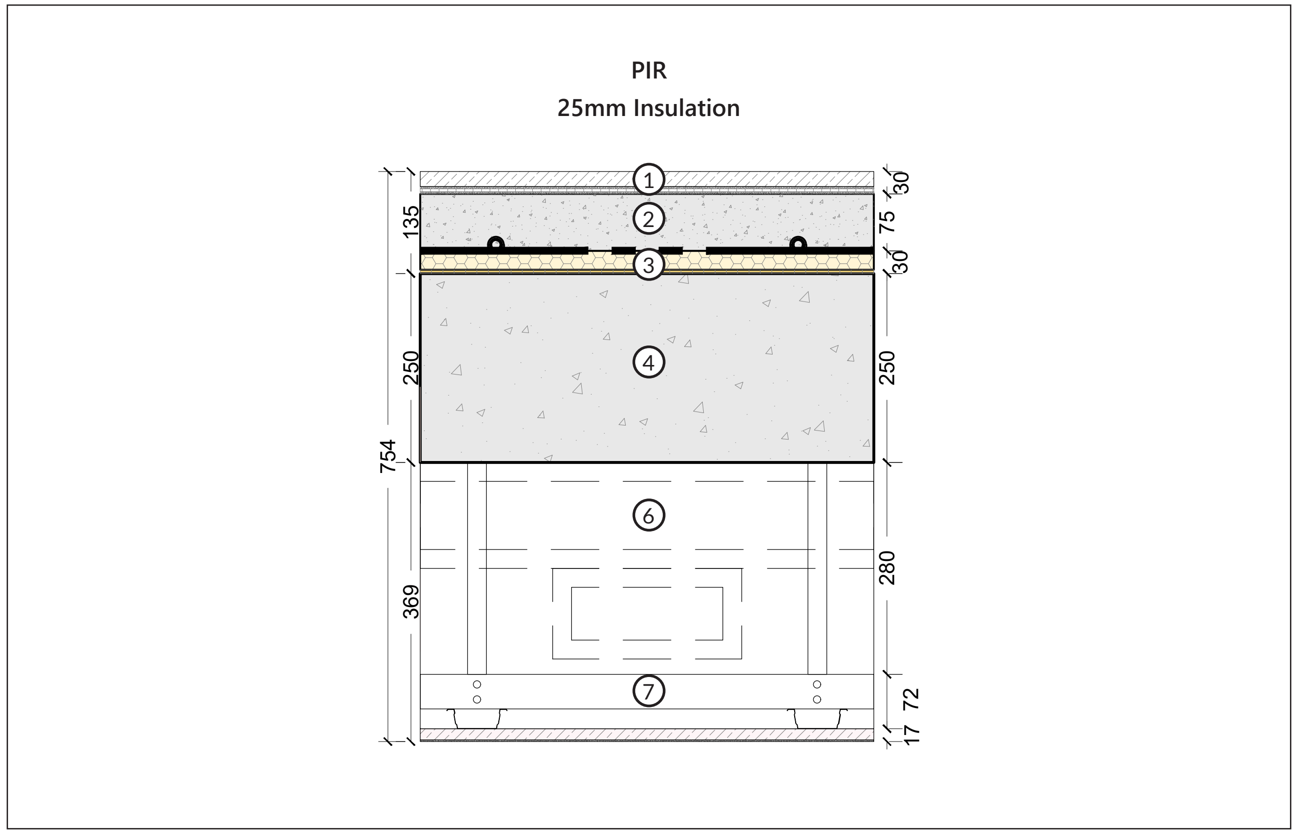
- PIR Insulation - £138.06 per m2
- Mineral Wool Insulation - £139.26 per m2

Block & Beam - Insulation Above Slab 0.13 W/m²K

- PIR Insulation - £218.72 per m2
- Mineral Wool Insulation - £337.71 per m2

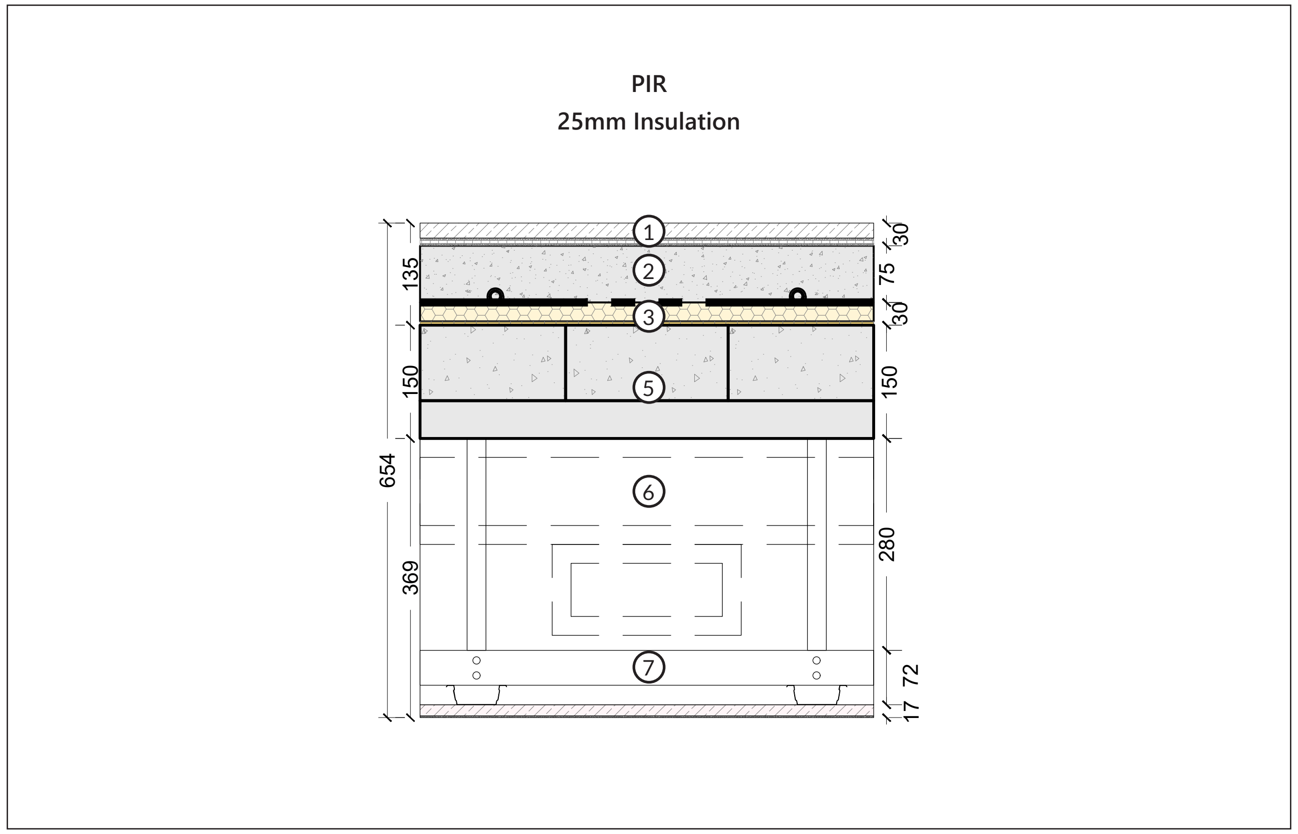
Typical Residential RC Concrete Floors

Airborne Sound is 45 Decibels or Above / Impact Sound is 62 Decibels or Below



Typical Residential Block & Beam Floors

Airborne Sound is 45 Decibels or Above / Impact Sound is 62 Decibels or Below



Residential Floor Build-up

Typical Residential Floor Build-up

01 - Floor Finish Zone (30mm)

Timber or Tiles: Maximum 20mm Board/Tile with 10mm Adhesive & Dimtra Matt

Solid wood flooring is not recommended for installations over UFH. Always check with manufacturer to ensure the selected Solid or Engineered Wood Flooring is approved for use over UFH. Check to see if a decoupling membrane is required as this will add 3mm within the floor finish zone.

Carpet: Typically, 10mm Underlay / 10mm Carpet

Combined TOG value of the carpet and underlay should not exceed 2.5 tog.

Underlay Layer - When installing certain flooring as floating installation, a suitable polythene slip membrane beneath is essential. Check with manufacturer of flooring.

02 - Screed/UFH (60mm to 85mm Zone)

Unbonded Sand & Cement Screed - Minimum: 85mm

75mm (65mm K-Screed – potentially more expensive)
10mm structural slab building tolerances

DMP – 500 Gauge Polythene Layer
It is recommended to include a moisture suppressant layer within the subfloor. This layer must be incorporated beneath the heat source and fully supported from beneath.

03 - Insulation / Acoustic Layer (30mm)

25mm Insulation (Cellecta XFloor 250 or Similar)
5mm Acoustic Layer (Yelofon HD5 or Similar)

Acoustic Performance - Airborne - 54dB D + C nT,w tr / Impact - 54dB LnT,w (Building Regulations + 5dB)

04 - Concrete (250mm)

Range from 225mm to 275mm
(Confirm with Structural Engineer)

05 - Concrete Block & Beam (150mm)

150mm Block & Beam System
(Length, Size & Strength to be confirmed with SE)

06 - Service Void

350mm required for Attenuator/Fan Coil Units
325mm - MVHR, Electrical, Water, SVP & RWP if 45 degrees bend required.
Stacked services can reduce zone to 280mm

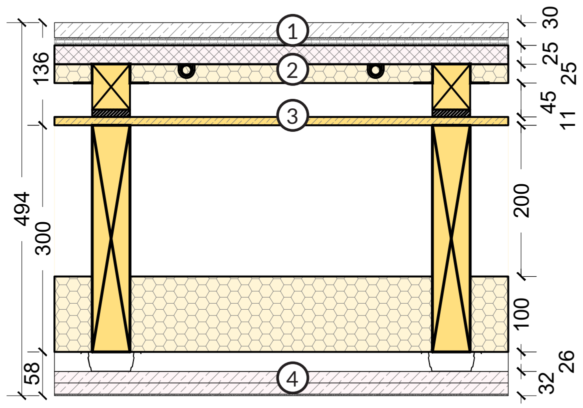
07 - Plasterboard (90mm)

Standard British Gypsum CasoLine MF System consists: (Approximate 90mm)

46mm Gypframe MF7 Primary Support Channel
26mm Gypframe MF5 Ceiling Section
1x12.5mm Plasterboard
2mm Plaster Skim

Typical Residential Timber Floors

Airborne Sound is 45 Decibels or Above / Impact Sound is 62 Decibels or Below



Residential Floor Build-up

Typical Residential Floor Build-up

01 - Floor Finish Zone (30mm)

Timber or Tiles: Maximum 20mm Board/Tile with 10mm Adhesive & Dimtra Matt

Solid wood flooring is not recommended for installations over UFH. Always check with manufacturer to ensure the selected Solid or Engineered Wood Flooring is approved for use over UFH. Check to see if a decoupling membrane is required as this will add 3mm within the floor finish zone.

Carpet: Typically, 10mm Underlay / 10mm Carpet

Combined TOG value of the carpet and underlay should not exceed 2.5 tog.

Underlay Layer - When installing certain flooring as floating installation, a suitable polythene slip membrane beneath is essential. Check with manufacturer of flooring.

02 - Acoustic System (60mm to 85mm Zone)

25mmHideck Structural 25 Board

25mm Cellecta XFLO JB-FF with UFH

70/75mm Deckfon Batten 70

03 - Timber Structure (60mm to 85mm Zone)

11mm OSB 3 Board

300mm Structural Timber Joist to SE Specification

Between Joists - 450mm Centers

100mm Rockwool Flexi Insulation

200mm Service Void

If a larger void is required - use larger joists

04 - Plasterboard

MF5 Plasterboard Ceiling Section

2x15mm Gyproc Wallboard

2mm Plaster Skim

Cost Comparison

Block & Beam - Insulation Above Slab

- PIR Insulation - £291.20 per m2

Block & Beam - Insulation Above Slab

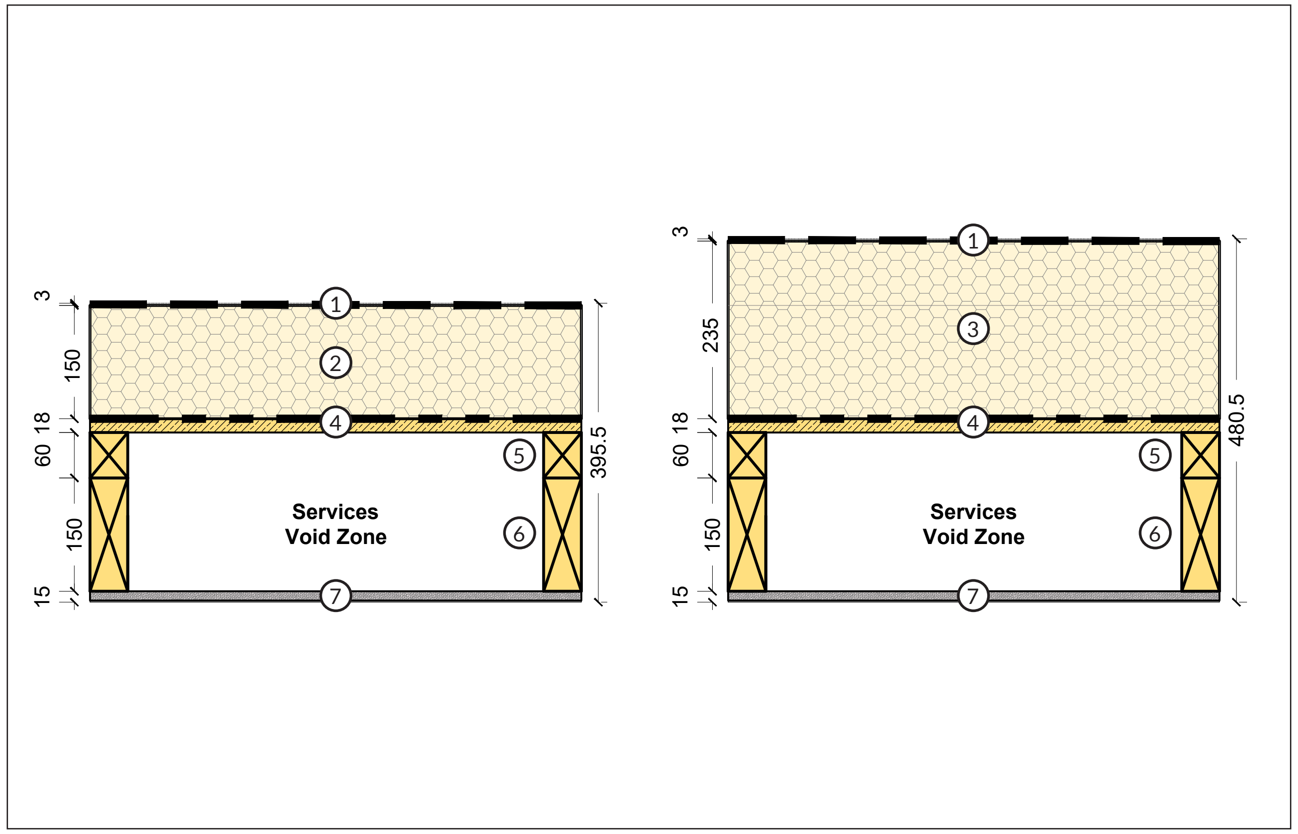
- PIR Insulation - £193.39 per m2

Timber - Insulation Between Joists

- PIR & Mineral Insulation - £216.36 per m2

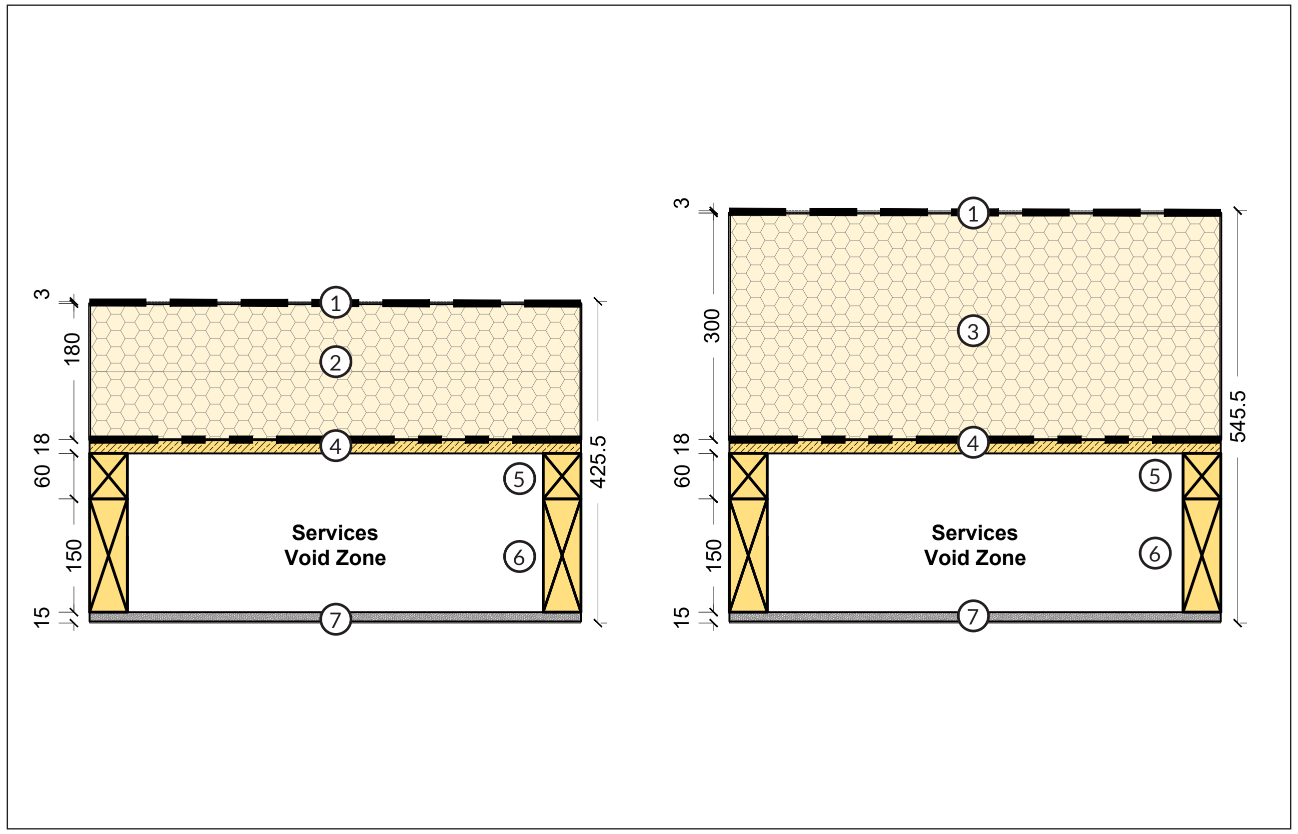
Timber Flat Roof - Extensions - PIR & Mineral Wool Insulation

0.15 W/m²K



Timber Flat Roof - New Build - PIR & Mineral Wool Insulation

0.13 W/m²K



Roof Build-up - Timber Flat Roof

Typical Residential Roof Build-up

01 – Waterproofing Layer

3mm Alkorplan Fleece Backed Membrane

02 – Insulation – PIR (150/180mm)

150/180mm Kingspan Thermaroof TR27 Insulation

(U-Value - 0.13/15W/m²)

03 – Insulation – Inverted Roof (280mm)

235/300mm Rockwool Hardrock Multi-Fix

(U-Value - 0.13/15W/m²)

04 – Timber Deck

PU Insulation Adhesive

VCL - Alumasc AVCL - Self-adhesive

Alumasc Primer - Self-adhesive

18mm OSB 3 Tongue & Groove Board

05 – Fall in Roof

60mm Firring Strips to Create Falls

(Maximum 3m Fall - 20mm for every 1 meter)

06 – Timber Structure

150mm Structural Timber Joist to SE Specification

Between Joists - 600mm Centers

07 – Plasterboard & Skim

12.5mm Plasterboard

3mm Plaster Skim

Cost Comparison

Timber Flat Roof - Extensions

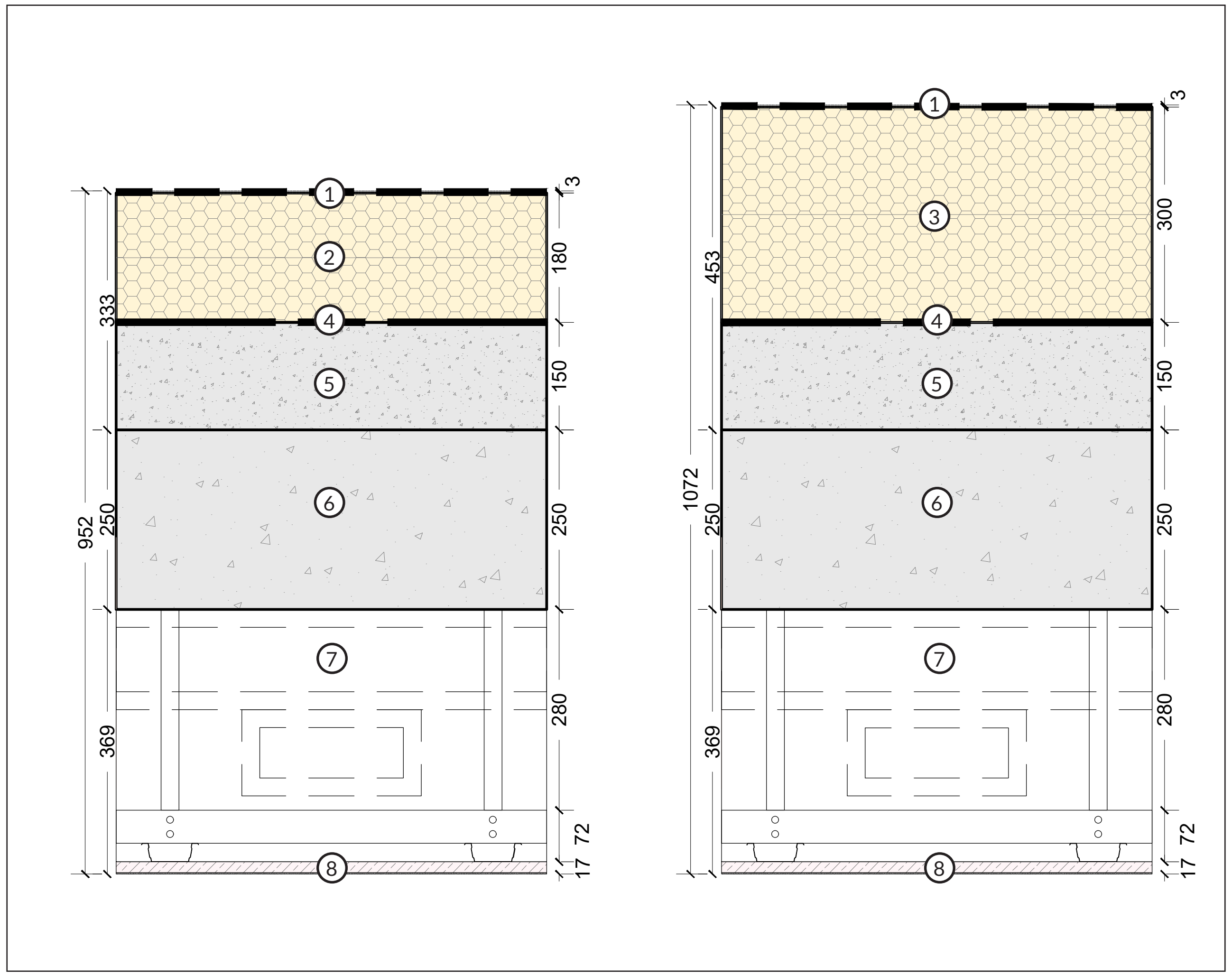
- PIR Insulation - £130.65 per m2
- Mineral Wool Insulation - £198.45 per m2

Timber Flat Roof - New Build

- PIR Insulation - £182.07 per m2
- Mineral Wool Insulation - £231.37 per m2

Concrete Flat Roof - New Build - PIR & Mineral Wool Insulation

0.13 W/m²K



Roof Build-up - Concrete Flat Roof

Typical Residential Roof Build-up

01 – Waterproofing Layer

3mm Alkorplan Fleece Backed Membrane

02 – Insulation – PIR

180mm Kingspan Thermaroof TR27 Insulation

(U-Value - 0.13W/m²)

03 – Insulation – Inverted Roof

300mm Rockwool Hardrock Multi-Fix

(U-Value - 0.13W/m²)

04 – VCL

PU Insulation Adhesive

VCL - Alumasc AVCL - Self-adhesive

Alumasc Primer - Self-adhesive

05 – Fall in Roof

150mm Screed Zone for Falls

1:40 falls for 4 meters - (50mm min screed)

06 – Concrete Structure

250mm Concrete Slab to SE Specification

07 - Service Void

350mm required for Attenuator/Fan Coil Units

325mm - MVHR, Electrical, Water, SVP & RWP if 45 degrees bend required.

Stacked services can reduce zone to 280mm

08 - Plasterboard (90mm)

Standard British Gypsum CasoLine MF System consists:

(Approximate 90mm)

46mm Gypframe MF7 Primary Support Channel

26mm Gypframe MF5 Ceiling Section

1x12.5mm Plasterboard

2mm Plaster Skim

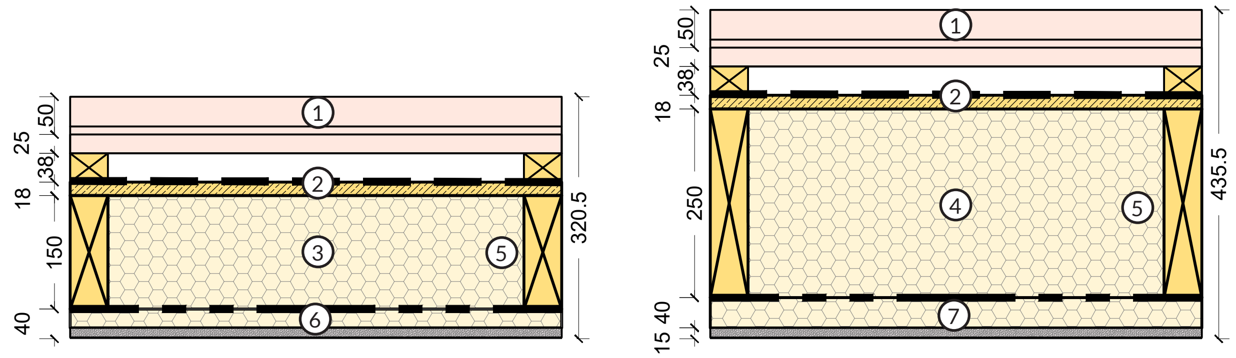
Cost Comparison

Concrete Flat Roof - New Build

- PIR Insulation - £366.37 per m2
- Mineral Wool Insulation - £414.15 per m2

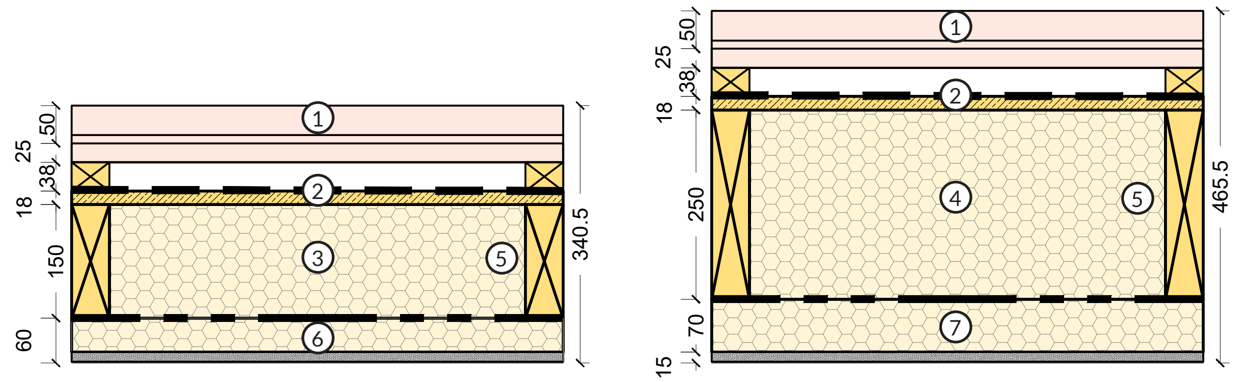
Timber Pitch Roof - Tiles - Extensions - PIR & Mineral Wool Insulation

0.15 W/m²K



Timber Pitched Roof - Tiles - New Build - PIR & Mineral Wool Insulation

0.13 W/m²K



Roof Build-up - Timber Pitched Roof - Tiles

Typical Residential Roof Build-up

01 – Roof Tiles

Clay Roof Tiles - Mid-Range

Roof Tile Nails 30mm

25x50mm Treated Timber Batten (5.1m)

Timber Nails 65mm

38x50mm Treated Timber Batten

Timber Nails 65mm

02 – Timber Deck & Breather Membrane

Kingspan Nilvent Breathable Membrane

18mm OSB 3 Tongue & Groove Board

03 – Insulation

150/180mm Kingspan Kooltherm K107 Insulation

(U-Value - 0.15/13 W/m²)

04 – Insulation

250mm Knauf Rafter Roll 32 Insulation

(100mm+75mm+75mm Rolls)

(U-Value - 0.15/13 W/m²)

05 – Timber Structure

150/250mm Structural Timber Joist to SE Specification

Between Joists - 600mm Centers

06 – Plasterboard & Skim

VCL - Visqueen Vapour Barrier

37.5/57.5mm Kooltherm K118 Plasterboard

Drywall 65/100mm Screws (16 per m2)

2mm Thistle MultiFinish Plaster Skim

07 – Plasterboard & Skim

VCL - Visqueen Vapour Barrier

40/70mm Knauf Rocksilk Flexible Slab

40/70x50mm Treat Timber Batten (3m)

Wood Screws 5x70/100mm 12x

12.5mm BG Plasterboard

Drywall 38mm Screws (16 per m2)

2mm Thistle MultiFinish Plaster Skim

Cost Comparison

Timber Pitched Roof Tiles - Extensions

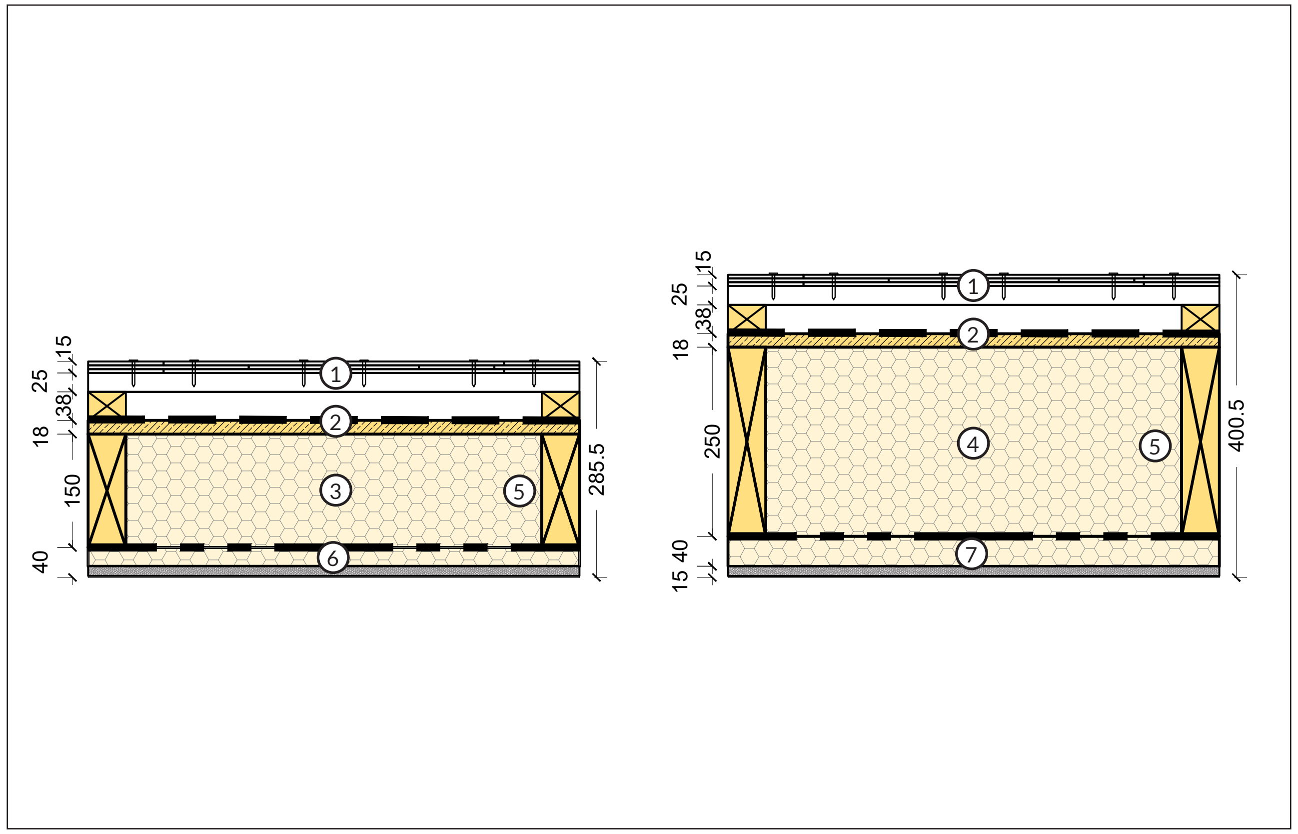
- PIR Insulation - £172.44 per m2
- Mineral Wool Insulation - £162.36 per m2

Timber Pitched Roof Tiles - New Build

- PIR Insulation - £178.17 per m2
- Mineral Wool Insulation - £164.39 per m2

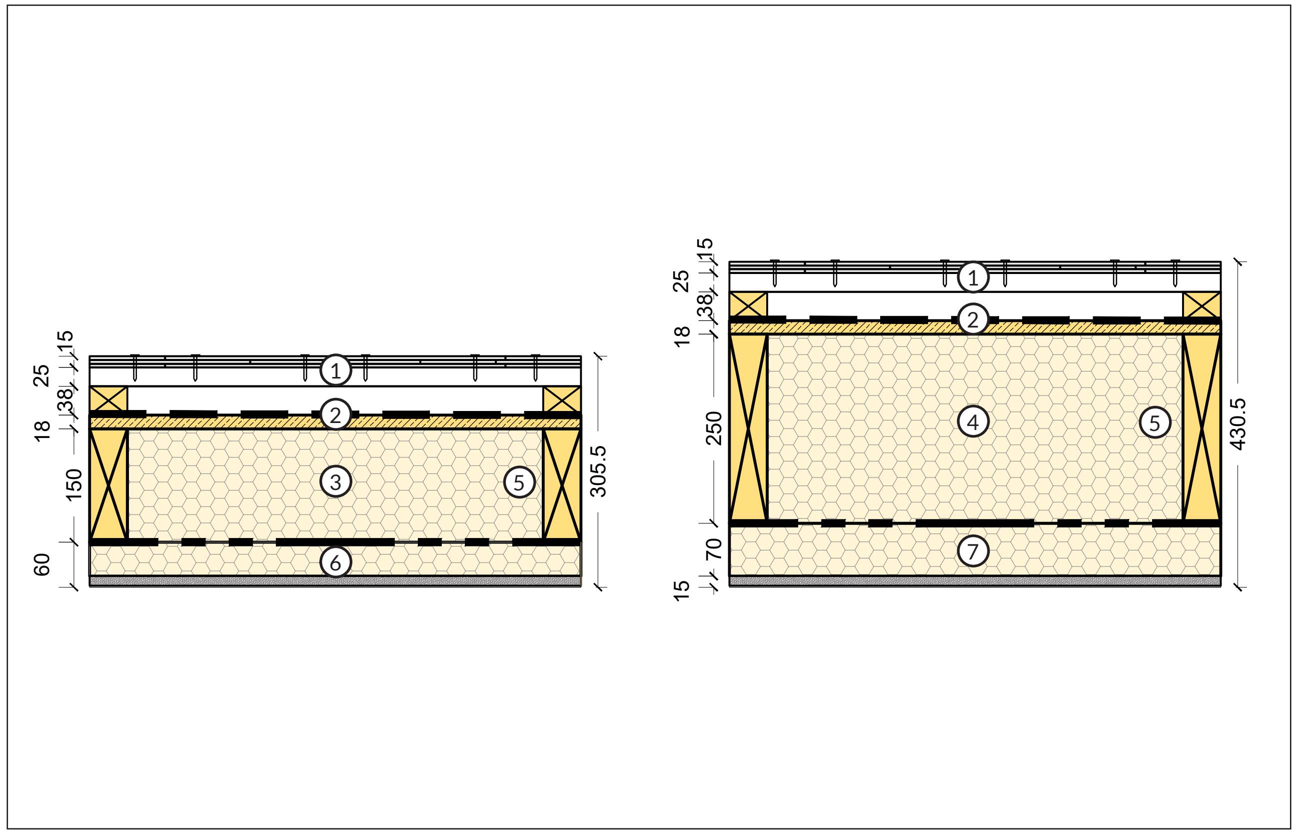
Timber Pitch Roof - Slate - Extensions - PIR & Mineral Wool Insulation

0.15 W/m²K



Timber Pitched Roof - Slate - New Build - PIR & Mineral Wool Insulation

0.13 W/m²K



Roof Build-up - Timber Pitched Roof - Slates

Typical Residential Roof Build-up

01 – Slate Roof Tiles

Slate Roof Tiles (31x 400x250mm) - Mid-Range
Timber Roof Tile Nails 30mm
25x50mm Treated Timber Batten
Timber Nails 65mm
38x50mm Treated Timber Batten
Timber Nails 65mm

02 – Timber Deck & Breather Membrane

Kingspan Nilvent Breathable Membrane
18mm OSB 3 Tongue & Groove Board

03 – Insulation

150/180mm Kingspan Kooltherm K107 Insulation
(U-Value - 0.15/13 W/m²)

04 – Insulation

250mm Knauf Rafter Roll 32 Insulation
(100mm+75mm+75mm Rolls)
(U-Value - 0.15/13 W/m²)

05 – Timber Structure

150/250mm Structural Timber Joist to SE Specification
Between Joists - 600mm Centers

06 – Plasterboard & Skim

VCL - Visqueen Vapour Barrier
37.5/57.5mm Kooltherm K118 Plasterboard
Drywall 65/100mm Screws (16 per m2)
2mm Thistle MultiFinish Plaster Skim

07 – Plasterboard & Skim

VCL - Visqueen Vapour Barrier
40/70mm Knauf Rocksilk Flexible Slab
40/70x50mm Treat Timber Batten (3m)
Wood Screws 5x70/100mm 12x
12.5mm BG Plasterboard
Drywall 38mm Screws (16 per m2)
2mm Thistle MultiFinish Plaster Skim

Cost Comparison

Timber Pitched Roof Tiles - Extensions

- PIR Insulation - £199.44 per m2
- Mineral Wool Insulation - £189.36 per m2

Timber Pitched Roof Tiles - New Build

- PIR Insulation - £205.17 per m2
- Mineral Wool Insulation - £191.39 per m2

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/m²k 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/m²k 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.

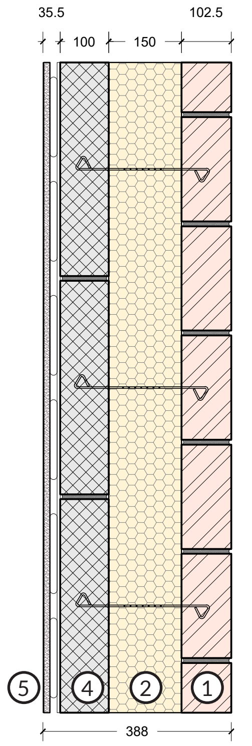
Fire Performance Requirements

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.

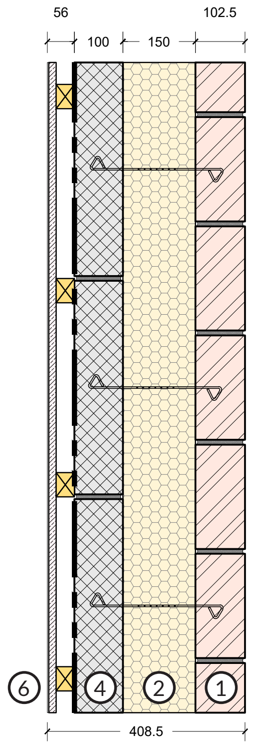
Existing Building (Refurbishment & Extensions)

0.18 W/m²K

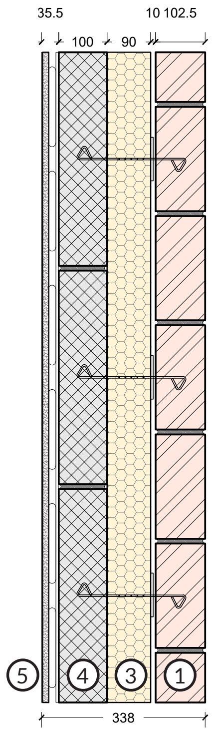
Full-Fill Mineral Wool 150mm Insulation



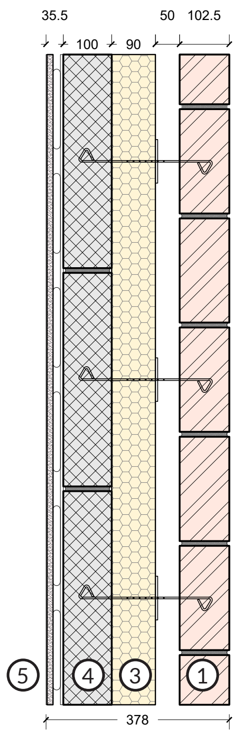
Full-Fill Mineral Wool 150mm Insulation (Low Carbon)



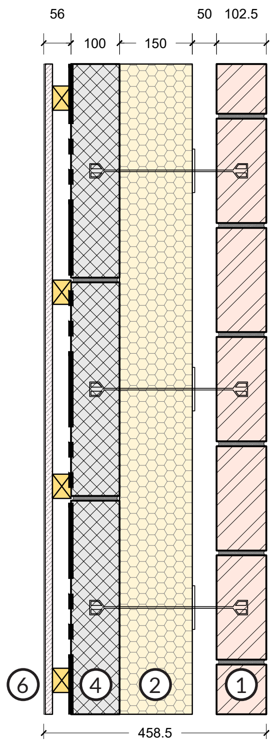
Partial-Fill PIR 90mm Insulation 10mm Cavity



Partial-Fill PIR 90mm Insulation 50mm Cavity



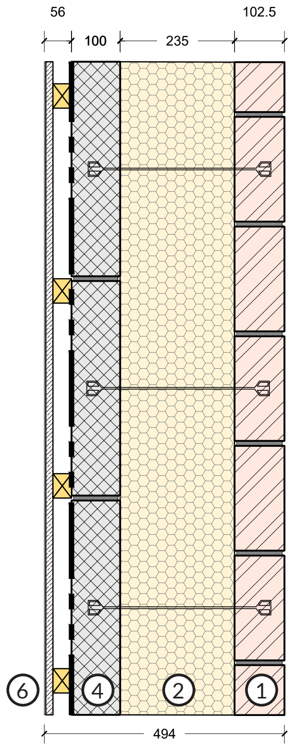
Partial-Fill Mineral Wool 150mm Insulation with (Low Carbon)



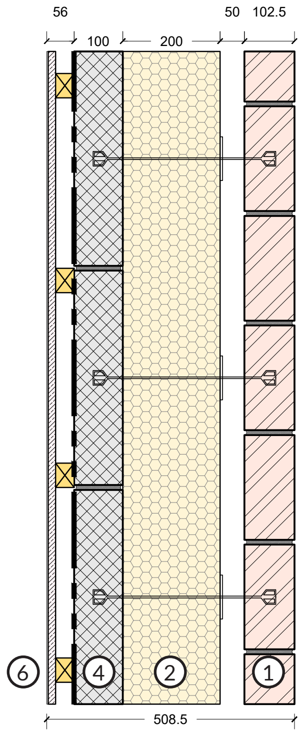
New Build Homes

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

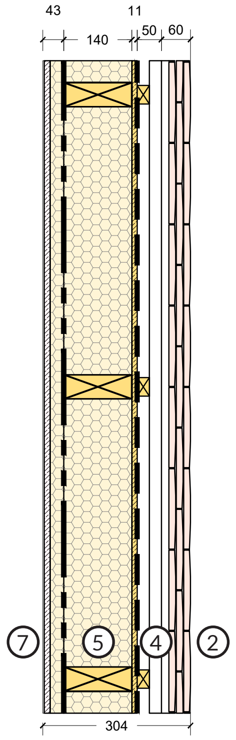
New Build Homes 0.13W/m²K

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

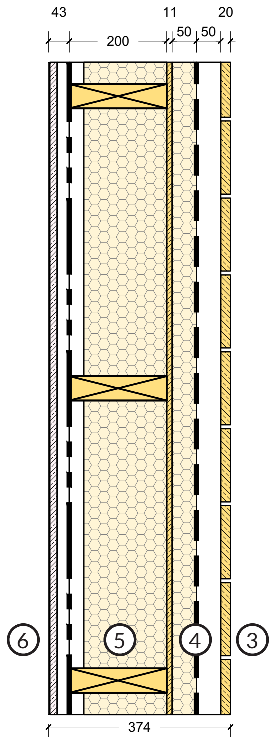
Existing Building (Extensions)

0.18 W/m²K

Clay Hanging Tiles - Timber Frame
PIR Insulation



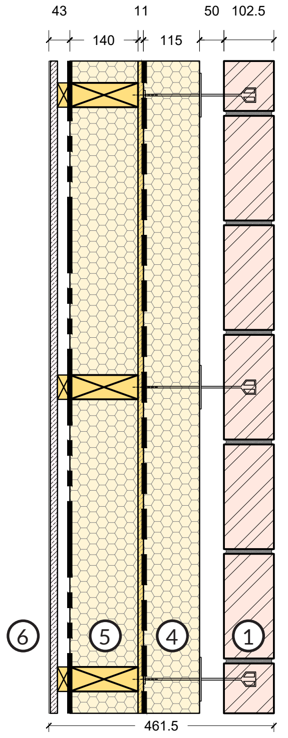
Timber Cladding - Timber Frame
Mineral Wool Insulation



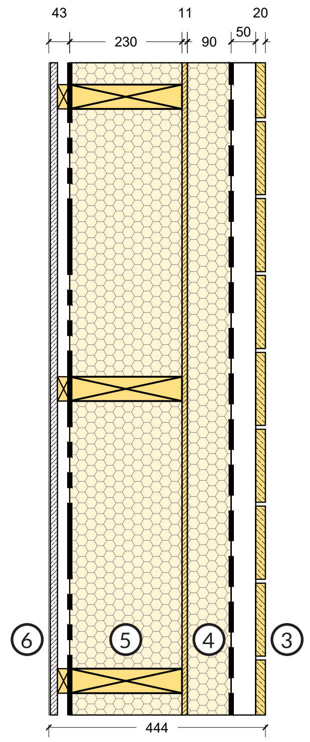
New Build Homes

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

Internal Wall Build-up

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

Internal Wall Build-up

Guidance Notes

Counterbalance would recommend the use of following wall build-up throughout the building to allow for flexible in the design when the internal wall build-up is unknown. These widths allows for all the build-ups to follow in this chapter, safe guarding the design from material changes in the future.

Thermal Requirements

The ground floor wall build-up has assumed thermal insulation is required within the walls to ensure a thermal break happened between refuse/cycle stores and residential common corridor/dwellings. Party wall build-ups have assumed that thermal insulation is required between units. This is only required if common corridors are not heated - refer to the project MEP engineer to confirm if insulation is required and target U-values. For guidance refer to Approved Document Part L.

Acoustic Requirements

The acoustic performance of the internal walls will be project specific. Ensure a review of requirements are carried out with the relevant acoustic consultant. Refer to Approved Document Part E/Robust Details for Acoustic requirements.

Fire Performance Requirements

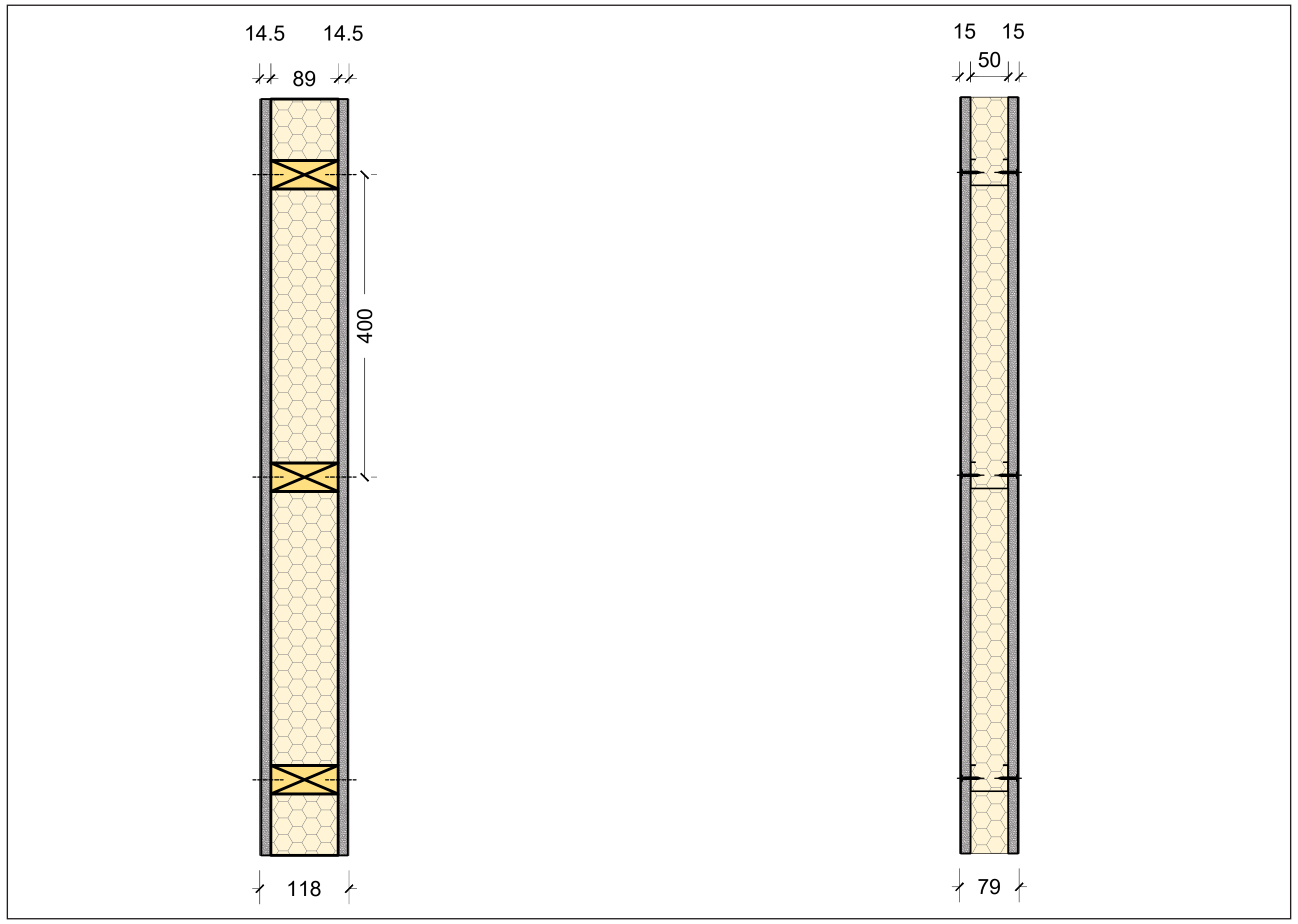
The following fire resistances can be achieved through the relevant specification of individual elements with the wall build-up, refer to the manufacturers guidance for archiving each rating:

- Ground Floor Walls - 60-120mins
- Core Walls - 120mins
- Party Walls - 60-120mins
- Internal Walls - 30mins

Refer to Approved Document Part B for guidance and consult with the project fire consultant for advice.

Internal Wall Build-up - Partition Walls

Internal Partition Walls - Studs



Timber Stud Wall with Plasterboard

Material Build-up

2mm BG Thistle MultiFinish Plaster Skim

12.5mm BG Plasterboard

89x38mm CLS Timber Studwork

Spacing Centers 438mm to create 400mm void (4.8m Length per m2)

90mm Rockwool Flexi Insulation 1200x600mm

Material Cost per m2

£50.86

Metal Stud Wall with Plasterboard

Material Build-up

2mm BG Thistle MultiFinish Plaster Skim

12.5mm BG Plasterboard - Screws

British Gypsum Gypframe 48 S 50 ‘C’ - Spacing Centers 400mm to create 400mm void (2.4m Length) per m2)

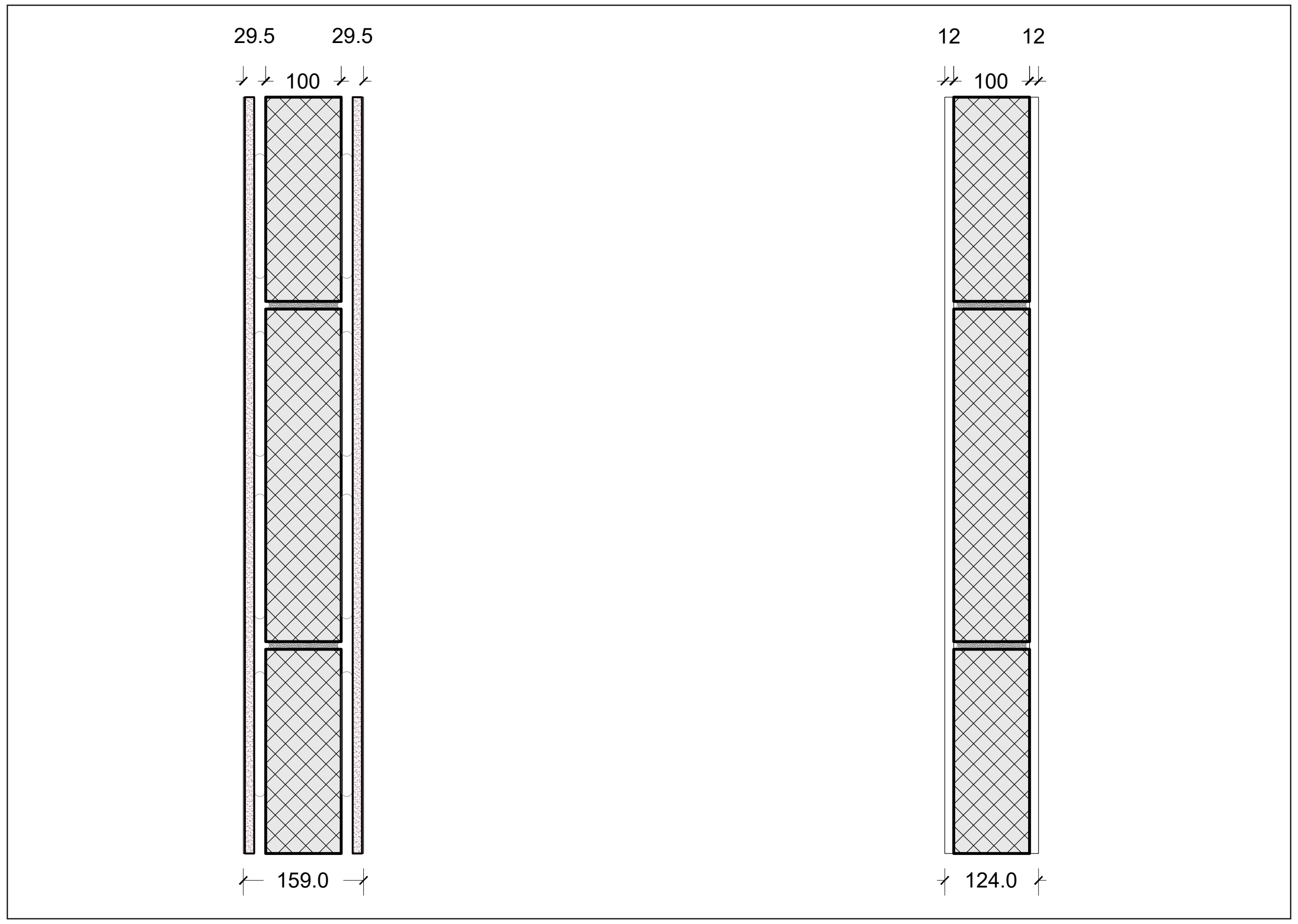
50mm Rockwool Flexi Insulation 1200x600mm

Material Cost per m2

£45.60

Internal Wall Build-up - Partition Walls

Internal Partition Walls - Blockwork



Blockwork with Plasterboard

Material Build-up

2mm BG Thistle MultiFinish Plaster Skim

12.5mm BG Plasterboard

15mm Zone for Adhesive

100mm Medium Dense Concrete Block 7.3N including sand and cement

Material Cost per m2

£67.06

Blockwork with Plaster

Material Build-up

12mm BG Thistle Universal One Coat Plaster

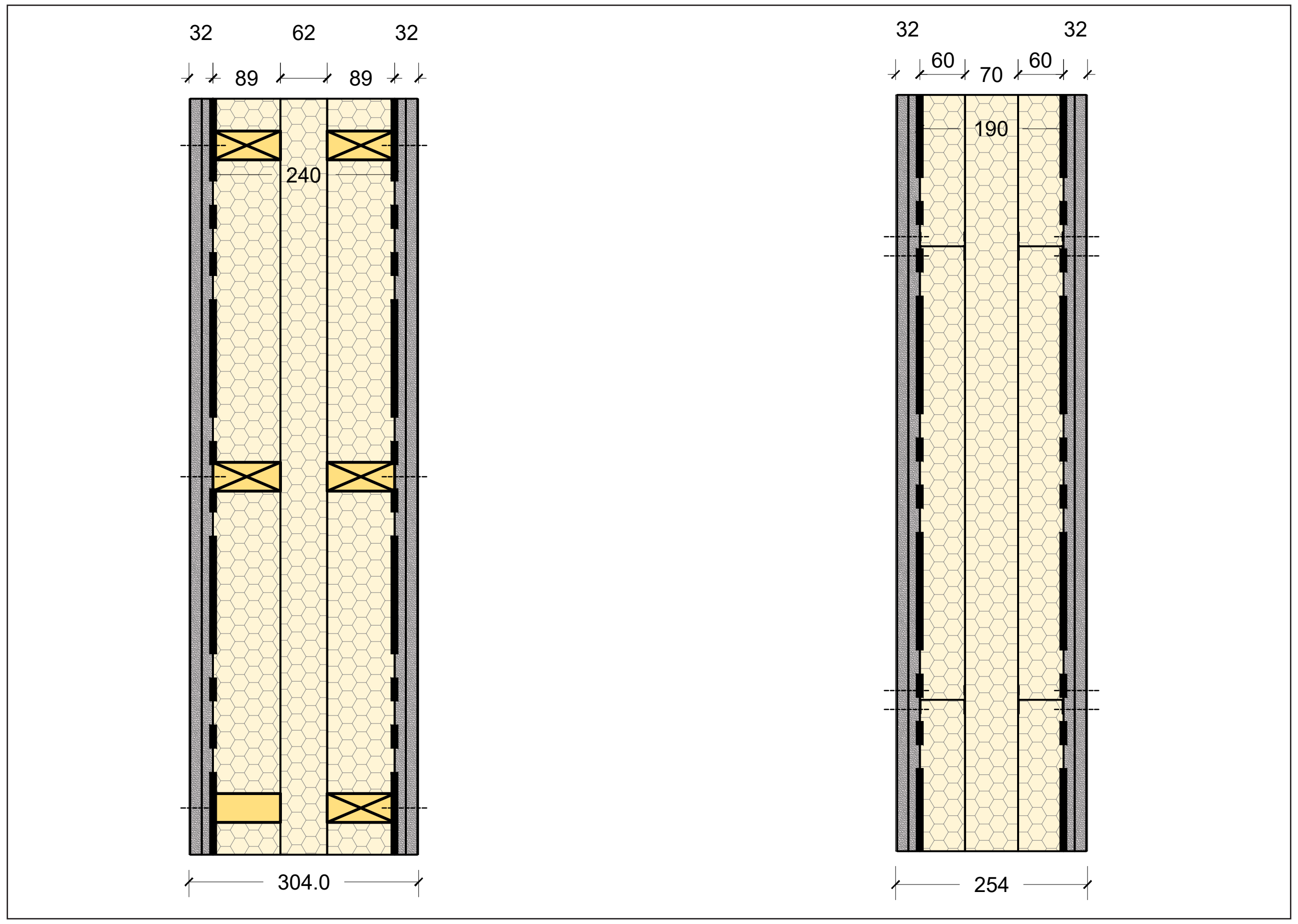
100mm Medium Dense Concrete Block 7.3N including sand and cement

Material Cost per m2

£60.24

Internal Wall Build-up - Party Walls

Internal Walls - Typical Residential Floor - Party Walls



Timber Stud Wall with Plasterboard

Material Build-up

2mm BG Thistle MultiFinish Plaster Skim - 2x £1.09m2

2x15mm BG Soundbloc Plasterboard - 2x £15.18m2

Vapour Control Layer - 2x £1.36m2

89x38mm CLS Timber Studwork (Non Structural)

Spacing Centers 438mm to create 400mm void

(4.8m Length per m2) - £37.24m2

2x90mm & 1x60mm Knauf Rocksilk Flexible Slab

1200x600mm - £28.91m2

Material Cost per m2

£109.29

Metal Stud Wall with Plasterboard

Material Build-up

2mm BG Thistle MultiFinish Plaster Skim - 2x £1.09m2

2x15mm BG Soundbloc Plasterboard - 2x £15.18m2

Vapour Control Layer - 2x £1.36m2

2x British Gypsum Gypframe 60 I Stud (Non Structural)

Spacing Centers 600mm to create 600mm void

(8m Length per m2) - £52.36m2

2x60mm & 1x70mm Knauf Rocksilk Flexible Slab -

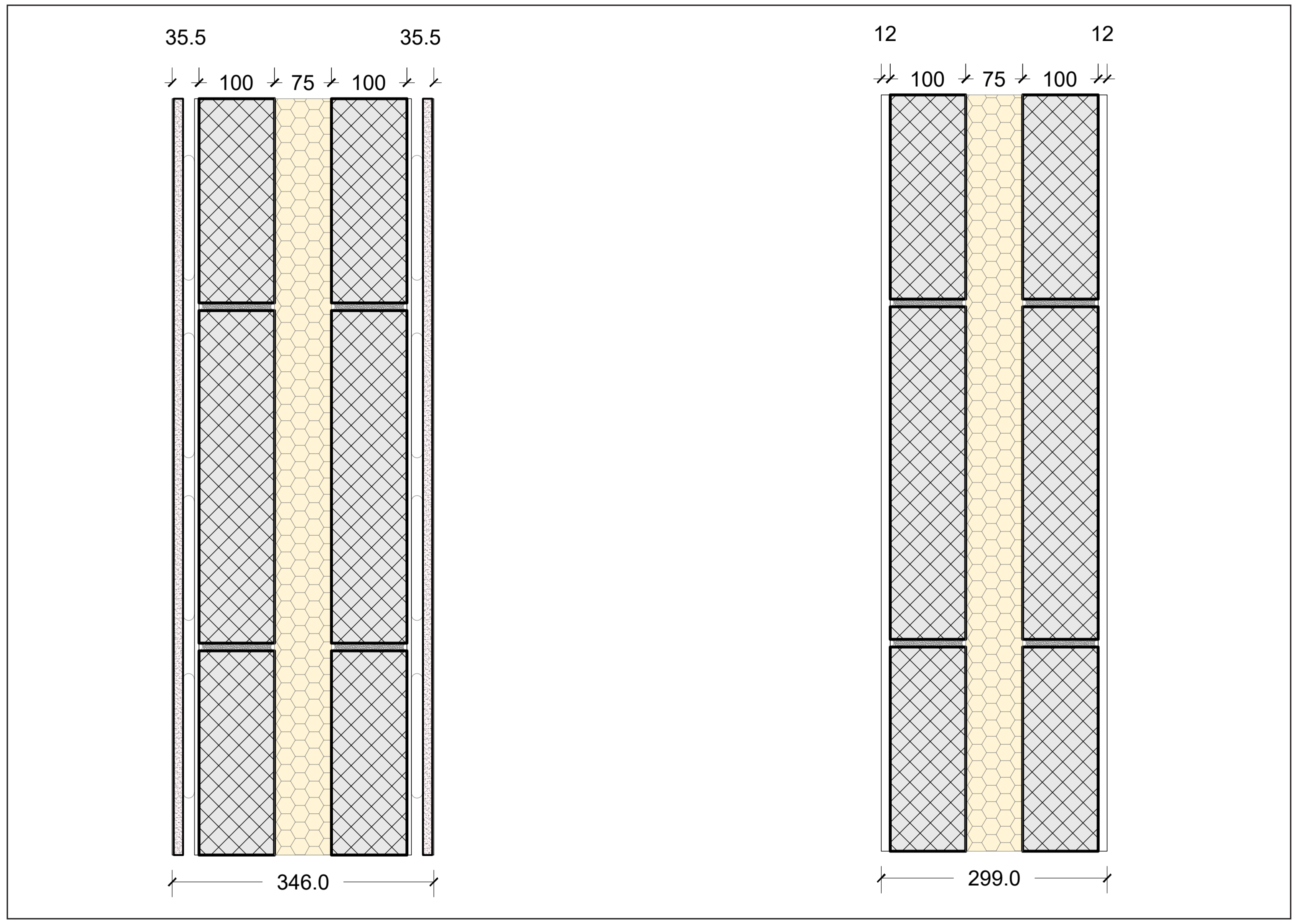
1200x600mm - £24.53m2

Material Cost per m2

£114.74

Internal Wall Build-up - Ground Floor Walls

Internal Walls - Ground Floor Walls



Blockwork Wall with Plasterboard

Material Build-up

2mm BG Thistle MultiFinish Plaster Skim - 2x £1.09 m2

12.5mm BG Plasterboard -2x £4.31m2

15mm Zone for Adhesive 2x £4.63m2

6mm Parge Coat 2x £2.39m2

100mm Medium Dense Concrete Block 7.3N

including sand and cement 2x £47.00 m2

75mm Knauf Insulation Masonry Party Wall Slab £17.22 m2

Material Cost per m2

£136.06

Blockwork Wall with Plaster

Material Build-up

12mm BG Thistle Universal One Coat Plaster 2x £6.62m2

100mm Medium Dense Concrete Block 7.3N

including sand and cement 2x £47.00 m2

75mm Knauf Insulation Masonry Party Wall Slab £17.22 m2

Material Cost per m2

£124.46

counterbalance