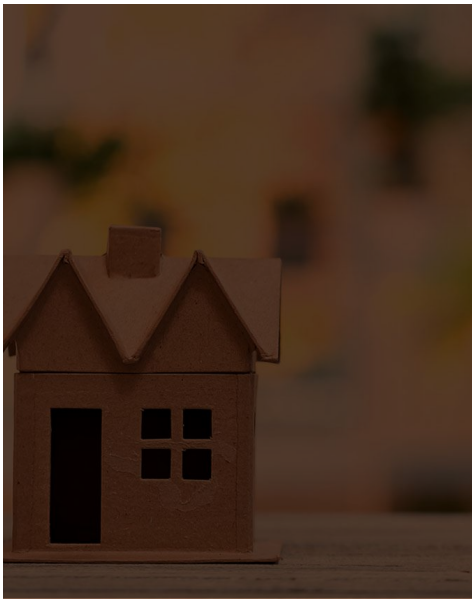
HOUSE TYPE APPROVAL SCHEME



The Premier Guarantee House Type Approval Scheme is a service exclusively available to Premier Guarantee registered developers, that, via a single point of contact, ensures a consistent interpretation of Building Regulations. It is available to any registered developer who has a collection of at least 10 different house designs, and who produce a minimum of 100 units per year.

The service helps to provide developers and designers with the confidence that their house type range has been checked against the specific requirements of the Building Regulations, and that it is suitable for both complete building designs and for standard building modules across England and Wales (where there are different requirements for England and Wales these are identified within the document).

The Premier Guarantee House Type Approvals Manager will arrange an initial discussion with the developer and their design team to talk through the approvals process, outlining the information required to undertake a formal review of their current house type range. The architectural package submission will need to demonstrate compliance with the current Building Regulations.

Upon gaining a type approval, the benefits afforded to the developer include the knowledge that a dedicated Design Evaluation Surveyor will undertake a site specific design review and will also provide reassurance that they will receive a specific point of contact for both the developer and their design team.

It is recognised that in time, for whatever reason, a developer may wish to amend a house type approval or add further house types to the system. Therefore, another benefit of the service is that the developer will receive a yearly review meeting to discuss any changes to their house type range, providing guidance on any future changes to the Building Regulations.

In the cases where a change does occur, the supporting documentation sheet will simply be updated to accommodate the amendments as long as:

- The internal floor area of the dwelling has not increased.

Or deemed to effect items such as:

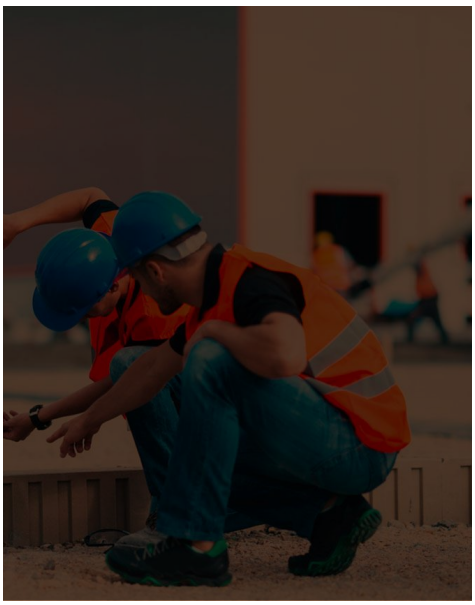
- The structural stability of the property.
- The means of escape.
- Thermal performance.
- Access to and within the dwelling.

The house type approval remains valid until either:

- There are any changes to the current legislation
- There are any changes to the current Building Regulations

To find out how you can benefit from the House Type Approval Scheme, contact your Surveyor or Account Manager.

B4 REQUIREMENTS FOR BUILDINGS OF ANY HEIGHT



In December, there were significant changes made to the Building Regulations in respect to the use of combustible materials in external walls of ‘relevant’ buildings (for example: a residential building having a floor level exceeding 18.0m above external ground level).

These changes were developed in a manner that was to work alongside (and not instead of) the pre-existing requirement B4-(1) of Schedule 1, Part B of the Regulations - the requirement being:

“The external walls of a building shall adequately resist the spread of fire over walls and from one building to another, having regard to the height, use and position of the building.”

It’s important that, despite the focus in recent months on buildings over 18m, we, as an industry, don’t lose sight of requirement B4-(1) and how it relates to buildings of all heights, and not just those over 18m.

The December 2018 amendments to the regulations included a detailed definition of the elements that constitute an ‘external wall’.

The MHCLG issued a Circular Letter titled ‘Requirement B4’, July 2019. The letter reminds Building Control bodies that they should use judgement to consider the overall intent of the B4 requirement for buildings that are less than 18.0m, particularly where the guidance in the approved document is not specific. The letter acknowledges that the use of combustible materials within or attached to the external walls of buildings below 18.0m in height are not expressly prohibited (either by the Building Regulations or the Approved Documents), but notes that it is still necessary to consider the health and safety risk in these buildings from fire spread.

The letter concludes: “Where Building Control Bodies consider that the extent and arrangement of materials and/or attachments to an external wall may not meet the functional requirement of B4, they should raise this with the person carrying out the work and request further evidence to show that reasonable provisions will be made to meet Requirement B4.”

It is important that all departments and individuals in the construction and development of new homes, whether construction, surveying, project management, risk assessment, and so on, are familiar with the requirements of B4 and that these requirements are being applied.

On projects for which Premier Guarantee are providing building control, our building control team will carry out the necessary design checks and request that the surveyors confirm that the agreed fire safety elements are being installed in an appropriate manner.

GUIDANCE ON RAMPED APPROACHES TO DWELLINGS

For the purposes on this article, consideration has been given to the following guidance:

- Approved Documents: K Protection from falling collision and impact (England)
- M Access to and the use of buildings Vol 1 Dwellings (England)

Background

The design and approval process for ramps should ensure that people's movement in and around buildings is safe and accessible. From a developer's perspective they need to provide this with minimal cost and resource.

Where a ramp approach is alongside a car parking bay and within the curtilage of the dwelling, the minimum width requirements for the ramp/car setting down area is as follows:

M4(1) Visitable dwellings

900mm wide ramp access + 2400mm wide parking bay = total width 3300mm

M4(2) Accessible and adaptable dwellings

900mm wide ramp access + 2400mm wide parking bay (with space to increase to 3300mm wide)

= total width 3300-4200mm

M4(3) Wheelchair user dwelling

1200mm wide ramp access + 3600mm wide parking bay

= total width 4800mm.

In the case below the developer wished to save time and money by omitting the pin kerb between the ramped access and the car parking bay.

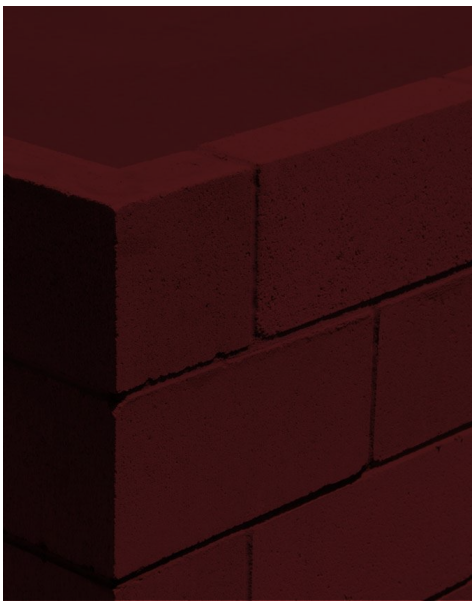
Does a standard parking bay to a single dwelling have to be separated from an approach to a dwelling?

Under Building Regulations for dwelling houses, physical or visual separation is not required between the parking bay and the approach ramp to the dwelling entrance.

So in this case the developer could omit the separating kerb, rolling with tarmac across the full width, saving time and material expense.

Note: in the case of a 600mm drop between the approach ramp and parking bay, guarding would be required under Approved Document K.

ACCOUNTING FOR MOVEMENT IN CONCRETE BRICKS



Recently, the increasing demand and availability of construction materials has resulted in concrete bricks becoming more popular.

All building materials move in one way or other, either from drying shrinkage, moisture movement (absorption and drying out), thermal effects or structural movement – and the same applies for concrete bricks.

Types of Movement

Movement in a structure can be caused by:

- Thermal influences
- Shrinkage and moisture movement characteristics of the external masonry
- Changes in the orientation or shape of a building
- Site practice
- Type and grade of mortar
- Incorrect storage and protection of materials

The tendency for all concrete products is to shrink slightly over time and when drying out, although they may revert back to near their original size when subject to moisture. Like all materials, they are also subject to thermal movement. Consequently, the location of movement joints is to define the most appropriate position to accommodate this movement whilst considering the aesthetic, practical and structural factors.

Shrinkage

Concrete shrinkage is due primarily to the shrinkage of the hardened cement paste. The type and amount of aggregate can affect the amount of shrinkage in a concrete bricks performance.

- Sandstone Aggregate: Typical 1 year shrinkage - 0.116%
- Granite Aggregate: Typical 1 year shrinkage - 0.047%
- Limestone Aggregate: Typical 1 year shrinkage - 0.032%

With the high differential of movement between the various available raw materials used in concrete brick manufacture, it's important that the design for movement in a wall panel is specific to the shrinkage capacity of the concrete brick used and the requirements of the manufacture should be followed. In all cases site specific advice should be obtained from the manufacture before work begins.

Materials

Concrete bricks must display a CE marking. The use of non CE concrete bricks will always be referred back to the Premier Guarantee Technical Services team for their consideration.

It's important that concrete bricks are adequately cured at the factory before they are delivered to site. Excess moisture introduced into the brick will result in a higher shrinkage rate. Bricks should be kept dry whilst storing on site and stacking out.

Bricks shouldn't be wetted before laying, and incomplete brickwork should be protected from the rain and snow as this will minimise the risk of shrinkage and efflorescence leaching from around the mortar joints.

Thermal Movement

South facing walls, particularly those built from dark coloured bricks, are more susceptible to thermal movement than other elevations. Whereas a simple contraction joint may suffice in more sheltered elevations, joints for southern facing elevations should have movement joints which are capable of responding to both expansion and contraction.

Mortar

The mortar should be suitable for use and the specific strength of the mortar used on site and should be accounted for in the design. Stronger mortars have higher shrinkage values and care should be taken to ensure the correct grade of mortar is specified and used. Due to safety factors incorporated by mortar suppliers the onsite mix has the potential to have an increased strength. Therefore, the mortar manufactures supply documents must be available to verify that the mortar is the required specification and ensure the mortar mix is not a stronger mix due to safety factors.

Dissimilar Materials

In certain instances, different masonry materials may be combined within the same elevations. In the case of clay bricks, which have expansive properties, and concrete bricks, which may shrink slightly, it is important to make provision for this differential movement.

Where, for example, a clay brick is used up to DPC level and a concrete brick built as the superstructure, then the DPC itself may act as a slip plane and allow the differential movement to occur. This can be dependent on the dead load on the DPC and advice from a Structural Engineer should be sought. In all cases, provision should be made to ensure structural stability.

If two dissimilar materials are mixed on one elevation, then slip planes should be introduced or bed joint reinforcement incorporated to dissipate the areas of tensile stress. Again, a Structural Engineer's advice should be sought and provision must be made to ensure that structural stability is not compromised.

Panel Ratios

External wall leafs of concrete brickwork should be designed as a series of panels separated by movement joints to control contraction. The degree of movement is dependent upon unit type and, as a rule, vertical joints to accommodate horizontal movement should be provided at intervals of 6m. The ratio of length to height of the panels should generally not exceed 3:1 (BS 5628).

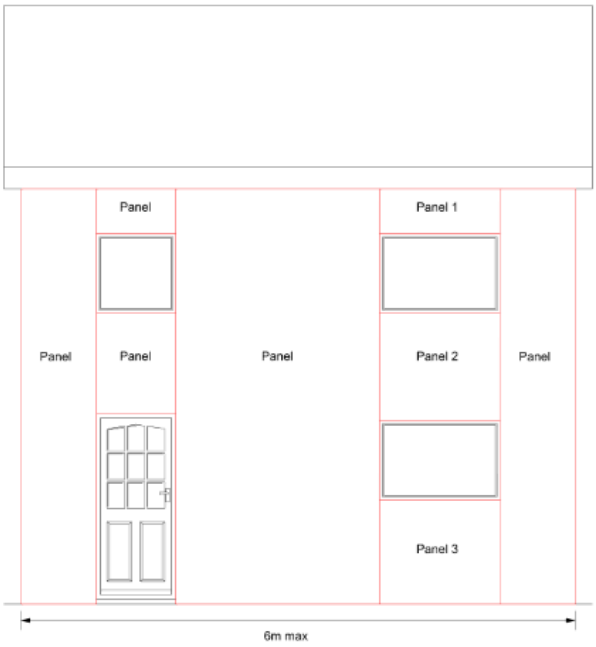


Figure 1: Front elevation of dwelling, divided into panels

Figure 1 shows the superstructure viewed as a series of panels (the diagram does not demonstrate position of movement joints). For example, in elevations where window openings are wide in comparison to their height, leaving long low areas of masonry such as fig 1 panel 1, 2 and 3, or where those types of openings are stacked above each other, this may result in the brick panels in between the windows being less than 6m metres but exceeding the 3:1 ratio.

In these instances, inclusion of additional vertical movement joints may need to be considered, or alternatively bed joint reinforcement introduced to dissipate the stresses within the panel (figure 2).

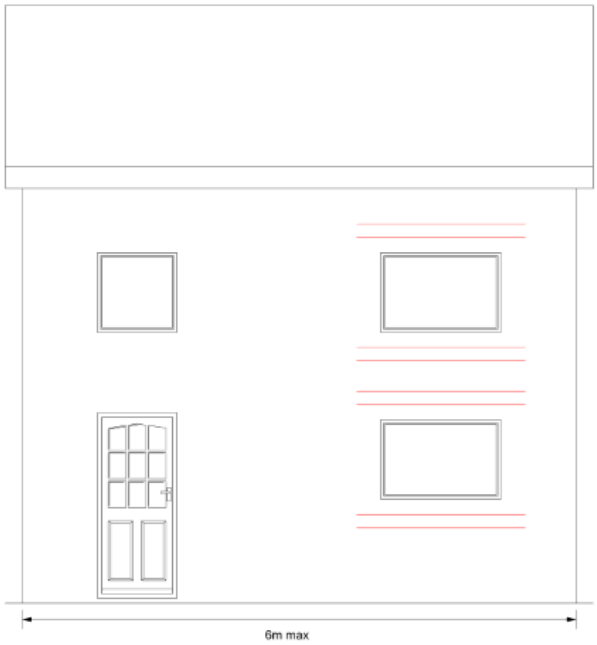


Figure 2: Example of reinforcement above and below openings exceeded 1.5m

Provision of reinforcement around openings

Particular care should be taken with openings greater than 1.5m in width especially where they are placed directly above each other. In this case the panel may not exceed 6m or the 3:1 ratio but can be subject to stresses from the larger areas of brickwork adjacent to the openings. In these cases, bed joint reinforcing should be introduced above and below the openings (fig 2 and 3). The bed joint reinforcement should generally extend 600mm past the openings and must not

extend through any movement joint. Care must be taken to ensure the bed reinforcement is installed in the correct brick courses as per the brick manufactures recommendations. The reinforcement should be of the ladder/lattice type as opposed to the expanded mesh version.

Whilst this bed joint reinforcement will assist in the prevention of potential cracking, it is not a complete alternative to movement joints and these should still be provided at the appropriate locations.

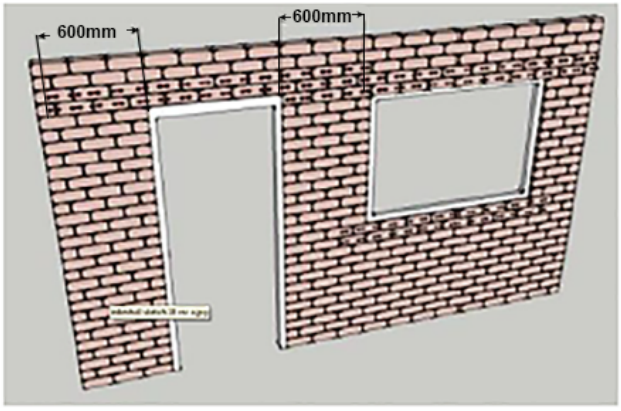


Figure 3: Example of bed joint reinforcement (courtesy of Edenhall)

Positioning of movement joints

The position of movement joints should take into account the need to maintain the structural integrity of the wall.

Movement joints should not pass through structural members e.g. lintels. Where possible, it is recommended that movement joints should not coincide with door or window openings due to the difficulty in continuing the movement joint between the frames and masonry and around the ends of the lintels (figure 5).

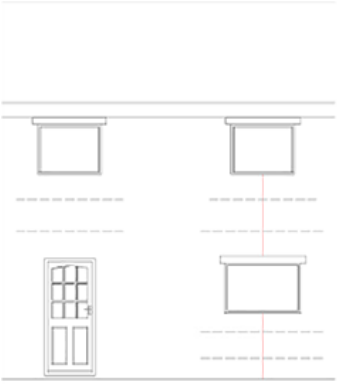


Figure 5: Incorrect positioning of movement joints

Vertical movement joints should therefore be located in sections of full height masonry between the openings (figure 4).

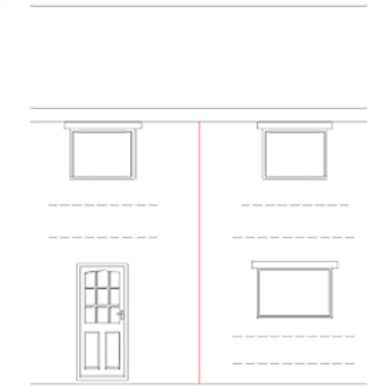


Figure 4

Vertical movement joints should not pass through bed joint reinforcement and should not be located in close proximity to the openings that may impair the structural integrity of the wall.

Where a full height masonry panel does not exist, the location and detailing of the movement joint should be designed by an engineer to avoid it passing around window and door frames.

Note: The movement joint should be in full height masonry between the window and door openings.

Note: It is recommended that movement joints should not pass through openings due to the difficulty in continuing the joint between the frame and masonry and around the end of lintels.

Where there is no full height path within the masonry, the movement joint should be engineer designed to avoid any door or window openings. The design may involve the introduction of a slip plane to link the staggered joint.

Note: Small piers created by the placement of movement joints should be fully justified by a structural engineer.

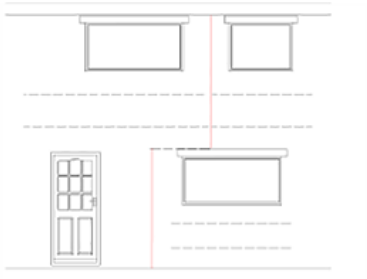


Figure 6: Avoiding openings

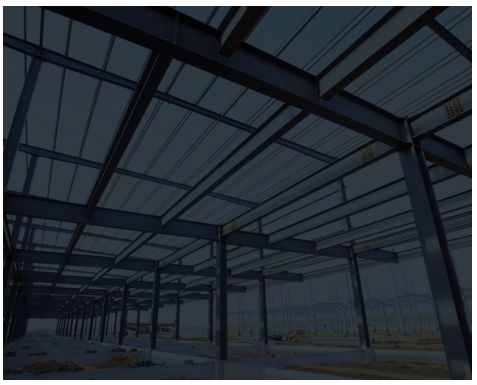
Formation of joints

Contraction joints in external walls should be formed with a compressible material, such as a polyurethane foam, and a sealant to prevent water penetration. The width of these joints should be in accordance with the manufactures recommendations.

Premier Guarantee Recommendations

- Only concrete bricks displaying a CE marking should be used and must be adequately cured before use on site.
- The design for movement should be specific to the shrinkage capacity of the brick used and the requirements of the brick manufacture should be followed. In all cases site specific advice should be obtained from the manufacturer before work begins.
- The bricks must be kept dry whilst storing and stacking out. Bricks should not be wetted before laying and incomplete brickwork should be protected from the rain and snow.
- Ensure that the correct grade of mortar is specified and used.
- Movement joints should be located at 6m centres. The length to height ratio of the panels should not exceed the 3:1 ratio
- Accommodation for movement should be provided in long/ low areas above or below large openings.
- Movement joints are not recommended to pass through openings due to the difficulty in continuing the joint between the frame and masonry and around the end of lintels.
- Bed joint reinforcement or additional provision for movement should be used where openings exceed 1.5m

CASE STUDY - QUANTUM EVOLVE

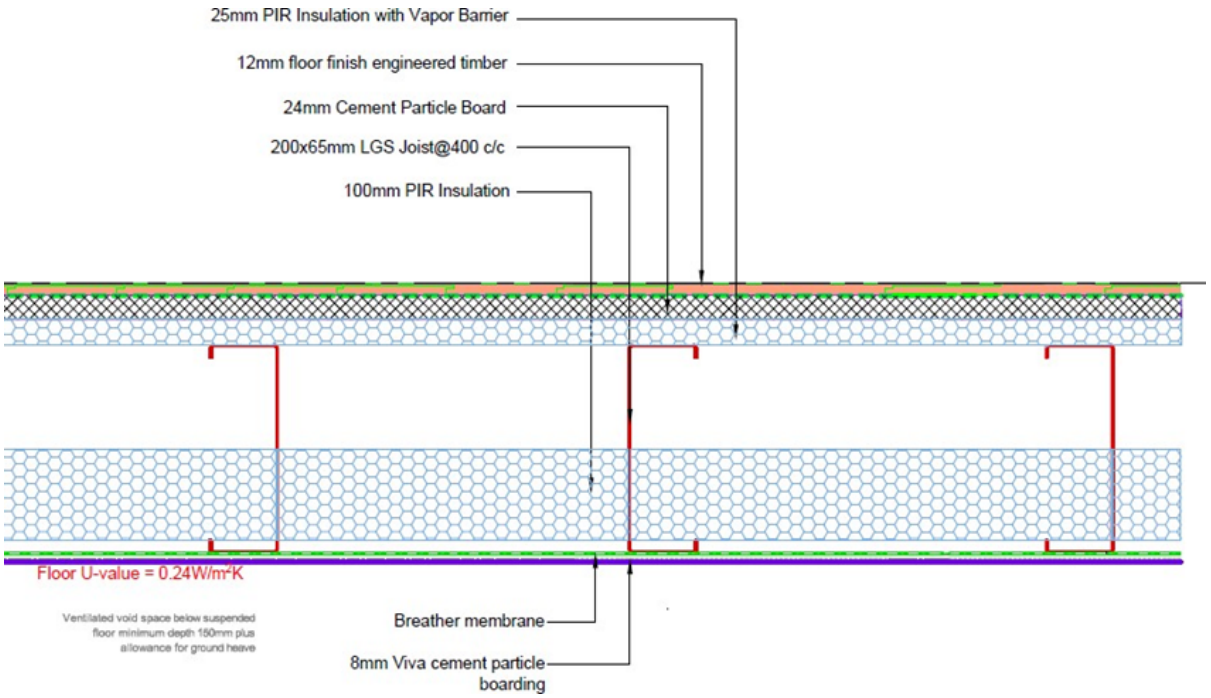


Quantum Evolve is a Malaysian based company with over 30 years of experience, previously specialising in shop fitting, design, construction and project management.

Following a rebrand, they entered into the residential industry and have now obtained a system approval with Premier Guarantee for their Steel Frame Modular system, up to three storeys.

The structure is a steel frame with a variation of cladding, brick slip or render fitted. The modules are wrapped in the factory for protection during delivery, and are delivered, installed and fully finished on site by the manufacturer.

Ground Floor Construction



Ground floors are to be suspended steel floor cassettes, made up of Light Gauge Steel Frame Joists with 100mm PIR insulation between the steels and 25mm PIR in sulation above with a Vapour Barrier.

Above this is 24mm Cement Particle Board and then 12mm floor finish engineered timber. On the underside of the floor cassette will be the breather membrane and 8mm of Viva CPB boarding.

The external finishes are applied to the base of the external wall at ground floor level and Telescopic vents are installed through this to achieve a minimum of 1500mm² per metre run of external wall. There is a ventilated void beneath the structure of a minimum 150mm.

Intermediate Floors/Ceiling Section

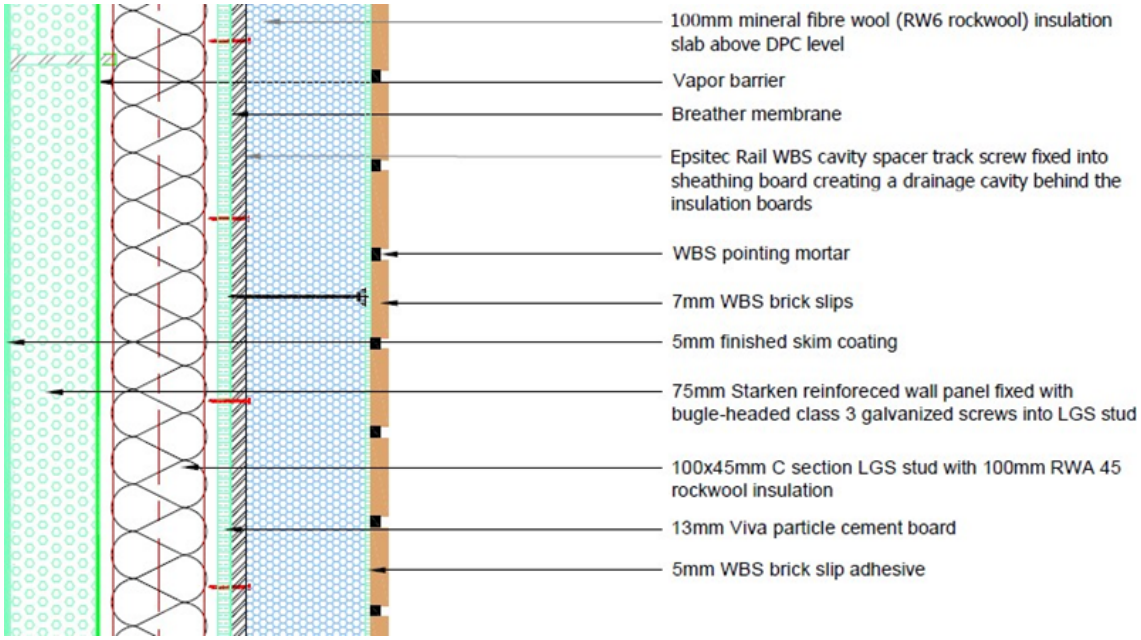
First floor cassette consists 200mm C section light gauge steel joists with 200mm RWA 45 Rockwool insulation between. Above this is 2 layers of 24mm Viva cement particle board, 12mm engineered timber floor finish. On the underside of the steels, is 8mm Viva cement particle board.

The Ground Floor ceiling cassette is made up of Weather proof membrane over 11mm OSB/3, over, over 2 layers of 12.5mm Boral Firestop plasterboard.

External walls

The External walls are made up of 100mm x 45mm C section light gauge steel studs with 100mm of Rockwool insulation between. The walls are constructed using 75mm Starken reinforced wall panels fixed using galvanised screws into the Light Gauge Steel studs.

From the external face WBS render system or WBS brick slip system, over 100mm RW6 Rockwool insulation above DPC level. Beneath this is the WBS cavity spacer track over the breather membrane, which lies over the 13mm Viva cement particle board. (Please see diagrams below).



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