

RespiraBlock Technical Install Manual (Current Sept 2025)

Key considerations

- Set out your walls windows and door heights considering a 200mm high blockwork course with 13mm perps and 13mm bedding mortar. Also provide this information to your designer to allow them to set out window positions at strategic heights
- RespiraBlock walls over 3.5m require a brick lintel to relieve the load to the load bearing wall.
- Stud Wall heighs 2.7 – 3.6 m: Standard load brearing 90mm studwork can be used
- Above 4.2–4.5 m: 140 mm studs are usually required, as per the NCC.
- Brick ties must the Stainless steel
- RespiraBlocks must be up 200mm from earth
- Keep progress on walls to 2m per day to allow curing of mortar
- Veneer cavity must be 20mm minimum between RespiraBlocks and timber frame
- Stainless steel flashing an or lime render is reccomended to avoid ingress of rainwater between ResapiraBlocks and concrete slab at the base of your ResapiraBlock wall.



A bitumen painted brick lintel has been installed to the subfloor of this high wall to relieve the load onto the frame and tie the blockwork into the structure

Installation Sequence Overview

The installation follows the **typical building sequence**:

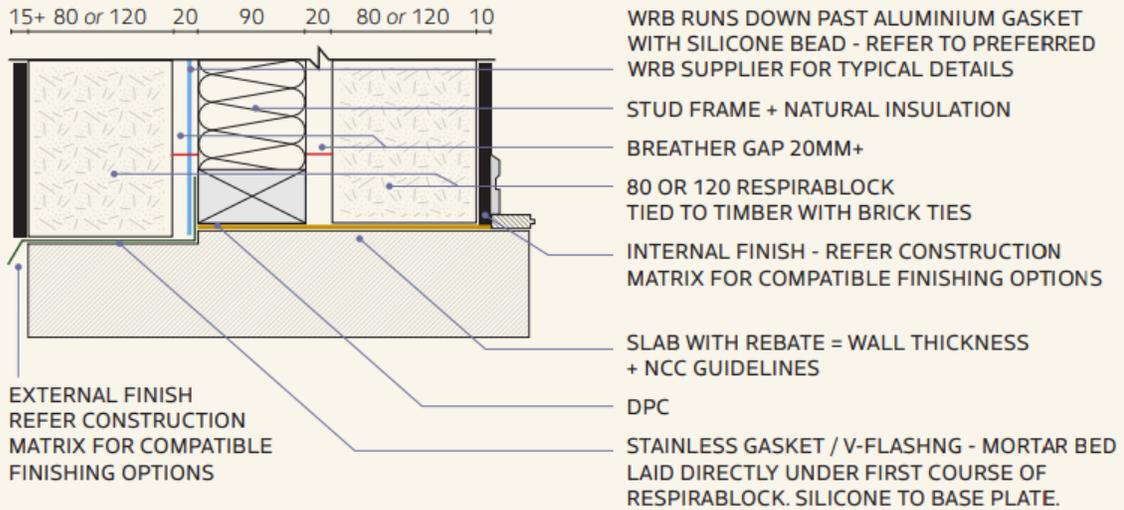
1. **Frame Construction & Roof Installation**
 2. **External Block Installation** and/or other external cladding
 3. **Services Rough-In** (Electrical & Plumbing)
 4. **Internal RespiraBlock Installation**
 5. **Internal wall stud framing**
 6. **Windows & Doors Installation.**
 7. **Internal Wall Finishes** (Plastering, sheeting, painting, etc.)
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Step-by-Step Installation Process

1. Frame & Slab Important Considerations

- The **slab** must include a **DPC (Damp Proof Course) or a Z flashing** under the timber frame, covering the hempcrete footprint. This prevents moisture from rising into the hempcrete. It also creates a drip point for water running down the wall in rain events
- **Leave a 20mm gap** between the timber frame and the block wall **to allow the bricklayer to achieve a plumb and straight wall**. This is also important because timber frames do expand and contract, and without the gap there is the potential for cracking along the external mortar lines.
- **Bitumen paint must be applied** to any steel elements that come into contact with hempcrete to prevent corrosion. This includes rafter hangers and gang nail plates if they're coming into contact with the lime mortar

SLABS + REBATES

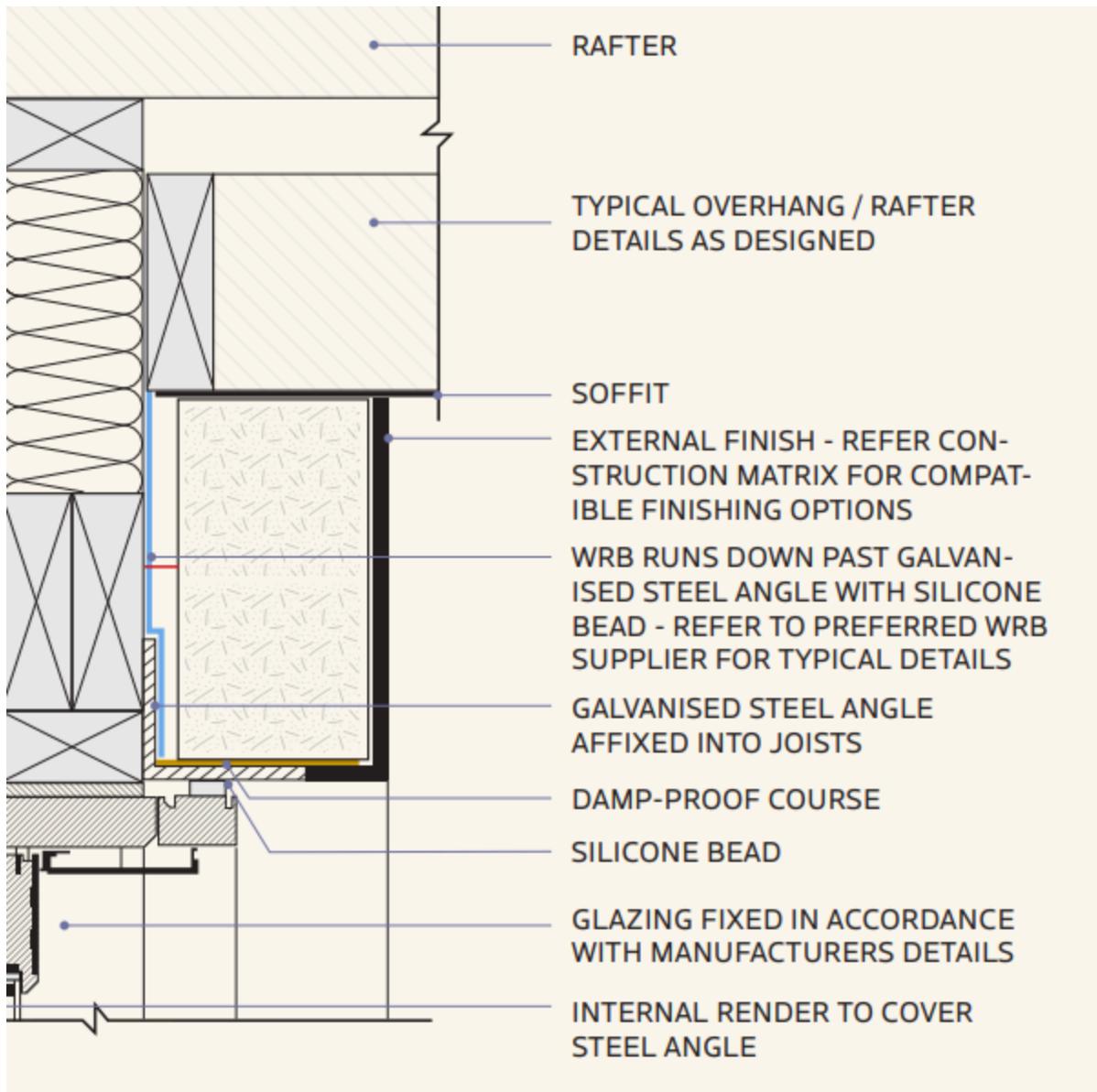


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Note that this detail is for BLOCK AND BLOCK. Please check the Cast&Block install guide if you are using Cast&Block

Fenestration header and Lintel details



2. Block Installation

Preparation

- **Blocks can be cut using a hand saw, reciprocating saw or even a drop saw into any shape required with ease. For very large jobs, a bandsaw can be**

used to cut very precise shapes en masse and with ease



- Before applying mortar, **blocks must be sprayed with water** using a hose to **prevent excessive drying and cracking in the mortar**

- If building in a **hot climate or direct sun**, the **wall should be sprayed twice daily** for two days post-install using a misting / spraying function on a hose to **slow down the curing process and improve strength**.

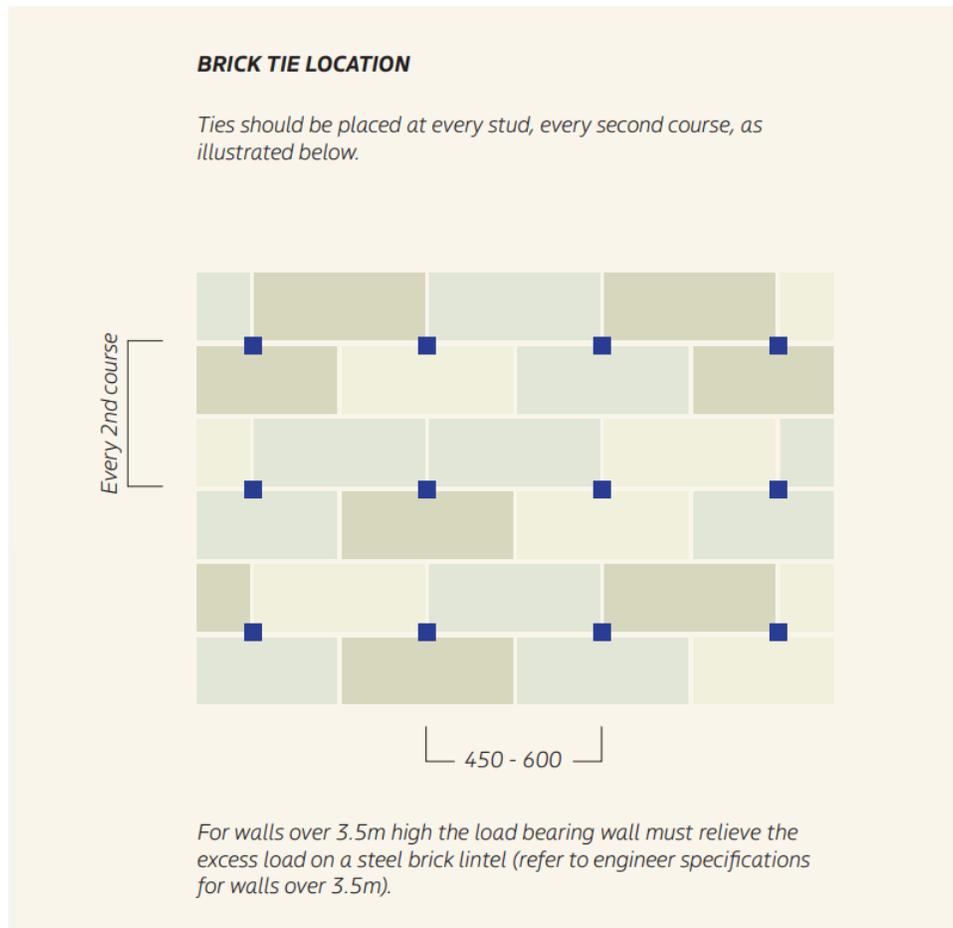
Laying the Blocks

1. *Refer to the Mortar Mixing Guide to prep your mortar mix*
2. Apply a **13mm bedding mortar layer** before placing the first course of blocks. Then continue to work with **13mm mortar bed** for all mortar lines. If the mortar bed is too thin, the blocks will **pull moisture too quickly**, leading to **cracked mortar joints**.
3. Install, ensuring level and plumb.
4. Make sure to trowel on enough mortar on your perps (vertical joins to leave an airtight joint. The aim for all RespiraBuilt systems is for high performance so gaps in mortar are to be avoided



5. Go back with a tuck pointing trowel to compress mortar into perps, this will ensure sealing and fixation of mortar to blocks tightly to improve thermal performance and airtightness

6. You can mix in coloured oxides for hempblock feature walls and coloured mortar lines
7. Brick ties must be installed as per technical guidelines in the Respira technical guide and the Design booklet. Brick ties must be stainless steel to avoid corrosion



1. Blocks can be laid **above the eave line** to align with the **roof membrane for optimal thermal performance.**



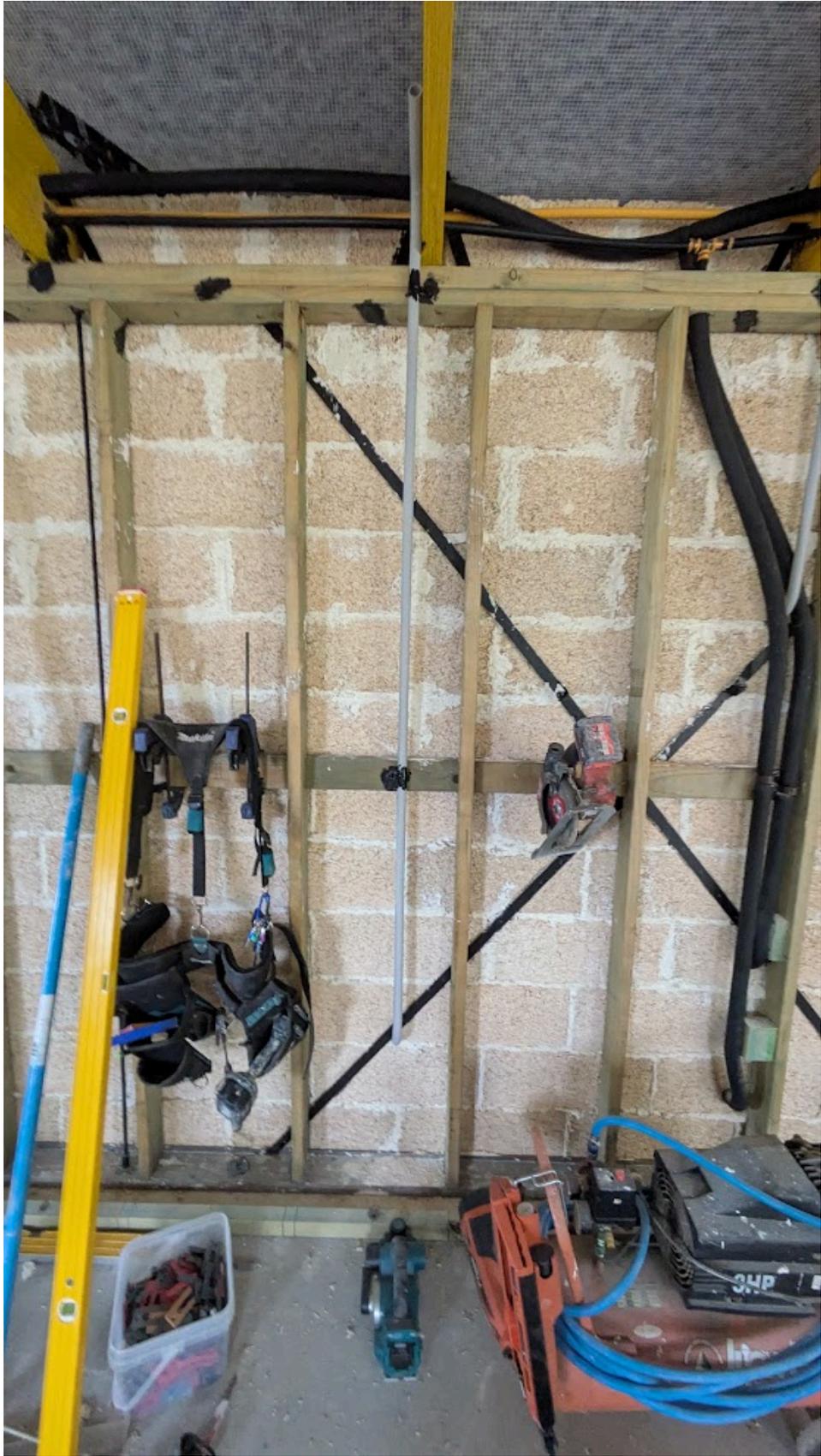
- you can even run the Proclima Contga tape or similar from your ceiling of wall wrap to the face to the Respirablocks to ensure an airtight connection between your WRB and the lime render



3. Services Installation on Cast Walls

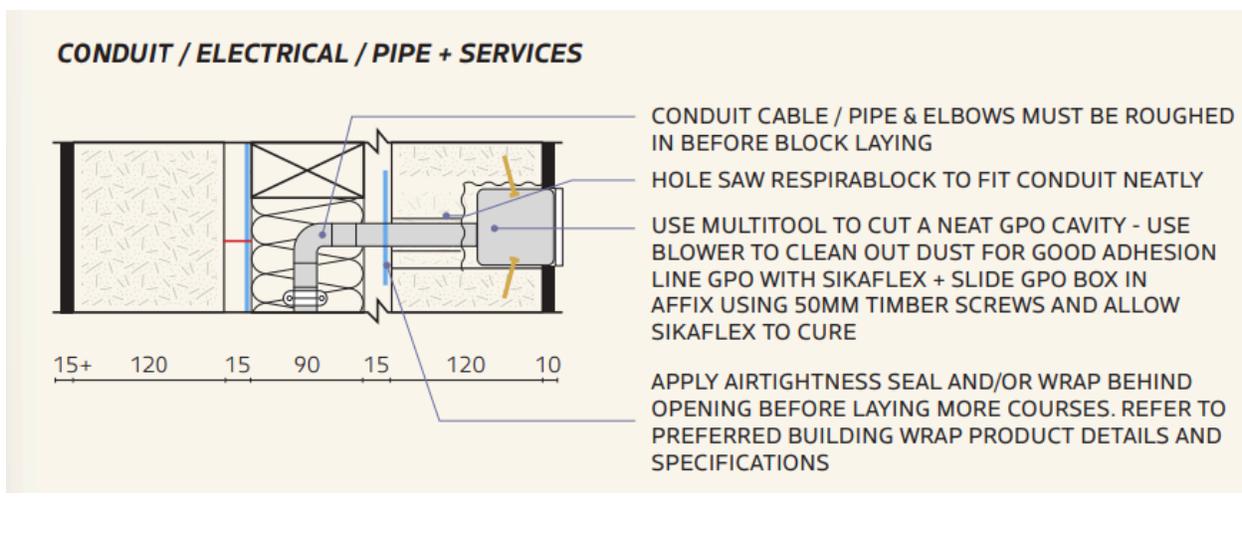
Electrical & Plumbing Considerations

- **Electrical conduits should be used** rather than running cables. This allows for easier future modifications. As RespiraBlocks are built to stay unlike plasterboard



- Consider adding **extra conduits** in locations where you might install additional equipment later.
- **Copper pipes should be lagged** to protect against corrosion.
- **Taking photos of the installed services** before casting is **highly recommended**. These photos provide a **valuable reference** for the locations of electrical and plumbing lines, as well as wall studs, in the future.

3. GPO and Lightswitch Installation on RespiraBlock Walls



Window & Door Reveal Installation

- Window and door install isn't too dissimilar to standard construction. You can fix to the exposed timber stud in the fenestration opening
- Hempcrete blocks can be trimmed back flush in line with studs once ResapiraBlock work has time to dry.

Above Fenestration openings

- For openings with less than two courses of RespiraBlocks above. Use a simple L bracket rated for 30kg and above and space brackets to catch blocks on

their perp joins. brackets need to be bitumen painted to avoid corrosion



This L Bracket is stainless steel and will not corrode, galvanised steel is stronger but will require bitumen painting before blocklaying



Install a brick tie at the final course and screw down into the final block to hold it in place.

- For more than two courses of RespiraBlocks, a pre-engineered brick lintel is required. The builder or engineer should calculate the weigh load per square meter. In saying that most brick lintels will easily cover the weight load requirement as RespiraBlocks are 20% the weight of standard bricks



The weights per m² of our RespiraBlocks. Install a suitable brick lintel to the header lintel prior to blockwork install

<i>Product</i>	<i>Depth</i>	<i>R-Value</i>	<i>Weight</i>
RB 80	80mm	1.84	40 kg/m ²
RB 120	120mm	2.67	60 kg/m ²
RB 200	200mm	4.38	100 kg/m ²
RB 300	300mm		140 kg/m ²

Curves and Getting Creative



You can also shave back respirablocks with a rasp or coarse scratchpad. This scratchpad was made with a simply gangnail with a generic handle attached with screws



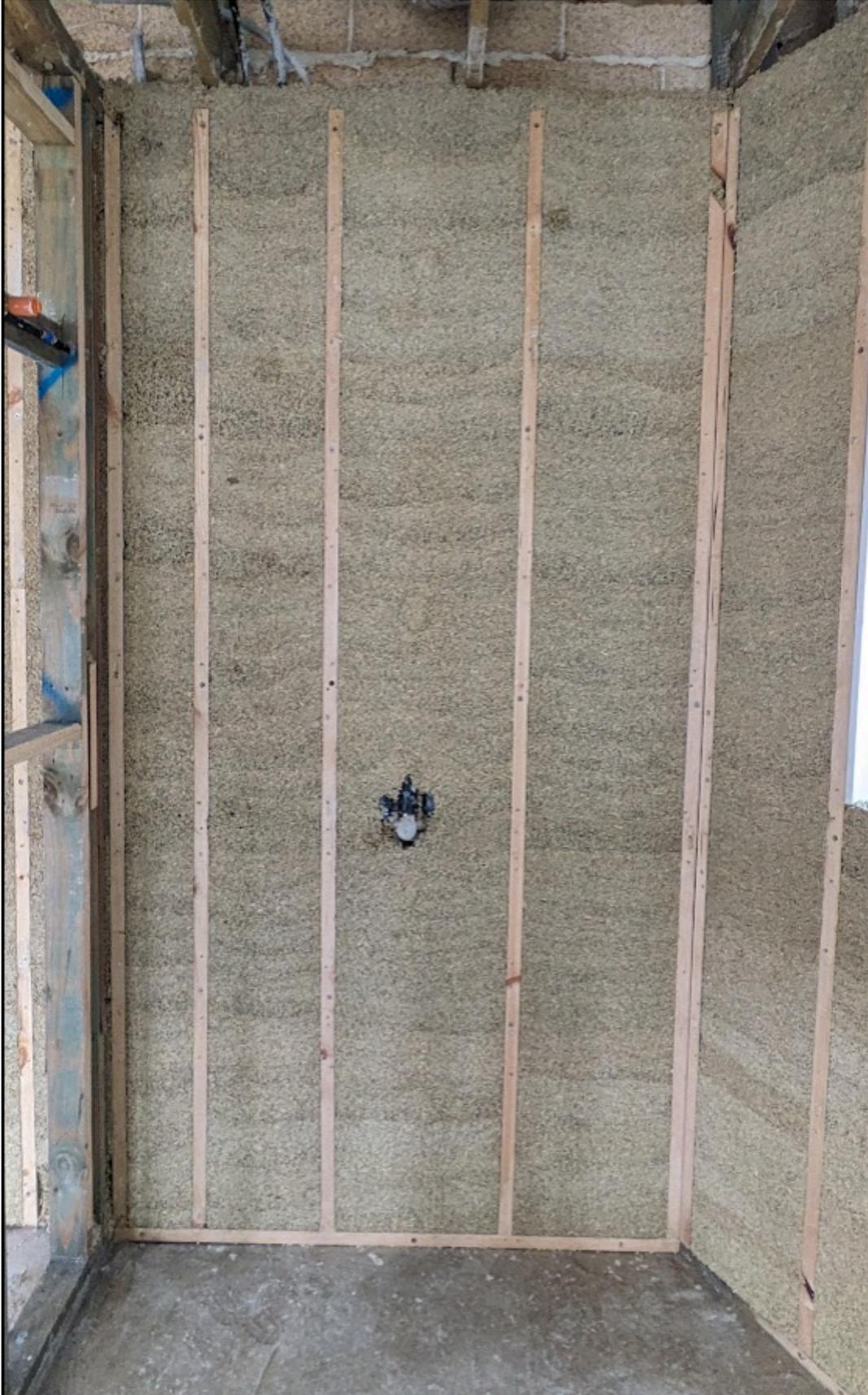
You can get quite creative with our RespiraBlocks and create quite organic contours and shapes with the client desires. Photo credit to Will Stanwix

Wet Area Preparation

- In bathrooms, install **dummy walls** for fixing tile underlay or cement sheeting direct to timber. you can run these dummy studs in line with ResapiraBlocks if

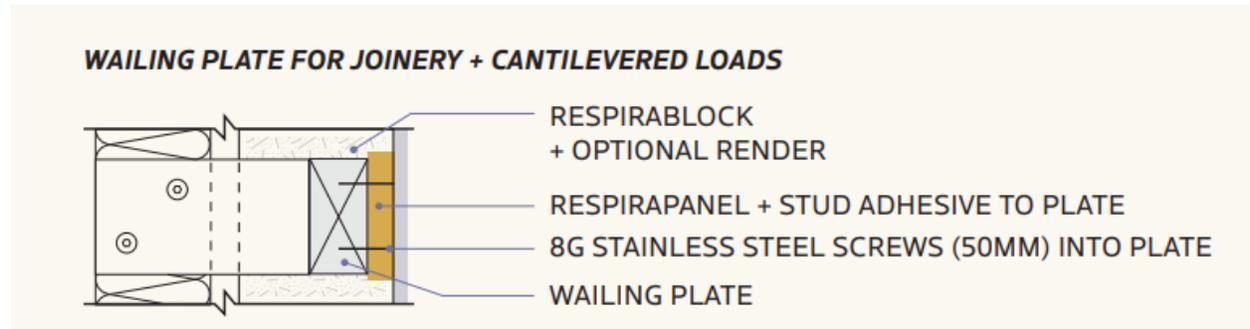
the opposing side of your wall is vapour open. If not, you can leave a 20mm cavity and allow the dummy studs to sit 'proud' of the Respirablocks

- Space dummy stud wall studs with 500mm openings and lay RespiraBlocks in *a stackbond pattern*



 A Dummy stud frame - in line with the finished hempcrete wall. Tile underlay can be directly fixed here to allow a fully tiled and waterproofed surface in wet areas

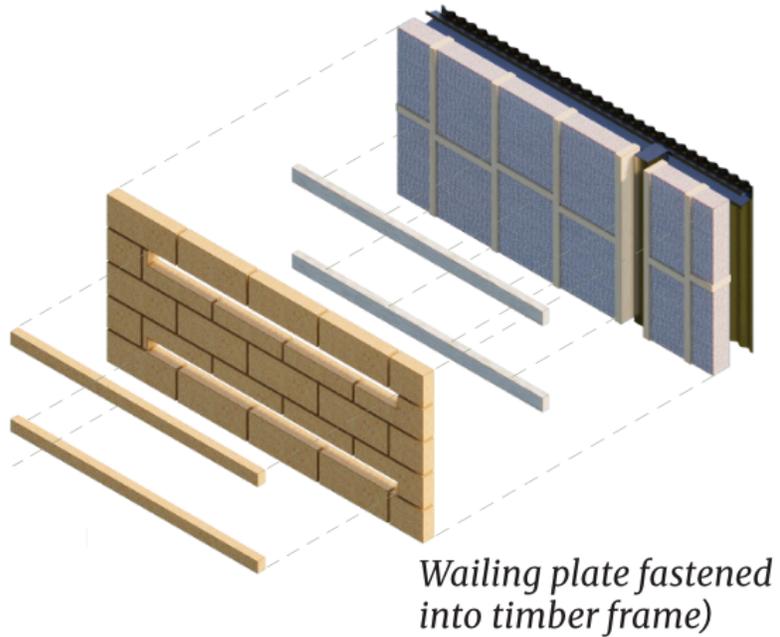
Wailing Plates for Cabinets



- **Wailing plates should be installed** to provide strong support for **wall cabinets** (especially in kitchens).
- Follow diagram below to allow for secret embedment of strong wailing plates as anchors with covering of the RespiraPanel. This allows you to seamlessly render without hairline fractures between timber and hemp

■ WAILING PLATE – RECESSED

*25mm thick
RespiraPanel to cover
over wailing plate*



*Cupboard attachment
through the panel and
into the wailing plate
behind*

- The reason for putting a 25 mm RespiraPanel over a timber wailing plate is because timber is always the best fixing point. Timber allows screws to be inserted and removed indefinitely. A hidden timber wailing plate ensures a perfect fixing point, especially for cantilevered and overhanging items like kitchen cabinets.
- The second reason for the RespiraPanel is that it allows lime render to cover everything; render won't adhere properly to bare timber and would crack on its smooth surface.

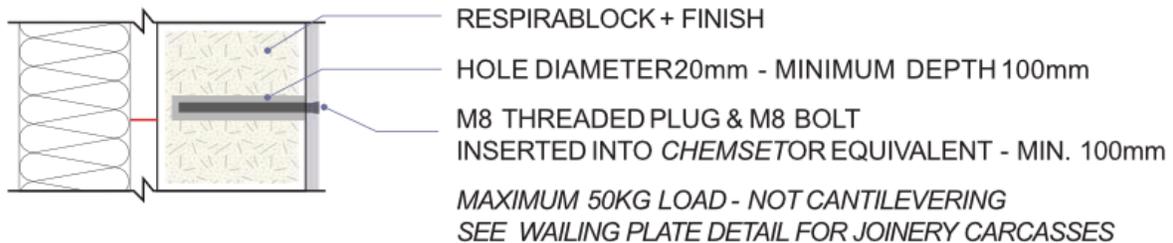
Direct fixing to RespiraBlocks

- Smaller items (picture frames, TVs, shelves) can be fixed directly into the RespiraBlock using timber screws. For larger screws like batten or bugle screws you can also use the chem-set method

FIXING INTO RESPIRABLOCK- 10KG



SINGLE CONNECTIONS- 50KG



Elimination of thermal bridges in steel work

- Sometimes you will have steel or timber which is closer to the finished face of the blockwork than the size of the blockwork. This is why we send out RespiraPanels with each order. RespiraPanels can get cut and direct stuck with stud adhesive to bridge gaps in places like this to avoid thermal bridges and to render over the top seamlessly



Airtightness Notes

Install Note: Airtightness with RespiraBlock

The rendered internal RespiraBlock alone is not considered an airtight barrier. To achieve airtightness:

- Wrap the external side of the timber frame before installing the outer layer of hemp blocks.
- Direct fix brick ties on the external face of the studwork during the blocklaying process.
- Adhere a small square of ProClima Unitape (or locally available Bradford tape equivalent) over the top of each brick tie screw to achieve a completely airtight result. This is the same approach used for staples in underfloor wrap and roof wrap in standard PassivHaus construction.

At the slab connection, seal between the WRB and the slab drip edge flashing with ProClima tape or equivalent. Refer to page 23 of the design booklet for the WRB detail and how it overlaps positively with the gasket/flashing.

At the ceiling/wall junction, refer to page 25 of the design booklet as guidance. For higher airtightness, this detail can be altered with a 'starter strip' fixed to the top plate of the frame, which is sandwiched when rafters or trusses are installed. This strip can then be taped to the wall/ceiling WRB airtight layers.

Finishes, Renders and Clear Coats for Feature walls

Finishing options for Internal Hempcrete Walls:

- **Exposed Clear Coat Finish:** Highlight the natural look of the blocks with a vapor-permeable clear coat, adding warmth and feel to living spaces.
- **Painted Finish:** Apply natural tones using oxides for a unique, organic aesthetic that complements various interior styles.
- **Fully Rendered Finish:** Achieve a smooth, refined finish, ideal for a modern and elegant spaces.

Finishing options for External Walls:

- **Lime Render Finish:** We recommend a durable and visually appealing lime render for the exterior, providing optimal protection and aesthetic value. A surveyor or building certifier will dictate the thickness required of external renders for local weatherproofing requirements. As a rule of thumb external lime renders are generally 12 - 15mm in two coats with a mesh embedded in the first (skim) coat

We are proud to partner with **Rockcote**, Australia's leading render company, to provide access to their high-quality materials and expert installers at discounted rates. You can explore their products and work on their [website](#) or Instagram [@rockcote](#).

Aftercare

Exposed internal Feature wall Finishing and Aftercare

- **After 3 weeks of curing of the Hempcrete**, apply Rockcote's Repel product in three **coats** as per **manufacturer's instructions** to seal the hempcrete surface. If the feature wall becomes chalky after six months, apply another

coat of the Repel. As the Hempcrete is masonry and quite dry, it will have the ability to absorb the Repel product, so it is always good to keep extra Repel to brush or roll on in the future as required

- <https://rockcote.com.au/product/repel/>

External or lime rendered walls

- We advise that you keep extra oxide from the renderer and ask if they can produce extra for you to store for maintenance. This is because it can be difficult to colour match in the future, especially if the installer isn't available in the future
- You can use the oxide to add to Rockcotes natural paint as a base to paint on over scratches (<https://rockcote.com.au/product/lime-wash/>)
- This paint can be used over the top of any of Rockcotes lime render products, if the wall is damaged (eg: child's drawing, tagging, scratches) you can use the paint and oxide to blend and remove damage and blemishes

Plastering, rendering and skim coating notes

Given the breathability characteristics of RespiraBlocks, in order to not invalidate this ability, it is necessary to use breathable plasters made from natural lime. After a delay of about two weeks from the laying of RespiraBlocks, if the weather conditions allow it, it is possible to start applying the render:

PREPARATION:

Dampen the entire surface with water to excess as for any porous and absorbent surface. Be careful especially in the hot months of summer, when the operation will have to be repeated several times if you allow time to pass before laying the plaster.

PREPARATION OF CRITICAL POINTS:

The critical points are specific areas where the appearance of cracks related to structural settlements or expansion is predictable due to the thermal discontinuity

of the wall components. The following parts must be treated with particular attention:

- Windows frames, thresholds and sills
- Boxes for roller shutters
- Wherever there's a change of material
- Presence of panels of any type (celenit, xps, reinforced concrete, wood, gypsum fibre or concrete slabs, etc.)
- Pre-existing cracks or damaged areas

We recommend laying a double coat of a natural breathable skim coat reinforced with a mesh, according to the following procedure:

1. Spread the **first coat** with a notched trowel, a layer of render + of at least 2–3 mm and apply the mesh. We recommend the mesh of 145–165 gr/m² and 5×5mm. Press with a smooth spatula until the mesh is hidden in the render. If necessary, apply a new sheet of mesh overlapping at least 30/40 cm.
2. After 12 hours, apply a **second coat** with a notched trowel, by spreading the render horizontally and taking care to leave the grooves visible to facilitate the adhesion of the next layer of plaster. Total 3–4mm for both coats.

NOTE In the inner part of the openings, the mesh must be laid vertically and horizontally along the sides, while at 45° in the corners in the form of a dressing having an adequate size for both length and width.

PLASTERING AND SKIM COATING

To maintain the hygroscopic capacity of hemp and lime, it is essential to use a breathable finish.

1. **First step, rough coat:** Dampen the substrate with clean water and apply a natural lime plaster evenly on the entire surface for a thickness of about 5 mm. The application can be carried out manually or with a spray machine.
2. **Second step, base coat:** (at least 12 hours): To guide the application of the plaster, dampen the rough coat and create strips of about 15 mm thick. Carry

out the filling by applying a layer of natural lime plaster manually or with a spray machine.

3. **Third step, external skim coat:** after at least 5–7 days of air T° between 15 and 30°C): Dampen the base coat and apply the first coat of Natural Breathable Skim Coat with a thickness of 1–2 mm and immediately affix a reinforcing mesh to the wall by pressing the mesh with a trowel, until it gets hidden in the render. Overlap the mesh for at least 10 cm. The size of the mesh needs to be 5×5 mm and it should weigh from 145 to 165 g/m². After 12–24 hours, dampen the surface with clean water and apply the second coat of Natural Breathable Skim, still with a stainless-steel trowel, and adjust with a sponged trowel until the surface is perfectly flat. The total thickness of skim coat should be around 4 mm.
4. **Third step, internal skim coat:** (at least 5–7 days of air T° between 15 and 30°C): Dampen the base coat and apply the first coat of FineMortar of Lime Putty and Sand with a thickness of 1–2 mm. After 12–24 hours, dampen the surface with clean water and apply the second coat of FineMortar of Lime Putty and Sand, still with a stainless-steel trowel, and adjust with a sponged trowel until the surface is perfectly flat. The total thickness of skim coat should be around 3 mm.

Attachments & Further References

Please Enquire for the following Documents as required

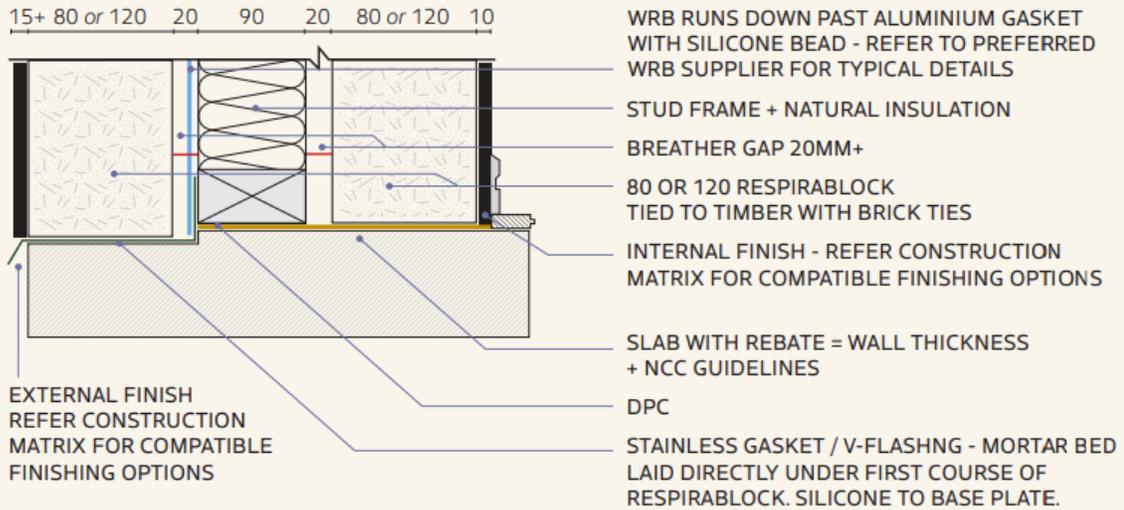
- **Mortar Mixing Guide**
- **RespiraBlock Technical Document**
- **RespiraBuilt Design Booklet**
- **RespiraBuild ShedHouse Guide**

TECHNICAL SUPPORT:

The installation and manufacturers guidelines provided in this document must be used when designing and constructing walls using our Hempcrete Blocks. While the information provides technical guidance it does not, in any way, replace the

need for your design to be certified by a suitability qualified and experienced engineer to ensure it complies with your local building codes and receives the necessary approvals from the relevant authorities prior to commencing any work.

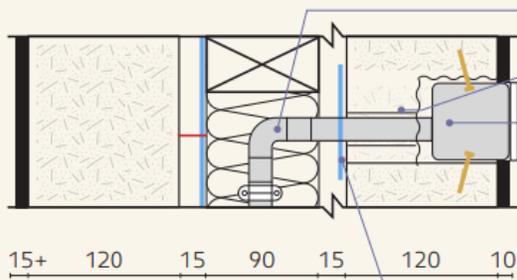
SLABS + REBATES



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CONDUIT / ELECTRICAL / PIPE + SERVICES



CONDUIT CABLE / PIPE & ELBOWS MUST BE ROUGHED IN BEFORE BLOCK LAYING

HOLE SAW RESPIRABLOCK TO FIT CONDUIT NEATLY

USE MULTITOOL TO CUT A NEAT GPO CAVITY - USE BLOWER TO CLEAN OUT DUST FOR GOOD ADHESION
LINE GPO WITH SIKAFLEX + SLIDE GPO BOX IN
AFFIX USING 50MM TIMBER SCREWS AND ALLOW SIKAFLEX TO CURE

APPLY AIRTIGHTNESS SEAL AND/OR WRAP BEHIND OPENING BEFORE LAYING MORE COURSES. REFER TO PREFERRED BUILDING WRAP PRODUCT DETAILS AND SPECIFICATIONS