Lockwood Assembly Manual

V8 | 2024

Welcome

This guide demonstrates construction tips and techniques for building a Lockwood home. As with any building project, you'll also need good workmanship and a sound understanding of local building regulations, the New Zealand Building Code, and NZS 3604.

Unlike most builds, Lockwood components are pre-cut and pre-finished to precise dimensions. You are working with a finished product which requires careful handling to ensure a smooth building process and high-quality finished home.

Keeping components protected from the natural elements is critical. Keep all component packs fully covered with waterproof tarps—don't rely on the delivery plastic alone. Lay component packets on dunnage off the ground; you'll need at least a 45mm gap underneath to protect from damp. Increase this gap to provide protection from uneven ground. Use packing paper between the tarps and planks to prevent dirt or dye marks.

Before you start, carefully review and make sure you have on site:

- Building Consent plans and specifications
- Lockwood production drawings and load sheet
- Project-specific engineering reports and details
- The Lockwood Detail Manual
- The Lockwood Product Catalogue

> The highlighted steps in this document are critical to ensure a smooth building process and a quality finished product. Many of these steps are included in the Lockwood Builders Declaration. As a condition of the Lockwood Product Warranty, the builder needs to complete the Builders Declaration checklist once everything's done, confirming that all essential tasks have been completed.

■ Detail manual references are marked throughout for further information.

On-site construction assistance is available and tailored to your needs. Assistance includes supply of manuals, on-site training and guidance on day of off-loading, and continued contact throughout the build. The Lockwood Technical department can also provide support.
Email technical@lockwood.co.nz or phone 07 3477691.

For any issues with components on site, complete a field report form by scanning this QR code. The QR code is also printed on the Lockwood Production Plans.
Or report online at https://form.jotform.com/LockwoodHomes/field-report-form

Table of Contents

Timber Subfloors 4
Concrete Subfloors 5
Component Delivery 6
Unloading 7
Prepare for construction 8
Flashing Baseboard 10
Wall Board Preparation 11
First Boards 12
Full height Joinery Frames 14
Wall Board Assembly 15
Covering Up 19
Laminated Beams 20
Sarking 22
Fitting Tie Rods 25
Dummy Rafters 26
Electrical Pre-wire 27
Getting ready for Roof 28
Exterior Finishing 28
Interior Finishing 30
Site Glazing and Joinery Adjustments 32
Completion 32

Timber Subfloors

Build the subfloor to Lockwood Production Subfloor plans in conjunction with consent plans. If there is any variance in overall dimensions between the two sets of plans, rely on the Lockwood production plans.

Use the Lockwood Production plans for overall subfloor dimensions - it is essential these are followed as the components have been manufactured to these dimensions.

Use the Consent Subfloor plan for pile locations and joist positioning.

Check consent drawings and engineering reports for site specific subfloor details such as load-supporting posts that extend through the floor and may require subfloor support fixing.

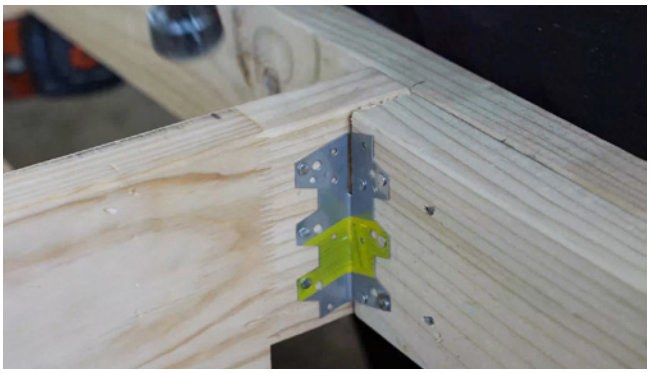
Identify tie rod nog and full height sill nog locations on the Lockwood Production Subfloor Plans.

For sill nogs, use ex 100 x 50 nog on the flat between joists, at the depth of the floor substrate.

- Recessed Sill 01-50-107

Fix Tie Rod Nogs in place with nails, screws and four multigrips.

- Specific Nailing Schedule 01-135-107



Once the flooring substrate is installed to manufacturer's specifications, use the Lockwood Production Subfloor plan to locate and mark out the recess sills for full-height aluminium joinery.

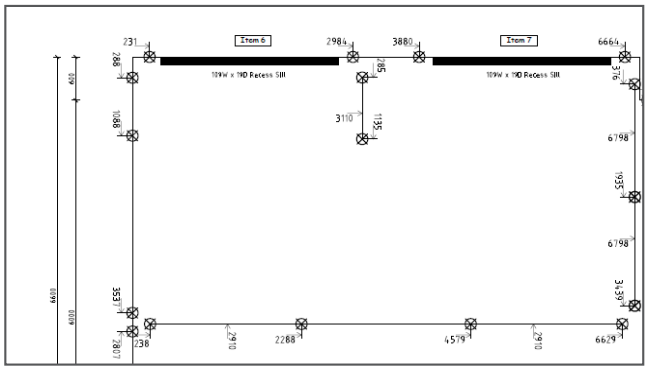
Check recess sill depth and widths on the Lockwood Production Subfloor Plan. Cut recesses out of the flooring to allow for the full height/ floor set door and window joinery.

Tape recesses with a suitable sealing tape.

Concrete Subfloors

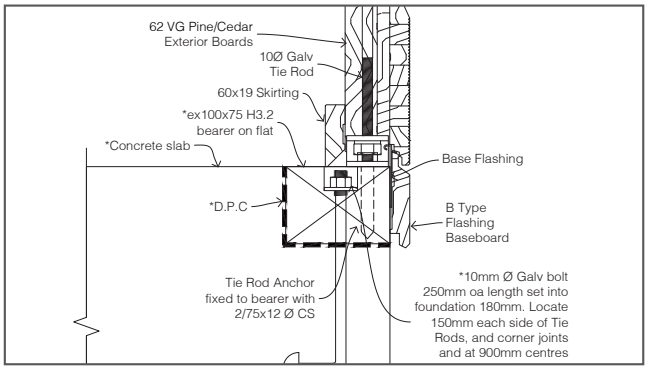
Spend extra time to ensure the concrete perimeter is laid out accurately according to the Lockwood Production Subfloor Plan. Make sure it is square and level. This will help prevent frustration and additional costs throughout the build.

Include recesses in the floor for full height joinery referring to the Lockwood Subfloor Plan for locations and depths.

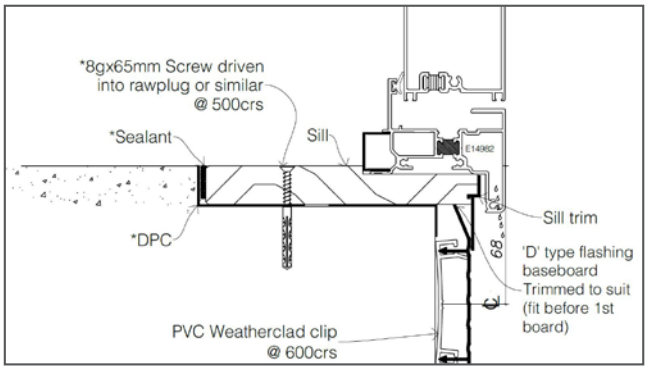


For 62mm walls, install a timber edge bearer into the concrete for fixing.

- 62 Wall to Concrete Subfloor 16-30-62



Install DPC in recesses and around the perimeter before installing first boards and full height joinery.



Component Delivery

Prior to loadout

On the component order form note which trucking configuration will be best suited for the site.

Advise us of any concerning issues on the site and assess site for overhead power lines or underground pipes etc. Just because you have had a concrete truck to site doesn't mean the delivery truck can fit!

Truck only – usually an 8 Wheeler, 11 metres long

Truck & Trailer or 40ft - 22 metres long

Hiab reach is max – 2 Ton at 10mtrs

Our Logistics team will ring to confirm or reschedule Loadout date.

If there is limited room on site and your components are arriving on a Truck & Trailer Hiab, we will need to know a suitable transfer location close to the site.

Alternatively, you may need to arrange either a Hiab or Crane to unload the truck.

We prefer the truck to go direct to site as this minimizes the risk of damage. However if delivery to the site is problematic, you can nominate a timber merchant or trucking company close by to unload in their yard and engage them to deliver to site.

> Before components are delivered make sure you have some timber offcuts to keep components at least 45mm off the ground or floor, and tarpaulins to cover and protect from moisture.

Delivery Day - On Site

The truck driver will not do anything that compromises anyone's safety, including yours. Ensure you have enough hard hats on site during unload.

House component deliveries are scheduled to be delivered on site at 8:00am, The truck driver will have your details if anything changes.

Keep the unload area clear and park your vehicles down the road from site.

Have at least 4 strong people on site to assist with unloading.

Pre-plan which packets you may need first and plan where they will be unloaded.

Unloading

Where possible, unload the components clear of the foundations to allow plenty of room to brace walls when they are built and to allow freedom to work around the structure.

The Joinery pallet usually gets unloaded first. The frames will need to be removed from the pallet along with straps, foam and timber dunnage which need to be returned to the driver. Do not cut the straps! Check for and report any damage to the frames using the field report form.

Joinery components and interior doors should be stacked in a dry, well protected area from the weather. We recommend knocking up a timber A frame to stack the joinery panels on, close by the floor.

Open the wooden hardware box and locate Lockwood factory drawings and load sheets in a plastic bag.

Refer to the Load sheets in the Lockwood Production plans and check off packets and joinery items as they are unloaded. If something appears missing, file a Field Report using the QR code on the production plans and contact the Lockwood factory immediately.

Stack components on minimum 45mm dunnage to protect from moisture.

Wall packets should be stacked with the top board packets at the bottom and first board packets at the top.

Cover packets with tarpaulins for further protection from the weather.

If components arrive damaged this must be noted on the delivery driver's docket. This is essential to making a claim for damage in transit. Complete the Onsite Delivery Check Sheet which the truck driver and return this to them.

Prepare for construction

Run a chalk line 88 mm in from foundation's edge to mark placement of Seating Profiles. This also marks the inside edge of the 107 Exterior boards. For 62 Exterior boards, run the chalk line at 43mm.

When setting out, dimension everything from one exterior side and one exterior end of the floor as a fixed measuring point.

Mark out the position of the interior walls on the floor.

Label walls by their letters as per the Lockwood Production Floor plan, including the dash before or after. This makes it easier to see what side of the wall is shown on the Lockwood Wall plans as you build.

Refer to the Lockwood production plans and mark out, tie rods and electrical cable locations on the finished subfloor. Check your measurements carefully against the Lockwood production plan dimensions.

Fix seating profiles at 900 centres, starting approximately 150 mm in from the corner, clear of Tie Rod brackets. Place one Seating Profile each side of the join where a ‘B’ profile occurs.

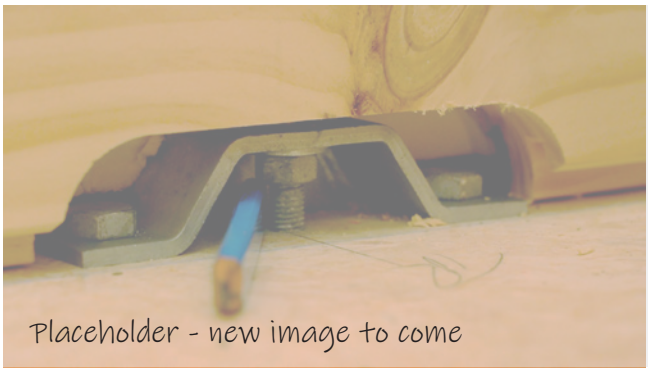
- 01-110-107

Fix interior seating profiles with two nails as preparation for first interior board installation. Place at 900mm centres and either side of any openings, avoiding tie rods.

- 01-120-107

On concrete floors, install the tie rod anchor brackets

- Exterior Walls 01-130-107
- Interior Walls 01-140-107



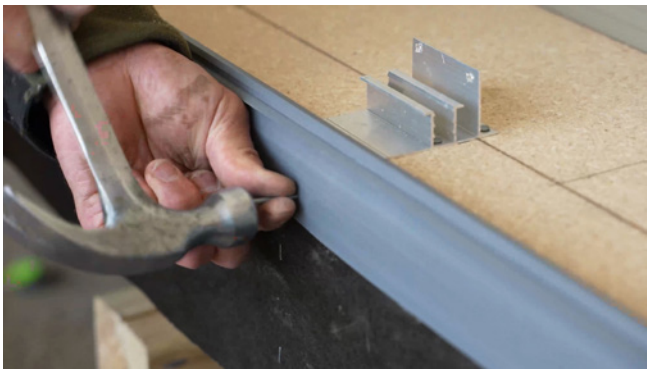
Prepare ‘X’ Profiles for easy installation. Some builders like to tap the ends of the X Profiles to make fitting easier.

Wax, linseed oil or silicone spray an be applied to help with board installation. Make sure to apply these well away from the timber components in case of staining or marking.

Staple builders wrap around the boundary and end joists.

Install PVC base flashing by clipping it onto the Seating Profiles. Press firmly on the joists and fix with nails. The corners need to be mitred and all joins sealed with silicon.

- 01-110-107



Flashing Baseboard

For Aluminium baseboards, install baseboard clips at 600 centres. Clips are positioned 130mm from floor level to centre line for ‘C’ type baseboards, and 245mm for ‘D’ type baseboards.

Fit the flashing baseboard by clipping on to the clips. You may need additional clips at joins.

Where there are recessed sills for full height joinery check out the baseboard so it stays at the same height around the building.

Trim and seal the top of the flashing baseboard to the bottom edge of the sill.

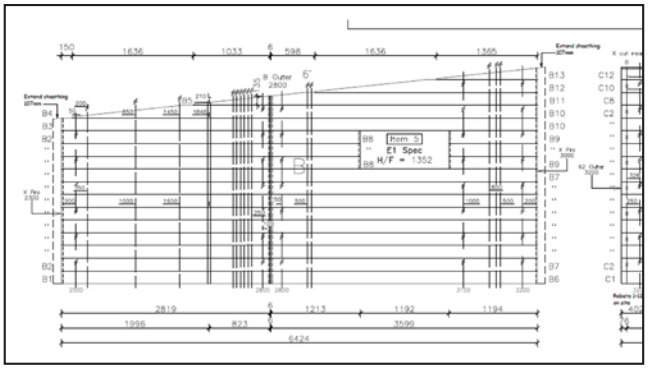
Install PVC wedges at full height joinery.

Wall Board Preparation

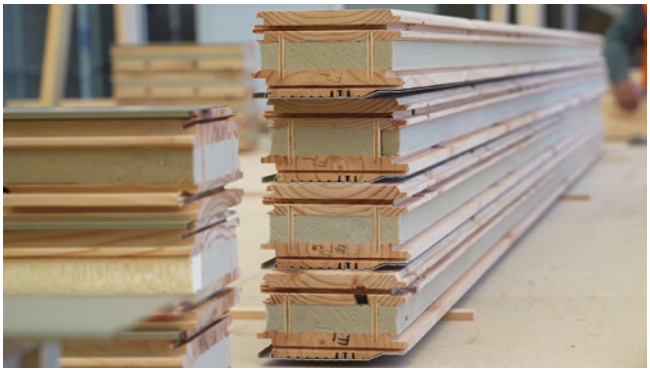
Open the packets of wall boards,starting with the First Boards Packet. Use the Lockwood Production plans to identify where the boards will be installed. Position them on the floor in the general area they will be installed.

Each wall is designated with a letter shown on the Lockwood Production Floor and Wall Plans. Each board is labelled with the wall letter and a number to denote its placement.

Reference the Lockwood Production Floor Plan and the Lockwood Production Wall Plans to locate the walls and the board numbers.



Remember you are dealing with a finished product, so take extreme care when handling, stacking and moving boards. Wear gloves and always stack interior boards on dunnage to keep the wall surface from damage. Exterior wall boards can be stacked Aluminum side down.



Stack the boards with the labelled side visible at one end and check the power and tie rod holes line up.

Boards with higher numbers are higher up the wall so stack the boards with highest number at the bottom, and the lowest at the top.

First Boards

At external corners, remove 25mm from the tongue of the overlapping walls to allow for the base flashing.

Install the first boards over the Seating Profiles, referencing the Lockwood Production Floor plan. Careful attention to the outline and position of first boards will ensure a smooth build.

Hammer boards into place where required, using wooden blocks to protect the tongues of the wall boards from damage.

Install ‘X’ Profiles at the external corners.

When all exterior first boards are installed, fit full height ‘B’ Profiles where an exterior wall uses butt-joined boards. Install PVC wedges as you install the ‘B’ Exterior profiles.

For aluminium baseboards ensure the rebated end of the profile is at the bottom. Use a block to guide the profile to the correct position

Install the ‘B’ Interior profiles on the internal side of the exterior board.

Temporarily fix seating profiles to the first wall boards with two nails. They will be nailed off once the walls are built and prior to installing sarking.

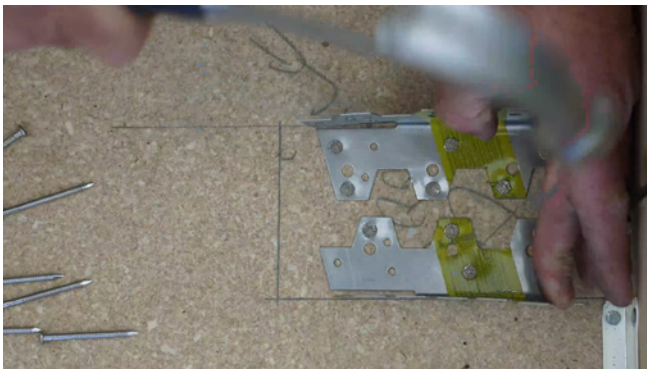
Install PVC wedges in the exterior board scallop wherever the board meets a window, door, wall joint or corner.

Check the Tie Rod and electrical holes match up with the marks previously made on the subfloor. Remeasure, check the Lockwood Production Floor Plan and amend if required.

On Timber Subfloors, drill tie rod holes through flooring and nogs. Drill power holes where wiring needs to come through the floor, such as under windows, or to kitchen island benches.

Mark out the position of full height stiffener and beam posts and install two multi-grips or J9 brackets for fixing to the side of the post

- 01-170-107



Full height Joinery Frames

Joinery Frames, head flashings and weather seals are installed as part of the wall assembly process. Check the Lockwood Production plans to identify each joinery frame and location. A joinery kit for builders is supplied with components giving useful instructions and notes on required items.

Apply a suitable flashing tape on full height joinery recesses.

Place Full height window and door joinery in recess position.

- Fit an angle support bar under sliding stacker doors.
- 10-160-107

- Use 50mm screws at 500 centres to fix the sill down to the recessed sill nogs, or into the double joist at gable ends.
- Timber Subfloor 01-50-107
- Concrete Subfloor 01-90-107 / 01-100-107

Ensure the frames are square and plumb, and securely brace full height joinery to the floor.

Lift sliding doors into place. The door rollers will be lifted as high as possible to allow for easy installation. Rollers will need to be adjusted for the sliding doors to operate and rechecked and adjusted at the completion of the build.

Install ‘X’ Profiles on each side of the joinery frames joining them to the bottom boards.

Wall Board Assembly

In the construction of smaller homes, all of the exterior boards can be installed first. This gives you more working area to sort interior walls. On more complex builds, it’s important to install the exterior and interior boards together to help keep checkouts and openings plumb.

Make sure you have ‘X’ Profiles in place – always slide boards down profiles, not profiles down boards. Use a 3-4kg hammer on a wooden striker block to lock the wall boards in place.

Alternate hammering at each end of short boards.

On longer boards, alternate the direction of hammering (left to right, then right to left etc) to keep the boards plumb.

Alternate the direction of board installation around the building too, i.e., install the second board clockwise around the house, the third anticlockwise. This helps to keep the boards and building plumb.

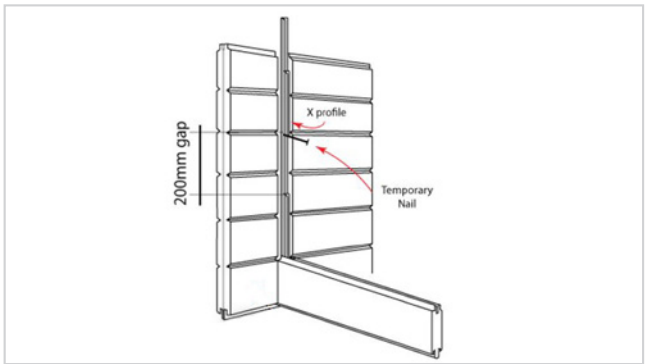
Install PVC wedges in the exterior wall scallops wherever the board meets a window, door wall joint, or corner before placing the next board.

Before locking each board in tight, check the tie rod and power holes line up with the board below. Make sure boards are hammered down tight before fitting the board above.

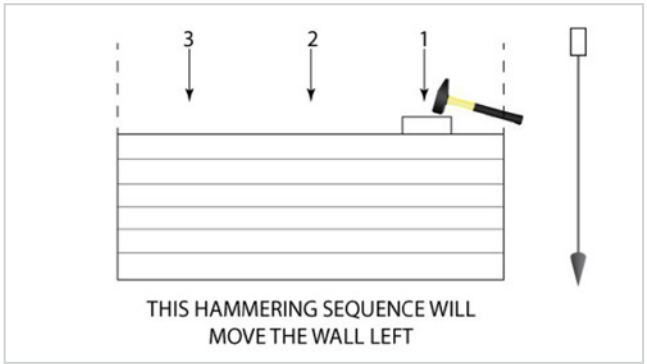
At two boards high, fit full height stiffener and beam posts into place using an ‘X’ Profile. Fix with multi-grips.

Install ‘X’ Profiles as you work your way up the wall.

Leave a 200mm gap between the first and second profile using a temporary nail to hold the profile in place. This makes it much easier to install the interior boards.



Continually check the walls stay level and plumb as you build and ensure V grooves line up in corners.



Take your time when there are multiple profiles in a small area, such as stiffener posts between windows, to avoid damaging boards.

Install windows as you build the exterior walls making sure they are tightly in place. Build the wall up to the top of the window adding ‘X’ Profiles and PVC wedges as you go.

Fit the head packer and head flashing to the lintel board. Head flashings are cut to length and should extend equally on each side of the headpacker. Fix the head flashing to the tongue of the lintel board to avoid head flashing creep.

On VG Pine walls, trim 3mmx100mm off the tongue to allow headflashing to fit:

- 10-05-107

Fit wind seal to the underside of the head flashing allowing 50mm from either end. Then install the lintel boards above the windows, ensuring they are square and plumb once complete.

For frames with clear openings over 2000mm use lintel screws, found in the Joinery Tube.

- Various details 10-05-107 - 10-230-107

Check the height of the V between the 12th and 13th boards; this should be 2074mm from the floor and no more than 2077mm. Any more would indicate board growth.

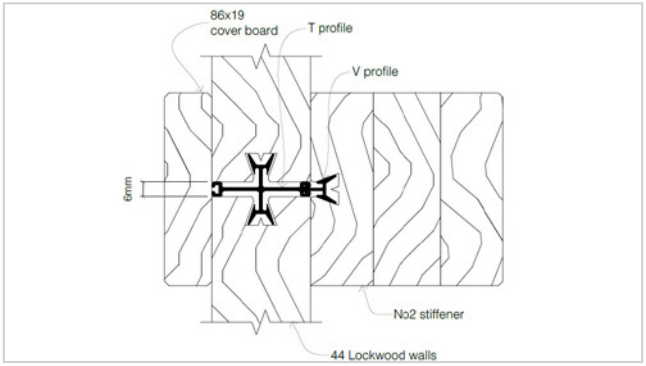
Brace the walls at 13 boards high to help keep them straight.

On gable walls, nail the boards from the top to the board below approx 60mm from the end.

Install the bottom interior board, then re-check your room dimensions and openings against the Lockwood production plans.

On timber subfloors, with the bottom boards in place, drill tie rod holes through the floor.

Position and fix full height stiffener and beam posts.



Build up the interior walls locking each into place using a 3-4kg hammer and striker board using an alternating sequence as described on page 15.

At three boards high, knock the ‘X’ Profile down to allow for the next three boards to be installed.

Ensure V grooves are lined up as you go and check wall heights as you build.

Check the height of the V between the 12th and 13th boards. If there is considerable board growth, you can use a ratchet strap attached to the floor to help pull down the walls.

Fix a temporary cap to door openings and wall ends to keep them plumb.

Covering Up

It is essential to protect wall boards from the elements during construction. When rain is likely, walls need to be covered to minimise board growth and damage. Walls should also be protected from UV as the sun can bleach, warp and damage timber.

If rain is expected, use the supplied rolls of white plastic to cover up. Drape over walls and secure to the floor.

For a short-term solution on partially built walls, use the timber dunnage from the Lockwood delivery trimmed to length and nailed to the top tongue.

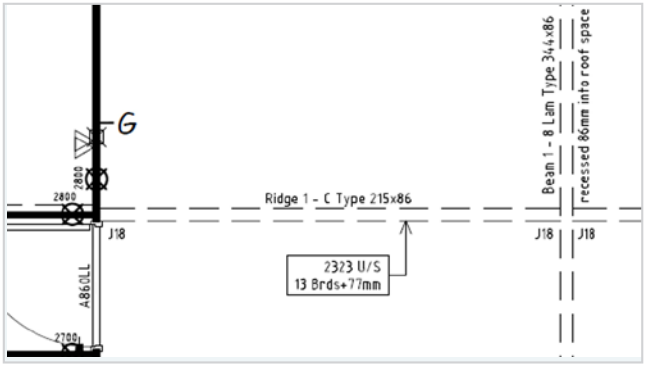
Laminated Beams

All stand-alone exterior wall stiffener posts must extend a minimum of 100mm into the roof space.

Posts supporting beams are supplied over-length and need to be trimmed to suit.

- 01-150-107

Check beam labels against the Lockwood factory drawings to identify locations.



For beams fixed to posts, refer to the Lockwood factory floor plan for the floor to underside of beam measurement. Mark the position of beam on the posts and router out for the beam bracket.

When positioning brackets, check the beam will be level once fitted

- 03-40-107

Remove the beam bullnose so the beam will sit flat against the post.

Check out the bottom of the beam for a tight post to beam fix.

Mark out the position of beam pins and drill holes.

- 03-50-107

For beams attached to gable walls, check the Lockwood factory plan for the floor-to-underside of-beam measurement. To find where the bottom edge of the beam sits, count the number of full boards in the wall (boards without angle cuts), then multiply that by 172 and add 10 for the tongue.

The difference between this number and the floor-to-beam measurement tells you where the bottom edge of the beam aligns with the tongue and groove joint on the board below.

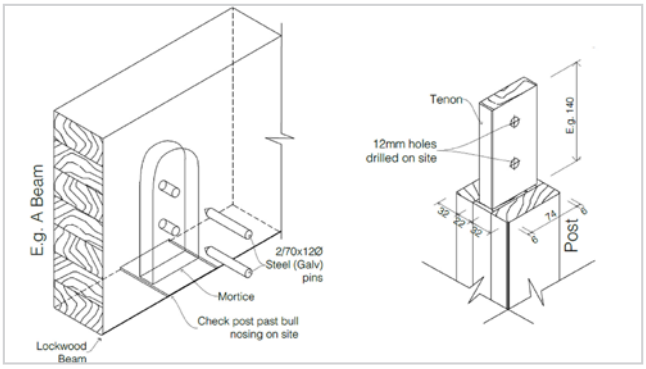
Mark beam checkouts on wallboards and intersecting beams. Before cutting, double check measurements against the Lockwood factory plans.

- 03-30-107

The main ridge beam should be fitted first, and gable walls should be checked for plumb before installing the other beams. Use string lines to line up and level beams.

For mortise and tenon post connections, the post height should be adjusted by trimming the bottom of the post. Use 10-15mm packers under the post. This allows for easier adjustment if walls need to be hammered down further.

- 03-70-107



Fit the ‘E’ beams to interior walls. E beams will all be numbered on the plans. They are supplied approximately 50mm longer than necessary. Trim to correct size before installing.

On exterior beams, treat any cuts or checkouts with timber preservative before installing.

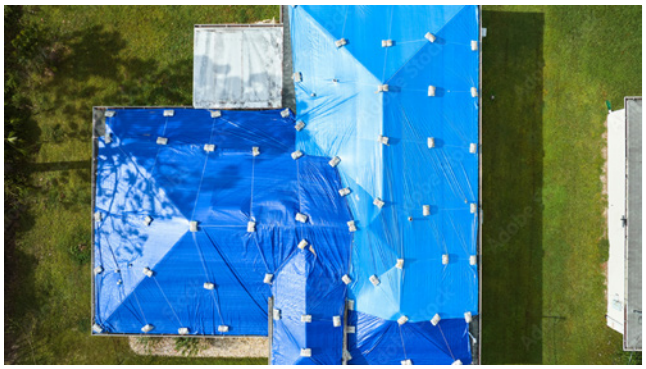
Ensure all walls are plumb and level before installing sarking. Check all walls carefully adjusting where required. Remove packers from under posts if walls need bringing down further. When done, then fix all seating profiles permanently in place.

Sarking

Check engineering details for specified fixings before beginning. Sarking is supplied approx 50mm over length and will need trimming before roof-on stage.

Before starting sarking, tape all surfaces that meet the sarking with noise reduction tape. This includes tops of walls and beams.

Be prepared to cover sarking at the end of each day or if it rains. Wet sarking can result in cupping and swelling and is difficult to remedy. Sarking needs to be covered by heavy tarpaulins.



Sort sarking boards into various lengths. Stack them alongside the building with the clean side facing up and the tongues facing the same direction.

Start laying sarking at the end of the house with the largest open room.

For gable overhangs the first board to be fixed is over the gable end wall. To find the positioning of this board use the overhang dimension. Work back from the edge of the overhang in full board widths to the wall to find the position the first board.

Fix the sarking boards at the top structural support – either a ridge beam or a wall. Then fix at the bottom structural support – usually the top of an external board.

- Ridge 04-40-107
- Lowered Eave 04-10-107

Bring the next board into place. Skew nail the top of the previous board again before fitting the next one. This tightens the sarking as you go.

> Check the sarking is staying in line regularly, measuring the top, middle and bottom of the board to a fixed point of reference.

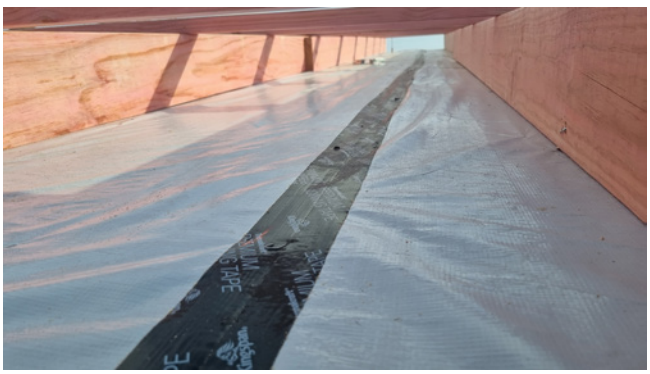
As you fit the sarking, watch for upcoming tie rod and electrical holes. Measure the position of the hole from the tongue of the previous board and note this on the board that will cover the hole.

Measure out and drill tie rod and power holes as you go. Tap a nail in next to the hole to help identify their locations once the sarking overlay paper is installed.

Check out sarking around posts.

Provide continuous temporary support under any sarking spanning 2.5m or more. Keep this in place until the roof is fixed.

Lay sarking overlay over the all of the sarked area including the end grains. Overlap the joins by 150mm. Staple the joins to the sarking and seal with tape.



Fix the sarking straps and tension using the kit provided. Sarking straps help tighten the structure and are required for all spans greater than 2.5m.

Check the Lockwood factory plans for strap positions. Adjust these for any roof penetrations, such as skylights, shown on the consent plans. Check engineering drawings for any additionally specified bracing strap positions.

Screw fix every second sarking board to the outer edge of the wall. This straightens the boards and makes it easier to fit rebated fascia.

Image to come

Fitting Tie Rods

Check the Lockwood factory wall plans to determine the tie rod holes from electrical holes and the length of tie rods.

Prepare the tie rods by threading on the locating top washer, spring, sleeve, 25mm round washer and nut.

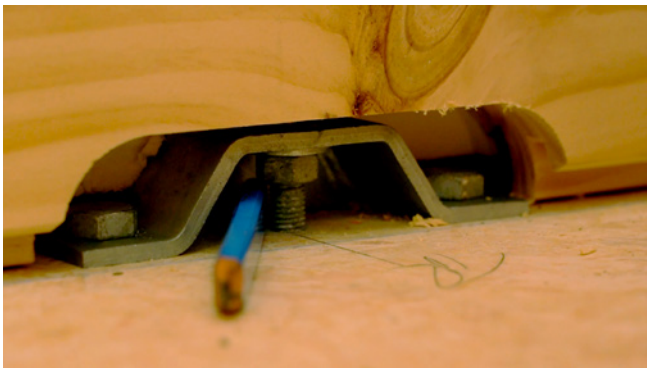
For sea spray zones, a tie rod pack will be supplied with a stainless steel nut, washer extension and coupling. Attach these to the bottom of each rod before installing in tie rod holes.

Drop tie rods in from the top.

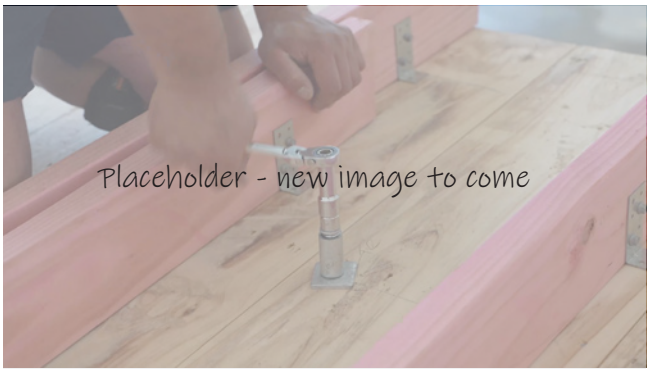
For timber subfloors, fit a 50x50mm washer and nut at the base, the nut should be screwed on only slightly past the bottom of the thread.

On concrete subfloors, fit nut under 25mm tie rod anchor (pictured)

- 09-101-107



Tension the tie rods as required or to help close gaps due to board growth. It's important not to over-tighten. Use hand tools, not a torque wrench or other power tools

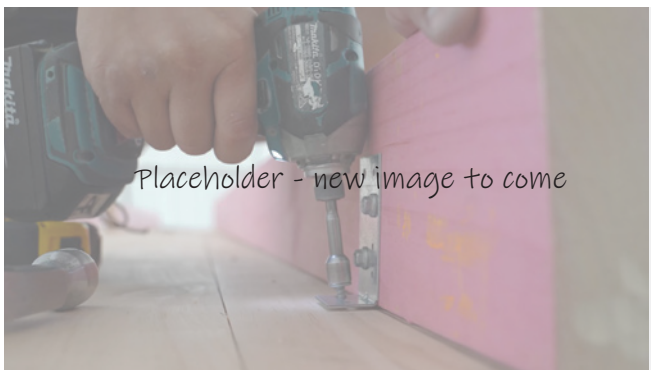


Dummy Rafters

Make sure you have adequate, continuous support under sarking before fitting the dummy rafters.

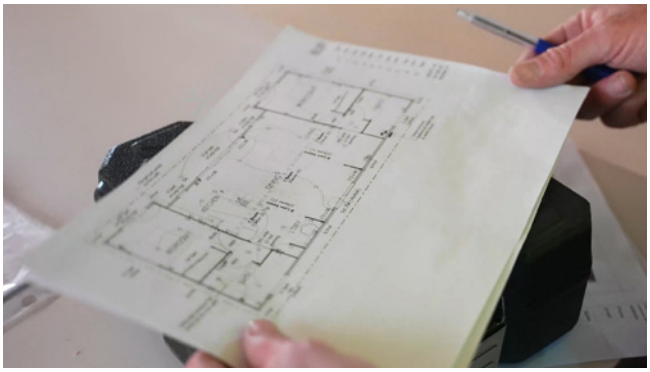
Plumb cut rafters and attach CPC 40 brackets on the ground before lifting onto the sarking platform.

Use the consent and engineering plans to identify dummy rafter placement and fixings. Install at the specified centres.



Use the consent plans to identify purlin placement and fixing.

Electrical Pre-wire



The electrician can then begin installing the wiring according to the Lockwood Production Electrical plan.

Make sure electrical hole marks are still clearly visible on the floor before they begin.

Holes for switches and sockets are drilled using a hole saw. Power socket holes are generally drilled 250mm off the subfloor, and light switches at the centre of the 7th board, (1140mm) off the subfloor. It is helpful to use a template for efficiency and consistent hole sizes.

Cables are installed down through the power holes in the sarking and pulled through socket and switch holes using cable pullers.

Drill holes as required for downlights and pendants.

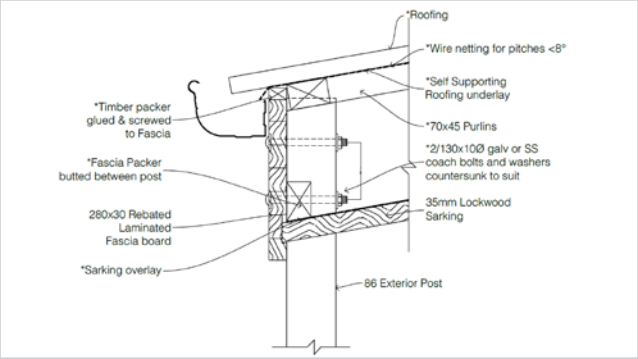
Every wiring hole should be patched with squares of sarking overlay, extending a minimum of 100mm from the holes and securely sealed with tape.

Image to come

Getting ready for Roof

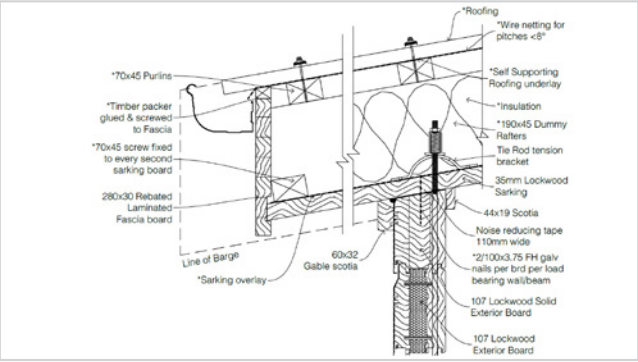
If roof support posts are used, these should be pre-fitted to the fascia beam prior to fixing the fascia to the sarking. In sea spray zones check fixings are stainless steel.

- 04-70-107



Fit barges and fascia before the roofing. Extend barge boards 250mm beyond the lower end of the sarking and plumb cut after installing.

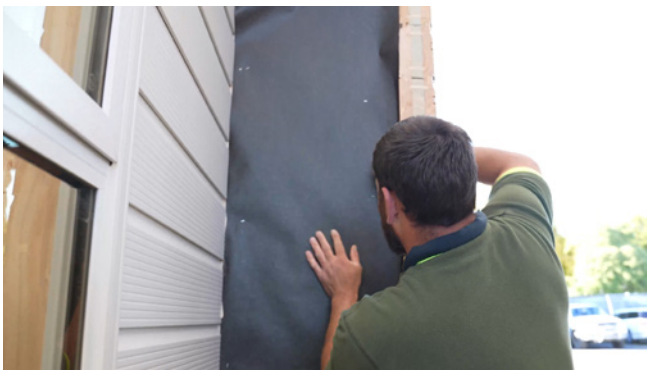
Once insulation is in place, the home is now ready for the roofing contractor to install the roof.



Exterior Finishing

44mm walls that require lining need to have building insulation battens and building wrap fitted prior to over lining.

- 14-20-107



Install base clips at the bottom of the wall to be over lined.

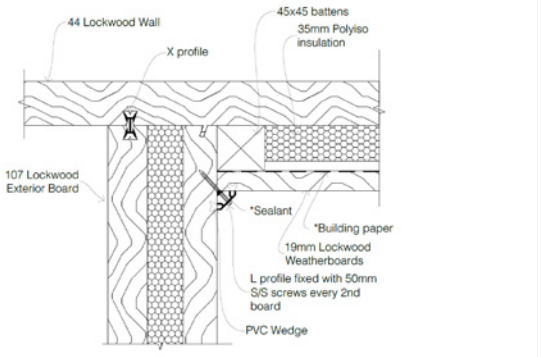
On Aluminium weatherboards, install at 5pies. For VG Pine weatherboards, install at 450 centres between boards, on every board.

Work up the wall installing the 19mm Aluminium or VG Pine Weatherboard, fixing through top tongues.

Seal exterior corners using a suitable flashing tape before installing Corner Profiles

Trim corner Profiles to length and install PVC Wedges before fitting. On timber boxed corners, the PVC wedges fit into the outer weather groove furthest from the corner.

Fit an aluminium L Profile into internal corners sealing it in place. Seal meter box with RTV silicone sealant and install W repair profiles



Fix A Corner Profiles by pre-drilling then screwing every second board.

Timber boxed corners come in two pieces, Fix the smaller edge on the front face of the exterior wall, nailing every four boards.

Fix the larger board on the end of the wall, sealing between the two profiles at the join. Nail to the wall and into adjoining profile every four boards.

- 02-140-107

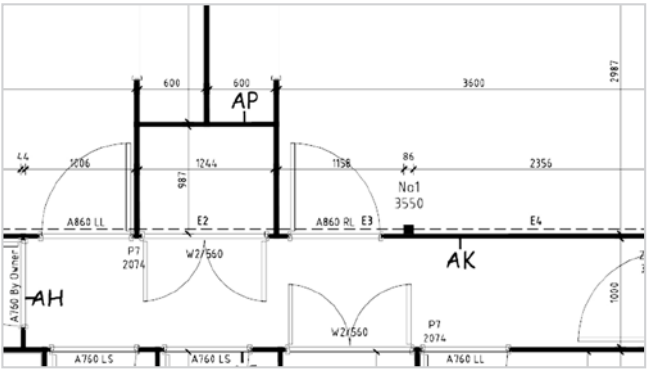
On both sides of exterior gable walls, fit sealant to gable scotia and fit gable scotia as required.

Interior Finishing

Interior floor and ceiling perimeters are finished using the supplied skirting and scotia, fixed using finishing nails. Mitre exterior corners.

Interior doors and frames are numbered and referenced on the Lockwood Production Floor Plan.

> Arris both edges of the opening around frames for easy installation. Closely follow the floor plan to ensure doors are hung the correct way.



Install interior doors by first removing the tongue of the board above. Tack the heads of the frames into position. Drive the jambs hard under them to prevent gaps between heads and jambs.

Install hinges and hang doors. The door leaf should have a gap of around 1.5mm on the hinged side and 3-4mm on the latch side. Ensure the gaps are even all the way up the door.

Hammer home jambs and head after the doors are hung. The fit of the doors can be improved by the way the frames are hammered home.

Use 44 cappings to cover the end grain of the internal walls. Cut them to the required length and nail them in place.

Pack out walls where showers will be fitted.

Install shelving in cupboards and sliding door tracks where required.

Site Glazing and Joinery Adjustments

Joinery panels over 80kg will require on-site glazing. Lockwood will tentatively schedule site glazing this with Metro Glass for two weeks after component loadout, and Metro Glass will confirm or adjust the booking with you.

Check all joinery is operating smoothly and adjust where required.

The joinery pack supplied with the Lockwood components will guide you through what needs to be done. Instructional videos can be found at nulook.co.nz/for-builders/maintenance-videos/

Completion

When the build is complete, fill out the Lockwood Builders Declaration to confirm all essential steps are complete. (This is a condition of the Lockwood Product Warranty).