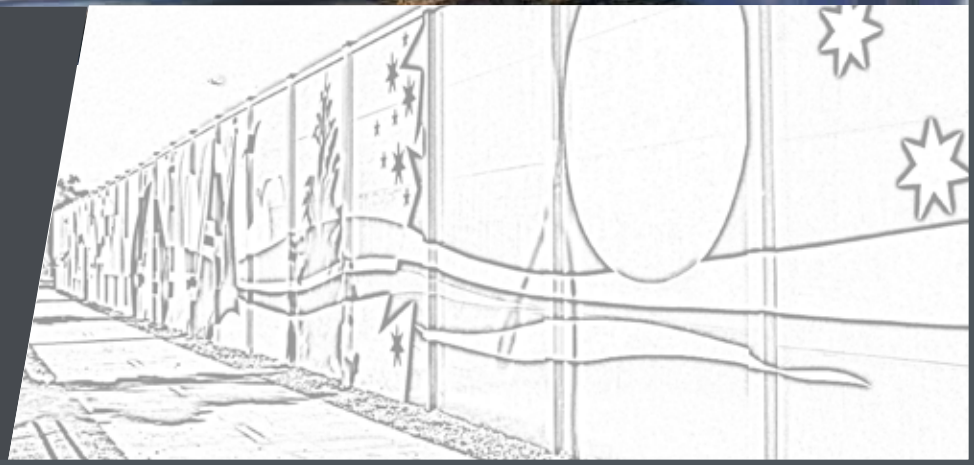
Modular Wall systems™

Installation Guide

For over 3 metres
2016

ISO 9001 QUALITY ASSURED COMPANY ✓✓✓

AUS MADE



Thank you for choosing one of our quality products. We are the industry leaders in all things 'Modular Walls'. This product will stand the test of time and withstand the elements if installed in accordance with these guidelines.

Introduction

The recommendations detailed in this guide are formulated in accordance with good building practice. This guide is not intended to be an exhaustive statement of all the relevant data.

As the success of product installation depends on factors outside the control of Modular Wall Systems™ (e.g. quality of workmanship, detail requirements, etc), Modular Wall Systems™accepts no responsibility for, or in connection with, the quality of the projects or their suitability when completed.

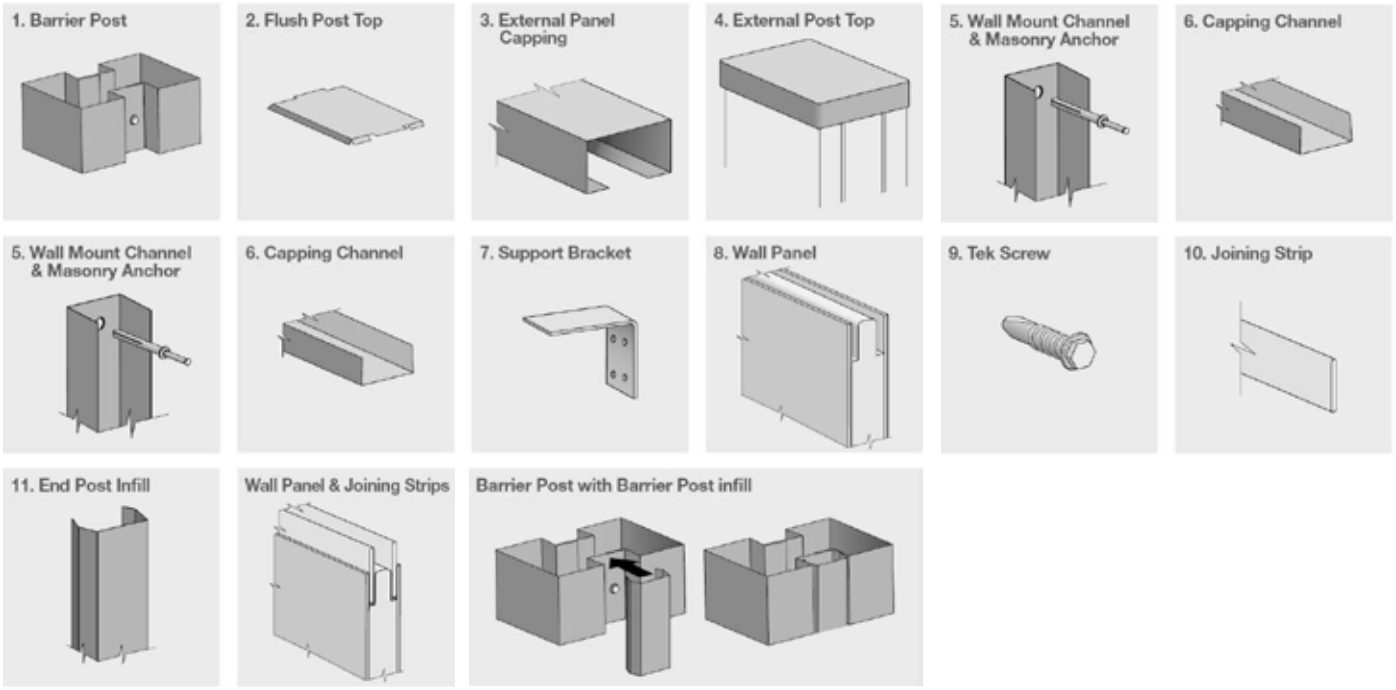
If you are in any doubt please seek independent advice or contact Modular Wall Systems™ are always happy and available to answer questions regarding installation no matter how small or insignificant you think they may be.

24/7 technical and installation advice is available on ph: (02) 9540 6666 and select the after hours option

NOTE

* It is recommended that the reader pays particular attention to items identified as a NOTE in this manual to ensure a satisfactory installation and that the long term performance of the products.
* For correct finishing of your Modular Wall System™, you must paint or seal the panels within 90 days of installation.

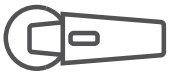
Components list



Tools needed

5/16 Hex Bit

Drill/Driver



Angle Grinder

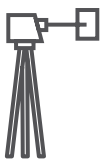
Square

Spirit Level

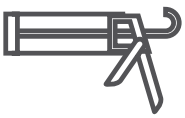
Shovel

Line Marking Paint

Circular Saw



Laser Level



Caulking Gun

String Line

Post Hole Digger

Tape Measure

24/7 technical and installation advice is available on ph: (02) 9540 6666 and select the after hours option.

It is recommended that you read through this guide before beginning the installation.

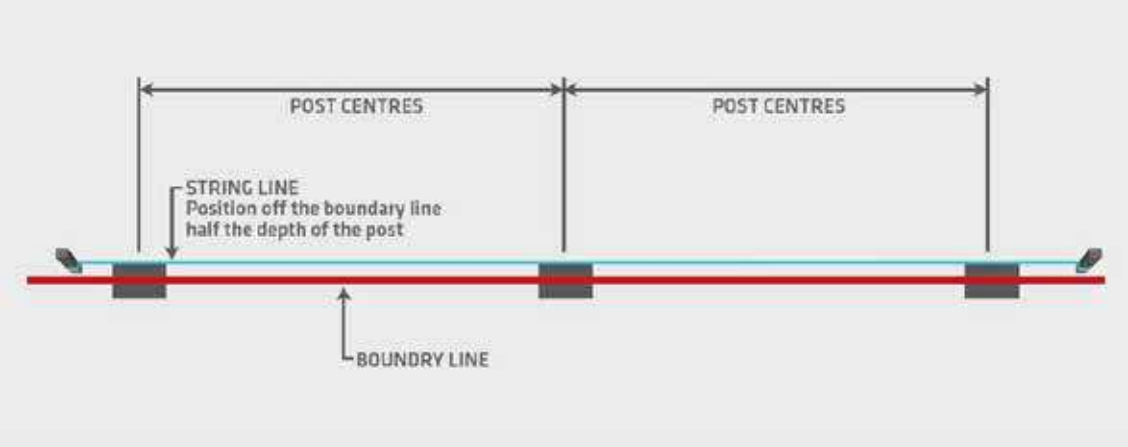
Step 1 Determine boundary line, Post hole depths and centres

Please read the wind region and post hole depth charts carefully prior to starting your installation.

We recommend you plan your wall set out/post position on a piece of paper first to save unnecessary digging.

Accurately determine the boundary line to where the wall will be installed, (in some cases a surveyor may be required) mark this with a string line as per the diagram below.

NOTE: **The diagram below is for reference purposes only and shows the wall splitting the boundary line, this may not always be the case depending on your individual circumstances.**



Determine your post hole centres using the table below as a guide and mark out your post hole positions on the ground with line marking paint.

NOTE: **Wall panels may be trimmed with a circular saw if necessary to fit in within an exact measurement (panel cutting procedure is detailed later in this guide)**

Post holes can be dug by hand or with a mechanical auger. Use the Footing depth table on page 5 to determine your posthole depth and diameter.

Recommended footing depths listed here are for wind regions A & B plus terrain categories 2.0, 2.5 & 3. If you are building your wall in a Cyclonic wind area, on the top of a hill, adjacent to an escarpment, on a ridge, or in terrain category 1, you will need engineering advice beyond the scope of this publication.

Please contact Modular Wall Systems™ directly for this information.

NOTE: **Walls that are to be installed in DARWIN (NT) shall be installed in accordance with engineering recommendations for wall panels, post types, post spacing and footings included in the Northern Territory (NT) Deemed To Comply Manual (DTCM) – Available upon request.**

Standard 'Post Centre to Post Centre' guide

The table below allows you to work out what your post centres will be when using a 'BarrierWall™ post'.

Wall Panel Length	BarrierWall™ Post (150mm face x 250mm depth) Post hole centres
2400mm	2500mm centre
2700mm	2800mm centre
3000mm	3100mm centre (3100mm centres are not available for all regions of Australia)

Footing Depth Table

NOTE: This is a guide only. Please request site and region specific specifications for all BarrierWall™ installations.

<table>
<tr><th rowspan="2">Wall Height</th><th colspan="2">Hole Depth into firm earth or clay</th><th colspan="2">Hole Depth into sand, soft clay or loose earth</th><th rowspan="2">Hole diameter</th></tr>
<tr><td>Wind Region</td><td></td><td>Wind Region</td><td></td></tr>
<tr><td></td><td>A and B</td><td>C</td><td>A and B</td><td>C</td><td></td></tr>
<tr><td>3000mm</td><td>1000mm</td><td rowspan="6">NOTE:
You will need engineering advice beyond the scope of this publication. Please contact Modular Wall Systems™ directly for this information.</td><td>1200mm</td><td rowspan="6">NOTE:
You will need engineering advice beyond the scope of this publication. Please contact Modular Wall Systems™ directly for this information.</td><td rowspan="8">For all Wind regions the Post Hole diameter should be
450mm - 600mm (unreinforced). Actual size will be specified depending upon
your individual site conditions and wall height.</td></tr>
<tr><td>3300mm</td><td>1100mm</td><td>1300mm</td></tr>
<tr><td>3600mm</td><td>1200mm</td><td>1400mm</td></tr>
<tr><td>3900mm</td><td>1300mm</td><td>1500mm</td></tr>
<tr><td>4200mm</td><td>1400mm</td><td>1600mm</td></tr>
<tr><td>4500mm</td><td>1500mm</td><td>1700mm</td></tr>
<tr><td>4500mm +</td><td colspan="4">Please contact Modular Wall Systems for specific advice.</td></tr>
</table>

NOTE: The free ends of your wall may need to be shortened or strengthened depending on your site specific specifications including wall height, terrain category, shielding class, wind region & soil conditions. The plan for your wall layout (if generated by Modular Wall Systems™) will specify any of these requirements.

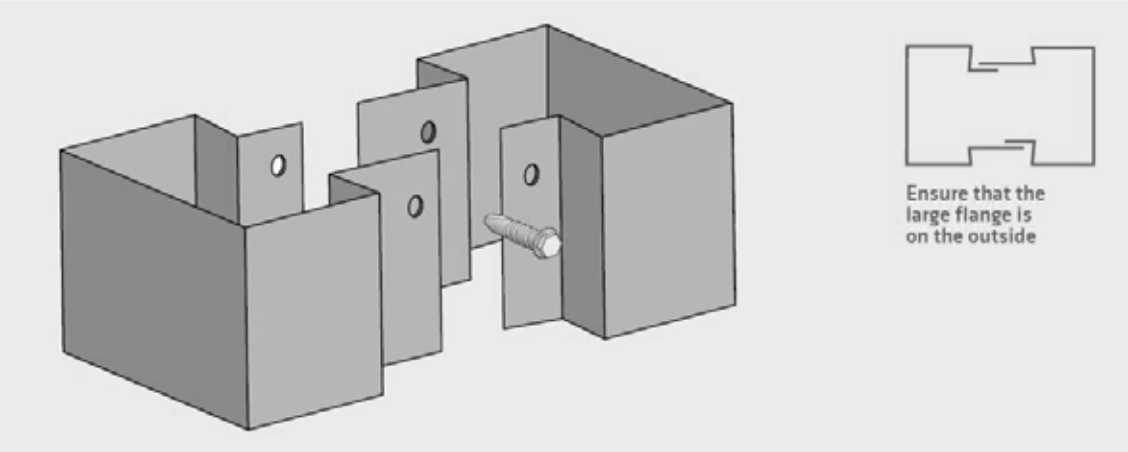
1) Grade of concrete N32 with a maximum aggregate size of 20mm

2) Concrete shall be compacted after placement by means of roding or vibrating

Step 2 Screw posts together

Place the two halves of the post on a FLAT surface. Align the pre-punched holes in the post exactly (large flange on top) and clamp both ends together – see picture.

NOTE: Screw both ends together first then fasten one screw in the middle (with supplied hex head screws). The remaining screws can be fixed in any order.



Step 3 Fixing the base brackets to the post

7. Support Bracket

9. Tek Screw

Attach the panel support bracket into the post with the hex head screws supplied. The measurement from the top of the post will vary depending if you have Flush or External (standard) Post Tops.

NOTE: **Bracket leg should point DOWNWARDS for ease of panel fitment.**

External Post Tops (Standard)

The support bracket should be fixed at 23mm more than the finished wall height.
Example: for an 1800mm high wall the bracket should be fixed at 1823mm from the top of the post. This allows 23mm for the post top to sleeve over the post after the panels have been installed.

Flush Post Tops

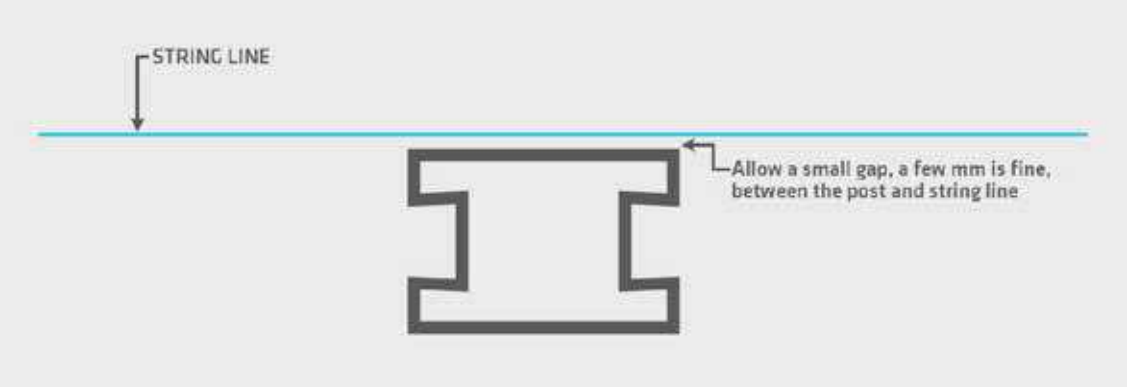
The support bracket should be fixed at 3mm more than the finished wall height.
Example: for an 1800mm high wall the bracket should be fixed at 1803mm from the top of the post. This 3mm is to allow for the thickness of the top wall capping and base channel on top of the panel measurements.

Step 4 Post fitment & alignment

These instructions presume you are using the Modular Wall Systems™ jig set up and pouring the footings from a concrete truck. There are many different methods that could be adopted depending on your knowledge and construction experience.

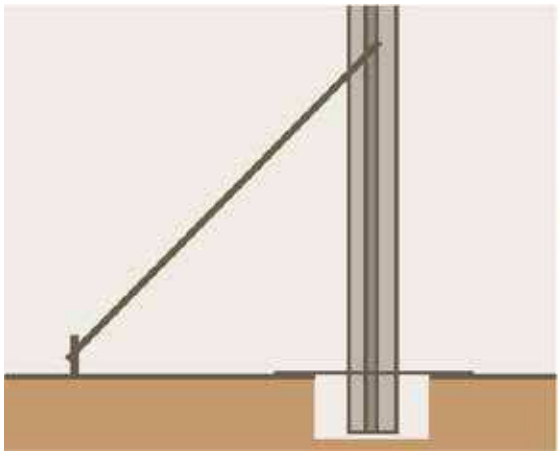
Measure the depth of the hole and, if necessary, fit post extensions to the post so the base of the post is approx 50mm off the bottom of the hole.

Working to a string line on the face of the post, insert the first post into the hole and slide the 'support shoe' under the brackets and level to the correct height with packers. You may also use timer or steel bars in place of a specially made 'support shoe'.



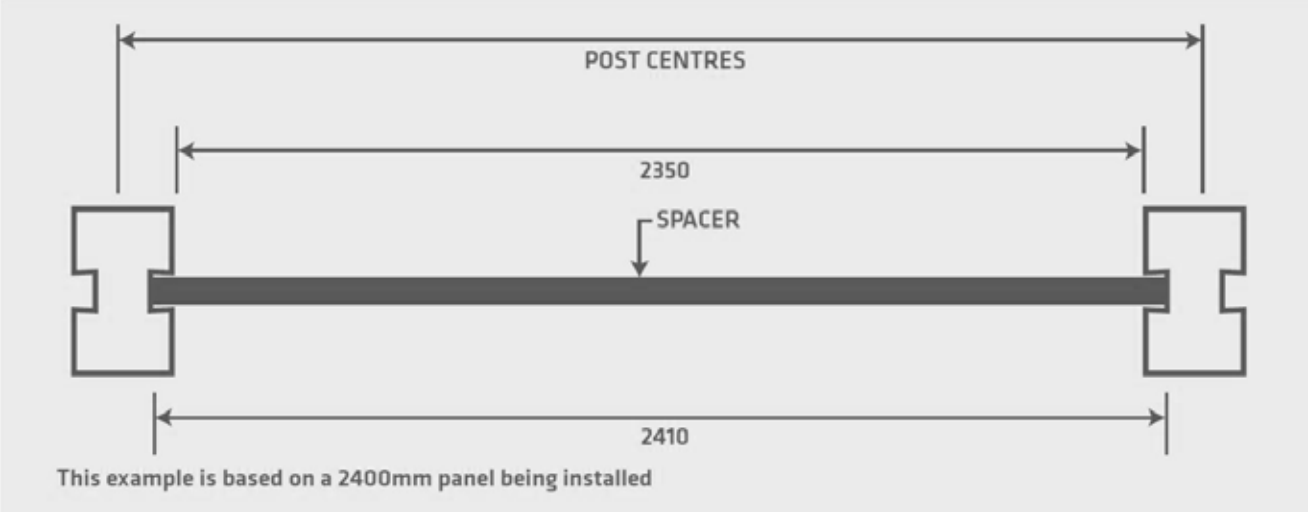
NOTE: The post should be clamped or secured so it cannot 'skate' or 'slide' on the support shoe.

Next while holding the post vertical screw the 'vertical' support brace into position (approx 2m from the ground) and then drive the stake into the ground in the appropriate position and adjust to level.



Installing Consecutive Posts

Cut a 'spreader/spacer bar' to help you achieve a very accurate spacing to your next post. See diagram below regarding what length to cut your spacer bar. Use no more than a 75mm wide spacer as it will need to fit inside the panel rebate of the post.



Now insert the next post in the hole using the 'spreader bar' as a spacer. This spacer bar should rest on the base brackets. Once the next post has been levelled screw the 'spreader bar' into position at the base and use this to get a level off.

NOTE: An alternative to the Modular Wall Systems™ steel spreader bar may be timber spacers (say 75mm x 35mm) with two 'L' brackets screwed onto each end.

NOTE: **If you are pressing your spacer bar to the back of the panel rebate make sure it does not collide with a tek screw. If it does, remove the tek screw at this stage and re insert it later when the spacer has been removed.**

We also strongly recommend another spacer bar at around 2000mm in height. The posts are very tall and if you are a few millimeters out at the bottom that can translate to a lot at the top and in turn causing poor panel fitment.

After the post alignment has been performed you can screw the top spreader bar into position. This will hold the 2 posts parallel to each other.

Take a measurement of 2000mm from the bottom spreader bar and mark each post.

NOTE: **It is very important that the top spreader bar is parallel to the bottom one. Do not screw one side on and use the level to determine the height on the next side as this may be wrong if the post was not levelled correctly to begin with.**

You can see below a combination of steel and timber spacers being used.

If pouring directly from a concrete truck - you must stabilize the bottom of the post to the hole. If you don't, the force of the concrete entering the hole will push the post around and undo all the previous alignments. This can make panel inserting very difficult (ultimately producing a poor looking installation).

To do this we recommend using bagged concrete that doesn't require mixing in the hole or pre-mixed concrete that can be shovelled in the hole.

Go back and have one final check of all post alignments before pouring concrete and also check the alignment as you go.

Step 5 Concreting the posts

Recommended concrete grade is 32 mpa with a 20mm aggregate and 90 slump.

The concrete should be a wet mix so as not to put undue force on the post as it is entering the hole.

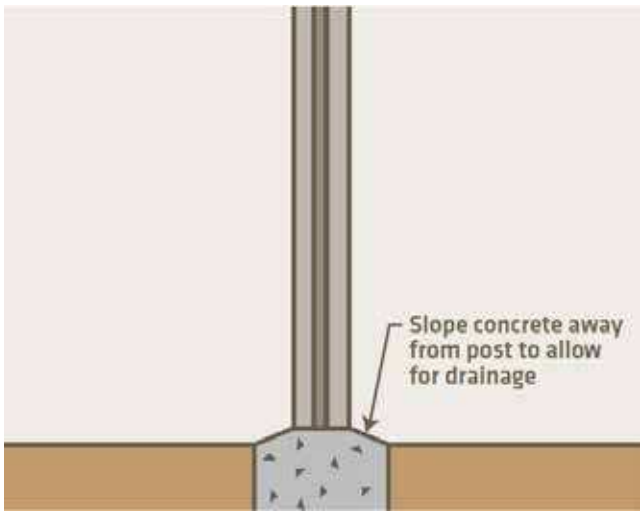
MOST IMPORTANTLY…ASK THE DRIVER TO POUR THE CONCRETE SLOWLY! If you try to rush things by pouring it fast you will only cause more work later by having ill aligned posts. Be sure to hose off the excess concrete left behind on the support shoes etc after the pour and before it sets.

Rod or vibrate the concrete as required.

After the posts have set and the support shoes have been removed you should mix up a mortar mix and with a trowel slope the concrete away from the post.

A zinc rich industrial preventative coating must be applied to the base of the footing and 100mm min up the post.

The recommended coating is DULUX DUREBILD STE applied thickly ie 100 microns minimum.



Step 6 Final wall assembly

Allow concrete to cure completely before assembly.

On tall walls we recommend installing the panels via a scissor lift. For lower walls, the panels can be installed using a low portable scaffolding.

Maneuver the scissor lift close to the wall (side on if possible) and load the platform with all the panels required plus joining strips and wall capping.

Step 7 Fitting the capping channel to the panel

The capping channel will be slightly shorter than the panel to allow it to be guided down the post easily so it does not collide with the heads of the tek screws.

Start at one end of the panel, approx 5mm in and carefully ease the capping channel over the panel. Once fitted, tap the capping channel to make sure it is seated correctly.

Step 8 Inserting the wall panels

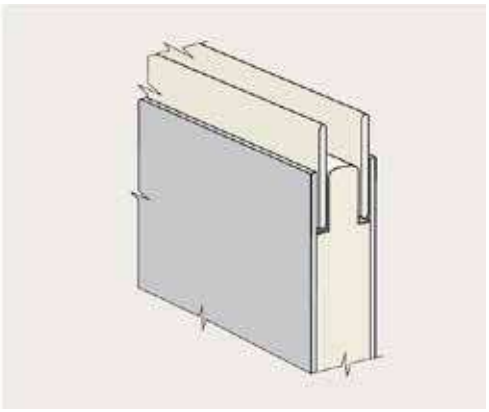
NOTE: Make sure the base bracket is free of debris.

With one person at either end, lift the panel vertically and insert into the top recesses of the post. The panel must be guided down at an even rate or it will jam. This can be done by inserting the panel into the rebate by approx 200mm and have one person apply a twisting action onto the panel to jam it up in the rebate. This person should then move into the middle of the panel to support it (with a twisting action still applied) while the other scissor lift operator lowers the platform.

There should be 2 people below that then catch the first panel and guide it down onto the base brackets. These two people should then fit the panel joining strips as outlined in the next step.

Step 9 Joining strips

Insert the 2 plastic aligning biscuits into the bottom panel making sure they are seated all the way down.



Step 10 Inserting consecutive panels

Guide the second panel down on top of the bottom panel and press down to seat the aligning biscuits. Care should be taken to make sure everything is in place before attempting to press the panels together.

If they do not align correctly with light downward pressure remove the top panel and inspect the Polystyrene joint. It may be necessary to 'tap' the panel down using a heavy block of wood in a pivoted slapping action to bring it together completely (see picture below).

Step 11 Linking the posts
(for wall heights 3900mm and above)

The purpose of this step is to link one post to the next. This will assist the top alignment, wall strength and to maintain the correct post centre's under load.

After the top panel is inserted and before any wall capping is fitted, place the steel 'strap' on top of the polystyrene (see below).

Next fit the wall capping (outlined further in the next step) + bracket and Tek screw in place. Make sure to 'pull or push' the post if required to achieve the correct alignment before Tek screwing off.

As seen in the pictures below the bracket can be fitted either on top or below the capping.

Step 12 Fitting the top wall capping

There are two types of panel capping options - you will have either have External Panel Capping (standard) or a Capping Channel to give a flush finish look.

Both procedures are outlined below.

External Panel Capping (standard)

Apply 'liquid nails fast grab' or similar every 250mm.

NOTE: **The adhesive must be water based or it will melt into the polystyrene.**

Ease the wall capping over the panel starting at one end and press down (see picture below). Once set, the liquid nails will stop any unwanted movement.

Capping Channel

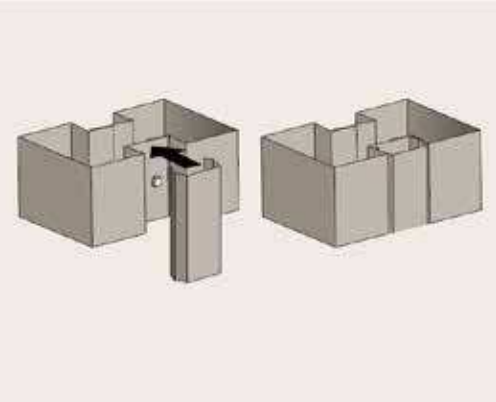
Apply 'liquid nails fast grab' or similar every 250 mm along both internal radiuses. This adhesive will
contact with the fibre cement sheets once the channel is installed. Start at one end approx 5mm in and carefully guide the capping channel over the panel. Once fitted, tap the capping channel to make sure it is seated correctly.

Step 13 End post Infills

To fill the recess in a post where you are not inserting a panel, snap in an end post infill.

NOTE: **These are designed to be inserted with a small amount of force.**

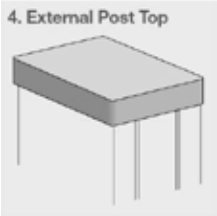
Where your wall is stepped, this insert can be cut to size to suit the step and inserted in the exposed recess.



Step 14 Fitting the Top Post Tops

There are two types of Post Top options – you will have either have External Post Top (standard) or, to give a flush finish look you will use a Flush Post Top.

Both procedures are outlined below.



External Post Top

Apply liquid nails to all four internal walls of the post top. Sleeve the post top over the post and seat down by hand then level the post top.

NOTE: **It may be necessary in some cases to place a small packer in-between the top and the post to hold the top level until the liquid nails dries.**

Flush Post Top

Lay your flush post top on top of the post making sure there are no obstructions that may cause it to sit unevenly. If any obstructions are present, such as one flange of a post-half being slightly higher, make the necessary adjustments to allow the flush post top to sit correctly.

Seal around the post top with 'Sika flex pro - grey' or a similar paintable polyurethane sealant. Scrape back any excess sealant and finish by smoothing out your sealant application with a rag coated in mineral turpentine.

NOTE: **In a corner post situation you will need to manually notch your post to where the panel exits the post to suit the LH or RH corner you are turning.**

Additional Cutting the panels & posts

Cutting the Panels

NOTE: Wear the appropriate safety equipment for performing the task. Eye wear, hearing protection & a dust mask.

The panels can be cut using a circular saw with a timber blade. Remember to always support or catch the piece you're cutting off as it may break towards the end of your cut if you don't.

NOTE: If your circular saw doesn't have a deep enough blade to cut through the panel in one sweep then you must cut through one face and carefully turn the panel over and cut through the other.

The panel should go 25mm into the rebate of each post.
Example: If the distance between the internal face of posts is 2000mm then the panel should be cut at 2050mm.

Cutting the Posts

NOTE: Wear the appropriate safety equipment for performing the task such as, eye wear, hearing protection & a dust mask.

Mark the post and use a 5 inch/125mm angle grinder with a 1mm cutting blade to cut through the post. A smaller grinder (4 inch/100mm) can be used but you will find it difficult to get the blade depth required when cutting through the rebate in the post that accepts the panel.

NOTE: All cut edges that will remain exposed to the elements will require treating with a zinc rich paint such as 'cold gal' or similar.

Additional Post extensions: for walls where extra post length is required

Where a post extension is required the 2 halves must be flexed open and sleeved over the exterior of the post base by 200mm minimum, then fastened with the supplied tek screws at a minimum 100mm spacings along the flange edges (see picture below).

We recommend digging your hole first, then measuring the depth of the hole and sleeving the post extension onto the base of the post to suit the hole depth. Before panel insertion the post must be core filled with concrete to cover the post extension internally.

NOTE: **The pictures below are only showing one half of the post extension being fitted, the post should be turned over and the other half fitted also. The 2 halves of the post extension will not quite meet in the middle of the post, this is to allow a small amount of concrete to enter the centre of the post before actual core filling.**

Stepping Your Wall

For stepping or raking your wall please see the separate guide produced by Modular Wall Systems™ - 'Installation Guide for Sloping Sites' which is downloadable from our web site.

With a reputation for quality and innovation, Modular Wall Systems™ have truly provided a revolutionary way to build stylish yet cost-effective walls and boundary fencing.

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Modular Wall systems™