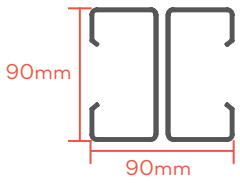
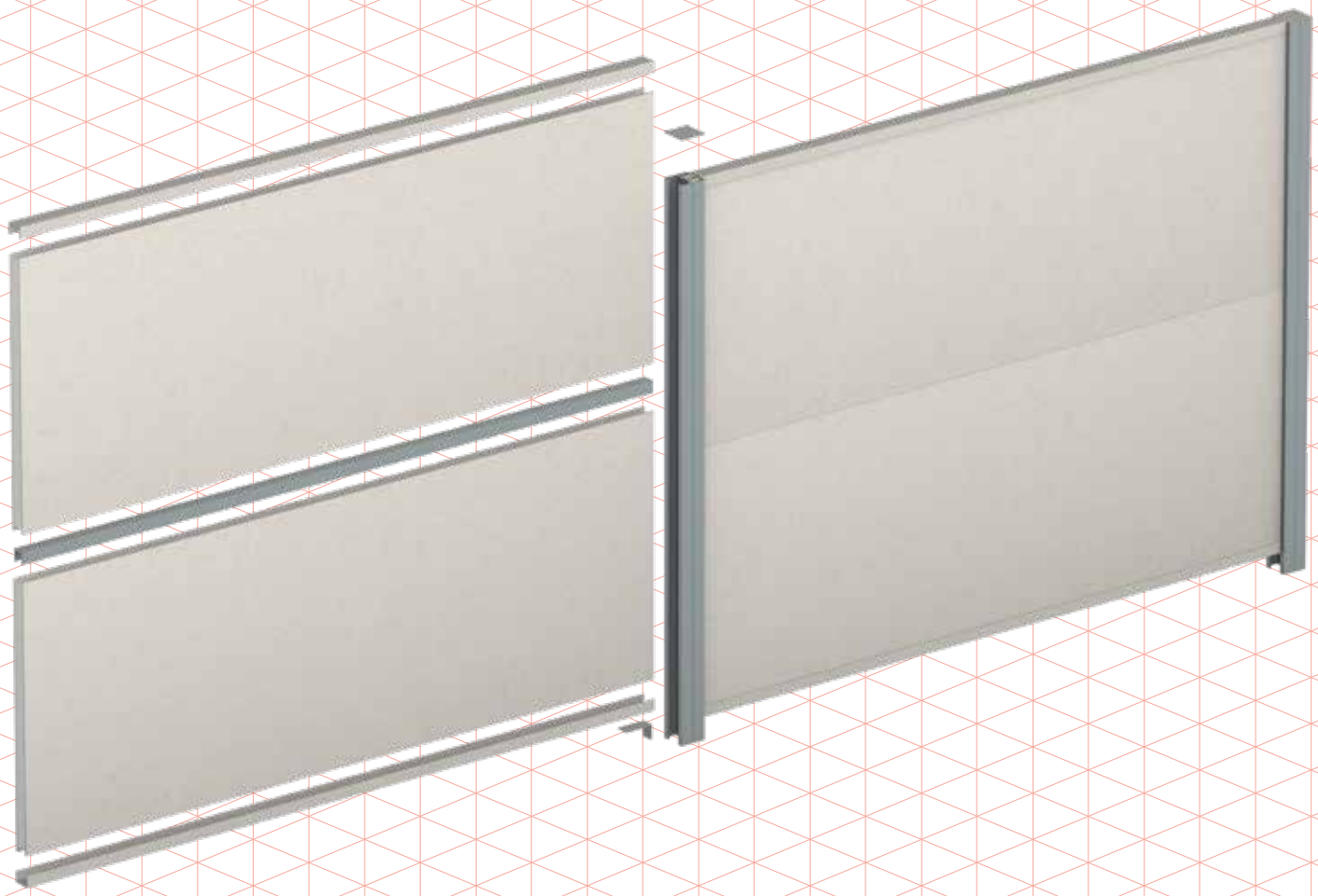
INSTALLATION GUIDE

SLIMWALL™



CLASSIC POST



810280SWC

MODULARWALLS®

THANK YOU FOR CHOOSING ONE OF OUR QUALITY PRODUCTS. WE ARE THE INDUSTRY LEADERS IN COST EFFECTIVE, ACOUSTIC AND BOUNDARY WALLS, AND THIS PRODUCT WILL STAND THE TEST OF TIME AND WITHSTAND THE ELEMENTS IF INSTALLED IN ACCORDANCE WITH THESE GUIDELINES.

SLIMWALL™

SlimWall is Australia's fastest growing fencing solution for homeowners in search of an aesthetically pleasing, cost-effective alternative to traditional metal or timber options. The AcoustiMax50 panel as used by the SlimWall punches well above its weight when it comes to acoustic performance, due to its fibre cement and EPS composite construction. This makes the SlimWall a proven noise barrier that is fully capable of preserving peace, quiet and privacy in the backyards of Australia's increasingly dense urbans areas.

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.

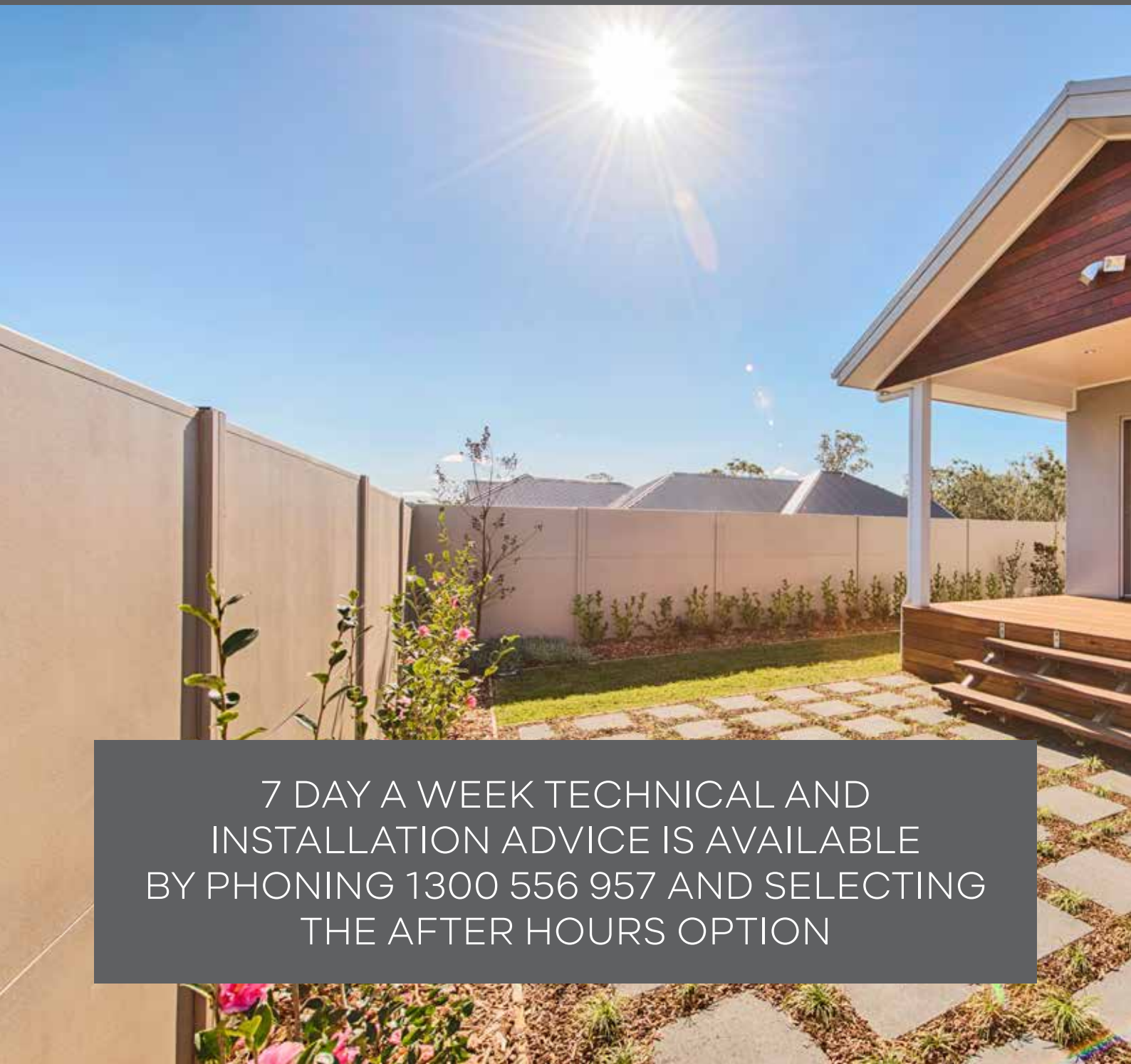
For correct finishing of your modular wall, you must paint or seal the entire wall system within 30 days of installation.

CONTENTS

BEFORE YOU START

The recommendations detailed by ModularWalls in this guide are formulated along the lines of good building practice. They form a "common-sense" approach and are not intended to be an exhaustive statement of all the relevant data. Further, as the success of projects depend on factors outside the control of ModularWalls (e.g. quality of workmanship, particular design, detail requirements, etc.), we accept no responsibility for, or in connection with, the quality of the projects or their suitability when completed.

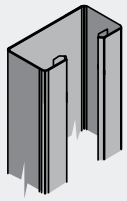
If you are in any doubt please seek independent advice or contact ModularWalls. We are always happy and available to answer questions regarding installation procedures, no matter how small or insignificant you think they may be. 7 day technical and installation advice is available on 1300 556 957.



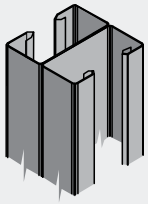
7 DAY A WEEK TECHNICAL AND INSTALLATION ADVICE IS AVAILABLE BY PHONING 1300 556 957 AND SELECTING THE AFTER HOURS OPTION

COMPONENT LIST

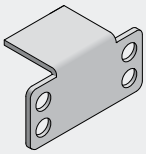
1. Post Half



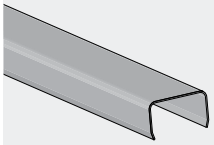
2. Complete Post



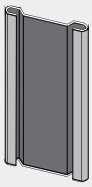
3. Support Bracket



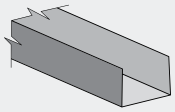
4. Joining Profile



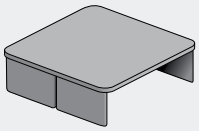
5. Post Infill



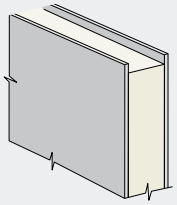
6. Capping Channel



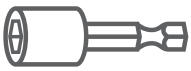
7. Double Post Top



8. Wall Panel

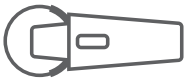


TOOLS NEEDED



5/16" Hex Bit

Drill/Driver



Angle Grinder

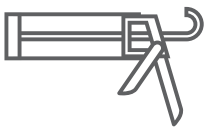
Square

Spirit Level

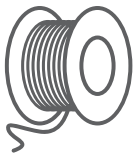
Shovel

Line Marking Paint

Circular Saw

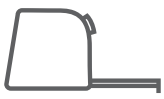


Caulking Gun



String Line

Post Hole Digger



Tape Measure

STEP 1: HOLES

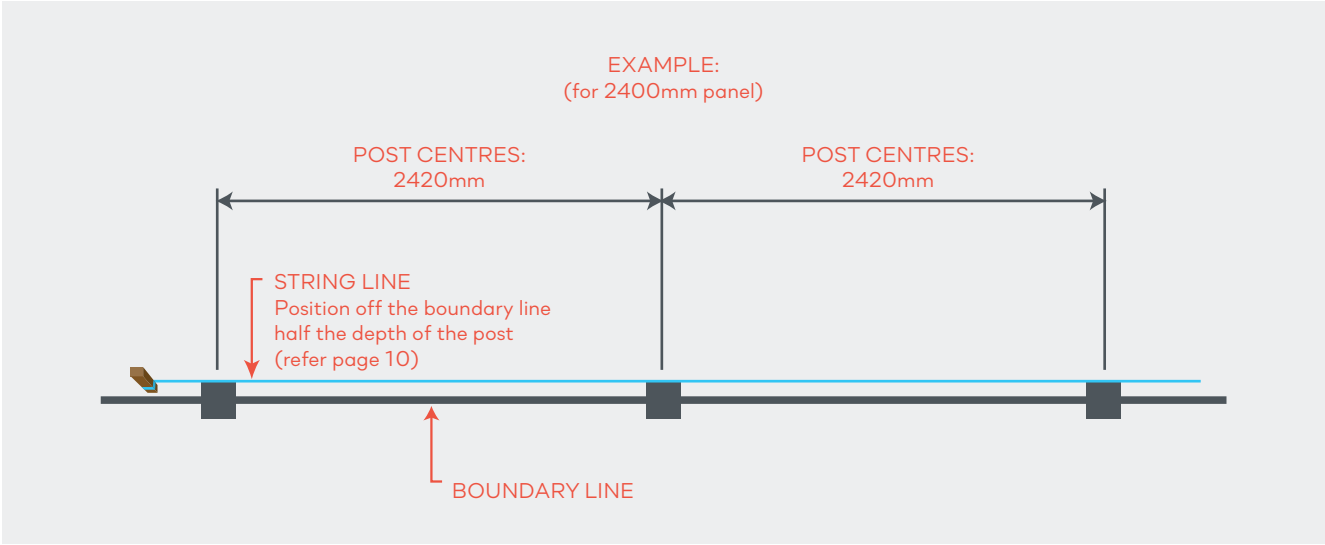
DETERMINE BOUNDARY LINE, POSTHOLE CENTRES & DEPTHS

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. Where installation is to take place on uneven or sloped ground, you should also consider the instructions listed under "Additional Information" towards the end of this guide.

Accurately determine the boundary line to where the fence will be installed and mark this with a string line as per the diagram below. In cases where the boundary line is unknown or unclear, a surveyor will need to be engaged.

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



Standard post centre-to-centre measurement when using a 2400mm panel will be 2420mm minimum (Plus 5mm extra is an allowable tolerance i.e 2425mm). This will give you the required clearance when installing the wall panels.

NOTE: Wall panels may be trimmed with a circular saw if necessary to fit within an exact measurement (panel cutting procedure is detailed on page 24 of this guide). Postholes can be dug by hand or with a mechanical auger. Use the Footing Depth Table to determine your posthole depth and diameter.

NOTE: Recommended footing depths listed here are for terrain categories 2.5 and 3, within wind regions A and B. 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 ModularWalls directly for this information.

STEP 1: HOLES

FOOTING DEPTHS

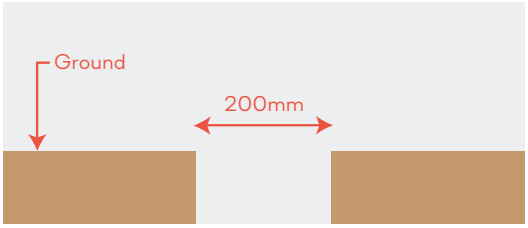
Wall Height	Hole depth into firm earth or clay (100kPa)		Hole depth into sand, soft clay or loose earth (60kPa)		Hole diameter
	Wind regions A and B Terrain Categories 2.5 and 3	Approx concrete required (20kg bags)	Wind regions A and B Terrain Categories 2.5 and 3	Approx concrete required (20kg bags)	Wind regions A and B Terrain Categories 2.5 and 3
900	450mm	1.5 per hole	550mm	1.5 per hole	200mm
1200	550mm	2 per hole	650mm	2 per hole	200mm
1500	600mm	2 per hole	700mm	2.5 per hole	200mm
1800	650mm	2 per hole	800mm	3 per hole	200mm
2100	700mm	2.5 per hole	900mm	3 per hole	200mm

WIND REGION A
WIND REGION B
WIND REGION C
WIND REGION D

Proven wind load performance means your wall will withstand all nature can throw at it.
Rated and suitable for regions A & B, terrain categories 2.5 & 3.
Details above available on request from ModularWalls™.

NOTE: Footing sizes are provided as a guide only. Final design parameters should be subject to the review of geotechnical conditions.

All footing diameters are 200mm.



NOTE: For the two footings adjacent to a non returning 'free end' or gate, embedment depth is to be increased by an additional 150mm.

Use minimum 20 MPa concrete mix.

STEP 2: POSTS

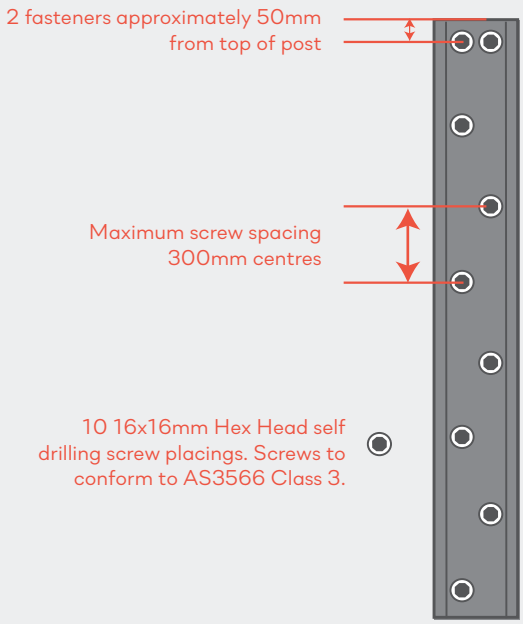
SCREW POSTS TOGETHER

Place the two halves of the post on a FLAT surface back to back, align the tops exactly and clamp if necessary.

Screw the posts together starting with a double screw at the top approx. 50mm down and then in an off-set pattern at a maximum 300mm centres from then on.

NOTE: Screw both ends together first before the centre section. If retaining with posts please refer to specific reinforcement recommendations as outlined in the Retaining section later in this guide.

FASTENING POSTS TOGETHER

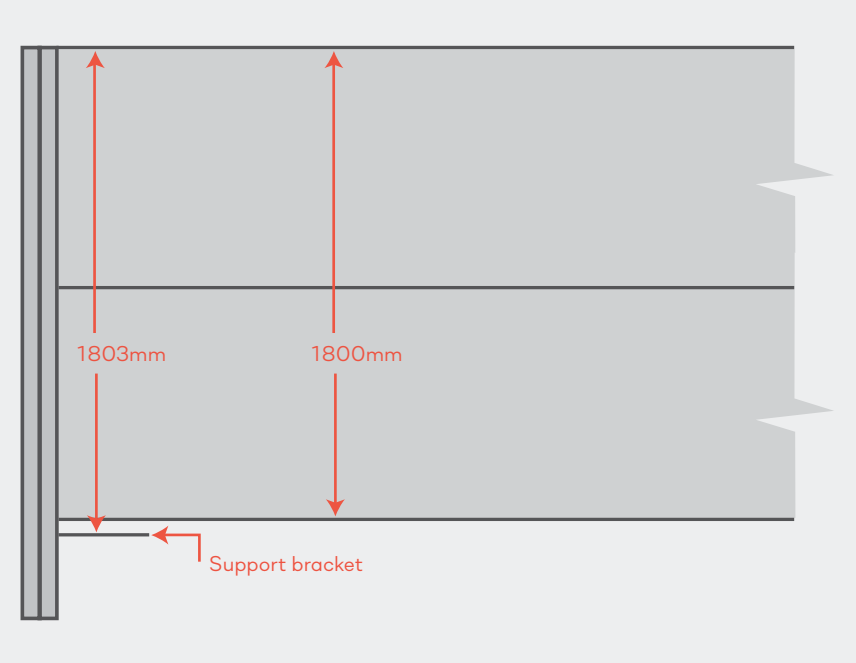


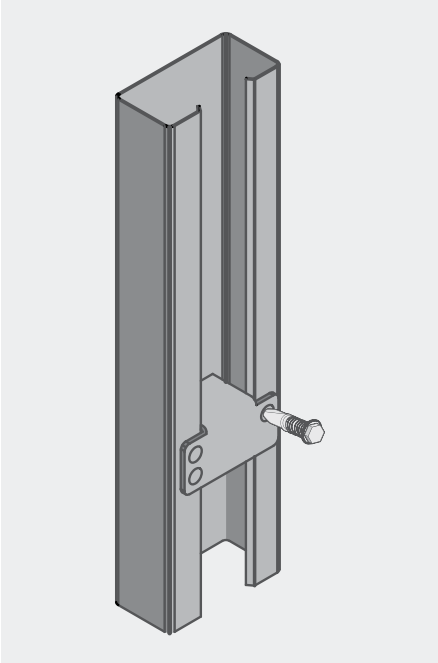
STEP 2: POSTS

FIXING THE BASE BRACKETS TO THE POST

Attach the panel support bracket into the post with the hex head screws supplied. The measurement from the top of the post should be your final wall height plus 3mm. This 3mm will allow for panel joins plus the thickness of the capping channels.

Example: an 1800mm high wall will have the brackets set at 1803mm from the top of the post.





USING EXPRESSED JOINTS?

If you are using the Expressed Joint feature, please refer to **page 19** for specific bracket instructions.

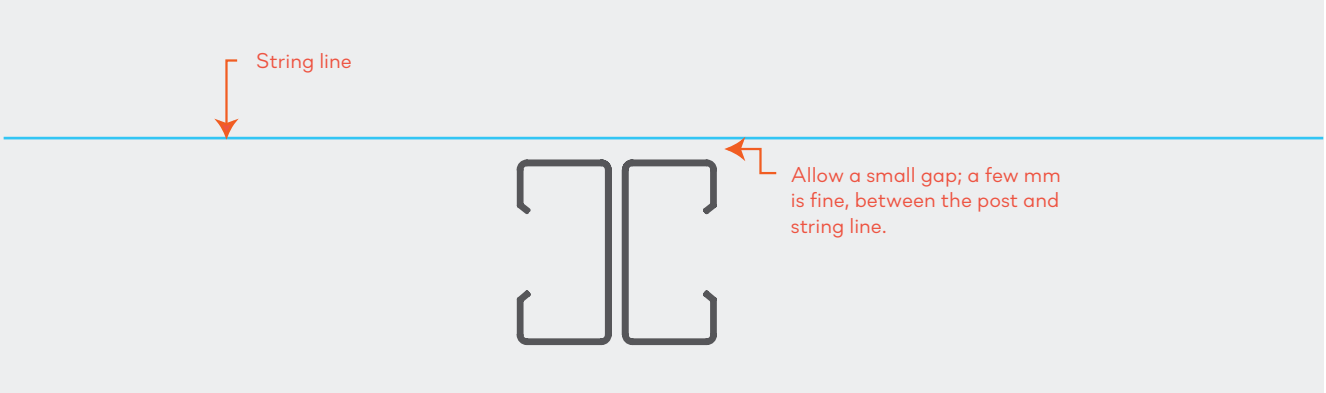
INSTALLING ON SLOPING GROUND?

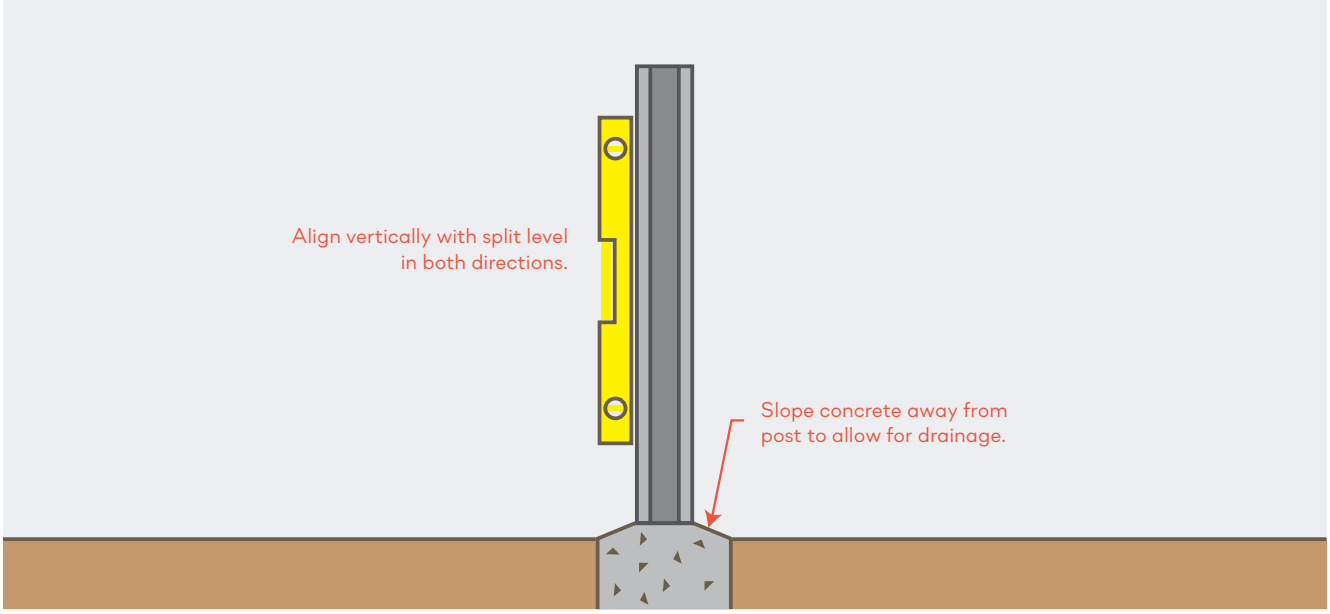
If you are stepping or raking your wall on sloping ground, please refer to **page 20** for specific brackket instructions.

STEP 2: POSTS

POST FITMENT & ALIGNMENT

Working to a string line on the face of the post, insert the first post into the hole and gradually pour in the concrete (mix as per the manufacturers recommendations). Continually check the post alignment with a spirit level as the concrete is being poured.





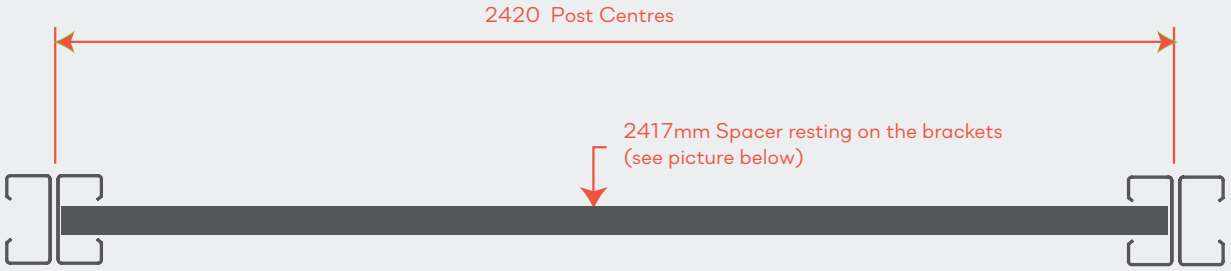
STEP 2: POSTS

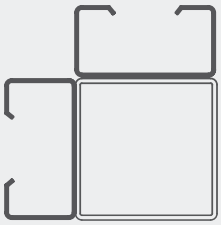
SPACING CONSECUTIVE POSTS

The centre to centre measurement of 2420mm is to allow 10mm per side clearance for a full-length panel. We recommend that you cut a "spacer" bar at around 2417mm long and push it hard against the back of the posts as pictured below.

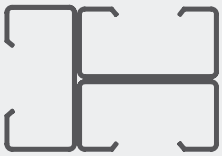
A piece of 2"x4" pine or similar will suffice.

THIS EXAMPLE IS BASED IN A 2400MM PANEL BEING INSTALLED

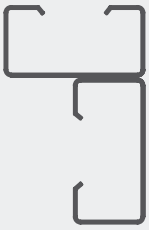




Corner using 90x90x2.5 Galvanised SHS

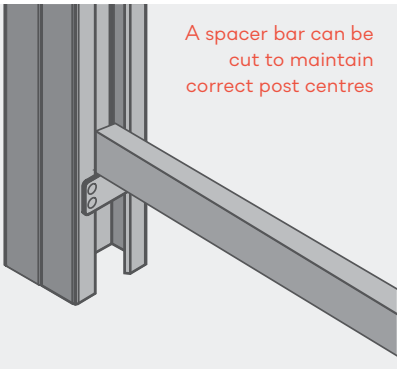


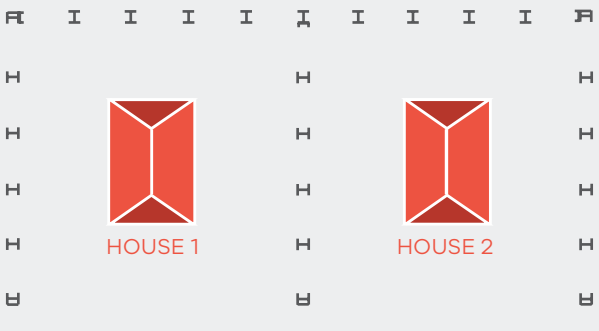
3 way post configurations



Corner post by fixing the post halves together

45 degree angle trim



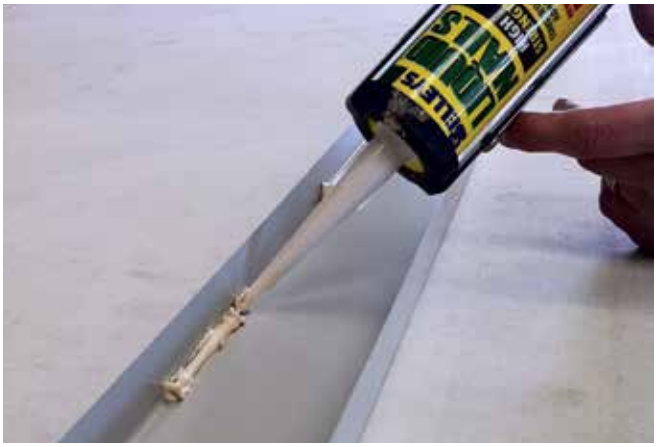


NOTE: Allow concrete to cure completely before further assembly. See manufacturers data for concrete curing times.

STEP 3: PANELS

FITTING THE CAPPING CHANNEL TO THE BOTTOM 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. Apply 'FLEXIT' or similar along the 90 degree radiuses (as pictured below). Ease the wall capping over the panel starting at one end and press down. 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 3: PANELS

INSERTING THE WALL PANELS

Make sure the base bracket is free of debris. Then with one person at either end, lift the panel vertically and insert into the top rebates of the post. You may need a small platform to stand on to achieve the required height.

The first panel will have the capping channel installed so the initial part will be tight to insert as the post is trying to 'stretch' to accommodate the panel plus the capping channel, this is normal.

NOTE: The panel must be guided down at an even and level rate or it will jam.

NOTE: Always take special care if working from heights or lifting objects above your head.

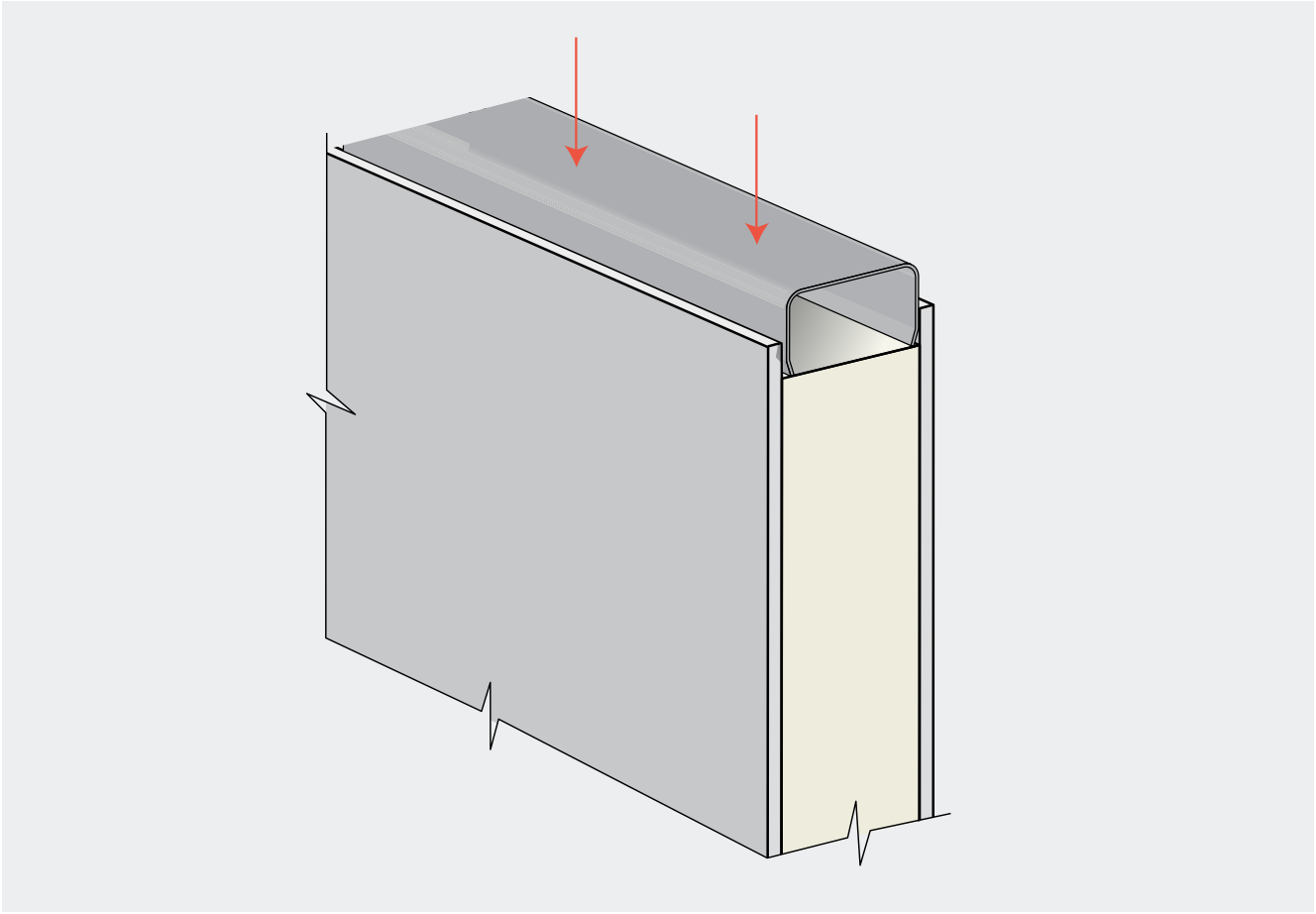
INSTALLING ON SLOPING GROUND?

If you are stepping or raking your wall on sloping ground, please refer to **page 20** for specific brackket instructions.

STEP 3: PANELS

JOINING PROFILE

Insert the joining profile into the bottom panel making sure it is seated all the way down against the polystyrene core.



USING EXPRESSED JOINTS?

If you are using the Expressed Joint feature, please refer to **page 19** for specific bracket instructions.

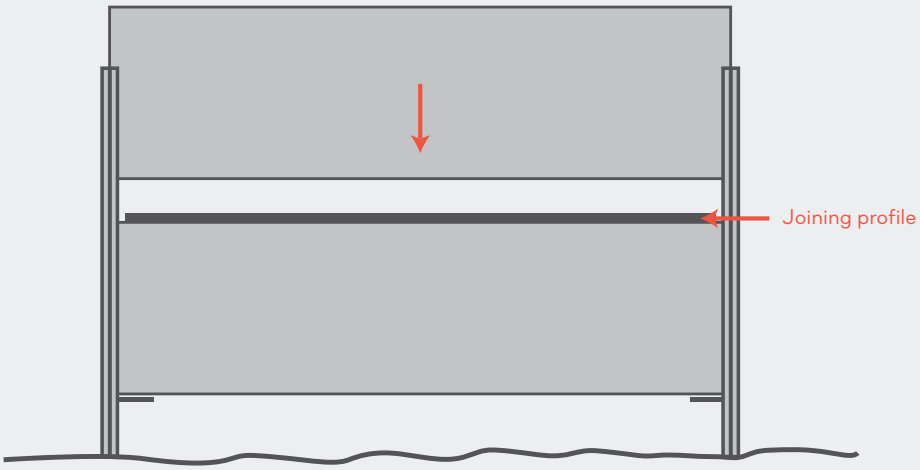
STEP 3: PANELS

INSERTING CONSECUTIVE PANELS

Guide the second panel down on top of the base panel and press down to align the panels together with the joining profile.

NOTE: If they do not align correctly with light downward pressure it may be necessary to 'tap' the top panel downusing a heavy block of wood in a 'pivoted slapping action' to bring it together completely.

Once the top panel has been installed you can now install the top capping channel in the same way as explained on page 12, including liquid nails to glue the channel to the panel.



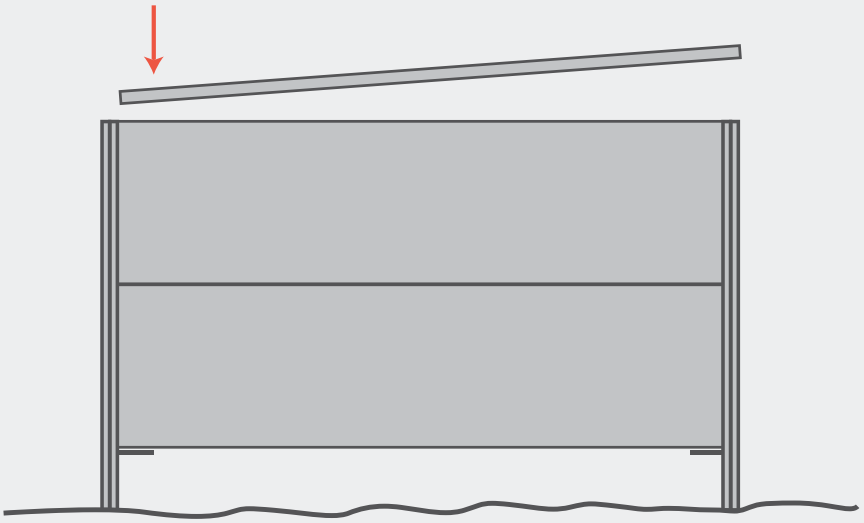
STEP 4: FINISHING

TOP CAPPING CHANNEL

Once the top panel has been installed you can now install the top capping channel.

With a correctly spaced post, the capping channel will not need trimming to length. It will fit inside the post at either end by approximately 5mm - 7mm from the face of the post. Should you need to cut a capping channel to length, measure the inside dimension from post face to post face, and add 12mm.

NOTE: Apply a bead of liquid nails (FLEXIT or similar) to the inside radiuses of the channel before fitment.

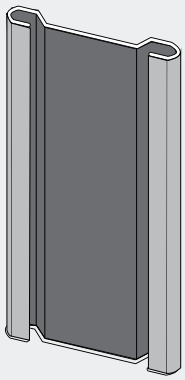


STEP 4: FINISHING

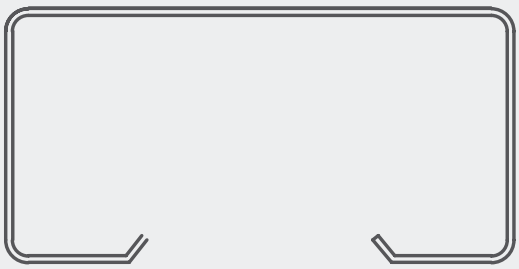
POST INFILLS

Use a post infill to hide any exposed recesses in the posts; these occur at the end posts and where there are steps in your SlimWall. These are designed to be inserted vertically with a small amount of force.

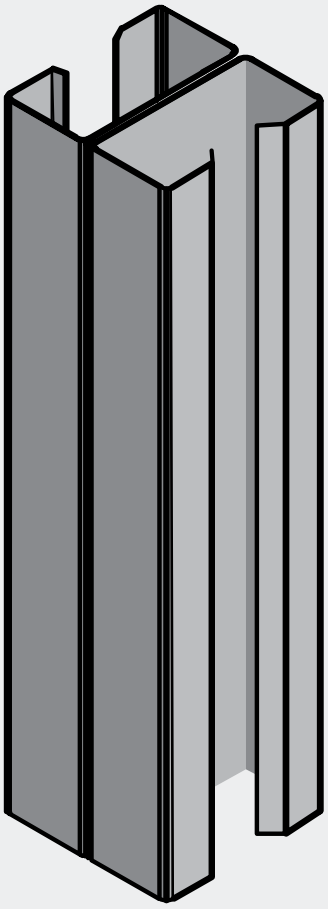
NOTE: Where your wall is stepped, this insert can be cut to size to suit the step and inserted in the exposed recess.



Post Infill



Post Infill inside post



End Post with Post Infill

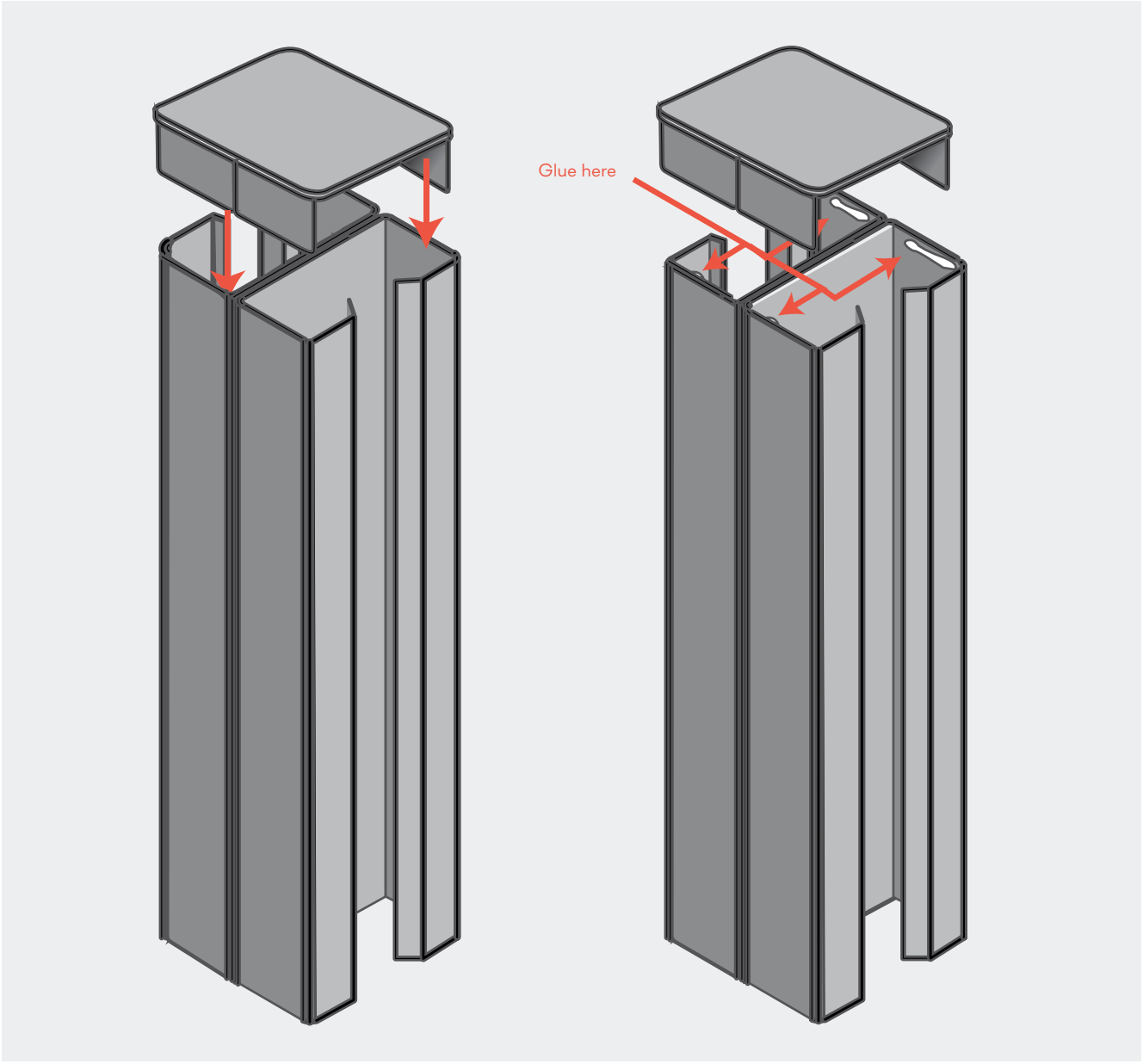
STEP 4: FINISHING

FITTING THE POST TOPS

Trial fit the post top to assure correct alignment before applying any adhesive. Don't insert all the way as you risk damage upon removal.

Providing correct fitment is achieved apply a small amount of liquid nails (or similar) to the inside surfaces of the post that the post top legs will contact.

Re-fit the post tops. Most of the liquid nails will be wiped away but the remainder will provide enough grab to stabilise the top and prevent unwanted removal.

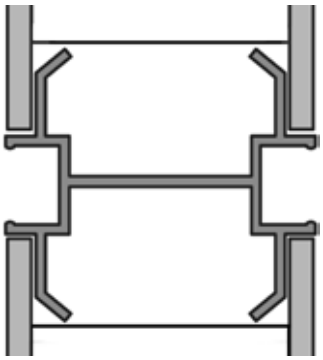


ADDITIONAL

EXPRESSED JOINTS BETWEEN PANELS

An Expressed Joint is used to create an architectural feature by providing a 10mm rebate between horizontal panels.

See example below of an 1800mm high SlimWall with Expressed Joints. This 1800mm high SlimWall is made up of 3 x 600mm panels.



1. SETTING YOUR BRACKET HEIGHT

For every Expressed Panel Joint you need to add 15mm on top of your normal bracket height as outlined in Step 3.

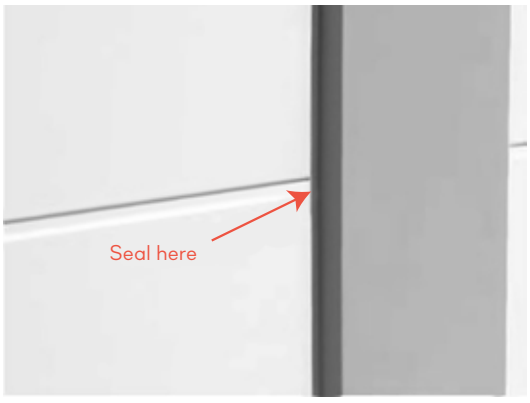
EXAMPLE: You are installing an 1800mm high wall as per the guide given in step 3. This measurement from the top of post to the bracket is 1805mm. If you are installing an expressed joint this will increase by 15mm (per joint) to 1820mm. If you you had two expressed joints on an 1800mm wall as per the picture below you will need to add 30mm.

2. INSTALLING THE EXPRESSED JOINT JOINING PROFILE

Install the Expressed Joining Profile in between the horizontal panel joins by simply pushing it into place between the external skins of the lower panel. Guide the top panel down over the profile in a similar manner as outlined in Step 7.

3. SEALING

To prevent water ingress, seal between the inside of the rebate and the post junction with an exterior grade 'paintable' sealant upon completion.



ADDITIONAL

STEPPING OR RAKING YOUR WALL

This will generally be the most complex part of any installation. Please take the time to draw it out on a piece of paper before setting any posts in the ground. Having to remove posts that are concreted in can be very disheartening! And remember we are always here to help you get it right so if you are unsure please ask.

There are three methods for dealing with sloping ground. The examples below are based around an 1800mm high wall.

METHOD 1

Stepping the bottom of your panels and maintaining a minimum 1800mm wall height at one end and a taller wall height at the low end of the slope.

NOTE: This will leave a void/gap under one end of your wall panels.

METHOD 2

Raking/cutting the base panel and maintaining a maximum 1800mm wall height.

NOTE: This will leave no void/gap under your wall panels but will reduce your wall height at one end.

METHOD 3

Raking/cutting the base and maintaining a minimum 1800mm wall height at one end and a taller wall height at the low end of the slope.

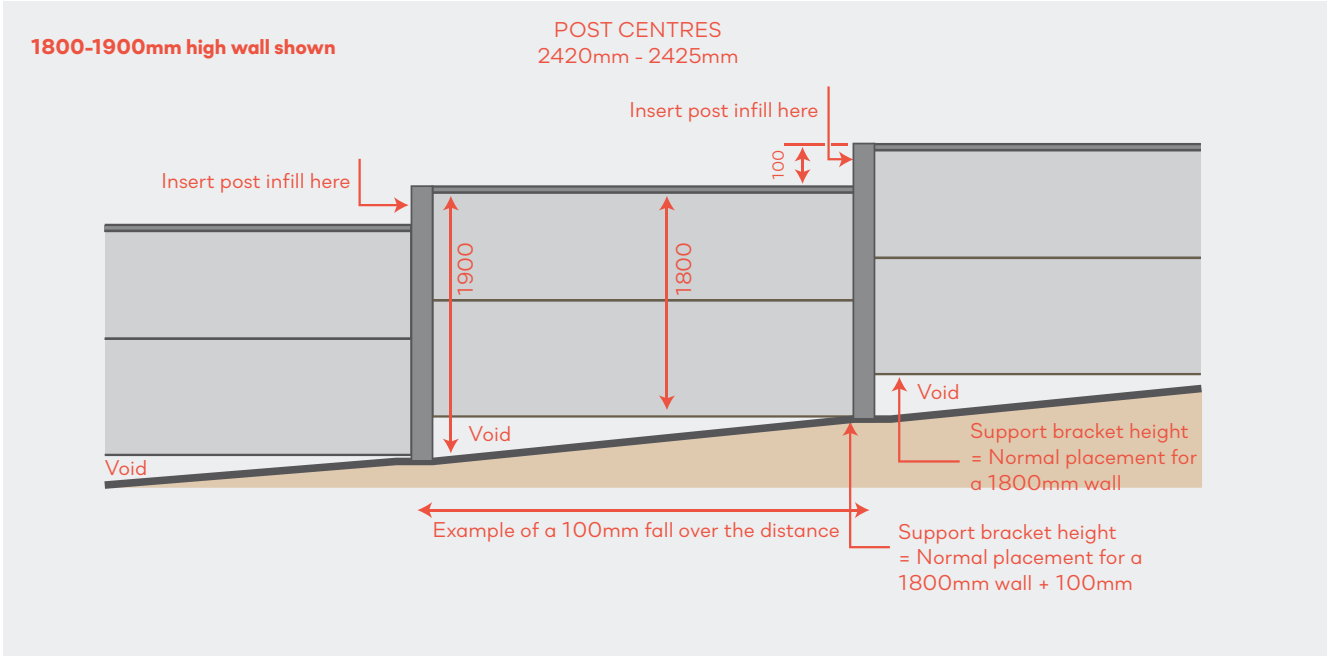
NOTE: This will leave no void/gap under your wall panels but will increase your wall height at the lower end of the slope above 1800mm. A longer base panel is required for this method and as such should be a consideration at the time of ordering.

ADDITIONAL

STEPPING OR RAKING YOUR WALL

STEPPING METHOD 1 - MAINTAINING A MINIMUM 1800MM WALL HEIGHT

As pictured below it should be noted that you will be left with a void at the low end of the slope but you will maintain a minimum 1800mm wall height. In most cases on gradual slopes this void won't be large and can either be left as is or planted in front of.



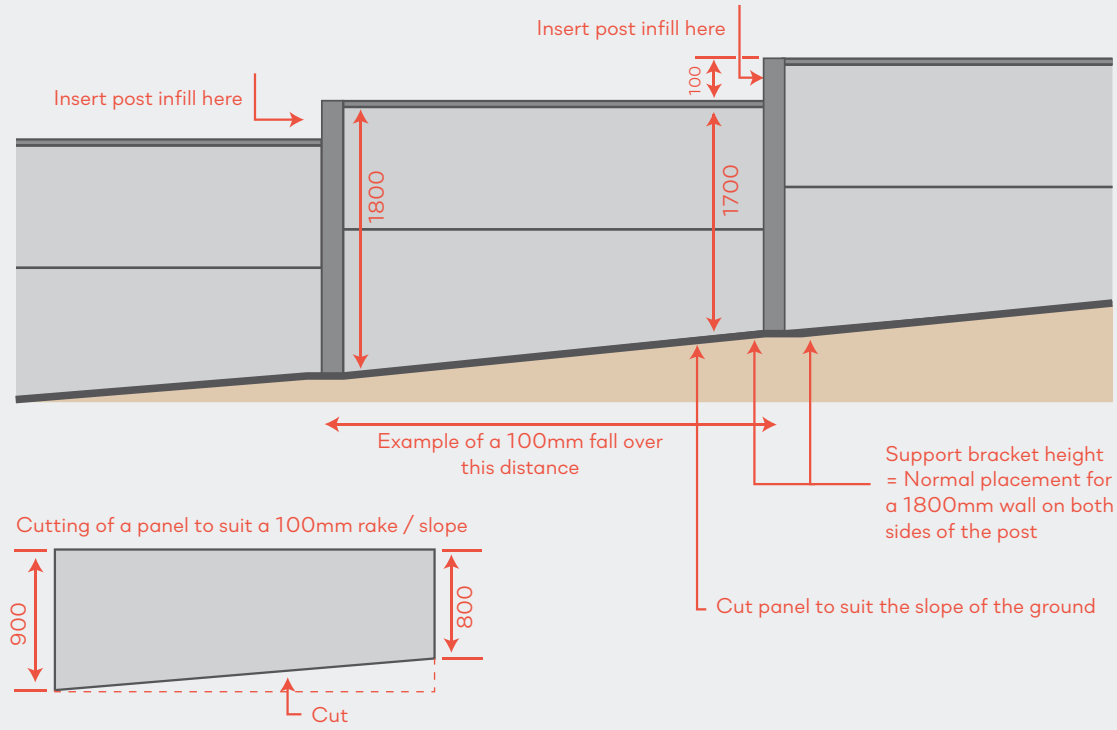
ADDITIONAL

STEPPING OR RAKING YOUR WALL

STEPPING METHOD 2 – RAKE/CUT YOUR BOTTOM PANEL TO THE SLOPE USING 1800MM WORTH OF WALL PANELS

You will maintain a maximum height of 1800mm wall height – As pictured below it should be noted that your wall height at the high side of the slope will be reduced by the amount of the rake – in this situation 100mm.

1700-1800mm High wall shown



Cutting of a panel to suit a 100mm rake / slope

N.B On a larger rake / slope a longer basel channel may be required

ADDITIONAL

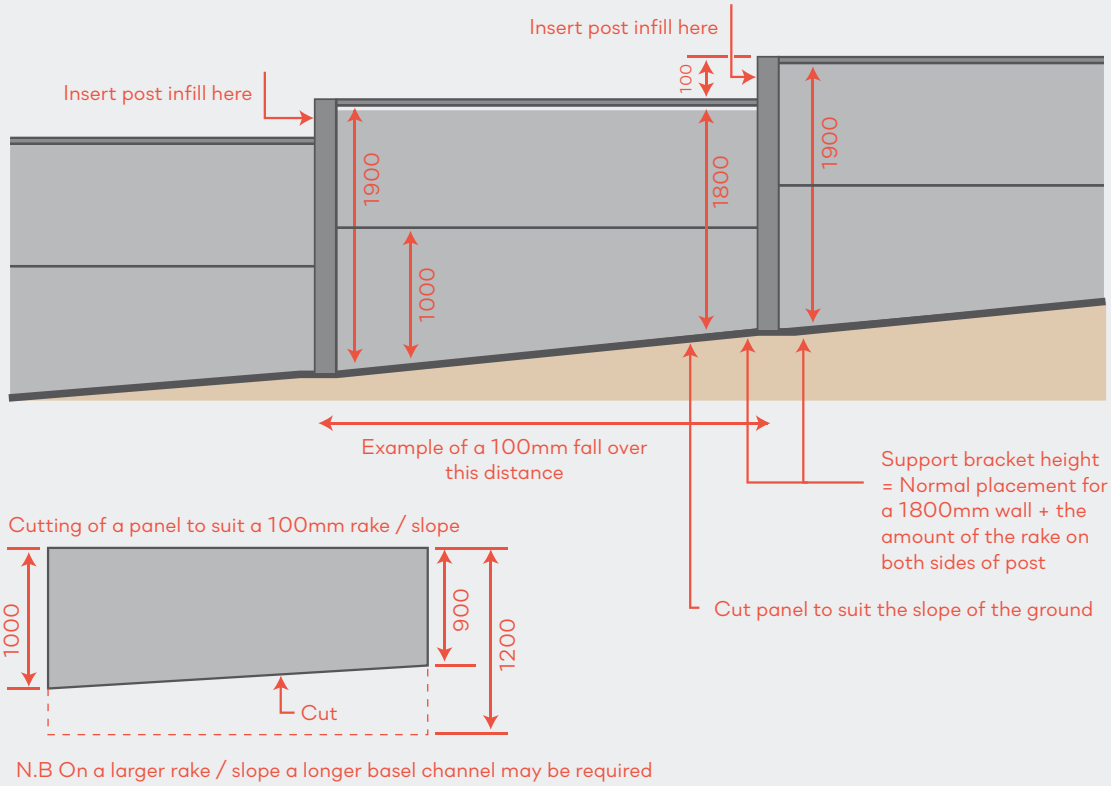
STEPPING OR RAKING YOUR WALL

STEPPING METHOD 3 – RAKE/CUT YOUR BOTTOM PANEL TO THE SLOPE USING 2100MM WORTH OF WALL PANELS TO MAINTAIN A MINIMUM 1800MM WALL HEIGHT.

You will maintain a maximum height of 1800mm wall height – As pictured below it should be noted that your wall height at the high side of the slope will be increased by the amount of the rake – in this situation 100mm.

Depending on the additional height gained by doing this you may require deeper footings and longer posts. Please contact us for specific advice before installation.

1800-1900mm High wall shown



Cutting of a panel to suit a 100mm rake / slope

N.B On a larger rake / slope a longer basel channel may be required

ADDITIONAL

CUTTING POSTS, TRIMS & PANELS

CUTTING POSTS AND TRIMS

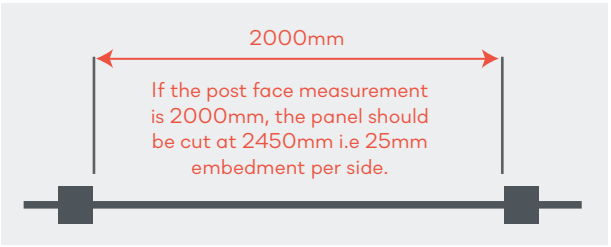
If you need to cut a post for any reason, please take note of the following:

- Be sure to wear appropriate safety wear, such as safety goggles and ear muffs.
- Mark accurate measurements around all sides.
- Use an angle grinder with a 1mm cutting blade.
- Best practice is to cut over grass or protect the floor surface, as the swarf (shavings) from the cut may create rust marks if not cleaned up well.
- Treat the cut end with a cold galvanising spray.
- Where possible, place the cut end of the post into the foundation to ensure a level finish with post capping.

CUTTING PANELS

If you are raking the top or bottom of your wall, or have had to position your posts shorter than the standard centres, you will need to cut your panels down.

To cut panels to length, take the face-to-face measurement of your posts and add 25mm panel embedment per side i.e. the panel should go minimum 25mm into the post rebate.



- Be sure to wear appropriate safety wear, such as safety goggles and ear muffs.
- Place the panel so it is level and well supported.
- Mark both sides of the panel with a pencil line.
- Unless you have a circular saw with a minimum 80mm depth cut, you will need to cut one side and then flip the panel and cut the other - a standard timber blade will suffice
- If you are cutting one side first, set the depth of the blade to half of the panel thickness; this way, the core will still be strong enough support the end of the panel and allow you to flip the panel without risk of breakage. Have a second person support the last cut, as pictured.

ADDITIONAL

SLIMWALL™ RETAINING PANEL

SlimWall retaining can be simplified into four easy steps:

STEP 1 - Set out your SlimWall as you would for a normal installation.

STEP 2 - Any post that will be used for retaining needs to have reinforcing sleeves incorporated when the posts are being screwed together. These are supplied as a part of your material kit and detailed further in this guide.

STEP 3 - Install the SlimWall Retaining Panel for the retaining sections of your SlimWall, using the supplied stainless steel base channel.

STEP 4 - Seal the retaining panels and backfill as specified.

SLIMWALL RETAINING PANEL

At times, a difference in ground levels can occur on opposite sides of a SlimWall installation. The SlimWall Retaining Panel modular has been designed for use in these circumstances, providing a seamless appearence whilst reliably holding these sil loads at bay. The SlimWall Retaining Panel provides a solution to backyard soil retention up to 500mm (2.5 kPa) that is robust and elegant.

APPLICATION

SlimWall integrated with SlimWall Retaining Panel is ideally suited for:

- Replacement of an old timber or colorbond fence that is leaning away from the retained embakment
- New housing developments or subdivisions with uneven ground levels between blocks
- Stand-alone planter boxes, raised garden beds or terraced lawns

SPECIFICATION

The SlimWall Retaining Panel consists of:

- Fibre cement outer skins
- High density EPS core
- internal reinforcing ribs
- Size: 2400mm (L) x 600mm (H) x 50mm (W)

ADDITIONAL

SLIMWALL™ RETAINING PANEL

RETAINING INSTALLATION

STRUCTURAL STRENGHTENING OF STANDARD SLIMWALL POSTS

Step 2 of this installation guide (page 7) instructs on the correct methodology of screwing the SlimWall post halves together.

During this step, any post that will be performing a retaining function will need the addition of structural strengthening sleeves installed as per drawing number SWR1 and SWR2 which can be found later in this guide.

Snapshot from page 8

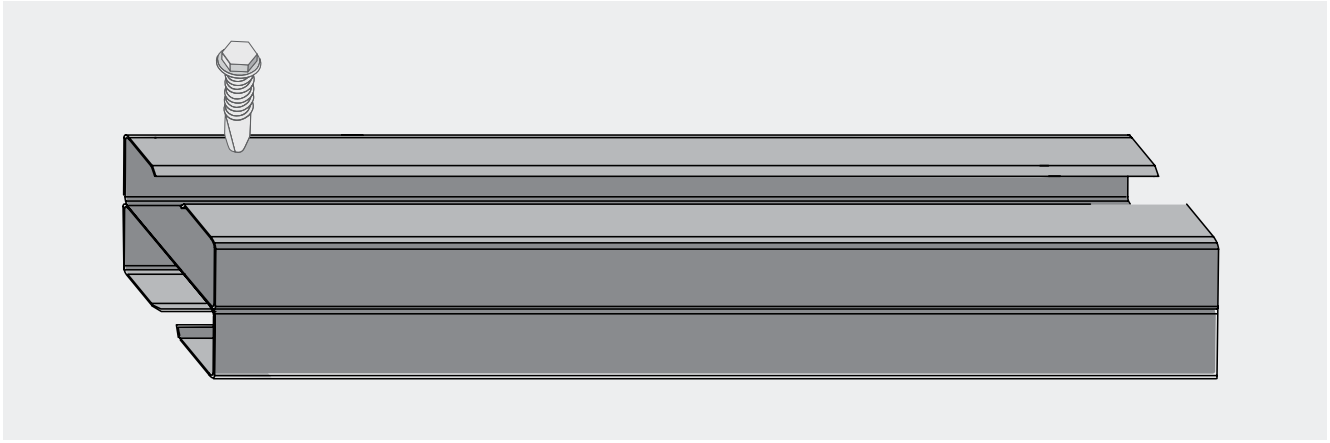
STEP 2:

SCREW POSTS TOGETHER

Place the two halves of the post on a FLAT surface back to back, align the tops exactly and clamp if necessary.

Screw the posts together starting with a double screw at the top approx. 50mm down and then in an off-set pattern at a maximum 300mm centres from then on.

NOTE: Screw both ends together first before the centre section. If retaining with posts please refer to specific reinforcement recommendations as outlined in the Retaining section later in this guide.



ADDITIONAL

SLIMWALL™ RETAINING PANEL

FIXING OF A STAINLESS STEEL CAPPING CHANNEL TO THE BASE OF THE SLIMWALL RETAINING PANEL

Step 6 of this installation guide (page 11) instructs on the correct methodology for installing the base capping channel. This channel when used on the base of a retaining panel must be Stainless Steel.

NOTE: Stainless Steel Capping Channels for the base of this panel will be automatically supplied as part of yor material kit when a TerraFirm50 retaining panel is supplied. They can be easily identified as different to the standard ones by the non-painted stainless steel finish.

Snapshot from page 12

STEP 6:

FITTING THE CAPPING CHANNEL TO THE BOTTOM PANEL

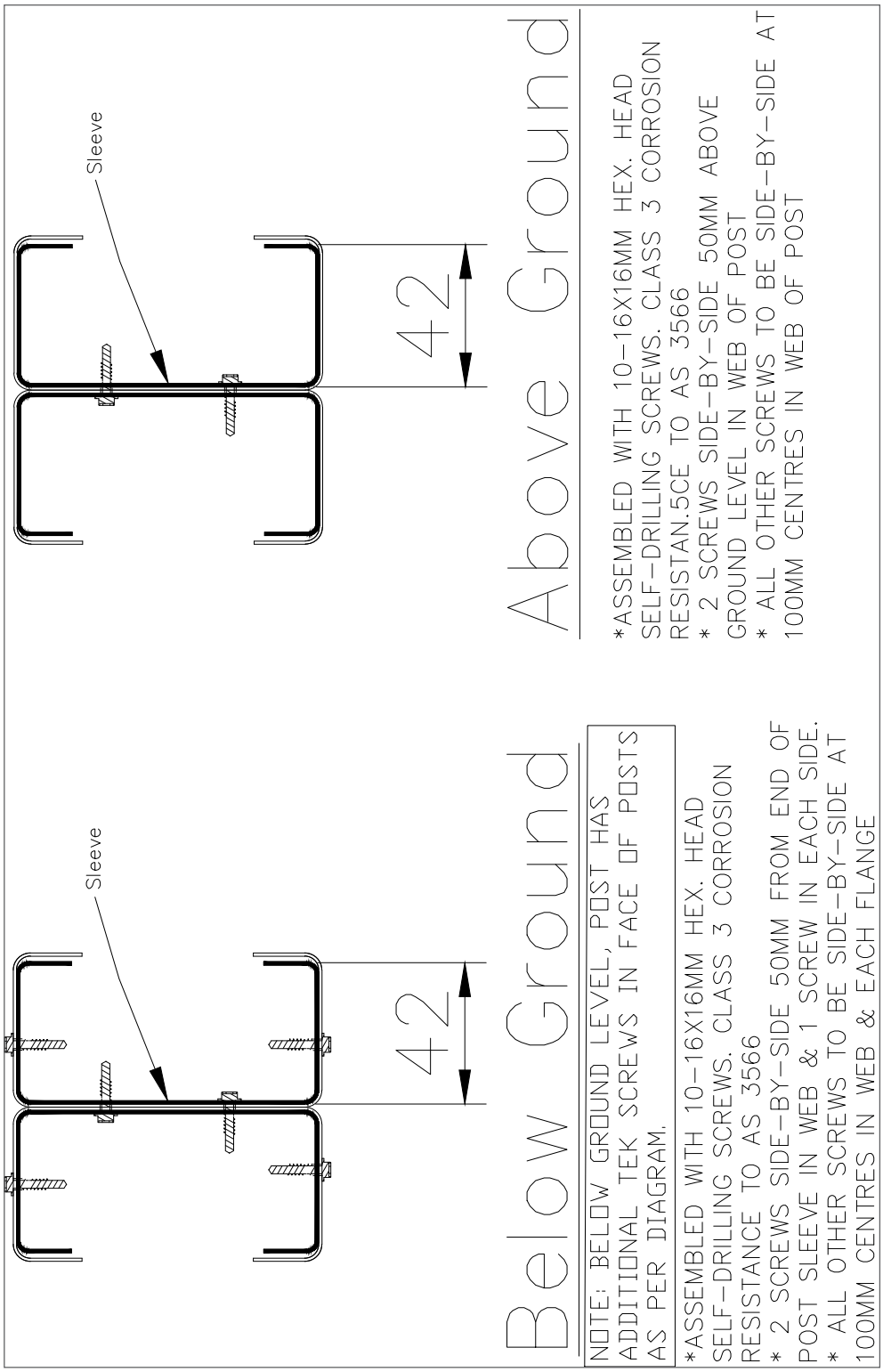
The capping channel will be slightly shorter than the panel. This is to avoid collision with the heads of the hex head screws as the panel is being guided down the post.

NOTE: This will contact the external panel sheeting once the capping is fitted. 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 with hand pressure only to make sure it is seated correctly.

ADDITIONAL

SLIMWALL™ RETAINING PANEL

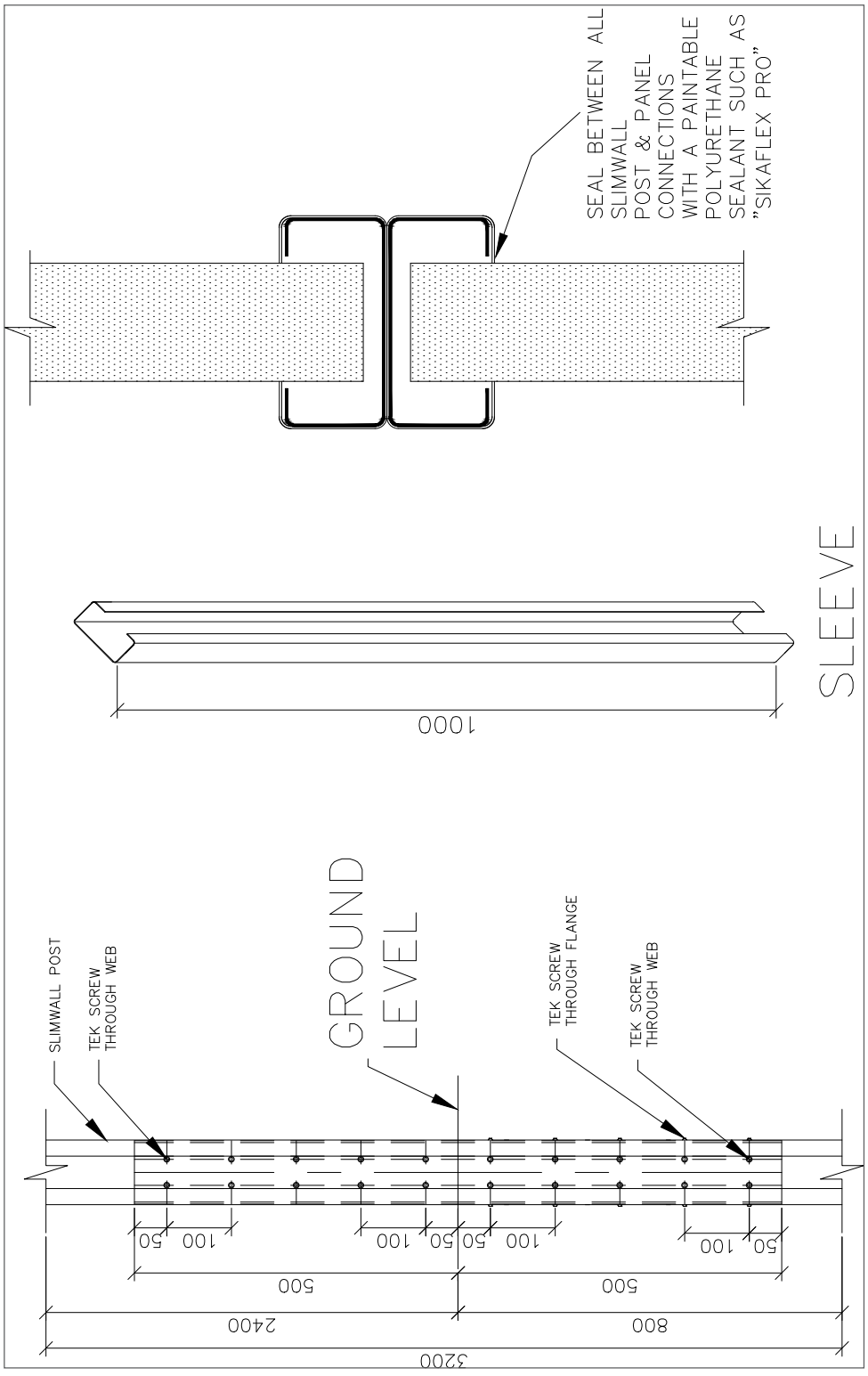
SWR1



ADDITIONAL

SLIMWALL™ RETAINING PANEL

SWR2



ADDITIONAL

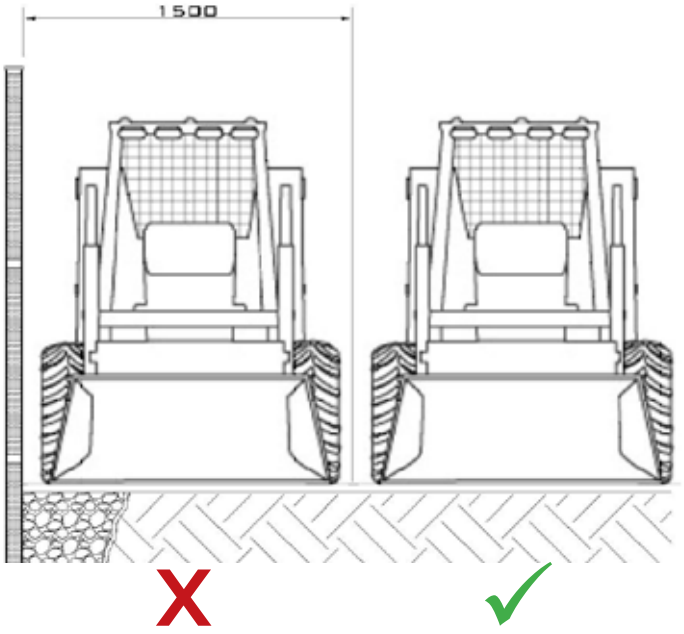
SLIMWALL™ RETAINING PANEL

CONSTRUCTION PARAMETERS

The following conditions must be observed for all SlimWall installations with retained soils:

Soil height -	Maximum soil height that can be retained = 500mm (typical) or 2.5 kPa surcharge load.
Wall height -	Maximum wall height above upper ground level = 1800mm (wind region dependant).
Post spacing -	Maximum centre-to-centre post spacing = 2420mm.
Footing diameter -	Minimum footing diameter = 350mm when retaining.
Footing depth -	Minimum footing depth = height of retained soil + one third the height of any free standing wall. For example: a wall which is retaining 500mm of soil and extends an additional 1500mm above the soil level would require a minimum footing depth = 500 + 1500/3 = 500mm. Overall footing depth required is 1000mm.
Post embedment -	50-100mm less than actual footing depth, to prevent the post from directly sitting on the soil.
Soil type -	Minimum Soil Bearing Capacity (SBC) = 100kPa. Additionally, soils with (foundations) moisture reactivity above 'Class S' are not suitable for use with the SlimWall system without additional engineering assessment.
Surcharge loads -	**Loads placed on the upper retained ground level are limited to pedestrian activity only. Stockpiled materials, additional raised garden beds, driveways or adjacent buildings are not permitted within 1.5m from the rear of the wall, unless otherwise specified.**

REQUIREMENTS



ADDITIONAL

SLIMWALL™ RETAINING PANEL

The SlimWall retaining system has requirements that are no different to any other retaining wall of similar size. The process of properly finishing the back of your wall is done in 3 easy steps:

- Coating/sealing

- Drainage

- Backfilling

The materials and procedure for each of these steps is described below.

COATING/SEALING

The following applies to any section of the wall that is to be buried by backfill material.

Apply a polyurethane sealent at post/panel junctions. Using a commercial grade polyurethane sealant (i.e FLEXIT), seal the junction between the posts and panels full length at the rear of the wall and seal the junction between the two pansles full length at the rear of the wall.

Apply a water proofing sealer to the required area of the posts and panels. Any commercial waterproofing or bituminious product designed for such use will suffice. SlimWall uses and recommends SikaTite BE, which is available from most hardware stores. Where the wall is to be backfilled for only part of its height, apply the sealing product to 100mm above the intended fill level. Posts should be coated on their rear face as well as the support bracket and base channel.

DRAINAGE

A retaining wall without adequate drainage will act as a dam with potential damage to the wall. This applies to running water that is both above and below the ground surface.

The ground behind the wall should be suitably contoured to prevent surface water being trapped.

At the base of the wall it is recommended that an agricultural line (75mm - 100mm diameter) be used to allow under ground seepage to escape. A line fitted with an external filter-sock is recommended to reduce silt entering the line. Place the agricultural line on top of the 'base layer' of aggregate (refer to the next page and drawing on the following page).

Position the agricultural line to allow it to connect to a free-draining outlet (i.e stormater or to daylight). Directing of the agricultural line through the wall panel for the purpose of draining is not recommended but can be done if no other draining method is possible.

ADDITIONAL

SLIMWALL™ RETAINING PANEL

BACKFILLING

Incorrect materials and method used to backfill behind the wall can cause damage to the wall.

Allow suitable time for the concrete footings to cure before backfilling. 2 days should be acceptable for most installations.

The agricultural line is then placed onto this layer. Cover the agrcultural line with further aggregate.

Geotextile lining is then laid over the agricultural line and up the excavated face. This is to prevent silt entering and possibly blocking the drainage area.

Backfill up to approximately 75% (3/4) of the total retained height with a free-draining granular backfill material. For example, if you are backfilling to a height of 500mm, then use the granular backfill at least 375mm high. This should extend no less than 150mm off the back of the wall.

Normal soil can than be used to top-dress the area behind the wall and to cover the backfill.

NOTE: Do not compact or vibrate the top layer.

ADDITIONAL FACTORS TO CONSIDER

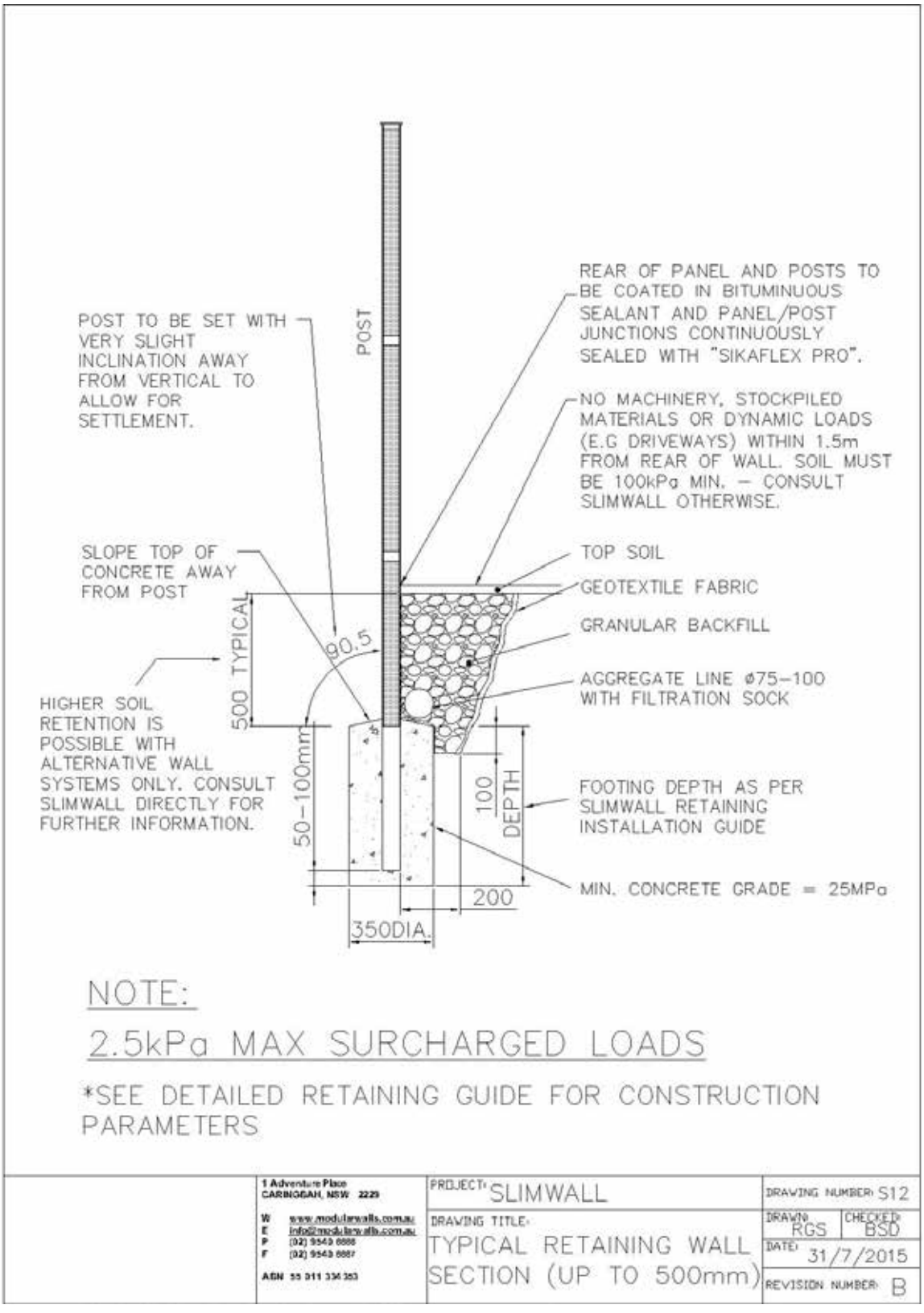
When backfilling, take care not to damage the sealing or membrane at the back of the wall.

Avoid the use of heavy machinery to place backfill materials. If it is necessary to use such equipment, maintain a distance from the back of the wall equal to 3 x the retained height. This also applies to vehicles approaching the wall after completion.

Do not backfill higher than the top of the wall. If it is necessary, use a batter (slope) ratio of 1:10 up to level ground.

ADDITIONAL

SLIMWALL™ RETAINING PANEL



NOTES:

NOTES:

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