



Section E Internal Design Considerations

Logicwall® Internal Design Considerations, Levels of Finish, Movement Joints, Sheet Surface Joints, Wall Preparation, Joint Setting, Over Sheeting, Applied Finishes.

Contents

E1. Internal Design Considerations	3
Introduction.....	3
Levels of Finish	3
Levels of finish (continued)	4
Movement Joints	5
Sheet Surface Joints	6
Wall Preparation.....	7
System One - Joint Setting Only	9
System One - Joint Setting Only (continued)	10
System One - Joint Setting Only (continued)	11
System Two - Joint Setting and Skim Coating	12
System Two - Joint Setting and Skim Coating (continued)	13
System Three - Over Sheeting	14
System Three - Over Sheeting (continued).....	15
Applied Finishes	16
Applied Finishes	17

E1. Internal Design Considerations

Disclaimer: The products referred to in this document have been manufactured by or on behalf of CSR Building Products Limited ("CSR") to comply with the relevant sections of the National Construction Code (NCC) and any relevant Australian Standards. While any design or usage guidelines set out in this document have been prepared in good faith by CSR, they are of a general nature only and are intended to be used in conjunction with project specific design and engineering advice.

It is the responsibility of the customer to ensure that CSR's products are suitable for their chosen application, including in respect of project-specific matters such as, but not limited to structural adequacy, acoustic, fire resistance/combustibility, thermal, and weatherproofing requirements. All information relating to design/installation/application of these products is offered without warranty and no responsibility can be accepted by CSR for errors and omissions, or for any use of the relevant products not in accordance with CSR's technical literature or any other relevant industry standards. For current technical and warranty documentation relating to CSR's products, visit the AFS website at www.afsformwork.com.au

Introduction

AFS Logicwall® panels are faced with 6mm fibre cement sheets which, at the completion of the construction process, provide the wall face and substrate for applied finishes and decorating.

The fibre cement sheets bear similar features to plasterboard, however are much harder-wearing and more impact resistant.

The final finish of AFS Logicwall® is influenced by factors such as structural movement and sheet surface joints, correct alignment of panels at installation stage,

glancing" or critical lighting, joint setting methods and the applied finishing system.

There are a number of methods for ensuring that the finished AFS Logicwall® meets end user expectations. For best results, these should be considered in the planning stages of a project and be clearly set out in specifications.

It is good practice to construct a reference area of finished AFS Logicwall® to provide a benchmark and to aid in judging quality of walls throughout a project.

Levels of Finish

Levels of finish are defined in AS/NZS 2589.1, and are intended to provide builders, installers and their customers with defined methods and practices necessary to meet the customer's expectations in terms of 'Level of Finish'.

It is essential for designers and builders to determine the level of finish required before construction commences, otherwise it may not be possible to attain the desired finish level without extensive corrective measures.

In general, Logicwall®, without further treatment such as skim coating or over sheeting, achieves Level 4 finish which is +/- 4mm across an 1800mm plane.

Level 5 finish should be used wherever gloss or semi-gloss paints are to be used, where paint is mid or dark coloured, or where critical light conditions occur such as from windows, skylights or silhouette and spot lighting. Level 5 finish can be achieved through skim coating Logicwall®. Refer to 'Joint Setting and Skim Coating' in this chapter.

For internal walls AFS recommends the adoption of one of 3 finishing systems;

1. Joint setting and patching only.
2. Joint setting, patching and skim coating.

3. Over-sheeting.

- A. Direct stick plasterboard
- B. Batten and Sheet
- C. Discontinuous Stud Wall

Lighting

The flatness of Logicwall® is influenced by factors such as the accuracy of the substrate, the installation methods, joint setting and finishing textures. A surface that appears perfectly flat in one lighting condition can seem uneven in another.

Critical lighting or glancing light is where the incident light from an artificial or natural source is nearly parallel to the surface. This condition exaggerates vertical joints and any minor imperfections making them obvious.

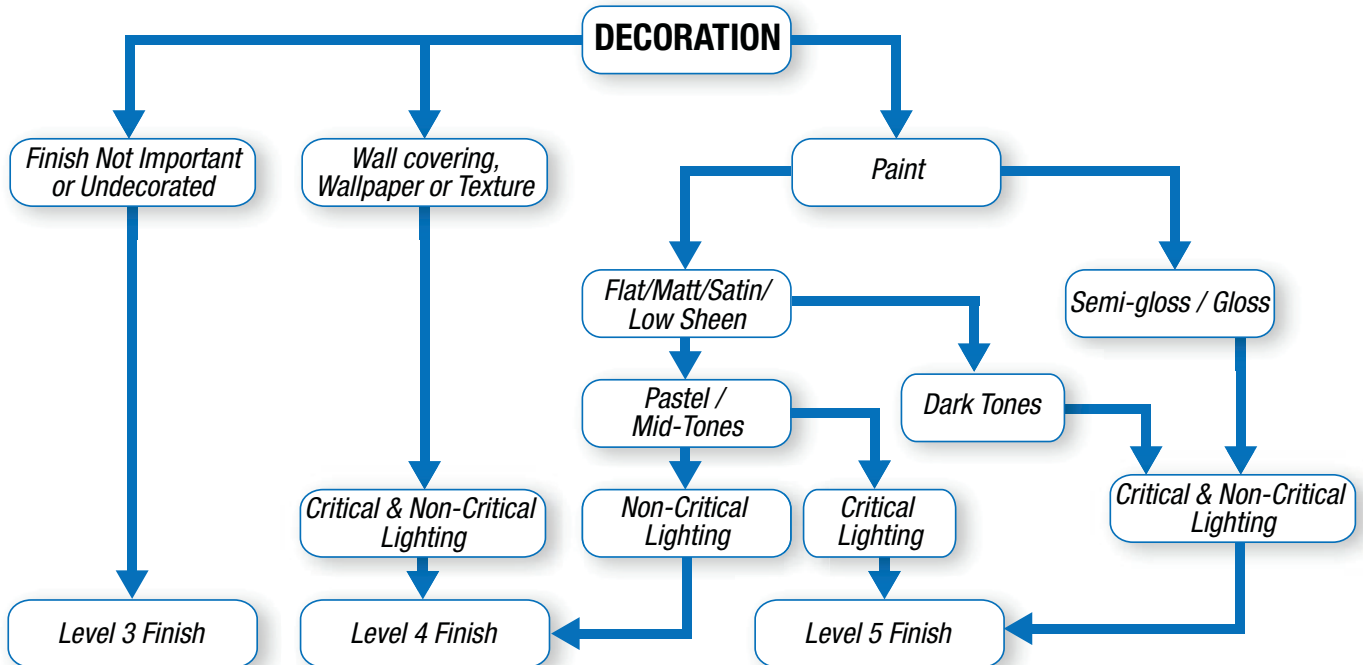
Ways to minimise the effect of critical or glancing light include:

- Use more rather than fewer lights and install at regular spacings to give a more even, diffused light and to minimise the shadows that occur from a single row or single light source.
- Design soft rather than harsh lighting conditions.
- Avoid placing windows immediately adjacent to the end of a wall.

Levels of Finish (continued)

- Provide sun shades over the window.
- Recess the window to stop the sunlight reaching the wall.

Fig E1: Process for determining appropriate level of finish



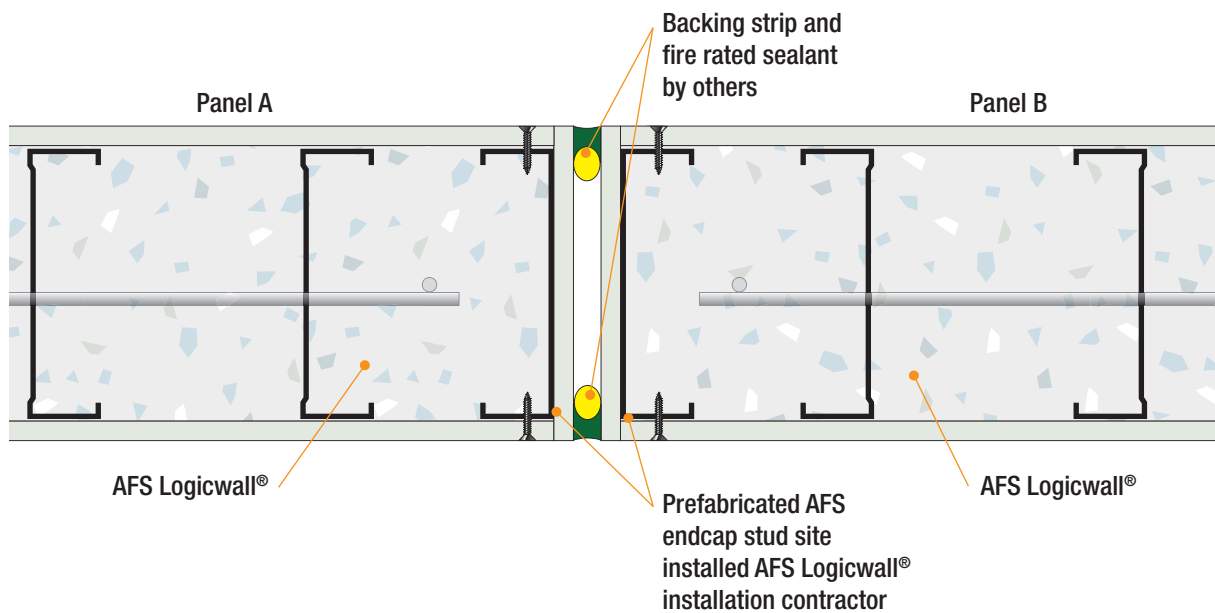
Movement Joints

Movement joints

The structural concrete wall effectively has control joints at each stud so no additional crack control joints are necessary. Full depth "movement joints" may be required depending on the geometry of the structure and other considerations such as thermal loads, exposure and building joints. In general "movement

joints" would not be required for walls less than 16m long. Structural movement joints will be placed in locations nominated by the structural engineer and must be documented on structural drawings. These will be installed at construction stage by the AFS Logicwall® installation contractor. The following method is recommended.

Fig E2: Logicwall® Movement Joint



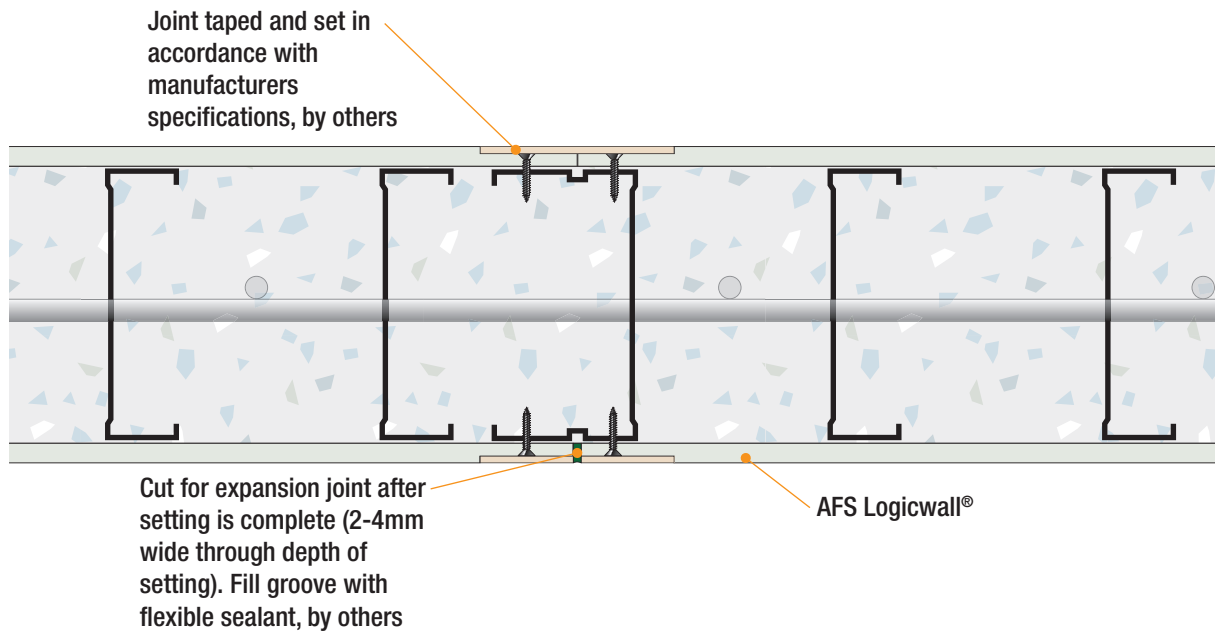
Note: Can be dowel jointed if required structurally. Must be clearly specified and negotiated with installers at time of tender. Installed where nominated by project engineer. Must be clearly documented on drawings. Typically not required in walls less than 16m in length.

Sheet Surface Joints

Sheet surface joints are 6mm deep, (i.e the full depth of the fibre cement sheeting) to accommodate the movement in the fibre cement sheet. These are placed at maximum 6m centres at finishing stage ie. after wall is concrete filled at time of setting the vertical recessed

joints. Locations of sheet surface joints should be nominated by the architect as they can often be concealed behind glazing sections or cupboards. The following method is recommended:

Fig E3: Sheet Surface Joint

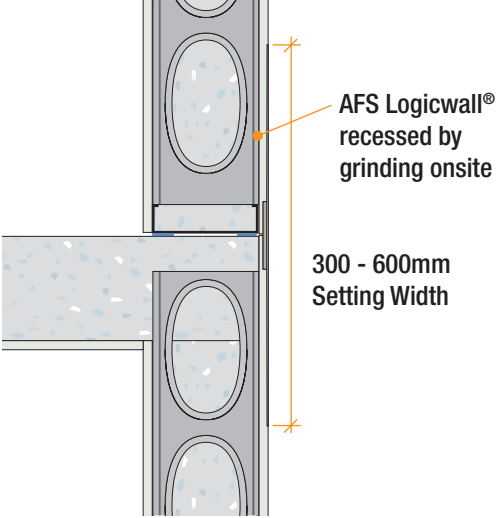
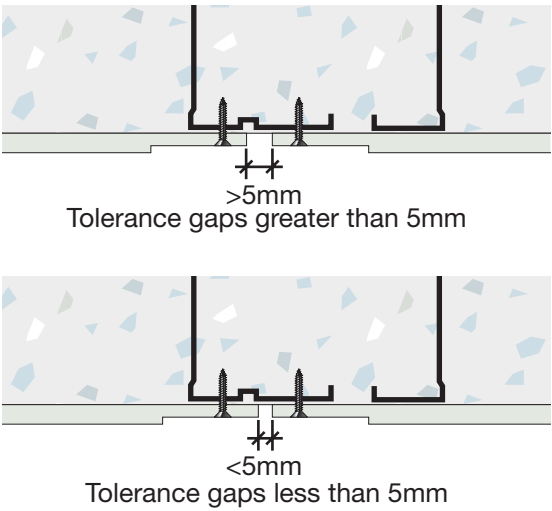


Wall Preparation

Prior to joint setting the panels may require preparation in the following areas and as outlined in the following table.

- Horizontal butt joints where setting rebate has been ground may need additional preparation. eg. Sanding of furry edges.
- Tolerance gaps between vertical panel joints greater than 5mm wide are to be filled with a suitable joint filler.
- Tolerance gaps between vertical panel joints less than 5mm wide are to be filled with the base coat of the setting system.
- Any misaligned panel joints should be ground flush to create a flat surface.
- Any proud screws should be removed or recessed just inside the sheet surface.
- Patching of scratches and dents in panel surfaces resulting from other trades throughout construction phase.

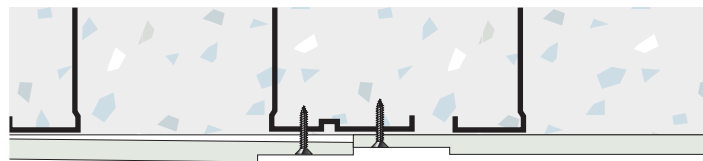
TABLE E1: Wall Preparation

Horizontal Butt Joints	
<p>Rebates are to be ground onsite with the joint to be treated as per CSR joint setting procedure.</p> <p>This rebate will not reflect standard rebated joints and will require additional preparation by the internal setting contractor.</p>	
Tolerance Gaps	
<ul style="list-style-type: none"> • Tolerance gaps between vertical panel joints greater than 5mm wide are to be filled with a suitable joint filler. • Tolerance gaps between vertical panel joints less than 5mm wide are to be filled with the base coat of the joint setting system. 	

Wall Preparation

Wall prep work includes:

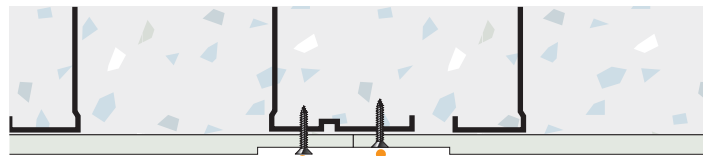
- Patching broken FC edges.
- Grinding flush protruding FC board or concrete.
- Removing screws or punching screws flush.



Misalignment



Broken edges



Proud Screw **X** Recessed Screw **✓**

Scratches and Dents

AFS Logicwall® is a permanent formwork system which comes through the construction phase, resulting scratches and dents in the FC panel surface are to be patched by the internal setting contractor prior to and/ or following the first prep coat.

Note: This especially applies to reinforcement bar penetrations on corner panels, T junctions.



System One - Joint Setting Only

For joint setting AFS Logicwall® it is necessary to achieve a high strength joint to resist thermal movement and a smooth surface for decorating. There are two methods which are suitable.

Note: Being a permanent formwork system, there will be a percentage of joints that may require further treatment, such as grinding or feathering out the top coat plaster 300mm wide each side of the joint, to achieve an acceptable finish.

METHOD ONE - General thermal conditions.

(suitable for most applications):

- Gap between fibre cement sheets at vertical panel joint is to be pre-filled with a suitable joint filler.
 - In a bed of Gyprock® Wet Area Base Coat, immediately bed Gyprock® Paper Tape centrally over the joint. Press tape firmly into compound to avoid trapping air behind it.
- Trowel a thin layer of Wet Area Base Coat over the

tape then allow to dry for 24 hours. It is important that the first layer of Wet Area Base Coat does not surface dry (skin) before the tape is bedded. This might involve working in cooler parts of the day, cutting tape to length in preparation, bedding and taping short lengths of one joint at a time.

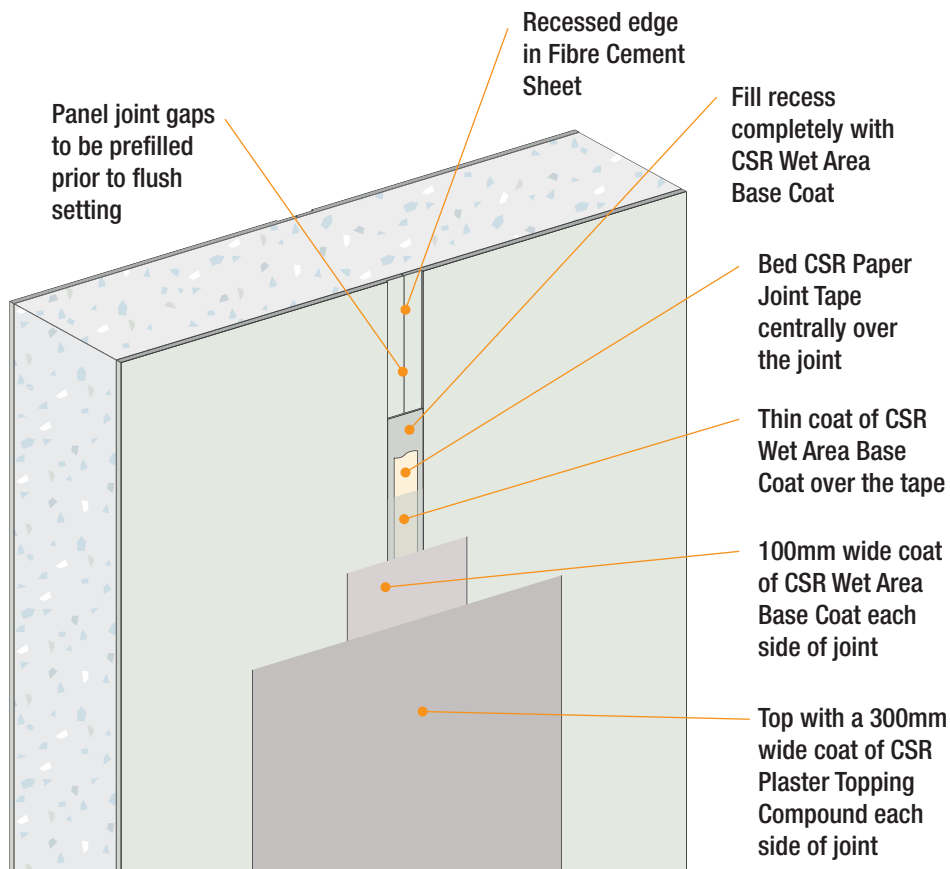
- When the first layer is dry, apply a second layer of Wet Area Base Coat to a width of 100mm. Allow to dry for 24 hours.

Note: "Mud" cracking of Wet Area Base Coat can appear on drying, especially in hot weather. This does not affect the performance of the joint and is covered by the topping compound.

- Top with CSR plaster topping compound 300mm wide or greater each side of the joint to achieve an acceptable finish. Allow it to dry before painting.

When it has set and completely dry, sand the compound smooth with 150 grit paper or with 220 grit sanding mesh. Avoid any heavy pressure which may scuff the joints.

Fig E4: Method One – Joint Setting Only



Note: The set joints in AFS Logicwall® may be visible in critical or glancing light conditions. AFS recommends to the designer or builder that under those circumstances further treatment should be applied as set out in Joint Setting and Skim Coating.

System One - Joint Setting Only (continued)

METHOD TWO - Extreme thermal conditions.

Testing (refer to appendix Section J) has shown that joints with this method have tensile strength similar to that of 6mm fibre cement sheet, and so can be expected to perform well in extreme conditions.

- Gap between fibre cement sheets at vertical panel joint is to be pre-filled with a suitable joint filler.
- In a bed of Gyprock® Wet Area Base Coat, immediately bed PVC Cemintel™ External Joint Tape centrally over the joint. Press tape firmly into compound to avoid trapping air behind it.

Trowel a thin layer of Wet Area Base Coat over the tape then allow to dry for 24 hours. It is important that the first layer of Wet Area Base Coat does not surface dry (skin) before the tape is bedded. This might involve working in cooler parts of the day, cutting tape to length in preparation, bedding and

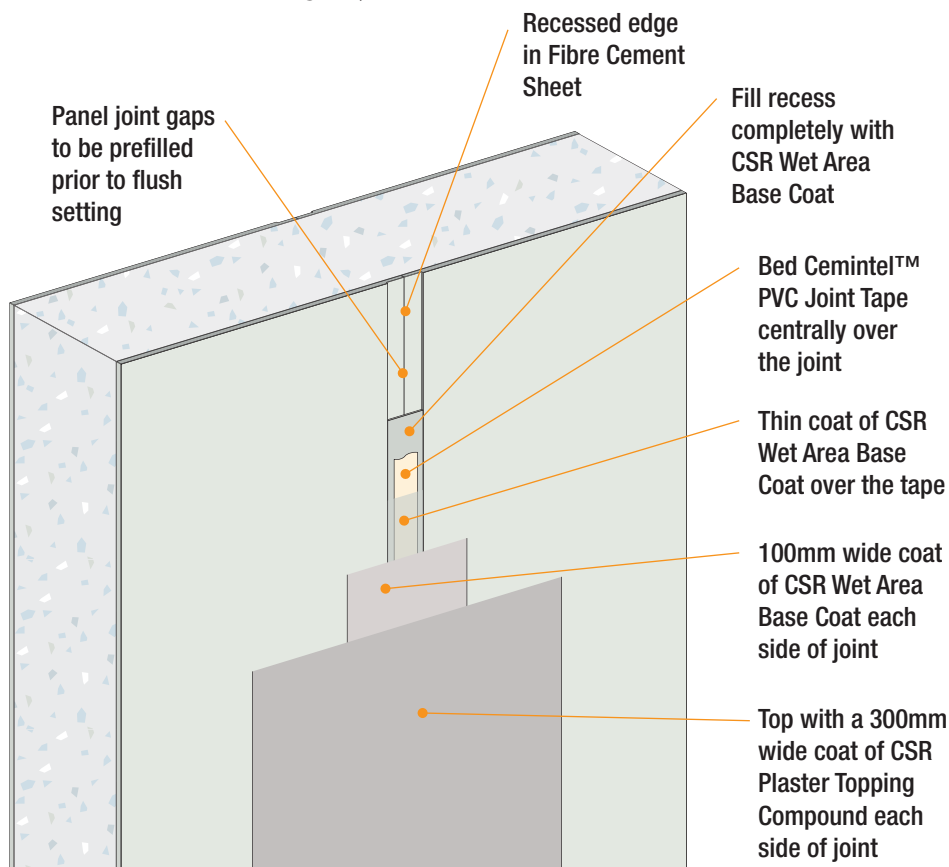
taping short lengths of one joint at a time.

- When the first layer is dry, apply a second layer of Wet Area Base Coat to a width of 100mm. Allow to dry for 24 hours.

Note: "Mud" cracking of Wet Area Base Coat can appear on drying, especially in hot weather. This does not affect the performance of the joint and is covered by the topping compound.

- Top with CSR plaster topping compound 300mm wide or greater each side of the joint to achieve an acceptable finish. Allow it to dry before painting.

Fig E5: Method Two – Joint Setting Only



Note: The set joints in AFS Logicwall® may be visible in critical or glancing light conditions. AFS recommends to the designer or builder that under those circumstances further treatment should be applied as set out in Joint Setting and Skim Coating.

System One - Joint Setting Only (continued)

METHOD ONE - Internal and External Corner Setting.

Fig E6: Internal Angle Joint Setting

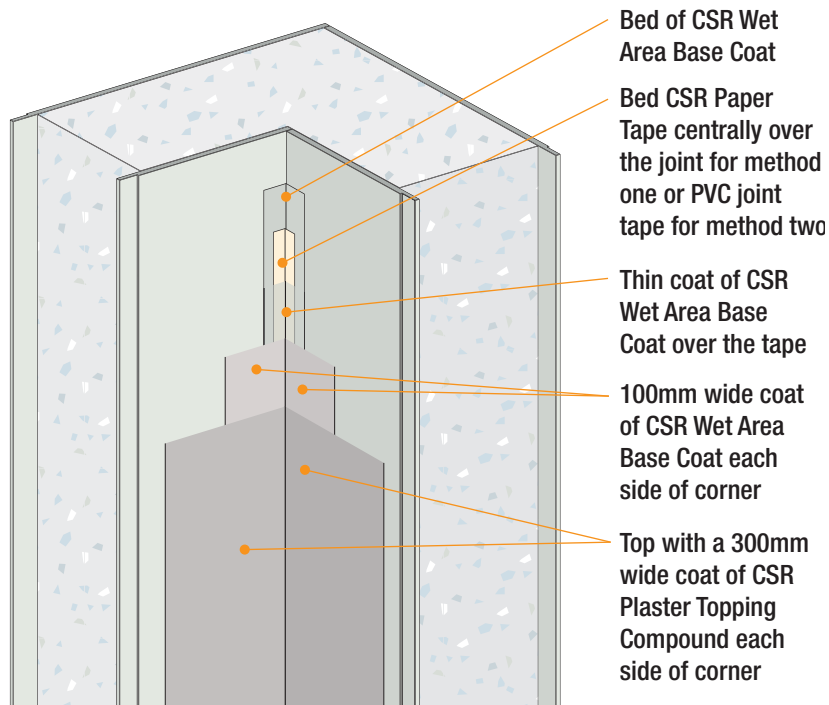
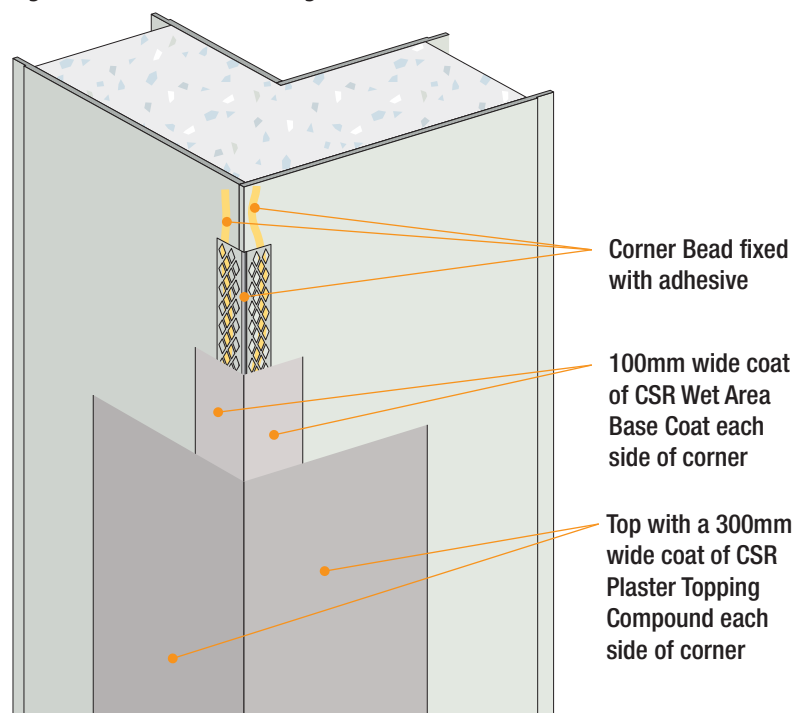


Fig E7: External Joint Setting



System Two - Joint Setting and Skim Coating

Skim coating is a term used to describe a thin finish coat, trowelled or airless sprayed onto the prepared wall surface, and then possibly sanded, to achieve a smooth and even finish. It is normally less than 1mm in thickness and is applied over the entire surface to fill imperfections in the joint work, smooth the board texture and provide a uniform surface for decorating. All joints must be set and finished in accordance with the previous section - System One - Joint Setting Only. All indents or gouges shall be filled to a flat finish in the plane of the surface of the board and the board must be kept free of any dirt, oil or other foreign matter which could cause a lack of bonding.

Roller Application

Skim Coat Material (recommended):

- Gyprock Total Joint Cement mixed to consistency suitable for roller application.

Roller Equipment (suggested):

- Large lambswool roller.
- **Foam roller (without nap).**

PROCEDURE

1. Prepare equipment and compound mix
2. Apply the first coat using a large lambswool roller.
3. Immediately follow with back rolling using a foam roller to flatten the surface. Allow to dry.
4. If required, apply subsequent coat(s) as described in Steps 2 and 3. Allow to dry. Sand and prepare for paint finish, using 150 to 180 grit sandpaper.

Achieving a Level 5 Finish

PREPARATION

'Level 5 Finish' cannot be achieved without a high degree of preparatory work. It is critical to achieving a successful outcome that each of these requirements is reached and checked prior to proceeding to the next step.

The following points should also be noted:

- The maximum permissible frame deviation is 3mm per 3 metre. Carefully check and correct any problem areas before proceeding.
- Recess and butt joints should be taped and set with a three coat system. Internal angles should be taped and set with a two coat system. External angles should be set with metal bead and a three coat system. Fastener heads and accessories should receive three coats of compound. Allow each coat to dry before proceeding.
- All indents or gouges shall be filled to a flat finish

in the plane of the surface of the board. All joint compounds should be carefully sanded to a smooth finish free of tool marks and ridges.

- Wall linings must be kept free of any dirt, oil or other foreign matter which could cause a lack of bonding

What Kind of Skim Coating Compound Should be Used

CSR Gyprock Total Joint Cement should be used to conceal small imperfections in joints and on the surface of fibre cement sheets. It will also smooth the texture of sheet and create a more uniform surface to which final decoration can be applied.

How to Apply

1. Mix the CSR Gyprock Total Joint Cement with water to achieve roll on consistency. Water should be added to the compound gradually until the desired consistency is achieved. The goal is to have a compound thin enough that can be rolled smoothly, without sagging, with a paint roller.
2. Using a long nap roller cover (13mm), roll the compound evenly on the surface to be skimmed. It is best to work in small sections of 0.5-1.0 metre. It is highly desirable that excess compound be removed or smoothed off with trowel while compound is still wet.

Note: long nap roller cover should be fully cleaned before use and should be free from dirt, debris and loose fibres. It will minimise appearance of scratches on the surface after trowelling with broad knife.

3. Using wide broad knife, remove excess compound to achieve smooth flat finish. Broad knife should be pulled tightly across the surface of the fibre cement sheet. The key to roll skimming a wall is not to leave excess compound on the surface. Excess compound would need more sanding. Roll skimming works compound into pores of the fibre cement sheet to achieve similar consistency to that of joints and screw heads. Broad knife is bent gently with pressure applied to the right side of the knife therefore slightly floating the edge of compound so as not to leave the tool marks.
4. Once the compound is dry for 3-4 hours, depending on the temperature/humidity conditions, light sanding using 150 grit sandpaper would be required to remove any minor imperfections. If too much skimmed compound was left, it can require more sanding due to greater possibility of imperfections in thicker compound layer. A good light source aimed along the surface is necessary to see any imperfections that were not covered by roller skim coating. If minor imperfections can't be removed by further sanding, application of second

System Two - Joint Setting and Skim Coating (continued)

coat of roller skim (Step 1-4) should be considered before final decoration.

Important Note: The quality of roller skim coating is necessary to create very smooth walls. The taping and coating process are also important to allow for a flat wall. If the joints are too humped out or caved in even roller skim coating will not be able to correct these flaws.

5. The smooth flat skim coated surface is now ready for final decoration. 1 coat of quality fibre cement primer and 2 coat of paint should be applied according to paint manufacturer's recommendation. The prepared skim coated surface should be coated with a quality paint primer/sealer before application of final paint application. If primer is applied using spraying equipment, light sanding may be required around joint area and screw heads to remove any fibres raised during joint preparation stage. The application of high quality paint high solids primer/sealer and paint will minimize decorating issues.

System Three - Over Sheeting

Over sheeting is a term used to describe the application of plasterboard veneer over the AFS Logicwall® and can be achieved by the following methods:

- Direct stick plasterboard
- Batten and sheeting or
- Discontinuous stud wall

As AFS Logicwall® applications vary from project to project, so do the architectural, acoustic and thermal requirements. The following options provide flexibility for the designer, particularly where an air gap or cavity is required.

METHOD ONE - Direct Stick Plasterboard

'Direct stick plasterboard' is a term used for directly adhering plasterboard lining to AFS Logicwall®. This system provides another alternative and flexibility for the designer when considering internal wall finishes.

PROCEDURE

1. Surface of AFS Logicwall® is to be clean, dry and free of dust, oil and other elements that may reduce adhesive performance.
2. Establish the basis of a true wall plane before commencing installation. Leveling pads that may be required where irregularities in the wall surface occur.
3. Apply daubs of plasterboard adhesive to the AFS Logicwall® surface or to the back of the plasterboard sheets at 450mm centres maximum vertically and "horizontally (plasterboard can be fixed horizontally or vertically). Hold sheets in position until adhesive sets by using temporary masonry nails.
4. Setting of the plasterboard joints is to be carried out in accordance with the setting methods provided by the appropriate plasterboard supplier.

Note: Where direct stick plasterboard is being applied to a wall requiring an acoustic rating, plasterboard adhesive may need to be troweled on to prevent a drummy effect when wall is impacted. Discuss with your acoustic consultant prior to installation.

Fig E8: Horizontal Fixing

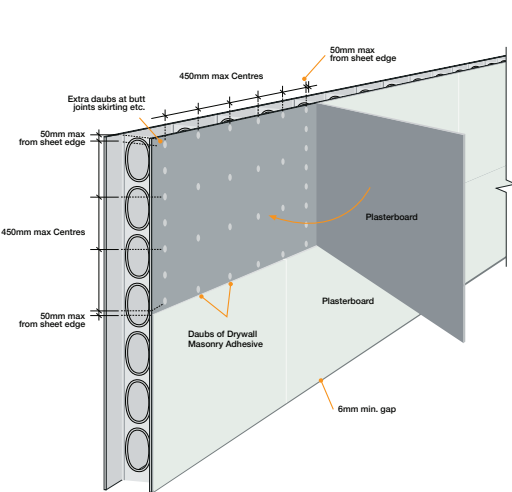
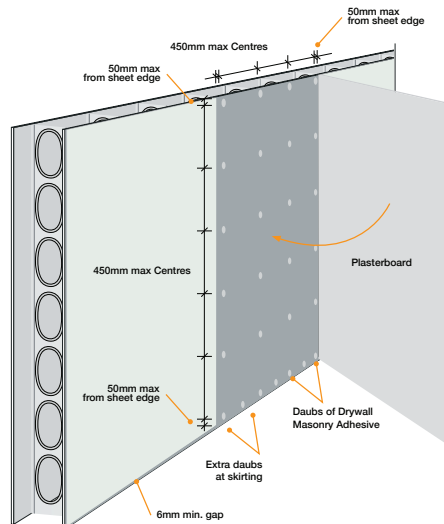


Fig E9: Vertical Fixing



System Three - Over Sheeting (continued)

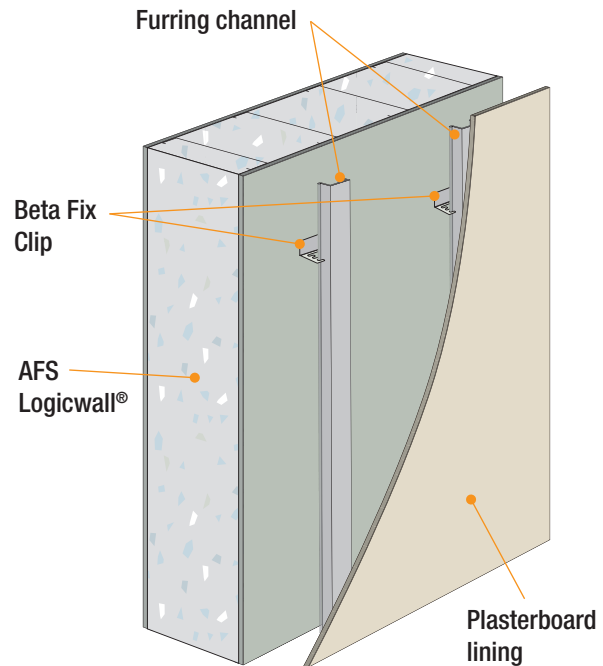
METHOD TWO - Batten and Sheeting

Batten and sheeting is a term used where timber or steel battens are fixed to the AFS Logicwall® and over sheeted with plasterboard or similar interior lining board. Most commonly 19mm or 28mm furring channel is used for battening walls.

PROCEDURE

1. Battens are fixed vertically at 600mm centres to the AFS Logicwall® using the contractors preferred masonry fixing system. Where furring channels are used, furring channel clips are fixed to the AFS Logicwall®. The furring channel is then clipped into the clip system. In some cases furring channels may require fixing using a resilient mounted clip system for acoustic purposes. For details on fixing options contact your furring channel supplier.
2. Insulate cavity where required.
3. Plasterboard, or similar interior lining system, is fixed to the battens using the standard fixing procedure provided by the interior lining supplier. Sheets can be fixed horizontally or vertically.
4. The interior lining board joints are set using the setting methods adopted by the interior lining board installer.

Fig E10: Batten and Sheeting



(Insulation can be installed within cavity to meet thermal requirements, typically for external facade walls)

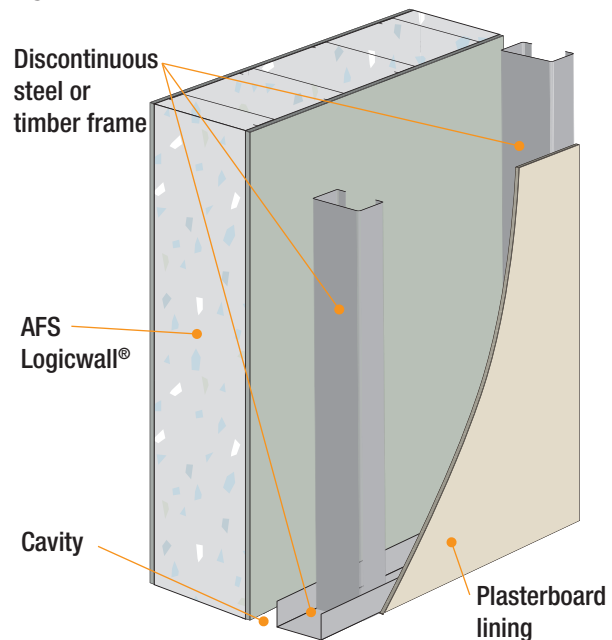
METHOD THREE - DISCONTINUOUS STUD WALL

'Discontinuous stud wall' is a term used where a separate stud wall is erected parallel to the AFS Logicwall® for the purposes of running services or to meet acoustic or thermal requirements. Steel or timber frames can be used, however steel stud and track is most common.

PROCEDURE

1. Determine the cavity size required and mark stud frame location on slab.
2. Assemble/erect frame according to procedure provided by supplier.
3. Insulate cavity where required.
4. Plasterboard, or similar interior lining system, is fixed to the stud wall using standard fixing procedure provided by the interior lining supplier. Sheets can be fixed horizontally or vertically, however horizontally is recommended.
5. The interior lining board joints are set using the setting methods adopted by the interior lining board installer.

Fig E11: Discontinuous Stud Wall



(Insulation can be installed within cavity to meet thermal requirements, typically for external facade walls)

Applied Finishes

Selection

Internal finishes applied to AFS Logicwall® can have a significant effect on the perceived quality of the installation, particularly where critical lighting conditions exist.

General rules when selecting the applied finish are:

- Textured or heavy patterned finishes tend to hide imperfections.
- Matt finishes minimise imperfection visibility.
- Semi-gloss and gloss finishes highlight imperfections.
- Lighter colours (compared to darker colours) are less likely to show imperfections and impact damage, and are more effective at diffusing the light and reducing shadow effects, particularly in smaller rooms.
- Gloss paints tend to highlight paint application variations eg. where a good wet edge has not been maintained when painting.
- Paint or thin wallpaper finishes are less tolerant of imperfections.
- Paint applied with a longer pile roller tends to mask imperfections better than paint applied with a short pile roller.

Decoration

AFS Logicwall® surfaces may be decorated in any of a variety of finishes including flat, semi-gloss or gloss paint, wallpaper or vinyl, texture or stipple.

Roll coated paints generally have a greater coating thickness and create a similar texture on both the plasterboard and the jointing compounds.

No building material has an absolutely flat surface and all that can be expected in practice is an appearance of flatness. The effect of glancing light on the appearance of flat surfaces is described in the CSIRO Division of Building Research Report No. L8 (Revised Edition). This report clearly demonstrates that surfaces which seem perfectly flat in diffuse light appear rough and uneven when light strikes nearly parallel to the surface.

Painting

Select a proprietary paint system and apply all paints strictly in accordance with the respective manufacturer's instructions.

The use of a preparatory coat over the entire surface is recommended prior to application of the finish coats due to the differing texture and porosity of uncoated fibre cement and areas which have received joint treatment.

AFS recommend proven paint systems, from suppliers such as Dulux, Wattly and Taubmans. It is the responsibility of the paint manufacturer to show compliance to all relevant performance requirements as per the latest NCC.

Fig E12 summarises Dulux recommended interior coating systems for AFS LogicaWall. For full system detail and application information refer the relevant Dulux Duspec Specification. For best results, apply finishing coats by roller. This helps to achieve a full even coat and a light, uniform texture over the entire surface. Refer to Australian Standard AS2311 "The Painting of Buildings" and/or paint manufacturer's recommendations for specific roller nap length for the desired finish.

Wallpaper and Vinyl

To enable eventual removal of wallpaper and vinyl without damaging the fibre cement, seal the surface with a pigment solvent-based sealer.

Tiling

Tiles shall be installed in accordance with AS3958.1. Allowance must be made for expansion/contraction by leaving a gap between adjoining tiles in corners. Fill gap with flexible wet area sealant.

Tiling to be in accordance with the tile adhesive manufacturer's instructions. A compatible tile adhesive must be used to fix tiles to proprietary membranes.

Applied Finishes

Fig E12: DuSpec INTERIOR Specification

AFS Logicwall® Minimum Coating System Requirements - Internal	
Minimum System Performance	Dulux Specification: AU_SD11656
<ul style="list-style-type: none"> • Preparatory basecoat relative to project surface level requirements. • Where level 5 finish is specified additional preparation will be required. • Premium Acrylic sealer Undercoat. • 2 coats of premium Acrylic Interior Matt or Low Sheen. 	<p style="text-align: center;">PREPARATORY BASECOAT</p> <ul style="list-style-type: none"> • Required where a level 5 finish is specified. • Dulux Professional FastFinish level 5 Prep Coat. • Premium high film build prepcoat designed to even out surfaces and help to create a level 5 finish. • Applied by airless spray. Sand smooth when dry prior to application sealer undercoat.
	<p style="text-align: center;">PRIMER</p> <ul style="list-style-type: none"> • Dulux Professional FastFinish level 5 Prep Coat. • Acrylic sealer/ undercoat designed to aid system adhesion and opacity prior to application of Dulux premium interior Paints.
	<p style="text-align: center;">DECORATIVE FINISHING COAT</p> <ul style="list-style-type: none"> • Dulux Wash&Wear Low Sheen. • Premium Acrylic Coating for interior use.
	<p style="text-align: center;">DECORATIVE FINISHING COAT</p> <ul style="list-style-type: none"> • Dulux Wash&Wear Low Sheen. • Premium Acrylic Coating for interior use.
	<p style="text-align: center;">Refer to the full Dulux Specification available at www.duspec.com.au for detailed instruction and advice.</p>