CEMINTEL™
SAINT-GOBAIN

CONSTRUCTAFLOOR™

Internal and External Design Guide

CSR

INTRODUCTION

Contents

Introduction

Cemintel Constructafloor® is an advanced, lightweight, fibre cement flooring sheet. Constructafloor sheets have a flat surface with a tongue and grooved profile along the two long edges of the sheet. These edges are coloured for easy identification. Constructafloor can be easily installed with screws or power driven nails. The joints at the edges of the sheets are filled with flexible sealant to provide a flat surface suitable to accept a wide range of surface toppings.

Constructafloor sheet is a strong and durable building product that can be installed externally as decking or as an interior floor substrate including wet areas. This guide refers to installations for both external and internal applications.

This Cemintel Constructafloor Design and Installation Guide recommends good building practice and has been prepared as a general guide on design considerations, system engineering information and installation procedures for common external and internal applications. It assumes that the user has an intermediate level knowledge of building design and construction. This guide in no way replaces the services of building professionals required to design the projects, nor does it offer comprehensive and exhaustive guidance on all possible scenarios.

It is the responsibility of the architect, designer and relevant engineering parties to verify that the details in this guide are appropriate for the intended application and that additional design and detailing are carried out for requirements outside the guide's scope, including, but not limited to, construction loads, waterproofing, and surface finishes.

Panel Information

Constructafloor flooring sheets are available in two thickness, 19mm and 22mm and the following sizes.

Order NO.	Product	Sheet Thickness
115657	Constructafloor 600x2700	19mm
193406	Constructafloor 600x2400	22mm

Panel Specifications

Constructafloor flooring sheets conform to the requirements of AS/NZS 2908.2: Cellulose-cement products, Part 2 – Flat sheets for Type A Category 3 .

Property	Tolerance
Thickness	-0.0/+0.3mm
Mass	25.5kg/m^2 (19mm thick) 28.6kg/m^2 (22mm thick)
Width	-3.0 / +0.0mm
Length	-3.0 / +0.0mm
Diagonal Differance (max.)	3.0mm

Fire Resistance

In accordance with the NCC 2022 Amdt 2 BCA Volume One C2D10 (6)(d) [NCC 2019 Amdt 1: C1.9] and BCA Volume Two H3D2 (1)(d) [NCC 2019 Amdt 1: 3.7.1], Cemintel Constructafloor flooring sheets can be used wherever non-combustible material is required.

SYSTEM APPLICATIONS

Constructafloor sheets are a high strength, lightweight, durable building product that is impervious to water when installed in conjunction with a suitable waterproof membrane system. It can be fixed directly to timber or steel structural framing to form the structural substrate for both wet area and non-wet area applications. Refer to 'System Selection' section for more details.

Internal Habitable Areas

For internal applications in non-wet areas, Constructafloor flooring may be finished with carpet, direct fixed tiles, carpet or vinyl coverings in areas that are not required to be waterproof including:

- Living rooms.
- Bedrooms.
- Dining rooms.
- Media rooms.
- Offices.
- Hall ways, and
- General Living Spaces.

Internal Wet Areas

When combined with a suitable waterproofing system, Constructafloor offers a NCC compliant waterproofing system solution to wet areas and other internal area applications, and external areas, which may be covered with your selection of tiles or decorative finishes in a range of floor applications including:

- Bathrooms.
- Ensuites.
- Laundries.
- Upper and lower storey decks and balconies.
- Tiled verandahs, and
- Trafficable roofs.

External Areas

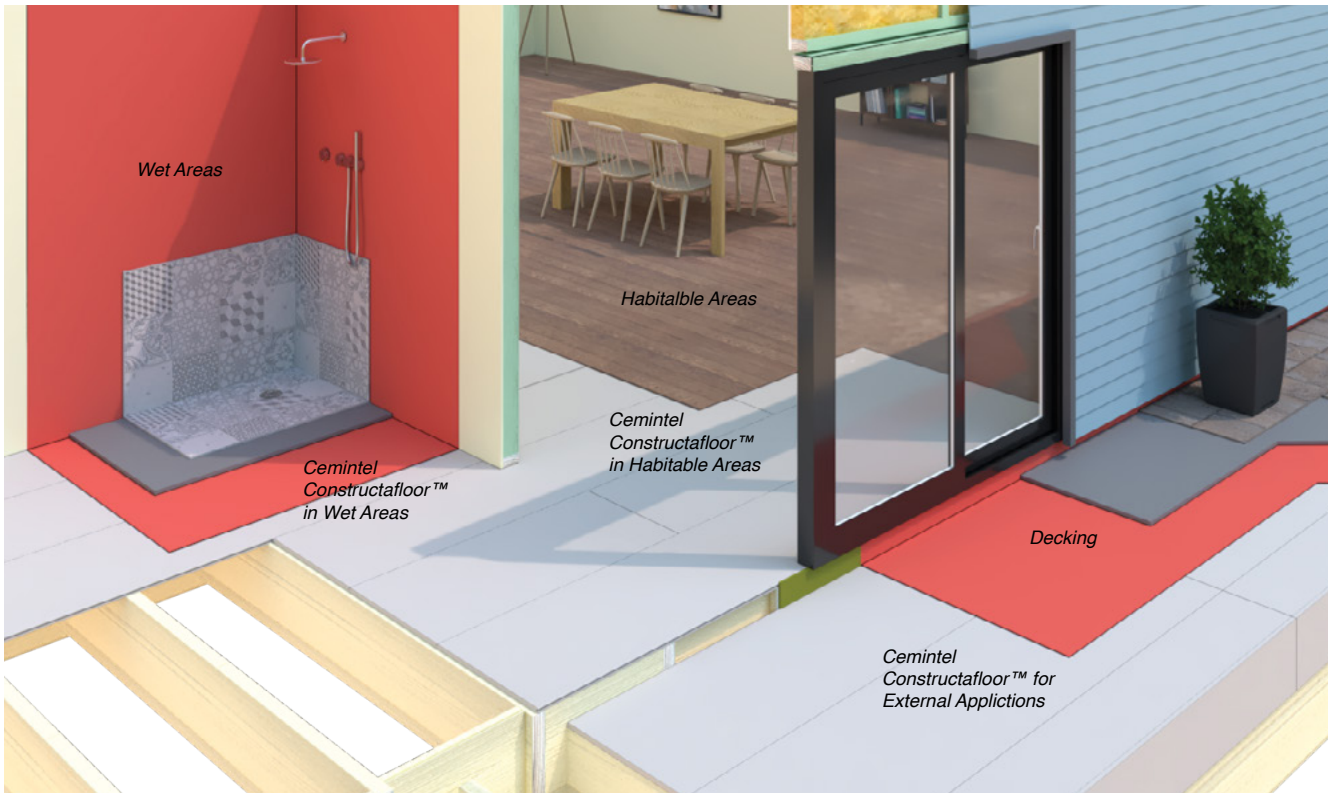
Cemintel Constructafloor is suitable for external decking applications when combined with an external waterproofing system. It may be finished with, direct fixed tiles, tile and mortar bed, or trafficable membrane

Features

Cemintel Constructafloor offers several high performance features thats include:

- Manufactured from highly durable and robust fibre cement.
- Simple and quick to install using screw or gun nail fixings.
- Tough durable substrate for wet areas with compatible waterproofing system.
- Suitable for all tiled floor areas.
- Lightweight and economical building material.
- Termite resistant.
- Resistant to rot, swell or warp when correctly installed and maintained.
- Fire – fibre cement sheets can be used where non-combustible material is required under the NCC provisions.
- Ideal for upper storey construction.
- Available in a range of sheet sizes to reduce waste, and
- A single flooring product for inside and outside areas of the build.

FIGURE 1 Cenintel Constructafloor



DESIGN CONSIDERATIONS

This guide provides detailed installation information for flooring systems with Cemintel Constructafloor sheets in timber and steel framed construction. This section outlines some important areas for consideration in determining an appropriate design of the Cemintel Constructafloor flooring systems. The following points are not exhaustive. It is the responsibility of the architect / building designer to ensure the design conforms to NCC requirements and other relevant building standards that may exist for that location. It is recommended that the architect/building designer assigns the responsibility for the flooring design to the project engineer.

This installation guide should be read in conjunction with the NCC, and design information presented in the 'Cemintel Wet Area Systems', 'Cemintel Wallboard on Steel Framing", "CSR Cemintel® Facades & Cladding – Design Guide" and "CSR Gyprock The Red Book" publications.

Framing

Constructafloor flooring sheets can be fixed to timber or steel floor joists at a maximum of:

- 450mm centres for 19mm Constructafloor sheets, and
- 600mm centres for 22mm Constructafloor sheets.

Joists and trimmers must have a minimum face fixing width of 45mm or to floor joist manufacturer's requirements. All perimeters of the floor area must be supported on framing.

As a minimum requirement, framing shall be in accordance with the following standards:

- AS 1684 – Residential Timber-Framed Construction.
- AS 1720 – Timber Structures.
- AS/NZS 4600 – Cold-Formed Steel Structures.
- AS 3623 – Domestic metal framing.
- National Construction Code (NCC).

Timber shall be seasoned or have reached an equilibrium moisture content of 16% or less at the time of framing. Unseasoned timber is not recommended.

The design and construction of the steel frames should be considered in conjunction with the advice from the manufacturer. Where required, appropriate measures should be taken to protect the frame from corrosion.

Fixings to steel joists are suitable up to a 2.0mm base metal thickness (BMT). Contact CSR Cemintel® for information on fixing to steel with BMT greater than 2.0mm.

Framing design guidelines advise to achieve a quality floor installation, the installation tolerance of the floor framing shall be within 4mm over 3m in all directions.

Sheet Layout

Constructafloor flooring sheets are fixed directly to the floor joists. Sheets are laid with tongue and groove joints perpendicular to the joists. The sheets shall be supported at a minimum of 3 locations (i.e., joists) and form 2 spans. The lengths of supporting joist spans must be similar and the ratio of longer to shorter span shall be less than 1.10 (e.g., for a shorter span of 400mm, the maximum allowable longer span is 440mm). Sheet ends must align with the centreline of joists.

Blocking and/or trimmers must be provided to ALL edges of the sheet, and designed to meet the live loading requirements (see Loads) wherever a

- Tongue or groove profile has been removed,
- Where the profiles do not engage fully, or
- Where a single span installation of Constructafloor flooring sheet cannot be avoided.

The sheet layout can be staggered or aligned according to the system requirements. Sheet ends must be aligned at control joints. Sheets may be laid in either direction relative to the slope. Provide a minimum 10mm gap between Construtafloor and floor covering systems at wall junctions.

Where sheets are cantilevered at the outer edge of a deck, sheet edges must not extend more than 50mm beyond the frame/ support. Balustrades and other fittings must be connected to the structural framing. It is the responsibility of the project designer to detail the penetrations to ensure the waterproofing and structural support of the Cemintel Constructafloor system is maintained.

Sheet Preparation

In non-wet areas, cement based leveling products compatible with the Constructafloor sheet may be directly applied to the sheets as per design instructions. Sheets should not be sanded. Sheets should be cut from the back using a power saw, refer to the 'Components + Accessories' section of this guide. All cut edges shall be coated with Cemintel Edge Sealer

Fixing Sheets

Fixings should finish below the finished level of the Constructafloor sheets and any indentation should be filled with joint sealant. Refer to General Installation for fixing details.

Control Joints

Control joints in sheets must be provided at appropriate locations as specified in the installation details of each system. Sheet joints should align with movement joints provided in the framing.

Internal Control Joints

Control joints between Constructafloor sheets must be provided at 9m centres maximum at tongue and groove edges to allow for differential movement in both the materials and the structure. Where the floor is exposed to direct sunlight, control joints are to be spaced at 6m centres maximum. Refer to the system control joint layout details. Control joints sheet edges at tongue and groove edges shall be supported by trimmers and blocking.

Control joints between sheets must be provided at butt joints in accordance with the system control joint layout details. Sheet ends must be aligned at control joints.

Control joints in sheets must also be provided at changes in direction of sheets, at doorways and at any structural framing control joints. Control joints in the finishing layers must be aligned with control joints in the sheets.

External Control Joints

Control joints between Constructafloor sheets must be provided at 12m centres maximum at tongue and groove edges to allow for differential movement in both the materials and the structure. Refer to the system control joint layout details

Control joints between sheets must be provided at butt joints in accordance with the system control joint layout details. Sheet ends must be aligned at control joints.

DESIGN CONSIDERATIONS

Waterproofing Systems

Constructafloor flooring is a fibre cement product and requires an impervious or waterproof membrane to achieve a waterproofing system. Waterproofing and lining components such as sealers, membranes/reinforcements/bond breakers, mortars/screeds/grouts, adhesives and finishes should be selected as per manufacturer's recommendation as compatible with each other, as well as with the fibre cement substrate, and their performance as a complete system.

A proprietary membrane system must be used. This should be installed by a specialist waterproofing contractor, and a waterproof guarantee provided.

Information on waterproofing systems for use with Constructafloor sheets is available from ARDEX, Bostik, Crommelin and Parchem. In all cases details and installation procedures from these suppliers should take precedent over details in this guide, such as the use of bond breaker and/or joint reinforcement tapes.

Please contact these companies to confirm project suitability. Further information is available at www.cemintel.com.au

Internal Wet Areas

Depending on the class of building, the NCC has nominated design provisions for the waterproofing of an internal floor using the Housing Provisions, Australian Standard AS 3740: Waterproofing of wet areas within residential buildings, or a combination of both. Further waterproofing construction detailing information is provided in Cemintel literature.

For internal wet areas, the finished floor plane shall have the required fall to facilitate drainage and prevent water ponding. The location of the waterproofing membrane is dependent on the nominated design provisions and is the responsibility of the project waterproofing contractor and designer. Some possible options, but not all include:

- The waterproofing membrane applied to a level structural substrate with required fall in the finished floor plane.
- Waterproofing membrane applied over the screed/mortar/tile bed with the required fall.
- The Constructafloor structural substrate installed with fall to facilitate drainage and prevent ponding and a waterproof membrane applied to the Constructafloor substrate.

Cemintel Constructafloor sheets must have an impervious membrane or waterproofing membrane applied to the Constructafloor surface.

A premium solution for level Constructafloor structural substrates, is the provision of an under and over membrane to the screed/mortar/tile bed. The primary waterproofing membrane to satisfy NCC provisions is applied over the screed/mortar/tile bed with required fall, and a must have an impervious membrane/waterproof membrane applied to the Constructafloor substrate. A double leak control flange (double puddle flange) system can be installed with the top flange recessed into the screed/mortar/tile bed. The secondary impervious membrane is a 'piece of mind' addition to prevent uncontrolled water spreading should the required waterproofing membrane fail.

External Applications

The waterproofing membranes of external floor systems outlined in this guide should be installed in accordance with AS 4654.2 Waterproofing membrane systems for exterior use - above ground level Part 2: Design and installation. **The waterproofing membrane must be applied to the top surface of the Constructafloor structural substrate.**

The external deck is to be waterproof, and the Constructafloor structural substrate must have a fall to facilitate drainage and prevent ponding. Decks must not be constructed level, and a fall of at least 1 in 100 is recommended. Where possible the fall should be provided in the framing.

Membranes may be required to resist a range of conditions, including chemical attack, ultra-violet light, heat aging, and temperatures from –15°C to +85°C. Low temperatures can result in reduced flexibility, and high temperatures can result in softening of the membrane.

The standard has specific details for the termination of membranes at vertical upward and downward locations. For decks up to 4m from the ground in wind classifications N1 to N3 and C1, the vertical upward termination height is 100mm minimum. The termination height increases for higher wind classifications and exposure conditions, and for greater deck heights. The system details show typical methods of sealing, anchoring and protecting the membrane terminations.

Whenever possible avoid draining into a sump as this can lead to water building up (ponding) to a depth above flashings. If this is unavoidable, the mortar bed with separating layer system must be used with waterproof membranes under and over the mortar bed and a double puddle flange system at the waste drain.

The use of a gutter at the edge of the deck can assist in the reduction of staining and prevent water tracking under the tiles and membrane.

At intenal/external floor junctions, the interior area floor level at doors and other openings must be at a sufficient level above the finished deck surface and highest overflow level to prevent water entering the building. The step should be at least 100mm, and equal to the membrane vertical upward termination height.

Durability

For external applications, Constructafloor systems are suitable for use in coastal areas – Corrosivity Category C3: Medium – defined as up to 1km from a surf beach, or more than 200m from the shore without breaking surf, i.e., sheltered bays. Consideration must also be given to local weather and topography features which can increase the distance that salt spray can travel, extending these nominal limits.

While the Constructafloor sheets are not subject to corrosion, the sheets should be waterproofed for external applications, and the fixings, drip angles and steel framing must have suitable corrosion resistance for the location. The designer can consider timber framing, steelwork with additional treatment and higher corrosion resistance fixings to achieve a suitable level of durability. The waterproofing membrane must be maintained in accordance with the manufacturer's recommendations and any damaged areas replaced immediately.

Maintenance

The durability of the system can be maintained by periodic inspection, including examination of the surface finishes, fixings, flashings, penetrations and membranes. Any cracked or damaged flashings or seals that would allow water ingress must be repaired immediately. Localised deflections, undulations in membranes, or other factors that may cause ponding of water must be rectified immediately.

DESIGN CONSIDERATIONS

Loads

Constructafloor systems are designed to satisfy the live loads associated with activities outlined in AS/NZS 1170.1:2002 and appropriate load combinations in AS/NZS 1170.0:2002.

Constructafloor sheets are not suitable for vehicle wheel loads. The 'Specific Uses' presented in Table: 1 reflect the minimum imposed live load actions listed in Table 3.1 of AS/NZS 1170.1.

Table: 1 presents the maximum allowable unfactored loads to satisfy a span/300 deflection limit under serviceability loading, appropriate load combinations in AS 1170.0:2002 and a superimposed dead load of 1.2kPa for floor coverings (i.e., tiles, grout screeds, mortar beds, underlay etc.).

Table: 1 presents load values for Constructafloor sheets supported at a minimum of 3 support joists (see Sheet Layout section).

The unfactored loads are based on the Constructafloor sheets having an Equilibrium Moisture Content (EMC) condition.

It is the responsibility of the designer to specify the waterproofing membranes or sealants to prevent moisture ingress into the Constructafloor sheets to maintain the EMC condition.

Contact DesignLINK for information on on Constructafloor sheets at a saturated condition or higher live loads requirements.

Table: 1. Cemintel Constructafloor Interior Flooring – 'Double Span' Sheet Installation, SDL = 1.2kPa

Cemintel Constructafloor		**Specific Uses**	**Maximum Allowable Unfactored Floor Loadings**			
Sheet Thickness (mm)	Max. Joist Spacing (mm)		Dead Load	Live Load		
			SDL* (kPa)	UDL (kPa)	Concentrated Point Load (kN)	
					P_{360}	P_{100}
19	450	Category A1 & A2 Domestic and residential activities – general areas, private kitchens, laundries, bedrooms, hospital wards, hotel rooms, toilet areas	1.2	3.0	1.8	2.0
22	400	All categories in buildings and structures with a concentrated live load action less than 4.5kN	1.2	7.5	1.8	4.5
	450	All categories in buildings and structures with a concentrated live load action less than 4.0kN	1.2	7.5	1.8	4.0
	600	Category A1 & A2 Domestic and residential activities – general areas, private kitchens, laundries, bedrooms, hospital wards, hotel rooms, toilet areas, balconies, roofs used for roof type activities	1.2	5.0	1.8	2.0

Notes:

SDL superimposed dead load, i.e., weight of the floor coverings, such as, carpet, underlay, grout, mortar bed and tiles.
UDL uniformly distributed live load, AS/NZS 1170.1:2002 Table 3.1.
P_{350} concentrated point live load applied to a 350mm² bearing area. Refer to Note 1, AS/NZS 1170.1:2002 Table 3.1.
P_{100} concentrate point live load applied to a 100mm x 100mm bearing area (0.01m²). Refer AS/NZS 1170.1:2002 Cl.3.2(b).
ψ_s = 0.7, for uniformly distributed loading, AS/NZS 1170.0:2002 Table 4.1.
ψ_s = 1.0, for concentrated point loading, AS/NZS 1170.0:2002 Table 4.1.
* Span/300 deflection limit under serviceability loading.
Constructafloor flooring must be installed over a minimum of 3 supporting joists.
When unavoidable for single span sheeting, provide blocking and/or trimmers to ALL the edges of the sheeting.

DESIGN, DETAILING AND PERFORMANCE RESPONSIBILITIES

Cemintel engages independent testing laboratories to test and report on the performance of wall/ceilings/floors in accordance with the relevant Australian Standards. Consultants use these reports as the basis for opinions (estimates of laboratory performance) they issue for variations or different arrangements to the tested system. Using their experience, the consultant will make judgement about on-site installed performance of various walls, ceilings and floors.

Project Consultants

(Structural, Fire, Acoustic, Façade etc.)

These consultants are typically responsible for the following:

- Opinions on expected laboratory performance of wall, ceiling and floor configurations that vary from actual test configuration, such as substitution of products and components;
- Judgements about expected field performance using laboratory test reports and practical experience; and
- Design, specification and certification of structural, fire, acoustic, durability, weather tightness and any other required performance criteria for individual projects.

The design and selection of building elements, such as wall and floors and their integration into the building should considering the following:

- Interface of different building elements including the structure/ substrate;
- Wall and floor junctions;
- Penetrations;
- Flashing issues;
- Room / building geometry; and
- Acoustic and water penetration field-testing.

Design Responsibility

Structural floor framing are required to resist superimposed windloads, dead loads and fire loads that are specific to the building and the site. It is the project designer's responsibility to determine the loads and structural framing adequacy of the Constructafloor sheets for the project. Refer to the appropriate tables in this guide.

The performance levels of floors documented in this guide the 'Constructafloor Design & Installation Guide' and CSR Gyprock® The Red Book™ publications are either what is reported in a test or the documented opinion of consultants.

Performance in projects is typically the responsibility of the Project Certifier and/or Builder. These professionals are typically responsible for:

- Identifying the performance requirements for the project in accordance with the NCC and clearly communicating this to the relevant parties; and
- Applicability of any performance characteristics supplied by Cemintel including test and opinions for the project.

Cemintel does not provide consulting services. Cemintel provides technical information that has been prepared in consultation with third party subject expert consultants for the presentation of information presented in this guide. This guide may be subject to amendment or change as required or as deemed necessary. The most up to date version of this guide should be referred to and shall be available at the Cemintel website cemintel.com.au.

Any party using the information contained in this guide or supplied by Cemintel in the course of a project must satisfy themselves that it is true, current and appropriate for the application, consequently accepting responsibility for its use.

It is the responsibility of the building designer, architect, engineer and project consultants to ensure that the information and details in this guide and the performance of the Constructafloor flooring is suitable for the intended project application.

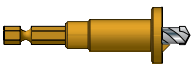
The recommendations in this guide are formulated along the lines of good building practice but are not intended to be an exhaustive statement of all relevant data.

Cemintel is not responsible for the performance of constructed floors and walls, including field performance, and does not interpret or make judgments about performance requirements in the NCC.

Note: It is the responsibility of the Project Engineer/ Frame Designer to specify the connection of the structural blocking and trimmers for the structural framing of control joints and single span sheets, and to calculate the superimposed dead load and live load for the flooring on a project.

COMPONENTS + ACCESSORIES

Table: 2. Components and Accessories

Accessories	Description	Size/Colour	Quantity	Product Code
CONSTRUCTAFLOOR SHEET FIXINGS				
	**Nail for Timber Framing** – 50mm machine driven D Head ,used for direct fixing Constructafloor sheets to a minimum MGP10 timber framing. Class 3 or Class 4 finish.	2.87mmø x 50mm	Supplied by others	
	**Screw for Steel Framing** – Countersinking screw used for direct fixing Constructafloor sheets to steel framing. To suit a minimum 0.75mm BMT G2 framing. Pre-drill Constructafloor sheets and countersink heads.	10-16 x 30mm	Supplied by others	
	**Screw for Steel Framing** – Winged, self-embedding head, Class 3	10-16 x 30mm	Supplied by others	
	**Screw for Timber Framing** – Used for direct fixing Constructafloor sheets to a minimum MGP10 timber framing. Pre-drill Constructafloor sheets and countersink heads. Type 17, CSK countersunk head, stainless steel or Class 3	10g x 50mm	Supplied by others	
	**Screw for Drip Mould** – Used with sealant for direct fixing drip mould to underside of Constructafloor sheet. Metal thread self-tapping, CSK countersunk head, galvanised	8g x 15mm	Supplied by others	
	**Construction Adhesive** – Used when nail fixing Constructafloor sheets to minimum MGP10 timber framing			
	• Sikaflex 11FC • Fuller Max Bond • Fuller Max Bond Pro	– – –	Supplied by others or equivalent	– – –
FLASHINGS, SHEETS, MEMBRANES, ADHESIVES				
	Cemintel Edge Sealer – for sealing panel edges after on-site cutting.	200ml 2ltr	1 1	100166 180928
	Mortar Bed & Steel Reinforcement– Used to create profile of surface finish and compatible with the membrane. As required for the system to AS 3958.1		Supplied by others	
	Insitu Membrane/Internal Tray – Used for an impervious barrier/Water Proof Membrane (WPM) or as required by system, may incorporate joint reinforcing. Proprietary impervious barrier assessed and classified in accordance with AS/NZS 4858		Supplied by others	
	Slip Sheet – Use for a bond breaker and slip layer between WPM and mortar. 0.2mm Polyethylene (Polythene) Sheet to AS 2870		Supplied by others	
	Moisture Barrier – For use with the water resistant floor system. A liquid sealer to be applied to the Constructafloor immediately prior to the installation of the surface finish.			
	• Ardex WPM 300		Supplied by others	
	Perimeter Flashing – Used at the wall/floor junction.PVC angle 75mm x 50mm		Supplied by others	
	Flashing – Used as a water barrier for the framing. Alcor™ or equivalent	3000mm	1	11206
	Wall/Floor Joint Flashing – PVC Angle Mould 4mm x 47mm x 47mm		Supplied by others	
	Edge Drip Mould – Used to prevent water tracking along underside of Constructafloor sheet. Aluminium or PVC Angle 12mm x 12mm		Supplied by others	
	Tile Adhesive – Use to bond tiles to Constructafloor sheets, mortar bed, waterproofing membrane or floor surface. Compatible products available from Ardex, Bostik, Davco, Crommelin and Parchem.		Supplied by others	
	Vinyl Adhesive – Use to bond vinyl to Constructafloor sheets and floor substrate. Fibre cement compatible products include Holdfast 1906, Dunlop Vinyl Adhesive and Polymer Engineering Vinyl Adhesive.		Supplied by others	
	**Flexible Sealant** – Wet area sealant used for joints in tiles and other substrates, and other sealants for joints in Constructafloor substrate and fastener heads. Prime surfaces as recommended by the manufacturer.			
	• Gyprock Wet Area Acrylic Sealant • Sikaflex Pro (Grey) • Sikaflex Pro (Black)	450g tube 310mL tube 310mL tube	1 1 1	10902 11378 39488
	**Backing Rod** – Used to enable correct filling of joints with sealant. The diameter of backing rod must be appropriate for the width of the gap being filled	10mm diameter x 50m roll	1	11177
	Paint Finishes – Anti-slip exterior paint suitable as a trafficable wearing surface for fibre cement substrates. As required for the system		Supplied by others	
DRILLING & CUTTING TOOLS – Cemintel recommends the cutting tools in the table below. Appropriate dust extraction methods should also be used.				
	**Countersinking Tool** – A tungsten carbide tipped tool specifically designed for drilling and countersinking.		1	22116
	Makita Plunge Saw Kit (1300W) includes 1400mm guide rail and bonus 165mm fibre cement saw blade – excellent for cutting cement based sheets	165mm	1	165485
	Makita 165mm Fibre Cement Saw Blade – ideal for use with the Makita Plunge saw and other 165mm circular saws fitted with vacuum extraction systems.	165mmx20x4T	1	165486

GENERAL INSTALLATION

Sheet Fixing

Fix Constructafloor sheets with screws at 450mm centres maximum along framing. Alternatively, where sheets are to be nail fixed, apply a continuous bead of construction adhesive to sheet framing and power nail at 200mm centres maximum. Fixings must be kept a minimum of 50mm from corners. Refer to FIGURE 2, FIGURE 3 and FIGURE 4.

Fixings should finish below the finished level of the Constructafloor sheet and any indentation should be filled with epoxy or polyester filler.

Constructafloor sheets are fixed directly to the floor joists. Sheets are laid with tongue and groove joints perpendicular to the joists. Sheet ends must align with joists, and may be staggered or aligned. Sheet ends must be aligned at control joints. Sheets may be laid in either direction relative to the slope. Leave a 10mm gap at wall junctions. **All exposed cut edges must be sealed with Cemintel Edge Sealer to prevent moisture absorption.**

FIGURE 2 Fastener Countersinking

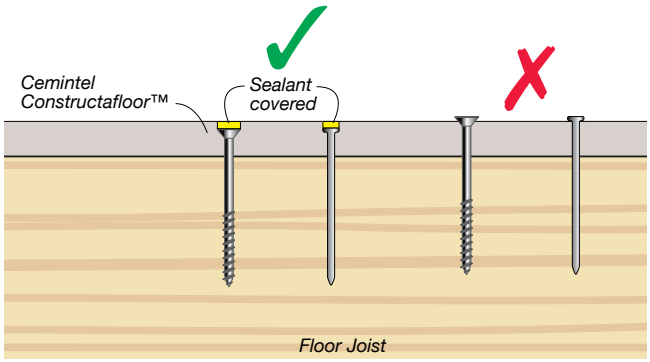


FIGURE 3 Fixing Detail for Nail and Adhesive

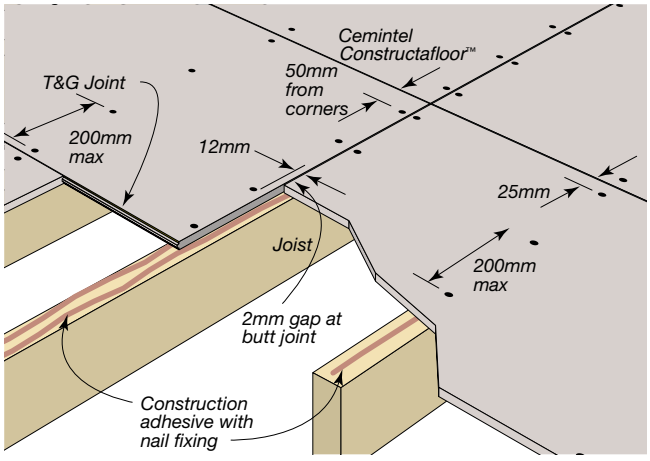
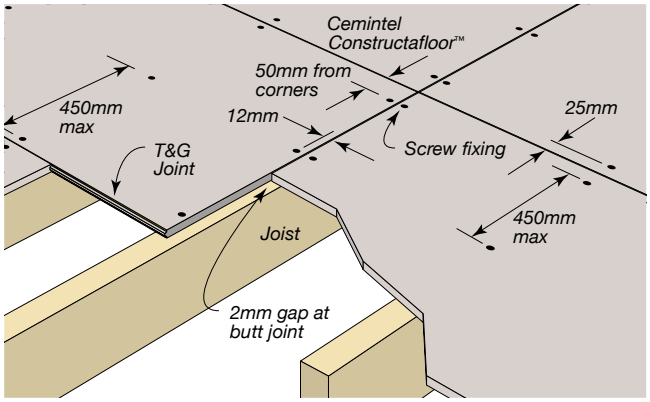


FIGURE 4 Fixing Detail for Screw



Sheet Jointing for Membrane, Mortar and/or Tile Finishing

Sheets are installed with the side printed 'This side down for tiling' facing down.

Tongue and groove joints along the long edge must be butted tightly together prior to fixing. A chamfer at each tongue and groove edge allows for waterproofing sealant.

Butt joints at sheet ends must be fixed to the frame leaving a 2mm minimum gap between each flooring sheet to allow for joint sealant.

Fill all joints with joint sealant, finishing level with the sheet surface. Joints must be smoothed within 10 minutes.

FIGURE 5 Sheet Butt Joint Finish

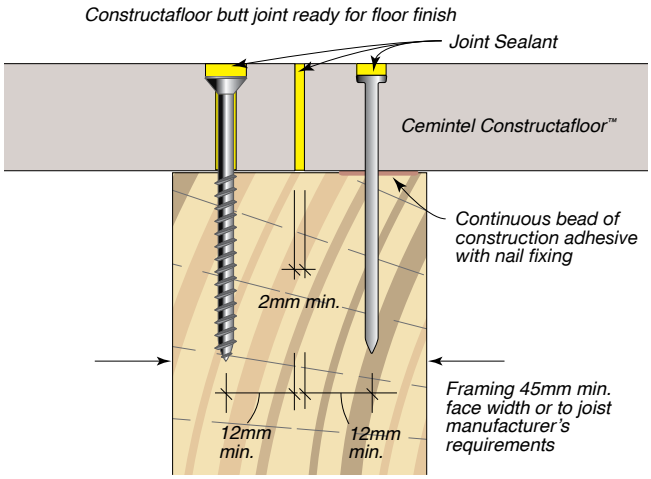
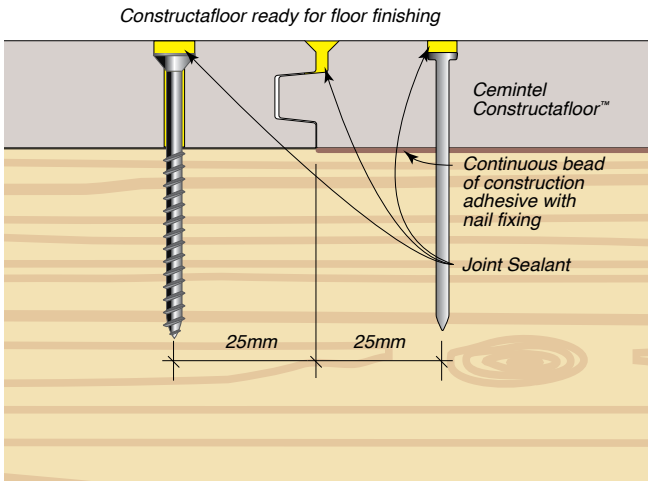


FIGURE 6 Tongue and Groove Joint Finished



GENERAL INSTALLATION

Sheet Jointing for Vinyl or Carpet Finishing

Sheets are installed with the side printed 'This side down for tiling' facing up so that there is no upward facing chamfer at tongue and groove edges. All panel joints are to be butted tightly together prior to fixing. Sealant is not required at tongue and groove or butt joints. Sheet fixing and layout requirements are the same as the standard installation.

FIGURE 7 T&G Joint Ready for Vinyl or Carpet.

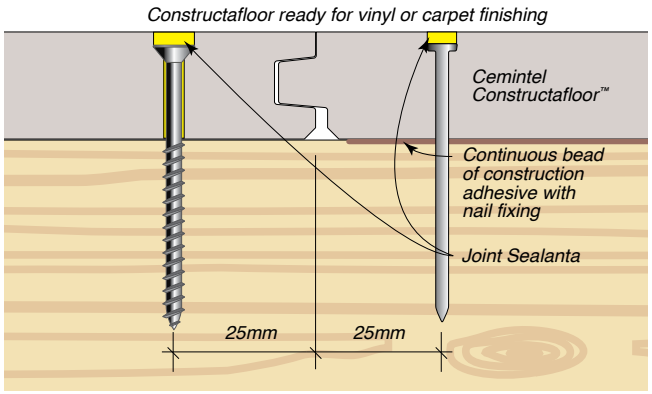
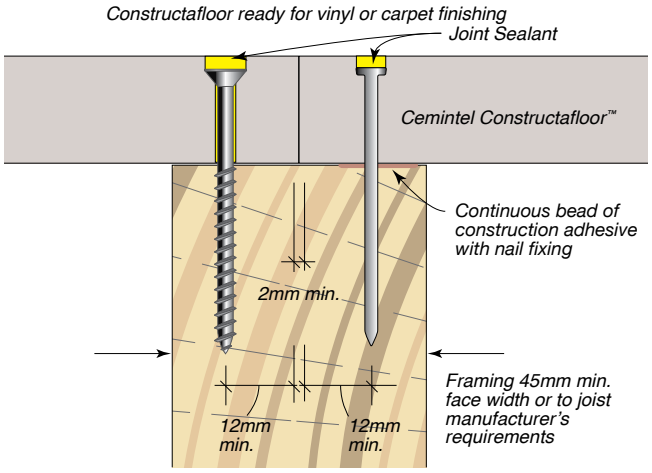


FIGURE 8 Butt Joint Ready for Vinyl or Carpet



Control Joints

Sheets must be fixed in position ready for joints to be completed. Ensure joints are clean and clear of any dust that may prevent sealant adhering. All cut edges shall be supported by a structural trimmers or blocking as per designer specifications. **All exposed cut edges must be sealed with Cemintel Edge Sealer**.

Control Joints must be installed leaving a 5mm minimum gap between sheets to allow for the installation of backing rod and sealant. This gap is important to accommodate movement of the building materials and structure.

Press foam backing rod into joint pressing down firmly against joist leaving approximately 6mm depth gap at top to suit sealant requirements and fill with flexible sealant, finishing flush with the sheet surface.

A strip of masking tape along both sides of the joint can help ensure a neat finish is achieved. Joints must be smoothed within 10 minutes. Remove masking tape and allow sealant to dry for approximately 24 hours.

Refer to appropriate sheet layout and control joint details in the chosen Constructafloor solution.

Tiled Areas

When selecting tiles ensure they are fit for purpose and an appropriate adhesive compatible with the fibre cement substrate and waterproofing membrane is selected. In all cases the tile and tile adhesive manufacturer's instructions should be followed.

For further advice, refer to Australian Standard AS 3958.1 'Guide to the installation of ceramic tiles'.

Tile adhesive must conform to Australian Standard AS 2358 'Adhesives - for fixing ceramic tiles'. In all cases the tile and tile adhesive manufacturers' instructions should be followed.

Penetrations

Penetrations in the Constructafloor sheets will be required for the installation of waste and drainage pipes, and leak control system. Typically the leak control flange (i.e., puddle flange) will be bonded and fixed to the sheets and the waterproofing system may require a recess to position the flange flush with the sheet surface. Any recesses around the flange perimeter shall be filled as per manufacturer's instruction to provide a suitable surface for the waterproof membrane.

When a double puddle flange with waterproof membranes under and over the mortar bed, then the lower leak control flange can be installed on top of the sheet, with no recess.

For holes greater than 100mm diameter and perimeter recesses provide a trimmer blocking to support the edge of the penetration.

GENERAL INSTALLATION

Sheet Layout for Internal Areas

FIGURE 9 Staggered Sheeting & Control Joint layout

NOTE: ▶◀ Aligned control joints refer to system details.

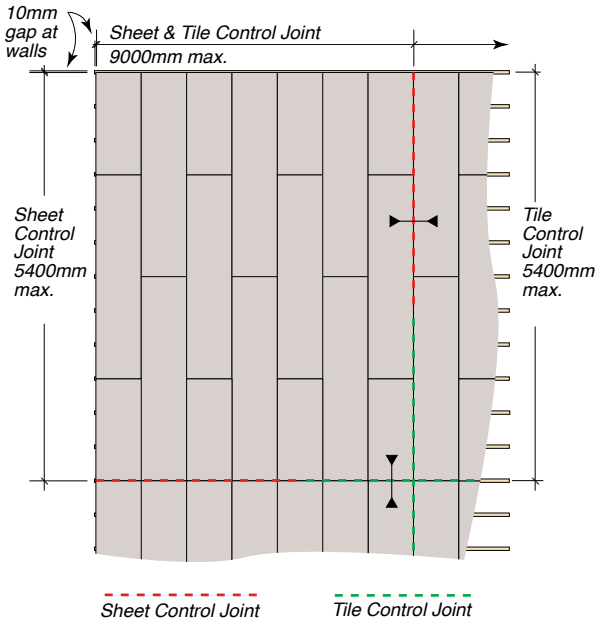
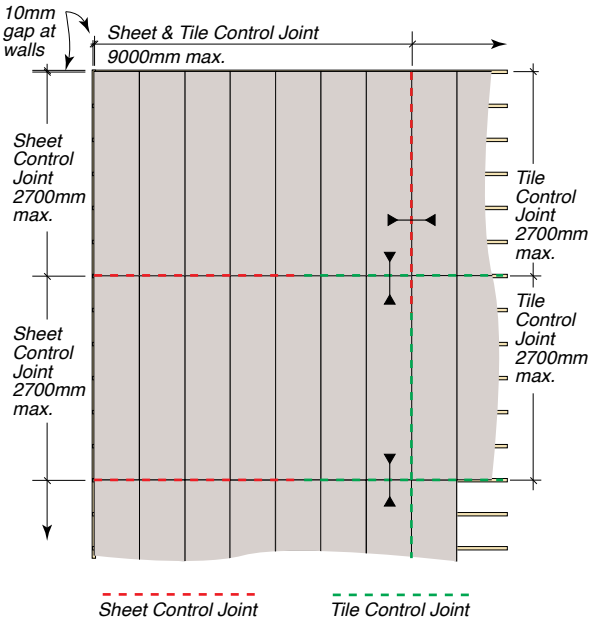


FIGURE 10 Aligned Sheeting & Control Joint layout

NOTE: ▶◀ Aligned control joints refer to system details.



Sheet Layout for External Areas

FIGURE 11 Staggered Sheeting & Control Joint layout

NOTE: ▶◀ Offset or aligned control joints refer to system details.

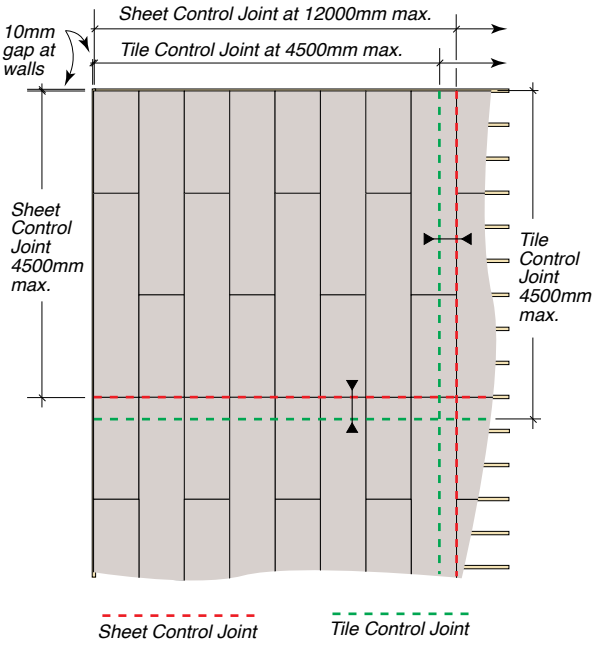
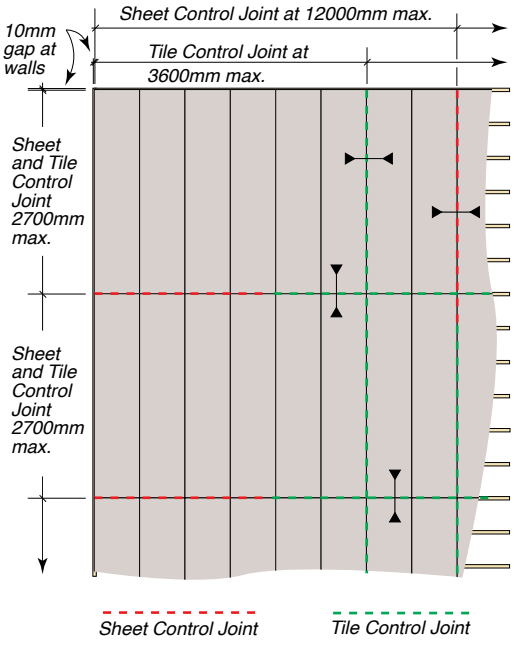


FIGURE 12 Aligned Sheeting & Control Joint layout

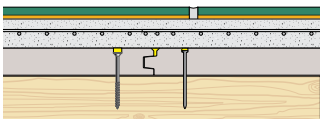
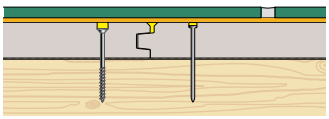
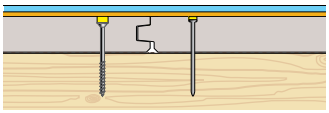
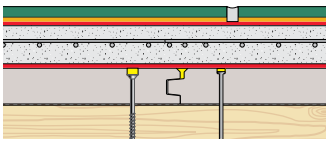
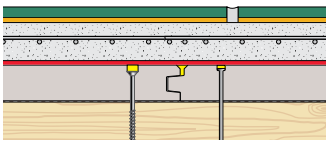
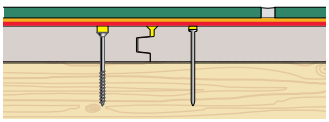
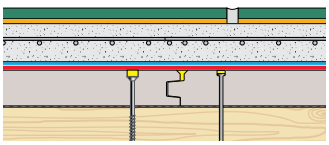
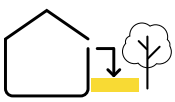
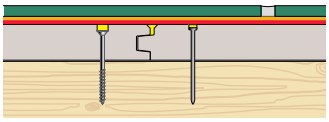
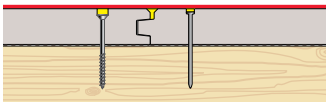
NOTE: ▶◀ Aligned control joints refer to system details.



SYSTEM SELECTION

Cemintel offers floor systems that are suitable for a variety of applications. Systems fall broadly into the following three categories with a variety of surface finishes available.

Table: 3. Constructafloor System Selection

Typical Layout	System/ Page No.	Suitable for Internal Habitable Areas	Suitable for Internal Wet Areas	Suitable for External Areas	Coverings		
					Tile	Vinyl	Carpet
Internal Habitable Areas							
	**Tile & Mortar Bed/Tile Bed** page 13	✓	–	–	✓	–	–
 	**Direct Fixed Tiles** page 14	✓	–	–	✓	–	–
	**Vinyl or Carpet** page 15	✓	–	–	–	✓	✓
Internal Wet Areas							
	**Under/Over waterproofing** page 16	–	✓	–	✓	–	–
 	**Mortar Bed & Tiles with Waterproof Membrane** page 17	–	✓	–	✓	–	–
	**Direct Fix Tiles with Membrane** page 19	–	✓	–	✓	–	–
External Areas							
	**Mortar Bed with Separating Layer** page 20	–	–	✓	✓	–	–
 	**Liquid Membrane Systems** page 22	–	–	✓	✓	–	–
	**Trafficable Membrane System** page 24	–	–	✓	–	–	–

Tile & Mortar Bed/Tile Bed

Internal floor systems in **non-wet areas** do not require a waterproofing system for typical floor finishes like tiles and mortar bed/tile bed which are installed directly over the Constructafloor. Sheets can be installed staggered or aligned.

Important: Control joints in tiling and mortar bed/tile bed must correspond with sheet joints.

FIGURE 13 Tiles & Mortar/Tile Bed

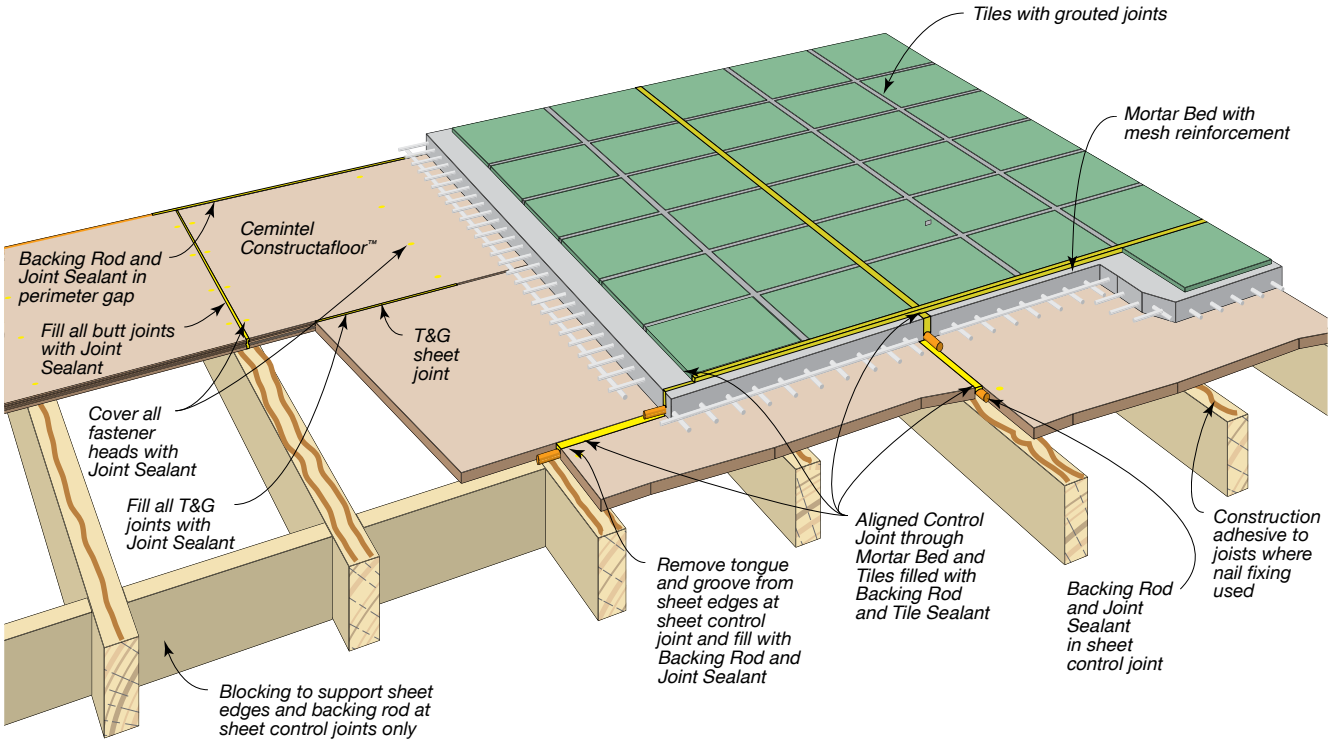


FIGURE 14 T&G control joint

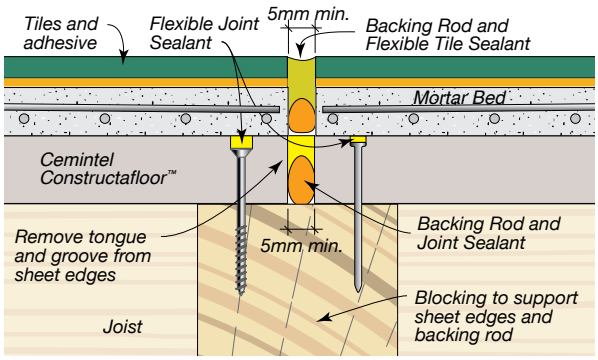


FIGURE 15 Butt Joint Control joint

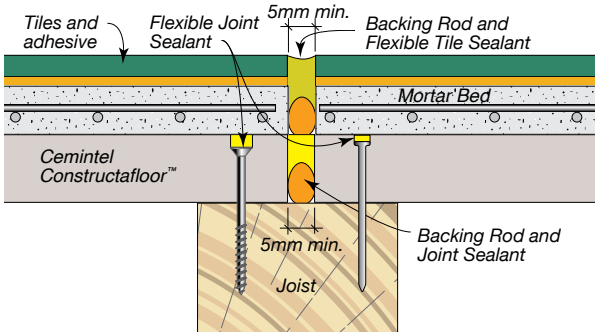


FIGURE 16 Typical T&G Joint with Tiles on Mortar

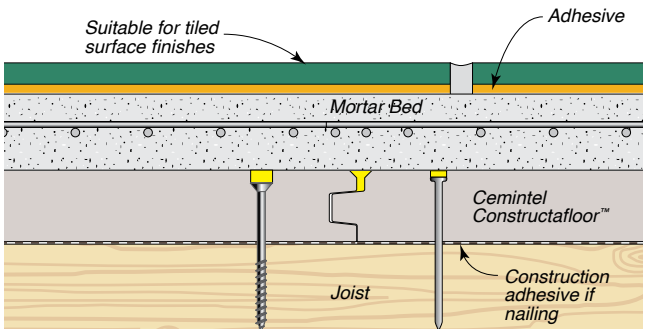
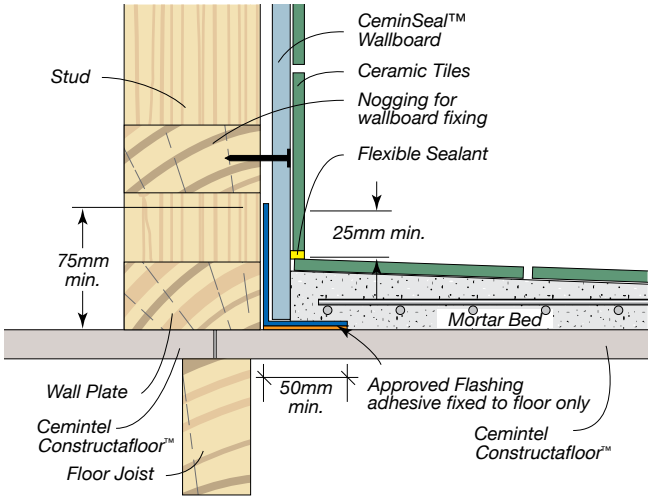


FIGURE 17 Perimeter Flashing with PVC Angle



Direct Fixed Tiles

When selecting tiles ensure they are suitable for use and an appropriate adhesive is selected. In all cases the tile and tile adhesive manufacturer's instructions should be followed.

For further advice, refer to Australian Standard AS 3958.1 'Guide to the installation of ceramic tiles'. **Important**: Control joints in tiling **must** correspond with sheet joints.

Constructafloor sheets can be staggered or aligned.

FIGURE 18 Direct Fixed Tiles

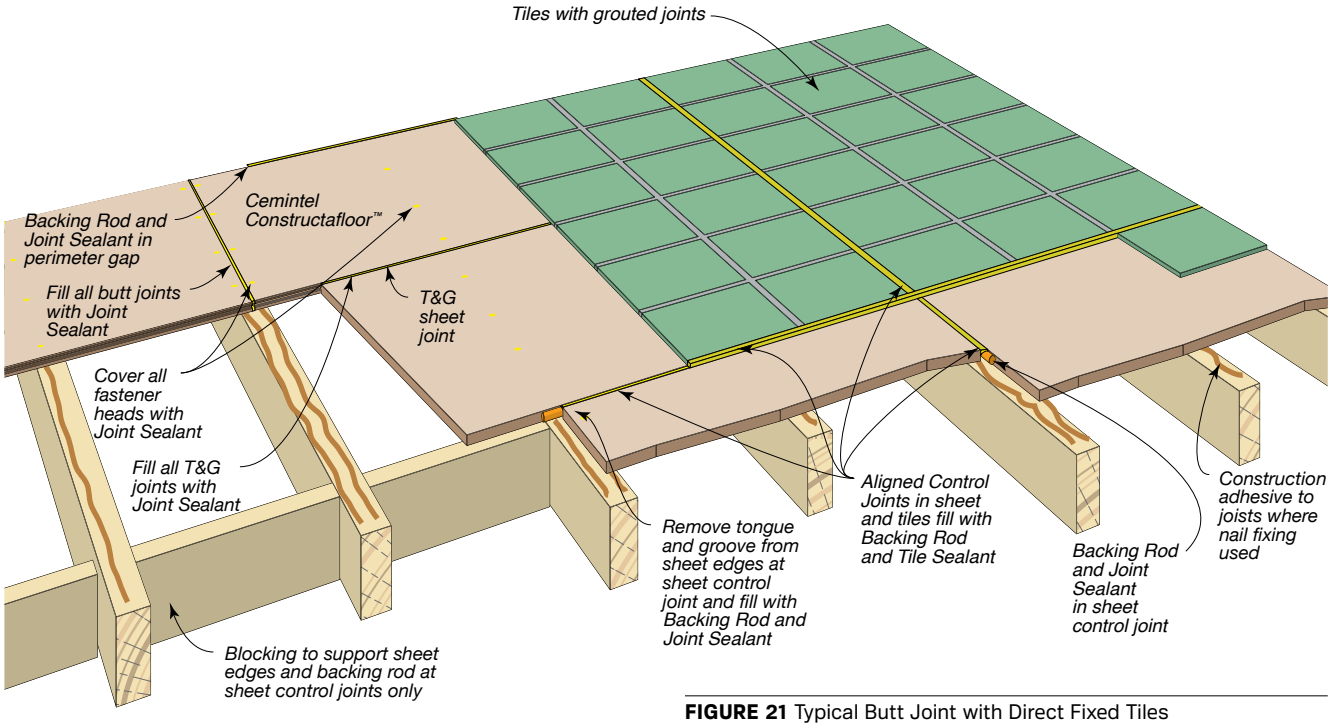


FIGURE 19 Butt Joint Control Joint layout

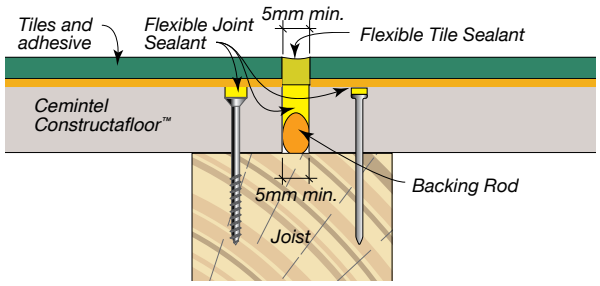


FIGURE 20 T&G Control Joint layout

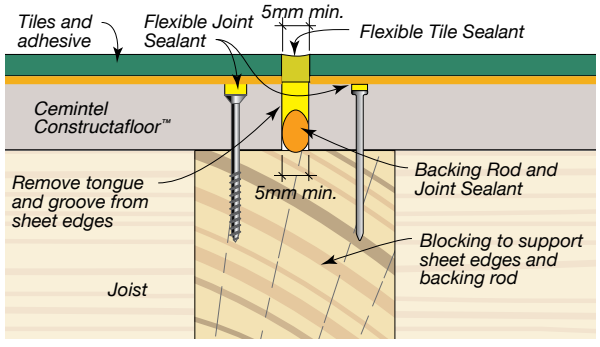


FIGURE 21 Typical Butt Joint with Direct Fixed Tiles

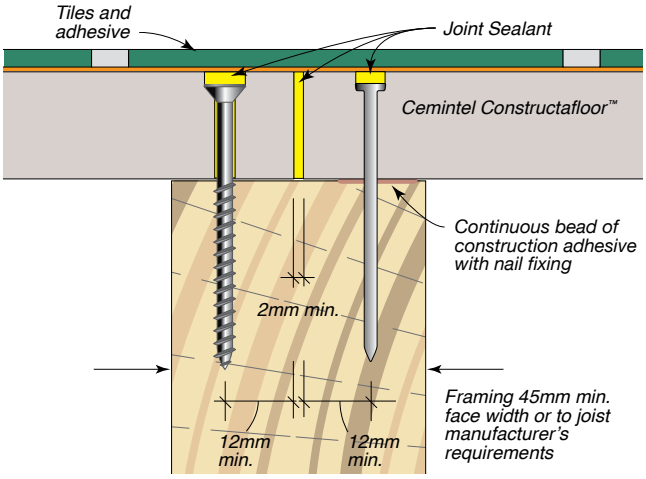
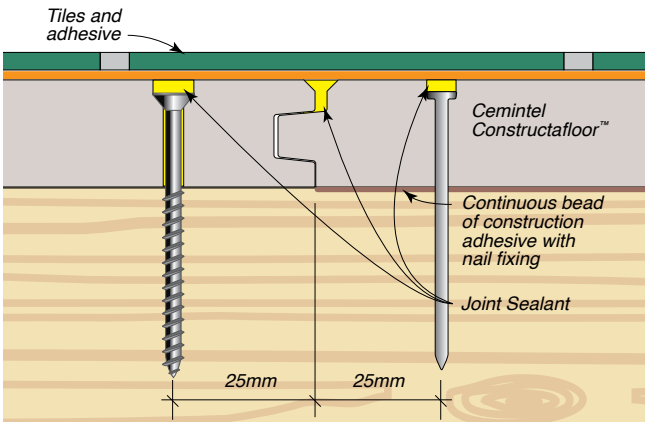


FIGURE 22 Typical T&G Joint with Direct Fixed Tiles



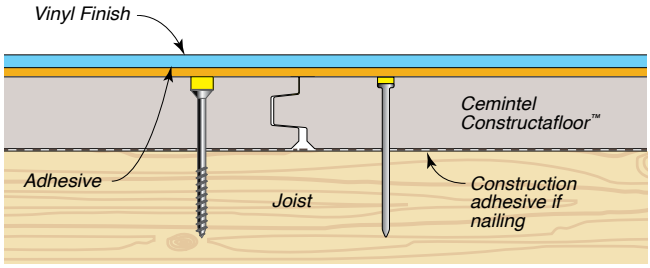
Vinyl or Carpet on Constructafloor

For vinyl floor coverings, the Constructafloor sheet shall be **reversed** so the un-painted surface is upwards. This will ensure the tongue and groove joint has no rebate and sealant filling is not required. Constructafloor sheets can be staggered or aligned.

A flush surface is required to avoid blemishes in the finish. Fill minor imperfections and cover fastener heads with epoxy or polyester based builder's filler. Any joint misalignments must be filled or sanded smooth. Alternatively, a floor leveller may be used over larger areas. Ensure all movement joints and gaps in the floor are protected or filled prior to applying the floor levelling compound.

Ensure all sheets are clean, dry and free from dust. Follow adhesive manufacturer's recommendations for installing the vinyl sheeting. It is recommended that a primer be used for polymer type adhesives.

FIGURE 23 Internal Habitable Area with Vinyl Finish



Under/Over Waterproofing System

This system has Constructafloor sheets fixed directly to floor joists, with a flexible waterproofing membrane installed under and over the screed/mortar bed/tile bed with double leak control (i.e. double puddle flange) at the waste pipe. This should be installed by a specialist waterproofing contractor, and a waterproofing guarantee provided.

Control joints in the mortar bed/tiles **must** be aligned with control joints in the sheets. Constructafloor sheets can be staggered or aligned.

FIGURE 24 Typical Under/Over Waterproofing

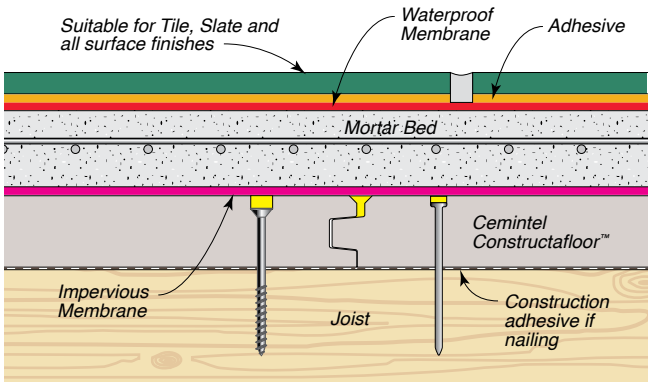


FIGURE 25 Typical Under/Over Waterproofing Perimeter

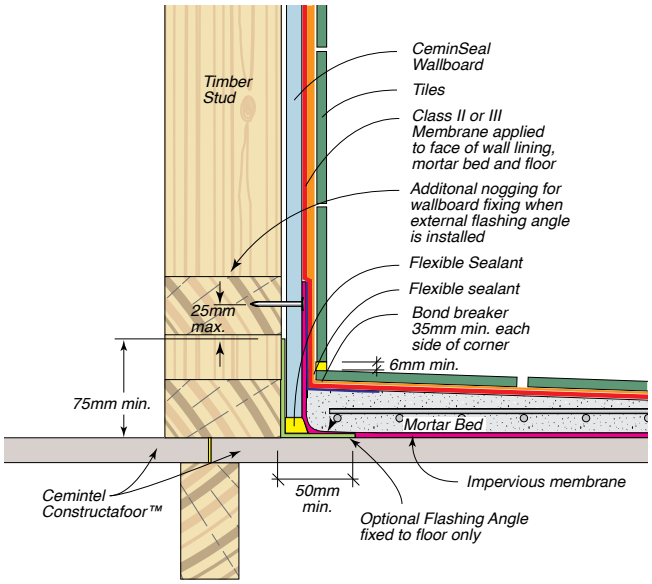
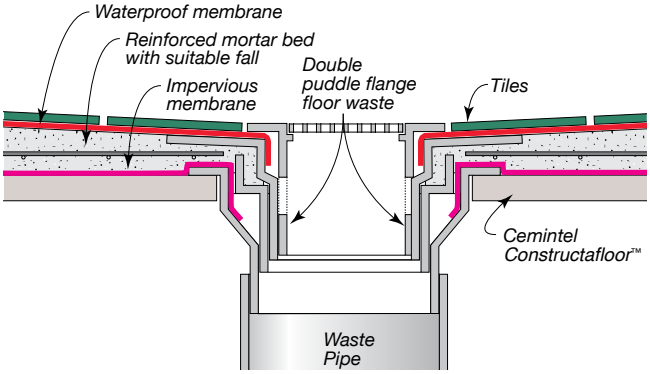


FIGURE 26 Double Leak Control Flange Floor Wast



Mortar Bed & Tiles with Waterproof Membrane

This system has Constructafloor sheet fixed directly to floor joists, with a flexible waterproofing membrane installed on the top surface of the Constructafloor sheets to provide waterproofing. This should be installed by a specialist waterproofing contractor, and a waterproofing guarantee provided. Constructafloor sheets can be staggered or aligned. The finished floor plane must have falls to a waste drain to prevent ponding.

Depending on the size and thickness of the mortar bed layer, the designer may specify a separating layer or slip-sheet to separate the membrane from the mortar bed to accommodate minor movement, and a reinforced mortar bed to support the tiles or other finish. Control joints in the mortar bed/tiles must be aligned with control joints in the sheets. The waterproof membrane system may require a bond breaker/reinforcement tape, refer to the manufacturer for details.

FIGURE 27 Mortar Bed & Tiles with Membrane

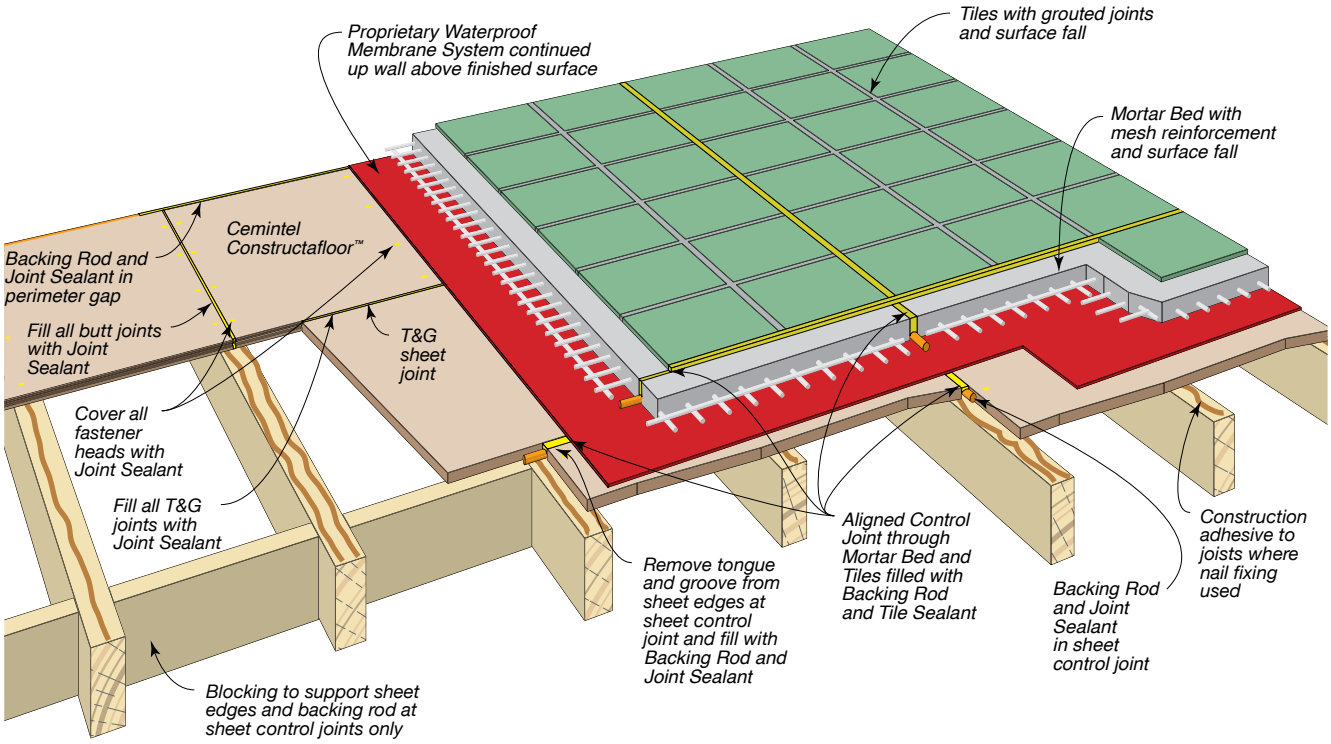


FIGURE 28 T&G Control Joint layout

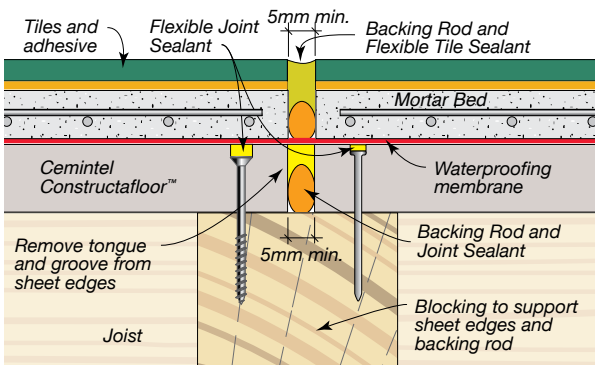


FIGURE 29 Butt Joint Control Joint layout

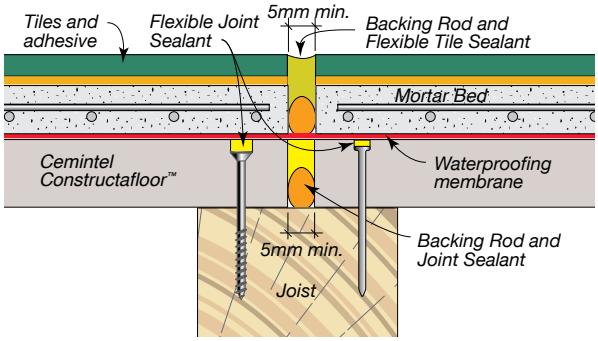


FIGURE 30 Typical T&G Joint with Tiles/Mortar with Membrane

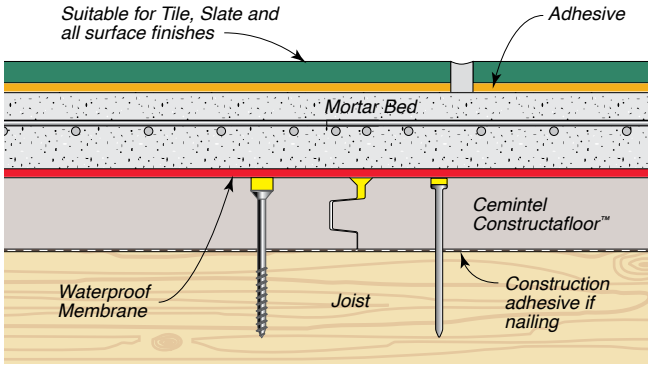


FIGURE 31 Insitu-Formed Shower Recess – Class II Or III Membrane

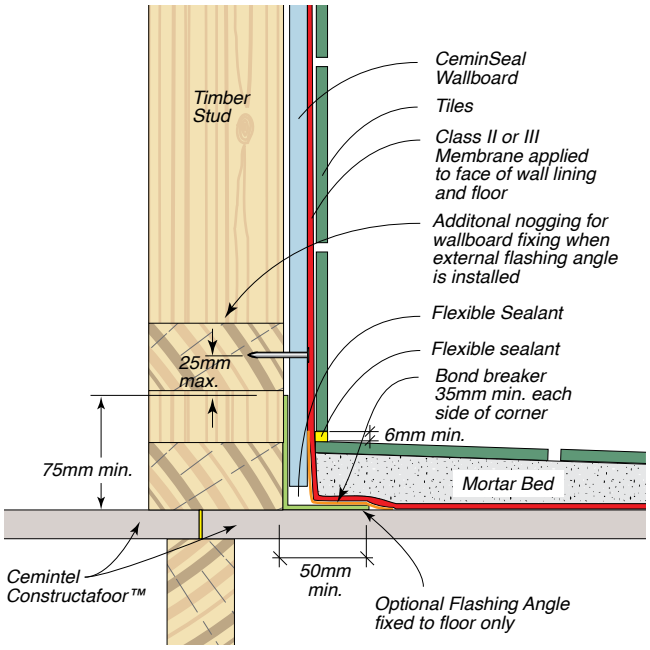


FIGURE 32 Typical Shower Hob

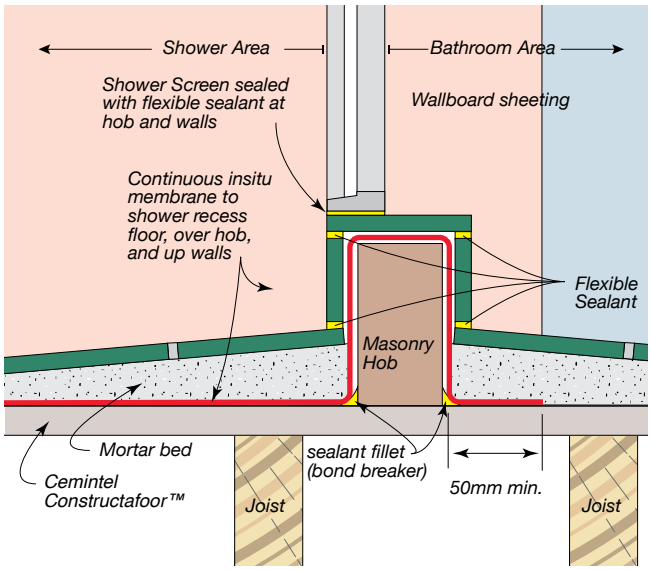


FIGURE 33 Typical Hobless Shower Recess

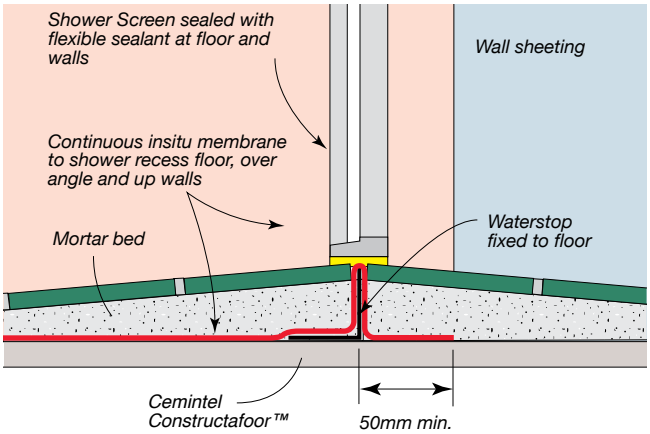


FIGURE 34 Typical Doorway Flashing Details

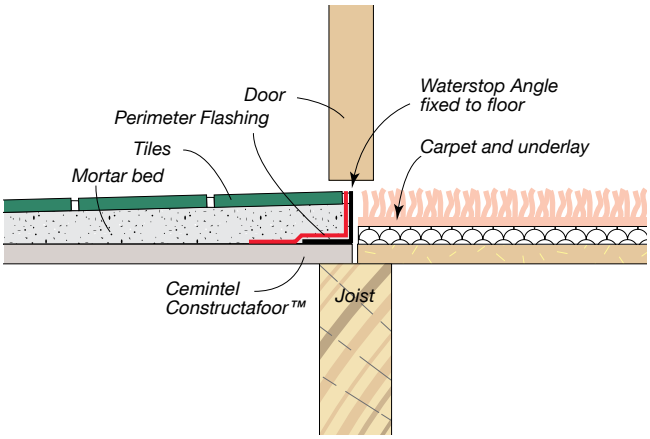
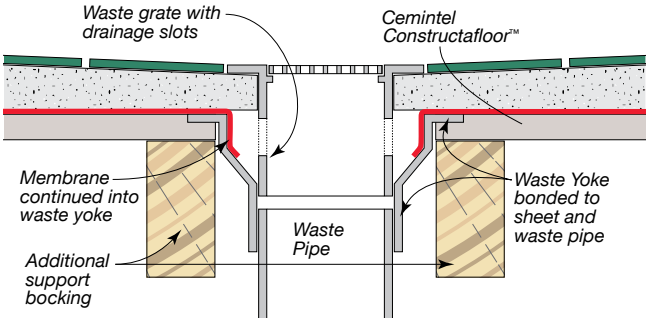


FIGURE 35 General Waste Detail



Direct Fix Tiles with Membrane

This system has no mortar bed and are of minimum thickness, which is an advantage where threshold step height is low, and are also light weight to reduce the load on floor joists. If a fall to waste is required, the support framing of the Constructafloor sheets will need to create the fall in the floor surface.

Constructafloor sheets can be staggered or aligned and a proprietary membrane system must be used. This should be installed by a specialist waterproofing contractor, and a waterproofing guarantee provided. The waterproof membrane system may require a bond breaker/reinforcement tape, refer to the manufacturer for details.

FIGURE 36 Direct Fix Tiles with Membrane

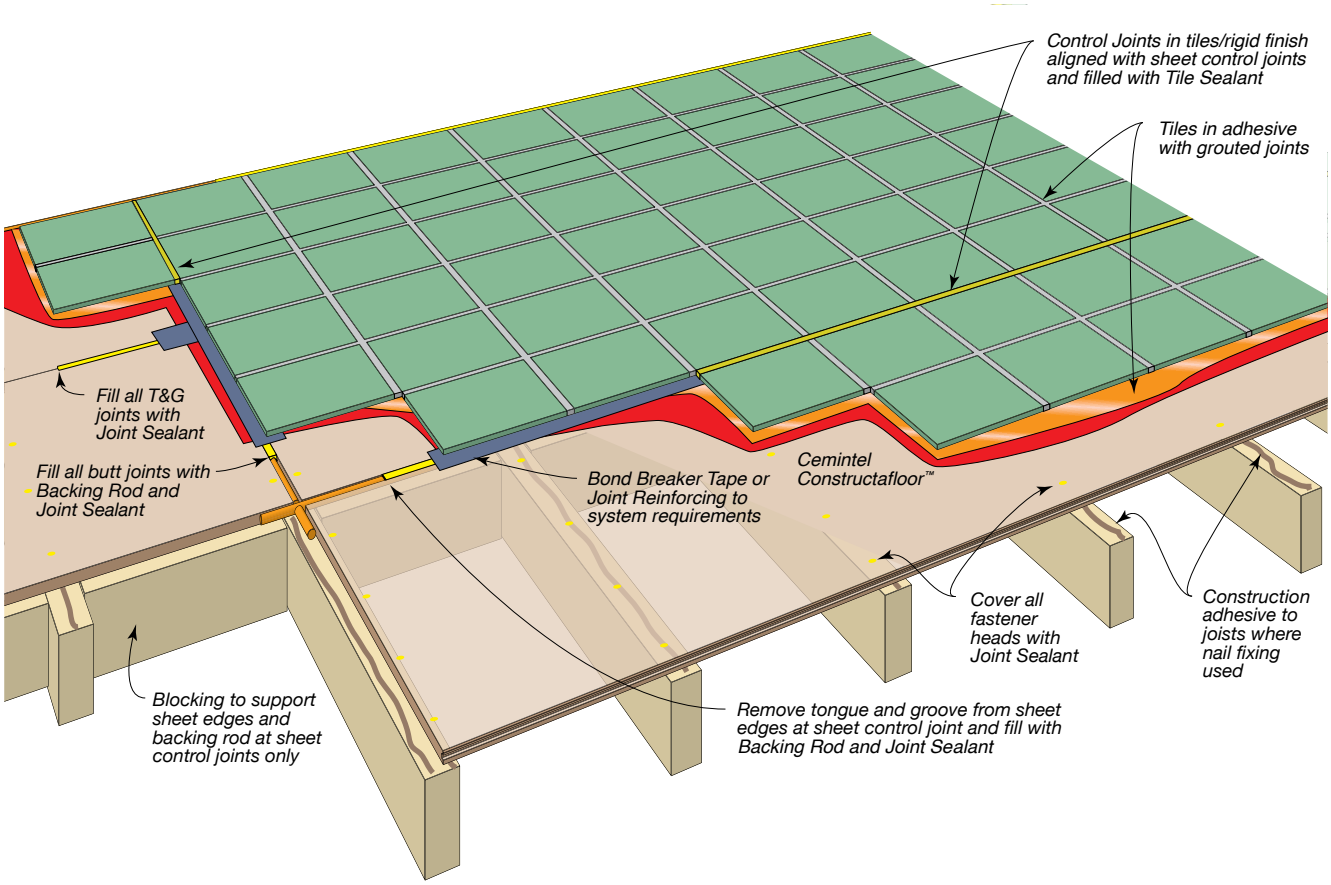


FIGURE 37 T&G Control Joint Layout

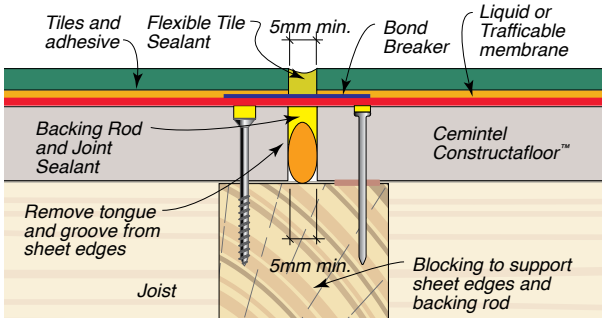


FIGURE 38 Butt Joint Control Joint Joint Layout

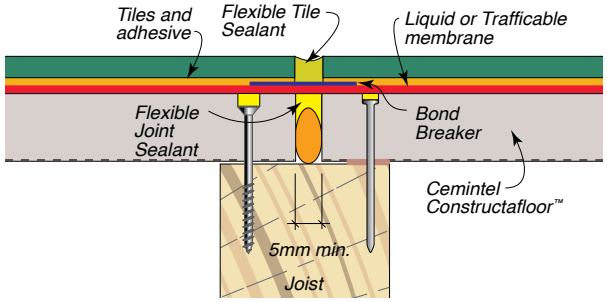
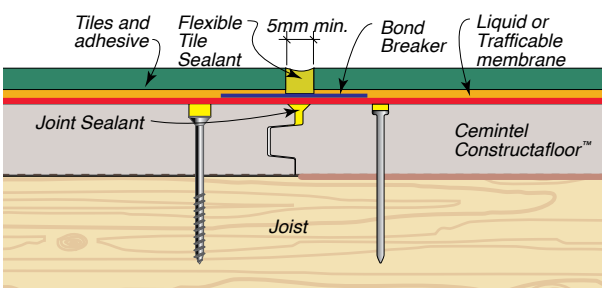


FIGURE 39 T&G Sheet Joint with Tile Control Joint



Mortar Bed with Separating Layer

The waterproofing membrane is covered with a separating or slip sheet, and a reinforced mortar bed is then laid to support the tiles or other finish. Constructafloor sheets can be staggered or aligned.

A mortar bed is laid over the slip sheet to provide a suitable surface for tiling. The mortar bed must be 40mm minimum thickness and reinforced with galvanised steel or stainless steel mesh. The mortar bed should be allowed to cure for as per specification before tiling commences.

The structural substrate of Constructafloor sheets must have a fall to the deck edge. Drainage to the deck edge may be provided by fall in the sheets and/or in the mortar bed, or the mortar bed may drain to a sump.

Control joints in the reinforced mortar bed/tiles **do not** have to coincide with sheet joints.

The waterproof membrane system may require a bond breaker/ reinforcement tape, refer to the manufacturer for details.

Do not tile over control joints in the mortar bed.

FIGURE 40 Mortar Bed with Separating Layer

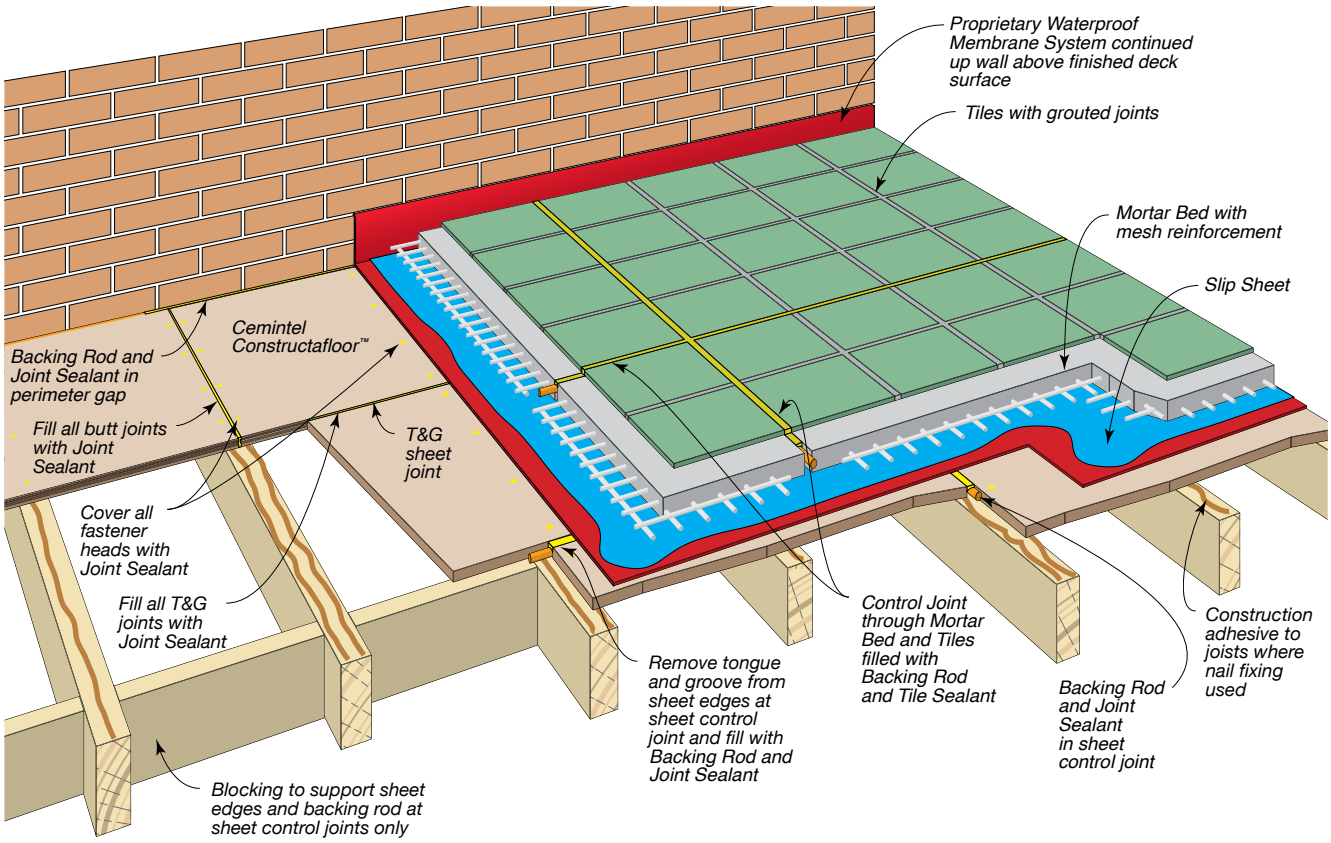


FIGURE 41 T&G Control joint with Offset Mortar/Tile Control Joint

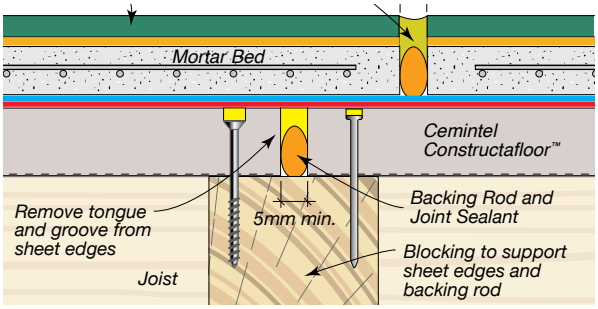


FIGURE 42 Typical T&G Sheet Joint

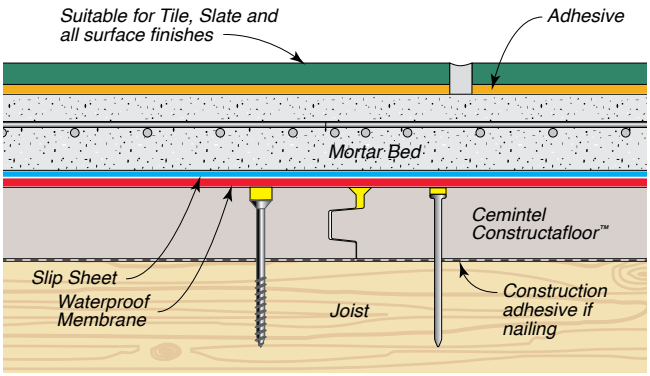


FIGURE 43 Wall/Floor Junction Option 1

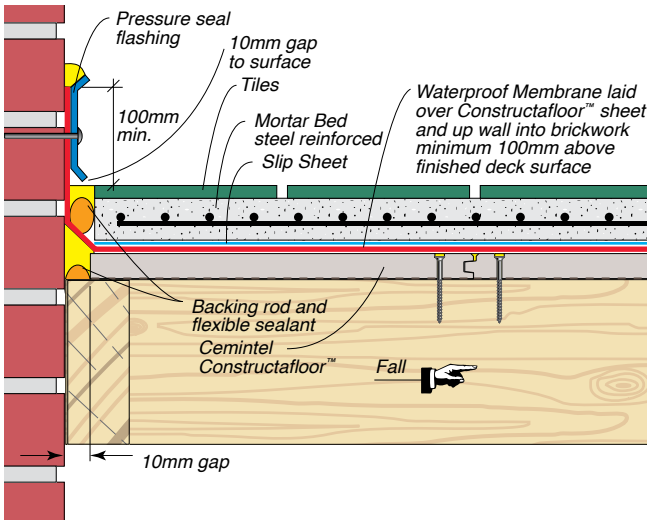


FIGURE 44 Wall/Floor Junction Option 2

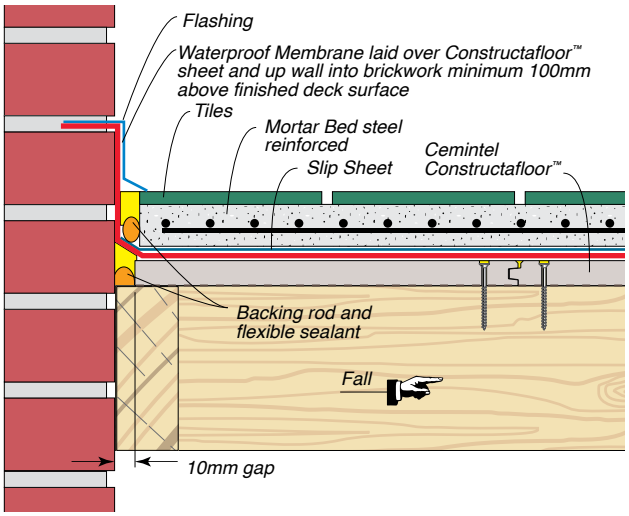


FIGURE 45 Edge Finish

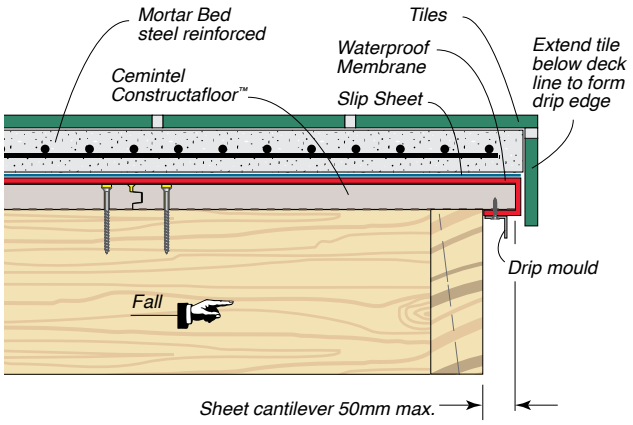
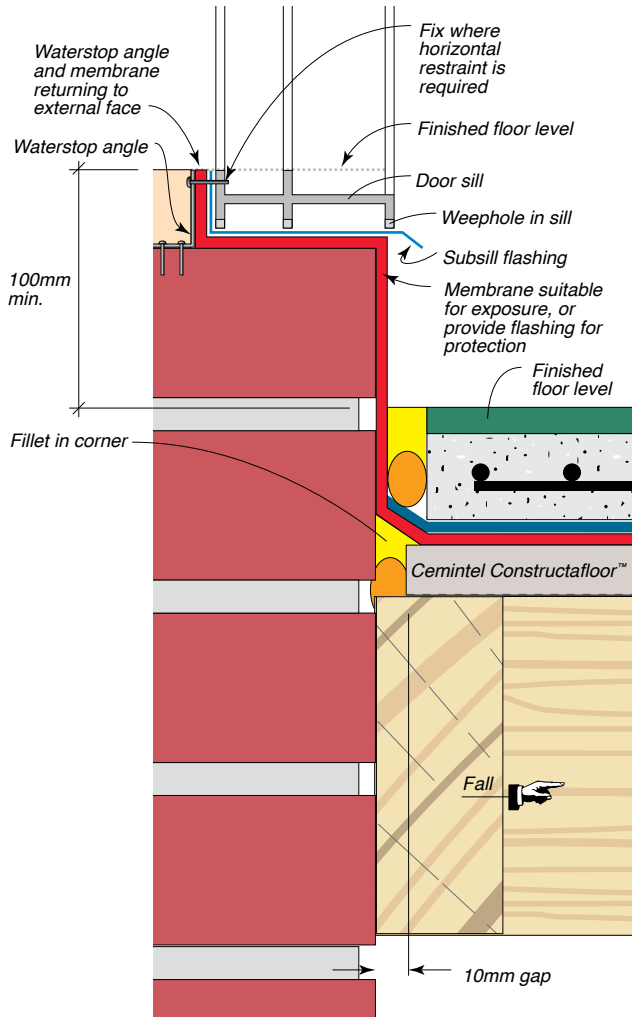


FIGURE 46 Door Sill



Liquid Membrane Systems

Tiles are fixed over the membrane, and drainage is provided by fall in the sheets. Control joints in the tiles **must** be aligned with control joints in the sheets. Constructafloor sheets can be staggered or aligned and a proprietary membrane system must be used. This should be installed by a specialist waterproofing contractor, and a waterproofing guarantee provide. The waterproof membrane system may require a bond breaker/reinforcement tape, refer to the manufacturer for details.

Trafficable Membrane Systems

Membrane systems, laid directly over Constructafloor sheets, are available that are suitable for foot traffic. This should be installed by a specialist waterproofing contractor, and a waterproofing guarantee provide. Constructafloor sheets can be staggered or aligned.

FIGURE 47 Liquid Membrane System

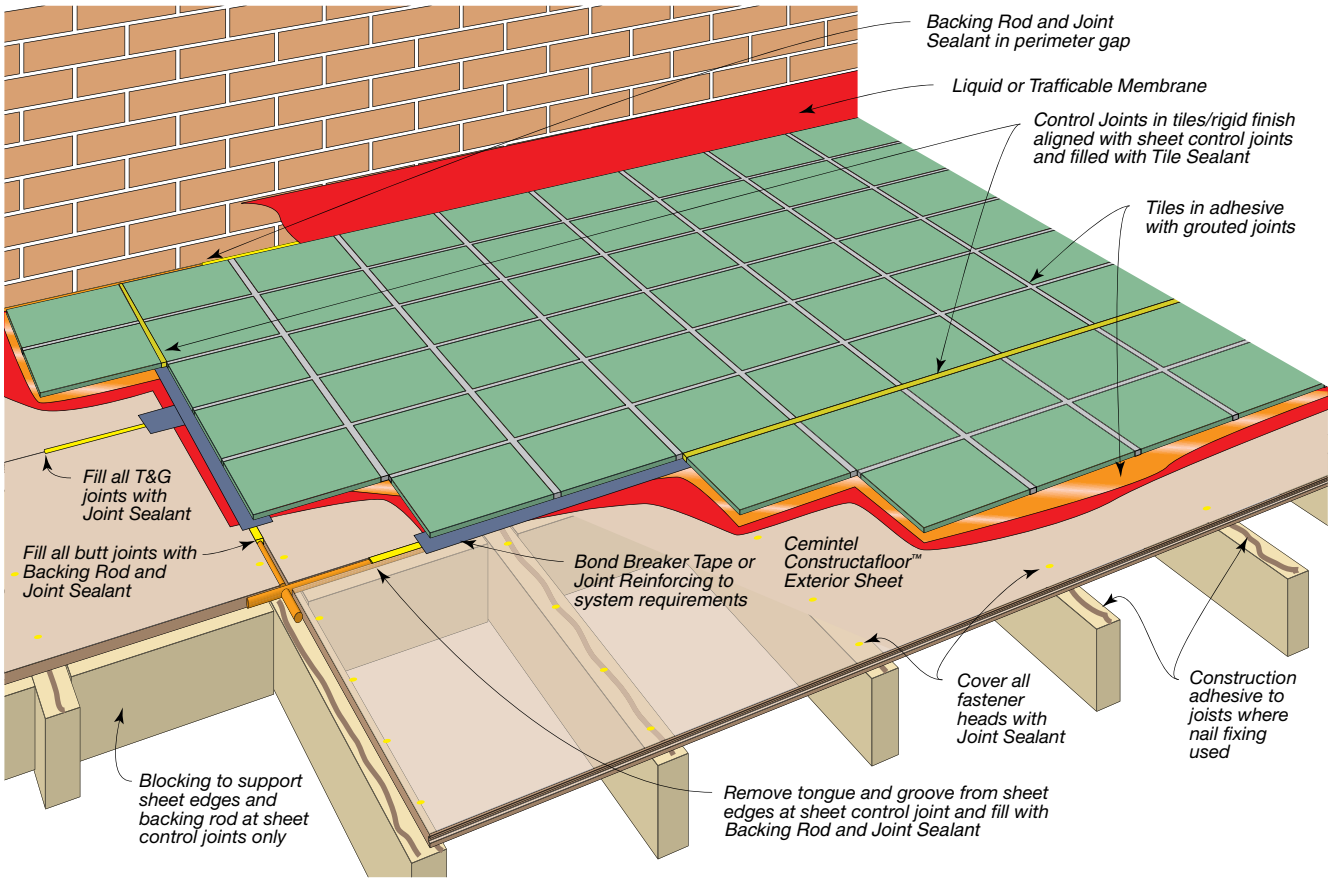


FIGURE 48 T&G Control Joint Layout

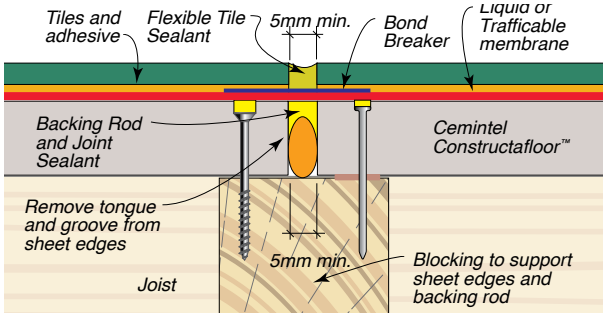


FIGURE 49 Butt Joint Control Joint Joint Layout

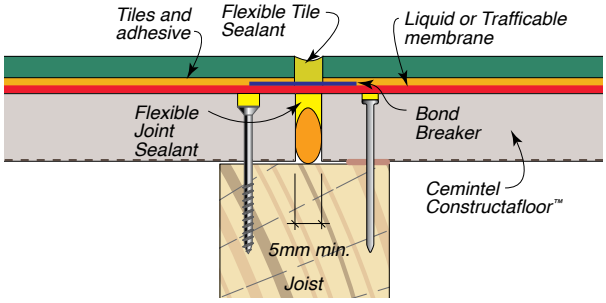


FIGURE 50 T&G Sheet Joint with Tile Control Joint

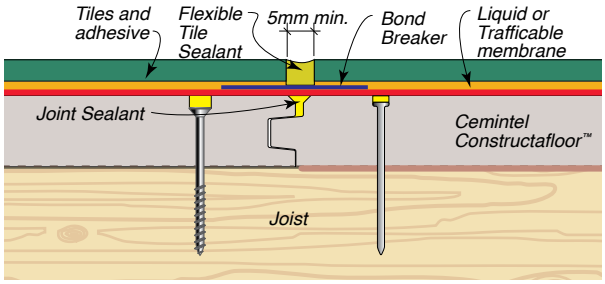


FIGURE 51 Wall/Floor Junction

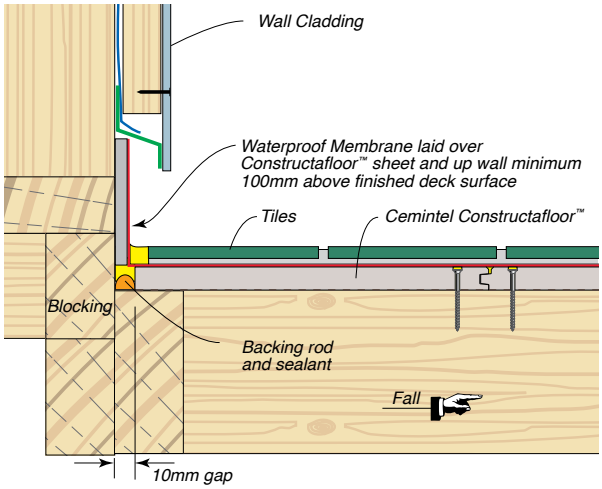


FIGURE 52 Wall/Floor Junction

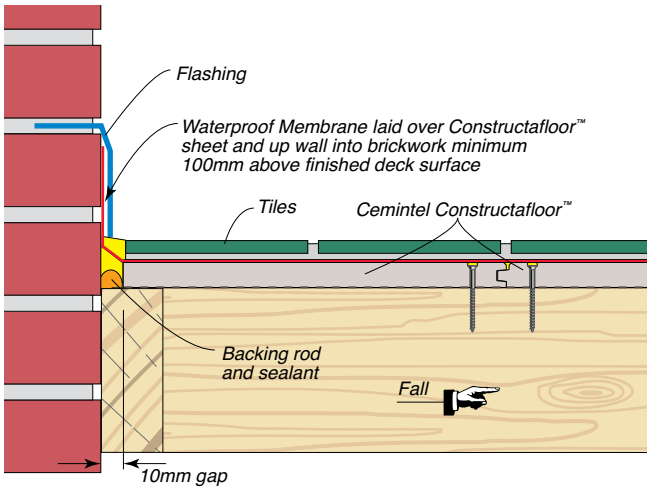


FIGURE 53 Gutter Detail (Edge fall protection not show)

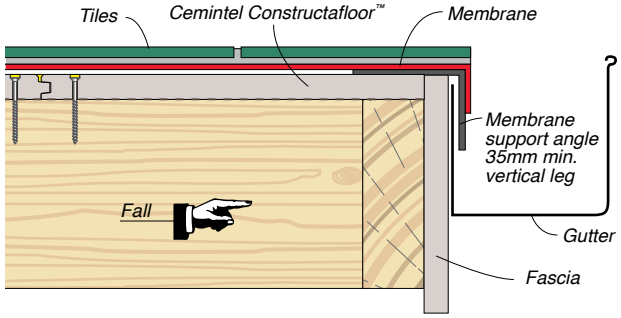


FIGURE 54 Drip Mould (Edge fall protection not show)

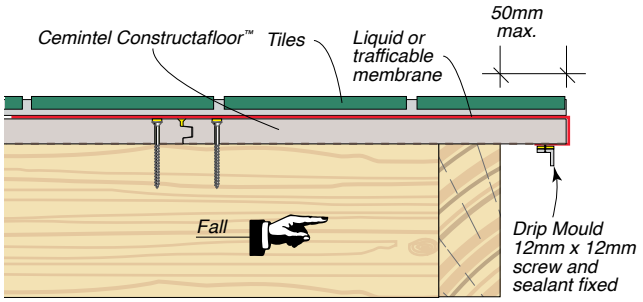


FIGURE 55 Pipe Penetration Detail

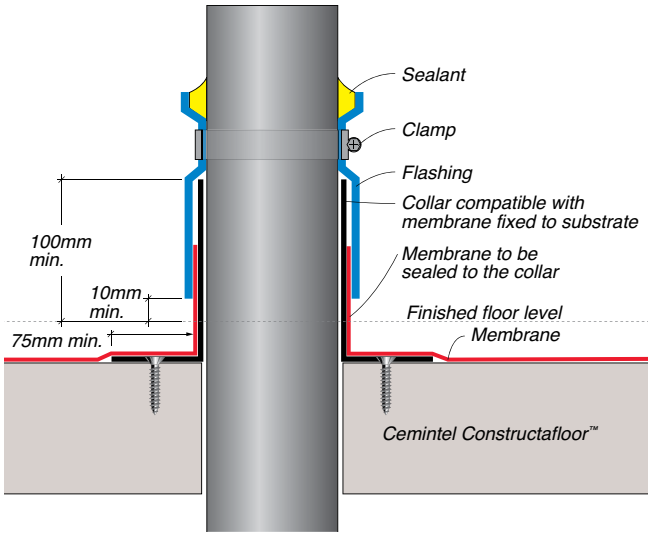


FIGURE 56 Post Support

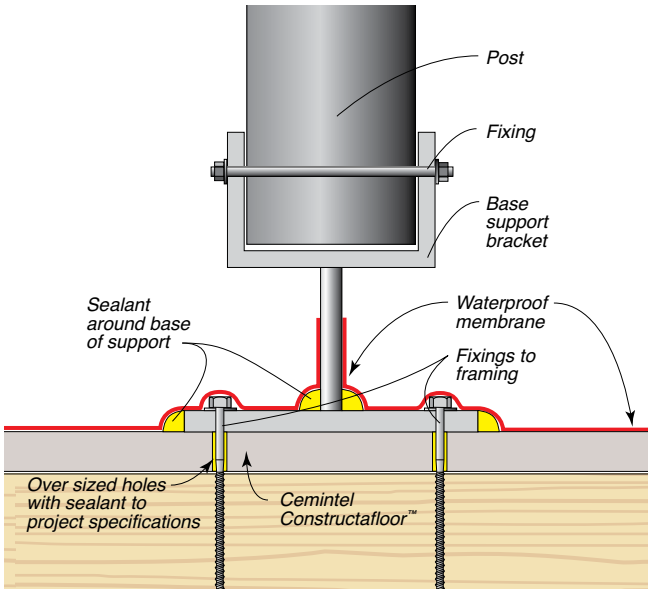


FIGURE 57 Typical T&G Joint with Trafficable Membrane

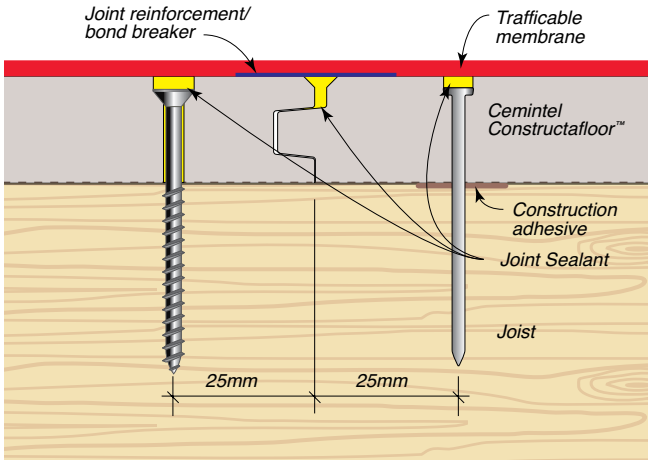


FIGURE 58 Sheet Control Joint at Butt Joint with Trafficable Membrane

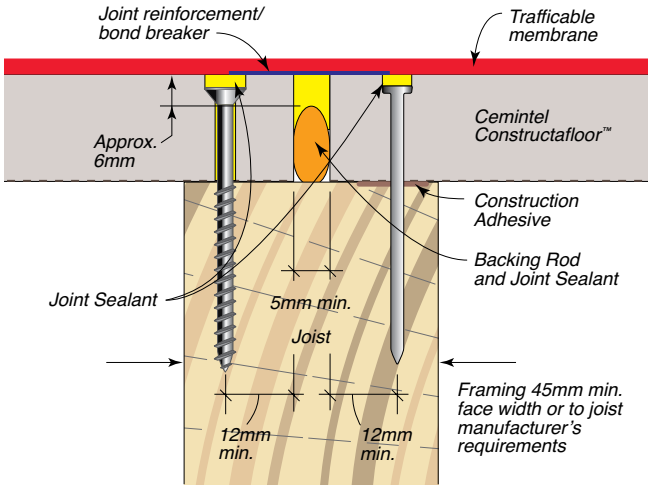
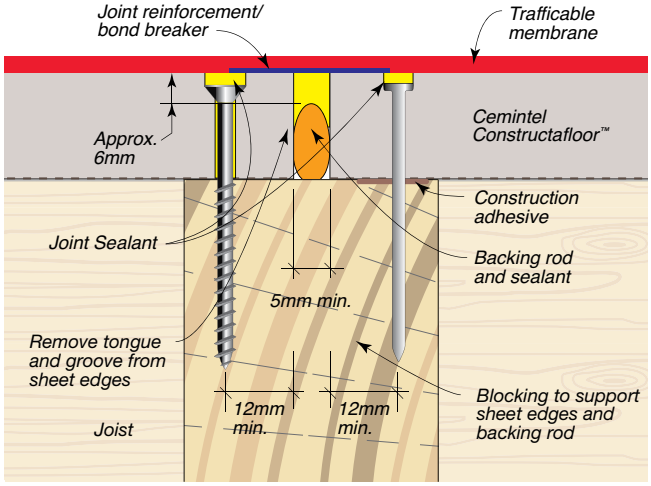
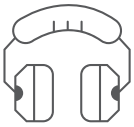


FIGURE 59 Sheet Control Joint at T&G Joint with Trafficable Membrane





Health, Safety and Personal Protection Equipment (PPE)

Fibre Cement contain silicas that are harmful if inhaled. Protective clothing and breathing equipment should be worn when cutting products. When cutting, drilling or grinding fibre cement panels using power tools, always ensure the work area is properly ventilated.

An approved dust mask (AS/NZS 1715 and AS/NZS 1716) and safety glasses (AS/NZS 1337) must be worn. Cemintel recommends that hearing protection also be worn.

Safety Data Sheet information is available at www.cemintel.com.au

Managing Respirable Crystalline Silica Dust

Crystalline Silica is everywhere. It is found naturally in stone, rocks, sand, gravel and clay. Sand is one of the raw materials in Fibre Cement. Respirable Crystalline Silica dust is the fine dust that's created when you use power tools to cut, drill, grind, chip or sand materials and products that contain crystalline silica. This dust is of concern due to its size as it gets caught deep in your lungs and can cause long term damage.

IF YOU USE THE CORRECT SAFETY EQUIPMENT AND PPE, FIBRE CEMENT IS SAFE TO USE.

Cemintel Safety Requirements	
1 - Cut Outdoors*	The ventilation outdoors is greater than that indoors, and therefore should reduce exposure.
2 - Use On-Tool Dust Extraction	Use on-tool dust extraction when using power tools to drill and cut Fibre Cement, with a vacuum that contains a HEPA M Class filter.
3 - Correct Saw and Blade	Use a plunge saw with a specifically designed Fibre Cement blade.
4 - Don't Sweep, Vacuum instead	When completing your work vacuum with a HEPA M Class filter, rather than a broom as sweeping creates more dust.
5 - Use Correct Respirator	Use a half face P1 or P2 respirator. It is essential that the respirators are Fit Tested and workers are cleanly shaven to obtain a good seal.

* Even though not recommended, indoor cutting can be completed when using an onsite cutting room with exhaust ventilation and a M class filter at a minimum, on-tool dust extraction with a vacuum with a HEPA M Class filter, a Full Face P2 respirator and conducting local occupational and static air monitoring to validate effectiveness of control measures.

Safety & Handling

Storage

All Cemintel panels must be stacked flat, clear of the ground and supported at 300mm maximum centres on a level platform. Panels must be kept dry, preferably stored inside the building. Panels must be dry prior to fixing, hence if it is necessary to store outside, the product must be protected from the weather.

Handling

Prefinished products and must be treated with care during handling to avoid damage to edges, ends and prefinished surface. Panels should be carried horizontally on edge by at least two people. Consideration should be given to planning the order of other trades that might stain or damage the panels. Any splashings of mud, cement, mortar and the like should be removed immediately.

Cutting

Panels should be fully supported and cut from the back using a power saw. Cemintel recommends using the Makita Plunge Cut Saw with guide rail and appropriate blade, together with the appropriate dust extraction system. All exposed cut edges MUST BE SEALED WITH CEMINTEL EDGE SEALER TO PREVENT MOISTURE ABSORPTION.

Mitres

It is not recommended to mitre panel edges as this can cause delamination of the face.

Penetrations

Penetrations in panels may be cut or drilled prior to installation. Cut from the back or drill from the front. Mask, prime and fill gaps with sealant in accordance with recommended methods and products.

Warranty

Cemintel Constructafloor sheets have a product warranty of 10 years.

The full product warranty is available for download at www.cemintel.com.au

Our Offices

Sydney
376 Victoria Street
Wetherill Park NSW 2164

Adelaide
Lot 100 Sharp Court
Mawson Lakes SA 5095

Darwin
Cnr Stuart Highway
& Angliss Street
Berrimah NT 0828

Melbourne
277 Whitehall Street
Yarraville VIC 3013

Perth
19 Sheffield Road
Welshpool WA 6106

Brisbane
768 Boundary Road
Coopers Plains QLD 4108

Hobart
11 Farley Street
Derwent Park TAS 7009

cemintel.com.au
1300 236 468

For Design and Technical Support:
DesignLINK – 1800 621 117

BMS2023 CEMINTEL 161025