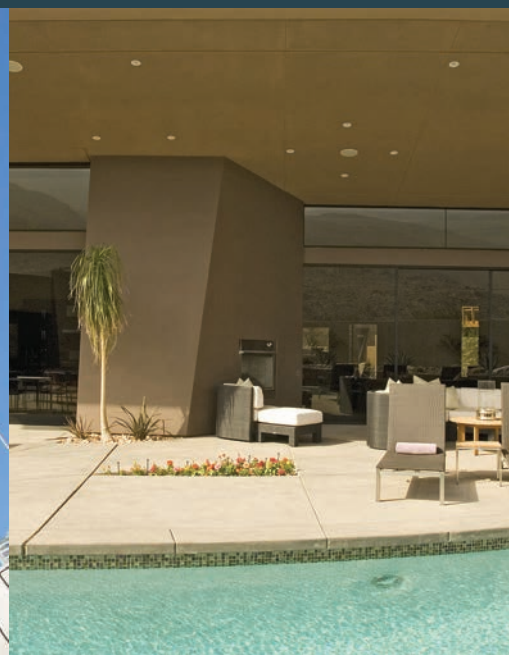


CSR CEMINTEL™

CEILING SYSTEMS



FC:129



INTERIOR AND EXTERIOR CEILING SYSTEMS

OCTOBER 2015

CSR Cemintel™ offers a range of Interior and Exterior Ceiling Systems for Residential and Commercial applications. Presenting the latest in best practice and system solutions, Cemintel™ is proud to offer a flush jointed soffit system, SoffitLine™, featuring CeminSeal™ Waterblock technology. Cemintel™ Ceiling Systems are durable, simple to install and require minimal maintenance.

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DESCRIPTION

Cemintel™ Ceiling Systems are designed for interior and exterior non-trafficable applications, and are suitable for use with steel and timber framing. Systems are available with expressed joints or with flush-set joints. They are easy to install and require minimal maintenance.

The Cemintel SoffitLine™ System is recommended for exterior use where a flush joint appearance is required. The system comprises CeminSeal™ Soffit sheets fixed to furring channels on a variety of framing types. CeminSeal™ Soffit is a fibre cement panel that is formulated with a technically advanced Waterblock technology, designed to reduce moisture penetration. It is used with a purpose designed acrylic jointing system that has increased joint strength and reduces the need for sanding.

For interior ceilings, CeminSeal™ Wallboard is used. It also includes Waterblock technology and has a smooth flat surface for easy decoration. It is available in recessed edge (RE) for a flush jointed finish, and square edge (SE) for an expressed joint finish.

APPLICATIONS

Cemintel SoffitLine™ System has been developed for use in flush jointed exterior ceilings such as those found in:

- Shopping Centres
- Office Buildings
- Hospitals
- Schools
- Apartment Buildings
- Houses, including verandas and carports

CeminSeal™ Wallboard (SE) lining is suitable for use in expressed joint ceilings in similar applications, and may also be used in high humidity interior areas such as indoor pools. For more information, refer to 'INDOOR POOL DESIGN CONSIDERATIONS' on page 5.

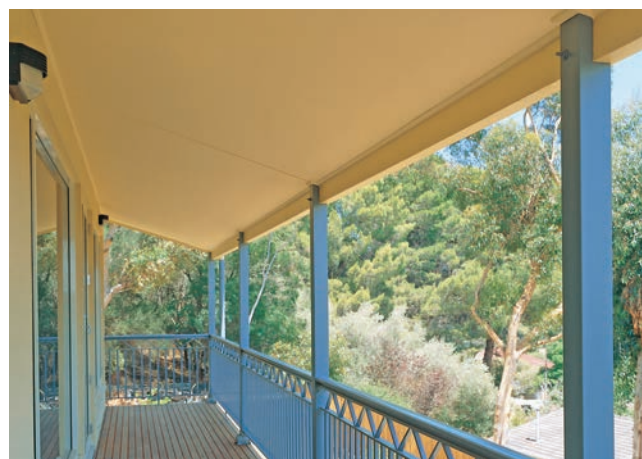
CeminSeal™ Wallboard (RE) lining is suitable for use in flush jointed interior ceilings, typically found in applications such as:

- Court houses
- Police stations
- Security rooms

Recessed edge CeminSeal™ Wallboard is suitable for most interior applications. It remains the responsibility of the building designer to verify a particular system is suitable for the requirements of a project.

ADVANTAGES

- Expressed joint or flush joint appearance.
- High strength jointing system with reduced sanding.
- Easy installation.
- Interior and exterior applications.
- Smooth surface ready for finishing.
- Accepts a wide range of paint finishes.



DESIGN CONSIDERATIONS

SYSTEM SELECTION/WIND LOADING

Exterior ceilings are subject to wind loads and the design of framing and fixings must be based on the project's site conditions. Factors that must be assessed to determine wind loading include the wind speed region, the terrain category in the vicinity of the site, and shielding from nearby buildings. Local pressure factors for the ceiling lining may also apply to some ceiling areas.

It is the responsibility of the building designer to determine the applicable pressures or Wind Class for the ceiling. System span tables are provided to suit residential buildings within the scope of AS4055 'Wind loads for housing' and for design to AS1170.2, the wind loading code, for other buildings and structures.

In cyclonic wind regions, systems may be selected based on the appropriate Wind Class for complying residential buildings. For buildings outside the scope of AS4055, only systems using Cemintel ExpressPanel™ may be used. For more information, refer to manual FC126 – Cemintel Commercial ExpressWall™.

CEILING FRAMING

The Cemintel™ Ceiling Systems in this manual consist of a lining fixed to furring channels that are supported by structural framing. The structural framing may be timber or steel joists, rafters or trusses, or a suspension system.

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

- AS1684 – Residential timber-framed construction.
- AS/NZS4600 – Cold-formed steel structures.
- AS3623 – Domestic metal framing.
- AS4055 – Wind loads for housing.
- The Building Code of Australia (BCA).

CeminSeal™ Soffit and Wallboard linings must not be fixed directly to the under side of roof framing or structural members. Furring must be used. Steel furring channels such as Rondo N°129 are recommended. Furring must have a minimum fixing face width of 35mm.

Framing set-out must be based on actual sheet lengths, with respect to the noted sheet tolerances. Correct design of the framework and sheet layout is important for the long term success of flush jointed installations.

Timber Framing

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.

Steel Framing

The design and construction of the steel frames should be considered in conjunction with the advice from the manufacturer. In highly corrosive environments, appropriate measures should be taken to protect the frame from corrosion. Refer to "Corrosivity Categories/Coastal Areas" in this guide.

Steel framing must be a minimum 0.55mm BMT to a maximum 1.6mm BMT. Do not fix Cemintel sheets to thicker cold rolled members or to hot rolled steel.

CSR recommends steel components manufactured by Rondo Building Services Pty Ltd, for our systems. Other brands of equivalent or better performance may be used. It is the responsibility of the manufacturer of the steel component to substantiate equivalent or better performance than the recommended Rondo component.

CONTROL JOINTS

To accommodate movement due to temperature and moisture effects, control joints in the framing are specified. Each system has a framing module, which indicates the spacing between framing control joints, and a sheet module, for additional sheet control joints.

Control joints must be provided in flush-set systems to allow for sheet movement. They must be installed at the specified sheet module and to coincide with control joints provided in the support framing.

Sheet modules for exterior systems are given as multiples of single sheet sizes and must not be formed with smaller sheets joined.

PENETRATIONS

Penetrations in the Cemintel™ ceiling sheets must be neatly cut using appropriate tools such as a saw, drill or hole saw. Penetrations should be prepared with a clearance of 5mm all around and the gap should be filled with sealant where acoustic performance is required.

INSULATION

Energy efficiency requirements for buildings are set out in the BCA as performance requirements and acceptable construction practices, and are dependant on geographical climate zones. Check with local building authorities for minimum insulation requirements.

For ceilings that form part of the building envelope, it is recommended that Bradford insulation material is installed to meet energy requirements and improve occupant comfort. Insulation also improves the acoustic performance

of the ceiling against outside noise. It is recommended that insulation values above the minimum be chosen for better energy conservation and occupant comfort.

In high humidity interior areas such as over pools, the design must be sufficient to ensure condensation does not occur.

For structures that do not require thermal insulation for energy efficiency, such as awnings and walkway canopies, it is recommended that insulation material is installed for condensation control. A suitable material is Bradford Anticon™ 55 roofing blanket.

The level of insulation provided in a ceiling is described by its R-value. The higher the R-value the greater the insulation provided.

Refer to relevant Cemintel Installation Guides and/or The Gyprock Red Book for thermal and acoustic performance values.

CORROSIVITY CATEGORIES/COASTAL AREAS

Corrosivity categories are as described in AS4312 - Atmospheric corrosivity zones in Australia. The code has methods for determining categories as well as maps and tables of major population centres. It is recommended that the building designer assess the site in accordance with the standard and local conditions.

For details on system requirements in different environments refer to Table 1. It is the designer's responsibility to determine the environmental zone, based on site conditions.

Due to limitations on the corrosion performance of steel framing, expressed joint systems are not appropriate in corrosivity Category C5.

The durability of the system can be increased by the additional treatment of steelwork, and by painting all exposed sealants to the sealant manufacturer's recommendations. In corrosivity Category C4, sealants and other barriers are required to reduce the ingress of salt laden air.

The following is a summary of the BCA description.

C1: Very Low

Generally inside buildings, semi-sheltered locations away from marine or industrial influence, and some alpine regions.

C2: Low

Dry, rural areas, away from the coast or sources of pollution. Most areas of Australia at least 50 kilometres from the coast, which can extend to within one kilometre from quiet, sheltered seas. Most inland towns, such as Canberra, Ballarat, Toowoomba and Alice Springs, and suburbs of cities on sheltered bays (Brisbane, Melbourne, Hobart) that are more than one kilometre from the sea. Adelaide suburbs more than 6 kilometres from the coast in the southern suburbs, through to 3 kilometres from the coast in the northern suburbs.

C3: Medium

Coastal areas with low salinity, extended by factors such as wind, topography and vegetation. Sheltered areas such as Port Philip Bay 50 metres from the shoreline to about one kilometre inland. Around less sheltered bays such as Adelaide to about 3 to 6 kilometres inland. Along ocean front areas with breaking surf and significant salt spray extending from about one kilometre inland to between 10 and 50 kilometres inland, depending on the strength of prevailing winds and topography. Includes much of the metropolitan areas of Wollongong, Sydney, Newcastle and the Gold Coast, most of the Yorke Peninsula South Australia, and from Victor Harbour to the Victorian border, extending between 30 and 70 kilometres inland. Urban and industrial areas with low pollution levels, and for several kilometres around large industries such as steelworks and smelters.

C4: High

Around sheltered bays up to 50 metres inland from the shoreline. Areas with rough seas and surf, extending from several hundred metres inland to about one kilometre inland and depends on winds, wave action and topography. Up to 1.5 kilometres downwind of large industrial plants.

C5: Very High

Offshore and on the beach front in regions of rough seas and surf beaches, and inland for several hundred metres, e.g. around Newcastle extending over half a kilometre from the coast. Aggressive industrial areas where the environment may be acidic with a pH of less than 5.

Table 1: Requirements for Corrosive Environments

Corrosivity Category (AS4312)	Exposed Head Screws	Countersunk Screws	Joints
C1 : Very Low C2 : Low	Class 3	Class 3	Flush-set, Expressed, or Expressed with Sealant
C3 : Medium	Class 3	Class 3	Flush-set, Expressed, or Expressed with Sealant
C4 : High	Class 4	Class 3	Flush-set or Expressed with Sealant
C5 : Very High	Not Suitable	Class 4	Flush-set

INDOOR POOL DESIGN CONSIDERATIONS

Consideration should be given to the corrosive environment around indoor swimming pools.

Measures should be implemented to avoid possible corrosion of the ceiling framing components and fixings from corrosive chemicals and moisture that may be present in the ceiling space.

In locations subject to excessive humidity and varying temperature range, CSR recommends the use of expressed joint ceiling systems only.

BUILDING RENOVATIONS

When undertaking building renovations, remove all linings from the original framing. Ensure the condition of the framing is in accordance with current applicable requirements. Install additional framing where required as per details in this publication.

PAINTING

All products should be painted within three months of delivery to site. CSR recommends a minimum of two coats of appropriate acrylic paint be applied to the manufacturer's specifications. A priming coat may also be required. Refer to paint manufacturer's recommendations.

Where Cemintel™ products are exposed to the elements for more than three months from delivery, CSR recommends the application of a priming coat before applying the decorative coatings.

For ceilings over pools, a paint system resistant to the chemical atmosphere is required. Dulux recommends a three coat system of Sealer Binder and ENVIROPOXY™ WBE near chlorinated and saltwater pools.

The paint manufacturer, instructions should be followed in all cases.

Prior to the application of the external coating, wash down exposed surfaces with clean fresh water to remove salt spray build-up from boards and fixings. Boards must be allowed to dry before coating.

MAINTENANCE

CeminSeal™ Soffit and Wallboard sheets have properties which make them very durable, including:

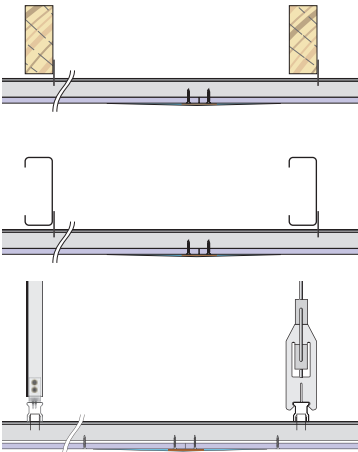
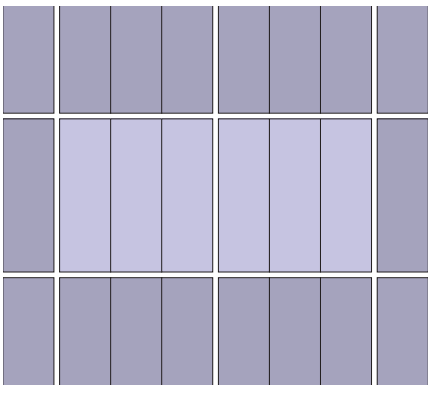
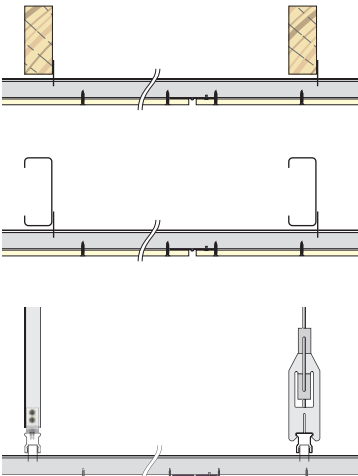
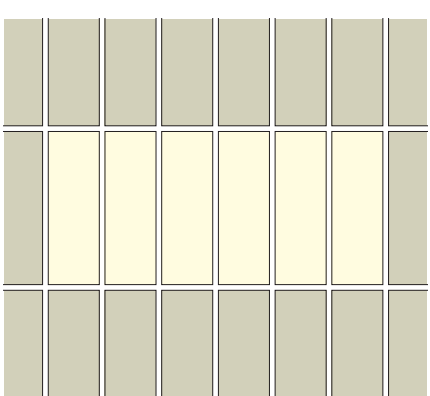
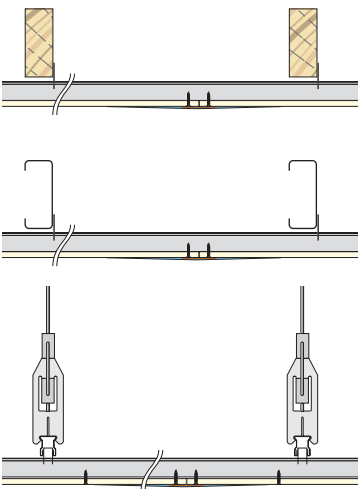
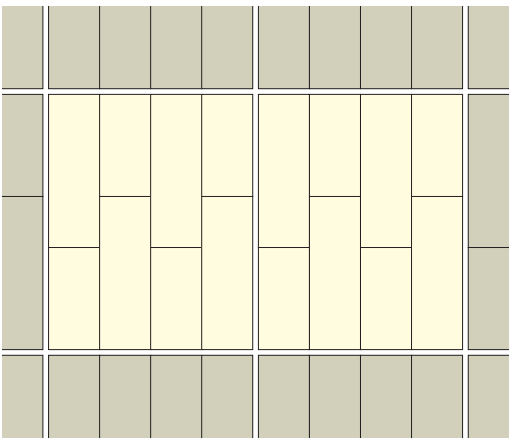
- Immune to permanent water damage in both short and long-term exposure.
- Will not rot, burn or corrode,
- Are unaffected by termites, steam, and salt.

The durability of the Cemintel™ Ceiling Systems can be enhanced by periodic inspection and maintenance. Inspections should include examination of the coatings, flashings and seals. Paint finishes must be maintained in accordance with the manufacturer's recommendations.

Any cracked or damaged finish or seals which would allow water ingress must be repaired immediately by recoating or resealing the effected area. Any damaged sealants, flashings or sheets must be replaced as for new work.



CEILING SYSTEM SELECTION

Framing & Jointing Type	Sheet Module Layout	Features & Applications
SOFFITLINE™ CEILING SYSTEMS – EXTERIOR CEILING WITH FLUSH-SET JOINTS		
		Features • 6mm CeminSeal™ Soffit recessed edge lining • Flush-set joints • Furring channels fixed to timber or steel joists, trusses or suspension system • Sheet module size up to 3.6 x 3.6m • Framing control joint module size up to 7.2 x 3.6m Typical Applications • Retail awnings • Verandas and balconies • Carports • Eaves For detailed information, refer to page 14.
EXTERIOR CEILING SYSTEMS WITH EXPRESSED JOINTS		
		Features • 6 or 9mm CeminSeal™ Wallboard (SE) square edge sheets • All joints expressed – may be with or without sealant depending on application (refer to Table 1) • Furring channels fixed to timber or steel joists, trusses or suspension system • Sheet module size up to 1.2 x 3.6m • Framing control joint module size up to 7.2 x 3.6m Typical Applications • Industrial awnings • Car park canopies • High-rise balconies • Carports For detailed information, refer to page 18.
INTERIOR CEILING SYSTEMS WITH FLUSH-SET JOINTS		
		Features • 6 or 9mm CeminSeal™ Wallboard (RE) recessed edge lining • Flush-set joints • Furring channels fixed to timber or steel joists, trusses or suspension system • Sheet module size up to 5.2 x 6.0m • Framing control joint module size up to 10.4 x 6.0m Typical Applications • Sports halls • Secure areas • Industrial storage areas For detailed information, refer to page 22.

COMPONENTS

LININGS

CeminSeal™ Soffit is an autoclaved, cellulose reinforced fibre cement sheet which is formulated with a technically advanced waterblock technology, designed to reduce moisture penetration. It is tinted lilac and has long edges recessed.

CeminSeal™ Soffit is 6mm in thickness.

CeminSeal™ Soffit Sheet Sizes (6mm thickness)	
Sheet Length	Width (mm)
3600	1200

CeminSeal™ Wallboard is an autoclaved, cellulose reinforced fibre cement sheet with a yellow tint for use in ceilings and interior wet areas. It is available with long edges recessed (RE) or square edge finish (SE). CeminSeal™ Wallboard is available in 6mm and 9mm thickness.

CeminSeal™ Wallboard Sheet Sizes (6mm thickness)				
Length	CeminSeal™ Wallboard RE			CeminSeal™ Wallboard SE
	Width (mm)			Width (mm)
	900	1200	1350	1200
1800	–	✓	–	–
2400	–	✓	✓	✓
2700	–	✓	–	✓
3000	✓	✓	✓	✓
3600	–	✓	✓	✓
4200	–	✓	✓	–

CeminSeal™ Wallboard Sheet Sizes (9mm thickness)		
Length	CeminSeal™ Wallboard RE	CeminSeal™ Wallboard SE
	Width (mm)	Width (mm)
	1200	1200
2400	✓	–
2700	✓	✓
3000	✓	✓

MATERIAL PROPERTIES

Cemintel™ fibre cement products conform to the requirements of AS/NZS 2908.2, 'Cellulose cement products Part 2: flat sheets' for Type B Category 3.

Manufacturing Tolerances	
Wallboard – Mass (6mm thickness nominal)	9.7kg/m ²
Wallboard – Mass (9mm thickness nominal)	14.3kg/m ²
Soffit Sheet – Mass (6mm thickness nominal)	9.7kg/m ²
Length	+0 to -4mm
Width	+0 to -3mm
Thickness	+0.5 to -0mm
Diagonals Difference (max)	3mm

FIRE HAZARD PROPERTIES

The Building Code of Australia limits the materials used in Class 2 to 9 buildings by controlling the Fire Hazard properties of linings. These properties are assessed using AS/ISO9705 room burn test, AS/NZS3837 the cone calorimeter test, AS1530.2 and AS1530.3.

The fire hazard properties for CeminSeal™ Soffit and Wallboard are as follows:

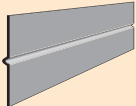
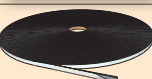
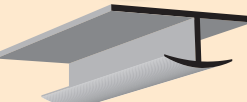
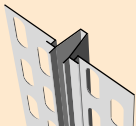
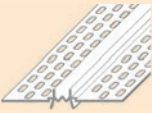
Ignitability	0
Spread of Flame	0
Heat Evolved	0
Smoke Developed	0
ASE	<250m ² /kg
Group Number	1

Note: SMOGR_{Arc} = Smoke Growth Rate Index
ASE: Average Specific Extinction Area

In accordance with the BCA, C1.12, Cemintel™ fibre cement sheet products may be used where non-combustible linings are required by the code.

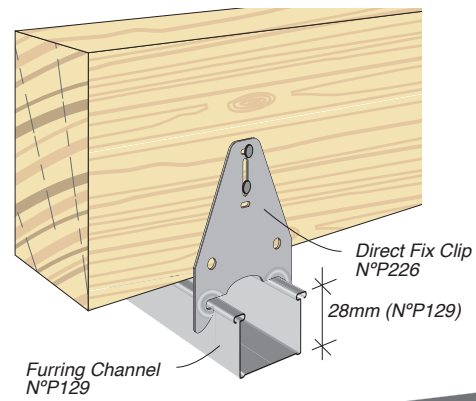
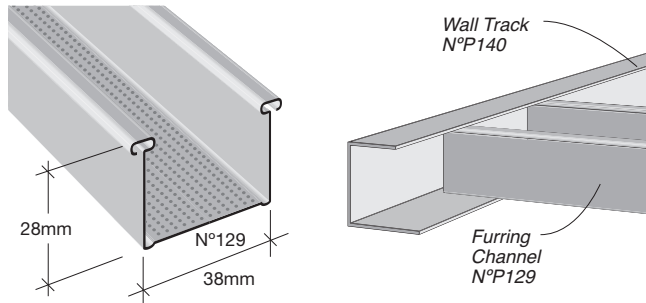
To guarantee performance, only approved fasteners should be used in these systems. Where nominal fasteners are required, Class 3 minimum finish products must be used.

In high corrosion zones, Class 4 or Stainless Steel fasteners are required. Supplied by others. Refer to "Corrosivity Categories/Coastal Areas".

Product	Description	Size	Qty	Order Code
	Sheet Fixing Screw – FibreTEKS™ CSK rib head, Phillips drive, Class 4 finish. Used to fix Cemintel sheets to steel framing of 0.5 to 1.0mm BMT	10G-18 x 25mm	1000 (loose)	125651
			1000 (collated)	118225
		10G-18 x 30mm	1000 (loose)	125614
			1000 (collated)	118224
	Horizontal Backing Strip – Used for backing horizontal expressed joints between panels. ExpressWall™ Backing Strip is manufactured from high tensile Colorbond steel, and is black in colour.	60 x 1194mmL	1	21089
		60 x 2394mmL		21088
		60 x 2994mmL		21087
	Gyprock Acrylic Stud Adhesive – Coloured blue for easy identification. It can be used on both timber and steel in temperatures not less than 5°C. Contact surfaces must be free of oil, grease or other foreign materials before application. The adhesive is applied with a broad knife. This product is suitable for use with pre-painted metal battens and some treated timbers. Always follow directions on packaging when using CSR stud adhesive.	5.5kg bucket	1	10091
		1kg bucket	1	10090
		900g sausage	1	88618
	Gyprock Paper Tape – For strong invisible jointing.	75m	1	10589
		150m	1	10586
	Soffitline External Jointing Compound – For quality flush jointed exterior finishing.	15kg	1	85771
	Soffitline Topping Compound – For quality flush jointed exterior finishing.	15kg	1	95382
	Sealant Bond Breaker Tape – Used behind sealant filled board joints. Tesa Multifoam Tape N°7492, polyethylene closed cell foam tape. Self adhesive back.	48 x 3mm x 25mL	1	13172
	Flexible Sealant – Sikaflex®-PRO polyurethane sealant for sealed expressed joints, gaps around windows, doors and other penetrations. Paintable. Apply to manufacturer's specifications.	310 ml tube	1 x Grey	11378
			1 x Black	39488
	Sealant Primer – Sika® Primer-3 N. Should be applied to surfaces prior to sealant to improve the long-term performance of joints. Apply to manufacturer's specifications.	250 ml	1	115227
	H-Moulding – PVC moulding for sheet joints.	2400mm	1	11253
		3000mm		11255
		3600mm		11256
	Trim-Tex Expansion Joint – 72-093V PVC moulding has flanges that act as a trowel guide. Tear off strips act as a guide for taping knives and protect the centre from plaster during jointing.	3000mm	10350	
	Trim-Tex Hideaway Expansion Joint – 72-2710 PVC moulding with a low profile that provides a full 6mm of movement. The soft centre "W" flexes as the structure expands and contracts. Tear off strips act as a guide for taping knives and protect the centre from plaster during jointing.	3000mm	10351	
	Trim-Tex Shadow Bead – 72-5390 PVC moulding provides 6 x 10mm shadowline. Tear off strip acts as a guide for taping knives and protects the reveal from plaster during jointing. To suit 6 and 9mm sheet.	3000mm	61021	

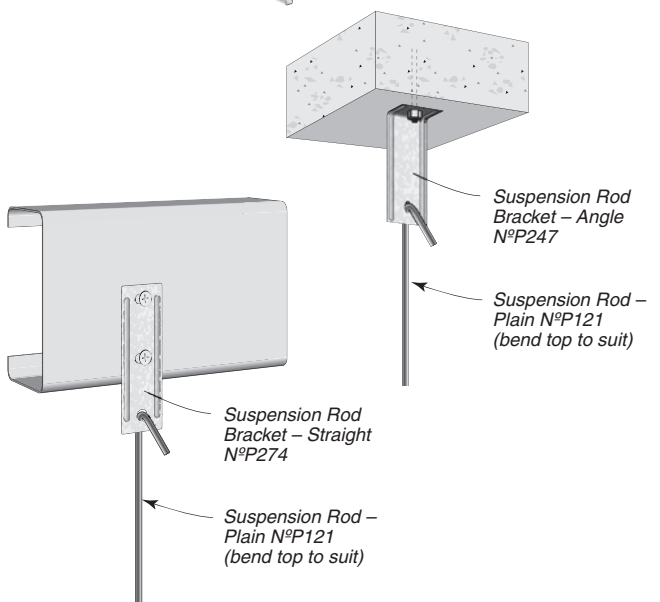
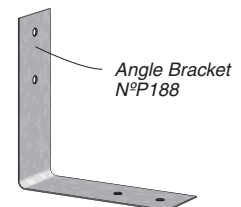
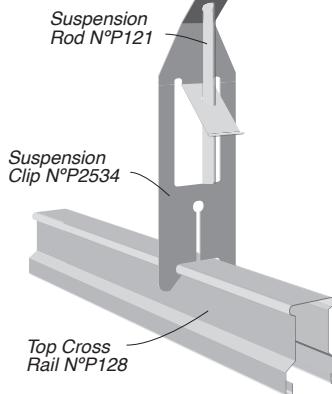
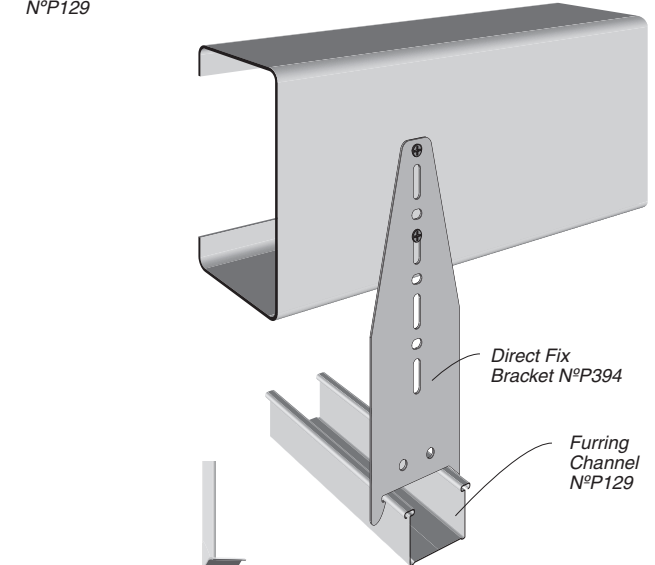
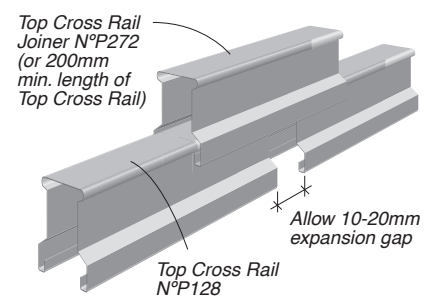
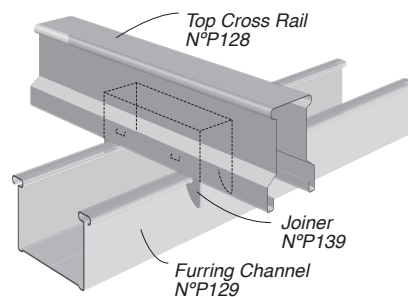
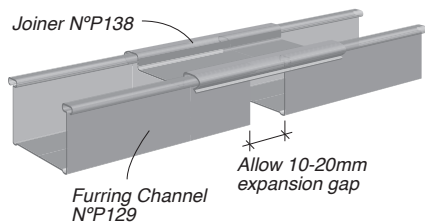
Furring Channel

Part N°129	Length (mm)			
	3000	3600	4800	6000
Order N°	12122	10394	10464	10395



Suspension Components

Part N°	Description	Order N°
P128	Top Cross Rail (38mm x 21mm, 0.75 BMT x 4800mm length)	10428
P272	Joiner – P128 to P128 Top Cross Rail	10409
P138	Joiner – P129 to P129 Furring Channel	10400
P139	Joiner – P128 TCR to P129 Furring	10401
P140	Perimeter Trim (3000mm length)	10465
P188	Angle Bracket	10431
P247	Suspension Rod Bracket – Angle	10432
P274	Suspension Rod Bracket – Straight	10410
P2534	TCR to Rod Clip – 100mm	10407
P121	Suspension Rod (5mmø x 3600mm)	10389
226	Direct Fix Bracket for P129 to Timber/Steel – 75mm	10404
394	Direct Fix Bracket for P129 to Timber/Steel – 175mm	10435



INSTALLATION PROCEDURE

FURRING CHANNEL FRAMING

The design capacities of CeminTel™ Ceiling Systems are presented in two formats:

- Limit state format and for use with AS/NZS1170.2
- Wind Categories for use with AS4055

The building designer must calculate the appropriate loads or Categories to select framing spans and spacing and sheet fixing spacings. Refer to Design Considerations for assumptions made for system design.

The furring channel capacities in the following tables have been calculated in accordance with AS4600 Cold Formed Steel Structures and are applicable for Rondo P129 channels only.

The connection of furring channels to structural framing is to be with Rondo P226 or P394. For exterior systems using Rondo Keylock suspension grid, a down strut is to be used adjacent to every hanger, refer to Table 4.

Where furring channel joiners are required within a framing module, they should be staggered between adjacent channels.

Table 2: Furring Channel Span and Spacing – Interior System – 6 or 9mm CeminSeal™ Wallboard (RE)

Lining Product	Application	Furring Channel Spacing (mm)	Furring Channel Span (mm)	Sheet Fixing Centres (mm)
CeminSeal™ Wallboard	Interior air-conditioned	600	1200	300
CeminSeal™ Soffit	Interior high humidity	450	1200	300

Wind loads up to N3 (0.5kPa)

For Key-Lock suspension system details, refer to GYP548, Gyprock Commercial Installation Guide.

SHEET INSTALLATION

All CeminSeal™ Soffit and Wallboard sheets are to be installed with long edges across the framing. Butt joints, where permitted, must be staggered a minimum of 600mm in adjacent sheets.

Avoid set sheet joints near openings such as skylights. Where these are unavoidable, they are to be positioned a minimum 200mm from corners of the openings.

Fasteners are to be positioned a minimum of 12mm from the edge of the sheet for recessed edges that are set, and 20mm from other edges. Fasteners are to be a minimum 50mm from sheet corners and are to be installed approximately 0.5mm below the sheet surface.

FIG 1: Fastener Positioning – CeminSeal™ Wallboard

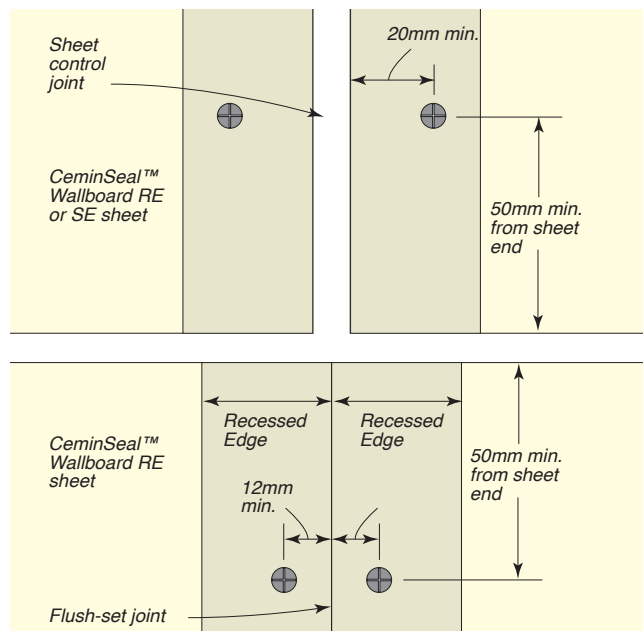


FIG 2: Fastener Positioning – CeminSeal™ Soffit Sheet

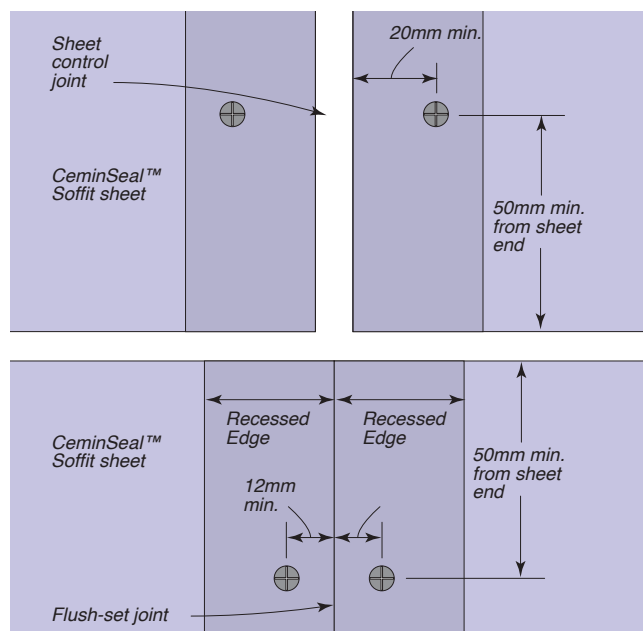


Table 3: Maximum Furring Channel Span and Sheet Fixing Centres (mm) – Exterior Direct Fix Systems

Ultimate Design Wind Pressure kPa	Furring Channel Spacing (mm)			Sheet Fixing Centres (mm)
	300	450	600	
0.5	1610	1410	1290	300
1	1320	1120	920	300
1.5	1150	870	700	300
2	950	710	580	300
2.5	820	610	–	300
3	720	–	–	300
3.5	650	–	–	300
4	590	–	–	250

Table 4: Top Cross Rail (N°P128) Spacing, Downstrut Spacing and Sheet Fixing Centres – Exterior Suspension Systems

Ultimate Design Wind Pressure kPa	Furring Channel Spacing (mm)	TCR Spacing (mm)	Maximum Downstrut Spacing (mm)	Sheet Fixing Centres (mm)
0.5	600	1150	1090	300
1	450	900	870	300
1.5	450	600	890	300
2	300	600	740	300
2.5	300	600	630	300
3	300	450	690	300

Maximum drop 1200mm soffit to Top Cross Rail (refer to FIG 20)

Table 5: Furring Channel Spans and Sheet Fixing Spacing for Residential Buildings – Cpn = 1.0

Wind Category AS4055	Corner Zones ($K_f = 1.5$)			Other Zones			
	Furring Channel Spacing (mm)		Sheet Fixing Centres (mm)	Furring Channel Spacing (mm)			Sheet Fixing Centres (mm)
	300	450		300	450	600	
N1	1360	1090	300	1520	1340	1140	300
N2	1180	890	300	1500	1140	940	300
N3/C1	880	660	200	1150	870	700	300
N4/C2	670	–	150	890	660	530	200
N5/C3	500	–	–	680	500	–	200

Table 6: Furring Channel Spans and Sheet Fixing Spacing for Residential Buildings – Cpn = 1.5

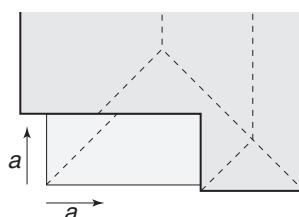
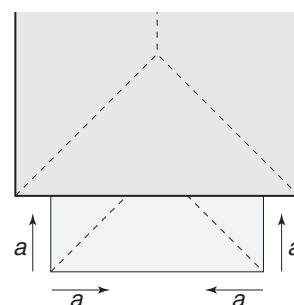
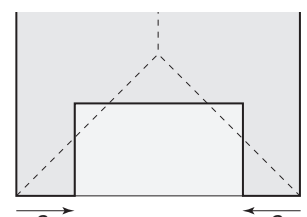
Wind Category AS4055	Corner Zones ($K_f = 1.5$)			Other Zones			
	Furring Channel Spacing (mm)		Sheet Fixing Centres (mm)	Furring Channel Spacing (mm)			Sheet Fixing Centres (mm)
	300	450		300	450	600	
N1	1120	840	300	1360	1090	890	300
N2	910	680	300	1180	890	720	300
N3/C1	670	–	200	880	660	–	300
N4/C2	–	–	–	670	–	–	200
N5/C3	–	–	–	500	–	–	200

Notes to All Wind Load Tables:

1. Tables are provided by Rondo and apply to Rondo framing products and to 6mm and 9mm thickness Cemintel™ products only.
2. Stated pressure is the Ultimate Design Wind Load, including all local factors.
3. Deflection limited to the lesser of $L/600$ under dead load, or $L/200$ under dead load plus service wind load.
4. Service wind load checked at 0.65 times the ultimate pressure.

Guide to Wind Load Tables

1. These tables are applicable to residential buildings within the scope of AS4055.
2. Local pressures may apply in corner zone **a = 1.2m** from building corners.

FIG 3: Two Sides Enclosed
(Refer to Table 5)
Cpn = 1.0**FIG 4: Unenclosed Verandah**
(Refer to Table 6)
Cpn = 1.5**FIG 5: Three Sides Enclosed**
(Refer to Table 6)
Cpn = ±1.2

INTERIOR CEILING SYSTEMS

Interior ceiling systems may be installed using the combination adhesive/fastener fixing system as detailed in FIG 6.

Alternatively the full fastener fixing system may be used as detailed in FIG 7. Fasteners must be spaced at 300mm maximum centres:

Table 2 details the maximum allowable furring channel span and spacing for CeminSeal interior ceiling systems.

FIG 6: Adhesive/Fastener Fixing System for Interior Flush-set Ceiling Systems

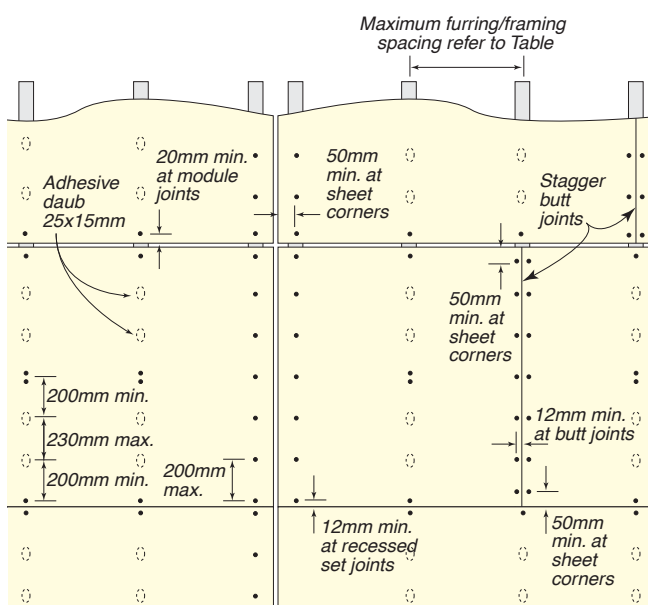
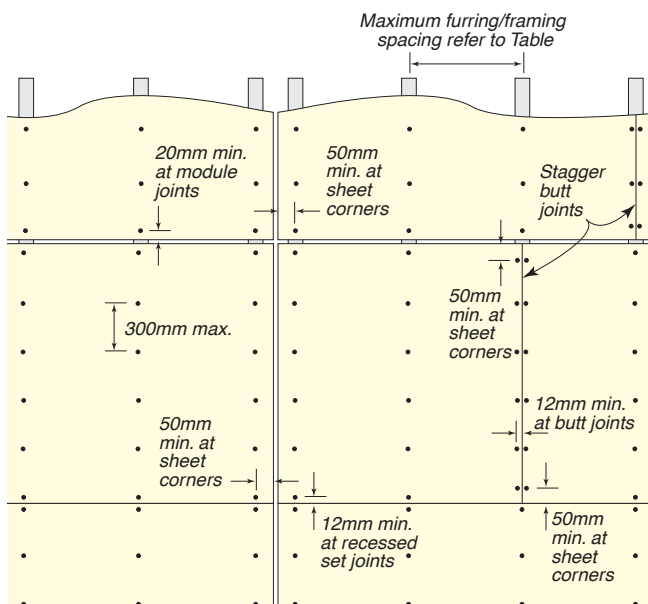


FIG 7: Fastener Fixing System for Interior Flush-set Ceiling Systems



EXTERIOR CEILING SYSTEMS

Exterior ceiling systems must be installed using the all fastener fixing system as detailed in FIG 8 or FIG 9.

Table 3, Table 4, Table 5 and Table 6 detail the maximum frame/furring channel spacing and maximum fixing centres for CeminSeal™ Soffit and Wallboard exterior ceiling installations in various Wind Category and for various wind pressures.

FIG 8: Fastener Fixing System for Exterior Flush-set Ceiling Systems

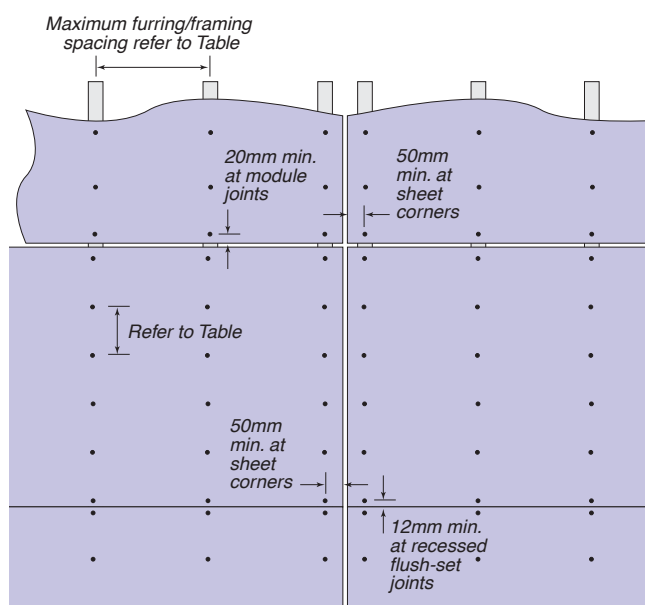
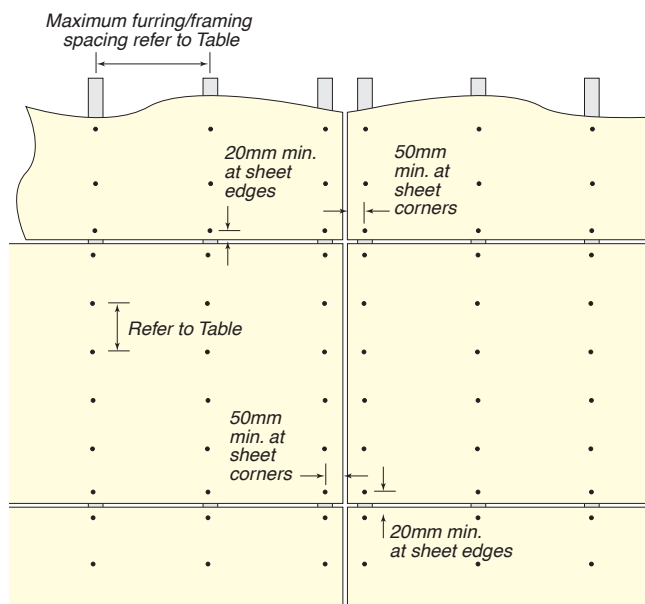


FIG 9: Fastener Fixing System for Exterior Expressed Joint Ceiling Systems



INSTALLATION METHODS

HANDLING, STORAGE AND SAFETY

All CSR Fibre Cement sheeting must be stacked flat, off the ground, and supported on a level platform. Care must be taken to avoid damage to edges, ends and surfaces. Material must be kept dry, preferably by being stored inside the building. Where it is necessary to store sheets outside, they must be protected from the weather. Sheets must be dry prior to fixing, jointing and finishing.

When cutting or grinding fibre cement sheets using power tools, always ensure the work area is well ventilated. An approved dust mask (AS1715 and AS1716) and safety glasses (AS1337) must be worn. CSR recommends that hearing protection be worn where appropriate.



SHEET CUTTING

Cemintel™ Fibre Cement Sheets may be cut on-site using any of the following methods.

Power Saw

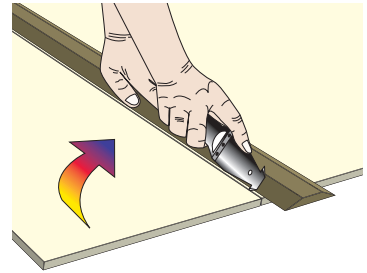
When it is necessary to use power tools for cutting Cemintel™ Fibre Cement Sheets, CSR recommends using saws fitted with vacuum extraction systems and blades specifically designed for use with fibre cement products as these produce a superior cut compared to conventional blades. Refer to available tools in this guide.

TOOLS

Product	Description	Size	Qty	Order Code
	• Hitachi C7YA Dustless Circular Saw – to suit dust extraction system.	185mm	1	10836
	• Hitachi Fibre Cement Power Saw Blade – Ideal for use with the Hitachi C7YA dustless circular saw and other 185mm circular saws fitted with vacuum extraction systems.	185mm	1	10837
	• Cemintel™ Power Saw Blade – Specifically designed for cutting cement based sheets. Ideal for use with dustless circular saws fitted with vacuum extraction systems. 15000 RPM max.	125mm	1	134449
	• Hitachi Dust Extraction System – Ideal for use with the Hitachi C7YA dustless circular saw and other saws.	–	1	10833
	• FESTO TS 55 EBQ Plunge Cut Saw – with 1400mm Guide Rail. Precise plunge cuts in materials up to 55 mm thick.	160mm	1	121400
	• FESTO Diamond Tipped Blade for TS 55 – For cutting all fibre cement sheet products.	160mm	1	112647
	• Score & Snap Knife – Soft Grip GTPRO with TCT tips.		1	123290

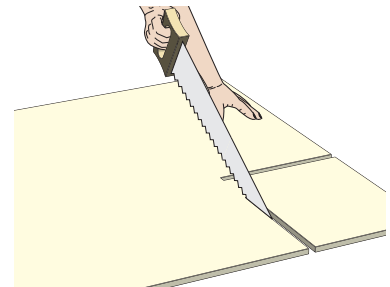
Tungsten Tipped Score and Snap Knife.

1. Score face of sheet 4 to 5 times using a tungsten tipped knife against a straight edge.
2. Support the scored edge with the straight edge and snap the sheet upwards for a clean break.



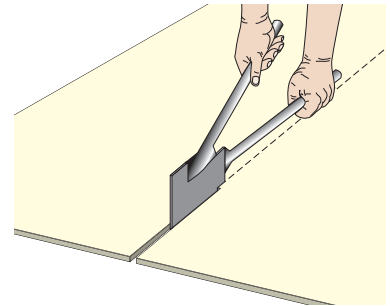
Hand Saw

Preferably use an old handsaw. A quick jabbing action is best. Work with sheet face up to prevent burrs forming on the face.



Hand Guillotine

Work with sheet face up to prevent burrs forming on the face.



INSTALLATION DETAILS FOR SOFFITLINE™ CEILING SYSTEMS – EXTERIOR CEILING WITH FLUSH-SET JOINTS

FEATURES

- 6mm CeminSeal™ Soffit recessed edge lining
- Flush-set joints
- Furring channels fixed to timber or steel joists, trusses or suspension system
- Sheet module size up to 3.6 x 3.6m
- Framing control joint module size up to 7.2 x 3.6m

TYPICAL APPLICATIONS

- Retail awnings
- Verandas and balconies
- Carports
- Eaves

FIG 10: Typical Layout for SoffitLine™ Ceiling System – Exterior Ceiling with Flush-Set Joints

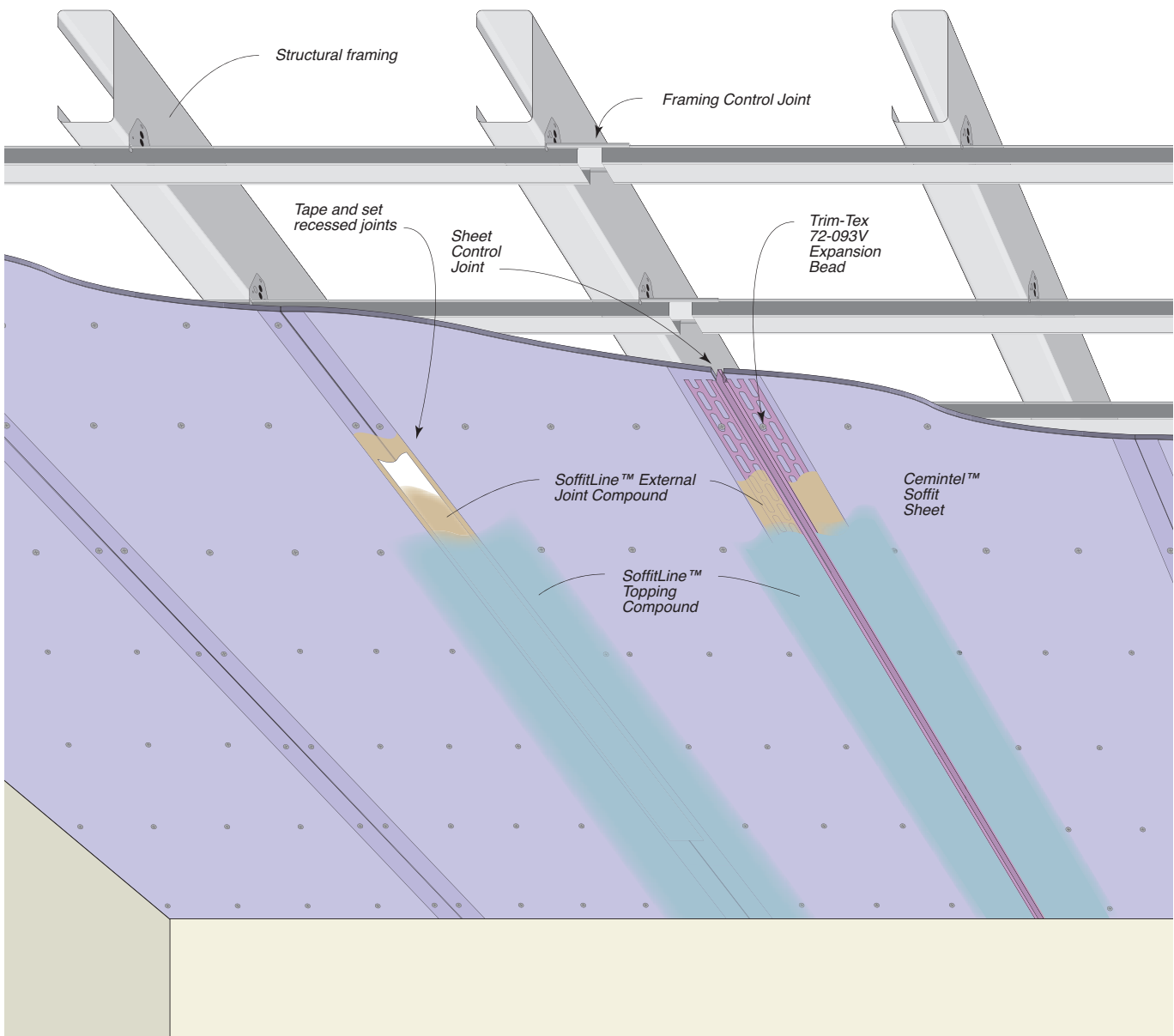
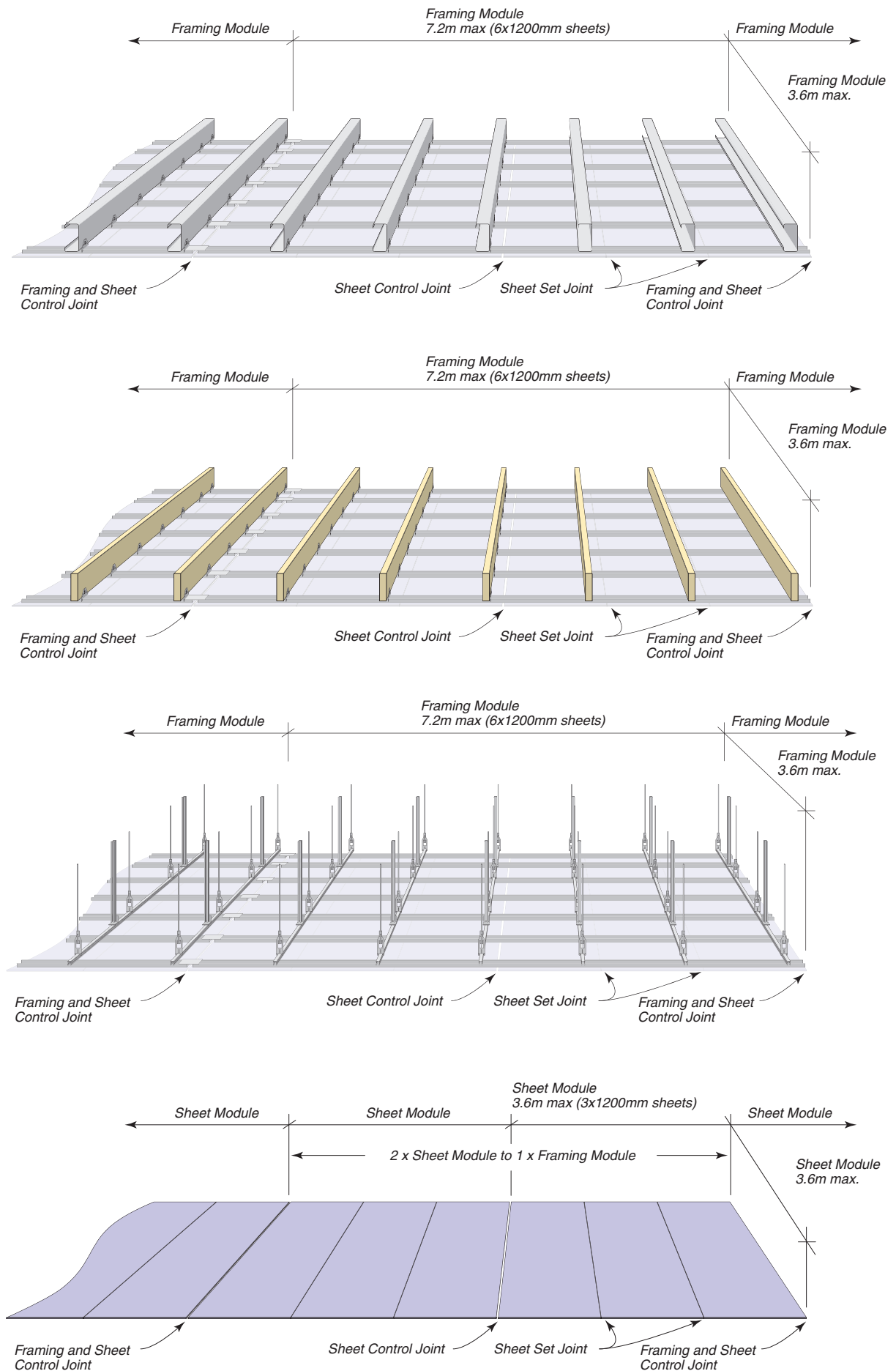


FIG 11: SoffitLine™ Ceiling System – Exterior Ceiling with Flush-Set Joints



INSTALLATION DETAILS – SOFFITLINE™ CEILING SYSTEMS – EXTERIOR CEILING WITH FLUSH-SET JOINTS

FIG 12: Perimeter Detail

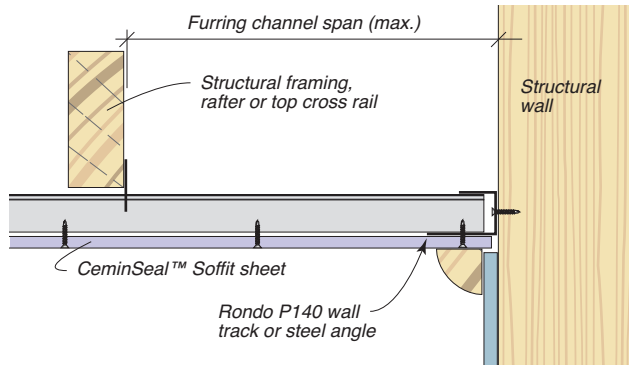


FIG 15: Perimeter Detail

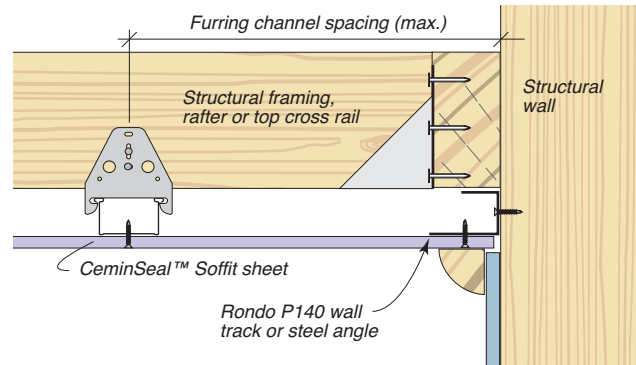


FIG 13: Perimeter Detail

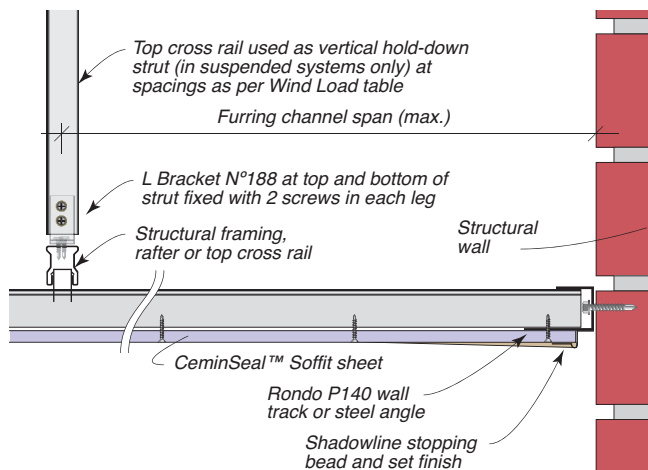


FIG 16: Perimeter Detail

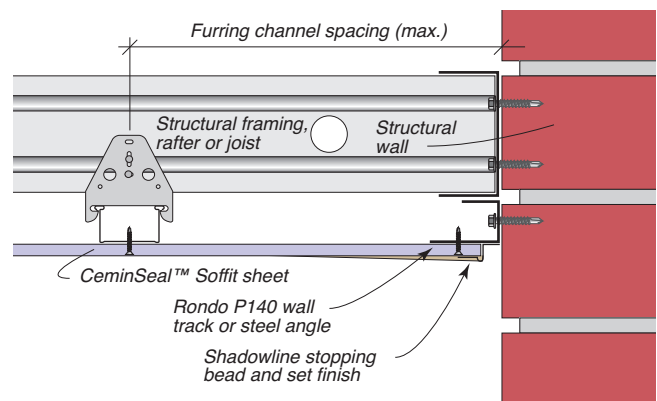


FIG 14: Framing & Sheet Module Control Joint

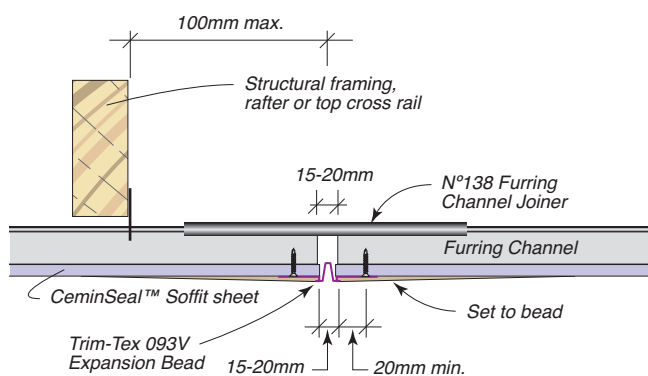


FIG 17: Framing and Sheet Module Control Joint

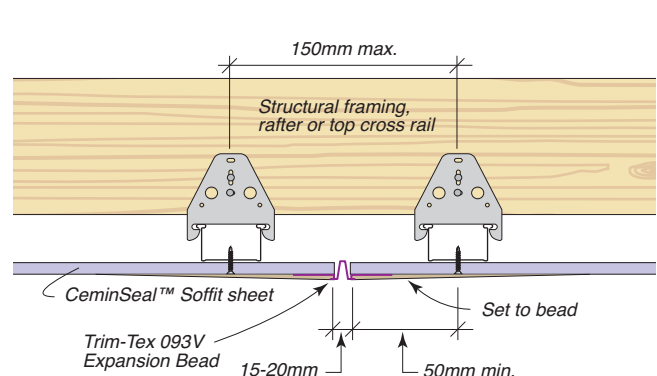


FIG 18: Sheet Module Control Joint

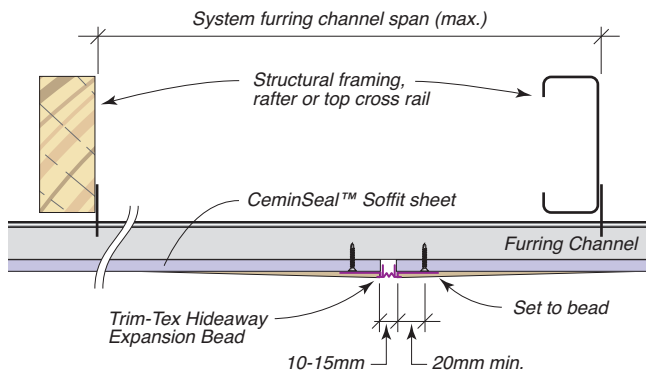


FIG 21: Sheet Set Joint

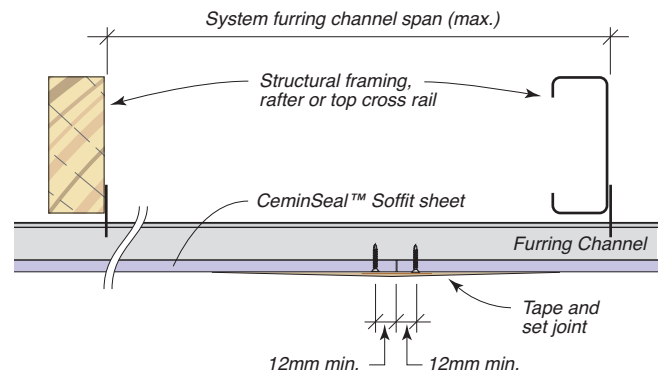


FIG 19: Joining of Furring Channel

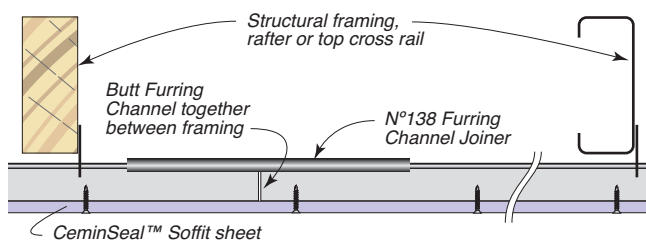


FIG 20: Hold-down Strut Detail – Suspended Ceiling System

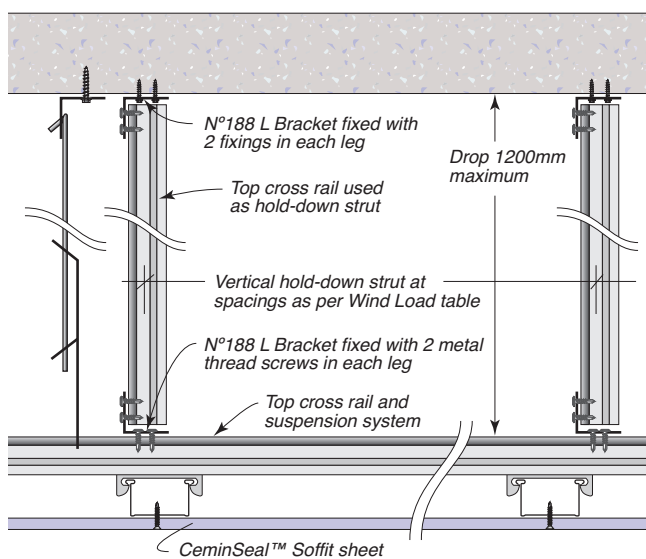
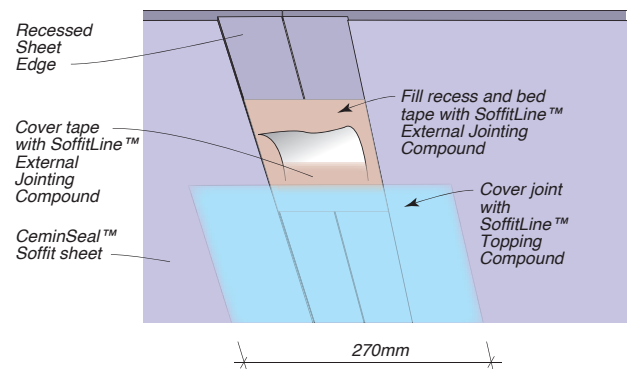


FIG 22: Flush-Set Jointing – Exterior SoffitLine™ System Recessed Joint. (Refer to the JOINTING section in this guide for more detailed information)

**Installation Tip:**

Avoid the use of excess compounds to reduce sanding requirements.

INSTALLATION DETAILS FOR EXTERIOR CEILING SYSTEMS – WITH EXPRESSED JOINTS

FEATURES

- 6 or 9mm CeminSeal™ Wallboard (SE) square edge sheets
- All joints expressed – may be with or without sealant depending on application (refer to Table 1)
- Furring channels fixed to timber or steel joists, trusses or suspension system
- Sheet module size up to 1.2 x 3.6m
- Framing control joint module size up to 7.2 x 3.6m

TYPICAL APPLICATIONS

- Industrial awnings
- Car park canopies
- High-rise balconies
- Carports

FIG 23: Typical Layout for Exterior Ceiling with Expressed Joints

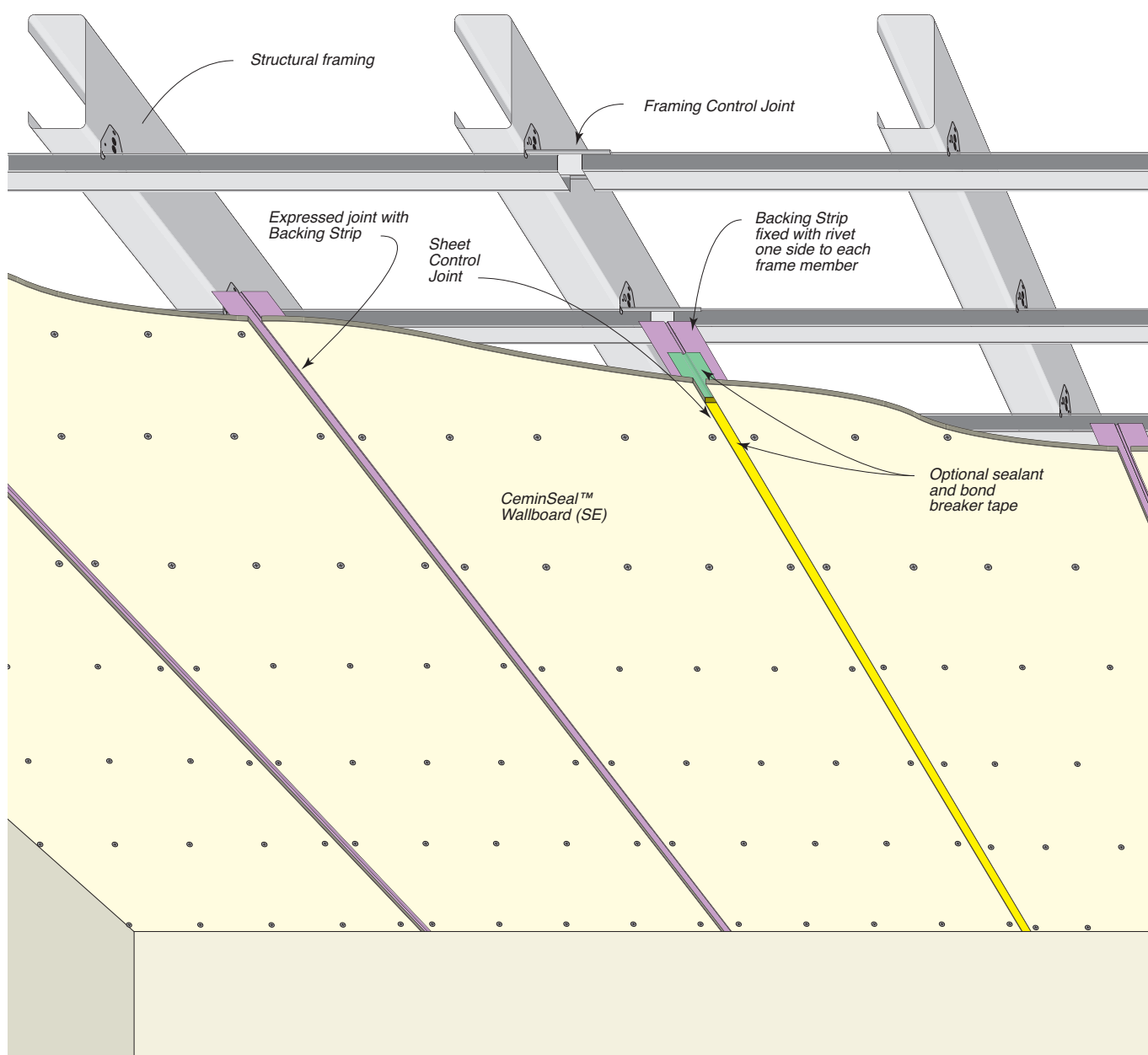
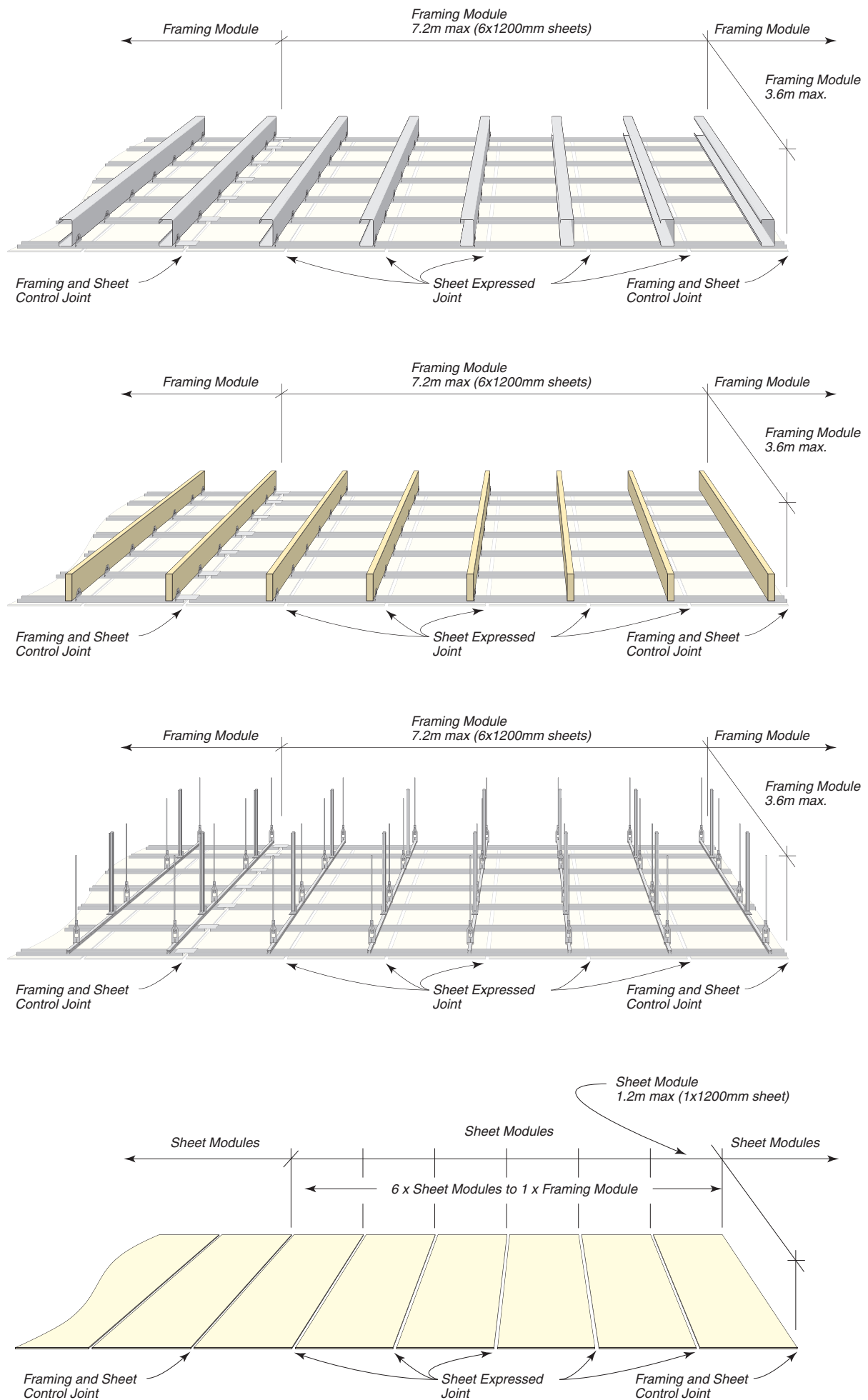


FIG 24: Exterior Ceiling with Expressed Joints



INSTALLATION DETAILS – EXTERIOR CEILING SYSTEMS WITH EXPRESSED JOINTS

FIG 25: Perimeter Detail – Expressed Joint

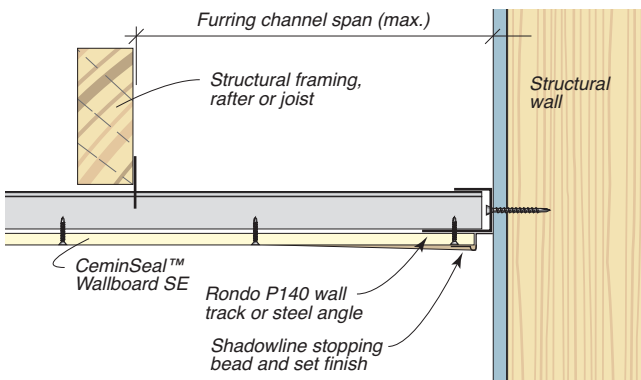


FIG 26: Perimeter Detail – Expressed Joint

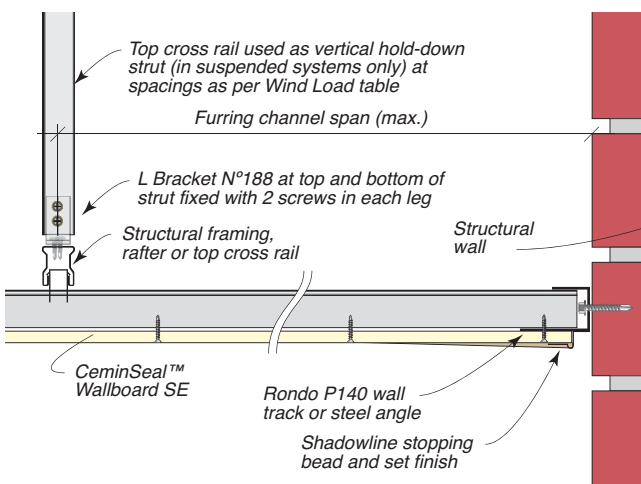


FIG 27: Framing & Sheet Module Control Joint – Expressed Joint

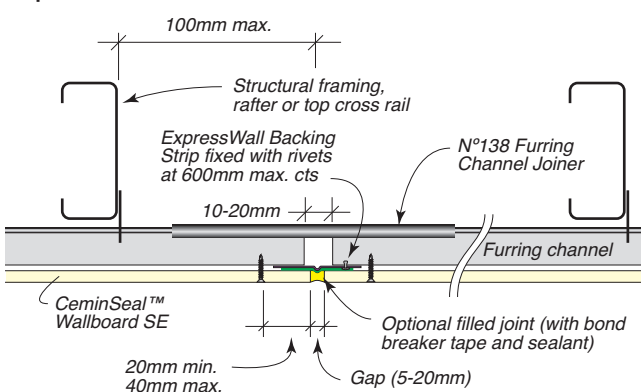


FIG 28: Sheet Module Control Joint – Expressed Joint

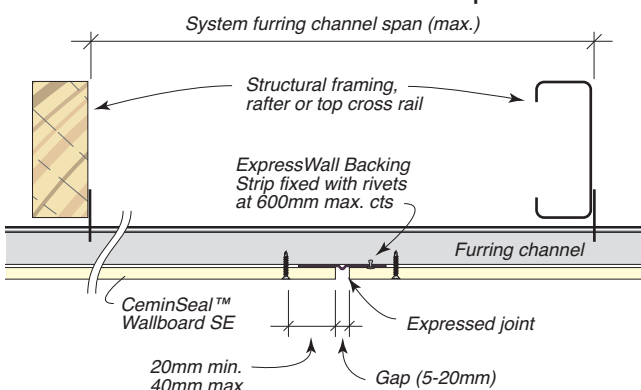


FIG 29: Perimeter Detail – Expressed Joint

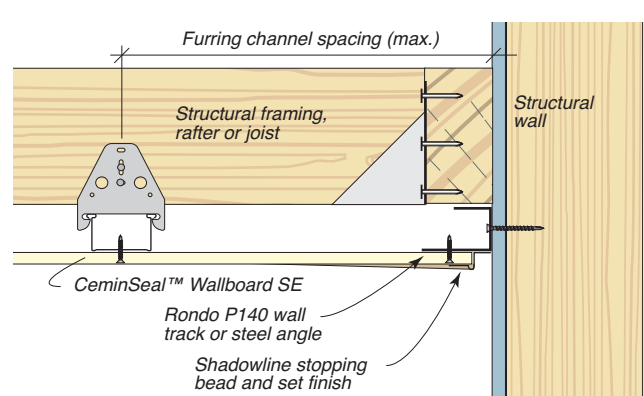


FIG 30: Perimeter Detail – Expressed Joint

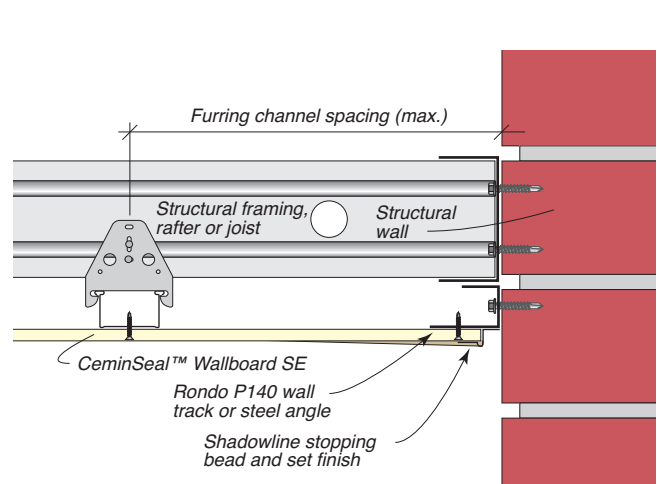


FIG 31: Framing and Sheet Module Control Joint – Expressed Joint

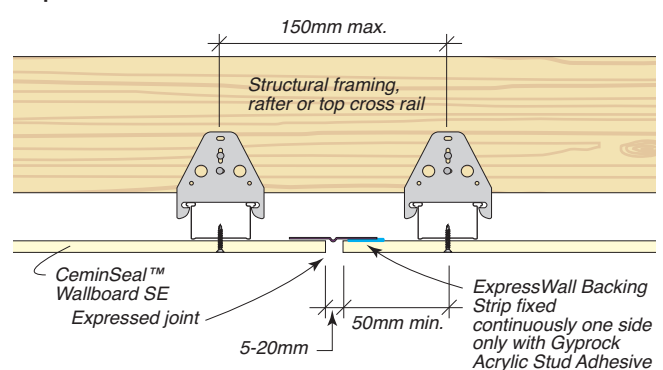


FIG 32: Framing and Sheet Module Control Joint – Expressed Joint – Alternative

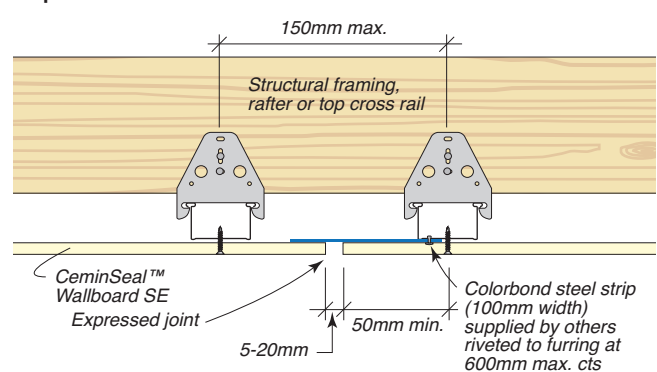


FIG 33: Sheet Module Control Joint – H-Mould Joint

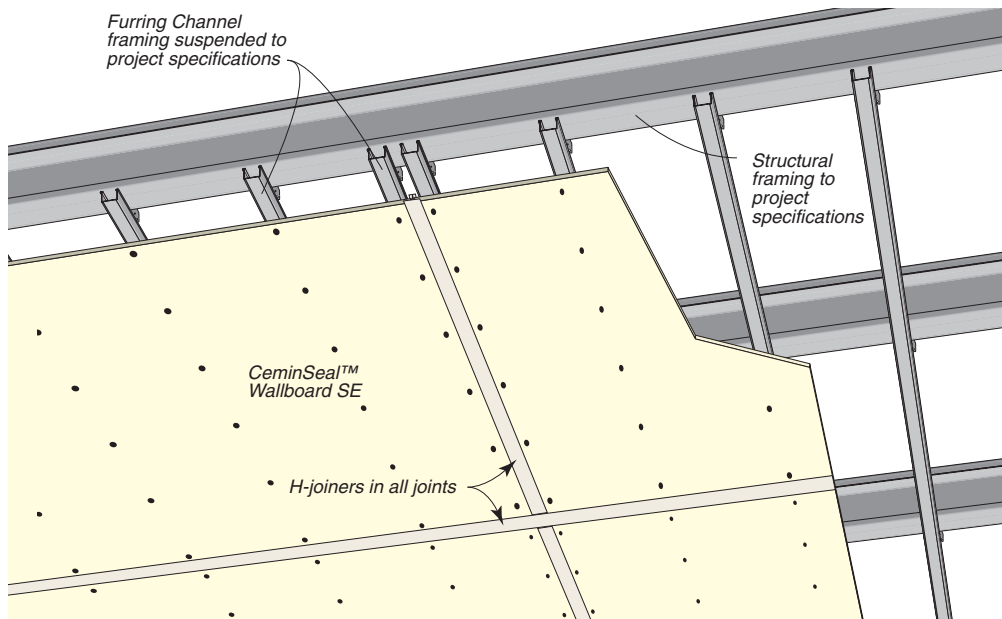


FIG 34: Sheet Module Control Joint – H-Mould Joint

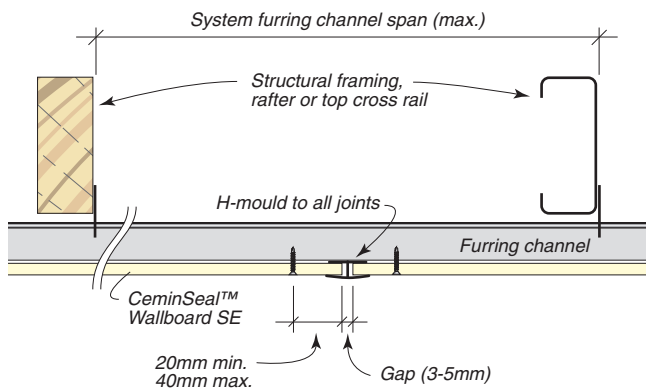


FIG 35: Framing and Sheet Module Control Joint – H-Mould Joint

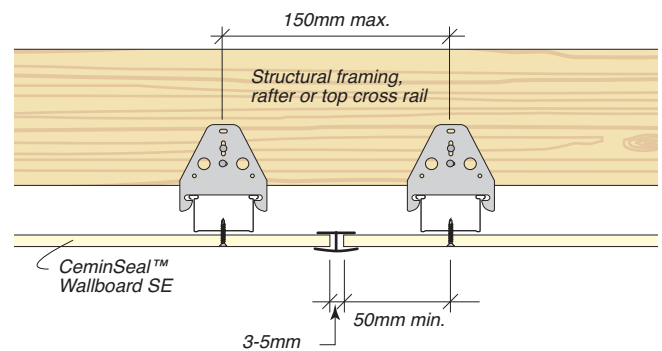


FIG 36: Typical Soffit/Fascia Junction Detail

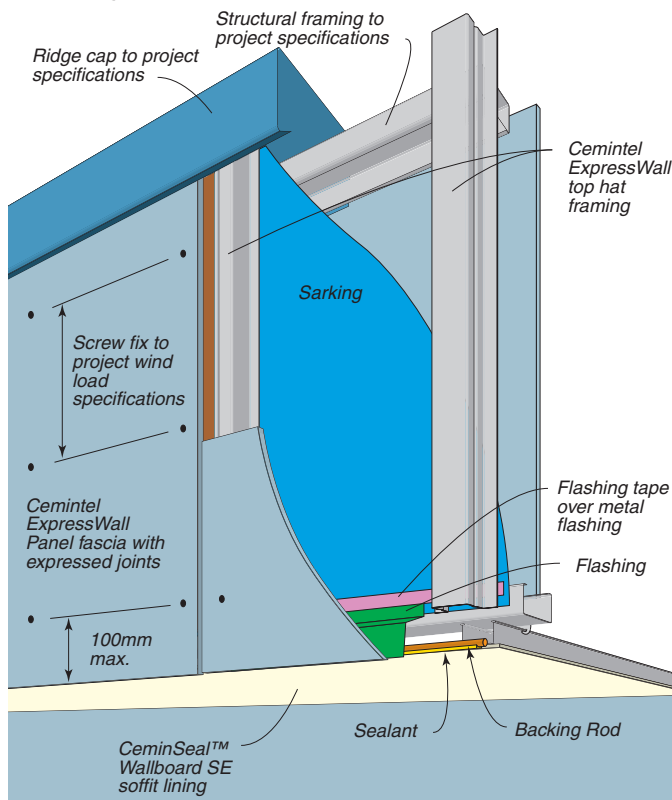
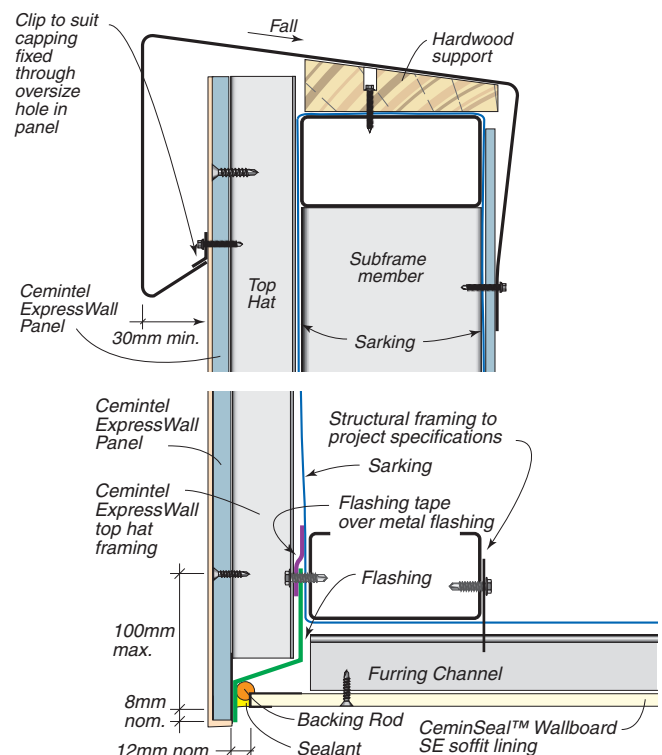


FIG 37: Typical Fascia and Soffit Detail



INSTALLATION DETAILS FOR INTERIOR CEILING SYSTEMS – WITH FLUSH-SET JOINTS

FEATURES

- 6 or 9mm CeminSeal™ Wallboard (RE) recessed edge lining
- Flush-set joints
- Furring channels fixed to timber or steel joists, trusses or suspension system
- Sheet module size up to 5.2 x 6.0m
- Framing control joint module size up to 10.4 x 6.0m

TYPICAL APPLICATIONS

- Sports halls
- Secure areas
- Industrial storage areas

FIG 38: Typical Layout for Interior Ceiling with Flush-Set Joints

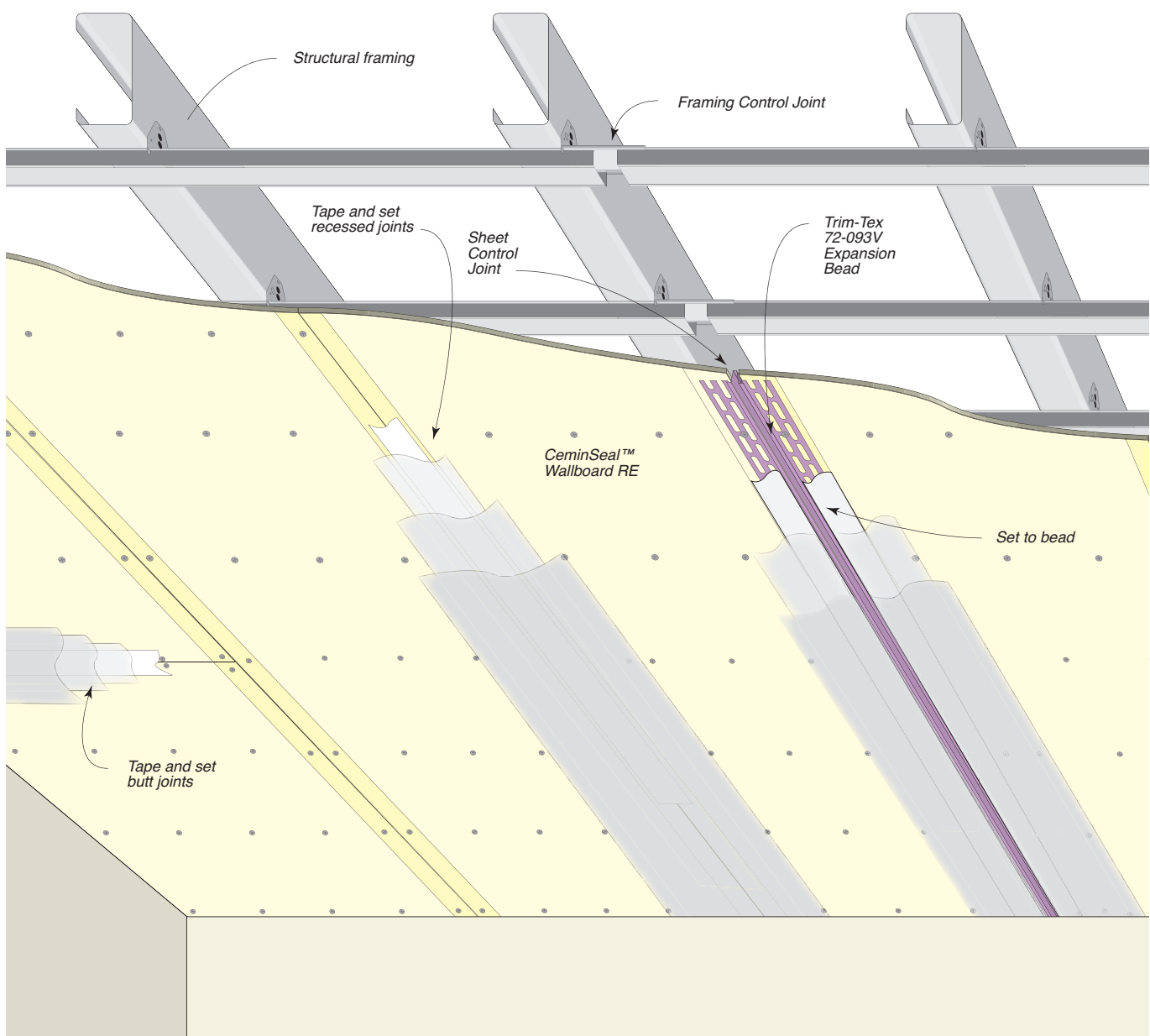
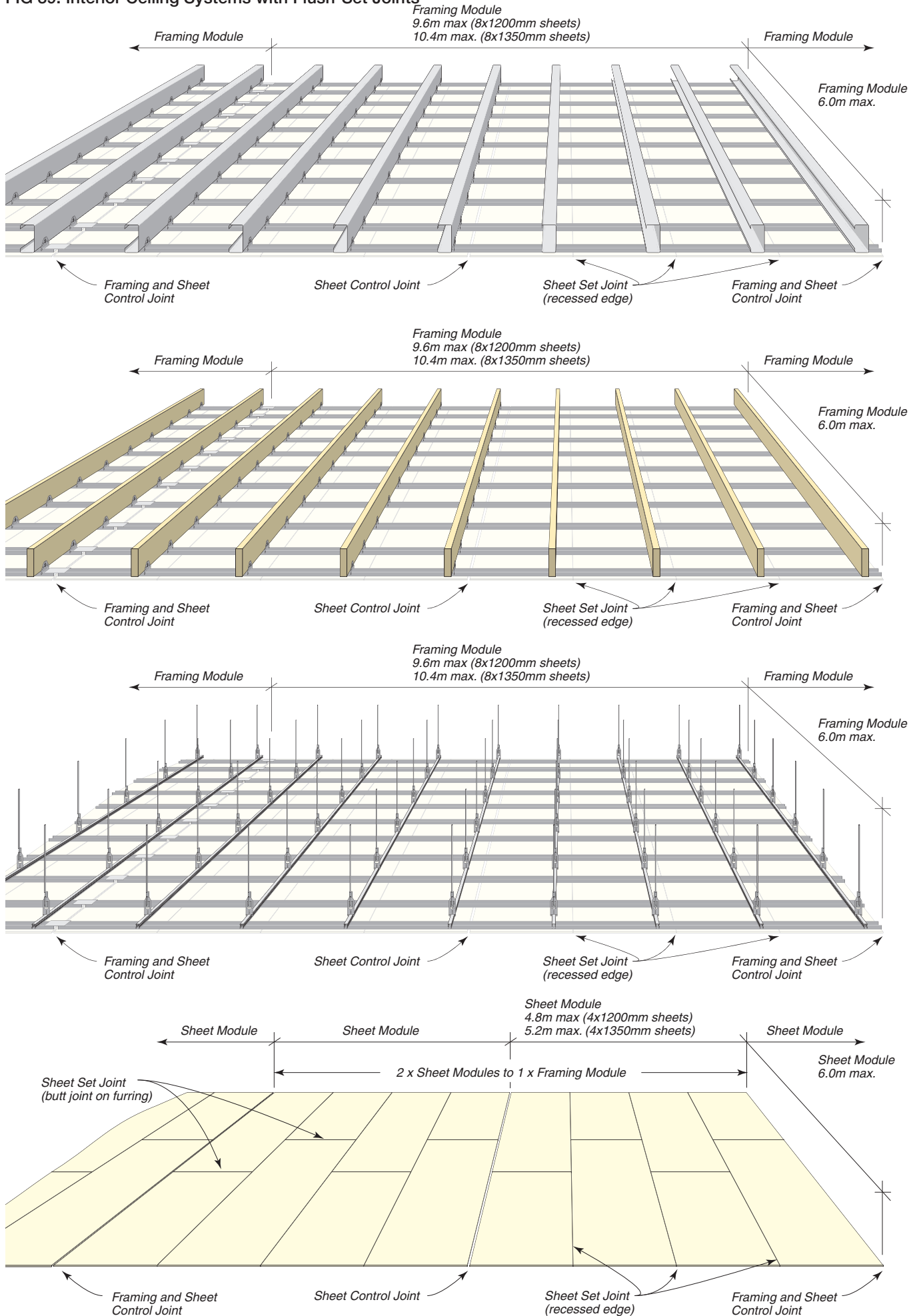


FIG 39: Interior Ceiling Systems with Flush-Set Joints



INSTALLATION DETAILS – INTERIOR CEILING SYSTEMS WITH FLUSH-SET JOINTS

FIG 40: Perimeter Detail

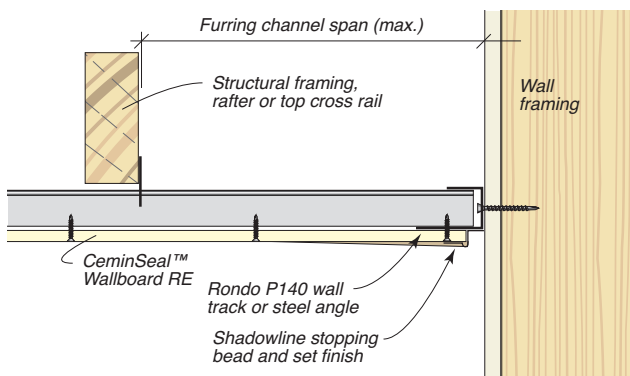


FIG 43: Perimeter Detail

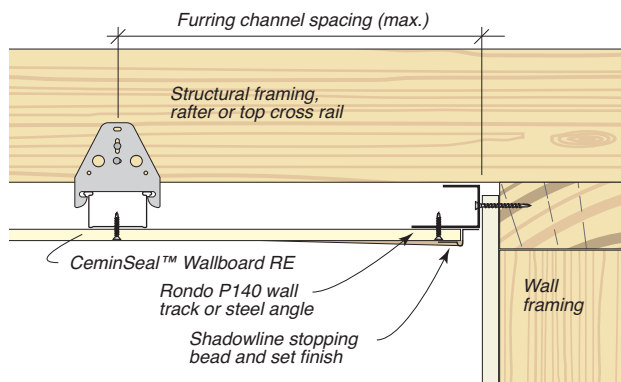


FIG 41: Perimeter Detail

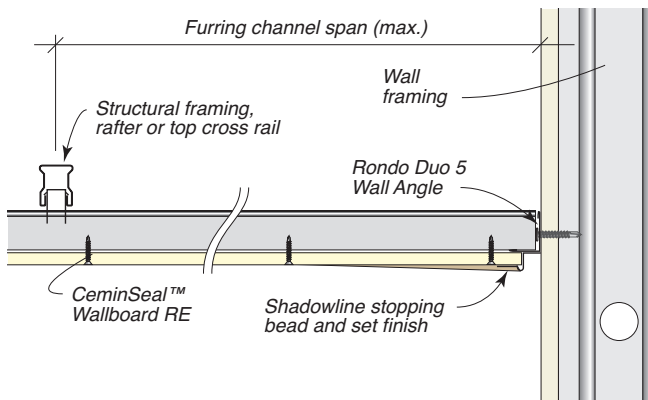


FIG 44: Perimeter Detail

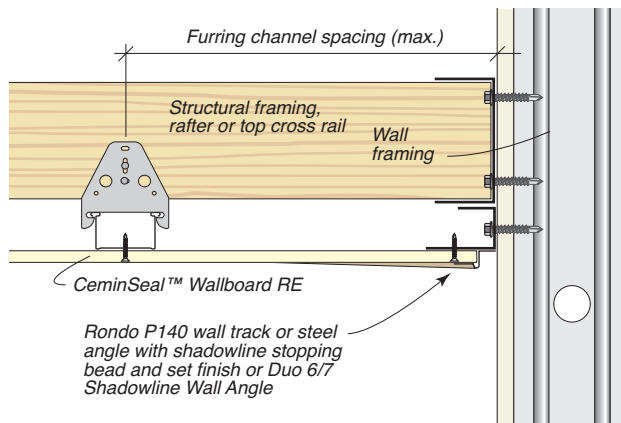


FIG 42: Framing & Sheet Module Control Joint

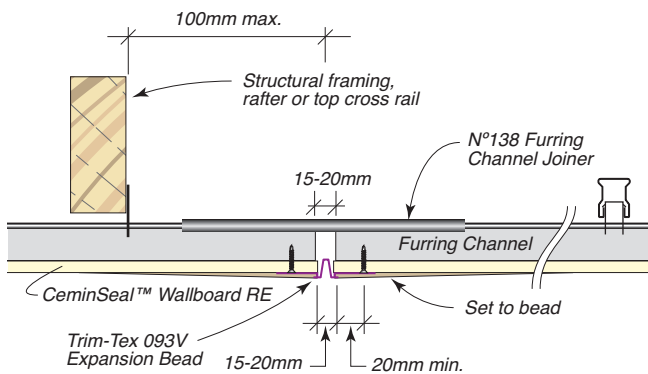


FIG 45: Framing and Sheet Module Control Joint

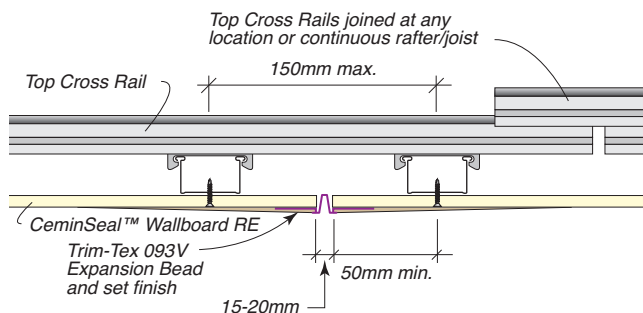


FIG 46: Sheet Module Control Joint

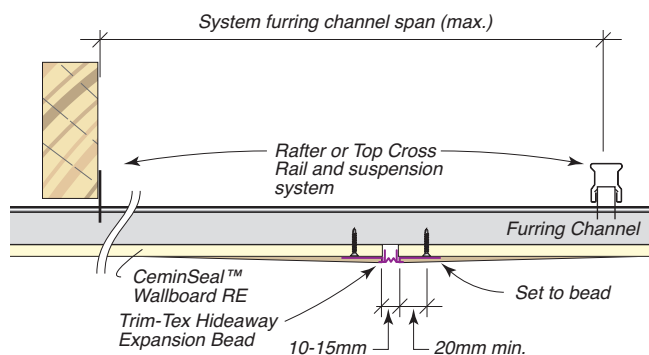


FIG 49: Sheet Set Joint (Butt or End Joint)

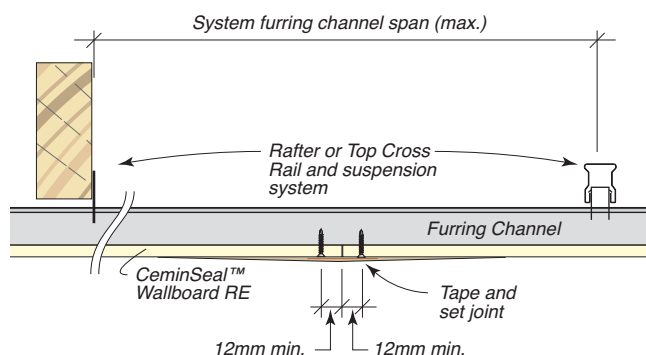


FIG 47: Flush-Set Jointing – Interior System Recessed Edge. (Refer to the JOINTING section in this guide for more detailed information)

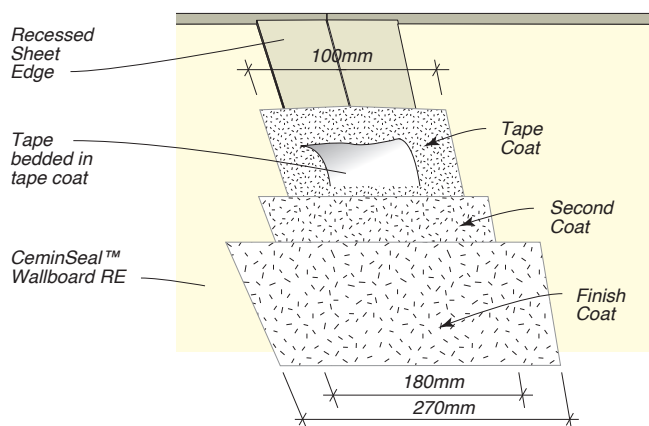


FIG 50: Flush-Set Jointing – Interior System Butt Joint. (Refer to the JOINTING section in this guide for more detailed information)

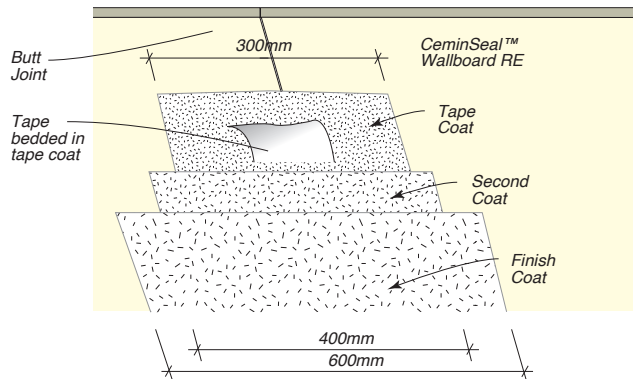
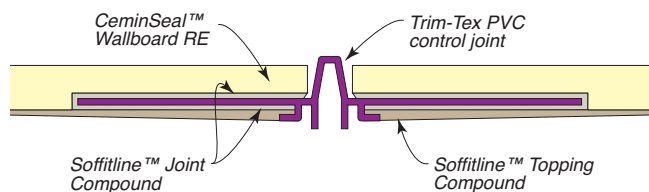


FIG 48: Control Joint Detail – Exterior Application (Interior similar)



JOINTING

After CeminSeal™ Soffit or Wallboard sheets have been fixed the joints and/or fastener heads require stopping to provide a smooth surface for decoration.

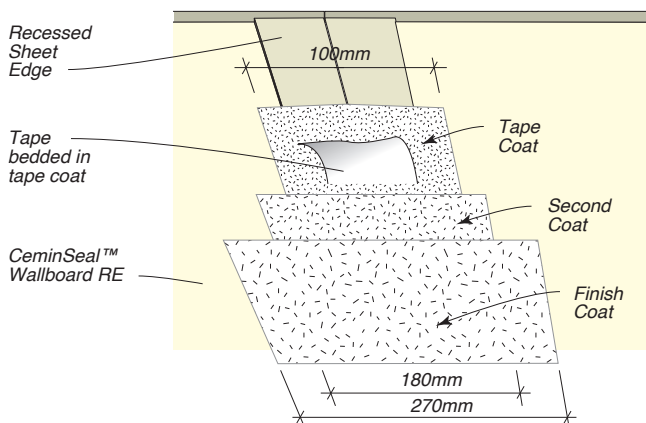
INTERIOR SYSTEMS

Joints in CeminSeal™ Wallboard ceilings used in interior locations may be jointed using Gyprock plasterboard methods and compounds. Refer to GYP547, Gyprock™ Residential Installation Guide for complete details. When using Wet Area Base Coat, remove excess material while it is wet to reduce sanding.

Tape Coat

1. Apply tape coat to both sides of the joint, bed the tape centrally over the joint and lightly cover with compound.
2. Cover all fastener heads with tape coat.
3. Allow tape coat to set/completely dry before proceeding.

FIG 51: Flush-Set Jointing – Interior System Recessed Edge



Second Coat

1. Apply a second coat to width as shown. Feather the edges with a trowel.
2. Cover fastener heads with a second coat, extending beyond the first coat by about 25mm.
3. Allow the second coat to set/completely dry before proceeding.

Finish Coat

1. Apply a finish coat centrally over the second coat, to width as shown. Feather the edges with a trowel. (If required, soften the outer edges of the compound with a damp brush before feathering).
2. Cover fastener heads with a finish coat, extending beyond the second coat by about 25mm. Ensure that the edges of the compound are neatly feathered and that there are no knife edge marks left in the final stopping.

Sanding

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

FIG 52: Flush-Set Jointing – Interior System Butt Joint

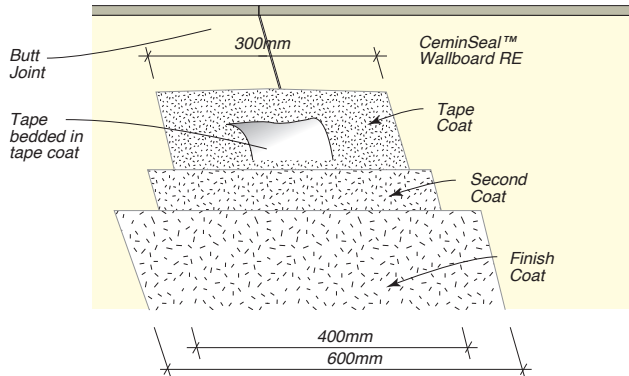


Table 7: Jointing System Selection – Interior Ceilings

Tape Coat	Second Coat	Finish Coat
Any of the following:	Any of the following: (*see note)	Any of the following:
Base Coat 20	Base Coat 20*	Jointmaster
Base Coat 45	Base Coat 45*	Ultra-Top
Base Coat 60	Base Coat 60*	Pre-Mixed Total Joint Cement
Base Coat 90	Base Coat 90*	Multi-Purpose Compound
Pre-Mixed Total Joint Cement	Pre-Mixed Total Joint Cement	Easy-Finish
Multi-Purpose Compound	Multi-Purpose Compound	Easy-Flow
Wet Area Base Coat	Wet Area Base Coat	Final Finish
Easy-Flow	Easy-Flow	Ultra-AP
Ultra-AP	Ultra-AP	Total Coat-Lite (dry)
Total Coat-Lite (dry)	Total Coat-Lite (dry)	

* Setting compound. Do not use a setting compound over a drying type compound.

EXTERIOR SYSTEMS

Recessed joints in CeminSeal™ Soffit ceilings used in exterior locations must be set using SoffitLine™ external compounds and paper tape.

SoffitLine™ compounds are acrylic and have different sanding characteristics than plaster products, and require increased sanding effort. Care should be taken in the application of both jointing and topping compounds to minimise the use of excess material. This will result in little need for sanding.

RECESSED EDGES

Taping Coat

1. Fill recess evenly and fully with SoffitLine™ External Jointing Compound. Only the recess area should be filled; avoid spreading the compound over the face of the sheet
2. Bed in the paper tape centrally over the joint and cover lightly with compound.
3. Allow to dry completely, approximately 2–4 hours in warm conditions.

Second Coat

1. If required apply a second coat of SoffitLine™ External Jointing Compound to ensure tape is completely covered. Do not spread the compound wider than the recess. Feather edges whilst the compound is wet.
2. Allow compound to dry and harden thoroughly, approximately 2–4 hours in warm conditions.

Finish Coat

1. Scrape joint with a joint knife to remove any excess jointing compound.
2. Apply a thin coat of SoffitLine™ Topping Compound centrally over the joint, about 270mm wide. Ensure that the edges of the compound are neatly feathered to minimise sanding.

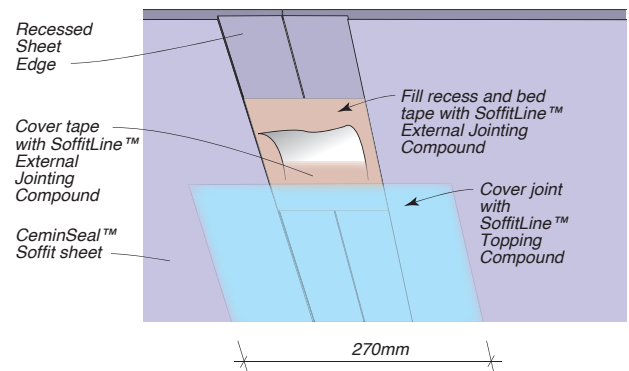
Fasteners

Fasteners may be coated with up to three coats of SoffitLine™ Topping compound. The fasteners must be driven just below the board surface so that a smooth finish can be achieved. Ensure that there are no knife edge marks left in the final stopping.

Sanding

With careful compound application, sanding should be minimal. When required, ensure the topping is dry, and sand smooth with 120 grit paper. Avoid any heavy pressure which might scuff the joints.

FIG 53: Flush-Set Jointing – Exterior SoffitLine™ System Recessed Joint



Installation Tip:

Avoid the use of excess compounds to reduce sanding requirements.

Table 8: Jointing System Selection – Exterior Ceilings

Tape Coat	Second Coat	Finish Coat
SoffitLine™ External Jointing Compound	SoffitLine™ External Jointing Compound	SoffitLine™ Topping Compound



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CEILING SYSTEMS

HEALTH & SAFETY

WARNING

Fibre Cement products contain crystalline silica. Repeated inhalation of fibre cement dust may cause lung scarring (silicosis) or cancer. Do not breathe the dust. When cutting sheets, use the methods recommended in this brochure to minimise dust generation. If power tools are used, wear an approved dust mask (respirator). These precautions are not necessary when stacking, unloading or handling fibre cement products.

For further information and for a Material Safety Data Sheet, phone 1800 678 068.

WARRANTY

CSR Building Products Limited ("CSR") warrants its Cemintel SoffitLine[™] and Ceminseal[™] Wallboard ("Product") to remain free of defects in material and manufacture for the usual lifetime of the Product (up to 25 years).

In the event of any failure of the Product caused by the direct result of a defect in the material or manufacture of the Product, CSR will at its option replace or repair, supply an equivalent product, or pay for doing one of these.

This warranty does not apply where the Product has been used in any manner not in accordance with the manufacturer's instructions, nor the reuse of the Product after its initial installation. This includes installation and maintenance in accordance with the relevant Cemintel technical manual, current copies are available at cemintel.com.au/installation or by contacting 1300 CEMINTEL. CSR recommends that only those products, components and systems recommended by it be used and the project must be designed and constructed in strict compliance with all relevant provisions of the current Building Code of Australia, regulations and standards. All other products, including coating systems, applied to or used in conjunction with the Product must be applied or installed and maintained in accordance with the relevant manufacturer's instructions and good trade practice. CSR will need to be satisfied that any defect in its Product is attributable to material or manufacture defect (and not another cause) before this warranty applies.

Without limiting the foregoing, CSR will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect

design of the structure, high levels of pollution, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product or normal wear and tear.

Other than as expressly set out in this warranty, and the guarantees that can not be excluded under The Australian Consumer Law (Schedule 2 of the Competition and Consumer Act 2010 (Cth)) (and any other law), CSR excludes all other warranties and guarantees with regard to the Product including all guarantees and warranties that may apply at law.

To the extent that it is able to do so, CSR excludes all liability for loss and damage (including consequential loss) in connection with the Product. This exclusion does not apply where the Product is sold to a consumer and is a good of a kind ordinarily acquired for personal, domestic or household use or consumption.

The following statement is provided where the Product is supplied to a buyer who is a "consumer" under the Australian Consumer Law: Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. The benefits of this warranty are in addition to other rights or remedies of the consumer under law in relation to the goods or services to which the warranty relates.

Notification of a warranty claim must be made to CSR prior to any return of the Product. Failure to allow CSR to examine an alleged faulty Product in-situ may result in the voiding of this warranty.

To make a claim under this warranty, you must contact CSR on 1300 CEMINTEL, or write to one of our state offices, cemintel.com.au/contact-us. All expense of claiming the warranty will be borne by the person making the claim. CSR may require documentation supporting the claim to be provided.

Cemintel[™], CeminSeal[™], SoffitLine[™], Gyprock[®] and CSR[™] are trademarks of CSR Limited.
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