Commercial Walling

bondorpanel®
equitilt®
flameguard®
metecnopanel®
metecnoinspire®

CodeMark™

Colorbond®
THE COLOURS OF AUSTRALIA SINCE 1966

BONDOR®

metecno® PIR

Design and Install Guide

V1 - Current 17/03/2021

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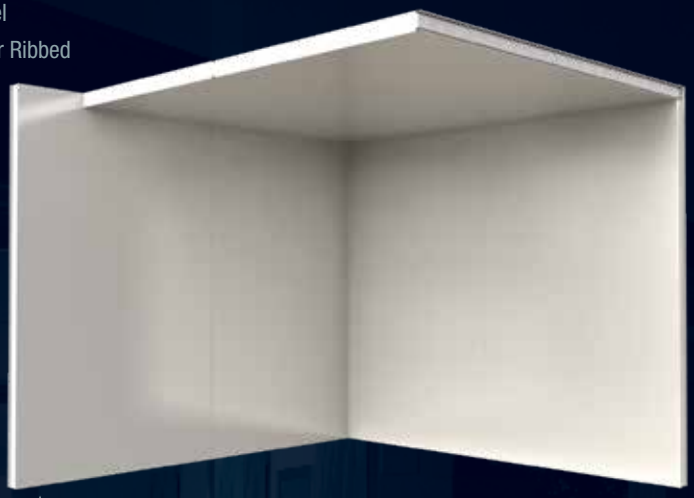
BondorPanel®

External Layer

Available in thermally efficient and modern colours
Australian made and proven Colorbond® steel
Three layer finish options in Plain, Satinline or Ribbed



Colorbond®
BAL40
CodeMark Australia
Certificate CM40189

Internal Layer

Internal Layer available in six Colorbond® steel colour options*
Three layer finish options in Plain, Satinline or Ribbed
Low maintenance and durable Colorbond® steel

Insulation Layer

EPS-FR for superior thermal performance

Colour Range

BondorPanel®'s colour range has been rigorously tested and made tough for Australian conditions. The range has been picked with the support of BlueScope® Steel to offer pre finished walling colours with the best thermal performance. Standard and non-statndard colours available, check for availability.

Panel Finishes

BondorPanel®'s offer three different designs as a popular internal and external finish. The finish options available are Plain, Satinline or Ribbed layer made from proven BlueScope® Colourbond® steel.

Plain - Contemporary Look

'Plain' modern finish is a popular smooth walling surface option that embodies contemporary design, suitable for the modern home.

Satinline - Smooth Look

'Satinline' wall panel finish provides an aesthetic with smooth lines that emulate the look and feel of subtle corrugation.

Ribbed - Cladded Look

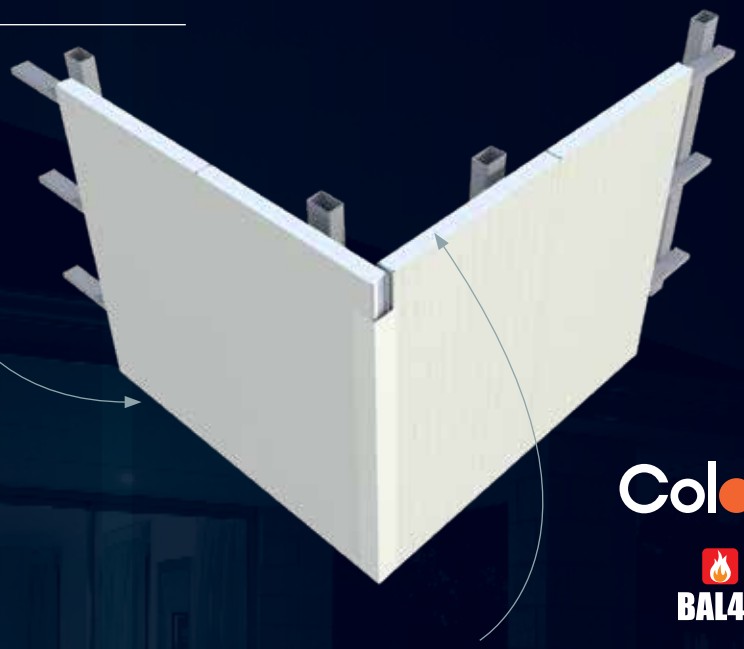
'Ribbed' cladded walling finish provides a style with distinct lines that represents the appearance of a cladded wall.

* Conditions may apply
Check with your local BondorPanel® dealer for more information and the availability of profile in your state.

Equitilt®

External Layer

Available in thermally efficient and modern colours
Australian made and proven Colorbond® steel
Four layer finish options in Plain, Satinline, Ribbed and Shadowline Series 600/1200



Colorbond®
BAL40
CodeMark Australia
Certificate CM40104

Internal Layer

Internal Layer available in eleven Colorbond® steel colour options*
Four layer finish in Plain, Satinline, Ribbed and Shadowline Series 600/1200
Low maintenance and durable Colorbond® steel

Insulation Layer

EPS-FR for superior thermal performance

Colour Range

Equitilt®'s colour range has been rigorously tested and made tough for Australian conditions. The range has been picked with the support of BlueScope® Steel to offer pre finished walling colours with the best thermal performance. Standard and non-standard colours available, check for availability.

Panel Finishes

Equitilt® offers four different stylish designs for any popular internal and external finish. The finishes available are Plain, Satinline, Ribbed or Shadowline made from proven BlueScope® Colourbond® steel.

Plain - Contemporary Look

'Plain' modern finish is a popular smooth walling surface option that embodies contemporary design, suitable for the modern home.

Satinline - Smooth Look

'Satinline' wall panel finish provides an aesthetic with smooth lines that emulate the look and feel of subtle corrugation.

Ribbed - Cladded Look

'Ribbed' cladded walling finish provides a style with distinct lines that represents the appearance of a cladded wall.

Shadowline - Cladded Look

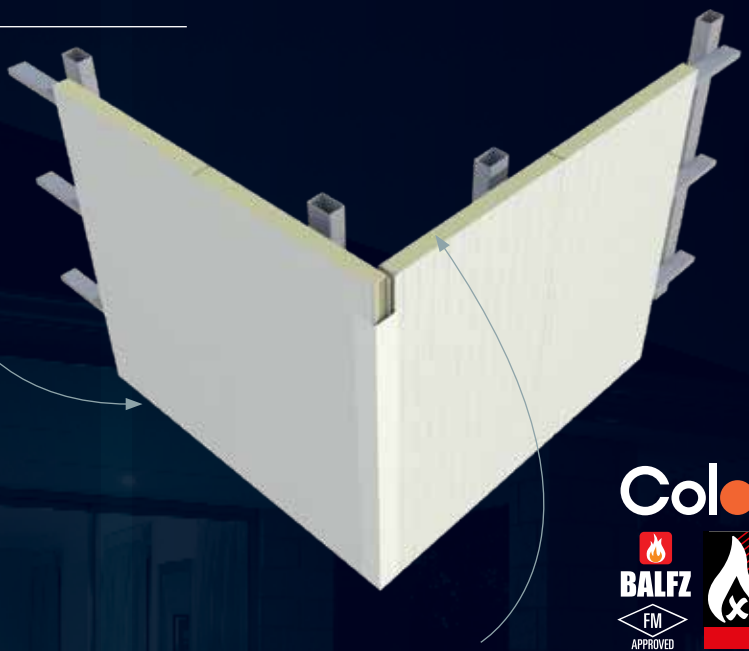
'Shadowline' walling finish provides a style with distinct lines that represents the appearance of large cladded intesecting panelling.
Available as 600 & 1200 series

* Conditions may apply
Check with your local Equitilt® Flameguard® dealer for more information, the availability of profile and panel widths in your state.

Equitilt® Flameguard®

External Layer

Available in thermally efficient and modern colours
Australian made and proven Colorbond® steel
Four layer finish options in Plain, Satinline, Ribbed and Shadowline Series 600/1200.



Colorbond®
BALFZ FM APPROVED
NON-COMBUSTIBLE
CodeMark Australia
Certificate CM40149

Internal Layer

Internal Layer available in eleven Colorbond® steel colour options*
Four Layer finish options in Plain, Satinline, Ribbed and Shadowline Series 600/1200
Low maintenance and durable Colorbond® steel

Insulation Layer

Non-ozone depleting Mineral Wool core for superior non-combustible, fire-rated walling and thermal performance

Colour Range

Equitilt® Flameguard®'s colour range has been rigorously tested and made tough for Australian conditions. The range has been picked with the support of BlueScope® Steel to offer pre finished walling colours with the best thermal performance. Standard and non-standard colours available, check for availability.

Panel Finishes

Equitilt® Flameguard® offers four different stylish designs for any popular internal and external finish. The finishes available are Plain, Satinline, Ribbed or Shadowline made from proven BlueScope® Colourbond® steel.

Plain - Contemporary Look

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Satinline - Smooth Look

'Satinline' wall panel finish provides an aesthetic with smooth lines that emulate the look and feel of subtle corrugation.

Ribbed - Cladded Look

'Ribbed' cladded walling finish provides a style with distinct lines that represents the appearance of a cladded wall.

Shadowline - Cladded Look

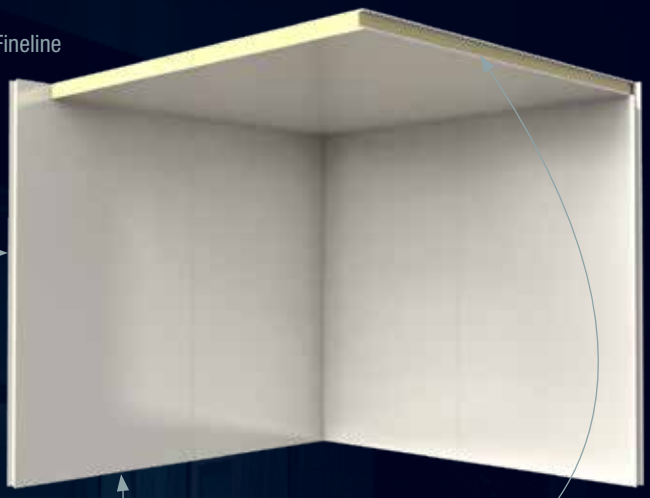
'Shadowline' walling finish provides a style with distinct lines that represents the appearance of large cladded intesecting panelling.
Available as 600 & 1200 series

* Conditions may apply
Check with your local Equitilt® Flameguard® dealer for more information, the availability of profile and panel widths in your state.

MetecnoPanel®

External Layer

- Available in thermally efficient and modern colours
- Australian made and proven Colorbond® steel
- Four layer finish options in Plain, Satinline, Ribbed or Fineline



Colorbond®
BAL40
FM APPROVED
CodeMark Australia
Certificate CM40196

Internal Layer

Internal Layer available in eleven Colorbond® steel colour options*
Four layer finish options in Plain, Satinline, Ribbed or Fineline
Low maintenance and durable Colorbond® steel

Insulation Layer

PIR fire-retardant core delivering exceptional thermal performance
Alternative to concrete tilt panel and traditional claddings

Colour Range

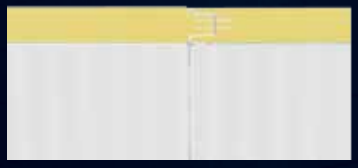
MetecnoPanel®'s colour range has been rigorously tested and made tough for Australian conditions. The range has been picked with the support of BlueScope® Steel to offer pre finished walling colours with the best thermal performance. Standard and non-standard colours available, check for availability.

Panel Finishes

MetecnoPanel® offers four different stylish designs for any popular internal and external finish. The finishes available are Plain, Satinline, Ribbed or Fineline made from proven BlueScope® Colourbond® Steel.

Plain - Contemporary Look

'Plain' modern finish is a popular smooth walling surface option that embodies contemporary design, suitable for the modern home.



Satinline - Smooth Look

'Satinline' wall panel finish provides an aesthetic with smooth lines that emulate the look and feel of subtle corrugation.

Ribbed - Cladded Look

'Ribbed' cladded walling finish provides a style with distinct lines that represents the appearance of a cladded wall.

Fineline - Smooth Look

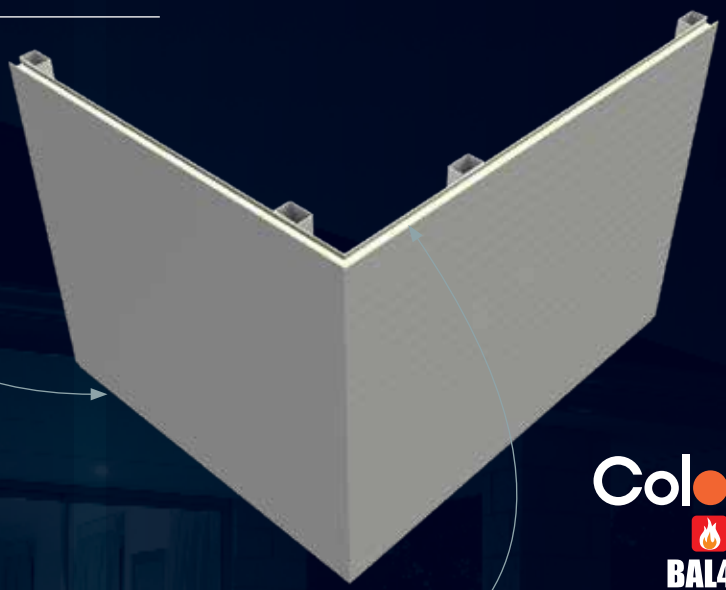
'Fineline' cladded walling finish provides a style with a narrow look of smooth lines that represents the appearance of a cladded wall.

* Conditions may apply
Check with your local MetecnoPanel® dealer for more information and the availability of profile in your state.

MetecnoInspire®

External Layer

- Available in thermally efficient and modern colours
- Australian made and proven Colorbond® steel
- Six layer finish options Plain, Satinline, Micro V Rib V Rib, Single V Rib and Double V Rib



Colorbond®
BAL40
FM APPROVED
CodeMark Australia
Certificate CM40191

Internal Layer

Internal Layer available in eleven Colorbond® steel colour options*
Four layer finish options in Plain, Satinline, Ribbed or Fineline
Low maintenance and durable Colorbond® steel

Insulation Layer

PIR fire-retardant core delivering exceptional thermal performance hidden-fix system concealing fasteners from sight, creating a flush and aesthetically pleasing finish for use in a variety of applications including external façades, internal walling and partition walls

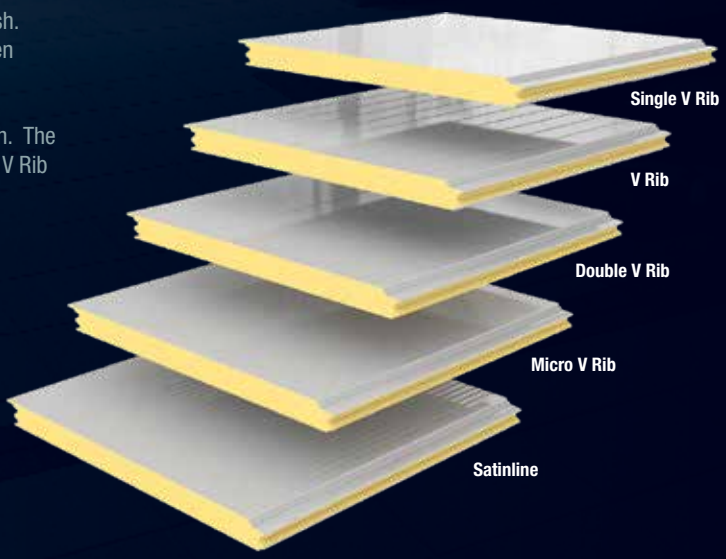
Colour Range

MetecnoInspire®'s colour range has been rigorously tested and made tough for Australian conditions. The range has been picked with the support of BlueScope® Steel to offer pre finished walling colours with the best thermal performance. Standard and non-standard colours available, check for availability.

Panel Finishes

MetecnoInspire® offers four different stylish designs for any popular internal finish. The finishes available are Plain, Satinline, Ribbed or Fineline all made from proven BlueScope® Colourbond® Steel.

MetecnoInspire® offers six different stylish designs for any popular external finish. The finishes available are Plain, Satinline, Micro V Rib, V Rib, Single V Rib and Double V Rib all made from proven BlueScope® Colourbond® Steel.



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* Conditions may apply
Check with your local MetecnoInspire® dealer for more information and the availability of profile in your state.

Design Considerations

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Bondor®/Metecno® Insulated panels are available in various modular widths and continuous lengths up to 16m. All Bondor®/Metecno® wall panels utilise a proprietary tongue-in-groove "Slip-joint" for interlocking adjacent panels, making them easy to install while ensuring optimal thermal continuity, superior structural integrity and weather performance.

Fire Considerations

All buildings constructed in Australia must comply with the Building Code of Australia (BCA). The BCA is principally designed to maximise the health and safety of people around buildings. Section C of National Construction Code (NCC) Volume One, in particular, establishes the performance requirements and verification methods for fire resistance of Buildings of Classes 2 to 9. The minimum Type of fire-resisting Construction of a building is influenced by the Class of Building as well as rise in storeys. Requirements that are relevant to the properties of insulated wall panels for each of these Construction Types include the following:

- Non-combustibility, as detailed in NCC Volume One C1.9 e (vii)
- Fire hazard properties of internal linings, as detailed in NCC Volume One C1.10 & Specification C1.10
- Ancillary elements, such as awnings or sunshade, as detained in NCC Volume One C1.14 & Specification C1.10
- Fire-resisting construction for different Construction Types, as detailed in NCC Volume One Specification C1.1

Table 1 provides a quick summary of fire properties of Bondor®'s/Metecno®'s commercial walling products.

Table 1 Fire Properties of Bondor®/Metecno® Products Summary

Property	BondorPanel®	Equitilt®	Equitilt® Flameguard®	MetecnoPanel®	MetecnoInspire®
Core	EPS-FR	EPS-FR	MW	PIR	PIR
Non combustibility and EW classification			Non-combustible C1.9 e (vii)	MetecnoKasset® system[a] AS 5113	
Group number AS 5637	Group 1 & 2[b]	Group 1 & 2[b]	Group 1	Group 2	Group 2
Fire Indices AS 1530.3	0,0,0,2-3	0,0,0,2-3	0,0,0,3	0,0,0,1	0,0,0,1
Bushfire	BAL40	BAL40	BALFZ	BAL40 & BALFZ[c]	BAL40
FRL AS 1530.4			30/30/30[d] up to 180/180/180[d]	30/60/30[d]	
FM			FM4880 FM4881	FM4880 FM4881	FM4880 FM4881

NOTES:
a) MetecnoKasset® system has been tested to AS5113, achieving EW classification and BB rating.
b) Group 1: Panels up to 250mm thick with steel 'wall-wall' and 'wall-ceiling' angles fixed with steel rivets or screws at maximum 300mm centres is classified as Group 1. Group 2: Panels up to 150mm thick with aluminium 'wall-wall' and 'wall-ceiling' angles fixed with aluminium rivets or screws at 300mm centres is classified as Group 2. Panels thicker than 150mm require steel 'wall-wall' and 'wall-ceiling' angles fixed with steel rivets or screws at 300mm centres to be classified as Group 2.
c) BALFZ applies to 100mm thick MetecnoPanel®.
d) To achieve Structural Resistance: for external fires, the structural member is protected by the panel; For internal fires or fires from both sides, the structural member needs independent protection to achieve the required Fire Resistance Level.

Thermal Considerations

Using guidelines for NCC compliance and our knowledge of thermal efficiencies, solutions for long term energy savings can be optimised. With the correct combination of panel thickness, steel facer colour, core material, span range and panel length the desired efficiencies can be addressed early in the project specification.

For wall-glazing construction the energy efficiency requirements of the NCC, across the full range of Building Classes and Climate Zones, can be met by satisfying the maximum given Total System U-value as shown in Table 2. The Total System U-Value of wall-glazing construction must be calculated in accordance with Specification J1.5a .

Table 2: Maximum Total System U-values of Wall-Glazing Construction

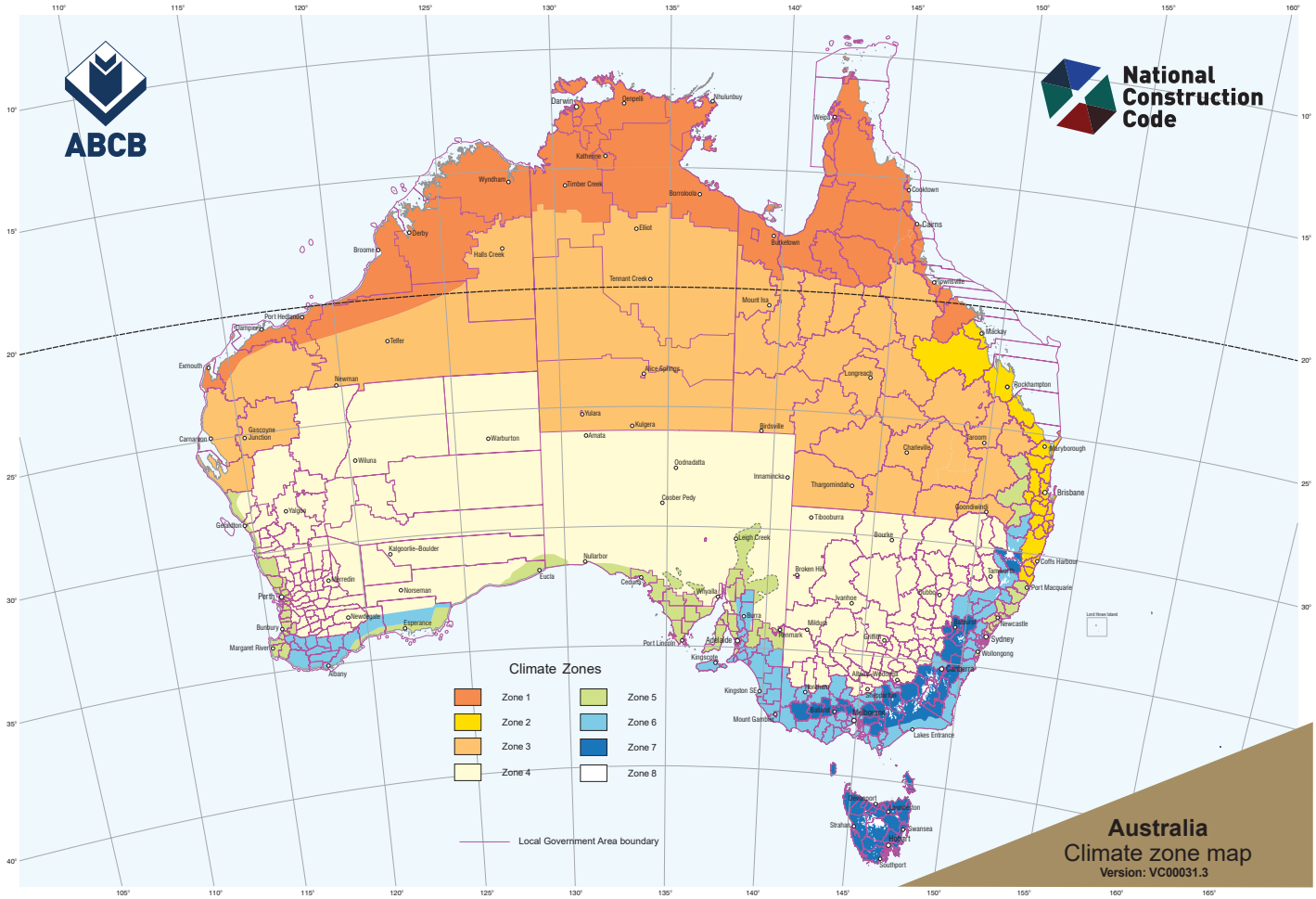
Building Class	Climate Zone		
	1, 3, 4, 6, 7	2, 5	8
Class 2 Common Area, Class 5, 6, 7, 8, 9b, or 9a other than a Ward Area	2.0	2.0	2.0
Class 3, 9c or 9a Ward Area	1.1	2.0	0.9

*Refer to NCC Vol. 1 J1.5.

Wall components of a wall-glazing construction (including the Bondor®/Metecno® panels) must achieve a minimum Total R-Value as given in Table 3.

The Solar Admittance of externally facing wall-glazing construction must not be greater than that shown in Table 4 and must be calculated in accordance with Specification J1.5a . Specification J1.5a describes the methods of calculating the U-Value and Solar Admittance of a wall-glazing construction.

Figure 1: NCC Climate Zones 2019



Thermal Considerations continued

Table 3: Minimum Wall Total R-value of Wall-Glazing Construction

% of Wall/Glazing	Building Class	Climate Zone							
		1	2	3	4	5	6	7	8
Wall Less than 80% of the Area	All Classes	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Wall 80% or More of the Area	Class 2 Common Area, Class 5, 6, 7, 8, 9b or 9a Other than Ward Area	2.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	Class 3, 9c or 9a Ward Area	3.3	1.4	3.3	2.8	1.4	2.8	2.8	3.8

*Refer to NCC Vol. 1 Table J1.5a.

Table 4: Maximum Wall-Glazing Construction Solar Admittance

Building Class	Aspect	Climate Zone							
		1	2	3	4	5	6	7	8
Class 2 Common Area, Class 5, 6, 7, 8, 9b or 9a Other than Ward Area	Eastern	0.12	0.13	0.16	0.13	0.13	0.13	0.13	0.20
	Northern								0.20
	Southern								0.42
	Western								0.36
Class 3, 9c or 9a Ward Area	Eastern	0.07	0.10	0.07	0.07	0.10	0.07	0.07	0.08
	Northern	0.07						0.07	
	Southern	0.10						0.08	
	Western	0.07						0.07	

*Refer to NCC Vol. 1 Table J1.5b.

Structural Considerations

One of the main considerations in the structural design of commercial walling products is wind pressure on the walls. Wind pressure acts in an inward and outward directions. Its intensity depends on the site location, wind direction, and geometry & permeability characteristics of the building. In general, external walls of a building are subject to higher wind loads compared to the internal walls.

Wind loads on commercial structures are determined according to AS 1170.2. Factors such as Wind Region, Terrain Category, Height of the structure, Shielding and Topographic Multipliers, Orientation and Aerodynamic Shape Factors are considered in a detailed wind analysis. Additionally, Dynamic, Earthquake and Snow loads may need to be accounted for where applicable.

Both Serviceability and Ultimate Limit State requirements must be considered. The requirements to be fulfilled under each Limit State depends on the Importance Level of the structure and Serviceability requirements of the application. For convenience Bondor®'s/Metecno®'s wind pressure span tables combine both Serviceability and Ultimate criteria and the governing Limit State pressure is tabulated for each corresponding span. It is assumed that the external wall cladding is fixed to the outside of the structural supports. In these cases, the support bearing width under inward wind pressure is equal to the width of the girts.

Allowable span also depends on other factors such as fixing (concealed fix, self-drilling screws, mushroom bolts), support stiffness, width & thickness, temperature differential between internal and external skins, skin colour, and size & location of penetrations. Refer Bondor®/Metecno® specifications for more details.

Location Classification

*Refer to Wind Regions of Australia (AS/NZS-1170.2, 2002)

Delivery & Handling

Commercial Walling Design & Install Guide

Packing for Shipment

Insulated sandwich panels are packed to a maximum pack height of 1.2m with the number of panels per pack dependant on panel thickness, length and overall pack weight. Insulated panels are manufactured with a protective film applied to the outer steel skin.

Delivery to Site

Panel packs should be secured using load restraints spaced approximately every 2m with plastic cargo angles under the straps (refer to figure 1). Unloading remains the client's responsibility. For lifting panels greater than 9.0m it is recommend to use a slip-on fork spreader (refer to figure 2). For recommendations to unload panels of less than and greater than 8m in length refer to figures 3 and 4.

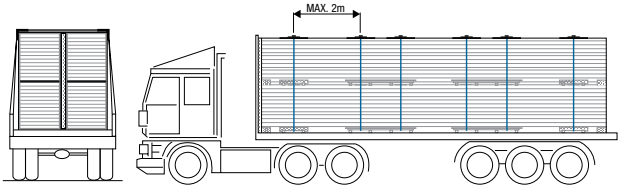


Fig. 1. Positioning of Panel Packs and Cargo Strap.

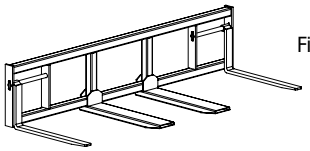


Fig. 2. Slip-On Fork Spreader.

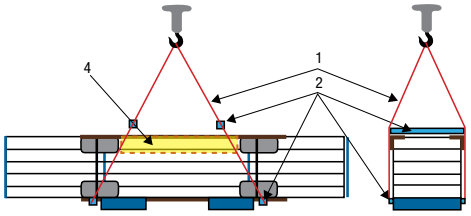


Fig. 3. Unloading of Panels of < 8.0m: 1. Lifting Sling; 2. Sling Separator (Timber/Channels).

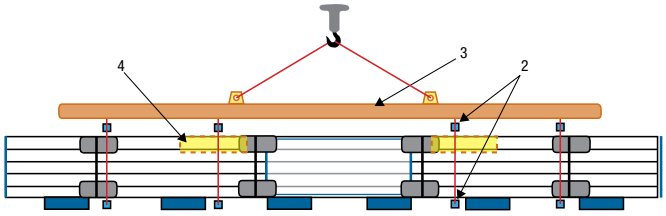


Fig. 4. Unloading of Panels of > 8.0 m; 3. Spreader Beam; 4. Strap-down Corner Angles.

Safe Panel Handling

- Assess the weight of panels and ascertain if they can be handled manually
- Use lifting equipment wherever possible for example crane, forklift, trolleys, pallet jacks, lifter & suction handling grips
- Ensure operators are trained, competent & where applicable, licensed for operating lifting equipment
- Always use gloves when handling panels to avoid cuts
- Ensure adequate space is available to safely move panels, and that everyone in the area is aware of all relevant safety requirements.

Site Storage

Panels should always be kept dry and if placed on site, stored off the ground, slightly inclined, allowing adequate drainage and ventilation of the panel pack.

It is also highly recommended to minimise panels being exposed to excessive weather ie. sun exposure to the protective coating especially for extended periods of time. To minimise exposure relocate or provide additional cover.

Safe Panel Handling

Carrying, Positioning, Erecting

- Establish a safe working environment.
- Use lifting equipment wherever possible (crane, forklift, trolleys, pallet jacks, lifter, suction handling grips, etc):
  - Ensure operators are licensed and competent in their use of equipment.
  - Where manual handling is required:
    - Specific Personal Protection Equipment Requirements.
    - Safety Footwear.
    - Cut Resistant Gloves.
    - Cut Resistant Arm Guards.
  - Assess the weight of panel and ascertain number of people required to lift panels into place and also position into base channel/angle.
- Ensure two or more people are being used to lift, carry and stand up heavy/awkward panels.
  - All lifters should be of equal height and build. They must be trained in safe manual handling techniques.
- Establish clear travel path free from obstacles or obstructions.
  - Use correct manual handling techniques:
    - Keep load close to you.
    - Back straight.
    - Bend your knees and use leg muscles.
    - Move your feet & never twist at the waist & establish stable footing.
  - When team lifting, ensure you have one person who gives instruction on the lift, etc.
  - Once erected ensure panel is secured and stable.
  - Ensure safe work practices are followed when using powered tools.

Preparation

Review construction drawings and ensure all required components have been received, check that the supporting structure complies with the project specification. Ensure that the substrates including slabs and kerbs; and sub frames to which the insulated panels are to be fixed are straight and true and fit for purpose. Ensure all required supports have been installed.

General Precautions

When cutting insulated panels and accessories use dust extraction equipment and wear appropriate hearing, eye, breathing and personal protection equipment. When installing fire rated systems ensure details are referenced and specified in accordance with the "Installation Guidelines Fire Rated (FRL)" section in this document. Openings for doors, windows or penetrations can be pre-cut or cut on-site once the panel has been installed. This should be predetermine in the project specification or planning stage.

*Note: Where IPCA code of practice requirements & FRL fire ratings requirements are to be met, flashings & rivets must be steel. For fire rated applications in external walls, penetrations are not allowed except for approved fire doors, or as stipulated in AS1530.4

Clean Up

- Broom for cleaning swarf from roof
- Blower/Vacuum

Required Tools & Equipment

Personal Protective Equipment

- Long sleeves & pants
- Cut resistance level 5 gloves
- Cut resistance arm guards
- Dust mask
- Eye protection
- Hearing Protection
- Enclosed footwear

General Tools

- Saw Horse Stools (Padded)
- Rivet gun
- Multi-purpose step ladders
- Socket set (metric) for post bolts
- RH & LH Hand Tin snips
- Spirit Level
- Chalk Line
- Plastic Paint Scraper
- Measuring Tape
- Cold Cut Saw (48TH blade)
- Reciprocating Saw
- Plunge Saw
- 350mm Electric Drop Saw
- Tungsten Carbide Hole Cutter
- Electric Drill/Driver & Screw Gun
- Collated Screw Gun for Trim Fasteners
- Dispensing Gun for Silicone
- Portable Vacuum
- Rubber Mallet & Timber Block

Components

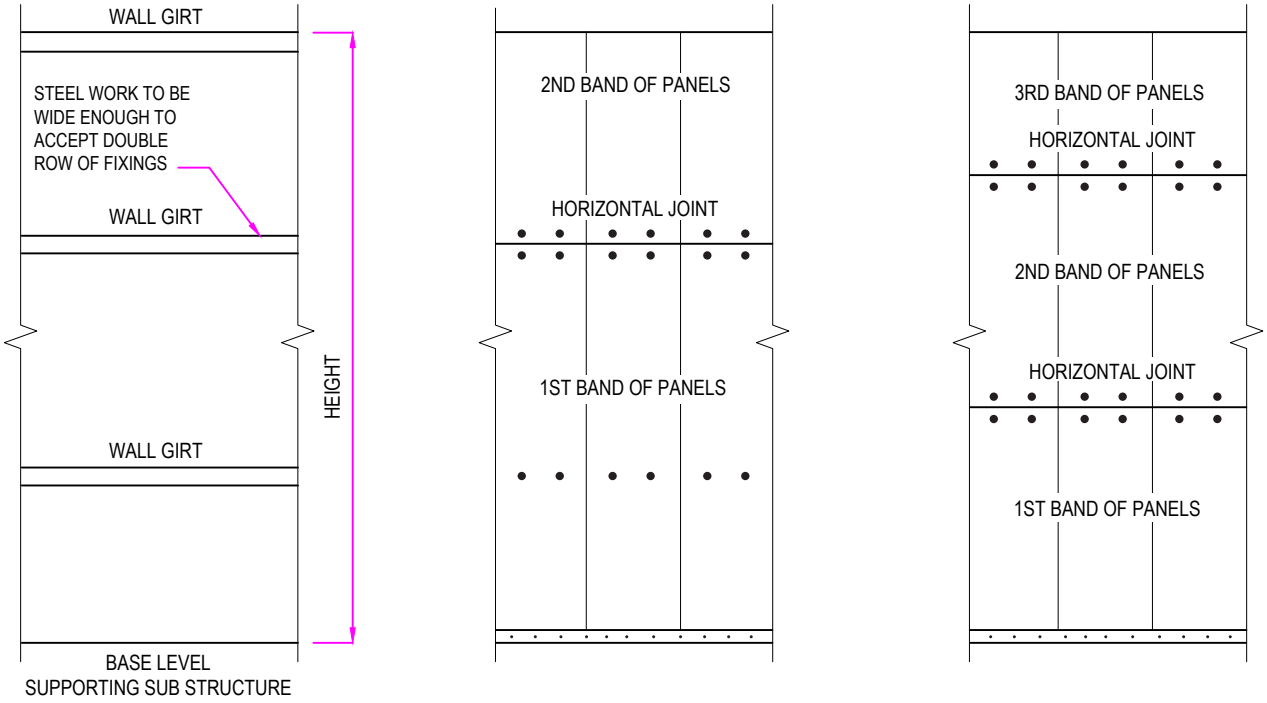
- Insulated Panel
- External/Internal Wall Base Channels or Flashings
- Flashings as per design specifications
- Neutral cure sealants
- Mineral wool infill
- (Optional) PU foam sealant for non-FRL applications
- Additional materials for windows & penetrations
  Insulated Panel, as per engineering
- Fixings
  - 76mm Dia. M10 Mushroom bolts
  - Masonry anchors/screws
  - 14g Tek screws
  - Concealed fix system
  - 4mm Steel or Aluminium blind rivets

Installation Guidelines Non-Fire Rated

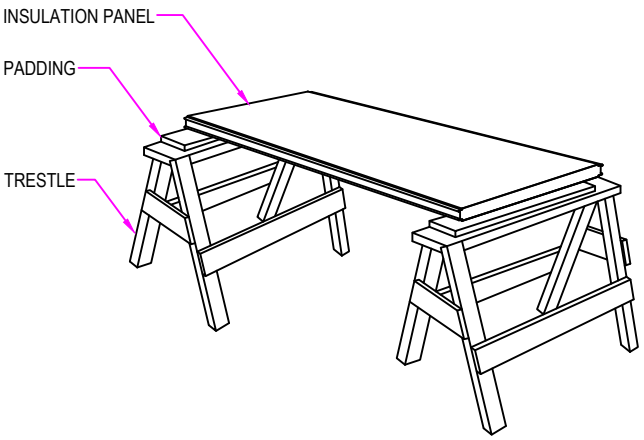
Commercial Walling Design & Install Guide

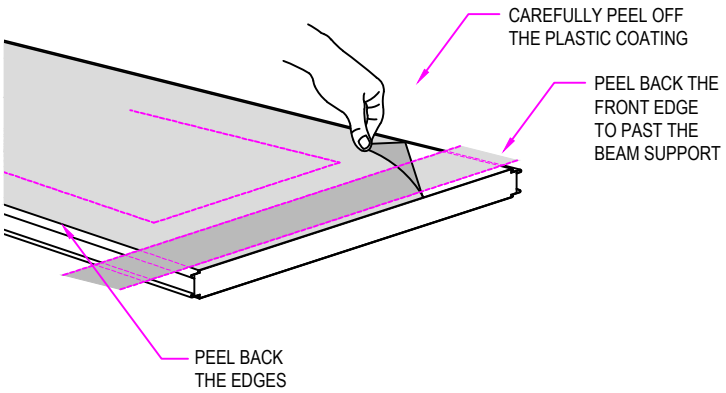
Vertical Installation Sequence

Mechanical lifting aids should be used to prevent damage/breakage of long panels. Where multiple vertical panels are to be installed in a band, the bottom row of panels should be installed first, horizontal joints should be located at the supporting sub-structure. Check the installation sequence and which way the male/female joint will be orientated, then determine where the first panel will be located. Ensure all required supports, accessories and flashing elements such as base & top channels, internal corner flashings and shelf angles have been installed. Measure the required dimensions of the first panel, including required rebates & corner mitres or rebates, cut to suit. It is recommended to tape foam to the top of the trestle to reduce the risk of scratches. Use appropriate tool as specified. The protective film on the internal side must be removed before installation. The protective film on the external side must be partially removed along panel's edges and joints. As after installation these locations become difficult to remove the protective film. Other sections of The film can be left on for additional protection during installation works, but must be completely removed after installation.



Apply suitable sealant or tape to the slab and install the channels/angles on to the slab. Apply sealant to inside of flashing /channel. Apply sealant to external female joint. Lift the first panel in position using appropriate lifting device, note panels can be installed manually if within OHS weight limitations. Check that the panel is level then fix insulated panel to support frame or flashings/channels by threaded rod, mushroom bolts, Tek Screws, concealed fix system or rivets as specified, ensure the fasteners are not over tightened. The second panel is installed with a slight inclination it must be pushed against the previous panel, in order to obtain a perfect coupling between the panels.



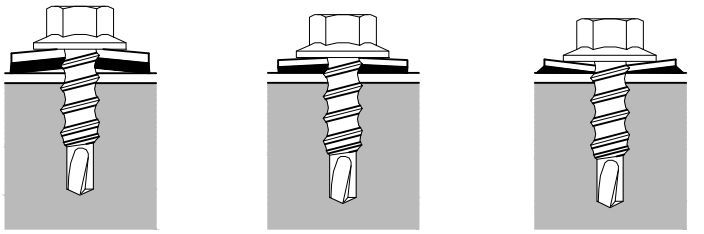


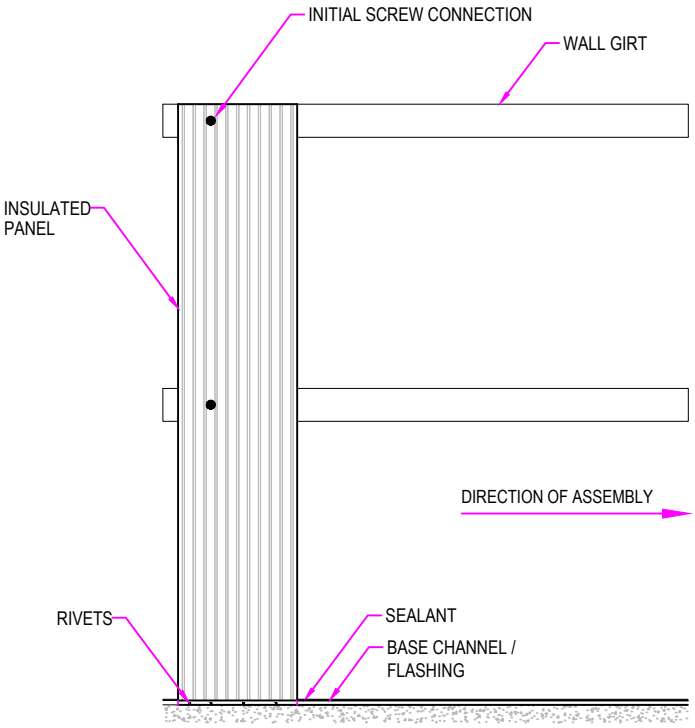
Vertical Installation Sequence Continued

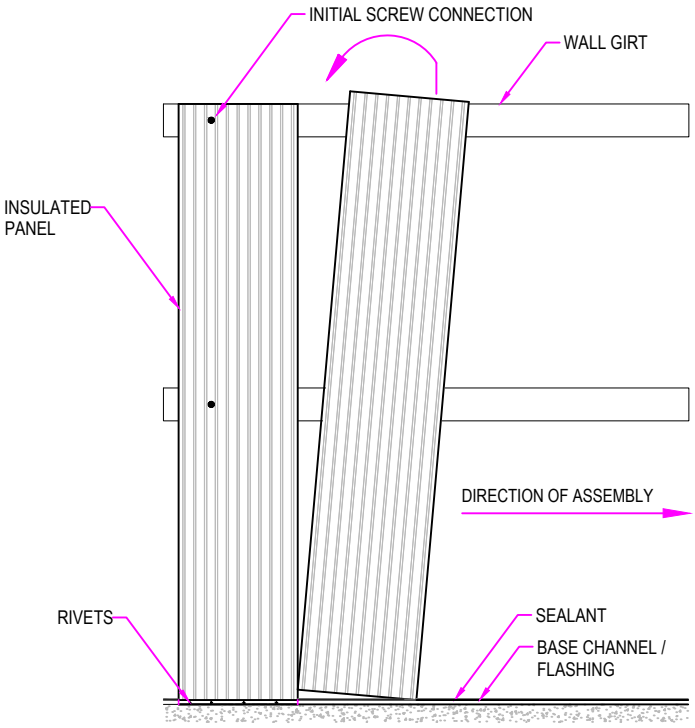
Check that the panel is level & fully engaged then fix panels together top and bottom with locator rivets. Then fix insulated panel to support frame or flashings/channels by the specified accessories that include threaded rod, mushroom bolts, Tek Screws, concealed fix system or rivets as specified. Ensure the fasteners are not over tightened (See image below).

Continue until all the panels in band are installed. If another band of panels is to be installed leave appropriate gap for support structure and ensure the base is always supported. Always refer to project specification.

Once all panels have been installed fix side flashings, top/angles to panels with rivets at 300mm centres. Cut out any required openings, do not generate hot swarf. Remove swarf & other extraneous material from panel immediately. Install any additional flashings, joint covers, over seal flashings & panel joints. Parapet flashings between wall and roof are to be installed by a licensed plumber.

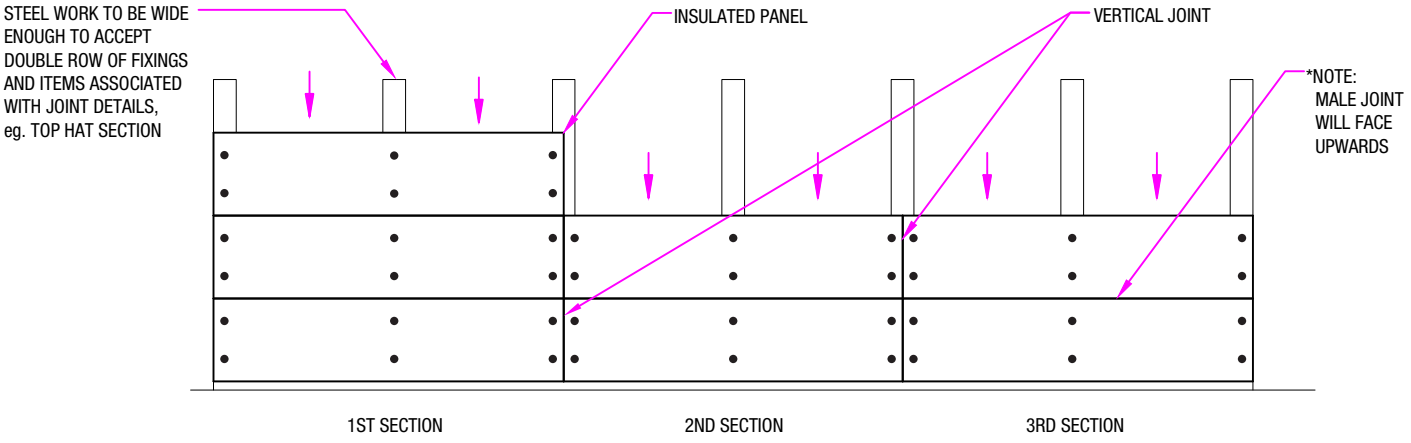




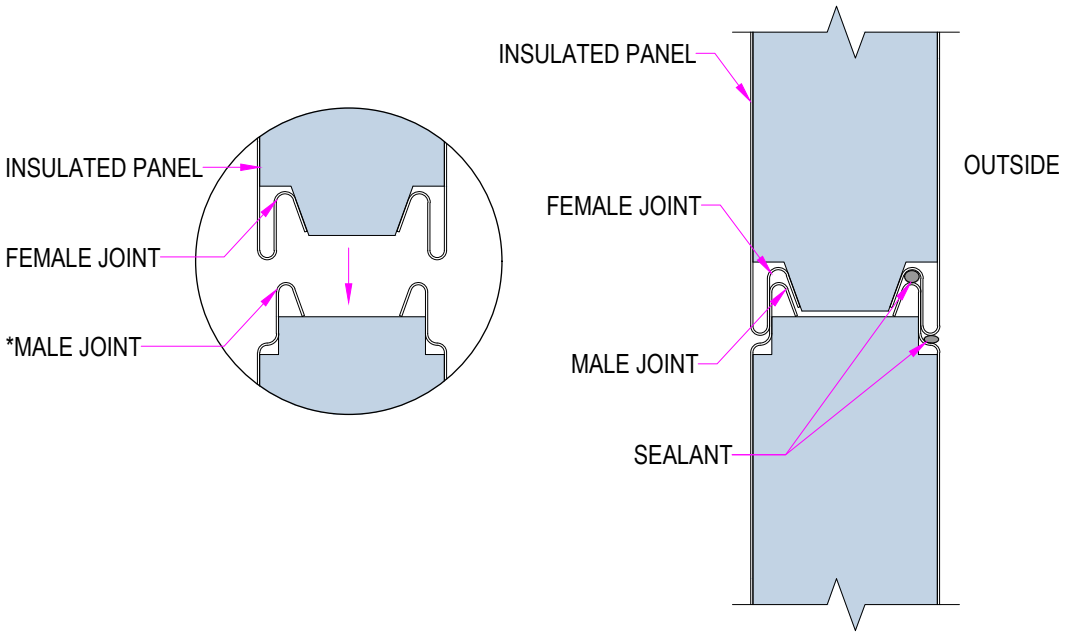


Horizontal Installation Sequence

Mechanical lifting aids should be used to prevent damage/breakage of long panels. Panels are installed in multiple horizontal sections one next to the other, a series of vertical joints are created which should be located along the supporting sub-structure. A gap should be allowed between panels of adjacent vertical sections see project specification. Check the panel spacing and installation sequence note the male joint will face upwards, determine where the first panel will be located. Ensure all required supports, accessories and flashing elements such as base & top channels, internal corner flashings and shelf angles have been installed. Measure the required dimensions of the first panel, including required rebates & corner mitres or rebates, cut to suit, it is recommended to tape foam to the top of the trestle to reduce the risk of scratches. The protective film on the internal side must be removed before installation. The protective film on the external side must be partially removed along panel's edges, joints & locations where removal of film after installation will be difficult; otherwise the film can be left on for additional protection during installation works, but must be completely removed after installation.



Apply sealant to the slab and install the channels/angles on the slab. Apply sealant to inside of flashing/channel. Apply sealant to external female joint. The male joint will face upwards. Lift the first panel in position using appropriate lifting device, note panels can be installed manually if within OHS weight limitations. Check that the panel is level then fix insulated panel to support frame or flashings/channels by threaded rod, mushroom bolts, Tek Screws, concealed fix system or rivets as specified, ensure the fasteners are not over tightened. Continue this sequence until all panels in section are installed. Once all panels have been installed, do not exert excessive force when fitting the panel (joints) together. Install side flashings top/angles fixed to panels with rivets at 300mm centres.



Cut out any required openings, do not generate hot swarf, remove swarf & other extraneous material from panel immediately. Install any additional flashings & joint covers. Overseal flashings & panel joints.

Parapet flashings between wall and roof are to be installed by a licensed plumber.

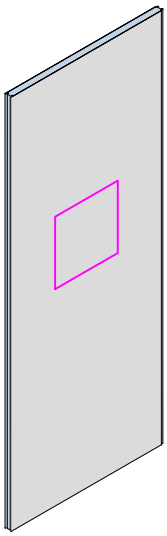
Penetration's & Window Installation Details (External Walls Non-Fire Rated Applications Only)

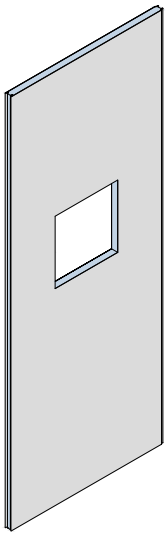
Penetrations can be pre-cut or cut out once the panels have been installed. There are limitations on the size of penetrations as they impact the strength of panels. This must be considered at design stage, together with the design pressures and maximum spans.

Window Installation

Step 1: Panel Preparation

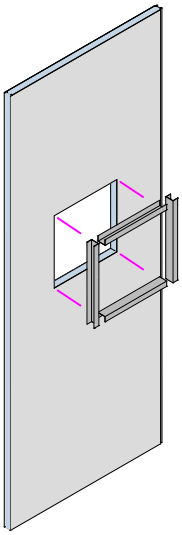
Mark out the penetration & apply masking tape, cut skin on one side, mark out the other side of the penetration & apply masking tape, complete cutting of penetration. Note: Previous comments on removal of 'swarf'.

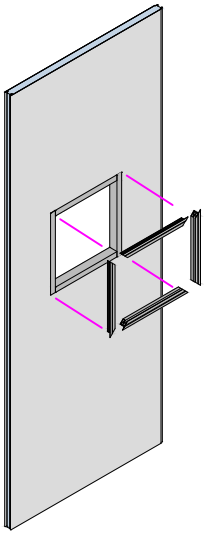




Step 2: Fit Flashings

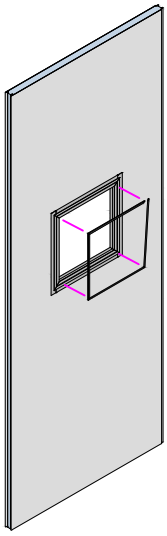
Install flashings with sealant between flashings and panels. Then install window frame with fixings into panel reveal / flashings or install piece to secure perspex with sealant, over sealing all flashings & junctions.

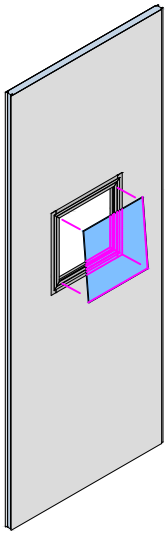


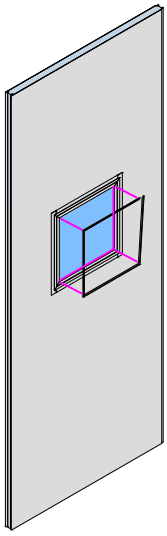


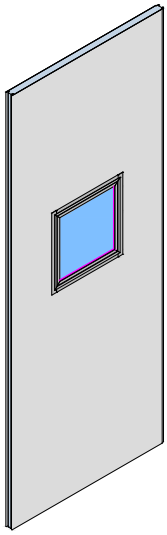
Step 3: Fit Glass / Perspex & Glazing Seals

Install Glass / Perspex into window frame and secure glass / perspex with glazing wedges & sealant, then over seal all flashings & junctions.









Typical Wall Penetrations

Follow 'Window Installation' instructions as noted above. Ensure cut edges are flashed off and sealed accordingly. Exposed core should be avoided where possible, flash-off as possible.

Additional Material Details

Sealants

Sealants to be neutral cure and approved by manufacturer for use on ColorBond®. Surfaces to be clean and dry before sealant is applied. Sealant to be applied as per manufactures instructions in a continuous bead. Sealant should not be applied until panels & trims have been prepared for installation. Sealant to be placed between flashings/angles and panel joints as shown in construction details. Excess sealant should be removed immediately. For more information refer to BlueScope® Technical Bulletin, Sealants for exterior finishes.

Fixings

Fasteners to fix walling and accessories are required to have the same or superior service life as the panels which they are fixing. Consideration should be given to the proper selection of fasteners with respect to the anticipated application and working environment. Only use Class 3 or 4 fasteners compliant with Australian Standard AS 3566.2-2002 Self drilling screws for the building and construction industries Part 2. Rubber washers must be compatible with the ColorBond® facings. Either mild steel or aluminium rivets should be used dependant on project specifications. Fasteners to be checked and adjusted if necessary, to ensure they are weather tight and external panel facing is not distorted. For more information refer to BlueScope® Technical Bulletin, Fasteners for roofing and walling product selection guide.

Environment of Intended Use	AS 3566.2-2002 Corrosion Resistance Class	Bluescope® Steel Roofing and Walling Products
External use in severe marine enviorments	4 (Stainless steel screws)	COLORBOND® Stainless Steel
	4 (Metallic coated steel screws)	COLORBOND® Ultra Steel COLORBOND® Steel COLORBOND® Coolmax® Steel ZINCALUME® Steel
External use in mild, moderate industrial or marine environments	3	COLORBOND® Ultra Steel COLORBOND® Steel COLORBOND® Coolmax® Steel ZINCALUME® Steel
General use in other than external applications but where significant levels of condensation occur.	2	**NOT TO BE USED IN EXTERNAL ROOFING AND WALLING APPLICATIONS**
General use in internal application.	1	

Table 1: Fastener materials for use with roofing and walling manufactured from BlueScope® Steel strip and sheet products.

Flashings

Flashings form the intersections between walls, roof, floors, windows, doors and penetrations to seal against water ingress and other unwanted exposures to the internal side of the building/ wall to minimise damage to the panel core. Flashings must be durable, weather resistant and compatible with adjoining materials. Flashings for insulated panels can be made of aluminium or the same ColorBond® steel used in the external steel facings. For further information refer to BlueScope® Technical Bulletin: Flashing materials for ColorBond® steel and Zincalume steel sheet.

Swarf

Swarf is steel debris as a result of cutting or piercing the external steel skins, flashings, angles, supports, rivets, screws, washers or nuts. If swarf particles are left on the surface it will corrode and cause rust stains. NOTE: Prevention of swarf staining is the responsibility of the installer. Bondor®/Metecno® recommends the use of cold cutting saws. Care should be taken to ensure hot swarf does not come into contact with nearby steel faced insulated panels. Panels, flashings, angles & supports should be cut away from packs of panels & installed panels. Walls should be brushed down, rinsed or blown to remove loose particles. Many swarf staining problems arise from subsequent trades, Project Managers should warn other contractors of this possibility. For more information refer to BlueScope® Technical Bulletin, Swarf staining of steel profiles.

Maintenance Requirements

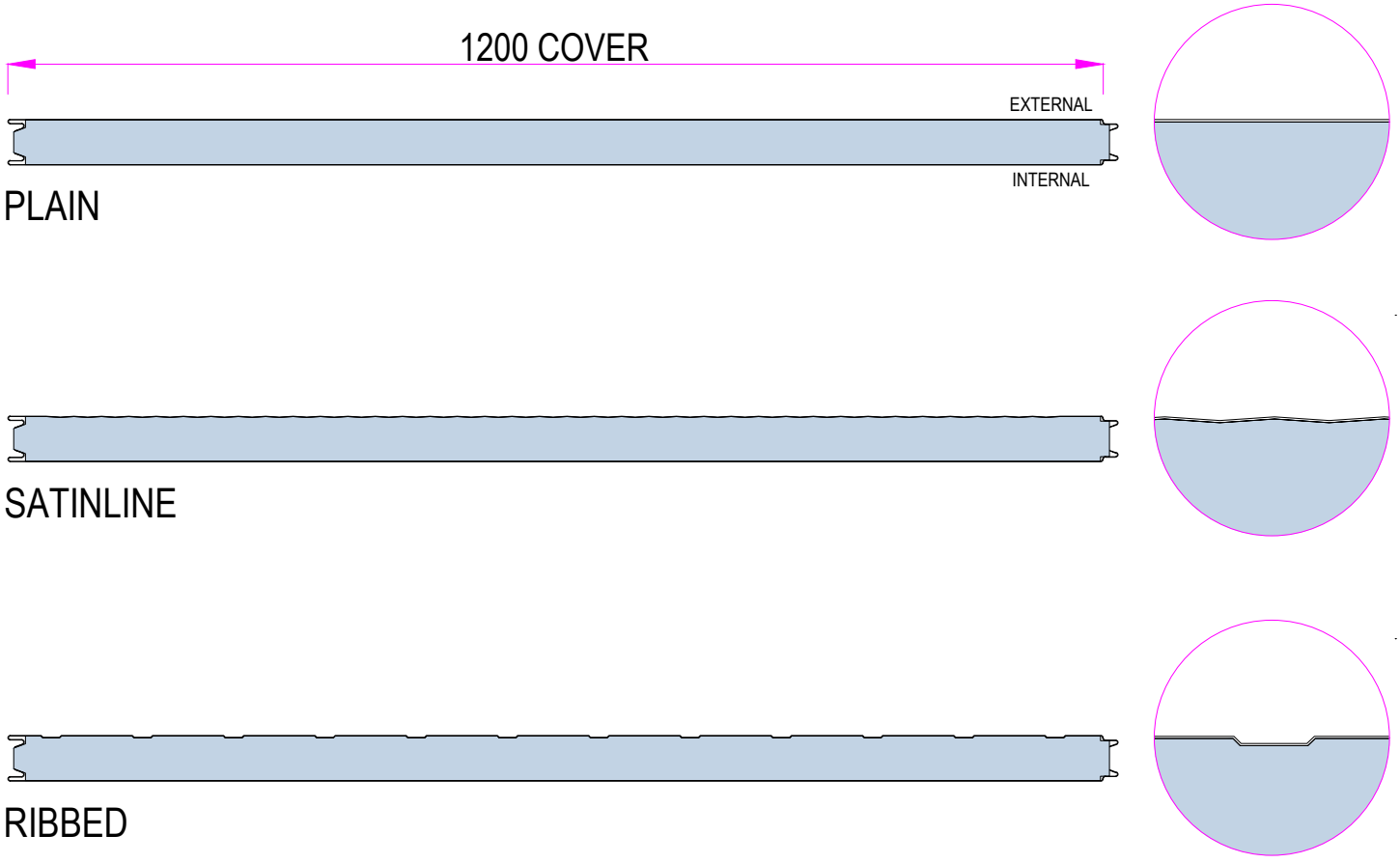
Ongoing maintenance is recommended every six months which includes all flashings, sealants, fixings and penetrations. Regular inspections allow for early detection of damage, rust build-up of dirt or mould and therefore take right action to repair, replace or clean. Cleaning walls is recommended every 6 months. For further information see BlueScope® Technical Bulletin Maintenance of ColorBond® steel and Zincalume® steel.

Construction Drawings Non-Fire Rated

Commercial Walling Design & Install Guide

Panel Profiles

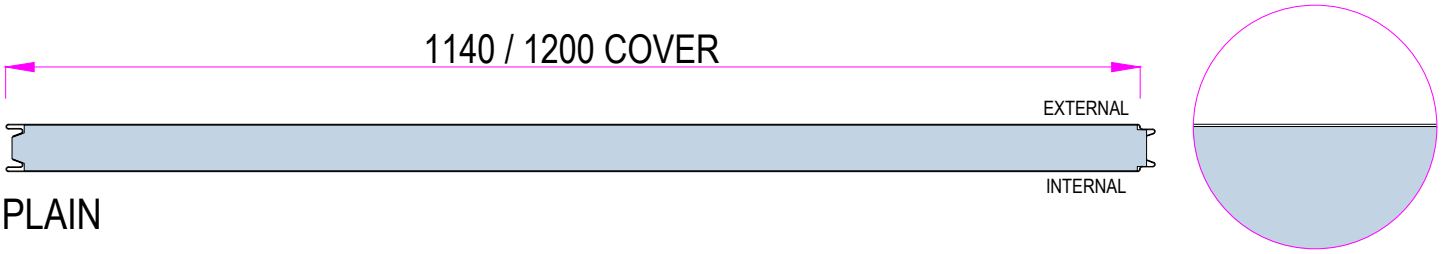
BondorPanel® Profile Surface Options



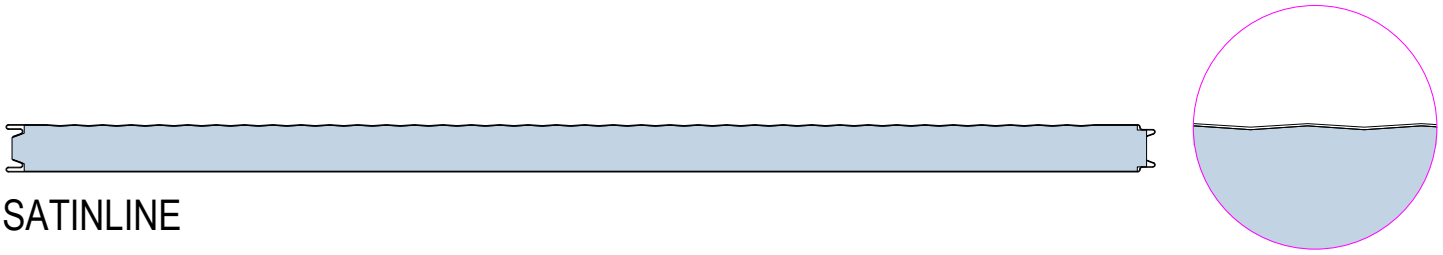
PLAN

Panel Profiles

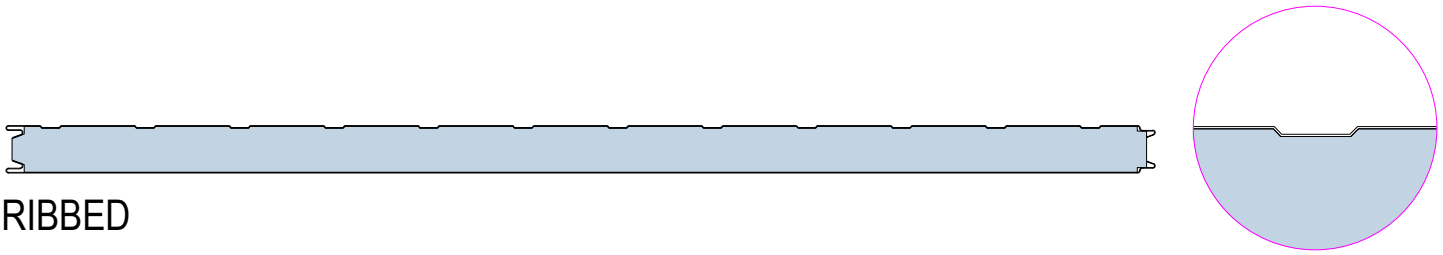
Equitilt® & Equitilt® Flameguard® Profile Surface Options



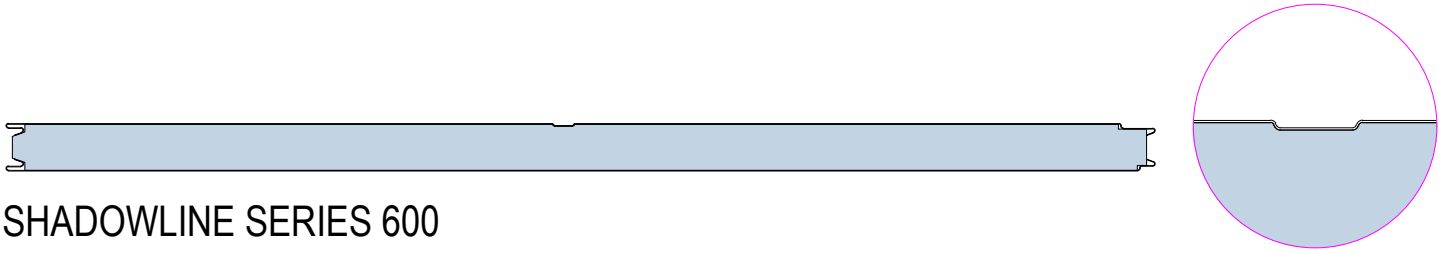
PLAIN



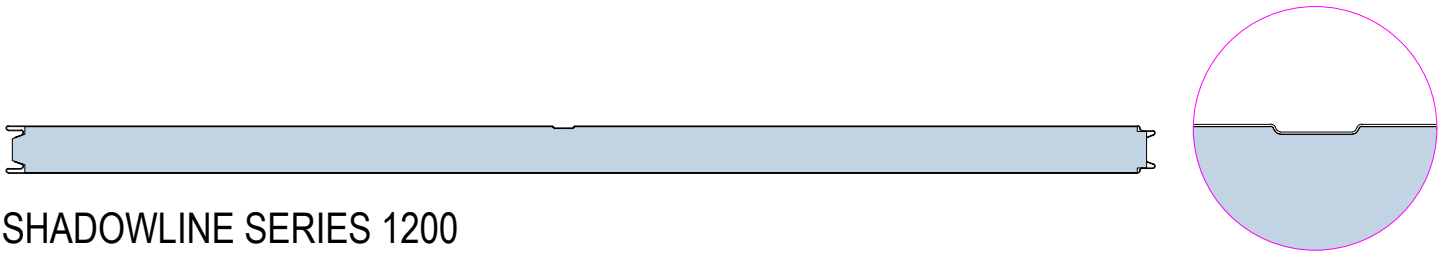
SATINLINE



RIBBED



SHADOWLINE SERIES 600

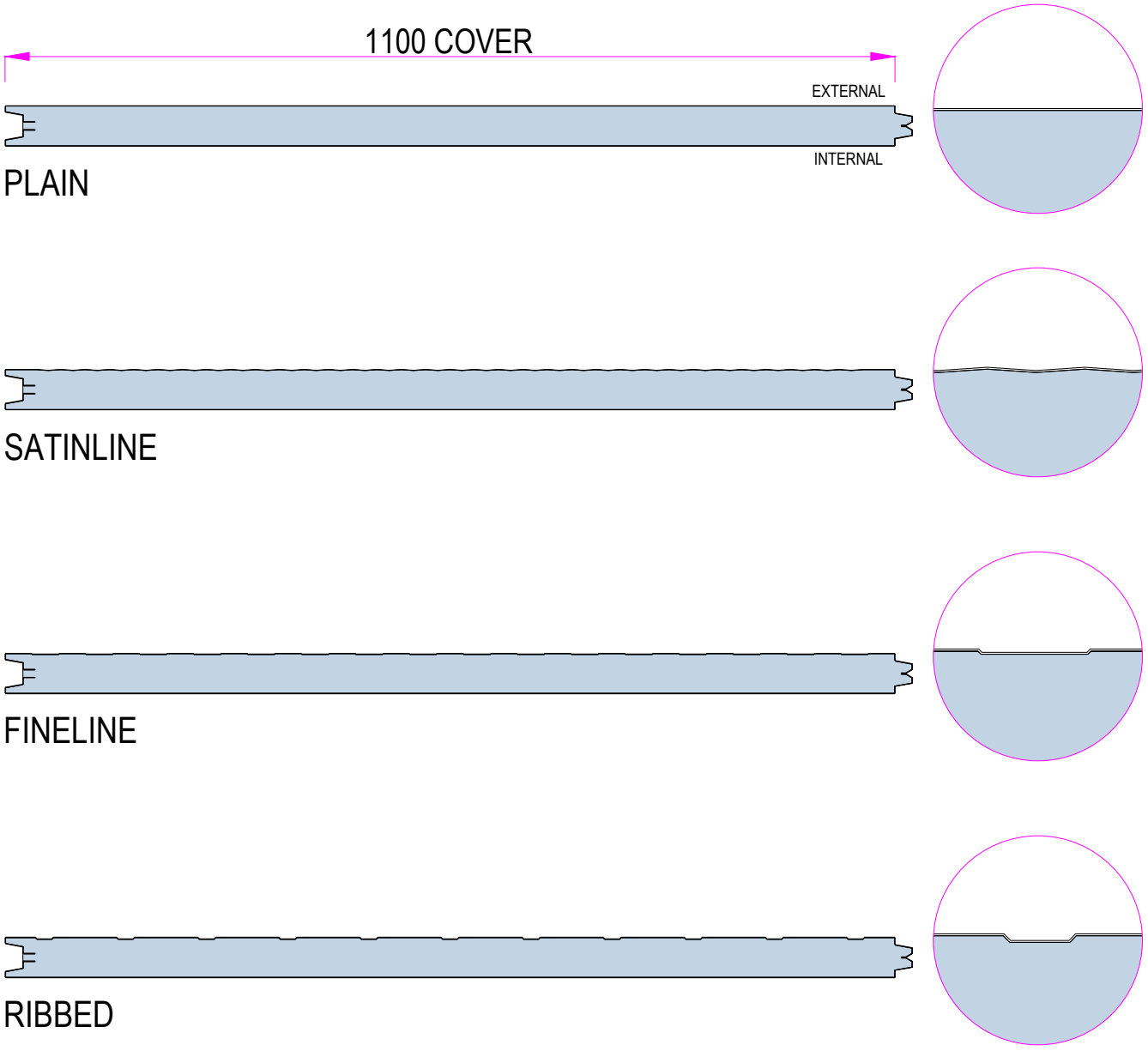


SHADOWLINE SERIES 1200

PLAN

Panel Profiles

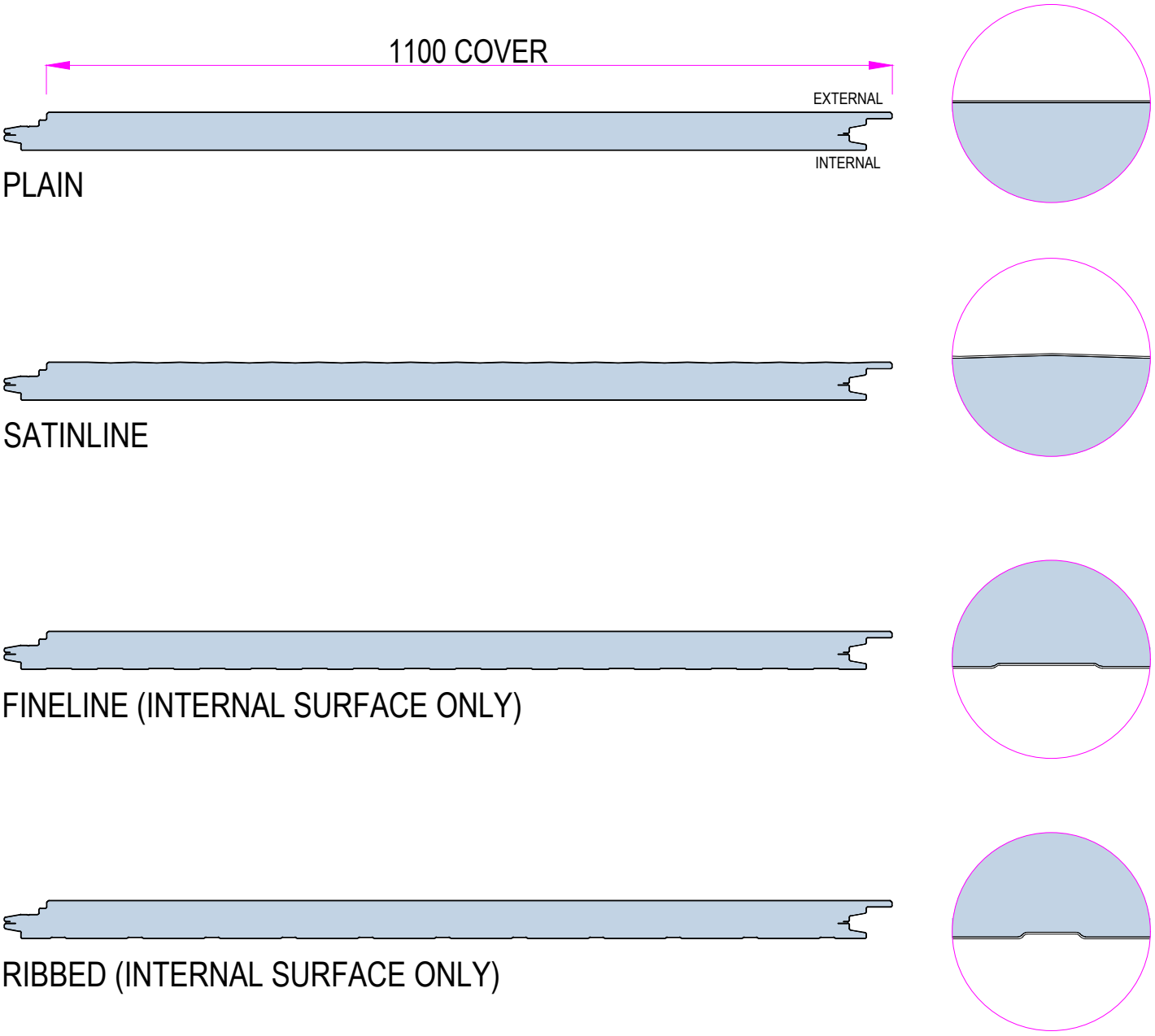
MetecnoPanel® Profile Surface Options



PLAN

Panel Profiles

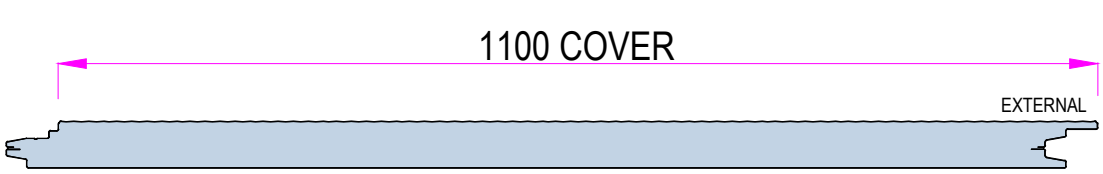
MetecnoInspire® Q Profile Surface Options



PLAN

Panel Profiles

MetecnoInspire® Q Profile Surface Options Continued



MICRO V RIB (EXTERNAL SURFACE ONLY)

V RIB (EXTERNAL SURFACE ONLY)

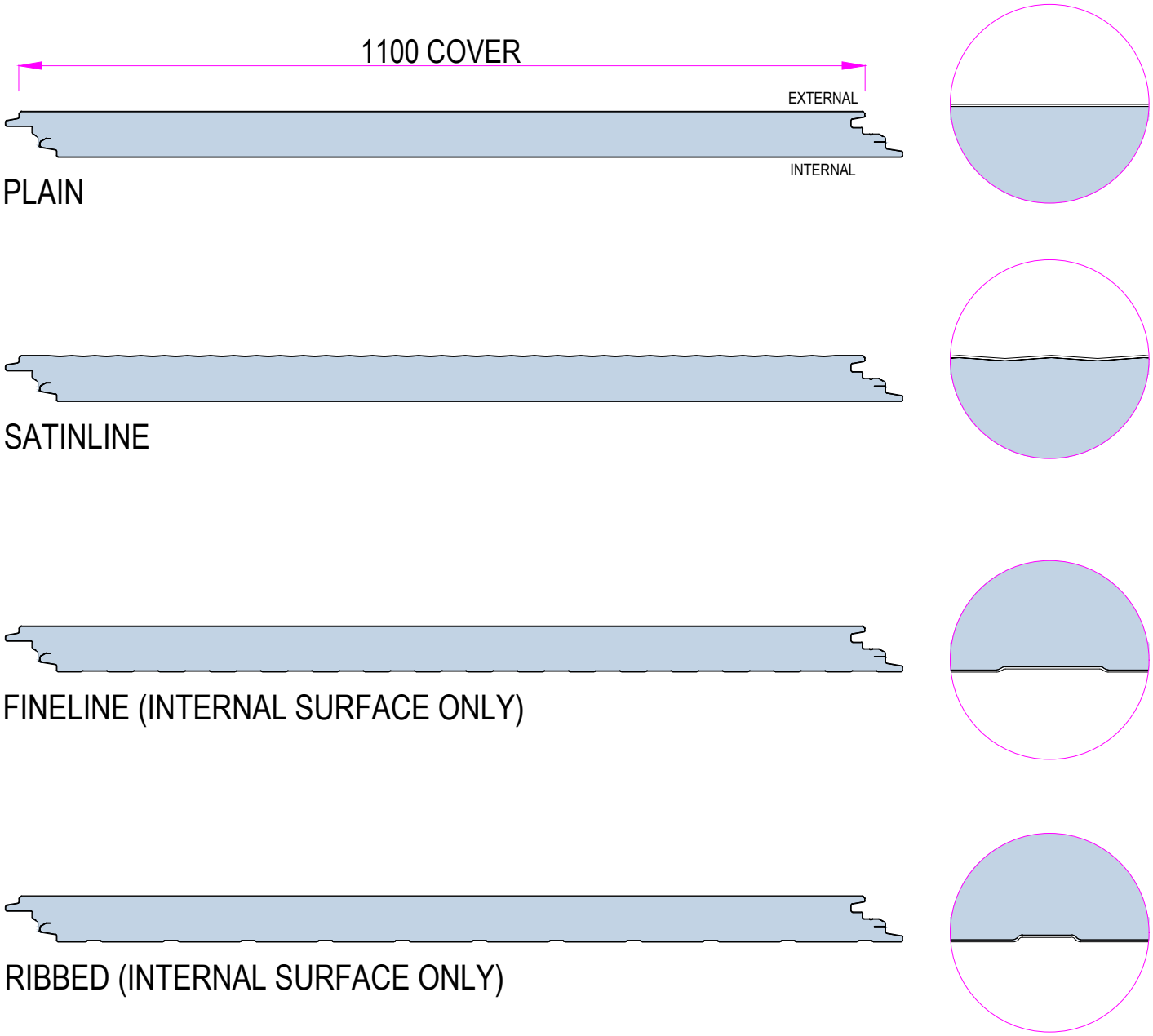
SINGLE V RIB (EXTERNAL SURFACE ONLY)

DOUBLE V RIB (EXTERNAL SURFACE ONLY)

PLAN

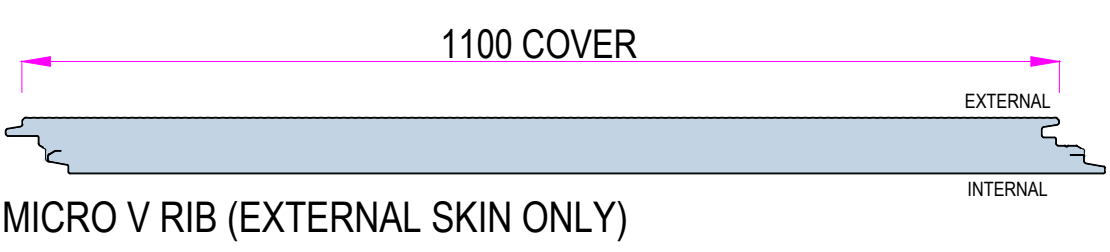
Panel Profiles

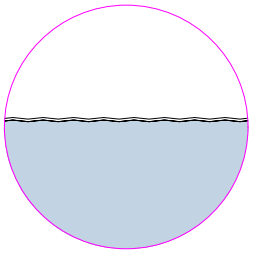
MetecnoInspire® V Profile Surface Options (Vertical Only)



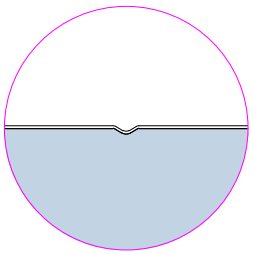
Panel Profiles

MetecnoInspire® V Profile Surface Options (Vertical Only) Continued

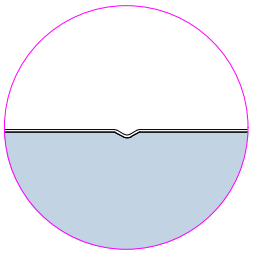




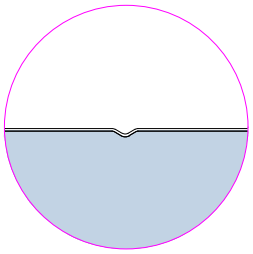
MICRO V RIB (EXTERNAL SKIN ONLY)



V RIB (EXTERNAL SKIN ONLY)



SINGLE V RIB (EXTERNAL SKIN ONLY)

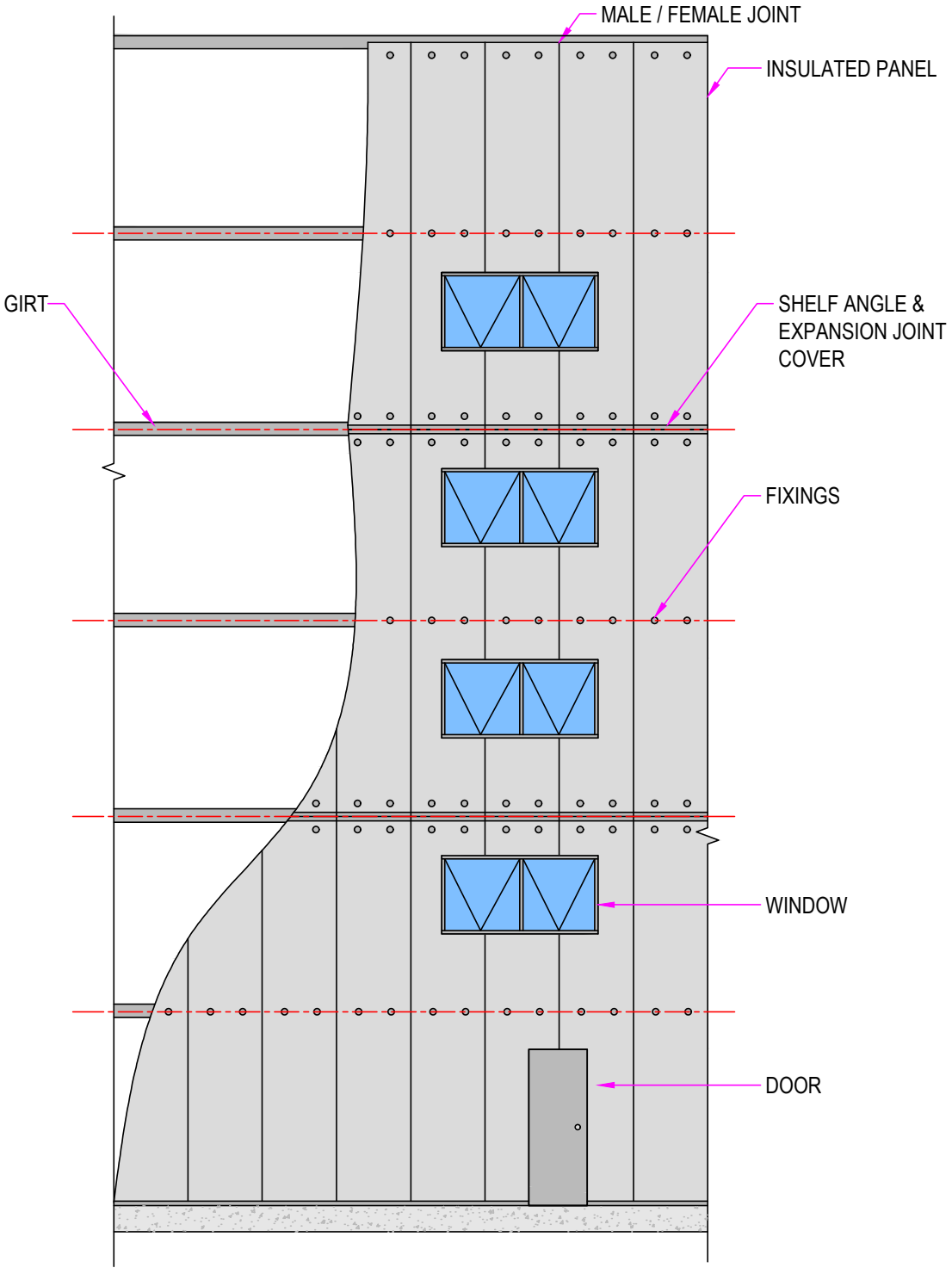


DOUBLE V RIB (EXTERNAL SKIN ONLY)

PLAN

Facade Layout Options

Typical Vertical Panel Construction Details

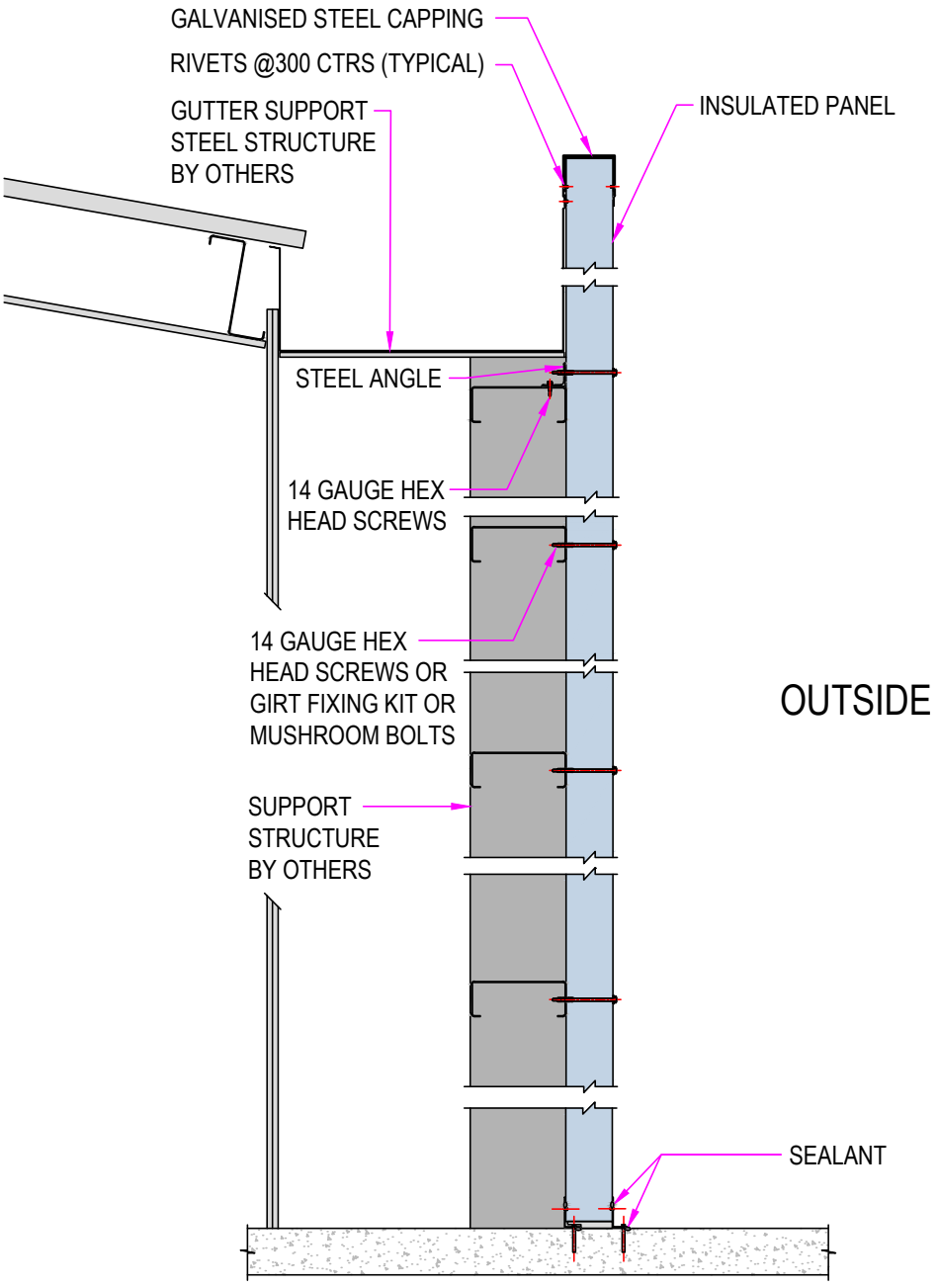


FRONT ELEVATION

ETF-MW-FR173-REV04B

Facade Layout Options

Typical Vertical Panel Construction Details

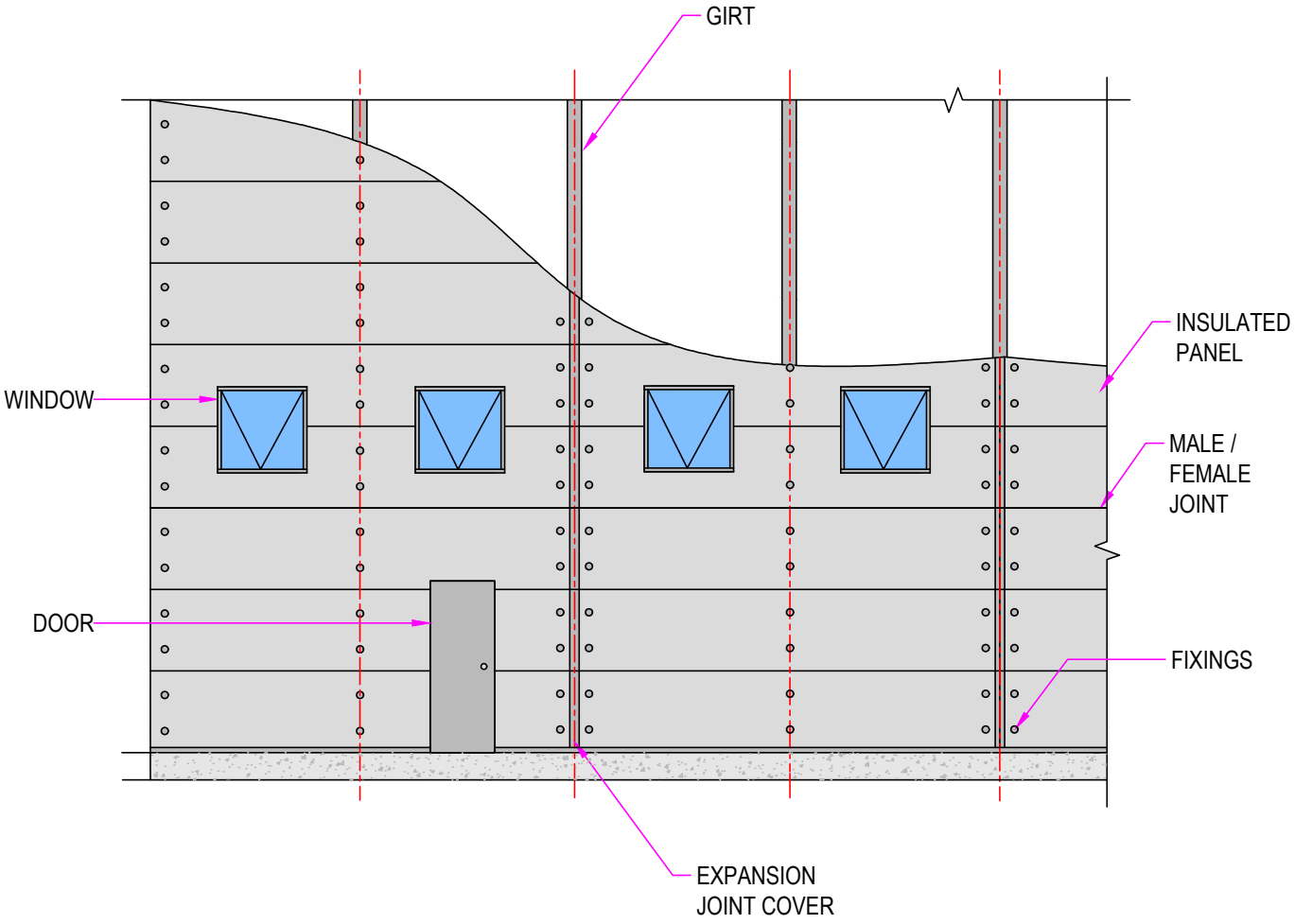


SIDE ELEVATION

ETF-MW-FR073-REV04A

Facade Layout Options

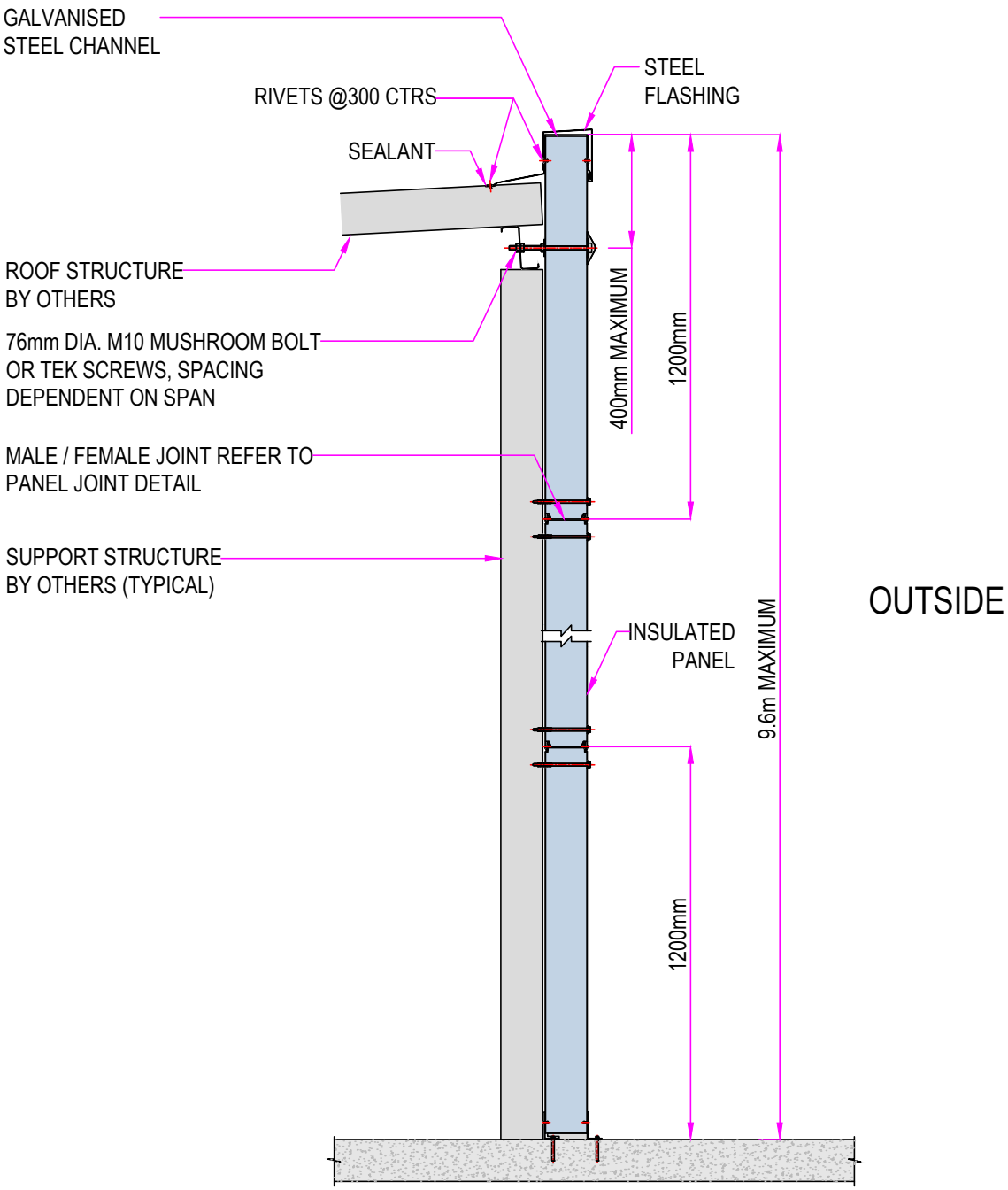
Typical Horizontal Panel Construction Details



FRONT ELEVATION

Facade Layout Options

Typical Horizontal Panel Construction Details

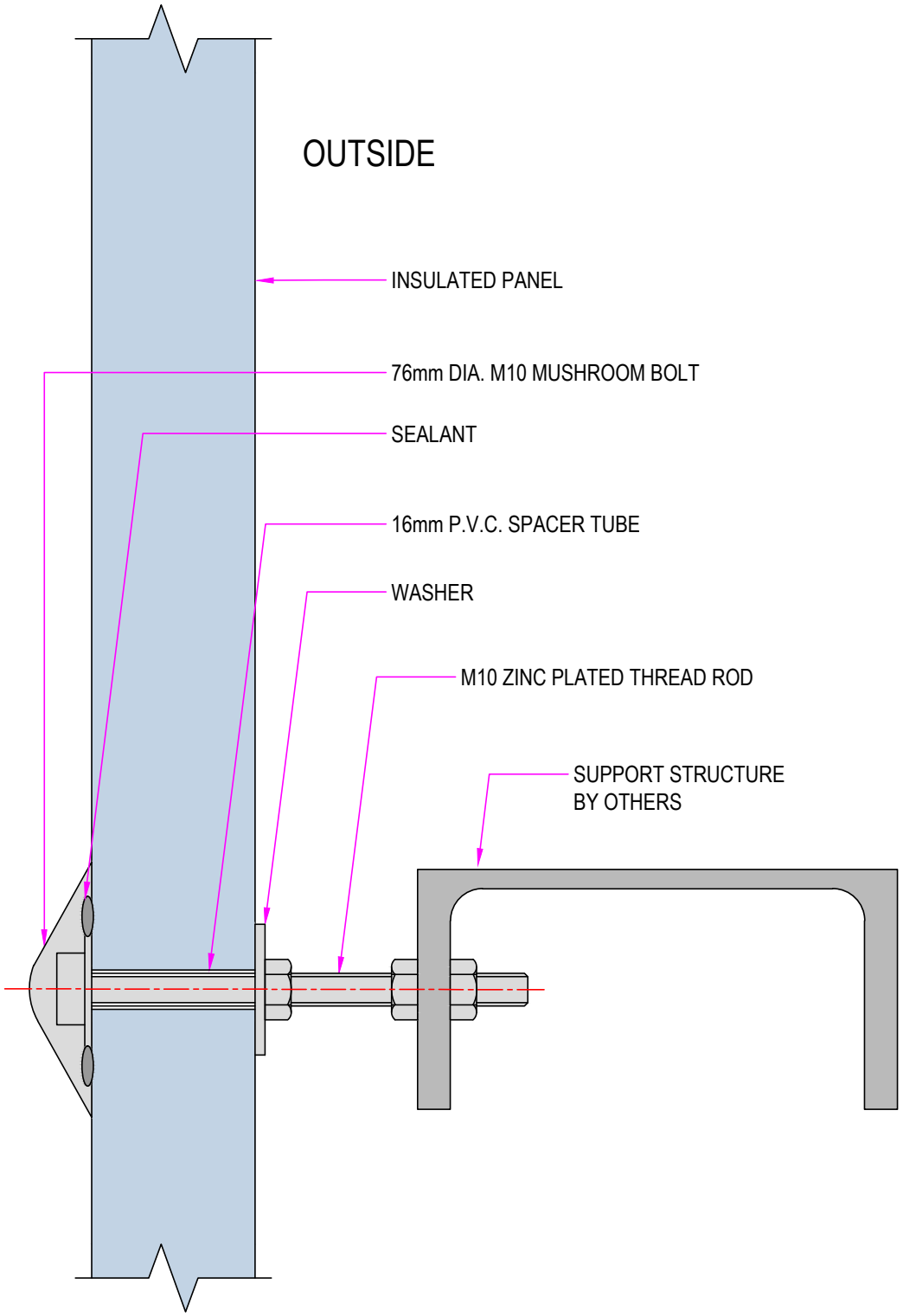


SIDE ELEVATION

ETF-MW-FR135-REV00C

Panel Fixing Options

Typical Through Parallel Flange Channel Fixing Details - Vertical & Horizontal

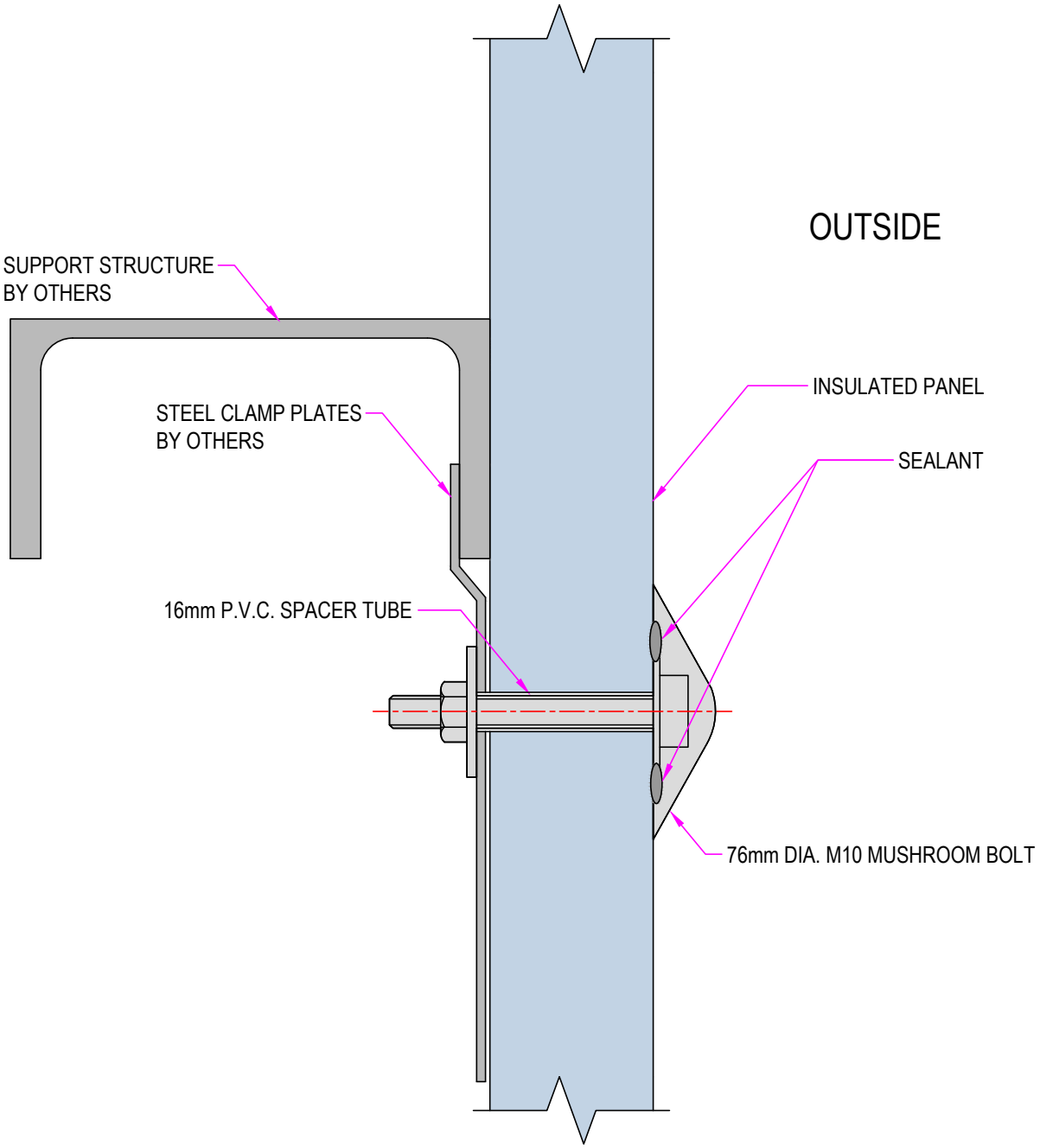


ELEVATION / PLAN

BPE-EP-CS025-REV00B

Panel Fixing Options

Typical Clamp Parallel Flange Channel Fixing Details - Vertical & Horizontal

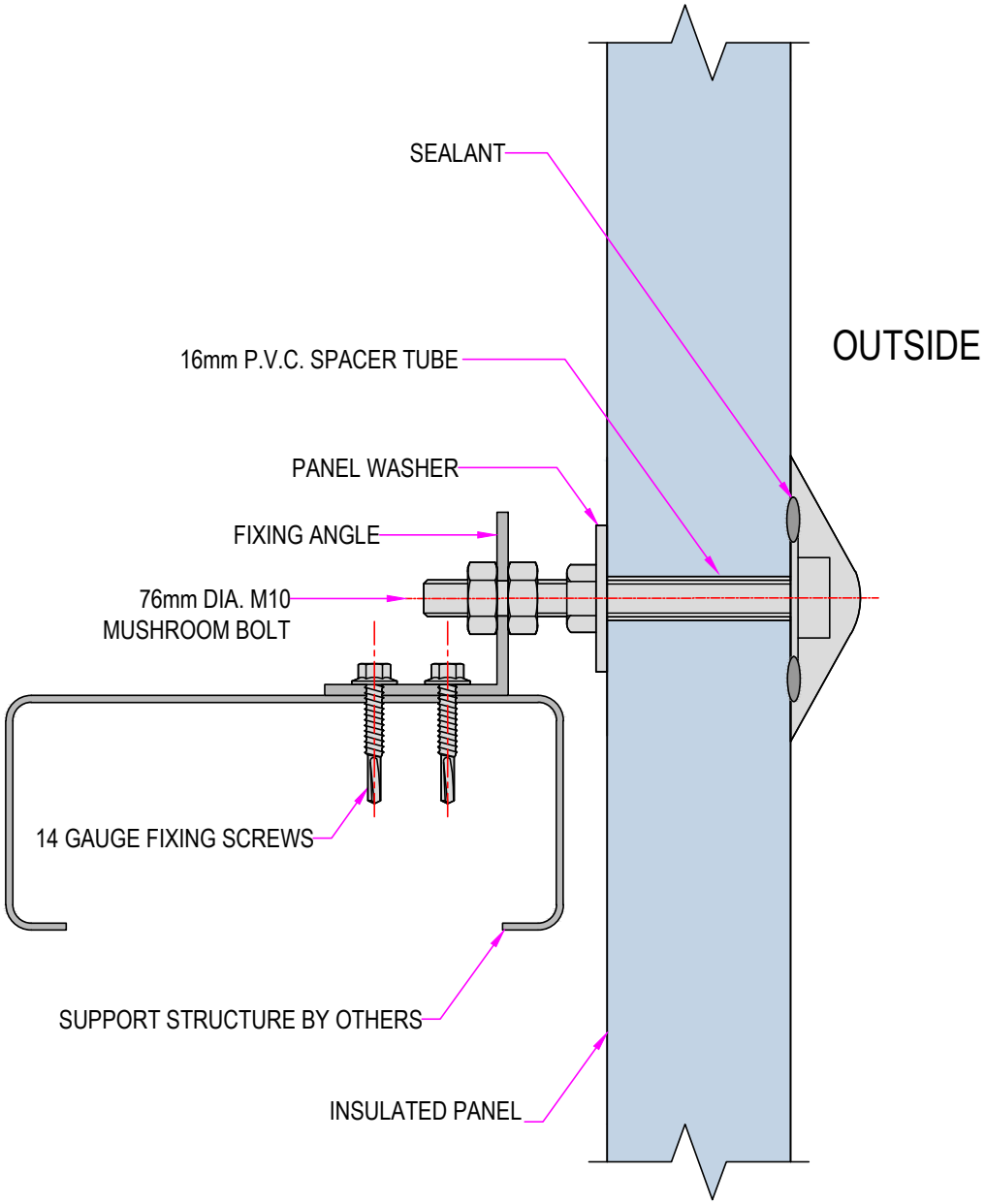


ELEVATION / PLAN

ETE-EP-CL024-REV01B

Panel Fixing Options

Typical C-Channel Fixing Details - Vertical & Horizontal

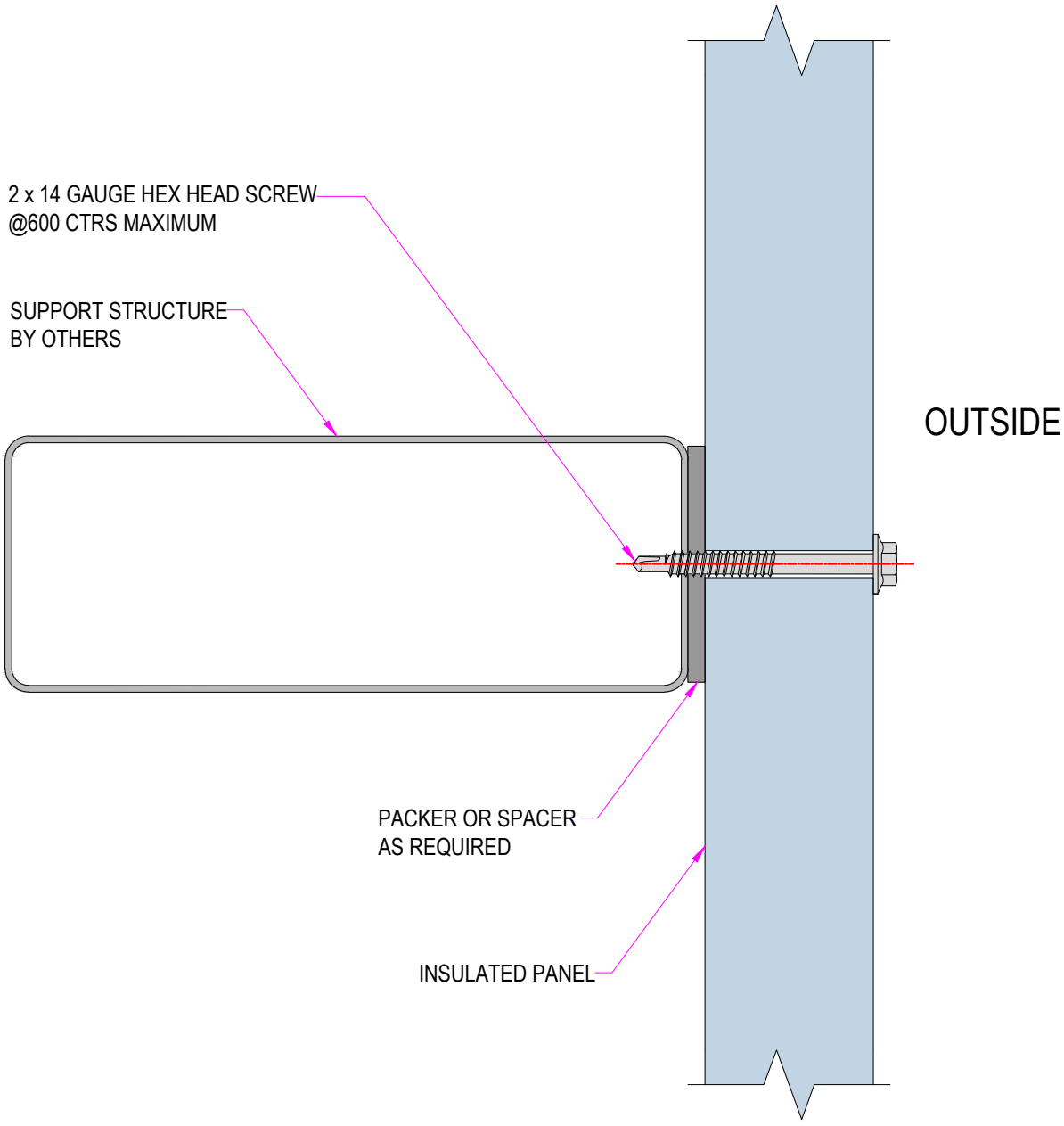


ELEVATION / PLAN

ETF-MW-FR090-REV03B

Panel Fixing Options

Typical Rectangular Hollow Section Fixing Details - Vertical & Horizontal

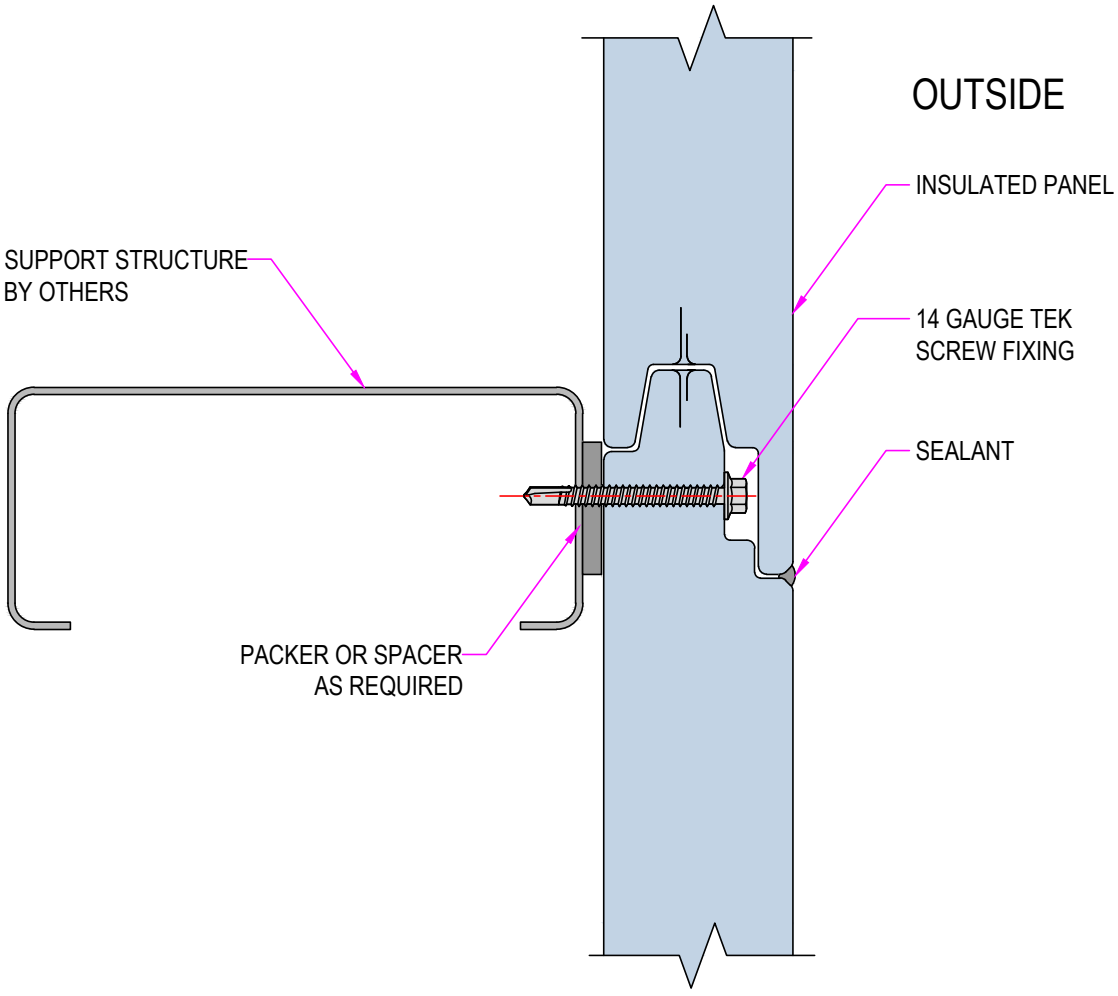


ELEVATION / PLAN

ETE-EP-CL032-REV00A

Panel Fixing Options

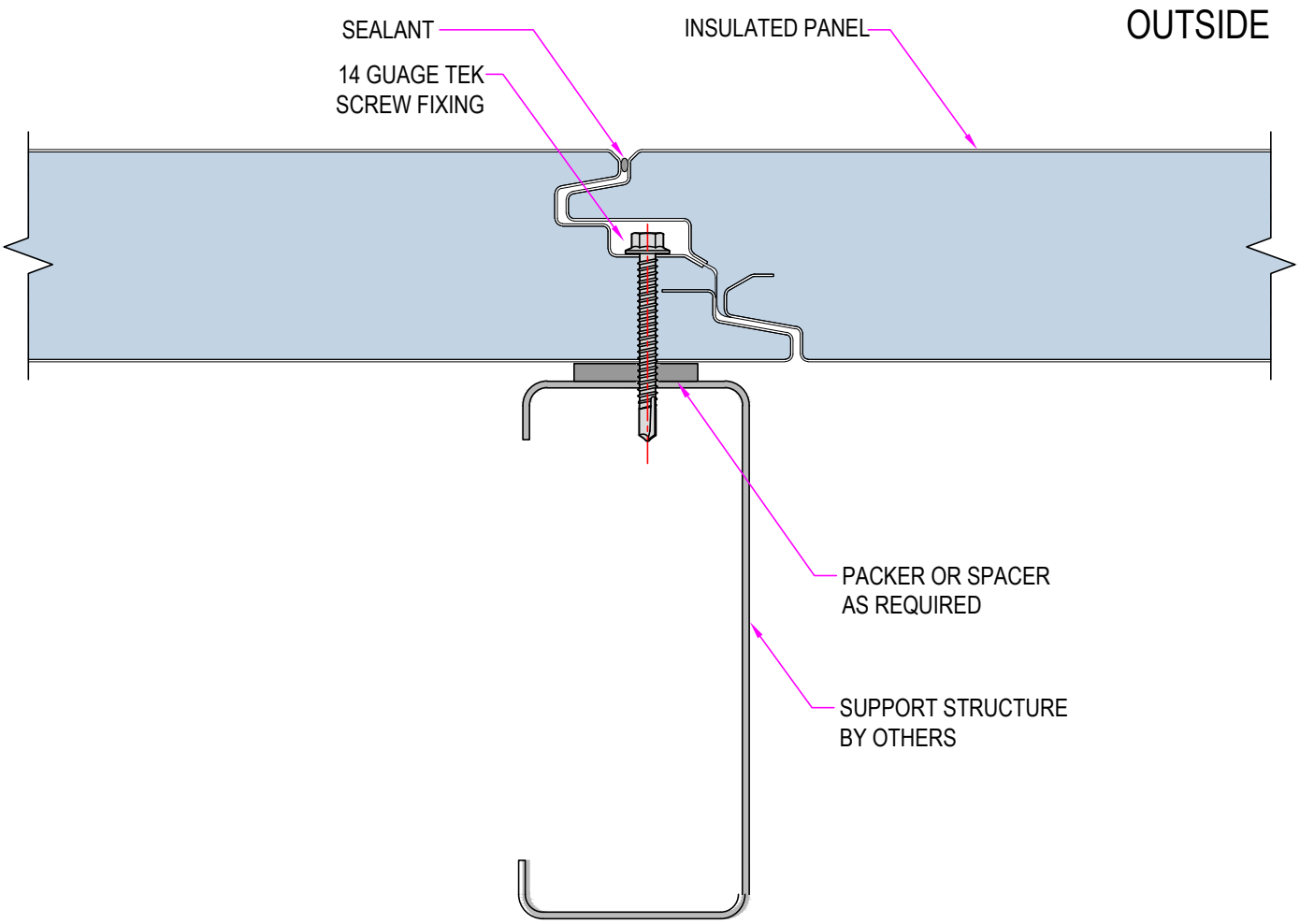
MetecnoInspire® Q Concealed Fixing Details - Vertical & Horizontal



ELEVATION / PLAN

Panel Fixing Options

MetecnoInspire® V Concealed Fixing Details - Vertical Only

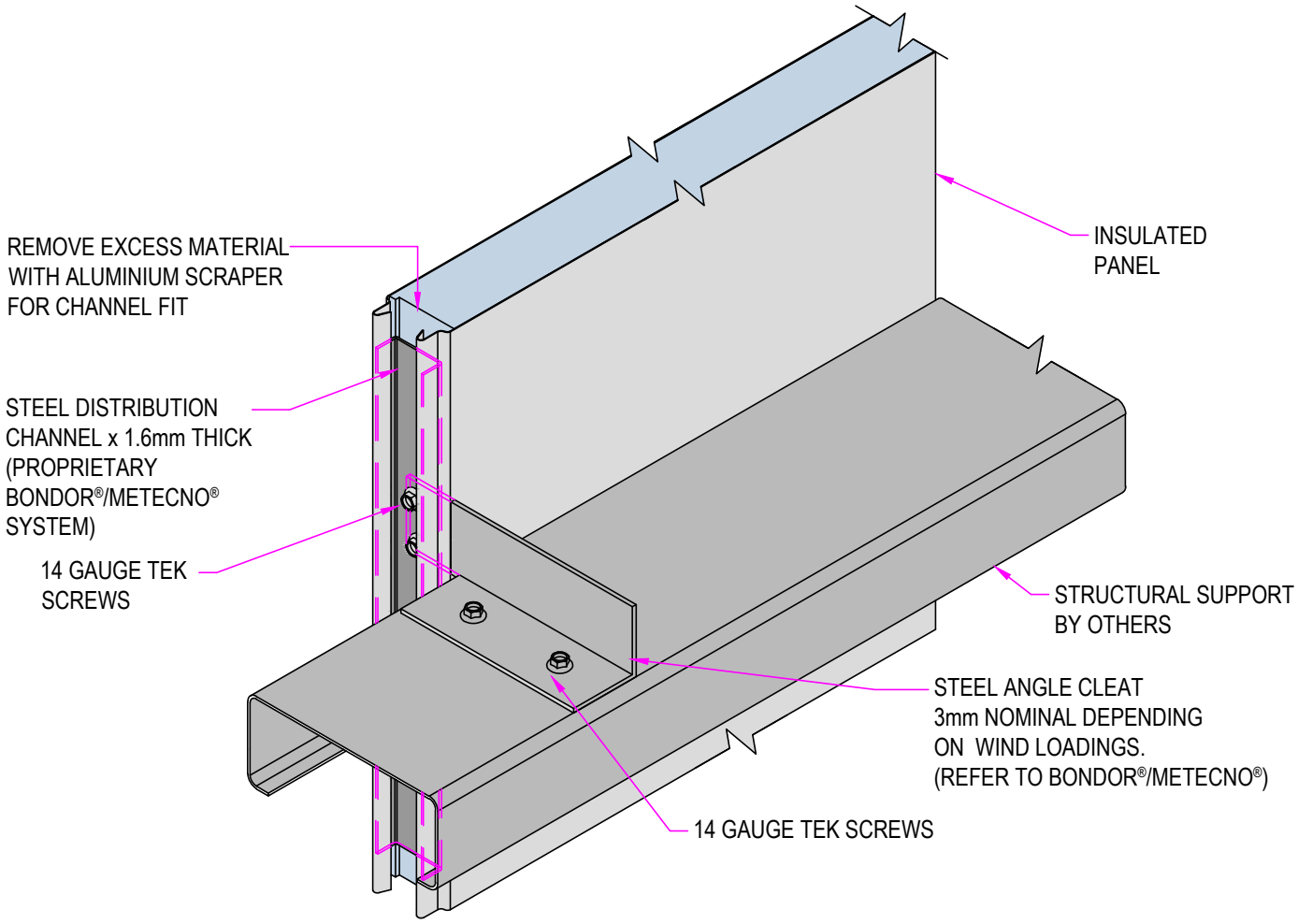


PLAN

MIP-PI-CL008-REV01A

Panel Fixing Options

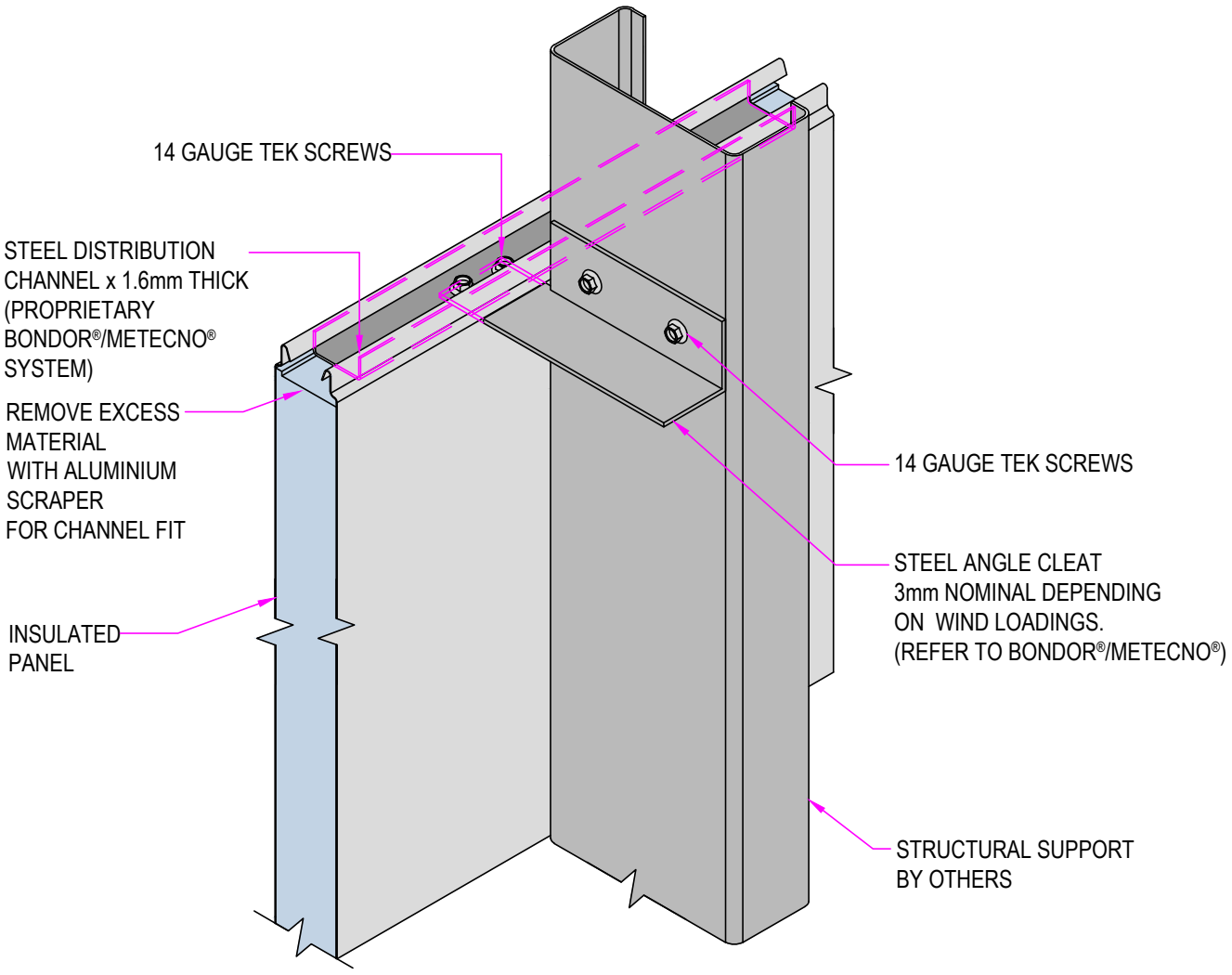
BondorPanel® / Equitilt® Intermediate Concealed Fixing Details - Vertical



ETE-EP-CL023-REV01A

Panel Fixing Options

BondorPanel® / Equitilt® Intermediate Concealed Fixing Detail - Horizontal

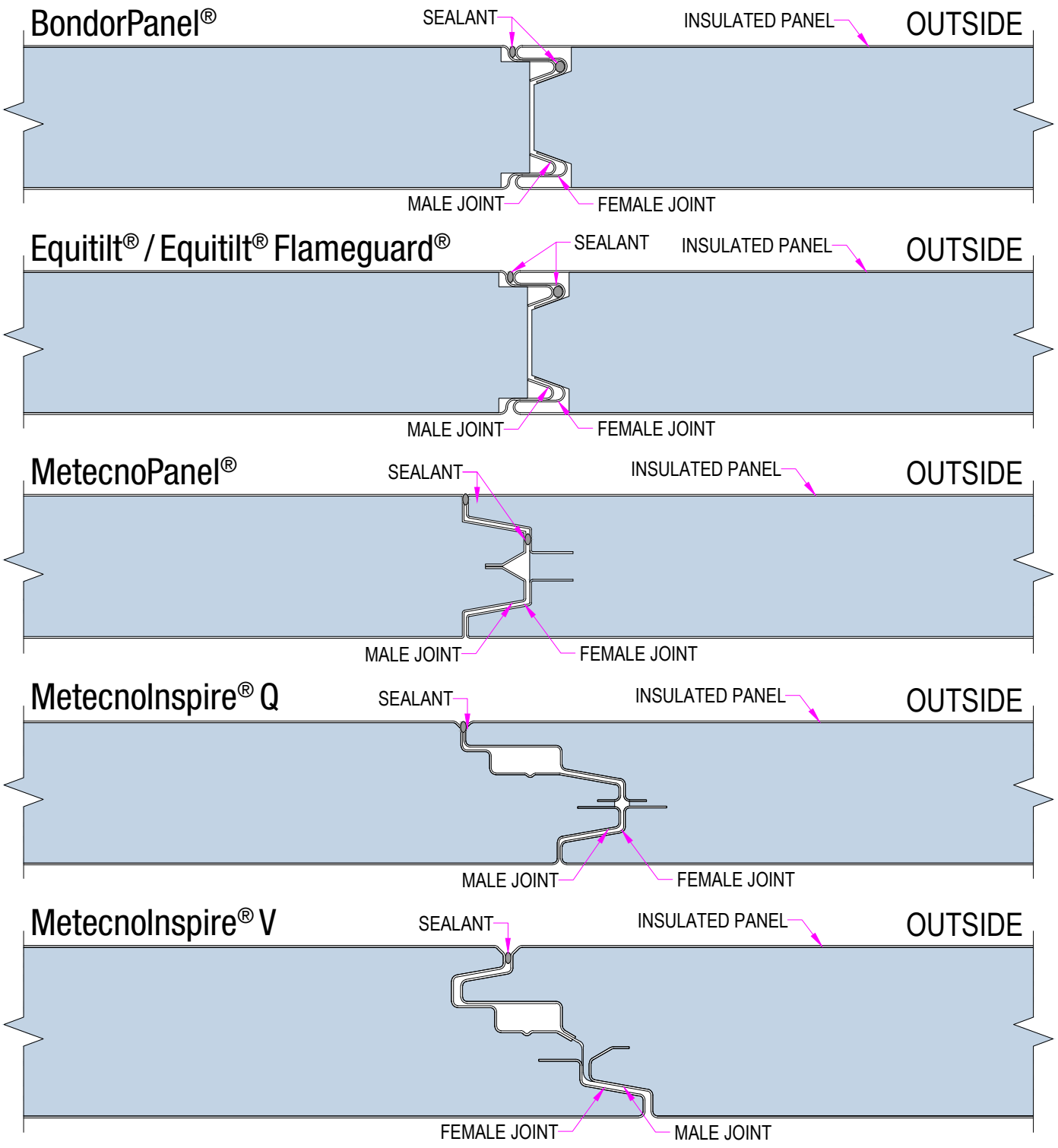


NOTE: SIZE, LENGTH AND NUMBER OF FIXINGS TO BE DETERMINED ON A PROJECT BASIS.

ETE-EP-CL023-REV01A

Panel Fixing Options

Typical Panel Joints - Vertical

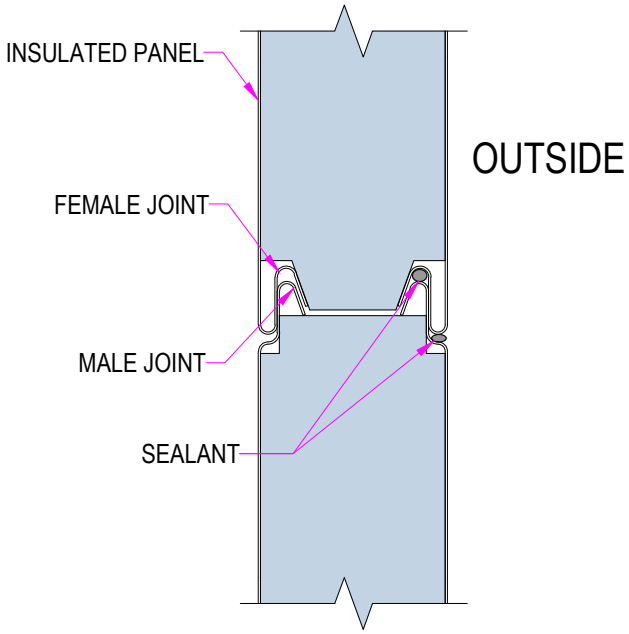


PLAN

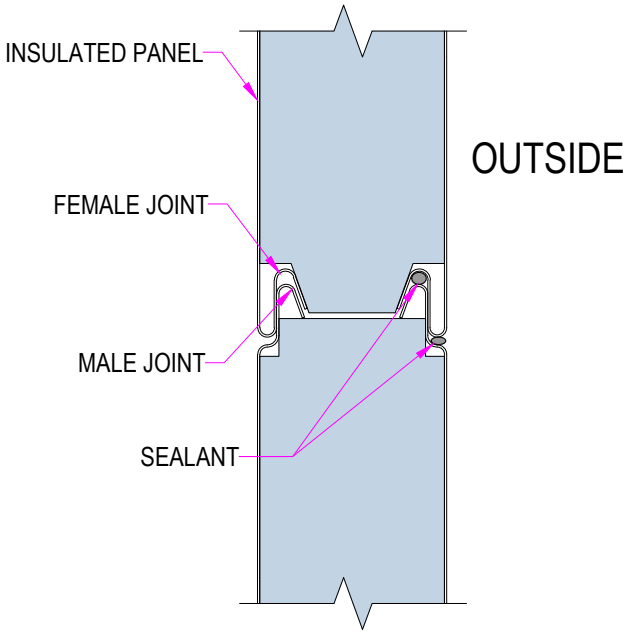
Panel Fixing Options

Typical Panel Joints - Horizontal

BondorPanel®

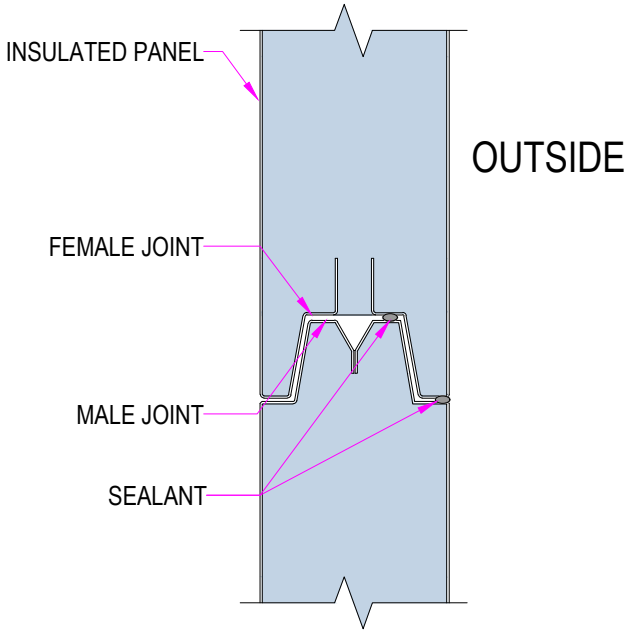


Equitilt® / Equitilt® Flameguard®

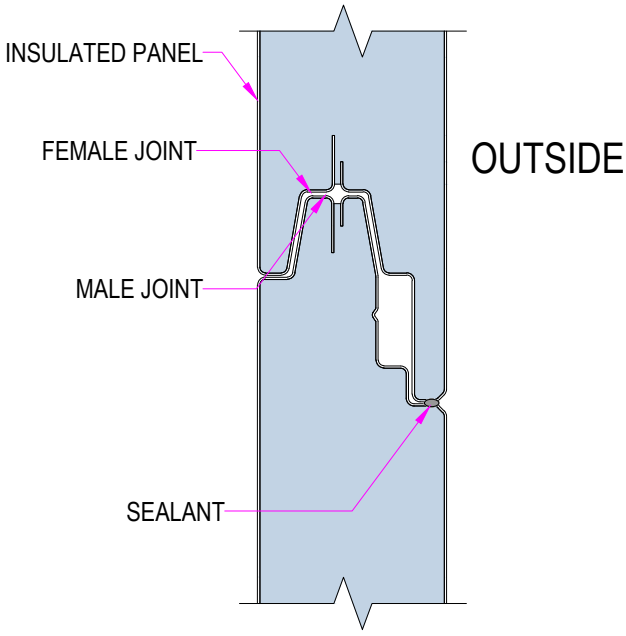


ELEVATION

MetecnoPanel®



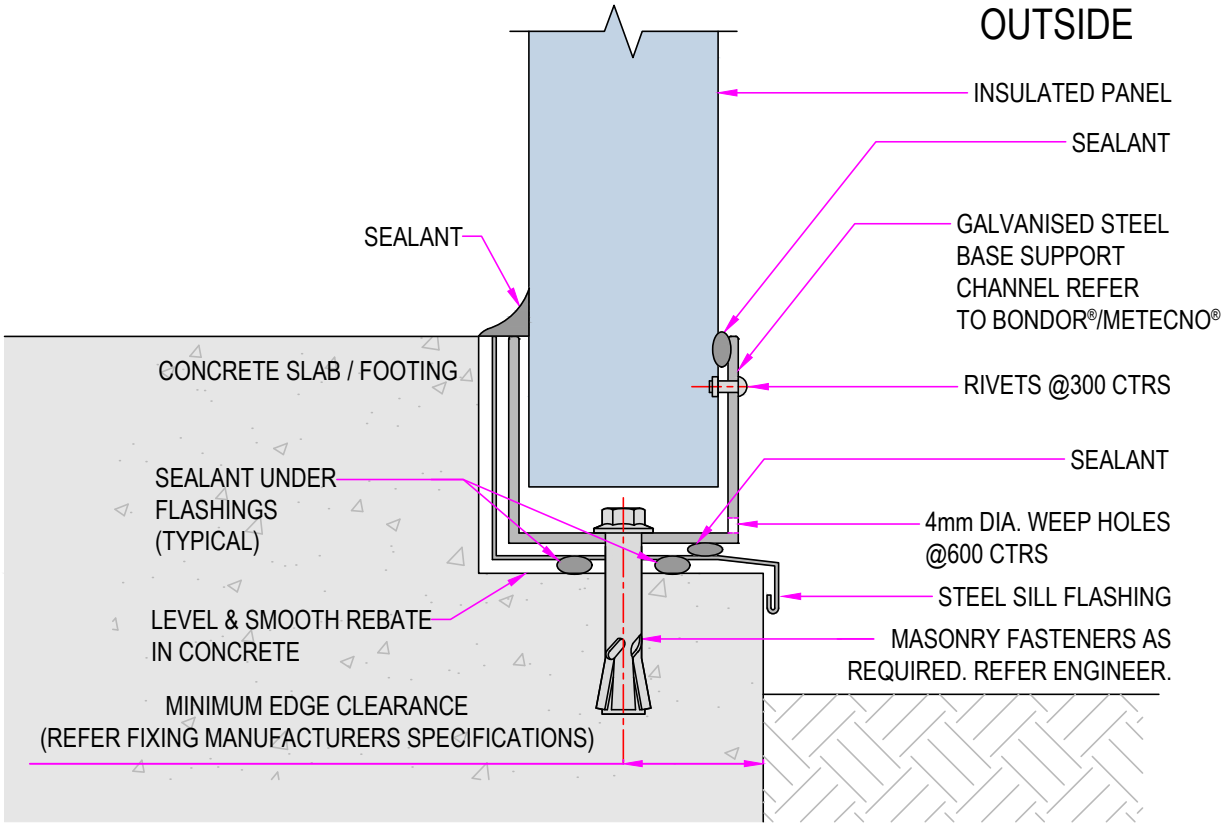
MetecnoInspire® Q

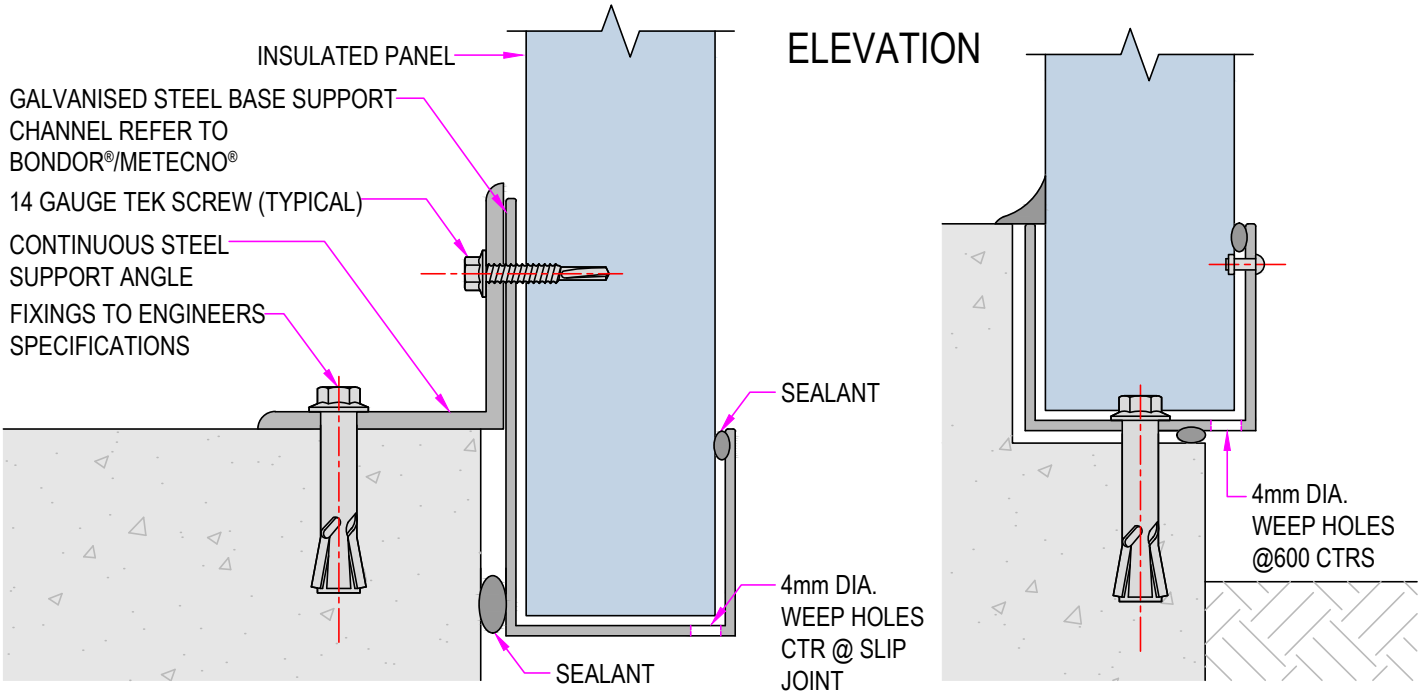


NOTE: FEMALE JOINT MUST ALWAYS FACE DOWN FOR WATER RUN OFF

Base Connection Details

Typical Vertical Base Capping Details





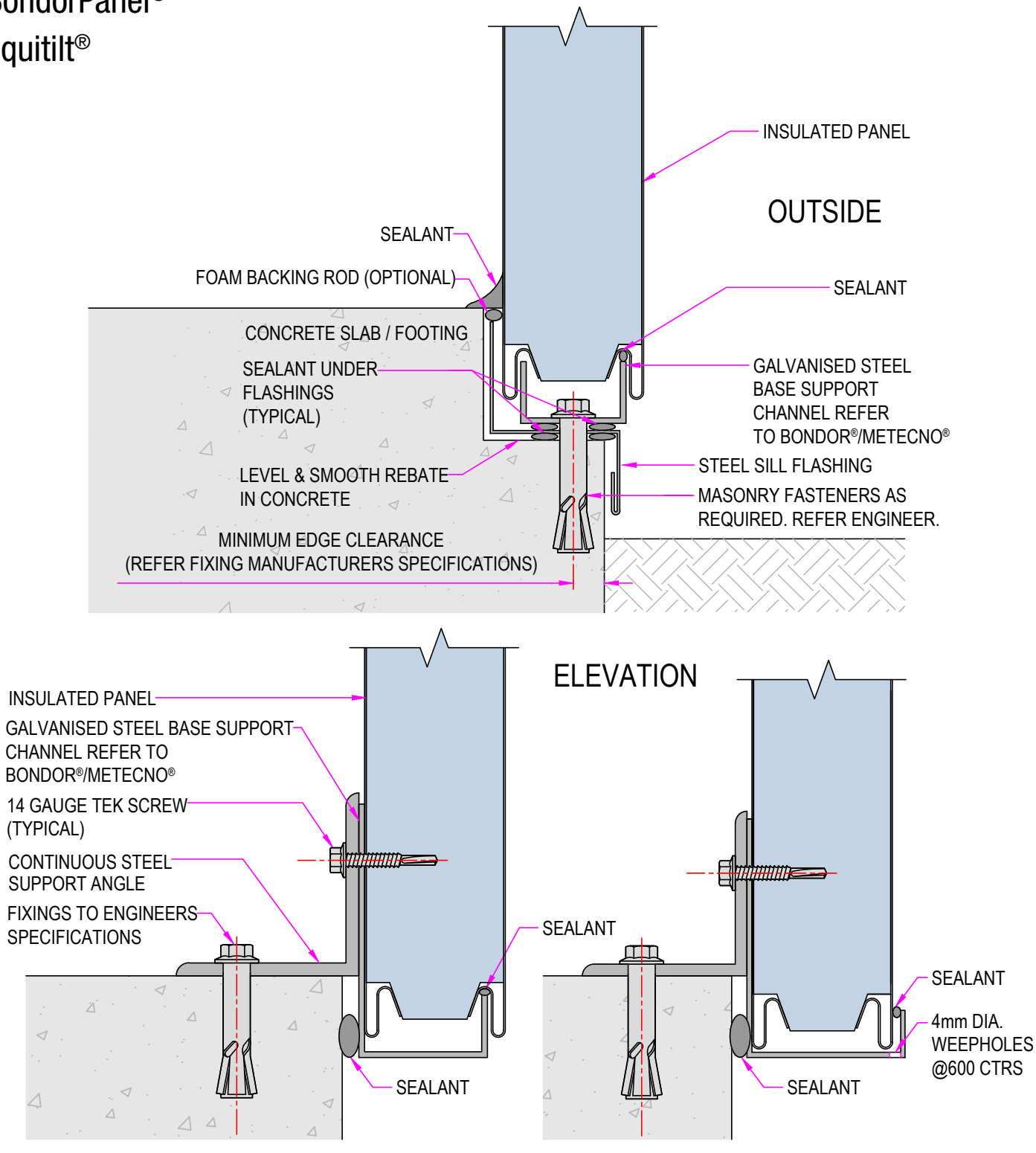
EXTERNAL BASE CAP ALTERNATIVE

SIMILAR ALTERNATIVE

ETE-EP-CL020-REV01A

Base Connection Details

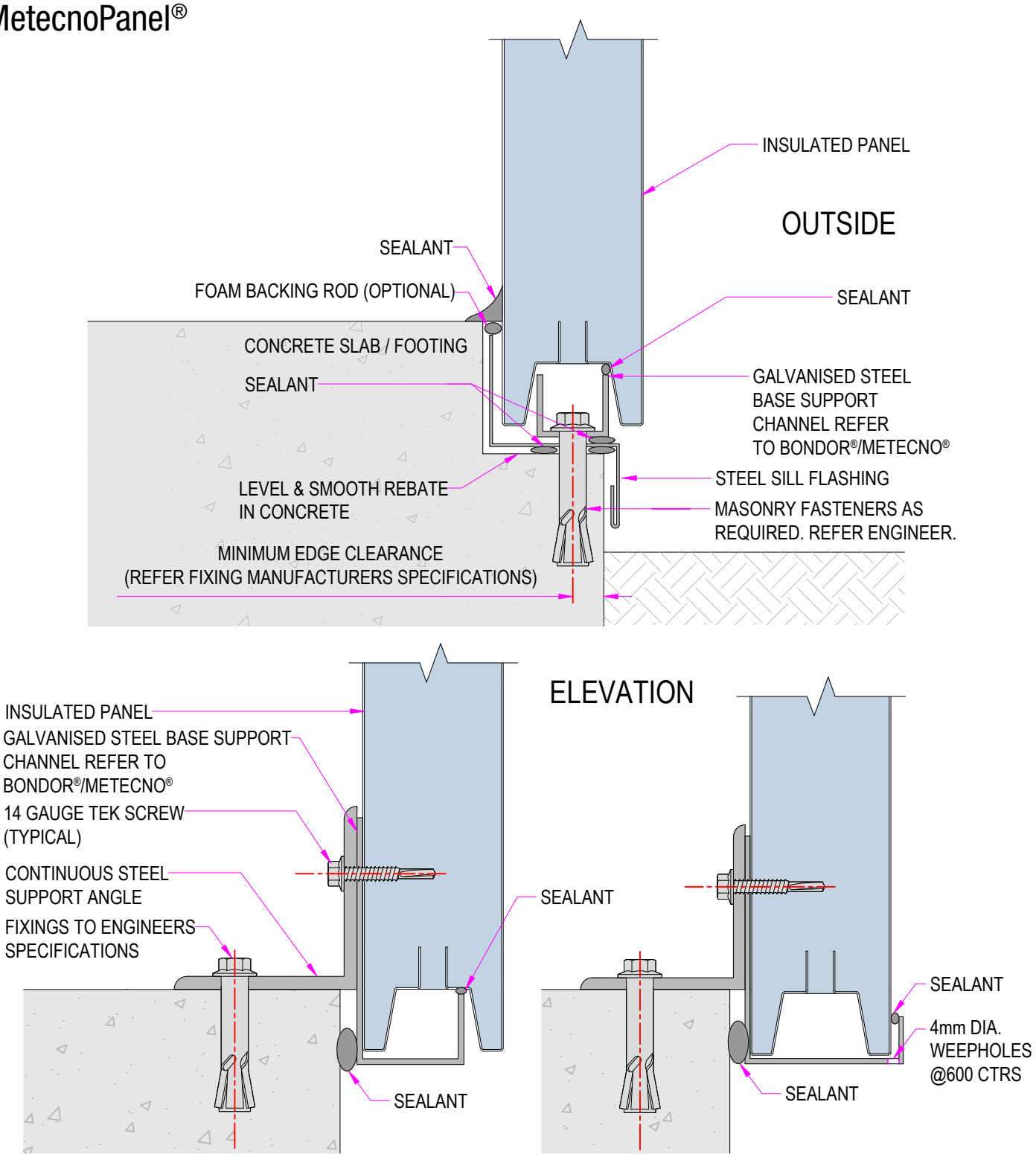
Horizontal Architectural Base Capping Details
BondorPanel®
Equitilt®



ETF-MW-CL002-REV01B

Base Connection Details

Horizontal Architectural Base Capping Details
MetecnoPanel®



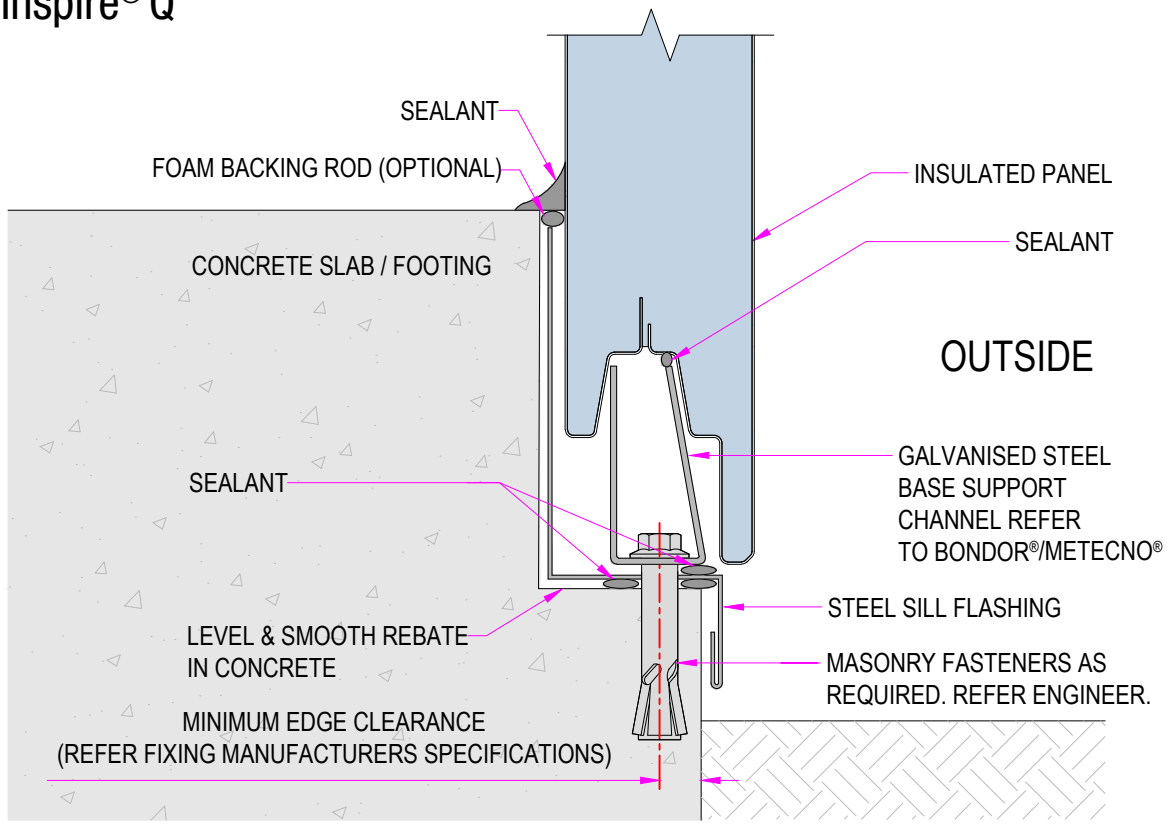
EXTERNAL BASE CAP ALTERNATIVE

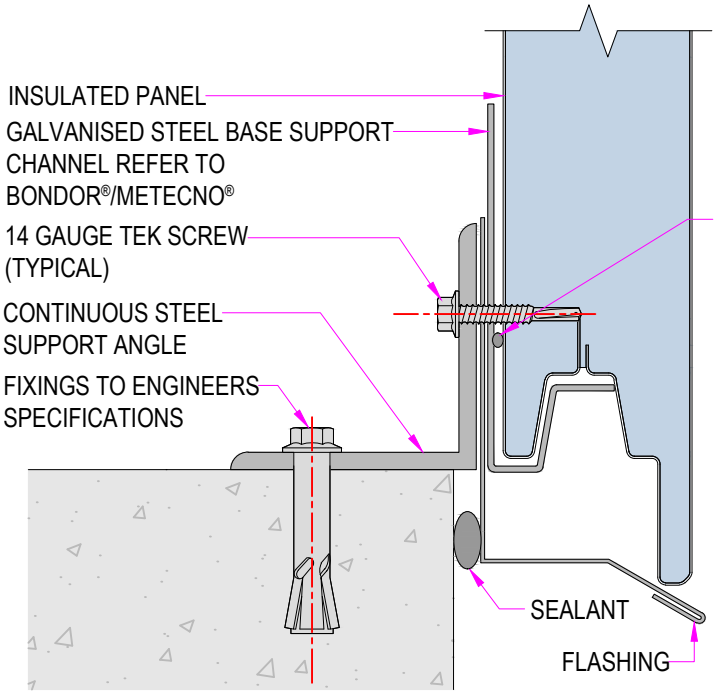
SIMILAR ALTERNATIVE

MPP-PI-CL015-REV00A

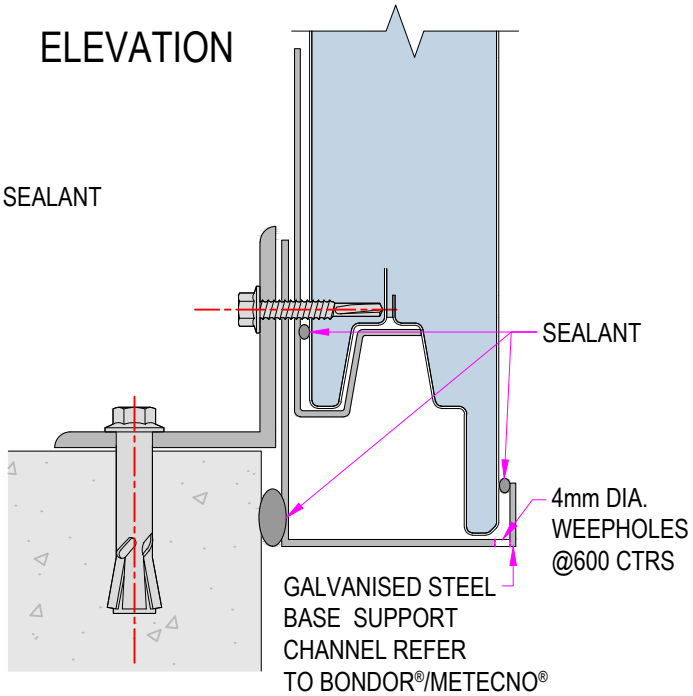
Base Connection Details

Horizontal Architectural Base Capping Details
MetecnoInspire® Q





EXTERNAL BASE CAP ALTERNATIVE

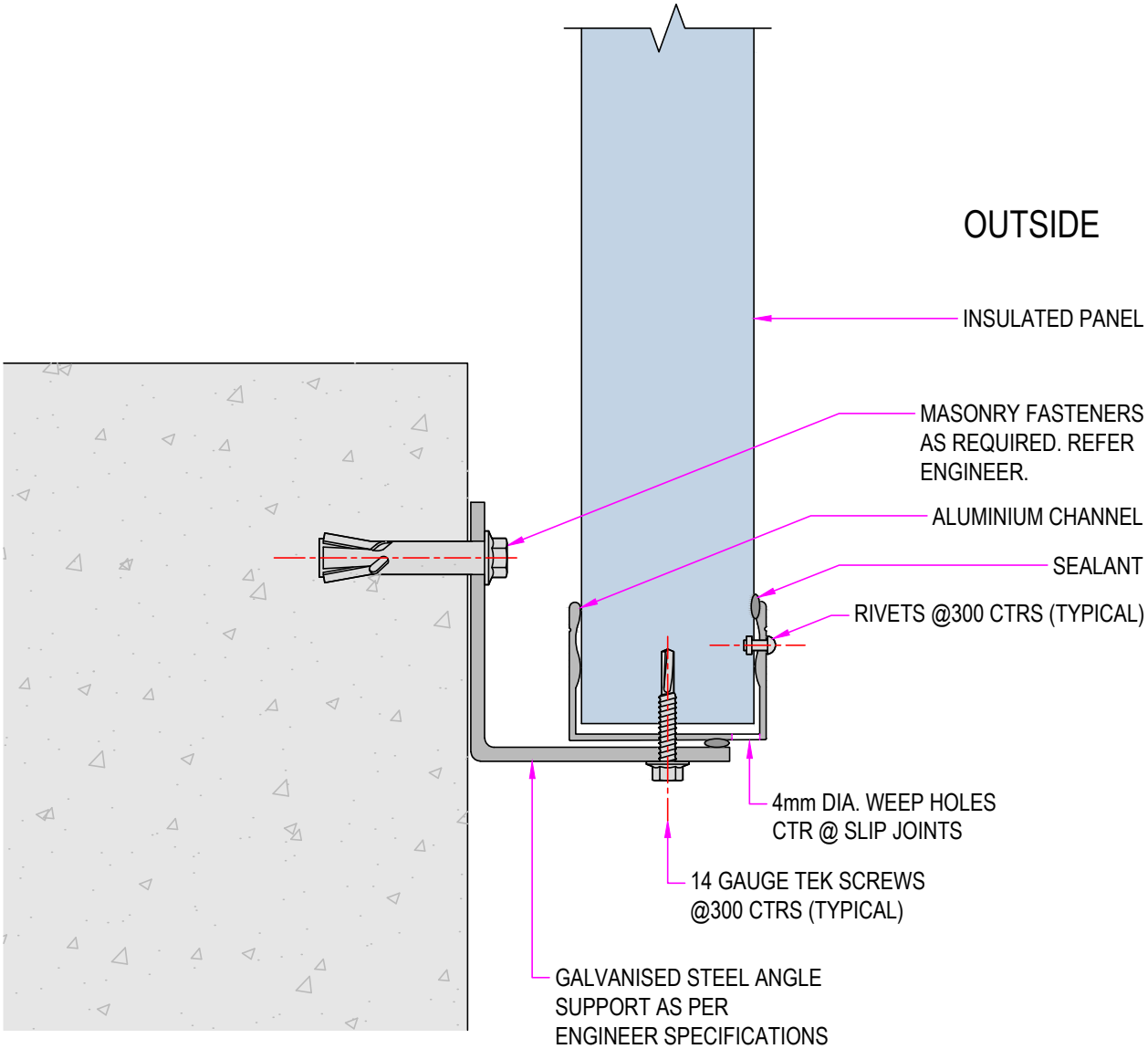


SIMILAR ALTERNATIVE

MIP-PI-CL013-REV00A

Base Connection Details

Typical Vertical External Base Capping Details

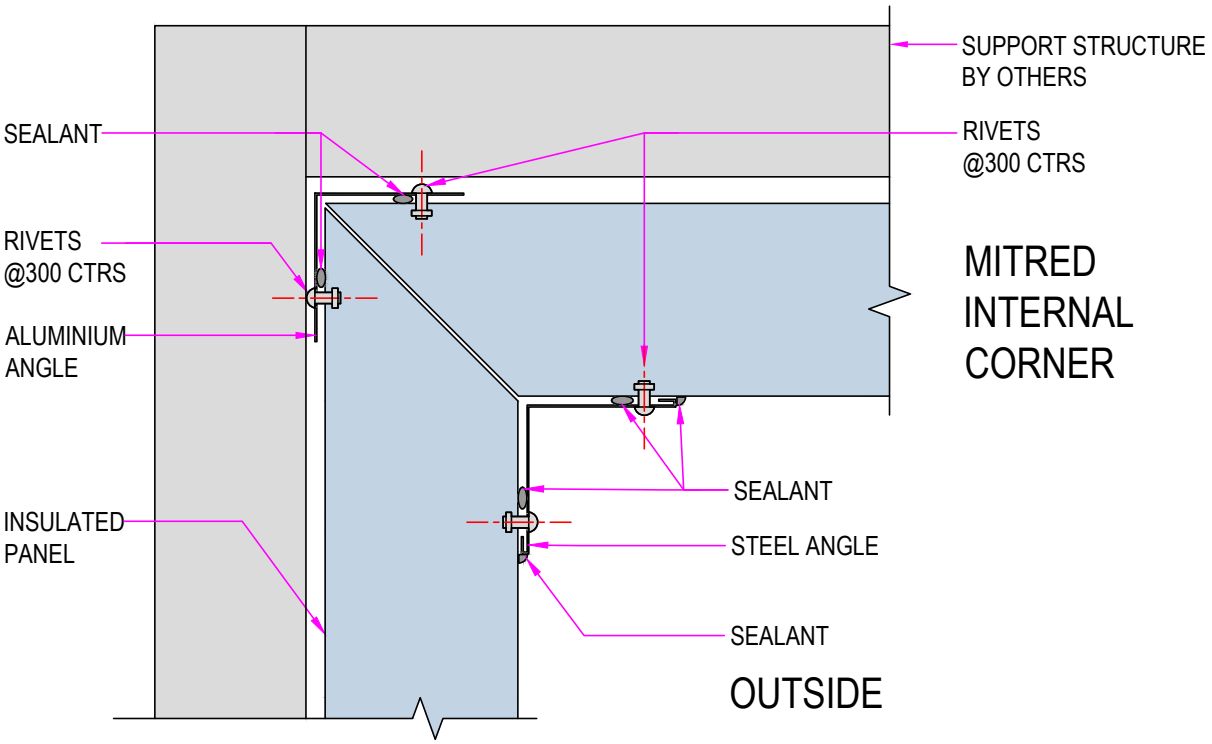


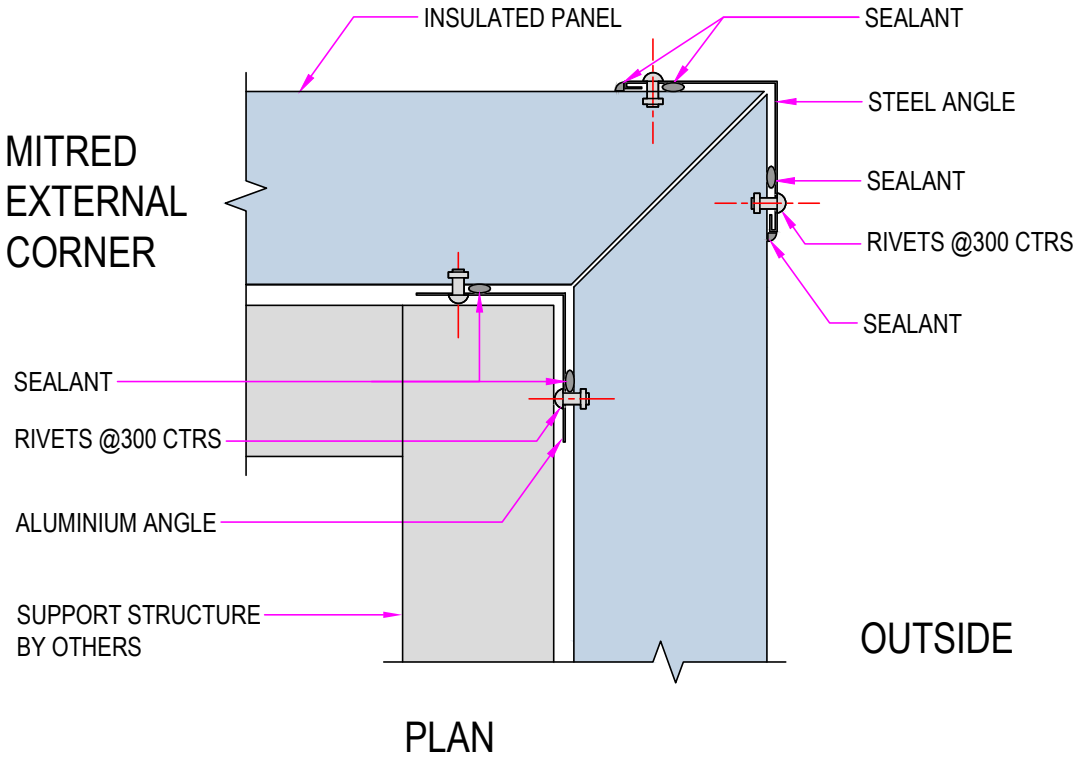
ELEVATION

ETE-EP-CL021-REV01A

Corner Details

Typical Mitred Corner Details

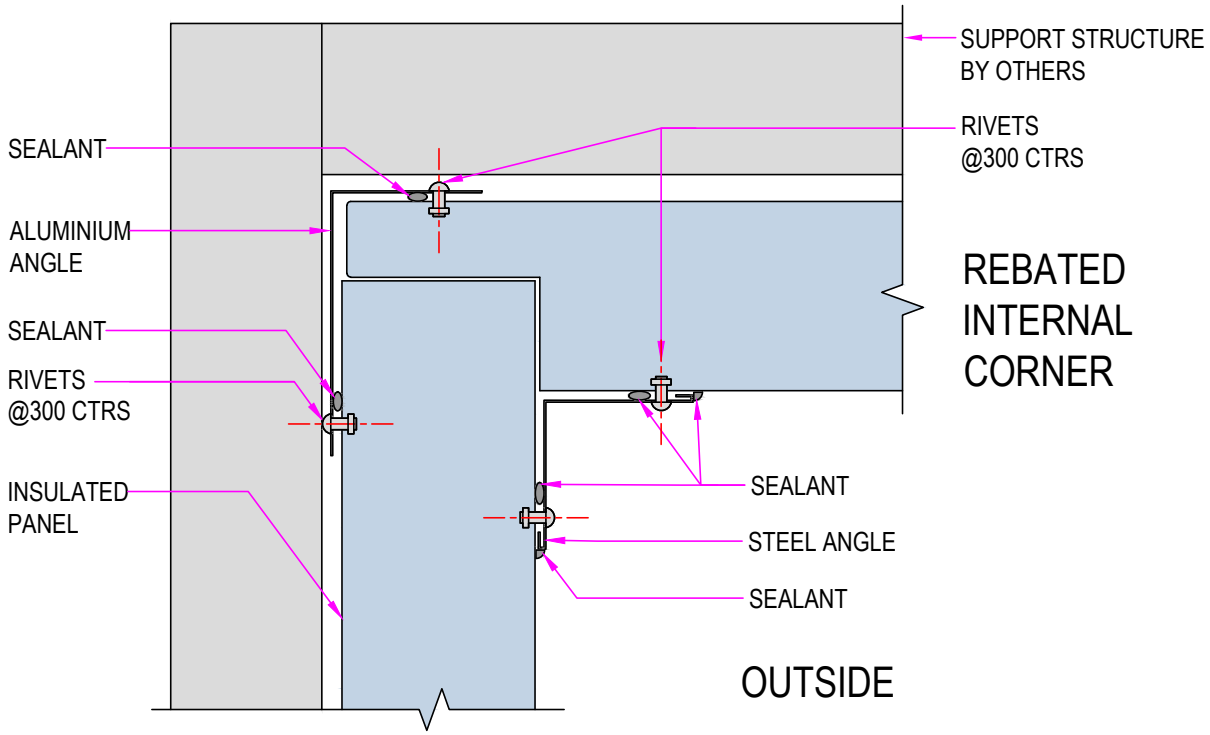


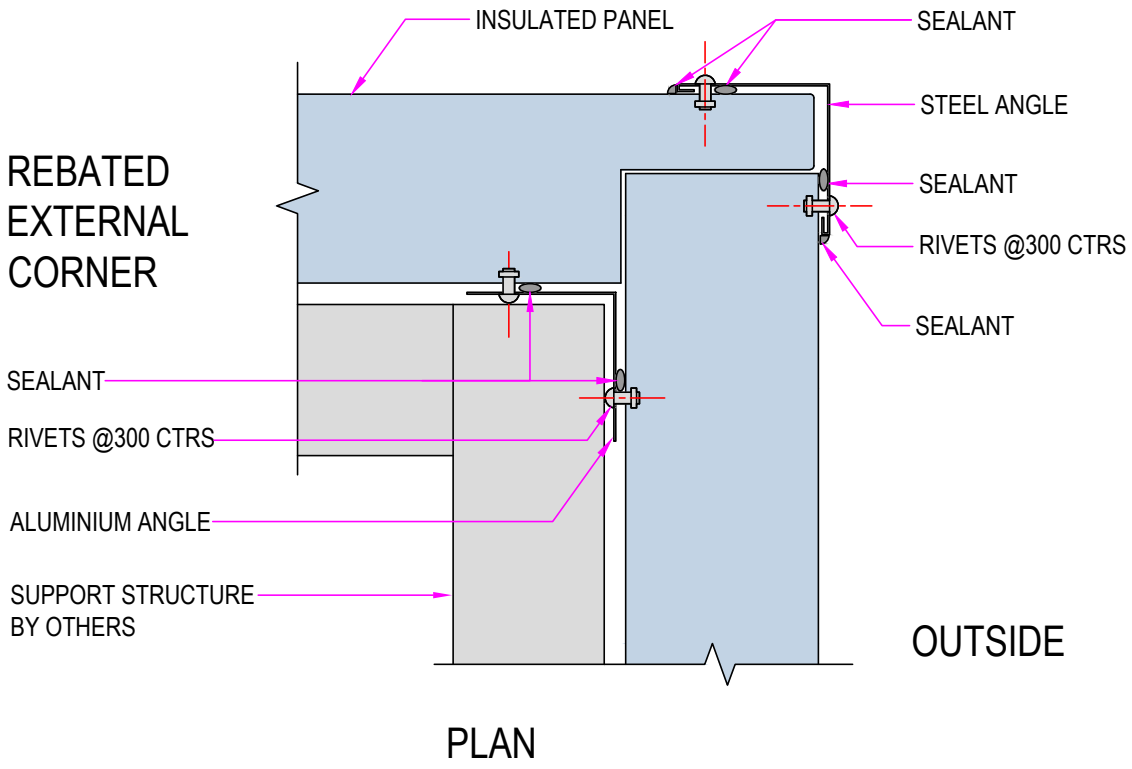


TE-MIP-PI-WE001-REV00

Corner Details

Typical Rebated Corner Details

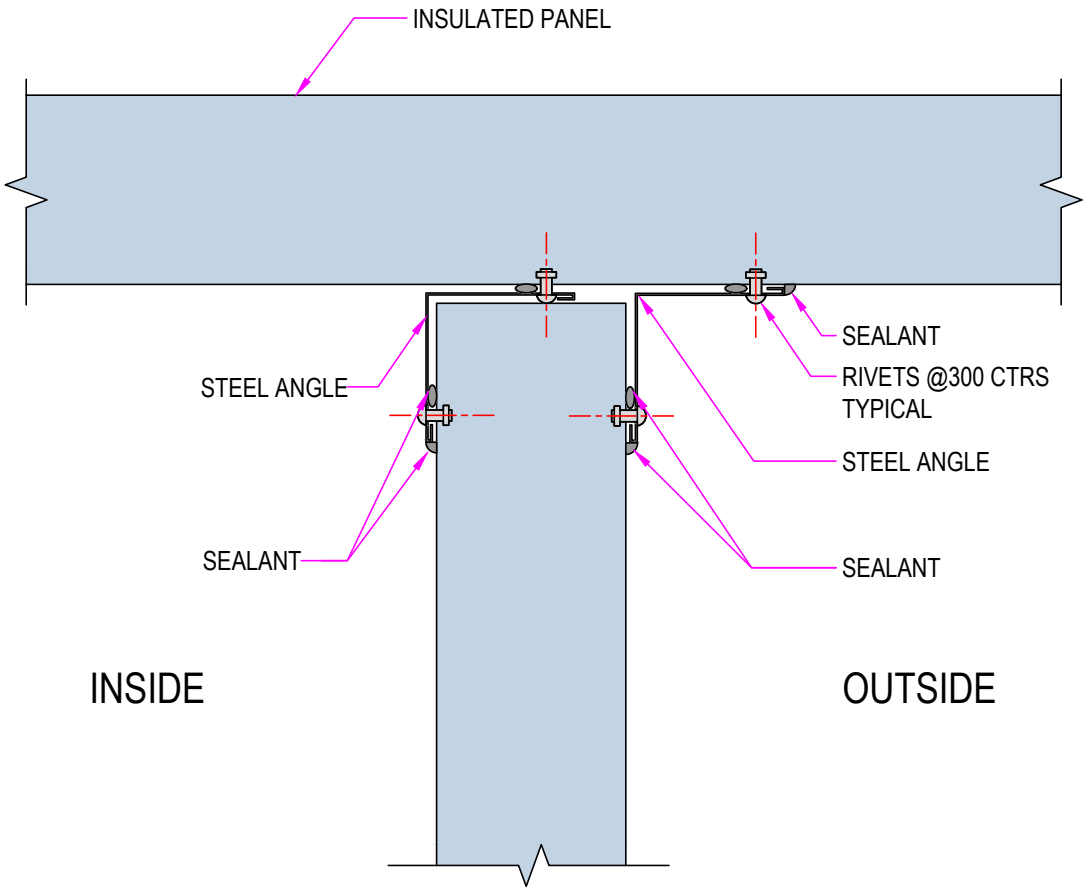




TE-MIP-PI-WE001-REV00

Abutment Details

Typical ‘T’ Intersection Details

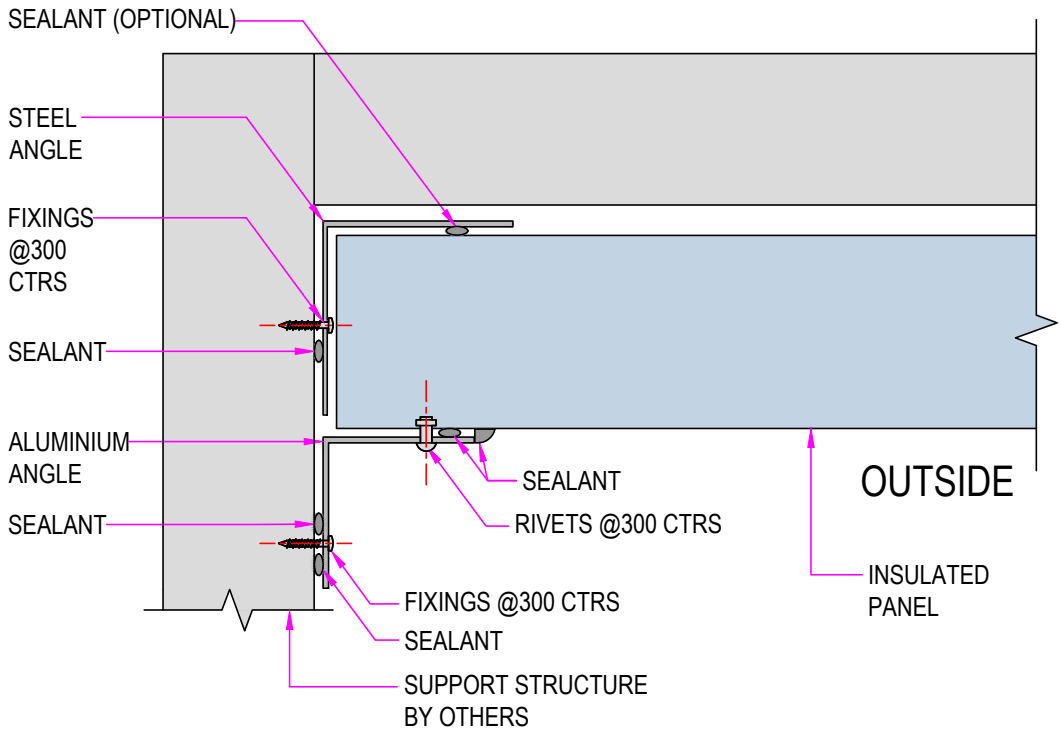


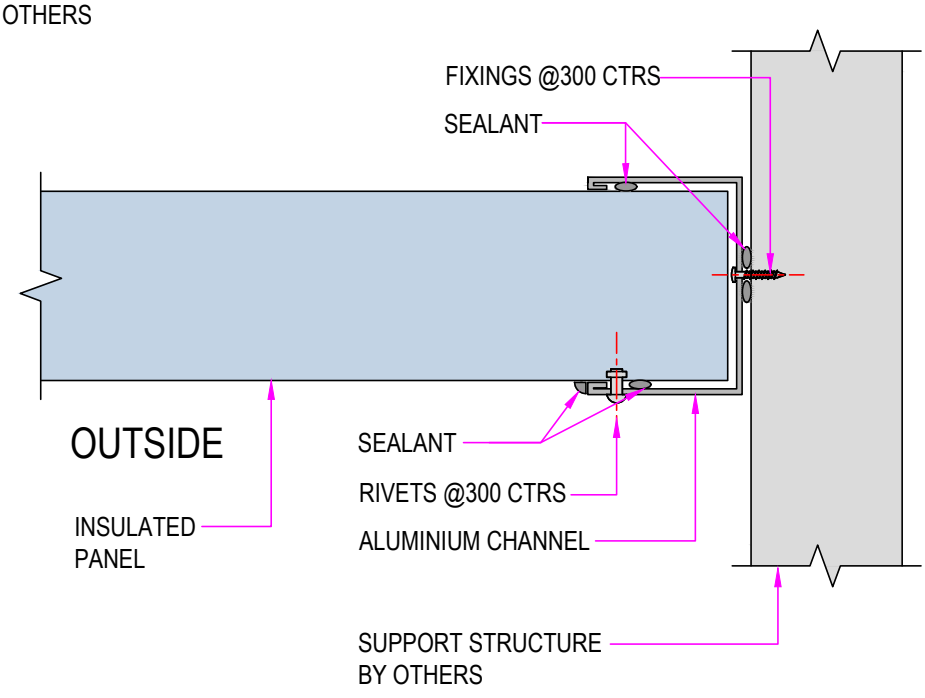
PLAN

NOTE: NON-COLD ROOM APPLICATIONS ONLY

Abutment Details

Typical Side Details



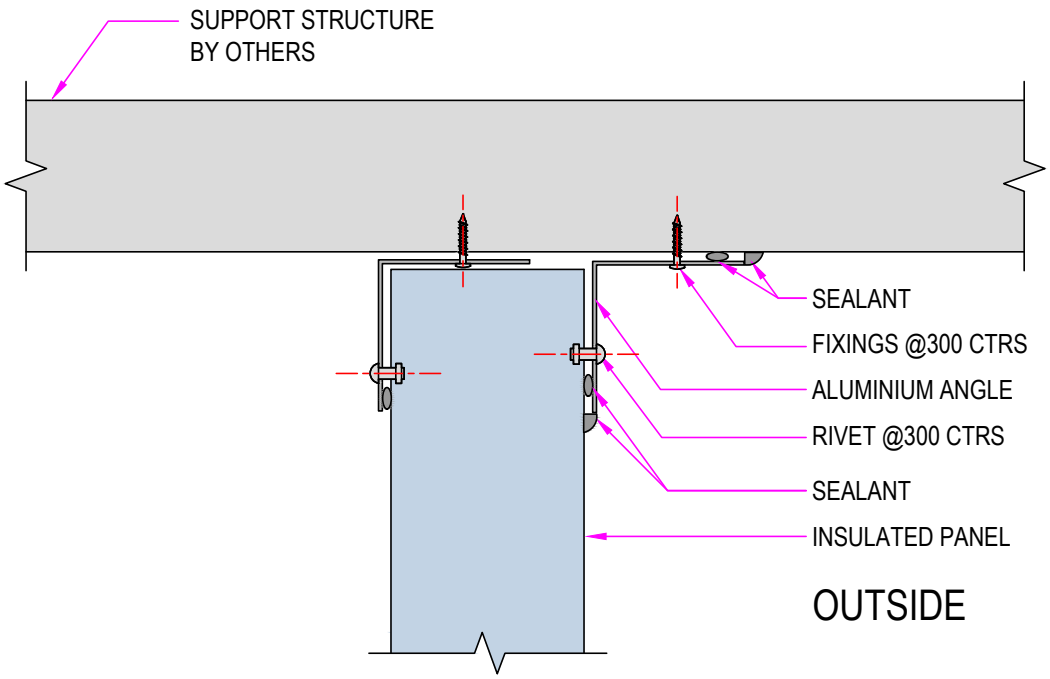


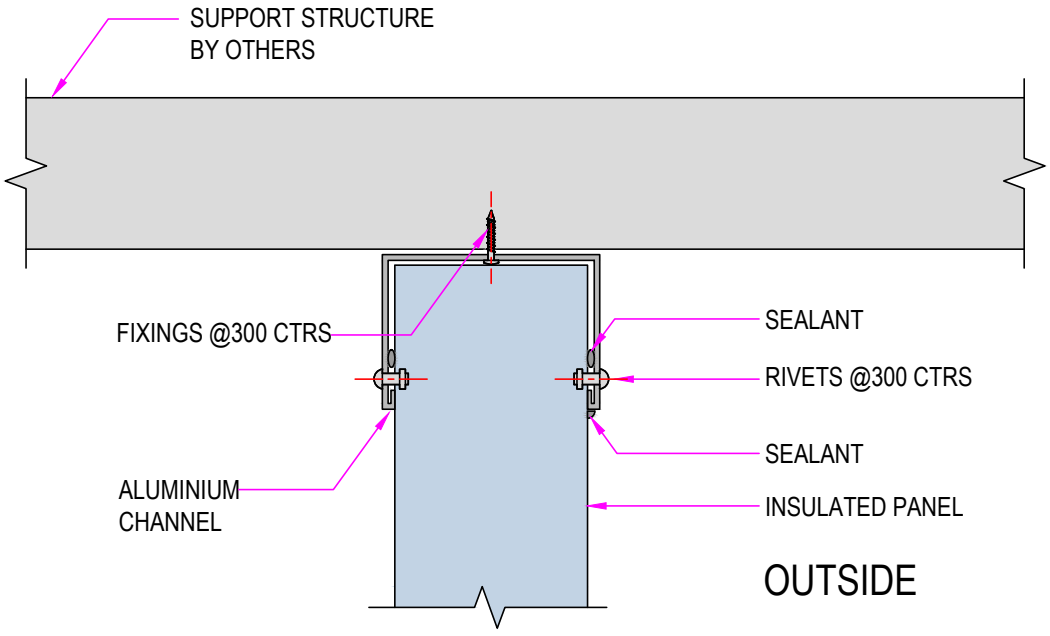
PLAN

TE-MIP-PI-WE001-REV00

Top Connection Details

Typical Top Detail Options





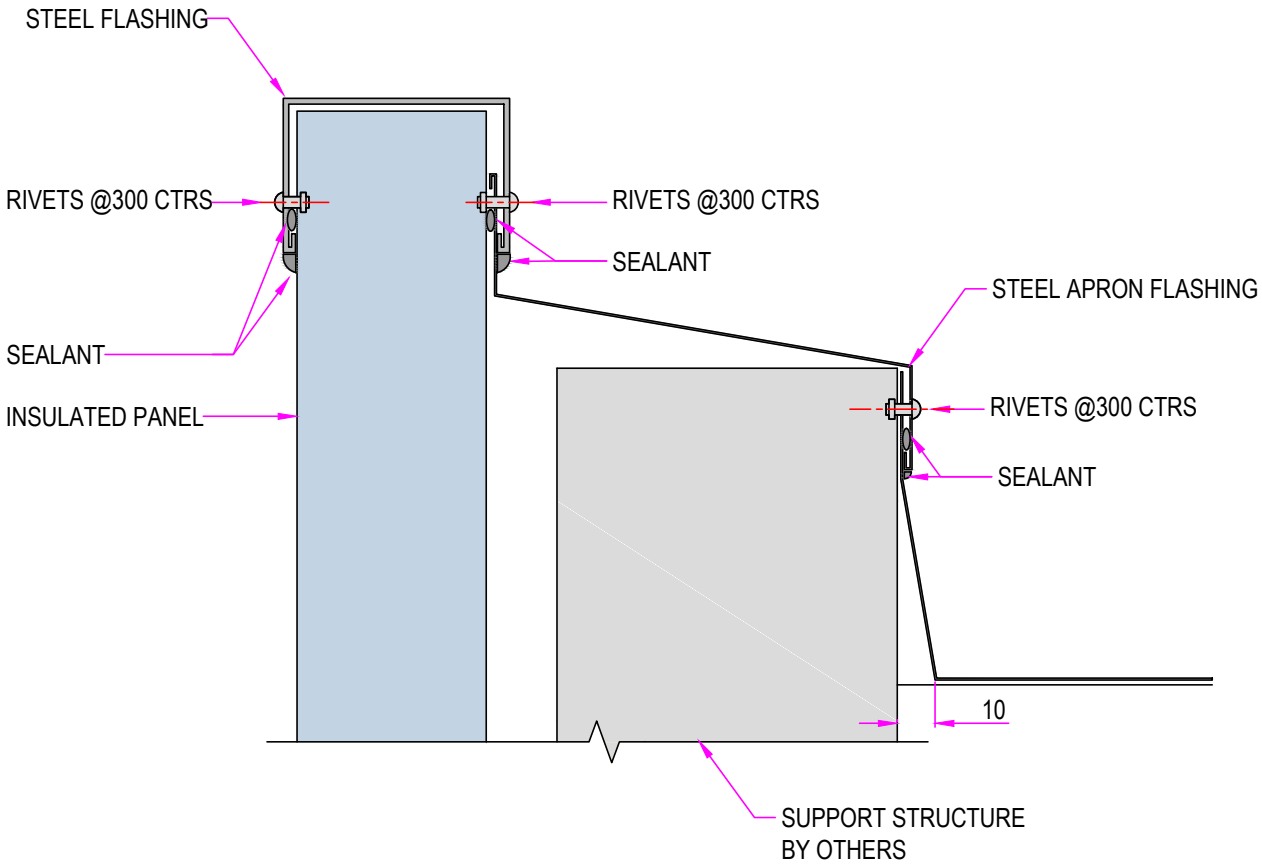
ELEVATION

NOTE: NON-COLD ROOM APPLICATIONS ONLY

TE-MIP-PI-WE001-REV00

Parapet Details

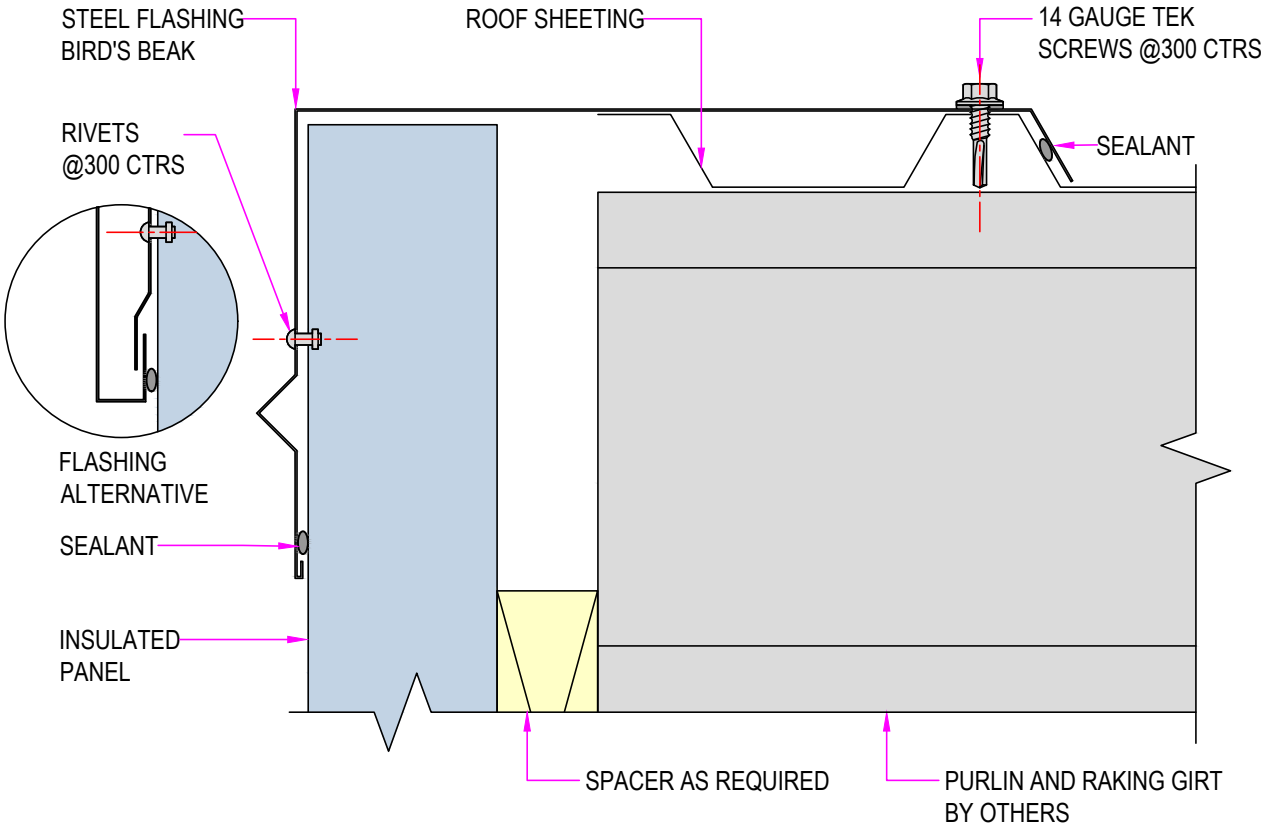
Typical Parapet Lapping Details



ELEVATION

Parapet Details

Typical Parapet Flush Details

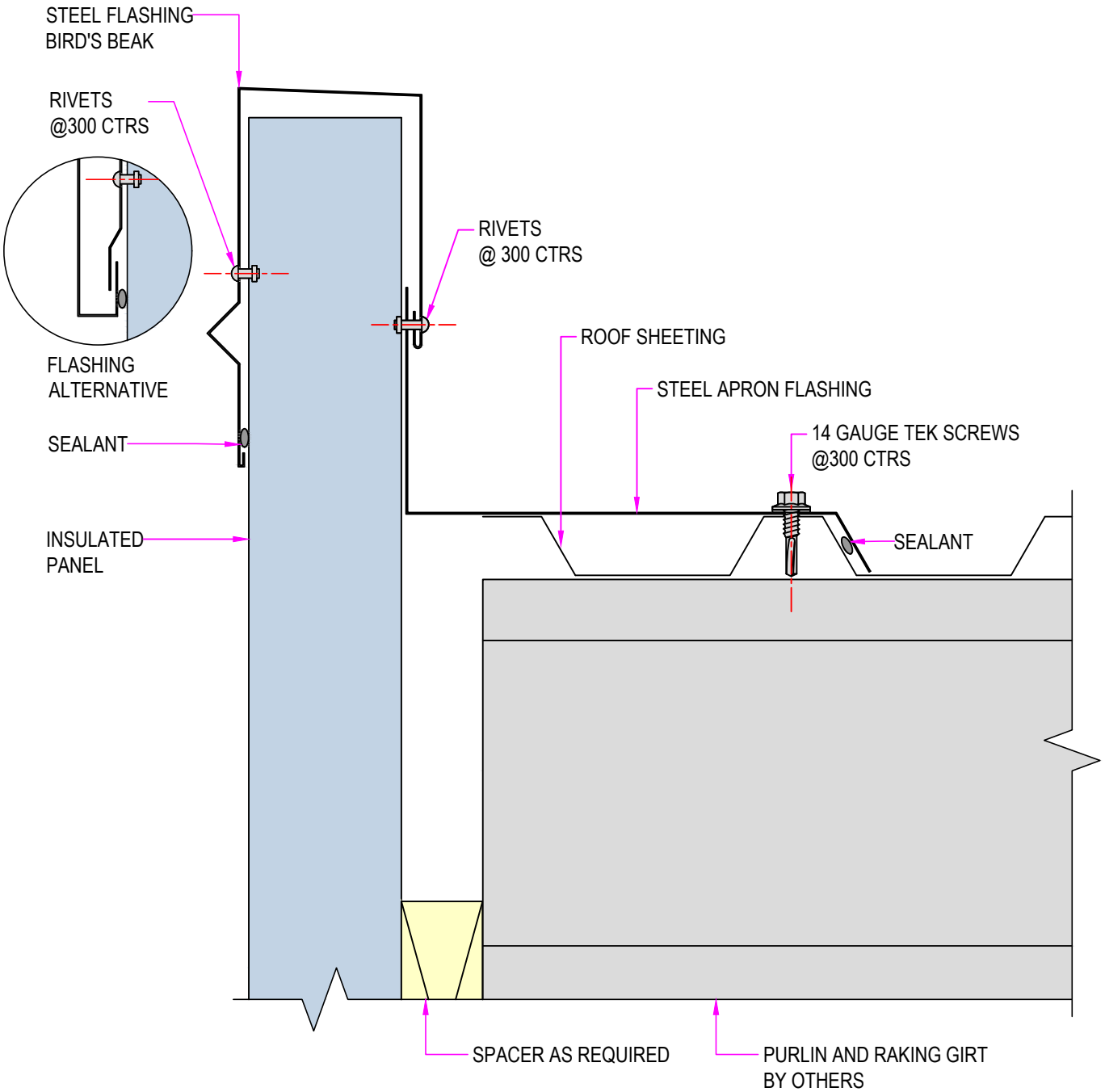


ELEVATION

ETE-EP-CL015-REV01A

Parapet Details

Typical Parapet Step Down Details

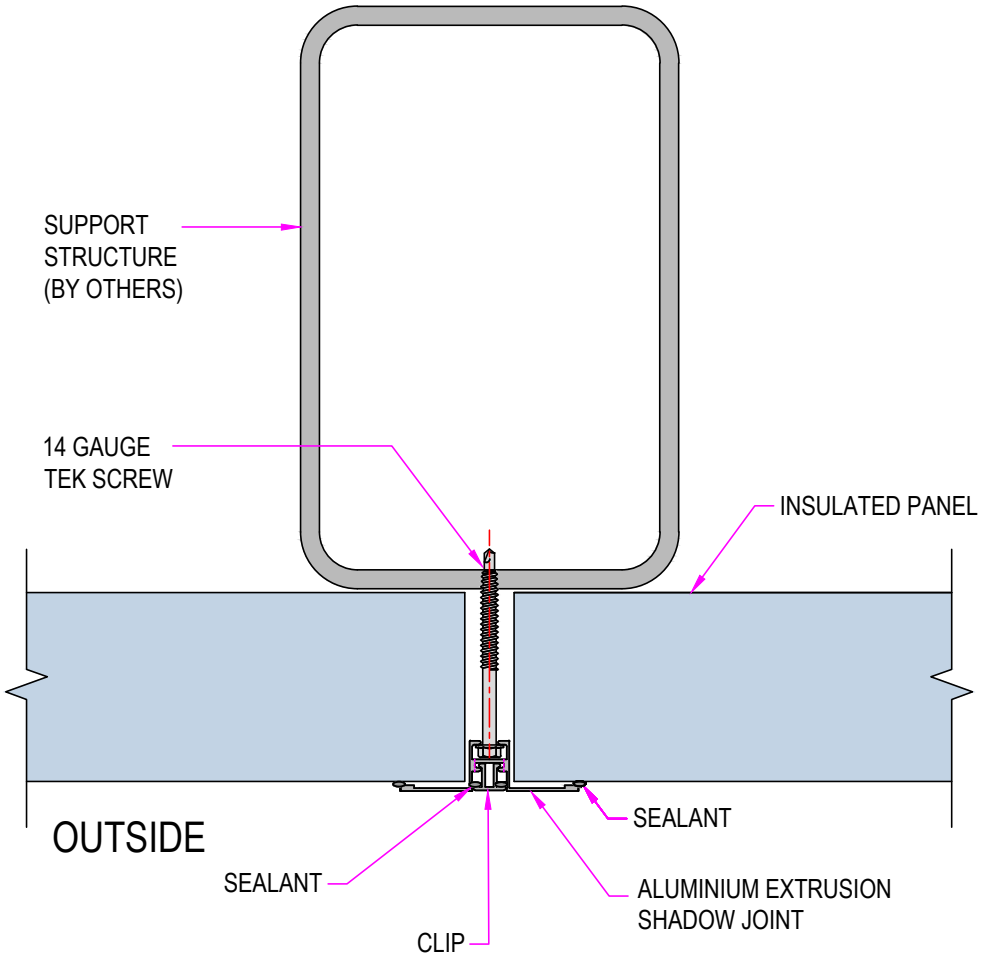


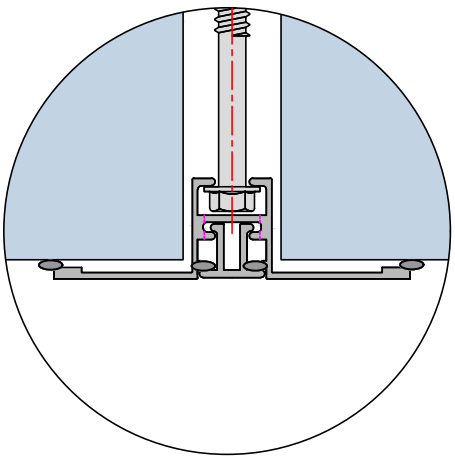
ELEVATION

ETE-EP-CL017-REV01A

Expansion Joint Details

Typical Expansion Flush Joint Details - Horizontal



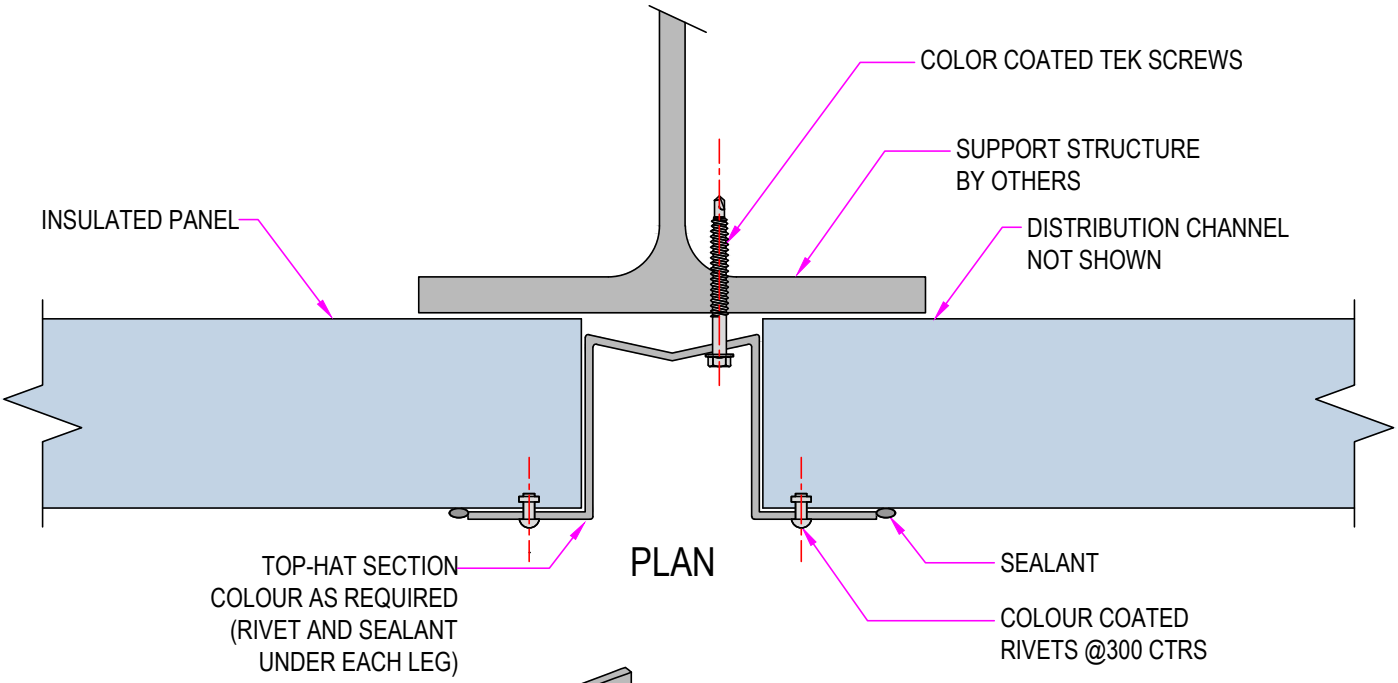


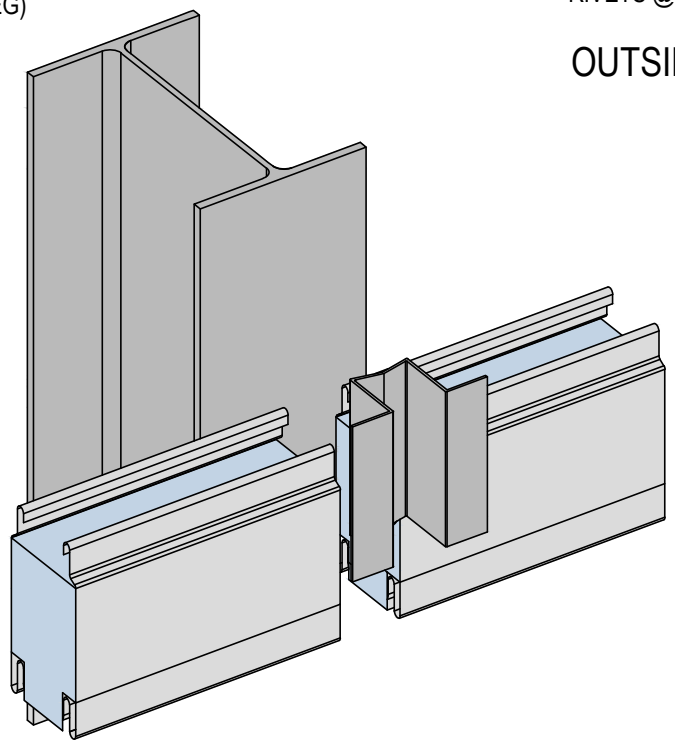
PLAN

BPE-EP-PA013-REV00B

Expansion Joint Details

Typical Expansion Shadow Joint Details

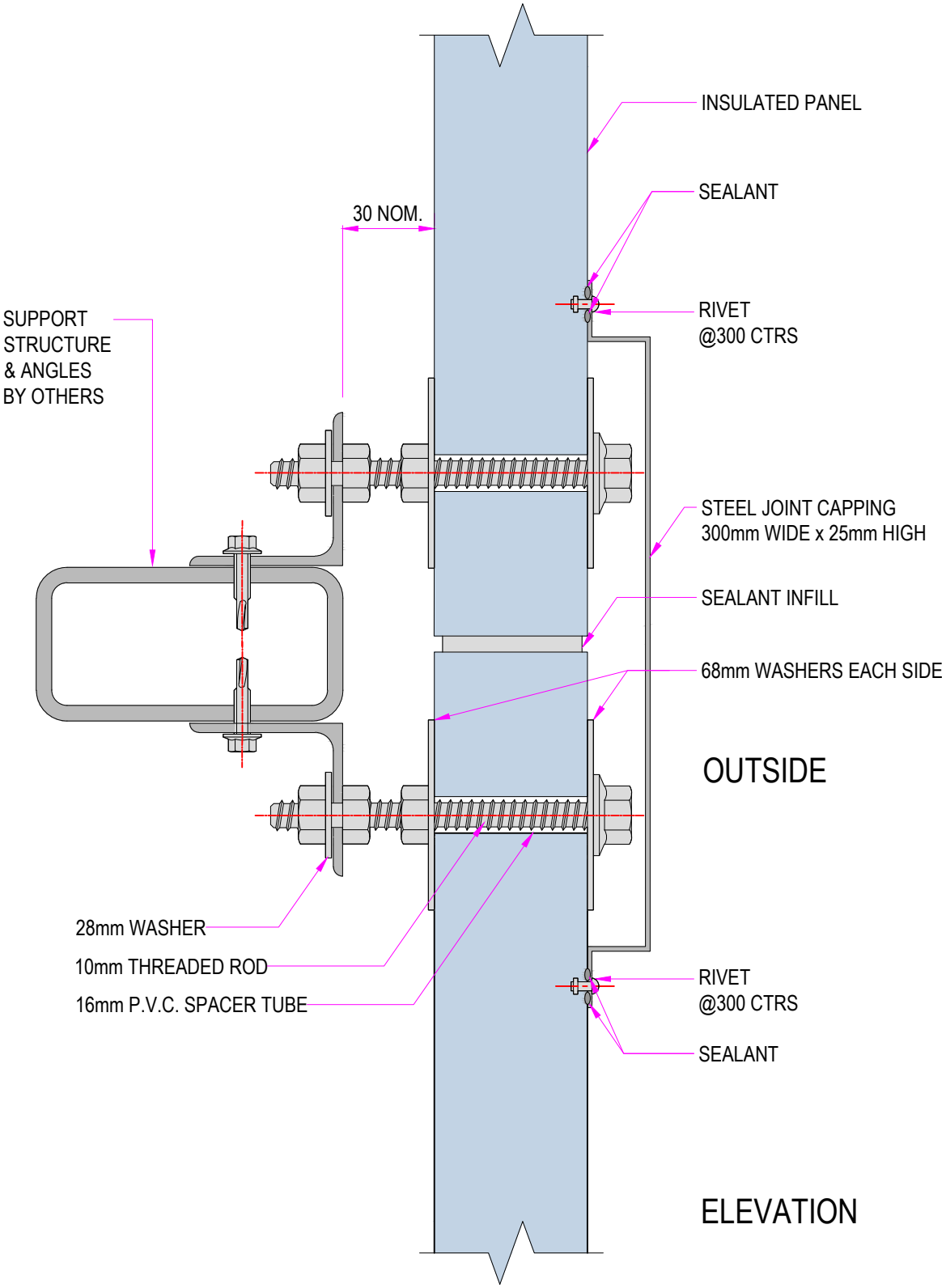




ETF-MW-CL011-REV00A

Expansion Joint Details

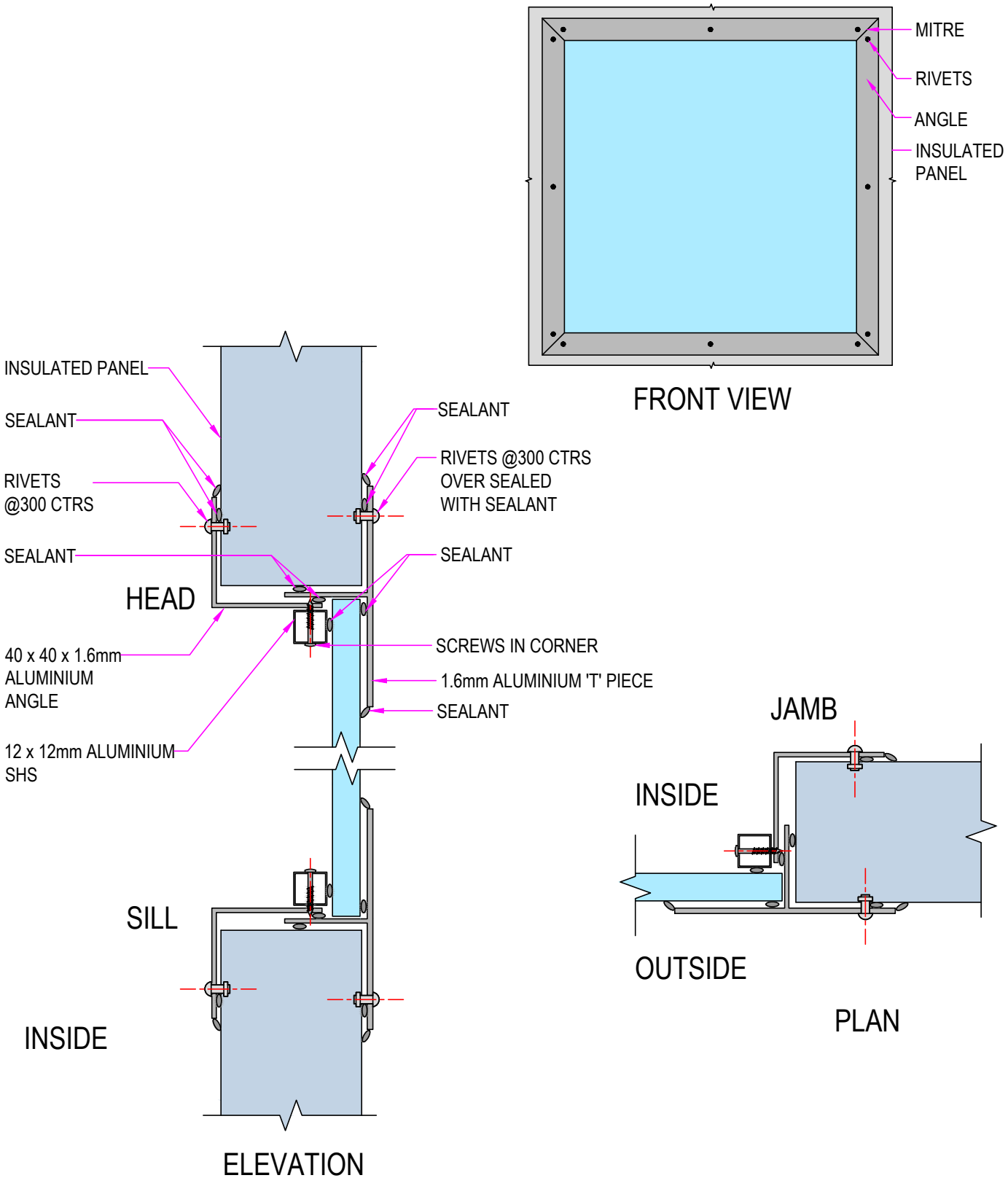
Typical Expansion Capped Joint Details



ETE-EP-CL031-REV00B

Window Details

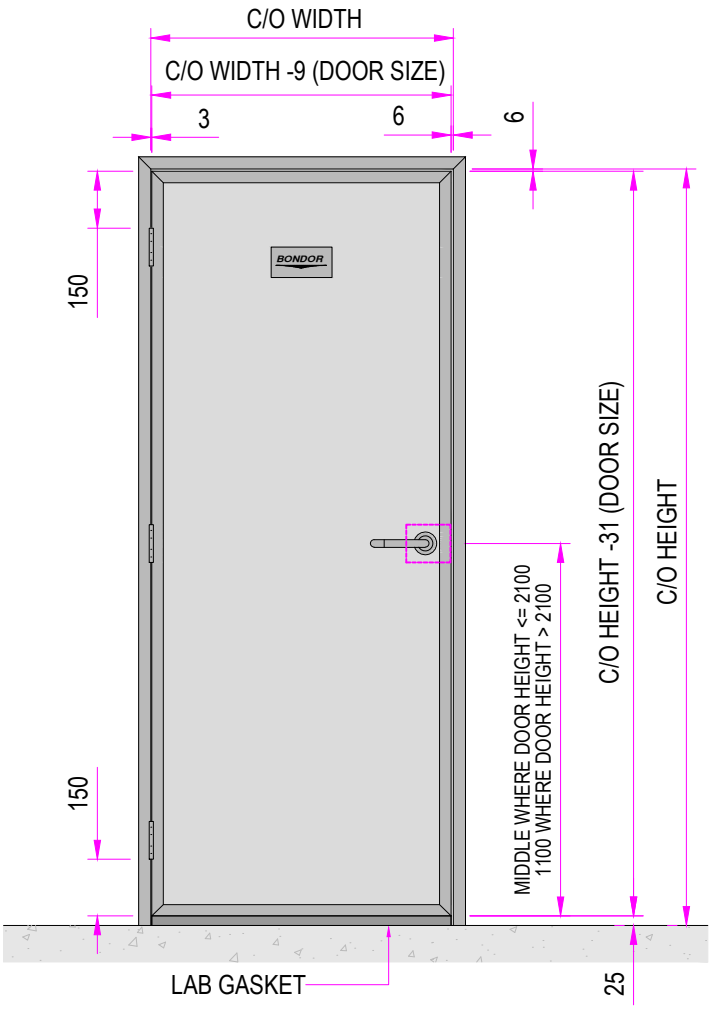
Typical Window Face Fixed Details

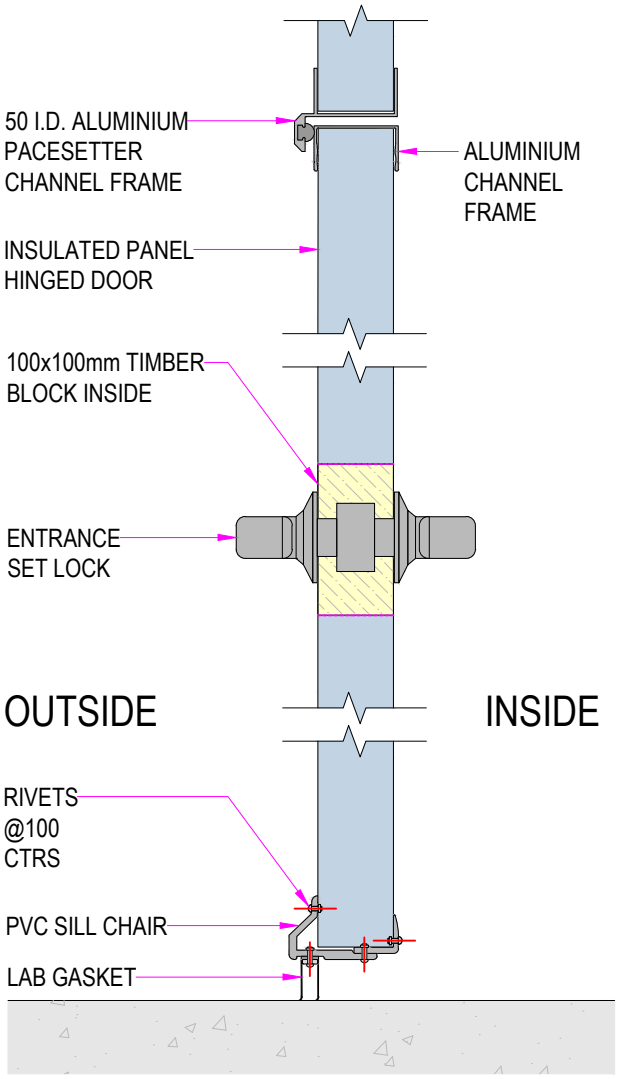


TE-MIP-PI-WE001-REV00

Door Details

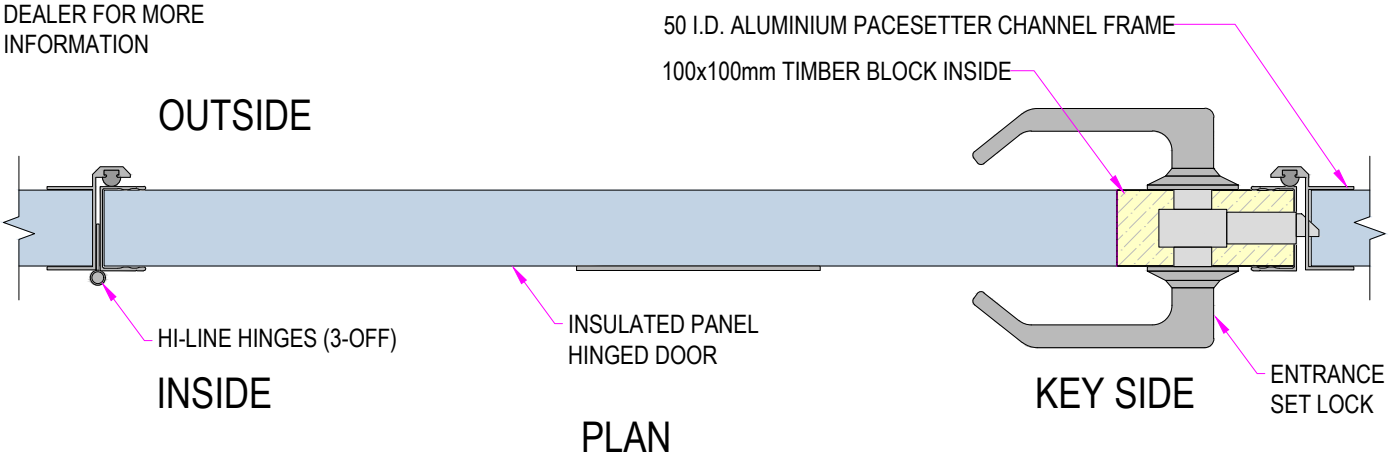
Typical Hinged Door Left Hand Details





ELEVATION

NOTE: DETAILS MAY VARY CHECK WITH YOUR LOCAL BONDOR®/METECNO® DEALER FOR MORE INFORMATION

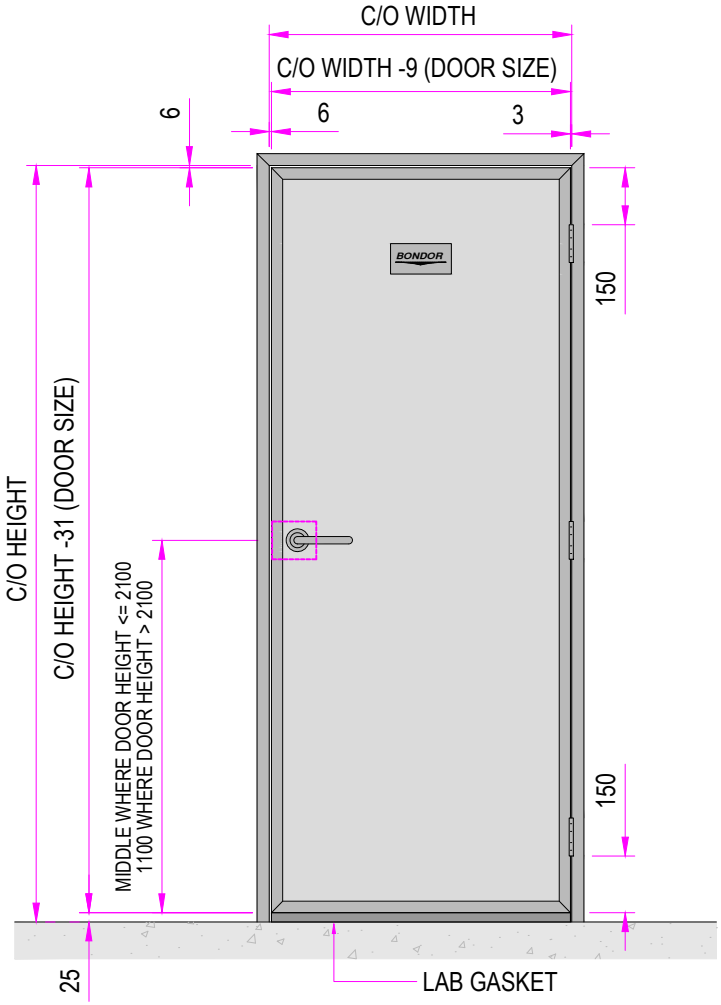


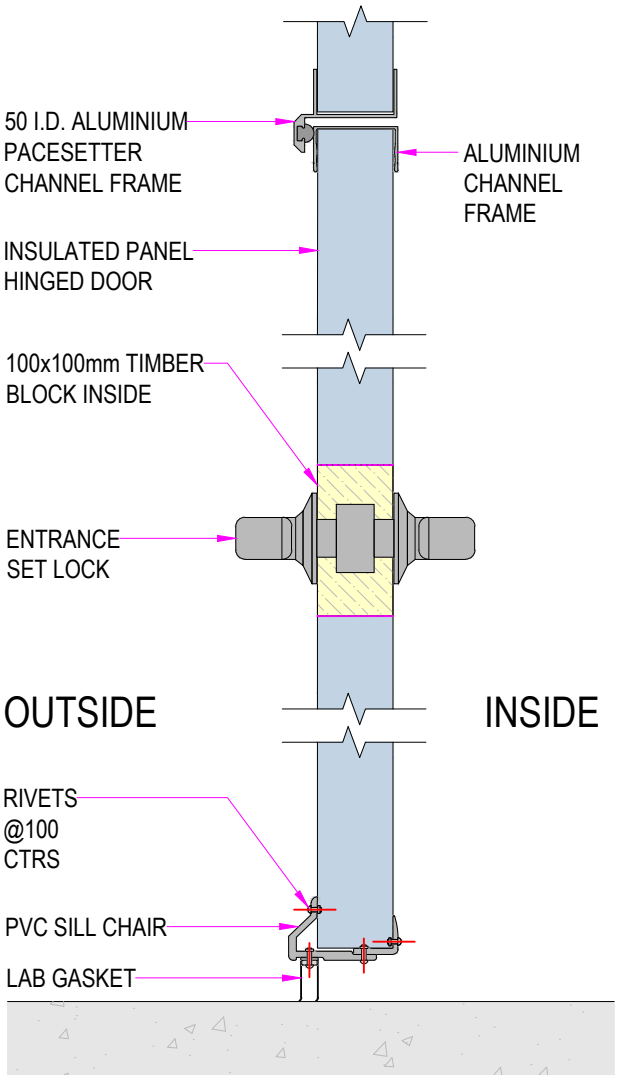
PLAN

MPP-PI-PA001-REV00A

Door Details

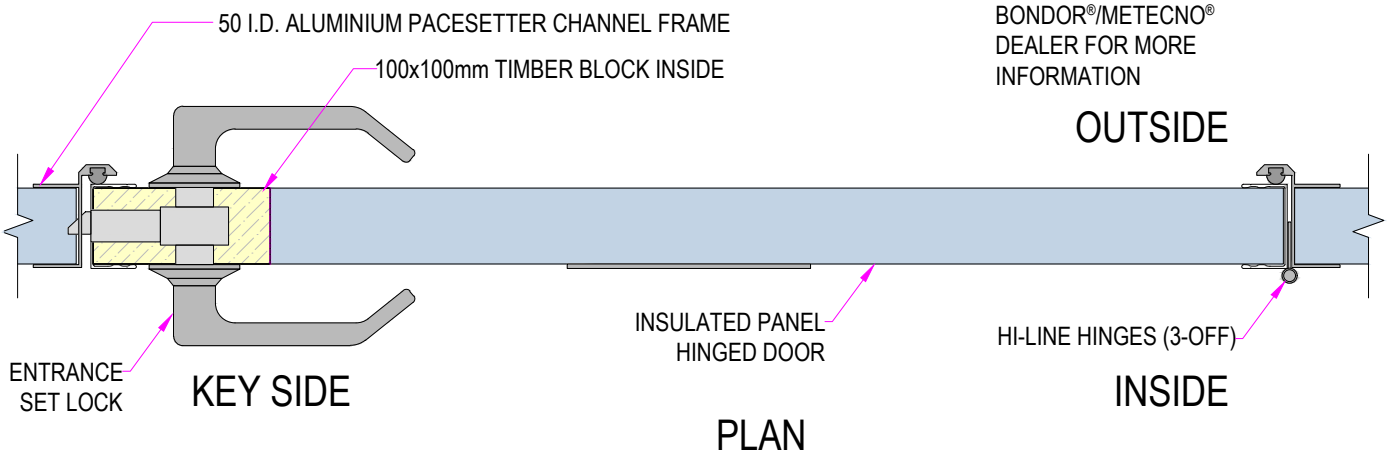
Typical Hinged Door Right Hand Details





ELEVATION

NOTE: DETAILS MAY VARY CHECK WITH YOUR LOCAL BONDOR®/METECNO® DEALER FOR MORE INFORMATION



PLAN

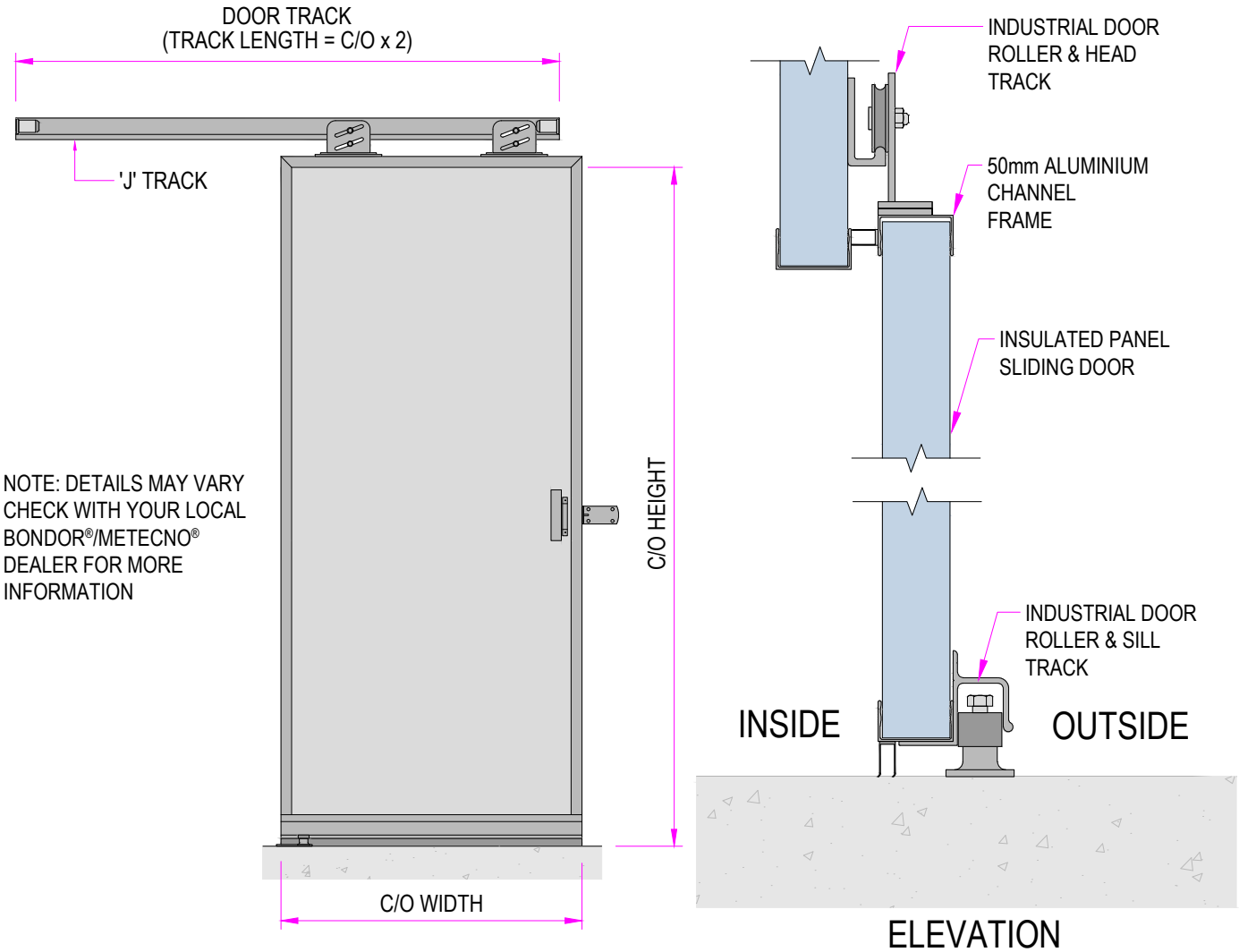
ETF-MW-PA005-REV00A

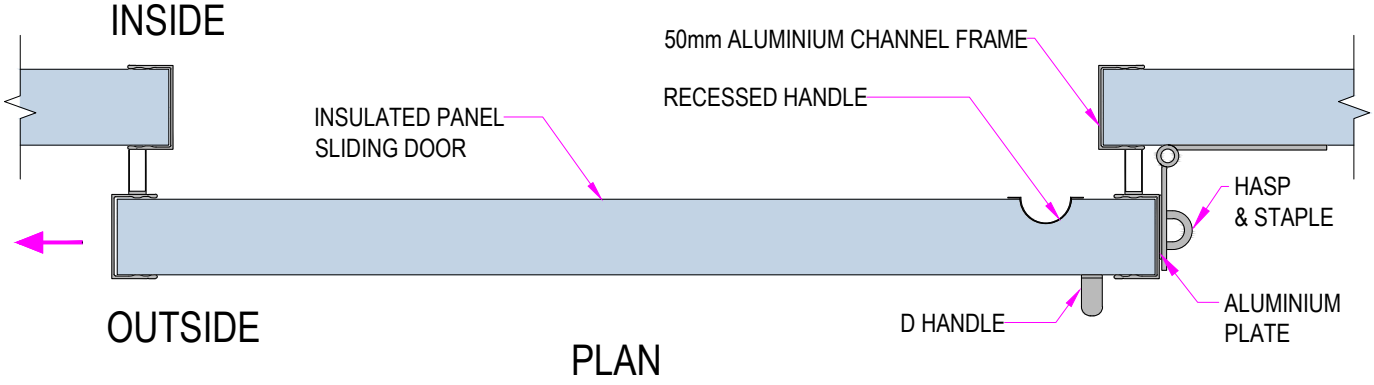
Door Details

Typical Sliding Door Left Hand Details

LOOSE ITEMS

(2-OFF) 25mm DOOR STOPS ASSEMBLY
(1 - OFF) 'J' TRACK & FIXINGS (LONG RIVETS)
(1-OFF) HASP & STAPLE (AS SHOWN)
(1-OFF) FLOOR MOUNTED DOOR GUIDE (25mm)



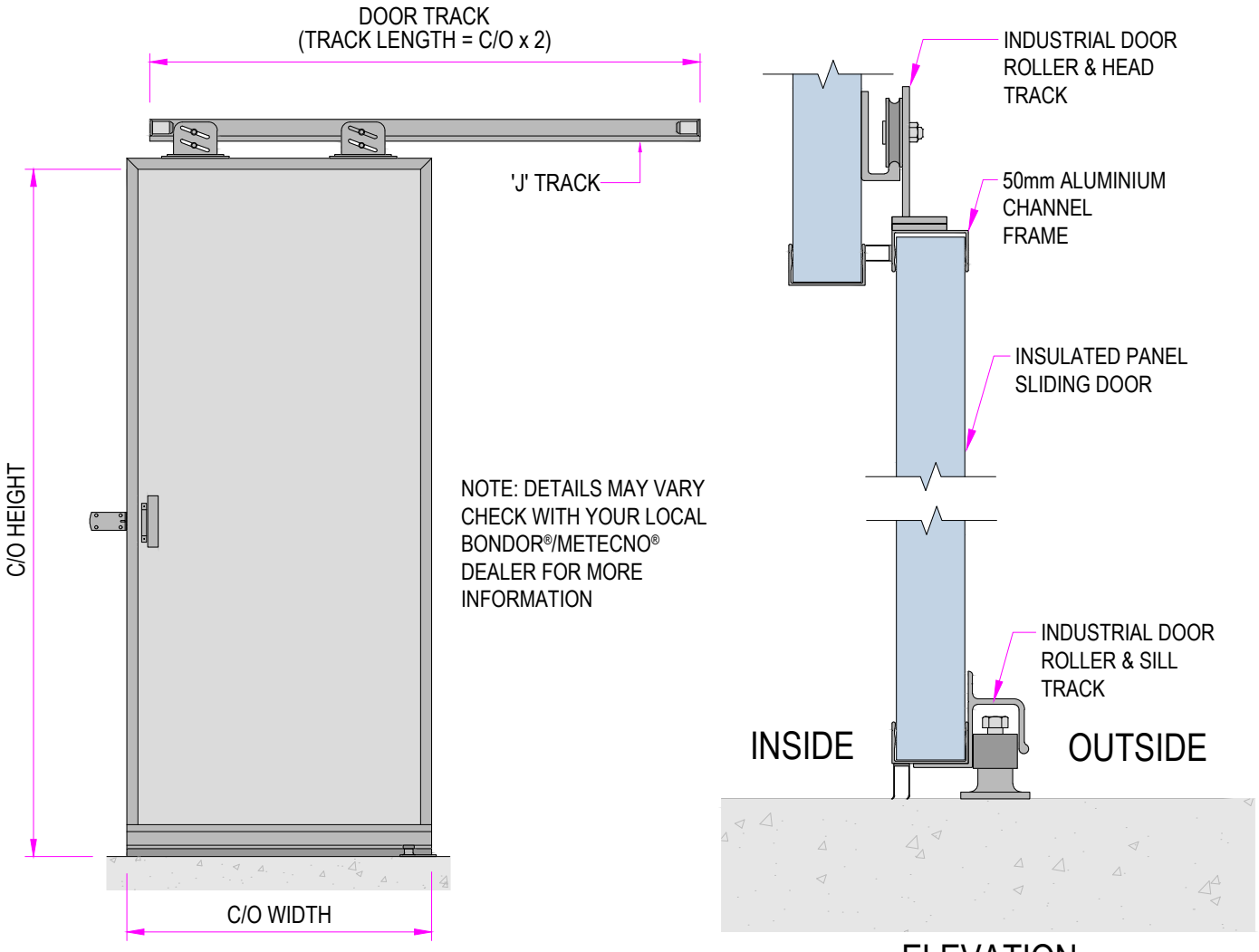


MPP-PI-PA006-REV00A

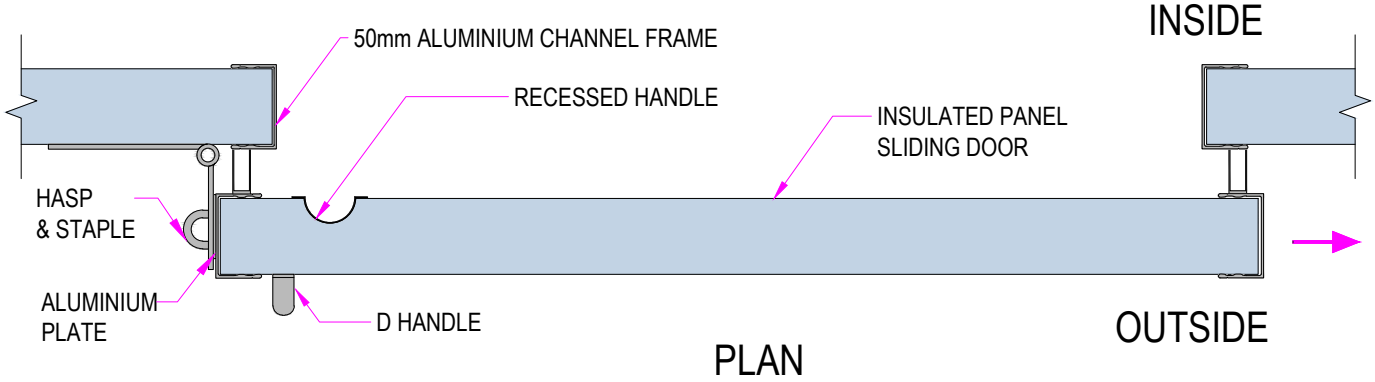
Door Details

Typical Sliding Door Right Hand Details

LOOSE ITEMS
(2-OFF) 25mm DOOR STOPS ASSEMBLY
(1 - OFF) 'J' TRACK & FIXINGS (LONG RIVETS)
(1-OFF) HASP & STAPLE (AS SHOWN)
(1-OFF) FLOOR MOUNTED DOOR GUIDE (25mm)



ELEVATION

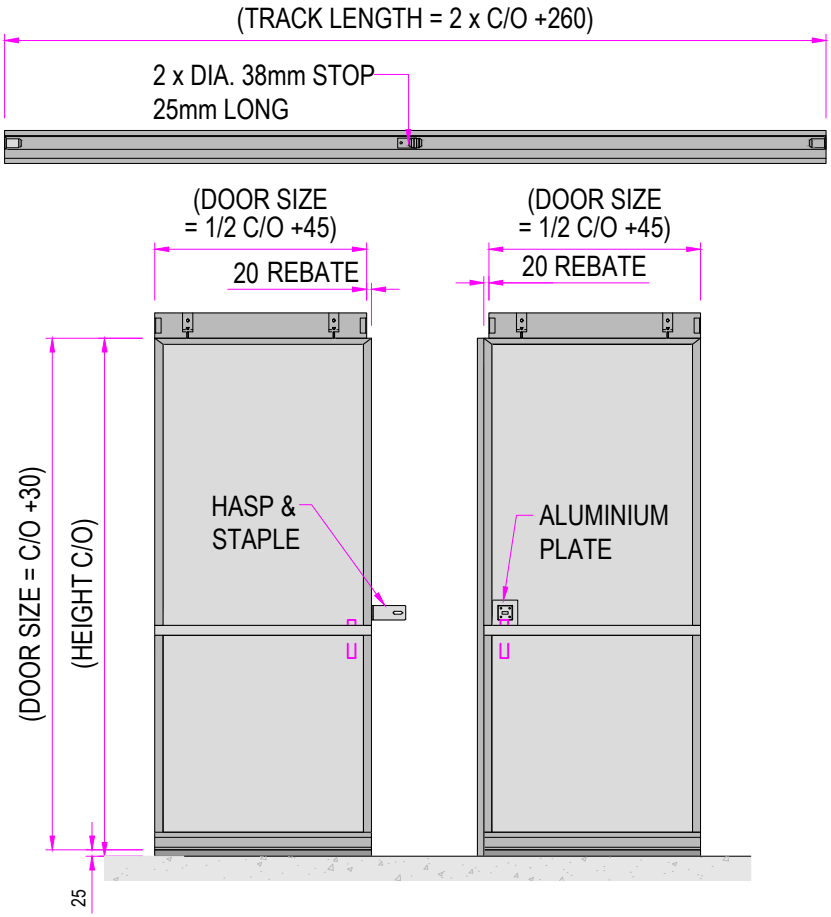


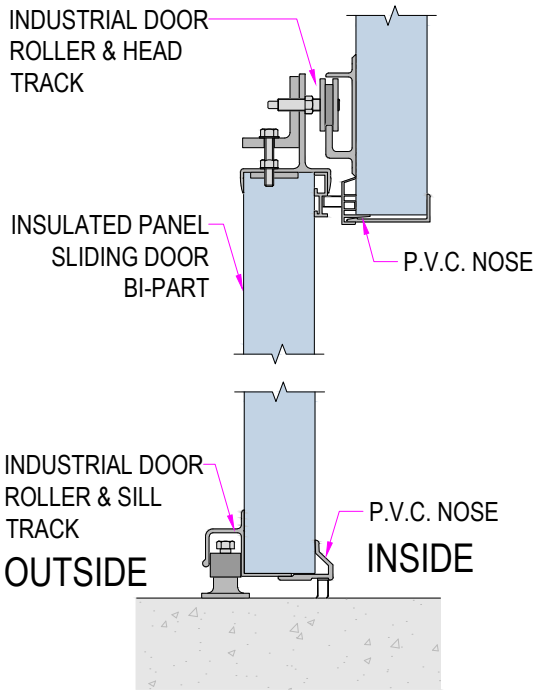
PLAN

MPP-PI-PA006-REV00A

Door Details

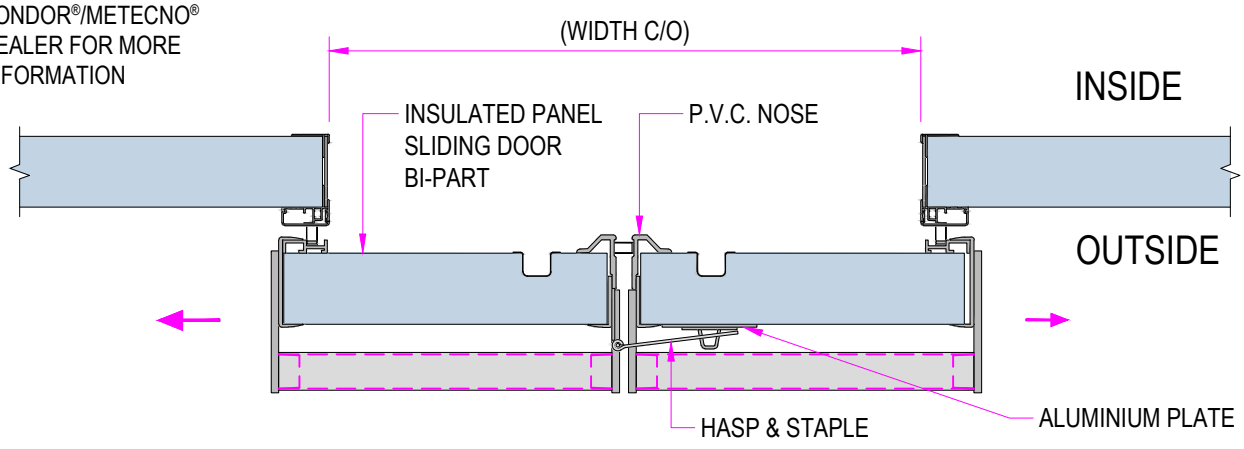
Typical Sliding Door Bi-Part Details





ELEVATION

NOTE: DETAILS MAY VARY
CHECK WITH YOUR LOCAL
BONDOR®/METECNO®
DEALER FOR MORE
INFORMATION

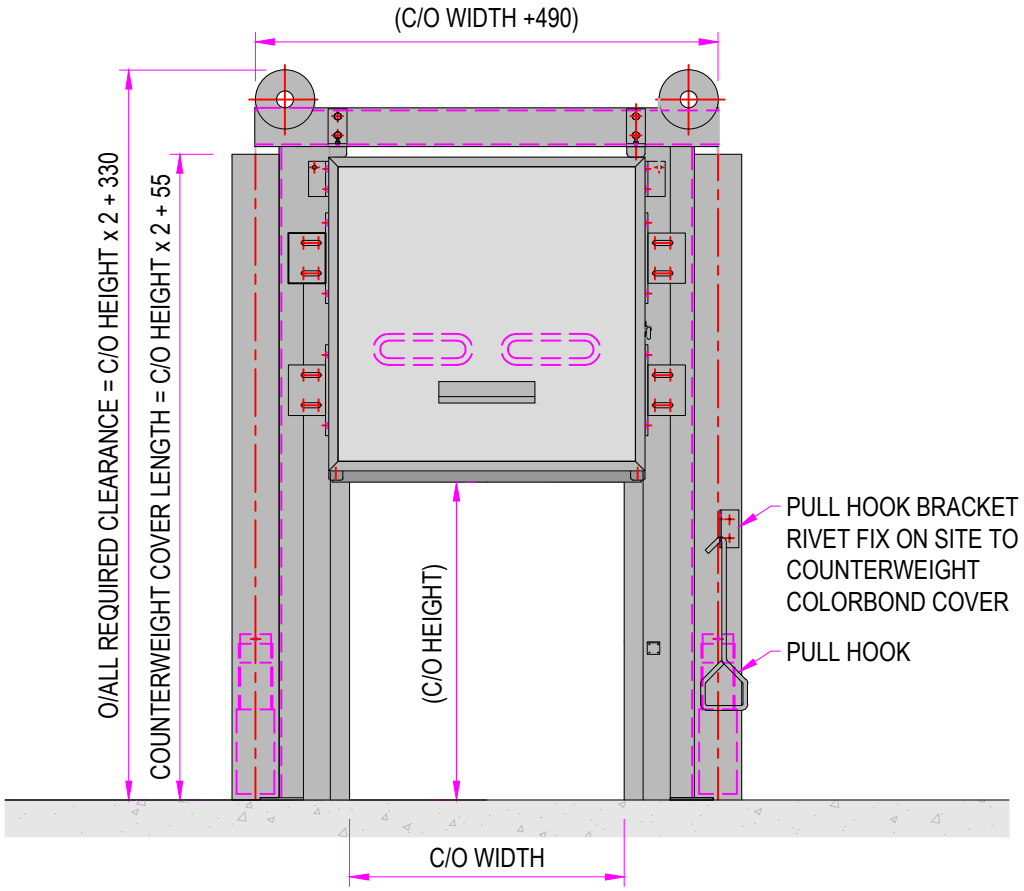


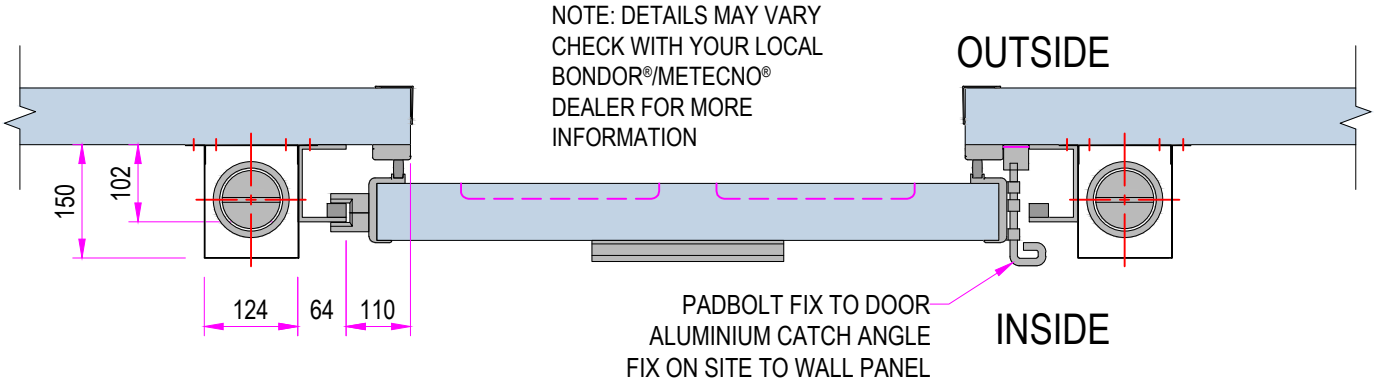
PLAN

BPE-EP-CS009-REV00A

Door Details

Typical Sliding Door Vertical (Chain Operated) Details



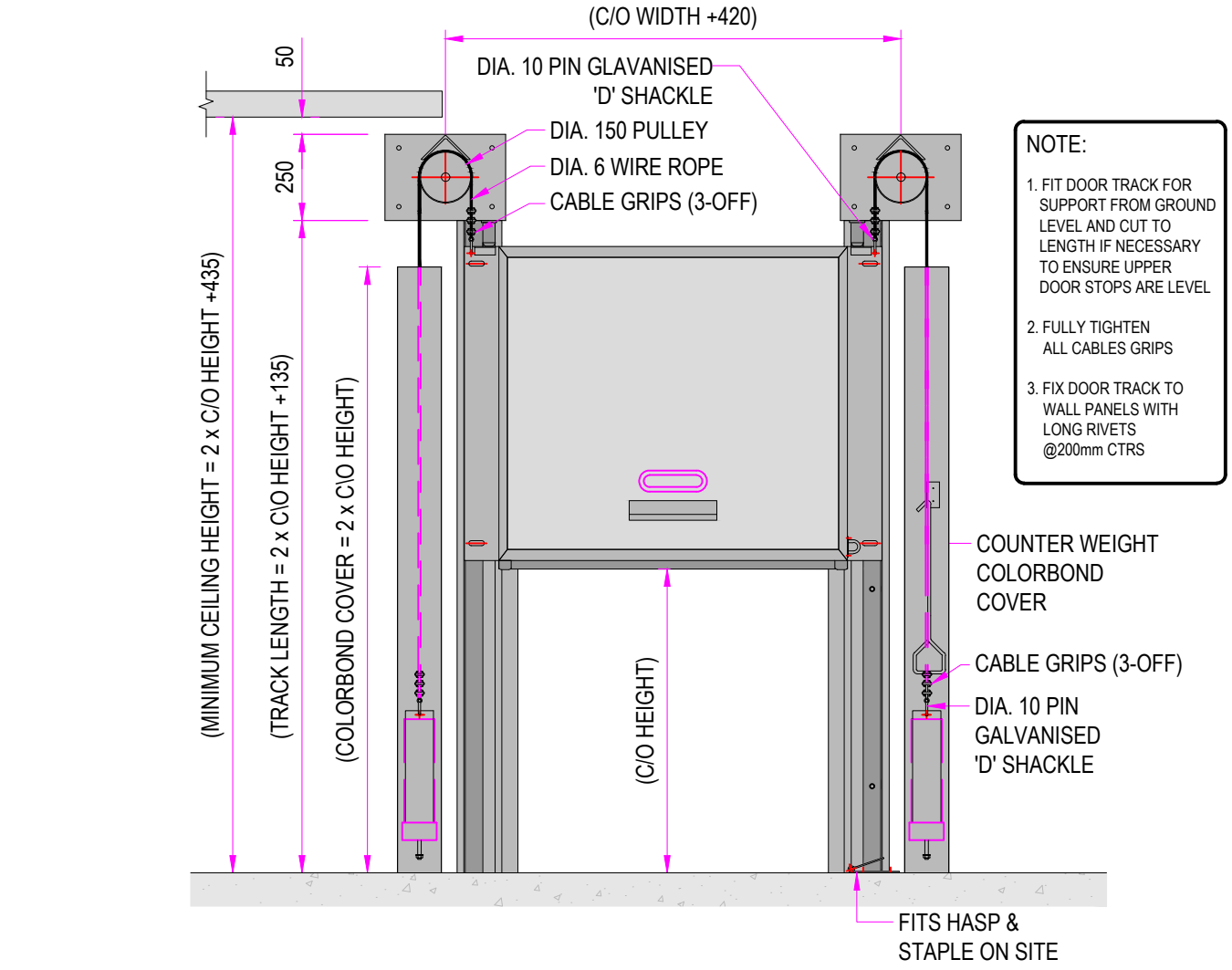


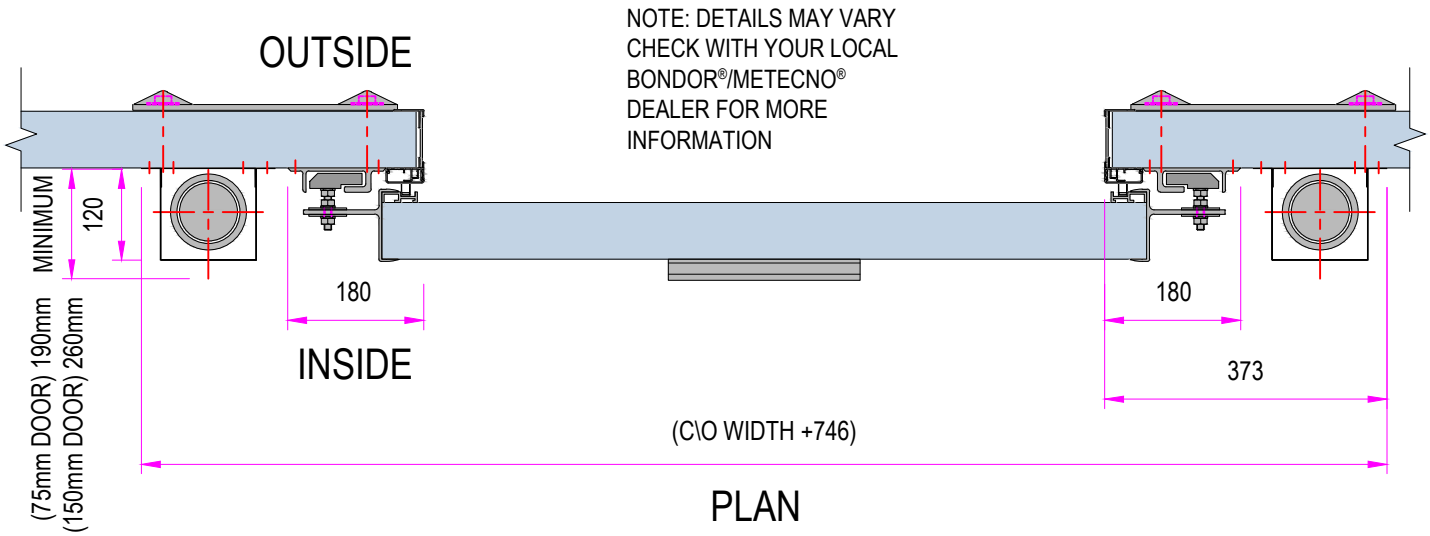
PLAN

MPP-PI-CS009-REV00A

Door Details

Typical Sliding Door Vertical (Wire Operated) Details

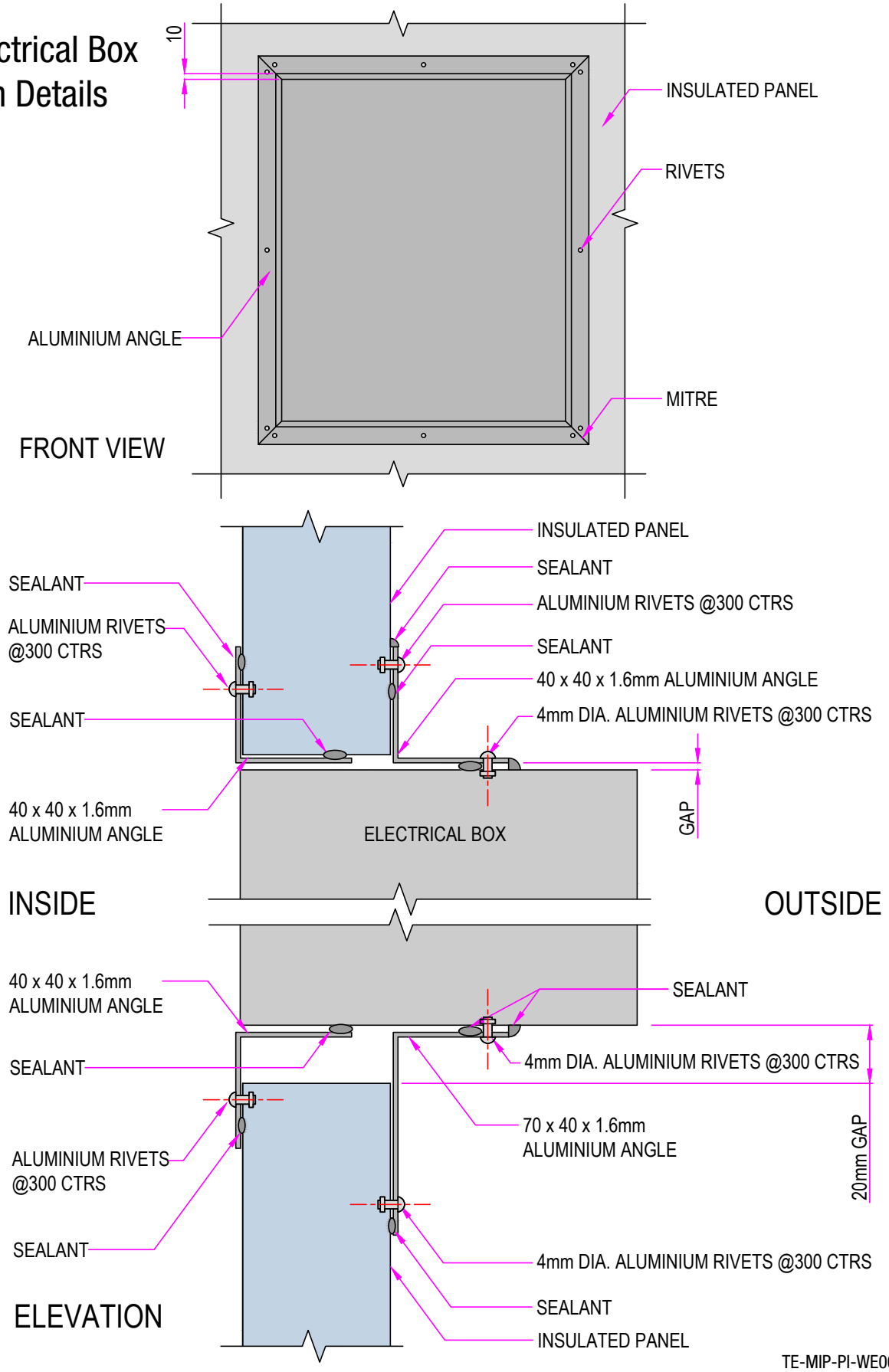




MPP-PI-CS010-REV00A

Penetration Details

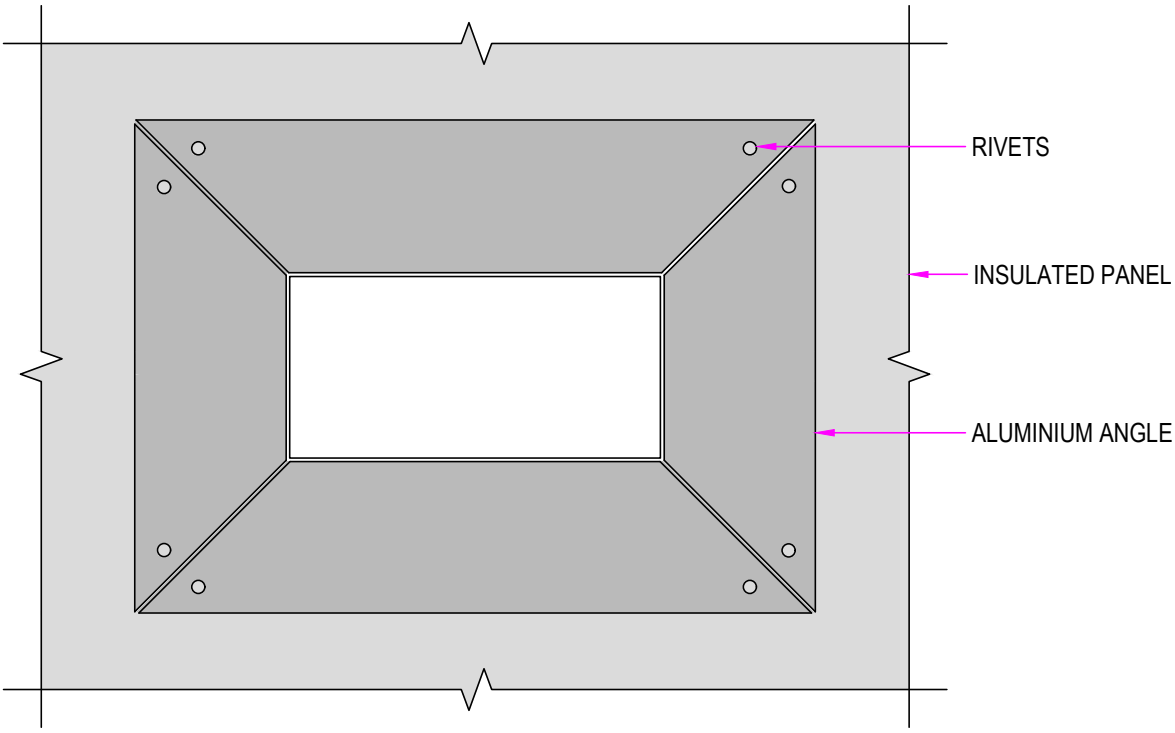
Typical Electrical Box Penetration Details



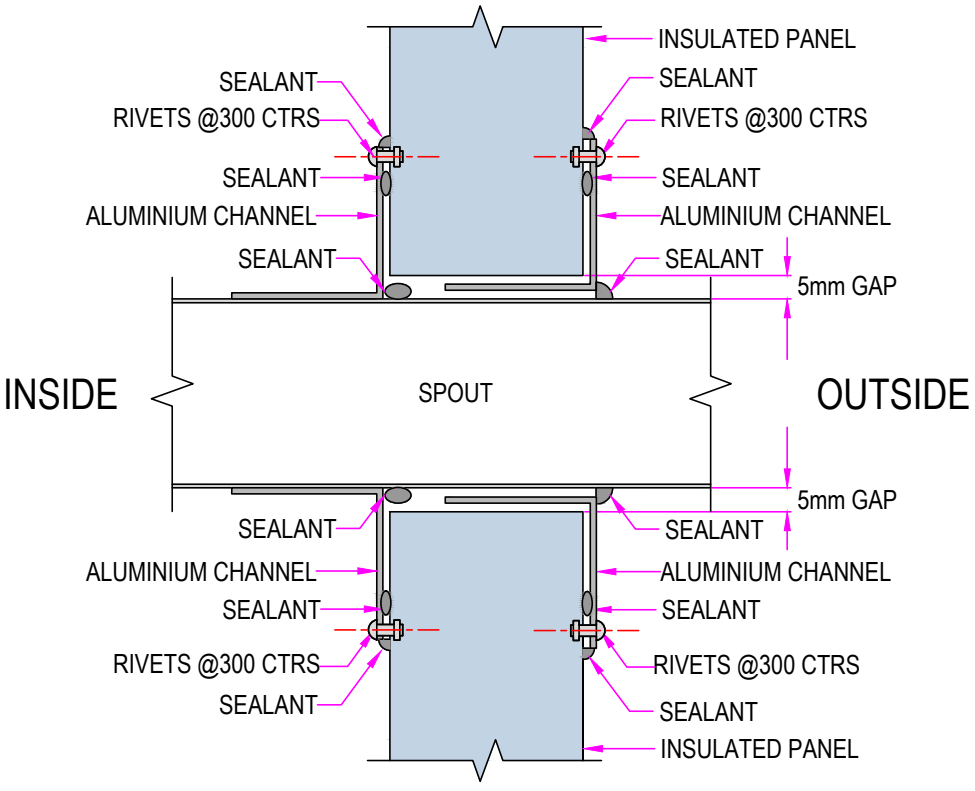
TE-MIP-PI-WE001-REV00

Penetration Details

Typical Services Penetration Details



FRONT VIEW



ELEVATION

TE-MIP-PI-WE001-REV00

Installation Guidelines - Fire Rated (FRL)

Commercial Walling Design & Install Guide

Equitilt® Flameguard® Fire Rated Wall Installation Details (FRL)

Introduction

For many years Bondor®/Metecno® have been developing insulated panelised systems to satisfy "FRL - Fire Resistance Level" requirements in accordance with the National Construction Code (NCC) and associated Australian Standards.

"Fire Resistance" is defined as the ability of an element of construction, component or structure to fulfil, for a stated period of time, the required structural adequacy, integrity, and thermal insulation during exposure to a fire.

Numerous tests and assessments have been conducted to validate Bondor®/Metecno® FRL systems in accordance with AS1530.4 "Methods for Fire Tests on Building Materials, Components & Structures - Part 4: Fire resistance Test of Elements of Construction", in order to satisfy a broad range of building requirements. Testing is normally conducted with the proposed test assembly constructed within face of a test furnace aperture, complete with all standard installation requirements.

Test results received from an FRL fire test are given in terms of a nominal grading period that is determined by subjecting a specimen (eg. walling system) to the standard time-temperature curve regime set out in AS1530.4, to specify

- Structural Adequacy: The ability of a load bearing element of construction to support a load when tested in accordance with AS1530.4
- Integrity: The ability of an element of construction to resist the passage of flames and hot gases from one space to another, when tested in accordance with AS1530.4
- Insulation: The ability of an element of construction to maintain a temperature on the surface that is not exposed to the furnace, below the limits specified, when tested in accordance with AS1530.4

The fire resistant levels of a tested system shall be assigned in the form "structural adequacy / integrity / insulation" (xx/yy/zz)

Building designers, engineers, architects, builders and specifiers need to consider that systems tested and assessed to this Standard are given results in terms of an FRL set of figures (eg. 60/60/60) that are based on an "as-tested" or "as-assessed" assembly configuration.

Any deviations from these pre-approved configurations for a particular site or project specific application will need to be assessed by a Fire Engineer or registered Fire Testing Authority in order to validate its use in maintaining the required FRL, deemed as an "alternate solution". This is particularly important where certain design or site limitations require the standard approved system to be modified. These issues need to be raised early in the project phase in order for resolution to be undertaken.

Consideration also needs to be given to the requirements of "fire side", "non-fire side" and "fire from both sides" as defined in the NCC and Standard as well as how they impact on the configuration and orientation of the walling system. Similarly the fire protection requirements of supporting structures for the walling system need to be determined and allowed for. Penetrations in the walling system need to abide by an assessed or tested solution. Importantly the vertical/horizontal orientations of Bondor®/Metecno® panels may dictate different requirements for fixing & spanning requirements.

As Equitilt® Flameguard® panels come in 50mm,75mm,100mm & 150mm thicknesses, only 100mm & 150mm (PLUS) can be used in FRL applications.

Preparation

In preparation for the erecting Equitilt® Flameguard® panels ensure a full review of the construction drawings and ensure all components have been received. Check the supporting structure complies with the project specification and that all substrate (including slabs, kerbs and sub frames) are fixed, straight and fit for purpose. Finally ensure all supports have been installed.

General Precautions

When cutting Equitilt® Flameguard® panels and accessories use dust extraction equipment and wear appropriate hearing, eye, breathing and personal protection equipment. Ensure that all relevant SDS (Safety Data Sheets) are available for each material, component, chemical, sealant, etc, incorporated in the system.

Panel Joint Installation

Where multiple vertical or horizontal panels are to be installed in a band, the bottom row of panels should be installed first, with the horizontal expansion joints located at the support sub-structure. Check the panel spacing and installation sequence and which way the male/female joint will be orientated, determine where the first panel will be located. Note concerning horizontal panel applications, the male joint will face upwards. Ensure all required supports, accessories and flashing elements such as base & top channels, internal corner flashings and shelf angles have been installed. Note all flashing, fixings & rivets must be steel, there are specific minimum size & thickness specifications for flashings, refer to drawings for details. This applies equally to required fire resisting sealants, tapes and paints

Measure the required dimensions of the first panel, including required rebates & corner mitres and cut to suit. It is recommended to tape foam to the top of the trestle to reduce the risk of scratches. The protective film on the internal side must be removed before installation. The protective film on the external side must be partially removed along panel's edges, joints & locations where removal of film after installation will be difficult. Some fire rated systems will require Promat Cafco WB3 intumescent paint to be applied to the panel core edge. Refer to Table 1 for vertical panel joint option and Table 2 for horizontal panel joint options, as well as FRL construction drawings chapter for clarification. Approved parapet details are also available for various height extensions. Importantly, the correct fixing method, including fastener numbers/types, needs to be applied based on the wall supporting and spanning arrangement for the required FRL.

Table 1: Equitilt® Flameguard® Vertical FRL System Details

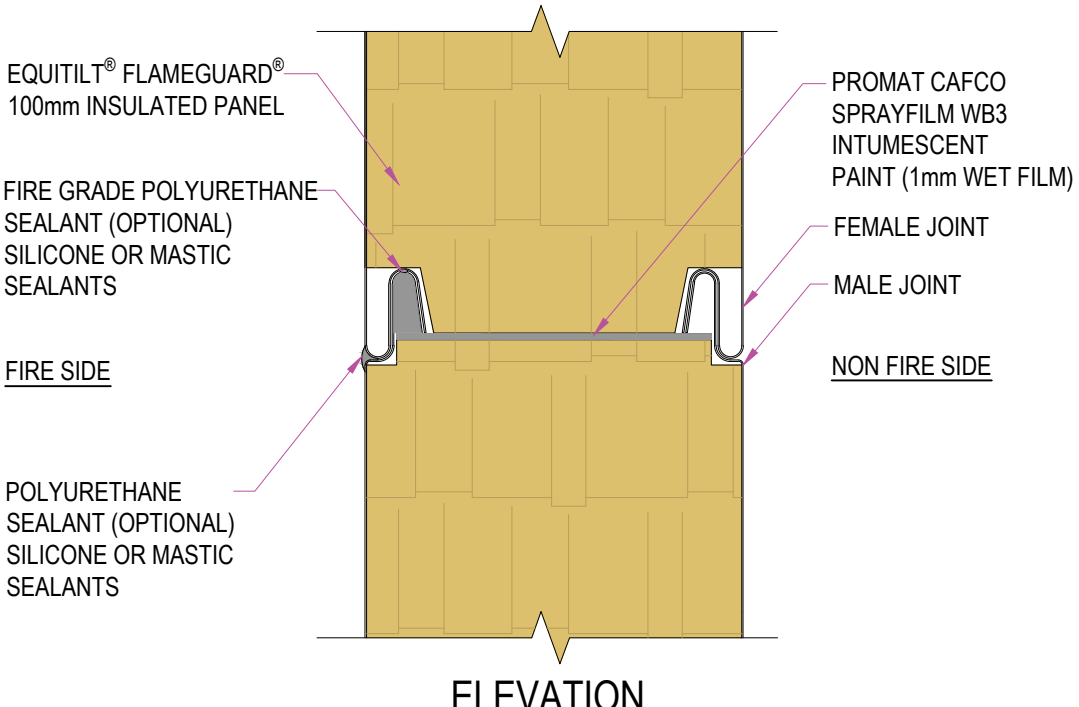
Panel Thickness	100mm	100mm	150mm	150mm	150mm
Maximum FRL (Fire Resistance Level)	-/60/60	-/90/90	-/60/60	-/120/120	-/180/180
Intumescent Paint on Core Edge	No	Yes	No	Yes	Yes
Rivets Male / Female Joint Both Sides	300mm	none	300mm	300mm	300mm

Table 2: Equitilt® Flameguard® Horizontal FRL System Details

Panel Thickness	100mm	100mm	150mm
Maximum FRL (Fire Resistance Level)	-/60/60	-/90/90	-/120/120
Intumescent Paint on Core Edge	No	Yes	Yes
Rivets Male / Female Joint Both Sides	300mm	none	300mm

Panel Joint Detail

Example Shown: Horizontal Panel 100mm -/90/90



ELEVATION

ETF-MW-FR175-REV00

Base / Wall Installation

Apply sealant to the slab and install the steel base angles/channels as necessary onto the slab using the appropriate fixings. Refer "Base/Wall Detail" diagram.

For both vertically and horizontally oriented panels, an infill of mineral wool needs to be placed at the floor level between the base fixing angles prior to panel installation.

Apply sealant to the inside of the angles/flashings.

Lift the first panel into position using an appropriate lifting device, noting that panels can be installed manually if within OHS weight limitations.

Check that the panel is level then fix insulated panel to support frame or flashings/channels by threaded rod, mushroom bolts, Tek Screws or rivets as specified ensure the fasteners are not over tightened. Apply sealant to the external female joint as necessary. The second panel is installed with a slight inclination it must be pushed against the previous panel, in order to obtain a perfect coupling between the panels. Check that the panel is level & fully engaged then fix panels together top and bottom with locator rivets, then fix insulated panel to support frame or flashings/channels by threaded rod, mushroom bolts, Tek Screws or rivets as specified, ensure the fasteners are not over tightened.

The maximum allowable span between fixing points and number of fixings required per support varies depending on the FRL & panel thickness as per Table 3, where R = 10mm steel threaded rod and T = 14 g steel Tek Screw. Spans between fixing points may need to be further reduced due to other design load considerations. eg. If the wall panels are part of the external facade of a building then they may be exposed to wind loads.

Table 3: Equitilt® Flameguard® Span Limitations & Fixing Requirements

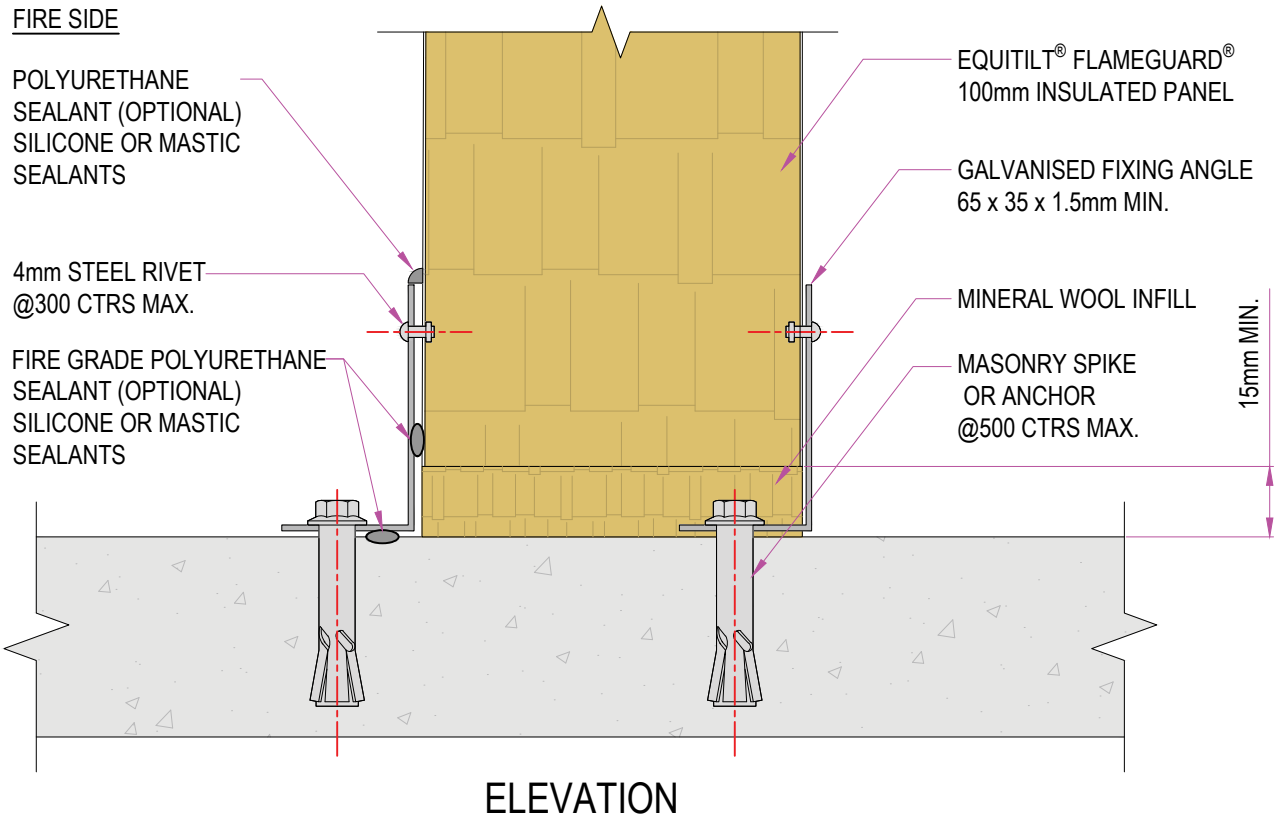
Panel Thickness	100mm	100mm	150mm
Span - FRL (Fire Resistance Level)	-/60/60	-/90/90	-/120/120
3m	2R or 2T	2R or 2T	1R or 2T
4.5m	2R or 2T	2R or 2T	1R or 2T
6m	2R or 3T	2R or 3T	2R or 3T
7.5m	N/A	N/A	2R or 4T

If another band of panels is to be installed, leave appropriate gap for support structure, see project specification. If another band of panels is to be installed, the panels should be supported at the base as per project design and one of the approved expansion joints.

Once all panels have been installed fix all remaining side, top and ancillary flashings with rivets at 300mm centres, an insert of mineral wool needs to be placed between the side flashing and the final panel. Where appropriate insert rivets in the male/female joint at 300mm centres, see Table 1 for vertical panel joint option, Table 2 for horizontal panel joint options and refer to FRL construction drawings chapter for clarification. Penetrations are permitted but only in conjunction with an 'approved' FRL penetration system. Refer to "Construction Drawings - Fire Rated (FRL)" section in this document. Approved Fire doors can also be installed within this application.

Base/Wall Detail

Example Shown: Horizontal Panel 100mm -/60/60



ELEVATION

Penetration Installation

Bondor®/Metecno® has developed its Fire Resistant walling systems in order to accommodate the requirement for services that need to pass through the wall. This is achieved via an approved penetration construction incorporating Promaseal® Bulkhead batt penetration seals. The 'penetration seals' may be used for various services provided they have been tested or assessed by others for the required FRL when installed in Promaseal® Bulkhead Batts. Refer to "Construction Drawings - Fire Rated (FRL) section in this document for more information and service-specific examples.

It is an important design consideration that the effects of penetrations in the walls are assessed early in the project in order to understand if any structural impacts on panel spans, etc, apply. The approved wall penetration size of 600mm x 600mm applies.

FRL's of up to "-/120/120" are achievable utilising Promaseal® Bulkhead Batts, with actual FRL's dictated by the type of service and associated solution being applied.

By way of example, and as per detail drawing shown in this document, the Promastop® UniCollar UC150 system used in conjunction with a 150mm uPVC Pipe, is shown penetrating the Promaseal® Bulkhead Batt mounted inside Equitilt® Flameguard® panel penetration. This system can achieve an FRL of up to "-/90/90" for 100mm thick wall panel, and up to "-/120/120" for Euitilt® FlameGuard® 150.

Other FRL approved service penetrations are allowed through the Equitilt® Flameguard® Promaseal Bulkhead batts including, but not limited to:

- Various copper pipes 19-50mm diameter (lagged up to 25mm),
- Brass pipes 32mm-100mm diameter,
- Copper/steel/iron 32mm-150mm diameter,
- uPVC pipes 40-100mm diameter,
- PEX pipe up to 100mm diameter,
- Various cables/bundles 30-60mm diameter,
- 150mm PVC pipe collar

Refer Bondor®/Metecno® for more information.

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Penetration Installation

Carefully measure and set out the proposed location of the penetration on both sides of the panel. Cut the panel and prepare the additional Promaseal® bulkhead batts & unicollar pieces ready for installation.

NOTE: Services may already be insitu before the panel wall is installed.

Table 4: Performance of 150mm uPVC Pipe Penetrating Promaseal® Bulkhead Batt

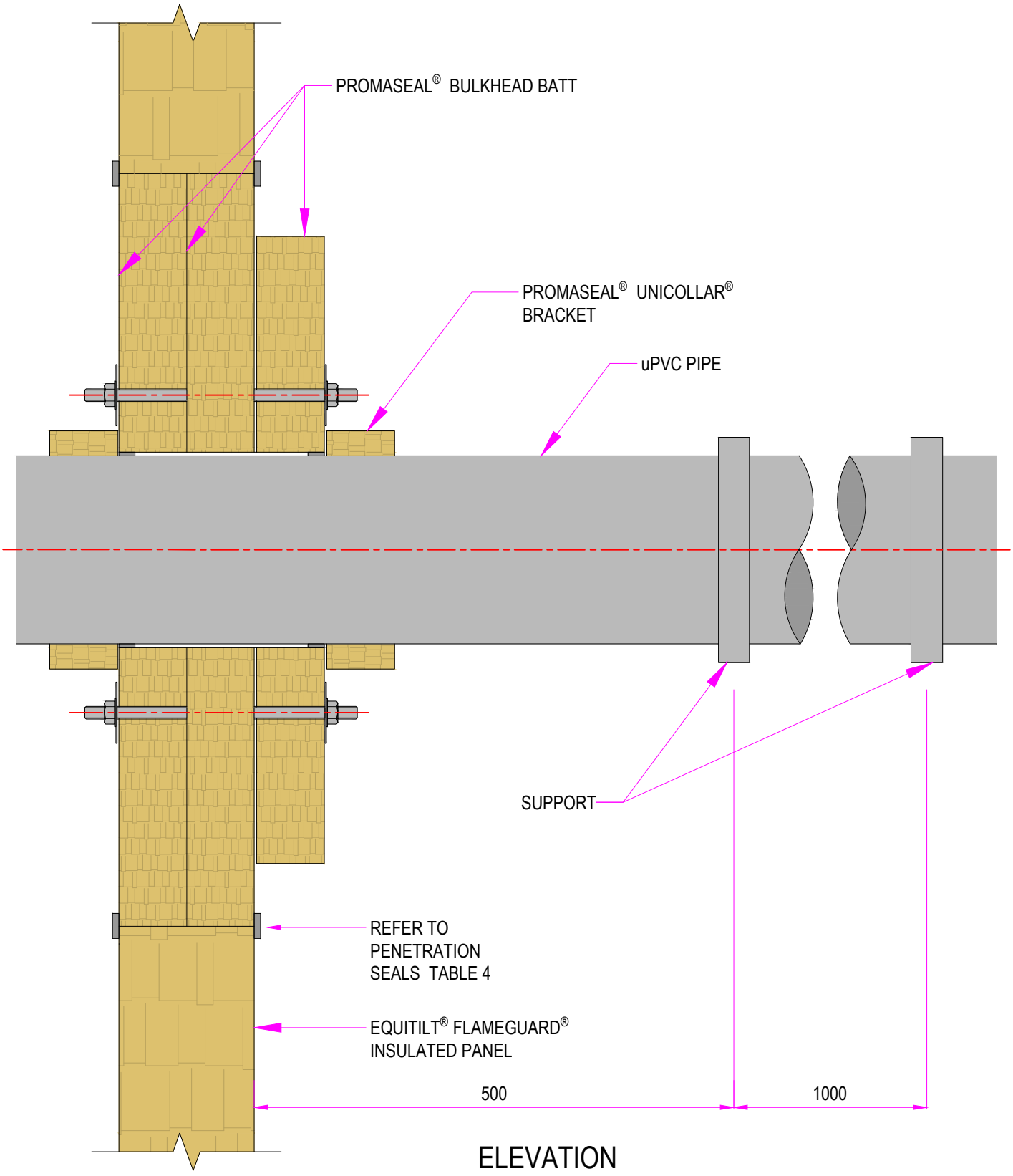
Protection	FRL
Promastop® UniCollar UC150 collar each side of wall. Promaseal® AN Acrylic sealant to min. 20mm depth.	Up to -/90/90 for Equitilt® Flameguard® 100 Note: May be limited by panel performance.

Table 5: Performance of Equitilt® Flameguard® Incorporating Penetration Seals

Pentration Seal	FRL
Promaseal® Bulkhead Batt Blank Seal.	Up to -/120/120.
Promaseal® Bulkhead Batt with Penetrations.	Performance of services that penetrate batts shall be as tested or otherwise assessed by others.

Penetration Installation

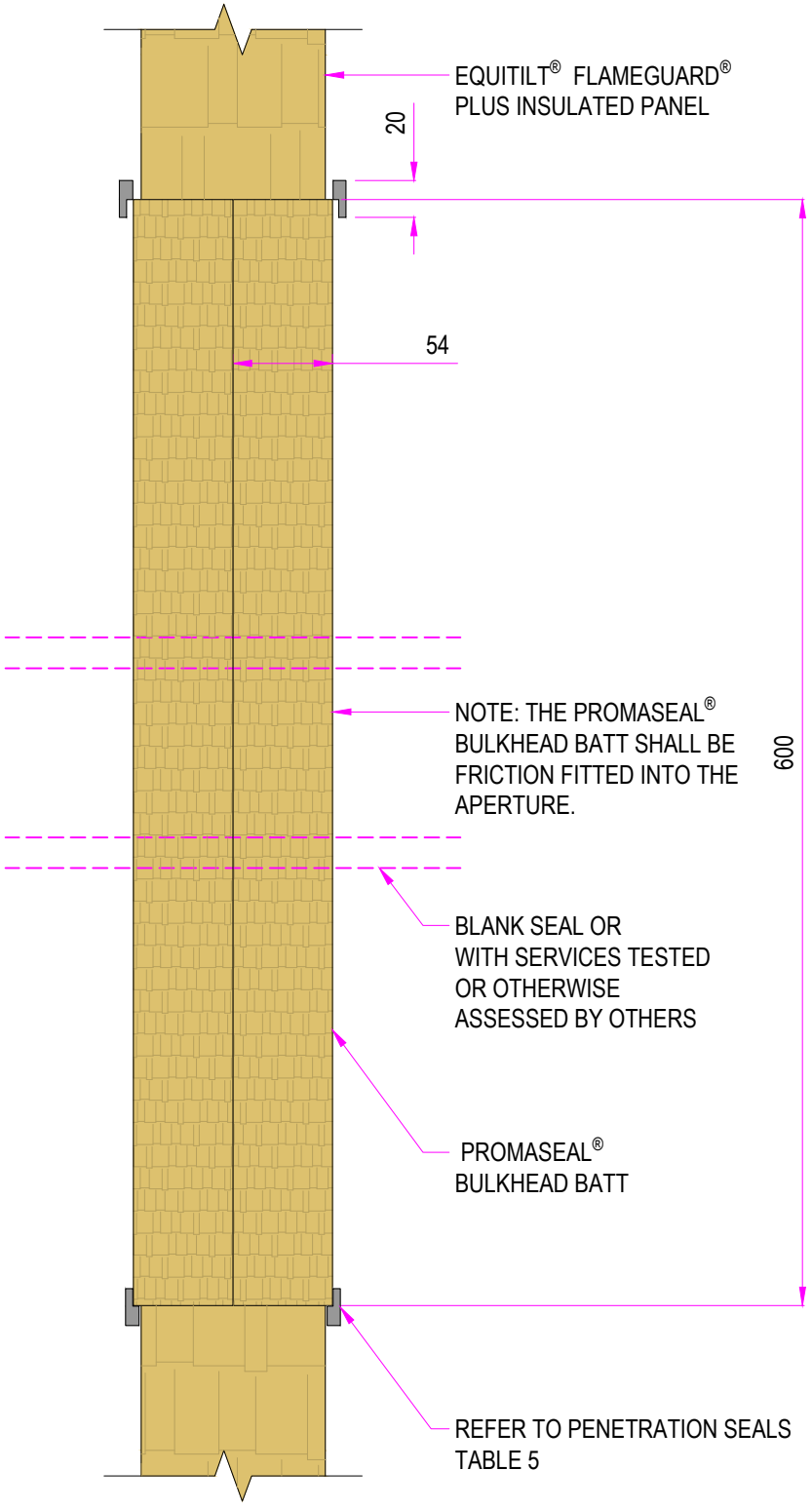
Typical Inclusion of uPVC Pipe Penetration Detail



ELEVATION

ETF-MW-FR179-REV03

Typical Inclusion of Penetration Seals Detail



ELEVATION

ETF-MW-FR068-REV02A

Door Installation

Approved 'door-sets' within an approved plaster or grout-filled door frame tested to a given FRL can be utilised in a Bondor®/Metecno® FRL walling system. Details of the door frame and associated componentry are provided in the drawing section. Importantly, the 3rd party door-sets are to have been tested for a FRL fire rating in accordance with AS1530.4 and must achieve the required walling FRL unless advised otherwise

It is an important design consideration that the effects of larger openings (including doorways) in the walls are assessed early in the project in order to understand if any structural impacts on spans, fixings & supports apply.

FRL approved Bondor®/Metecno® Equitilt® Flameguard® wall systems incorporating door-sets can achieve FRL's up to "-/180/30" limited by the stated FRL performance of the wall panels themselves within their specific project application.

Panel Wall to Panel Roofing / Sheet Roofing Installation

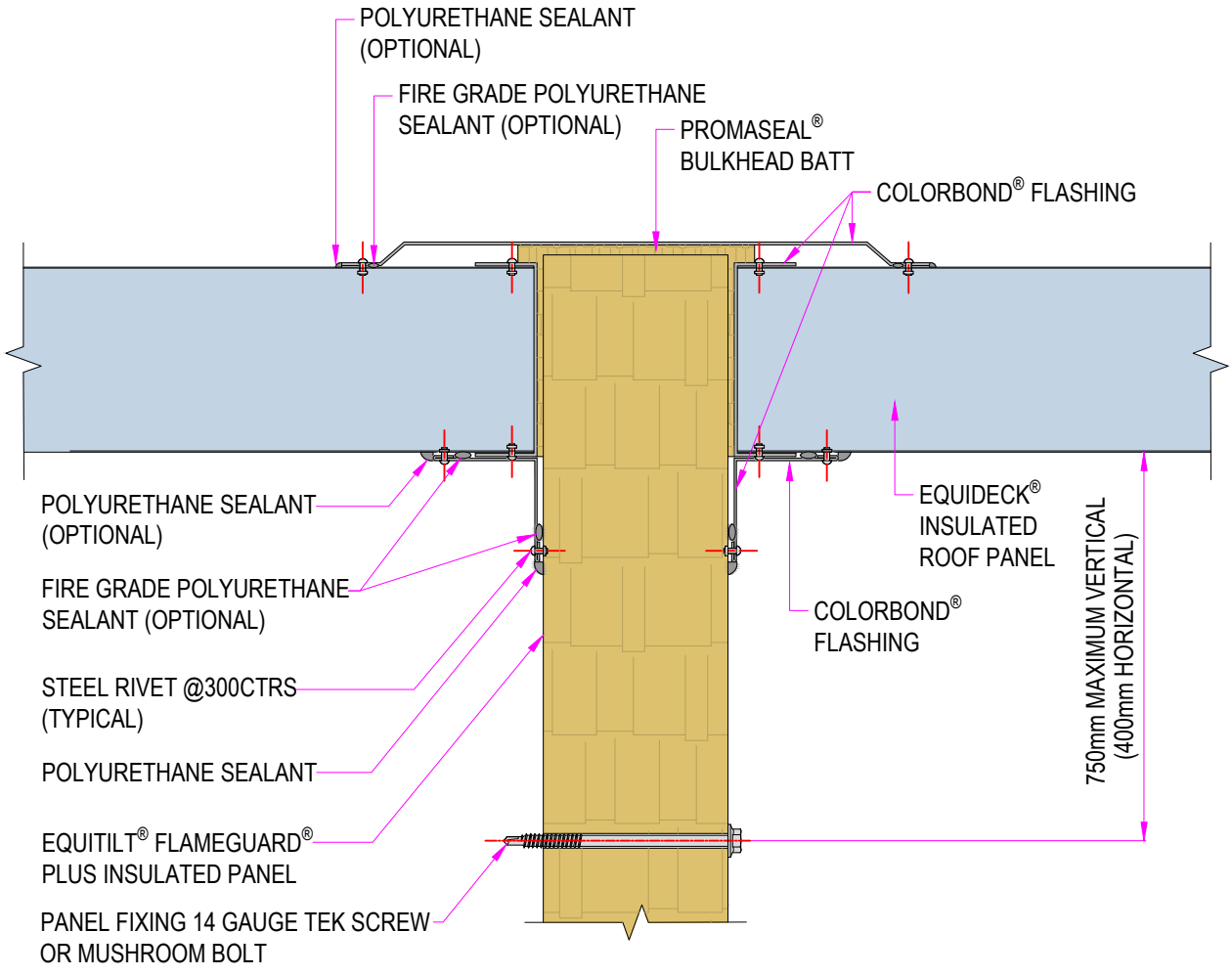
In order to allow fully panelised construction of walls and roofing where FRL's are mandated, Bondor®/Metecno® has developed a number of approved construction details to allow for this interface.

To this end, Equitilt® Flameguard® walling panel can be configured to connect with the full range of Bondor®/Metecno® roofing panels, as well as standard metal roofing options compiled with plasterboard ceilings. Refer to "Construction Drawings - Fire Rated (FRL)" section in this document..

The systems shown have been assessed to achieve up to an FRL of 180/180/180, limited by the actual walling FRL configuration implemented on a project by project basis.

Carefully measure and set out the proposed location of the wall to roof intersection on both sides of the roof panels. Ensure that if the roof panels are to be cut the roof panels will have adequate support after the intersection cuts have been made.

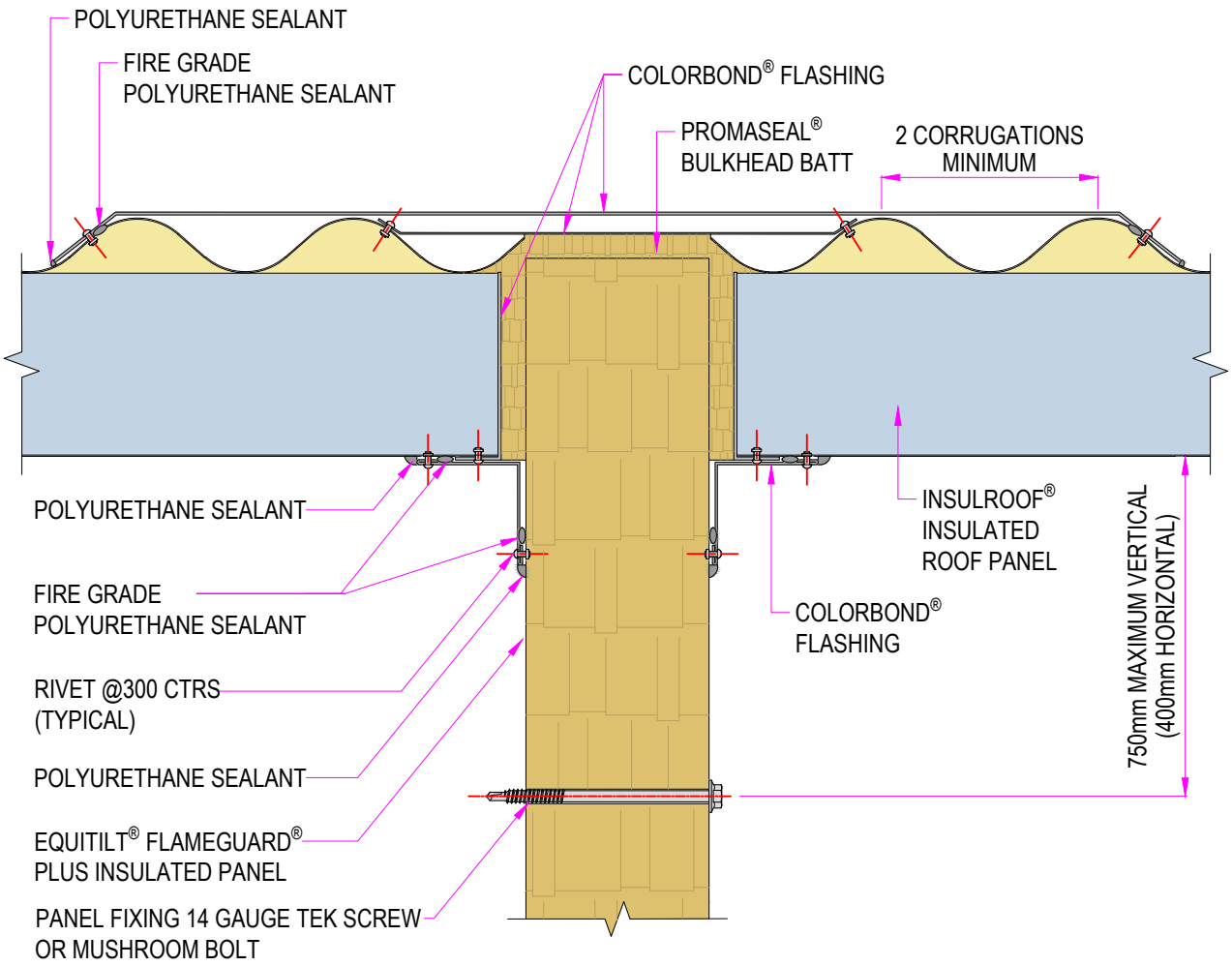
Typical Equideck® Roof Intersection FRL Wall Detail



ELEVATION

ETF-MW-FR034-REV00A

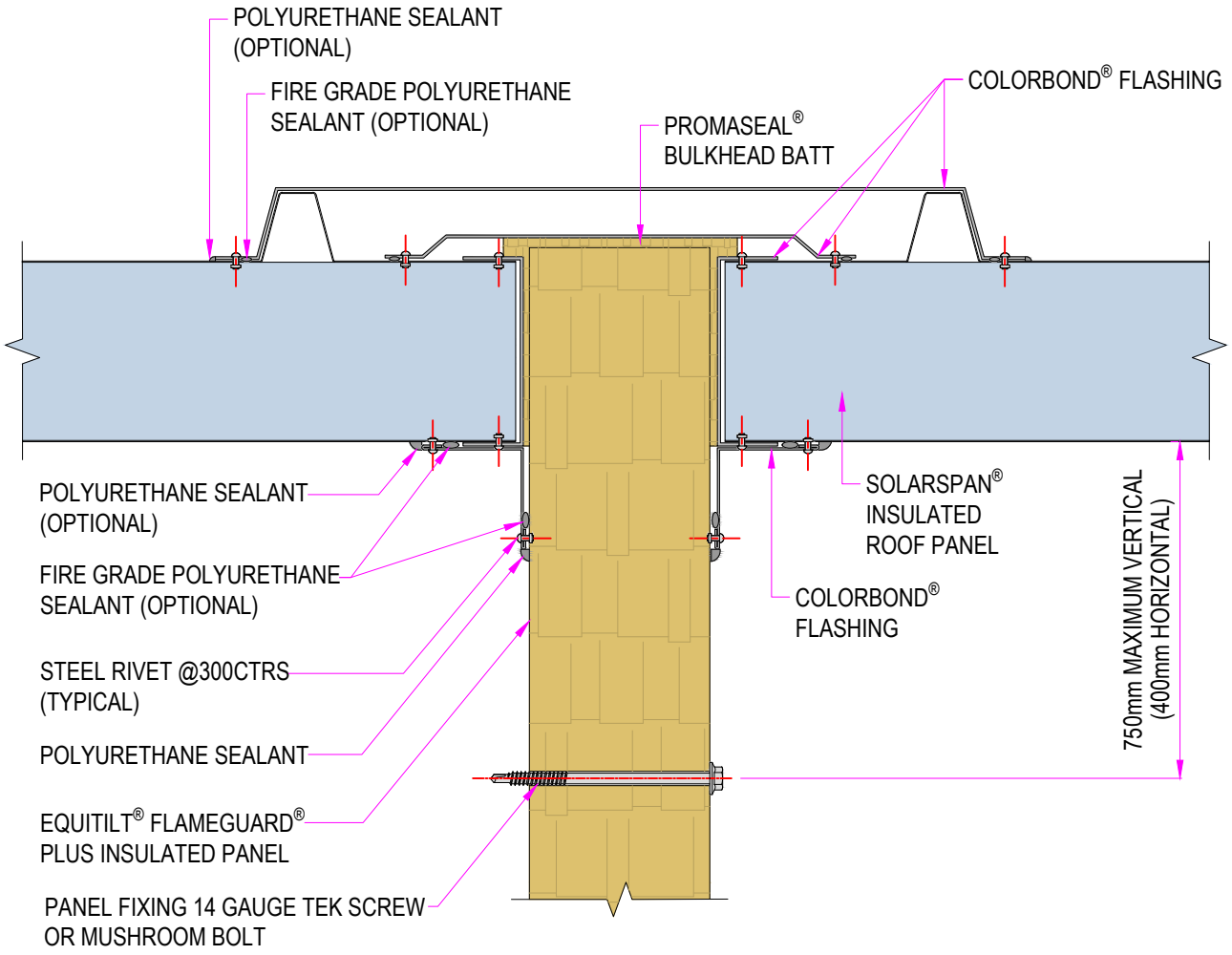
Typical InsulRoof® Roof Intersection FRL Wall Detail



ELEVATION

ETF-MW-FR048-REV00A

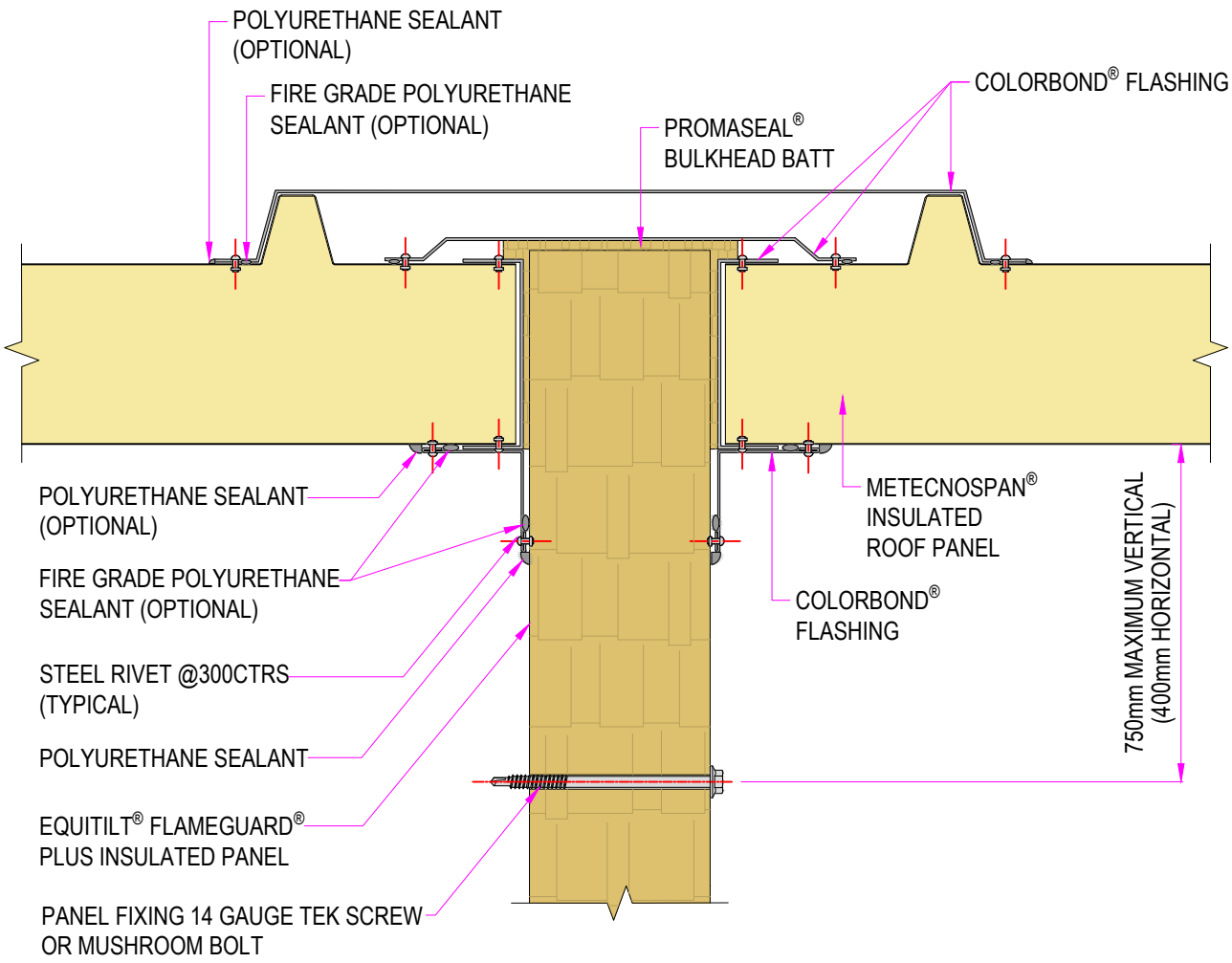
Typical SolarSpan® Roof Intersection FRL Wall Detail



ELEVATION

ETF-MW-FR084-REV00A

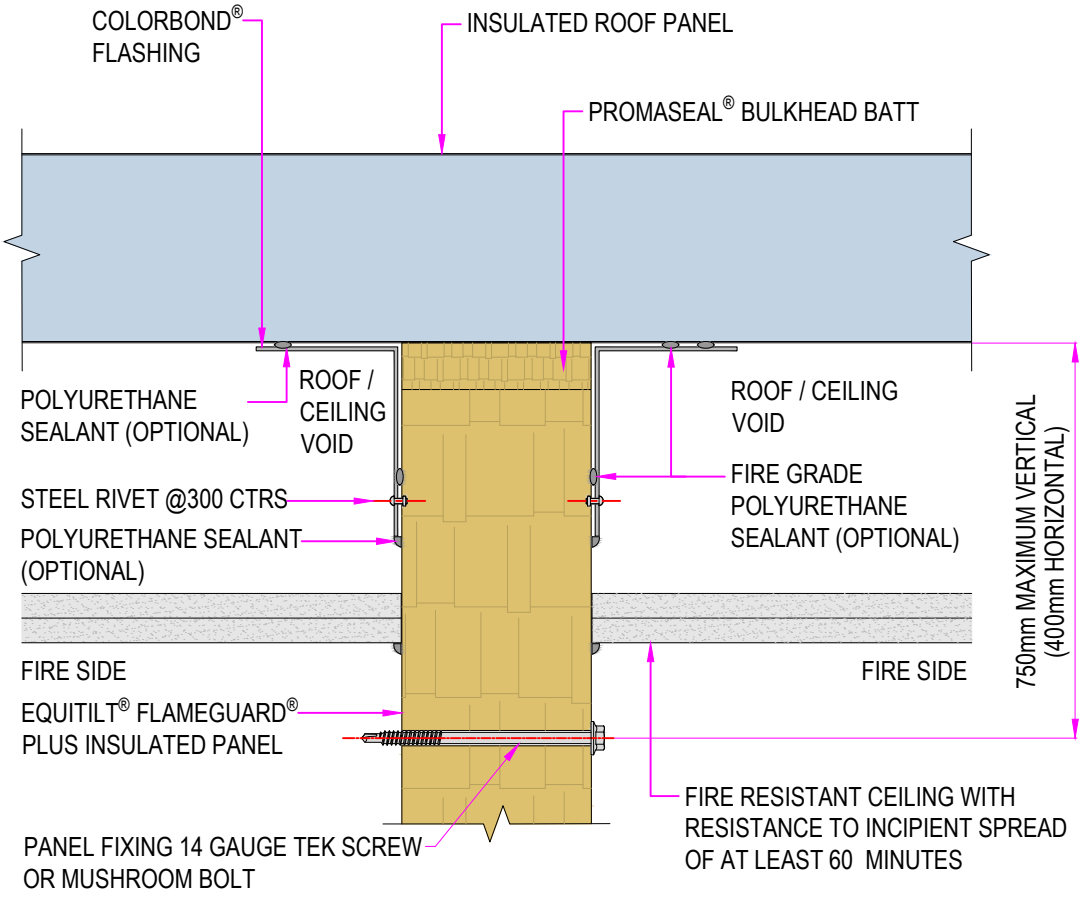
Typical MetecnoSpan® Roof Intersection FRL Wall Detail



ELEVATION

ETF-MW-FR051-REV01A

Typical Insulated Roof Intersection FRL Wall / Ceiling Detail



ELEVATION

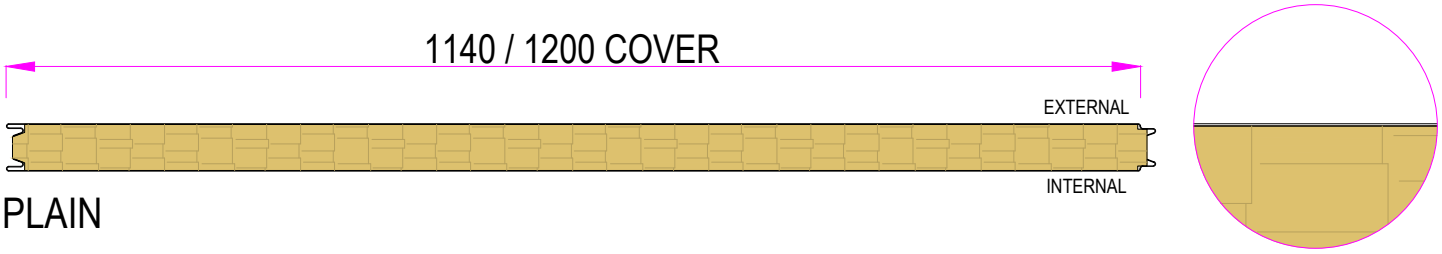
ETF-MW-FR046-REV01A

Construction Drawings - Fire Rated (FRL)

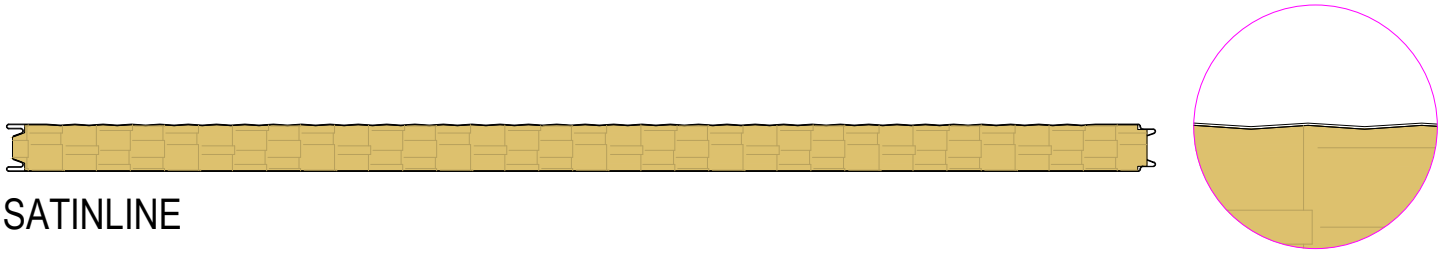
Commercial Walling Design & Install Guide

FRL Panel Profiles

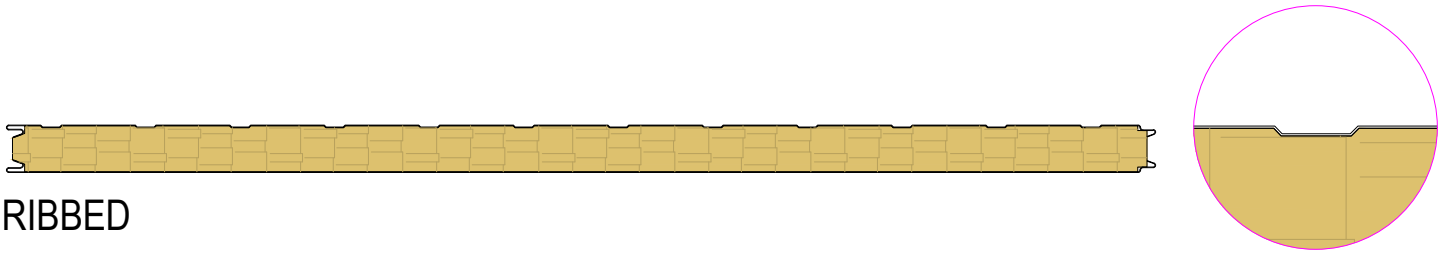
Equitilt® Flameguard® Profile Surface Options



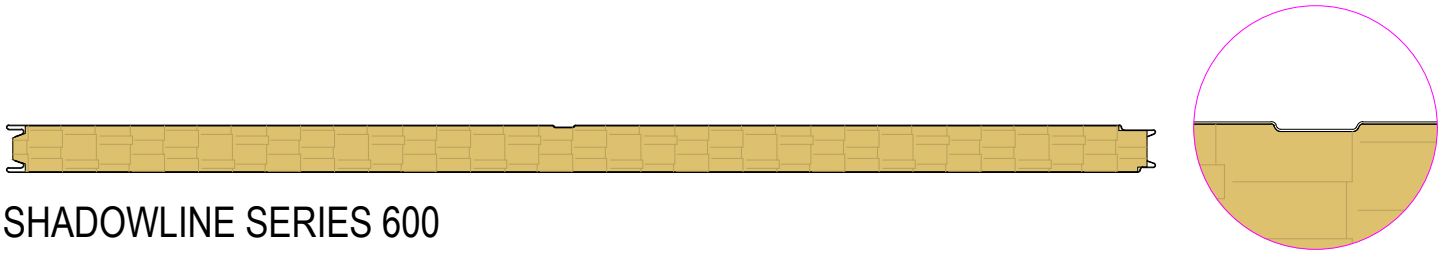
PLAIN



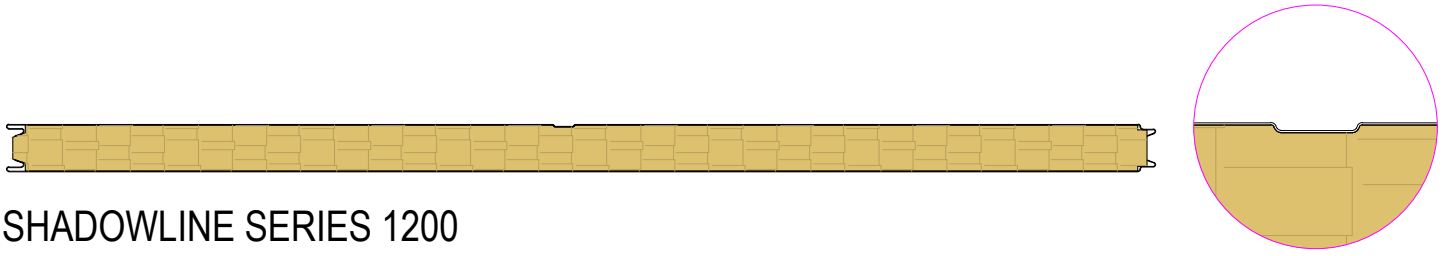
SATINLINE



RIBBED



SHADOWLINE SERIES 600

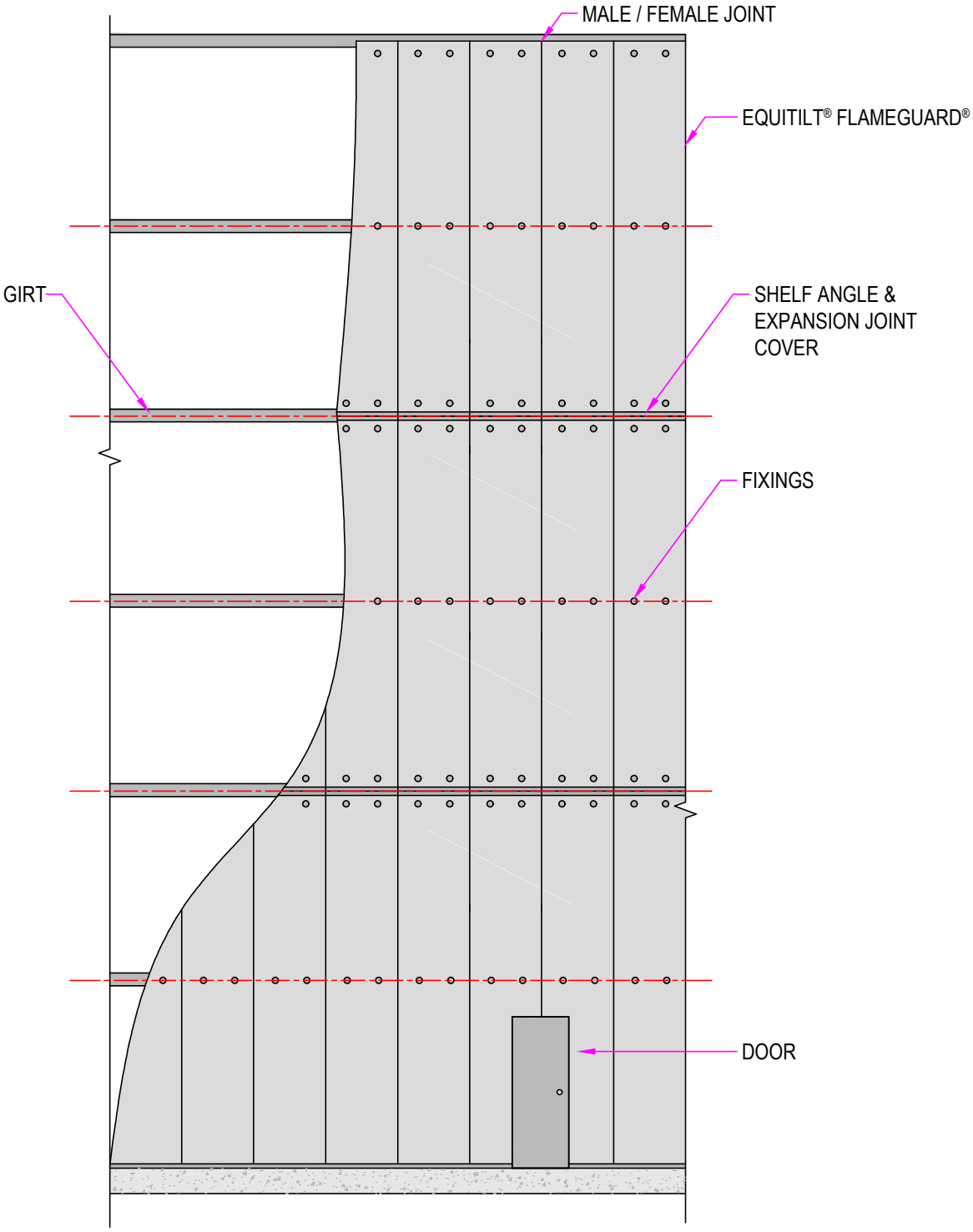


SHADOWLINE SERIES 1200

PLAN

FRL Facade Layout Options

Typical Vertical Panel Construction Details

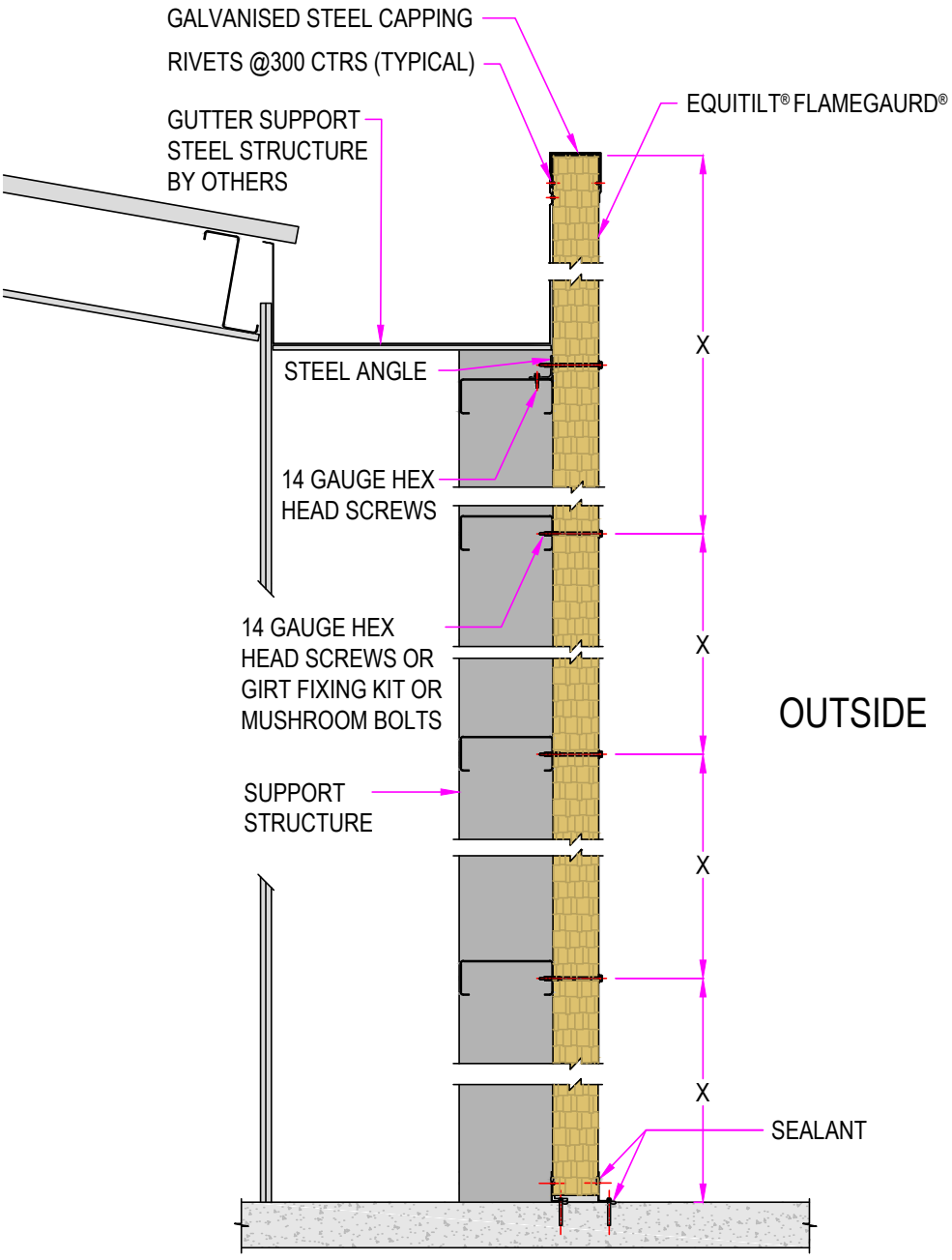


FRONT ELEVATION

ETF-MW-FR173-REV04B

FRL Facade Layout Options

Typical Vertical Panel Construction Details

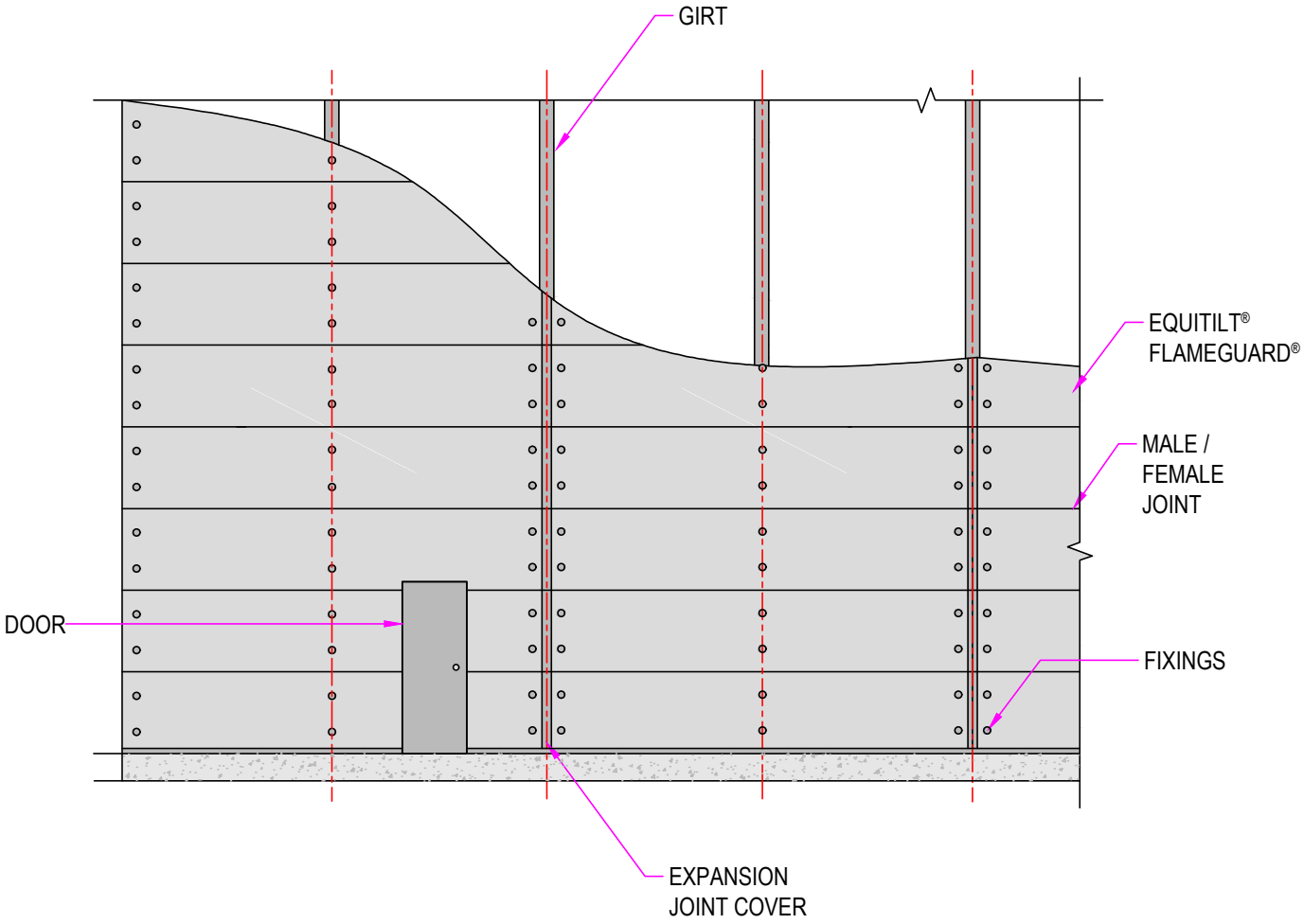


SIDE ELEVATION

ETF-MW-FR073-REV04A

FRL Facade Layout Options

Typical Horizontal Panel Construction Details

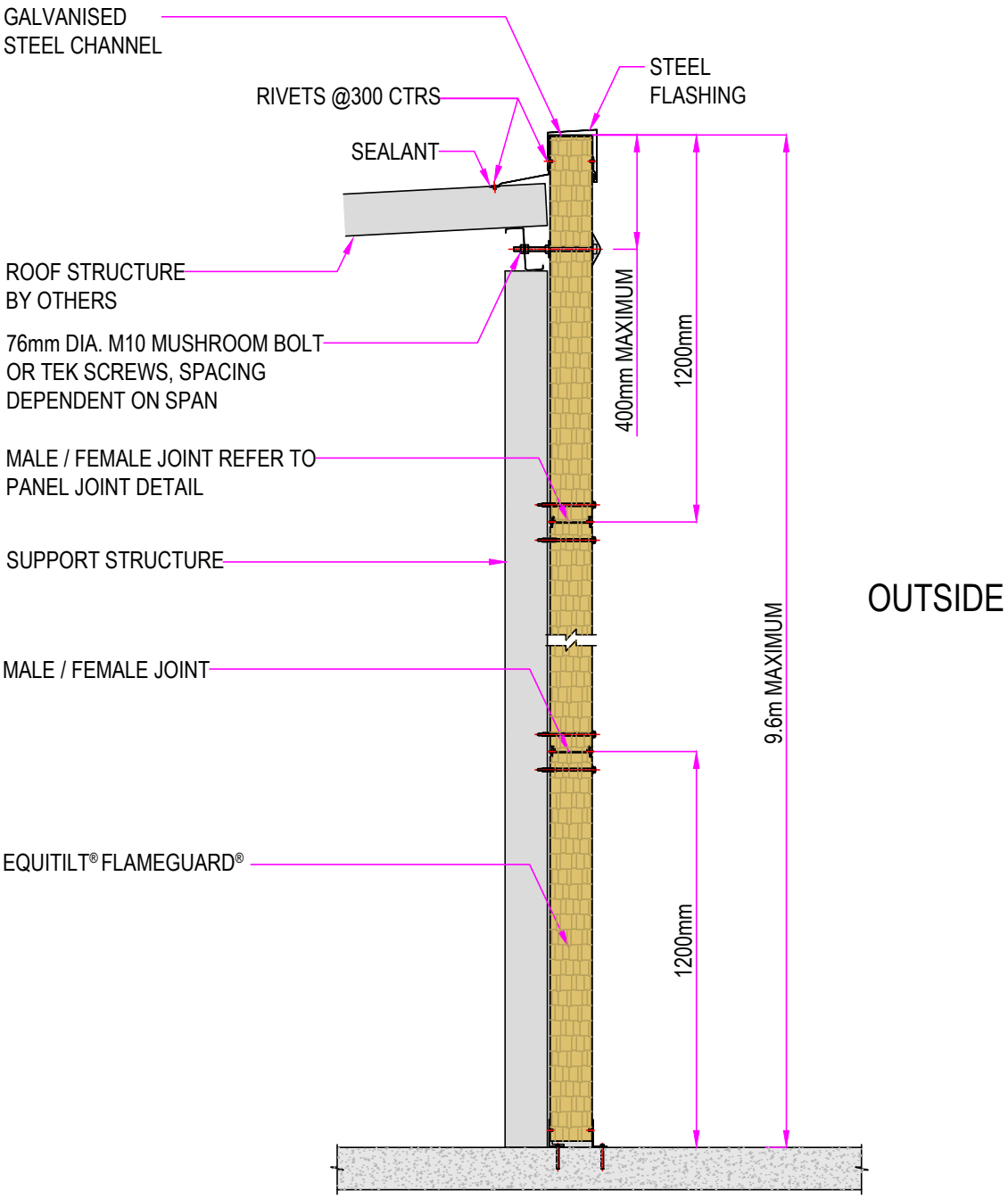


FRONT ELEVATION

ETF-MW-FR023-REV03A

FRL Facade Layout Options

Typical Horizontal Panel Construction Details

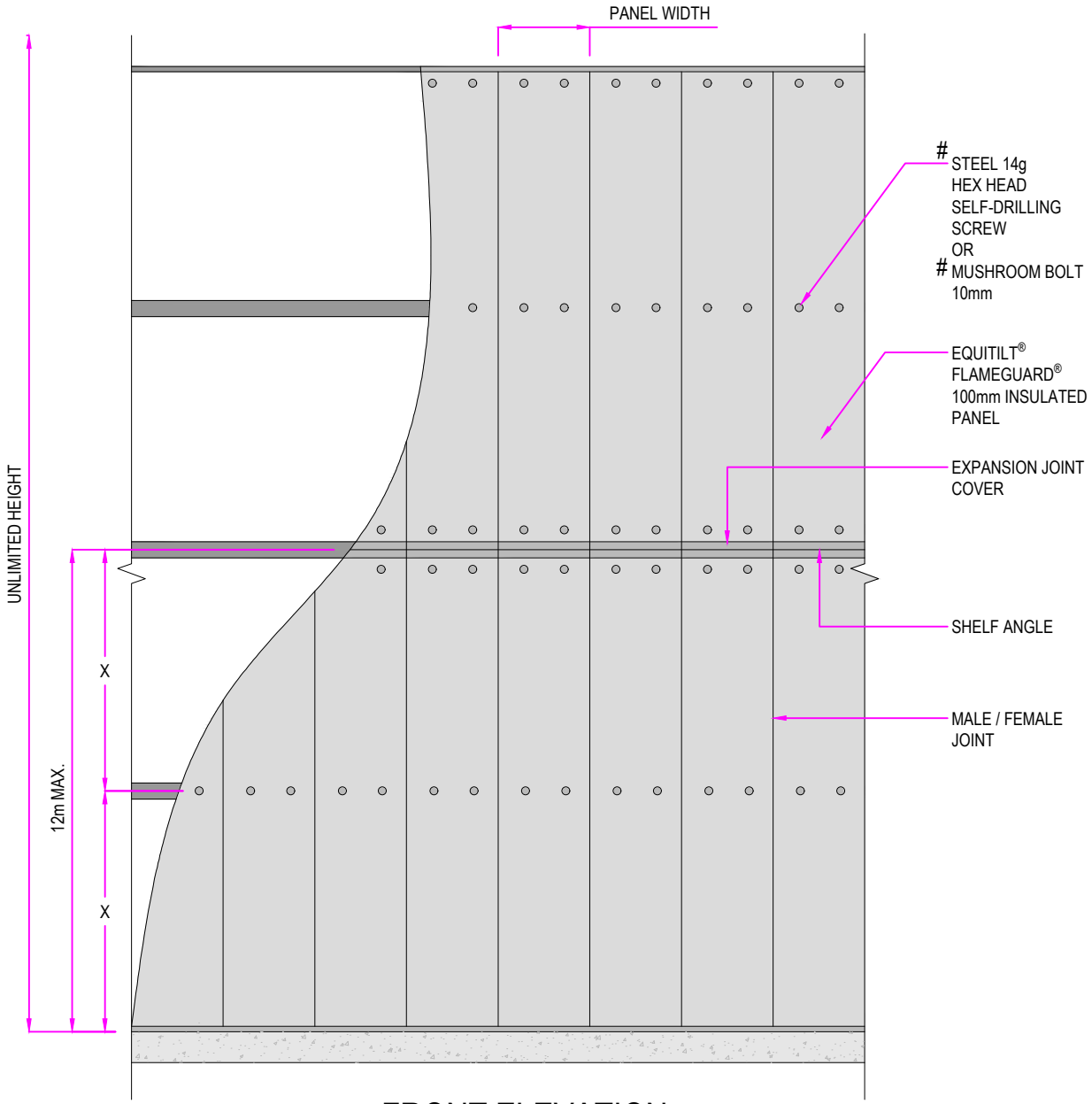


SIDE ELEVATION

ETF-MW-FR135-REV00C

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Panel Construction Details
(No Intumescent Paint in Slip Joints)



FRONT ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/60/60
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
5.7m	1 x R OR 3 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

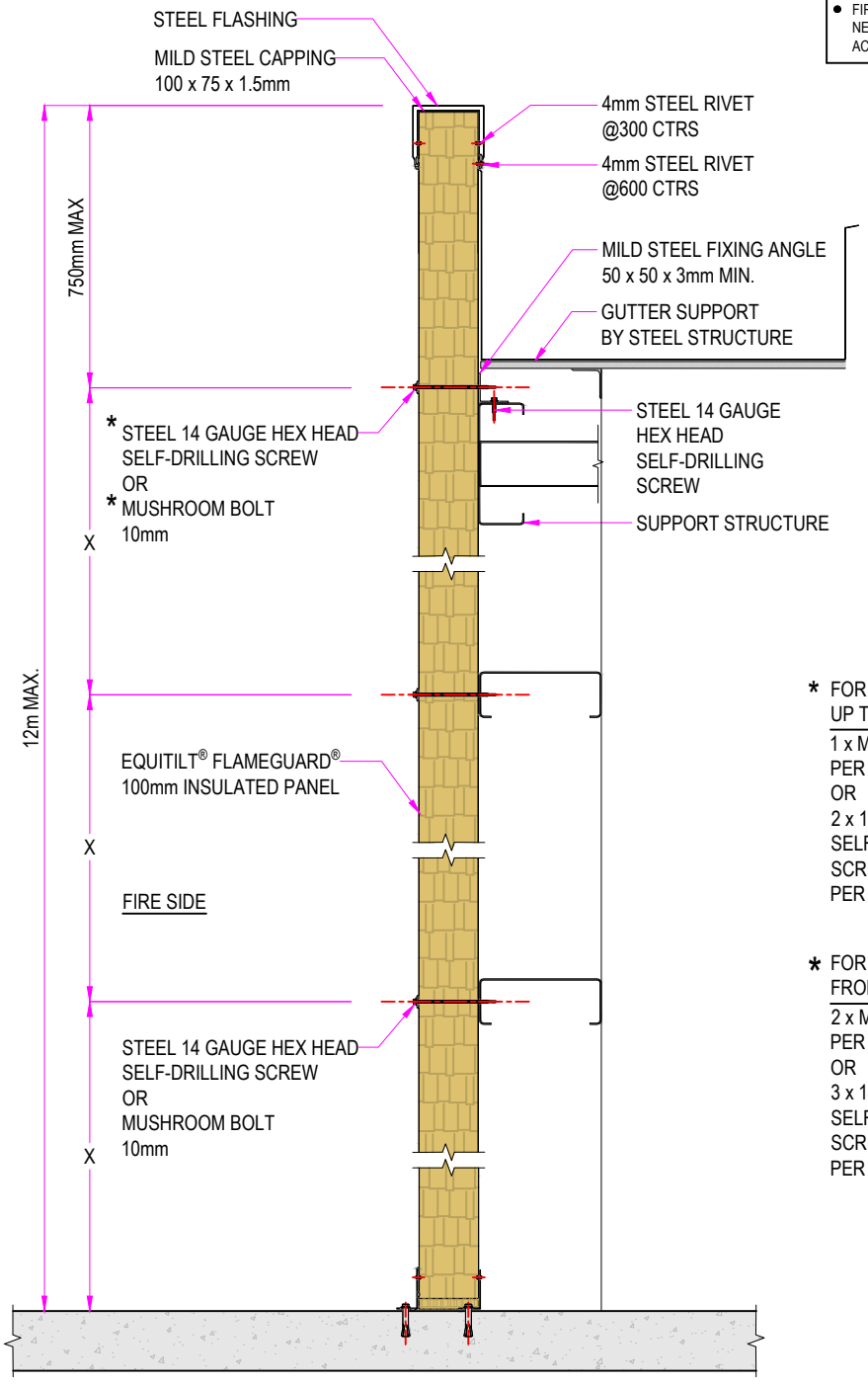
ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Panel Construction Details
(No Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.



SIDE ELEVATION

* FOR PARAPETS UP TO 350mm
1 x MUSHROOM BOLTS (10mm) PER PANEL WIDTH
OR
2 x 14G HEX HEAD SELF-DRILLING SCREWS (STEEL) PER PANEL WIDTH

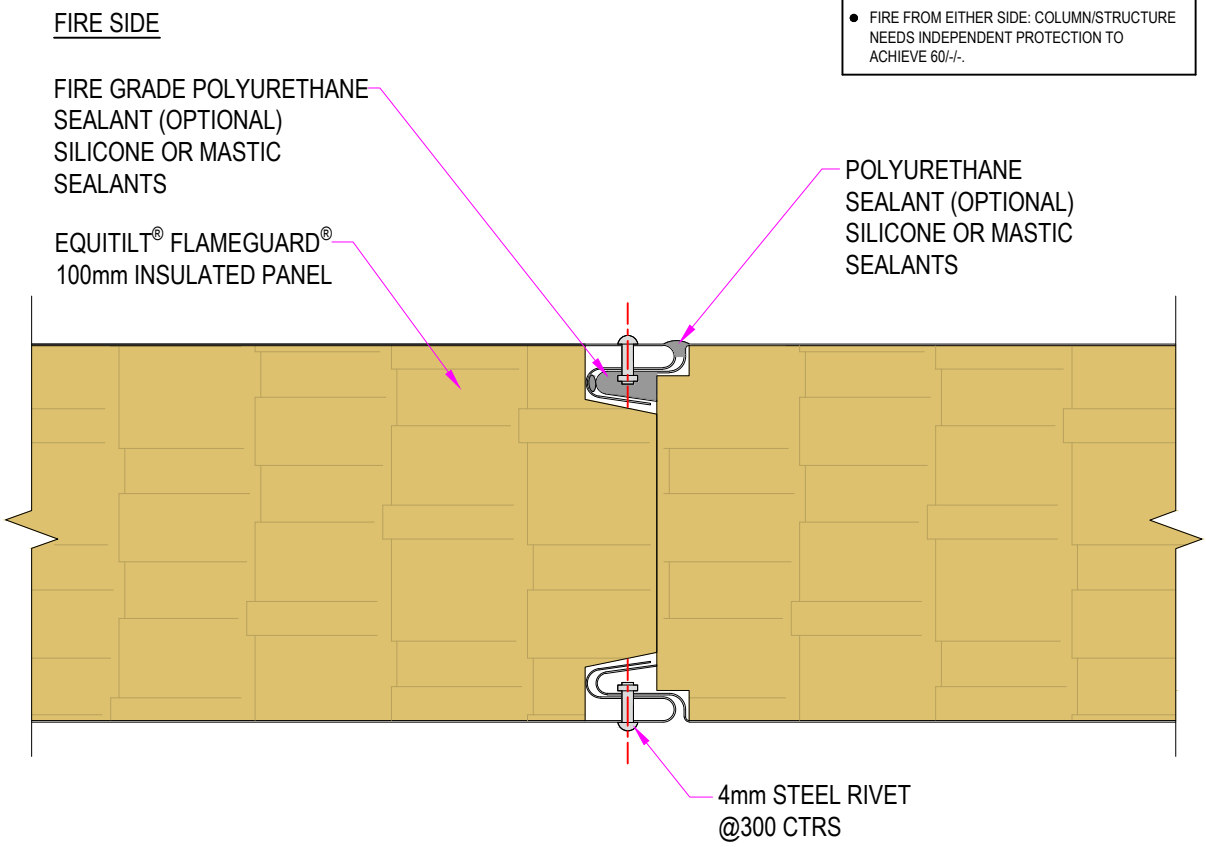
* FOR PARAPETS FROM 350mm UP TO 750mm
2 x MUSHROOM BOLTS (10mm) PER PANEL WIDTH
OR
3 x 14G HEX HEAD SELF-DRILLING SCREW (STEEL) PER PANEL WIDTH

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Joint Fixing Details
(No Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

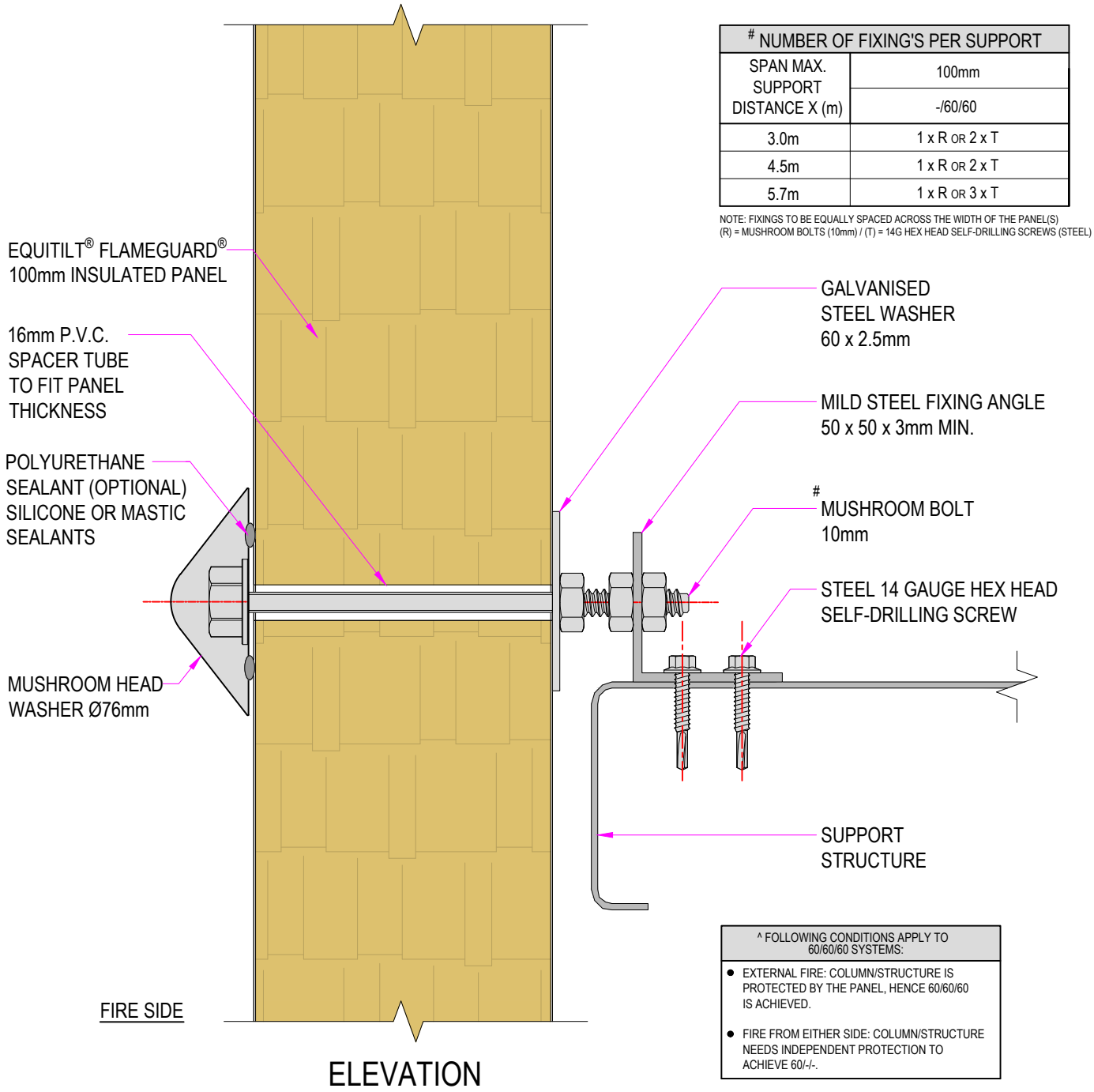


PLAN

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Intermediate Mushroom Bolt Fixing Details
(No Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/60/60
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
5.7m	1 x R OR 3 x T

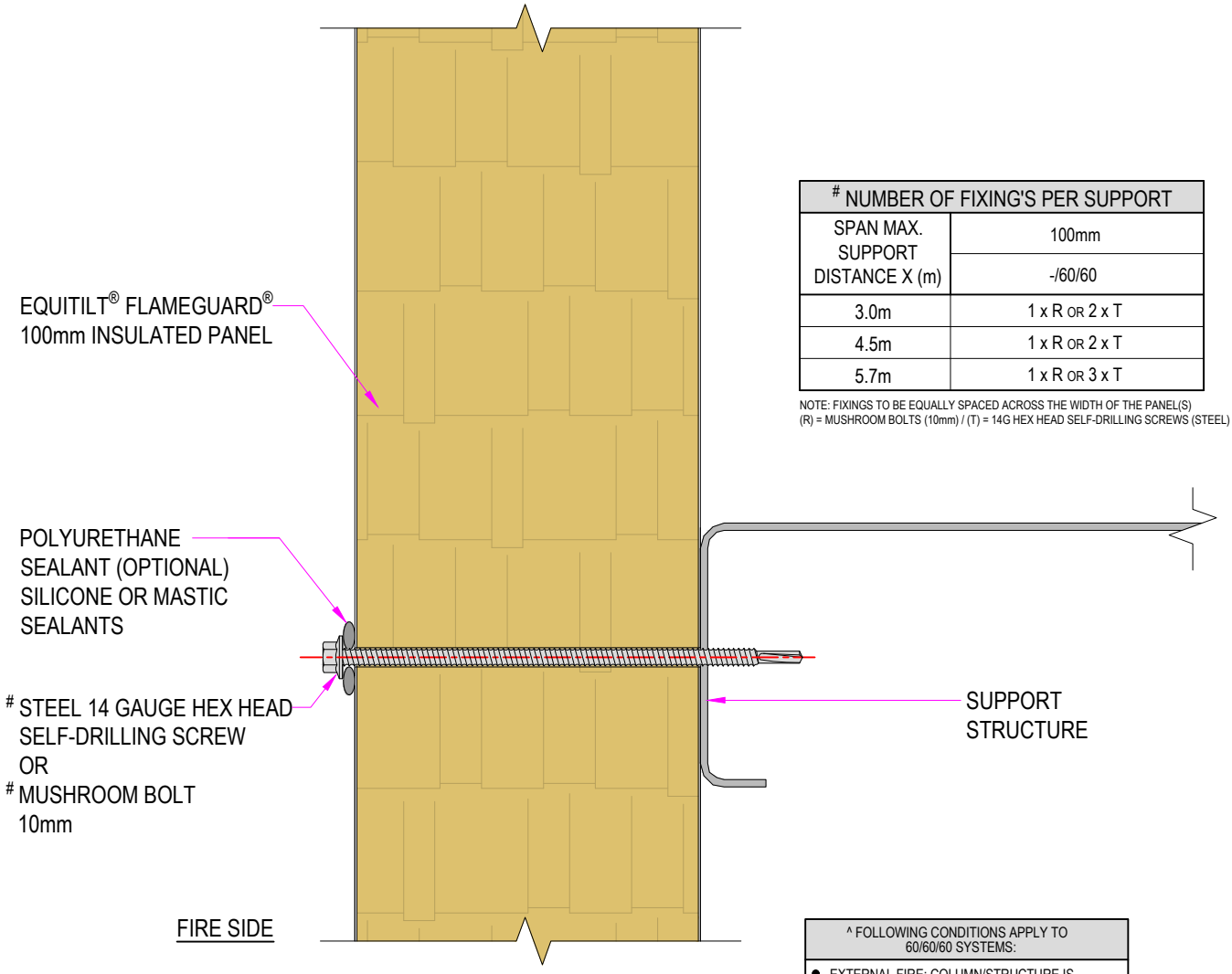
NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Intermediate Tek Screw Fixing Details
(No Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/60/60
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
5.7m	1 x R OR 3 x T

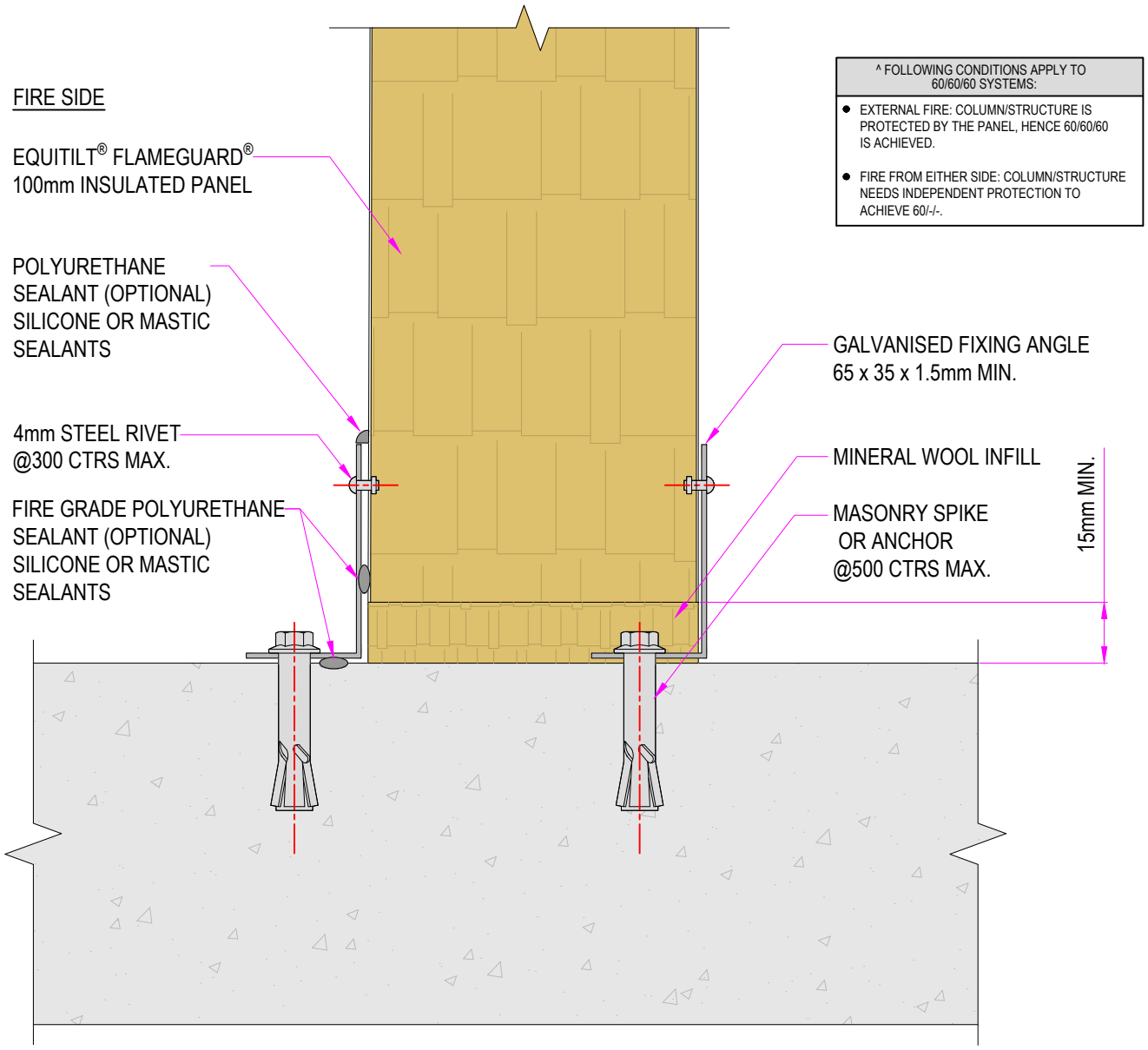
NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Base Fixing Details
(No Intumescent Paint in Slip Joints)

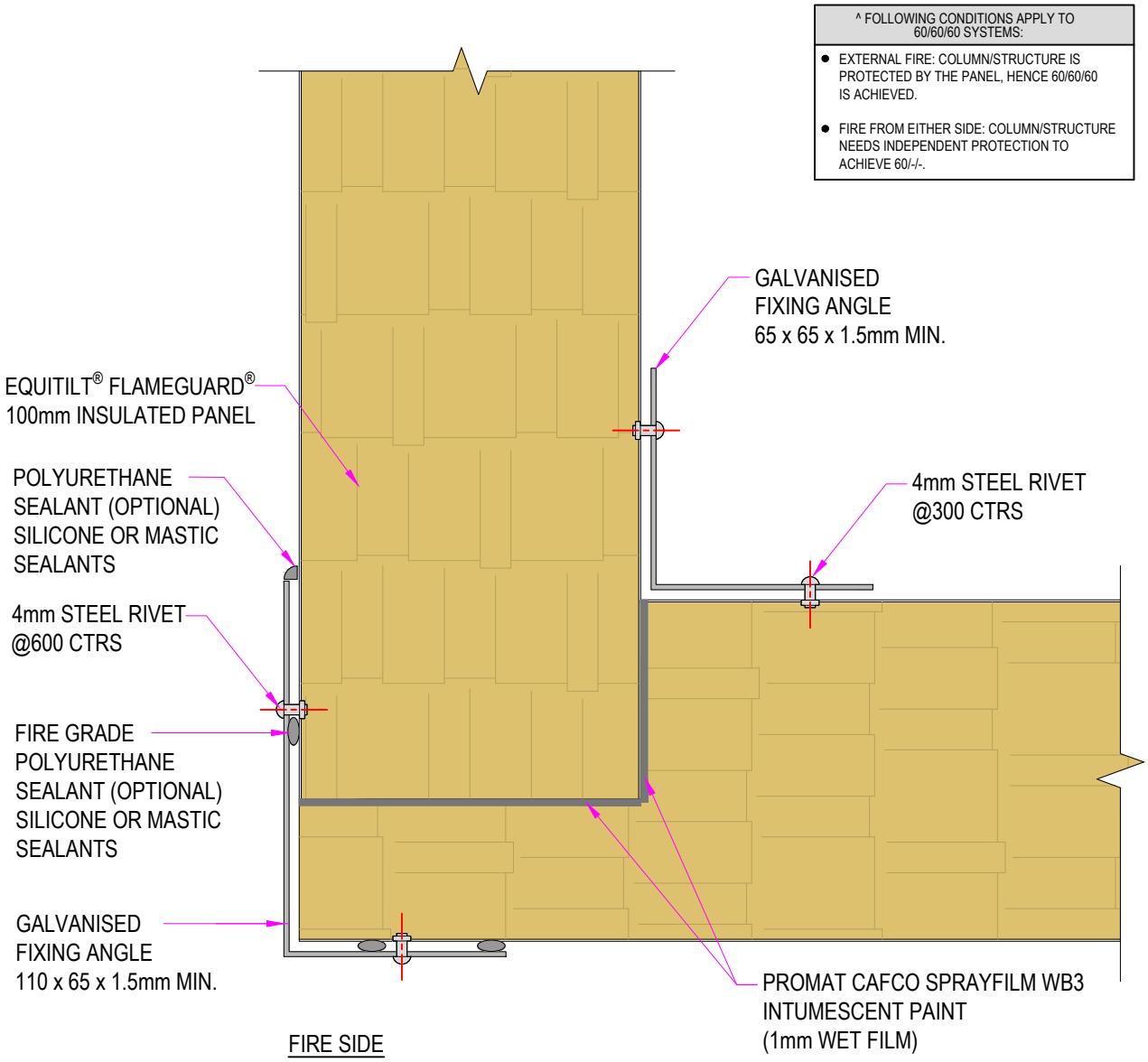


ELEVATION

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Corner Fixing Details
(No Intumescent Paint in Slip Joints)

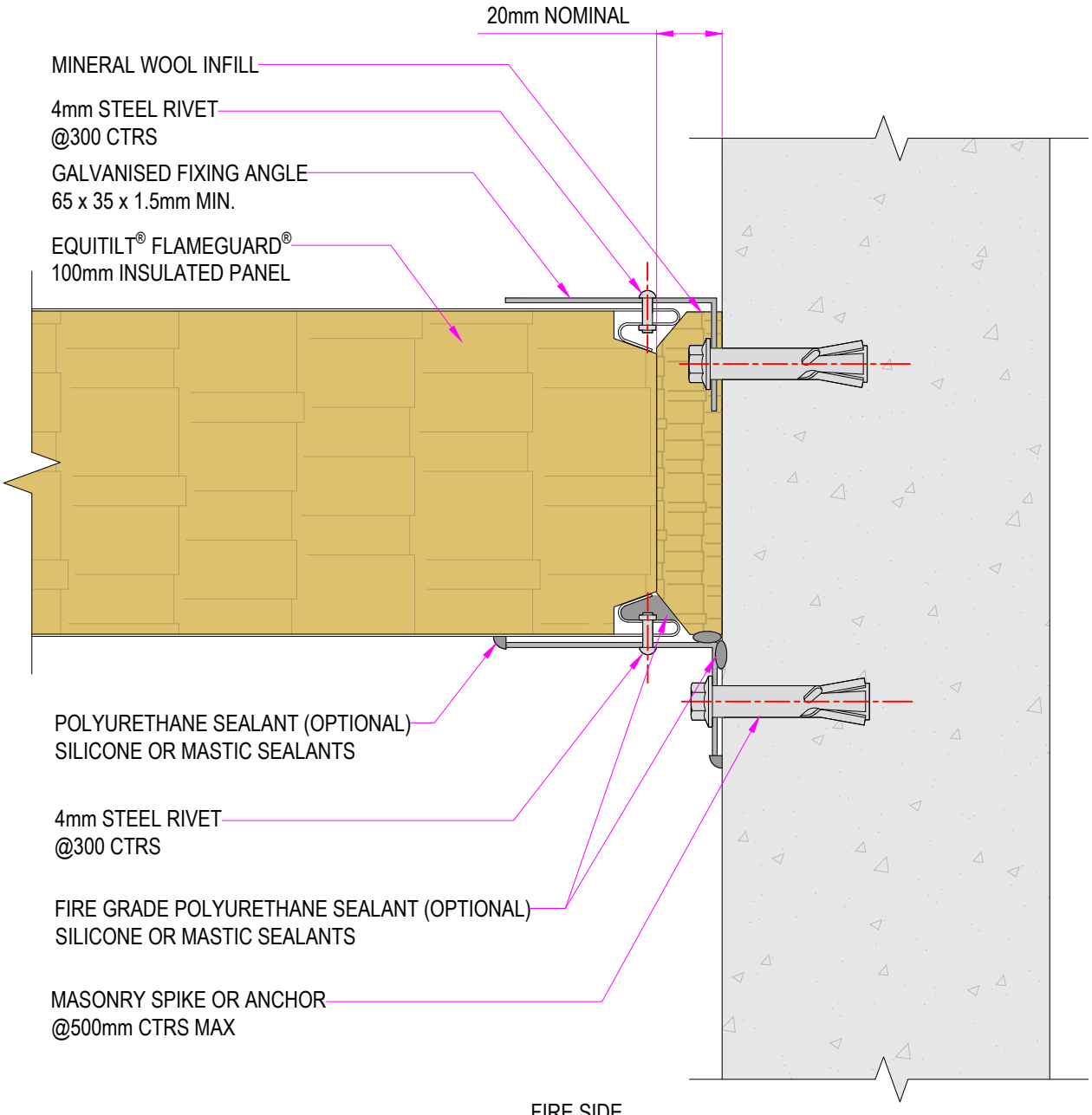


ELEVATION

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Wall Fixing Details
(No Intumescent Paint in Slip Joints)



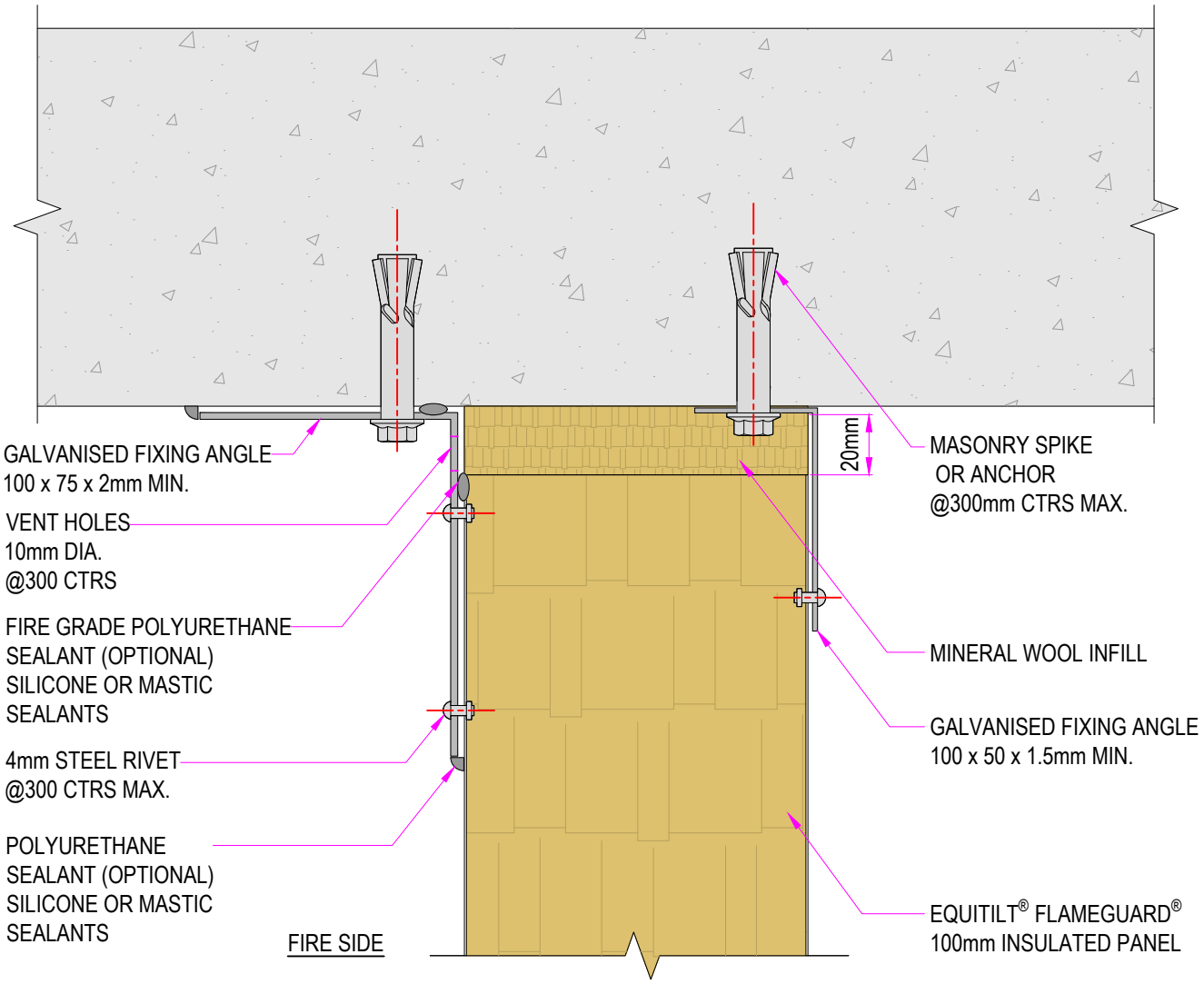
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Top Fixing Details
(No Intumescent Paint in Slip Joints)



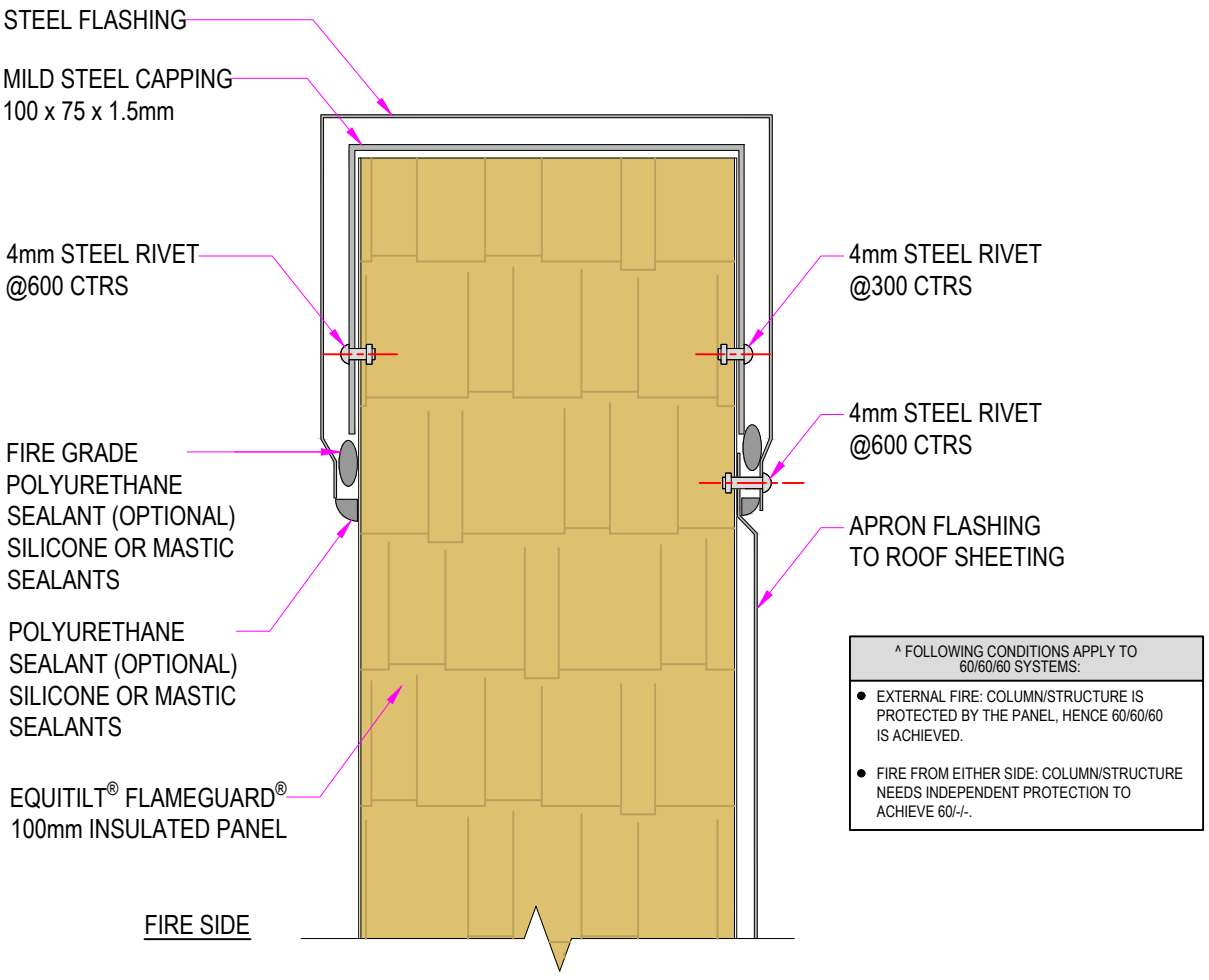
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Parapet Capping Fixing Details
(No Intumescent Paint in Slip Joints)

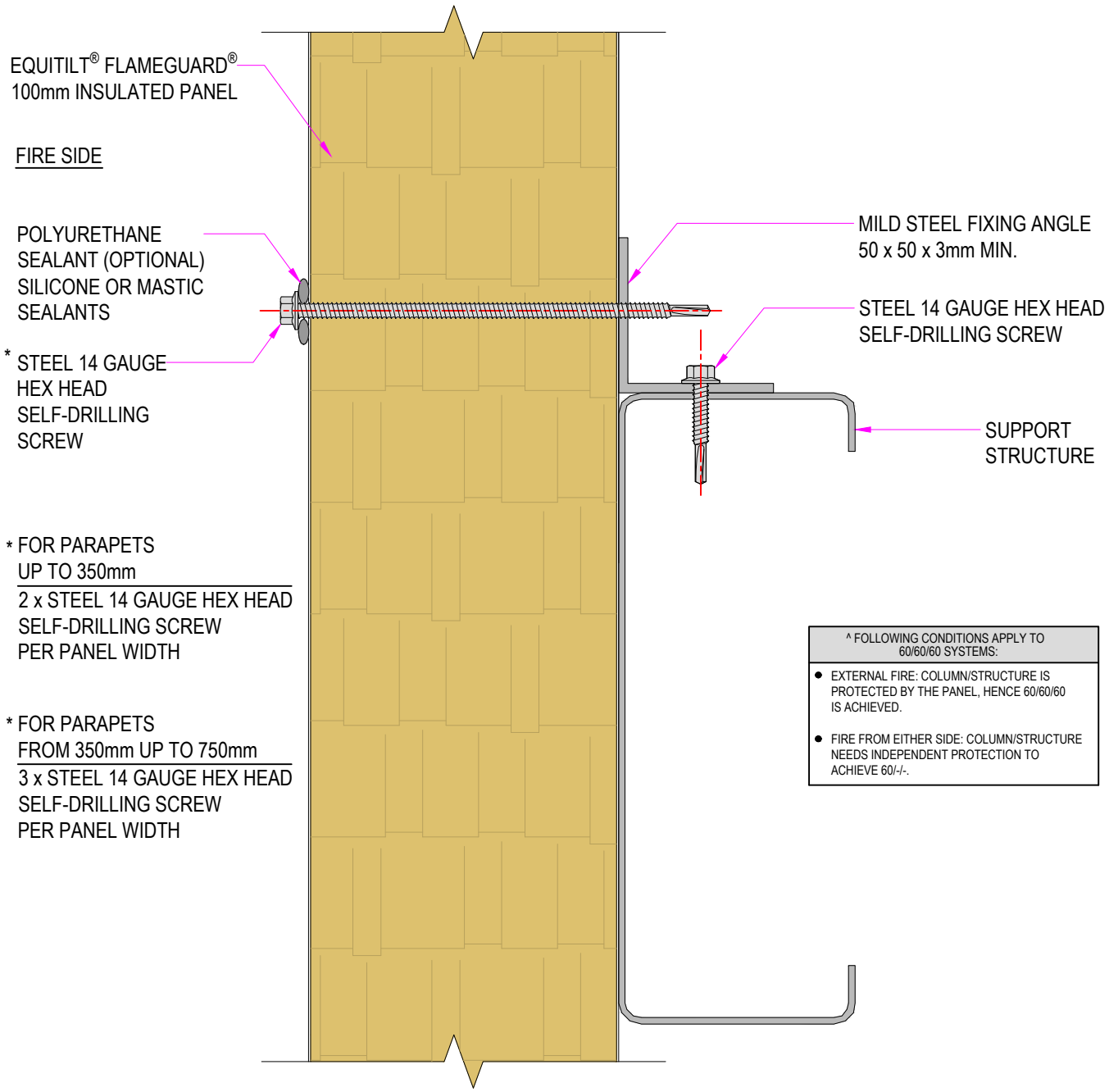


ELEVATION

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Parapet Fixing Details
(No Intumescent Paint in Slip Joints)

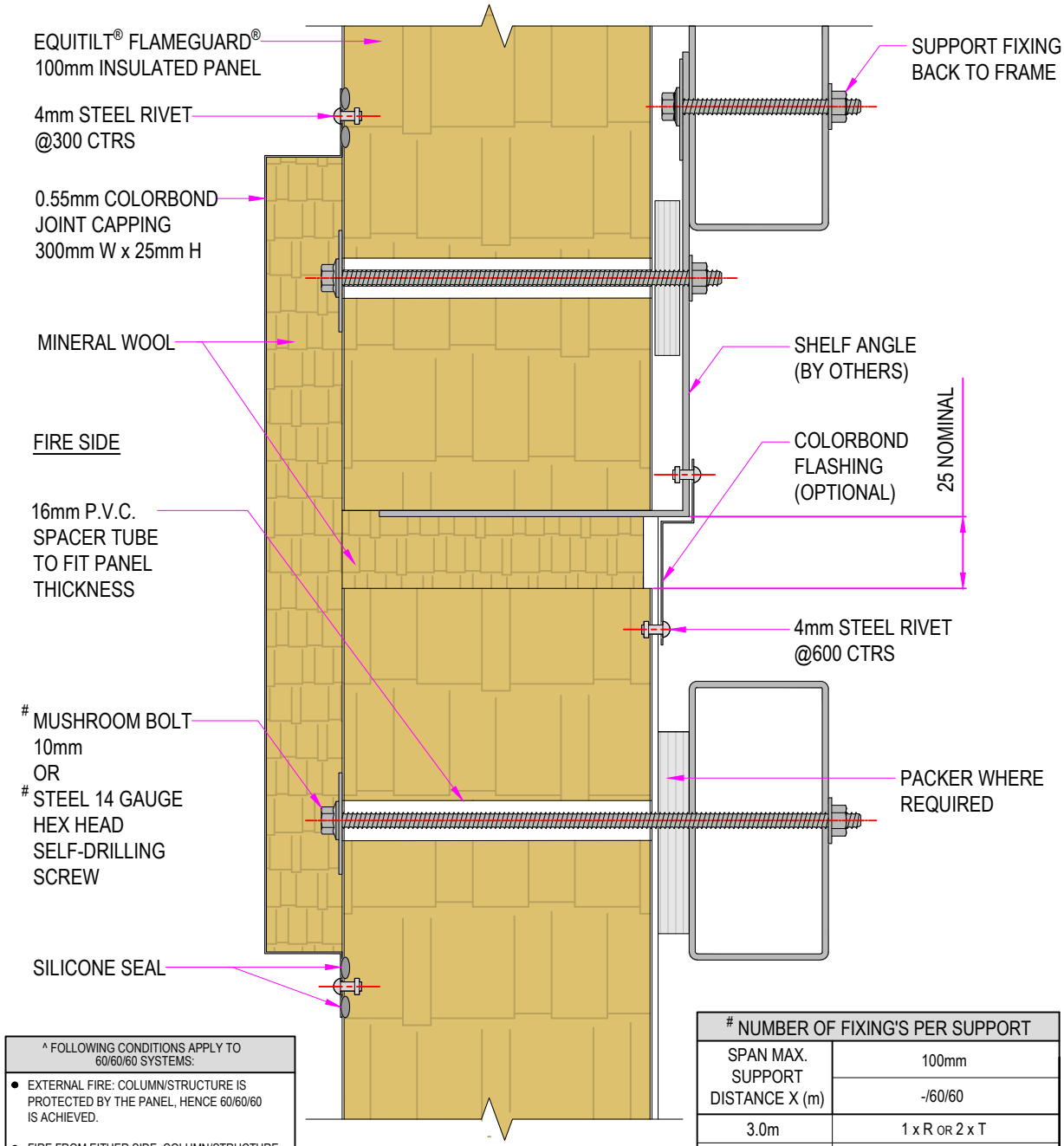


ELEVATION

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/60/60 or 60/60/60^

Expansion Joint Fixing Details
(No Intumescent Paint in Slip Joints)



ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

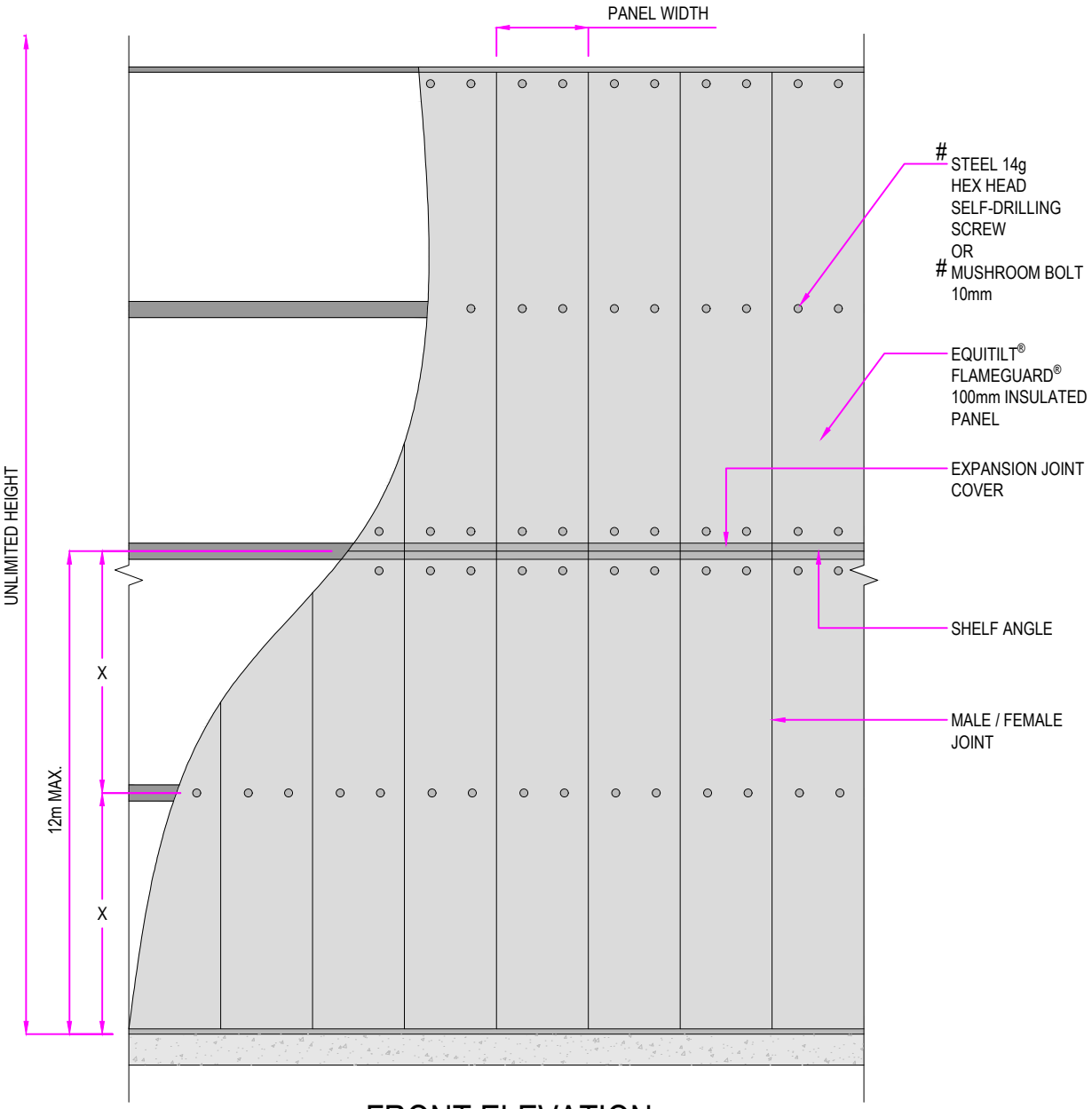
# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/60/60
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
5.7m	1 x R OR 3 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

ETF-MW-FR178-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Panel Construction Details
(Intumescent Paint in Slip Joints)



FRONT ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/90/90
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
5.7m	1 x R OR 3 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

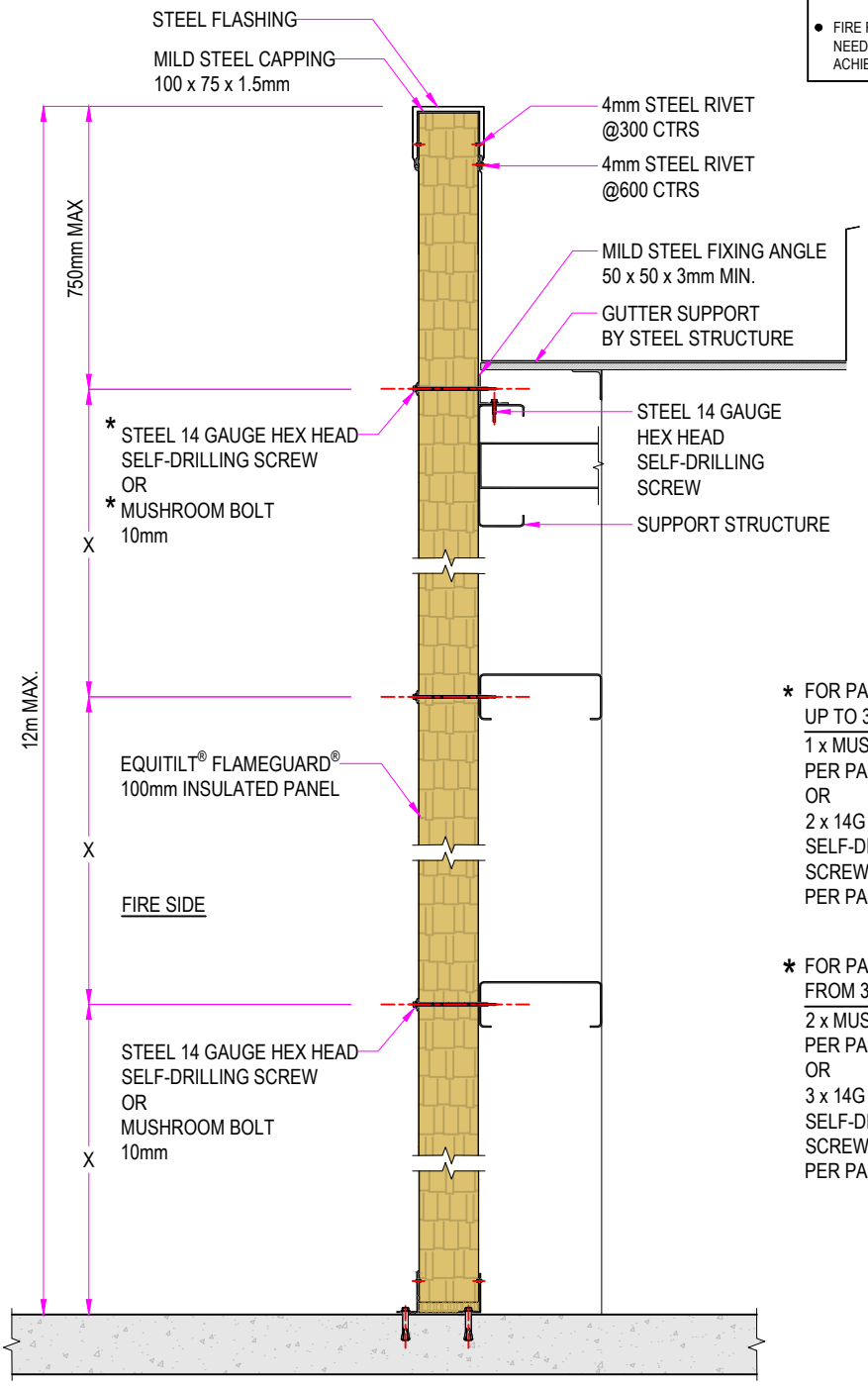
ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Panel Construction Details
(Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.



* FOR PARAPETS UP TO 350mm
1 x MUSHROOM BOLTS (10mm) PER PANEL WIDTH
OR
2 x 14G HEX HEAD SELF-DRILLING SCREWS (STEEL) PER PANEL WIDTH

* FOR PARAPETS FROM 350mm UP TO 750mm
2 x MUSHROOM BOLTS (10mm) PER PANEL WIDTH
OR
3 x 14G HEX HEAD SELF-DRILLING SCREW (STEEL) PER PANEL WIDTH

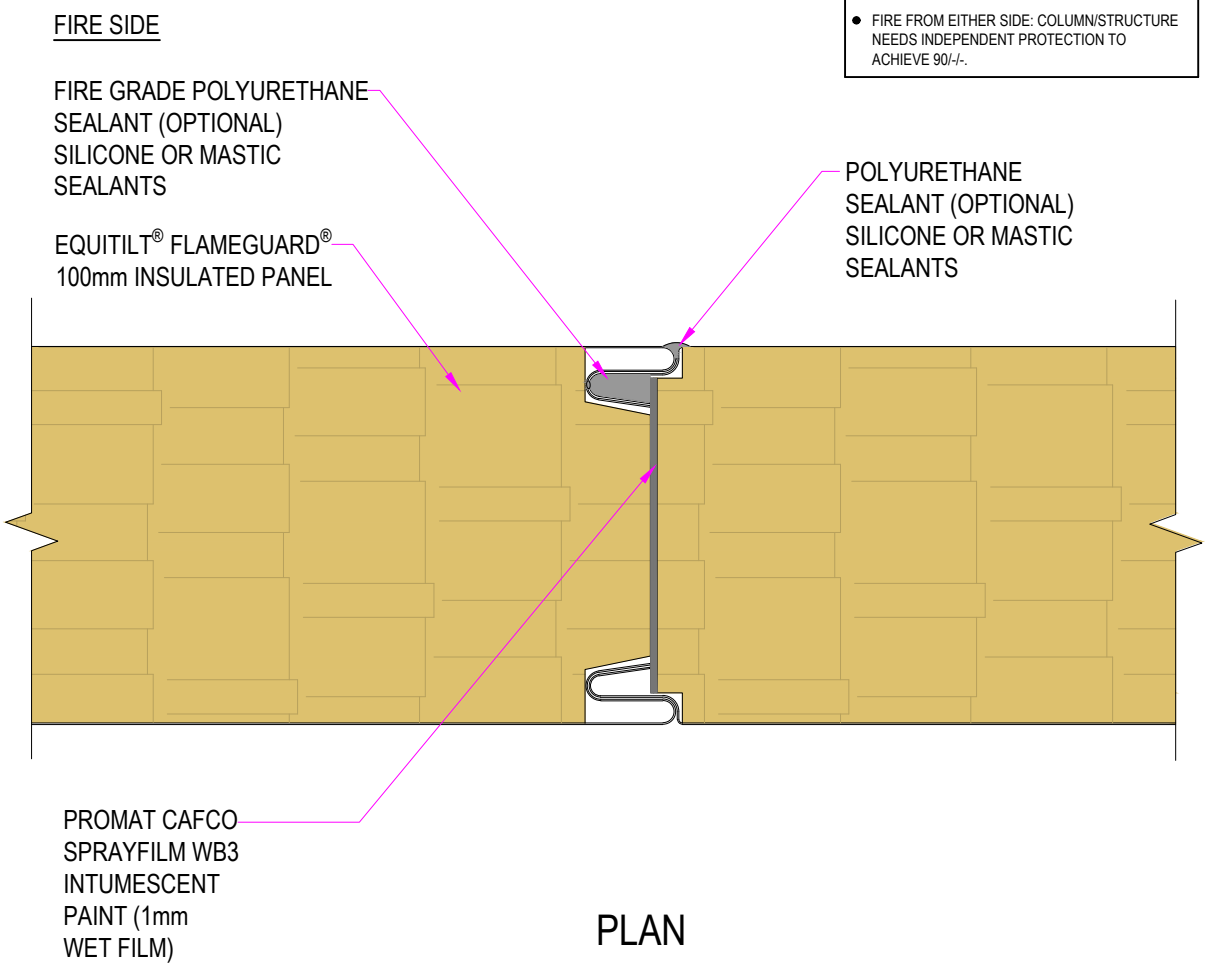
SIDE ELEVATION

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Joint Fixing Details
(Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

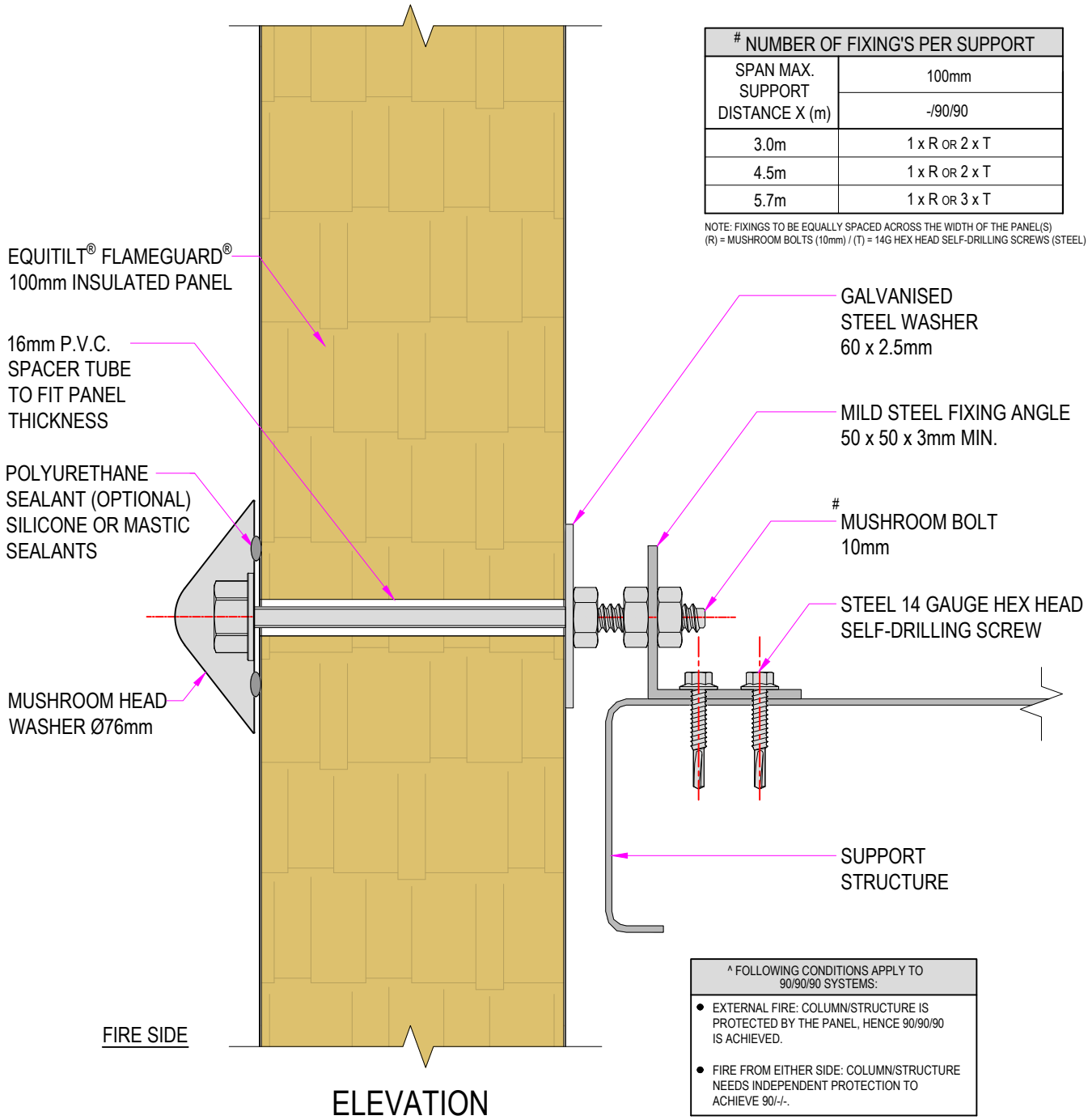


PLAN

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Intermediate Mushroom Bolt Fixing Details (Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/90/90
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
5.7m	1 x R OR 3 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

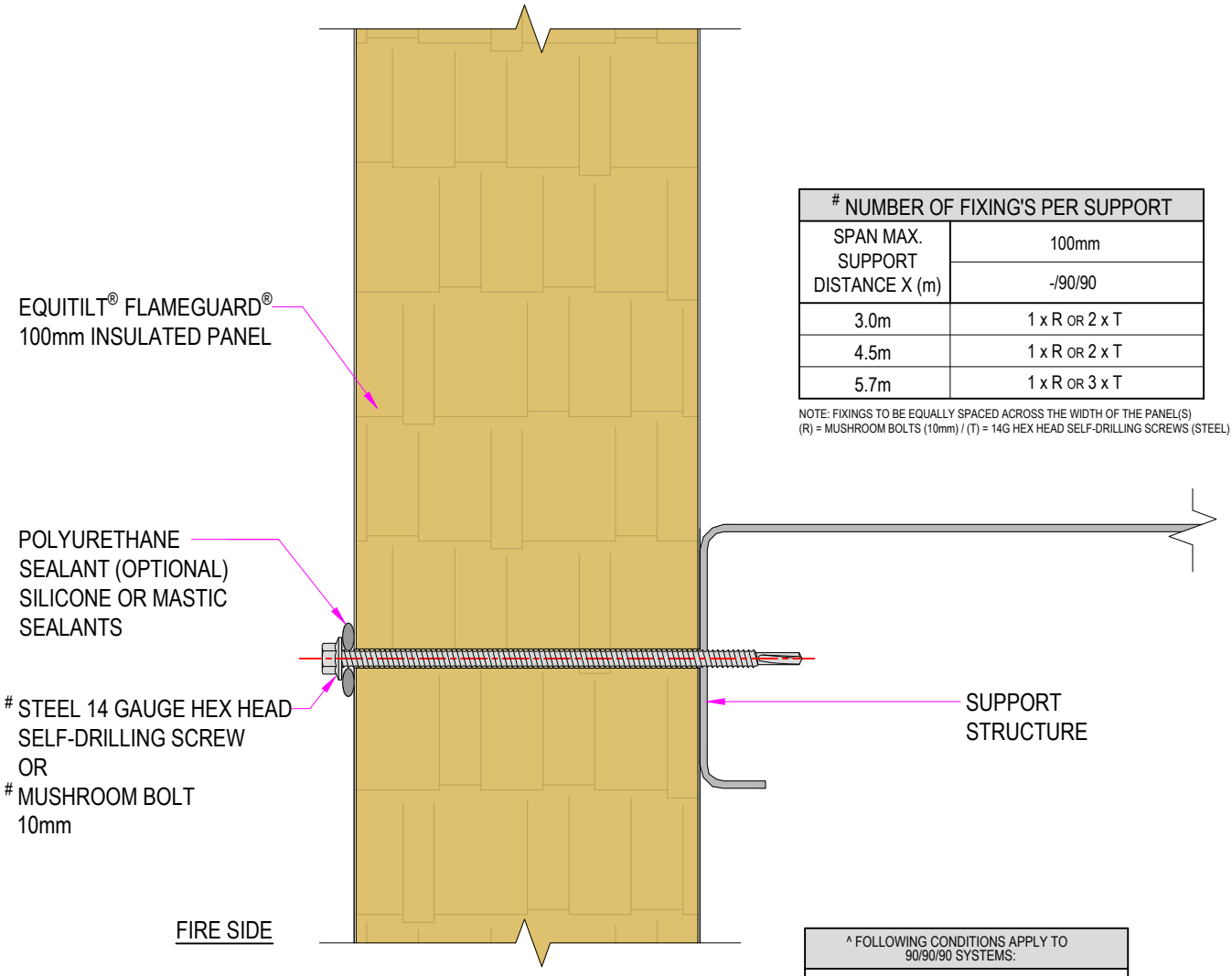
^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Intermediate Tek Screw Fixing Details (Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/90/90
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
5.7m	1 x R OR 3 x T

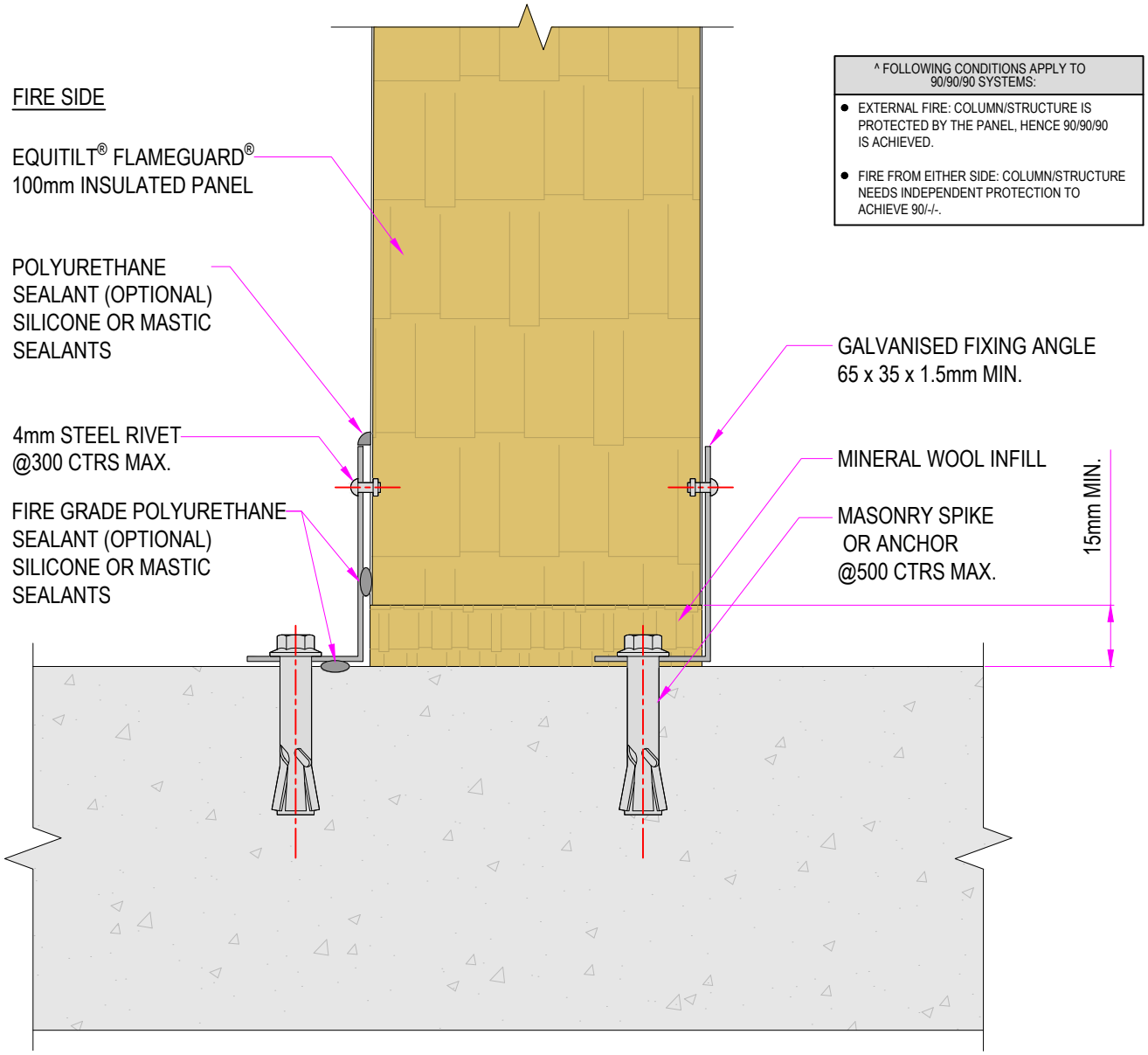
NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Base Fixing Details
(Intumescent Paint in Slip Joints)

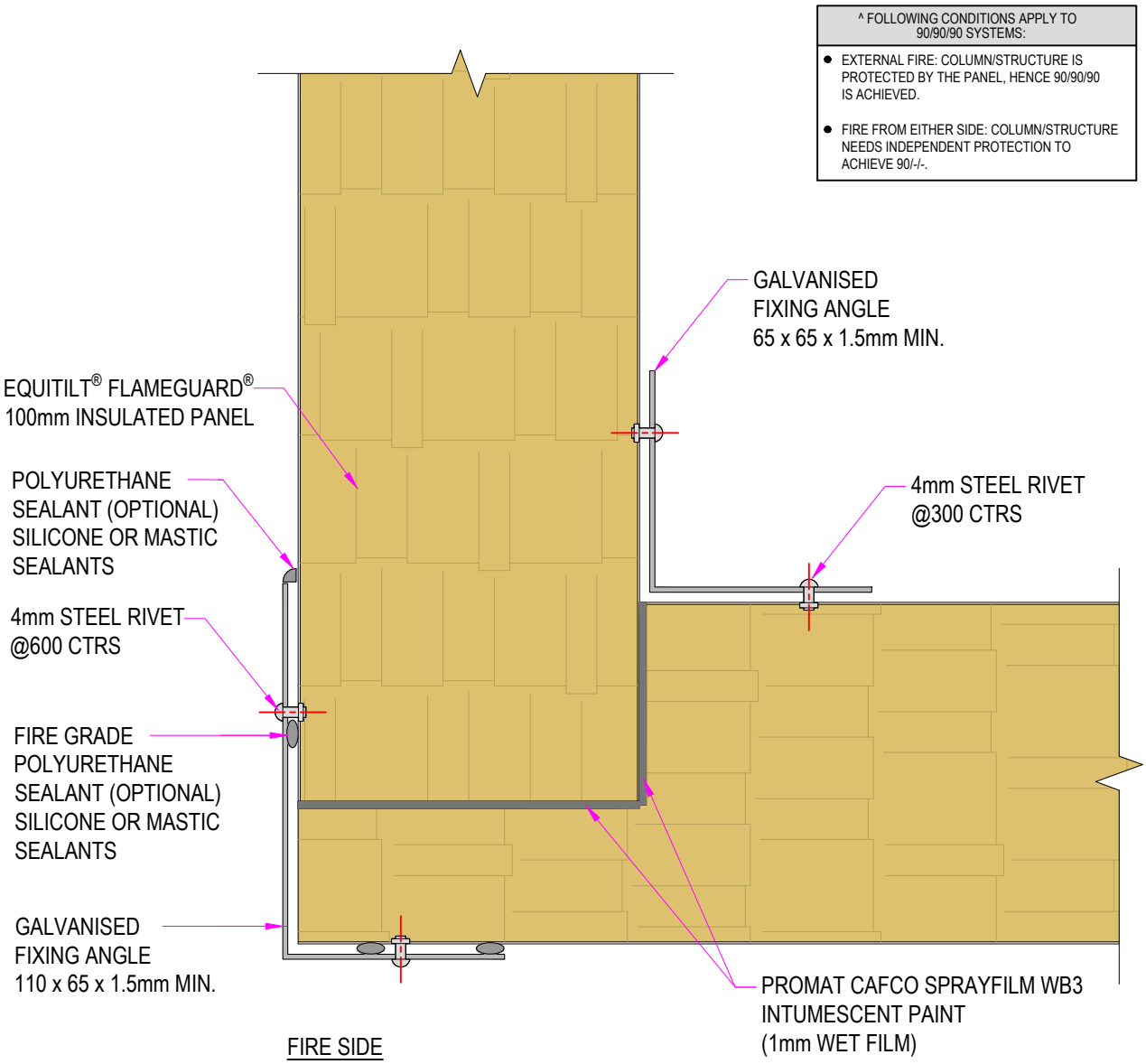


ELEVATION

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Corner Fixing Details
(Intumescent Paint in Slip Joints)

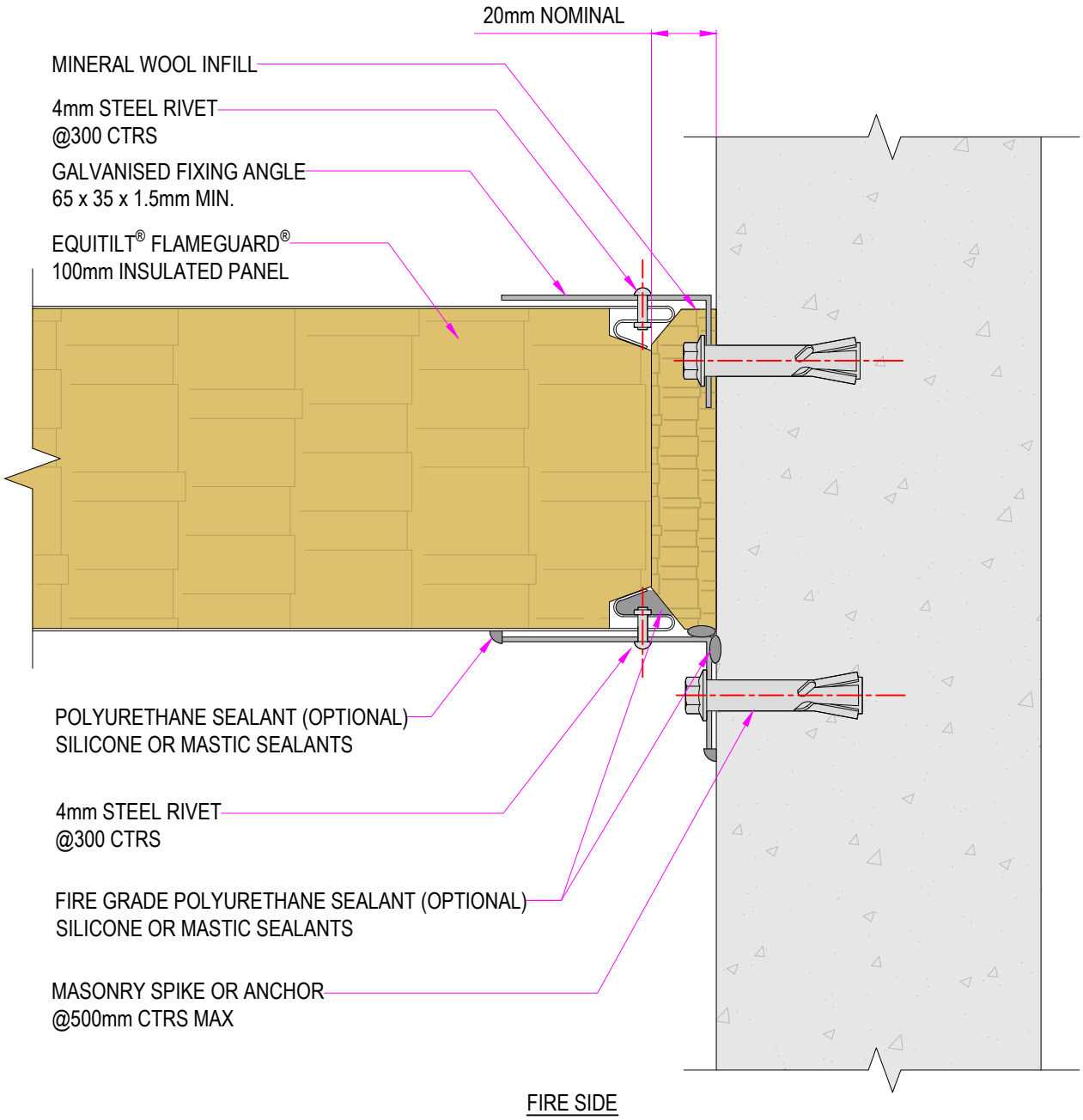


ELEVATION

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Wall Fixing Details
(Intumescent Paint in Slip Joints)



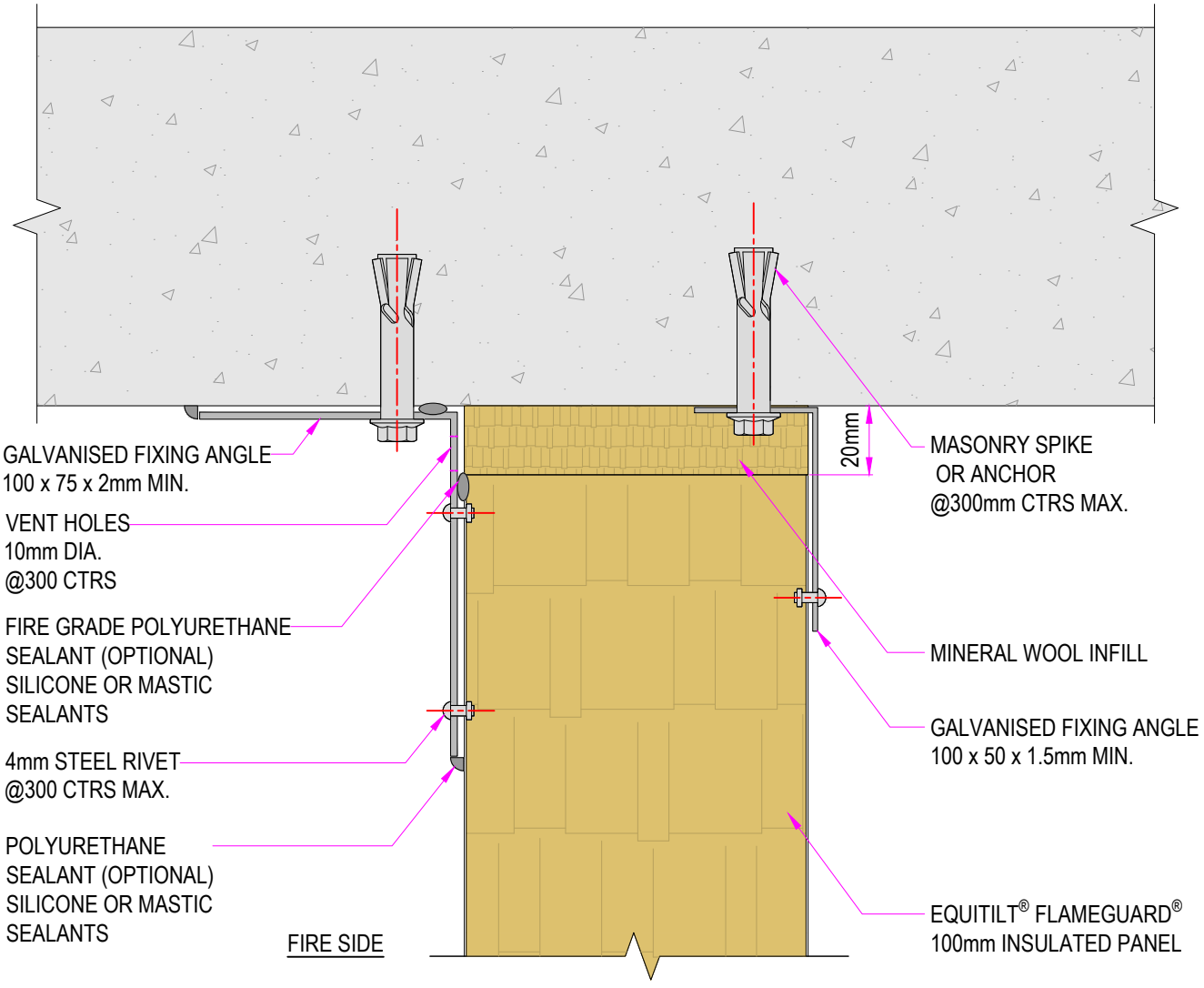
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Top Fixing Details
(Intumescent Paint in Slip Joints)



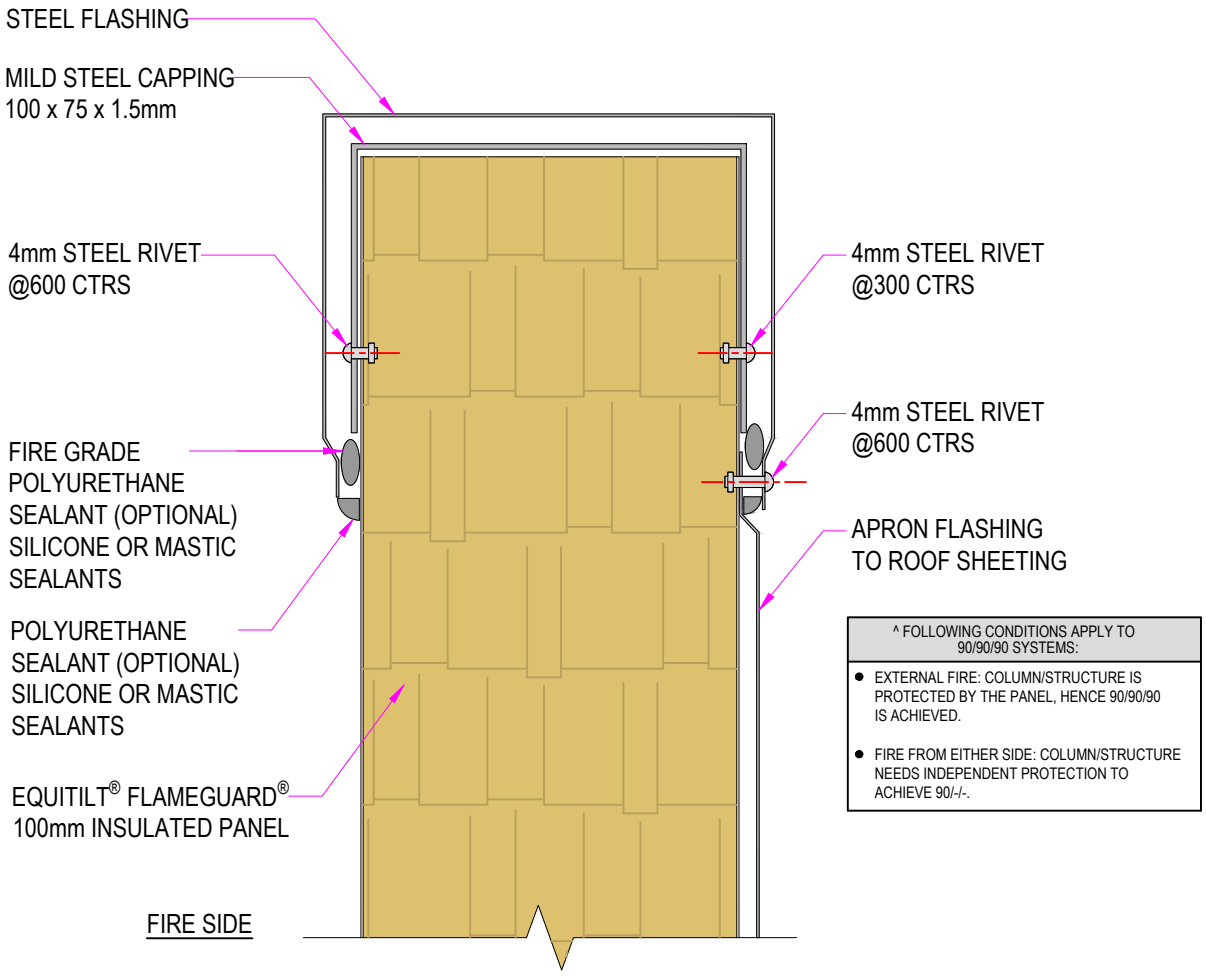
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Parapet Capping Fixing Details (Intumescent Paint in Slip Joints)

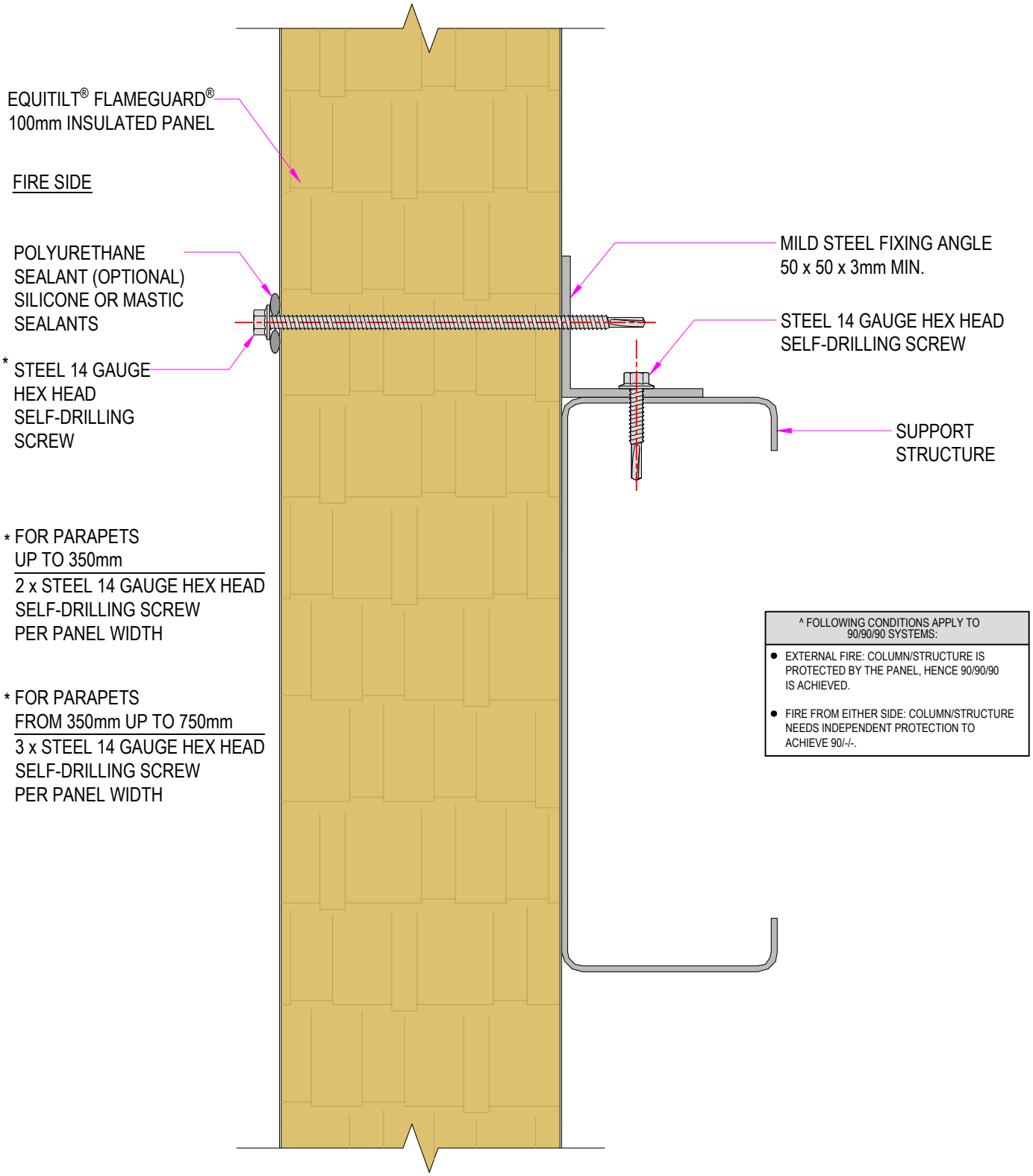


ELEVATION

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Parapet Fixing Details
(Intumescent Paint in Slip Joints)



* FOR PARAPETS
UP TO 350mm
2 x STEEL 14 GAUGE HEX HEAD
SELF-DRILLING SCREW
PER PANEL WIDTH

* FOR PARAPETS
FROM 350mm UP TO 750mm
3 x STEEL 14 GAUGE HEX HEAD
SELF-DRILLING SCREW
PER PANEL WIDTH

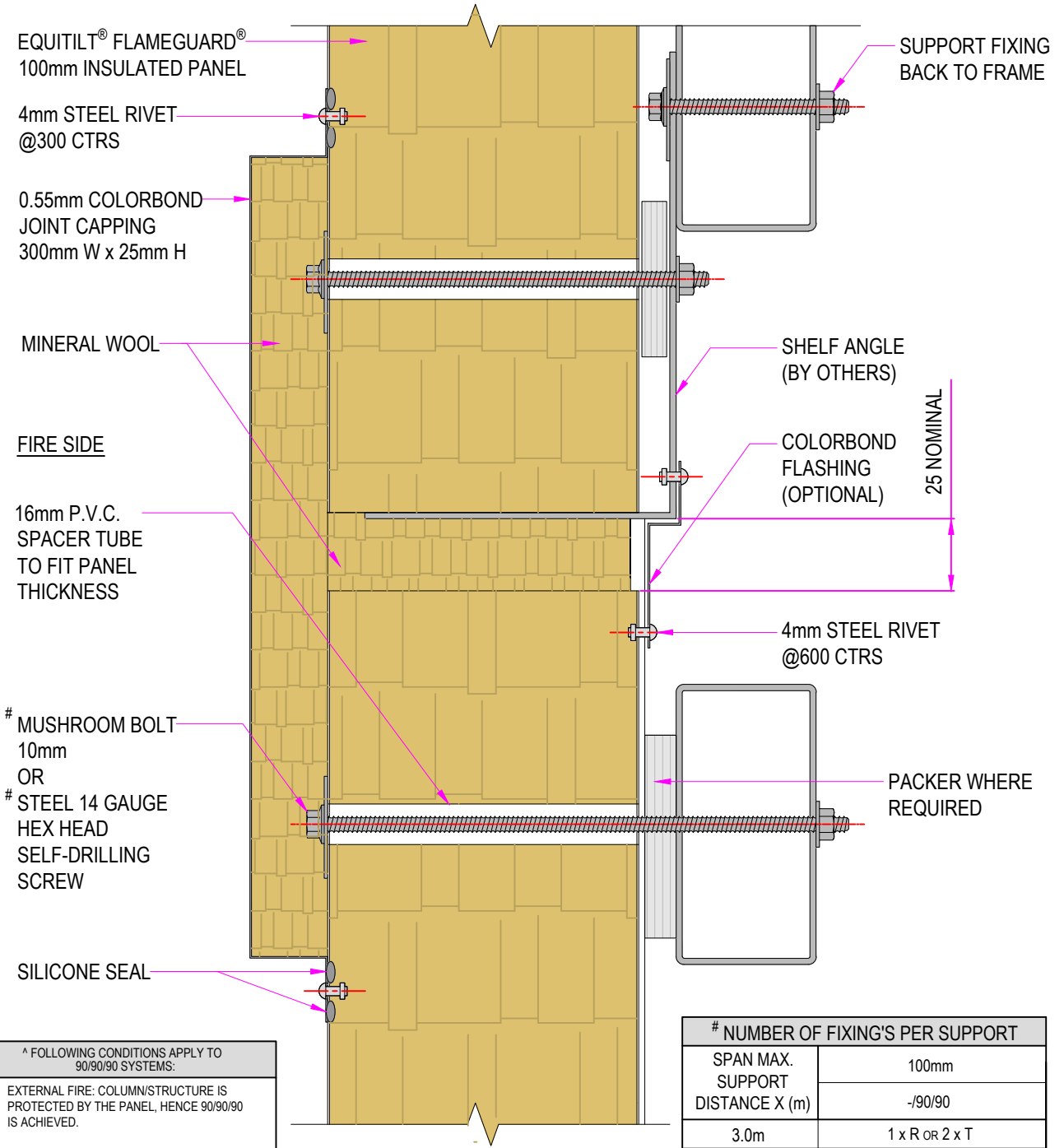
^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ELEVATION

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 100mm Panel -/90/90 or 90/90/90^

Expansion Joint Fixing Details
(Intumescent Paint in Slip Joints)



ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

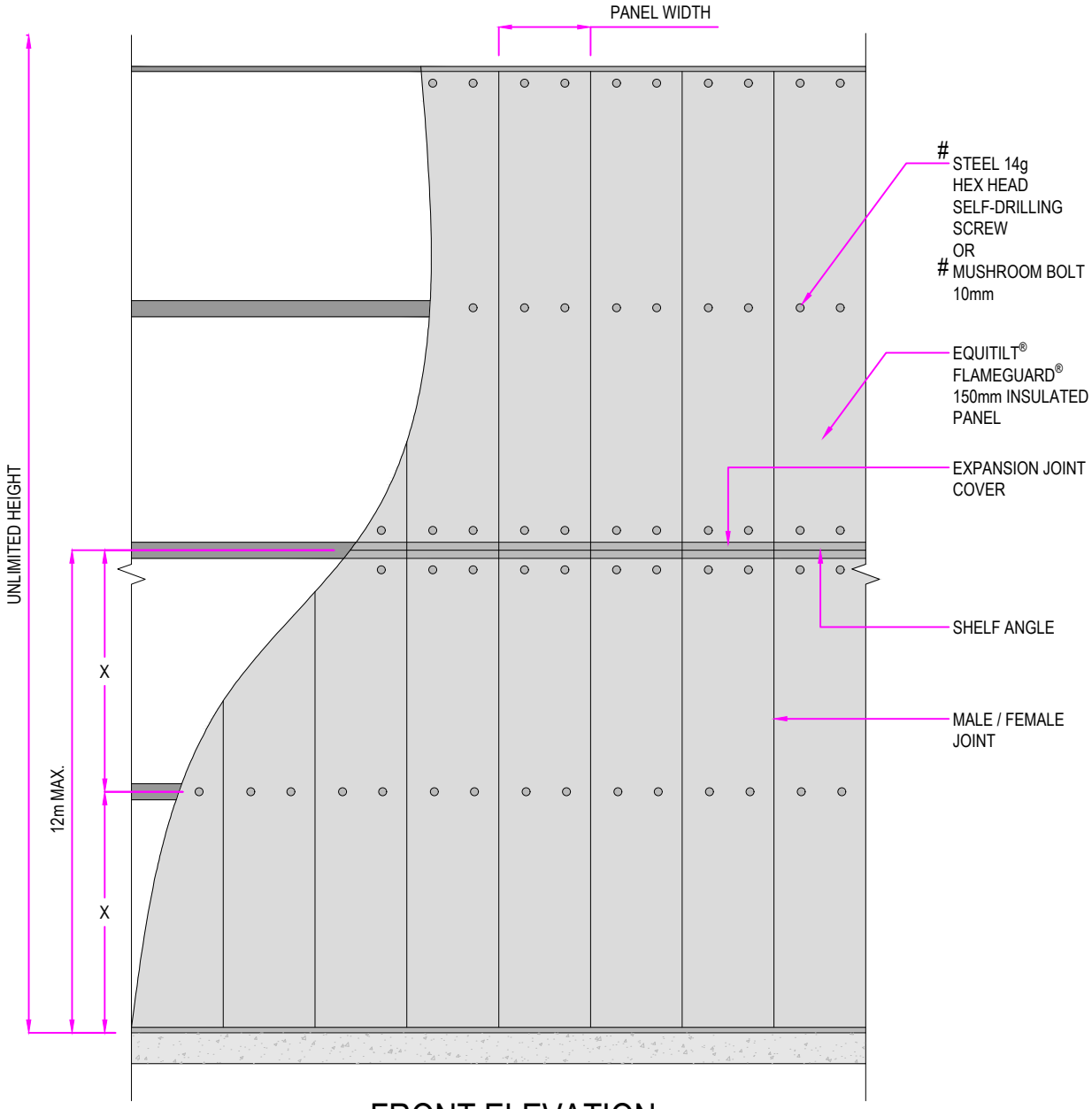
# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/90/90
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
5.7m	1 x R OR 3 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

ETF-MW-FR177-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Panel Construction Details
(No Intumescent Paint in Slip Joints)



FRONT ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/60/60
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
6.0m	1 x R OR 3 x T
7.5m	1 x R OR 4 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

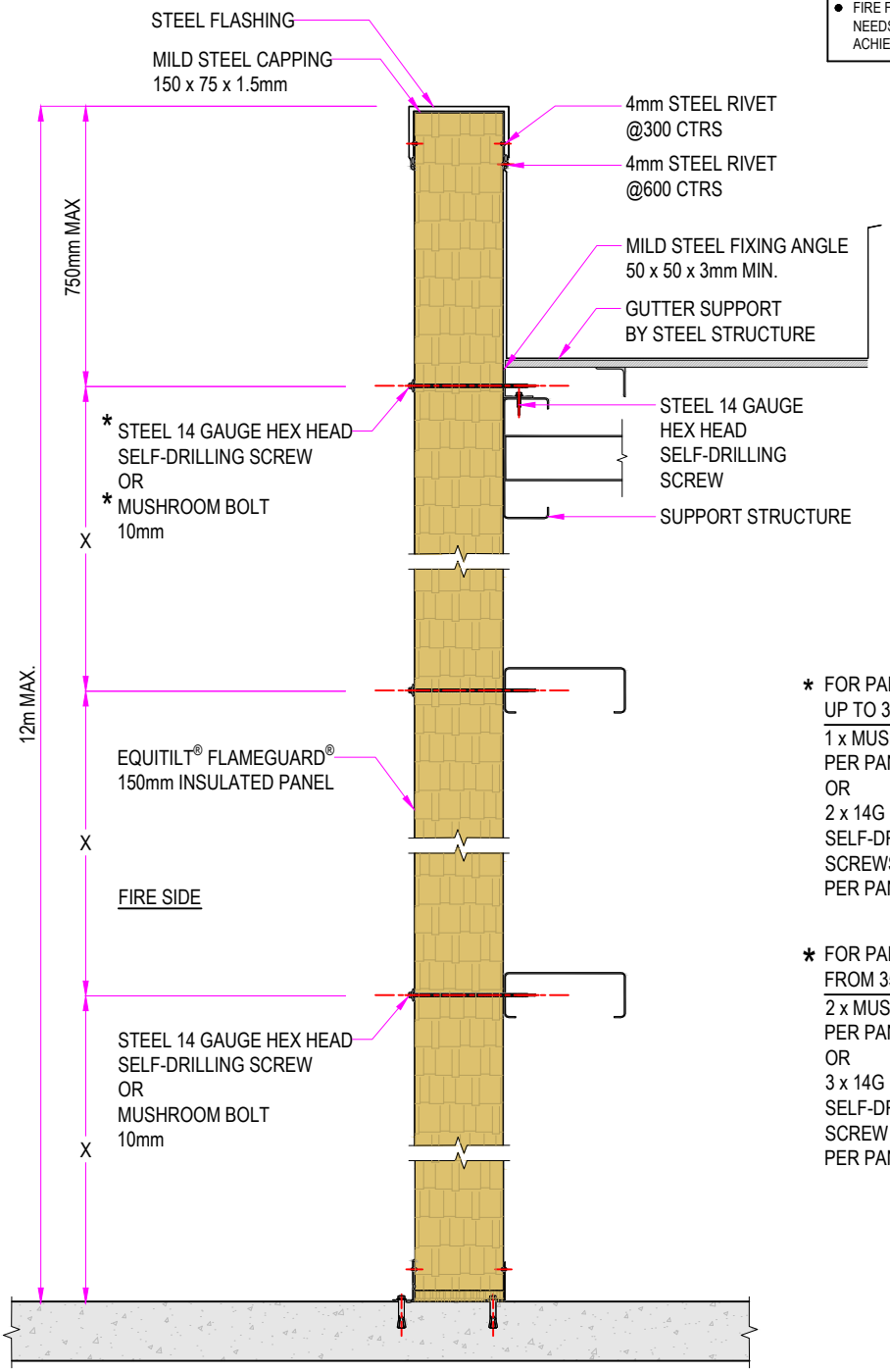
ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Panel Construction Details
(No Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.



SIDE ELEVATION

* FOR PARAPETS
UP TO 350mm
1 x MUSHROOM BOLTS (10mm)
PER PANEL WIDTH
OR
2 x 14G HEX HEAD
SELF-DRILLING
SCREWS (STEEL)
PER PANEL WIDTH

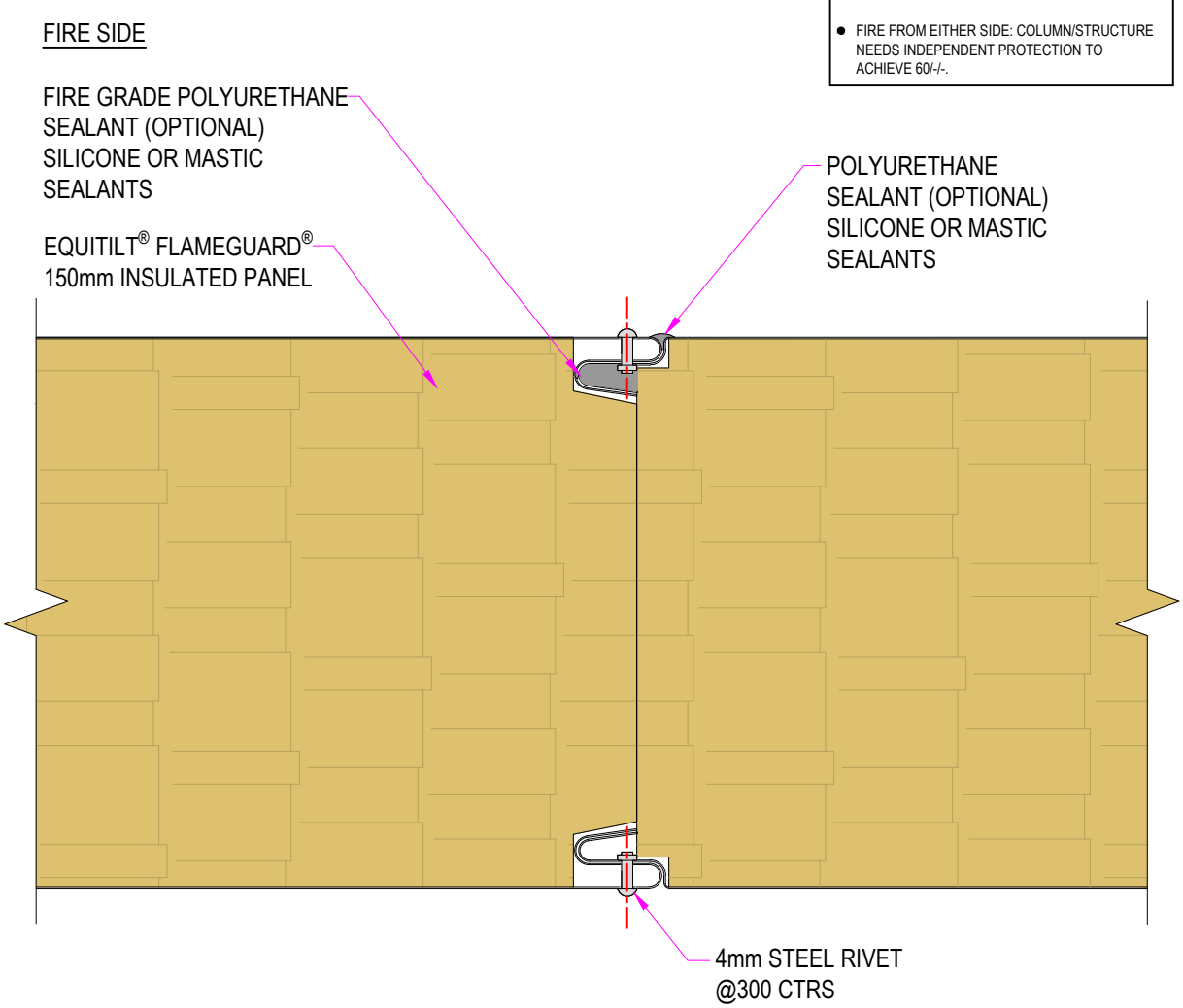
* FOR PARAPETS
FROM 350mm UP TO 750mm
2 x MUSHROOM BOLTS (10mm)
PER PANEL WIDTH
OR
3 x 14G HEX HEAD
SELF-DRILLING
SCREW (STEEL)
PER PANEL WIDTH

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Joint Fixing Details
(No Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

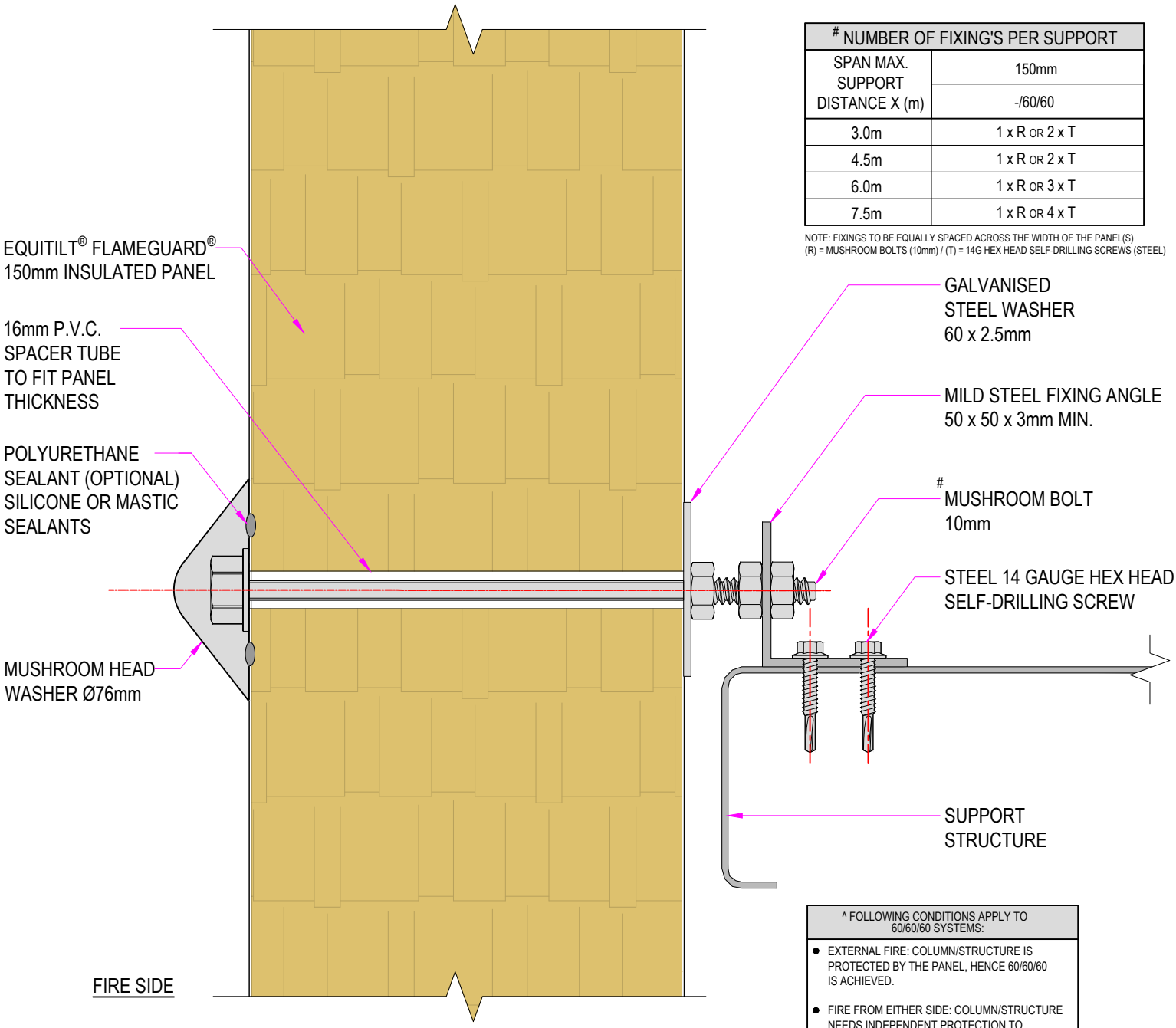


PLAN

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Intermediate Mushroom Bolt Fixing Details
(No Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/60/60
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
6.0m	1 x R OR 3 x T
7.5m	1 x R OR 4 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

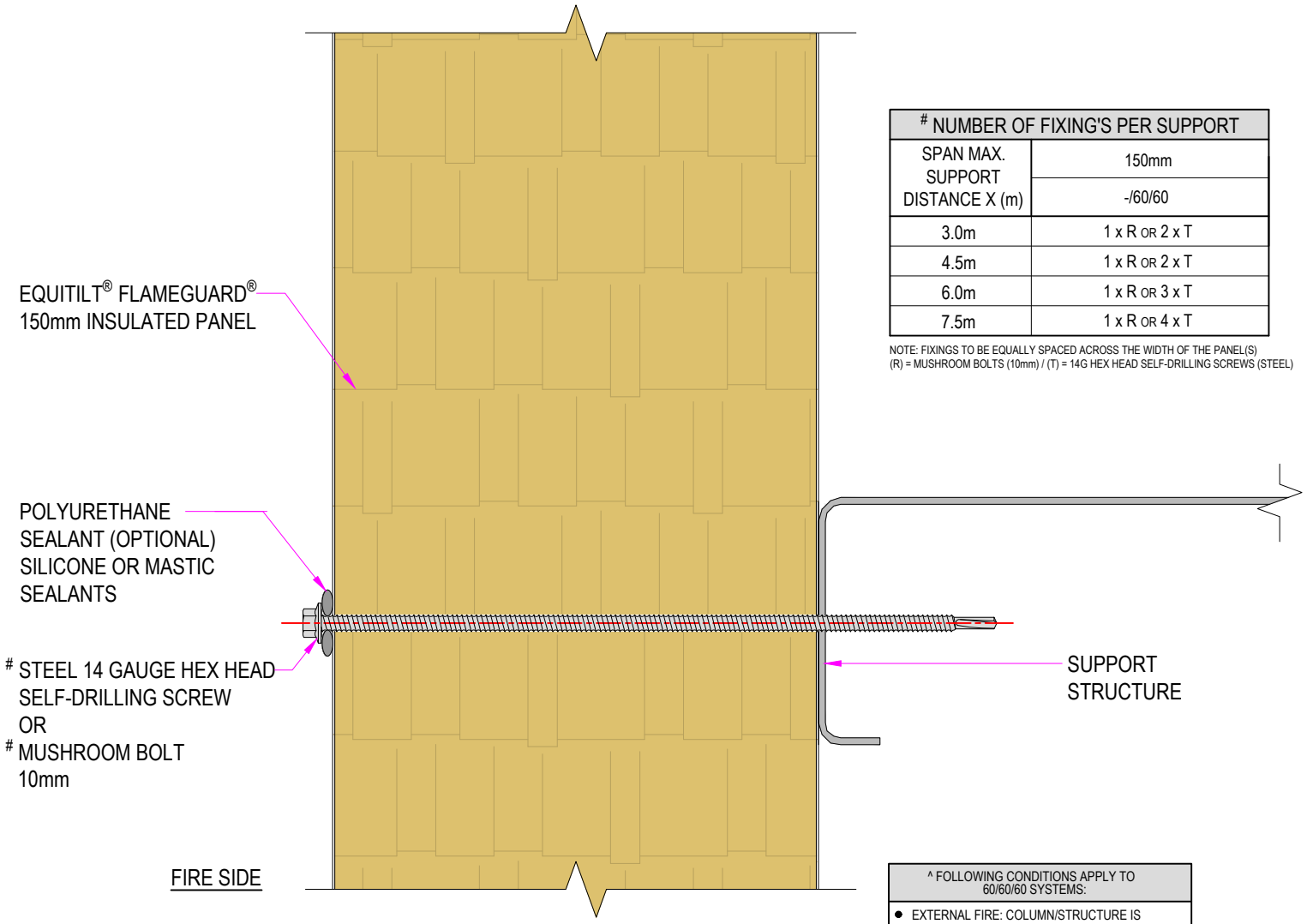
^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Intermediate Tek Screw Fixing Details
(No Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/60/60
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
6.0m	1 x R OR 3 x T
7.5m	1 x R OR 4 x T

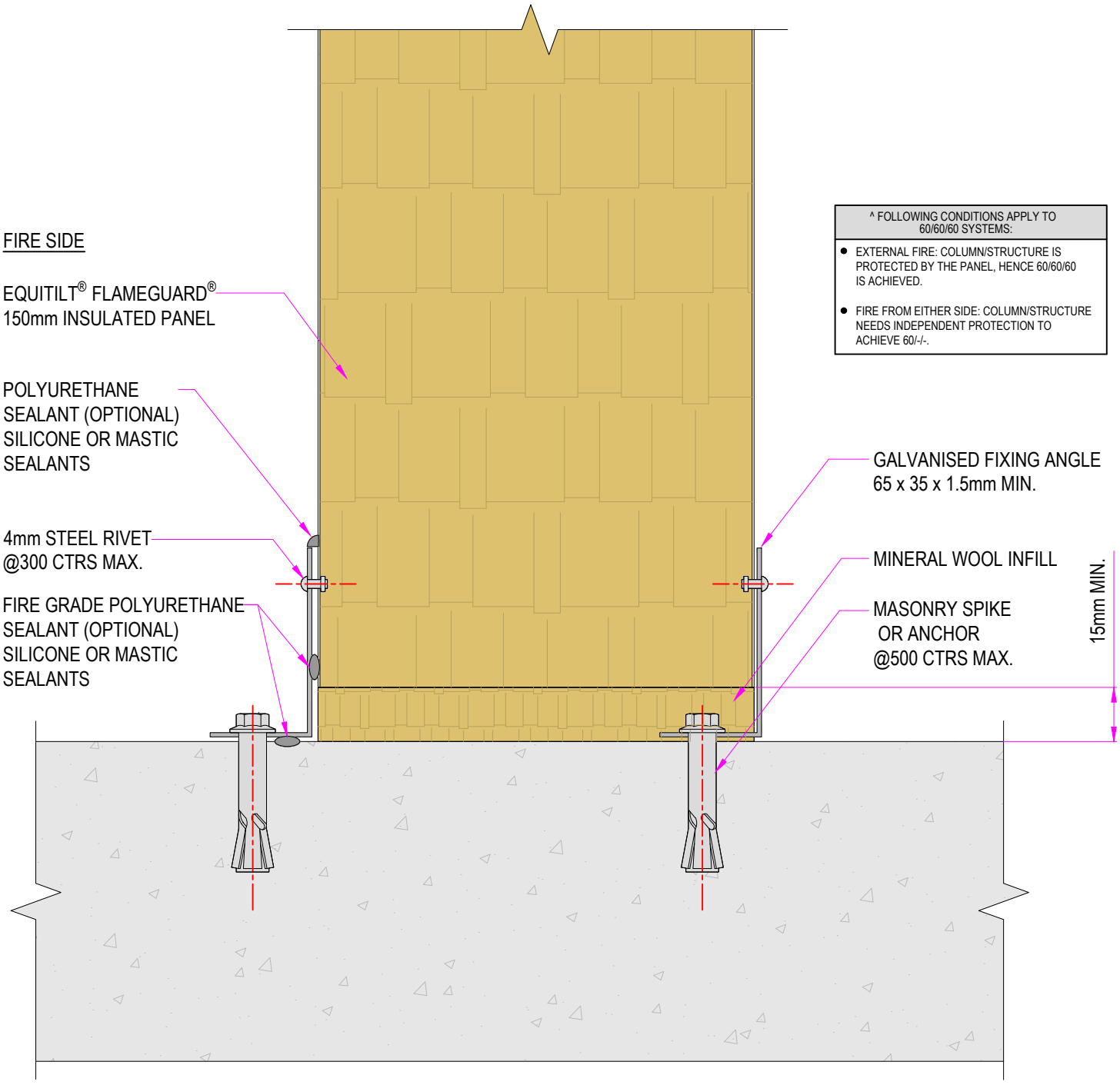
NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Base Fixing Details
(No Intumescent Paint in Slip Joints)

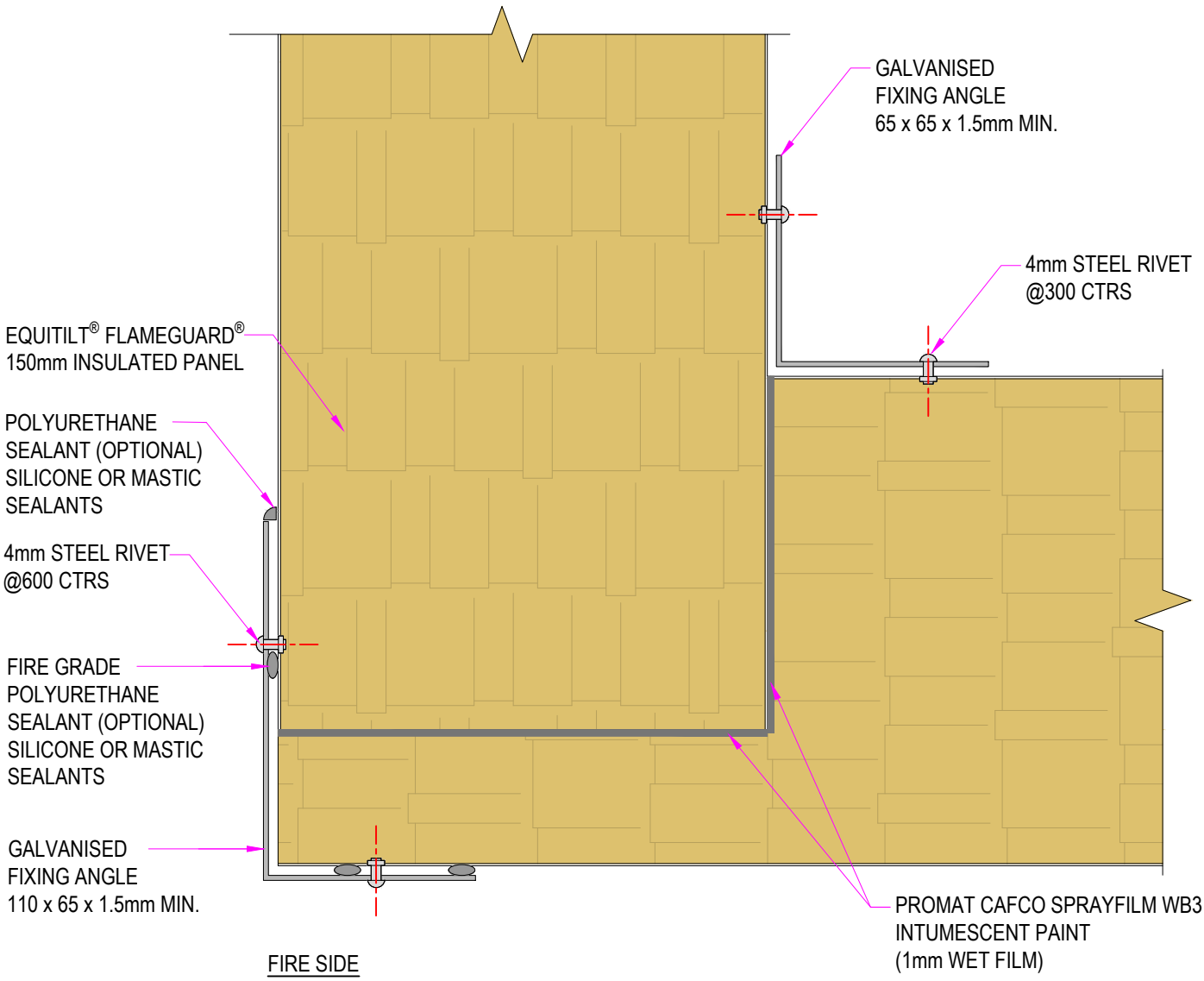


ELEVATION

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Corner Fixing Details
(No Intumescent Paint in Slip Joints)



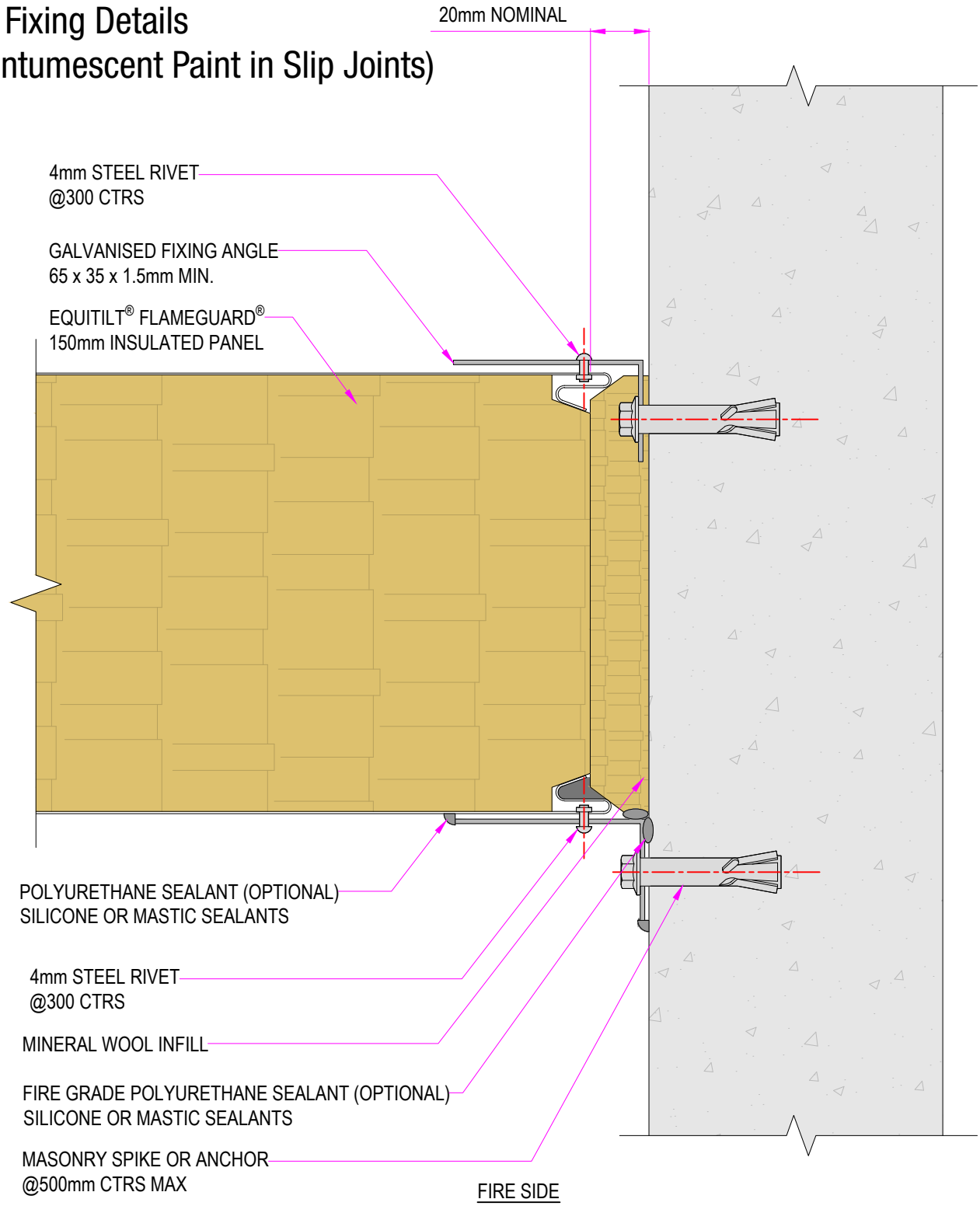
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Wall Fixing Details
(No Intumescent Paint in Slip Joints)



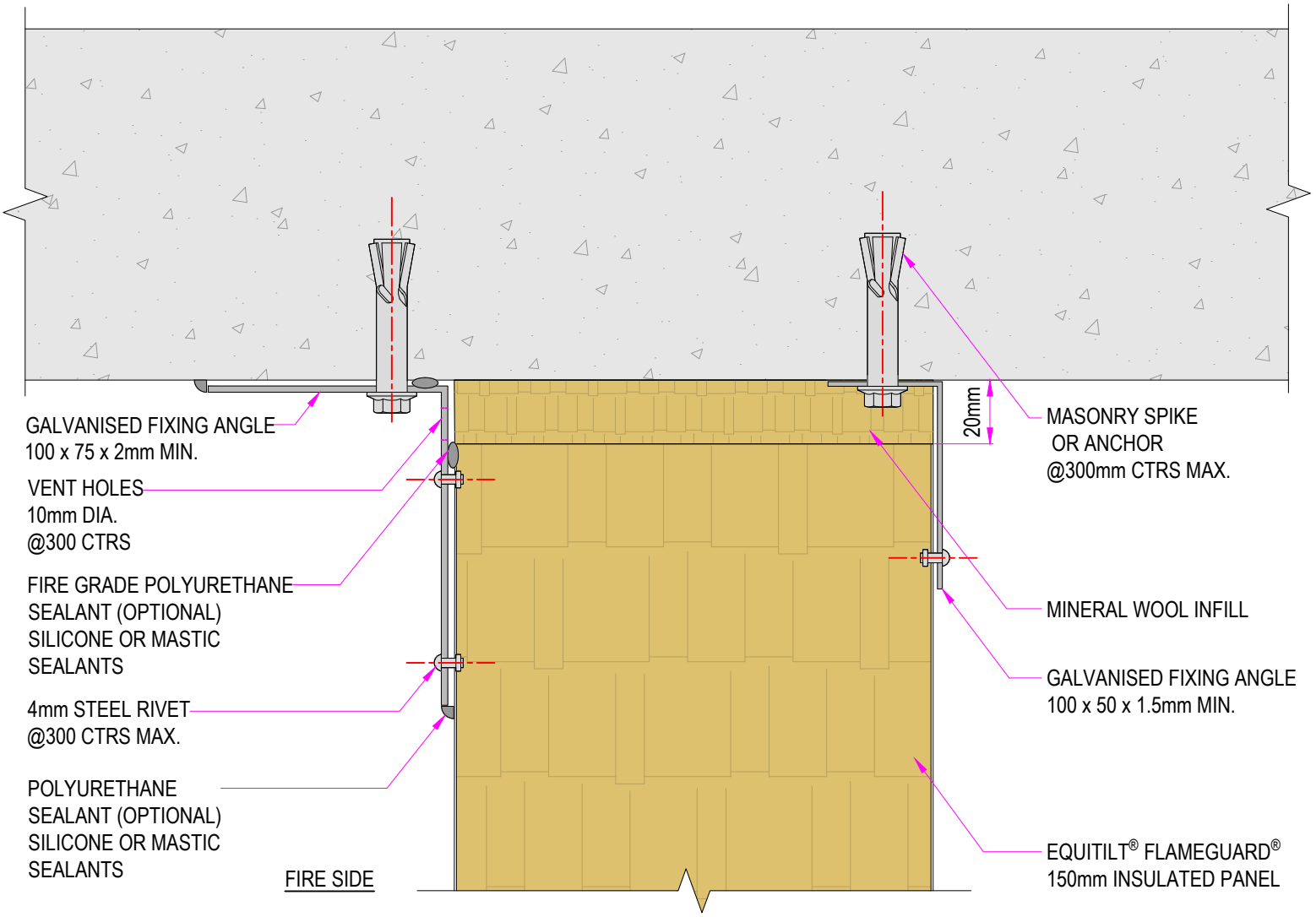
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Top Fixing Details
(No Intumescent Paint in Slip Joints)



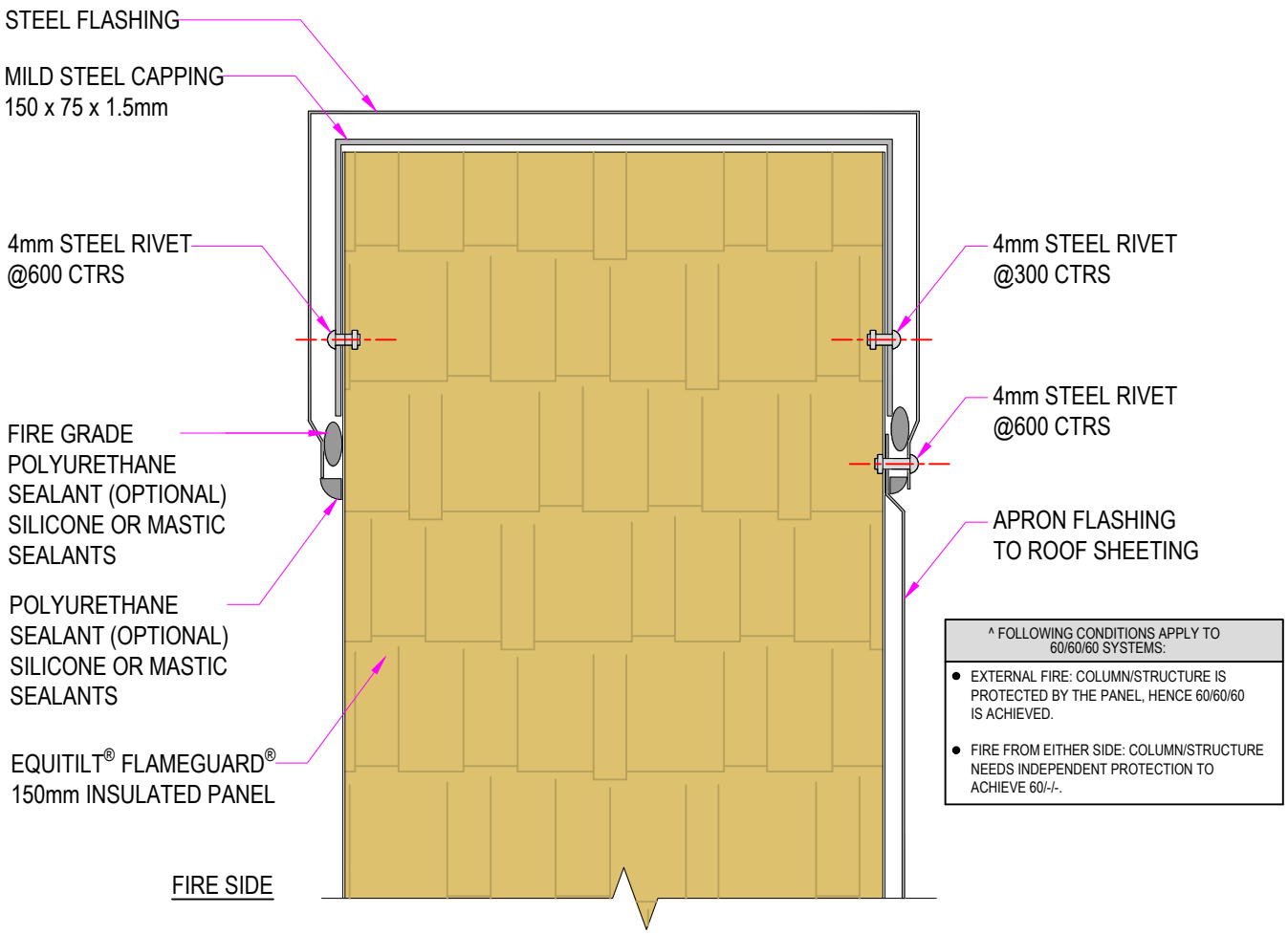
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Parapet Capping Fixing Details
(No Intumescent Paint in Slip Joints)

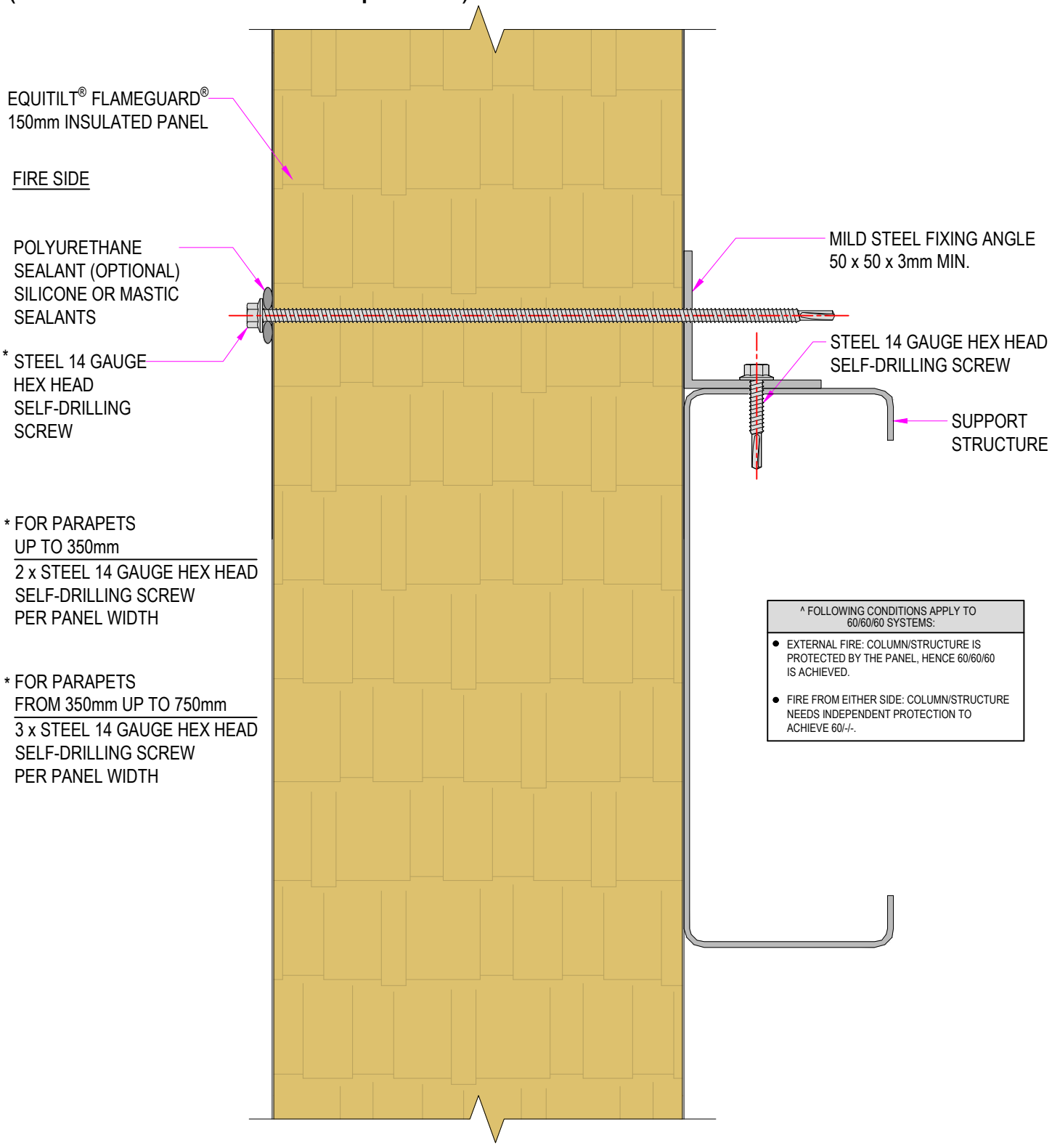


ELEVATION

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Parapet Fixing Details
(No Intumescent Paint in Slip Joints)



* FOR PARAPETS
UP TO 350mm
2 x STEEL 14 GAUGE HEX HEAD
SELF-DRILLING SCREW
PER PANEL WIDTH

* FOR PARAPETS
FROM 350mm UP TO 750mm
3 x STEEL 14 GAUGE HEX HEAD
SELF-DRILLING SCREW
PER PANEL WIDTH

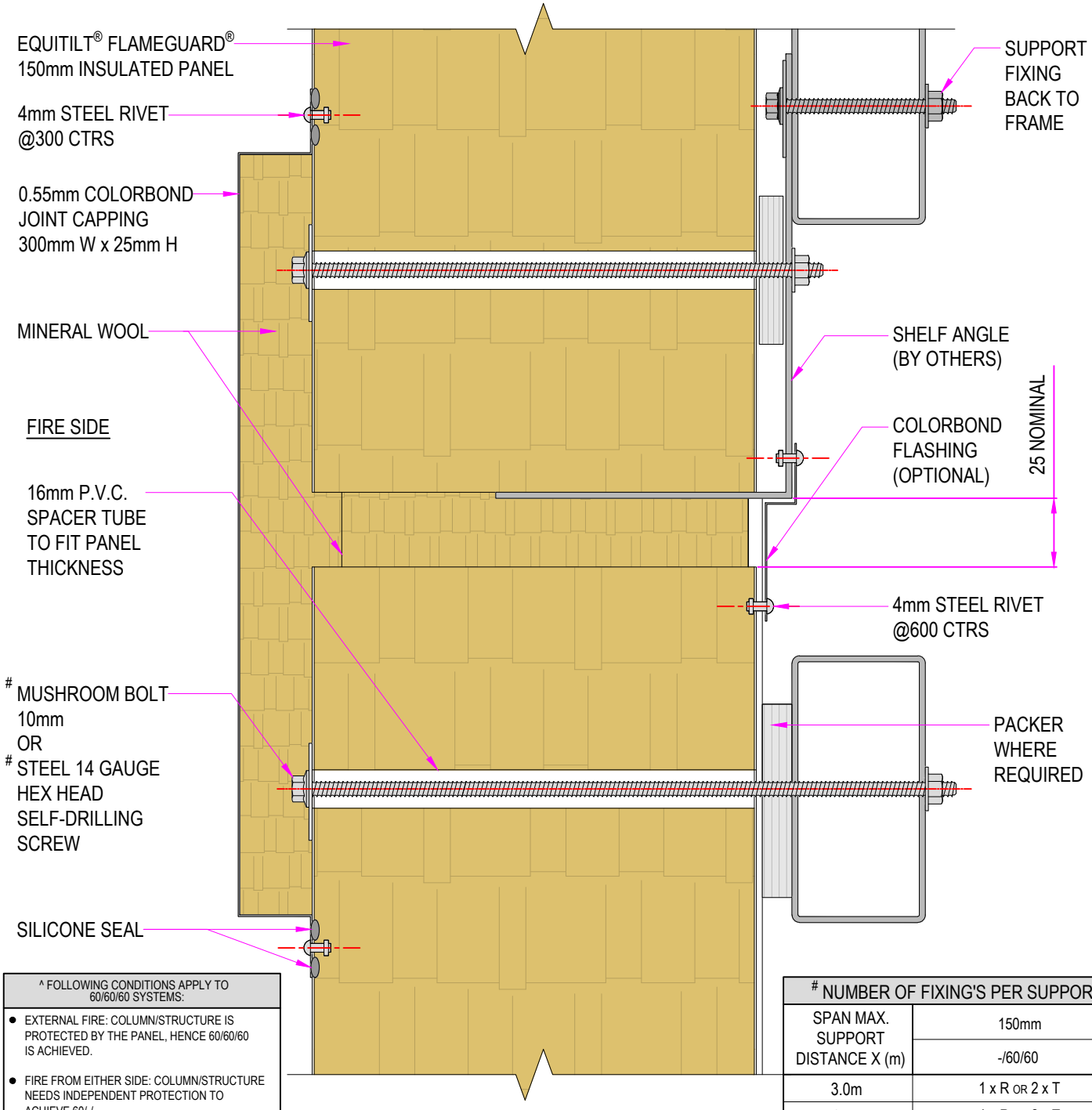
^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ELEVATION

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/60/60 or 60/60/60^

Expansion Joint Fixing Details
(No Intumescent Paint in Slip Joints)



ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

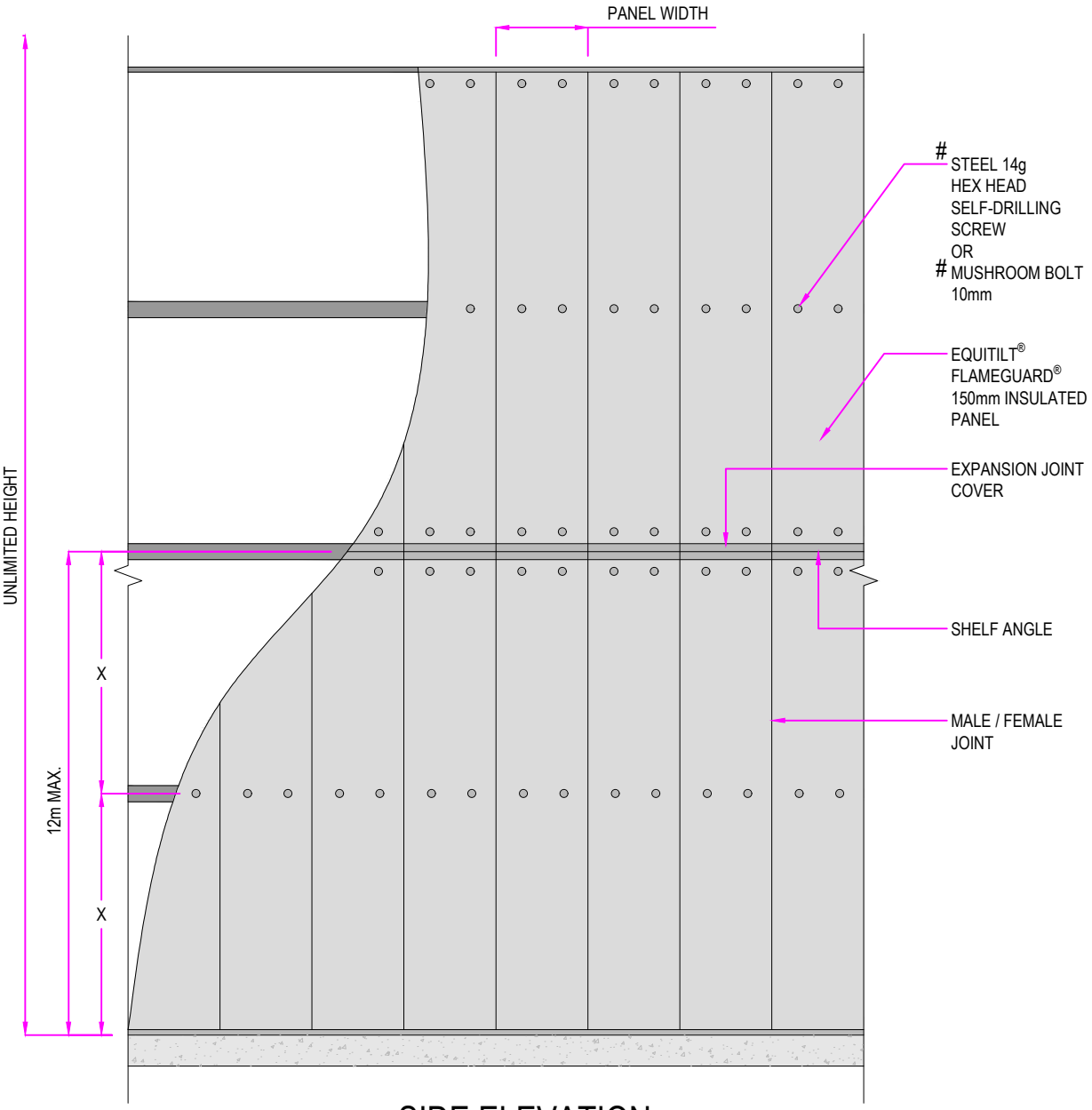
# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/60/60
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
6.0m	1 x R OR 3 x T
7.5m	1 x R OR 4 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

ETF-MW-FR181-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Panel Construction Details
(Intumescent Paint in Slip Joints)



SIDE ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/120/120
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
6.0m	1 x R OR 3 x T
7.5m	1 x R OR 4 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

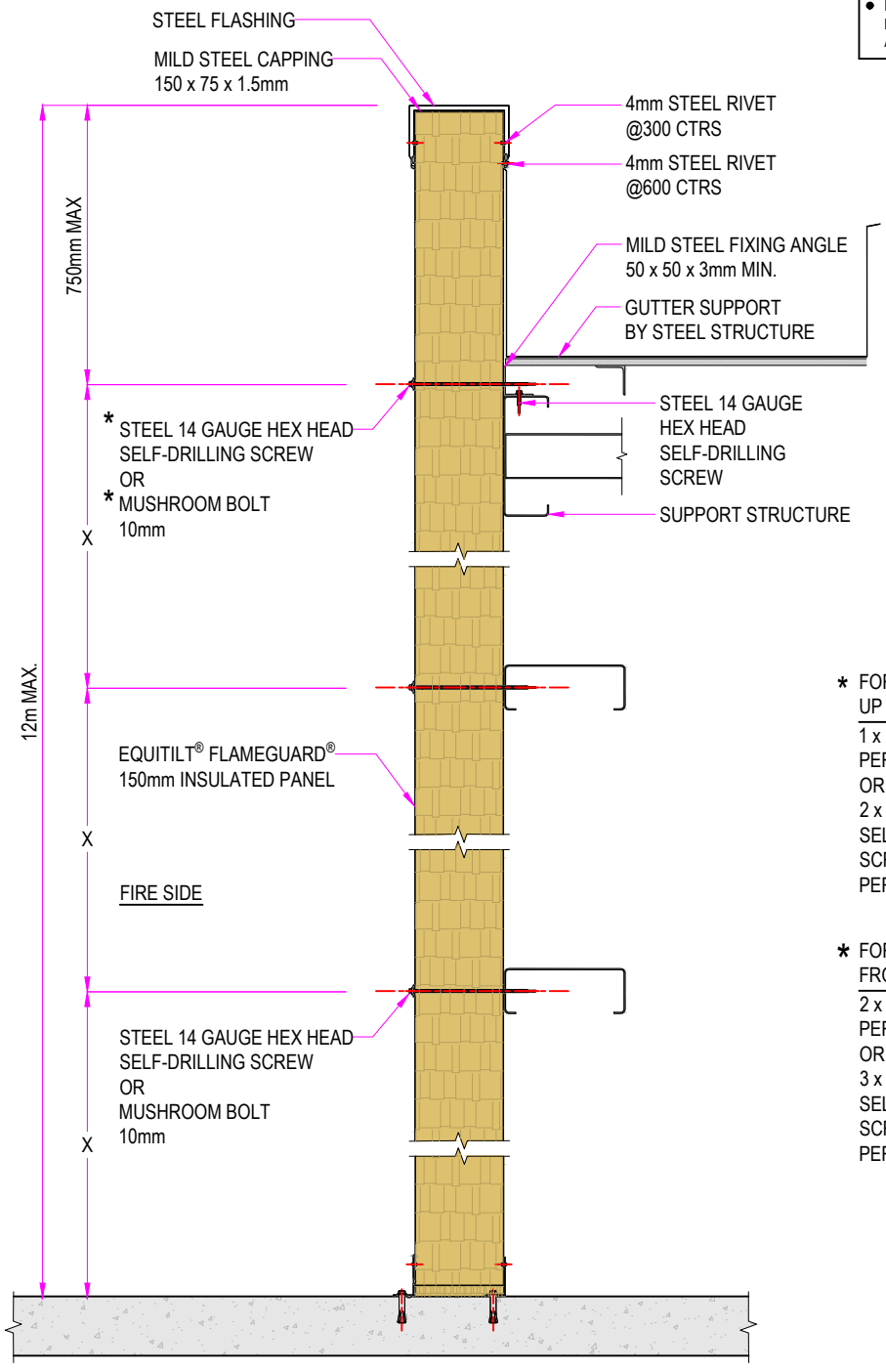
ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Panel Construction Details
(Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.



SIDE ELEVATION

* FOR PARAPETS UP TO 350mm
1 x MUSHROOM BOLTS (10mm) PER PANEL WIDTH
OR
2 x 14G HEX HEAD SELF-DRILLING SCREWS (STEEL) PER PANEL WIDTH

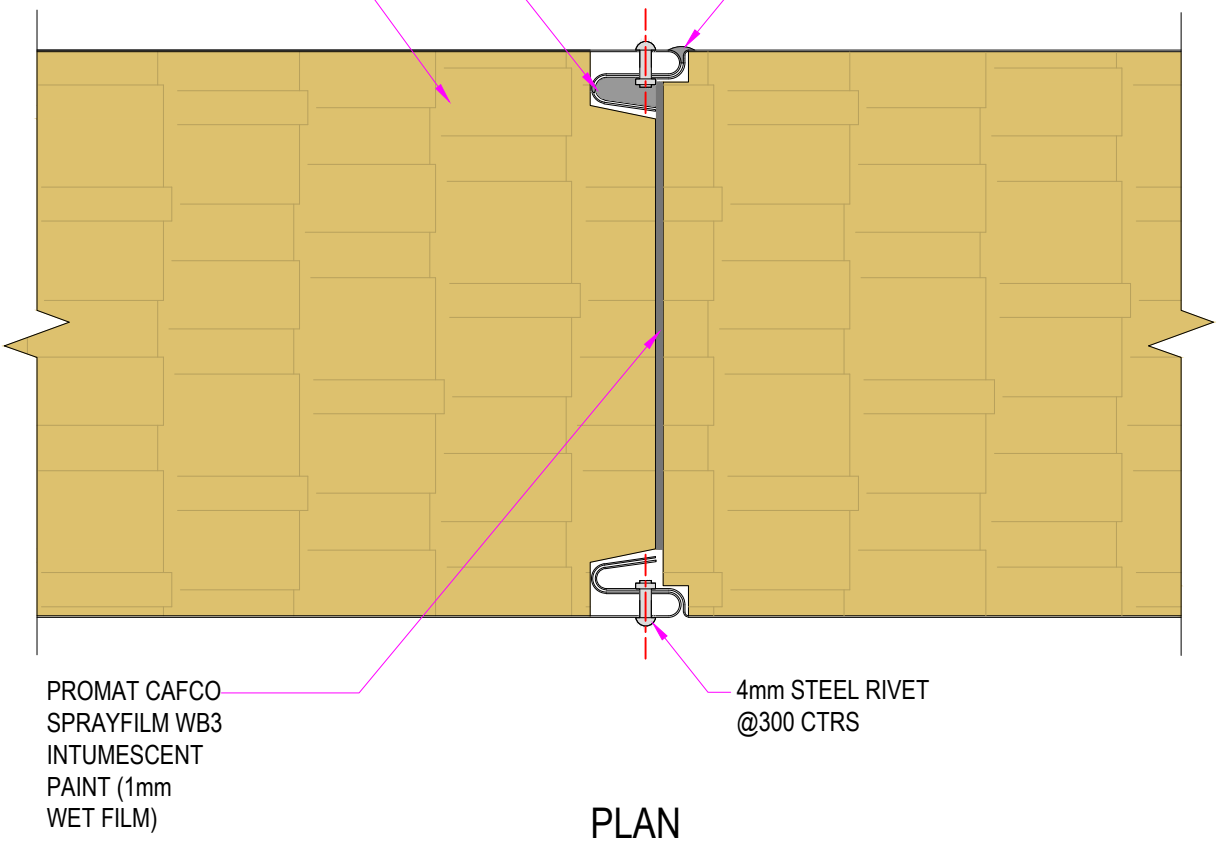
* FOR PARAPETS FROM 350mm UP TO 750mm
2 x MUSHROOM BOLTS (10mm) PER PANEL WIDTH
OR
3 x 14G HEX HEAD SELF-DRILLING SCREW (STEEL) PER PANEL WIDTH

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Joint Fixing Details
(Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

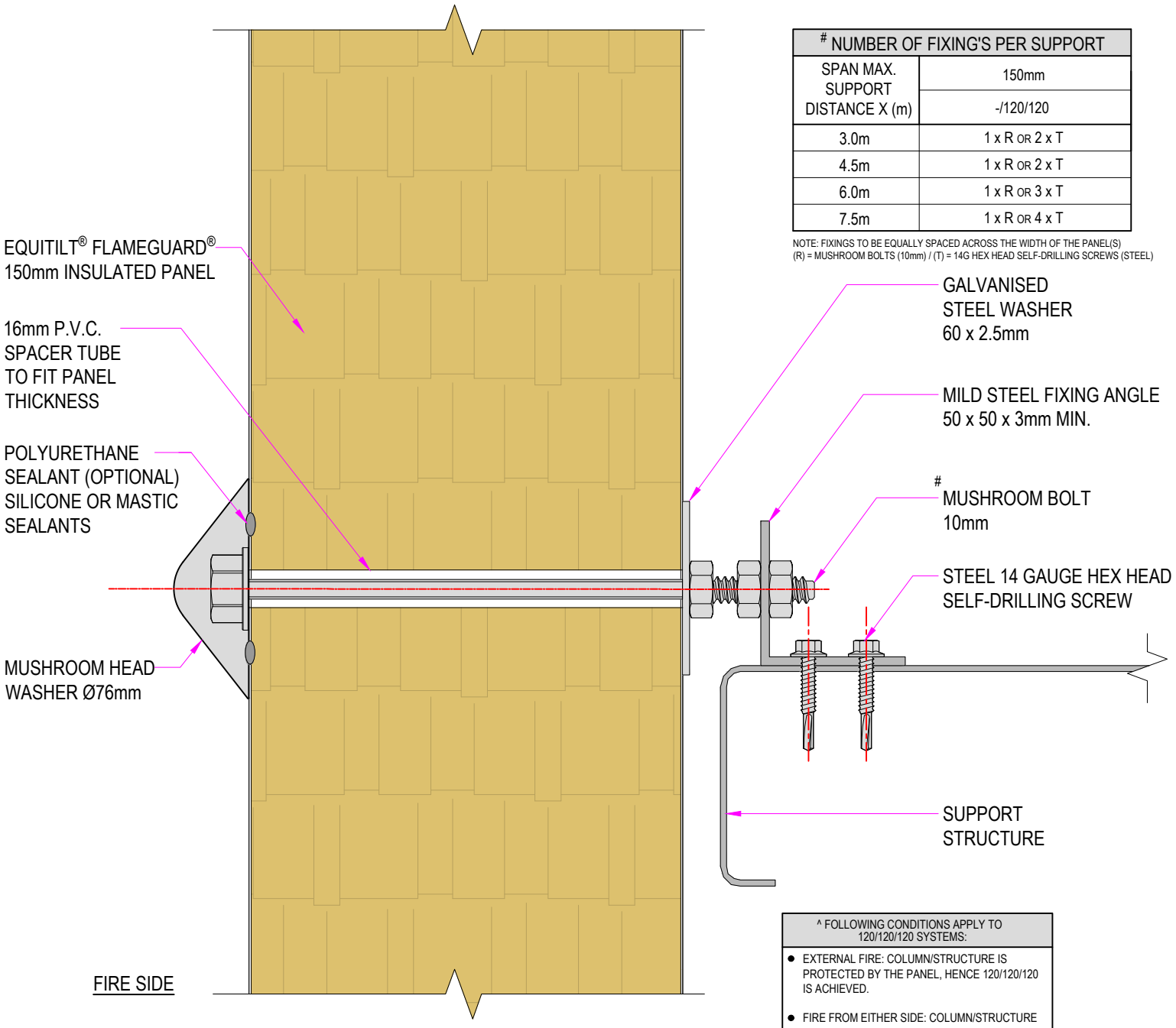


PLAN

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Intermediate Mushroom Bolt Fixing Details (Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/120/120
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
6.0m	1 x R OR 3 x T
7.5m	1 x R OR 4 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

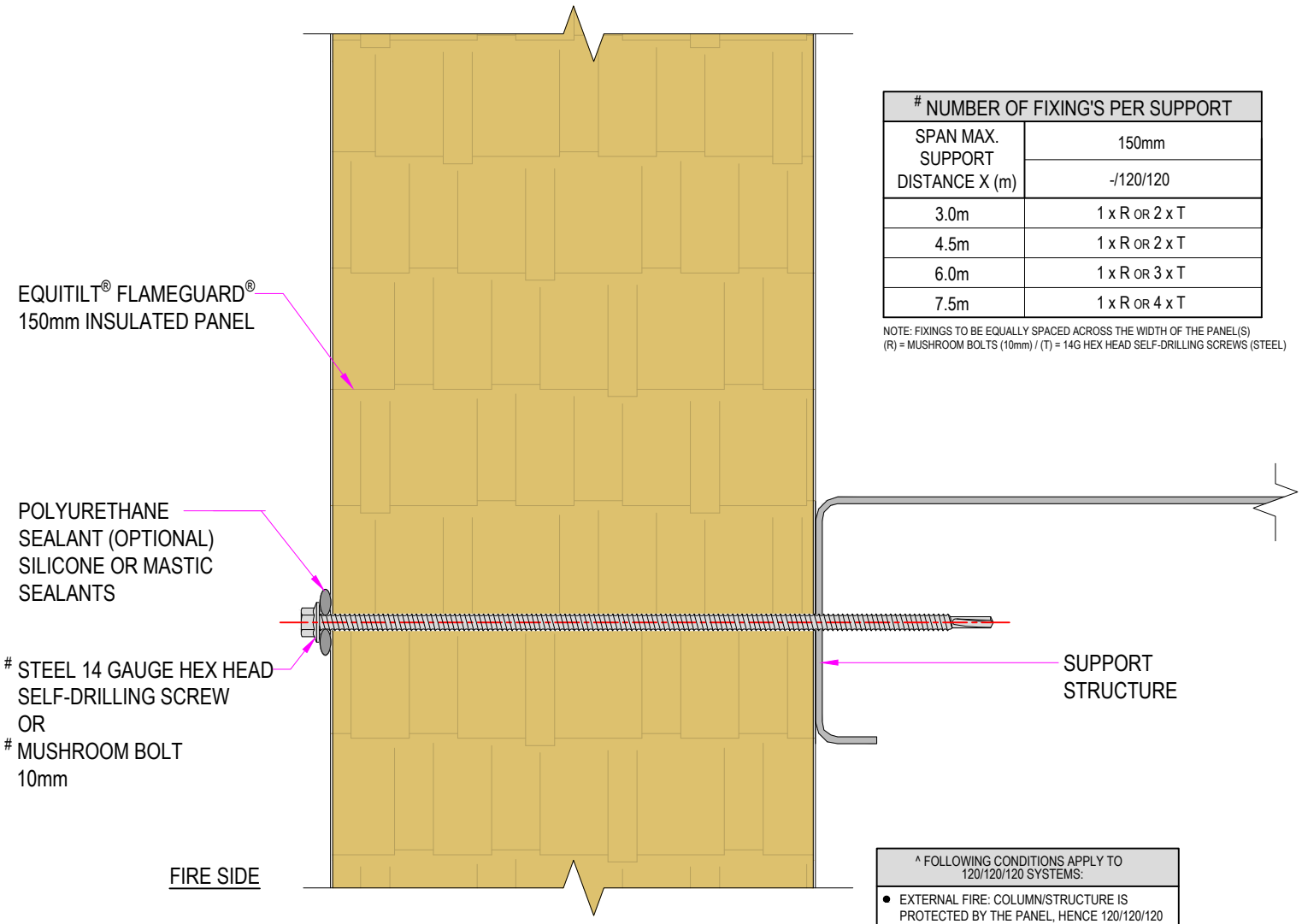
^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Intermediate Tek Screw Fixing Details (Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/120/120
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
6.0m	1 x R OR 3 x T
7.5m	1 x R OR 4 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

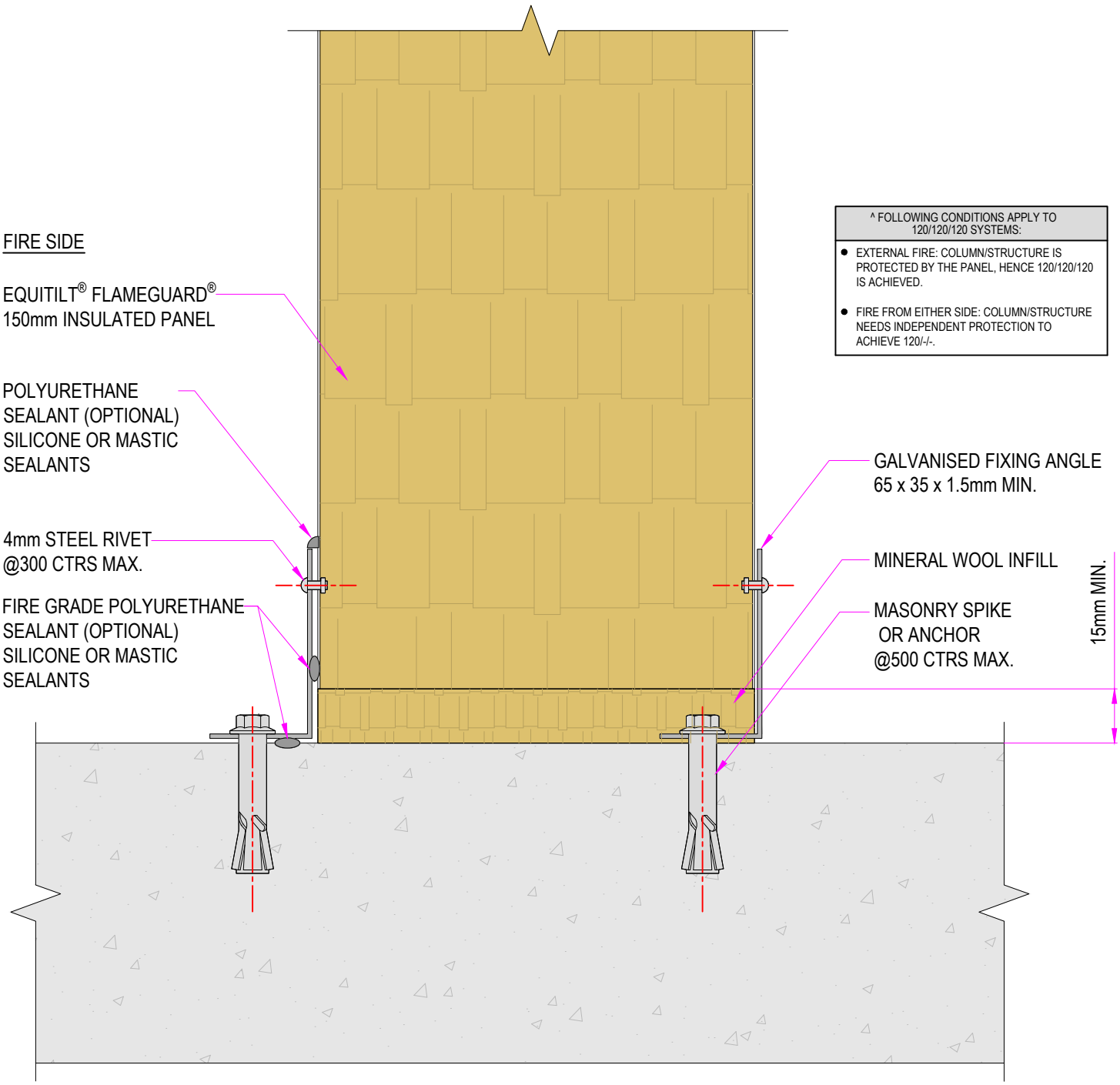
^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Base Fixing Details
(Intumescent Paint in Slip Joints)

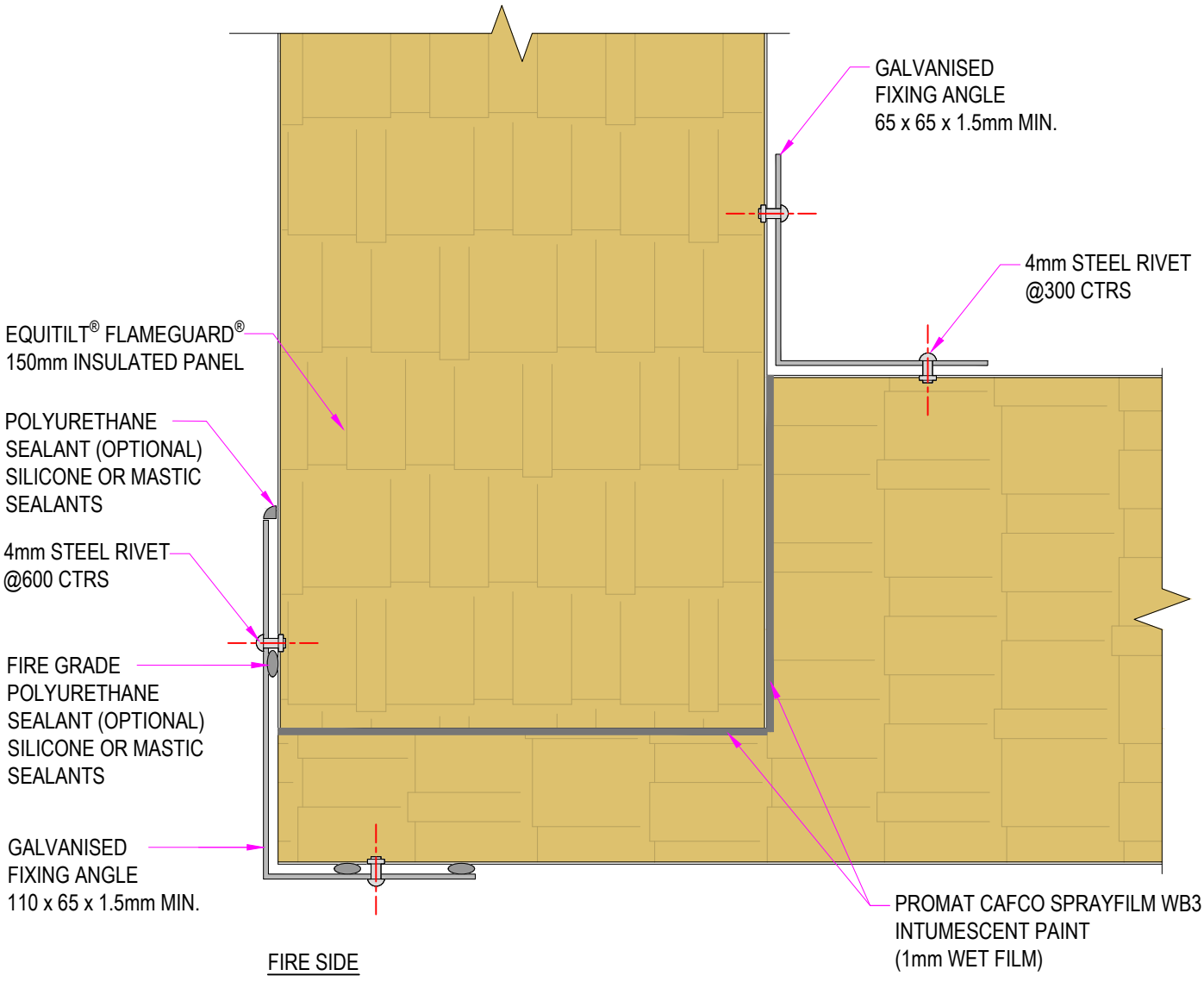


ELEVATION

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Corner Fixing Details
(Intumescent Paint in Slip Joints)



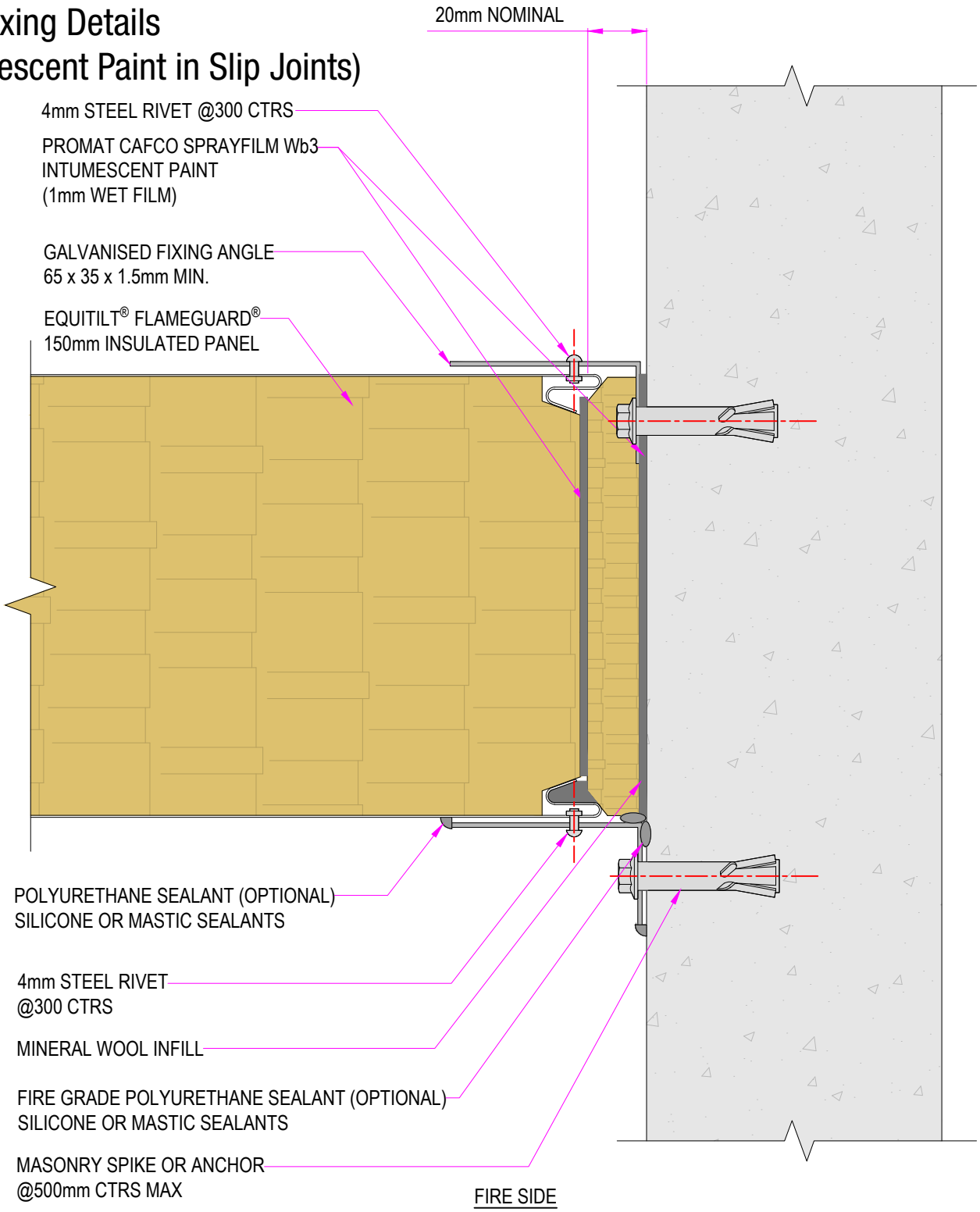
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Wall Fixing Details
(Intumescent Paint in Slip Joints)



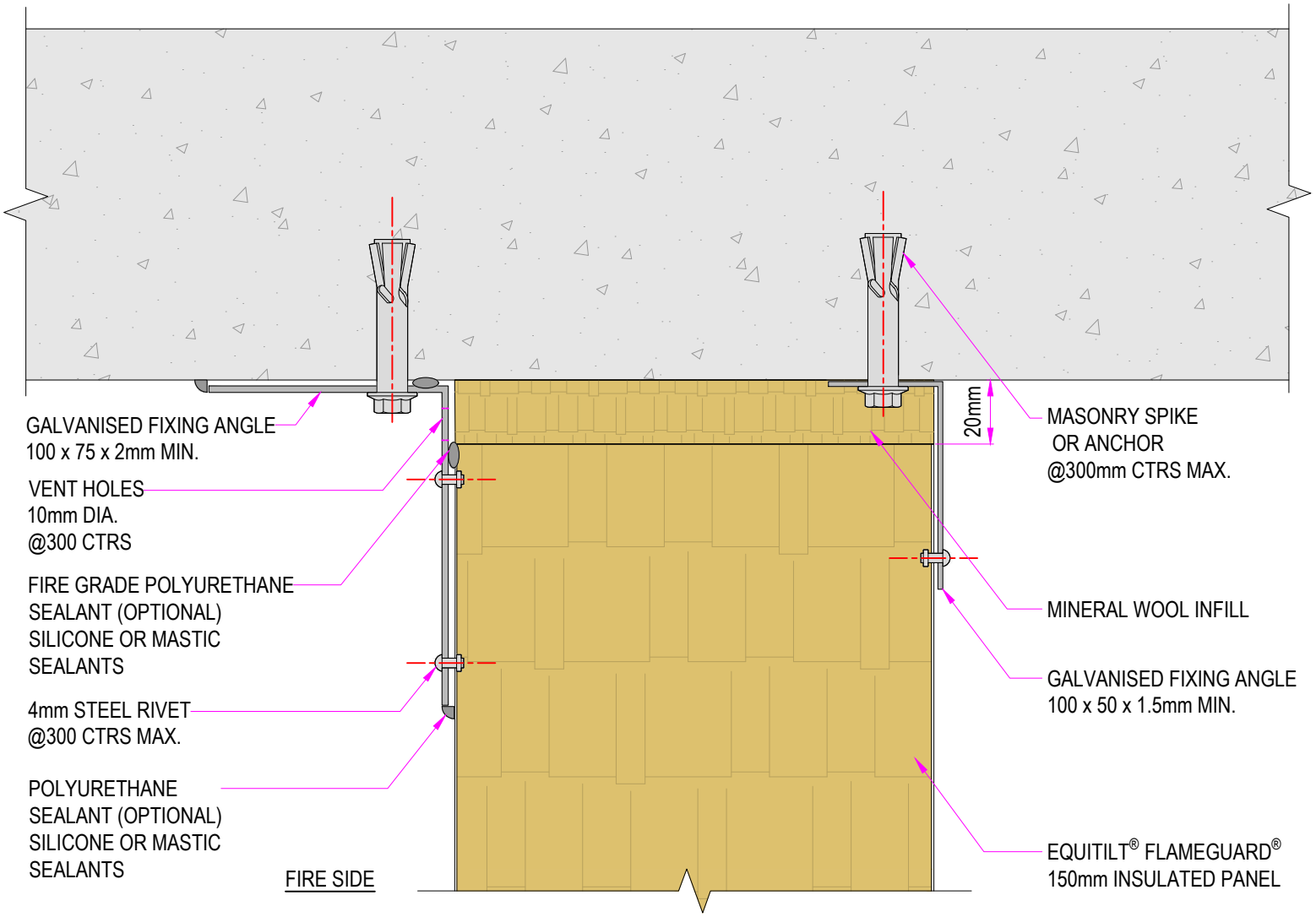
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Top Fixing Details
(Intumescent Paint in Slip Joints)



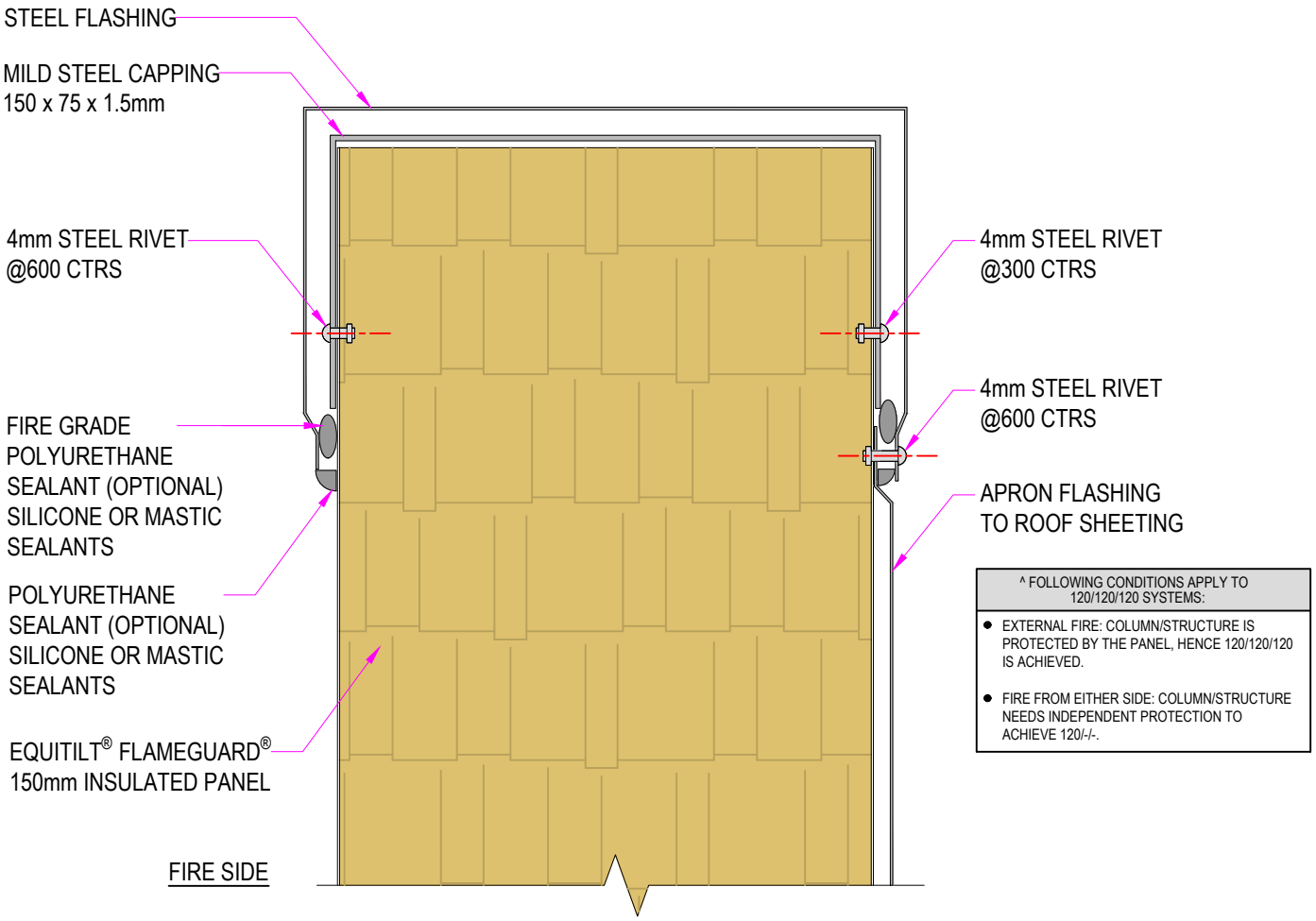
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Parapet Capping Fixing Details (Intumescent Paint in Slip Joints)

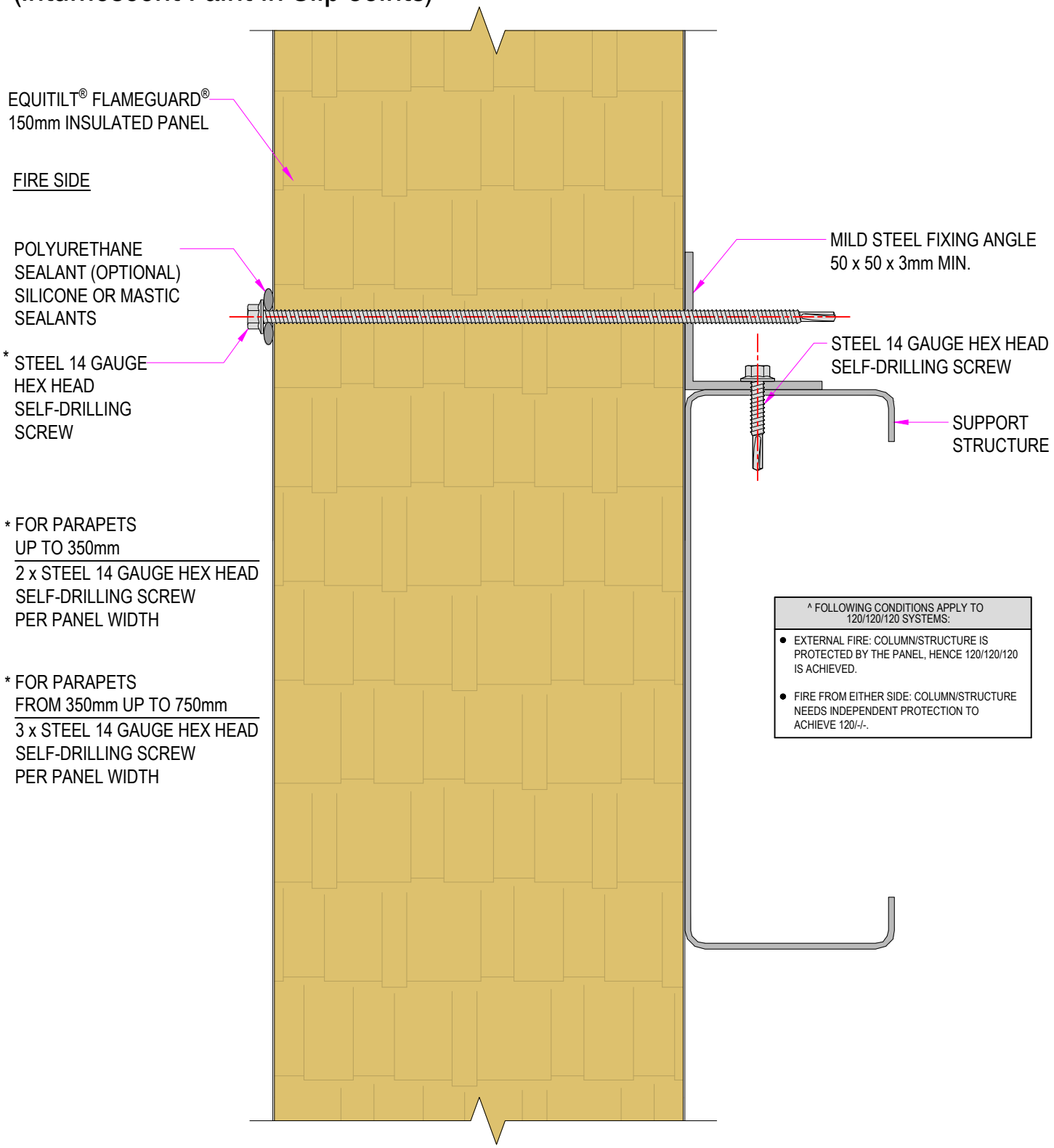


ELEVATION

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Parapet Fixing Details
(Intumescent Paint in Slip Joints)



* FOR PARAPETS
UP TO 350mm
2 x STEEL 14 GAUGE HEX HEAD
SELF-DRILLING SCREW
PER PANEL WIDTH

* FOR PARAPETS
FROM 350mm UP TO 750mm
3 x STEEL 14 GAUGE HEX HEAD
SELF-DRILLING SCREW
PER PANEL WIDTH

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:

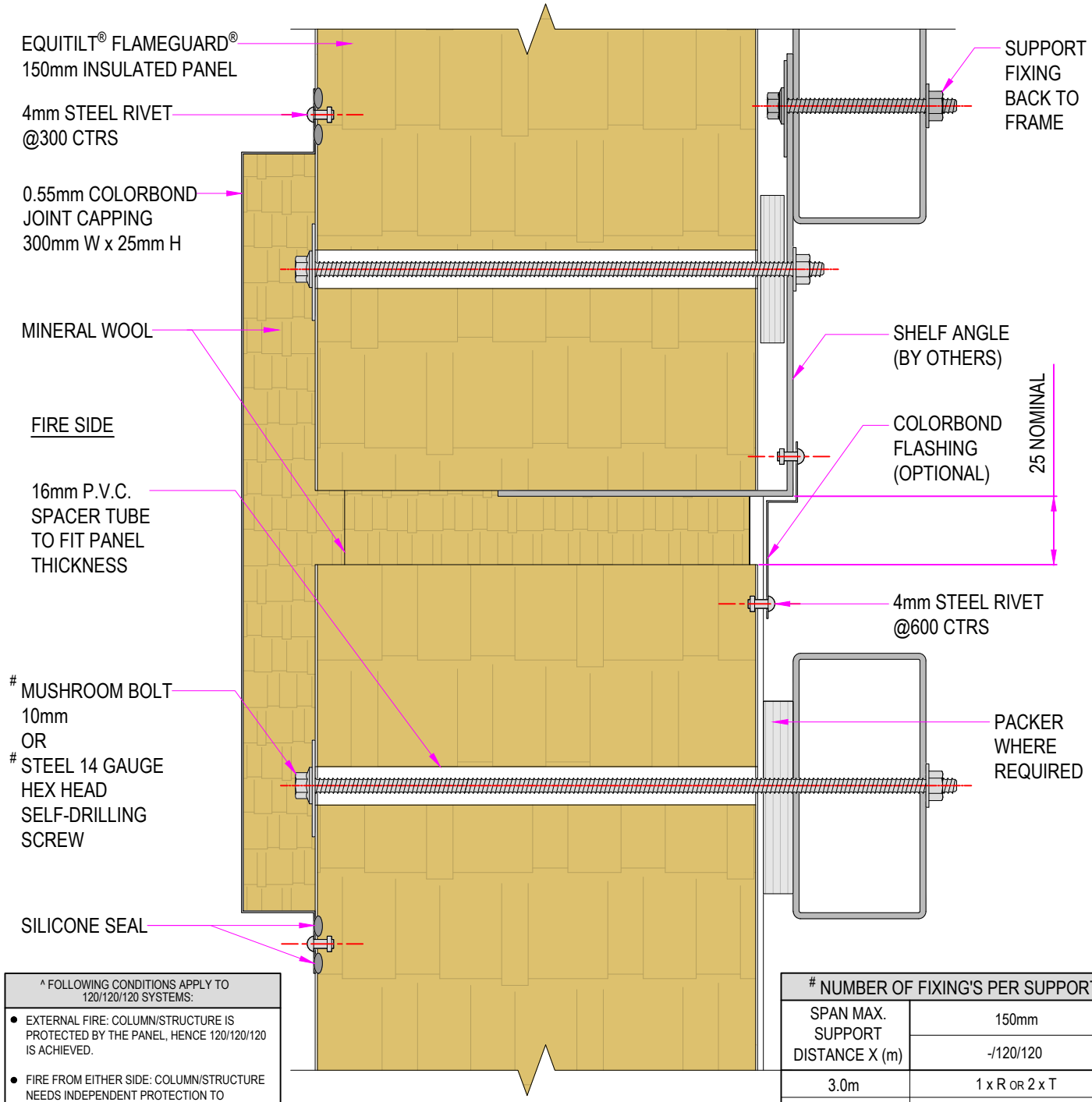
- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ELEVATION

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/120/120 or 120/120/120^

Expansion Joint Fixing Details
(Intumescent Paint in Slip Joints)



ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

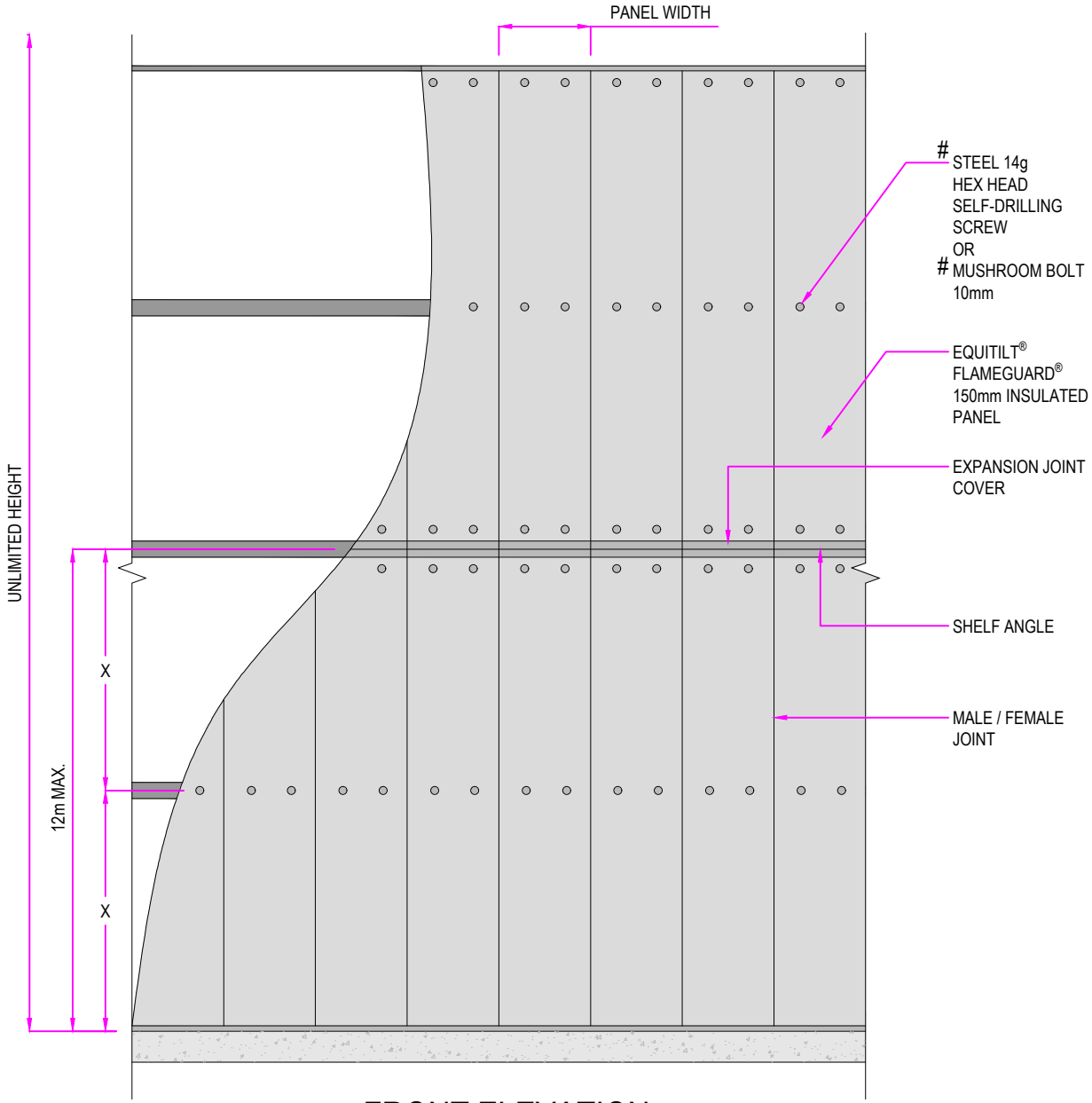
# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm -/120/120
3.0m	1 x R OR 2 x T
4.5m	1 x R OR 2 x T
6.0m	1 x R OR 3 x T
7.5m	1 x R OR 4 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

ETF-MW-FR180-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Panel Construction Details
(Intumescent Paint in Slip Joints)



FRONT ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/180/180
3.0m	1 x R OR 2 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

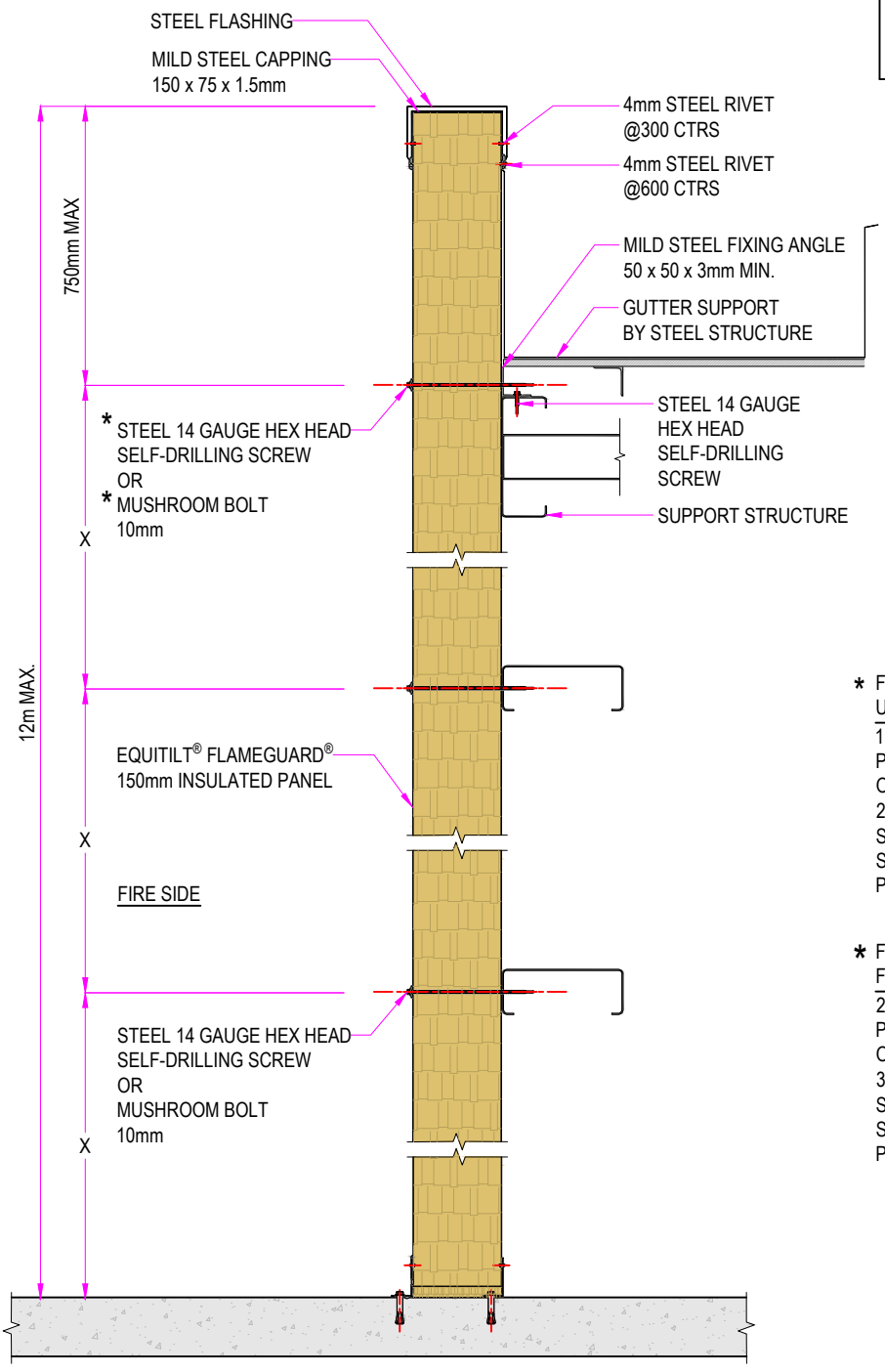
ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Wall Fixing Details
(Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.



SIDE ELEVATION

* FOR PARAPETS
UP TO 350mm
1 x MUSHROOM BOLTS (10mm)
PER PANEL WIDTH
OR
2 x 14G HEX HEAD
SELF-DRILLING
SCREWS (STEEL)
PER PANEL WIDTH

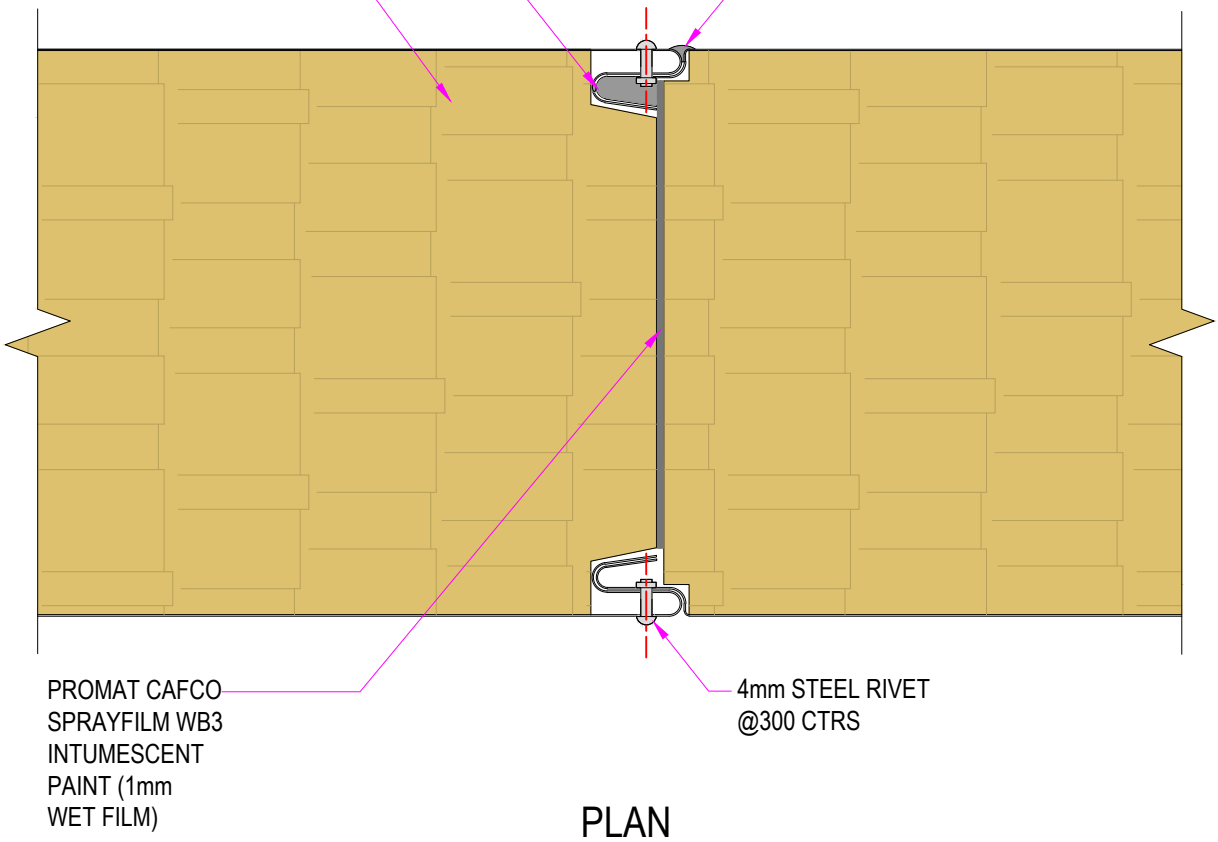
* FOR PARAPETS
FROM 350mm UP TO 750mm
2 x MUSHROOM BOLTS (10mm)
PER PANEL WIDTH
OR
3 x 14G HEX HEAD
SELF-DRILLING
SCREW (STEEL)
PER PANEL WIDTH

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Joint Fixing Details
(Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.

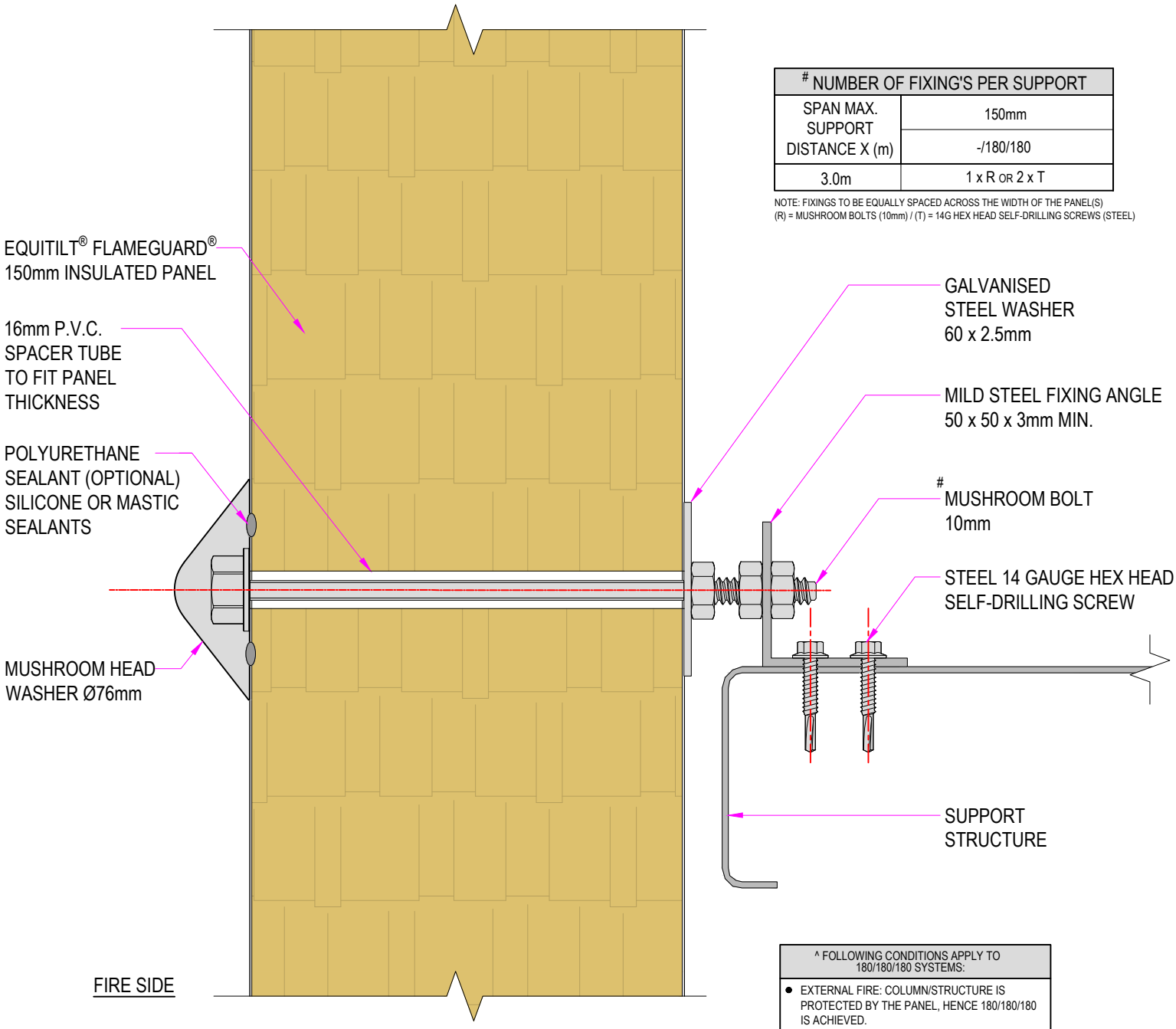


PLAN

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Intermediate Mushroom Bolt Fixing Details (Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/180/180
3.0m	1 x R OR 2 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

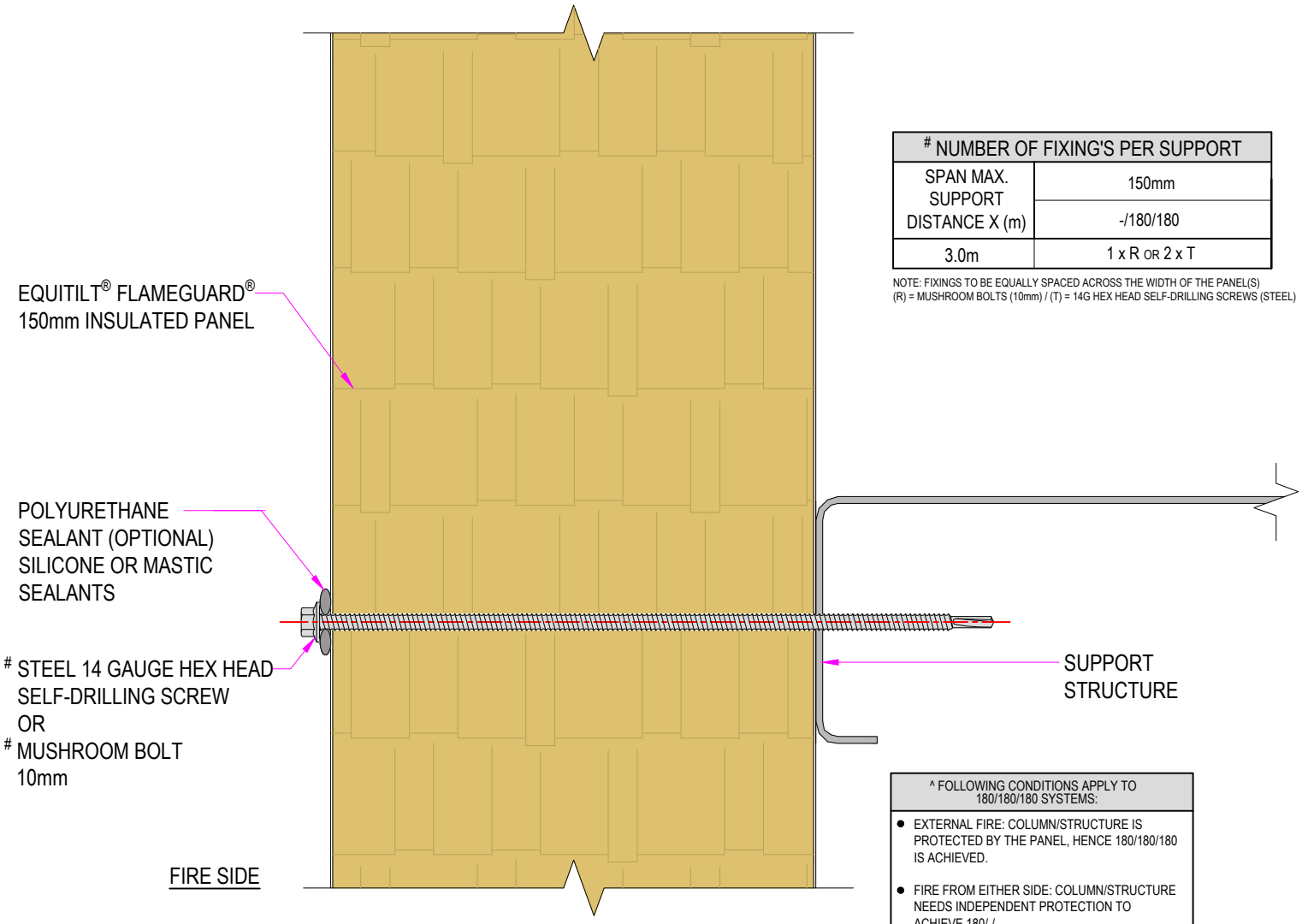
^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Intermediate Tek Screw Fixing Details (Intumescent Paint in Slip Joints)



# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/180/180
3.0m	1 x R OR 2 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:

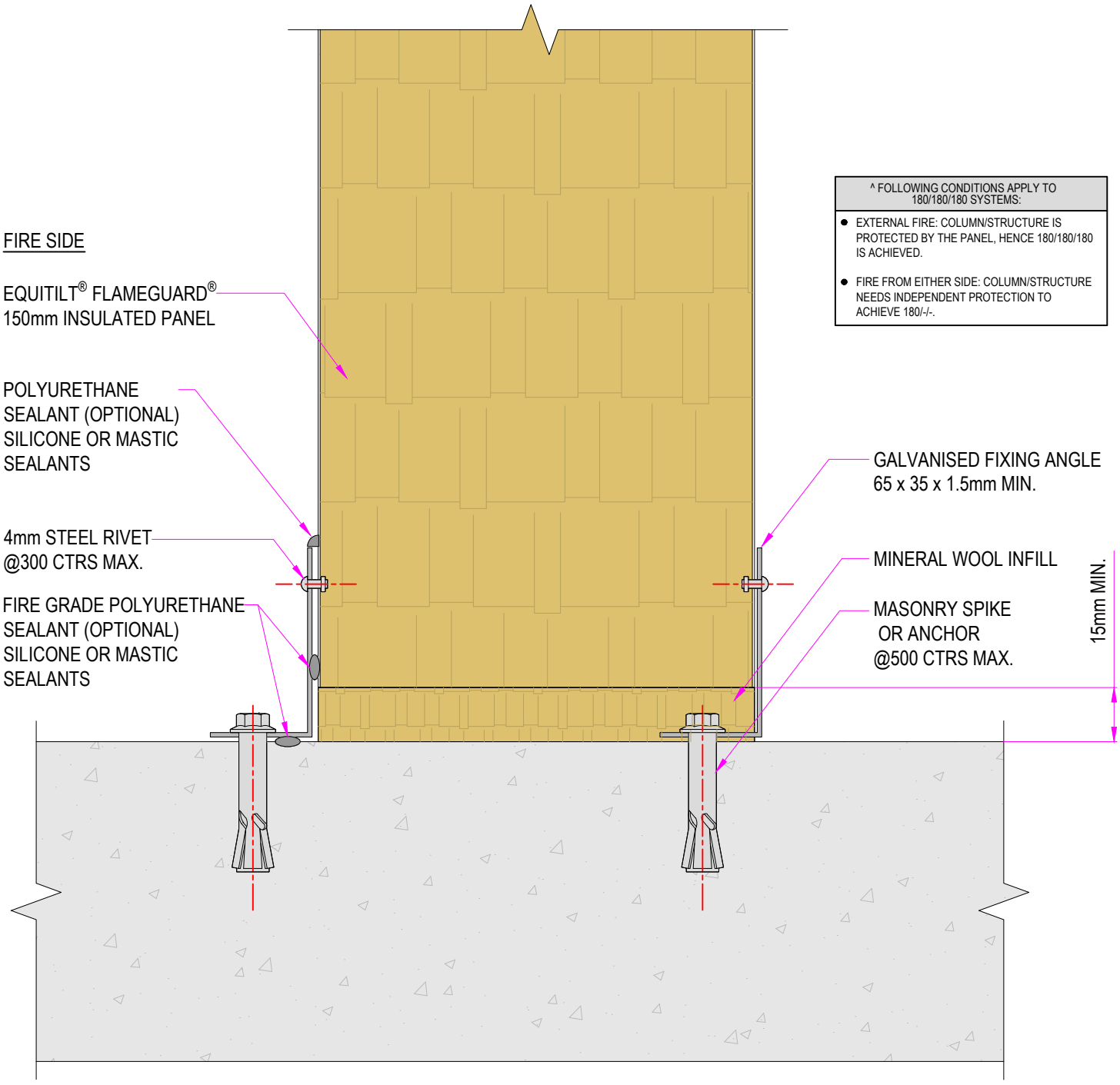
- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.

ELEVATION

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Base Fixing Details
(Intumescent Paint in Slip Joints)

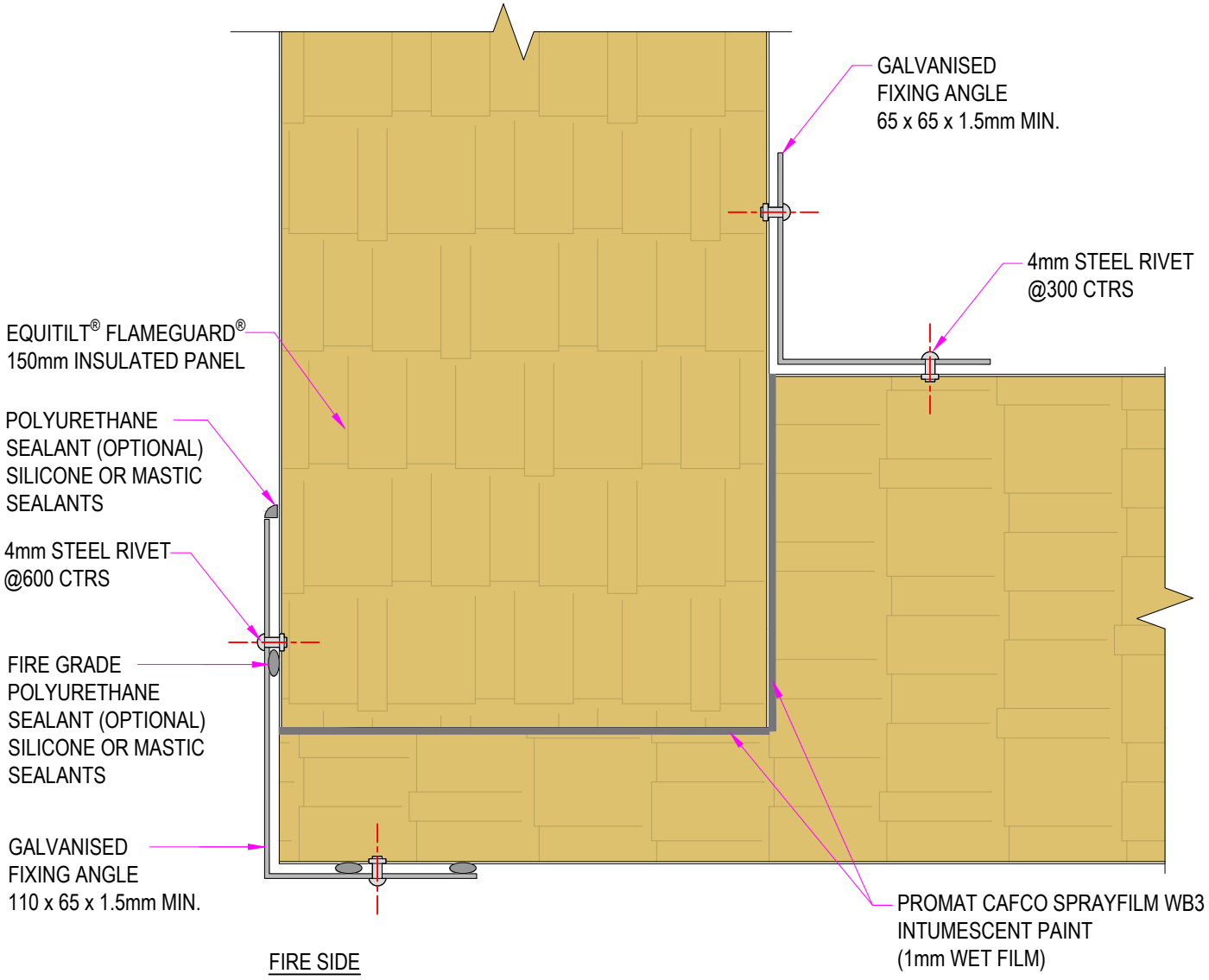


ELEVATION

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Corner Fixing Details
(Intumescent Paint in Slip Joints)



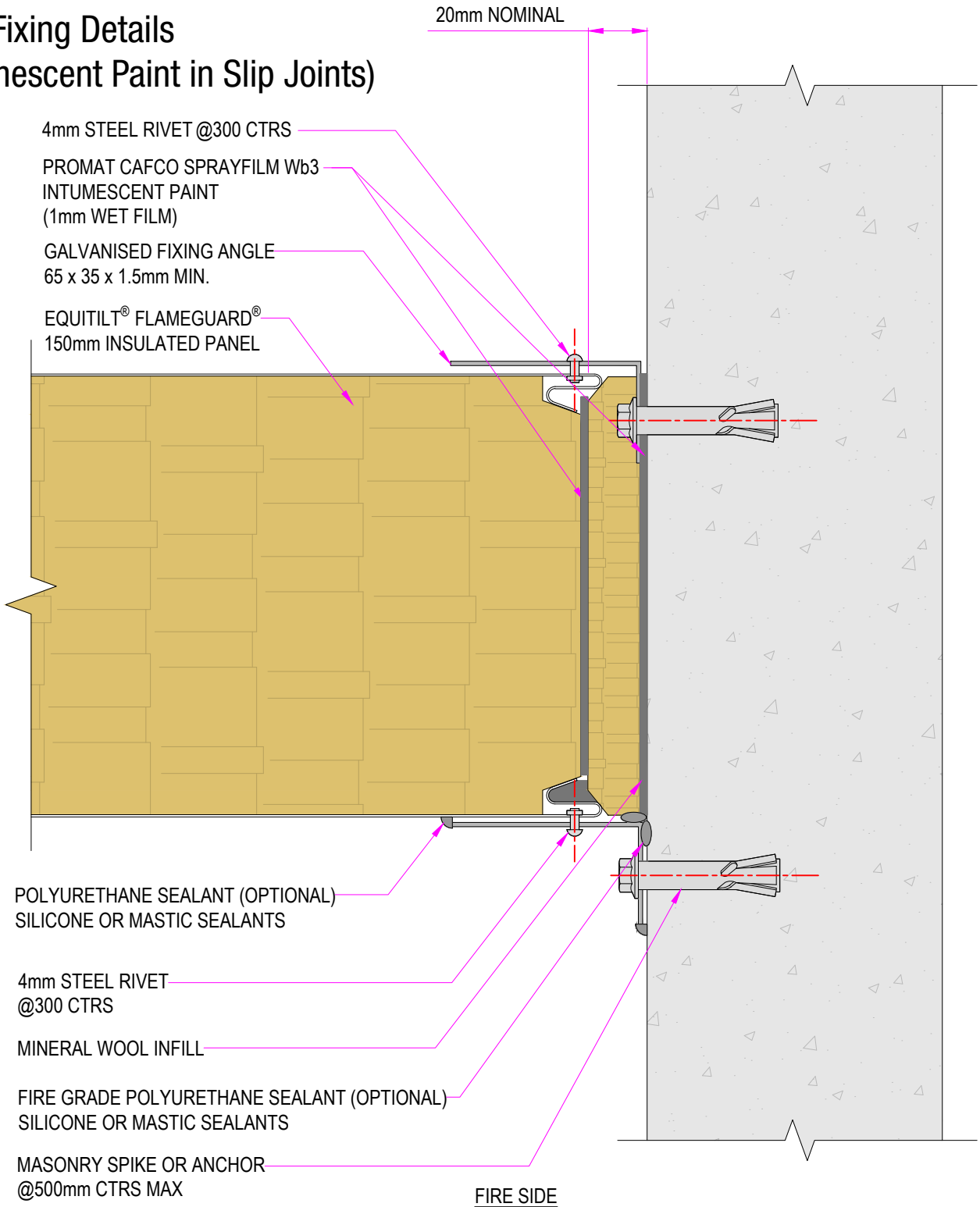
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Wall Fixing Details
(Intumescent Paint in Slip Joints)



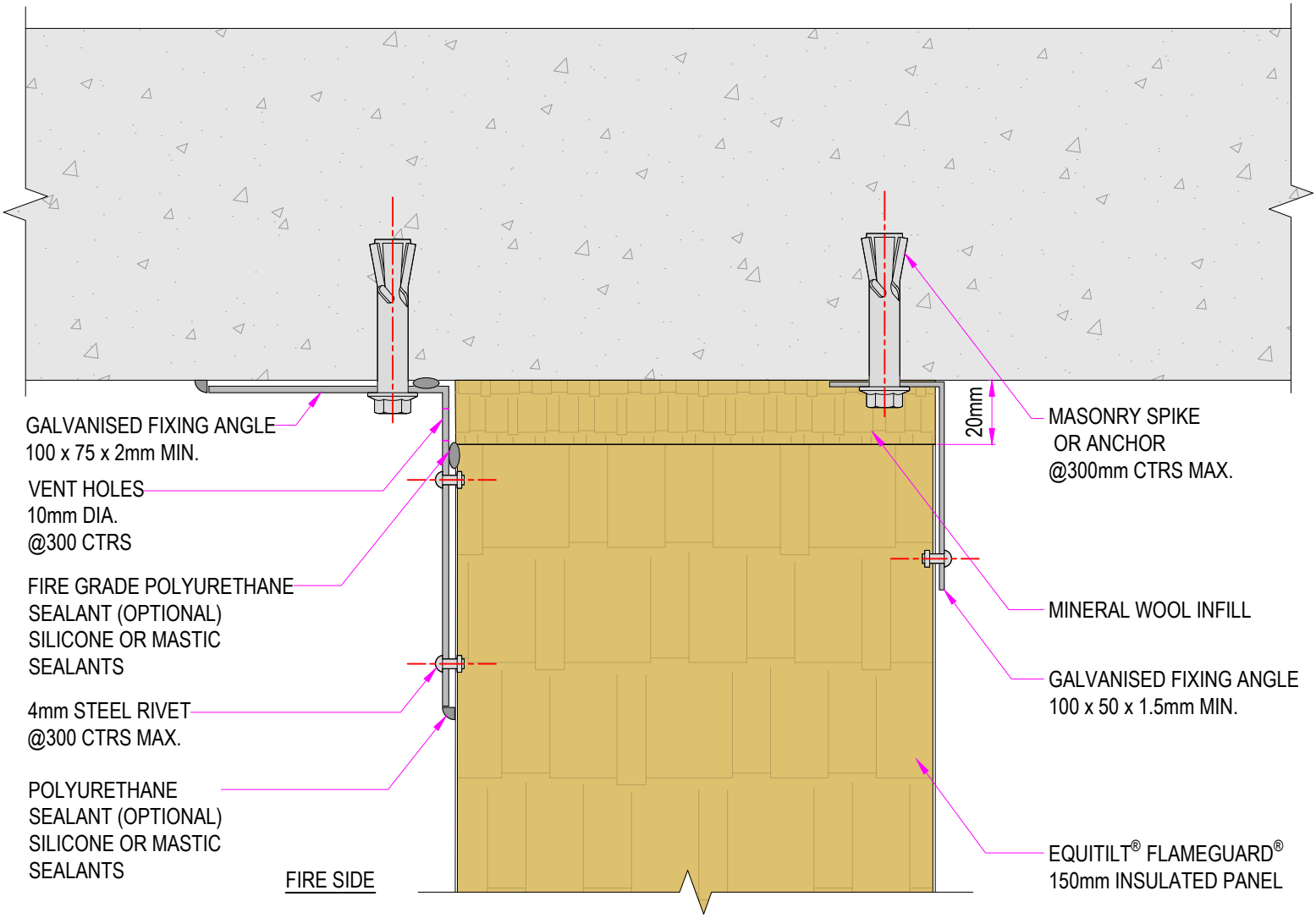
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Top Fixing Details
(Intumescent Paint in Slip Joints)



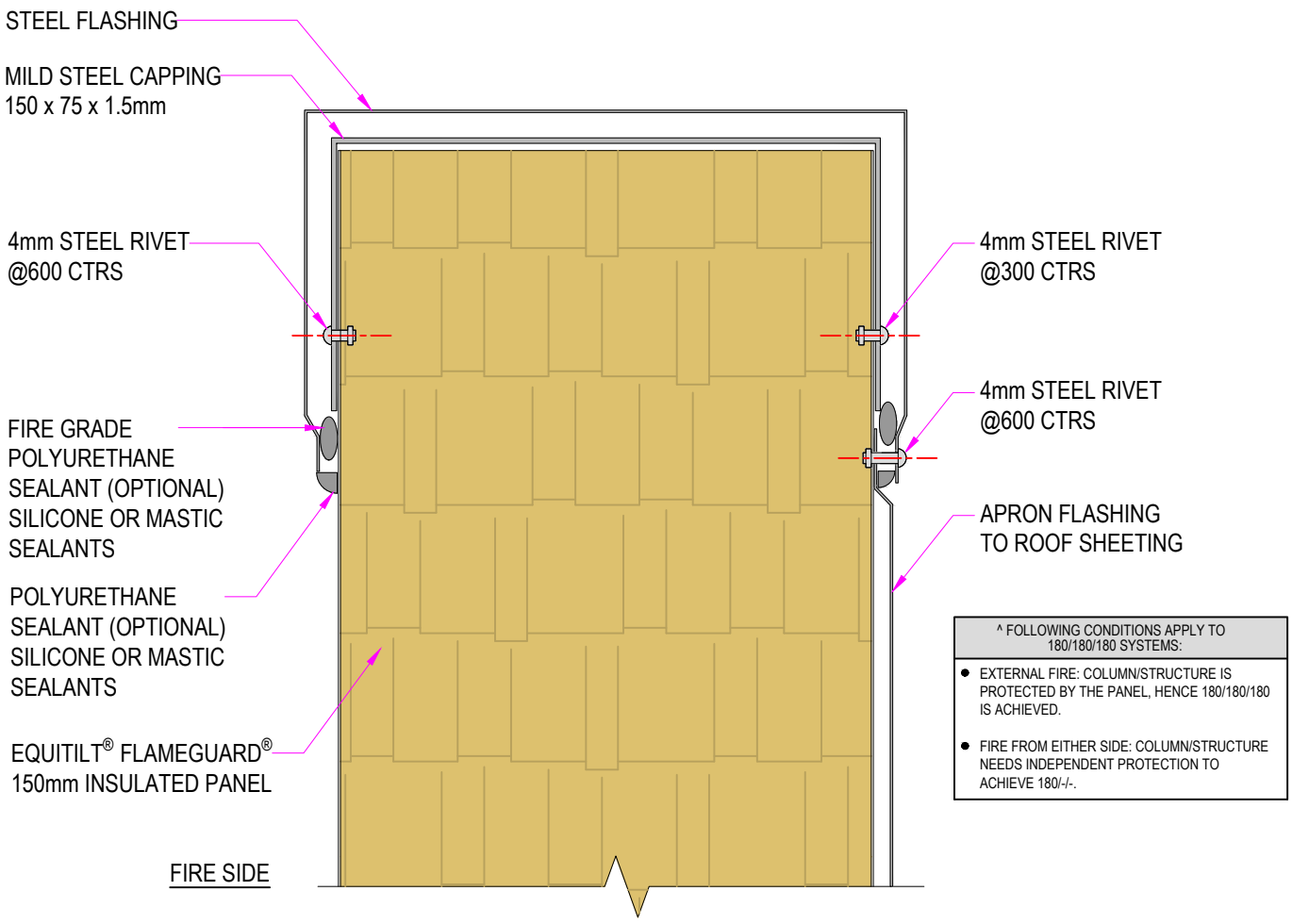
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Parapet Capping Fixing Details (Intumescent Paint in Slip Joints)



^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:

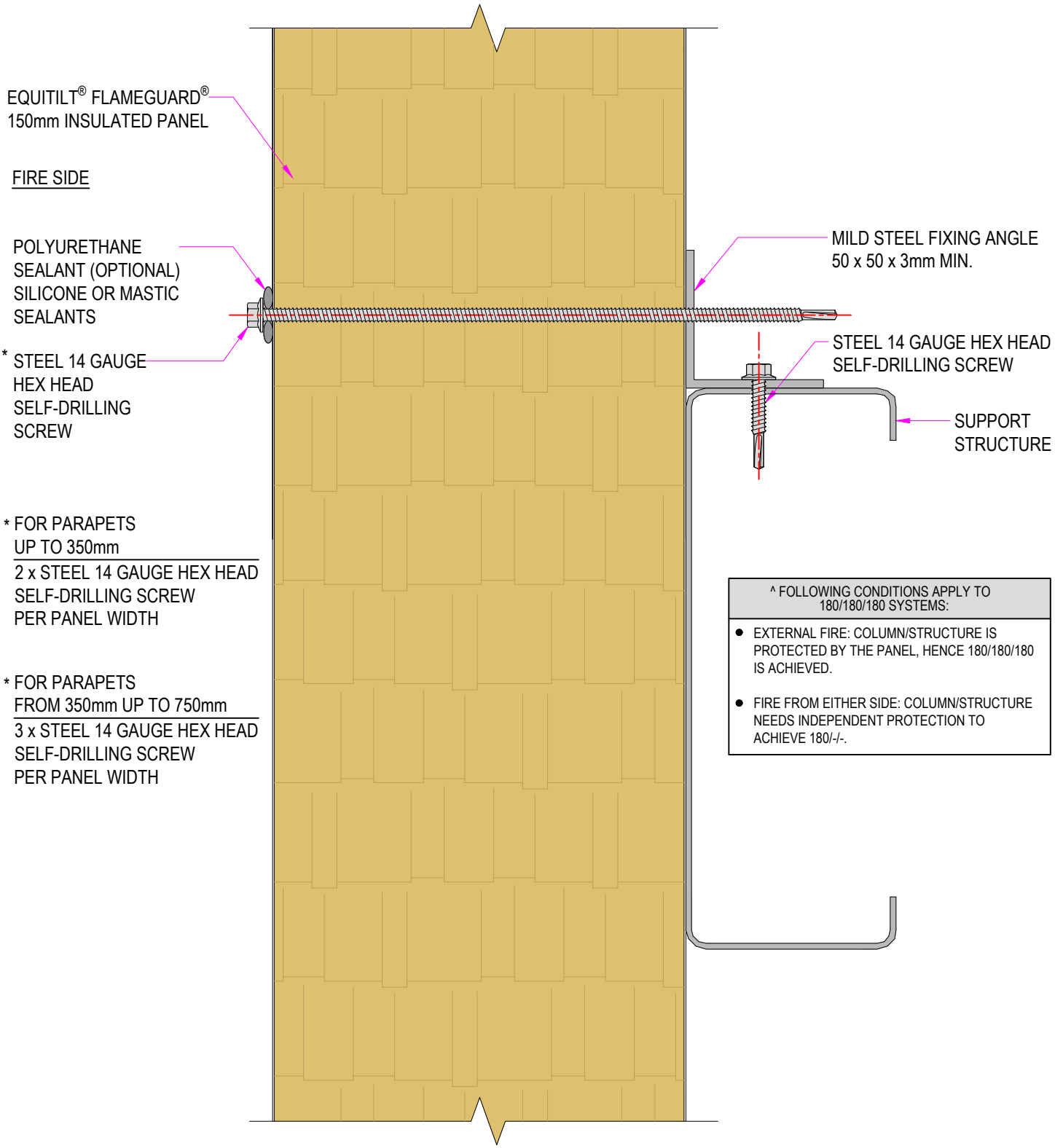
- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.

ELEVATION

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Parapet Fixing Details
(Intumescent Paint in Slip Joints)



* FOR PARAPETS
UP TO 350mm
2 x STEEL 14 GAUGE HEX HEAD
SELF-DRILLING SCREW
PER PANEL WIDTH

* FOR PARAPETS
FROM 350mm UP TO 750mm
3 x STEEL 14 GAUGE HEX HEAD
SELF-DRILLING SCREW
PER PANEL WIDTH

^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:

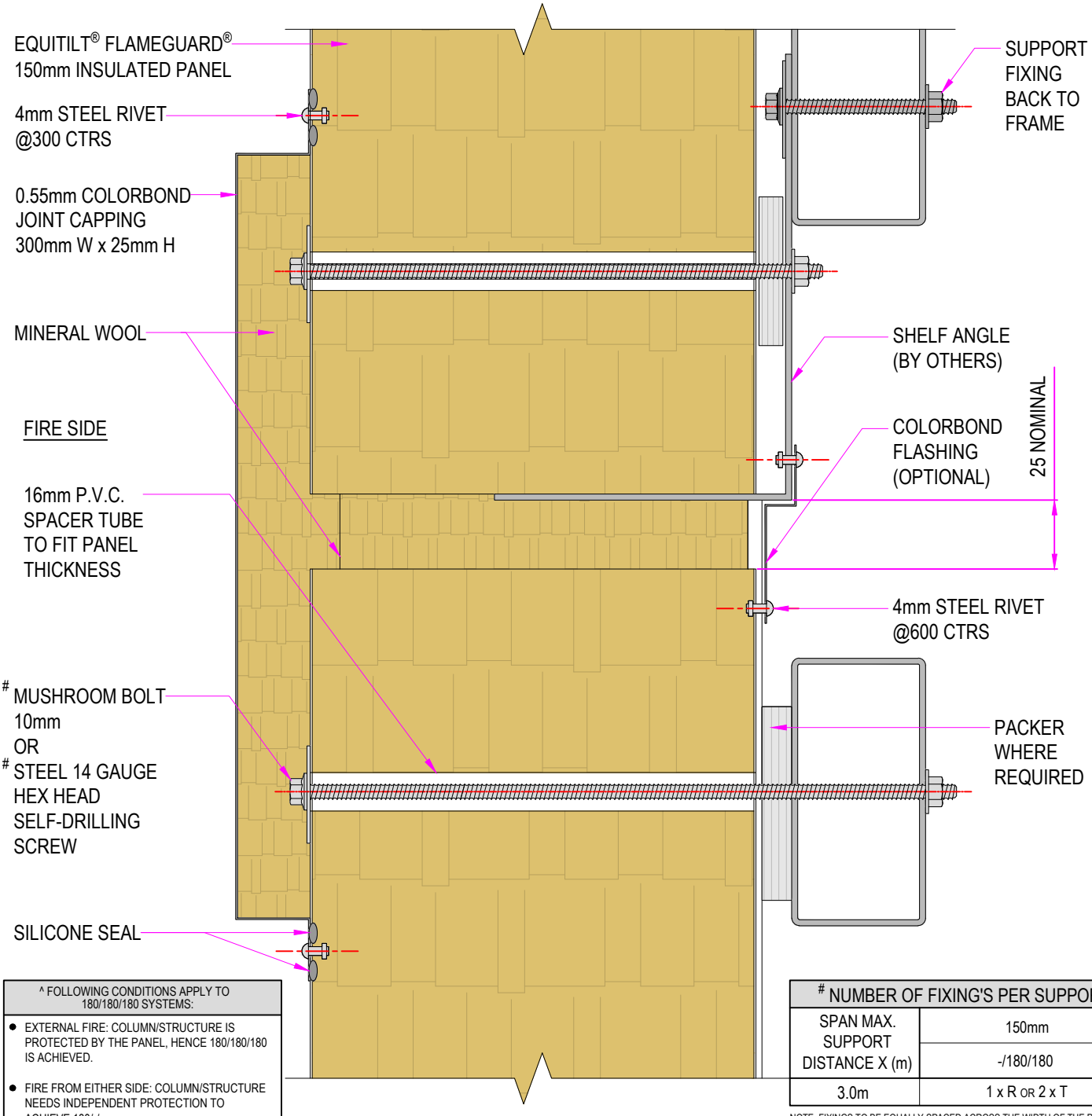
- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.

ELEVATION

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Vertical 150mm Panel -/180/180 or 180/180/180^

Expansion Joint Fixing Details
(Intumescent Paint in Slip Joints)



^ FOLLOWING CONDITIONS APPLY TO 180/180/180 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 180/180/180 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 180/-/-.

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/180/180
3.0m	1 x R OR 2 x T

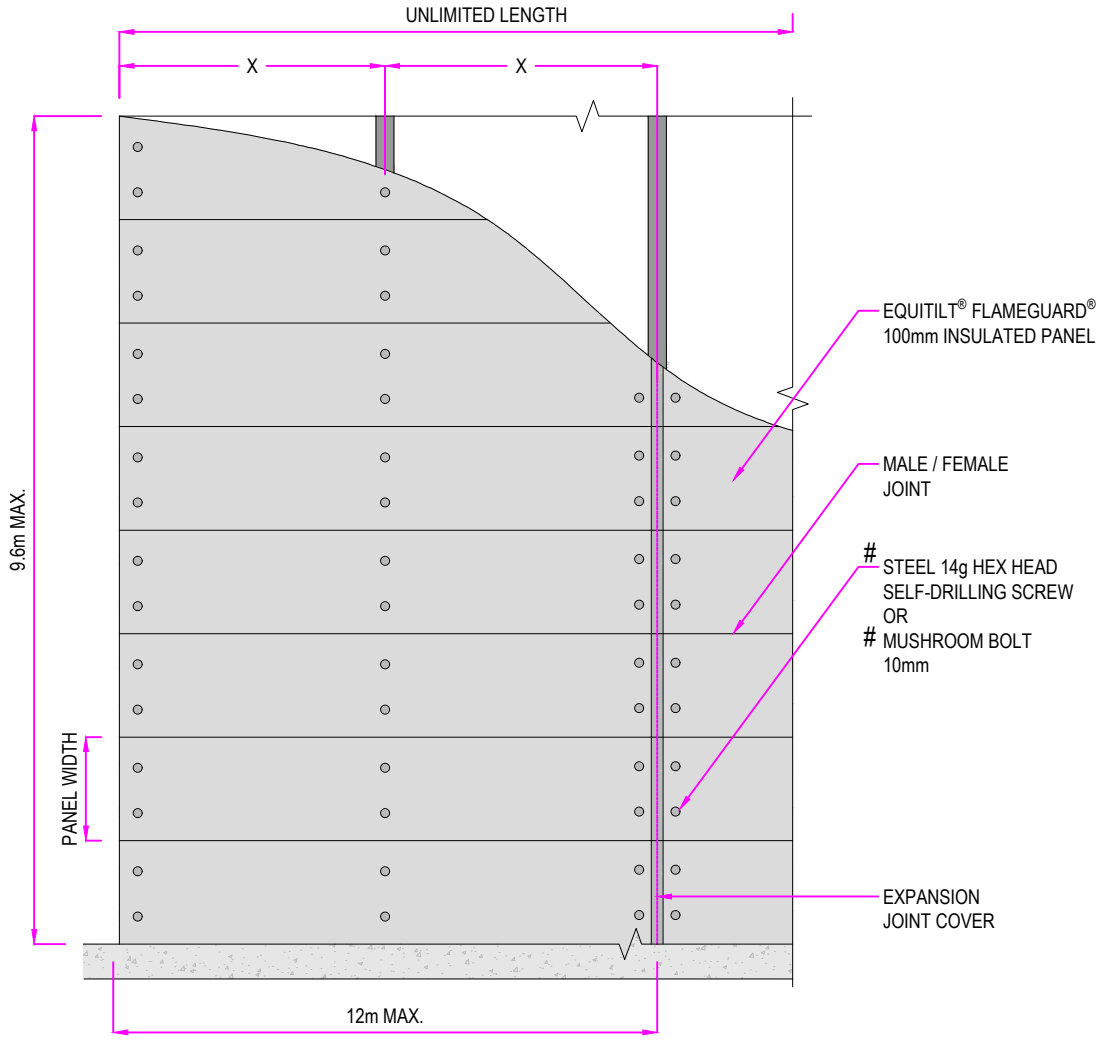
NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

ELEVATION

ETF-MW-FR179-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Panel Construction Details
(No Intumescent Paint in Slip Joints)



FRONT ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/60/60
3.0m	2 x R OR 2 x T
4.5m	2 x R OR 2 x T
5.7m	2 x R OR 3 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

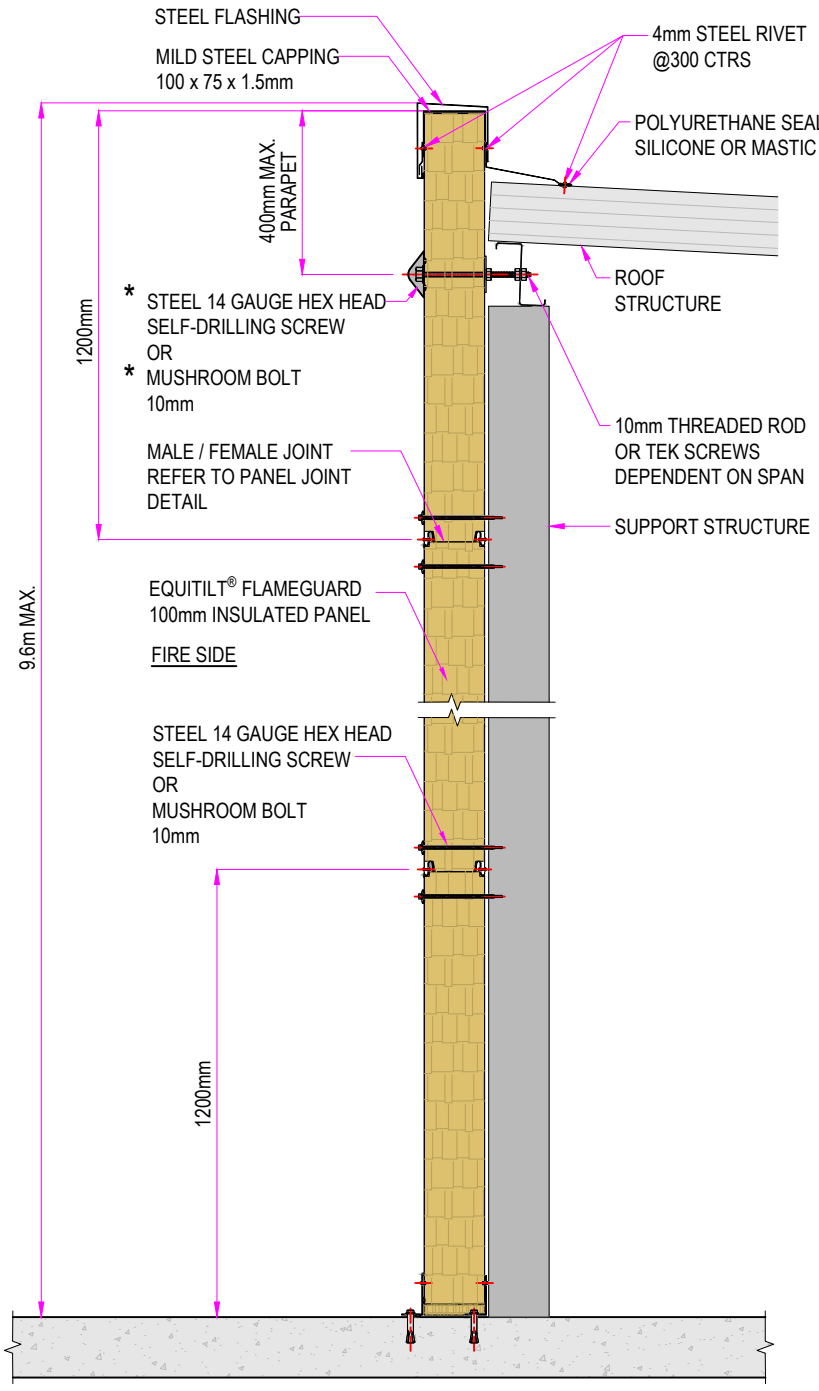
ETF-MW-FR174-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Panel Construction Details
(No Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.



SIDE ELEVATION

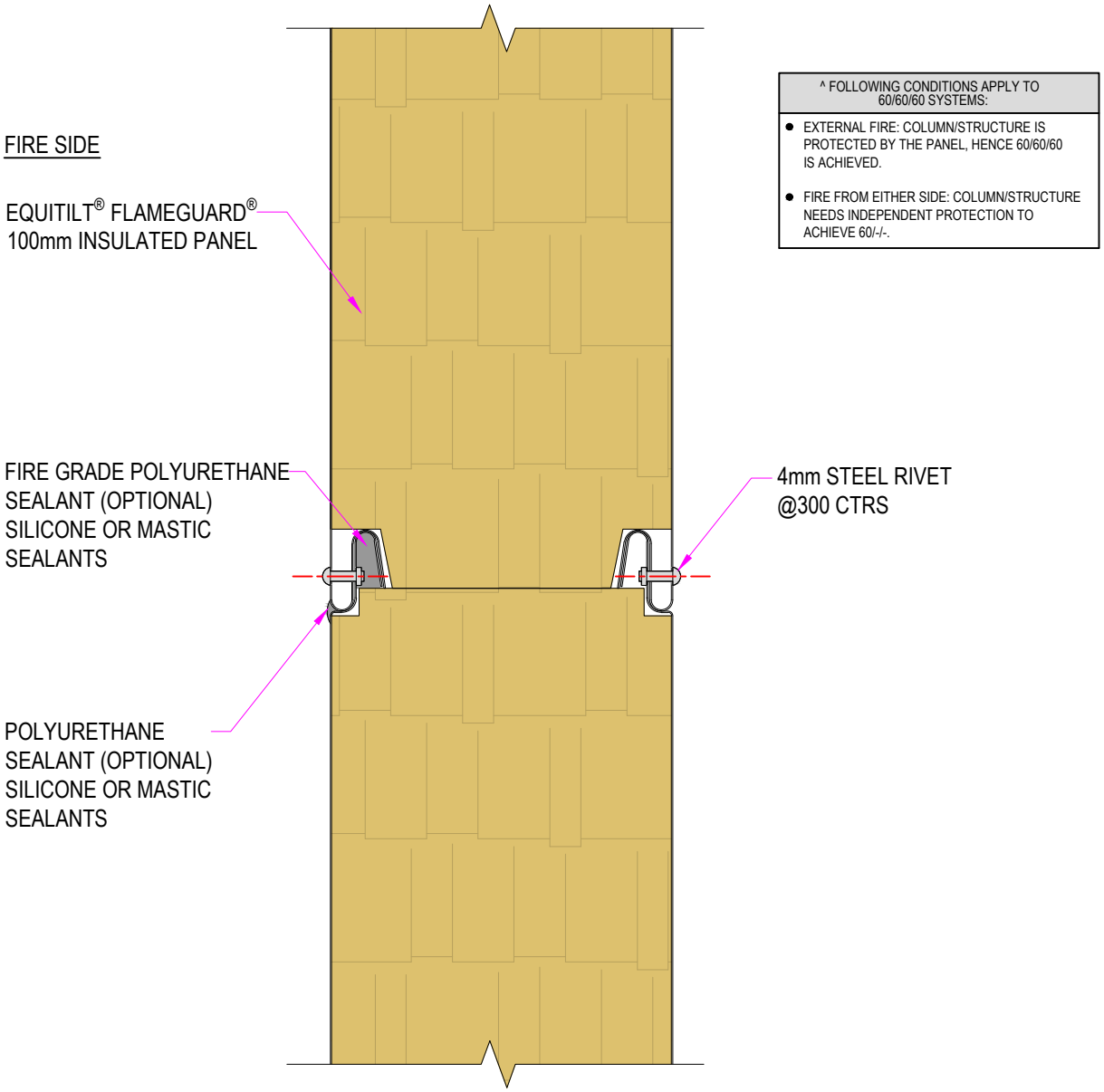
* FOR PARAPETS UP TO 200mm
MUSHROOM BOLTS (10mm) @1200 CTRS MAX.
OR
14G HEX HEAD SELF-DRILLING SCREWS (STEEL) @600 CTRS MAX.

* FOR PARAPETS FROM 200mm UP TO 400mm
MUSHROOM BOLTS (10mm) @600 CTRS MAX.
OR
14G HEX HEAD SELF-DRILLING SCREW (STEEL) @400 CTRS MAX.

ETF-MW-FR174-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Joint Fixing Details
(No Intumescent Paint in Slip Joints)

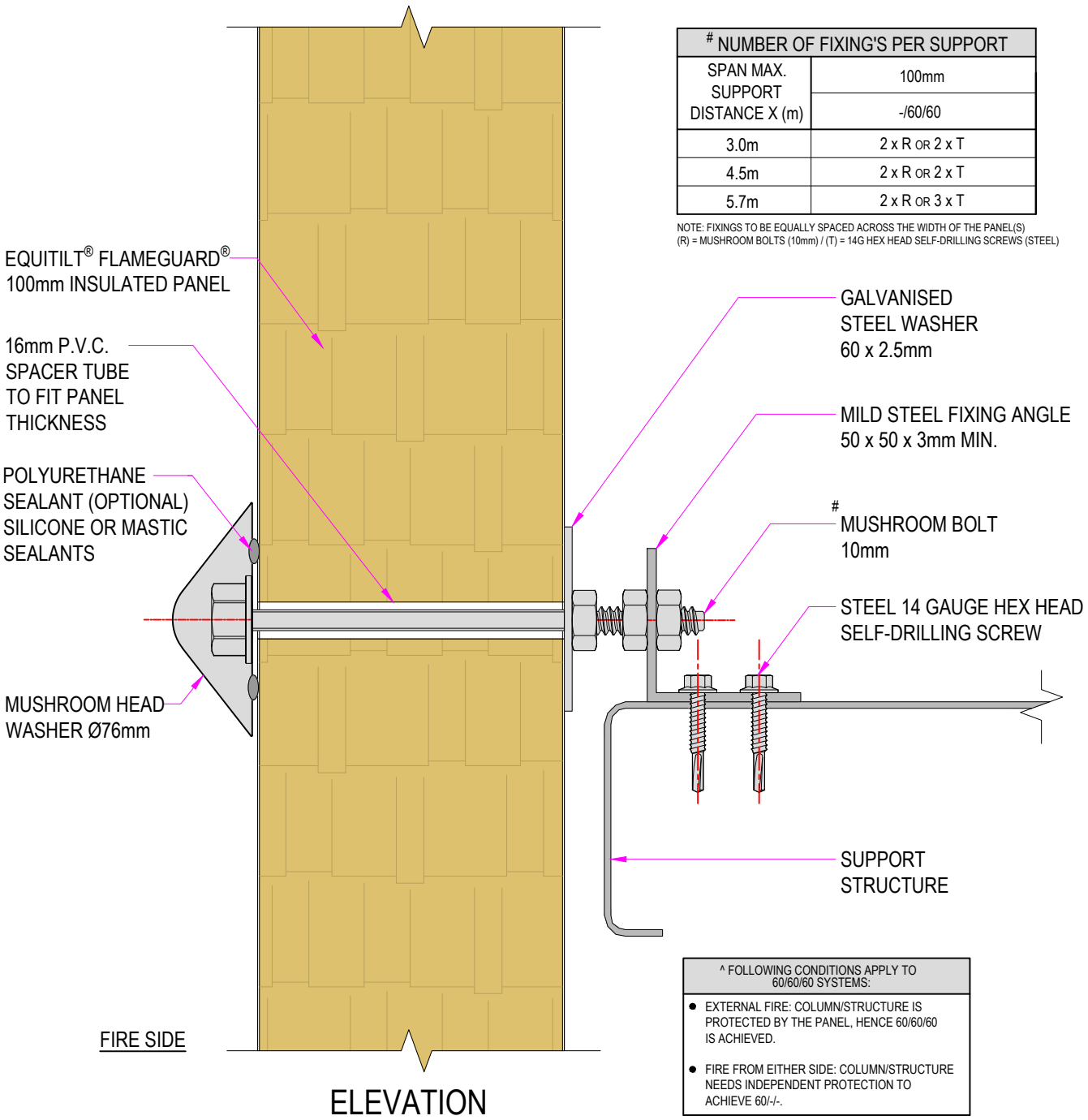


ELEVATION

ETF-MW-FR174-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Intermediate Mushroom Bolt Fixing Details
(No Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/60/60
3.0m	2 x R OR 2 x T
4.5m	2 x R OR 2 x T
5.7m	2 x R OR 3 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

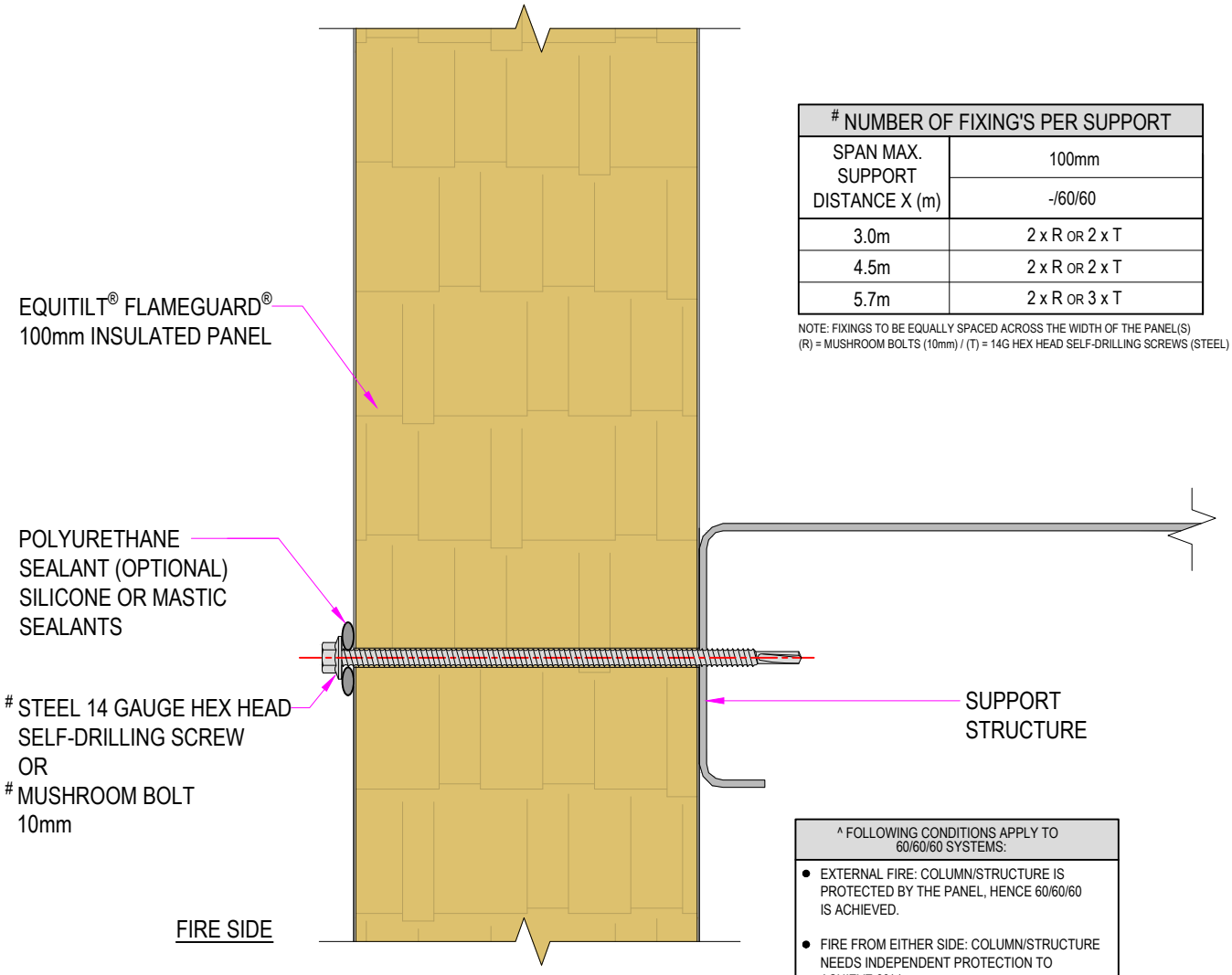
^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR174-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Intermediate Tek Screw Fixing Details
(No Intumescent Paint in Slip Joints)



# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/60/60
3.0m	2 x R OR 2 x T
4.5m	2 x R OR 2 x T
5.7m	2 x R OR 3 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

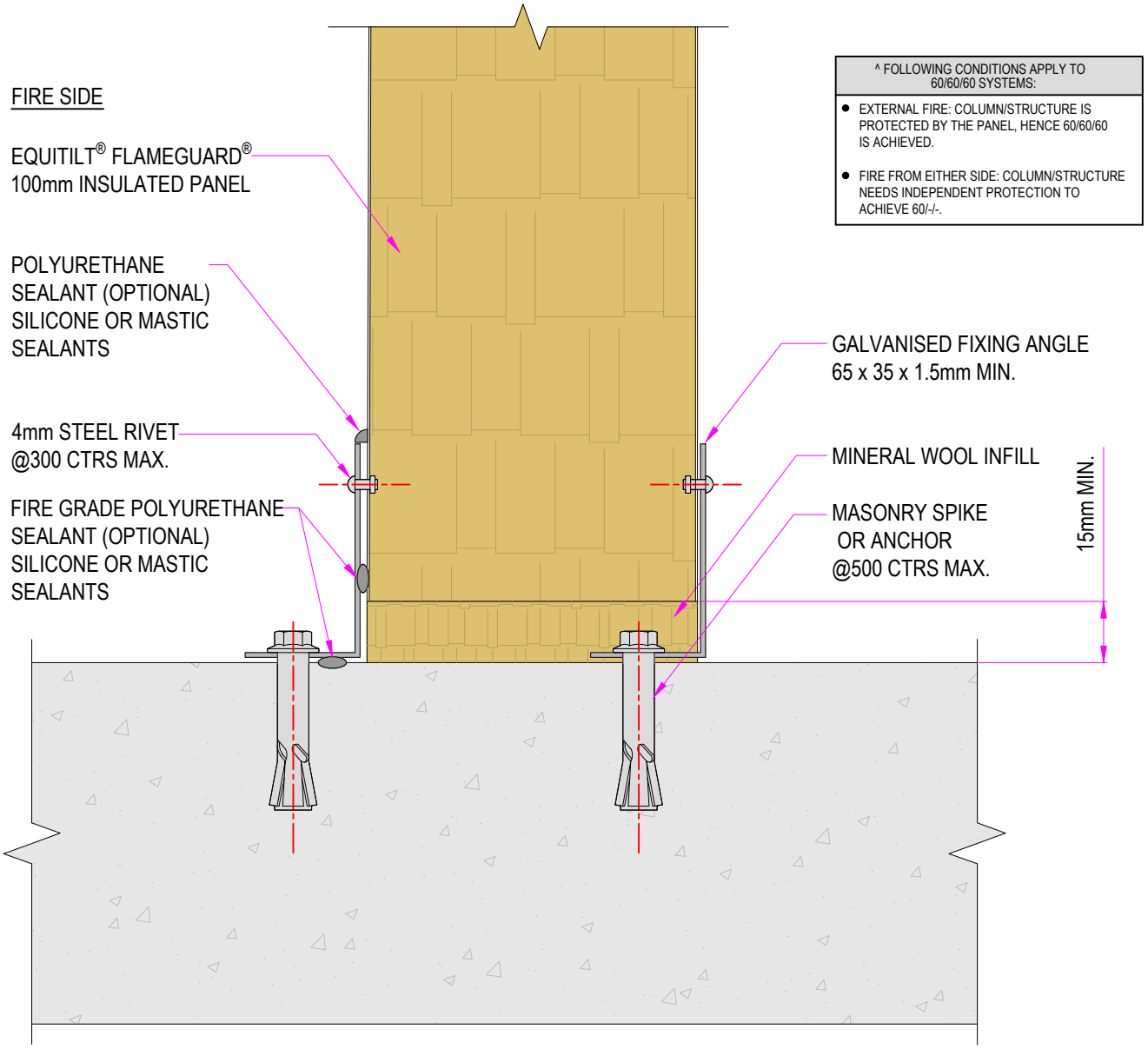
^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ELEVATION

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Base Fixing Details
(No Intumescent Paint in Slip Joints)

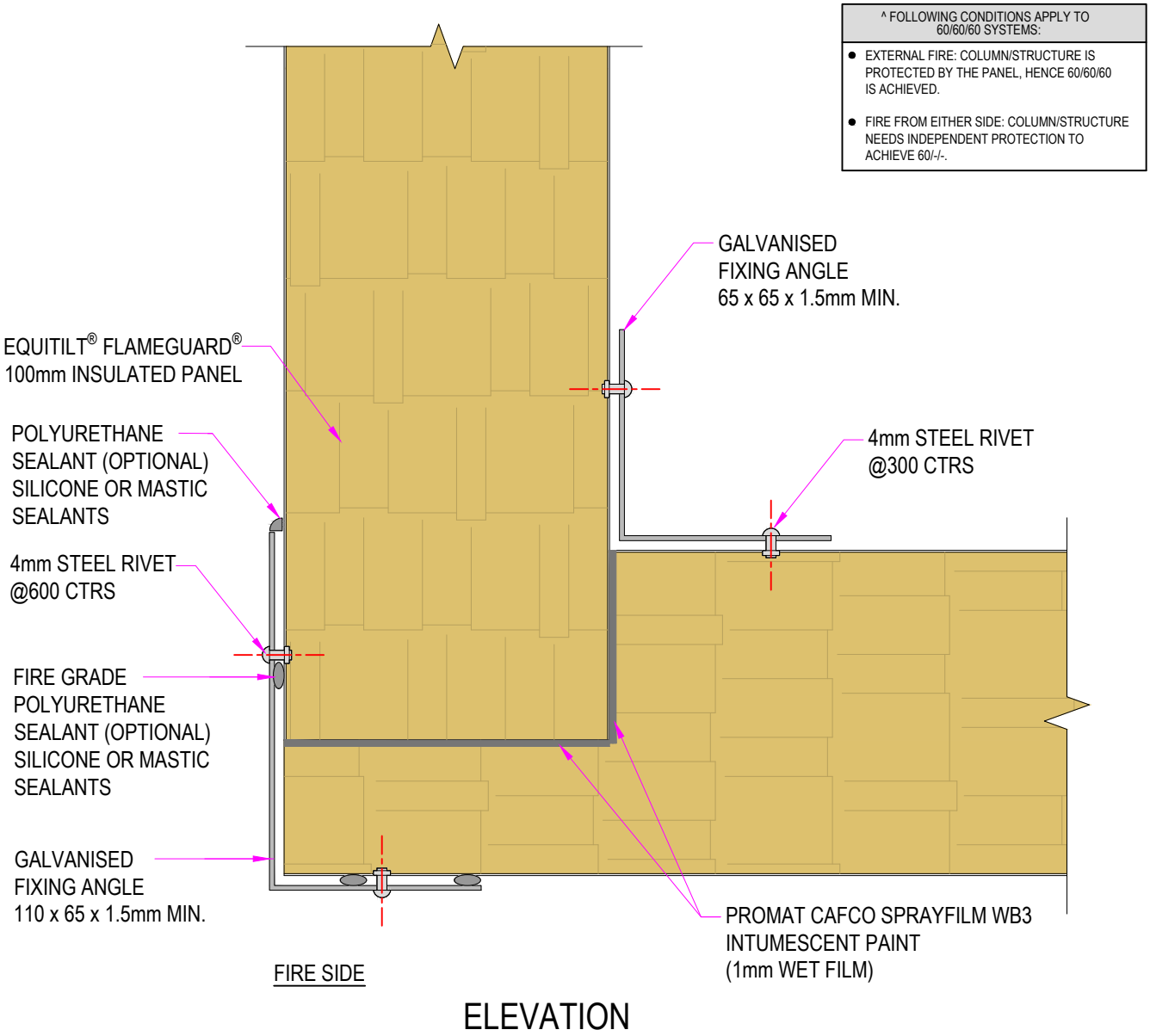


ELEVATION

ETF-MW-FR174-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Corner Fixing Details
(No Intumescent Paint in Slip Joints)

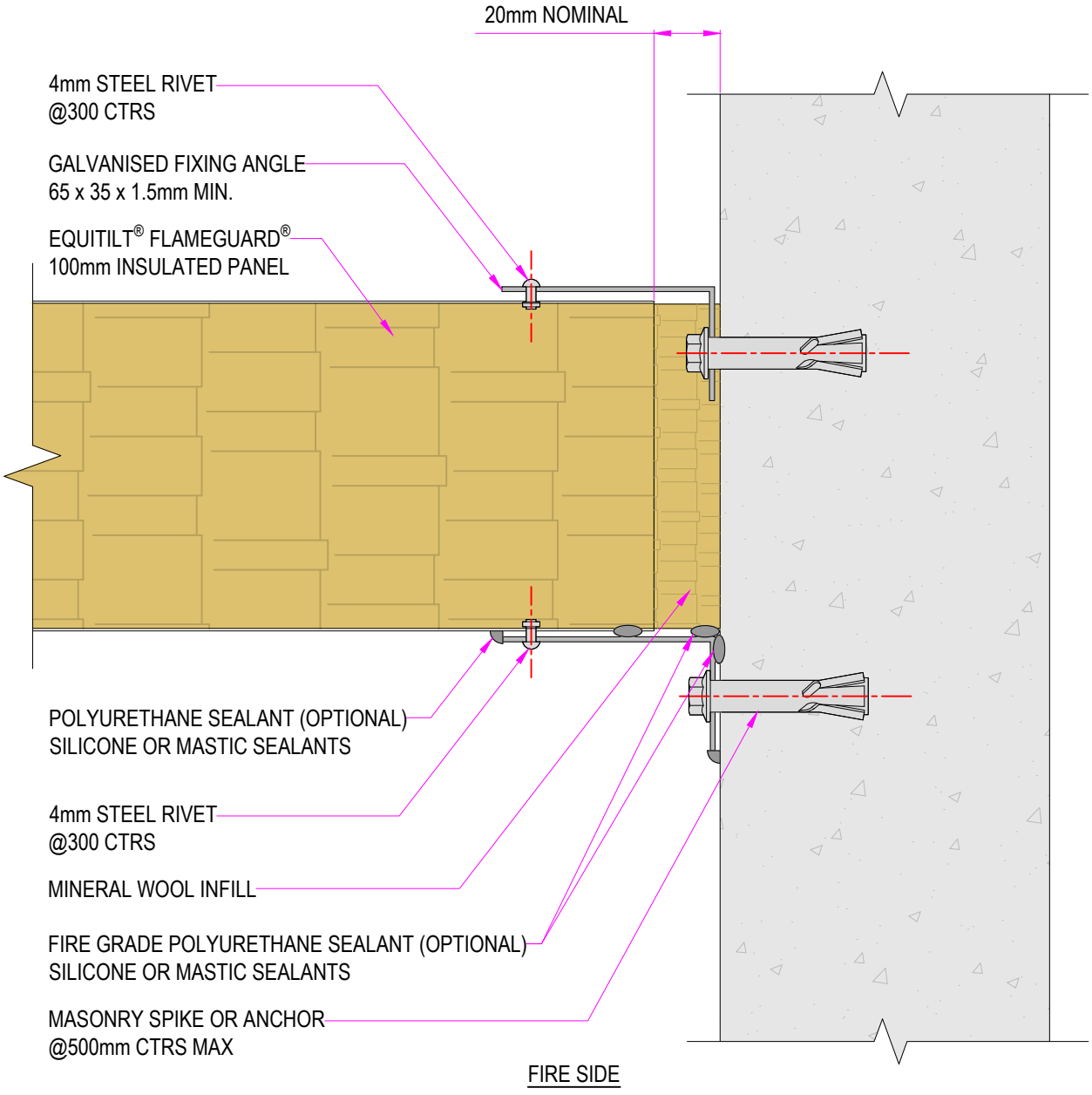


ELEVATION

ETF-MW-FR174-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Wall Fixing Details
(No Intumescent Paint in Slip Joints)



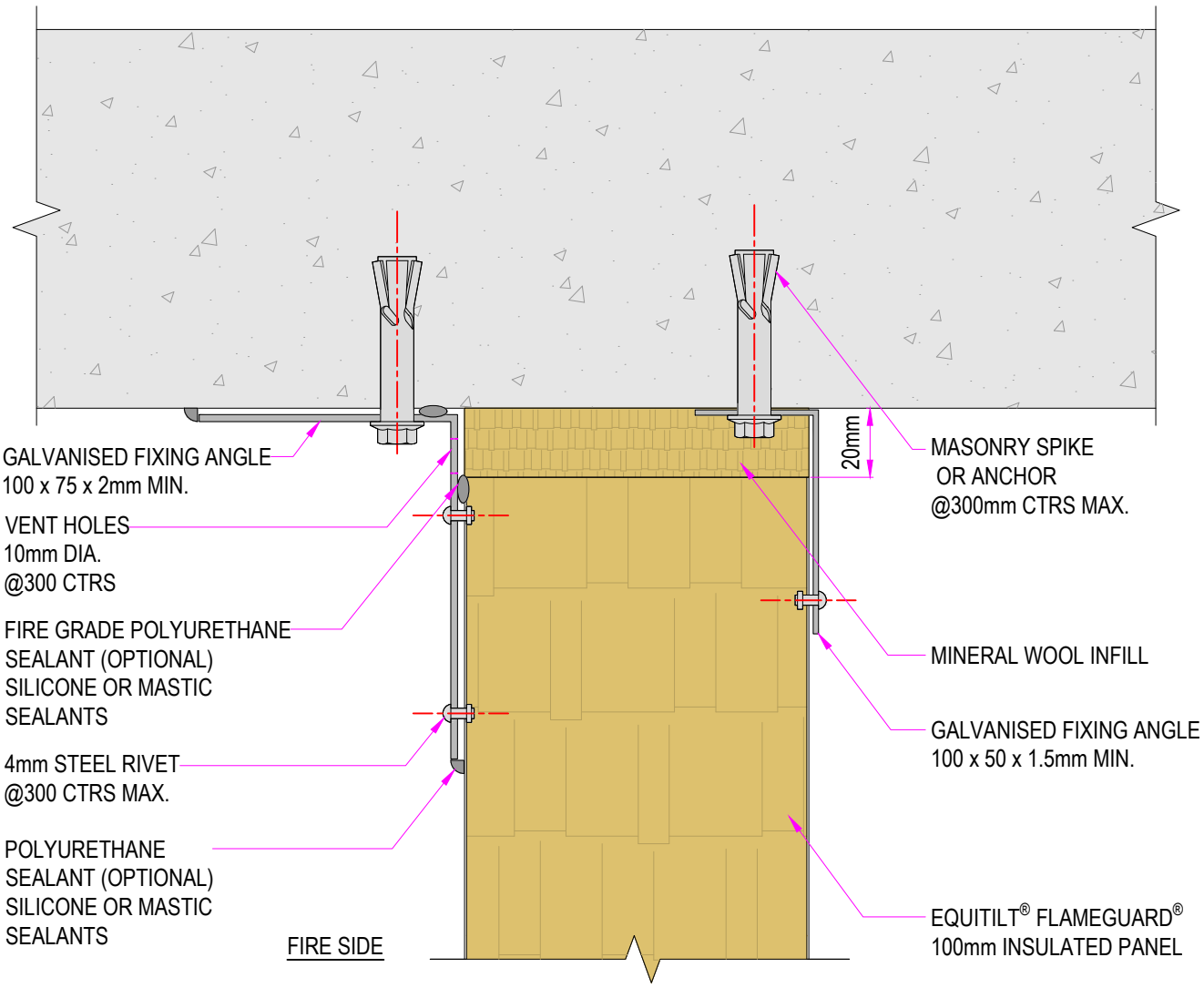
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ETF-MW-FR174-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Top Fixing Details
(No Intumescent Paint in Slip Joints)



ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

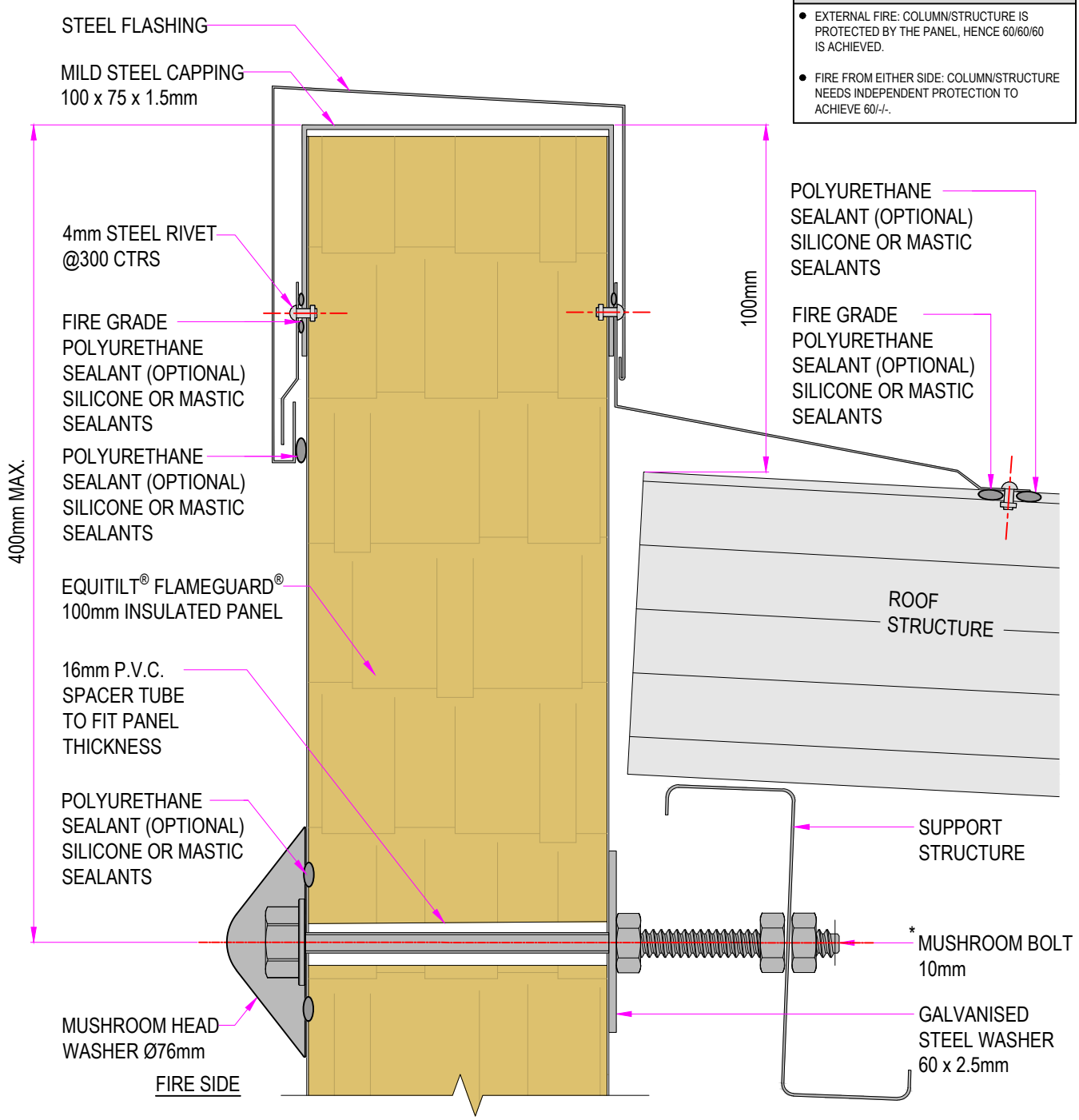
ETF-MW-FR174-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Parapet Capping & Parapet Fixing Details (No Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.



ELEVATION

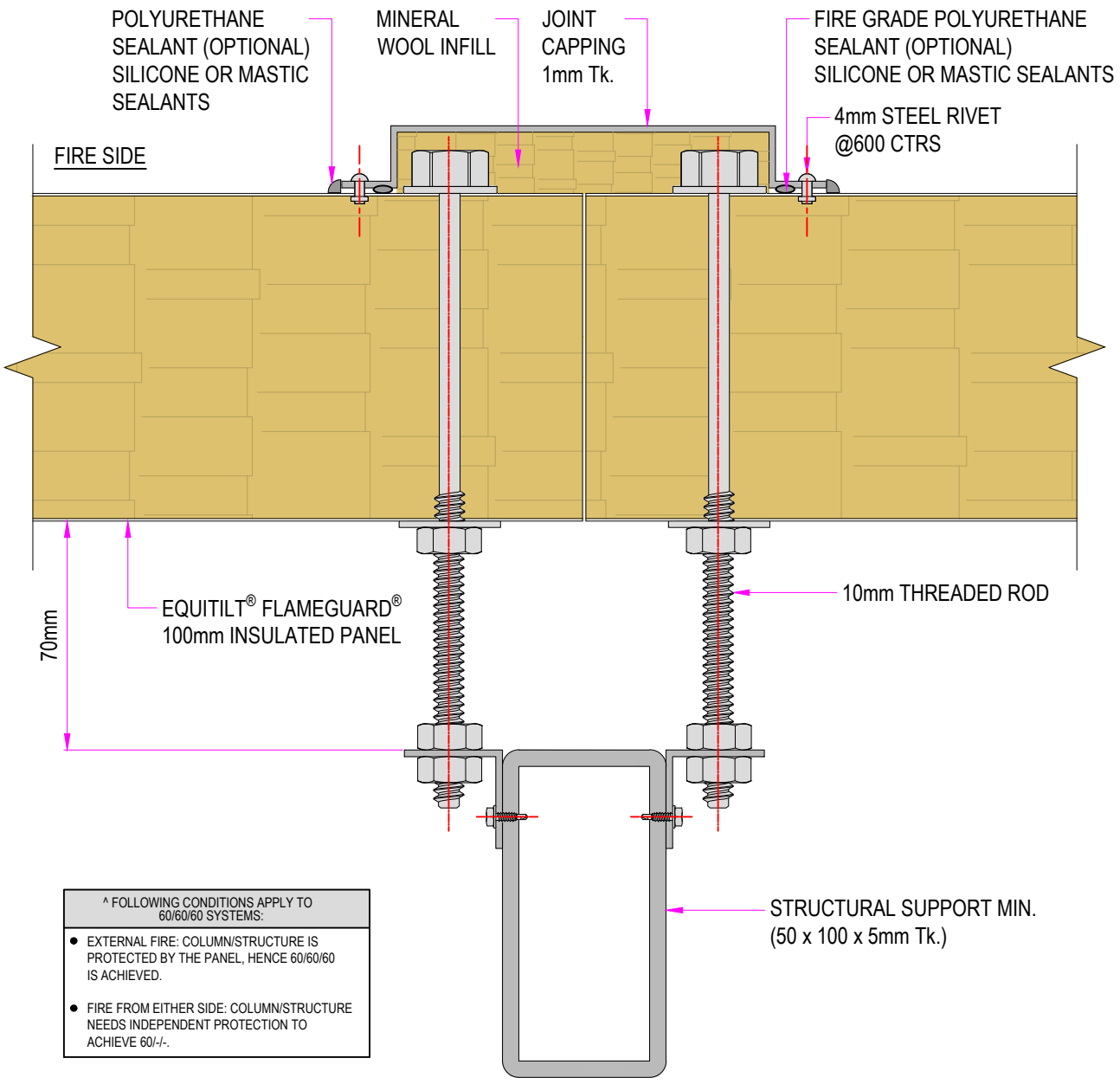
* FOR PARAPETS UP TO 200mm
MUSHROOM BOLTS (10mm) @1200 CTRS MAX.

* FOR PARAPETS FROM 200mm UP TO 400mm
MUSHROOM BOLTS (10mm) @600 CTRS MAX.

ETF-MW-FR174-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/60/60 or 60/60/60^

Expansion Joint Fixing Details
(No Intumescent Paint in Slip Joints)



^ FOLLOWING CONDITIONS APPLY TO 60/60/60 SYSTEMS:

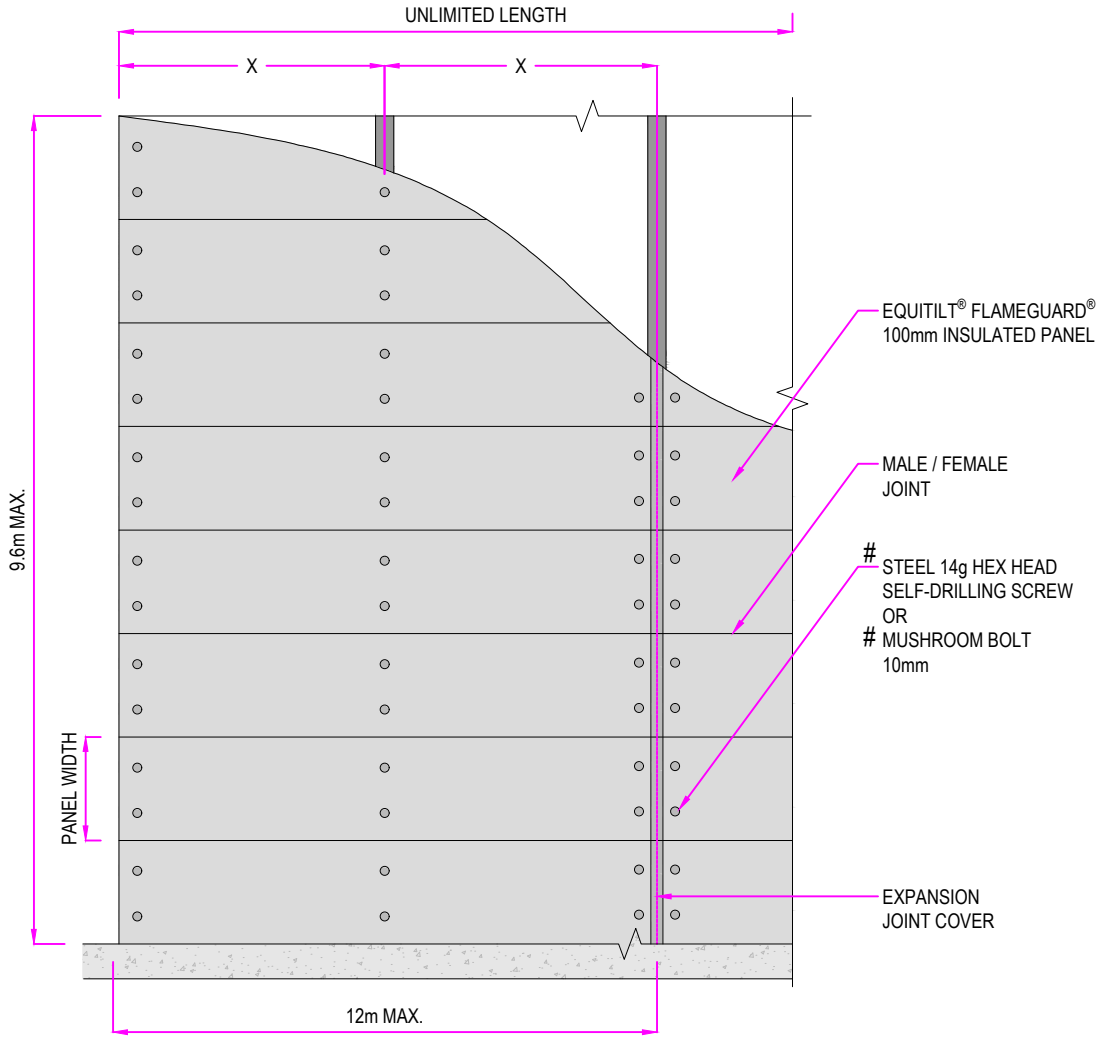
- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 60/60/60 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 60/-/-.

ELEVATION

ETF-MW-FR174-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Panel Construction Details
(Intumescent Paint in Slip Joints)



FRONT ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/90/90
3.0m	2 x R OR 2 x T
4.5m	2 x R OR 2 x T
6.0m	2 x R OR 3 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

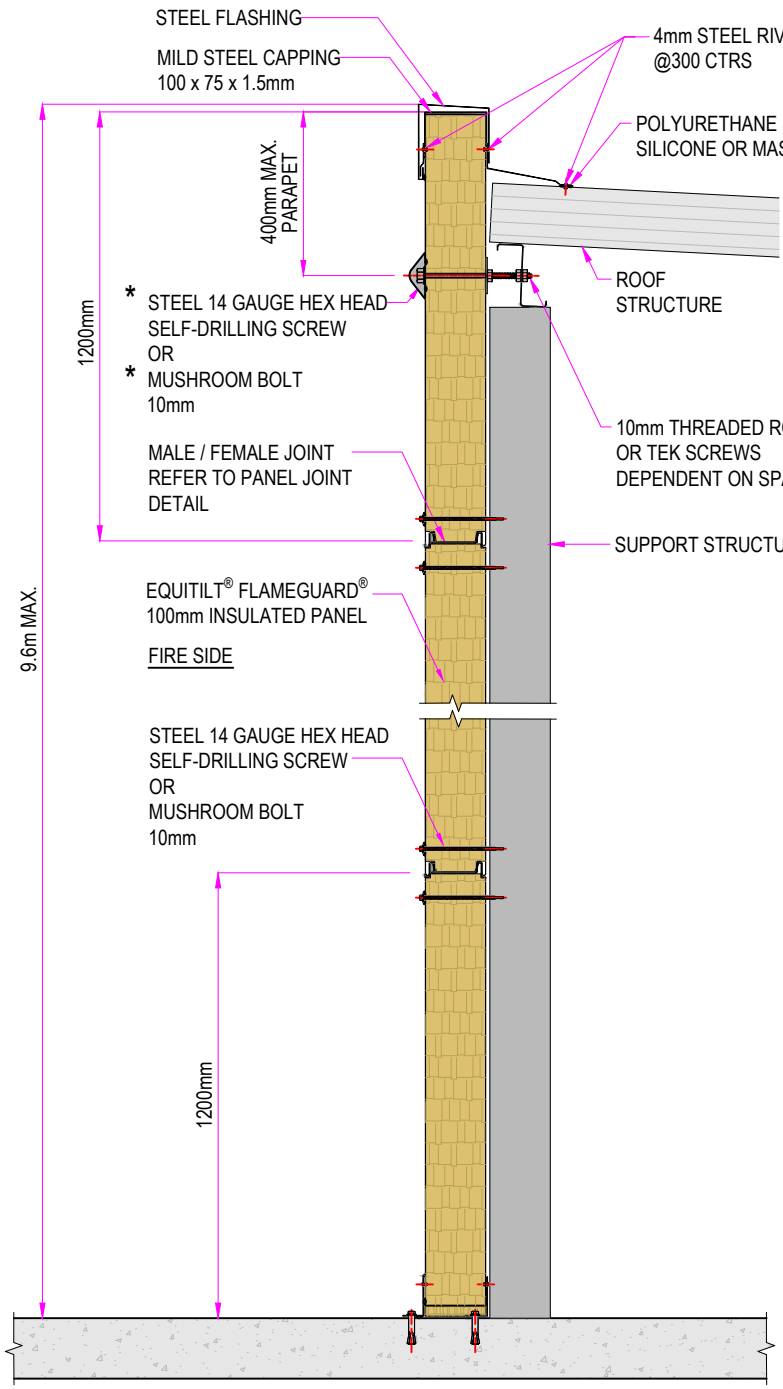
ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Panel Construction Details
(Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.



ELEVATION

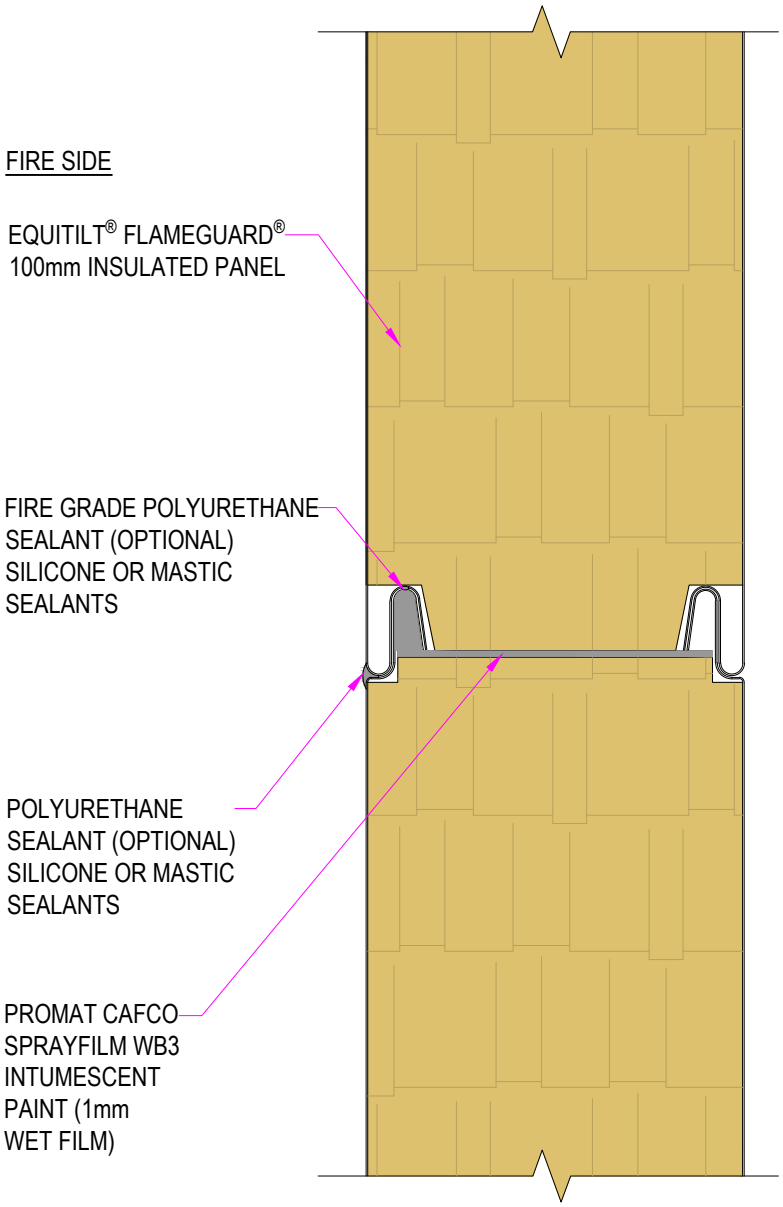
* FOR PARAPETS UP TO 200mm
MUSHROOM BOLTS (10mm) @1200 CTRS MAX.
OR
14G HEX HEAD SELF-DRILLING SCREWS (STEEL) @600 CTRS MAX.

* FOR PARAPETS FROM 200mm UP TO 400mm
MUSHROOM BOLTS (10mm) @600 CTRS MAX.
OR
14G HEX HEAD SELF-DRILLING SCREW (STEEL) @400 CTRS MAX.

ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Joint Fixing Details
(Intumescent Paint in Slip Joints)



ELEVATION

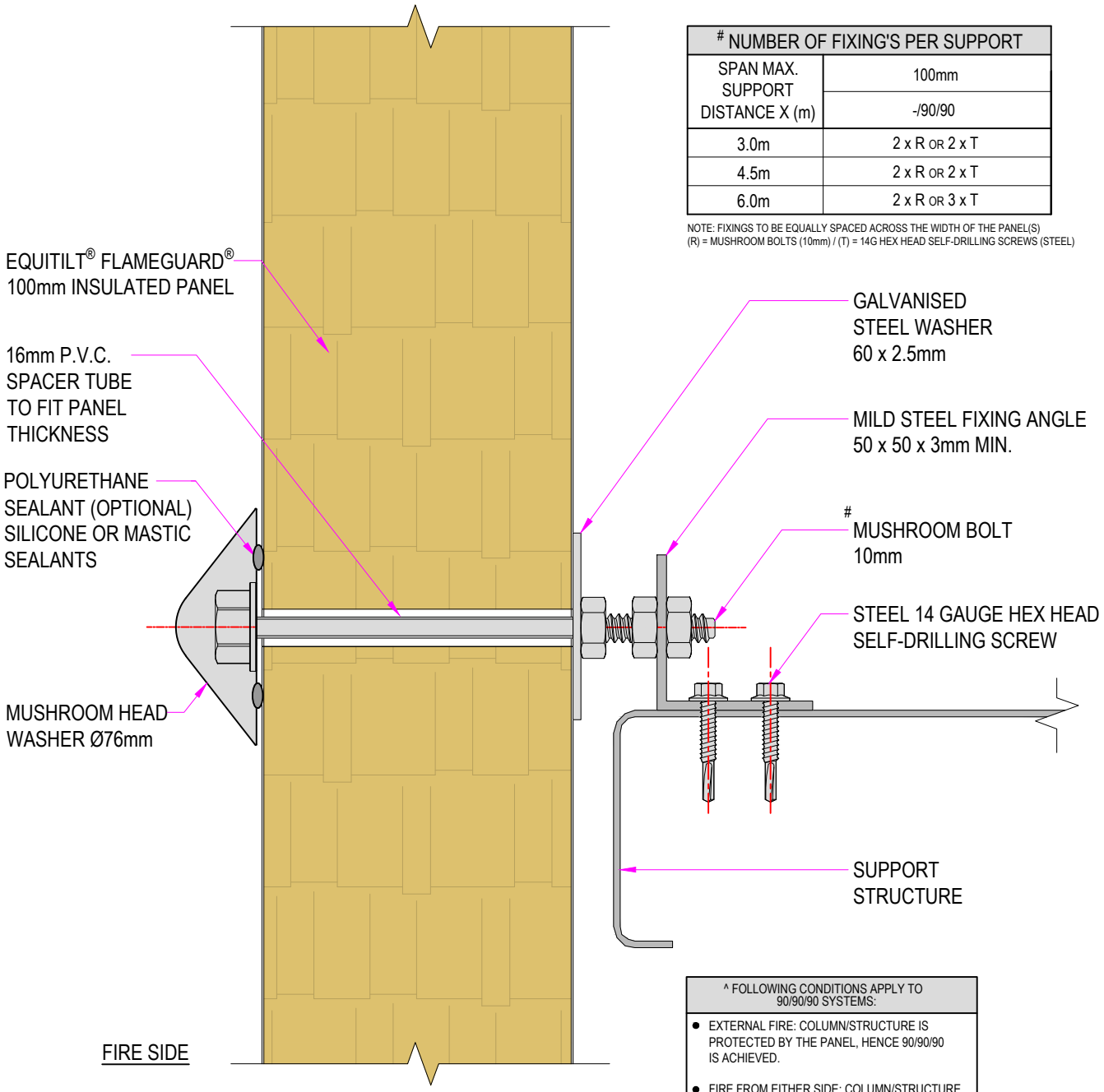
^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Intermediate Mushroom Bolt Fixing Details (Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/90/90
3.0m	2 x R OR 2 x T
4.5m	2 x R OR 2 x T
6.0m	2 x R OR 3 x T

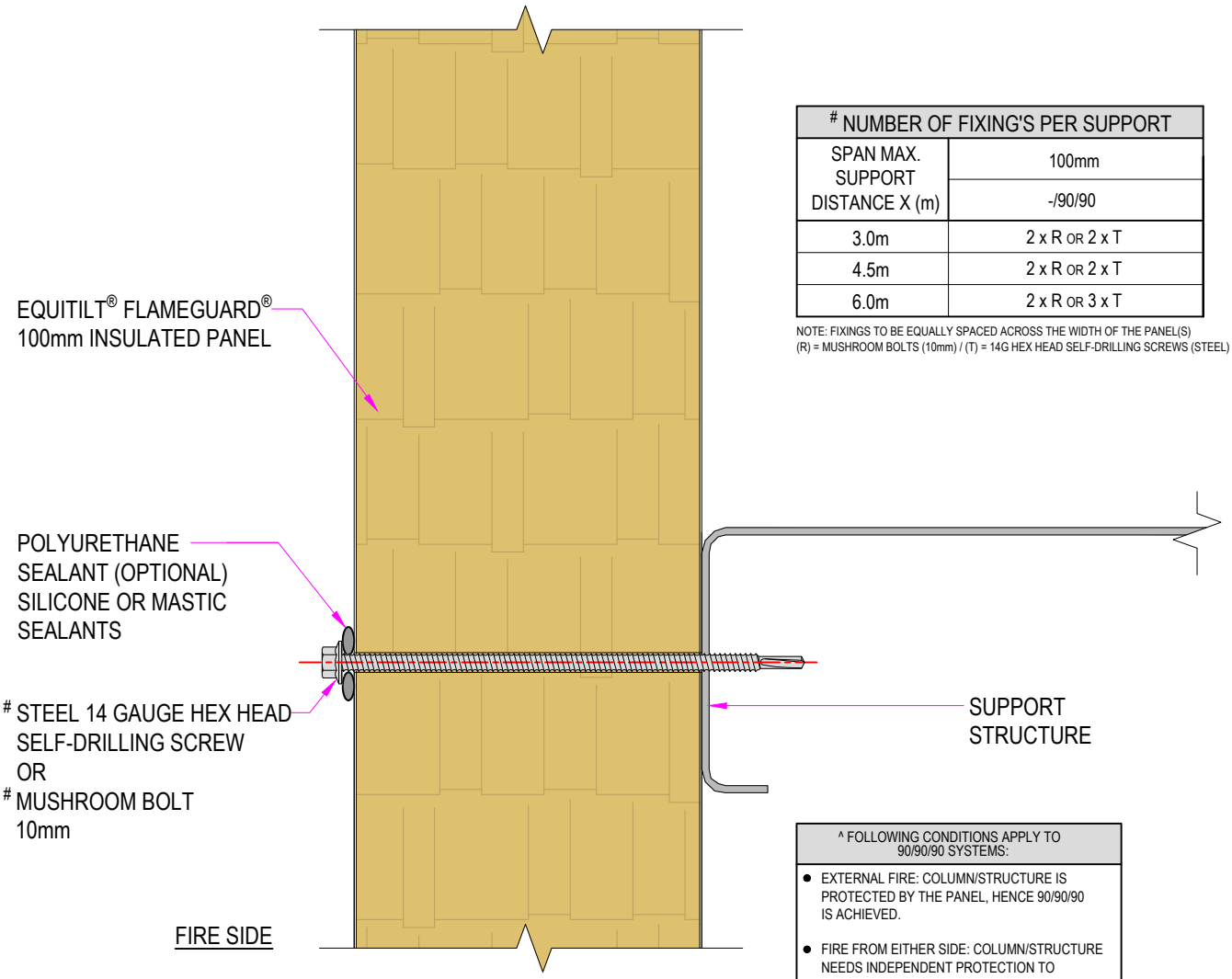
NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Intermediate Tek Screw Fixing Details (Intumescent Paint in Slip Joints)



# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	100mm
	-/90/90
3.0m	2 x R OR 2 x T
4.5m	2 x R OR 2 x T
6.0m	2 x R OR 3 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

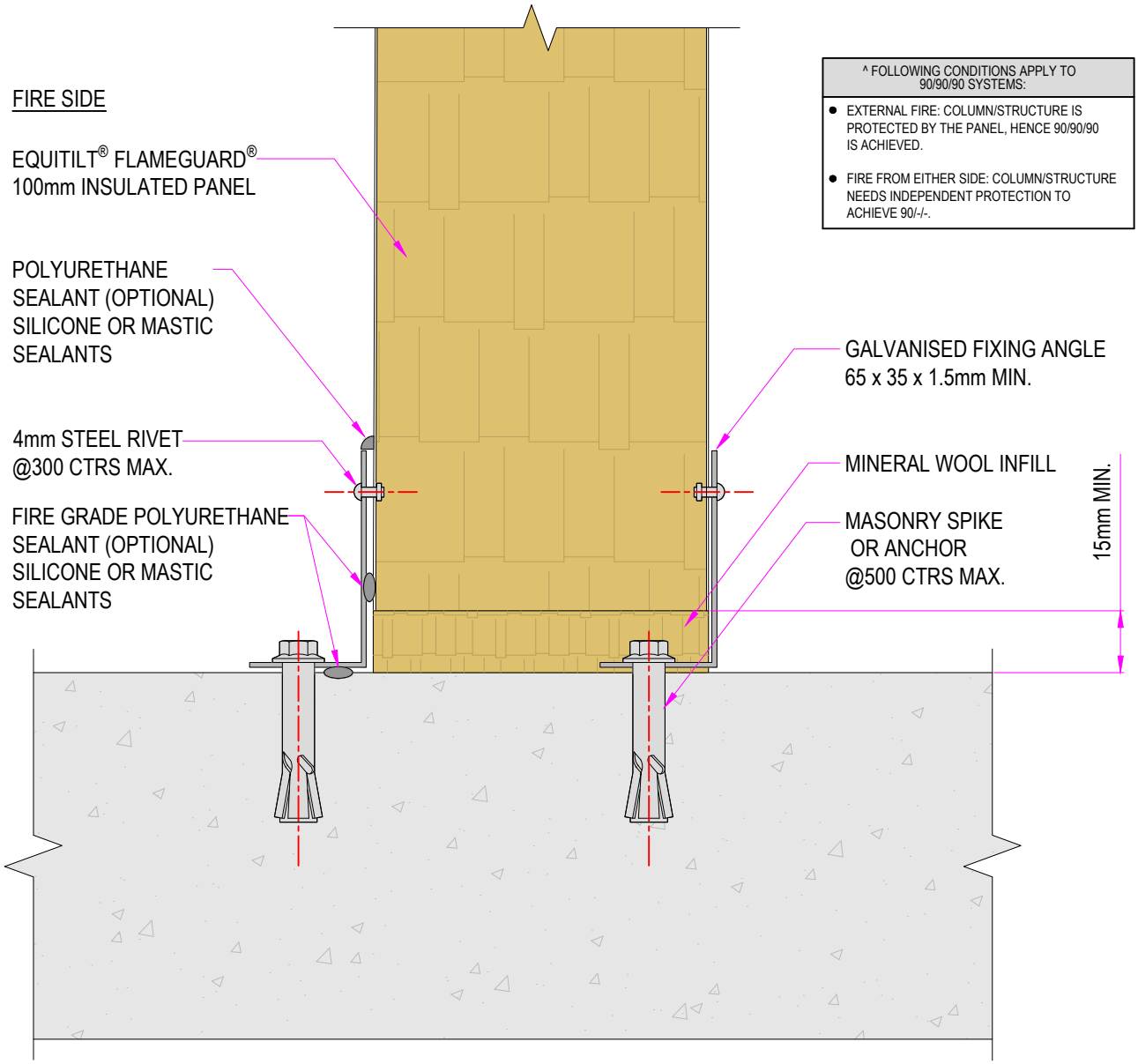
^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ELEVATION

ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Base Fixing Details
(Intumescent Paint in Slip Joints)

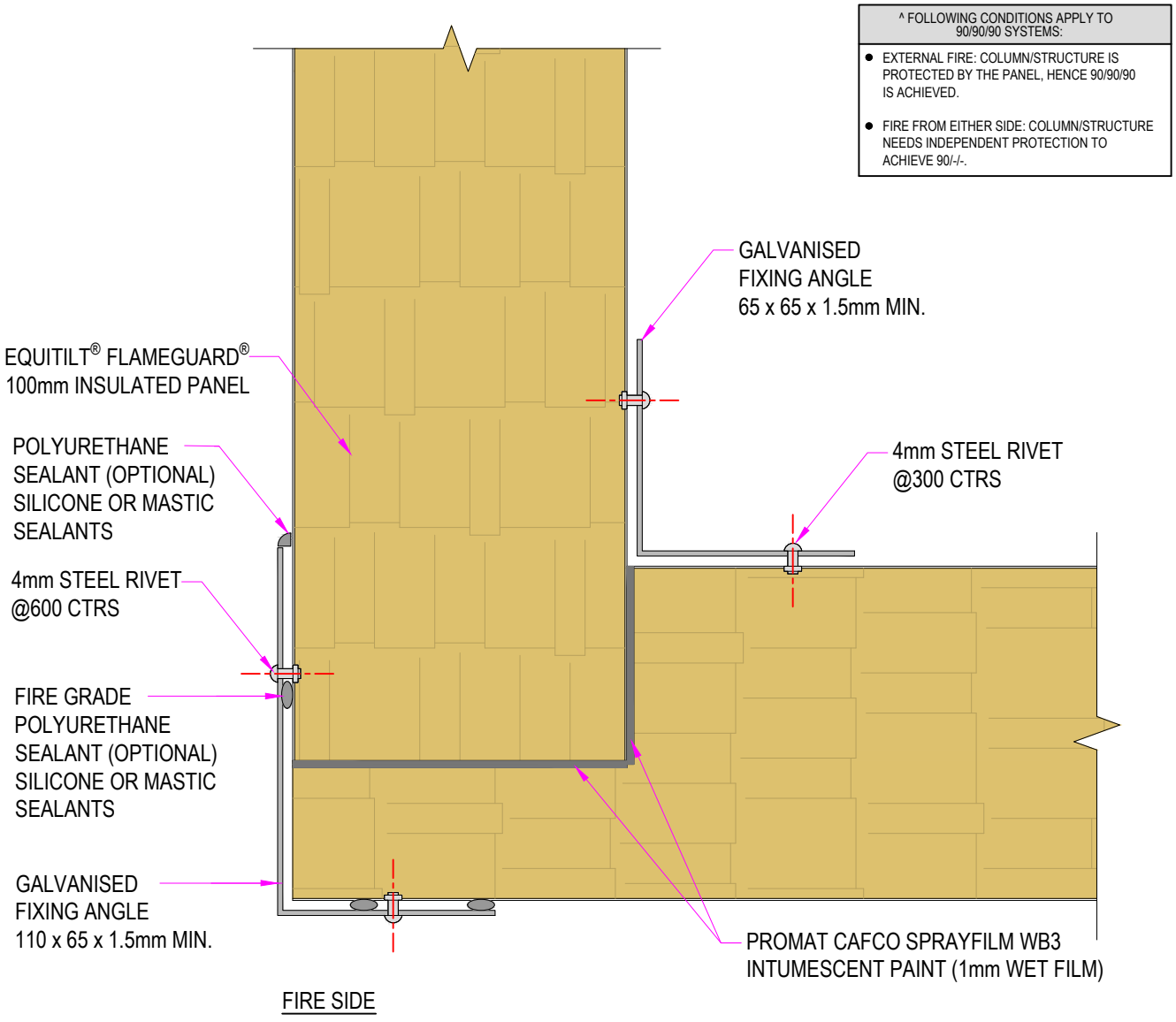


ELEVATION

ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Corner Fixing Details
(Intumescent Paint in Slip Joints)

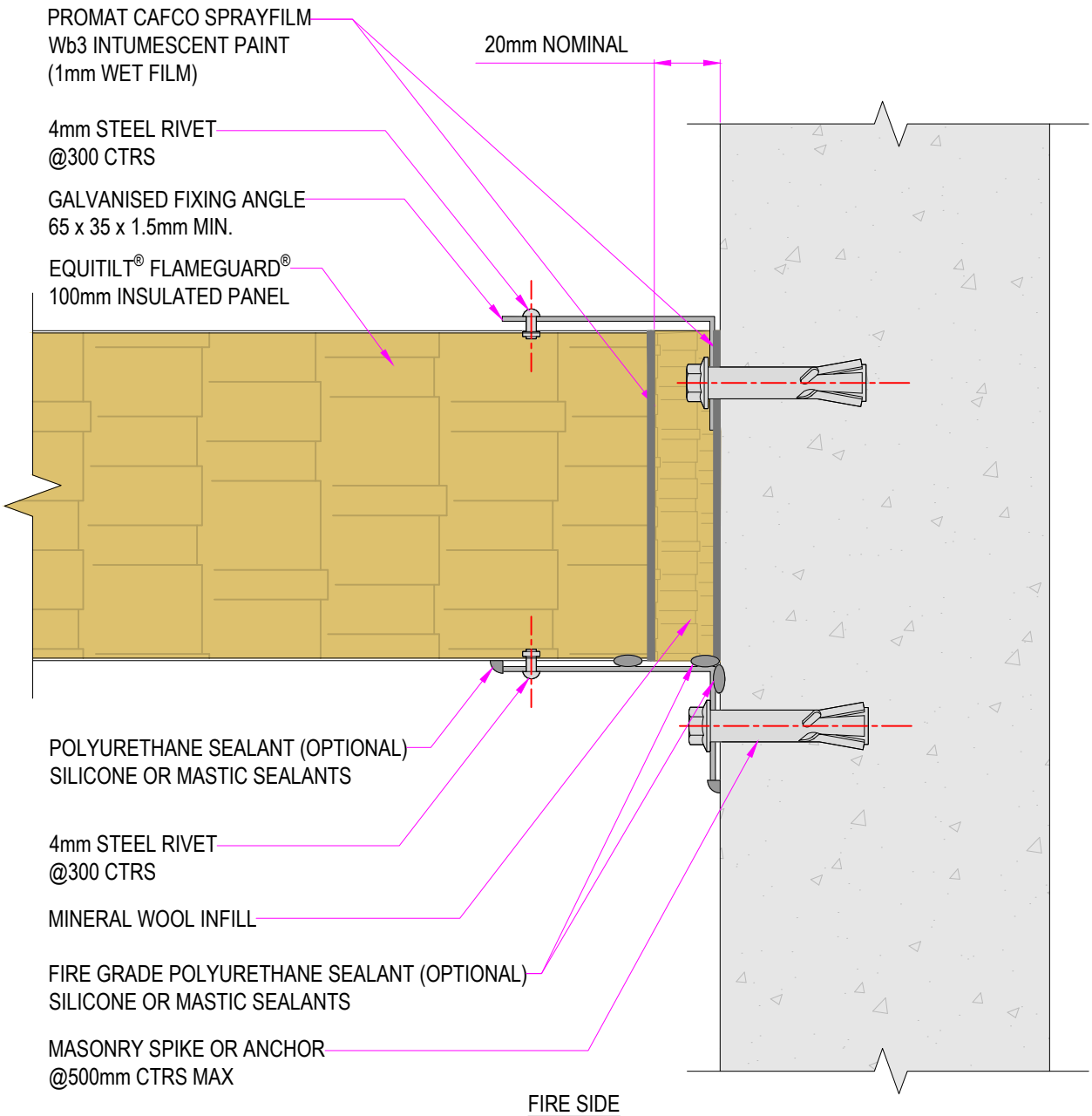


ELEVATION

ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Wall Fixing Details
(Intumescent Paint in Slip Joints)



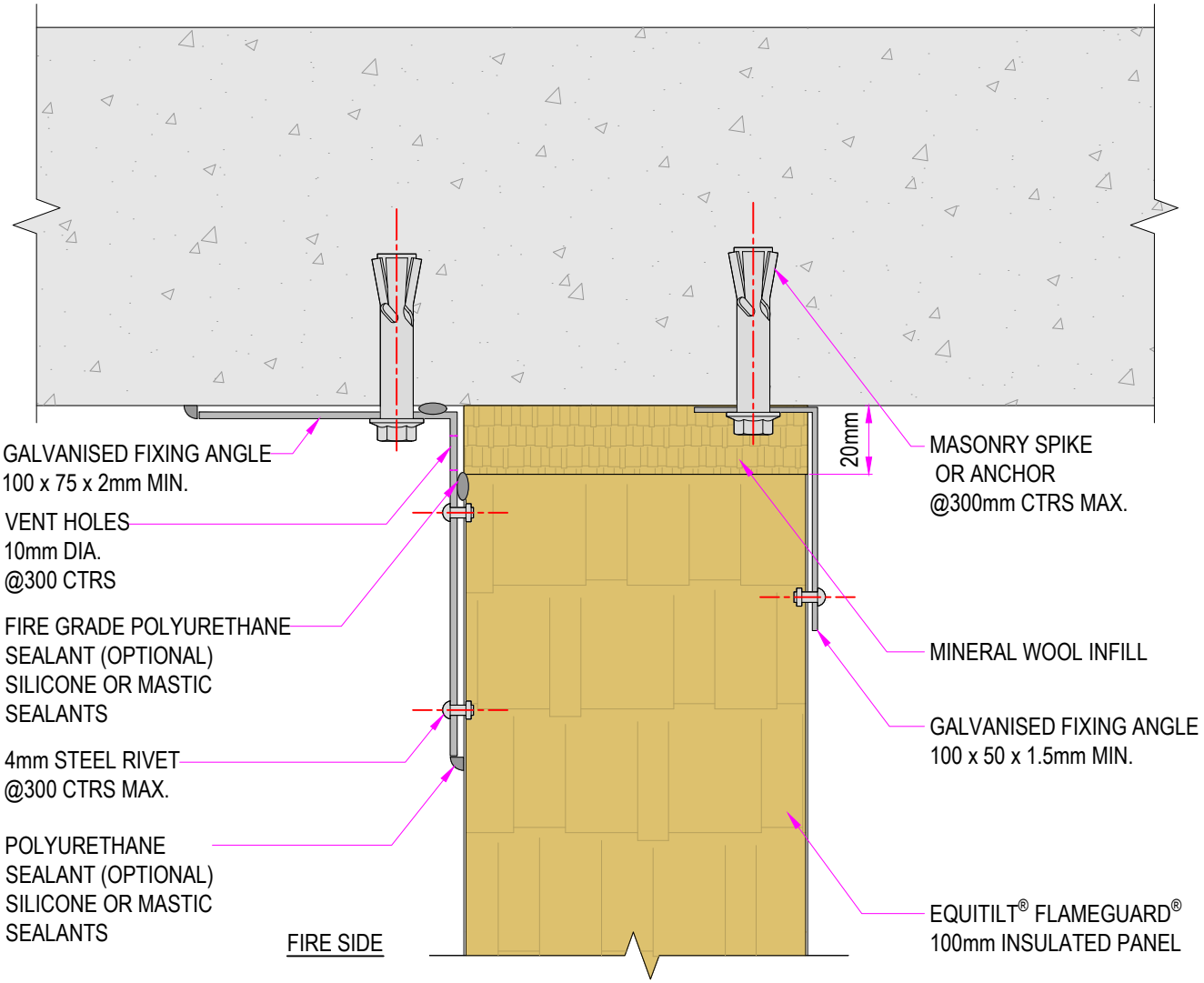
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Top Fixing Details
(Intumescent Paint in Slip Joints)



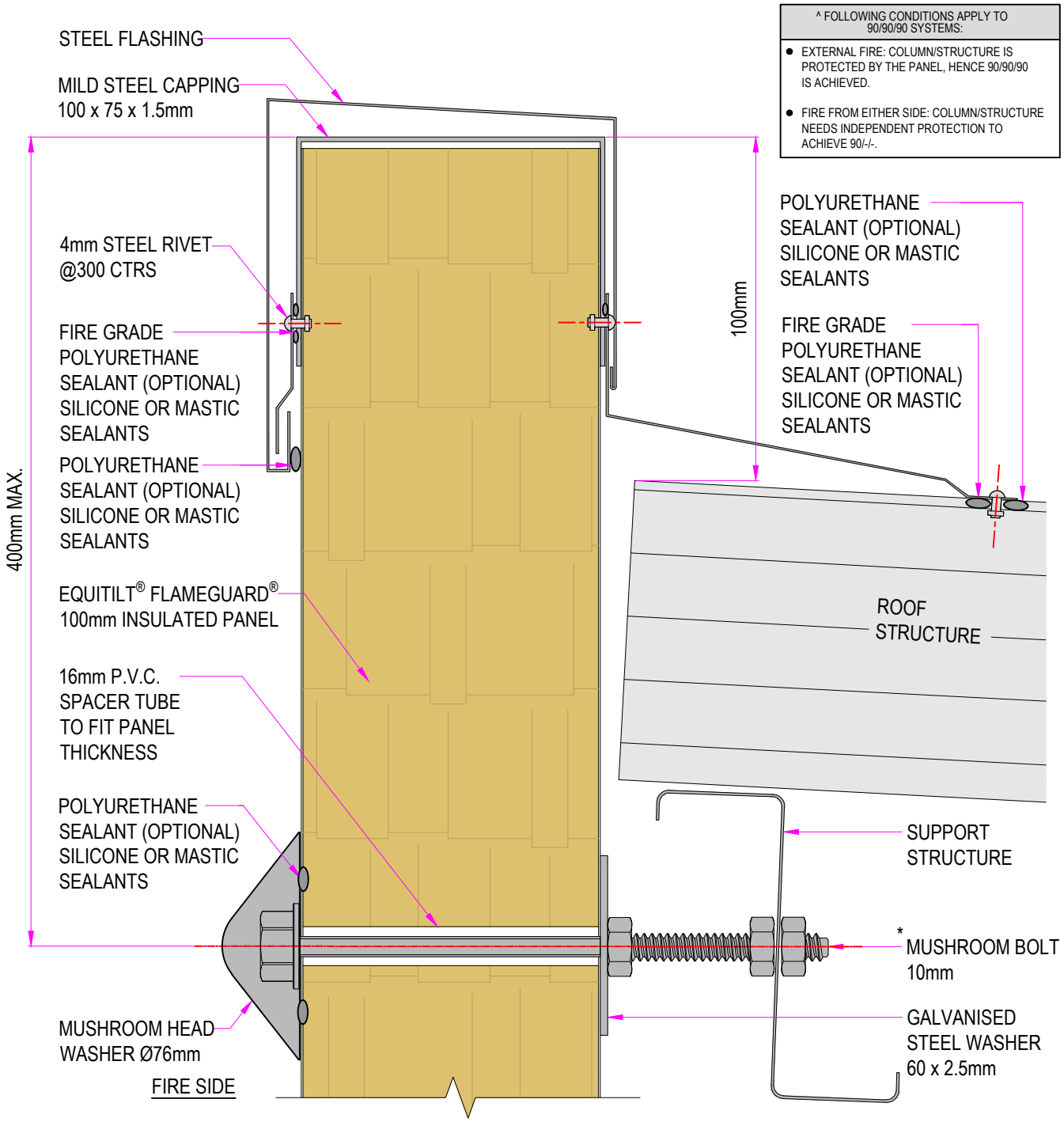
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Parapet Capping & Parapet Fixing Details (Intumescent Paint in Slip Joints)



^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ELEVATION

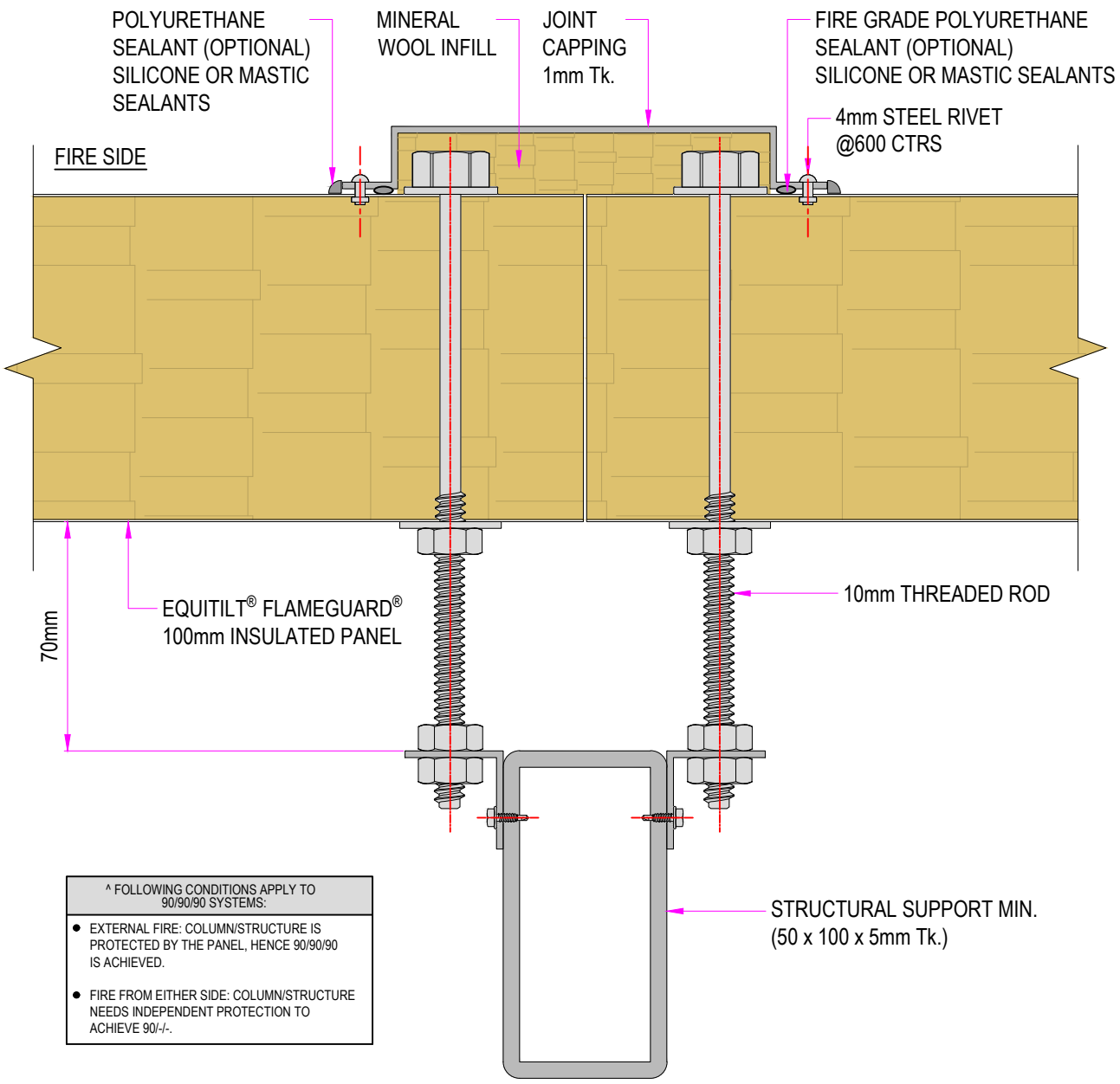
* FOR PARAPETS UP TO 200mm
MUSHROOM BOLTS (10mm) @1200 CTRS MAX.

* FOR PARAPETS FROM 200 UP TO 400mm
MUSHROOM BOLTS (10mm) @600 CTRS MAX.

ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 100mm Panel -/90/90 or 90/90/90^

Expansion Joint Fixing Details
(Intumescent Paint in Slip Joints)



^ FOLLOWING CONDITIONS APPLY TO 90/90/90 SYSTEMS:

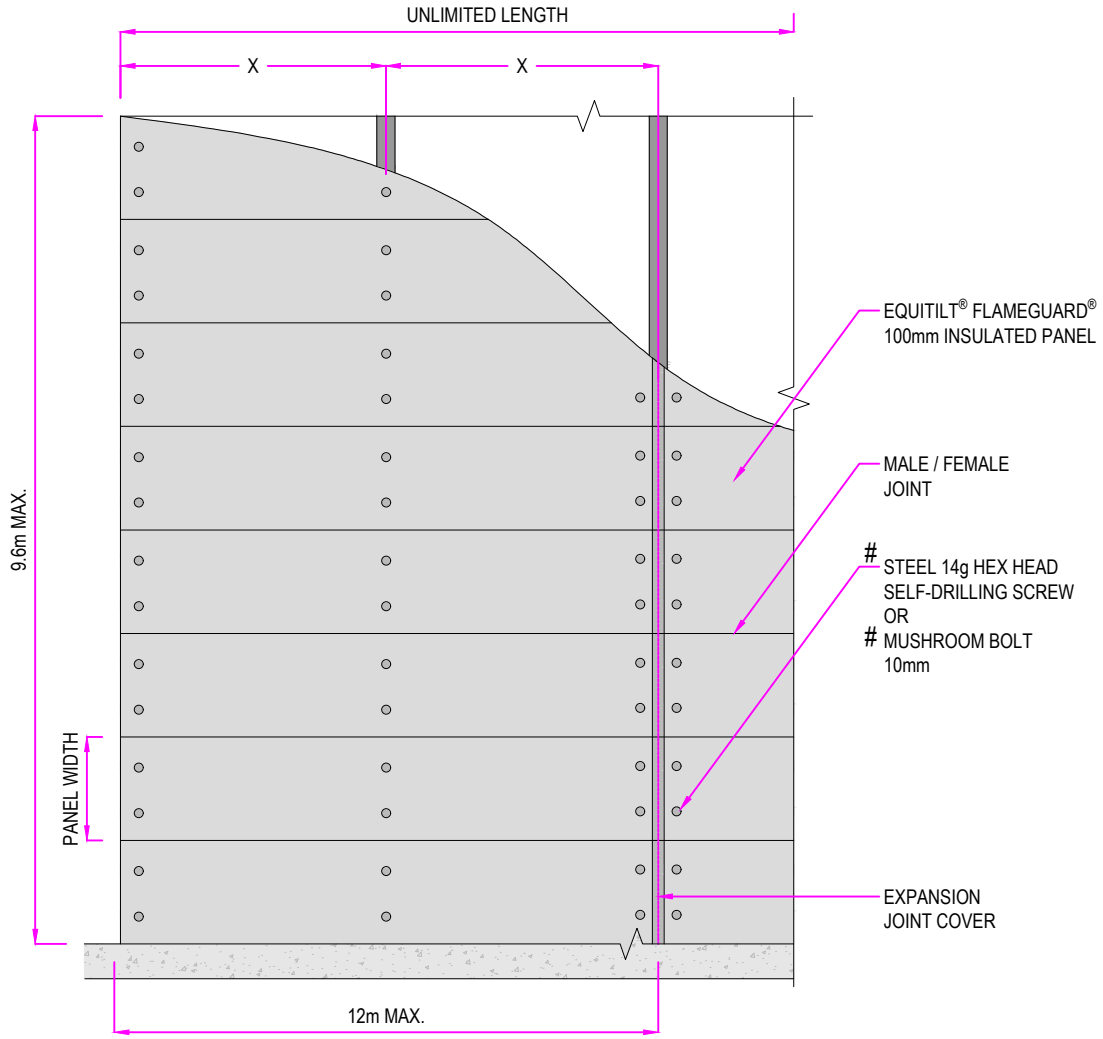
- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 90/90/90 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 90/-/-.

ELEVATION

ETF-MW-FR175-REV03

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Panel Construction Details
(Intumescent Paint in Slip Joints)



FRONT ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm -/120/120
3.0m	2 x R OR 2 x T
4.5m	2 x R OR 2 x T
6.0m	2 x R OR 3 x T
7.5m	3 x R OR 4 x T

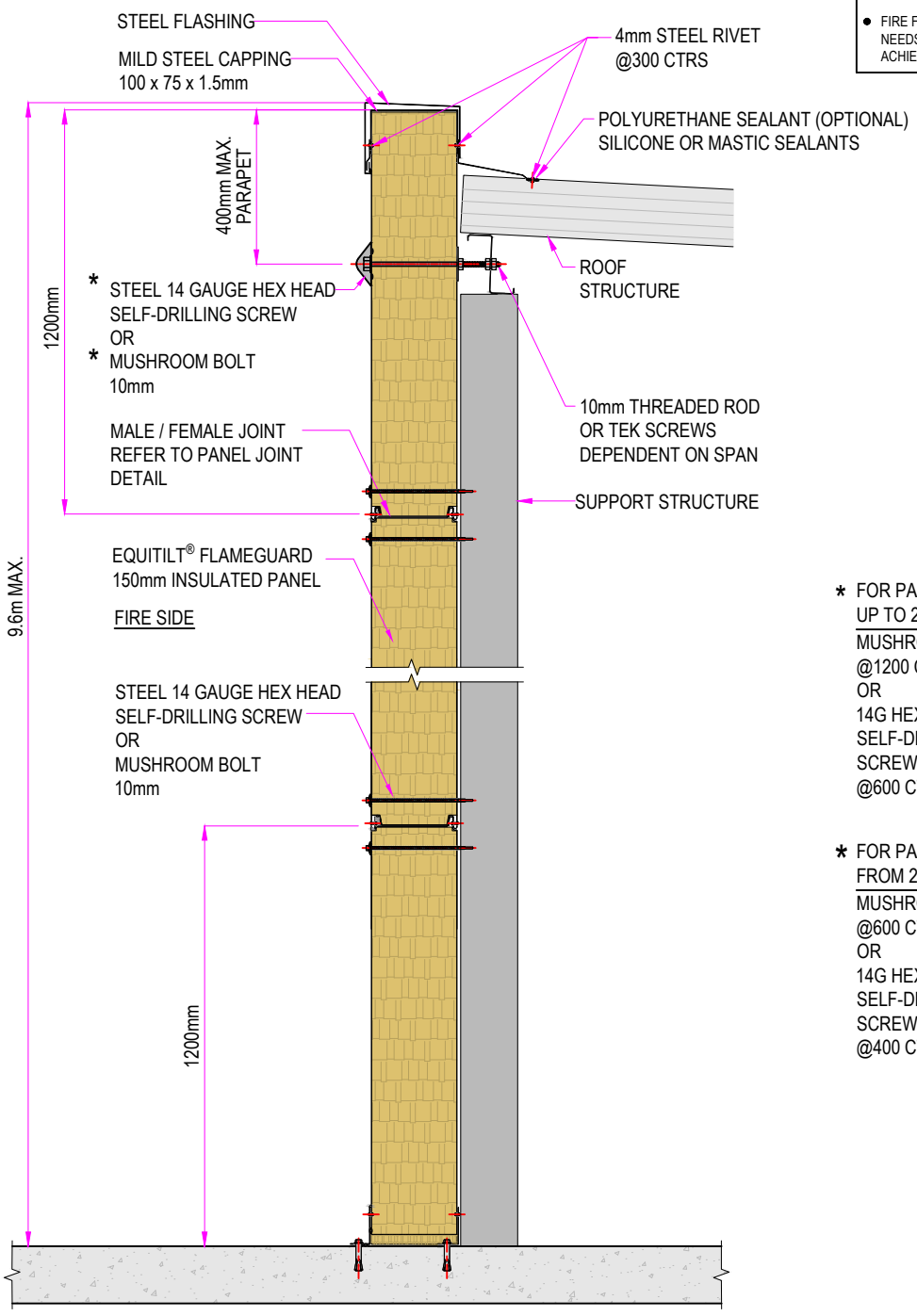
NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Panel Construction Details
(Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.



ELEVATION

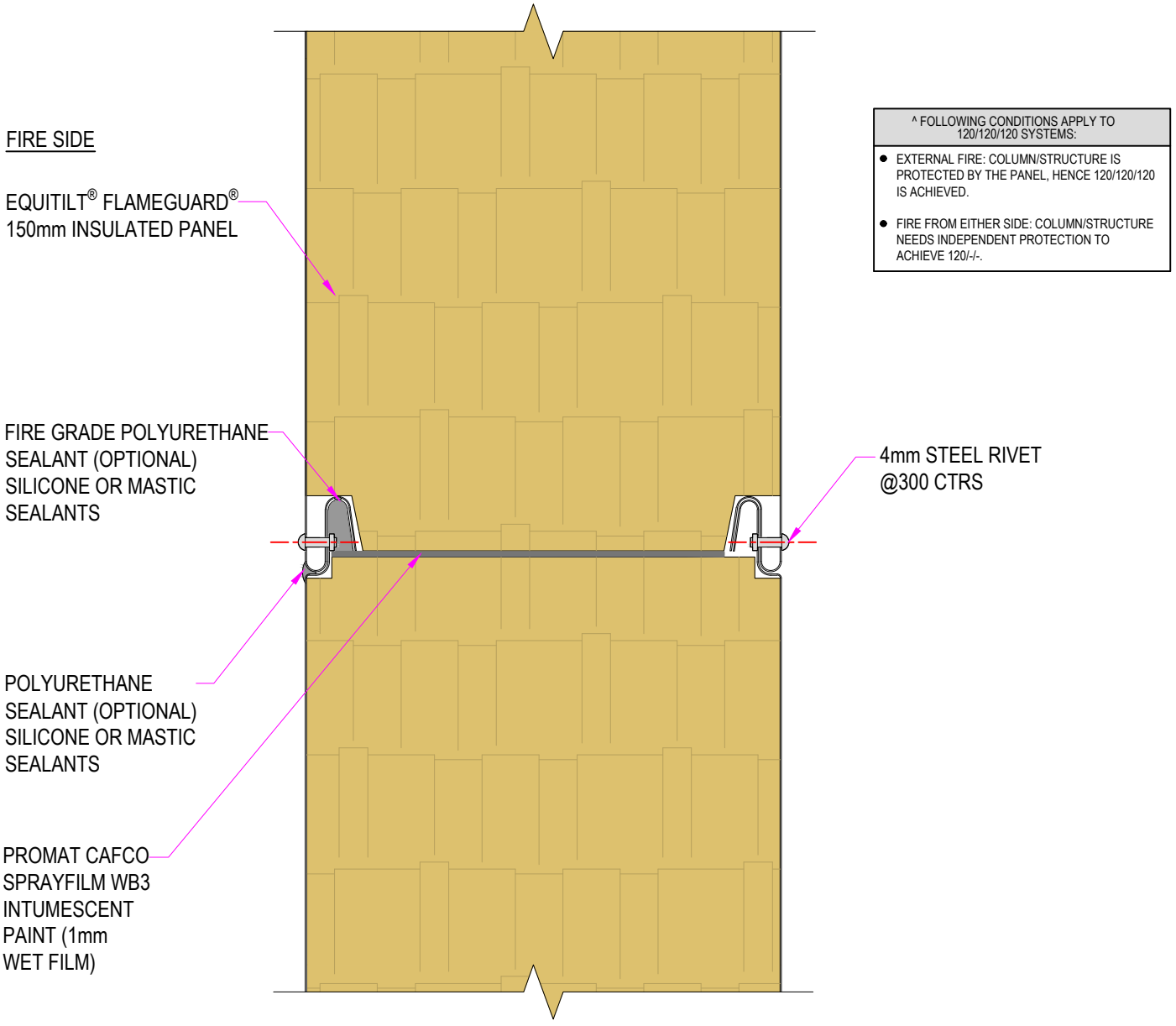
* FOR PARAPETS UP TO 200mm
MUSHROOM BOLTS (10mm) @1200 CTRS MAX.
OR
14G HEX HEAD SELF-DRILLING SCREWS (STEEL) @600 CTRS MAX.

* FOR PARAPETS FROM 200mm UP TO 400mm
MUSHROOM BOLTS (10mm) @600 CTRS MAX.
OR
14G HEX HEAD SELF-DRILLING SCREW (STEEL) @400 CTRS MAX.

ETF-MW-FR176-REV03

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Joint Fixing Details
(Intumescent Paint in Slip Joints)

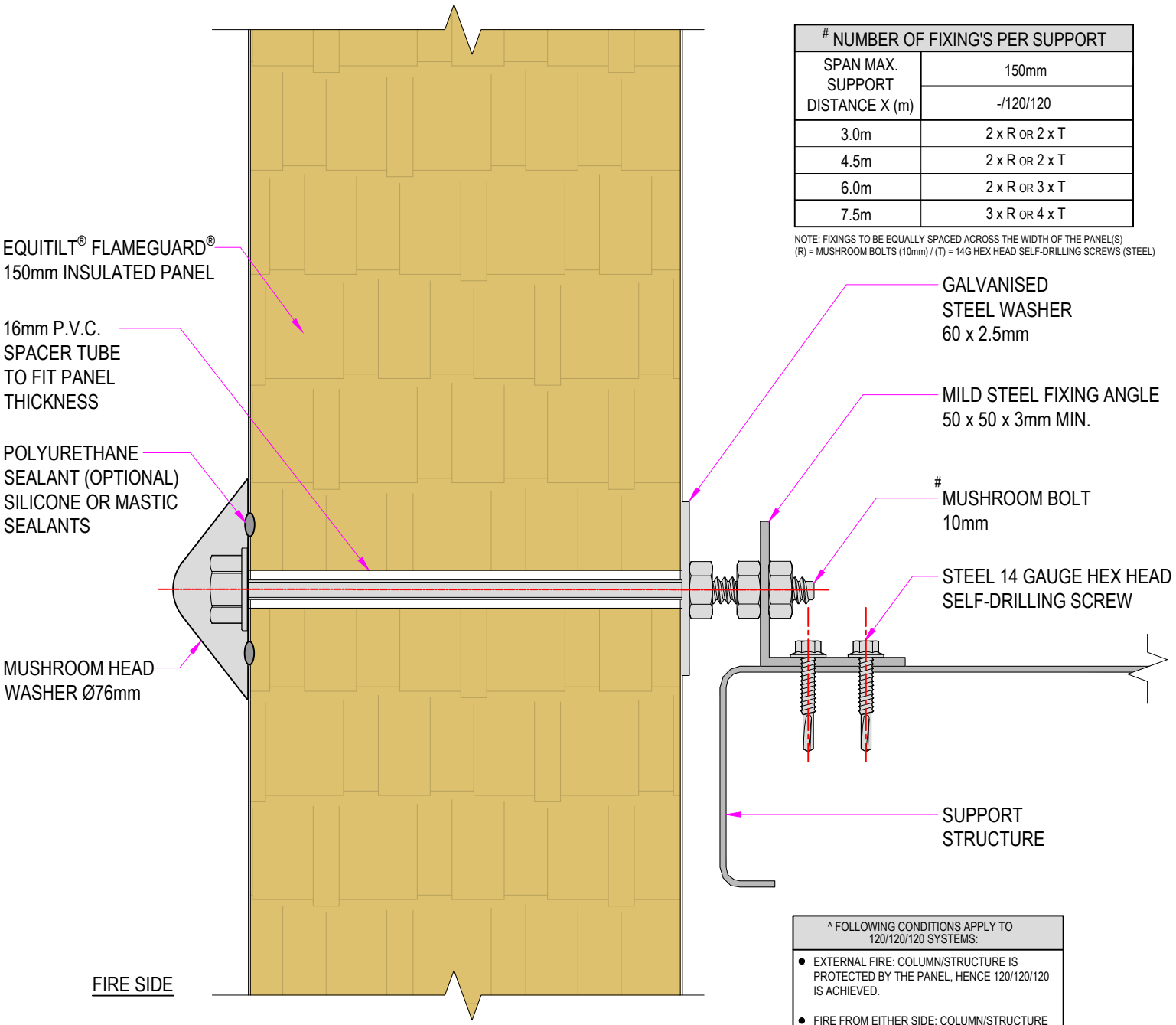


ELEVATION

ETF-MW-FR176-REV03

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Intermediate Mushroom Bolt Fixing Details (Intumescent Paint in Slip Joints)



ELEVATION

# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/120/120
3.0m	2 x R OR 2 x T
4.5m	2 x R OR 2 x T
6.0m	2 x R OR 3 x T
7.5m	3 x R OR 4 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

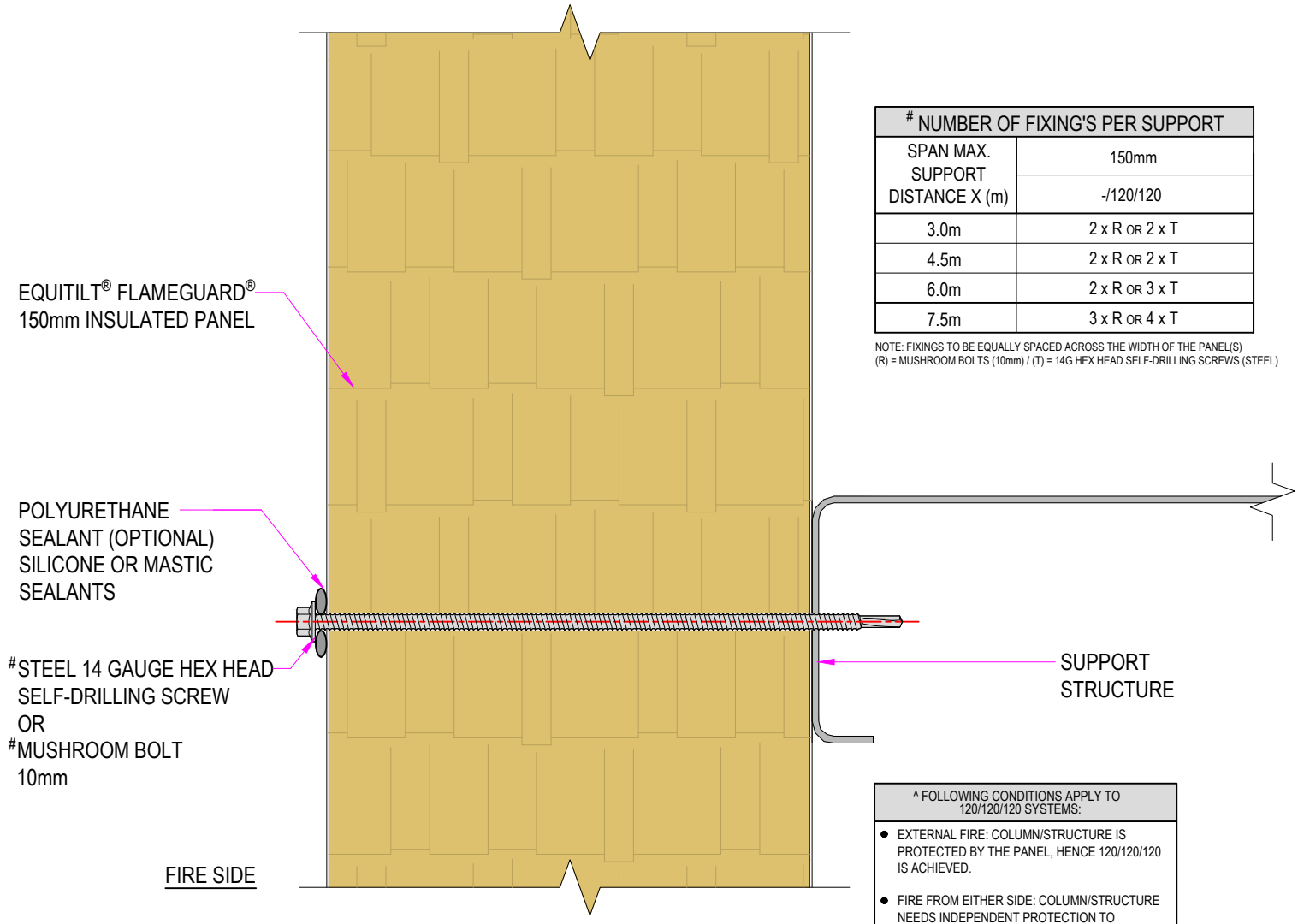
^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:

- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ETF-MW-FR176-REV03

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Intermediate Tek Screw Fixing Details (Intumescent Paint in Slip Joints)



# NUMBER OF FIXING'S PER SUPPORT	
SPAN MAX. SUPPORT DISTANCE X (m)	150mm
	-/120/120
3.0m	2 x R OR 2 x T
4.5m	2 x R OR 2 x T
6.0m	2 x R OR 3 x T
7.5m	3 x R OR 4 x T

NOTE: FIXINGS TO BE EQUALLY SPACED ACROSS THE WIDTH OF THE PANEL(S)
(R) = MUSHROOM BOLTS (10mm) / (T) = 14G HEX HEAD SELF-DRILLING SCREWS (STEEL)

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:

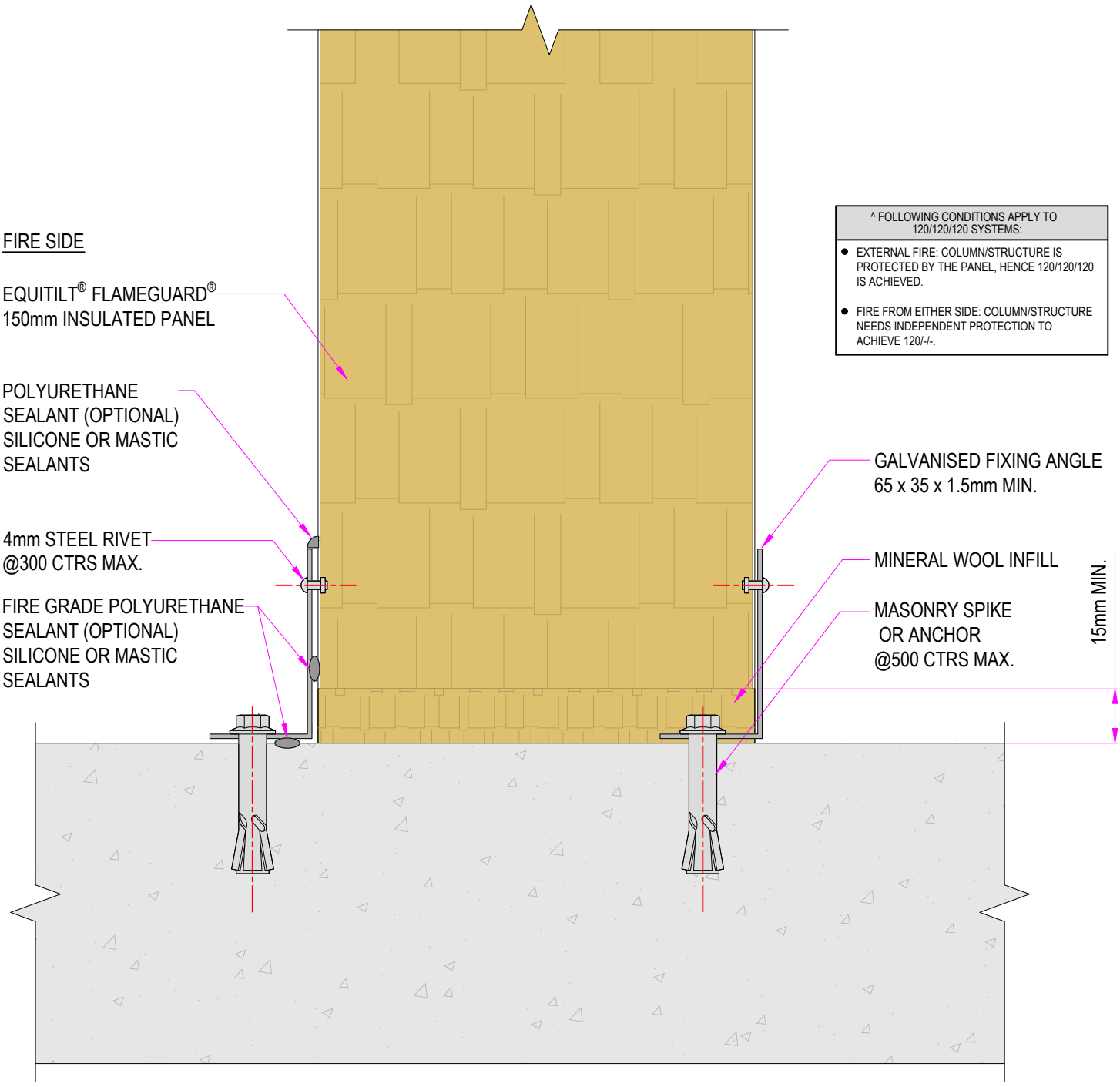
- EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ELEVATION

ETF-MW-FR176-REV03

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Base Fixing Details
(Intumescent Paint in Slip Joints)

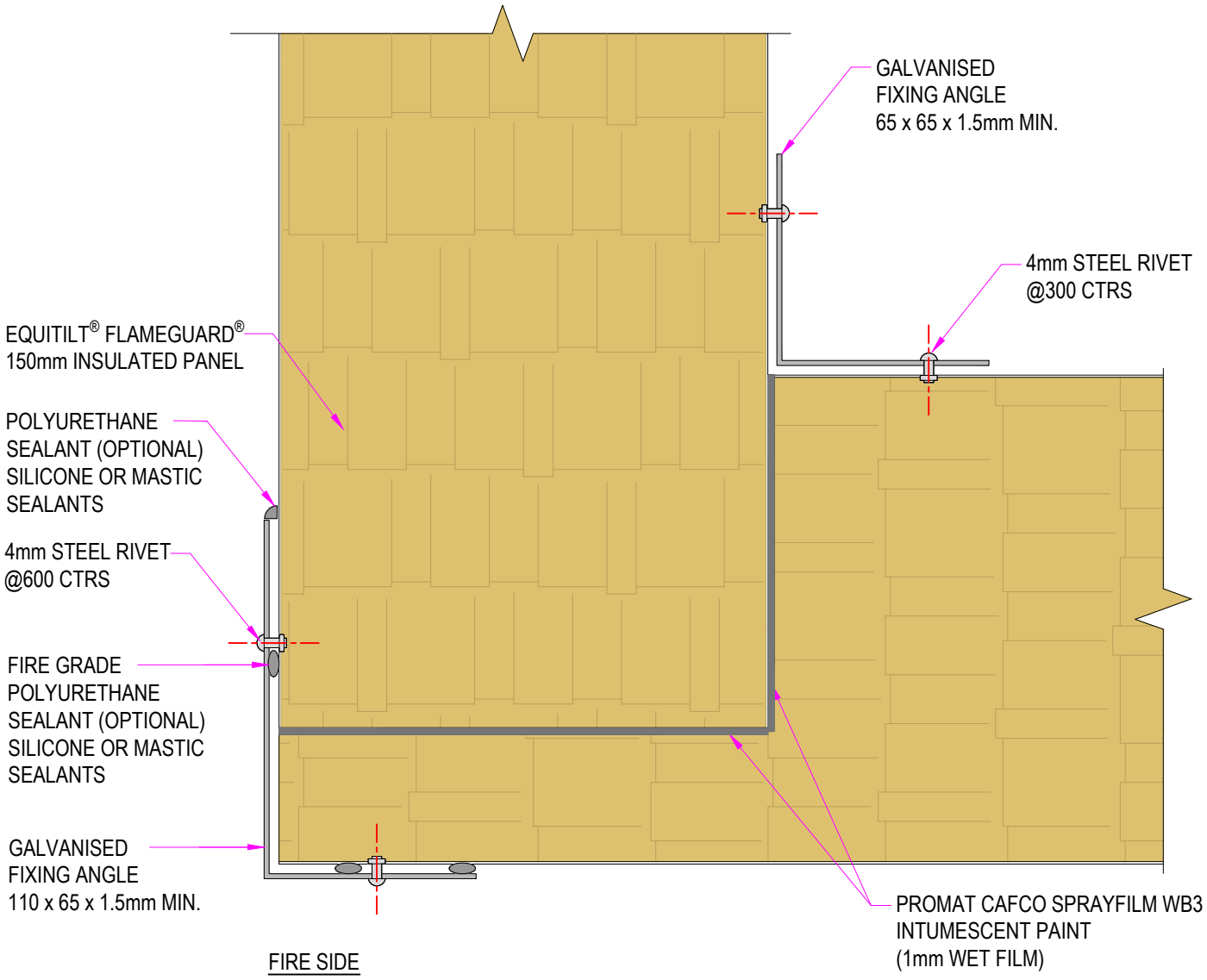


ELEVATION

ETF-MW-FR176-REV03

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Corner Fixing Details
(Intumescent Paint in Slip Joints)



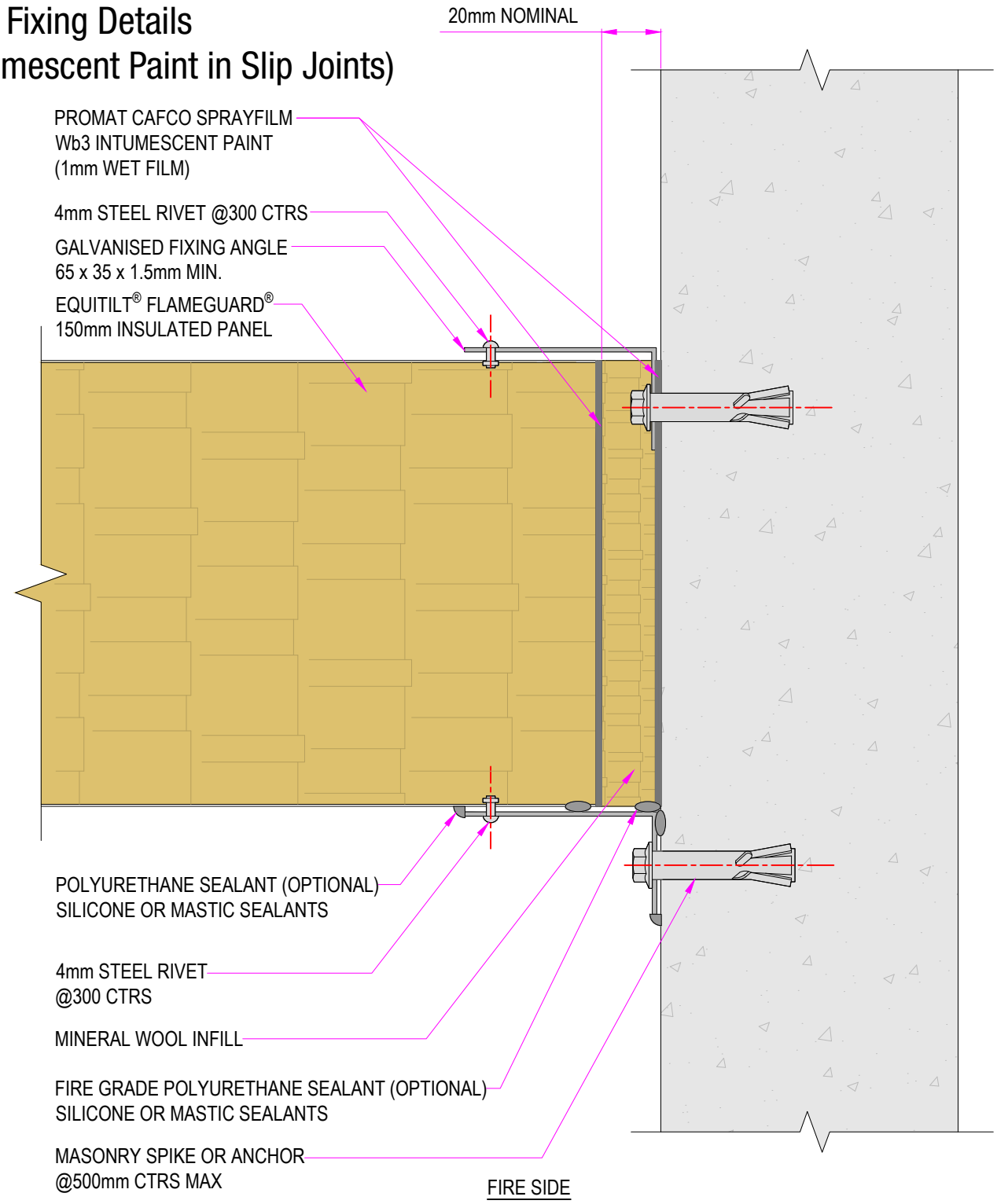
ELEVATION

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:
• EXTERNAL FIRE: COLUMN/STRUCTURE IS PROTECTED BY THE PANEL, HENCE 120/120/120 IS ACHIEVED.
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ETF-MW-FR176-REV03

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Wall Fixing Details
(Intumescent Paint in Slip Joints)



ELEVATION

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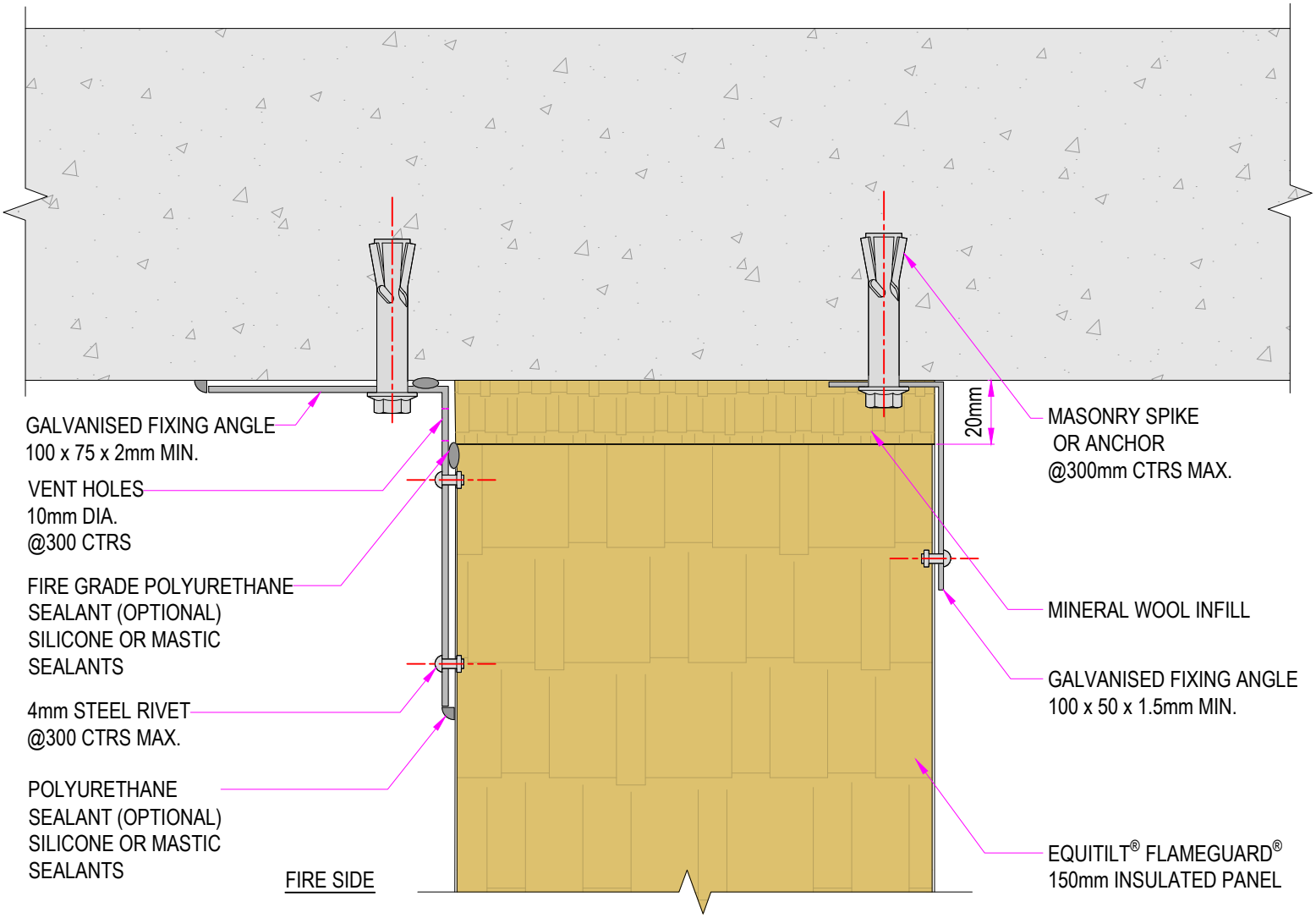
• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ETF-MW-FR176-REV03

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Top Fixing Details
(Intumescent Paint in Slip Joints)



ELEVATION

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• FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ETF-MW-FR176-REV03

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Parapet Capping & Parapet Fixing Details (Intumescent Paint in Slip Joints)

^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:

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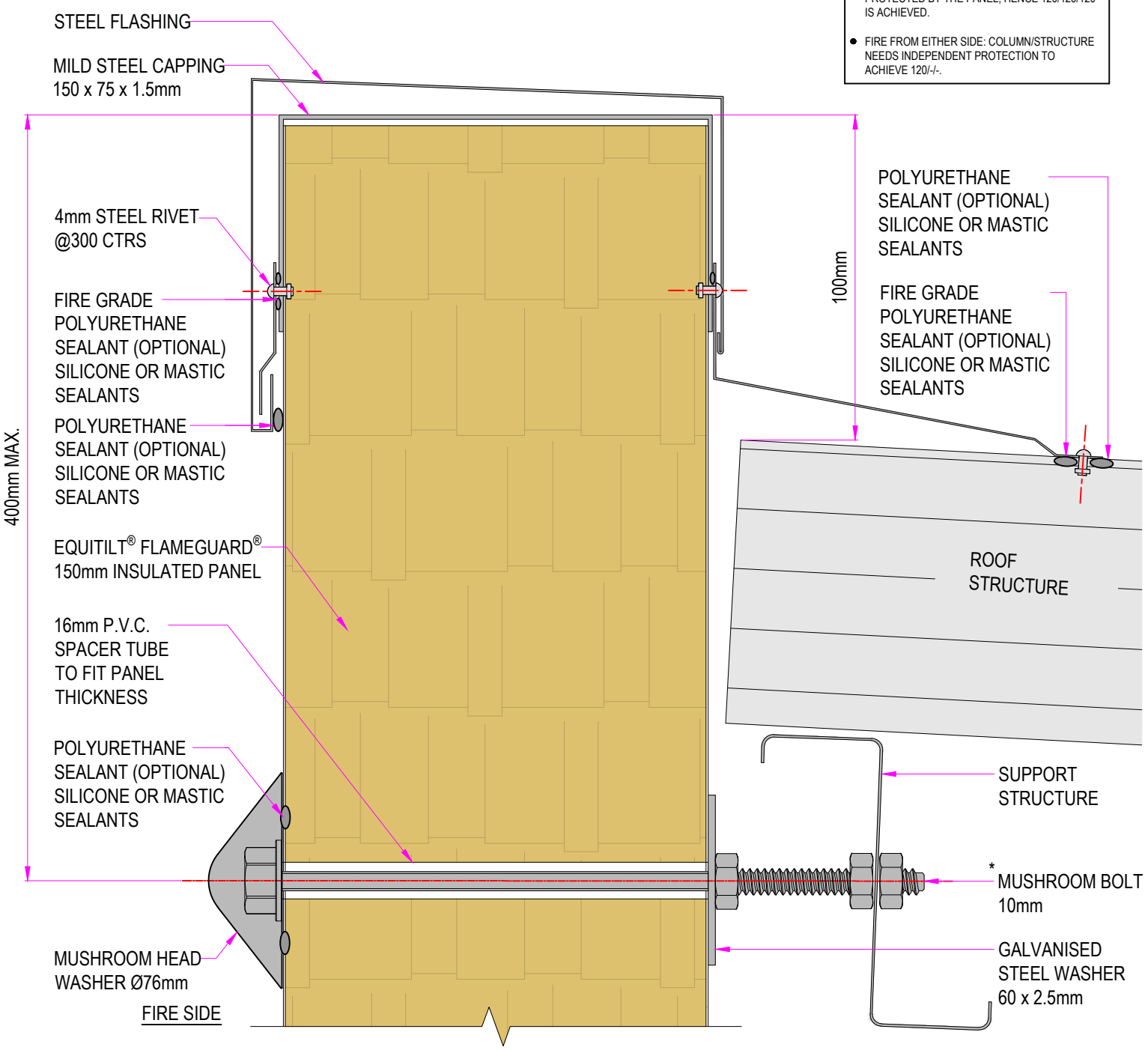
- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.



ELEVATION

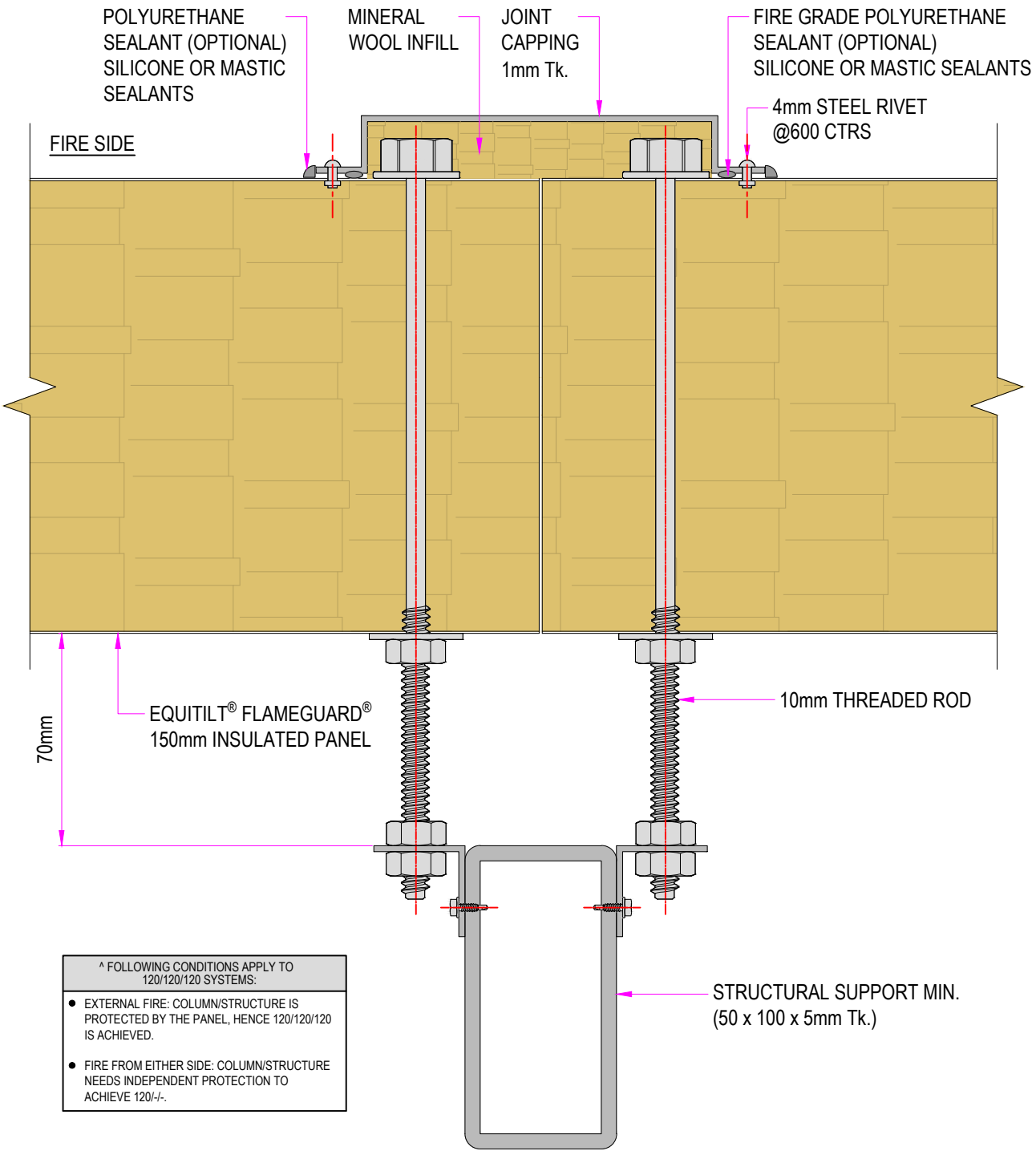
* FOR PARAPETS UP TO 200mm
MUSHROOM BOLTS (10mm) @1200 CTRS MAX.

* FOR PARAPETS FROM 200mm UP TO 400mm
MUSHROOM BOLTS (10mm) @600 CTRS MAX.

ETF-MW-FR176-REV03

FRL Panel Fixing Options - Horizontal 150mm Panel -/120/120 or 120/120/120^

Expansion Joint Fixing Details
(Intumescent Paint in Slip Joints)



^ FOLLOWING CONDITIONS APPLY TO 120/120/120 SYSTEMS:

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- FIRE FROM EITHER SIDE: COLUMN/STRUCTURE NEEDS INDEPENDENT PROTECTION TO ACHIEVE 120/-/-.

ELEVATION

ETF-MW-FR176-REV03

Clean Up & Maintenance

Commercial Walling Design & Install Guide

It is recommended that all metal filling (swarf) are swept off and disposed of into bins after each sheet. If not, removed swarf can leave stains of panel, tiles or paver's.

Hose Down

It is recommended that regular maintenance of the external cladding occur. At least once a month a quick spray of water will remove most surface dirt due to dust or rain residue. Special attention like eaves, awnings and under verandah's must also be hosed down with water.

Note: Avoid hosing the ceiling as it will cause water to permeate, allowing water to sit inside the panel joints and flashings thus leading to possible corrosion.

Wash Away

Stubborn surface grime can be washed away with a soft brush or sponge soaked in warm water or mild detergent. Use one teaspoon of regular dishwashing liquid with four litres of water. For the best results, complete the wash down in the shade, change the water frequently and repeat the wipe down till the smears are removed.

Remove Mould

Areas constantly damp could suffer from the formation of mould. The mould can be removed with a solution of household bleach and water, at a ratio of 3:1. Rub the solution onto the surface with a soft sponge, leave for 10-20 minutes, and then rinse off with clean water. When dry rinse once more with clean water.

Renovations

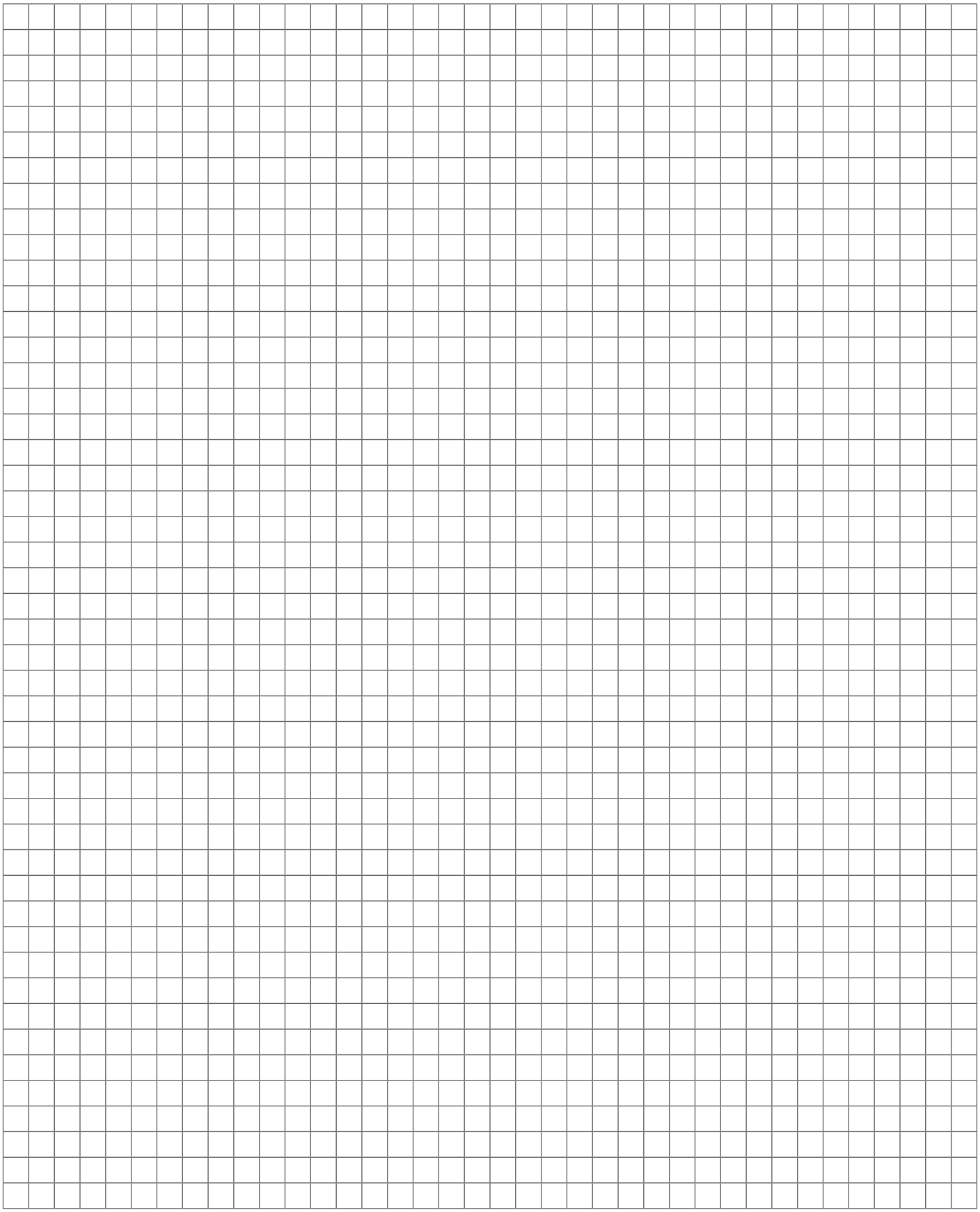
Before completing any renovations, seek engineering advice especially if adding fixtures onto the interior or exterior surface. For example patio additions, internal wall reconfiguration or wall modifications.

Coastal Region

Panels in coastal regions require more care due to the exposure of the salt air. Panels should be cleaned and washed down periodically to minimise the effect of corrosion forming.

Handy Tips: Regular visual inspection every 6 months on all external surfaces would be recommended.

Refer to BlueScope® Colorbond® Technical Bulletin: Coastal region



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