

## FIRE ESCAPE TUNNEL

<b>SYSTEMS</b>	<b>353</b>
<b>INSTALLATION</b>	<b>354</b>
General Requirements	354
Framing	354
Plasterboard Layout	355
Plasterboard Fixing	355
<b>CONSTRUCTION DETAILS</b>	<b>357</b>

Fire escape tunnel systems are designed to provide building occupants with an escape route protected from fire. They comply with the BCA requirements for 'Fire Isolated Passageways' and achieve fire protection from the outside up to FRL of 120/120/120.

This section provides systems as well as installation instructions and construction details for the framing and external plasterboard layers. For the installation of plasterboard to the interior of the fire escape tunnel [REFER TO SECTION 4.1.1 FOR WALLS AND 4.4.1 FOR CEILINGS].

### LFET1-LFET3


EXTERNAL LINING:	[OPTION 1] 2 layers of 16mm <b>FireShield</b> [OPTION 2] 3 layers of 13mm <b>FireShield</b> [OPTION 3] 3 layers of 16mm <b>FireShield</b>
INTERNAL LINING:	[CEILING] 1 layer of 10mm SpanShield (optional) [WALL] 1 layer of 10mm MastaShield (optional)
FRAME:	Wall studs and ceiling joists at 600mm max centres

[Use 150x0.75mm steel studs with Cleat 1]  
[Use 150x1.15mm steel studs with Cleat 2]  
[Maximum Height and Width apply to all systems]




FRL rated from outside only	SYSTEM	EXTERNAL PLASTERBOARD LINING	PLASTERBOARD THICKNESS (mm)
<b>60/60/60</b> FAR 2869	LFET1	2 layers of 16mm <b>FireShield</b>	32
<b>90/90/90</b> FAR 2869	LFET2	3 layers of 13mm <b>FireShield</b>	39
<b>120/120/120</b> FAR 2869	LFET3	3 layers of 16mm <b>FireShield</b>	48

GENERAL REQUIREMENTS

	FIRE RATED 
Install control joints in plasterboard walls at: <ul style="list-style-type: none"> <li>› 12m maximum intervals</li> <li>› All control joints in the structure</li> <li>› Any change in the substrate material</li> </ul>	✓
All ceilings in this section are non-trafficable. Do not walk on plasterboard ceilings!	✓
Attach ceiling fixtures to framing members only. Ensure the framing is designed to carry any additional load.	✓
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: <ul style="list-style-type: none"> <li>› Two coats of <b>MastaBase</b> / <b>MastaLongset</b>, or</li> <li>› Three coats of <b>MastaRapid</b> / <b>MastaLite</b></li> </ul> Never joint sheets with fire sealant. [REFER TO SECTION 5]	✓
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.	✓
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.	✓

**i** For acceptable modifications or variations to fire rated systems [REFER TO SECTION 3.3 FIRE RESISTANCE].

FRAMING

	FIRE RATED 
Fix the bottom track at 600mm maximum centres and 100mm maximum from each end.	✓
Space studs at maximum 600mm centres.	✓
Push studs down completely into bottom track.	✓
Fix studs to top and bottom tracks. Fix joists to perimeter tracks [REFER TO CONSTRUCTION DETAILS].	✓


**i** Noggings are permitted to assist the fixing of services. Copper Chromium Arsenate (CCA) treated timber must not be used.  
 Plumbing and electrical services must not protrude beyond the face of the stud.  
 Gas services are not permitted.


FIRE ESCAPE TUNNEL MAXIMUM HEIGHT AND WIDTH TABLE

STUD SIZE (mm)		MAXIMUM HEIGHT (m)	MAXIMUM WIDTH (m)
Stud and Joist Depth	Stud and Joist BMT		
150	0.75	2.4	2.0
150	1.15	3.0	2.0


- 1 Deflection Limit is Height/240 to a maximum of 30mm at 0.35kPa, in accordance with BCA Specification C1.8 for walls of shafts and fire isolated exits generally.
- 2 Tabulated heights are not for axial loads but do include self weight and lateral pressures.
- 3 Shelf loading is not permitted on these tabulated wall heights.
- 4 Loadings: Ultimate = 0.525 kPa, Pservice = 0.35 kPa.
- 5 These walls are not for external applications.
- 6 All loadings in accordance with AS1170.
- 7 Walls analysed in accordance with AS4600.
- 8 Noggings in accordance with relevant table.

## PLASTERBOARD LAYOUT

	FIRE RATED 
<b>WALLS</b>	
Stagger butt joints by 600mm minimum on adjoining sheets and between layers.	✓
First layer butt joints must be backed by a nogging.	✓
Stagger recessed edges by 300mm minimum between layers.	✓
Fix all underlying plasterboard sheets vertically. The face layer may be fixed either horizontally or vertically.	✓
<b>CEILING</b>	
Sheets must be perpendicular to the framing members.	✓
Stagger face layer butt joints by 600mm minimum on adjoining sheets and between layers.	✓
Stagger recessed edges by 300mm minimum between layers.	✓
First layer butt joints must be over a framing member.	✓

 Ceiling butt joints on underlying layers (not face layer) may be made on the same framing member.

## PLASTERBOARD FIXING

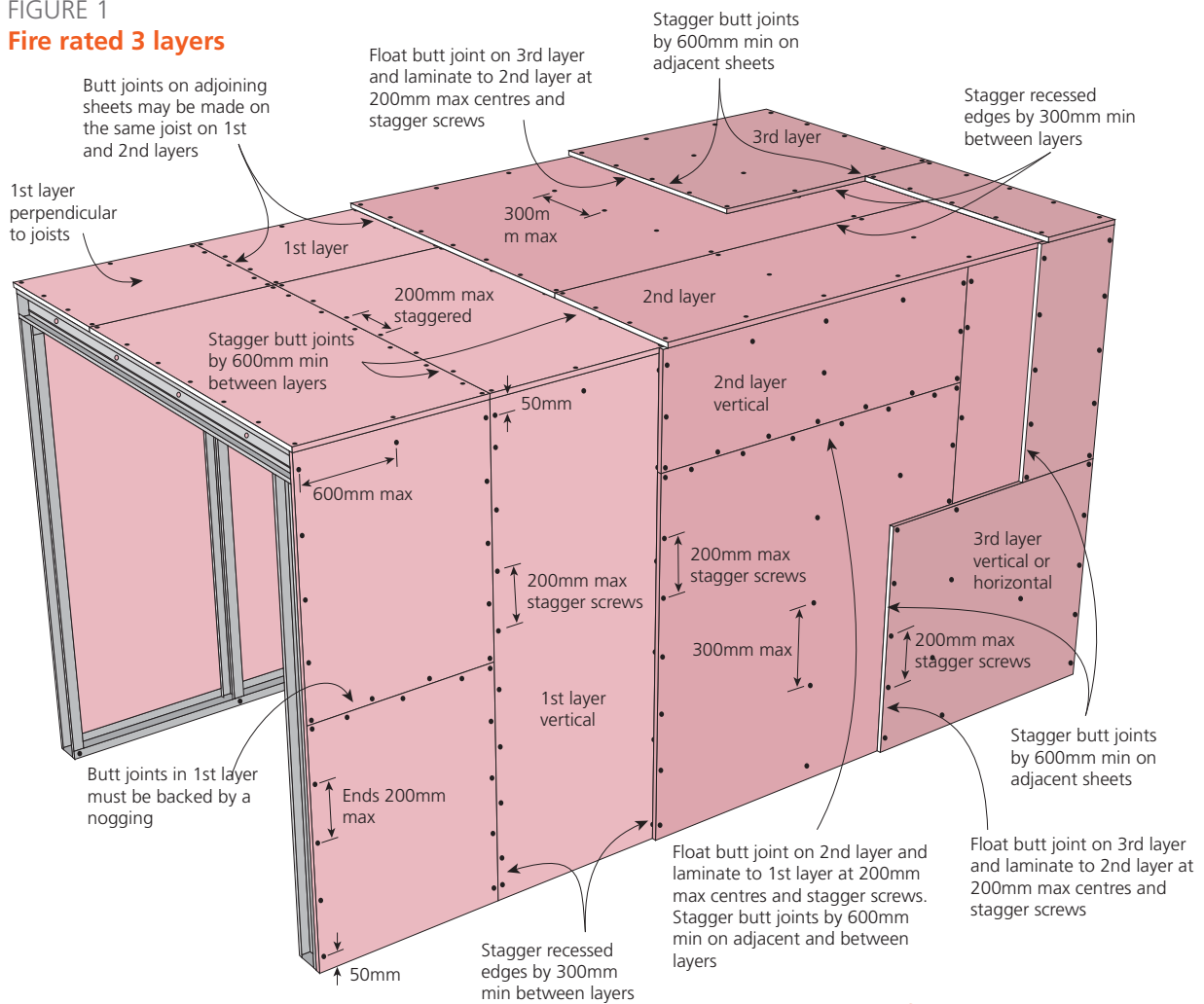
	FIRE RATED 
Use the Screw Only Method. Stud adhesive is not permitted.	✓
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✓
Laminating screws can be used to fix butt joints in the second and third layer on the wall.	✓
Laminating screws can be used to fix butt joints in the third layer on the ceiling.	✓

### SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL FURRING CHANNEL

PLASTERBOARD THICKNESS	1ST LAYER	2ND LAYER	3RD LAYER
13mm	25mm – 6g S screw	40mm – 6g S screw *	60mm – 6g S screw *
16mm	30mm – 6g S screw	45mm – 6g S screw *	65mm – 6g S screw *

For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.  
 For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.  
 \* 40mm - 10g Laminating screws may be used as detailed in installation diagrams.

**FIGURE 1**  
**Fire rated 3 layers**



**CEILINGS**

<b>Fixing</b>	SCREW ONLY METHOD
<b>Fasteners</b>	Perimeter fasteners 10-15mm from sheet edges. Nails must not be used on metal framing members.
<b>Field</b>	Fix at 300mm max centres.
<b>Recessed Edges</b>	Fix on each frame member. Stagger recessed edges by 300mm min between layers.
<b>Butt joints on framing members</b>	Fix at 100mm max centres and stagger screws. Butt joints on 1st and 2nd layers may be made on same joist. Stagger butt joints by 600mm min between layers.
<b>Floating butt joints on 3rd layer</b>	Locate centrally between framing members and laminate to 2nd layer at 200mm max centres. Stagger butt joints by 600mm min on adjoining sheets.
<b>Openings and Control Joints</b>	Fix at 200mm max centres.
<b>Fire Sealant</b>	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. [REFER TO CONSTRUCTION DETAILS]
<b>Jointing face layer</b>	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaRapid/MastaLite. [REFER TO SECTION 5]

**WALLS**

<b>Fixing</b>	SCREW ONLY METHOD
<b>Fasteners</b>	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
<b>Field</b>	1st layer: Fix at 300mm max centres. 2nd layer: Fix at 300mm max centres. 3rd layer: Laminate to 2nd layer at 400mm max centres.
<b>Recessed Edges</b>	1st and 2nd layers: Fix at 200mm max centres and stagger screws. Stagger recessed edges by 300mm min between layers and on opposite sides of the wall. Recessed edges must be backed by a stud. 3rd layer Horizontal: Fix on each stud. 3rd layer Vertical: Laminate to 2nd layer at 400mm max centres and stagger screws.
<b>Butt Joints</b>	1st layer: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. Butt joints must be backed by a nogging. 2nd layer: Same as 1st layer or laminate to 1st layer using laminating screws at 200mm max centres and stagger screws. 3rd layer: Laminate to 2nd layer at 200mm max centres and stagger screws.
<b>Openings and Control Joints</b>	Fix at 200mm max centres.
<b>Fire Sealant</b>	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. [REFER TO CONSTRUCTION DETAILS]
<b>Jointing face layer</b>	As a minimum, only use paper tape with either two coats of MastaBase/MastaLongset or three coats of MastaRapid/MastaLite. [REFER TO SECTION 5]



**FIRE RATED**  
**FIRE ESCAPE TUNNEL - ELEVATION**

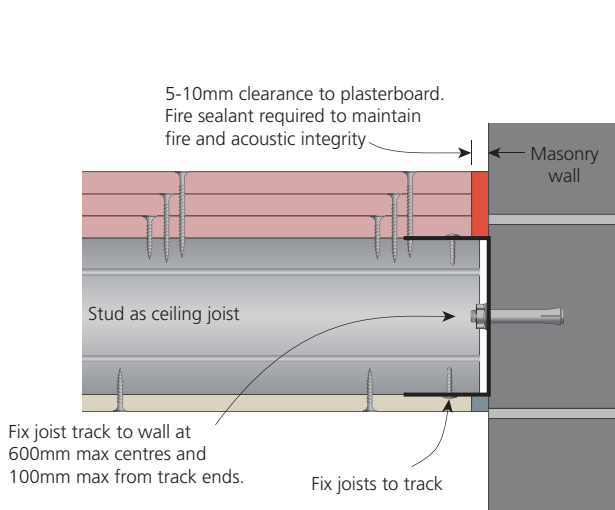


FIGURE 2  
**Fire escape tunnel ceiling to masonry wall**

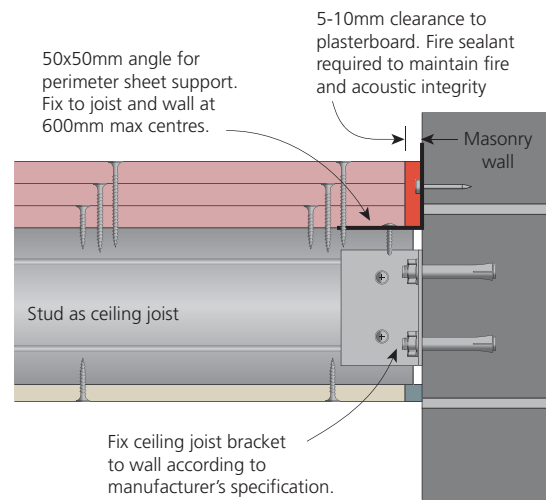


FIGURE 3  
**Fire escape tunnel ceiling to masonry wall**

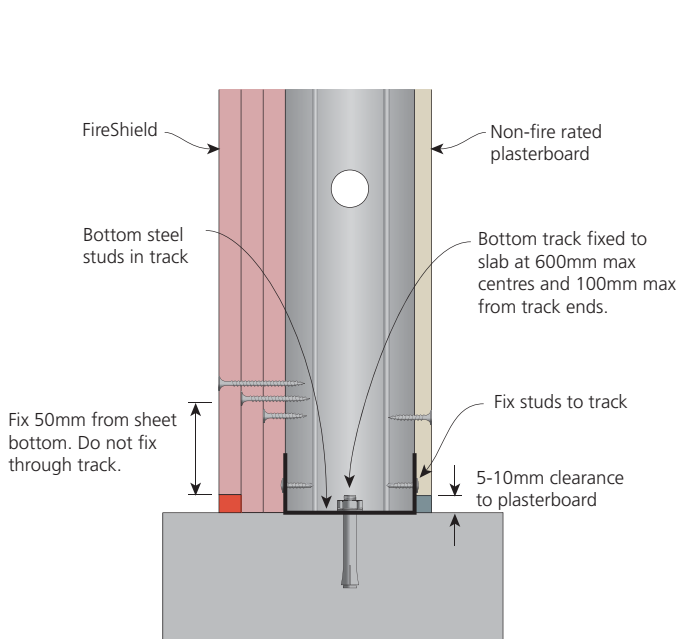


FIGURE 4  
**Fire escape tunnel base to slab**

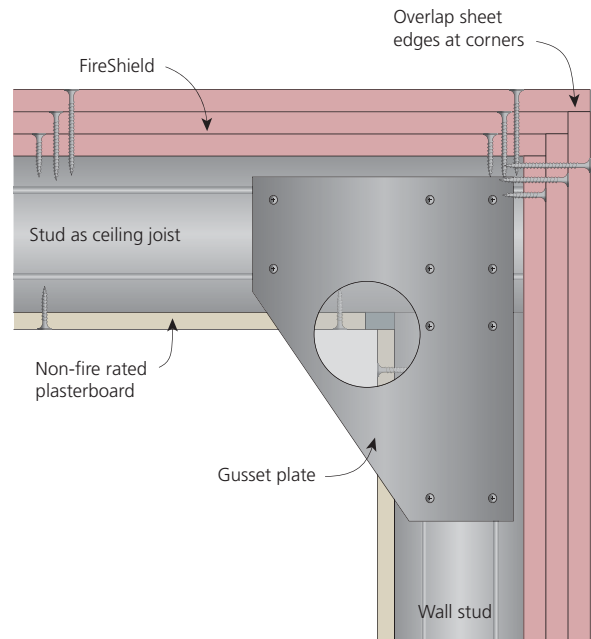


FIGURE 5  
**Fire escape tunnel wall to ceiling**