SYSTEMS	**362**
SYSTEM DIRECTORY	362
INSTALLATION	**368**
GENERAL REQUIREMENTS	368
FRAMING	369
STEEL PROFILE INFORMATION	377
PLASTERBOARD LAYOUT	378
PLASTERBOARD FIXING	379
EXTERIOR CLADDING	380
CONSTRUCTION DETAILS	**384**

4.1 External Steel Stud Walls

External steel framed walls protect the inside from weather, noise and when applicable, fire. They must also comply with local energy efficiency provisions.

Fire rated systems in this section can satisfy the National Construction Codes Fire Safety requirements for spandrel walls and walls built close to a fire source feature such as a property boundary. These walls are often required to be fire rated from the outside only.

multishield forms part of the outer wall adding fire and sound resistance which is covered by a moisture barrier and external cladding for weather protection.

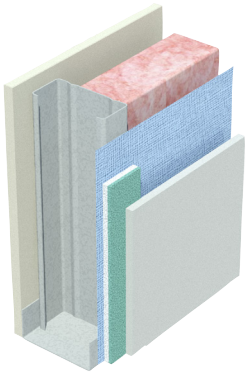
This section contains systems, installation instructions and construction details for fire rated and non-fire rated external steel framed walls.

System Directory

System	Inside Lining	Outer Lining and Cladding	Frame	FRL	Acoustics[1]	
					Rw	Rw+Ctr
SSW73	1 x 10mm **masta**shield	6.0mm fibre cement sheeting	Steel stud	-	42	31
SSW274	2 x 10mm **sound**shield	6.0mm fibre cement sheeting	Steel stud	-	47	35
SSW378	3 x 13mm **fire**shield	6.0mm fibre cement sheeting	Steel stud	-	52	39
SSW470	1 x 10mm **masta**shield	1 x 13mm **multi**shield plus any external cladding	Steel stud	30/30/30 from outside	41	31
SSW473	1 x 10mm **masta**shield	1 x 16mm **multi**shield plus any external cladding	Steel stud	60/60/60 from outside	42	32
SSW471	1 x 10mm **masta**shield	2 x 13mm **multi**shield plus any external cladding	Steel stud	90/90/90 from outside	46	35
SSW472	1 x 10mm **masta**shield	3 x 13mm **multi**shield plus any external cladding	Steel stud	120/120/120 from outside	50	38
SSW491	Optional	2 x 13mm **multi**shield plus any external cladding	Steel stud	30/30/30 from outside	34	30
SSW494	Optional	2 x 16mm **multi**shield plus any external cladding	Steel stud	60/60/60 from outside	35	31
SSW492	Optional	3 x 13mm **multi**shield plus any external cladding	Steel stud	90/90/90 from outside	37	34
SSW495	Optional	3 x 16mm **multi**shield plus any external cladding	Steel stud	120/120/120 from outside	38	35
SSW496	1 x 13mm **fire**shield	1 x 13mm **multi**shield plus any external cladding	Steel stud	-/60/60	43	32
SSW476	1 x 16mm **fire**shield	1 x 16mm **multi**shield plus any external cladding	Steel stud	60/60/60 or -/90/90 using glasswool	44	35
SSW477	1 x 16mm **fire**shield	2 x 13mm **multi**shield plus any external cladding	Steel stud	90/90/90 from outside 60/60/60 from inside	48	39
SSW478	2 x 13mm **fire**shield	2 x 13mm **multi**shield plus any external cladding	Steel stud	90/90/90	53	45
SSW479	2 x 16mm **fire**shield	2 x 16mm **multi**shield plus any external cladding	Steel stud	120/120/120	54	37
SSW70	1 x 10mm **masta**shield	90mm masonry	Steel stud	60/60/60 from outside	58	47
SSW373	1 x 16mm **fire**shield	90mm masonry	Steel stud	60/60/60	59	49
SSW371	2 x 13mm **fire**shield	90mm masonry	Steel stud	90/90/90	62	**53**
SSW374	2 x 16mm **fire**shield	90mm masonry	Steel stud	120/120/120	65	**54**

1. Sound Insulation values determined using glasswool insulation.

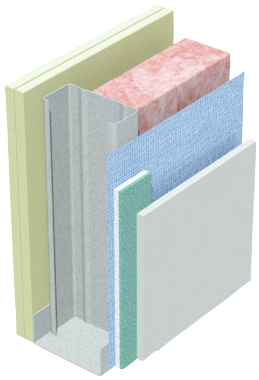
SSW73



- 1 layer of 10mm **masta**shield or 10mm **water**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- Wall wrap + thermal break
- 1 layer of minimum 6mm James Hardie™ fibre cement sheeting

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m²K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	120 approx	0.63 plus insulation R value*	38 (29)	42 (31)	Report Insul

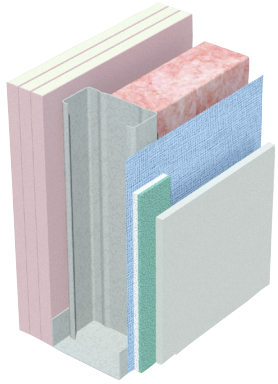
SSW274



- 2 layers of 10mm **sound**shield or 10mm **opal**
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- Wall wrap + thermal break
- 1 layer of minimum 6mm James Hardie™ fibre cement sheeting

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m²K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	130 approx	0.72 plus insulation R value*	43 (31)	47 (35)	Report Insul

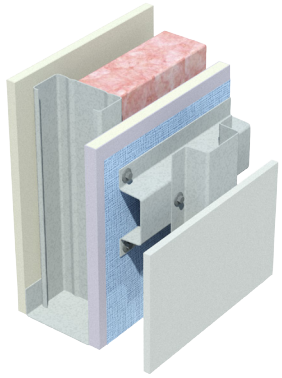
SSW378



- 3 layers of 13mm **fire**shield or 13mm **multi**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- Wall wrap + thermal break
- 1 layer of minimum 6mm James Hardie™ fibre cement sheeting

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m²K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	150 approx	0.79 plus insulation R value*	48 (36)	53 (39)	Report Insul

SSW470



- 1 layer of 10mm **masta**shield or 10mm **water**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- 1 layer of 13mm **multi**shield or 13mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

Fire Resistance Level

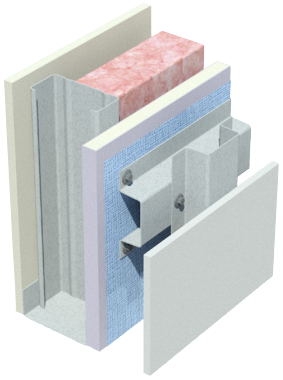
30/30/30
rated from the outside only

Report FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m²K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	170 approx	0.84 plus insulation R value*	37 (29)	41 (31)	Report Insul

* R-value based on 40mm batten cavity and anti-glare foil wall wrap - does not include thermal bridging pathway. Insulation shown is the minimum required to meet the acoustic rating. Refer to Chapter 2 for more information.

SSW473



- 1 layer of 10mm **masta**shield or 10mm **water**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- 1 layer of 16mm **multi**shield or 16mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

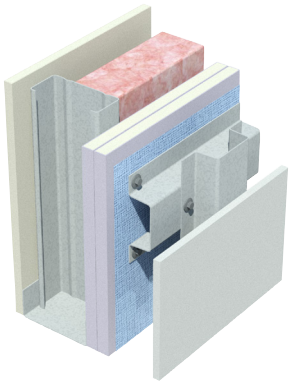
Fire Resistance Level

60/60/60
rated from the outside only

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	175 approx	0.86 plus insulation R value*	38 (30)	42 (32)	Report Insul

SSW471



- 1 layer of 10mm **masta**shield or 10mm **water**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- 2 layers of 13mm **multi**shield or 13mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

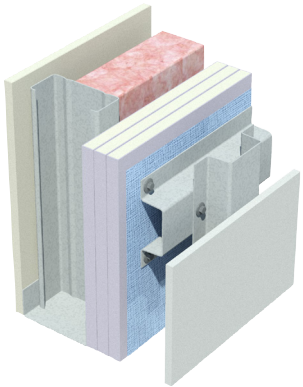
Fire Resistance Level

90/90/90
rated from the outside only

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	185 approx	0.91 plus insulation R value*	43 (33)	46 (35)	Report Insul

SSW472



- 1 layer of 10mm **masta**shield or 10mm **water**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- 3 layers of 13mm **multi**shield or 13mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

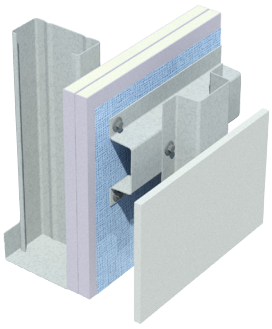
Fire Resistance Level

120/120/120
rated from the outside only

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	195 approx	0.99 plus insulation R value*	46 (36)	50 (38)	Report Insul

SSW491



- Optional internal wall lining
- Optional wall insulation
- Minimum 90mm steel stud framing at 600mm maximum centres
- 2 layers of 13mm **multi**shield or 13mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

Fire Resistance Level

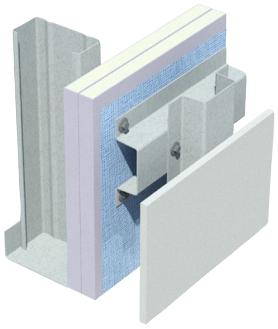
30/30/30
rated from the outside only

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	175 approx	0.85 plus insulation R value*	34 (30)	34 (30)	Report Day Design 3094-33

* R-value based on 40mm batten cavity and anti-glare foil wall wrap - does not include thermal bridging pathway. Insulation shown is the minimum required to meet the acoustic rating. Refer to Chapter 2 for more information.

SSW494



- Optional internal wall lining
- Optional wall insulation
- Minimum 90mm steel stud framing at 600mm maximum centres
- 2 layers of 16mm **multi**shield or 16mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

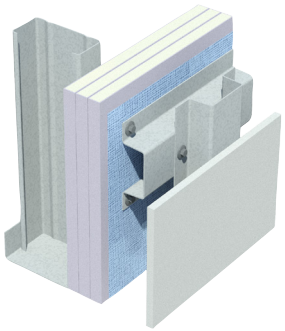
Fire Resistance Level

60/60/60
rated from the outside only

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	Report
90	180 approx	0.89 plus insulation R value*	35 (31)	35 (31)	Day Design 3094-33

SSW492



- Optional internal wall lining
- Optional wall insulation
- Minimum 90mm steel stud framing at 600mm maximum centres
- 3 layers of 13mm **multi**shield or 13mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

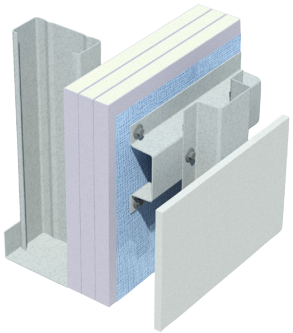
Fire Resistance Level

90/90/90
rated from the outside only

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	Report
90	180 approx	0.93 plus insulation R value*	37 (34)	37 (34)	Day Design 3094-33

SSW495



- Optional internal wall lining
- Optional wall insulation
- Minimum 90mm steel stud framing at 600mm maximum centres
- 3 layers of 16mm **multi**shield or 16mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

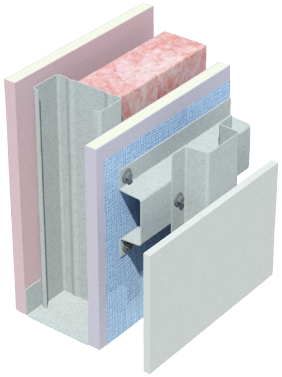
Fire Resistance Level

120/120/120
rated from the outside only

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	Report
90	195 approx	0.98 plus insulation R value*	38 (35)	38 (35)	Day Design 3094-33

SSW496



- 1 layer of 13mm **fire**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- 1 layer of 13mm **multi**shield or 13mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

Fire Resistance Level

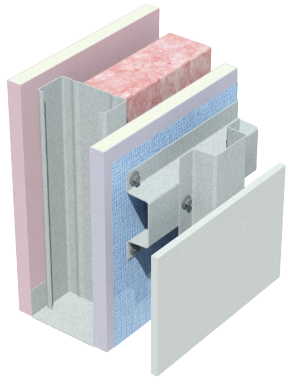
-/60/60
rated from both sides

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	Report
90	175 approx	0.85 plus insulation R value*	39 (30)	43 (32)	Insul

* R-value based on 40mm batten cavity and anti-glare foil wall wrap - does not include thermal bridging pathway. Insulation shown is the minimum required to meet the acoustic rating. Refer to Chapter 2 for more information.

SSW476

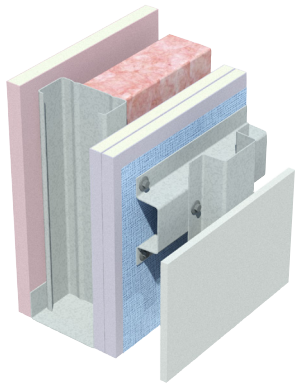


- 1 layer of 16mm **fire**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- 1 layer of 16mm **multi**shield or 16mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

Fire Resistance Level
60/60/60
rated from both sides
Report FAR3371
-/90/90
rated from both sides using glasswool insulation
Report FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	Report Insul
90	180 approx	0.89 plus insulation R value*	40 (31)	44 (35)	

SSW477

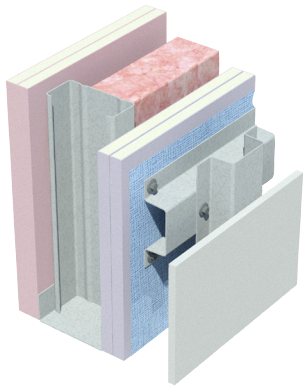


- 1 layer of 16mm **fire**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- 2 layers of 13mm **multi**shield or 13mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

Fire Resistance Level
90/90/90
rated from the outside
60/60/60
rated from the inside
Report FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	Report Insul
90	190 approx	0.95 plus insulation R value*	45 (36)	48 (39)	

SSW478

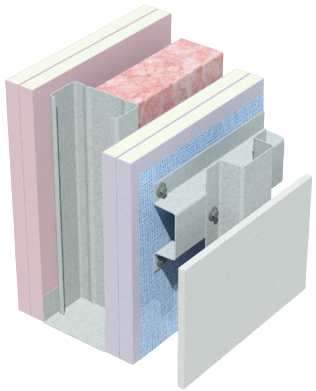


- 2 layers of 13mm **fire**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- 2 layers of 13mm **multi**shield or 13mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

Fire Resistance Level
90/90/90
-/120/120
rated from both sides
Report FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	Report Insul
90	210 approx	1.01 plus insulation R value*	50 (41)	53 (45)	

SSW479



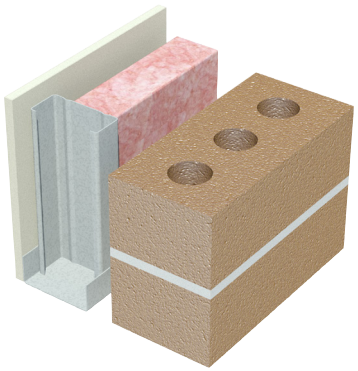
- 2 layers of 16mm **fire**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- 2 layers of 16mm **multi**shield or 16mm **tru**rock
- Wall wrap
- Any external wall cladding with a drained and vented cavity

Fire Resistance Level
120/120/120
rated from both sides
Report FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m^2K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	Report Insul
90	210 approx	1.08 plus insulation R value*	51 (43)	54 (47)	

* R-value based on 40mm batten cavity and anti-glare foil wall wrap - does not include thermal bridging pathway. Insulation shown is the minimum required to meet the acoustic rating. Refer to Chapter 2 for more information.

SSW70



- 1 layer of 10mm **masta**shield or **water**shield
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- Minimum 40mm air-gap
- Minimum 90mm masonry with FRL 60/60/60 and minimum laid weight 130 kg/m²

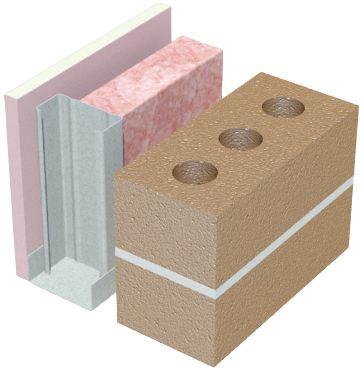
Fire Resistance Level

60/60/60
rated from the outside only

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m²K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	230 approx	0.37 plus insulation R value	47 (41)	58 (47)	Report Insul

SSW373



- 1 layer of 16mm **fire**shield, **multi**shield or **tru**rock
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- Minimum 40mm air-gap
- Minimum 90mm masonry with FRL 60/60/60 and minimum laid weight 130 kg/m²

System designed to provide fire protection to stud (not masonry)

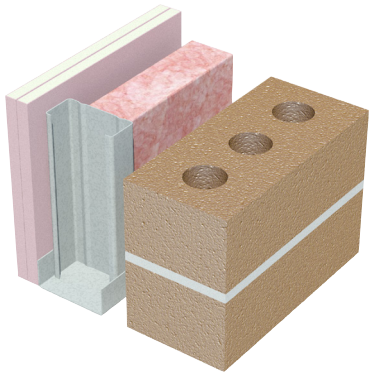
Fire Resistance Level

60/60/60
rated from both sides

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m²K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	236 approx	0.40 plus insulation R value	48 (43)	59 (49)	Report Insul

SSW371



- 2 layers of 13mm **fire**shield,**multi**shield or **tru**rock
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- Minimum 40mm air-gap
- Minimum 90mm masonry with FRL 60/60/60 and minimum laid weight 130 kg/m²

System designed to provide fire protection to stud (not masonry)

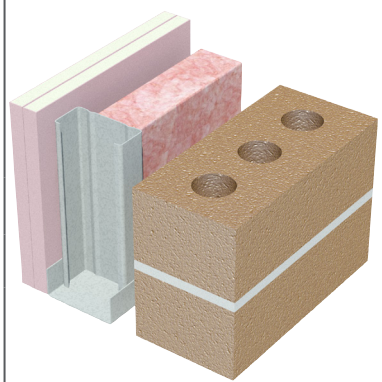
Fire Resistance Level

90/90/90
rated from both sides

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m²K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	246 approx	0.46 plus insulation R value	51 (47)	62 (**53**)	Report Insul

SSW374



- 2 layers of 16mm **fire**shield,**multi**shield or **tru**rock
- Minimum 90mm steel stud framing at 600mm maximum centres
- Optional wall insulation
- Minimum 40mm air-gap
- Minimum 90mm masonry with FRL 60/60/60 and minimum laid weight 130 kg/m²

System designed to provide fire protection to stud (not masonry)

Fire Resistance Level

120/120/120
rated from both sides

Report
FC13921

Stud Size (mm)	Width (mm)	Insulation Pathway R-Value (m²K/W)	Sound Insulation Rw (Rw + Ctr)		
			No insulation	Pink® Batts Wall R2.0HD	
90	242 approx	0.50 plus insulation R value	53 (49)	65 (**55**)	Report Insul

* R-value does not include thermal bridging pathway. Insulation shown is the minimum required to meet the acoustic rating. Refer to Chapter 2 for more information.

General Requirements

	Non-fire Rated	Fire Rated
Install control joints in plasterboard walls: > At 12m maximum intervals > At all control joints in the structure > At any change in the substrate	✓	✓
Jointing of **multi**shield is not required due to the overlying breathable wall wrap and cladding.		✓
Joint the face layer on the internal side. As a minimum, use paper tape with any Siniat jointing compound applied in one or two coats to the thickness of two coats. Alternatively, use **bindex** fire and acoustic sealant according to the Product Data Sheet.		✓
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance. Refer to the **i** box below.		✓
Use approved fire rated penetration details for systems that use the internal non-fire rated plasterboard wall lining to maintain the FRL. Refer to **i** box below.		✓
Protect plasterboard sheets from the weather when installed on the exterior side of external wall framing until the moisture barrier and exterior cladding are installed.	✓	✓
Protect plasterboard from water pooling at ground level.	✓	✓
Use **bindex** fire and acoustic sealant on all gaps and around perimeter.		✓
Attach all fixtures to studs or purpose installed noggings. Wall anchors must not be fixed only to the plasterboard of fire rated walls.		✓

> For acceptable modifications or variations to fire rated systems, refer to Section 2.3 Fire Resistance.

> Penetrations in external walls of Class 1 buildings do not need to have an FRL, refer to NCC Volume Two, Clause 3.7.1.5

> Insulation products nominated in system tables are the minimum required to meet the acoustic rating. Insulation with higher R-value may be required to meet the desired system R-value.

Framing

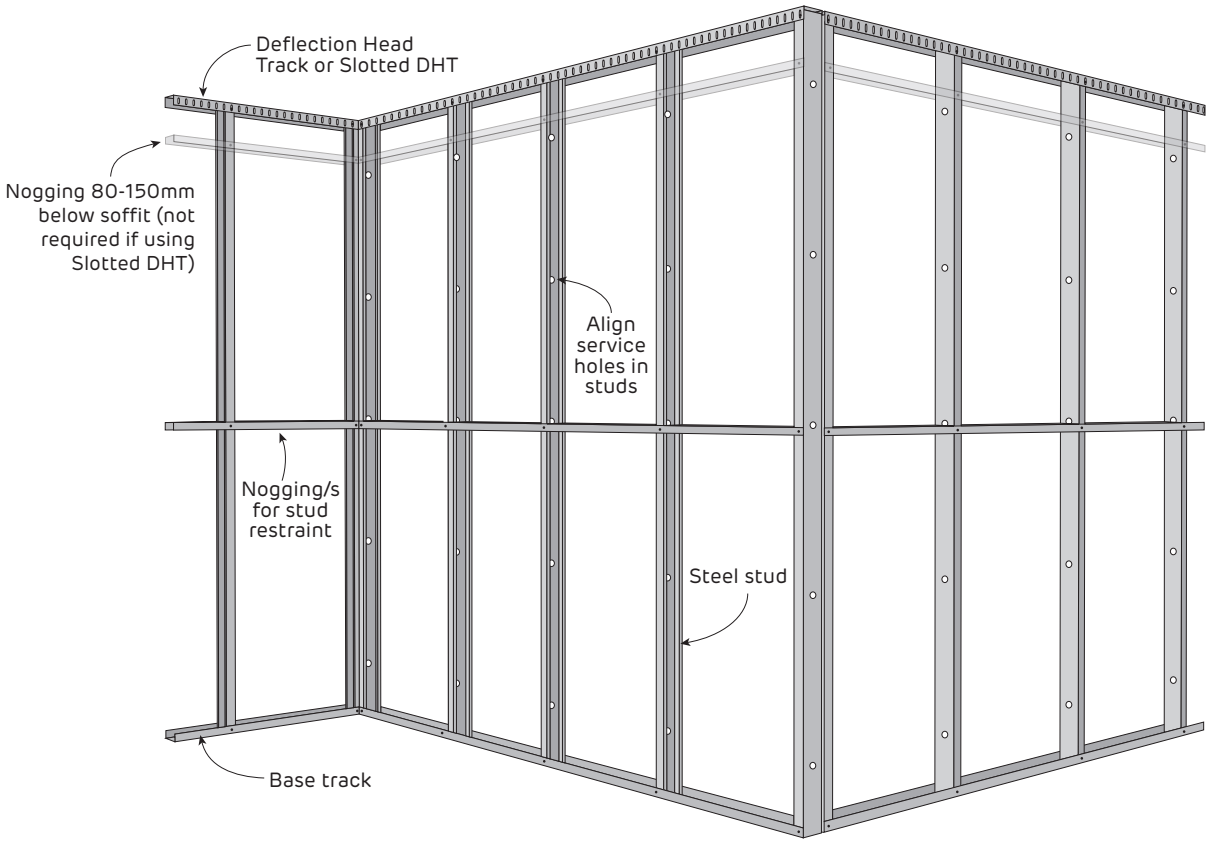


FIGURE 1 Typical External Steel Frame Wall Layout

	Non-fire Rated	Fire Rated
Use a Deflection Head Track if soffit movement of up to 20mm is expected. For higher requirements contact Siniat. Refer to Construction Details for clearances.	✓	✓
Framing members as per framing table or structural design up to 600mm maximum. Refer to the Stud Spacing Charts for appropriate framing selection.	✓	✓
Face studs in the same direction if possible, to allow easier fastening of wall lining. However, installation of some services may require the studs to be positioned in opposite directions. Refer to Construction Details.	✓	✓
Twist studs into tracks and push studs down completely into bottom track.	✓	✓
Structural wall designs must allow for the intended dead, live and wind loads in accordance with the AS/NZS 1170 series.	✓	✓

Table 1 Maximum Head and Base Track Anchor Spacing

Stud Spacing (mm)	Maximum Anchor Spacing (mm)
600	600
450	600
400	600
300	450
200	300

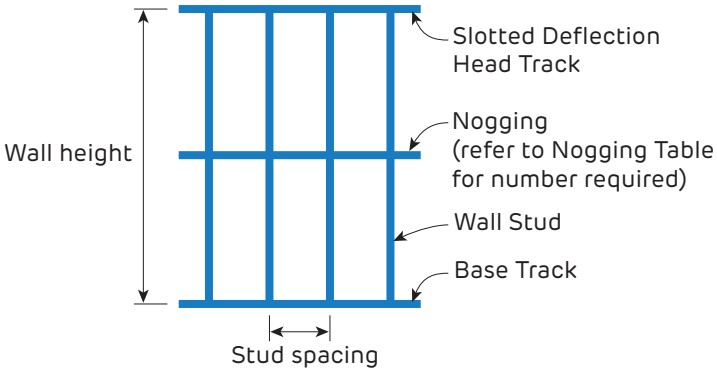
1. Additional anchors 100mm maximum from track ends.
2. 150mm studs require 2 anchors across width.

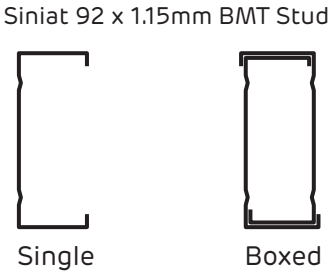
> Noggings are permitted to assist the fixing of services. Copper Chromium Arsenate (CCA) treated timber must not be used.

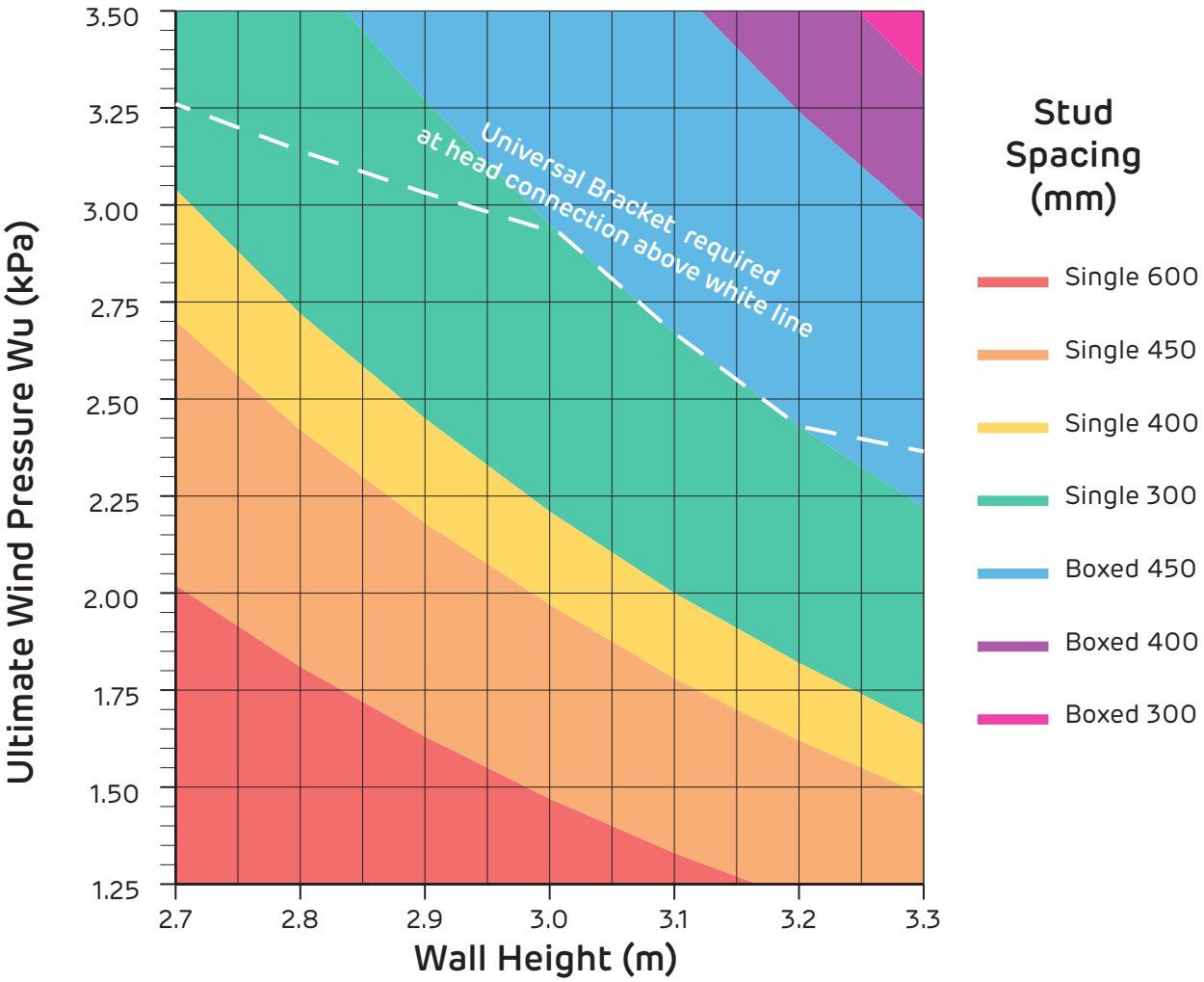
> Plumbing and electrical services must not protrude beyond the face of the studs.

Non-Load Bearing External Steel Stud Wall

Chart 1 Stud Spacing - REGION A - HEIGHT/240 - Expressed Jointed CFC / Metal Cladding







NOTES

1. Table based upon evenly distributed lateral pressures and the deflection limit stated. A sufficient number of cladding battens/top-hats, or brick-ties must be installed to provide an even distribution of lateral load to the stud framing.
2. Serviceability wind pressure (Ws) taken as 67% of ultimate which is suitable for buildings of Importance Level 2 to 4.
3. Table includes self weight and cladding weight up to 25 kg/m^2 only. Heavier outer linings like Masonry and AAC panels must be supported at wall base. Table not applicable to axially loaded (load bearing) studs or bracing shear walls. Point loads and other loads such as shelf loads or live loads are not considered.
4. Table refers to Siniat Steel Studs of grade G300 steel with Zincalume™ AM150 corrosion protection.
5. Calculations based upon a single span and designed in accordance with *AS/NZS 4600:2018 Cold Formed Steel Structures.*
6. Base track must be 1.15mm BMT (Base Metal Thickness). Stud must be fixed to base track with 10g screws on both sides.
7. Slotted Deflection Head Track (SDHT) must be 1.15mm BMT. Studs must be fixed through SDHT slots with 10g wafer head screws on both sides.
8. Wind pressures determined in accordance with *AS/NZS 1170.2 Wind Actions.* Seek professional engineering advice to determine wind pressures for a specific project.
9. Contact Siniat or a structural engineer to check walls for earthquake actions or any imposed ceiling loads during an earthquake. Specific project information is required.
9. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Nogging Table

Wall Height (mm)	No. of Noggings evenly spaced
0 - 3000	1
3001 - 3300	2

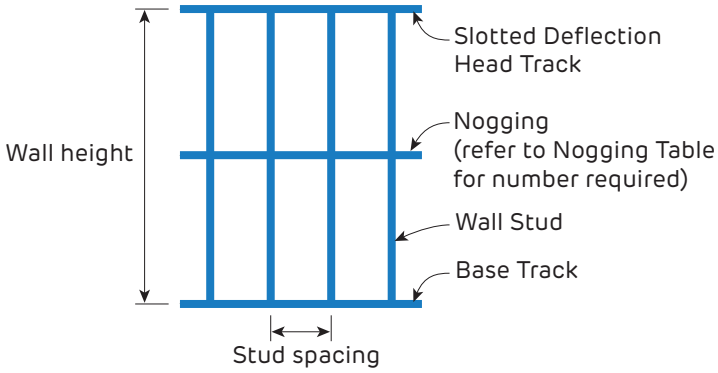
1. Brick Veneer construction requires noggings at 1200mm max centres.

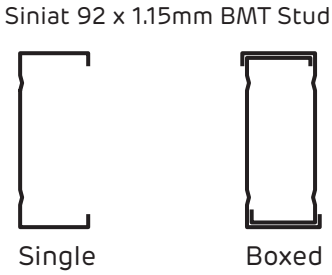
Anchor Demand

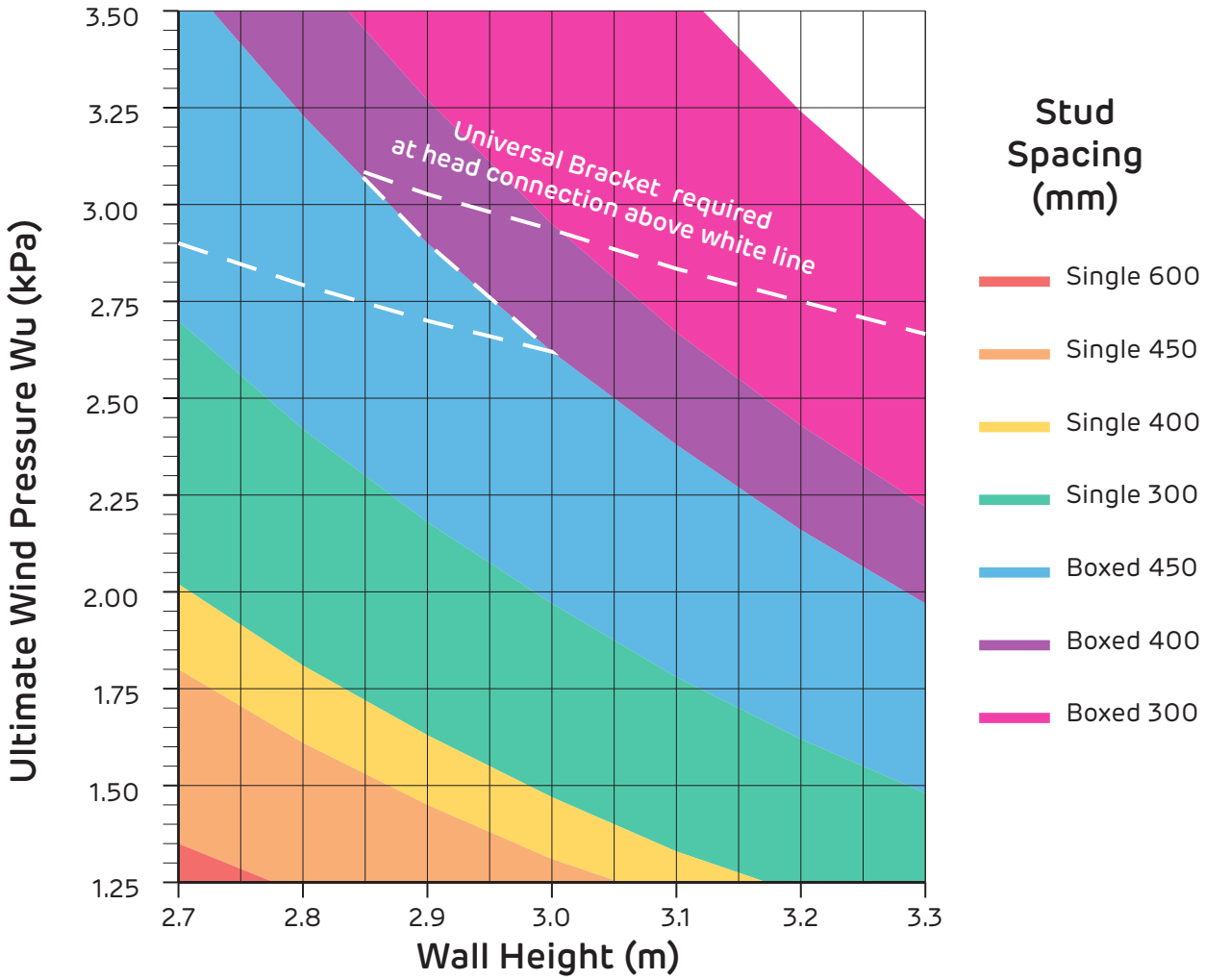
1. Anchor Shear (kN) demand = Wu (kPa) x Stud Spacing (m) x Wall Height (m) x 0.5
2. Anchors at maximum 1.5 x stud spacing up to 600mm maximum, and also 100mm maximum from ends.

Non-Load Bearing External Steel Stud Wall

Chart 2 Stud Spacing - REGION A - HEIGHT/360 - Rendered or Tiled CFC / AAC / Brick Veneer







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2. Serviceability wind pressure (Ws) taken as 67% of ultimate which is suitable for buildings of Importance Level 2 to 4.
3. Table includes self weight and cladding weight up to 25 kg/m^2 only. Heavier outer linings like Masonry and AAC panels must be supported at wall base. Table not applicable to axially loaded (load bearing) studs or bracing shear walls. Point loads and other loads such as shelf loads or live loads are not considered.
4. Table refers to Siniat Steel Studs of grade G300 steel with Zincalume™ AM150 corrosion protection.
5. Calculations based upon a single span and designed in accordance with *AS/NZS 4600:2018 Cold Formed Steel Structures.*
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9. Contact Siniat or a structural engineer to check walls for earthquake actions or any imposed ceiling loads during an earthquake. Specific project information is required.
9. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Nogging Table

Wall Height (mm)	No. of Noggings evenly spaced
0 - 3000	1
3001 - 3300	2

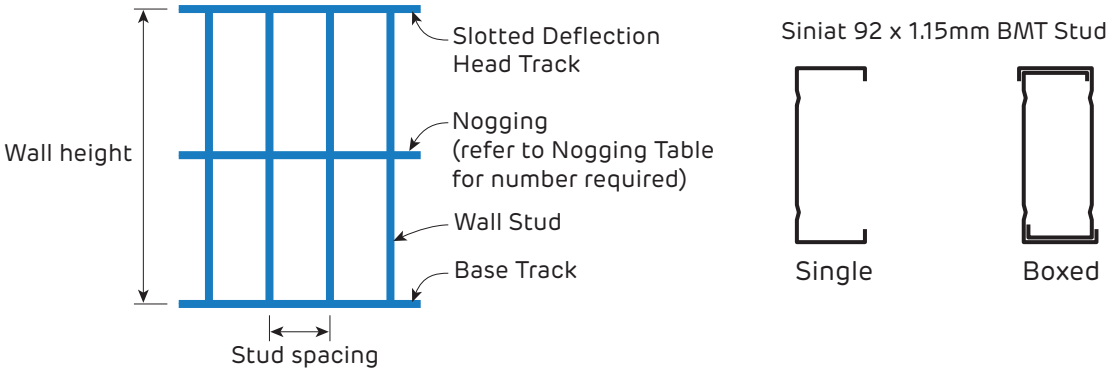
1. Brick Veneer construction requires noggings at 1200mm max centres.

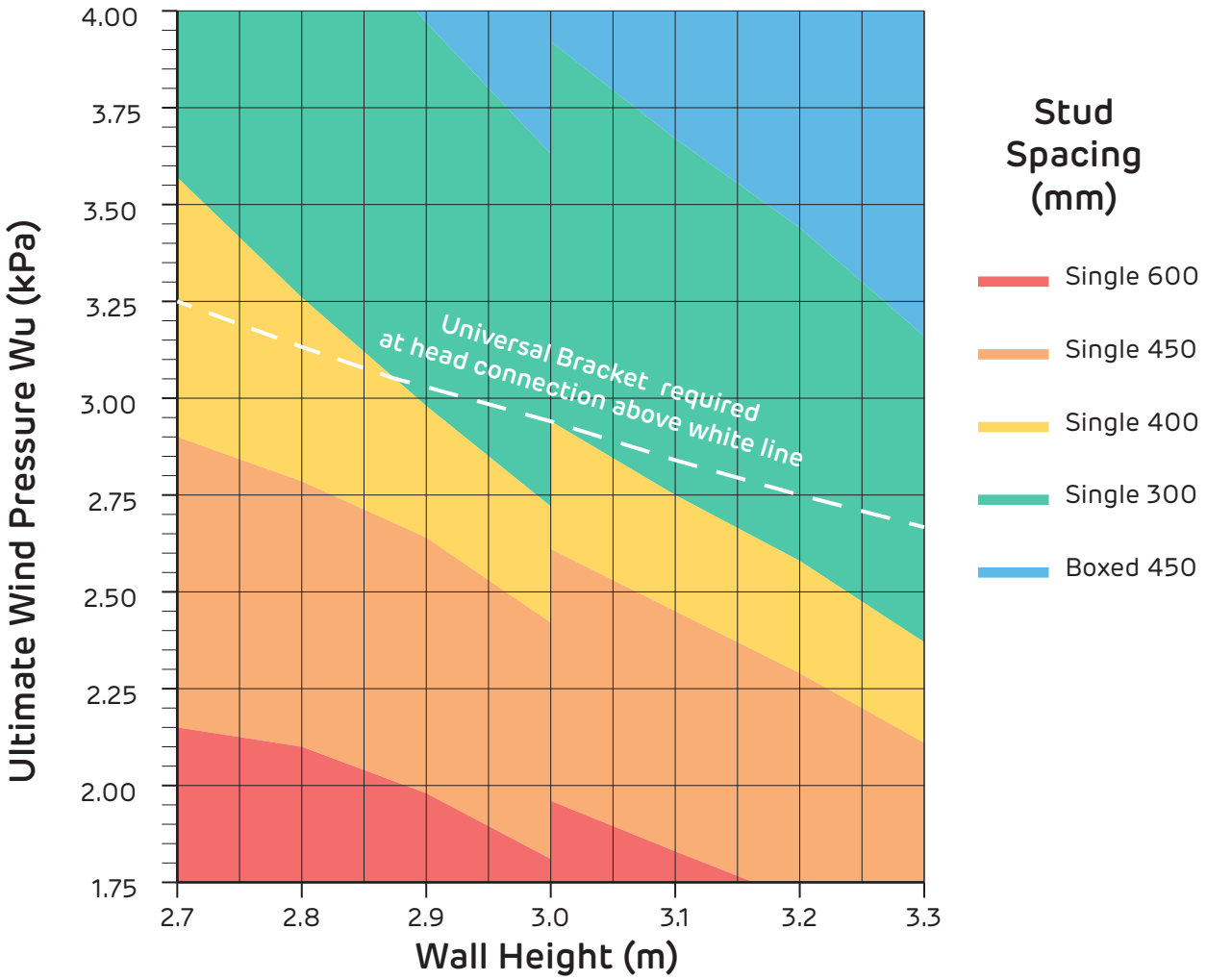
Anchor Demand

1. Anchor Shear (kN) demand = Wu (kPa) x Stud Spacing (m) x Wall Height (m) x 0.5
2. Anchors at maximum 1.5 x stud spacing up to 600mm maximum, and also 100mm maximum from ends.

Non-Load Bearing External Steel Stud Wall

Chart 3 Stud Spacing - REGION B - HEIGHT/240 - Expressed Jointed CFC / Metal Cladding





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Nogging Table

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1. Brick Veneer construction requires noggings at 1200mm max centres.

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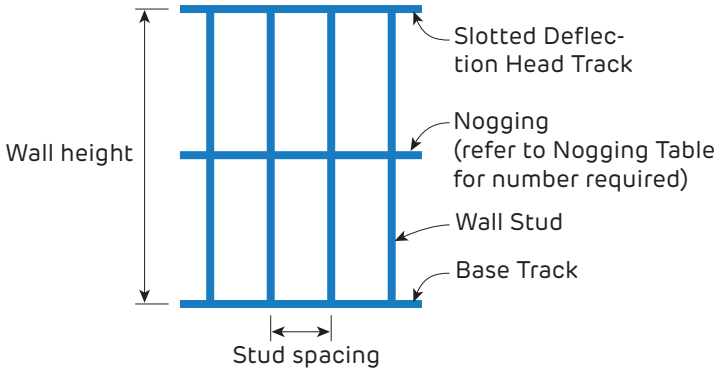
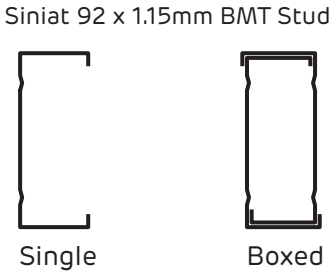
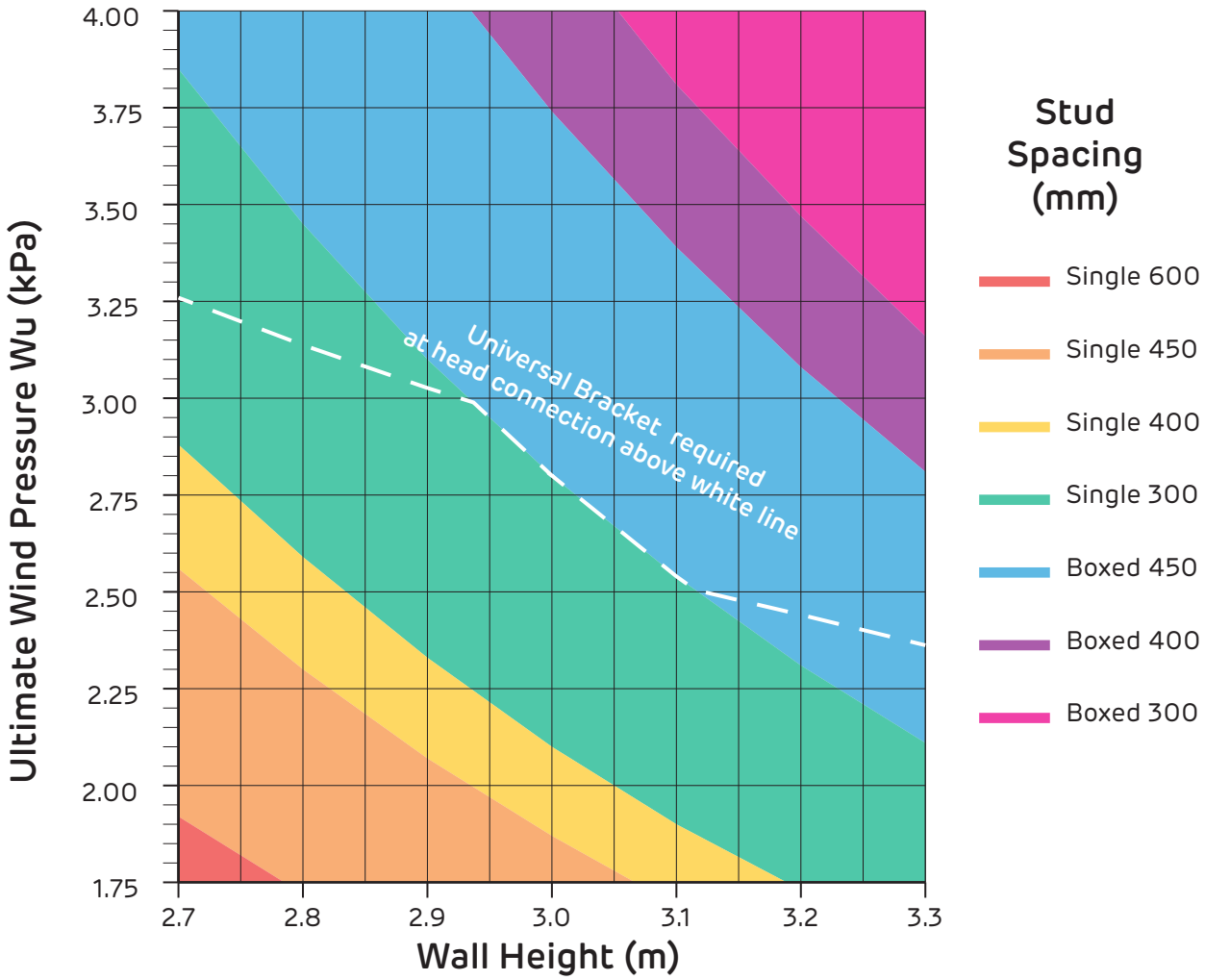
Non-Load Bearing External Steel Stud Wall

Chart 4 Stud Spacing - REGION B - HEIGHT/360 - Rendered or Tiled CFC / AAC / Brick Veneer







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9. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Nogging Table

Wall Height (mm)	No. of Noggings evenly spaced
0 - 3000	1
3001 - 3300	2

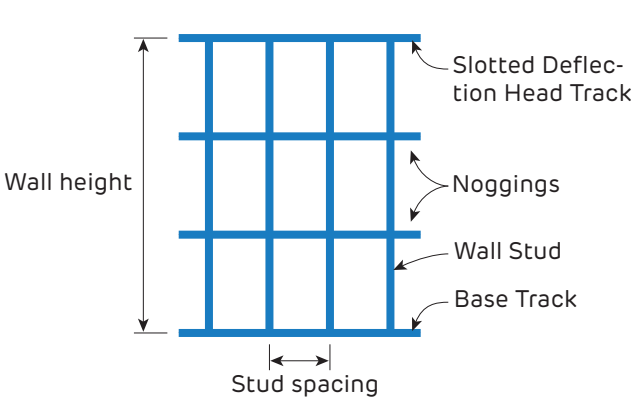
1. Brick Veneer construction requires noggings at 1200mm max centres.

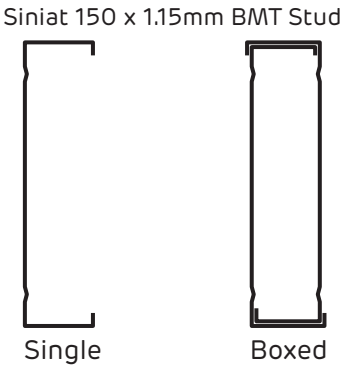
Anchor Demand

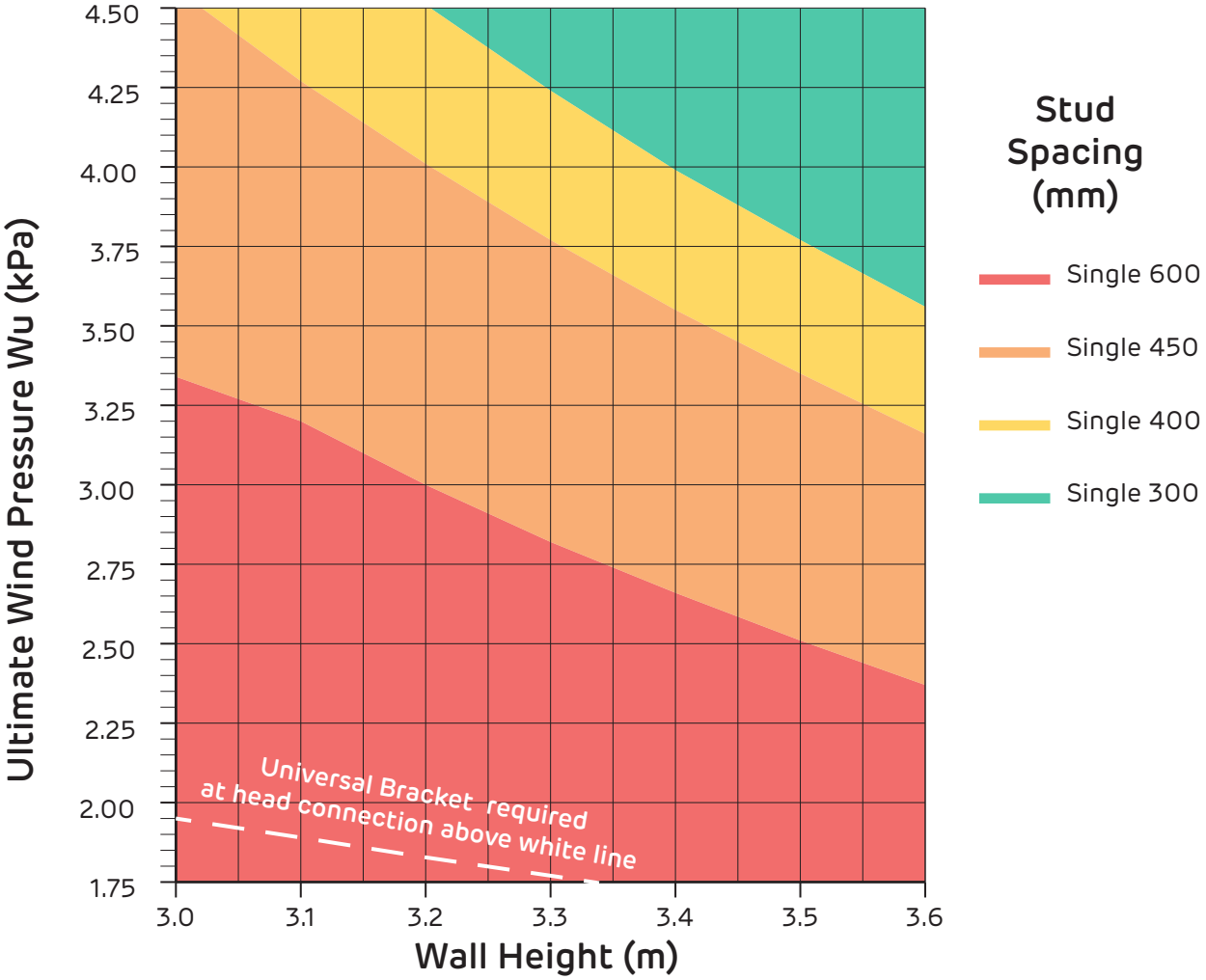
1. Anchor Shear (kN) demand = Wu (kPa) x Stud Spacing (m) x Wall Height (m) x 0.5
2. Anchors at maximum 1.5 x stud spacing up to 600mm maximum, and also 100mm maximum from ends.

Non-Load Bearing External Steel Stud Wall

Chart 5 Stud Spacing - REGION A - HEIGHT/240 - Expressed Jointed CFC / Metal Cladding







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9. The nominated lateral pressures and deflection limits must be checked for suitability for a specific project.

Nogging Table

Wall Height (mm)	No. of Noggings evenly spaced
3001 - 3600	2

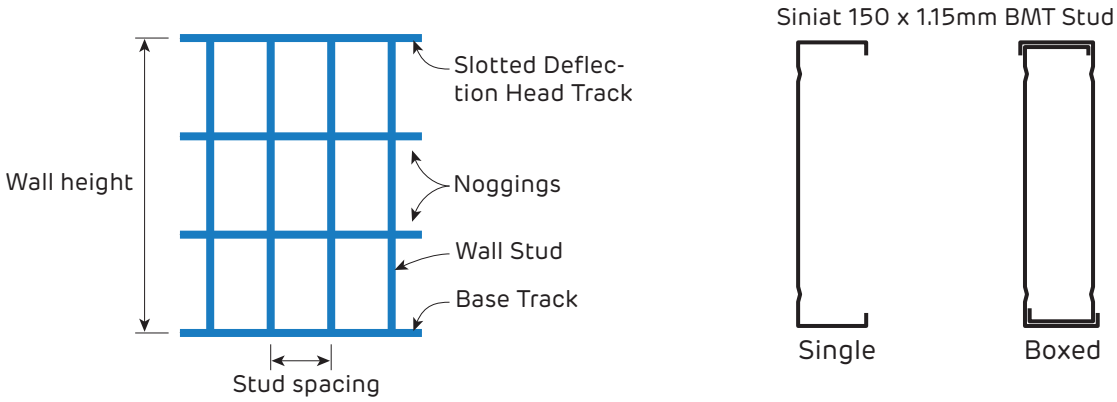
1. Brick Veneer construction requires noggings at 1200mm max centres.

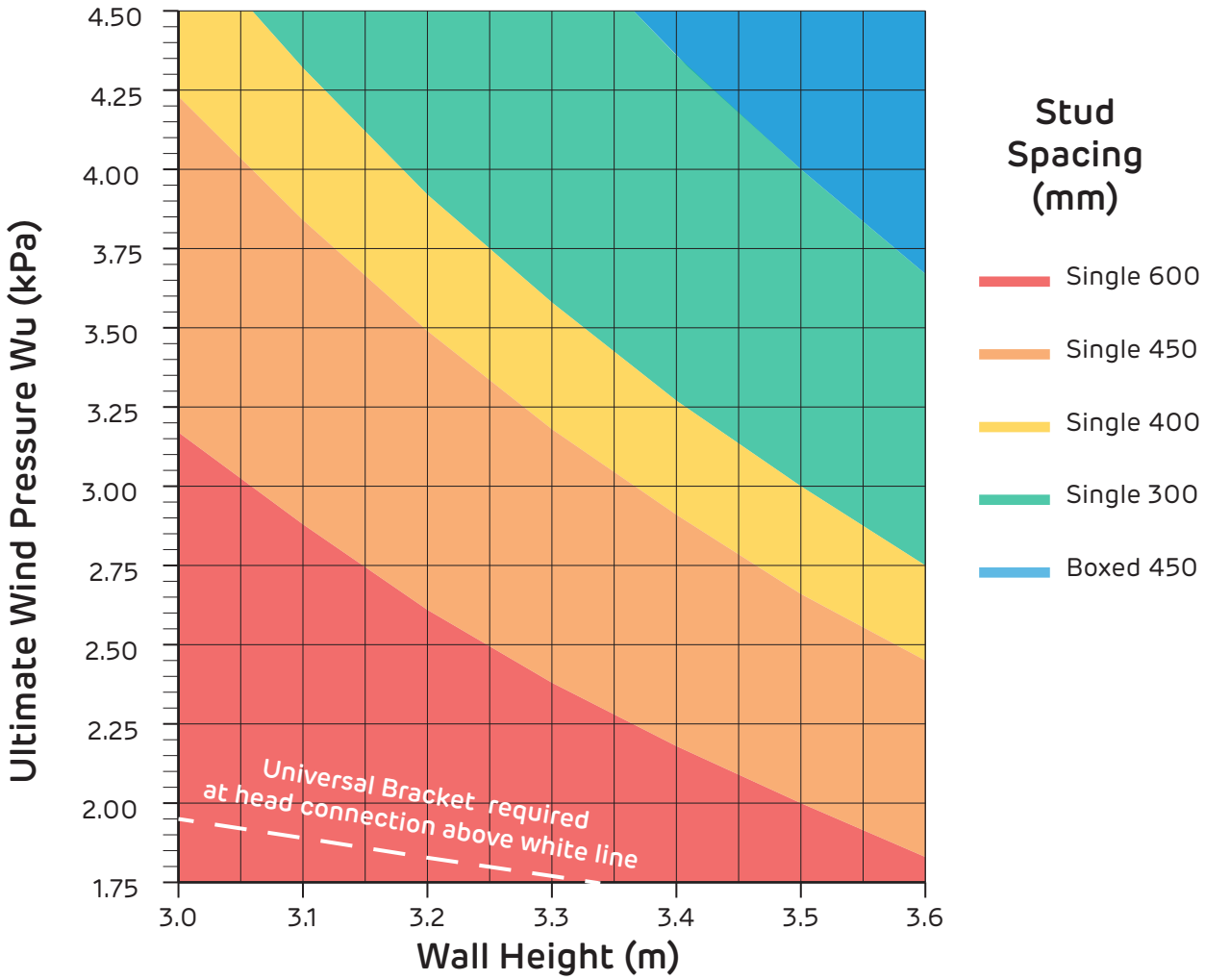
Anchor Demand

1. Anchor Shear (kN) demand = Wu (kPa) x Stud Spacing (m) x Wall Height (m) x 0.5
2. Anchors at maximum 1.5 x stud spacing up to 600mm maximum, and also 100mm maximum from ends.

Non-Load Bearing External Steel Stud Wall

Chart 6 Stud Spacing - REGION A - HEIGHT/360 - Rendered or Tiled CFC / AAC / Brick Veneer





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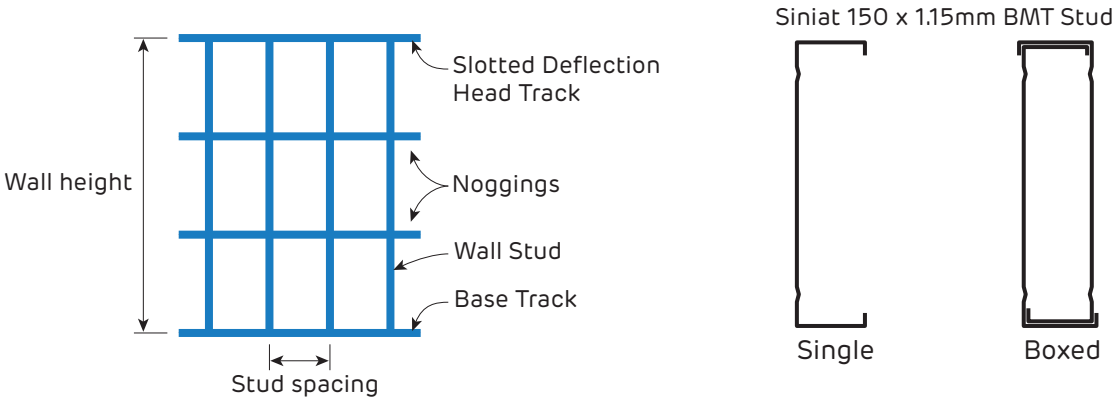
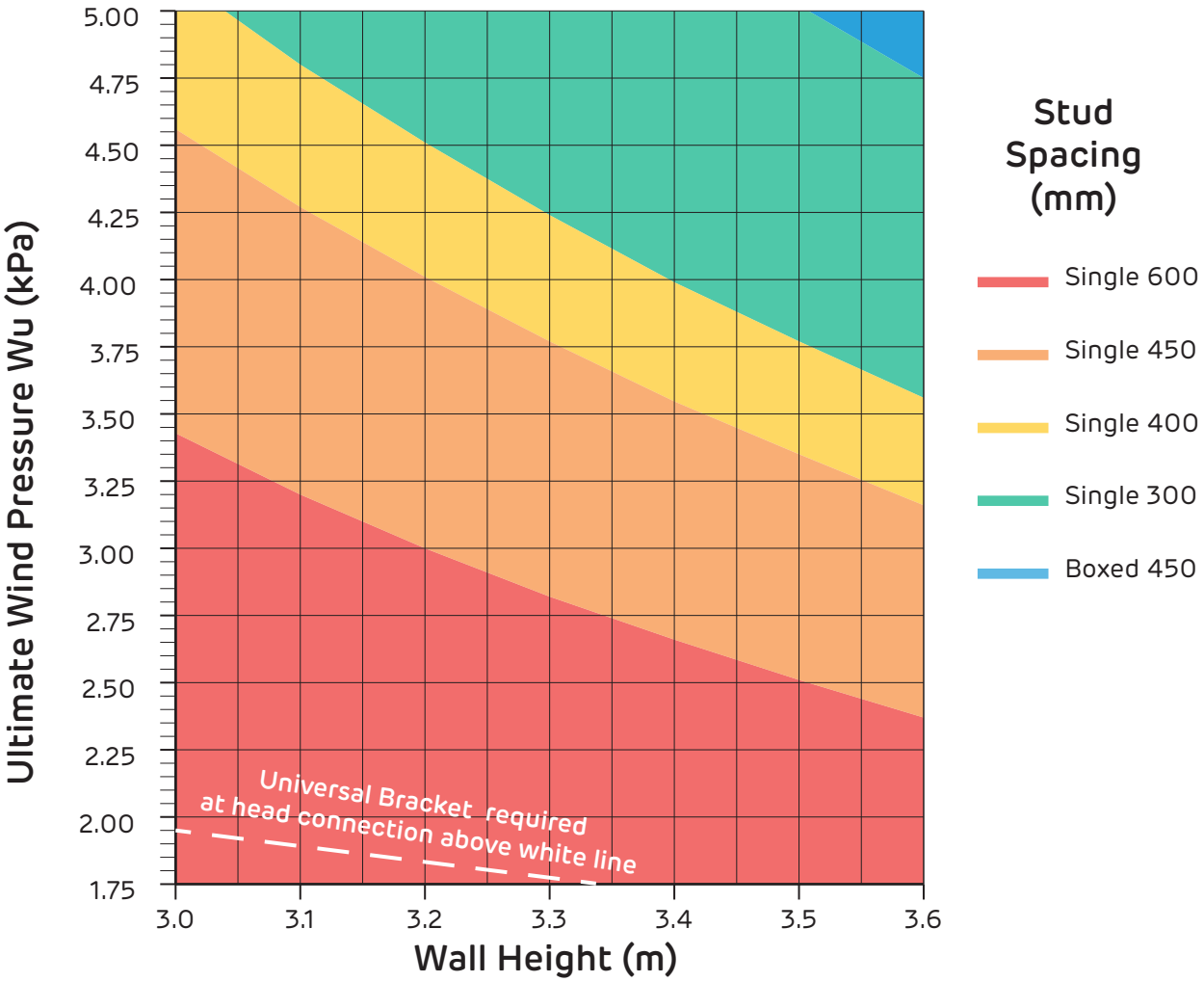
Non-Load Bearing External Steel Stud Wall

Chart 7 Stud Spacing - REGION B - HEIGHT/240 and HEIGHT/360





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Nogging Table

Wall Height (mm)	No. of Noggings evenly spaced
3001 - 3600	2

1. Brick Veneer construction requires noggings at 1200mm max centres.

Anchor Demand

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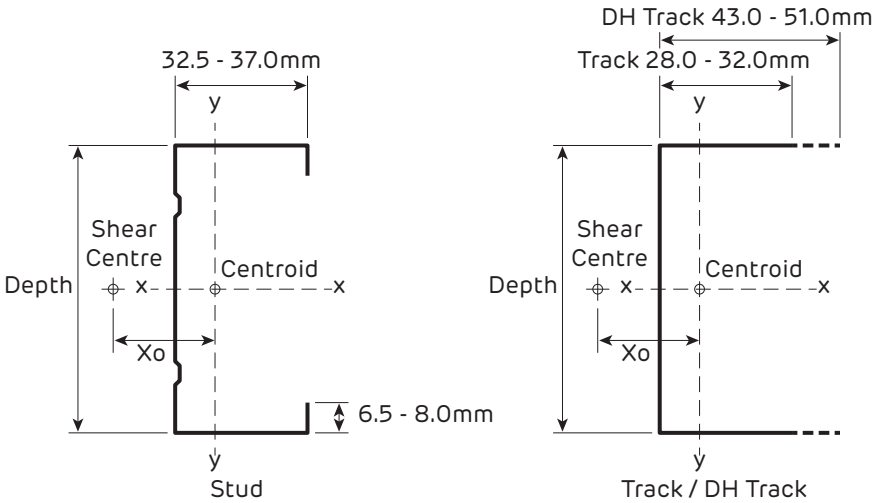
Steel Profile Information

Material

Manufacturer	Grade	Ultimate	Yield	Coating
Siniat	G300	340 MPa	300 MPa	AM150

1. Steel grade and coating in accordance with AS 1397 *Continuous hot-dip metallic coated steel sheet and strip*



Section Properties

Profile	Dimensions (mm)		Shear Centre from Centroid (mm)	Area (mm^2)	Moment of Inertia (mm^4)		Section Modulus (mm^3)		Torsion Constant J (mm^4)	Warping Constant Iw (mm^6)
	Depth	BMT	Xo		Ixx	Iyy	Zxx	Zyy		
Stud	92	1.15	-24.7	194.7	251,300	30,770	5,548	1,199	85.8	48,940,000
	150	1.15	-20.0	262.1	808,500	35,850	10,880	1,296	115.6	150,300,000
Track	92	1.15	-15.6	172.6	220,300	13,780	4,714	583	76.1	21,050,000
	150	1.15	-12.9	241.5	718,500	16,890	9,491	649	106.5	71,610,000
DH Track	92	1.15	-30.7	215.3	314,200	51,950	6,714	1,457	94.9	78,040,000
	150	1.15	-25.4	280.8	937,400	59,520	12,450	1,546	123.8	238,600,000

Plasterboard Layout

	Non-fire Rated	Fire Rated
For single layer systems, vertical joints must be 200mm minimum from the edge of any opening such as windows and doorways to minimise cracking at the joints.	✓	✓
Horizontal Layout		
Stagger butt joints in single layer systems by 300mm minimum on adjoining sheets and on opposite sides of the wall.	✓	✓
Stagger butt joints in multilayer systems by 300mm minimum on adjoining sheets and between layers.	✓	✓
First layer butt joints must be backed by a stud or back-blocked. Refer to installation diagrams.	✓	✓
Stagger recessed edges by 300mm minimum between layers.	✓	✓
Stagger recessed edges in single layer systems by 300mm minimum on opposite sides of the wall or alternatively, back by a nogging.		✓
Vertical Layout		
Stagger butt joints in single layer systems by 300mm minimum on adjoining sheets and on opposite sides of the wall.	✓	✓
Stagger butt joints by 300mm minimum on adjoining sheets and between layers.	✓	✓
First layer butt joints must be backed by a nogging or back-blocked.	✓	
First layer butt joints must be backed by a nogging.		✓
Stagger recessed edges by 300mm minimum between layers.	✓	✓
Stagger recessed edges by 300mm minimum on opposite sides of the wall for single layer systems	✓	✓

- Install plasterboard sheets horizontally when practical to minimise stud twisting and reduce the effect of glancing light.
- Minimise butt joints by using long sheets.

Plasterboard Fixing

	Non-fire Rated	Fire Rated
Drive screws to just below the sheet surface, taking care not to break the paper linerboard. For over-driven screws, install another screw 20mm away. Leave or remove the over-driven screw and patch.	✓	✓
Laminating screws can be used to fix butt joints in the second and third layer.	✓	✓
Screw and Adhesive Method		
Apply masta**grip** Stud Adhesive after the frame is clean, dry, and free from grease, dust and other contaminants.	✓	
Apply masta**grip** daubs 200mm minimum from screws and plasterboard edges.	✓	
Screw Only Method		
Use the 'Screw Only Method' in tiled or fire rated areas. Stud adhesive is not permitted.	✓	✓

The 'Screw and Adhesive Method' is recommended for non-fire rated applications. masta**grip** will:

- Minimise screw popping
- Reduce the number of screw heads that may show in glancing light
- Assist in compensating for frame irregularities.

Screw Type and Minimum Size for the Installation of Plasterboard to Steel

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
10mm	6g x 25mm screw	6g x 41mm screw *	-
13mm	6g x 25mm screw	6g x 41mm screw *	7g x 57mm screw *
16mm	6g x 32mm screw	6g x 45mm screw *	8g x 65mm screw *

For steel ≤ 0.75mm BMT, use fine thread needle point screws.

For steel ≥ 0.75mm BMT, use fine thread drill point screws.

*10g x 38mm Laminating screws may be used as detailed in installation diagrams.

Exterior Cladding

	Fire Rated
The following cladding sheets or planks are not considered detrimental to the FRL of the wall: > PERMAROCK Outdoor > James Hardie™ fibre cement sheeting > Wood or timber > Steel > Aluminium > PVC > Rendered polystyrene > Cladding fixed and supported independently of the wall. For class 2 to 9 buildings, also refer to NCC Volume One Section C, CP2 Spread of fire requirements.	✓
Fix cladding or cladding top hats to the steel frame through the **multi**shield.	✓
Extend the external fire rated wall up to the non-combustible roof covering or non-combustible eaves lining. Refer to Construction Details.	✓

> Protect plasterboard sheets from the weather when installed on the exterior side of external wall framing until the moisture barrier and exterior cladding are installed.

> Exterior cladding and the moisture barrier once installed, must provide protection from the weather.

> Use construction techniques that direct condensation and rain away from plasterboard.

> Siniat recommends a drained cavity between the external cladding and the **multi**shield for weathertightness and durability.

> Top hats between external cladding and external plasterboard do not change the FRL of the system.

> Horizontal and vertical top hats are shown in system images as an option to provide a drained and vented cavity as well as meet the NCC thermal break requirements. Alternatively, use a thermal break strip with insulated value R0.2 between the steel stud framing and external cladding.

FIGURE 2 Fire Rated 1 Layer - Horizontal
Screw Only Method

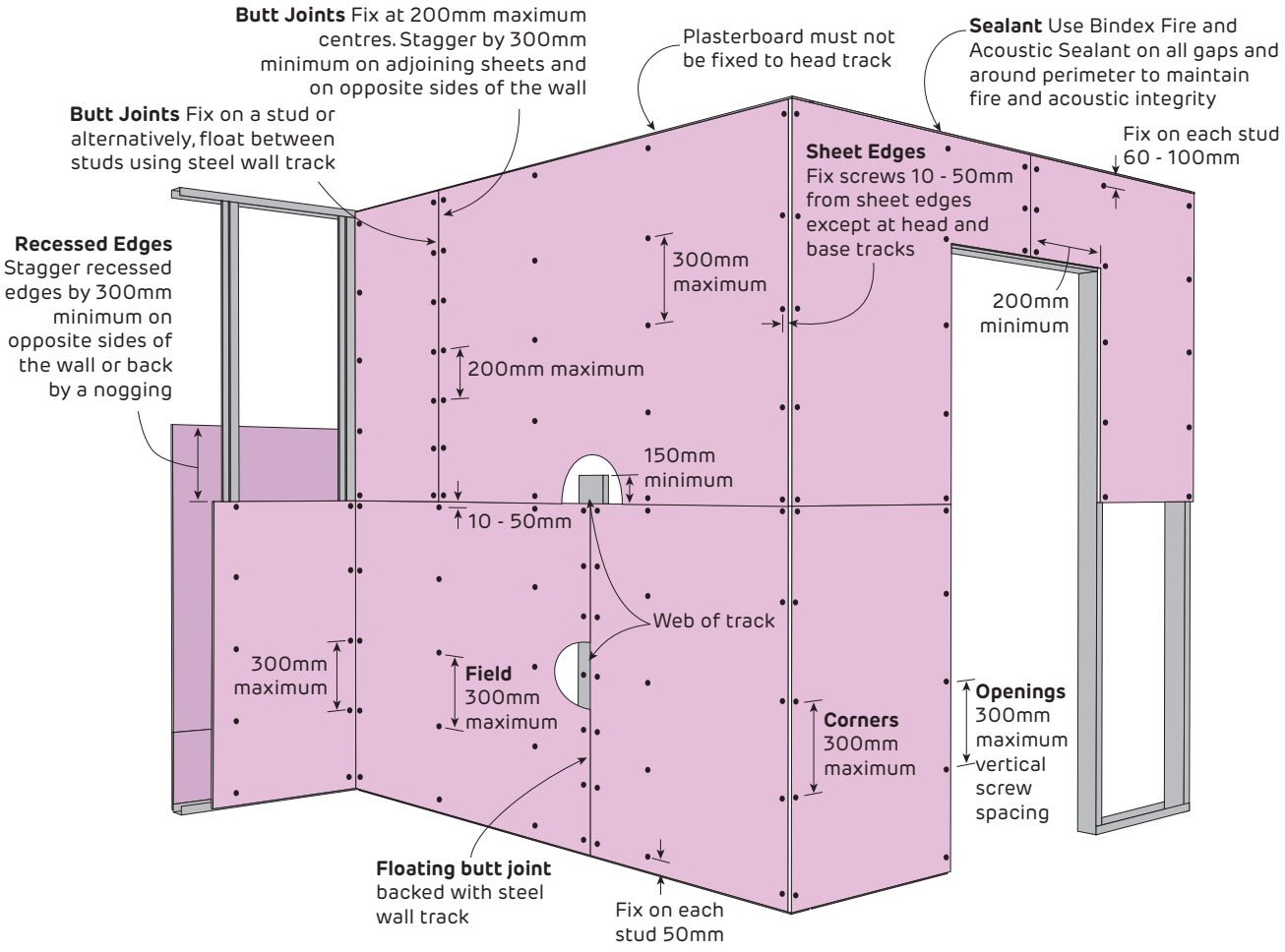


FIGURE 3 Fire Rated 2 Layers - Horizontal + Horizontal
Screw Only Method

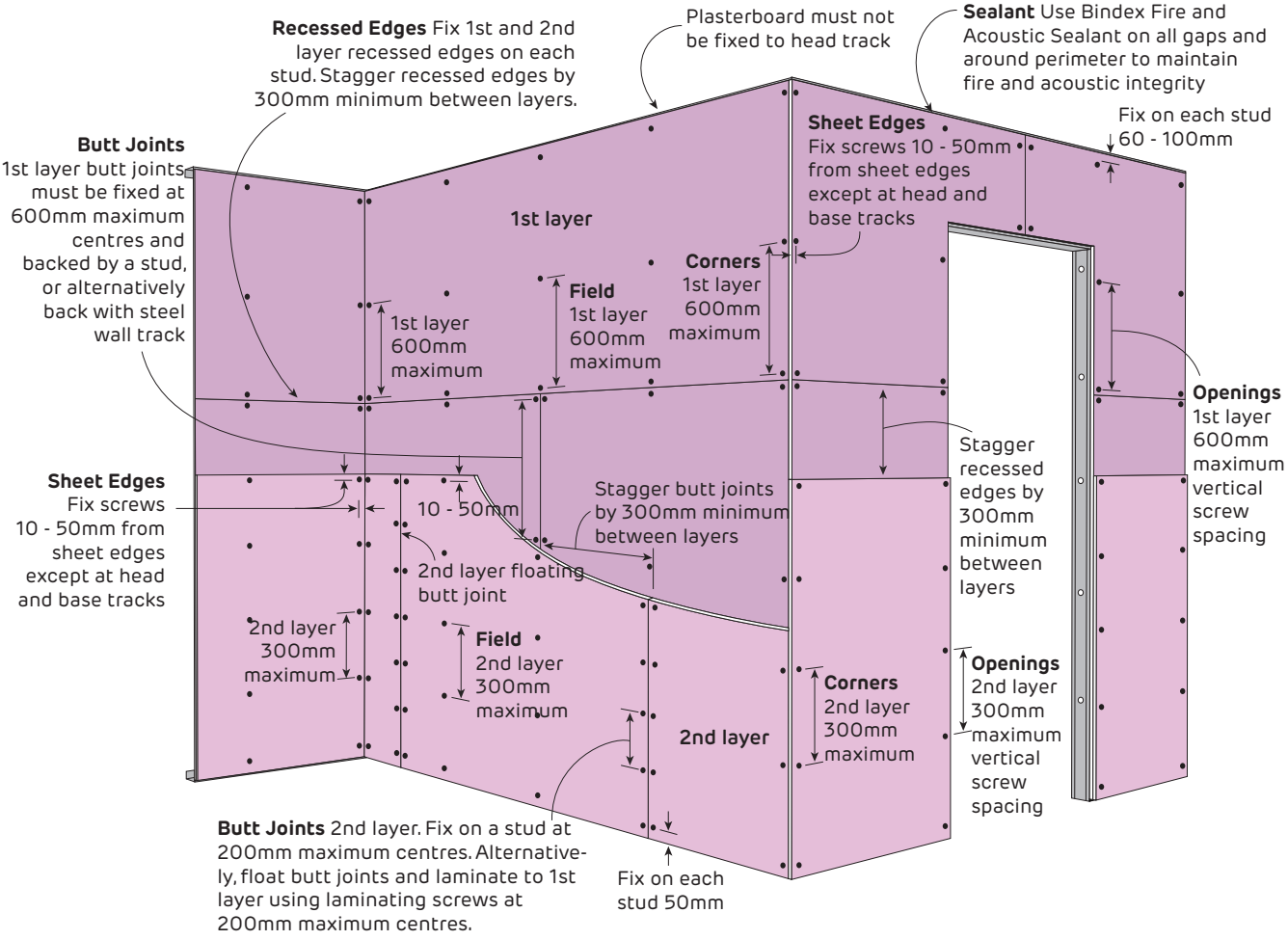
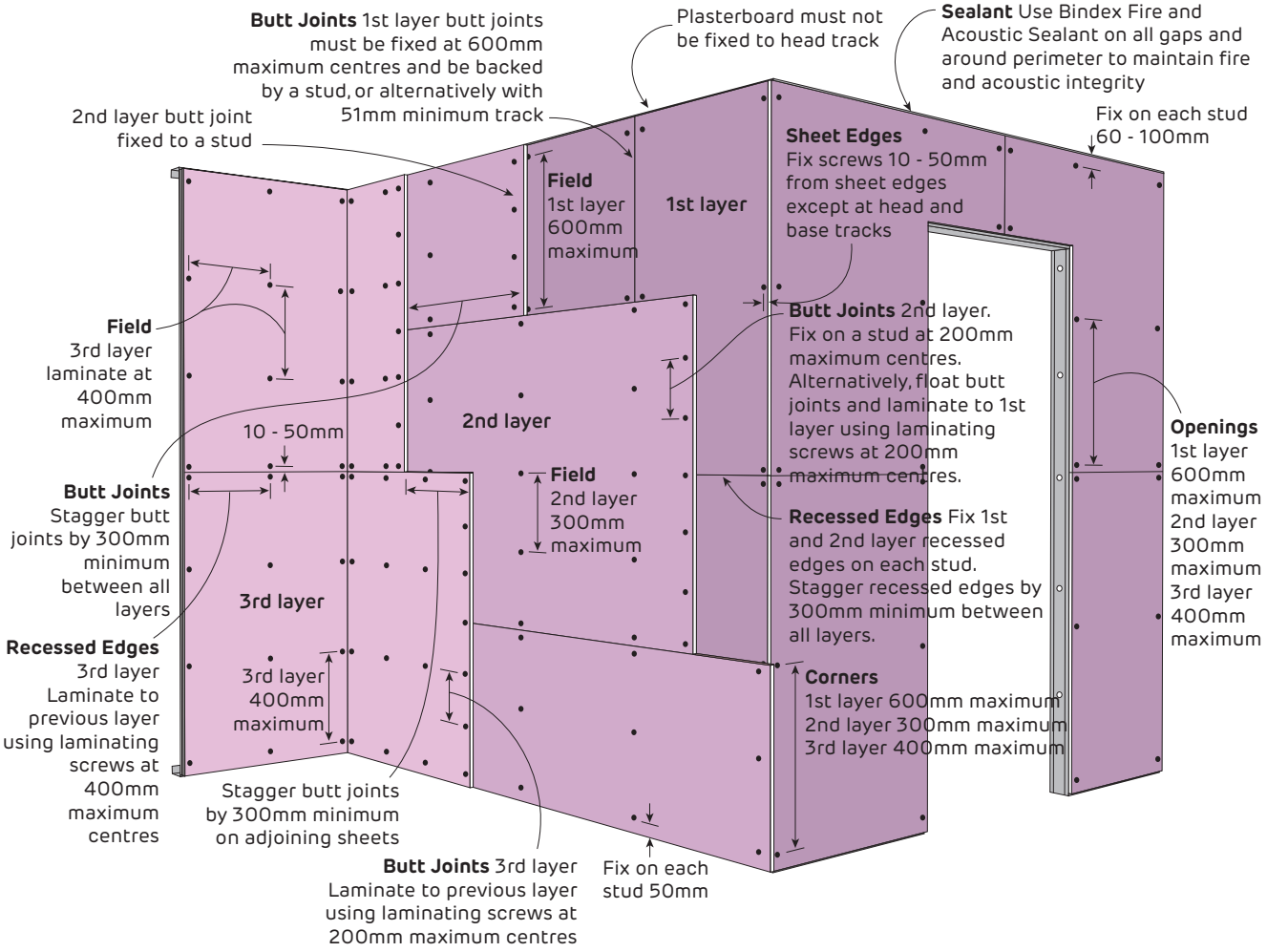


FIGURE 4 Fire Rated 3 Layers - Horizontal + Horizontal + Horizontal
Screw Only Method



Non-Fire Rated
Head and Base Details for External Steel Stud Walls

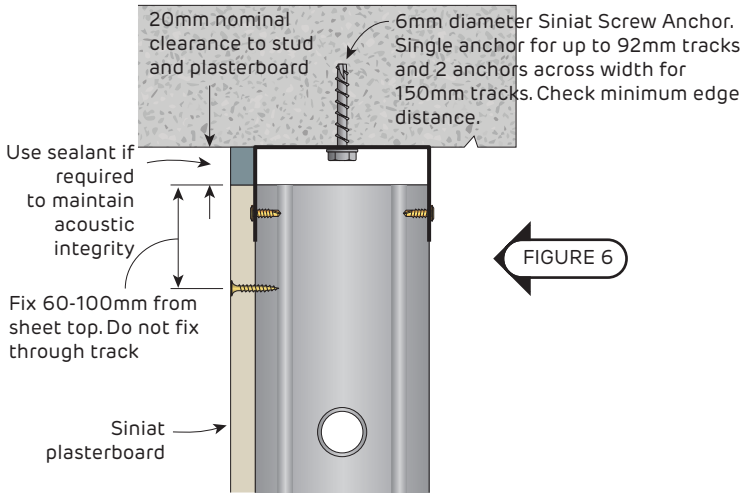


FIGURE 5 Head Connection HC2
Slotted Deflection Head Track
Section

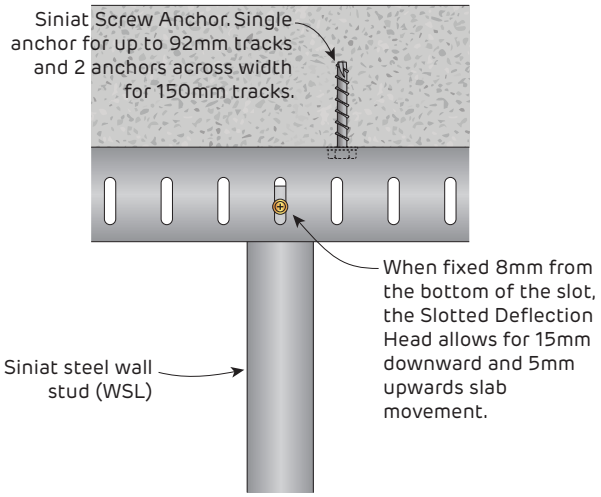


FIGURE 6 Slotted Deflection Head Connection
Elevation

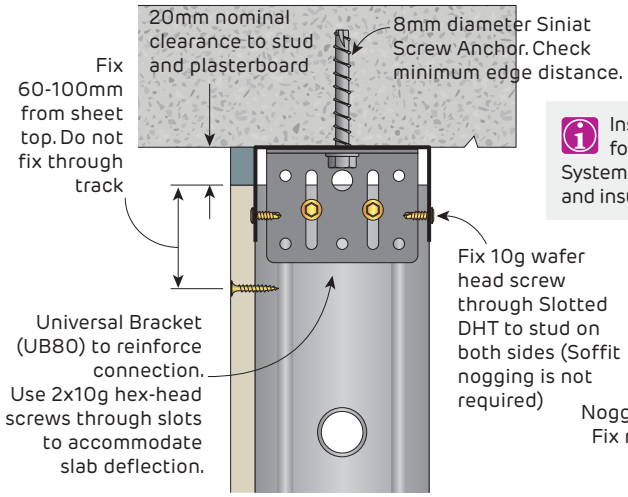


FIGURE 7 Head Connection HC4
Slotted Deflection Head Track with
Universal Bracket
Section

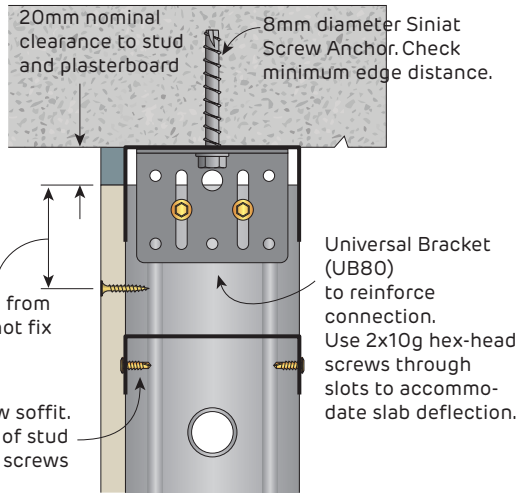


FIGURE 8 Head Connection HC3
With Universal Bracket
Section

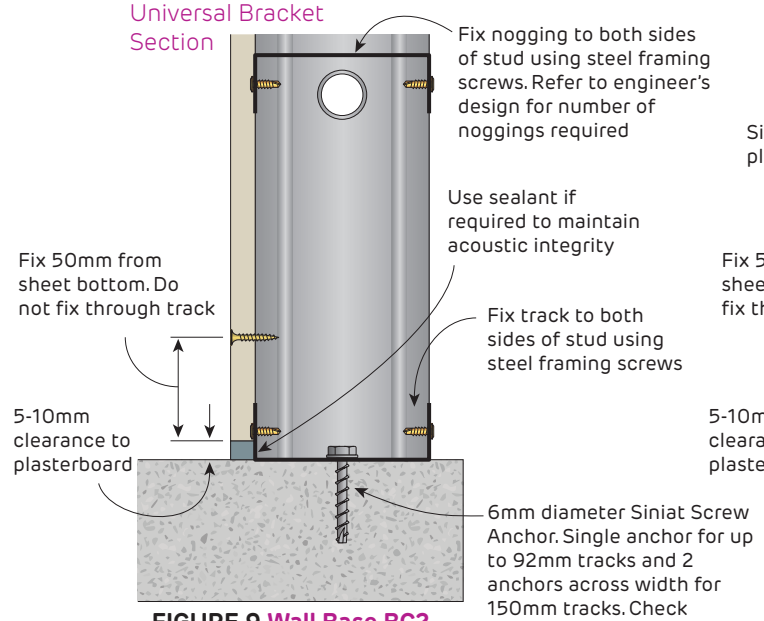


FIGURE 9 Wall Base BC2
Section

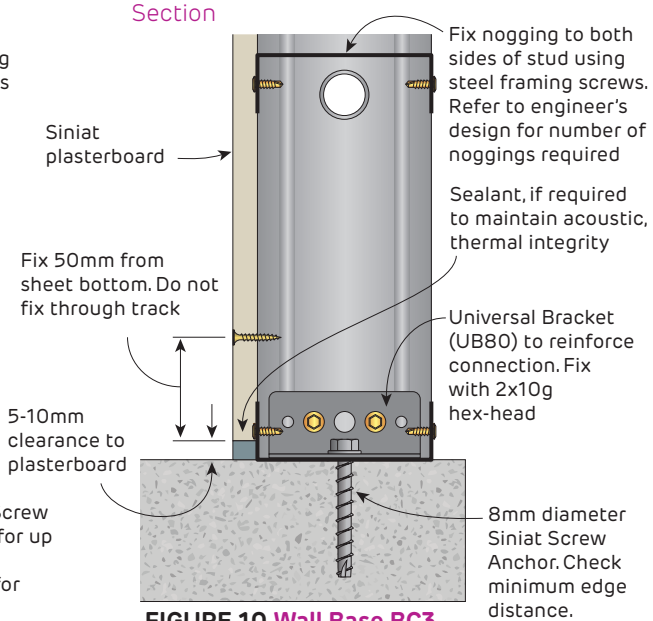


FIGURE 10 Wall Base BC3
With Universal Bracket
Section

Non-Fire Rated

Typical Head and Base Details for Non-Load Bearing External Steel Stud Walls

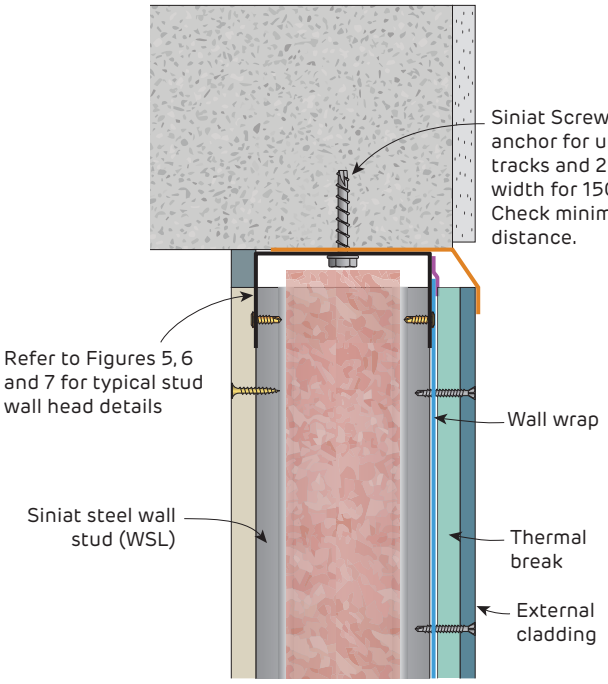


FIGURE 11 External Steel Stud Wall Head
With cladding over thermal break
Section

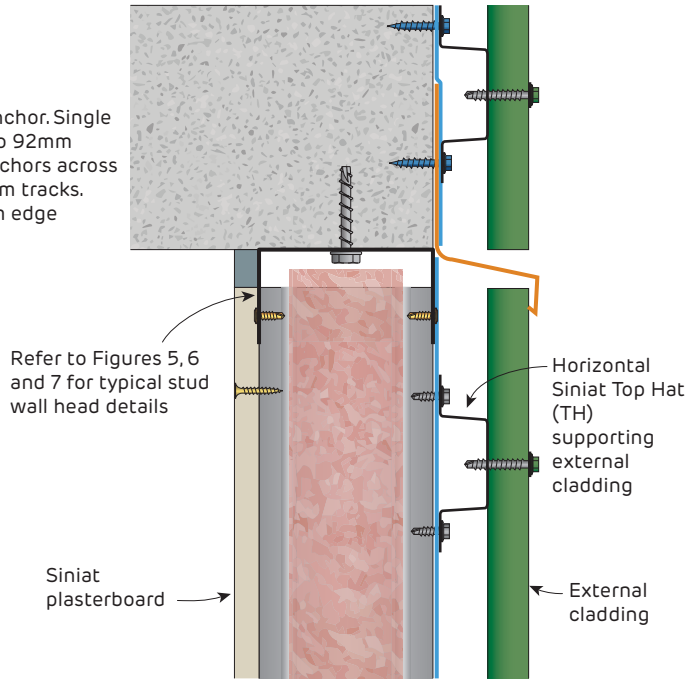


FIGURE 12 External Steel Stud Wall Head
With cladding over horizontal top-hats
Section

Non-load bearing walls are unsuitable for bracing wall applications

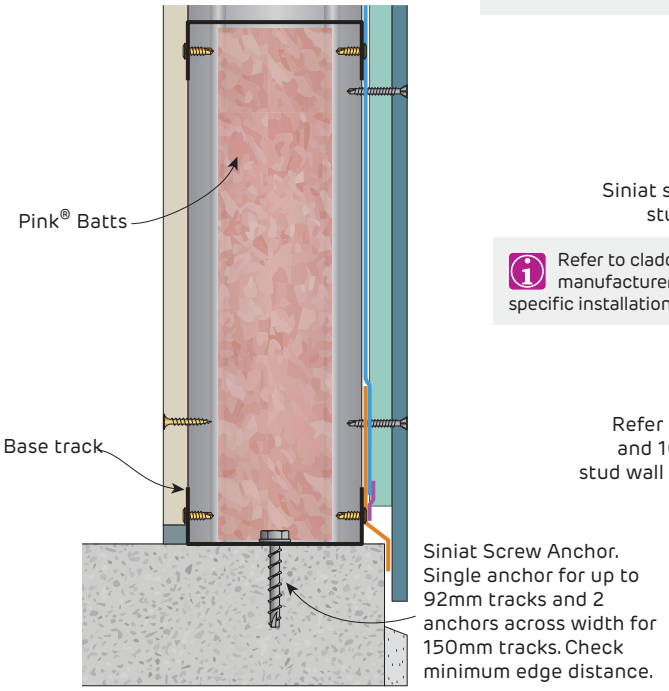


FIGURE 13 External Steel Stud Wall Base
With cladding over thermal break
Section

Top hats must not be fixed to noggings or deflection head tracks

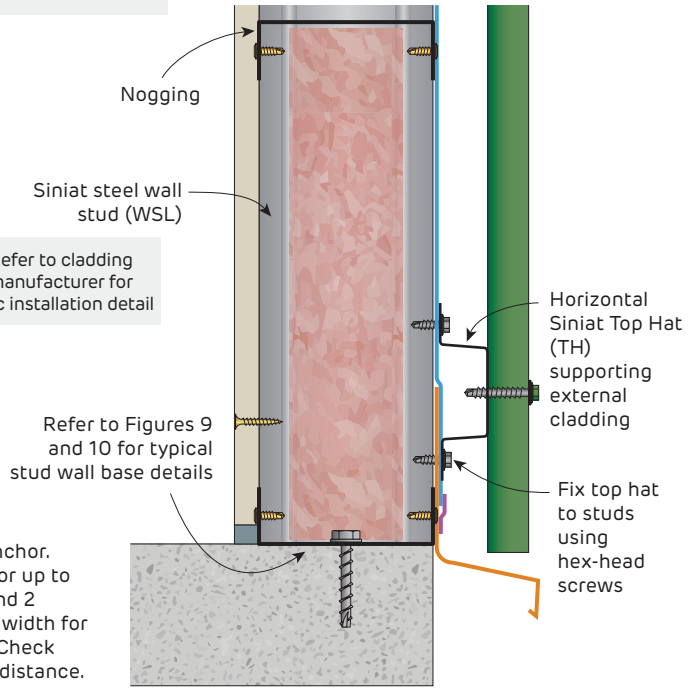


FIGURE 14 External Steel Stud Wall Base
With cladding over horizontal top-hats
Section

Non-Fire Rated

Typical Head and Base Details for Non-Load Bearing External Steel Stud Walls

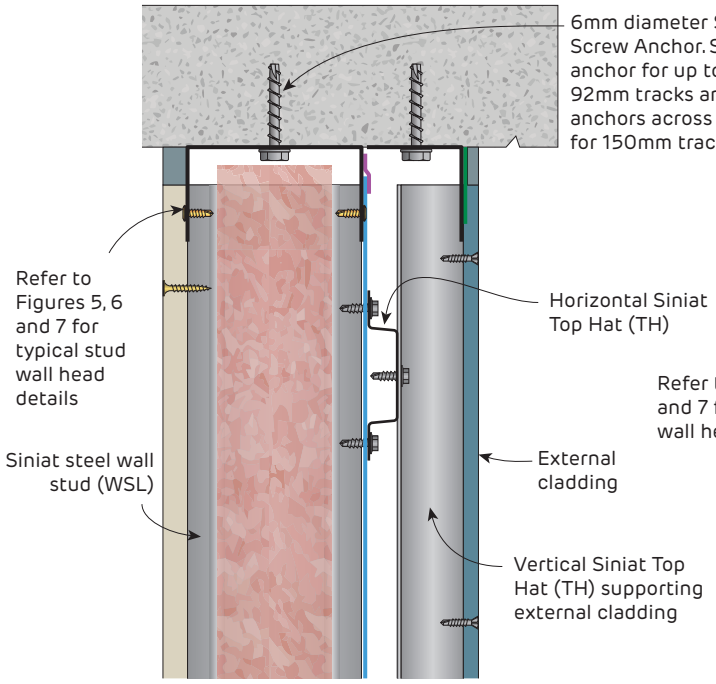


FIGURE 15 External Steel Stud Wall Head
With cladding over horizontal + vertical Top Hats
Section

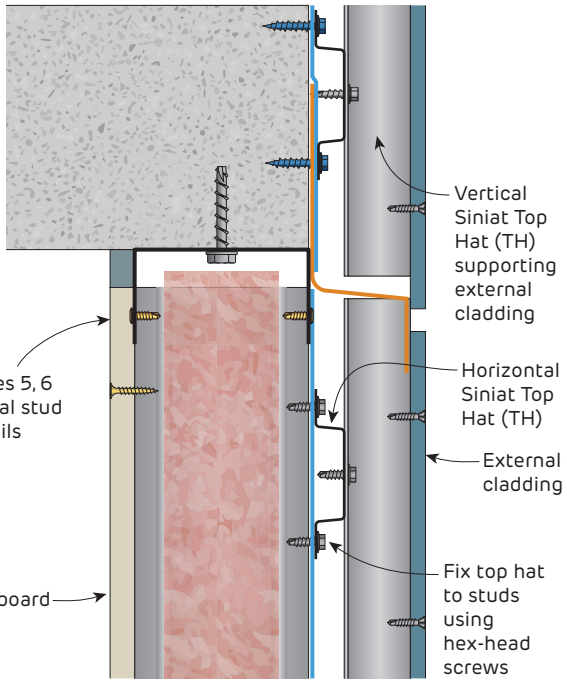


FIGURE 16 External Steel Stud Wall Head
With cladding over horizontal + vertical Top Hats
Section

Non-load bearing walls are unsuitable for bracing wall applications

Refer to cladding manufacturer for specific installation detail

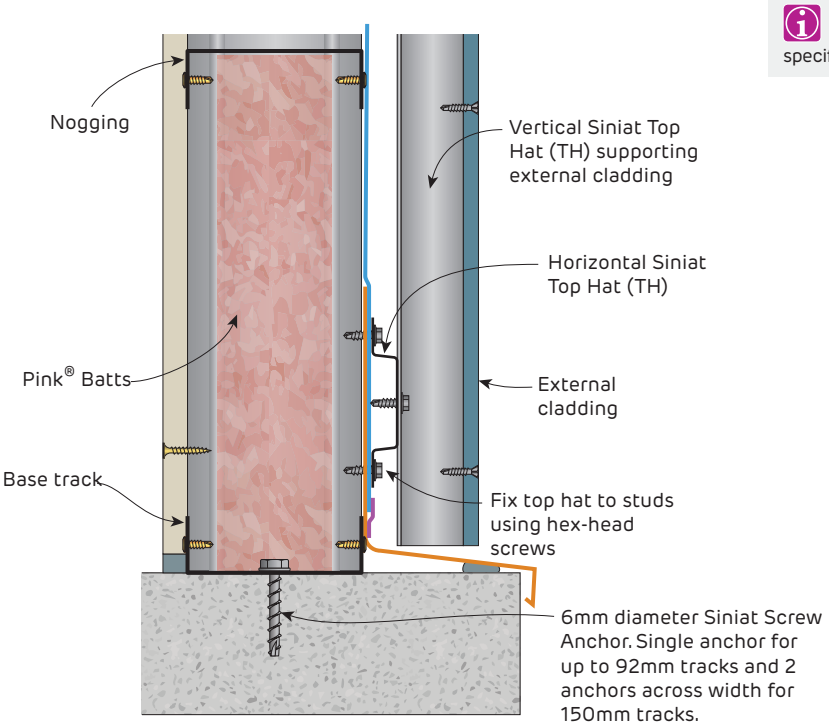


FIGURE 17 External Steel Stud Wall Base
With cladding over horizontal + vertical Top Hats
Section

Fire Rated

Typical Head and Base Details for Non-Load Bearing External Steel Stud Walls

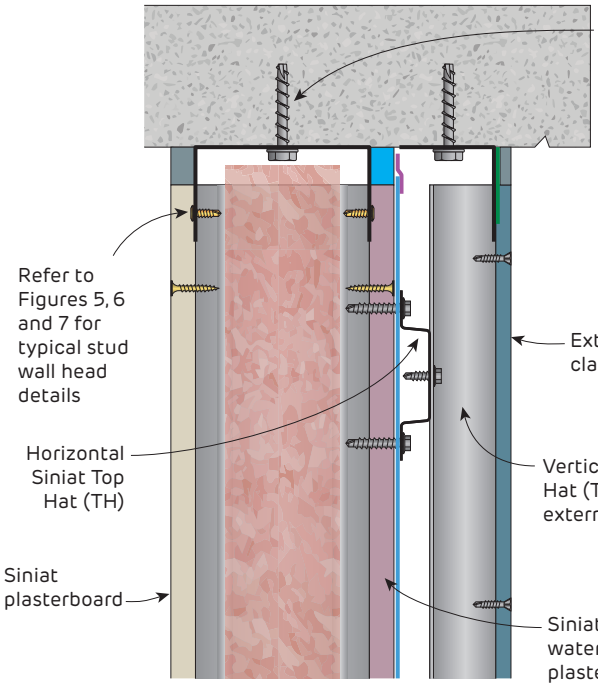


FIGURE 18 External Steel Stud Wall Head
With cladding over horizontal + vertical Top Hats
Fire rated from the outside only - Section

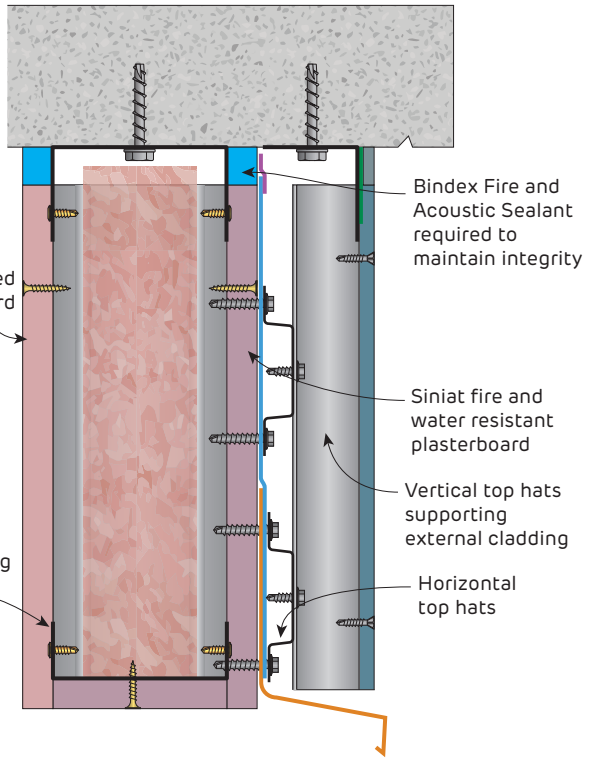


FIGURE 19 External Steel Stud Wall Head
With cladding over horizontal + vertical Top Hats
Fire rated from both directions - Section

Top Hats must not be fixed to noggings or deflection head tracks

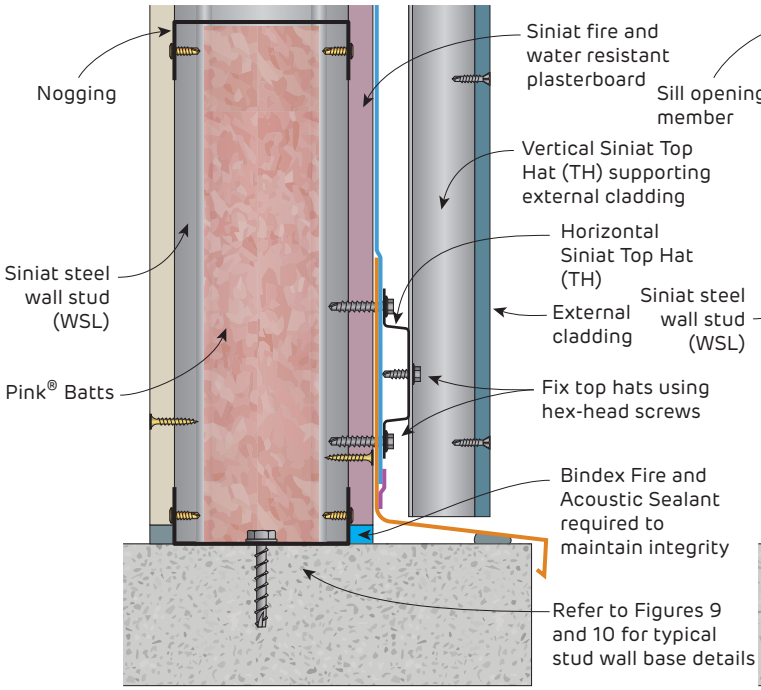


FIGURE 20 External Steel Stud Wall Base
With cladding over horizontal + vertical Top Hats
Fire rated from the outside only - Section

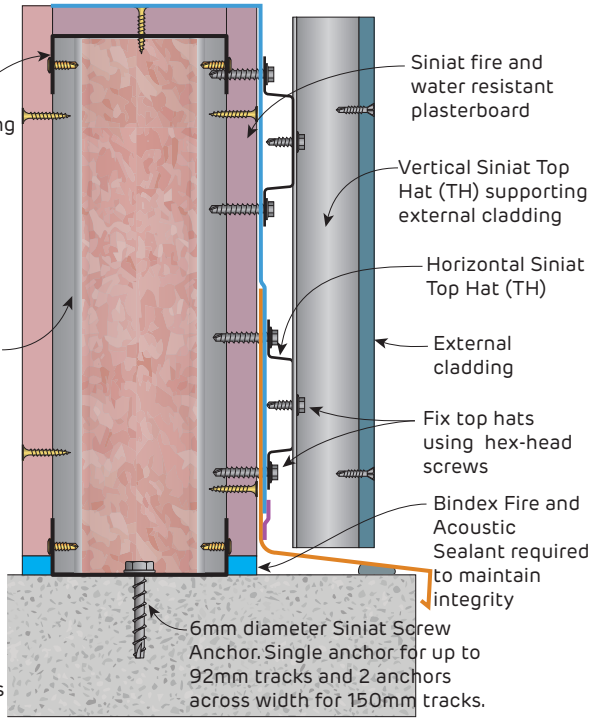


FIGURE 21 External Steel Stud Wall Base
With cladding over horizontal + vertical Top Hats
Fire rated from both directions - Section

Non-load bearing walls are unsuitable for bracing wall applications

Refer to cladding manufacturer for specific installation detail

Non-Fire Rated

Typical Head and Base Details for Non-Load Bearing External Steel Stud Walls

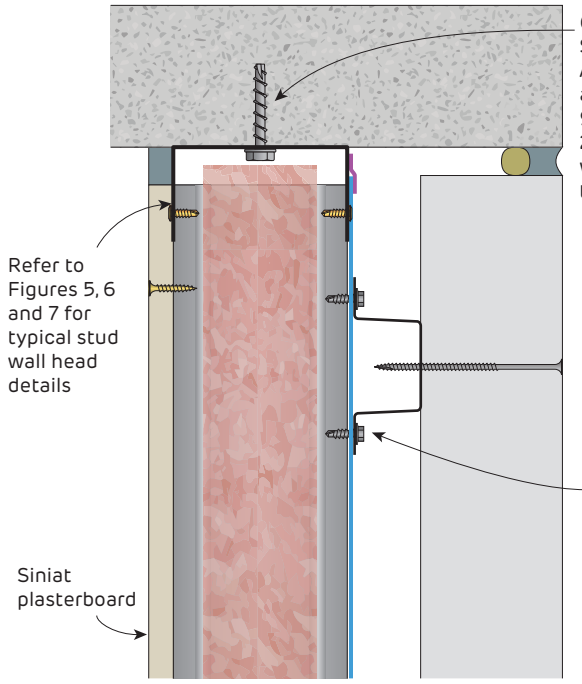


FIGURE 22 External Steel Stud Wall Head
With horizontal Top Hats under AAC
Section

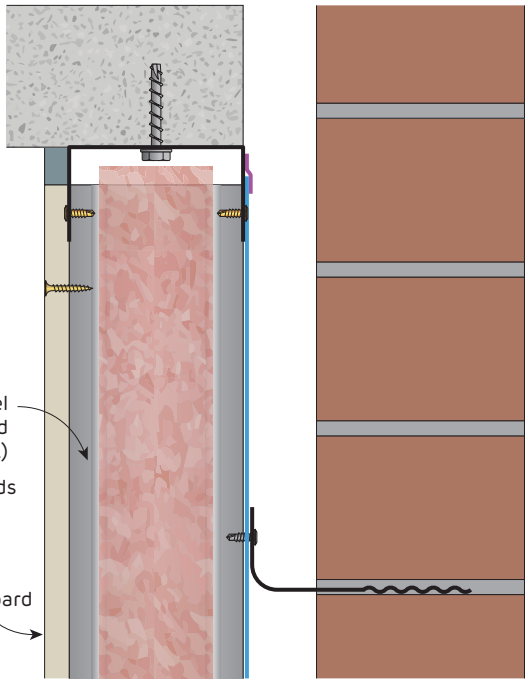


FIGURE 23 External Steel Stud Wall Head
With brick veneer
Section

Refer to cladding manufacturer for specific installation detail

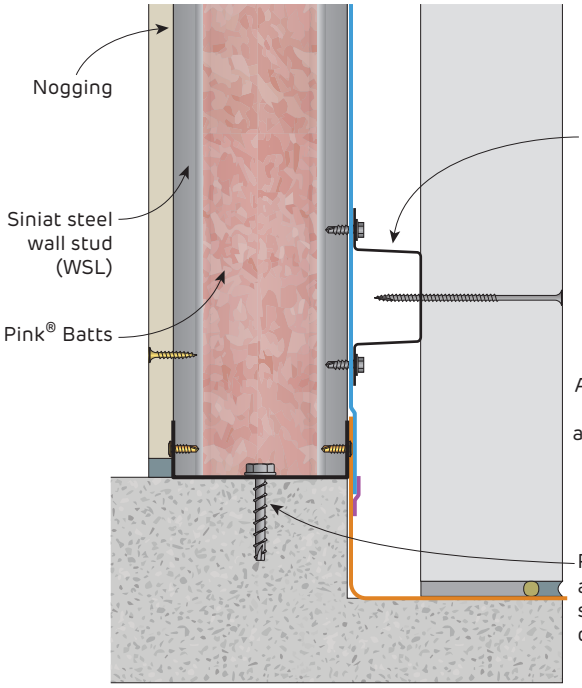


FIGURE 24 External Steel Stud Wall Base
With horizontal Top Hats under AAC
Section

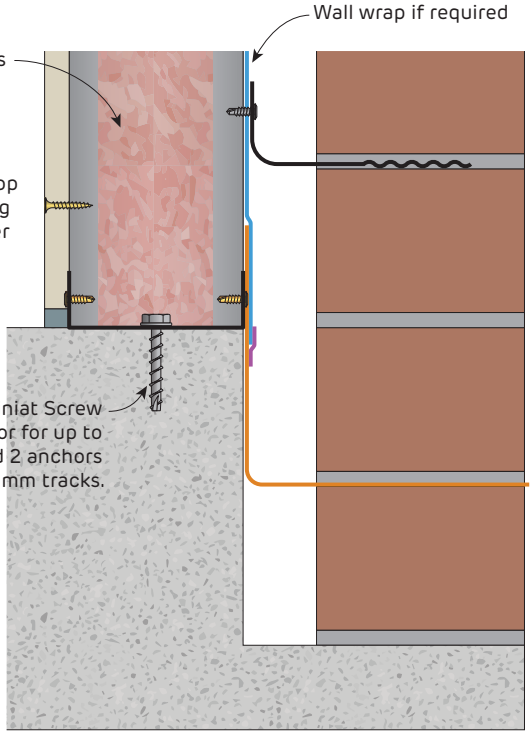


FIGURE 25 External Steel Stud Wall Base
With brick veneer
Section

Brick veneer ties must be compatible with Zincalume steel. Stainless steel brick ties and other more noble metals must be electrically isolated from the steel studs.

Fire Rated
Typical Details for Spandrel Walls

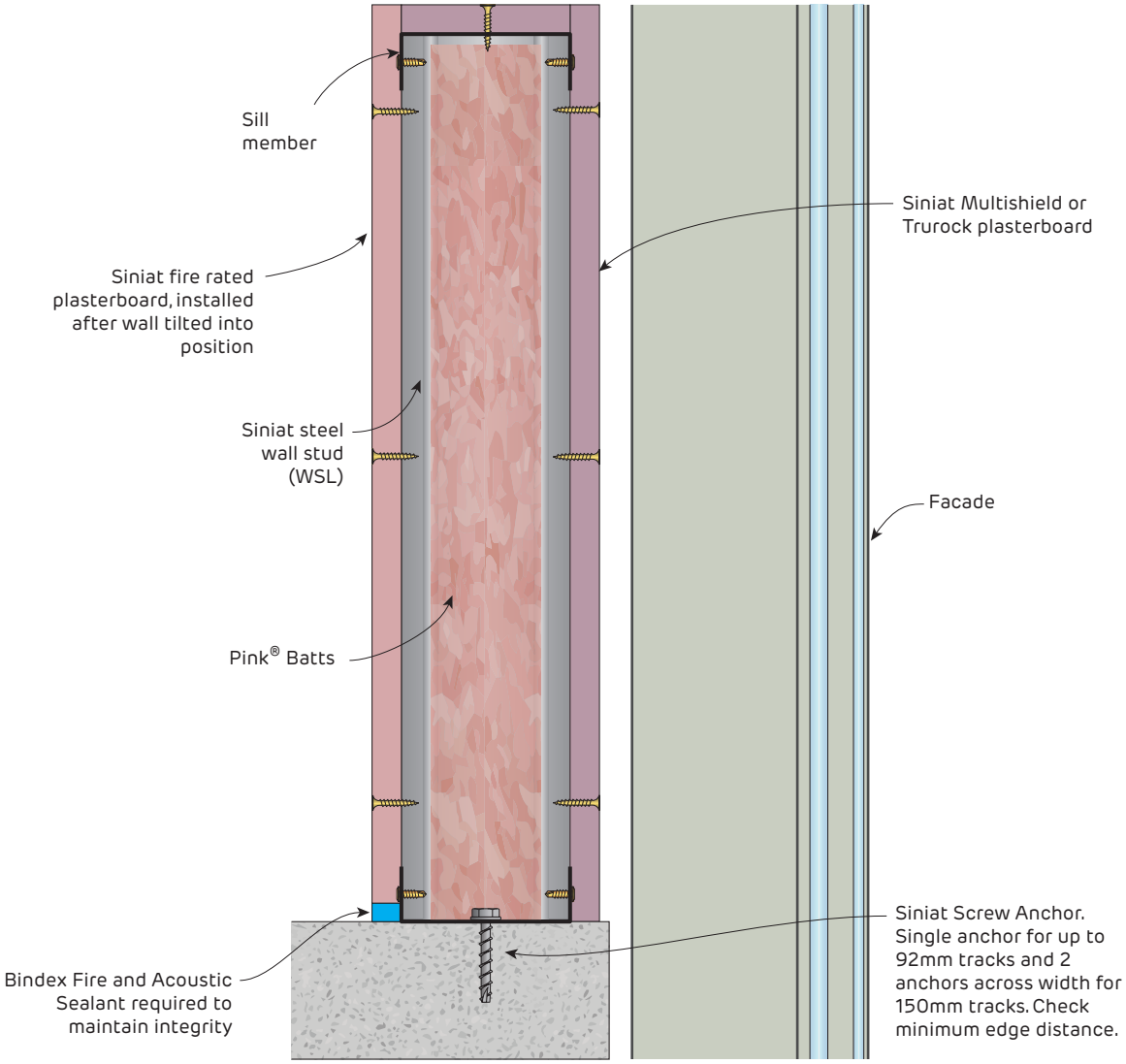


FIGURE 26 Spandrel Steel Stud Wall
Spandrel wall tilted into position near facade
Section

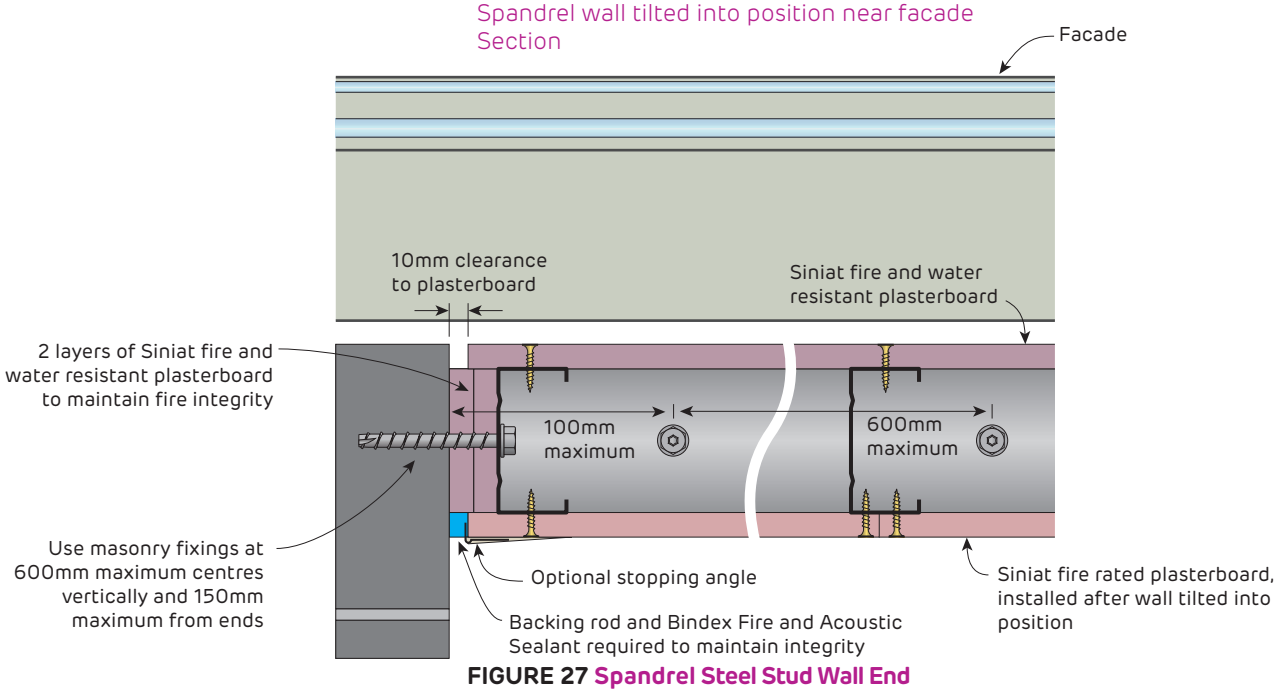


FIGURE 27 Spandrel Steel Stud Wall End
Spandrel wall tilted into position near facade
Plan