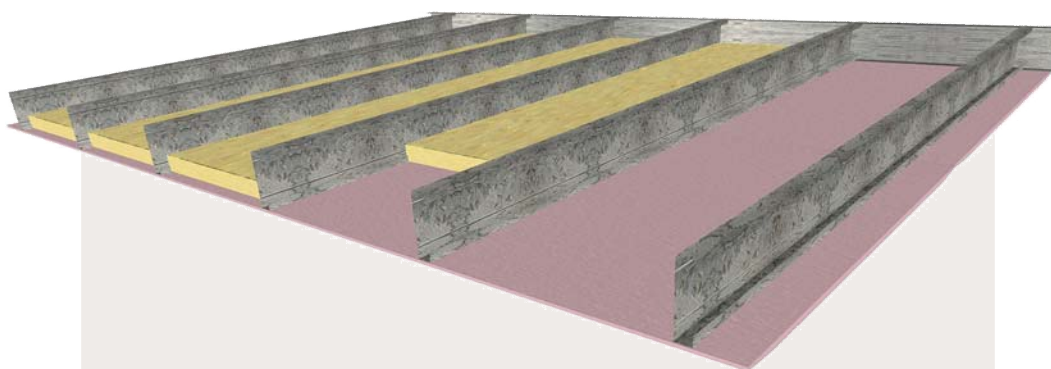


STEEL STUD CEILINGS

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The ceilings in this section are constructed using steel studs as the ceiling joists. Common applications for these ceilings include corridors, above stairwells, and under concrete floors, where unsupported spans are required.

This section contains systems for fire rated ceilings, including fire rated from above only, and fire rated from above and below. Access is required to construct steel stud ceiling systems that are fire rated from above only. If access is from below only, and the ceiling is required to be fire rated from above, a Horizontal Shaft Wall can be used [REFER TO SECTION 4.5.2].

For acoustic ceiling systems using steel stud framing [REFER TO SECTION 4.6.1].

LSC1

CEILING LINING: [ABOVE SIDE] 1 layer of 16mm **FireShield** [BELOW SIDE] 2 layers of 16mm **FireShield**

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing
 [Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
 [Ceiling joists are lipped C studs]
 [Ceiling is non-trafficable]



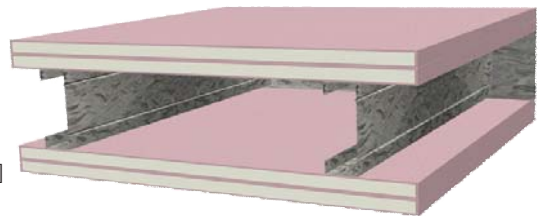
FRL	STUD SIZE (mm)		SPAN UDL 0.35 kPa (mm)				CEILING THICKNESS (mm)	ACOUSTICS Rw (Rw + Ctr)	
	Stud Depth	Stud BMT	STUDS + 1 ROW OF NOGGINGS		BOXED STUDS			No Insulation	50mm Glasswool
			300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing			
60/60/60 rated from above and below FAR 3436	92	0.75	4290	4040	4660	4290	124	38 (30)	47 (39)
		1.15	4450	4160	-	-			
	150	0.75	5120	4790	5710	5300	182	40 (31)	48 (42)
		1.15	5450	5070	-	-			

Day Design 3094-23

LSC2

CEILING LINING: [ABOVE SIDE] 2 layers of 16mm **FireShield** [BELOW SIDE] 2 layers of 16mm **FireShield**

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing
 [Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
 [Ceiling joists are lipped C studs]
 [Ceiling is non-trafficable]



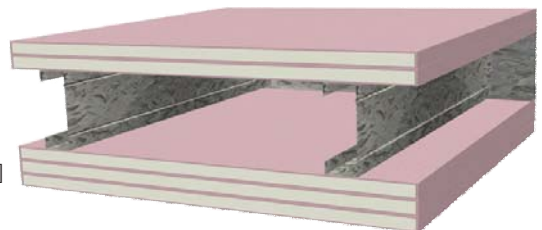
FRL	STUD SIZE (mm)		SPAN UDL 0.35 kPa (mm)				CEILING THICKNESS (mm)	ACOUSTICS Rw (Rw + Ctr)	
	Stud Depth	Stud BMT	STUDS + 1 ROW OF NOGGINGS		BOXED STUDS			No Insulation	50mm Glasswool
			300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing			
120/120/120 rated from above only 90/90/90 rated from below only +60min RISF FAR 2888	92	0.75	3850	3550	4150	3830	156	49 (42)	55 (49)
		1.15	4000	3710	-	-			
	150	0.75	4630	4310	5210	4800	214	51 (44)	55 (51)
		1.15	4950	4580	-	-			

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LSC3

CEILING LINING: [ABOVE SIDE] 2 layers of 16mm **FireShield** [BELOW SIDE] 3 layers of 16mm **FireShield**



FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing
 [Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
 [Ceiling joists are lipped C studs]
 [Ceiling is non-trafficable]



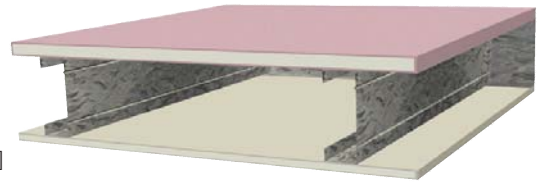
FRL	STUD SIZE (mm)		SPAN UDL 0.35 kPa (mm)				CEILING THICKNESS (mm)	ACOUSTICS Rw (Rw + Ctr)	
	Stud Depth	Stud BMT	STUDS + 1 ROW OF NOGGINGS		BOXED STUDS			No Insulation	50mm Glasswool
			300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing			
120/120/120 rated from above and below +60min RISF 97/1140	92	0.75	3720	3310	4020	3700	172	52 (45)	57 (52)
		1.15	3870	3570	-	-			
	150	0.75	4490	4180	5060	4660	230	54 (47)	57 (53)
		1.15	4810	4440	-	-			

Day Design 3094-23

LSC4

CEILING LINING: [ABOVE SIDE] 1 layer of 16mm **FireShield**  
 [BELOW SIDE] 1 layer of 10mm **MastaShield**



FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing
 [Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
 [Ceiling joists are lipped C studs]
 [Ceiling is non-trafficable]



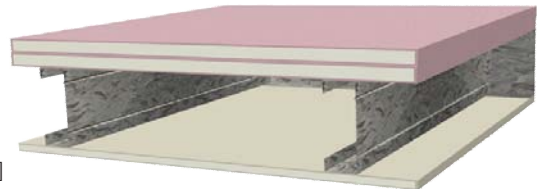
FRL	STUD SIZE (mm)		SPAN UDL 0.35 kPa (mm)				CEILING THICKNESS (mm)	ACOUSTICS R _w (R _w + C _{tr})				
	Stud Depth	Stud BMT	STUDS + 1 ROW OF NOGGINGS		BOXED STUDS			No Insulation	50mm Glasswool			
			300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing						
60/60/60 rated from above only FAR 3436	92	0.75	4080	3760	4490	4110	118	37 (28)	44 (35)			
		1.15	4290	3940	-	-						
	150	0.75	5100	4710	5770	5320				176	38 (28)	46 (38)
		1.15	5480	5050	-	-						

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LSC5

CEILING LINING: [ABOVE SIDE] 2 layers of 16mm **FireShield**  
 [BELOW SIDE] 1 layer of 10mm **MastaShield**



FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing
 [Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]
 [Ceiling joists are lipped C studs]
 [Ceiling is non-trafficable]



FRL	STUD SIZE (mm)		SPAN UDL 0.35 kPa (mm)				CEILING THICKNESS (mm)	ACOUSTICS R _w (R _w + C _{tr})				
	Stud Depth	Stud BMT	STUDS + 1 ROW OF NOGGINGS		BOXED STUDS			No Insulation	50mm Glasswool			
			300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing						
90/90/90 rated from above only FAR 2888	92	0.75	3900	3580	4310	3920	134	43 (33)	50 (41)			
		1.15	4110	3760	-	-						
	150	0.75	4900	4510	5570	5110				192	45 (34)	51 (44)
		1.15	5270	4850	-	-						

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LSC6

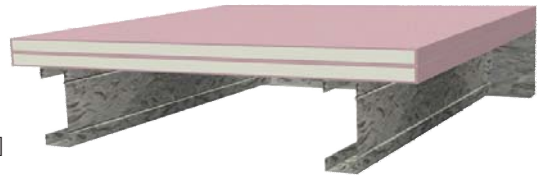
CEILING LINING: [ABOVE SIDE] 2 layers of 16mm **FireShield**  
[BELOW SIDE] Lining optional

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]

[Ceiling joists are lipped C studs]



[Ceiling is non-trafficable]



FRL	STUD SIZE (mm)		SPAN UDL 0.35 kPa (mm)				CEILING THICKNESS (mm)	ACOUSTICS Rw (Rw + Ctr)	
	Stud Depth	Stud BMT	STUDS + 1 ROW OF NOGGINGS		BOXED STUDS				
			300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing			
60/60/60 rated from above only	92	0.75	3600	3170	4140	3770	124	No Insulation	
		1.15	3890	3490	-	-			
	150	0.75	4680	4260	5460	5000	182	35 (32)	
		1.15	5130	4680	-	-			
	FAR 2888	92	0.75	3600	3170	4140	3770	124	35 (32)
			1.15	3890	3490	-	-		
FAR 2888	150	0.75	4680	4260	5460	5000	182	35 (32)	
		1.15	5130	4680	-	-			

Day Design
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LSC7

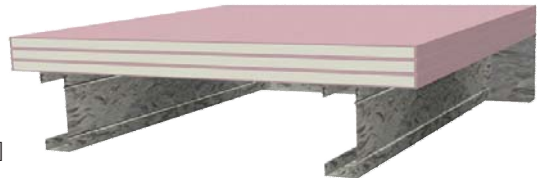
CEILING LINING: [ABOVE SIDE] 3 layers of 13mm **FireShield**  
[BELOW SIDE] Lining optional

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]

[Ceiling joists are lipped C studs]



[Ceiling is non-trafficable]



FRL	STUD SIZE (mm)		SPAN UDL 0.35 kPa (mm)				CEILING THICKNESS (mm)	ACOUSTICS Rw (Rw + Ctr)	
	Stud Depth	Stud BMT	STUDS + 1 ROW OF NOGGINGS		BOXED STUDS				
			300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing			
90/90/90 rated from above only	92	0.75	3550	3120	4110	3750	131	No Insulation	
		1.15	3860	3460	-	-			
	150	0.75	4650	4230	5430	4960	189	37 (35)	
		1.15	5090	4650	-	-			
	FAR 2888	92	0.75	3550	3120	4110	3750	131	37 (35)
			1.15	3860	3460	-	-		
FAR 2888	150	0.75	4650	4230	5430	4960	189	37 (35)	
		1.15	5090	4650	-	-			

Day Design
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LSC8

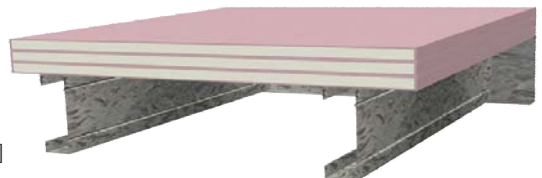
CEILING LINING: [ABOVE SIDE] 3 layers of 16mm **FireShield**  
[BELOW SIDE] Lining optional

FRAME: Steel studs as ceiling joists at either 300mm or 450mm spacing

[Span based on Serviceability UDL 0.35 kPa and maximum deflection span/360 or 10mm]

[Ceiling joists are lipped C studs]

[Ceiling is non-trafficable]



FRL	STUD SIZE (mm)		SPAN UDL 0.35 kPa (mm)				CEILING THICKNESS (mm)	ACOUSTICS Rw (Rw + Ctr)	
	Stud Depth	Stud BMT	STUDS + 1 ROW OF NOGGINGS		BOXED STUDS				
			300mm Joist Spacing	450mm Joist Spacing	300mm Joist Spacing	450mm Joist Spacing			
120/120/120 rated from above only	92	0.75	3340	2930	3930	3580	140	No Insulation	
		1.15	3680	3250	-	-			
	150	0.75	4440	4030	5200	4750	198	38 (36)	
		1.15	4880	4440	-	-			
	FAR 2888	92	0.75	3340	2930	3930	3580	140	38 (36)
			1.15	3680	3250	-	-		
FAR 2888	150	0.75	4440	4030	5200	4750	198	38 (36)	
		1.15	4880	4440	-	-			

Day Design
3094-23

FRAMING

MAXIMUM CEILING SPAN TABLE - SINGLE SPAN ONLY LINED WITH PLASTERBOARD ON UNDERSIDE

JOIST DEPTH (mm)	JOIST BMT (mm)	1 x 10mm	2 x 10mm	1 x 13mm	2 x 13mm	3 x 13mm	1 x 16mm	2 x 16mm	3 x 16mm
STEEL STUDS AT 600mm MAXIMUM CENTRES									
51	0.5	1835	1720	1800	1665	1565	1740	1580	1465
	0.75	2060	1935	2020	1880	1765	1960	1780	1655
64	0.5	2145	2010	2100	1945	1830	2095	1860	1730
	0.75	2460	2305	2530	2335	2190	2470	2235	2065
	1.15	2775	2605	2785	2575	2415	2705	2450	2265
76	0.55	2535	2375	2580	2365	2200	2500	2235	2045
	0.75	2820	2645	3005	2770	2590	2945	2650	2445
	1.15	3185	2990	3125	2900	2730	3025	2760	2565
92	0.55	2935	2745	2870	2660	2500	2780	2525	2350
	0.75	3255	3055	3290	3030	2835	3195	2875	2645
	1.15	3680	3460	3615	3355	3160	3495	3190	2970
150	0.75	4750	4460	4660	4325	4075	4510	4115	3635
	1.15	5380	5060	5285	4915	4630	5120	4675	4355
STEEL STUDS AT 450mm MAXIMUM CENTRES									
51	0.5	2010	1885	1975	1830	1720	1910	1735	1615
	0.75	2260	2125	2220	2060	1940	2150	1950	1820
64	0.5	2350	2205	2305	2140	2010	2305	2080	1910
	0.75	2695	2530	2760	2550	2395	2690	2440	2260
	1.15	3035	2850	3045	2820	2650	2960	2690	2490
76	0.55	2780	2605	2845	2615	2440	2760	2480	2280
	0.75	3090	2900	3265	3015	2825	3200	2895	2675
	1.15	3480	3275	3415	3175	2990	3310	3020	2815
92	0.55	3210	3015	3165	2920	2745	3050	2775	2580
	0.75	3565	3350	3605	3330	3120	3505	3170	2930
	1.15	4020	3780	3975	3680	3460	3845	3495	3255
150	0.75	5190	4880	5095	4740	4465	4935	4505	4195
	1.15	5860	5525	5760	5370	5065	5585	5115	4770
STEEL STUDS AT 400mm MAXIMUM CENTRES									
51	0.5	2090	1960	2050	1900	1785	1985	1805	1675
	0.75	2350	2205	2300	2140	2015	2230	2030	1890
64	0.5	2445	2290	2395	2220	2090	2395	2160	1980
	0.75	2800	2625	2855	2645	2480	2785	2530	2345
	1.15	3145	2960	3150	2925	2750	3065	2790	2590
76	0.55	2885	2705	2955	2720	2540	2870	2585	2380
	0.75	3205	3010	3375	3120	2925	3310	2995	2770
	1.15	3605	3395	3540	3295	3105	3430	3135	2930
92	0.55	3335	3130	3300	3035	2855	3185	2880	2680
	0.75	3700	3475	3740	3460	3245	3635	3295	3045
	1.15	4165	3920	4125	3825	3590	3995	3630	3375
150	0.75	5380	5065	5285	4915	4630	5120	4675	4355
	1.15	6065	5720	5960	5560	5250	5785	5300	4945
STEEL STUDS AT 300mm MAXIMUM CENTRES									
51	0.5	2290	2150	2250	2085	1960	2175	1980	1840
	0.75	2570	2415	2520	2340	2210	2440	2230	2075
64	0.5	2675	2515	2625	2435	2295	2620	2375	2200
	0.75	3060	2875	3105	2880	2705	3030	2755	2560
	1.15	3430	3230	3430	3190	3005	3340	3045	2835
76	0.55	3160	2965	3230	2980	2795	3145	2845	2625
	0.75	3505	3295	3655	3390	3185	3585	3255	3020
	1.15	3930	3705	3860	3600	3395	3745	3430	3195
92	0.55	3650	3425	3635	3355	3140	3520	3175	2940
	0.75	4040	3800	4075	3780	3550	3970	3605	3345
	1.15	4535	4275	4500	4185	3940	4370	3985	3705
150	0.75	5865	5525	5760	5370	5065	5585	5115	4770
	1.15	6580	6220	6475	6055	5725	6285	5775	5400

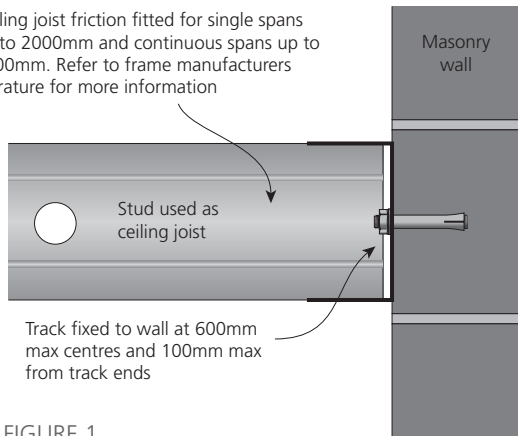
MINIMUM NUMBER OF NOGGINGS REQUIRED IN STEEL STUD CEILINGS

CEILING SPAN (m)	Stud lined with plasterboard on one side only			
	0 - 2	2 - 4	4 - 6	6 - 7
MINIMUM NUMBER OF NOGGINGS	0	1	2	3

- 1 W ultimate = 0.375 kPa, Strength Load Case: 1.2G + Wu
- 2 W serviceability = 0.25 kPa, Serviceability Load Case 1: G [Limit is /600], Serviceability Load Case 2: G + Ws [Limit is L/360] or 12mm.
- 3 Support walls and connections to be independently checked.
- 4 The live load in accordance with AS1170:2002 Clause 3.5.2 has not been applied to the ceiling joists. Accordingly, personnel are not permitted to traffic the ceiling joists.
- 5 Maximum span tables assume noggings are equally spaced along studs.
- 6 For Continuous Spans refer to Rondo Building Services latest literature.

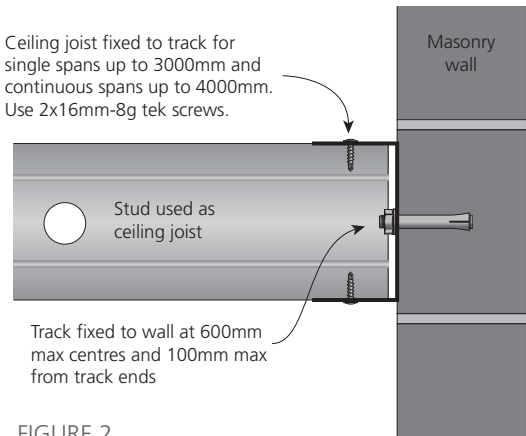
**FIRE RATED AND NON-FIRE RATED
STEEL STUD CEILING FRAME DETAIL - ELEVATION**

Ceiling joist friction fitted for single spans up to 2000mm and continuous spans up to 2800mm. Refer to frame manufacturers literature for more information



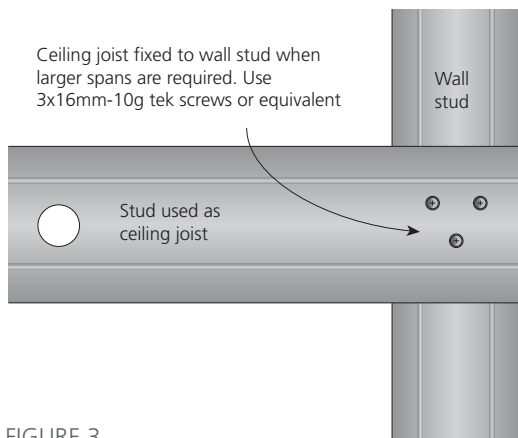
**FIGURE 1
Ceiling joist to masonry detail**

Ceiling joist fixed to track for single spans up to 3000mm and continuous spans up to 4000mm. Use 2x16mm-8g tek screws.



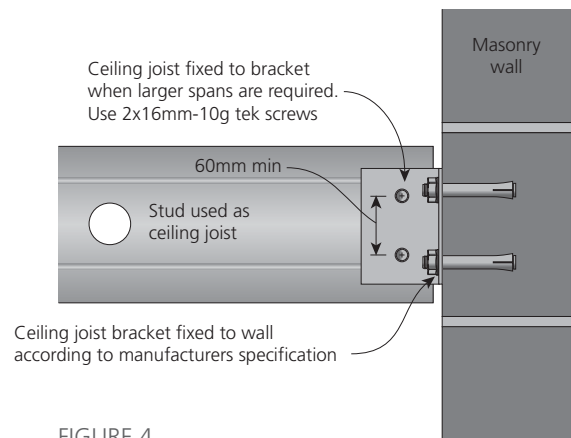
**FIGURE 2
Ceiling joist to masonry detail**

Ceiling joist fixed to wall stud when larger spans are required. Use 3x16mm-10g tek screws or equivalent

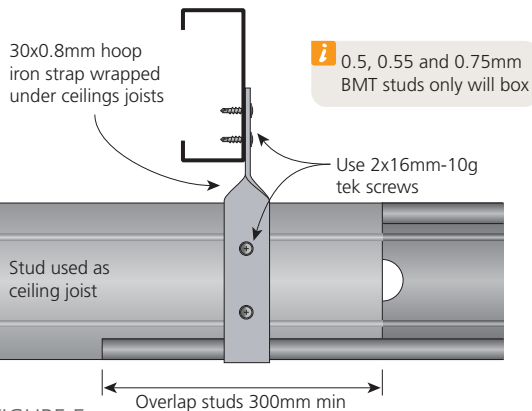


**FIGURE 3
Ceiling joist to steel stud detail**

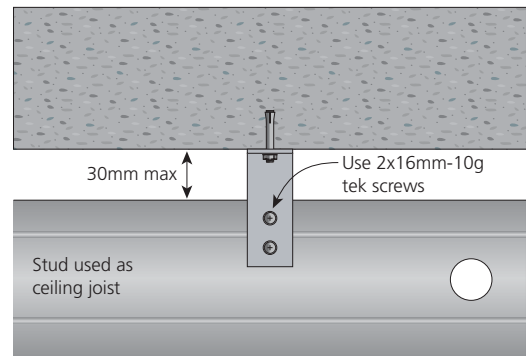
Ceiling joist fixed to bracket when larger spans are required. Use 2x16mm-10g tek screws



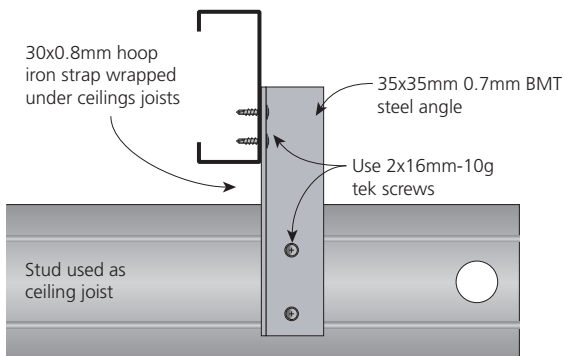
**FIGURE 4
Ceiling joist to masonry detail**



**FIGURE 5
Ceiling continuous joist to hoop iron strap**



**FIGURE 6
Ceiling continuous joist to angle bracket**



**FIGURE 7
Ceiling continuous joist to hoop iron strap**

FIRE RATED AND NON-FIRE RATED
STEEL STUD CEILING TO WALL DETAIL - ELEVATION

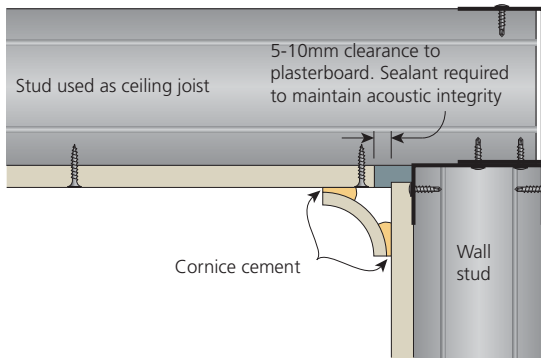


FIGURE 8
Non-trafficable ceiling to plasterboard wall

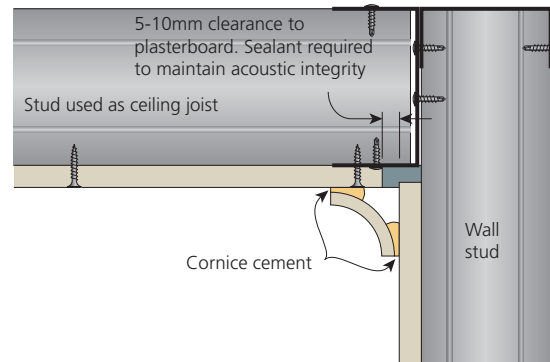


FIGURE 9
Non-trafficable ceiling to plasterboard wall

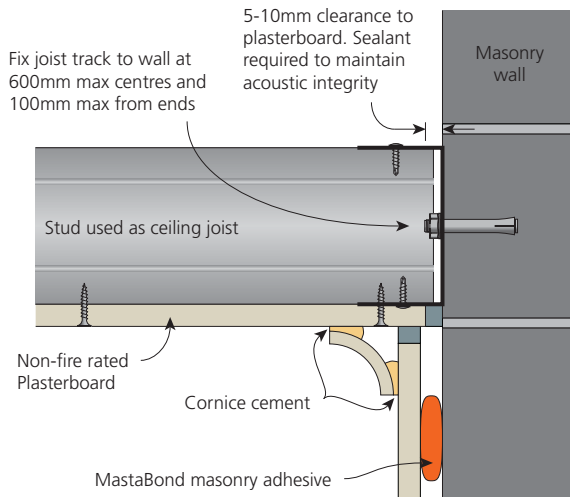


FIGURE 10
Non-trafficable ceiling to masonry wall

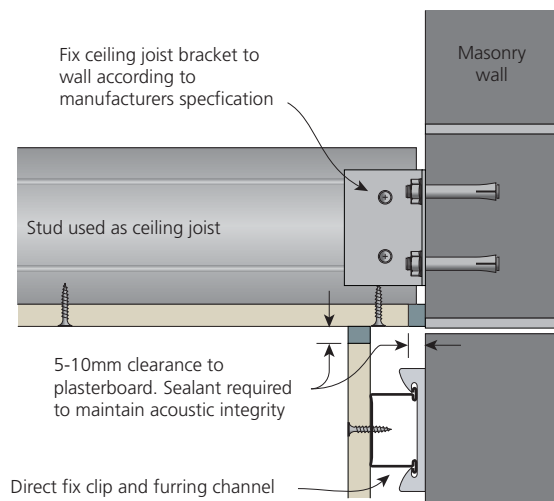


FIGURE 11
Non-trafficable ceiling to masonry wall

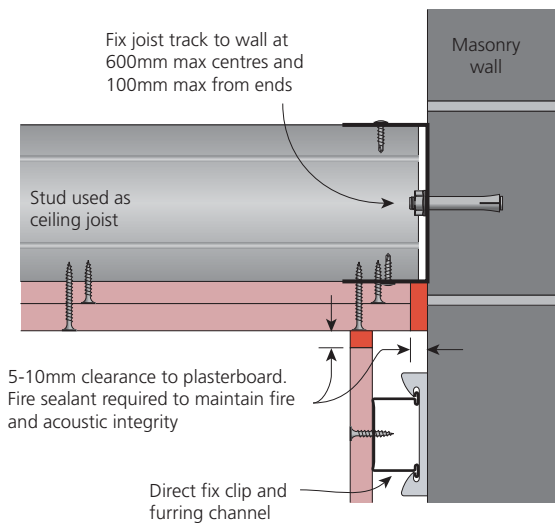


FIGURE 12
Non-trafficable ceiling to masonry wall

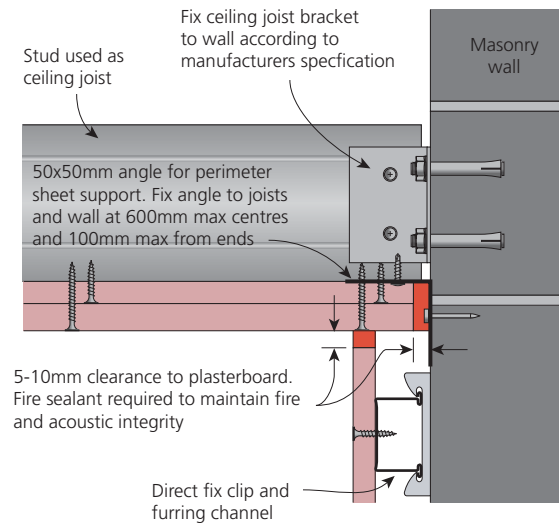


FIGURE 13
Non-trafficable ceiling to masonry wall

FIRE RATED AND NON-FIRE RATED
STEEL STUD CEILING TO WALL DETAIL - ELEVATION

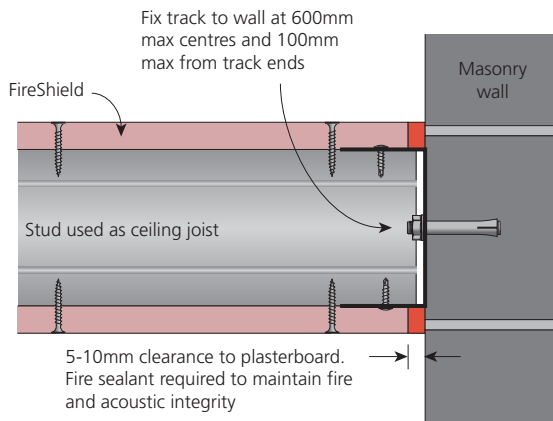


FIGURE 14
Non-trafficable ceiling to masonry wall

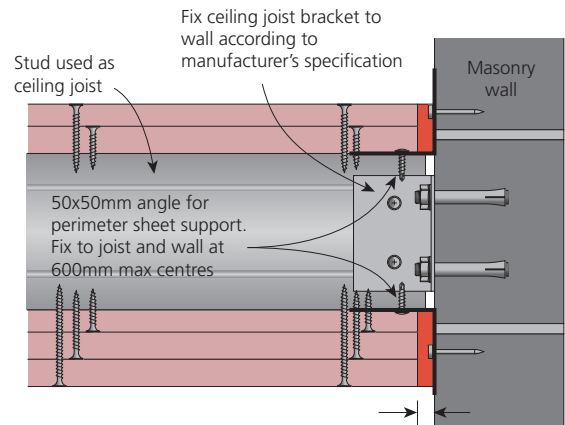


FIGURE 15
Non-trafficable ceiling to masonry wall

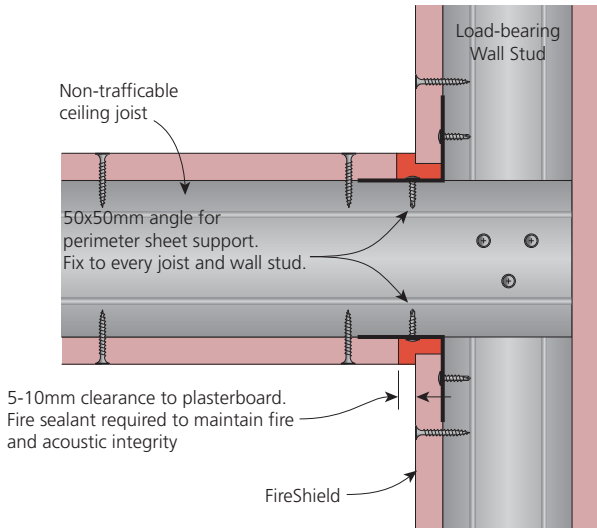


FIGURE 16
Non-trafficable ceiling to plasterboard wall

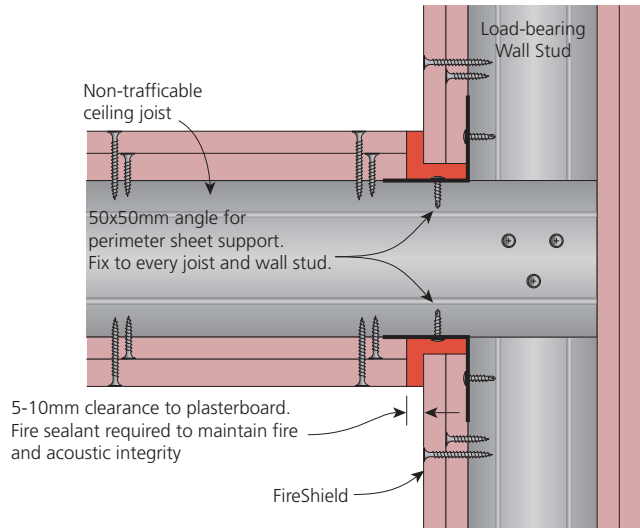


FIGURE 17
Non-trafficable ceiling to plasterboard wall

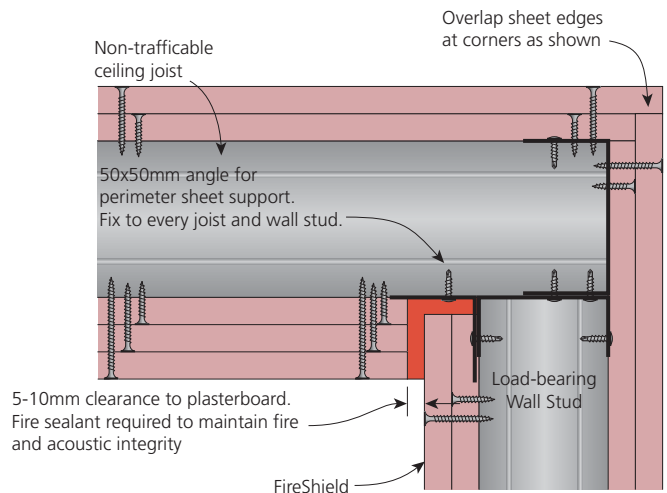


FIGURE 18
Non-trafficable ceiling to plasterboard wall

FIRE RATED AND NON-FIRE RATED
STEEL STUD BULKHEAD DETAIL - ELEVATION

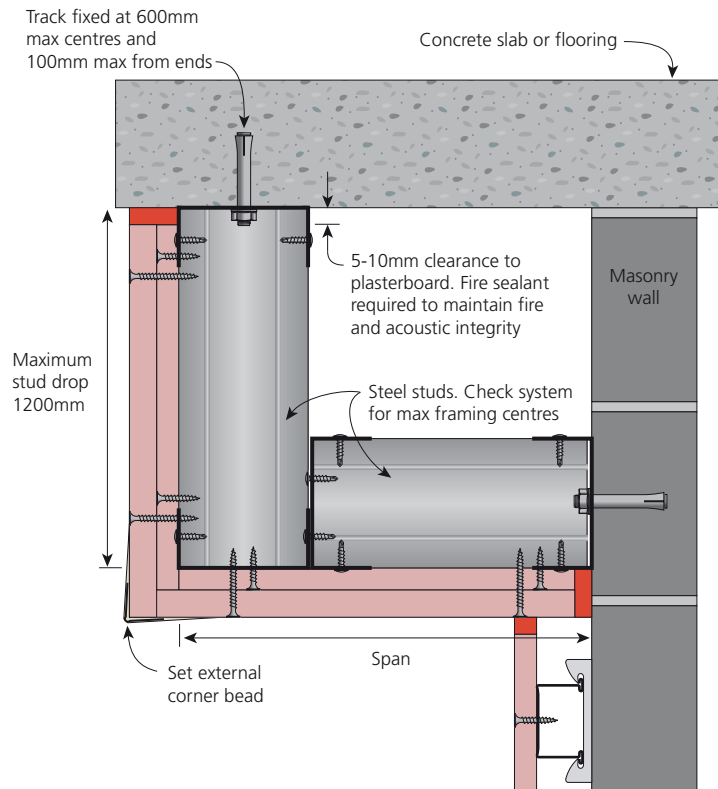


FIGURE 19
Steel stud bulkhead

MAXIMUM BULKHEAD SPAN TABLE - STEEL STUDS AT 600mm MAXIMUM CENTRES

STUD DEPTH (mm)	STUD BMT (mm)	NO USE OF WASHERS					75 X 3mm WASHER USED				
		1 x 10mm	1 x 13mm	1 x 16mm	2 x 13mm	2 x 16mm	1 x 10mm	1 x 13mm	1 x 16mm	2 x 13mm	2 x 16mm
STEEL STUDS AT 600mm MAXIMUM CENTRES											
51	0.5	1835	1800	1740	1665	1195	-	-	-	-	-
	0.75	2060	2020	1960	1880	1780	-	-	-	-	-
64	0.5	2085	1890	1545	1220	755	-	-	-	-	-
	0.75	2460	2530	2470	2335	2235	-	-	-	-	-
76	1.15	2775	2785	2705	2575	2450	-	-	-	-	-
	0.55	2130	1935	1585	1255	790	2535	2580	2500	2365	2200
92	0.75	2820	3005	2945	2770	2295	2820	3005	2945	2770	2650
	1.15	3185	3125	3025	2900	2760	3185	3125	3025	2900	2760
150	0.55	1700	1520	1205	910	485	2935	2870	2750	2520	2200
	0.75	3255	3210	2760	2335	1730	3255	3290	3195	3030	2875
150	1.15	3680	3615	3495	3355	3190	3680	3615	3495	3355	3190
	0.75	1985	1795	1460	1140	685	4330	4040	3520	3035	2335
	1.15	5155	4825	4245	3700	2915	5380	5285	5120	4915	4675

MINIMUM NUMBER OF NOGGINGS REQUIRED IN STEEL STUD BULKHEADS

SPAN (m)	Bulkhead lined with plasterboard on underside only		
	0 - 2	2 - 4	4 - 6
MINIMUM NUMBER OF NOGGINGS	0	1	2

- 1 W ultimate = 0.375 kPa, Strength Load Case: 1.2G + Wu
- 2 W serviceability = 0.25 kPa, Serviceability Load Case: G + Ws [Limit is L/360] or 12mm.
- 3 1200mm max stud drop.
- 4 600mm max stud spacing.
- 5 Bulkhead is non-trafficable.