Elephant Plasterboard
Fire Rated Systems Manual
October 2019

Elephant FIRE RATED SYSTEMS

www.elephantplasterboard.co.nz

Elephant Plasterboard
STRENGTH WITH STYLE

Elephant Plasterboard Fire Rated Systems Manual

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Elephant NoiseSmart®, Elephant UltraSmart®, Elephant ImpactSmart®

Elephant Plasterboard New Range of Smartboards

We have introduced new brand names for our plasterboard range

- 10 & 13mm Multiboard is now called 10 & 13mm MultiSmart
- 10 & 13mm Aquaboard is now 10 &13mm AquaSmart
- 16mm Multiboard is now 16mm FireSmart

The performance characteristics of these products are unchanged
Further Smart board products will be introduced soon

Elephant Plasterboard Product & System Warranty

Elephant Plasterboard wall and ceiling linings are supported by Elephant Plasterboard's Quality Guarantee. This Warrantee covers Elephant Plasterboard products and or systems for a minimum of 10 years from the date of the purchase. Elephant Plasterboard supplies products which are warranted to be free from defects. Any products found to be defective before or after installation will be replaced and/or repaired, provided installation has been in accordance with Elephant Plasterboard's technical literature.

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E2SL30	-M26	30/30/30	LB	37	36	1 x 13mm Elephant MultiSmart on One side 1 x 13mm Elephant MultiSmart on Other side	32
	-F32	30/30/30	LB	37	36	1 x 16mm Elephant FireSmart on One side 1 x 16mm Elephant FireSmart on Other side	32
E4SL30	-S40	30/30/30	LB	43	42	2 x 10mm Elephant Standard-Plus on One side 2 x 10mm Elephant Standard-Plus on Other side	33
E2S60	-M26	--/60/60	NLB	37	36	1 x 13mm Elephant MultiSmart on One side 1 x 13mm Elephant MultiSmart on Other side	34
E4S60	-S52	--/60/60	NLB	45	44	2 x 13mm Elephant Standard on One side 2 x 13mm Elephant Standard on Other side	35
	-M40	--/60/60	NLB	45	44	2 x 10mm Elephant MultiSmart on One side 2 x 10mm Elephant MultiSmart on Other side	35
E4SL60	-M52	60/60/60	LB	46	45	2 x 13mm Elephant MultiSmart on One side 2 x 13mm Elephant MultiSmart on Other side	36
E2S75	-F32	--/75/75	NLB	38	37	1 x 16mm Elephant FireSmart on One side 1 x 16mm Elephant FireSmart on Other side	37

Fire Rated Walls

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control STC	Noise Control Rw	Lining Requirements	Page
E4S90	-M46	--/90/90	NLB	45	44	1 x 10mm Elephant MultiSmart and 1 x 13mm MultiSmart on One side 1 x 10mm Elephant MultiSmart and 1 x 13mm MultiSmart on Other side	38
E4SL90	-F64	90/90/90	LB	47	46	2 x 16mm Elephant FireSmart on One side 2 x 16mm Elephant FireSmart on Other side	39
E4S120	-FM58	---/120/120	NLB	46	45	1 x 16mm Elephant FireSmart and 1 x 13mm MultiSmart on One side 1 x 16mm Elephant FireSmart and 1 x 13mm MultiSmart on Other side	40
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System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control STC	Noise Control Rw	Lining Requirements	Page
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E1UW15	-S13	15/15/15	LB	-	-	1 x 13mm Elephant Standard on One side	45
E1UW30	-F16a	30/30/30	LB	-	-	1 x 16mm Elephant FireSmart on One side	46
E2UW30	-S20	30/30/30	LB	-	-	2 x 10mm Elephant Standard-Plus on One side	47
E2UW45	-M26	45/45/45	LB	-	-	2 x 13mm Elephant MultiSmart on One side	48
E2UW60	-M26a	60/60/60	LB	-	-	2 x 13mm Elephant MultiSmart on One side	49
	-FM29	60/60/60	LB	-	-	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart on One side	49
E3UW90	-M39a	90/90/90	LB	-	-	3 x 13mm Elephant MultiSmart on One side	50
	-FM42	90/90/90	LB	-	-	1 x 16mm Elephant FireSmart and 2 x 13mm Elephant MultiSmart on One side	50
E3UW120	-MF45a	120/120/120	LB	-	-	1 x 13mm Elephant MultiSmart and 2 x 16mm Elephant FireSmart on One side	51

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System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control STC	Noise Control Rw	Lining Requirements	Page
Smoke Separation - Timber or Steel Frame Wall - Two Way FRR							
E2sm10	-	10/10/10	LB	-	-	1 x Minimum 10mm Elephant Plasterboard on One side 1 x Minimum 10mm Elephant Plasterboard on Other side	53

Fire Rated Floor/Ceilings

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirements	Page
				STC	Rw	IIC		
Floor/Ceiling								
E1FC15	-S13	15/15/15	LB	38	37	31	1 x 13mm Elephant Standard	55
E1FC30	-M13	30/30/30	LB	39	39	32	1 x 13mm Elephant MultiSmart	56
E2FC30	-S26	30/30/30	LB	39	38	32	2 x 13mm Elephant Standard	57
E1FC45	-M13	45/45/45	LB	39	39	32	1 x 13mm Elephant MultiSmart	58
E1FC60	-F16	60/60/60	LB	39	38	32	1 x 16mm Elephant FireSmart	60
E2FC60	-MS26	60/60/60	LB	40	39	33	1 x 13mm Elephant MultiSmart and 1 x 13mm Elephant Standard	62
E2FC90	-FM29	90/90/90	LB	41	40	34	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart	63
E3FC120	-M39	120/120/120	LB	43	42	35	3 x 13mm Elephant MultiSmart	64
Composite Joist Floor/Ceiling								
E1CJ30	-M13	30/30/30	LB	39	38	32	1 x 13mm Elephant MultiSmart	65
E2CJ30	-S26	30/30/30	LB	39	38	32	2 x 13mm Elephant Standard	66
E1CJ45	-M13	45/45/45	LB	39	38	32	1 x 13mm Elephant MultiSmart	67
E1CJ60	-F16	60/60/60	LB	39	38	32	1 x 16mm Elephant FireSmart	68
E2CJ60	-MS26	60/60/60	LB	40	39	33	1 x 13mm Elephant MultiSmart and 1 x 13mm Elephant Standard	69
Steel Joist Floor/Ceiling								
E1SJ30	-M13	30/30/30	LB	35	34	31	1 x 13mm Elephant MultiSmart	70
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E1BC30	-M13	30/30/30	LB	35	34	31	1 x 13mm Elephant MultiSmart	72
E1BC60	-F16	60/60/60	LB	39	38	32	1 x 16mm Elephant FireSmart	74
Direct Fix Clip Floor/Ceiling								
E1DF45	-M13	45/45/45	LB	49	48	42	1 x 13mm Elephant MultiSmart	76
E1DF60	-F16	60/60/60	LB	49	48	43	1 x 16mm Elephant FireSmart	77
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E2DF75	-M26	75/75/75	LB	52	51	43	2 x 13mm Elephant MultiSmart	79
E2DF90	-F32	90/90/90	LB	54	53	43	2 x 16mm Elephant FireSmart	80
E3DF120	-M39	120/120/120	LB	54	53	43	3 x 13mm Elephant MultiSmart	81

Fire Rated Floor/Ceilings

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirements	Page
				STC	Rw	IIC		
Suspended Grid Floor/Ceiling								
E2SC30	-S26	30/30/30	LB	50	49	42	2 x 13mm Elephant Standard	82
	-M20	30/30/30	LB	50	49	42	2 x 10mm Elephant MultiSmart	82
E1SC45	-M13	45/45/45	LB	48	47	42	1 x 13mm Elephant MultiSmart	83
E1SC60	-F16	60/60/60	LB	48	47	43	1 x 16mm Elephant FireSmart	84
E1XC60	-F16	60/60/60	LB	48	47	43	1 x 16mm Elephant FireSmart	85
E2SC60	-MS26	60/60/60	LB	48	47	42	1 x 13mm Elephant MultiSmart and 1 x 13mm Elephant Standard	86
E2SC75	-M26	75/75/75	LB	51	50	42	2 x 13mm Elephant MultiSmart	87
E2SC90	-F32	90/90/90	LB	53	52	43	2 x 16mm Elephant FireSmart	88
E2XC90	-FM29	90/90/90	LB	48	47	43	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart	89

Fire Rated Universal Ceilings

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirements	Page
				STC	Rw	IIC		
Universal Ceiling - Timber or Steel Frame								
E1UC15	-M13	15/15/15	LB	-	-	-	1 x 13mm Elephant MultiSmart	91
E1UC30	-F16	30/30/30	LB	-	-	-	1 x 16mm Elephant FireSmart	92
E2UC60	-M26a	60/60/60	LB	-	-	-	2 x 13mm Elephant MultiSmart	93
	-FM29	60/60/60	LB	-	-	-	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart	93
E3UC90	-M39a	90/90/90	LB	-	-	-	3 x 13mm Elephant MultiSmart	94
	-FM42	90/90/90	LB	-	-	-	1 x 16mm Elephant FireSmart and 2 x 13mm Elephant MultiSmart	94

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System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control STC 64mm Stud No Fill	Noise Control STC 64mm Stud Fill	Noise Control STC 102mm Stud No Fill	Noise Control STC 102mm Stud Fill	Lining Requirements	Page
Shaft Wall - Fire Rated from Shaft Side only									
E1SWS60	-M13	-/60/60	NLB	39	45	42	46	1 x 13mm Elephant MultiSmart	98
E2SWS90	-M26	-/90/90	NLB	43	49	46	50	2 x 13mm Elephant MultiSmart	98
E2SWS120	-FM29	-/120/120	NLB	44	50	46	51	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart	98
Shaft Wall - Fire Rated from Either Side									
E1SWE30	-M13	-/30/30	NLB	39	45	42	46	1 x 13mm Elephant MultiSmart	98
E2SWE60	-M26	-/60/60	NLB	43	49	46	50	2 x 13mm Elephant MultiSmart	98
E2SWE90	-FM29	-/90/90	NLB	44	50	46	51	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart	98
E3SWE120	-FM42	-/120/120	NLB	46	51	48	52	1 x 16mm Elephant FireSmart and 2 x 13mm Elephant MultiSmart	98
Elephant Shaft Panel									
Elephant Shaft Panel									96

Fire Rated Columns & Beams

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control STC	Noise Control Rw	Lining Requirements	Page
Steel Column & Beam - Timber Strapped							
E1CBT15	-S13	15/-/-	LB	-	-	1 x 13mm Elephant Standard	100
E1CBT30	-F16	30/-/-	LB	-	-	1 x 16mm Elephant FireSmart	100
E2CBT30	-S20	30/-/-	LB	-	-	2 x 10mm Elephant Standard-Plus	100
E2CBT60	-M26	60/-/-	LB	-	-	2 x 13mm Elephant MultiSmart	100
E2CBT90	-F32	90/-/-	LB	-	-	2 x 16mm Elephant FireSmart	100
E3CBT120	-MF45	120/-/-	LB	-	-	1 x 13mm Elephant MultiSmart and 2 x 16mm Elephant FireSmart	100
Steel Column & Beam - Steel Clip and Channel							
E1CBS15	-S13	15/-/-	LB	-	-	1 x 13mm Elephant Standard	102
E1CBS30	-F16	30/-/-	LB	-	-	1 x 16mm Elephant FireSmart	102
E2CBS30	-S20	30/-/-	LB	-	-	2 x 10mm Elephant Standard-Plus	102
E2CBS60	-M26	60/-/-	LB	-	-	2 x 13mm Elephant MultiSmart	102
E2CBS90	-F32	90/-/-	LB	-	-	2 x 16mm Elephant FireSmart	102
E3CBS120	-MF45	120/-/-	LB	-	-	1 x 13mm Elephant MultiSmart and 2 x 16mm Elephant FireSmart	102

INTRODUCTION

This manual provides details for construction of One way and Two way Fire Rated walls and floor/ceiling elements to provide fire protection as required by the NZBC clause C1 to C6 "Protection From Fire".

Elephant Plasterboard (NZ) Limited has many different combinations of wall and ceiling Fire Rated Systems. It is the responsibility of the specifier to accommodate the required performance of the building they are considering. The specifier should take into consideration both external and internal fire rating for occupants intended use. Special consideration must be taken in the construction process.

All construction details that have been provided in this manual are generic only and it is important that expert advice is seeked to determine suitability in each individual project

Limitations and Conditions of Use

- Elephant Plasterboard is intended for normal conditions of dry internal use.
- Elephant Plasterboard must not be used for bracing applications in or around baths and shower areas.
- Elephant Plasterboard must not be exposed to liquid water or be installed in situations where extended exposures to humidity above 90% Relative Humidity are to be expected. Bathrooms, kitchens and laundries should have adequate ventilation or heating to avoid condensation build-up.
- A suitable surface finish (e.g. Vinyl wallpaper or gloss and semi-gloss alkyd paints) must be applied to Elephant Plasterboard in all areas where liquid water or high humidity can be expected.
- Elephant Plasterboard must not be installed over a vapour barrier.
- Elephant Plasterboard must not be applied directly to masonry, concrete or solid plaster, unless timber strapping or steel furring channels are used.
- Elephant Plasterboard must not be exposed to temperatures of 52ºC or greater for prolonged periods.
- Elephant Plasterboard may not be used as an external lining.

New Zealand Building Code (NZBC) Compliance

Elephant Plasterboard is manufactured to AS/NZS 2588 and has been specifically formulated to meet New Zealand Building Code requirements. Elephant Plasterboard has been marketed internationally since 1975 and the product has established an excellent history of performance for its use in buildings throughout New Zealand and the Asia/Pacific region. Elephant Plasterboard meets the durability requirements of the NZBC and is subject to use, installation and maintenance in accordance with the instructions outlaid in this manual. The Manufacturing plant is International Standard ISO 9001 and ISO 14001 registered.

- **NZBC Clause B1 Structure:**
  Framing material specifications used with Elephant Plasterboard Systems must be in accordance with the performance requirements of NZBC Clause B1. Timber framed walls and floors must be installed and meet the requirements of NZS3604.
- **NZBC Clause B2 Durability:**
  Elephant Plasterboard Fire, Noise Control & Bracing Systems have a serviceable life of not less than 50 years and so is in accordance to NZBC B2.3.1.
- **NZBC Clause C1-C6 Protection from Fire:**
  Elephant Plasterboard Fire & Noise Control Systems can meet the requirements of providing passive fire protection as per NZBC Clause C1-C6.
- **NZBC Clause E3 Internal Moisture:**
  Elephant Plasterboard Wet Area Systems can meet the requirements of NZBC Acceptable Solution E3/AS1.
- **NZBC Clause F2 Hazardous Building Materials:**
  Elephant Plasterboard Systems meet this requirement of NZBC Clause F2 and will not present a health hazard to people.
- **NZBC Clause G6 -Airborne & Impact Sound:**
  Elephant Plasterboard Noise Control Systems entitled 'Full Intertenancy' (STC 55 or greater) systems meet the requirements of NZBC Clause G6.

INTRODUCTION

Fire Resistance Ratings (FRR)

To prevent fire spread or structural collapse, the Acceptable Solutions require building elements to have fire resistance ratings (FRR). The level of FRR required depends on the risk group of the building. The way to determine the FRR of building elements is by using the standard tests specified in Appendix C of the Acceptable Solutions.

FRR components

An FRR comprises three numbers: these give time values in minutes for structural adequacy, integrity and insulation. E.g. --/60/60 (a/b/c). Primary and secondary elements required to have an FRR will, depending on their function, need to satisfy one or more of these three criteria as follows:

a) **Structural Adequacy**: usually provided by primary elements within a fire cell. These include building elements which are part of the structure, and those providing support to other elements with an FRR within the same or adjacent fire cells. Examples are: columns, beams, floors and walls (which may also be fire separations). Paragraph 4.3 of the Acceptable Solutions describes special situations where primary elements need not have an FRR.

b) **Integrity**: usually provided by secondary elements. Examples are fire separations, which are internal partitions and floors, areas of external walls not permitted to be an unprotected area, and some areas of roofs when close to another building or crossed by an exit way. Primary elements forming an integral part of a fire separation are also rated for integrity.

c) **Insulation**: applies to fire separations and is required where the transmission of heat through the element may endanger occupants on the other side or cause fire to spread to other fire cells or adjacent buildings. For example, insulation is necessary for fire separations between sleeping spaces, where protecting a safe path or through external walls.

Elephant Plasterboard Fire Rated Systems meet the requirements of the above clauses and definitions and have numerous systems combinations as outlined in this manual. All Elephant Plasterboard Fire Rated systems have been tested or have opinions, provided by independent accredited quality assurance organisations like "The Building Research Association of New Zealand (BRANZ)".

Internal Lining Surface Finish Properties

Elephant Plasterboard has been tested at BRANZ in accordance with ISO 5660 Reaction to fire tests (Heat release, smoke production and mass loss rate) Part 1: Heat release rate (cone calorimeter method); and ISO 5660 Reaction to fire tests (Heat release, smoke production and mass loss rate) Part 2: Smoke production rate (dynamic measurement).

A Group Number Classification of 1-S was achieved in Fire test FH 5695-TT for all Elephant Plasterboard paper faced sheet linings. This classification only applies to Elephant Plasterboard paper faced sheet linings without paint or wallpaper finish. Contact the surface finish suppliers for group number information for their products.

'Group Number 1-S' is the highest performance expectation under 'Part 4. Control of Internal Fire and Smoke Spread' clause C/AS2 to C/AS7 of the NZBC. It means an Elephant Plasterboard paper faced sheet lining can be specified for use in any risk group application.

Fire Rated Walls

Elephant Plasterboard Fire Rated Systems have been tested on timber & steel frame walls, either as Load Bearing (LB) or Non Load Bearing.

Timber Frame

Stud heights, stud spacings, load and framing dimensions for Load Bearing (LB) or Non Load Bearing (NLB) Timber framed walls are determined by the NZBC, and NZS3604. Heights greater than what is defined in NZS3604 will need specific design by a structural engineer.

Steel Frame

Stud heights, stud spacings, load and framing dimensions for Load Bearing (LB) or Non Load Bearing (NLB) Steel framed walls need consultation with the framing supplier or fire engineer for fire design serviceability criteria.

General

Maximum spacing of studs 600mm centres. Wall linings must be mechanically fixed. Glue may not be substituted for mechanical fixing if used in a passive fire system. Screw lengths, spacings and type as defined by this manual must be used. Sheet edges must be fixed over studs when placed vertically or over solid blocking when placed horizontally. All outer layers must be stopped to a minimum level 3 stopping (refer to Elephant Plasterboard Installation Guide). Ensure the outer wall sheet is staggered minimum 300mm centres from the first sheet and that it is placed behind an adjacent stud. If a fire rated sealant is required ensure that the sealant is of the same FRR as the specified system in use and that it has been independently tested.

Fire Resistance of Clad Walls

External Walls

When using Elephant Plasterboard externally for a fire system, the board should be protected by a suitable weathertight cladding.

Elephant Plasterboard's FRR remains unaffected by the external cladding, provided the exterior cladding complies with NZBC Clause C1-6 protection of fire and in particular It is also important to consider that the fire properties of the external cladding is in accordance with NZBC C/VM1 or C/AS documents. Refer to Table 5.1 of Section 5.4 of C/AS1 and Table 5.5 of Section 5.8.1 of C/AS2 for the information about various risk groups to identify the external fire spread safety requirement applicable to the exterior surface finishes.

External cladding systems must comply with NZBC E2/AS1.

All external walls must have a flexible underlay or a rigid air barrier and be installed with a drained cavity.

Internal or External Walls

Elephant Plasterboard joints and screw heads may be left unstopped if the wall is clad with one of the following materials:

- Timber or wood based products
- Fibre Cement sheeting
- Steel sheeting (flat or profiled)
- EIFS (Exterior insulation and finish systems)

Internal Walls

- All the above
- 10mm or thicker plasterboard of any type

Structural Steel Members located inside cavities of Two way Fire Rated Wall or Floor/Ceiling systems

Structural steel members such as columns or beams are sometimes located inside the cavities of two way fire rated wall or floor/ceiling systems. The FRR of the two way fire rated system applies across the entire element, from exposed side to the unexposed side. The temperature inside the cavity can rise above the critical temperature level for structural steel members resulting in premature buckling. Therefore by containing a structural steel member within a two way fire system, it cannot be automatically assumed that the structural steel member will maintain it's structural integrity of the two way fire system within which it is contained. Hence, reference should be made to the column and beam section oin this manual for further information on protection of structural steel members.

Universal Walls (One Way FRR Systems)

Elephant Plasterboard Fire Rated systems may be used for a Universal wall. By definition a Universal wall is a wall that is further away than a boundary wall i.e. greater than 1.0 meter. Cladding is a requirement. Note limitations in each fire system in regard to cladding that contain foamed polymers.

Walls closer than 1 metre generally need to be Two Way FRR systems and require a suitable fire rated cladding or plasterboard on the exterior and then a suitable water tight cladding system over the top. (See Boundary Walls section) .

The building code (NZBC) under C2 part 5.2 and tables 5.2 and 5.3 stipulates distances from a delineated boundary and recommends the required fire protection as a percentage of exposed property wall. FRR ratings are required for Structural Adequacy and Integrity. Insulation to the wall is not considered, as fire penetration will spread to the exterior walls through windows and unprotected FRR walls.

Elephant QuickBrace System

The bracing systems specified in the Elephant QuickBrace Systems Manual can easily be combined with the Elephant Fire Rated Systems by adhering to the details outlined for the relevant Bracing system type and relevant Fire Rated System requirements.
For Single layered Fire Rated systems, use the QuickBrace fastening pattern and the required screw length of the Fire Rated Systems.
For Double layered Fire Rated systems, the bracing sheet can be either:

- The Inner sheet fixed directly to the framing. Use the QuickBrace fastening pattern and the required screw length of the Fire Rated System. The inner layer can be left unstopped; or
- The Outer sheet. Use the QuickBrace fastening pattern and the required screw length of the Fire Rated System.

For Resilient Rail or Resilient Mount systems, only single sided bracing systems can be used e.g. ER1, ES-N, ES-H and EM-H. The bracing sheet must be placed directly against the framing and not on the rail or mount side. Use the QuickBrace fastening pattern and the required screw length of the Fire Rated System.

Fire Rated Floor/Ceiling

Elephant Plasterboard Fire Rated Systems have been tested on Load bearing floor/ceiling systems. Refer to this manual for fixings and layer combinations. Ceiling linings must be mechanically fixed. Glue may not be substituted for mechanical fixing if used in a passive fire system. Screw lengths, spacings and type as defined by this manual must be used.

Timber & Composite Joists

Floor/ceiling system as defined in NZS3604 for floor loadings (2.0 kPa or 3.0 kPa) may be used. Consult NZS 3604 latest edition for floor joist spans. Floor joists must have a minimum of 190mm depth x 45mm width and a maximum spacing of 600mm centres. Alternatively, proprietary composite joist systems may be used. Consult the appropriate supplier's technical information for design strength and serviceability.

Steel Joists

Steel floor joists shall be a minimum depth of 190mm C- section with 45mm flanges and a steel gauge of 1.6mm minimum. Joists to be spaced at no more than 600mm centres.

Flooring

Floor/Ceiling system must have a floor that is at least 20mm thick particle board complying with AS/NZS 1860 Part 1: 2017 or minimum 17mm thick structural ply complying with AS/NZS 2269 Part 0: 2012 fixed to the floor joists as per manufacturer's installation instructions.

Existing Tongue & Groove flooring of minimum 20mm thickness that is tight and in good condition is also allowed.

Suspended Grid Ceiling

Rondo® KEY-LOCK™ steel frame suspension system comprising 2.5mm wire hangers spaced at 1200mm centres may be used. Supporting strong back channels to be spaced at a minimum of 1200mm centres and furring channels to be spaced at a maximum of 600mm centres. Refer to "Rondo Drywall Grid Suspension System" installation manual. Any alternative suspension system with at least equivalent layout and material properties, strength and stiffness may also be used.

Universal Ceiling Systems(One Way FRR)

Elephant Plasterboard Fire Rated systems may be used as a Universal ceiling system. By definition a Universal ceiling system is a ceiling without a floor above. Universal ceiling systems are usually ceiling joists, rafters and bottom cords of a truss roof. Universal ceiling systems can be either timber or steel with or without battens, may have a suspended clip system with timber or steel battens secured to the bottom of the universal ceiling. Refer to this manual for exact fixings and layer combinations.

Acoustic Sealant

In order to achieve the published STC performances in this manual, a bead of acoustic sealant must be placed around the perimeter of the framing or the inner layer and the outer layer is bedded into the bead.

Impact Insulation Class

The IIC rating stated in the Elephant plasterboard floor/ceiling systems are based on a bare floor finish.

Load Bearing Steel Studs

The steel frame design shall meet the structural criteria for strength and serviceability under dead and live loads. Frame heights, stud spacings and stud type are determined by specific engineering design. Stud spacings shall be 600 centres maximum. Stud width shall be 35mm minimum. Refer to the relevant sections of this Manual, in order to obtain the lining requirements to achieve the equivalent FRR of load bearing steel stud walls.

Non Load Bearing Steel Studs

Specific design for serviceability and fire design criteria is required for greater wall heights than the limit stated in the relevant systems of this Manual. Consult the framing manufacturer for the serviceability design criteria. Nogs in accordance with the framing supplier.

Product & Component Substitution

When a product specified in a system as per this manual is substituted, the performance of the system will be compromised. Therefore the materials specified in the system must not be substituted. Elephant Plasterboard (NZ) Limited does not take any liability if substitution of components are implemented in any Elephant Plasterboard Systems without consultation.

Plasterboard Substitution Options

The table below indicates which products can substitute the original plasterboard type specified.

✓ indicates that the FRR performance will be maintained
X indicates that the FRR performance will be lower and so therefore the substitution is not allowed

Original Elephant Plasterboard specified	FRR performance						
	Standard-Plus	Standard	MultiSmart		AquaSmart		FireSmart
	10mm	13mm	10mm	13mm	10mm	13mm	16mm
10mm Standard-Plus	-	✓	✓	✓	✓	✓	✓
13mm Standard	X	-	✓	✓	✓[1]	✓	✓
10mm MultiSmart	X	X	-	✓	✓[1]	✓	✓
13mm MultiSmart	X	X	X	-	X	✓[1]	✓
16mm FireSmart	X	X	X	X	X	X	-

Note 1 : See table below for STC reduction when substituting

The table below details the reduction in STC performance when substituting original specified plasterboard with AquaSmart

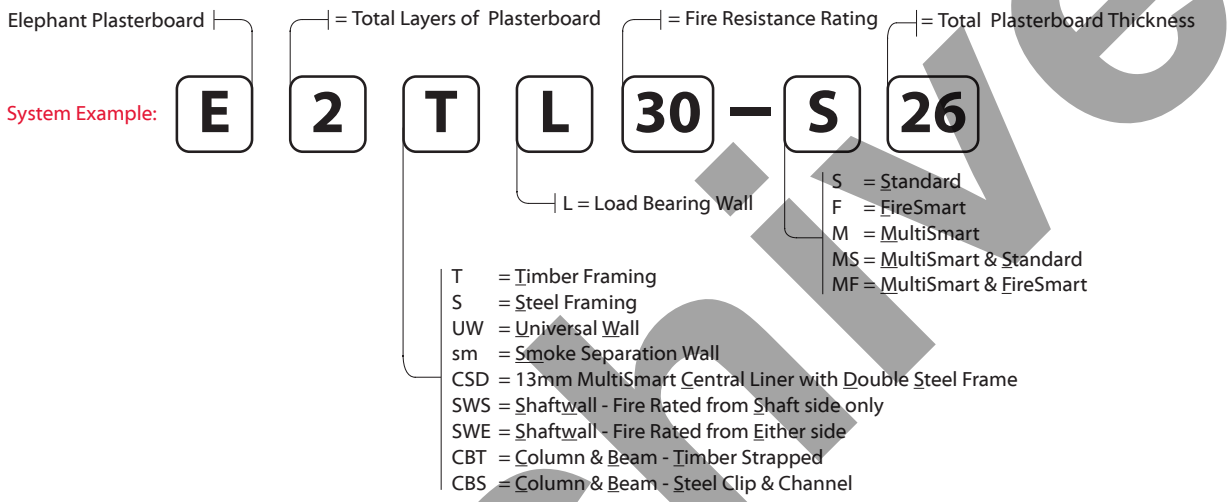
✓ indicates that the FRR & STC performance will be maintained
X indicates that the FRR performance will be lower and so therefore the substitution is not allowed

Original Elephant Plasterboard specified	STC performance			
	10mm AquaSmart		13mm AquaSmart	
	Single layer One side	Single Layer Both sides	Single layer One side	Single Layer Both sides
10mm Standard-Plus	✓	✓	✓	✓
13mm Standard	Reduced by 1 STC	Reduced by 2 STC	✓	✓
10mm MultiSmart	Reduced by 1 STC	Reduced by 2 STC	✓	✓
13mm MultiSmart	X	X	Reduced by 1 STC	Reduced by 2 STC

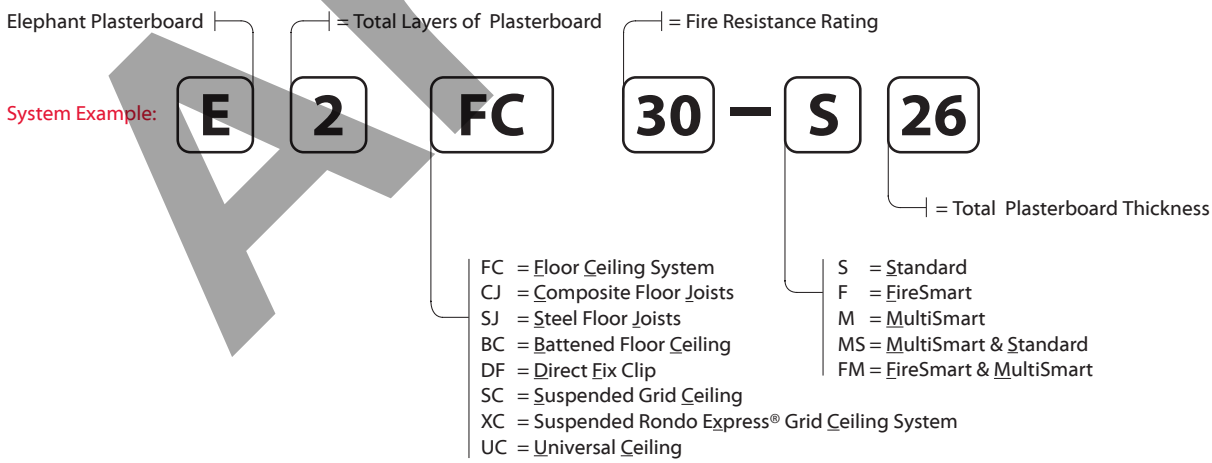
Nomenclature:

Elephant Specification Reference

Wall Systems



Floor/Ceiling Systems



E2TL30 Single Timber Frame | Load Bearing | Two Way FRR

2 Layers: 1 Layer of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E2TL30	-S20	30/30/30	LB	37	36	1 x 10mm Elephant Standard-Plus on One side 1 x 10mm Elephant Standard-Plus to Other side
	-S26	30/30/30	LB	37	36	1 x 13mm Elephant Standard on One side 1 x 13mm Elephant Standard to Other side

Framing

Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 1200mm centre maximum.

Wall Height, Load and Framing Dimensions

These are determined by NZS 3604 stud tables for load bearing or non-load bearing partitions.

Plasterboard Lining

One layer of Elephant Plasterboard lining as per specified system above on each side of the timber framing.

Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

For Horizontal Fixing- the horizontal sheet joints on the opposite side of the frame can be formed over the same row of nogs.

Sheet end butt joints- must be formed over framing, offset from opposite side of the frame.

All sheet joints must be fixed over solid timber framing.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners (As per Specified System Above)

System Number	Side One	Side Two
	High Thread Drywall Screws	
E2TL30-S20	10mm	10mm
	41 x 6g	41 x 6g
E2TL30-S26	13mm	13mm
	41 x 6g	41 x 6g

Fastener Centres

Fix at 300mm centres at sheet perimeters, on top and bottom plates and 300mm centres up all studs.

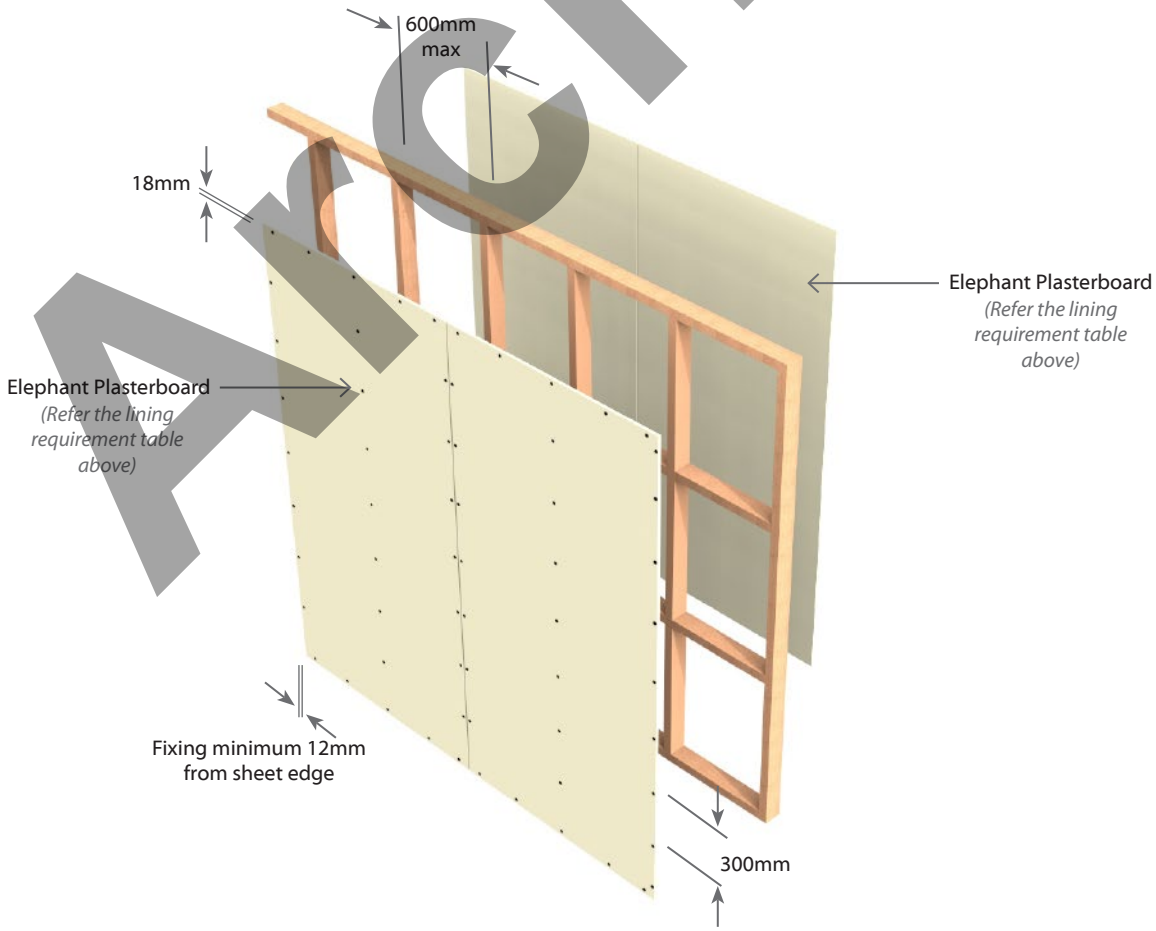
Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

Place fasteners at 200mm centres where sheet end butt joints occur.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E4TL45 Single Timber Frame | Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4TL45	**-S40**	45/45/45	LB	42	41	2 x 10mm Elephant Standard-Plus on One side 2 x 10mm Elephant Standard-Plus to Other side

Framing

Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 1200mm centre maximum.

Wall Height, Load and Framing Dimensions

These are determined by NZS3604 stud tables for load bearing or non-load bearing partitions.

Plasterboard Lining

Two layers of 10mm Elephant Standard-Plus lining on each side of the timber framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame and staggered between layers.

For Horizontal Fixing- the horizontal sheet joints on the opposite side of the frame can be formed over the same row of nogs and must be staggered between layers.

Optionally, inner layers can be fixed vertically and outer layers fixed horizontally.

Sheet end butt joints- must be formed over framing, offset from opposite side of the frame and staggered between layers.

All sheet joints must be fixed over solid timber framing.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	High Thread Drywall Screws			
E4TL45-S40	10mm	10mm	10mm	10mm
	41 x 6g	51 x 7g	41 x 6g	51 x 7g

Fastener Centres

Inner Layer: Fix 600mm centres at sheet perimeters and on top and bottom plates. Fix at 600mm up each stud.

Outer Layer: Fix at 300mm centres at sheet perimeters and on top and bottom plates and 300mm centres up each stud.

Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

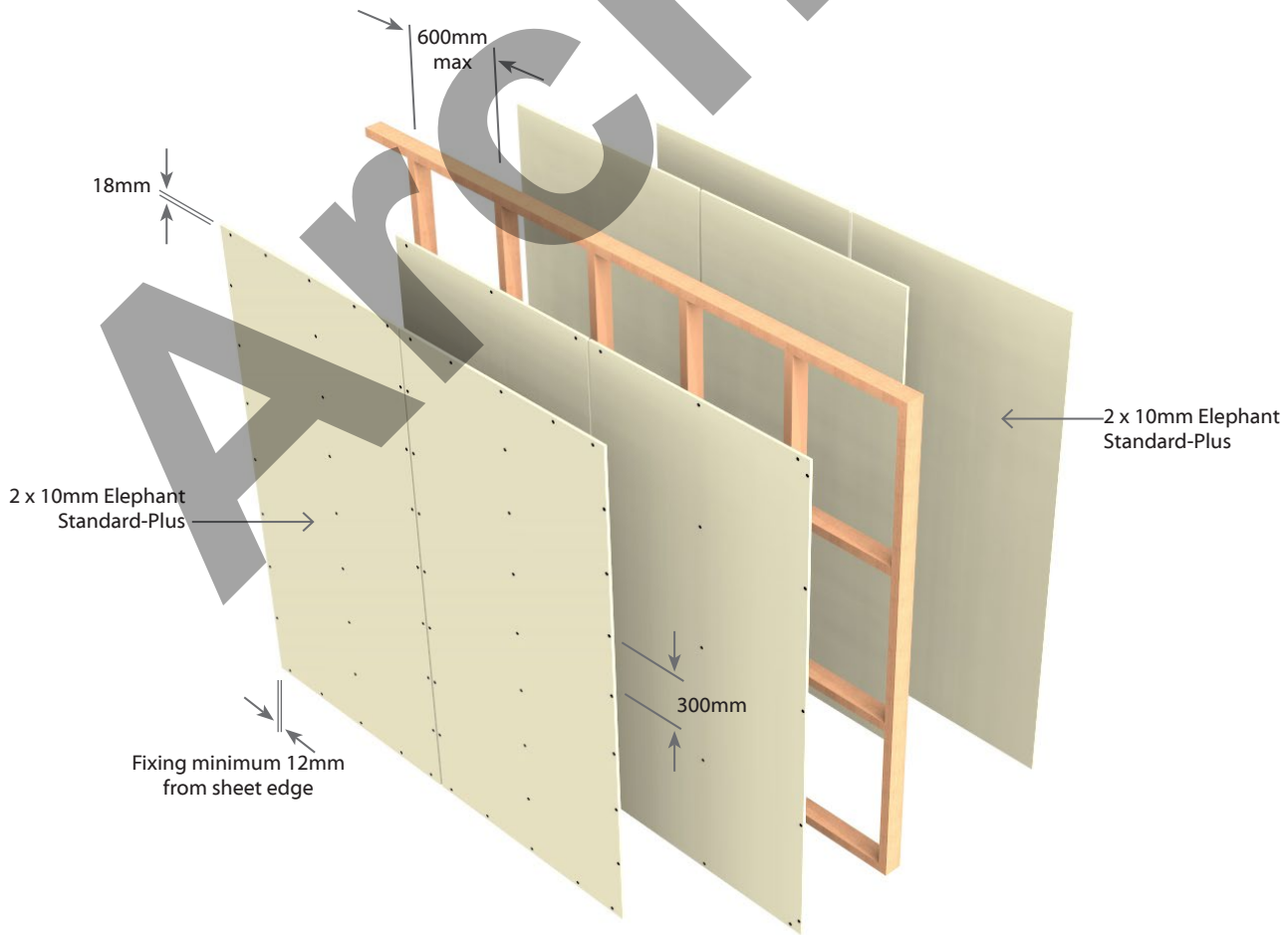
Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing

Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E4T60 Single Timber Frame | Non Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4T60	**-S40**	---/60/60	NLB	42	41	2 x 10mm Elephant Standard-Plus on One side 2 x 10mm Elephant Standard-Plus to Other side

Framing

Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 1200mm centre maximum.

Wall Height, Load and Framing Dimensions

These are determined by NZS3604 stud tables for non-load bearing partitions.

Plasterboard Lining

Two layers of 10mm Elephant Standard-Plus lining on each side of the timber framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame and staggered between layers.

For Horizontal Fixing- the horizontal sheet joints on the opposite side of the frame can be formed over the same row of nogs and must be staggered between layers.

Optionally, inner layers can be fixed vertically and outer layers fixed horizontally.

Sheet end butt joints- must be formed over framing, offset from opposite side of the frame and staggered between layers.

All sheet joints must be fixed over solid timber framing.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	High Thread Drywall Screws			
E4T60-S40	10mm	10mm	10mm	10mm
	41 x 6g	51 x 7g	41 x 6g	51 x 7g

Fastener Centres

Inner Layer: Fix 600mm centres vertically up each stud and 600mm horizontally along top and bottom plate.

Outer Layer: Fix at 300mm centres at sheet perimeter and 300mm centres on all other studs.

Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

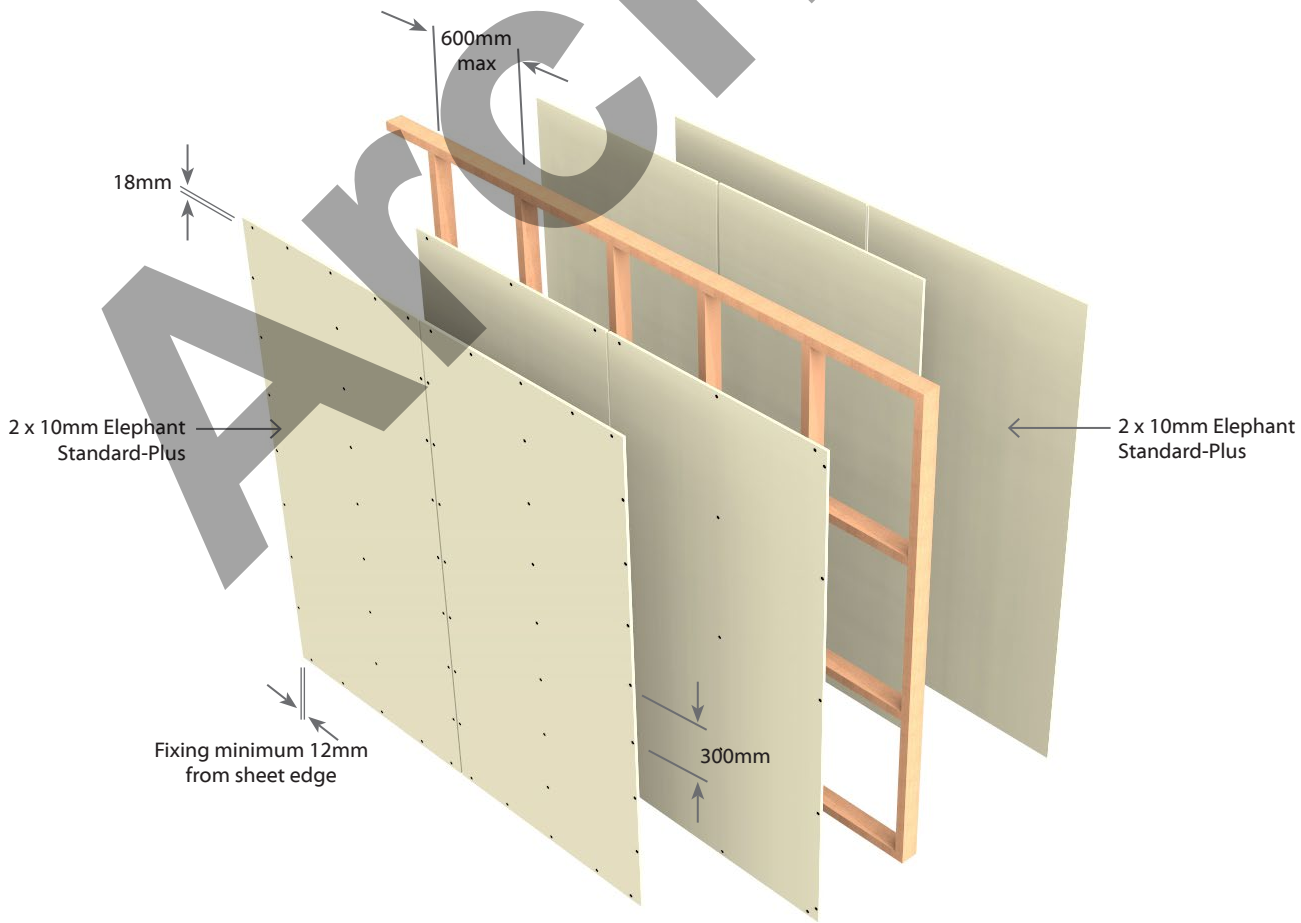
Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing

Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E2TL60 Single Timber Frame | Load Bearing | Two Way FRR

2 Layers: 1 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E2TL60	**-M26**	60/60/60	LB	38	37	1 x 13mm Elephant MultiSmart on One side 1 x 13mm Elephant MultiSmart to Other side

Framing

Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 1200mm centre maximum.

Wall Height, Load and Framing Dimensions

These are determined by NZS3604 stud tables for load bearing or non-load bearing partitions.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart lining on each side of the timber framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

For Horizontal Fixing- the horizontal sheet joints on the opposite side of the frame can be formed over the same row of nogs.

Sheet end butt joints- must be formed over framing, offset from opposite side of the frame.

All sheet joints must be fixed over solid timber framing.
Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One	Side Two
	High Thread Drywall Screws	
E2TL60-M26	13mm	13mm
	41 x 6g	41 x 6g

Fastener Centres

Fix at 300mm centres at sheet perimeters and on top and bottom plates. And 300mm centres up all studs.

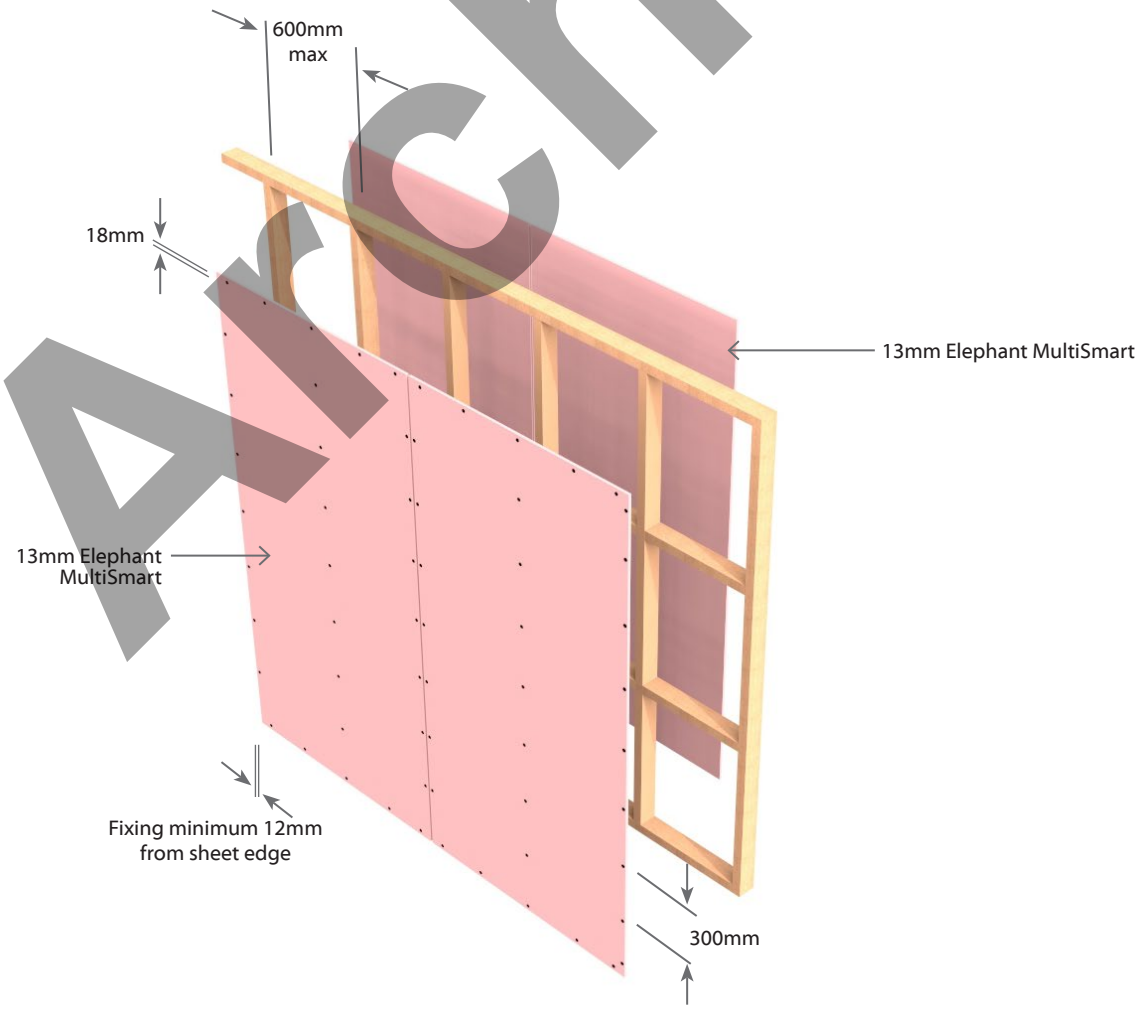
Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

Place fasteners at 200mm centres where sheet end butt joints occur.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E4TL60 Single Timber Frame | Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4TL60	-S46	60/60/60	LB	42	41	1 x 10mm and 1 x 13mm Standard on One side 1 x 10mm and 1 x 13mm Standard on Other side
	-MS40	60/60/60	LB	42	41	1 x 10mm Standard-Plus and 1 x 10mm MultiSmart on One side 1 x 10mm Standard-Plus and 1 x 10mm MultiSmart on Other side
	-S52	60/60/60	LB	43	42	2 x 13mm Elephant Standard on One side 2 x 13mm Elephant Standard to Other side

Framing

Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 1200mm centre maximum.

Wall Height, Load and Framing Dimensions

These are determined by NZS3604 stud tables for load bearing or non-load bearing partitions.

Plasterboard Lining

Two layers of Elephant Plasterboard lining as per specified system above on each side of the timber framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame and staggered between layers.

For Horizontal Fixing- the horizontal sheet joints on the opposite side of the frame can be formed over the same row of nogs and must be staggered between layers.

Optionally, inner layers can be fixed vertically and outer layers fixed horizontally.

Sheet end butt joints- must be formed over framing, offset from opposite side of the frame and staggered between layers.

All sheet joints must be fixed over solid timber framing.
Sheets shall be touch fitted.

Fixing of Linings

Fasteners (As per Specified System Above)

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	High Thread Drywall Screws			
E4TL60-S46	10mm	13mm	10mm	13mm
	41 x 6g	51 x 7g	41 x 6g	51 x 7g
E4TL60-MS40	10mm	10mm	10mm	10mm
	41 x 6g	51 x 7g	41 x 6g	51 x 7g
E4TL60-S52	13mm	13mm	13mm	13mm
	41 x 6g	51 x 7g	41 x 6g	51 x 7g

Fastener Centres

Inner Layer: Fix 600mm centres at sheet perimeters and on top and bottom plates. Fix at 600mm up each stud

Outer Layer: Fix at 300mm centres at sheet perimeters and on top and bottom plates and 300mm centres up each stud.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

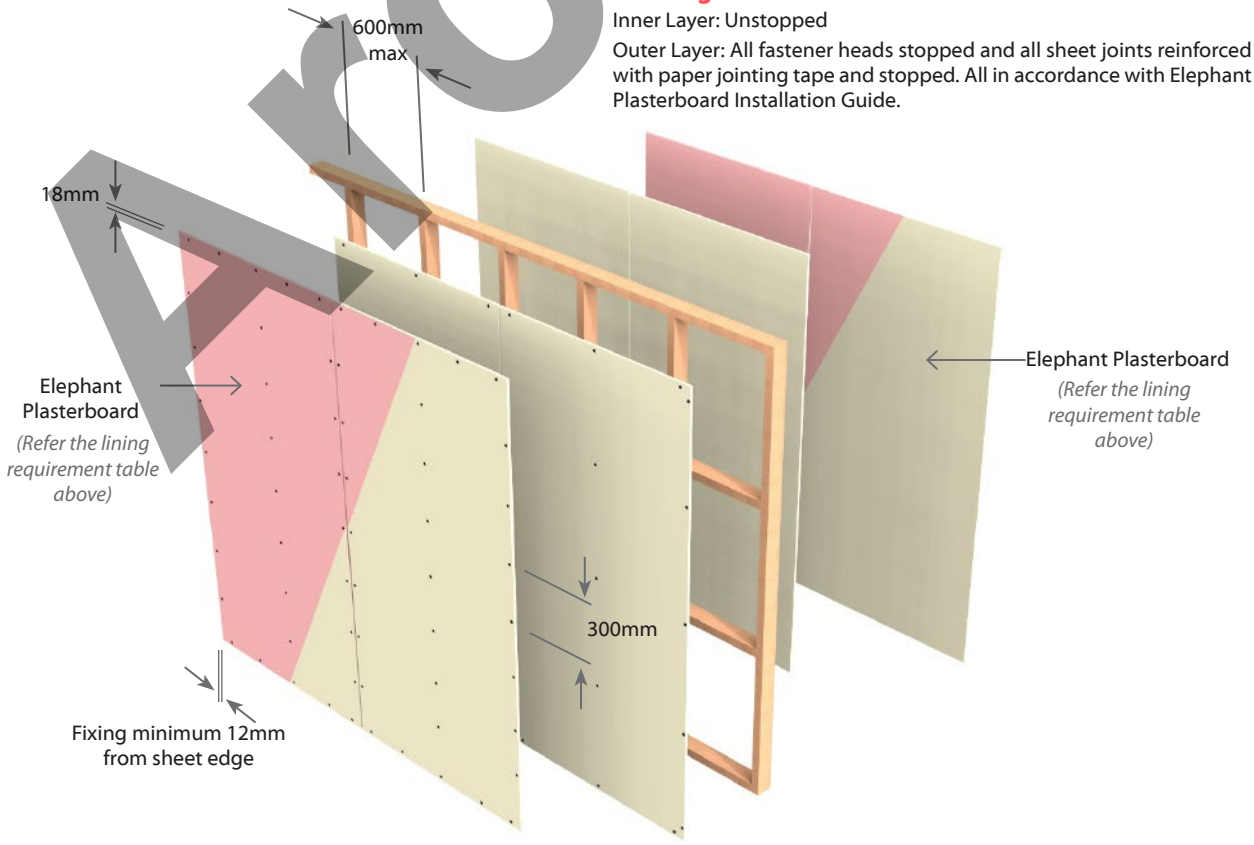
Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing

Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E2TL75 Single Timber Frame | Load Bearing | Two Way FRR

2 Layers: 1 Layer of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E2TL75	**-F32**	75/75/75	LB	38	37	1 x 16mm Elephant FireSmart on One side 1 x 16mm Elephant FireSmart to Other side

Framing

Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 1200mm centre maximum.

Wall Height, Load and Framing Dimensions

These are determined by NZS3604 stud tables for load bearing or non-load bearing partitions.

Plasterboard Lining

One layer of 16mm Elephant FireSmart lining on each side of the timber framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

For Horizontal Fixing- the horizontal sheet joints on the opposite side of the frame can be formed over the same row of nogs.

Sheet end butt joints- must be formed over framing, offset from opposite side of the frame.

All sheet joints must be fixed over solid timber framing.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One	Side Two
	High Thread Drywall Screws	
E2TL75-F32	16mm	16mm
	51 x 7g	51 x 7g

Fastener Centres

Fix at 300mm centres around sheet perimeter and up all intermediate studs.

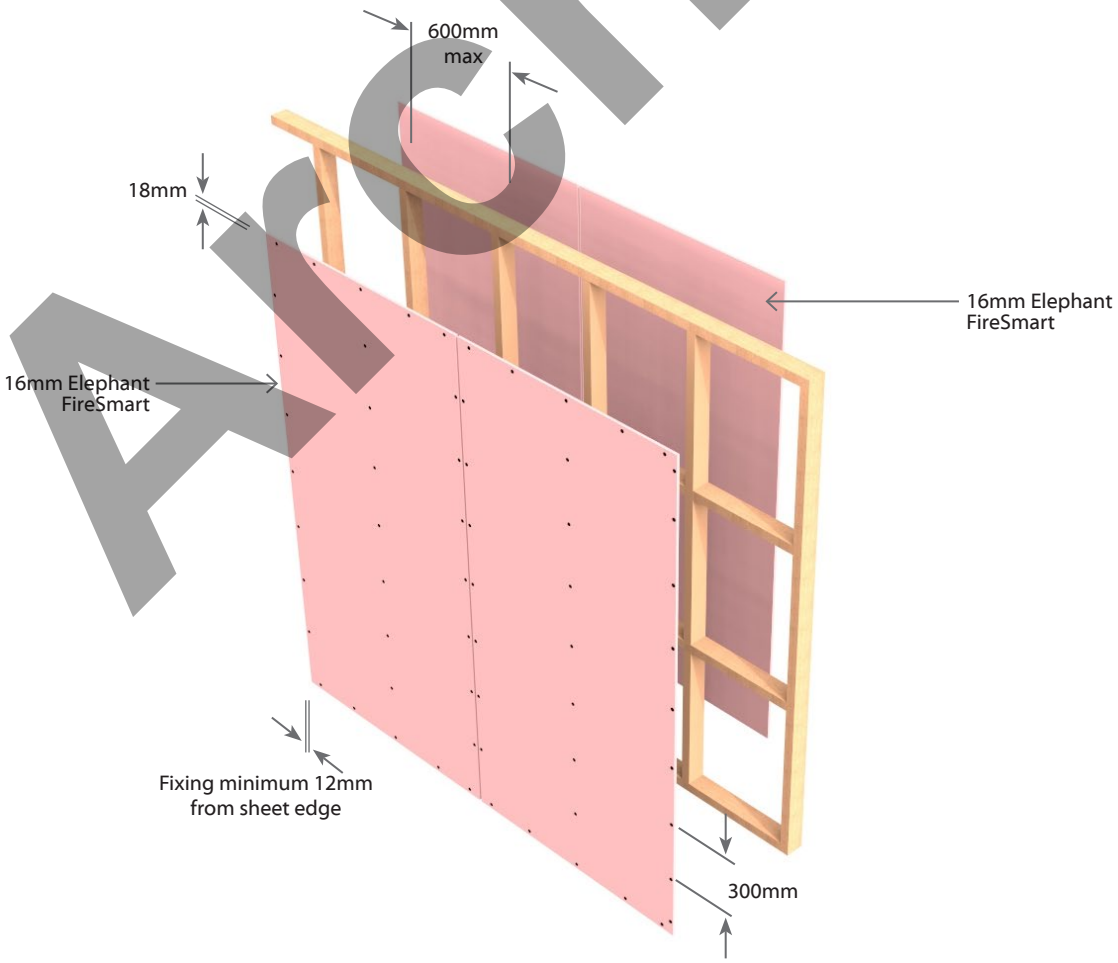
Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

Place fasteners at 200mm centres where sheet end butt joints occur.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E4T90 Single Timber Frame | Non Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4T90	-MS52	---/90/90	NLB	43	42	1 x 13mm Elephant MultiSmart and 1 x 13mm Standard on One side 1 x 13mm Elephant MultiSmart and 1 x 13mm Standard to Other side
	-M46	---/90/90	NLB	43	42	1 x 13mm Elephant MultiSmart and 1 x 10mm MultiSmart on One side 1 x 13mm Elephant MultiSmart and 1 x 10mm MultiSmart to Other side

Framing

Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 1200mm centre maximum.

Wall Height, Load and Framing Dimensions

These are determined by NZS3604 stud tables for non-load bearing partitions.

Plasterboard Lining

Two layers of Elephant Plasterboard lining as per specified system above on each side of the timber framing.

Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame and staggered between layers.

For Horizontal Fixing- the horizontal sheet joints on the opposite side of the frame can be formed over the same row of nogs and must be staggered between layers.

Optionally, inner layers can be fixed vertically and outer layers fixed horizontally.

Sheet end butt joints- must be formed over framing, offset from opposite side of the frame and staggered between layers.

All sheet joints must be fixed over solid timber framing.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	High Thread Drywall Screws			
E4T90-MS52	13mm	13mm	13mm	13mm
	41 x 6g	51 x 7g	41 x 6g	51 x 7g
E4T90-M46	13mm	10mm	13mm	10mm
	41 x 6g	51 x 7g	41 x 6g	51 x 7g

Fastener Centres

Inner Layer: Fix 600mm centres vertically up each stud and 600mm horizontally along top and bottom plate.

Outer Layer: Fix at 300mm centres at sheet perimeter and 300mm centres on all other studs.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

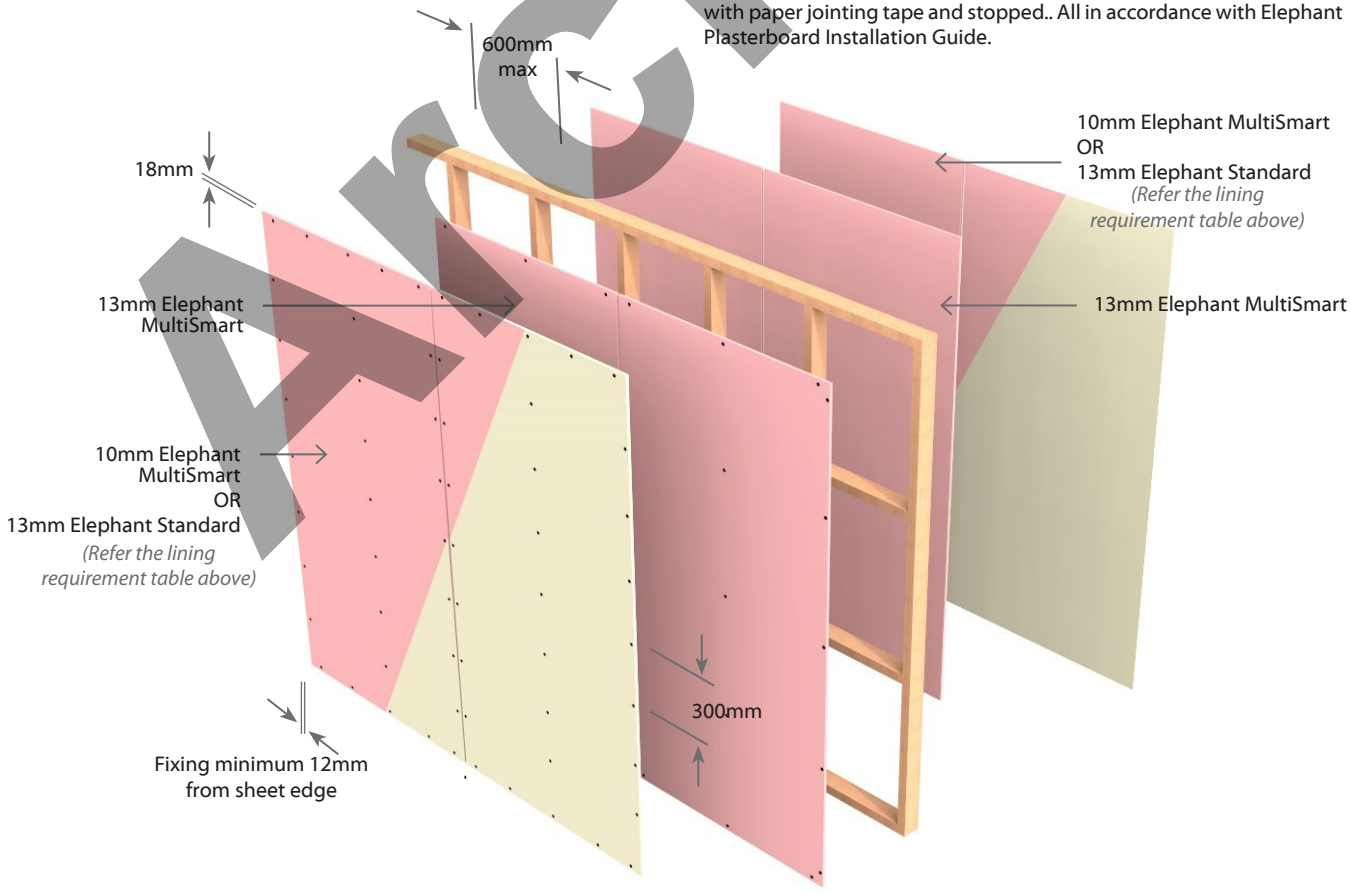
Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing

Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped.. All in accordance with Elephant Plasterboard Installation Guide.



E4TL90 Single Timber Frame | Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4TL90	**-M52**	90/90/90	LB	45	44	2 x 13mm Elephant MultiSmart on One side 2 x 13mm Elephant MultiSmart to Other side

Framing
Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 1200mm centre maximum.

Wall Height, Load and Framing Dimensions
These are determined by NZS3604 stud tables for load bearing or non-load bearing partitions.

Plasterboard Lining
Two layers of 13mm Elephant MultiSmart lining on each side of the timber framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame and staggered between layers.

For Horizontal Fixing- the horizontal sheet joints on the opposite side of the frame can be formed over the same row of nogs and must be staggered between layers.

Optionally, inner layers can be fixed vertically and outer layers fixed horizontally.

Sheet end butt joints- must be formed over framing, offset from opposite side of the frame and staggered between layers.

All sheet joints must be fixed over solid timber framing.

Sheets shall be touch fitted.

Fixing of Linings
Fasteners

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	High Thread Drywall Screws			
E4TL90-M52	13mm 41 x 6g	13mm 51 x 7g	13mm 41 x 6g	13mm 51 x 7g

Fastener Centres

Inner Layer: Fix 600mm centres at sheet perimeters and on top and bottom plates. Fix at 600mm up each stud.

Outer Layer: Fix at 300mm centres at sheet perimeters and on top and bottom plates and 300mm centres up each stud.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

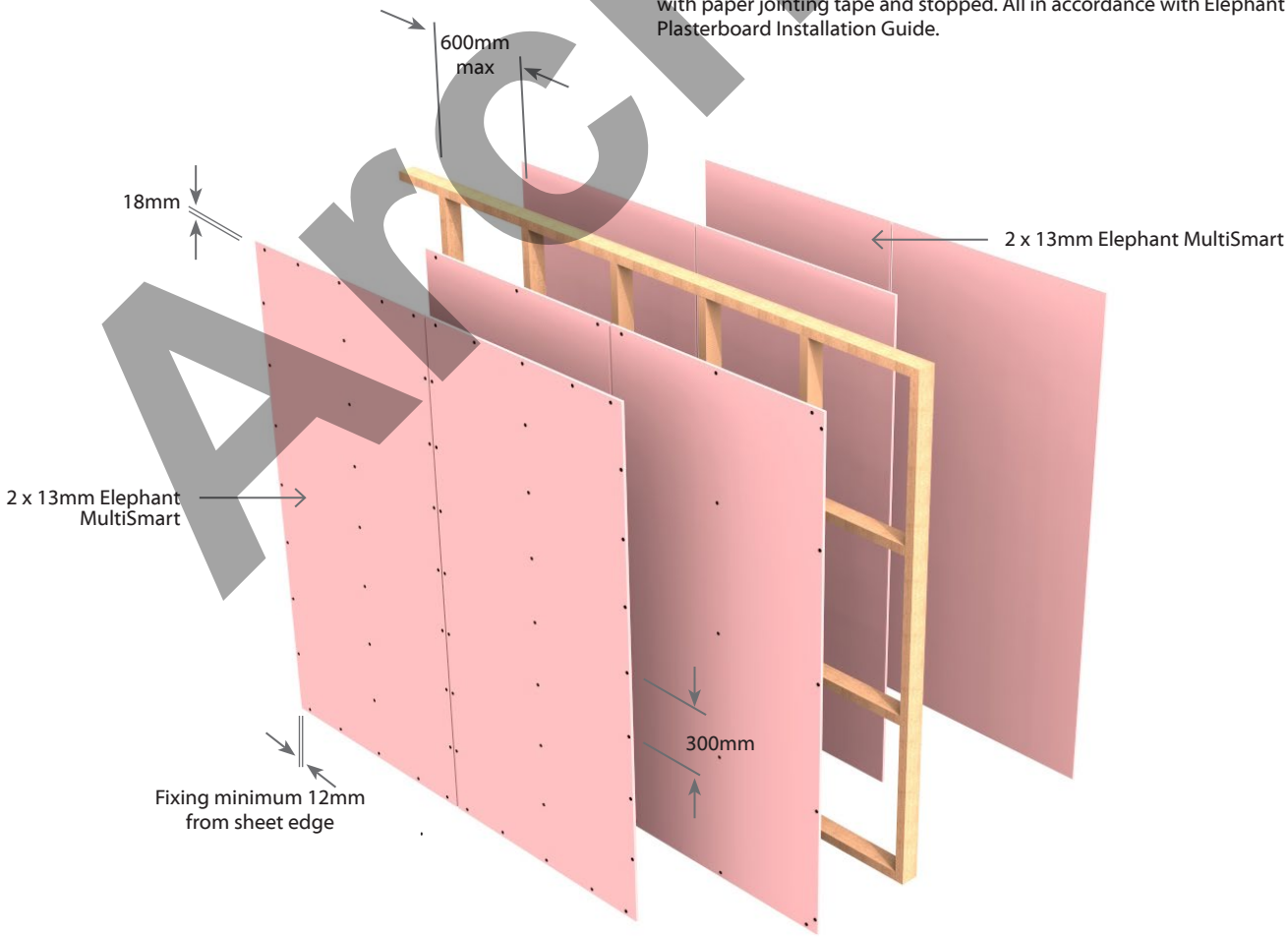
Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing
Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E4T120 Single Timber Frame | Non Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4T120	**-FM58**	---/120/120	NLB	46	45	1 x 16mm FireSmart and 1 x 13mm Elephant MultiSmart on One side 1 x 16mm FireSmart and 1 x 13mm Elephant MultiSmart to Other side

Framing
Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 800mm centre maximum.

Wall Height, Load and Framing Dimensions
These are determined by NZS3604 stud tables for non-load bearing partitions.

Plasterboard Lining
One layer of 16mm Elephant FireSmart & One layer of 13mm Elephant MultiSmart lining on each side of the timber framing.

Vertical fixing only permitted. Use full height sheets where possible.

Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame and staggered between layers.

Sheet end butt joints- must be formed over framing, offset from opposite side of the frame and staggered between layers.

All sheet joints must be fixed over solid timber framing.

Sheets shall be touch fitted.

Fixing of Linings
Fasteners

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	High Thread Drywall Screws			
E4T120-FM58	16mm	13mm	16mm	13mm
	41 x 6g	51 x 7g	41 x 6g	51 x 7g

Fastener Centres

Inner Layer: Fix 600mm centres vertically up each stud and 600mm horizontally along top and bottom plate.

Outer Layer: Fix at 300mm centres at sheet perimeter and 300mm centres on all other studs.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

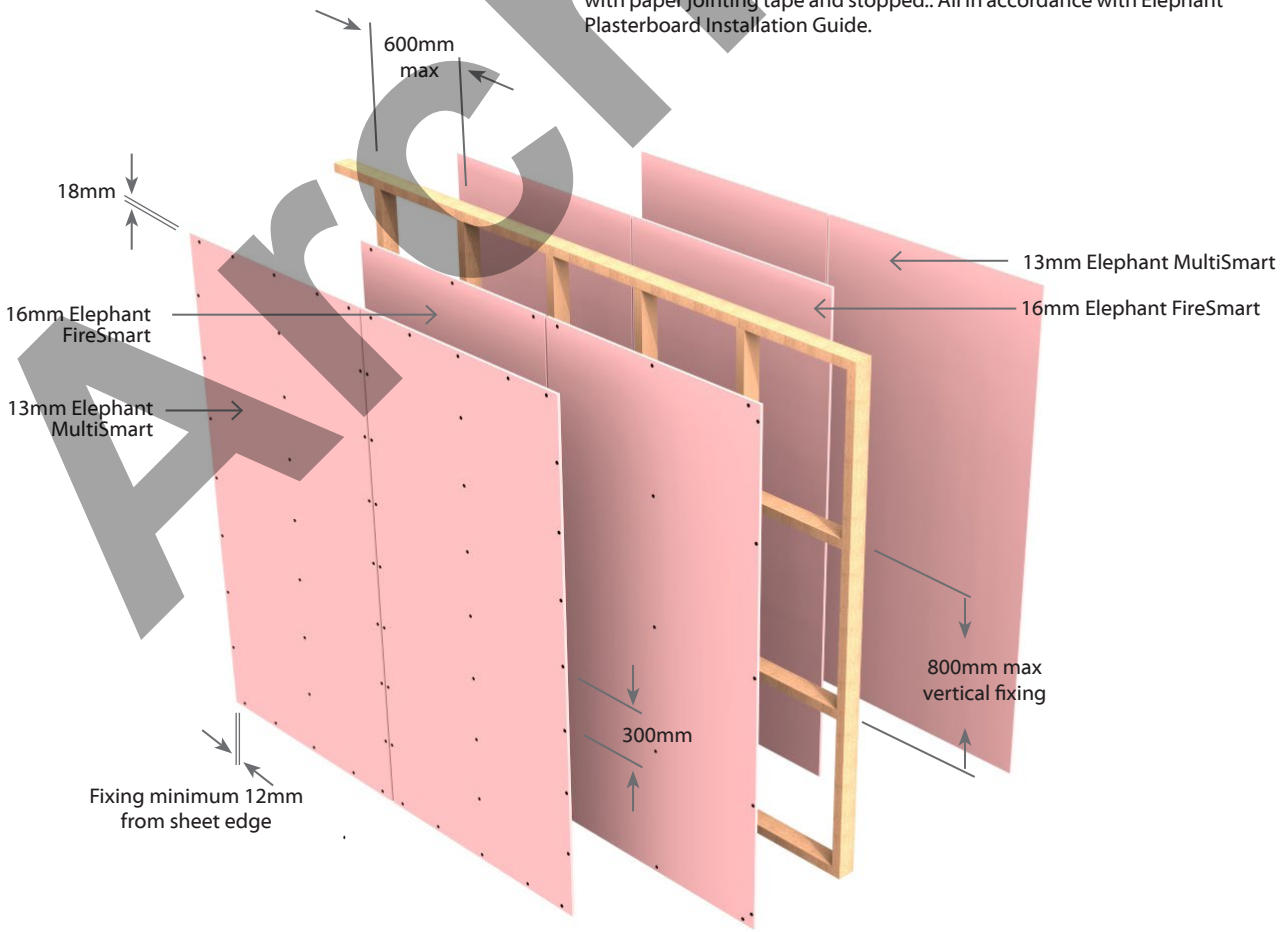
Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing
Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped.. All in accordance with Elephant Plasterboard Installation Guide.



E6TL120 Single Timber Frame | Load Bearing | Two Way FRR

6 Layers: 3 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E6TL120	**-M78**	120/120/120	LB	44	43	3 x 13mm Elephant MultiSmart on One side 3 x 13mm Elephant MultiSmart to Other side

Framing

Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 800mm centre maximum.

Wall Height, Load and Framing Dimensions

These are determined by NZS3604 stud tables for load bearing or non-load bearing partitions.

Plasterboard Lining

Three layers of 13mm Elephant MultiSmart lining on each side of the timber framing.

Vertical fixing only permitted. Use full height sheets where possible.

Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame and staggered between layers.

Sheet end butt joints- must be formed over framing, offset from opposite side of the frame and staggered between layers.

All sheet joints must be fixed over solid timber framing.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	1st Layer	2nd Layer	3rd Layer
	High Thread Drywall Screws		Self-Tapping Drywall Screws
E6TL120-M78	13mm	13mm	13mm
	41 x 6g	51 x 7g	63 x 8g

Fastener Centres

1st and 2nd Layer: Fix 600mm centres at sheet perimeters and on top and bottom plates. Fix at 600mm up each stud

3rd Layer: Fix at 300mm centres at sheet perimeters and on top and bottom plates and 300mm centres up each stud.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

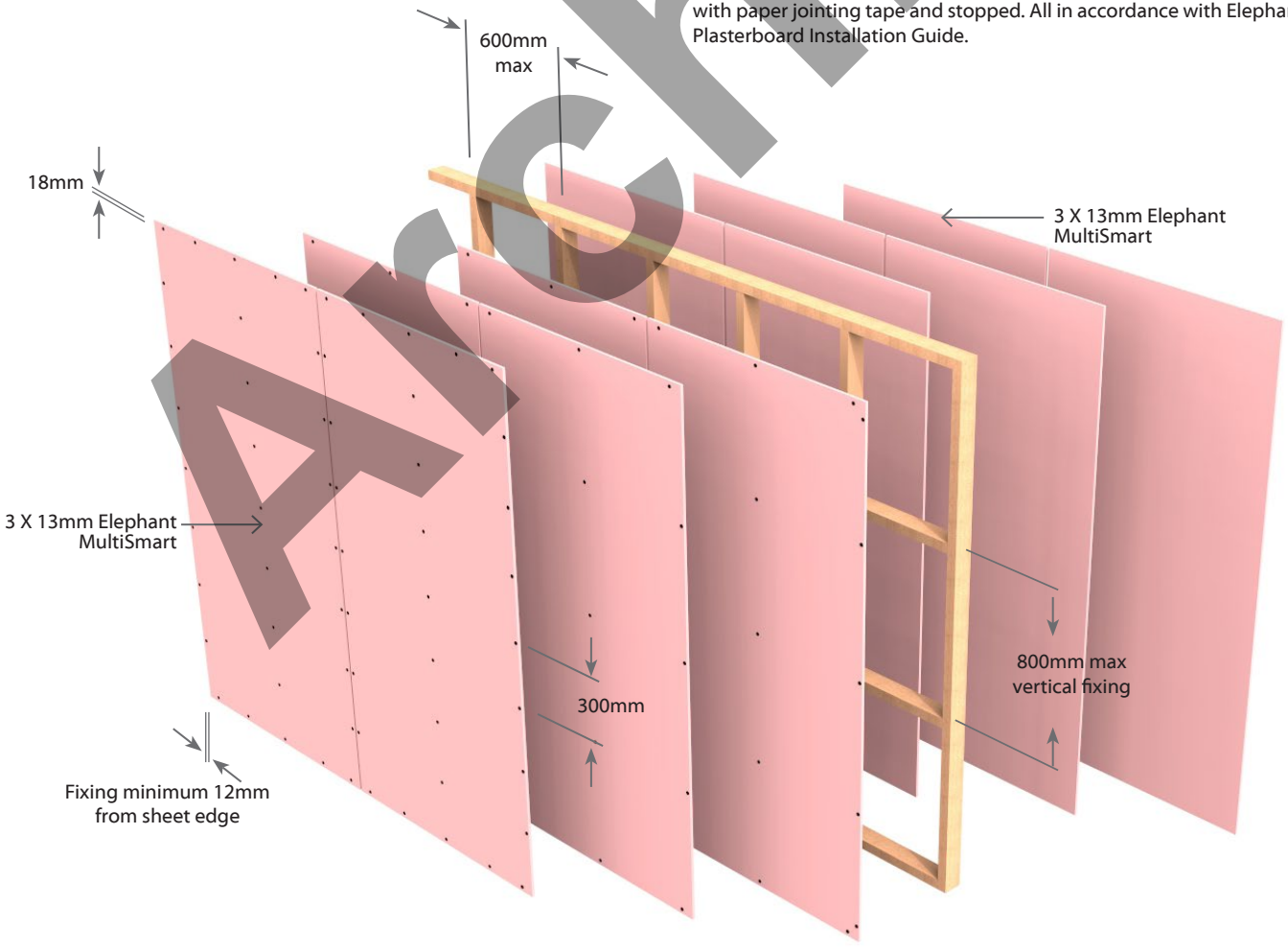
Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing

1st and 2nd Layer: Unstopped

3rd Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



EBV1TL30 Single Timber Frame with Brick Veneer | Load Bearing | Two Way FRR

1 Layer: 1 Layer of Plasterboard to one side of frame & Brick Veneer to the other side of the frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
EBV1TL30	**-S10**	30/30/30	LB	46	45	1 x 10mm Elephant Standard-Plus on One side Brick Veneer to Other side
EBV1TL30	**-S13**	30/30/30	LB	46	45	1 x 13mm Elephant Standard on One side Brick Veneer to Other side

Framing
Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 1200mm centre maximum.

Wall Height, Load and Framing Dimensions
These are determined by NZS3604 stud tables for load bearing or non-load bearing partitions.

Minimum stud dimension 90 x 35mm

Maximum stud height not exceeding 3.0m.

For higher stud heights consult brick manufacturers.

Brick Veneer
Brick veneer must comply to AS/NZS 4456 and AS/NZS 4455 with minimum thickness of 70mm. Brick Manufacturer must demonstrate minimum 60 minutes fire resistance.

Brick veneer cladding installed as per manufacturer's technical specification and relevant NZ Standards.

Cavity Insulation
Fill wall cavity between studs and nogs with 1 layer of 90mm thick R2.2 glass wool insulation.

Plasterboard Lining
One layer of Elephant Plasterboard lining as per specified system above on one side of the timber framing.

Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

Sheet end butt joints- must be formed over framing.

All sheet joints must be fixed over solid timber framing.

Sheets shall be touch fitted.

Fixing of Linings
Fasteners (As per Specified System Above)

System Number	Single Layer
	High Thread Drywall Screws
EBV1TL30-S10	10mm 41 x 6g
EBV1TL30-S13	13mm 41 x 6g

Fastener Centres

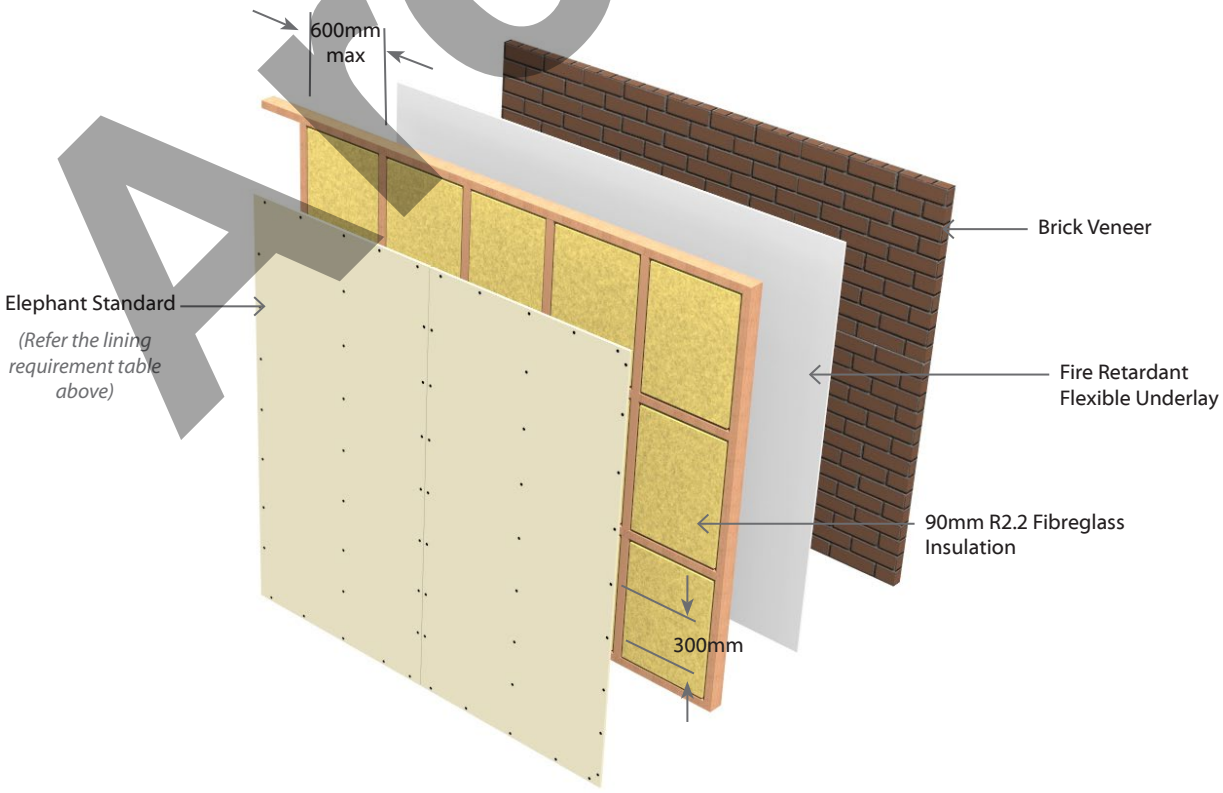
Fix at 300mm centres at sheet perimeters, on top and bottom plates and 300mm centres up all studs.

Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

Place fasteners at 200mm centres where sheet end butt joints occur.

Jointing
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



EBV1TL60 Single Timber Frame with Brick Veneer | Load Bearing | Two Way FRR

1 Layer: 1 Layer of Plasterboard to one side of frame & Brick Veneer to the other side of the frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
EBV1TL60	**-M13**	60/60/60	LB	46	45	1 x 13mm Elephant MultiSmart on One side Brick Veneer to Other side

Framing
Framing to comply with relevant sections and clauses of NZBC B1: Structure and NZBC B2: Durability.

Studs at 600mm centres maximum.

Nogs at 1200mm centre maximum.

Wall Height, Load and Framing Dimensions
These are determined by NZS3604 stud tables for load bearing or non-load bearing partitions.

Minimum stud dimension 90 x 35mm

Maximum stud height not exceeding 3.0m.

For higher stud heights consult brick manufacturers.

Brick Veneer
Brick veneer must comply to AS/NZS 4456 and AS/NZS 4455 with minimum thickness of 70mm. Brick Manufacturer must demonstrate minimum 60 minutes fire resistance.

Brick veneer cladding installed as per manufacturer's technical specification and relevant NZ Standards.

Cavity Insulation
Fill wall cavity between studs and nogs with 1 layer of 90mm thick R2.2 glass wool insulation.

Plasterboard Lining
One layer of 13mm Elephant MultiSmart lining on one side of the timber framing.

Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

Sheet end butt joints- must be formed over framing.

All sheet joints must be fixed over solid timber framing.

Sheets shall be touch fitted.

Fixing of Linings
Fasteners

System Number	Single Layer
	High Thread Drywall Screws
EBV1TL60-M13	13mm 41 x 6g

Fastener Centres

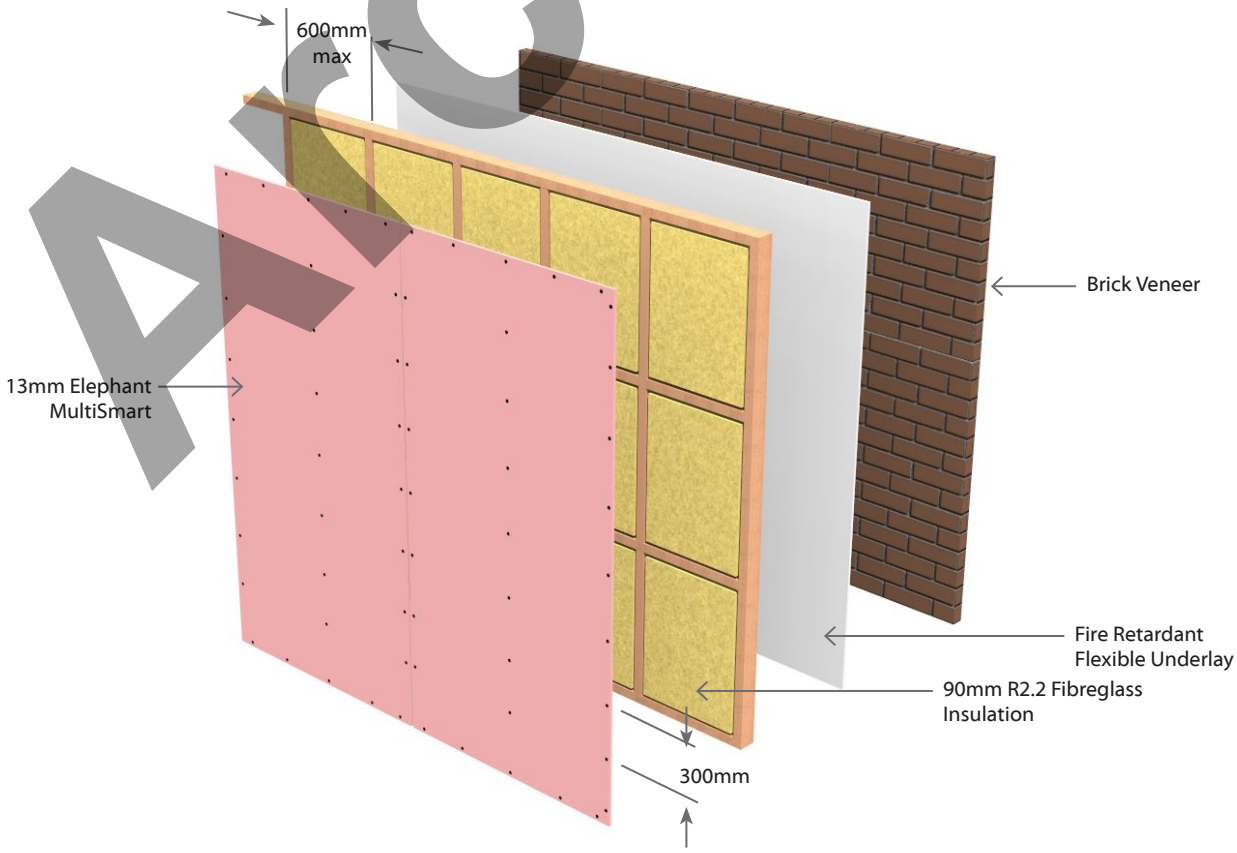
Fix at 300mm centres at sheet perimeters, on top and bottom plates and 300mm centres up all studs.

Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

Place fasteners at 200mm centres where sheet end butt joints occur.

Jointing
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



Fire Rated Steel Frame Walls

E2SL15 Single Steel Frame | Load Bearing | Two Way FRR

2 Layers: 1 Layer of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E2SL15	**-S26**	15/15/15	LB	35	34	1 x 13mm Elephant Standard on One side 1 x 13mm Elephant Standard to Other side

Framing

Any steel frame designed to meet structural criteria for strength and serviceability under dead and live loads. Stud width shall be 35mm minimum. Stud spacing at 600 centres maximum.

Frame heights as determined by specific design.

Plasterboard Lining

One layer of 13mm Elephant Standard lining on each side of the steel framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

For Horizontal Fixing- the horizontal sheet joints must be formed over nogs and must be offset on the other side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All sheet joints must be formed over framing.

The layers are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One	Side Two
	Single Layer	
	Self-Tapping Drywall Screws	
E2SL15-S26	13mm	13mm
	25 x 6g	25 x 6g

Fastener Centres

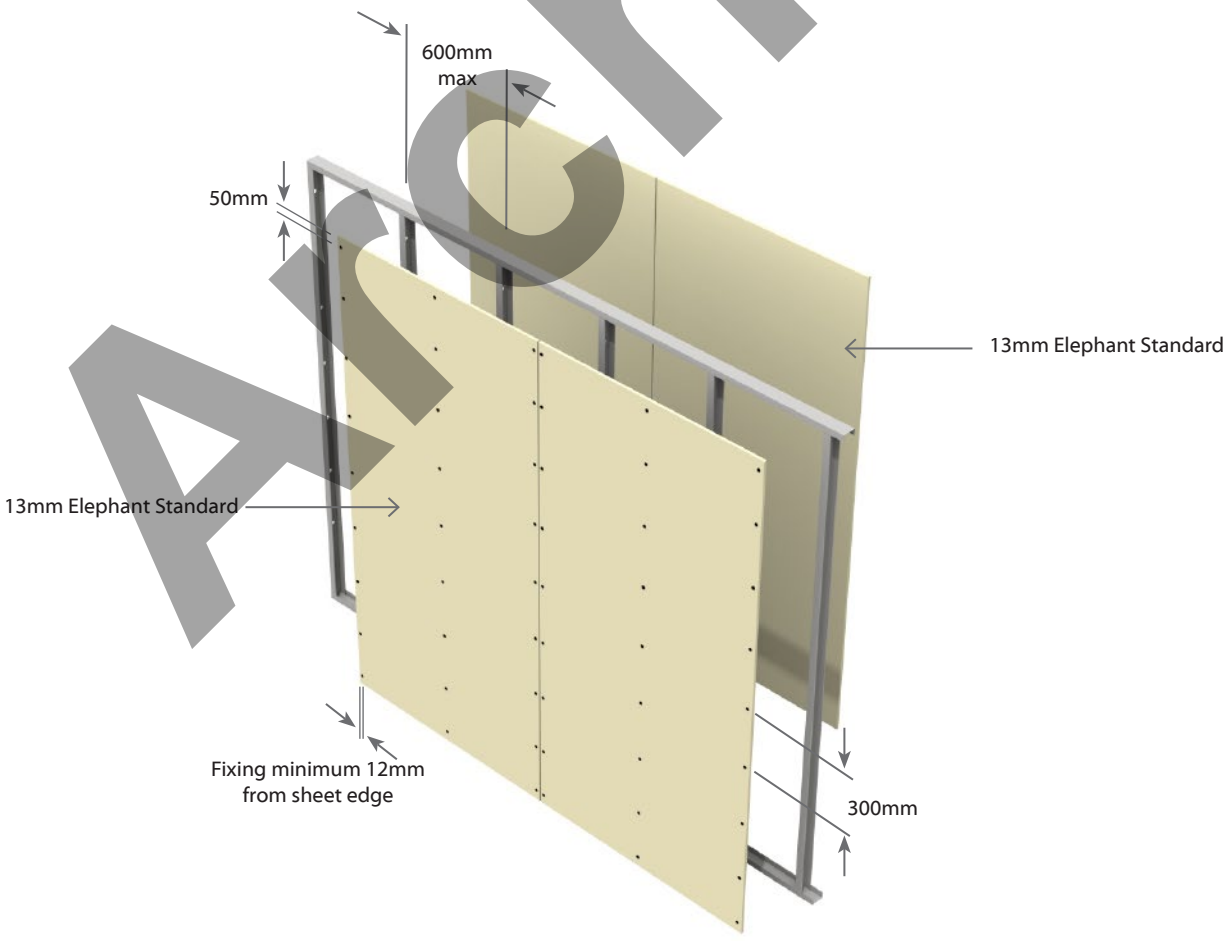
Fix at 300mm centres up each stud with no fixing to top and bottom track sections.

Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends.

Place fasteners at 200mm centres where sheet end butt joints occur.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with the Elephant Plasterboard Installation Guide.



E2S30 Single Steel Frame | Non Load Bearing | Two Way FRR

2 Layers: 1 Layer of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E2S30	-S26	---/30/30	NLB	35	34	1 x 13mm Elephant Standard on One side 1 x 13mm Elephant Standard to Other side
	-M20	---/30/30	NLB	36	35	1 x 10mm Elephant MultiSmart on One side 1 x 10mm Elephant MultiSmart to Other side

Framing

Steel studs with minimum dimensions 64mm x 34mm x 0.50 BMT with 6mm return.

Tracks to be minimum dimensions 64mm x 30mm x 0.50 BMT.

Top & bottom tracks are fixed to the floor and ceiling in true alignment.

Studs are placed at 600mm centres maximum.

Place studs to allow the nominated expansion gap (minimum 15mm) at the top of frame. The studs cannot be directly fixed to the tracks. The studs are held in place by the grip of the track runners.

Wall Height

Recommended maximum height is 3.0m. For higher walls refer to steel stud height table below.

Stud Dimentions (mm)	Base Metal Thickness (mm)	Stud Centres (mm)	Max Wall Heights (mm)	Expansion Tolerance at top of studs (mm)
64 x 34	0.50	600	3000	15
		400	3100	15
76 x 34	0.55	600	3300	15
		400	3700	20*
	0.75	600	3600	20*
		400	4100	20*
92 x 34	0.55	600	3800	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

* Use a minimum 50mm deep head track

Plasterboard Lining

One layer of Elephant Plasterboard lining as per specified system above on each side of the steel framing. Vertical fixing only permitted. Use full height sheets where possible.

Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.
All sheet joints must be formed over framing.
The layers are fixed hard to the floor. Sheets shall be touch fitted.

Fixing of Linings

Fasteners (As per Specified System Above)

System Number	Side One	Side Two
	Single Layer	
	Self-Tapping Drywall Screws	
E2S30-S26	13mm	13mm
	25 x 6g	25 x 6g
E2S30-M20	10mm	10mm
	25 x 6g	25 x 6g

Fastener Centres

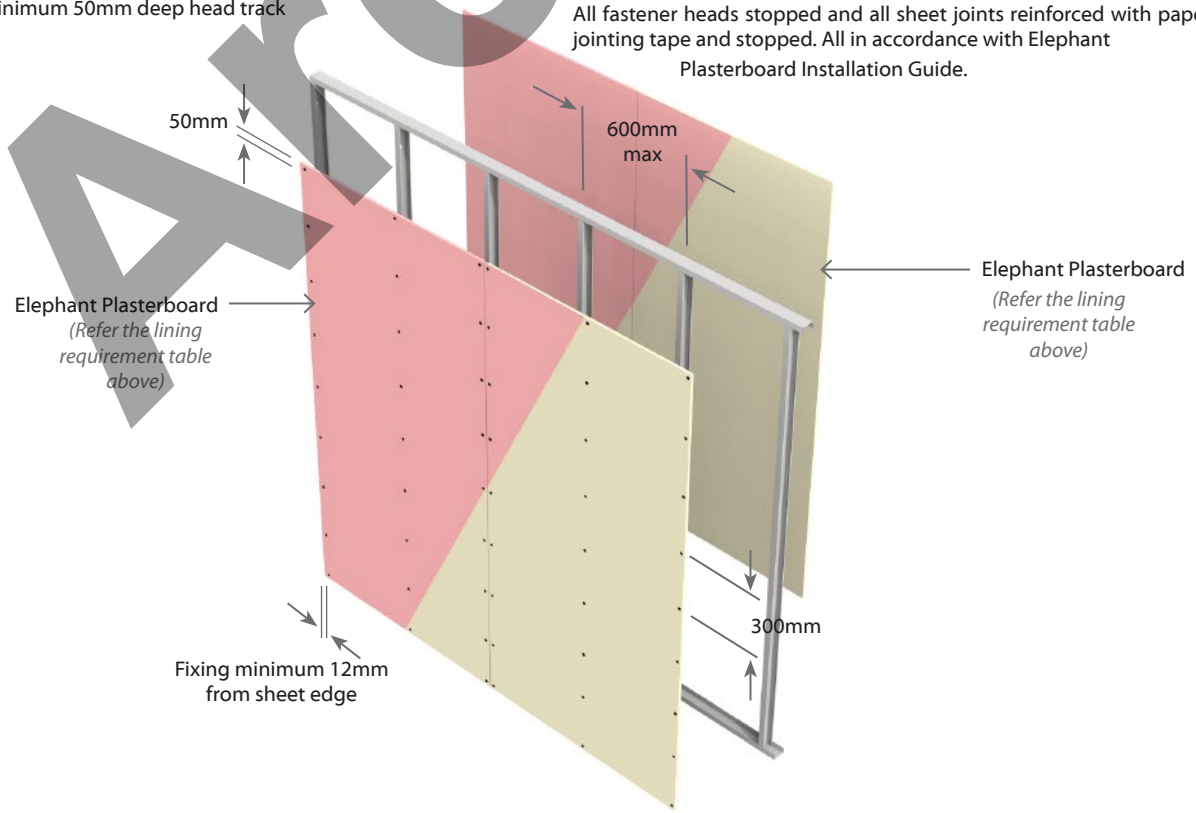
Fix at 300mm centres up each stud with no fixing to top and bottom track sections. Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends and min 20mm clear of top and bottom tracks.

Place fasteners at 200mm centres where sheet end butt joints occur.

Fasteners may be placed at 18mm from sheet ends along top and bottom tracks, provided the fasteners do not connect the stud to the track. If floor deflections need to be considered, do not fix any linings to top track.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E2SL30 Single Steel Frame | Load Bearing | Two Way FRR

2 Layers: 1 Layer of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E2SL30	-M26	30/30/30	LB	37	36	1 x 13mm Elephant MultiSmart on One side 1 x 13mm Elephant MultiSmart to Other side
	-F32	30/30/30	LB	37	36	1 x 16mm Elephant FireSmart on One side 1 x 16mm Elephant FireSmart to Other side

Framing

Any steel frame designed to meet structural criteria for strength and serviceability under dead and live loads. Stud width shall be 35mm minimum. Stud spacing at 600 centres maximum.

Frame heights as determined by specific design.

Plasterboard Lining

One layer of Elephant Plasterboard lining as per specified system above on each side of the steel framing.

Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

For Horizontal Fixing- the horizontal sheet joints must be formed over nogs and must be offset on the other side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All sheet joints must be formed over framing.

The layers are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners (As per Specified System Above)

System Number	Side One	Side Two
	Single Layer	
	Self-Tapping Drywall Screws	
E2SL30-M26	13mm	13mm
	25 x 6g	25 x 6g
E2SL30-F32	16mm	16mm
	32 x 6g	32 x 6g

Fastener Centres

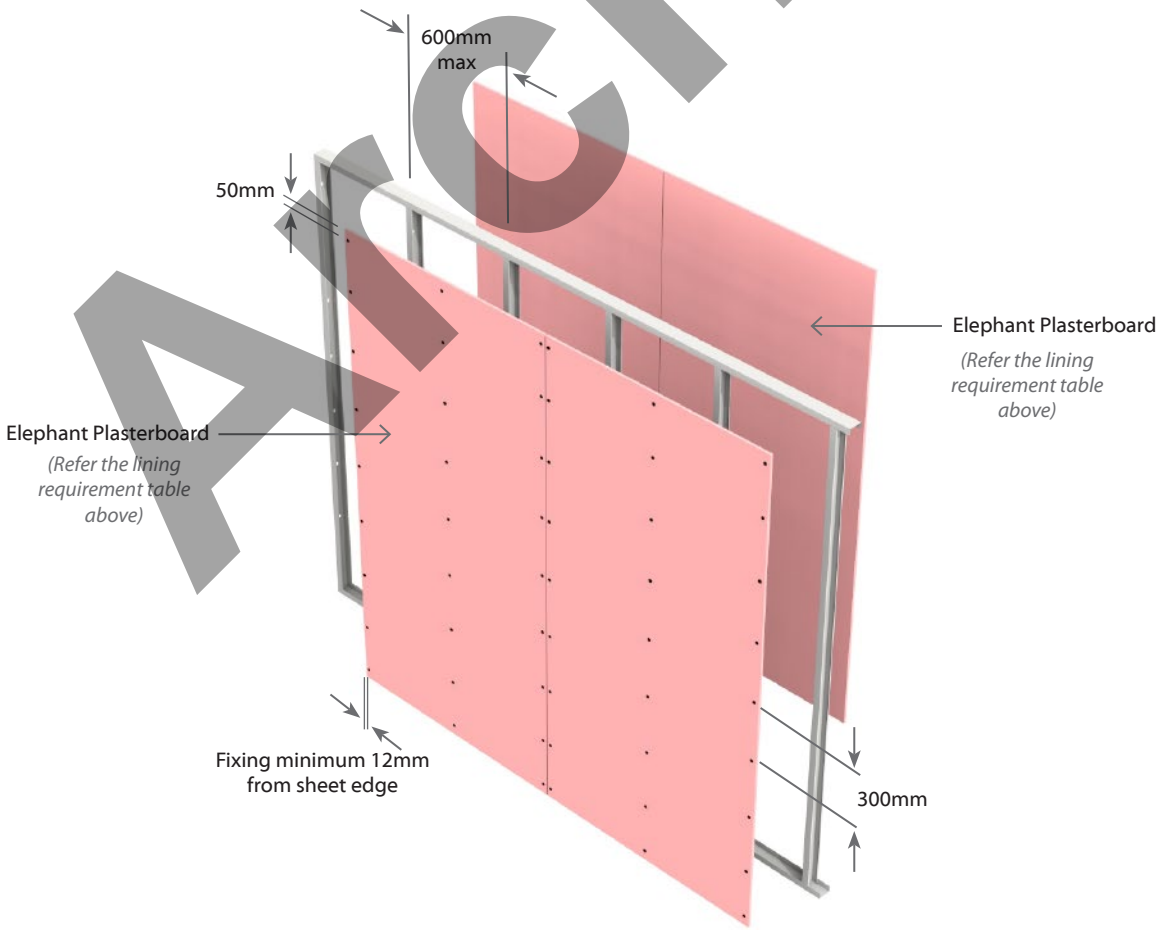
Fix at 300mm centres up each stud with no fixing to top and bottom track sections.

Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends.

Place fasteners at 200mm centres where sheet end butt joints occur.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with the Elephant Plasterboard Installation Guide.



E4SL30 Single **S**teel Frame | **L**oad Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4SL30	**-S40**	30/30/30	LB	43	42	2 x 10mm Elephant Standard-Plus on One side 2 x 10mm Elephant Standard-Plus to Other side

Framing

Any steel frame designed to meet structural criteria for strength and serviceability under dead and live loads. Stud width shall be 35mm minimum. Stud spacing at 600 centres maximum.

Frame heights as determined by specific design.

Plasterboard Lining

Two layers of 10mm Elephant Standard-Plus lining on each side of the steel framing.

Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

For Horizontal Fixing- the horizontal sheet joints must be formed over nogs and must be offset on the other side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All outer layer joints must be staggered from inner layer joints.

All sheet joints must be formed over framing.

The layers are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	Self-Tapping Drywall Screws			
E4SL30-S40	10mm 25 x 6g	10mm 32 x 6g	10mm 25 x 6g	10mm 32 x 6g

Fastener Centres

Inner Layer: Fix at 600mm centres up each stud with no fixing to top and bottom track sections.

Outer Layer: Fix at 300mm centres up each stud with no fixing to top and bottom track sections.

Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends.

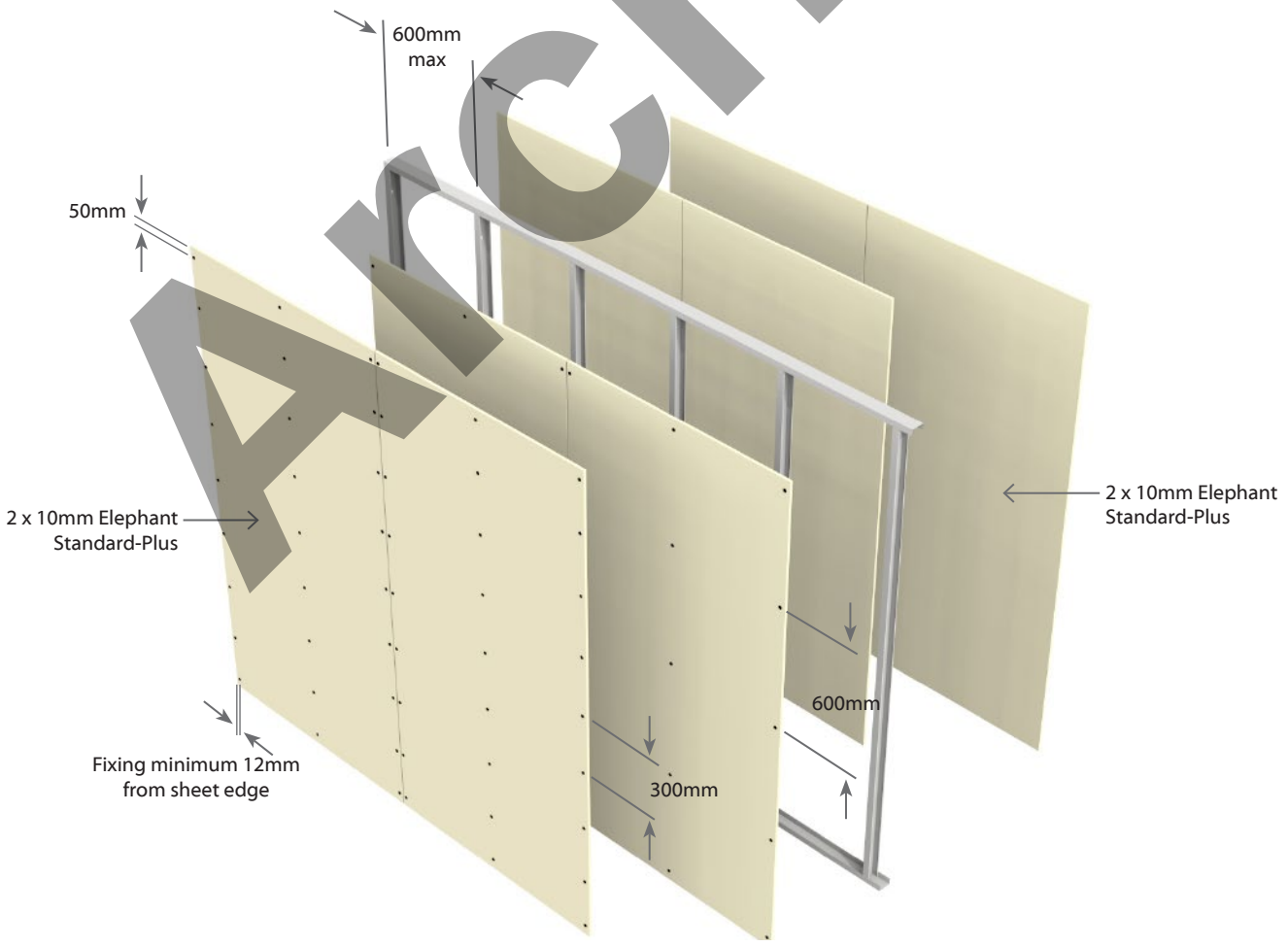
Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing

Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E2S60 Single Steel Frame | Non Load Bearing | Two Way FRR

2 Layers: 1 Layer of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E2S60	**-M26**	---/60/60	NLB	37	36	1 x 13mm Elephant MultiSmart on One side 1 x 13mm Elephant MultiSmart to Other side

Framing

Steel studs with minimum dimensions 64mm x 34mm x 0.55 BMT with 6mm return.

Tracks to be minimum dimensions 64mm x 30mm x 0.55 BMT.

Top & bottom tracks are fixed to the floor and ceiling in true alignment.

Studs are placed at 600mm centres maximum.

Place studs to allow the nominated expansion gap (minimum 15mm) at the top of frame. The studs cannot be directly fixed to the tracks. The studs are held in place by the grip of the track runners.

Wall Height

Recommended maximum height is 3.0m. For higher walls refer to steel stud height table below.

Stud Dimentions (mm)	Base Metal Thickness (mm)	Stud Centres (mm)	Max Wall Heights (mm)	Expansion Tolerance at top of studs (mm)
64 x 34	0.55	600	3000	15
		400	3100	15
76 x 34	0.55	600	3300	15
		400	3700	20*
	0.75	600	3600	20*
		400	4100	20*
92 x 34	0.55	600	3800	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

* Use a minimum 50mm deep head track

Plasterboard Lining

One layer of 13mm Elephant MultiSmart lining on each side of the steel framing. Vertical fixing only permitted. Use full height sheets where possible.

Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All sheet joints must be formed over framing.

The layers are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One	Side Two
	Single Layer	
	Self-Tapping Drywall Screws	
E2S60-M26	13mm	13mm
	25 x 6g	25 x 6g

Fastener Centres

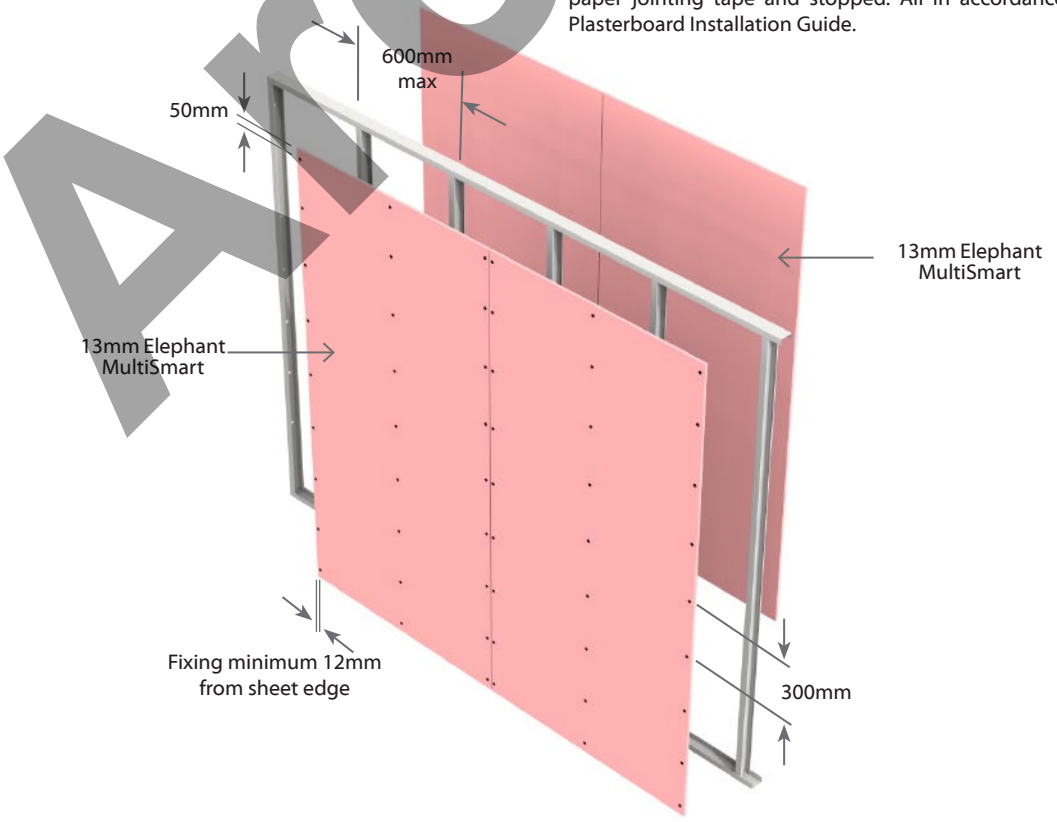
Fix at 300mm centres up each stud with no fixing to top and bottom track sections. Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends and min 20mm clear of top and bottom tracks.

Place fasteners at 200mm centres where sheet end butt joints occur.

Fasteners may be placed at 18mm from sheet ends along top and bottom tracks, provided the fasteners do not connect the stud to the track. If floor deflections need to be considered, do not fix any linings to top track.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E4S60 Single Steel Frame | Non Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4S60	-S52	---/60/60	NLB	45	44	2 x 13mm Elephant Standard on One side 2 x 13mm Elephant Standard to Other side
	-M40	---/60/60	NLB	45	44	2 x 10mm Elephant MultiSmart on One side 2 x 10mm Elephant MultiSmart to Other side

Framing

Steel studs with minimum dimensions 64mm x 34mm x 0.50 BMT with 6mm return.

Tracks to be minimum dimensions 64mm x 30mm x 0.50 BMT.

Top & bottom tracks are fixed to the floor and ceiling in true alignment.

Studs are placed at 600mm centres maximum.

Place studs to allow the nominated expansion gap (minimum 15mm) at the top of frame. The studs cannot be directly fixed to the tracks. The studs are held in place by the grip of the track runners.

Wall Height

Recommended maximum height is 3.0m. For higher walls refer to steel stud height table below.

Stud Dimentions (mm)	Base Metal Thickness (mm)	Stud Centres (mm)	Max Wall Heights (mm)	Expansion Tolerance at top of studs (mm)
64 x 34	0.50	600	3000	15
		400	3100	15
76 x 34	0.55	600	3300	15
		400	3700	20*
	0.75	600	3600	20*
		400	4100	20*
92 x 34	0.55	600	3800	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

* Use a minimum 50mm deep head track

Plasterboard Lining

Two layers of Elephant Plasterboard lining as per specified system above on each side of the steel framing. Vertical fixing only permitted. Use full height sheets where possible.

Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All outer layer joints must be staggered from inner layer joints.

All sheet joints must be formed over framing. The layers are fixed hard to the floor. Sheets shall be touch fitted.

Fixing of Linings

Fasteners (As per Specified System Above)

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	Self-Tapping Drywall Screws			
E4S60-S52	13mm	13mm	13mm	13mm
	25 x 6g	41 x 6g	25 x 6g	41 x 6g
E4S60-M40	10mm	10mm	10mm	10mm
	25 x 6g	41 x 6g	25 x 6g	41 x 6g

Fastener Centres

Inner Layer: Fix at 600mm centres up each stud with no fixing to top or bottom track sections.

Outer Layer: Fix at 300mm centres up each stud with no fixing to top and bottom track sections.

Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends and min 20mm clear of top and bottom tracks.

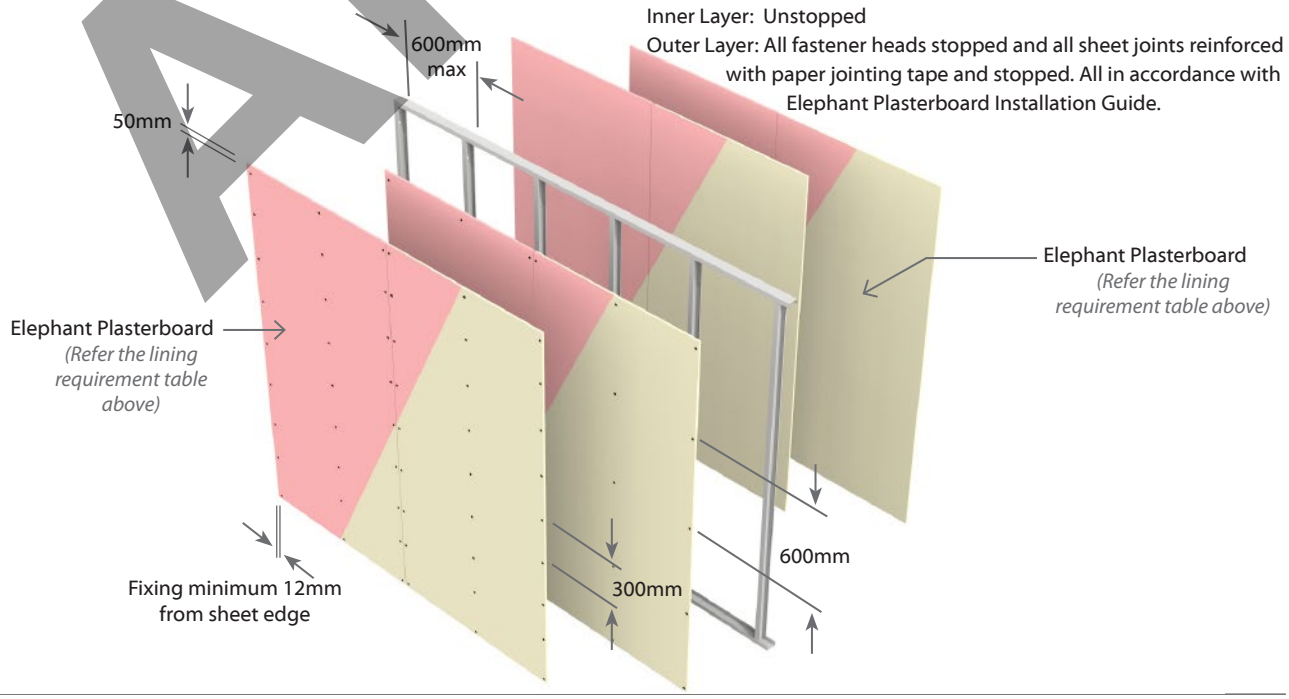
Place fasteners at 200mm centres where sheet end butt joints occur. Avoid outer layer screws from hitting inner layer screws.

Fasteners may be placed at 18mm from sheet ends along top and bottom tracks, provided the fasteners do not connect the stud to the track. If floor deflections need to be considered, do not fix any linings to top track.

Jointing

Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E4SL60 Single Steel Frame | Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4SL60	**-M52**	60/60/60	LB	46	45	2 x 13mm Elephant MultiSmart on One side 2 x 13mm Elephant MultiSmart to Other side

Framing

Any steel frame designed to meet structural criteria for strength and serviceability under dead and live loads. Stud width shall be 35mm minimum. Stud spacing at 600 centres maximum.

Frame heights as determined by specific design.

Plasterboard Lining

Two layers of 13mm Elephant MultiSmart lining on each side of the steel framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

For Horizontal Fixing- the horizontal sheet joints must be formed over nogs and must be offset on the other side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All outer layer joints must be staggered from inner layer joints.

All sheet joints must be formed over framing.

The layers are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	Self-Tapping Drywall Screws			
E4SL60-M52	13mm	13mm	13mm	13mm
	25 x 6g	41 x 6g	25 x 6g	41 x 6g

Fastener Centres

Inner Layer: Fix at 600mm centres up each stud with no fixing to top and bottom track sections.

Outer Layer: Fix at 300mm centres up each stud with no fixing to top and bottom track sections.

Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends.

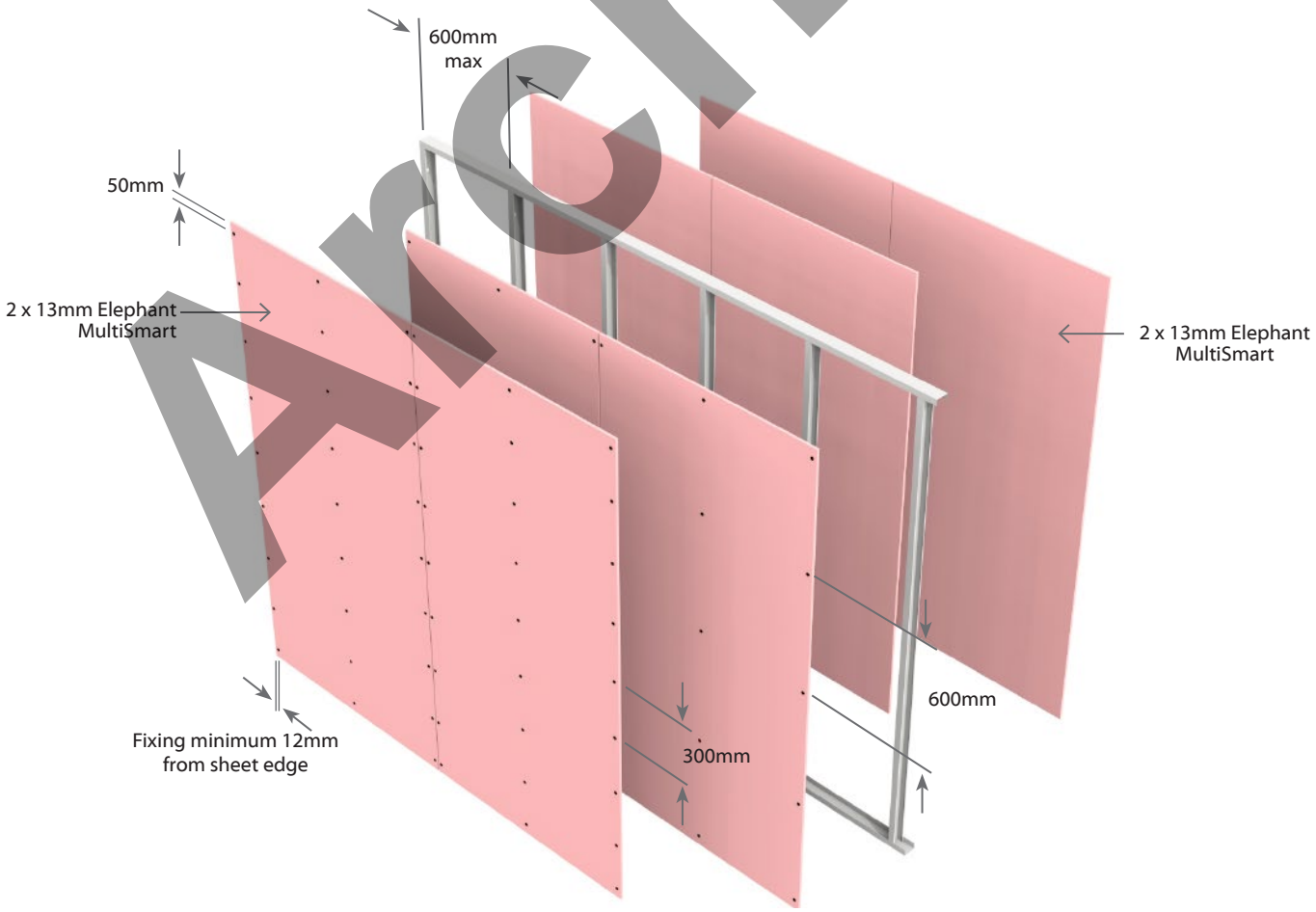
Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing

Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E2S75 Single Steel Frame | Non Load Bearing | Two Way FRR

2 Layers: 1 Layer of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E2S75	**-F32**	---/75/75	NLB	38	37	1 x 16mm Elephant FireSmart on One side 1 x 16mm Elephant FireSmart to Other side

Framing

Steel studs with minimum dimensions 92mm x 34mm x 0.75 BMT with 6mm return.

Bottom tracks to be minimum dimensions 92mm x 30mm x 0.75 BMT.

Top tracks to be minimum dimensions 92mm x 50mm x 0.75 BMT.

Top & bottom tracks are fixed to the floor and ceiling in true alignment.

Studs are placed at 600mm centres maximum.

Place studs to allow the nominated expansion gap (minimum 15mm) at the top of frame. The studs cannot be directly fixed to the tracks. The studs are held in place by the grip of the track runners.

Wall Height

Recommended maximum height is 3.0m. For higher walls refer to steel stud height table below.

Stud Dimentions (mm)	Base Metal Thickness (mm)	Stud Centres (mm)	Max Wall Heights (mm)	Expansion Tolerance at top of studs (mm)
92 x 34	0.75	600	3000	15
		400	3400	15
150 x 34	0.75	600	4300	20*
		400	4900	25*
	1.15	600	4900	25*
		400	5500	30*

* Use a minimum 50mm deep head track

Plasterboard Lining

One layer of 16mm Elephant FireSmart lining on each side of the steel framing. Vertical fixing only permitted. Use full height sheets where possible.

Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All sheet joints must be formed over framing.

The layers are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One	Side Two
	Single Layer	
	Self-Tapping Drywall Screws	
E2S75-F32	16mm 32 x 6g	16mm 32 x 6g

Fastener Centres

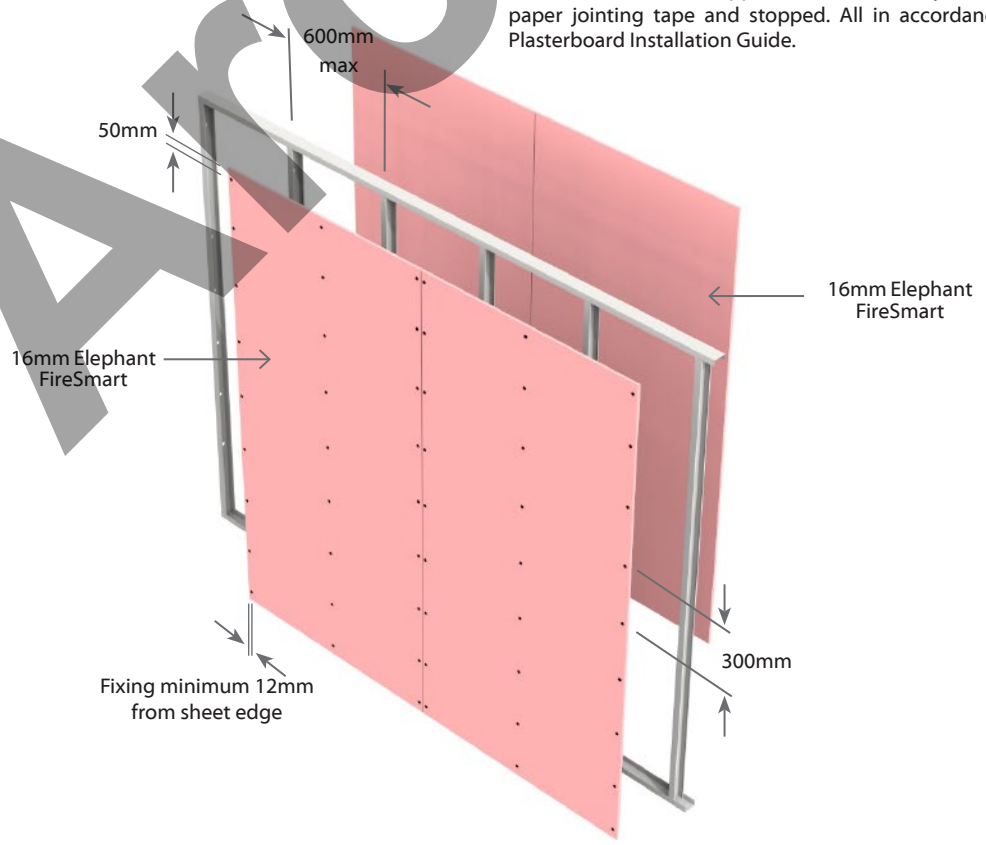
Fix at 300mm centres up each stud with no fixing to top and bottom track sections. Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends and min 20mm clear of top and bottom tracks.

Place fasteners at 200mm centres where sheet end butt joints occur.

Fasteners may be placed at 18mm from sheet ends along top and bottom tracks, provided the fasteners do not connect the stud to the track. If floor deflections need to be considered, do not fix any linings to top track.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E4S90 Single Steel Frame | Non Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4S90	**-M46**	---/90/90	NLB	45	44	1 x 10mm Elephant MultiSmart & 1 x13mm MultiSmart One side 1 x 10mm Elephant MultiSmart & 1 x13mm MultiSmart Other side

Framing

Steel studs with minimum dimensions 64mm x 34mm x 0.55 BMT with 6mm return.

Tracks to be minimum dimensions 64mm x 30mm x 0.55 BMT.

Top & bottom tracks are fixed to the floor and ceiling in true alignment.

Studs are placed at 600mm centres maximum.

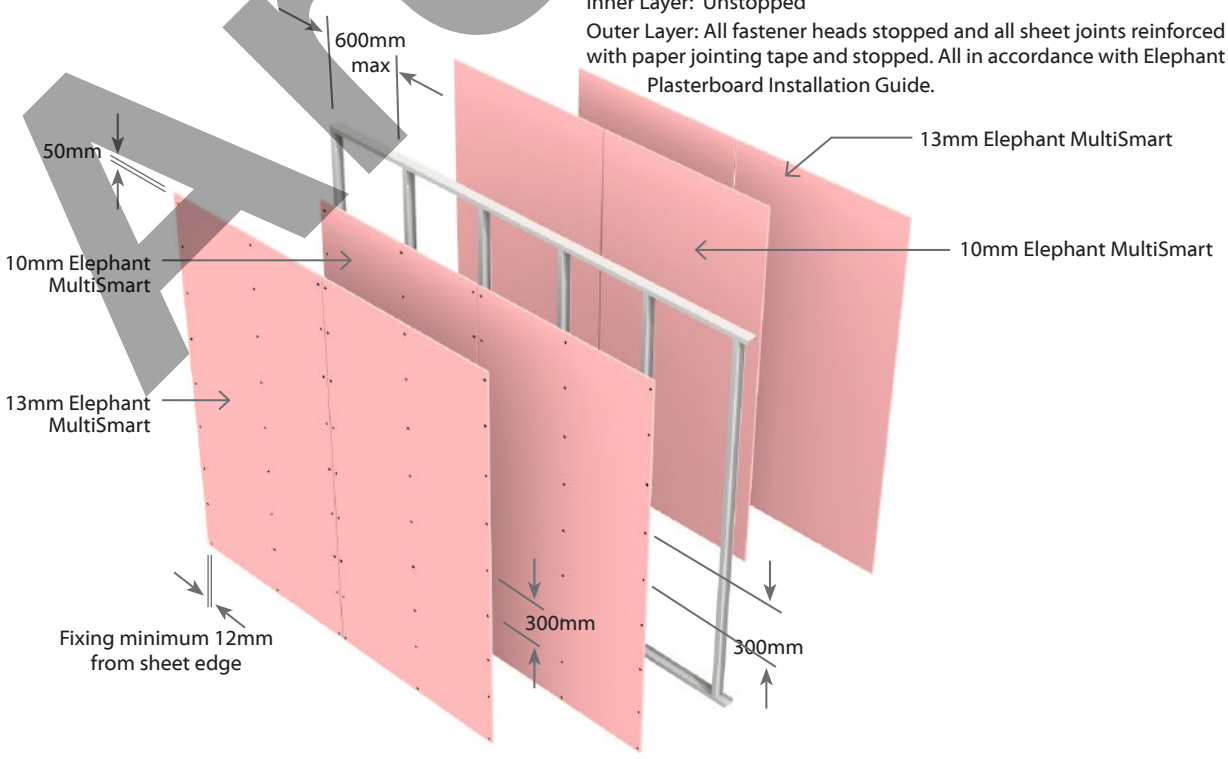
Place studs to allow the nominated expansion gap (minimum 15mm) at the top of frame. The studs cannot be directly fixed to the tracks. The studs are held in place by the grip of the track runners.

Wall Height

Recommended maximum height is 3.0m. For higher walls refer to steel stud height table below.

Stud Dimentions (mm)	Base Metal Thickness (mm)	Stud Centres (mm)	Max Wall Heights (mm)	Expansion Tolerance at top of studs (mm)
64 x 34	0.55	600	3000	15
		400	3100	15
76 x 34	0.55	600	3300	15
		400	3700	20*
	0.75	600	3600	20*
		400	4100	20*
92 x 34	0.55	600	3800	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

* Use a minimum 50mm deep head track



Plasterboard Lining

One layer of 10mm Elephant MultiSmart & One layer of 13mm Elephant MultiSmart lining on each side of the steel framing.

Vertical fixing only permitted. Use full height sheets where possible.

Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All outer layer joints must be staggered from inner layer joints.

All sheet joints must be formed over framing. The layers are fixed hard to the floor. Sheets shall be touch fitted.

Fixing of Linings

Fasteners (As per Specified System Above)

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	Self-Tapping Drywall Screws			
E4S90-M46	10mm	13mm	10mm	13mm
	25 x 6g	41 x 6g	25 x 6g	41 x 6g

Fastener Centres

Inner Layer: Fix at 300mm centres up each stud with no fixing to top or bottom track sections.

Outer Layer: Fix at 300mm centres up each stud with no fixing to top and bottom track sections.

Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends and min 20mm clear of top and bottom tracks.

Place fasteners at 200mm centres where sheet end butt joints occur. Avoid outer layer screws from hitting inner layer screws.

Fasteners may be placed at 18mm from sheet ends along top and bottom tracks, provided the fasteners do not connect the stud to the track. If floor deflections need to be considered, do not fix any linings to top track.

Jointing

Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.

E4SL90 Single Steel Frame | Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4SL90	**-F64**	90/90/90	LB	47	46	2 x 16mm Elephant FireSmart on One side 2 x 16mm Elephant FireSmart to Other side

Framing

Any steel frame designed to meet structural criteria for strength and serviceability under dead and live loads. Stud width shall be 35mm minimum. Stud spacing at 600 centres maximum.

Frame heights as determined by specific design.

Plasterboard Lining

Two layers of 16mm Elephant FireSmart lining on each side of the steel framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

For Horizontal Fixing- the horizontal sheet joints must be formed over nogs and must be offset on the other side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All outer layer joints must be staggered from inner layer joints.

All sheet joints must be formed over framing.

The layers are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	Self-Tapping Drywall Screws			
E4SL90-F64	16mm	16mm	16mm	16mm
	32 x 6g	51 x 7g	32 x 6g	51 x 7g

Fastener Centres

Inner Layer: Fix at 600mm centres up each stud with no fixing to top and bottom track sections.

Outer Layer: Fix at 300mm centres up each stud with no fixing to top and bottom track sections.

Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends.

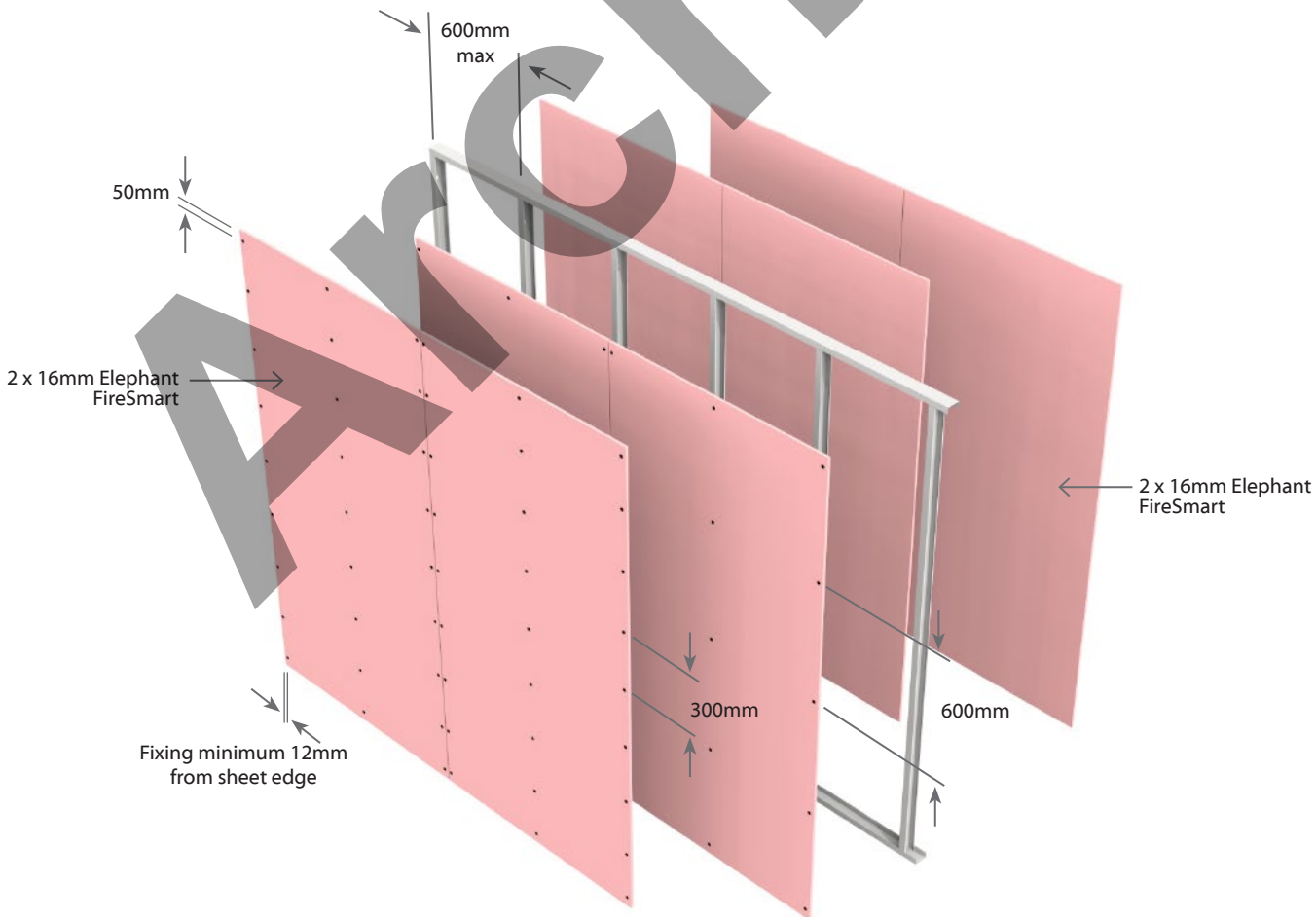
Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing

Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E4S120 Single Steel Frame | Non Load Bearing | Two Way FRR

4 Layers: 2 Layers of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E4S120	**-FM58**	---/120/120	NLB	46	45	1 x 16mm FireSmart and 1 x 13mm MultiSmart on One side 1 x 16mm FireSmart and 1 x 13mm MultiSmart to Other side

Framing

Steel studs with minimum dimensions 64mm x 34mm x 0.50 BMT with 6mm return.

Tracks to be minimum dimensions 64mm x 30mm x 0.50 BMT.

Top & bottom tracks are fixed to the floor and ceiling in true alignment.

Studs are placed at 600mm centres maximum.

Place studs to allow the nominated expansion gap (minimum 15mm) at the top of frame. The studs cannot be directly fixed to the tracks. The studs are held in place by the grip of the track runners.

Wall Height

Recommended maximum height is 3.0m. For higher walls refer to steel stud height table below.

Stud Dimentions (mm)	Base Metal Thickness (mm)	Stud Centres (mm)	Max Wall Heights (mm)	Expansion Tolerance at top of studs (mm)
64 x 34	0.50	600	3000	15
		400	3100	15
76 x 34	0.55	600	3300	15
		400	3700	20*
	0.75	600	3600	20*
		400	4100	20*
92 x 34	0.55	600	3800	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

* Use a minimum 50mm deep head track

Plasterboard Lining

One layer of 16mm Elephant FireSmart and one layer of 13mm Elephant MultiSmart lining on each side of the steel framing.

Vertical fixing only permitted. Use full height sheets where possible.

Vertical Fixing- the vertical sheet joints must be offset on the opposite side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All outer layer joints must be staggered from inner layer joints.

All sheet joints must be formed over framing. The layers are fixed hard to the floor. Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Side One		Side Two	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	Self-Tapping Drywall Screws			
E4S120-FM58	16mm	13mm	16mm	13mm
	32 x 6g	41 x 6g	32x 6g	41 x 6g

Fastener Centres

Inner Layer: Fix at 300mm centres up each stud with no fixing to top or bottom track sections.

Outer Layer: Fix at 300mm centres up each stud with no fixing to top and bottom track sections.

Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends and min 20mm clear of top and bottom tracks.

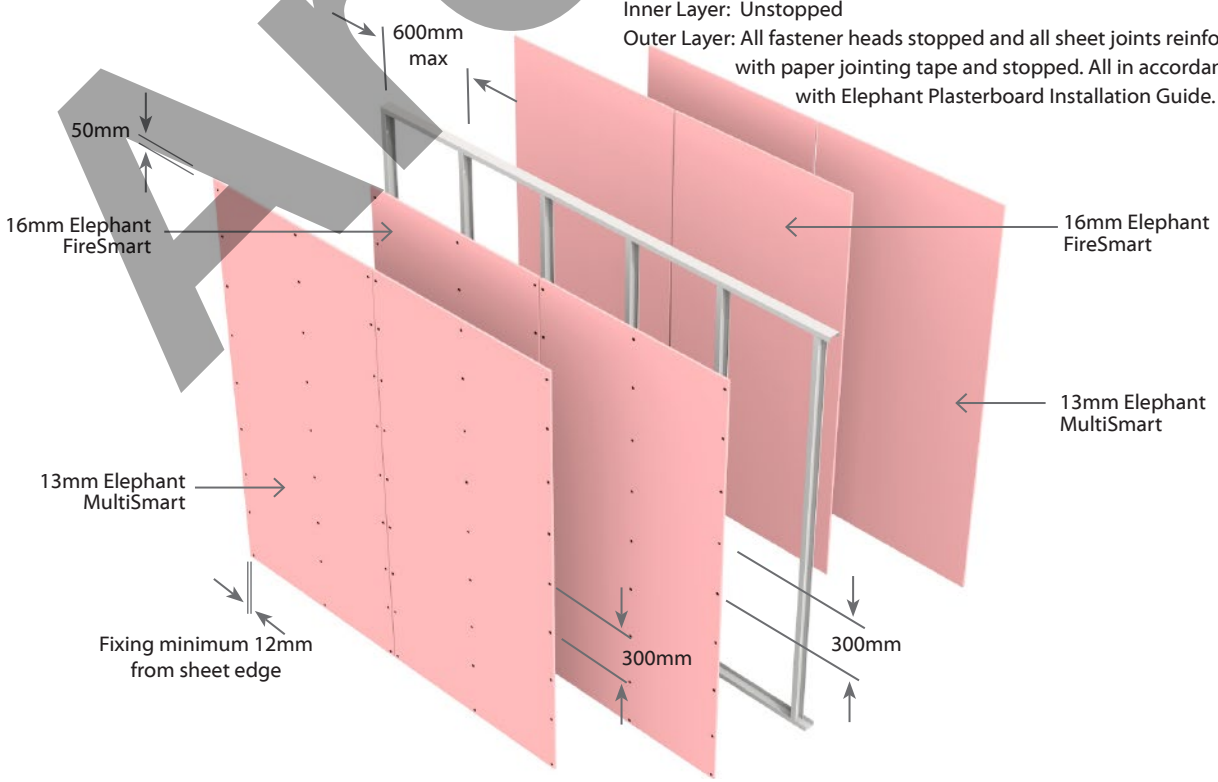
Place fasteners at 200mm centres where sheet end butt joints occur. Avoid outer layer screws from hitting inner layer screws.

Fasteners may be placed at 18mm from sheet ends along top and bottom tracks, provided the fasteners do not connect the stud to the track. If floor deflections need to be considered, do not fix any linings to top track.

Jointing

Inner Layer: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E2CSD60 Double Steel Frame-13mm MultiSmart Central liner | Non Load Bearing | Two Way FRR

2 Layers: 1 Layer of Plasterboard to each side of frame (excludes Central liner)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC*	Rw	
E2CSD60	**-M26**	--/60/60	NLB	44	43	1 x 13mm MultiSmart on One side 1 x 13mm MultiSmart to Other side

**To receive a higher STC of 53, fill the wall cavities between studs with 1 layer of 75mm thick R1.8 glass wool blanket on both frames.*

Framing

Steel studs with minimum dimensions 64mm x 34mm x 0.55 BMT with 6mm return.

Tracks to be minimum size 64mm x 30mm x 0.55 BMT.

Top & bottom tracks are fixed to the floor and ceiling in true alignment.

Studs are placed at 600mm centres maximum.

Place studs to allow the nominated expansion gap (minimum 15mm) at the top of frame. The studs are not directly fixed to the tracks. The studs are held in place by the grip of the track runners.

Wall Height

Recommended maximum height is 3.0m. For higher walls refer to steel stud height table below.

Stud Dimentions (mm)	Base Metal Thickness (mm)	Stud Centres (mm)	Max Wall Heights (mm)	Expansion Tolerance at top of studs (mm)
64 x 34	0.55	600	3000	15
		400	3100	15
76 x 34	0.55	600	3300	15
		400	3700	20*
	0.75	600	3600	20*
		400	4100	20*
92 x 34	0.55	600	3800	20*
		400	4200	20*
	0.75	600	4200	20*
		400	4800	25*

* Use a minimum 50mm deep head track

13mm MultiSmart Central liner

Fix bottom and top tracks to floor and ceiling at 600mm centres and not more than 150mm from ends using steel fasteners. Install studs at 600mm centres max.

Install 13mm Elephant MultiSmart Central liner vertically at 300mm to one side using 25mm x 6g Self tapping drywall screws. Fasteners to be placed at 12mm from sheet edges and min 20mm clear of top and bottom tracks. Sheet joints to be formed over framing.

Second frame must be constructed against the 13mm Elephant MultiSmart Central liner with bottom and top tracks fixed to floor and ceiling. Install studs at 600mm centres max. Offset the second frame's studs by 300mm from the first frame.

Fix the 13mm Elephant MultiSmart Central liner to the second frame using 25mm x 6g Self tapping drywall screws at 300mm centres. Fasteners to be placed at 12mm from sheet edges and min 20mm clear of top and bottom tracks. Sheet joints to be formed over framing.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart lining each side of the steel framing.

Vertical fixing only permitted. Use full height sheets where possible. The vertical sheet joints must be offset on the opposite side of the frame.

Sheet end butt joints- must be formed over framing and staggered. Offset joints from opposite side of the frame.

All sheet joints must be formed over framing.

The layers are fixed hard to the floor. Sheets shall be touch fitted.

Fixing of Linings

System Number	Single Layer
	Self Tapping Drywall Screws
E2CSDA60-M26	13mm
	25 x 6g

Fasteners

Fastener Centres

Fix at 300mm centres up each stud with no fixing to top and bottom track sections.

Place fasteners no closer than 12mm to the sheet edge and 50mm from sheet ends and min 20mm clear of top and bottom tracks.

Place fasteners at 200mm centres where sheet end butt joints occur.

Fasteners may be placed at 18mm from sheet ends along top and bottom tracks, provided the fasteners do not connect the stud to the track.

If floor deflections need to be considered, do not fix any linings to top track.

Penetrations

Penetrations in cavities are permitted on either side of the Central liner for plumbing and electrical services.

Minimum 10mm clearance must be allowed between plumbing or electrical services and Central Liner for back-to-back services and penetrations.

Fire stopping for penetrations are not required for Metal and PVC Plumbing services up to 65mm diameter. 6mm max clearance gap around the plumbing services are required for penetrations through plasterboard linings. Gaps to be filled with a flexible sealant.

Penetration of electrical services up to 90 x 50mm do not require to be fire-stopped. Flush boxes are limited to two per 600mm wide stud bay.

For larger penetrations and penetrations through 13mm Elephant MultiSmart Central Liner, suitable proprietary fire-stopping is required.

Penetrations through 13mm Elephant MultiSmart Central Liner may reduce the STC performance.

Plasterboard lining for Wet Area

If 13mm Elephant MultiSmart is replaced with 13mm Elephant AquaSmart, the FRR will be retained, but with a reduction in STC.

Refer to STC performance table on page 11.

Jointing

Central Liner: Unstopped

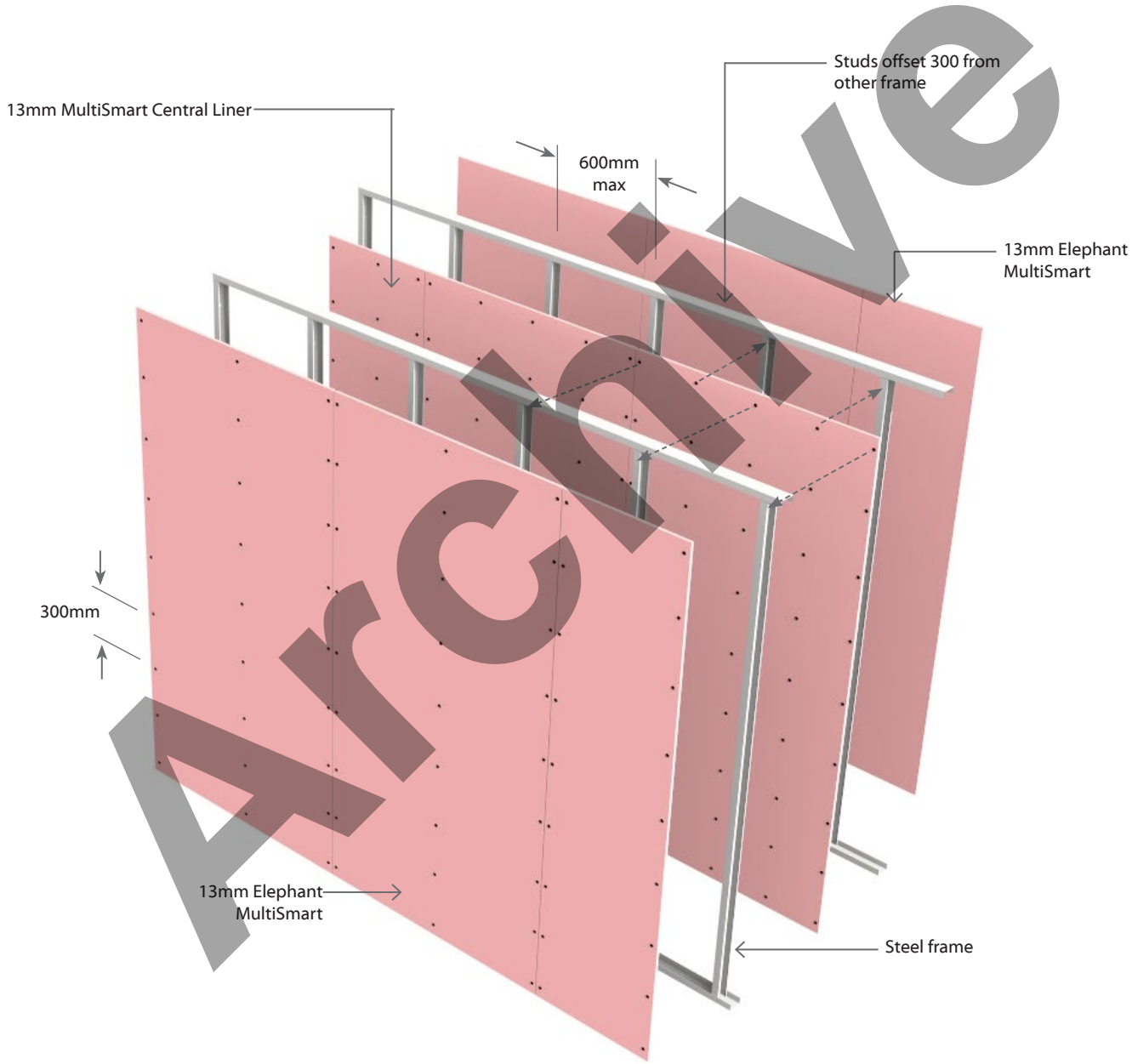
Outer Layers: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.

E2CSD60 Double Steel Frame-13mm MultiSmart Central liner Non Load Bearing Two Way FRR

2 Layers: 1 Layer of Plasterboard to each side of frame (excludes Central liner)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC*	Rw	
E2CSD60	**-M26**	--/60/60	NLB	44	43	1 x 13mm MultiSmart on One side 1 x 13mm MultiSmart to Other side

**To receive a higher STC of 53, fill the wall cavities between studs with 1 layer of 75mm thick R1.8 glass wool blanket on both frames.*



Fire Rated Universal Walls

E1UW15 Universal Timber or Steel Frame Wall | Load Bearing | One Way FRR

1 Layer: 1 Layer of Plasterboard to one side of frame (Fire side)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement	Cladding (Required)
				STC	Rw		
E1UW15	**-S13**	15/15/15	LB	N/A	N/A	1 x 13mm Elephant Standard on One side	Any Cladding

Framing
Timber or Steel Frame designed to meet durability and structural criteria for strength and serviceability under dead and live loads.

Studs at 600mm centres maximum.

Stud width to be a minimum of 35mm.

Cavity depth to be a minimum of 90mm.

Wall Height , Load and Framing Dimensions
Timber frame : Refer to NZS3604 stud tables for height and framing dimensions of load bearing and non-load bearing partitions.

Steel frame : Refer to specific designs.

Exterior Cladding
The Exterior wall must be clad with a suitable weathertight material. E.g. Brick Veneer, fibre cement sheeting, timber weatherboards etc

Plasterboard Lining (Fire side)
One layer of 13mm Elephant Standard lining on one side of the framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Horizontal Fixing- the horizontal sheet joints must be formed over nogs.

Sheet end butt joints- must be formed over framing.

All sheet joints must be fixed over framing.

For steel frame, linings are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings
Fasteners

System Number	Timber Frame	Steel Frame
	High Thread Drywall Screws	Self-Tapping Drywall Screws
E1UW15-S13	13mm	13mm
	32 x 6g	25 x 6g

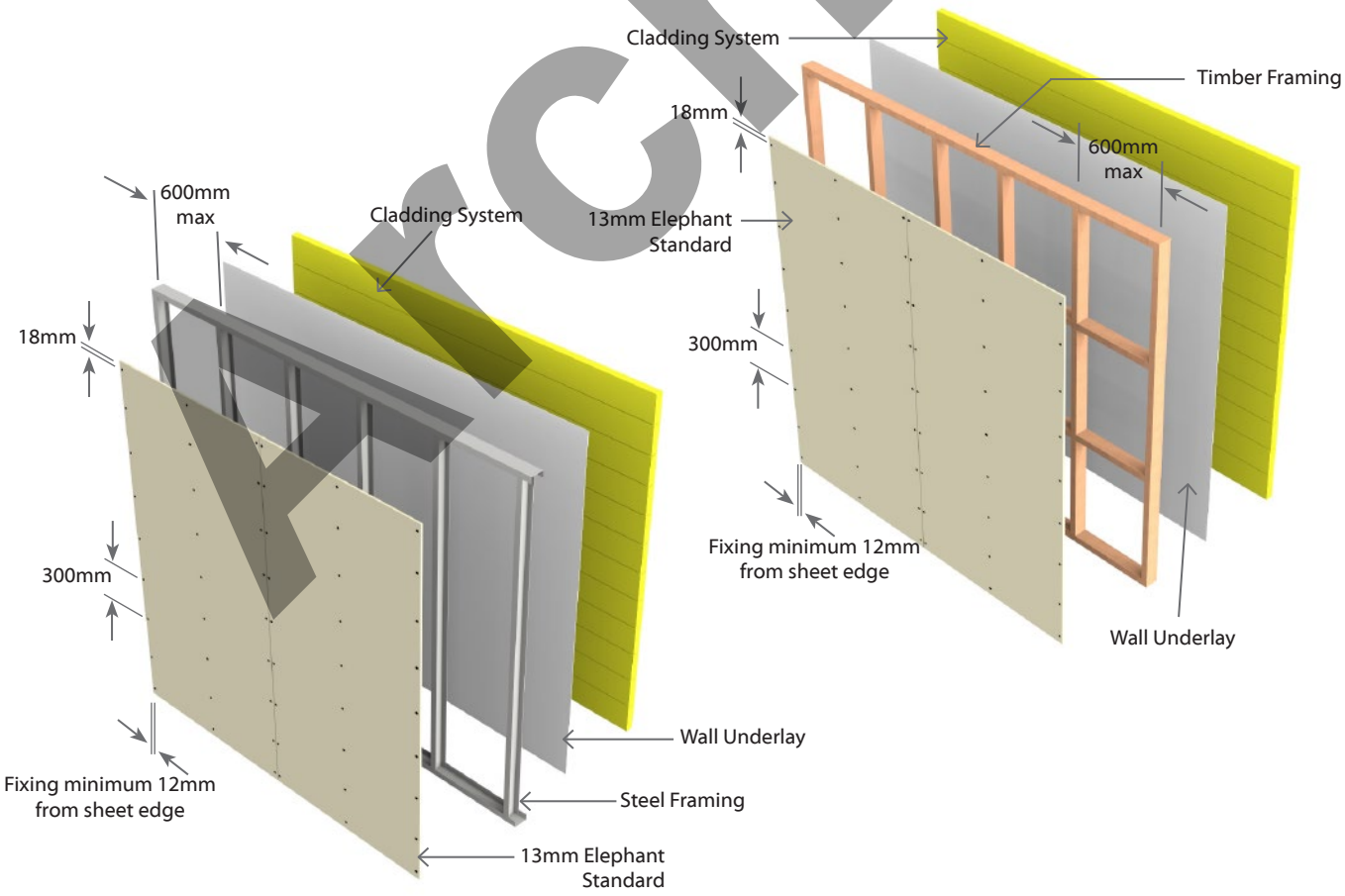
Fastener Centres

Timber or Steel Frames: Fix at 300mm centres up each stud.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Place fasteners at 200mm centres where sheet end butt joints occur.

Jointing
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E1UW30 Universal Timber or Steel Frame Wall | Load Bearing | One Way FRR

1 Layer: 1 Layer of Plasterboard to one side of frame (Fire side)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement	Cladding (Required)
				STC	Rw		
E1UW30	**-F16a**	30/30/30**	LB	N/A	N/A	1 x 16mm Elephant FireSmart on One side	NO Polymeric foam

** N.B. System E1UW30-F16a achieves the stated fire rating with cladding systems that do not incorporate polymeric foam

Framing
Timber or Steel Frame designed to meet durability and structural criteria for strength and serviceability under dead and live loads.

Studs at 600mm centres maximum.

Stud width to be a minimum of 35mm.

Cavity depth to be a minimum of 90mm.

Wall Height , Load and Framing Dimensions
Timber frame : Refer to NZS3604 stud tables for height and framing dimensions of load bearing and non-load bearing partitions.
Steel frame : Refer to specific designs.

Exterior Cladding
The Exterior wall must be clad with a suitable weathertight material. E.g. Brick Veneer, fibre cement sheeting, timber weatherboards etc.

N.B. Cladding cannot contain polymeric foam.

Plasterboard Lining (Fire side)
One layer of 16mm Elephant FireSmart lining on one side of the framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Horizontal Fixing- the horizontal sheet joints must be formed over nogs.

Sheet end butt joints- must be formed over framing.

All sheet joints must be fixed over framing.
For steel frame, linings are fixed hard to the floor.
Sheets shall be touch fitted.

Fixing of Linings
Fasteners

System Number	Timber Frame	Steel Frame
	High Thread Drywall Screws	Self-Tapping Drywall Screws
E1UW30-F16a	16mm	16mm
	41 x 6g	32 x 6g

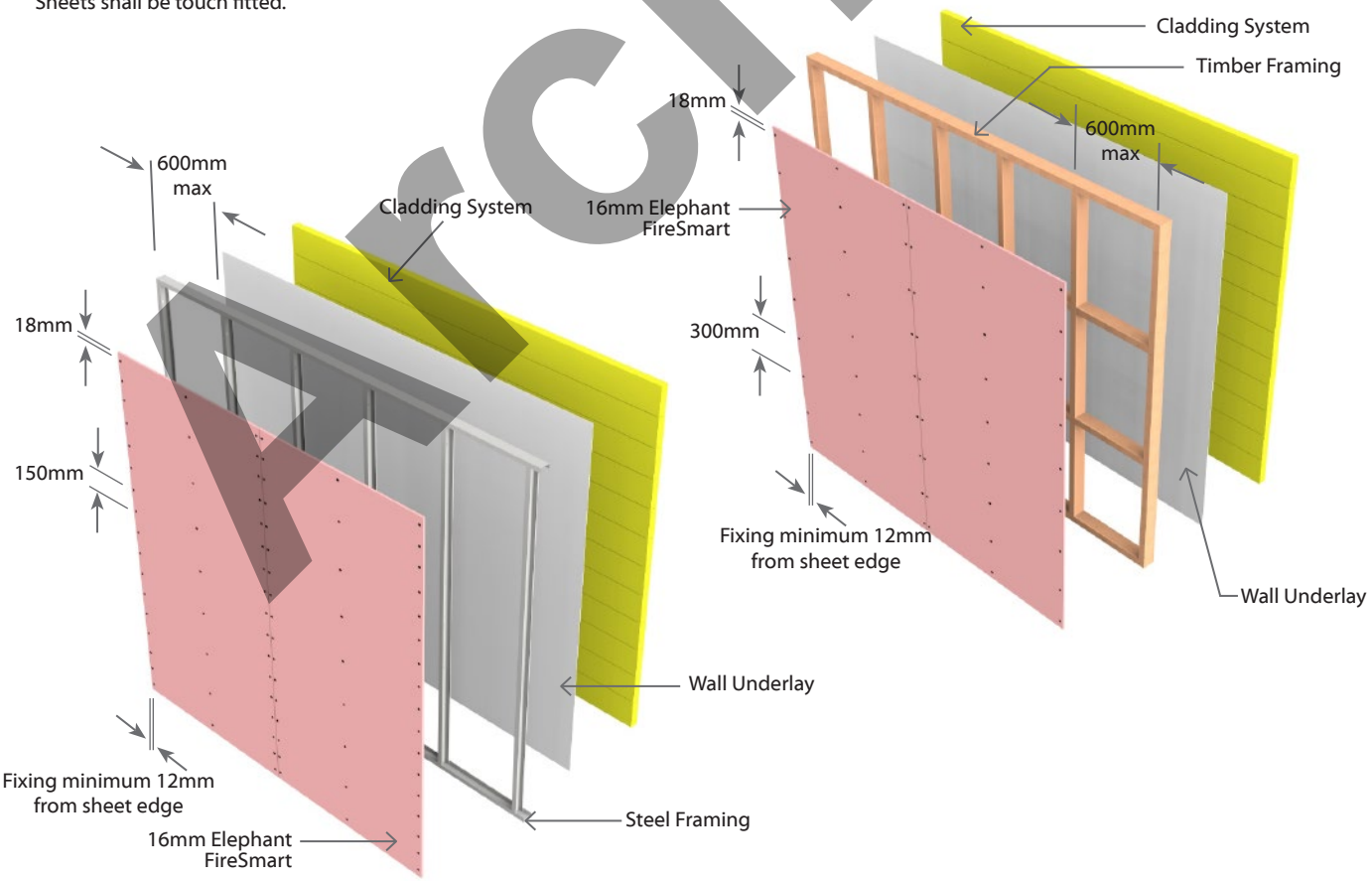
Fastener Centres
Timber Frame: Fix at 300mm centres up each stud.

Steel Frame: Fix at 150mm centres up sheet edges and 300mm centres up each intermediate stud.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Place fasteners at 200mm centres where sheet end butt joints occur.

Jointing
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E2UW30 Universal Timber or Steel Frame Wall | Load Bearing | One Way FRR

2 Layers: 2 Layers of Plasterboard to one side of frame (Fire side)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement	Cladding (Required)
				STC	Rw		
E2UW30	**-S20**	30/30/30	LB	N/A	N/A	2 x 10mm Elephant Standard-Plus on One side	Any Cladding

Framing
Timber or Steel Frame designed to meet durability and structural criteria for strength and serviceability under dead and live loads.

Studs at 600mm centres maximum.

Stud width to be a minimum of 35mm.

Cavity depth to be a minimum of 90mm.

Wall Height , Load and Framing Dimensions
Timber frame : Refer to NZS3604 stud tables for height and framing dimensions of load bearing and non-load bearing partitions.

Steel frame : Refer to specific designs.

Exterior Cladding
The Exterior wall must be clad with a suitable weathertight material. E.g. Brick Veneer, fibre cement sheeting, timber weatherboards etc.

Plasterboard Lining (Fire side)
Two layers of 10mm Elephant Standard-Plus lining a on one side of the framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

Inner layer: The vertical or horizontal sheet joints of the inner layer must be formed over framing.

Outer layer(vertical fixing): All sheet joints must be fixed over framing.

Outer layer(horizontal fixing): All sheet joints must be fixed over framing except longitudinal sheet joints of the outer layer, which do not need to be formed over framing.

Sheet end butt joints must be formed over framing.

All outer layer joints must be staggered from inner layer joints.

For steel frame, linings are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings
Fasteners

System Number	Timber Frame		Steel Frame	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	High Thread Drywall Screws		Self-Tapping Drywall Screws	
E2UW30-S20	10mm	10mm	10mm	10mm
	41 x 6g	51 x 7g	25 x 6g	32 x 6g

Fastener Centres

Inner Layer: Fix at 300mm centres up each stud.

Outer Layer: Fix at 300mm centres up each stud.

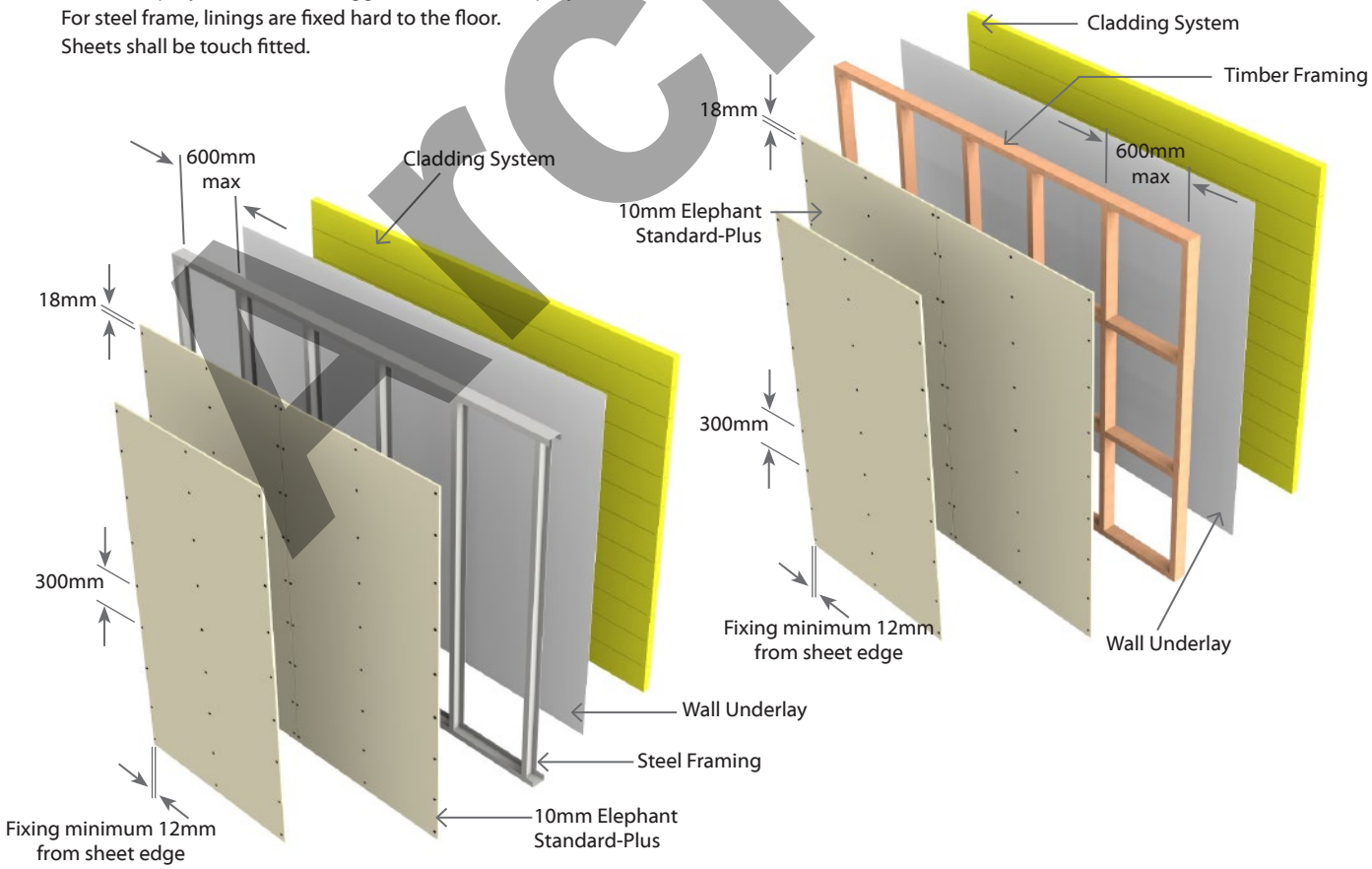
Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing
Inner Layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E2UW45 Universal Timber or Steel Frame Wall | Load Bearing | One Way FRR

2 Layers: 2 Layers of Plasterboard to one side of frame (Fire side)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement	Cladding (Required)
				STC	Rw		
E2UW45	**-M26**	45/45/45	LB	N/A	N/A	2 x 13mm Elephant MultiSmart on One side	Any Cladding

Framing
Timber or Steel Frame designed to meet durability and structural criteria for strength and serviceability under dead and live loads.

Studs at 600mm centres maximum.

Stud width to be a minimum of 35mm.

Cavity depth to be a minimum of 90mm.

Wall Height , Load and Framing Dimensions
Timber frame : Refer to NZS3604 stud tables for height and framing dimensions of load bearing and non-load bearing partitions.

Steel frame : Refer to specific designs.

Exterior Cladding
The Exterior wall must be clad with a suitable weathertight material. E.g. Brick Veneer, fibre cement sheeting, timber weatherboards etc.

Plasterboard Lining (Fire side)
Two layers of 13mm Elephant MultiSmart lining on one side of the framing. Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

Inner layer: The vertical or horizontal sheet joints of the inner layer must be formed over framing.

Outer layer(vertical fixing): All sheet joints must be fixed over framing.

Outer layer(horizontal fixing): All sheet joints must be fixed over framing except longitudinal sheet joints of the outer layer, which do not need to be formed over framing.

Sheet end butt joints must be formed over framing.

All outer layer joints must be staggered from inner layer joints.

For steel frame, linings are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings
Fasteners

System Number	Timber Frame		Steel Frame	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	High Thread Drywall Screws		Self-Tapping Drywall Screws	
E2UW45-M26	13mm	13mm	13mm	13mm
	32 x 6g	51 x 7g	25 x 6g	41 x 6g

Fastener Centres

Inner Layer: Fix at 300mm centres up each stud.

Outer Layer: Fix at 300mm centres up each stud.

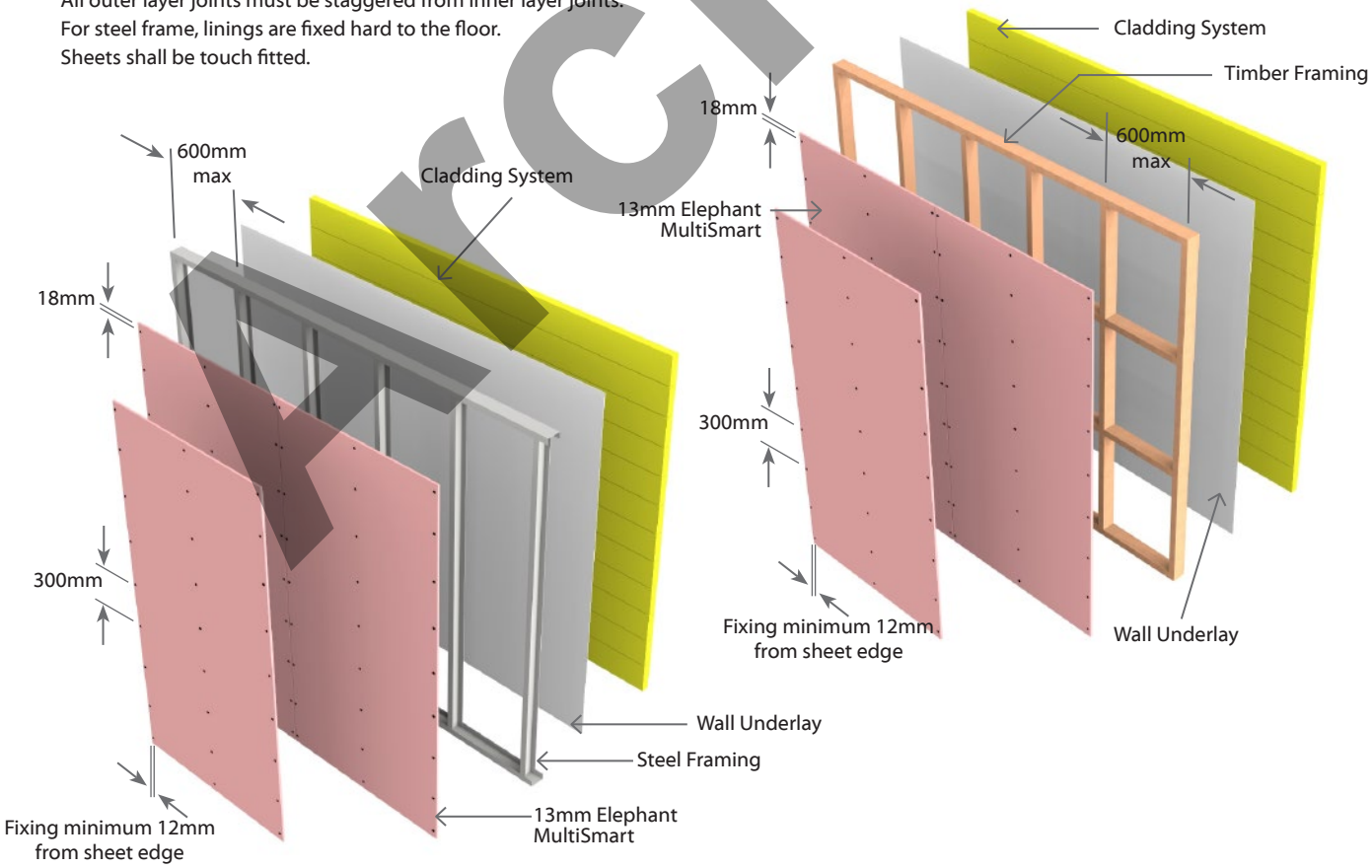
Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing
Inner Layer: Unstopped.

Outer Layer:All fastener heads stopped and all sheet joints reinforced and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E2UW60 Universal Timber or Steel Frame Wall | Load Bearing | One Way FRR

2 Layers: 2 Layers of Plasterboard to one side of frame (Fire side)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement	Cladding (Required)
				STC	Rw		
E2UW60	-M26a	60/60/60**	LB	N/A	N/A	2 x 13mm Elephant MultiSmart on One side	NO Polymeric foam
	-FM29	60/60/60	LB	N/A	N/A	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart on One side	Any Cladding

** N.B. System E2UW60-M26a achieves the stated fire rating with cladding systems that do not incorporate polymeric foam

Framing

Timber or Steel Frame designed to meet durability and structural criteria for strength and serviceability under dead and live loads.

Studs at 600mm centres maximum.

Stud width to be a minimum of 35mm.

Cavity depth to be a minimum of 90mm.

Wall Height , Load and Framing Dimensions

Timber frame : Refer to NZS3604 stud tables for height and framing dimensions of load bearing and non-load bearing partitions.

Steel frame : Refer to specific designs.

Exterior Cladding

The Exterior wall must be clad with a suitable weathertight material. E.g. Brick Veneer, fibre cement sheeting, timber weatherboards etc.

N.B. Cladding cannot contain polymeric foam for system E2UW60-M26a.

Plasterboard Lining (Fire side)

Two layers of Elephant Plasterboard lining as per specified system above on one side of the framing.

Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

Inner layer: The vertical or horizontal sheet joints of the inner layer must be formed over framing.

Outer layer(vertical fixing): All sheet joints must be fixed over framing.

Outer layer(horizontal fixing): All sheet joints must be fixed over framing except longitudinal sheet joints of the outer layer, which do not need to be formed over framing.

Sheet end butt joints must be formed over framing.

All outer layer joints must be staggered from inner layer joints.

For steel frame, linings are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners (As per Specified System Above)

System Number	Timber Frame		Steel Frame	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	High Thread Drywall Screws		Self-Tapping Drywall Screws	
E2UW60-M26a	13mm 32 x 6g	13mm 51 x 7g	13mm 25 x 6g	13mm 41 x 6g
E2UW60-FM29	16mm 41 x 6g	13mm 51 x 7g	16mm 32 x 6g	13mm 41 x 6g

Fastener Centres

Inner Layer: Fix at 300mm centres up each stud.

Outer Layer: Fix at 300mm centres up each stud.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends..

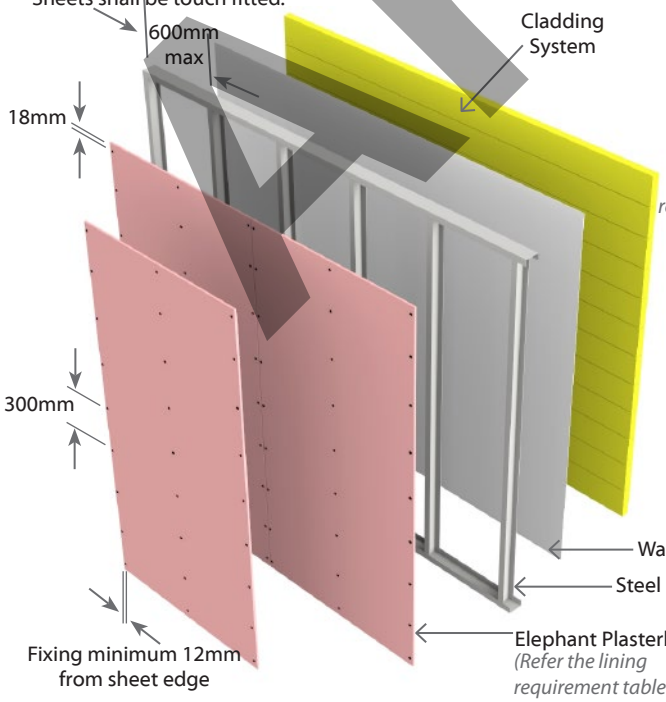
Place fasteners at 200mm centres where sheet end butt joints occur.

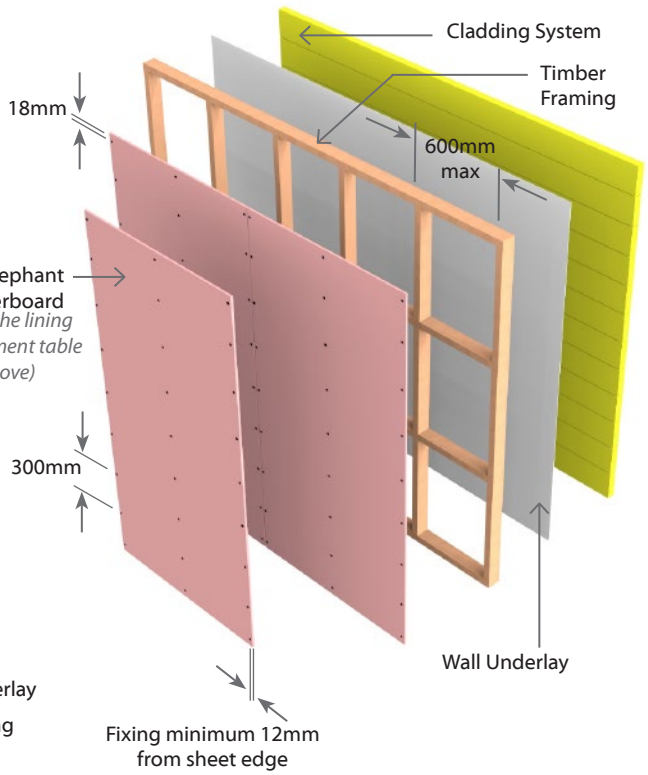
Avoid outer layer screws from hitting inner layer screws.

Jointing

Inner Layer: Unstopped.

Outer Layer:All fastener heads stopped and all sheet joints reinforced and stopped. All in accordance with Elephant Plasterboard Installation Guide.





E3UW90 Universal Timber or Steel Frame Wall | Load Bearing | One Way FRR

3 Layers: 3 Layers of Plasterboard to one side of frame (Fire side)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement	Cladding (Required)
				STC	Rw		
E3UW90	-M39a	90/90/90**	LB	N/A	N/A	3 x 13mm Elephant MultiSmart on One side	NO Polymeric foam
	-FM42	90/90/90	LB	N/A	N/A	1 x 16mm Elephant FireSmart and 2 x 13mm Elephant MultiSmart on One side	Any Cladding

** N.B. System E3UW90-M39a achieves the stated fire rating with cladding systems that do not incorporate polymeric foam

Framing

Timber or Steel Frame designed to meet durability and structural criteria for strength and serviceability under dead and live loads.

Studs at 600mm centres maximum.

Stud width to be a minimum of 35mm.

Cavity depth to be a minimum of 90mm.

Wall Height , Load and Framing Dimensions

Timber frame : Refer to NZS3604 stud tables for height and framing dimensions of load bearing and non-load bearing partitions.

Steel frame : Refer to specific designs.

Exterior Cladding

The Exterior wall must be clad with a suitable weathertight material. E.g. Brick Veneer, fibre cement sheeting, timber weatherboards etc.

N.B. Cladding cannot contain polymeric foam for system E2UW90-M39a.

Plasterboard Lining (Fire side)

Three layers of Elephant Plasterboard lining as per specified system above on one side of the framing.

Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

Inner layer: The vertical or horizontal sheet joints of the inner layer must be formed over framing.

Outer layer(vertical fixing): All sheet joints must be fixed over framing.

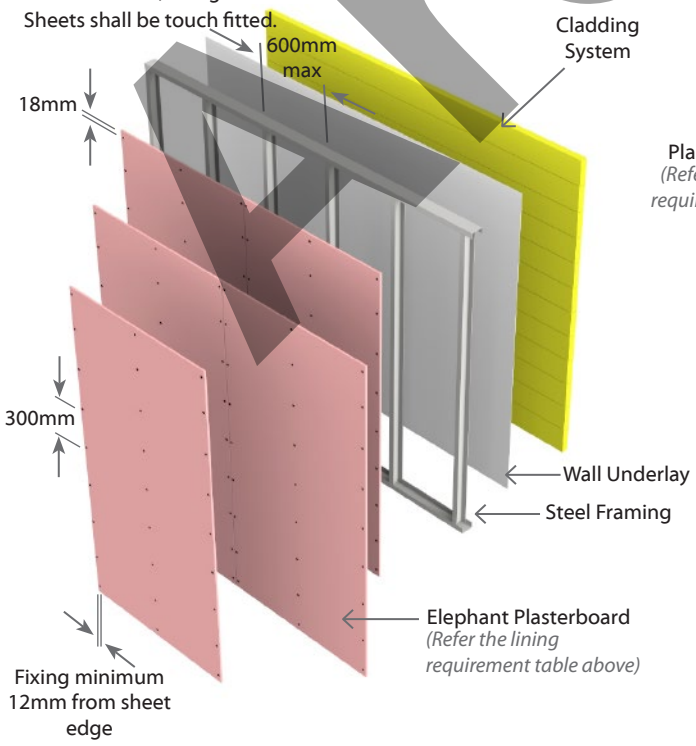
Outer layer(horizontal fixing): All sheet joints must be fixed over framing except longitudinal sheet joints of the outer layer, which do not need to be formed over framing.

Sheet end butt joints must be formed over framing.

All outer layer joints must be staggered from inner layer joints.

For steel frame, linings are fixed hard to the floor.

Sheets shall be touch fitted.



Fixing of Linings

Fasteners (As per Specified System Above)

System Number	Timber Frame			Steel Frame		
	1st Layer	2nd Layer	3rd Layer	1st Layer	2nd Layer	3rd Layer
	High Thread Drywall Screws			Self-Tapping Drywall Screws		
E3UW90-M39a	13mm	13mm	13mm	13mm	13mm	13mm
	41 x 6g	51 x 7g	63 x 8g	25 x6g	41 x 6g	51 x 7g
E3UW90-FM42	16mm	13mm	13mm	16mm	13mm	13mm
	41 x 6g	51 x 7g	63 x 8g	32 x 6g	41 x 6g	63 x 8g

Fastener Centres

First and Second Layer: Fix at 300mm centres up each stud.

Outer Layer: Fix at 300mm centres up each stud.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends..

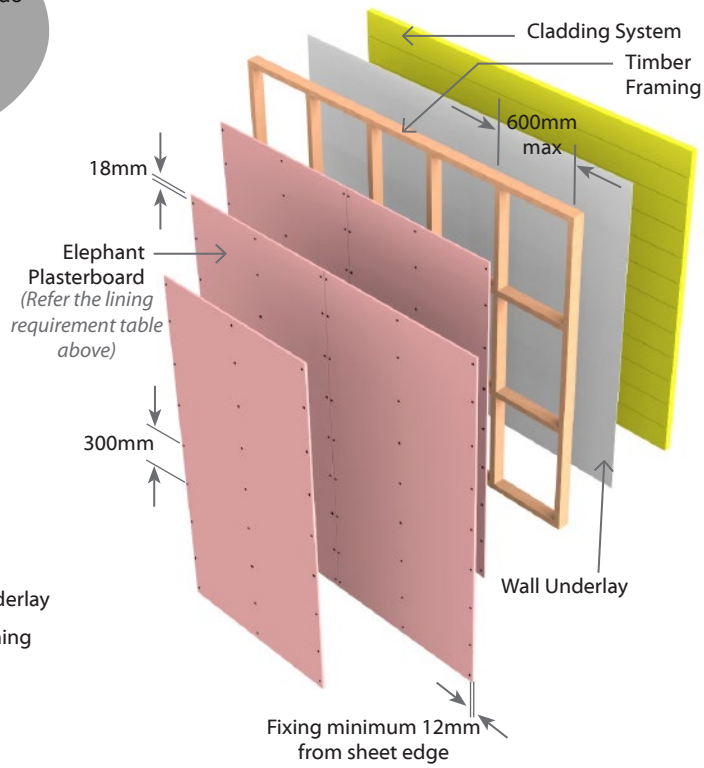
Place fasteners at 200mm centres where sheet end butt joints occur.

Avoid outer layer screws from hitting inner layer screws.

Jointing

1st and 2nd Layers: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E3UW120 Universal Timber or Steel Frame Wall | Load Bearing | One Way FRR

3 Layers: 3 Layers of Plasterboard to one side of frame (Fire side)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement	Cladding (Required)
				STC	Rw		
E3UW120	**-MF45a**	120/120/120**	LB	N/A	N/A	1 x 13mm Elephant MultiSmart and 2 x 16mm Elephant FireSmart on One Side	NO Polymeric foam

** N.B. System E3UW120-MF45a achieves the stated fire rating with cladding systems that do not incorporate polymeric foam

Framing

Timber or Steel Frame designed to meet durability and structural criteria for strength and serviceability under dead and live loads.

Studs at 600mm centres maximum.

Stud width to be a minimum of 35mm.

Cavity depth to be a minimum of 90mm.

Wall Height , Load and Framing Dimensions

Timber frame : Refer to NZS3604 stud tables for height and framing dimensions of load bearing and non-load bearing partitions.

Steel frame : Refer to specific designs.

Exterior Cladding

The Exterior wall must be clad with a suitable weathertight material. E.g. Brick Veneer, fibre cement sheeting, timber weatherboards etc.

N.B. Cladding cannot contain polymeric foam .

Plasterboard Lining (Fire side)

One layer of 13mm Elephant MultiSmart and Two layers of 16mm Elephant FireSmart lining on one side of the framing.

Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

Inner layer: The vertical or horizontal sheet joints of the inner layer must be formed over framing.

Outer layer(vertical fixing): All sheet joints must be fixed over framing.

Outer layer(horizontal fixing): All sheet joints must be fixed over framing except longitudinal sheet joints of the outer layer, which do not need to be formed over framing.

Sheet end butt joints must be formed over framing.

All outer layer joints must be staggered from inner layer joints.

For steel frame, linings are fixed hard to the floor.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Timber Frame			Steel Frame		
	1st Layer	2nd Layer	3rd Layer	1st Layer	2nd Layer	3rd Layer
	High Thread Drywall Screws		Self-Tapping Drywall Screws			
E3UW120-MF45a	13mm	16mm	16mm	13mm	16mm	16mm
	32 x 6g	51 x 7g	63 x 8g	25x 6g	41 x 7g	63 x 8g

Fastener Centres

First and Second Layer: Fix at 300mm centres up each stud.

Outer Layer: Fix at 300mm centres up each stud.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends..

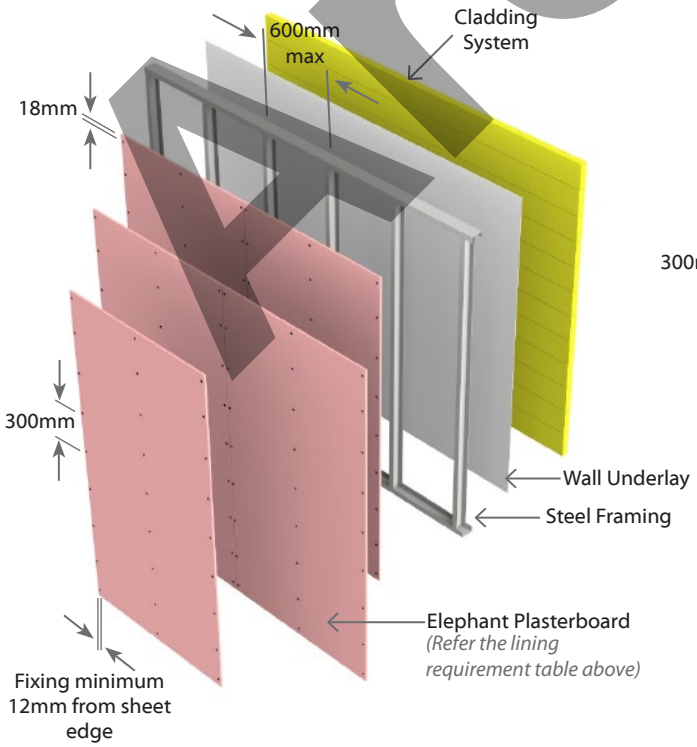
Place fasteners at 200mm centres where sheet end butt joints occur.

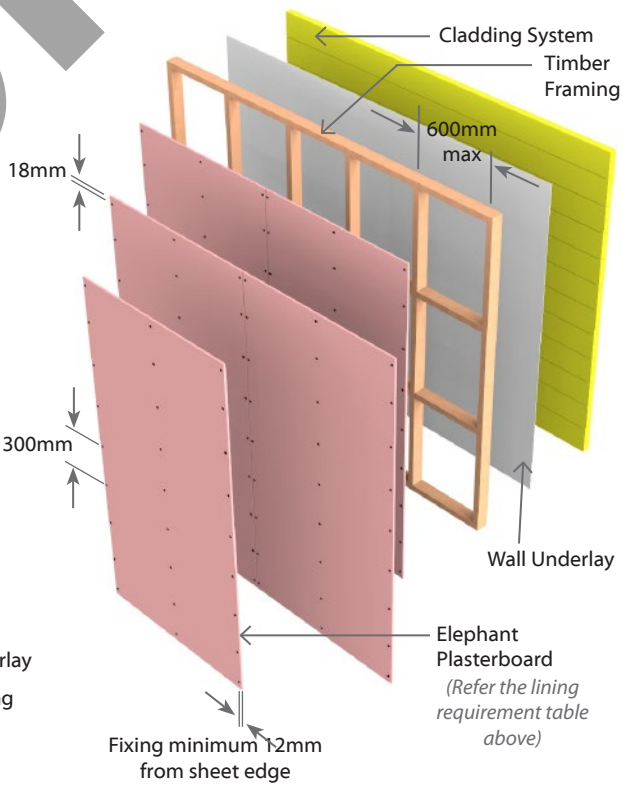
Avoid outer layer screws from hitting inner layer screws.

Jointing

1st and 2nd Layers: Unstopped

Outer Layer: All fastener heads stopped and all sheet joints reinforced and stopped. All in accordance with Elephant Plasterboard Installation Guide.





E2sm10 Smoke Separation - Timber or Steel Frame | Load Bearing | Two Way FRR

2 Layers: 1 Layer of Plasterboard to each side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E2sm10	-	10/10/10	N/A	N/A	N/A	1 x minimum 10mm Elephant Plasterboard on One side 1 x minimum 10mm Elephant Plasterboard to Other side

Framing

Timber or Steel Frame designed to meet durability and structural criteria for strength and serviceability under dead and live loads.

Studs at 600mm centres maximum.

Stud width to be a minimum of 35mm.

Plasterboard Lining

One layer of minimum 10mm Elephant Plasterboard lining on each side of the framing.

Vertical or Horizontal fixing permitted. Use full height or full length sheets where possible.

For Horizontal Fixing, the horizontal sheet joints need not be formed directly over framing.

Sheets shall be touch fitted.

Penetrations

Penetrations in cavities are permitted on one side of the framing for plumbing and electrical services, with a maximum of two per stud bay. Metal plumbing services up to 65mm in diameter and metal flush boxes up to 90 x 50mm are permitted. Ensure all penetrations through smoke walls have sealant around the cover plates attached to metal flush boxes or around plumbing services.

Fixing of Linings

Fix the linings as per the Elephant Plasterboard Installation Guide.

For higher FRR requirements follow the Fixing of Linings instruction for the relevant FRR system.

Fasteners

For minimum screw lengths, refer Elephant Plasterboard Installation guide. For multiple layer board combinations consider longer screw lengths, ensuring a minimum penetration of 25mm for timber and 12mm for steel.

Fastener Centres

Fix at 300mm centres at sheet perimeters, on top and bottom plates and 300mm centres up all end studs. When fixing horizontally, screw fasteners at the points where the horizontal joint crosses the stud.

Place fasteners 50mm from sheet corners along the top and bottom plates. On end studs place additional fasteners 50-60mm vertically and no close than 10mm from plate to stud connections.

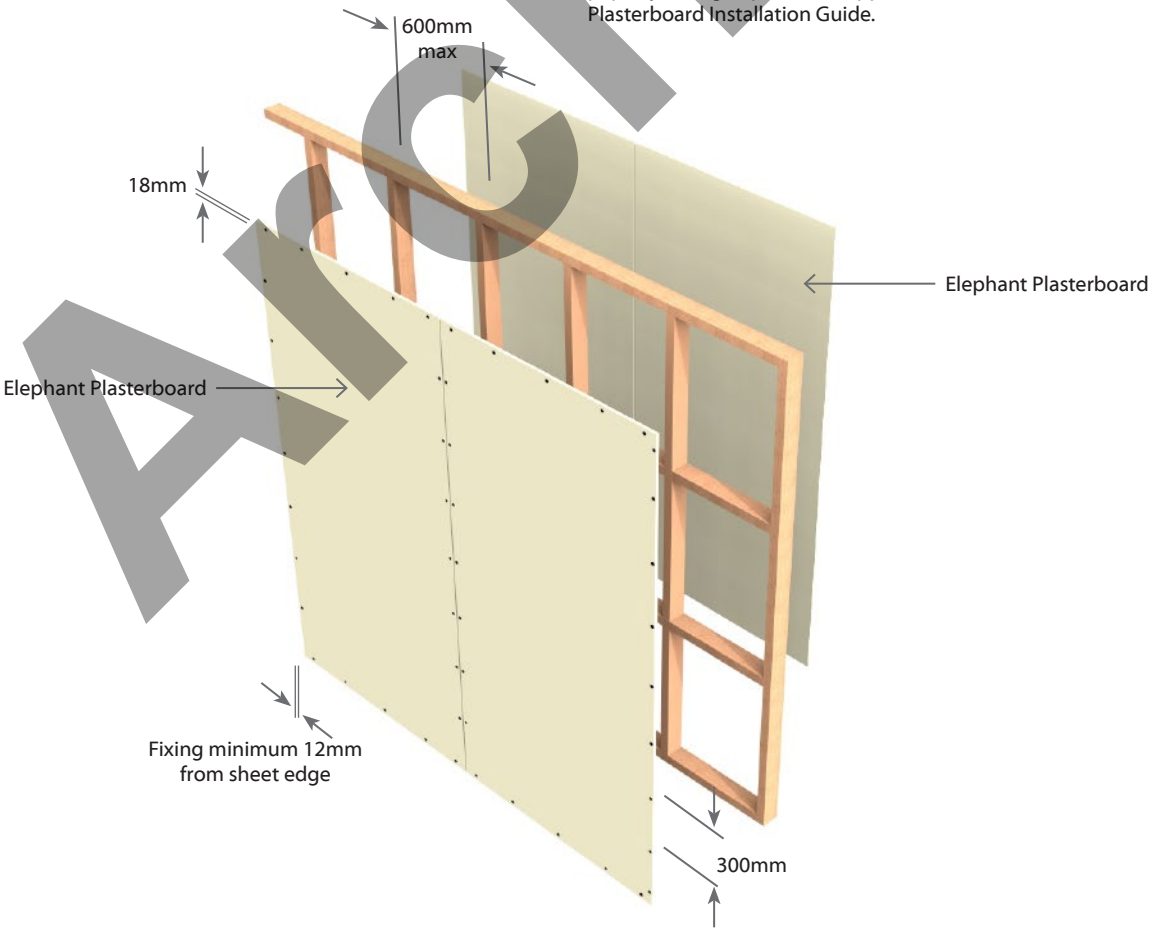
Place fasteners no closer than 12mm from the sheet edges and 18mm from sheet ends.

Intermediate studs may be fixed with fasteners or adhesives. Fix at 300mm centres. Adhesives not to be placed at sheet edges or within 200mm of mechanical fasteners.

Ensure all perimeter gaps are plaster stopped or sealed with a general purpose flexible sealant ensuring the passage of smoke is restricted.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



Fire Rated Floor/Ceiling Systems

E1FC15 Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1FC15	**-S13**	15/15/15	LB	38	37	31	1 x 13mm Elephant Standard

Floor Framing

Timber floor joists shall comply with NZS3604 with a minimum depth of 140mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing

Nogs fixed on the flat to receive the Elephant Plasterboard lining shall be 70mm x 45mm minimum. They are spaced at 600mm centres for joist at 600mm centres or at 1200mm centres for joists at 450mm centres.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining

One layer of 13mm Elephant Standard fixed at right angles directly to the underside of floor joists.

All joints must occur on joists and solid blocking.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	Single Layer
	High Thread Drywall Screws
E1FC15-S13	13mm
	41 x 6g

Fastener Centres

Place fasteners 150mm centres around the perimeter of each sheet. 200mm centres across each joist and at the centre of each nog.

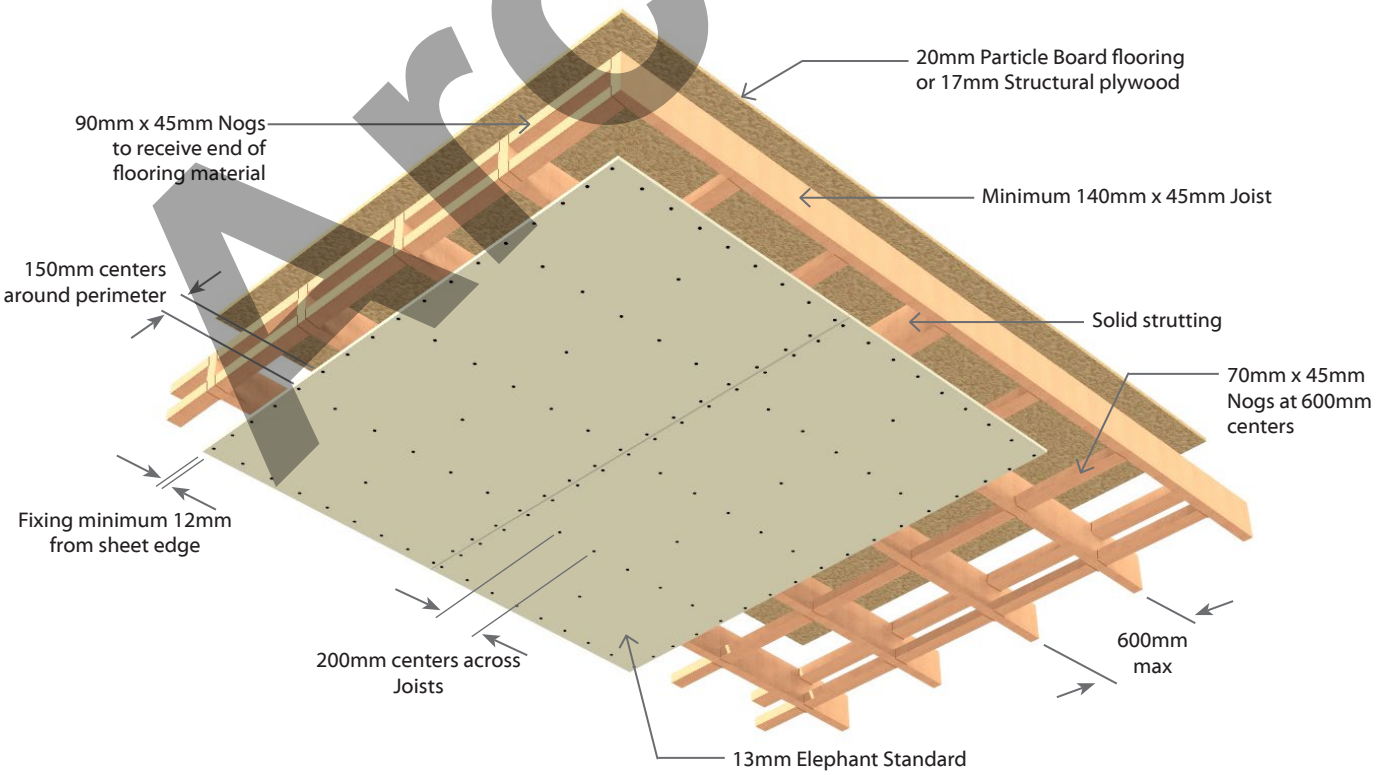
Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with the Elephant Plasterboard Installation Guide.



E1FC30 Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1FC30	**-M13**	30/30/30	LB	39	38	32	1 x 13mm Elephant MultiSmart

Floor Framing
Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring
Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing
Nogs shall be 70mm x 35mm minimum, fixed on the flat in between joists to receive the Elephant Plasterboard lining. They are spaced at 600mm centres for joist at 600mm centres or at 1200mm centres for joists at 450mm centres.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Alternative Framing
In situations where NZS3604 allows for 140mm deep joists a 70mm x 45mm ceiling batten and nog shall be used to build up the joist depth.

Also in situations where the 70mm x 35mm ceiling battens have been fixed over the 190mm joists instead of nogged within the joists, the alternative framing method can be used to ensure that the fire integrity is maintained.

Refer to E1FC45 Alternative Framing specifications.

Plasterboard Lining
One layer of 13mm Elephant MultiSmart fixed at right angles directly to the underside of floor joists.

All joints must occur on joists and solid blocking.

Sheets to be touch fitted.

Fixing of Linings
Fasteners

System Number	Single Layer
	High Thread Drywall Screws
E1FC30-M13	13mm
	41 x 6g

Fastener Centres

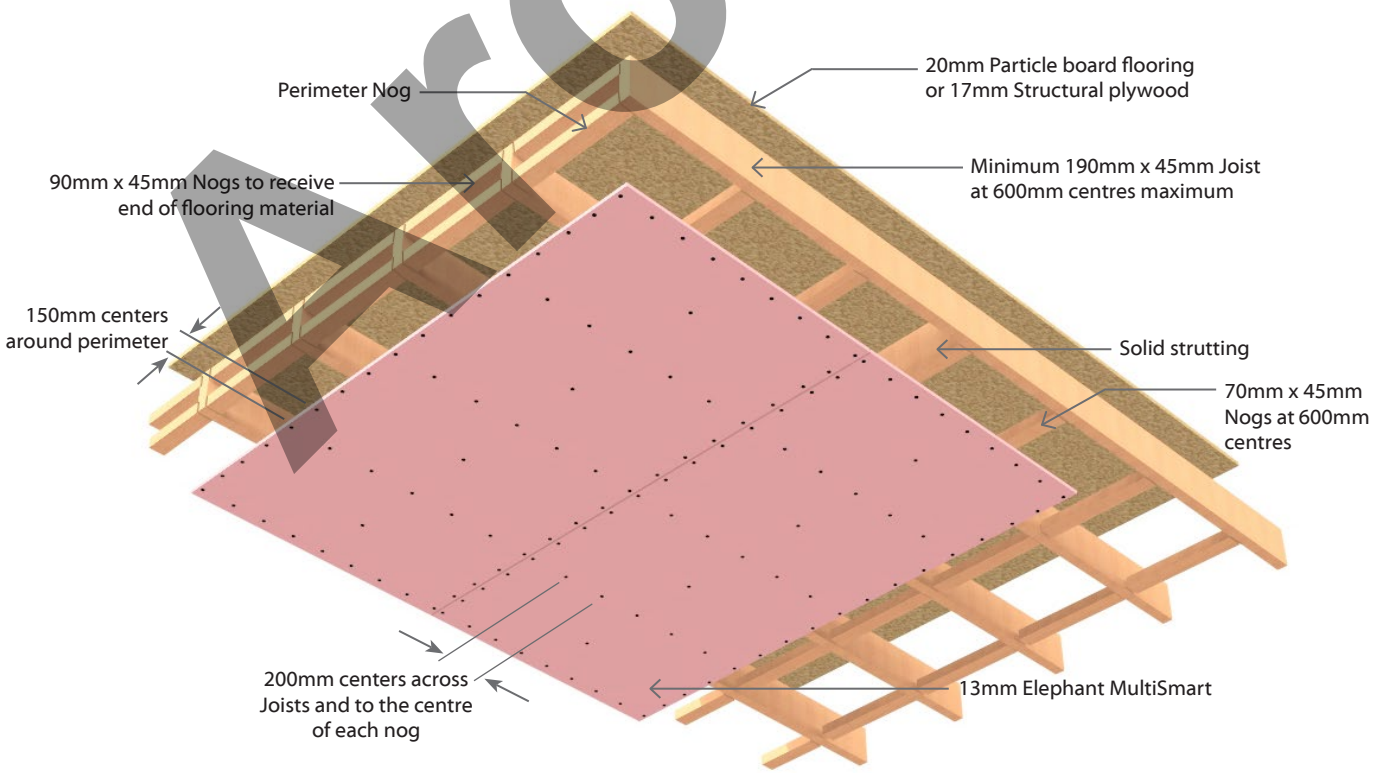
Place fasteners 150mm centres around the perimeter of each sheet.

200mm centres across each joist and at the centre of each nog.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Wall/Ceiling Junction
The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with the Elephant Plasterboard Installation Guide.



E2FC30 Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2FC30	**-S26**	30/30/30	LB	39	38	32	2 x 13mm Elephant Standard

Floor Framing
Timber floor joists shall comply with NZS3604 with a minimum depth of 140mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring
Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing
Nogs fixed on the flat to receive the Elephant Plasterboard lining shall be 70mm x 45mm minimum.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining
Two layers of 13mm Elephant Standard fixed directly to the underside of floor joists.

All joints must occur on joists and solid blocking.

All sheet joints should be staggered 600mm between layers.

Sheets shall be touch fitted.

Fixing of Linings
Fasteners

System Number	1st Layer	2nd Layer
	High Thread Drywall Screws	
E2FC30-S26	13mm	13mm
	41 x 6g	51 x 7g

Fastener Centres

Inner Layer: 150mm centres around the perimeter of each sheet, across each joist and at the centre of each nog.

Outer Layer: 150mm centres around the perimeter of each sheet and 200mm centres along each joist and at centre of each nog.

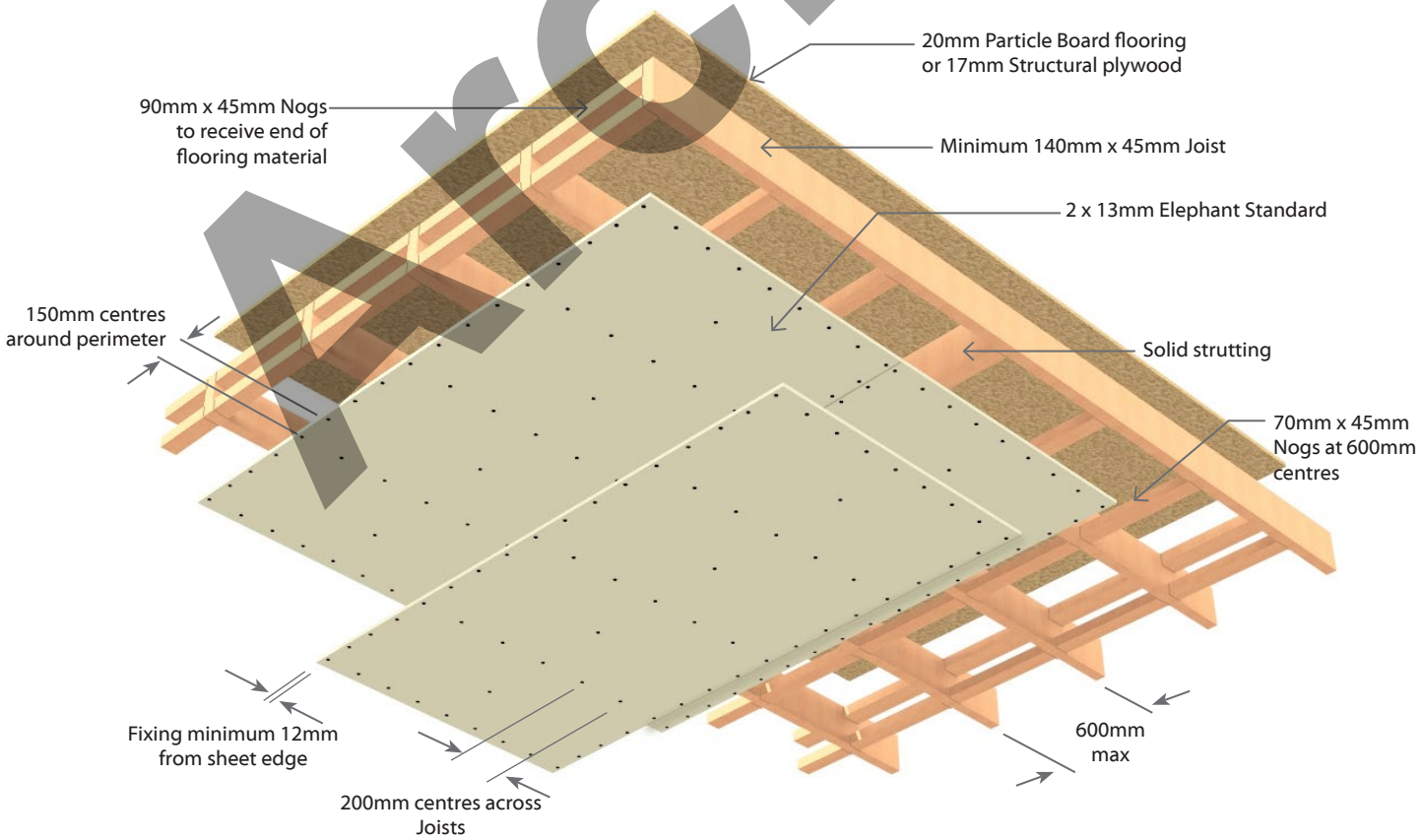
Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Avoid outer layer screws from hitting inner layer screws.

Wall/Ceiling Junction
The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing
Inner Layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1FC45 Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1FC45*	**-M13**	45/45/45	LB	39	38	32	1 x 13mm Elephant MultiSmart

Floor Framing
Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring
Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing
Nogs shall be 70mm x 45mm minimum, fixed on the flat in between joists to receive the Elephant Plasterboard lining. They are spaced at 600mm centres for joist at 600mm centres or at 1200mm centres for joists at 450mm centres.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Alternative Framing
In situations where NZS3604 allows for 140mm deep joists a 70mm x 45mm ceiling batten and nog can be used to build up the joist depth.

The 45mm x 45mm nog is required under all joists that are spaced at 600mm centres or under all joists which are at 450mm centres and the battens are spaced at 600mm centres.

Where joists are at 400mm centres or joists are at 450mm centres and the battens are at 450mm centres, then nogs are required at 1200mm centres.

Also in situations where ceiling battens have been fixed over the 190mm x 45mm joists instead of nogged within the joists, the alternative framing method can be used to ensure that the fire integrity is maintained.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining
One layer of 13mm Elephant MultiSmart fixed at right angles directly to the underside of floor joists.

All joints must occur on joists and solid blocking.

Sheets to be touch fitted.

Fixing of Linings
Fasteners

System Number	Single Layer
	High Thread Drywall Screws
E1FC45-M13	13mm
	51 x 7g

Fastener Centres

Place fasteners 150mm centres around the perimeter of each sheet.

200mm centres across each joist and at the centre of each nog.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Wall/Ceiling Junction
The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

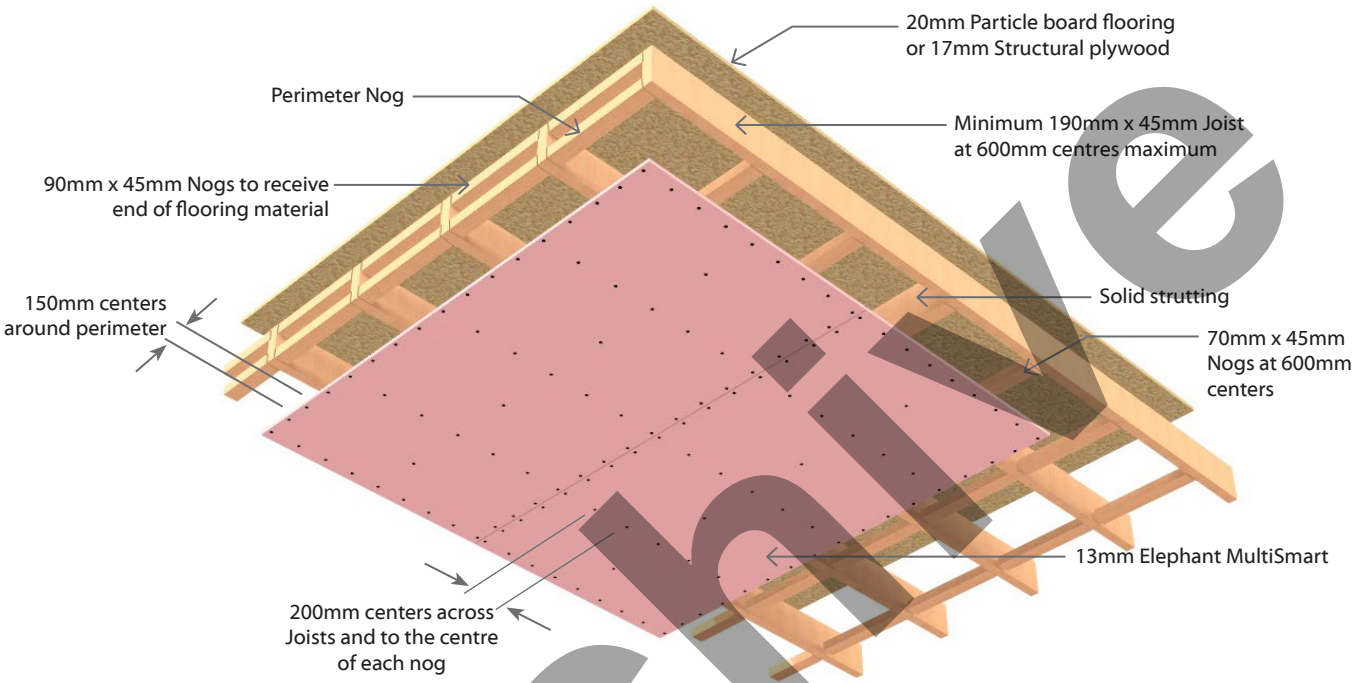
Jointing
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with the Elephant Plasterboard Installation Guide.

*Note: For 30/30/30 FRR
If the actual FRR required is 30/30/30, reference can be made to either E1BC30 or E1FC30.

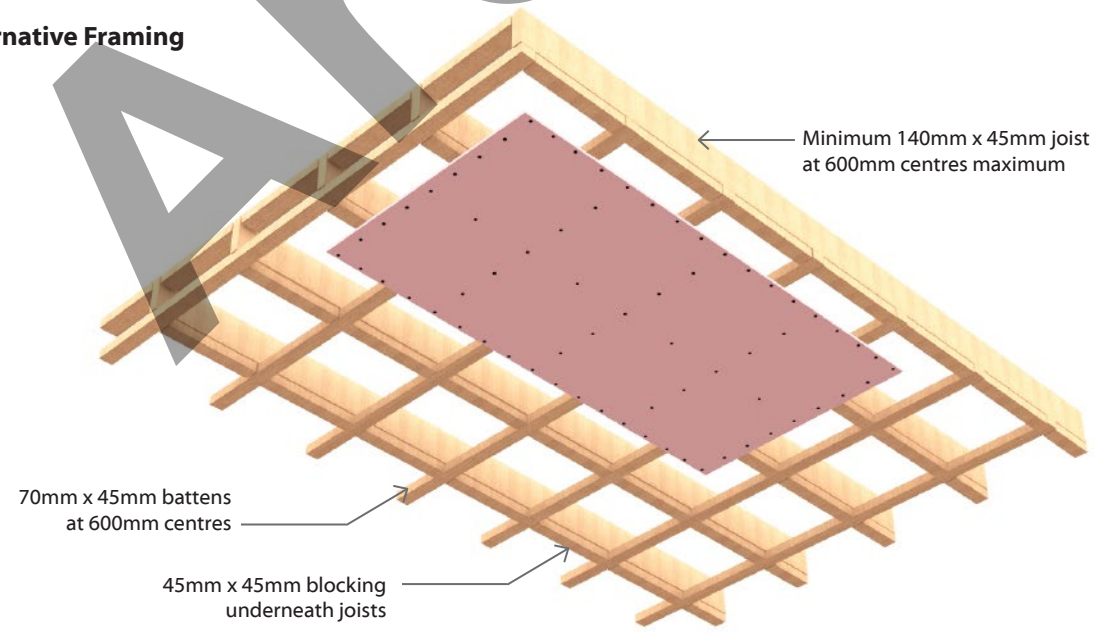
E1FC45 Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1FC45	**-M13**	45/45/45	LB	39	38	32	1 x 13mm Elephant MultiSmart



Alternative Framing



E1FC60 Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1FC60	**-F16**	60/60/60	LB	39	39	32	1 x 16mm Elephant FireSmart

Floor Framing
Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring
Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing
Nogs fixed on the flat to receive the Elephant Plasterboard lining shall be 70mm x 45mm minimum. They are spaced at 600mm centres for joist at 600mm centres or at 1200mm centres for joists at 450mm centres.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Alternative Framing
In situations where NZS3604 allows for 140mm deep joists a 70mm x 45mm ceiling batten and nog can be used to build up the joist depth.

The 45mm x 45mm nog is required under all joists that are spaced at 600mm centres or under all joists which are at 450mm centres and the battens are spaced at 600mm centres.

Where joists are at 400mm centres or joists are at 450mm centres and the battens are at 450mm centres, then nogs are required at 1200mm centres.

Also in situations where the ceiling battens have been fixed over the 190mm x 45mm joists instead of within the joists, the alternative framing method can be used to ensure that the fire integrity is maintained.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining
One layer of 16mm Elephant FireSmart fixed at right angles directly to the underside of floor joists.

All joints must occur on joists and solid blocking.

Sheets to be touch fitted.

Fixing of Linings
Fasteners

System Number	Single Layer
	High Thread Drywall Screws
E1FC60-F16	16mm
	51 x 7g

Fastener Centres

Place fasteners 150mm centres around the perimeter of each sheet.

200mm centres across each joist and at the centre of each nog.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

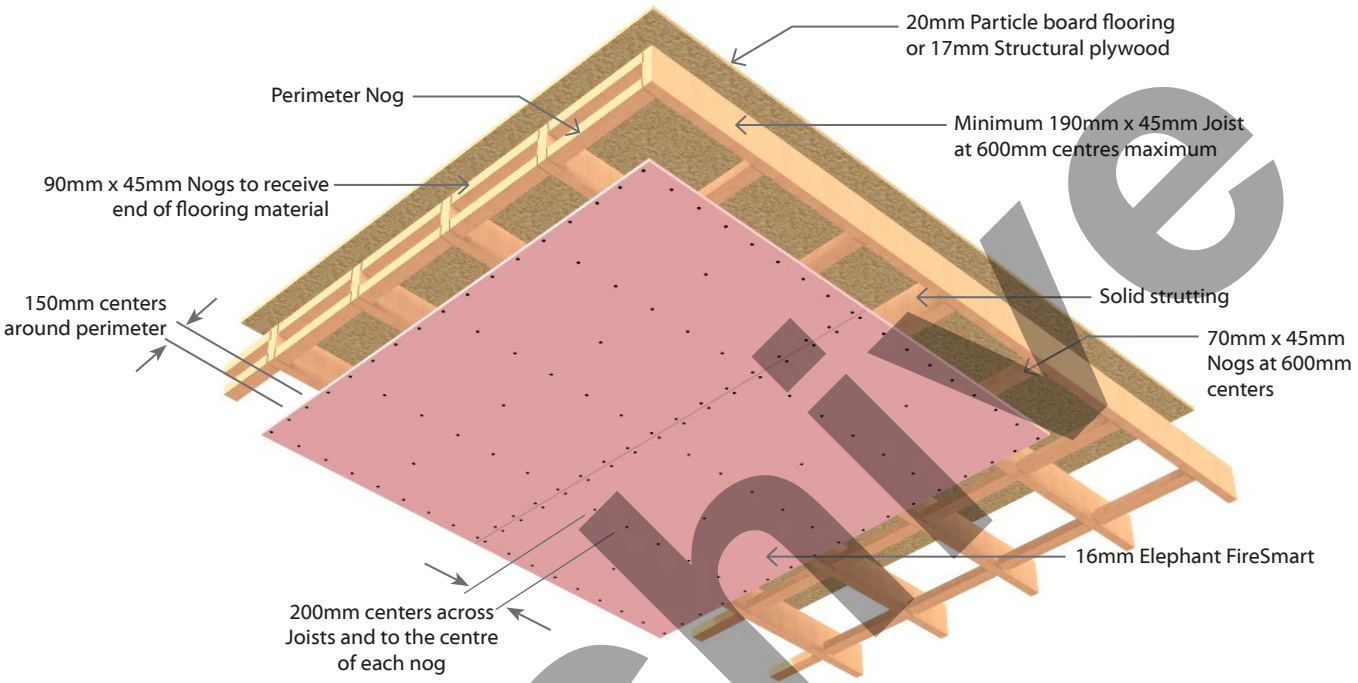
Wall/Ceiling Junction
The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with the Elephant Plasterboard Installation Guide.

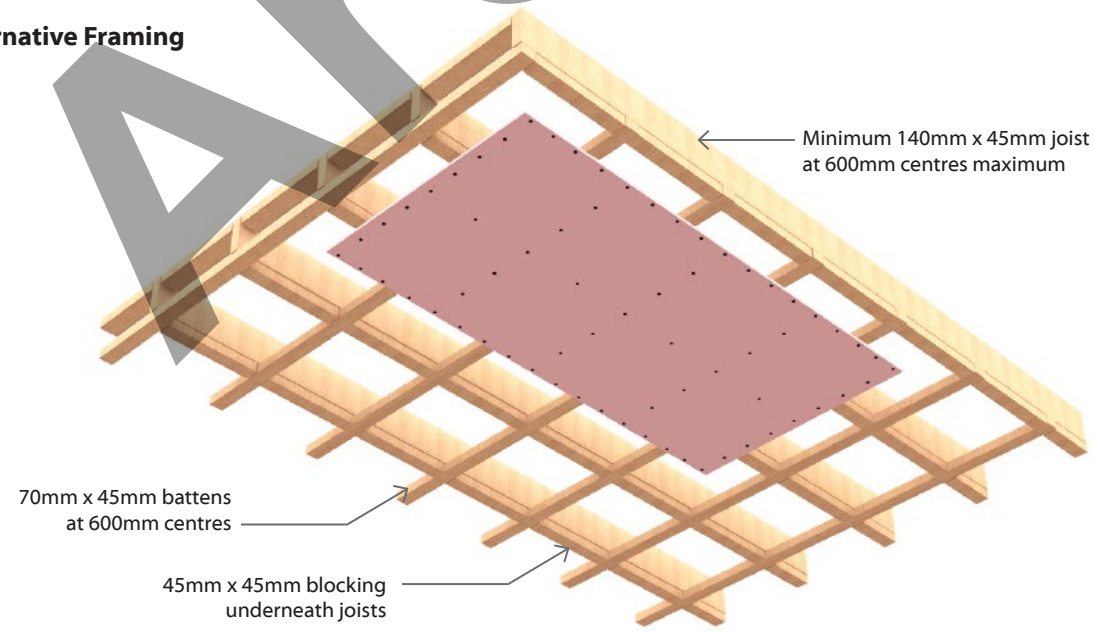
E1FC60 Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1FC60	**-F16**	60/60/60	LB	39	39	32	1 x 16mm Elephant FireSmart



Alternative Framing



E2FC60 Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2FC60	**-MS26**	60/60/60	LB	40	39	33	1 x 13mm Elephant MultiSmart and 1 x 13mm Elephant Standard

Floor Framing

Timber floor joists shall comply with NZS3604 and be a minimum of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing

Nogs fixed on the flat to receive the Elephant Plasterboard lining shall be 70mm x 45mm minimum.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Alternative Framing

In situations where NZS3604 allows for 140mm deep joists a 70mm x 45mm ceiling batten and nog can be used to build up the joist depth.

Also in situations where the ceiling battens have been fixed over the joists instead of within the joists, the alternative framing method can be used to ensure that the fire integrity is maintained.

Refer to E1FC60 Alternative Framing .

Plasterboard Lining

One layer of 13mm Elephant MultiSmart & One layer of 13mm Elephant Standard lining fixed directly to the underside of floor joists.

All joints must occur on joists and solid blocking.

All sheet joints should be staggered 600mm between layers.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	1st Layer	2nd Layer
	High Thread Drywall Screws	
E2FC60-MS26	13mm 51 x 7g	13mm 68 x 8g

Fastener Centres

Inner Layer: 150mm centres around the perimeter of each sheet, across each joist and at the centre of each nog.

Outer Layer: 150mm centres around the perimeter of each sheet and 200mm centres along each joist and at centre of each nog.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Avoid outer layer screws from hitting inner layer screws.

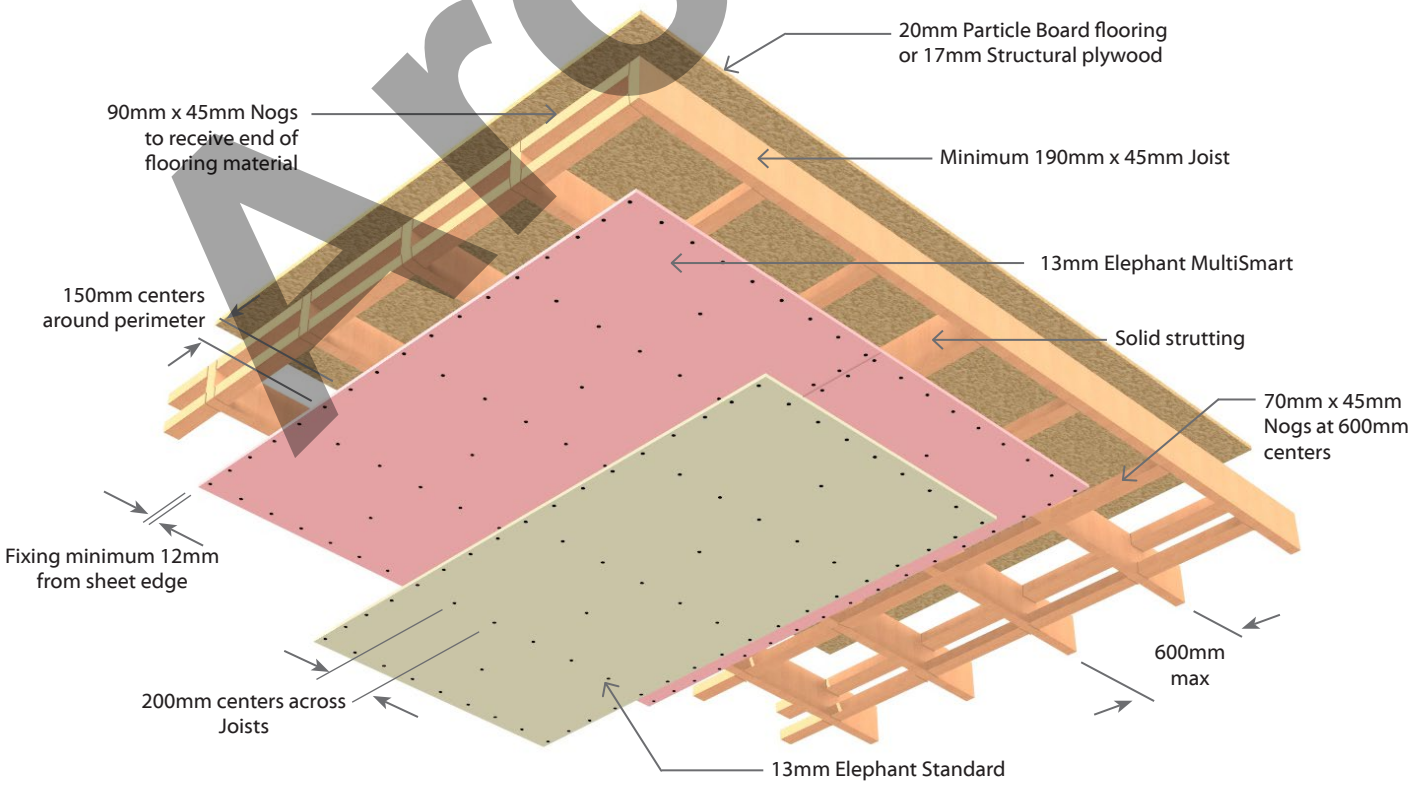
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner Layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E2FC90 Floor/Ceiling Load Bearing

2 Layers: 2 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2FC90	**-FM29**	90/90/90	LB	41	40	34	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart

Floor Framing

Timber floor joists shall comply with NZS3604 and be a minimum of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing

Nogs fixed on the flat to receive the Elephant Plasterboard lining shall be 70mm x 45mm minimum.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining

One layer of 16mm Elephant FireSmart & One layer of 13mm Elephant MultiSmart lining fixed directly to the underside of floor joists.

All joints must occur on joists and solid blocking.

All sheet joints should be staggered 600mm between layers.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	1st Layer	2nd Layer
	High Thread Drywall Screws	
E2FC90-FM29	16mm	13mm
	51 x 7g	68 x 8g

Fastener Centres

Inner Layer: 150mm Centres around the perimeter of each sheet, across each joist and at the centre of each nog.

Outer Layer: 150mm centres around the perimeter of each sheet and 200mm centres along each joist and at centre of each nog.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Avoid outer layer screws from hitting inner layer screws.

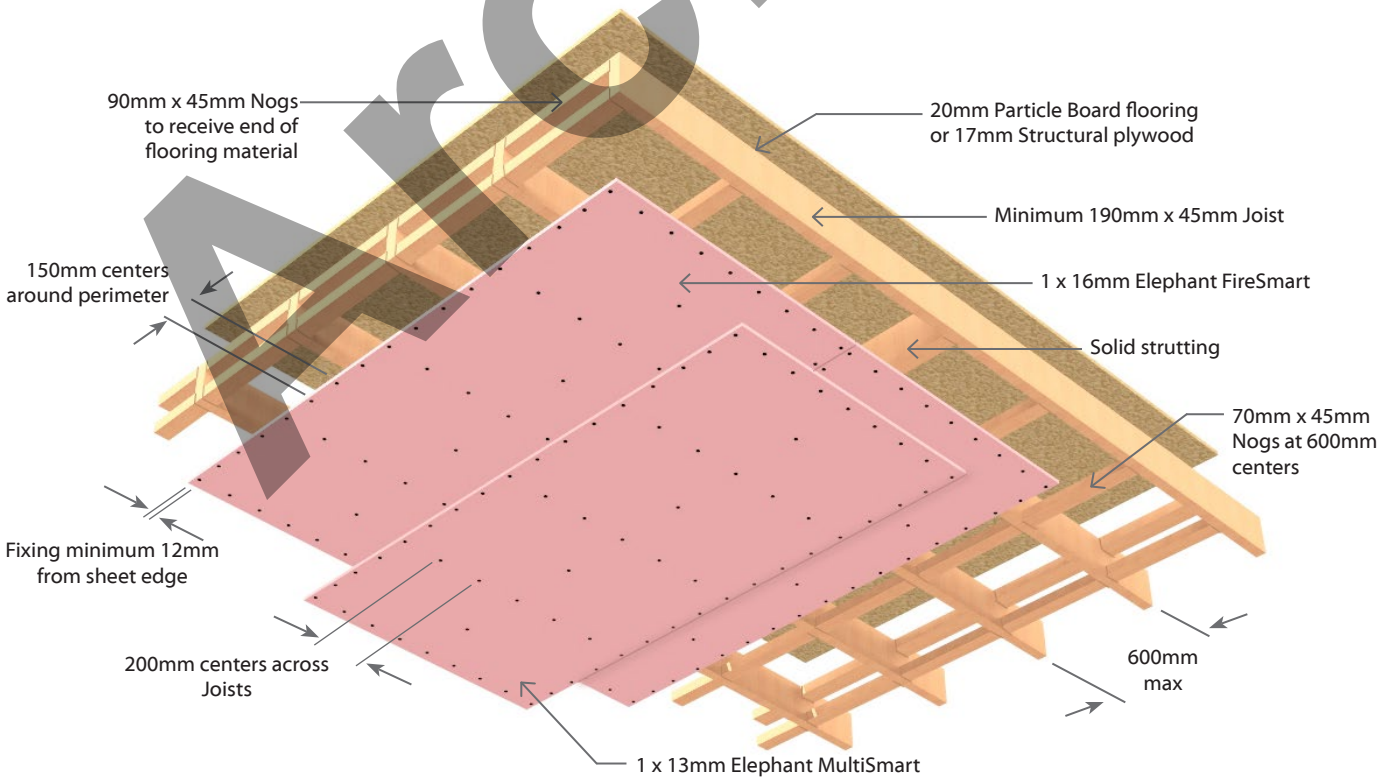
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner Layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E3FC120 Floor/Ceiling Load Bearing

3 Layers: 3 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E3FC120	**-M39**	120/120/120	LB	43	42	35	3 x 13mm Elephant MultiSmart

Floor Framing
Timber floor joists shall comply with NZS3604 and be a minimum of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring
Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing
Nogs fixed on the flat to receive the Elephant Plasterboard lining shall be 70mm x 45mm minimum.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining
Three layers of 13mm Elephant MultiSmart fixed directly to the underside of floor joists. All joints must occur on joists and solid blocking.

All sheet joints should be staggered 600mm between layers.

Sheets shall be touch fitted.

Fixing of Linings
Fasteners

System Number	1st Layer	2nd Layer	3rd Layer
	High Thread Drywall Screws		
E3FC120-M39	13mm	13mm	13mm
	51 x 7g	68 x 8g	68 x 8g

Fastener Centres

Inner Layer: 150mm centres around the perimeter of each sheet, across each joist and at the centre of each nog.

Outer Layer: 150mm centres around the perimeter of each sheet and 200mm centres along each joist and at centre of each nog.

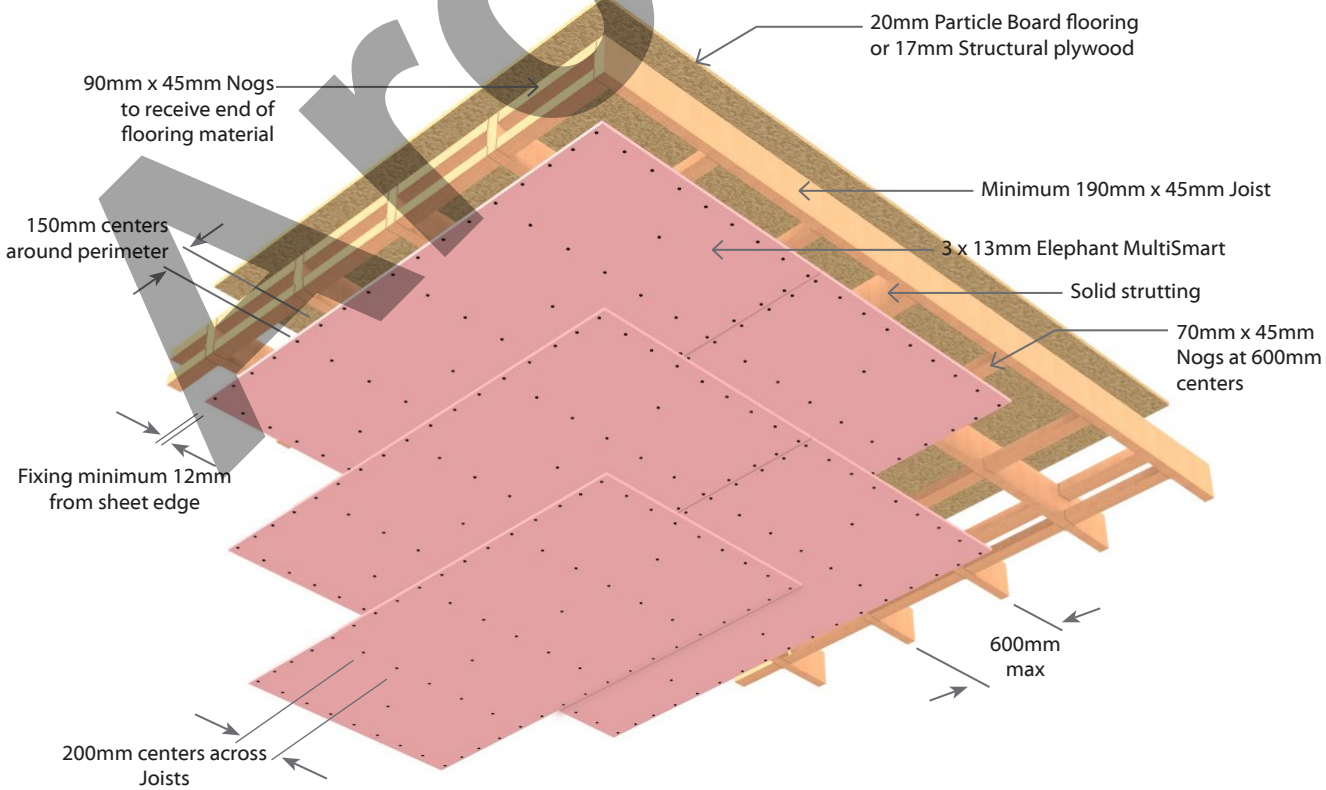
Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Avoid outer layer screws from hitting inner layer screws.

Wall/Ceiling Junction
The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing
Inner Layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1CJ30 Composite Joist Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1CJ30	**-M13**	30/30/30	LB	39	38	32	1 x 13mm Elephant MultiSmart

Floor Framing

Composite Floor joists may be either hySPAN® or hyJOIST®. Joists shall be covered by specific engineering design for strength and serviceability. A minimum depth of 190mm and spaced at no more than 600mm centres.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Consult the beam manufacturer re construction of the solid blocking contained in floor/ceiling to wall junctions.

Flooring

Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing

Nogs shall be 70mm x 35mm minimum, fixed on the flat in between joists to receive the Elephant Plasterboard lining. They are spaced at 600mm centres for joist at 600mm centres or at 1200mm centres for joists at 450mm centres.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart fixed at right angles directly to the underside of floor joists.

All joints must occur on joists and solid blocking.

Sheets to be touch fitted.

Fixing of Linings

Fasteners

System Number	Single Layer
	High Thread Drywall Screws
E1CJ30-M13	13mm
	41 x 6g

Fastener Centres

Place fasteners 150mm centres around the perimeter of each sheet.

200mm centres across each joist and at the centre of each nog.

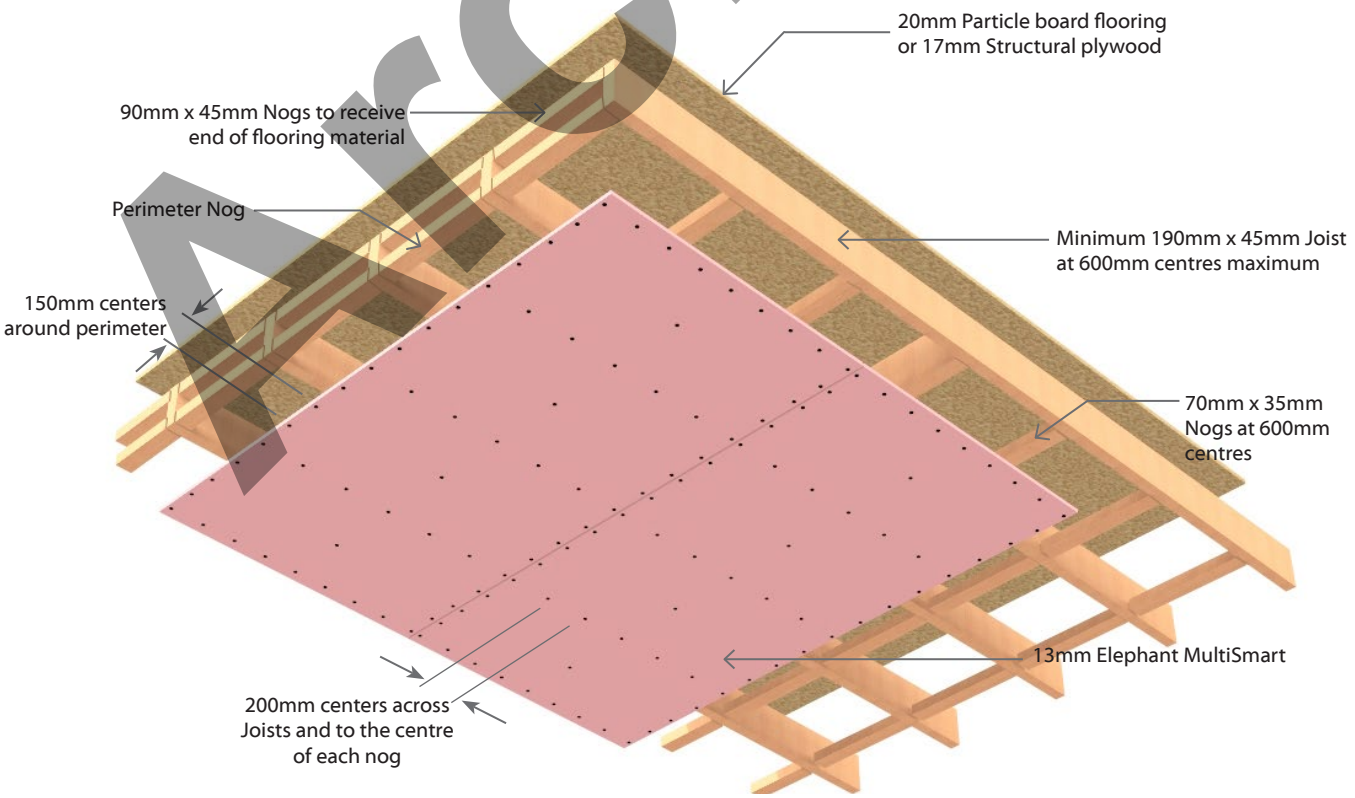
Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with the Elephant Plasterboard Installation Guide.



E2CJ30 Composite Joist Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2CJ30	**-S26**	30/30/30	LB	39	38	32	2 x 13mm Elephant Standard

Floor Framing

Composite Floor joists may be either hySPAN® or hyJOIST®. Joists shall be covered by specific engineering design for strength and serviceability. A minimum depth of 190mm and spaced at no more than 600mm centres.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Consult the beam manufacturer re construction of the solid blocking contained in floor/ceiling to wall junctions.

Flooring

Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing

Nogs fixed on the flat to receive the Elephant Plasterboard lining shall be 70mm x 35mm minimum and spaced at 600mm for joists at 600mm, or at 1200mm for joists at 400 or 450mm.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining

Two layers of 13mm Elephant Standard fixed directly to the underside of floor joists. All joints must occur on joists and solid blocking.

All sheet joints should be staggered 600mm between layers.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	1st Layer	2nd Layer
	High Thread Drywall Screws	
E2CJ30-S26	13mm	13mm
	41 x 6g	51 x 7g

Fastener Centres

Inner Layer: 150mm centres around the perimeter of each sheet, across each joist and at the centre of each nog.

Outer Layer: 150mm centres around the perimeter of each sheet and 200mm centres along each joist and at centre of each nog.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Avoid outer layer screws from hitting inner layer screws.

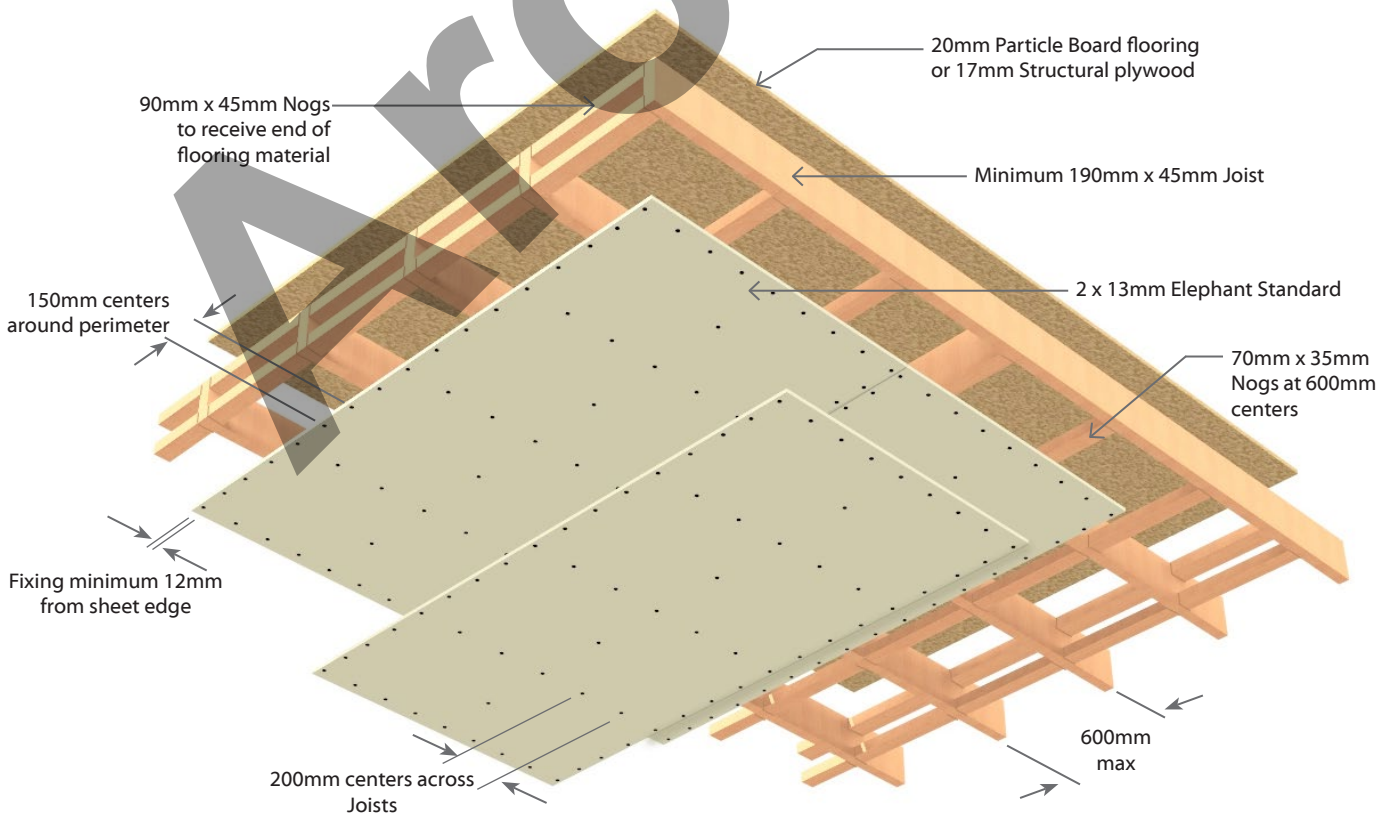
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner Layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1CJ45 Composite Joist Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1CJ45*	**-M13**	45/45/45	LB	39	38	32	1 x 13mm Elephant MultiSmart

Floor Framing

Composite Floor joists may be either hySPAN® or hyJOIST®. Joists shall be covered by specific engineering design for strength and serviceability. A minimum depth of 190mm and spaced at no more than 600mm centres.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Consult the beam manufacturer re construction of the solid blocking contained in floor/ceiling to wall junctions.

Flooring

Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing

Nogs fixed on the flat to receive the Elephant Plasterboard lining shall be 70mm x 45mm minimum and spaced at 600mm for joists at 600mm, or at 1200mm for joists at 400 or 450mm.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart fixed at right angles directly to the underside of floor joists.

All joints must occur on joists and solid blocking.

Sheets to be touch fitted.

Fixing of Linings

Fasteners

System Number	1st Layer
	High Thread Drywall Screws
E1CJ45-M13	13mm
	51 x 7g

Fastener Centres

Place fasteners 150mm centres around the perimeter of each sheet. 200mm centres across each joist and at the centre of each nog.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

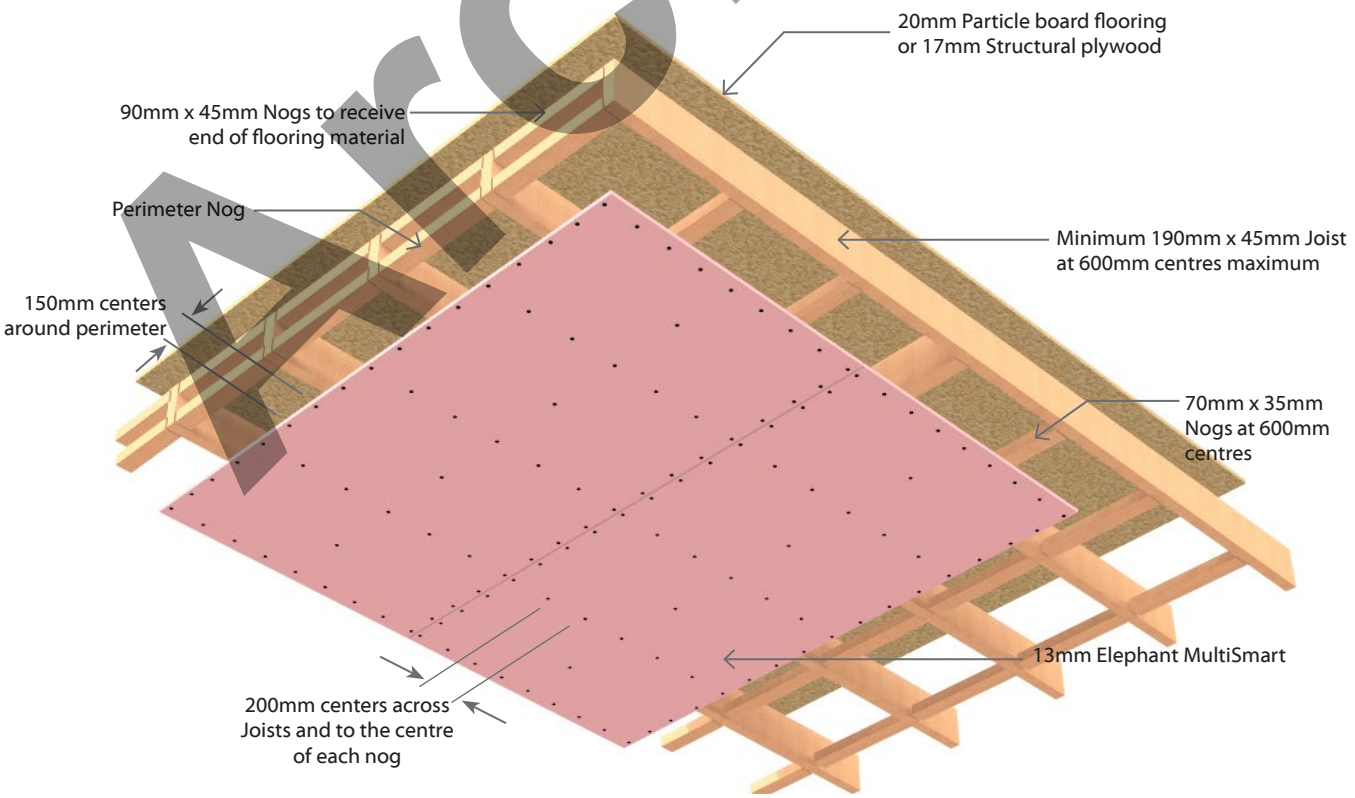
Jointing

Inner Layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.

*Note: For 30/30/30 FRR

If the actual FRR required is 30/30/30, reference can be made to either E1BC30 or E1CJ30.



E1CJ60 Composite Joist Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1CJ60	**-F16**	60/60/60	LB	39	38	32	1 x 16mm Elephant FireSmart

Floor Framing

Composite Floor joists may be either hySPAN® or hyJOIST®. Joists shall be covered by specific engineering design for strength and serviceability. A minimum depth of 190mm and spaced at no more than 600mm centres.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Consult the beam manufacturer re construction of the solid blocking contained in floor/ceiling to wall junctions.

Flooring

Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing

Nogs fixed on the flat to receive the Elephant Plasterboard lining shall be 70mm x 45mm minimum and spaced at 600mm for joists at 600mm, or at 1200mm for joists at 400 or 450mm.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining

One layer of 16mm Elephant FireSmart fixed at right angles directly to the underside of floor joists.

All joints must occur on joists and solid blocking.

Sheets to be touch fitted.

Fixing of Linings

Fasteners

System number	1st Layer
	High Thread Drywall Screws
E1CJ60-F16	16mm
	51 x 7g

Fastener Centres

Place fasteners 150mm centres around the perimeter of each sheet. 200mm centres across each joist and at the centre of each nog.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

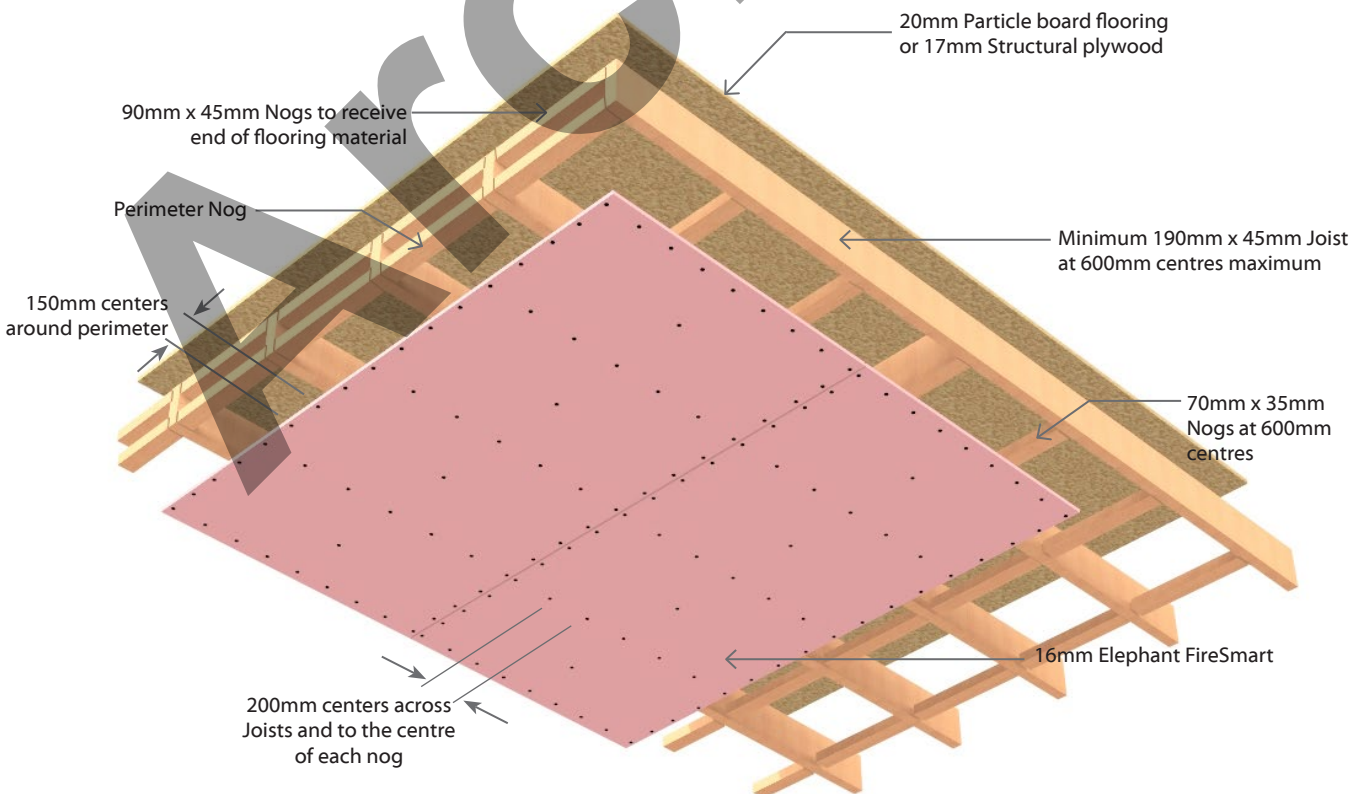
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner Layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E2CJ60 Composite Joist Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2CJ60	**-MS26**	60/60/60	LB	40	39	33	1 x 13mm Elephant MultiSmart and 1 x 13mm Elephant Standard

Floor Framing

Composite Floor joists may be either hySPAN® or hyJOIST®. Joists shall be covered by specific engineering design for strength and serviceability. A minimum depth of 190mm and spaced at no more than 600mm centres.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Consult the beam manufacturer re construction of the solid blocking contained in floor/ceiling to wall junctions.

Flooring

Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing

Nogs fixed on the flat to receive the Elephant Plasterboard lining shall be 70mm x 45mm minimum and spaced at 600mm for joists at 600mm, or at 1200mm for joists at 400 or 450mm.

Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart and One layer of 13mm Elephant Standard lining fixed directly to the underside of floor joists. All joints must occur on joists and solid blocking.

All sheet joints should be staggered 600mm between layers.

Sheets shall be touch fitted.

Fixing of Linings

Fasteners

System Number	1st Layer	2nd Layer
	High Thread Drywall Screws	
E2CJ60-MS26	13mm	13mm
	41 x 6g	51 x 7g

Fastener Centres

Inner Layer: 150mm centres around the perimeter of each sheet, across each joist and at the centre of each nog.

Outer Layer: 150mm centres around the perimeter of each sheet and 200mm centres along each joist and at centre of each nog.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Avoid outer layer screws from hitting inner layer screws.

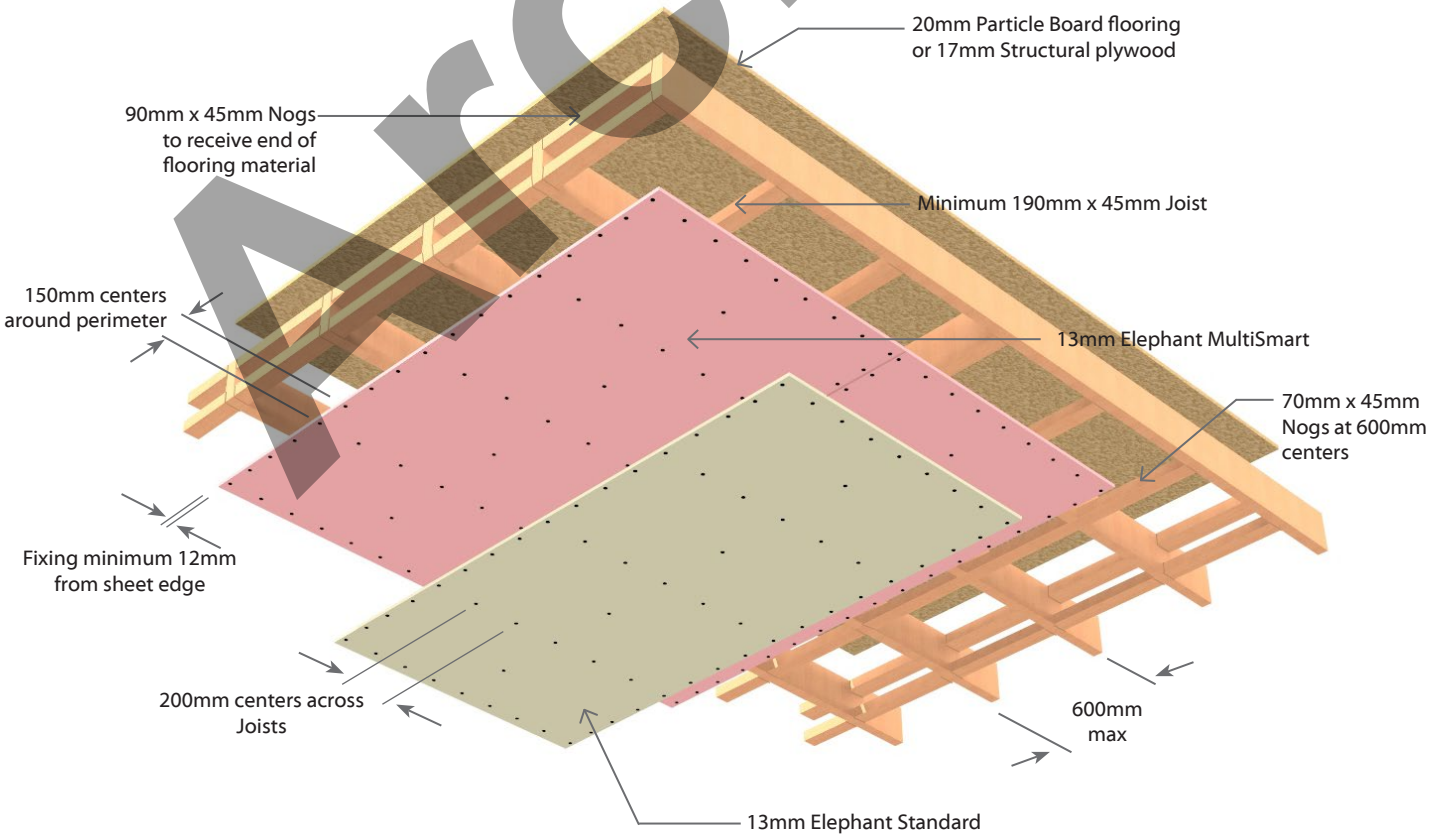
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner Layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1SJ30 Steel Joists Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1SJ30	**-M13**	30/30/30	LB	35	34	31	1 x 13mm Elephant MultiSmart

Floor Framing
A specifically designed steel floor structure with C-section steel floor joists of 190mm minimum depth and with 45mm flanges with a steel gauge of 1.55mm. Joist spacing's at no more than 600mm centres.

Flooring
Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing
Nogs or framing are required all around the perimeter of the fire rated ceiling and on tapered edged plasterboard joints. Use perimeter framing of minimum 35mm x 35mm x 0.55mm gauge steel perimeter angle or steel nogs.

All tapered edged pl masterboard joints must be supported by C-section steel nogs (connected to the joists) with a minimum width of 50mm and a vertical leg depth of 25mm and of minimum 0.55mm gauge.

Plasterboard Lining
One layer of 13mm Elephant MultiSmart fixed at right angles directly to the underside of floor joists.

All joints must occur on joists or nogs.

Sheets to be touch fitted.

Fixing of Linings
Fasteners

System Number	Single Layer
	Scavenger Head Drill Point Drywall Screws
E1SJ30-M13	13mm
	32 x 6g

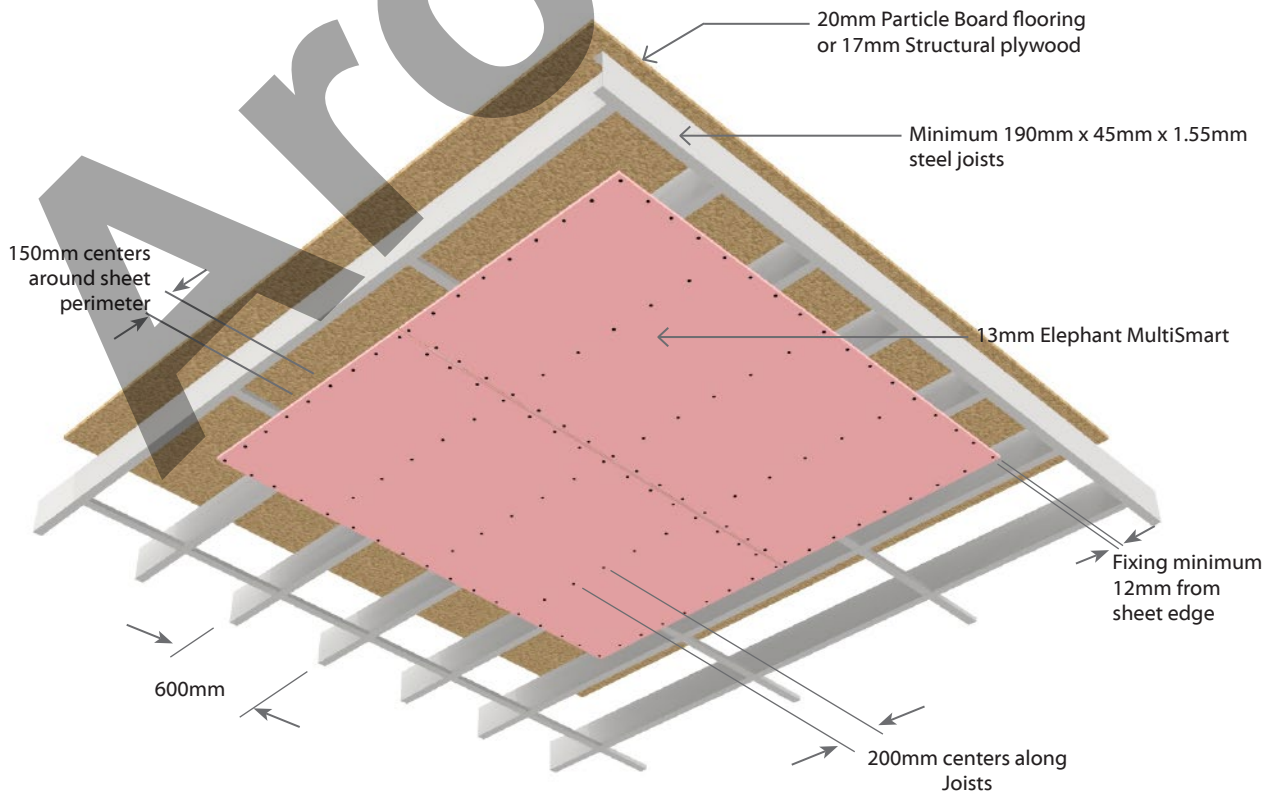
Fastener Centres

Place fasteners 150mm centres around the perimeter of each sheet. 200mm centres along each joist.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Wall/Ceiling Junction
The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1SJ60 Steel Joists Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1SJ60	**-F16**	60/60/60	LB	39	38	32	1 x 16mm Elephant FireSmart

Floor Framing
A specifically designed steel floor structure with C-section steel floor joists of 190mm minimum depth and with 45mm flanges with a steel gauge of 1.55mm. Joist spacing's at no more than 600mm centres.

Flooring
Minimum flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Sheet joints without a tongue and groove jointer must have a bead of fire rated sealant applied before sheets are joined together.

If jointers or sealants are not applied then the fire rating is reduced to 60/60/45.

Ceiling Framing
Nogs or framing are required all around the perimeter of the fire rated ceiling and on tapered edged plasterboard joints. Use perimeter framing of minimum 35mm x 35mm x 0.55mm gauge steel perimeter angle or steel nogs.

All tapered edged plasterboard joints must be supported by C-section steel nogs (connected to the joists) with a minimum width of 50mm and a vertical leg depth of 25mm and of minimum 0.55mm gauge.

Plasterboard Lining
One layer of 16mm Elephant FireSmart fixed at right angles directly to the underside of floor joists.

All joints must occur on joists or nogs. Sheets to be touch fitted.

Fixing of Linings
Fasteners

System Number	Single Layer
	Scavenger Head Drill Point Drywall Screws
E1SJ60-F16	16mm
	41 x 6g

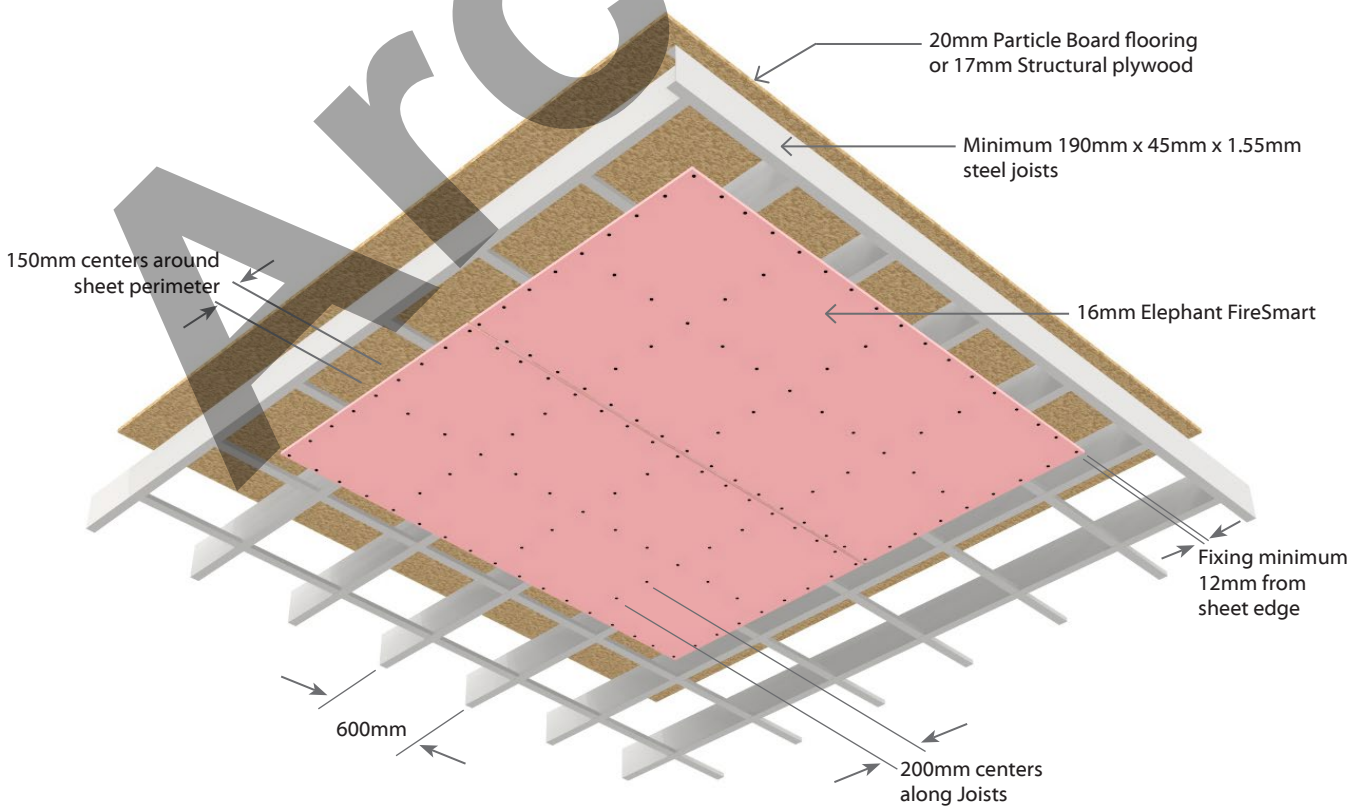
Fastener Centres

Place fasteners 150mm centres around the perimeter of each sheet. 200mm centres along each joist and along each nog.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Wall/Ceiling Junction
The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1BC30 Battened Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1BC30	**-M13**	30/30/30	LB	39	38	32	1 x 13mm Elephant MultiSmart (back blocked)

Floor Framing

Timber floor joists shall comply with NZS3604 and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing

Ceiling battens to be fixed across the joists at 600mm centres maximum. Ceiling perimeter must be fully supported by framing.

Metal Ceiling Batten: Metal ceiling batten with minimum 35mm depth e.g. Rondo® 310.

Perimeter channels are required to receive the ends of the metal ceiling battens.
Wall angles or perimeter channels required at wall/ceiling junctions parallel to the metal ceiling battens.

Timber Ceiling Batten: Minimum 70mm x 35mm timber ceiling battens. Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart fixed at right angles to the underside of the ceiling battens.

All sheet end butt joints shall occur on the battens.

Joints formed by sheet edges shall be back blocked between ceiling battens with strips of plasterboard equivalent to the lining thickness used and with a minimum width 300mm.

Sheets to be touch fitted.

Fixing of Linings

Fasteners

System Number	Single Layer	
	Metal Ceiling Batten	Timber Ceiling Batten
	Self-Tapping Drywall Screws	High Thread Drywall Screws
E1BC30-M13	13mm	13mm
	25 x 6g	41 x 6g

Fastener Centres

Ceiling sheets shall be fixed at 200mm centres along each ceiling batten and around ceiling perimeter.

Fix butt ends at 200mm centres.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

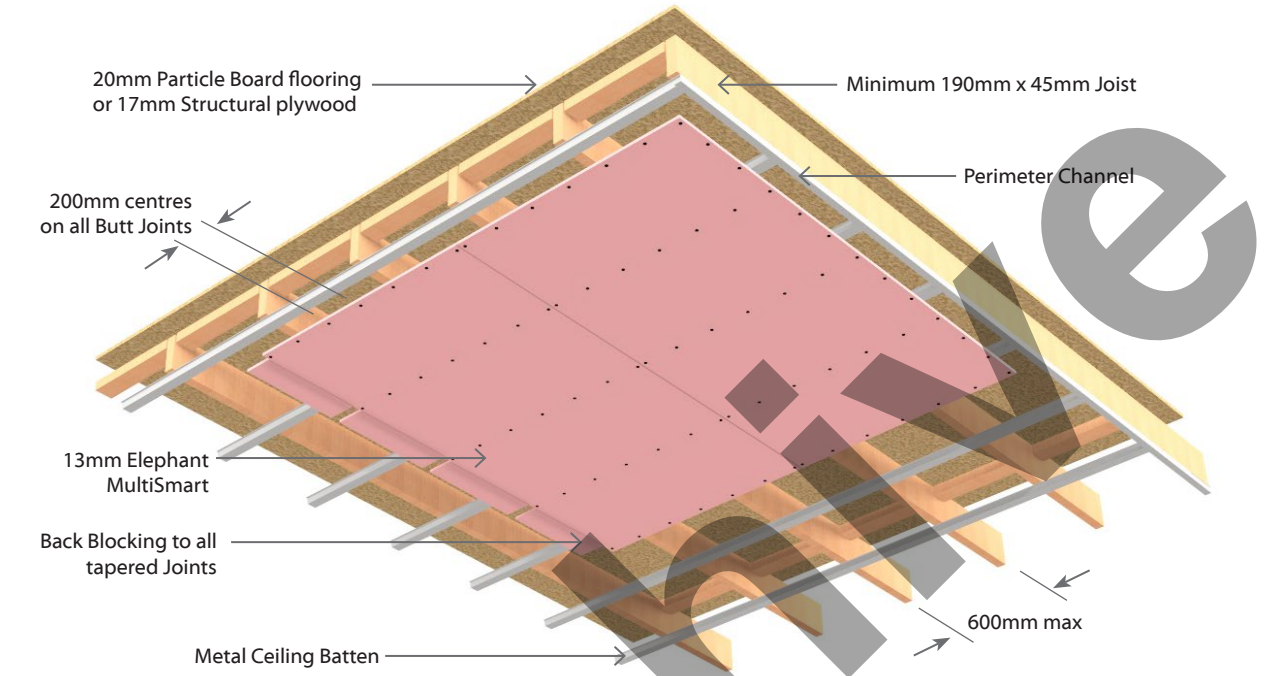
Jointing

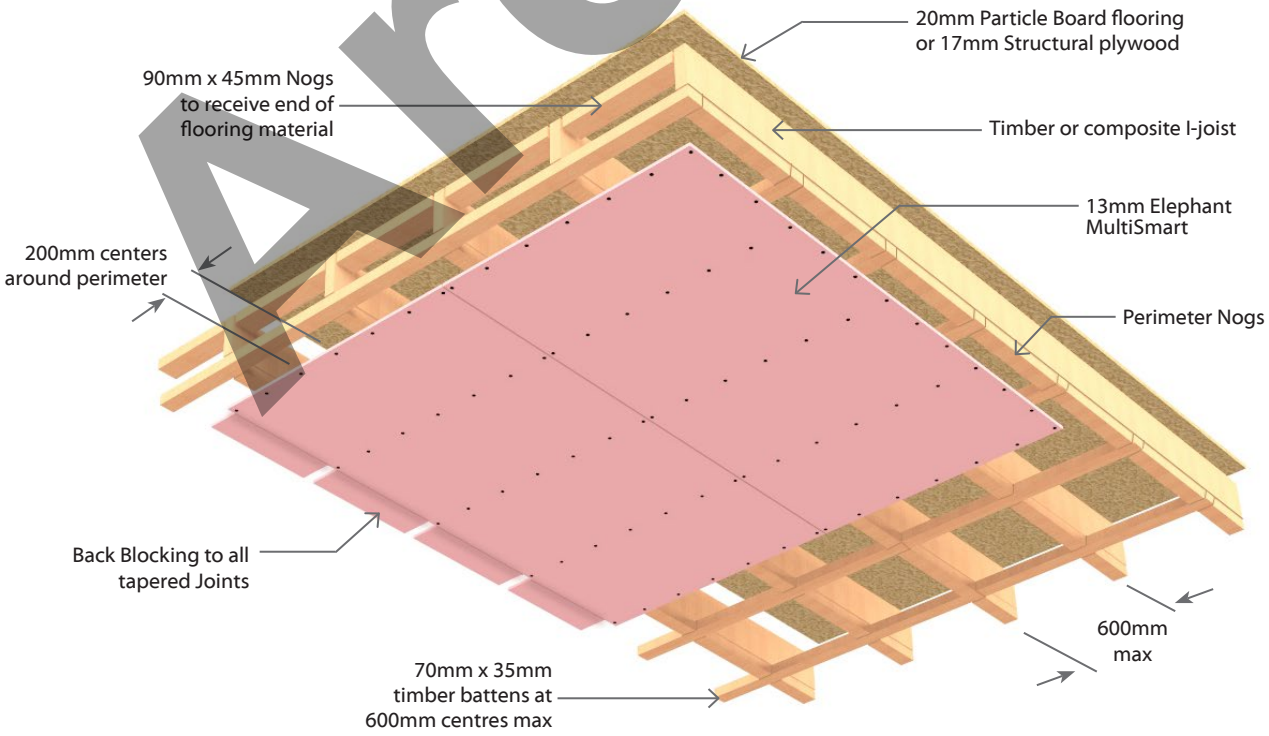
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with the Elephant Plasterboard Installation Guide.

E1BC30 Battened Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1BC30	**-M13**	30/30/30	LB	39	38	32	1 x 13mm Elephant MultiSmart (back blocked)





E1BC60 Battened Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1BC60	**-F16**	60/60/60	LB	39	38	32	1 x 16mm Elephant FireSmart (back blocked)

Floor Framing

Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Flooring shall be nominal 20mm thick particle board or minimum 17mm thick structural plywood, fixed to the joists as per manufacturers' instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Ceiling Framing

Ceiling battens to be fixed across the joists at 600mm centres maximum. Ceiling perimeter must be fully supported by framing.

Metal Ceiling Batten: Metal ceiling batten with minimum 35mm depth e.g. Rondo® 310.

Perimeter channels are required to receive the ends of the metal ceiling battens.
Wall angles or perimeter channels required at wall/ceiling junctions parallel to the metal ceiling battens.

Timber Ceiling Batten: Minimum 70mm x 35mm timber ceiling battens. Nogs or framing is required at the perimeter of the fire rated ceiling.

Plasterboard Lining

One layer of 16mm Elephant FireSmart fixed at right angles to the underside of the ceiling battens.

All sheet end butt joints shall occur on the battens.

Joints formed by sheet edges shall be back blocked between ceiling battens with strips of plasterboard equivalent to the lining thickness used and with a minimum width 300mm.

Sheets to be touch fitted.

Fixing of Linings

Fasteners

System Number	Single Layer	
	Metal Ceiling Batten	Timber Ceiling Batten
	Self-Tapping Drywall Screws	High Thread Drywall Screws
E1BC60-F16	16mm	16mm
	32 x 6g	51 x 7g

Fastener Centres

Ceiling sheets shall be fixed at 200mm centres along each ceiling batten and around ceiling perimeter.

Fix butt ends at 200mm centres.

Place fasteners no closer than 12mm from sheet edges and 18mm from sheet ends.

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

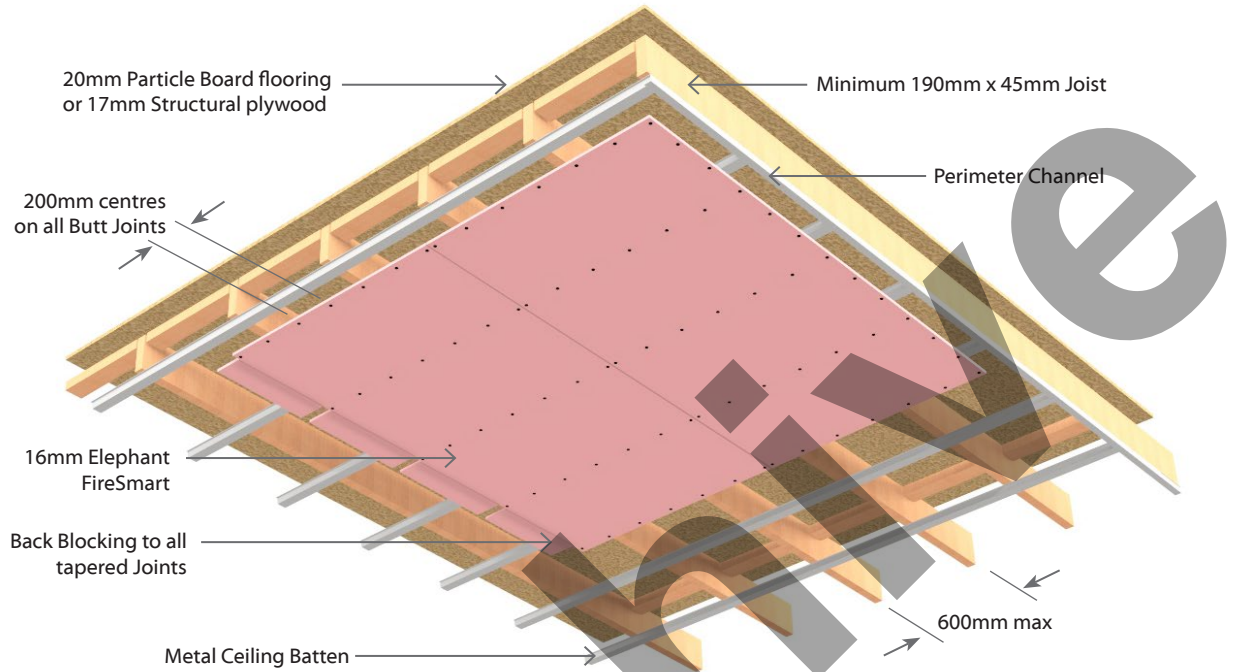
Jointing

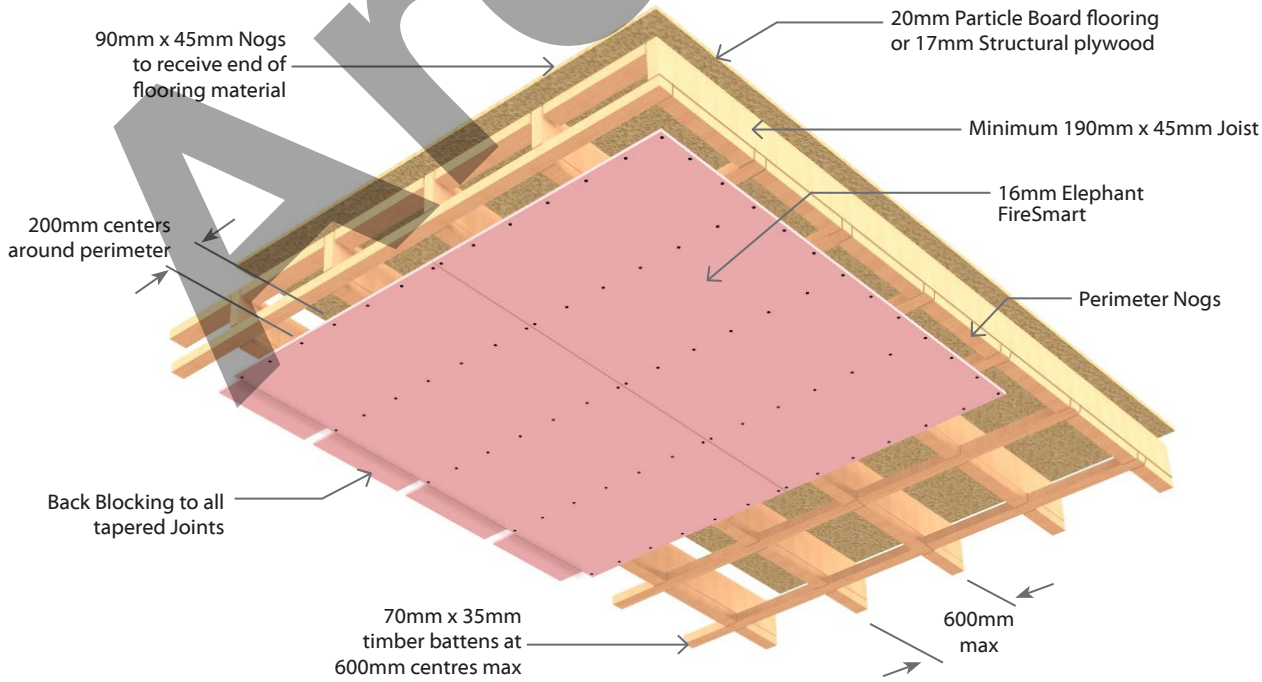
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with the Elephant Plasterboard Installation Guide.

E1BC60 Battened Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1BC60	**-F16**	60/60/60	LB	39	38	32	1 x 16mm Elephant FireSmart (back blocked)





E1DF45 Direct Fix Clip Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1DF45	**-M13**	45/45/45	LB	49	48	42	1 x 13mm Elephant MultiSmart (back blocked)

Floor Framing

Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process. Consult the joist manufacturer regarding construction of the solid blocking contained in the floor/ceiling to wall junctions.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Clip and Battens

Ceiling battens to be fixed across the joists at 600mm centres maximum. Ceiling perimeter must be fully supported by framing.

The Clip shall be fastened to the joists at 1200mm centres maximum (and no less than 900mm centres) to support the metal ceiling battens. They are spaced at 600mm centres maximum. Use 3 x 32mm x 8g Wafer Head screws. Insert first screw into the middle slot. Adjust clip to correct height. Then insert remaining two screws.

Perimeter channels are required to receive the ends of the metal ceiling battens.

Wall angles or perimeter channels required at wall/ceiling junctions parallel to the metal ceiling battens.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart fixed at right angles to the metal ceiling battens. All sheet end butt joints shall occur on the battens. Joints formed by sheet edges shall be back blocked between furring channels with strips of plasterboard equivalent to the lining thickness used and with a minimum width 300mm. They shall be adhered with a cove or cornice bond adhesive. Sheets shall be touch fitted.

Fixing the Lining

Fasteners

System Number	Single Layer
	Self-Tapping Drywall Screws
E1DF45-M13	13mm
	25 x 6g

Fastening Centres

Ceiling sheets shall be fixed at 200mm centres along each metal ceiling batten and around ceiling perimeter.

Fix butt ends at 100mm centres.

Place fasteners no closer than 12mm from sheet edges.

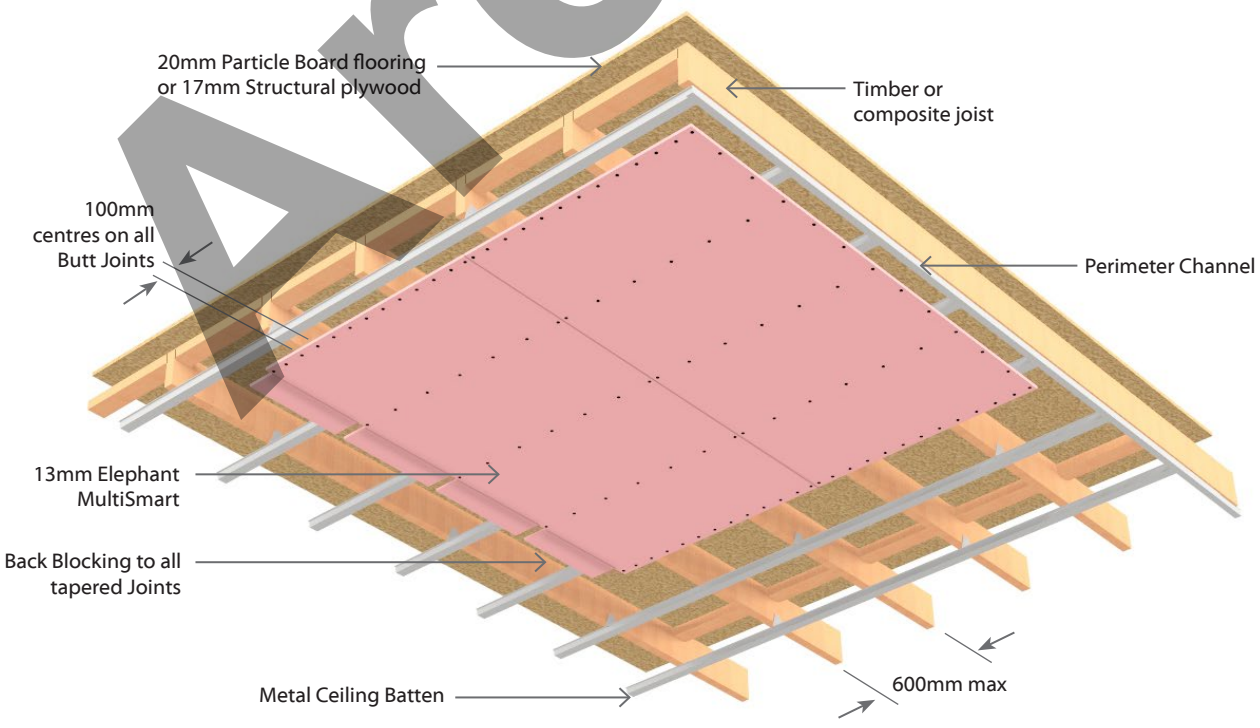
Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on metal ceiling battens .

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1DF60 Direct Fix Clip Floor/Ceiling — Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1DF60	**-F16**	60/60/60	LB	49	48	43	1 x 16mm Elephant FireSmart (back blocked)

Floor Framing

Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process. Consult the joist manufacturer regarding construction of the solid blocking contained in the floor/ceiling to wall junctions.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Clip and Battens

Ceiling battens to be fixed across the joists at 600mm centres maximum. Ceiling perimeter must be fully supported by framing.

The Clip shall be fastened to the joists at 1200mm centres maximum (and no less than 900mm centres) to support the metal ceiling battens. They are spaced at 600mm centres maximum. Use 3 x 32mm x 8g Wafer Head screws. Insert first screw into the middle slot. Adjust clip to correct height. Then insert remaining two screws.

Perimeter channels are required to receive the ends of the metal ceiling battens.

Wall angles or perimeter channels required at wall/ceiling junctions parallel to the metal ceiling battens.

Plasterboard Lining

One layer of 16mm Elephant FireSmart fixed at right angles to the metal ceiling battens. All sheet end butt joints shall occur on the battens. Joints formed by sheet edges shall be back blocked between furring channels with strips of plasterboard equivalent to the lining thickness used and with a minimum width 300mm. They shall be adhered with a cove or cornice bond adhesive. Sheets shall be touch fitted.

Fixing the Lining

Fasteners

System Number	Single Layer
	Self-Tapping Drywall Screws
E1DF60-F16	16mm
	32 x 6g

Fastening Centres

Ceiling sheets shall be fixed at 200mm centres along each metal ceiling batten and around ceiling perimeter.

Fix butt ends at 100mm centres.

Place fasteners no closer than 12mm from sheet edges.

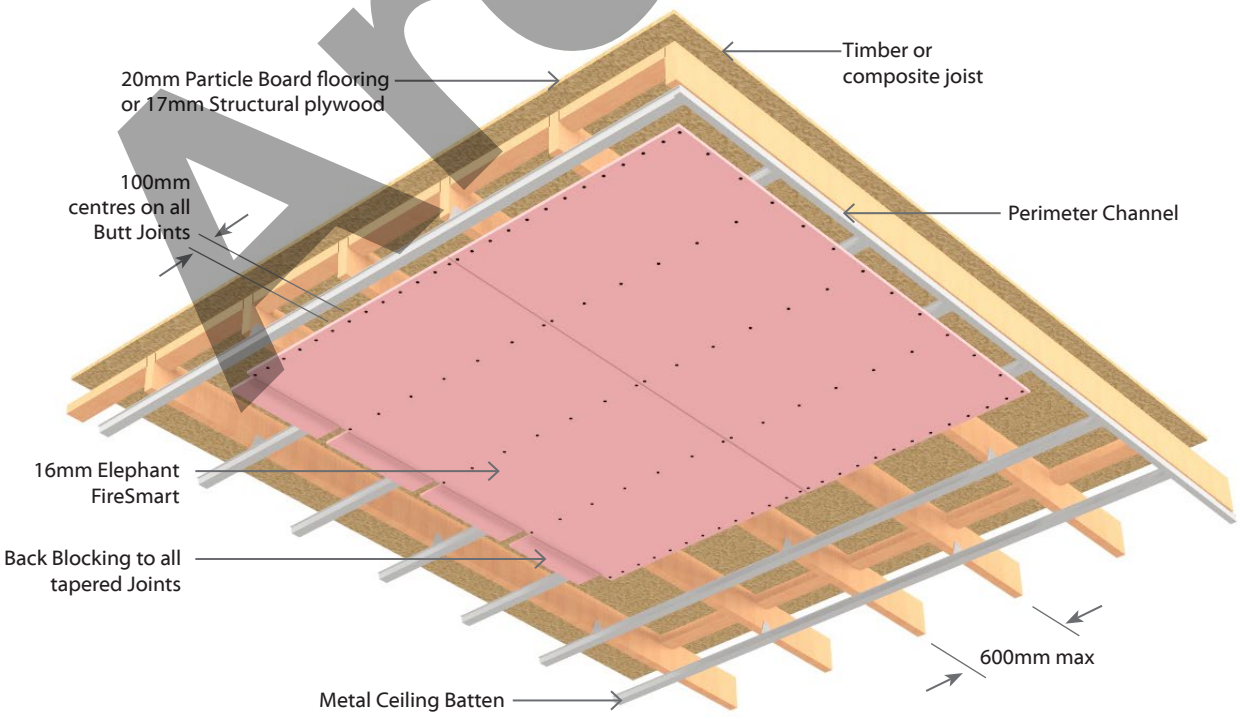
Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on metal ceiling battens

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E2DF60 Direct Fix Clip Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2DF60	**-MS26**	60/60/60	LB	49	48	43	1 x 13mm Elephant MultiSmart and 1 x 13mm Elephant Standard

Floor Framing

Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.Consult the joist manufacturer regarding construction of the solid blocking contained in the floor/ceiling to wall junctions.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Clip and Battens

The Clip shall be fastened to the joists at 1200mm centres maximum (and no less than 900mm centres) to support the metal ceiling battens. They are spaced at 600mm centres maximum. Use 3 x 32mm x 8g Wafer Head screws. Insert first screw into the middle slot. Adjust clip to correct height. Then insert remaining two screws.

Perimeter channels are required to receive the ends of the metal ceiling battens.

Wall angles or perimeter channels required at wall/ceiling junctions parallel to the metal ceiling battens.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart and One layer of 13mm Elephant Standard fixed at right angles to the metal ceiling battens. All sheet end butt joints shall occur on the battens. Offset the outer layer by 600mm from the inner layer. Sheet joints shall be touch fitted.

Fixing the Lining

Fasteners

System Number	1st Layer	2nd Layer
	Self-Tapping Drywall Screws	
E2DF60-MS26	13mm 25 x 6g	13mm 41 x 6g

Fastening Centres

Ceiling sheets shall be fixed at 200mm centres along each metal ceiling batten and around ceiling perimeter.

Fix butt ends at 100mm centres.

Place fasteners no closer than 12mm from sheet edges.

Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on metal ceiling battens.

Avoid outer layer screws from hitting inner layer screws.

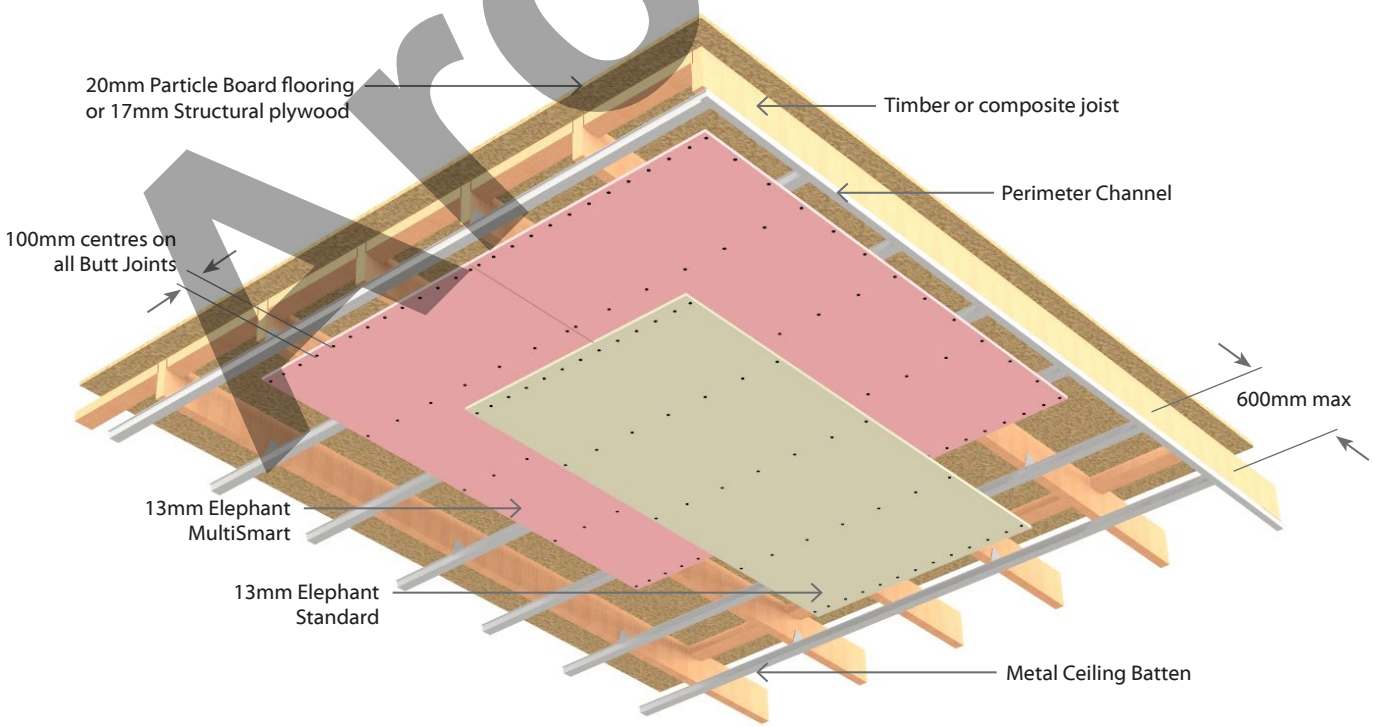
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E2DF75 Direct Fix Clip Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2DF75	**-M26**	75/75/75	LB	52	51	43	2 x 13mm Elephant MultiSmart

Floor Framing

Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.Consult the joist manufacturer regarding construction of the solid blocking contained in the floor/ceiling to wall junctions.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Clip and Battens

The Clip shall be fastened to the joists at 1200mm centres maximum (and no less than 900mm centres) to support the metal ceiling battens. They are spaced at 600mm centres maximum. Use 3 x 32mm x 8g Wafer Head screws. Insert first screw into the middle slot. Adjust clip to correct height. Then insert remaining two screws.

Perimeter channels are required to receive the ends of the metal ceiling battens.

Wall angles or perimeter channels required at wall/ceiling junctions parallel to the metal ceiling battens.

Plasterboard Lining

Two layers of 13mm Elephant MultiSmart fixed at right angles to the metal ceiling battens. All sheet end butt joints shall occur on the battens. Offset the outer layer by 600mm from the inner layer. Sheet joints shall be touch fitted.

Fixing the Lining

Fasteners

System Number	1st Layer	2nd Layer
	Self-Tapping Drywall Screws	
E2DF75-M26	13mm	13mm
	25 x 6g	41 x 6g

Fastening Centres

Ceiling sheets shall be fixed at 200mm centres along each metal ceiling batten and around ceiling perimeter.

Fix butt ends at 100mm centres.

Place fasteners no closer than 12mm from sheet edges.

Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on metal ceiling battens.

Avoid outer layer screws from hitting inner layer screws.

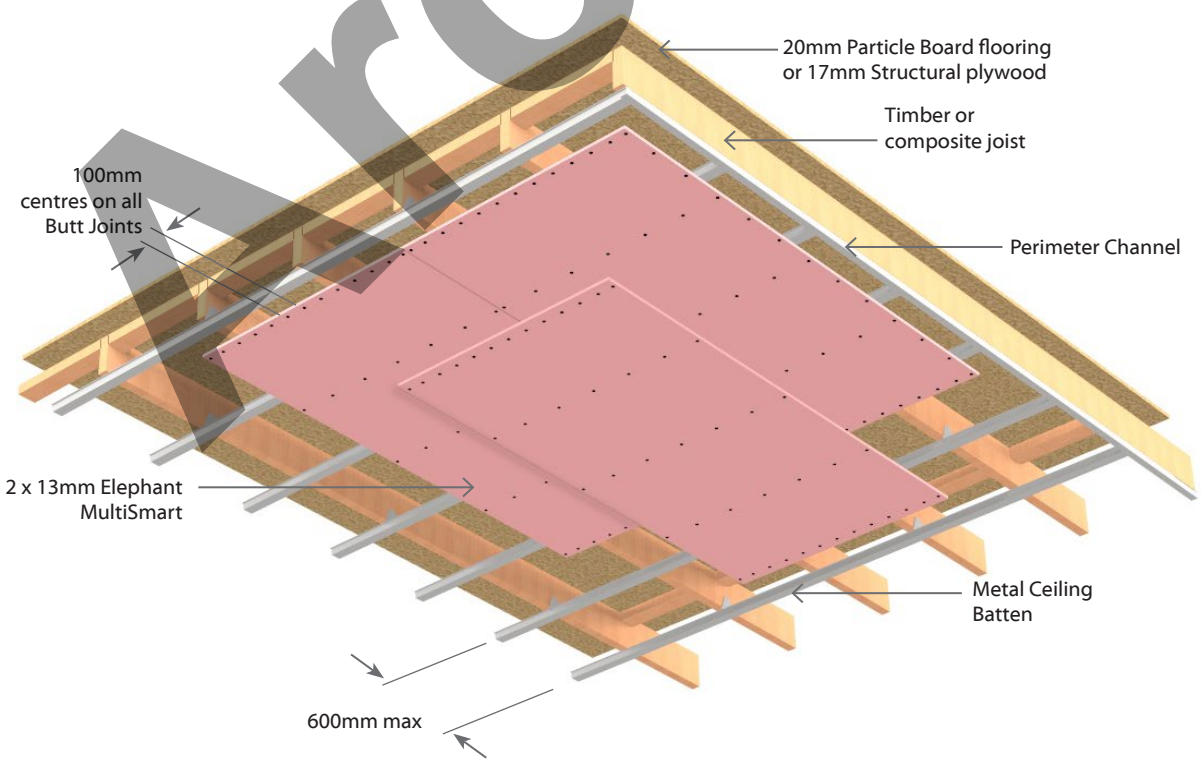
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E2DF90 Direct Fix Clip Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2DF90	**-F32**	90/90/90	LB	54	53	43	2 x 16mm Elephant FireSmart

Floor Framing
Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring
Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Clip and Battens
The Clip shall be fastened to the joists at 1200mm centres maximum (and no less than 900mm centres) to support the metal ceiling battens. They are spaced at 600mm centres maximum. Use 3 x 32mm x 8g Wafer Head screws. Insert first screw into the middle slot. Adjust clip to correct height. Then insert remaining two screws.

Perimeter channels are required to receive the ends of the metal ceiling battens.

Wall angles or perimeter channels required at wall/ceiling junctions parallel to the metal ceiling battens.

Plasterboard Lining
Two layers of 16mm Elephant FireSmart fixed at right angles to the metal ceiling battens. All sheet end butt joints shall occur on the battens. Offset the outer layer by 600mm from the inner layer. Sheet joints shall be touch fitted.

Fixing the Lining
Fasteners

System Number	1st Layer	2nd Layer
	Self-Tapping Drywall Screws	
E2DF90-F32	16mm	16mm
	32 x 6g	51 x 7g

Fastening Centres

Ceiling sheets shall be fixed at 200mm centres along each metal ceiling batten and around ceiling perimeter.

Fix butt ends at 100mm centres.

Place fasteners no closer than 12mm from sheet edges.

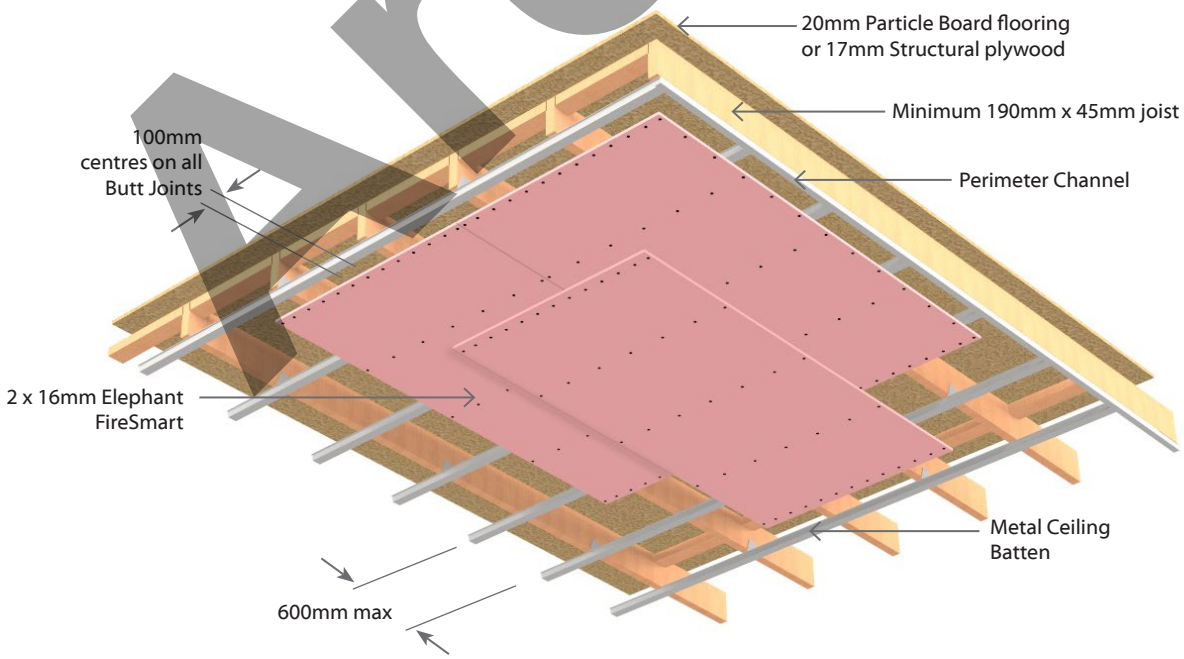
Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on metal ceiling battens.

Avoid outer layer screws from hitting inner layer screws.

Wall/Ceiling Junction
The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing
Inner layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E3DF120 Direct Fix Clip Floor/Ceiling Load Bearing

3 Layers: 3 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E3DF120	**-M39**	120/120/120	LB	54	53	43	3 x 13mm Elephant MultiSmart

Floor Framing

Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Clip and Battens

The Clip shall be fastened to the joists at 1200mm centres maximum (and no less than 900mm centres) to support the metal ceiling battens. They are spaced at 600mm centres maximum. Use 3 x 32mm x 8g Wafer Head screws. Insert first screw into the middle slot. Adjust clip to correct height. Then insert remaining two screws.

Perimeter channels are required to receive the ends of the metal ceiling battens.

Wall angles or perimeter channels required at wall/ceiling junctions parallel to the metal ceiling battens.

Plasterboard Lining

Three layers of 13mm Elephant MultiSmart fixed at right angles to the metal ceiling battens. All sheet end butt joints shall occur on the battens. Offset the outer layer by 600mm from the inner layer. Sheets shall be touch fitted.

Fixing the Lining

Fasteners

System Number	1st Layer	2nd Layer	3rd Layer
	Self-Tapping Drywall Screws		
E3DF120-M39	13mm	13mm	13mm
	32 x 6g	41 x 6g	51 x 7g

Fastening Centres

For all layers, ceiling sheets shall be fixed at 200mm centres along each metal ceiling batten and around ceiling perimeter.

Fix butt ends at 100mm centres.

Place fasteners no closer than 12mm from sheet edges.

Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on metal ceiling battens.

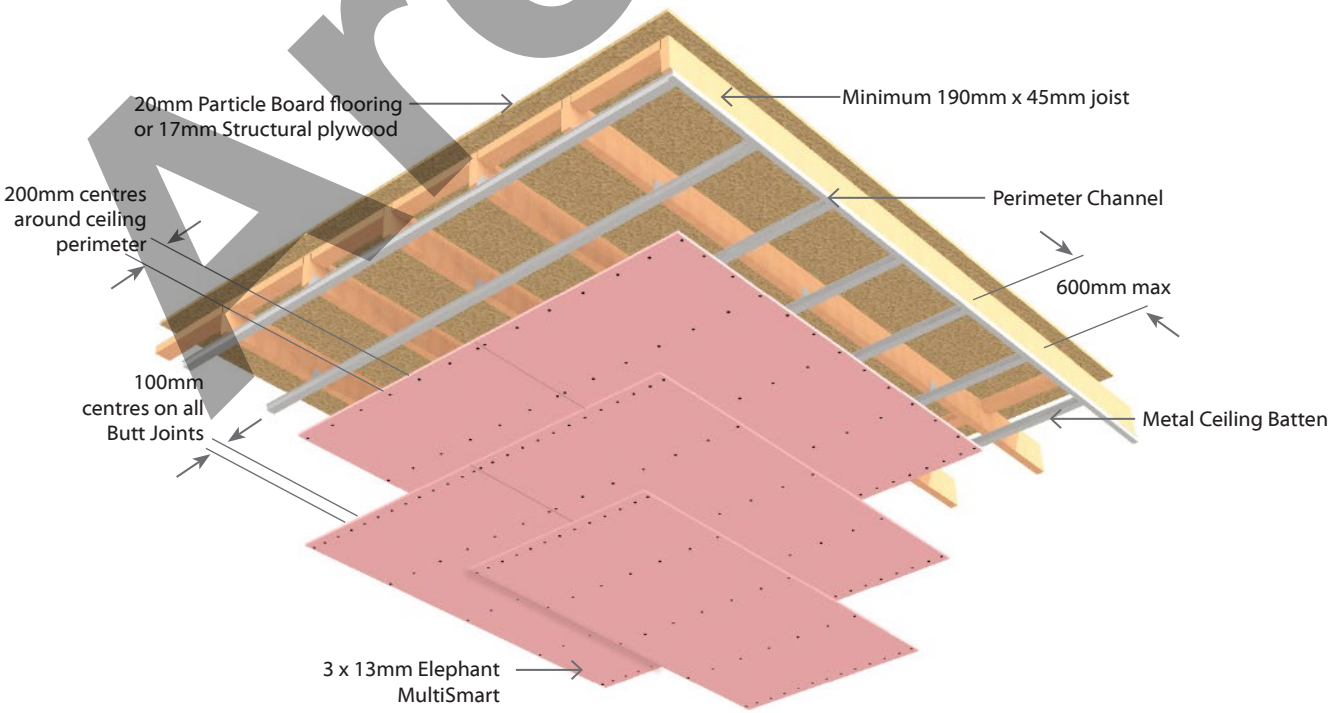
Avoid outer layer screws from hitting inner layer screws.

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E2SC30 Suspended Grid Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2SC30	-S26	30/30/30	LB	50	49	42	2 x 13mm Elephant Standard
	-M20	30/30/30	LB	50	49	42	2 x 10mm Elephant MultiSmart

Floor Framing

Timber floor joists shall comply with NZS3604 and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Suspension System

Rondo® KEY-LOCK™ steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting top cross rails (part 128) spaced at a maximum of 1200mm centres and furring channels (part 129) at 600mm centres.

OR

Rondo ScrewFix® steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting F38 strong back channels spaced at a maximum of 1200mm centres and F37 furring channels at 600mm centres.

OR

Alternative suspension systems with equivalent performance characteristics and layout may be used.

Suspended Grid ceiling system to be installed as per manufacturer's specification.

Plasterboard Lining

Two layers of Elephant Plasterboard as per specified system above, fixed perpendicular to the furring channels. Offset the joints of the outer layer by 600mm from those of the inner layer.

All sheet butt joints must occur on the furring channel. Sheet joints shall be touch fitted.

Fixing of Linings

Fasteners (As per Specified System Above)

System Number	1st Layer	2nd Layer
	Self-Tapping Drywall Screws	
E2SC30-M20	10mm	10mm
	25 x 6g	32 x 6g
E2SC30-S26	13mm	13mm
	25 x 6g	41 x 6g

Fastener Centres

Ceiling sheets shall be fixed at 200mm centres along each furring channel, around the ceiling perimeter and at 200mm centres where butt joints occur.

Place fasteners no closer than 12mm from sheet edges.

Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on furring channels.

Avoid outer layer screws from hitting inner layer screws.

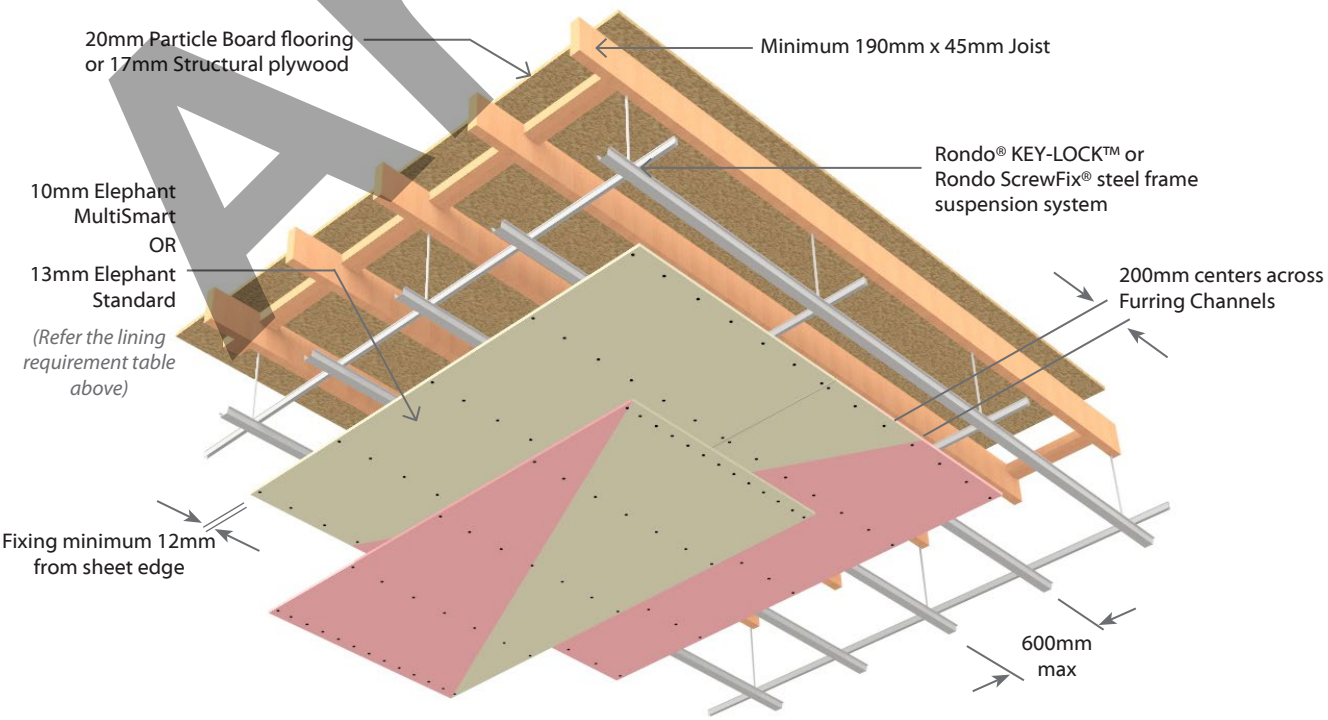
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1SC45 Suspended Grid Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1SC45	**-M13**	45/45/45	LB	48	47	42	1 x 13mm Elephant MultiSmart (back blocked)

Floor Framing

Timber floor joists shall comply with NZS3604 and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Suspension System

Rondo® KEY-LOCK™ steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting top cross rails (part 128) spaced at a maximum of 1200mm centres and (part 129) furring channels at 600mm centres.

OR

Rondo ScrewFix® steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting F38 strong back channels spaced at a maximum of 1200mm centres and F37 furring channels at 600mm centres.

OR

Alternative suspension systems with equivalent performance characteristics and layout may be used.

Suspended Grid ceiling system to be installed as per manufacturer's specification.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart fixed at right angles to the furring channels. All sheet butt joints must occur on the furring channel. Joints formed by sheet edges shall be back blocked between furring channels with strips of plasterboard equivalent to the lining thickness used and with a minimum width 300mm. They shall be adhered with a cove or cornice bond adhesive.

Sheet joints shall be touch fitted.

Fixing the Lining

Fasteners

System Number	Single Layer
	Self-Tapping Drywall Screw
E1SC45-M13	13mm
	25 x 6g

Fastening Centres

Ceiling sheets shall be fixed at 200mm centres along each furring channel, around the ceiling perimeter and at 200mm centres where butt joints occur.

Place fasteners no closer than 12mm from sheet edges.

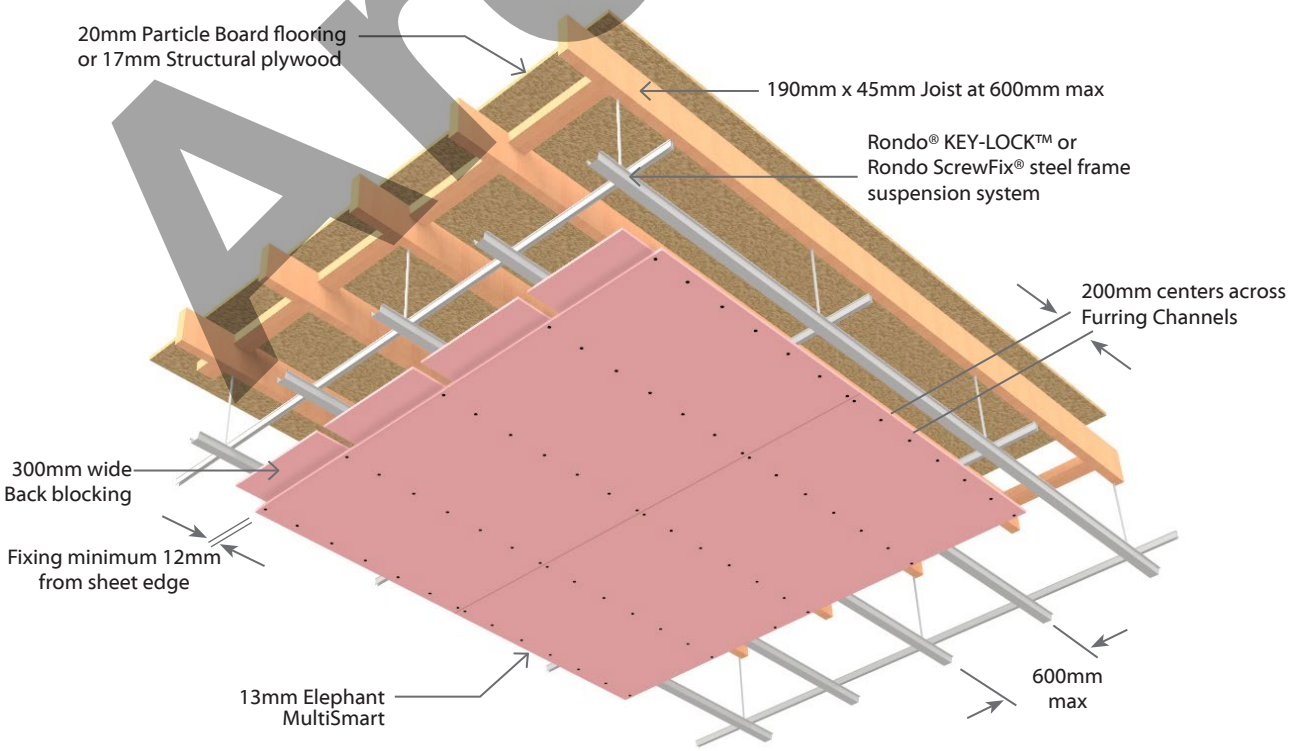
Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on furring channels.

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1SC60 Suspended Grid Floor/Ceiling Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1SC60	**-F16**	60/60/60	LB	48	47	43	1 x 16mm Elephant FireSmart (back blocked)

Floor Framing

Timber floor joists shall comply with NZS3604 and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Suspension System

Rondo® KEY-LOCK™ steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting top cross rails (part 128) spaced at a maximum of 1200mm centres and furring channels (part 129) at 600mm centres.

OR

Rondo ScrewFix® steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting F38 strong back channels spaced at a maximum of 1200mm centres and F37 furring channels at 600mm centres.

OR

Alternative suspension systems with equivalent performance characteristics and layout may be used.

Suspended Grid ceiling system to be installed as per manufacturer's specification.

Plasterboard Lining

One layer of 16mm Elephant FireSmart fixed at right angles to the furring channels. All sheet butt joints must occur on the furring channel.

Joints formed by sheet edges shall be back blocked between furring channels with strips of plasterboard equivalent to the lining thickness used and with a minimum width 300mm. They shall be adhered with a cove or cornice bond adhesive.

Sheet joints shall be touch fitted.

Fixing the Lining

Fasteners

System Number	Single Layer
	Self-Tapping Drywall Screw
E1SC60-F16	16mm
	32 x 6g

Fastening Centres

Ceiling sheets shall be fixed at 200mm centres along each furring channel, around the ceiling perimeter and at 150mm centres where butt joints occur.

Place fasteners no closer than 12mm from sheet edges.

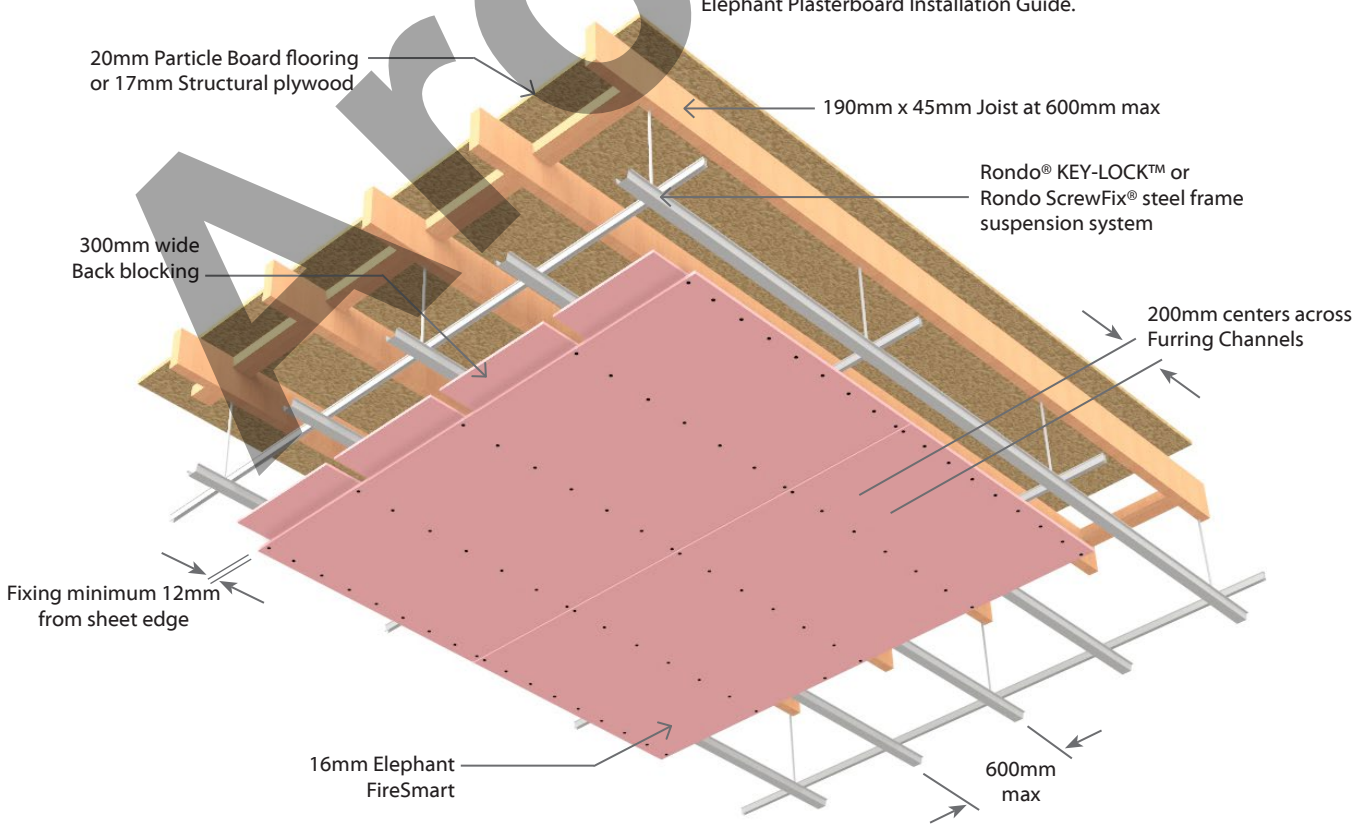
Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on furring channels.

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1XC60 Suspended Rondo Express® Grid Ceiling System — Load Bearing

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E1XC60	**-F16**	60/60/60	LB	48	47	43	1 x 16mm Elephant FireSmart

Floor Framing
Timber floor joists shall comply with NZS3604 and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring
Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Minimum Cavity Depth
The system requires a minimum of 450mm cavity depth between the ceiling linings and the underside of the flooring.

Suspension System
Rondo Express ® Drywall Grid ceiling system comprising 2.5mm wire hangers or Rondo XD50 wall angles at 1200mm centres maximum, supporting Rondo XD1 main tee spaced at a maximum of 1200mm centres and Rondo XD2-1200 cross tee installed at 600mm centres.

Install Rondo XD2-600 cross tees at 1200mm centres, parallel to the main tee.

Rondo Express ® Drywall Grid ceiling system to be installed as per manufacturer's specification.

Plasterboard Lining
One layer of 16mm Elephant FireSmart fixed parallel to the main tees. All taper edges must be located on cross tees. All sheet butt joints must occur on the suspension system.

Sheet joints shall be touch fitted.

Fixing the Lining
Fasteners

System Number	Single Layer
	Self-Tapping Drywall Screw
E1XC60-F16	16mm
	32 x 6g

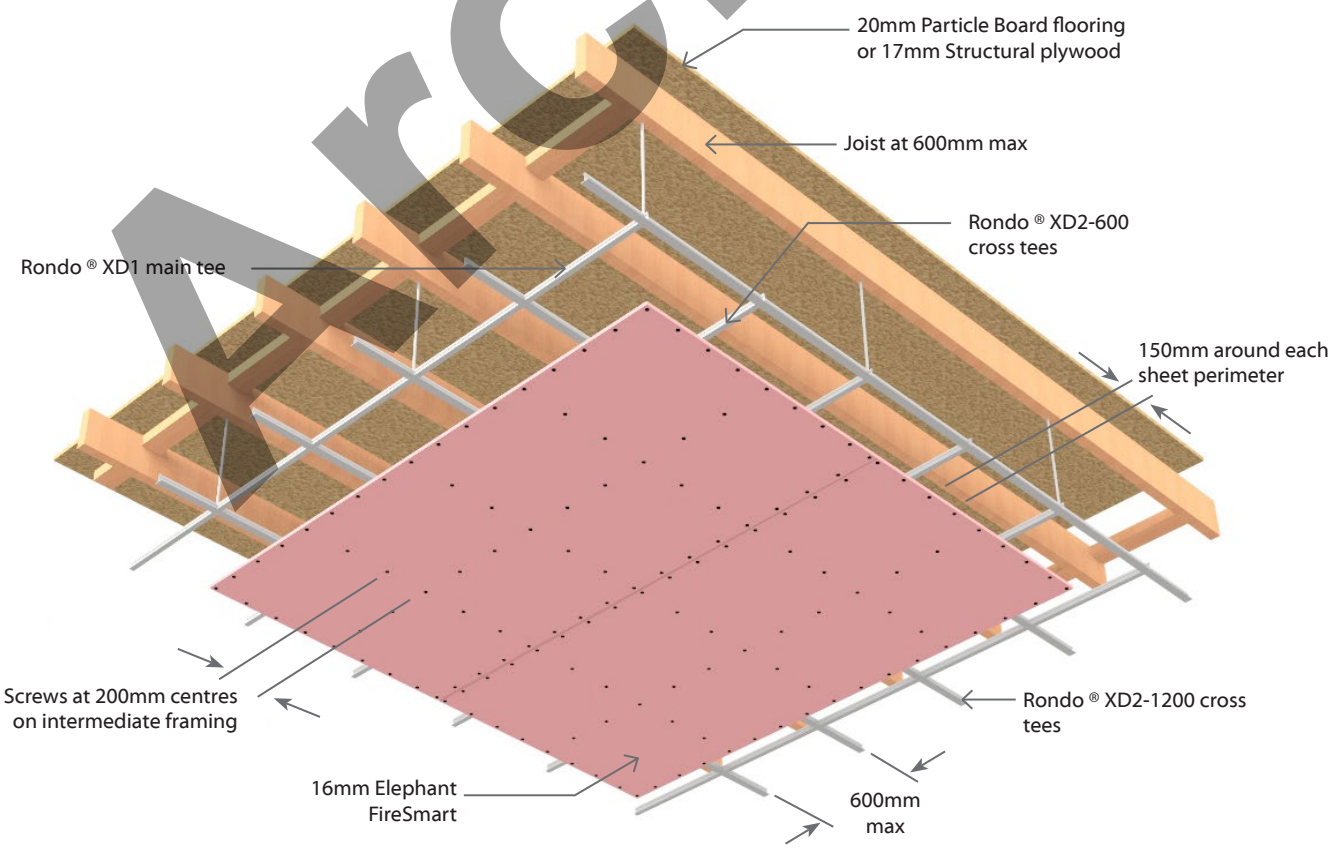
Fastening Centres

Ceiling sheets shall be fixed at 150mm centres around each sheet perimeter and 200mm centres to intermediate framing. Place fasteners no closer than 12mm from sheet edges.

Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on cross tees.

Wall/Ceiling Junction
The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing
All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E2SC60 Suspended Grid Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2SC60	**-MS26**	60/60/60	LB	48	47	42	1 x 13mm Elephant MultiSmart and 1 x 13mm Elephant Standard

Floor Framing

Timber floor joists shall comply with NZS3604 and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Suspension System

Rondo® KEY-LOCK™ steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting top cross rails (part 128) spaced at a maximum of 1200mm centres and furring channels (part 129) at 600mm centres.

OR

Rondo ScrewFix® steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting F38 strong back channels spaced at a maximum of 1200mm centres and F37 furring channels at 600mm centres.

OR

Alternative suspension systems with equivalent performance characteristics and layout may be used.

Suspended Grid ceiling system to be installed as per manufacturer's specification.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart and One layer of 13mm Elephant Standard fixed at right angles to the furring channels. Offset the joints of the outer layer by 600mm from those of the inner layer.

All sheet butt joints must occur on the furring channel. Sheet joints shall be touch fitted.

Fixing of Linings

Fasteners

System Number	1st Layer	2nd Layer
	Self-Tapping Drywall Screws	
E2SC60-MS26	13mm 25 x 6g	13mm 41 x 6g

Fastener Centres

Ceiling sheets shall be fixed at 200mm centres along each furring channel and around the ceiling perimeter. Fix at 200mm centres where butt joints occur.

Place fasteners no closer than 12mm from sheet edges.

Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on furring channels.

Avoid outer layer screws from hitting inner layer screws.

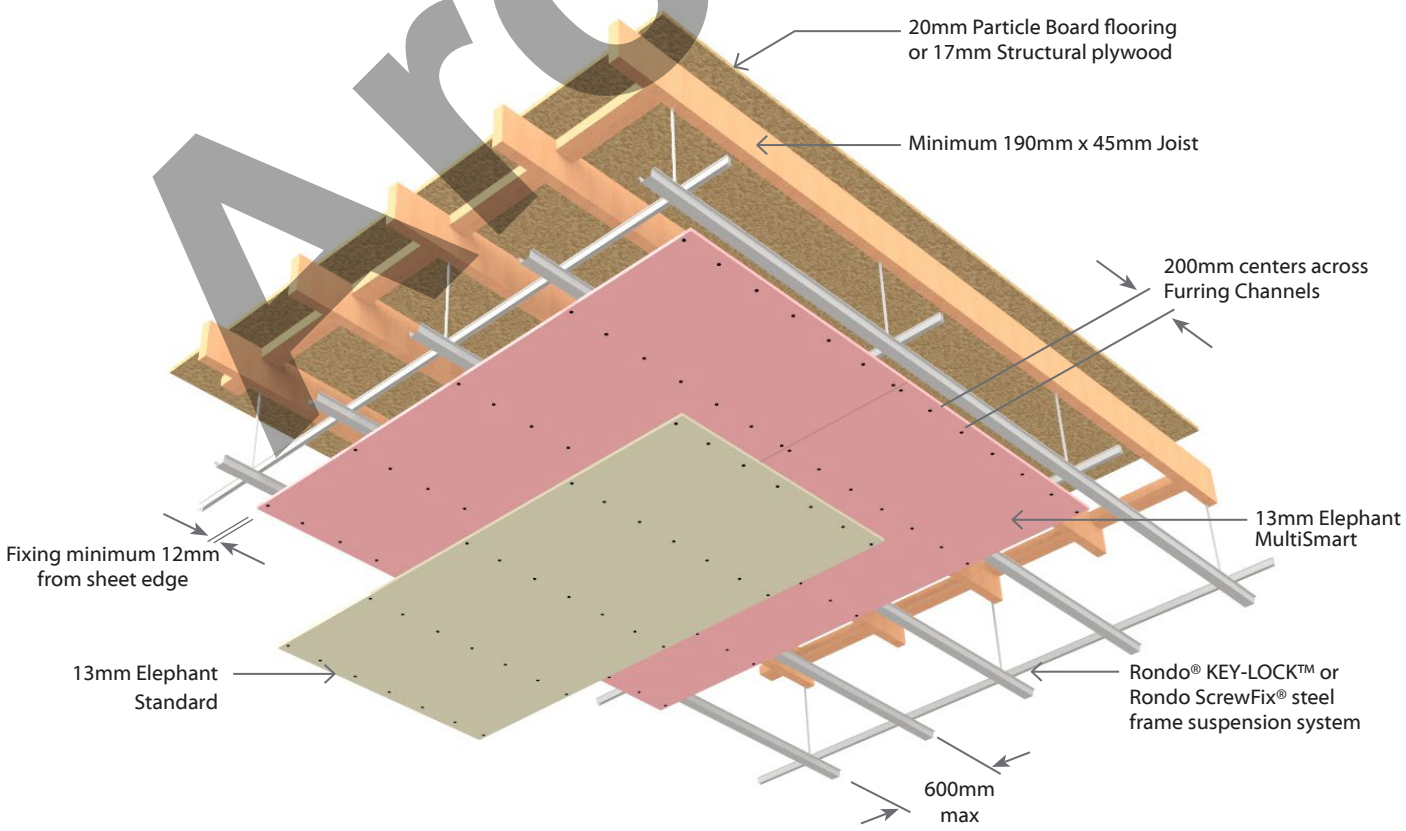
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E2SC75 Suspended Grid Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2SC75	**-M26**	75/75/75	LB	51	50	42	2 x 13mm Elephant MultiSmart

Floor Framing
Timber floor joists shall comply with NZS3604 and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring
Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Suspension System
Rondo® KEY-LOCK™ steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting top cross rails (part 128) spaced at a maximum of 1200mm centres and furring channels (part 129) at 600mm centres.

OR

Rondo ScrewFix® steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting F38 strong back channels spaced at a maximum of 1200mm centres and F37 furring channels at 600mm centres.

OR

Alternative suspension systems with equivalent performance characteristics and layout may be used.

Suspended Grid ceiling system to be installed as per manufacturer's specification.

Plasterboard Lining
Two layers of 13mm Elephant MultiSmart fixed at right angles to the furring channels. Offset the joints of the outer layer by 600mm from those of the inner layer.

All sheet butt joints must occur on the furring channel. Sheet joints shall be touch fitted.

Fixing of Linings
Fasteners

System Number	1st Layer	2nd Layer
	Self-Tapping Drywall Screws	
E2SC75-M26	13mm	13mm
	25 x 6g	41 x 6g

Fastener Centres

Ceiling sheets shall be fixed at 200mm centres along each furring channel and around the ceiling perimeter. Fix at 200mm centres where butt joints occur.

Place fasteners no closer than 12mm from sheet edges.

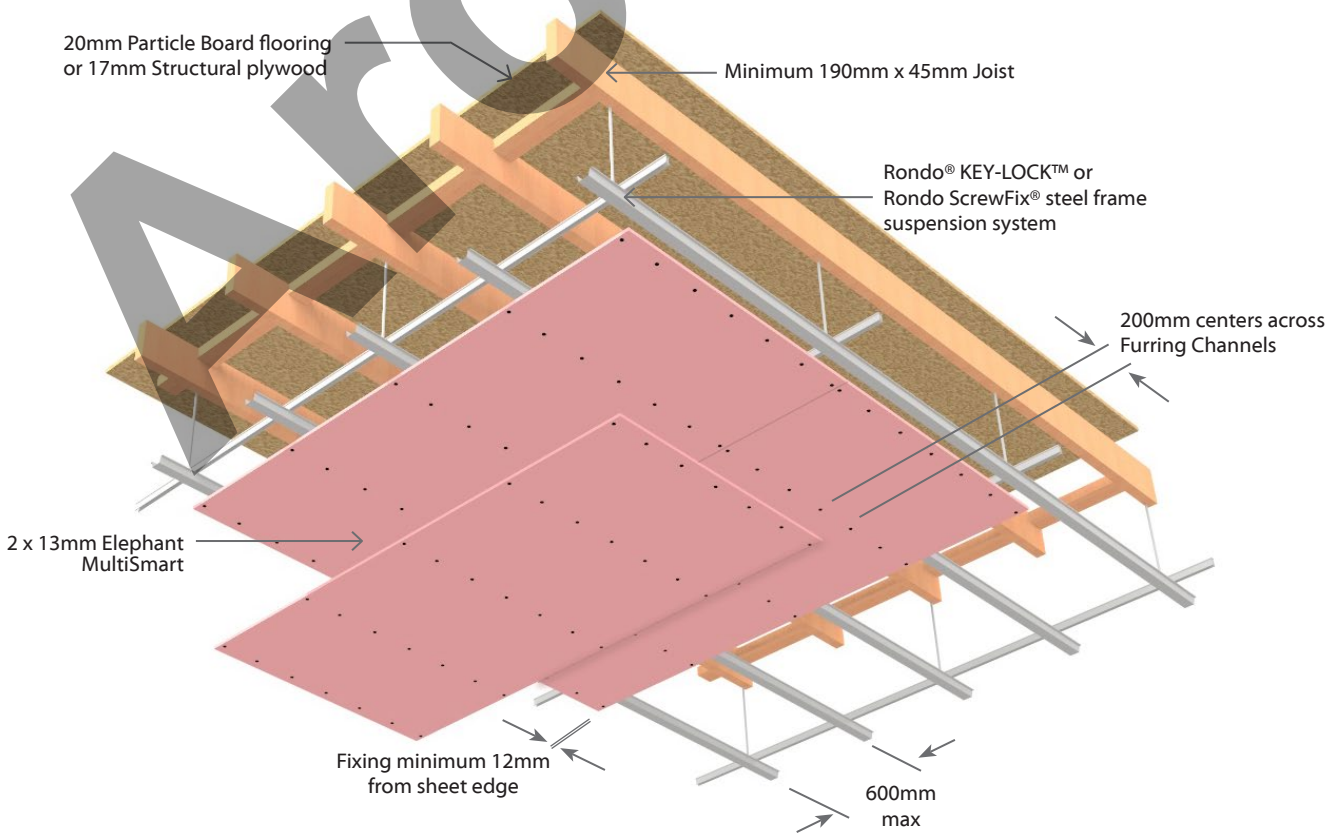
Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on furring channels.

Avoid outer layer screws from hitting inner layer screws.

Wall/Ceiling Junction
The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing
Inner layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E2SC90 Suspended Grid Floor/Ceiling Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2SC90	**-F32**	90/90/90	LB	53	52	43	2 x 16mm Elephant FireSmart

Floor Framing

Timber floor joists shall comply with NZS3604 with a minimum depth of 190mm x 45mm and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Suspension System

Rondo® KEY-LOCK™ steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting top cross rails (part 128) spaced at a max of 1200mm centres and furring channels (part 129) at 600mm centres.

OR

Rondo ScrewFix® steel frame suspension system comprising 2.5mm wire hangers at 1200mm centres supporting F38 strong back channels spaced at a maximum of 1200mm centres and F37 furring channels at 600mm centres.

OR

Alternative suspension systems with equivalent performance characteristics and layout may be used.

Suspended Grid ceiling system to be installed as per manufacturer's specification.

Plasterboard Lining

Two layers of 16mm Elephant FireSmart fixed at right angles to the furring channels. Offset the joints of the outer layer by 600mm from those of the inner layer.

All sheet butt joints must occur on the furring channel. Sheet joints shall be touch fitted.

Fixing of Linings

Fasteners

System Number	1st Layer	2nd Layer
	Self-Tapping Drywall Screws	
E2SC90-F32	16mm 32 x 6g	16mm 41 x 6g

Fastener Centres

Ceiling sheets shall be fixed at 200mm centres along each furring channel and around the ceiling perimeter. Fix at 150mm centres where butt joints occur.

Place fasteners no closer than 12mm from sheet edges.

Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on furring channels.

Avoid outer layer screws from hitting inner layer screws.

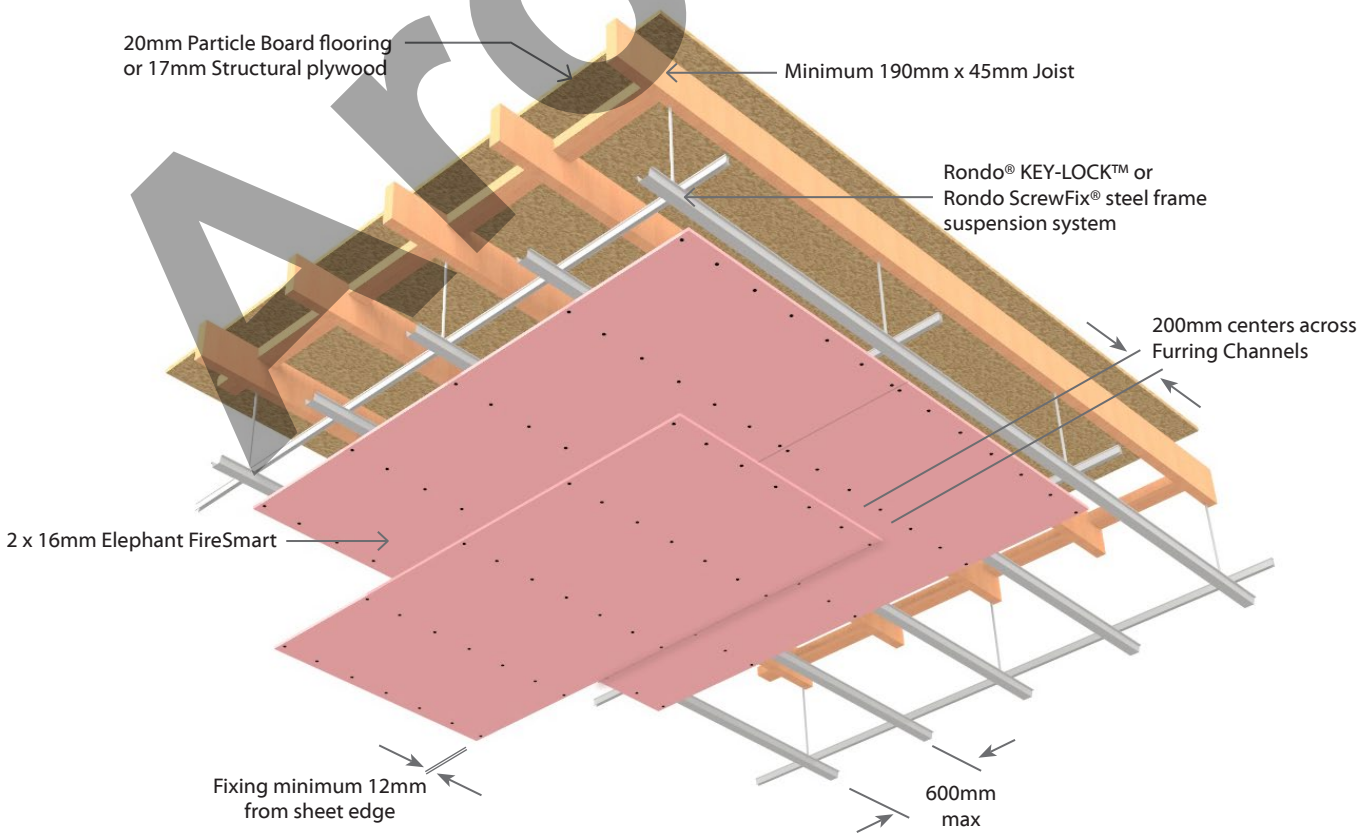
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E2XC90 Suspended Rondo Express® Grid Ceiling System Load Bearing

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control			Lining Requirement
				STC	Rw	IIC	
E2XC90	**-FM29**	90/90/90	LB	48	47	43	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart

Floor Framing

Timber floor joists shall comply with NZS3604 and spaced at no more than 600mm centres. Solid strutting is required in accordance with NZS 3604.

Alternatively, a proprietary I-joist system may be used subject to specific structural design and approved by the normal building consent process.

Nogs fixed on the flat to receive the ends of flooring material shall be 90mm x 45mm minimum.

Flooring

Flooring shall be 20mm thick particle board or 17mm thick structural ply, fixed to the joists as per manufacturer's instructions.

Flooring sheet joints must either be formed over framing or have a polypropylene tongue and groove jointer.

Minimum Cavity Depth

The system requires a minimum of 450mm cavity depth between the ceiling linings and the underside of the flooring.

Suspension System

Rondo Express ® Drywall Grid ceiling system comprising 2.5mm wire hangers or Rondo XD50 wall angles at 1200mm centres maximum, supporting Rondo XD1 main tee spaced at a maximum of 1200mm centres and Rondo XD2-1200 cross tee installed at 600mm centres.

Install Rondo XD2-600 cross tees at 1200mm centres, parallel to the main tee.

Rondo Express ® Drywall Grid ceiling system to be installed as per manufacturer's specification.

Plasterboard Lining

One layer of 16mm Elephant FireSmart and One layer of 13mm Elephant MultiSmart fixed at right angles to the furring channels.

The inner layer to be fixed parallel to the main tees with taper edges located on main tees.

The outer layer to be fixed parallel to the main tees and offset by 600mm from those of the inner layer in both direction.

All sheet butt joints must occur on the cross tees.

They shall be adhered with a cove or cornice bond adhesive.

Sheet joints shall be touch fitted.

Fixing the Lining

Fasteners

System Number	1st Layer	2nd Layer
	Self-Tapping Drywall Screws	
E2XC90-FM29	16mm	13mm
	32 x 6g	41 x 6g

Fastening Centres

Ceiling sheets shall be fixed at 150mm centres around each sheet perimeter and 200mm centres to intermediate framing.

Place fasteners no closer than 12mm from sheet edges.

Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on cross tees.

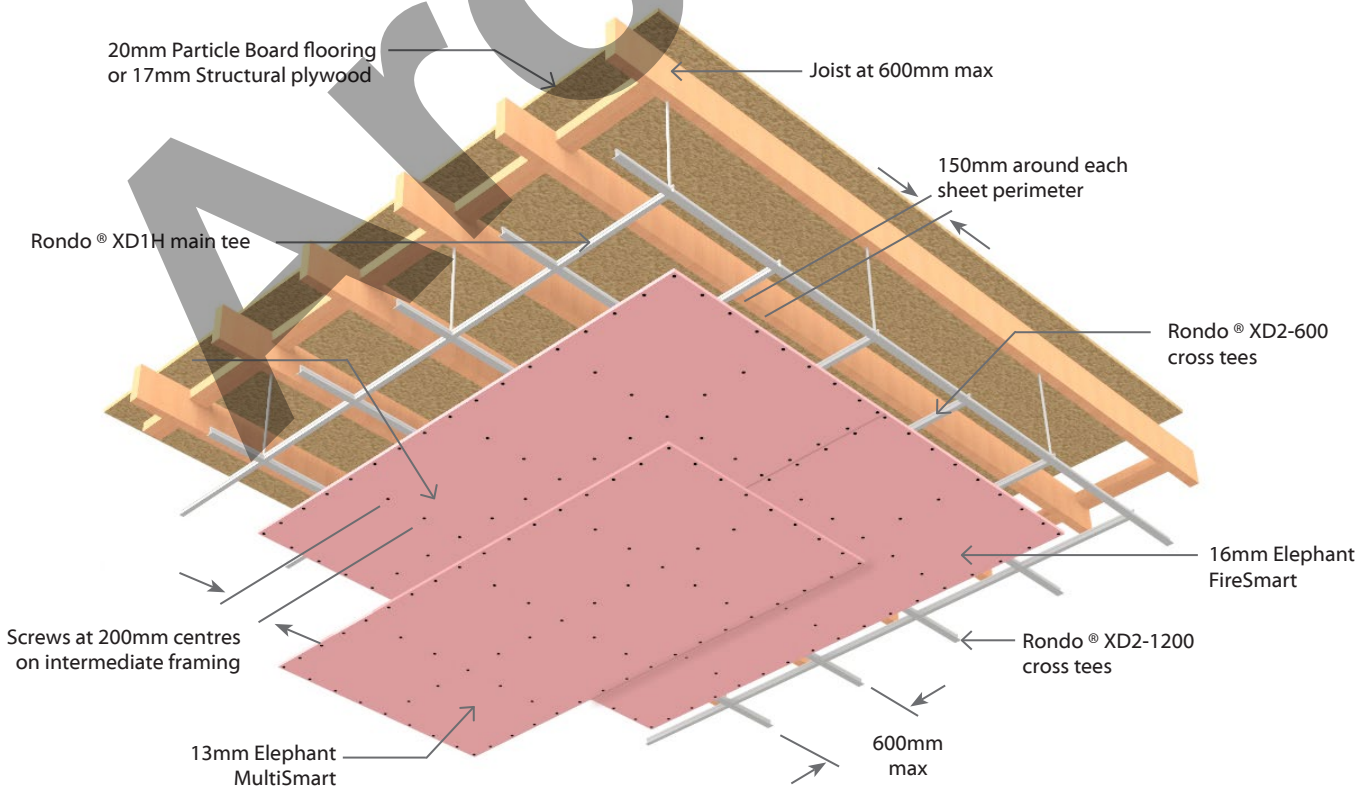
Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice or square stopped corners, taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



Fire Rated Universal Ceilings

E1UC15 Universal Ceiling - Timber or Steel Frame | Load Bearing | One Way FRR

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	IIC	
E1UC15	**-M13**	15/15/15	LB	N/A	N/A	1 x 13mm Elephant MultiSmart

Floor Framing

Timber or steel roof or floor/ceiling framing designed to meet structural criteria for strength and serviceability under dead and live loads.

The separation between the ceiling lining and any flooring or roofing material shall be 90mm minimum. Linings to be supported by framing members spaced at no more than 600mm centres and with a minimum width of 35mm.

Solid nogs shall be provided at 1200mm centres maximum (to provide solid nogging for the sheet edges) and to the perimeter of the ceiling.

For timber construction, the nogs shall be 75mm x 40mm minimum.

Plasterboard Lining

One layer of 13mm Elephant MultiSmart fixed at right angles directly to the underside of the framing above.

All tapered edged and sheet end butt joints must form on solid framing.

Alternatively the tapered edges can be back blocked using 300mm wide strips of 13mm Elephant MultiSmart. Use Cornice adhesive to adhere the back blocking pieces as per the Elephant Installation Guide.

Sheets to be touch fitted.

Fixing of Linings

Fasteners

System Number	Timber Frame	Steel Frame
	High Thread Drywall Screws	Self-Tapping Drywall Screws
E1UC15-M13	13mm	13mm
	41 x 6g	25 x 6g

Fastener Centres

Ceiling sheets shall be screw fixed at 200mm centres around the perimeter of the ceiling, along each framing member and where sheet end butt joints occur.

Place fasteners no closer than 12mm from sheet edges.

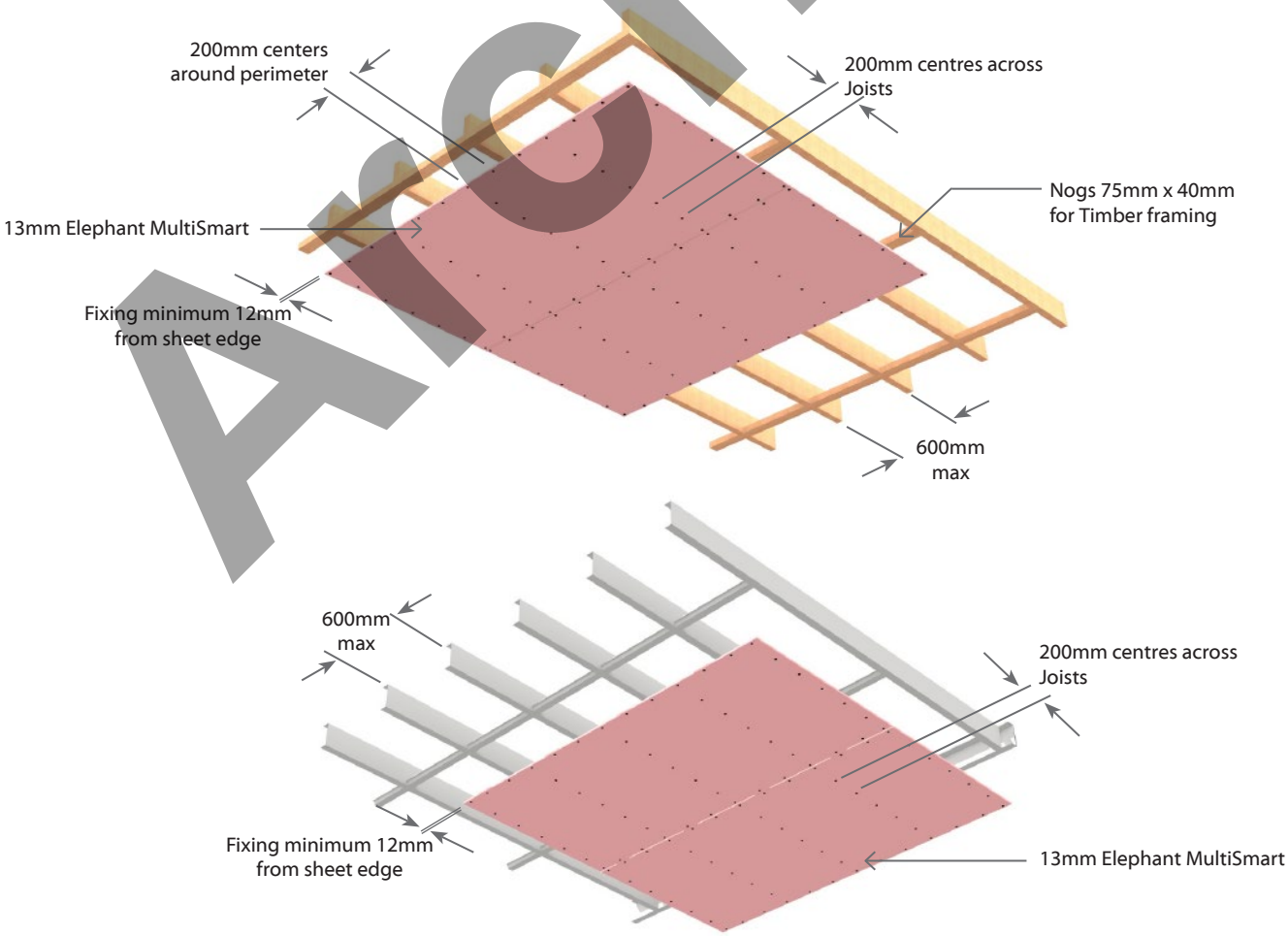
Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on furring channels or metal ceiling battens.

Wall/Ceiling Junction

The internal angle between the ceilings and walls must be protected by Cornice, adhered with cornice adhesive or square stopped corners taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.



E1UC30 Universal Ceiling - Timber or Steel Frame | Load Bearing | One Way FRR

1 Layer: 1 Layer of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement	Flooring or Roofing Material
				STC	IIC		
E1UC30	**-F16a**	30/30/30**	LB	N/A	N/A	1 x 16mm Elephant FireSmart	NO Polymeric foam

** N.B. System E1UC30-F16a achieves the stated fire rating with flooring or roofing materials that do not incorporate polymeric foam

Floor Framing

Timber or steel roof or floor/ceiling framing designed to meet structural criteria for strength and serviceability under dead and live loads.

The separation between the ceiling lining and any flooring or roofing material shall be 90mm minimum. Linings to be supported by framing members spaced at no more than 600mm centres and with a minimum width of 35mm.

Solid nogs shall be provided at 1200mm centres maximum (to provide solid nogging for the sheet edges) and to the perimeter of the ceiling.

For timber construction, the nogs shall be 75mm x 40mm minimum.

System Number	Timber Frame	Steel Frame
	High Thread Drywall Screws	Self-Tapping Drywall Screws
E1UC30-F16a	16mm	16mm
	41 x 6g	32 x 6g

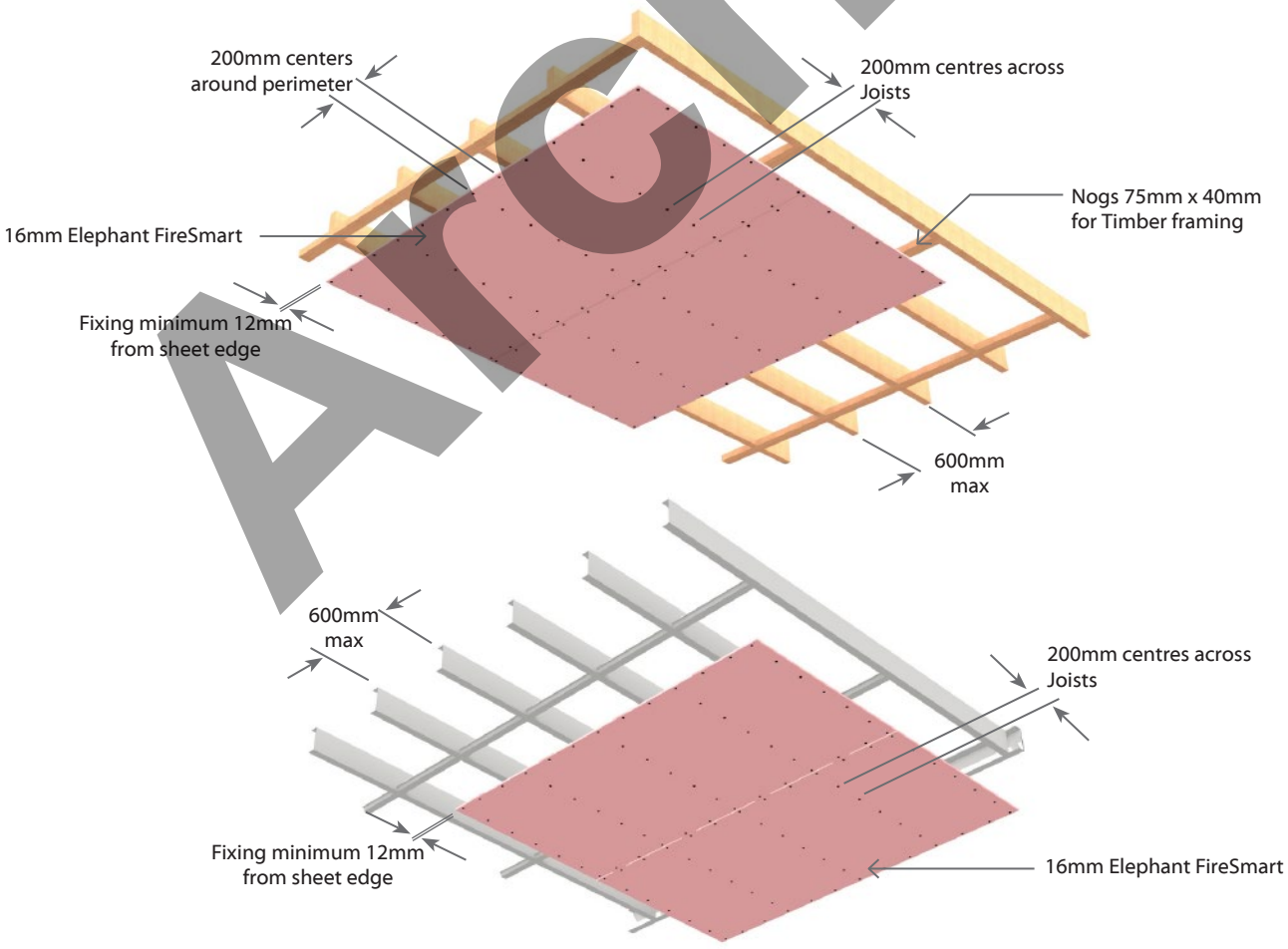
Plasterboard Lining

One layer of 16mm Elephant FireSmart fixed at right angles directly to the underside of the framing above.

All tapered edged and sheet end butt joints must form on solid framing.

Alternatively the tapered edges can be back blocked using 300mm wide strips of 16mm Elephant FireSmart. Use Cornice adhesive to adhere the back blocking pieces as per the Elephant Installation Guide.

Sheets to be touch fitted.



E2UC60 Universal Ceiling - Timber or Steel Frame | Load Bearing | One Way FRR

2 Layers: 2 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement	Flooring or Roofing Material
				STC	IIC		
E2UC60	-M26a	60/60/60**	LB	N/A	N/A	2 x 13mm Elephant MultiSmart	NO Polymeric foam
	-FM29	60/60/60	LB	N/A	N/A	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart	Any Material

** N.B. System E2UC60-M26a achieves the stated fire rating with flooring or roofing materials that do not incorporate polymeric foam

Floor Framing

Timber or steel roof or floor/ceiling framing designed to meet structural criteria for strength and serviceability under dead and live loads.

The separation between the ceiling lining and any flooring or roofing material shall be 90mm minimum. Linings to be supported by framing members spaced at no more than 600mm centres and with a minimum width of 35mm.

Solid nogs shall be provided at the perimeter of the ceiling.

For timber construction, the nogs shall be 75mm x 40mm minimum.

Plasterboard Lining

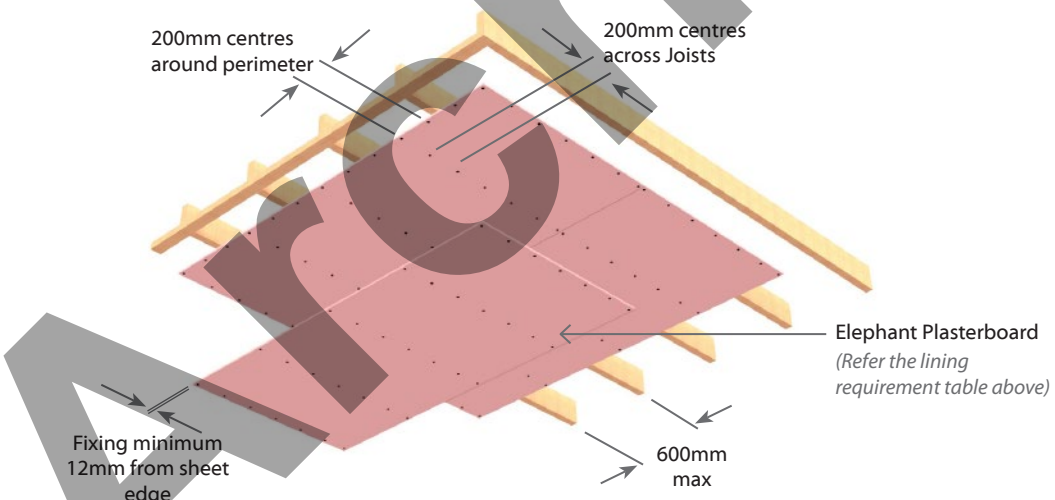
Two layers of Elephant Plasterboard as per specified system above fixed at right angles directly to the underside of the framing above.

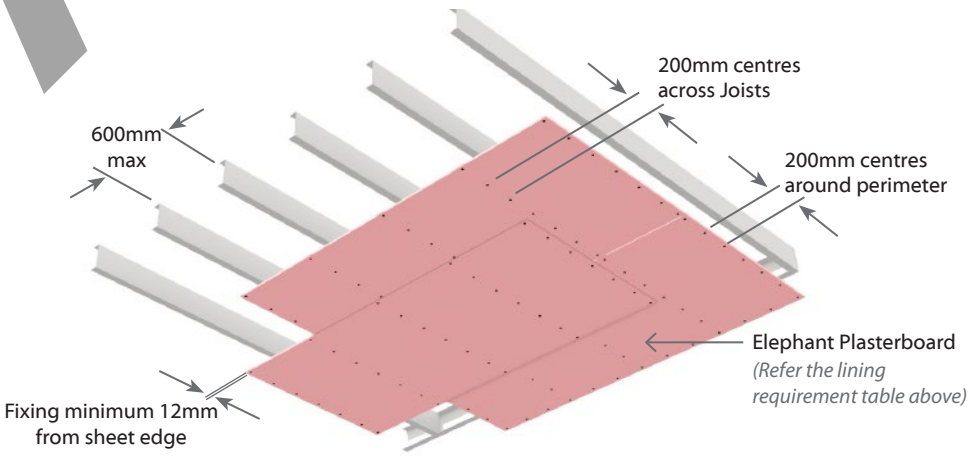
All sheet end butt joints must form on solid framing.

The joints of the second layer should be offset 600mm from those of the first layer.

Sheets to be touch fitted.

System Number	Timber Frame		Steel Frame	
	1st Layer	2nd Layer	1st Layer	2nd Layer
	High Thread Drywall Screws		Self-Tapping Drywall Screws	
E2UC60-M26a	13mm	13mm	13mm	13mm
	41 x 6g	51 x 7g	25 x 6g	41 x 6g
E2UC60-FM29 (opt-1)	16mm	13mm	16mm	13mm
	41 x 6g	51 x 7g	32 x 6g	41 x 6g
E2UC60-MF29 (opt-2)	13mm	16mm	13mm	16mm
	41 x 6g	51 x 7g	25 x 6g	41 x 6g





E3UC90 Universal Ceiling - Timber or Steel Frame | Load Bearing | One Way FRR

3 Layers: 3 Layers of Plasterboard to underside side of frame

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement	Flooring or Roofing Material
				STC	IIC		
E3UC90	-M39a	90/90/90**	LB	N/A	N/A	3 x 13mm Elephant MultiSmart	NO Polymeric foam
	-FM42	90/90/90	LB	N/A	N/A	1 x 16mm Elephant FireSmart and 2 x 13mm Elephant MultiSmart	Any Material

** N.B. System E3UC90-M39a achieves the stated fire rating with flooring or roofing materials that do not incorporate polymeric foam

Floor Framing

Timber or steel roof or floor/ceiling framing designed to meet structural criteria for strength and serviceability under dead and live loads.

The separation between the ceiling lining and any flooring or roofing material shall be 90mm minimum. Linings to be supported by framing members spaced at no more than 600mm centres and with a minimum width of 35mm.

Solid nogs shall be provided at the perimeter of the ceiling.

For timber construction, the nogs shall be 75mm x 40mm minimum.

Plasterboard Lining

Three layers of Elephant Plasterboard as per specified system above fixed at right angles directly to the underside of the framing above.

All sheet end butt joints must form on solid framing.

The joints of the each consecutive layer should be offset minimum of 300mm from those of the previous layer.

Sheets to be touch fitted.

Fixing of Linings

Fasteners

System Number	Timber Frame			Steel Frame		
	1st Layer	2nd Layer	3rd Layer	1st Layer	2nd Layer	3rd Layer
	High Thread Drywall Screws		Self-Tapping Drywall Screws			
E3UC90-M39a	13mm	13mm	13mm	13mm	13mm	13mm
	41 x 6g	51 x 7g	63 x 8g	25 x6g	41 x 6g	51 x 7g
E3UC90-FM42	16mm	13mm	13mm	16mm	13mm	13mm
	41 x 6g	51 x 7g	63 x 8g	32 x6g	41 x 6g	63 x 8g

Fastener Centres

For all layers, ceiling sheets shall be screw fixed at 150mm centres around ceiling perimeter, and at each sheet end butt joint. Fix at 200mm centres along each framing member.

Fasteners to be placed no closer than 12mm from sheet edge.

Place fasteners no closer than 18mm from sheet ends. However this can be reduced to 12mm if sheet ends occur on furring channels or metal ceiling battens.

Avoid outer layer screws from hitting inner layer screws.

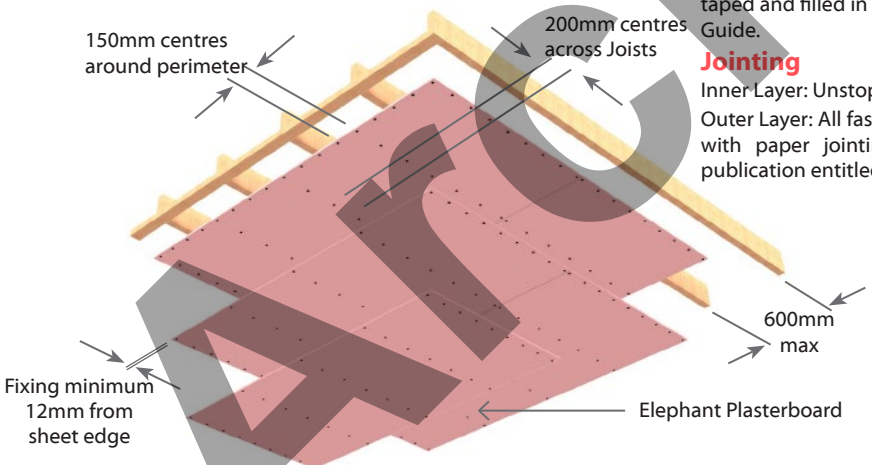
Wall/Ceiling Junction

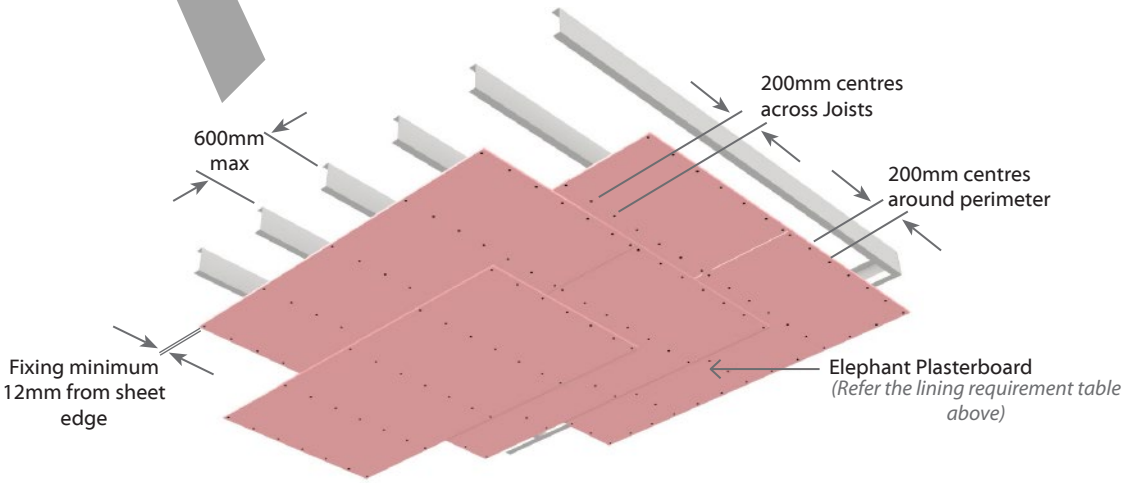
The internal angle between the ceilings and walls must be protected by Cornice, adhered using cornice adhesive or square stopped corners taped and filled in accordance with Elephant Plasterboard Installation Guide.

Jointing

Inner Layer: Unstopped.

Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.





Fire Rated Speciality Systems

Elephant Shaft Panel

Two Way FRR

Elephant Shaft Panels using any selected Elephant Fire or Noise Control System

Elephant Shaft Panel systems outlined in this manual are when construction can only be done from one side. Ideal for lift and service shaft enclosures.

Any conventional steel or timber framing Elephant Plasterboard System within this manual or Elephant Noise Control Manual can be referred to in terms of lining and FRR. For installation and fixing details, look at the selected Elephant system's technical specification

Framing Construction

Construct the framing by friction fitting steel or timber studs into the top and bottom steel channels. Cut the studs minimum 15mm less than the full height between the top and bottom channel to allow an expansion gap. The channels are not continuous.

Packers

Place strips of plasterboard packers on each side of the end studs and at the head of the panel. The packer thickness on the head of the panel depends on the floor defection required.

Shaft Side Lining

Elephant Plasterboard as per the specified system to be screw fixed to the framing on the shaft side of the panel. Fixing to bottom channels is optional. Do not fix to top channels.

Panel Installation Procedure

Erecting the panel

Move and fix the panels into positions by screwing the top channel into to the above structure and the bottom channel to the floor. Allow for the required deflection gap and make sure the plasterboard lining overlaps by 6mm above the head packers.

Construct the next panels in the similar way, move them into position and secure them in place and against the previous panel by screwing through the end stud plasterboard packers.

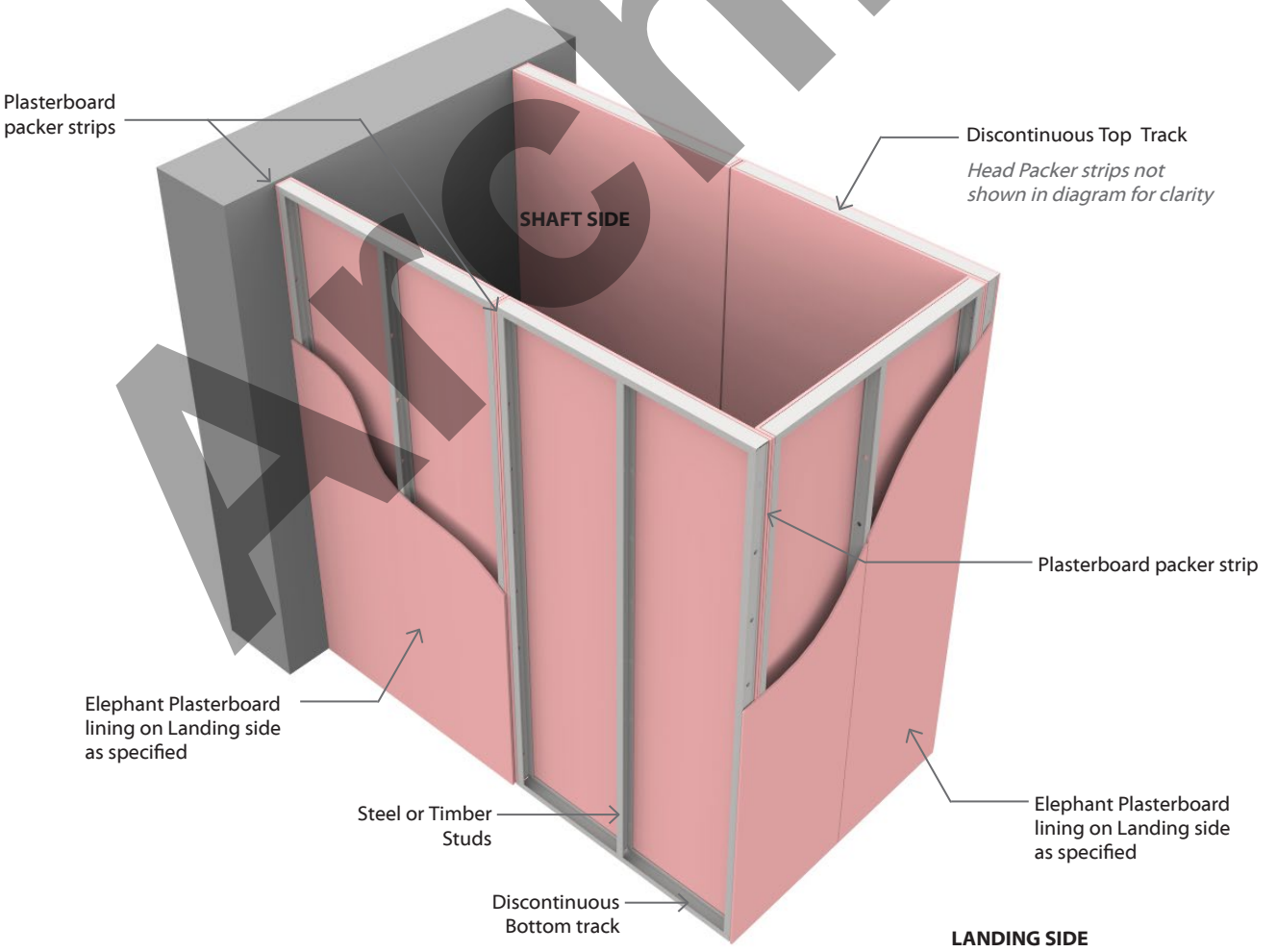
Once all panels have been installed, and the shaft is enclosed, fill any minor gaps with Flexible Fire rated sealant of the same FRR as required before lining the landing side.

When connecting to structural steel, install the channels before fireproofing spray application.

Landing Side Lining

Fix Elephant Plasterboard as per the specified system vertically to each stud and hard to the floor. Use full height sheets where possible. Staggered joints are required for systems with more than one layer of plasterboard. The top gaps are to be filled with Flexible Fire rated sealant of the same FRR as required. All sheets shall be formed over framing and sheet end butt joints must be formed over nogs.

For detailed instructions on fixings, refer to the relevant technical page of the chosen Elephant Plasterboard system.

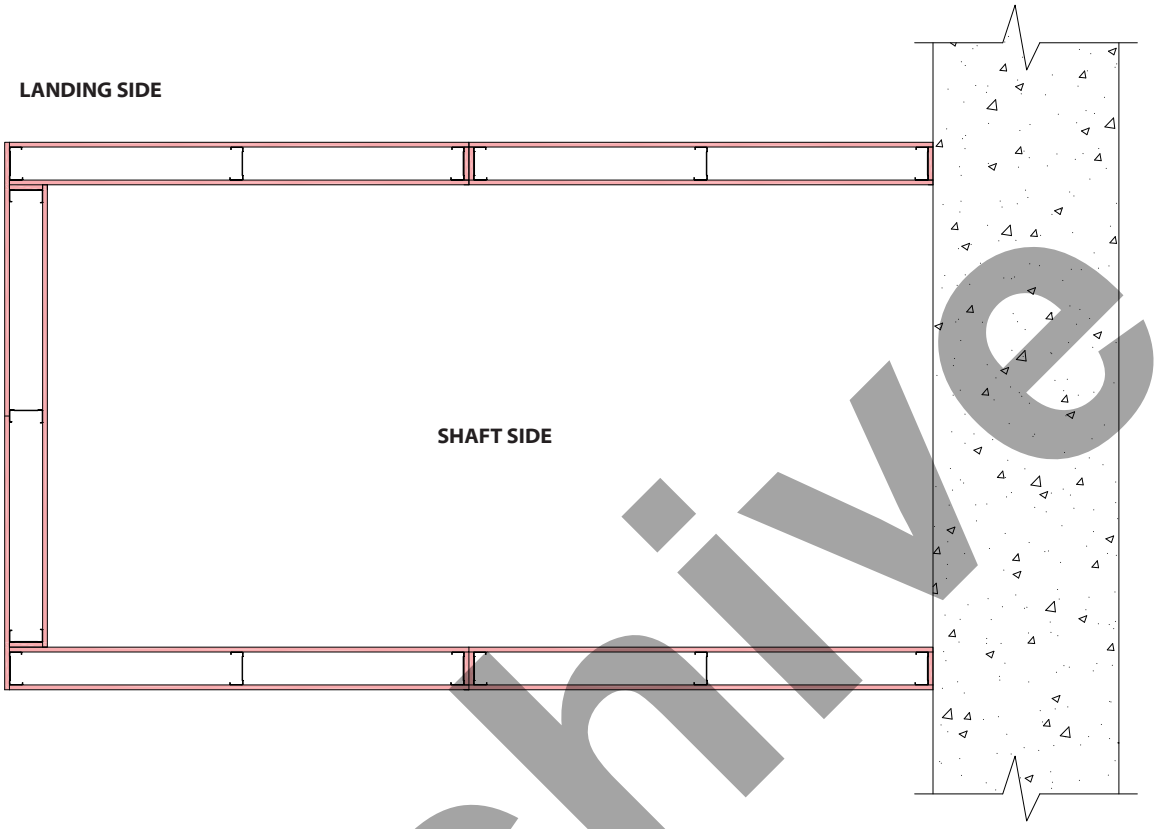


Elephant Shaft Panel

Two Way FRR

Elephant Shaft Panels using any selected Elephant Fire or Noise Control System

PLAN



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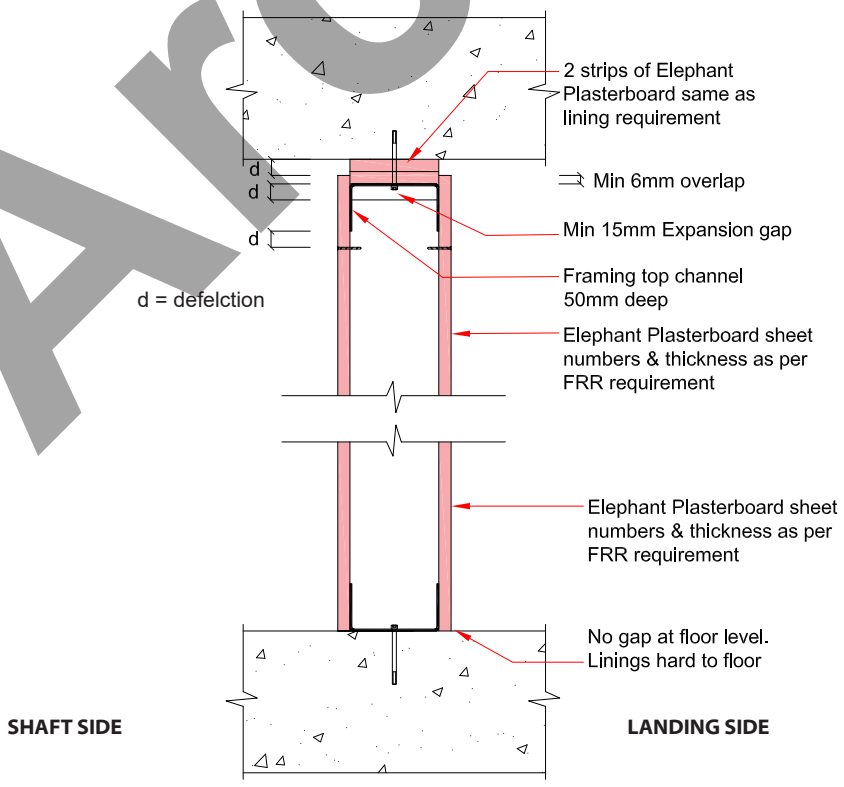


E1SWS, E2SWS — **S**haft**w**all - Fire Rated from **S**haft side — One Way FRR

E1SWE, E2SWE, E3SWE — **S**haft**w**all - Fire Rated from **E**ither side — Two Way FRR

1, **2** or **3** Layers: No. of Layers of Plasterboard to one side of frame (Fire side)

System Number	Lining Suffix	Fire Rating	Fire Rated Side	Noise Control STC 64mm stud No fill	Noise Control STC 64mm stud Fill	Noise Control STC 102mm stud No fill	Noise Control STC 102mm stud Fill	Landing Side Lining Requirement
E1SWS60	**-M13**	-/60/60	Shaft Side	39	45	42	46	1 x 13mm Elephant MultiSmart
E2SWS90	**-M26**	-/90/90		43	49	46	50	2 x 13mm Elephant MultiSmart
E2SWS120	**-FM29**	-/120/120		44	50	46	51	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart
E1SWE30	**-M13**	-/30/30	Either Side	39	45	42	46	1 x 13mm Elephant MultiSmart
E2SWE60	**-M26**	-/60/60		43	49	46	50	2 x 13mm Elephant MultiSmart
E2SWE90	**-FM29**	-/90/90		44	50	46	51	1 x 16mm Elephant FireSmart and 1 x 13mm Elephant MultiSmart
E3SWE120	**-FM42**	-/120/120		46	51	48	52	1 x 16mm Elephant FireSmart and 2 x 13mm Elephant MultiSmart

Elephant Shaftwall systems outlined in this manual are when construction can only be done from one side. Ideal for lift and service shaft enclosures. All Elephant Shaftwall systems are non-load bearing.

Framing

Elephant Shaftwall systems utilises Rondo® E-Stud, CH-Stud and J-Track. Fix the Rondo® J-Tracks as the top and bottom channels. The vertical framing begins with the E-Stud, followed by CH-Studs and ends with the J-Stud. See construction sequence over page.

When connecting to structural steel, install the framing before fireproofing spray application.

Wall heights

Maximum Stud heights

System Number	Stud Size	BMT	Pressure 0.25 kPa	Pressure 0.35 kPa
E1SWE30-M13	64	0.55	2950	2640
		0.90	3460	3090
E1SWS60-M13	102	0.55	3730	2660
		0.90	4980	4190
E2SWE60-M26	64	0.55	3730	2660
E2SWS90-M26		0.90	4380	3890
E2SWE90-FM29	102	0.55	4250	3080
E2SWS120-FM29		0.90	5510	4190
E3SWE120-FM42				

Framing & Lining Installation Procedure

Top and Bottom Tracks

Mechanically fix the Rondo® J-Track as the top and bottom channels at 600mm centres max and 100mm max from each end. Position the J-Track with short leg facing towards the landing side of the wall. When connecting to structural steel, install the Rondo® J-Track before fireproofing spray application.

End Studs

Cut the Rondo® E-Studs 15mm less than the full height between the top and bottom J-Track to allow an expansion gap. Fix the Rondo® E-Stud at 600mm centres max to the structure. Fix a Rondo® J-Stud on the opposite end of the wall using the same procedure, positioning the short leg of the J-Track towards the landing side and long leg towards the shaft side. When connecting to structural steel, install the Rondo® E-Stud and Rondo® J-Stud before fireproofing spray application.

Elephant Plasterboard Linings-Shaft Side

Two layers of 13mm Elephant MultiSmart on the shaft side.

Cut the 13mm Elephant MultiSmart lengthwise in half, leaving two 600mm wide panels and place them between the Rondo® E-Stud and Rondo® CH-Stud on the side closest to the shaft. Position the cut lining back to back with tapered edge at each side. Fix the panels hard to the floor leaving a 15mm expansion gap at the top of the frame. Fill this gap and other gaps with Flexible Fire rated sealant of the same FRR as required before lining the landing side. Use full height sheets where possible. Where sheet end butt joints are unavoidable they should be tight fitted and staggered by 300mm.

CH-Studs

Cut the Rondo® CH-Studs 15mm less than the full height between the top and bottom J-Track to allow an expansion gap. Friction fit the Rondo® CH-Studs vertically into the J-Track at 600mm centres max with the C profile of the CH-Stud facing towards the landing side and H profile towards the shaft side. Position the stud such that the shaft side panels slip into the H profile of the CH-Stud. This process is repeated further until the final gap is 600mm or less.

End Lining Panel - Fixing & Fastening

Cut the final lining panel to such a size that it fits into the already installed J-Stud. To fit the final end panel into the bottom J-Track, cut the flange of the J-Track and bend it down to fit the panel in and then return it back to vertical. Screw fix these panels to the long leg side of the Rondo® J-Stud using 41mm x 6g Self Tapping Drywall screws at 300mm centres. Fill the 15mm gap between the boards and the top J-Track and the gap between the J-Stud and the board with Flexible Fire rated sealant of the same FRR as required before lining the landing side.

Landing Side Lining

Fix Elephant plasterboard as per specified system vertically to each stud at 300mm centres and hard to the floor. Use full height sheets where possible. Do not fix the sheets to the top and bottom Rondo® J-Tracks. Staggered joints are required for systems with more than one layer of plasterboard. The top gaps are to be filled with Flexible Fire rated sealant of the same FRR as required. All sheets shall be formed over framing and sheet end butt joints must be formed over nogs.

E1SWS, E2SWS	**S**haft**w**all - Fire Rated from **S**haft side	One Way FRR
E1SWE, E2SWE, E3SWE	**S**haft**w**all - Fire Rated from **E**ither side	Two Way FRR

Fixing of Landing side Linings

Fasteners (As per Specified System Above)

System Number	1st Layer	2st Layer	3st Layer
	Self-Tapping Drywall Screws		
E1SWS60-M13	13mm	—	—
E1SWE30-M13	32 x 6g		
E2SWS90-M26	13mm	13mm	—
E2SWE60-M26	32 x 6g	41 x 6g	
E2SWS120-FM29	16mm	13mm	—
E2SWE90-FM29	32 x 6g	41 x 6g	
E3SWE120-FM42	16mm	13mm	13mm
	32 x 6g	41 x 6g	63 x 8g

Fastener centres

For both layers, sheets shall be screw fixed at 300mm centres along each framing member. Fasteners to be placed no closer than 12mm from sheet edge.

Jointing

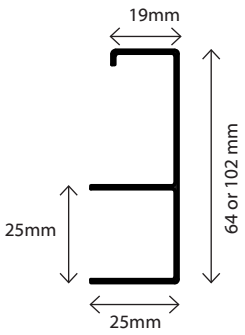
Shaft side: Unstopped

Landing Side

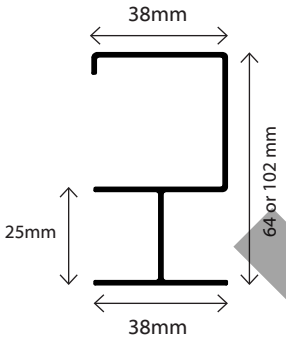
Inner Layer: Unstopped.

Single or Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped in accordance with the publication entitled Elephant Plasterboard Installation Guide.

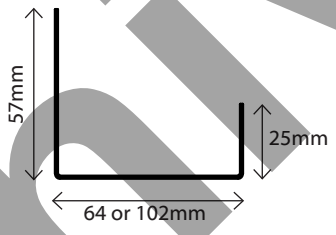
Shaftwall Framing Components



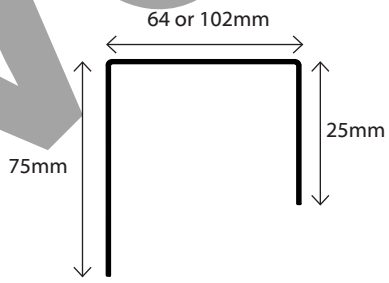
Rondo® E-Stud



Rondo® CH-Stud

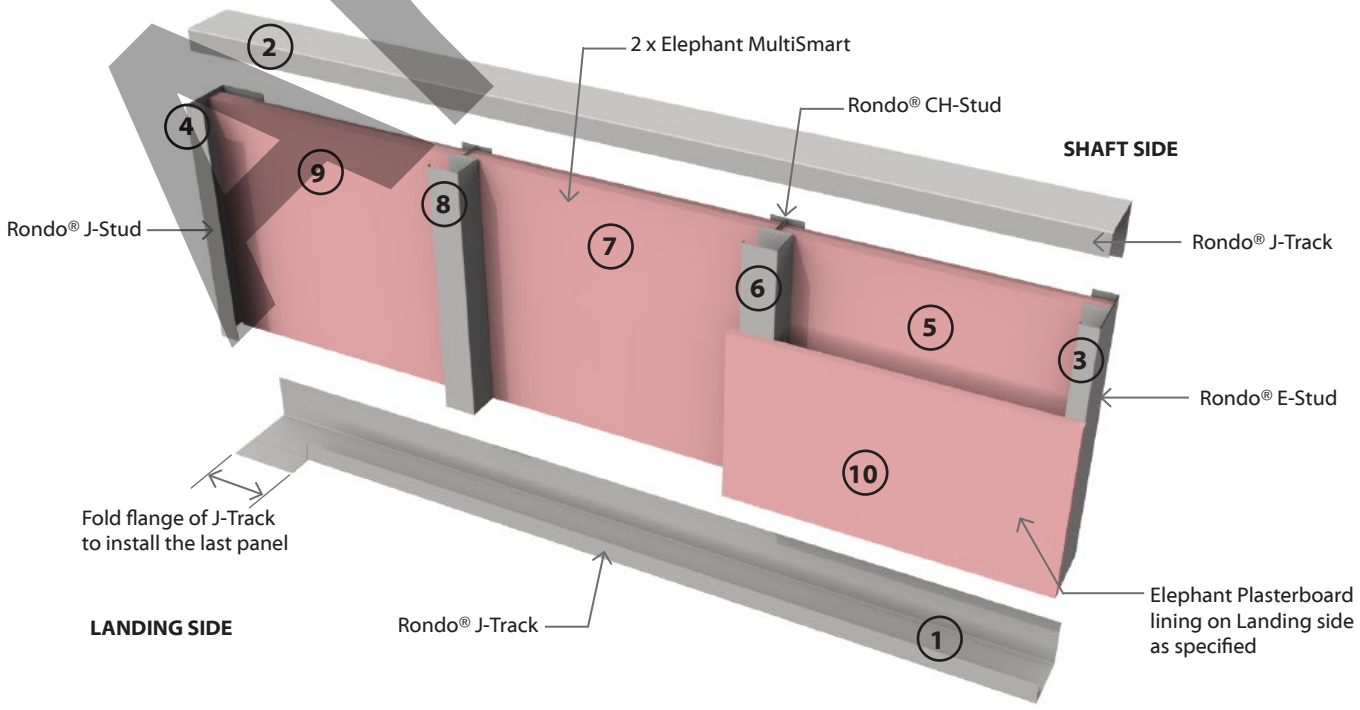


Rondo® J-Track or J-Stud



Rondo® Deflection Head J-Track

Construction Sequence



E1CBT, E2CBT, E3CBT | Steel Column & Beam - Timber Strapped | One Way FRR

1, **2** or **3** Layers: No. of Layers of Plasterboard to one side of frame (Fire side)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E1CBT15	**-S13**	15/-/-	LB	N/A	N/A	1 x 13mm Elephant Standard
E1CBT30	**-F16**	30/-/-	LB	N/A	N/A	1 x 16mm Elephant FireSmart
E2CBT30	**-S20**	30/-/-	LB	N/A	N/A	2 x 10mm Elephant Standard-Plus
E2CBT60	**-M26**	60/-/-	LB	N/A	N/A	2 x 13mm Elephant MultiSmart
E2CBT90	**-F32**	90/-/-	LB	N/A	N/A	2 x 16mm Elephant FireSmart
E3CBT120	**-MF45**	120/-/-	LB	N/A	N/A	1 x 13mm Elephant MultiSmart and 2 x 16mm Elephant FireSmart

Scope

The system options provided in the table above are a quick reference solution for fire protection of structural steel columns and beams. Specific Fire engineering designs are required for specific column and beam sizes and loading conditions.

Strapping

The Columns or Beams are to be strapped with a nominal 50mm x 50mm timber. The linings must be supported by framing members spaced at 600mm centres maximum. No air gap is required as long as support is provided to the protective linings at 600mm centres max on each side of the structural member.

Plasterboard Lining (Fire Side)

One, two or three layers of Elephant Plasterboard lining as per specified system above. All joints /edges for the first, second and third layers must be formed over the framing. The joints between subsequent layers must be offset by at least 300mm.

Fixing of Linings

Fasteners (As per Specified System Above)

System Number	Lining Suffix	Single Layer	2nd Layer	3rd Layer
		High Thread Drywall Screws		Self-Tapping
E1CBT15-S13	**S13**	13mm 41 x 6g	—	—
E1CBT30-F16	**F16**	16mm 41 x 6g	—	—
E2CBT30-S20	**S20**	10mm 32 x 6g	10mm 41 x 6g	—
E2CBT60-M26	**M26**	13mm 41 x 6g	13mm 51 x 7g	—
E2CBT90-F32	**F32**	16mm 41 x 6g	16mm 57 x 7g	—
E3CBT120-MF45	**MF45**	13mm 41 x 6g	16mm 51 x 7g	16mm 63 x 8g

Fastener Centres

Fix each layer at 300mm centres maximum to framing.

Place fasteners minimum 12mm from the sheet edge.

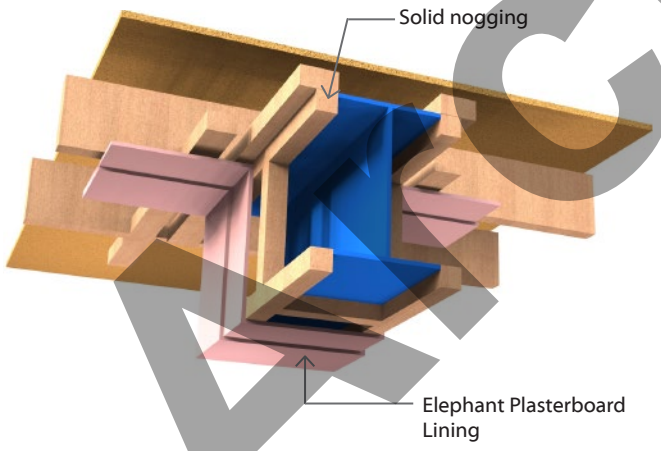
Corner Protection

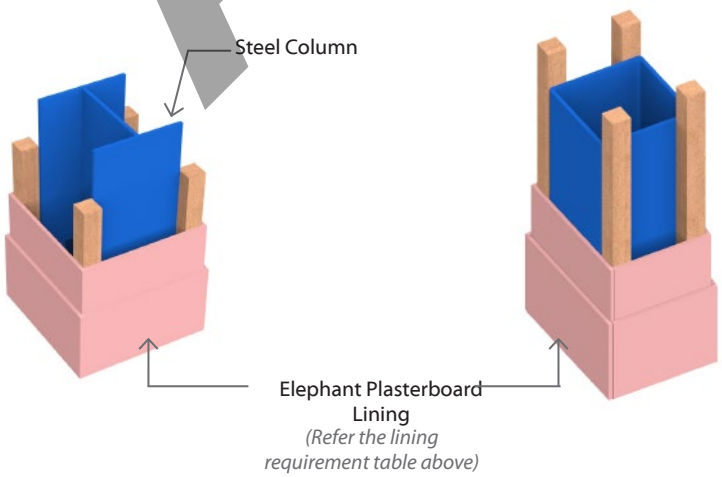
If required, external corners to be reinforced with external corner beads.

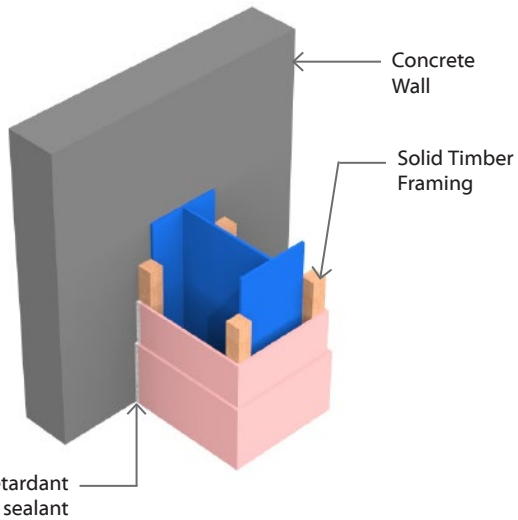
Jointing

Inner Layer: Unstopped

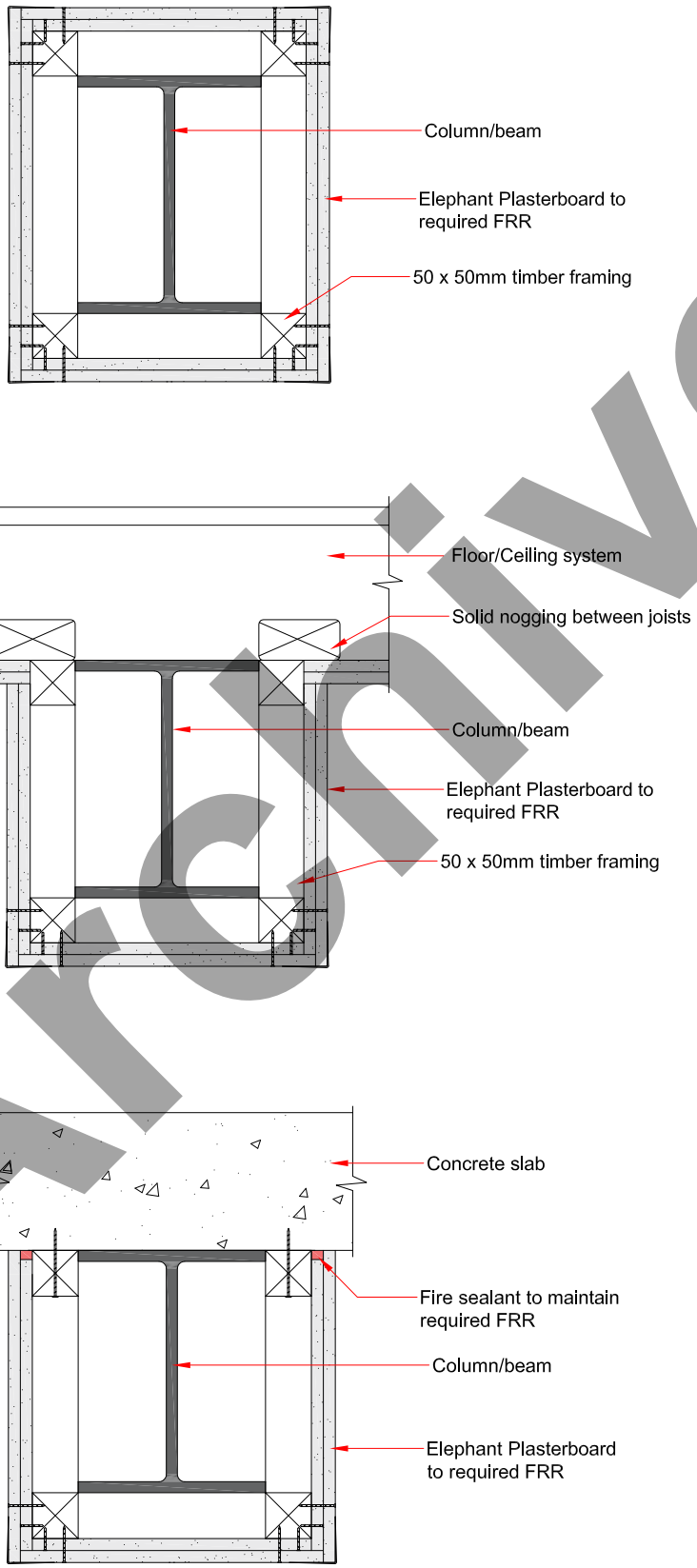
Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.







E1CBT, E2CBT, E3CBT | Steel **C**olumn & **B**eam - **T**imber Strapped | One Way FRR



E1CBS, E2CBS, E3CBS Steel Column & Beam - Steel Clip and Channel | One Way FRR

1, 2 or 3 Layers: No. of Layers of Plasterboard to one side of frame (Fire side)

System Number	Lining Suffix	Fire Rating	Load Bearing Ability	Noise Control		Lining Requirement
				STC	Rw	
E1CBS15	**-S13**	15/-/-	LB	N/A	N/A	1 x 13mm Elephant Standard
E1CBS30	**-F16**	30/-/-	LB	N/A	N/A	1 x 16mm Elephant FireSmart
E2CBS30	**-S20**	30/-/-	LB	N/A	N/A	2 x 10mm Elephant Standard-Plus
E2CBS60	**-M26**	60/-/-	LB	N/A	N/A	2 x 13mm Elephant MultiSmart
E2CBS90	**-F32**	90/-/-	LB	N/A	N/A	2 x 16mm Elephant FireSmart
E3CBS120	**-MF45**	120/-/-	LB	N/A	N/A	1 x 13mm Elephant MultiSmart and 2 x 16mm Elephant FireSmart

Scope

The system options provided in the table above are a quick reference solution for fire protection of structural steel columns and beams. Specific Fire engineering designs are required for specific column and beam sizes and loading conditions.

Steel Clip and Channel

Attach the Rondo® Beam or Encasement Clip to column or beams at 600mm centres max. Then insert the Rondo® Furring Channel Track (Part 140) into the clips.

Framing members spaced at 600mm centres max to support the linings.

For columns or beams that are exposed on 3 sides use the Rondo® Perimeter Angle (Part NZ18) to allow for the fixing of the plasterboard. The perimeter angle is to be fixed to the wall or underside of floor at maximum 600mm centres with first fixing no more than 100mm from the ends.

Plasterboard Lining (Fire Side)

One, two or three layers of Elephant Plasterboard lining as per specified system above. All joints /edges for the first, second and third layers must be formed over the framing. The joints between subsequent layers must be offset by at least 300mm.

Fixing of Linings

Fasteners

System Number	Lining Suffix	Single Layer	2nd Layer	3rd Layer
		Self-Tapping Drywall Screws		
E1CBS15-S13	S13	13mm 25 x 6g	—	
E1CBS30-F16	F16	16mm 32 x 6g	—	
E2CBS30-S20	S20	10mm 25 x 6g	10mm 32 x 6g	—
E2CBS60-M26	M26	13mm 25 x 6g	13mm 41 x 6g	—
E2CBS90-F32	F32	16mm 32 x 6g	16mm 51 x 7g	—
E3CBS120-MF45	MF45	13mm 25 x 6g	16mm 41 x 6g	16mm 63 x 8g

Fastener Centres

Fix each layer at 300mm centres maximum to framing.

Place fasteners minimum 12mm from the sheet edge.

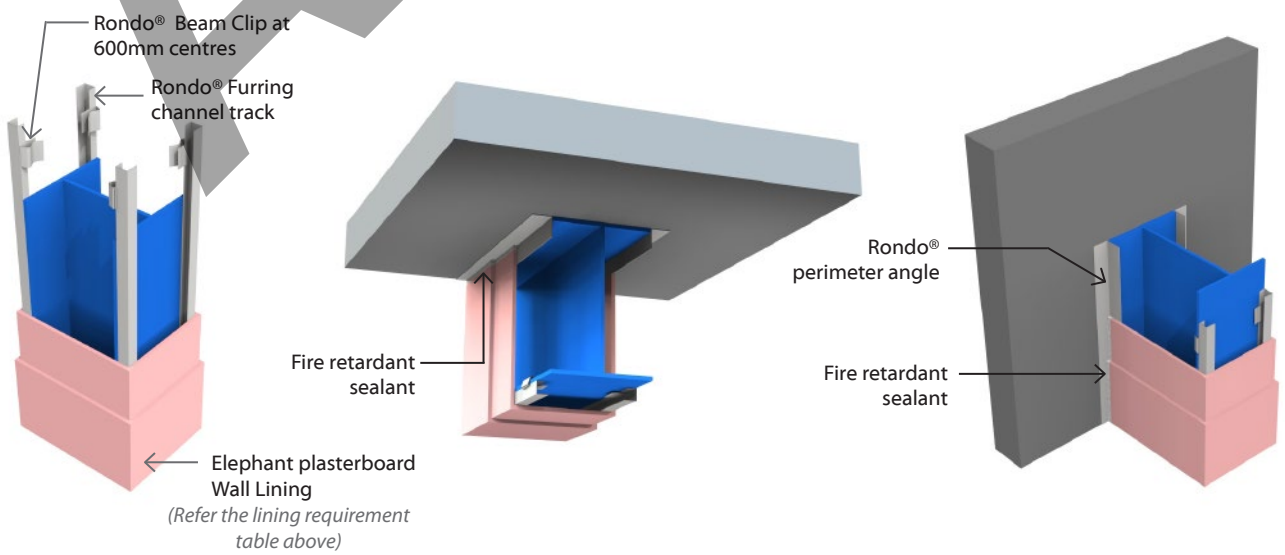
Corner Protection

If required, external corners to be reinforced with external corner beads.

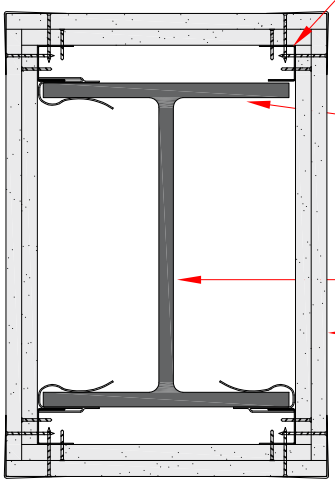
Jointing

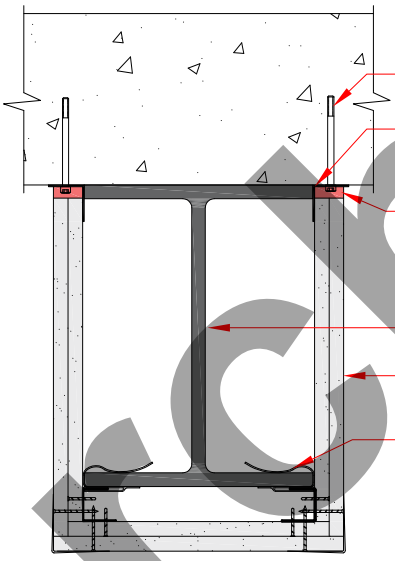
Inner Layers: Unstopped

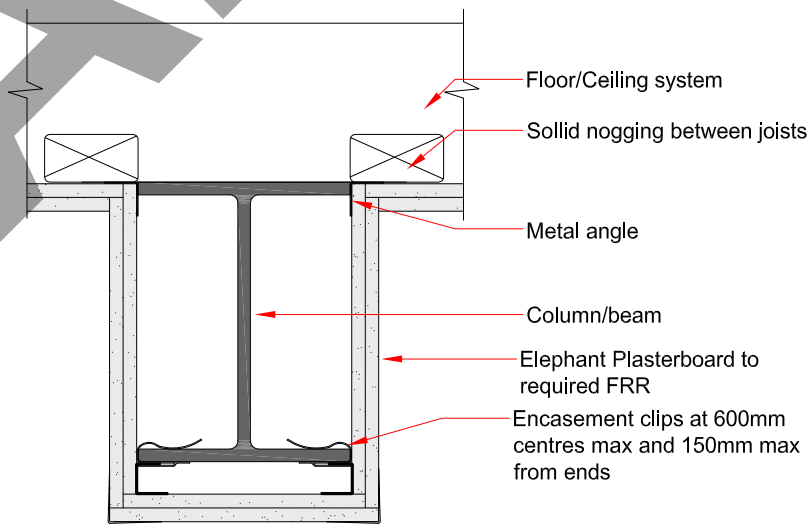
Outer Layer: All fastener heads stopped and all sheet joints reinforced with paper jointing tape and stopped. All in accordance with Elephant Plasterboard Installation Guide.



E1CBS, E2CBS, E3CBS | Steel **C**olumn & **B**eam - **S**teel Clip and Channel | One Way FRR







Construction Details

Penetrations

Penetrations in Fire Rated Walls is a potential hazard of flame and smoke spreading from one fire cell to other in building occupancies. Ensuring the right penetration seals will help in maintaining the FRR of the Fire system and thereby maintaining the health and security of the occupants.

Generic Penetration Details

This section contains the general principle of penetrations and the most common installation details of one-sided penetrations on Elephant Plasterboard Fire Rated systems.

Proprietary Penetration Seals

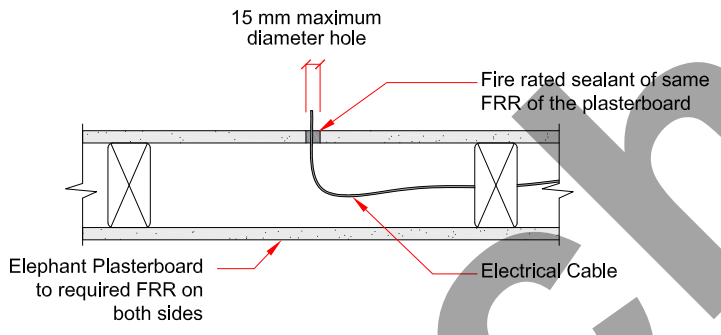
Fire rated penetration details using proprietary penetrations seals and products (such as GPO's with intumescent pads, fire collars, dampers etc) must be installed in accordance with requirements from particular product manufacturers, and are not shown in this manual.

Installation instructions and product performance specifications must be verified with the relevant penetration seal manufacturer. It is the responsibility of the component manufacturer to ensure that the fire rating performance of the system is not affected.

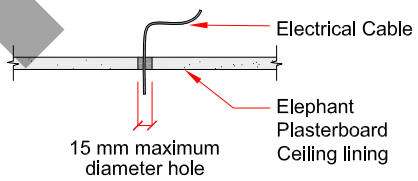
EFS-008

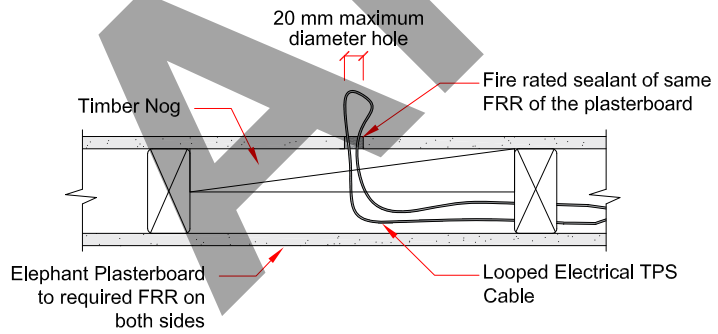
Cable Penetration for Surface Mounted Electrical Fixtures

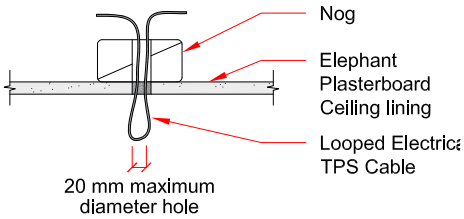
Plan View



Ceiling Section



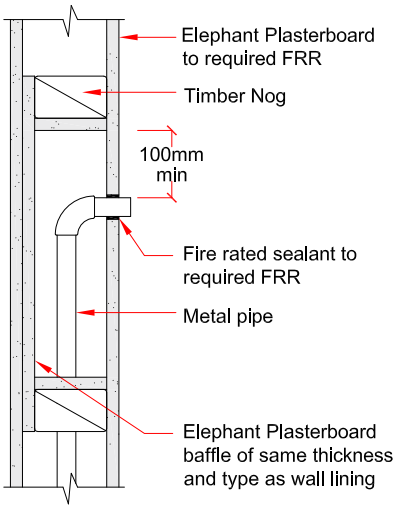




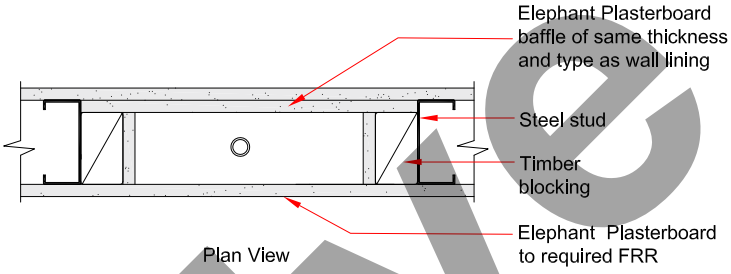
** Note: Refer proprietary products & penetration seal manufacturer's specifications & limitations for larger holes*

Penetrations

EFS-005 Metal Pipe on Steel Frame Wall



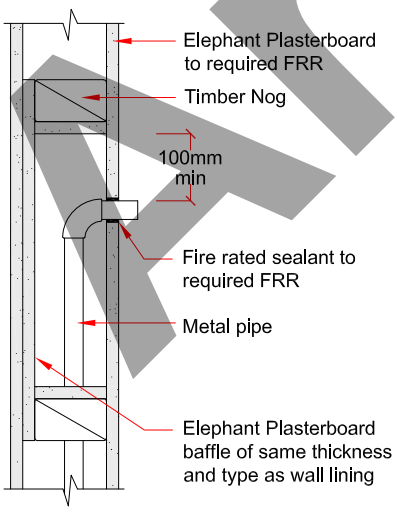
Side Elevation



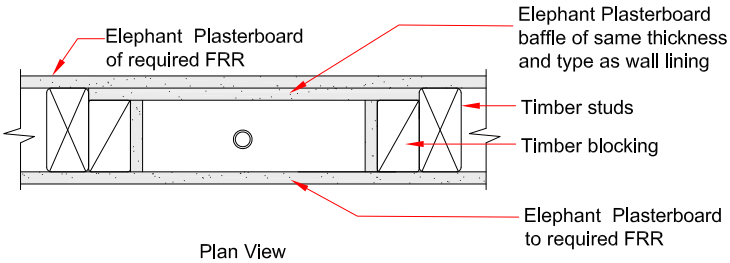
Plan View

Note: Refer proprietary products & penetration seal manufacturer's specifications & limitations for larger holes

EFS-006 Metal Pipe on Timber Frame Wall



Side Elevation

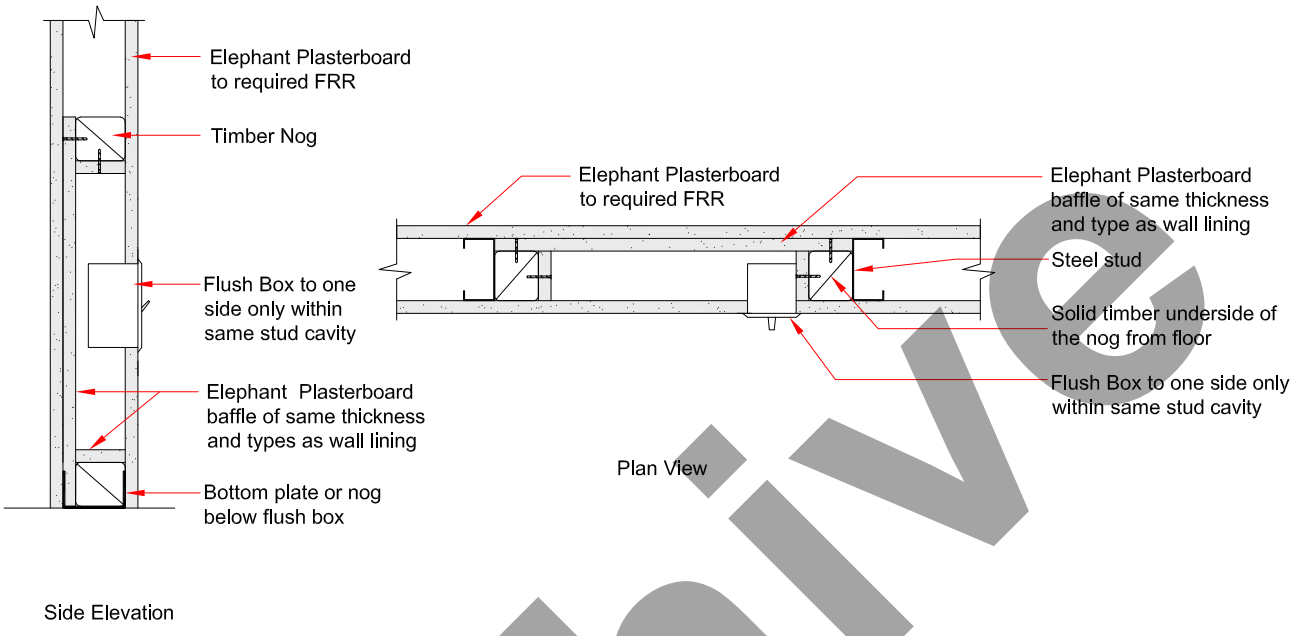


Plan View

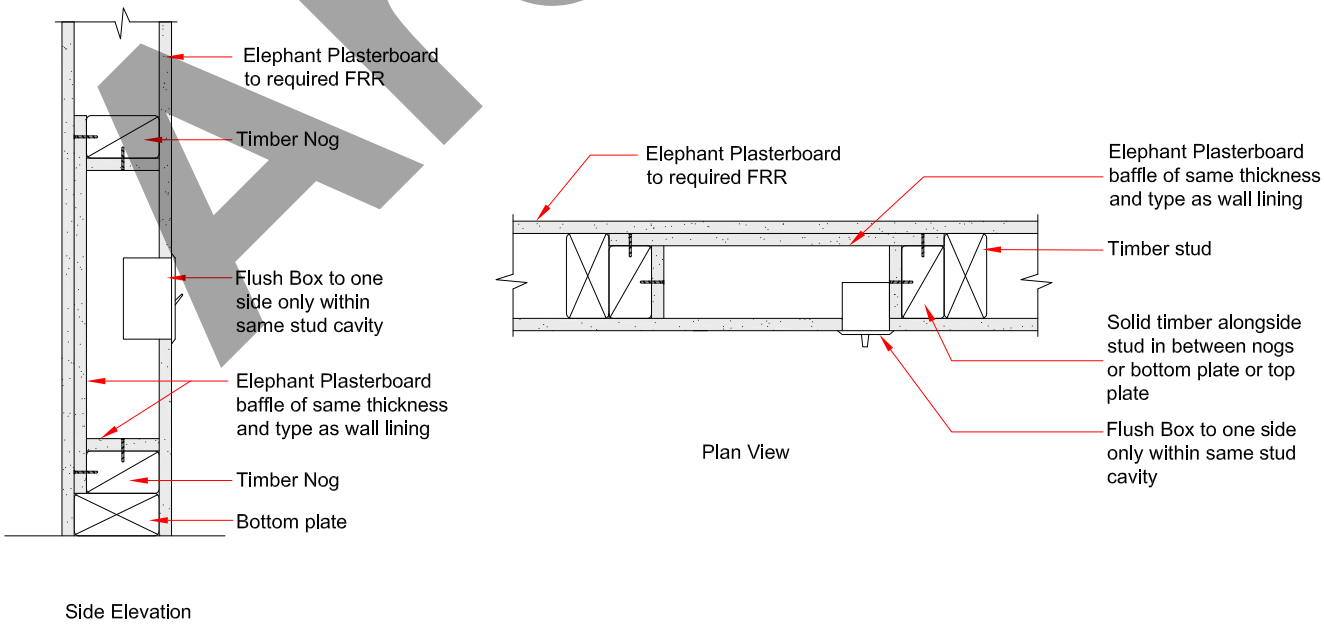
Note: Refer proprietary products & penetration seal manufacturer's specifications & limitations for larger holes

Penetrations

EFS-001 Flush Box on Steel Frame Wall

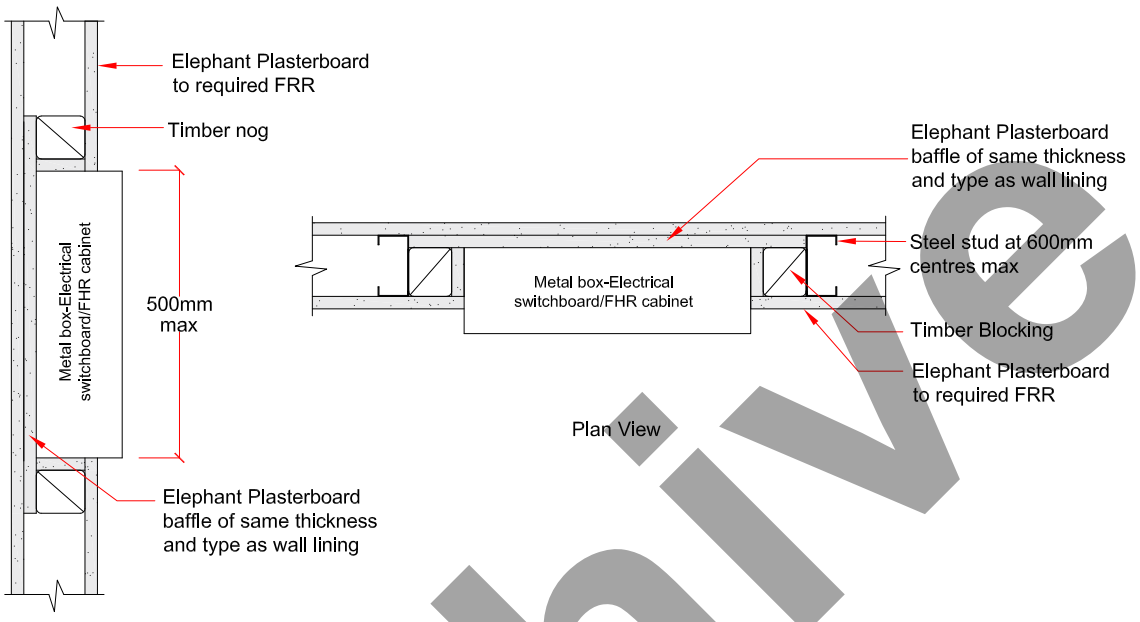


EFS-002 Flush Box on Timber Frame Wall

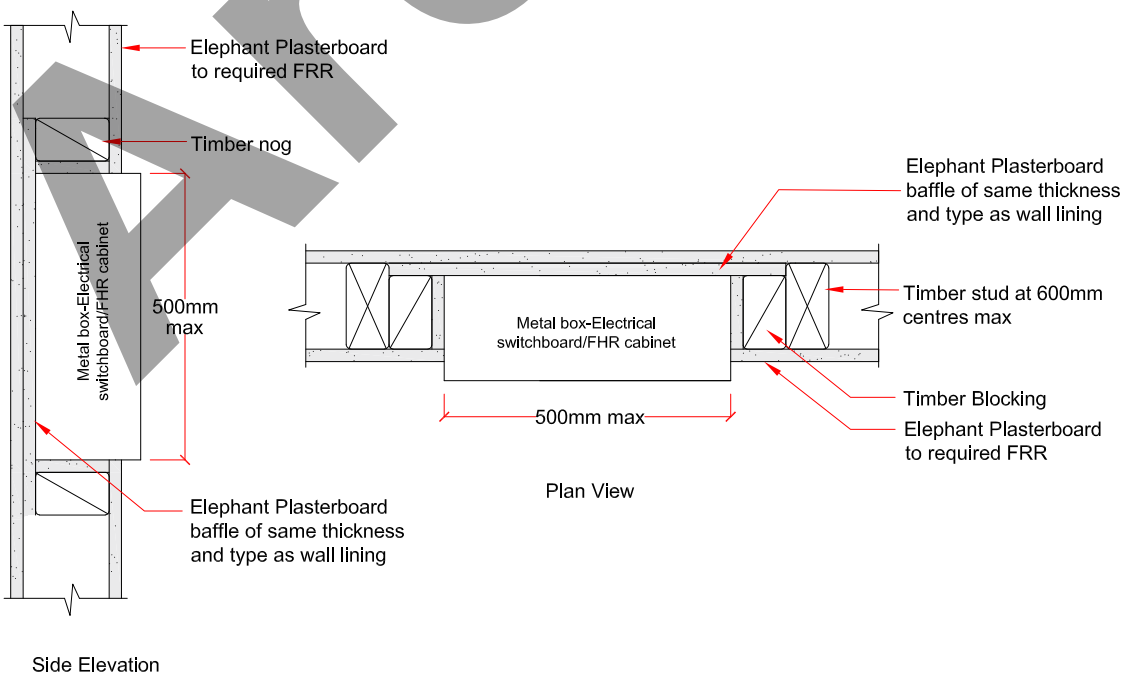


Penetrations

EFS-004 Large Recess on Steel Frame Wall



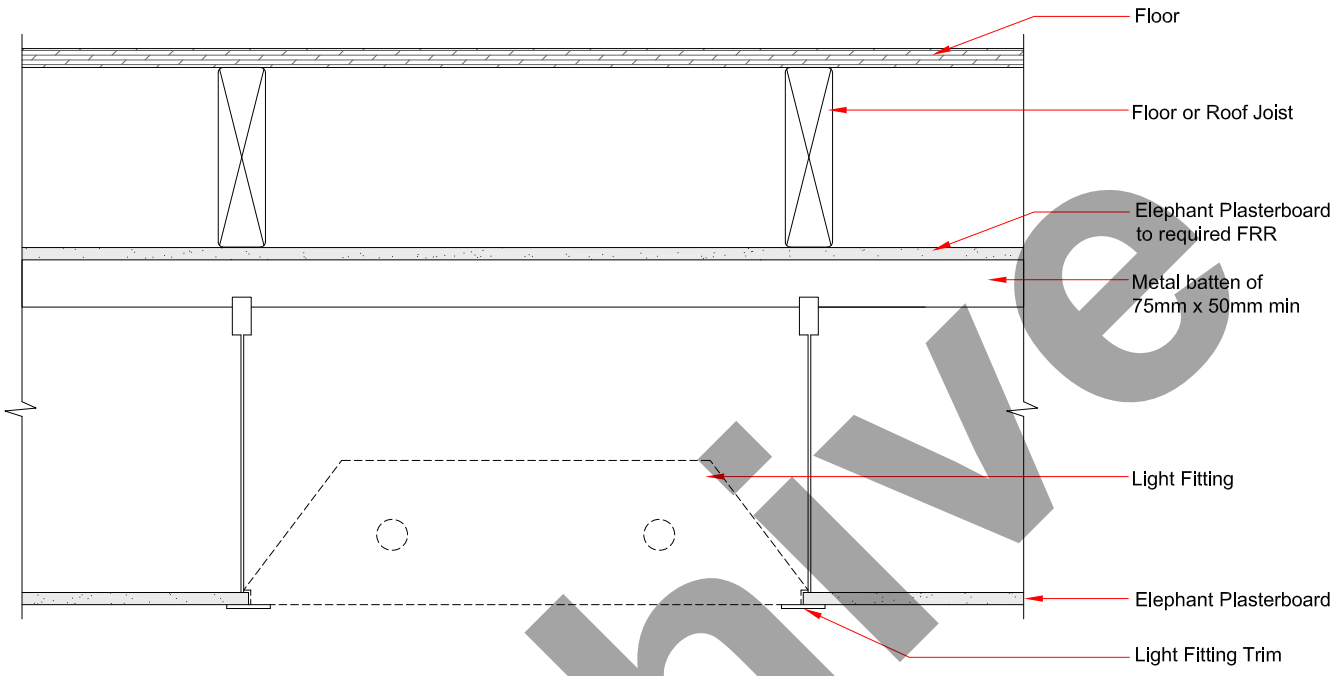
EFS-003 Large Recess on Timber Frame Wall



Penetrations

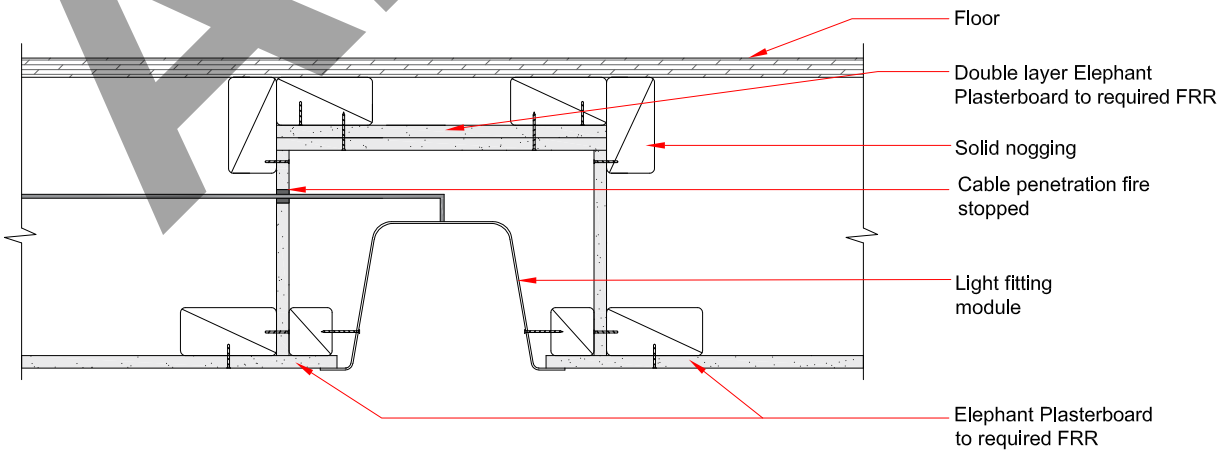
EFS-010

Recessed Light Ceiling Penetration



EFS-009

Recessed Light Ceiling Penetration



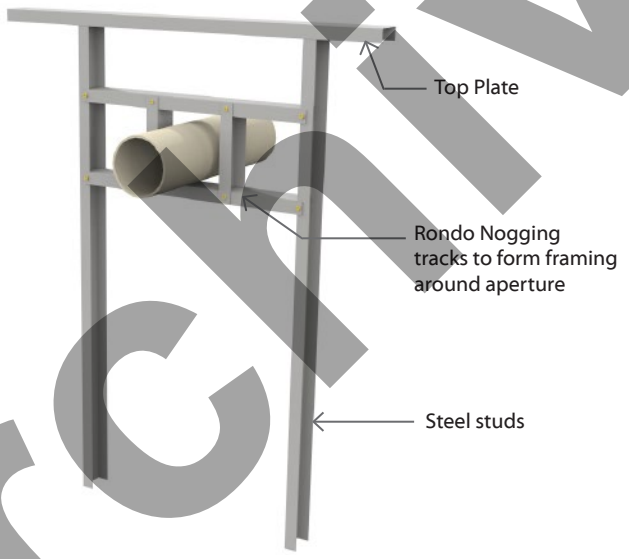
Proprietary Penetration Seals

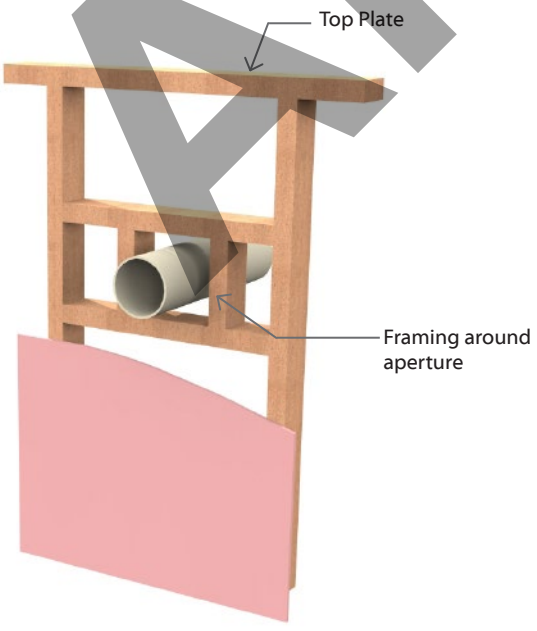
Design Stage

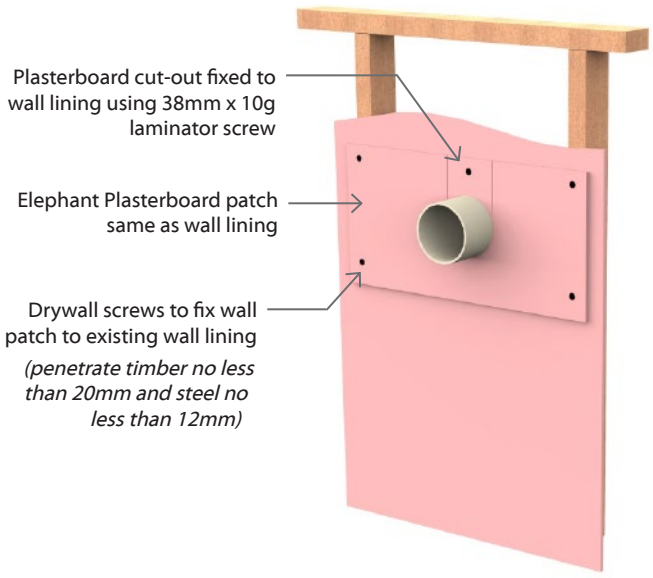
- The engineer/architect must ensure that the fire rated service penetrations are correctly specified in the building plan.
- The design team must ensure that fire engineer's details and specifications are incorporated into the overall design as part of the building consent documentation.
- It is advisable to combine many services as possible into a fire rated shaft or service highways hence avoiding multiple individual penetrations that could compromise the fire rating.
- Correct specification of service penetrations requires understanding of test reports, evaluations and limitations of applicability. eg. the fire test result of the penetration seals tested on a concrete wall will require separate verification to be installed on a framed wall lined with plasterboard.
- In all cases ensure that the manufacturer's specifications must be followed, particularly paying attention to specific application, wall types and fixing methods.

Penetration Seal support

- Support penetration seals by additional framing members around the aperture if required.
- Alternatively, for penetration seals such as small metal pipes, plastic collar pipes or cable bundles, additional patches of plasterboard can be installed over the existing layer of wall linings, supported by the adjacent framing members.
- One way universal wall or ceiling systems do not require wall patches when penetration seals are installed.
- For heavy penetrations such as cable trays and ducts, separate support is required as per the penetration seal manufacturer's specification.
- In scenarios where there are multiple penetrations above the ceiling level, it is advisable to add an additional continuous strip of plasterboard over the existing wall lining to ensure strengthening around that area.



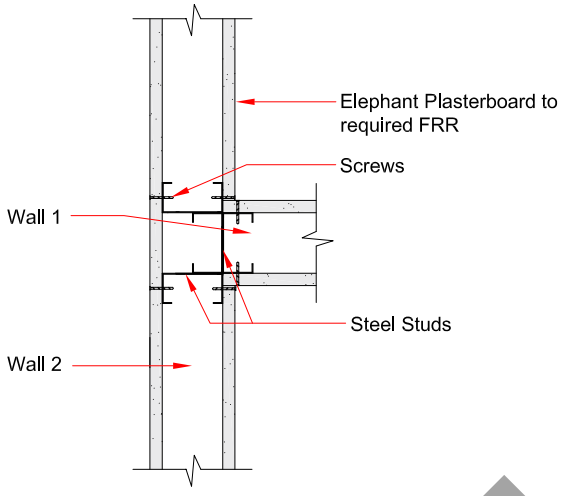




T Junctions & Corner Junction Two Way FRR Systems

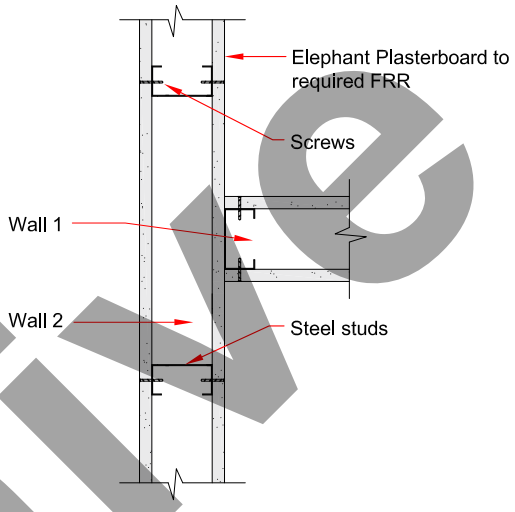
EFS-013 Single Steel Frame Wall to Single Steel Frame Wall

For Systems where FRR of Wall 1 & 2 are equal



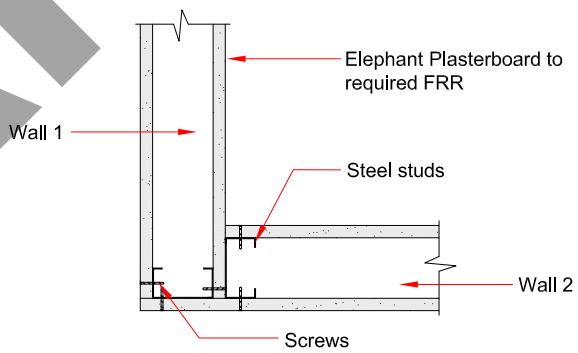
EFS-011 Single Steel Frame Wall to Single Steel Frame Wall

For Systems with Wall 1 & 2 of different FRR, the lining of wall with higher FRR is continuous (Wall 2 in this example)



EFS-014 Single Steel Frame Wall to Single Steel Frame Wall - Corner Junction

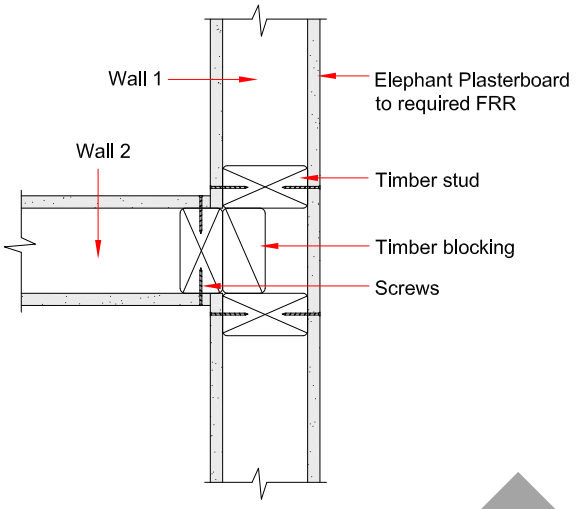
For Systems where FRR of Wall 1 & 2 are equal



T Junctions & Corner Junction Two Way FRR Systems

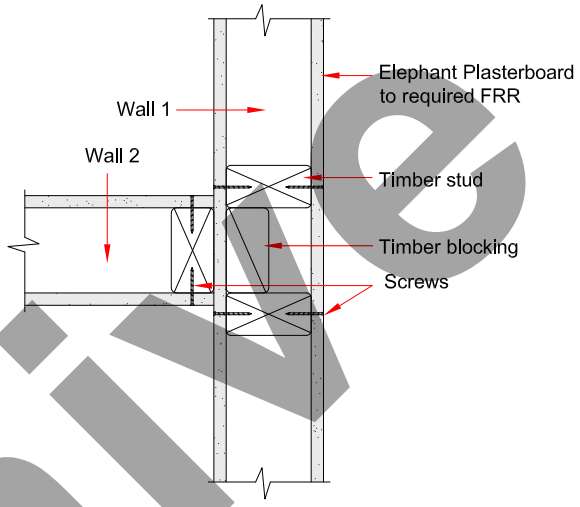
EFS-020 Single Timber Frame Wall to Single Timber Frame Wall

For Systems where the difference in FRR between Wall 1 & 2 is 30 minutes or less



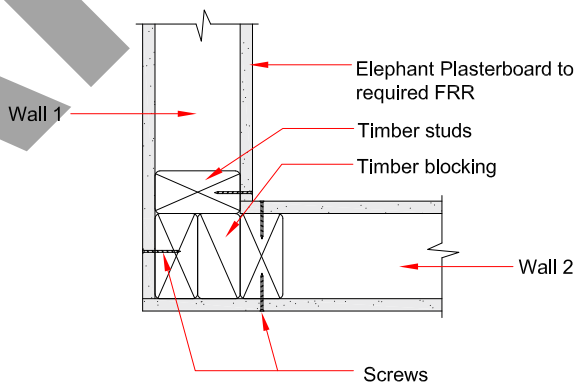
EFS-021 Single Timber Frame Wall to Single Timber Frame Wall

For Systems where the difference in FRR between Wall 1 & 2 is higher than 30 minutes, the lining of wall with higher FRR is continuous. (Wall 1 in this example)



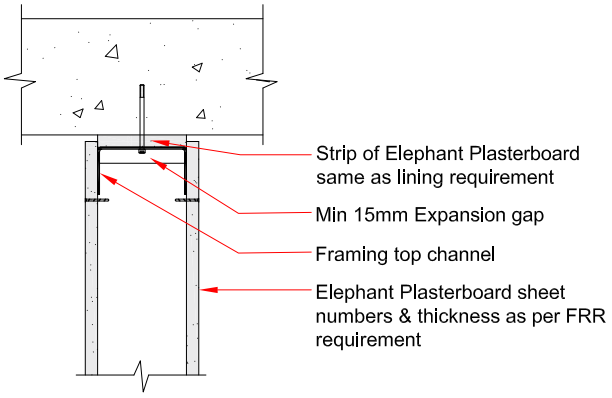
EFS-022 Single Timber Frame Wall to Single Timber Frame Wall - Corner Junction

For Systems where FRR of Wall 1 & 2 are equal

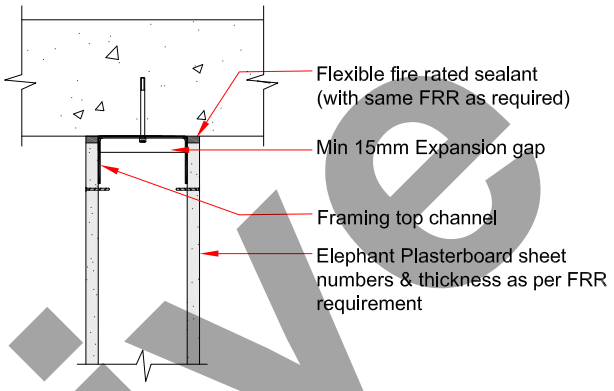


Head Details with Negligible Deflections

EFS-101 Head Detail for Steel or Timber Stud with Metal Top Track

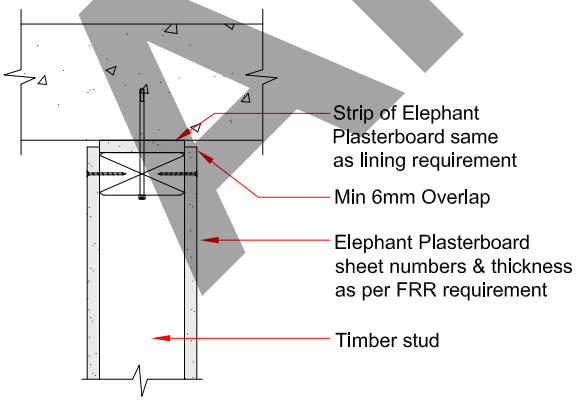


EFS-102 Head Detail for Steel or Timber Stud with Metal Top Track

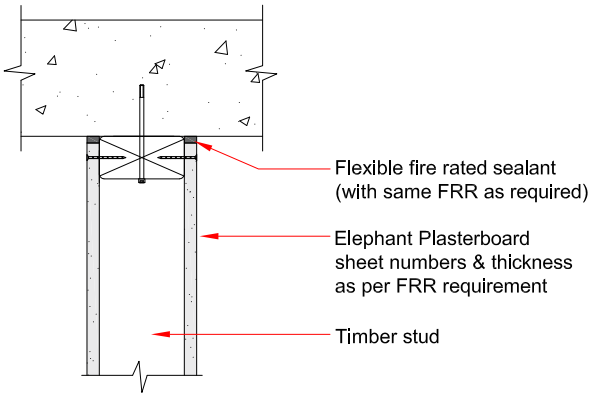


Note: Do not screw the wall lining into the top track

EFS-103 Head Detail for Full Timber frame - Type 1



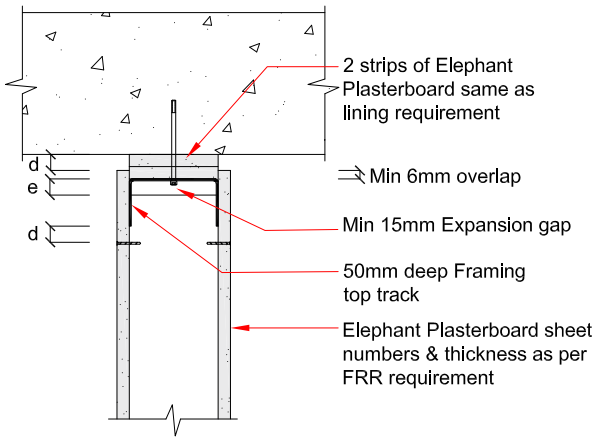
EFS-104 Head Detail for Full Timber frame - Type 2



Deflection Head Details

EFS-050 Timber or Steel stud with Metal Top Track

Deflection (d) less than 20mm

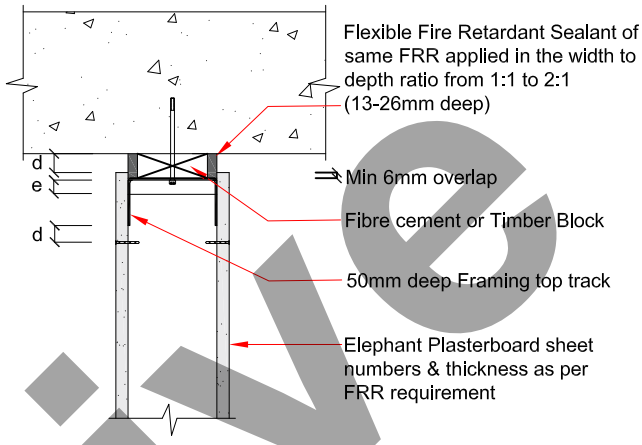


d = deflection
e = expansion gap is the greater of 15mm or d

Note: If Plasterboard is cantilevered 75mm or more past the top screw then a cover strip must be added

EFS-053 Timber or Steel stud with Metal Top Track

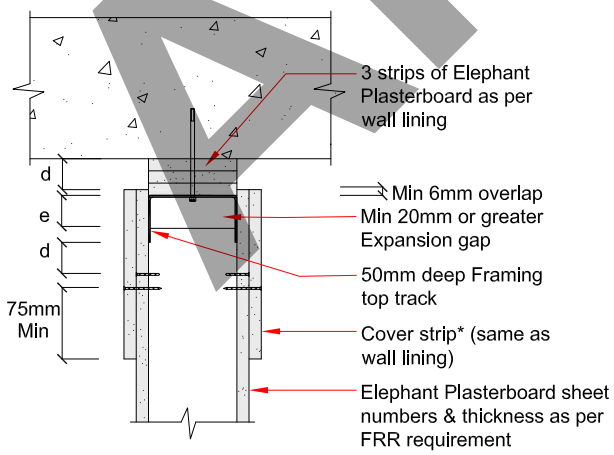
Deflection (d) less than 20mm with Fibre Cement or Timber block



d = deflection
e = expansion gap is the greater of 15mm or d

EFS-051 Timber or Steel stud with Metal Top Track

Deflection (d) 20mm or greater

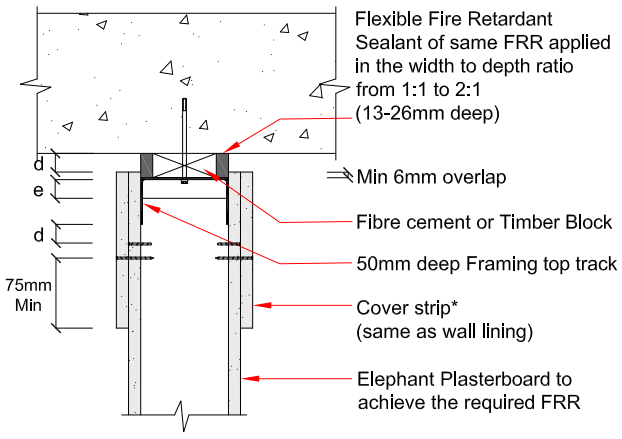


d = deflection
e = expansion gap is the greater of 15mm or d

*Note: If Plasterboard is cantilevered 75mm or more past the top screw use additional cover strip

EFS-052 Timber or Steel stud with Metal Top Track

Deflection (d) 20mm or greater with Fibre Cement or Timber block

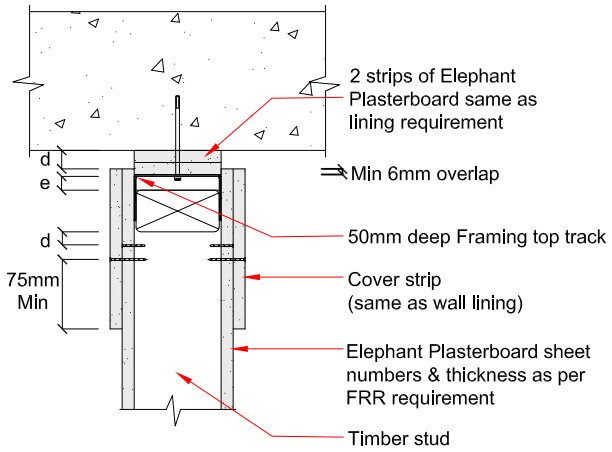


d = deflection
e = expansion gap is the greater of 15mm or d

*Note: If Plasterboard is cantilevered 75mm or more past the top screw use additional cover strip

Deflection Head Details

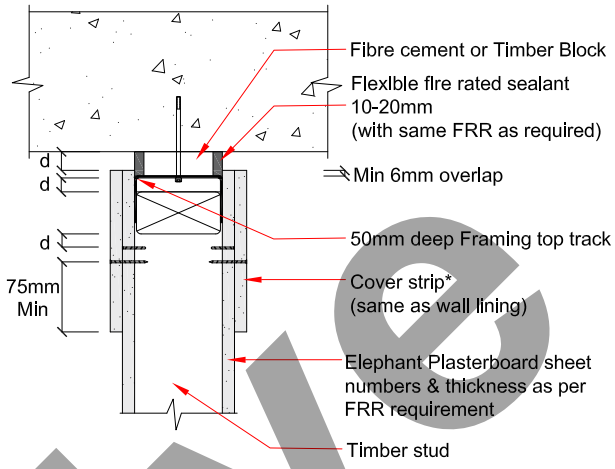
EFS-054 Full Timber Frame with Metal Top Track -Type 1



d = deflection
e = expansion gap is the greater of 15mm or d

*Note: If Plasterboard is cantilevered 75mm or more past the top screw use additional cover strip

EFS-055 Full Timber Frame with Metal Top Track -Type 2

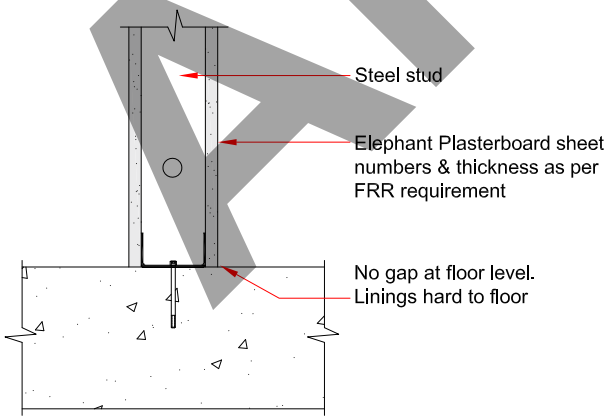


d = deflection
e = expansion gap is the greater of 15mm or d

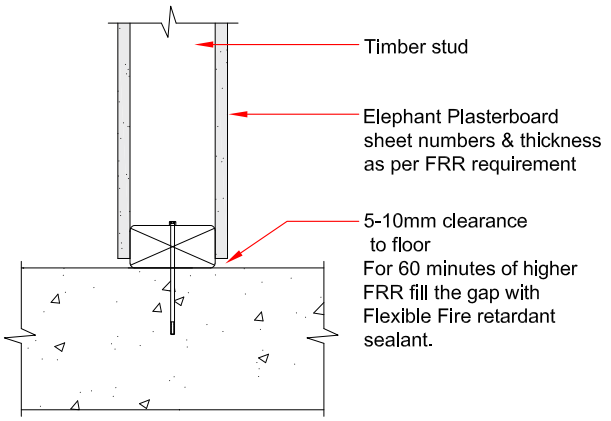
*Note: If Plasterboard is cantilevered 75mm or more past the top screw use additional cover strip

Base Details

EFS-106 Steel Frame



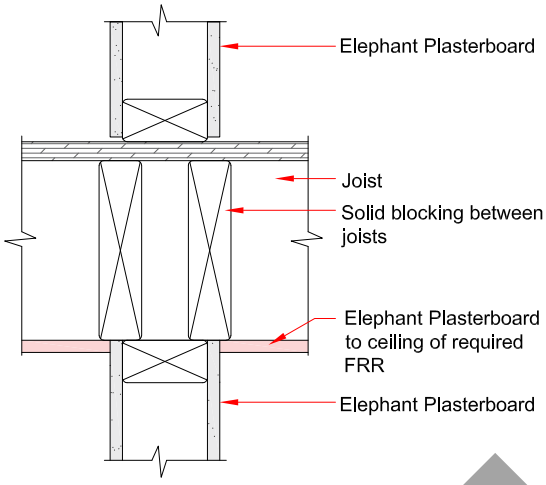
EFS-105 Timber Frame



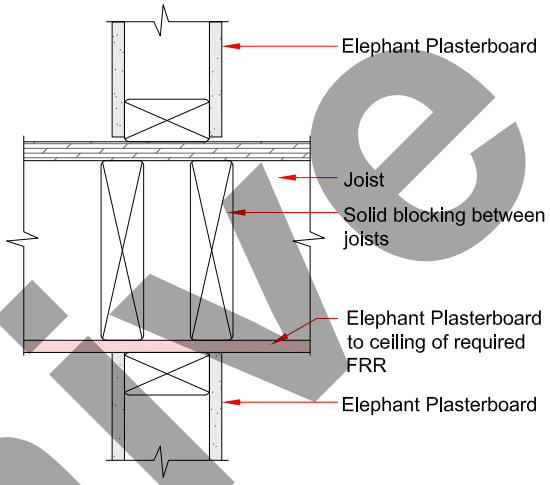
Wall & Floor/Ceiling Junctions

EFS-030 Junction with FRR of Floor/Ceiling being continuous

- FRR of floor/ceiling is higher than the wall
- Difference in FRR is 30 minutes or less
- Non-load bearing wall

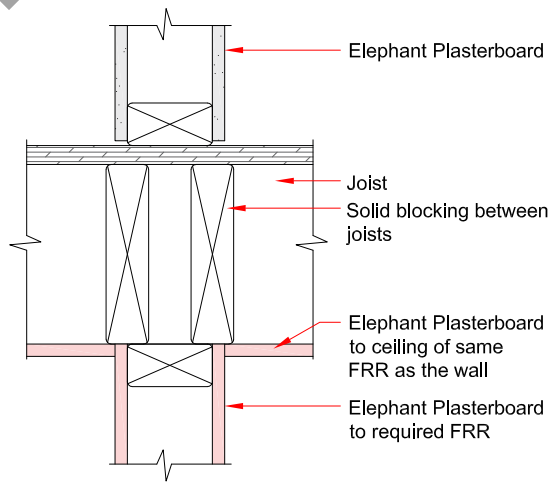


- FRR of floor/ceiling is higher than the wall
- Difference in FRR is greater than 30 minutes
- Non-load bearing wall



EFS-031 Junction with FRR of Wall & Floor/Ceiling being same

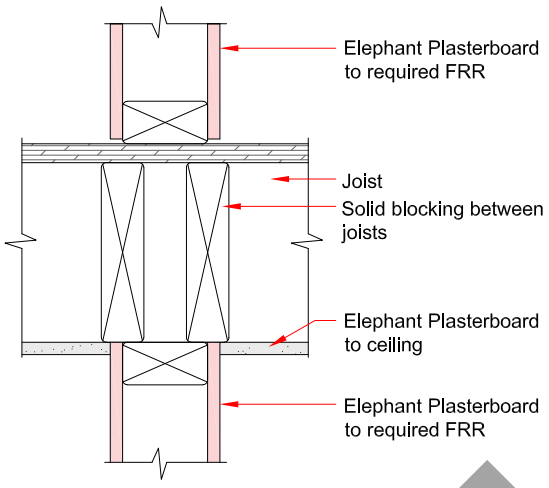
- FRR of floor/ceiling & the wall are the same
- Load or Non-load bearing Wall
- Incase of load bearing wall and it not being a fire cell, then it should be made a Universal wall in order to maintain structural stability.



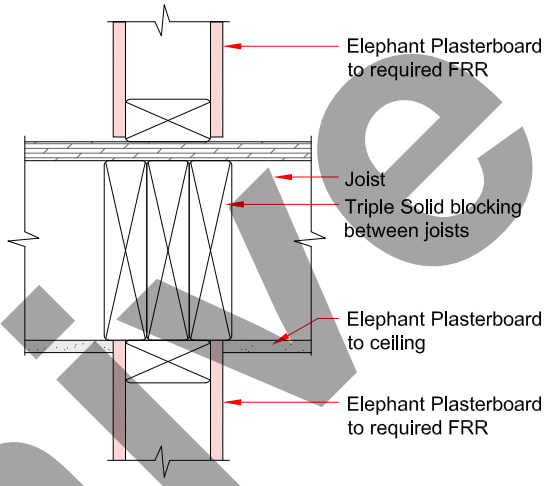
Wall & Floor/Ceiling Junctions

EFS-034 Junction with FRR of Wall being continuous

- If FRR of the wall is greater than the Floor/ceiling by 30 minutes or less
- If Both have the same FRR
- If FRR of the wall is 60 minutes or less

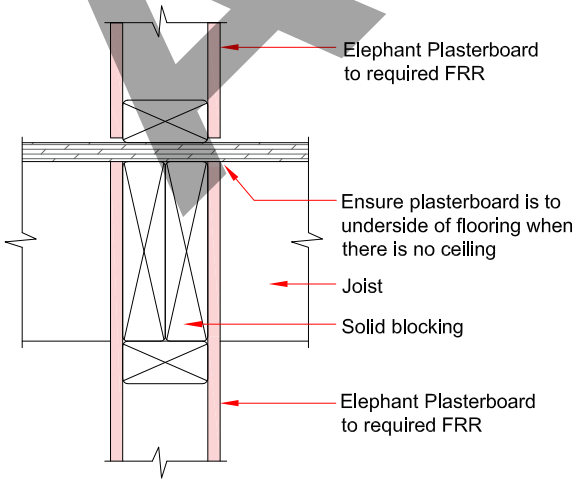


- FRR of the wall is greater than 60 minutes and the FRR of floor/ceiling is 60 minutes less than the wall



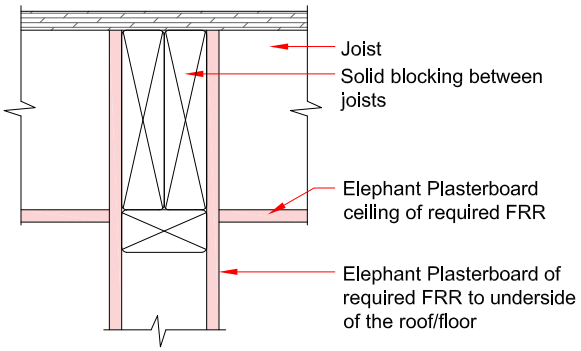
EFS-032 Junction with no Ceiling Lining

- In absence of Ceiling lining, timber double blocking between wall top plate & underside of flooring is required to fill the void.
- Plasterboard must be carried up to the underside of flooring



EFS-036 Fire Rated wall and Fire Rated Ceiling Junction

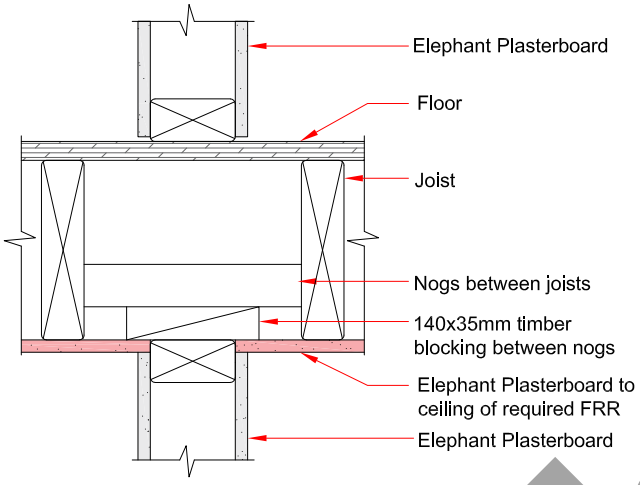
- Load or Non-load bearing Wall
- In case of load bearing wall and it is within the same fire cell, then it should be made a Universal wall in order to maintain structural stability.



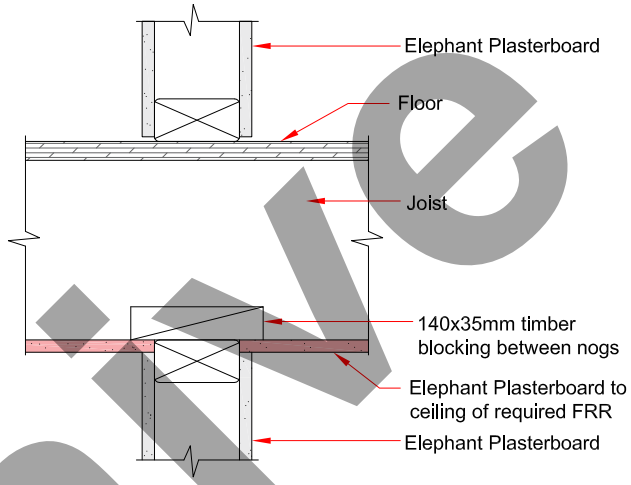
Wall & Floor/Ceiling Junctions

EFS-130 Junction of ceiling sheets Direct fixed to Timber Joist

- FRR of floor/ceiling is higher than the wall
- Difference in FRR is 30 minutes or less
- Non-load bearing wall

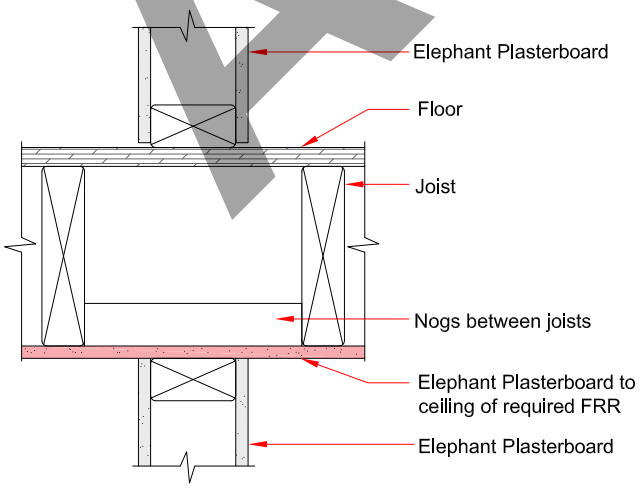


- FRR of floor/ceiling is higher than the wall
- Difference in FRR is 30 minutes or less
- Non-load bearing wall

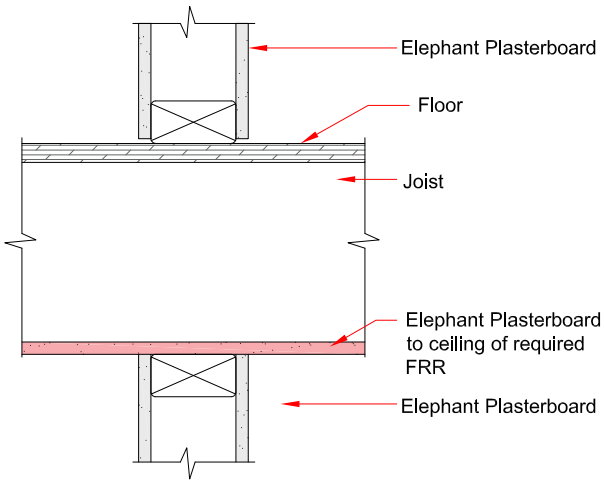


EFS-131 Junction of ceiling sheets Direct fixed to Timber Joist

- FRR of floor/ceiling is higher than the wall
- Difference in FRR is greater than 30 minutes
- Non-load bearing wall



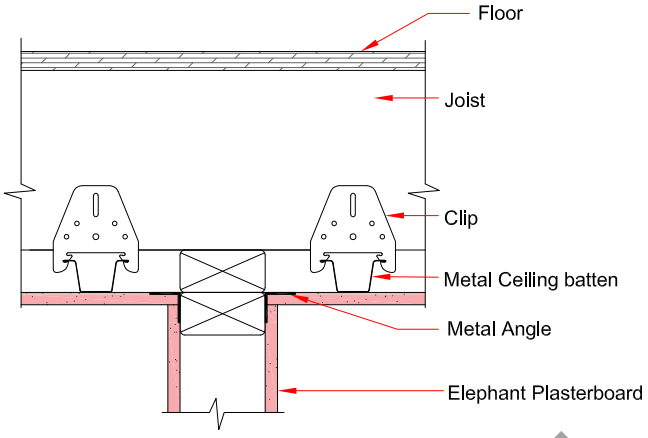
- FRR of floor/ceiling is higher than the wall
- Difference in FRR is greater than 30 minutes
- Non-load bearing wall



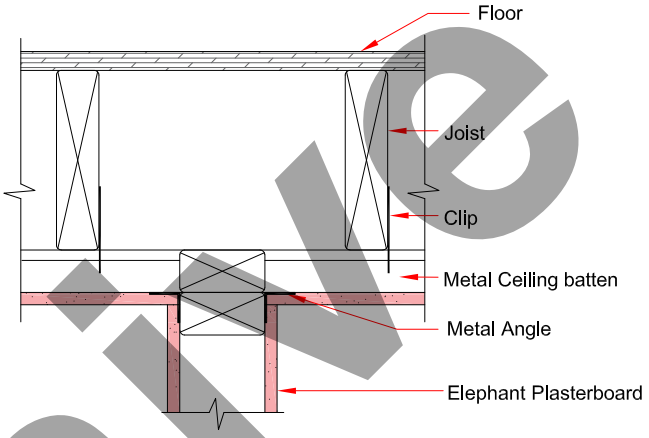
Wall & Floor/Ceiling Junctions

EFS-132 Direct fix clip Floor/Ceiling Junction

- FRR of floor/ceiling & the wall are the same
- Load or Non-load bearing Wall
- Incase of load bearing wall and it not being a fire cell, then it should be made a Universal wall in order to maintain structural stability.

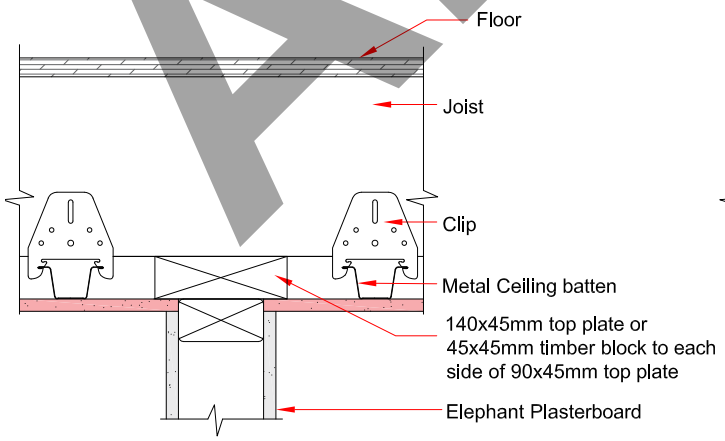


- FRR of floor/ceiling & the wall are the same
- Load or Non-load bearing Wall
- Incase of load bearing wall and it not being a fire cell, then it should be made a Universal wall in order to maintain structural stability.

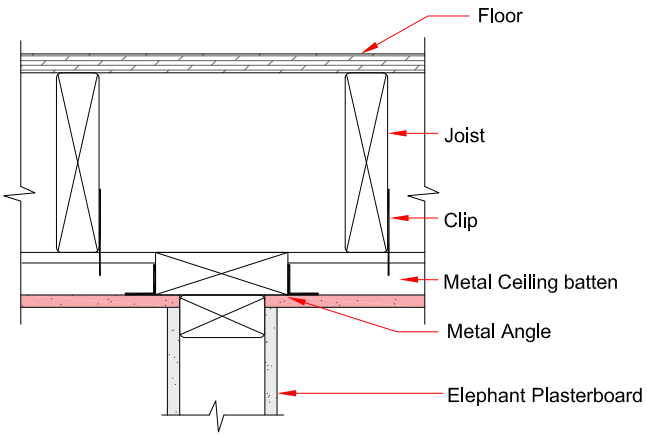


EFS-133 Direct fix clip Floor/Ceiling Junction

- FRR of floor/ceiling & the wall are the same
- Load or Non-load bearing Wall
- Incase of load bearing wall and it not being a fire cell, then it should be made a Universal wall in order to maintain structural stability.



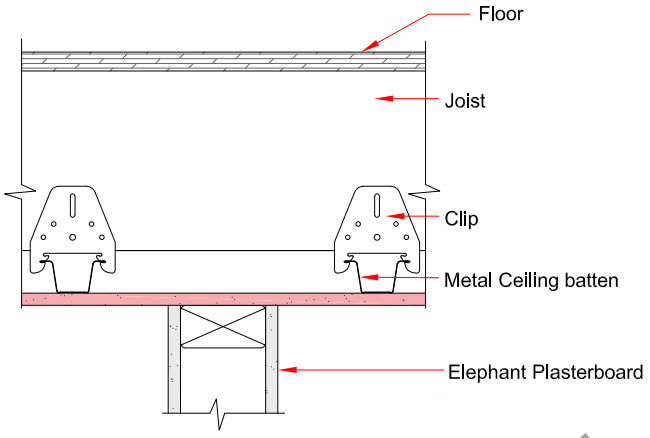
- FRR of floor/ceiling & the wall are the same
- Load or Non-load bearing Wall
- Incase of load bearing wall and it not being a fire cell, then it should be made a Universal wall in order to maintain structural stability.



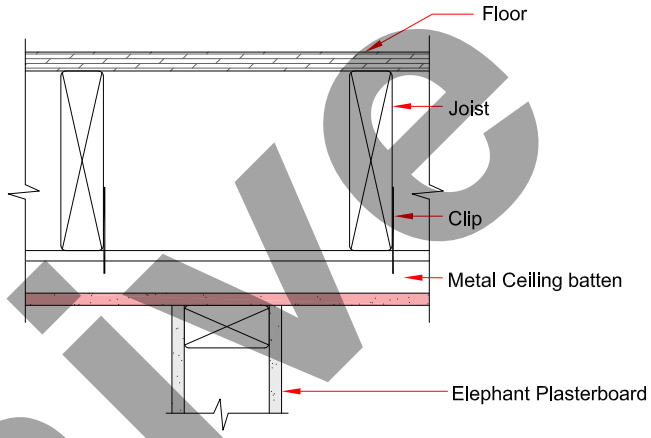
Wall & Floor/Ceiling Junctions

EFS-134 Direct fix clip Floor/Ceiling Junction

- FRR of floor/ceiling is higher than the wall
- Non-load bearing Wall

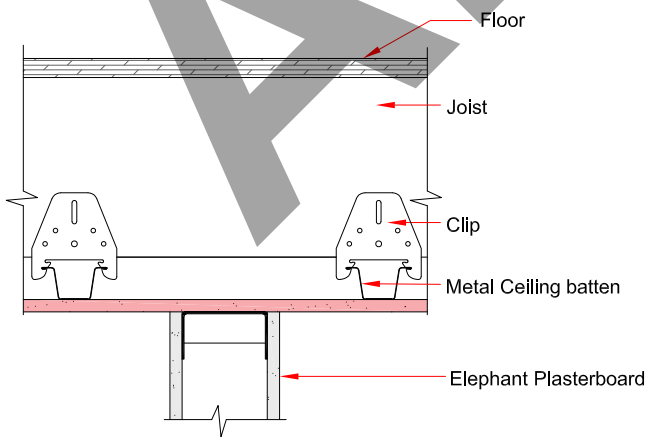


- FRR of floor/ceiling is higher than the wall
- Non-load bearing Wall

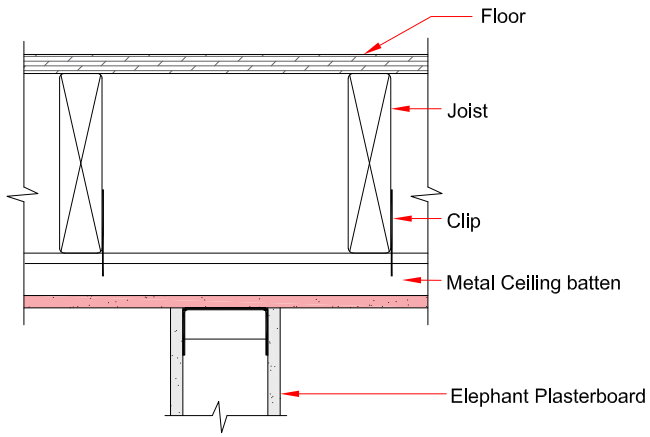


EFS-135 Direct fix clip Floor/Ceiling Junction

- FRR of floor/ceiling is higher than the wall
- Non-load bearing Wall



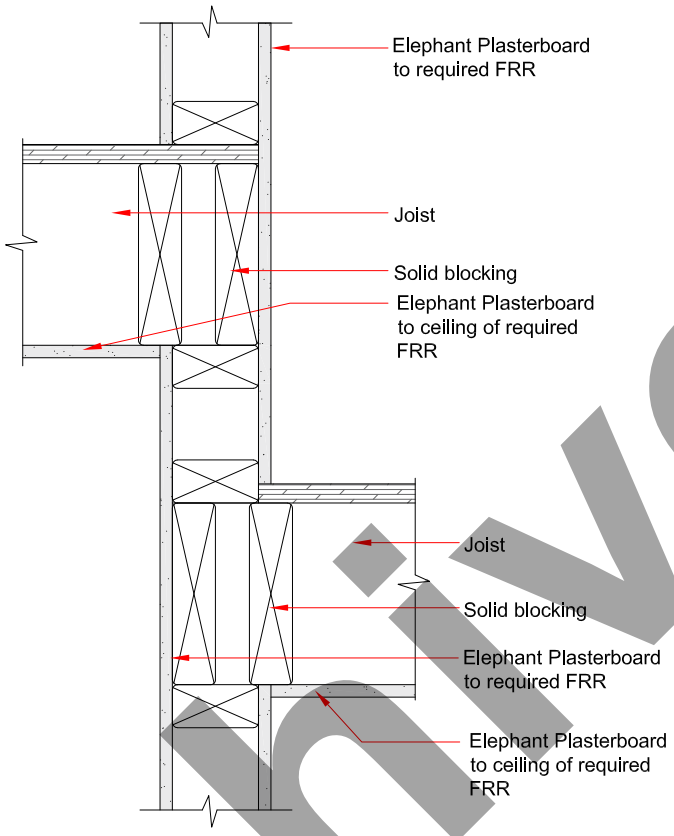
- FRR of floor/ceiling is higher than the wall
- Non-load bearing Wall



Wall & Floor/Ceiling Junctions

EFS-033

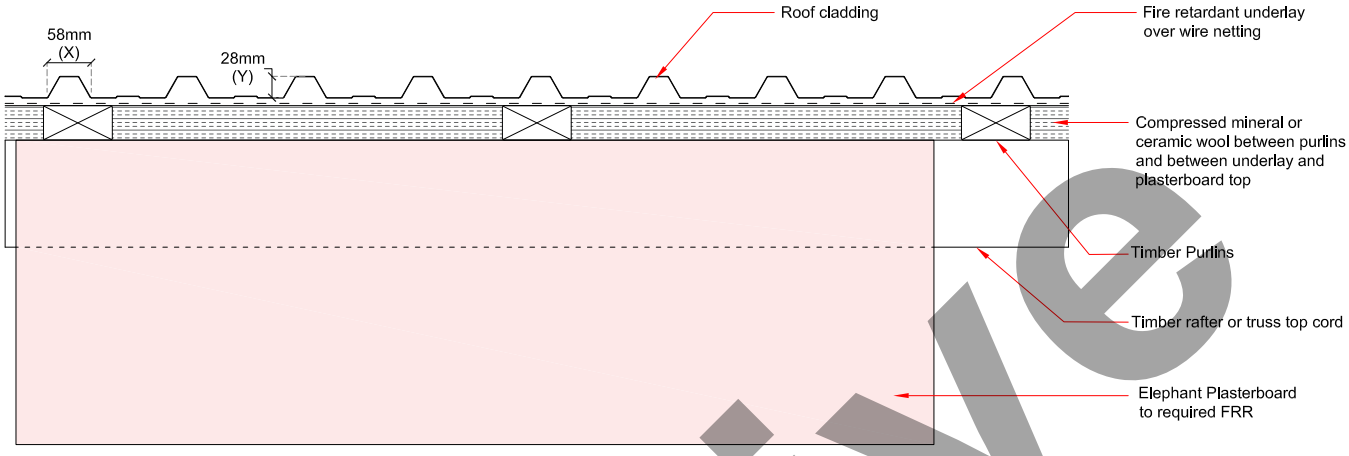
Floor/Ceiling Junction - Split level



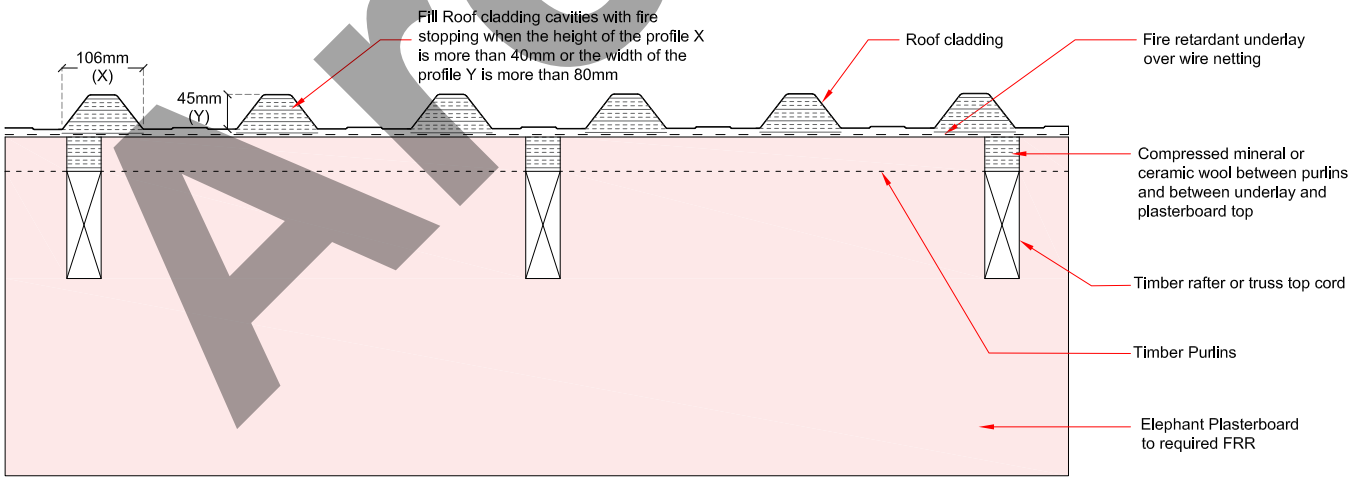
Roof Details

EFS-035

Intersection Roof Details



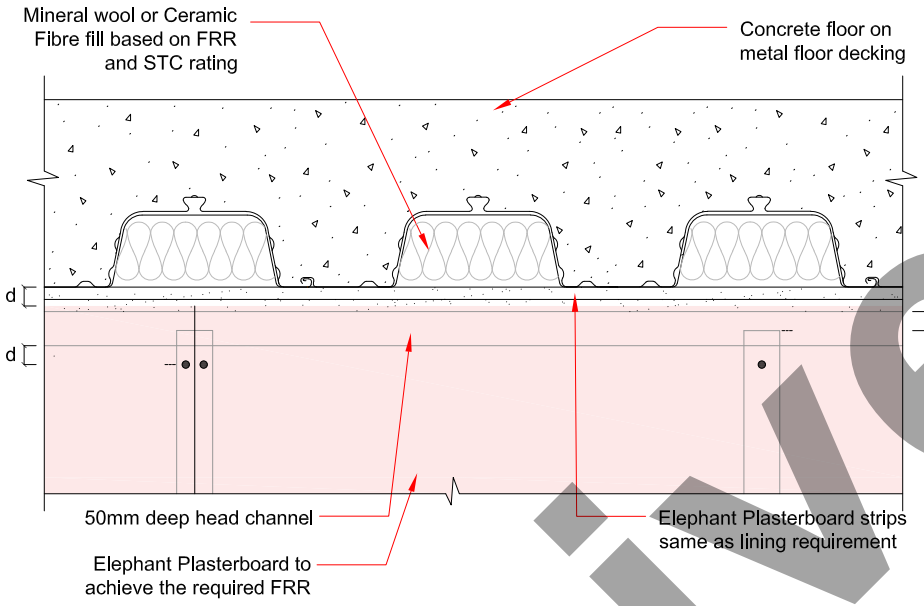
Intersection Roof Detail
(with plasterboard running parallel to timber rafters/roof battens)



Intersection Roof Detail
(with plasterboard running perpendicular to timber rafters/roof battens)

Composite Floor Deflection Head Details

EFS-111 Wall Perpendicular to Profile Junction

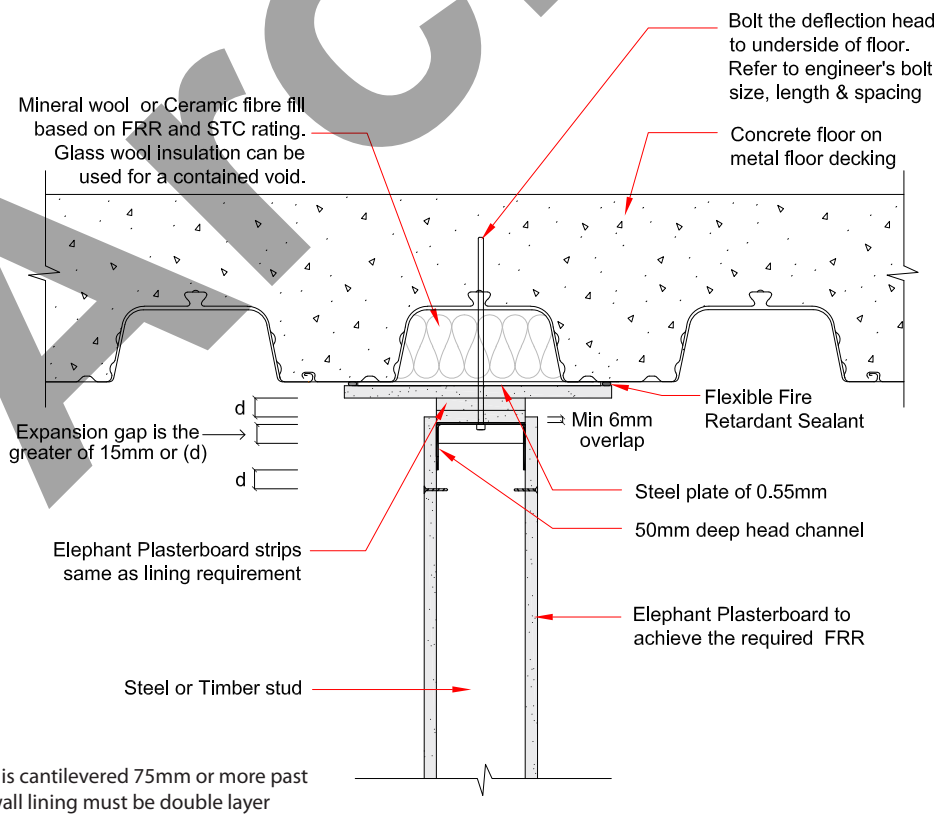


d = Deflection

Note: If Plasterboard is cantilevered 75mm or more past the top screw then wall lining must be double layer

NOTE: Maximum 60 mins Fire system only. For higher fire rating requirements, contact Elephant Plasterboard at 0800 353 742

EFS-114 Wall to Profile Junction



d = Deflection

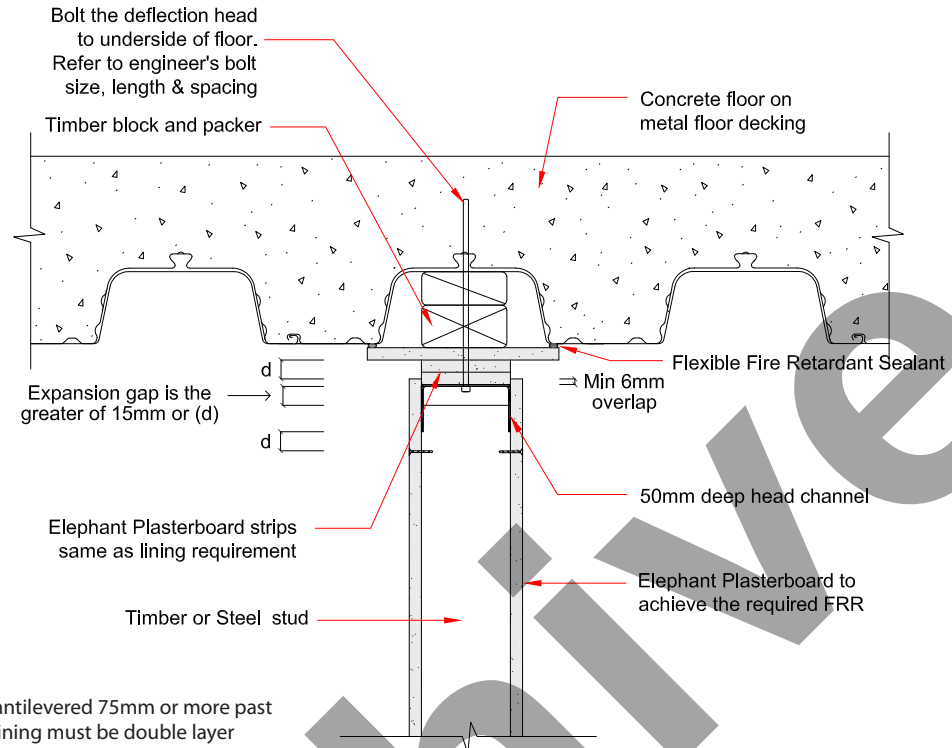
Note: If Plasterboard is cantilevered 75mm or more past the top screw then wall lining must be double layer

NOTE: Maximum 60 mins Fire system only. For higher fire rating requirements, contact Elephant Plasterboard at 0800 353 742

Composite Floor Deflection Head Details

EFS-123

Wall to Profile Junction with Timber packer



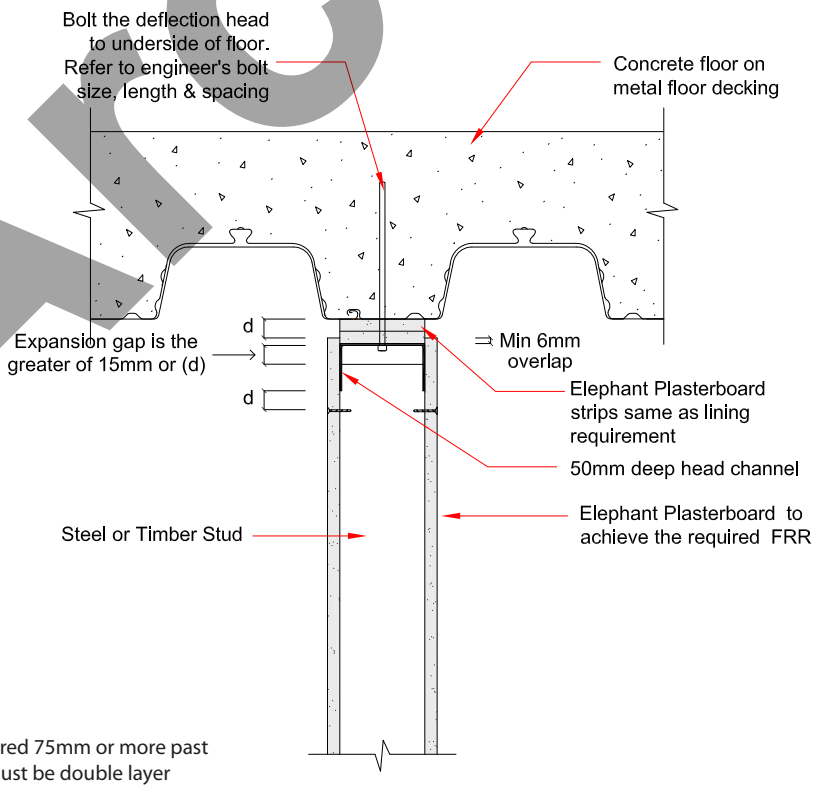
d = Deflection

Note: If Plasterboard is cantilevered 75mm or more past the top screw then wall lining must be double layer

NOTE: Maximum 60 mins Fire system only. For higher fire rating requirements, contact Elephant Plasterboard at 0800 353 742

EFS-117

Wall to Profile Junction



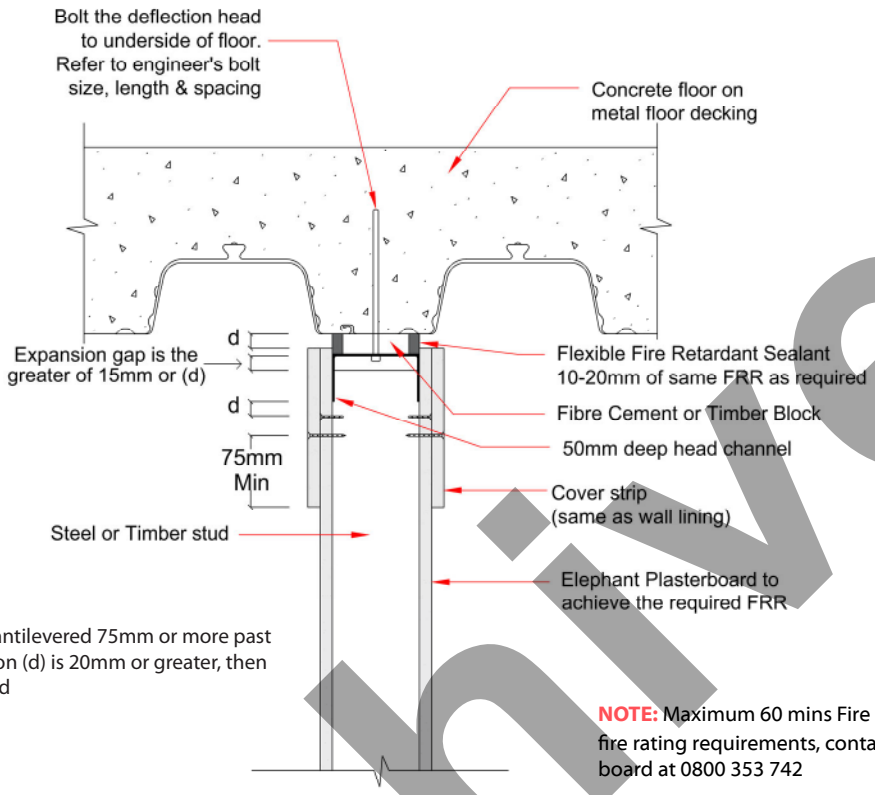
d = Deflection

Note: If Plasterboard is cantilevered 75mm or more past the top screw then wall lining must be double layer

NOTE: Maximum 60 mins Fire system only. For higher fire rating requirements, contact Elephant Plasterboard at 0800 353 742

Composite Floor Deflection Head Details

EFS-121 Wall to Profile Junction

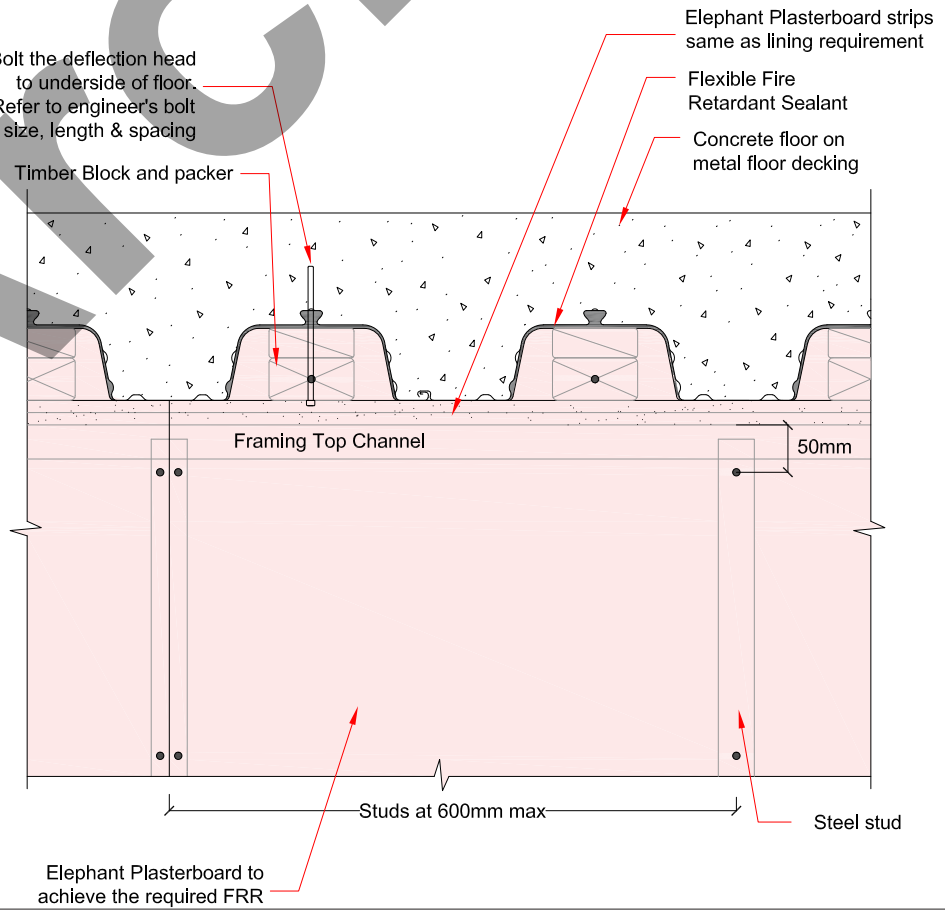


d = Deflection

Note: If Plasterboard is cantilevered 75mm or more past the top screw or deflection (d) is 20mm or greater, then cover strip must be added

NOTE: Maximum 60 mins Fire system only. For higher fire rating requirements, contact Elephant Plasterboard at 0800 353 742

EFS-116 Wall Perpendicular to Profile Junction - For Negligible Deflection

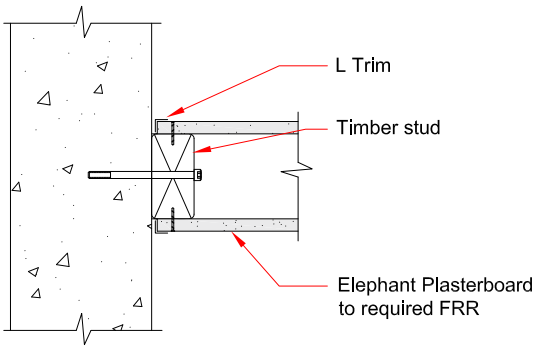


Note: If Plasterboard is cantilevered 75mm or more past the top screw or deflection (d) is 20mm or greater, then cover strip must be added

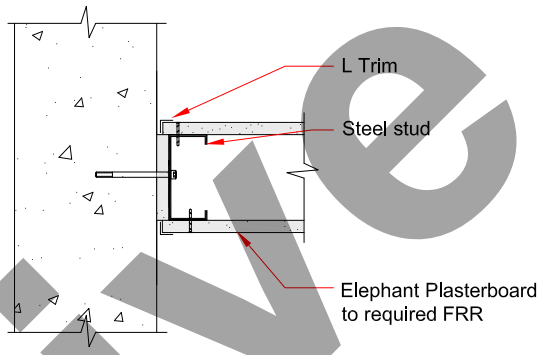
NOTE: Maximum 60 mins Fire system only. For higher fire rating requirements, contact Elephant Plasterboard at 0800 353 742

Rigid Junctions

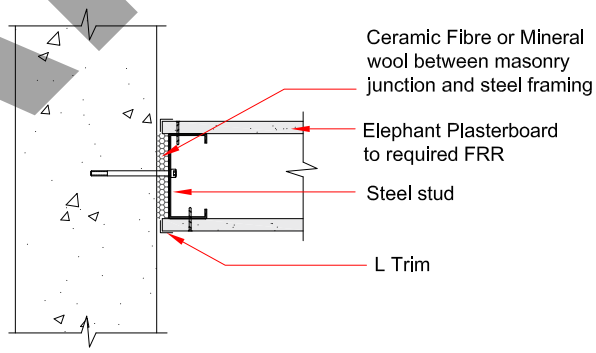
EFS-040 Timber Stud Drywall to Masonry



EFS-041 Steel Stud Drywall to Masonry

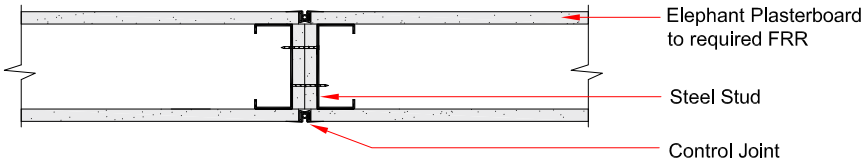


EFS-042 Steel Stud Drywall with FRR Wool Lining to Masonry

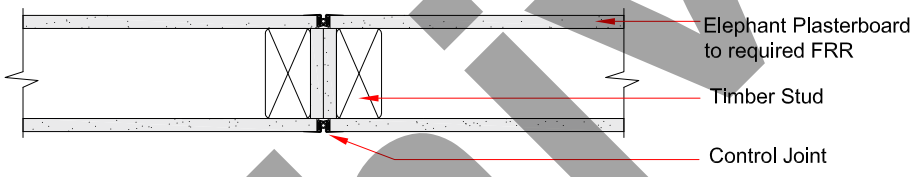


Control Joints

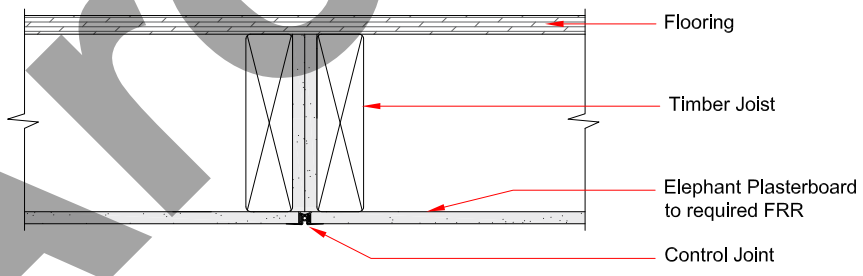
EFS-060 Steel Frame FRR Wall



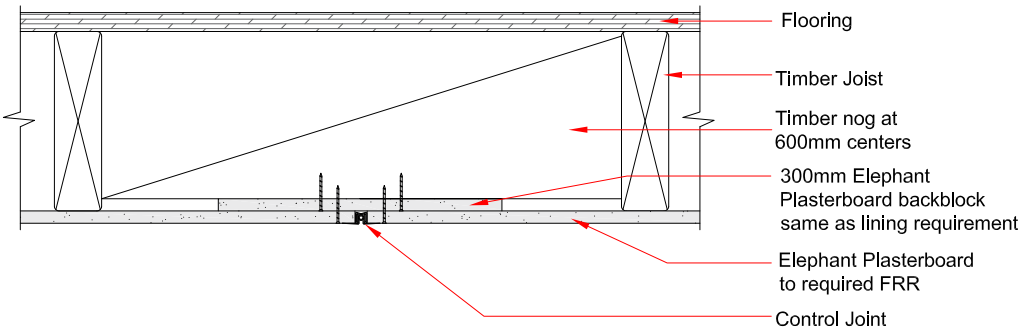
EFS-061 Timber Frame FRR Wall



EFS-062 FRR Floor Ceiling

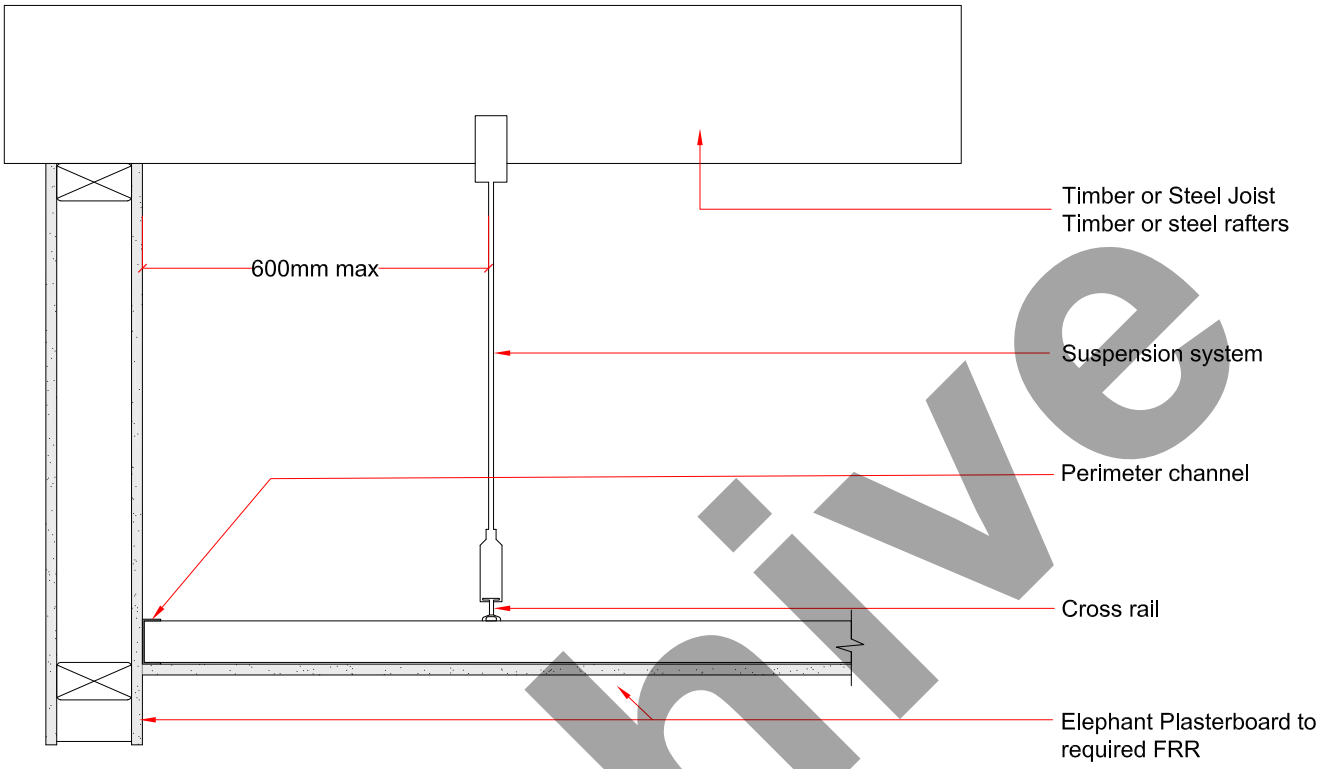


EFS-063 FRR Floor Ceiling

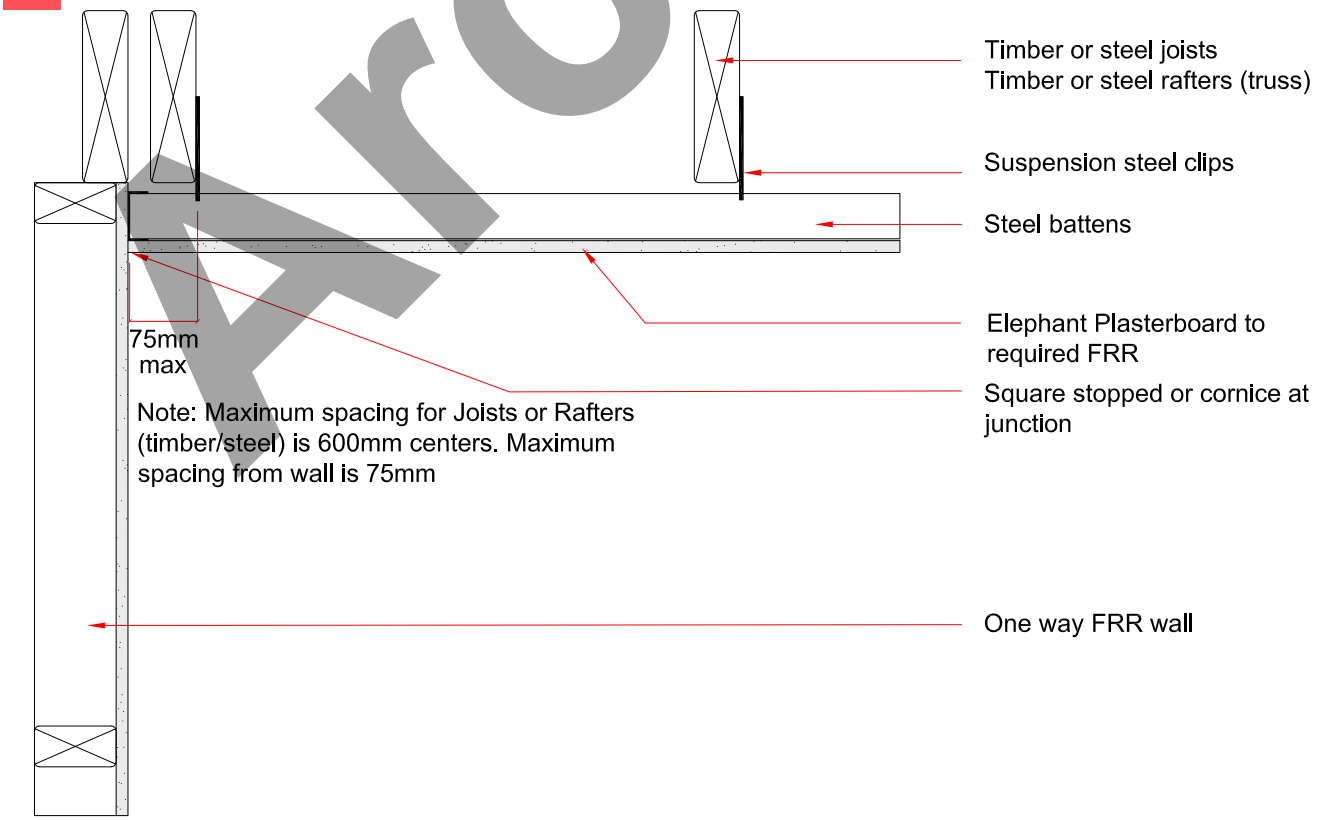


Ceiling Wall Junction Details

EFS-070 Suspended Ceiling Details



EFS-071 Direct Fix Clip Ceiling Details

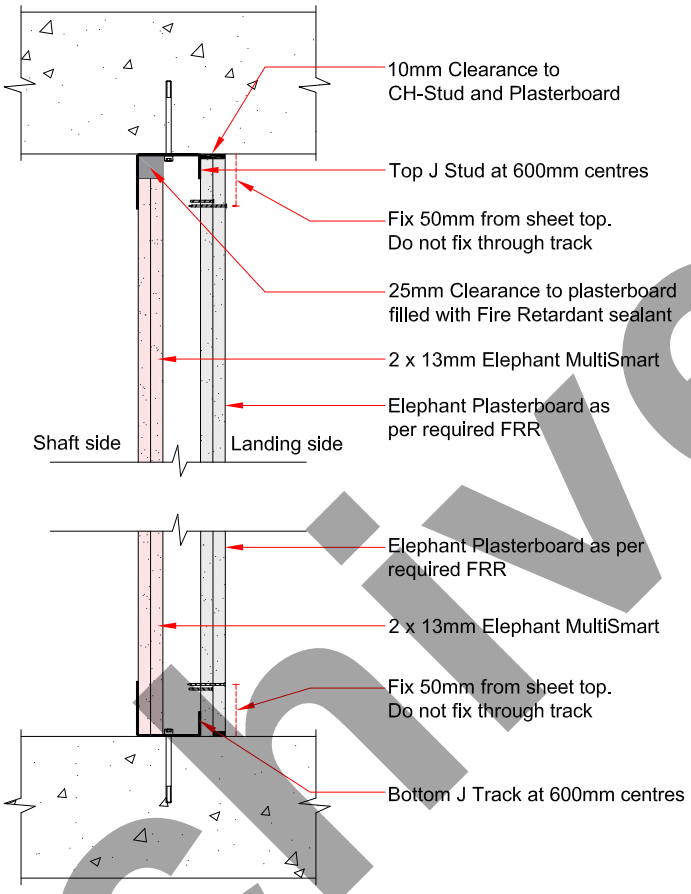


Shaftwall

EFS-080

Shaftwall Head & Base Detail

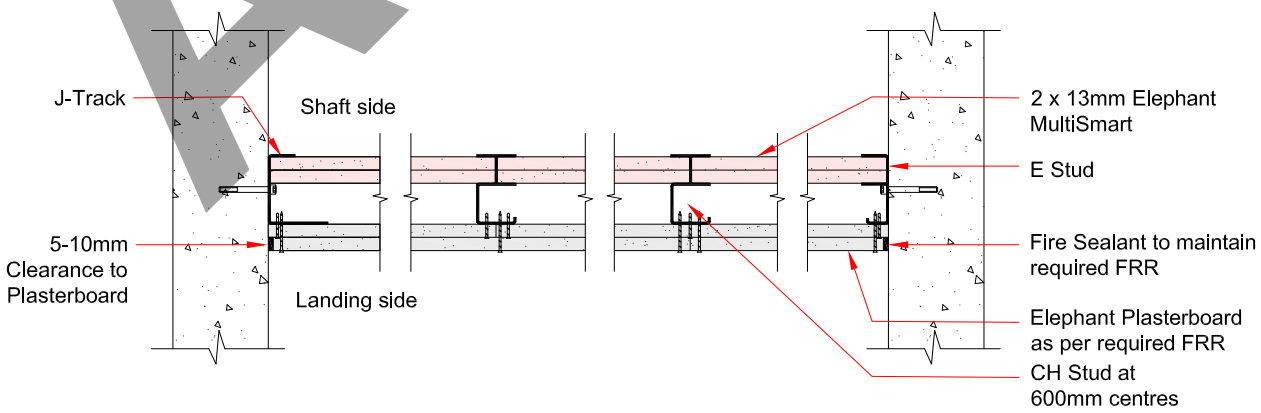
Elevation



EFS-083

Shaftwall Construction Detail

Plan View

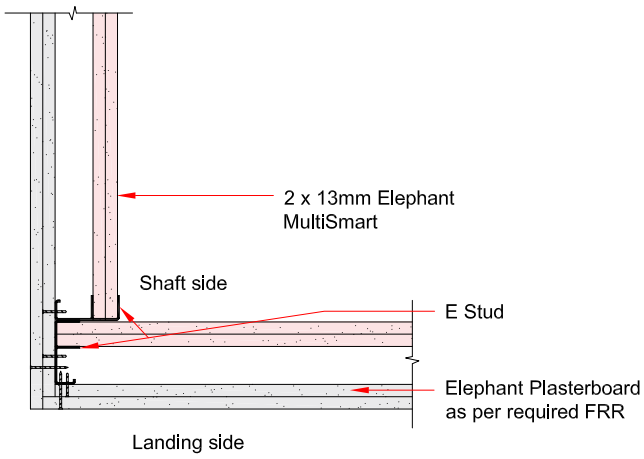


Shaftwall

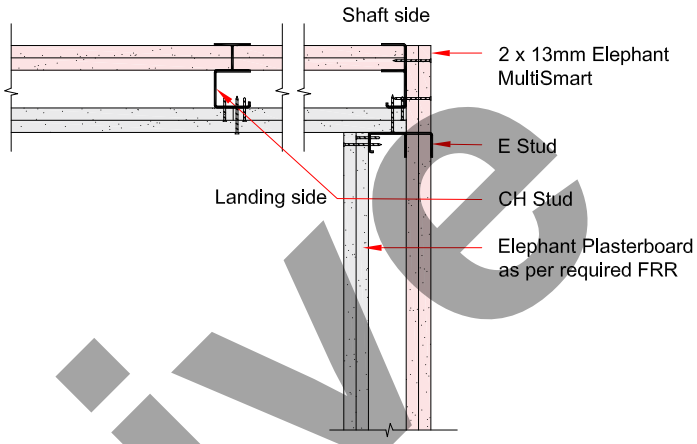
EFS-084
EFS-085

Shaftwall Corner Junctions

Plan View



Internal Corner

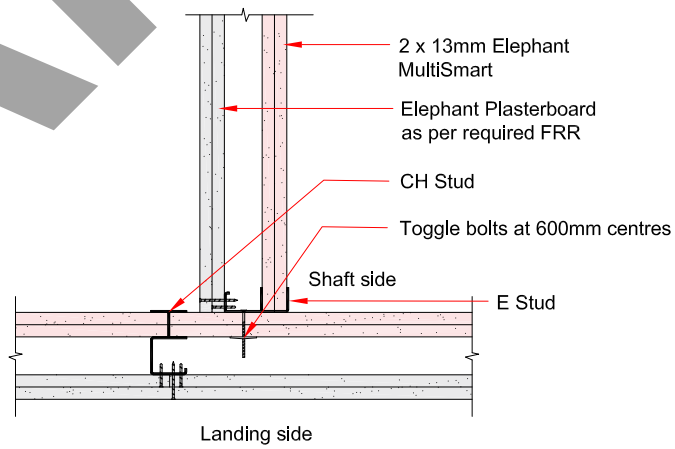


External Corner

EFS-086

Intersecting Shaftwall Junction

Plan View



Boundary Wall

Elephant Fire Rated Plasterboard systems may be used for boundary wall (FRR). The boundary wall can be either timber or steel. The definition of a boundary wall is a wall which is 1.0m or less to a delineated boundary refer to NZBC C3.6, C3.7. NZBC Clause C3.3 states that "buildings must be designed and constructed so that there is a low probability of fire spread to other property vertically or horizontally across a relevant boundary". NZBC clause 3.4 "Performance and NZBC B1.3.3.i,b and 2.2.4 (b) (iii) "a uniformly distributed horizontal face load of 0.5 kPa in any direction." In other words to put it in simple terms the boundary wall needs fire ratings on both sides of the wall (two way system) the wall must stand so that it won't fall into a neighbouring property or boundary, fire service personnel will not be endangered by the wall collapsing for the required specified (FRR).

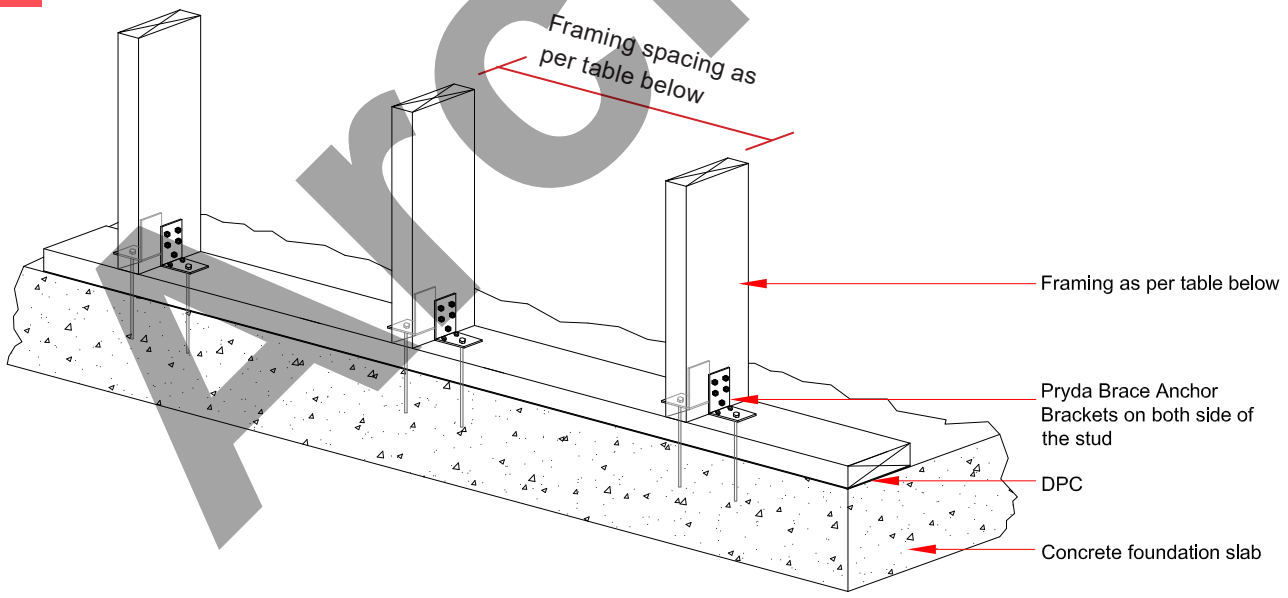
The architect or designer must ensure that the wall has enough structural stability for the required (FRR) in an event of a fire by taking into account the provisions of NZBC clause B1, it may be required that a structural engineer gives guidance.

All timber framing either on timber or concrete floor to the boundary wall to be as per the latest edition of NZS 3604. A boundary wall exterior will require a (FRR) cladding. Limitations of this manual are to NZS 3604 and NASH, for taller buildings (greater than two stores) a structural or fire engineer may need to evaluate the building.

Refer to this manual for exact fixings and layer combinations.

EFS-090

Bottom Plate Fixing



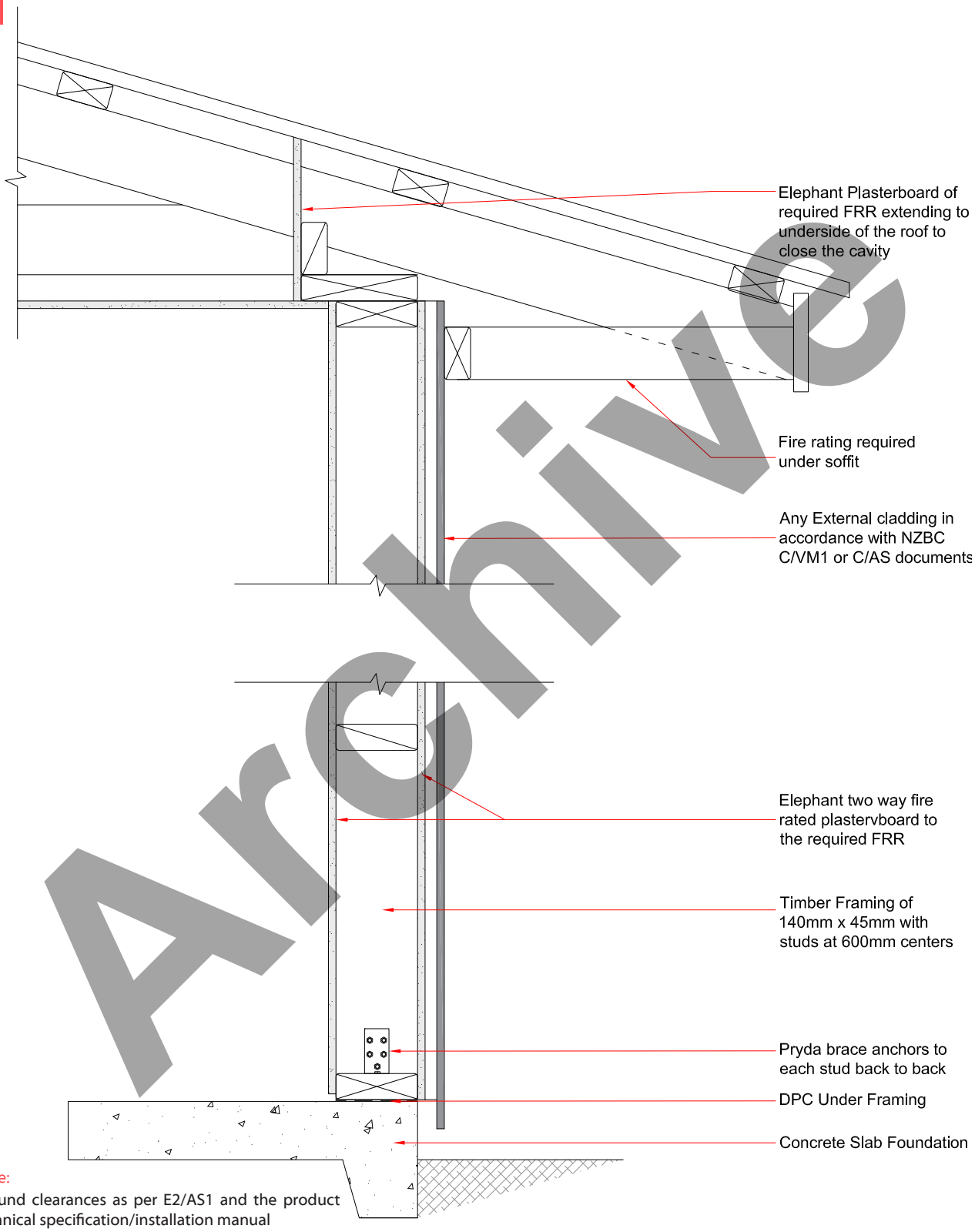
Note:
This detail is only indicative, confirmation will be required by a structural engineer for stability NZBC B1 by designer. Elephant plasterboard (NZ) Ltd accepts no liability if not verified by an engineer

Wall Height max (mm)	2400	3000	3700
Bottom Plate (mm)	90 x 45	140 x 45	140 x 45
Stud Spacing max (mm)	400	600	400
Nog Spacing (mm)	800	800	800
Hold Down brackets	Pryda Brace Anchor to both sides of Stud		

Boundary Wall Detail

EFS-091

Boundary Wall Cross Section



Note:
Ground clearances as per E2/AS1 and the product technical specification/installation manual

Wall Height max (mm)	2400	3000	3700
Bottom Plate (mm)	90 x 45	140 x 45	140 x 45
Stud Spacing max (mm)	400	600	400
Nog Spacing (mm)	800	800	800
Hold Down brackets	Pryda Brace Anchor to both sides of Stud		

Notes

Elephant Plasterboard Product Range

Product Weights and available Lengths

THICK-NESS	ELEPHANT PLASTERBOARD PRODUCT RANGE	EDGE TYPE	WIDTH	WEIGHT	LENGTH							
mm			mm	Kg per m²	2.4m	2.7m	3.0m	3.3m	3.6m	4.2m	4.8m	6.0m
10	Standard-Plus	TE/TE	1200	7.4	✓	✓	✓	✓	✓	✓	✓	✓
13	Standard	TE/TE	1200	9.1	✓	✓	✓	✓	✓	✓	✓	✓
10	Horizontal Standard	TE/SE	1200	7.4	✓		✓		✓	✓	✓	✓
10	Wide Horizontal Standard	TE/SE	1350	7.4	✓		✓		✓		✓	✓
10	FireSmart (Standard-Plus)	TE/TE	1200	7.4	✓	✓	✓	✓	✓	✓	✓	✓
13	FireSmart (MultiSmart)	TE/TE	1200	11.8	✓	✓	✓	✓	✓			
16	FireSmart	TE/TE	1200	14.5	✓	✓	✓					
10	MultiSmart	TE/TE	1200	9.0	✓	✓	✓	✓	✓		✓	
10	Horizontal MultiSmart	TE/SE	1200	9.0	✓						✓	
13	MultiSmart	TE/TE	1200	11.8	✓	✓	✓	✓	✓			
10	AquaSmart	TE/TE	1200	8.4	✓	✓	✓		✓			
10	Horizontal AquaSmart	TE/SE	1200	8.4	✓						✓	
13	AquaSmart	TE/TE	1200	11.5	✓	✓	✓		✓			

TE/TE = Tapered Both Edges
TE/SE = Tapered One Edge, Square the Other

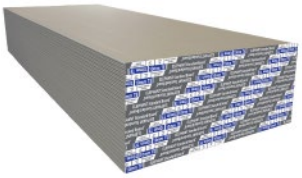
Product Primary Functions*

THICK-NESS	ELEPHANT PLASTERBOARD PRODUCT RANGE	EDGE TYPE	WIDTH	Horizontal Fixing	Span 600 Centres on Ceilings	Bracing	Fire Resistance	Noise Control	Impact Resistant	Water Resistant
mm			mm							
10	Standard-Plus	TE/TE	1200		✓	✓	✓			
13	Standard	TE/TE	1200		✓		✓			
10	Horizontal Standard	TE/SE	1200	✓		✓				
10	Wide Horizontal Standard	TE/SE	1350	✓		✓				
10	FireSmart (Standard-Plus)	TE/TE	1200		✓	✓	✓			
13	FireSmart (MultiSmart)	TE/TE	1200		✓	✓	✓	✓	✓	
16	FireSmart	TE/TE	1200				✓	✓	✓	
10	MultiSmart	TE/TE	1200		✓	✓	✓	✓		
10	Horizontal MultiSmart	TE/SE	1200	✓		✓		✓		
13	MultiSmart	TE/TE	1200		✓	✓	✓	✓	✓	
10	AquaSmart	TE/TE	1200				✓	✓		✓
10	Horizontal AquaSmart	TE/SE	1200	✓						✓
13	AquaSmart	TE/TE	1200		✓		✓	✓		✓

* The above table details the product's Primary functions.
Some products may perform more than the functions indicated

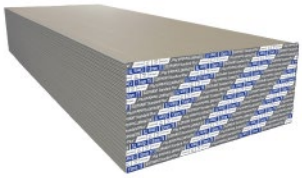
Elephant Plasterboard Product Range

10mm Elephant Standard-Plus



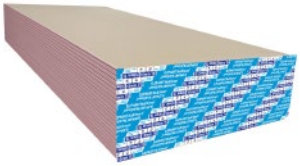
- Suitable for general wall and ceiling lining applications
- Spans 600mm centers on ceilings
- Medium Performance Bracing
- Fire Rated
- High Quality Finish

13mm Elephant Standard



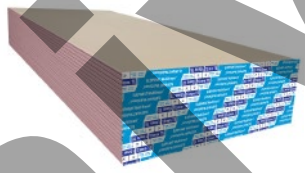
- Excellent for Ceiling applications
- Spans 600mm ceiling batten centres
- Fire Rated
- Medium Performance Bracing System
- High Quality Finish

10mm Elephant MultiSmart



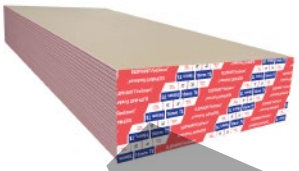
- High Performance Bracing Systems
- Increased Noise control
- Fire Rated
- Suitable for wall and ceiling lining applications
- Spans 600 centres on ceilings
- High Quality Finish

13mm Elephant MultiSmart



- Fire Rated
- Increased Noise control
- Impact Resistant
- High Performance Bracing Systems
- Spans 600 centres on ceilings
- High Quality Finish

16mm Elephant FireSmart



- Fire Rated
- Increased Noise control
- Impact Resistant
- Suitable for wall and ceiling lining
- High Quality Finish

10mm Elephant AquaSmart

- Suitable for wet-area wall and ceiling linings
- Moisture Resistant
- Fire Rated
- Multi-functional
- Increased Noise control
- High Quality Finish

13mm Elephant AquaSmart

- Suitable for wet-area wall and ceiling linings
- Moisture Resistant
- Spans 600 centres on ceilings
- Fire Rated
- Multi-functional
- Increased Noise control
- Impact Resistant
- High Quality Finish

Notes

Elephant Plasterboard
Fire Rated Systems Manual
October 2019

Elephant Plasterboard (NZ) Limited

FOR MORE INFORMATION VISIT

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Elephant Plasterboard
STRENGTH WITH STYLE