

Steel Framing Systems (SFS) Specification Manual



New Section Range for 2018 including
Fire and Through Wall Solutions



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Contents

Commercial	4-21	SFS Load Bearing	66-105
Introduction to SFS	4-5	Introducing SFS Load Bearing...	68-69
Details of the New Range	6	Section Names Explained	70
Section Names Explained	7	Industry Standards and Solutions	71
Our SFS Systems	8-9	Load and Performance Data Tables	72-97
SFS Solutions	10-11	Architectural Drawings	98-103
SFS vs Blockwork	12-13	Case Study	104-105
SFS Project Process Timeline	14-15		
SFS CPD Information	16	Continuous Walling	106-133
SFS BIM Design	17	Introducing Continuous Walling...	108-109
Design Specification	18	Section Names Explained	110
Detailed Design	19	Industry Standards and Solutions	112
Installer Training	20	Load and Performance Data Tables	113-129
Health and Safety	21	Architectural Drawings	130-131
		Case Study	132-133
voestalpine Metsec plc	22-33	High Bay Walling	134-149
The Quality You Expect, The Care You Need	24	Introducing High Bay Walling...	136-137
Our Heritage, This is Our DNA	26	Section Names Explained	138
Our Organisation, Company Structure	27	Industry Standards and Solutions	140
Metsec and BIM	28-29	Load and Performance Data Tables	141-148
All the Hallmarks of Quality, Industry Standards	30		
Treading Carefully, Delivering Sustainability	32	Other Technical Information	150-169
		SFS Components	152-156
Infill Walling	34-65	External Finish Options	158-163
Introducing Infill Walling...	36-37	Metsec Framing Fixing Application Guide	164
Section Names Explained	38	SFS Fixing Table	165-168
Industry Standards and Solutions	40		
Load and Performance Data Tables	42-57		
Architectural Drawings	58-63		
Case Study	64-65		



Introduction to SFS

Overview

Metsec is proud to introduce our new SFS range to the market. It is the second major redesign of the Metsec SFS range and has been launched after significant investment in product testing and development. The new system offers many benefits including lighter more cost efficient and sustainable design options, as well as new robust fire solutions enabling more efficient overall wall construction performance.

Features of the New Range

- » Expanded and enhanced range of new sections
- » Suitable for a wide range of sector applications, including residential, hotels, student accommodation, social housing, healthcare and education
- » New cleat range
- » New section profiles for all SFS solutions
- » New fire tested solutions based on British Gypsum, Siniat and Knauf plasterboard
- » New thermal and fire performance solutions using Rockwool insulation
- » New fire performance solutions using RCM Y Wall and Euroform Versaliner sheathing boards
- » Works with a wide range of external finishes, including brickwork, insulated render, timber cladding, composite panels, ventilated rainscreens and brick slip systems
- » CE Marked
- » Full suite of BIM product data, downloadable and available for all products and accessories
- » Professional Indemnity Insurance and Collateral Warranties

Benefits of the New Range

- » Cost and weight reductions of typically 5-10%
- » Thinner, more efficient through wall constructions
- » New 90mm stud for residential developments providing more usable floor area
- » Fire performance tested and assessed at BRE test laboratories
- » Through wall and floor solutions for structural, fire, acoustic and thermal performance
- » Greater deflection allowances for our slotted head track now up to +/-20mm

Details of the New Range

Section Depths

The new range has revised stud depths of 90mm, 120mm, 150mm, 180mm, 210mm, 240mm, 270mm, 300mm and 350mm.

For walling applications the 90mm, 120mm and 150mm ranges will be replacing the previous 100mm and 150mm ranges. For typical residential applications the 90mm range will provide more value compared to the previous 100mm range. This also narrows the wall construction providing more usable floor area or the option of extra insulation improving the thermal performance of the wall. For higher floor to floor heights or higher wind load areas the 120mm range provides a cost effective alternative to the previous higher gauge 100mm studs or 150mm range.

For flooring solutions the 180mm, 210mm, 240mm, 270mm, 300mm and 350mm are replacing the previous 200mm, 250mm and 300mm ranges. These options provide cost savings and/or reduced floor constructions. The 350mm range has been introduced to provide more economical solutions to longer floor spans and increases the maximum typical residential floor span from around 6m to 7m.

Section Widths

The new range has revised stud flange widths. These increase uniformly as the depth range increases. Widths are typically, 50mm, 62mm and 75mm. The tracks have revised flange widths of 40mm and 70mm.

For the first time Metsec SFS sections have multiple flange widths for a specified gauge. To avoid confusion the section references now include the flange size.

Section Gauge (Thicknesses)

The primary sections have revised gauges of 1.2mm, 1.4mm, 1.6mm, 1.8mm and 2.0mm. 1.3mm is introduced on deeper sections (210mm upwards) replacing some 1.2mm sections where the extra thickness provides the required section strength. On the deeper 300mm and 350mm sections, 2.3mm, 2.5mm and 2.9mm gauge sections are used for increased strength for long spanning joists.

Slotted Head Tracks

The new range now also has improved slotted head tracks. These are available in the 90mm to 180mm range, with a 46mm slot which now offers up to +/-20mm deflection allowance when used in an infill wall compared with the previous +/-15mm.

The new range also has two thicknesses of slotted head track available, these being 1.8mm and now a new 1.6mm gauge. The 1.6mm has been introduced for low span, low wind load applications offering more cost effective designs.

Section Names Explained

Metsec section references are designed to be easy to read and understood at a glance. Each section type is identified by a unique reference consisting of three numerical values separated by a letter or a dash.

Studs or Joist Sections (lipped sections)

Example stud reference – 090M12-50

- » 090 – Refers to the section depth of 90mm (numbers ending in 0 are always lipped)
- » M – Refers to Metsec SFS
- » 12 – Refers to the gauge (thickness) of the section i.e. 12 is 1.2mm thick
- » 50 – Refers to the width or section flange of 50mm

Track Sections (un-lipped sections)

Example stud reference – 094M16-70S

- » 094 – Refers to the section depth of 94mm (numbers ending in 4 or 6 are always un-lipped)
- » M – Refers to Metsec SFS
- » 16 – Refers to the gauge (thickness) of the section i.e. 16 is 1.6mm thick
- » 70 – Refers to the width or section flange of 70mm
- » S – If present at the end of the section reference it means the section is slotted

Colour Coding Explained

Metsec prints stud or joist sections and track sections with references that are designed to be easy to read and understand at a glance. Metsec prints the Metsec name down both flanges for the thinner thicknesses of section and these are colour coded as follows:

- » BLACK = 1.2mm or 1.3mm thickness
- » RED = 1.4mm thickness
- » GREEN = 1.6mm thickness
- » ORANGE = 1.8mm thickness
- » BLUE = 2.0mm thickness

On our drawings any sections greater than 2.0mm or that are made up of multiple sections are shown in yellow so they are highlighted on the drawings.

Slotted head track or sections thicker than 2.0mm are not colour coded but still have the “M” reference on the web.

All stud or joist sections and track sections have a string of numbers and letters printed down the back web along with our CE mark. One of the string of characters will start with a M and have two numbers after it e.g. M12 or M20. This denotes the thickness of the section i.e. M12 = 1.2mm thick section.



Our SFS Systems

Infill Walling

Our most economical framing method, infill walling is constructed from the floor to soffit of the primary structural frame to 'infill' the external wall zone. A Metsec base track is fixed onto the slab of the primary structural frame. Metsec's slotted head tracks are then fixed to the underside of the slab or structure to allow for deflection, and studs are then cut, aligned and fixed into position with Tek screws at regular centres to provide support for internal and external finishes.



SFS Load Bearing

Metsec can design and supply a complete load bearing superstructure for low to medium rise structures up to 3 storeys. It is stick built to ensure maximum flexibility and our technical department provides details to allow SFS sections to be assembled in-situ to provide walls, floors and roofs.



Continuous Walling

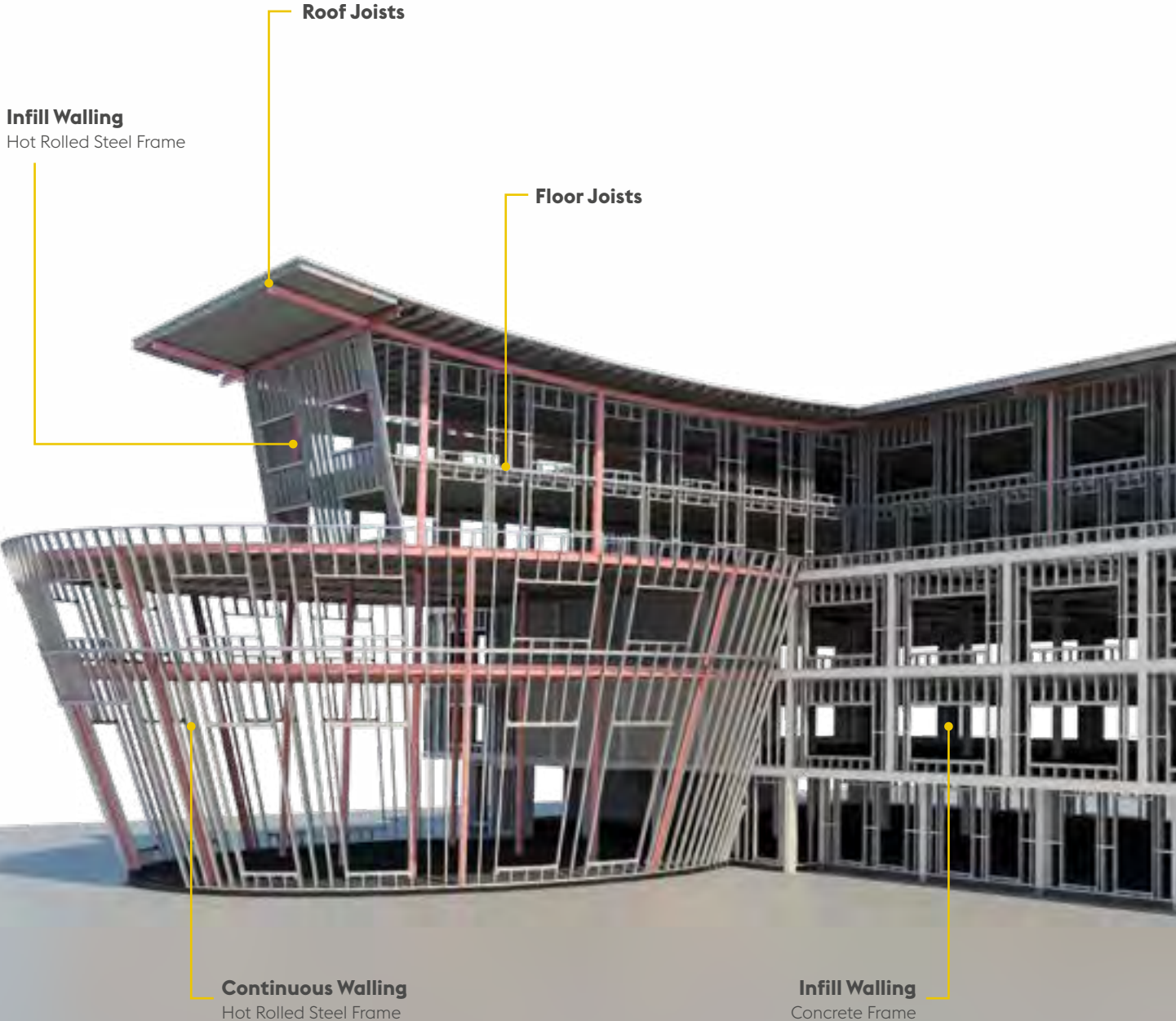
This system oversails the edge of the primary structure. Studs sail past slab edge to maximise floor area also meaning cladding does not need to bridge deflection joints at each floor. Support is required for the system's base track and studs are then built multiple storeys tall. These are restrained using cleats with slotted connections at each slab level. Each lift of studs is capped with a track which provides support for the next base track and lift of studs over.

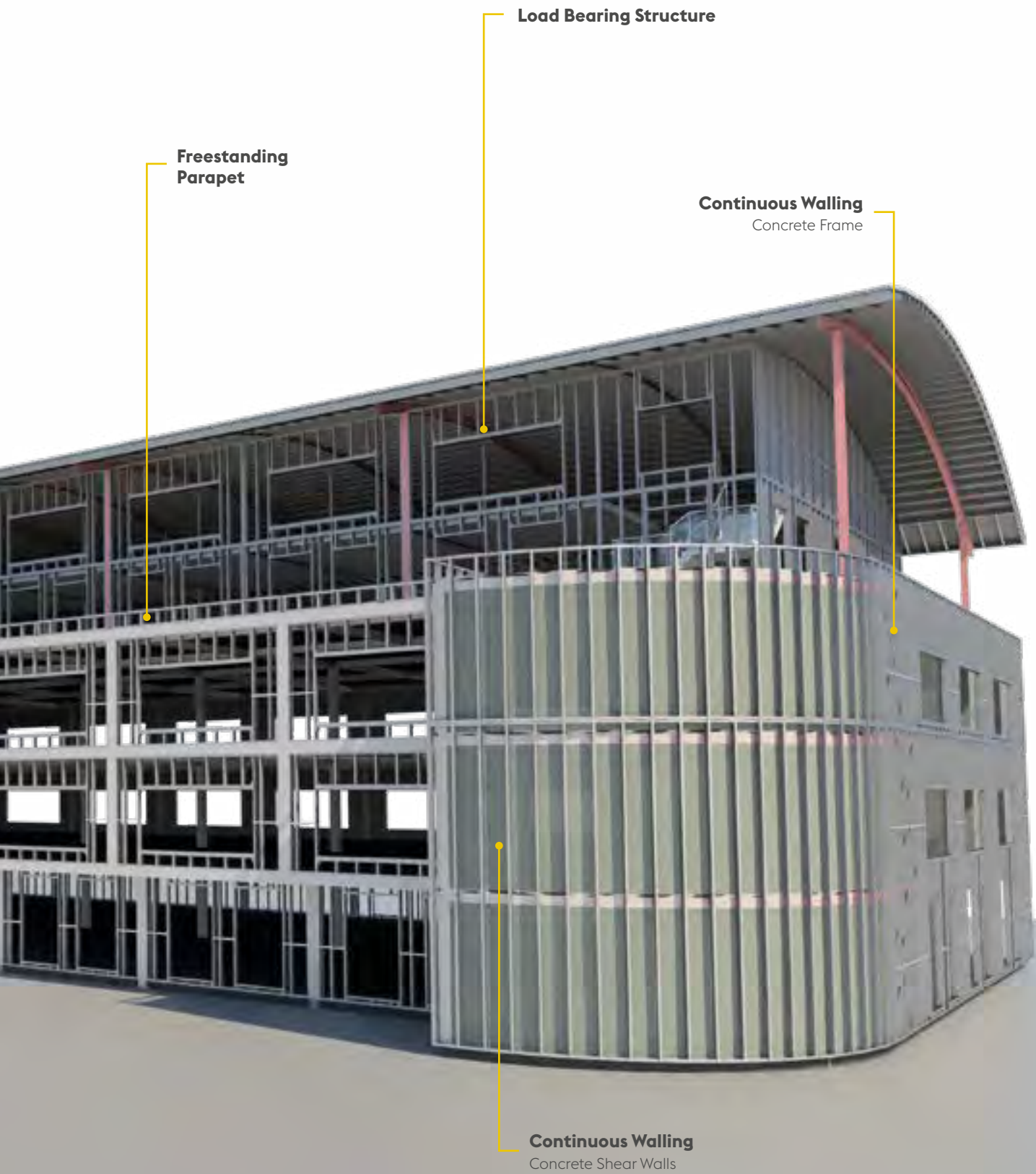


High Bay Walling

This is a fast-track, high performance system used to provide high separating walls for factory units or atriums. These can be up to 20m high and their lightweight construction and uniformly distributed loads normally mean that the system can be used within existing structures without the need to strengthen foundations or slabs.

SFS Solutions





SFS vs Blockwork

We commissioned an independent report to prove that SFS is as good as we say it is. We considered four comparative façade scenarios fixed to the SFS inner leaf, based on a building model of a reinforced concrete framed residential development requiring 4,000m² of cladding.

We compared all areas of the build scenarios including:

- » Project benefits (in construction)
- » Cost efficiency
 - » Direct material costs
 - » Associated build costs
 - » Total build programme costs
- » Sustainability performance

For each of these scenarios, we compared an inner blockwork wall with SFS.

The Results

The results were clear. In comparison to an equivalent blockwork build, SFS proved to be quicker to build, to increase sustainability performance and to significantly improve cost efficiency.

Project Benefits

Precision, Practicality and Performance.

SFS steel is delivered to site on flat bed articulated vehicles (other vehicles are available on request), ready for a crane off-load directly to the loading bays on the building scaffold at each floor level. It is usually then installed from the inside of the building using a scissor lift or cherry picker platform.

SFS is Much Quicker to Build

- » In a typical week, with two teams of three installers, SFS can offer 124m² greater coverage than blockwork, with 4 teams of brick layers
- » Allows a rapid water tightness date
- » In larger scale projects, specialist input has shown it is possible to install SFS at a rate of up to 1000m² per week
- » Even with the conservative data, SFS would reduce the installation programme by three weeks

SFS Requires up to 25x Less Lorry Deliveries to Site

- » In this methodology, SFS typically required 2 lorry loads of SFS; the blockwork required up to 50
- » SFS positively affects traffic and health and safety management
- » Less deliveries means less environmental impact

Sustainable Performance

Wastage

- » SFS can be supplied cut to length and offcuts can re-enter the resource lifecycle – rather than being discarded as waste
- » SFS has a wastage rate of 1%, as opposed to the 20% wastage rate of dense concrete blockwork. As a result it created less waste in each of the four scenarios we tested

95%

Less wastage than blockwork

Cost Efficiency

» SFS offers significant cost savings in every scenario we tested. The figures below show both the like for like material comparison, and an overall build cost comparison

4%

Saving on total build cost

13%

Average saving on through wall cost

33%

Saving against comparable elements

1



Brick Face External Wall

8%

Saving on through wall cost

17%

Saving on comparable elements

2



Timber Cladding External Wall

27%

Saving on through wall cost

54%

Saving on comparable elements

3



Insulated Render External Wall

8%

Saving on through wall cost

21%

Saving on comparable elements

4



Rainscreen Cladding External Wall

4%

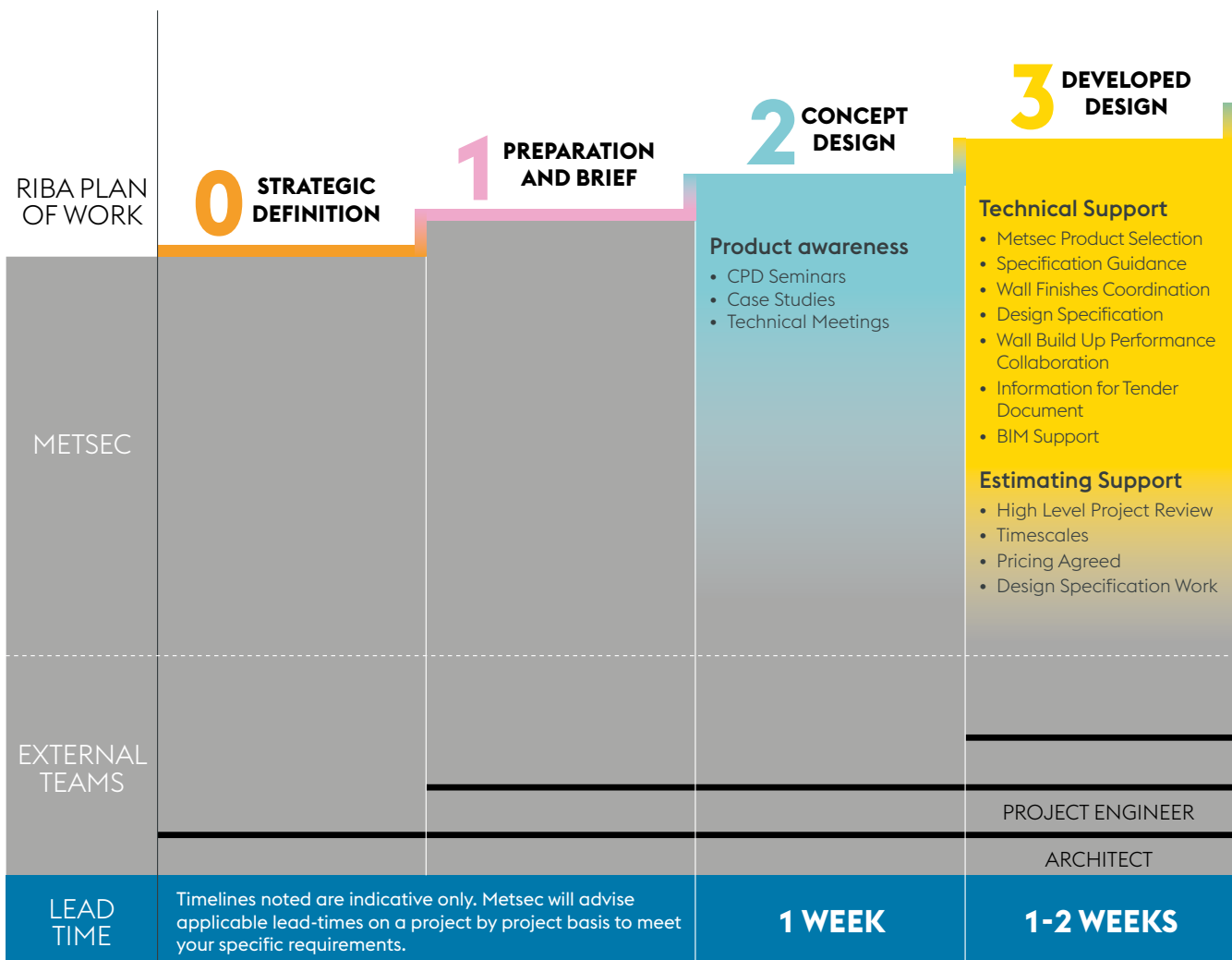
Saving on through wall cost

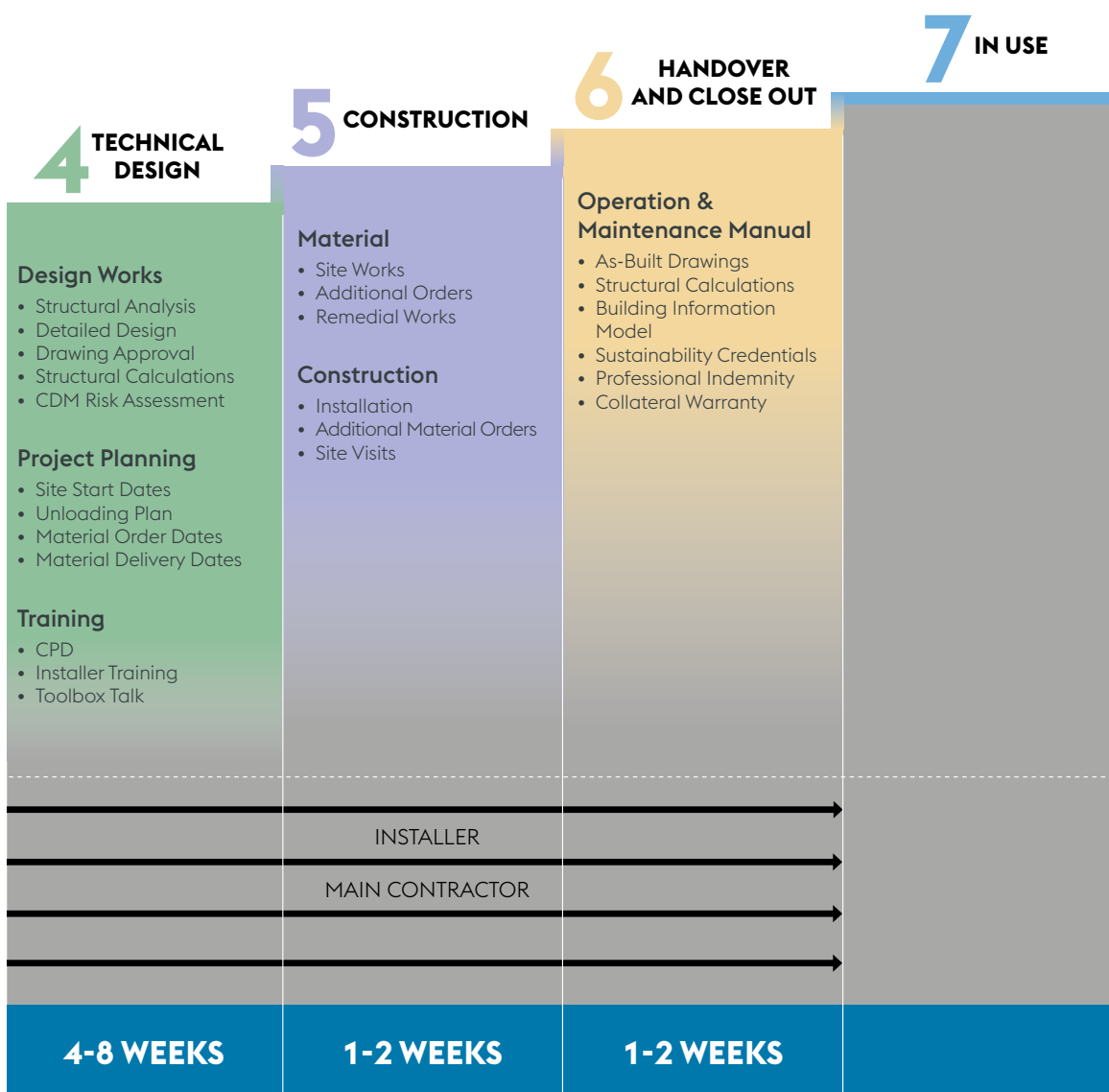
19%

Saving on comparable elements

SFS Project Process Timeline

The timeline below has been created based on the RIBA Plan of Work. For each stage we have included all the required tasks that form part of an SFS project. The timeline also shows the external teams and indicative timescales involved at each stage. Please note Metsec will advise on project specific lead-times to meet specific requirements. For any queries please get in touch.





SFS CPD Information

If you are looking to increase your knowledge of steel framing systems, including design and specification, the Metsec SFS CPD seminar provides a comprehensive and engaging opportunity to do so.

Our SFS CPD seminar provides the following:

- » Introduction to steel framing systems and their applications
- » Design and detailing process including BIM
- » Wall build ups and performance data
- » Able to be organised at your office or an event at a time to suit you

Metsec has many years of experience working with main contractors, architects, engineers and sub-contractors to efficiently design and supply SFS systems. There is no company better placed to get your SFS knowledge up to speed.

For more information on the Metsec SFS CPD seminar, please get in touch.

SFS BIM Design

voestalpine Metsec plc is the first tier two organisation globally to be awarded the BSI Kitemark for its BIM capabilities and tier 2 designer and manufacturer complying with BIM Level 2 for Design and Construction in the UK accredited by the BSI. We aim to provide our customers with confidence in our ability to work collaboratively with others in the supply chain enhancing customer satisfaction and providing the following benefits:

- » Faster and efficient processes
- » Increased productivity
- » Reduced uncertainty – right first time philosophy
- » Controlled whole-life costs and environmental data
- » Avoidance and elimination of rework costs
- » Improved safety by working collaboratively within the supply chain
- » Comply with Government requirements for centrally funded projects
- » Reduction of waste
- » Collaborative working

We have the resources to fully detail the cold rolled steel elements of your project in either 2D or 3D environments using either Tekla or Revit allowing the Metsec SFS to be detailed within a design team's model.

Alternatively, Metsec Framing sections can now be downloaded from the Metsec website for direct incorporation into your project BIM file. The individual 3D sections are available for download as Industry Foundation Classes (.ifc files) and Revit files (.rvt) so that they can be readily imported into your BIM model, regardless of the modelling software being used. The .ifc files all contain the necessary data to assist with the production of the Construction Operations Building Information Exchange (COBie) file required by clients at the end of a project.

In addition to the above Metsec also offer:

- » A list of approved installers that your estimating/ QS teams should be approaching for best prices
- » Free site inspections
- » A CE Marked product, which is a legal requirement for the SFS market as of July 14th 2014



Design Specification

Metsec can provide design specification support free of charge. Using our Metwall software we can produce a number of panel drawings that are job specific. They include wind-loadings and cladding weights, and show the principles of how we would frame out certain areas of the building concerned. This level of design does not cover the entire building however.

We can offer this level of design on any job you are tendering or have secured. Our design specification can be used to assist early estimating on projects by enabling you to get more accurate prices rather than just going out to tender with a BoQ.

For us to produce our design specification we require architect's dimensioned elevations, sections and plans, along with the site address with postcode to establish the wind loading. The panel drawings will then help to identify what stud size is required generally, what sections would be needed for jambs, cill's and lintels and all connection details. They also help to show at an early stage where areas of hot rolled steel might be required if we can't value engineer them out.

The Metsec panels are colour coded to highlight any different section gauges which are used within a panel. The studs are then delivered to site with the same colour coding to assist with the site control of the material and to aid installation and checking of the Metsec SFS.

What Do We Need?

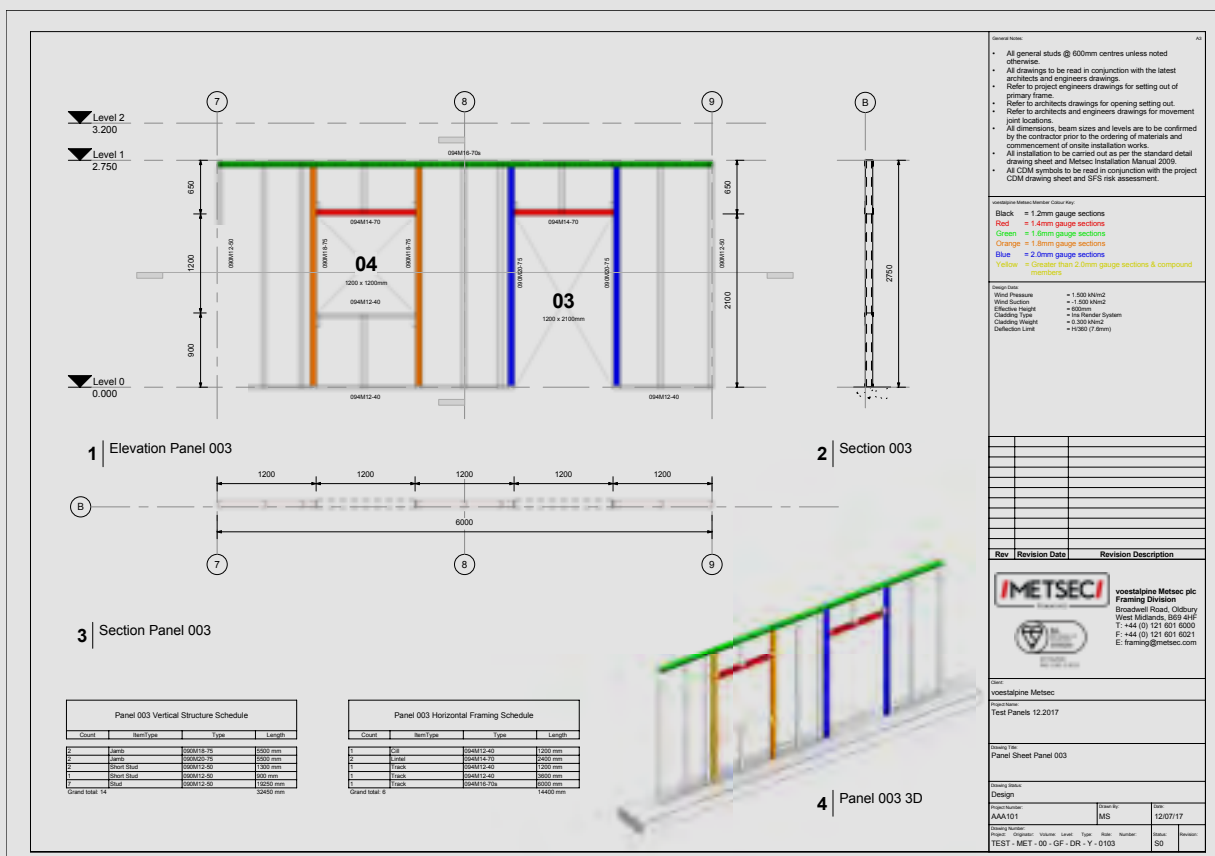
Design specification drawings – information requirement:

- » Site address including postcode
- » Full plan drawings
- » Window schedule
- » Elevation drawings
- » Primary structural frame drawings
- » Section drawings

NB: For complex and/or highly competitive projects, voestalpine Metsec plc would strongly advise that full construction drawings are produced to enable the sub-contractor to produce an accurate costing of the SFS. Full construction drawings will also improve the co-ordination and speed of the steel framing installation by the nominated sub-contractor.

What Do We Supply?

- » Design specification drawings to a pre-agreed level of detail
- » Metsec Framing will provide our customers with a design specification pack within 5-10 working days of receipt of the information shown above enabling you to gain prices quickly from the approved sub-contractors



Detailed Design

Metsec Framing can also offer a complete detailing service, providing a full set of either CAD or Revit drawings. These drawings are to be used when you have secured a project and you require a set of complete value engineered construction level drawings offering the most economic framing solution. They ensure the Metsec SFS is properly coordinated with other design team drawings and ensures that the full extent of the work is clearly defined.

These drawings can be used by main contractors as tender drawings to ensure that they acquire the most competitive price from Metsec's network of approved installers.

Alternatively drawings can be provided directly to installers to support them as part of their design and supply sub-contract. This provides the sub-contractor with total confidence that nothing has been missed and all areas are designed and drawn enabling them to provide a lump sum/fixed cost as the full design has been completed.

Metsec construction drawings are produced at an agreed fee.

What Do We Need?

In order for Metsec to commence production of the detailed drawings we require the following information to be issued:

- » Marked up scope of works confirming Metsec SFS locations
- » Architects GA plans, elevations and sections in dwg format
- » Structural plans, elevations and sections in dwg format
- » Hot rolled steel fabrication drawings in dwg format
- » Any architect's/engineer's/fabricators revit models (if available)
- » Window and door schedule (if available)

Additionally a signed detailing agreement is required in order for Metsec to start the detailing process.

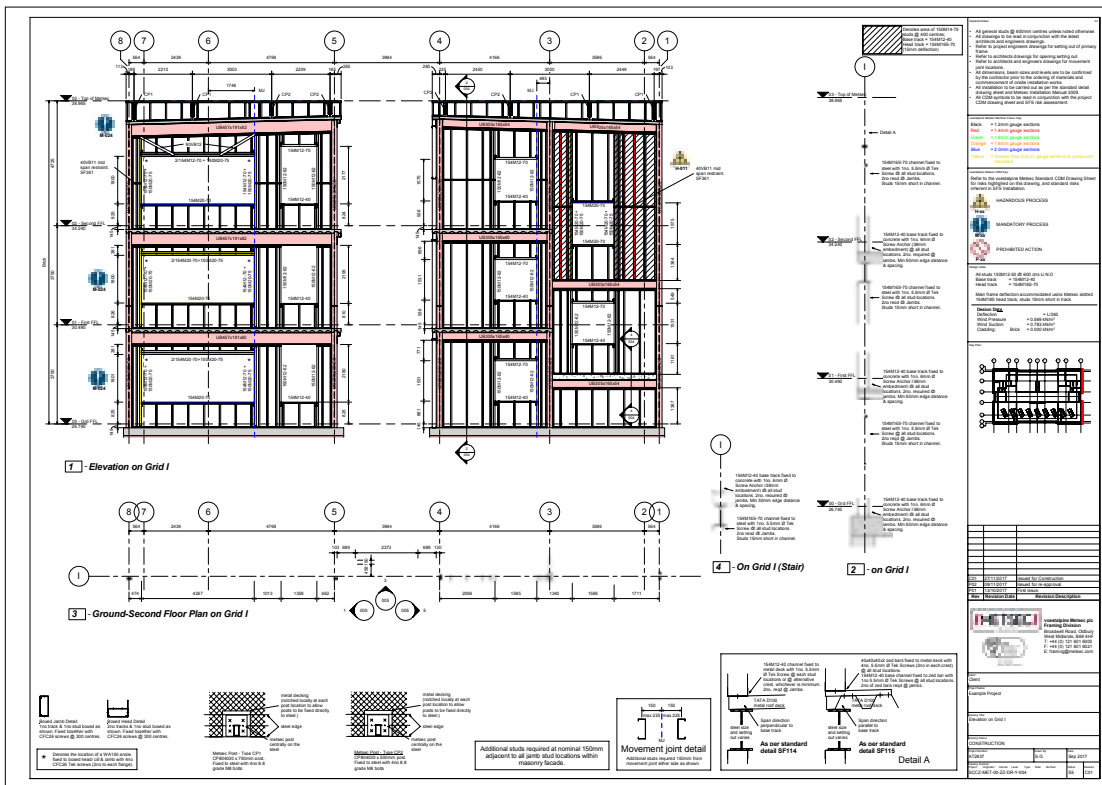
Timescales

Drawing timescales are typically 8-10 weeks. This allows for 4-6 weeks for first issue of drawings (based on 3000m² façade area), 1 to 2 weeks for comments from the design team and 2 weeks, from receipt of the comments, to amend before issuing for construction.

Warranty Cover

All designs produced by voestalpine Metsec plc are underwritten by £5m Professional Indemnity Insurance and client direct collateral warranties.

NB: voestalpine Metsec plc will provide this warranty where requested. We would limit the number of beneficiaries for each warranty to a maximum of 3.



Installer Training

There are several elements that contribute to a successful build; products, materials, people and design to name a few. Training and development are hailed as important foundations for a smooth-running project.

The cost implications of errors in the installation stages can jeopardise the entire delivery of a project and ensuring that all product is being installed in accordance with the design can alleviate delays in project completion. Recent research showed that the cost of errors is between £10 billion and £25 billion a year, which exceeds the average profit margin for the industry.

We underwrite and warranty our designs, however this is only valid if the installation is in accordance with our design. Therefore to achieve quality work the installation needs to be underpinned by appropriate training.

Metsec offers training courses to our key partners to ensure all parties that implement Metsec SFS designs do so with a full and applied understanding of the product and its assembly.

About the Course

Metsec runs six, one day, installer training courses during the course of a year. The course is designed for supervisory level managers to provide an overview of the SFS systems and covers a large range of topics including:

- » Application and use of Metsec SFS
- » Typical installation details
- » Factory tour
- » Pricing and estimating
- » Ordering
- » QA checking the installation

The course takes place in our dedicated training rooms and consists of PowerPoint presentations and workshops.

Health and Safety

Metsec takes health and safety very seriously and provides a range of information at different stages of a project to help our customers limit any risk using the SFS system.

At concept and developed design stages of the project a comprehensive general risk assessment can be provided to help main contractors and installers develop their build methodology.

At the technical design stages of a project additional information is provided on the project drawings which are clear and easily understood. These symbols are used to identify a hazard, mandatory process or a prohibited action. Each hazard, mandatory process or prohibited action is then listed on the project specific hazard sheet.



All of our construction details show by the use of easily read symbols the minimum PPE requirements and also what tools should be used in the process of building the particular details.







voestalpine Metsec plc

The Quality You Expect, The Care You Need

At voestalpine Metsec plc, our customers receive our undivided attention from start to finish. For over 85 years we've helped customers to maintain their competitive edge by designing the best steel manufacturing and construction solutions on the market. In each of our products and services, we deliver high quality, added value solutions and have a reputation for short lead times.

Technical Excellence

We offer outstanding technical excellence and expertise, providing absolute value through absolute quality.

Complete Care

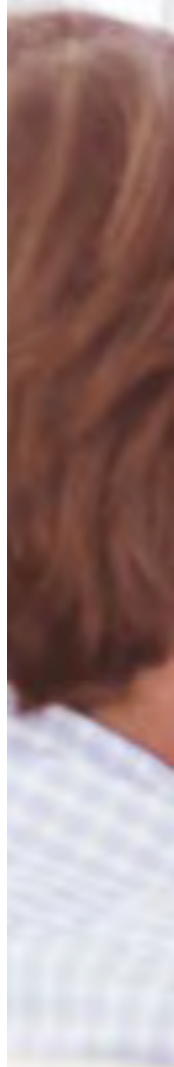
We care passionately about every detail of what we do, from our customer service and design approach, to our precision manufacturing and sustainability credentials.

Project Management

Working closely with our customers and design team – we are an integral part of the project from start to finish.

Compliance

Our products meet the very latest legislation, are CE Marked and responsibly sourced in accordance with BES 6001. We were the first to operate an IMS compliant with the requirements of PAS 99.





Our Heritage, This is Our DNA

At voestalpine Metsec plc, we're proud of both our past and our present. It gives our customers the best of everything.

Anchored in the traditional industry of the Black Country, Metsec has been at the forefront of UK manufacturing for over 85 years.

We are part of the voestalpine Group, the world's largest manufacturer of cold rolled steel sections.

With voestalpine delivering a revenue of over €11 billion in 2016/2017, and employing 49,700 staff across 50 countries and five continents, Metsec has the backing of a global engineering giant to complement our specific understanding of the UK Market.



Our Organisation, Company Structure

- **voestalpine**

A leading European manufacturer with its own steelmaking facilities and headquarters in Austria.

- **voestalpine – Metal Forming Division**

A leading global provider of high-quality metal processing solutions, particularly special tubes and sections, special strip steel and complex components for the automotive industry.

- **voestalpine Metsec plc**

We are the UK's largest specialist cold roll-forming company, providing products for the construction and manufacturing industries.

- **SFS**

Metsec developed and now lead the market when it comes to light gauge, galvanised steel structural framing systems suitable for a wide range of applications in most sectors of construction.

Metsec and BIM

Driven by the government construction strategy, the implementation of Building Information Modelling (BIM) is now becoming a key part of integrating different trades who work on the same project.

The idea is that BIM brings together all of the information about every component of a building, in one place. This makes the information easy to access for many different purposes, e.g. to integrate different parts of a design.

BIM isn't just about 3D modelling, but the inclusion of data, which can be used to illustrate the entire building lifecycle, from cradle to grave. Systems, products and sequences can be shown in relative scale to each other and, in turn, relative to the entire project which can help prevent errors creeping in at the various stages of a project.

With BIM now sitting directly at the centre of all information flow, every member of the project design team can now work collaboratively to ensure a smooth and efficient design and build process.

Metsec is the first cold roll forming company to be certified to BIM Level 2 by the BSI. (PAS 1192-2:2013 – Specification for information management for the capital/delivery phase of construction projects using Building Information Modelling) and the first tier two designer and manufacturer complying with BIM Level 2 for Design and Construction in the UK.

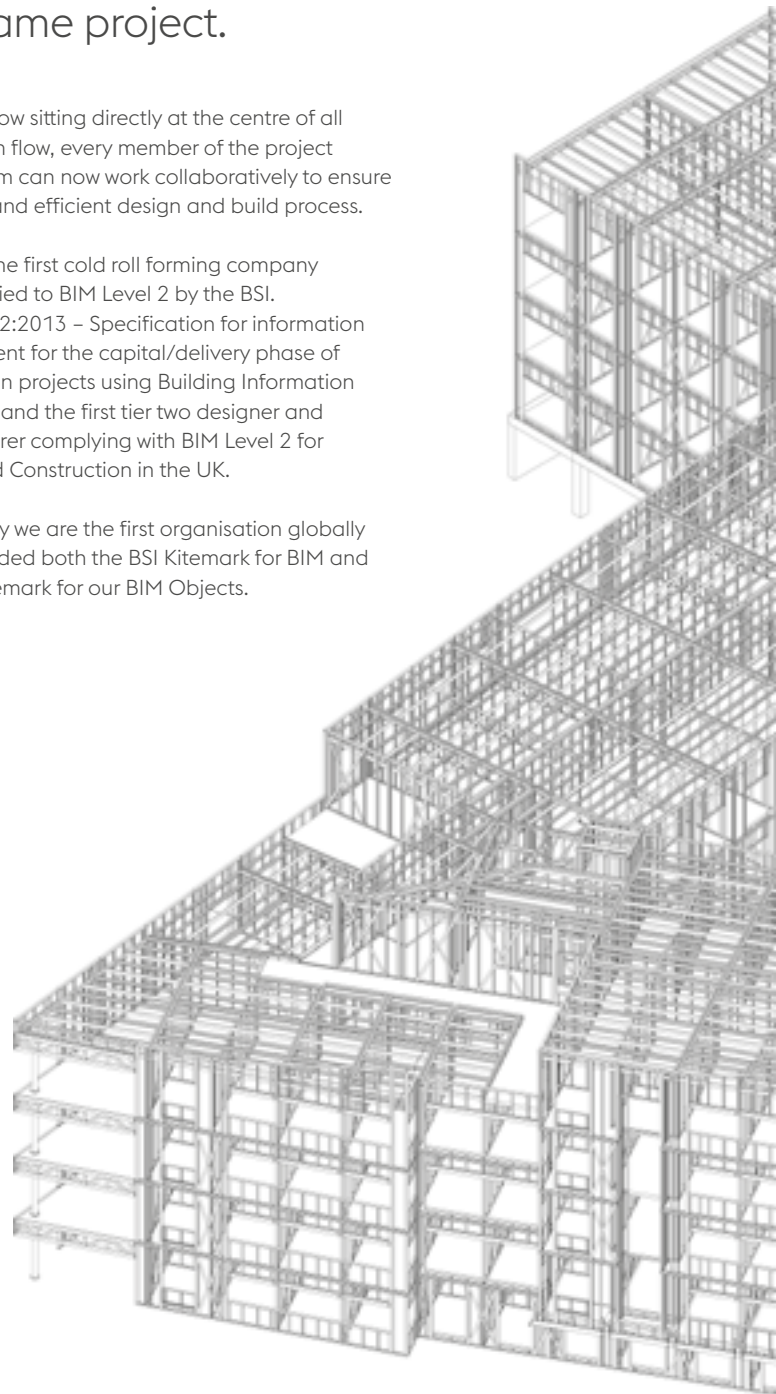
Additionally we are the first organisation globally to be awarded both the BSI Kitemark for BIM and the BSI Kitemark for our BIM Objects.

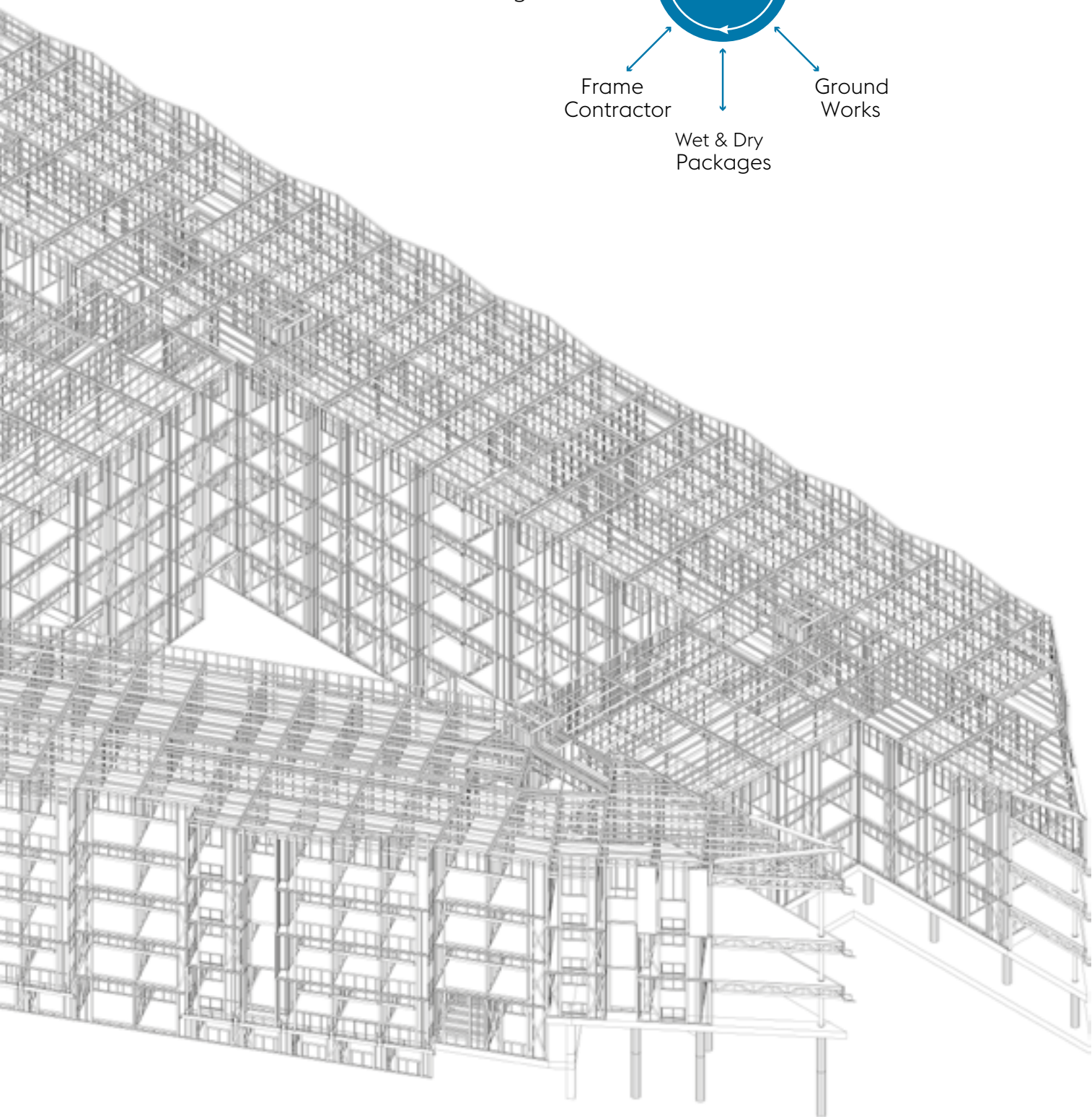
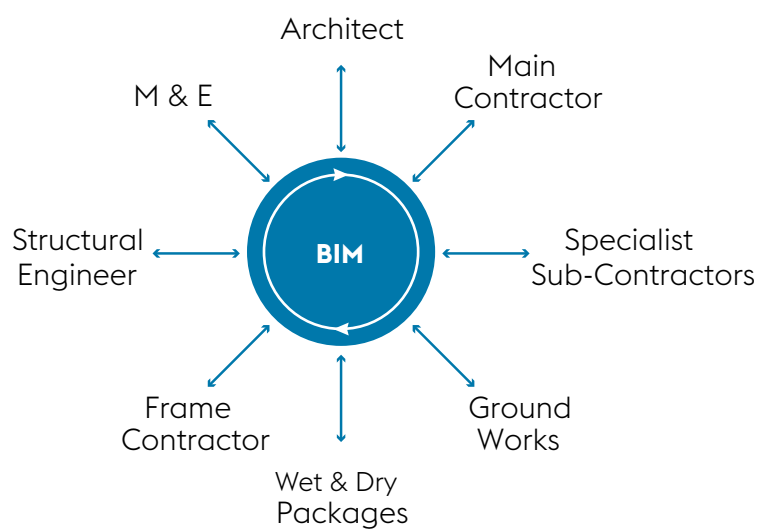


BIM Information Route

voestalpine Metsec plc has been working with 3D models for over 20 years and has harnessed this knowledge to achieve BIM Level 2 compliance. We have a number of design engineers all of which have the latest software to ensure we remain at the forefront of BIM development.

Our longstanding experience of working with BIM allows us to model buildings with our customers, enabling cost-effective designs to be developed, and shared between all involved parties.





All the Hallmarks of Quality, Industry Standards

At voestalpine Metsec plc, we pride ourselves on delivering solutions fully in line with the latest legislation, regulation and industry standards. So whatever you specify, you can be assured of the quality of product you've purchased.

ISO 9001

Our ISO 9001 quality management certification assures our customers that we consistently provide products that meet both our customer and applicable regulatory requirements.

BS OHSAS 18001

BS OHSAS 18001 is the framework for occupational health and safety adopted by voestalpine Metsec plc, which sets out the minimum requirements for occupational health and safety management best practice in the workplace.

PAS 99

PAS 99 is the world's first specification for integrated management systems and provides us with one framework to manage all certified systems.

CE Marking

We were the first in our field to have our products CE marked not only in design, but on the shop floor too. This ensures that all our bespoke products meet the requirements of the applicable EC directives. Similarly, our processes are certified up to EXC4, the highest standard available.



CE





Treading Carefully, Delivering Sustainability

We understand sustainability is a global issue.
To us it is a responsibility, not a choice.

Our company policy is to reduce our environmental and resource impacts everywhere that we can – from electricity and gas to water and waste-to-landfill.

We know that every efficiency counts. We also work hard to increase the fundamental sustainability of our steel systems in practice. Ninety four percent of all global steel can be recycled, while the lightness of our steel systems reduces the load on the substructure. The combined effect is to help reduce the carbon footprint of our projects in comparison to alternative methods.

In recognition of our ongoing efforts, voestalpine Metsec plc has received the following certifications:

BES 6001

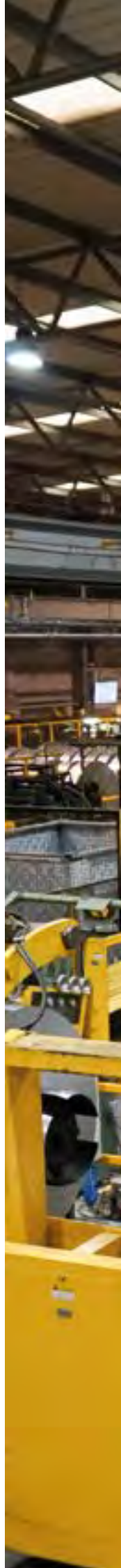
The standard enables construction product manufacturers to ensure and then prove that their products have been made with constituent materials that have been responsibly sourced.

ISO 14001

ISO 14001 sets out the criteria for an environmental management system that can provide assurance to company management and employees as well as external stakeholders that environmental impact is being measured and improved.

BCSA Steel Construction Sustainability Charter

The objective of the Steel Construction Sustainability Charter is to develop steel's sustainability in terms of economic viability, social progress and environmental responsibility.









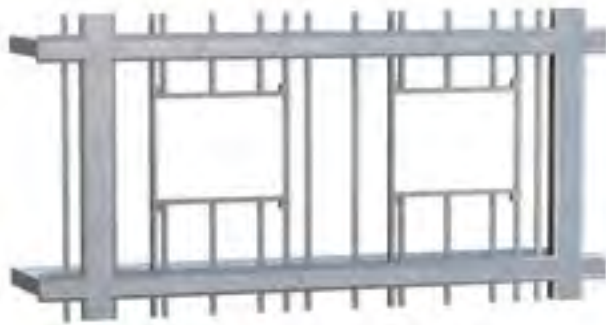
Infill Walling

Introducing Infill Walling...

Our most economical framing method. It is constructed from the floor to soffit of the primary structural frame to 'infill' the external wall zone.

Overview of the Infill Walling System

Metsec SFS infill walling forms a secondary structure which is fixed between the primary super structure at floor and soffit. It is generally positioned at the slab edge allowing insulation and external finishes to be installed continuously outside the main structural frame.



Parapets and Downstands

Parapets and downstands can readily be formed with SFS using Metsec's cantilever posts, which can be incorporated within the Metsec framing. These posts can also be used to break up the span of wide openings and also allow the formation of ribbon windows.

Compound Sections

Where it is necessary to use sections with a higher capacity, single sections can be fixed together to form compound sections. This can be done for jamb, cill and lintel sections.

Zed Bars (z402)

40 x 40 x 40 x 2mm zed bars can be provided in 2mm material and 600mm length. Zed bars are commonly used where there is not sufficient bearing at the head or base of the SFS panel.



Metsec Slotted Head Track

Metsec's patented slotted head track has been developed to allow for the deflection in the primary structural frame without applying any vertical load into the studs. The studs are screw fixed to the slotted head track through pre-formed slots in the track.

Key advantages over alternative systems are:

- » Quicker and easier to install than conventional deflection brackets
- » Simpler and faster to install than traditional masonry infill
- » Fewer components on site – less components to store, lose or work with
- » Fix and forget system – no concerns about missing brackets
- » Visible centre line indent indicates fixing location
- » Vertical slots at 25mm centres allow for flexibility of stud positions



Cantilever Post

Centres as Metsec design.

Metsec Slotted Head Track

Lintel Track

As Metsec design.

Stud Section as Support Bracket

Minimum 150mm long stud section fixed through jamb web with 4 no. Tek screws.

Additional Stud

150mm from jamb, where brick-tie channels required for masonry finish.

Studs

Section size and centres according to Metsec design. Top of stud is positioned 20mm short within track.

Jamb Stud

As Metsec design.

Studs Fixed to Track

With low profile Tek screws, both flanges.

Cill Track

As Metsec design.

Cill Support Bracket

Design may require stud section to extend to base track.

Base Track

Supported by and fixed to primary frame as Metsec design.



Section Names Explained

Metsec section references are designed to be easy to read and understand at a glance. Each section type is identified by a unique reference consisting of three numerical values separated by a letter or a dash.

Studs Sections (lipped sections)

Example stud reference – 090M12-50

- » 090 – Refers to the section depth of 90mm (numbers ending in 0 are always lipped)
- » M – Refers to Metsec SFS
- » 12 – Refers to the gauge (thickness) of the section i.e. 12 is 1.2mm thick
- » 50 – Refers to the width or section flange of 50mm

Track Sections (un-lipped sections)

Example stud reference – 094M16-70S

- » 094 – Refers to the section depth of 94mm (numbers ending in 4 or 6 are always un-lipped)
- » M – Refers to Metsec SFS
- » 16 – Refers to the gauge (thickness) of the section i.e. 16 is 1.6mm thick
- » 70 – Refers to the width or section flange of 70mm
- » S – If present at the end of the section reference it means the section is slotted.

Colour Coding Explained

Metsec prints stud or joist sections and track sections with references that are designed to be easy to read and understand at a glance. Metsec prints the Metsec name down both flanges for the thinner thicknesses of section and these are colour coded as follows:

- » BLACK = 1.2mm or 1.3mm thickness
- » RED = 1.4mm thickness
- » GREEN = 1.6mm thickness
- » ORANGE = 1.8mm thickness
- » BLUE = 2.0mm thickness

On our drawings any sections greater than 2.0mm or that are made up of multiple sections are shown in yellow so they are highlighted on the drawings.

Slotted head track or sections thicker than 2.0mm are not colour coded but still have the “M” reference on the web.

All stud or joist sections and track sections have a string of numbers and letters printed down the back web along with our CE mark. One of the string of characters will start with a M and have two numbers after it e.g. M12 or M20. This denotes the thickness of the section i.e. M12 = 1.2mm thick section.

METSEC

M12-AD1 D80563 16 ANW

METSEC

M12-AD1 D80563 16 ANW

METSEC

M12-AD1 D80563 16 ANW

CELL

Industry Standards and Solutions

Building Regulations Part A – Structure:

The Metsec SFS infill system is designed on an individual project basis to support the external cladding, insulation and internal plasterboard against the external wind load. The SFS sections can be designed to wind loads provided by the project engineer/consultant or designed to wind loads calculated by our own engineers.

Metsec calculate wind loads to BS EN 1991-1-4 plus the UK national annex incorporating the latest amendments and the use of PD6688-1-4, background information to EN 1991-1-4 and additional guidance.

The structural design of the SFS sections utilises BS EN 1993-1-1, BS EN1993-1-3 and BS EN 1993-1-5 plus UK national annexes and additional codes where appropriate.

The design of the SFS infill walling considers, but is not limited to:

- » Structural capacity of the SFS sections
- » Deflection of the SFS sections under load
- » Connection of the SFS sections back to the primary structure
- » Effect of the cladding and fixing method to the SFS sections

Typical deflection limits for different claddings are given below:

- » H/500 for brickwork (ignoring the stiffening effect of the brickwork)
- » H/500 for thin joint masonry or stone
- » H/360 for brickwork (including the combined stiffening effect of the brickwork)
- » H/360 for Insulated Render Systems
- » H/360 for Heavy Rainscreen (terracotta tiles, brick or stone slip)

- » H/250 for Lightweight Rainscreen
- » H/250 for Timber Cladding
- » H/250 for Composite Panels

The load tables within this section are based on:

- » Unfactored horizontal pressure
- » Maximum external cladding weight of 0.50kN/m²
- » Blocking and strapping at mid height for studs higher than 3.00m
- » Third span blocking and strapping required for studs higher than 6.00m
- » Studs at 600mm centres
- » Studs fixed into 1.2mm base track
- » 90mm, 120mm, 150mm, 180mm studs fixed to Metsec slotted head track 1.6mm thick
- » 210mm, 240mm, 270mm, 300mm, 350mm studs fixed at head using standard 2.0mm head track with blocking and strapping detail

For wind loads outside the tables or conditions different from above please contact Metsec for advice.



Load Tables

Maximum Height – Deflection Limited to Height/250

How to Use the Load Table:

The load tables in this section allow for simple sizing of the general studs for a given wind load and known height. Where openings are required within the wall, please contact Metsec for the design of the supporting members.

Maximum span tables are provided for all standard SFS sections for wind loads between 0.5kN/m² and 2.0kN/m². Three tables are provided for three deflection criterion, Height/250, Height/360 and Height/500.

Uniform Horizontal Pressure (kN/m ²)																
Section Reference	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
090M12-50	4.16	3.92	3.72	3.56	3.42	3.30	3.20	3.11	3.03	2.61	2.56	2.51	2.47	2.40	2.28	2.16
090M12-62	4.41	4.15	3.95	3.77	3.63	3.50	3.39	3.30	3.21	3.13	3.06	2.93	2.83	2.67	2.53	2.40
090M12-75	4.65	4.37	4.15	3.97	3.82	3.69	3.57	3.47	3.38	3.29	3.22	3.15	3.09	2.94	2.78	2.64
090M14-75	4.88	4.59	4.36	4.17	4.01	3.87	3.75	3.64	3.55	3.46	3.38	3.31	3.24	3.18	3.12	3.03
090M16-75	5.09	4.79	4.55	4.35	4.18	4.04	3.91	3.80	3.70	3.61	3.53	3.45	3.38	3.32	3.26	3.20
090M18-75	5.28	4.97	4.72	4.51	4.34	4.19	4.06	3.94	3.84	3.74	3.66	3.58	3.51	3.44	3.38	3.32
090M20-75	5.45	5.13	4.87	4.66	4.48	4.33	4.19	4.07	3.96	3.87	3.78	3.70	3.63	3.56	3.49	3.43
120M12-50	4.86	4.61	4.40	4.23	4.09	3.96	3.84	3.74	3.65	3.56	3.45	3.23	3.04	2.62	2.58	2.54
120M12-62	5.48	5.16	4.90	4.68	4.50	4.35	4.21	4.09	3.98	3.89	3.80	3.59	3.38	3.19	3.03	2.87
120M12-75	5.75	5.41	5.14	4.92	4.73	4.56	4.42	4.30	4.18	4.08	3.99	3.90	3.72	3.51	3.33	3.16
120M14-75	6.04	5.69	5.40	5.17	4.97	4.80	4.65	4.51	4.39	4.29	4.19	4.10	4.02	3.85	3.65	3.47
120M16-75	6.31	5.93	5.64	5.39	5.18	5.00	4.85	4.71	4.58	4.47	4.37	4.28	4.19	4.11	3.97	3.77
120M18-75	6.54	6.16	5.85	5.59	5.38	5.19	5.03	4.89	4.76	4.64	4.54	4.44	4.35	4.27	4.19	4.07
120M20-75	6.76	6.37	6.05	5.78	5.56	5.37	5.20	5.05	4.92	4.80	4.69	4.59	4.50	4.41	4.33	4.26
150M12-50	6.14	4.92	4.71	4.53	4.38	4.24	4.12	4.02	3.92	3.83	3.75	3.68	3.54	3.35	3.17	3.01
150M12-62	6.49	6.11	5.43	5.22	5.03	4.87	4.72	4.59	4.47	4.36	4.26	4.17	3.94	3.72	3.52	3.35
150M12-75	6.80	6.40	6.08	5.81	5.59	5.39	5.22	5.06	4.93	4.78	4.66	4.55	4.33	4.09	3.68	3.69
150M14-75	7.12	6.70	6.36	6.08	5.85	5.65	5.47	5.31	5.17	5.05	4.93	4.83	4.60	4.34	4.12	3.91
150M16-75	7.43	6.99	6.64	6.35	6.10	5.89	5.71	5.54	5.40	5.27	5.15	5.04	4.86	4.59	4.35	4.13
150M18-75	7.72	7.27	6.90	6.60	6.35	6.13	5.94	5.77	5.61	5.48	5.35	5.24	5.13	4.84	4.59	4.36
150M20-75	7.99	7.52	7.15	6.83	6.57	6.34	6.15	5.97	5.81	5.67	5.54	5.42	5.31	5.09	4.82	4.58
180M12-50	6.52	6.18	4.98	4.80	4.64	4.50	4.37	4.26	4.16	4.07	3.99	3.91	3.84	3.68	3.49	3.31
180M12-62	7.47	7.03	6.68	6.39	6.14	5.16	5.01	4.88	4.76	4.65	4.54	4.45	4.33	4.09	3.87	3.68
180M12-75	7.81	7.35	6.98	6.68	6.42	6.20	6.01	5.39	5.25	5.11	4.99	4.88	4.76	4.50	4.26	4.05
180M14-75	8.18	7.69	7.31	6.99	6.72	6.49	6.28	6.10	5.57	5.44	5.32	5.20	4.91	4.64	4.40	4.18
180M16-75	8.53	8.03	7.63	7.30	7.01	6.77	6.56	6.37	6.20	6.05	5.62	5.38	5.07	4.79	4.53	4.31
180M18-75	8.86	8.34	7.92	7.58	7.28	7.03	6.81	6.62	6.44	6.29	5.88	5.56	5.23	4.94	4.68	4.45
180M20-75	9.16	8.62	8.19	7.83	7.53	7.27	7.04	6.84	6.66	6.50	6.11	5.73	5.39	5.09	4.82	4.58

Uniform Horizontal Pressure (kN/m ²)																
Section Reference	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
210M12-50	6.86	6.50	6.21	5.04	4.87	4.73	4.60	4.49	4.38	4.29	4.20	4.12	4.05	3.98	3.80	3.61
210M12-62	7.87	7.44	7.09	6.79	6.53	6.30	6.10	5.14	5.02	4.90	4.80	4.70	4.61	4.46	4.22	4.01
210M13-75	8.93	8.42	8.00	7.65	7.34	7.07	6.83	6.62	6.39	5.55	5.42	5.19	4.89	4.62	4.37	4.15
210M16-75	9.61	9.04	8.59	8.22	7.90	7.63	7.39	7.17	6.61	6.14	5.73	5.37	5.06	4.78	4.52	4.30
210M18-75	9.98	9.39	8.92	8.53	8.20	7.92	7.67	7.40	6.83	6.34	5.92	5.55	5.22	4.93	4.67	4.44
210M20-75	10.00	9.71	9.23	8.82	8.48	8.19	7.93	7.64	7.05	6.55	5.73	5.73	5.39	5.09	4.82	4.58
240M12-50	7.17	6.80	6.50	6.25	6.03	4.94	4.81	4.69	4.58	4.48	4.39	4.31	4.24	4.01	3.80	3.61
240M13-62	8.47	8.02	7.66	7.35	7.08	6.85	6.64	6.45	6.18	5.29	5.18	5.02	4.72	4.46	4.22	4.02
240M13-75	9.45	8.92	8.49	8.12	7.81	7.53	7.28	6.93	6.39	5.88	5.54	5.19	4.89	4.62	4.37	4.15
240M16-75	10.00	9.55	9.12	8.76	8.45	8.17	7.82	7.17	6.61	6.14	5.73	5.37	5.06	4.78	4.52	4.30
240M18-75	10.00	9.94	9.51	9.14	8.82	8.54	8.08	7.40	6.83	6.34	5.92	5.55	5.22	4.94	4.67	4.44
240M20-75	10.00	10.00	9.84	9.47	9.14	8.85	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
270M13-50	7.64	7.25	6.94	6.68	6.45	6.25	6.08	5.00	4.89	4.78	4.69	4.51	4.25	4.01	3.80	3.61
270M13-62	8.80	8.35	7.97	7.66	7.38	6.85	6.64	6.45	6.18	5.50	5.35	5.02	4.72	4.46	4.22	4.01
270M16-75	10.00	10.00	9.59	9.21	8.88	8.60	7.82	7.17	6.61	6.14	5.73	5.37	5.06	4.78	4.52	4.30
270M18-75	10.00	10.00	9.98	9.60	9.27	8.88	8.08	7.40	6.83	6.34	5.92	5.55	5.22	4.93	4.67	4.44
270M20-75	10.00	10.00	10.00	9.94	9.64	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
300M13-50	7.64	7.25	7.19	6.92	6.69	6.48	6.31	6.02	5.06	4.95	4.82	4.51	4.25	4.01	3.80	3.61
300M16-62	9.73	9.24	8.85	8.51	8.23	7.98	7.30	6.69	6.18	5.73	5.35	5.02	4.72	4.46	4.22	4.01
300M18-75	10.00	10.00	10.00	9.94	9.60	8.88	8.08	7.40	6.83	6.34	5.92	5.55	5.22	4.93	4.67	4.44
300M20-75	10.00	10.00	10.00	10.00	9.94	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
300M25-89	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
300M29-89	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
350M18-54	9.63	9.16	8.78	8.46	8.19	7.95	7.74	7.40	6.83	6.34	5.92	5.55	5.22	4.93	4.67	4.44
350M20-68	10.00	10.00	10.00	10.00	9.84	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
350M23-84	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
350M25-84	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
350M29-84	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58

Maximum heights on above infill walling tables based on:

1. Unfactored horizontal pressure
2. Studs at 600mm centres
3. Deflection limited to height/250
4. Blocking and strapping at mid height for studs higher than 3.00m. Third span blocking and strapping required for studs higher than 6.00m
5. Maximum external cladding weights of 0.50kN/m²
6. Studs fixed into 1.2mm base track
7. 90mm, 120mm, 150mm, 180mm studs fixed to Metsec slotted head track of 1.6mm thick
8. 210mm, 240mm, 270mm, 300mm, 350mm studs fixed at head using standard 2.0mm head track with blocking and strapping detail

Load Tables

Maximum Height – Deflection Limited to Height/360

How to Use the Load Table:

The load tables in this section allow for simple sizing of the general studs for a given wind load and known height. Where openings are required within the wall, please contact Metsec for the design of the supporting members.

Maximum span tables are provided for all standard SFS sections for wind loads between 0.5kN/m² and 2.0kN/m². Three tables are provided for three deflection criterion, Height/250, Height/360 and Height/500.

Uniform Horizontal Pressure (kN/m ²)																
Section Reference	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
090M12-50	3.69	3.47	3.30	3.16	3.03	2.89	2.81	2.74	2.67	2.61	2.55	2.50	2.45	2.40	2.28	2.16
090M12-62	3.91	3.68	3.49	3.34	3.21	3.10	3.00	2.92	2.84	2.77	2.71	2.66	2.60	2.55	2.50	2.40
090M12-75	4.11	3.87	3.68	3.52	3.39	3.27	3.16	3.07	2.99	2.92	2.85	2.79	2.73	2.68	2.63	2.59
090M14-75	4.32	4.07	3.86	3.70	3.55	3.43	3.32	3.23	3.14	3.07	3.00	2.93	2.87	2.82	2.77	2.72
090M16-75	4.50	4.24	4.03	3.85	3.70	3.58	3.47	3.37	3.28	3.20	3.12	3.06	2.99	2.94	2.89	2.84
090M18-75	4.67	4.40	4.18	4.00	3.84	3.71	3.59	3.49	3.40	3.31	3.24	3.17	3.11	3.05	2.99	2.94
090M20-75	4.83	4.54	4.32	4.13	3.97	3.83	3.71	3.61	3.51	3.42	3.35	3.28	3.21	3.15	3.09	3.04
120M12-50	4.59	4.32	4.10	3.92	3.77	3.63	3.53	3.42	3.33	3.25	3.17	3.11	3.04	2.62	2.58	2.54
120M12-62	4.85	4.57	4.34	4.15	3.99	3.85	3.73	3.62	3.52	3.44	3.36	3.29	3.22	3.15	3.02	2.87
120M12-75	5.09	4.79	4.55	4.35	4.18	4.04	3.91	3.80	3.70	3.61	3.52	3.45	3.38	3.32	3.26	3.16
120M14-75	5.34	5.03	4.78	4.57	4.39	4.25	4.11	4.00	3.89	3.79	3.70	3.62	3.55	3.48	3.42	3.36
120M16-75	5.58	5.25	4.99	4.77	4.59	4.43	4.29	4.16	4.05	3.95	3.86	3.78	3.71	3.64	3.57	3.51
120M18-75	5.79	5.45	5.18	4.95	4.76	4.60	4.45	4.33	4.21	4.11	4.02	3.93	3.85	3.78	3.71	3.65
120M20-75	5.99	5.64	5.35	5.12	4.92	4.75	4.60	4.47	4.35	4.24	4.15	4.06	3.98	3.91	3.84	3.77
150M12-50	5.18	4.92	4.70	4.53	4.38	4.24	4.12	4.02	3.92	3.83	3.75	3.68	3.54	3.35	3.17	3.01
150M12-62	5.75	5.41	5.14	4.91	4.73	4.56	4.42	4.29	4.18	4.08	3.98	3.90	3.82	3.72	3.52	3.35
150M12-75	6.02	5.67	5.38	5.15	4.95	4.78	4.63	4.50	4.38	4.27	4.17	4.09	4.00	3.93	3.86	3.68
150M14-75	6.30	5.93	5.63	5.39	5.18	5.00	4.84	4.70	4.58	4.47	4.37	4.27	4.19	4.11	4.04	3.91
150M16-75	6.58	6.19	5.88	5.62	5.40	5.22	5.05	4.91	4.78	4.66	4.56	4.46	4.38	4.29	4.21	4.13
150M18-75	6.84	6.43	6.11	5.84	5.62	5.43	5.26	5.11	4.97	4.85	4.74	4.64	4.54	4.46	4.38	4.30
150M20-75	7.08	6.66	6.33	6.05	5.82	5.62	5.44	5.29	5.15	5.02	4.91	4.80	4.71	4.62	4.53	4.46
180M12-50	5.48	5.20	4.98	4.80	4.64	4.50	4.37	4.26	4.16	4.07	3.99	3.91	3.82	3.68	3.49	3.31
180M12-62	6.34	6.01	5.75	5.52	5.33	5.16	5.01	4.88	4.76	4.65	4.54	4.45	4.33	4.09	3.87	3.68
180M12-75	6.92	6.51	6.18	5.91	5.69	5.49	5.32	5.17	5.03	4.91	4.79	4.69	4.60	4.50	4.26	4.05
180M14-75	7.24	6.81	6.47	6.19	5.95	5.74	5.56	5.41	5.26	5.13	5.02	4.91	4.81	4.64	4.40	4.18
180M16-75	7.56	7.11	6.75	6.46	6.21	6.00	5.81	5.64	5.49	5.36	5.24	5.13	5.02	4.79	4.53	4.31
180M18-75	7.85	7.38	7.01	6.71	6.45	6.23	6.03	5.86	5.70	5.57	5.44	5.32	5.22	4.94	4.68	4.45
180M20-75	8.11	7.63	7.26	6.94	6.67	6.44	6.24	6.06	5.90	5.75	5.63	5.50	5.39	5.09	4.82	4.58

Uniform Horizontal Pressure (kN/m ²)																
Section Reference	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
210M12-50	5.75	5.46	5.23	5.04	4.87	4.73	4.60	4.49	4.38	4.29	4.20	4.12	4.05	3.98	3.80	3.61
210M12-62	6.65	6.31	6.04	5.81	5.61	5.43	5.28	5.14	5.02	4.90	4.80	4.70	4.61	4.46	4.21	4.01
210M13-75	7.59	7.20	6.88	6.61	6.38	6.17	5.99	5.83	5.68	5.55	5.42	5.31	5.19	4.91	4.65	4.41
210M16-75	8.13	7.73	7.39	7.11	6.88	6.67	6.48	6.32	6.17	6.03	5.90	5.61	5.28	4.98	4.72	4.48
210M18-75	8.45	8.03	7.68	7.40	7.15	6.94	6.75	6.58	6.43	6.27	6.05	5.67	5.34	5.04	4.78	4.54
210M20-75	8.75	8.31	7.95	7.66	7.40	7.18	6.99	6.81	6.65	6.48	6.11	5.73	5.39	5.09	4.82	4.58
240M12-50	5.99	5.70	5.46	5.26	5.09	4.94	4.81	4.69	4.58	4.48	4.39	4.31	4.24	4.01	3.80	3.61
240M13-62	7.11	6.76	6.47	6.23	6.02	5.84	5.68	5.54	5.41	5.29	5.18	5.02	4.72	4.46	4.22	4.01
240M13-75	8.00	7.60	7.26	6.98	6.74	6.53	6.34	6.17	6.02	5.88	5.75	5.52	5.19	4.91	4.65	4.41
240M16-75	8.46	8.04	7.70	7.41	7.17	6.96	6.76	6.59	6.44	6.30	5.98	5.61	5.28	4.98	4.72	4.48
240M18-75	8.78	8.35	7.99	7.70	7.45	7.23	7.03	6.86	6.70	6.48	6.05	5.67	5.34	5.04	4.78	4.54
240M20-75	10.00	9.55	9.07	8.67	8.34	8.05	7.80	7.58	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
270M13-50	7.64	7.25	6.94	6.68	6.45	6.25	6.08	5.00	4.89	4.78	4.69	4.51	4.25	4.01	3.80	3.61
270M13-62	8.80	8.33	7.97	7.66	7.38	7.14	6.93	6.69	6.18	5.50	5.35	5.02	4.72	4.46	4.22	4.01
270M16-75	10.00	9.79	9.30	8.89	8.55	8.25	8.00	7.48	6.90	6.41	5.98	5.61	5.28	4.98	4.72	4.48
270M18-75	10.00	10.00	9.66	9.24	8.88	8.57	8.25	7.57	6.98	6.48	6.05	5.67	5.34	5.04	4.78	4.54
270M20-75	10.00	10.00	9.99	9.55	9.19	8.87	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
300M13-50	7.90	7.51	7.19	6.92	6.69	6.48	6.31	6.02	5.06	4.95	4.82	4.51	4.25	4.01	3.80	3.61
300M16-62	9.73	9.24	8.85	8.51	8.23	7.98	7.30	6.69	6.18	5.73	5.35	5.02	4.72	4.46	4.22	4.01
300M18-75	10.00	10.00	10.00	9.94	9.60	8.83	8.03	7.36	6.79	6.31	5.89	5.52	5.19	4.91	4.65	4.41
300M20-75	10.00	10.00	10.00	10.00	9.94	8.97	8.16	7.48	6.90	6.41	5.98	5.61	5.28	4.98	4.72	4.48
300M25-89	10.00	10.00	10.00	10.00	10.00	9.08	8.25	7.57	6.98	6.48	6.05	5.67	5.34	5.04	4.78	4.54
300M29-89	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
350M18-54	9.63	9.16	8.78	8.46	8.03	7.23	6.57	6.02	5.56	5.16	4.82	4.51	4.25	4.01	3.80	3.61
350M20-68	10.00	10.00	10.00	10.00	8.92	8.03	7.30	6.69	6.18	5.73	5.35	5.02	4.72	4.46	4.22	4.01
350M23-84	10.00	10.00	10.00	10.00	9.97	8.97	8.16	7.48	6.90	6.41	5.98	5.61	5.28	4.98	4.72	4.48
350M25-84	10.00	10.00	10.00	10.00	10.00	9.08	8.25	7.57	6.98	6.48	6.05	5.67	5.34	5.04	4.78	4.54
350M29-84	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58

Maximum heights on above infill walling tables based on:

1. Unfactored horizontal pressure
2. Studs at 600mm centres
3. Deflection limited to height/360
4. Blocking and strapping at mid height for studs higher than 3.00m. Third span blocking and strapping required for studs higher than 6.00m
5. Maximum external cladding weights of 0.50kN/m²
6. Studs fixed into 1.2mm base track
7. 90mm, 120mm, 150mm, 180mm studs fixed to Metsec slotted head track of 1.6mm thick
8. 210mm, 240mm, 270mm, 300mm, 350mm studs fixed at head using standard 2.0mm head track with blocking and strapping detail

Load Tables

Maximum Height – Deflection Limited to Height/500

How to Use the Load Table:

The load tables in this section allow for simple sizing of the general studs for a given wind load and known height. Where openings are required within the wall, please contact Metsec for the design of the supporting members.

Maximum span tables are provided for all standard SFS sections for wind loads between 0.5kN/m² and 2.0kN/m². Three tables are provided for three deflection criterion, Height/250, Height/360 and Height/500.

Uniform Horizontal Pressure (kN/m ²)																
Section Reference	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
090M12-50	3.30	3.11	2.95	2.82	2.71	2.62	2.54	2.47	2.40	2.34	2.29	2.24	2.19	2.15	2.11	2.08
090M12-62	3.50	3.30	3.13	2.99	2.88	2.78	2.69	2.62	2.55	2.48	2.43	2.38	2.33	2.28	2.24	2.20
090M12-75	3.69	3.47	3.30	3.15	3.03	2.92	2.83	2.75	2.68	2.61	2.55	2.50	2.45	2.40	2.36	2.32
090M14-75	3.87	3.64	3.46	3.31	3.18	3.07	2.98	2.89	2.81	2.74	2.68	2.63	2.57	2.52	2.48	2.44
090M16-75	4.04	3.80	3.61	3.45	3.32	3.22	3.10	3.01	2.93	2.86	2.80	2.74	2.68	2.63	2.59	2.54
090M18-75	4.19	3.94	3.74	3.58	3.44	3.32	3.22	3.13	3.04	2.97	2.90	2.84	2.78	2.73	2.68	2.64
090M20-75	4.33	4.07	3.87	3.70	3.56	3.43	3.33	3.23	3.15	3.07	3.00	2.94	2.88	2.82	2.77	2.72
120M12-50	4.11	3.87	3.67	3.51	3.38	3.26	3.16	3.07	2.88	2.81	2.76	2.71	2.66	2.62	2.58	2.54
120M12-62	4.35	4.09	3.89	3.72	3.57	3.45	3.34	3.25	3.17	3.08	3.01	2.95	2.89	2.84	2.78	2.74
120M12-75	4.56	4.30	4.08	3.90	3.75	3.62	3.51	3.41	3.32	3.24	3.16	3.10	3.03	2.98	2.92	2.87
120M14-75	4.80	4.51	4.29	4.10	3.94	3.81	3.69	3.58	3.49	3.40	3.32	3.25	3.19	3.13	3.07	3.02
120M16-75	5.00	4.71	4.47	4.28	4.11	3.98	3.85	3.74	3.64	3.55	3.47	3.39	3.33	3.26	3.20	3.15
120M18-75	5.19	4.89	4.65	4.44	4.27	4.12	3.99	3.88	3.78	3.68	3.60	3.52	3.45	3.39	3.33	3.27
120M20-75	5.37	5.05	4.80	4.59	4.42	4.26	4.13	4.01	3.90	3.81	3.72	3.64	3.57	3.50	3.44	3.38
150M12-50	4.89	4.60	4.37	4.18	4.01	3.88	3.75	3.65	3.55	3.46	3.39	3.31	3.25	3.19	3.13	3.01
150M12-62	5.15	4.85	4.61	4.40	4.23	4.09	3.96	3.85	3.75	3.65	3.58	3.49	3.42	3.36	3.30	3.24
150M12-75	5.40	5.08	4.83	4.61	4.44	4.28	4.15	4.03	3.92	3.83	3.74	3.66	3.59	3.52	3.46	3.40
150M14-75	5.65	5.31	5.05	4.83	4.64	4.48	4.34	4.22	4.10	4.00	3.91	3.83	3.75	3.68	3.62	3.56
150M16-75	5.89	5.54	5.27	5.04	4.84	4.68	4.53	4.40	4.28	4.18	4.08	4.00	3.92	3.84	3.77	3.71
150M18-75	6.13	5.77	5.48	5.24	5.04	4.86	4.71	4.57	4.45	4.35	4.25	4.16	4.07	4.00	3.92	3.86
150M20-75	6.34	5.97	5.67	5.42	5.21	5.03	4.88	4.74	4.61	4.50	4.40	4.30	4.22	4.14	4.07	3.99
180M12-50	5.48	5.20	4.98	4.80	4.63	4.47	4.33	4.21	4.10	4.00	3.91	3.82	3.75	3.68	3.49	3.31
180M12-62	5.93	5.58	5.30	5.07	4.87	4.71	4.56	4.43	4.31	4.21	4.11	4.02	3.94	3.87	3.80	3.68
180M12-75	6.20	5.83	5.54	5.30	5.10	4.92	4.77	4.63	4.51	4.40	4.30	4.21	4.12	4.04	3.97	3.91
180M14-75	6.49	6.10	5.80	5.55	5.33	5.15	4.99	4.84	4.72	4.60	4.50	4.40	4.31	4.23	4.16	4.09
180M16-75	6.77	6.37	6.05	5.79	5.57	5.38	5.21	5.06	4.92	4.80	4.69	4.59	4.51	4.50	4.34	4.26
180M18-75	7.03	6.62	6.29	6.01	5.78	5.58	5.41	5.25	5.11	4.99	4.87	4.77	4.67	4.59	4.50	4.43
180M20-75	7.27	6.84	6.50	6.22	5.98	5.77	5.59	5.43	5.29	5.16	5.04	4.93	4.83	4.74	4.66	4.58

Uniform Horizontal Pressure (kN/m ²)																
Section Reference	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
210M12-50	6.37	5.46	5.23	5.04	4.87	4.73	4.60	4.49	4.38	4.29	4.20	4.12	4.05	3.98	3.80	3.61
210M12-62	6.69	6.29	5.98	5.72	5.50	5.31	5.14	4.99	4.86	4.74	4.64	4.54	4.45	4.36	4.22	4.01
210M13-75	7.13	6.71	6.38	6.10	5.86	5.66	5.48	5.33	5.19	5.06	4.94	4.84	4.74	4.65	4.37	4.15
210M16-75	7.63	7.18	6.82	6.52	6.27	6.05	5.86	5.70	5.55	5.41	5.29	5.17	5.06	4.78	4.52	4.30
210M18-75	7.92	7.45	7.08	6.77	6.51	6.29	6.09	5.91	5.76	5.62	5.49	5.37	5.22	4.93	4.67	4.44
210M20-75	8.19	7.71	7.32	7.00	6.73	6.50	6.30	6.12	5.96	5.81	5.68	5.56	5.39	5.09	4.82	4.58
240M12-50	7.09	6.68	6.34	6.07	5.09	4.94	4.81	4.69	4.58	4.48	4.39	4.31	4.24	4.01	3.80	3.61
240M13-62	7.63	7.18	6.82	6.52	6.27	6.05	5.68	5.54	5.41	5.29	5.18	5.02	4.72	4.46	4.22	4.01
240M13-75	7.94	7.48	7.10	6.79	6.53	6.31	6.11	5.93	5.78	5.64	5.51	5.19	4.89	4.62	4.37	4.15
240M16-75	8.46	7.96	7.56	7.24	6.96	6.72	6.51	6.32	6.15	6.00	5.73	5.37	5.06	4.78	4.52	4.30
240M18-75	8.79	8.27	7.51	7.22	7.23	6.98	6.76	6.56	6.39	6.23	5.92	5.55	5.22	4.93	4.67	4.44
240M20-75	9.09	8.56	8.13	7.77	7.47	7.21	6.99	6.79	6.61	6.45	6.11	5.73	5.39	5.09	4.82	4.58
270M13-50	7.64	7.25	6.94	6.68	6.45	6.25	6.08	5.00	4.89	4.78	4.69	4.51	4.25	4.01	3.80	3.61
270M13-62	8.38	7.88	7.49	7.16	6.89	6.65	6.44	6.26	6.09	5.50	5.35	5.02	4.72	4.46	4.22	4.01
270M16-75	9.32	8.77	8.33	7.97	7.66	7.40	7.17	6.96	6.61	6.14	5.73	5.37	5.06	4.78	4.52	4.30
270M18-75	9.68	9.11	8.65	8.28	7.96	7.68	7.44	7.23	6.83	6.34	5.91	5.55	5.22	4.93	4.67	4.44
270M20-75	10.00	9.42	8.95	8.56	8.23	7.95	7.70	7.48	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
300M13-50	7.90	7.51	7.19	6.92	6.69	6.48	6.31	6.02	5.06	4.95	4.82	4.51	4.25	4.01	3.80	3.61
300M16-62	9.73	9.18	8.72	8.34	8.02	7.74	7.30	6.69	6.18	5.73	5.35	5.02	4.72	4.46	4.22	4.01
300M18-75	10.00	9.90	9.41	9.00	8.65	8.35	8.08	7.40	6.83	6.34	5.92	5.55	5.22	4.93	4.67	4.44
300M20-75	10.00	10.00	9.73	9.31	8.95	8.64	8.33	7.64	7.05	6.55	6.11	5.55	5.39	5.09	4.82	4.58
300M25-89	10.00	10.00	10.00	10.00	9.99	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
300M29-89	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
350M18-54	9.63	9.16	8.78	8.46	8.19	7.95	7.74	7.40	6.83	6.34	5.92	5.55	5.22	4.93	4.67	4.44
350M20-68	10.00	10.00	10.00	10.00	9.84	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
350M23-84	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
350M25-84	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58
350M29-84	10.00	10.00	10.00	10.00	10.00	9.17	8.33	7.64	7.05	6.55	6.11	5.73	5.39	5.09	4.82	4.58

Maximum heights on above infill walling tables based on:

1. Unfactored horizontal pressure
2. Studs at 600mm centres
3. Deflection limited to height/500
4. Blocking and strapping at mid height for studs higher than 3.00m. Third span blocking and strapping required for studs higher than 6.00m
5. Maximum external cladding weights of 0.50kN/m²
6. Studs fixed into 1.2mm base track
7. 90mm, 120mm, 150mm, 180mm studs fixed to Metsec slotted head track of 1.6mm thick
8. 210mm, 240mm, 270mm, 300mm, 350mm studs fixed at head using standard 2.0mm head track with blocking and strapping detail

Building Regulations Part B – Fire:

The requirements for fire protection will normally be found in the relevant annexe of the Building Regulations, Part B, and often specific fire strategy reports are generated.

The fire ratings published in this document are tested and/or assessed for use with Metsec SFS sections and cannot be used with other systems.

All performance claims by manufacturers for fire resistance must be substantiated by test or assessment reports by UKAS accredited laboratories. Installations must be in strict accordance with the report data for types of materials used, components and assembly details. Unwarranted site modifications can jeopardize performance; in particular services and these should be well coordinated and often involve fire stopping.

All fire test data in this infill walling section is to BS EN 1364-1: 1999 and the fire performance shown equally applies to BS 476 Part 22: 1987. All test data is based on unique UKAS accredited tests and UKAS accredited scope of testing. The tests are carried out in UKAS accredited furnaces measuring 3m square.

The results of our fire tests are the lower of insulation and or integrity failure rounded down to the nearest 30 minutes i.e. measured as 30, 60, 90 or 120 minutes.

For further information on the individual tests or to see where the test or assessment was carried out please contact Metsec.

How to Use the Fire Performance Table:

Decide the fire performance required from the inside of the building based on the Building Regulations Part B. If the walling is subject to boundary wall conditions or other situations where fire resistance is required from the outside then note this also.

Due to the large amount of data the tables have been split into fire resistance periods from the inside, 60 minutes, 90 minutes and 120 minutes to make sorting through the data easier. Within these tables the data has been listed in order of wall type and then the type of plasterboard (e.g. Fire type boards or Sound type boards).

Example:

The external wall is a boundary wall condition and requires 90 minutes fire rating from both sides.

The solution can be any of the boards given in the 90 minute table for the non-boundary wall conditions however to meet the boundary wall condition of 90 minutes from the outside only two options are available:

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Sheathing Board	Duty Rating	Fire Performance from Outside (Boundary Wall Condition)
Fire Performance from Inside 90 MINUTES						
E1 & E1i	2x12.5mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	Severe	30 minutes
E1 & E1i	2x12.5mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	Severe	30 minutes
E1 & E1i	2x12.5mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	Severe	60 minutes
E1 & E1i	2x12.5mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	Severe	60 minutes
E1 & E1i	2x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	Severe	60 minutes
E1 & E1i	2x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	Severe	60 minutes
E1 & E1i	2x15mm Soundshield Plus	Knauf	90mm	12mm Euroform Versaliner	Severe	60 minutes
E1 & E1i	2x15mm Soundshield Plus	Knauf	90mm	12mm RCM Y-Wall	Severe	60 minutes
E1 & E1i	2x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	Severe	60 minutes
E2 & E2i	2x12.5mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	Severe	60 minutes
E2 & E2i	2x12.5mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	Severe	60 minutes
E2 & E2i	2x12.5mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	Severe	60 minutes
E2 & E2i	2x12.5mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	Severe	60 minutes
E2 & E2i	2x12.5mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	Severe	60 minutes
E2 & E2i	2x12.5mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	Severe	60 minutes
E2 & E2i	2x15mm Soundshield Plus	Knauf	90mm	12mm Euroform Versaliner	Severe	60 minutes
E2 & E2i	2x15mm Soundshield Plus	Knauf	90mm	12mm RCM Y-Wall	Severe	60 minutes
E4 & E4i	2x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	Severe	90 minutes
E4 & E4i	2x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	Severe	90 minutes

There are many different types of plasterboard available so to keep the tables simple only the basic boards have been shown. Where required other boards may be used as shown in the tables below:

Board Substitutions – British Gypsum

Tested Board	Allowable Substitutions
Fireline	Fireline Duplex Fireline MR Soundbloc F Duraline Duraline MR
Soundbloc	Soundbloc F Soundbloc MR Duraline Duraline MR

Provided substituted board is at least as thick as the tested board.

Board Substitutions – Knauf

Tested Board	Allowable Substitutions
Fire Panel	Impact Panel Performance Plus
Soundshield Plus	Performance Plus

Provided substituted board is at least as thick as the tested board.

Board Substitutions – Siniat

Tested Board	Allowable Substitutions
Fire Board	Fire V Board Fire MR Board Universal Board Megadeco Board
dB Board	Universal Board Megadeco Board

Provided substituted board is at least as thick as the tested board.

Fire Performance Table for Infill Walling



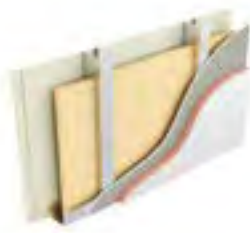
Type E1: Two layers of plasterboard, stud, sheathing board



Type E1i: Two layers of plasterboard, stud with mineral wool between, sheathing board



Type E2: Two layers of plasterboard, stud, sheathing board, 50mm K15 Insulation



Type E2i: Two layers of plasterboard, stud with mineral wool between, sheathing board, 50mm K15 Insulation



Type E3: Two layers of plasterboard, stud, two layers of sheathing board, 50mm K15 Insulation



Type E3i: Two layers of plasterboard, stud with mineral wool between, two layers of sheathing board, 50mm K15 Insulation



Type E4: Two layers of plasterboard, stud, sheathing board, 75mm Rockwool Duoslab Insulation



Type E4i: Two layers of plasterboard, stud with Rockwool between, sheathing board, 75mm Rockwool Duoslab Insulation

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Sheathing Board	Duty Rating	Fire Performance from Outside (Boundary Wall Condition)
Fire Performance from Inside 60 MINUTES						
E1 & E1i	2x12.5mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	Severe	30 minutes
E1 & E1i	2x12.5mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	Severe	30 minutes
E1 & E1i	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	Severe	30 minutes
E1 & E1i	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	Severe	30 minutes
E1 & E1i	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	Severe	30 minutes
E1 & E1i	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	Severe	30 minutes
E2 & E2i	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	Severe	30 minutes
E2 & E2i	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	Severe	30 minutes
E2 & E2i	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	Severe	30 minutes
E2 & E2i	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	Severe	30 minutes

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Sheathing Board	Duty Rating	Fire Performance from Outside (Boundary Wall Condition)
Fire Performance from Inside 90 MINUTES						
E1 & E1i	2x12.5mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	Severe	30 minutes
E1 & E1i	2x12.5mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	Severe	30 minutes
E1 & E1i	2x12.5mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	Severe	60 minutes
E1 & E1i	2x12.5mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	Severe	60 minutes
E1 & E1i	2x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	Severe	60 minutes
E1 & E1i	2x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	Severe	60 minutes
E1 & E1i	2x15mm Soundshield Plus	Knauf	90mm	12mm Euroform Versaliner	Severe	60 minutes
E1 & E1i	2x15mm Soundshield Plus	Knauf	90mm	12mm RCM Y-Wall	Severe	60 minutes
E1 & E1i	2x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	Severe	60 minutes
E2 & E2i	2x12.5mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	Severe	60 minutes
E2 & E2i	2x12.5mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	Severe	60 minutes
E2 & E2i	2x12.5mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	Severe	60 minutes
E2 & E2i	2x12.5mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	Severe	60 minutes
E2 & E2i	2x12.5mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	Severe	60 minutes
E2 & E2i	2x12.5mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	Severe	60 minutes
E2 & E2i	2x15mm Soundshield Plus	Knauf	90mm	12mm Euroform Versaliner	Severe	60 minutes
E2 & E2i	2x15mm Soundshield Plus	Knauf	90mm	12mm RCM Y-Wall	Severe	60 minutes
E4 & E4i	2x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	Severe	90 minutes
E4 & E4i	2x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	Severe	90 minutes
Fire Performance from Inside 120 MINUTES						
E1 & E1i	2x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	Severe	60 minutes
E1 & E1i	2x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	Severe	60 minutes
E1 & E1i	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	Severe	60 minutes
E2 & E2i	2x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	Severe	90 minutes
E2 & E2i	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	Severe	90 minutes
E3 & E3i	2x15mm Fireline	British Gypsum	90mm	2x12mm Euroform Versaliner	Severe	90 minutes
E3 & E3i	2x15mm Fire Panel	Knauf	90mm	2x12mm Euroform Versaliner	Severe	90 minutes
E3 & E3i	2x15mm Fireboard	Siniat	90mm	2x12mm Euroform Versaliner	Severe	60 minutes
E4 & E4i	2x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	Severe	90 minutes
E4 & E4i	2x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	Severe	120 minutes
E4 & E4i	2x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	Severe	90 minutes
E4 & E4i	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	Severe	120 minutes

Building Regulations Part L – Conservation of Fuel and Power:

The U-Values published in this section have been obtained by the combined method, which takes account of the performance of the individual elements making up the wall construction. These values should be confirmed with the insulation provider or by the consultant providing the SAP calculations.

Depending on the stud depth used in the wall construction additional insulation between the studs may help reduce the external insulation thickness. A condensation risk analysis should be completed if the insulation between the studs makes up more than a third of the overall insulation performance of the wall.

Where generic materials are referenced the following thermal conductivities have been used:

- » 12mm sheathing board, $\lambda = 0.25 \text{ W/mK}$
- » 12.5mm plasterboard, $\lambda = 0.24 \text{ W/mK}$
- » 102mm brickwork, $\lambda = 0.77 \text{ W/mK}$

Where wool insulation is referenced as being between the studs the following has been used:

- » Generally 50mm of glass wool insulation, $\lambda = 0.044 \text{ W/mK}$ has been used
- » Where Rockwool Duoslab has been used, Rockwool RWA45 insulation, $\lambda = 0.04 \text{ W/mK}$ has been used between the studs. Where the Rockwool Duoslab is 90mm or less then 50mm of RWA45 has been used. Where the Rockwool Duoslab is 100mm or greater then 75mm of RWA45 has been used



Thermal Performance Table – Brick Cladding



Type EC1: Two layers of plasterboard, stud, sheathing board, insulation, cavity, brickwork



Type EC1i: Two layers of plasterboard, stud with mineral wool between, sheathing board, insulation, cavity, brickwork

U- Value Required	Wall Type EC1			Wall Type EC1i		
	TW55 (mm)	K15 (mm)	DuoSlab (mm)	TW55 (mm)	K15 (mm)	DuoSlab (mm)
0.30	50	45	85	30	30	55
0.29	55	50	90	30	30	55
0.28	55	50	90	35	30	60
0.27	60	55	100	40	35	65
0.26	60	55	110	40	40	70
0.25	65	60	110	45	40	75
0.24	70	65	120	50	45	80
0.23	75	65	120	50	50	85
0.22	75	70	130	55	50	90
0.21	80	75	140	60	55	100
0.20	90	80	140	65	60	100
0.19	95	85	150	70	65	110
0.18	100	90	160	80	70	120
0.17	110	100	170	85	80	130
0.16	120	110	190*	95	85	140
0.15	130*	120	200*	110	95	150
0.14	140*	130	220*	120	110	170
0.13	150*	140	230*	130*	120	180
0.12	160*	150*	250*	140*	130	200*
0.11	180*	160*	280*	160*	140	230*
0.10	200*	180*	310*	180*	160*	260*

*Double insulation boards required, boards should be of roughly equal thickness

1. Metsec studs assumed to be at 600mm horizontal centres
2. Brick tie channels fixed at 450mm vertical centres with stainless steel stand off screws fixing to studs through insulation

Thermal Performance Table – Ventilated Rainscreen Cladding



Type EC2: Two layers of plasterboard, stud, sheathing board, insulation, ventilated rainscreen



Type EC2i: Two layers of plasterboard, stud with mineral wool between, sheathing board, insulation, ventilated rainscreen

U- Value Required	Wall Type EC2						Wall Type EC2i					
	Brackets 600mm	Brackets 900mm	Brackets 1200mm	Brackets 600mm	Brackets 900mm	Brackets 1200mm	Brackets 600mm	Brackets 900mm	Brackets 1200mm	Brackets 600mm	Brackets 900mm	Brackets 1200mm
	K15 (mm)	K15 (mm)	K15 (mm)	DuoSlab (mm)	DuoSlab (mm)	DuoSlab (mm)	K15 (mm)	K15 (mm)	K15 (mm)	DuoSlab (mm)	DuoSlab (mm)	DuoSlab (mm)
0.30	90	85	80	130	120	110	60	60	50	90	80	75
0.29	95	85	85	130	130	120	70	60	60	100	85	80
0.28	100	90	85	140	130	120	70	60	60	100	90	85
0.27	110	95	90	150	140	130	75	70	60	100	100	90
0.26	110	100	95	160	140	140	80	70	70	110	100	100
0.25	120	110	100	160	150	140	90	75	70	120	100	100
0.24	120	110	110	170	160	150	90	80	70	130	110	100
0.23	130	120	110	180	160	160	100	90	80	140	120	110
0.22	140	120	120	190*	170	170	110	90	80	150	130	120
0.21	150*	130	120	210*	180	170	110	100	90	160	140	130
0.20	160*	140	130	220*	200*	190*	120	110	100	170	150	130
0.19	170*	150*	140	240*	210*	200*	130	110	100	190*	160	150
0.18	180*	160*	150*	260*	220*	210*	150*	120	110	210*	180	160
0.17	200*	170*	160*	280*	240*	230*	160*	140	120	230*	190*	170
0.16	220*	190*	170*	310*	260*	240*	180*	150*	130	260*	210*	190*
0.15	240*	200*	190*	350*	280*	260*	200*	160*	140	290*	230*	210*
0.14	270*	220*	200*	-	310*	290*	220*	180*	160*	330*	260*	230*
0.13	-	240*	220*	-	350*	310*	250*	200*	170*	-	290*	260*
0.12	-	270*	250*	-	-	350*	-	230*	190*	-	330*	290*
0.11	-	-	280*	-	-	-	-	260*	220*	-	-	330*
0.10	-	-	-	-	-	-	-	-	250*	-	-	-

*Double insulation boards required, boards should be of roughly equal thickness

1. Metsec studs assumed to be at 600mm horizontal centres
2. Insulation assumed to be broken by rainscreen support brackets at the vertical centres selected (default 600mm)
3. Thermal performance may be increased by increasing vertical centres of the brackets especially for U-values less than 0.18
4. If vertical centres greater than 600mm then confirmation should be obtained from cladding engineer to confirm this is acceptable

Thermal Performance Table – Timber Cladding



Type EC3: Two layers of plasterboard, stud, sheathing board, insulation, battens, timber cladding



Type EC3i: Two layers of plasterboard, stud with mineral wool between, sheathing board, insulation, battens, timber cladding

U- Value Required	Wall Type EC3			Wall Type EC3i		
	TW55 (mm)	K15 (mm)	DuoSlab (mm)	TW55 (mm)	K15 (mm)	DuoSlab (mm)
0.30	70	60	100	50	50	65
0.29	70	65	110	50	50	70
0.28	75	65	110	55	50	75
0.27	75	70	120	55	50	80
0.26	80	70	120	60	60	80
0.25	80	75	130	60	60	85
0.24	85	80	130	65	60	90
0.23	90	85	140	70	70	100
0.22	95	85	140	75	70	100
0.21	100	90	150	80	70	110
0.20	110	95	160	90	80	110
0.19	110	100	170	90	80	120
0.18	120	110	180	100	90	130
0.17	130*	120	190*	110	100	140
0.16	130*	120	200*	110	100	150
0.15	140*	130	210*	120	110	170
0.14	150*	140	230*	130*	120	180
0.13	170*	150*	250*	140*	130	200*
0.12	180*	160*	270*	160*	140	220*
0.11	200*	180*	290*	170*	160*	240*
0.10	220*	200*	320*	190*	180*	270*

*Double insulation boards required, boards should be of roughly equal thickness

1. Metsec studs assumed to be at 600mm horizontal centres
2. Timber battens assumed to be fixed with stainless steel screws at 300mm vertical centres fixing through insulation
Timber battens are to be fixed on top of the insulation and not penetrate the insulation thickness

Thermal Performance Table – Insulated Render



Type EC4: Two layers of plasterboard, stud, sheathing board, 20mm cavity, EPS insulation, render



Type EC5: Two layers of plasterboard, stud, sheathing board, EPS insulation, render



Type EC4i: Two layers of plasterboard, stud with glass wool between, sheathing board, 20mm cavity, EPS insulation, render



Type EC5i: Two layers of plasterboard, stud with glass wool between, sheathing board, EPS insulation, render

U- Value Required	Wall Type EC4	Wall Type EC5	Wall Type EC4i	Wall Type EC5i
	NHBC 20mm Cavity	Adhesive Fix	NHBC 20mm Cavity	Adhesive Fix
	EPS	EPS	EPS	EPS
0.30	100	110	70	80
0.29	110	110	70	80
0.28	110	120	80	80
0.27	120	120	80	90
0.26	120	130	90	90
0.25	130	130	90	100
0.24	130	140	100	110
0.23	140	140	110	110
0.22	150	150	110	120
0.21	150	160	120	130
0.20	160	170	130	130
0.19	170	180	140	140
0.18	180	190	150	150
0.17	190	200*	160	160
0.16	210*	210*	170	180
0.15	220*	230*	180	190
0.14	240*	240*	200*	210*
0.13	260*	260*	220*	230*
0.12	280*	280*	240*	250*
0.11	300*	310*	270*	270*
0.10	330*	340*	300*	300*

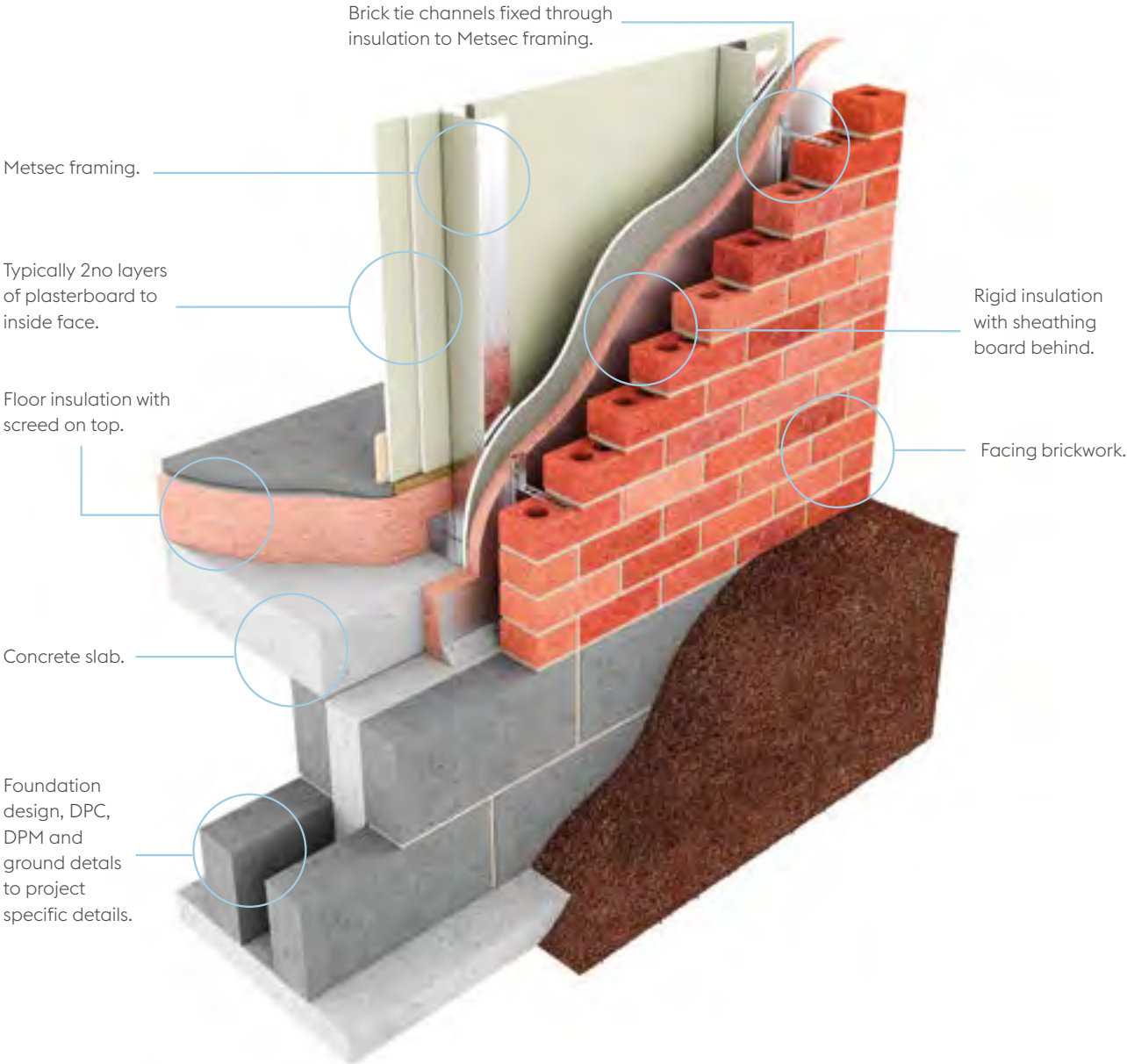
*Advice should be sought from the insulation provider regarding the construction to achieve the required insulation thickness

1. Metsec studs assumed to be at 600mm horizontal centres

Architectural Drawings

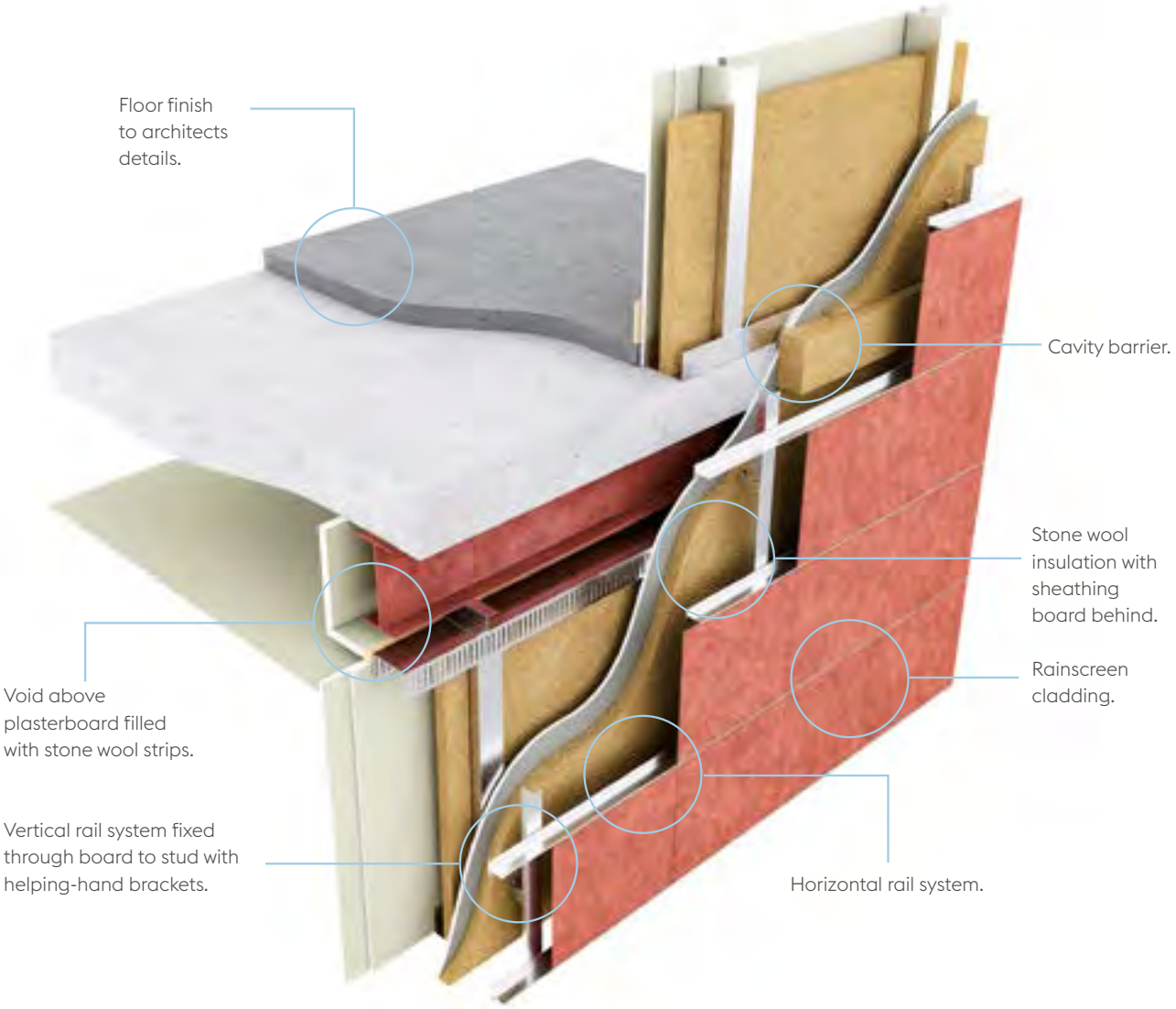
F3D-01

Base of SFS at Ground Floor



F3D-02

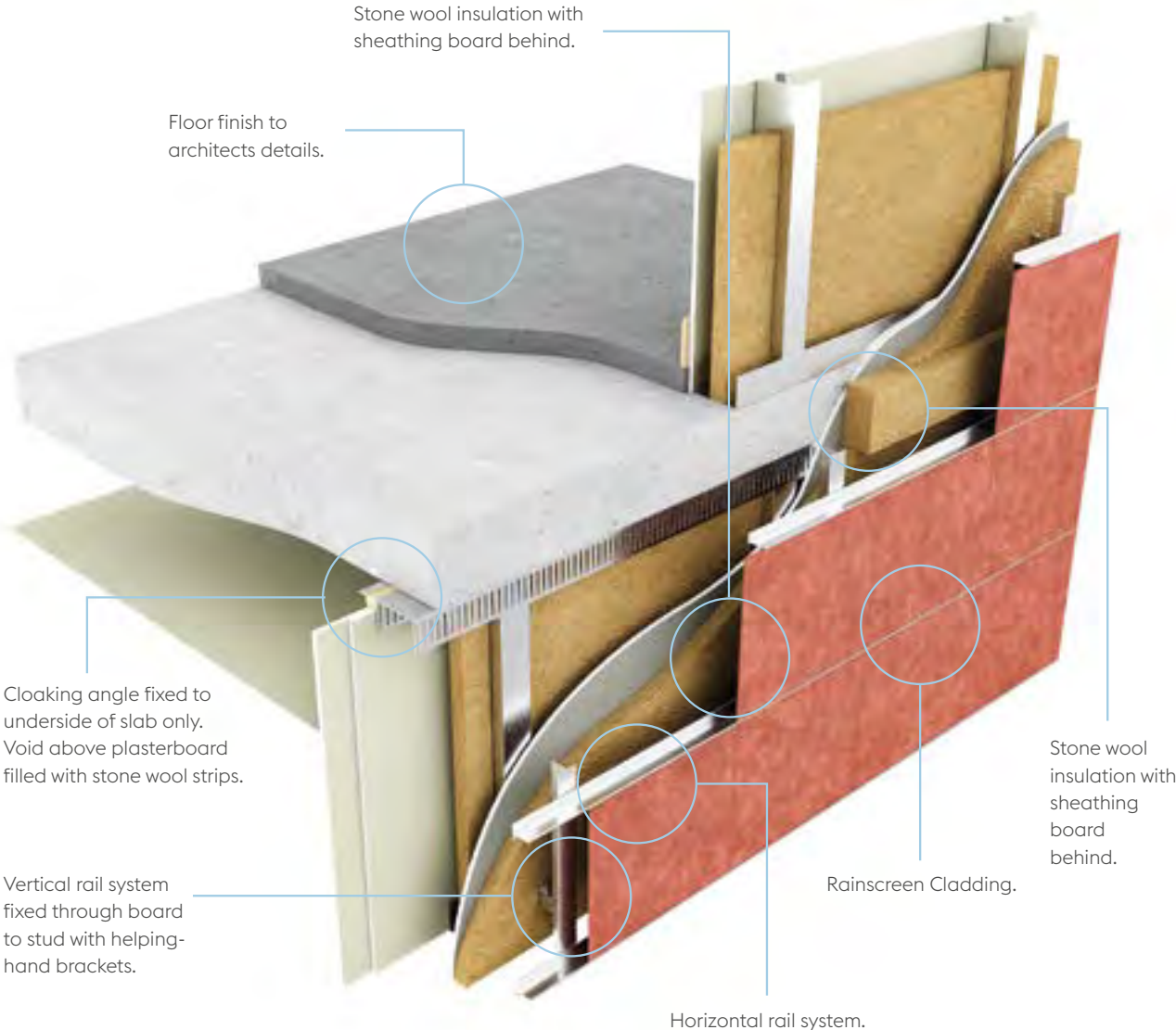
Steel Frame Edge Detail



Architectural Drawings

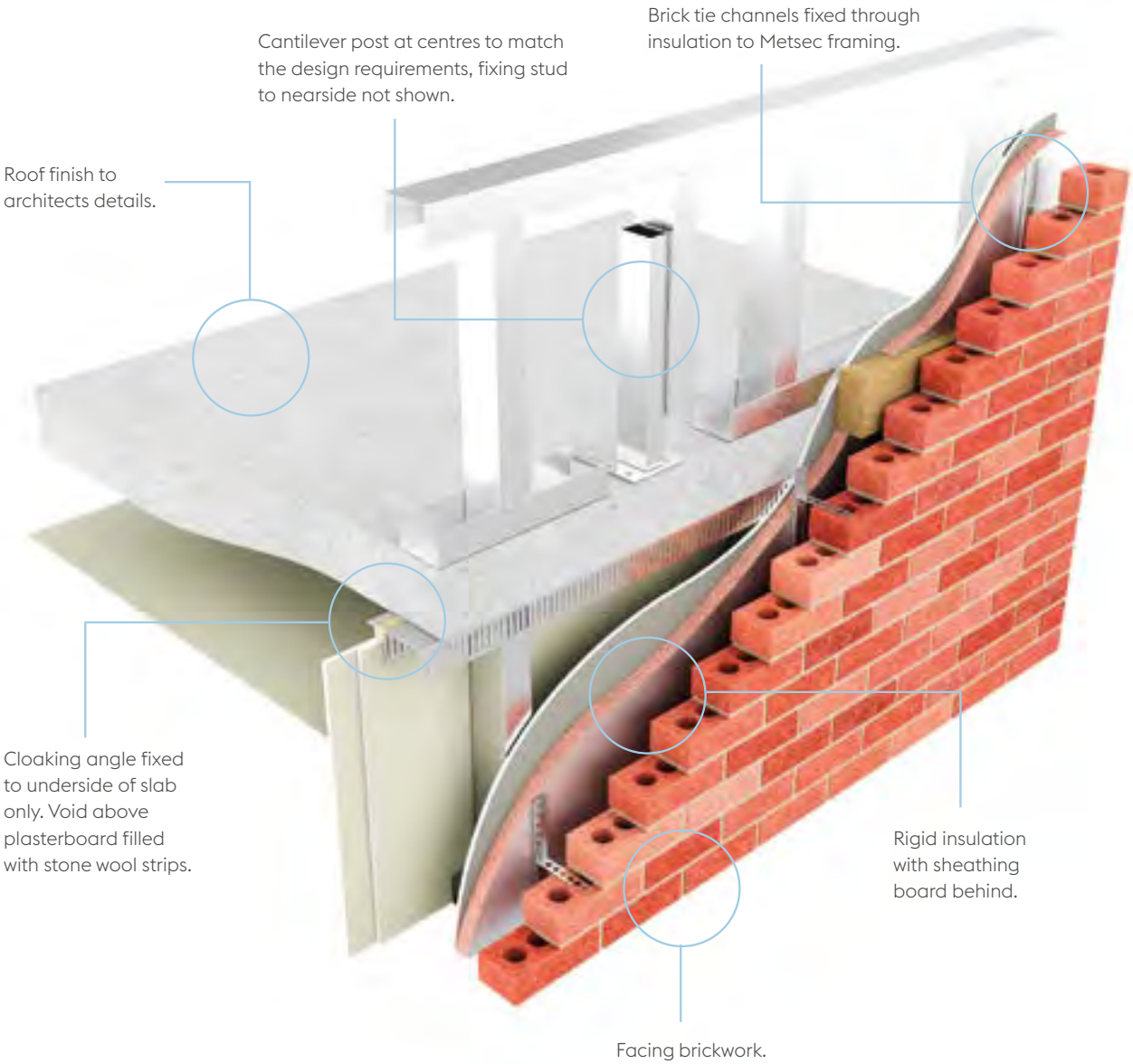
F3D-03

Concrete Frame Edge Detail



F3D-04

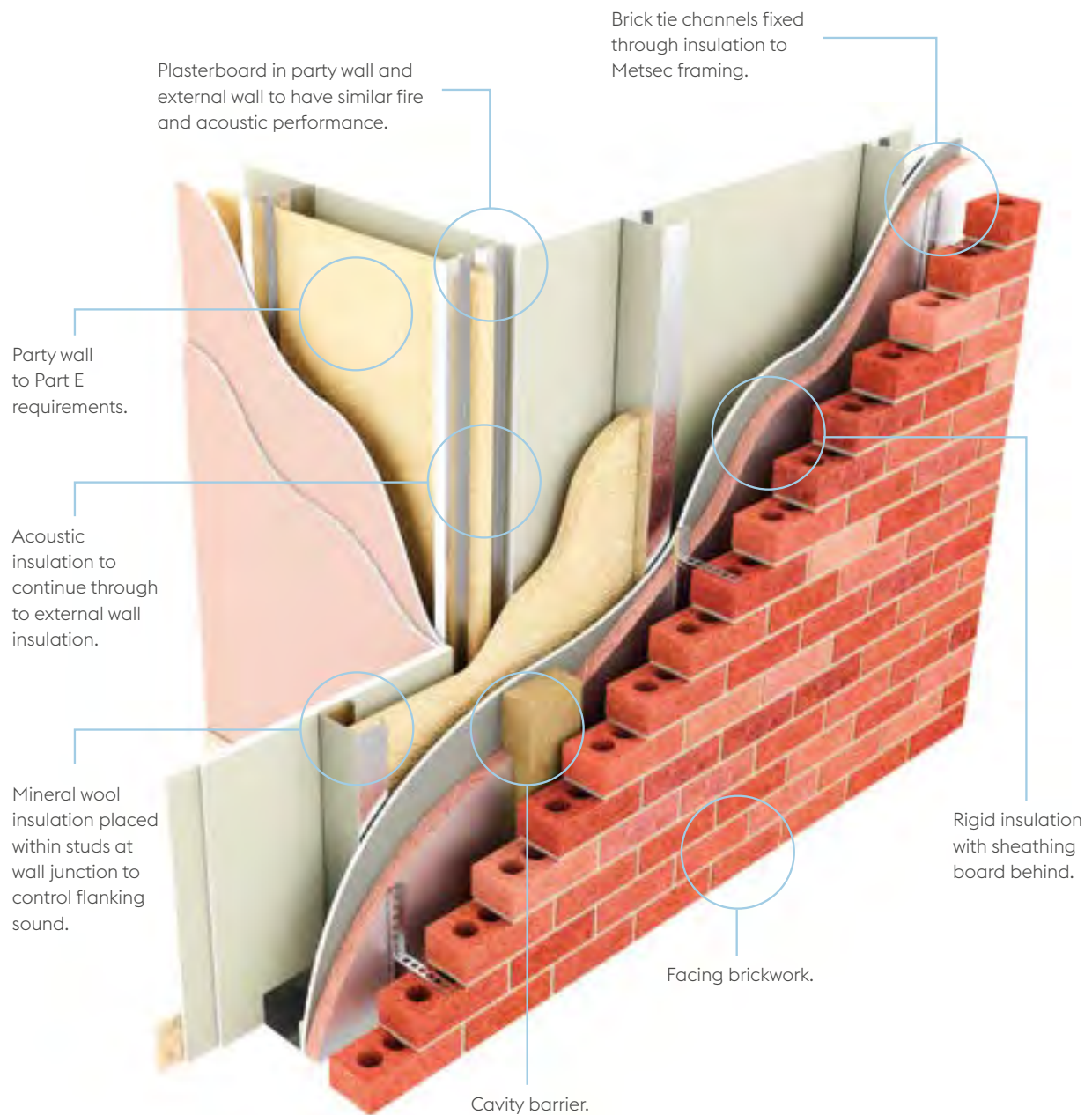
Concrete Frame Parapet Detail



Architectural Drawings

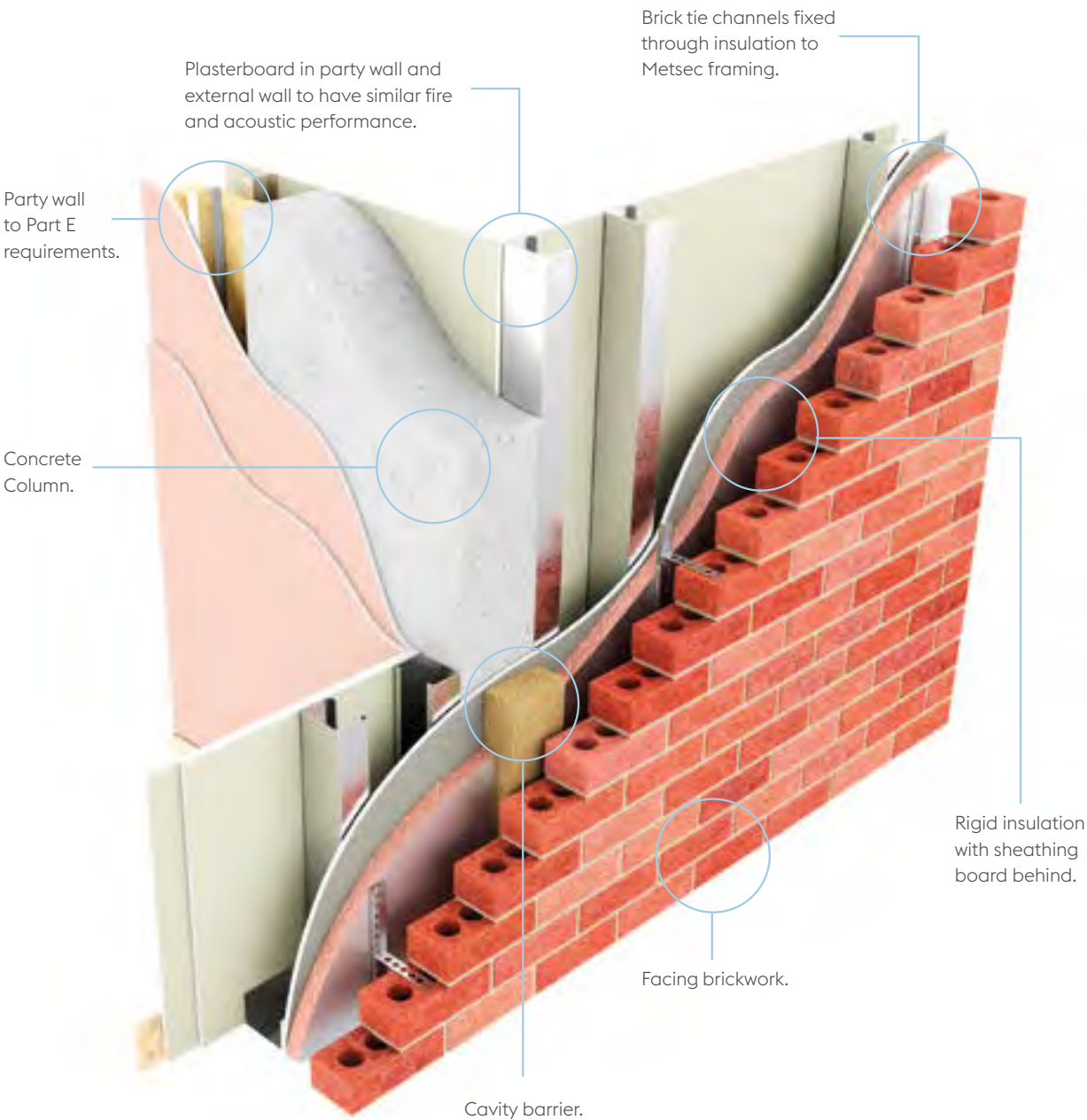
F3D-05

Party Wall to SFS Detail



F3D-06

Party Wall to Concrete Column Detail



Case Study

Framing Solution to Manchester Cambridge Street Project

Light gauge structural steel specialist, voestalpine Metsec plc supported the development of the Cambridge Street regeneration project in Manchester, providing SFS infill walling for the construction of 29 and 21 storey new build apartment buildings, comprising a total of 282 one, two and three bedroom residences.

The project was the next phase of on-going regeneration at the location, fitting alongside architect Terry Farrell's 2001 master plan for the area. The architect's plan entailed the conversion of two listed mills and the construction of two new residential towers marking a southern gateway, with an additional urban landmark along a new street named River Street, linking the mixed-use development to the city.

One additional requirement on the project was working around the use of heavier brick-finish cladding, Corium, which was utilised by the architect to ensure that the construction maintained characteristics synonymous with the geographical area. Using its in-house design expertise, Metsec was able to ensure the steel framing solution was as efficient as possible when supporting the heavier cladding which enabled a reduction in the cost of cladding brackets.

The construction of the two towers, which are especially tall for a project outside the capital, specified Metsec's infill walling, which allows for a quick speed of installation on the project. Also, by utilising Revit (BIM), it allowed Metsec to produce drawings of the project, which allowed clashes to be detected and floor-by-floor material lists to be produced. These lists enabled the phased ordering of materials, ensuring that no excess products were requested and wasted, whilst the materials arrived on site to suit the build programme, meaning on-site storage was kept to a minimum.



Mike Leonard, Contracts Manager at Astley Facades commented: "The Cambridge Street project was a great development to work on, as it had been in planning for a long time. We're very happy with the SFS infill walling provided by Metsec, and how they were able to provide design expertise, which had a real benefit to the project. This expertise allowed us to achieve the most cost effective outcome, as Metsec was able to ensure the solution we used was exactly what the project required, whilst the use of BIM meant we could phase the arrival of materials to suit the build programme, meaning storage was greatly reduced."

Ryan Simmonds, Sales Director of Metsec Framing, commented: "The redevelopment of the area surrounding Cambridge Street has been in full effect since the master plan was conceived in 2001. We're thrilled to have been able to be a part of the Cambridge Street Project, and our work on the project truly demonstrates the additional value that BIM can bring to construction projects. Our expertise in using BIM on a project has really shone through on Cambridge Street, as it has allowed us to design effective solutions to the challenges presented by the project, such as supporting heavy cladding on the construction."







SFS Load Bearing

Introducing SFS Load Bearing...

SFS load bearing is a complete load bearing system suitable for structures up to 3 storeys without the need for a primary hot rolled or reinforced concrete frame.

Overview of SFS Load Bearing System

Load bearing structures make use of the axial capacity of the Metsec SFS studs, with studs designed as a series of columns to provide complete load bearing wall panels.

The system provides a complete load-bearing superstructure for low to medium rise structures with all Metsec components supplied to site loose and are assembled in-situ with Tek screwed connections.

This system has many advantages over traditional methods of construction. It is light-weight, fast track, durable and is suitable for confined sites. This flexibility makes load bearing structures ideally suited to penthouses or high level inset structures where it is important to keep the loads to a minimum. It also benefits from reduced crane and transport costs, when compared to pre-panellised solutions.

Design

Metsec's technical team can offer advice on wall and floor build-ups and have a library of test details to substantiate performance data for a range of build-ups. A design and detailing service can be provided. For this process to work effectively, the following basic architectural information should be provided by the design team:

- » Wall set-outs and build-ups
- » Structural set-out of apertures in walls
- » Floor build-up and positions where trimming-out required
- » Roof build-up and set-out and details of feature (i.e. eaves/parapets/hatches etc.)
- » Junction detail with supporting elements

Please note:

Load bearing structures require a full Metsec design prior to commencement of work on site.

Apertures

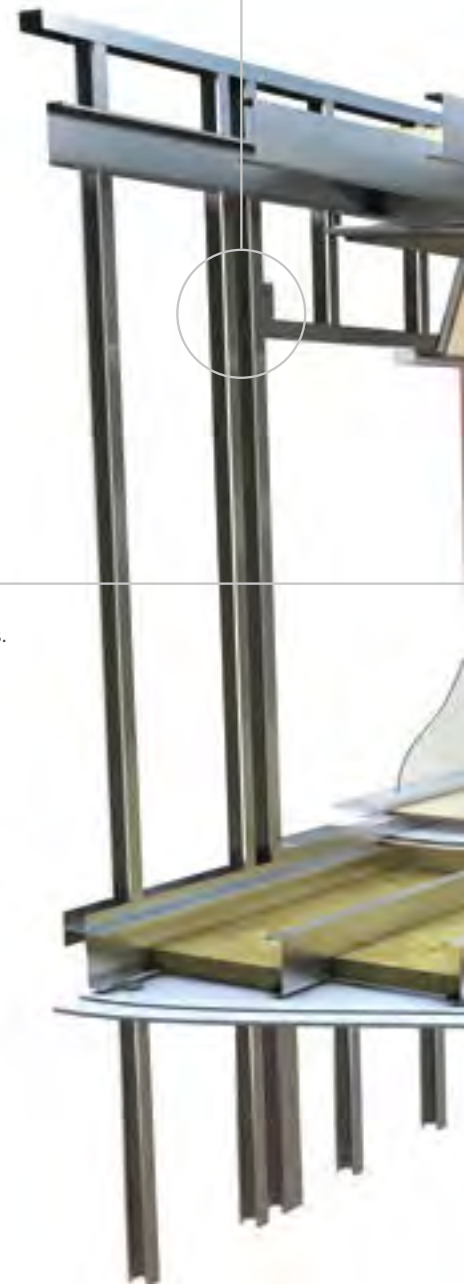
Set to suit architectural layout.

Lintel and jamb design is dependent on aperture configuration. A short section of stud is used as a support bracket for lintels and cills.

An additional stud is positioned adjacent to the jamb for a brick-tie channel where masonry cladding is required.

Ceiling

Resilient bars fixed to underside of Metsec joists.



Walls

Metsec lipped C-section studs storey height with track sections at base and head. Set-out/extent of SFS wall to suit architectural configuration and Metsec design requirements. Size/gauge and centres of studs as design.

Bracing

Flat strap bracing screw fixed to wall studs. Quantities and positions as Metsec design.

External Finishes

SFS load bearing walls can provide support/restraint for most finishes.

Foil-faced rigid insulation for masonry cladding shown.

Floating Floor

Shown over Metsec.

Roofs

Joists laid flat or with a fall to suit project.

Access hatches/roof-lights can be incorporated where required.

Bracing requirements are dependent upon roof build-up. Parapet detail shown has studs continuous from floor below.

Joists supported by and fixed to end track which is fixed to studs.

End joists are also screwed to studs.

Blocking Detail

Solid blocking of joist section cut to fit snugly between every third joist and adjacent first/last joist. Design to determine requirements.

Floors

Metsec joists depth, gauge and centres to suit spans required. Joists supported by/ fixed to track, screwed to wall head.



Section Names Explained

Metsec section references are designed to be easy to read and understand at a glance. Each section type is identified by a unique reference consisting of three numerical values separated by a letter or a dash.

Studs Sections (lipped sections)

Example stud reference – 240M12-50

- » 240 – Refers to the section depth of 240mm (numbers ending in 0 are always lipped)
- » M – Refers to Metsec SFS
- » 12 – Refers to the gauge (thickness) of the section i.e. 12 is 1.2mm thick
- » 50 – Refers to the width or section flange of 50mm

Track Sections (un-lipped sections)

Example stud reference – 244M20-70

- » 244 – Refers to the section depth of 244mm (numbers ending in 4 or 6 are always un-lipped)
- » M – Refers to Metsec SFS
- » 20 – Refers to the gauge (thickness) of the section i.e. 20 is 2.0mm thick
- » 70 – Refers to the width or section flange of 70mm

Colour Coding Explained

Metsec prints stud or joist sections and track sections with references that are designed to be easy to read and understand at a glance. Metsec prints the Metsec name down both flanges for the thinner thicknesses of section and these are colour coded as follows:

- » BLACK = 1.2mm or 1.3mm thickness
- » RED = 1.4mm thickness
- » GREEN = 1.6mm thickness
- » ORANGE = 1.8mm thickness
- » BLUE = 2.0mm thickness

On our drawings any sections greater than 2.0mm or that are made up of multiple sections are shown in yellow so they are highlighted on the drawings.

Slotted head track or sections thicker than 2.0mm are not colour coded but still have the “M” reference on the web.

All stud or joist sections and track sections have a string of numbers and letters printed down the back web along with our CE mark. One of the string of characters will start with a M and have two numbers after it e.g. M12 or M20. This denotes the thickness of the section i.e. M12 = 1.2mm thick section.

Industry Standards and Solutions

Building Regulations Part A – Structure:

The Metsec SFS load bearing system is designed on an individual project basis to provide a structural solution for a building providing the walls, floors and roof of the building.

Metsec calculate wind loads to BS EN 1991-1-4 plus the UK national annex incorporating the latest amendments and the use of PD6688-1-4, Background Information to EN 1991-1-4 and additional guidance.

The structural design of the SFS sections utilises BS EN 1993-1-1, BS EN1993-1-3 and BS EN 1993-1-5 plus UK national annexes and additional codes where appropriate.

The design of the SFS load bearing system considers, but is not limited to:

- » Structural capacity of the SFS sections
- » Deflection of the SFS sections under load
- » Connection of the SFS sections
- » Stability of the structure
- » Disproportionate collapse where appropriate
- » Effect of the cladding and fixing method to the SFS sections

Load Tables:

Maximum span tables are provided for all standard SFS sections for typical joist applications. Please refer to the notes at the bottom of the tables for important information and deflection limits.

Floor joist tables and spans are limited to the following criteria:

- » The maximum deflection of a single joist subject to dead and variable loads is limited to the smaller of span/350 or 20mm
- » The maximum deflection of a single joist subject only to imposed load is limited to span/450
- » For the uniformly distributed load case of dead plus 20% of the variable load, the natural frequency of the floor should not be less than 8Hz
- » The deflection of the complete floor when subject to a 1kN point load should be limited to values established at the Virginia Polytechnic Institute and State University

For flooring used in public or corridors please consult Metsec as more stringent vibration criteria applies which can reduce the maximum span of the joists.

For further information additional guidance is provided in the Steel Construction Institute publication P402.

Load Tables

Floor Joists with Acoustic Overlay

How to Use the Load Table:

The load tables in this section allow for simple sizing of the SFS sections for a given loading.

Where openings are required within the floor, please contact Metsec for the design of the supporting members.

The values given assume that the joists are fixed into a Metsec 2.0mm track.

Section Reference	Uniform Load (kN/m ²) at Joist Spacing (mm)							
	Dead	Live	Dead	Live	Dead	Live	Dead	Live
	1.00	1.50	1.25	1.50	1.00	2.00	1.00	3.00
	400	600	400	600	400	600	400	600
090M12-50	2.49	2.17	2.41	2.11	2.34	2.05	2.13	1.65
090M12-62	2.64	2.31	2.56	2.23	2.48	2.17	2.26	1.84
090M12-75	2.78	2.43	2.69	2.35	2.61	2.28	2.37	2.02
090M14-75	2.92	2.55	2.83	2.47	2.74	2.40	2.49	2.18
090M16-75	3.04	2.66	2.95	2.57	2.86	2.50	2.60	2.27
090M18-75	3.16	2.76	3.06	2.67	2.97	2.59	2.70	2.36
090M20-75	3.26	2.85	3.14	2.76	3.07	2.68	2.79	2.43
120M12-50	3.10	2.71	3.00	2.62	2.92	2.55	2.65	1.98
120M12-62	3.28	2.86	3.16	2.77	3.08	2.69	2.80	2.20
120M12-75	3.42	3.00	3.27	2.91	3.24	2.83	2.94	2.42
120M14-75	3.55	3.16	3.40	3.06	3.40	2.97	3.09	2.70
120M16-75	3.66	3.29	3.51	3.17	3.55	3.10	3.22	2.82
120M18-75	3.77	3.40	3.61	3.26	3.68	3.22	3.35	2.92
120M20-75	3.86	3.49	3.70	3.34	3.79	3.33	3.46	3.02
150M12-50	3.60	3.22	3.44	3.11	3.46	3.03	3.15	2.30
150M12-62	3.75	3.38	3.58	3.24	3.65	3.19	3.32	2.56
150M12-75	3.88	3.50	3.71	3.35	3.81	3.34	3.48	2.82
150M14-75	4.01	3.62	3.84	3.47	3.94	3.50	3.64	3.18
150M16-75	4.14	3.74	3.96	3.58	4.07	3.65	3.80	3.32
150M18-75	4.27	3.85	4.08	3.69	4.19	3.78	3.95	3.45
150M20-75	4.38	3.96	4.19	3.79	4.30	3.88	4.09	3.57
180M12-50	4.01	3.62	3.83	3.46	3.93	3.49	3.63	2.64
180M12-62	4.16	3.76	3.98	3.60	4.09	3.67	3.82	2.94
180M12-75	4.30	3.89	4.12	3.72	4.22	3.82	3.99	3.48
180M14-75	4.45	4.02	4.26	3.85	4.37	3.95	4.18	3.65
180M16-75	4.60	4.15	4.40	3.98	4.51	4.08	4.36	3.81
180M18-75	4.73	4.27	4.53	4.09	4.64	4.19	4.49	3.96
180M20-75	4.85	4.38	4.64	4.19	4.76	4.30	4.60	4.09

Section Reference	Uniform Load (kN/m ²) at Joist Spacing (mm)							
	Dead	Live	Dead	Live	Dead	Live	Dead	Live
	1.00	1.50	1.25	1.50	1.00	2.00	1.00	3.00
	400	600	400	600	400	600	400	600
210M12-50	4.39	3.97	4.20	3.80	4.31	3.90	4.11	2.98
210M12-62	4.55	4.12	4.36	3.94	4.47	4.04	4.31	3.31
210M13-75	4.78	4.32	4.57	4.13	4.69	4.24	4.54	4.01
210M16-75	5.03	4.54	4.81	4.35	4.93	4.46	4.77	4.29
210M18-75	5.17	4.67	4.95	4.47	5.08	4.59	4.91	4.44
210M20-75	5.30	4.79	5.08	4.59	5.21	4.70	5.04	4.55
240M12-50	4.76	4.30	4.56	4.12	4.67	4.03	4.47	2.98
240M13-62	5.03	4.54	4.81	4.35	4.93	4.46	4.77	3.31
240M13-75	5.18	4.68	4.96	4.48	5.09	4.60	4.92	4.15
240M16-75	5.44	4.91	5.20	4.70	5.34	4.82	5.16	4.66
240M18-75	5.59	5.05	5.35	4.83	5.49	4.96	5.31	4.80
240M20-75	5.74	5.18	5.49	4.96	5.63	5.09	5.44	4.92
270M13-50	5.22	4.71	4.99	4.49	5.12	4.03	4.47	2.98
270M13-62	5.39	4.87	5.16	4.66	5.29	4.48	4.97	3.31
270M16-75	5.84	5.28	5.59	5.05	5.74	5.18	5.55	4.99
270M18-75	6.01	5.43	5.75	5.20	5.90	5.33	5.71	5.16
270M20-75	6.17	5.57	5.90	5.33	6.05	5.47	5.85	5.29
300M13-50	5.57	4.89	5.33	4.49	5.47	4.03	4.47	2.98
300M16-62	6.05	5.44	5.79	4.99	5.93	4.48	4.97	3.31
300M18-75	6.40	5.78	6.13	5.53	6.28	5.68	6.08	5.49
300M20-75	6.57	5.93	6.28	5.68	6.45	5.82	6.23	5.63
300M25-89	7.13	6.44	6.82	6.16	7.00	6.32	6.77	6.12
300M29-89	7.39	6.67	7.07	6.39	7.25	6.55	7.01	6.34
350M18-54	6.70	6.06	6.42	5.80	6.58	5.95	6.37	5.75
350M20-68	7.10	6.42	6.80	6.14	6.97	6.30	6.75	6.09
350M23-84	7.60	6.86	7.27	6.57	7.46	6.74	7.21	6.52
350M25-84	7.75	7.00	7.42	6.70	7.61	6.87	7.36	6.65
350M29-84	8.03	7.26	7.69	6.94	7.88	7.12	7.62	6.66

Maximum spans in above joist load tables based on:

1. Unfactored dead and live loads
2. Imposed load deflection limited to span/450 for floors and span/360 for other conditions
3. Dead + Imposed load deflection limited to span/350 for floors and span/200 for other conditions
4. Blocking and strapping at mid span for spans < 6.0m. For spans over 6.0m blocking and strapping required at max 3.0m spacing
5. Floor joists boarded with minimum 15mm plywood for joists at 400mm centres or 18mm plywood for joists at 600mm centres
6. Boarding fixed to the joists at maximum 300mm centres
7. Joists fixed into 2.0mm gauge tracks at each end

Load Tables

Floor Joists without Acoustic Overlay

How to Use the Load Table:

The load tables in this section allow for simple sizing of the SFS sections for a given loading.

Where openings are required within the floor, please contact Metsec for the design of the supporting members.

The values given assume that the joists are fixed into a Metsec 2.0mm track.

Section Reference	Uniform Load (kN/m ²) at Joist Spacing (mm)							
	Dead	Live	Dead	Live	Dead	Live	Dead	Live
	0.50	1.50	0.75	1.50	0.50	3.00	0.75	5.00
	400	600	400	600	400	600	400	600
090M12-50	2.68	2.34	2.58	2.25	2.15	1.86	1.69	1.13
090M12-62	2.84	2.48	2.73	2.39	2.28	1.99	1.88	1.25
090M12-75	2.99	2.61	2.88	2.51	2.40	2.10	2.03	1.38
090M14-75	3.14	2.74	3.02	2.64	2.52	2.20	2.13	1.79
090M16-75	3.28	2.86	3.15	2.75	2.63	2.30	2.22	1.94
090M18-75	3.40	2.97	3.27	2.86	2.73	2.39	2.30	2.01
090M20-75	3.51	3.07	3.38	2.95	2.82	2.46	2.38	2.08
120M12-50	3.34	2.92	3.21	2.80	2.68	2.22	2.02	1.35
120M12-62	3.53	3.08	3.39	2.96	2.84	2.47	2.25	1.50
120M12-75	3.71	3.24	3.56	3.11	2.98	2.60	2.48	1.65
120M14-75	3.89	3.40	3.74	3.27	3.13	2.73	2.64	2.09
120M16-75	4.06	3.55	3.87	3.41	3.26	2.85	2.75	2.40
120M18-75	4.22	3.68	3.97	3.54	3.39	2.96	2.86	2.49
120M20-75	4.36	3.81	4.07	3.66	3.50	3.06	2.95	2.58
150M12-50	3.97	3.46	3.80	3.33	3.19	2.59	2.36	1.57
150M12-62	4.18	3.65	3.95	3.51	3.36	2.87	2.62	1.74
150M12-75	4.38	3.83	4.09	3.68	3.52	3.07	2.88	1.92
150M14-75	4.53	4.00	4.23	3.82	3.68	3.22	3.10	2.39
150M16-75	4.68	4.18	4.37	3.95	3.84	3.36	3.24	2.83
150M18-75	4.82	4.35	4.50	4.07	4.00	3.49	3.37	2.94
150M20-75	4.94	4.47	4.62	4.17	4.14	3.61	3.49	3.05
180M12-50	4.52	4.00	4.23	3.82	3.68	2.97	2.70	1.80
180M12-62	4.70	4.21	4.39	3.97	3.87	3.30	3.00	2.00
180M12-75	4.86	4.39	4.54	4.10	4.04	3.53	3.41	2.37
180M14-75	5.03	4.54	4.70	4.24	4.23	3.70	3.57	2.75
180M16-75	5.19	4.69	4.85	4.38	4.42	3.86	3.72	3.13
180M18-75	5.34	4.83	4.99	4.51	4.59	4.01	3.87	3.38
180M20-75	5.48	4.95	5.12	4.62	4.74	4.14	4.00	3.49

Section Reference	Uniform Load (kN/m ²) at Joist Spacing (mm)							
	Dead	Live	Dead	Live	Dead	Live	Dead	Live
	0.50	1.50	0.75	1.50	0.50	3.00	0.75	5.00
	400	600	400	600	400	600	400	600
210M12-50	4.96	4.48	4.63	4.19	4.16	3.35	3.05	2.03
210M12-62	5.14	4.65	4.81	4.34	4.36	3.72	3.39	2.26
210M13-75	5.40	4.88	5.04	4.56	4.65	4.06	3.92	2.83
210M16-75	5.68	5.13	5.30	4.79	4.97	4.35	4.19	3.40
210M18-75	5.84	5.28	5.46	4.93	5.17	4.51	4.36	3.81
210M20-75	5.99	5.41	5.59	5.05	5.34	4.67	4.51	3.94
240M12-50	5.38	4.86	5.02	4.54	4.63	3.35	3.05	2.03
240M13-62	5.68	5.13	5.30	4.79	4.97	3.72	3.39	2.26
240M13-75	5.85	5.29	5.47	4.94	5.18	4.53	4.25	2.83
240M16-75	6.14	5.54	5.73	5.18	5.52	4.82	4.66	3.40
240M18-75	6.31	5.70	5.90	5.33	5.73	5.01	4.83	3.97
240M20-75	6.48	5.85	6.05	5.47	5.93	5.18	5.00	4.37
270M13-50	5.89	5.32	5.50	4.97	5.03	3.35	3.05	2.03
270M13-62	6.09	5.50	5.69	5.14	5.46	3.72	3.39	2.26
270M16-75	6.60	5.96	6.16	5.57	6.08	5.31	5.10	3.40
270M18-75	6.79	6.13	6.34	5.73	6.27	5.52	5.33	3.97
270M20-75	6.96	6.29	6.51	5.88	6.43	5.71	5.51	4.54
300M13-50	6.29	5.68	5.87	5.31	5.03	3.35	3.05	2.03
300M16-62	6.83	6.17	6.38	5.76	5.58	3.72	3.39	2.26
300M18-75	7.23	6.53	6.75	6.10	6.67	6.00	5.79	3.97
300M20-75	7.41	6.70	6.93	6.26	6.85	6.19	5.99	4.54
300M25-89	8.05	7.27	7.52	6.80	7.43	6.72	6.62	4.54
300M29-89	8.34	7.54	7.79	7.04	7.70	6.96	6.82	4.54
350M18-54	7.57	6.84	7.07	6.39	6.99	6.32	5.96	3.97
350M20-68	8.02	7.25	7.49	6.77	7.41	6.69	6.60	4.54
350M23-84	8.58	7.75	8.01	7.24	7.92	7.16	6.82	4.54
350M25-84	8.75	7.91	8.18	7.39	8.08	7.30	6.82	4.54
350M29-84	9.07	8.19	8.47	7.66	8.37	7.48	6.82	4.54

Maximum spans in above joist load tables based on:

1. Unfactored dead and live loads
2. Imposed load deflection limited to span/450 for floors and span/360 for other conditions
3. Dead + Imposed load deflection limited to span/350 for floors and span/200 for other conditions
4. Blocking and strapping at mid span for spans < 6.0m. For spans over 6.0m blocking and strapping required at max 3.0m spacing
5. Floor joists boarded with minimum 15mm plywood for joists at 400mm centres or 18mm plywood for joists at 600mm centres
6. Boarding fixed to the joists at maximum 300mm centres
7. Joists fixed into 2.0mm gauge tracks at each end

Load Tables

Roof Joists

How to Use the Load Table:

The load tables in this section allow for simple sizing of the SFS sections for a given loading.

Where openings are required within the roof, please contact Metsec for the design of the supporting members.

The values given assume that the joists are fixed into a Metsec 2.0mm track.

Section Reference	Uniform Load (kN/m ²) at Joist Spacing (mm)							
	Dead	Live	Dead	Live	Dead	Live	Dead	Live
	0.70	0.60	1.20	0.60	0.70	1.50	1.20	1.50
	400	600	400	600	400	600	400	600
090M12-50	3.74	3.26	3.35	2.93	2.92	2.56	2.93	2.56
090M12-62	3.96	3.46	3.56	3.11	3.11	2.71	3.11	2.71
090M12-75	4.17	3.64	3.74	3.27	3.27	2.86	3.27	2.86
090M14-75	4.38	3.83	3.93	3.43	3.43	3.00	3.43	3.00
090M16-75	4.57	3.99	4.10	3.58	3.58	3.13	3.58	3.13
090M18-75	4.74	4.14	4.25	3.71	3.71	3.24	3.71	3.24
090M20-75	4.90	4.28	4.39	3.84	3.84	3.35	3.84	3.35
120M12-50	4.20	3.71	3.82	3.35	3.54	3.10	3.33	2.90
120M12-62	4.83	4.22	4.36	3.79	3.85	3.37	3.75	3.22
120M12-75	5.16	4.51	4.63	4.05	4.05	3.53	4.05	3.43
120M14-75	5.42	4.74	4.87	4.25	4.25	3.71	4.25	3.71
120M16-75	5.66	4.94	5.08	4.44	4.44	3.87	4.44	3.87
120M18-75	5.87	5.13	5.27	4.60	4.60	4.02	4.60	4.02
120M20-75	6.07	5.30	5.45	4.76	4.76	4.16	4.76	4.16
150M12-50	4.49	3.98	4.09	3.62	3.81	3.35	3.59	3.14
150M12-62	5.17	4.55	4.69	4.10	4.34	3.77	4.07	3.51
150M12-75	5.76	5.01	5.18	4.47	4.76	4.07	4.43	3.77
150M14-75	6.14	5.34	5.51	4.81	5.00	4.37	4.76	4.11
150M16-75	6.66	5.64	5.81	5.11	5.22	4.56	5.07	4.41
150M18-75	6.93	5.93	6.18	5.38	5.43	4.74	5.34	4.67
150M20-75	7.17	6.27	6.44	5.62	5.62	4.91	5.58	4.89
180M12-50	4.76	4.22	4.34	3.85	4.05	3.57	3.82	3.36
180M12-62	5.48	4.84	4.98	4.37	4.62	4.04	4.34	3.77
180M12-75	6.18	5.35	5.52	4.79	5.09	4.38	4.74	4.07
180M14-75	6.72	5.67	5.84	5.12	5.40	4.72	5.08	4.41
180M16-75	7.29	5.97	6.24	5.42	5.71	5.01	5.38	4.70
180M18-75	7.83	6.39	6.70	5.66	5.96	5.26	5.62	4.95
180M20-75	8.22	6.80	7.13	5.89	6.33	5.48	5.84	5.16

Section Reference	Uniform Load (kN/m ²) at Joist Spacing (mm)							
	Dead	Live	Dead	Live	Dead	Live	Dead	Live
	0.70	0.60	1.20	0.60	0.70	1.50	1.20	1.50
	400	600	400	600	400	600	400	600
210M12-50	5.00	4.44	4.57	4.06	4.26	3.77	4.03	3.55
210M12-62	5.76	5.10	5.25	4.62	4.88	4.27	4.59	4.00
210M13-75	6.93	5.66	5.93	4.84	5.51	4.80	5.17	4.48
210M16-75	7.90	6.45	6.76	5.52	6.01	5.29	5.66	4.97
210M18-75	8.47	6.92	7.25	5.92	6.44	5.53	5.91	5.21
210M20-75	9.00	7.35	7.70	6.29	6.84	5.74	6.21	5.41
240M12-50	5.22	4.65	4.78	4.25	4.46	3.95	4.22	3.73
240M13-62	6.32	5.49	5.41	5.00	5.26	4.64	4.96	4.36
240M13-75	7.59	6.20	6.50	5.30	5.85	5.11	5.49	4.77
240M16-75	8.50	6.94	7.27	5.94	6.46	5.54	5.91	5.21
240M18-75	9.10	7.43	7.79	6.36	6.92	5.78	6.29	5.45
240M20-75	9.67	7.89	8.27	6.75	7.35	5.99	6.67	5.66
270M13-50	5.55	4.96	5.09	4.54	4.76	4.23	4.50	4.00
270M13-62	6.76	5.52	5.78	5.21	5.48	4.84	5.17	4.55
270M16-75	9.22	7.53	7.89	6.44	7.01	5.82	6.37	5.48
270M18-75	9.89	8.07	8.46	6.91	7.51	6.14	6.83	5.73
270M20-75	10.00	8.57	8.99	7.34	7.98	6.52	7.25	5.95
300M13-50	5.74	5.13	5.27	4.70	4.93	4.39	4.67	4.15
300M16-62	8.06	6.58	6.90	5.78	6.13	5.40	5.74	5.10
300M18-75	10.00	8.57	8.98	7.33	7.97	6.51	7.24	5.94
300M20-75	10.00	9.10	9.53	7.78	8.47	6.91	7.69	6.28
300M25-89	10.00	10.00	10.00	10.00	10.00	9.33	10.00	8.47
300M29-89	10.00	10.00	10.00	10.00	10.00	9.86	10.00	9.27
350M18-54	7.93	6.48	6.79	5.74	6.03	5.37	5.70	5.09
350M20-68	10.00	8.99	9.42	7.69	8.36	6.83	7.60	6.20
350M23-84	10.00	10.00	10.00	10.00	10.00	9.25	10.00	8.41
350M25-84	10.00	10.00	10.00	10.00	10.00	9.71	10.00	8.82
350M29-84	10.00	10.00	10.00	10.00	10.00	10.00	10.00	9.63

Maximum spans in above joist load tables based on:

1. Unfactored dead and live loads
2. Imposed load deflection limited to span/450 for floors and span/360 for other conditions
3. Dead + Imposed load deflection limited to span/350 for floors and span/200 for other conditions
4. Blocking and strapping at mid span for spans < 6.0m. For spans over 6.0m blocking and strapping required at max 3.0m spacing
5. Floor joists boarded with minimum 15mm plywood for joists at 400mm centres or 18mm plywood for joists at 600mm centres
6. Boarding fixed to the joists at maximum 300mm centres
7. Joists fixed into 2.0mm gauge tracks at each end

Load Tables

Ceiling Joists

How to Use the Load Table:

The load tables in this section allow for simple sizing of the SFS sections for a given loading.

Where openings are required within the ceiling, please contact Metsec for the design of the supporting members.

The values given assume that the joists are fixed into a Metsec 2.0mm track.

Section Reference	Uniform Load (kN/m ²) at Joist Spacing (mm)							
	Dead	Live	Dead	Live	Dead	Live	Dead	Live
	0.25	0.25	0.50	0.25	0.25	1.50	0.50	1.50
	400	600	400	600	400	600	400	600
090M12-50	5.14	4.49	4.49	3.92	2.93	2.56	2.93	2.56
090M12-62	5.45	4.76	4.76	4.16	3.11	2.71	3.11	2.71
090M12-75	5.73	5.01	5.01	4.38	3.27	2.86	3.27	2.86
090M14-75	6.02	5.26	5.26	4.60	3.43	3.00	3.43	3.00
090M16-75	6.28	5.49	5.49	4.79	3.58	3.13	3.58	3.13
090M18-75	6.52	5.69	5.69	4.97	3.71	3.24	3.71	3.24
090M20-75	6.73	5.88	5.88	5.14	3.84	3.35	3.84	3.35
120M12-50	5.53	4.93	4.95	4.40	3.64	3.18	3.64	3.18
120M12-62	6.76	5.72	5.75	5.08	3.85	3.37	3.85	3.37
120M12-75	7.10	6.20	6.20	5.42	4.05	3.53	4.05	3.53
120M14-75	7.46	6.52	6.52	5.69	4.25	3.71	4.25	3.71
120M16-75	7.78	6.80	6.80	5.94	4.44	3.87	4.44	3.87
120M18-75	8.08	7.06	7.06	6.16	4.60	4.02	4.60	4.02
120M20-75	8.35	7.29	7.29	6.37	4.76	4.16	4.76	4.16
150M12-50	5.89	5.25	5.28	4.70	4.06	3.59	3.91	3.45
150M12-62	7.54	6.16	6.21	5.43	4.57	3.99	4.47	3.89
150M12-75	8.39	7.33	7.33	6.11	4.78	4.18	4.78	4.18
150M14-75	8.78	7.67	7.67	6.64	5.00	4.37	5.00	4.37
150M16-75	9.16	8.00	8.00	6.99	5.22	4.56	5.22	4.56
150M18-75	9.53	8.32	8.32	7.27	5.43	4.74	5.43	4.74
150M20-75	9.86	8.62	8.62	7.53	5.62	4.91	5.62	4.91
180M12-50	6.40	5.55	5.58	4.98	4.31	3.82	4.16	3.67
180M12-62	8.28	6.76	6.82	5.74	4.94	4.33	4.75	4.16
180M12-75	9.64	8.12	8.19	6.69	5.47	4.74	5.24	4.53
180M14-75	10.09	8.81	8.81	7.27	5.75	5.02	5.57	4.87
180M16-75	10.53	9.20	9.20	7.89	6.00	5.24	5.87	5.16
180M18-75	10.93	9.55	9.55	8.34	6.23	5.44	6.22	5.41
180M20-75	11.30	9.88	9.88	8.63	6.44	5.63	6.44	5.63

Section Reference	Uniform Load (kN/m ²) at Joist Spacing (mm)							
	Dead	Live	Dead	Live	Dead	Live	Dead	Live
	0.25	0.25	0.50	0.25	0.25	1.50	0.50	1.50
	400	600	400	600	400	600	400	600
210M12-50	6.97	5.82	5.85	5.22	4.54	4.02	4.38	3.88
210M12-62	9.01	7.36	7.42	6.06	5.20	4.58	5.01	4.40
210M13-75	11.09	9.11	9.19	7.50	5.90	5.17	5.68	4.95
210M16-75	11.86	10.36	10.36	8.55	6.67	5.65	6.28	5.44
210M18-75	12.31	10.76	10.76	9.17	7.02	5.90	6.73	5.68
210M20-75	12.73	11.12	11.12	9.72	7.26	6.21	7.15	5.90
240M12-50	7.52	6.14	6.20	5.45	4.74	4.21	4.58	4.06
240M13-62	10.17	8.30	8.38	6.84	5.60	4.96	5.40	4.77
240M13-75	12.22	9.98	10.06	8.22	6.41	5.48	6.03	5.26
240M16-75	13.16	11.16	11.26	9.20	7.18	5.91	6.75	5.69
240M18-75	13.66	11.94	11.94	9.85	7.69	6.28	7.23	5.94
240M20-75	14.13	12.35	12.35	10.46	8.06	6.67	7.68	6.27
270M13-50	8.40	6.86	6.92	5.80	5.05	4.50	4.88	4.34
270M13-62	10.88	8.88	8.96	7.32	5.82	5.16	5.62	4.97
270M16-75	14.49	12.12	12.23	9.98	7.79	6.36	7.33	5.98
270M18-75	15.05	12.99	13.11	10.70	8.35	6.82	7.85	6.41
270M20-75	15.57	13.60	13.60	11.37	8.87	7.24	8.34	6.81
300M13-50	8.93	7.29	7.36	6.01	5.23	4.66	5.05	4.50
300M16-62	12.97	10.59	10.68	8.72	6.81	5.74	6.40	5.54
300M18-75	16.36	13.78	13.91	11.35	8.86	7.23	8.33	6.80
300M20-75	16.92	14.64	14.77	12.06	9.41	7.68	8.85	7.22
300M25-89	18.89	16.50	16.50	14.41	10.76	9.40	10.76	9.40
300M29-89	19.80	17.30	17.30	15.11	11.29	9.86	11.29	9.86
350M18-54	12.77	10.43	10.52	8.59	6.70	5.70	6.30	5.51
350M20-68	17.71	14.46	14.59	11.91	9.29	7.59	8.74	7.14
350M23-84	20.00	17.96	17.96	15.69	11.72	10.23	11.72	9.67
350M25-84	20.00	18.44	18.44	16.11	12.03	10.51	12.03	10.15
350M29-84	20.00	19.34	19.34	16.89	12.62	11.02	12.62	11.02

Maximum spans in above joist load tables based on:

1. Unfactored dead and live loads
2. Imposed load deflection limited to span/450 for floors and span/360 for other conditions
3. Dead + Imposed load deflection limited to span/350 for floors and span/200 for other conditions
4. Blocking and strapping at mid span for spans < 6.0m. For spans over 6.0m blocking and strapping required at max 3.0m spacing
5. Floor joists boarded with minimum 15mm plywood for joists at 400mm centres or 18mm plywood for joists at 600mm centres
6. Boarding fixed to the joists at maximum 300mm centres
7. Joists fixed into 2.0mm gauge tracks at each end

Load Tables

Studs

How to Use the Load Table:

The load tables in this section allow for simple sizing of the SFS sections for a given loading. Where openings are required within the wall, please contact Metsec for the design of the supporting members.

Compressive and Buckling Resistances are provided for a number of stud heights. The project engineer should calculate the axial load on the studs and moment on the studs. With this information the studs can be checked using the interaction formula:

$$(N_{b,Ed}/N_{b,Rd})^{0.8} + (M_{b,Ed}/M_{b,Rd})^{0.8} \leq 1.0$$

The values given assume that the studs are fixed into a Metsec base and head track and for spans 3m or above midheight blocking and strapping is used. The relationship between compressive and buckling resistances and stud height is not linear, therefore interpolation between values is not permitted.

Compressive Resistance $N_{b,Rd}$ (kN), Buckling resistance Moment $M_{b,Rd}$ (kNm) for Stud Height (m)																							
Section Reference	1		1.5		2		2.5		*3		*3.5		*4		*4.5		*5		*5.5		*6		
	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	
090M12-50	52.01	2.32	40.60	1.93	29.47	1.50	21.55	1.15	24.94	1.79	19.83	1.55	16.12	1.33	13.40	1.15	11.36	1.00	9.79	0.87	8.57	0.77	
090M12-62	57.48	2.71	47.02	2.46	35.51	2.16	26.32	1.83	29.89	2.36	23.86	2.20	19.37	2.02	16.01	1.83	13.47	1.65	11.52	1.49	9.99	1.34	
090M12-75	60.60	2.83	51.14	2.76	39.99	2.58	30.20	2.37	33.83	2.70	27.25	2.60	22.18	2.49	18.34	2.37	15.40	2.24	13.12	2.11	11.32	1.97	
090M14-75	78.31	3.57	64.49	3.45	49.02	3.20	36.43	2.93	40.94	3.37	32.68	3.23	26.50	3.09	21.88	2.93	18.38	2.76	15.69	2.59	13.57	2.42	
090M16-75	97.24	4.33	78.25	4.16	58.14	3.85	42.76	3.50	48.09	4.06	38.18	3.88	30.91	3.70	25.54	3.50	21.49	3.29	18.38	3.08	15.94	2.87	
090M18-75	117.24	5.16	92.33	4.91	67.37	4.53	49.23	4.10	55.30	4.79	43.78	4.57	35.44	4.35	29.32	4.10	24.72	3.85	21.21	3.60	18.46	3.35	
090M20-75	138.46	6.00	106.80	5.68	76.77	5.22	55.90	4.72	62.64	5.53	49.52	5.28	40.12	5.00	33.25	4.72	28.12	4.43	24.20	4.13	21.13	3.85	
120M12-50	55.69	3.15	47.75	2.60	38.02	1.98	28.91	1.49	34.98	2.39	28.93	2.05	24.04	1.74	20.20	1.49	17.21	1.28	14.86	1.11	12.99	0.97	
120M12-62	61.35	3.63	54.62	3.27	46.21	2.82	37.31	2.34	41.85	3.13	35.36	2.88	29.71	2.61	25.08	2.34	21.36	2.09	18.39	1.86	16.00	1.65	
120M12-75	64.28	3.83	58.30	3.66	50.83	3.37	42.37	3.03	46.40	3.57	39.97	3.41	34.05	3.23	28.97	3.03	24.77	2.83	21.34	2.62	18.56	2.41	
120M14-75	83.85	5.01	75.12	4.71	64.18	4.30	52.33	3.82	57.85	4.58	49.06	4.35	41.33	4.09	34.92	3.82	29.74	3.53	25.59	3.24	22.24	2.97	
120M16-75	105.06	6.26	92.99	5.82	77.98	5.26	62.45	4.61	69.53	5.64	58.25	5.32	48.69	4.98	40.97	4.61	34.83	4.24	29.96	3.87	26.06	3.53	
120M18-75	127.60	7.38	111.66	6.81	92.07	6.12	72.70	5.34	81.32	6.59	67.52	6.21	56.15	5.79	47.14	5.34	40.07	4.90	34.50	4.47	30.06	4.06	
120M20-75	149.94	8.54	129.98	7.83	105.81	7.01	82.80	6.09	92.84	7.58	76.66	7.11	63.59	6.61	53.37	6.09	45.41	5.57	39.16	5.08	34.20	4.62	

Compressive Resistance $N_{b,Rd}$ (kN), Buckling resistance Moment $M_{b,Rd}$ (kNm) for Stud Height (m)																							
Section Reference	1		1.5		2		2.5		*3		*3.5		*4		*4.5		*5		*5.5		*6		
	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	Nb,Rd	Mb,Ed	
150M12-50	55.87	3.97	48.46	3.28	39.24	2.50	30.24	1.87	41.23	3.02	35.47	2.59	30.25	2.20	25.83	1.87	22.20	1.60	19.26	1.38	16.87	1.21	
150M12-62	63.07	4.57	57.95	4.11	51.58	3.54	44.05	2.92	48.97	3.93	43.50	3.61	38.05	3.26	33.04	2.92	28.67	2.59	24.99	2.29	21.91	2.03	
150M12-75	66.04	4.84	61.61	4.60	56.32	4.22	50.02	3.77	53.51	4.48	48.59	4.26	43.41	4.03	38.34	3.77	33.68	3.50	29.58	3.22	26.06	2.95	
150M14-75	86.36	6.31	79.86	5.87	71.95	5.30	62.61	4.63	67.78	5.69	60.57	5.37	53.28	5.01	46.46	4.63	40.43	4.24	35.29	3.85	30.97	3.49	
150M16-75	108.58	7.91	99.67	7.26	88.70	6.48	75.96	5.58	82.94	7.01	73.21	6.57	63.69	6.09	55.08	5.58	47.69	5.07	41.51	4.58	36.38	4.13	
150M18-75	131.88	9.58	120.30	8.74	105.98	7.74	89.65	6.61	98.49	8.43	86.12	7.86	74.36	7.25	64.00	6.61	55.26	5.97	48.04	5.38	42.11	4.84	
150M20-75	155.47	11.17	141.09	10.16	123.28	8.95	103.33	7.60	114.00	9.78	99.00	9.10	85.06	8.36	73.00	7.60	62.96	6.86	54.74	6.17	48.02	5.54	
180M12-50	55.92	4.81	48.90	3.99	40.09	3.06	31.23	2.28	44.39	3.67	39.00	3.16	33.71	2.68	28.92	2.28	24.80	1.95	21.37	1.68	18.52	1.47	
180M12-62	63.13	5.53	58.25	4.98	52.22	4.29	45.05	3.53	52.84	4.76	48.40	4.37	43.66	3.95	38.91	3.53	34.46	3.13	30.46	2.77	26.98	2.45	
180M12-75	66.96	5.86	63.34	5.56	59.20	5.09	54.29	4.54	57.29	5.41	53.55	5.15	49.42	4.86	45.05	4.54	40.68	4.21	36.51	3.87	32.69	3.53	
180M14-75	87.66	7.64	82.26	7.09	75.88	6.39	68.23	5.57	73.46	6.87	67.84	6.48	61.74	6.04	55.50	5.57	49.50	5.09	43.99	4.62	39.11	4.18	
180M16-75	110.43	9.56	103.02	8.77	94.11	7.81	83.39	6.71	90.88	8.47	83.10	7.93	74.83	7.34	66.61	6.71	58.94	6.08	52.09	5.48	46.14	4.93	
180M18-75	133.81	11.53	124.17	10.51	112.44	9.27	98.35	7.86	108.41	10.12	98.32	9.42	87.81	8.65	77.62	7.86	68.33	7.08	60.20	6.34	53.23	5.68	
180M20-75	157.84	13.56	145.76	12.28	130.90	10.73	113.17	9.00	126.12	11.79	113.61	10.91	100.81	9.97	88.66	9.00	77.79	8.07	68.41	7.21	60.47	6.44	

* Blocking and strapping at mid span for stud height $\geq 3.0\text{m}$
 Linear interpolation between values is not permitted

$$[(N_{b,Ed}/N_{b,Rd})^{0.8} + (M_{b,Ed}/M_{b,Rd})^{0.8}] \leq 1.0$$

$N_{b,Ed}$ = Design Axial Load

$M_{b,Ed}$ = Design Bending Moment

Building Regulations Part B – Fire Safety:

The requirements for fire protection will normally be found in the relevant annexe of the Building Regulations, Part B, and often specific fire strategy reports are generated.

The fire ratings published in this document are tested and/or assessed for use with Metsec SFS sections and cannot be used with other systems.

All performance claims by manufacturers for fire resistance must be substantiated by test or assessment reports by UKAS accredited laboratories. Installations must be in strict accordance with the report data for types of materials used, components and assembly details. Unwarranted site modifications can jeopardize performance; in particular services and these should be well coordinated and often involve fire stopping.

All fire test data in this load bearing section is to BS EN 1365-1: 2012 and the fire performance shown equally applies to BS 476 Part 21: 1987. All test data is based on unique UKAS accredited tests and UKAS accredited scope of testing. The tests are carried out in UKAS accredited furnaces measuring 3m square.

The results of our fire tests are the lower of insulation and or integrity failure rounded down to the nearest 30 minutes i.e. measured as 30, 60, 90 or 120 minutes.

For further information on the individual tests or to see where the test or assessment was carried out please contact Metsec.

How to Use the External Wall Fire Performance Table:

Decide the fire performance required from the inside of the building based on the Building Regulations Part B. If the walling is subject to boundary wall conditions or other situations where fire resistance is required from the outside then note this also.

Due to the large amount of data the tables have been split into fire resistance periods from the inside, 60 minutes, 90 minutes and 120 minutes to make sorting through the data easier. Within these tables the data has been listed in order of wall type and then the type of plasterboard (e.g. Fire type boards or Sound type boards).

Example:

The external wall is a boundary wall condition and requires 60 minutes fire rating from both sides.

The solution can be any of the boards given in the 60 minute table for the non-boundary wall conditions however to meet the boundary wall condition of 60 minutes from the outside only four options are available:

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Sheathing Board	Duty Rating	Fire Performance from Outside (Boundary Wall Condition)
Fire Performance from Inside 60 MINUTES						
LE1	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	Severe	No Rating
LE1	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	Severe	No Rating
LE1	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	Severe	No Rating
LE1	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	Severe	No Rating
LE1	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	Severe	No Rating
LE2	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	Severe	No Rating
LE2	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	Severe	60 minutes
LE2	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	Severe	No Rating
LE2	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	Severe	60 minutes
LE3	2x15mm Soundbloc	British Gypsum	90mm	2x12mm Euroform Versaliner	Severe	60 minutes
LE3	2x15mm Soundbloc	British Gypsum	90mm	2x12mm RCM Y-Wall	Severe	90 minutes
LE3	2x15mm db Board	Siniat	90mm	2x12mm Euroform Versaliner	Severe	60 minutes
LE3	2x15mm db Board	Siniat	90mm	2x12mm RCM Y-Wall	Severe	90 minutes
LE4	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	Severe	90 minutes
LE4	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	Severe	90 minutes
LE4	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	Severe	90 minutes
LE4	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	Severe	90 minutes

Fire Performance Table for External Walls – Load Bearing



Type LE1: Two layers of plasterboard, stud, sheathing board



Type LE2: Two layers of plasterboard, stud, sheathing board, 50mm K15 Insulation



Type LE3: Two layers of plasterboard, stud, two layers of sheathing board, 50mm K15 Insulation



Type LE4: Two layers of plasterboard, stud, sheathing board, 75mm Rockwool Duoslab Insulation



Type LE5: Three layers of plasterboard, stud, sheathing board



Type LE6: Three layers of plasterboard, stud, sheathing board, 50mm K15 Insulation



Type LE7: Three layers of plasterboard, stud, two layers of sheathing board, 50mm K15 Insulation



Type LE8: Three layers of plasterboard, stud, sheathing board, 75mm Rockwool Duoslab Insulation

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Sheathing Board	Fire Performance from Outside (Boundary Wall Condition)
Fire Performance from Inside 60 MINUTES					
LE1	2x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	No Rating
LE1	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	No Rating
LE1	2x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	No Rating
LE1	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	No Rating
LE1	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	No Rating
LE2	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	60 minutes
LE2	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	60 minutes
LE3	2x15mm Soundbloc	British Gypsum	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm Soundbloc	British Gypsum	90mm	2x12mm RCM Y-Wall	90 minutes
LE3	2x15mm db Board	Siniat	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm db Board	Siniat	90mm	2x12mm RCM Y-Wall	90 minutes
LE4	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	90 minutes
LE4	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	90 minutes

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Sheathing Board	Fire Performance from Outside (Boundary Wall Condition)
Fire Performance from Inside 90 MINUTES					
LE1	2x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm Soundshield Plus	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm Soundshield Plus	Knauf	90mm	12mm RCM Y-Wall	No Rating
LE2	2x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	60 minutes
LE2	2x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	60 minutes
LE2	2x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	60 minutes
LE2	2x15mm Soundshield Plus	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm Soundshield Plus	Knauf	90mm	12mm RCM Y-Wall	60 minutes
LE3	2x15mm Fireline	British Gypsum	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm Fireline	British Gypsum	90mm	2x12mm RCM Y-Wall	90 minutes
LE3	2x15mm Fire Panel	Knauf	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm Fire Panel	Knauf	90mm	2x12mm RCM Y-Wall	90 minutes
LE3	2x15mm Fireboard	Siniat	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm Fireboard	Siniat	90mm	2x12mm RCM Y-Wall	90 minutes
LE3	2x15mm Soundshield Plus	Knauf	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm Soundshield Plus	Knauf	90mm	2x12mm RCM Y-Wall	90 minutes
LE4	2x15mm Soundshield Plus	Knauf	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm Soundshield Plus	Knauf	90mm	12mm RCM Y-Wall	120 minutes
LE4	2x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	120 minutes
LE4	2x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	120 minutes
LE4	2x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	120 minutes
Fire Performance from Inside 120 MINUTES					
LE5	3x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE5	3x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	No Rating
LE5	3x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE5	3x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	No Rating
LE5	3x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE5	3x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	No Rating
LE6	3x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE6	3x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	60 minutes
LE6	3x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE6	3x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	60 minutes
LE6	3x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE6	3x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	60 minutes
LE7	3x15mm Fireline	British Gypsum	90mm	2x12mm Euroform Versaliner	60 minutes
LE7	3x15mm Fireline	British Gypsum	90mm	2x12mm RCM Y-Wall	90 minutes
LE7	3x15mm Fire Panel	Knauf	90mm	2x12mm Euroform Versaliner	60 minutes
LE7	3x15mm Fire Panel	Knauf	90mm	2x12mm RCM Y-Wall	90 minutes
LE7	3x15mm Fireboard	Siniat	90mm	2x12mm Euroform Versaliner	60 minutes
LE7	3x15mm Fireboard	Siniat	90mm	2x12mm RCM Y-Wall	90 minutes
LE8	3x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	90 minutes
LE8	3x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	120 minutes
LE8	3x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	90 minutes
LE8	3x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	120 minutes
LE8	3x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	90 minutes
LE8	3x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	120 minutes

How to Use the Internal Wall Fire Performance Table:

Decide the fire performance required based on the Building Regulations Part B.

Due to the large amount of data the tables have been split into fire resistance periods from the inside, 60 minutes, 90 minutes and 120 minutes to make sorting through the data easier. Within these tables the data has been listed in order of wall type and then the type of plasterboard (e.g. Fire type boards or Sound type boards).

The internal walls will often be party walls subject to acoustic performance so to assist in selecting the boarding solution that matches both the fire and acoustic requirements the acoustic performance for each wall construction is also provided. See section, Building Regulations Part E – Acoustic for more information.

There are many different types of plasterboard available so to keep the tables simple only the basic boards have been shown. Where required other boards may be used as shown in the tables below for wall constructions only.

Board Substitutions – British Gypsum

Tested Board	Allowable Substitutions
Fireline	Fireline Duplex Fireline MR Soundbloc F Duraline Duraline MR
Soundbloc	Soundbloc F Soundbloc MR Duraline Duraline MR

Provided substituted board is at least as thick as the tested board.

Board Substitutions – Knauf

Tested Board	Allowable Substitutions
Fire Panel	Impact Panel Performance Plus
Soundshield Plus	Performance Plus

Provided substituted board is at least as thick as the tested board.

Board Substitutions – Siniat

Tested Board	Allowable Substitutions
Fire Board	Fire V Board Fire MR Board Universal Board Megadeco Board
dB Board	Universal Board Megadeco Board

Provided substituted board is at least as thick as the tested board.

How to Use the Floor Fire Performance Table:

Decide the fire performance required based on the Building Regulations Part B.

Due to the large amount of data the tables have been split into fire resistance periods from the inside, 60 minutes and 90 minutes to make sorting through the data easier. Within these tables the data has been listed in order of floor type and then the type of plasterboard.

The floors will often be subject to acoustic performance so to assist in selecting the boarding solution that matches both the fire and acoustic requirements the acoustic performance for each floor construction is also provided. See section, Building Regulations Part E – Acoustic for more information.

There are many different types of plasterboard available so to keep the tables simple only the basic boards have been shown. Where required other boards may be used as shown in the tables below for joist constructions only.

Board Substitutions – British Gypsum

Tested Board	Allowable Substitutions
Fireline	Fireline Duplex Fireline MR

Provided substituted board is at least as thick as the tested board.

Board Substitutions – Siniat

Tested Board	Allowable Substitutions
Fire Board	Fire V Board Fire MR Board

Provided substituted board is at least as thick as the tested board.

Building Regulations Part E

– Resistance to the Passage of Sound:

The requirements for acoustic performance will normally be found in the relevant annexe of the Building Regulations, Part E, and often specific acoustic strategy reports are generated.

Sound insulation performance must be substantiated or based on UKAS accredited laboratories test reports, tested to BS EN ISO 717-1:1997 and BS EN ISO 140-3:1995.

The quoted figures in this publication are laboratory tested measured as the Weighted Sound Reduction Index (R_w) measured in decibels (dB), hence all values are R_wdB figures. Where the particular wall construction hasn't been tested an estimated figure is provided and clearly noted.

All sound insulation data is based on laboratory evaluation of the building element in isolation and cannot reproduce your installed local conditions. It is important that flanking transmission is considered at design stage.

On site testing is measured using a different scale. It uses D_{nT,w} Standardised Level Difference. Values on site are approximately 7 to 8 decibels lower than achieved in the laboratory. One of the primary reasons for this difference will be the downgrading due to flanking transmission. This highlights the absolute need for good design and flanking details to help minimise these reductions

Party walls under Part E are measured as D_{nT,w} + c_{tr}, to give you as a designer more information within this document in appropriate wall build ups to be considered we print the R_w+c_{tr} figures in brackets after the R_wdB figures.

The actual tests carried out are used to offer an order of magnitude comparison for the performance of the various systems. Sound insulation on site is a function of the partition chosen and the associated structures in which it is installed. We cannot take any responsibility for overall design and we would advise that specialist advice is sought at an early stage of design. It is essential that consideration is giving to blocking all air paths and flanking sound.

All test data and system specifications are for systems constructed with materials and components as shown. The inclusion of other components without prior approval or constructed on site contrary to these documents will invalidate test certification and system performance.

All acoustic values are based on studs at 600mm centres. If the stud centres are reduced to either 400mm or 300mm, this could impact negatively on acoustic performance.

For further information on the individual tests or to see where the test or assessment was carried out please contact Metsec.

Fire and Acoustic Performance Table for Internal Walls – Load Bearing



Type L1: Two layers of plasterboard, stud, two layers of plasterboard



Type L2: Two layers of plasterboard, stud with mineral wool between, two layers of plasterboard



Type L3: Two layers of plasterboard, stud with mineral wool between, resilient bar, two layers of plasterboard



Type L4: Two layers of plasterboard, resilient bar, stud with mineral wool between, resilient bar, two layers of plasterboard

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Duty Rating	Acoustic Performance Rw (Rw+Ctr)
Fire Performance from Inside 60 MINUTES					
L1	2x15mm Soundbloc	British Gypsum	90mm	Severe	50 (43)
L1	2x15mm db Board	Siniat	90mm	Severe	46 (36)
L2	2x15mm Soundbloc	British Gypsum	90mm	Severe	* 51 (44) *
L2	2x15mm db Board	Siniat	90mm	Severe	49 (44)
L3	2x15mm Soundbloc	British Gypsum	90mm	Severe	* 56 (49) *
L3	2x15mm db Board	Siniat	90mm	Severe	* 54 (47) *
L4	2x15mm Soundbloc	British Gypsum	90mm	Severe	64(56)
L4	2x15mm Soundbloc	British Gypsum	150mm	Severe	67(60)
L4	2x15mm db Board	Siniat	90mm	Severe	58 (51)
Fire Performance from Inside 90 MINUTES					
L1	2x15mm Fireline	British Gypsum	90mm	Severe	46 (38)
L1	2x15mm Fire Panel	Knauf	90mm	Severe	46 (36)
L1	2x15mm Fireboard	Siniat	90mm	Severe	*46 (36) *
L1	2x15mm Soundshield Plus	Knauf	90mm	Severe	46 (35)
L2	2x15mm Fireline	British Gypsum	90mm	Severe	48 (40)
L2	2x15mm Fire Panel	Knauf	90mm	Severe	* 49 (37) *
L2	2x15mm Fireboard	Siniat	90mm	Severe	51 (45)
L2	2x15mm Soundshield Plus	Knauf	90mm	Severe	49 (37)
L3	2x15mm Fireline	British Gypsum	90mm	Severe	* 56 (49) *
L3	2x15mm Fire Panel	Knauf	90mm	Severe	* 56 (49) *
L3	2x15mm Fireboard	Siniat	90mm	Severe	57 (50)
L3	2x15mm Soundshield Plus	Knauf	90mm	Severe	56 (49)
L4	2x15mm Fireline	British Gypsum	90mm	Severe	57 (49)
L4	2x15mm Fire Panel	Knauf	90mm	Severe	57 (49)
L4	2x15mm Fireboard	Siniat	90mm	Severe	58 (50)
L4	2x15mm Soundshield Plus	Knauf	90mm	Severe	57 (50)



Type L5: Three layers of plasterboard, stud, three layers of plasterboard



Type L6: Three layers of plasterboard, stud with mineral wool between, three layers of plasterboard



Type L7: Three layers of plasterboard, stud with mineral wool between, resilient bar, three layers of plasterboard



Type L8: Three layers of plasterboard, resilient bar, stud with mineral wool between, resilient bar, three layers of plasterboard

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Duty Rating	Acoustic Performance Rw (Rw+Ctr)
Fire Performance from Inside 120 MINUTES					
L5	3x15mm Fireline	British Gypsum	90mm	Severe	*50 (40) *
L5	3x15mm Fire Panel	Knauf	90mm	Severe	*50 (40) *
L5	3x15mm Fireboard	Siniat	90mm	Severe	*50 (40) *
L6	3x15mm Fireline	British Gypsum	90mm	Severe	* 53 (42) *
L6	3x15mm Fire Panel	Knauf	90mm	Severe	* 53 (42) *
L6	3x15mm Fireboard	Siniat	90mm	Severe	* 53 (42) *
L7	3x15mm Fireline	British Gypsum	90mm	Severe	* 60 (53) *
L7	3x15mm Fire Panel	Knauf	90mm	Severe	60 (53)
L7	3x15mm Fireboard	Siniat	90mm	Severe	* 60 (53) *
L8	3x15mm Fireline	British Gypsum	90mm	Severe	62 (55)
L8	3x15mm Fire Panel	Knauf	90mm	Severe	61 (54)
L8	3x15mm Fireboard	Siniat	90mm	Severe	62 (55)

*Indicates estimated values based on similar tests

Fire and Acoustic Performance Table for Joisted Floors – Load Bearing



Type F1: Two layers of plasterboard, resilient bars, joists with mineral wool between, 15mm plywood, 19mm British Gypsum Plank



Type F2: Two layers of plasterboard, resilient bars, joists with mineral wool between, 15mm plywood, 19mm British Gypsum Plank, 8mm Cloud 9 Underlay, 12mm OSB



Type F3: Two layers of plasterboard, resilient bars, joists with mineral wool between, 15mm plywood, 19mm British Gypsum Plank, 53mm Danskin acoustic battens, 18mm V313 chipboard



Type F7: Two layers of plasterboard, resilient bars, joists with mineral wool between, 15mm plywood, 19mm British Gypsum Plank, 70mm Collecta Deckfon acoustic battens, 18mm V313 chipboard



Type F8: Two layers of plasterboard, resilient bars, joists with mineral wool between, 15mm plywood, 19mm British Gypsum Plank, Collecta Screedboard 28

Floor Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Joist Depth	Acoustic Performance R _w (R _w +C _{tr})	Acoustic Performance L _{n,w} (C1)
Fire Performance from Inside 60 MINUTES					
F1	2x12.5mm Fireline	British Gypsum	200mm	59 (51)	65 (-6)
F1	2x12.5mm Fire Panel	Knauf	200mm	56 (50)	63
F2	2x12.5mm Fireline	British Gypsum	200mm	63 (54)	55 (0)
F2	2x12.5mm Fire Panel	Knauf	200mm	* 60 (53) *	* 55 *
F3	2x12.5mm Fireline	British Gypsum	200mm	59 (52)	51 (2)
F3	2x12.5mm Fire Panel	Knauf	200mm	* 56 (51) *	* 51 *
F7	2x12.5mm Fireline	British Gypsum	200mm	* 64 (54) *	* 50 *
F7	2x12.5mm Fire Panel	Knauf	200mm	64 (54)	50
F8	2x12.5mm Fireline	British Gypsum	200mm	* 59 (52) *	*55 *
F8	2x12.5mm Fire Panel	Knauf	200mm	59 (52)	55

1. For Siniat performance data please contact Metsec
2. For 2 hour performance data please contact Metsec



Type F4: Three layers of plasterboard, resilient bars, joists with mineral wool between, 15mm plywood, 19mm British Gypsum Plank



Type F5: Three layers of plasterboard, resilient bars, joists with mineral wool between, 15mm plywood, 19mm British Gypsum Plank, 8mm Cloud 9 Underlay, 12mm OSB



Type F6: Three layers of plasterboard, resilient bars, joists with mineral wool between, 15mm plywood, 19mm British Gypsum Plank, 53mm Dansk acoustic battens, 18mm V313 chipboard



Type F9: Three layers of plasterboard, resilient bars, joists with mineral wool between, 15mm plywood, 19mm British Gypsum Plank, 70mm Collecta Deckfon acoustic battens, 18mm V313 chipboard



Type F10: Three layers of plasterboard, resilient bars, joists with mineral wool between, 15mm plywood, 19mm British Gypsum Plank, Collecta Screedboard 28

Floor Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Joist Depth	Acoustic Performance R_w (R_w+C_{tr})	Acoustic Performance $L_{n,w}$ (C1)
Fire Performance from Inside 90 MINUTES					
F4	3x12.5mm Fireline	British Gypsum	200mm	* 59 (51) *	* 65 *
F4	3x12.5mm Fire Panel	Knauf	200mm	57 (51)	63
F5	3x12.5mm Fireline	British Gypsum	200mm	* 63 (54) *	* 55 *
F5	3x12.5mm Fire Panel	Knauf	200mm	* 60 (53)*	* 55 *
F6	3x12.5mm Fireline	British Gypsum	200mm	* 59 (52) *	* 51 *
F6	3x12.5mm Fire Panel	Knauf	200mm	* 56 (51) *	* 51 *
F9	3x12.5mm Fireline	British Gypsum	200mm	* 64 (54) *	* 50 *
F9	3x12.5mm Fire Panel	Knauf	200mm	64 (56)	50
F10	3x12.5mm Fireline	British Gypsum	200mm	* 59 (52) *	*55 *
F10	3x12.5mm Fire Panel	Knauf	200mm	59 (53)	53

1. For Siniat performance data please contact Metsec
2. For 2 hour performance data please contact Metsec

Building Regulations Part L – Conservation of Fuel and Power:

The U-Values published in this section have been obtained by the combined method, which takes account of the performance of the individual elements making up the wall construction. These values should be confirmed with the insulation provider or by the consultant providing the SAP calculations.

Depending on the stud depth used in the wall construction additional insulation between the studs may help reduce the external insulation thickness. A condensation risk analysis should be completed if the insulation between the studs makes up more than a third of the overall insulation performance of the wall.

Where generic materials are referenced the following thermal conductivities have been used:

- » 12mm sheathing board, $\lambda = 0.25 \text{ W/mK}$
- » 12.5mm plasterboard, $\lambda = 0.24 \text{ W/mK}$
- » 102mm brickwork, $\lambda = 0.77 \text{ W/mK}$

Where wool insulation is referenced as being between the studs the following has been used:

- » Generally 50mm of glass wool insulation, $\lambda = 0.044 \text{ W/mK}$ has been used
- » Where Rockwool Duoslab has been used, Rockwool RWA45 insulation, $\lambda = 0.04 \text{ W/mK}$ has been used between the studs. Where the Rockwool Duoslab is 90mm or less then 50mm of RWA45 has been used. Where the Rockwool Duoslab is 100mm or greater then 75mm of RWA45 has been used



Thermal Performance Table – Brick Cladding



Type EC1: Two layers of plasterboard, stud, sheathing board, insulation, cavity, brickwork



Type EC1i: Two layers of plasterboard, stud with mineral wool between, sheathing board, insulation, cavity, brickwork

U- Value Required	Wall Type EC1			Wall Type EC1i		
	TW55 (mm)	K15 (mm)	DuoSlab (mm)	TW55 (mm)	K15 (mm)	DuoSlab (mm)
0.30	50	45	85	30	30	55
0.29	55	50	90	30	30	55
0.28	55	50	90	35	30	60
0.27	60	55	100	40	35	65
0.26	60	55	110	40	40	70
0.25	65	60	110	45	40	75
0.24	70	65	120	50	45	80
0.23	75	65	120	50	50	85
0.22	75	70	130	55	50	90
0.21	80	75	140	60	55	100
0.20	90	80	140	65	60	100
0.19	95	85	150	70	65	110
0.18	100	90	160	80	70	120
0.17	110	100	170	85	80	130
0.16	120	110	190*	95	85	140
0.15	130*	120	200*	110	95	150
0.14	140*	130	220*	120	110	170
0.13	150*	140	230*	130*	120	180
0.12	160*	150*	250*	140*	130	200*
0.11	180*	160*	280*	160*	140	230*
0.10	200*	180*	310*	180*	160*	260*

*Double insulation boards required, boards should be of roughly equal thickness

1. Metsec studs assumed to be at 600mm horizontal centres
2. Brick tie channels fixed at 450mm vertical centres with stainless steel stand off screws fixing to studs through insulation

Thermal Performance Table – Ventilated Rainscreen Cladding



Type EC2: Two layers of plasterboard, stud, sheathing board, insulation, ventilated rainscreen



Type EC2i: Two layers of plasterboard, stud with mineral wool between, sheathing board, insulation, ventilated rainscreen

U- Value Required	Wall Type EC2						Wall Type EC2i					
	Brackets 600mm	Brackets 900mm	Brackets 1200mm	Brackets 600mm	Brackets 900mm	Brackets 1200mm	Brackets 600mm	Brackets 900mm	Brackets 1200mm	Brackets 600mm	Brackets 900mm	Brackets 1200mm
	K15 (mm)	K15 (mm)	K15 (mm)	DuoSlab (mm)	DuoSlab (mm)	DuoSlab (mm)	K15 (mm)	K15 (mm)	K15 (mm)	DuoSlab (mm)	DuoSlab (mm)	DuoSlab (mm)
0.30	90	85	80	130	120	110	60	60	50	90	80	75
0.29	95	85	85	130	130	120	70	60	60	100	85	80
0.28	100	90	85	140	130	120	70	60	60	100	90	85
0.27	110	95	90	150	140	130	75	70	60	100	100	90
0.26	110	100	95	160	140	140	80	70	70	110	100	100
0.25	120	110	100	160	150	140	90	75	70	120	100	100
0.24	120	110	110	170	160	150	90	80	70	130	110	100
0.23	130	120	110	180	160	160	100	90	80	140	120	110
0.22	140	120	120	190*	170	170	110	90	80	150	130	120
0.21	150*	130	120	210*	180	170	110	100	90	160	140	130
0.20	160*	140	130	220*	200*	190*	120	110	100	170	150	130
0.19	170*	150*	140	240*	210*	200*	130	110	100	190*	160	150
0.18	180*	160*	150*	260*	220*	210*	150*	120	110	210*	180	160
0.17	200*	170*	160*	280*	240*	230*	160*	140	120	230*	190*	170
0.16	220*	190*	170*	310*	260*	240*	180*	150*	130	260*	210*	190*
0.15	240*	200*	190*	350*	280*	260*	200*	160*	140	290*	230*	210*
0.14	270*	220*	200*	-	310*	290*	220*	180*	160*	330*	260*	230*
0.13	-	240*	220*	-	350*	310*	250*	200*	170*	-	290*	260*
0.12	-	270*	250*	-	-	350*	-	230*	190*	-	330*	290*
0.11	-	-	280*	-	-	-	-	260*	220*	-	-	330*
0.10	-	-	-	-	-	-	-	-	250*	-	-	-

*Double insulation boards required, boards should be of roughly equal thickness

1. Metsec studs assumed to be at 600mm horizontal centres
2. Insulation assumed to be broken by rainscreen support brackets at the vertical centres selected (default 600mm)
3. Thermal performance may be increased by increasing vertical centres of the brackets especially for U-values less than 0.18
4. If vertical centres greater than 600mm then confirmation should be obtained from cladding engineer to confirm this is acceptable

Thermal Performance Table – Timber Cladding



Type EC3: Two layers of plasterboard, stud, sheathing board, insulation, battens, timber cladding



Type EC3i: Two layers of plasterboard, stud with mineral wool between, sheathing board, insulation, battens, timber cladding

U- Value Required	Wall Type EC3			Wall Type EC3i		
	TW55 (mm)	K15 (mm)	DuoSlab (mm)	TW55 (mm)	K15 (mm)	DuoSlab (mm)
0.30	70	60	100	50	50	65
0.29	70	65	110	50	50	70
0.28	75	65	110	55	50	75
0.27	75	70	120	55	50	80
0.26	80	70	120	60	60	80
0.25	80	75	130	60	60	85
0.24	85	80	130	65	60	90
0.23	90	85	140	70	70	100
0.22	95	85	140	75	70	100
0.21	100	90	150	80	70	110
0.20	110	95	160	90	80	110
0.19	110	100	170	90	80	120
0.18	120	110	180	100	90	130
0.17	130*	120	190*	110	100	140
0.16	130*	120	200*	110	100	150
0.15	140*	130	210*	120	110	170
0.14	150*	140	230*	130*	120	180
0.13	170*	150*	250*	140*	130	200*
0.12	180*	160*	270*	160*	140	220*
0.11	200*	180*	290*	170*	160*	240*
0.10	220*	200*	320*	190*	180*	270*

*Double insulation boards required, boards should be of roughly equal thickness

1. Metsec studs assumed to be at 600mm horizontal centres
2. Timber battens assumed to be fixed with stainless steel screws at 300mm vertical centres fixing through insulation
3. Timber battens are to be fixed on top of the insulation and not penetrate the insulation thickness

Thermal Performance Table – Insulated Render



Type EC4: Two layers of plasterboard, stud, sheathing board, 20mm cavity, EPS insulation, render



Type EC5: Two layers of plasterboard, stud, sheathing board, EPS insulation, render



Type EC4i: Two layers of plasterboard, stud with glass wool between, sheathing board, 20mm cavity, EPS insulation, render



Type EC5i: Two layers of plasterboard, stud with glass wool between, sheathing board, EPS insulation, render

U- Value Required	Wall Type EC4	Wall Type EC5	Wall Type EC4i	Wall Type EC5i
	NHBC 20mm Cavity	Adhesive Fix	NHBC 20mm Cavity	Adhesive Fix
	EPS	EPS	EPS	EPS
0.30	100	110	70	80
0.29	110	110	70	80
0.28	110	120	80	80
0.27	120	120	80	90
0.26	120	130	90	90
0.25	130	130	90	100
0.24	130	140	100	110
0.23	140	140	110	110
0.22	150	150	110	120
0.21	150	160	120	130
0.20	160	170	130	130
0.19	170	180	140	140
0.18	180	190	150	150
0.17	190	200*	160	160
0.16	210*	210*	170	180
0.15	220*	230*	180	190
0.14	240*	240*	200*	210*
0.13	260*	260*	220*	230*
0.12	280*	280*	240*	250*
0.11	300*	310*	270*	270*
0.10	330*	340*	300*	300*

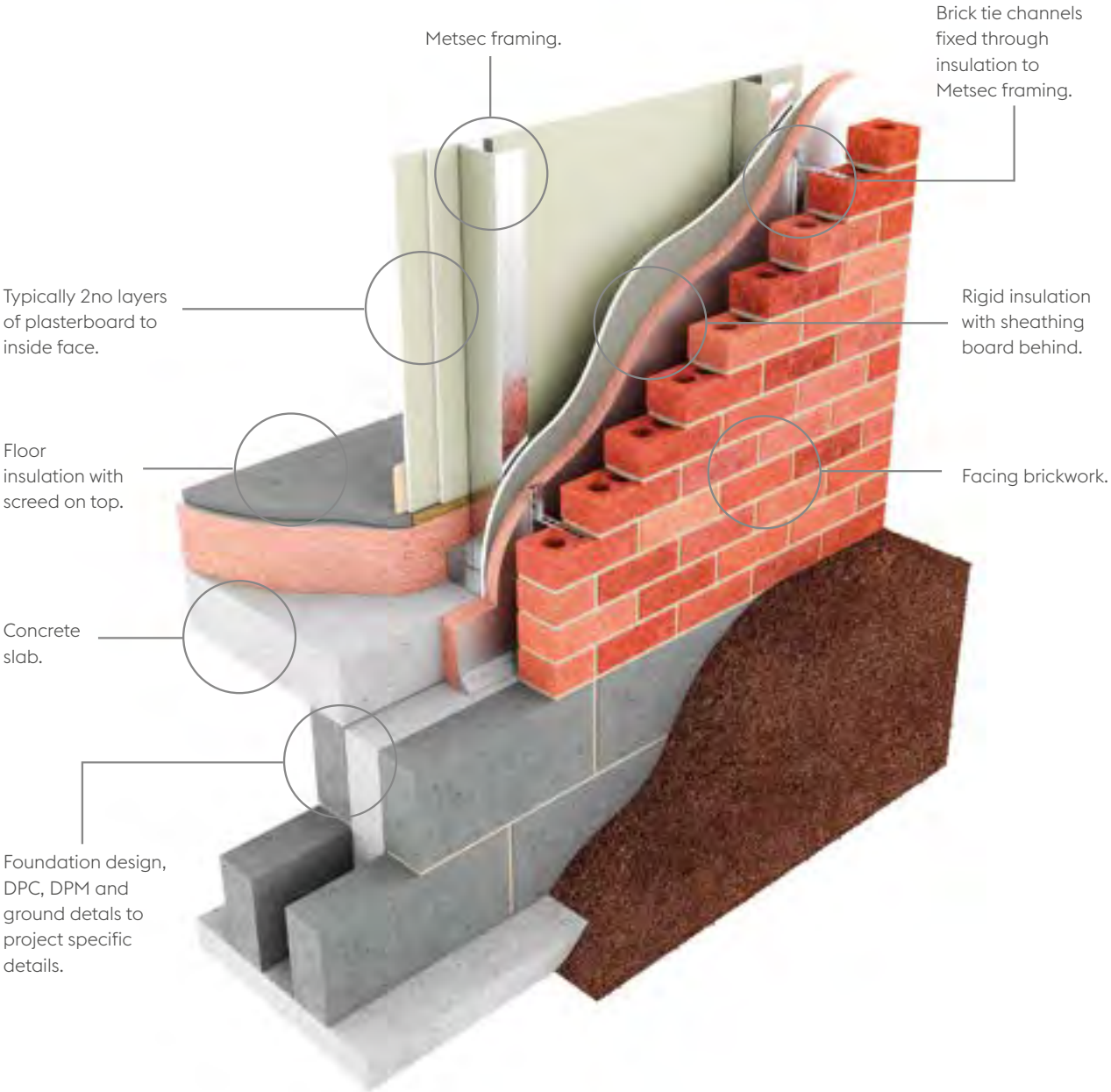
*Advice should be sought from the insulation provider regarding the construction to achieve the required insulation thickness

1. Metsec studs assumed to be at 600mm horizontal centres

Architectural Drawings

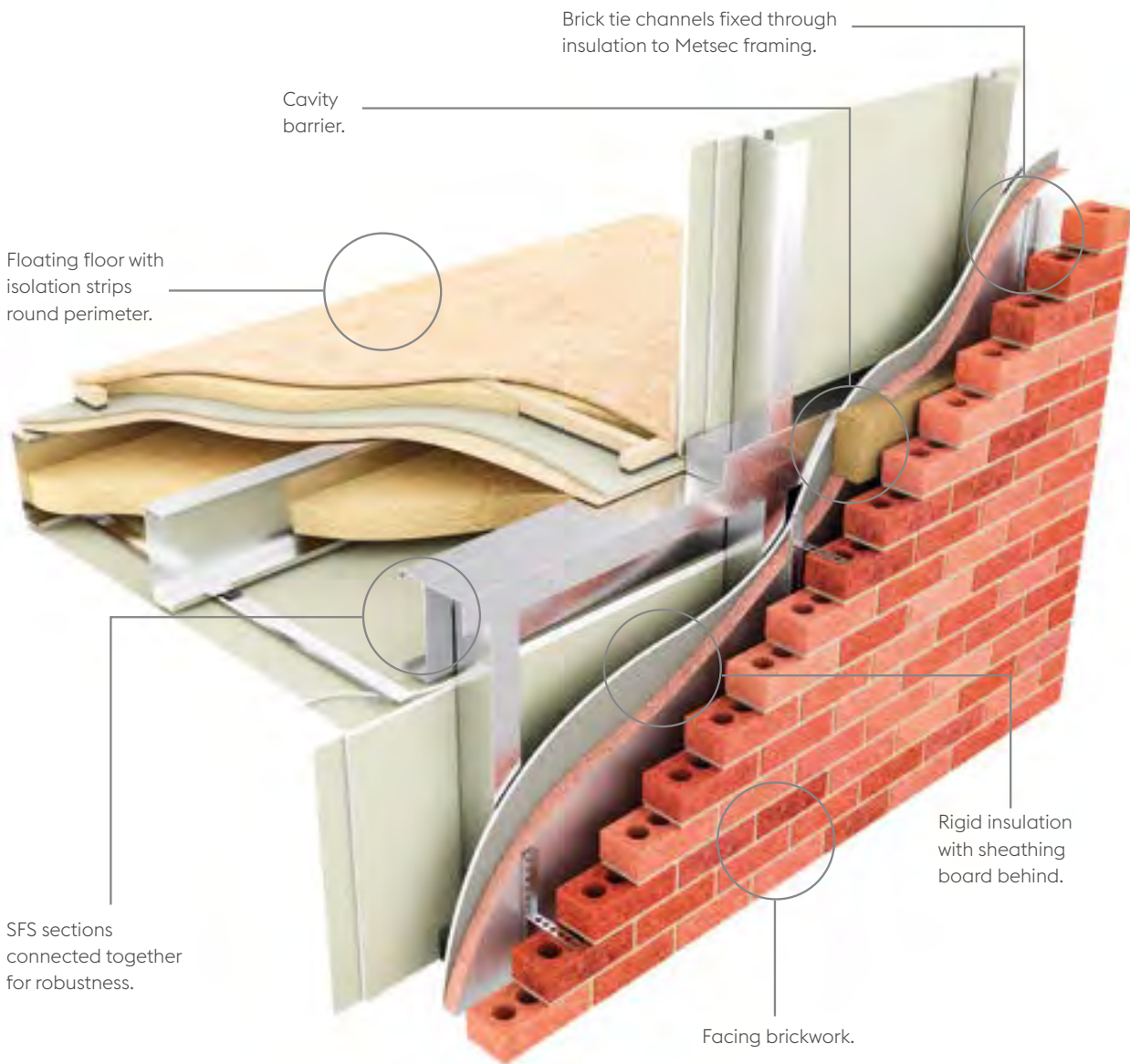
L3D-01

Base of SFS at Ground Floor



L3D-02

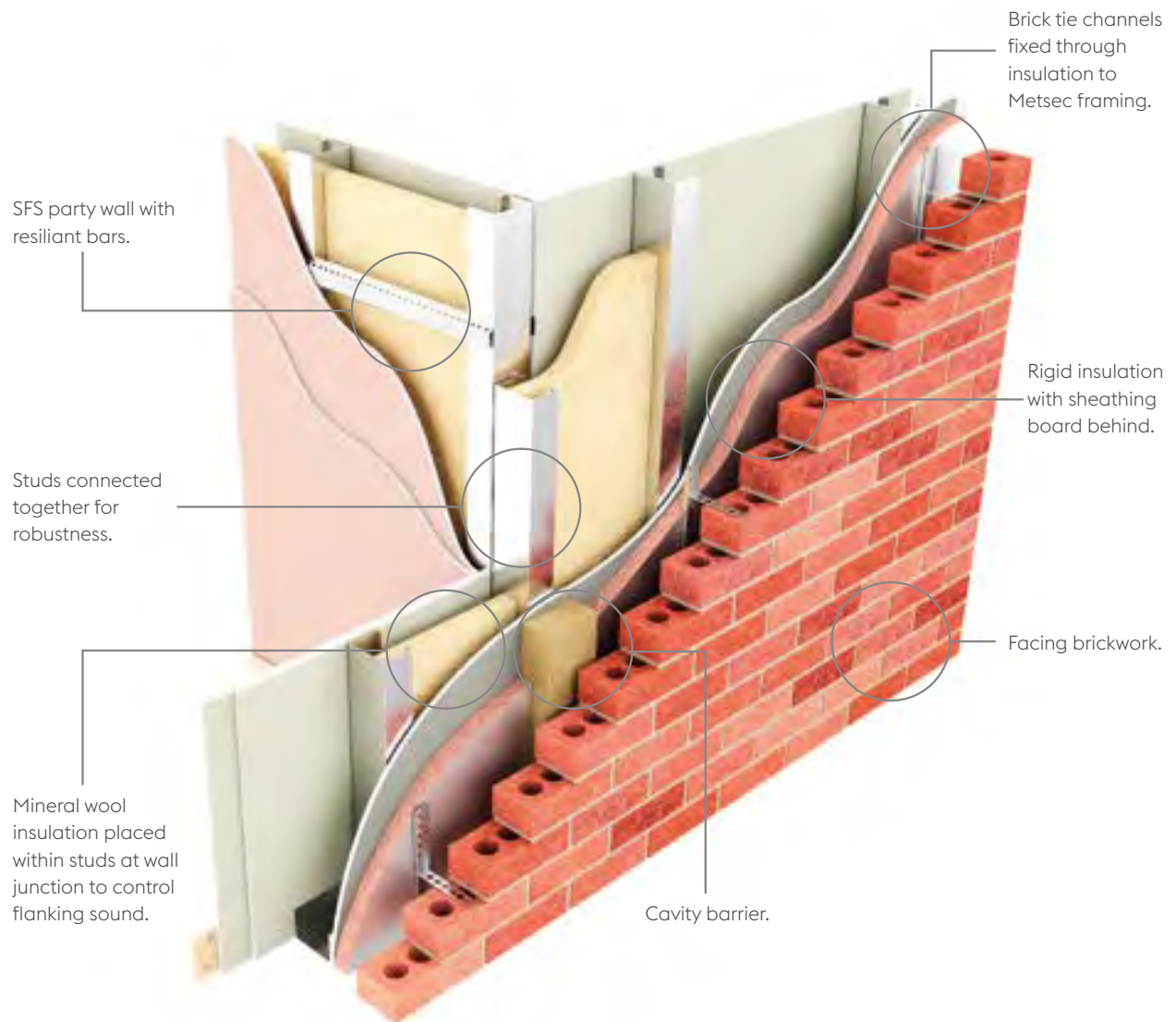
External Wall and Floor Junction



Architectural Drawings

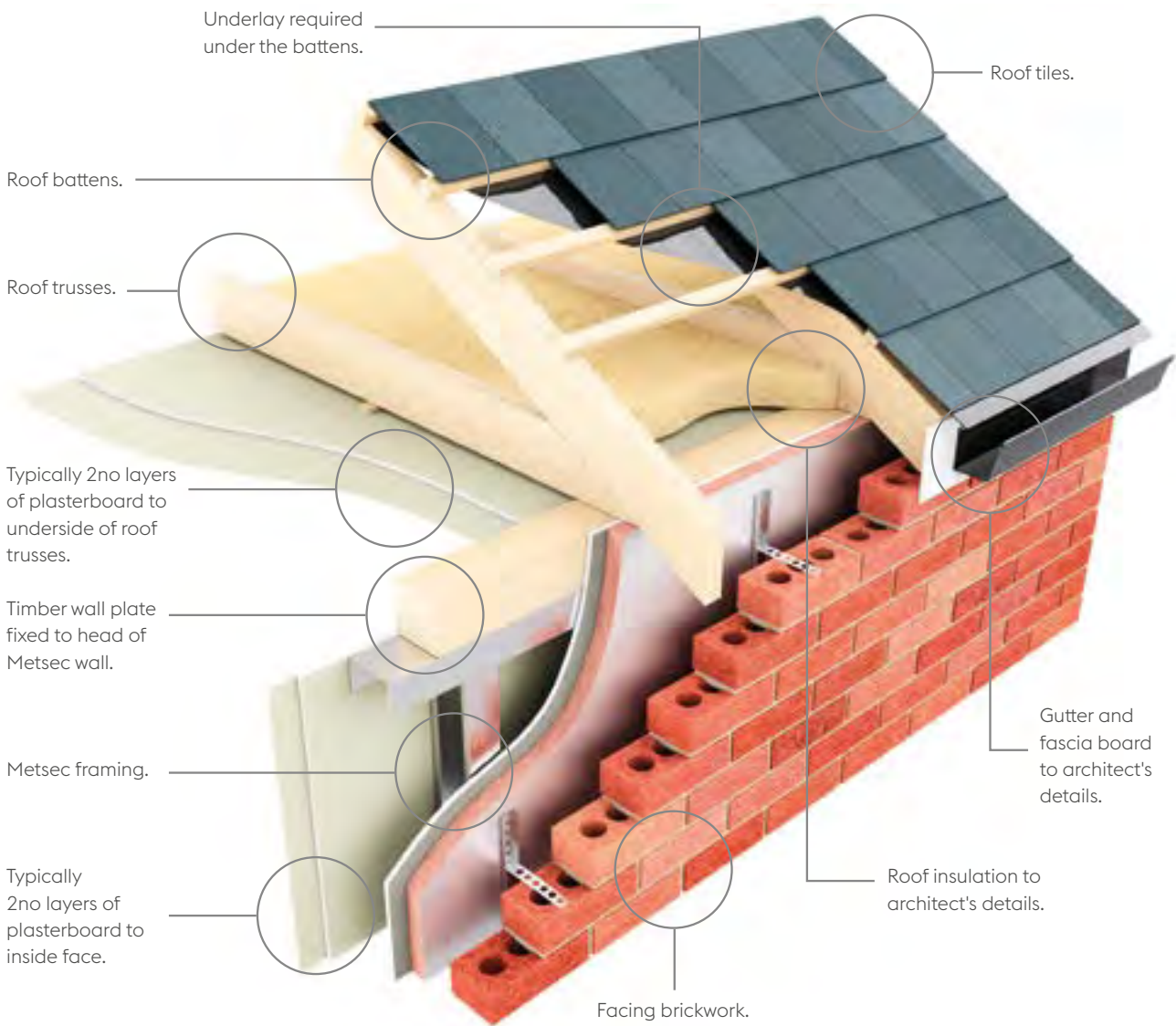
L3D-03

Party Wall Junction to External Wall



L3D-04

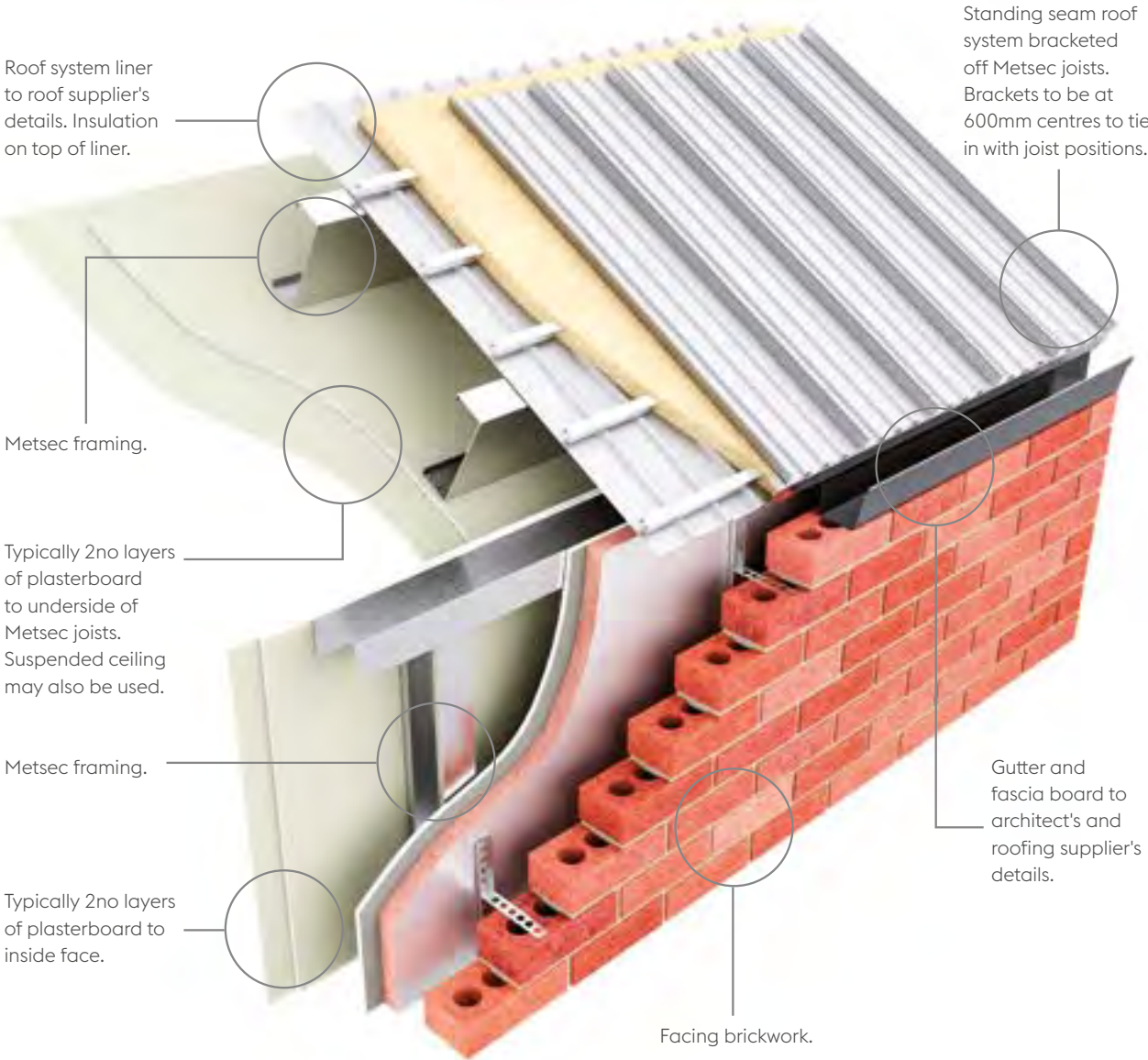
Roof - Tiles on Timber Trusses



Architectural Drawings

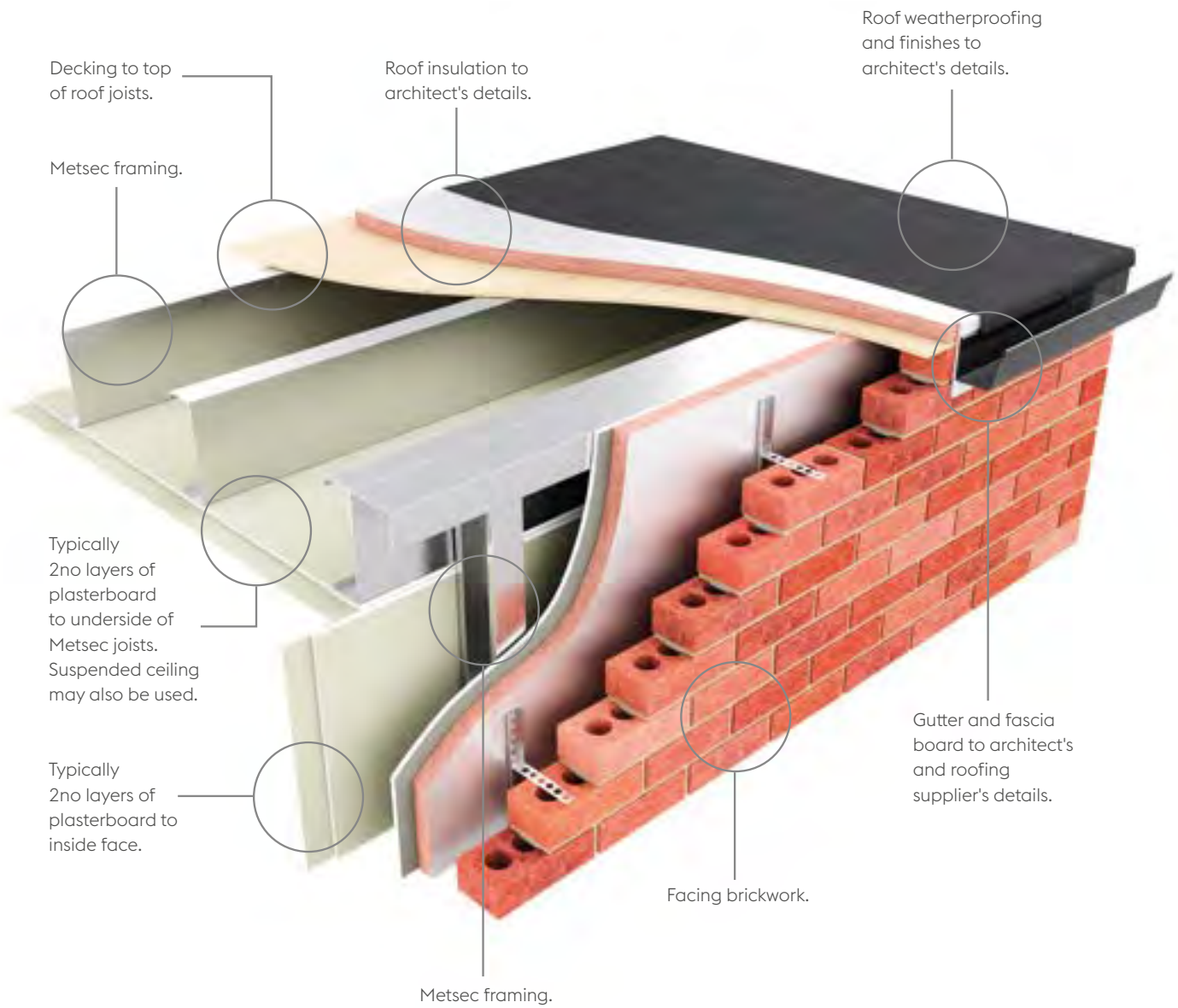
L3D-05

Roof - Standing Seam Type Roof



L3D-06

Roof - Single PLY on Steel Joists



Case Study

Palmerston School

Palmerston School, based in Liverpool, provides education to 11–19 year olds with profound learning difficulties.

Palmerston identified a need for a new school building as staff and pupils were hampered by the lack of outdoor space and modern learning facilities. The former Aigburth High secondary school site was selected on which to construct its new £7m facility.

The new T-shaped single storey building includes a sports and dining hall plus a new hydrotherapy and splash pool together with sensory learning spaces. There is also a five-a-side football pitch and four-lane grass running track around the pitch perimeter. The project started in April 2017 and was completed mid-2017 when pupils will move from the existing location in Woolton to Minehead Road in the Aigburth area of Liverpool.

Early Stages

Originally planned as a timber frame construction, the main contractor asked voestalpine Metsec plc to review the school design and see whether a load bearing steel frame solution (SFS) could be offered. Taking a consultative approach, Metsec was able to advise the main contractors on the layout, and worked in conjunction with installers, local company Mark One.

As the first tier 2 designer and manufacturer certified to BIM Level 2 for Design and Construction in the UK by the BSI, Metsec used its BIM capabilities within the design stages to provide detailed plans and costings.

Designing the SFS solution for Palmerston School using Revit, Metsec attended regular main contractor team meetings with the BIM model, allowing any issues to be resolved in advance of the build. By using BIM, the project benefited from a reduced timing programme and no waste, both providing subsequent cost savings.





Design Requirements

The blueprint of the school building presented several structural challenges, but were all incorporated into the BIM model from Metsec, including the design aspects of the roof. Studs within the joisted roof were extended out to overhang the external walls in order to create the overhang desired. Another roofing design requirement within the structure was a duo pitched roof. To enable the sloping element, Metsec used longer stud sections of a high gauge to accommodate the longer spans required and the larger load placed on the studs.

The school has invested in a substantial server room, in order to house the complex technologies being implemented into the school, which required a large number of ducts. This needed a substantial amount of openings within the wall which Metsec incorporated into the specification.

Partnership

Metsec's engagement in the project from the early stages meant it could provide bespoke, flexible solutions integral to enabling the complex design aspects desired by the client.

Steve Williams, director at Mark One, said: "Working alongside the manufacturer from the early stages of the project meant that we could work in conjunction with Metsec in designing and delivering the additional design requirements, and it was a smooth running project all round."

Ryan Simmonds, sales director of framing at Metsec, said: "Palmerston School was an interesting project from a design perspective and, in using BIM, all parties benefited from a central model that could be amended and revised throughout the early stages to produce an accurate plan during the delivery stages."





Continuous Walling

Introducing Continuous Walling...

Typically constructed from the outside of the building continuous walling oversails the edge of the primary structure with studs being fixed via cleats maximising floor area.

Overview of Continuous Walling System

Our new universal cleats can be produced either 3mm or 6mm thick and 130mm or 190mm deep. The cleats are pre-punched with slots and holes to allow easy fixing to the primary structure and to the SFS studs.

The projecting cleat leg can vary from 100mm to 300mm in increments of 25mm. Slots allow the cleat to be used as a deflection cleat. Alternatively, the cleat can be fixed through the holes to act as a dead load cleat supporting the wall.

The return leg of the cleats are provided with both 9mm and 6mm holes. 9mm diameter holes allow the cleat to be fixed to concrete with 6mm concrete screw anchors, M8 resin bolts or to steel with M8 bolts. The 6mm diameter holes allow the cleat to be fixed to steel with 5.5 diameter tek screws.



Universal Cleats



A new range of cleats used to provide support to continuous wall studs, with a unique pattern of pre-punched slots and holes which offer both deflection and solid fix.

Slotted Angle (SA1002)



The use of slotted angles is often advantageous where the SFS is offset from the primary structure frame by a distance which is too great for a universal cleat.

**Intermediate Base/
Head Track**
Base and head track are fixed back to receive studs from above and below.



Head Track
Tek screwed to all studs.

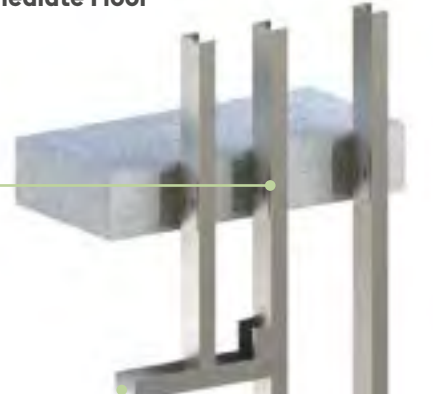


Upper Floor

Studs
Continuous past the slab. Stud height, gauge, centres and size according to Metsec bespoke design.

Intermediate Floor

Universal Cleat
Cleat size and anchors specified by Metsec design. Tek screws through slots to stud.



Window Lintel Track

Window Cill Track



Lower Floor

Base Track
Tek screwed to all studs.

Base Support
Support member required below Metsec base track. Designed and supplied by others.



Section Names Explained

Metsec section references are designed to be easy to read and understand at a glance. Each section type is identified by a unique reference consisting of three numerical values separated by a letter or a dash.

Studs Sections (lipped sections)

Example stud reference – 240M12-50

- » 240 – Refers to the section depth of 240mm (numbers ending in 0 are always lipped)
- » M – Refers to Metsec SFS
- » 12 – Refers to the gauge (thickness) of the section i.e. 12 is 1.2mm thick
- » 50 – Refers to the width or section flange of 50mm

Track Sections (un-lipped sections)

Example stud reference – 244M20-70

- » 244 – Refers to the section depth of 244mm (numbers ending in 4 or 6 are always un-lipped)
- » M – Refers to Metsec SFS
- » 20 – Refers to the gauge (thickness) of the section i.e. 20 is 2.0mm thick
- » 70 – Refers to the width or section flange of 70mm

Colour Coding Explained

Metsec prints stud or joist sections and track sections with references that are designed to be easy to read and understand at a glance. Metsec prints the Metsec name down both flanges for the thinner thicknesses of section and these are colour coded as follows:

- » BLACK = 1.2mm or 1.3mm thickness
- » RED = 1.4mm thickness
- » GREEN = 1.6mm thickness
- » ORANGE = 1.8mm thickness
- » BLUE = 2.0mm thickness

On our drawings any sections greater than 2.0mm or that are made up of multiple sections are shown in yellow so they are highlighted on the drawings.

Slotted head track or sections thicker than 2.0mm are not colour coded but still have the “M” reference on the web.

All stud or joist sections and track sections have a string of numbers and letters printed down the back web along with our CE mark. One of the string of characters will start with a M and have two numbers after it e.g. M12 or M20. This denotes the thickness of the section i.e. M12 = 1.2mm thick section.



Industry Standards and Solutions

Building Regulations Part A – Structure:

The Metsec SFS continuous walling system is designed on an individual project basis to support the external cladding, insulation and internal plasterboard against the external wind load. The SFS sections can be designed to wind loads provided by the project engineer/consultant or designed to wind loads calculated by our own engineers.

Metsec calculate wind loads to BS EN 1991-1-4 plus the UK national annex incorporating the latest amendments and the use of PD6688-1-4, Background Information to EN 1991-1-4 and additional guidance.

The structural design of the SFS sections utilises BS EN 1993-1-1, BS EN1993-1-3 and BS EN 1993-1-5 plus UK national annexes and additional codes where appropriate.

The design of the SFS continuous walling considers, but is not limited to:

- » Structural capacity of the SFS sections
- » Deflection of the SFS sections under load
- » Connection of the SFS sections back to the primary structure
- » Effect of the cladding and fixing method to the SFS sections

Typical deflection limits for different claddings are given below:

- » H/500 for brickwork (ignoring the stiffening effect of the brickwork)
- » H/500 for thin joint masonry or stone
- » H/360 for brickwork (including the combined stiffening effect of the brickwork)
- » H/360 for Insulated Render Systems
- » H/360 for Heavy Rainscreen (terracotta tiles, brick or stone slip)

- » H/250 for Lightweight Rainscreen
- » H/250 for Timber Cladding
- » H/250 for Composite Panels

The load tables within this section are based on:

- » Unfactored horizontal pressure
- » Maximum external cladding weight of 0.50kN/m²
- » Blocking and strapping at mid height for studs higher than 2.50m
- » Third span blocking and strapping required at 2.5m intervals for studs higher than 5.00m
- » Studs at 600mm centres
- » Studs fixed into 1.2mm base track at the bottom of the wall
- » 90mm studs fixed with 2 no. 5.5mm diameter tek screws through slots in Metsec cleats
- » 120mm or greater studs fixed with 3 no. 5.5mm diameter tek screws through slots in Metsec cleats
- » Horizontal reaction loads provided for cleat design
- » Unequal spans limited to 80% of the largest span so $L1 > L2 > L1 \times 0.8$

For wind loads outside the tables or conditions different from above please contact Metsec for advice.

Load Tables

Maximum Height – Deflection Limited to Height/250

How to Use the Load Table:

The load tables in this section allow for simple sizing of the general studs for a given wind load and known height. Where openings are required within the wall please contact Metsec for the design of the supporting members.

Maximum span tables are provided for all standard SFS sections for wind loads between 0.5kN/m² and 2.0kN/m². Three tables are provided for three deflection criterion, Height/250, Height/360 and Height/500. For designs deeper than 210mm, please contact Metsec.

		Uniform Horizontal Pressure (kN/m ²)															
Section Reference		0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2
090M12-50	Span	3.80	3.60	3.40	3.30	3.20	3.00	2.90	2.80	2.75	2.70	2.60	2.50	-	-	-	-
	Reaction	2.38	2.70	2.98	3.30	3.60	3.75	3.99	4.20	4.47	4.73	4.88	5.00	-	-	-	-
090M12-62	Span	4.40	4.10	3.90	3.70	3.50	3.40	3.30	3.10	3.00	2.90	2.70	2.60	-	-	-	-
	Reaction	2.75	3.08	3.41	3.70	3.94	4.25	4.54	4.65	4.88	5.08	5.06	5.20	-	-	-	-
090M12-75	Span	4.90	4.50	4.20	4.00	3.80	3.60	3.50	3.40	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	6.06	3.38	3.68	4.00	4.28	4.50	4.81	5.10	5.20	5.08	5.06	5.20	-	-	-	-
090M14-75	Span	5.00	4.80	4.60	4.40	4.20	4.00	3.70	3.40	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	3.13	3.60	4.03	4.40	4.73	5.00	5.09	5.10	5.20	5.08	5.06	5.20	-	-	-	-
090M16-75	Span	5.00	5.00	4.80	4.60	4.40	4.10	3.70	3.40	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	3.13	3.75	4.20	4.60	4.95	5.13	5.09	5.10	5.20	5.08	5.06	5.20	-	-	-	-
090M18-75	Span	5.00	5.00	5.00	4.70	4.50	4.10	3.70	3.40	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	3.13	3.75	4.38	4.70	5.06	5.13	5.09	5.10	5.20	5.08	5.06	5.20	-	-	-	-
090M20-75	Span	5.00	5.00	5.00	4.90	4.60	4.10	3.70	3.40	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	3.13	3.75	4.38	4.90	5.18	5.13	5.09	5.10	5.20	5.08	5.06	5.20	-	-	-	-
120M12-50	Span	4.10	3.90	3.70	3.60	3.40	3.30	3.20	3.10	3.00	3.00	2.90	2.85	2.80	2.75	2.70	2.60
	Reaction	2.56	2.93	3.24	3.60	3.83	4.13	4.40	4.65	4.96	5.25	5.44	5.70	5.95	6.19	6.41	6.50
120M12-62	Span	5.40	5.10	4.30	4.10	3.90	3.80	3.60	3.50	3.40	3.30	3.20	3.05	3.10	3.00	2.95	2.90
	Reaction	3.38	3.83	3.76	4.10	4.39	4.75	4.95	5.25	5.53	5.78	6.00	6.45	6.59	6.75	7.01	7.25
120M12-75	Span	5.80	5.40	5.10	4.40	4.20	4.10	3.90	3.80	3.70	3.50	3.40	3.30	3.25	3.20	3.10	3.00
	Reaction	3.63	4.05	4.46	4.40	4.73	5.13	5.36	5.70	6.01	6.13	6.38	6.60	6.91	7.20	7.36	7.50
120M14-75	Span	6.40	6.00	5.60	5.30	4.60	4.50	4.30	4.20	4.00	3.90	3.80	3.70	3.60	3.40	3.20	3.10
	Reaction	4.00	4.50	4.90	5.30	5.18	5.63	5.91	6.30	6.50	6.83	7.13	7.40	7.65	7.65	7.60	7.75
120M16-75	Span	6.60	6.20	5.90	5.70	5.40	5.30	5.10	4.50	4.30	4.20	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.13	4.65	5.16	5.70	6.08	6.63	7.01	6.75	6.99	7.35	7.69	7.80	7.65	7.65	7.60	7.75
120M18-75	Span	6.90	6.50	6.10	5.90	5.60	5.50	5.30	5.10	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.31	4.88	5.34	5.90	6.30	6.88	7.29	7.65	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
120M20-75	Span	7.10	6.70	6.40	6.10	5.80	5.60	5.50	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.44	5.03	5.60	6.10	6.53	7.00	7.56	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75

Maximum spans in above continuous walling load table based on:

1. Unfactored horizontal pressure
2. Deflection limited to height/250
3. Blocking and strapping at max 2.5m intervals
4. Studs at 600mm centres
5. 90mm studs fixed with 2No 5.5mm diameter tek screws through continuous walling cleats
6. 120mm+ studs fixed with 3No 5.5mm diameter tek screws through continuous walling cleats
7. Maximum external cladding weight of 0.5kN/m²
8. Unequal spans limited to 20% of the maximum span (L1 > L2) where L1 = maximum span & L2 = L1×0.8

		Uniform Horizontal Pressure (kN/m ²)															
Section Reference		0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2
150M12-50	Span	5.20	4.20	4.00	3.80	3.70	3.60	3.50	3.40	3.30	3.20	3.15	3.10	3.00	2.95	2.90	2.80
	Reaction	3.25	3.15	3.50	3.80	4.16	4.50	4.81	5.10	5.36	5.60	5.91	6.20	6.38	6.64	6.89	7.00
150M12-62	Span	5.90	5.50	5.20	4.40	4.20	4.10	3.90	3.80	3.70	3.60	3.50	3.40	3.35	3.30	3.20	3.10
	Reaction	3.69	4.13	4.55	4.40	4.73	5.13	5.36	5.70	6.01	6.30	6.56	6.80	7.12	7.43	7.60	7.75
150M12-75	Span	6.40	5.90	5.60	5.30	4.60	4.40	4.30	4.10	4.00	3.90	3.80	3.70	3.60	3.40	3.20	3.10
	Reaction	4.00	4.43	4.90	5.30	5.18	5.50	5.91	6.15	6.50	6.83	7.13	7.40	7.65	7.65	7.60	7.75
150M14-75	Span	6.90	6.50	6.10	5.80	5.50	5.30	5.10	4.50	4.30	4.20	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.31	4.88	5.34	5.80	6.19	6.63	7.01	6.75	6.99	7.35	7.69	7.80	7.65	7.65	7.60	7.75
150M16-75	Span	7.80	6.90	6.50	6.20	6.00	5.70	5.50	5.20	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.88	5.18	5.69	6.20	6.75	7.13	7.56	7.80	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
150M18-75	Span	8.10	7.60	6.90	6.60	6.30	6.10	5.60	5.20	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.06	5.70	6.04	6.60	7.09	7.63	7.70	7.80	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
150M20-75	Span	8.40	7.90	7.30	7.00	6.70	6.20	5.60	5.20	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.25	5.93	6.39	7.00	7.54	7.75	7.70	7.80	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M12-50	Span	5.50	5.20	4.30	4.10	3.90	3.80	3.70	3.60	3.50	3.45	3.40	3.30	3.25	3.20	3.10	3.00
	Reaction	3.44	3.90	3.76	4.10	4.39	4.75	5.09	5.40	5.69	6.04	6.38	6.60	6.91	7.20	7.36	7.50
180M12-62	Span	6.30	5.90	5.60	5.30	5.10	4.30	4.20	4.10	4.00	3.90	3.80	3.70	3.60	3.40	3.20	3.10
	Reaction	3.94	4.43	4.90	5.30	5.74	5.38	5.78	6.15	6.50	6.83	7.13	7.40	7.65	7.65	7.60	7.75
180M12-75	Span	6.90	6.40	6.00	5.70	5.40	5.20	4.60	4.40	4.30	4.20	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.31	4.80	5.25	5.70	6.08	6.50	6.33	6.60	6.99	7.35	7.69	7.80	7.65	7.65	7.60	7.75
180M14-75	Span	8.00	6.90	6.50	6.20	5.90	5.70	5.50	5.20	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.00	5.18	5.69	6.20	6.64	7.13	7.56	7.80	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M16-75	Span	8.40	7.80	7.00	6.70	6.40	6.10	5.60	5.20	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.38	6.00	6.13	6.70	7.20	7.63	7.70	7.80	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M18-75	Span	9.10	8.50	8.00	7.60	6.50	6.20	5.60	5.20	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.69	6.38	7.00	7.60	7.65	7.75	7.70	7.80	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M20-75	Span	9.50	8.90	8.40	7.80	6.90	6.20	5.60	5.20	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.94	6.68	7.35	7.80	7.76	7.75	7.70	7.80	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M12-50	Span	5.80	5.50	5.30	4.30	4.20	4.00	3.90	3.80	3.70	3.60	3.55	3.50	3.40	3.30	3.20	3.10
	Reaction	3.63	4.13	4.64	4.30	4.73	5.00	5.36	5.70	6.01	6.30	6.66	7.00	7.23	7.43	7.60	7.75
210M12-62	Span	6.70	6.30	5.90	5.60	5.40	5.20	4.50	4.30	4.20	4.10	4.00	3.90	3.60	3.40	3.20	3.10
	Reaction	4.19	4.73	5.16	5.60	6.08	6.50	6.19	6.45	6.83	7.18	7.50	7.80	7.65	7.65	7.60	7.75
210M13-75	Span	8.20	7.00	6.60	6.30	6.00	5.80	5.60	5.20	4.70	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.06	5.25	5.98	6.30	6.75	7.25	7.70	7.80	7.64	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M16-75	Span	9.10	8.50	8.00	7.60	6.80	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.69	6.38	7.00	7.60	7.65	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M18-75	Span	9.60	9.00	8.50	7.80	6.90	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	6.00	6.75	7.44	7.80	7.80	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M20-75	Span	10.00	9.40	8.90	7.80	6.90	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	6.25	7.05	7.79	7.80	7.80	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75

Maximum spans in above continuous walling load table based on:

1. Unfactored horizontal pressure
2. Deflection limited to height/250
3. Blocking and strapping at max 2.5m intervals
4. Studs at 600mm centres
5. 90mm studs fixed with 2No 5.5mm diameter tek screws through continuous walling cleats
6. 120mm+ studs fixed with 3No 5.5mm diameter tek screws through continuous walling cleats
7. Maximum external cladding weight of 0.5kN/m²
8. Unequal spans limited to 20% of the maximum span (L1 > L2) where L1 = maximum span & L2 = L1×0.8

Load Tables

Maximum Height – Deflection Limited to Height/360

How to Use the Load Table:

The load tables in this section allow for simple sizing of the general studs for a given wind load and known height. Where openings are required within the wall please contact Metsec for the design of the supporting members.

Maximum span tables are provided for all standard SFS sections for wind loads between 0.5kN/m² and 2.0kN/m². Three tables are provided for three deflection criterion, Height/250, Height/360 and Height/500. For designs deeper than 210mm, please contact Metsec.

		Uniform Horizontal Pressure (kN/m ²)															
Section Reference		0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2
090M12-50	Span	3.80	3.60	3.40	3.30	3.20	3.00	2.90	2.80	2.75	2.70	2.60	2.50	-	-	-	-
	Reaction	2.38	2.70	2.98	3.30	3.60	3.75	3.99	4.20	4.47	4.73	4.88	5.00	-	-	-	-
090M12-62	Span	4.10	3.80	3.70	3.50	3.40	3.20	3.10	3.05	3.00	2.90	2.70	2.60	-	-	-	-
	Reaction	2.56	2.85	3.24	3.50	3.83	4.00	4.26	4.58	4.88	5.08	5.06	5.20	-	-	-	-
090M12-75	Span	4.30	4.10	3.80	3.70	3.50	3.40	3.30	3.20	3.10	2.90	2.70	2.60	-	-	-	-
	Reaction	2.69	3.08	3.33	3.70	3.94	4.25	4.54	4.80	5.04	5.08	5.06	5.20	-	-	-	-
090M14-75	Span	4.50	4.30	4.00	3.90	3.70	3.60	3.50	3.40	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	2.81	3.23	3.50	3.90	4.16	4.50	4.81	5.10	5.20	5.08	5.06	5.20	-	-	-	-
090M16-75	Span	4.70	4.40	4.20	4.00	3.90	3.70	3.60	3.40	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	2.94	3.30	3.68	4.00	4.39	4.63	4.95	5.10	5.20	5.08	5.06	5.20	-	-	-	-
090M18-75	Span	4.90	4.60	4.40	4.20	4.00	3.90	3.70	3.40	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	3.06	3.45	3.85	2.65	4.50	4.88	5.09	5.10	5.20	5.08	5.06	5.20	-	-	-	-
090M20-75	Span	5.00	4.80	4.50	4.30	4.20	4.00	3.70	3.40	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	3.13	3.60	3.94	4.30	4.73	5.00	5.09	5.10	5.20	5.08	5.06	5.20	-	-	-	-
120M12-50	Span	4.10	3.90	3.70	3.60	3.40	3.30	3.20	3.10	3.00	3.00	2.90	2.85	2.80	2.75	2.70	2.60
	Reaction	2.56	2.93	3.24	3.60	3.83	4.13	4.40	4.65	4.96	5.25	5.44	5.70	5.95	6.19	6.41	6.50
120M12-62	Span	5.10	4.50	4.30	4.10	3.90	3.80	3.60	3.50	3.40	3.30	3.20	3.10	3.05	3.00	2.95	2.90
	Reaction	3.19	3.38	3.76	4.10	4.39	4.75	4.95	5.25	5.53	5.78	6.00	6.45	6.59	6.75	7.01	7.25
120M12-75	Span	5.30	5.00	4.70	4.40	4.20	4.10	3.90	3.80	3.70	3.50	3.40	3.30	3.25	3.20	3.10	3.00
	Reaction	3.31	3.75	4.11	4.40	4.73	5.13	5.36	5.70	6.01	6.13	6.38	6.60	6.91	7.20	7.36	7.50
120M14-75	Span	5.60	5.30	5.00	4.80	4.60	4.50	4.30	4.20	4.00	3.90	3.80	3.70	3.60	3.40	3.20	3.10
	Reaction	3.50	3.98	4.38	4.80	5.18	5.63	5.91	6.30	6.50	6.83	7.13	7.40	7.65	7.65	7.60	7.75
120M16-75	Span	5.90	5.50	5.20	5.00	4.80	4.60	4.50	4.40	4.30	4.20	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	3.69	4.13	4.55	5.00	5.40	5.75	6.19	6.60	6.99	7.35	7.69	7.80	7.65	7.65	7.60	7.75
120M18-75	Span	6.10	5.70	5.40	5.20	5.00	4.80	4.70	4.50	4.40	4.30	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	3.81	4.28	4.73	5.20	5.63	6.00	6.46	6.75	7.15	7.53	7.69	7.80	7.65	7.65	7.60	7.75
120M20-75	Span	6.30	5.90	5.60	5.40	5.20	5.00	4.80	4.70	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	3.94	4.43	4.90	5.40	5.85	6.25	6.60	7.05	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75

Maximum spans in above continuous walling load table based on:

1. Unfactored horizontal pressure
2. Deflection limited to height/360
3. Blocking and strapping at max 2.5m intervals
4. Studs at 600mm centres
5. 90mm studs fixed with 2No 5.5mm diameter tek screws through continuous walling cleats
6. 120mm+ studs fixed with 3No 5.5mm diameter tek screws through continuous walling cleats
7. Maximum external cladding weight of 0.5kN/m²
8. Unequal spans limited to 20% of the maximum span (L1 > L2) where L1 = maximum span & L2 = L1x0.8

		Uniform Horizontal Pressure (kN/m ²)															
Section Reference		0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2
150M12-50	Span	5.20	4.20	4.00	3.80	3.70	3.60	3.50	3.40	3.30	3.20	3.15	3.10	3.00	2.95	2.90	2.80
	Reaction	3.25	3.15	3.50	3.80	4.16	4.50	4.81	5.10	5.36	5.60	5.91	6.20	6.38	6.64	6.89	7.00
150M12-62	Span	5.90	5.50	5.20	4.40	4.20	4.10	3.90	3.80	3.70	3.60	3.50	3.40	3.35	3.30	3.20	3.10
	Reaction	3.69	4.13	4.55	4.40	4.73	5.13	5.36	5.70	6.01	6.30	6.56	6.80	7.12	7.43	7.60	7.75
150M12-75	Span	6.30	5.90	5.60	5.30	4.60	4.40	4.30	4.10	4.00	3.90	3.80	3.70	3.60	3.40	3.20	3.10
	Reaction	3.94	4.43	4.90	5.30	5.18	5.50	5.91	6.15	6.50	6.83	7.13	7.40	7.65	7.65	7.60	7.75
150M14-75	Span	6.60	6.20	5.90	5.70	5.40	5.20	5.10	4.50	4.30	4.20	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.13	4.65	5.16	5.70	6.08	6.50	7.01	6.75	6.99	7.35	7.69	7.80	7.65	7.65	7.60	7.75
150M16-75	Span	6.90	6.50	6.20	5.90	5.70	5.50	5.30	5.20	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.31	4.88	5.43	5.90	6.41	6.88	7.29	7.80	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
150M18-75	Span	7.20	6.80	6.40	6.10	5.90	5.70	5.50	5.00	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.50	5.10	5.60	6.10	6.64	7.13	7.56	7.50	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
150M20-75	Span	7.40	7.00	6.70	6.40	6.10	5.90	5.50	5.00	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.63	5.52	5.86	6.40	6.86	7.38	7.56	7.50	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M12-50	Span	5.50	5.20	4.30	4.10	3.90	3.80	3.70	3.60	3.50	3.45	3.40	3.30	3.25	3.20	3.10	3.00
	Reaction	3.44	3.90	3.76	4.10	4.39	4.75	5.09	5.40	5.69	6.04	6.38	6.60	6.91	7.20	7.36	7.50
180M12-62	Span	6.30	5.90	5.60	5.30	5.10	4.30	4.20	4.10	4.00	3.90	3.80	3.70	3.60	3.40	3.20	3.10
	Reaction	3.94	4.43	4.90	5.30	5.74	5.38	5.78	6.15	6.50	6.83	7.13	7.40	7.65	7.65	7.60	7.75
180M12-75	Span	6.90	5.64	5.60	5.70	5.40	5.20	4.60	4.40	4.30	4.20	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.31	4.80	5.25	5.70	6.08	6.50	6.33	6.60	6.99	7.35	7.69	7.80	7.65	7.65	7.60	7.75
180M14-75	Span	7.60	6.90	6.50	6.20	5.90	5.70	5.50	5.20	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.75	5.18	5.69	6.20	6.64	7.13	7.56	7.80	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M16-75	Span	8.00	7.40	7.00	6.70	6.40	6.10	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.00	5.55	6.13	6.70	7.20	7.63	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M18-75	Span	8.30	7.80	7.30	7.00	6.80	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.19	5.85	6.39	7.00	7.65	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M20-75	Span	8.50	8.00	7.60	7.30	6.80	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.31	6.00	6.65	7.30	7.65	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M12-50	Span	5.80	5.50	5.30	4.30	4.20	4.00	3.90	3.80	3.70	3.60	3.55	3.50	3.40	3.30	3.20	3.10
	Reaction	3.63	4.13	4.64	4.30	4.73	5.00	5.36	5.70	6.01	6.30	6.66	7.00	7.23	7.43	7.60	7.75
210M12-62	Span	6.70	6.30	5.90	5.60	5.40	5.20	4.50	4.30	4.20	4.10	4.00	3.90	3.60	3.40	3.20	3.10
	Reaction	4.19	4.73	5.16	5.60	6.08	6.50	6.19	6.45	6.83	7.18	7.50	7.80	7.65	7.65	7.60	7.75
210M13-75	Span	8.10	7.00	6.60	6.30	6.00	5.80	5.60	5.20	4.70	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.06	5.25	5.78	6.30	6.75	7.25	7.70	7.80	7.64	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M16-75	Span	9.00	8.40	8.00	7.60	6.80	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.63	6.30	7.00	7.60	7.65	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M18-75	Span	9.30	8.80	8.30	7.80	6.90	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.81	6.60	7.26	7.80	7.76	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M20-75	Span	9.60	9.10	8.60	7.80	6.90	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	6.00	6.83	7.53	7.80	7.76	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75

Maximum spans in above continuous walling load table based on:

1. Unfactored horizontal pressure
2. Deflection limited to height/360
3. Blocking and strapping at max 2.5m intervals
4. Studs at 600mm centres
5. 90mm studs fixed with 2No 5.5mm diameter tek screws through continuous walling cleats
6. 120mm+ studs fixed with 3No 5.5mm diameter tek screws through continuous walling cleats
7. Maximum external cladding weight of 0.5kN/m²
8. Unequal spans limited to 20% of the maximum span (L1 > L2) where L1 = maximum span & L2 = L1×0.8

Load Tables

Maximum Height – Deflection Limited to Height/500

How to Use the Load Table:

The load tables in this section allow for simple sizing of the general studs for a given wind load and known height. Where openings are required within the wall please contact Metsec for the design of the supporting members.

Maximum span tables are provided for all standard SFS sections for wind loads between 0.5kN/m² and 2.0kN/m². Three tables are provided for three deflection criterion, Height/250, Height/360 and Height/500. For designs deeper than 210mm, please contact Metsec.

		Uniform Horizontal Pressure (kN/m ²)															
Section Reference		0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2
090M12-50	Span	3.50	3.20	3.10	2.90	2.80	2.70	2.65	2.60	2.50	-	-	-	-	-	-	-
	Reaction	2.19	2.40	2.71	2.90	3.15	3.38	3.64	3.90	4.06	-	-	-	-	-	-	-
090M12-62	Span	3.70	3.40	3.30	3.10	3.00	2.90	2.80	2.70	2.65	2.60	2.55	2.50	-	-	-	-
	Reaction	2.31	2.55	2.89	3.10	3.38	3.63	3.85	4.05	4.31	4.55	4.78	5.00	-	-	-	-
090M12-75	Span	3.90	3.60	3.40	3.30	3.20	3.10	3.00	2.90	2.80	2.75	2.70	2.60	-	-	-	-
	Reaction	2.44	2.70	2.98	3.30	3.60	3.88	4.13	4.35	4.55	4.81	5.06	5.20	-	-	-	-
090M14-75	Span	4.10	3.80	3.60	3.50	3.30	3.20	3.10	3.00	2.95	2.90	2.70	2.60	-	-	-	-
	Reaction	2.56	2.85	3.15	3.50	3.71	4.00	4.26	4.50	4.79	5.08	5.06	5.20	-	-	-	-
090M16-75	Span	4.20	4.00	3.80	3.60	3.50	3.30	3.20	3.15	3.10	2.90	2.70	2.60	-	-	-	-
	Reaction	2.63	3.00	3.33	3.60	3.94	4.13	4.40	4.73	5.04	5.08	5.06	5.20	-	-	-	-
090M18-75	Span	4.40	4.10	3.90	3.70	3.60	3.50	3.40	3.30	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	2.75	3.08	3.41	3.70	4.05	4.38	4.68	4.95	5.20	5.08	5.06	5.20	-	-	-	-
090M20-75	Span	4.50	4.30	4.00	3.90	3.70	3.60	3.50	3.40	3.20	2.90	2.70	2.60	-	-	-	-
	Reaction	2.81	3.23	3.50	3.90	4.16	4.50	4.81	5.10	5.20	5.08	5.06	5.20	-	-	-	-
120M12-50	Span	4.10	3.90	3.70	3.60	3.40	3.30	3.20	3.10	3.05	3.00	2.90	2.85	2.80	2.75	2.70	2.60
	Reaction	2.56	2.93	3.24	3.60	3.83	4.13	4.40	4.65	4.96	5.25	5.44	5.70	5.95	6.19	6.41	6.50
120M12-62	Span	4.60	4.30	4.10	3.90	3.70	3.60	3.50	3.40	3.30	3.20	3.15	3.10	3.05	3.00	2.95	2.90
	Reaction	2.88	3.23	3.59	3.90	4.16	4.50	4.81	5.10	5.36	5.60	5.91	6.20	6.48	6.75	7.01	7.25
120M12-75	Span	4.80	4.50	4.30	4.10	3.90	3.80	3.70	3.60	3.50	3.40	3.30	3.25	3.20	3.10	3.05	3.00
	Reaction	3.00	3.38	3.76	4.10	4.39	4.75	5.09	5.40	5.69	5.95	6.19	6.50	6.80	6.98	3.55	7.50
120M14-75	Span	5.00	4.70	4.50	4.30	4.10	4.00	3.90	3.70	3.65	3.60	3.50	3.40	3.35	3.30	3.20	3.10
	Reaction	3.13	3.53	3.94	4.30	4.61	5.00	5.36	5.55	5.93	6.30	6.56	6.80	7.12	7.43	7.60	7.75
120M16-75	Span	5.30	4.90	4.70	4.50	4.30	4.20	4.00	3.90	3.80	3.70	3.60	3.55	3.50	3.40	3.20	3.10
	Reaction	3.31	3.68	4.11	4.50	4.84	5.25	5.50	5.85	6.18	6.48	6.75	7.10	7.44	7.65	7.60	7.75
120M18-75	Span	5.50	5.10	4.90	4.70	4.50	4.30	4.20	4.10	4.00	3.90	3.80	3.70	3.60	3.40	3.20	3.10
	Reaction	3.44	3.83	4.29	4.70	5.06	5.38	5.78	6.15	6.50	6.83	7.13	7.40	7.65	7.65	7.60	7.75
120M20-75	Span	5.60	5.30	5.00	4.80	4.60	4.50	4.30	4.20	4.10	4.00	3.90	3.80	3.60	3.40	3.20	3.10
	Reaction	3.50	3.98	4.38	4.80	5.18	5.63	5.91	6.30	6.66	7.00	7.31	7.60	7.65	7.65	7.60	7.75

Maximum spans in above continuous walling load table based on:

1. Unfactored horizontal pressure
2. Deflection limited to height/500
3. Blocking and strapping at max 2.5m intervals
4. Studs at 600mm centres
5. 90mm studs fixed with 2No 5.5mm diameter tek screws through continuous walling cleats
6. 120mm+ studs fixed with 3No 5.5mm diameter tek screws through continuous walling cleats
7. Maximum external cladding weight of 0.5kN/m²
8. Unequal spans limited to 20% of the maximum span (L1 > L2) where L1 = maximum span & L2 = L1x0.8

Uniform Horizontal Pressure (kN/m ²)																	
Section Reference		0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2
150M12-50	Span	5.10	4.20	4.00	3.80	3.70	3.60	3.50	3.40	3.30	3.20	3.15	3.10	3.00	2.95	2.90	2.80
	Reaction	3.19	3.15	3.50	3.80	4.16	4.50	4.81	5.10	5.36	5.60	5.91	6.20	6.38	6.64	6.89	7.00
150M12-62	Span	5.40	5.10	4.60	4.40	4.20	4.10	3.90	3.80	3.70	3.60	3.50	3.40	3.35	3.30	3.20	3.10
	Reaction	3.38	3.83	4.03	4.40	4.73	5.13	5.36	5.70	6.01	6.30	6.56	6.80	7.12	7.43	7.60	7.75
150M12-75	Span	5.70	5.30	5.10	4.80	4.60	4.40	4.30	4.10	4.00	3.90	3.80	3.70	3.60	3.40	3.20	3.10
	Reaction	3.56	3.98	4.46	4.80	5.18	5.50	5.91	6.15	6.50	6.83	7.13	7.40	7.65	7.65	7.60	7.75
150M14-75	Span	5.90	5.60	5.30	5.10	4.90	4.70	4.50	4.40	4.30	4.20	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	3.69	4.20	4.64	5.10	5.51	5.88	6.19	6.60	6.99	7.35	7.69	7.80	7.65	7.65	7.60	7.75
150M16-75	Span	6.20	5.80	5.50	5.30	5.10	4.90	4.80	4.60	4.50	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	3.88	4.35	4.81	5.30	5.74	6.13	6.60	6.90	7.31	7.70	7.69	7.80	7.65	7.65	7.60	7.75
150M18-75	Span	6.40	6.10	5.80	5.50	5.30	5.10	4.90	4.80	4.70	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.00	4.58	5.08	5.50	5.96	6.38	6.74	7.20	7.64	7.70	7.69	7.80	7.65	7.65	7.60	7.75
150M20-75	Span	6.70	6.30	6.00	5.70	5.50	5.30	5.10	5.00	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.19	4.73	5.25	5.70	6.19	6.63	7.01	7.50	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M12-50	Span	5.50	5.20	4.30	4.10	3.90	3.80	3.70	3.60	3.50	3.45	3.40	3.30	3.25	3.20	3.10	3.00
	Reaction	3.44	3.90	3.76	4.10	4.39	4.75	5.09	5.40	5.69	6.04	6.38	6.60	6.91	7.20	7.36	7.50
180M12-62	Span	6.20	5.90	5.60	5.30	5.10	4.30	4.20	4.10	4.00	3.90	3.85	3.80	3.60	3.40	3.20	3.10
	Reaction	3.88	4.43	4.90	5.30	5.74	5.38	5.78	6.15	6.50	6.83	7.22	7.60	7.65	7.65	7.60	7.75
180M12-75	Span	6.50	6.10	5.80	5.60	5.40	5.20	4.60	4.40	4.30	4.20	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.06	4.58	5.08	5.60	6.08	6.50	6.33	6.60	6.99	7.35	7.69	7.80	7.65	7.65	7.60	7.75
180M14-75	Span	6.80	6.40	6.10	5.80	5.60	5.40	5.20	5.10	4.60	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.25	4.80	5.34	5.80	6.30	6.75	7.15	7.65	7.48	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M16-75	Span	7.10	6.70	6.40	6.10	5.80	5.60	5.50	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.44	5.03	5.60	6.10	6.53	7.60	7.56	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M18-75	Span	7.40	7.00	6.60	6.30	6.10	5.90	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.63	5.25	5.78	6.30	6.86	7.38	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
180M20-75	Span	7.70	7.20	6.80	6.50	6.30	6.10	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.81	5.40	5.95	6.50	7.09	7.63	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M12-50	Span	5.80	5.50	5.30	4.30	4.20	4.00	3.90	3.80	3.70	3.60	3.55	3.50	3.40	3.30	3.20	3.10
	Reaction	3.63	4.13	4.64	4.30	4.73	5.00	5.36	5.70	6.01	6.30	6.66	7.00	7.23	7.43	7.60	7.75
210M12-62	Span	6.70	6.30	5.90	5.60	5.40	5.20	4.50	4.30	4.20	4.10	4.00	3.90	3.60	3.40	3.20	3.10
	Reaction	4.19	4.73	5.16	5.60	6.08	6.50	6.19	6.45	6.83	7.18	7.50	7.80	7.65	7.65	7.60	7.75
210M13-75	Span	7.50	7.00	6.60	6.30	6.00	5.80	5.60	5.20	4.70	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	4.69	5.25	5.78	6.30	6.75	7.25	7.70	7.80	7.64	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M16-75	Span	8.00	7.60	7.20	6.90	6.60	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.00	5.70	6.30	6.90	7.43	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M18-75	Span	8.30	7.80	7.40	7.10	6.80	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.19	5.85	6.48	7.10	7.65	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75
210M20-75	Span	8.60	8.10	7.70	7.40	6.90	6.20	5.60	5.20	4.80	4.40	4.10	3.90	3.60	3.40	3.20	3.10
	Reaction	5.38	6.08	6.74	7.40	7.76	7.75	7.70	7.80	7.80	7.70	7.69	7.80	7.65	7.65	7.60	7.75

Maximum spans in above continuous walling load table based on:

1. Unfactored horizontal pressure
2. Deflection limited to height/500
3. Blocking and strapping at max 2.5m intervals
4. Studs at 600mm centres
5. 90mm studs fixed with 2No 5.5mm diameter tek screws through continuous walling cleats
6. 120mm+ studs fixed with 3No 5.5mm diameter tek screws through continuous walling cleats
7. Maximum external cladding weight of 0.5kN/m²
8. Unequal spans limited to 20% of the maximum span (L1 > L2) where L1 = maximum span & L2 = L1×0.8



Building Regulations Part B – Fire:

The requirements for fire protection will normally be found in the relevant annexe of the Building Regulations, Part B, and often specific fire strategy reports are generated.

The fire ratings published in this document are tested and/or assessed for use with Metsec SFS sections and cannot be used with other systems.

All performance claims by manufacturers for fire resistance must be substantiated by test or assessment reports by UKAS accredited laboratories. Installations must be in strict accordance with the report data for types of materials used, components and assembly details. Unwarranted site modifications can jeopardize performance; in particular services and these should be well coordinated and often involve fire stopping.

All fire test data in this continuous walling section is to BS EN 1365-1: 2012 and the fire performance shown equally applies to BS 476 Part 21: 1987. All test data is based on unique UKAS accredited tests and UKAS accredited scope of testing. The tests are carried out in UKAS accredited furnaces measuring 3m square.

The results of our fire tests are the lower of Insulation and or integrity failure rounded down to the nearest 30 minutes i.e. measured as 30, 60, 90 or 120 minutes.

For further information on the individual tests or to see where the test or assessment was carried out please contact Metsec.

How to Use the Fire Performance Table:

Decide the required fire performance from the inside of the building based on the Building Regulations Part B. If the walling is subject to boundary wall conditions or other situations where fire resistance is required from the outside then note this also.

Due to the large amount of data the tables have been split into fire resistance periods from the inside, 60 minutes, 90 minutes and 120 minutes to make sorting through the data easier. Within these tables the data has been listed in order of wall type and then the type of plasterboard (e.g. Fire type boards or Sound type boards).

Example:

The external wall is a boundary wall condition and requires 60 minutes fire rating from both sides.

The solution can be any of the boards given in the 60 minute table for the non-boundary wall conditions however to meet the boundary wall condition of 60 minutes from the outside only four options are available:

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Sheathing Board	Duty Rating	Fire Performance from Outside (Boundary Wall Condition)
Fire Performance from Inside 60 MINUTES						
LE1	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	Severe	No Rating
LE1	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	Severe	No Rating
LE1	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	Severe	No Rating
LE1	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	Severe	No Rating
LE1	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	Severe	No Rating
LE2	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	Severe	No Rating
LE2	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	Severe	60 minutes
LE2	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	Severe	No Rating
LE2	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	Severe	60 minutes
LE3	2x15mm Soundbloc	British Gypsum	90mm	2x12mm Euroform Versaliner	Severe	60 minutes
LE3	2x15mm Soundbloc	British Gypsum	90mm	2x12mm RCM Y-Wall	Severe	90 minutes
LE3	2x15mm db Board	Siniat	90mm	2x12mm Euroform Versaliner	Severe	60 minutes
LE3	2x15mm db Board	Siniat	90mm	2x12mm RCM Y-Wall	Severe	90 minutes
LE4	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	Severe	90 minutes
LE4	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	Severe	90 minutes
LE4	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	Severe	90 minutes
LE4	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	Severe	90 minutes

There are many different types of plasterboard available so to keep the tables simple only the basic boards have been shown. Where required other boards may be used as shown in the tables below:

Board Substitutions – British Gypsum

Tested Board	Allowable Substitutions
Fireline	Fireline Duplex Fireline MR Soundbloc F Duraline Duraline MR
Soundbloc	Soundbloc F Soundbloc MR Duraline Duraline MR

Provided substituted board is at least as thick as the tested board.

Board Substitutions – Knauf

Tested Board	Allowable Substitutions
Fire Panel	Impact Panel Performance Plus
Soundshield Plus	Performance Plus

Provided substituted board is at least as thick as the tested board.

Board Substitutions – Siniat

Tested Board	Allowable Substitutions
Fire Board	Fire V Board Fire MR Board Universal Board Megadeco Board
dB Board	Universal Board Megadeco Board

Provided substituted board is at least as thick as the tested board.

Fire Performance Table for Continuous Walling



Type LE1: Two layers of plasterboard, stud, sheathing board



Type LE2: Two layers of plasterboard, stud, sheathing board, 50mm K15 Insulation



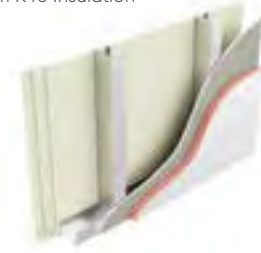
Type LE3: Two layers of plasterboard, stud, two layers of sheathing board, 50mm K15 Insulation



Type LE4: Two layers of plasterboard, stud, sheathing board, 75mm Rockwool Duoslab Insulation



Type LE5: Three layers of plasterboard, stud, sheathing board



Type LE6: Three layers of plasterboard, stud, sheathing board, 50mm K15 Insulation



Type LE7: Three layers of plasterboard, stud, two layers of sheathing board, 50mm K15 Insulation



Type LE8: Three layers of plasterboard, stud, sheathing board, 75mm Rockwool Duoslab Insulation

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Sheathing Board	Fire Performance from Outside (Boundary Wall Condition)
Fire Performance from Inside 60 MINUTES					
LE1	2x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	No Rating
LE1	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	No Rating
LE1	2x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	No Rating
LE1	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	No Rating
LE1	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	No Rating
LE2	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	60 minutes
LE2	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	60 minutes
LE3	2x15mm Soundbloc	British Gypsum	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm Soundbloc	British Gypsum	90mm	2x12mm RCM Y-Wall	90 minutes
LE3	2x15mm db Board	Siniat	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm db Board	Siniat	90mm	2x12mm RCM Y-Wall	90 minutes
LE4	2x15mm Soundbloc	British Gypsum	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm Soundbloc	British Gypsum	90mm	12mm RCM Y-Wall	90 minutes
LE4	2x15mm db Board	Siniat	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm db Board	Siniat	90mm	12mm RCM Y-Wall	90 minutes

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Sheathing Board	Fire Performance from Outside (Boundary Wall Condition)
Fire Performance from Inside 90 MINUTES					
LE1	2x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm Soundshield Plus	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE1	2x15mm Soundshield Plus	Knauf	90mm	12mm RCM Y-Wall	No Rating
LE2	2x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	60 minutes
LE2	2x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	60 minutes
LE2	2x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	60 minutes
LE2	2x15mm Soundshield Plus	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE2	2x15mm Soundshield Plus	Knauf	90mm	12mm RCM Y-Wall	60 minutes
LE3	2x15mm Fireline	British Gypsum	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm Fireline	British Gypsum	90mm	2x12mm RCM Y-Wall	90 minutes
LE3	2x15mm Fire Panel	Knauf	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm Fire Panel	Knauf	90mm	2x12mm RCM Y-Wall	90 minutes
LE3	2x15mm Fireboard	Siniat	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm Fireboard	Siniat	90mm	2x12mm RCM Y-Wall	90 minutes
LE3	2x15mm Soundshield Plus	Knauf	90mm	2x12mm Euroform Versaliner	60 minutes
LE3	2x15mm Soundshield Plus	Knauf	90mm	2x12mm RCM Y-Wall	90 minutes
LE4	2x15mm Soundshield Plus	Knauf	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm Soundshield Plus	Knauf	90mm	12mm RCM Y-Wall	120 minutes
LE4	2x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	120 minutes
LE4	2x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	120 minutes
LE4	2x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	90 minutes
LE4	2x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	120 minutes
Fire Performance from Inside 120 MINUTES					
LE5	3x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE5	3x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	No Rating
LE5	3x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE5	3x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	No Rating
LE5	3x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE5	3x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	No Rating
LE6	3x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	No Rating
LE6	3x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	60 minutes
LE6	3x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	No Rating
LE6	3x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	60 minutes
LE6	3x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	No Rating
LE6	3x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	60 minutes
LE7	3x15mm Fireline	British Gypsum	90mm	2x12mm Euroform Versaliner	60 minutes
LE7	3x15mm Fireline	British Gypsum	90mm	2x12mm RCM Y-Wall	90 minutes
LE7	3x15mm Fire Panel	Knauf	90mm	2x12mm Euroform Versaliner	60 minutes
LE7	3x15mm Fire Panel	Knauf	90mm	2x12mm RCM Y-Wall	90 minutes
LE7	3x15mm Fireboard	Siniat	90mm	2x12mm Euroform Versaliner	60 minutes
LE7	3x15mm Fireboard	Siniat	90mm	2x12mm RCM Y-Wall	90 minutes
LE8	3x15mm Fireline	British Gypsum	90mm	12mm Euroform Versaliner	90 minutes
LE8	3x15mm Fireline	British Gypsum	90mm	12mm RCM Y-Wall	120 minutes
LE8	3x15mm Fire Panel	Knauf	90mm	12mm Euroform Versaliner	90 minutes
LE8	3x15mm Fire Panel	Knauf	90mm	12mm RCM Y-Wall	120 minutes
LE8	3x15mm Fireboard	Siniat	90mm	12mm Euroform Versaliner	90 minutes
LE8	3x15mm Fireboard	Siniat	90mm	12mm RCM Y-Wall	120 minutes

Building Regulations Part L – Conservation of Fuel and Power:

The U-Values published in this section have been obtained by the combined method, which takes account of the performance of the individual elements making up the wall construction. These values should be confirmed with the insulation provider or by the consultant providing the SAP calculations.

Depending on the stud depth used in the wall construction additional insulation between the studs may help reduce the external insulation thickness. A condensation risk analysis should be completed if the insulation between the studs makes up more than a third of the overall insulation performance of the wall.

Where generic materials are referenced the following thermal conductivities have been used:

- » 12mm sheathing board, $\lambda = 0.25 \text{ W/mK}$
- » 12.5mm plasterboard, $\lambda = 0.24 \text{ W/mK}$
- » 102mm brickwork, $\lambda = 0.77 \text{ W/mK}$

Where wool insulation is referenced as being between the studs the following has been used:

- » Generally 50mm of glass wool insulation, $\lambda = 0.044 \text{ W/mK}$ has been used
- » Where Rockwool Duoslab has been used, Rockwool RWA45 insulation, $\lambda = 0.04 \text{ W/mK}$ has been used between the studs. Where the Rockwool Duoslab is 90mm or less then 50mm of RWA45 has been used. Where the Rockwool Duoslab is 100mm or greater then 75mm of RWA45 has been used



Continuous Walling

Thermal Performance Table – Brick Cladding



Type EC1: Two layers of plasterboard, stud, sheathing board, insulation, cavity, brickwork



Type EC1i: Two layers of plasterboard, stud with mineral wool between, sheathing board, insulation, cavity, brickwork

U- Value Required	Wall Type EC1			Wall Type EC1i		
	TW55 (mm)	K15 (mm)	DuoSlab (mm)	TW55 (mm)	K15 (mm)	DuoSlab (mm)
0.30	50	45	85	30	30	55
0.29	55	50	90	30	30	55
0.28	55	50	90	35	30	60
0.27	60	55	100	40	35	65
0.26	60	55	110	40	40	70
0.25	65	60	110	45	40	75
0.24	70	65	120	50	45	80
0.23	75	65	120	50	50	85
0.22	75	70	130	55	50	90
0.21	80	75	140	60	55	100
0.20	90	80	140	65	60	100
0.19	95	85	150	70	65	110
0.18	100	90	160	80	70	120
0.17	110	100	170	85	80	130
0.16	120	110	190*	95	85	140
0.15	130*	120	200*	110	95	150
0.14	140*	130	220*	120	110	170
0.13	150*	140	230*	130*	120	180
0.12	160*	150*	250*	140*	130	200*
0.11	180*	160*	280*	160*	140	230*
0.10	200*	180*	310*	180*	160*	260*

*Double insulation boards required, boards should be of roughly equal thickness

1. Metsec studs assumed to be at 600mm horizontal centres
2. Brick tie channels fixed at 450mm vertical centres with stainless steel stand off screws fixing to studs through insulation

Thermal Performance Table – Ventilated Rainscreen Cladding



Type EC2: Two layers of plasterboard, stud, sheathing board, insulation, ventilated rainscreen



Type EC2i: Two layers of plasterboard, stud with mineral wool between, sheathing board, insulation, ventilated rainscreen

U- Value Required	Wall Type EC2						Wall Type EC2i					
	Brackets 600mm	Brackets 900mm	Brackets 1200mm	Brackets 600mm	Brackets 900mm	Brackets 1200mm	Brackets 600mm	Brackets 900mm	Brackets 1200mm	Brackets 600mm	Brackets 900mm	Brackets 1200mm
	K15 (mm)	K15 (mm)	K15 (mm)	DuoSlab (mm)	DuoSlab (mm)	DuoSlab (mm)	K15 (mm)	K15 (mm)	K15 (mm)	DuoSlab (mm)	DuoSlab (mm)	DuoSlab (mm)
0.30	90	85	80	130	120	110	60	60	50	90	80	75
0.29	95	85	85	130	130	120	70	60	60	100	85	80
0.28	100	90	85	140	130	120	70	60	60	100	90	85
0.27	110	95	90	150	140	130	75	70	60	100	100	90
0.26	110	100	95	160	140	140	80	70	70	110	100	100
0.25	120	110	100	160	150	140	90	75	70	120	100	100
0.24	120	110	110	170	160	150	90	80	70	130	110	100
0.23	130	120	110	180	160	160	100	90	80	140	120	110
0.22	140	120	120	190*	170	170	110	90	80	150	130	120
0.21	150*	130	120	210*	180	170	110	100	90	160	140	130
0.20	160*	140	130	220*	200*	190*	120	110	100	170	150	130
0.19	170*	150*	140	240*	210*	200*	130	110	100	190*	160	150
0.18	180*	160*	150*	260*	220*	210*	150*	120	110	210*	180	160
0.17	200*	170*	160*	280*	240*	230*	160*	140	120	230*	190*	170
0.16	220*	190*	170*	310*	260*	240*	180*	150*	130	260*	210*	190*
0.15	240*	200*	190*	350*	280*	260*	200*	160*	140	290*	230*	210*
0.14	270*	220*	200*	-	310*	290*	220*	180*	160*	330*	260*	230*
0.13	-	240*	220*	-	350*	310*	250*	200*	170*	-	290*	260*
0.12	-	270*	250*	-	-	350*	-	230*	190*	-	330*	290*
0.11	-	-	280*	-	-	-	-	260*	220*	-	-	330*
0.10	-	-	-	-	-	-	-	-	250*	-	-	-

*Double insulation boards required, boards should be of roughly equal thickness

1. Metsec studs assumed to be at 600mm horizontal centres
2. Insulation assumed to be broken by rainscreen support brackets at the vertical centres selected (default 600mm)
3. Thermal performance may be increased by increasing vertical centres of the brackets especially for U-values less than 0.18
4. If vertical centres greater than 600mm then confirmation should be obtained from cladding engineer to confirm this is acceptable

Thermal Performance Table – Timber Cladding



Type EC3: Two layers of plasterboard, stud, sheathing board, insulation, battens, timber cladding



Type EC3i: Two layers of plasterboard, stud with mineral wool between, sheathing board, insulation, battens, timber cladding

U- Value Required	Wall Type EC3			Wall Type EC3i		
	TW55 (mm)	K15 (mm)	DuoSlab (mm)	TW55 (mm)	K15 (mm)	DuoSlab (mm)
0.30	70	60	100	50	50	65
0.29	70	65	110	50	50	70
0.28	75	65	110	55	50	75
0.27	75	70	120	55	50	80
0.26	80	70	120	60	60	80
0.25	80	75	130	60	60	85
0.24	85	80	130	65	60	90
0.23	90	85	140	70	70	100
0.22	95	85	140	75	70	100
0.21	100	90	150	80	70	110
0.20	110	95	160	90	80	110
0.19	110	100	170	90	80	120
0.18	120	110	180	100	90	130
0.17	130*	120	190*	110	100	140
0.16	130*	120	200*	110	100	150
0.15	140*	130	210*	120	110	170
0.14	150*	140	230*	130*	120	180
0.13	170*	150*	250*	140*	130	200*
0.12	180*	160*	270*	160*	140	220*
0.11	200*	180*	290*	170*	160*	240*
0.10	220*	200*	320*	190*	180*	270*

*Double insulation boards required, boards should be of roughly equal thickness

1. Metsec studs assumed to be at 600mm horizontal centres
2. Timber battens assumed to be fixed with stainless steel screws at 300mm vertical centres fixing through insulation
3. Timber battens are to be fixed on top of the insulation and not penetrate the insulation thickness

Thermal Performance Table – Insulated Render



Type EC4: Two layers of plasterboard, stud, sheathing board, 20mm cavity, EPS insulation, render



Type EC5: Two layers of plasterboard, stud, sheathing board, EPS insulation, render



Type EC4i: Two layers of plasterboard, stud with glass wool between, sheathing board, 20mm cavity, EPS insulation, render



Type EC5i: Two layers of plasterboard, stud with glass wool between, sheathing board, EPS insulation, render

U- Value Required	Wall Type EC4	Wall Type EC5	Wall Type EC4i	Wall Type EC5i
	NHBC 20mm Cavity	Adhesive Fix	NHBC 20mm Cavity	Adhesive Fix
	EPS	EPS	EPS	EPS
0.30	100	110	70	80
0.29	110	110	70	80
0.28	110	120	80	80
0.27	120	120	80	90
0.26	120	130	90	90
0.25	130	130	90	100
0.24	130	140	100	110
0.23	140	140	110	110
0.22	150	150	110	120
0.21	150	160	120	130
0.20	160	170	130	130
0.19	170	180	140	140
0.18	180	190	150	150
0.17	190	200*	160	160
0.16	210*	210*	170	180
0.15	220*	230*	180	190
0.14	240*	240*	200*	210*
0.13	260*	260*	220*	230*
0.12	280*	280*	240*	250*
0.11	300*	310*	270*	270*
0.10	330*	340*	300*	300*

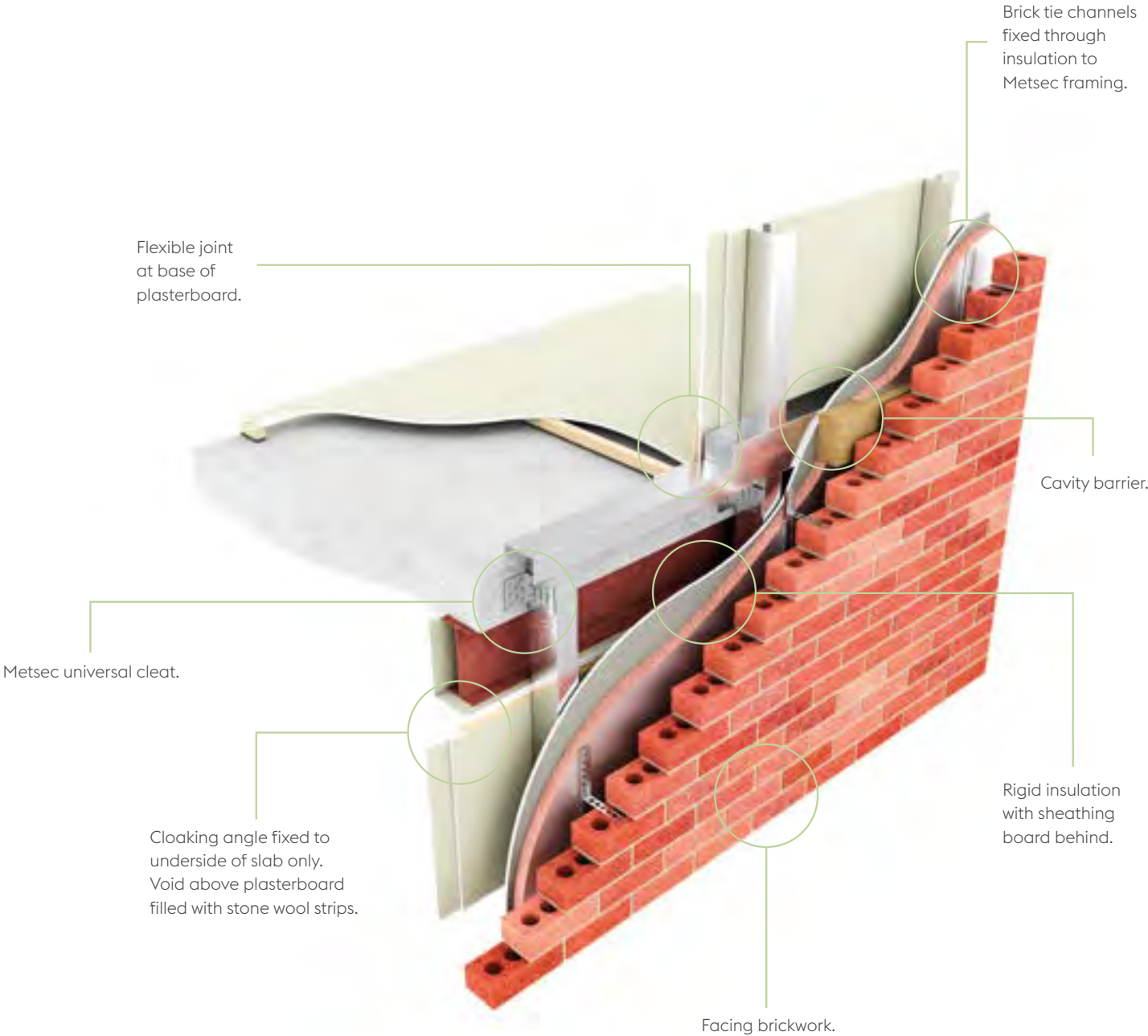
*Advice should be sought from the insulation provider regarding the construction to achieve the required insulation thickness

1. Metsec studs assumed to be at 600mm horizontal centres

Architectural Drawings

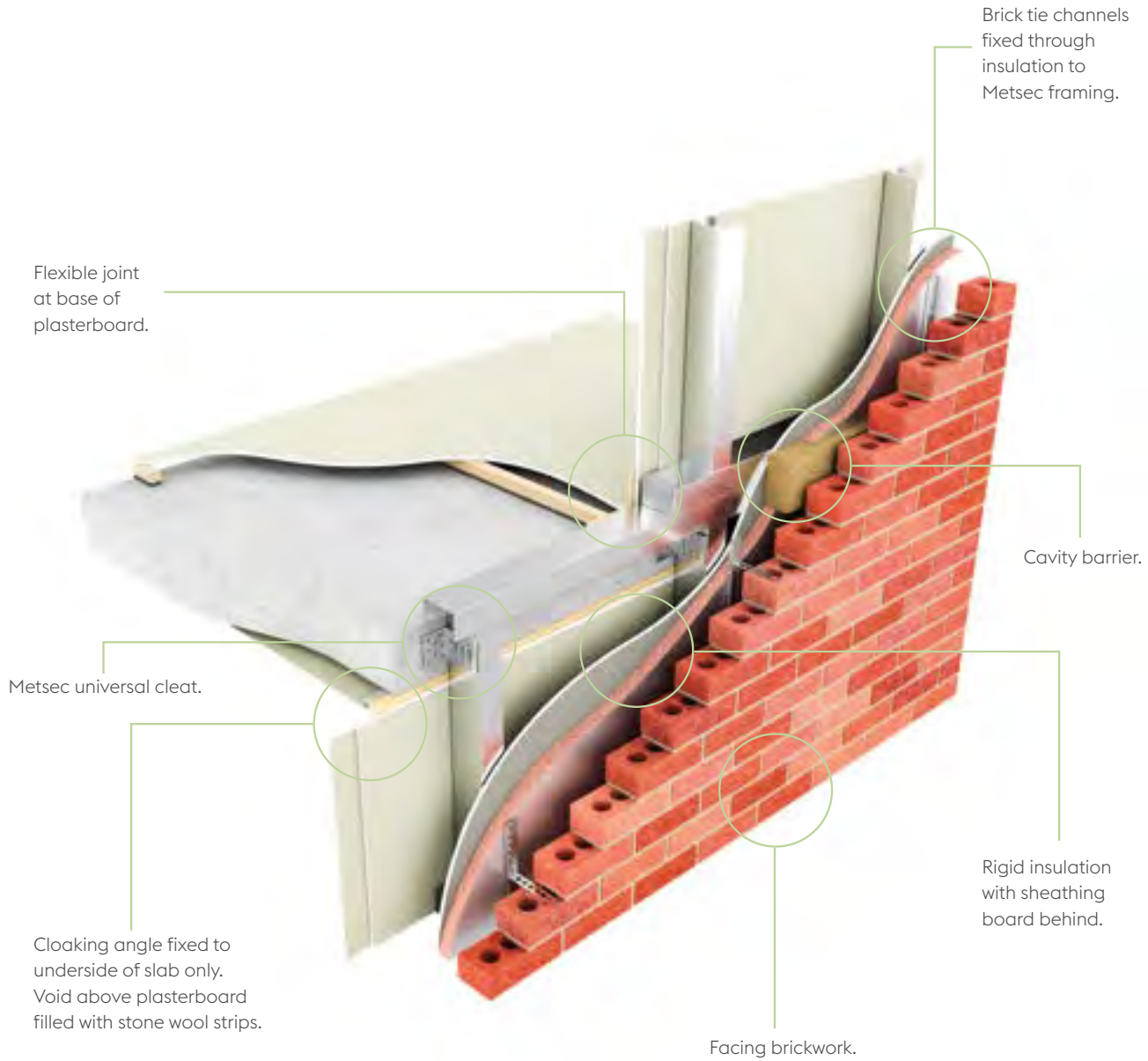
C3D-01

Continuous Walling Edge Detail to Steel Frame



C3D-02

Continuous Walling Edge Detail to Concrete Slab



Case Study

Money Penny

Metsec played a part in revolutionary creation of Money Penny's new headquarters.

Light gauge structural steel specialist, voestalpine Metsec plc, has provided its Steel Framing (SFS) products to support leading UK telephone answering service and outsourced switchboard company, Money Penny, with the development of its new headquarters in Wrexham. The £15m, 91,000 square feet scheme, which covered two phases was completed in April 2016.

The finished building provides high-quality, employee-focused spaces and boasts a treehouse, a village pub, as well as an impressive 8,000 square feet atrium with a restaurant and stadium seating. As part of the first phase of the project, main contractor, Pochin Construction, brought Metsec on board to provide SFS continuous and infill walling across all three floors of the new office block.

Metsec's design team reviewed the structural external wall options initially and produced construction principles in Revit (BIM), utilising specially designed dead load cleats at first floor level to support a continuous external SFS walling system. Infill walling was utilised on the ground floor areas, Metsec was then able to complete the design in Revit and provide a quick turnaround on the drawings, and issue these to Pochin for its review.

Due to the large number of M&E services required for the development, the ground floor slab was not installed at the beginning of the project. Usually, Metsec's continuous walling solution is installed from the ground floor up, but in this instance it was implemented from the first floor up by using the dead load cleats. The infill walling was then used as a solution to bring together the ground floor and first floor.





Jon Pochin, Managing Director of Pochin Construction, commented: “Moneypenny wanted a high spec, bespoke office build that reflected the growth and technical advancements of its business, which is why all aspects of the build need to be of a high standard. We wanted Metsec to be part of this project, as it has the knowledge and expertise to handle the challenges that the structure of the new building presented. The Metsec team were quickly able to provide us with a solution when working around the slab, which meant that the development of the project was not impacted or delayed.”

Stephen Ginger, Managing Director of Metsec Purlins and Framing, commented: “It was great working on a project that delivered a bespoke office space fit to rival those occupied by the likes of Google and Apple, which only further reflects the quality of the building created. Being involved in this project early on meant that we were able to use our expertise to provide a quick turnaround on the design. This, coupled with our great customer service, meant that we were able to accelerate the project.”







High Bay Walling

Introducing High Bay Walling...

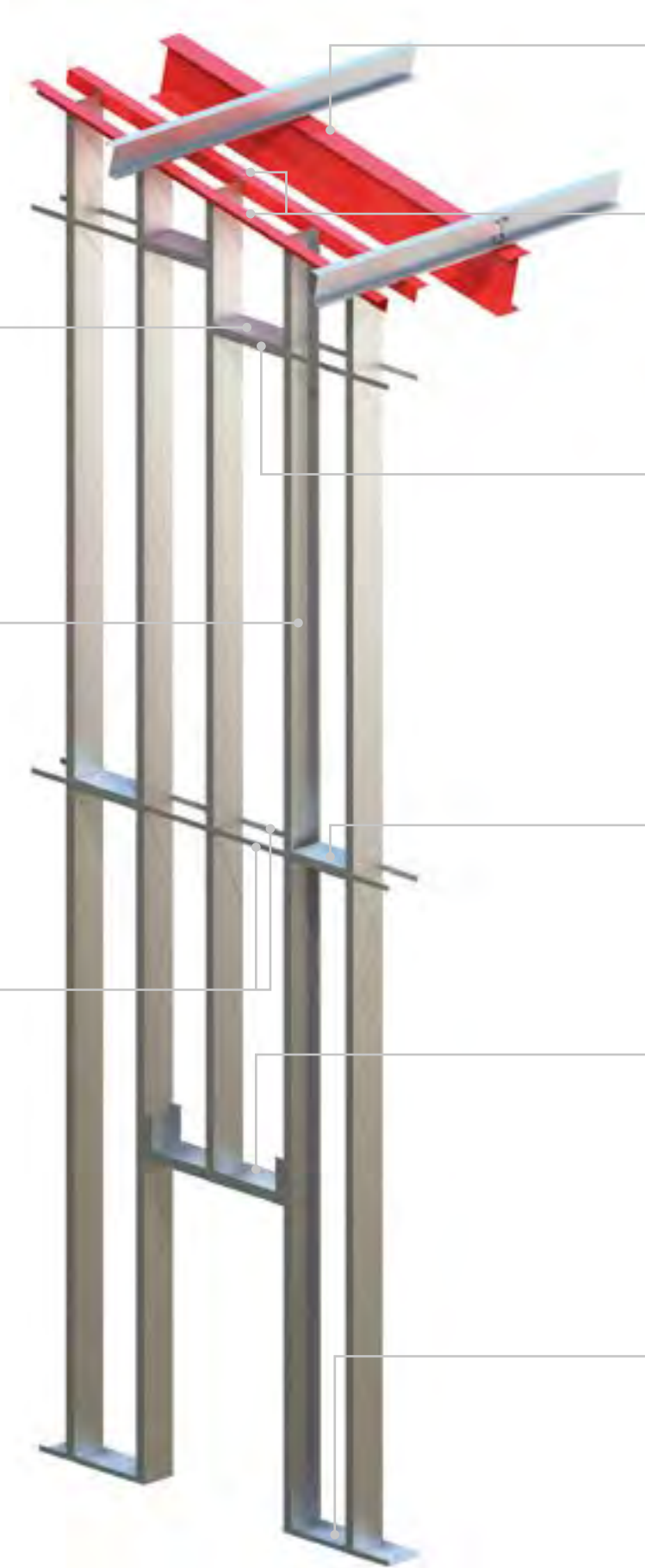
High bay walls are lightweight separating walls up to 20m high, used internally to provide high separating walls for factory units or atriums.

Overview of High Bay Walling System

High bay walls are a high performance single span internal walling system used to provide high separating walls for factory units or atriums. As they are often constructed within hot rolled steel portal frames, the amount of primary frame deflection that needs to be accommodated can be much greater than required for infill panels.

Metsec high-bay walls can be constructed up to 20m high and because of their lightweight construction there is rarely any need to provide additional foundations underneath the wall. The high strength to weight ratio of the Metsec studs enables these high separating walls to be constructed without any need for any hot rolled steel wind posts which would be necessary in an equivalent wall of masonry construction.

Walls can also be designed to meet project specific acoustic and fire rating requirements.



Hot Rolled Steel Roof Beam

Angle Section Restraint Members

Fitted to the underside of purlins each side of partition head.

40VB11 Strap on Both Sides

1 no. Tek screw to every stud flange, 3 no. Teks to each blocking piece.

Wall Head Blocking

Stud section cut to fit snugly between studs, fitted every third bay and to end studs in partition.

Full Height Studs

Section size and centres as Metsec design. Studs stopped short from top of angles to allow for vertical movement as required by design.

Mid Height Blocking

Stud section cut to fit snugly between studs and fitted every third bay and to end studs in partition.

40VB11 Strap on Both Sides

1 no. Tek screw to every stud flange, 3 no. Teks to each blocking piece.

Jams and Lintels

Jams and lintels by Metsec design. Compound members (such as above) may be required.

Base Track

Studs fixed to base track with low profile tek screws both flanges.

Section Names Explained

Metsec section references are designed to be easy to read and understand at a glance. Each section type is identified by a unique reference consisting of three numerical values separated by a letter or a dash.

Studs Sections (lipped sections)

Example stud reference – 210M12-50

- » 210 – Refers to the section depth of 210mm (numbers ending in 0 are always lipped)
- » M – Refers to Metsec SFS
- » 12 – Refers to the gauge (thickness) of the section i.e. 12 is 1.2mm thick
- » 50 – Refers to the width or section flange of 50mm

Track Sections (un-lipped sections)

Example stud reference – 214M12-70

- » 214 – Refers to the section depth of 214mm (numbers ending in 4 or 6 are always un-lipped)
- » M – Refers to Metsec SFS
- » 12 – Refers to the gauge (thickness) of the section i.e. 12 is 1.2mm thick
- » 70 – Refers to the width or section flange of 70mm

Colour Coding Explained

Metsec prints stud or joist sections and track sections with references that are designed to be easy to read and understand at a glance. Metsec prints the Metsec name down both flanges for the thinner thicknesses of section and these are colour coded as follows:

- » BLACK = 1.2mm or 1.3mm thickness
- » RED = 1.4mm thickness
- » GREEN = 1.6mm thickness
- » ORANGE = 1.8mm thickness
- » BLUE = 2.0mm thickness

On our drawings any sections greater than 2.0mm or that are made up of multiple sections are shown in yellow so they are highlighted on the drawings.

Slotted head track or sections thicker than 2.0mm are not colour coded but still have the “M” reference on the web.

All stud or joist sections and track sections have a string of numbers and letters printed down the back web along with our CE mark. One of the string of characters will start with a M and have two numbers after it e.g. M12 or M20. This denotes the thickness of the section i.e. M12 = 1.2mm thick section.



High Bay Walling

Industry Standards and Solutions

Building Regulations Part A – Structure:

The Metsec SFS high bay walling system is designed on an individual project basis to support the plasterboard against the internal wind load. The SFS sections can be designed to wind loads provided by the project engineer/consultant or designed to wind loads calculated by our own engineers.

Metsec calculate wind loads to BS EN 1991-1-4 plus the UK national annex incorporating the latest amendments and the use of PD6688-1-4, Background Information to EN 1991-1-4 and additional guidance.

The structural design of the SFS sections utilises BS EN 1993-1-1, BS EN1993-1-3 and BS EN 1993-1-5 plus UK national annexes and additional codes where appropriate.

The design of the SFS high bay walling considers, but is not limited to:

- » Structural capacity of the SFS sections
- » Deflection of the SFS sections under load
- » Connection of the SFS sections back to the primary structure

The load tables within this section is based on:

- » Unfactored horizontal pressure
- » Maximum plasterboard cladding weight of 0.50kN/m²
- » Blocking and strapping at mid height
- » Studs are to be boarded with a minimum of one layer of 12.5mm plasterboard to both sides
- » Studs fixed into 1.2mm base track
- » 90mm, 120mm, 150mm, 180mm studs fixed to Metsec slotted deflection head track of 1.6mm thick
- » 210mm, 240mm, 270mm, 300mm, 350mm studs fixed at head using standard 2.0mm head track with blocking and strapping detail

High bay walling is often built within large portal frame structures where the deflection of the primary structure is over the standard +/-20mm vertical deflection allowance. Before designing the high bay wall the deflection of the primary structure at the top of the wall should be provided so a suitable deflection head detail can be designed.

For wind loads outside the tables or conditions different from above please contact Metsec for advice.

Load Tables

Maximum Height - Deflection Limited to Height/240

How to Use the Load Table:

The load tables in this section allow for simple sizing of the general studs for a given wind load and known height. Where openings are required within the wall please contact Metsec for the design of the supporting members.

Maximum span tables are provided for all standard SFS sections for wind loads between 0.1kN/m² and 0.45kN/m². Where the wind load exceeds 0.45kN/m² then use the infill walling load tables. The table provided is based on the deflection criterion, Height/240.

Section Reference	Uniform Horizontal Pressure (kN/m ²) at Stud Spacing (mm)															
	0.1		0.15		0.2		0.25		0.3		0.35		0.4		0.45	
	0.40	0.60	0.40	0.60	0.40	0.60	0.40	0.60	0.40	0.60	0.40	0.60	0.40	0.60	0.40	0.60
090M12-50	8.26	7.22	7.22	6.31	6.56	5.73	6.09	5.32	5.73	5.00	5.44	4.75	5.20	4.55	5.00	4.37
090M12-62	8.76	7.66	7.66	6.69	6.96	6.08	6.46	5.64	6.08	5.31	5.77	5.04	5.52	4.82	5.31	4.64
090M12-75	9.22	8.06	8.06	7.04	7.32	6.39	6.79	5.93	6.39	5.58	6.07	5.30	5.81	5.07	5.58	4.88
090M14-75	9.68	8.46	8.46	7.39	7.69	6.71	7.13	6.23	6.71	5.86	6.38	5.57	6.10	5.33	5.86	5.12
090M16-75	10.10	8.82	8.82	7.71	8.02	7.00	7.44	6.50	7.00	6.12	6.65	5.81	6.36	5.56	6.12	5.34
090M18-75	10.48	9.15	9.15	8.00	8.32	7.26	7.72	6.74	7.26	6.35	6.90	6.03	6.60	5.76	6.35	5.54
090M20-75	10.83	9.46	9.46	8.26	8.59	7.51	7.98	6.97	7.51	6.56	7.13	6.23	6.82	5.96	6.56	5.73
120M12-50	10.29	8.98	8.98	7.85	8.16	7.13	7.58	6.62	7.13	6.23	6.77	5.92	6.48	5.66	6.23	5.44
120M12-62	10.88	9.50	9.50	8.30	8.63	7.54	8.01	7.00	7.54	6.59	7.16	6.26	6.85	5.98	6.59	5.75
120M12-75	11.42	9.97	9.98	8.71	9.06	7.92	8.41	7.35	7.92	6.91	7.52	6.57	7.19	6.28	6.91	6.04
120M14-75	12.00	10.48	10.48	9.15	9.52	8.32	8.84	7.72	8.32	7.26	7.90	6.90	7.56	6.60	7.26	6.35
120M16-75	12.52	10.93	10.93	9.55	9.93	8.68	9.22	8.05	8.68	7.58	8.24	7.20	7.88	6.89	7.58	6.62
120M18-75	12.99	11.35	11.35	9.91	10.31	9.01	9.57	8.36	9.01	7.87	8.55	7.47	8.18	7.15	7.87	6.87
120M20-75	13.43	11.73	11.73	10.25	10.66	9.31	9.89	8.64	9.31	8.13	8.84	7.72	8.46	7.39	8.13	7.10
150M12-50	12.22	10.67	10.67	9.32	9.70	8.47	9.00	7.86	8.47	7.40	8.05	7.03	7.70	6.72	7.40	6.46
150M12-62	12.89	11.26	11.26	9.83	10.23	8.94	9.50	8.29	8.94	7.80	8.49	7.41	8.12	7.09	7.80	6.82
150M12-75	13.50	11.79	11.79	10.30	10.71	9.36	9.95	8.69	9.36	8.18	8.89	7.77	8.50	7.43	8.18	7.14
150M14-75	14.12	12.34	12.34	10.78	11.21	9.79	10.40	9.09	9.79	8.56	9.30	8.12	8.90	7.77	8.55	7.47
150M16-75	14.74	12.88	12.88	11.25	11.70	10.22	10.86	9.49	10.22	8.93	9.71	8.48	9.28	8.11	8.93	7.80
150M18-75	15.33	13.39	13.39	11.69	12.16	10.62	11.29	9.86	10.62	9.28	10.09	8.82	9.65	8.43	9.28	8.11
150M20-75	15.87	13.86	13.86	12.11	12.59	11.00	11.69	10.21	11.00	9.61	10.45	9.13	9.99	8.73	9.61	8.39
180M12-50	14.10	12.32	12.32	10.76	11.19	9.77	10.39	9.07	9.77	8.54	9.28	8.11	8.88	7.76	8.54	7.46
180M12-62	14.83	12.96	12.96	11.32	11.77	10.28	10.93	9.55	10.28	8.98	9.77	8.53	9.34	8.16	8.98	7.85
180M12-75	15.51	13.55	13.55	11.83	12.31	10.75	11.42	9.98	10.75	9.39	10.21	8.92	9.77	8.53	9.39	8.20
180M14-75	16.23	14.17	14.17	12.38	12.88	11.25	11.95	10.44	11.25	9.83	10.69	9.33	10.22	8.93	9.83	8.58
180M16-75	16.94	14.80	14.80	12.92	13.44	11.74	12.48	10.90	11.74	10.26	11.15	9.74	10.67	9.32	10.26	8.96
180M18-75	17.59	15.36	15.36	13.42	13.96	12.19	12.96	11.32	12.19	10.65	11.58	10.12	11.08	9.68	10.65	9.30
180M20-75	18.00	15.89	15.89	13.88	14.43	12.61	13.40	11.70	12.61	11.01	11.98	10.46	11.45	10.01	11.01	9.62

Maximum heights on above high bay/internal walling table based on:

1. Unfactored horizontal pressure
2. Deflection limited to height/240
3. Blocking and strapping at mid height
4. Studs are boarded with a minimum of one layer of 12.5mm plasterboard to both sides
5. Studs fixed into 1.2mm base track
6. 90mm, 120mm, 150mm, 180mm studs fixed to Metsec slotted head track of 1.6mm thick
7. 210mm, 240mm, 270mm, 300mm, 350mm studs fixed at head using standard 2.0mm head track with blocking and strapping detail

Uniform Horizontal Pressure (kN/m ²) at Stud Spacing (mm)																
Section Reference	0.1		0.15		0.2		0.25		0.3		0.35		0.4		0.45	
	0.40	0.60	0.40	0.60	0.40	0.60	0.40	0.60	0.40	0.60	0.40	0.60	0.40	0.60	0.40	0.60
210M12-50	15.94	13.92	13.92	12.16	12.65	11.05	11.74	10.26	11.05	9.63	10.49	9.17	10.04	8.77	9.65	8.43
210M12-62	16.73	14.61	14.61	12.76	13.27	11.60	12.32	10.76	11.60	10.13	11.02	9.62	10.54	9.20	10.13	8.85
210M13-75	17.84	15.58	15.58	13.61	14.16	12.37	13.14	11.48	12.37	10.80	11.75	10.26	11.24	9.81	10.80	9.44
210M16-75	19.07	16.66	16.66	14.56	15.14	13.22	14.05	12.28	13.22	11.55	12.56	10.97	12.01	10.49	11.55	10.09
210M18-75	19.81	17.30	17.30	15.12	15.73	13.73	14.59	12.75	13.73	12.00	13.04	11.40	12.48	10.90	12.00	10.48
210M20-75	20.00	17.90	17.90	15.63	16.26	14.20	15.09	13.18	14.20	12.41	13.49	11.78	12.90	11.27	12.41	10.84
240M12-50	17.74	15.50	15.50	13.54	14.08	12.30	13.07	11.42	12.30	10.75	11.69	10.21	11.18	9.76	10.75	9.39
240M13-62	19.07	16.66	16.66	14.56	15.14	13.22	14.05	12.27	13.22	11.55	12.56	10.97	12.01	10.49	11.55	10.09
240M13-75	19.87	17.36	17.36	15.16	15.77	13.78	14.64	12.79	13.78	12.03	13.09	11.43	12.52	10.93	12.03	10.51
240M16-75	20.00	18.49	18.49	16.15	16.80	14.67	15.59	13.62	14.67	12.82	13.94	12.18	13.33	11.65	12.82	11.20
240M18-75	20.00	19.20	19.20	16.77	17.45	15.24	16.20	14.15	15.24	13.31	14.48	12.65	13.85	12.09	13.31	11.63
240M20-75	20.00	19.86	19.86	17.35	18.04	15.76	16.75	14.63	15.76	13.77	14.97	13.08	14.32	12.51	13.77	12.03
270M13-50	20.00	17.51	17.51	15.29	15.91	13.90	14.77	12.90	13.90	12.14	13.20	11.53	12.62	11.03	12.14	10.60
270M13-62	20.00	18.30	18.30	15.99	16.63	14.53	15.44	13.48	14.53	12.69	13.80	12.05	13.20	11.53	12.69	11.08
270M16-75	20.00	20.00	20.00	17.79	18.50	16.16	17.17	15.00	16.16	14.12	15.35	13.41	14.68	12.83	14.12	12.33
270M18-75	20.00	20.00	20.00	18.48	19.22	16.79	17.84	15.58	16.79	14.66	15.94	13.93	15.25	13.32	14.66	12.81
270M20-75	20.00	20.00	20.00	19.11	19.88	17.36	18.45	16.12	17.36	15.17	16.49	14.41	15.77	13.78	15.17	13.25
300M13-50	20.00	19.09	19.09	16.68	17.35	15.15	16.10	14.07	15.15	13.24	14.39	12.57	13.77	12.03	13.24	11.56
300M16-62	20.00	20.00	20.00	18.61	19.36	16.91	17.97	15.70	16.91	14.77	16.06	14.03	15.37	13.42	14.77	12.91
300M18-75	20.00	20.00	20.00	20.00	20.00	18.25	19.39	16.94	18.25	15.94	17.33	15.14	16.58	14.48	15.94	13.93
300M20-75	20.00	20.00	20.00	20.00	20.00	18.88	20.00	17.52	18.88	16.49	17.93	15.66	17.15	14.98	16.49	14.41
300M25-89	20.00	20.00	20.00	20.00	20.00	20.00	20.00	19.56	20.00	18.41	20.00	17.49	19.14	16.72	18.41	16.08
300M29-89	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	19.30	20.00	18.33	20.00	17.53	19.30	16.86
350M18-54	20.00	20.00	20.00	20.00	20.00	19.41	20.00	18.02	19.41	16.96	18.44	16.11	17.63	15.40	16.07	14.81
350M20-68	20.00	20.00	20.00	20.00	20.00	20.00	20.00	19.47	20.00	18.32	19.92	17.40	19.05	16.64	17.86	16.00
350M23-84	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	19.03	20.00	18.20	19.95	17.50
350M25-84	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	19.55	20.00	18.69	20.00	17.98
350M29-84	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	19.60	20.00	18.85

Maximum heights on above high bay/internal walling table based on:

1. Unfactored horizontal pressure
2. Deflection limited to height/240
3. Blocking and strapping at mid height
4. Studs are boarded with a minimum of one layer of 12.5mm plasterboard to both sides
5. Studs fixed into 1.2mm base track
6. 90mm, 120mm, 150mm, 180mm studs fixed to Metsec slotted head track of 1.6mm thick
7. 210mm, 240mm, 270mm, 300mm, 350mm studs fixed at head using standard 2.0mm head track with blocking and strapping detail

Building Regulations Part B – Fire:

The requirements for fire protection will normally be found in the relevant annexe of the Building Regulations, Part B, and often specific fire strategy reports are generated.

The fire ratings published in this document are tested and/or assessed for use with Metsec SFS sections and cannot be used with other systems.

All performance claims by manufacturers for fire resistance must be substantiated by test or assessment reports by UKAS accredited laboratories. Installations must be in strict accordance with the report data for types of materials used, components and assembly details. Unwarranted site modifications can jeopardize performance; in particular services and these should be well coordinated and often involve fire stopping.

All fire test data in this high bay walling section is to BS 476 Part 22: 1987. All test data is based on unique UKAS accredited tests and UKAS accredited scope of testing. The tests are carried out in UKAS accredited furnaces measuring 3m square.

The results of our fire tests are the lower of Insulation and or integrity failure rounded down to the nearest 30 minutes i.e. measured as 30, 60, 90 or 120 minutes.

For further information on the individual tests or to see where the test or assessment was carried out please contact Metsec.

How to Use the Fire Performance Table:

Decide the fire performance required from the inside of the building based on the Building Regulations Part B.

Due to the large amount of data the tables have been split into fire resistance periods 30 minutes, 60 minutes, 90 minutes and 120 minutes to make sorting through the data easier. Within these tables the data has been listed in order of acoustic performance, wall type and then the type of plasterboard (e.g. Fire type boards or Sound type boards)

Example:

The wall requires 90 minutes fire rating and an acoustic performance of $R_w > 60\text{db}$.

The solution can be any of the boards given in the 90 minute table with an R_w value over 60db

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Duty Rating	Acoustic Performance R_w (R_w+C_{tr})
Fire Performance from Inside 90 MINUTES					
H2	2x15mm Soundbloc	British Gypsum	90mm	Severe	50 (43)
H2	2x12.5mm Fire Panel	Knauf	90mm	Severe	* 43 *
H2	2x15mm Fire Panel	Knauf	90mm	Severe	46 (36)
H2	2x15mm Soundshield Plus	Knauf	90mm	Severe	46 (35)
H2	2x12.5mm Fireboard	Siniat	90mm	Severe	* 42 *
H2i	2x15mm Soundbloc	British Gypsum	90mm	Severe	* 51 (44) *
H2i	2x12.5mm Fire Panel	Knauf	90mm	Severe	* 46 *
H2i	2x15mm Fire Panel	Knauf	90mm	Severe	* 49 (37) *
H2i	2x15mm Soundshield Plus	Knauf	90mm	Severe	49 (37)
H2i	2x12.5mm Fireboard	Siniat	90mm	Severe	* 46 *
H3i	2x15mm Soundbloc	British Gypsum	90mm	Severe	* 56 (49) *
H3i	2x15mm Fire Panel	Knauf	90mm	Severe	* 56 (49) *
H3i	2x15mm Soundshield Plus	Knauf	90mm	Severe	56 (49)
H4i	2x15mm Soundbloc	British Gypsum	90mm	Severe	64(56)
H4i	2x15mm Soundbloc	British Gypsum	150mm	Severe	67(60)
H4i	2x15mm Fire Panel	Knauf	90mm	Severe	57 (49)
H4i	2x15mm Soundshield Plus	Knauf	90mm	Severe	57 (50)

There are many different types of plasterboard available so to keep the tables simple only the basic boards have been shown. Where required other boards may be used as shown in the tables below:

Please note changing these boards may affect the acoustic performance of the wall.

Board Substitutions – British Gypsum

Tested Board	Allowable Substitutions
Fireline	Fireline Duplex Fireline MR Soundbloc F Duraline Duraline MR
Soundbloc	Soundbloc F Soundbloc MR Duraline Duraline MR

Provided substituted board is at least as thick as the tested board.

Board Substitutions – Knauf

Tested Board	Allowable Substitutions
Fire Panel	Impact Panel Performance Plus
Soundshield Plus	Performance Plus

Provided substituted board is at least as thick as the tested board.

Board Substitutions – Siniat

Tested Board	Allowable Substitutions
Fire Board	Fire V Board Fire MR Board Universal Board Megadeco Board
dB Board	Universal Board Megadeco Board

Provided substituted board is at least as thick as the tested board.

Building Regulations Part E

– Resistance to the Passage of Sound:

The requirements for acoustic performance will normally be found in the relevant annex of the Building Regulations, Part E, and often specific acoustic strategy reports are generated.

Sound insulation performance must be substantiated or based on UKAS accredited laboratories test reports, tested to BS EN ISO 717-1:1997 and BS EN ISO 140-3:1995.

The quoted figures in this publication are laboratory tested measured as the Weighted Sound Reduction Index (R_w) measured in decibels (dB), hence all values are R_wdB figures. Where the particular wall construction hasn't been tested an estimated figure is provided and clearly noted.

All sound insulation data is based on laboratory evaluation of the building element in isolation and cannot reproduce your installed local conditions. It is important that flanking transmission is considered at design stage.

On site testing is measured using a different scale. It uses D_{nT,w} Standardised Level Difference. Values on site are approximately 7 to 8 decibels lower than achieved in the laboratory. One of the primary reasons for this difference will be the downgrading due to flanking transmission. This highlights the absolute need for good design and flanking details to help minimise these reductions.

Party walls under Part E are measured as D_{nT,w} + c_{tr}, to give you as a designer more information within this document in appropriate wall build ups to be considered we print the R_w+c_{tr} figures in brackets after the R_wdB figures if these are available.

The actual tests carried out are used to offer an order of magnitude comparison for the performance of the various systems. Sound insulation on site is a function of the partition chosen and the associated structures in which it is installed. We cannot take any responsibility for overall design and we would advise that specialist advice is sought at an early stage of design. It is essential that consideration is given to blocking all air paths and flanking sound.

All test data and system specifications are for systems constructed with materials and components as shown. The inclusion of other components without prior approval or constructed on site contrary to these documents will invalidate test certification and system performance.

All acoustic values are based on studs at 600mm centres. If the stud centres are reduced to either 400mm or 300mm, this could impact negatively on acoustic performance.

For further information on the individual tests or to see where the test or assessment was carried out please contact Metsec.

Fire Performance Table for High Bay Walling



Type H1: Layer of plasterboard, stud, layer of plasterboard



Type H1i: Layer of plasterboard, stud with mineral wool between, layer of plasterboard



Type H2: Two layers of plasterboard, stud, two layers of plasterboard



Type H2i: Two layers of plasterboard, stud with mineral wool between, two layers of plasterboard



Type H3i: Two layers of plasterboard, stud with mineral wool between, resilient bar, two layers of plasterboard



Type H4i: Two layers of plasterboard, resilient bar, stud with mineral wool between, resilient bar, two layers of plasterboard

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Duty Rating	Acoustic Performance Rw (Rw+Ctr)
Fire Performance from Inside 30 MINUTES					
H1	1x12.5mm Standard Wallboard	British Gypsum	90mm	Medium	* 34 *
H1	1x15mm Standard Wallboard	British Gypsum	90mm	Heavy	* 34 *
H1	1x12.5mm Soundbloc	British Gypsum	90mm	Medium	* 37 *
H1	1x15mm Soundbloc	British Gypsum	90mm	Heavy	* 39 *
H1	1x12.5mm Soundshield Plus	Knauf	90mm	Medium	* 38 *
H1	1x12.5mm db Board	Siniat	90mm	Medium	* 37 *
H1	1x15mm db Board	Siniat	90mm	Heavy	* 38 *
H1i	1x12.5mm Standard Wallboard	British Gypsum	90mm	Medium	* 38 *
H1i	1x15mm Standard Wallboard	British Gypsum	90mm	Heavy	* 38 *
H1i	1x12.5mm Soundbloc	British Gypsum	90mm	Medium	* 42 *
H1i	1x15mm Soundbloc	British Gypsum	90mm	Heavy	* 43 *
H1i	1x12.5mm Standard Wallboard	Knauf	90mm	Medium	* 39 *
H1i	1x15mm Standard Wallboard	Knauf	90mm	Heavy	* 39 *
H1i	1x12.5mm Soundshield Plus	Knauf	90mm	Medium	* 43 *
H1i	1x12.5mm Standard Wallboard	Siniat	90mm	Medium	* 37 *
H1i	1x15mm Standard Wallboard	Siniat	90mm	Heavy	* 38 *
H1i	1x12.5mm db Board	Siniat	90mm	Medium	* 42 *
H1i	1x12.5mm db Board	Siniat	90mm	Heavy	* 42 *

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Duty Rating	Acoustic Performance Rw (Rw+Ctr)
Fire Performance from Inside 60 MINUTES					
H1	1x15mm Fireline	British Gypsum	90mm	Heavy	* 34 *
H1	1x15mm Soundshield Plus	Knauf	90mm	Heavy	* 39 *
H1i	1x15mm Fireline	British Gypsum	90mm	Heavy	* 38 *
H1i	1x15mm Fire Panel	Knauf	90mm	Heavy	* 40 *
H1i	1x15mm Soundshield Plus	Knauf	90mm	Heavy	* 44 *
H1i	1x15mm Fireboard	Siniat	90mm	Heavy	* 38 *
H2	2x12.5mm Standard Wallboard	British Gypsum	90mm	Severe	* 43 *
H2	2x15mm Standard Wallboard	British Gypsum	90mm	Severe	* 43 *
H2	2x12.5mm Soundbloc	British Gypsum	90mm	Severe	* 49 *
H2	2x12.5mm Standard Wallboard	Knauf	90mm	Severe	* 43 *
H2	2x15mm Standard Wallboard	Knauf	90mm	Severe	* 43 *
H2	2x12.5mm Soundshield Plus	Knauf	90mm	Severe	* 45 *
H2	2x12.5mm Standard Wallboard	Siniat	90mm	Severe	* 42 *
H2	2x15mm Standard Wallboard	Siniat	90mm	Severe	* 42 *
H2	2x12.5mm db Board	Siniat	90mm	Severe	* 45 *
H2	2x15mm db Board	Siniat	90mm	Severe	46 (36)
H2i	2x12.5mm Standard Wallboard	British Gypsum	90mm	Severe	* 47 *
H2i	2x15mm Standard Wallboard	British Gypsum	90mm	Severe	* 47 *
H2i	2x12.5mm Soundbloc	British Gypsum	90mm	Severe	* 53 *
H2i	2x12.5mm Standard Wallboard	Knauf	90mm	Severe	* 46 *
H2i	2x15mm Standard Wallboard	Knauf	90mm	Severe	* 46 *
H2i	2x12.5mm Soundshield Plus	Knauf	90mm	Severe	* 48 *
H2i	2x12.5mm Standard Wallboard	Siniat	90mm	Severe	* 46 *
H2i	2x15mm Standard Wallboard	Siniat	90mm	Severe	* 46 *
H2i	2x12.5mm db Board	Siniat	90mm	Severe	* 46 *
H2i	2x15mm db Board	Siniat	90mm	Severe	49 (44)
H3i	2x15mm db Board	Siniat	90mm	Severe	* 54 (47) *
H4i	2x15mm db Board	Siniat	90mm	Severe	58 (51)

*Indicates estimated values based on similar tests

Wall Type	Plasterboard Lining	Plasterboard Manufacturers	Minimum Stud Depth	Duty Rating	Acoustic Performance Rw (Rw+Ctr)
Fire Performance from Inside 90 MINUTES					
H2	2x15mm Soundbloc	British Gypsum	90mm	Severe	50 (43)
H2	2x12.5mm Fire Panel	Knauf	90mm	Severe	* 43 *
H2	2x15mm Fire Panel	Knauf	90mm	Severe	46 (36)
H2	2x15mm Soundshield Plus	Knauf	90mm	Severe	46 (35)
H2	2x12.5mm Fireboard	Siniat	90mm	Severe	* 42 *
H2i	2x15mm Soundbloc	British Gypsum	90mm	Severe	* 51 (44) *
H2i	2x12.5mm Fire Panel	Knauf	90mm	Severe	* 46 *
H2i	2x15mm Fire Panel	Knauf	90mm	Severe	* 49 (37) *
H2i	2x15mm Soundshield Plus	Knauf	90mm	Severe	49 (37)
H2i	2x12.5mm Fireboard	Siniat	90mm	Severe	* 46 *
H3i	2x15mm Soundbloc	British Gypsum	90mm	Severe	* 56 (49) *
H3i	2x15mm Fire Panel	Knauf	90mm	Severe	* 56 (49) *
H3i	2x15mm Soundshield Plus	Knauf	90mm	Severe	56 (49)
H4i	2x15mm Soundbloc	British Gypsum	90mm	Severe	64(56)
H4i	2x15mm Soundbloc	British Gypsum	150mm	Severe	67(60)
H4i	2x15mm Fire Panel	Knauf	90mm	Severe	57 (49)
H4i	2x15mm Soundshield Plus	Knauf	90mm	Severe	57 (50)
Fire Performance from Inside 120 MINUTES					
H2	2x12.5mm Fireline	British Gypsum	90mm	Severe	* 43 *
H2	2x15mm Fireline	British Gypsum	90mm	Severe	46 (38)
H2	2x15mm Fireboard	Siniat	90mm	Severe	*46 (36) *
H2i	2x12.5mm Fireline	British Gypsum	90mm	Severe	* 47 *
H2i	2x15mm Fireline	British Gypsum	90mm	Severe	48 (40)
H2i	2x15mm Fireboard	Siniat	90mm	Severe	51 (45)
H3i	2x15mm Fireline	British Gypsum	90mm	Severe	* 56 (49) *
H3i	2x15mm Fireboard	Siniat	90mm	Severe	57 (50)
H4i	2x15mm Fireline	British Gypsum	90mm	Severe	61 (54)
H4i	2x15mm Fireboard	Siniat	90mm	Severe	58 (50)

*Indicates estimated values based on similar tests.



High Bay Walling

Product Code	Height (kg)
090M12-50	2.07
090M12-62	2.35
090M12-75	2.70
090M14-75	3.13
090M16-75	3.57
090M18-75	4.00
090M20-75	4.43
120M12-50	2.07
120M12-62	2.35
120M12-75	2.70
120M14-75	3.13
120M16-75	3.57
120M18-75	4.00
120M20-75	4.43
150M12-50	2.07
150M12-62	2.35
150M12-75	2.70
150M14-75	3.13
150M16-75	3.57
150M18-75	4.00
150M20-75	4.43
180M12-50	2.07
180M12-62	2.35
180M12-75	2.70
180M14-75	3.13
180M16-75	3.57
180M18-75	4.00
180M20-75	4.43
210M12-50	2.07
210M12-62	2.35
210M12-75	2.70
210M13-75	3.13
210M16-75	3.57
210M18-75	4.00
210M20-75	4.43
240M12-50	2.07
240M12-62	2.35
240M12-75	2.70
240M13-62	3.13
240M13-75	3.57
240M16-75	4.00
240M18-75	4.43
270M13-50	2.07
270M13-62	2.35
270M13-75	2.70
270M16-75	3.13
270M18-75	3.57
300M13-50	2.07
300M13-62	2.35
300M13-75	2.70

Product Code	Height (kg)	Depth (mm)	Stud/C Section	Up beam
090M12-50	2.07	75	50	50
090M12-62	2.35	75	50	50
090M12-75	2.70	75	50	50
090M14-75	3.13	75	50	50
090M16-75	3.57	75	50	50
090M18-75	4.00	75	50	50
090M20-75	4.43	75	50	50
120M12-50	2.07	75	50	50
120M12-62	2.35	75	50	50
120M12-75	2.70	75	50	50
120M14-75	3.13	75	50	50
120M16-75	3.57	75	50	50
120M18-75	4.00	75	50	50
120M20-75	4.43	75	50	50
150M12-50	2.07	75	50	50
150M12-62	2.35	75	50	50
150M12-75	2.70	75	50	50
150M14-75	3.13	75	50	50
150M16-75	3.57	75	50	50
150M18-75	4.00	75	50	50
150M20-75	4.43	75	50	50
180M12-50	2.07	75	50	50
180M12-62	2.35	75	50	50
180M12-75	2.70	75	50	50
180M14-75	3.13	75	50	50
180M16-75	3.57	75	50	50
180M18-75	4.00	75	50	50
180M20-75	4.43	75	50	50
210M12-50	2.07	75	50	50
210M12-62	2.35	75	50	50
210M12-75	2.70	75	50	50
210M13-75	3.13	75	50	50
210M16-75	3.57	75	50	50
210M18-75	4.00	75	50	50
210M20-75	4.43	75	50	50
240M12-50	2.07	75	50	50
240M12-62	2.35	75	50	50
240M12-75	2.70	75	50	50
240M13-62	3.13	75	50	50
240M13-75	3.57	75	50	50
240M16-75	4.00	75	50	50
240M18-75	4.43	75	50	50
270M13-50	2.07	75	50	50
270M13-62	2.35	75	50	50
270M13-75	2.70	75	50	50
270M16-75	3.13	75	50	50
270M18-75	3.57	75	50	50
300M13-50	2.07	75	50	50
300M13-62	2.35	75	50	50
300M13-75	2.70	75	50	50



Other Technical Information

SFS Components

Metsec relies on high quality, purpose designed components. The design of sections draws on Metsec Framing's extensive cold rolling knowledge to maximise the strength to weight ratios.

The section profiles are listed on the following pages:

Stud/C Section

These are simple but structurally efficient lipped C-sections used as studs in walls and joists in floors or roofs.



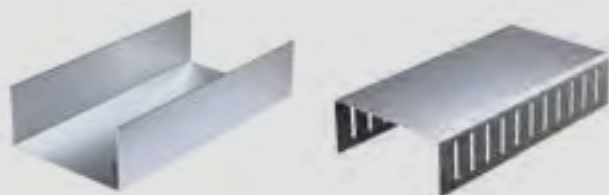
Stud/C Section							
Product Code	Weight (Kg/m)	Depth (mm)	Flange (mm)	Lip (mm)	Thickness (mm)	Colour Code	Available Lengths (m)
090M12-50	2.07	90	50	10	1.2	BLACK	1.5 to 6.0
090M12-62	2.38	90	62	13	1.2	BLACK	1.5 to 6.0
090M12-75	2.70	90	75	15	1.2	BLACK	1.5 to 6.0
090M14-75	3.13	90	75	15	1.4	RED	1.5 to 6.0
090M16-75	3.57	90	75	15	1.6	GREEN	1.5 to 6.0
090M18-75	4.00	90	75	15	1.8	ORANGE	1.5 to 6.0
090M20-75	4.42	90	75	15	2	BLUE	1.5 to 6.0
120M12-50	2.38	120	50	10	1.2	BLACK	1.5 to 7.0
120M12-62	2.70	120	62	13	1.2	BLACK	1.5 to 7.0
120M12-75	3.01	120	75	15	1.2	BLACK	1.5 to 7.0
120M14-75	3.50	120	75	15	1.4	RED	1.5 to 7.0
120M16-75	3.99	120	75	15	1.6	GREEN	1.5 to 7.0
120M18-75	4.47	120	75	15	1.8	ORANGE	1.5 to 7.0
120M20-75	4.95	120	75	15	2	BLUE	1.5 to 7.0
150M12-50	2.70	150	50	10	1.2	BLACK	1.5 to 8.0
150M12-62	3.01	150	62	13	1.2	BLACK	1.5 to 8.0
150M12-75	3.32	150	75	15	1.2	BLACK	1.5 to 8.0
150M14-75	3.82	150	75	15	1.4	RED	1.5 to 8.0
150M16-75	4.36	150	75	15	1.6	GREEN	1.5 to 8.0
150M18-75	4.91	150	75	15	1.8	ORANGE	1.5 to 8.0
150M20-75	5.45	150	75	15	2	BLUE	1.5 to 8.0
180M12-50	3.01	180	50	10	1.2	BLACK	1.5 to 9.0
180M12-62	3.32	180	62	13	1.2	BLACK	1.5 to 9.0
180M12-75	3.64	180	75	15	1.2	BLACK	1.5 to 9.0
180M14-75	4.20	180	75	15	1.4	RED	1.5 to 9.0
180M16-75	4.80	180	75	15	1.6	GREEN	1.5 to 9.0
180M18-75	5.40	180	75	15	1.8	ORANGE	1.5 to 9.0
180M20-75	6.00	180	75	15	2	BLUE	1.5 to 9.0
210M12-50	3.32	210	50	10	1.2	BLACK	1.5 to 10.0
210M12-62	3.64	210	62	13	1.2	BLACK	1.5 to 10.0
210M13-75	4.28	210	75	15	1.3	BLACK	1.5 to 10.0
210M16-75	5.20	210	75	15	1.6	GREEN	1.5 to 10.0
210M18-75	5.85	210	75	15	1.8	ORANGE	1.5 to 10.0
210M20-75	6.47	210	75	15	2	BLUE	1.5 to 10.0
240M12-50	3.64	240	50	10	1.2	BLACK	1.5 to 10.0
240M13-62	4.28	240	62	13	1.3	BLACK	1.5 to 10.0
240M13-75	4.62	240	75	15	1.3	BLACK	1.5 to 10.0
240M16-75	5.62	240	75	15	1.6	GREEN	1.5 to 10.0
240M18-75	6.32	240	75	15	1.8	ORANGE	1.5 to 10.0
240M20-75	6.99	240	75	15	2	BLUE	1.5 to 10.0
270M13-50	4.28	270	50	10	1.3	BLACK	1.5 to 10.0
270M13-62	4.62	270	62	13	1.3	BLACK	1.5 to 10.0
270M16-75	6.04	270	75	15	1.6	GREEN	1.5 to 10.0
270M18-75	6.79	270	75	15	1.8	ORANGE	1.5 to 10.0
270M20-75	7.52	270	75	15	2	BLUE	1.5 to 10.0
300M13-50	4.62	300	50	10	1.3	BLACK	1.5 to 10.0
300M16-62	6.04	300	62	13	1.6	GREEN	1.5 to 10.0
300M18-75	7.28	300	75	15	1.8	ORANGE	1.5 to 10.0
300M20-75	8.09	300	75	15	2	BLUE	1.5 to 10.0
300M25-89	10.78	300	89	18	2.5	-	1.5 to 10.0
300M29-89	12.51	300	89	18	2.9	-	1.5 to 10.0
350M18-54	7.28	350	54	11	1.8	ORANGE	1.5 to 10.0
350M20-68	8.63	350	68	14	2	BLUE	1.5 to 10.0
350M23-84	10.72	350	84	18	2.3	-	1.5 to 10.0
350M25-84	11.65	350	84	18	2.5	-	1.5 to 10.0
350M30-84	13.97	350	84	18	3	-	1.5 to 10.0

Slotted Head Track

These are un-lipped sections that are slightly wider than the lipped C-sections to allow for simple connections incorporating deflection at the head of a wall.

Base Track/Channels

These are un-lipped sections that are slightly wider than the lipped C-sections to allow for simple connections at the base of wall and at the ends of floors or roofs.



Track							
Product Code	Weight (Kg/m)	Depth (mm)	Flange (mm)	Lip (mm)	Thickness (mm)	Colour Code	Available Lengths (m)
094M12-40	1.76	94	40	0	1.2	BLACK	3, 4 or 6
094M12-70	2.37	94	70	0	1.2	BLACK	3, 4 or 6
094M14-70	2.78	94	70	0	1.4	RED	3, 4 or 6
094M16-70S	3.17	94	70	0	1.6	-	3
094M18-70S	3.55	94	70	0	1.8	-	3
094M20-70	3.94	94	70	0	2	BLUE	3, 4 or 6
124M12-40	2.06	124	40	0	1.2	BLACK	3, 4 or 6
124M12-70	2.67	124	70	0	1.2	BLACK	3, 4 or 6
124M14-70	3.12	124	70	0	1.4	RED	3, 4 or 6
124M16-70S	3.56	124	70	0	1.6	-	3
124M18-70S	4.01	124	70	0	1.8	-	3
124M20-70	4.45	124	70	0	2	BLUE	3, 4 or 6
154M12-40	2.38	154	40	0	1.2	BLACK	3, 4 or 6
154M12-70	2.98	154	70	0	1.2	BLACK	3, 4 or 6
154M14-70	3.49	154	70	0	1.4	RED	3, 4 or 6
154M16-70S	3.98	154	70	0	1.6	-	3
154M18-70S	4.48	154	70	0	1.8	-	3
154M20-70	4.97	154	70	0	2	BLUE	3, 4 or 6
184M12-40	2.67	184	40	0	1.2	BLACK	3, 4 or 6
184M12-70	3.37	184	70	0	1.2	BLACK	3, 4 or 6
184M14-70	3.82	184	70	0	1.4	RED	3, 4 or 6
184M16-70S	4.35	184	70	0	1.6	-	3
184M18-70S	4.91	184	70	0	1.8	-	3
184M20-70	5.44	184	70	0	2	BLUE	3, 4 or 6
214M12-40	2.98	214	40	0	1.2	BLACK	3, 4 or 6
214M12-70	3.63	214	70	0	1.2	BLACK	3, 4 or 6
214M14-70	4.19	214	70	0	1.4	RED	3, 4 or 6
214M16-70	4.79	214	70	0	1.6	GREEN	3, 4 or 6
214M18-70	5.39	214	70	0	1.8	ORANGE	3, 4 or 6
214M20-70	5.98	214	70	0	2	BLUE	3, 4 or 6
244M12-40	3.32	244	40	0	1.2	BLACK	3, 4 or 6
244M13-70	4.28	244	70	0	1.3	BLACK	3, 4 or 6
244M16-70	5.19	244	70	0	1.6	GREEN	3, 4 or 6
244M18-70	5.85	244	70	0	1.8	ORANGE	3, 4 or 6
244M20-70	6.49	244	70	0	2	BLUE	3, 4 or 6
274M12-40	3.63	274	40	0	1.2	BLACK	3, 4 or 6
274M13-70	4.62	274	70	0	1.3	BLACK	3, 4 or 6
274M16-70	5.61	274	70	0	1.6	GREEN	3, 4 or 6
274M18-70	6.32	274	70	0	1.8	ORANGE	3, 4 or 6
274M20-70	7.01	274	70	0	2	BLUE	3, 4 or 6
304M13-40	4.28	304	40	0	1.3	BLACK	3, 4 or 6
304M16-70	6.03	304	70	0	1.6	GREEN	3, 4 or 6
304M18-70	6.79	304	70	0	1.8	ORANGE	3, 4 or 6
304M20-70	7.50	304	70	0	2	BLUE	3, 4 or 6
354M16-45	6.03	354	45	0	1.6	GREEN	3, 4 or 6
354M18-60	7.28	354	60	0	1.8	ORANGE	3, 4 or 6
354M20-75	8.66	354	75	0	2	BLUE	3, 4 or 6
356M25-75	10.79	356	75	0	2.5	-	3, 4 or 6
356M29-75	12.49	356	75	0	2.9	-	3, 4 or 6

Bracing Straps

These are used as bracing members or screed stops when screw fixed to the face of walls.



Bracing Straps				
Product Code	Depth (mm)	Thickness (mm)	Weight (kg)	Available Lengths (m)
40VB11	40	2	0.35	4.0
90VB12	90	3	0.85	4.0



Angles

These are used for various arrangements to provide additional or temporary support.

Angles				
Product Code	Legs (mm)	Thickness (mm)	Weight (kg)	Available Lengths (m)
45x45x2	45	2	1.38	3.0
100x100x2	100	2	3.11	3.0

Universal Cleats

A new range of cleats used to provide support to continuous wall studs, with a unique pattern of pre-punched slots and holes which offer both deflection or solid fix.



Universal Cleats					
Product Code	Depth (mm)	Fixed Leg (mm)	Adjustable Leg (mm)	Thickness (mm)	Weight (kg)
UX 1303x100	130	100	100	3	0.68
UX 1303x125	130	100	125	3	0.77
UX 1303x150	130	100	150	3	0.85
UX 1303x175	130	100	175	3	0.94
UX 1303x200	130	100	200	3	1.02
UX 1303x225	130	100	225	3	1.11
UX 1303x250	130	100	250	3	1.19
UX 1303x275	130	100	275	3	1.28
UX 1303x300	130	100	300	3	1.36
UX 1306x100	130	100	100	6	1.36
UX 1306x125	130	100	125	6	1.54
UX 1306x150	130	100	150	6	1.69
UX 1306x175	130	100	175	6	1.87
UX 1306x200	130	100	200	6	2.05
UX 1306x225	130	100	225	6	2.22
UX 1306x250	130	100	250	6	2.38
UX 1306x275	130	100	275	6	2.55
UX 1306x300	130	100	300	6	2.73
UX 1903x100	190	100	100	3	1.00
UX 1903x125	190	100	125	3	1.13
UX 1903x150	190	100	150	3	1.24
UX 1903x175	190	100	175	3	1.37
UX 1903x200	190	100	200	3	1.50
UX 1903x225	190	100	225	3	1.62
UX 1903x250	190	100	250	3	1.74
UX 1903x275	190	100	275	3	1.86
UX 1903x300	190	100	300	3	1.99
UX 1906x100	190	100	100	6	1.99
UX 1906x125	190	100	125	6	2.25
UX 1906x150	190	100	150	6	2.48
UX 1906x175	190	100	175	6	2.73
UX 1906x200	190	100	200	6	2.99
UX 1906x225	190	100	225	6	3.25
UX 1906x250	190	100	250	6	3.47
UX 1906x275	190	100	275	6	3.73
UX 1906x300	190	100	300	6	3.99



Cill Plate

These are used to provide support for windows where required.

Cill plate				
Product Code	Depth (mm)	Adjustable Leg (mm)	Thickness (mm)	Weight (kg)
CPL 1903x100	190	100	3	0.50
CPL 1903x125	190	125	3	0.63
CPL 1903x150	190	150	3	0.75
CPL 1903x175	190	175	3	0.87
CPL 1903x200	190	200	3	1.00
CPL 1903x225	190	225	3	1.12
CPL 1903x250	190	250	3	1.24
CPL 1903x275	190	275	3	1.36
CPL 1903x300	190	300	3	1.50
CPL 1906x100	190	100	6	0.99
CPL 1906x125	190	125	6	1.25
CPL 1906x150	190	150	6	1.50
CPL 1906x175	190	175	6	1.74
CPL 1906x200	190	200	6	2.00
CPL 1906x225	190	225	6	2.24
CPL 1906x250	190	250	6	2.49
CPL 1906x275	190	275	6	2.73
CPL 1906x300	190	300	6	2.99



Window Connector

These are used to connect lintel/cill members to jamb studs around openings.

Window connector				
Product Code	Depth (mm)	Flange (mm)	Thickness (mm)	Weight (kg)
WC090	90	62	1.2	0.36
WC120	120	62	1.2	0.41
WC150	150	62	1.2	0.45
WC180	180	62	1.2	0.50
WC210	210	62	1.2	0.55
WC240	240	62	1.3	0.64
WC270	270	62	1.3	0.69
WC300	300	62	1.6	0.90
WC350	350	68	2	1.30



Window Angle

These are used to strengthen the connections around openings where there is higher loads.

Window Angle				
Product Code	Depth (mm)	Legs (mm)	Thickness (mm)	Weight (kg)
WA090	90	45	2	0.14
WA120	120	45	2	0.18
WA150	150	45	2	0.23
WA180	180	45	2	0.27
WA210	210	45	2	0.32
WA240	240	45	2	0.36
WA270	270	45	2	0.41
WA300	300	45	2	0.46
WA350	350	45	2	0.53



Cantilever Post

These are utilised on parapets, freestanding walls and downstands, along with providing support above and below wall openings where required.

Cantilever post					
Product Code	Post Length (mm)	Post Dimensions (mm)	Post Thickness (mm)	Base Plate Dimensions (mm)	Weight (kg)
CP 804030 x 250	250	80 x 40	3	160 x 150	3.70
CP 804030 x 500	500	80 x 40	3	160 x 150	5.18
CP 804030 x 750	750	80 x 40	3	160 x 150	6.67
CP 804030 x 1000	1000	80 x 40	3	160 x 150	8.15



Other Accessories

Zed bars – These are used to provide head and base support to walls where required.

High load cleats – These are used to provide additional support for jamb studs where required.

Slotted angle – These are used to provide support to continuous wall studs where the offset from the primary frame is too great for a universal cleat.

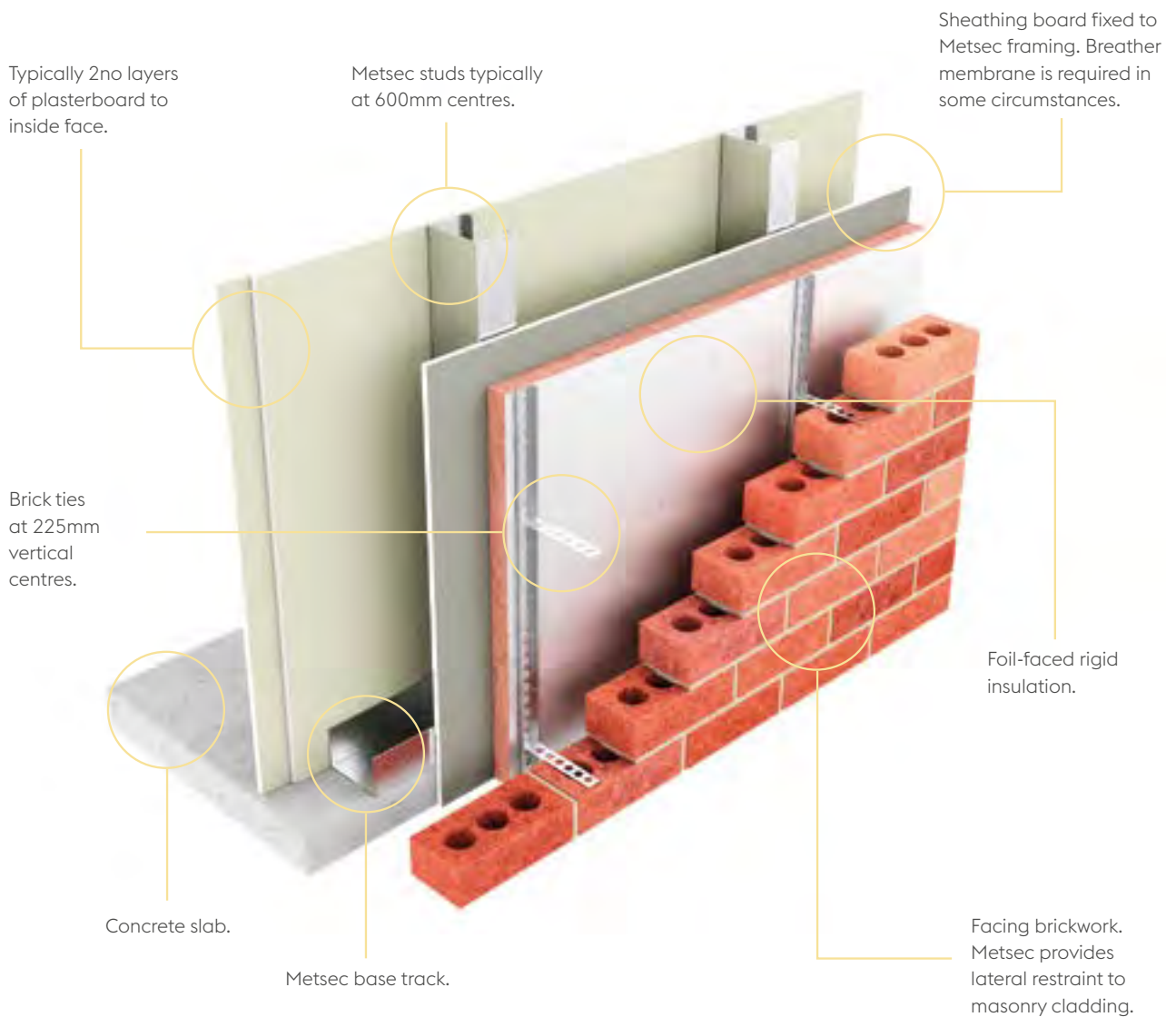
Other Accessories				
Product Code	Length (mm)	Dimensions (mm)	Thickness (mm)	Weight (kg)
Z 402	600	40 x 40 x 40	2	1.24
HL 903	90	100 x 60	3	0.37
HS 903	90	100 x 60	3	0.37
SA 1002	1000	100 x 100	2	3.45



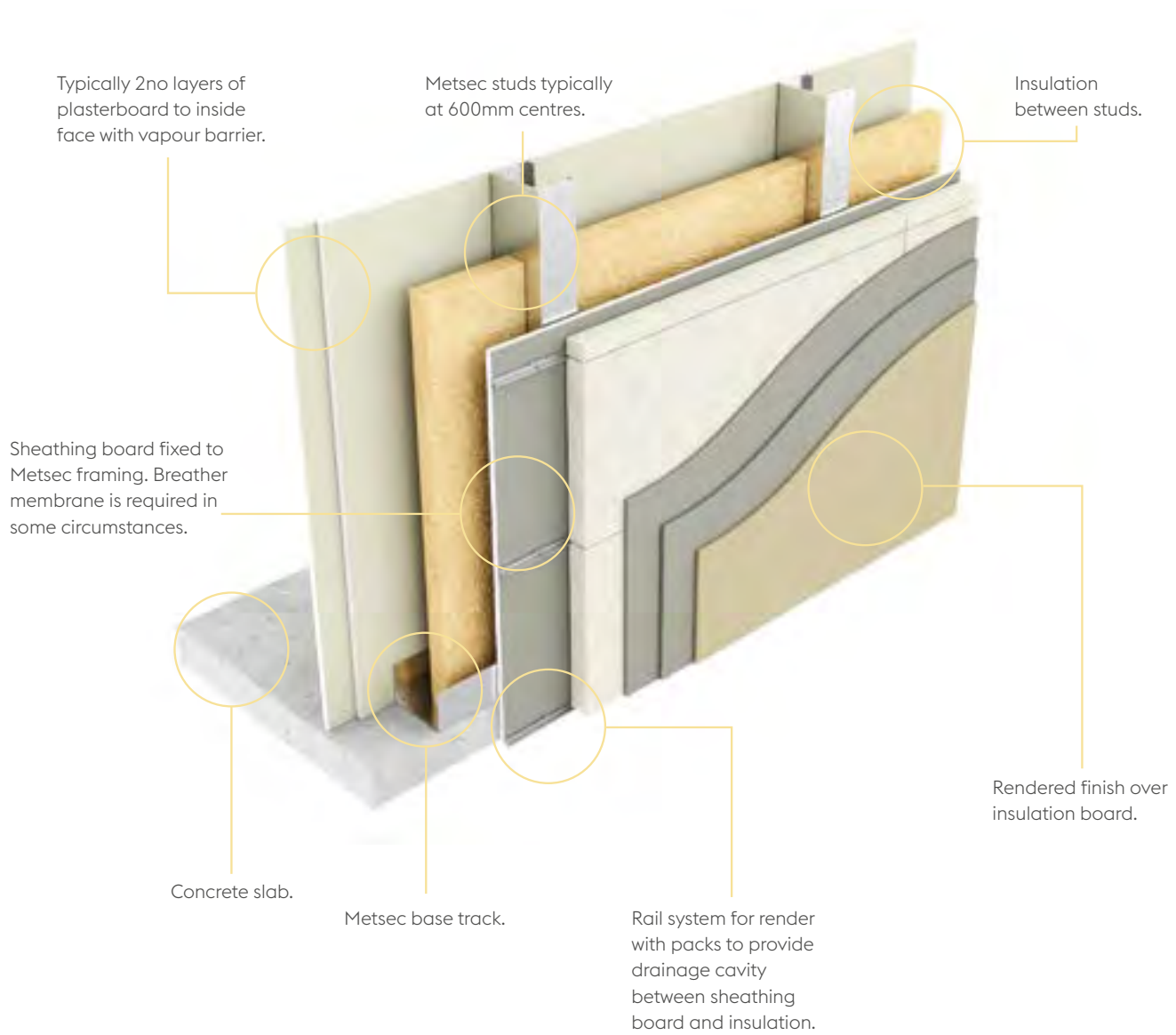
External Finish Options

All our SFS systems are able to be used with a wide range of external finishes. Each finish can function with all key sector applications including residential developments, hotels, student accommodation, social housing, healthcare and education.

Brickwork

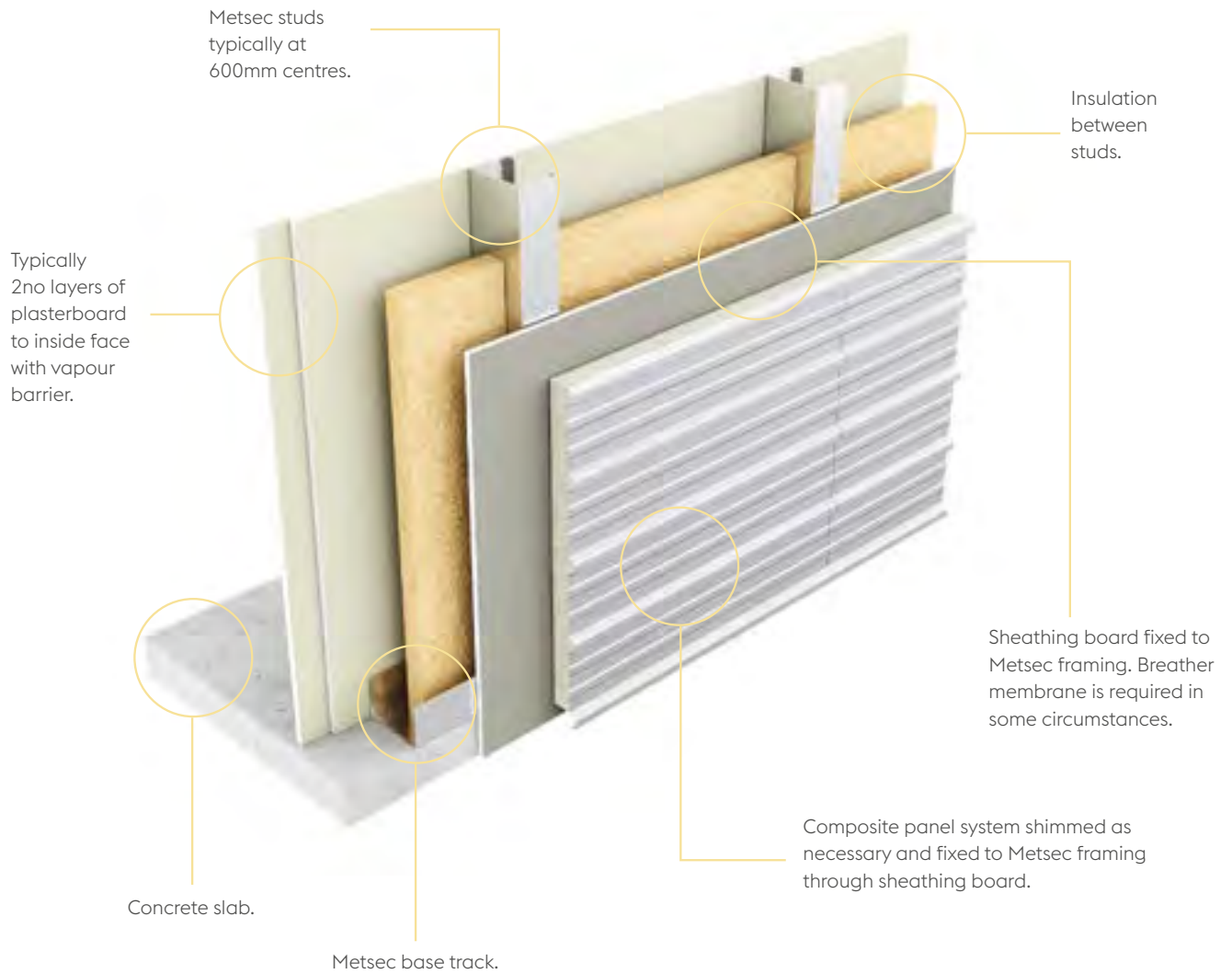


Insulated Render

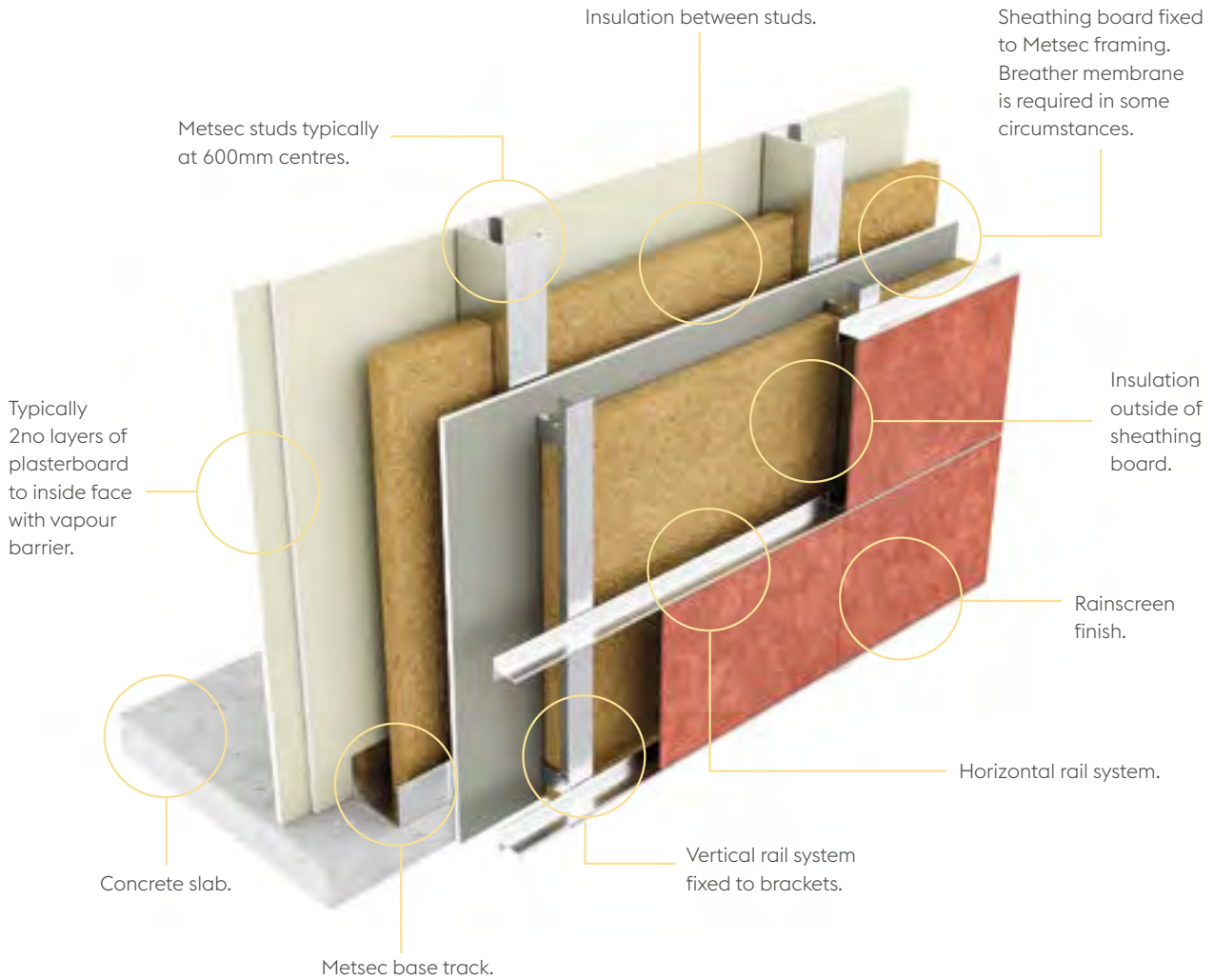


External Finish Options

Composite Panels



Ventilated Rainscreen



Resin Tiles



Stone Tiles



Metal Cladding



Terracotta Tiles



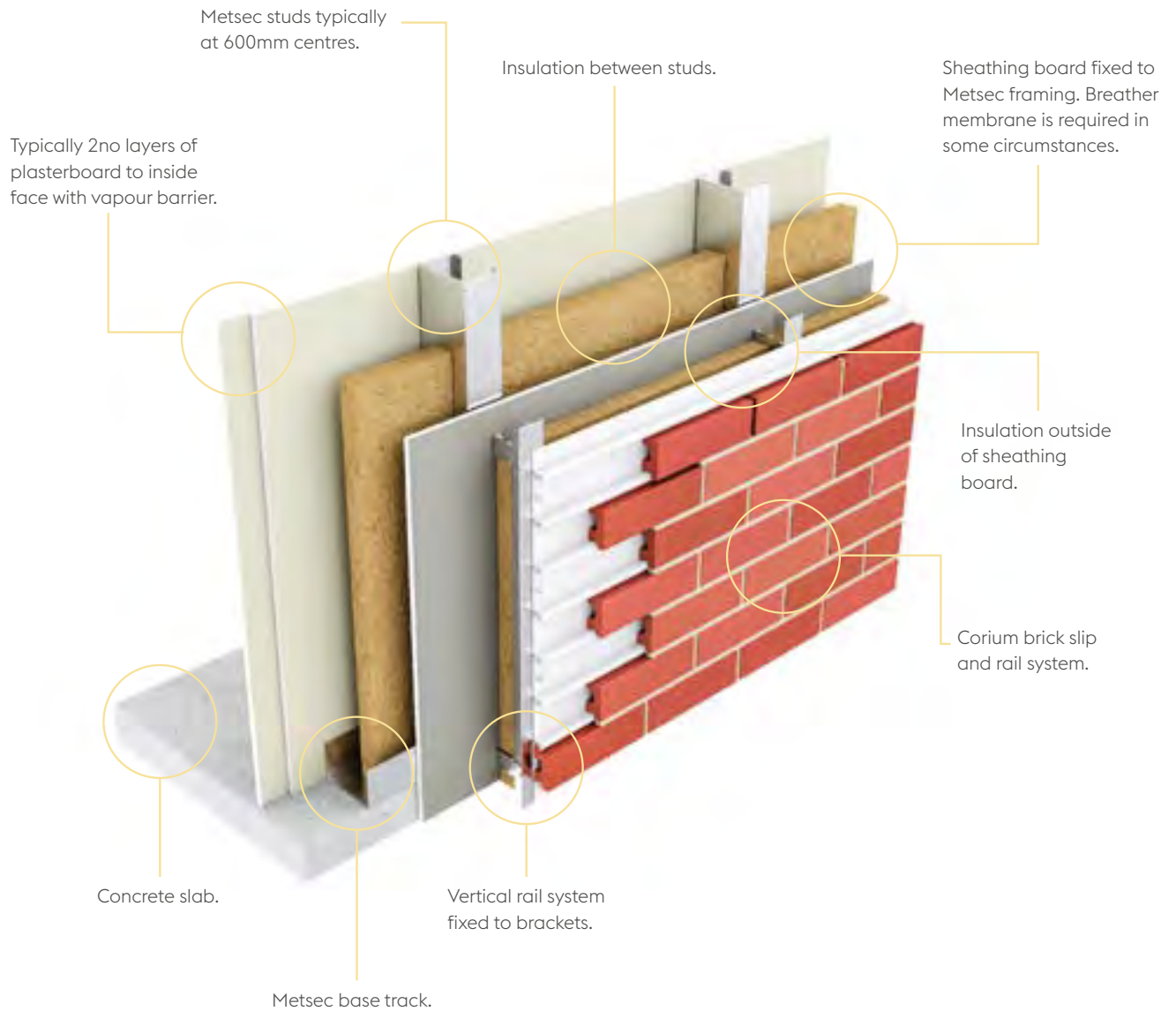
Fibre Cement



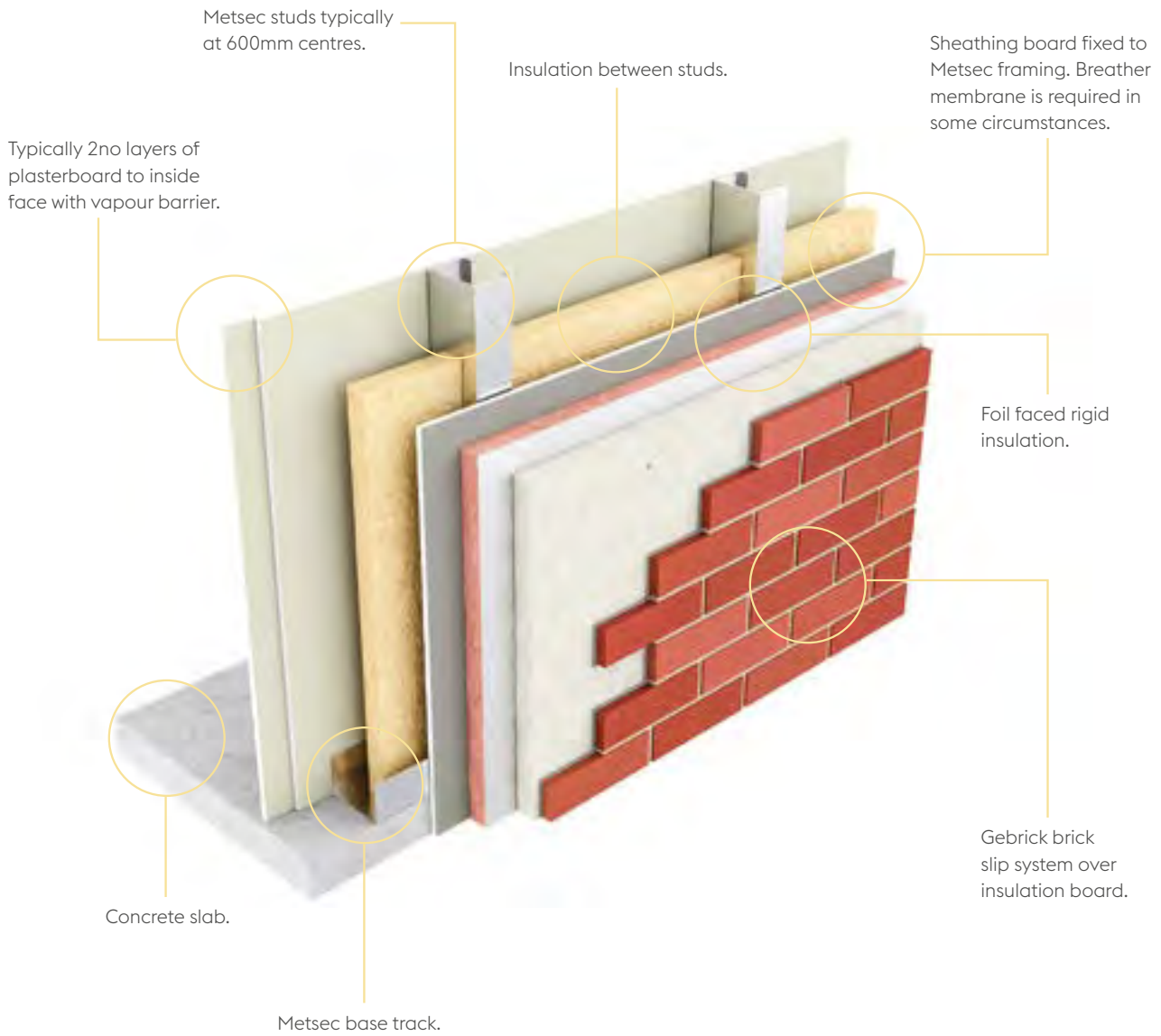
Timber Cladding

External Finish Options

Corium



Gebrick



Metsec Framing Fixing Application Guide

Notes on the Fixing Guide:






- » Only the fixings specified below or similar recommended should be used with Metsec Framing
- » For similar recommended fixings please contact Metsec
- » Fixing codes have been supplied by the fixing manufacturer and in the event of any fixing not performing as required the fixings manufacturer should be contacted before Metsec
- » Fixings given below are a guide to the range of fixings often used with Metsec Framing. Project specific fixings may be used in addition to those given below and these will be shown on the Metsec project specific details
- » Unless specified or noted all Pan Head, Low Profile or Countersunk screws have a P2 Phillips recess and all Hex Head Screws have a AF 8mm head

Listings of fixings are in alphabetical order only.

A selection of pictures have been provided courtesy of Hilti (Gt. Britain) Limited, DeWalt and Ejoyt and represent their range of fixings only.

SFS fixing table


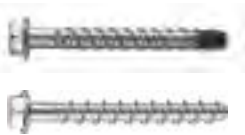

Table 1 – General Framing Fixings

Application	Description	Pictures	Fixing Manufacturers
General framing screw fixing studs/joist/runners and bracing sections. 1.2-1.5mm to 1.2-1.5mm steel.	5.5mm Diameter Pan Head Screw		<ul style="list-style-type: none"> o DeWalt: DWF4020002 5.5x19 o Ejot: JT2-NH3-5.5x19 o Evolution: TSPH5.5-19-3 o Fixfast: DF3-CF-5.5x22 o Hilti: S-MD01ZW 5.5x19 o Spit: CFC26⁽¹⁾
General framing screw fixing studs/joist/runners and bracing sections. 1.5-3.0mm to 1.5-3.0mm max steel ⁽²⁾	5.5mm Diameter Low Profile Head Screw		<ul style="list-style-type: none"> o DeWalt: DWF4020002 5.5x19 o Ejot: LSCF 5.5x25^(P3 Recess) o Evolution: TSPH5.5-25-3 o Fixfast: DF3-CF-5.5x25 o Hilti: S-MD03ZW 5.5x25 o Spit: CFC26⁽¹⁾
	5.5mm Diameter Hex Head Screw		<ul style="list-style-type: none"> o DeWalt: DWF4020005 5.5x25 o Ejot: LS 5.5x25 o Evolution: TSHW5.5-25-3 o Fixfast: DF3-5.5x25 o Hilti: S-MD03Z 5.5x25⁽²⁾ o Spit: TC25
General framing screw fixing studs/joist/runners and bracing sections. 1.2-3.0mm max to 3.0-12.5mm max steel.	5.5mm Diameter Low Profile Head Screw		<ul style="list-style-type: none"> o DeWalt: DWF4020016 5.5x38 o Ejot: HSCF 5.5x38^(P3 Recess) o Evolution: TSLP5.5-38-5 o Fixfast: DF12-CF-5.5x38 o Hilti: S-MD05ZW 5.5x40 o Spit: CFL32
	5.5mm Diameter Hex Head Screw		<ul style="list-style-type: none"> o DeWalt: DWF4020013 5.5x38 o Ejot: HS 5.5x38 o Evolution: TSHW5.5-38-3 o Fixfast: DF12-5.5x38 o Hilti: S-MD05Z 5.5x40 o Spit: TL38
Shot Fired fixing studs/joist/runners and bracing sections. 3.0mm max to 6.0 - 12.5mm max steel. ⁽³⁾	Powder Actuated Nail Fixing to Hot Rolled Steel		<ul style="list-style-type: none"> o DeWalt: DDF3010000 or DDF344000⁽⁴⁾ o Hilti: X-U 16 P8 or X-U 16 MX^(3,4) o Spit: SC9 or SBR9⁽⁴⁾

Notes:

1. The CFC26 has an ITW exclusive Philips Square Drive (2PSD)
2. If the material build-up is over 5.5mm then the Hilti fixing required will be S-MD03Z 6.3x25
3. Please see approved Data Sheet and Installer Guide for this application available from Metsec / Hilti. The Hilti X-U nail has no maximum base steel thickness
4. The use of Powder Actuated Nail Fixings must be approved by Metsec for each individual project due to the large range in fixing load capacities

Table 2 – Fixings to Concrete

Application	Description	Pictures	Fixing Manufacturers
Fixing 1.2-3.0mm Steel to Concrete	Concrete Screw Anchor Hex Head		<ul style="list-style-type: none"> o DeWalt: DWT1400015 Tapper Pro 6.3x45⁽¹⁾ o Ejot: 4H 6.3x45⁽¹⁾ o Fixfast: HTF-6.3x45⁽¹⁾ o Hilti: HUS3-H 6x40/5⁽¹⁾ o Spit: 4H45⁽¹⁾ or Tapcon HFL 6x50/15
	Powder Actuated Nail Fixing into Predrilled Hole using Hilti DX-Kwik Method ⁽²⁾		<ul style="list-style-type: none"> o Hilti: X-DNH 37-P8⁽²⁾
Fixing 3.0-15.0mm Steel to Concrete	Concrete Screw Anchor Hex Head		<ul style="list-style-type: none"> o DeWalt: DWT1400015 Tapper Pro 6.3x57⁽¹⁾ o Fixfast: HTF-6.3x57⁽¹⁾ o Hilti: HUS3-H 6x60/5/25⁽¹⁾ o Spit: 4H57⁽¹⁾ or Tapcon HFL 6x80/15
Fixing 1.2-15.0mm Steel to Concrete (3)	Large Diameter Concrete Screw Anchor Hex Head		<ul style="list-style-type: none"> o DeWalt: Range of Bluetip Concrete Screws 10x60 to 16x150 o Ejot: Range of LDT M10x45 to LDT M20x159 o Fixfast: FBS-8x55 to FBS-14x 150 o Hilti: Range of HUS3-H 10x60 to HUS3-H 14x150 o Spit: Range of Tapcon Xtrem HFL 8x50/5 to M14x150/75-35
	Stud Anchors		<ul style="list-style-type: none"> o DeWalt: Range of PTB-PRO M8/75 to M20/60 o Hilti: Range of HSA M8x55 to HSA M20x170 o Fixfast: FAZ II-8/10 to FAZ II-24/60 o Spit: Range of HDP 06/10 to HDP 20/50
	Chemical / Adhesive Anchors		<ul style="list-style-type: none"> o DeWalt: Range of SC-PRO Capsules with studs M8 to M16 o Fixfast: RG-M8 to RG-M30 threaded rod with RM resin capsules o Hilti: Range of HVU2 M8x80 to HVU M20x170 with HAS Rod o Spit: Range of Maxima M8 to Maxima M24 with studs

Notes:

1. Screw anchors listed are the shortest that can be used in the range. Longer fixing may be specified by Metsec Design
2. Please see approved Data Sheet and Installer Guide for this application available from Metsec/Hilti. Powder Actuated Nail Fixings have a minimum edge distance of 80mm to the edge of the concrete. The use of Powder Actuated Nail Fixings must be approved by Metsec for each individual project due to the large range in fixing load capacities
3. Large anchors are designed on a project by project basis and the different makes cannot be substituted for each other. All head types vary



Table 3 – Fixing Insulation to Steel

Application ⁽¹⁾	Description	Pictures	Fixing Manufacturers
Fixing 50mm Insulation to 1.2mm Steel	Large Washer with Stainless Countersunk Head Screw		<ul style="list-style-type: none"> o Ejot: IT/S 5/60 Washer with TKE 4.8x70 o Fixfast: SP-70-D4 washer with BS-A4-4.8x80 o Hilti: Hilti: S-ID01LSS 4.8x70⁽²⁾ o Spit: TC75⁽²⁾
Fixing 50mm Insulation to 1.2-3.0mm Steel	Large Washer with Stainless Hex Head Screw		<ul style="list-style-type: none"> o Ejot: SBV 90 Washer with JT3-3-5.5x70 o Fixfast: SP-70-D4 washer with DF3-SS-HT-5.5x85 o Hilti: S-MD03S 5.5x80⁽²⁾ o Spit: TC75⁽²⁾
Fixing 50mm Insulation to 3.0-6.0mm Steel	Large Washer with Stainless Hex Head Screw		<ul style="list-style-type: none"> o Ejot: SBV 90 Washer with JT3-6-5.5x70 o Fixfast: SP-70-D4 washer with DF12-SS-HT-5.5x95 o Hilti: S-MD05S 5.5x82⁽²⁾ o Spit: Contact Spit

Notes:

1. Application shown is for fixing 50mm insulation. For other insulation thicknesses please consult the fixing manufacturers' product range and select the appropriate length of fixing
2. Hilti and ITW products do not contain the large washers however the fixings shown will work with the SBV 90 washer from Ejot or SP-70-D4 from Fixfast

Table 4 – Fixing Brick Tie Channels to Steel

Application ⁽¹⁾	Description	Pictures	Fixing Manufacturers
Fixing Brick Tie Channel via 50mm Insulation to 1.2-3.0mm Steel	5.5mm Diameter Stainless Hex Head Screw with EPDM sealing washer		<ul style="list-style-type: none"> o Ejot: JT3-D-3-5.5x82 S16 o Fixfast: DF3-SS-HT-A15-5.5x85 o Hilti: S-CD63S 5.5x85 o Spit: SCOTS Fixing
Fixing Brick Tie Channel via 50mm Insulation to 3.0-6.0mm Steel	5.5mm Diameter Stainless Hex Head Screw with EPDM sealing washer		<ul style="list-style-type: none"> o Ejot: JT3-D-6H-5.5x87 S16 o Fixfast: DF12-SS-HT-A15-5.5x115 o Hilti: S-CD63S 5.5x85 o Spit: SCOTS Fixing

Notes:

1. Application shown is for fixing 50mm insulation. For other insulation thicknesses please consult the fixing manufacturers' product range and select the appropriate length of fixing

Table 5 - Fixing Sheathing Boards and Timber to Steel

These types of fixings are suitable for the following types of sheathing boards:


Cement Particle Board, Cement Fibre Board, Magnesium Oxide Board, Calcium Silicate Board, PLY Board, Oriented Strand Board, Chipboard and Timber.

Application ⁽¹⁾	Description	Pictures	Fixing Manufacturers
Fixing to 1.2-3.0mm Steel. Board thickness 6.0mm to 19mm	4.8mm Diameter Wafer/CSK Ribbed Head Wing Tipped Screw		<ul style="list-style-type: none"> o Ejot: WDLS 4.8x38⁽²⁾ o Fixfast: DF3-W-4.8x38 o Hilti: S-WD12Z 4.8x38 o Spit: TFC36 or RKC 41⁽²⁾
Fixing to 1.2-3.0mm Steel. Board thickness 13mm to 29mm	5.5mm Diameter Wafer/CSK Ribbed Head Wing Tipped Screw		<ul style="list-style-type: none"> o Ejot: WDLS 5.5x50⁽²⁾ o Fixfast: DF3-W-5.5x50 o Hilti: S-WD12Z 5.5x50 o Spit: TFC50 or RKC 41⁽²⁾
Fixing to 1.2-3.0mm Steel. Board thickness 25mm to 60mm	5.5mm Diameter Wafer/CSK Ribbed Head Wing Tipped Screw		<ul style="list-style-type: none"> o Ejot: WDLS 5.5x85⁽²⁾ o Fixfast: DF3-W-5.5x80 o Hilti: S-WD12Z 5.5x85 o Spit: TFC80⁽²⁾
Fixing to 1.2-3.0mm Steel. Board thickness 65mm to 100mm	5.5mm Diameter Wafer/CSK Ribbed Head Wing Tipped Screw		<ul style="list-style-type: none"> o Ejot: WDLS 5.5x127⁽²⁾ o Fixfast: DF3-W-5.5x120 o Hilti: S-WD12Z 5.5x100⁽³⁾ o Spit: TFC120⁽²⁾
Fixing to 3.0-6.0mm Steel. Board thickness 10.0mm to 24mm	5.5mm Diameter Wafer/CSK Ribbed Head Wing Tipped Screw		<ul style="list-style-type: none"> o Ejot: WDHS 5.5x65⁽²⁾ o Fixfast: DF12-W-5.5x60 o Hilti: S-WD15Z 5.5x65 o Spit: TFL65⁽²⁾

Notes:

1. Applications shown are for regularly selected boarding/timber thicknesses. For other thicknesses please consult the fixing manufacturers' product range and select the appropriate length of fixing
2. P3 Phillips recess drive bit required in 5.5 diameter screws in the Ejot and ITW product range
3. Up to 82mm only

Table 6 – Fixing Plasterboard to Steel

Application ⁽¹⁾	Description	Pictures	Fixing Manufacturers
Fixing to 1.2mm Steel. Single board up to 15mm thick	3.5mm Diameter Bugle/Wafer/CSK Ribbed Head Screw		<ul style="list-style-type: none"> o DeWalt: DWF4000250 3.5x25 o Ejot: WDLS 4.8x38⁽²⁾ o Evolution: DWSDZ25 o Hilti: S-DD01B 3.5x25 o Spit: TFC36 or RKC 41⁽²⁾
Fixing to 1.2mm Steel. Double boards up to 30mm combined thickness	3.5mm Diameter Bugle/Wafer/CSK Ribbed Head Screw		<ul style="list-style-type: none"> o DeWalt: DWF4000450 3.5x45 o Ejot: WDLS 5.5x85⁽²⁾ o Evolution: DWSDZ42 o Hilti: S-DD01B 3.5x45 o Spit: TFC80 or RKC 41⁽²⁾
Fixing to 1.2-2.0mm Steel. Single board up to 15mm thick	3.5mm Diameter Bugle/Wafer/CSK Ribbed Head Screw		<ul style="list-style-type: none"> o DeWalt: DWF4000250 3.5x25 o Ejot: WDLS 4.8x38⁽²⁾ o Evolution: DWSDZ25 o Hilti: S-DD01B 3.5x25 o Spit: TFC36 or RKC 41⁽²⁾
Fixing to 1.2-2.0mm Steel. Double boards up to 30mm combined thickness	3.5mm Diameter Bugle/Wafer/CSK Ribbed Head Screw		<ul style="list-style-type: none"> o DeWalt: DWF4000450 3.5x45 o Ejot: WDLS 5.5x85⁽²⁾ o Evolution: DWSDZ42 o Hilti: S-DD01B 3.5x45 o Spit: TFC80⁽²⁾
Fixing to 2.0-6.0mm Steel. Single board up to 15mm thick	4.8mm Diameter Wafer/CSK Ribbed Head Wing Tipped Screw		<ul style="list-style-type: none"> o Ejot: WDLS 4.8x38⁽²⁾ o Hilti: S-WD12Z 4.8x38 o Spit: TFC36⁽²⁾
Fixing to 2.0-6.0mm Steel. Double boards up to 30mm combined thickness	5.5mm Diameter Wafer/CSK Ribbed Head Wing Tipped Screw		<ul style="list-style-type: none"> o Ejot: WDLS 5.5x85⁽²⁾ o Hilti: S-WD12Z 5.5x85 o Spit: TFC80⁽²⁾

Notes:

1. Applications shown are for regularly selected boarding thicknesses. For other thicknesses please consult the fixing manufacturers' product range and select the appropriate length of fixing
2. ITW & Ejot require wing tipped screws of 4.8 & 5.5 diameters for lower thicknesses of steel as no plasterboard screws available





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