



Thrubuild® Load Bearing Light Steel Construction

System
Specification
Guide

CONTENTS

3
THRUBUILD® A faster way of specifying and constructing your building, complete with peace of mind

5
Current Challenges faced by Specifiers

6
The Solution

8
Specifying Light Steel Structures

11
Thrubuild® System 30 Year Warranty

12
Our Thrubuild® Systems:

Thrubuild® Internal Dividing Wall System	14
Thrubuild® Internal Separating Wall System	15
Thrubuild® External Wall System	17
Thrubuild® Internal Dividing Floor System	19
Thrubuild® Internal Separating Floor System	20

22
Building Regulation and Performance Criteria

25
Design: A Collaborative Process

26
The EOS Thrubuild® Timeline

29
Fully Tested and Certified Fire Solutions

30
About Etex Building Performance



Etex Building Performance

Etex Exteriors

Etex Industry



We are part of the global Etex group of companies, which in the UK includes the Equitone brand.

THRUBUILD®

A faster way of specifying and constructing your building, complete with peace of mind

In an environment of increasing labour and skills shortages, and at a time of housing shortfalls, the construction industry is being challenged like never before to deliver more buildings, quicker, and with greater certainty around cost and programme times. Improving levels of occupants' comfort and safety, and increasing the quality of the build, is under the microscope. Risk – cost, time, quality and performance – needs to be controlled and managed.

In response to these challenges, EOS has developed its Thrubuild® system.

Part of the Etex Group of companies, a €2.9billion multi-national manufacturer of building materials and systems, with 102 companies across 42 countries, EOS has an established track record in the off-site design, manufacture and supply of steel frame solutions.



Developed in collaboration with our sister companies, Siniat, a leading expert in plasterboard and drylining systems, and Promat, the market leader in passive fire protection, Thrubuild® combines the technical and manufacturing expertise of the group to provide a comprehensive range of tested and certified solutions for light gauge steel frame construction – all from one supplier.

Light gauge steel frame is ideal for forming the structure of low to medium rise buildings, up to ten storeys high. Thrubuild® is a light gauge steel frame system which is manufactured and panelised in the EOS factory to rigorous quality standards, and delivered to site for assembly – accelerating construction time and reducing site waste. Depending on requirements, it can also be partially boarded in the factory, further speeding up the build process.



SCI / NHBC Stage 1
System Certificate
EOS Facades Ltd



CURRENT CHALLENGES FACED BY SPECIFIERS

Our research and perspective interviews with sector experts have equipped us with a deep understanding of the challenges faced by specifiers when designing solutions for steel framing systems.

- **Uncertainty around price, quality and speed**
 - Increasing labour, skills and housing shortages means buildings must be delivered quicker, and with greater certainty around cost and programme times.
- **Limited technical expertise**
 - Lack of a system-based approach to the design and specification of steel framing systems leaves few or no technical experts available to help.
- **Fragmented supply chain**
 - Each of the components of the solution are offered by different manufacturers.
- **Lack of supporting warranties**
 - A fragmented supply chain means warranties are complex, too short, or non-existent.
- **Lack of performance data and testing**
 - Limited test evidence to reassure specifiers.
- **Lower lifetime cost**
 - Repairs and maintenance can add unwanted additional costs.
- **Waste and sustainability**
 - Sustainability targets need to be achieved, and waste needs to be reduced.



PEACE OF MIND:
THE SPECIFIERS
RESPONSIBILITY

THE SOLUTION

The EOS Thrubuild® system has been developed as an integrated system, using the award-winning range of EOS light steel framing, Siniat Weather Defence external sheathing board, and Siniat Frameboard, an internal plasterboard. These have been developed exclusively for EOS by Siniat, a world leader in plasterboard materials.

These integrated systems have been tested and assessed for compliance with the latest regulations and standards, to ensure robust and reliable design performance.

EOS LIGHT STEEL FRAMING

EOS light steel framing features cold-rolled galvanised light steel sections in a range of depths and gauges. C-sections are swaged, a unique way to achieve a flat surface finish.

By considering all components, systems can be relied on to offer excellent fire, acoustic and thermal capabilities to suit the needs of UK construction market. All systems have been engineered for structural performance to the latest Eurocodes.



Left: Weather Defence A1 non-combustible external sheathing board.

Below: Siniat Frameboard combines high levels of strength, acoustic insulation and fire resistance.

The Thrubuild® light steel framework is panelised in the factory and delivered to site for assembly. External boarding of these frames can also take place offsite depending on the system and your build process.

WEATHER DEFENCE

Weather Defence is a revolutionary new external sheathing board, faced with water repellent material for superior weather protection. Designed exclusively by Siniat, it is strong, highly moisture resistant and A1 non-combustible.

It is a faster way to a weather tight building compared to traditional sheathing board products. Weather defence can be left installed and exposed for up to 12 months on site before the final cladding needs to be completed. Taking the external sheathing offsite reduces programme on site and saves money and reduces scaffold costs/plant hire on site.

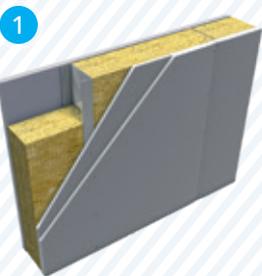
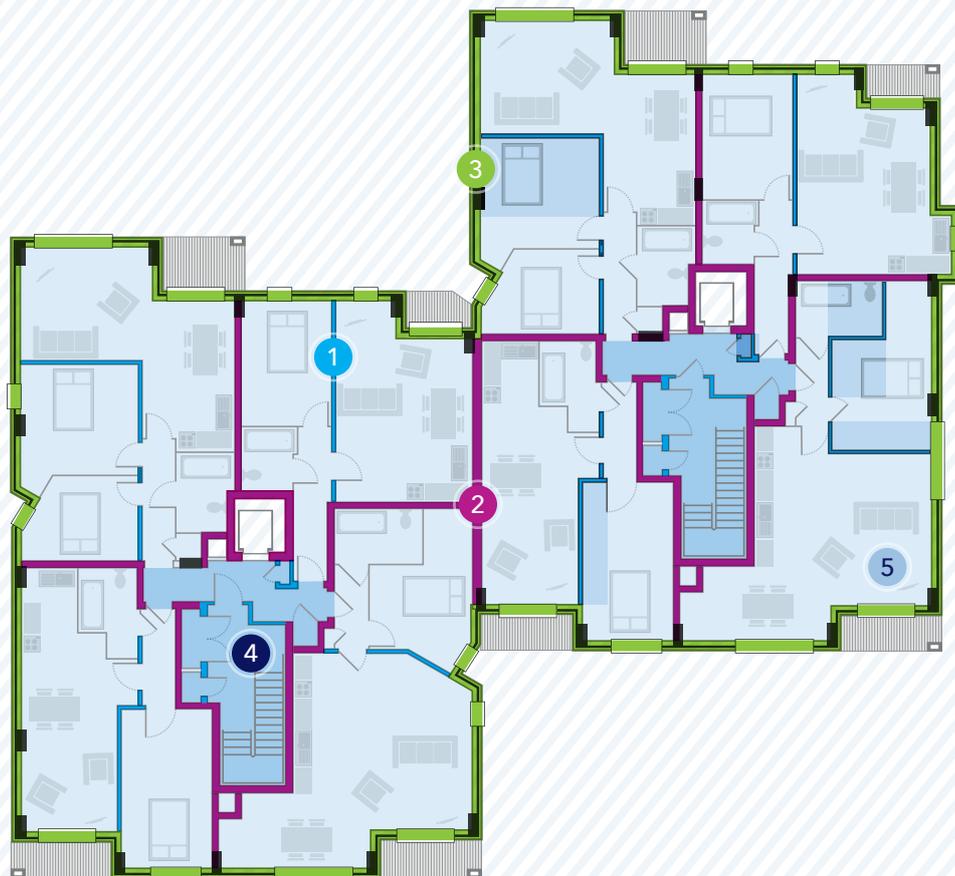


SINIAT FRAMEBOARD

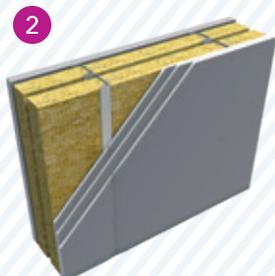
Developed exclusively for EOS, Siniat Frameboard combines high levels of strength, acoustic insulation and fire resistance. The board is ideal for use in EOS Thrubuild® systems, where the loadbearing frame places extra requirements on plasterboard. Fewer boards are required on site and your specification and installation process is simplified.

THE LOADBEARING SYSTEM RANGE COMPRISES:

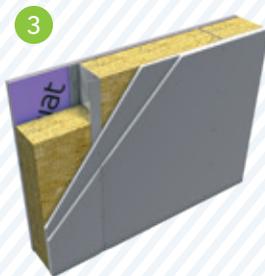
- Internal separating walls, between units, using twin 65mm studs or deeper.
- Internal dividing walls, within a unit, using 100mm studs or deeper.
- External walls, using 100mm studs or deeper.
- Internal dividing floors, within a unit, using 150mm steel joists or deeper.
- Internal separating floors, between units, using 150mm steel joists or deeper.



Thrubuild® Internal Dividing Wall System



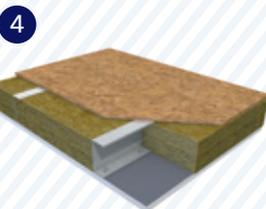
Thrubuild® Internal Separating Wall System



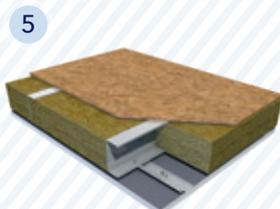
Thrubuild® External Wall System

Design performance is achieved using combinations of boarding and insulation. Only tested configurations are available for selection and shown in the system tables on page 14.

Almost all building arrangements can be achieved, and non-loadbearing drywall systems can also be used to sub-divide space following initial construction of the loadbearing building system.



Thrubuild® Internal Dividing Floor System



Thrubuild® Internal Separating Floor System

We offer additional configurations offering steel deck and Lewis deck for applications when concrete and screeds are required.

SPECIFYING LIGHT STEEL STRUCTURES



BENEFITS OF LIGHT STEEL STRUCTURES TO DEVELOPERS



High Strength to Weight Ratio:

Reducing total load by up to 60% compared to timber and concrete saves on foundations and is suitable for construction on brownfield sites, or pre-existing buildings.



Panelisation: Offsite panels reduces site labour costs, reduces construction waste, cuts the project cycle time, and improves quality with external boards factory fitted.



Shorter Project Programmes:

Shorter construction time reduces financing costs and shortens the period of construction liability. On larger schemes you could shave months from programmes compared to concrete builds.



Winter Builds: Panelised factory assembled products are not weather dependent and combined with fast installing products such as Siniat Weather Defence means the site can be made weathertight earlier, allowing internal trades to commence.



Earlier Completion and

Budget Savings: Light steel's shorter construction cycle means equipment can move on and off site more quickly, lowering crane and scaffold costs and site prelims and labour costs.



Future Proof and Future Ready:

As an advanced high-performance offsite solution, steel is not susceptible to shrinkage, warping, cracking, rot infestation or moisture absorption. Steel is a robust, rigid and dimensionally stable material that does not suffer from movement created by moisture related issues.



Sustainability: sustainability of a build by reducing site waste and the cost of dealing with the site waste.



Cost Certainty

EOS has a dedicated in-house estimating team who will work with your company to ensure that we meet your specific requirements.

EOS guarantee a very competitive price structure, with no hidden costs for fittings or transport. We can provide a fixed cost which will not alter, providing the specification remains unchanged.

HELPING THE SPECIFIER TO KEEP COSTS DOWN



Faster Installation: This reduces the amount of time overheads need to be taken into consideration.



Lower insurance:* Light steel is non-combustible, and the faster installation can result in savings of as much as 30% on:

- Builders' risk and construction insurance
- Ownership insurance costs, including general liability
- Worker's compensation
- Commercial property insurance.



Better Structural Stability and Reduced Load: There is no shrinkage, meaning no call backs, and the reduced weight of up to 60% saves on foundations.



Increased Productivity: Follow-on trades can work as the building is assembled.



One Supplier: Makes the build less complicated, supported with full BIM integration / design team integration.



Repeat System: Reduces design and engineering costs, and a repeated project can be on site in under 15 days.

*Source, Metal Building Manufacturers Association (MBMA)

The unique, integrated system-based approach to ThruBuild® accelerates the speed of the build. Developers can expect the time of installation to average:



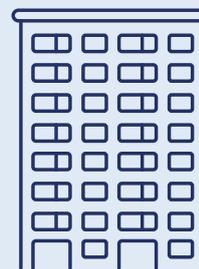
Houses
2-3 weeks



2 floors
3-4 weeks



4 floors
8 weeks



8 floors
16 weeks

ARTISAN PLACE, HARROW

Comprising of 189 homes, a refurbished, locally listed B1 office building, 5 newly built artist's studios, a new public square and a safeguarded area for educational and sports hall use.

- EOS designed and supplied stand-alone pods; pre-assembled offsite panels for onsite assembly.
- EOS successfully engineered fixings into traditionally built substrate sections – something that is rarely done.

OFFSITE
AWARDS 2018

Winner of
Housing Project of the Year

THRUBUILD® SYSTEM 30 YEAR WARRANTY



With our combined expertise in fire, acoustics and building mechanics, we have developed and tested a wide range of Thrubuild® solutions to meet the requirements of any project.

Our components and products are rigorously tested together to ensure compatibility and system performance, enabling us to warrant the technical performance of our Thrubuild solutions.

When Thrubuild® Systems are built entirely with Etex Building Performance components and materials in line with our latest literature and relevant standards – we award it the EOS Thrubuild® Warranty.

EOS Thrubuild® System

Comprehensively tested, the EOS Thrubuild® system is performance guaranteed for 30 years, ensuring peace of mind for clients, contractors and designers.

Siniat Plasterboard

Lifetime performance warranty for non-loadbearing drywall systems.

EOS Framing

Structural engineering and design backed by the EOS warranty.

Our Thrubuild® solutions:

- Are fully tested.
- Are supported by a 30 year warranty.
- Meet required building performance requirements.
- Speed up the installation process.

Full details of our warranty are available on request.





OUR THRUBUILD® SYSTEMS:

TECHNICAL SPECIFICATION

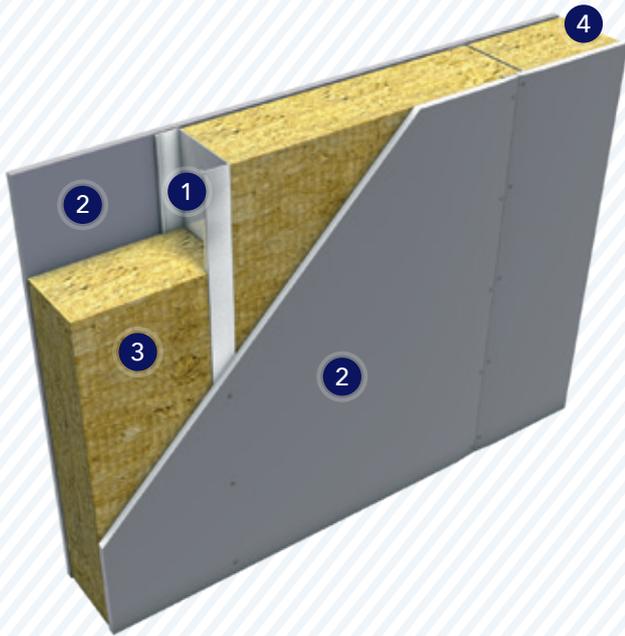
HOW TO USE THE TABLES

In the initial design stage, systems can be selected based on typical requirements for the project. At this point framing (depth and gauge) is typically unassigned. Later EOS engineers will recommend the framing (depth and gauge) to suit the building load and fire performance required.

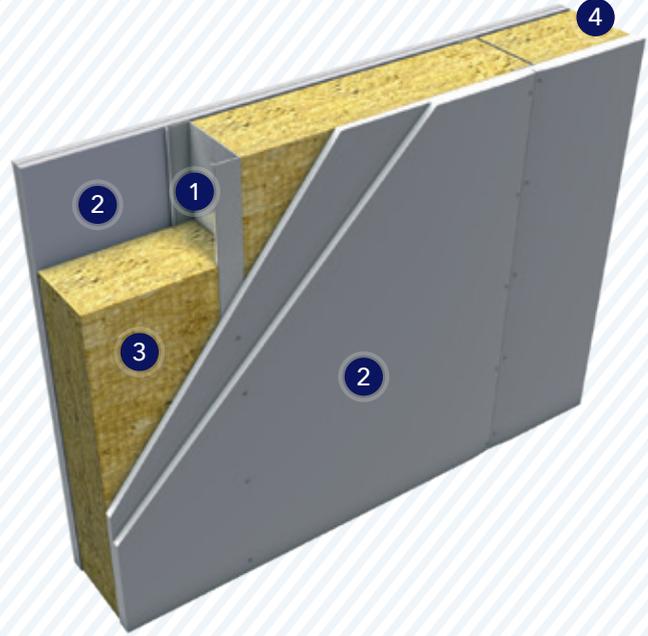


THRUBUILD®
INTERNAL DIVIDING
WALL SYSTEM

**ELDW 002: 60 MINUTE
INTERNAL DIVIDING WALL**



**ELDW 003: 90 MINUTE
INTERNAL DIVIDING WALL**



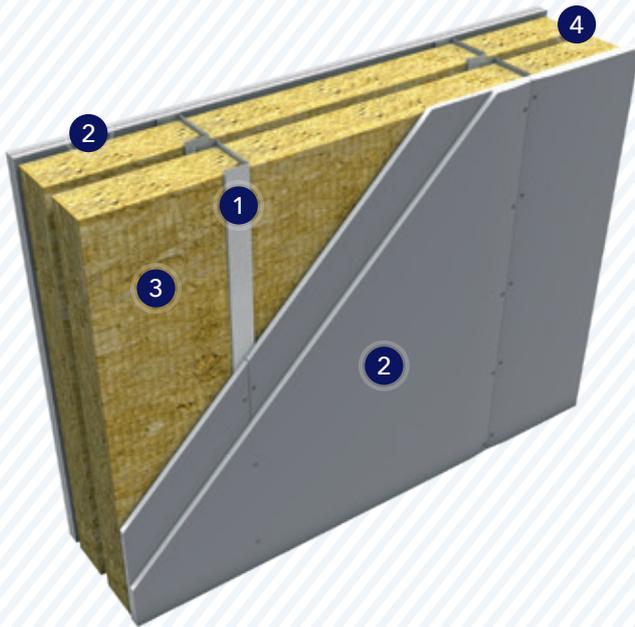
- 1 Framing:**
Min. 100mm x 1.2mm (SS10012) EOS Stud*
- 2 Boarding:**
1x 15mm Siniat Frameboard each side.
- 3 Insulation:**
100mm 45kg/m³ Rock Mineral Wool.

- 1 Framing:**
Min. 100mm x 1.2mm (SS10012) EOS Stud*
- 2 Boarding:**
2x 12.5mm Siniat Frameboard each side.
- 3 Insulation:**
100mm 45kg/m³ Rock Mineral Wool.

Reference	 Fire Resistance: to EN 1365-1	 Sound Insulation: to ISO 717-1	 Thermal:	 Duty: (to BS 5234-2)	 4 Minimum Depth
ELDW 002	60 mins REI	45 R _w dB	N/A	Severe	130mm*
ELDW 003	60 and 90 mins REI	52 R _w dB	N/A	Severe	150mm*

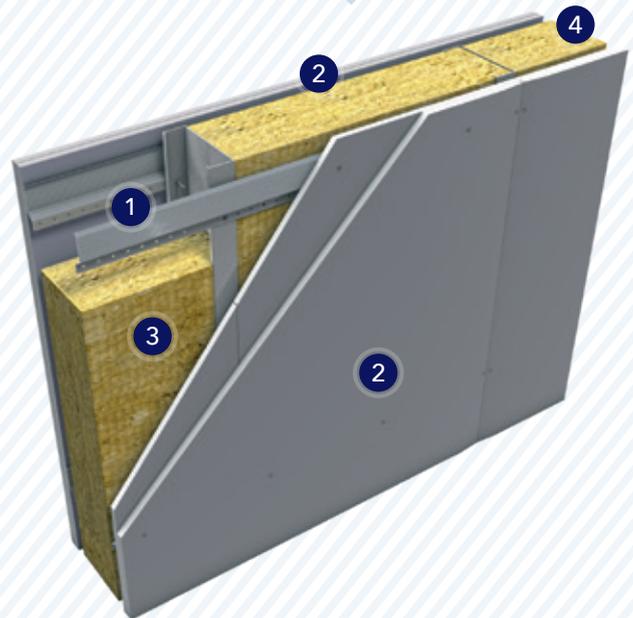
THRUBUILD®
INTERNAL SEPARATING
WALL SYSTEM

ELSW 004: 90 MINUTE
INTERNAL SEPARATING WALL



- 1 Framing:**
Twin frame, min. 65mm x 1.2mm (SS6512) EOS Stud with mid-height noggings.*
- 2 Boarding:**
2x 15mm Siniat Frameboard each side.
- 3 Insulation:**
Twin 50mm 45kg/m³ Rock Mineral Wool.

ELSW 024: 90 MINUTE
INTERNAL SEPARATING WALL

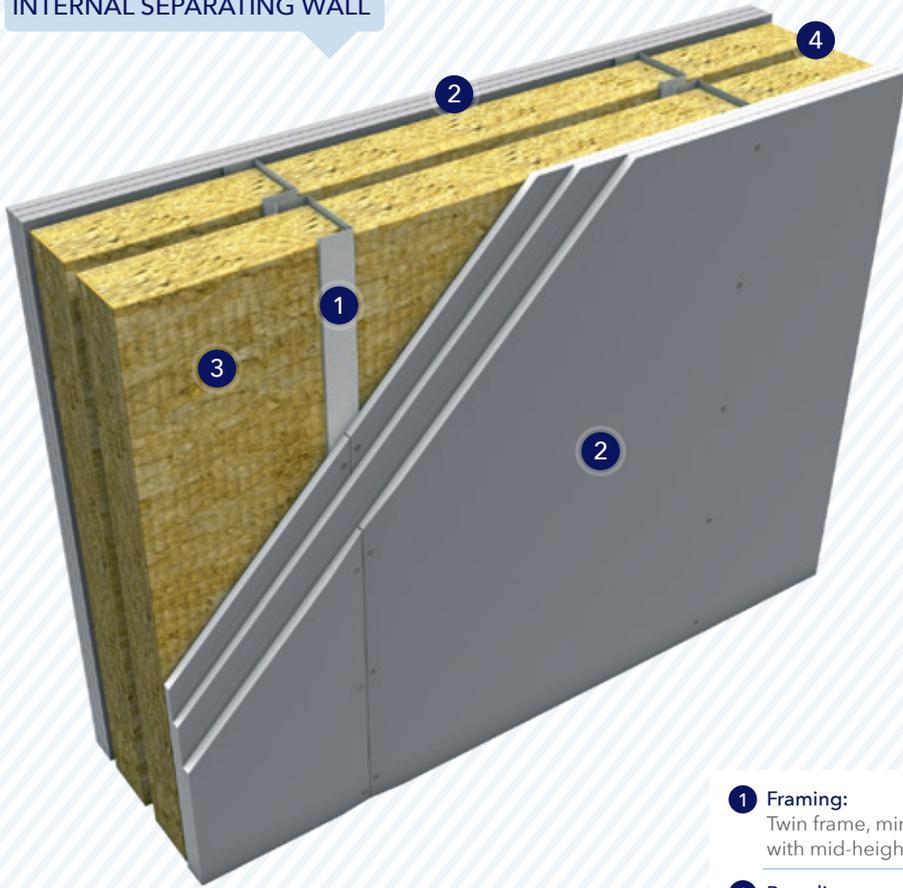


- 1 Framing:**
Single frame, min. 100mm x 1.2mm (SS10012) EOS Stud, mid-height noggings, plus GTEC Resilient Bars to each side at 600mm vertical centres.*
- 2 Boarding:**
2x 15mm Siniat Frameboard each side.
- 3 Insulation:**
100mm 45kg/m³ Rock Mineral Wool.

Reference	 Fire Resistance: to EN 1365-1	 Sound Insulation: to ISO 717-1	 Thermal:	 Duty: (to BS 5234-2)	 4 Minimum Depth
ELSW 004	60 and 90 mins REI	58 R _w (-3 C _{tr}) dB	AD L1A Default: 0.2 W/m ² k	Severe	200mm*
ELSW 024	60 and 90 mins REI	59 R _w (-5 C _{tr}) dB	AD L1A Default: 0.2 W/m ² k	Severe	194mm*

THRUBUILD®
INTERNAL SEPARATING
WALL SYSTEM

ELSW 006: 120 MINUTE
INTERNAL SEPARATING WALL

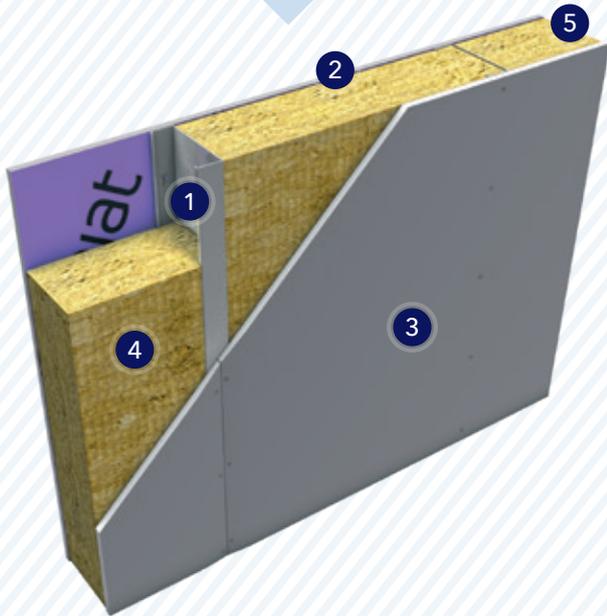


- 1 Framing:**
Twin frame, min. 65mm x 1.2mm (SS6512) EOS Stud with mid-height noggings.*
- 2 Boarding:**
3x 15mm Siniat Frameboard each side.
- 3 Insulation:**
Twin 50mm 45kg/m³ Rock Mineral Wool.

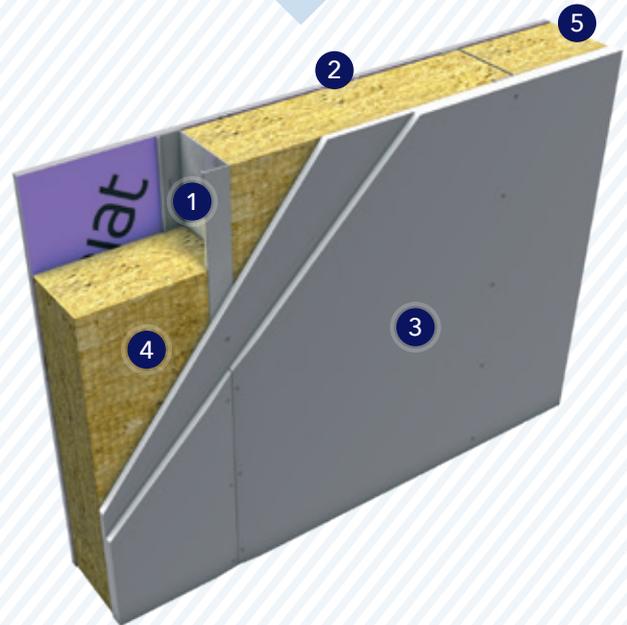
Reference	 Fire Resistance: to EN 1365-1	 Sound Insulation: to ISO 717-1	 Thermal:	 Duty: (to BS 5234-2)	 4 Minimum Depth
ELSW 006	60 and 90 and 120 mins REI	65 R _w (-4 C _{tr}) dB	AD L1A Default: 0.2 W/m ² k	Severe	230mm*

THRUBUILD®
EXTERNAL WALL
SYSTEM

ELEW 102: 60 MINUTE
EXTERNAL WALL



ELEW 103: 60 MINUTE
EXTERNAL WALL



- 1 Framing:**
Min. 100mm x 1.6mm (SS10016) EOS Stud with mid-height noggings.*
- 2 Sheathing:**
1x 12.5mm Weather Defence externally,
- 3 Internal Boarding:**
1x 15mm Siniat Frameboard internally.
- 4 Insulation:**
100mm 45kg/m³ Rock Mineral Wool.

- 1 Framing:**
Min. 100mm x 1.6mm (SS10016) EOS Stud with mid-height noggings.*
- 2 Sheathing:**
1x 12.5mm Weather Defence externally,
- 3 Internal Boarding:**
2x 12.5mm Siniat Frameboard internally.
- 4 Insulation:**
100mm 45kg/m³ Rock Mineral Wool.

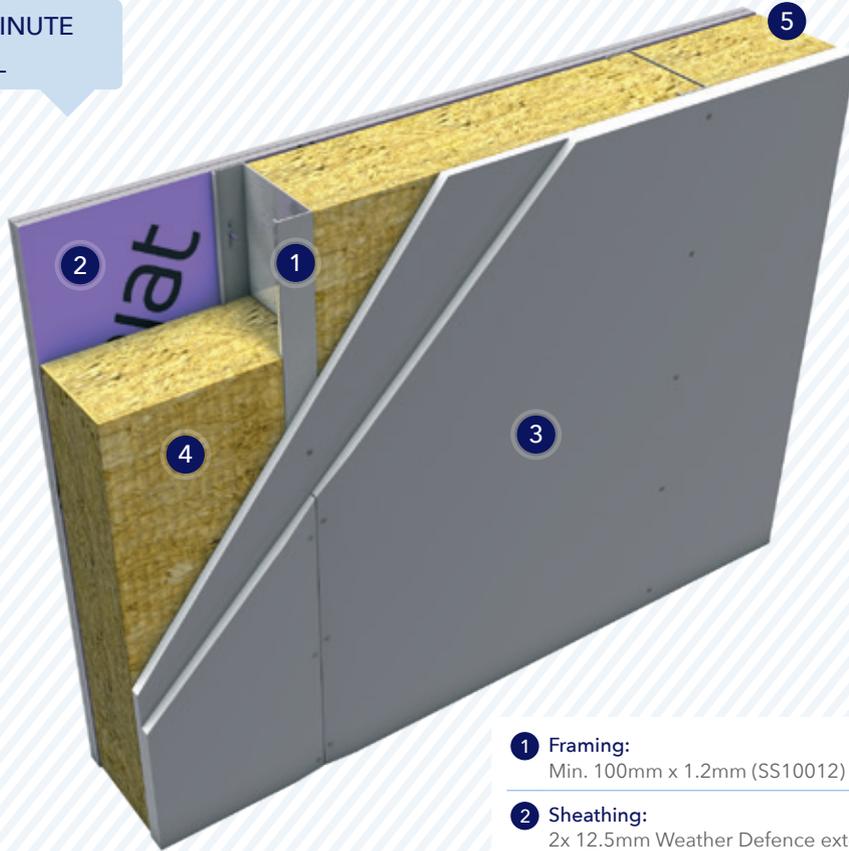
Reference	 Fire Resistance: to EN 1365-1	 Sound Insulation: to ISO 717-1	 Thermal:	 Duty: (to BS 5234-2)	 5 Minimum Depth
ELEW 102	60 mins REI (both directions)	45 R _w dB	Calculated on request, result dependent on external insulation/cladding.	Severe	127.5mm*
ELEW 103	60 mins REI (both directions)	48 R _w dB	Calculated on request, result dependent on external insulation/cladding.	Severe	137.5mm*

THRUBUILD®
EXTERNAL WALL
SYSTEM

ELEW 204: 90 MINUTE
EXTERNAL WALL



2x layers of
Weather Defence



- 1 Framing:**
Min. 100mm x 1.2mm (SS10012) EOS Stud*

- 2 Sheathing:**
2x 12.5mm Weather Defence externally.

- 3 Internal Boarding:**
2x 15mm Siniat Frameboard internally.

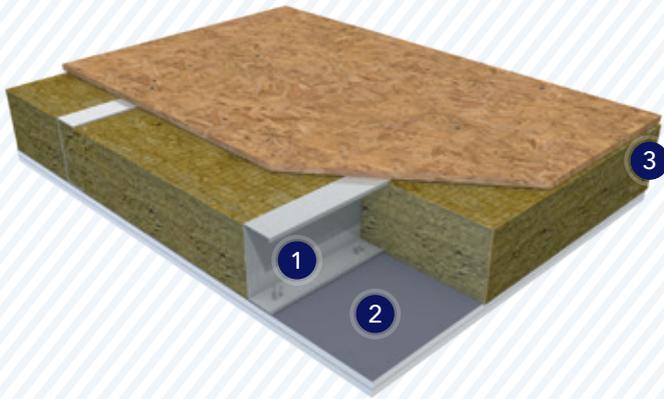
- 4 Insulation:**
100mm 45kg/m³ Rock Mineral Wool.

Reference	 Fire Resistance: to EN 1365-1	 Sound Insulation: to ISO 717-1	 Thermal:	 Duty: (to BS 5234-2)	 5 Minimum Depth
ELEW 204	90 mins REI (both directions)	52 R _w dB	Calculated on request, result dependent on external insulation/cladding.	Severe	155mm*

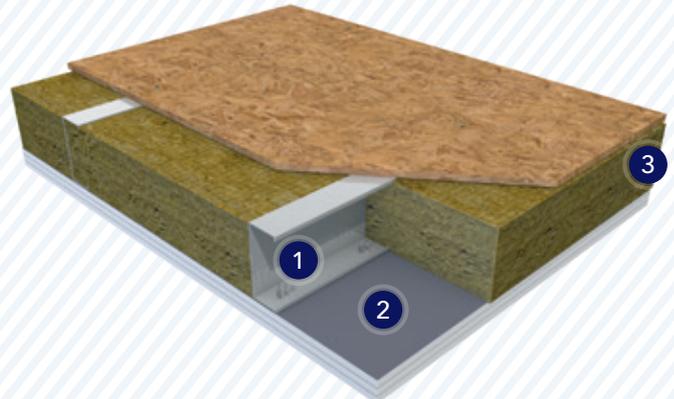
*Framing specification is determined based on worst case of cold and hot state (fire) loadings and stresses by structural engineers. The stated framing is the minimum for lower load conditions and deeper/thicker studs may often be required. If there are restrictions on wall depths, please advise at earliest opportunity as it may be possible to increase framing gauge, instead of framing depth, to achieve slimmer walls.

THRUBUILD® INTERNAL DIVIDING FLOOR SYSTEM

**ELDF 004: 60 MINUTE
INTERNAL DIVIDING FLOOR**



**ELDF 005: 90 MINUTE
INTERNAL DIVIDING FLOOR**



- 1 Framing:
See table below.
- 2 Boarding:
2x15mm Frameboard.

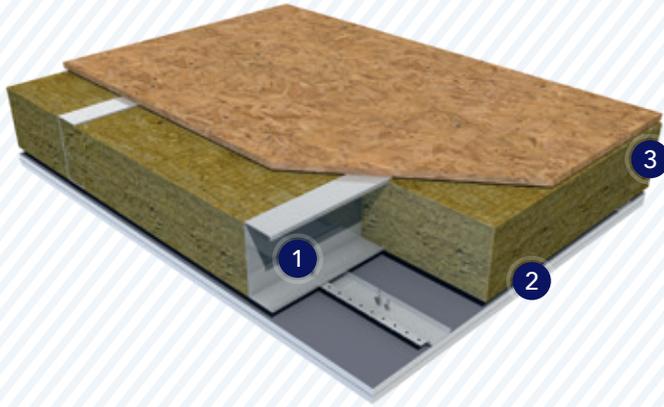
- 1 Framing:
See table below.
- 2 Boarding:
3x12.5mm Frameboard.

Reference	2 Framing	Max. Span (mm) - Based on Live Load (kN/m²) and Framing Centres (mm)						Acoustic Performance (based on 400mm C/C)		Fire Performance (EN 1365-2)	3 Depth (mm)
		1.5		2.0		3.0		Sound Insulation (R _w , C _{tr} dB)	Impact Sound Insulation (L _{nw} dB)		
		600	400	600	400	600	400				
ELDF 004	DF(65)SS15012	3300	3700	3100	3600	2460	3200	49, -5	77	60 mins REI	198
	DF(65)SS15016	3600	3900	3310	3800	2460	3600	49, -5	77		198
	DF(65)SS15020	3800	4200	3310	4100	2460	3690	49, -5	77		198
	SS20012	3900	4300	3800	4200	3170	4000	49, -4	77		248
	SS20016	4200	4700	4100	4600	3170	4400	49, -4	77		248
	SS20020	4500	5000	4270	4900	3170	4500	49, -4	77		248
	SS25012	4400	4900	4270	4800	3170	4500	49, -4	77		298
	SS25016	4690	5300	4270	5200	3170	4500	49, -4	77		298
	SS25020	4690	5700	4270	5220	3170	4500	49, -4	77		298
ELDF 005	DF(65)SS15012	-	1750	-	1750	-	1750	51, -5	76	60 and 90 mins REI	205.5
	DF(65)SS15016	-	3900	-	3310	-	2460	51, -5	76		205.5
	DF(65)SS15020	-	4000	-	3310	-	2460	51, -5	76		205.5
	SS20012	3900	4300	3310	4200	2460	3690	51, -4	76		255.5
	SS20016	4000	4700	3310	4450	2460	3690	51, -4	76		255.5
	SS20020	4000	4890	3310	4450	2460	3690	51, -4	76		255.5
	SS25012	4000	4900	3310	4630	2460	4000	51, -4	76		305.5
	SS25016	4000	5090	3310	4630	2460	4000	51, -4	76		305.5
	SS25020	4000	5090	3310	4630	2460	4000	51, -4	76		305.5

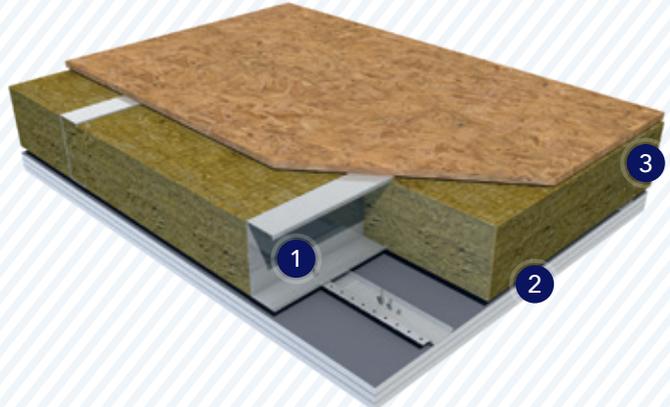
All floors include a minimum of 100mm Rock Mineral Wool (45kg/m³). All floors include a minimum of 18mm OSB3 board to top of joists – (higher floor loads may require thicker OSB).

THRUBUILD® INTERNAL SEPARATING FLOOR SYSTEM

ELSF 004: 60 MINUTE INTERNAL SEPARATING FLOOR



ELSF 005: 90 MINUTE INTERNAL SEPARATING FLOOR



1 Framing:
See table below*

2 Boarding:
2x15mm Frameboard.

1 Framing:
See table below*

2 Boarding:
3x12.5mm Frameboard.

Reference	2 Framing	Max. Span (mm) - Based on Live Load (kN/m ²) and Framing Centres (mm)						Acoustic Performance (based on 400mm C/C)**		Fire Performance (EN 1365-2)	3 Depth (mm)
		1.5		2.0		3.0		Sound Insulation (R _w , C _{tr} dB)	Impact Sound Insulation (L _{nw} dB)		
		600	400	600	400	600	400				
ELSF 004	DF(65)SS15012	3300	3700	3100	3600	2460	3200	49, -5	69	60 mins REI	215
	DF(65)SS15016	3600	3900	3310	3800	2460	3600	49, -5	69		215
	DF(65)SS15020	3800	4200	3310	4100	2460	3690	49, -5	69		215
	SS20012	3900	4300	3800	4200	3170	4000	49, -4	69		265
	SS20016	4200	4700	4100	4600	3170	4400	49, -4	69		265
	SS20020	4500	5000	4270	4900	3170	4500	49, -4	69		265
	SS25012	4400	4900	4270	4800	3170	4500	49, -4	68		315
	SS25016	4690	5300	4270	5200	3170	4500	49, -4	68		315
	SS25020	4690	5700	4270	5220	3170	4500	49, -4	68		315
ELSF 005	DF(65)SS15012	-	1750	-	1750	-	1750	56, -6	68	60 and 90 mins REI	222.5
	DF(65)SS15016	-	3900	-	3310	-	2460	56, -6	68		222.5
	DF(65)SS15020	-	4000	-	3310	-	2460	56, -6	68		222.5
	SS20012	3900	4300	3310	4200	2460	3690	56, -5	67		272.5
	SS20016	4000	4700	3310	4450	2460	3690	56, -5	67		272.5
	SS20020	4000	4890	3310	4450	2460	3690	56, -5	67		272.5
	SS25012	4000	4900	3310	4630	2460	4000	56, -5	67		322.5
	SS25016	4000	5090	3310	4630	2460	4000	56, -5	67		322.5
	SS25020	4000	5090	3310	4630	2460	4000	56, -5	67		322.5

All floors include a minimum of 100mm Rock Mineral Wool (45kg/m³).
All floors include a minimum of 18mm OSB3 board to top of joists – (higher floor loads may require thicker OSB)

*All floors include GTEC Resilient Bars fixed to the underside of joists at 400mm C/C.

**Acoustic performances shown are for core floor only, additional acoustic/floating floor treatment may be likely to be required to meet building regulations.

SOUTHWARK TOWN HALL DEVELOPMENT

The project involved extensive collaboration with Southwark Council and the local community to facilitate the regeneration of the former Town Hall, and demolition and re-provision of Theatre Peckham – a community theatre which has operated for more than two decades.

Cost certainty and sustainability was essential for the successful development of a steel frame system for this complex development, together with speed of build to accommodate the students of Goldsmith University in time for the new semester.

BUILDING REGULATION AND PERFORMANCE CRITERIA

Our testing regimes are designed to ensure that when specifying our Thrubuild® System you have complete peace of mind; knowing that all our systems have been subject to extensive fire, acoustic, weathering, airtightness and mechanical tests.



FIRE

All fire performances are results of testing to BS EN 1365-1 for walls and BS EN 1365-2 for floors. Systems are tested at their minimum dimensions for a safe 'worst case' performance. Loads applied during testing are selected to simulate representative stresses in accordance with the test standard.

Higher design loads than those tested are achieved by using framework which experiences lower design stresses than that tested. In some cases, this means that the system is over-engineered for cold state (i.e. not during a fire), but this has the benefit of a safe and secure fire performance.

In accordance with building regulations, all fire performances quoted in system tables are for fire resistance to loadbearing, insulation and integrity criteria. This means that the wall is both a structural element for the full fire period, but also provides full fire compartmentation for the same period.

No penetrations or holes should be made into load bearing walls or floors without appropriate fire stopping, please contact Promat for fire stopping solutions.



Alternately, service voids can be created by utilising drywall suspended ceilings and non-load bearing wall lining systems. Please contact Siniat for appropriate solutions.

All substantial products recommended in this system specification guide are either non-combustible (Euroclass A1) or of limited combustibility (Euroclass A2-s1,d0).

Left: Furnace to test full size partitions, ceilings or floors, Etex Building Performance Innovation and Technical Centre, Avignon, France.



Middle: Acoustic laboratory to analyse airborne sound transmission, impact noise reduction and acoustic correction, Etex Building Performance, Innovation and Technical Centre, Avignon, France.

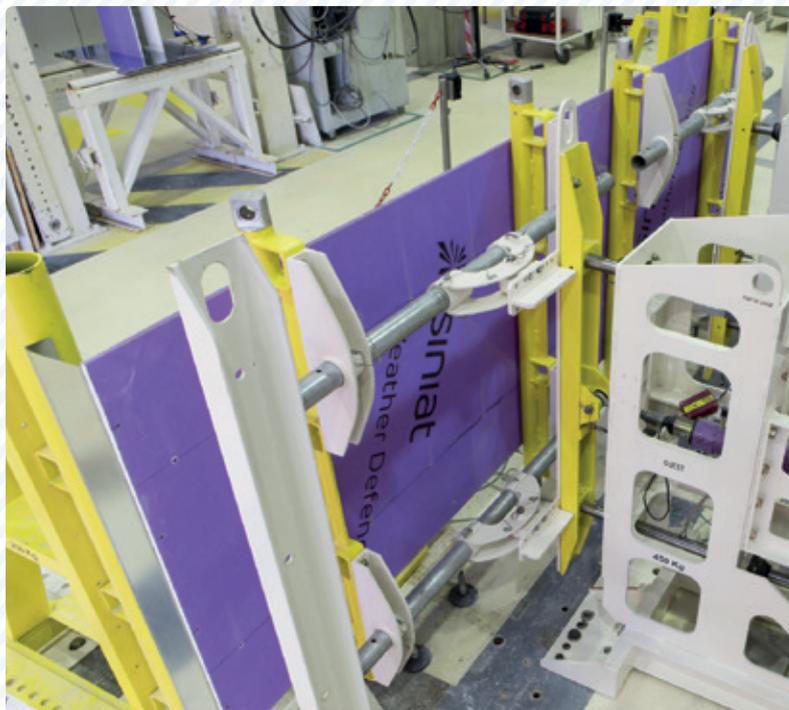
Right: Horizontal rig for structural testing, Etex Building Performance, Innovation and Technical Centre, Avignon, France.



ACOUSTIC

Acoustic performance has been estimated by modelling in Marshall Day Insul software, a validated and industry recognised modelling tool which simulates results to ISO 10140-2. Accuracy is to +/- 3dB and 'worst case' assumptions have been made in generating results.

Acoustic performance requires air-tight construction with sealing in all specified locations at junctions or abutments. Junctions have been designed to minimise flanking transmission - poor installation quality or re-design of details may lead to impaired sound insulation or site flanking and reduced results in pre-completion testing.



For walls, acoustic performance is provided by the 'core' system and finishes/cladding are excluded from results.

For floors, acoustic floating floor treatments will provide significant contribution to the overall performance and will be required to achieve separating floor standards. Floating floor treatments are not supplied as part of the EOS system and the final floor treatment must be sourced from a 3rd party in collaboration with the project's acoustic consultant. Results presented in the system tables are for the 'core' floor provided by EOS only.

Any floating floor treatment should be checked to avoid compromising fire performance.

Systems have been designed to meet building regulation requirements, and enhanced performance to achieve BREEM credits.



STRUCTURE

The detailed structural design of the EOS system is carried out by qualified engineers in accordance with loadings to EN 1991-1 and building regulations, calculated to EN 1993-1-3 and EN 1993-1-5 and further relevant parts of the Eurocodes for robustness, stability and resistance, the following guidance of SCI document P391 and P402.



THERMAL

Thermal values for separating walls are default party wall values from categories in Approved Document L1A.

For external walls, indicative 1D calculations have been made in Buildesk software in accordance with BR465 and Approved Document L1A/L2A.

Additional thermal calculations and 2D or 3D modelling following selection of insulation is recommended.



WEATHERING

Weather Defence has undergone extensive weathering tests in our purpose-built laboratory. Boards are tested to ensure they retain their mechanical stability and resist mould growth even when exposed to the elements for extended periods during the construction phase.

Weather Defence can be left exposed on site for up to 12 months. Whilst it is highly resistant to water, the board is also open to vapour, allowing the building to breathe and release potentially damaging moisture trapped. These qualities mean that there is no need to install a breather membrane over the sheathing board; saving both time and cost.



AIRTIGHTNESS

Weather Defence is an extremely stable substrate and will only expand by fractions of a millimetre as humidity changes. This means that gaps don't need to be left between the boards. On a recent project utilising Weather Defence, an airtightness of less than 1.53/m²/hr was achieved (Abercynon Primary School).

Top: Industrial scale climate chamber testing facility, Etex Building Performance, Innovation and Technical Centre, Avignon, France.

DESIGN: A COLLABORATIVE PROCESS

EOS offers an unparalleled level of support from a dedicated design team which includes:



Fully detailed structural calculations in accordance with EN 1090-1 and BS EN ISO 9001, that have been verified by EOS' structural engineering team.



Review of architects' and structural engineers' drawings, fire strategy and acoustic strategy.



Abortive design to work the building to full construction level, including a full 3D BIM model. A building then can be tendered to drastically reduce lead times.



Detailed section and elevation drawings which are passed through our client's architectural and structural engineering approval procedures.



Scope of works documents and Thrubuild® Project Packs to allow architectural and building control approval earlier, providing contractors a fit for purpose package to tender.



Structural calculations will cover all aspects of loading and specification; for for the building, wall framing sections, flooring, roofing, structural openings, fixing design and specification and bracket design.

THE EOS THRUBUILD® TIMELINE



It is recommended to follow the Design for Manufacture and Assembly (DFMA) overlay to the RIBA plan of Work.



STRATEGIC DEFINITION PREPARATION AND BRIEF

The construction mode is considered in Stage 2 Concept Design, and provisions are to be made to allow for extensive off-site production of the building.

The EOS Loadbearing system is specifically developed for offsite production. If the construction mode changes to Stage 3 or later, then there is the danger of having to make complex design changes.

CONCEPT DESIGN

- Feasibility and system requirements (1-2 weeks)

EOS Deliverables:

- Concept Specification Pack.
- Indicative cost proposals.

DEVELOPED DESIGN

- Design development and engineering calculations (3-4 weeks)

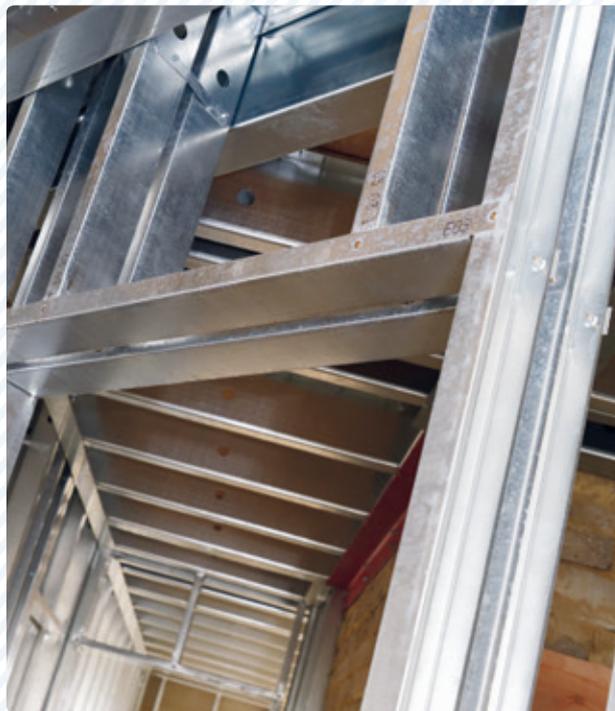
EOS Deliverables:

- Detailed Project Specification Pack.
- Technical proposal and outline framing design.
- Lump sum cost estimate for steel.

CONTRACTUAL COMMITMENT TO PROCEED TO FULL DESIGN



Left: EOS sub frame infill panels, pre-fixed to the lightweight innovative stone cladding system.



TECHNICAL DESIGN

- Final confirmed design (6-10 weeks)
- Manufacture (3 weeks, depending on scale)

EOS Deliverables:

- A detailed technical proposal and framing design.
- A lump sum cost for Frameboard.
- Manufacture.



CONSTRUCTION

- Installation (time dependent on project scale and schedule)

EOS Deliverables:

- Delivery to site
- Construction Specification Pack.
- Technical support from EOS and Siniat teams during construction.



HANDOVER AND CLOSE OUT

- Panels are assembled and fixed by specialist sub-contractors, and final boarding is completed.

EOS Deliverables:

- Inspections and sign-off for warranty.

A DIFFERENT STRUCTURAL APPROACH

Designing with light steel structural systems is not complex but requires a different approach. It is based on transferring loads throughout the building and through as many walls as are practical.

Internal and external walls become fundamental parts of the primary structure, rather than just infill pieces that only carry their own weight and directly applied loads.

THE RAM QUARTER, WANDSWORTH

Transforming the former Young's Brewery site where beer has been brewed since 1581, the Ram Quarter sensitively integrates historic Grade II buildings into a contemporary scheme which provides accommodation for boutiques, restaurants, a craft-brewery, a brewery museum and 650 new exclusive loft-style apartments.

Due to the large and complex nature of the project, it was imperative that EOS's steel frame systems were designed and supplied ready for easy onsite installation.

OFFSITE
AWARDS 2019

Highly Commended for
Best use of Steel Technology



FULLY TESTED AND CERTIFIED FIRE SOLUTIONS



Nigel Morrey is our Technical Director specialising in passive fire protection for over 30 years. He is a qualified fire engineer and Chair of the Finishes and Interiors Sector (FIS) Fire Safety Group and sits on the Association of Specialist Fire Protection (ASFP) Council and Strategy Group.

The performance of building materials is under an unprecedented spotlight. How does Etex Building Performance ensure that materials are tested and fit for purpose?

Our products, processes and whole business philosophy show that as a manufacturer, we take our responsibilities extremely seriously. At the heart of this is rigorous testing, technically competent people and a systems approach to our solutions.

What is your testing regime?

Current regulations tend to deal with individual products and how they perform in a laboratory test. This is not enough. Material providers should have comprehensive, full-scale testing regimes that study the performance of products working together to see how they interact

under 'real' circumstances, like under fire conditions or when exposed to wind and rain.

We need to assess how all of the products in the system - boards, metals, screws, insulation etc. - react under these circumstances.

How many tests do you conduct annually?

Over 500 in Europe alone. We have three Innovation and Technology Centres where we have our own fire, acoustic, mechanical, structural and thermal testing facilities, equipment and laboratories. We also fully support and endorse third party certification systems such as BBA, BRE Global and Certifire.

Does the provenance of materials matter?

Yes, it's important to understand that having a CE mark on a product is not a quality mark. Specifiers need to understand where products come from and the quality controls that were put in place to ensure a consistency in the performance of the material.

Describe your organisations' commitment to technical competence.

I will say we genuinely have some of the best fire technical experts in the UK, to the extent that they work closely with certification bodies to jointly develop and design technical solutions.

Our range of technical support is there for specifiers throughout the lifecycle of the project, from concept to completion, in person, online, or by phone. We also invest heavily in technical training; for instance, it is compulsory for every single person in a technical or specification role to have taken our Technical Expert Programme.

"Current regulations tend to deal with individual products and how they perform in a laboratory test. This is not enough."

Nigel Morrey, Technical Director
Etex Building Performance

ABOUT ETEX BUILDING PERFORMANCE

Etex Building Performance is the UK's leading provider of lightweight construction solutions, and the technical construction products division of the global Etex Group.



Our expertise in drywall, passive fire protection and steel framing systems has created a range of unique solutions; from the building envelope, to internal linings, partitions and penetrations.

We are uniquely placed as a progressive partner to meet the construction challenges.

EOS

EOS has been manufacturing light steel framing since 2004 for infill, modular and load bearing applications into the UK.

Now part of Etex Building Performance, we collaborate and invest in research and development to ensure our dry construction methods are market leading.

We work closely with the supply chain, from architects and specifiers, to contractors and installers, to ensure that the full advantages of offsite light steel construction are received by the client.



OUR GROUP AT A GLANCE

€2.9bn

Our global turnover

102

Companies globally

42

The number of countries we're based in

FREE SEMINARS FOR ARCHITECTS AND CLIENTS

We hold free hour-long seminars for clients and architects to gain an insight into how to maximise the potential of their Thrubuild® projects by adopting the latest innovations in dry construction systems.

**TO LEARN MORE, BOOK
A FREE SEMINAR ON:
01325 303 030 or email:
thrubuild@etexgroup.com**

In the seminar you will learn:

- To secure earlier occupancy by making efficiency gains on site.
- How 2D pre-fabricated loadbearing panels are a practical solution for sites where full volumetric construction is not possible.
- How to ensure your investment asset is protected by fully tested, warranted systems.

We are uniquely placed as a progressive partner to meet the construction challenges of the coming decades – and beyond.

EOS Offsite Solutions Limited

Heighington Lane,
Aycliffe Industrial Park,
Newton Aycliffe,
County Durham
DL5 6QG
+44(0)1325 303 030

eos-facades.co.uk
etex-bp.co.uk/thruebuild

