

SpaceJoist™
METAL OPEN WEB FLOOR SOLUTION

SpaceRafter™
VALUE OPEN WEB RAFTER SOLUTION

SpaceStud™
HIGH PERFORMANCE WALL STUD

NEW!

Metal Web Roof, Floor and Wall Systems



FIRE **SPREAD** **RESISTANT** **SOLUTION**



NEW SpaceJoist Category C open web joists support the ideal solution to reduce the risk of fire spread.

Approved by STA and HSE.

Contact 01252 551960, option 5 or email quote@itwcp.com for more information.



Sj SpaceJoist™
METAL OPEN WEB FLOOR SOLUTION

ITW CONSTRUCTION PRODUCTS

ITW Construction Products is one of five major divisions of the Illinois Tool Works family, innovating, designing and manufacturing advanced industrial technology.

With five brands all at the forefront of technology and enterprise for their respective markets, ITW Construction Products are committed to providing advanced trade solutions for professional users.

**A leader in technology,
research and development**

ITW Construction Products are known for their problem solving nature, and as such always remain a leader in technology, research and development; a trait that enhances our interaction and relationship with our customer and generates increased productivity for our end users.

PART OF A GLOBAL COMPANY - ITW

ITW - We are everywhere. With over 12,000 active patents ITW's products and solutions are at work all over the world, in deep-sea oil rigs, aerospace technology, bridges and wind turbines, supporting commercial buildings, healthcare, the spaces in which we live and work, the construction of those spaces, the cars we drive, and the mobile devices we rely on. We are never, whether we know it or not, more than a few steps from an innovative ITW solution.

**We are never more than
a few steps from an
innovative ITW solution**

We are committed to operational excellence and systematic new product development that helps our customers create the products and services that make our lives better.

OUR ENGINEERED WOOD PRODUCT BRANDS



OUR CONSTRUCTION FIXINGS BRANDS



ALPINE AND GANG-NAIL

For over 50 years, Alpine and Gang-Nail have been specialists and world leaders in the development, manufacture and marketing of timber connecting systems, software and equipment for the production of floor and roof solutions.

**Brands synonymous with
reliability, quality and
customer service**

Becoming a part of ITW Construction Products in 2008, Alpine has benefited from the expertise and resources of a global corporation allowing them to grow, invent and create more than ever before. Joining ITW a few years later, Gang-Nail added further to the roster of expertise and diversity of product solutions available to an ITW CP customer.

Designing and manufacturing a succinct range of open web products, nailplates and providing the software to design rafter and floor solutions, Alpine and Gang-Nail are industry leading partners for fabricators, and provide superior expansive solutions for housebuilders.



INNOVATION

At ITW CP we follow a systematic customer focused approach to new product development which allows us to research and interpret the true needs of our customers and their industry. Our product development begins on site, not in a lab.

Thanks to our dedicated focus on innovation, ITW CP adds new products to its offering which are true problem solvers for the industry.

**Product development begins
on site, not in a lab**

Our state of the art research facility in Glenrothes, Scotland includes a timber conditioning chamber, test rig and computer controlled turret press for prototype work.



QUALIFIED TECHNICAL SUPPORT

You can be confident with ITW CP that you are fully supported with any purchase of our products.

With over 50 years of experience, our highly qualified staff can offer advice, perform engineering load calculations or organise on-site support visits. Available from 8.30am - 5:00pm Monday to Friday.

All our technical documents, product certifications, approvals and safety data is in line with relevant safety standards and is readily available online at itwcp.com

Call 01872 245456 option 3 or email helpdesk@itwcp.com



CUSTOMER SUPPORT

Our dedicated team of customer service advisors are always available to take your calls.

They can assist you with:



Processing your orders



Answering questions and queries



Collections and returns



Putting you in touch with the correct member of our organisation

Customer services are available from Monday to Friday 8:30am - 5:00pm.

Get in touch with us today to see how we can assist you.



BENEFITS OF THE SPACEJOIST SYSTEM...



Long Spans

Longer spans are achievable in comparison to solid timber. This may eliminate the need for intermediate load bearing internal walls, reducing a building's overall cost.



Reduced Wastage

Manufactured to size eliminates site alterations saving time on site.



Design Flexibility

SpaceJoist can be designed top hung to eliminate the rim board in timber frame construction, improving air tightness and reducing thermal bridging.



Less Timber and Fewer Webs

Tests show that the NEW SpaceJoist system requires less construction material, saving cost.



Sound Performance

SpaceJoist delivers outstanding acoustic performance to comfortably pass English and Welsh regulations, even complying with the more stringent 43dB Scottish regulations without additional insulation, plasterboard or resilient bars.



Fire Performance

NEW SpaceJoist category C open web floor solution is approved by the Structural Timber Association (STA) in their product paper 4 as an acceptable option to achieve a fire robust solution during the construction process.



Easy to Handle

Now even lighter, the lightweight construction makes SpaceJoist easy to individually move on site without the need for crane hire. Alternatively, floor and roof sections (cassettes) can be delivered to site and craned into position to save build time.



Wide Nailing Surface

Fixing of floor and ceiling materials is simpler and quicker due to the minimum chord width of 72mm.



Highly Engineered

SpaceJoist are manufactured off-site ensuring consistent quality and reliability.



Open Web Design

Fast and simple installation of services, without the need for drilling or notching. Joists can accommodate large services such as mechanical heat recovery systems.



Home Grown Timber

SpaceJoist can be manufactured in home grown timber, reducing carbon footprint.

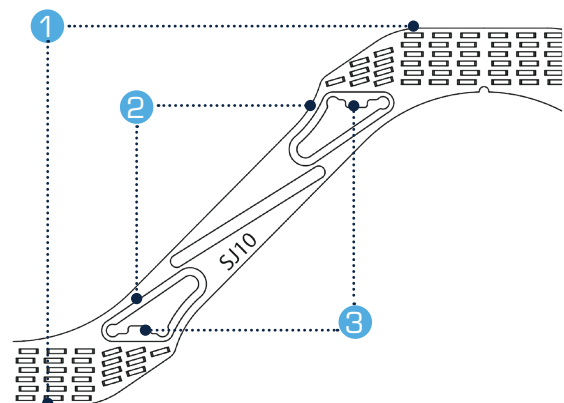


Attic Bottom Chords

SpaceJoist can be incorporated into attic truss bottom chords to achieve greater spans, deeper insulation and provide a service void.

Typically achieve greater maximum spans with less double webs and timber:

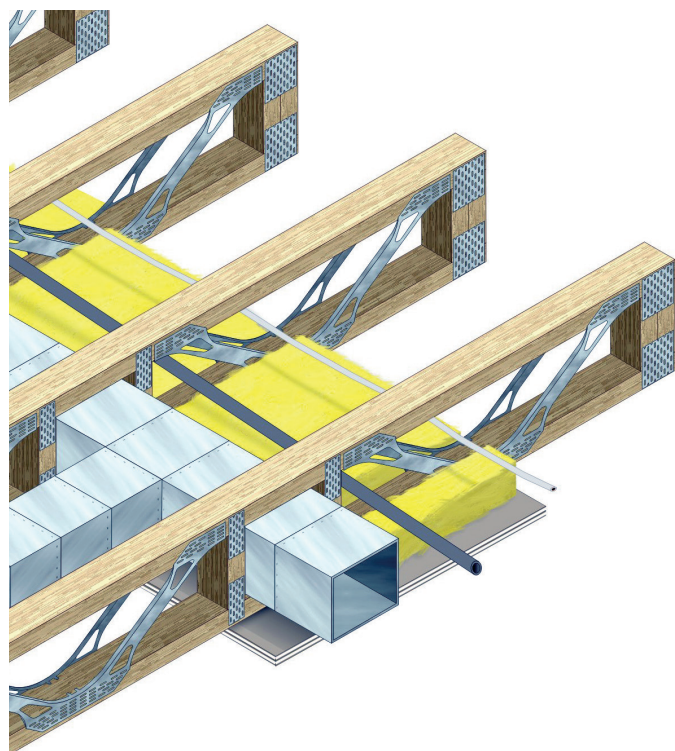
1. Extra teeth improve SpaceJoist stiffness and strength which reduces deflection
2. Burst-through holes increase web strength in compression
3. Contact tabs aid load transfer from webs to timber chords, increasing web capacity



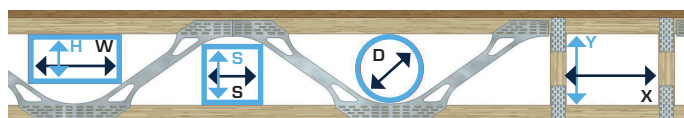
THE OPEN WEB FEATURE

SpaceJoist offers a comprehensive range of depths from 195mm as a direct competitor to solid timber joists and I-joists, up to 424mm which is ideal for large spanning commercial applications.

Services can be passed through the open web feature. The table below gives the maximum opening sizes for each depth.



Opening size span tables



Web	Depth	D*	H*	W*	S*	X	Y
TW8	195	120	73	208	107	605	125
SJ9	219	120	75	210	105	505	125
SJ10	254	154	97	208	133	505	158
SJ12	304	192	121	215	155	505	209
TW14	375	252	160	283	204	505	285
TW16	424	265	178	264	212	705	330

Dimensions shown in mm.

*These dimensions include a 3mm clearance. Dimensions are approximate as discrepancies may occur in manufacture.

For use with Alpine and Gang-Nail software.



ETA and CE marking

SpaceJoist have European Technical Approval (ETA). All ITW CP licensed fabricators CE mark their SpaceJoist or SpaceRafter to legally comply with the construction products regulation. This includes an external quality assurance system and clear labelling of every joist and rafter.

Span tables available on request. [Call 01252 551960](tel:01252551960), option 5 or email quote@itwcp.com.



" At Ochil we know that SpaceJoist's benefits reduce the amount of time contractors spend on site, speeding up construction and ultimately saving the client money. "

- Andrew McAree, Managing Director
- Ochil Timber Frame

SOUND PERFORMANCE

Sound performance - intermediate floors

Independent testing proved the new SpaceJoist delivers outstanding acoustic performance to comfortably pass English and Welsh sound regulations. The joists even comply with the more stringent 43dB Scottish regulations without additional insulation, plasterboard or resilient bars.



SpaceJoist depth (mm)	Floor build-up	Scotland requirements for non-separate domestic floors (43db)	England and Wales requirements for non-separate domestic floors (40db)
219	22mm chipboard on 219mm SpaceJoist at 600mm centres lined to the underside with 15mm plasterboard (standard wall board)	✓	✓
254	22mm chipboard on 254mm SpaceJoist at 600mm centres lined to the underside with 15mm plasterboard (standard wall board)	✓	✓
304	22mm chipboard on 304mm SpaceJoist at 600mm centres lined to the underside with 15mm plasterboard (standard wall board)	✓	✓

Robust details - separating floors

SpaceJoist complies with robust detail “E-FT-3 separating floor - metal web joists.” Floors built to this specification will require no pre-completion testing to comply with “Approved Document part E - resistance to the passage of sound”, and helps avoid possible call backs.

A. SpaceJoist - minimum 254mm deep

B. Minimum 18mm thick sub-deck with minimum density of 600kg/m³

C. Minimum 16mm resilient bars with laboratory performance of $rd\Delta w + C_{tr} = 17dB$ and $rd\Delta Lw-16dB$ fixes at 400mm centres perpendicular to joists

D. Minimum 100mm thick mineral wool quilt insulation with density of 10-36kg/m³ laid between joists

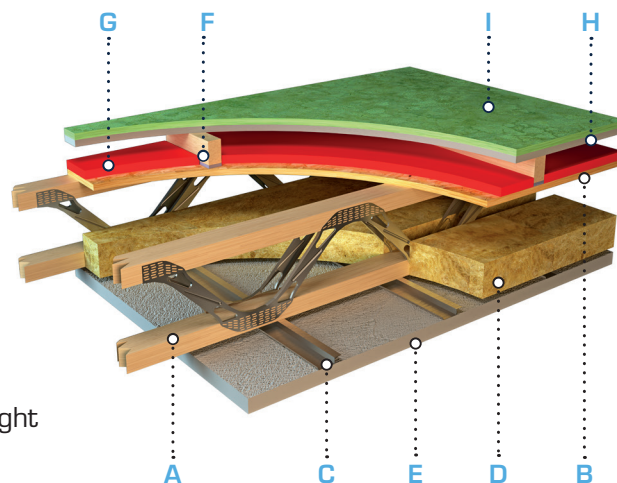
E. Two layers of 15mm thick plasterboard with nominal weight of 11.7kg/m² fixed with 32mm long screws (first layer) and 42mm long screws (second layer)

F. Minimum 70mm deep composite resilient battens fixed at 600mm centres perpendicular to joists

G. Mineral wool quilt laid between battens, 25mm thick with density of 10 - 36kg/m³

H. 19mm thick plasterboard plank with nominal weight of 13.5kg/m²

I. Minimum 18mm thick tongue and groove floorboards



To find out how to comply with the detail, [visit www.robustdetails.com](http://www.robustdetails.com), or refer to the Robust Details handbook.

FIRE PERFORMANCE

SpaceJoist has been independently tested in accordance with BS 476 part 2:1987 for both 30 and 90 minute fire resistance.



Category C

SpaceJoist open web joists are now available as a Category C fire solution.

Approved by the Structural Timber Association (STA) as an acceptable option in their Product Paper 4, the "go-to guide" for fire robust solutions during the construction process.

Design professionals and clients can now select open web joists using SpaceJoist webs implementing the Category C solution, in order to achieve a fully compliant floor and/or flat roof assembly.

SpaceJoist Category C has been tested and approved using Paslode tools and 3.4mmx35mm Square Twist Nails. This system provides clients with a reliable solution from a leading manufacturer.

" By using ITW's open web joist system, which meets Category C fire performance, Pinewood Structures Limited can reduce the use of, or eliminate the need for temporary fire mitigation in the areas where open web joists are used. "

- Nick Worboys, Pinewood Design Manager

Pinewood Structures Limited is a leading provider of timber frame structures which incorporate open web joists within the floor design.

Fire resistance

Around 90% of fire resistance is provided by the plasterboard so it is important to specify this correctly. The required fire resistance for domestic floor structures is 30 minutes and for compartment floors is 60 minutes.

Contact our technical team on 01872 245456 option 3' for more details on data resulting from full scale testing and calculation assessment.



BENEFITS OF SPACERAFTER



Long spans

Longer clear spans than solid timber can be achieved, requiring fewer intermediate supports, saving time on site.



Thermal performance

Rigid, blown or quilt insulation can be fitted inside voids to improve thermal efficiency.



Cassettes

Available in cassettes to increase construction speed on site.



Easy to handle

Now even lighter, the lightweight construction makes SpaceRafter easy to individually move on site without the need for crane hire.



Versatile

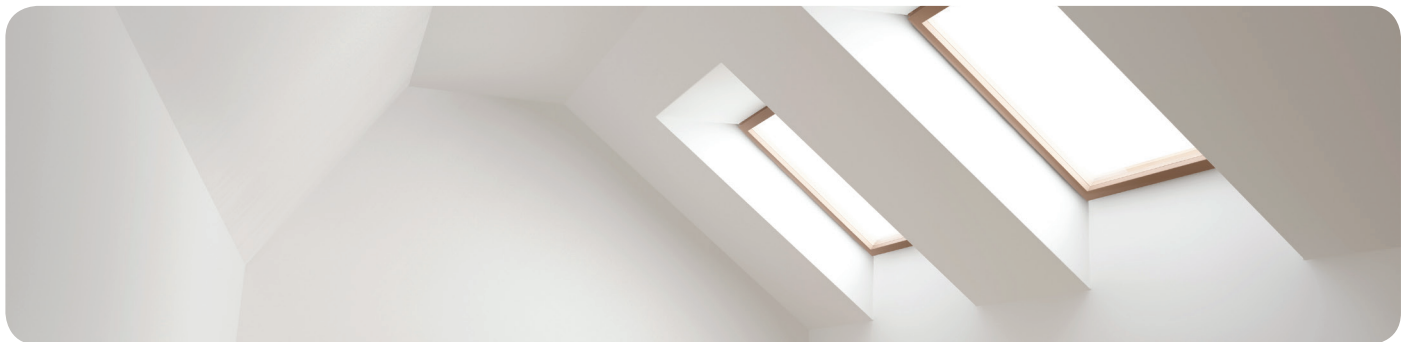
Can be used on both residential and commercial buildings.

LOOSE SPACERAFTER

SpaceRafter can be supplied loose for both residential and commercial builds. The rafters can be supplied with rigid insulation between the timber chords for improved thermal efficiency.



RETROFIT SPACERAFTER



SpaceRafter combined with SpaceJoist can be used to create a room in the roof space by replacing the existing roof trusses. A detailed structural design and method statement must be prepared by a qualified designer before any work is undertaken.

For use with Alpine and Gang-Nail software.

CASSETTED SPACERAFTER



SpaceRafter can be supplied as cassettes for residential and commercial projects. The roof cassettes can comprise of a number of SpaceRafter, complete with sheathing, plasterboard and insulation for fast installation on site.

INDICATIVE ROOF SPANS

Web type	Depth (mm)	Centres (mm)	Width (mm)	Flat roof span (<5°)	Pitched roof span (45°)
SJ9	219mm	600	47x72	5150	4500
			47x97	5650	4950
			47x122	6100	5350
SJ10	254mm	600	47x72	5900	5100
			47x97	6500	5650
			47x122	7000	6050
SJ12	304mm	600	47x72	6650	5800
			47x97	7300	6400
			47x122	7850	6900
TW14	375mm	600	47x72	7800	6750
			47x97	8550	7500
			47x122	9150	8050
TW16	425mm	600	47x72	8550	7350
			47x97	9350	8050
			47x122	10050	8800

This span table is indicative and to be used only as an estimating/feasibility tool.

These spans have been calculated with typical roof loading applied.

Pitched roof:

Top chord dead: 685 N/m²

Snow loads: 750 N/m²

Bottom chord dead: 200 N/m²

Flat roof:

Top chord dead: 500 N/m²

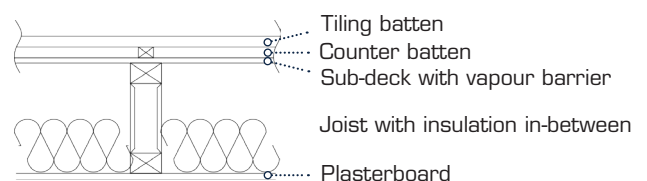
Snow loads: 750 N/m²

Bottom chord dead: 200 N/m²

Flipped timber orientation option

Rafter overall depth (mm)	Flat roof span (<5°)	Pitched roof span (45°)
269	5700	5000
319	6850	6000
304	6400	5550
354	7600	6600

Typical roof section:



These are achieved by rotating the timber, so joist is only 47mm thick.

U-VALUES

Web type	Timber size (mm)	Overall joist depth (mm)	Insulate joist	Joist insulation	Main insulation	Main insulation depth	U value at 600mm c/c
SJ9	72x47	269	Y	0.03	0.021	250mm	0.11
SJ9	97x47	319	N	N/A	0.021	319mm	0.10
SJ10	72x47	304	Y	0.03	0.021	304mm	0.12
SJ10	97x47	354	N	N/A	0.021	354mm	0.10

BENEFITS OF SPACESTUD



Code for sustainable housing

SpaceStud complies to The Code for Sustainable Homes Level 4 and above.



Economical

SpaceStud is one of the most cost effective wall stud systems on the market to comply to The Code for Sustainable Homes Level 4 and above.



Thermal performance

SpaceStud creates the wall thicknesses required to reduce U-values and thermal bridging compared to solid timber.



UKTFA "Fabric First"

SpaceStud supports the UK Timber Frame Association's "Fabric First" campaign which highlights the benefits of using timber frame as the core fabric of a building to achieve higher levels of The Code for Sustainable Homes.



No drilling or notching

Fast and simple installation of services, without the need for drilling or notching.



Improved racking resistance

SpaceStud provides a 20% greater racking performance than a standard 38x140mm timber frame stud construction.



Quality

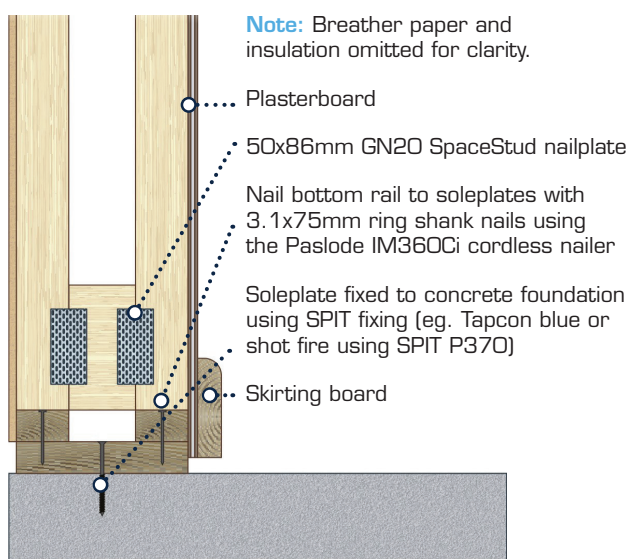
NHBC stipulate treated timber must be used in wall stud construction. SpaceStud is manufactured with standard treated timber sizes.



Home grown

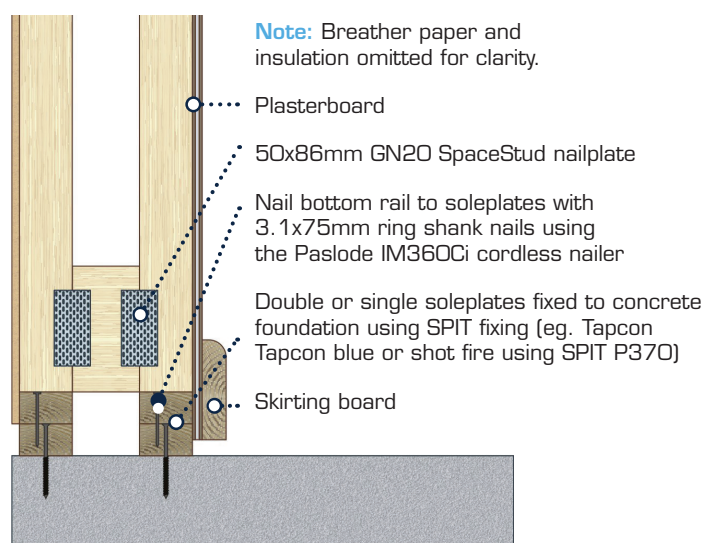
Can be manufactured with home grown timber to reduce carbon impact. Where on-site assembly is required SpaceStud components can be supplied loose.

SINGLE PIECE SOLEPLATE DETAIL

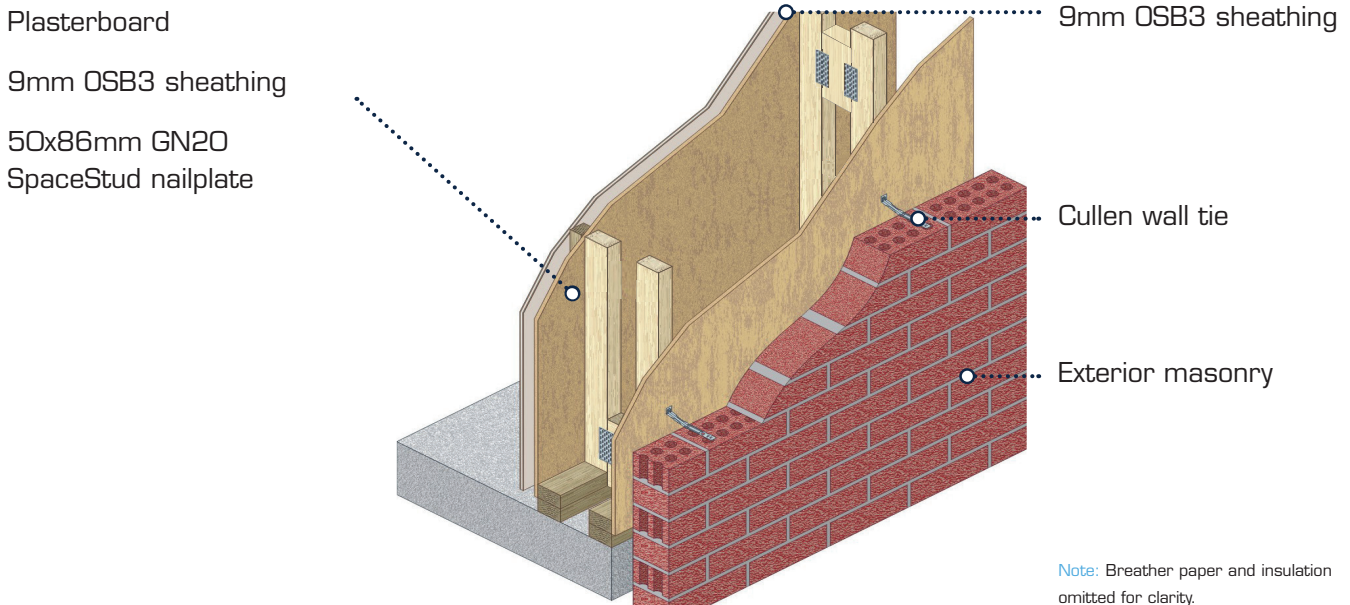


For use with Alpine and Gang-Nail software.

TWIN SOLEPLATE DETAIL



CLOSED PANEL

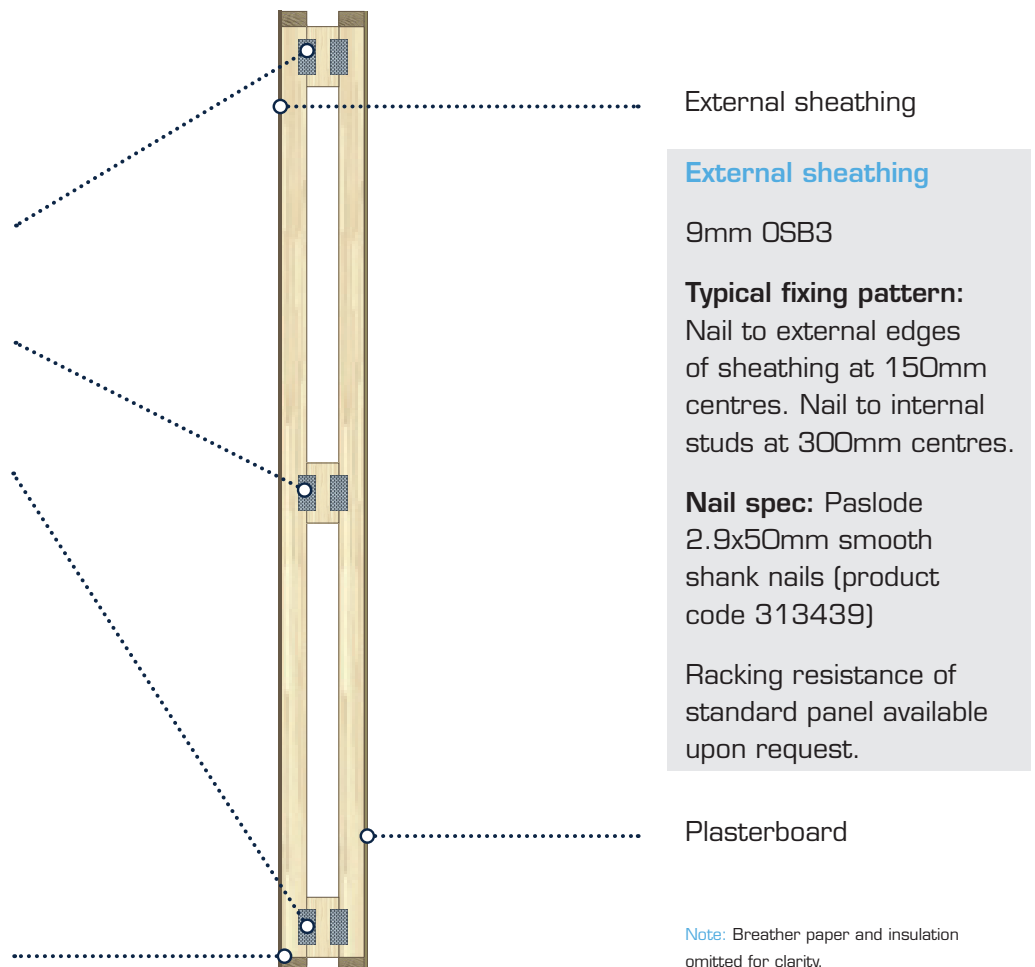


TYPICAL WALL PANEL SECTION

SpaceStud connectors

Timber blocking piece plated between vertical studs using GN20 SpaceStud nailplates - minimum 140mm deep (4 per block) positioned top, middle and bottom as shown or additional as required by design.

Various top and bottom rail details are possible. This method shows loose 38x63 or 38x89 timbers to plated and insulated rails.





CONSTRUCTION PRODUCTS

Gang-Nail Technical Support

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