STRESSLINE
STRUCTURAL BUILDING PRODUCTS

FLOORING SYSTEMS GUIDE

www.stressline.net

THE SOLID CHOICE

1964 50 2014

PROUDLY INDEPENDENT

BUILD ON OUR STRENGTH

COMPANY HISTORY

Stressline Limited manufactures a wide range of structural building products for domestic and commercial sectors. Stressline is the first choice for builders, contractors & specifiers across the UK because of its ability to deliver high quality products on time and at the right price, ensuring projects are not disrupted and work is completed on time.

Stressline also supply direct to site or through a supply chain of merchants across the country, making sure their products are always highly accessible.

Stressline's customers choose them over other structural product manufacturers because of the promise to always be competitive on price, the mixed order delivery capabilities and the high quality service.

STRUCTURAL BUILDING PRODUCTS

We manufacture a complete range of prestressed concrete products in addition to the prestressed concrete lintels; including flooring beams (suitable for concrete or insulation infill) and hollowcore flooring. Precast items available include padstones, stairflights and landing slabs, whilst our extensive design and manufacturing resource enables special projects to be produced cost effectively. Our non-structural range includes fencing, landscape, walling, and decorative cast stone products.

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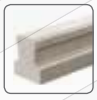
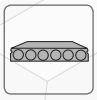


BEAM AND BLOCK 10



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SERVICE DELIVERY
OUR COMMITMENT TO YOU

SALES & SUPPORT

Our unique ability to manufacture a range of structural building components offers the specifier and the buyer a complete solution for structural flooring (both beam and hollowcore), steel and concrete lintels and structural precast products, including padstones, staircases and landings.

Our area sales managers and sales technicians are able to assist you with your specification needs. Whether advice is needed for a single floor, or a comprehensive take off and pricing schedule for a multi dwelling development, our team is here to help.

The brochure and website outline our ranges to assist your selection.

OUR PRODUCTS

Our 50 year experience of making concrete lintels and beams has allowed us to create a comprehensive package of flooring products. Our concrete beams have superior strength and can span up to 8 metres, and are designed to BS EN 15037-1:2008.

Our hollowcore products are made from the same strength concrete with spans up to 9 metres. All of our hollowcore floors have a self weight of 300kg/m2 which complies with the latest sound regulations.

Finally, our thermal flooring system uses ultra-modern Stylite T-beam technology, is quick and easy to install and offers great reductions in cold-bridging in floors. Depths of the floors can also be met to achieve the desired U values, and this method of installation exceeds the thermal requirements of Part L building requirements.

DELIVERY

All our products are delivered on flat bed articulated or rigid lorries, with the option of either self offload or crane offload. Depending on the customer's requirements floor beams can be sent to stock or are packaged in consignment loads to house plots.

As we are located centrally we are able to supply all our standard products nationally, with delivery typically between 2-6 weeks, depending on the product.

OUR PROMISE

Stressline understand the day-to-day challenges you face on a building site and the importance of working with a supplier you can trust. Our promise is simple – to deliver competitively priced products, on time, to the required specification.

ACCREDITATIONS

Stressline has an on-going commitment to improving both product and management systems;

BSI Quality Assurance
Accreditation to ISO 9001

Our thermal flooring option also has the insulation approved by BBA certificate 13/5021, and we also possess a Worksafe Management Membership Certificate for our flooring installation.

ENVIRONMENTAL AND SUSTAINABILITY

We recognise our responsibilities to the environment. We are committed to developing, implementing and reviewing our management and operational policies and procedures to minimise our environmental impact. Our integrated management system includes all our compliance policies and achievement targets.

From our ongoing environmental and sustainability commitments we have continued to achieve significant reductions in our impact as manufacturers and distributors. One major environmental benefit shared with our existing customers is the ability to source our complete range of products and for them to be delivered as a mixed load on one vehicle, instead of separate deliveries which creates wasteful and unnecessary movements.

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OTHER STRESSLINE PRODUCTS

STEEL LINTELS

- Huge variety for Wide-Ranging Applications
- Standard and Heavy Duty
- Standard, Wide Inner and Wide Outer Leafs
- Short Outer Leafs
- Closed Eaves and Timber Frame
- Rolled Steel Available
- Special lintels available including arch, apex, corner, parabolic and more

PRESTRESSED CONCRETE LINTELS

- Prestressed Concrete
- Universal Lintels
- Standard & High Strength
- Free Scheduling service
- Padstones
- Fair Faced variants available

CONCRETE FENCING & WALLING PRODUCTS

- Slotted Posts
- Gravel Boards
- Support Posts
- Morticed and Recessed Posts
- Chain Link & Cranked Top Posts
- Screed Rails and Bollards
- Pier Caps
- Copings

Wet cast and light weight variants available

STANTON CAST STONE

- Large range of available products
- Vapour cured
- Choice of four colours
- Bespoke products to order

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FLOORING SYSTEMS

Stressline's extensive range of prestressed flooring products allows estimators and designers to determine the most economical solution to satisfy your loading and span requirements.

Upon receipt of your enquiry, which should contain copies of your working drawings and loading requirements, Stressline will produce a detailed quotation for your consideration.

After placing your order Stressline's technical office will design and prepare a comprehensive layout drawing. This will be sent back to you for approval to ensure that your requirements have been covered.

Being able to offer both ground and upper flooring solutions incorporating precast stairs, landings and balconies enables the customer to source all his structural flooring requirements from just one supplier.

Full technical support and advice is available from product suitability through to detailed design calculations.

Installation onto masonry or steelwork by our qualified teams of installers ensures that your floor has been installed correctly, efficiently and with no compromise to the design solution.

Whether you are looking for a ground floor for a home extension, or a major multi call-off development, Stressline have a service solution that will suit your needs.

PRESTRESSED FLOORING

I' BEAM DESIGN

VARIOUS SECTIONS

END SLIPS

DESIGN & DEVELOPMENT

THERMAL FLOORING

HOLLOWCORE

SPANS UPTO 9M

300KG/M² SOUND FLOOR

PRECAST SECTIONS

PRESTRESSED BEAM AND BLOCK FLOORING

Stressline has constantly reacted to changes in modern building practices and have developed their own range of prestressed concrete floor beams to accept flooring grade infill blocks of up to 8m.

Available for use at the ground floor, prestressed beam flooring offers a flexible and dependable method to overcome difficult site conditions. It is also available in some circumstances at first floor level to help sound reduction.

Architects, Engineers and Developers have learnt that the Stressline range of prestressed suspended flooring provides the ideal solution where land has been made up, is sloping, or has potential contamination concerns. With the benefits of off-site manufacturing and no on site curing of concrete, it is possible to allow following trades access as soon as the floor is installed

HOLLOWCORE FLOORING

To compliment the beam and block flooring systems Stressline offers two sections of hollowcore flooring. With spans up to 9m, hollowcore is available in either 150mm deep or 200mm depths to resolve many specification problems.

PRECAST CONCRETE STAIRS

With Stressline's in house design, technical and manufacturing teams it is possible to produce staircases to accompany your flooring requirements, either straight or integral, together with landing slabs.

THERMAL FLOORING

Using Stylite T-Beam technology, we have a comprehensive range of thermal flooring options. For use on the ground floor, the suspended insulated systems uses prestressed concrete beams and EPS panels to reduce cold-bridging in floors and achieve required U-values. The system has achieved the BBA certificate 13/5021.

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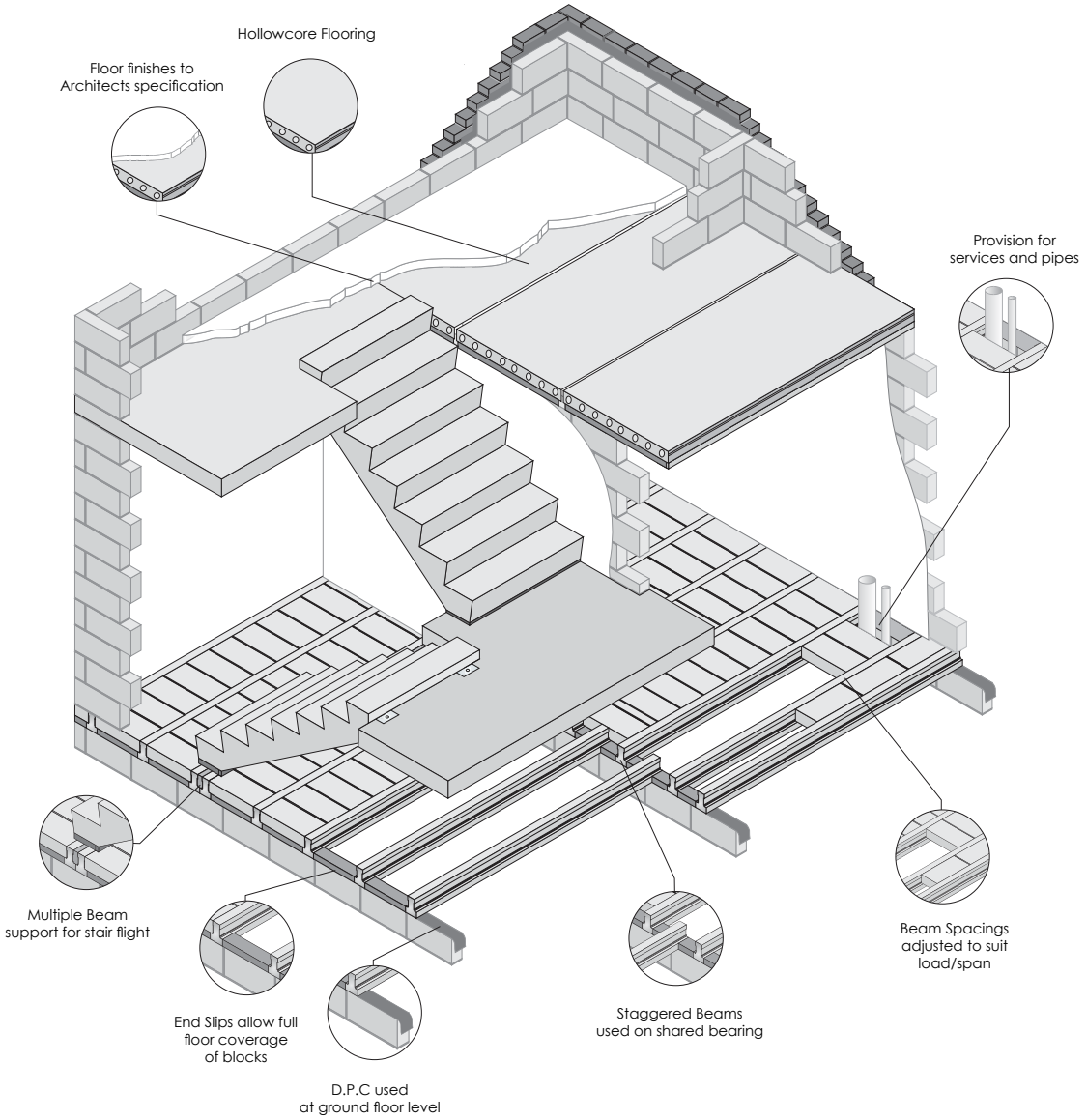
FLOORING SYSTEMS

FLOOR AND CEILING FINISHES TO ARCHITECTS SPECIFICATION



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PRESTRESSED FLOORING

INFILL BLOCK SPECIFICATION

Any dimensionally accurate solid building blocks 440 x 215 x 100mm may be used as infill within the floor provided that they can support a 3.5kN transverse load over a 400mm clear span. Stressline's quotation will specify a maximum block density that the floor has been designed for. While lighter blocks may be used on no account should heavier than specified block be used without first checking with Stressline that the designed layout is capable of safely supporting the additional load.

Your Builders Merchant or block manufacturers will confirm the suitability of your blocks. Some aerated concrete block manufacturers have floor infill blocks of non-standard size. These can be incorporated into the floor provided that Stressline are aware of their probable use at the quotation and design stage. (Protection of this infill will be required during construction).

CONCRETE INFILL

Where infill concrete between beams is used this should be of mix proportion 1:5:3 (Cement/Sand/Aggregate) with maximum 10mm aggregate.

HOLES THROUGH THE FLOOR

The formation of the holes will be by the omission of blocks from the floor. Voids around pipes to be made good with insitu concrete.

DPC/DPM

These are to be provided by others in accordance with Architect's details. It is an NHBC requirement that a DPC should be installed beneath the floor beams to deter aggressive ground water chemical attack.

This is in addition to the other membranes which the Architect may specify.

VENTILATION

Where the void to the underside of ground floor is to be ventilated, air bricks must be fitted to manufacturer's specifications. Provisions should be made for ventilation through internal support/sleeper walls. Ventilation from garages is not permitted. A minimum of 1500mm² of free air per metre run of external wall is required. Care must be exercised when positioning ventilators. Floor beams must not bear directly onto the ventilator.

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GAS MEMBRANE

Where Methane or Radon gas penetration is perceived as a potential problem, proprietary gas proof membranes may be applied across the floor and adjacent walls and cavities so as to isolate the dwelling from the void beneath. Additional sub-floor ventilation requirements may need to be met. Local Building Control should be able to advise on this.

THERMAL INSULATION

Latest Building Regulations calls for ground floors to have enhanced thermal performance. Numerous different calculation routes are available to determine the amount of insulation (if any) required to comply with these requirements. Your Architect/Engineer should have determined these during your Building Regulations application.

VOID

A minimum void of 150mm is required beneath the floor. This should be increased by 50-150mm (according to the soil's shrinkage potential) on shrinkable soil where heave could occur.

CEILING

Ceiling clips to support 50 x 38mm ceiling battens are available if required for upper floors. A minimum ceiling void of 38mm can provide service runs.

SPLIT COURSES

Stressline offer 375 x 90 x 40mm and 375 x 140 x 40mm concrete slips for making good to the edges of the floor where a 50mm split course is required to the underside of the infill blocks. Stressline's quotation will detail quantities and price for these end slips.

PRECAST STAIRCASES

Stressline are able to design and manufacture precast concrete stairs, landing and balconies to complete your building requirement. Delivery dates for these precast specials will be given at enquiry stage.

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BEAM & BLOCK

Prestressed 'I' Beams Design Information

Beam Section	Weight	Centres	Floor Self Weights						Serviceable Moment	Ultimate Moment	Ultimate Shear	Basic Fire Resistance
(WxD)mm	(kg/m)	(mm)	1970 kg/m³ (kN/m²)	(kg/m²)	1350 kg/m³ (kN/m²)	(kg/m²)	650 kg/m³ (kN/m²)	(kg/m²)	(kNm)	(kNm)	(kN)	(Hours)
105 x 150	28.03	510	2.21	225	1.68	171	1.09	111	4.32	6.86	15.87	0.5
		510/285	2.28	233	1.78	182	1.22	124				
		285	2.42	247	1.96	200	1.45	147				
125 x 150	34.95	530	2.25	229	1.75	178	1.18	120	6.67	10.02	24.62	0.5
		530/305	2.34	238	1.86	190	1.32	135				
		305	2.49	253	2.06	210	1.57	160				
165 x 150	50.06	570	2.35	240	1.88	192	1.35	138	9.61	14.72	38.20	0.5
		570/345	2.46	250	2.02	206	1.53	156				
		345	2.63	268	2.25	229	1.82	186				
125 x 225	56.70	530	2.65	271	2.15	219	1.58	161	15.80	23.00	32.94	0.5
		530/305	2.85	290	2.37	242	1.83	187				
		305	3.19	325	2.76	281	2.27	232				

Designed to BS 8110

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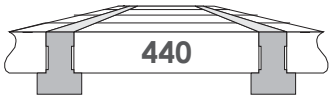
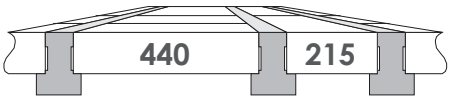
Wide centres - Using flooring block Full Width



Beam Section WxD(mm)	Centres (mm)	Block Density (kg/m³)	Superimposed Load in kN/m² 1.5	2.0	2.5	3.0	4.0	5.0
105 x 150	510	1970	3.54	3.46	3.23	3.10	2.89	2.70
		1350	3.74	3.55	3.38	3.23	2.99	2.79
		650	4.01	3.78*	3.58*	3.41*		
125 x 150	530	1970	4.31	4.11	3.94	3.78	3.52	3.29
		1350	4.55	4.32	4.12	3.94	3.63	3.39
		650	4.86	4.58*	4.35*	4.13*		
165 x 150	570	1970	4.96	4.73	4.54	4.36	4.06	3.82
		1350	5.20	4.94	4.72	4.52	4.20	3.93
		650	5.52	5.22	4.96*	4.73*		
125 x 225	530	1970	6.44	6.15	5.88	5.65	5.25	4.93
		1350	6.75	6.41	6.11	5.85	5.42	5.07
		650	7.16	6.75*	6.41*	6.11*		

Maximum clear span in metres

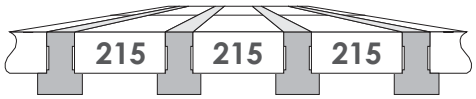
Alternate centres - Using flooring block Full & Narrow Width



Beam Section WxD(mm)	Centres (mm)	Block Density (kg/m³)	Superimposed Load in kN/m² 1.5	2.0	2.5	3.0	4.0	5.0
105 x 150	510/285	1970	3.99	3.81	3.64	3.50	3.26	3.06
		1350	4.20	3.99	3.81	3.64	3.37	3.16
		650	4.20	3.20*	4.02*	3.83*		
125 x 150	530/305	1970	4.92	4.61	4.42	4.25	3.96	3.70
		1350	5.00	4.82	4.60	4.41	4.08	3.80
		650	5.00	5.00*	4.84*	4.61*		
165 x 150	570/345	1970	5.49	5.25	5.03	4.84	4.52	4.25
		1350	5.73	5.46	5.22	5.01	4.65	4.36
		650	6.05	5.73*	5.45*	5.21		
125 x 225	530/305	1970	7.15	6.83	6.55	6.30	5.87	5.51
		1350	7.46	7.10	6.78	6.50	6.03	5.65
		650	7.80	7.44*	7.08*	6.76*		

Maximum clear span in metres

Narrow centres - Using flooring block Narrow Width



Beam Section WxD(mm)	Centres (mm)	Block Density (kg/m³)	Superimposed Load in kN/m² 1.5	2.0	2.5	3.0	4.0	5.0
105 x 150	285	1970	4.20	4.20	4.11	4.20	3.83	3.60
		1350	4.20	4.20	4.20	4.20*	3.95	3.70
		650	4.20*	4.20*	4.20*	4.93*		
125 x 150	305	1970	5.00	5.00	4.93*	5.00	4.60	4.32
		1350	5.00	5.00	5.00	5.00*	4.73	4.42
		650	5.00*	5.00*	5.00*	5.52		
165 x 150	345	1970	5.97	5.73	5.52	5.68	5.16	4.86
		1350	6.17	5.91	5.68	5.88*	5.29	4.97
		650	6.42*	6.13*	5.88*	7.22		
125 x 225	305	1970	7.80	7.50	7.22	7.43	6.75	6.36
		1350	7.80	7.73	7.43	7.68*	6.92	6.50
		650	7.80	7.80*	7.68*	6.76*		6.76*

Maximum clear span in metres

Notes. 65mm screed finish with insulation 1.41 kN/m² has been included.

These tables are given as a guide only and allowance should be made for partition loads or point loads supported by floor. The effect of camber and deflection on partitions must be considered when using maximum or near maximum spans.

It is recommended that a mesh screed for imposed loads in excess of 5.0 kNm² when the block is 440mm.

*For superimposed loads other than 1.5 kNm² using 650kg/m³ blocks refer to block manufacturer. Block Size: 440 x 215 x 100mm.

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End slips and T Blocks

L x W x H mm (Nominal)	Inner skin mm	Unit weight kg	Pack quantity	Pack weight kg	Crushing strength N/mm²
375 x 90 x 40 End Slip	100	2.84	200	570	10.0
375 x 140 x 40 End Slip	140	4.20	200	840	10.0
530 x 100 x 140 T-Block	100	16.00	40	640	7.3
280 x 100 x 140 T-Block	100	8.60	40	640	7.3

Garage floors

Beam Section (mm)	Centres (mm)	Maximum Clear Span (m)
105 x 150	510	2.77
	510/285	3.00
	285	3.30
125 x 150	530	3.64
	530/305	3.95
	305	4.36
165 x 150	570	4.36
	570/345	4.78
	345	5.26
125 x 225	530	5.68
	530/305	6.33
	305	7.19

Superimposed load: 2.5 kN/m²
75mm structural topping (minimum grade C30) with minimum A98 mesh 1.88 kN/m² has been included.
1970 kg/m³ dense blocks (440x215x100) included.

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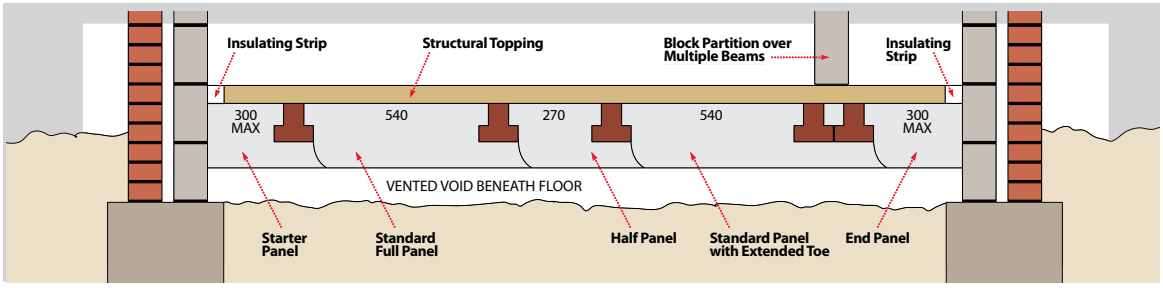
THERMAL FLOORING



Thermal Floor Load Span Table

	1.5 kN/m² imposed load		Incl Stud partitions 2.0 (kN/m²)	
Beam size WxH	Standard Panels	Half Panels	Standard Panels	Half Panels
105x150	3.70	4.40	3.60	4.40
125x150	4.50	5.20	4.40	5.20
165x150	5.10	6.40	5.00	6.10
125x225	6.80	8.00	6.50	8.00

Maximum clear spans in metres. Allows for 75mm structural topping

Example U values (W/m²K) - Single beams at full centres

		EPS panel thickness (other depths available)						
		T Beam (white)			T Beam Plus (grey)			
Beam depth	p/a ratio	290	350	450	260	290	350	420
150	0.4	0.14	0.11		0.14	0.12	0.10	
	0.6	0.15	0.12		0.15	0.13	0.10	
	0.7	0.15	0.12		0.15	0.13	0.10	
	0.9	0.15	0.12		0.15	0.13	0.10	
225	0.4		0.14	0.10		0.17	0.12	0.09
	0.6		0.15	0.10		0.18	0.13	0.10
	0.7		0.15	0.10		0.19	0.14	0.10

- Stylite T-Beam technology
- Suspended insulated ground floor for domestic use
- Stressline supplies pre-stressed concrete I beams, EPS panels, perimeter insulating strips and beam end T blocks
- BBA certificate 13/5021
- Insulating panels are available in a variety of profiles to minimise site cutting and additional clip-on pieces
- Comprehensive range of panel depths to achieve required U value
- Lightweight panels for quick and easy site handling

For further information on any of the Stressline product range and services, please contact sales@stressline.net

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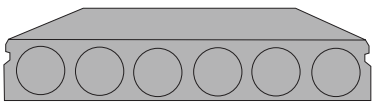
Prestressed hollowcore unit design information

Section	Weight	Self Weight		Serviceable Moment	Ultimate Moment	Ultimate Shear	Basic Fire Resistance
(WxD mm)	(kg/m)	(kN/m²)	(kg/m²)	(kNm)	(kNm)	(kN)	(Hours)
1200x150 (Standard)	362.4	2.96	302.0	44.51	67.73	150.43	1.5
1200x150 (High strength)	362.4	2.96	302.0	47.78	74.46	146.04	1.5
1200x200 (Standard)	360.0	2.94	300.0	62.63	81.57	105.00	2.0
1200x200 (High strength)	360.0	2.94	300.0	77.47	105.63	107.73	2.0

Prestressed hollowcore floor



Section (WxD mm)	Self Weight kN/m²	Self Weight kg/m²	Live Load						
			1.5	2.0	2.5	3.0	4.0	5.0	7.50
1200x150 (Standard)	2.96	302.0	6.35	6.14	5.94	5.76	5.45	5.18	4.65
1200x150 (High strength)	2.96	302.0	6.59	6.36	6.16	5.98	5.65	5.37	4.82
1200x200 (Standard)	2.94	300.0	7.19	6.92	6.68	6.46	6.08	5.76	5.13
1200x200 (High strength)	2.94	300.0	8.19	7.89	7.61	7.36	6.93	6.57	5.85

Maximum clear span in metres allowing for characteristic service live loads + self weight + 1.5 kN/m2 finishes + 1.0 kN/m² partition load allowance + 0.15 kN/m² ceiling load.

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ACCESSORIES

END SLIPS

375 x 90 x 40mm and 375 x 140 x 40mm end slips are specifically designed for use with Stressline floor beams.

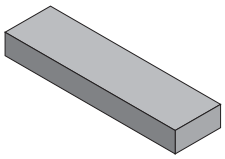
This slimline block provides a simple and cost effective solution by allowing standard flooring grade infill blocks to be used over the entire floor area instead of using more costly infill/edge block combination.

The end slips can be easily cut when used with narrow beam centres.

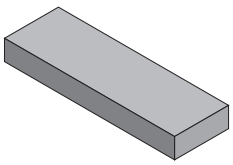
Stressline end slips can also be used as a T-block/ coursing block to adjust flooring levels as required.

CEILING CLIPS

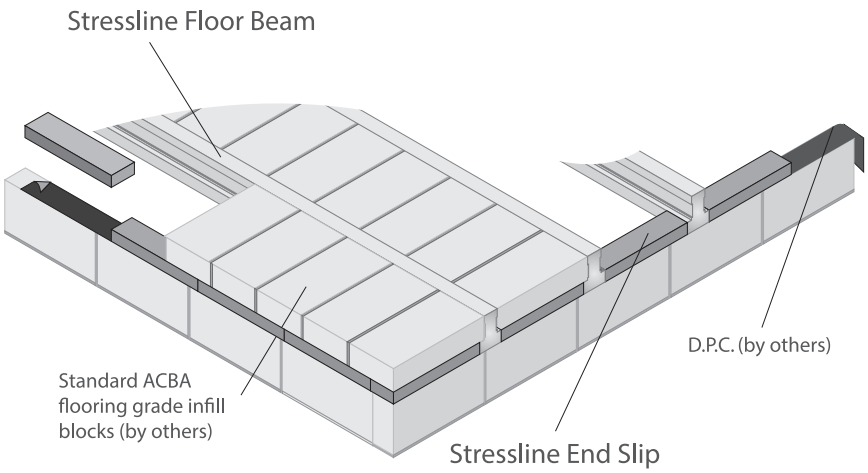
Our ceiling clips are standard galvanised metal ceiling clips, placed at 600mm centres, designed to support 50x38mm battens (by others) flush to the underside of the floor. Two depths are available – 150mm and 225mm.



375 x 90 x 40 mm



375 x 140 x 40 mm



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