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## CERTIFICATE OF APPROVAL

### No CF 421

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This is to certify that, in accordance with  
TS00 General Requirements for Certification of Fire Protection Products  
The undermentioned products of

## PROMAT UK LTD

The Sterling Centre, Eastern Road, Bracknell, Berkshire, RG12 2TD  
Tel: 01344 381 300 Fax: 01344 381 301

Have been assessed against the requirements of the Technical Schedule(s)  
denoted below and are approved for use subject to the conditions  
appended hereto:

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#### CERTIFIED PRODUCT

Vermiculux board

#### TECHNICAL SCHEDULE

TS14 Board/Spray Protection  
for Steelwork

Signed and sealed for and on behalf of CERTIFIRE

A handwritten signature in black ink, appearing to be "K. Knight".

Sir Ken Knight  
Chairman - Management Council

Issued: 13<sup>th</sup> April 2006  
Reissued: 12<sup>th</sup> July 2011  
Valid to: 11<sup>th</sup> July 2016

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Seal is in place Only valid when authentic CERTIFIRE



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### Vermiculux board

1. This approval relates to the use of Vermiculux board for the fire protection of I-shaped and hollow steel sections, structural tees, angles and channels. The precise scope is given in Tables 1 to 10 which show the thickness of Vermiculux board required to provide fire resistance periods in accordance with BS476: Part 21: 1987 of up to 240 minutes for differing sections and section factors (Hp/A) at various critical steel temperatures.
2. This certification is designed to demonstrate compliance of the product or system specifically with Approved Document B (England and Wales), Section 2 of the Technical Standards (Scotland), Technical Booklet E (N. Ireland). If compliance is required to other regulatory or guidance documents there may be additional considerations or conflict to be taken into account.'
3. The product is approved on the basis of:
  - i) Initial type testing
  - ii) Audit testing at the frequency specified in TS14
  - iii) A design appraisal against TS14
  - iv) Inspection and surveillance of factory production control
  - v) Certification of quality management system to ISO 9001: 2008.
4. The data at a critical steel temperature of 550°C relate to beams and columns with fire exposure on one, two, three or four sides. The data at a critical steel temperature of 620°C relate to beams, supporting concrete floor slabs, with fire exposure on three sides. The data is applicable to Vermiculux board applied as a box protection to horizontal, vertical, flexural and compression members supporting loads up to the maximum design loads specified in BS449: Part 2. Separate consideration is required where this is not the case.
5. The data at critical steel temperatures of 300°C, 350°C, 400°C, 450°C, 500°C, 550°C, 600°C, 620°C, 650°C and 700°C relate to beams and columns with fire exposure on one, two, three or four sides. The data is applicable to Vermiculux board applied as a box protection to horizontal, vertical, flexural and compression members. The critical steel temperature is determined from BS5950: Part 8 depending on the load ratio applied to the member. Separate consideration is required where this is not the case.
6. The approval relates to on going production. Product and/or its immediate packaging is identified with the manufacturers' name, the product name or number, the CERTIFIRE name or name and mark, together with the CERTIFIRE certificate number and application where appropriate.

#### **Further Information**

Further information regarding the details contained in this data sheet may be obtained from Promat UK Ltd (Tel: 01344 381 300).

Further information regarding CERTIFIRE certification and other approved products can be obtained from CERTIFIRE (Tel:01925 646777, website: [www.warringtonfire.net](http://www.warringtonfire.net)).



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**Vermiculux board**

**Application technique**

3-sided casing to columns and beams abutting wall or structural soffit

*Framing:* 19mm x 32mm x 0.65mm to 38mm x 50mm x 1.2mm steel angle fixed to the flange of the steel section or to the adjacent wall or soffit. Minimum angle size 32mm x 32mm if shot firing.

*Fixings:*

Angle to flange: shot fired 3.7mm x 16mm steel nails (Hilti ENK 16 S12 or equivalent) or self-tapping 10mm x M4 panhead screws at 300mm centres.

Angle to wall or soffit: shot fired 3.7mm x 32mm steel nails (Hilti ENK 32 S12 or equivalent) or self-tapping 32mm x M4 panhead screws into non-combustible plugs or Spit Hammer-In CL 35 or equivalent all steel expansion anchors 6mm x 35mm at 300mm centres.

Board to angle: M4 countersunk self-tapping hardened steel or dry wall screws at nominal 285mm centres, i.e. five screws for 1220mm board length. Screw length should allow minimum of 10mm penetration through the angle.

Board to board: For columns, M4 countersunk deep thread screws (e.g. Spax single thread woodscrews) at nominal 190mm centres, i.e. seven screws for 1220mm board length. For beams, M4 countersunk deep thread screws (e.g. Spax single thread woodscrews) at nominal 180mm centres, i.e. eight screws for 1220mm board length as flange (soffit) board joint is staggered from web board joint. End screw fixing 20mm from the rebate edge. M5 deep thread screws (e.g. Spax single thread woodscrews) used for screw lengths greater than 75mm. A minimum penetration of 30mm is required when edge screwing Vermiculux.

*Board joints:*

Transverse column joints are coincident between adjacent sides. Transverse beam joints are staggered by a nominal 240mm between web and flange face boards.

*Joint backing:*

None required.

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**Vermiculux board**

4-sided casing to beams

*Framing:* 19mm x 32mm x 0.65mm to 38mm x 50mm x 1.2mm steel angle fixed to the flange of the steel section. Minimum angle size 32mm x 32mm if shot firing.

*Fixings:*

Angle to flange: shot fired 3.7mm x 16mm steel nails (Hilti ENK 16 S12 or equivalent) or self-tapping 10mm x M4 panhead screws at 300mm centres.

Board to angle: M4 countersunk self-tapping hardened steel or dry wall screws at nominal 285mm centres, i.e. five screws for 1220mm board length. Screw length should allow minimum of 10mm penetration through the angle.

Board to board: M4 countersunk deep thread screws (e.g. Spax single thread woodscrews) at nominal 180mm centres, i.e. eight screws for 1220mm board length as flange board joint is staggered from web board joint. End screw fixing 20mm from the rebate edge. M5 deep thread screws (e.g. Spax single thread woodscrews) used for screw lengths greater than 75mm. A minimum penetration of 30mm is required when edge screwing Vermiculux.

*Board joints:*

Transverse beam joints are staggered by a nominal 240mm between web and flange face boards.

*Joint backing:*

None required.

4-sided casing to columns

*Framing:* None. Board screwed to board edge.

*Fixings:*

Board to board: M4 countersunk deep thread screws (e.g. Spax single thread woodscrews) at nominal 190mm centres, i.e. seven screws for 1220mm board length. End screw fixing 20mm from the rebate edge. M5 deep thread screws (e.g. Spax single thread woodscrews) used for screw lengths greater than 75mm. A minimum penetration of 30mm is required when edge screwing Vermiculux.

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### Vermiculux board

*Board joints:*

Transverse joints can be coincident between adjacent sides.

*Joint backing:*

None required.

1 and 2-sided casings to beams and columns

The constructions of 1 and 2-sided casings for beams and columns are shown in Figures 1 and 2. The same fixing options, as described for the 3 and 4-sided casings, are used for the 1 and 2-sided casings. The boards are a close fit to the wall or floor.

3 and 4-sided casing to deep web beams from 686mm up to 1200mm deep

The construction of the casings for deep web beams from 686mm up to 1200mm deep is shown in Figure 3. The construction is the same as for shallower beams but with the addition of Vermiculux internal cover strips, 100mm wide x minimum 20mm thick, wedged between the flange tips at the position of vertical board joints in the Vermiculux web panels. The web panels are fastened to the cover strips, on one side of the joint only, with M4 countersunk deep thread screws (e.g. Spax single thread woodscrews) at 300mm maximum centres. The length of the screws must be sufficient to engage the full thickness of the cover strip.

3 and 4-sided casing to deep web beams from 1200mm up to 2000mm deep

The construction of the casings for deep web beams from 1200mm up to 2000mm deep is shown in Figure 4.

*Framing:* 32mm x 50mm x 32mm x 0.5mm horizontal steel channel fixed to the underside of the top flanges and the upper side of the bottom flanges of the steel beam. Vertical steel studs, 34mm x 48mm x 32mm x 0.5mm, are fitted into the horizontal channels at 610mm centres.

*Fixings:*

Channel to flange: shot fired 3.7mm x 16mm steel nails (Hilti ENK 16 S12 or equivalent) or self-tapping 9.5mm x M4 panhead screws at 300mm centres.

Board to channels: M4 countersunk self-tapping hardened steel or dry wall screws at nominal 270mm centres. Screw length should allow minimum of 10mm penetration through the channel.

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**Vermiculux board**

Board to board: For beams, M4 countersunk deep thread screws (e.g. Spax single thread woodscrews) at nominal 180mm centres, i.e. eight screws for 1220mm board length. End screw fixing 20mm from the rebate edge. M5 deep thread screws (e.g. Spax single thread woodscrews) used for screw lengths greater than 75mm. A minimum penetration of 30mm is required when edge screwing Vermiculux.

*Cover strips:*

Vermiculux internal cover strips, 200mm wide x minimum 20mm thick, at the position of vertical board joints in the Vermiculux web panels and joints in the soffit panels. The web panels are fastened to the cover strips, on one side of the joint only, with M4 countersunk deep thread screws (e.g. Spax single thread woodscrews) at 270mm maximum centres. The length of the screws must be sufficient to engage the full thickness of the cover strip.

*Board joints:*

Transverse beam joints are coincident between adjacent sides. If horizontal board joints are required in the Vermiculux web panels then internal cover strips of either Vermiculux board, 100mm wide x minimum 20mm thick, or steel strip, 75mm wide x 0.7mm thick, are fitted fixed with screws on both sides of the joint.

For beams with lower flange widths over 325mm up to 600mm additional support is provided for the Vermiculux soffit boards using steel Z-sections at 610mm centres. The depth of the Z-section is the same as the thickness of the Vermiculux soffit cover strip. The fixings for the Z-section to steel flange and for the soffit board to the Z-section are the same as for the channel.

*4-sided casing:*

The 4-sided casing is the same as for the 3-sided casing except that the web panels extend above the steel beams for the thickness of the board and Vermiculux boards are fitted between the web panels to protect the top of the beam. The screw fixings are the same as for other board to board joints. No joint cover strips are required.

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Vermiculux board

**Table 1**

<b>Beams and columns – critical steel temperature 550°C</b>							
<b>Section factor Hp/A – m<sup>-1</sup></b>	<b>Fire resistance period - minutes</b>						<b>Board thickness</b>
	<b>30</b>	<b>60</b>	<b>90</b>	<b>120</b>	<b>180</b>	<b>240</b>	
	260	260	202	114	61		20mm
			260	159	81	54	25mm
				215	103	67	30mm
				260	128	82	35mm
					156	98	40mm
					189	115	45mm
					227	134	50mm
					260	155	55mm
						178	60mm

**Table 2**

<b>Beams and columns – critical steel temperature 620°C</b>							
<b>Section factor Hp/A – m<sup>-1</sup></b>	<b>Fire resistance period - minutes</b>						<b>Board thickness</b>
	<b>30</b>	<b>60</b>	<b>90</b>	<b>120</b>	<b>180</b>	<b>240</b>	
	260	260	260	162	79		20mm
				234	105	68	25mm
				260	136	85	30mm
					171	104	35mm
					213	126	40mm
					260	149	45mm
						175	50mm
						205	55mm
						238	60mm

**Table 3**

<b>Beams and columns – critical steel temperature 300°C</b>							
<b>Section factor Hp/A – m<sup>-1</sup></b>	<b>Fire resistance period - minutes</b>						<b>Board thickness</b>
	<b>30</b>	<b>60</b>	<b>90</b>	<b>120</b>	<b>180</b>	<b>240</b>	
	260	119	61	41	24		20mm
		183	84	54	32	22	25mm
		260	112	70	40	28	30mm
			148	88	48	33	35mm
			194	109	58	39	40mm
			255	134	68	46	45mm
			260	163	79	52	50mm
				199	92	60	55mm
				244	106	67	60mm



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**Table 4**


<b>Beams and columns – critical steel temperature 350°C</b>							
<b>Section factor Hp/A – m<sup>-1</sup></b>	<b>Fire resistance period - minutes</b>						<b>Board thickness</b>
	<b>30</b>	<b>60</b>	<b>90</b>	<b>120</b>	<b>180</b>	<b>240</b>	
260	160	77	51	30			<b>20mm</b>
	252	107	68	39	27		<b>25mm</b>
	260	145	88	49	34		<b>30mm</b>
		193	111	60	41		<b>35mm</b>
		258	138	72	48		<b>40mm</b>
		260	171	85	56		<b>45mm</b>
			211	99	64		<b>50mm</b>
			260	115	73		<b>55mm</b>
				132	83		<b>60mm</b>

**Table 5**

<b>Beams and columns – critical steel temperature 400°C</b>							
<b>Section factor Hp/A – m<sup>-1</sup></b>	<b>Fire resistance period – minutes</b>						<b>Board thickness</b>
	<b>30</b>	<b>60</b>	<b>90</b>	<b>120</b>	<b>180</b>	<b>240</b>	
260	216	97	62	36			<b>20mm</b>
	260	136	84	47	33		<b>25mm</b>
		187	109	59	41		<b>30mm</b>
		254	139	73	49		<b>35mm</b>
		260	175	87	58		<b>40mm</b>
			218	103	68		<b>45mm</b>
			260	121	78		<b>50mm</b>
				141	89		<b>55mm</b>
				164	101		<b>60mm</b>

**Table 6**

<b>Beams and columns – critical steel temperature 450°C</b>							
<b>Section factor Hp/A – m<sup>-1</sup></b>	<b>Fire resistance period – minutes</b>						<b>Board thickness</b>
	<b>30</b>	<b>60</b>	<b>90</b>	<b>120</b>	<b>180</b>	<b>240</b>	
260	260	121	76	43			<b>20mm</b>
		173	103	57	39		<b>25mm</b>
		243	135	71	48		<b>30mm</b>
		260	174	88	59		<b>35mm</b>
			222	106	69		<b>40mm</b>
			260	126	81		<b>45mm</b>
				149	94		<b>50mm</b>
				175	107		<b>55mm</b>
				204	122		<b>60mm</b>







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**Table 7**

<b>Beams and columns – critical steel temperature 500°C</b>							
<b>Section factor Hp/A – m<sup>-1</sup></b>	<b>Fire resistance period – minutes</b>						<b>Board thickness</b>
	<b>30</b>	<b>60</b>	<b>90</b>	<b>120</b>	<b>180</b>	<b>240</b>	
	260	260	154	92	51		<b>20mm</b>
			225	127	68	46	<b>25mm</b>
			260	169	86	57	<b>30mm</b>
				220	106	69	<b>35mm</b>
				260	128	82	<b>40mm</b>
					154	97	<b>45mm</b>
					183	112	<b>50mm</b>
					216	129	<b>55mm</b>
					255	147	<b>60mm</b>

**Table 8**

<b>Beams and columns – critical steel temperature 600°C</b>							
<b>Section factor Hp/A – m<sup>-1</sup></b>	<b>Fire resistance period – minutes</b>						<b>Board thickness</b>
	<b>30</b>	<b>60</b>	<b>90</b>	<b>120</b>	<b>180</b>	<b>240</b>	
	260	260	260	145	73		<b>20mm</b>
				207	97	63	<b>25mm</b>
				260	125	80	<b>30mm</b>
					157	97	<b>35mm</b>
					194	117	<b>40mm</b>
					237	138	<b>45mm</b>
					260	162	<b>50mm</b>
						188	<b>55mm</b>
						218	<b>60mm</b>



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**Table 9**

Beams and columns – critical steel temperature 650°C							
Section factor Hp/A – m <sup>-1</sup>	Fire resistance period – minutes						Board thickness
	30	60	90	120	180	240	
	260	260	260	205	89		20mm
				260	120	75	25mm
					158	94	30mm
					202	117	35mm
					257	141	40mm
					260	169	45mm
						201	50mm
						238	55mm
						260	60mm

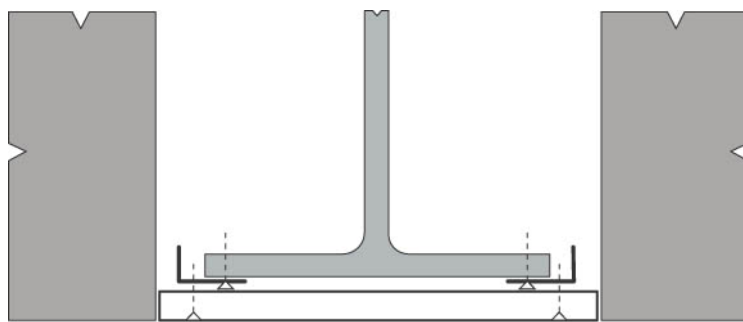
**Table 10**

Beams and columns – critical steel temperature 700°C							
Section factor Hp/A – m <sup>-1</sup>	Fire resistance period – minutes						Board thickness
	30	60	90	120	180	240	
	260	260	260	260	112		20mm
					156	89	25mm
					211	114	30mm
					260	142	35mm
						175	40mm
						214	45mm
						259	50mm
						260	55mm
							60mm

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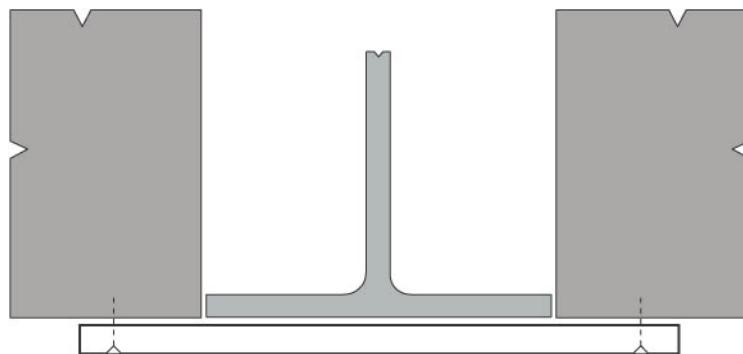
**Vermiculux board**

**Figure 1 1-sided casings to beams and columns**



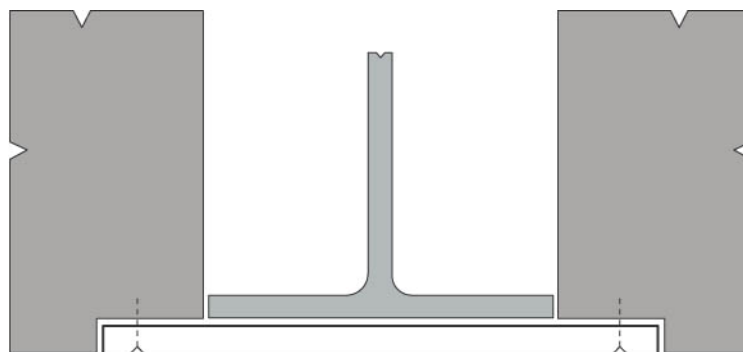
*1.1 - for columns*

Light gauge steel angles fixed to steelwork with M4 screws or shot-fired fixings at 300mm centres. Boards fixed to angle sections with M4 self-tapping screws at 300mm centres; screw length to provide 10mm penetration through angle. Promaseal intumescent acrylic mastic is fitted between the edges of the board and the wall.



*1.2 - for columns*

Boards fixed to blockwork with M4 screws at 300mm centres into metal plugs; screw length to provide minimum 30mm penetration into plug. Fixings to be minimum 50mm from edge of blockwork.



*1.3 - for columns*

Boards fixed to blockwork with M4 screws at 300mm centres into metal plugs; screw length to provide minimum 30mm penetration into plug. Fixings to be minimum 50mm from edge of blockwork.

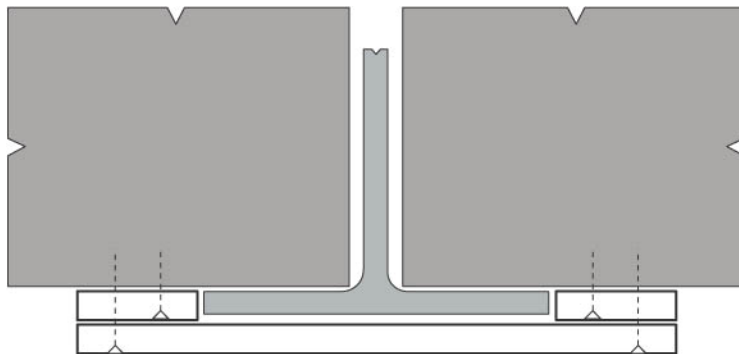
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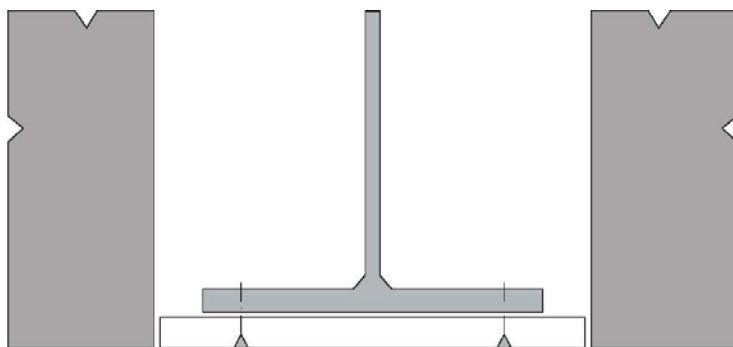
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**Vermiculux board**

**Figure 1 cont'd 1-sided casings to beams and columns**



*1.4 - for columns or beams*  
Boards fixed to blockwork with M4 screws at 300mm centres into metal plugs; screw length to provide minimum 30mm penetration into plug. Fixings to be minimum 50mm from edge of blockwork.

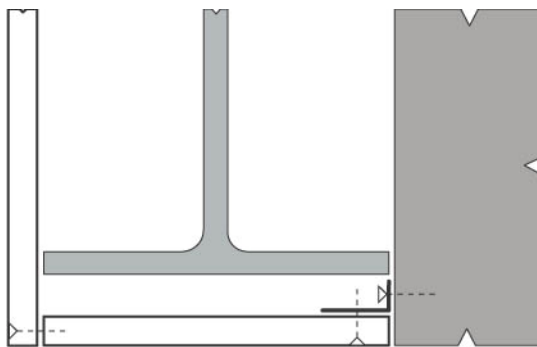


*1.5 - for columns*  
Boards fixed to column flange with either M4 steel self-tapping screws or 3.6mm or 3.7mm shot-fired nails. All fixings at 285mm nominal centres and must be of such a length that they penetrate at least 10mm beyond the interface of the board and steel flange. The screws and nails may be fitted with or without steel washers. Two vertical rows of fixings are used, each row between 25mm and 85mm from the adjacent vertical edge of the board. Promaseal intumescent acrylic mastic is fitted between the edges of the board and the wall.

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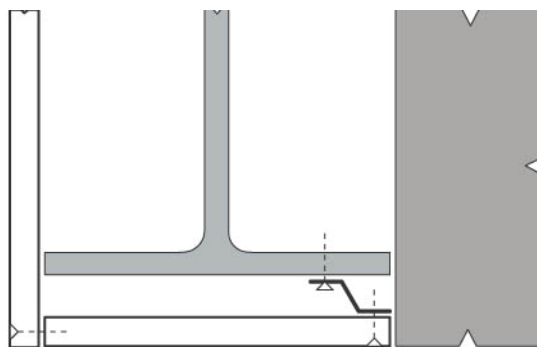
**Vermiculux board**

**Figure 2 2-sided casings to beams and columns**



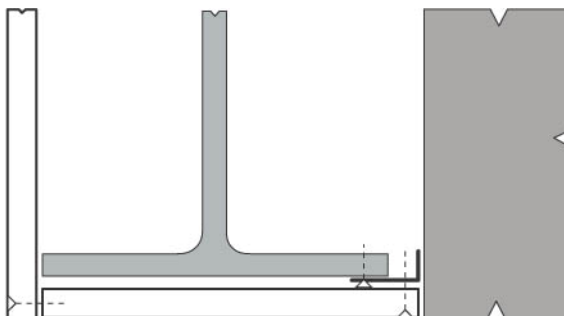
**2.1 - for columns**

Light gauge steel angles fixed to blockwork with M4 screws at 300mm centres into metal plugs; screw length to provide minimum 30mm penetration into plug. Board fixed to angle section with M4 self-tapping screws at 300mm centres; screw length to provide 10mm penetration through angle.



**2.2 - for columns or beams**

Light gauge steel Z-sections fixed to steelwork with M4 screws or shot-fired fixings at 300mm centres. Board fixed to Z-section with M4 self-tapping screws at 300mm centres; screw length to provide 10mm penetration through Z-section. Promaseal intumescent acrylic mastic is fitted between the edges of the board and the wall or floor.



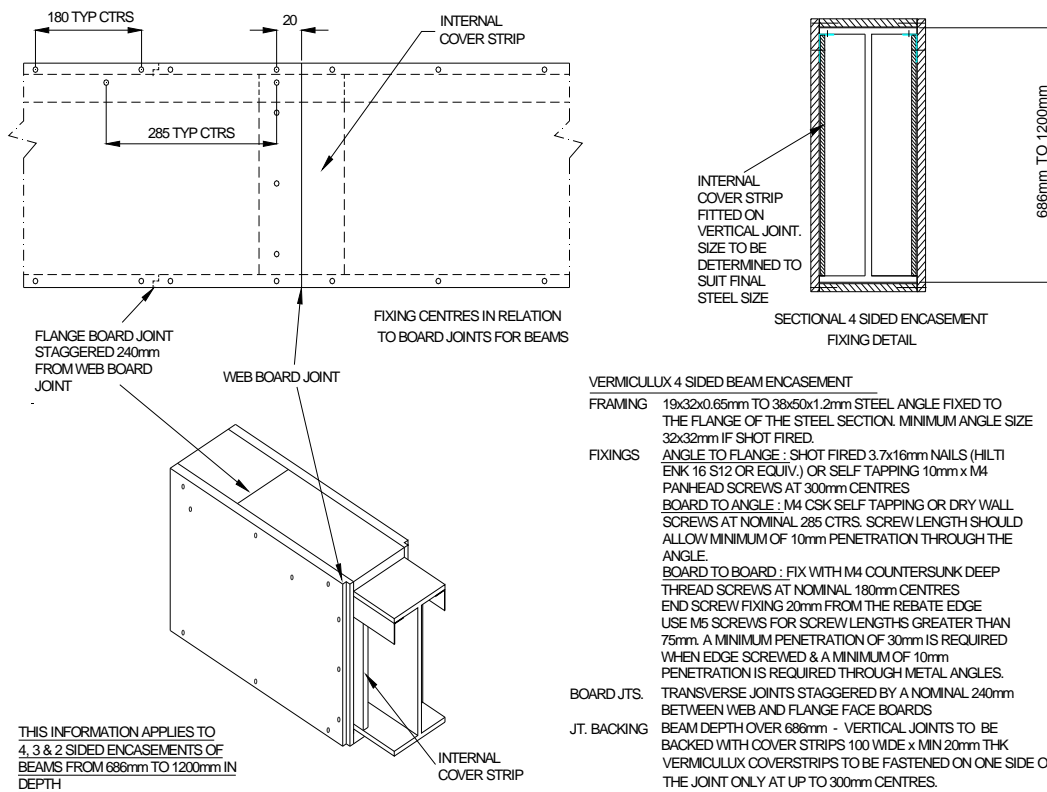
**2.3 - for columns or beams**

Light gauge steel angles fixed to steelwork with M4 screws or shot-fired fixings at 300mm centres. Board fixed to angle section with M4 self-tapping screws at 300mm centres; screw length to provide 10mm penetration through angle. Promaseal intumescent acrylic mastic is fitted between the edges of the board and the wall or floor.

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**Vermiculux board**

**Figure 3 4-sided casing to deep web beams from 686mm up to 1200mm deep**



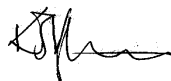
**VERMICULUX 4 SIDED BEAM ENCASEMENT**

**FRAMING** 19x32x0.65mm TO 38x50x1.2mm STEEL ANGLE FIXED TO THE FLANGE OF THE STEEL SECTION. MINIMUM ANGLE SIZE 32x32mm IF SHOT FIRED.

**FIXINGS** ANGLE TO FLANGE : SHOT FIRED 3.7x16mm NAILS (HILTI ENK 16 S12 OR EQUIV.) OR SELF TAPPING 10mm x M4 PAN-HEAD SCREWS AT 300mm CENTRES  
BOARD TO ANGLE : M4 CSK SELF TAPPING OR DRY WALL SCREWS AT NOMINAL 285 CTRS. SCREW LENGTH SHOULD ALLOW MINIMUM OF 10mm PENETRATION THROUGH THE ANGLE.  
BOARD TO BOARD : FIX WITH M4 COUNTERSUNK DEEP THREAD SCREWS AT NOMINAL 180mm CENTRES  
END SCREW FIXING 20mm FROM THE REBATE EDGE  
USE M6 SCREWS FOR SCREW LENGTHS GREATER THAN 75mm. A MINIMUM PENETRATION OF 30mm IS REQUIRED WHEN EDGE SCREWED & A MINIMUM OF 10mm PENETRATION IS REQUIRED THROUGH METAL ANGLES.

**BOARD JTS.** TRANSVERSE JOINTS STAGGERED BY A NOMINAL 240mm BETWEEN WEB AND FLANGE FACE BOARDS

**JT. BACKING** BEAM DEPTH OVER 686mm - VERTICAL JOINTS TO BE BACKED WITH COVER STRIPS 100 WIDE x MIN 20mm THK VERMICULUX COVERSTRIPS TO BE FASTENED ON ONE SIDE OF THE JOINT ONLY AT UP TO 300mm CENTRES.



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**Figure 4 3-sided casing to deep web beams from 1200mm up to 2000mm deep**

