

J42 NBS Proposed Specification  
New School, London

Project Ref: DB0123456  
Issued: 17/09/2013  
Pages: 1 of 10

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## Proposed Specification

Single Ply System:	Armourplan P Mechanically System
Guarantee Period:	20 Years
Prepared For:	Ace Archtectural Services
Client Address:	London
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## Introduction: SIG Design & Technology

SIG Design & Technology, a specification driven division of SIG plc, designs, supplies and guarantees exclusive 21st century roofing solutions from a purpose-manufactured comprehensive and complementary product portfolio.



The company philosophy is simple: to enable the roof to work harder in a two step approach. SIG D&T's knowledgeable team can show you how the fifth elevation can firstly: waterproof and insulate the building, and then work harder by capturing carbon; generating power; providing a green space and living zone; managing & harvesting rainwater; and provide a natural & bio-diverse wildlife habitat.



Every component supplied in the design is carefully tested and selected for its sustainability, functionality, longevity and/or aesthetic strengths to guarantee total roofing solutions from inspiration to installation.



The SIG D&T guarantee provides reassurance from a single source. For each project SIG D&T provides a bespoke design, and can supply all the components of the roof build-up including the deck, insulation, membranes and green roof systems (to include modular, living walls, photovoltaic's and drainage accessories).

In 2009, SIG D&T launched a national accreditation scheme for roofing contractors called DATAC (the Design & Technology Accredited Contractors Scheme) which sets out benchmark roofing installation standards. Member installer companies offer expert roofing knowledge and are committed to high standards of training and corporate management. Design & Technology are corporate members of SPRA and NFRC.



# J42 Single layer polymeric sheet roof coverings

## J42 Single layer polymeric sheet roof coverings

To be read with Preliminaries/ General conditions.

### TYPES OF ROOF COVERING

#### 110A WARM DECK ROOF COVERING

##### Armourplan P mechanically fixed system

Manufacturer: IKO Ltd

Distributor: SIG Design & Technology. Mannheim House, Gelders Hall Road  
Shepshed, Leicestershire. LE12 9NH

- Web: [www.singleply.co.uk](http://www.singleply.co.uk).
- Email: [alexmatson@sigdandt.co.uk](mailto:alexmatson@sigdandt.co.uk).
- Tel: 01509 505 714
- Fax: 01509 505 475

Contact: Alex Matson – Mobile 07968 765469

- **Roof covering system:** Armourplan P single ply waterproofing.
- **Substrate:** Timber OR Concrete OR Metal deck.
  - Preparation: Ensure deck is smooth, clean, and free from dust, grease and frost.
  - **Lower protection layer (loose laid):** Not required.
  - **Vapour control layer:** IKO Spectravap PE Vapour Control Layer.
  - **Insulation:** Tapered Recticel foil faced insulation: Eurothane Silver to achieve 0.18 W/m<sup>2</sup>K
  - **Separating layer (loose laid):** Not required.
  - **Waterproof membrane:** Armourplan P (PVC) single ply waterproofing system.
    - Width: 2.12 m.
    - Thickness: 1.2 mm.
    - Colour: Dark Grey.
- **Surface protection:** Walk-way.
- **Accessories:** TBC
- **Guarantee:** The system to be installed by an approved SIG Design & Technology Installer. The system will carry 20 year guarantee when installed in accordance with BS 6299:2003.

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#### PERFORMANCE

##### 210 ROOF PERFORMANCE

- Roof covering: Secure, free draining and weathertight.

##### 220 AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS

- Determine: Interstitial condensation risk of roof construction as recommended in BS 6229.
- Basic design data:
  - Outdoor notional psychrometric conditions, winter:  
Temperature: -5°C.  
Relative humidity: 90%.  
Vapour pressure: 0.36 kPa.  
Duration: 60 days.
  - Outdoor notional psychrometric conditions, summer:  
Temperature: 18°C.  
Relative humidity: 65%.  
Vapour pressure: 1.34 kPa.  
Duration: 60 days.
  - Indoor notional psychrometric conditions:  
Temperature: 20 °C.  
Relative humidity: 50 %.  
Vapour pressure: 1.17 kPa.
- Winter interstitial condensate (warm roof):
  - Calculated amount (maximum): 0.35 kg/m<sup>2</sup>.
  - Calculated annual net retention: Nil.
- Vapour control layer: If necessary, provide a suitable membrane or sealed deck so that damage and nuisance from interstitial condensation do not occur.

##### 225 AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS

- Determine: Interstitial condensation risk of roof construction as recommended in BS 5250, annex D.
- Vapour control layer: If necessary, provide a suitable membrane so that damage and nuisance from interstitial condensation do not occur.

##### 230 INSULATION

- Requirement: Determine type and thickness of insulation and integral or separate overlay to satisfy the following criteria:
  - Thermal transmittance of the roof (maximum): 0.18 W/m<sup>2</sup>K.
  - Compressive strength of insulation (minimum) at 10% compression: 150 kPa.
  - Finished surface: Suitably even, stable and robust to receive roof covering.
  - Insulation compliance: To a relevant British Standard, or Agrément certified.

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#### 240A ATTACHMENT OF ROOF COVERING IN ACCORDANCE WITH BS 6399-2

- Requirement: Determine methods of attachment to resist wind loads. Provide for relative movement of materials and effects of vapour pressure. Do not reduce performance of vapour control layer. Wind load data to be confirmed and agreed by SIG Design and Technology, Architect and Project Engineer.
- Wind loads: Calculate to BS 6399-2, Standard Method.
  - Basic wind speed (Vb): TBC.
  - Altitude factor (Sa): TBC.
  - Direction factor (Sd): TBC.
  - Seasonal factor (Ss): 1.
  - Probability factor (Sp): 1.
  - Terrain and building factor (Sb): TBC.
  - Size effect factor (Ca): 1.
  - External pressure coefficients (Cpe): TBC.
  - Internal pressure coefficients (Cpi): TBC.

#### PRODUCTS

##### 325C ADHESIVE For adhering Armourplan in vertical applications

- Type: Synthetic bonding adhesive.
- Manufacturer: IKO.
- Distributor: SIG Design & Technology. Mannheim House, Gelders Hall Road, Shepshed, Leicestershire, LE12 9NH.
  - Product reference: PVC Contact Adhesive.

##### 330 TIMBER TRIMS, ETC

- Quality: Planed. Free from wane, pitch pockets, decay and insect attack except ambrosia beetle damage.
- Moisture content at time of covering (maximum): 22%.
- Preservative treatment: Not required.

##### 345 PERIMETER TRIMS

- Type: 0.6 mm galvanized steel with 0.5 mm unreinforced membrane laminate.
- Manufacturer: IKO.
- Distributor: SIG Design & Technology. Mannheim House, Gelders Hall Road, Shepshed, Leicestershire. LE12 9NH.
  - Product reference: Armourplan laminated metal.
- Colour: Grey.
- Size: 100mm x 85mm x 15mm. Length 2m.

##### 345A POWDER COATED ALUMINIUM PERIMETER TRIMS

- Type: Aluminium fascia plate reinforced by metal mounting rail.
- Manufacturer: FDT GmbH.
- Distributor: SIG Design & Technology. Mannheim House, Gelders Hall Road, Shepshed, Leicestershire, LE12 9NH.
  - Product reference: Aluminium Roof Edge Trim.
- Colour: Powder coated grey.
- Size: Length 4m. 110mm OR 175mm fascia.

##### 355 MECHANICAL FASTENERS, WASHERS, PRESSURE PLATES, ETC

- Type: Class 2 point fastener.
- Manufacturer: IKO,
- Distributor: SIG Design & Technology. Mannheim House, Gelders Hall Road, Shepshed, Leicestershire, LE12 9NH.
  - Product reference: IKOfix Fasteners.

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#### 380 PROTECTION LAYER

- Type: Polyethylene Foil.
- Manufacturer: IKO, UK Agents and distributors SIG Design and Technology.
  - Product reference: Spectravap.
- Grade: 0.25mm.

#### 383 SEPARATING LAYER

- Type: Polyester fleece.
- Manufacturer: IKO, UK Agents and distributors SIG Design and Technology.
  - Product reference: Spectratex.
- Grade: 300 g/m<sup>2</sup>.

#### 395D VAPOUR CONTROL LAYER

- Type: Polyethylene sheet .
- Manufacturer: IKO.  
Distributor: SIG Design & Technology. Mannheim House, Gelders Hall Road, Shepshed, Leicestershire, LE12 9NH.
  - Product reference: Spectravap.
- Thickness: 0.25mm.
- Vapour resistance: 428 MN s/g.

#### 400 WATERPROOF MEMBRANE

- Type: Polyvinyl chloride (PVC).
- Manufacturer: IKO.  
Distributor: SIG Design & Technology. Mannheim House, Gelders Hall Road, Shepshed, Leicestershire, LE12 9NH.
  - Product reference: Armourplan P.
- Width: 2.12 m.
- Thickness: 1.2 mm.
- Colour: Grey.
- Guarantee: 20 years.

#### 430 WARM DECK ROOF INSULATION

- Type: Rigid PIR board.
- Manufacturer: Recticel.
  - Product reference: Eurothane Silver.
- Grade: As insulation manufacturer's recommendations for the traffic loading.
- Edges: Square.
- Thickness: To achieve U-Value of 0.18 W/m<sup>2</sup>K.
- Facing: Foil.

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#### 485A MEMBRANE WALKWAY

- Manufacturer/ Supplier: IKO.
- Distributor: SIG Design & Technology. Mannheim House, Gelders Hall Road, Shepshed, Leicestershire, LE12 9NH.
  - Product reference: Armourplan Walkway.
- Width: 20m x 1.06m.
- Thickness: 10mm.
- Colour: Black.
- Finish: Anti slip embossed.
- Reinforcement: Welded 50mm to perimeter. For heavy foot traffic please consult SIG Design & technology.

#### EXECUTION GENERALLY

##### 510 ADVERSE WEATHER

- General: Do not lay membrane at temperatures below 5°C or in wet or damp conditions unless effective temporary cover is provided over working area.
- Unfinished areas of roof: Keep dry and protect edges of laid membrane from wind action.

##### 520 INCOMPLETE WORK

- End of working day: Provide temporary seal to prevent water infiltration.
- On resumption of work: Cut away tail of membrane from completed area and remove from roof.

#### SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM DECK ROOF INSULATION

##### 610 SUITABILITY OF SUBSTRATES

- Surfaces to be covered: Secure, clean, dry, smooth, free from frost, contaminants, voids and protrusions.
- Preliminary work: Complete, including
  - Grading to correct falls.
  - Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
  - Fixing of battens, fillets and anchoring plugs/ strips.
- Moisture content and stability of substrate: Must not impair integrity of roof.

##### 640 FIXING TIMBER TRIMS

- Fasteners: Sherardized steel screws.
- Fixing centres (maximum): 200 mm.

##### 670A LAYING VAPOUR CONTROL LAYER

- Laying: Loose laid, flat and smooth in preparation for mechanical fixing.
- Side and head laps: 50 mm fully sealed.
- Upstands, kerbs and other penetrations: Enclose edges of insulation. Fully seal at abutment by bonding or taping.

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#### 680 LAYING WARM DECK ROOF INSULATION

- Setting out:
  - Long edges: Fully supported and running at right angles to direction of span.
  - End edges: Adequately supported.
  - Joints: Butted together.
  - End joints: Staggered.
- Attachment: Not required.
- Mechanical fixing: Screws and washers per board to agreed pattern, as per manufacturer's instructions.
- Completion: Boards must be in good condition, well fitting and secure.

#### **WATERPROOF MEMBRANES/ ACCESSORIES**

#### 710 MECHANICAL FIXING OF WATERPROOF MEMBRANE

- Setting out: Perpendicular to the deck direction.
- Laying: Loose, do not wrinkle or stretch.
- Installing fasteners:
  - Use manufacturers/ supplier's recommended methods and equipment.
  - Insertion: Correct and consistent.
- Washers/ Pressure plates/ Bars:
  - Distance from fixed edge (minimum): 10 mm.
  - Fixing: Flush with membrane.
- Sheet overlaps: Extend beyond washers/ pressure plates by minimum 50 mm.
- Surface condition at completion: Fully sealed, smooth, weatherproof and free draining.

#### 730 WELDED JOINTING OF WATERPROOF MEMBRANE

- Side and end joints:
  - Laps (minimum): 50 mm.
  - Preparation: Clean and dry surfaces beyond full width of joint.
  - Sealing: Weld together.
- Condition at completion: Fully sealed, smooth, weatherproof and free draining.

#### 760 PERIMETER OF MEMBRANE

- General: Secure membrane at roof edge conditions, changes of plane, curb flashings, upstands to roof lights, etc. with mechanical fasteners.

#### 765 PERIMETER DETAILS FOR THERMOPLASTIC MEMBRANES

- Upstands, edge trims, drips, kerbs, etc: Secure preformed metal sections to roof structure with mechanical fasteners.
- Roof membrane: Dress over perimeter profile. Overlap beyond fasteners by minimum 50 mm.  
Sealing: Weld together.

#### 770 PERIMETER DETAILS FOR THERMOPLASTIC MEMBRANES

- Upstands, edge trims, drips, kerbs, etc: Form flashings from waterproof membrane material.
- Roof membrane: Terminate in horizontal plane immediately adjacent to change in direction and secure with mechanical fasteners.
- Flashings: Dress over perimeter profile. Overlap horizontal roof membrane beyond perimeter fixing by minimum 50mm.
- Sealing: Bond with adhesive and weld at overlap.



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#### 780 ROOF PENETRATIONS THROUGH THERMOPLASTIC MEMBRANES

- Roof membrane: Cut around penetrations and secure to deck.
- Flanged sleeve:
  - Type: Form from roof membrane complete with base flange.
  - Installation: Dress over and around penetration.
  - Roof membrane overlap to flange (minimum): 50 mm beyond fasteners.
  - Sealing: Weld flange to roof membrane.
  - Protection to top edge of sleeve: Flashing or weathering cravat.

#### **SURFACING**

#### 850 LAYING MEMBRANE WALKWAYS

- Attachment: Welded 50mm around perimeter. For heavy foot traffic please consult SIG Design and Technology.

#### **COMPLETION**

#### 910 INSPECTION

- Interim and final roof inspections: Submit reports.

#### 920 ELECTRONIC ROOF INTEGRITY TEST

- Testing authority: Should test be required, SIG Design & Technology recommend RAM Consultancy or other equivalent WITA approved organisation.
  - RAM Consultancy Ltd
    - Tel: 01234 840 442
    - Email: ram@roofasset.com
    - Web: www.ramroofconsultancy.com
  - Waterproof Integrity Testing Association (WITA)
    - Tel: 020 7448 3857
    - Email: info@wita.org.uk
    - Web: wita.chilli1.co.uk
- Timing of test: Prior to, and on completion of access by other trades.
- Condition of roof prior to testing:
  - Waterproof membrane complete to a stage where integrity can be tested.
  - Surface: Clean.
- Test results and warranty: Submit on completion of testing.

#### 940 COMPLETION

- Roof areas: Clean.
  - Outlets: Clear.
- Work necessary to provide a weathertight finish: Complete.
- Storage of materials on finished surface: Not permitted.
- Completed membrane: Do not damage. Protect from traffic and adjacent or high level working.

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## Maintenance Schedule for SIG Design and Technology Waterproofing Systems

Generally, it is recommended that the flat roof is inspected at a minimum of twice a year during spring and autumn. The roof should also be inspected after access to roof by other trades and installation of roof equipment and also after storms to check for storm damage. Access to the roof should be controlled and maintenance inspection records should be updated and kept for future reference.

### Internally:

- Visual checks should be made for signs of condensation, moisture and/or leakage.

### Externally:

#### **Water Tightness**

- Make visual checks of the membrane for water tightness.
- The roof area should be cleaned of any incrustation, vegetation and foreign matter.
- Check the laps and make any repairs if necessary.
- Visual checks for signs of mechanical elements requiring repair and repair arranged.
- Visual checks for damage, stress or deformation to movement joints to be noted and repaired.

#### **Flashings**

- Check for signs of stress cracks or splits and arrange for repairs if necessary.
- Make visual checks for damage to mechanical fastening system and flashings. Repair if required.

#### **Drainage**

- Visual check of outlets and gutters. Clean debris obstructing gutter if required.
- Perform outlet performance check with water if required.

#### **Surface Protection Layer**

- Remove any debris and vegetation growth from roof surface.
- In an inverted roof, check position and stability of thermal insulation.
- In an inverted roof, check condition of thermal insulation
- Check all protective layers to membrane for damage. Replace or repair where required.
- Remove unwanted vegetation from vegetation layer.

### Spillage:

- Single Ply membranes are affected by the following basic chemicals:
  - Diesel oil, Fuel oil, Kerosene, Lubrication oils, Vegetable oils and Animal fats.
- If these chemicals (or any other compounds not listed) come into contact with the waterproofing layer, please contact SIG Design and Technology technical department for advice.

If remedial or maintenance works are required please contact the roofing contractor and/or SIG Design and Technology Technical Department. Always check with SIG Design and Technology when carrying out remedial work to ensure any warrantee is not invalidated.

# Armourplan Wind Uplift Calculation

## New School, London

Project Ref: DB0123456  
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**Project: New School, London – Main Roof**

**Client: Roofers R' Us**

### Wind Load Calculation: Engineers Page

The calculations have been carried out in accordance with the requirements of BS 6399 Part 2 :1997, Code of practice for wind loads - Standard Method

#### Site wind speed

$V_s = V_b \times S_a \times S_d \times S_s \times S_p$	25.4	m/s
$V_b$ is the basic wind speed	21.0	m/s
$S_a$ is the altitude factor	1.21	Site Altitude 128m
$S_d$ is the direction factor	1	
$S_s$ is the seasonal factor	1	
$S_p$ is the probability factor	1	

#### Effective wind speed

$V_e = V_s \times S_b$	39.0	m/s
$S_b$ is the terrain & building factor	1.54	
Site is in country, nearest distance to sea = 106km.		

#### Dynamic Pressure

$q_s = 0.613 \times V_e^2$	0.93	kN/m <sup>2</sup>
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#### Wind Loads

Flat Roof

	Zone A	Zone B	Zone C
External Surface			
$p_e = q_s \times C_{pe} \times C_a$	-1.86	-1.31	-0.65
$C_{pe}$ is the external pressure coefficient	-2	-1.4	-0.7
$C_a$ is the size effect factor	1	1	1
Internal Surface			
$p_i = q_s \times C_{pi} \times C_a$	0.19	0.19	0.19
$C_{pi}$ is the internal pressure coefficient	0.2	0.2	0.2
$C_a$ is the size effect factor	1	1	1
Total Pressure kN/m <sup>2</sup>			
$p = p_e - p_i$	-2.05	-1.49	-0.84

#### Fixing Requirements

Design load per fixing	0.4	kN
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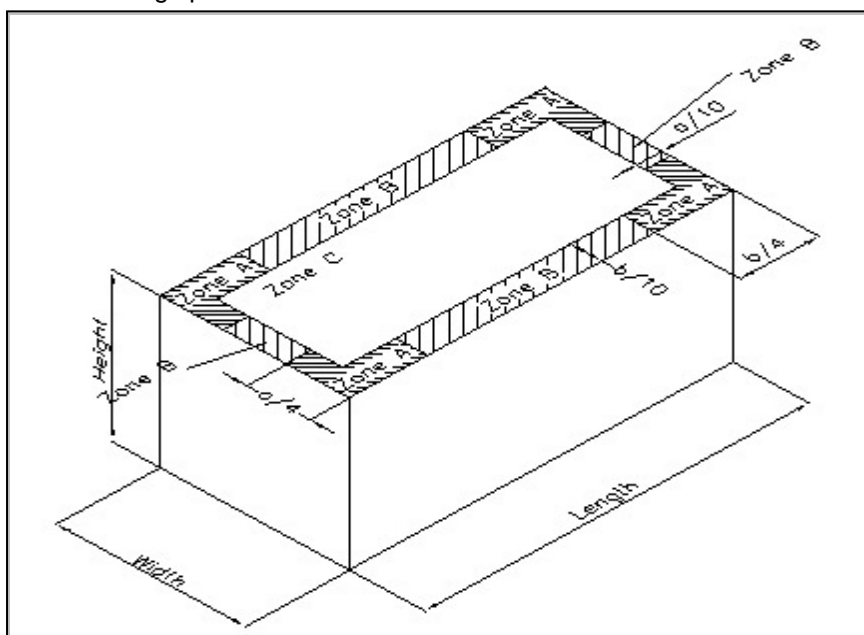
# Armourplan Wind Uplift Calculation

## New School, London

Project Ref: DB0123456  
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### Wind Load Calculation: Installers Page

	Zone A	Zone B	Zone C
Actual number of fixings			
Fixing centres mm	<b>200</b>	<b>250</b>	<b>200</b>
Width of membrane m	<b>1.06</b>	<b>1.06</b>	<b>2.12</b>
Lines of fixings at m	0.95	0.95	2.01
Minimum number of fixings per m <sup>2</sup>	5.2	3.8	2.1
Number of fixings per m <sup>2</sup>	5.3	4.3	2.5



b = Length or 2 x Building Height whichever is the smaller  
a = Width or 2 x Building Height whichever is the smaller

Building Height	7	m	b =	14.00	m
Building Width	12.5	m	b/10 =	1.40	m
Building Length	19	m	b/4 =	3.50	m
Total Area	237.5	m <sup>2</sup>	b/2 =	7.00	m
			a =	12.50	m
			a/10 =	1.25	m
			a/4 =	3.13	m
			a/2 =	6.25	m

	Zone A	Zone B	Zone C	Excess 5%	Total
Fixings/m <sup>2</sup>	5.3	4.3	2.5		
Zone m <sup>2</sup>	28.23	49.23	160.05		
Fixings Total	150	212	400	38	<b>799</b>

NOTES: Number of fixings are for simple rectangular roofs only and should be used for guidance only.  
Number of fixings should always be confirmed with own estimate.  
Wind uplift calculations are based on the information provided being up-to-date and accurate. If any information becomes obsolete/ changes or is inaccurate it is the responsibility of the client requesting the calculation to inform SIG D&T. SIG D&T does not accept responsibility for any wind uplift calculations based on inaccurate information. **Ref: 000002 DB**

# Armourplan Wind Uplift Calculation

## New School, London

Project Ref: DB0123456  
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**Project: New School, London – Small Roof**

**Client: Roofers R' Us**

### Wind Load Calculation: Engineers Page

The calculations have been carried out in accordance with the requirements of BS 6399 Part 2 :1997, Code of practice for wind loads - Standard Method

#### Site wind speed

$V_s = V_b \times S_a \times S_d \times S_s \times S_p$	25.4	m/s
$V_b$ is the basic wind speed	21.0	m/s
$S_a$ is the altitude factor	1.21	Site Altitude 128m
$S_d$ is the direction factor	1	
$S_s$ is the seasonal factor	1	
$S_p$ is the probability factor	1	

#### Effective wind speed

$V_e = V_s \times S_b$	39.0	m/s
$S_b$ is the terrain & building factor	1.54	
Site is in country, nearest distance to sea = 106km.		

#### Dynamic Pressure

$q_s = 0.613 \times V_e^2$	0.93	kN/m <sup>2</sup>
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#### Wind Loads

Flat Roof	Zone A	Zone B	Zone C
External Surface			
$p_e = q_s \times C_{pe} \times C_a$	-1.86	-1.31	-0.65
$C_{pe}$ is the external pressure coefficient	-2	-1.4	-0.7
$C_a$ is the size effect factor	1	1	1
Internal Surface			
$p_i = q_s \times C_{pi} \times C_a$	0.19	0.19	0.19
$C_{pi}$ is the internal pressure coefficient	0.2	0.2	0.2
$C_a$ is the size effect factor	1	1	1
Total Pressure kN/m <sup>2</sup>			
$p = p_e - p_i$	-2.05	-1.49	-0.84

#### Fixing Requirements

Design load per fixing	0.4	kN
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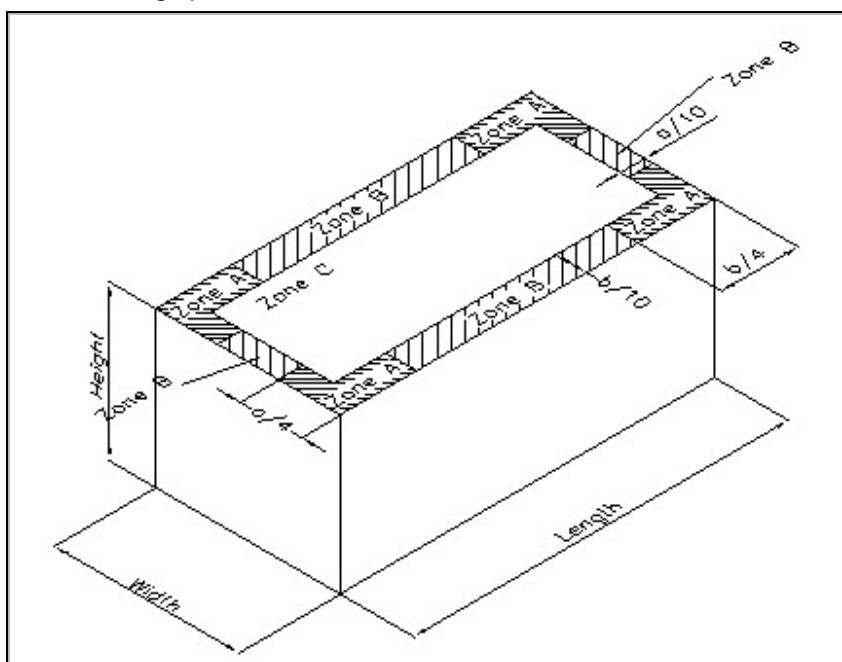
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## New School, London

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### Wind Load Calculation: Installers Page

	Zone A	Zone B	Zone C
Actual number of fixings			
Fixing centres mm	200	250	500
Width of membrane m	1.06	1.06	1.06
Lines of fixings at m	0.95	0.95	0.95
Minimum number of fixings per m <sup>2</sup>	5.2	3.8	2.1
Number of fixings per m <sup>2</sup>	5.3	4.3	2.2



b = Length or 2 x Building Height whichever is the smaller  
a = Width or 2 x Building Height whichever is the smaller




Building Height	7	m	b =	9.50	m
Building Width	6	m	b/10 =	0.95	m
Building Length	9.5	m	b/4 =	2.38	m
Total Area	57	m <sup>2</sup>	b/2 =	4.75	m
			a =	6.00	m
			a/10 =	0.60	m
			a/4 =	1.50	m
			a/2 =	3.00	m


	Zone A	Zone B	Zone C	Excess 5%	Total
Fixings/m <sup>2</sup>	5.3	4.3	2.2		
Zone m <sup>2</sup>	10.35	12.63	34.03		
Fixings Total	55	54	75	9	193

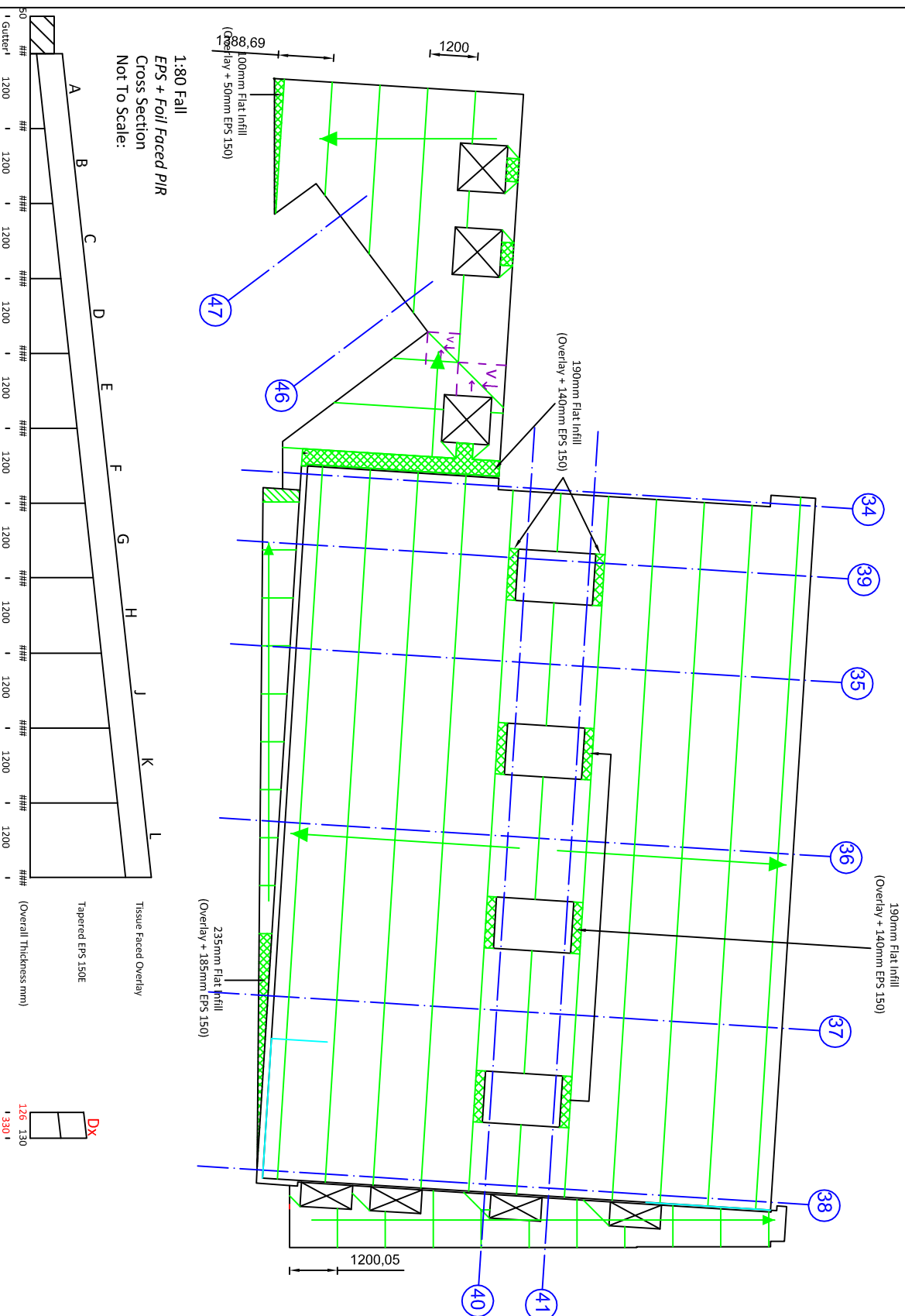
NOTES: Number of fixings are for simple rectangular roofs only and should be used for guidance only. Number of fixings should always be confirmed with own estimate. Wind uplift calculations are based on the information provided being up-to-date and accurate. If any information becomes obsolete/ changes or is inaccurate it is the responsibility of the client requesting the calculation to inform SIG D&T. SIG D&T does not accept responsibility for any wind uplift calculations based on inaccurate information. **Ref: 000001 DB**

- Do not scale from this drawing.
- All buildings and surrounding is to be carried out and all cuttings and boulding is to be compacted and by the contractor, unless otherwise stated.
- All officers are to be retained as necessary to complete the scheme.
- All existing trees and structures are to be maintained by the contractor.
- This drawing assumes a level deck unless otherwise stated.
- Ponding water may occur within areas utilising flat boards.
- Orders placed against this drawing reference assume approval of this scheme.
- Scheme based on client drawing: 1016/245 Rev C

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- Scheme based on client drawing: 1016/245 Rev C

 <b>Flat Gutter Zone</b> (may hold water)	 <b>Flat Infill Zone</b>	 <b>Pre-Mitred Valley</b>
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Job Title New School New Hall & Classroom	
Drawing Title Proposed Tapered Insulation Scheme	
Scale	Date
1:100 @A3	21.08.13
U Value (W/m <sup>2</sup> K)	DB
Overall* <b>0.18</b>	Scheme Area
	275 m <sup>2</sup>
Overall U-Values calculated according to BS EN ISO 6946:2007 (6) Annex C	
Drawing No	Revision
001	2



Addressee:

Date:

**Guarantee Number:**

Building Address:

Client:

Roofing Contractor:

Roof Area: m<sup>2</sup>

Roofing Membrane:

Material delivery date:

Duration: 20 years

## THE GUARANTEE

The Guarantee covers the materials, set out in the SIG Agreement and Application for Guarantee document reference number A (the "**Materials**").

SIG Design & Technology ("**SIG**"), guarantee to the Client that if, within the duration of the Guarantee, the Materials prove to be defective, we will repair, or, at our option, pay the reasonable cost of replacement (the "**Guarantee**").



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## CONDITIONS OF THE GUARANTEE

Guarantee Number

This Guarantee is subject to and conditional upon the following terms and conditions;

1. SIG's liability to the Client under this Guarantee does not include:
  - a. Any losses which were not foreseeable at the time the Guarantee was given and, in the case of use in course of a business, trade or profession, any consequential, economic or indirect losses;
  - b. Any damage to or defects in the Materials caused by any reason other than defective Materials, including any accidental or wilful damage to the Materials after they have been laid;
  - c. Any deformation affecting the aesthetic of the Materials but not damaging their waterproofing integrity;
  - d. Any defects in the Materials caused by existing moisture in an old roofing system (including insulation and/or associate structure) on refurbishment projects;
  - e. Any damage to or defects in the Materials caused by fire or abnormal weather conditions;
  - f. Any damage to or defects in the Materials resulting from issues or considerations which should have been made apparent by the Client during the design process; and
  - g. Any matter for which the Client is insured under a contract of insurance or for which a prudent occupier should maintain a policy of insurance.
2. SIG's total liability to the Client under this Guarantee shall not exceed the cost of the repair or replacement of the Materials except in the case of non-business purchases in which case SIG does not limit its liability for any loss or damage caused by defects in the Materials resulting from SIG's negligence.
3. All Materials delivered and invoiced have been paid for in full.
4. The Materials have been installed by a Roofing Contractor authorised by SIG and strictly in accordance with the instructions of SIG and the Materials have only been used for the purposes recommended or implied by: (a) any standard specifications set out in any applicable national standards and codes of practice, and/or (b) SIG in its relevant literature, and/or © SIG issuing written specific recommendations.
5. If the Client wishes to make a claim under this Guarantee then any defects in the Materials must be notified (by telephone to the number set out below) to SIG within 48 hours of discovery and subsequent written confirmation must be sent to SIG (at the address set out below) within a further 48 hours and in any event not later than the expiry of the Guarantee.
6. The Client shall maintain the roof to relevant British Standards and codes of practice as stated on page 3 of this Guarantee and in accordance with the attached recommended Maintenance Contract or other maintenance contract providing similar protections. The 20 year Guarantee period will only remain valid (irrespective of when any defect occurs) if roof inspections are carried out at intervals of no more than 5 years, with the first inspection being before the fifth anniversary of the date of supply of the Materials. Inspections must be carried out by SIG at the cost of the Client. Failure to comply with these inspection obligations shall limit the period of this Guarantee to no more than 15 years.
7. SIG must be given the opportunity to inspect any defective Materials before any repairs or remedial works are carried out by an approved contractor.
8. The Client may assign the benefits of this Guarantee (subject to all its terms) to any subsequent owner of the building on which the Materials are fitted, providing such assignment is in writing and written notification is sent to SIG within 14 days of such assignment taking place.
9. In the case of non-business purchases, this Guarantee is in addition to, and in no way affects, the Client's statutory rights relating to faulty or misdescribed goods or services.
10. If the Client has purchased the Materials acting in the course of its business, trade or profession, then this Guarantee is in place of and to the extent permitted by law replaces and excludes all other warranties and conditions whether express or implied by common law, statutory or otherwise.
11. The parties do not intend that any of the terms of this Guarantee shall be enforceable by virtue of the Contract (Right of Third Parties) Act 1999 by any person not a party to it.
12. This Guarantee shall be construed in accordance with English law and the parties hereby submit to the exclusive jurisdiction of the English courts save that non-business purchasers in the Republic of Ireland, Northern Ireland and Scotland shall be entitled to enforce their rights in the courts of their country of residence.
13. SIG Design & Technology is a Trading Name of SIG Trading Ltd, Hillsborough Works, Langsett Road, Sheffield, S6 2LW.

.....  
Signed on behalf of  
SIG Design and Technology

Date:.....



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# General Guidance Note on Maintenance and Care

The roof is definitely one of the parts of the building that bears the greatest stress. Because you do not directly look at it very often, it is poorly neglected when it comes to maintenance and care.

This can not only lead to unwanted consequences for the functional integrity of a roof covering and waterproofing, but may eventually result in a particularly high financial burden for the building owner, which could have been prevented by due care, maintenance and refurbishment.

What conditions impact on the roof?

All materials, including roofing and waterproofing materials, are subject to natural ageing. However, roof areas are particularly exposed to weathering. Chemical and biological impacts from the environment, facilitated by dust and debris, which in turn promote growth of plants, mosses and other detrimental micro-organisms, may accelerate the process of natural ageing. Physical loads originating from the use of the building impose additional loads on the roof as a constructional component. Thus, simply forgetting about the pitched roof covering or the flat roof waterproofing once it has been installed will become very expensive and hazardous to the overall building fabric in the long run.

Therefore, by giving to a professional roofing contractor the maintenance and care of the roof you will ensure an extended life of your building.

What may threaten your roof?

Wind, vibrations and movements of the building structure may cause loosening of the roofing materials (tiles, slates, slabs, corrugated sheets, ballast).

Temperature changes (freeze-thaw-cycles in winter, thermal shock in other seasons of the year) corrode the surface as well as the substance of the material, possibly causing cracks and fractures. Mortar becomes brittle.

This facilitates the intrusion of water, ice, debris and flying seeds as well as metal corrosion, which in turn accelerates the destruction process.

Obstructing leaves can result in ponding water areas which can turn into slip or wind hazard.

The water-tightness of flashings at roof penetrations, built-in details and adjacent building

structures as well as of roof edge trims will be impaired, as will the seam tightness of the membranes installed on the roof area and over movement joints.

From regular inspections to maintenance and care

The roof covering and waterproofing with all its components should be checked at regular intervals. An expert opinion on the condition of the roof is recommended.

An inspection and maintenance contract with a roofing company is the best solution to this issue.

In particular, the following works should always be carried out:

- Cleaning the gutters and down pipes as well as other drainage components such as rainwater outlets on the roof
- Removal of rough debris from the roof area and from corners and edges in particular
- Cleaning of bulk gravel, in particular, from growing plants and rough debris
- Checking flashings and trims and built-in details
- Paint coating of metal parts
- Replacing damaged roofing material
- Care of roofing membrane surface protection
- Repairing brittle mortar and the like
- Checking wooden parts for pests and decay
- Inspecting the seams on the flat roof
- Inspecting and cleaning roof lights and other lighting elements
- Visual control of running boards, roof hooks, snow guards and other built-in details

How is it affecting your SIG Design & Technology Guarantee?

The building owner is obliged to ensure roof maintenance and care also during the Guarantee period for construction works. Failure to do so puts potential Guarantee claims at risk.

In case of 20 year Guarantee, SIG Design & Technology must have copy of the signed Maintenance Contract and of each inspection report issued by the Roofing Contractor in accordance with the Maintenance Contract.

Repairs and maintenance must be undertaken by a qualified operative in accordance with the manufacturer recommendations, code of good practice and national standards.



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# Recommended Maintenance Contract

Maintenance Contract = Security for your flat roof

- regular inspections
- longer roof life expectancy
- damage prevention
- better asset preservation
- contractual agreement
- security for years to come

Additional information concerning the Maintenance Contract for flat roofs:

SIG Design & Technology have provided this example Maintenance Contract as a guide to the maintenance services that we would expect to be carried out.

If the Roofing Contractor and the Client decide to use and enter into this Maintenance Contract each party should ensure that they fully review and understand its terms before signature. This Maintenance Contract only covers commercial issues such as the maintenance services to be performed; it does not address legal issues such as limits or exclusions of liability or rights of termination and the parties should take separate and independent legal advice in respect of these issues.

The Maintenance Contract is entered into between the Roofing Contractor and the Client and SIG Design & Technology shall bear no liability whatsoever to either party in connection with the use of the Maintenance Contract.

SIG Design & Technology, Shepshed, March 2009 (SIG Design & Technology is a Trading Name of SIG Trading Ltd, Hillsborough Works, Langsett Road, Sheffield, S6 2 LW)



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# Maintenance Contract

## - Flat Roof -

This Maintenance Contract is entered into on \_\_\_\_\_

between the Client \_\_\_\_\_ of \_\_\_\_\_ ; and

the Roofing Contractor \_\_\_\_\_ of \_\_\_\_\_

### § 1 – Introduction

Roof areas are in particular exposed to weathering. UV and IR radiation cause ageing. Dust and debris lead to incrustation and may obstruct drainage elements. Flying seeds may produce plants. Specific chemical environmental loads may be detrimental to the roof covering. Through professional maintenance the Client may control the risks arising from these loads, from damage of the supporting structure and from natural ageing of the construction materials.

### § 2 – Area to be maintained

Maintenance shall include the following roof areas: \_\_\_\_\_

Approx. size in m<sup>2</sup>: \_\_\_\_\_

Year of construction: \_\_\_\_\_

### § 3 – Times of Maintenance

A roof area survey is carried out every calendar year:

☐ once in spring; and

☐ for a second time in autumn

- Please tick as applicable -

During the survey(s) the roof waterproofing will be checked for any defects or damage.

### § 4 – Cost of Maintenance

A flat rate of £ \_\_\_\_\_/m<sup>2</sup>, in total £ \_\_\_\_\_ plus VAT is due for every maintenance service.

### § 5 – Maintenance Services

The flat-rate maintenance includes the following works:

- Cleaning the gutters and downpipes as well as other drainage components such as rainwater outlets on the roof etc.
- Removal of obstructing debris from the roof area and from corners and edges
- Removal of plants
- Visual check of water tightness, in particular, at flashings and trims
- Visual check of the mechanical strength of profiles, ventilation elements, roof lights, trims etc.

Furthermore, the flat-rate maintenance includes smaller repair works such as:

- Rewelding or rebonding seam areas.
- Care of surface protection
- Tightening of profile fixings, mechanical roof light elements etc.
- Repair of small leaks with permanently elastic synthetic materials or by other suitable measures

Smaller repair works included in the flat-rate maintenance must not take longer than three hours.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Client's signature

### § 6 – Report and Works

After the roof survey, the Roofing Contractor shall provide the Client a short maintenance protocol as well as a status report on the necessary and recommended repair works not included in the flat-rate maintenance.

The Roofing Contractor shall provide the Client with a cost estimate including a list of the works to be carried out. The Roofing Contractor shall, upon the request of and after prior consultation with the Client, carry out these works as soon as reasonably possible. If these works are to be carried out on an hourly rate basis, the parties have agreed up on the following wage rates per hour:

Skilled operatives: £ \_\_\_\_\_

Semi-skilled operatives: £ \_\_\_\_\_

Labourer: £ \_\_\_\_\_

Travel expenses flat rate up to 50 km: £ \_\_\_\_\_

Rates for additional distance £ \_\_\_\_\_

The indicated prices do not include VAT

### § 7 – Term

This Maintenance Contract shall commence on the date set out above and shall be valid until \_\_\_\_\_.

### § 8 – Variation

Any changes to this Maintenance Contract must be made in writing and signed by both parties

### § 9 – Assignment

Neither party shall be entitled to assign the benefit of this Contract without the prior written consent of the other party.

### § 10 – Severance

If this Maintenance Contract shall be or become void in whole or in part, the other provisions shall remain valid and enforceable and the void provisions shall, where appropriate, be replaced by other provisions corresponding as closely as possible with the void provisions.

### § 11 – Third Party Rights

A person who is not a party to this Maintenance Contract (a "third party") shall have no rights pursuant to the Contracts (Rights of Third Parties) Act 1999 (the "Act") to enforce any of the terms of this Maintenance Contract.

### § 12 – Governing Law

The parties agree that any disputes arising or in any way connected with the subject matter of this Maintenance Contract (whether of a contractual or tortious nature or otherwise) shall be subject to the laws of England..

\_\_\_\_\_  
Date

\_\_\_\_\_  
Roofing Contractor's signature



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