



## SYSTEM DESCRIPTION

The **Wolfin Membrane System** is a combination of purpose designed termination and mounting accessories with a number of strong, elastic, weldable sheet membrane materials together with a detailing and inspection regime.

All membrane types are completely bitumen compatible, have excellent UV and variable temperature behaviour and do not require protection against Australian weather conditions. All membrane types also tolerate light service traffic.

The range of membranes is based on the same material (**Wolfin**), varying in thickness, reinforcement and bonding method to suit the full range of structural waterproofing conditions. Wolfin Membranes Australia Pty Ltd (WMA) strictly controls all Wolfin membrane system installations.

Termination designs are specific, designed for each project and are mandatory on the Applicators. The Applicators are subject to tight workmanship supervision and thorough final inspections on all projects.

The design philosophy in all cases is completely *self-sufficient* waterproofing. The systems are all designed to accept flexible structures and chemically aggressive environments.

## WOLFIN MEMBRANE TYPES

### **Wolfin IB (unreinforced):**

This is the standard *un-bonded* general-purpose membrane, intended for loose laid applications.

#### *It is useful for:*

- New roofing and tanking situations on any substrate, where wind uplift is prevented by the use of ballast or toppings
- Waterproofing lightweight structures
- Waterproofing heavy duty structures, such as bridges
- Retrofit roofing and tanking: compatible with all existing membrane materials and it is generally not necessary to remove existing failed materials
- Relief of trapped moisture in retrofit applications: the membrane diffuses vapour
- May be topped with any desired finishing or wearing course materials.

*Colours available:* light grey or black.

*Standard thickness:* 1.5mm or 2mm thickness available for extreme duty applications.

### **Wolfin GWSK (reinforced):**

This is the standard general-purpose **bonded** membrane, intended for all situations. It is a reinforced version of Wolfin IB, coated on one side with a powerful butyl-modified bituminous adhesive. The adhesive is a permanent elastomer and will tolerate thermal and structural movements.

#### *It is useful for:*

- Roofs etc where exposed and subject to wind uplift forces
- Balconies, terraces and where artificial grass, rubber matting, tiles or similar finishes are to be laid over the membrane
- Tanking or similar where mechanical damage may be a risk
- Road bridges: under the wearing course
- Detailing to the bolts of plant or steel column mountings.

*Colours available:* light grey or black.

*Standard thickness:* 2.3mm thickness available

### **Wolfin M (reinforced):**

This is Wolfin IB with a polyester mesh reinforcement extruded into the centre of the membrane.

It is not laminated and it is useful where very high (1600Nmm) tensile behaviour is sought and elasticity is less critical.



## WOLFIN SYSTEM ACCESSORIES

### **Wolfinsteel:**

The profiles are cut and press broken to any desired size or shape. Wolfinsteel comprises 24gge galvanised steel with an 0.8mm thick layer of Wolfin factory bonded to one side.

#### *It is useful for:*

- All terminations (other than AF6 below) and intermediate fixings, such as high walls or long spans
- Integrated cappings and overflashings, which can be decorated if desired with any good quality acrylic or vinyl coating
- Concrete or masonry: galvanized pin Nylon Anchors
- Timber, plywood or FC: Mason Ammson wafer head self-tapping screws, gauge and length to individual specification

All installations are finished with an overlaid membrane, encapsulating the fixings. Typical termination detail applications are shown on standard drawings WSD – 1 TO 4. All special cases are to be advised to WMA for fixing selection and other materials may only be used by Applicators with WMA express permission.

**Standard colours:** light grey or black, to match the selected membrane.

### **Stainless Wolfinsteel:**

Wolfinsteel is also available in 316S stainless steel in lieu of galvanised. It is otherwise similar to standard Wolfinsteel in all respects although available only in black. It is useful for exterior profiles (such as cappings/overflashings) in marine and/or aggressive environments.

### **Wolfin AF6:**

This is a section extruded from the same material as **Wolfin IB**. It is intended to be cast into concrete to form a highly efficient reglet termination, waterstop either side of cold joints or as an intermediate mounting. It may be fitted to any type of formwork (including steel) and may be used in precast work. Placement to formwork is only performed by a Wolfin Applicator.

### **Sealants:**

Generally sealants are only used in the saw-cut (P5) Detail.

#### *The types supplied are:*

- General purpose: Bostik Seal 'n' Flex 1 one part urethane
- Heavy duty (such as below ground): Bostik Seal 'n' Flex FC one part urethane
- Marine or very wet conditions: Refer WMA for advice
- Road joints, deck joints and special conditions: refer WMA for advice

Other materials may only be used by Applicators with express WMA permission.

### **Projex Shockmat:**

Shockmat is a reclaimed rubber sheeting available in 5mm or 10mm thick.

#### *It is useful for:*

- Service walkways and roof plant surrounds
- Soundproofing underlay to hard roof and balcony finishes
- The 10mm thick is also use for membrane protection under heavily reinforced concrete and on rail bridges.

## ACCESSORIES RECOMMENDED BUT NOT SUPPLIED

The following adhesives have been tested for adhesion to Wolfin and have performed satisfactorily on those tests. They are not supplied by WMA:

- Bonding Shockmat or Artificial Grass to the membrane: Holdfast SG226

**Bonding Ceramic direct to the membrane:** A product will be recommended for each case

**Quarry Tiles direct to the membrane (skirting tiles only):** A product will be recommended for each case

**Protective media:** A product will be recommended for each case

**Geotextile fabrics :** A grade will be nominated for each case

**Concrete, topping or mortar bed slip planes:** A product will be recommended for each case.



# Technical Information

## WOLFIN® IB

WOLFIN IB Roof- and Waterproofing Membranes are non reinforced, homogenous, soft plasticized extruded thermoplastic membranes. Since 1962 WOLFIN membranes have been applied in Building Construction and Civil Engineering as well as for foundations, ponds- and kitchen sealing (DIN 18195).

Requirements fulfilled to DIN 18531 (Dachabdichtungen) DIN 18195 (Bauwerksabdichtung), DIN V 20000-201 and DIN V 20000-202 plus CE-marking according EN 13956 and EN 13967, testing's according DIN 4102-1 (B2) and EN 13501-1 (E)

Henkel AG&Co KGaA, has been certified in compliance with DIN EN ISO 9001 and DIN EN ISO 14001.

### WOLFIN® means:

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• bitumen compatible</li> <li>• homogene hot air- and cold weldable</li> <li>• suitable for all insulation materials</li> <li>• free of toxic heavy metals</li> <li>• diffusion open</li> <li>• root resistant acc. to FLL</li> <li>• mineral oil resistant</li> </ul> | <ul style="list-style-type: none"> <li>• WOLFIN means equal physical properties throughout the whole membrane thickness</li> <li>• ozone- and UV-stable</li> <li>• almost acid- and alkaline resistant</li> <li>• cold resilience till – 45°C (AIB bending test)</li> <li>• long proved duration (&gt;30 years)</li> <li>• suitable for recycling</li> </ul> |
|---|--|

### Membrane Type and Application Fields:

|                                      |  |
|--------------------------------------|--|
| <b>WOLFIN® IB</b>                    | non reinforcement  |
| <b>membrane width:</b>               | 1100 mm and 1620 mm  |
| <b>length:</b>                       | 15 m   |
| <b>area:</b>                         | 16,5 m <sup>2</sup> and 24,3 m <sup>2</sup>                        |
| <b>nominal thickness:</b>            | 1,5 mm / 2,0 mm* (furth.thickn.upon request)                       |
| <b>new building + refurbishment:</b> | loose laid under ballast   |
| <b>special application:</b>          | waterproofing under mastic asphalt<br>WOLFIN / SBS-torch-on method |

\*2,0 mm role length = 10 m

**Colour:** black, grey, further colours upon request

### System parts etc.

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• inner- and outer corners</li> <li>• sky light kerb corners</li> <li>• coated metal sheets</li> <li>• special profile systems</li> </ul> | <ul style="list-style-type: none"> <li>• stainless steel drain- and vent elements</li> <li>• stainless steel overflows etc.</li> <li>• lightning protection elements</li> <li>• adhesion systems</li> </ul> |
|--|---|

**Hotline Technik-, Tel.: +49 6053 / 708-141**

This technical data sheet was produced according to the latest technical knowledge and standards of Henkel AG&Co KGaA, Bautechnik Deutschland, WOLFIN, Am Rosengarten 5, D-63607 Wächtersbach. Technical changes due to further developments are possible.

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1349 CPD 012 + 1349 CPD 015

# Technical Information

## WOLFIN® IB

**Produktdaten gem. DIN EN 13956**unter Auflast (Kies/Begrünung/Verkehrsflächen o.ä.)  
covered application (gravel, greenroof ...)

und

**Produktdaten gem. DIN EN 13967**

Feuchtigkeitssperre

damp proof sheets

Grundwassersperre

basement tanking

| Eigenschaft  | Prüfnorm                     | Einheit           | Angaben            | Ergebnis       |                |
|--|------------------------------|-------------------|--------------------|----------------|----------------|
|  |                              |                   |                    | 1,5 mm         | 2,0 mm         |
| Außere Beschaffenheit <i>Visible defects</i>   | DIN EN 1850-2                | -                 | erfüllt/passed     | erfüllt/passed | erfüllt/passed |
| Länge <i>Length</i>  | DIN EN 1848-2                | m                 | MDV                | 15             | 10             |
| Breite <i>Width</i>  |                              | m                 | MDV                | 1,1/1,62       | 1,1/1,62       |
| Geradheit <i>Straightness</i>  |                              | mm                | MLV                | ≤ 50           | ≤ 50           |
| Planlage <i>Flatness</i>   |                              | mm                | MLV                | ≤ 10           | ≤ 10           |
| Flächengewicht <i>Mass per unit area</i>   | DIN EN 1849-2                | kg/m <sup>2</sup> | MDV                | 1,9            | 2,5            |
| Effektive Dicke <i>Effective thickness</i>   |                              | mm                | MDV                | 1,5            | 2,0            |
| Wasserdichtigkeit <i>Water tightness</i>   | DIN EN 1928 B                | kPa               | MLV                | ≥ 400          | ≥ 400          |
| Brandverhalten <i>Reaction to fire</i>   | DIN EN 13501-1               | -                 | s. 5.2.5.2         | E              | E              |
| Schälwiderstand der Fügenaht<br><i>Joint peel resistance</i>   | DIN EN 12316-2               | N/50 mm           | MLV                | ≥ 150          | ≥ 150          |
| Scherwiderstand der Fügenaht<br><i>Joint shear resistance</i>  | DIN EN 12317-2               | N/50 mm           | MLV                | ≥ 600          | ≥ 600          |
| Zugfestigkeit <i>Tensile strenght</i>  | DIN EN 12311-2               | N/mm <sup>2</sup> | MLV                | ≥ 16           | ≥ 16           |
| Dehnung <i>Elongation</i>  |                              | %                 | MLV                | ≥ 300          | ≥ 300          |
| Perforationsverhalten <i>Resistance to impact</i>  | DIN EN 12691 DIN EN 12691    | mm                | MLV                | ≥ 600          | ≥ 750          |
| Verfahren A) <i>Method A)</i>  |                              |                   |                    |                |                |
| Verfahren B) <i>Method B)</i>  |                              |                   |                    |                |                |
| Widerstand gegen statische Belastung<br><i>Resistance to static load</i>                               | DIN EN 12730 Methode B       | kg                | MLV                | ≥ 20           | ≥ 20           |
| Dauerhaftigkeit Wasserdichtheit gegen Alterung<br><i>Durability watertightnes against aging</i>        | DIN EN 1296 nach DIN EN 1928 | -                 | erfüllt/passed     | erfüllt/passed | erfüllt/passed |
| Dauerhaftigkeit Wasserdichtheit gegen Chemikalien<br><i>Durability watertightnes against chemicals</i> | DIN EN 1847 nach DIN EN 1928 | -                 | erfüllt/passed     | erfüllt/passed | erfüllt/passed |
| Weiterreißwiderstand Nagelschaft<br><i>Resistance to nail tear</i>                                     | DIN EN 12310-1               | N                 | MLV                | ≥ 250          | ≥ 250          |
| Weiterreißwiderstand <i>Tear resistance</i>  | DIN EN 12310-2               | N                 | MLV                | ≥ 100          | ≥ 100          |
| Wurzelfestigkeit<br><i>Resistance to root penetration</i>  | DIN EN 13948                 | -                 | erfüllt/passed     | erfüllt/passed | erfüllt/passed |
| Maßänderung nach Warmlagerung<br><i>Dimensional stability</i>  | DIN EN 1107-2                | %                 | MLV                | ≤ 1,5          | ≤ 1,5          |
| Falzen in der Kälte<br><i>Foldability at low temperature</i>   | DIN EN 495-5                 | °C                | MLV                | ≤ -25          | ≤ -25          |
| UV-Beanspruchung <i>UV exposure</i>  | DIN EN 1297                  | visuell           | erfüllt/passed     | erfüllt/passed | erfüllt/passed |
| Hagelschlagbeständigkeit <i>Hail resistance</i>  | DIN EN 13583                 | m/s               | MLV                | ≥ 25           | ≥ 25           |
| Wasserdampfdurchlässigkeit<br><i>water vapour properties</i>   | DIN EN 1931                  | -                 | μ = MDV oder 15000 | 10.000 ± 3.000 | 10.000 ± 3.000 |
| Bitumenverträglichkeit <i>Exposure to bitumen</i>  | DIN EN 1548 90 d / 70°C      | -                 | erfüllt/passed     | erfüllt/passed | erfüllt/passed |

**Erläuterung:**

MDV = manufacturer's declared value (Herstellerangabe mit Toleranz)

MLV = manufacturer's limiting value (Grenzwert des Herstellers)

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# Technical Information

## WOLFIN® GWSK with Protect Equipment

WOLFIN Roof- and Waterproofing Membranes are soft plasticized extruded thermoplastic membranes. Since 1962 they have been applied in Building Construction and Civil Engineering as well as for foundations, ponds- and kitchen sealing (DIN 18195).

Approvals according DIN 16726 and UEATc guideline, Requirements fulfilled to DIN 18531 (Dachabdichtungen) DIN 18195 (Bauwerksabdichtung), DIN V 20000-201 and DIN V 20000-202 plus CE-marking according EN 13956 and EN 13967, testing's according DIN 4102-1 (B2) and EN 13501-1 (E) as well as DIN 4102-7 (harte Bedachung) and DIN ENV 1187 / prEN 13501-5 (BROOF (t1) without a fire protection layer between polystyrene thermo insulation and WOLFIN GWSK membrane.

Henkel AG&Co KGaA, has been certified in compliance with DIN EN ISO 9001 and DIN EN ISO 14001.

### WOLFIN® means:

|   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• bitumen compatible</li> <li>• homogene hot air- and cold weldable</li> <li>• suitable for all insulation materials</li> <li>• free of toxic heavy metals</li> <li>• diffusion open</li> <li>• root resistant acc. to FLL</li> <li>• mineral oil resistant</li> </ul> | <ul style="list-style-type: none"> <li>• WOLFIN means equal physical properties through the whole membrane thickness</li> <li>• ozone- and UV-stable</li> <li>• almost acid- and alkaline resistant</li> <li>• cold resilience till – 45°C (AIB bending test)</li> <li>• long proved duration (&gt;30 years)</li> <li>• suitable for recycling</li> </ul> |
|---|---|

### Membrane Type and Application Fields:

|                                      |  |                     |                                  |
|--------------------------------------|--|---------------------|----------------------------------|
| <b>WOLFIN® GWSK</b>                  | with a special inner layer of glass fleece and self adhesive layer acc. to EN 13956 and to EN 13967 (PVC-P-BV) |                     |                                  |
| <b>membrane width:</b>               | 1100 mm  | <b>length:</b> 20 m | <b>area:</b> 22,0 m <sup>2</sup> |
| <b>nominal thickness:</b>            | 2,3 mm / 2,8 mm  |                     |                                  |
| <b>new building + refurbishment:</b> | adhered construction   |                     |                                  |

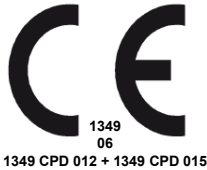
**Colour:** black, grey, further colours upon request

### System parts etc.

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• inner- and outer corners</li> <li>• sky light kerb corners</li> <li>• coated metal sheets</li> <li>• special profile systems</li> </ul> | <ul style="list-style-type: none"> <li>• stainless steel drain- and vent element</li> <li>• stainless steel overflows etc.</li> <li>• lightning protection elements</li> <li>• adhesion systems</li> </ul> |
|--|--|

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# Technical Information WOLFIN® GWSK with Protect Equipment



## Produktdaten gem. DIN EN 13956

freiliegende Verlegung (verklebt)  
*exposed application (fully adhered)*  
unter Auflast (Kies/Begrünung/Verkehrsflächen o.ä.)  
*covered application (gravel, greenroof ...)*

und

## Produktdaten gem. DIN EN 13967

Feuchtigkeitssperre *damp proof sheets*  
Grundwassersperre *basement tanking*

| Eigenschaft   | Prüfnorm                     | Einheit           | Angaben                | Ergebnis **             |                         |
|---|------------------------------|-------------------|------------------------|-------------------------|-------------------------|
|   |                              |                   |                        | 2,3 mm                  | 2,8 mm                  |
| Äußere Beschaffenheit <i>Visible defects</i>  | DIN EN 1850-2                | -                 | erfüllt/ <i>passed</i> | erfüllt/ <i>passed</i>  | erfüllt/ <i>passed</i>  |
| Länge <i>Length</i>   | DIN EN 1848-2                | m                 | MDV                    | 15 / 10                 | 10 / 10                 |
| Breite <i>Width</i>   |                              | m                 | MDV                    | 1,1/1,62                | 1,1/1,62                |
| Geradheit <i>Straightness</i>   |                              | mm                | MLV                    | ≤ 50                    | ≤ 50                    |
| Planlage <i>Flatness</i>  |                              | mm                | MLV                    | ≤ 10                    | ≤ 10                    |
| Flächengewicht <i>Mass per unit area</i>  | DIN EN 1849-2                | kg/m <sup>2</sup> | MDV                    | 2,7                     | 3,3                     |
| Effektive Dicke <i>Effective thickness</i>  |                              | mm                | MDV                    | 1,5                     | 2,0                     |
| Wasserdichtigkeit <i>Water tightness</i>  | DIN EN 1928 B                | kPa               | MLV                    | erfüllt/ <i>passed</i>  | erfüllt/ <i>passed</i>  |
| Brandverhalten <i>External fire protection</i>  | DIN ENV 1187                 | -                 | Anhang E               | B <sub>ROOF</sub> (t1)* | B <sub>ROOF</sub> (t1)* |
| Brandverhalten <i>Reaction to fire</i>  | DIN EN 13501-1               | -                 | s. 5.2.5.2             | E                       | E                       |
| Schälwiderstand der Fügenaht <i>Joint peel resistance</i>   | DIN EN 12316-2               | N/50 mm           | MLV                    | NPD                     | NPD                     |
| Scherwiderstand der Fügenaht <i>Joint shear resistance</i>  | DIN EN 12317-2               | N/50 mm           | MLV                    | ≥ 600                   | ≥ 600                   |
| Zugfestigkeit <i>Tensile strenght</i>   | DIN EN 12311-2               | N/mm <sup>2</sup> | MLV                    | ≥ 10                    | ≥ 10                    |
| Dehnung <i>Elongation</i>   |                              |                   |                        | %                       | MLV                     |
| Perforationsverhalten <i>Resistance to impact</i>   | DIN EN 12691 DIN EN 12691    | mm                | MLV                    | 600                     | 750                     |
| Verfahren A) <i>Method A)</i><br>Verfahren B) <i>Method B)</i>                                      |                              |                   |                        | mm                      | MLV                     |
| Widerstand gegen statische Belastung <i>Resistance to static load</i>                               | DIN EN 12730 Methode B       | kg                | MLV                    | ≥ 20                    | ≥ 20                    |
| Dauerhaftigkeit Wasserdichtheit gegen Alterung <i>Durability watertightnes against aging</i>        | DIN EN 1296 nach DIN EN 1928 | -                 | erfüllt/ <i>passed</i> | erfüllt/ <i>passed</i>  | erfüllt/ <i>passed</i>  |
| Dauerhaftigkeit Wasserdichtheit gegen Chemikalien <i>Durability watertightnes against chemicals</i> | DIN EN 1847 nach DIN EN 1928 |                   | erfüllt/ <i>passed</i> | erfüllt/ <i>passed</i>  | erfüllt/ <i>passed</i>  |
| Weiterreißwiderstand Nagelschaft <i>Resistance to nail tear</i>                                     | DIN EN 13859-1               |                   |                        | ≥ 350                   | ≥ 350                   |
| Weiterreißwiderstand <i>Tear resistance</i>   | DIN EN 12310-2               | N                 | MLV                    | ≥ 150                   | ≥ 150                   |
| Wurzelfestigkeit <i>Resistance to root penetration</i>  | DIN EN 13948                 |                   | erfüllt/ <i>passed</i> | erfüllt/ <i>passed</i>  | erfüllt/ <i>passed</i>  |
| Maßänderung nach Warmlagerung <i>Dimensional stability</i>  | DIN EN 1107-2                | %                 | MLV                    | ≤ 0,5                   | ≤ 0,5                   |
| Falzen in der Kälte <i>Foldability at low temperature</i>   | DIN EN 495-5                 | °C                | MLV                    | ≤ -20                   | ≤ -20                   |
| UV-Beanspruchung <i>UV exposure</i>   | DIN EN 1297                  | visuell           | erfüllt/ <i>passed</i> | erfüllt/ <i>passed</i>  | erfüllt/ <i>passed</i>  |
| Hagelschlagbeständigkeit <i>Hail resistance</i>   | DIN EN 13583                 | m/s               | MLV                    | ≥ 25                    | ≥ 25                    |
| Wasserdampfdurchlässigkeit <i>water vapour properties</i>   | DIN EN 1931                  | -                 | μ = MDV oder 15000     | 25.000 ± 7500           | 25.000 ± 7500           |
| Bitumenverträglichkeit <i>Exposure to bitumen</i>   | DIN EN 1548 90 d / 70°C      | -                 | erfüllt/ <i>passed</i> | erfüllt/ <i>passed</i>  | erfüllt/ <i>passed</i>  |

**Erläuterung:** MDV = manufacturer's declared value (Herstellerangabe mit Toleranz)  
MLV = manufacturer's limiting value (Grenzwert des Herstellers)

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# THE MEMBRANE WITH SUPERIOR CHEMICAL RESISTANCE

## Chemical Resistance

(90 days immersion test at room temperatures)

### Inorganic Chemicals

#### 1. Acids and alkalis

|  | <b>Test</b> |   |
|--|-------------|---|
| Hydrochloric acid                        | 50% sol.    | + |
| Sulphuric acid                           | 50% sol.    | + |
| Nitric acid                              | 10% sol.    | / |
| Ammonia                                  | conc.       | + |
| Soda solution                            | 25% sol.    | + |
| Mixed sulph. and hydrochl. acid solution | 10% sol.    | + |

#### 2. Aqueous Solutions

|                     |          |   |
|---------------------|----------|---|
| Water               |          | + |
| Hydrogen peroxide   | conc.    | / |
| Hydrogen peroxide   | 3% sol.  | + |
| Sodium sulphite     | 10% sol. | + |
| Sodium sulphite     | 10% sol. | + |
| Sodium chloride     | sat.sol. | + |
| Sodium thiosulphate | 10% sol. | + |
| Pot. chromate       | 10% sol. | + |
| Pot. bromide        | sat.sol. | + |
| Copper sulphate     | 10% sol. | + |
| Ammonium nitrate    | 10% sol. | + |
| Magnesium chloride  | 10% sol. | + |

## Organic Chemicals

### 1. Aliphatic Compounds

|                            |            |   |
|----------------------------|------------|---|
| Petrol ether               |            | + |
| Cyclohexane                |            | + |
| Turps substitute (Dekalin) |            | + |
| Methylene chloride         |            | / |
| Ethanol                    |            | + |
| Glycol                     |            | + |
| Acetone                    |            | 0 |
| Formic acid                | 88% sol.   | + |
| Actic acid                 | 20% sol.   | + |
| Oilic acid                 |            | + |
| Lactic acid                | 10% sol.   | + |
| Acrylic acid               | 99.5% sol. | / |

### 2. Aromatic Compounds

|                  |       |   |
|------------------|-------|---|
| Benzene (benzol) |       | / |
| Xylene (xylol)   |       | 0 |
| Tetraline        |       | + |
| Petrol-benzene   | 50:50 | / |
| Petroleum        |       | + |

### Miscellaneous

|                       |          |   |
|-----------------------|----------|---|
| Lubricating oil       |          | + |
| Fuel Oil              |          | + |
| Silicone fluid        |          | + |
| Chlorid KOH           | 40% sol. | + |
| Sugar solution        | 50% sol. | + |
| Fertilizer: pot. sol. | sat      | + |
| Nitrophoska sol.      | sat.     | + |
| Milk of lime sol.     | sat      | + |

**Key to symbols:** + inert (unaffected)  
 0 affected but not unstable (superficial swelling may become brittle)  
 / unstable

# THE SUPERIOR WATERPROOFING MEMBRANE

## Summary of technical investigations carries out on Wolfin IB

### No.1 Physical properties – General

| Tests (Units)   | Method*       | Mean Results |
|---|---------------|--------------|
| Density (kgm <sup>-3</sup> )                                  | MOAT 29:4.4   | 2281         |
| Ash CTest (Units)   | Method*       | Mean         |
| Content (%)   | MOAT 29:4.5   | 7.61         |
| Dehydrochlorination inflection time (minutes)                 | MOAT 29:4.11  |              |
| -unaged   |               | 39.4         |
| -180 days heat aged at 80 °C                                  |               | 33.9         |
| -UV aged (1)  |               | 26.4         |
| -bitumen treated (2)  |               | 33           |
| Water Absorption (%)  | BS 2782(430A) | 0.37         |
| Water vapour permeability (gm <sup>-2</sup> d <sup>-1</sup> ) | BS 3177       | 2.6          |
|   | (75% RH/25°C) |              |
| Water vapour resistance (Mnsg <sup>-1</sup> )                 | BS3177        | 2.6          |
|   | (75% RH/25°C) | 78.9         |
| Plasticizer content (%)                                       | MOAT 29:45.6  |              |
| -unaged   |               | 18.52        |
| -180 days heat aged at 80                                     |               | 18.48        |
| -180 days water soak at 23                                    |               | 19.89        |
| -SO <sub>2</sub> aged (3)                                     |               | 20.3         |
| -bitumen treated (2)  |               | 15.53        |

(1) 1000 light hours UV aged in general accordance with ASTN 53-7.

(2) bitumen embedded in 95/25 grade bitumen aged for 90 days at 50.

(3) SO aged for 28 days in accordance with MOAT 29 : 1984, 4.19.4.

\* Test documents are detailed below. Numbers in the table refer to sections/parts of the various documents.

UEAtc MOAT 27: 1983 general directive for the assessment of roof waterproofing systems.

UEArc MOAT 29: 1984 Directives for the Assessment of Roofing Systems using PVC sheets without reinforcement, loose laid under heavy protection and not compatible with bitumen.

BS 2782 Method of testing plastics.

BS 3177: 1959 Method for determining the permeability of water vapour of flexible sheet materials used for packaging.



# THE SUPERIOR WATERPROOFING MEMBRANE

## Summary of technical investigations carries out on Wolfin IB

### No.2 Physical properties – Directional

| Test (Units)                                    | Method*            | Mean         | Results    |
|---|--------------------|--------------|------------|
|   |                    | Longitudinal | Transverse |
| Tensile strength (Nmm <sup>-2</sup> )           | MOAT 29:4.8        |              |            |
| -unaged   |                    | 17.7         | 16.9       |
| -180 days heat aged at 80°C                     |                    | 17.7         | 17.4       |
| -56 days water soak at 25°C                     |                    | 17.4         | 16.3       |
| -UV aged (1)                                    |                    | 17.4         | 17.2       |
| -SO2 aged (2)                                   |                    | 16.6         | 15.8       |
| -bitumen treated (3)                            |                    | 18.5         | 17.3       |
|   | MOAT 29:4.8        |              |            |
| Elongation (%)                                  |                    |              |            |
| -unaged   |                    | 348          | 365        |
| -180 days heat aged at 80°C                     |                    | 329          | 361        |
| -56 days water soak at 23°C                     |                    | 335          | 334        |
| -UV aged (1)                                    |                    | 330          | 368        |
| -SO2 aged(2)                                    |                    | 368          | 371        |
| -bitumen treated(3)                             |                    | 318          | 326        |
| Tear propagation (mean load Nmm <sup>-1</sup> ) | BS2782 (360B)      | 79.6         | 89.8       |
| Dimension free stability (%)                    | MOAT<br>27:5.1.6.1 |              |            |
| Dimensional restrained stability (%)            | MOAT<br>27:5.1.6.1 | -1.03        | 0.89       |

(1) 1000 light hours UV aged in general accordance with ASTM 53-77 (4 hours 45 C UV/4 hours 40 C condensation).

(2) 28 days SO aged in accordance with MOAT 29: 1984, 4.19.4.

(3) bitumen embedded in 95/25 grade bitumen aged for 90 days at 50 C.

•Test documents are detailed below. Numbers in the table refer to sections/ parts of the various documents.

UEAtc MOAT 27: 1983 General Directive for the Assessment of Roof Waterproofing Systems.

UEAtc MOAT 29: 1984 Directives for the Assessment of Roofing Systems using PVC sheets without reinforcement, loose laid under the heavy protection and not compatible with bitumen.

## THE SUPERIOR WATERPROOFING MEMBRANE

### Summary of technical investigations carries out on Wolfin IB

#### No.3 Service performances

| Test (Units)                            | Method*         | Mean Results   |
|---|-----------------|----------------|
| Water pressure (6 metres)               | MOAT 27:5.14    | No penetration |
| Low temperature flexibility (at -25 °C) | MOAT 27:5.4.2   |                |
| -unaged                                 |                 | No cracking    |
| -180 days heat aged at 80 °C            |                 | No cracking    |
| -UV aged                                |                 | No cracking    |
| Static indentation                      | MOAT 27:5.1.9   |                |
| -concrete substrate                     |                 | L4             |
| -expanded polystyrene                   |                 | L4             |
| Dynamic Indentation                     | MOAT 27:5.1.10  |                |
| -chipboard substrate                    |                 | I4             |
| -expanded polystyrene                   |                 | I3             |
| Unrolling at low temperatures/0 °C      | MOAT 27:5.4.3   | Satisfactory   |
| Tests on joints Air pressure at 10kPa   | MOAT 27:5.2.1   |                |
| -hot air weld                           |                 | No penetration |
| -solvent weld                           |                 | No penetration |
| Tensile strength (N)                    | MOAT 27:5.2.2/4 |                |
| hot air weld                            |                 |                |
| -unaged                                 |                 | 944            |
| -28 days heat aged at 80 °C             |                 | 910            |
| -7 days water soak at 60 °C             |                 | 822            |
| solvent weld                            |                 |                |
| -unaged                                 |                 | 851            |
| -28 days heat aged at 80 °C             |                 | 913            |
| -7 days water soak at 60 °C             |                 | 855            |
| Weldability (Nmm <sup>-1</sup> )        | MOAT 29:4.17.2  |                |
| -hot air weld                           |                 | 2.94           |
| -solvent weld                           |                 | 2.88           |

(1) Results are satisfactory for the central zones of roofs up to 20 m in height in the UK.

\* Test documents are detailed below. Numbers in the table refer to section/ parts of the various documents.

UEAtc MOAT 27: 1983 General Directive for the Assessment of Roof Waterproofing Systems.

UEAtc MOAT 29: 1984 Directives for the Assessment of Roofing Systems using PVC sheets without reinforcement, loose laid under heavy protection and not compatible with bitumen.

**WOLFINSTEEL FIXINGS**

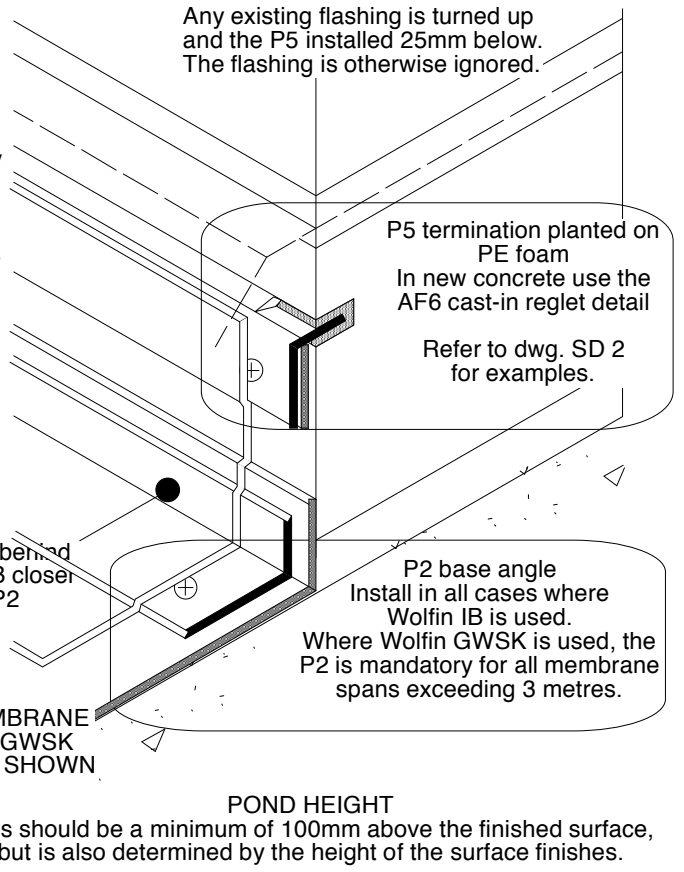
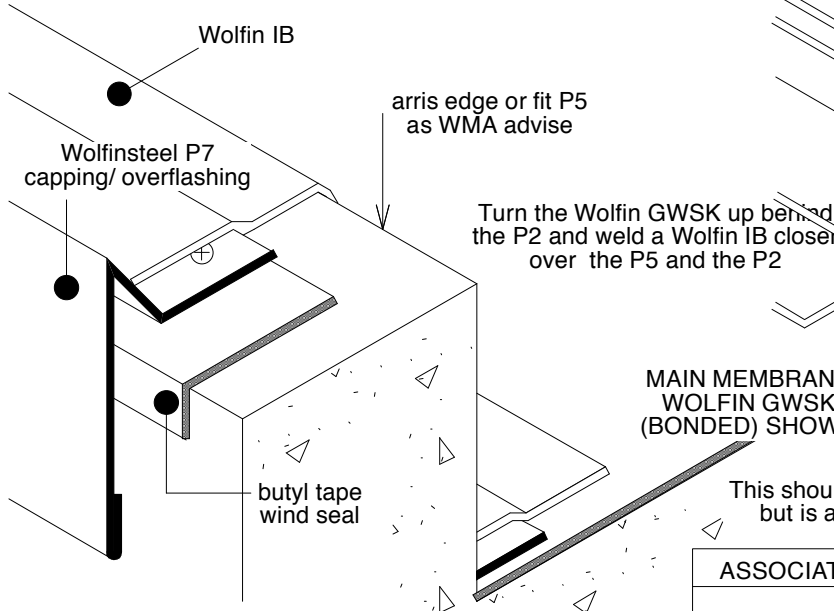
The standard Wolfinsteel fixings are Hilti nylon anchors at 150 centres. If the structure is timber / FC sheet / plywood, the essential difference is only in the fixings, which will be suitable posidrive screws in lieu.

**INSULATION (WHERE USED)**

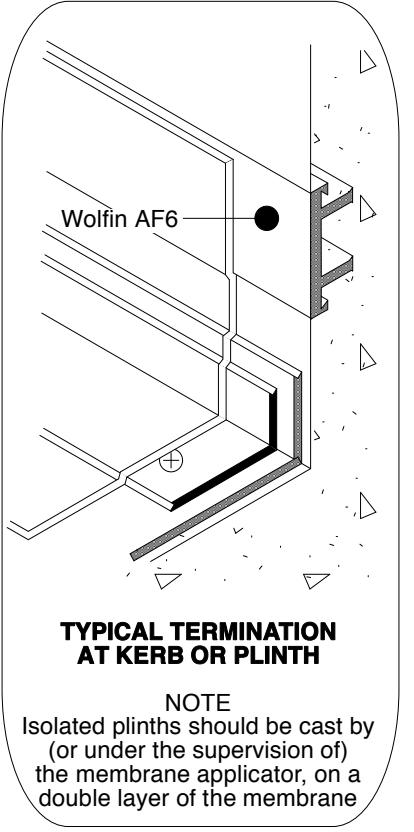
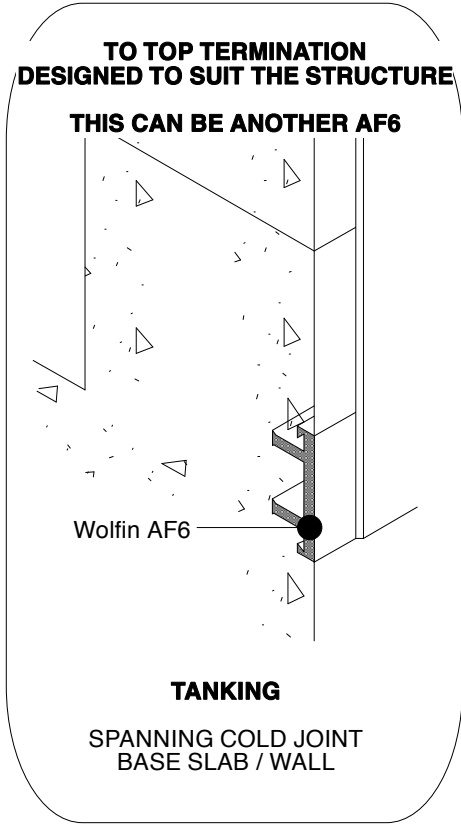
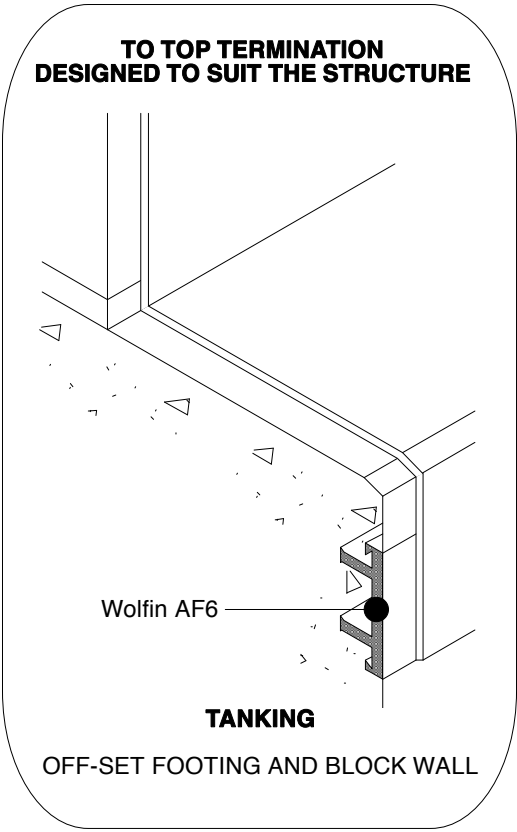
Where a soft substrate (insulation, lightweight concrete) exists below any existing membrane, WMA will advise the fixings to be employed.

**FLASHINGS**

The P5 detail is to be used whether there are existing flashings/cappings or not. Where flashings exist, bend them out of the way, fit the P5 minimum 25mm below and redress the existing flashing down.



|  |   |
|--|---|
| ASSOCIATED DETAIL                                      | <b>TYPICAL TERMINATIONS</b><br>WALL (P5) AND PARAPET (P7)<br>New or retrofit to concrete or masonry |
| © WOLF IN MEMBRANES AUSTRALIA PTY LTD <b>DWG: SD 1</b> |   |



|  |                                      |
|--|--------------------------------------|
| ASSOCIATED DETAIL                                      | <b>TYPICAL TERMINATIONS</b><br>(AF6) |
| © WOLF IN MEMBRANES AUSTRALIA PTY LTD <b>DWG: SD 2</b> |                                      |

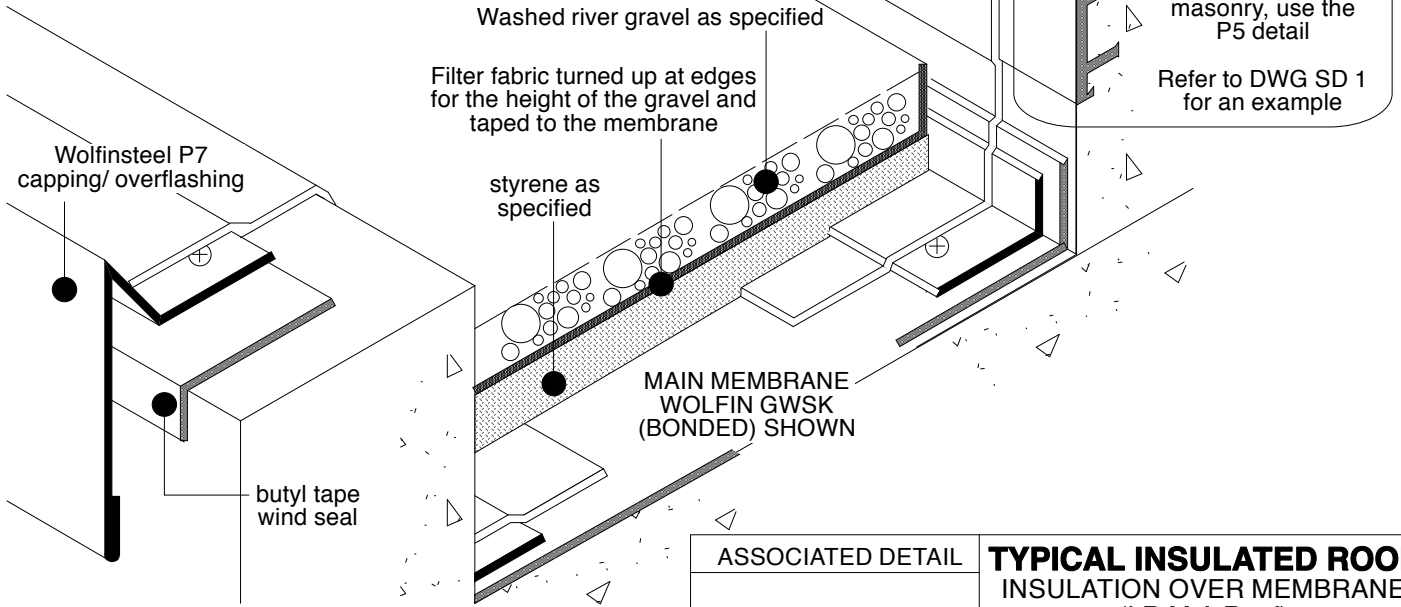
**EXPANDED POLYSTYRENE**

Selection should consider the thermal performance required and the traffic live loads. Normally a styrene grade of H and a thickness of 40mm suffices for most applications.

**GRAVEL TOPPING**

This is selected for wind suction loads and at least 50mm thickness is usually needed. The material should be 20mm round stone - (river gravel, at least #2 wash) - ie is relatively free of fines.

**FOR FIXING NOTES REFER TO DWG SD 1**



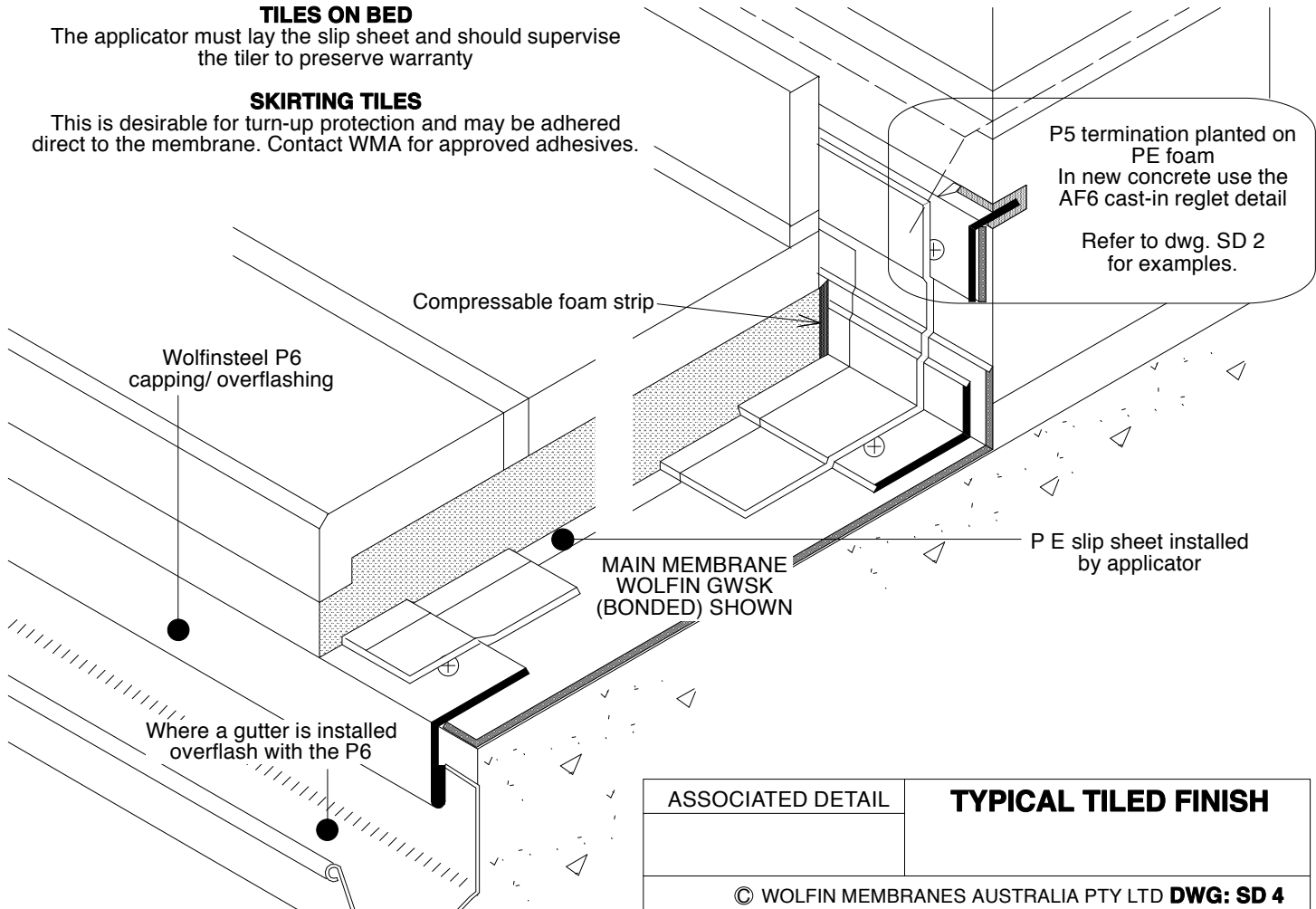
|   |   |
|---|---|
| ASSOCIATED DETAIL                                     | <b>TYPICAL INSULATED ROOF</b><br>INSULATION OVER MEMBRANE<br>(I R M A Roof) |
| © WOLFEN MEMBRANES AUSTRALIA PTY LTD <b>DWG: SD 3</b> |   |

**TILES ON BED**

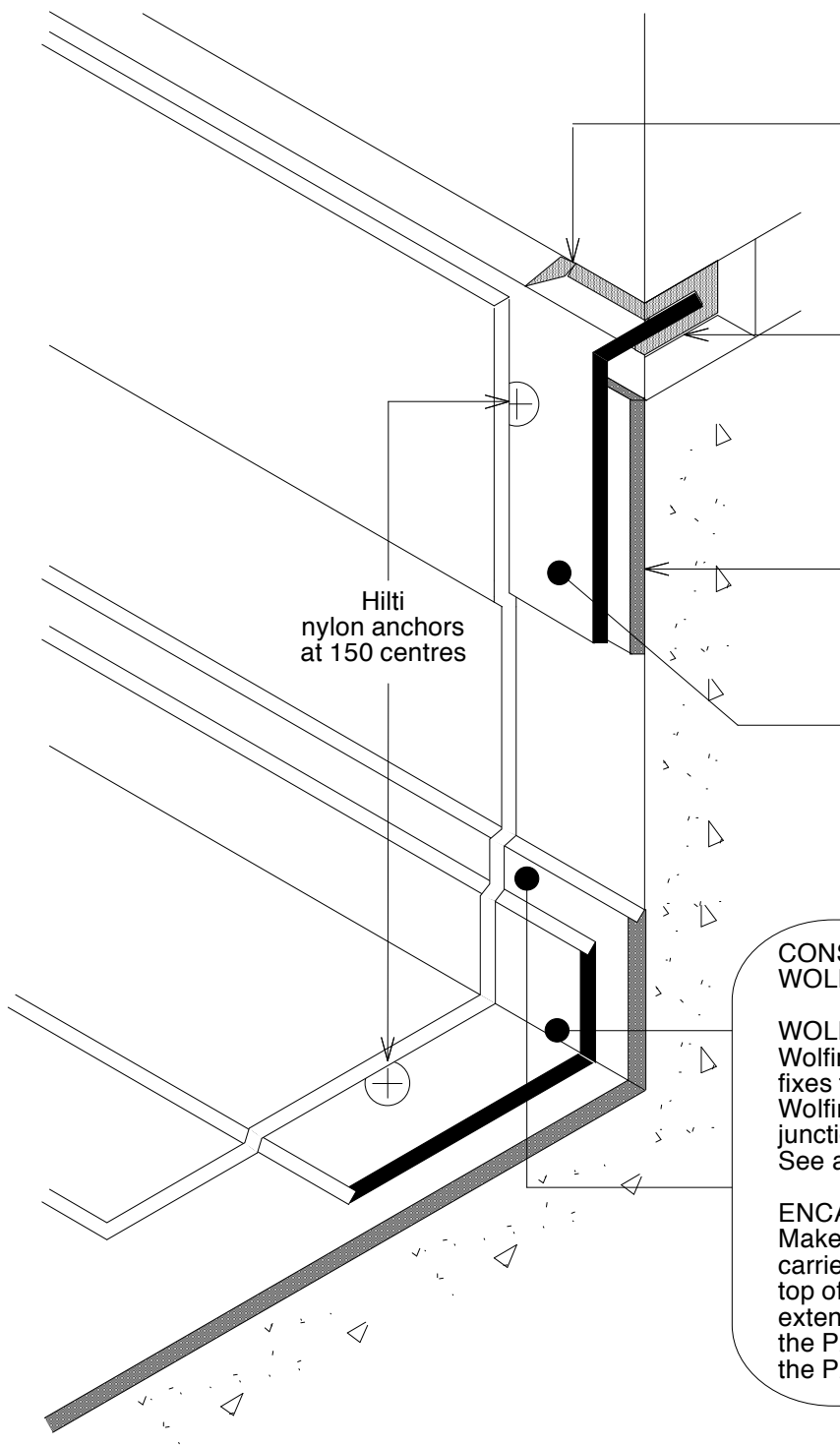
The applicator must lay the slip sheet and should supervise the tiler to preserve warranty

**SKIRTING TILES**

This is desirable for turn-up protection and may be adhered direct to the membrane. Contact WMA for approved adhesives.



|   |                             |
|---|-----------------------------|
| ASSOCIATED DETAIL                                     | <b>TYPICAL TILED FINISH</b> |
| © WOLFEN MEMBRANES AUSTRALIA PTY LTD <b>DWG: SD 4</b> |                             |



**CONSTRUCTION NOTES  
WOLFINSTEEL P5**

**SAWCUT**

Masonry:  
Open out joint to 20 mm deep or run a sawcut in the face.  
Concrete:  
Sawcut 6 mm wide by 20 mm deep.  
Sawcuts to be straight and clean.

**URETHANE**

Prime and fill sawcut with approved one part urethane before inserting P5. Ensure a good fill for gap closure.  
On completion neatly apply a second run of urethane.  
See also Note 1.

**SEPARATION LAYER**

38 wide closed cell polyethylene foam tape as separator between steel and masonry.  
See also Note 2.

**WOLFINSTEEL**

Wolfinsteel - 40 mm X 15 mm angle - set lengths min. 3 mm apart to allow for expansion. Patch together before fixing with Wolfin IB covering the full girth.

**CONSTRUCTION NOTES  
WOLFINSTEEL P2**

**WOLFINSTEEL**

Wolfinsteel P2 - 40 mm X 15 mm angle - this fixes the perimeters in shear and clamps the Wolfin membrane snugly into the floor/ wall junction.  
See also Note 3.

**ENCAPSULATION**

Make certain that the deck membrane carries up the wall minimum 15mm above the top of the P2. Ensure that the skirt membrane extends onto the deck minimum 40mm beyond the P2 base and is completely welded to both the P2 and the membrane behind.

**Notes:**

1. The prefill is the necessary water barrier and is critical. Ensure that the P5 is ready and fully patched before applying the urethane to the sawcut - fit while the urethane is wet. For isolated expansion joints: horizontal or underwater applications: Wolfin will advise sealant selection.
2. Check substrate conditions with WMA. 1mm thick semi-cured butyl tape may be specified in lieu of the foam tape, depending on substrate conditions.
3. The P2 detail is mandatory at the base of all upturns. Clearance from WMA is to be sought should alternatives be considered necessary.

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|---|--|------------------|
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| WOLFEN MEMBRANES AUSTRALIA -<br>CONCEPT/SHOP DWG.   | <b>CUTAWAY SECTION</b><br>Typical Details<br>P2 (Base Angle) and P5<br>(Wall or Floor Termination) | SCALE: Full Size |
|   |  | DATE: Nov 2009   |
|   |  | DWG. No: WSD - 1 |

**CONSTRUCTION NOTES  
WOLFINSTEEL P3  
FIXBAND**

**UNDERLAP**

Lay the first lap and fix the fixband over it, leaving a min. 40 mm free end of membrane for encapsulation.

**OVERLAP**

Overlay the second lap (also beyond the fixband by 40 mm) and weld all services.

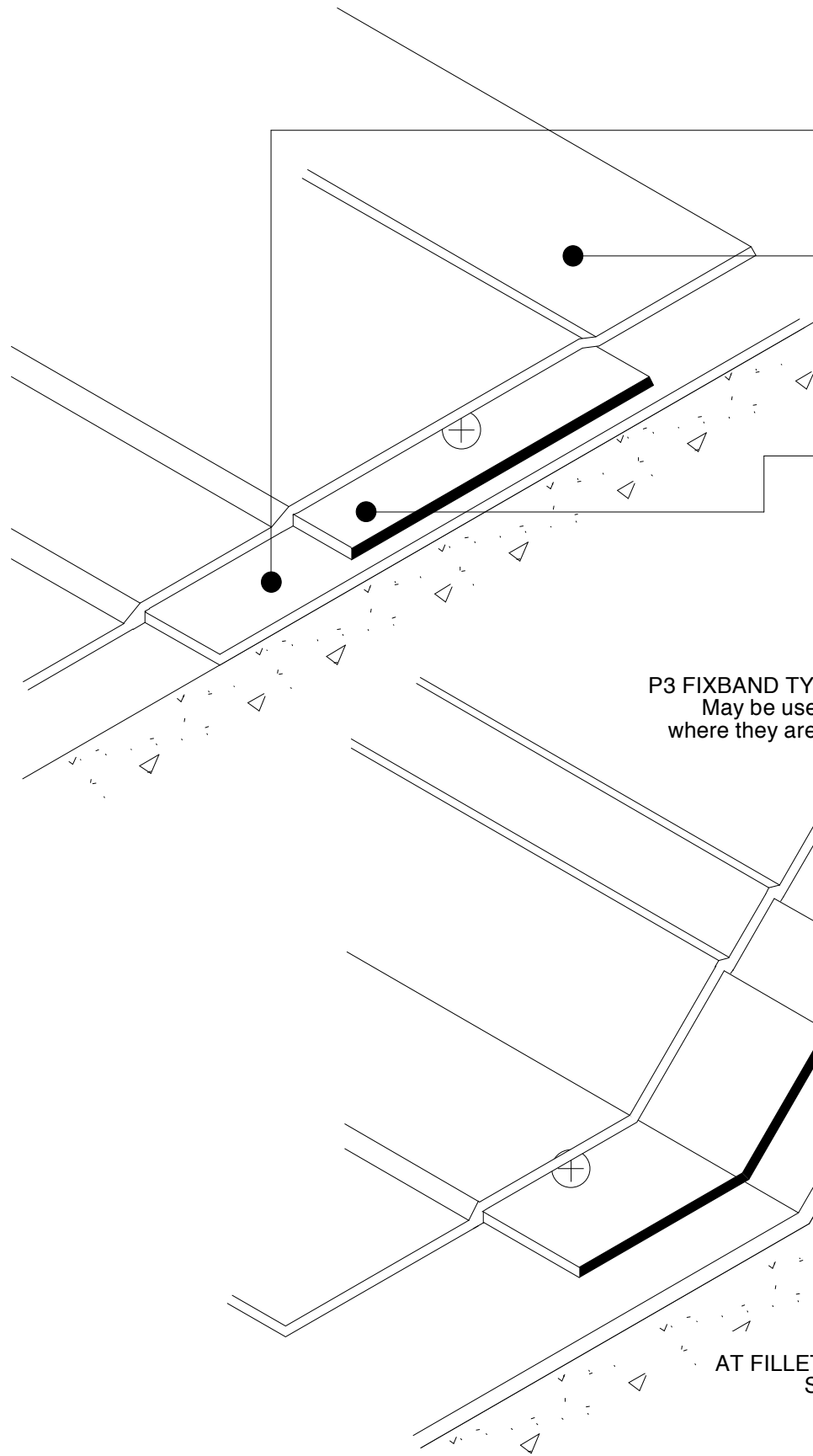
**WOLFINSTEEL**

Wolfinsteel P3 - 50 mm crossbroken flat fixed with Hilti Nylon anchors at 150 mm centres

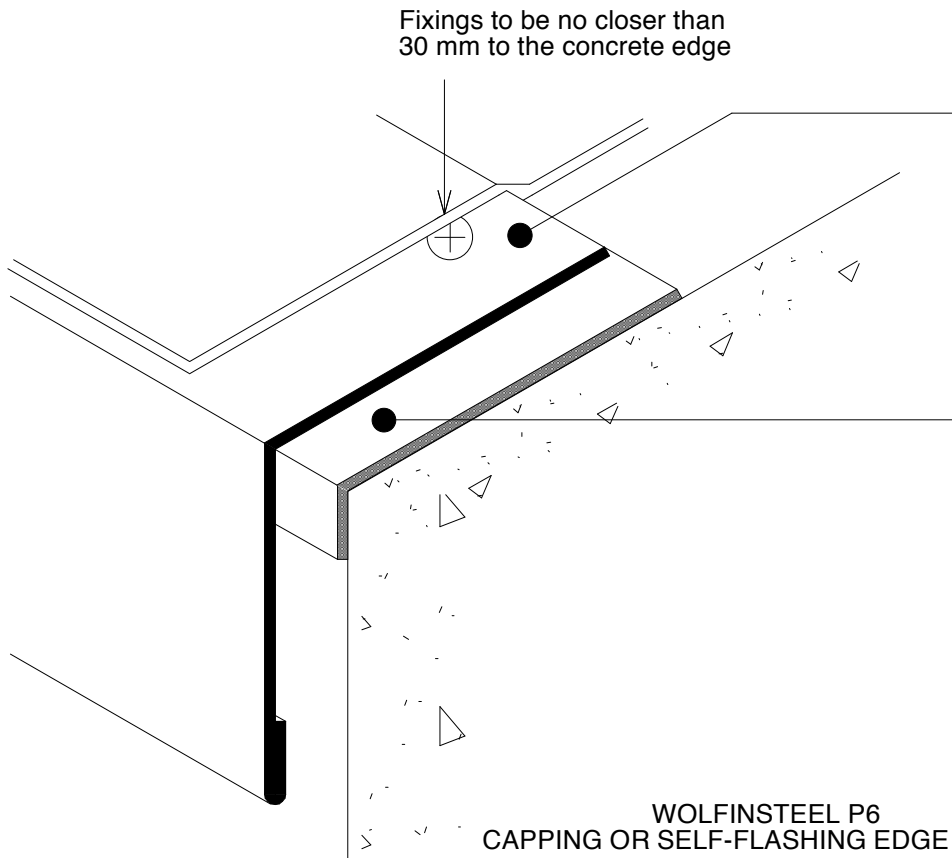
**P3 FIXBAND TYPICAL (HORIZONTAL or VERTICAL)**

May be used either side of movement joints where they are within the extent of the membrane.

**P3 VARIANT  
AT FILLETS AND IRREGULAR BASE ANGLES**  
Specifications all as P3 above



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|---|--|------------------|
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| WOLFIN MEMBRANES AUSTRALIA -<br>CONCEPT/SHOP DWG.   | <b>CUTAWAY SECTION</b><br>Typical Details<br>P2 (Base Angle) and P5<br>(Wall or Floor Termination) | SCALE: Full Size |
|   |  | DATE: Nov 2009   |
|   |  | DWG. No: WSD - 2 |



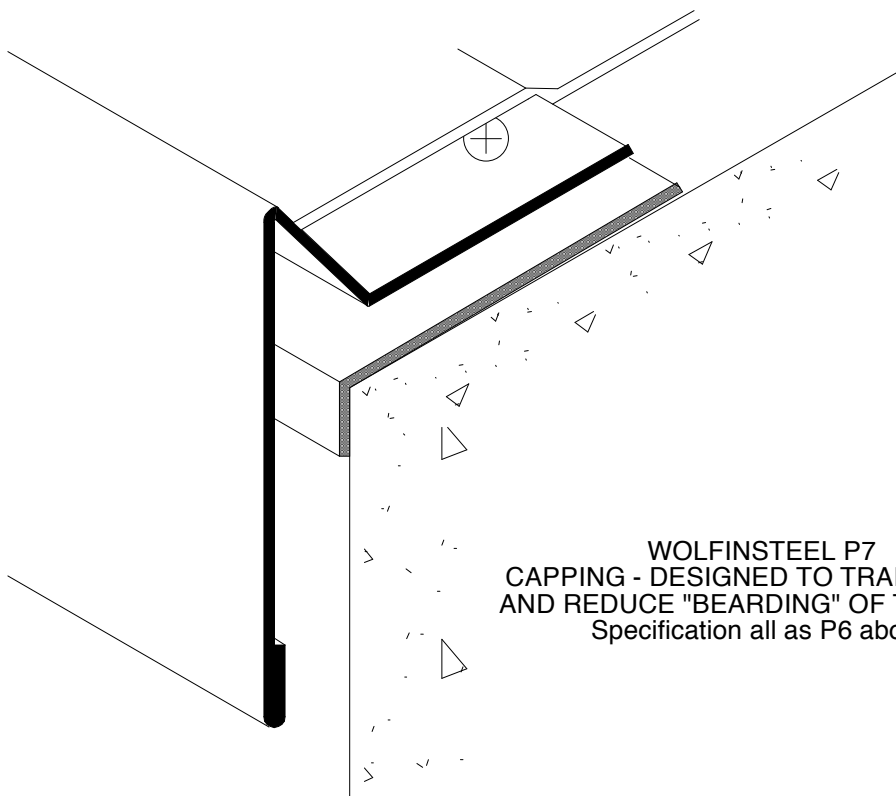
**CONSTRUCTION NOTES  
WOLFINSSTEEL P6**

**WOLFINSSTEEL**  
 Wolfinssteel P6 - 10 X H X 45.  
 Height (H) is variable and depends on wind and weathering needs. Set to cover any structural joint in the top 100 mm. WMA are to advise on each case. Set lengths min. 3 mm apart to allow for expansion. Patch together before fixing the Wolfin covering the full girth.

**SEPARATION LAYER/ WIND BARRIER**  
 38 mm wide X 1 mm thick semi-cured butyl tape planted over concrete edge before fixing P6.

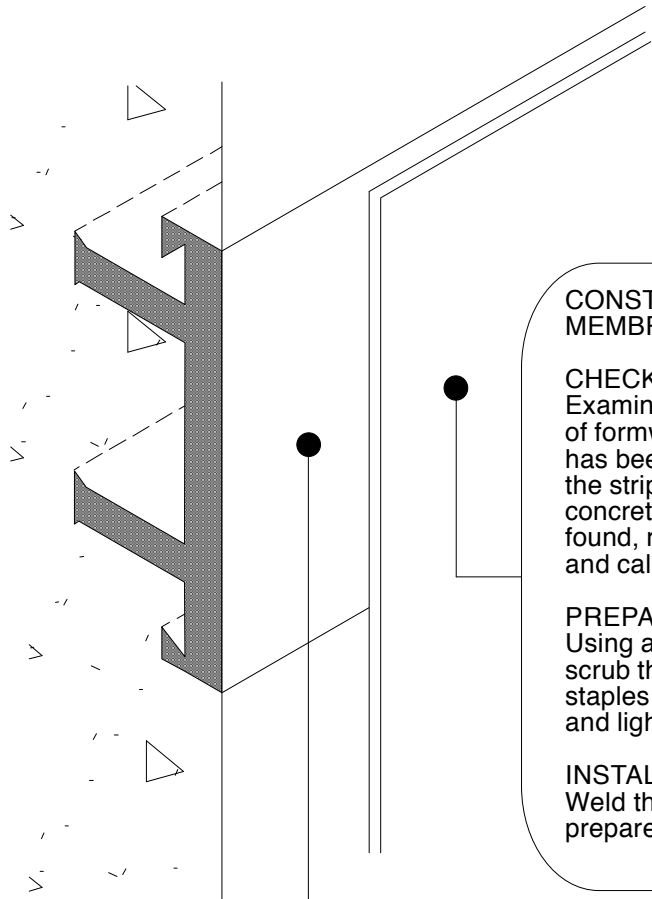
**SECTION JOINTS**  
 80 mm wide Wolfin IB patches covering each joint between P6 sections. Carry full height of vertical face and across the full width of the horizontal face.

**WOLFINSSTEEL P6  
CAPPING OR SELF-FLASHING EDGE DETAIL**



**WOLFINSSTEEL P7  
CAPPING - DESIGNED TO TRAP DEBRIS  
AND REDUCE "BEARDING" OF THE FACE  
Specification all as P6 above**

|   |   |                  |
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| WOLFINS MEMBRANES AUSTRALIA -<br>CONCEPT/SHOP DWG.  | <b>CUTAWAY SECTION</b><br>Typical Details<br>P6 (Capping / edge)<br>and P7 (Anti-beard capping) | SCALE: Full Size |
|   |   | DATE: Nov 2009   |
|   |   | DWG. No: WSD - 3 |



**CONSTRUCTION NOTES  
MEMBRANE TO AF 6**

**CHECK**  
Examine the AF 6 after stripping of formwork to ensure that there has been no dislodgement during the strip and identify any bony concrete. If any such faults are found, report them to the builder and call WMA.

**PREPARATION**  
Using a small angle grinder, scrub the laitence and protruding staples off the face of the AF 6 and lightly roughen the surface.

**INSTALLATION**  
Weld the membrane to the prepared surface as normal.

**CONSTRUCTION NOTES  
WOLFEN AF 6**

**COORDINATION**  
The Wolfen AF 6 is fitted by the applicator, not by the formworker. Discuss with the builder in advance to ensure feasibility - formwork erection sequence - and reinforcement steel placement. The above factors can make installation difficult if not pre-arranged.

**INSTALLATION**  
Check the specification to determine who is responsible for the level set-out. If builder, ensure the line is clearly applied to the formwork. If applicator, ensure that the drawings are carefully checked.

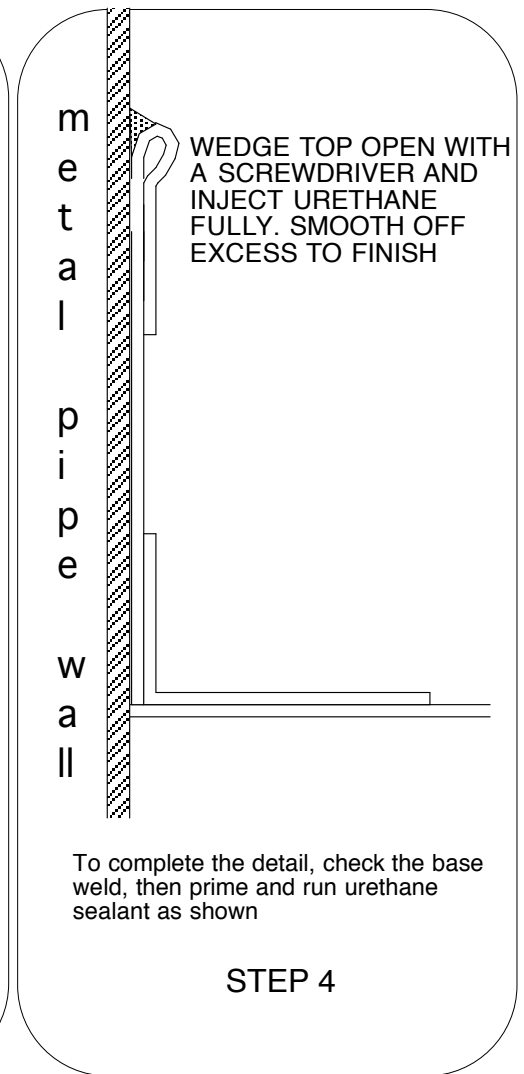
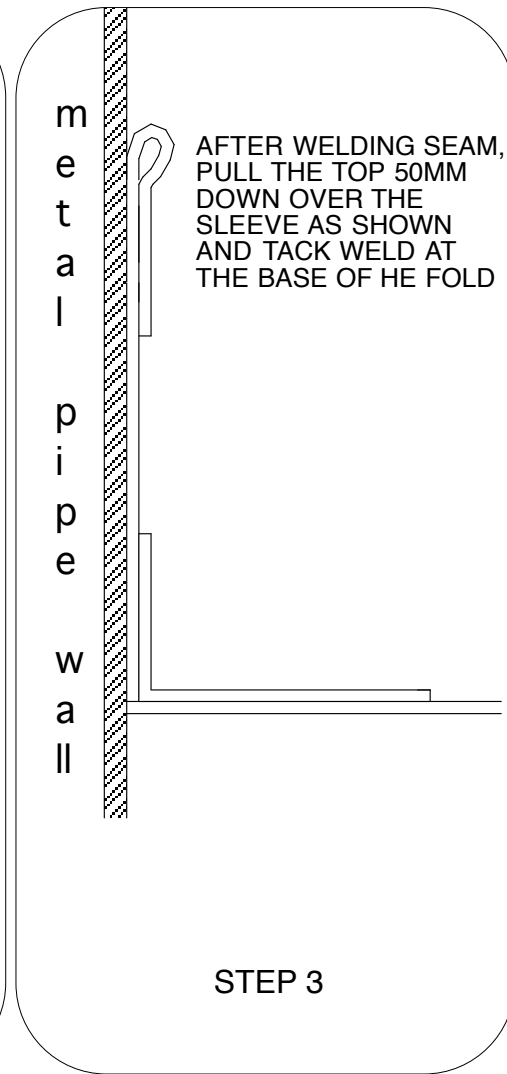
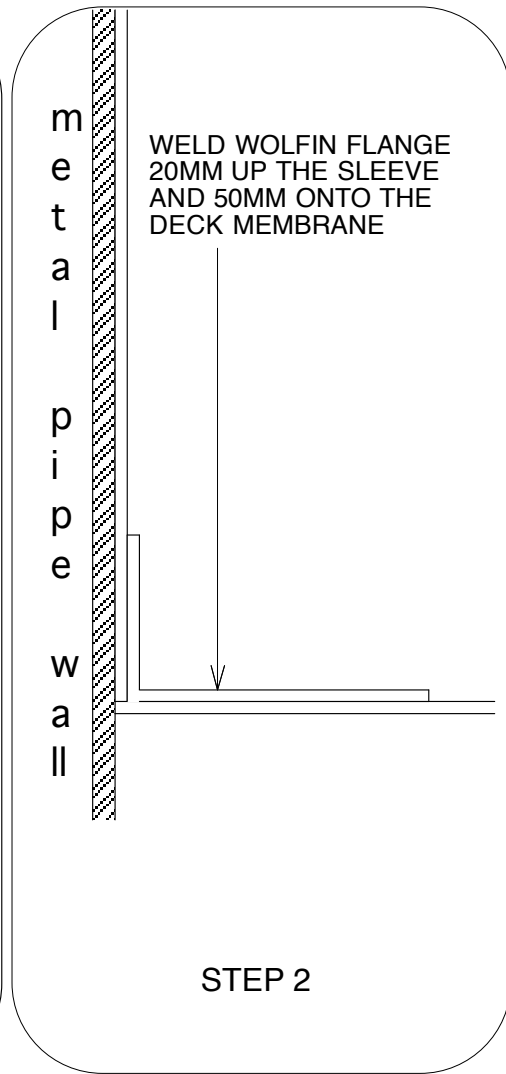
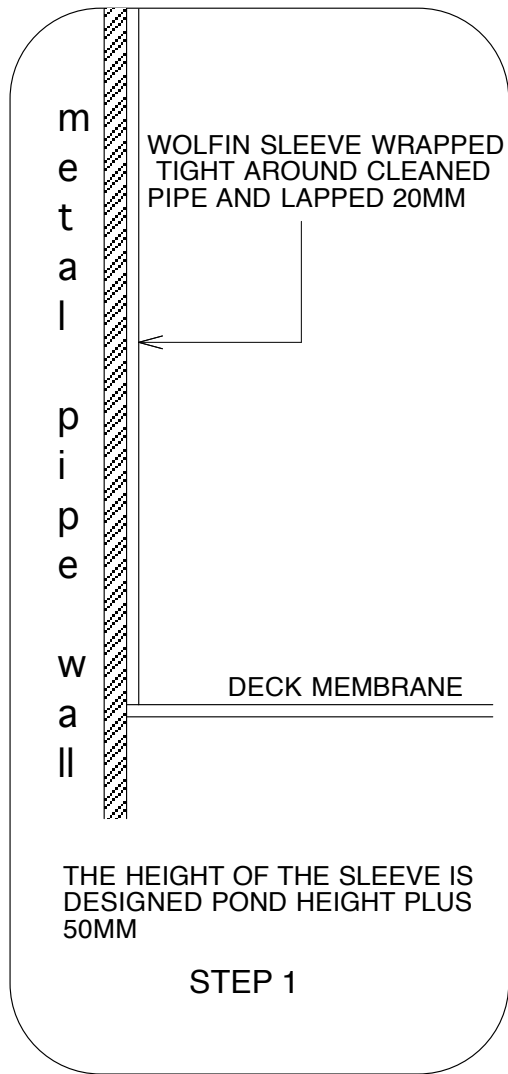
**FITTING**  
Using a 10 mm staple gun staple both outer wings to the formwork at approx. 100 mm centres. All changes of direction are to be mitred and welded with a Wolfen welding axe.

**WOLFEN AF 6 REGLET**

This is the preferred detail for terminations in new concrete structures.  
It can also be installed in some horizontal surfaces where desired and WMA should be called for advise for such cases. Rectification of any poor (bony) concrete found can usually be achieved by installing a P5 loop - intersect the P5 into one of the AF 6 wings at each end of the loop. A P5 can also be intersected with the AF 6 to give continuity for both details where they occur in the same surface.

|   |   |                  |
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| WOLFEN MEMBRANES AUSTRALIA -<br>CONCEPT/SHOP DWG.   | <b>CUTAWAY SECTION</b><br>Typical Details<br>AF 6<br>Cast-in Reglet | SCALE: Full Size |
|   |   | DATE: Nov 2009   |
|   |   | DWG. No: WSD - 4 |





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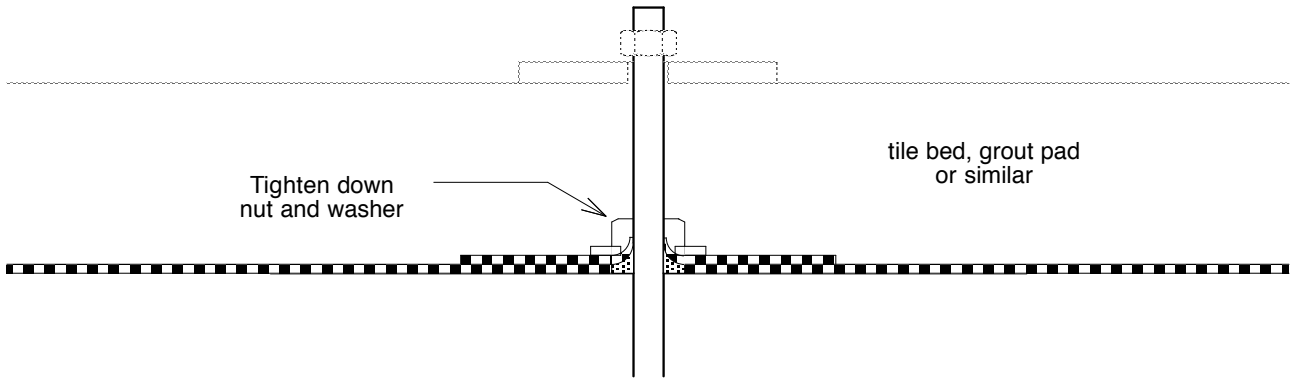
WOLFEN MEMBRANES AUSTRALIA - CONCEPT/SHOP DWG.

HALF SECTION  
TYPICAL DETAIL AT METAL PIPE  
PENETRATION

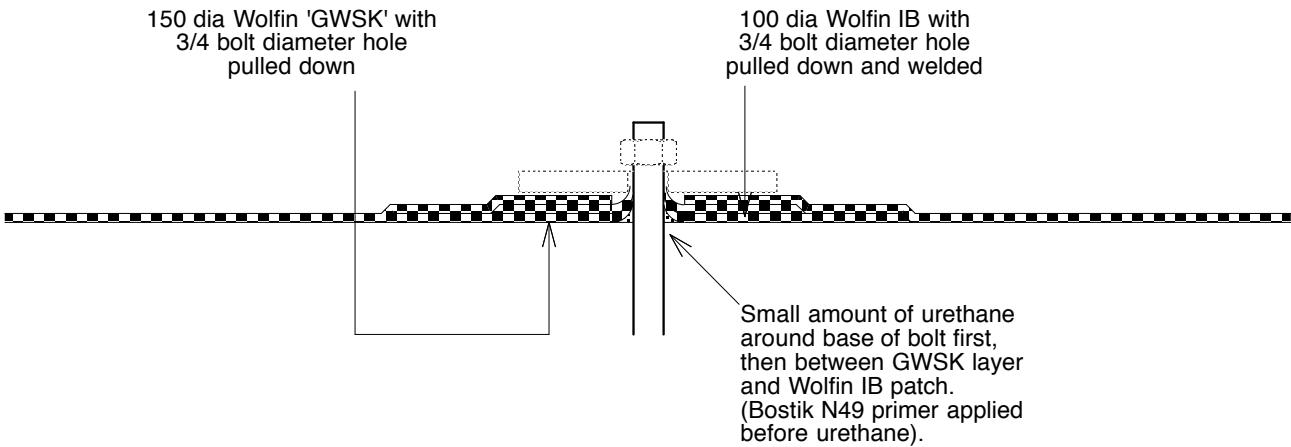
SCALE: 1:1

DATE: OCT 2004

DWG. No: WP - 1



Shows the case where the device is separated from the membrane by a tile bed or similar. Also drawn to show a bolt drilled later.



TYPICAL DETAIL AT BOLTS PENETRATING MEMBRANE

DETAIL SD 9.02

|  |  |                                       |  |
|--|--|---------------------------------------|--|
| <p>This drawing is intended to show basic principles and set minimum standards. Any variation in site conditions is to be referred to WMA for approval of the required detail. The thickness scale on this drawing is exaggerated for clarity.</p> |  | <p>COMMENTS / ASSOCIATED DRAWINGS</p> |  |
| <p>© WOLFIN MEMBRANES AUSTRALIA PTY LTD</p>  |  | <p>Scale: 1: 5</p>                    |  |
| <p>Standard Guide Details</p>  |  | <p>Bolt Details</p>                   |  |
|  |  | <p>Date: May 2011</p>                 |  |
|  |  | <p>Dwg No: <b>SD - 9.02</b></p>       |  |