

# 4421WB WPS BITUFLAME® MEMBRANE ROOFING

## 1. GENERAL

This section relates to **Waterproofing Systems Ltd** bituFLAME® membrane roofing, bonded to:

- construction plywood, including all underlays and accessories
- concrete, including all underlays and accessories

### 1.1 RELATED WORK

Refer to ~ for ~

### 1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

MGNZ                      Membrane Group New Zealand Inc.

### Documents

### 1.3 DOCUMENTS REFERRED TO

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC E2/AS1      External moisture  
AS/NZS 2269      Plywood - Structural - Specifications  
MGNZ              Code of practice for torch-on membranes  
BRANZ BU 345    Flat membrane roofs - design and installation  
BRANZ BU 346    Flat membrane roofs - materials

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

### 1.4 MANUFACTURER/SUPPLIER DOCUMENTS

**Waterproofing Systems Ltd** documents relating to work in this section are:

bituFLAME® Product Manual (3<sup>rd</sup> Edition November 2007)  
Standard detailed drawings  
[BRANZ Appraisal 404](#) - bituFLAME® Roof Membrane Systems

For copies of the above documents, or for technical assistance, contact your local **Waterproofing Systems Ltd** representative:

Northland, Auckland	021 - 917 773
Waikato, Bay of Plenty	021 - 457 953
Gisborne	021 - 457 953
Hawkes Bay, Manawatu	021 - 402 434
Wanganui, Taranaki	021 - 402 434
Wairarapa, Wellington	021 - 402 434
Marlborough, Nelson	027 - 544 5534
Christchurch, Dunedin	027 - 544 5534
Southland, Central Otago	027 - 544 5532

Web:                      [www.waterproofing.co.nz](http://www.waterproofing.co.nz)  
Telephone:              03 - 366 9495 (Head office) or 0508 (2WATER) 292837  
Facsimile:              03 - 366 9496 (Head office)



## Warranties

- 1.5 WARRANTY - INSTALLER/APPLICATOR  
Warrant this work under normal environmental and use conditions against failure.  
Warranty period: 5 years

Refer to the general section for the required form of 1237WA WARRANTY AGREEMENT and details of when completed warranty must be submitted.

- 1.6 WARRANTY - MANUFACTURER/SUPPLIER  
Provide a materials warranty in the suppliers standard form.  
  
Warranty period: 20 years materials double layer system  
From: Date of completion of the application

## Requirements

- 1.7 QUALIFICATIONS  
Roofing work to be carried out by licensed applicators approved by **Waterproofing Systems Ltd**. Approved applicators may be found at:  
Web: [www.waterproofing.co.nz](http://www.waterproofing.co.nz)  
Telephone: 03 - 366 9495 or 0508(2WATER) 292837
- 1.8 NO SUBSTITUTIONS  
Substitutions are not permitted to any specified **Waterproofing Systems Ltd** system, or associated components and products.
- 1.9 PROJECT REGISTRATION  
Contact **Waterproofing Systems Ltd** to confirm that the project has been registered.  
Web: <http://www.waterproofing.co.nz/project-registration.html>  
Telephone: 03 - 366 9495 or 0508(2WATER) 292837  
If the project has not been registered, telephone and provide all required details.

## Performance

- 1.10 PRE INSTALLATION MEETING  
Convene a meeting between the applicator, contractor, all associated consultants and **Waterproofing Systems Ltd** to ensure all parties know what is required for effective performance of the system.
- 1.11 SPECIAL DETAILS  
Where a standard detail does not exist, or if a standard detail cannot be applied, an approved alternative must be obtained from **Waterproofing Systems Ltd** before proceeding with the installation.
- 1.12 TEST  
Flood test horizontal applications with a minimum 50mm depth of water for 24 hours. Make good any lack of watertightness when the surface is completely dry.
- 1.13 PERFORMANCE  
Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets.

1.14 QUALITY ASSURANCE

Maintain quality necessary to assure that work is performed in accordance with this specification and the qualifying requirements of **Waterproofing Systems Ltd.**

Ensure that **Waterproofing Systems Ltd's** Quality Control sheets are completed fully and faithfully for each installation area.

2. PRODUCTS

**Materials**

2.1 DOUBLE LAYER WATERPROOFING MEMBRANE SYSTEM

bituFLAME<sup>®</sup> BS, an AAP modified bitumen base sheet with glass fibre reinforcement.

bituFLAME<sup>®</sup> CS, an AAP modified bitumen waterproofing membrane with 180 gsm composite spunbond reinforcement all marked with the manufacturer's mark and where required finished with a UV protection coating system.

2.2 DOUBLE LAYER VENTED SYSTEM

bituFLAME<sup>®</sup> VBS, an APP modified bitumen base sheet, with a mass of 0.745 kg/m<sup>2</sup> and 119 holes/m<sup>2</sup>.

bituFLAME<sup>®</sup> BS, an APP modified bitumen base sheet with glassfibre reinforcement.

bituFLAME<sup>®</sup> CS, an APP modified bitumen cap sheet with 180 gsm composite spunbond reinforcement all marked with the manufacturer's mark and where required finished with a UV protection coating system.

2.3 DOUBLE LAYER MECHANICALLY FIXED SYSTEM

bituFLAME<sup>®</sup> BS, an APP modified bitumen base sheet, with glass fibre reinforcement and mechanically fixed using annular grooved nails and washers.

bituFLAME<sup>®</sup> BS, an APP modified bitumen base sheet with glassfibre reinforcement fully torched to the mechanically fixed bituFLAME<sup>®</sup> BS.

bituFLAME<sup>®</sup> CS, an APP modified bitumen cap sheet with 180 gsm composite spunbond reinforcement all marked with the manufacturer's mark and where required finished with a UV protection coating system.

2.4 PRIMER

bituPRIME quick drying bituminous primer compatible with the waterproofing membrane and formulated to prepare the substrate for optimum application of the membrane.

2.5 BITUBOND<sup>®</sup> WB ADHESIVE

Liquid applied bituminous adhesive all marked with the manufacturer's mark for areas of installation where a torch cannot be safely used and areas specified in **Waterproofing Systems Ltd** specifications or when the membrane system is being installed using the cold-applied adhesive method.

2.6 UV COATING SYSTEM FOR POLYPROPYLENE FINISHED MEMBRANES

Proprietary coating systems to provide UV protection to the membrane roofing system.



## Components

- 2.7 EDGE TRIM  
Metal to **Waterproofing Systems Ltd** details and to suit the specific location.
- 2.8 OUTLETS  
Eterno roof drains, overflows and WPS sumps as supplied and required by **Waterproofing Systems Ltd**.
- 2.9 ROOF VENTS  
Eterno air vents as supplied and required by **Waterproofing Systems Ltd**.

## 3. EXECUTION

### Conditions

- 3.1 GENERALLY  
Work and materials to BRANZ Bulletins 345: Flat membrane roofs - design and installation. 346: Flat membrane roofs - materials, and to **Waterproofing Systems Ltd** documents.
- 3.2 STORAGE  
Take delivery of rolls undamaged and include for site handling facilities where required. Stack on end, off the ground on a level surface, out of sunlight and above 5°C and with accessories. Do not allow rolls to become crushed.
- 3.3 CONFIRM LAYOUT  
If not detailed on the drawings, confirm the layout to suit site conditions, and **Waterproofing Systems Ltd** specification.

### Application - preparation

- 3.4 PRELIMINARY WORK  
Ensure that preliminary work, including formation of falls, flashing rebates, provision of battens and fillets and fixing of vents and outlets to levels, is complete and properly constructed to enable the system to work as intended. Ensure timber fillets fit neatly and that mitres are neatly formed. This work and the substrate to be smooth, clean and dry. Identify areas of potential movement and plan for movement joints.
- 3.5 ACCEPTANCE OF SUBSTRATE  
Confirm that the substrate complies with the [NZBC E2/AS1](#) for the relevant substrates and **Waterproofing Systems Ltd** documents, including fillets, sumps, outlets and projections, and ensure work of the required standard.
- 3.6 CONCRETE SUBSTRATE  
Ensure concrete substrate has been allowed to cure for at least 28 days and has a moisture content of less than 75% RH before commencing application. Prepare surface, including vacuum cleaning and acid etching/diamond grinding as necessary to leave smooth, clean, dry and free of debris. Make good any cracks with non shrink grout.
- 3.7 PLYWOOD SUBSTRATE  
Lay plywood square-edged sheets with staggered joints (brick bond), and laid tight-butted, with all edges fully supported. Ensure sheets are rigid, with joints flush, no lumps or hollows, smooth, clean, dry (20% maximum moisture content) and free of debris. Plywood to be minimum 18mm, H3 CCA treated and conform to AS/NZS 2269. Sheets to be fixed with glue and stainless steel screws counter sunk,



chamfered edges, coving fillets to all up-stands and installed to **Waterproofing Systems Ltd** specification. Do not use LOSP treated plywood.

- 3.8 **TURN DOWNS**  
Where the membrane is to be turned down at an external corner, chamfer the corner to provide a minimum 5mm radius.
- 3.9 **UPSTANDS**  
Install fillets minimum 20mm to all upstands and ensure tight and neat fit. Timber fillets H3.1 treated minimum.
- 3.10 **FLASHINGS**  
Fit membrane flashings to all internal and external corners and upstands and to all penetrations to **Waterproofing Systems Ltd** specifications. Neatly mould membrane up all upstands and around all roof penetrations with a tight cove.
- 3.11 **SET-OUT**  
Neatly set out rolls starting at the lowest point of the roof and run perpendicular to the roof pitch. Lay out membrane and allow to relax for 30 minutes prior to laying. In cooler conditions allow additional time for the membrane to fully relax.

### **Application - laying**

- 3.12 **CONDITIONS**  
Do not lay membrane in wet or misty conditions or below 7°C. Check that the substrate is dry at time of laying. Concrete maximum moisture content 75% RH; plywood maximum moisture content 20%.
- 3.13 **APPLICATION TORCH ON MEMBRANES - GENERALLY**  
Unless otherwise specified, install reinforced modified bitumen membrane system to MGNZ Code of practice for torch-on membranes.
- 3.14 **PRIMING**  
All surfaces to be primed strictly to **Waterproofing Systems Ltd** recommendations, ensuring good even coverage. Primed roofs will need re-priming if left more than 3 days before membrane installation.
- 3.15 **LAYING AND JOINTING**  
Lay membrane using torch applied bonding unless the location will not allow the application of heat. When cold applied under-surface adhesive may be used. Lay in order from sumps, through gutters, valleys, eaves, verges, main roof and upstands to cover flashings.
- 3.16 **HEAT CONTROL**  
Control heat to ensure the membrane is fully installed to the substrate with all laps properly formed. Ensure full bonding between the bituFLAME<sup>®</sup> base sheet and bituFLAME<sup>®</sup> cap sheet. Do not over heat membrane.
- 3.17 **BITUFLAME<sup>®</sup> VENTED BASE SHEET**  
Lay out the rolls of bituFLAME<sup>®</sup> VBS vented base sheet without any allowance for laps. Ensure rolls remain in place while the bituFLAME<sup>®</sup> BS base sheet is torched over the vented base sheet.
- 3.18 **BITUFLAME<sup>®</sup> BASE SHEET**  
Fully torch the rolls of bituFLAME<sup>®</sup> BS directly to the primed substrate or vented base sheet as described in the bituFLAME<sup>®</sup> Product Manual, allowing for 100mm side laps and 150mm end laps. Where the mechanical fixing option is used mechanically fix the



bituFLAME® BS base sheet according to the bituFLAME® Product Manual taking particular note of the requirements when installing in very high wind zones. Fully torch a further layer of bituFLAME® BS over the mechanically fixed layer before installing the bituFLAME® CS cap sheet.

- 3.19 **BITUFLAME® CAP SHEET**  
Set the bituFLAME® CS sheets to ensure laps are off-set to the base sheet. Fully torch to base sheet to **Waterproofing Systems Ltd** installation instructions, ensuring the cap sheet is fully bonded to the base sheet. All side laps 100mm wide and end laps 150mm wide. All laps fully welded and seamed off.
- 3.20 **BOX GUTTERS**  
Lay membrane in box gutters with the membrane neatly dressed into proprietary preformed sump and downpipe outlets. Fix membrane into downpipes and overflows.
- 3.21 **WELD JOINTS**  
Weld joints using heat to **Waterproofing Systems Ltd** requirements. For bituFLAME® Granule, remove granules from the end-lap area to create bitumen to bitumen contact.
- 3.22 **PENETRATIONS**  
Form, or mould by torching, with required upstands and downturns and all penetrations to **Waterproofing Systems Ltd** details.
- 3.23 **ROOF DRAINS, OVERFLOWS AND SUMPS**  
Install Eterno roof drains, overflows and sumps to **Waterproofing Systems Ltd** installation details.
- 3.24 **ROOF VENTS**  
Install Eterno roof vents for roof space/moisture venting to **Waterproofing Systems Ltd** installation details.
- 3.25 **MOVEMENT JOINTS**  
Install required movement joints to **Waterproofing Systems Ltd** details.

### **Finishing**

- 3.26 **COATINGS, TOPPINGS**  
For polypropylene finished bituFLAME® place the specified coating or topping system within 5 days of completing laying.
- 3.27 **APPLY COATING**  
Apply the selected system to **Waterproofing Systems Ltd** requirements on all polypropylene finished membranes, ensuring full film thickness and even coverage is achieved. For aluminium based UV protection coatings ensure aluminium flakes are drilled up into the liquid and are evenly dispersed prior to coating.
- 3.28 **FOOT TRAFFIC**  
Heavy foot traffic is not allowed on the membrane after laying.
- 3.29 **ACCESS BOARDS**  
Provide access boards for later operations and remove when no longer needed.



- 3.30 ACCEPTANCE
- Arrange for an inspection of the completed work.
  - Complete **Waterproofing Systems Ltd** Quality Control sheets and provide to them for the issuing of the Materials Warranty.
  - Protect and maintain roofing until completion of the contract works.

- 3.31 SUBSEQUENT WORK
- Make good any covering cut or deformed by later work. Making good to take the form of inserting a new whole or part infill sheet to maintain the appearance of the covering as originally laid.

#### Completion

- 3.32 CLEAN UP
- Clean up as the work proceeds.

- 3.33 ACCEPTANCE
- Arrange for an inspection of the completed work.
  - Complete **Waterproofing Systems Ltd** Quality Control sheets and provide to them for the issuing of the Materials Warranty.
  - Protect the membrane until completion of the contract works.

- 3.34 LEAVE
- Leave work to the standard required by following procedures.

- 3.35 REMOVE
- Remove debris, unused materials and elements from the site.

#### 4. SELECTIONS

Substitutions are not permitted to the following, unless stated otherwise.

##### 4.1 WATERPROOFING MEMBRANE - DOUBLE LAYER

Base sheet: 2mm bituFLAME<sup>®</sup> BS  
Cap sheet: 4mm bituFLAME<sup>®</sup> CS  
Finish: ~  
Colour: ~

##### 4.2 WATERPROOFING MEMBRANE - VENTED DOUBLE LAYER

Vented base sheet: bituFLAME<sup>®</sup> VBS  
Base sheet: 2mm bituFLAME<sup>®</sup> BS  
Cap sheet: 4mm bituFLAME<sup>®</sup> CS  
Finish: ~  
Colour: ~

##### 4.3 WATERPROOFING MEMBRANE - MECHANICALLY FIXED

Base sheet: 2mm bituFLAME<sup>®</sup> BS plus nails / washers  
Base sheet: 2mm bituFLAME<sup>®</sup> BS  
Cap sheet: 4mm bituFLAME<sup>®</sup> CS  
Finish: ~  
Colour: ~

##### 4.4 UV COATING FOR POLYPROPYLENE FINISHED MEMBRANES

Brand: ~  
Colour: ~

5. **DISCLAIMER**

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

