

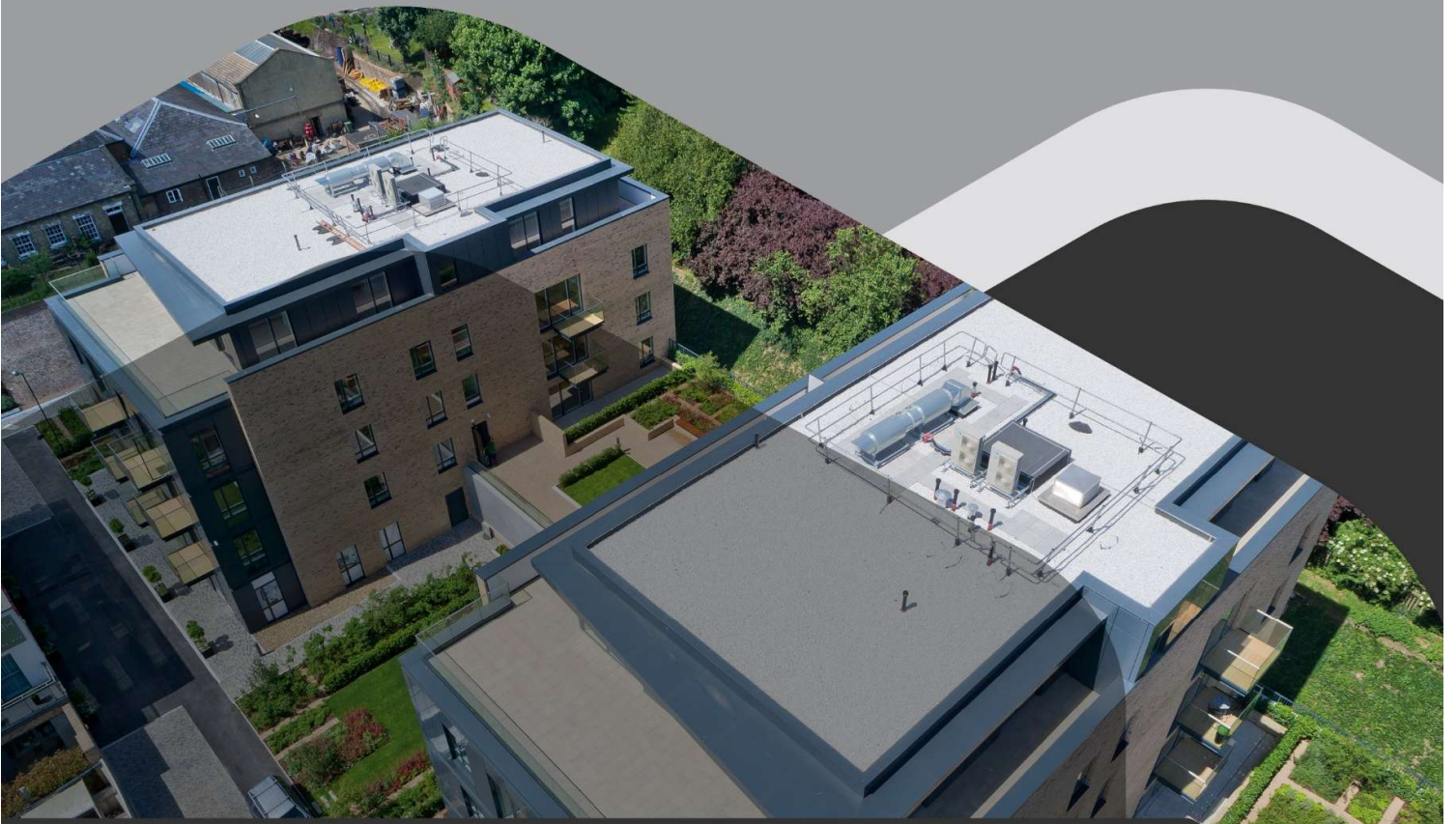


ALUMASC ROOFING

Proposed Specification

Project:
YGG Rhossafan

Project ID: SP147588-S1
Date of issue: 28/02/2025



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Project information

Project: YGG Rhossafan
Location: Port Talbot SA12 7NN
Area 1: Green Roof Areas
Project ID: SP147588-S1
Date of issue: 28/02/2025
NBS category: J41 Reinforced bitumen membrane roof coverings

Client information

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All clauses with the suffix 'A' are either NBS Plus non-standard clauses and/or amended by Alumasc.

J41 REINFORCED BITUMEN MEMBRANES ROOF COVERINGS

To be read in conjunction with related Architectural Sections, Preliminaries, and Contract Conditions.

TYPES OF COVERING

110-A BUILT-UP REINFORCED BITUMEN MEMBRANE WARM DECK ROOF COVERING

- Substrate: Exterior grade plywood to BS EN 636-2/structural engineer's/architect's specification.
 - Panels should be laid to break joint i.e. with staggered short edge joints. Allowance should be made for an expansion gap between panels in accordance with current codes of practice.
 - All panels should be fixed using corrosion resistant countersunk screws at 100mm centres along all edges and intermediate supports/noggins, and a minimum 8mm from the board edge.
 - After construction the deck must be homogenous, rigid, and not allow for rotation or flex at board edges.
- Preparation:
 - Surface is to be dry, clean and free from all contaminants including oils, grease, dirt and debris.
- Primer: Eurorof SA Primer.
 Application: As clause 530-A.
 - *Prime: All surfaces to receive a Self-Adhesive membrane must be first primed with Eurorof SA Primer.*
 Primer (where insulation to the vertical is not applicable): Alumasc Bitumen Primer.
 Application: As clause 530-A.
- Vapour control layer: Eurorof Self-Adhesive AVCL.
 Attachment: Self-adhered, as clause 670-A.
- Insulation to field area: 240mm Alumasc BGT PIR Insulation (140mm+100mm).
 Attachment: Bonded by Eurorof PU Insulation Adhesive, as clause 680-A.
 - Detailing: 30mm Alumasc GTF PIR Insulation, where appropriate.
 Attachment: Subject to substrate, secured in accordance with manufacturer's instructions.
- Waterproof covering: Derbigum High Performance Roofing System.
 - Manufacturer: Alumasc Building Products Ltd
 White House Works, Bold Road
 Sutton, St Helens, WA9 4JG
 Telephone: 01744 648400
 Email: technical@alumascroofing.com
 - Underlay: Hi-Ten Universal Underlay.
 Attachment: Fully bonded by gas torch, as clause 710 / 740-A.
 - Top layer/Cap sheet: Derbigum Anti-Root.
 Colour: Black.
 Attachment: Fully bonded by gas torch, as clause 710 / 740-A.
 - Flashings and detail work: Eurorof Self-Adhesive Underlay & Derbigum Anti-Root Cap sheet.
 Attachment: Fully bonded by self-adhesion/bonded in Eurorof Detail Adhesive/heat welded laps, respectively.
 - Reinforcement strip to flashings and detail work: Derbigum Anti-Root Cap sheet (100mm x 100mm).
 Attachment: Fully bonded in Eurorof Detail Adhesive.
- Surface: Graded 20/40mm large rounded pebbles, as clause 465.
 Precast concrete paving slabs on Pedestal Pro Fixed/or Adjustable Supports, as clause 470-A.
 Alumasc/Blackdown Green Roof, refer to Q37 'Green Roofs' NBS specification.
- Accessories: Alumasc GRP Check Trim, as clause 345.
 Alumasc Termination bar, as clause 376-A.
 Alumasc Alumasc Roofing Sealant, as clause 407-A.
 Harmer outlet/s, size and number required to be in accordance with BS EN 12056-3.

PERFORMANCE

210 ROOF PERFORMANCE

- General: Secure, free draining and weathertight.

225 AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS

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

230-A INSULATION

- Requirement: Determine type and thickness of insulation and integral or separate overlay to satisfy the following criteria:
 Thermal transmittance of roof (maximum): $0.10 \text{ W/m}^2 \text{ K}$.
 - Compressive strength of insulation (minimum) at 10% compression: 150 kN/m^2 .
 Compressive creep to EN 1606: 40 kN/m^2 recommended design load.
 - Finished surface: Suitably even, stable and robust to receive the covering.
 - Insulation compliance: To relevant British Standard, or Agrément certified.

280-A GENERAL DESIGN REQUIREMENTS

- All works must comply with all current relevant standards, codes of practice, and the Building Regulations to provide a secure, free draining and completely weathertight roof, including but not limited to:
 - BS 6229 - Flat roofs with continuously supported coverings. Code of practice.
 - BS 8217 - Reinforced bitumen membranes for roofing. Code of practice.
 - BS 5250 - Code of practice for control of condensation in buildings.
 - BS EN 1991-1-4 Eurocode 1 - Actions on structures. General actions. Wind actions.
 - BS EN 12056-3 - Gravity drainage systems inside buildings. Roof drainage, layout and calculation.
 - BS EN ISO 6946 - Building components and building elements. Thermal resistance and thermal transmittance. Calculation method.
 - The Building Regulations Approved Document Part L1 or Part L2. Conservation of fuel and power.
- The design must take account of all structural factors to ensure that the waterproof covering is able to accommodate the effect of movement in order to avoid stress or deformation under these conditions.
- The waterproofing components' resistance to dead and imposed loading must be assessed to avoid failure of the component/and or reduction in performance. Where resistance is deemed inadequate, suitable measures to mitigate load intensity will need to be considered.
- Insulation must be incorporated to avoid a cold bridge as determined by building control and/or appointed design professional.
- The design must ensure that the continuity of the waterproof covering is maintained for a vertical height of at least 150mm above the finished roof level at all abutments, parapets etc.
- The building owner or their appointed design professional must have satisfied themselves that the roof structure and deck are suitable to receive the dead load of the proposed specification.
- It is strictly the responsibility of the client and/or their design professional to ensure compliance of the proposed specification with all relevant Building Regulations by consultation with Building Control. In the event of any doubt about the interpretation or application of the Building Regulations in relation to any particular new build or refurbishment works, clarification must be sought directly from Building Control.

PRODUCTS

322-A PRIMER

- Type: Solvent based primer.
- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Eurorof SA Primer.
- Packaging: 25 kg Drums.
- Approx. coverage: $0.10\text{-}0.25 \text{ kg/m}^2$ ($250\text{-}100 \text{ m}^2$ per unit).

327-A BONDING COMPOUND - INSULATION

- Type: High foaming one part polyurethane adhesive.
- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Eurorof PU Insulation Adhesive.
- Packaging: 6 kg Cans.
- Approx. coverage: $30\text{-}35 \text{ m}^2$ to central areas & 25 m^2 at roof perimeter/detail and exposed areas.
- Storage temperature: $+10^\circ\text{C}$, keep clear of the ground.

328-A BONDING COMPOUND - TOP LAYER/CAP SHEET TO DETAILS

- Type: Synthetic rubber adhesive.
- Manufacturer: Alumasc Building Products Ltd.
- Product reference: Eurorof Detail Adhesive.
- Packaging: 15l drums.
- Approx. coverage: 2m²/l.
- Storage temperature: +10°C, keep clear of the ground.

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: To BWPDA commodity specification C8.

345 PERIMETER TRIMS

- Type: GRP - Pultruded glass fibre reinforced polyester resin.
- Manufacturer: Alumasc Building Products Ltd.
- Product reference: GRP Check Trim.
- Colour: Select from
- of profile Select from 40mm / 65mm / 100mm / 150mm.
- Lengths (maximum): 3m.

375 MINOR MOVEMENT JOINTS IN SUBSTRATES

- Type: _____.
- Manufacturer: _____.
- Product reference: _____.
- Size: _____.

376-A TERMINATION BAR (Options)

- Type: Aluminium.
- Manufacturer: Alumasc Building Products Ltd.
- Product reference: Termination bar.
- Size: 1.5 lm.
- Type: GRP
- Manufacturer: Alumasc Building Products Ltd.
- Product reference: Termination bar.
- Size: 3 lm.

395-A VAPOUR CONTROL LAYER

- Type: Polyester reinforced, self-adhesive, modified bitumen vapour barrier with an aluminium core.
- Manufacturer: Alumasc Building Products Ltd.
- Product reference: Eurorof Self-Adhesive AVCL.
- Roll size: Width 1m x 15m Length, Thickness 2mm.

400-A BUILT-UP REINFORCED BITUMEN WATERPROOF COVERING

- Manufacturer: Alumasc Building Products Ltd.
- System reference: Derbigum High Performance Roofing.

400-1 UNDERLAY

- Type: Polyester reinforced oxidised bitumen membrane.
- Product reference: Hi-Ten Universal Underlay.
- Roll size: Width 1.1m x 7.27m Length, Thickness 3mm.

400-2 UNDERLAY TO DETAILS

- Type: Polyester reinforced, composite polymer modified bitumen membrane with a removable polythene film to the underside and a sanded finished surface.
- Product reference: Eurorof Self-Adhesive Underlay.
- Roll size: Width 1m x 16m Length.

400-12 TOP LAYER/CAP SHEET

- Type: Dual reinforced APP modified bitumen membrane with a glass fibre weathering surface and high tensile polyester core. Anti-root chemicals are added to the blend to make it resistant to roots.
- Product reference: Derbigum Anti-Root.
- Colour: Black.
- Performance data: Tensile Strength - Longitudinal 700 N/50mm, Transverse 650 N/50mm, Elongation at break (L/T) 45%, Tear resistance >150 N, Softening point >140°C, Resistance to impact >1250mm, Resistance to static load >20 kg, Cold flex <-15°C.
- Roll size: Width 1.1m x 8m Length, Thickness 4mm.
- 400-20 REINFORCEMENT STRIP Certification: BBA Certificate No. 86/1593, root resistant to EN 13948, manufactured under ISO, ISO 14001 and EMAS. 9001

400-20 REINFORCEMENT STRIP

- Type: As clause 400-12.
- Product reference: Derbigum Anti-Root.
- Size: Form using 100mm x 100mm strips cut from the roll.
- Roll size: Width 1.1m x 8m Length, Thickness 4mm.

407-A SEALANT

- Type: One part, solvent-free, flexible UV resistant adhesive.
- Manufacturer: Alumasc Building Products Ltd.
- Product reference: Alumasc Roofing Sealant.
- Application: To seal the connection between roofing membranes to all common building materials.
- Coverage: 10m with a 6mm bead, per 290ml cartridge.
- Packaging: 290ml cartridge.
- Colour: Black.

420-A RIGID URETHANE FOAM WARM ROOF INSULATION

- Standard: Polyisocyanurate (PIR) roofboard manufactured to BS EN 13165.
- Manufacturer: Alumasc Building Products Ltd.
- Product reference: Alumasc BGT PIR Insulation.
- Grade: 32 kg/m³.
- Edges: Square.
- Board size: Standard 1200mm x 600mm.
- Thickness: 240mm (140mm+100mm).
- Facing: Bitumen glass fleece on both sides.
- Environmental status: Blowing agent: Pentane, CFC and HCFC free.
 Ozone depletion potential: Zero, Global warming potential: <5.
 BRE Green Guide Rating: A.

421-A RIGID URETHANE FOAM WARM ROOF INSULATION

- Standard: Polyisocyanurate (PIR) roofboard manufactured to BS EN 13165.
- Manufacturer: Alumasc Building Products Ltd.
- Product reference: Alumasc GTF PIR Insulation.
- Grade: 32 kg/m³.
- Edges: Square.
- Board size: Standard 1200mm x 600mm.
- Thickness: 30mm.
- Facing: Mineral coated glass fibre tissue to both sides.
- Environmental status: Blowing agent: Pentane, CFC and HCFC free.
 Ozone depletion potential: Zero, Global warming potential: <5.
 BRE Green Guide Rating: A.

465 STONE BALLAST

- Type: Large rounded pebbles.
- Supplier: Alumasc Building Products Ltd.
- Size: Graded 20/40mm, free from fines and sharps.
- Colour: _____.

470-A PRECAST CONCRETE PAVING SLABS

- Standard: To BS EN 1339, hydraulically pressed.
- Manufacturer: _____.
- Product reference: _____.
- Colour/ Finish: _____.
- Size: ____x____ mm.
- Recycled content: _____.
- Support system: As clause 377-A.

477-A SUPPORT SYSTEM FOR PAVING SLABS

- Manufacturer: Alumasc Building Products Ltd.
- Product reference: Pedestal Pro - Select from Fixed Supports / Adjustable Supports / Non-Combustible Adjustable Paving Pedestal.
- Size: Module height ____mm.
- Accessories: Select from Self-Adhesive Rubber Levelling Shockpad / Moulded Rubber Shockpad / Shockpad for Pedestal Base / Perimeter Spaces / Not applicable.
- NB. A sacrificial layer of membrane must be placed beneath any steel based pedestals for additional protection, extending 25mm beyond the footprint of the baseplate in each direction.

EXECUTION GENERALLY

515 ADVERSE WEATHER

- General: Do not lay coverings in high winds, wet or damp conditions or in extremes of temperature unless effective temporary cover is provided over working area.
- Unfinished areas of roof: Keep dry. Protect edges of laid membrane from wind action.

520-A INCOMPLETE WORK

- Progress of the works will be such as to maintain the waterproof integrity of the roof/s. At the end of each working day, all open laps and joints to be sealed in accordance with current codes of practice.
- On resumption of work: Cut away tail of membrane from completed area and remove.

530-A APPLYING PRIMERS

- Product reference: Eurorof SA Primer.
- Coverage per coat: 0.10-0.25kg/m² (250-100m² per unit), subject to substrate.
- Surface coverage: Even and full.
- Application: The adhesive must only be applied in dry weather conditions at temperatures of at least 5°C, in a thin, even layer, with a brush or roller.
- Product reference: Alumasc Bitumen Primer.
- Coverage per coat (minimum): Metal 6-12 m²/litre.
Concrete and timber 6-8 m²/litre.
- Surface coverage: Even and full.

590-A GENERAL NOTES / REQUIREMENTS

- Prior to installation, the Alumasc project specification, associated drawings, and manufacturer's installation instructions for all materials should have been studied and understood, and must be followed.
- These proposals relate to the roof waterproofing area only. They do not include associated work to be carried out by other trades, which may be required to complete a satisfactory refurbishment.
- All preliminary work including alterations to detailing, where applicable, is complete and satisfactory.
- Installation may only be carried out by Alumasc registered operatives, who have sufficient training for each specialist system and awareness to work safely, under the direction of qualified supervisors.
- Where applicable, all operatives must be able to produce their individual ID card upon demand, whilst installing the system for which they are registered. These should be available for inspection at all times.
- Contractors are advised to visit site when deemed necessary and make themselves fully acquainted with the extent of the works and the conditions under which they are to be executed.
- It is the sole responsibility of the contractor to ensure that all roofing works shall be installed in accordance with the appropriate sections of all current relevant codes of practice, Building Regulations, and manufacturer's installation instructions for product supplied by the company.
- Provision is to be made for flame-free detailing to encapsulate any combustible materials that may be present (whether visible or not) in the roof construction and particularly within 900mm of any abutment or perimeter details. It is the responsibility of the appointed contractor to assess the potential risk. Alumasc will accept no liability for any loss, damage, or injury attributable to non-flame-free detailing in such cases.
- Outlet/s shall be set at a level to compensate for the thickness of the outlet flange and avoid any check against the flow of water. All outlets are to include a clamping ring to secure the waterproof covering.
- Outlets and apertures must be protected from ingress of debris to prevent blockage of downpipe/s; protection should be removed during non-operating periods.
- Where applicable, all roof services and plant, access walkways, platforms, pipes etc. must be mounted on Roof-Pro support systems providing at least 500mm clearance above the roof membrane, in order to facilitate access for future inspection/maintenance or repair.
- The contractor must ensure that appearance of the completed works is achieved.

591-A SITE INSPECTIONS

- Site inspections will be made by Alumasc during the works to ensure that the installation is executed in accordance with the Alumasc warranty requirements and current codes of practice. A site visit report form, along with supporting photographs will be issued to the client/contractor following each inspection. The reports will identify and monitor the works observed during the inspections and will, where applicable, make recommendations for appropriate rectification which the contractor is to undertake in order to satisfy the warranty requirements.
- In situations where works can only be undertaken outside of standard business hours as stipulated by the building owner, they cannot be monitored by Alumasc, and as a result, the company won't take responsibility or be liable for any outcome related to that work. Alumasc can only undertake regular inspections during business hours to inspect the quality and progress subject to agreement with the building owner.
- No materials are to be installed above the completed waterproof covering until Alumasc has carried out a final inspection and satisfactory documented leak test certification is in place.

592-A HEALTH & SAFETY

- It is strictly the contractor's responsibility to ensure that all works are executed in accordance with current health and safety legislation. Guidance may be taken from HSE publication reference: HSG33 - Health and Safety in Roof Work.
- Safety scaffolding, the location of rubbish skips, access ladders etc. should be agreed with the client/principal contractor and be in accordance with current Health and Safety regulations.
- Wherever a gas torch is employed, the contractor must observe the greater of a minimum one-hour fire watch, or the period dictated by their own insurers, after cessation of torching. Fire extinguishing equipment must be readily available, in accordance with Health and Safety legislation.
- Sure-Foot Guardrail System or other suitable temporary or permanent fall arrest or fall protection measures will be necessary for the inspection and maintenance of the warranted Alumasc Roofing System throughout its life cycle.
- It is the responsibility of the contractor to carry out their own assessment of the potential risks on all aspects of the contract by using flame-free products to any combustible materials that may be present (whether visible or not), or otherwise where there is a potential hazard. Alumasc will accept no liability for

any loss, damage, or injury attributable to the use of a gas torch application on or adjacent to combustible materials. To all areas considered a risk, the contractor must enforce a torch-free zone as dictated by their own insurers, however, it is recommended that this should be no less than 900mm.

- Product data and SDS documents are available for all relevant products supplied by Alumasc; available for download from <http://www.alumascroofing.com>.

593-A STORING OF MATERIALS

- Materials must be stored carefully on a clean dry surface, under cover and raised clear of the ground.
 - Insulation should be stored inside wherever possible. If outside storage is unavoidable, the insulation packaging alone is not under any circumstances sufficient to provide protection.
- Roll materials must be stored on end.
- The load-bearing capacity of the structure must be checked if material is to be stored at roof level.
- Only sufficient material for the day's schedule should be taken out of store, or uncovered, and placed close to the area being worked. Insulation should only be unwrapped immediately prior to use.
- Materials that become wet during storage that are susceptible to weakening, damage etc. (e.g. Insulation), should be replaced.

SUBSTRATES/VAPOUR CONTROL LAYERS/INSULATION

610-A SUITABILITY OF SUBSTRATES

- Suitability of base: The substrate is to be even and free from any irregularities that may compromise the works/and or performance. It is the responsibility of the appointed contractor to verify and report any deficiencies so that they can be corrected prior to commencing with the application.
- Substrates generally: Secure, clean, dry, smooth, and free from frost, contaminants, voids and protrusions.
- Preliminary work: Complete including:
 - Formation of upstands, kerbs, box gutters, sumps, grooves, chases, and expansion joints.
 - Fixing of battens, anchoring plugs/strips.
- Moisture content and stability of substrate: Must not impair roof integrity.
- Acceptable methods of drying of roof areas, where required, must be agreed with the client prior to the commencement of works.

670-A LAYING VAPOUR CONTROL LAYER

- Preparation: Substrate/s must be even and free from any irregularities that may compromise the bond.
 - It is the responsibility of the installer to undertake adhesion tests to all non Alumasc supplied materials in advance of the primary application to verify a full bond is achieved to the primed substrate. Where there are any adhesion issues, consult Alumasc technical services. Installation must only proceed if proven to be satisfactory.
- Bond: Full over whole surface, with no air pockets.
- Application: Remove release film and firmly pressure roll the surface and overlaps to ensure adhesion. The roll must be accurately aligned prior to the removal of the release film.
- Side and end laps: 75mm side lap & 100mm end lap.
 - Heat seal leaving a continuous bead of bitumen extruded from all laps.
- Edges of insulation at roof edges, abutments, upstands, kerbs, penetrations and the like:
 - Dress to form edge protection and provide a minimum 50mm seal above the top surface of the insulation.
 - Where insulation is to be installed vertically against abutments, parapets etc. the vapour control layer is to be taken the full height of the upstand.

680-A LAYING WARM DECK ROOF INSULATION TO FIELD AREA

- Setting out:
 - Long edges: Fully supported.
 - End edges: Fully supported.
 - Joints: Butt together.
 - End joints: Stagger.
- Bedding: For central areas apply in 10mm continuous parallel beads at a rate of 4 beads per metre at 250mm centres (30-35m²/6kg can). For roof perimeters/detail and exposed areas apply in 10mm continuous beads at a rate of 6 beads per metre at 175mm centres (25m²/6kg can).
 - Eliminate uneven surfaces to ensure positive contact between the insulation board and substrate.
 - Firmly press the insulation into place to ensure full contact and adhesion.

- Minimum application temperature of PU adhesive: 5°C.
- Protection to exposed edges of insulation: Install treated timber batten approx. 10mm less in thickness to the adjacent insulation, to avoid creating a step in the waterproofing.
- Completion: Boards must be in good condition, well fitting and stable.

681-A LAYING WARM DECK ROOF INSULATION TO VERTICAL DETAILING

- Setting out:
 - Edges: Fully supported.
 - Top edge: Chamfered.
 - Joints: Butt together.
- Attachment: To be advised by Alumasc technical services on confirmation of substrate type.
- Completion: Boards must be in good condition, well fitting and stable.

WATERPROOF COVERINGS/ACCESSORIES

710 LAYING REINFORCED BITUMEN MEMBRANES GENERALLY

- Direction of laying: Unrolled up the slope.
 - Where practicable, install so that water drains over and not into laps.
- Side and end laps: In accordance with manufacturer's requirements.
 - Pre-cut the lower corner of the end of each roll at 45° where it will be overlapped by the end lap of the next roll.
- Head and side laps: Offset.
- Intermediate and top layer/ capsheet: Fully bond.
- Successive layers: Apply without delay. Do not trap moisture.
- Strips of bitumen membrane for 'linear' details: Cut from length of roll.
- Completed coverings: Firmly attached, fully sealed, smooth, weatherproof and free draining.

738-A SELF-ADHESIVE BONDING OF REINFORCED BITUMEN UNDERLAY

- Preparation: Substrate/s must be even and free from any irregularities that may compromise the bond.
 - Undertake an adhesion test to establish a full bond can be obtained to the primed substrate.
- Bond: Full over whole surface, with no air pockets.
- Application: Remove release film and firmly pressure roll the surface and overlaps to ensure adhesion. The roll must be accurately aligned prior to the removal of the release film.
- Side and end laps: 75mm side lap & 100mm end lap.
 - Heat seal leaving a continuous bead of bitumen extruded from all laps.

740-A TORCH-ON BONDING OF REINFORCED BITUMEN MEMBRANES

- Setting out: Neat, with carefully formed junctions.
- Bond: Full over whole surface, with no air pockets.
- Application: Use of a roll bar is recommended to field areas.
 - Torch free zones should be no less than 900mm from any detail.
- Side and end laps: 100mm side lap & 150mm end lap.
 - A minimum 5 to 10mm continuous bead of bitumen must extrude from all laps including detailing.
 - Excess compound at laps of top layer/cap sheet: Leave as continuous bead, do not spread or remove.

775-A SKIRTINGS AND UPSTANDS / GENERAL DETAILING

- Preparation: Prepare the substrate to provide an acceptable base for waterproofing.
 - Prime substrate with the specified primer, as clause 530-A.
- Layers of bitumen membrane: Carry in staggered formation up the upstand, with each layer fully bonded.
- Flashings and detail work:
 - The design should ensure that the continuity of the waterproof covering is maintained for a vertical height of 150mm above the finished roof level at all abutments, parapets etc. Alumasc cannot take responsibility in the event of water ingress over and above the termination of our waterproofing.
 - All membranes specified for the detailing are to be executed in two layers, the underlay (self-adhered) and cap sheet (bonded in adhesive), each to be fully bonded. At all upstands, install a 100 x 100mm reinforcing strip into the angle.

The main field cap sheet must overlap onto the reinforcing strip by the full 100mm. Install a final flashing piece of the cap sheet, fully bonded to the upstand and overlapping onto the main horizontal sheet area by a minimum of 100mm.

- Bonding (cap sheet): Eurorof Detail Adhesive is to be applied to both the substrate and the reverse side of the membrane by brush or roller to produce an even coat (coverage approx. 2m²/l). Avoid puddling as this will cause uneven drying. Firmly pressure roll the surface to achieve a continuous bond across the full width of the membrane. The membrane is to be applied only when the primer is dry, cure times will vary with ambient temperature fluctuations.
- Upstands:
 - At ends of rolls: Form with bitumen membrane carried up without using separate strip.
 - Elsewhere: Form with matching strips of bitumen membrane, maintaining laps.
- Leadwork: Where applicable, code 4 or 5 lead is required for flashing of details. Maximum lengths and girth should be established and carried out in accordance with the Lead Sheet Association recommendations.

780-A WELTED DRIPS

- Material: Derbigum Anti-Root Cap Sheet.
 - Length: Form using maximum width strips.
 - Height at external gutter (minimum): 75mm.
- Welt tail: Fold neatly to a 6mm timber drip former. Nail former to face of drip batten.
- Welt: Bond together; carry minimum 100mm onto roof. Overlap with bituminous cap sheet.

785-A FIXING PERIMETER TRIMS

- Bitumen membrane: Lay over roof edge upstand. Project free edge from wall or fascia.
- Trim:
 - Setting out: 3mm (minimum) clear from wall or fascia. All lengths should be close butt jointed, using the connecting pieces supplied.
 - Fasteners: Screw fixings only, type and length appropriate to substrate.
 - Fixing: 30mm from ends and at 300mm (maximum) centres.
 - Corner pieces: Purpose made.
- Completion:
 - Contact surfaces: Prime.
- Completion of bitumen membrane:
 - Top layer/ Cap sheet: Butt joint to rear edge of trim.
 - Cover strip: Fully bond flashing piece of membrane to the primed trim, overlapping onto the system below by a minimum of 100mm.
 - Cover strip material: Derbigum Anti-Root Cap Sheet.

SURFACING

840-A LAYING STONE BALLAST

- Condition of substrate: Clean.
- Gravel guards: Fit to outlets.
- Previously laid materials: Protect during laying of ballast.
- Laying: Spread evenly. Do not pile to excessive heights.
 - Depth (minimum): ____ mm.

850 LAYING PRECAST CONCRETE PAVING SLABS

- Condition of substrate: Clean.
- Setting out: Minimize cutting.
- Joints: Open.
 - Width: 4mm (Pedestal std. blade).
 - Perimeter/ Upstand margins: Not applicable.
- Completion: Slabs must be level and stable.

COMPLETION

910-A FINAL INSPECTION

- Interim and final roof inspections: Strictly in accordance with Alumasc requirements to satisfy the warranty requirements.
- Rainwater goods must be tested by the contractor upon completion of the works prior to handover.
- The contractor must contact Alumasc to arrange a final inspection upon completion of each stage of the works. It is strictly the responsibility of the contractor to notify Alumasc that a final inspection is required, and also to ensure that the inspection takes place prior to the application of any surfacing above the waterproof covering. Failure on either or both counts will jeopardise approval and/or warranty release.
- Once the final inspection has been carried out, the warranty will be issued via the roofing contractor upon acceptable rectification of any snags as identified by Alumasc, or without undue delay should all be satisfactory.

920-A ELECTRONIC ROOF INTEGRITY TEST

- Test Authority: The contractor must arrange final documented leak testing for each waterproofed area, which must be conducted by a leak detection service, who will provide the following:
 - A method statement explaining the test methods employed.
 - Up-to-date instrument calibration documentation.
 - Confirmation of correct voltage setting according to the dielectric value of the material to be tested.
 - Numbered and dated reports including annotated roof plan in .pdf format.
 - Confirmation of testing of all waterproofed areas, including upstands.
- Timing of Tests:
 - Primary test must take place within seven days of completion of each roof area.
 - Final test must take place within 24 hours prior to applying finishes to the waterproofing. A minimum of three days notification of the final test must be given to Alumasc who will be in attendance during the test.
- Condition of roof covering prior to testing: Complete to stage where integrity can be tested.
- Surface: Clean and free of site debris.
- Breaches detected: Re-test immediately following repair and confirm watertight.
- Test Results: Submit on completion, to include annotated plan of area tested.
- Waterproofing Integrity Certificate: Submit on completion of a single test or series of tests to the nominated roof or section thereof.
- The issue of the warranty is conditional upon the provision of satisfactory leak test certification covering all areas.

921-A PROTECTION

- As soon as an area of waterproofing has been completed it should be inspected upon notification of completion by the contractor. Completed areas should not be used as a building platform or as an access route by other trades. If unavoidable, appropriate protection must be provided for the duration of the construction period. Care should be taken not to mark or dent the works while laying any additional protection. Inspection and/or leak testing must always take place after removal of such protection.
- Roofs accessed for regular maintenance of plant, or parts of the building, should be given consideration in providing a predetermined route to and from the entry point to minimise potential hazards.

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 chemicals, traffic and adjacent or high level working.

941-A WARRANTY

- Type: Single source, fully warranted waterproofing package from a sole supplier, including all associated component parts and accessories, and installed by a specialist contractor registered with Alumasc.
- Term/Conditions: Alumasc Building Products Ltd offers a warranty to the customer in respect of the proposed roofing installed as per our specification at the premises for a period of 40 years from the date of final completion.
 - The warranty assures the building owner that, in the event that the roof fails to remain watertight as a consequence of latent defect in products supplied by Alumasc, details designed by Alumasc or faulty workmanship of the Alumasc Registered Contractor, Alumasc undertakes to reinstate the waterproof integrity of the roof, subject to the terms and conditions.
 - The warranty offered is conditional upon the full system being purchased from Alumasc and installed in accordance with the specification outlined. Substitution of any products, or installation by means other than those described, will invalidate the warranty offered.

942-A MAINTENANCE

- It is recommended that all flat roofs be inspected at a minimum frequency of twice a year. Ideally, inspections should be carried out in spring and autumn accounting for the effects of annual extremes of weather to be checked. Inspection should also be carried out following works on the roof by other trades, or following installation of new roof equipment.
- All inspections/and or maintenance actions carried out at roof level must be in full compliance with the appropriate health and safety regulations, and particularly those specifically dealing with working at height.

Alumasc standard NBS specifications are offered on the condition that the customer is responsible for ensuring that each specification is appropriate for its intended purpose and that conditions for its use are suitable. This specification may require adjustment in accordance with specific project requirements.

The substitution of any products (or installation by means other than those described) is strictly prohibited, unless agreed in writing, in advance, with Alumasc.

Alumasc Building Products Ltd will not accept any liability arising from unauthorised variations or un-notified changes in circumstances relating to the application or performance of Alumasc products or systems.

Q37 GREEN ROOFS

To be read in conjunction with related Architectural Sections, Preliminaries, and Contract Conditions.

GENERAL

131A BIODIVERSE GREEN ROOF

- Roof type: Biodiverse Wildflower Seed Mix.
- Manufacturer: Alumasc Building Products Ltd
 White House Works, Bold Road
 Sutton, St Helens, WA9 4JG
 Telephone: 01744 648400
 Email: technical@alumascroofing.com
- Substrate: As J41 Specification.
 - Slope: $\leq 1:80$.
- Waterproofing: Root resistant waterproofing.
- Moisture control layers: Blackdown 40 3-1 Drainage Layer.
- Protection/Filter Layer: Blackdown Upstand Fleece, applicable to all abutment upstands.
- Growing medium: Blackdown Biodiverse Substrate.
 - Depth: 80 to ≥ 150 mm to create undulating mounds + 20% settlement factor.
- Vegetation: Blackdown Wildflower Seed Mix.
 - Comprises a colourful mix of native wildflower species.
 - Peak flowering time: May - September (depending on local weather conditions).
 - Habitat incidentals: Add piles of clean cobble/stone/rocks, logs, and rotting tree stumps to encourage insects, invertebrates, birds, and other wildlife.
- Irrigation establishment: Carry out regular watering after the seeds are sown until they have germinated. During this time, it's important to maintain a consistent moist substrate for the seeds according to weather variation and seasonality. Once the seedlings have germinated, slowly transition to less frequent watering.
- Accessories: Blackdown Retention Angle, metal edging $\geq$ substrate height, as clause 420.
 Blackdown Inspection Chamber, installed above all internal outlets, as clause 430.
 Blackdown Washed Pebble Ballast 20/40mm grade, as clauses 260A, 440.

PERFORMANCE

210 GENERAL DESIGN

- Green roof and associated features: Complete the detailed design.
- Proposals: Submit drawings, technical information, calculations, and manufacturer's literature.
- Performance criteria:
 - The design, installation and maintenance of the green roof, must be carried out in accordance with the GRO Green Roof Code of Best Practice.
 - The relevant appointed design professional/s have satisfied themselves that the structure can accept the imposed loading of this proposal both during and on completion of the works.
 - The building shall be designed, constructed, or refurbished so that, in the event of a fire, the external envelope of the building has sufficient resistance to prevent fire spread across the relevant boundaries in accordance with all appropriate sections of the Building Regulations/Green Roof Code of Best Practice.
 - The appointed design professional is responsible for ensuring that the calculation of wind load action is satisfied in accordance with BS EN 1991-1-4 (UK National Annex to Eurocode 1. Actions on structures. General actions. Wind actions). Consult with Alumasc Roofing where applicable for further guidance.
 - The components' resistance to dead and imposed loading to avoid failure of the component and/or reduction in performance is adequate. Where resistance is deemed to be inadequate, suitable measures to mitigate load intensity must be considered.
 - Continuity of the waterproofing is to be maintained for a vertical height of 150mm above the finished roof level at all abutments. If level access is required from within the building, as in the case of a door threshold to a balcony, refer to BS 6229:2018 (Flat roofs with continuously supported flexible waterproof coverings - code of practice) for further guidance.

255A MAXIMUM PERMITTED GREEN ROOF LOADS

- Dead loads (saturated): 220 kg/m².
 - Green roof layers:
- Requirement: Restrict site activities to ensure that design loads are not exceeded, or submit proposals for temporary supports.

260A EXTERNAL FIRE PERFORMANCE

- Fire breaks: Must be provided around all vertical abutments, penetrations, openings etc. to prevent the spread of fire into, or from a building onto the green roof.
 - Comprising 20-40mm grade rounded pebbles (fines free) to a minimum depth of 50mm laid onto the drainage layer, or a minimum 40mm thick concrete paving.
 - Recommended width: 500mm around all perimeters and penetrations and openings. Maintain 500mm where there are openings to the building in accordance with GRO Green Roof Code of Best Practice.
 - Retention angles must be used to keep back the growing medium and maintain the fire break.
- Large roofs: Provision should be made for a 1m wide fire break installed at every 40m.
- Drainage layers and filter fleeces: Keep completely buried beneath the growing medium and ballast margins to prevent potential exposure to fire risk.
- Substrate: To comply with GRO Green Roof Code of Best Practice guidelines.
- Ongoing maintenance: Ensure that the organic content of the roof does not significantly increase over time.

PRODUCTS**330 PROTECTION/FILTER LAYER**

- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Blackdown Uprand Fleece.
- Material: Geotextile - mixed Polypropylene/Synthetic
 - Thickness: 4mm.
- Roll size: 1 x 50m.

350 DRAINAGE LAYER

- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Blackdown 40 3-1 Drainage Layer.
- Type: Geocomposite drainage & water attenuation layer comprising a perforated cusped HDPE core with a geotextile bonded to the upper side.
 - Depth: 47mm.
- Size: 0.92 x 20m.
- Water Reservoir Volume(l/m²): 14
- Compressive Strength: 100kPa
- Carbon per kg: 1.80 kgCO₂e
- Life Expectancy: 120 years in pH 4 to 9 at 25 °C

390A BIODIVERSE GROWING MEDIUM

- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Blackdown Biodiverse Substrate.
- Type: Lightweight, free draining substrate composed of recycled 14-5mm crushed brick, lightweight clay aggregate and fine grade 10mm pine bark.
 - All the materials used within its manufacture are from a responsibly sourced recycled origin.
 100% Recycled Material.
 - Depth: 80 to ≥150mm to create mounds + 20% settlement factor.
- Supply: 1.25m³ bulk bag or 25kg bags.

400 VEGETATION

- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Blackdown Wildflower Seed Mix.
- Planting mix: Native British mix of wildflower species.
Vegetation coverage: Will take some time to get established and will start to see the real benefit in the second year rather than the first year of establishment.
- Supply: By the gram.

420 EDGE RETAINING PROFILE

- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Blackdown Retention Angle / Blackdown Perforated Retention Angle.
- Material: Aluminium / Steel.
- Height: 50mm / 75mm / 100mm / 120mm / 150mm / 200mm / 250mm / 300mm.
- Supply: Typically 2.4m lengths, subject to confirmation on type to meet aesthetic requirements.

430 INSPECTION CHAMBERS

- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Blackdown Inspection Chamber / Blackdown Parapet Inspection Chamber.
- Material: Black, powder-coated steel.
- Size: 300 x 300mm.
 - Depth: 50mm.
- Access covers: Lockable lid.
- Accessories: Additional interlocking mid-sections are available in 50mm, 75mm, 100mm and 200mm.

440 VEGETATION BARRIER

- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Blackdown Washed Pebble Ballast 20/40mm grade.
- Depth (minimum): 50mm.
- Width: 500mm width around all perimeters, penetrations and openings.

EXECUTION

710 INSTALLATION GENERALLY

- Preparation: Clear all surfaces of debris.
 - Timing: After certification of waterproof membrane integrity.
 - Surface condition: Visually inspect waterproof membrane, report any damage.
- Faults in waterproof membrane: Report.
- Contamination: Do not use materials detrimental to healthy plant growth.
- Storage: Do not overload.
 - Point loads: Avoid.
- Outlets: Do not block.
 - Outlet grates: Installed.
 - Outlet grates can be removed should the height obstruct the closing of an inspection chamber lid.

720 ADVERSE WEATHER

- Unfinished work: Secure from damage and wind uplift.
- Conditions: Do not install or work with frozen materials.

721A SAFETY & ACCESS

- It is strictly the contractor's responsibility to ensure that all works are executed in accordance with current health and safety legislation. Guidance may be taken from HSE publication, reference HSG33.
- A detailed method or work statement, design risk evaluation (Incl. RAMS), and program of works are to be provided by the contractor and agreed upon by all relevant parties prior to commencing works.
- It is imperative that safe access, egress, and edge/fall protection which complies with the Workplace (Health, Safety and Welfare) Regulations 1992 is in place for the duration of the works, inspection, and maintenance of the warranted Alumasc Roofing system throughout its life cycle.
- Safety scaffolding, the location of rubbish skips, access ladders etc. should be agreed upon with the client and/or Principal Contractor and be in accordance with current Health and Safety regulations.

PRODUCT INSTALLATION

750 PROTECTION/FILTER LAYER INSTALLATION

- Extent: Rolled out and loose laid around all abutments.
- Joints: Minimize.
 - Overlaps (minimum): 150mm.
- Detailing: To ensure continuity of filtration against fines and sediments from entering the drainage layer and to provide protection to the underlying components, allow for the sufficient application of product to all abutments in accordance with manufacturers' typical details. Finish below the line of the vegetation barrier to prevent potential exposure to fire risk.

770 DRAINAGE LAYER INSTALLATION

- Extent: Continuous over the designated roof area.
- Fitting: Unroll directly over the surface, white geotextile side up over the area to be greened. Butt joint the individual rolls ensuring the adjacent roll is sat on the top of the 100mm overlap of the thicker fleece bonded to the underside. The geotextile selvedge edge to the upper side overlaps the previous one by 130mm. Cover end on butt joints against abutments as clause 750.
- Detailing: Fit closely around penetrations and outlets, using a heavy-duty knife or small toothed saw.

790A GROWING MEDIUM INSTALLATION

- Handling: Minimize handling. Deliver to the roof in small sacks, bulk bags or pump.
 - Conditions: Handle in the driest condition possible. Do not handle or install when wet or frozen.
- Layers:
 - Depth (minimum): 80 to ≥ 150 mm to create mounds +20% settlement allowance post installation.
 - Sequence: Gently firm each layer before spreading the next. Grading bars are recommended to achieve the correct depth. Gently firm each layer before spreading the next.
 - Conditioner: Apply the pre-formulated nutrient regime according to the planting plan and rake in.
- Erosion control: Subject to wind uplift loads, further measures may be required.
- Use of a substrate supplied by others: Under no circumstances will Alumasc be held responsible for its performance or suitability for the application intended. All parties must satisfy themselves in respect of the adequacy of any change.

801A VEGETATION INSTALLATION

- Handling:
 - Extent: Continuous over the designated area to be planted.
 - Storage: Must be stored in a cool and shaded area.
- Planting
 - Best sowed in March through to May or in the autumn.
 - Planting during periods of frost or drought should be avoided.
 - Moisten growing medium preinstallation.
 - Surface sow.
 - Planting density: 1.5g per m² dispersed evenly into a suitable carrier and spread by hand or mechanically.
- Watering:
 - Carry out regular watering after the seeds are sown until they have germinated. During this time, it's

important to maintain a consistent moist substrate for the seeds according to weather variation and seasonality. Once the seedlings have germinated, slowly transition to less frequent watering.

- Long term provision is to be made for means of regularly watering as dictated by the weather.

820 EDGE RETAINING PROFILE INSTALLATION

- Extent: Should be included between the growing medium and ballasted vegetation barrier/paving.
- Cutting: Neat, accurate and without spalling.
- - Junctions: vertical, secured using male/female connection pieces.
- Position: True to line and level. Smooth continuous lines.
- Fixing: Ballasted by the weight of the overlying finishes. For open perimeters secure in place using separate flashings of the waterproofing as specified to the main field area. Further details are to be provided by Alumasc under separate cover once the full extent of the works has been established.

830 INSPECTION CHAMBER INSTALLATION

- Location: Install centrally over the rainwater outlet.
 - Supplied outlet grates can be removed should the height obstruct the closing of the chamber lid.
 - Orientation: Align parallel with adjacent features.
- Positioning: Locate above the specified drainage layer/geotextile sheet.
- Surround: Using 20-40mm rounded pebbles to a minimum width of 500mm in all directions.
- Height: The appointed contractor is to allow for additional interlocking mid-sections to increase the overall height so that it is at least equal to the adjacent landscaping. Refer to clause 430.

COMPLETION

910 INSPECTION

- Timing: Before handover.
 - Give notice (minimum): 3 days.

920 COMPLETION

- General: Leave the works in a clean, tidy condition.
- Surfaces: Clean immediately before handover.
- Outlets: Clean and clear of obstructions.
- Completed green roof: Protect from adjacent or high-level working.

930 DOCUMENTATION

- Timing: Submit at handover.
- Contents:
 - Growing medium declaration of analysis.
 - Manufacturers' guarantees and warranties.
 - Procedures for maintenance of the green roof.
 - Record drawings showing the location of planting and associated features.
- Number of copies: As requested.

Alumasc Roofing reserves the right to revise specification content without notice. It is the responsibility of the client and/or their appointed Principal Designer to ensure compliance of the proposed specification with all relevant Building Regulations by consultation with Building Control. Any future changes to the prevailing standards, regulations or codes of practice may result in specification amendment.

Alumasc Roofing will not accept any liability arising from unauthorised variations or unnotified changes in circumstances relating to the application or performance of Blackdown products.