



ALUMASC

ROOFING SYSTEMS

Proposed Roofing Specification

Project:
Sgwd Gwladys

Project ID: SP118894-S2
Date: 05/07/2021

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Project information

Project: Sgwd Gwladys
Location: Neath
Area 1: Mastergold Option
Project ID: SP118894-S2
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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: Minimum 18mm exterior grade plywood to structural engineer's/architect's specification.
 - Fixed using corrosion-resistant screws or ring shank nails, in accordance with DD CEN/TS 12872.
 - Expansion gap of one millimetre per metre of the panel size should be provided at all edges.
 - Falls: Roof falls are to be designed within the structure to achieve a minimum finished fall of 1:80.
- Preparation:
 - Surface is to be dry, clean and free from all contaminants including oils, grease, dirt and debris.
 - Tape joints with 150mm wide strips of bituminous membrane.
 - Attachment: As clause 660.
- Primer: Eurorof SA Primer.
 - Application: As clause 530-A.
 - 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: 150mm Alumasc BGT Rigid Polyisocyanurate.
 - Attachment: Bonded by Eurorof PU Insulation Adhesive, as clause 680-A.
 - Detailing: 30mm Alumasc BGT Rigid Polyisocyanurate, where appropriate.
 - Attachment: Subject to substrate, secured in accordance with manufacturer's instructions.
- Waterproof covering: Eurorof 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: Eurorof Mastergold Underlay.
 - Attachment: Fully bonded by gas torch, as clause 710 / 740-A.
 - Top layer/Cap sheet: Eurorof Mastergold Anti-Root Cap sheet.
 - Colour: Charcoal mineral finish.
 - Attachment: Fully bonded by gas torch, as clause 710 / 740-A.
 - Flashings and detail work: Eurorof Mastergold Underlay & Eurorof Mastergold Anti-Root Cap sheet.
 - Attachment: Fully bonded by gas torch.
 - Reinforcement strip to flashings and detail work: Eurorof Mastergold Underlay (100mm x 100mm).
 - Attachment: Fully bonded by gas torch.
- Surface: Alumasc/Blackdown Green Roof, refer to Q37 'Green Roofs' NBS specification.
- Accessories:
 - Alumasc Harmer outlet/s, see clause 377-A.
 - Alumasc Standard Termination bar, see clause 376-A.
 - Alumasc Derbitech Sealstick HD, see clause 407-A.
 - Alumasc Toptrim GRP prefabricated edge trim, see clause 345.
 - Roof-Pro 350C Lite-Anchor lightning conductor pad, as clause 380-A.

PERFORMANCE

210 ROOF PERFORMANCE

- General: Secure, free draining and weathertight.

225 AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS - BS 5250 AND BS EN ISO 13788

- Interstitial condensation within roof construction: Determine risk as recommended in BS 5250 and BS EN ISO 13788.
- 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): $0.15 \text{ W/m}^2 \text{ K}$.
 - 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: 30-35m² to central areas & 25m² at roof perimeter/detail and exposed areas.
- 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: Toptrim.
- Colour: Select from Black / Grey / White.
- Size: Depth of profile Select from 40mm / 65mm / 100mm / 150mm.
- Lengths (maximum): 3m.

375 MINOR MOVEMENT JOINTS IN SUBSTRATES

- Manufacturer: _____ .
- Product reference: _____ .
- Size: _____ .
- Insert colour: _____ .

376-A TERMINATION BAR

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

377-A ROOF OUTLETS

- Type: Aluminium.
- Manufacturer: Alumasc Building Products Ltd.
- Product reference: Harmer, type to be determined by appointed design professional.
- Size: Select from 50mm / 75mm / 100mm / 150mm.
- Accessories: Select from N/A / Screw Thread Adaptor / Flat Grate / Terrace Grate / Extension Piece.
- Product reference: Select from N/A / 2ADP (50mm) / 3ADP (75mm) / 4ADP (100mm) / 6ADP (150mm).

380-A LIGHTNING CONDUCTOR PAD

- Type: Purpose-made clip mechanically fixed to a colour matched waterproofing pad.
- Manufacturer: Roof-Pro.
- Product reference: 350C Lite-Anchor.
- Clips available: **Select from** 25mm x 3mm bare conductor tape / PVC coated conductor tape.

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: Eurorof High Performance Roofing.

400-2 UNDERLAY

- Type: Glass/Polyester reinforced APP modified bitumen membrane.
 - Product reference: Eurorof Mastergold Underlay.
- Roll size: Width 1m x 10m Length, Thickness 3mm.

400-11 TOP LAYER/CAP SHEET

- Type: Glass/Polyester reinforced APP modified bitumen membrane. Anti-root chemicals are added to the blend to make it resistant to roots.
 - Product reference: Eurorof Mastergold Anti-Root.
 - Colour: Charcoal mineral finish.
- Roll size: Width 1m x 7.5m Length, Thickness 4mm.
- Certification: BBA Certificate No. 13/5066, manufactured under ISO 9001, and ISO 14001.

400-20 REINFORCEMENT STRIP

- Type: As clause 400-2.
 - Product reference: Eurorof Mastergold Underlay.
 - Size: Form using 100mm x 100mm strips cut from the roll.
- Roll size: Width 1m x 10m Length, Thickness 3mm.

407-A SEALANT

- Type: HD Polymer eco-friendly fast curing flexible UV resistant adhesive.
- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Alumasc Derbitech Sealstick HD.
- Application: To seal the connection between roofing membranes to all common building materials.
- 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 Rigid Polyisocyanurate.
- Grade: 31 kg/m³.
- Edges: Square.
- Board size: Standard 1200mm x 600mm.
- Thickness: 150mm (30mm to details).
- Facing: Bitumen glass fleece 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.

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 satisfactory aesthetic 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.

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

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.

660 JOINTS IN RIGID BOARD SUBSTRATES

- Cover strip: Lay centrally over substrate joints before laying vapour control layers or coverings. Adhere to substrate with bonding compound along edges only, or alternatively, retain in place using clout nails.

670-A LAYING VAPOUR CONTROL LAYER

- 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.
 - Side laps are self-adhesive when subject to temperatures of >15° under normal conditions. However, in cold weather or if the lap has become contaminated, hot air equipment should be used to ensure the laps are fully sealed. End laps should be heat welded using hot-air equipment. If left exposed overnight both side and end laps must be heat welded to ensure they are fully sealed.
- 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.

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.
- 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 and cap sheet, each to be fully bonded by torching. 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.
- 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.
 - Additional fixing of bitumen membranes: Where applicable, mechanically fix termination bar at 300mm (max.) centres placed at the top edge of the flashing detail, sealed with Alumasc Derbitech Sealstick HD.
- 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.
- Seal the connection between roofing membranes to all common building materials: Apply Alumasc Derbitech Sealstick HD polymer sealant to all exposed edges, termination bars, flashings, connections with roof penetrations etc. Surfaces must be dry, clean and free from contaminants.
- Additional requirements: The contractor is to install all details in a manner to comply with current quality assessment recommendations for the installation of the specified system. Should any detail arise where it is not clear how this can be achieved, the contractor is to seek advice and approval for all proposals from Alumasc before completing the works.

780-A WELTED DRIPS

- Material: Eurorof Mastergold 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: Eurorof Mastergold Anti-Root Cap sheet.

787-A LIGHTNING CONDUCTOR CLIPS

- Setting out:
 - Should be accurately fixed in straight lines with the aid of a chalkline.
 - Pad centres 1m maximum, closer centres may be required in areas of high wind uplift.
- Attachment: Fully bonded by the application of heat to underside of the colour matched waterproofing pad.

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 who must be a member company of WITA - Waterproofing Integrity Test Association Tel: 020 7448 3857.
- 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.
- 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 MANUFACTURER'S WARRANTY

- The above specification/s 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. The works shall be installed by an Alumasc Registered Contractor, and, as agreed in the contract, the Alumasc Warranty shall be issued to the Building Owner from the date of final completion.

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.

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.

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

Q37 GREEN ROOFS

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

GENERAL

130-A EXTENSIVE GREEN ROOF

- Roof type: Blackdown Sedum NatureMat Plant Roof.
 - Manufacturer: Blackdown Greenroofs, 3 Waggon Shed, Flax Drayton Farm, South Petherton, Somerset, TA13 5LR Tel: 01460 234582. Web: www.blackdown.co.uk
 - Falls: Roof falls are to be designed to achieve a minimum finished fall of 1:80.
- Waterproofing: Eurorof Mastergold waterproofing system, refer to J41 NBS specification.
 - Manufacturer: Alumasc Building Products Ltd
White House Works, Bold Road
Sutton, St Helens, WA9 4JG
Telephone: 01744 648400
Email: technical@alumascroofing.com
 - Root barrier: Mastergold Anti-root cap sheet, refer to J41 NBS specification.
- Moisture control layers:
 - Blackdown 20 3 in 1 Drainage Layer (moisture mat + composite drainage layer + filter sheet).
- Growing medium: Blackdown Extensive Substrate.
 - Depth: 50mm
 - Settlement factor: +20%
- Vegetation: Blackdown NatureMat, 20mm thick pre-grown sedum blanket.
 - Vegetation coverage: 90-95% minimum on installation.
- Irrigation: Mats are to be thoroughly watered in and the substrate kept moist for a minimum of 6 to 8 weeks following installation, or longer if necessary, to allow the plants to become established.
- Accessories: Blackdown Nutrient, as clause 390.
Blackdown Aluminium Containment Angle (Optional), as clause 420.
Blackdown Inspection Chamber, as clause 430.
Blackdown Washed Pebble Ballast 20/40, as clause 440.

PERFORMANCE

210-A GENERAL DESIGN

- Green roof and associated features: Complete the detailed design.
- Proposals: Submit drawings, technical information, calculations, and manufacturer's literature.
- Performance criteria: Instant green coverage.
- 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

350 DRAINAGE LAYER

- Manufacturer: Blackdown Horticultural Consultants Ltd.
 - Product reference: Blackdown 20 3 in 1 Drainage Layer.
- Material: Perforated cusped HPDE (High Density Polyethylene) core with geotextiles thermally bonded.
 - Upper face: Non-woven needle punched and heat treated long staple fibre polypropylene.
 - Lower face: Non-woven felt of polypropylene/recycled polymers.
- Properties:
 - Depth: 27mm
 - Retention volume: 6.5 l/m²
 - Mass/unit area (saturated): 7.5 kg/m²
 - Compressive strength: 240 kN/m²
- Size: 0.92 x 50m

390 EXTENSIVE GROWING MEDIUM

- Manufacturer: Blackdown Horticultural Consultants Ltd.
 - Product reference: Blackdown Extensive Substrate.
- Material: Mineral & organic substrate consisting of clean virgin crushed brick, expanded clay, organic matter bark compost & greenwaste.
- Depth: 50mm
 - Settlement factor: +20% post installation.
- Ameliorant/conditioner: Blackdown 12 months fertiliser.
 - Coverage: 25 gm/m²
 - Supply: 20kg sack.

400 VEGETATION

- Manufacturer: Blackdown Horticultural Consultants Ltd.
 - Product reference: Blackdown NatureMat.
- Planting mix: 6 core & up to 13 random sedum species, up to 5 species are native or naturalised to the UK.
 - Depth: 20mm
- Vegetation coverage: 90-95% minimum on installation.
- Supply: 1.5m² roll.

420 EDGE RETAINING PROFILE - OPTIONAL

- Manufacturer: Blackdown Horticultural Consultants Ltd.
 - Product reference: Blackdown Aluminium Containment Angle.
- Material: Aluminium.
- Height: 100mm

430 INSPECTION CHAMBERS

- Manufacturer: Alumasc Building Products Ltd.
 - Product reference: Blackdown Inspection Chamber.
- Material: High-grade powder coated aluminium.
- Standard base size: 300 x 300mm
 - Height: 50mm (Additional interlocking sections available in 50mm, 75mm, 100mm and 200mm).
- Locking Cover: 300 x 300mm
 - Height: 55mm.

440 VEGETATION BARRIER

- Manufacturer: Blackdown Horticultural Consultants Ltd.
 - Product reference: Blackdown Washed Pebble Ballast 20/40.
- Depth: 70mm
- Width: 300mm to external perimeter edge / 500mm to internal junctions and penetrations etc.

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 grilles: Installed.

720 ADVERSE WEATHER

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

770 DRAINAGE LAYER INSTALLATION

- Extent: Continuous over entire roof area.
- Fitting: Loose lay, closely butt-joint boards.
- Upstands: Fit closely around penetrations and outlets, using a heavy-duty knife or small toothed saw.

790 GROWING MEDIUM INSTALLATION

- Handling: Minimize handling. Deliver to roof in small sacks, bulk bag or pump.
 - Conditions: Handle in the driest condition possible. Do not handle or install when wet or frozen.
- Layers:
 - Depth: 50mm
 - Settlement factor: +20% 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. Apply pre-formulated nutrient regime according to planting plan and rake in.

800 VEGETATION INSTALLATION

- Handling NatureMat:
 - Extent: Continuous over area to be planted.
 - Timing: To be installed within 36 hours of delivery.
 - Storage: Pallets containing the NatureMat must be stored in a cool and shaded area.
 - Excessive stacking: Not permitted.
- Laying blankets:
 - Dry, damaged, frosty or waterlogged blankets: Do not lay.
 - Orientation: Diagonal or perpendicular to slope of roof.
 - Joints: Stagger. Butt together or slightly overlap to prevent gaps. Do not stretch blankets.
 - Edges: Finish with whole blankets.
 - Consolidation: Firm as laying proceeds to ensure full contact with the growing medium. Do not use rollers.
- Dressing: Sedum vegetative material.
 - Application: Brush in to fill joints.
- Watering:
 - Gently water following installation.
 - Keep growing medium moist until plants are established (typically a minimum of 6 to 8 weeks following installation)
 - Account for climatic variation and seasonality.

820 EDGE RETAINING PROFILE INSTALLATION

- Cutting: Neat, accurate and without spalling.
 - Junctions: vertical, secured using proprietary connectors.
- Position: True to line and level. Smooth continuous lines.
- Fixing: Integrated to roofing system in accordance with manufacturer's recommendations.

830 INSPECTION CHAMBER INSTALLATION

- Location: Install centrally over drain outlet.
 - Orientation: Align parallel with adjacent features.
- Bedding: Position onto waterproofing membrane.
- Surround: 300mm diameter circle / square of 20-40mm pebble ballast.

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.