Ss_45_40_47_28
Extensive green roof systems All top level roofs blocks A,B & C

Systems

Ss_45_40_47_28 Extensive green roof systems All top level roofs blocks A,B & C

1. Description: Top level roofs system to be integrated with PV panels
2. System manufacturer: Bauder Ltd
3. Contact details
   - 3.1. Address: 70 Landseer Road
     Ipswich
     Suffolk
     IP3 0DH
   - 3.2. Telephone: +44 (0)1473 257671
   - 3.3. Web: www.bauder.co.uk
   - 3.4. Email: info@bauder.co.uk
4. Product reference: Bauder Green Floral 3 seed mix and substrate to be integrated with PV panels
5. Protection
   - 5.1. Protection layer: **BauderGREEN FSM 600 -** 4mm protection mat.
6. Moisture control
   - 6.1. Drainage layer: **(Non-PV Area) BauderGREEN DSE 40** drainage board – 40mm.

     (PV Area) Photovoltaic mounting system: **BauderSOLAR G LIGHT** BioSolar photovoltaic mounting system, supplied by Bauder Ltd and ballasted using Bauder substrate.
   - 6.2. Filter membrane: **(Non PV Areas ONLY): BauderGREEN FV 125** filter fleece
7. Planting systems
   - 7.1. Planting medium: ·
     (Non-PV Area) BauderGREEN SUB-BM UK biodiverse substrate (FLL compliant), depth 100mm above the **BauderGREEN FV 125** filter fleece.
     (PV Area) BauderGREEN SUB-BM UK biodiverse substrate, FLL compliant (Photovoltaic mounting system areas only), to a required depth as per the scheme's design.
   - 7.2. Planting requirements:
8. Fire breaks: Pr_20_31_04_13 Coarse general aggregates
9. Edge restraints:
10. Execution: Ac_85_70_40/605 Installation of living roofs generally; Ac_85_70_40/671 Installing protection layers; Ss_45_40_47/680 Installing growing substrate; Ss_45_40_47/710 Installing edge-retaining profile; Ss_45_40_47/720 Installing fire breaks
11. System completion:

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

    DOCUMENTATION

    · **Timing:** Submit at handover.
    · **Contents:**
    · Manufacturer's guarantees and warranties.

- Procedures for maintenance of the green/blue roof.
- Record drawings showing the location of planting and associated features.
- **Number of copies:** as required by client.

Products

Pr_20_31_04_13 Coarse general aggregates

1. Description: Pebble Ballast
2. Standard: · **Type:** Washed, round pebbles.
   - **Size:** Graded 20-40mm and free from fines and sharps.
   - **Supplier:** Locally sourced.

Execution

Ac_85_70_40/605 Installation of living roofs generally

1. Description:
2. Standard: In accordance with GRO Green roof code: code of best practice for the UK.
3. Preparation
   3.1. Previous coatings and contaminants: Remove, including dirt, dust, efflorescence, mould, oil, paint and plaster.
4. Contamination: Do not use materials detrimental to healthy plant growth.
5. Loading
   5.1. Standard: To BS EN 1991-1-6.
   5.2. Generally: Restrict site activities to ensure that design loads are not exceeded.
6. Outlets: Do not block. Install outlet grilles prior to installation of living roof.
7. Drainage and water storage:
   - **Extent:** Continuous over entire designated roof area.
   - **Fitting:** Loose laid over the protection layer. Boards to overlap and interlock by one cup profile at sides and ends and each row be laid staggered. The 'X' stamped impression on the highpoint of the cup moulding indicates where boards overlap.
   - **Upstands:** Carefully cut to fit closely around penetrations and outlets.
   - **Construction of planter walls:** The drainage/water storage board provides a suitable base surface for building concrete or brick kerbs/walls. The specified infill haunching should be installed over the board to required depth of cover, poured directly into the cells of board. These should be constructed to provide an adequate support for the raised masonry planters

   For the specification of the type of infill and all kerb/wall construction elements – please refer to the structural engineer's plans and the specification. An internal surface of the planter wall may be primed using bituminous primer and then lined with single layer of torch applied Bauder root resistant capping sheet. The bright green slate finish may be considered undesirable, but the slate is necessary for long-term UV protection of the bitumen. To disguise and blacken the slate colour, paint exposed areas above anticipated soil level with a light coat of bituminous primer.

8. Installation of irrigation pipework :
   - Pipe work should be installed and connected in accordance with the irrigation supplier's installation guidelines and set as per the plan provided.

   Bauder Vegetation Blankets - Pipework should be secured at intervals to the vegetation blanket using wire or cable ties, as required. Over time the planting will cover the pipework, visually hiding it. **Bauder Plug Plants / Flora Seed Mixes / Biodiversity** - Pipework should be secured at intervals to the substrate as required using plastic pegs (available from irrigation supplier) Please note pegs should be installed in a manner so as not to cause damage to the waterproofing.

9. Filter membrane installation:
    - **Joints:** Minimize.
    - **Overlaps (minimum):** 150mm
    - **Fitting:** Loose laid over drainage layer in accordance with manufacturer's recommendation.
    - **Upstands (soft landscaping):** Extend up, between vegetation barrier and growing medium and trim flush with finished surface level.
    - **Upstands (Hard landscaping):** Extend to top of perimeter abutments and trim flush just below finished surface level.

10. PV Panel mounting system:
    - **BauderSOLAR G LIGHT** BioSolar photovoltaic mounting system to be loose laid and positioned directly on to a protection layer. They are to be butted up to adjacent boards (not overlapped). **BauderSOLAR G LIGHT** Anchor boards must be ballasted using **BauderGREEN SUB-BM UK** biodiverse substrate growing medium, applied directly into the cups of the anchor board and then built up to a minimum depth of 100mm above the crowns of the board. Please refer to project specific design and windload calculation. Allowance should be made for any settlement that may occur. Please see the project specific **BauderSOLAR G LIGHT** roof layout for location and quantity of mounting system.
    - **PV module specification** - please refer to NBS Engineering services Section V14, clauses 310 and 315 and the corresponding **BauderSOLAR G LIGHT** roof layout for further information on scheme design or BioSOLAR installation guidelines for further information on installation method.

11. Vegetation blanket installation: **VEGETATION BLANKET INSTALLATION**
    - **Handling blankets:**
    - **Timing:** Lay within 36 hours of lifting from growing position.
    - **Method:**
    - **Standard Roll Size:** laid manually – two-man operation
    - **Long Roll Size:** laid using a crane with lifting attachment – three-man operation.
    - **Excessive stacking:** Not permitted.
    - **Material loss (maximum):** 3% of total surface area.
    - **Growing medium condition: Thoroughly watered**
    - **Laying blankets:**

    General: Do not lay if blankets are dried out, damaged, frosty or waterlogged.
    Sloped Roofs: Blankets to laid over the spikes of the already installed Bauder retention strips and trod down to ensure that the spikes penetrate the moisture retention fleece to the underside of the blanket.
    Retention Strips Required (BauderGREEN XF 301 Blanket ONLY):
    - Bitumen Membrane Green Systems - from 10° and above.
    - Bauder Single Ply Green Systems - from 5° and above.
    - Bauder LiquiTEC Roofing System - from 5° and above.

    Note: For BauderGREEN SB Sedum Blanket - On steeper slopes the blankets can be additionally pegged with bio-degradable pegs (supplied by others) to secure them until they root, but these must not penetrate further than the depth of the substrate growing medium.
    - **Orientation:** Diagonal or perpendicular to slope of roof.
    - **Joints:** Stagger. Butt together or slightly overlap to prevent gaps. Do not stretch blankets. All excess vegetation should be removed from the overlap and the opposite leading edge of the blanket to ensure that the joints butt together tightly (as per the Bauder installation guideline).
    - **Edges:** No smaller than 1m x 1m pieces.
    - **Consolidation:** N/A
    - **Dressing:** Bauder Extensive substrate.
    - **Application:** Brush in to fill joints.

- **Watering:** Thoroughly water using surface sprinklers immediately after installation and substrate dressing, ensuring that the blankets and substrate are fully saturated before moving on to the next area.

Note: Follow Bauder Establishment Watering Guidelines also.· **Roll size:**
Standard:
o **BauderGREEN SB Sedum Blanket:** 2m x 0.5m
o **BauderGREEN XF 301 lightweight sedum system:** 2m x 1m
Long: 10m x 0.5m (or length size as required, cut in 1m increments)

- **BauderGREEN XF 301 lightweight sedum system on Exposed Sites:** It may be necessary to provide a stone ballast coating spread evenly to prevent wind uplift and erosion of the vegetation blanket in high winds and/or heavy rainfall.

o **Installation:** 20 - 40mm rounded washed pebbles to be installed onto the vegetation blankets to provide the required loading of 27Kg/m².

Ac_85_70_40/671 Installing protection layers

1. Jointing
   1.1. Generally:
   · **Installation:** Protection fleece rolled out and laid loose. Laps to be sealed by lightly heating overlap area with a propane gas torch / hot air welding gun to melt the polypropylene fibres and then press seal the two fleece sheets together.
   · **Joints:** Minimize.
   · **Overlaps (minimum):** Laps to be 150mm
   · **Upstands:** Sufficient protection fleece must be allowed for so that it may be installed to all abutment upstands and edge details, in accordance with the manufacturer's instructions. Extend to full height of the upstand and secure in place by using a lead or fabricated metal counter-flashing.
   · **Outlets:** Should be trimmed well back from ALL outlets.
   · **Openings in landscape restraint kerbs:** Where these kerbs are present (roof slopes above 5º), the protection layer should be cut away from the openings/ gaps to avoid impeding drainage.

Ss_45_40_47/680 Installing growing substrate

1. Depth (minimum): 100mm
2. Method:
   - **Handling:** Minimize.
   - **Conditions:** Handle in the driest condition possible. Do not handle or install when wet or frozen.
   - **Layers:** Start by applying two equal layers, building up to required maximum depth.
   - **Sequence:** Gently firm each layer before spreading the next. Allowance should be made for any settlement that may occur. It is recommended that measuring stick markers of the required depth be used around the roof area to ensure that a minimum acceptable thickness of growing medium is achieved.
   - **Supply:** Depending on size and access of the project the 'substrate' can be supplied by various methods i.e. Tipper, big bags, or sacks. Prior to costing this element of the installation the 'Approved Contractor' must contact Bauder Ltd so that they may advise on the best solution on any specific contract.

Important note regarding alternative substrates: If alternative substrates are required (e.g. topsoil…etc.), Bauder does not take any responsibility for the performance of such substrates supplied from an alternative source. We recommend that alternative substrates should be covered by a technical data sheet and certified in writing as suitable to support the system and plants specified. Saturated weight loadings must be provided directly from the supplier of the substrate and should be the subject to a structural engineer's approval

Ss_45_40_47/710 Installing edge-retaining profile

1. Generally: · **Cutting:** Neat, accurate and without spalling.
   · **Junctions:** Cut with a hack saw to form 90º corners – mitre cut fixing arm.
   · **Position:** True to line and level. Smooth continuous lines.
   · **Fixing:** The **BauderGREEN KFL AL 100/80 edge trim** is to be secured in place using additional strips/sections of capping sheet/membrane/waterproofing system the same as the main field area of the roof. **BauderGREEN KFL AL 100/80** can be installed either to form an 80mm or 100mm perforated retention upstand, depending on which way the fixing arm is secured.
   o **Bitumen Membrane Green Systems** - Bauder capping sheet cut into strips 1000mm x 200mm, these bituminous flashings should be torched to the surface of the trim and set at intervals of 400mm between each one metre long flashing piece, bonding onto the main capping sheet by a minimum 100mm.
   o **Bauder Single Ply Green Systems** - Reinforced single ply membrane fed through the pre-cut horizontal slots positioned along the base of the vertical face of the trim. The ends of the fixing strips to be hot air welded to the main waterproof membrane.
   o **Bauder LiquiTEC Roofing System** - Sections of **Bauder LiquiDETAIL** incorporating **Bauder 110g Reinforcement fleece**. These are to be a minimum of 1000mm x 200mm, applied through the holes in the trim to the waterproofing surface and set at intervals of 400mm, bonding onto the adjacent waterproofing by a minimum 100mm.
   · **Location: BauderGREEN KFL AL 100/80 edge trim** must always be used in conjunction with the pebble vegetation barrier.
   · **Precautionary note:** when cutting metal, please ensure that appropriate tools and personal protection equipment are used.

Ss_45_40_47/720 Installing fire breaks

1. Depth (minimum): 100 mm.
2. Width (minimum): 1000 mm.

Ω End of System

Ss_50_30_02_28
External gravity rainwater drainage systems

Systems

Ss_50_30_02_28 External gravity rainwater drainage systems

1. Description: Rain water outlets, pipes, hoppers & overflow arrangements top level green roofs & common room roof
2. System performance: Bauder have provided rain water calc's and analysis
3. System manufacturer: Bauder/ Alumasc
4. Roof outlets: Bauder DN 70 with pre attached bitumen connection flange and dome grating. 12No top roof levels, 1 No common room roof
5. Hoppers: No1 common room
6. Overflows: Overflow arrangements with gargoyle overflow pipe. For common room roof
7. Walkway sleeve detail: Supply metal sleeve to metsec contractor to cast into walkway concrete deck. Seal between sleeve and RWP after walkway tile finish installation
8. Walkway Channel: Wade (Alumasc) SS3135A5 grating, purpose made channel (BS EN 1433 Compliant) with 1 in 80 falls spec code NEF. RWP connections All stainless steel grade 304.
9. External rainwater pipework
    - 9.1. Rainwater downpipes
        - 9.1.1. Downpipe types: Pr_65_52_03_12 Cast iron above-ground drainage pipes and fittings
        - 9.1.2. Jointing:
    - 9.2. Supports
        - 9.2.1. Brackets and clips: Pr_20_85_09_01 Above-ground drainage pipe brackets
        - 9.2.2. Fixings: Pr_20_29_29_84 Spacer sleeves and fixings for insulated render system
10. System accessories:
11. Execution:
12. System completion:

Products

Pr_20_29_29_84 Spacer sleeves and fixings for insulated render system

1. Description: Fix through 165mm sto render system
2. Manufacturer: Submit proposals

Pr_20_85_09_01 Above-ground drainage pipe brackets

1. Description: Rain water down pipe brackets
2. Manufacturer: Alumasc
3. Product: Apex range to suit 75mm diameter rwp
4. Pipe location: Refer to Builders work Plans
5. Form: Circular
6. Material: Cast iron
7. Finish: Paint finish

Pr_65_52_03_12 Cast iron above-ground drainage pipes and fittings

1. Description: Rwp from roof outlet to ground floor

2. Manufacturer: Alumasc
3. Product: Apex range circular pipes
4. Standard: To BS EN 877.
5. Jointing type: Socketed.
6. Size (nominal): DN 75.
7. Finish
   7.1. External: Paint as manufacturers standard
   7.2. Internal: Two-part epoxy.
8. Integral accessories: Access fittings. at ground level and third floor
9. Execution: Pr_65_52_03/630 Fixing and jointing rainwater and above ground drainage pipes

Execution

Pr_65_52_03/630 Fixing and jointing rainwater and above ground drainage pipes

1. Fixing
   1.1. Supports
      1.1.1. Stability: Fix securely.
      1.1.2. Fixing centres (nominal): To contractors design
   1.2. Pipework
      1.2.1. Alignment: Plumb and/ or true to line.
      1.2.2. Externally socketed pipes and fittings: Fix with socket ends forming inlet for each individual pipe.
2. Jointing
   2.1. Jointing differing pipework systems: Use adaptors intended for the purpose.
   2.2. Cut ends of pipes: Clean and square. Remove burrs and swarf. Chamfer ends of plastics pipes before inserting into ring seal sockets. Where metal pipes are to be used, recoat bare metal with appropriate primer and paint.
   2.3. Jointing or mating surfaces: Clean and, where necessary, use jointing lubricant immediately to allow safe and efficient jointing assembly.
   2.4. Unsealed joints: Wedge unsealed joints to cast pipes with timber or sheet lead cut-offs to centralize pipe joints and reduce rattling.
   2.5. Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.
   2.6. Solvent-welded pipelines: Install ring seal joints in all long runs of solvent-welded pipework, as movement joints.

Ω End of System