



L I Z A R D

Landscape Design and Ecology

Soft Landscape Specification

Oxford Road

Stonegate Homes

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Q28

Topsoil and soil ameliorants

System outline

125 Extensive Sedum roof growing media system

1. **Description:** Refer to Bauder NBS - Appendix 1

126 Extensive Biodiverse roof growing media system

1. **Description:** Refer to Bauder NBS - Appendix 2

127 Green Living Wall media system

1. **Description:** Refer to ANS NBS - Appendix 3

135 Planting bed soil system

1. **Description:** For ornamental and native planting areas
2. **Composition**
 - 2.1. **Topsoil:** Site sourced topsoil, subject to soil testing. Otherwise, imported topsoil to BS 3882
 - 2.2. **Ameliorants:** None
 - 2.3. **Accessories:** None

145 Plant pit backfilling soil system

1. **Description:** For ornamental and native planting areas
2. **Composition**
 - 2.1. **Topsoil:** Excavated material, subject to soil testing. Otherwise, imported topsoil to BS 3882
 - 2.2. **Ameliorants:** None
 - 2.3. **Accessories:** None

155 Mulching and top dressing system Type A

1. **Description:** For planting areas
 - 1.1. **Location:** As shown in drawing LLD2498-LAN-DWG-200
2. **Composition**
 - 2.1. **Material:** Sanitized and stabilized composted conifer bark mulch.
 - 2.2. **Size:** Medium grade ornamental bark mulch particle size 10 -35mm. No fines.
 - 2.3. **Additional requirements:** FSC certified; Free from pests, disease, fungus, weeds or any contaminant that is hazardous to human or animal life or detrimental for plant growth.

Products

300 Preparation materials generally

1. **Purity:** Free of pests and disease.

2. **Foreign matter:** On visual inspection, free of fragments and roots of aggressive weeds, sticks, straw, subsoil, pieces of brick, concrete, glass, wire, large lumps of clay or vegetation, and the like.
3. **Contamination** Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
 - 3.1. Corrosive, explosive or flammable.
 - 3.2. Hazardous to human or animal life.
 - 3.3. Detrimental to healthy plant growth.
4. **Subsoil:** In areas to receive topsoil or planting media, do not use subsoil contaminated with the above materials.
5. **Objectionable odour:** None.
6. **Give notice:** If any evidence or symptoms of soil contamination are discovered on the site or in topsoil or planting media to be imported.

305 Permitted materials

1. **Materials:** Composted bark;
Composted animal manures;
Composted green waste
2. **Give notice:** before ordering or using.
3. **Declaration of compliance in accordance with BS EN 13650:** Required

310 Materials not permitted

1. **Materials:** Products containing peat

315 Imported topsoil to BS 3882

1. **Description:** For ornamental and native planting areas
2. **Quantity:** Provide as necessary to complete the work.
3. **Standard:** To BS 3882.
4. **Classification:** Multipurpose
 - 4.1. **Soil textural class to BS 3882, Figure 1:** Sandy loam
5. **Source:** Local - submit proposals
 - 5.1. **Product reference:** Submit proposals

320 Imported topsoil from a specified source

1. **Description:**
2. **Quantity:** Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
3. **Soil textural class:**
4. **Source:**

335 Imported manufactured topsoil, custom mix

1. **Description:**
2. **Quantity:** Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
3. **Source:**
 - 3.1. **Product reference:**

4. **Soil textural class:**
5. **Reaction, to BS 1377-3: pH**
6. **Organic matter to PD CR 13456:**
7. **Nutrient content:** Minimum index values for nitrogen, phosphorus, potassium and magnesium to be as for BS 3882 multipurpose topsoil.
8. **Crumb structure:** Made up of discernible crumbs.
9. **Stone size in any dimension (maximum):**

340 Imported subsoil to BS 8601

1. **Description:** For ornamental and native planting areas
2. **Quantity:** Provide as necessary to complete the work.
3. **Standard:** To BS 8601.
4. **Classification:** Multipurpose
 - 4.1. **Soil textural class to BS 8601, Figure 1::** Sandy loam
5. **Source:** Local - submit proposals
 - 5.1. **Product reference:** Submit proposals

360 Sanitized and stabilized composted materials certified to PAS 100

1. **Description:**
2. **Standard:** In accordance with PAS 100 and Compost Quality Protocol
3. **Source:** Local supplier - submit proposals
 - 3.1. **Product reference:**
4. **Horticultural parameters**
 - 4.1. **pH (1:5 water extract):** 6.5-8.7
 - 4.2. **Electrical conductivity (maximum, 1:5 water extract):**
 - 4.3. **Moisture content (m/m of fresh weight):** 35-55%.
 - 4.4. **Organic matter content (minimum):**
 - 4.5. **Grading (air dried samples):**
 - 4.6. **Carbon:Nitrogen ratio (maximum):** 20:1.
5. **Texture:** Friable.
6. **Objectionable odour:** Not permitted.
7. **Compost Certification Scheme certification:** Not required
8. **Declaration of analysis:** Submit.
9. **Additional analyses:** Phytotoxic elements
10. **Samples:**

Execution

610 Topsoil analysis

1. **Soil to be analysed:** Existing soil in soft landscape/ grass areas.
2. **Soil analyst:** Local soil lab
3. **Samples:** Collect in accordance with BS 3882.
4. **Submit**
 - 4.1. **Declaration of analysis:** In accordance with BS 3882, clause 6 and Table 1.

- 4.2. **Additional analysis:** Chemical analysis
Chemical contaminants
Potentially toxic elements (PTEs)
- 4.3. Report detailing soil analyst's recommendations.

620 Importing topsoil

1. **Give notice:** Before stripping topsoil for transfer to site.
 - 1.1. **Notice period:** 14 days

625 Sample loads

1. **Description:** For imported topsoil
2. **Deliver to site a sample load:** of 5 kg
3. **Give notice:** Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
 - 3.1. **Notice period:** 14 days

630 Documentation for imported topsoil

1. **Description:** For ornamental and native planting areas
2. **Timing:** Submit at handover.
3. **Contents**
 - 3.1. Full description of all soil components.
 - 3.2. Record of source for all soil components.
 - 3.3. Record drawings showing the location and depth of all soils by type and grade.
 - 3.4. **Declaration of analysis:** in accordance with BS 3882, clause 6 and Table 1.
4. **Number of copies:** As agreed with Contract Administrator

635 Documentation for compost and composted materials

1. **Description:**
2. **Timing:** Submit at handover.
3. **Contents**
 - 3.1. Full description of all compost components.
 - 3.2. Record of source for all compost components.
 - 3.3. Analyst's report for each test carried out.
 - 3.4. **Declaration of compliance:** in accordance with PAS 100 and BSI PD CR 13456.
 - 3.5. **Quality Compost Protocol certification:** Required
4. **Number of copies:** As agreed with Contract Administrator

640 Documentation for preparation materials

1. **Description:**
2. **Timing:** Submit at handover.
3. **Contents**
 - 3.1. Full description of all components.
 - 3.2. Record of source for all components.
 - 3.3. Analyst's report for each test carried out.
 - 3.4. Supplier's declaration of compliance with BSI PD CR 13456.

4. Number of copies:

650 Notice

1. Give notice before
 - 1.1. Setting out.
 - 1.2. Spreading topsoil.
 - 1.3. Applying herbicide.
 - 1.4. Applying fertilizer.
 - 1.5. Visiting site during maintenance period.
2. Period of notice: 2 weeks

655 Mechanical tools

1. Restrictions: Do not use within 500 mm of tree and plant stems.

660 Grading subsoil for

1. Description: For ornamental and native planting areas
2. Standard: In accordance with BS 8601.
3. General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
4. Avoid compaction.
5. Excess subsoil: Remove.

665 Subsoil surface preparation for

1. Description: For ornamental and native planting areas
2. Standard: In accordance with BS 3882.
3. General: Excavate and/ or place fill to required profiles and levels.
4. Loosening
 - 4.1. When ground conditions are sufficiently dry to allow breaking up of soils, loosen thoroughly to specified depth
 - 4.1.1. Light and noncohesive subsoils: 300 mm
 - 4.1.2. Stiff clay and cohesive subsoils: 300 mm
 - 4.1.3. Rock and chalk subgrades: Lightly scarify to promote free drainage.
 - 4.2. Wet conditions: Do not loosen subsoils.
5. Stones: Immediately before spreading topsoil, remove stones larger than 50 mm.
6. Remove from site: Arisings, contaminants and debris;
Builders rubble

670 Inspecting formations

1. Give notice: Before spreading topsoil for ornamental and native planting areas.
2. Notice period: 14 days

675 Preparation of undisturbed topsoil

1. Standard: In accordance with BS 4428.
 - 1.1. Grading and cultivation:
2. Hard ground: Break up thoroughly.
3. Clearing: Remove visible roots and large stones with a diameter greater than 50 mm.

4. **Areas covered with turf or thick sward:** Plough or dig over to full depth of topsoil.
5. **Fallow period (minimum):**
 - 5.1. Weed control: At appropriate times

680 Surplus topsoil to be retained

1. **Generally** Spread and level on site:
 - 1.1. **Locations:** As agreed with Contract Administrator
 - 1.2. **Protected areas:** Do not raise soil level within root spread of trees that are to be retained.

685 Surplus materials to be removed

1. **Topsoil removal from site:** Topsoil remaining after completion of all landscaping work
2. **Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings:** Remove.

690 Topsoil storage heaps

1. **Location:** As agreed with Contract Administrator
2. **Height (maximum):** 1.0 m
3. **Width (maximum):** Subject to space available
 - 3.1. **Formation:** Loose tip and shape from the side only, without running machinery on the heap at any time.
4. **Protection**
 - 4.1. Do not place any other material on top of storage heaps.
 - 4.2. Do not allow construction plant to pass over storage heaps.
 - 4.3. Prevent compaction and contamination, by fencing and covering as appropriate.

700 Grading of topsoil

1. **Topsoil condition:** Reasonably dry and workable.
2. **Contours:** Smooth and flowing, with falls for adequate drainage.
 - 2.1. **Hollows and ridges:** Not permitted.
3. **Give notice:** If required levels cannot be achieved by movement of existing soil.

705 Handling topsoil

1. **Standard:** In accordance with BS 3882.
2. **Aggressive weeds:** Give notice and obtain instructions before moving topsoil.
3. **Plant:** Select and use plant to minimize disturbance, trafficking and compaction.
4. **Contamination** Do not mix topsoil with:
 - 4.1. Subsoil, stone, hardcore, rubbish or material from demolition work.
 - 4.2. Other grades of topsoil.
5. **Multiple handling:** Keep to a minimum. Use or stockpile topsoil immediately after stripping.
6. **Wet conditions:** Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall, or when the moisture content is greater than the plastic limit.

710 Spreading topsoil on

1. **Description:** For ornamental and native planting areas

2. **Standard:** In accordance with BS 3882.
3. **Temporary roads/ surfacing:** Remove before spreading topsoil.
4. **Layers**
 - 4.1. **Depth (maximum):** 150 mm.
 - 4.2. Gently firm each layer before spreading the next.
5. **Depth after firming and settlement:** As shown in drawings LLDxxxx-LAN-DWG-320.
6. **Crumb structure:** Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

715 Loose tipping of topsoil

1. **Standard:** In accordance with BS 3882.
2. **General:** Do not firm, consolidate or compact topsoil when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.

718 Final cultivation

1. **Description:** For ornamental and native planting areas
2. **Compacted topsoil:** Break up to full depth.
3. **Tilth:** Loosen, aerate and break up topsoil to a tilth suitable for blade grading.
4. **Depth:** 300 mm
5. **Particle size (maximum):** 20 mm
6. **Timing:** Within a few days before planting
7. **Weather and ground conditions:** Suitably dry.
8. **Surface:** Leave regular and even.
9. **Levels:** As shown on drawings
10. **Undesirable material brought to the surface**
 - 10.1. Remove visible weeds.
 - 10.2. Remove roots and large stones with any dimension exceeding 50 mm.

720 Finished levels of topsoil after settlement

1. **In relation to adjoining paving, kerbs or hard surfaces:** 0-25 mm above
2. **In relation to dpc of adjoining buildings:** Not less than 150 mm below.
3. **In relation to adjacent grass areas:** 0-25 mm above
4. **Seeded areas:** Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.
5. **Within root spread of existing trees and shrubs to be retained:** Do not dig or cultivate.
6. **Adjoining soil areas:** Marry in.
7. **Thickness of turf or mulch:** Included.

730 Green roof growing medium installation

1. **Description:** : Refer to Bauder NBS

750 Site-made topsoil

1. **Description:** FOR PLANTING BEDS
2. **Quantity:** Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.

3. **Base material:**
4. **Additional materials:**
5. **Crumb structure:** Made up of discernible crumbs.
6. **Particles**
 - 6.1. **Size in any dimension (maximum):**
 - 6.2. **Large particle content by dry weight (maximum):**
7. **Organic content (by dry weight):**
8. **Nutrient content:** Minimum index values for nitrogen, phosphorus, potassium and magnesium to be as for BS 3882 multipurpose topsoil.

755 Site-made growing media

1. **Description:**
2. **Quantity:** Provide as necessary to make up any deficiency of topsoil or growing media existing on site and to complete the work.
3. **Composition**
 - 3.1. **Base material:**
 - 3.2. **Additional materials:**
4. **Crumb structure:** Made up of discernible crumbs.
5. **Particles**
 - 5.1. **Size in any dimension (maximum):**
 - 5.2. **Large particle content by dry weight (maximum):**
6. **Organic content (by dry weight):**
7. **Nutrient content:** Minimum index values for nitrogen, phosphorus, potassium and magnesium to be as for BS 3882 multipurpose topsoil.

820 Applying general fertilizer

1. **Description:**
2. **Application:** Spread evenly, carefully incorporating below mulch materials.
 - 2.1. **Timing:** Immediately before cultivation.
 - 2.2. **Application rate:** As recommended by soil analyst.
 - 2.3. **Other requirements:**

830 Applying top dressing

1. **Description:**
2. **Rate:**
3. **Timing:** Apply prior to cultivation.

845 Applying loose mulch

1. **Description:** For ornamental and native planting areas
2. **Timing:** Immediately after planting
3. **Preparation:** Clear all weeds;
Water soil thoroughly
4. **Coverage of mulch (minimum)**
 - 4.1. **Planting beds (depth):** 75 mm depth
 - 4.2. **Trees:** 75 mm depth

5. **Finished level of mulch:** 0-25 mm above adjacent paved areas

Completion

905 Applying maintenance fertilizer to soil

1. **Description:**
2. **Duration:** Carry out the following operations from completion of seeding/ turving until
.....
3. **Time of year:**
4. **Application:** Evenly spread, carefully incorporating below mulch materials.
5. **Rate:**

920 Applying mulch

1. **Timing:** At end of the rectification period
2. **Watering:** Ensure that soil is thoroughly moistened prior to mulching, applying water where necessary.
3. **Planting beds:** Re-mulch.
 - 3.1. **Depth (minimum):** 75 mm
4. **Trees:** Remulch.
 - 4.1. **Depth (minimum):** 75 mm
5. **Container planting:** Remulch.
 - 5.1. **Depth (minimum):** 50 mm

Ω End of Section

Q30 Seeding/ turfing

General information/requirements

120 Climatic conditions

1. **General:** Carry out the work while soil and weather conditions are suitable.

145 Watering

1. **Quantity:** Wet full depth of topsoil.
2. **Application:** Even and without displacing seed, seedlings or soil.
3. **Frequency:** As necessary to ensure the establishment and continued thriving of all seeding/turfing.

146 Watering

1. **Quantity:** Wet full depth of topsoil.
2. **Application:** Even and without displacing seed, seedlings or soil.
3. **Frequency:**

150 Water restrictions

1. **Timing:** If water supply is or is likely to be restricted by emergency legislation do not carry out seeding/turfing until instructed. If seeding/turfing has been carried out, obtain instructions on watering.

160 Notice

1. **Give notice before**
 - 1.1. Setting out.
 - 1.2. Applying herbicide.
 - 1.3. Applying fertilizer.
 - 1.4. Preparing seed bed.
 - 1.5. Seeding or turfing.
 - 1.6. Visiting site during maintenance period.
2. **Period of notice:** 2 weeks

170 Setting out

1. **Boundaries:** Mark clearly.
2. **Delineation:** In straight lines or smoothly flowing curves as shown on drawing LLD2498-LAN-DWG-101.

Preparation - Not Used

Seeding

312 Wildflower seed mixture

1. **Description:** For Biodiverse Green Roof
2. **Supplier:** Bauder

- 2.1. **Web::** www.bauder.co.uk
- 2.2. **Email::** info@bauder.co.uk
- 2.3. **Mixture reference:** The Bauder Flora 3 Seed Mix
3. **Application rate:** 100 g/m²

319 Quality of seed

1. **Description:** To seed mixtures.
2. **Freshness:** Produced for the current growing season.
3. **Certification:** Blue label certified varieties.
 - 3.1. **Standard:** EC purity and germination regulations.
 - 3.2. **Official Seed Testing Station certificate of germination, purity and composition:** Submit when requested.
4. **Samples of mixtures:** Submit when requested.

320 Quality of seed

1. **Description:**
2. **Freshness:** Produced for the current growing season.
3. **Certification:** Blue label certified varieties.
 - 3.1. **Standard:** EC purity and germination regulations and Department for Environment, Food and Rural Affairs Higher Voluntary Standard.
 - 3.2. **Official Seed Testing Station certificate of germination, purity and composition:** Submit when requested.
4. **Samples of mixtures:** Submit when requested.

322 Quality of wildflower seed

1. **Description:**
2. **Standard:** In accordance with Flora Locale's 'Code of practice for collectors, growers and suppliers of native flora'.
3. **Germination testing:** Submit germination test results (to ISTA International rules for seed testing) in situation described below
4. **Freshness of seed:** Produced for the current growing season. Otherwise supply germination test certificate confirming viability for the planned growing season.
5. **Samples:** Submit when requested.

330 Sowing

1. **General:** Establish good seed contact with the root zone.
2. **Method:** To suit soil type, proposed usage, location and weather conditions during and after sowing.
 - 2.1. **Distribution:** 2 equal sowings at right angles to each other.

336 Wildflower sowing season

1. **Wildflower seed generally:** March to May or August to October

340 Pre-emergent herbicide

1. **Description:** For areas to accept wildflower seed mix.
2. **Standard:** Pesticide Safety Directorate approved.

3. **Application rate:** In accordance with manufacturer's written recommendation.
- 3.1. **Timing:** Immediately after sowing.

Turfing - Not Used

Protecting/cutting

540 First cut of

1. **Description:** Wildflower Grassland Area
2. **Height of initial growth:** 75 mm
3. **Preparation:**
4. **Debris and litter:** Remove.
 - 4.1. **Stones and earth clods larger than 25 mm in any dimension:** Remove
5. **Height of first cut:** 50 mm
6. **Mower type:** Contractor's choice, but ensure cutting machinery is very sharp and in good condition to avoid pulling out young seedlings.
7. **Arisings:** Leave the initial mowings in situ for a few days to allow seed to drop to the ground, then collect arisings and remove from site.

550 Areas not to be cut

1. **Do not cut:**
2. Bulb planting swathe along the edge of wildflower grassland area.

567 Galvanized steel edgings

1. **Manufacturer:** Kinley
 - 1.1. **Product reference:** RoofEdge Aluminium Edging
2. **Fixing:** As manufacturer's recommendations
 - 2.1. **Installation height:** 150 mm

590 Cleanliness

1. **Soil and arisings:** Remove from hard surfaces.
2. **General:** Leave the works in a clean, tidy condition at Completion and after any maintenance operations.

Maintenance - Not Used

Ω End of Section

Q31 External planting

General information/ requirements

112 Site clearance generally

1. **General:** Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
2. **Stones:** Remove those with any dimension exceeding 50 mm.
3. **Contamination:** Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
4. **Vegetation:** Clear scrub to ground level by flail mowing and remove arisings; retain and protect trees indicated on drawings
5. **Large roots:** Grub up and dispose of without undue disturbance of soil and adjacent areas.
6. **Additional requirements:**

118 Soil conditions

1. **Soil for cultivating and planting:** Moist, friable and (except in aquatic/ marginal planting) not waterlogged.
2. **Frozen or snow covered soil:** Give notice before planting. Provide additional root protection. Prevent planting pit sides and bases and backfill materials from freezing.

120 Climatic conditions

1. **General:** Carry out the work while soil and weather conditions are suitable.
 - 1.1. **Strong winds:** Do not plant.

125 Times of year for planting

1. **Deciduous trees and shrubs:** Late October to late March.
2. **Conifers and evergreens:** September/ October or April/ May.
3. **Herbaceous plants (including marginal):** September/ October or March/ April.
4. **Container grown plants:** At any time if ground and weather conditions are favourable.
 - 4.1. **Watering and weed control:** Provide as necessary.
5. **Dried bulbs, corms and tubers:** September/ October.
6. **Colchicum (crocus):** July/ August.
7. **Green bulbs:** After flowering in spring.
8. **Wildflower plugs:** Late August to mid November or March/ April.
9. **Aquatic plants:** May/ June or September/ October.

130 Mechanical tools

1. **Restrictions:** Do not use within 1 m of existing trees and 0.5 m of other plant stems.

145 Watering

1. **Quantity:** Wet full depth of topsoil.
2. **Application:** Even and without damaging or displacing plants or soil.

3. **Frequency:** As necessary to ensure establishment and continued thriving of planting. Two times per week in summer as minimum during establishment period.

146 Watering Planting Areas

1. **Quantity:** Soil analysis to be undertaken to measure matric potential (capacity to release water) of soil prior to calculating irrigation needs. If soil analysis not practical, apply 20 l per application in the summer. Less (c. 10 l) in the spring and autumn.
2. **Application:** Wet full depth of topsoil. Even and without damaging or displacing plants or soil.
3. **Frequency:** When planted, and at the point of bud burst in the spring. To be continued throughout the spring and summer until the leaves have fallen in autumn (for deciduous species)
Apply water two times per week during summer.

146 Watering Trees

1. **Quantity:** Soil analysis to be undertaken to measure matric potential (capacity to release water) of soil prior to calculating irrigation needs. If soil analysis not practical, apply 20 l per application per tree in the summer. Less (c. 10 l) in the spring and autumn.
2. **Application:** Even and without damaging or displacing plants or soil. Wet full depth of topsoil.
3. **Frequency:** When planted, and at the point of bud burst in the spring. To be continued throughout the spring and summer until the leaves have fallen in autumn (for deciduous trees)
Apply water two times per week during summer.

150 Water restrictions

1. **General:** If water supply is or is likely to be restricted by emergency legislation, do not carry out planting until instructed. If planting has been carried out, obtain instructions on watering.

160 Notice

1. **Give notice before**
 - 1.1. Setting out.
 - 1.2. Applying herbicide.
 - 1.3. Applying fertilizer.
 - 1.4. Delivery of plants/ trees.
 - 1.5. Planting shrubs.
 - 1.6. Planting trees into previously dug pits.
 - 1.7. Watering.
 - 1.8. Visiting site during maintenance period.
2. **Period of notice:** Two weeks

170 Soil requirements

1. Type
 - 1.1. **Planted beds:** Planting bed soil system, as section Q28
 - 1.2. **Tree pits, shrub pits and other backfilling:** Plant pit backfilling soil system, as section Q28
 - 1.3. **External container planting:** Container planting growing media system, as section Q28

- 1.4. **Mulch applied after planting:** Mulching and top dressing system, as section Q28.
Refer to drawing LLDxxxx-LAN-DWG-210 for Mulching Layout.

200 Plants/ trees - general

1. **Condition:** Materially undamaged, sturdy, healthy and vigorous.
2. **Appearance:** Of good shape and without elongated shoots.
3. **Hardiness:** Grown in a suitable environment and hardened off.
4. **Health:** Free from pests, diseases, discoloration, weeds and physiological disorders.
5. **Budded or grafted plants:** Bottom worked.
6. **Root system and condition:** Balanced with branch system.
 - 6.1. **Standard:** The National Plant Specification
7. **Species:** True to name.
8. **Origin/ Provenance:** Grown in the United Kingdom for at least one growing season, unless otherwise approved.
 Local provenance for native species.
9. **Definition:** Origin and Provenance have the meaning given in the National Plant Specification.

215 Plants/ trees - specification criteria

1. **Name, forms, dimensions, provenance and other criteria:** As scheduled and defined in the National Plant Specification (available on CS Design Software Limited's website).

216 Plants/ trees - specification criteria

1. **Name, forms, dimensions and other criteria:** To the relevant part of BS 3936.

225 Bulbs/ Corms/ Tubers

1. **Condition:** Firm, entire, not dried out or shrivelled.
2. **Health:** Free from pests, diseases and fungus.
3. **Handling:** Remove from packaging immediately.
4. **Storage:** Permitted only when necessary.
 - 4.1. **Location:** Well ventilated, dark, covered, rodent proof container, away from exhausts and fruit.
 - 4.2. **Duration:** Minimum period.
 - 4.3. **Temperature:** 18-21°C.

235 Container grown plants/ Trees

1. **Growing medium:** With adequate nutrients for plants to thrive until permanently planted.
2. **Plants:** Centred in containers, firmed and well watered.
3. **Root growth:** Substantially filling containers, but not root bound, and in a condition conducive to successful transplanting.
4. **Hardiness:** Grown in the open for at least two months before being supplied.
5. **Containers:** With holes adequate for drainage when placed on any substrate commonly used under irrigation systems.

245 Labelling and information

1. **General** Provide each plant/ tree or group of plants/ trees of a single species or cultivar with supplier's labelling for delivery to site, showing:

- 1.1. Full botanical name.
- 1.2. Total number.
- 1.3. Number of bundles.
- 1.4. Part bundles.
- 1.5. Supplier's name.
- 1.6. Employer's name and project reference.
- 1.7. Plant specification, in accordance with scheduled National Plant Specification categories.
2. Additional information: Submit on request: Country of origin, Name or designation of rootstock of budded or grafted plants.

246 Labelling and information

1. **Standard:** To BS 3936.

260 Plant/ Tree substitution

1. **Plants/ trees unobtainable or known to be likely to be unobtainable at time of ordering**
Submit alternatives, stating:
 - 1.1. Price.
 - 1.2. Difference from specified plants/ trees.
2. **Approval:** Obtain before making any substitution.

265 Plant handling, storage transport and planting

1. **Standard:** To CPSE 'Handling and establishing landscape plants'.
2. **Frost:** Protect plants from frost.
3. **Handling:** Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.
4. **Plant packaging:** Black polyethylene bags
5. **Packaging of bulk quantities:** Pallets or bins sealed with polyethylene and shrink wrapped
6. **Planting:** Upright or well balanced with best side to front.

290 Surplus material

1. **Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings:** Remove.
Non-contaminated debris and woody arisings can be retained for habitat creation on site.
Refer to Landscape Architect or Ecology Consultant's ecological enhancements proposals, if applicable.

Plant containers - Not Used

Preparation of planting beds/ planting materials

300 Herbicide

1. **Description:** To clear existing vegetation
2. **Locations:** Where existing vegetation requires removal.
3. **Type:** Suitable for suppressing perennial weeds.
4. **Timing:** Allow fallow period before cultivation.
 - 4.1. **Duration (minimum):** As manufacturer's recommendation

305 Weed control

1. **Description:**
2. **Locations:**
3. **General:** Prevent weeds from seeding and perennial weeds from becoming established,
.....

Planting shrubs/ herbaceous plants/ bulbs

400 Random plant layout

1. **Description:** To native shrub planting
2. **Spacing:** Random groups of 3-5 plants of the same species.
3. **Density:** 0.4 m c/c

401 Regular plant layout

1. **Description:** To planting beds
2. **Spacing:** In regular, staggered rows
3. **Density:** If single-species groups are not demarcated in construction drawings, for herbaceous perennials, group 3-5 plants per m², to achieve specified numbers.

415 Antidesiccant for conifers/ Evergreens

1. **Manufacturer:** Submit proposals
 - 1.1. **Product reference:** Submit proposals
2. **Application:** Dip before delivering to site. Spray soon after planting.
 - 2.1. Do not apply in wet or frosty weather.
 - 2.2. Ensure full coverage of underside of foliage.

430 Green Wall

1. **Manufacturer:** ANS Group Global Ltd
 - 1.1. **Product reference:** Aluminium Tophat Build-up System (Standard)

470 Formal hedges

1. **Shrubs for hedges:** Consistent in species, cultivar and clone to ensure a uniform hedge.
2. **Planting:** In trenches large enough to take full spread of roots. Set out plants evenly, as specified.
Plant min. 300 mm from building walls. Allow 600 mm rooting depth over foundation levels.

471 Naturalized hedges

1. **Planting:** In trenches large enough to take full spread of roots. Set out plants evenly.
Plant min. 300 mm from building or boundary walls. Allow 600 mm rooting depth over foundation levels.

480 After planting

1. **Watering:** Immediately after planting, thoroughly and without damaging or displacing plants or soil.
2. **Firming:** Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.

3. **Top dressing:** Mulching and top dressing system, as section Q28
 - 3.1. **Depth:** 75 mm

Planting trees

500 Tree planting

1. **Standard:** Prepare trees and transplant in accordance with BS 4428

535 Tree stakes

1. **Stakes:** Softwood, peeled chestnut, larch or oak, straight, free from projections and large or edge knots and with pointed lower end.
 - 1.1. **Preservative treatment:** Tanalised
2. **Stake size (minimum):** 75 mm diameter
3. **Stake length (minimum):** As per drawing LLDxxxx-LAN-DWG-321

550 Double staking for

1. **Description:** Standard Trees
2. **Staking**
 - 2.1. **Position:** Either side of tree position and perpendicular to wind direction.
 - 2.2. **Driving:** Vertically at least 300 mm into bottom of pit before planting.
 - 2.3. **Backfilling:** Consolidate material around stake.
 - 2.4. **Firming:** Sufficiently firm to prevent movement of the rootball/ rootstock.
3. **Height of stakes:** Cut off at approximately one third of the height of the clear stem of tree
4. **Horizontal bracing:** Timber cross bar, 75 mm x 38 mm x 900 mm
 - 4.1. **Fixing:** Firmly fix using nails on windward side of tree and as close as possible to the stem without making contact with the bark. Position cross bar horizontally and 25 mm from top of stakes
5. **Ties:** Biodegradable natural fibre
6. **Tying:** Secure tree firmly but not rigidly to cross bar. Prevent tree from touching cross bar using spacer blocks or cushions if required
7. **Nails for fixing ties, belts and webbing:** To BS 1202-1, galvanized, minimum 25 mm long and with 10 mm diameter heads.
8. **Nails for fixing cross bars:** To BS 1202-1, galvanized round wire, minimum 75 mm long and 3.75 mm gauge

566 Tree protection

1. **Manufacturer:**
 - 1.1. **Product reference:**
2. **Type:**
3. **Material:**
4. **Size:**
5. **Colour:**
6. **Support:**
7. **General:** Ensure that protection methods do not impede natural movement of trees or restrict growth.

Woodland/ matrix/ buffer zone planting

605 Existing vegetation/ Weed clearance

1. **Surface vegetation clearance:** Using suitable nonresidual herbicide
2. **Arisings:** Remove.

617 Removing trees and hedges

1. **Identification:** Clearly mark trees and hedges to be removed.
2. **Work near retained trees:** Where canopies overlap, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
3. **Arisings:** Retain sections of trunks on site for habitat creation.
4. **Tree stumps:** Remove mechanically to a minimum depth of 300 mm below ground level

625 Cultivation

1. **General:** Plough to full depth of topsoil
2. **Consolidation:** Leave for one month
3. **Soil within root spread of trees to be retained:** Do not plough or cultivate.

Protecting/ maintaining/ making good defects

710 Maintenance

1. **Duration:** Carry out the operations in the following clauses from completion of planting until the end of the rectification period. The rectification period is to be for 1 year (TBC with form of contract) after practical completion..
2. **Frequency of maintenance visits:** TBC with land owner. In accordance with the agreed maintenance schedule/ monthly?

720 Failures of planting

1. **Defects due to materials or workmanship not in accordance with the Contract:** Plants/ trees/ shrubs that have failed to thrive.
 - 1.1. **Exclusions:** Theft or malicious damage after completion.
 - 1.2. **Rectification:** Replace with equivalent plants/ trees/ shrubs.
2. **Replacements:** To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.
3. **Timing of making good:** During the next suitable planting season

730 Protective fencing

1. **Fencing type:**
2. **Erection:** On completion of planting.
3. **Removal:**

740 Cleanliness

1. **Soil and arisings:** Remove from hard surfaces and grassed areas.
2. **General:** Leave the works in a clean tidy condition at completion and after any maintenance operations.

750 Planting maintenance generally

1. **Weed control:** Maintain weed free area around each tree and shrub.
 - 1.1. **Diameter (minimum):** The larger of 1 m or the surface of original planting pit.
 - 1.2. **Keep planting beds clear of weeds:**
2. **Planted areas:** Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
3. **Precautions:** Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
4. **Firming up:** Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs.
5. **Trees:** Spray crown when in leaf during warm weather.
 - 5.1. **Timing:** After dusk.
6. **Tree accessories:** Check condition of stakes, ties, guys, guards and irrigation and ventilation systems.
 - 6.1. **Broken or missing items:** Replace.
 - 6.2. **Loose stakes:** Re-firm in the ground or replace as necessary to provide support to the tree.
 - 6.3. **Loose guys:** Re-firm anchor points and adjust as necessary to provide support to the tree.
 - 6.4. **Ties:** Adjust to accommodate growth and prevent constriction or abrasion.
 - 6.5. **Damage to bark:** Cut back neatly with sharp knife. Prevent further damage.
 - 6.6. **Frequency of checks:**
7. **Watering:** As required for healthy establishment, depending on weather conditions

760 Planting maintenance - pruning

1. **General:** Prune to promote healthy growth and natural shape.
 - 1.1. **Dead, dying, diseased wood and suckers:** Remove.
 - 1.2. **Timing:**
 - 1.3. **Trees:** Favour a single central leading shoot.
2. **Arisings:** Remove.

Ω End of Section



LIZARD

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Specification created using NBS Chorus



SPECIFICATION - APPENDIX 1

System	Bauder XF301 Sedum Blanket
Project plan	New Build
Structural deck	TBC
Roof construction	TBC
Origination	
Reference	

Bauder Generic BIM Specifications are offered on the condition that the specifier accepts responsibility for ensuring that each specification is appropriate for its intended purpose, that conditions for its use are suitable, and that it meets current building regulations.

Please note that changes made to the content of this document may impact suitability and eligibility to meet Bauder Limited's requirements for guarantee.

Our support

This specification is not bespoke and therefore will need further input from Bauder to meet project specific requirements. Consequently, we strongly recommend contacting your local Bauder technical manager for individual project advice to ensure this specification meets the requirements of your project and importantly, remains eligible for guarantee as Bauder Limited cannot be held liable for any errors or omissions.

To ensure you get the right roof package, our fully compatible accessory items such as rooflights, rainwater outlets, and trims etc. are readily available and can be incorporated into the specification. We can also provide photovoltaic array systems with compatible mounting.

Registering your project

By registering your project with us prior to tender, we can confirm the suitability of this specification and at the same time allow implementation of our project monitoring service and procedures. At this stage the guarantee duration and terms and conditions can be confirmed.

Bauder Ltd reserves the right to amend information and product specifications without prior notice.

NBS SECTION Q37 - DESCRIPTION OF WORKS

Section Q37 deals with the design and installation of the Bauder Green Roof landscaping system, including the various related elements i.e. separation, protection, and drainage layers, substrates, Bauder supplied planting and accessories such as inspection chambers, trims etc. It invokes clauses from related sections for waterproofing, insulation, landscaping and maintenance as necessary for a complete system.

It is intended for use on projects where the detailed design is completed by the specifier (architect or landscape architect) with technical assistance from the manufacturer as required and should be read in conjunction with any project specific drawings provided.

SCOPE OF WORKS

This section includes:

- Bauder Extensive green roof system components/ landscaping
- Related Bauder system accessories

This section does not include:

- Construction of the structural deck
- Bauder waterproofing system – refer NBS Section J??-???

Q37 GREEN ROOFS

To be read with Preliminaries / General Conditions.

GENERAL

130 EXTENSIVE GREEN ROOF: Roof Area Name

- **Landscaping finish:** Pre-cultivated Sedum vegetation blanket
- **Substrate:** TBC
- **Slope:** 1-2°
- **Waterproofing system:** Please contact Bauder Limited for confirmation of suitable waterproofing system.
- **Drainage / protection layer:** Bauder SDF Mat - 20mm drainage / protection layer. Installation as clause 770B.
- **Vegetation blanket:** Bauder Xero Flor XF301 sedum blanket, applied in standard length rolls 2m x 1 m. Installation as clause 800B.
- **Landscaping depth:** ca. 48mm (excluding vegetation).
- **Vegetation:** Mainly Sedum with some moss and grasses.
- **Accessories:** -
 - Bauder ALU 250 Inspection chamber, to be installed over all internal rainwater outlets within soft landscaping areas. The lid of the chamber must be level with, or higher than the surrounding landscaping. For landscaping exceeding 100mm, additional height adapter units (available in 50mm or 100mm depths) must be used to achieve the required chamber depth, with the chamber lid being at least level with the surrounding landscaping or higher. Installation as clause 830.

- 20 - 40mm round washed pebble vegetation barrier provided at all perimeters and protrusions, as clause 460. Installation as clause 840.
- Bauder Xero Flor organic fertiliser, apply as clause 850A.
- **Additional requirements:** As clauses 210, 710, 715A, 720, 910, 915A, 916, 920, 930.

PRODUCTS

460 PEBBLE BALLAST

- **Type:** Washed, round pebbles.
- **Size:** Graded 20-40mm and free from fines and sharps.

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 (these can be omitted where Bauder inspection chambers are used, if the grille cap height obstructs the closing of the chamber lid).

715A GREEN ROOF RELATED REQUIREMENTS

- **The following are vital to the accurate pricing, correct installation, and ultimately the long-term life of a green roof, and must, therefore, be included within the specification and tender documents:** -
- **Loadings:** It is assumed that the architect or his advisors have satisfied themselves that the roof structure and deck are suitable to receive the dead load of the proposed green roof system and landscape both during construction and on completion of the works.
- **Additional protection:** A planned or contractual delay between the installation of the waterproofing and landscape will almost certainly necessitate additional/increased protection to the waterproofing. This protection may be temporary or permanent. The responsibility and cost of this possible extra protection should be clearly included within the tender documents.
- **Detailed drawings:** Correct detailing design and construction is essential to the long-term life of the green roof. It is essential, therefore, that detail drawings illustrating for the construction are included with the tender documents, in order to enable the contractor to tender accurately.
- **Minimum upstand height requirements:** The waterproofing should be taken up all abutment upstands, pipes, detailing protrusions etc. a minimum of 150mm above finished landscape surface level to comply with British Standards and current code of practice BS8217:2005.
- **Provision for living products in hot weather conditions:** During hot weather conditions, living products such as plants, turf, sedum blankets etc. must be laid on the day of delivery to site. With regard to sedum blankets or turf, any rolls not installed should be laid out and kept watered prior to final installation.
- **Watering / Irrigation:** Adequate provision for watering the installed any form of planting must be in place on site before the product is installed. Irrigation systems if fitted should be operational. Initial watering should be by surface sprinklers to water in the fertiliser, where this

is specified. All watering should be carried out in strict accordance with the Bauder watering requirements and guidance document.

- **Final Inspection:** No landscaping work should be installed until Bauder have carried out a final inspection to the waterproofing and have passed this as suitable for guarantee. It is the responsibility of the roofing contractor to advise and organise this inspection with Bauder. We cannot guarantee any waterproofing that has been landscaped without this inspection having been carried out and passed as acceptable.
- **Damage risk form other trades:** No landscaping should be installed while the roof area is subject to other site traffic. Bauder will carry out an inspection of the completed roof 4-6 weeks following installation and any site related damage by others will be reported to the client. Bauder accept no responsibility whatsoever for damage to the product or the installation caused by site work carried out by others after the landscaping has been installed.
- **First year maintenance:** The contractor must price into his tender the cost of post installation maintenance for a minimum period of 1 year to ensure the handover of a flourishing green roof.

720 ADVERSE WEATHER

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

LANDSCAPING INSTALLATION

770B DRAINAGE LAYER INSTALLATION

- **Extent:** Continuous over designated roof area
- **Fitting:** Loose laid over the waterproofing and butt jointed with 100mm fleece overlap
- **Upstands:** Carefully cut to fit closely around penetrations and outlets.

800B VEGETATION BLANKET INSTALLATION

Handling blankets:

- **Timing:** Lay within 36 hours of lifting from growing position.
- **Method:** laid manually – two-man operation
- **Excessive stacking:** Not permitted.
- **Material loss (maximum):** 3% of total surface area.

Growing medium condition: Thoroughly watered

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. 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:** Finish with whole blankets.
- **Consolidation:** N/A
- **Dressing:** Bauder Xero Flor 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.
- **Roll size:** 2m x 1m

830 INSPECTION CHAMBER INSTALLATION

- **Location:** Install centrally over rainwater outlets.
- **Orientation:** Align parallel with adjacent features.
- **Surround:** Using 20/40mm grade washed pebbles; the inspection chamber must be surrounded by a 500mm vegetation barrier surround to prevent unwanted growth obstructing the drainage system.
- **Positioning:** Never place directly on the waterproofing membrane – see options below-
Intensive / extensive soft landscaping: Placed directly on to the drainage / water storage layer.
Inverted roof with pebble ballast: Placed directly on the vapour permeable membrane or filter layer.
Decorative aggregate finishes: Placed directly on the protection layer or vapour permeable membrane / filter layer
- **Important Note:** Ensure that a suitably sized hole has been cut out of the underlying drainage board / protection layer to allow water to flow freely into the outlet.
- **Chamber Height:** The contractor should also allow for the installation of additional Bauder height adapter units as required, in order to bring the inspection chamber up to at least the height of the surrounding landscaping. These are available in either 50mm or 100mm units.
- **Box gutters and gullies:** Where a box gutter is to be constructed, provision should be made to accommodate the 250mm diameter of the inspection chamber. The front support leg of the chamber will need to be removed (see installation guide) for the unit to fit inside a box gutter /gully. We recommend that all box gutters are constructed to a minimum finished width of 500mm to ensure that the support feet of the inspection chamber sufficiently clears the angle fillets within the gutter sole and leaves space to dress the pebble vegetation barrier around the main body of the chamber.
- **Precautionary note:** When cutting metal, please ensure that appropriate tools and personal protection equipment are used.

840 VEGETATION BARRIER / DRAINAGE BARRIER

- A vegetation barrier must be provided to all perimeters, abutments penetrations including protrusions i.e. man-safe posts etc. We recommend 20/40mm rounded river washed pebbles. Stones/ aggregates with sharp edges must not be used i.e. flint.
In accordance with current GRO guidelines, the specified barrier widths are as follows: -
- Minimum 300mm, but increasing to 500mm at vertical walls with opening windows or doors or to abutments with opening rooflights.
- Every 40m, there is a 30mm high barrier constructed of non-flammable materials or a one metre wide strip of solid paving, gravel or pebbles.
- At all open drainage perimeters, drainage trim must be used to contain the vegetation barrier.
- For extensive green roofs where sedum blanket is specified, the vegetation barrier must cover the edges of the blanket by a minimum of 100mm in order to protect the exposed edge of the blanket against wind uplift and substrate erosion.
- **Vegetation barriers removal or reduction of the recommended width:** Pebble vegetation barriers function as a fire break between potentially flammable dry vegetation and abutting construction materials that are also potentially flammable, to prevent fire spreading. These can be seen as an aesthetic issue for smaller green roof areas and for this reason some clients/designers choose to reduce this width or otherwise remove the barrier altogether. The current barrier guidelines are set by the GRO codes of practice that Bauder follows and promotes. These are guidelines and not currently a legal requirement under British Standards or Building Regulations. However, not following these guidelines may affect an insurance claim in the unlikely event of a fire. Consequently, Bauder Ltd cannot accept liability for issues arising from non-compliance with the current GRO guidelines.

850A FERTILISER

- Bauder Organic Fertiliser slow release must be applied at a rate of 80g/m² onto the installed planting.
- This product is to be supplied by Bauder Ltd.
- Care must be taken to distribute the fertiliser evenly, through use of an approved applicator.
- The vegetation / vegetation blankets should then be thoroughly saturated by the use of sprinklers so as to promote rapid establishment. It is the responsibility of the roofing contractor to liaise with the main contractor/ building owner to provide water to ensure that the growing medium/ blanket does not dry out within the first month – refer document 'Watering Requirement Guidelines for Extensive and Bio-diverse green roof installations'.

COMPLETION

910 INSPECTION

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

915A ESTABLISHMENT WATERING REQUIREMENTS –

- XF301 requires surface watering for the first 4 weeks following installation (to ensure that the sedum blanket remains moist to the touch) It is the responsibility of the roofing contractor to liaise with the main contractor/ building owner to provide water to ensure that the vegetation mat does not dry out during this period.
- An adequate mains supply of sufficient pressure must be available and operational prior to the sedum blanket being delivered and installed. Irrigation systems (where fitted on roof slopes above 10 degrees) must be operational, but initial watering in of the fertiliser must be by surface mounted sprinklers.
- See the Bauder Watering Guide document for detailed information on watering requirements.
- Bauder Ltd accepts no responsibilities whatsoever for the condition of installed sedum blankets that are not properly watered in accordance with our recommendations.

916 POST INSTALLATION MAINTENANCE

- The installing contractor should price into the tender, the cost of carrying out post-installation maintenance for a contract period to be agreed with the client's representative. Following completion of the landscaping installation and handover, the responsibility for future on-going maintenance of the green roof planting becomes the responsibility of the building owner or the Main Contractor, where this element forms part of the contract.
- **Maintenance services:** Bauder Ltd offers a professional maintenance service using experienced green roof technicians and would be pleased to provide an estimate for carrying out on-going maintenance. Please contact our green roof maintenance team on Tel: 01473 257671. Alternatively, the work can be contracted to experienced landscape contractors of your choice.
- **Period of maintenance contract:** TBC
- **Scope of maintenance procedure:** as per manufacturer's recommendations.

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:**
 - Manufacturer's guarantees and warranties.
 - Procedures for maintenance of the green roof.
 - Record drawings showing the location of planting and associated features.
- **Number of copies:** as required by client.

Bauder reserves the right to amend information and product specifications without prior notice. All reasonable care has been taken to ensure that the information is current and correct at the time of issue. Please note that any future regulation changes could result in this specification requiring an update. The specifier is responsible for ensuring that this specification information is still current prior to issue, as Bauder Ltd can accept no liability for any resulting errors or omissions.



SPECIFICATION - APPENDIX 2

System	Bauder XF118 Wildflower Blanket
Project plan	New Build
Structural deck	TBC
Roof construction	TBC
Origination	
Reference	

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Our support

This specification is not bespoke and therefore will need further input from Bauder to meet project specific requirements. Consequently, we strongly recommend contacting your local Bauder technical manager for individual project advice to ensure this specification meets the requirements of your project and importantly, remains eligible for guarantee as Bauder Limited cannot be held liable for any errors or omissions.

To ensure you get the right roof package, our fully compatible accessory items such as rooflights, rainwater outlets, and trims etc. are readily available and can be incorporated into the specification. We can also provide photovoltaic array systems with compatible mounting.

Registering your project

By registering your project with us prior to tender, we can confirm the suitability of this specification and at the same time allow implementation of our project monitoring service and procedures. At this stage the guarantee duration and terms and conditions can be confirmed.

Bauder Ltd reserves the right to amend information and product specifications without prior notice.



NBS SECTION Q37 - DESCRIPTION OF WORKS

Section Q37 deals with the design and installation of the Bauder Green Roof landscaping system, including the various related elements i.e. separation, protection, and drainage layers, substrates, Bauder supplied planting and accessories such as inspection chambers, trims etc. It invokes clauses from related sections for waterproofing, insulation, landscaping and maintenance as necessary for a complete system.

It is intended for use on projects where the detailed design is completed by the specifier (architect or landscape architect) with technical assistance from the manufacturer as required and should be read in conjunction with any project specific drawings provided.

SCOPE OF WORKS

This section includes:

- Bauder Extensive green roof system components/ landscaping
- Related Bauder system accessories

This section does not include:

- Construction of the structural deck
- Bauder waterproofing system – refer NBS Section

Q37 GREEN ROOFS

To be read with Preliminaries / General Conditions.

GENERAL

130 EXTENSIVE GREEN ROOF: Roof Area Name

- **Landscaping finish:** Pre-cultivated UK Native species wildflower blanket
- **Substrate:** TBC
- **Slope:** 1°
- **Waterproofing system:** Please contact Bauder Limited for confirmation of suitable waterproofing system.
- **Slip Layer:** Bauder PE Foil (loose laid) rolled out in single layer. Installation as clause 745.
- **Protection layer:** Bauder FSM600 - 4mm protection fleece. Installation as clause 750C.
- **Drainage layer:** Bauder DSE40 - drainage / water storage panel. Installation as clause 770E.
- **Filter membrane:** Bauder Filter Fleece. Installation as clause 780A.
- **Growing Medium:** Bauder Biodiverse Substrate, depth 100mm above the filter fleece. Installation as clause 790A.
- **Landscaping depth:** TBC
- **Vegetation:** Bauder XF118 UK Native Species Wildflower Blanket. Installation as clause 800A.
- **Accessories:**
 - Project specific drip line irrigation system (designed and supplied by others), as clause 463C. Installation of irrigation pipe work to the waterproofing as clause 825A.
 - Bauder ALU 250 Inspection chamber, to be installed over all internal rainwater outlets within soft landscaping areas. The lid of the chamber must be level with, or higher than

the surrounding landscaping. For landscaping exceeding 100mm, additional height adapter units (available in 50mm or 100mm depths) must be used to achieve the required chamber depth, with the chamber lid being at least level with the surrounding landscaping or higher. Installation as clause 830.

- 20 - 40mm round washed pebble vegetation barrier provided at all perimeters and protrusions, as clause 460. Installation as clause 840.
- **Additional requirements:** As clauses 210, 710, 715A, 720, 910, 915F, 916, 920, 930.

PRODUCTS

460 PEBBLE BALLAST

- **Type:** Washed, round pebbles.
- **Size:** Graded 20-40mm and free from fines and sharps.

463C IRRIGATION

- **Supplier:** Access Irrigation Ltd. Crick, Northampton NN6 7XS
Tel: 01788 823811 Fax: 01788 824256 E-mail: sales@access-irrigation.co.uk
- **Product reference:** Permadrrip Pro - drip line irrigation system with anti-syphon design to resist clogging and pressure regulation.
- **Material:** Perforated UV resistant plastic - Colour: Dark Brown
- **Height:** 10mm
- **Operating range:** 0.8 -4.3bar.
- **Wall thickness:** 1.2mm
- **Nozzle output:** 1.6L/h
- **Spacing:** 150mm.
- **Pipe connection:** For Bauder Extensive Green Roofs, all irrigation systems using Permadrrip Pro must use PoziLock compression fittings for both the drip line and water feed pipework. Barbed connectors are not permitted.
- **Location:** Irrigation system to be installed flush with the surface of the growing medium and tested to ensure that it is fully operational prior to installation of the vegetation blanket.
- **Design:** The design, water pressure, positioning and spacing of the drip line is critical to the performance and effectiveness of the system. Therefore, the irrigation scheme for each project should be designed accordingly to ensure it is fit for purpose. Irrigation is a specialist subjects and Access Irrigation Ltd provide a design service and can assist with information pertaining to any individual project upon request.

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 (these can be omitted where Bauder inspection chambers are used, if

the grille cap height obstructs the closing of the chamber lid).

715A GREEN ROOF RELATED REQUIREMENTS

- **The following are vital to the accurate pricing, correct installation, and ultimately the long-term life of a green roof, and must, therefore, be included within the specification and tender documents: -**
- **Loadings:** It is assumed that the architect or his advisors have satisfied themselves that the roof structure and deck are suitable to receive the dead load of the proposed green roof system and landscape both during construction and on completion of the works.
- **Additional protection:** A planned or contractual delay between the installation of the waterproofing and landscape will almost certainly necessitate additional/increased protection to the waterproofing. This protection may be temporary or permanent. The responsibility and cost of this possible extra protection should be clearly included within the tender documents.
- **Detailed drawings:** Correct detailing design and construction is essential to the long-term life of the green roof. It is essential, therefore, that detail drawings illustrating for the construction are included with the tender documents, in order to enable the contractor to tender accurately.
- **Minimum upstand height requirements:** The waterproofing should be taken up all abutment upstands, pipes, detailing protrusions etc. a minimum of 150mm above finished landscape surface level to comply with British Standards and current code of practice BS8217:2005.
- **Provision for living products in hot weather conditions:** During hot weather conditions, living products such as plants, turf, sedum blankets etc. must be laid on the day of delivery to site. With regard to sedum blankets or turf, any rolls not installed should be laid out and kept watered prior to final installation.
- **Watering / Irrigation:** Adequate provision for watering the installed any form of planting must be in place on site before the product is installed. Irrigation systems if fitted should be operational. Initial watering should be by surface sprinklers to water in the fertiliser, where this is specified. All watering should be carried out in strict accordance with the Bauder watering requirements and guidance document.
- **Final Inspection:** No landscaping work should be installed until Bauder have carried out a final inspection to the waterproofing and have passed this as suitable for guarantee. It is the responsibility of the roofing contractor to advise and organise this inspection with Bauder. We cannot guarantee any waterproofing that has been landscaped without this inspection having been carried out and passed as acceptable.
- **Damage risk form other trades:** No landscaping should be installed while the roof area is subject to other site traffic. Bauder will carry out an inspection of the completed roof 4-6 weeks following installation and any site related damage by others will be reported to the client. Bauder accept no responsibility whatsoever for damage to the product or the installation caused by site work carried out by others after the landscaping has been installed.
- **First year maintenance:** The contractor must price into his tender the cost of post installation maintenance for a minimum period of 1 year to ensure the handover of a flourishing green roof.

720 ADVERSE WEATHER

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

LANDSCAPING INSTALLATION

745 SLIP LAYER INSTALLATION

- **Installation:** to be rolled out loose over the root resistant layer as specified (one layer for Extensive landscaping and two layers for Intensive landscaping).

- This product is only required for roofs with a fall between 0-3° (A slip layer is not necessary or advisable for slopes above 3°).
- **Joints:** Minimize.
- **Overlaps (minimum):** All laps to be 150mm with care being taken to ensure that roll sides join between layers.
- **Upstands:** Extend to top of growing medium. Sufficient foil must be allowed for to enable it to be taken up all upstand and edge details prior to installation of the protection layer.

750C PROTECTION LAYER INSTALLATION

- **Installation:** Protection fleece rolled out and laid loose. Laps to be sealed by lightly heating overlap area with a propane gas torch 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.
- **Openings in landscape restraint kerbs:** Where these kerbs are present (roof slopes above 5°), the protection layer should be cut away from the openings/ gaps to avoid impeding drainage.

770E DRAINAGE / WATER STORAGE LAYER INSTALLATION

- **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 root resistant Bauder Plant-E. 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.

780A 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.

790A GROWING MEDIUM INSTALLATION

- **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, Silo lorry (pumping directly onto the roof area), 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.

800A WILDFLOWER VEGETATION BLANKET INSTALLATION

- **Planting mix:** Non-invasive selected wildflowers (see manufacturer's literature)
- **Thickness:** 25mm.
- **Roll size:** 2m x 1m
- **Handling blankets and timing:** Lay within 24 hours of delivery. Watering and installation over large areas should be carried out in sections that could be completed within 4 hour time frame.
- **Laying blankets:** Dry, damaged, frosty or waterlogged blankets: Do not lay.
- **Excessive stacking:** Not permitted.
- **Method:** Laid manually / two-man operation
Pre-grown wildflower blankets should be supplied and installed in strict accordance with the manufacturer's recommendations.
- **Material loss (maximum):** 3% of total surface area.
- **Growing medium condition:** Immediately prior to planting, the whole system should be thoroughly watered to ensure that the water storage/drainage board is filled and the substrate growing medium saturated
- **Layers:** Pre-grown wildflower blankets should be typically applied directly over a minimum of 100mm of prepared level or gently undulating substrate.
- **Orientation:** Perpendicular to slope of roof.
- **Joints:** Staggered/tight abut together to minimize any 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 abut together tightly (as per the manufacturer's installation guideline).
- **Edges:** Finish with whole blankets.
- **Consolidation:** N/A
- **Dressing:** Bauder Xero Terr 3 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.
- **Slopes:** When applying the system on roof slopes above 10°, on large or exposed areas, the vegetation blankets should be secured in place by suitable bio-degradable landscaping pegs. Great care should be taken to prevent any damage to the waterproofing.
- **Please note** - Bauder Ltd does not take any responsibility for the design, performance or maintenance of any planting schemes.

825A 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. Pipework should be secured at intervals to the substrate as required using plastic pegs (available from irrigation supplier), but these must not exceed the depth of the substrate itself. Pegs are best installed off-set at an angle if they are over long or otherwise trimmed down to ensure that later foot traffic during maintenance does not push the peg beyond the substrate depth into the underlying drainage board. Once the vegetation blanket is installed, the pipes will become retained in position.

830 INSPECTION CHAMBER INSTALLATION

- **Location:** Install centrally over rainwater outlets.
- **Orientation:** Align parallel with adjacent features.
- **Surround:** Using 20/40mm grade washed pebbles; the inspection chamber must be surrounded by a 500mm vegetation barrier surround to prevent unwanted growth obstructing the drainage system.
- **Positioning:** Never place directly on the waterproofing membrane – see options below-
Intensive / extensive soft landscaping: Placed directly on to the drainage / water storage layer.
Inverted roof with pebble ballast: Placed directly on the vapour permeable membrane or filter layer.
Decorative aggregate finishes: Placed directly on the protection layer or vapour permeable membrane / filter layer
Important Note: Ensure that a suitably sized hole has been cut out of the underlying drainage board / protection layer to allow water to flow freely into the outlet.
- **Chamber Height:** The contractor should also allow for the installation of additional Bauder height adapter units as required, in order to bring the inspection chamber up to at least the height of the surrounding landscaping. These are available in either 50mm or 100mm units.
- **Box gutters and gullies:** Where a box gutter is to be constructed, provision should be made to accommodate the 250mm diameter of the inspection chamber. The front support leg of the chamber will need to be removed (see installation guide) for the unit to fit inside a box gutter /gully. We recommend that all box gutters are constructed to a minimum finished width of 500mm to ensure that the support feet of the inspection chamber sufficiently clears the angle fillets within the gutter sole and leaves space to dress the pebble vegetation barrier around the main body of the chamber.
- **Precautionary note:** When cutting metal, please ensure that appropriate tools and personal protection equipment are used.

840 VEGETATION BARRIER / DRAINAGE BARRIER

- A vegetation barrier must be provided to all perimeters, abutments penetrations including protrusions i.e. man-safe posts etc. We recommend 20/40mm rounded river washed pebbles. Stones/ aggregates with sharp edges must not be used i.e. flint.
In accordance with current GRO guidelines, the specified barrier widths are as follows: -
- Minimum 300mm, but increasing to 500mm at vertical walls with opening windows or doors or to abutments with opening rooflights.
- Every 40m, there is a 30mm high barrier constructed of non-flammable materials or a one metre wide strip of solid paving, gravel or pebbles.
- At all open drainage perimeters, drainage trim must be used to contain the vegetation barrier.
- For extensive green roofs where sedum blanket is specified, the vegetation barrier must cover the edges of the blanket by a minimum of 100mm in order to protect the exposed edge of the blanket against wind uplift and substrate erosion.

- **Vegetation barriers removal or reduction of the recommended width:** Pebble vegetation barriers function as a fire break between potentially flammable dry vegetation and abutting construction materials that are also potentially flammable, to prevent fire spreading. These can be seen as an aesthetic issue for smaller green roof areas and for this reason some clients/designers choose to reduce this width or otherwise remove the barrier altogether. The current barrier guidelines are set by the GRO codes of practice that Bauder follows and promotes. These are guidelines and not currently a legal requirement under British Standards or Building Regulations. However, not following these guidelines may affect an insurance claim in the unlikely event of a fire. Consequently, Bauder Ltd cannot accept liability for issues arising from non-compliance with the current GRO guidelines.

COMPLETION

910 INSPECTION

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

915F ESTABLISHMENT WATERING REQUIREMENTS

- For wildflower blankets, it will be necessary to keep the blanket substrate damp for a period of at least 10 weeks during the period of vegetation establishment. It should be established at tender stage, whom should carry out this task and that they have all relevant information available regarding watering requirements.
- It is the responsibility of the roofing contractor to liaise with the main contractor/ building owner to provide water and ensure that the planted growing medium is thoroughly irrigated immediately after installation.
- An adequate mains water supply of sufficient pressure must be available and operational prior to the planting being delivered and installed. Initial watering must be by surface mounted sprinklers. For larger roofs this will likely entail more than one watering point at roof level.

916 POST INSTALLATION MAINTENANCE

- The installing contractor should price into the tender, the cost of carrying out post-installation maintenance for a contract period to be agreed with the client's representative. Following completion of the landscaping installation and handover, the responsibility for future on-going maintenance of the green roof planting becomes the responsibility of the building owner or the Main Contractor, where this element forms part of the contract.
- **Maintenance services:** Bauder Ltd offers a professional maintenance service using experienced green roof technicians and would be pleased to provide an estimate for carrying out on-going maintenance. Please contact our green roof maintenance team on Tel: 01473 257671. Alternatively, the work can be contracted to experienced landscape contractors of your choice.
- **Period of maintenance contract:** *TBC*

- **Scope of maintenance procedure:** as per manufacturer's recommendations. **COMPLETION**

920 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:**
- Manufacturer's guarantees and warranties.
- Procedures for maintenance of the green roof.
- Record drawings showing the location of planting and associated features.
- **Number of copies:** as required by client.

Bauder reserves the right to amend information and product specifications without prior notice. All reasonable care has been taken to ensure that the information is current and correct at the time of issue. Please note that any future regulation changes could result in this specification requiring an update. The specifier is responsible for ensuring that this specification information is still current prior to issue, as Bauder Ltd can accept no liability for any resulting errors or omissions.

GREEN/LIVING WALL SOIL SPECIFICATIONS - APPENDIX 3

William Sinclair Horticulture



MATERIAL SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

Commercial product name	Sinclair Custom Mix Compost ANS.05.95
Description	Medium textured Peat and Coir growing medium with added wood fibre, perlite, lime, base nutrients and CRF fertiliser, with added wetter and insect control.
Manufacturer	William Sinclair Horticulture Firth Road Lincoln LN6 7AT Tel: (01522) 537561 Fax: (01522) 780281

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/preparation	Preparation
Hazardous ingredients:	This product contains an insecticide, keep product from entering watercourses and wild habitat. Imidasect is included in Annex 1 under EC Directive 91/414

3. HAZARDS IDENTIFICATION

Dust is the main hazard if the product should become dry.
Large bags should be lifted with care.
No physico/chemical health hazards have been reported
Product contains insecticide Imidasect 5GR

4. FIRST AID MEASURES

No specific effects and/or symptoms have been reported or known

Skin contact:	Remove contaminated clothing. Wash hands after use. Wash from cuts and abrasions with soap and water
Eye contact:	Immediately irrigate with plenty of clean water. After initial flushing, remove any contact lenses and continue flushing for 10 minutes
Ingestion:	Wash out mouth with water. Accidental ingestion should produce no ill effects
Inhalation:	Remove victim to fresh air

If any symptoms persist seek medical advice.

5. FIREFIGHTING MEASURES

Suitable fire fighting extinguishing media: Water

Special exposure hazards: None

Protection against fire and explosions: Peat is a combustible material so this product should not come into contact with naked flames.

Hazardous thermal decomposition products: Burning may produce nitrogen oxides and carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Environmental precautions: Prevent dispersion

Cleaning up methods: Collect spilled material in containers

7. HANDLING AND STORAGE

Handling: Prevent formation of clouds of dust

Storage: No specific protective measures required. Keep in a cool, dry well-ventilated place away from chemicals and pesticides

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment: No special protection is needed when using this product as directed

Hand and Eye protection: No special protection is needed when using this product as directed

Occupational Exposure Limits: No limits have been established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Medium peat and coir blend with control release fertilisers and perlite

Odour: Peaty

PH: 5.5 – 6.5

Solubility in water: Mostly Insoluble

Decomposition temperature: 150 - 200°C

10. STABILITY AND REACTIVITY

The material is stable under normal conditions of use

Conditions to avoid: Excessive heat (peat is combustible), moisture and combustible substances

Hazardous reactions: None reported or known

Hazardous decomposition products: None

11. TOXICOLOGICAL INFORMATION

This product is regarded as non-toxic

12. ECOLOGICAL INFORMATION

Contains Imidasect for control of pests, not for use on common land. Harmful to aquatic organisms. High risk to bees. Do not use on crops in areas where bees are actively foraging.

Persistence/degradability: Biodegradable

13. DISPOSAL CONSIDERATIONS

Methods of disposal: Disposal according to local regulations. Not to be disposed of on common land

14. TRANSPORT INFORMATION

Free for transport regulations

15. REGULATORY INFORMATION

Uses and restrictions: Horticultural use:

EU regulations/classification: This product does not contain any hazardous Ingredients (67/548/EEC-88/379/EEC) in accordance with EU regulations (91/155/EEC)
The product contains Imidasect 5GR as included in Annex 1 under EC directive 91/414

16. OTHER INFORMATION

The information contained in this Safety Data Sheet, as of the issue date, is believed to be true and correct. However, the accuracy or completeness of this information, and any recommendations or suggestions, are made without warranty or guarantee. The product label provides information on the use of this product. Since the conditions of use are beyond the control of our company, it is the responsibility of the user to determine the conditions of safe use of this product.

Date of preparation: 18/04/2012