

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 J41-110

Q37 GREEN ROOFS

To be read with Preliminaries / General Conditions.

GENERAL**130 EXTENSIVE GREEN ROOF:** Single Storey Extension

- **Landscaping finish:** Pre-cultivated Sedum vegetation blanket
- **Substrate:** New Plywood Deck
- **Slope:** 1°
- **Waterproofing system:** BAUDER TOTAL GREEN ROOF SYSTEM
- **Drainage / protection layer:** Bauder SDF Mat - 20 mm 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 800A
- **Landscaping depth:** ca. 44 mm (excluding vegetation).
- **Vegetation:** Mainly Sedum with some moss and grasses.
- **Accessories:** -
 - Bauder ALU 250 Inspection chambers, 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 100 mm, additional height adapter units (available in 50 mm or 100 mm 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 - 40 mm 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.

PERFORMANCE

210 GENERAL DESIGN

- **Green roof and associated features:** Complete the detailed design.
- **Proposals:** Submit drawings, technical information, calculations and manufacturers literature.

PRODUCTS

460J31/440C440C PEBBLE BALLAST

- **Type:** Washed, round pebbles.
- **Size:** Graded 20-40 mm 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 fertilizer, 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 100 mm fleece overlap
- **Upstands:** Carefully cut to fit closely around penetrations and outlets.

800A 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:** Thorough, immediately after laying and dressing.
- **Roll size:** 2m x 1m

830 INSPECTION CHAMBER INSTALLATION

- **Location:** Install centrally over rainwater outlets.
- **Orientation:** Align parallel with adjacent features.
- **Surround:** Using 20/40 mm grade washed pebbles, the inspection chamber must be surrounded by a 300 mm 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 50 mm or 100 mm units.
- **Box gutters and gullies:** Where a box gutter is to be constructed, provision should be made to accommodate the 250 mm 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 minimum 300 mm pebble vegetation barrier must be provided to all perimeters and roof penetrations and protrusions i.e. surrounds to roof light or plant upstand kerbs, rainwater outlets, soil vent pipes, man-safe posts etc. as specified. If there are adjacent buildings within 6 metres and the barrier functions also as a fire-break, then the width of the vegetation barrier should be increased to 500mm. On very large roof areas, a one metre wide pebble fire break should be incorporated every 40 metres.
- We recommend 20/40 mm rounded river washed pebbles. Stones or aggregates with sharp edges must not be used i.e. flint. Other materials may be used, but only after consultation and agreement with Bauder Ltd.
- At all open drainage perimeters AL80/100 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 100 mm in order to protect the exposed edge of the blanket against wind uplift and substrate erosion.

850A FERTILISER

- Xero Flor organic slow release fertiliser must be applied at a rate of 80g/m² onto the newly laid XF301 sedum blanket. This is available from Bauder Ltd. Care must be taken to distribute the fertiliser evenly, through use of an approved applicator.
- The vegetation blanket 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 vegetation mat does not dry out within the first month.

COMPLETION

910 INSPECTION

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

915A INITIAL WATERING

- 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 within the first month. 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 responsibility 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.
- **Soft landscaping:** Following the final maintenance visit and application of slow release fertiliser at the end of the agreed contract period, the responsibility for the ongoing maintenance of the green roof planting becomes the responsibility of the building owner.
- **Period of maintenance contract:** *Insert requirement i.e. one year, two years etc.*
- **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:**
 - Manufacturers guarantees and warranties.
 - Procedures for maintenance of the green roof.
 - Record drawings showing the location of planting and associated features.
- **Number of copies:** as required by client.