

Q37 NBS Specification

Project Name:	Bourne Estates	Location:	London
Client:	Mathew Lloyd Architects	Project Ref:	
System Ref:	NB_MedO_Inv_Ext_Bio_WildB	Page:	1 of 10
Release Date:	30 January 2015	Author:	Jake Watkins
Revision number:	RevA	Revision date:	29/01/15

NBS SECTION Q37 DESCRIPTION OF WORKS

To be read with Preliminaries/General conditions.

Section Q37 deals with the installation of the MedO Green Roof System comprising drainage board, filter fleece, growing medium (substrate) and living plant materials. It includes where required, fire breaks and presumes the deck substrate and roof falls as stated within the specification below. Accessories are included where relevant.

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.

The details contained within this proposal are based on information available at the time of writing. It covers the installation of MedO green roofing materials and the preparation work necessary to provide a suitable substrate. Radmat Building Products Ltd cannot be held responsible for unknown site conditions or for the performance of materials within the system other than the MedO roofing products supplied.

A detailed method of work statement and programme of works should be agreed with the Radmat Approved Contractor before the commencement of the works.

The requirements of all relevant British Standards and Industry Codes of Practice should be complied with at all times. A bibliography is available upon request.

SCOPE OF WORKS

This section includes:

- The MedO green roof system
- Related system accessories

This section does not include:

- Construction of the structural deck.
- Proprietary rainwater drainage / plumbing – refer NBS Section R10
- Lightning protection – refer NBS Engineering Services, Section W60.
- Lead sheet coverings / flashings – See NBS Section H71.
- The waterproofing system – See NBS Section J31, J41 or J42.
- Thermal insulation
- Internal rainwater outlets (but not the connected drainage/plumbing goods)
- Photovoltaic system
- Proprietary metal capping system – refer Section H72.

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GENERAL

130a EXTENSIVE SEDUM PLUS MAT ROOF Level 04 & 09

- **Roof type:** Radmat MedO Sedum Plus Mat Extensive.
 - **Substrate:** Radmat ProTherm G Green Guide to Specification A rated insulation (see J31/340) on PermaQuik PQ6100 Hot Melt monolithic waterproofing membrane over concrete structure (see J31/130).
 - **Slope:** Flat
- **Waterproofing:** PermaQuik PQ6100 Hot Melt monolithic waterproofing membrane (see J31/130).
- **Thermal insulation:** ProTherm G Green Guide to Specification A rated insulation (see J31/340).
- **Protection:** Radmat Root Protection Sheet root barrier (see J31/130).
- **Moisture control layers:**
 - Radmat D25 Drainage/Reservoir Board, 25mm deep HDPE with cusplate. As clause 350a
 - Radmat G11 Polyester geo-textile filter fleece 100g/m². As clause 360a
- **Growing medium:** Radmat Vulkatec GM10 extensive growing medium as clause 390a.
 - **Depth:** minimum 70mm deep after settlement.
- **Vegetation:** Radmat Sedum Plus pre-grown sedum blanket containing 16 species of sedum. As clause 400.
- **Accessories:**
 - **Vegetation breaks:** 500mm wide, 20-40mm rounded pebble margin.
 - **Gravel Stop:**
 - GS10 Two height Gravel Stop 80x120mm as clause 420
 - GS14 Curved Gravel Stop 80mm as clause 420
 - **Inspection Chambers:**
 - PARA100 Aluminium Inspection Chamber as clause 430
- **System Manufacture:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572 email: techenquiries@radmat.com, Web: www.radmat.com

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130b EXTENSIVE BROWN BIODIVERSE ROOF Level 04 & 09

- **Roof type:** Radmat MedO Extensive Brown Biodiverse Roof
 - **Substrate:** Radmat ProTherm G Green Guide to Specification A rated insulation (see J31/340) on PermaQuik PQ6100 Hot Melt monolithic waterproofing membrane over concrete structure (see J31/130).
 - **Slope:** Flat
- **Waterproofing:** PermaQuik PQ6100 Hot Melt monolithic waterproofing membrane (see J31/130).
- **Thermal insulation:** ProTherm G Green Guide to Specification A rated insulation (see J31/340).
- **Protection:** Radmat Root Protection Sheet root barrier (see J31/130).
- **Moisture control layers:**
 - Radmat D25 Drainage/Reservoir Board, 25mm deep HDPE with cusplate. As clause 350a.
 - Radmat G11 Polyester geo-textile filter fleece 100g/m². As clause 360a.
- **Growing medium:** Radmat Vulkatec GM10 extensive growing medium. As Clause 390c.
 - **Depth:** minimum 80mm deep after settlement and mounded to 150mm
- **Vegetation:** Radmat S2 or S3 seed mix's as clause 400e & 400f. Plug Planting as clause 400c.
- **Accessories:**
 - **Vegetation breaks:** 500mm wide, 20-40mm rounded pebble margin.
 - **Gravel Stop:**
 - GS10 Two height Gravel Stop 80x120mm as clause 420
 - GS14 Curved Gravel Stop 80mm as clause 420
 - **Inspection Chambers:**
 - PARA100 Aluminium Inspection Chamber as clause 430
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PERFORMANCE

210 GENERAL DESIGN

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

255 MAXIMUM PERMITTED GREEN ROOF LOADS

- **Dead loads:**
 - **Green roof layers:**
- **Imposed loads:**
 - **Activity:**
 - **Vegetation:**
 - **Allowance for additional loads during construction:**
- **Service loads:**
- **Requirement:** Restrict site activities to ensure that design loads are not exceeded, or submit proposals for temporary supports.

PRODUCTS

310 INVERTED ROOF INSULATION

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** ProTherm G Inverted Extruded Polystyrene board:
- **Type:** Extruded polystyrene board to BS EN 13163:2012 and Green Guide to Specification A rating
- **Edges:** Shiplap
- **Thickness:** 240mm (2x120mm) to achieve 0.13w/m² 'U' Value or better. To Comply with Building regulations Part L2A, the Services Engineer's performance requirements and any other stated requirements in conjunction with other components
 - Do not lay insulation until roof is clear.
 - Clean of all dirt debris from base.
 - Set out to minimize cutting and avoid small cut pieces at perimeter and penetrations.
 - Loose lay boards tightly butted and to a brick pattern, cut cleanly to fit closely around projections, upstands, rainwater outlets, etc.
 - Once installed ensure that boards are in good condition, with no springing, or rocking. Secure boards against wind uplift as soon as practicable.

320 ROOT BARRIER

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** Radmat Root Protection Sheet.
- **Material:** FLL Certified SBS modified reinforced bitumen membrane.
 - **Thickness:** 4.0mm.

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350a DRAINAGE LAYER EXTENSIVE

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** Radmat D25 Drainage/Reservoir Board, 25mm deep HDPE with cusplate.
- **Material:** HDPE.
 - **Depth:** 25mm.
- **Infill:** None

360a FILTER MEMBRANE

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** Radmat G11 filter fleece.
- **Material:** Polyester geo-textile.
 - **Mass:** 100g/m²

390a EXTENSIVE GROWING MEDIUM SEDUM BLANKET

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** Radmat Vulkatec GM10 extensive growing medium.
- **Material:** Vulkamineral (a combination of volcanic lava rock and natural pumice) blended with three organic components (green compost, composted bark and Xylith*) to store high levels of the micronutrients required for healthy plant growth. Compliant with RAL-GZ 253 and RAL Certified. Peat free.
- **Depth:** minimum 70mm deep after settlement.
- **Ameliorant/conditioner:** Not required.
 - **Coverage:** n/a
- **Declaration of analysis:** Submit
 - **Parameters:** manufacturer declared values.

390c EXTENSIVE GROWING MEDIUM Bio Diverse.

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** Radmat Vulkatec GM10 extensive growing medium.
- **Material:** Vulkamineral (a combination of volcanic lava rock and natural pumice) blended with three organic components (green compost, composted bark and Xylith*) to store high levels of the micronutrients required for healthy plant growth. Compliant with RAL-GZ 253 and RAL Certified. Peat free.
- **Depth:** minimum 80mm deep after settlement mounded to 150mm
- **Ameliorant/conditioner:** Not required.
 - **Coverage:** n/a
- **Declaration of analysis:** Submit
 - **Parameters:** manufacturer declared values.

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400 VEGETATION BLANKET

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** Radmat Sedum Plus pre-grown sedum blanket T1.
- **Planting Mix:** Pre cultivated, tightly rooted plant mats containing a minimum of 16 varieties of sedum on a 450 g/m² bio-degradable Grassfelt carrier. Sedum stoloniferum (Stolon Stonecrop), Sedum pulchellum (Widow's-cross), Sedum oreganum (Oregon stonecrop), Sedum montanum (Jenny), Sedum hybridum (Czars Gold), Sedum hispanicum (Spanish Stonecrop), Sedum floriferum (Bailey's Gold), Sedum ellacombianum (Selskianum hort), Sedum aizoon (Euphorbioides), Sedum acre (Oktoberfest), Sedum acre (Yellow), Sedum album (White), Sedum spurium (Coccineum), Sedum sexangulare (Tasteless Stonecrop), Sedum reflexum (Crooked Yellow Stonecrop) and Sedum telephium (Fabaria).
 - **Thickness:** 25mm.
- **Vegetation coverage (minimum):** 75%.

400c VEGETATION EXTENSIVE BIO DIVERSE

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** Radmat Wild Flower plug Plants PLG2
- **Planting Mix:** Choice of species
- **Vegetation coverage (minimum):** 16-20 No per m².

400e VEGETATION EXTENSIVE BROWN ROOF

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** Radmat Cast Seed Mix S2
- **Planting Mix:** Please see datasheet for listed species
- **Vegetation coverage (minimum):** 4g/m²

400f VEGETATION EXTENSIVE BROWN ROOF

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** Radmat Cast Seed Mix S3
- **Planting Mix:** Please see datasheet for listed species
- **Vegetation coverage (minimum):** 4g/m²

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420 EDGE RETENTION PROFILE

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:**
 - Radmat GS10 Two height Gravel Stop 80x120mm as clause 420
 - Radmat GS14 Curved Gravel Stop 80mm as clause 420
- **Material:** Aluminium.
- **Height:** 80mm.

430 INSPECTION CHAMBERS

- **Manufacturer:** Radmat Building Products Limited, Esha House, St Mary's Business Park, Albany Road, Market Harborough LE16 7EB Tel: 01858 410372, Fax 01858 410572
 - **Product reference:** PARA100 Aluminium Inspection Chamber as clause 430
- **Material:** Aluminium.
- **Size:** 300 x 300mm.
 - **Depth:** 100mm.
- **Access Covers:** fixed to frame and hinged.
- **Features:** security fastened.

440 VEGETATION BARRIER

- **Material:** 20-40mm rounded pebbles.
- **Depth:** minimum 50mm.
- **Width:** 500mm.

450 ROOF DRAINAGE OUTLETS

- **Manufacturer:** Wade or similar approved with clamping ring arrangement. Cold metal.
 - **Product reference:** As recommended by manufacturer.
- **Material:** Aluminium
- **Size:** To M&E engineers specification
- **Fixing:** As recommended by manufacturer.

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.

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720 ADVERSE WEATHER

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

730 INSTALLATION OF INVERTED ROOF INSULATION

- **Preparation:** Clear roof of other trades.
- **Condition of substrate:** Clean.
- **Fitting:** Loose lay.
- **Joints:** Butt Jointed using rebate in insulation boards.
 - **End joints:** stagger.
- **Cutting: minimise.**
 - **Perimeters and upstands:** Fit full size pieces.
 - **Penetrations:** Cut cleanly and fit closely.
- **Stability:** Springing and rockig not permitted.
- **Protection:** Cover to prevent wind uplift.

770 DRAINAGE LAYER INSTALLATION

- **Extent:** Continuous over entire roof area.
- **Fitting:** Loose-Laid.
- **Upstands:** Fit closely around penetrations and outlets.

740 ROOT BARRIER

- **Joints:** Minimise.
 - **Overlaps (minimum):** 80mm.
- **Upstands:** Extend to top of growing medium.

770 DRAINAGE LAYER INSTALLATION

- **Extent:** Continuous over entire roof area except where omitted locally in build-up to increase diversity of habitat created.
- **Fitting:** Loose-laid, close-buttet.
- **Upstands:** Cut to fit closely against abutments, roof penetrations and where butt joints are required. Rainwater outlets must not be covered.

780 FILTER MEMBRANE INSTALLATION

- **Joints:** Minimise.
 - **Overlaps (minimum):**150mm
- **Fitting:** Loose Laid
- **Upstands:** Extend to top of growing medium.

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790 GROWING MEDIUM INSTALLATION

- **Handling:** Minimise. Deliver to Roof in Bulk Bag, spreading the specified depth on filter sheet, allowing for a settlement factor of 12%.
 - **Conditions:** Handle in the driest condition possible. Do not handle or install when wet or frozen.
- **Layers:**
 - **Depth (maximum):** 80mm.
 - **Sequence:** Gently firm each layer before spreading the next.

800 VEGETATION BLANKET INSTALLATION

- **Handling blankets:**
 - **Timing:** Lay within 36 hours of lifting from growing position.
 - **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 install.
 - **Orientation:** Diagonal or perpendicular to slope of roof.
 - **Joints:** Stagger. Butt together or slightly overlap to prevent gaps. Do not stretch blankets.
 - **Edges:** Finish with whole blankets.
 - **Consolidation:** Firm as installation proceeds to ensure full contact with the growing medium. Do not use rollers.
- **Dressing:**
 - **Application:** Brush in to fill joints.
- **Watering:** Thorough, immediately after laying and dressing. Keep Moist until sedum blankets are established (typically 4-6 weeks following installation).

820 EDGE RETAINING PROFILE INSTALLATION

- **Cutting:** Neat, accurate and without spalling.
 - **Junctions:** vertical, secured using proprietary connectors.
- **Position:** True to line and level. Smooth continuous lines.
- **Fixing:** Loose-Laid.

830 INSPECTION CHAMBER INSTALLATION

- **Location:** Install centrally over drain outlet.
 - **Orientation:** Align parallel with adjacent features.
- **Bedding:** Position flanges on to crowns of drainage layer.
- **Backfill:** Ballast Flanges with pebbles.
- **Surround:** 300mm diameter circle/ square 20/40mm round washed pebbles.

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COMPLETION

910 INSPECTION

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

920 COMPLETION

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

930 DOCUMENTATION

- **Timing:** Submit at handover.
- **Contents:**
 - Growing medium declaration of analysis.
 - Manufacturers' guarantees and warranties.
 - Procedures for maintenance of the green roof.
 - Record drawings showing the location of planting and associated features.
 - FLL Guidelines for the planning, execution and upkeep of green-roof sites page 59 paragraph 11.6 titled Readiness for Handover DIN 18916 DIN 18917
- **Number of copies:** Contractor to define.