

Q37 Green Roofs

Project: One Bedford Avenue

To be read with Preliminaries/General conditions

GENERAL

130 EXTENSIVE GREEN ROOF - GREEN ROOF AREAS (4TH,5TH,6TH,7TH FLOORS)

- Roof type: Nature Roof Solution 1
- Substrate: Concrete
- Slope: 0-5°
- Waterproofing: Hot melt monolithic membrane with root resistant surfacing layer (in accordance with FLL/GRO guidelines)
- Thermal insulation: Expanded polystyrene with Min-K layer or similar over
- Drainage layer: FKD 40, see clause 350
- Filter layer: Filter Mat Type 105, see clause 360
- Growing medium: Substrate Type E, see clause 390
 - Depth: 100 mm minimum
- Vegetation: Sedum and wildflower plugs, see clause 400
- Accessories: Vegetation barriers, see clause 440
- Water for temporary irrigation to be provided on site during initial establishment period
- *Ecological enhancements - Cobble piles every 30m2*
 - *Sand areas (1x 1m) every 50m2*
 - *Bird boxes as required specification for starlings and redstarts (quantity and position as directed by architect/ecology consultant)*

130 EXTENSIVE BROWN ROOF

- Roof type: Brown Roof
- Substrate: Concrete
- Slope: 0-5°
- Waterproofing: Hot melt monolithic membrane with root resistant surfacing layer (in accordance with FLL/GRO guidelines)
- Thermal insulation: Expanded polystyrene with Min-K layer or similar over
- Drainage layer: FKD 25, see clause 351
- Filter layer: Filter Mat 105, see clause 360
- Growing medium: Brown Roof Aggregate, see clause 391
 - Depth: 100mm
- Vegetation: Seed Mix as clause 401
- Accessories: Vegetation barriers, see clause 420
- Water for temporary irrigation to be provided on site
- *Ecological enhancements - as above*

PERFORMANCE

210 GENERAL DESIGN

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

- Performance criteria: As per manufacturers instructions.

250 CHARACTERISTIC ROOF LOADS

- Roof structure:
- Allowance for additional loads during construction:
- Requirement: Restrict site activities to ensure that design loads are not exceeded, or submit proposals for temporary supports.

255 CHARACTERISTIC ROOF LOADS

Dead loads:

- Roof structure, screed and waterproofing: To be advised by structural engineer.
- Green roof layers: Approx. 1.35kN/m² (saturated)
- Brown roof layers: Approx. 1.55kN/m² (saturated)

Imposed roof loads:

- Activity: To be advised by structural engineer
- Vegetation: Included in Green roof layers
- Allowance for additional loads during construction: To be advised by structural engineer

Service loads: To be advised by structural engineer

- Long term dynamic wind loads: To be advised by structural engineer

Snow loads: To be advised by structural engineer

Other loads: To be advised by structural engineer

Requirement: Restrict site activities to ensure that design loads are not exceeded, or submit proposals for temporary support.

PRODUCTS

350 DRAINAGE LAYER

- Manufacturer: Optigreen Ltd, 235 Old Marylebone Road, London, NW1 5QT, United Kingdom, Tel. 0203 589 9400
- Product Reference: Optigreen Drainage Board FKD 40
- Material: Recycled HDPE
- Depth: 40 mm
- Water Storage: Approx. 9 litres/m²

351 DRAINAGE LAYER

- Manufacturer: Optigreen Ltd, 235 Old Marylebone Road, London, NW1 5QT, Tel. 0203 589 9400
- Product Reference: Optigreen Drainage Board Type FKD 25
- Material: Recycled HDPE
- Depth: 25 mm
- Water Storage: Approx. 5 litres/m²

360 FILTER LAYER

- Manufacturer: Optigreen Ltd, 235 Old Marylebone Road, London, NW1 5QT, Tel. 0203 589 9400
- Product Reference: Optigreen Filter Mat 105
- Material: Polypropylene
- Mass: 105 g/m²

390 GROWING MEDIUM

- Manufacturer: Optigreen Ltd, 235 Old Marylebone Road, London, NW1 5QT, Tel. 0203 589 9400
- Product Reference: Optigreen Extensive Substrate Type E
- Material: Brick, expanded clay, pumice, green compost, blend depending on regional availability
- Depth: 100 mm minimum (to be confirmed)
- Declaration of analysis: Submit
- Parameters: According to current FLL/GRO Guidelines

391 GROWING MEDIUM

- Manufacturer: Optigreen Ltd, 235 Old Marylebone Road, London, NW1 5QT, Tel. 0203 589 9400
- Product Reference: Brown Roof Aggregate
- Material: Recycled and graded site material, actual blend dependant on local availability.
- Depth: 100mm
- Declaration of analysis: Submit
 - Parameters: *Does not comply with FLL/GRO guidelines*

400 PLANTS

- Manufacturer: Optigreen Ltd, 235 Old Marylebone Road, London, NW1 5QT, Tel. 0203 589 9400
- Product Reference: Optigreen Plug Plants, minimum 25 species
- Planting Mix: Sedums (30%), Wildflowers (70%)
- Pot size: 27 or 51cc
- Planting density: 15 plants/m²

401 VEGETATION

- Manufacturer: Optigreen Ltd, 235 Old Marylebone Road, London, NW1 5QT, United Kingdom, Tel. 0203 589 9400
- Product Reference: Optigreen Seed Mix Type A
- Planting Mix: 19 species of herb
- Sowing rate: approx 1g/m²

420 RETAINING PROFILE

- Manufacturer: Optigreen Ltd, 235 Old Marylebone Road, London, NW1 5QT, Tel. 0203 589 9400
- Product Reference: Optigreen Edge Trim ZP 120
- Material: Aluminium
- Thickness: 1 mm
- Height: 120 mm

450 FERTILISER

- Manufacturer: Optigreen Ltd, 235 Old Marylebone Road, London, NW1 5QT Tel. 0203 589 9400
- Product Reference: Optigreen Opticote Slow Release Fertiliser
- Application rate: 50 g/m²

EXECUTION

770 DRAINAGE LAYER INSTALLATION

- Extent: Continuous over designated roof area
- Fitting: Loose laid
- Overlaps: Butt joint boards
- Upstands: Fit closely around penetrations
- Cut out around outlets

780 FILTER LAYER INSTALLATION

- Extent: Continuous over designated roof area
- Joints: Without joints
- Overlaps (minimum): 100 mm
- Upstands: Extend to top of growing medium/vegetation barrier

790 GROWING MEDIUM INSTALLATION

- Extent: Continuous over designated roof area
- Handling: Minimize
- Conditions: Do not handle when frozen
- Depth: as stated in clause 390
- Level according to the depth required

800 PLUG PLANTS APPLICATION

- Level growing medium according to the depth required
- Plant plug plants as stated in clause 400
- Watering: Thorough, immediately after planting until entire build-up is water saturated (minimum 30 litres/m²).
- Subsequent watering: 2-3 times thoroughly, thereafter keep moist until fully rooted in

801 SEEDS APPLICATION

- Extent: Continuous over designated roof area
- Level growing medium according to the depth required
- For a more consistent distribution, mix seed with dry sand and spread seed mix evenly
- Keep moist until fully rooted in

820 EDGE RETAINING PROFILE INSTALLATION

- Cutting: Neat, accurate
- Junctions: Vertical, secured using proprietary connectors
- Position: True to line and level. Smooth continuous lines
- Fixing: TBA by waterproofing manufacturer

830 INSPECTION CHAMBER INSTALLATION

- Location: Install centrally over drain outlet
- Orientation: Align parallel with adjacent features
- Surround: As clause 440

840 PEBBLE INSTALLATION

- Extent: Continuous along all edges and around roof penetrations and outlets at a minimum of 300 mm wide. Where installed as preventive fire protection (around all types of openings such as skylights, doors, etc.) at a minimum of 500 mm wide. On large roof areas, install a fire break every 40 metres at a minimum of 1 m wide.
- Depth: as stated in clause 440
- Level according to the depth required

840A FERTILISER APPLICATION

- Spread evenly before or after vegetation application
- Frequency: Once annually as required

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.
- Number of copies: As required.

940 COMPLETION CARE AND MAINTENANCE

- Period: Completion Care phase lasts for 12 – 15 months after installation. After the agreed contract period, the ongoing maintenance of the green roof becomes the responsibility of the building owner.
- Frequency: Twice annually
- Weeding: Removal of undesired growth
- Watering: As required, depending on weather
- Remove dead leaves and any debris.
- Cutting: Mowing or strimming as required
- Re-seeding or re-planting of any bare areas including additional substrate where required
- Fertilise: Optigreen Opticote as clause 840
- Removal of plant growth from borders, gravel areas and paved areas
- Clean gutters, control chambers and roof outlets
- Water for irrigation to be provided on site