

8th March 2013

The Royal School, Hampstead, London – New Sports Hall, - Nature Roof specification

Blackdown Horticultural Consultants and HB Architects, along with GHW Consulting Engineers have prepared this paper in response to an email received from Camden Council dated 21st February 2013 which required:

1. Section Plan (1:20) to show sufficient substrate is provided
 2. Planting details (species and number to be planted eg. per/sq.m) to ensure provision for biodiversity
 3. Establishment and longer term maintenance plan (eg 10 years)
- We would also require substrate depth to vary between 80-150mm (using mounding techniques to provide different conditions/habitats) but average out at 130mm.

This paper seeks to respond and to provide detailed advice on the roof, how it meets the green roof specification and requirements and shows how maximum bio-diversity can be achieved from this development.

The Council requirement for the substrate depth is based on a traditional “heavy” green roof on a building with a greater pitch than the development proposal and therefore the assumption on the substrate depth is fundamentally flawed.

The “lightweight” green roof being used here is required due to the ground-bearing capacity for the proposed foundations of the building resulting from an extensive ground investigation survey and subsequent report. As a result, the maximum loading for the green roof is 100 kg/sq.m. This allows us to provide a substrate depth of 95mm comprising a 25mm thick drainage and filter layer, overlaid with a 70mm thick growing medium into which the plants are sown. Any increase in the depth of the substrate beyond this would result in a different roof, metalwork and foundation solution, which would drive the project considerably over budget and would mean the sports hall cannot be delivered.

Therefore, on this development, we cannot provide the substrate depth required but the proposal meets the requirements of the planning condition.

With regard to the request for a section drawing at 1:20 scale, this is provided and enclosed by HB Architects which indicates the 95mm substrate. It also indicates the build-up in greater detail comprising the planting layer, the growing medium substrate, the filter sheet and drainage layer, all of which form the green roof above the insulated aluminium standing seam roof. Also enclosed are 3 generic roof drawings from Blackdown to visually demonstrate the system proposed.

The key requirement and purpose of this green roof is to provide a detailed and diverse planting system to increase bio-diversity on the site, both fauna and flora, as well as insect and bird species. Given the nature and orientation of this building at Rosslyn Hill it is recognised that a NatureMat system would not achieve these requirements and therefore, to maximise bio-diversity, plug plants will be used.

Blackdown Horticultural Consultants Ltd,
Street Ash Nursery, Lisieux Way, Combe St Nicholas, Chard, Somerset, TA20 3HZ
t. 01460 234582 f. 0845 0760267 e. enquiries@blackdown.co.uk www.blackdown.co.uk

Company Registration No. 3808516 VAT Registration No. 737237522

The Blackdown plug system comprises a random selection of 16 varieties of sedum plugs (see below).

Genus	Cultivar
Sedum	acre 'Aureum'
Sedum	Album
Sedum	album 'Coral Carpet'
Sedum	album 'murale'
Sedum	Mixed – superbum
Sedum	forsterianum ssp. elegans 'Silver Stone'
Sedum	hispanicum var. <i>minus</i> 'Aureum'
Sedum	hybridum 'Czars Gold'
Sedum	hybridum 'Immergrünchen'
Sedum	kamtschaticum 'Weihenstephaner Gold'
Sedum	Lydium
Sedum	Reflexum
Sedum	Sarmentosum
Sedum	Sexangulare
Sedum	spurium 'Fulda Glut'
Sedum	spurium 'Green Mantle'

Additionally, Blackdown are able to incorporate a range of wildflower plugs that are suitable for shallower depths of substrate, and these would also be incorporated to increase bio-diversity.

Wildflower
Allium schoenoprasum
Armeria maritima
Briza media
Centaurea cyanus
Cerastium tomentosum
Dianthus armeria
Dianthus carthusianoru
Dianthus deltoides
Dianthus gratianopolitanus
Echium vulgare
Gypsophila repens
Hieracium aurantiacum
Hieracium pilosella
Hypoecharis radicata
Leontodon autumnalis
Linaria alpina
Linaria purpurea
Linaria repens
Linaria vulgaris

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Papaver rhoeas
Plantago lanceolata
Silene dioica
Silene maritima
Silene noctiflora
Silene vulgaris

For this site we will incorporate the optimum density of between 16 -20 plugs per sq.m and we will install wildflower plugs in addition to the sedum plugs at the ratio of 15:5 sedum:wildflower per sq.m.

Irrigation

These plugs will be planted in a random pattern, to provide the maximum establishment rate. The planted system will be irrigated for a period of 6-8 weeks post installation to ensure the maximum chance of establishment. Once the plants are established there should be no further requirement for irrigation.

Maintenance

Blackdown provide a guarantee on all plant installations for a period to match the waterproofing and beyond if required. This provides for at least a 10 year maintenance contract which will be taken out in the first 12 months post installation. Maintenance will consist of 2 visits in the first year followed by a minimum of one maintenance visit per year. This provides for a rolling 10 year contract of at least 11 visits.

Procedures carried during maintenance include:

1. Removal of unwanted plant material i.e. invasive species (if required).
2. Correction of any localised plant system problems that may have occurred post installation.
3. Replacement of any failed plants exceeding 5% of total plants installed.
4. Application of nutrient source.
5. Removal of dead flower heads (if required).
6. Inspection of rainwater outlet chambers and surrounding vegetation breaks.
7. Replenishment of any areas of settled substrate.

I hope this information sets out Blackdown's site specific requirements for the sports hall's green roof at the Royal School in Rosslyn Hill.

Kind regards

Adrian Culling

Office: 01460 234582
email: adrian.culling@blackdown.co.uk
Mobile: 07595 056260

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