

DATE: 9-30-09
TO: Alice Meyers
FROM: Dave Spitzer
SUBJECT: Dekum Corner Green Roof

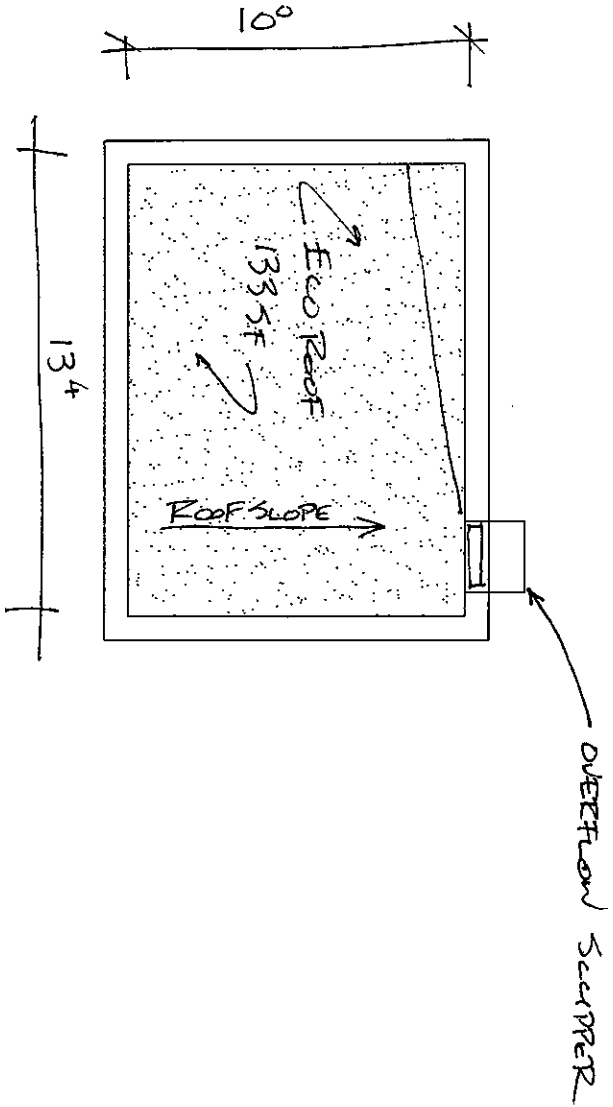
Following is a summary of the two green roofs that were recently installed at 820 NE Dekum and 6677 NE Durham (all the same tax lot but several different structures).

820 NE DEKUM – ECO ROOF ABOVE COMMERCIAL

- Plants installed 9-18-09
- 330 sf in size
- Existing roof over asphalt and tar had to be removed.
- Existing wood structure of 2x8's @ 16" o.c. had to be reinforced with additional 2x8's and the main beam also had to be reinforced.
- New spray on 3# roofing foam insulation was applied ontop of the new plywood sheathing for an r-value of approximately R-21 (3" in depth).
- 50 mil Polyurea with white elastomeric top coat used as waterproof layer.
- Enkadrain 3811R was used as drainage layer
- 80% pumice green roof growing media was used from Phillips soils.
- Soils to depth of approximately 4".
- Cuttings of a variety of sedums where 'sprinkled' over the growing medium.
- Irrigation is by hand until established – that means daily watering for the first two months until rainy season starts.

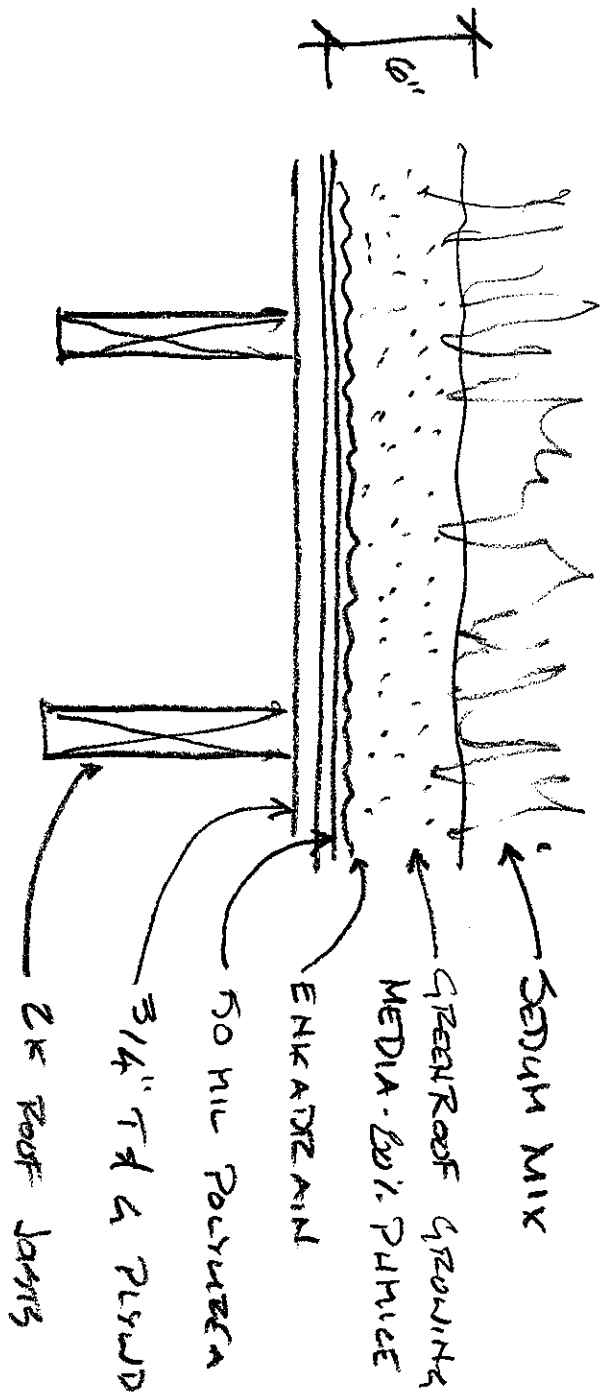
6677 NE DEKUM – ECO ROOF OVER TRASH ENCLOSURE

- Plants installed 9-18-09
- 133 sf in size
- New construction – wood roof with concrete block walls.
- 50 mil Polyurea with white elastomeric top coat used as waterproof layer over t&g plywood decking.
- Enkadrain 3811R was used as drainage layer
- 80% pumice green roof growing media was used from Phillips soils.
- Soils to depth of approximately 6".
- Cuttings of a variety of sedums where 'sprinkled' over the growing medium.
- Irrigation is by hand until established – that means daily watering for the first two months until rainy season starts.



Eco Roof & TRASH ENCLOSURE

3/16" = 1:0"



SECTION OF GREEN ROOF & PARAPET ENCLOSURE

3/10"

2 Rolls -

Enkadrain[®] 3811R*

Colbond Building Products — Drainage

COLBOND

Description

Enkadrain 3811R is one of a new generation of environmentally conscious Enkadrain products. This drainage composite consists of a post-industrial recycled polypropylene drainage core of fused, entangled filaments and a geocomposite fabric bonded to each side. The entangled filaments are molded into a square waffle pattern that maintains the flexible design of other Enkadrain products. This product, because it exceeds 40% post-industrial recycled content, can help contribute up to 2 LEED points when used in conjunction with other recycled content products. Enkadrain 3811R can contribute towards additional LEED points when used with a green roof by reducing stormwater runoff, heat islands, and energy consumption. The second fabric eliminates the need for protection board and stops penetration and migration of bitumen membrane.

Recommended Applications

- Foundation walls
- Green roofs
- Plaza decks
- Retaining walls
- Beneath slabs
- Earth sheltered homes
- Underground parking
- Exterior planters

Features and Benefits

- Excellent durability
- Protects waterproofing during and after backfill
- Second fabric eliminates need for protection board
- Conforms to irregular surfaces and corners
- Waffle design creates open flow path — even during backfill
- Continuous flow even under high loads
- Long rolls reduce installation costs by reducing butt seams and eliminating interlocking
- Recycled content polymer contributes towards LEED points
- Increased flow rates over same thickness nylon and HDPE drains
- 3" fabric overlap flap on both sides

Technical Data

Physical Properties

Property	English Units	Metric Units
Core Material	Recycled Polypropylene	
Thickness	0.45 in	11.43 mm
Total Weight	23.7 oz/lyd ²	803.7 gm ²
Core Weight	16.0 oz/lyd ²	542.6 gm ²
Colbond Compressive Load Test ¹	>30,000 psf	kN/m ² No failure*

¹Colbond Test Method: ASTM D 1621 modified and ASTM D 4716

*Failure defined as reaching yield point or no continued measurable flow under stated load

Flow Rates

Pressure	1.0 Gradient	0.5 Gradient	0.2 Gradient
250 psf	20.2 gal/min/ft	13.6 gal/min/ft	7.7 gal/min/ft
500 psf	18.1 gal/min/ft	12.4 gal/min/ft	7.3 gal/min/ft
1000 psf	17.9 gal/min/ft	12.2 gal/min/ft	7.2 gal/min/ft
2000 psf	16.8 gal/min/ft	11.2 gal/min/ft	7.0 gal/min/ft
3000 psf	12.9 gal/min/ft	7.9 gal/min/ft	4.9 gal/min/ft
3600 psf	8.6 gal/min/ft	4.7 gal/min/ft	2.8 gal/min/ft
5000 psf	3.8 gal/min/ft	2.5 gal/min/ft	1.3 gal/min/ft
8000 psf	1.7 gal/min/ft	1.0 gal/min/ft	0.5 gal/min/ft

Typical flow vs. pressure for vertical applications (ASTM D 4716) Sample Configuration: Plate/Enkadrain/Plate
Values are average of machine direction and cross machine direction test results

To the best of our knowledge, the information contained herein is accurate. However, Colbond Inc. cannot assume any liability whatsoever for the accuracy or completeness thereof. Final determination of the suitability of any information or material for the use contemplated, of its manner of use and whether the suggested use infringes any patents is the sole responsibility of the user. These products may be covered by patents or patents pending.

Colbond Inc.
PO Box 1057
Enka, NC 28728
Telephone 800-365-7391
Fax 828-665-5009

www.colbond-usa.com

Building Products

Colbond Inc. © 2006

Page 1/2 3/6/06 BP-5011-DS



Specializing in Custom Soil Mixing

EXTENSIVE GREENROOF GROWING MEDIA C

This extensive green roof growing media is formulated to meet the rigorous standards of the FLL Guidelines* for particle size gradation, fines content, dry and saturated bulk density, total porosity, air filled porosity, water retention, hydraulic conductivity, pH balance, soluble salts content and organic matter content. These guidelines have been developed through decades of experience in the European green roof market.

The growing media itself is created using only high quality, local substrates from the Pacific Northwest. A blend of pumice, aged fir bark, compost, lime and plant essential nutrients (optional), this growing media is derived from industry proven materials.

As a custom growing media blender, we can modify this formulation according to customer needs. Various additives are available to enhance the performance of this media.

Volume measures are guaranteed at the time of production and packing. Settling of materials may occur during transportation and handling.

*Forschungsgesellschaft Landschaftsentwicklung Landschaftsbau e.V. (FLL) "Guideline for the Planning, Execution and upkeep of Green-Roof Sites" 2002

LEDGER ANCHOR BOLTS @ CMU

DISTRIBUTED LOAD @ LEDGER:

w/ GREEN ROOF

DL = 50 PSF
LL = 25 PSF

15 DEAD FRAMING
35 GREEN ROOF

$5' \cdot 75 \text{ psf} = 375 \text{ PLF} @ 16" \text{ O.C.} = 498 \#/\text{BOLT}$

5/8 ϕ ANCHOR BOLT IN CMU: CAPACITY = 1330 # (F_u 1500)

AB @ 3 1/2" HEAVY FIR = 600# \perp m

USE 5/8" ϕ A.B. @ 16" O.C.

ROOF @ TRASH ENCLOSURE



