

Low Slope Roofing Systems
The University of Wisconsin Madison
Madison, Wisconsin – November 27-28, 2018


Vegetative roofs

presented by

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Vegetative Roof Systems
Sometimes called “green roofs”



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Definition
The NRCA Vegetative Roof Systems Manual, Third Edition

Vegetative roof system: A roof area of planting/landscaping installed above a waterproofed substrate at any building level that is over habitable space.



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Benefits of vegetative roofs

- Aesthetic improvement
- Storm water management
- Mitigation of heat island effect
- Energy efficiency
- Air quality improvement
- Noise reduction
- Increased roof system durability
- LEED® credit
- Rebates and other incentives



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Recommended membrane systems

- Hot-fluid-applied polymer-modified asphalt
- Built-up
- App- or SBS-polymer modified bitumen
- Single ply:
 - EPDM
 - PVC
 - TPO
 - KEE
- One- or two-part liquid applied



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Additional membrane recommendations

- Positive slope to drain
- Adhered membrane
- Enhance membrane durability
- Enhance membrane/metal flashings

Think waterproofing, not roofing



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Basic configurations

- Modular systems
- Built-in-place systems



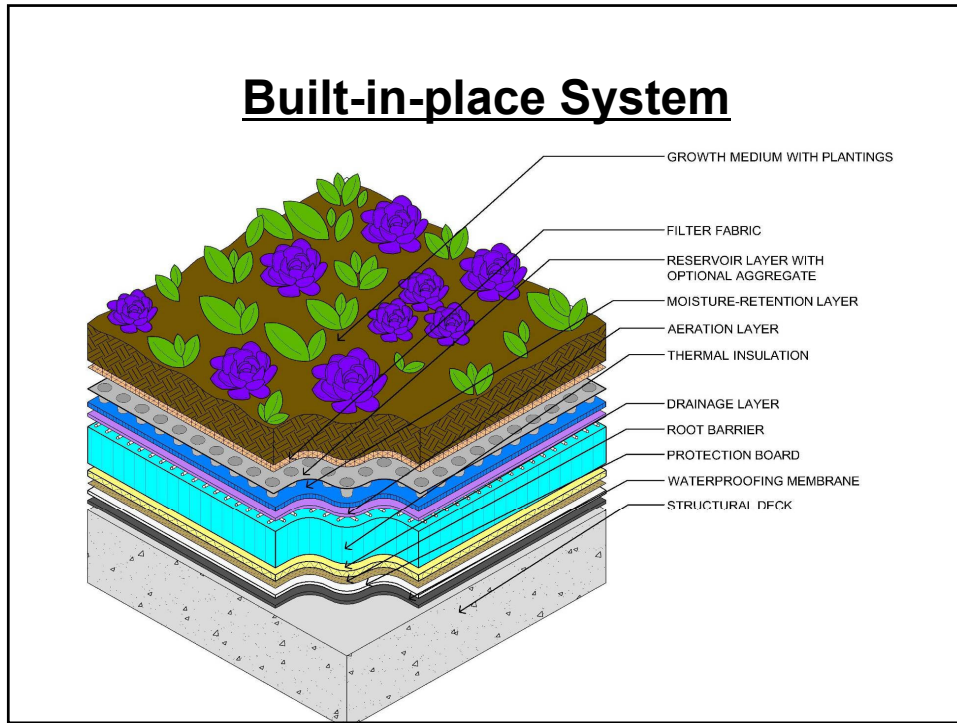
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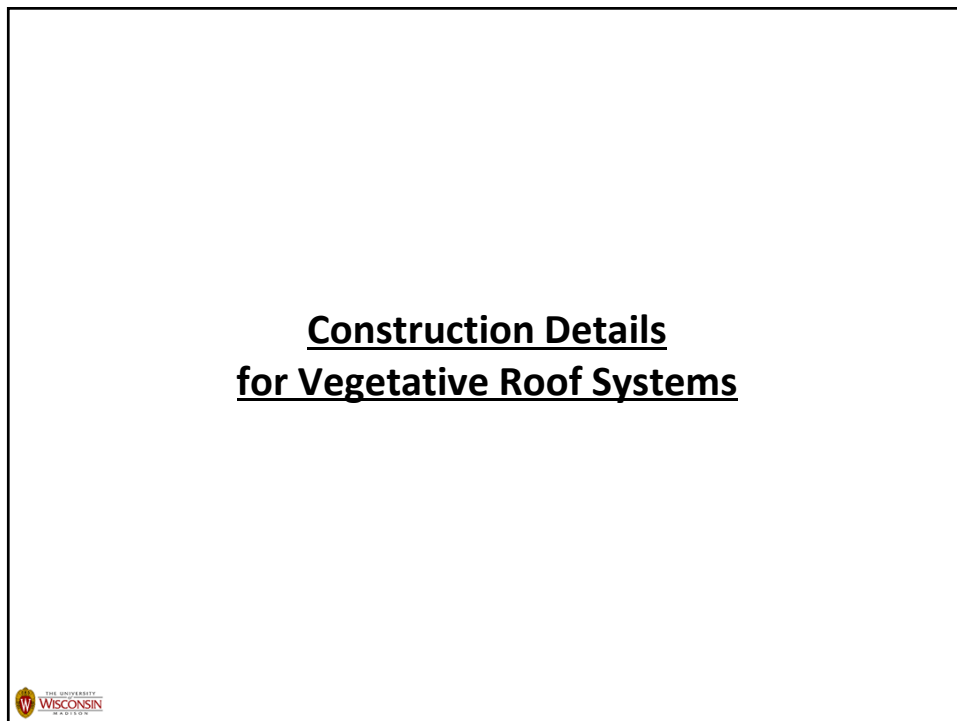
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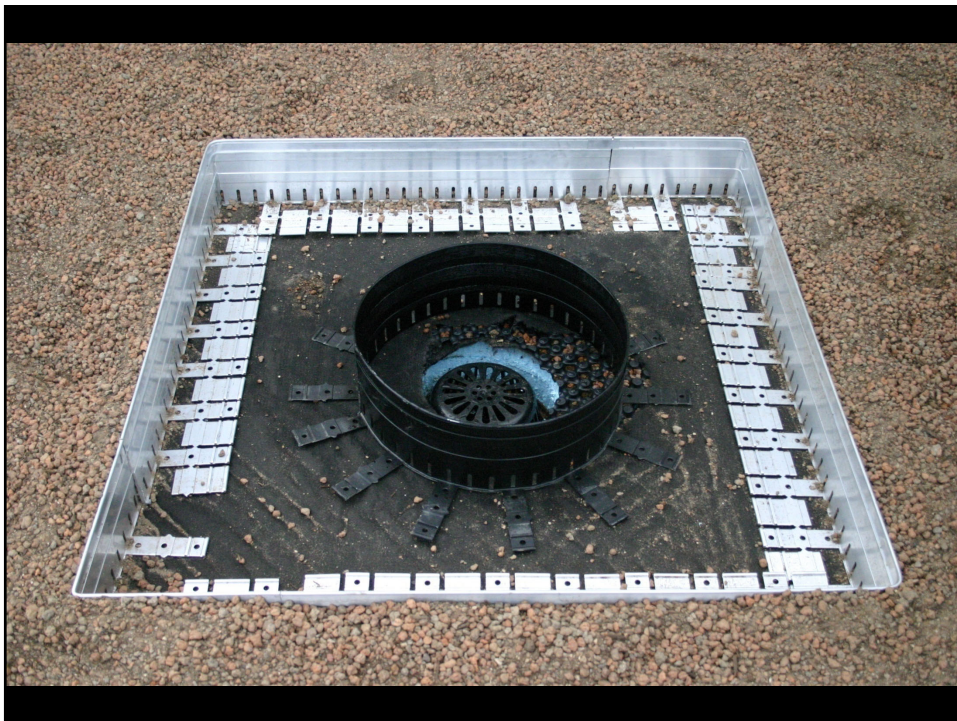
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Membrane Integrity Testing

- Flood test
- Flowing water test
- Electronic field vector mapping



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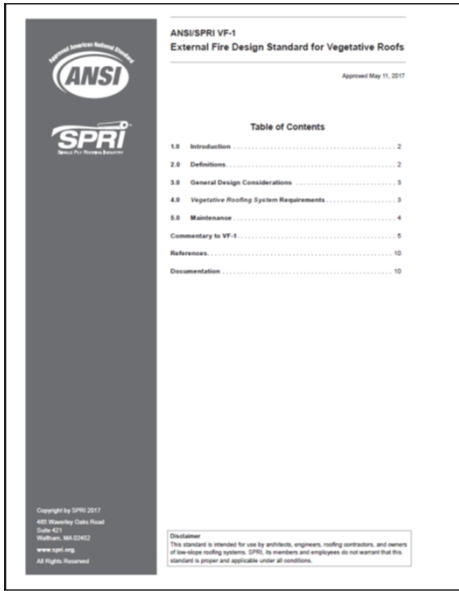
**Vegetative roof systems
require regular maintenance**



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Design standards -- ANSI/SPRI VF-1
www.spri.org

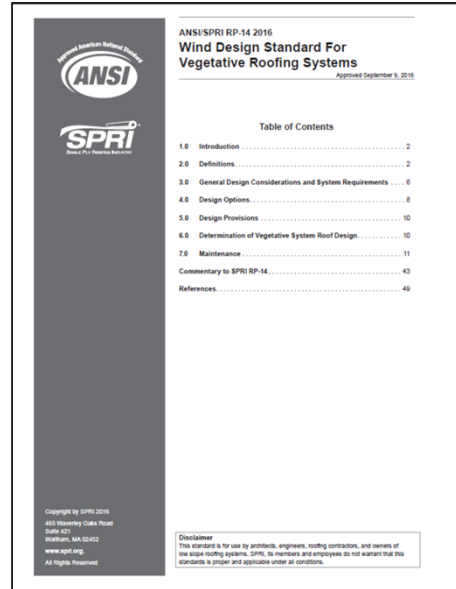


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Design standards -- ANSI/SPRI RP-14

www.spri.org



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Code requirements for vegetative roofs



IBC 2018:

Ch. 15: Roofing

- Sec. 1511: Reroofing

Ch. 13: Energy efficiency

- References IECC 2018



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Code requirements

International Building Code, 2018 Edition

Sec. 202-Definitions

VEGETATIVE ROOF. An assembly of interacting components designed to waterproof a building's top surface that includes by design, vegetation and related landscape elements.



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Code requirements

International Building Code, 2018 Edition

1507.16 Vegetative roofs, roof gardens and landscaped roofs. *Vegetative roofs, roof gardens and landscaped roofs shall comply with the requirements of this chapter, Section 1607.13.3 and the International Fire Code.*

[BF] 1507.16.1 Structural fire resistance. The structural frame and roof construction supporting the load imposed upon the roof by the *vegetative roof, roof gardens or landscaped roofs* shall comply with the requirements of Table 601.



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Code requirements

International Building Code, 2018 Edition

Sec. 1505-Fire Classification

1505.10 Roof gardens and landscaped roofs. Roof gardens and landscaped roofs shall comply with Section 1505.1 and Section 1507.16 and shall be installed in accordance with ANSI/SPRI VF-1.



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Code requirements

International Building Code, 2018 Edition

1607.13.3 Occupiable roofs. Areas of roofs that are occupiable, such as *vegetative roofs*, roof gardens or for assembly or other similar purposes, and marquees are permitted to have their uniformly distributed live loads reduced in accordance with Section 1607.11.

1607.13.3.1 Vegetative and landscaped roofs. The weight of all landscaping materials shall be considered as dead load and shall be computed on the basis of saturation of the soil as determined in accordance Section 3.1.4 of ASCE 7. The uniform design live load in unoccupied landscaped areas on roofs shall be 20 psf (0.958 kN/m²). The uniform design live load for occupied landscaped areas on roofs shall be determined in accordance with Table 1607.1.



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Code requirements
International Building Code, 2018 Edition

Excerpts from TABLE 1607.1
MINIMUM UNIFORMLY DISTRIBUTED LOADS, L_o,
AND MINIMUM CONCENTRATED LIVE LOADS^g

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (psf)
26. Roofs [some text omitted for clarity] Ordinary flat, pitched, and curved roofs (that are not occupiable) [some text omitted for clarity] Occupiable roofs: Roof gardens Assembly areas All other similar areas	20 100 100 ^m Note I.	Note I.

[Footnotes omitted for clarity]



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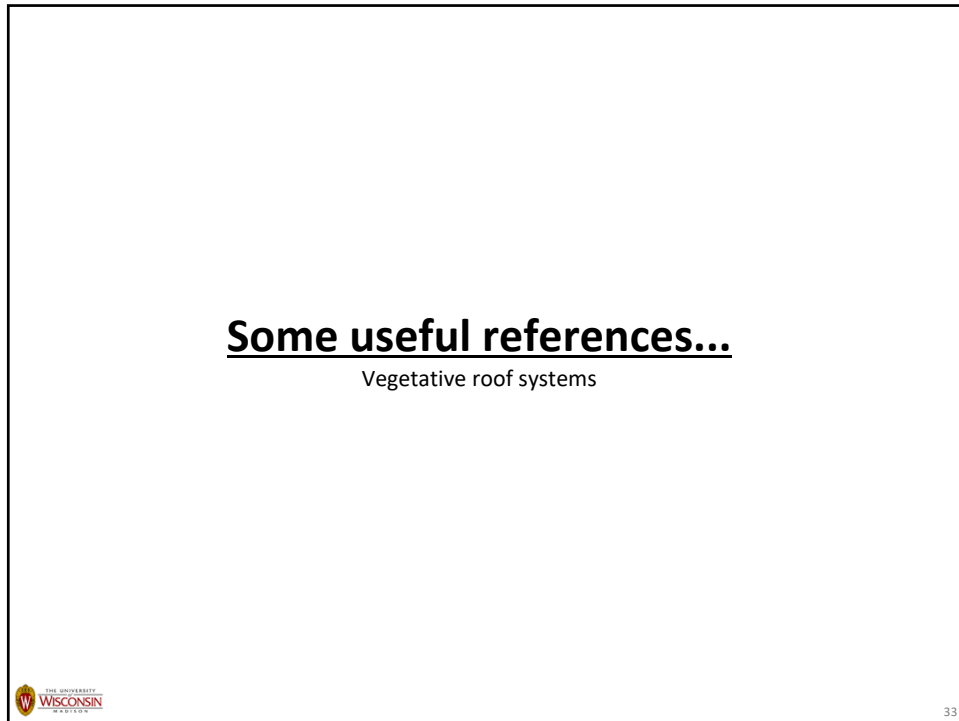
*Code compliance for vegetative roof systems
 is a challenge*

--Mark Graham

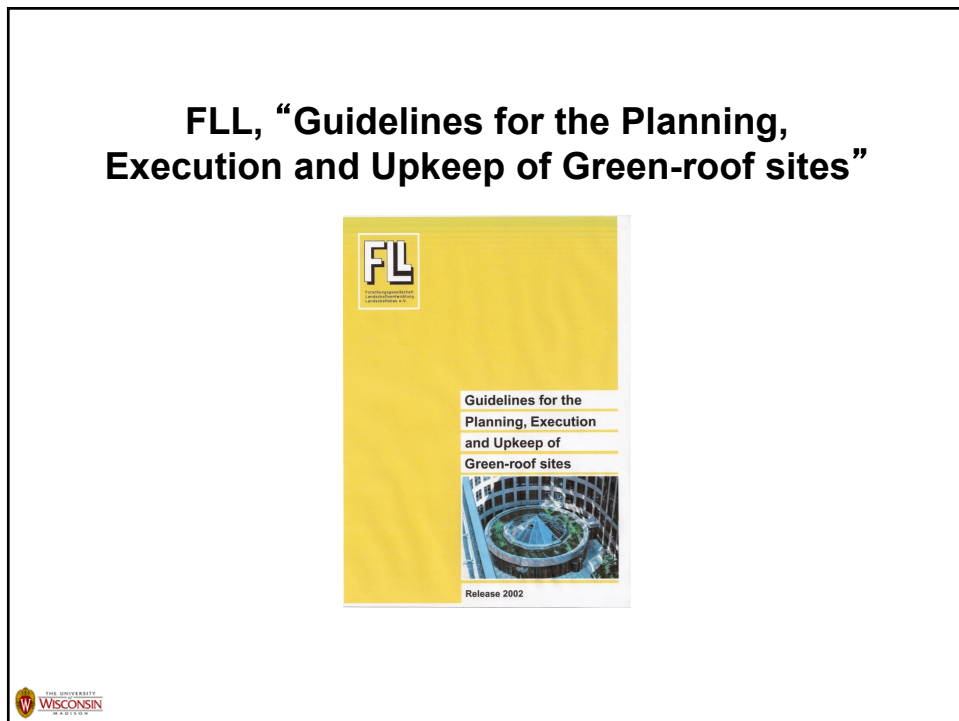


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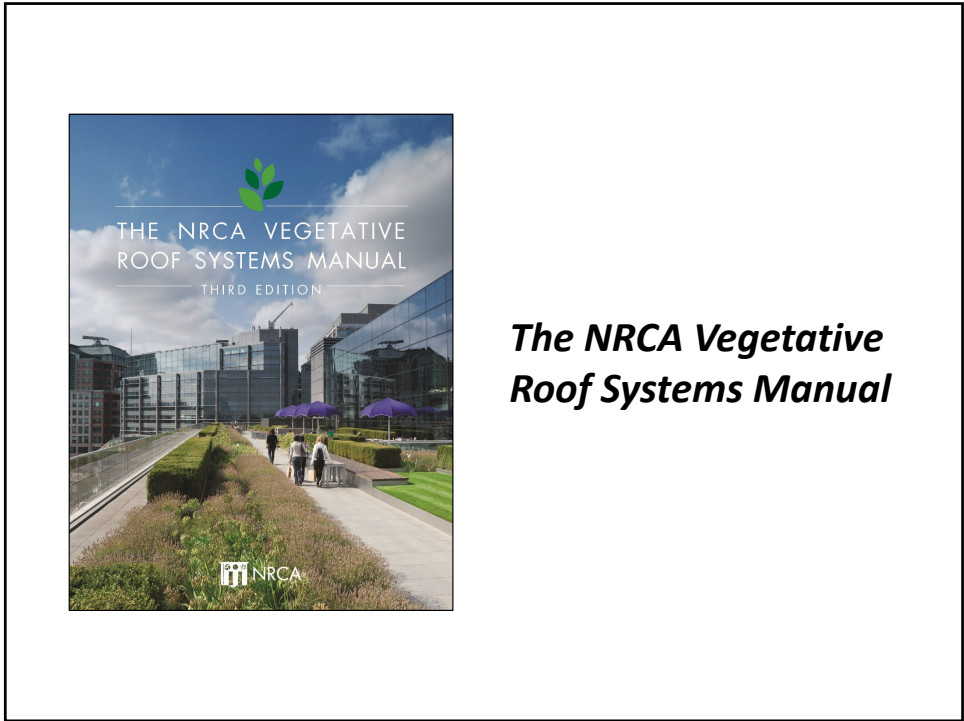
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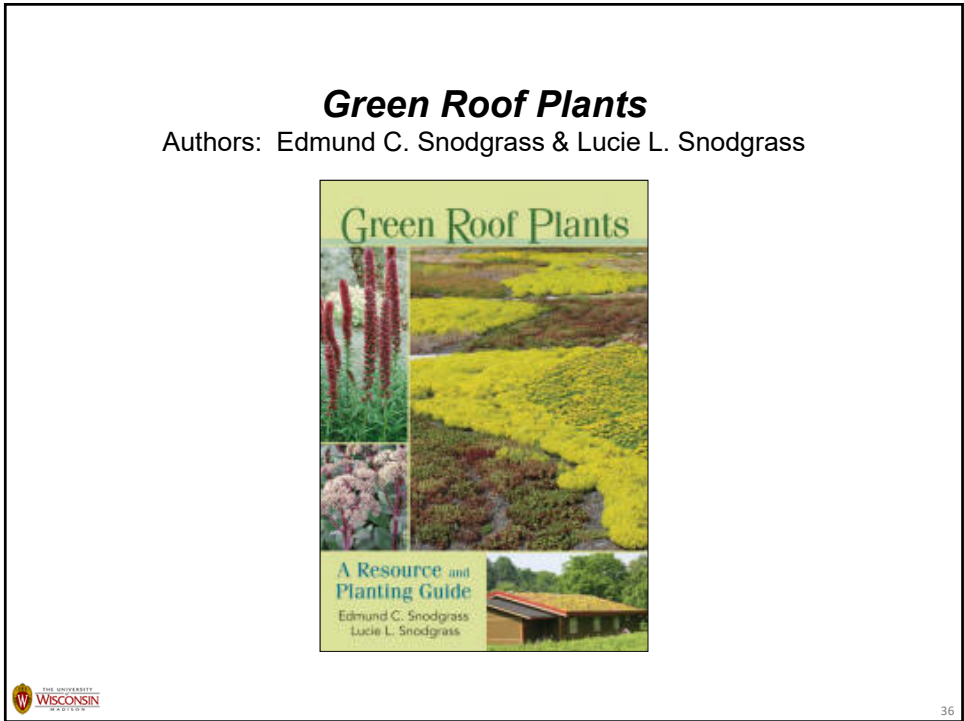


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The NRCA Vegetative Roof Systems Manual

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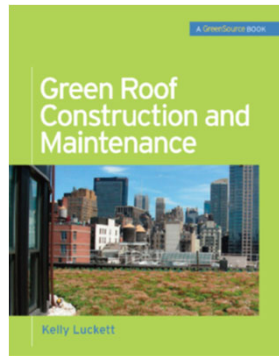


Green Roof Plants
Authors: Edmund C. Snodgrass & Lucie L. Snodgrass

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Green Roof Construction and Maintenance

Author: Kelly Lockett



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www.greenroofs.com

Greenroof & Greenwall Projects Database: 1,629 Projects = 35,044,419 ft² (3,255,803 m²) Friday, November 20, 2015

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Project of the Week: 11.16.15
Sherway Gardens Shopping Centre Expansion
Toronto, Canada

Greenroofs.com's Network:

1/200 ZinCo Headqu...



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