

The UWM Sandburg Commons Green Roof Project

*Assoc. Prof. James Wasley
UWM Dept. of Architecture*



*Habitat for more than
humans...*

Definition, applicability, benefits, basics of green roof planning, how it fit into the campus storm water planning, design standards and installation examples.

Variety of products available, plants for SE WI, roof loads, water sealing, runoff quantity/quality, maintenance needs, etc.

UWM as a Zero- Discharge Zone:

I.

A Stormwater
Masterplan for the
UWM campus

II.

The Pavilion Gateway
Demonstration Project



Associate Professor James Wasley
University of Wisconsin Milwaukee

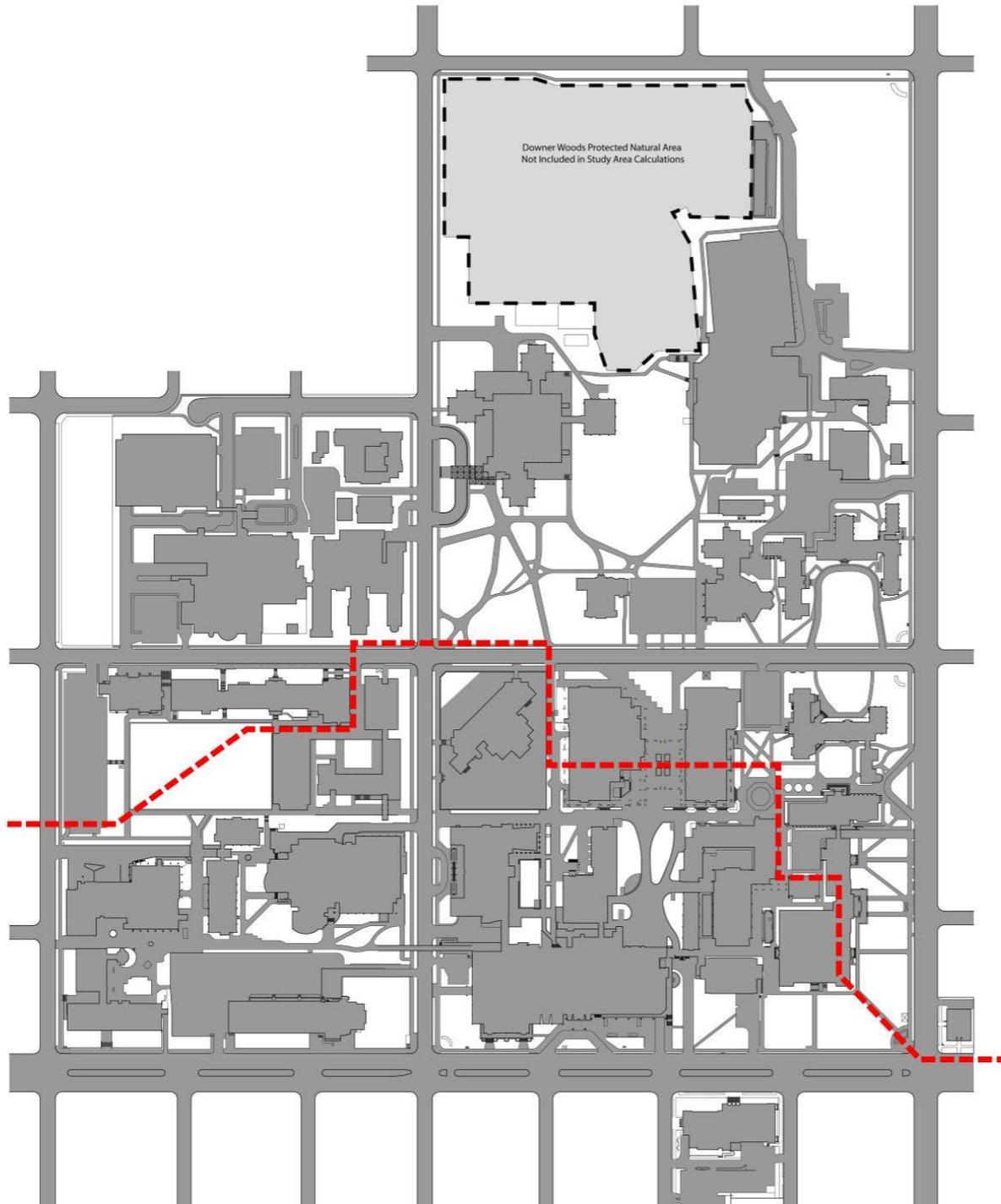


Impervious Surfaces

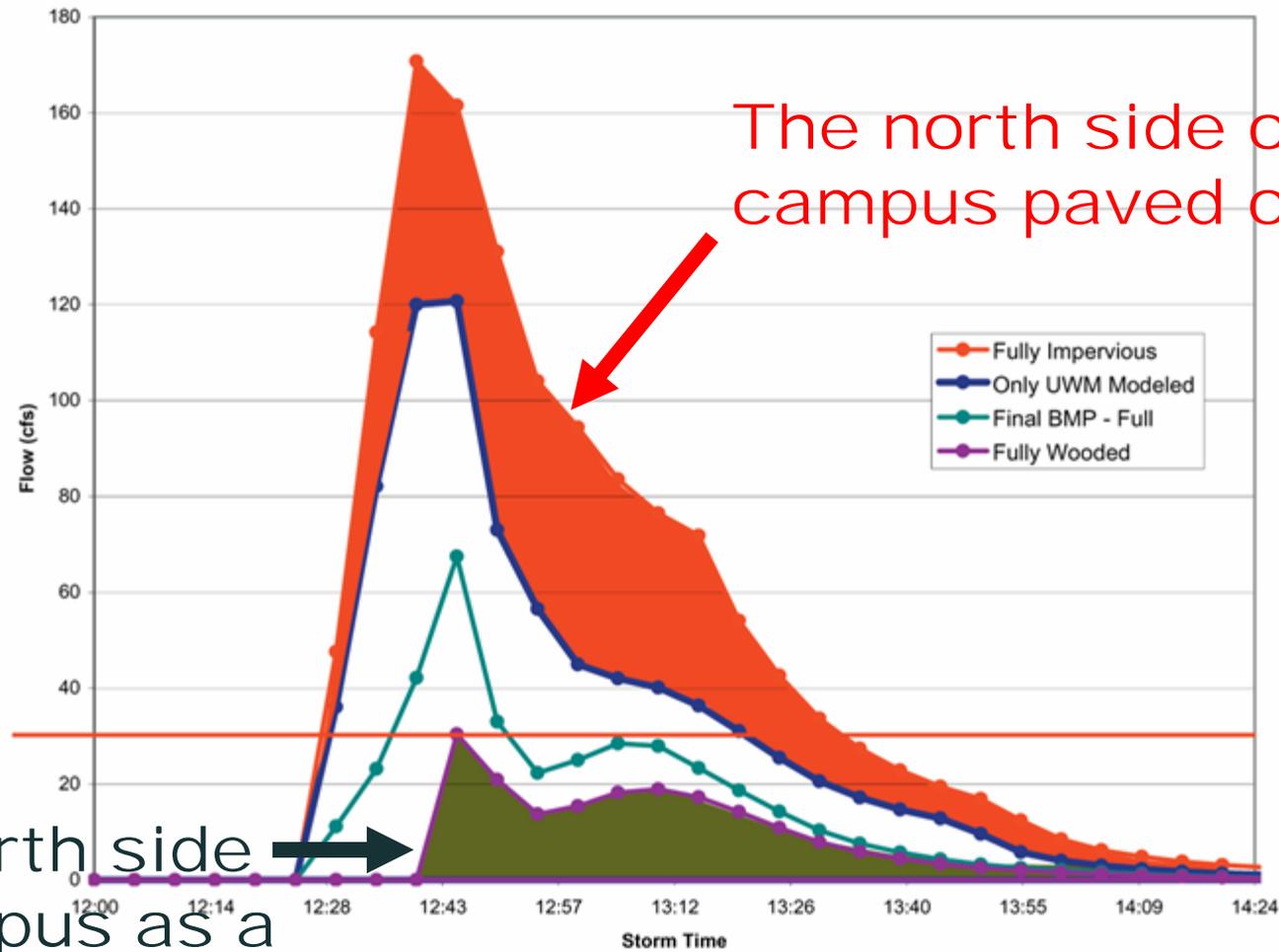
Campus total (excluding
Downer Woods)

5,000,000 s.f.

Approx. **53%**
of campus area



Flows to the North
100 year event



The north side of campus paved over

The north side of campus as a forest

Bracketing the Northern Drainage. Here, the plot described above has had an additional upper limit added. This top most plot represents the profile of the drainage at the limiting condition of being completely impervious.

The bottom most plot represents the opposite limiting condition in which the entire area is returned to forest. In the white space between these extremes lies the existing situation and the space of action for the masterplan.



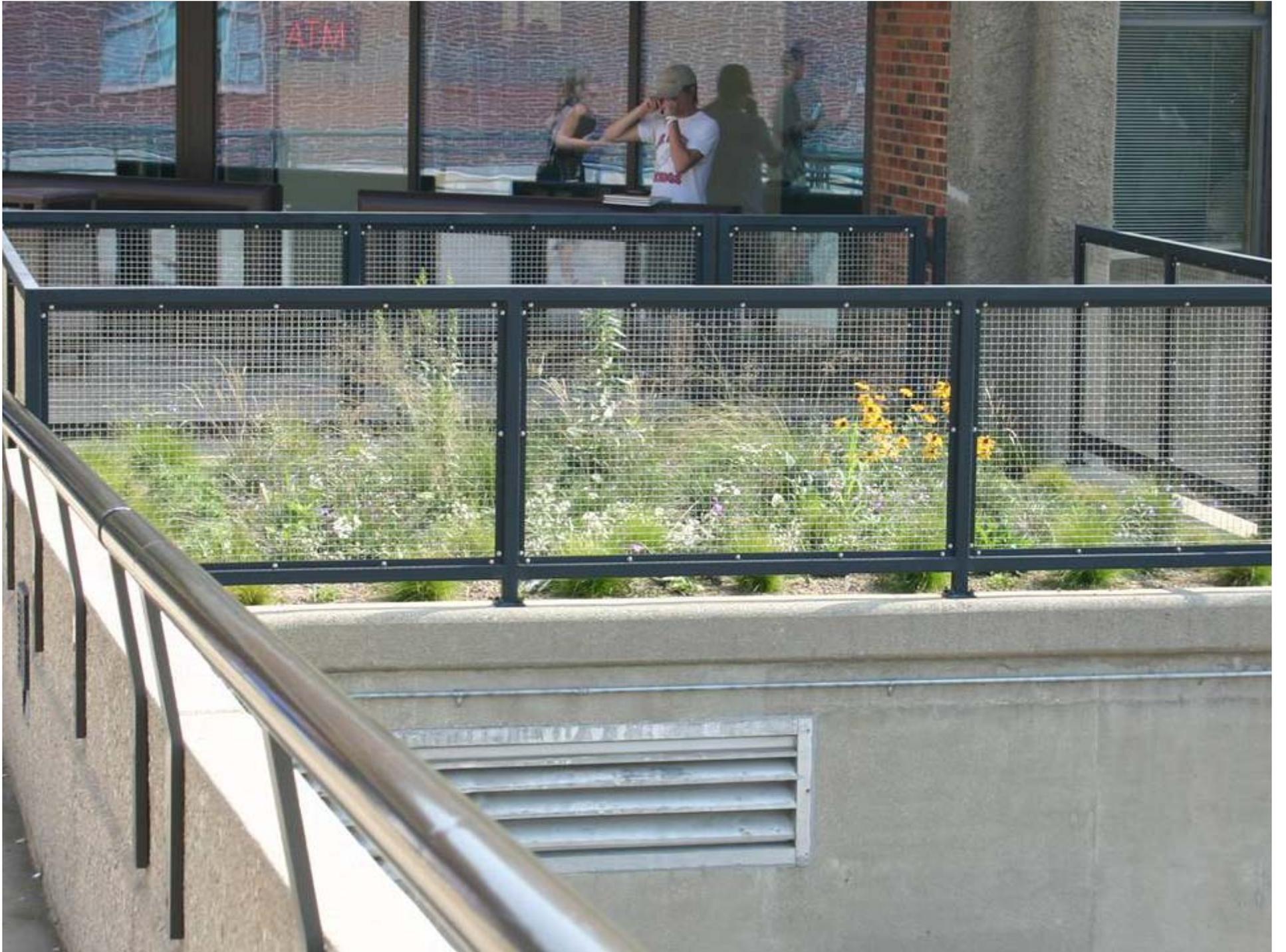
Internally
Drained Roofs

Approx. 20%
of campus area















Sandburg Residence Hall

North Drainage Catchment 16

Sandburg Hall is UWM's primary undergraduate housing, providing dormitory living for close to 2,700 students.

As a potential site for a green roof installation, the low commons building and mechanical penthouse above it are ideal 'high priority' candidates, with 25% of the dorms having a full view of the roofs and another 25%-50% having oblique views. The unique design opportunity here would be to create visually engaging patterns to be seen from above.

If desired, an ADA accessible terrace for public access could be created with access through the mechanical room.

Sandburg's location within the North drainage means that all stormwater measures have a direct positive impact on the Edgewood Ave. interceptor.

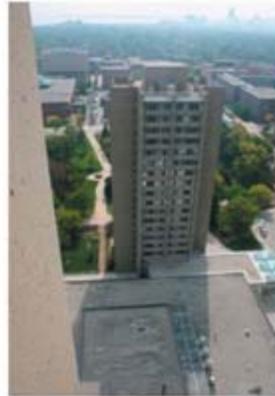
Only the square East Tower is a logical green roof candidate under the 'full' implementation scenario.



Roof, East Tower, viewed from the roof of the North Tower. Only the newly constructed East Tower suggests the potential for a green roof application.



(above and below) Sandburg Commons with a hypothetical green roof installation. An actual design would be elaborated to accommodate existing conditions such as the roof mounted antennas, as well as to create visual interest from above. Maintenance paths can be created by replacing the growing medium with gravel or with paver blocks.



South Tower and commons roof, viewed from the roof of the North Tower. As evident from above, the insulation covering the commons is in need of repair. All four towers have commanding views of the commons roof.



Commons roof and mechanical penthouse, looking north east. While a metal screen surrounds the penthouse, the structure is concrete.



Commons roof insulation, disrupted and rising through the existing gravel ballast layer.

(Left) Sandburg Commons with a hypothetical green roof installation. (Below) The same view as is.



HYPOTHETICAL GREEN ROOF APPLICATION

DEMONSTRATION PROJECT:

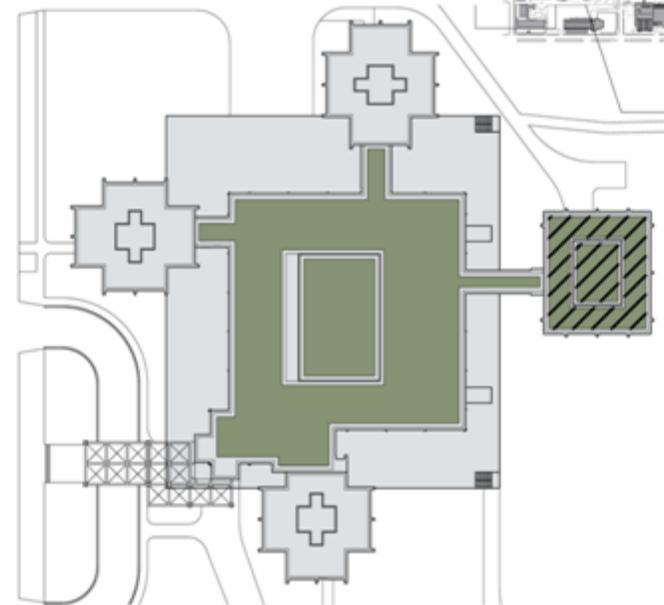
Commons potential green roof area approx. 25,920 s.f.

Penthouse potential green roof area approx. 5,400 s.f.

In Progress



INTERNALLY DRAINED ROOFS



Green Roof- Priority Implementation
 Green Roof- Secondary Implementation
 Uncaptured Roof

	Total Roof Area (s.f.)	Suitable Area	Priority (Area x .9 cover)	Secondary (Area x .9 cover)	Full (Area x .9 cover)	Access
Sandburg Commons	39023	37264	33538	0	33538	fair
North Tower	6945	0	0	0	0	poor
East Tower	7360	7360	0	6624	6624	poor
South Tower	5125	0	0	0	0	poor
West Tower	6720	0	0	0	0	poor



Sandburg Residence Hall







**SANDBURG COMMONS ROOF REPLACEMENT
UNIVERSITY OF WISCONSIN - MILWAUKEE
MILWAUKEE, WISCONSIN**

Division Project No. **07E2X**

August, 2007

FOR
THE STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
DIVISION OF STATE FACILITIES
STATE OF WISCONSIN ADMINISTRATION BUILDING - 7TH FLOOR
101 EAST WILSON STREET - P.O. BOX 7866
MADISON, WISCONSIN 53707





Native Perennials, Grasses and Annuals

Common Name	Latin Name	Bloom Period	Height	Special Interest	Native Perennials (Forbs)
Leadplant	<i>Amorpha canescens</i>	July-August	2-3'	Small shrub with silver fern-like foliage.	
Nodding Prairie Onion	<i>Allium cernuum</i>	July-August	2'	Edible	
Butterfly Milkweed	<i>Asclepias tuberosa</i>	July-September	2-3'	Host Plant of Monarch Butterfly	



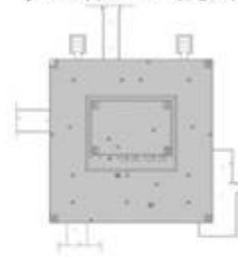
Sandburg Hall Commons Green Roof

j. wasley | a. manto | 7.31.07

Base Bid

Hot applied Roof

Set up for green roof application.



Alternate #1

Add Extensive Green Roof

Raindrop pattern- 15' bands of stone ballast within sedum field.

Approx. 60% green roof (sedum) / 40% stone ballast.



Alternate #2

Add Wisconsin Native Prairie on Penthouse Roof

Native prairie soil mix and plants used in place of sedum. Raindrop pattern still applies.

Approx. 3,000 s.f. of penthouse roof dedicated to Prairie, approx. 1,700 s.f. of penthouse roof remains stone ballast.

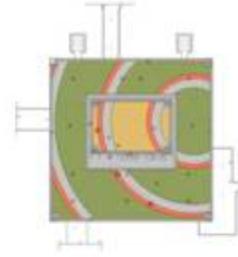


Alternate #3

Add Annual Flower Bed Rings

Raindrop pattern still applies- 15' bands divided into two bands- 5' bands of annual flower beds, 8" growing medium depth, 10' bands of stone ballast.

Annual flowerbeds approx. 2,400 s.f.

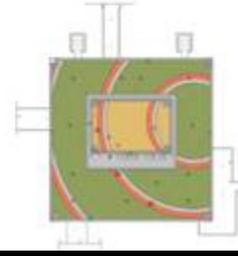


Alternate #4

Add Maximum Green Roof Area

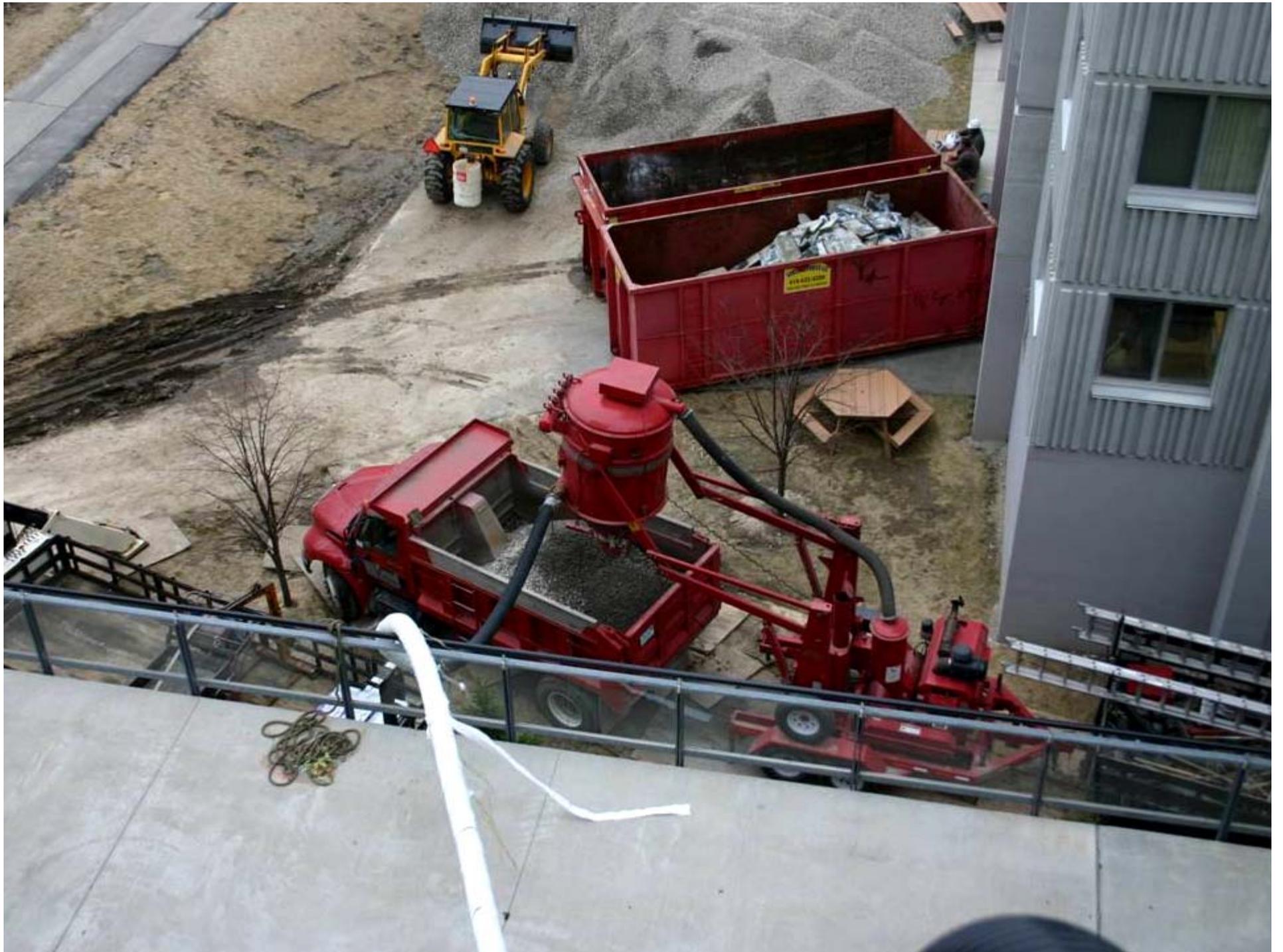
Raindrop pattern still applies- 5' gravel bands in Annual Flowerbed Ring scheme reduced to minimum path width of 5'. Extend sedum green roof to fill the 10' band.

Approx. 80% green roof (sedum + annual beds) / 20% stone ballast



































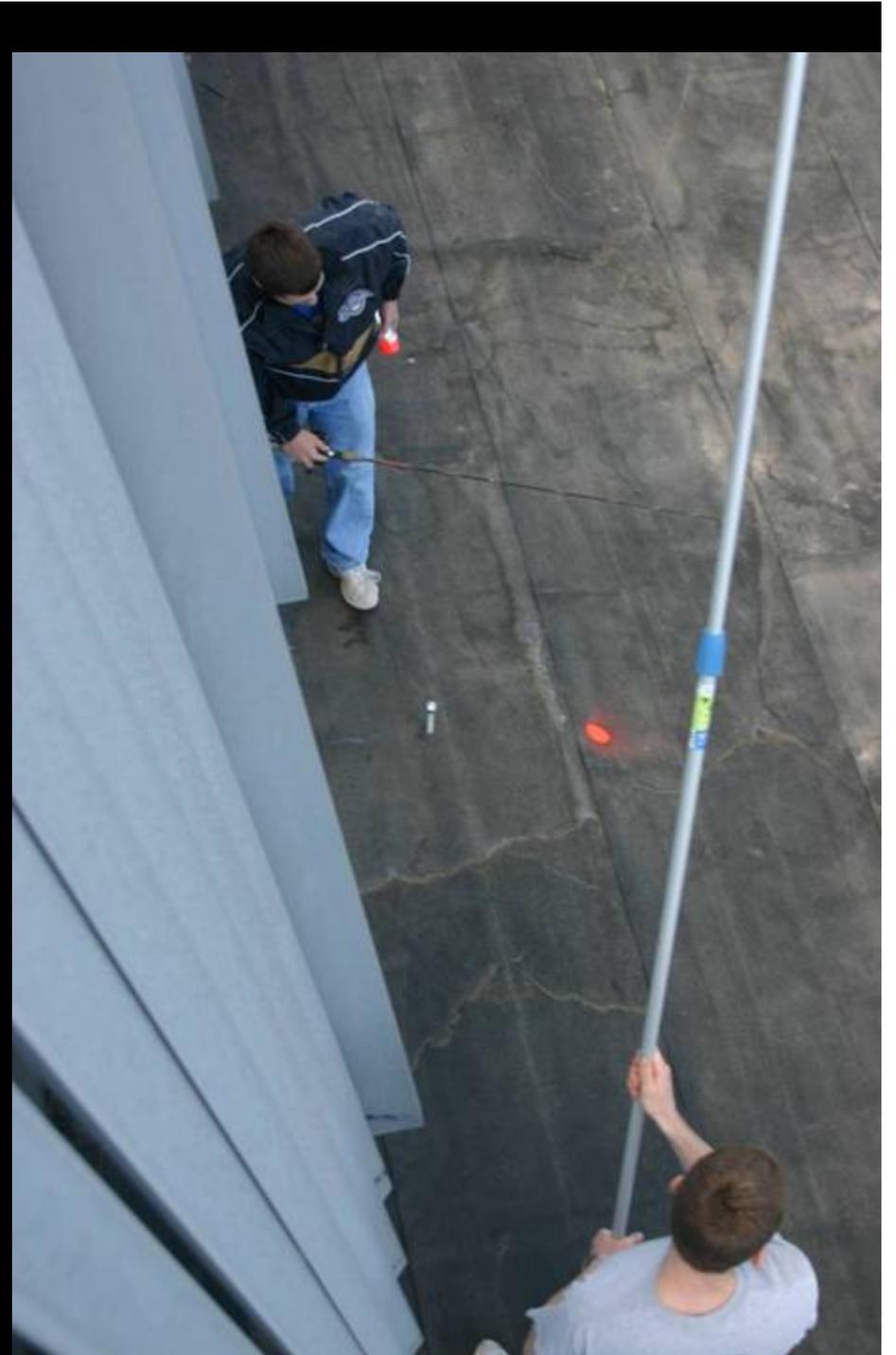
































































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Special thanks to:

- ***Scott Peak, Director of University Housing***
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- ***Tom Garnetzke, Facilities Engineering***
- ***Gene Sewalish, Pioneer Roofing***
- ***And many many students, faculty and
professionals who have contributed
their time and expertise....***







*“UWM should adopt a policy of installing **Green Roofs** for all appropriate internally drained roof replacement projects.”*