Green Roofs

design with the end in mind, and don't overstate the truth

Design for what goals?

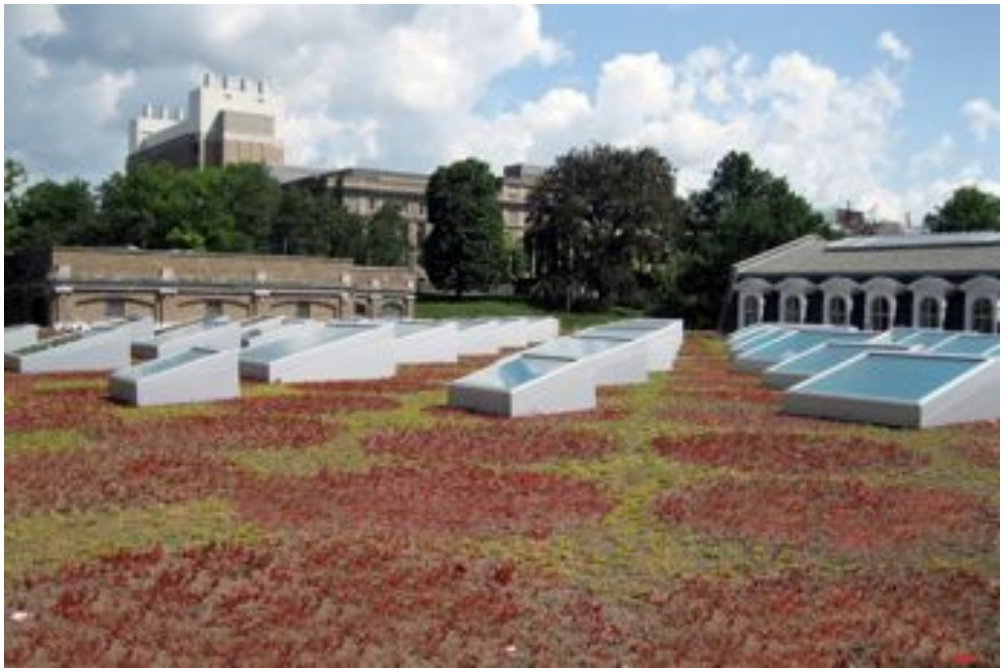
- Stormwater
- Aesthetics

  -maintenance

  -weeds; original design
- Energy conservation
- Carbon sequestration
- habitat

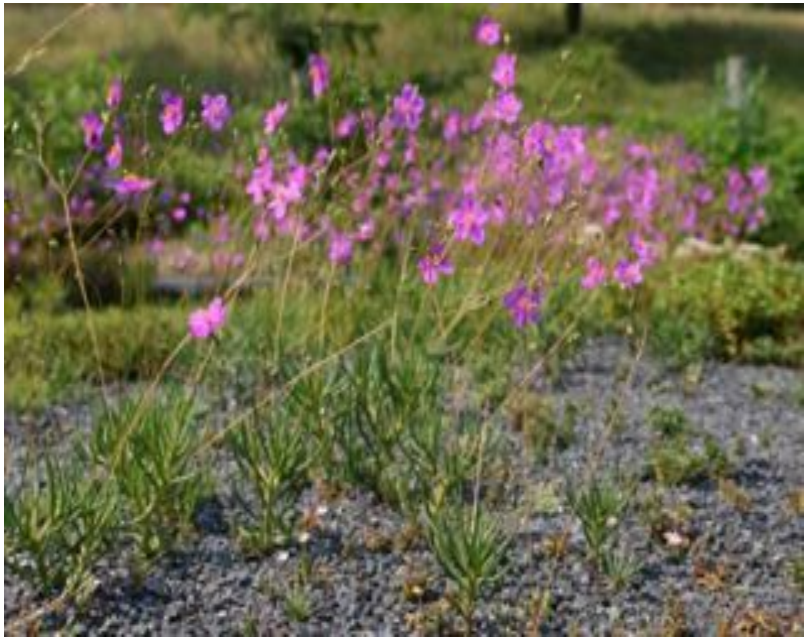
Plants and Design choices

- The bigger and more complex the plants and design, the more it will cost; both for install and maintenance.
- Plants have their own ideas



Native plants

- Native plants: not a native habitat
- Habitat value- insects; birds; what is the goal, plant-wise?
- Natives generally require deeper soil; more water.
- Native to where?



Weeds and growth habits

- Weeds: what is a weed?
- Coverage patterns- accent vs groundcover

Carbon Sequestration

- Carbon is sequestered in biomass. Wood; roots; shells of ocean creatures.
- It requires space and special conditions: lack of oxygen is standard

- A green roof has no space for C storage; either aboveground or in the soil. Except for a small amount of C stored in the first 2 yrs after installation, there is no C sequestered on green roofs.

R-Value

- Common question; no quick answer
- Bell and Spolek in 2009 found R of 2.1 in controlled conditions
- Others have found R of 2-6 depending on roof construction and plant cover
- Effect is greater in summer than winter

Embodied energy

- Sometimes called ‘emergy’
- Reflects total energy required to produce a thing
- 70% of embodied energy on a green roof is in the expanded shale/clay media according to Schramski and Tilley 2009.
- Crushed recycled brick a slightly heavier alternative. Also recycled polystyrene; other options?

Green Walls

- Buyer beware
- $150-$300 per square foot
- Very high maintenance effort
- High rate of failure