Green Roof Factsheet

1.0 General Description

Figure 1. Green roof (Center for Neighborhood Technology)

Potential Treatment Mechanisms								
I	ET	FA	B	RH	S	F	P	T
	✓	✓	✓		✓		✓	

Legend:
I = Infiltration
ET = Evapotranspiration
FA = Filtration and/or Adsorption
B = Biochemical Transformation
RH = Rainfall and Runoff Harvest
S = Sedimentation
F = Floatation
P = Plant Uptake
T = Trash Capture

Green roofs are layered stormwater management systems with a well-insulated and structurally sound roof for the first layer. On top of the roof is a waterproof layer and root barrier. Next is a drainage layer made of varying materials, such as a drainage mat or rock aggregate, to convey excess water off of the roof. Above this layer is a filter layer, which can also be made of varying materials (e.g., filter fleece), that assists in filtering out pollutants and some sediment. The top and final layers are the growing medium and plants that reduce runoff by storing and using the incidental stormwater. A schematic showing these layers is given in Figure 2.

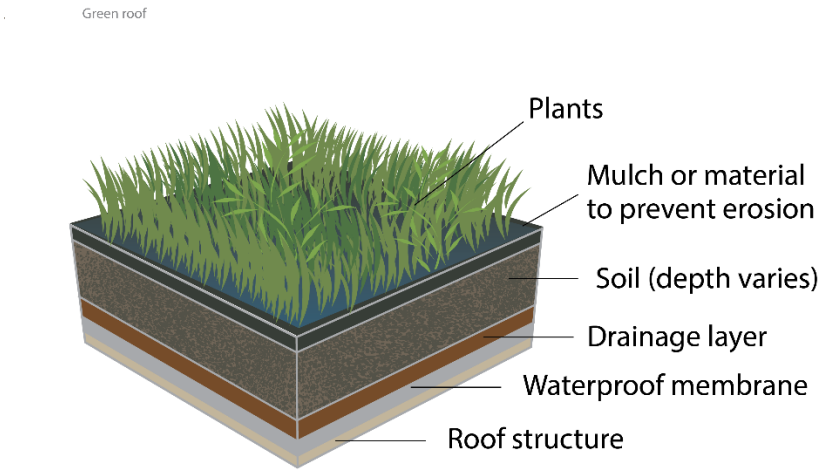

Figure 2. Schematic of basic green roof

1.1 Variations and Alternative Names

- Rooftop garden
- Eco-roof

2.0 Advantages & Limitations

2.1 Advantages

- ✓ Does not need any additional land
- ✓ Decreases runoff temperature (SSWP 2018)
- ✓ Can provide usable green space as well as wildlife habitat

2.2 Limitations

- × Requires specific structural support
- × Requires irrigation which can lead to structural issues if the roof is not properly protected
- × Not suitable for wooden structures

Green Roof Factsheet

3.0 SITING

Due to the moisture and load, installing green roofs on wooden structures may be infeasible.

4.0 DESIGN CONSIDERATIONS

When designing a green roof, the following parameters should be considered:

- ❑ Roof structure materials and design
- ❑ Building load capacity, including seismic loads during saturated conditions
- ❑ Vegetation
  - o planting material and water holding capacity
  - o mulch
- ❑ Drawdown time
- ❑ Roof slope
- ❑ Access
- ❑ Irrigation
- ❑ Lining
- ❑ Outlet drainage
- ❑ Overflow drainage

5.0 CONSTRUCTION CONSIDERATIONS

- ❑ Highly specialized construction may require a specialist to oversee the construction process
- ❑ Protection of vegetation during establishment from
  - o construction damage
  - o public access
  - o heat exposure
- ❑ Covering the area with mulch or another erosion control method before vegetation is added can help prevent erosion, especially during vegetation establishment.

6.0 MAINTENANCE

- ❑ Plant management
  - o mowing of grass
  - o pruning of non-grasses
  - o weed removal
  - o identification and promotion of desired species (may require special training)
- ❑ Inspections for standing water after major rainfall events to prevent vector breeding

7.0 REFERENCES

Sacramento Stormwater Quality Partnership (SSQP 2018). *Stormwater Quality Design Manual*. July 2018.