

4.6 Green Roof



Figure 4-8: Parking Lot with Turf-Covered Roof, Google building, Mountain View

Best Uses

- For innovative architecture
- Urban centers

Advantages

- Minimizes roof runoff
- Reduces “heat island” effect
- Absorbs sound
- Provides bird habitat
- Low maintenance costs

Limitations

- Sloped roofs require steps
- Non-traditional design
- High installation costs

A Green roof can be either *extensive*, with a 3"-7" lightweight substrate and a few types of low-profile, low-maintenance plants, or *intensive* with a thicker (8" to 48") substrate, more varied plantings, and a more garden-like appearance. The extensive installation shown in Figure 4-10, at Gap Headquarters in San Bruno, has experienced relatively few problems after nearly a decade in use. Green roofs may be considered “self-treating areas” and may drain directly to the storm drain, as allowed by the municipality.

Design and Sizing Guidelines

- Extensive green roof systems contain several layers of protective materials to convey water away from the roof deck. Starting from the bottom up, a waterproof membrane is installed, followed by a root barrier, a layer of insulation (optional), a drainage layer, a filter fabric for fine soils, the engineered growing medium or soil substrate, and the plant material.
- Design and installation is typically completed by an established vendor.
- Slopes should not exceed 15%.
- Follow manufacturer recommendations for slope, treatment width, and maintenance requirements.
- Either grass or a diverse selection of other low growing, drought tolerant, native vegetation should be specified. Vegetation whose growing season corresponds to the wet season is preferred. See Appendix B for planting guidance.
- Green roof shall be free of gullies or rills.

Maintenance

- Installations require inspection at least semiannually and may or may not require irrigation in the Bay Area's semi-arid climate. See www.greenroofs.com for information about and more examples of green roofs.



Figure4-9: Intensive Green Roof at Kaiser Center Parking Garage, Oakland.



Figure 4-10: Extensive Green Roof at Gap Headquarters, San Bruno (William McDonough & Partners)