A roof garden is a heavyweight vegetated roof system used in place of a conventional roof. Roof gardens typically consist of a waterproof membrane, drainage layer, and a thick layer of soil (typically 12 inches or more), vegetation, and hardscaping to allow access to the garden (e.g., planters, stepping stones, benches).

Because a roof garden can support pedestrian traffic, it can be designed as a building amenity, with walkways, terraces, plazas or seating areas. It differs from an ecoroof by its greater soil depth and weight, accessibility, and the greater range of plants it can accommodate.

**Benefits**
A roof garden reduces runoff flow rate, volume, and temperature. Roof gardens can outlast conventional roofs by twenty years. They also filter air pollutants, reduce outdoor air temperatures and the resulting urban heat island effect, increase wildlife habitat; insulate the building and lower energy costs. Long-term savings from deferred repair and replacement, lower heating and cooling costs, and reduced structural maintenance help offset the short-term capital costs. In addition, turning previously wasted rooftop space into an accessible and appealing area adds value to the building.

**Vegetation**
Roof gardens can be planted with a wide variety of vegetation including trees, shrubs, herbs, succulents, and grasses. Plants should be drought tolerant and self-sustaining, without the need for fertilizers or pesticides. They should be appropriate for the limited soil depths, moisture, and nutrient level.

**Maintenance**
Like a conventional roof, a roof garden requires care to maintain optimum function. This includes irrigation, and manual weeding and mulching, especially during the plant establishment period. Maintenance and irrigation depend on design and vegetation used. If the roof includes grasses or other annual plants, cut and remove dry vegetation to prevent combustible material from accumulating. Check drainage and vegetation regularly. Some plant replacement may be necessary.

**Cost**
The initial cost of a roof garden is more than a conventional roof, but will last longer. Costs also depend on the type and amount of waterproofing and drainage material, depth of soil, amount of hardscaping and size and type of plant material.
Safety and Siting Requirements

- Consult a design professional
- Locate roof gardens on flat or shallow-pitched roof structures.
- Building structures must be adequate to hold the additional weight on the roof.
- Roof gardens can contain picnic, park or other multiple use areas. They can include walkways for recreation or maintenance.
- Include overflow structures such as drains or downspouts.
- Refer to Portland’s Stormwater Management Manual for detailed sizing, placement, and design information.

Permits

- Roof gardens require substantially upgraded structural support. Bureau of Development Services (BDS) approval requires a signed document from a structural engineer.
- Roof garden retrofits usually need alteration of downspouts or other piping, requiring a plumbing permit from BDS.
- The stormwater management portion of the facility must be reviewed by Environmental Services.

Examples

Market Building, 200 SW Market Street

The PacWest Building, 1211 SW 5th Avenue

Terry Shrunk Plaza, SW 3rd and 4th Avenues and Madison and Jefferson Streets, is a street-level roof garden over an underground parking garage.

Portland State University-Native American Student Center, 710 SW Jackson Street