

Adding Green Roofs to Historic Buildings to Enhance their Sustainability and Energy Performance

 nps.gov/tps/sustainability/new-technology/green-roofs.htm

Green Roofs

Did You Know?

According to the organization [Green Roofs for Healthy Cities](#), in 2012 the Washington DC Metropolitan Region installed the most green roofs in North America with 1,326,872 square feet.

Historic buildings are great opportunities for sustainable development and are regularly being rehabilitated to incorporate green design features while still preserving their historic character. One way of increasing the sustainability and energy performance of a building is to install a green roof. The information here provides a background for applying green roof technology to historic buildings.

What is a Green Roof?

A green roof is a layer of vegetation planted over a waterproofing system that is installed on top of a flat or slightly-sloped roof. Green roofs are also known as vegetative or eco-roofs. They fall into three main categories—extensive, intensive, and semi-intensive.

Considerations

What is the primary purpose for installing a green roof? Considering the underlying purpose will shape the next decisions in designing the green roof and help determine if a green roof is an appropriate solution at all. The most important thing to keep in mind is that a green roof should not negatively impact the building's historic character.

Visual Impact

The visual impact of a green roof on a historic building is of primary importance. It must first be determined whether the building can accommodate the addition of a green roof without altering its character.

Physical Impact

The most important physical issue to take into account after it has been determined that a green roof can be added to a historic building without negatively impacting its character, is the increased roof load. Another physical and potentially damaging factor to be aware of when

considering the installation of a green roof is that it will change water/moisture patterns on the roof.

Plants for Green Roofs

Along with the makeup and depth of the growing medium, selecting the right plants is crucial to the success of a green roof. The plants chosen must be appropriate for the roof type—extensive, intensive, or semi-intensive.

Green Roof Alternatives

An owner can also improve the sustainability and energy performance of their property with a ground-level green roof, or by incorporating cool roofs and solar panels.

Green Roof Benefits

A green roof reduces temperatures on the roof, which helps cool the building and the surrounding urban environment. In addition, it filters air, collects and filters storm water, contributes to biodiversity, and provides urban amenities.

Summary & Resources

The installation of green roofs on historic buildings helps to improve the energy efficiency of these buildings, makes them more environmentally beneficial to the community and building occupants, and allows the buildings to continue to serve a useful purpose while updating them for today's environmental standards.

A selected list of resources is provided for further information.

Case Studies

These case studies highlight projects across the country that successfully combined historic rehabilitation and green roofs.

Sustainable Roofing Glossary

Definitions of green roof terminology primarily drawn from the [Heat Island Effect](#) resource by the [Environmental Protection Agency](#).