

Add a green roof:

Why:

There are many environmental benefits that come with utilizing green roofs. Covering the roof with vegetation rather than typical roofing materials cuts down on the heat island effect. This occurs when sunlight is reflected off of an existing building surface and increases the surrounding temperature. The added vegetation also acts as a filter to improve air quality.

This roofing method also has a number of fiscal advantages. It blocks direct UV radiation by acting as a shading device that covers the entire roof. The space underneath the roof remains consistently cooler, and requires less energy for air conditioning. In the winter, the roof works in the opposite direction to insulate the spaces below. The soil and vegetation add thermal properties to the building and aid in preventing heat loss. This increased efficiency of the building envelope cuts back on energy use and lowers utility bills. The lifespan of the roof itself is also increased. Green roofs are estimated to last two to three times longer than traditional roofs. Layers of soil and vegetation act as a buffer for damaging weather elements. Sunlight, extreme temperatures and precipitation are all blocked from reaching the roofing material. The lack of exposure helps prevent expansion and cracking. The vegetation layer also absorbs moisture and prevents it from reaching the roof's surface or creating excessive building runoff.¹

There are two types of green roofs. Intensive green roofs are typically occupiable and often used as rooftop gardens. These types of green roofs require more attention and maintenance. The types of vegetation used usually also require deeper soils which add a significant amount of weight to the roof. It is advisable to undertake this type of roof on a new construction project so that structural and maintenance needs can be accounted for.

Extensive green roofs are much simpler than intensive ones. Extensive roofs are covered with grasses and plants native to the building's location and more tolerant of extreme weather conditions. This vegetation requires little to no maintenance and can typically survive in shallower soil. The shallow soil means less added weight. The dead load increase for extensive green roofs is in the range of 15-50 pounds.² Watering is required for the first two years to establish the vegetation. After that, the roof is self-sustaining.

1 Boodram, Kai, et al. "An Extensive Green Roof for the ES2 Building." Environmental Studies Green Roof 2 Team. University of Waterloo, Canada. 2004.

2 "Great Lakes WATER Institute Green Roof Project: Green Roof Installation." www.glwi.uwm.edu/research/genomics/ecoli/greenroof/roofinstall.php.

How:

Convert an existing flat roof to a green roof when it reaches the end of its lifecycle and requires replacement. This alleviates additional construction costs of removing a roof surface that is still functional.

Before seeking funding or information on regional installers, have a structural engineer evaluate the current framing system. They will be able to determine what structural alterations will be necessary to support the added weight of a green roof. Check with the local government office to insure that green roofs follow local building codes.

After the roof evaluation, secure funding by informing the school board and others in charge of financing about the benefits of choosing a green roof over traditional roofing systems. Check state and federal governments to see if any grant funds are offered for installing a green roof. Once funding is secured advertise the project to the public. Send out a Request for Proposals to qualified professionals in the area and choose the one that best meets the District's needs.