



Green Infrastructure

As our population has grown, natural landscapes, prairies and forests have been replaced by agricultural land and sprawling cities. Stormwater, once easily absorbed into the ground, now flows as runoff across pavement and other hard surfaces. Stormwater runoff is comprised of water from rain or snowmelt that flows over hard, non-absorbent surfaces, also known as impervious surfaces, like driveways, roofs, sidewalks, and streets. Stormwater gains speed as it travels across these impervious surfaces. The increased speed and volume of runoff reaching the banks of a water body causes erosion. Stormwater picks up chemicals, nutrients, debris, sediment, and other pollutants as it travels across the pavement to the storm inlet. Heat from roadways and other impervious surfaces increases the temperature of stormwater, causing a rise in the temperature of streams, rivers, and lakes. Untreated stormwater runoff can be harmful to the water bodies we use for swimming, fishing, and as a source of drinking water.

To counter the effects of excessive stormwater runoff, we can manage stormwater with green infrastructure. Green Infrastructure involves the use of soils, plants, and land features that mimic natural processes to absorb the impact of stormwater where it first falls. This reduces the volume of runoff and pollutants entering our waterways. Using Green Infrastructure to manage stormwater, we can prevent untreated water from negatively impacting our environment. Common strategies include the collection and conveyance of stormwater runoff from roofs, driveways and other hard surfaces so that rain is absorbed into the ground through deep-rooted, drought-resistant native plants, or so it can be stored for re-use.

Incorporating Green Infrastructure into the landscape of your own property offers many benefits, including water conservation and aesthetic appeal.



Description:

A green roof is a living system of plants and growth media placed over a building's waterproofing. The vegetation and growth media treat and reduce the volume of stormwater that runs off the roof. The green roof system is made up of multiple layers that include a drainage layer, root barrier, and planting media. Currently there are two types of greens roofs, based on the thickness of the planting media. Extensive green roofs have a media depth of six inches or less while intensive roofs are greater than six inches. A green roof provides insulation that decreases rooftop temperatures. This can provide energy savings as well as insulation from typical urban environment sounds such as building equipment installed on rooftops. Another advantage of a green roof is that it exceeds the lifespan of a conventional roof by protecting the roof surface from UV light, large temperature fluctuations, and normal wear and tear associated with exposed surface roofs.

Considerations:

- Vegetation selected for the green roof must be able to thrive in very constrained growing conditions, as well as through seasonal fluctuations in temperature and moisture.
- Plants with tap roots should be avoided, as they can potentially damage the waterproofing and other layers. Fibrous rooting plants are recommended, especially in extensive green roof systems.
- Install a green roof at the beginning of the growing season with a goal of 90% vegetated coverage within six months.
- The heaviest components of the green roof (typically trees or planters) should be placed over column heads or beams (consult with a structural engineer when making these decisions.)
- A width of gravel, stone, or paver material along the perimeter of the green roof provides protection from wind scour and acts as a firebreak in the roof system.
- Check drainage outlets for clogging after any rain event exceeding one-half inch.
- Routine weeding of the green roof is recommended to deter weed seedlings and saplings from establishing.
- Structural stability of the building must be considered prior to any green roof design or installation.

To learn more about this and other Green Infrastructure strategies, visit:

www.OmahaStormwater.org