

GREEN INFRASTRUCTURE:

A Sustainable Solution For Urban Stormwater Management.



Stormwater In An Urban Environment

In urban areas, stormwater runoff is a major cause of water pollution. During rain events in undeveloped areas, stormwater is naturally absorbed and filtered by soil and plants. During rain events in urban areas, impervious surfaces such as roofs, streets, and parking lots prevent the absorption and filtration of stormwater. Since stormwater in urban areas can't be absorbed or filtered naturally, collection systems are engineered to remove stormwater to prevent flooding.

Traveling across impervious surfaces and into collection systems, stormwater in urban areas gathers trash, bacteria, heavy metals, and other pollutants. This stormwater does not get treated and is expelled into nearby waterbodies. The expulsion of this untreated stormwater is known as stormwater pollution which negatively affects the quality of receiving waterbodies, directly impacting the natural ecosystem. Furthermore, the expulsion of excess stormwater can overwhelm receiving waterbodies, causing flooding, property damage, and the deterioration of critical infrastructure.

Green Infrastructure

To combat the impact of stormwater pollution, architects, engineers, and city planners have been integrating Green Infrastructure (GI) as an alternative approach to urban stormwater management. GI protects, restores, or mimics the natural water cycle found in undeveloped areas and allows for stormwater to be absorbed and filtered on site. Using GI instead of traditional methods, significantly reduces stormwater pollution by limiting the volume of water that is expelled into nearby waterbodies.

Green Infrastructure Practices

Utilizing processes such as infiltration (*water seeping into the ground*), evaporation/transpiration (*removing water from soil and vegetation*), and rainwater capture and reuse, GI can reduce the ecological impact of an urban environment.

Properly designed, GI can be an effective and economical tool to enhance community safety and quality of life. Managing stormwater runoff from a volume and water quality perspective is easily achieved through GI and provides a sustainable solution to a persistent problem - stormwater pollution.

Green Infrastructure Practices

Permeable Pavement – A range of sustainable materials and techniques for permeable paving that allows stormwater to move through the surface of the pavement. This practice reduces runoff by allowing stormwater to be absorbed into the ground while filtering out pollutants.

Green Roofs – A roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane. The vegetation on the roof absorbs rain water and expels it naturally from their leaves as vapor instead of displacing it through a gutter system.

Rain Barrels – A barrel that connects to a gutter system to collect and store rainwater from a roof that would otherwise be lost to runoff and diverted to storm drains and streams. The captured water is filtered and can be reused during times when ground water is not as plentiful.