GREEN INFRASTRUCTURE – Opportunities and Advantages

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POSTER ABSTRACT:
Green Infrastructure strives to incorporate non-structural facilities that mimic natural processes that recharge groundwater, preserve base flows, moderate temperature impacts, and protect hydrologic and hydraulic stability. These facilities include green roofs (Figures 5a & 5b), trees, rain gardens (Figure 6), vegetated swales and medians (Figure 7), pocket wetlands (Figure 8), infiltration planters (Figure 9), reforestation, and protection and enhancement of existing riparian buffers and floodplains (Figure 1). Green Infrastructure is a cost effective, preferable approach to reduce stormwater flows, improve the quality of stormwater, and reduce both the on-site and secondary off-site impacts to the environment. It should be the preferred methodology used wherever soil and vegetation can be worked into the site design. For regional planning and land development, developing with Green Infrastructure and pollution management in the forefront instead of as an afterthought will often cost less to build than conventional methods, blend the developed portion of a property with the undeveloped portion, provide a seamless landscape, and be more attractive to buyers because of the environmental amenities.

There are a number of benefits in the utilization of Green Infrastructure for stormwater control and quality.

- Vegetation and green space as a whole reduces the amount of stormwater runoff through infiltration, absorption and evapotranspiration (Figure 1).
- Green Infiltration techniques, recharges the groundwater and increases the base flow of streams.
- Canopy trees and vegetation improves air quality by filtering airborne pollutants (Figure 2).
- Canopy trees and vegetation in urban setting helps lower summer temperatures by creating shade and reduces the amount of heat being absorbed by impervious surfaces (Figure 3). Vegetation also emits water vapor which helps in decreasing air temperature (Figure 4).
- Green space and green roofs help lower ambient temperatures and shades and insulate buildings, decreasing energy needs for heating and cooling (Figures 5a & 5b).
- Trees and vegetation improve urban aesthetics and add to the community by providing recreational and wildlife uses, thus increasing property values.

Green Infrastructure decreases the amount of pollution introduced into waterways and relieves the strain on stormwater and wastewater infrastructures. Efforts in cities have shown that Green Infrastructure can be used to reduce the amount of stormwater discharged or entering combined sewer systems and that it can be cost-competitive with conventional stormwater controls. In new development, Green Infrastructure cost less to build because of decreased site development and conventional infrastructure costs. Such developments are much more desirable because of the environmental amenities. Green Infrastructure is flexible and the decentralized qualities allow it be retrofitted into developed areas ranging in size from a single lot to an entire citywide plan.

Figure 1. Vegetation and Green Space on a Regional Basis

Figure 2.Vegetation and Green Space on a Site Specific Basis

Figure 3. Canopy Trees and Vegetation

Figure 4. Lower Urban Heat Absorbtion

Figure 5a. Green Roof for Lower Building Maintenance Costs

Figure 5b

Figure 6. Rain Gardens

Figure 7. Vegetative Swales and Medians

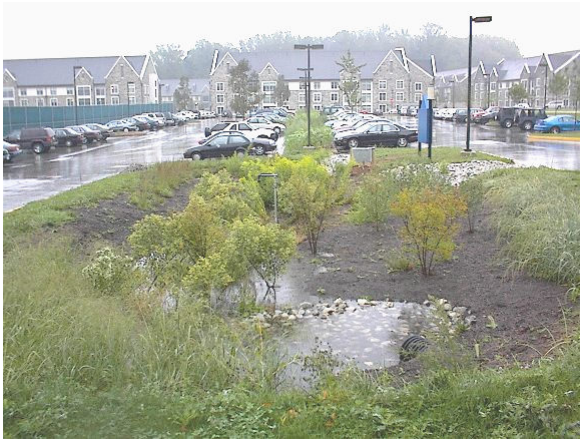

Figure 8. Pocket Wetlands

Figure 9. Infiltration Planters

In conclusion, Green Infrastructure techniques present new pollution control methods based on the known benefits of natural systems. These systems have provided multiply layers of pollution reduction that uses soil and vegetation to trap, filter and infiltrate stormwater.

References

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