BARRIER BUSTERS

This is the second of three e-newsletters on Low Impact Development (LID) for stormwater management. This article goes beyond the basics of LID to address concerns and questions you may have about costs, effectiveness, and maintenance.

THE ISSUE

Washington State's population is growing, and with that growth comes community, economic, and environmental challenges. Old ways of managing stormwater runoff, while well-known and readily understood, have had unforeseen consequences like urban flooding, stream habitat modification, reduced groundwater discharge, and increased pollution of our state's lakes, rivers, streams, and marine waters.

THE OPPORTUNITY

LID offers a unique opportunity to address these issues while providing more livable communities with amenities like natural areas and pedestrian-friendly streets. Accomplishing these outcomes requires a new approach to development and facility design – LID methods that many practitioners are still learning. It also involves more detailed predevelopment site studies and a commitment to working with the natural soil and stream systems when laying out a development project.

LID also provides opportunities for retrofitting existing facilities. Many of our urban stormwater systems are aging and under stress, and a large number of them do not function effectively. This can degrade urban water quality, send high flows into small stream channels, and cause localized flooding. Retrofitting stormwater facilities with LID designs that reduce flow and improve water quality can also reduce impacts from older stormwater systems.

THE MULTIPLE BENEFITS OF LID

The benefits of managing stormwater using LID are numerous. As communities grow, standard stormwater facilities struggle to keep up with the additional flows from new developments. With LID, much of the water generated by new development is infiltrated into the soil on site, where the site conditions allow it. This can reduce infrastructure costs for detention ponds and piped underground systems. LID design incorporated in early planning stages of new developments results in protecting open spaces and natural areas like wetlands and can leave additional space for building lots.

Jurisdictions and communities that use LID report improved water quality, reduced urban flooding, restored aquatic habitat, and enhanced ground water recharge. LID improves the quality of our communities by providing added landscaping and streetscapes, helping to calm street traffic by reducing pavement widths, improving walkability, and supporting new small-business opportunities in green sector jobs. Additional benefits include reduced infrastructure and maintenance costs, and improved wildlife habitat and air quality.

Q. HOW MUCH DOES LID COST COMPARED TO STANDARD DESIGN APPROACHES?

A. While costs for design and planning may be greater to evaluate the feasibility of LID for project sites, many developers have found that installing LID can be less expensive for controlling stormwater on a site compared to standard design approaches. This is due in part to the reduced need for piping and large storage facilities. In addition, LID can reduce the long-term management and maintenance costs for local governments and homeowners.

Here are some examples:

- Adding roadside bioretention facilities, making roads narrower, and designing smaller or permeable pavement parking lots with on-site bioretention to retain runoff saves money by reducing the amount of pavement, curbs, and gutters needed.
- Installing bioretention, disconnecting roof downspouts from impervious surfaces (driveways or streets), and retaining vegetated areas saves money by eliminating the need for costly runoff detention basins and pipe delivery systems.
- Designing more compact residential lots saves money by reducing site grading and building preparation costs, and can increase the value of the development for amenities such as vegetated open space.

Q. HOW EFFECTIVE IS LID?

A. LID practices offer significant environmental benefits over conventional stormwater management practices. By holding water on-site, LID practices reduce the amount of runoff generated during a rainstorm, alleviating downstream erosion and other damage to stream habitat. In addition, LID practices filter out pollutants such as oil, bacteria, sediment, and nutrients as the collected water seeps through vegetation and soil. The water that eventually reaches groundwater and surface water is much cleaner.

The new LID requirements recognize that these practices may not be feasible on every site. The requirements include infeasibility criteria for specific techniques such as soils that infiltrate poorly, proximity to steep slopes, or high groundwater. Where LID is not feasible to manage all the runoff, developers may use traditional techniques or a combination of both.

Q: WHAT ARE THE MAINTENANCE CONSIDERATIONS WITH LID?

A. Many managers are concerned that maintenance costs will increase as a result of switching from traditional stormwater practices to LID. While this may be true in some cases, LID practices have lower long-term lifecycle costs and perform better than their traditional stormwater system counterparts in general. Once established, LID practices can often be maintained in the same manner as other landscaping elements that require mowing, weeding, and debris removal.

As communities rely more on LID, they will need to adapt to managing practices that are dispersed across the landscape rather than centralized in a few locations. This may require a transition to new staff skills and equipment. Some cities and counties choose to maintain all LID facilities themselves, while others work with volunteers, neighborhood or homeowner associations, and individual property owners to ensure that LID facilities continue to perform as designed.

Q. WHERE CAN I GET MORE INFORMATION?

A. More information can be found at: www.awcnet.org/TrainingEducation/LID.aspx.

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