



LOW IMPACT DEVELOPMENT & STORMWATER MANAGEMENT

Incorporating Low Impact Development (LID) techniques into development is becoming a mainstream practice and in some cases, a required element of stormwater management. Some jurisdictions have been working for a number of years to test and develop LID standards that will accommodate all types of sites and developments. Most jurisdictions have more recently begun to evaluate the use of LID due in part to the need to update their stormwater regulations to be in compliance with the latest National Pollutant Discharge Elimination System (NPDES) Phase I and II Municipal Stormwater Permits.

Common LID Techniques

- Rain Gardens
- Pervious Pavement
- Bio-swales
- Infiltration Systems
- Dispersion
- Green Roofs
- Reduced Pavement Widths
- Rainwater Harvesting
- Reduced Building Footprints
- Clustered Lots/Maximize Open Space



The Highlands - Kirkland, WA

BlueLine designed this 25-lot single-family residential plat that was constructed on a 6.14-acre site in the City of Kirkland. Pervious pavements were used, and the use of LID techniques allowed for a small infiltration vault rather than a larger traditional detention facility. The project used flat curbs to allow road drainage to sheet flow into swales.

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Changes to the NPDES Permit Requirements

Local jurisdictions covered under the Statewide NPDES Permit must adopt stormwater controls equivalent to those practices and criteria described in the 2005 Ecology Stormwater Management Manual for Western Washington. The Department of Ecology has also incorporated LID into the NPDES Permit requirements (requirement S5) and all permittees must adopt ordinances to allow for the use of LID techniques. Most of the jurisdictions in Western Washington region are covered under either the Phase I or II permit.

Trends

As regulatory standards evolve and education increases, the use of LID techniques is becoming more common. Currently most cities and counties throughout Western Washington support to use of LID techniques, however they are at varying stages of fully adopting standards and guidelines that will easily allow the use of LID.

Incentives for Using LID

Some jurisdictions are further along in the process of implementing incentives for using LID techniques. Seattle has a program called Priority Green Permitting that was developed to encourage innovative projects by providing code and process assistance via an interdisciplinary review team, along with helping the developer maximize financial incentives available from other City departments and agencies. Kirkland offers expedited review for “green” building projects that incorporate LID and other green building practices such as BuiltGreen or LEED. They have also adopted a Cottage Housing Ordinance that allows clustering of houses to maintain more open space. Sammamish has developed incentives for LID based on an LID Points system. These incentives include increased density, street improvement/ROW reduction, and project recognition.

Common Concerns

Maintenance and long-term functionality of LID measures are concerns for both municipalities and private developers due to unknown on-going and long-term costs. Because of this, most jurisdictions support the use of LID on private property but few are willing to allow it within the right-of-ways maintained by the jurisdiction.

Lessons Learned

- Engage your civil and/or geotechnical engineer to research what LID elements are feasible, practical, allowed and/or required early in the design process.
- Involve the governing jurisdiction early in the design process, especially if they don't have standards and review guidelines for LID in place.
- Make sure that the selected contractor understands the objective of the LID measures prior to construction. Often when LID measures are not functioning as designed, it is due to improper installation, such as not protecting areas to be used for pervious pavement from silt and compaction during construction.