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Descriptions, purposes & examples of Low Impact Development using Integrated Mgmt. Practices




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Low Impact Development (LID) is an innovative approach to stormwater management, which designs a site to duplicate the hydrologic regime of the undeveloped watershed. LID is implemented by engineering a site, to provide post-development hydrologic functions that remain close to those, which existed prior to the site's development. Minimal disturbance techniques, known as site fingerprinting, are used to minimize the clearing and grading impacts to the area. LID is an integrated design management concept based upon the following principles: Conservation and minimization, storage, conveyance, landscaping and infiltration.

LID engineering compensates for the reduced infiltration and storage characteristics of the developed site, and includes Integrated Management Practices (IMPs), which are distributed throughout the site, to mitigate the impact of development on the hydrologic cycle. IMPs minimize impervious surfaces, create on-site storage, maximize opportunities for infiltration, slow down the flow of

surface run-off, detain, and/or retain water, and remove pollutants.

CONSERVATION & MINIMIZATION

Description: Conservation and minimization IMPs encompass a variety of practices applied at several scales, to alter or reduce the impervious surface area of a development, while maintaining the safety and usability features involved in current design practices.

Purpose: Less impervious areas maintain a site's natural hydrologic characteristics, including groundwater recharge, peak flow rates and stormwater run-off volumes and improved stormwater quality. Reductions in impervious areas translate into less managed run-off to be conveyed off-site, more opportunities for storage and infiltration, as well as cost savings.

Examples of Applicable IMPs:

- Site finger printing & porous pavements
- Narrow residential roads & pedestal sidewalks
- Grated infiltration trenches & sidewalk reductions

STORAGE

Description: Storage IMPs are designed to capture and temporarily detain specific volumes of stormwater run-off. Stored water is eventually released slowly after the storm event, reducing the peak discharge rate. Storage IMPs can be used alone or in conjunction with infiltration practices.

Purpose: Adding storage helps to preserve a site's natural hydrologic patterns. Storage IMPs

minimize the need for off-site conveyance.

Examples of Applicable IMPs:

- Roof water cisterns & roof top detention basins
- Green roofs & subsurface storage units
- Bioretention cells & rain gardens

CONVEYANCE

Description: Conveyance IMPs can be combined with a range of infiltration and filtering components. As IMPs convey on-site run-off, the quality and/or quantity of stormwater is improved. Site specific conditions such as slope, soil type, drainage area, and site constraints must be considered in the selection of a suitable option.

Purpose: As stormwater moves through the site, conveyance IMPs provide additional treatment and volume removal, to reduce the quantity and enhance the quality of the stormwater.

Examples of Applicable IMPs:

- Grassed swales & bioretention channels
- Disconnection of impervious areas
- Leaching trenches, & interior & exterior pipe systems

LANDSCAPING

Description: Landscape IMPs cover a range of practices, which can be incorporated into the overall landscaping plan for a site. Through sedimentation, infiltration, filtering, and grading, these practices enhance the quality and reduce the quantity of stormwater using landscaping features. Site specific conditions, such as slope,

soil type, drainage area, and site constraints must be considered in the selection of a suitable control option.

Purpose: Creating on-site, self-supporting systems using native vegetation reduces the quantity and enhances the quality of the stormwater. The use of these IMPs can help to preserve a site's natural hydrologic features promoting groundwater recharge and reducing stormwater volumes.

Examples of Applicable IMPs:

- Bioretention & rain gardens
- Preservation and re-vegetation of riparian buffers
- Wetlands restoration & enhancement

INFILTRATION

Description: Infiltration IMPs are designed to capture stormwater and to allow it to infiltrate the soil.

Purpose: Enhanced infiltration IMPs help to preserve a site's natural hydrologic features, promoting groundwater recharge, and maintaining pre-construction run-off volumes and peak discharge rates. These reductions represent direct savings in infrastructure construction and maintenance costs.

Examples of Applicable IMPs:

- Below-pavement infiltration basins & pocket infiltration devices
- Infiltration trenches & perimeter sand filters
- Infiltration basins

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