

Low Impact Development (LID)

Stormwater Design for Land Developers

What is it?

- 1** Natural and ecologically friendly stormwater management that mimics natural processes.
- 2** Often results in lower costs and less maintenance while creating an as aesthetically pleasing environment.
- 3** Alternative to traditional, strictly underground drainage piping systems.

Typical LID Design Elements:

- ▶ **Bioswale** - An earth channel that slowly conveys stormwater to a drainage structure while filtering the “first flush” of pollutants.
- ▶ **Rain Gardens** - Native, perennial gardens strategically positioned to capture, adsorb, and filter stormwater runoff from impervious surfaces.
- ▶ **Bioretention Cells** - Shallow, landscaped depressions with an engineered base to treat and infiltrate large volumes of water.
- ▶ **Native landscaping** - The utilization of native plants allows for an improved root structure, building a better soil quality and increased infiltration.



- ▶ **Pervious Paving** - Surfaces that give the appearance of an impervious surface but allow for significant infiltration. Some typical pervious surfaces include permeable block pavers, porous concrete, and porous asphalt.
- ▶ **Level Spreaders** - An erosion control practice that works to dissipate stormwater velocity by spreading flows over a wide area rather than single source point (pipe).



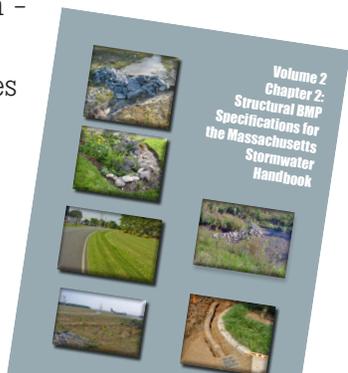
Specifically LID aims to:

- ▶ Preserve, restore, and create natural processes
- ▶ Utilize de-centralized treatment practices to manage stormwater close to the source
- ▶ Minimize impervious areas

What can I do?

For undeveloped areas, incorporate LID early

- ▶ Protect open space and natural resources (wetlands)
- ▶ Work to incorporate LID designs elements in the overall drainage design
- ▶ Limit the amount of new impervious area
- ▶ Work with the natural terrain - not against it
- ▶ Work to limit steep land slopes (unless natural) that may be susceptible to erosion
- ▶ Follow infiltration design practices within the Massachusetts Stormwater Handbook



For redevelopment, work to incorporate LID

- ▶ Perform an initial site assessment - What needs to change? How to incorporate LID elements into changes?
- ▶ Work to remove impervious area
- ▶ Increase the amount of lands set aside for natural conservation
- ▶ Use land and buildings on the site effectively - bigger doesn't always mean better
- ▶ Determine areas serving no purpose in the previous or future site design and incorporate LID elements
- ▶ Follow infiltration design practices within the Massachusetts Stormwater Handbook

Useful links: Massachusetts Department of Environmental Protection (MassDEP) Stormwater Handbook: <https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards>

U.S. Environmental Protection Agency (EPA) Low Impact Development Resources: <https://www.epa.gov/nps/urban-runoff-low-impact-development>



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