

LOW IMPACT DEVELOPMENT



Streets designed without curbs allow water to drain into natural systems, such as gardens

What are the objectives of Low Impact Development?

To create a more sustainable land development pattern that results from a site planning process that first identifies critical natural resources, then determines appropriate building envelopes. To incorporate a range of best management practices (BMPs) that preserves the natural hydrology of the land.

Why do we need Low Impact Development?

Development patterns based on conventional zoning codes in Massachusetts often result in "sprawl" with its associated large impervious areas, loss of natural areas, and alteration of hydrologic systems. Too often, the

development process begins with the clearing and leveling of an entire parcel. Conventional developments that follow commonly contain wide roads and large parking lots. These large impervious areas prevent water from infiltrating into the ground (which normally replenishes groundwater supplies and supports nearby wetlands and streams with baseflow) and convey polluted runoff into waterbodies. To deal with water that runs off of these sites, structural stormwater controls such as catch basins, pipes, and detention ponds are used. Conventional landscaping of these developments brings additional concerns including the introduction of non-native plants, use of herbicides, pesticides and fast-releasing fertilizers, and excessive water consumption.

How does Low Impact Development work?

The LID approach provides opportunities to build the homes and businesses that are needed, while conserving natural areas and drainage patterns. LID is accomplished as a two-step process: 1) thoughtful site planning, and 2) incorporation of best management practices (BMPs). Thoughtful site planning begins with an approach that identifies critical site features such as wetlands, poor soils, or drinking water protection areas that should be set aside as protected open space. Natural features, such as vegetated buffers and view sheds, will also play an integral role in any LID planning exercise. After the critical open space areas are identified and set aside, sustainable development areas are then identified as "building envelopes." Within the delineated building envelopes, a broad range of design techniques or BMPs, such as shared driveways, permeable pavers, and bioretention are used to reduce the level of impervious cover and improve the quantity and quality of stormwater drainage. Other LID design techniques include green roofs, rain barrels, rain gardens, grassed swales, stormwater infiltration systems, and alternative landscaping. Through these techniques, natural drainage pathways are conserved, open space is preserved, and the overall impact from development is significantly reduced.

DID YOU KNOW...

Vegetated rooftops have been used extensively in Germany for more than 25 years and results show up to 50% reduction in annual runoff in temperate climates. (US EPA)

EXAMPLES FROM THE PIONEER VALLEY

Town of Pelham

With a Smart Growth Technical Assistance Grant from EOEAA, PVPC worked with the Pelham Growth Study Committee to draft a Low Impact Development (LID) zoning bylaw utilizing the LID Bylaw from EOEAA's Smart Growth Tool Kit as a model template. Given the largely rural and residential nature of Pelham, the committee felt that the State's model was more complicated than they would be able to administer and was more appropriate for new commercial and industrial developments, the likes of which were not happening in Pelham. Therefore, PVPC significantly streamlined the model, making the bylaw applicable to two types of land uses: 1) all non-residential land disturbances requiring a Special Permit and/or Site Plan Approval, and 2) all residential uses, including single-family detached dwellings, creating land disturbances that require a Special Permit, Site Plan Approval, or Building Permit. The Committee opted to call the new zoning bylaw a Stormwater Management bylaw rather than an LID bylaw due to the fact that they believe stormwater management is a term more easily understood by the general public rather than low impact development.

EXAMPLES FROM OUTSIDE THE PIONEER VALLEY

Please visit the [Masachusetts Smart Growth Toolkit](#), developed by the Executive Office of Energy and Environmental Affairs, for more examples of LID in Massachusetts.

[MODEL RESIDENTIAL LID BYLAW](#)

[MODEL COMMERCIAL / INDUSTRIAL LID BYLAW \(EOEAA\)](#)