Willard Beach Implementation Project

Battle Creek, Michigan

Pervious asphalt at Willard Beach Park
Source: City of Battle Creek

Project description

The primary goal of the City of Battle Creek's Willard Beach Park Project consists of showcasing LID practices to community residents by installing porous asphalt throughout the park roadway system and rain gardens. By implementing these two LID techniques, the amount of impervious material on site was reduced. The project complemented other LID projects undertaken by the city, such as several bioretention basins, rain gardens, and a vegetated roof. All of these sites were used as examples for area developers to model.

The project also reduced the impact of stormwater by volume and pollutant loading from the park's four storm sewer discharge areas. Another goal of the project was to educate park users about the project and the importance of protecting water quality.

The porous asphalt requires vacuuming at least twice per year. Proper weeding of the rain gardens and bioretention basin caused the most concern. Keeping the native plants properly watered during establishment

Benefits

- Enhances site / community aesthetics
- Groundwater recharge
- Reduced maintenance
- Stormwater peak rate reduction
- Stormwater runoff volume reduction

Impediments

- Codes / ordinances
- Must comply with vehicular safety standards

Decreased costs

- Installation
- Overall maintenance
- Maintenance labor

Annual maintenance cost:
$ 2,500

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posed a challenge. Replanting was required in some areas.

Reducing impervious surfaces includes minimizing areas such as streets, parking lots, and driveways. By reducing the amount of paved surfaces, stormwater runoff is decreased while infiltration and evapotranspiration opportunities are increased.

Imperviousness greatly influences stormwater runoff volume and quality by increasing the rapid transport of stormwater and collecting pollutants from atmospheric deposition, automobile leaks, and additional sources. Reducing imperviousness improves an area's hydrology, habitat structure, and water quality.

Key Design Features include:

Streets

Evaluate traffic volumes and street parking requirements,
Consult with local fire department and road agencies,
If available, consider a private road ordinance as necessary to minimize width,
Minimize pavement widths and lengths by using alternative roadway layouts, restricting on-street parking, minimizing cul-de-sac radii, and
Using permeable pavers

Parking Lots
Evaluate parking requirements considering average demand as well as peak demand,
Consider smaller parking stalls and/or compact parking spaces,
Analyze parking lot layout to evaluate the applicability of narrowed traffic lanes and slanted parking stalls, and
If appropriate, minimize impervious parking area by using overflow parking areas constructed of pervious paving materials

Lot Level
Use maximum lot coverage requirements to manage the amount of impervious surfaces,
Reduce front yard setbacks to allow for shorter driveways, and
Use alternative materials for patios, sidewalks, driveways, as appropriate.

Other project information and lessons learned

The porous asphalt requires vacuuming at least twice per year. Proper weeding of the rain gardens and bioretention basin caused the most concern. Keeping the native plants properly watered during establishment posed a challenge. Replanting was required in some areas.

Case study site considerations	
Project type(s)	Porous pavement Rain gardens
Total project cost	$ 450,425
Maintenance responsibility	Community / agency

Maintenance activities	
Weed vegetation	Annually

Pavement sweeping / vacuuming	Semi-Annually