

PLANNING BY DESIGN

Montgomery County Planning Commission

Green Parking Lots

Green parking lots can dramatically enhance the appearance of parking lots in our communities while benefiting the environment. Their innovative design transforms what is a common sight in our neighborhoods into a greener, more attractive, and sustainable community asset. Green parking lots are designed to use innovative stormwater management practices, vegetation, and sustainable paving materials to mitigate the adverse environmental impacts of large expanses of paving.

While parking lots are a realistic necessity, their large expanses of impervious coverage generate stormwater runoff, air and water pollution, flooding, and excess heat. Green parking lots reduce stormwater runoff and improve the water quality of our streams and rivers by filtering and removing sediments and pollutants, decreasing volumes, slowing velocity, and reducing the temperature of stormwater runoff entering our waterways. The most effective green parking lots add greenery and provide shade, manage stormwater, and utilize sustainable paving materials to create environmentally-friendly and attractive parking areas.



*Photo: Green parking, Heifer International World Headquarters, Little Rock, AR.
Credit: Alexi Holford.*



*Top photo: Green parking bioretention island, Dansko, USA Headquarters, PA.
Credit: MCPC.*

*Middle photo: Curb cuts, Swede Square Shopping Center, East Norriton, PA
Credit: MCPC.*

*Bottom photo: Depressed bio-retention island with wheel stops, Fischer's Park,
Towamencin Township, Montgomery County, PA.
Credit: MCPC.*

Greenery

When creating green parking lots, it is important to provide generous planting areas or green areas within the parking lot for the planting of trees and shrubs. Large canopy trees (with a minimum mature height of 30 feet or more) should be strategically placed to provide maximum shade. Trees cool pavement surfaces, reduce the heat island effect, and create a more pleasant environment. Designing larger planting areas with sufficient growing space allows trees and other vegetation to reach their full height and size, providing maximum greening and shading. In green parking lots, these areas are designed as stormwater facilities to capture runoff and provide water for the plantings. Combining generous planting areas with stormwater infiltration practices creates optimal conditions for vegetation to grow, shade, and cool parking lots, helping to green our communities.

Bioretention

Conventional parking lots are designed to quickly remove stormwater runoff, usually through a connected underground piping system. In green parking lots, runoff is directed into small, interconnected landscaped/bioretention areas located throughout the parking lot. These bioretention areas use vegetation and soil to capture, slow, clean, and infiltrate stormwater runoff and can be designed in various shapes and sizes. Design alternatives include vegetative swales, rain gardens, depressed planting islands, and filter strips. By using plants and soil to manage stormwater, bioretention areas mimic natural drainage systems and trap pollutants, decrease volumes, slow velocity, and reduce the temperature of stormwater runoff entering our waterways. In green parking lots, bioretention areas are designed using curb cuts or as depressed islands to capture stormwater runoff rather than raised islands with continuous curbs. Plantings must be tolerant of the harsh conditions of parking areas along with the hydrological conditions of the site. The planting design, vegetation, and soil used are critical for success, so soil preparation and plant selection should be carefully considered.



*Top photo: The Morton Arboretum, Lisle, IL.
Credit: By Chris Bachtell, The Morton Arboretum.*

*Middle photo: Grass pavers for reserve parking, Dansko, USA Headquarters, PA.
Credit: MCPC.*

Bottom photo: Green parking lot, McKenney's Inc., Atlanta, Georgia.

Paving

Using environmentally-friendly paving materials that reduce impervious coverage also make parking surfaces more sustainable. These permeable paving materials include: interlocking eco-pavers, concrete pavers, grid systems, porous asphalt, and porous concrete. Permeable paving allows rainwater to infiltrate, usually through voids between the pavers, into an underground storage bed where runoff can be released slowly, helping to manage stormwater on site. This paving is recommended for low-use areas where load-bearing or weight issues are less critical, such as in parking bays, reserve parking areas, and pedestrian walkways. Conventional parking lots are constructed of black asphalt that absorbs heat. Using a low-albedo (light or reflective) paving material, reflective or light-colored stone and binders in asphalt, or grass pavers helps cool pavement, reducing temperatures and making parking lots more comfortable and desirable places.

Green parking lots are a great way to incorporate environmental-friendly practices into parking design. Many communities throughout the country have adopted new regulations to address the environmental challenges of parking lots and can serve as models. New standards include increasing the area in parking lots devoted to planting and bioretention. Some communities have established a minimum green area requirement of 10 percent for all parking areas. Other regulations allow depressed curbing, and include performance standards for shading parking lots. Examples of shading regulations include adding sufficient tree plantings to shade 50 percent of the parking surface within 15 years or, as in Austin, Texas, requiring 30 percent of the parking spaces to be shaded after 5 years. Along with shading requirements, tree lists were developed detailing the appropriate tree species to be planted. As new parking lots are built and existing parking areas are reconstructed, opportunities to create green parking lots emerge, helping to create more sustainable, pedestrian-friendly, and attractive environments throughout our communities.



*Top photo: Vegetated swale, Willingboro Town Center, Willingboro, NJ.
Credit: MCPC.*

*Middle photo: Porous asphalt parking lot and bioswale,
Chestnut Hill Academy, Philadelphia, PA.
Credit: MCPC.*

*Bottom photo: Rain garden, Bryn Mawr Hospital, Bryn Mawr, PA.
Credit: Glackin Thomas Panzack, Inc.*

Online Resources

www.planning.montcopa.org/planningbydesign

Morton Arboretum

www.mortonarb.org/sustainable-practices/environmental-parking.html

US Environmental Protection Agency

cfpub2.epa.gov/npdes/greeninfrastructure/technology.cfm#greenparking

Urban Forestry South Expo

www.urbanforestrysouth.org/resources/collections/parking-lot-design-issues-trees

Casey Trees

www.caseytrees.org/planning/greener-development/green-issue-briefs/index.php

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