

[PAVEMENT MANAGEMENT]

Lots and Lots of Parking Lots



Tackling related planning and site design issues (Part 1 of 2)

By Nikos Singelis, Lisa Nisenson & Martina Frey

Parking and storm water management—the two seem inextricably linked. We have all participated in discussions of storm water management, and sooner or later the topic of parking arises. Most frequently, the discussion focuses on parking lot design and how to build more environmentally friendly lots.

This is certainly an important topic and, fortunately, can represent some of the low-hanging fruit in efforts to improve communities' storm water management. Less frequently, though, does the discussion turn to how much parking is really needed.

Two issues—the planning and design aspects of parking—illustrate one of the primary challenges for local government managers implementing National Pollutant Discharge Elimination System Phase I and II postconstruction storm water requirements. To build effective storm water management programs, local government officials will need to tackle both the site design issues and the planning and zoning issues inherent in nearly every storm water issue, not just parking.

This article will illustrate how these two issues can be addressed to solve storm water problems associated with parking. It aims to demonstrate that this model can be used to solve other storm water management challenges as well.

What We Have vs. What We Need

The U.S. Environmental Protection Agency (EPA) and other environmental organizations and professionals often discuss the need to consider environmental problems on

various scales—site, neighborhood, community, watershed and so on. We must ask, “How much parking do we need in neighborhoods and communities?” and “What impact will that have on watersheds?”

These are complex questions that, historically, we have not fully considered. In the past, extra parking spaces were a feature of land development considered an amenity with little or no cost and environmental impact. After all, who wants to be caught with too few parking spaces? For years, cities, shoppers, landowners and retailers opted for a more-is-better approach.

Usually parking is planned for the “100-year, 24-hour shopping event,” otherwise known as the day after Thanksgiving. Despite the proliferation of parking in many places, it is not terribly surprising that survey respondents have disagreed. The Impervious Surface Reduction Study,

Parking—Habitat for Cars?

In the U.S., the average household generates approximately 12 trips per day, conducted mainly by car (National Household Travel Survey data, February 2004).

For each trip, we expect a parking space to await us. When considering the aisles, turnarounds, other support areas and the dimensions of the typical parking stall, 300 to 400 sq ft of impervious surface is needed to park a car at each destination.

conducted in 1994 by the city of Olympia, Wash., uncovered a widespread belief that parking was insufficient for commercial and other traditional daytime destinations.

The survey found that respondents from sites with traditional daytime uses, such as medical clinics, retail stores and service stations, said parking was inadequate even though occupancy ranged from 46 to 67 percent. The investigation also found that 18 of the 31 representative sites had less than 75 percent occupancy rates during the busiest peak hour surveyed.

There are some simple ways to get started assessing the general parking situation in communities; a detailed survey might not be necessary—at least not yet. Just take a drive on a random day and observe how many parking spaces are empty or used only during the day, dinnertime or weekend hours. How many are never used at all, save the day after Thanksgiving? It is also important to note how many businesses have their own parking lots and how many areas are inaccessible by foot because excessive parking keeps businesses so far apart, thus exacerbating the problem.

In many parts of the country, we really should be asking ourselves, “Why are we surrounded by so much parking?”

In recent years, we have learned that there is a direct correlation between the amount of impervious surface in a watershed and the

quality of its streams, lakes and coastal waters. Research conducted by the EPA and others has illustrated that development patterns significantly affect the environment.

The Center for Watershed Protection has developed its Impervious Cover Model using information gathered from hundreds of watersheds. This model indicates that degradation of a watershed’s streams and small rivers is expected when impervious cover exceeds 10 percent. Parking—particularly too much parking—can add significantly to the impervious coverage in a watershed.

In addition, a surplus of parking can create dead zones, according to the 2006 EPA report *Parking Spaces/Community Places*. These dead zones impede pedestrian-oriented commerce, increase the urban heat-island effect and generally diminish neighborhoods’ quality.

Barriers to Better Parking

So all concerned persons have to do is march into planning offices and reduce the numbers in some code, right? If only it were that easy. Effectively reducing the impact of parking requires a more complete understanding of a larger development landscape and the factors that drive land conversion and impervious surface coverage.

By now, most watershed planners and storm water engineers are familiar with basic land planning and zoning and have heard criticism of inefficient, auto-oriented growth and

development. A key force driving growth and development is local planning and zoning codes. In many cases, legislators adopted local codes decades ago with a specific goal in mind. Over time, however, some of these provisions have instigated unintended consequences for overall development patterns and water bodies.

Many common features of local zoning codes could be having unintended consequences on watersheds and storm water management:

Separated uses. Separate use, or Euclidian, zoning was invented to ensure unpleasant activities do not occur near homes and schools. No one wants to live near a hog-rendering plant or a lead smelter. The convention of placing houses in one area of town, retail in another and offices and industries in their own spaces continued without dissent. As a result, cities grew and spread out even as common nuisances such as noise, odor and pollution were reduced or eliminated.

The overall effect of separate uses in today’s urban and suburban landscape is that everyday needs (i.e., school, work and shopping) are more distant from homes. To bridge this growing distance gap, people resort to the car. The net effect is more frequent car trips and, to accommodate this separation and an increased reliance on the car, more parking spaces.

Building footprint caps. These caps, originally instituted to increase light and airflow and maintain a generally open feeling in industrial and commercial areas, limit the amount of a site that may be occupied by a building. Building caps of 30 to 40 percent are common.

The goals behind footprint caps may seem compatible with watershed objectives, but this zoning parameter unintentionally turned out to be ideal for big-box development. If a building can cover only 30 percent of a site, the rest can be devoted to parking—more to the point, inexpensive surface parking with minimal landscaping and retention. As boxes have grown bigger, so have the parcel sizes, total area land disturbance and impervious cover.

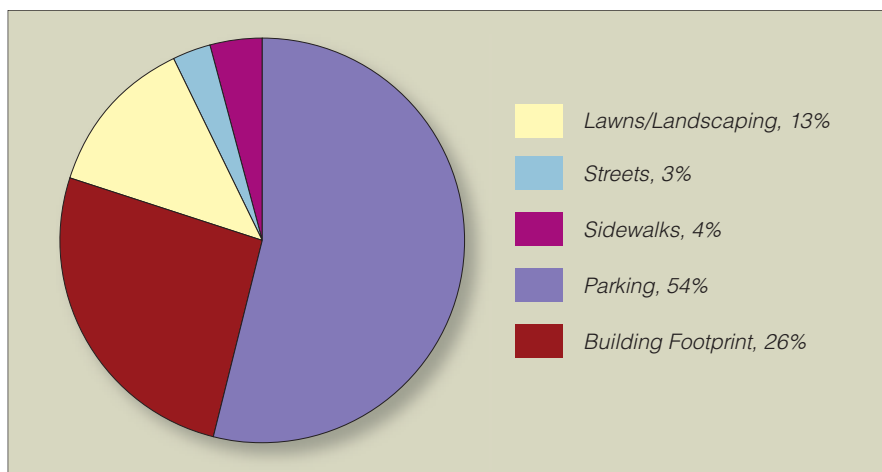


Figure 1. Average commercial site coverage for Olympia, Wash. Source: U.S. EPA, *Parking Spaces/Community Places*, 2006.

Parking minimum requirements.

Many local zoning codes set forth parking minimums for new construction and redevelopment. Most parking requirements are adopted using generic standards, usually guidelines developed by the Institute of Transportation Engineers. The standards are typically based on single-use developments in relatively low-density areas and fail to consider options such as mass transit, walking and biking.

The most common retail parameter is four or five parking spaces per 1,000 sq ft of interior space. These requirements are unintentionally creating commercial development that discourages walking or makes it impossible, inhibiting practices such as shared parking and ultimately driving urban sprawl. The danger is that developers can always supply more parking than these minimums, which are not so minimal to start with.

Barriers to shared parking. Some codes expressly prohibit shared parking. Others allow shared or joint

parking, but only after a study is conducted and the sum of spaces required by the minimum standard is provided. Because shared parking is not built into the planning process ahead of development, each parcel gets its own parking allotment, thus driving the abundance of spaces in communities.

Commercial establishments have different parking needs. Restaurants, for instance, need spaces during the dinner hour and clothing stores need them during the day; both business types need more parking on weekends than during the week, while dentists and doctors need it during the week but not on weekends. Shared parking is an excellent way to maximize the effective use of every spot.

There are other drivers of excess parking beyond zoning codes. Institutions that make loans to finance commercial development, for example, see more parking as a desirable feature (or, conversely, they see too little parking as an economic liability). Local emergency responders might view on-street

parking negatively based on the perception that it reduces maneuverability. Fire codes may even restrict on-street parking, further increasing the pressure to supply spaces elsewhere. Liability fears often stifle in-depth discussions on shared parking.

Solutions

While it is tempting to think about quick fixes for zoning codes, lessening the effects of parking on a meaningful level will require retooling development and redevelopment planning. The following improvements are intended to help guide a community-wide review of parking and its provision:

Parking ratios. What are current parking ratios? Are they stated as minimums? Is there a maximum? Is sufficient flexibility built into the process for more densely developed areas or different land uses? Can public parking or publicly supplied parking be used to meet requirements?

Landscaping in parking. Most codes include language on

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landscaping, typically for aesthetic purposes, and often require landscaping be contained within elevated, continuous islands. This essentially precludes infiltration and can be one of the first code parameters to amend. Note that the curb is often used as a wheel stop, so be prepared to work with engineers on alternatives.

Model-shared parking requirements. A city's economic development department has traditionally handled shared parking arrangements among commercial establishments. Because shared parking can be an effective best management practice, storm water managers might want to partner with economic development colleagues to design models that consider financing, effectiveness and liability issues.

Pricing strategies. Many cities effectively manage parking in downtown areas using pricing to encourage short-term stays and parking turnover so that a space can be used multiple times per day. In areas where

residents and businesses share on-street parking, daytime restrictions and permits for residents can be coupled to more efficiently limit parking.

Supply studies. Formal parking studies are often sponsored by a city's economic development arm. A careful review of parking economics will often reveal that a smaller parking footprint will allow more space for retail stores and commercial and office space. Shared parking can actually be a catalyst to economic development. Where storm water utilities base charges on the amount of a site's impervious surface, the economic argument to reduce coverage strengthens.

Unfortunately, most parking in the U.S. is free—99 percent, according to Donald Shoup, as stated in the *Journal of the American Planning Association*. Greater use of market-based incentives could help reduce the number of parking spaces.

The Center for Watershed Protection and EPA have developed the

Code and Ordinance Worksheet, a tool to help evaluate local zoning codes and point out areas that could be improved. To access this and other postconstruction tools, visit www.cwp.org/webcast/postconstruction.htm.

For more ideas, visit www.epa.gov/smartgrowth. **[SWS]**

Editor's note: Look for Part 2 of this article in the March/April issue.

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