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The Complete Streets initiative in Boston seeks to create streets that are multi-modal, green, and smart. The guidelines include recommendations for permeable paving options for streets as well as parking.

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ng Streets

Effectively Integrating Parking

Understanding Complete Streets, Green Streets, and the role of parking

The design, engineering, and planning of roadways and transportation in the United States has, to date, primarily focused on the single-occupant vehicle. These efforts have created a system that encourages efficient and safe movement of vehicles to the detriment of mass transit and other alternative modes of transportation, most particularly the pedestrian.

However, major shifts in the industry are at work that may alter the planning and structure of our transportation system. Just as LEED (Leadership in Energy and Environmental Design) and alternative rating systems have changed how we look at building performance and design, local governments, community planners, and transportation professionals are transforming our roads, sidewalks, and transit options.

Complete Streets

Complete Streets enable safe, attractive, and comfortable access and travel for all users, including pedestrians, bicyclists, motorists, and public transportation users of all ages and abilities, through careful design and operation. "Incomplete streets," designed only for vehicles, all too often discourage walking, bicycling, and taking mass transit, making these options problematic and even dangerous.

Complete Streets policies vary widely, and typically incorporate multiple elements, such as:

- Narrower travel lanes.
- Sidewalks.
- Dedicated bicycle lanes.
- Dedicated pedestrian crossings/raised crosswalks.
- On-street parking, complemented by structured parking.
- ADA-compliant walkways.
- Crossing islands.
- Bus lanes.
- Spaces for buses to transition into traffic.
- Medians and street trees.
- Shorter building setbacks and infill development.
- Lines of sight for both cars and pedestrians.
- Attractive building facades facing the street.
- Additional traffic calming measures.
- Additional methods to increase walkability.

Oregon led this charge in 1971, enacting the first statewide Complete Streets policy in the country. This policy required that new or reconstructed roads accommodate both bicycles and pedestrians, and that local governments fund facilities for pedestrians and bicyclists within the public right-of-way.

Complete Streets policies vary in intensity, design, and focus. They can be achieved through executive orders, resolutions, design manuals, comprehensive plans, and internal policies. Policies may collect input from multiple stakeholders, and are formally adopted by elected officials. There are multiple elements for an ideal Complete Streets policy. The National Complete

Streets Coalition outlines a full list of elements that include vision; accommodating all users (of all ages and abilities) as well as trucks, buses, and automobiles; street connectivity; performance standards; and implementation.

By the end of 2010, more than 200 policies existed at multiple levels of government in the United States. This adoption appears to be accelerating rapidly and is projected to advance quickly. Nearly half of the states have some form of Complete Streets policy. New research by the National Complete Streets Coalition and the American Planning Association found that most of the stronger policies tended to be newer and recently implemented. In many cases, states provide valuable leadership, modeling Complete Streets policies that are then adopted by local municipalities and often emulated by other agencies. Just as parking professionals look to each other for guidance and expert advice, new initiatives build on existing policy and experience to create Complete Streets.

"New York's roadways should safely accommodate all pedestrians, motorcycles, and cyclists. [Complete Streets] legislation will help communities across the state achieve this objective. Complete Streets design recognizes measures that will make streets safer for New Yorkers of all ages and abilities."

—ANDREW CUOMO, GOVERNOR, NEW YORK

A current federal statute in the United States code mandates that "bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation facilities, except where bicycle and pedestrian use are not permitted." In early 2010, U.S. Department of Transportation Secretary Ray LaHood released an updated policy statement on bicycle and pedestrian accommodation regulations and recommendations. This statement demonstrates federal government support of fully-integrated transportation networks and encourages states and local governments to commit to accommodating cyclists and pedestrians in the transportation system. It further encourages agencies and communities to exceed minimum design standards and requirements.

Beyond federal, state, and local initiatives, the Project for Public Spaces (PPS) has advanced a major initiative called "Streets as Places." The intent of this initiative is to transform public streets from purely functional (moving vehicles from place to place), to resources that improve the quality of the environment for the people who live there. Essentially an extension of place making, this initiative addresses the critical role the street plays in our everyday lives.

The approach to Complete Streets includes developing new street standards and guidelines, as has been done in San Francisco, Los Angeles, Seattle, and New York City. Further, the approach should be interdisciplinary, involving multiple departments and stakeholders, including parking professionals. In New York, multiple collaborators released Active Design Guidelines (January 2010) encouraging multiple modes of transportation. These guidelines integrated feedback and expertise from numerous departments, including Design and Construction, Health and Mental Hygiene, Transportation, City Planning, Green Codes Task Force, and the Office of Management and Budget, as well as professional groups, including the American Institute of Architects.

As initiatives continue to progress in depth and geography, federal, state, and local governments have a critical function to play in their support and implementation. Grassroots and citizen-led organizations have created a groundswell of support in many communities. The parking industry, too, has an important role in properly developing, maintaining, and managing parking resources to complement and enhance these efforts.

Greener, Smarter Streets

Complete Streets efforts are often paired with Green Streets efforts. The Low Impact Development Center defines Green Streets as "urban transportation right-of-ways integrated with green techniques." These streets incorporate sustainable stormwater management infrastructure within the street system itself.

These initiatives pair extremely well with smart growth best practices to facilitate mixed-use, higher density communities that encourage people to decrease their dependence on the automobile. Smart growth concepts also include transit-oriented development, which emphasizes many of the same principles.

The urban environment integrates significant impervious surfaces that include roads, sidewalks, surface parking, and roofs. Each of these impervious surfaces contributes to stormwater runoff and accompanying pollutants. By design, most roadways have impervious surfaces; these roads present a significant opportunity to create green infrastructure to treat stormwater, improve water quality, and utilize natural processes and landscaping to increase infiltration.

Green Streets seeks to accomplish these goals through a number of practical methods that integrate stormwater management within the right-of-way and reduce the volume discharged into natural water bodies. Green Streets policies often integrate aesthetic improvements along with an improved pedestrian experience. Green Streets programs include a number of strategies:

- For new streets, select alternative street designs built on narrower street widths, planned with respect to the existing landscape, and minimized impervious area.
- For existing streets that may be retrofitted or redeveloped, decrease impervious surface through multiple methods.These methods include swales (vegetated open channels) designed to accept runoff and increase infiltration. These may be as

"Incomplete streets" exist nearly everywhere in the nation, putting pedestrians at risk and discouraging mass transit use.

simple as integrating grassy areas to capture water, or more complex forms that include amended soils, gravel storage areas, diverse thick vegetation, and bio-retention soils. Additional bio-retention technologies can be provided in tree boxes, planter boxes, and curb extensions.

One of the most common and applicable technologies is permeable paving. This paving comes in a number of forms including permeable concrete, permeable asphalt, permeable interlocking concrete pavers, and grid pavers. Some systems may be modular and available for retrofit. All provide structural support and storm runoff, and assist in the removal of pollutants. Another accompanying strategy is to increase pavement albedo (reflectivity) to further reduce the heat island effect.

Many cities have formal programs to develop and maintain sidewalk trees and tree boxes in the urban environment. The benefits of street trees include reducing the heat island effect and reducing stormwater runoff, as well as accompanying aesthetic improvements. Often, insufficient space is permitted for the tree to grow and thrive. In line with Green Streets approaches, these areas may be enlarged to increase the value and life of the street trees. Street trees, swales, and planters become additional barriers between moving vehicles and pedestrians, creating a higher level of safety and increased walkability.

San Francisco's December 2010 update to Complete Streets provided information on green infrastructure and stormwater standards and guidelines. New York City's pending update to the street design manual is anticipated to provide a specific chapter on landscaping to address environmental performance and stormwater.

The City of Portland defines a green street as one that "uses vegetative facilities to manage stormwater runoff at its source," and a "sustainable stormwater strategy that meets regulatory compliance and resource protection goals." In 2007, the City Council approved a green street resolution, report, and policy that incorporated many of these strategies, reducing polluted stormwater, improving pedestrian and bicycle safety, and reducing impervious surfaces. Portland has made the connection between increasing urban green space, quality of life, and street design, and has made significant progress in developing implementation tools and successful project experience.

One of the newest trends is exemplified in Boston, which is pioneering the concept of "smart streets" that provide "intelligent signals, smart meters, electric vehicle charging, car and bicycle sharing, wayfinding, and social networks for greater system efficiencies and user convenience." Boston is seeking to develop streets that are multimodal, green, and

smart. The Complete Streets website there emphasizes the fact that streets can reinforce the identity, brand, and atmosphere of a place. These guidelines, too, recognize the role of on-street parking and seek to leverage its value.

Effectively Integrating Parking

Although many of these programs are quite new and currently being implemented, certain impacts should be expected. These policies may reduce on-street parking to accommodate other facilities for bicycle and transit. They may also include dedicated lanes for bus rapid transit bicycles and other uses. Demand for bicycle parking may increase under these conditions, in part due to the potential to reduce vehicle parking demand.

On-street parking plays an important role in a Complete Streets program in many contexts. Curbside parking can (and, in many cases, should) be retained to create a traffic calming effect, as well as create a sense of comfort by creating a physical barrier between vehicles and pedestrians. Complete Streets initiatives also include creating accessibility for all users. This may mean that some parking is lost to ADA-compliant walkways and curb bulb-outs that shorten pedestrian crossing distances.

"All street projects including design, planning, reconstruction, rehabilitation, maintenance, or operations by the city of Charlottesville should be designed and executed in a balanced, responsible and equitable way to accommodate and encourage travel by bicyclists, public transportation vehicles and their passengers, and pedestrians of all ages and abilities."

-REPORT FROM CHARLOTTESVILLE, VIRGINIA

The Livable Cities' Livable Downtown Initiative in San Francisco seeks to develop a livable and sustainable downtown neighborhood. The initiative includes managing parking and traffic as well as improving public transit. Although one of the key tenets in the 2007 initiative is the promotion of creating car-free streets in specific downtown areas, the plan also acknowledges the importance of parking and transportation to a vibrant urban environment.

The initiative seeks to craft a comprehensive transportation and streetscape plan to include a traffic management plan that focuses on key pedestrian and transit streets, as well as commercial deliveries and a parking management plan for downtown. The parking management plan encourages the supply and price of parking to support traffic management goals, decrease single-occupancy vehicles, and shift parking from commuter to short-term that can support economic development. This program has specifically addressed parking reform to create a more livable, sustainable city, and links Complete Streets, neighborhood transportation plans, and accessibility via multiple modes of transportation.

The attitude of this particular venture towards parking is progressive and integrates many best practices that parking professionals in the industry already know. These include concepts such as "too much parking can create problems," "parking can be a source of revenue for government, and priced correctly can fund other city priorities," and that "cities should use price to increase parking availability and turnover."

The redesign and redevelopment of urban and semi-urban roads under these policies and initiatives present an opportunity to reshape physical and operational parking programs, street by street. The parking industry has been, and will continue to be, affected by streets that seek to be complete, green, and smart. The interdisciplinary approach required for these changes creates openings to involve parking professionals, especially parking authorities and departments, to share their expertise and add value.

Making the Connections

Transportation accounted for 28 percent of total U.S. greenhouse gas emissions in 2006. The greatest source of these emissions is personal cars and trucks. By employing Complete Streets and Green Streets programs and strategies in the urban environment, cities can increase walkability and access to alternative modes of transportation.

This July, WalkScore rated the walkability of 2,500 cities and 10,000 neighborhoods; it is the only national quantitative rating available. Locations with the score of 90 to 100 were deemed a "Walker's Paradise." WalkScores' top 10 most walkable cities included 1) New York, 2) San Francisco, and 3) Boston. It is no surprise to see Chicago, Washington, D.C., and Philadelphia on this list as well. The trends toward urban development and revitalization, mixed-use development, and complete, green streets have transitioned from leading cities such as San Francisco and New York to cities, towns, and suburbs all over the country.

How can parking play a vital role in shaping these trends?

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