

# Street and Sidewalk Design



*Good street and sidewalk design improves public safety, accommodates a variety of users, reduces environmental impacts, and enhances community character.*

- Introduction I
- Benefits of Good Design I
- Designing Streets and Sidewalks I
  - Factors to Consider I
  - Common Approaches 2
- Implementing Design via Capital Improvements 3
- Implementing Design via SALDO 3
  - Design Standards 3
  - Technical and Engineering Standards 3
  - Design Guidelines 4
- Integrating Transportation and Land-Use Planning 4

## Introduction

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For decades, municipalities—urban, suburban and rural alike—adopted street-design standards that showed strong preference to cars. However, in recent years, transportation planners have been rebalancing transportation priorities, giving attention to streets and sidewalks that can safely accommodate a wide variety of people, uses, and needs—including those of pedestrians and bicyclists—in a manner that considers community priorities and land-use implications.

Municipalities can greatly improve the safety and utility of their transportation infrastructure by using effective planning concepts such as complete streets, context sensitive design, and traffic calming. To translate this planning into practice, municipalities may update their subdivision and land development ordinances to require new developments to conform to the standards; municipalities may also improve existing streets and sidewalks, using funding from grants, tax revenue, or bonding.

This guide explains the key elements of good street and sidewalk design, their benefits, and how to implement them via municipal ordinances or direct capital investments.

## Benefits of Good Design

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Good street and sidewalk design provides a wealth of benefits for people, communities, and the environment, including:

- **Public Safety:** Good streetscape design makes it safer to drive, walk, and bike in communities.
- **Mobility:** Infrastructure that provides multiple transportation options allows people of all ages, income levels, and physical abilities to travel where they need to go.
- **Public Health:** Safe connections between streets, parking lots, buildings, and destinations encourage people to walk and bike instead of drive; an active lifestyle greatly improves [physical](#) and [mental](#) health.
- **Quality of Life:** Well-designed streets and sidewalks make communities more inviting and aesthetically pleasing. They also help foster positive interactions between people and increase opportunities for recreational activities like biking, jogging, and walking.
- **Economic Growth:** In commercial areas, accommodating a variety of transportation options increases the number of potential consumers and employees, which can help attract new businesses. In residential areas, safe, attractive, and walkable streetscapes can boost property values.
- **Environmental Benefits:** Good street and sidewalk design incorporates green infrastructure features such as rain gardens, bioswales, and filter strips. By absorbing stormwater, these features prevent flooding and keep toxic pollutants out of waterways. Other features like street trees sequester carbon and provide shade, reducing air-conditioning costs.

## Designing Streets and Sidewalks

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### Factors to Consider

Deciding which types of street and sidewalk design are appropriate for your municipality involves reviewing current transportation modes (car, pedestrian, bicycle, and public transit); studying existing and potential future land uses; and assessing community needs and desires through a formal [community visioning](#) process or informal discussions.

Design strategies also depend on setting and affordability. For example, in rural areas, wide road shoulders may be the most feasible way to accommodate pedestrians, whereas sidewalks at least five feet wide are likely necessary in urban areas. Streetscape elements can vary from a simple landscape strip in rural settings to a variety of elements such as street trees, pedestrian lighting with banners, and hanging baskets in urban areas (see further discussion below).

When determining the appropriate design for streets and sidewalks, considering the following factors provides a good starting point:

- Type of road (arterial, collector, or local road) and volume of traffic.
- Land use (commercial, residential, mixed use, etc.).
- Setting (rural, suburban, or urban environment)
- Number and spacing of commercial driveways and entrances/exits—are they excessive, adequate, or insufficient?
- Possibilities to create more useful road, pedestrian, and non-auto connections.
- Need for traffic calming or road diets.
- Minimum streetscape elements necessary to accomplish community goals.
- Appropriate sidewalk width and placement given the land uses and density of uses.

## Common Approaches

Among the most common approaches municipalities use to inform and guide street and sidewalk design are (1) complete streets and (2) context sensitive design. These approaches are not mutually exclusive; in many instances they overlap or complement each other. The Pennsylvania Department of Transportation's (PennDOT) [Smart Transportation Guidebook: Planning and Designing Highways and Streets that Support Sustainable and Livable Communities](#) explores many elements of these approaches in more detail.

### Complete Streets

[Complete streets](#) refers to streets designed to accommodate a variety of users (pedestrians, bicyclists, motorists, and transit riders), including people of all ages and those with disabilities. The specific design of complete streets varies according to the community

setting (i.e. rural, urban, suburban) and the type of road.

Typical elements of complete streets include:

- Sidewalks.
- Bike lanes or wide shoulders.
- Bus lanes and public transit stops/shelters.
- Painted crosswalks and signals/countdown timers.
- Traffic-calming measures such as [road diets](#), raised medians, pedestrian refuge islands, roundabouts, and bump outs (see the guide [Traffic Calming](#) and related resources for more information).
- Lighting for both motorists and pedestrians.

A [series of fact sheets](#) published by the National Complete Streets Coalition highlights the wide-ranging economic, environmental, and social benefits of complete streets. For more complete streets resources, see the [Coalition's website](#) and the American Planning Association's [complete streets webpage](#).

### Context Sensitive Design

[Context sensitive design](#) (also referred to as context sensitive solutions) is an approach to transportation infrastructure that preserves or enhances an area's scenic, aesthetic, historic, and environmental resources and reflects community needs and priorities. A key factor in this approach is public involvement in the design and development of transportation infrastructure, which helps ensure that the end product addresses the needs of community stakeholders.

Typical elements of context sensitive design include:

- Natural features such as street trees, rain gardens, hanging flower baskets, and planter boxes.
- Street furniture that meets people's needs while enhancing community aesthetics such as benches, recycling bins, kiosks, bike racks, and newspaper containers.
- Signage such as banners hanging from light poles (see the guide [Sign Ordinance](#) for more information about regulating signs so they preserve or enhance community character).

The Georgia Department of Transportation's [Context Sensitive Design Manual](#) provides an in-depth look at best practices, policy guidelines, communication strategies, and successful examples. See the Federal

Highway Administration’s [Context Sensitive Solutions and Design webpage](#) for additional information and resources, including a number of CSD case studies.

## Implementing Design via Capital Improvements

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One way to implement good street and sidewalk design is to upgrade existing infrastructure.

Municipalities may fund the redesign and improvement of existing streets and sidewalks with state or federal grants, tax revenue, borrowing (bonding), or some combination of the three.

These improvements require varying degrees of maintenance. For example, a rain garden requires a consistent upkeep, whereas a bike lane will likely last for years before it needs repainting. Often, municipalities are in charge of this maintenance, but in some cases, local businesses, nonprofits, or homeowners take on that responsibility. See the Montgomery County Planning Commission’s [Making Your Downtown Improvements Last: Design, Installation, and Maintenance Guide](#) for more information about maintenance.

In Pennsylvania, grant funding is available through the Department of Community and Economic Development’s [Multimodal Transportation Fund](#) and through various [PennDOT grant programs](#). For federal grant information, see the U.S. Department of Transportation’s [grants webpage](#).

## Implementing Design via SALDO

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The most effective way to control and influence street and sidewalk design is via a municipal ordinance.

Generally, municipalities include street and sidewalk design regulations in their subdivision and land development ordinances (SALDOs). Less often, municipalities include these regulations in specific zoning ordinance sections that deal with design such as a [Traditional Neighborhood Development](#) district. Adopting or amending ordinance provisions requires resources (municipal staff time or the money to hire a planning/engineering consultant) and political will.

This section outlines how to incorporate street and sidewalk design regulations into a SALDO. For an example of an ordinance that includes many of the elements discussed below, see the Lancaster County Planning Commission’s [Model Subdivision and Land Development Ordinance](#).

## Design Standards

The design standards section of a SALDO addresses design elements for new development, and can include provisions regulating street and sidewalk design such as:

- Minimum and maximum length and width of blocks.
- Functional class of streets based upon the classes used by PennDOT: arterials, collectors, local roads, and private streets. These streets are often designated on a municipality’s official map (see “Integrating Transportation and Land-Use Planning”).
- Residential private street standards including ownership, paving standards, right-of-way requirements, and maintenance procedures.
- Number of intersections and minimum spacing between streets.
- Street alignment and design related to sight distance, street intersections, and grade.
- Driveway spacing related to sight distance and required permits.
- Sidewalk width and location in relation to the curb.

## Technical and Engineering Standards

The technical and engineering standards of the SALDO deal with construction standards. They often include standards for streets and sidewalks such as:

- Paving cross-sections and materials.
- Right-of-way requirements.
- Sidewalk and pathway construction materials and details.
- Driveway standards.
- Sidewalk, curb, and curb cut standards.
- ADA requirements.

## Design Guidelines

Municipalities can further bolster street and sidewalk design improvements—and make them better understood by the public and developers—by enacting design guidelines within the SALDO or other relevant ordinances. Alternatively, the guidelines can be enacted as a separate advisory document. Common elements found in design guidelines include:

- Illustrations and details for streets, sidewalks, parking, and bike lanes.
- Streetscape elements.
- Green infrastructure and landscape elements.
- Traffic-calming measures.

Many municipalities have adopted design guidelines for street and sidewalk construction and retrofit design. Examples include:

- [Burlington, Vermont](#)
- [Tacoma, Washington](#)
- [Minneapolis, Minnesota](#)
- [Phoenix, Arizona](#)

The aforementioned [Smart Transportation Guidebook](#) and [Making Your Downtown Improvements Last: Design, Installation, and Maintenance Guide](#) can also help inform design guidelines.

## Integrating Transportation and Land-Use Planning

Communities should integrate street and sidewalk design (and other transportation-related issues) into larger discussions about land-use planning; the two are inextricably linked. Transportation design and planning can and should be a key component of [comprehensive plans](#), [official maps](#), [community visioning](#), and the like.

See [Integrating Transportation and Land Use in Comprehensive Plans](#) for more information.

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