

Organizing a Streetscape

The first step in planning a streetscape project is to understand the component parts of the streetscape including the physical space that forms the improvement zone as well as the variety of potential streetscape elements.

Each element of the street contributes to the streetscape and to the overall identity of the neighborhood. The street right-of-way is the term used to describe the publicly owned area between the two property lines on each side of the street.



Figure 2-1: Streetscape elements

Complete Streets

Wisconsin is one of the leading states in the implementation of **Complete Streets** concepts and has recently passed legislation that provides for accommodation of bicycle and pedestrian facilities in reconstruction and new road projects in Wisconsin.

Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and public transportation users are able to safely move through and across a complete street.

There are no prescribed designs for **Complete Streets** and each one is as different as the corridor in which it travels. Elements in a Complete Street are numerous and may include one or more of the following:

- Public art
- Sidewalk treatments
- Landscape elements
- Street furniture (public or private)
- Pedestrian amenities
- Curb bump-outs or push-outs (curb extensions)
- Median islands (including pedestrian refuge zones)
- Comfortable public transit stops
- Bicycle lanes (or widened motor vehicle lanes)
- Green spaces, circles and commons
- Public utility elements (poles, manholes, access boxes)
- Private business items (newspaper boxes, menu boards)

Street Diets

Putting a street on a diet implies reducing any unnecessary pavement width and reallocating that width to other uses. In many cases, this reallocation can result in adding:

- Bicycle lanes
- Parking lanes
- Wider pedestrian zones

The issue of street diets is beyond the scope of these Streetscape Guidelines as such diets involve traffic and transportation planning, traffic engineering and land-use planning, however the balance between providing additional transportation and pedestrian facilities should continue to be studied and addressed.



Figure 2-2: Traffic, Bicycle and Parking Lanes

Streetscape Zones

The streetscape may include a variety of elements such as vehicle travel and parking lanes, bicycle lanes, sidewalks, street trees, tree border areas, street furniture, bicycle parking, bus stops, utility lines, accent planting and signage. Since streetscapes can include so many elements, it's helpful to divide them into three zones.

The **Sidewalk Zone** is the “front porch” of every business and residence. In residential areas, it is the place where people meet neighbors, interact or simply enjoy a stroll. In commercial districts, this zone is a transition zone where pedestrians alight from cars to enter businesses that front along the street. Larger sidewalk zones can also accommodate outdoor cafes, sidewalk sales, street performers and other commercial uses.

The **Parking Zone** allows convenient parking for shoppers who travel by car to patronize businesses in a commercial area. This zone also allows for short-term loading zones and transit stops.

The **Roadway Zone**, or vehicular zone, accommodates the movement of motor vehicles and bicycles through a streetscape.

While each zone is distinct, the zones often overlap and interact with each other. Pedestrians crossing the street interact with all of the zones. Street lighting located in the sidewalk zone overlaps the parking and roadway zones and intersections often contain traffic control devices located in the sidewalk zone. Bump-outs, crosswalks and curb ramps help define safe pedestrian crossing areas in the roadway and parking zones. Buses use the parking zone to pick up transit patrons from the sidewalk zone.

Understanding the relationship and interaction of the activities within the three zones is vital to the successful organization of a streetscape. Each commercial district and intersection needs to be observed and analyzed to address the activity level in each zone as well as its overall character.

There are many aspects of the public right-of-way to consider when designing a streetscape including:

- Overall right-of-way and sidewalk widths
- Presence of bus stops and shelters
- Current and projected commercial and residential uses
- Pedestrian comfort, user-friendliness
- Pedestrian traffic volume and flow
- Parking requirements and restrictions
- Vehicular traffic intensity, number of traffic and bicycle lanes
- Design for climate
- Accessibility and design for various user groups
- Safety and traffic calming measures
- Attractiveness as judged by the primary user community

These characteristics affect how a streetscape is designed and constructed as well as its ability to attract pedestrians, residents, and business patrons.

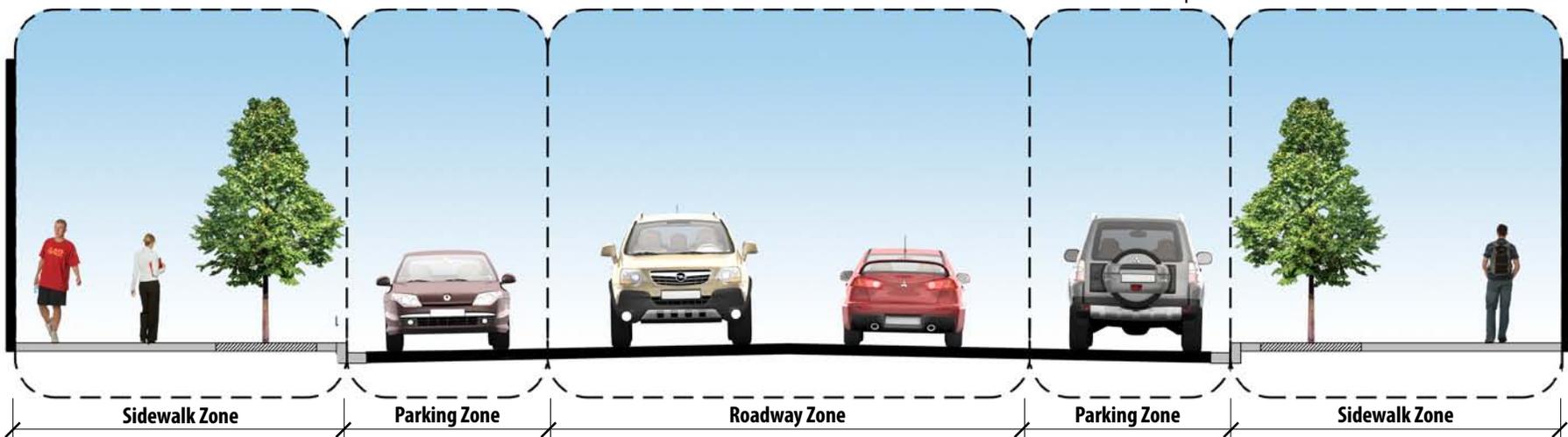


Figure 2-3: Streetscape Zones

Universal Design

When designing a streetscape, the different ability levels of all users must be considered. What some people don't even consider a problem can pose a significant barrier to others, yet with simple design changes, it can become accessible for all. This section identifies some accessibility concerns and proposes some design concepts which help to resolve the concerns. Streetscapes must still comply with all accessibility laws and regulations.

- Overall right-of-way and sidewalk widths
- Presence of bus stops
- Clear paths of travel across all areas
- Minimizing the impact of barriers such as newspaper boxes, bus shelters, parking kiosks, outdoor cafes, planters, etc. Ensure these do not impede the path of travel.

- Be aware of where parked car doors open in relation to the travel path. Parked car doors may suddenly open and impede access.
- Surfaces with no cracks, opening, or indentations more than 3/8" wide (particularly on drain covers, stamped concrete, etc).
- Ensure the grade and cross-slope of walks are designed with low slopes to minimize instability
- Snow and ice removal must be done frequently to keep all walkways, corners and crosswalks easily accessible.
- Color contrasts of elements to enhance visibility
- Be aware that some pavement surfaces are not as slip resistant as others. For example, certain exposed aggregate

surfaces may be more slippery than a broom-finished concrete

- Clearly designated accessible parking signs
- Waste receptacles of sufficient size or emptied frequently to prevent trash from accumulating in travel paths
- Providing additional and clearly marked spaces for vehicles which offload wheelchair passengers with side or rear ramps, which may benefit from increased space. Clearly identify the spaces with a Handicapped Accessible sign
- High-contrast crosswalks, preferably with pedestrian islands or bump-outs to facilitate safer movement when crossing
- Be aware that some users may tap building fronts or other



Figure 2-4: Utility gratings must be accessible

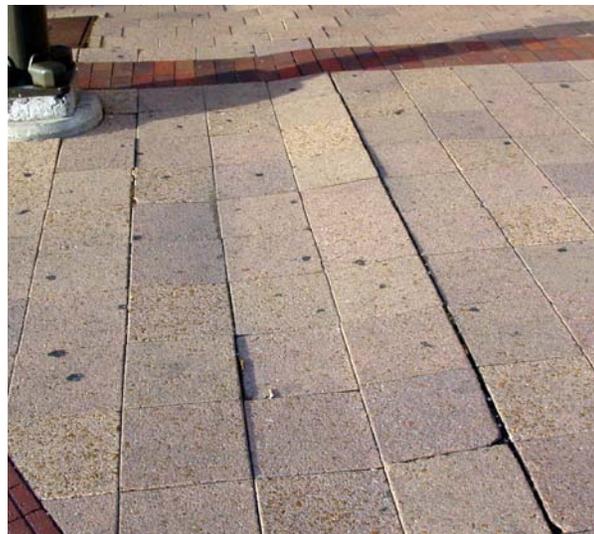


Figure 2-5: Improperly installed pavers create hazards



Figure 2-6: Improperly maintained elements create hazards

Universal Design

surfaces with a cane to determine the path of travel. Planters or sidewalk signs may pose an unexpected barrier

- Crosswalks with audible sounds to indicate when the signal changes from walk to do not walk
- Public art or design elements which can be easily viewed or enjoyed by people of all abilities
- Uneven or broken pavement
- Tree roots near surface or when the roots heave pavement; trees must be routinely maintained to keep branches out of the sidewalk areas
- Driveways that cross sidewalks may pose a hazard considering the slopes needed for the vehicle to exit, yet for pedestrians

of all abilities to safely cross the driveway. The slopes of the driveway flare may even cause some pedestrians to unexpectedly veer into the street or for wheelchair users to tip. The sidewalk should cross the drive rather than the flares when possible.



Figure 2-7: Detectable warning surface alert visually impaired pedestrians



Figure 2-8: Clearly marked crosswalks areas



Figure 2-9: Driveway with smooth transitions to sidewalks

Crime Prevention Through Environmental Design

Crime Prevention Through Environmental Design (CPTED) is an approach to design that focuses on creating spaces that reduce the risk of providing criminal opportunity. General CPTED principles address: perceived ownership of the space, design that supports the use of the space, promoting activities which increase a sense of natural surveillance or eyes on the street, and proper maintenance of the area. There are a number of methods to address CPTED in a streetscape.

- Lighting – clearly lit areas promote real and perceived safety or visibility in an area. Lighting alone will not address safety, but can be combined with other design elements to promote safety. Traditionally, lighting is designed for vehicular traffic, but there a growing emphasis on pedestrian lighting.
- Sight lines – a clearly visible travel path, with unobstructed views, provides an increased feeling of safety. Care should be taken to not provide hiding places, such as tall landscape, dark corners, or tall fences along a streetscape. This is particularly important when designing streetscapes around areas with ATMs or public transit stops.
- Natural surveillance or eyes on the street – design to maximize visibility to the street. This may include store windows that face the street and parking areas. It may include providing areas where people may congregate to watch activities or other people, like outdoor cafes or benches. Surveillance may be conducted formally through the use of cameras.
- Land use – the mix of uses in an area can promote additional natural surveillance. For example, restaurants typically provide later hours of attraction than nearby office or retail businesses, which results in longer hours of eyes on the street.



Figure 2-10: Property maintenance is a constant need



Figure 2-11: Well lit Entry and Vestibule



Figure 2-12: Well lit Streets

Crime Prevention Through Environmental Design

- Sense of ownership – establishing a sense of ownership demonstrates to others that an area is cared for and maintained. This relates to the broken window theory, which states that initial vandalism can escalate if the original problem is not quickly resolved. A sense of ownership sends a message to neighbors and visitors that they are welcome and to negative influences that they are being watched.
- Maintenance – much like sense of ownership, proper and prompt maintenance helps to establish a perception of safety. A well-maintained area helps pedestrians to feel comfortable and encourages them to return to the area.



Figure 2-13: Tagging must be addressed promptly



Figure 2-14: Eyes on the Street create a Safe Pedestrian Zone



Figure 2-15: People Spaces can provide “eyes-on-the-street”

Streetscape Elements

As outlined earlier, streetscapes are divided into zones based on use. Each zone will contain numerous elements and these elements will often overlap and serve multiple streetscape zones.

The arrangement of streetscape elements must be carefully considered and harmoniously integrated to help create a streetscape identity for commercial areas. When these elements take on a very strong presence, a brand can be created which creates a unique character in the area that can be expanded beyond the streetscape to advertising and marketing which are key tools in promoting economic development.



Figure 2-16: Lighting can set the night-time rhythm

Primary Streetscape Elements

Establishing the structure and rhythm in the streetscape is the task allocated to two major sets of streetscape elements:

- **Lighting** establishes the illumination levels and night-time visual rhythm of the streetscape. The vertical elements of lighting poles and luminaires create strong visual presences in a streetscape.
- **Trees** establish the daytime rhythm with foliage and canopies.

The vertical nature of lighting and tree elements is most noticed by pedestrians and motorists. These two sets of elements are important in establishing the character of the streetscape for both day and night.



Figure 2-17: Street trees can set the day-time rhythm

Secondary Streetscape Elements

Secondary elements add detail and texture to a streetscape. These elements include:

- Sidewalk pavements
- Roadway pavements
- Street furniture, including benches, trash receptacles and bicycle racks
- Vertical elements including banners, community identifiers and kiosks
- Public art elements
- Bus stops and patron shelters
- Traffic control devices

Chapter 4 describes each of these elements in greater detail.



Figure 2-18: Street furniture adds texture to the streetscape

The Element Line

When various streetscape elements are repeated over a typical block, the streetscape creates a particular rhythm depending on the use, arrangement, and emphasis of different elements. For any given typical block, there are many potential options for arranging elements.

This string of elements is loosely arranged around an **element line**, an artificial line that generally runs parallel to the street curbing. In an ideal arrangement, the centerlines of the street lighting, trees and similar vertical elements correspond to the element line and the subsequent pavement treatments and other streetscape elements respond in kind.

While ideal, the alignment of elements along an element line is not always possible. Various conditions including building and street alignments can create the need to vary the placement of elements in a streetscape. In every case, what is most important is to create a rhythm and a logic to the placement. Careful design and engineering must be used to prevent haphazard element placements.

Lighting

As one of the primary streetscape elements, lights set the stage for the nighttime look of the streetscape.

The spacing between light poles should be a function of lighting levels and rhythm with other objects in the element line such as planters, trees, and parking meters.

Shorter pedestrian lights and taller street lights will have different spacings with the taller fixtures that have a greater light “throw” spaced further apart.

The number of footcandles needed to light an area can be adjusted downward in areas where there is a high level of ambient light from individual properties, for example, house and porch lights in residential areas, and storefront lighting in commercial districts.

When these elements are linked together dimensionally, their arrangements can be logically laid out on the block.

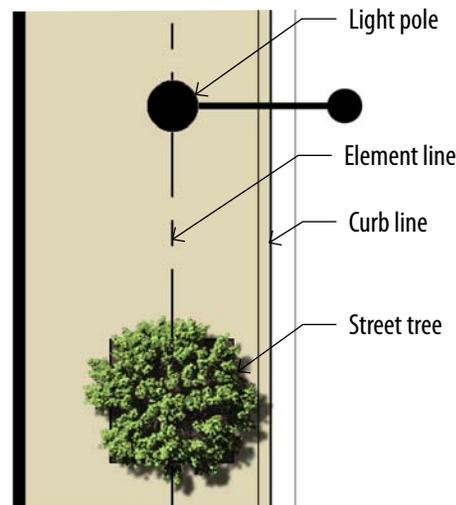


Figure 2-19: The Element Line - Plan

Trees

Where space permits, trees can be successfully planted in streetscapes. Alignment of the trees on the element line helps to reinforce the rhythm of the streetscape with logical placements of trees and lights.

Trees should be used in sufficient numbers to create a strong visual statement. The mass of tree foliage or crown of the trees will create a strong canopy effect in the streetscape. Large trees allow for visual access to businesses and signage that fronts the streetscape. Large trees may be pruned to maintain visibility at lower levels. While one of the primary streetscape elements for daytime effect, trees are increasingly being used to carry twinkle lights for seasonal and holiday night-time effect.

See Chapter Four for a more detailed discussion of planters, tree grates, and lighting.

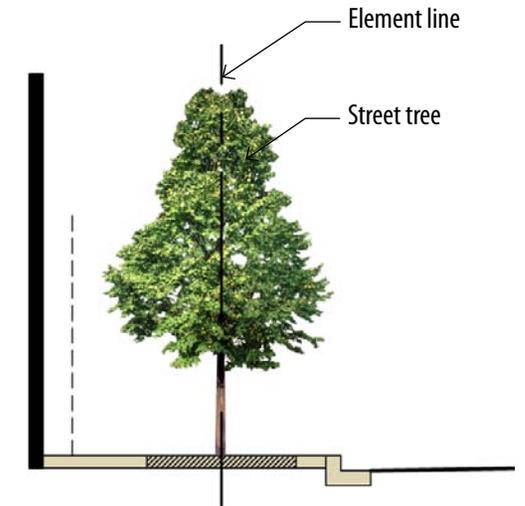


Figure 2-20: The Element Line - Elevation

Balance in the Streetscape

The Module

The combination of all the elements used in the streetscape design creates the module. This term describes the arrangement of elements in relation to each other. A good streetscape design achieves a balance between all elements, with the location of each element being adjusted in relationship to the others until a functional harmonious design is achieved.

Breaches in the Module

Once an element line is established, it must be fitted to the unique existing conditions of each block in the streetscape. Breaches in the element line can occur for many reasons, including:

- Driveways
- Hollow (vaulted) sidewalks
- Existing utilities
- Existing trees
- Intersections
- Overhanging signs and canopies
- Significant building entrances
- Bus stops
- Adjacent public spaces and existing landscape

These existing conditions disrupt the element line and can be accommodated by shifting the entire module, shifting individual elements within the module, or eliminating individual elements.

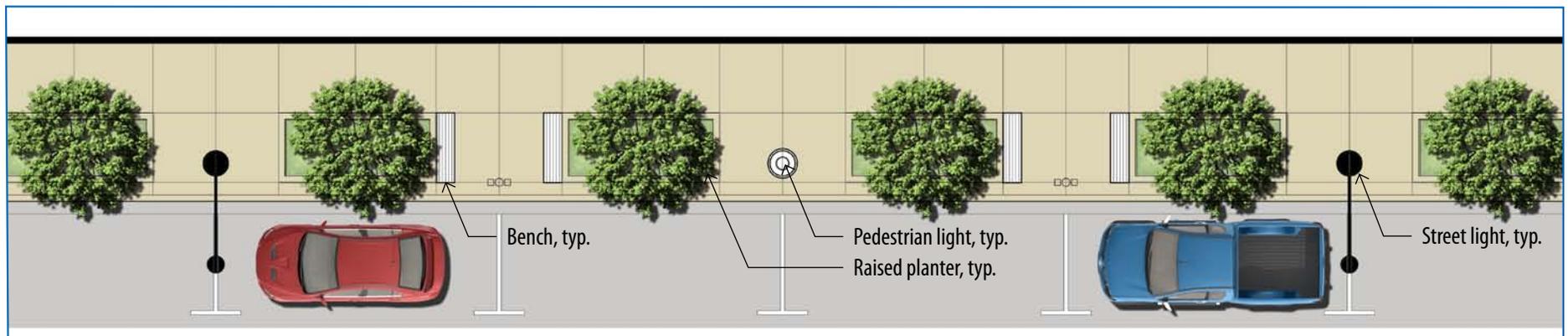


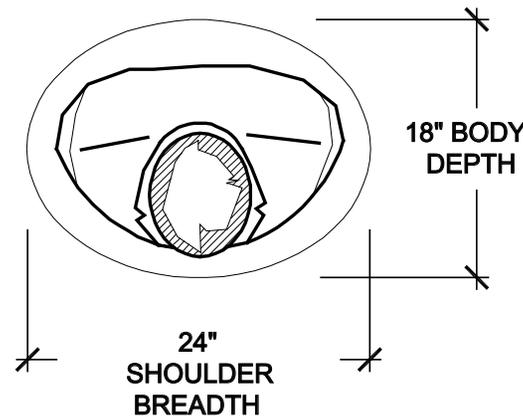
Figure 2-21: Streetscape Module

Design Psychology

A successful streetscape must accommodate another, unseen yet critical, element — the way people react to and use space. In the landmark book published in 1971, *Pedestrian Planning and Design*, John J. Fruin identified and quantified the body ellipse, a plan view space roughly 18" x 24" which defines the actual body space for the average individual. This measurement is useful when considering the streetscape elements a given sidewalk width can bear without sacrificing pedestrian capacity or comfort.

Much like traffic engineers work with levels of service (LOS) related to vehicular traffic, Fruin has defined similar LOS for pedestrian spaces. The LOS is a description of the intensity of use and freedom of mobility provided in a pedestrian space.

Levels of Service



Fruin describes LOS as intensity of use. Intensity of use is defined by the number of pedestrians using a space and their average speed of movement. Each successive LOS has an increased intensity of use. For example, LOS "A" spaces offer much more mobility and freedom than LOS "C" areas. The concept of LOS can be directly applied when planning and evaluating a streetscape design.

This concept is especially important when placing elements within the streetscape, especially at locations where potentially high numbers of pedestrians pass or congregate. These areas can include train and bus platforms, bus stops, outdoor cafes and buildings that generate high pedestrian counts.

Figure 2-22: Fruin's Body Ellipse

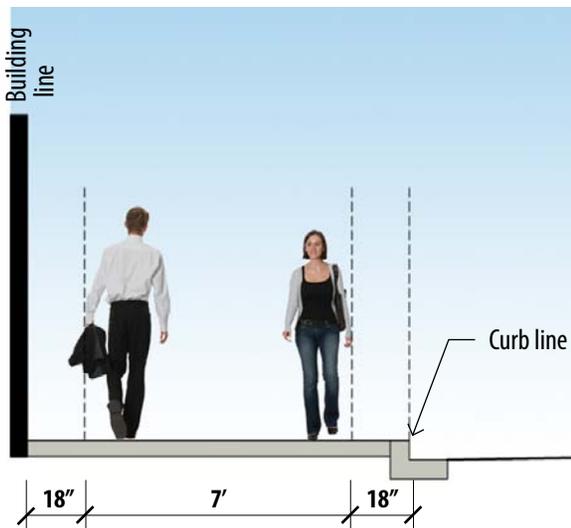


Figure 2-23: Level of Service A

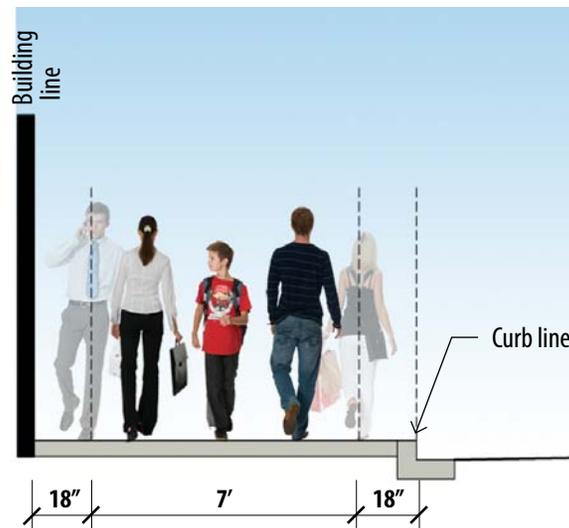


Figure 2-24: Level of Service B

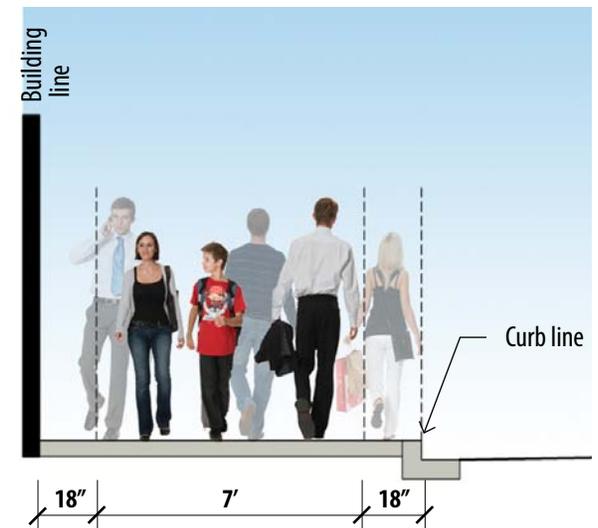


Figure 2-25: Level of Service C

Shy Zones

Another important concept developed by Fruin is the **shy zone**. When a pedestrian walks alongside a storefront, the pedestrian instinctively maintains a distance, or shy zone, from the storefront. The shy zone occurs around all objects within a streetscape. It also occurs at the curb line where pedestrians instinctively stay away from curbs unless waiting to cross into parking spaces or crosswalks. Objects placed in the streetscape actually consume more space than the actual physical dimensions due to this shy zone effect.

While a pedestrian can physically traverse the streetscape in tight conditions, attention is on safe passage rather than enjoying the streetscape or window-shopping. Since the overall goal in streetscape design is to create an environment in which pedestrians feel comfortable and to entice them to return, the shy zone effect must be carefully considered in the design process.

For example, a sidewalk that is 10' wide from curb face to building face has the shy zones indicated in Figure 2-27. The shy zone creates a net 7' wide sidewalk zone where pedestrians feel comfortable traveling. As the number of pedestrians increases, the net pedestrian space gets more crowded, impacting the personal

space of individual pedestrians. To accommodate this compression, pedestrians will encroach into the shy zone areas in an effort to maneuver along the streetscape. The space available between the curb line, element line, and building face helps to determine what form the major streetscape elements can take within the streetscape. Balance of elements and breaches in the element line must also be accommodated. Therefore, narrow spaces have more limitations on the scale and size of streetscape elements that can be accommodated and this is compounded by the shy zone effect. More opportunities with a greater level of service are possible as the space widens.

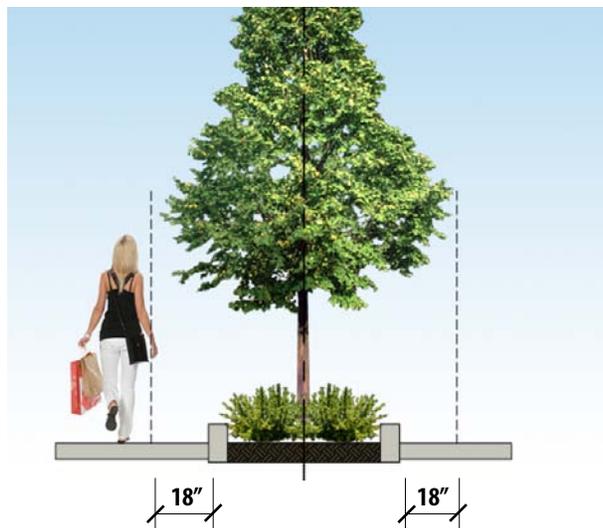


Figure 2-26: Shy Zones at Planters

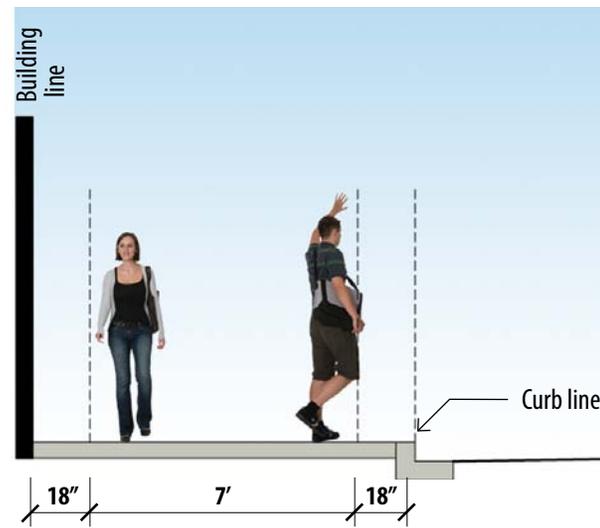


Figure 2-27: Shy Zones at Building and Street Edges

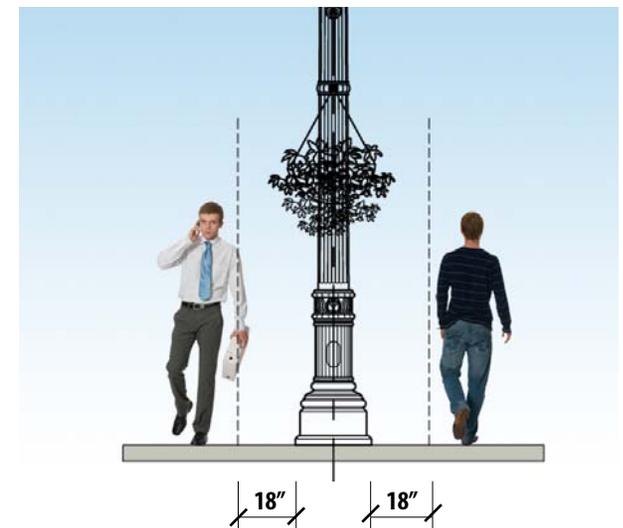


Figure 2-28: Shy Zones at Light Poles

Practical Applications of Shy Zones and Levels of Service

There are many streetscape elements that are necessary for safe vehicular and pedestrian flow. Street light poles and control cabinets, signage, trash receptacles and similar items have long been a part of common street scenes.

When properly combined, these elements would have slight effect on the movement of pedestrians in a streetscape. When these elements are not placed well in combination, pedestrian conflicts can develop. While many of these conflicts can be simply annoying, certain conflicts can contribute to an unsafe condition.

Multiple elements: The presence of multiple streetscape elements can have an additive effect on the shy zones present within the streetscape. In areas where these shy zones overlap or seem to prohibit easy pedestrian movements, pedestrians will adjust, however, this will increase the level of pedestrian

discomfort. While pedestrians in urban environments have come to accept crowded conditions as the norm, there are ways to mitigate these conditions. Planters, benches, and other elements should define the pedestrian route, not create an obstacle course. It is also important not to have too many elements placed at corners, bus stops or other places where people need to wait or gather.

Al fresco Dining: The popularity of al fresco dining in urban areas has created new challenges for streetscape designers. Cordoning off of dining spaces along sidewalks creates ever narrower spaces for high volumes of pedestrian traffic. In many areas, these dining areas have taken over half the available sidewalk space. While these dining opportunities have proven very popular with the restaurant businesses and may deserve some sidewalk space, care must also be taken to preserve a safe, accessible pedestrian route.

Bollards: For years, bollards have been employed extensively in urban areas to create permeable barriers that allow access for pedestrians and prohibit access by vehicles. Bollards protect the streetscape, buildings and pedestrians from automobile intrusion.

The use of bollards and other similar streetscape elements is discussed in greater depth in Chapter 4. Bollards can create effective vehicle barriers when properly designed and their arrangement in the streetscape must be carefully determined. Streetscape corners can prove very challenging where crossing pedestrian movements and other streetscape elements can create difficult conditions. Impact resistance requirements can create bollards that can become overly large, awkward design elements in a streetscape, particularly for high traffic areas where people must maneuver around or weave through them.



Figure 2-29: Crowded street furniture leaves little room for movement



Figure 2-30: Heavily armored building corner creates obstacle course



Figure 2-31: Directional conflicts combined with street furniture

Practical Applications of Shy Zones and Levels of Service

Transit: By far, the most common application of shy zones is in the design of transit facilities. Buses and bus stops create different pedestrian needs than a typical streetscape especially in heavily used transit hubs and stops. Transit patrons are specialized pedestrians with the goal of getting on and off buses and trains. The queues of transit patrons are often in physical conflict with other transit patrons or pedestrians making their way through the streetscape corridors.

Properly designed transit facilities need adequate room for queueing patrons who are waiting for the arrival of the bus or train as well as those patrons who are looking for their bus berth and those pedestrians who need to traverse the streetscape. When adequate space is not provided, transit patrons have been known to stand in unsafe positions that are too close to moving transit vehicles.

Bus stops are often placed in spaces that may be suitable for transit operations, but are not suitable for the facilities that accompany them. One-size-fits-all shelters are frequently placed at bus stops, sacrificing the quality and safety of the pedestrian spaces within the streetscape. These boxy shelters may contain seating and advertising space that can create blind spots and crowded conditions for bus patrons and pedestrians.

A solution to some of these tight conditions is to employ shelter structures with simpler supporting structures that rely on one or two supporting posts rather than the four posts commonly employed in standard transit shelters. A transit shelter with two posts located on the centerline can create a similar shelter zone as a four-post design while allowing for overlapping pedestrian zones behind the transit shelter for transit patrons and pedestrians.

Another solution is to utilize adjacent structures for the support of the shelter. While this creates a more complicated relationship between the transit agency and the building owner, it can provide heightened shelter opportunities for patrons in tighter locations.



Figure 2-32: Shy Zones at Building and Street Edges



Figure 2-33: Shy Zones at Light Poles

Maintenance and Community Commitment

Streetscape Investments

The success or failure of any streetscape project depends on continued, regular maintenance. Maintenance may come from the community, through maintenance agreements, or through budgets allocated for City departments to perform maintenance. The capital investment in a community through a streetscape should not be a short-term project, but one that will have a lasting positive impact.

Unfortunately, the natural elements and industrialized environment in which we live take a toll on infrastructure improvements. Materials, furnishings, and plantings used in streetscape projects are selected for durability as well as ease of maintenance, servicing, and replacement. Regardless of durability or installation, eventually all streetscape elements need maintenance including repair and replacement. This is especially true in the case of landscape plantings which require regular and active maintenance to appear thriving and attractive.

Given the many miles of city streets and landscaping that must be regularly cared for and maintained, a series of standard streetscape items has been established to help simplify this enormous task.

Maintenance and Community Ownership

The success or failure of any streetscape project depends on regular maintenance. This includes:

- Regular cleaning of the pavements.
- Regular painting, refinishing, refurbishment and replacement of streetscape furniture.
- Regular attention to landscape materials such as pruning, removing and replacing plants as needed.
- Regular soil enrichment program.
- Regular care and repair of irrigation system, if applicable.
- Regular repairs to pavements to eliminate tripping hazards.

This maintenance may come from the community through maintenance agreements or through budgeted allocations for city departments or BIDs to perform maintenance.

While most property owners do a good job of maintaining their own properties, few owners venture into important public areas frequented by customers. Therefore, community “ownership” and maintenance of the streetscape improvements (either through voluntary work such as weeding, watering, and general repair, or through monetary assessments for contracted work) are essential to the long-term viability of a streetscape project. While many City departments play a role in streetscape maintenance and upkeep, there are a variety of programs that help bring both economic and physical community involvement in streetscape maintenance.