# Sidewalks

## Introduction

**Page 17**

## Sidewalk Design Principles

**Page 18**

## Sidewalk Zones

**Page 20**

## Sidewalk Zones Widths

**Page 22**

## Preferred and Minimum Widths for Sidewalk Zones

**Page 23**

## Sidewalks by Boston’s Street Types

**Page 25**

## Features to Activate Sidewalks

**Page 31**

### Sidewalk Materials

**Page 41**

## Greenscape

**Page 47**

## Street Trees

**Page 55**

## Vegetated Stormwater Management

**Page 69**

## Street Furniture

**Page 75**

## Bicycle Parking

**Page 80**

## Transit Stops

**Page 84**

## Street Lights

**Page 89**
Sidewalk Materials

The key components of sidewalk construction are proper material selection, good detailing, and quality installation; these components work together to create smooth, stable, slip resistant, and durable sidewalks.

Sidewalk design plays a major role in establishing and reinforcing neighborhood and city identity. A specific palette of materials, colors, and patterns can be used to identify a neighborhood or district. In general, Neighborhood Residential and Industrial Street Types with relatively narrow sidewalks should have a single material for the entire sidewalk. Downtown Commercial and Neighborhood Connector Street Types with wider sidewalks may have more than one type of paving material to differentiate between sidewalk zones. Varying sidewalk materials within a single zone can be used to accent or embellish special areas such as building entrances, trail approaches before crossing roadways, plaza edges, or transit stops. Inserting the name of each cross street in the paving at corners is a functional wayfinding technique. New or reconstructed sidewalks should always match those of existing sidewalks to create a continuous walking and visual experience.

Boston’s sidewalks must be accessible to people of all ages and abilities. This includes everyone from people with vision, hearing, or mobility impairments to those pushing strollers or shopping carts. Accessibility is most critical in the Pedestrian Zone and at crossings. Materials and details should be selected to minimize gaps, discontinuities, rough surfaces or any other vibration causing features. Details should be designed to prevent the creation of tripping hazards as materials settle and age and to avoid uncomfortable or painful bumps and vibrations for pedestrians using wheeled devices such as walkers, strollers, and wheelchairs.

The following sections provide guidance for creating comfortable sidewalks that also have environmental benefits and reinforce a sense of place in Boston’s neighborhoods.

Materials and Accessibility

The City of Boston follows high accessibility standards. With respect to the public realm, the City of Boston follows accessibility requirements set by CMR 521 and the proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG). Refer to these guidelines for complete accessibility requirements and criteria.

Listed below are highlights of the above accessibility guidelines, which discuss design features that have the greatest impact on accessibility including the grade and cross-slope of the sidewalk, curb ramps and crossings, and the selection of materials. The guidelines below meet or exceed all Federal and local guidelines and regulations regarding accessibility:

- Surfaces should be smooth, stable, and slip resistant and should minimize gaps, rough surfaces, and vibration causing features. Discontinuities in the surface, such as gaps, rises, and falls should not exceed 1/8” where feasible.
- The cross-slope of the walking zone may not exceed 2%; 1.5% is the desired design specification.
- Ramps must be present at all intersections (excluding raised crosswalks.) Their design should minimize conflicts with motor vehicles. Detectable warnings must be included in the ramps or approaching raised crosswalks to indicate where the roadway begins. Please refer to Chapter 4: Intersections for detailed intersection and crossing guidelines.
- Design of sidewalks should avoid pooling of rainwater or ice melt. Even small amounts of water can be hazardous and form ice.
- Designs should avoid conflicts with common obstacles in the Pedestrian Zone. Street furniture, traffic control devices, retail displays, and stormwater management features must be located outside of the Pedestrian Zone. Tripping hazards such as settled or uneven sidewalk materials, abandoned sign posts, and low planters should be addressed during redesign and construction of sidewalks.
- The Pedestrian Zone should be continuous across driveways and meet all of the guidelines above. Please refer to Driveways found earlier in this chapter.

Note: This section focuses on materials for the Pedestrian Zone.

PWD is responsible for the management of publicly-owned sidewalks. All sidewalk designs must be approved by PWD in coordination with the Mayor’s Commission for Persons with Disabilities. Maintenance agreements with abutters are required for non-standard materials or installation details.
Overview

The primary goals for materials selection should be to maximize accessibility, sustainability, durability, drainage, and aesthetic appropriateness. Given that certain materials are better suited for specific zones and specific Street Types, designs should always be context-sensitive and reflect the character of the street. Proper subgrade preparation is critical to prevent settling and deterioration over time.

To ensure durability and limit maintenance, all material specifications must be approved by the PWD in consultation with the Mayor’s Commission for Persons with Disabilities prior to installation. Treatments within the standard category may be maintained by the PWD. Materials in the enhanced category will require a maintenance agreement between abutters and the City. In general, all non-standard materials require a maintenance agreement. Treatments in the pilot category are experimental and must be done in consultation with PWD and the Mayor’s Commission for Persons with Disabilities, and evaluated at regular intervals as they age. Treatments in the historic category are governed by guidelines of the appropriate Historic District Commission.

Use

The following guidelines cover the selection of materials by sidewalk zone:

**Curb Zone**
- Granite is the standard material for curbs on city-owned streets.
- Non-standard materials may be used but require maintenance agreements.

**Greenscape/Furnishing Zone**
- Decorative accent strips of unit pavers are most appropriate for the Greenscape/Furnishing Zone. Accent materials can include wire-cut bricks, unit pavers, or grating. Thematic elements such as markers and plaques can be embedded in this zone.
- Pavers are not recommended where gaps will result from cutting to meet existing surface features.
- The use of stamped concrete as a substitute for brick pavers will be considered on a case-by-case basis. In all cases, the color and stamping pattern should closely match any existing brick.
- Where curbside bus stops are present, a minimum of 5’ wide by 8’ deep concrete landing zone should be provided at all bus stop doors.

**Pedestrian Zone**
- Smooth finish cast-in-place concrete panels with saw cut joints (preferred) or tooled joints less than 3/8” wide.
- Dark aggregate and/or exposed fine aggregate concrete.
- Unit pavers (asphalt, granite, and wire-cut brick).
- Rubber pavements.
- Permeable pavements (See next page).

**Frontage Zone**
- When part of the Pedestrian Zone, follow Pedestrian Zone guidelines; otherwise, base materials selection on the Greenscape/Furnishing Zone guidelines.

*Notes*

Different types of materials come in an array of textures. Any paving material found in an active pedestrian path must be smooth, stable, and slip resistant, and minimize gaps, discontinuities, and vibrations.

As technology progresses, pavements should be reevaluated for appropriate use in different sidewalk zones.
Pedestrian Zone

- Concrete is the standard material for the Pedestrian Zone. Concrete panels should have a smooth, slip resistant finish as opposed to a broom finish. Concrete panels should be four square feet or larger. Panels may be as small as two square feet in limited areas such as at building entrances and driveways. "Window pane" details should be avoided.
- Concrete joints should be installed to create a surface that is as smooth and comfortable as possible to accommodate people with disabilities. Where feasible, saw cut rather than tooled joints are preferred. Installation methods must be monitored carefully as concrete can crack while curing before joints are cut. Expansion joints should be filled to reduce gaps to the maximum extent feasible to meet accessibility requirements.
- Patterns can be sandblasted into standard concrete or aggregates to change the surface.
- The selection of recycled aggregates includes recycled concrete, recycled glass, and industrial by products.
- Concrete or granite joints in the sidewalk should be oriented along the direction of travel where possible to reduce the frequency of joints across the Pedestrian Zone.
- Unit pavers may be used so long that it is feasible to achieve and maintain all accessibility requirements. Larger unit pavers are preferred to minimize joints and should be oriented in the direction of travel. Beveled-edge pavers should be avoided in the Pedestrian Zone.
- Transitions between concrete panels, unit pavers, and tree grates should be given special attention and designed to minimize bumps and differential settlement.
- Tree grate surfaces are not considered to be part of an accessible Pedestrian Zone.

Frontage Zone

- When the Frontage Zone supports active pedestrian use, like at building entrances, plazas, cafés, and where seating is provided along building facades, the Frontage Zone should be designed with the same principles as the Pedestrian Zone.
- Alternatively, when the Frontage Zone does not support active pedestrian use, such as where street trees, flower beds, rain gardens, and other greenscape elements are planted along building facades, materials selection should be similar to that of the Greenscape/Furnishing Zone.

Considerations

- The installation of traditional brick pavers may result in uneven surfaces after settling if not properly maintained; this can result in uncomfortable surfaces for those with wheel chairs, pushing strollers, or pulling suitcases.
- Concrete is the preferred material for the Pedestrian Zone; however, existing brick sidewalks may be replaced with wire-cut brick so long that all accessibility requirements are met.
- Use of unit pavers in the Pedestrian Zone requires increased oversight of installation and long-term inspection and maintenance.
- Where practical, hand-holes, vaults, tree grates, and other utility access points should be located outside of the Pedestrian Zone. Where this is not practical, these access points should match the level of the sidewalk and be firm, stable, and slip and shock resistant.
- As technology progresses, new materials should be piloted and tested so long that all accessibility requirements are met.

Existing granite slab and bluestone sidewalks are protected historic resources often found on Downtown Commercial Street Types. The guidelines below should be followed when working with historic materials:

- For new projects or major reconstruction, historic materials should be modified as necessary to be made accessible. This may involve resetting the material to make it level, treating the surface to create a non-slip texture, or shaping the material to create accessible ramps.
- Repair and reconstruction of existing brick sidewalks, though not protected historic resources, should include grading as necessary and repaving with wire-cut bricks.
- Stamped brick (i.e. concrete stamped as brick) is generally not allowed in designated Historic Districts where brick is the standard surface treatment. Stamped brick creates an uneven surface and the coloring can fade over time.
Overview

Permeable paving materials allow stormwater runoff to infiltrate through the material into the ground instead of being diverted as runoff into the storm drain system. Water that permeates through the material is stored underground for gradual absorption into the soil or is filtered through the soil into the groundwater or a nearby surface water body. Permeable pavement systems can filter pollutants; reduce flooding, ponding, and ice; improve water quality; and potentially reduce the size of infrastructure needed to convey stormwater off site.

All permeable materials are considered enhanced or pilot treatments, and require maintenance agreements with the City of Boston. Construction and maintenance of all materials must be coordinated with the PWD, Boston Water and Sewer Commission (BWSC), Parks Department, and the Mayor’s Commission for Persons with Disabilities.

Preferred Permeable Materials for Sidewalk Zones

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>Enhanced</th>
<th>Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb Zone</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Greenscape/Furnishing Zone</td>
<td>Not applicable</td>
<td>Soft paving (grass, mulch, and decomposed granite)</td>
<td>Permeable concrete</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Porous unit pavers</td>
<td>Plastic or concrete reinforcing grids</td>
</tr>
<tr>
<td>Frontage Zone</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Permeable Concrete</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bound recycled materials</td>
</tr>
</tbody>
</table>

*Notes

Different types of materials come in an array of textures. Any paving material found in an active pedestrian path must be smooth, stable, and slip resistant, and minimize gaps, discontinuities, and vibrations.

As technology progresses permeable pavements should be reevaluated for appropriate use in different sidewalk zones.
Use

- Permeable paving can be used in a broad variety of settings. All designs must consider the drainage characteristics of the underlying soils, the depth of the water table, and the slope of adjacent land.
- Permeable pavements can be used in sidewalks, plazas, cafés, parking areas, alleys, and other low-traffic areas.
- Soft paving materials are only appropriate for the Greenscape/Furnishing Zone or Frontage Zone, typically around trees, planters, and enclosed greenscape elements.
- Permeable concrete pavement can be piloted for use in the Pedestrian Zone as long as the resulting surface is durable, smooth, stable, slip resistant, and meets all other accessibility guidelines.
- Porous unit pavers are most appropriate in the Greenscape/Furnishing Zone or the Frontage Zone, except where there is active pedestrian use such as at bus stops or at crossings. They may also be used in small plazas offset from the sidewalk Pedestrian Zone.
- In specific locations where infiltration is not desired, such as adjacent to building foundations, engineered geotextile liners can be used to redirect the water to an appropriate location.

Considerations

- Compared to traditional impermeable pavements, permeable pavements can provide increased traction when wet because water tends not to pool, and the need for salt, sand, and plowing can be reduced during winter due to low or no black ice development.
- Designs should include methods to convey larger storms to the storm drain system.
- Long-term maintenance costs may be reduced because permeable pavements resist cracking and buckling in freeze-thaw conditions.
- Regular maintenance of permeable pavements include:
  - Annual inspection of unit pavers and permeable concrete for deterioration
  - Periodic replacement of sand, gravel, and vegetation where applicable
  - Annual vacuuming of pavements may be required to unclog sand and debris (Note: The use of sand in ice prevention should be avoided because it will clog pavement pores.)