Everyone is a pedestrian—whether you are walking to school or work, or to your parked car, transit or bicycle. Pedestrians include people on foot and/or using an assistive device. Pedestrian design should be accessible for all people. Pedestrians are the safety priority in street design as they are the most vulnerable and have the highest rates of fatalities among road users. The safety of pedestrians should be prioritized over maximizing traffic capacity and speeds as the safety benefits can be reaped for all road users.

The pedestrian network—which includes sidewalks, crossings, and public spaces— is core to the city's transportation network. Space should be allocated to protect pedestrians, encourage walking, and support placemaking—all of which enhances Toronto's economic and social vitality. This chapter discusses context-sensitive pedestrian design, accessibility, and the public realm.

4.0 STREET DESIGN FOR PEDESTRIANS

4.1 PEDESTRIAN DESIGN PRINCIPLES

For illustrative purposes.

1. Accessibility and Mobility. A top priority is to provide accessible sidewalks and facilities for all users regardless of physical abilities or age. Ensure clear, direct, unobstructed continuous paths of a suitable context-sensitive width to serve existing and anticipated pedestrian flows. Minimize or remove clutter.

2. Provide a Network of Continuous Sidewalks. Places that support walking are healthier, more vibrant, and resilient. Create a network of continuous sidewalks with dedicated space for pedestrians safely separated from cyclists and motorized vehicles.

3. Design for Safe Crossings. Pedestrian-friendly design takes into account the frequency of crossing opportunities, target speed, street width, intersection geometry, visibility, signal timing and walk speeds for vulnerable pedestrians, such as seniors and persons with disabilities. See also Chapter 9 on Intersections for guidance.

4. Placemaking. Sidewalks are public spaces where people interact. Design sidewalks to invite, with seating, trees, cafés, public art, lighting, and places to gather. Create opportunities suited to the street's context. Design to evolve with changing demands. Consider current and future pedestrians and uses.

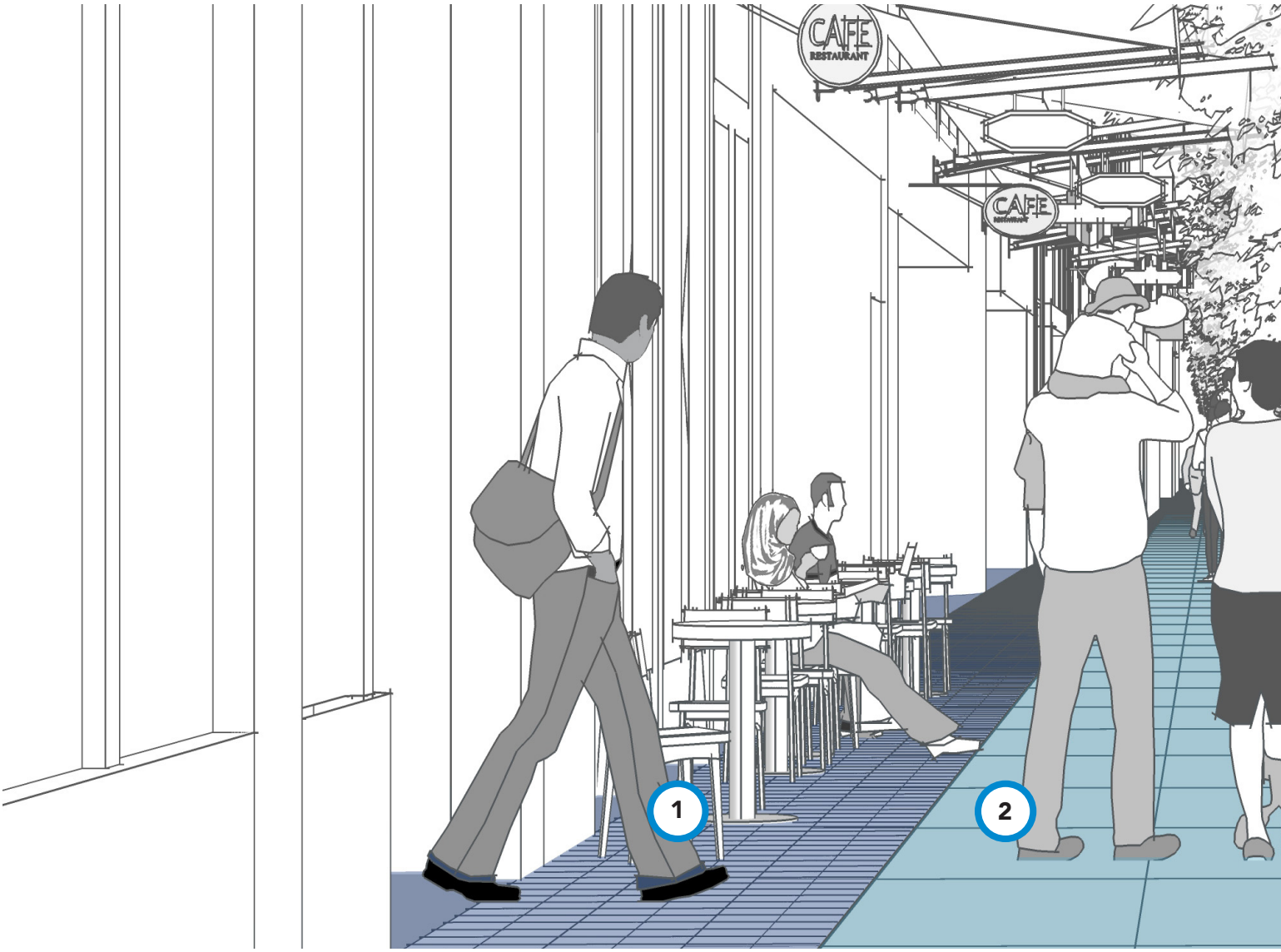
5. Design for Comfort. Provide sidewalks of adequate width for the context. Design sidewalks and boulevards for uses all year long. Street trees offer shade and relief from sun, rain, wind and snow. Carefully arrange street elements to support pedestrian activities, and to provide a safe buffer between pedestrians and moving traffic.

6. Greening Infrastructure and Stormwater Management. Incorporate passive stormwater measures in boulevards where possible. Divert stormwater into rain gardens, planting beds, or permeable paving in the boulevard to reduce potential for ponding. Green infrastructure enhances the quality of the street environment, and contributes to mental and psychological health. Consider sufficient soil and water for street trees to reach maturity. See Chapter 7 on Green Infrastructure for guidance.

7. Design for Efficient Maintenance. Consider materials and designs that are durable and easier to maintain. Use City Standard Materials. Provide adequate access to utilities for maintenance. Consider snow storage and waste and recycling collection. Coordinate repairs and upgrades, if feasible, to minimize impact to pedestrians.

8. Coordination with Utilities. The location, use, and maintenance of utilities needs to be coordinated early on in street projects. Ensure pedestrian clearway needs are met for universal accessibility. Seek ways to minimize conflicts among utilities, street furnishings, trees, and landscaping.

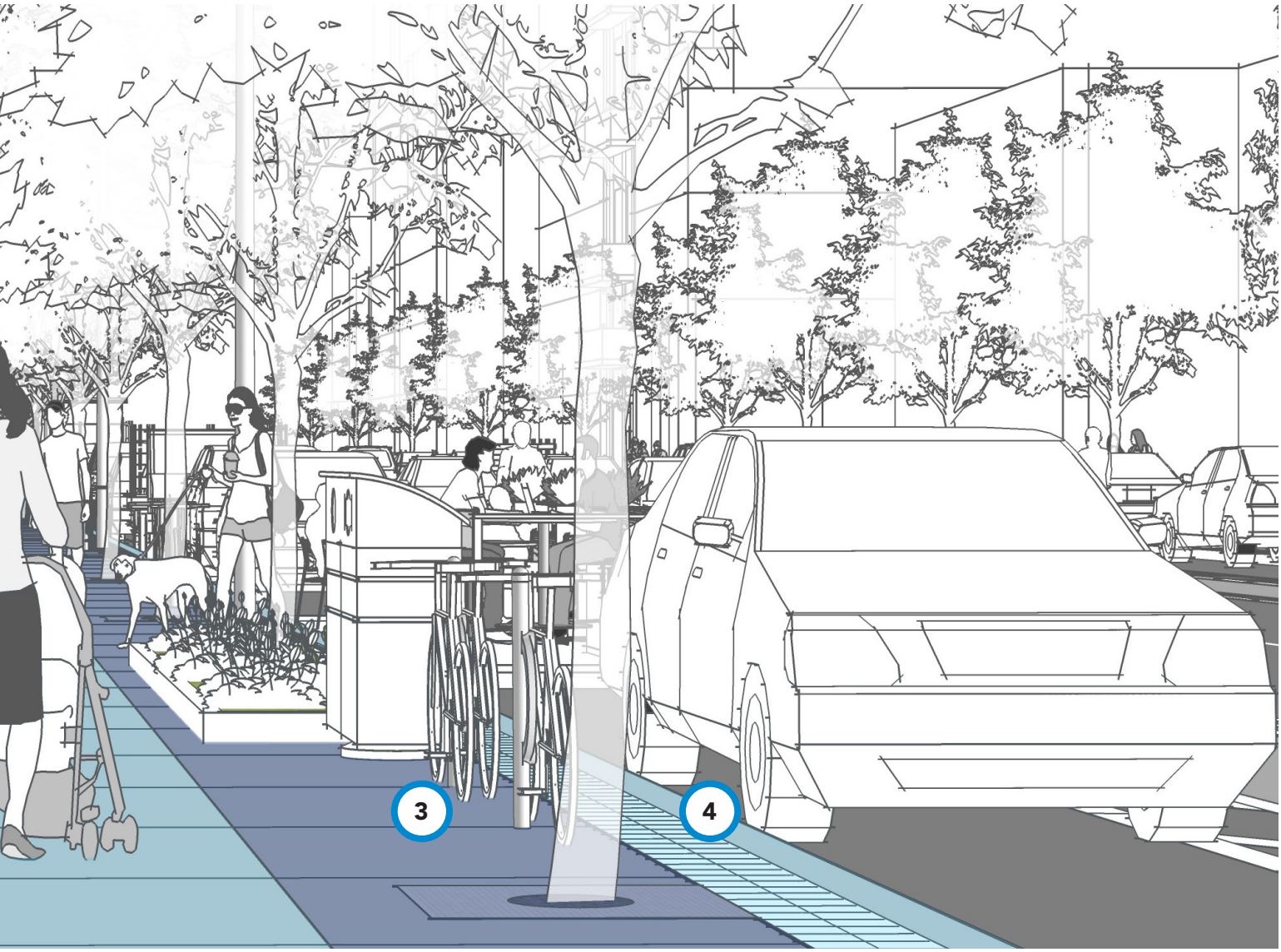
4.2 SIDEWALK ZONES



For illustrative purposes.

1. Frontage and Marketing Zone. The area adjacent to properties, such as building entrances, front yards, stoops, window shopping area, vending, café seating, and building-related utilities. This area may be part of the public right-of-way, or private, if a building setback is present.

2. Pedestrian Clearway Zone. The most important area of the street for safe, accessible, and efficient movement of pedestrians. The width depends on the street context. The minimum will be higher on streets with greater pedestrian activities. An adequate pedestrian clearway is most important in sidewalk design.



3. Furnishing and Planting Zone. This zone in the boulevard provides space for a wide range of street elements such as trees, other plantings, litter and recycling bins, benches, street lights, and bicycle racks.

4. Edge Zone. The space behind the curb that acts as a buffer between moving/parked vehicles and the other sidewalk/boulevard functions. May accommodate sign posts, parking machines, decorative pavers, garbage set out and snow storage.

4.3 IMPORTANCE OF THE PEDESTRIAN CLEARWAY ZONE

The Pedestrian Clearway Zone is the area of sidewalk that is free and clear of any obstacles so that people of all ages and abilities can travel in a direct, continuous path. This zone is dedicated for pedestrian movement and the amount of space required will depend on the volume and intensity of pedestrian activity on the street.

CONTEXT-SENSITIVE WIDTHS

A wider pedestrian clearway is required on streets that bring more people to the sidewalk, e.g. busy shopping or destination areas, busy transit routes with many pedestrians, or other sites with large volumes of pedestrians. Space is needed for greater numbers of pedestrians to pass each other, window shop, push strollers or delivery carts, or support someone needing assistance with walking(See Figure 4.1 and photos).

At minimum, two assistive devices need to be able to pass each other with a buffer. This minimum space (2.1 metres) provides a safe, universally accessible path for people of all abilities. Issues with lack of space include having to pass on uneven surfaces like sod that could tip a wheelchair, or being blocked on one side by a retaining wall and not having space to safely pass.

HIGH PRIORITY

For safety reasons, the pedestrian clearway takes priority from other parts of the street. In areas with high pedestrian volumes and crowding, walking will become obstructed and overflow if there is inadequate space and may result in people walking in the roadway. Overall sidewalk width should first accommodate the preferred pedestrian clearway, assigning available space to other zones second.

WHAT IS NOT CLEARWAY

When measuring the pedestrian clearway, do not count the space right up to a bench or bicycle post and ring, or other element (e.g. door opening areas, frontage and marketing areas or tree pits), because you need to account for how it is being used. Think of the users or objects taking up space, such as a person sitting on a bench, a bicycle locked to a post and ring, a person standing or lining up for a transit stop or food vendor. Ventilation grates and covers should be placed outside of the clearway.

DIRECT AND CONTINUOUS

A direct, continuous clearway is especially needed along a block, because it is difficult for people with low or no vision, or physical mobility challenges to maneuver sudden or frequent changes in path. Shared Streets need a clear path of adequate width that is delineated with visual contrast and by tactile indicators. This provides a dedicated path of travel for persons of all ages and abilities in an area with a mixing of pedestrians and vehicles.

Figure 4-1: Examples Of Widths Of Different Types Of Pedestrians

Wider pedestrian clearways are required on streets with greater pedestrian activities, like these examples in Toronto.

4.4

ACCESSIBILITY AND UNIVERSAL DESIGN

Sidewalks are essential. Accessible and universal design for sidewalks include: ensuring adequate pedestrian clearway widths, effective physical separation between pedestrians and cyclists, materials, slopes, and tactile walking surface indicators that provide warnings and guidance for people with low or no vision. See Chapter 9 on Intersections for accessible and universal design features found typically at intersections such as curb ramps, depressed curbs, and accessible pedestrian signals.

Sidewalks should be designed to accommodate pedestrians of all ages and abilities.


Sidewalk should be flat and level, while maintaining proper drainage.

SIDEWALK MATERIALS

- Sidewalk materials and their maintenance impact the experience of a street. Safe, smooth, stable and slip-resistant sidewalk surfaces are important for universal accessibility. In general, sidewalks should be constructed of concrete, in a manner that minimizes gaps, discontinuities, rough surfaces, and vibration-causing features for mobility device users.
- Minimize the number of different materials across the sidewalk. Non-standard items are strongly discouraged for most street types for cost, durability, maintenance, accessibility and sustainability reasons. Unique materials are more difficult and costly to maintain, and become tripping hazards, unsightly and confusing to users especially when maintenance lags.

SLOPES

- Sidewalks should have a flat, level surface for walking, while maintaining enough slope for proper drainage so rainwater does not accumulate on sidewalks. The slope of the sidewalk as you walk forward along it (i.e., running slope) often depends on the slope of the adjacent roadway.

TACTILE WALKING SURFACE INDICATORS & DELINEATORS

- To provide persons with low or no vision with warnings and guidance, Tactile Walking Surface Indicators (TWSI) are installed at curb ramps or depressed curbs where a pedestrian may encounter a hazard such as moving vehicles.
- A tactile, colour contrasting and/or physical delineator is required between the sidewalk and sidewalk-level cycle track (e.g., on Sherbourne Street), or for a flush street (e.g., Market Street), where pedestrians are at the same level or grade as cyclists and cars. Yellow tactile strips are used at transit stop areas. The design depends on the context, i.e. speed and volumes.

Curb ramps and accessible pedestrian signals are discussed in Chapter 9 on Intersections.


Tactile Walking Surface Indicators are in installed at curb ramps or depressed curbs.


Straight and direct sidewalks are required for safe and convenient access for people of all ages and abilities, especially those with low or no vision.

4.5

PEDESTRIAN CROSSINGS

Pedestrian crossings are found at intersections of streets, at mid-block locations on long blocks, and at key destinations, such as schools, transit stops or stations, offices, or shopping plazas, that generate pedestrian crossing demand. Pedestrian crossings are facilitated by traffic signals, mid-block pedestrian signals, pedestrian crossovers (also known as PXOs) and pedestrian crossing islands or refuge islands.

This mid-block pedestrian crossing facilitates children in walking safely to school.

PEDESTRIAN SIGNALS

Traffic control signals that provide pedestrians with a protected crossing opportunity at intersections or mid-block locations by requiring motorists to stop at the signal.

PEDESTRIAN CROSSOVER (PXO)

Pedestrian crossovers are identified by specific signs, pavement markings, illuminated overhead lights, and pedestrian push buttons. Under provincial laws, drivers and cyclists must wait until pedestrians have completely crossed the road.

PEDESTRIAN CROSSING ISLAND OR REFUGE ISLAND

An area protected by curbs (i.e., a raised concrete island) between two directions of traffic, where pedestrians can wait for a gap in vehicular traffic or rest while crossing streets mid-block.

As discussed in Chapter 8 on Roadways, a priority is to look for opportunities to rightsize streets to reduce pavement widths for safety and greening purposes. For example, before allocating space to a median or crossing island, consider right-sizing lanes and the street to reduce crossing distances and to support preferred widths for the pedestrian clearway, planting and furnishing zone, and cycling facilities.

The decision to install any of the above devices depends on many factors such as pedestrian safety (e.g., lack of crossings or gaps in traffic), street geometry, number of lanes, adjacent land uses and trip generators, vehicular volumes, speed, and observational data.

PXOs are common in Toronto.

4.6

PUBLIC REALM AND PLACEMAKING

Beyond providing safe pedestrian movement and access, sidewalk zones also serve as vital public spaces that contribute to the city's economic, social and environmental well-being. Various elements help create vibrant, attractive, safe, and green streets for people, including street furniture, lighting, cafés and marketing, curb and sidewalk extensions, wayfinding, green infrastructure, the sensitive placement of utilities, and year-round operations and maintenance. (Also see Chapter 7 on Green Infrastructure). These street elements are important components of placemaking, especially pedestrian amenities like benches and seating, which offer places for people to sit, rest, and socialize.

Sidewalks provide vital public space day and night.

c: tracer.ca. https://flic.kr/p/YYbkU

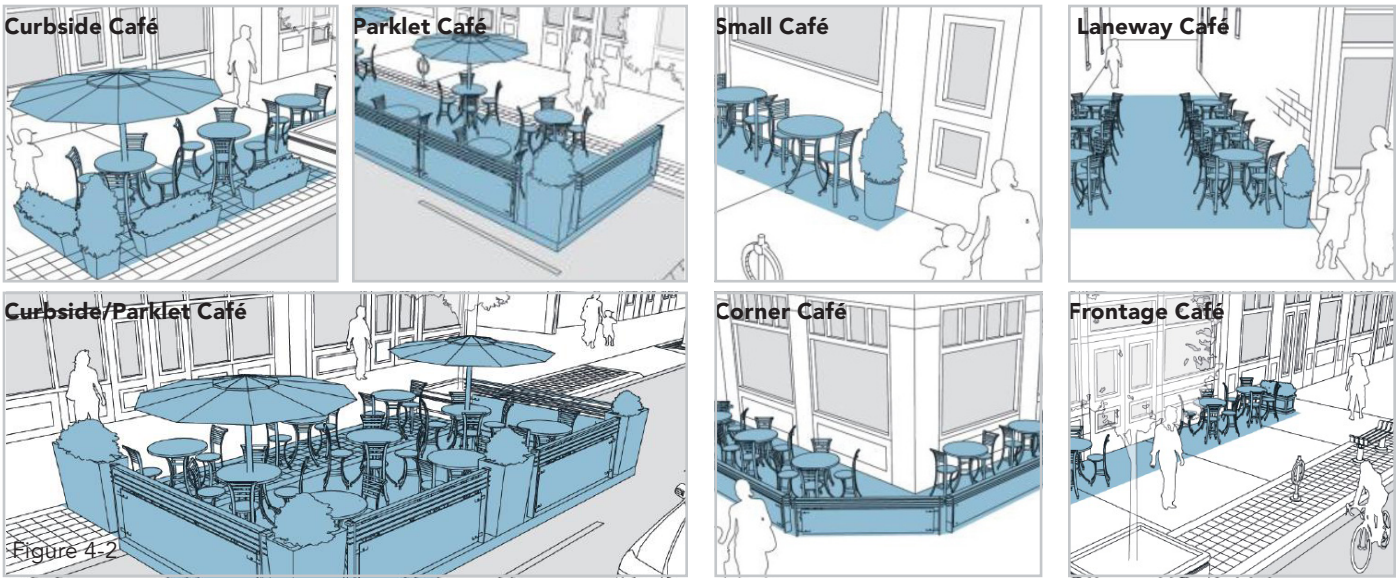


Figure 4.2

STREET FURNITURE

Street furniture includes street trees and planters, transit shelters, benches, bicycle parking, information and wayfinding signs, litter and recycling bins, publication box corrals and kiosks, postering boards and poles, and automated public toilets. Ensure street furniture does not obstruct the pedestrian clearway, rather locate them in the Furnishing and Planting Zone or Edge Zone (for narrower elements), or on private property using building setbacks and easements.

LIGHTING

Street lighting supports safety, pedestrian activity, sense of place, and economic vitality. It includes roadway lighting and pedestrian-scale lighting. Pedestrian-scale lighting for sidewalks and crosswalks ensures that pedestrians are visible to motorists and illuminates potential tripping hazards. Where cycling facilities are located adjacent to the sidewalk, these benefits are also extended to cyclists.

CAFÉS AND MARKETING

An outdoor café is a seating area located on the sidewalk that is operated and maintained by an adjacent restaurant or café owner. Various types of sidewalk café configurations are shown in Figure 4.2.

Since pedestrians are given the highest priority in the Sidewalk Zone, outdoor cafés or marketing displays must not infringe on the pedestrian clearway. Greater clearways are required in busier pedestrian areas, so people do not spill onto the roadway and can comfortably access and enjoy café, marketing, and vending areas (see section 4.3 on the importance of the pedestrian clearway).

PUBLIC ART, CULTURE AND HERITAGE

These elements help to celebrate the culture, history, and sense of place that makes our communities unique. Public art, culture and heritage features enhance the sense of enjoyment and well-being of people using city streets. These elements can include street art, sculptures, plaques, painted traffic boxes, murals and heritage buildings, structures or sites.

ORNAMENTAL PLANTING

Decorative hanging baskets, planters for trees and landscaping, and other visually attractive initiatives by local businesses and communities help to improve the public realm and create a sense of place.

Placemaking on sidewalks may provide transition space between streets and destinations for people to gather, linger and socialize.

Wayfinding helps people orient themselves and navigate to their destinations.

An enhanced streetscape in Scarborough Centre.

CURB AND SIDEWALK EXTENSIONS

Curb and sidewalk extensions (a.k.a. bulb-outs or bump-outs) are extensions of the sidewalk area and/or landscaped boulevard that protrude past the normal curb alignment. They are used for safety, greening and placemaking purposes as they can help repurpose space in the roadway for other much-needed uses. Uses include stormwater management and greening, streetscaping, or multi-unit bicycle racks depending on context and ensuring clear sightlines. Consider curb and sidewalk extensions wherever there is a permanent parking lane and consider how to accommodate cyclists when introducing curb extensions.

PEDESTRIAN WAYFINDING

Wayfinding systems help people orient themselves in physical space and navigate from place to place. They also help people to identify landmarks, explore the city and discover new destinations. The wayfinding systems are further supported through signs, printed maps and mobile devices. Toronto's 360 Wayfinding Strategy has specific guidance for on-street pedestrian, TTC, parks and trails and cyclist wayfinding systems.

GREEN INFRASTRUCTURE

Green infrastructure refers to natural and human-made elements that provide ecological and hydrological functions. These environmental qualities contribute to the enjoyment, care and value of the City's streets and public spaces. Part of their social and economic benefits include supporting opportunities for recreation, leisure and green tourism. Green elements include street trees, plantings, bioswales, permeable materials, and active transportation facilities. (see Chapter 7 on Green Infrastructure)

4.7 UTILITIES, MAINTENANCE, AND OPERATIONS

Create a safe, attractive and functional public realm by coordinating early on with staff involved in utilities, maintenance, and operations. Various needs include considering the placement of utilities so that they can be accessed, upgraded and maintained, while also ensuring a safe, universally accessible pedestrian clearway and minimizing conflicts with street furnishings, trees and landscaping. Year-round maintenance and operations are important to consider upfront to enable city services to be provided, while coordinating with other complete streets needs.

PLACEMENT OF UTILITIES

Utilities play a vital role in the city's infrastructure system and in our daily lives. Above ground utilities include various electrical and telecommunications wires, fire hydrants, traffic signal controllers and lighting. Underground utilities include various electrical and telecommunications conduits, water infrastructure and natural gas mains. Coordinate the safe access, use and maintenance of utilities using a complete streets approach to ensure safe and efficient operation of city streets and the utilities. Important considerations include ways to reduce clutter above ground and minimize negative impacts of underground utility repair, modification and replacement where possible. Early street project coordination will maximize opportunities for well-designed sidewalks that minimize conflicts among utilities, street furnishings and landscaping.

YEAR-ROUND MAINTENANCE AND OPERATIONS

Access to the Furnishing and Planting Zone and/or Edge Zone is critical for on-going and seasonal city services like snow clearing and storage, and waste and recycling collection. Sidewalk planning and design must keep in mind the various needs – including sweeping, repairs, snow removal and storage, landscaping maintenance, and waste management

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