

6

Designing Streets for People

People use urban streets for mobility or for stationary activities, for leisure or for work, out of necessity or by choice. People of all ages and abilities experience streets in different ways and have many different needs. Whether sitting, walking, cycling, using collective or personal transport, moving goods, providing city services, or doing business, the various activities that streets accommodate and facilitate shape the accessibility and livability of the city.

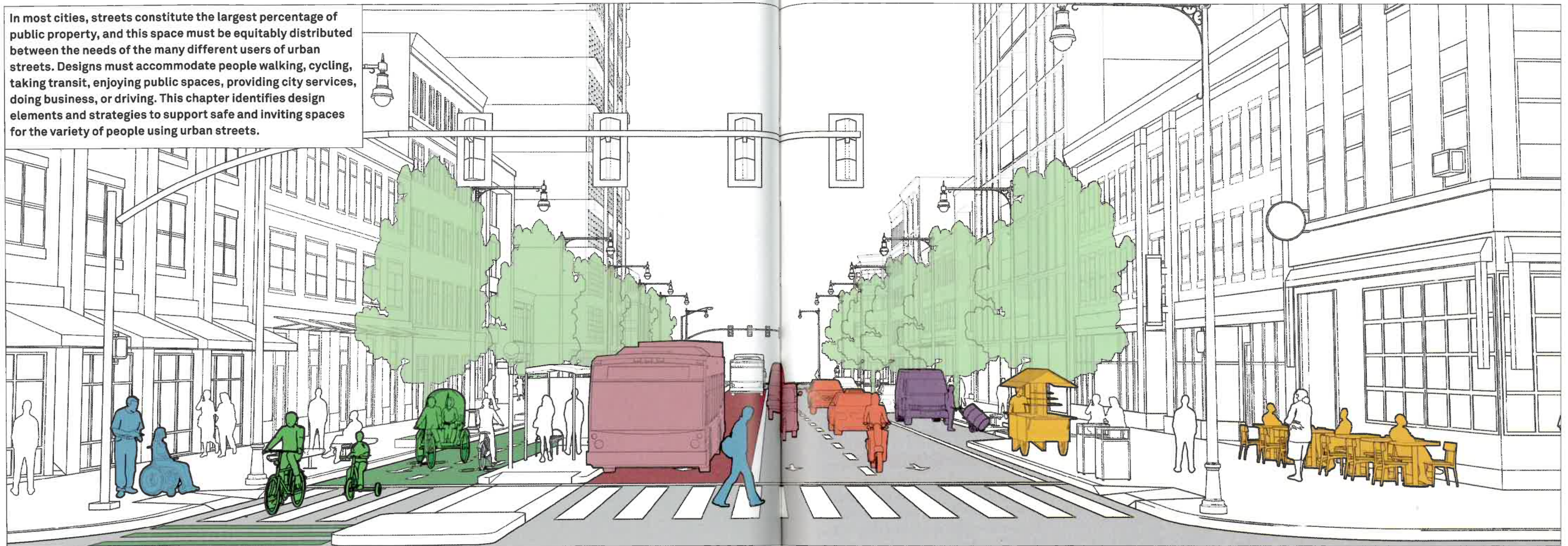
The types of users and the overall volume of people on a given street depend on many variables such as the time of day, the size of the street, the urban context, and the local weather. Each user moves at a different speed and takes up a different amount of space within the limited geometry of the street. Therefore, the overall capacity of the street will be determined by the mix of transportation modes that the street design accommodates.

Design streets to balance the needs of diverse users in order to shape an enticing environment that ensures access, safety, comfort, and enjoyment for everyone.

Paris, France

6.1 | A Variety of Street Users

In most cities, streets constitute the largest percentage of public property, and this space must be equitably distributed between the needs of the many different users of urban streets. Designs must accommodate people walking, cycling, taking transit, enjoying public spaces, providing city services, doing business, or driving. This chapter identifies design elements and strategies to support safe and inviting spaces for the variety of people using urban streets.



Pedestrians

Pedestrians include people of all abilities and ages, sitting, walking, pausing, and resting within urban streets. Designing for pedestrians means making streets accessible to the most vulnerable users. Design safe spaces with continuous, unobstructed sidewalks. Include visual variety, engage building frontages, design for human scale, and incorporate protection from extreme weather to ensure an enjoyable street experience.



Cyclists

Cyclists include people on bicycles, cycle-rickshaws, and cargo bikes. Facilities should be safe, direct, intuitive, clearly delineated, and part of a cohesive, connected network to encourage use by people of all ages and confidence levels. Cycle tracks that create an effective division from traffic, are well coordinated with signal timing, and are incorporated in intersection design form the basis of an accessible and connected cycle network.



Transit Riders

Transit riders are people using collective transport such as rail, bus, or small collective vehicles. This sustainable mode of transportation dramatically increases the overall capacity and efficiency of the street. Dedicated space for transit supports convenient, reliable, and predictable service for riders. Accessible boarding areas promote safe and equitable use. The space dedicated to a transit network should be aligned with demand, meeting service needs without sacrificing streetscape quality.



Motorists

Motorists are people driving personal motor vehicles for on-demand, point-to-point transportation. This includes drivers of private cars, for-hire vehicles, and motorized two-and three-wheelers. Streets and intersections must be designed to facilitate safe movement and manage interactions between motor vehicles, pedestrians, and cyclists.



Freight Operators and Service Providers

Freight operators and service providers are people driving vehicles that move goods or conduct critical city services. These users benefit from dedicated curb access and allocation of space for easy loading and unloading as well as dedicated routes and hours of operation. Emergency responders and cleaning vehicles need adequate space to operate, which must be accommodated while ensuring the safety of all other street users.



People Doing Business

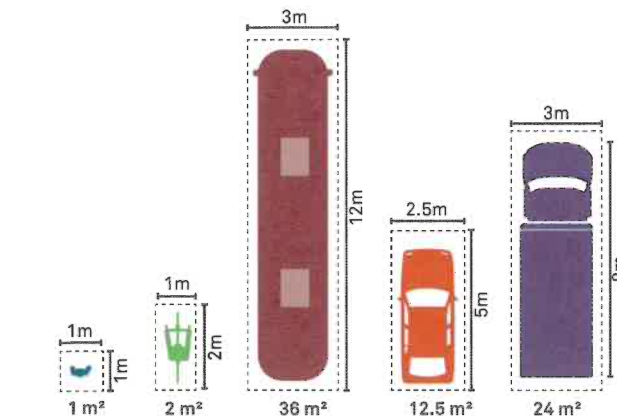
People doing business include vendors, street stall operators, and owners or renters of commercial storefronts. These users provide important services that support vibrant, active, and engaging street environments. Adequate space should be allocated to these uses. Provide regular cleaning, maintenance schedules, power, and water to support commercial activity and improve local quality of life.

6.2 | Comparing Street Users

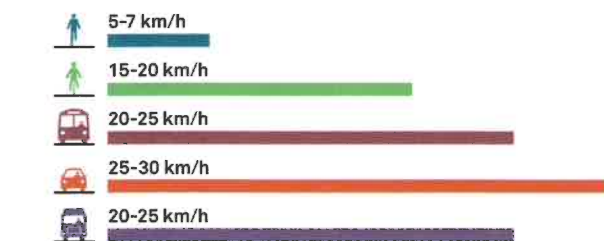
Comparing the size of and space occupied by different street users reveals the advantages of designing streets for transit, cycling, and walking. Providing high-quality facilities for these spatially efficient, affordable, and sustainable transportation modes allows the same street to accommodate more people. Reducing the amount of space devoted to movement and storage of private vehicles maximizes the amount of space available for other activities that add to the quality of the street.

Scale and Size

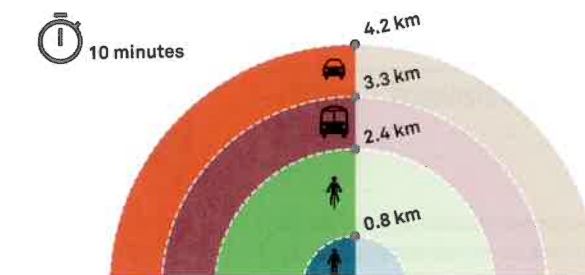
People and vehicles take up different amounts of space when they are moving. Each needs an operational envelope that feels comfortable and supports safe movement. While walking and cycling use the least amount of space for movement and storage, and have the greatest flexibility, the comfort and safety of these modes is heavily influenced by the amount of space available to them.



Operational envelope for different users and vehicles.



Average speeds for different users and vehicles.



Average distance traveled by different users and vehicles in 10 minutes.

Travel Time and Distance

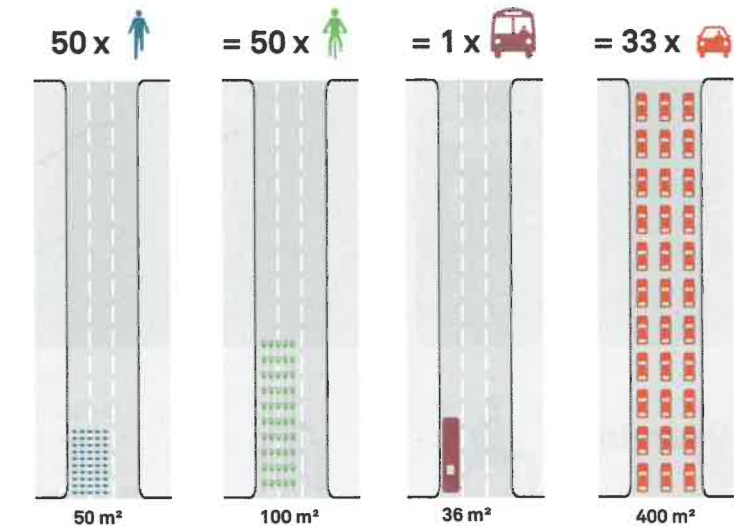
Understanding how far a person can travel in 10 minutes provides a basic measure of the number of destinations easily available to them. A person walking in a city center has access to many more destinations than a person driving in a low-density setting. Planning around 5-, 10-, and 15-minute distances, especially for transit stops and neighborhood cycle and walking networks, can help inform the potential of a street to become an important part of the active transportation network.

Mass and Vulnerability

Mass plays a very prominent role in the event of a crash. When a heavy vehicle collides with a lighter vehicle, the occupants of the light vehicle are far more at risk of sustaining severe injury. Pedestrians, cyclists, and motorcyclists have the greatest risk of severe injury when colliding with a motor vehicle and are commonly referred to as vulnerable users. Compared with other street users, this group is particularly exposed to injury as they are not protected by a vehicle shell.

Space Occupied by 50 People

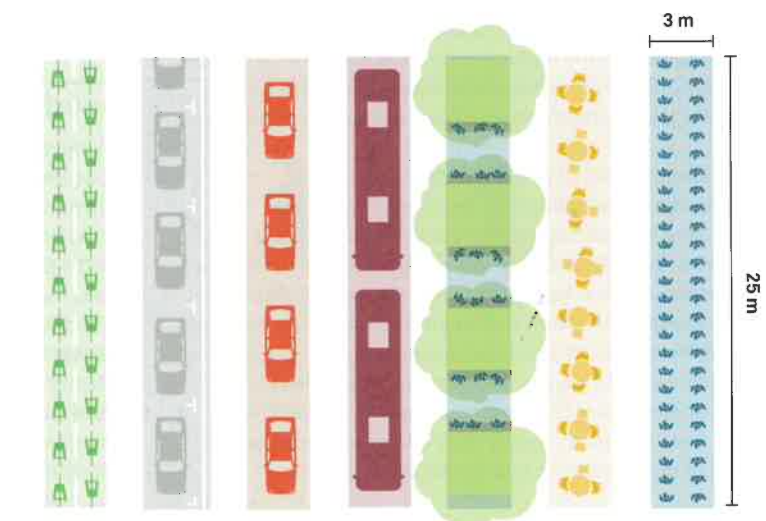
While a bus needs three times as much space as a car, its carrying capacity per lane is unrivaled among other on-street modes. As land in urban areas becomes increasingly scarce, use the space within the street most efficiently to serve the largest number of people.



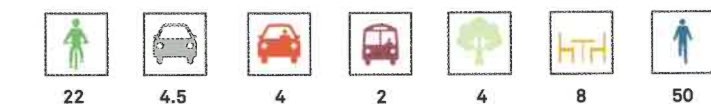
Space Occupied by Uses, Modes, and People in a Given Area

Analyze the way street designs allocate space among different users in order to support a variety of activities and modes of transportation.

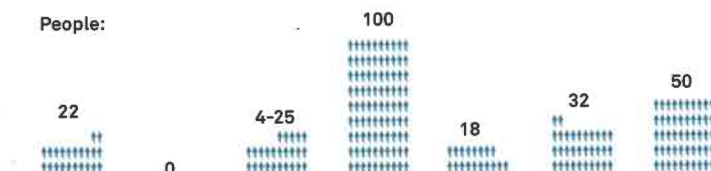
Consider how the same 3 m x 25 m strip can be used for various uses and by different numbers of people.



Uses and Modes:



People:





6.3 | Designing for Pedestrians



6.3.1 | Overview

Every trip begins and ends with walking, and therefore everyone is a pedestrian on a city's street at some point. Providing continuous and unobstructed clear paths ensures walkable neighborhoods for everyone. Each sidewalk's clear path should be complemented with active street edges and accessible facilities to make the journey comfortable and engaging.

Cities are places for people, and they use streets for not only walking, but also resting, sitting, playing, and waiting. This requires making people the highest priority in street design, with careful consideration for the most vulnerable users: the young, the elderly, and those with diminished perceptual or ambulatory abilities.

The types and volumes of people using a given street will depend on the surrounding land use and density, key destinations, and time of day. Without an enclosed vehicle and moving at slower speeds, pedestrians engage all of their senses when using urban streets. How people use streets will depend on the space available to them, the facilities that offer a moment to pause, and the overall street experience.

Street designs should always prioritize safe facilities for pedestrians, and measure their success from the pedestrian perspective. A walkable city that is easy and safe to navigate offers a level of independence and equity to its citizens.

Pedestrians need continuous and unobstructed moving paths, well-lit spaces, inviting building edges, shaded places to rest and walk, and wayfinding signs for a safe and comfortable street experience.

Speed

Walking speed depends on age and ability, as well as the purpose and length of the trip. It is influenced by pavement quality and topography, and the size, altitude, and climate of the city. While walking speeds range from **0.3 m/s–1.75 m/s** or **1 km/h–6 km/h**, people who walk with assistance—in form of canes, walkers, or other devices—are limited to speeds of **0.3 m/s–0.5 m/s**. People with motorized wheelchairs and other personal mobility devices may be faster, and people using skates or skateboards can reach speeds near that of cycles. Ensure that urban streets allow for a variety of speeds, whether someone is walking quickly with purpose, meandering slowly, pausing for a rest, or stopping to talk, sell goods, or eat. Accommodate fast walkers with low delay, and slow walkers with protection from vehicle conflicts and places to rest during long crossings. Consider these variables when determining lane configuration, signal timing, and sidewalk width.



Variations

An alert adult who can see clearly, walk confidently in any environment, and react quickly to motor vehicles is the exception rather than the rule, and should not be used as the design case. Instead, select street attributes using a variety of “design pedestrians,” discussed in more detail below. All pedestrians benefit from shorter crossing distances, refuge areas, ample room to wait at intersections, intersection control

that prioritizes their movement, and sidewalks that are laterally and vertically separate from all but the lowest-speed and lowest-volume traffic. Provide enough room on busy sidewalks for people walking in groups to pass each other. Use pedestrian countdown signals and minimize wait time while maximizing pedestrian signal phase length.

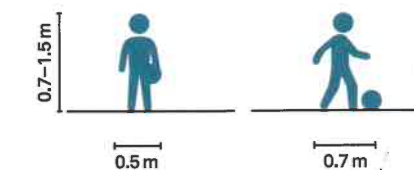
People with Disabilities

Integrate the needs of people who have impaired vision or hearing, people in wheelchairs, and those who walk with canes or gait trainers. Sidewalks must be wide enough to allow two people in wheelchairs to pass one another, with clear paths on low-volume streets being wider than **2 m** and never less than **1.8 m**. Clear paths should be unobstructed, level, and with a smooth surface. Design accessible ramps with shallow slopes at all crossings, preferably **8%**, and provide cut-through paths in medians, pedestrian refuge islands, and corner islands.



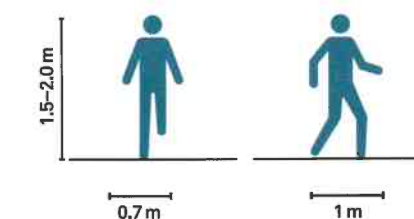
Children

With a world population that includes two billion children under 15 years old, all streets should be fundamentally safe for children traveling with or without adults. Children are less capable of judging speed than adults, placing the responsibility of providing safe movement options on designers and drivers. Their shorter height and slower walking speed must be accounted for in pedestrian crossing design and signal timing. Safe intersections for children have low through-traffic speeds, signals timed for a slow walking speed, very low turning speeds, and highly visible pedestrian crossings. Designs should indicate to drivers that children are present on neighborhood streets. The design of all streets must account for children by limiting the speed of vehicles and introducing efficient pedestrian infrastructure, especially signals.



Adults and Seniors

The global population is aging, but a large number of streets do not accommodate the needs of seniors. As pedestrians, older adults are a small portion of the population but account for a high percentage of road deaths. Danger increases when the pedestrian signal phase is too short, when there are broken or missing pedestrian ramps, and when markings are faded or hard to see. Design safe streets for seniors by providing refuge islands for every two to three traffic lanes, and providing curb extensions to reduce crossing distances and improve visibility at the pedestrian crossing. Prevent parking within **6 m** of pedestrian crossings to increase visibility.





6.3.2 | Pedestrian Networks

Pedestrian networks must be safe, comfortable, and enjoyable. Compared to other users, pedestrians cover less ground in the same amount of time, and experience the street the most intensely.

Moving without the protection of an enclosed vehicle, pedestrians engage all senses and are the most vulnerable users.

Connected and Permeable

Connected

To be useful, sidewalks and pedestrian crossings must offer a continuous clear path. Even short stretches of sidewalk that are unpaved, uneven, obstructed, or that end abruptly disincentivize walking and create serious barriers for wheelchair users.

Permeable

Create pedestrian links in order to shorten walking routes when possible. Paths and streets that end in cul-de-sacs should be extended to connect to nearby streets. Encourage the creation of pedestrian links through large blocks to achieve a finer-grain urban fabric and improve connectivity.

Choice

Provide multiple routes to move between key destinations. If one path is closed for maintenance, others should still be available.

Key Destinations

Carefully design pedestrian experiences within walking distance of key destinations such as transit stations, parks, schools, commercial districts, and neighborhood main streets. People are more likely to walk from one destination to another if the experience is convenient, comfortable, and enjoyable. Areas around key destinations and transit stops should include spaces that allow groups of people to congregate without blocking the paths of others.

Accessible and Comfortable

Accessibility

All streets should be universally accessible, accommodate different walking speeds, and be legible for all users. Pay particular attention to the needs of children, the elderly, and people with disabilities.

Capacity and Comfort

Ensure that sidewalk networks, hierarchy, and width relate to their context. Sidewalks should not require people to walk in single file, but allow pairs and groups to comfortably walk past each other. Downtown areas need wide sidewalks and clear paths for higher pedestrian volumes at peak periods. Neighborhood streets should allow space for outdoor uses and commercial activities, while residential streets with narrower clear paths should include additional landscaping.

Look at the finest grain of the city fabric and the various types of pathways that can work together to create a comprehensive and continuous network.

Design pedestrian networks to be:

- Connected and Permeable
- Accessible and Comfortable
- Safe
- Relevant to Context

Safe

Pedestrian Spaces

Pedestrian spaces must be safe for all users at different times of the day. They should be well-lit, provide accessible slopes and gradients, be free of obstructions, and offer eyes on the street for natural surveillance and crime prevention.

Intersections

Intersections are critical nodes in a network in which pedestrians are exposed to the highest risk of fatality and injury. Provide visible, clear, short, and direct crossings at intersections. Install curb extensions and refuge islands to shorten crossing distance and provide protected areas for pedestrians waiting to cross. Crossings should always be marked, and when possible raised, for increased safety.

Relevant to Context

Human Scale and Complexity

Design facades and edges of buildings or spaces that define the pedestrian network to be engaging and interesting. Support varied building heights, architectural details, signage, entrance spacing, transparency levels, and landscaping to break down the scale and rhythm of the block and make walking distances feel shorter. Include a variety of shading and lighting devices on building facades to provide a comfortable walk.

Character and Identity

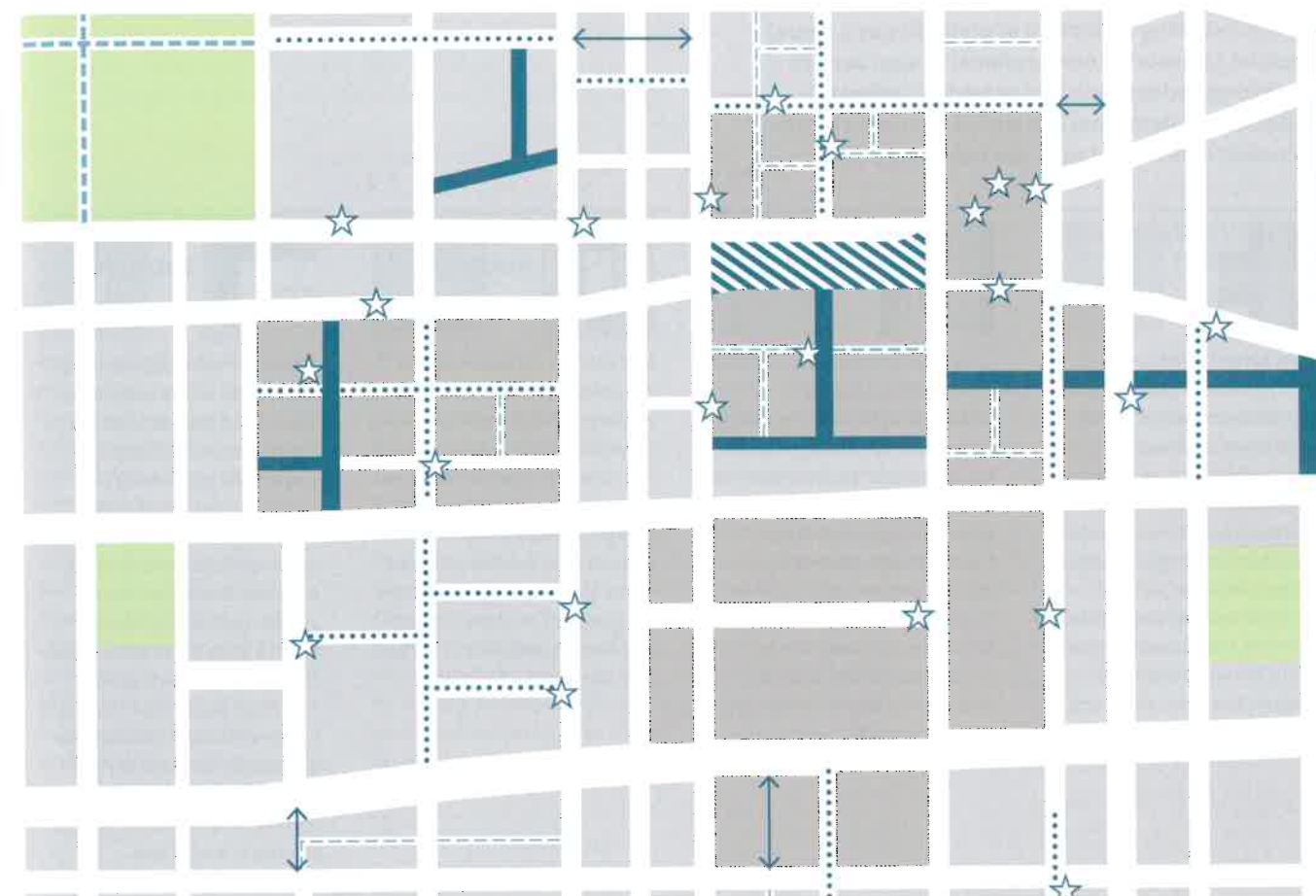
Iconic streets invite the opportunity for unique street furniture, wayfinding, landscaping, paving, signage, and lighting. Historic areas, promenades, and well-known corridors can strengthen the character of a neighborhood through the design of the street.

Topography

Steep elevation changes can limit street network connectivity and complicate access to critical services and key destinations. Combine steps and ramps with rest areas and landscaping.

Green Corridors

Opportunities to incorporate trees and landscaping should be identified throughout the city, along with particular corridors for additional greening. Green corridors should be provided on streets surrounding parks, large boulevards, central urban areas, and local neighborhood streets. Select native species to best suit local climates. Green corridors can help reinforce the character and identity of a neighborhood. See 7.2: Green Infrastructure.



Pedestrian Networks: Fine-grain pedestrian networks with a variety of pedestrian-priority spaces support a walkable city. Continuous sidewalks that are free of obstructions, frequent at-grade crossings, and small blocks allow pedestrians to conveniently and safely reach their destinations. Interesting and permeable building edges designed with human scale in mind provide an engaging and enjoyable walking experience.

- Pedestrian-only streets
- Plazas
- ... Shared spaces
- - - Laneways
- Walkways
- Sidewalks
- ↔ Pedestrian links
- ☆ Parklets and pocket parks



New Delhi, India. A narrow laneway provides a convenient shortcut between neighborhoods.



São Paulo, Brazil. Parklets on a neighborhood sidewalk provide a place to pause.



Paris, France. Wide sidewalks provide space for promenading and people watching.

