



# Pedestrian Pathways

A Planning Guide for the Houston-Galveston Region



## Context

Why should we improve walking conditions?



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The Houston-Galveston Area Council (H-GAC) is the voluntary association of local governments in the 13-county Gulf Coast Planning region of Texas. H-GAC also serves as the Metropolitan Planning Organization (MPO) for the eight-county Houston-Galveston area. As the MPO, H-GAC is responsible for developing and maintaining the long-range Regional Transportation Plan (RTP), which identifies and prioritizes transportation projects needed to improve mobility in the region.

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By 2035, the H-GAC region is expected to grow by an additional 3.5 million people, posing significant challenges to the transportation system. Walking is a healthy and affordable alternative to traffic congestion, vehicle pollution, and the high cost of automobile ownership. This planning guide lays the groundwork for improving the pedestrian environment...

**...one step at a time.**

## Context

# Why should we improve walking conditions?

If economic and growth projections hold over the next 25 years, we must explore alternative forms of travel to reduce congestion heading to and from employment centers, school zones, and retail and entertainment districts. For many area residents, walking is not one of many alternatives – it is the only option available to them.<sup>1</sup> Whether these individuals can't afford to own a car or don't have the physical or mental capacity to operate a vehicle, their dependence on walking underscores the necessity of connected and accessible pedestrian pathways.

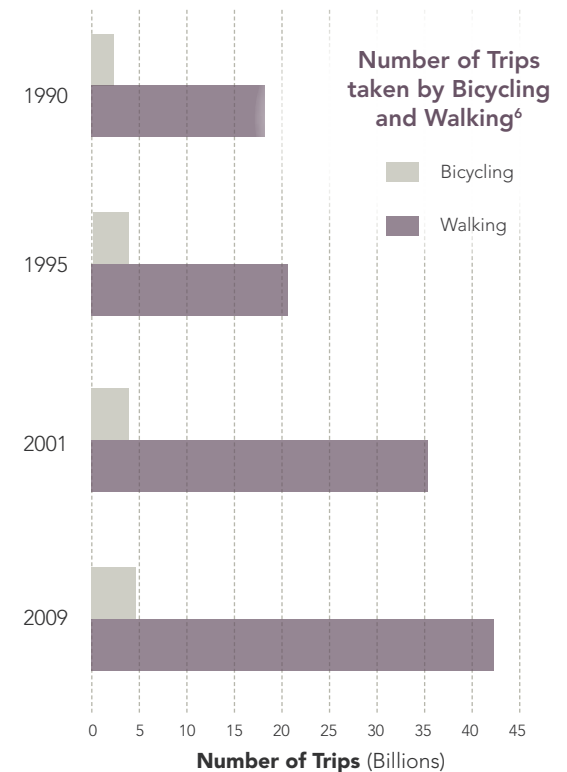
The importance of walking is compounded by the growing rate of obesity. In the greater Houston area, 58 percent of adults and 39 percent of children are classified as overweight or obese.<sup>2</sup> Walking to work and school is an easy way to build exercise into daily routines, assuming that pedestrian networks efficiently connect users from one destination to another. Similar to roadways, connectivity and safety are essential to encourage daily use. Beyond obvious repairs, such as cracked pavement and unlit trails, a systematic approach is needed to promote development patterns that are conducive to pedestrian commuting. This approach requires vision and regional coordination, often materializing in the form of mixed-use and multi-modal centers, updated development and zoning regulations, and interconnected street and sidewalk networks. Ideally, a walkable environment would offer housing, retail, entertainment, parks and public facilities, and office space – all within a quarter-mile radius.

Facts and figures presented in this section establish why we should develop pedestrian-friendly land use patterns and interconnected pathways. Walking benefits the health and safety of our community, enhances the character of our built environment, and reduces fiscal expenditures relative to other transportation improvements.



Health

- ▶ Up to a third of adults in the United States use walking as a form of exercise to meet public health recommendations for physical activity.<sup>3</sup>
- ▶ In the past 40 years, childhood obesity has increased five-fold for children between ages 6 to 11.<sup>4</sup>
- ▶ The number of pedestrian trips has more than doubled over the past 20 years.<sup>5</sup>





Safety

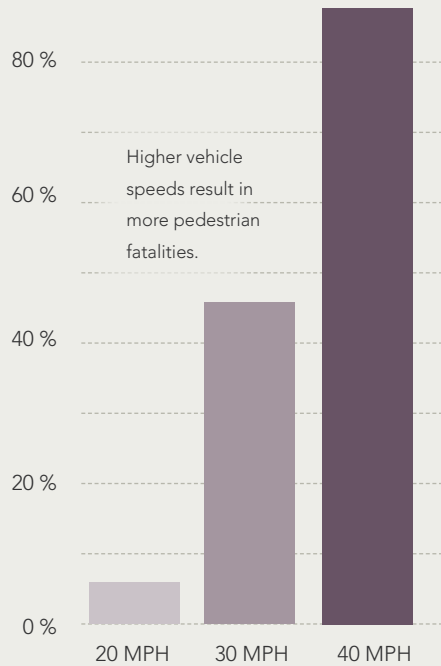


Community Character



Cost Savings

### Risk of Pedestrian Fatalities Based on Vehicle Speeds<sup>7</sup>



- ▶ Vehicle crashes generally increase with...<sup>8</sup>
  - > Lane widths greater than 9 to 11 feet
  - > Added lanes
  - > Elimination of curves
  - > Larger shoulder widths
  - > Cul-de-sac neighborhoods
  - > Increased speeds
- ▶ Almost 60 percent of pedestrian deaths occur in places where no crosswalk is available.<sup>9</sup>

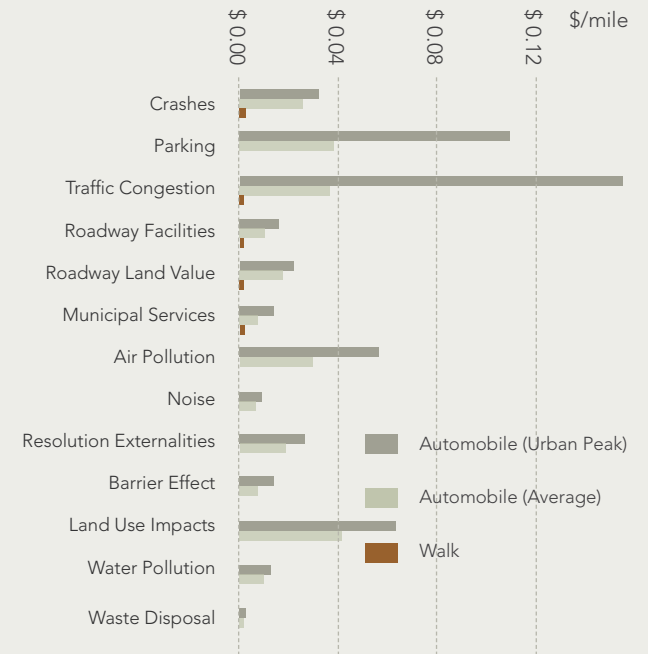
- ▶ More than 35 percent of Americans stated the availability of bikeways, walking paths, and sidewalks was important in choosing where to live.<sup>10</sup>
- ▶ 40.7 percent of respondents to the 2010 Houston Area Survey would prefer to live in an urban, walkable neighborhood.<sup>11</sup>
- ▶ 8 percent of households in the Houston-Galveston region do not have access to a motor vehicle; school-aged children who are too young to drive represent 16 percent of the region's population.<sup>12</sup>

### Percent of Households without a Vehicle<sup>3</sup>

MSA Size	1995	2001	2009
<b>Rural, Not in MSA</b>	5.3%	5.8%	5.6%
<b>&lt; 250,000</b>	4.8%	5.8%	6.3%
<b>250,000 to 499,999</b>	7.3%	5.2%	5.6%
<b>500,000 to 999,999</b>	6.3%	7.0%	8.3%
<b>1 to 2.9 million</b>	6.9%	6.4%	7.2%
<b>3+ million</b>	11.2%	11.9%	12.6%

MSA = Metropolitan Statistical Area

### Cost Comparison of Automobile Travel and Walking<sup>14</sup>



- ▶ A recent study by the Texas Transportation Institute found that congestion was responsible for an annual \$78 billion loss in fuel during traffic jams in 2007, an increase from \$57.6 billion in 2000.<sup>15</sup>
- ▶ The cost of owning and operating a car, currently estimated at \$9,055 per year, can account for almost 18 percent of a typical household's income. Compare that with the \$120 yearly operating cost of owning a bicycle, or essentially free travel by foot.<sup>16</sup>



# Principles

## What makes a good pedestrian experience?

In our region's subtropical climate, a good pedestrian environment should offer relief from the heat and humidity. We can't escape the natural elements, but we can design attractive and inviting spaces that mitigate inclement weather. Well-designed sidewalks or trails are a composite of many characteristics rather than a single amenity or attribute. This section elaborates on the following criteria:

- **Accessibility:** Sidewalks and trails are designed to accommodate a wide range of user groups.
- **Comfort and Convenience:** Pedestrian amenities and design materials facilitate all types of activities, ranging from work commutes, health and fitness, leisurely strolls, and other outdoor activities.
- **Connectivity:** Each path provides direct routes to destinations or other modes of transportation.
- **Safety:** Walkways are delineated from automobiles and bike traffic to avoid collisions, and they are well lit and within view of the public eye to deter crime.

More than 200 communities across the country have adopted complete streets policies that tie these pedestrian-friendly characteristics into development ordinances and transportation initiatives.<sup>17</sup> The term "complete streets" typically refers to roadways that are designed for all types of users and abilities. Unlike with traditional roadway design, pedestrians, transit riders, and bicyclists are placed on equal footing with motorists. These policies must balance best practice standards with administrative flexibility to address user- and site-specific conditions. They also must be tailored to the size and character of a community. A complete street in downtown Houston would contrast one in downtown Hempstead, just as traditional roadway standards vary from urban to rural environments.

**Outdoor Dining** enhances the streetscape with lively sidewalk activity, as long as it is placed in unobtrusive locations within the building zone. It also increases restaurant visibility and real estate values.

**Mixed-Use Buildings** attract active uses that generate foot traffic. These buildings typically offer retail, services, and entertainment uses on the street level. They oftentimes include uses like office space and residential on the upper floors.

**Awnings** protect pedestrians from sun and rain while adding variety to building facades. Typically, the style and size are coordinated among nearby business owners to ensure a compatible aesthetic.

**Street Furniture** is a broad classification of amenities that range from functional uses, like trash cans and bus shelters, to decorative displays, such as public art installations. Maintenance requirements, like trash and graffiti removal, should be calculated into the long-term cost.

**On-Street Parking** typically comes in the form of parallel and angled parking spaces. This type of activity is a traffic calming device that helps to slow vehicle speeds.



**Building Transparency** refers to the use of glass windows and doorways on street-level facades to increase pedestrian safety and visual interest.

**Transit Linkages**, such as bus shelters, transit stops, and bicycle racks, supplement walking and accommodate longer travel distances.

**Parking Garages** reduce the surface area required for parking, which preserves more space for active uses especially when designed with mixed-use tenants on the street level.

**Sight Lines** at intersections should be clear of obstructions (e.g., street trees, furniture) to maximize visibility of pedestrians and other safety hazards.

**Paving Patterns**, such as stamped concrete, inlaid brick, and other unique features, help to delineate pedestrian travel areas and direct traffic.

**Crosswalks and Mid-Block Crossings** use a combination of visual and audible signals, paving and striping patterns, tactile surfaces, and ramps to facilitate pedestrian crossings and to alert motorists of safety hazards.

**Access Management** protects pedestrians from excessive curb cuts resulting in unexpected automobile traffic. Any break along an urban building face or "street wall" for vehicle access should be clearly demarcated with contrasting pavers, signage, mirrors, and/or signals to maximize visibility and awareness.

## Accessibility



Positive  
Example



Negative  
Example

Studies show that approximately 70 percent of Americans will have a temporary or permanent disability at some point in their lives.<sup>18</sup> This statistic, combined with the region's diverse population, underscores the need for sidewalk and trail facilities that accommodate all ages and physical abilities (i.e., universal design). Federal, state, and local accessibility standards are derived from the Americans with Disabilities Act of 1990 (ADA) and Americans with Disabilities Act Accessibility Guidelines (ADAAG). In addition to federal compliance, sidewalk and trail developments within the 13-county H-GAC region also must conform with local and state requirements and guidelines, such as the Architectural Barriers Act, Architectural Barriers Texas Accessibility Standards (TAS), and TxDOT Roadway Design Manual.





## Comfort and Convenience

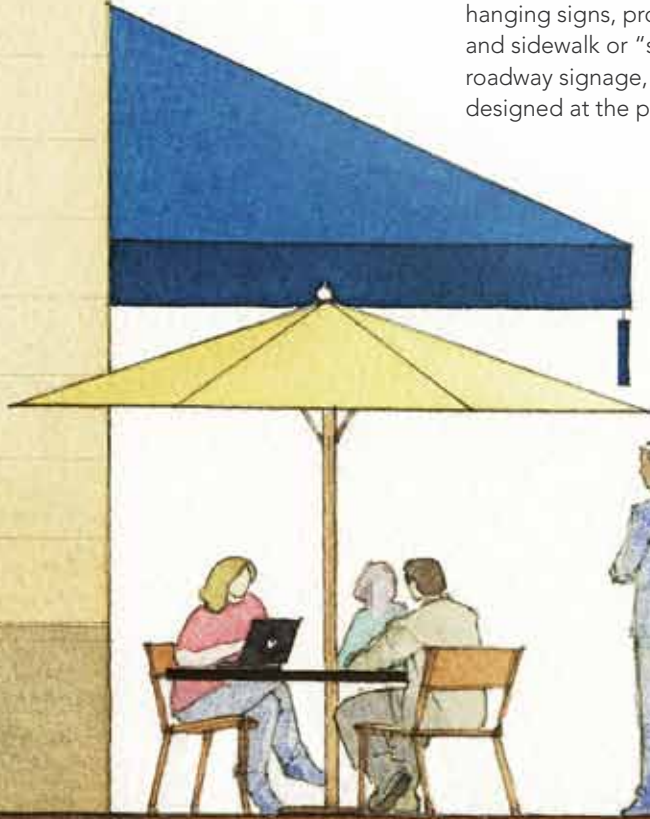
The physical dimensions, amenities, and materials of pedestrian access routes directly influence how much time we spend outdoors. Given the up front installation and maintenance costs, each enhancement should be strategically located in areas with the highest pedestrian traffic counts - or the greatest potential to attract more walking.

**Pedestrian Signage** includes everything from hanging signs, projecting signs and banners, and sidewalk or "sandwich board" signs. Unlike roadway signage, these are more detailed and designed at the pedestrian eye level.

**Vertical Clearance** involves keeping the pedestrian zone free from tree limbs up to eight feet from the ground.

**Street Trees** come in a variety of shapes, sizes, and colors, depending on the microclimate and design aesthetic. They can contribute to character or theme (e.g., palm trees); offer shade and protection from the elements; reduce vehicle speeds; or represent a combination of all three.

**Pedestrian Lighting** is optimized for the human scale, typically involving shorter light poles with decorative fixtures. This type of amenity improves visibility, safety, and overall ambience.



### Building Zone 0 to 5 Feet

Includes building amenities such as outdoor dining, merchandise display, or awnings.

### Pedestrian Zone Minimum 5 Feet

Clear and unobstructed for pedestrian movement.

### Curb Zone 5 to 10 Feet

Includes utilities, street trees, furnishings, and lighting.



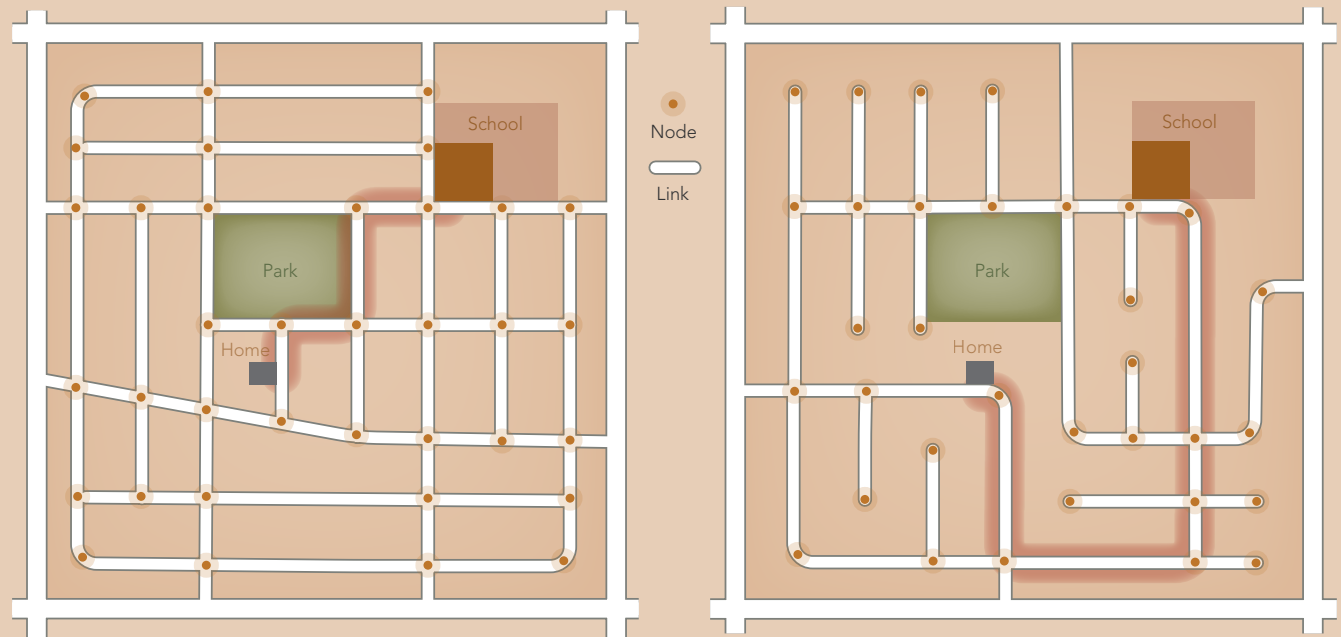
## Connectivity

Pedestrian pathways should provide direct and seamless routes to travel destinations. Over the last 50 years, development patterns have deviated from interconnected grid systems to cul-de-sacs and superblocks. These developments typically provide internal pedestrian circulation, but they oftentimes lack connectivity to adjoining subdivisions and land uses. In some cases, neighbors with back-to-back yards may need to travel several miles by vehicle or foot to visit one another. Built and natural barriers can also inhibit pedestrian travel, such as a highway or bayou crossings. In these cases, pedestrian improvements like footbridges and underpass sidewalks ensure continuous access. Disjoined pathways also occur in older neighborhoods when broken sidewalks or sidewalk gaps lower the effectiveness of the whole system.

### Connectivity Index

Connectivity indexes quantify how well roadway and sidewalk networks connect to destinations. A higher number indicates travelers have more route choice and more direct access. The ratio is derived by dividing the number of street links by the number of nodes, or junction points, within a subdivision. Cul-de-sacs and dead-ends reduce the overall value.

Many communities have adopted connectivity indexes in their land development regulations. The minimum threshold varies, but a walkable neighborhood typically has a connectivity ratio of at least 1.40.<sup>19</sup> The following illustrations are shown for comparison of two alternative subdivision designs. The example with higher connectivity provides a direct path from a central home to the neighborhood school, whereas the other example illustrates a more circuitous route.



**HIGHER  
CONNECTIVITY**  
65 Links  
36 Nodes

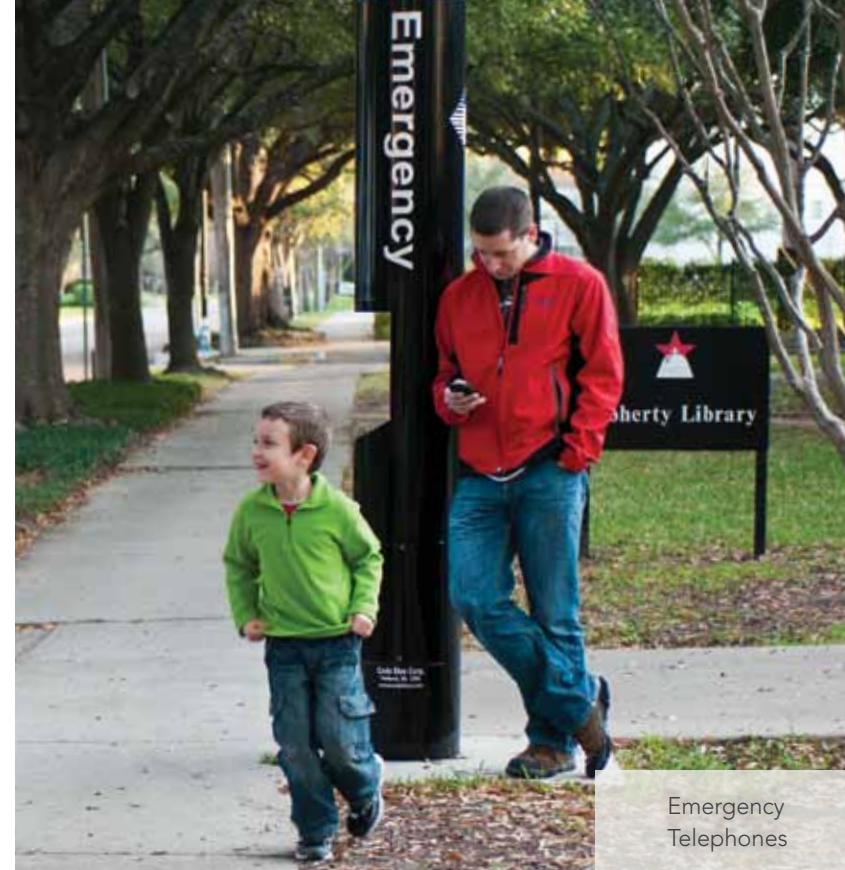
1.81

**LOWER  
CONNECTIVITY**  
39 Links  
33 Nodes

1.18



Median Refuge Island



Emergency Telephones



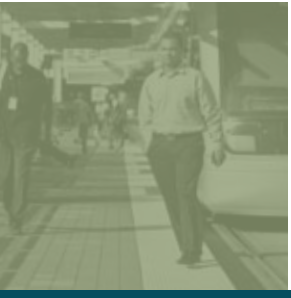
Corner Visibility  
(Negative Obstruction Illustrated)



Tactile Cues

## Safety

In 2009, approximately 63,000 pedestrians were injured or killed in the U.S. from vehicle crashes<sup>20</sup>. Although the current trend has been decreasing each year, there are numerous traffic-calming interventions (e.g., fewer lanes, narrower lanes, and median refuge islands) that aim to slow down vehicle speeds. These measures, when reinforced with crosswalk signals, paving markings, access management, and corner visibility, increase a motorist's awareness of pedestrians. Pedestrians may also be vulnerable to criminal activity. Many communities have integrated Crime Prevention through Environmental Design (CPTED), a four-pronged approach to criminal deterrence. These strategies include natural surveillance, natural access control, territorial reinforcement, and maintenance. CPTED is based on the premise that the physical design and character of the built environment reduces actual and perceived threats of criminal activity.



## Design

# What distinguishes one pathway from another?

Sidewalk and trail design should adapt to the surrounding environment, types of users, intensities of uses, and availability of land. The region benefits from a wide variety of pedestrian pathways that accommodate different functions: work commutes, school routes, and recreational activity. Each pathway should be designed to intersect at community nodes, which link pedestrians to employment centers, mixed-use districts, residential neighborhoods, shopping centers, transit stops, and multi-jurisdictional paths. This section identifies three pathway types: main streets, local streets, and recreational trails.

Every design decision comes with financial and opportunity costs. Wider sidewalks leave less space for on-street parking or vehicular travel lanes, whereas narrow urban sidewalks may be incapable of handling peak pedestrian flows. The selection of materials and amenities also comes with a tradeoff. For instance, concrete multi-use paths are preferred for pedestrian environments, but they generally cost 30 to 60 percent more than asphalt surfaces.<sup>21</sup> The roles of the planner, designer, and developer are to weigh the costs and benefits and select appropriately scaled pathways that best fit the community.

The sidewalk and trail guidelines are designed to serve as best practices, ranging from minimum accessibility standards to optimal usage requirements. None of these recommendations offers a one-size-fits-all solution, but instead they present baselines that can be tailored to specific conditions. Regardless of the pathway classification, the most effective sidewalks and trails complement the citywide, regional, and state pedestrian systems, connecting each segment type to the larger network.

## Dimensions

Minimum design standards for most local sidewalks and trails are under the authority of local development ordinances and/or infrastructure standards. Local standards must meet or exceed the Texas Accessibility Standards and the Americans with Disabilities Act Accessibility Guidelines (ADAAG) when involving places of public accommodation (e.g., parks, restaurants, retail stores, etc.). Other than fulfilling design minimums, the spatial dimension and configuration of each pathway should conform to local needs. Areas with more intense use (e.g., main streets) require wider pedestrian zones and generally benefit from the most public investment. The following table provides examples of spatial requirements for different activities.

Width <sup>22</sup>	Activity
3 ft.	Pedestrian with walker
3 ft.	Tourist with wheeled luggage
3 ft.	Wheelchair user
3 ft.	Jogger
4 ft.	Parent walking with child in hand
5 ft.	Business colleagues with briefcases
5 ft.	Wheelchair user with pet on leash
5 ft.	Wheelchair turning 180 degrees
6 ft.	Two parents pushing strollers



**Main Streets**

Sidewalks along main streets, commercial and entertainment districts, and major corridors attract the highest pedestrian flow volumes and largest diversity of users. They are most effective when surrounded by mixed uses that promote daytime and nighttime activity.

**Surface Materials:** Concrete, brick, stone, accent pavers

**Common Amenities:** Awnings, tree grates, pedestrian-scale lighting and signage, trash receptacles, transit stops, public art

**Funding Opportunities:** Capital Improvement Program, Business Improvement Districts, Community Development Block Grants, Chamber of Commerce and other community partners, transit agencies



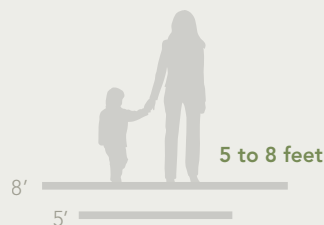
**Local Streets**

Local streets are integrated into neighborhoods and connect residents to destinations, such as schools, parks, and commercial centers. The intensity of use is dependent on the time of the day (e.g., school dismissal). While these sidewalks tend to have fewer amenities than main streets, their continuity and condition are essential for safe passageway.

**Surface Materials:** Concrete, accent pavers

**Common Amenities:** Neighborhood monuments, street trees, benches

**Funding Opportunities:** Capital Improvement Program, Private Homeowners and Developers, Homeowner and Neighborhood Associations, Community Development Block Grants, National Center for Safe Routes to School



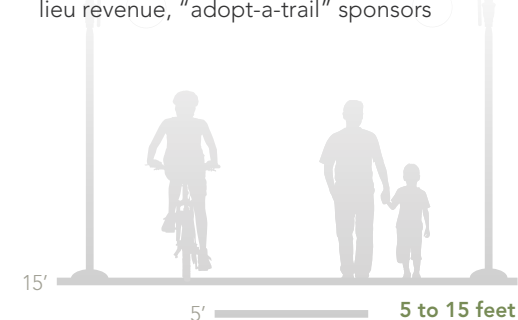
**Recreational Trails**

The functional use of recreational trails depends on their spatial dimensions and surface materials. These pathways range from five-foot wide trails to 15-foot wide shared-use paths that accommodate bicyclists and roller bladers, along with walkers and joggers.

**Surface Materials:** Concrete, asphalt, crushed gravel, rubber, permeable pavers

**Common Amenities:** Water fountains, benches, bicycle racks, fitness course, emergency telephones, directional/educational signage

**Funding Opportunities:** Capital Improvement Program, Texas Parks and Wildlife, federal transportation grants, Homeowner and Neighborhood Associations, ADA compliance, parkland dedication/fee-in-lieu revenue, "adopt-a-trail" sponsors





# Implementation

## How do we get started?

Implementation is a collaborative effort, requiring the support of elected and appointed leaders, governmental and non-governmental institutions, developers, business owners, and residents. Each jurisdiction within the 13-county region should be guided by policies and planning documents that are consistent with the regional vision for an interconnected, multi-modal system that promotes pedestrian travel. This section is divided into six implementation steps.



### 1. Assessment

What are the key considerations for improving walkability?



### 2. Planning

How does H-GAC's Pedestrian-Bicyclist Program address pedestrian planning?



### 3. Governance

What role do local governments play?



### 4. Partnerships

How can pedestrian projects complement other infrastructure projects?



### 5. Financing

What steps should be taken to optimize funding?



### 6. Construction

What considerations need to be addressed to construct projects?

# 1

## Assessment



Quantitative and qualitative assessment of walking conditions is the first step to implementation. Data analyses, field inventories, and stakeholder participation should involve a variety of user groups and technical experts. The following questions and considerations can be used to guide the process:

### Can I get there?

- ▶ Regional connectivity?
- ▶ Missing links in the pathway network?
- ▶ Appropriate mix of land uses?
- ▶ Transit access?
- ▶ Lengthy construction projects?
- ▶ Direct routes to destinations?
- ▶ Built and natural barriers?
- ▶ Connected street patterns?
- ▶ Convenient crosswalks?

### Is walking accessible to all users?

- ▶ Curb cuts and ramps?
- ▶ Appropriate sidewalk dimensions?
- ▶ Audible, visual, and tactile warning signals?
- ▶ Paving material and conditions?
- ▶ Changes in grade and cross slope?

### Are the conditions safe?

- ▶ Vehicle and pedestrian separation?
- ▶ Corner visibility?
- ▶ Pedestrian-scale lighting?
- ▶ Traffic calming?
- ▶ Access management?
- ▶ Crash history?
- ▶ Speed limits?
- ▶ Natural access control and surveillance?

### Is the experience convenient and comfortable?

- ▶ Appropriate block lengths?
- ▶ Building placement, orientation, and scale?
- ▶ Adequate shading?
- ▶ Maintenance of street trees and shrubs?
- ▶ Street furniture placement and condition?
- ▶ Pedestrian-scale signage?



## Street Smart Walk Score®

This online assessment tool evaluates the walkability of neighborhoods, districts, and cities. The algorithm is based on proximity and intensity of nine pedestrian-friendly amenities, including grocery stores, restaurants, parks, and schools.<sup>23</sup> Amenities within a quarter-mile radius receive maximum points; no points are awarded for amenities located further than one mile.

Some classifications have a higher multiplier than others if they generate more foot traffic, such as grocery stores. There are also point penalties for pedestrian deterrents, such as long blocks or low intersection densities.

Among the top five largest cities in Texas, the City of Houston has the highest Walk Score® (49.8). Planners can also use this tool at a more detailed scale to evaluate areas of need and gaps in citywide pedestrian networks. While the analysis is limited to proximity and intensity of pedestrian-friendly amenities rather than quality and function, its findings can influence neighborhood and city planning decisions, developer site selection, location of transit centers, and other transportation investments. Visit <http://www.walkscore.com> for additional information and resources.

- 90 - 100** Walker's Paradise: Daily errands do not require a car.
- 70 - 89** Very Walkable: Most errands can be accomplished on foot.
- 50 - 69** Somewhat Walkable: Some amenities within walking distance.
- 0 - 49** Car-Dependent: A few to no amenities within walking distance.

Houston Metropolitan Area Walk Score® Map<sup>24</sup>



H-GAC's Pedestrian and Bicyclist Program focuses on four planning strategies to improve pedestrian mobility.

- ▶ **Regional Corridors** provide continuous travel through multiple jurisdictions, linking municipal, county, and state segments. Because they require continuous right-of-way, these corridors are often found along waterways, greenways, and utility easements. In a system that is only as strong as its weakest link, regional corridor planning identifies gaps in the network. This type of planning may entail new connections from one jurisdiction to another, improving or replacing existing pathway segments, or providing direct access to destinations.
- ▶ **Special Districts** are identified in H-GAC's Pedestrian and Bicyclist Special District Study as conducive areas for walking and bicycling based on demographic and physical characteristics. Pedestrian planning within these areas tends to focus on connectivity and beautification at the district scale.
- ▶ **Livable Centers** are mixed-use activity centers that are designed for pedestrian convenience. As one-stop destinations, they offer housing, employment, shopping, entertainment, and transit linkages within short walking distance. From conception, these destinations are designed with pedestrian-oriented and -scaled buildings, good separation of people on foot from vehicle circulation and parking, and community gathering spaces.
- ▶ **Transportation Improvements** of all types should optimize pedestrian travel, especially roadway construction, widening, and maintenance projects. These design considerations, when addressed in the initial planning stages, help to improve pedestrian safety and enhance the overall functionality of a project in the most cost-effective manner.



Local elected officials and staff are equipped with policy, management, and regulatory tools for implementing pedestrian-friendly infrastructure and development in the public and private realms. These include:

- ▶ **Plan Adoption.** Upon completion of planning studies, the governments should adopt these policy documents through elected and appointed bodies such as city councils, planning commissions, and parks and recreation boards. This solidifies public support, helps to establish community priorities, and may affect grant eligibility.
- ▶ **Capital Improvements Programming.** The capital improvements program typically refers to a jurisdiction's multi-year plan for budgeted capital projects. Decisions regarding the prioritization of and expenditures for proposed pedestrian improvements should reflect community values and policies articulated in the planning process.
- ▶ **Development Regulations and Standards.** Regulatory tools influence the character and quality of public and private pedestrian access routes. Development regulations and standards are designed to further community priorities identified in the planning stage, as long as they do not unnecessarily delay or interfere with appropriate new development or redevelopment.

Beyond these roles, elected officials and local governments are responsible for advocating pedestrian-friendly development and awareness; identifying community leadership on specific projects and policies; and soliciting community participation and buy-in. As the 13-county region continues to grow, policies and regulations may need to be re-evaluated more frequently.

Local governments are equipped with a range of regulatory tools and standards to incentivize and mandate pedestrian-friendly pathways. This matrix identifies types of regulations and standards that support the central tenets of a good pedestrian environment.

PRINCIPLES	REGULATIONS AND STANDARDS
<p><b>Accessibility</b></p> <ul style="list-style-type: none"> <li>▶ Accessible to all users and abilities</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Complete Streets</li> <li>&gt; Sidewalk and trail design</li> <li>&gt; Audible, visual, and tactile warning signals</li> <li>&gt; Pedestrian Level of Service (PLOS) standards</li> <li>&gt; Building access and street orientation</li> <li>&gt; Locational standards</li> <li>&gt; Accessible surfaces and grades</li> </ul>
<p><b>Comfort and Convenience</b></p> <ul style="list-style-type: none"> <li>▶ Attractive and inviting ambience</li> <li>▶ Pedestrian orientation and scale</li> <li>▶ Weather protection</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Mixed-use development patterns</li> <li>&gt; Building placement, orientation, and scale</li> <li>&gt; Pedestrian and vehicular travel lane separation</li> <li>&gt; Landscaping standards</li> <li>&gt; Streetscape amenities</li> <li>&gt; Pedestrian-scale lighting</li> <li>&gt; Building massing and articulation</li> <li>&gt; Coherent signage</li> <li>&gt; Street enclosure</li> <li>&gt; Interpretative signage</li> <li>&gt; Shade structures</li> <li>&gt; Surface material</li> <li>&gt; Window transparency</li> <li>&gt; Architectural detail</li> </ul>
<p><b>Connectivity</b></p> <ul style="list-style-type: none"> <li>▶ Linkages to existing paths</li> <li>▶ Designated routes</li> <li>▶ Connected street patterns</li> <li>▶ Hierarchy of streets</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Continuous sidewalks and trails</li> <li>&gt; Street connectivity index</li> <li>&gt; Maximum block lengths</li> <li>&gt; Street classifications</li> <li>&gt; Alternative street cross-sections</li> <li>&gt; Building access and street orientation</li> <li>&gt; Land dedications</li> <li>&gt; Transfer of development rights</li> </ul>
<p><b>Safety</b></p> <ul style="list-style-type: none"> <li>▶ Vehicular and pedestrian separation</li> <li>▶ Pedestrian visibility</li> <li>▶ Slower traffic speeds</li> <li>▶ Crime deterrence</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Access management</li> <li>&gt; Traffic calming measures</li> <li>&gt; Lighting</li> <li>&gt; Maximum visibility and activity</li> <li>&gt; Safe street crossings</li> <li>&gt; Intersection and roadway design</li> <li>&gt; Sidewalk buffers from vehicular traffic</li> <li>&gt; Vehicular speeds</li> </ul>



## 4 Partnerships



There are many ways to partner pedestrian projects with other planned infrastructure efforts identified in a state, regional or local entity's capital improvement or transportation improvement program. Examples include:

- ▶ **Roadway Projects.** Look for opportunities to add or enhance pedestrian accommodations with new roadway projects, reconstruction or widening, intersection signal and timing improvements, or traffic calming measures. Coordination among multiple modes of transportation provides better mobility for all individuals.
- ▶ **Transit Projects.** Identify transit projects or facility improvements that could enhance pedestrian access to and around transit stops including lighting, landscaping, wider sidewalks (ADA compliance), and connections to activity centers and other modes of transportation.
- ▶ **Utility Projects.** Partner pedestrian upgrades, such as new or improved sidewalks or pathways, with utility construction or relocation, along with other types of public works projects.
- ▶ **Development Projects.** Ensure that ordinances or development criteria require basic pedestrian facilities and access.
- ▶ **Other Programs.** Seek out local, state, regional, or national programs that provide partnerships for accommodating pedestrian facilities. Examples include parks or greenway programs, the Complete Streets program, Safe Routes to School program, or downtown or neighborhood revitalization programs.

## 5 Financing



Financing tools are critical and can be the most challenging aspect of pedestrian facility implementation. Fortunately, numerous funding opportunities are available through federal, state, local, private or a combination of such resources.

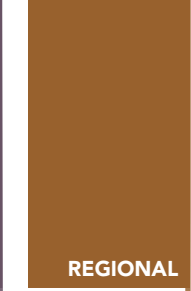
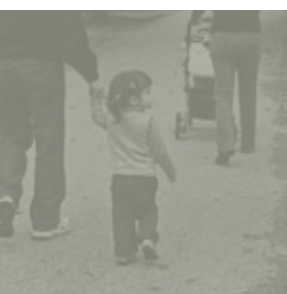
- ▶ **Identify Funding.** Metropolitan Planning Organizations initiate a "call for projects" each year, to solicit applications for federal funding allocations. Pedestrian-related projects often compete with roadway or transit projects, so it is beneficial to have them incorporated or partnered with a larger roadway or transit project application. Other funding resources may be found at the federal, state or local levels in the form of grants or loan programs, including for safety-related pedestrian projects.
- ▶ **Prioritize Projects.** Community consensus and elected official support should prioritize needed or desired pedestrian projects, and can increase the funding potential of a particular project.
- ▶ **Assess Cost-Benefit.** Pedestrian projects may be supported by the public and elected officials if the cost-to-benefit ratio is sound. Cost should account for construction and maintenance, and benefit should emphasize reduced reliance on motorized vehicles, personal accessibility, and the value added to a community.
- ▶ **Leverage Funding.** Once project funding is secured, identify ways to leverage even more. Local match is usually required on all federally-funded projects. Using a local grant or a secured funding source as the local match may increase the likelihood of receiving federal funding.

## 6 Construction



The final step to implementing pedestrian accommodations is construction. During the construction phase of a project, it is important to keep the end users in mind before, during and after facility completion. Below are a few ways to accommodate pedestrians during construction.

- ▶ **Timing.** Construction of a pedestrian facility should be timed in stages, working on small sections at a time in order to minimize overall impacts to pedestrian access.
- ▶ **Safety and Access.** During construction, pedestrians may continue to use existing and under-repair facilities. Proper signage, lighting, and drainage should be provided to assist pedestrians in safely navigating around or through a construction site. If construction detours are used, efforts should be made so the temporary routes or linkages must still meet ADA requirements.
- ▶ **Maintenance.** Once construction of a pedestrian facility has been completed, a local jurisdiction, agency, or other entity will be responsible for its maintenance. Maintenance and upkeep are essential to the lifespan and usability of pedestrian facilities. Depending on the durability and quality of materials originally used to construct the facility, a schedule for inspection should be developed to determine if and when maintenance may be required. When maintenance issues do arise, it is important to address and fix any problems in a timely manner in order to not adversely impact the pedestrians that use the facility.



## Resources

### What tools are available?

There are a variety of tools and resources to assist with planning and implementing better pedestrian facilities into your community. This section includes links to guides and resources, pedestrian organizations and advocacy groups, design guidelines, funding sources, and federal transit programs. A "Google" search of "pedestrian best practices" will retrieve over 1,000 results of pedestrian-related projects and programs that have been successfully implemented.

Local partnerships, as well as community input and support, are valuable tools for pedestrian project implementation. The public should be engaged as early as conceptual planning and design, all the way through ribbon cutting and everyday use of a facility.

#### Guides and Resources

▶ **ADA Best Practices Tool Kit for State and Local Governments**

> <http://www.ada.gov/pcatoolkit/chap6chklist.htm>

▶ **International CPTED Association**

> <http://cpted.net>

▶ **United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations**

> [http://www.fhwa.dot.gov/environment/bikeped/policy\\_accom.htm](http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm)

#### Pedestrian Organizations and Advocacy Groups

▶ **Advocacy Advance**

> <http://www.advocacyadvance.org/resources>

▶ **Alliance for Biking and Walking**

> <http://www.peoplepoweredmovement.org/site/index.php/site/memberservices/C530>

▶ **America Walks**

> <http://americawalks.org>

▶ **Association of Pedestrian and Bicycle Professionals**

> <http://www.apbp.org>

▶ **Measuring Walking**

> <http://www.measuring-walking.org>

▶ **National Center for Bicycling and Walking**

> <http://www.bikewalk.org/index.php>

▶ **National Center for Safe Routes to School**

> <http://www.saferoutesinfo.org>

▶ **National Complete Streets Coalition**

> <http://www.completestreets.org>

▶ **Pedestrian and Bicycle Information Center**

> [www.walkinginfo.org](http://www.walkinginfo.org)

▶ **Pedestrian Quality Needs Project**

> <http://www.walkeurope.org>

▶ **Rails to Trails Conservancy**

> <http://www.railstotrails.org>

▶ **USDOT Office of Livability**

> <http://www.dot.gov/livability>

▶ **Walkable Communities**

> <http://www.walkable.org>

▶ **Walk Friendly Communities and "Community Assessment Tool"**

> <http://www.walkfriendly.org/>; [http://www.walkfriendly.org/WFCAssessmentTool\\_Nov2011.pdf](http://www.walkfriendly.org/WFCAssessmentTool_Nov2011.pdf)

## SPECIAL DISTRICTS

Drainage  
Flood Control  
Levee Improvement  
Municipal Utility

Economic Development Corporations

## LOCAL ORGANIZATION AND SUPPORT

Chambers of Commerce  
Convention and Visitors Bureaus  
Neighborhood Groups  
Homeowners Associations  
Individual Property Owners

## SERVICE / CHARITABLE

Boy Scouts and Girl Scouts  
Keep Texas Beautiful Affiliates  
Local Foundations

## RECREATION

Walking Clubs  
YMCA

## LOCAL AND NATIONAL BUSINESSES

Bicycle and Sporting Goods Stores  
Builders/Developers  
Hardware and Building Stores  
Fitness/Wellness Centers  
Pipeline Companies  
Oil/Gas/Chemical Companies  
Railroads (Rails-to-Trails)  
Utility Companies

## PARTNERSHIPS

### Design Guidelines

- ▶ **A Resident's Guide for Creating Safe and Walkable Communities (FHWA), 2008**
  - > <http://katana.hsrrc.unc.edu/cms/downloads/residentsguide.pdf>
- ▶ **Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommended Approach**
  - > <http://www.fhwa.dot.gov/environment/bikeped/design.htm>
- ▶ **Guide for the Planning, Design, and Operation of Pedestrian Facilities (AASHTO), 2004**
  - > [https://bookstore.transportation.org/item\\_details.aspx?id=119](https://bookstore.transportation.org/item_details.aspx?id=119)
- ▶ **How to Develop a Pedestrian Safety Plan**
  - > <http://katana.hsrrc.unc.edu/cms/downloads/howtguide2006.pdf>

### Funding Sources

- ▶ **Houston, Texas Funding Profile created through Advocacy Advance**
  - > [http://www.bikeleague.org/resources/reports/pdfs/houston\\_funding\\_profile\\_final\\_compress.pdf](http://www.bikeleague.org/resources/reports/pdfs/houston_funding_profile_final_compress.pdf)
- ▶ **Congestion Mitigation and Air Quality (CMAQ)**
  - > [http://www.fhwa.dot.gov/environment/air\\_quality/cmaq](http://www.fhwa.dot.gov/environment/air_quality/cmaq)

- ▶ **U.S. Department of Houston and Urban Development, Community Development Block Grant Program**
  - > [http://portal.hud.gov/hudportal/HUD?src=/program\\_offices/comm\\_planning/communitydevelopment/programs](http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs)

### Federal Transit Programs

- ▶ **Jobs Access Reverse Commute Program (JARC)**
  - > [http://www.fta.dot.gov/grants/13093\\_3550.html](http://www.fta.dot.gov/grants/13093_3550.html)
- ▶ **Urbanized Area Formula Program (5307)**
  - > [http://www.fta.dot.gov/grants/13093\\_3561.html](http://www.fta.dot.gov/grants/13093_3561.html)
- ▶ **Highway Safety Improvement Program (HSIP)**
  - > <http://safety.fhwa.dot.gov/hsip/resources/fhwasa09029>
- ▶ **Recreational Trails Program (RTP) through the Texas Parks and Wildlife Department**
  - > <http://www.tpwd.state.tx.us/business/grants>
- ▶ **Surface Transportation Program (STP)**
  - > <http://www.fhwa.dot.gov/safetealu/factsheets/stp.htm>
- ▶ **Texas Transportation Enhancement (TE) Program**
  - > <http://www.txdot.gov/business/governments/te.htm>
- ▶ **Texas's Safe Routes To School (SRTS) Program**
  - > <http://www.saferoutestx.org>
- ▶ **Federal Highway Association Recreational Trails Program**
  - > <http://www.fhwa.dot.gov/environment/recreational/index.htm>

The preparation of this document has been financed in part through grant(s) from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the Metropolitan Planning Program, Section 104(f) of Title 23, U.S. Code. The contents of this document do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

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