



# Pedestrian Scale Design and the Public Realm



**MICHIGAN ECONOMIC  
DEVELOPMENT CORPORATION**

## *What you will learn:*

*What does pedestrian scale mean*

*Why is it important*

*What are the different elements of design*

*How requiring specific design standards will yield better projects*

*How to implement design standards*

The pedestrian perspective is one of the most thrilling and intimate ways to experience a place. A pedestrian can meander beneath verdant tree canopies, stroll alongside vibrant and varied storefronts and porches, greet friends, provide directions to strangers, or simply spend quality time walking a four-legged friend.

Everyone, at some point, is a pedestrian, whether they arrive to a place via car, transit, or bicycle. As we embark on building 21st century cities, towns and villages, the pedestrian (and the pedestrian scale and experience) becomes critical. Understanding how pedestrian scale can be used to rethink and rebalance the largest public space in our communities – the streetspace – will help us to make our future cities, towns and villages more resilient and sustainable for everyone.

Streetspaces, the streets and sidewalks (and the building walls that enclose them) typically represent about 25% to 30% of the land area of our big cities and small towns. As public assets they provide myriad opportunities to reshape and rescale our places to human beings.

Today streetspaces are primarily used as transportation linkages for single occupancy automobiles, complete with scales that prioritize and promote that singular use; however, historically they were places of commerce and gathering - essentially outdoor rooms, or third places - that provided a space for living, working, shopping, learning, recreating, and moving. Pedestrian scaling begins the effort to rebalance these public spaces from today's automobile-dominant, single-use thoroughfares into tomorrow's outdoor rooms.

Published by the  
**MICHIGAN ASSOCIATION OF PLANNING**  
Summer 2020  
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## Resources:

Some of the information contained within this document was derived from the Downtown Grand Rapids Incorporated (DGRI) Streetspace Guidelines. These guidelines have an extensive bibliography and far more information on human scaled placemaking.

Other pertinent documents and books include:

Center for Active Design & City of New York: Active Design, Shaping the Sidewalk Experience.

*Cities for People* by Jan Gehl and *New City Life* by Jan Gehl (These two books are essential to understand pedestrian scale and how to make places for people. Gehl is the global expert on this topic)

*Street Design: The Secret to Great Cities and Towns* by Victor Dover and John Massengale (This may be the single best book regarding human scaled street design)

*Walkable City, How Downtown Can Save America, One Step at a Time* by Jeff Speck

*Walkable City Rules, 101 Steps to Making Better Places* by Jeff Speck

Streetspaces provide a public platform for people to experience a place with nothing but their own two feet. When they are good, streetspaces are interconnected, interesting, enduring, and inviting. High quality streetspaces entice people to walk and linger within them, and to be physically active without knowing it. They play a critical role in physical activity and health, while supporting community, the local economy, and shared spaces.

### **What does it mean to be pedestrian scaled?**

People walk at about 3 miles per hour and perceive the habitat around them in a complex and multi-sensory way from both a physical and psychological perspective. The understanding of how the human body perceives space is the first step in redesigning and reshaping streetspaces into rich and varied three-dimensional environments at scales that improve human comfort. Pedestrian scale is thinking about how to design and shape the proportion and detail of a place to illicit a positive response from human beings as they intimately observe the space. Critical elements of human scale places include:

#### **1. Narrative of Dimension and Distance**

The streetspace, and specifically the building walls that enclose the outdoor room, provide a narrative to the human experience and act as variable edges along the path of human travel, creating complex partial enclosures and potentially lending a certain place-

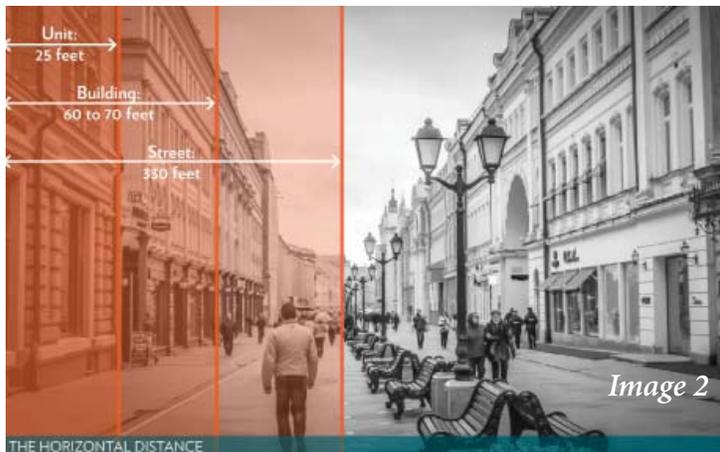
based uniqueness to the experience. Building walls that provide this enhanced pedestrian environment require increased attention to, and complexity within, two critical linear dimensions. These are the vertical dimensions of the building ground floor - which passes immediately beside pedestrians as they are walking - and the horizontal distance, or the distance down the street that is visible and legible to the pedestrian.

Credible and legible horizontal distance is needed to beckon people to continue their journey along the sidewalk. Properly articulated and detailed vertical dimension is needed to both invite people to linger within the streetspace and to continue their journey along the sidewalk.

**Vertical Dimension** (refer to image 1): The pedestrian's experience is strongly influenced by the vertical height



of the building wall or frontage. The image indicates the eye height (horizontal line) and the perceived vertical height most intensely experienced by the pedestrian. The human eye typically perceives the space within the angles of 50 - 55 degrees above and 70 - 80 degrees below a direct horizontal line. This is the lower one to two floors of a building. This lower portion of the building wall plane is most successful when it contains a sufficient level of detail and articulation, where it is more closely readable to the human eye while rendering the sidewalk experience interesting and engaging for the walker. This is where it is important to have a high level of detail, higher quality materials, and some degree of variety.



**Horizontal Distance** contains three sub-scales (refer to image 2):

**The Scale of the Unit** (or commercial space): The smallest scale of pedestrian experience occurs within the closest 25 feet of the viewer. This is the scale at which the senses are most engaged with the complexities of facade articulation, active entries, materiality, transparency, textures, awnings, signage, and architectural details. This is where the human being will be most engaged, and as the 3 mile per hour movement unfolds, so too should the scale of the unit – a blank wall or parking lot will severely interrupt this experience and result in the possibility of the journey ending prematurely.

**The Scale of the Building:** 60 to 70 feet is the distance at which the human eye can begin to read facial expressions. It is also the mid-scale of rhythm

often demonstrated by vertical distinctions between buildings on the same block. When a single building extends the full length of a block, it can quickly become monotonous and repetitive for the person walking next to it. In cases of long walls, variety should be encouraged using different materials, vertical articulation, vertical window patterns, cornice lines, and other architectural articulations. This mid-scale, when paired with the scale of the street (discussed below), creates a series of organized fixations that the unconscious brain uses to connect a human to the place.

**The Scale of the Street:** 330 feet is often considered the farthest distance that the human eye can see people or objects in motion. At this scale, people see landmarks in the distance, constructed view corridors, or terminated vistas. This is really the length of the outdoor room and careful street scales can invite people to continue their journey by providing a small glimpse of interest on the horizon.

## 2. *Prospect and Refuge*

Your subconscious brain seeks to keep you safe, it does this by continually scanning and processing your environment looking for and maintaining the hard-wired evolutionary desire for secure attachment (or wall hugging). This translates to the desire to want to be close to an edge and to protect your back. Known as prospect and refuge, it is simply the need or desire of people to be closer to an edge and to protect their back – this edge is usually a building wall, but sometimes can be a line of closely spaced street trees that create an illusion of a wall plane, or landscape planters. Physical design elements that greatly influence this feeling of safety and reassurance include:

- Articulated building walls that may have nooks for sitting directly on a ledge, or a space to place a bench up against the wall.
- Interesting walls that offer variety, texture, high-touch materials, and plenty of windows and doors to keep the person engaged as they walk close to the edge of the building.
- Street trees – closely and regularly spaced (about 30 feet on center) and carefully selected for urban conditions, canopy, and size – that help form a secondary edge condition within the street space. Lines of street trees also are great places to install more benches, and even better when the trees are arranged in an allée.

### 3. The Outdoor Room

While this is really part of the prospect and refuge concept because it provides an architecture of reassurance, its importance requires that it be singled out. A legible and coherent outdoor room starts with proportion of the streetspace through a narrow street and scaled building walls. The best proportion is a 1:1 ratio (1 street unit : 1 wall unit), meaning that if your right-of-way (sidewalks and street) is 66 feet wide, then your building wall height should be close to 66 feet (about 4 to 5 stories). Of course, narrower streets and taller buildings can be paired, but at some point, the streets become relatively inhospitable canyons that receive very little sun and are prone to being wind tunnels, like many in lower Manhattan.

Equally, the right-of way can become wider, and buildings shorter, but in a very small iteration you will end up with an uncontained and poorly defined space that is no longer providing the “architecture of reassurance” and instead makes most people feel as though they are “lost in space”. Many of our super car-oriented suburban arterials have a 6:1 or higher ratio – and these are purposely not people scaled places.

This ratio is obviously impacted by overly big setbacks, which break down the enclosure of the space. Retail and commercial buildings are typically constructed right up to the property line to achieve and reinforce the coherent street space. Residential buildings will typically vary in their setback condition, but large setbacks – bigger than 20 to 25 feet for single-family homes will significantly impact the condition and perception of your outdoor room.

A quick fix to alleviate some of the scale issues associated with higher proportions of street to building wall is to plant street trees. Street trees will help to rescale the space, and when properly selected to achieve a robust mature canopy, will also provide your room with a ceiling.

### 4. A Permeable Edge

Building walls that form the streetspace edge need to have a high level of permeability, manifested in doors and windows. Lots of windows, specifically articulated as a storefront in retail and commercial conditions allow passersby to look in and window shop, while placing the shopkeepers’ eyes on the street for increased safety.

Doors give the pedestrian opportunities to adjust their journey if so inspired by ducking into a store. Many doors provide many opportunities; one door per block provides little opportunity and is boring to most people. Refer to the two conditions in images 3 and 4, which one is more interesting and enjoyable to someone walking next to it?



Image 3



Image 4

Residential streets, while a bit different than commercial streets, can also provide a permeable edge. Front porches provide a great way to layer permeability onto a street wall because they set up a series of transitional public-private spaces from sidewalk to house. These transitions allow for people to engage with their neighbors without violating private space thresholds. Porches also provide visual interest because they are semi-transparent, non-solid



extensions of the more solid wall of the home that can oftentimes lend a great deal of variety to the streetspace. The porches in image 5 are in Heritage Hill in Grand Rapids. They frame the street while also providing an opportunity for chance encounters with neighbors.

### **5. NO Blank Walls**

An enemy to the permeable edge is the blank wall. Blank walls do nothing for the streetspace and they do nothing for human scale. While small expanses of periodic blank walls may be inevitable, they should be avoided at all costs in all streetspaces.

Buildings that have large wall spans that are blank or even unprogrammed create psychological “dead space” in the same way that parking lots, vacant lots and vacant buildings do.

Active walls reduce this dead space, leading to pedestrian comfort and visual stimulation, while also increasing the perceptions of safe streetspaces.

### **6. Materials**

High-quality and human-scaled materials are the building blocks of good buildings, great streetspaces, and meaningful human experience in the public realm. The message of quality and durability inherent in long-lasting materials promotes the human perception of timelessness and continuity of place.

Material sizes and proportions should follow historic material scale which was typically smaller and more detailed. This smaller material scale provides visual interest at the 3-mph speed of the pedestrian. Many contemporary materials are intended to be viewed at

higher automobile speeds; for instance, the currently in vogue jumbo bricks distort the pedestrian sense of scale and introduce an auto-oriented scale to the streetspace, whereas the standard brick size (3-5/8” x 2-1/4” x 7-5/8”) provides a particularly strong connection between human scale and the built environment. The size of a brick is directly related to the ability of a mason to lay it comfortably by hand.

Human-scaled details also provide a finer-grain building wall that adds to the complexity of the streetspace and breaks down the rhythm of the overall horizontal distance, making street and block lengths appear shorter and thus more inviting to continue the journey. We perceive buildings that have been assembled with human-scaled materials as the result of tangible human activities rather than as synthetic abstractions.

Materials also contribute to the perception of a building’s overall scale and texture. Individual elements of a known size, such as the brick example above, allow the observer to understand the total size and scale of the structure.

Materials make a difference and their selection should be carefully considered though the lens of size, scale, durability, and human perception.

### **7. Simplicity of Material**

Do not be confused by the notion that more materials on a single building will make the architecture better or lead to a better place. There are few examples of buildings worldwide that have 5 or more materials jumbled together that contribute to making a good human scale place.

Limit the number of materials and colors on the primary street-facing facade and avoid mixing several materials in a way that results in an overly busy design. Simple material palettes with only slight variations provide a more coherent building design while maintaining a sense of scale. The use of several different materials and colors is not an effective way to provide building articulation. This is one instance where “less is more” is advice to be followed.

### ***How to begin implementing pedestrian scale?***

In order to build people spaces that are safe, accessible, connected, sustainable, interesting and

memorable we must decide to put people first, and that means designing and planning for the pedestrian. This can effectively be accomplished by reshaping the streetspace (the walls, floor and ceiling of the outdoor room) with policy and design.

Where you start depends on what the context of your community is and what stage of development intensity and evolution your community has achieved. It is also important to remember that the best progress is incremental. Do not sweat it if you can only do small interventions, and never let the perfect get in the way of the good.

The following suggestions are grouped as **Zoning Improvements, Policy Changes, Design Guidelines, and Tactical Interventions**. They are not mutually exclusive and oftentimes work together to build pedestrian scale.

### **Zoning Improvements:**

In commercial areas require or incentivize small ground floor units with many doors. By providing approximately one door every 25 to 30 feet you increase activity and interest at the sidewalk, provide more opportunity for pedestrians to enter a building, and create less potential for blank or non-active street walls. This requirement also potentially encourages smaller retail units which help promote local start-up businesses and provide easier points of entry into commercial ownership by historically disenfranchised people. Note that locked doors, emergency egress only doors and stairwell doors do not typically support the intent of this recommendation.

**Require transparency.** Transparency is critical to achieve active walls that promote visually engaging experiences, vibrant and safe streetspaces, and commerce at the sidewalk. Transparency is measured in two ways:

1. The amount of wall (between 2 feet and 8 feet above the sidewalk) that contains clear glass and is not blank. For storefronts this should be 60% minimum of the overall front wall. For residential buildings it should range between 15% (for single family detached homes) and up to 60% (for live/work buildings).
2. The quality and performance of the clear glass. Clear glass should have a minimum 70% Visible Light Transmission (VLT). This is the percentage

of visible light that is transmitted through the glass. The higher the percentage, the clearer and more transparent the glass is. Clear glass should have a maximum 12% Visible Light Reflectance (VLR). This is the percentage of visible light that is reflected by the glass surface. The lower the percentage, the clearer and more transparent the glass is.

**Allow for encroachment into the public realm by awnings and blade signs.** Awnings provide façade relief and variety, introduce visual interest through color and texture, and provide a place for pedestrians to duck out of the weather. Blade signs provide similar variety, visual interest and color to the streetspace as well as providing wayfinding for people on foot. Both elements oftentimes need to project into the public space to be effective. Note that the scale and materiality of these elements should be carefully calibrated to the viewpoint of the pedestrian moving at 3mph and not the car moving at 30, 40 or 50 mph.

A **blade sign** is a type of projecting sign mounted on a building facade or storefront pole or attached to a surface perpendicular to the normal flow of traffic. These signs are one of the most effective way of attracting foot traffic into your establishment.

**Create a Form-Based Code (FBC).** These first three items can be integrated into a FBC which can also address building frontages (like porches, stoops, and storefronts), build-to-lines, parking, and active use locations on a site, building massing, and sometimes even street widths and streetspace composition. Form-Based-Codes regulate the form of the built environment and typically encourage a more pedestrian scale of development.

### **Policy Changes:**

Have your town transportation department use NACTO in lieu of AASHTO guidelines. The American Association of State Highway and Transportation Officials (AASHTO) provides design guidelines that, as the name suggests, calibrate primarily to highway design. AASHTO guidelines prioritize the efficient movement of traffic, whereas guidelines created by the National Association of City Transportation Officials (NACTO) typically

offer more comprehensive and flexible guidance to build pedestrian, bicycle, transit and automobile streets – streets that are multi-use and shared. NACTO guidelines are typically more user friendly than those of AASHTO.

**Rebalance your streets.** Consider all users of the streetspace and consider making incremental changes to the streets to provide more meaningful space for all modes. This rebalancing can include converting the extra space that has been allocated for cars to café seating, parklets, bike lanes, shared mobility lanes, shared streets, or landscape planters and bioswales. Street conditions that are opportunities to rebalance include 4-lane streets, street with too-wide travel lanes, street with extraneous right or center/left turn lanes,

and (in some cases) on-street parking lanes (whose space may be reallocated to more multi-purpose uses).

**Ask the right questions.** In lieu of asking only about average daily car trips, delays for motorists, and have you performed a traffic impact study - also ask about crash data, who is the most vulnerable street user, and have you performed a pedestrian and bike impact study. Other questions not related to street safety should also be considered, for instance, instead of asking about preventing loitering, perhaps ask where can we add seating that is comfortable and inviting?

**Plant and maintain street trees.** Healthy street trees are a critical and defining component to our streetspaces. Whether walking, biking, or driving,

### ELEMENTS OF A STOREFRONT

**A Bulkhead:** A short wall that is typically between 18 to 24 inches above the adjacent sidewalk, to maximize the amount of display window, while still giving the glass some buffer from the sidewalk. Bulkheads that are too high will limit the amount of display window, which will limit transparency, permeability and opportunities for the merchant to display goods. Another important reason to have a bulkhead in our climate is to ensure that snow does not pile up against the glass of the window.

**B Display window:** Large panes of transparent glass that sit on the bulkhead, typically between 7 and 10 feet tall. The display window is the essential component of the storefront and should provide transparent (clear) glass for at least 60 percent of the building frontage - this means that there is the possibility of vertical breaks between glass as long as they are small. Display windows should always be directly accessible and visual from the adjacent sidewalk.



Image 6a

street trees can set a temperament for the community environment. Tree lined streets can establish a calming sense of enclosure for those on our sidewalks, influence traffic speeds to increase safety, or provide

a unique character for a downtown shopping district. Street trees are proven to provide an array of environmental, economic, and social benefits to a city, town or village. An important consideration for

**C** **Storefront entrance:** The main entrance to the business from the sidewalk. In almost all cases this entrance is recessed and flanked by angled display windows that transition from the front building wall to the recessed entry. The importance of having a recessed entry is to allow for protection from the weather, to offer a transition between the sidewalk and the inside of the business, and so that the door does not swing into the sidewalk. The depth of this entry is typically between 3 and 8 feet from the front of the building and should be proportional to the overall building composition.

**D** **Transom:** The horizontal band of windows located above the display window, typically 24 to 36 inches high. These windows help to provide a human scale to the storefront while also providing additional light into the building (especially for inside spaces that are long and narrow). Transoms are not always present - when they are not provided, the display window should be taller.

**E** **Beam:** Horizontal expression band that is sometimes capped with a decorative cornice. This band effectively separates the storefront from the upper stories of the building and provides an excellent place for business signs and exterior lighting. The beam is typically 24 to 40 inches high and should be proportional to the building mass and scale. This band is also sometimes part of the 3-part building design that distinguishes the base from the body of the building (refer to the 3-part building composition).



selecting street trees is to use trees which will become large over time. Using large trees optimizes the urban tree canopy and provides an estimated 5 times the amount of associated benefits compared to planting many small trees. Large trees also have the greatest potential to provide shade in the public right-of-way by forming a complete canopy over the street.

### **Design Guidelines:**

Consider using design guidelines that help promote basic pedestrian scale interventions, specifically to the building walls that define the streetspace. These should not be zoning requirements nor should they promote building styles; rather they should provide guidance to establish visually coherent, human scaled buildings that are consistent with their context. These design guidelines may include:

**Creating a 3-part building with a defined base + body + top.** Buildings that incorporate a “3-part” design establish a scale and mass that is consistent with city form and human scaled outdoor rooms. Buildings with a coherent base, body and top reinforce the sense of scale at the street level, provide visual cues about the building’s relationship to its context, and provide the walls of a visually interesting streetspace.

**Creating vertical patterns.** This articulation, particularly at the street level, enhances the pedestrian experience by providing something interesting to look at through the variation of materials, forms, and surfaces along the building frontage. This variation is important to encourage pedestrians to continue their journey within a streetspace.

**Materials.** As referenced above, offer guidance on materials and number of materials on a building. Perhaps find buildings in your town that exemplify the character and scale that you are seeking and use them as guidance.

**Storefronts.** Use your design guidelines to encourage proper storefronts in your business districts. The storefront is a critical frontage to help build pedestrian scale. Images 6a and 6b on the preceding pages depicts storefront guidelines created by the Grand Rapids Downtown Development Authority.

### **Tactical Interventions:**

Test your proposed solutions in a lighter, quicker, cheaper way by deploying them through tactical interventions. These interventions are often practical for rebalancing the street – you can deploy temporary bike lanes, traffic calming measures, or even wider sidewalks and narrower traffic lanes through temporary installations. These installations can be something as simple as paint and traffic cones, or as elaborate as parklets and concrete barriers. During



Image 7

the Covid-19 shutdown and subsequent early recovery period, many cities and towns rebalanced (or in some cases completely shut-down) their streets to allow for more pedestrian or bike space or to increase restaurant seating. Image 7 shows the partial closure of Bridge Street in Grand Rapids, Michigan to provide more people space in the form of outdoor seating.

This tear sheet was developed by the Michigan Association of Planning (MAP) for the Michigan Economic Development Corporation (MEDC). The Michigan Association of Planning is a 501 c 3 organization, dedicated to promoting sound community planning that benefits the residents of Michigan. MAP was established in 1945 to achieve a desired quality of life through comprehensive community planning that includes opportunities for a variety of lifestyles and housing, employment, commercial activities, and cultural and recreational amenities.

