Appendices

APPENDIX A: Walkability Scan

APPENDIX B: Sidewalk Installation Policy*

APPENDIX C: Pedestrian Crossing Guidelines

APPENDIX D: (to be included later) School Zone Policy*

*Denotes a Council-adopted policy

These appendices are part of Charlotte's toolbox for improving citywide walkability. The appendices include a combination of technical guidance, prioritization criteria for pedestrian projects, and city policies.
Executive Summary

The City of Charlotte has made great strides in recent years to improve the ability of people to walk safely and comfortably in their communities. Walkability is the extent to which the built environment is friendly and easily accessible for people walking, for living, shopping, visiting, enjoying or spending time in an area.

There are many reasons why providing a more walkable environment is critical for Charlotte. These include:

A. People are increasingly interested in living in neighborhoods where they can choose to walk for at least some of their trips;

B. Cities are competing to attract educated, creative, and entrepreneurial residents, and these categories of workers are drawn to places where there are active streets and walkable neighborhoods;

C. Demographic changes suggest that the Millennials and Baby Boomers (the two age cohorts that will be driving the economy over the coming decades) are increasingly attracted to more walkable neighborhoods and cities;

D. Denser, more walkable environments are more sustainable, both economically and environmentally; and

E. Many Charlotte residents either cannot or choose not to drive and our transportation system should be safe and functional for all.

Background

In an effort to better understand how to create a more pedestrian-friendly environment and to uncover obstacles in current policies and regulations that may prevent walkable areas, Charlotte City Council directed staff to complete a scan of City policies and practices impacting walkability and to recommend needed improvements by June 2014 (FY2014 Focus Area Plan).

Scan Approach

The regulatory documents reviewed along with the most comprehensive City’s adopted policies for development, infrastructure, and walkability are:

- **Centers, Corridors, and Wedges** (policy) - adopted in 2010
- **General Development Policies** (policy) - adopted in 2003
- **Subdivision Ordinance** (regulatory) amendments through 2014
- **Transportation Action Plan** (policy) - initially adopted in 2006, updated in 2011
- **Urban Street Design Guidelines** (policy) - adopted in 2007
- **Zoning Ordinance** (regulatory) - amendments through 2014

These key policy and regulatory documents were scanned for statements and summary information that best describes the City’s expectations regarding key elements of walkability.
Scan Results

It was determined that there are many good policies and practices already in place to address walkability but additional approaches are needed. A series of specific issues were collectively identified by City staffs (CDOT and Planning) within current City practices or regulations that are creating barriers to a truly walkable community. In some cases, these issues arise from regulatory processes that do not fully implement existing policies. In other instances the issues exist due to internal processes or guidelines.

From the scan there were a total of eighteen issues identified as impacting walkability in the community. Recommendations are provided for all of the issues. Of the issues discovered, four (4) were deemed to be particularly significant and it is recommended that they be addressed by the City in the very near future. The four issues are:

1. Need for more crossing opportunities on busy thoroughfares;
2. Redeveloped site maintaining an existing back-of-curb sidewalk;
3. Phased development resulting in street frontage sidewalk not being installed, and
4. Whether there is adequate space for walkability elements in the public realm.

The following pages, beginning on page 4, describe all eighteen issues identified. The Implementation Guide, page 22, is also included that outlines the steps necessary to execute the recommendations of the Walkability Scan.
### Issue 1 - Walkability

#### Crossing Opportunities on Busy Thoroughfares

**TOP Priority**

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<td>Many of Charlotte’s busiest thoroughfares are difficult for pedestrians to cross due to infrequent traffic signals or other crossing opportunities, combined with high traffic volumes and (often) high speeds.</td>
<td>Much of Charlotte’s thoroughfare network was constructed or modified during an era dominated by a focus on capacity and throughput for motor vehicles. This decades-long focus resulted in long blocks with few crossing opportunities, as well as wide streets and relatively fast traffic. A sparse street network and/or lack of signals inhibits crossing opportunities and can also encourage greater vehicle speeds. The City’s mid-block crossing policies/practices do not yet provide sufficient opportunities for crossings, in part because vehicle speeds on many thoroughfares are too high to implement some types of crossings without significant enhancements to design. Providing more and better crossings requires a concerted effort to reduce speeds along the thoroughfare. Finally, lack of right-of-way can limit the amount of space for pedestrian refuges along some thoroughfares or sections of thoroughfares.</td>
<td>1. Ensure that capital projects continue to include more and better crossing opportunities, where feasible and appropriate [Capital]. 2. Seek additional sources of capital funding to create more thoroughfare crossings [Capital]. 3. Evaluate and consider revising the Pedestrian Crossing Guidelines and signal spacing practices to enable more crossing opportunities [Practice]. 4. Refine Traffic Impact Analyses to include multi-modal assessments [Practice and Regulatory]. 5. Identify enabling authority to help achieve more crossing opportunities through development [Regulatory]. 6. Develop a strategy and communication structure to accelerate locating, designing, and constructing pedestrian refuges through land development and capital projects [Practice].</td>
<td>• The majority of pedestrian crashes happen on thoroughfares (71% between 2008-2012), and the vast majority of fatalities occur on thoroughfares (97% for the same time period). Although more pedestrian crashes (63%) occur at intersections, over half (55%) of the fatalities occur at mid-block locations. • Pedestrians typically look for the shortest/nearest route to their destination, which means that they are unlikely to deviate significantly from their route to cross at signalized intersections. Pedestrians want and need to be able to cross thoroughfares at frequent intervals (see crash statistics above). • As more parts of Charlotte develop at higher densities and with a greater mixture of uses, the City should support and encourage people to walk between close destinations (creating highly walkable and/or “park once” environments). • As we continue to invest in a growing transit system, we are also creating greater need for pedestrians to have safe and comfortable access (along and across streets) to rail stations, streetcar stops, and bus stops.</td>
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**Issue 2 - Walkability**

**Back-of-Curb Sidewalks**

**Top Priority**

**What is the Issue?**

Sites that are developed or redeveloped by-right are not generally required to reconstruct existing sidewalks. This can result in sites with sidewalks left at the “back-of-curb” (i.e., having little or no buffer between pedestrians and traffic along the development’s street frontage).

**Why does this Occur?**

Reconstructing/relocating sidewalks is required for certain zoning categories (MUDD, NS, UR, TOD, TS, PED, UMUD) that require new streetscape. For other zoning districts (developed by-right), Chapter 19 of the *City of Charlotte Code of Ordinances (Municode)* (City Code) is silent on reconstructing existing sidewalk to meet new standards.

**What are the Team’s Recommendations?**

1. Continue to apply the *Urban Street Design Guidelines* (USDG)-recommended sidewalk locations and widths on capital projects [Capital].
2. Develop an appropriate/flexible approach to upgrade sidewalks as development occurs (this could potentially be based on the extent of redevelopment and how “substandard” the sidewalk is) [Regulatory].
3. Amend Chapter 19 and/or other relevant documents to reflect that approach [Regulatory].
4. Consider how best to maintain consistency with that approach during Zoning Ordinance update [Regulatory].

**Why does this Matter?**

- A sidewalk is a basic element for creating a safe and comfortable walking environment.
- A buffer (planting strip or hardscaped amenity zone) between pedestrians and moving traffic makes pedestrians feel safer and more comfortable about walking next to streets, particularly next to busy thoroughfares.
- Where sidewalks exist on Charlotte’s thoroughfares, roughly 25% of them are at the “back-of-curb”, with no planting strip or amenity zone as a buffer.
- The City focuses its sidewalk-specific funding on filling gaps in the sidewalk network. The City also reconstructs planting strips and sidewalks as part of larger street and streetscape projects. All City projects apply the updated sidewalk and planting strip widths defined in the USDG, subject to constraints (described below).
- The majority of street modifications occur incrementally, through private development, but the inclusion of USDG-recommended standards are not yet applied everywhere.
- It is typically more efficient (and cheaper) to reconstruct sidewalks through private development than through City projects, because the City often must work with multiple owners and physical and/or right-of-way constraints that are lessened when construction is already occurring on a site.
- While not always the case, development and redevelopment typically involves some degree of demolition and grading, providing an opportunity to more efficiently relocate sidewalks during construction.
**Issue 3 - Walkability**

**The 50% Rule**

*TOP Priority*

**What is the Issue?**

In some circumstances, by phasing development, a site can be fully developed without including street frontage sidewalks.

**Why does this Occur?**

Chapter 19-Article VI of the *City of Charlotte Code of Ordinances (Municode)* (City Code) defines the basic sidewalk and drainage requirements for by-right development (development not subject to a conditional re-zoning) and for sites not subject to the *Subdivision Ordinance*. When Chapter 19 is applied for zoning districts that do not specifically require streetscape, the following provision can be applied:

**City Code Ch. 19 Sec. 19-173 (b):** When the proposed new development will be less than 50% of the total area of the property under single ownership, sidewalks and drainage facilities may not be required. However, the city engineer may require certain improvements be made if they are determined to be in the public interest or needed to ensure public safety.

When less than 50% of a site is developed the development is not required to construct a sidewalk along the street frontage, thus leaving the sidewalk network incomplete.

**What are the Team's Recommendations?**

1. Investigate alternative language for Chapter 19 and other relevant documents that meets the intent of the original provision, but reduces the likelihood of not including sidewalk [Regulatory], and/or
2. Work to ensure consistent application of the sidewalk requirement as “in the public interest and for public safety” [Regulatory].
3. Provide training opportunities for internal staff to facilitate implementation of these recommendations on each development project (to help provide more consistent Chapter 19 interpretations) [Practice].

**Why does this Matter?**

- A sidewalk is a basic element for creating a safe and comfortable walking environment.
- Roughly 50% of thoroughfares and 70% of non-thoroughfares in Charlotte do not have sidewalks on both sides of the street, due to rapid growth and construction during the auto-oriented era after WWII.
- The City identifies and works to close gaps in the sidewalk network through capital projects, but the majority of street modifications occur incrementally through private development.
- It is typically more efficient (and cheaper) to build sidewalks through development than through City projects, because the City often must work with multiple owners and deal with physical and/or right-of-way constraints. These types of constraints are lessened when construction is already occurring on a site owned or being developed by a single entity.
- Phasing development for larger sites can allow a significant portion of street frontage to be fully developed or redeveloped without providing sidewalks along the street.
- An estimated 10-15% of sites are phased in this way and, therefore, can avoid providing sidewalks.
There are many elements that, together, help to create a walkable environment – providing an appropriate mix of these elements is an important aspect of creating highly walkable and livable places.

Some areas are designated (either through policy, plans, or the existing development context) to provide higher levels of walkability.

More urban areas, those that should exhibit the highest levels of walkability, are those where space between the curb and the buildings are often the most constrained, possibly limiting elements that could be provided in that space.

A constrained space might allow people to walk, but could unintentionally preclude the other attributes of highly walkable places – those that make a “useful” walk also a “safe and inviting” walk. Alternatively, including these other elements could constrain the walking space, thereby making the walk less inviting.

A significant portion of redevelopment in Charlotte is occurring in Urban zoning districts.

1. Consider incorporating stronger language in City of Charlotte Code of Ordinances (Municode) (City Code) about maintaining unobstructed walking space [Regulatory].
2. Consider whether and how to appropriately adjust setbacks to best and more consistently reflect context-based streetscapes – e.g., develop additional guidance for determining setbacks during the area plan process [Practice and Regulatory].
3. Identify and resolve any inconsistencies when the Zoning Ordinance is updated [Regulatory].
4. Consider incorporating illustrated frontage type requirements in the Zoning Ordinance update that show expectations for how building frontages should be located in relation to the street and sidewalk [Regulatory].
5. Develop and use a walkability checklist to help make decisions about items that can be placed in the setback under different conditions [Practice].

In some cases this is a result of inconsistent streetscape expectations. For example, our Urban zoning districts require a minimum 14-ft setback from the back of the existing or proposed future curb when there is no adopted streetscape plan. Recent area plans include streetscapes that might be wider than 14 feet, but these do not typically apply to by-right redevelopment in conventional zoning districts. Therefore, depending on whether there is an area plan and, depending on how the development occurs, the space between the curb and the buildings can vary greatly even in the same areas. In many cases, this is also the result of changing expectations of the types of design elements and activities that people want to include in the sidewalk area.

Why does this Occur?

What is the Issue?

The many activities and furnishing that help to create a walkable environment can also obstruct needed sidewalk space for pedestrians.

Why does this Matter?

- There are many elements that, together, help to create a walkable environment – providing an appropriate mix of these elements is an important aspect of creating highly walkable and livable places.
- Some areas are designated (either through policy, plans, or the existing development context) to provide higher levels of walkability.
- More urban areas, those that should exhibit the highest levels of walkability, are those where space between the curb and the buildings are often the most constrained, possibly limiting elements that could be provided in that space.
- A constrained space might allow people to walk, but could unintentionally preclude the other attributes of highly walkable places – those that make a “useful” walk also a “safe and inviting” walk. Alternatively, including these other elements could constrain the walking space, thereby making the walk less inviting.
- A significant portion of redevelopment in Charlotte is occurring in Urban zoning districts.
- A 14-ft setback from the back of an existing curb does not provide adequate space for (for example) the recommended 10-ft minimum sidewalk and 8-ft minimum amenity zone along a Main Street, or the recommended 8-ft minimum sidewalk and 8-ft minimum amenity zone along a commercial Avenue. These dimensions are intended to allow enough space for pedestrians plus other walkability elements, such as dining, plants, moveable signage near entrances, etc.
**Issue 5 - Walkability**

**Sidewalks Sometimes Not Required**

**NEXT Priority**

**What is the Issue?**

Some land uses are exempted from providing sidewalks, depending on how the sites are developed and reviewed.

**Why does this Occur?**

Chapter 19 of the *City of Charlotte Code of Ordinances (Municode)* (City Code) defines the basic requirements for by-right development (development not subject to a conditional re-zoning) and for sites not subject to the Subdivision Ordinance. When Chapter 19 is applied for zoning districts that do not specifically require streetscape, the following provision is applied:

**City Code Ch. 19 Sec. 19-173 (c):** Except as required by article III of this chapter and Chapter 20 of this Code, sidewalk facilities shall not be required in conjunction with the construction of any new buildings used solely for the following purposes:

1. Warehouse.
2. Industrial.
3. Auxiliary building.

Single family development that is not subject to subdivision is also exempt from providing sidewalks.

**What are the Team’s Recommendations?**

1. Consider how to best ensure consistency between policy and ordinances by amending Chapter 19 and updating any necessary zoning districts during the *City of Charlotte Zoning Ordinance Update* [Regulatory].
2. Consider (during Zoning Ordinance Update) providing one document or location that unifies the City’s policy position on sidewalks [Regulatory].

**Why does this Matter?**

- A place to walk is a basic element for creating a safe and inviting walking environment.
- Roughly 50% of thoroughfares and 70% of non-thoroughfares in Charlotte do not have sidewalks on both sides of the street, due to rapid growth and construction during the auto-oriented era after WWII.
- The City identifies and works to close gaps in the sidewalk network through capital projects, but the majority of street modifications occur incrementally as development occurs.
- It is typically more efficient (and cheaper) to build sidewalks through development than through City projects, because the City often must work with multiple owners and physical and/or right-of-way constraints that are lessened when construction is already occurring on a site.
Pedestrian Access to Public Trails

The City is investing in trails and sidewalks to help create a more walkable and livable community. In keeping with the above goals, we should be encouraging/allowing people to walk, rather than drive, to nearby trails – the network must be connected for pedestrians (and cyclists) to efficiently use it.

Land adjacent to trails and greenways (particularly in more urban locations) is increasingly attractive for infill development, which will logically begin to “close off” informal pedestrian access opportunities. Where the street network is dense, this may be less of an issue. Where the network is less dense, more street connections might be achieved through development. However, the very conditions that typically support trail development (along railroad tracks and creeks) are also those that limit the ability to require more street connections through current regulatory processes.

Charlotte residents are making a significant public investment in developing our emerging trail network and should have the right to access it.

As Charlotte works with Mecklenburg County and others to develop a network of public trails and pathways in urban locations, it might become increasingly difficult for pedestrians to gain access to them from nearby public streets when development fronts both the street and the trail. This has been identified as an issue along the existing South Corridor Rail Trail and has the potential to arise along the Cross-Charlotte Trail as well.

There is no clear mechanism for ensuring direct public access to trails from parallel public street frontages. The City of Charlotte Zoning Ordinance currently requires sidewalks from buildings to adjacent trails and public sidewalks, but is silent on providing access across sites from the public sidewalk to an adjacent trail. For example:

TOD 9.1208(11)(a): Connectivity and circulation standards. (2) External sidewalk connections are required to provide direct connections from all buildings on site to the existing and/or required sidewalk system, and to adjacent multi-use trails, parks and greenways. The connection shall be no longer than 120% of the straight-line distance from all buildings to the existing or proposed sidewalk, or no more than 20’ longer than the straight-line distance, whichever is less.

What is the Issue?

As public trails are built in Charlotte, it’s important that public access is provided from nearby thoroughfares through developments along the trails, particularly on long blocks.

Why does this Occur?

What are the Team’s Recommendations?

1. Ensure that plans for trails identify and reserve public access points that encourage/allow pedestrian access (in addition to less-frequently spaced “trailhead” parking lots) [Capital and Practice].
2. Seek additional funding and/or partnerships to reserve, build, and improve trail access points [Capital].
3. Develop and consider updating regulations to include “rules” for ensuring frequently spaced, accessible, public access to trails (including Rail Trail, Cross-Charlotte Trail, and other trails), particularly in areas with longer blocks [Regulatory].

Why does this Matter?

- The City is investing in trails and sidewalks to help create a more walkable and livable community.
- In keeping with the above goals, we should be encouraging/allowing people to walk, rather than drive, to nearby trails – the network must be connected for pedestrians (and cyclists) to efficiently use it.
- Land adjacent to trails and greenways (particularly in more urban locations) is increasingly attractive for infill development, which will logically begin to “close off” informal pedestrian access opportunities.
- Where the street network is dense, this may be less of an issue. Where the network is less dense, more street connections might be achieved through development. However, the very conditions that typically support trail development (along railroad tracks and creeks) are also those that limit the ability to require more street connections through current regulatory processes.
- Charlotte residents are making a significant public investment in developing our emerging trail network and should have the right to access it.
Issue 7 - Walkability

Block Lengths

What is the Issue?

While conditional rezoning processes and the Subdivision Ordinance have been updated to create (generally) shorter block lengths and a denser street network, there are still some developments that are not subject to those requirements.

Why does this Occur?

By-right development that does not trigger the subdivision ordinance is not required to provide streets. In some cases, infill sites might not be required to provide a street connection during rezoning.

What are the Team's Recommendations?

1. Continue to search for ways to establish street or pedestrian connections where long blocks exist [Capital and Practice].
2. Consider developing a communication tool similar to Charlotte-Mecklenburg, Engineering and Property Management Capital Active Project (CECAP) that places all potential street extensions that are planned, but not programmed, on a publically viewable map, so that Land Development (LD) staff can try to negotiate these connections on by-right development [Practice].
3. Consider whether/how to require midblock pedestrian connections through development projects with frontage greater than the recommended block length between intersections [Regulatory].

Why does this Matter?

- A denser street network creates a more walkable environment, because it generally provides more and shorter routes between destinations.
- In the absence of a street connection, well-designed pedestrian connections can help to create network connectivity, but do not typically provide as well for other walkability elements (security, visual interest/activity, e.g.).
- Because of updates to various regulatory and review processes, much of Charlotte's new development activity is helping to create a better street network.

Many of our large non-residential sites along our oldest corridors are being rezoned and redeveloped. The original industrial sites were situated on long block lengths which are problematic for current pedestrian use.
Issue 8 - Walkability
Pedestrian Access along Driveways

What is the Issue?
Sidewalks are not always provided along commercial or multi-family driveways, sometimes resulting in less visible or less direct routes for pedestrians to get from the street to the front of the building. This issue is particularly important when a driveway includes a traffic signal (which makes it a likely crossing opportunity for pedestrians) or is the main entrance into a development with reverse-frontage.

Why does this Occur?
The City of Charlotte Zoning Ordinance requires sidewalk access from the street onto the site, but does not always specify location/directness. For example, Section 12.529 requires a sidewalk connection with a minimum width of 5 feet for commercial development, but does not specify preferred locations for such connections. Both Chapter 19 of the City of Charlotte Code of Ordinances (Municode) (City Code) and the Driveway Manual are silent on this topic. The Charlotte Land Development Standards Manual (CLDSM) does not include design guidance for sidewalks along driveways.

What are the Team's Recommendations?
1. Investigate how to include better pedestrian access on the most direct route(s) [Regulatory and Practice].
2. Consider revising the standard details for driveways to show how to incorporate sidewalks along major driveways [Practice and Regulatory].
3. Consider how best to incorporate ADA accessibility on the most direct route [Regulatory].

Why does this Matter?
- A place to walk is a basic element for creating a safe and inviting walking environment.
- Commercial and multi-family driveways are often the most visible and/or direct path from the public street to on-site building entrances.
- Lack of a sidewalk on the most direct route can result in pedestrians walking in turning traffic, which compromises comfort and safety.
Issue 9 - Walkability
Application of Streetscape Standards

What is the Issue?
A variety of processes affect how streetscapes are implemented. Even though portions of the Charlotte Land Development Standards Manual (CLDSM) have been updated to reflect general policy about streetscapes, and most recent area plans also reflect these policies, these adopted streetscapes are not always applied consistently when streets are modified.

Why does this Occur?
The development review process differs depending on how a development project “comes through the door.” Several zoning districts (typically Urban zoning districts) require sidewalks and planting strips in accordance with an adopted streetscape plan. These adopted streetscape plans are usually associated with an area plan. Not all areas where these zoning districts are applied, however, have an adopted streetscape plan, so the streetscape defaults to a specific zoning district requirement. In addition, many other zoning districts do not reference a streetscape plan at all, and default to the zoning district requirement. Finally, there are also many different entities that review development plans, often with an eye only towards very specific types of items. Therefore, even with an adopted streetscape plan, the resulting streetscape may be inconsistent from one part of the street to another, or inconsistent with policy.

What are the Team’s Recommendations?
1. Develop a walkability checklist that includes consistent policy guidance to be used for all development reviews [Practice].
2. Develop staff training to better relate policies to practice [Practice].
3. Eliminate inconsistencies when the City of Charlotte Zoning Ordinance is updated [Regulatory].
4. During Zoning Ordinance update, make streetscape expectations consistent with policies and plans and ensure that area plans state that streetscapes apply to all development [Regulatory and Practice].

Why does this Matter?
• The streetscape sets the stage for how walkable an area will be.
• While capital projects typically reflect the recommended streetscape standards, most streets are affected incrementally through development or redevelopment.
• To establish a consistent streetscape and support walkability, it’s important to have all processes resulting in essentially the same streetscape in the same areas.
• Missing opportunities to apply the appropriate streetscape standard can set precedent that, over time, will impact the overall effectiveness of those projects that do provide the expected streetscape.
The idea of walkability, or the ease and comfort of walking instead of driving, is one multi-faceted goal to creating vitality within a community. Walkability can take on many forms and specific design elements. A place to walk is a basic element for creating a safe and comfortable walking environment (Walkability element #2).

Benches, trash cans, newspaper vending, and drinking fountains intended for use by pedestrian are excellent additions and demonstrate a pedestrian-friendly atmosphere. Benches can give pedestrians the opportunity to stop and enjoy the downtown environment. The simple design of wider sidewalks can provide for larger volumes of pedestrian traffic, while creating a nice open place to walk. Sidewalks made of decorative concrete can also contribute to increased walkability.

Raised planters that are sometimes used to accommodate street trees might, in some circumstances, reduce sidewalk space or constrain access to sidewalks from on-street parking. There is little to no guidance in any of the ordinances or the Charlotte Land Development Standards Manual (CLDSM) about design and dimensions of planters relative to the rest of a streetscape.

Raised planters used to accommodate street trees might, in some circumstances, reduce sidewalk space or constrain access to sidewalks from on-street parking.

What is the Issue?

Raised planters that are sometimes used to accommodate street trees might, in some circumstances, reduce sidewalk space or constrain access to sidewalks from on-street parking.

Why does this Occur?

There is little to no guidance in any of the ordinances or the Charlotte Land Development Standards Manual (CLDSM) about design and dimensions of planters relative to the rest of a streetscape.

What are the Team’s Recommendations?

1. Develop planting guidelines for trees in amenity zones (more urban contexts) that will ensure healthy street trees and accommodate access and pedestrian space [Regulatory].

Why does this Matter?

1. The idea of walkability, or the ease and comfort of walking instead of driving, is one multi-faceted goal to creating vitality within a community. Walkability can take on many forms and specific design elements. A place to walk is a basic element for creating a safe and comfortable walking environment (Walkability element #2).
2. Benches, trash cans, newspaper vending, and drinking fountains intended for use by pedestrian are excellent additions and demonstrate a pedestrian-friendly atmosphere. Benches can give pedestrians the opportunity to stop and enjoy the downtown environment. The simple design of wider sidewalks can provide for larger volumes of pedestrian traffic, while creating a nice open place to walk. Sidewalks made of decorative concrete can also contribute to increased walkability.
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Planting strips may not always be the best option in some situations, such as along urban street frontages with on-street parking. In those cases, it is generally preferable to use a hardscape amenity zone that is also usable for street furniture or other urban treatments. While policy guidance exists for using either planting strips or amenity zones in different contexts, planting strips are sometimes used in places where amenity zones might be more appropriate.

Example - (3) Urban zones. Planting requirements for urban zones are as follows:

a. Planting strip. A continuous perimeter planting strip, located between the street and sidewalk, with a minimum width of eight (8) feet, shall be required.

b. Urban retail sites. The following options are available for urban retail developments:
   - Tree pits. The perimeter trees required in subsection (e)(3) of this section may be installed in tree pits with irrigation and sub-drainage as specified in the Tree Ordinance Guidelines in lieu of a continuous perimeter planting strip.

1. Clarify intent of 8’ planting strip or 8’ amenity zone (context-based application) [Policy].
2. Include this topic on walkability checklist and in staff training [Practice].
3. Update CLDSM and Tree Ordinance to reflect 1 above [Regulatory].

The Charlotte Land Development Standards Manual (CLDSM) identifies differences between an amenity zone and a planting strip on U Series street with details for a variety of contexts; however the Tree Ordinance allows options for urban retail sites which sometimes create an undesirable outcome.

In dense urban environments, trees should be included as part of a hardscaped amenity zone, rather than in a continuous planting strip.
**Issue 12 - Walkability**

**Setbacks/Design for Arcades**

**LOWER Priority**

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**What is the Issue?**

Setbacks/design for arcades – in some cases, arcades may not feel secure, or may inhibit sight distance next to streets if structural supports are located adjacent to the curb which may block sight lines and pedestrian visibility.

**Why does this Occur?**

Currently there is no minimum required distance between the arcade supports and the primary building volume.

**What are the Team's Recommendations?**

1. Provide input for policy and ordinance updates that will include consistent guidance on where support structures may be located [Practice].
2. Develop a streetscape map similar to the Center City Transportation Enhancement map for UMUDD that identifies setback expectations for large areas with similar zoning districts (example TOD, PED Overlay) [Regulatory].
3. Consider providing guidance in *Charlotte Land Development Standards Manual* (CLDSM) (and/or Uptown Streetscape Standards) [Regulatory].

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**Why does this Matter?**

- Pedestrians like to walk along clear and unobstructed paths (walkability element). Allowing structure post to impede a path is in conflict with the goal of unobstructed paths.
Issue 13 - Walkability
Sidewalk/Driveway Separation Unclear for Townhouses with Garages

What is the Issue?
When townhouses are built on private streets sometimes the driveways are constructed so close together that the distinction between the sidewalk and driveways is not clearly delineated. This creates obstacles which may allow vehicles to park across the sidewalk and reduces the planting strip so that it becomes unusable.

Why does this Occur?
Driveways for front-loaded townhomes as well as back loaded on through lots and single family homes on narrow lots are currently not prohibited from being constructed at a length of less than 12 feet. A garage located 7 feet back of the right of way is too short to accommodate a vehicle thereby allowing a parked car to encroach on to the sidewalk. Allowing the driveways to be located too close together eliminates substantially the width of a planting strip so it can be 2 feet to 5 feet wide which cannot adequately accommodate perimeter planting.

What are the Team's Recommendations?
1. Develop additional guidance for parking relative to sidewalks/garages as part of setback discussion [Regulatory].
2. Consider how to include guidance during City of Charlotte Zoning Ordinance update [Regulatory].
3. Require shared driveways thereby reducing the number of driveways across the planting strip and sidewalk [Regulatory].
4. Increase the required length for a driveway to accommodate a parked vehicle [Regulatory].

Why does this Matter?
- City policy states that every street type requires unobstructed pedestrian space of varying widths, and the design element matrix cites sidewalk obstructions as a negative experience for pedestrians.
**Issue 14 - Walkability**

**Primary Entrances not easily Accessible from Sidewalk or Street Frontage**

**What is the Issue?**

Depending on the orientation of a building, sometimes the primary entrances may not be visible or easily accessible from a public sidewalk/street frontage.

**Why does this Occur?**

Current language is vague especially in the Mixed Use Development District (MUDD) and/or inconsistent about primary entrances of a building that is located off of a public street versus the primary entrance from parking lots in most relevant zoning districts.

**What are the Team's Recommendations?**

1. Develop a walkability checklist to be used for all development reviews [Practice].
2. Strengthen language and consistency during City of Charlotte Zoning Ordinance update [Regulatory].

**Why does this Matter?**

- Buildings facades can help create a place.
- Breaking up exterior facades of larger structures can create an illusion of smaller buildings.
- Large, transparent windows at the front of buildings can open up streets to include store fronts and window displays, allowing continuity between the street shoppers and retailers.
- Fully utilizing the street frontage with stores, restaurants, and other shops can maximize pedestrian exposure, increasing familiarity and ultimately increasing revenues. Locating parking lots and structures in pockets behind storefronts will take full advantage of street fronts while maintaining close parking access.
- Building architecture can truly inspire an area’s character and charisma.
The idea of walkability, or the ease and comfort of walking instead of driving is one multi-faceted goal to creating vitality within a community. Walkability can take on many forms and specific design elements. A place to walk is a basic element for creating a safe and comfortable walking environment (Walkability element #2).

Benches, trash cans, newspaper vending, and drinking fountains intended for use by pedestrian are excellent additions and demonstrate a pedestrian-friendly atmosphere. Benches can give pedestrians the opportunity to stop and enjoy the downtown environment. The simple design of wider sidewalks can provide for larger volumes of pedestrian traffic, while creating a nice open place to walk. Sidewalks made of decorative concrete can also contribute to increased walkability.
**Issue 16 - Walkability**

**Long Sections of Blank Walls**

Under some circumstances long sections of blank walls/ blocked windows/ unusable entrances might be constructed along sidewalks and street frontages, creating an uninviting and potentially less secure walking environment.

**What is the Issue?**

Addressing long sections of blank walls are addressed in some of the urban zoning districts but not in other districts, which by right may allow a building to be constructed at the sidewalk or street frontage thereby creating no visual interest or activity (which is a walkability element).

**Why does this Occur?**

**What are the Team's Recommendations?**

1. Use a walkability checklist to better define expectations and clarify how to activate street frontage [Practice].
2. Change the current language and consider removing ground floor restrictions for appropriate districts [Regulatory].

**Why does this Matter?**

- Buildings facades can help create a place.
- Breaking up exterior facades of larger structures can create an illusion of smaller buildings.
- Large, transparent windows at the front of buildings can open up streets to include storefronts and window displays, allowing continuity between the street shoppers and retailers.
- Fully utilizing the street frontage with stores, restaurants, and other shops can maximize pedestrian exposure, increasing familiarity and ultimately increasing revenues. Locating parking lots and structures in pockets behind storefronts will take full advantage of street fronts while maintaining close parking access.
- Building architecture can truly inspire an area’s character and charisma.
If new sidewalks and planting strips are not installed when buildings are renovated, it leaves gaps in the sidewalk network which may not be filled in until the property undergoes more substantial renovation or redevelopment. This degrades the walkability of the street.

In some zoning districts, there are exemptions from streetscape improvements for renovated buildings. One example of this occurs in the TOD zoning districts. Under Section 9.1204 (Applicability and Exceptions), unless the renovation involves a change of use or major façade improvements, the streetscape requirements of the ordinance are not applicable. This may result in no sidewalk if none exists or a substandard sidewalk and/or planting strip.

What is the Issue?

What are the Team's Recommendations?

1. Investigate appropriate/flexible application of streetscape changes to renovated buildings. [Regulatory]

Why does this Occur?

One example of this occurs in the TOD zoning districts. Under Section 9.1204 (Applicability and Exceptions), unless the renovation involves a change of use or major façade improvements, the streetscape requirements of the ordinance are not applicable. This may result in no sidewalk if none exists or a substandard sidewalk and/or planting strip.

Why does this Matter?

- If new sidewalks and planting strips are not installed when buildings are renovated, it leaves gaps in the sidewalk network which may not be filled in until the property undergoes more substantial renovation or redevelopment. This degrades the walkability of the street.
On-site sidewalks may be too narrow for some districts (with little or no guidance about design or location).

What is the Issue?

Internal pedestrian circulation within Institutional Districts allows for places that would be expected to generate high volumes of pedestrian activity not to provide adequate sidewalk access (minimum sidewalk width).

Why does this Occur?

Existing conditions sometimes do not allow for the implementation of both sidewalks and planting strips. In this instance, the existing historic buildings and established street network are preserved. Although, inadequate room was available for a planting strip, the on-street parking provides a buffer for pedestrians from the travel lanes.

What are the Team’s Recommendations?

1. Identify and work to resolve any inconsistency with ADA and minimum (on-site) sidewalk width for each context during the Zoning Ordinance update [Regulatory].

Why does this Matter?

- All sidewalks should comply with the American with Disability Act standards. Pedestrian also want space to walk (element of walkability) which includes wide, unobstructed sidewalks.
Charlotte WALKS

Sidewalk Installation Policy

April 23, 2018
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I. PURPOSE & APPLICABILITY

A. Purpose: Charlotte has hundreds of miles of streets without sidewalks. Because this problem is too big and expensive to handle all at once, City Council adopted a policy to guide limited resources for sidewalk construction to the places where sidewalks are most critical to safety & walkability. The purpose of this policy is to:

1. Use City Council’s adopted Sidewalk Installation Policy Statement (See Section III-A) to identify eligible sidewalk projects,
2. Establish objective ranking criteria for evaluating potential sidewalk projects, and
3. Outline the process by which potential sidewalk projects are identified, evaluated, and selected.

B. Applicability

1. The following policy and procedures apply to sidewalk installation projects funded through the City’s Sidewalk & Pedestrian Safety Program (sometimes simply referred to as the “Pedestrian Program”).
2. This policy may also be used as general guidance for the consideration of potential sidewalk projects under other programs within the City’s Community Investment Plan.
3. This policy does not apply to sidewalks included as part of larger roadway projects, business corridor projects, new subdivisions, or other land development projects, which have distinct requirements.

C. Other Sidewalk and Pedestrian Safety Projects: In addition to the sidewalk installation projects guided by this policy, the City’s Sidewalk and Pedestrian Safety Program funds other pedestrian improvements, such as, but not limited to,

- pedestrian crossings and accessibility improvements;
- pedestrian signals;
- projects that provide safer walking routes to schools, parks, greenways, and other recreational facilities;
- pedestrian wayfinding signage, and
- minor sidewalk gap connections (see “Definitions” Section VII).

This policy does not apply to these projects or to special projects approved by the Director of Transportation for the City of Charlotte. (Also see “Reserved Authority” Section IV.B.)
II. BACKGROUND

A. Charlotte WALKS: The City of Charlotte is committed to becoming a more “walkable” community as part of an overall strategy for advancing a balanced transportation system that accommodates pedestrians, bicyclists, transit users, and motorists. The Charlotte WALKS pedestrian plan describes the vision of Charlotte’s citizens to become a city of streets and neighborhoods where people love to walk. This Sidewalk Installation Policy is an important part of that vision as it guides the primary source of public funding for installing new sidewalks in Charlotte.

B. Sidewalk Installation in the City of Charlotte

Sidewalk & Pedestrian Safety Program – The City constructs new sidewalks on existing streets through its Sidewalk and Pedestrian Safety Program (sometimes simply referred to as the City’s “Pedestrian Program”). The Pedestrian Program is managed by staff at the Charlotte Department of Transportation. It is funded through street improvement bonds that are typically issued on 2-year cycles. The City’s commitment to improving “walkability” is demonstrated through its ongoing allocation of funds toward the construction of projects through the Sidewalks and Pedestrian Safety Program, in addition to other capital improvement programs that construct sidewalk.

In addition to Pedestrian Program projects guided by this Sidewalk Installation Policy, sidewalks in the City of Charlotte are installed in the following ways:

- **City and State Roadway Projects** – The City constructs sidewalks on all roadway construction projects within the City of Charlotte, including projects constructed by the City and the North Carolina Department of Transportation. The only exception is along controlled-access freeways where pedestrians are not allowed.

- **Comprehensive Neighborhood Improvement Program (CNIP)** – The City started this program in 2014 as an extension of earlier Neighborhood Improvement Programs. The purpose of the CNIP is to make strategic investments in multi-neighborhood geographies that comprehensively address a broad array of community needs. CNIP projects are prioritized and funded through Neighborhood Improvement Bonds. Among other investments, CNIP projects may include the construction of sidewalks as identified through an assessment of the neighborhood’s sidewalk infrastructure needs.

- **Individual Property Owner Installation** – Individual property owners have the ability to install their own sidewalks. Property owners are required to notify CDOT prior to construction. The City will review the plans to ensure the installation meets minimum construction standards.

- **Neighborhood Petition Assessment** – Residents can petition for sidewalk construction to be financed by all property owners in the area where sidewalk is requested. The process requires majority consent of 51% of the property owners in the improvement area, and a formal petition for no less than one block of the street. Provided City Council approves the request, 100% of the property owners will be required to pay for the sidewalk. If those 51% decide only to build sidewalk on one side of the street, all of the residences along both sides of the street will be required to pay for the sidewalk.
• **State Highway Participation** – Sidewalks are constructed on state roads through municipal agreements with the North Carolina Department of Transportation (NCDOT). Under the current NCDOT Pedestrian Policy, if a project is initiated by NCDOT, the City of Charlotte will request sidewalk and the two agencies will share in the cost of sidewalk equally. If the City initiates a project on an NCDOT roadway, the City will pay 100% of the cost to install sidewalk.

• **Land Development Requirements** – As of July 1, 1998, developers are required to build sidewalks on both sides of streets within a subdivision. In most cases, developers are also required to build sidewalk along their property frontage.

C. **Sidewalk Needs:** Although sidewalks are required of all new development and are constructed along roadway projects (except limited-access freeways), there are still approximately 479 miles of thoroughfares (both sides) and 1,635 miles of collectors/locals (one side) in Charlotte that lack sidewalk due to previous City and State policies that did not require sidewalk construction.

### Charlotte Sidewalk Mileage Estimates 2015

<table>
<thead>
<tr>
<th>Street Type</th>
<th>“Target”*</th>
<th>Existing Sidewalk</th>
<th>Sidewalk Gaps</th>
<th>Percent Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thoroughfares</td>
<td>1,080 miles</td>
<td>713 miles</td>
<td>367 miles</td>
<td>66%</td>
</tr>
<tr>
<td></td>
<td>(both sides)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Thoroughfares</td>
<td>2,703 miles</td>
<td>1,180 miles</td>
<td>1,523 miles</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td>(one side)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3,783 miles</td>
<td>1,893 miles</td>
<td>1,890 miles</td>
<td>50%</td>
</tr>
</tbody>
</table>

*NOTE – The “Target” mileage for sidewalks includes both sides of all thoroughfares and one side of all non-thoroughfares in accordance with the Sidewalk Retrofit Policy Statement adopted by City Council.

### III. POLICY STATEMENT & PROJECT ELIGIBILITY

A. **Sidewalk Installation Policy Statement:** It is the policy of the City of Charlotte to:

1. Install sidewalks on both sides of all thoroughfares and one side of all non-thoroughfares (local and collector streets) in accordance with the prioritization procedure set forth in this policy.
2. Prioritize sidewalk requests in accordance with the processes identified in Sections V and VI of this document. Pedestrian Program sidewalk projects will follow the public involvement process described in Section V.

B. **Project Eligibility:** In accordance with Section III.A, above, eligible Sidewalk Installation projects include:

1. **Thoroughfares:** Any sidewalk gap on either side of the street is eligible for consideration under this policy.
2. **Non-Thoroughfares:** Any location where sidewalk is missing from both sides of the street is eligible for consideration under this policy.
3. **Other Locations:** Other locations/projects, including existing sections of substandard sidewalk (e.g., back-of-curb, narrow, etc.) are not eligible for funding through this policy.
IV. RANKING CRITERIA

A. The potential criteria for prioritizing eligible sidewalk projects are described below. City staff is responsible for determining the point system associated with these criteria and for making additions or deletions to the criteria as needed. Any changes to the criteria or point system will apply to all potential projects and must be made by City staff before the project lists are ranked for each program. All ranked sidewalk projects are maintained on the City’s Sidewalk Priority List.

**Pedestrian Traffic Generators**
- Proximity to a Pedestrian Overlay District
- Proximity to a School or College/University Campus
  - School Type (Elementary, Middle, High, Higher Ed)
- Proximity to a Park or Greenway
- Part of Greenway Overland Connector route
- Proximity to Transit (Rail Station Area or Bus Stop)
- Proximity to Neighborhood Serving Land Uses (e.g., neighborhood retail, libraries, recreation facilities, government facilities, etc.)

**Safety**
- Evidence of Significant Pedestrian Activity (e.g., worn path)
- Roadway-Related Safety Need (e.g., poor visibility, sharp curves, no shoulder, etc.)
- AAWT (Average Annual Weekday Traffic)

**Completeness of Network**
- Connectivity to Other Sidewalks

**Cost Factors**
- Length of Proposed Sidewalk
- Existence of Curb/Gutter/Drainage

**Disadvantaged Populations**
- Proximity to Land Uses Serving the Elderly or People with Disabilities

B. Reserved Authority
A proposed or requested sidewalk will be exempt from the ranking criteria and processes identified in this Policy if the Transportation Director, or his/her designee, determines that the project is necessary because of exceptional and unique circumstances including, but not limited to:
- High traffic volumes and speeds,
- Pedestrian safety,
- Accessibility to transit,
- The street primarily consists of land uses other than single family residential, and
- The street has reverse frontage lots.
V. PROCESS & IMPLEMENTATION

The process for sidewalk installation is different for thoroughfare and non-thoroughfare streets. The primary difference is that petitions are required as a demonstration of neighborhood support on non-thoroughfare streets. These are typically smaller neighborhood streets, and the City uses the petition process to confirm citizen support before installing sidewalk within neighborhoods.

**Sidewalk Installation Summary Table**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Thoroughfare</th>
<th>Non-Thoroughfare</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nomination Form</td>
<td>Not required</td>
<td>A nomination form is required with signatures from at least 25% property owners on both sides of the street.*</td>
</tr>
<tr>
<td>2. Ranking</td>
<td></td>
<td>Once a project is nominated it is ranked according to the criteria established in this policy and added to the City’s Sidewalk Priority List. The ranking criteria for Thoroughfares and Non-Thoroughfares are the same. See Section IV.</td>
</tr>
<tr>
<td>3. Preliminary Project Selection</td>
<td></td>
<td>Sidewalk projects are programmed for preliminary design at the beginning of each fiscal year. CDOT staff will regularly update and re-rank the list of eligible streets for each street type to determine the highest priority projects.</td>
</tr>
<tr>
<td>4. Public Input</td>
<td></td>
<td>A public meeting will be held to provide citizens with information about the proposed sidewalk project. Design modifications may be made in response to citizen input.</td>
</tr>
<tr>
<td>5. Petition Process</td>
<td>Not required</td>
<td>Following the public meeting a petition is required to confirm continued support for the sidewalk project. The petition must include signatures from at least 60% of property owners on both sides of the street.*</td>
</tr>
<tr>
<td>6. Final Design &amp; Construction</td>
<td></td>
<td>The applicant has 30 days to submit a valid petition, after which the sidewalk project will move toward final design and construction. Additional public meetings will be held as necessary.</td>
</tr>
</tbody>
</table>

*Reverse frontage parcels will not count toward the total number of parcels in calculating the required percentage of signatures for nomination and petition forms.
A. Project Nomination

1. **Thoroughfares**: CDOT staff have conducted a process to identify sidewalk gaps on thoroughfares and rank them on the City’s Sidewalk Priority List. Although this list is extensive, it may not be inclusive of every segment of missing sidewalk on thoroughfares throughout Charlotte. Citizens are invited to contact the Pedestrian Program Manager to inquire about missing sidewalks on thoroughfares. Any segment not already identified and ranked will be added to the Sidewalk Priority List. No nomination form is required for this action.

2. **Non-Thoroughfares**: Any City of Charlotte resident may request a sidewalk on a non-thoroughfare street provided they show that the project has support of the residents along the street. In order to have a sidewalk request added to the City’s Sidewalk Priority List, residents must submit a nomination form with signatures representing at least 25% of all property owners along both sides of the requested street segment. Reverse frontage parcels will not count toward the total number of parcels in calculating the required percentage of signatures.

B. **Ranking**: City staff will rank all eligible requests and add them to the City’s Sidewalk Priority List. The ranking criteria for Thoroughfares and Non-Thoroughfares are the same. (See Section IV.) CDOT staff will regularly update and re-rank the list of eligible projects for each street type to determine the highest priority projects.

C. **Preliminary Project Selection**: The City will build sidewalks along street sections with high ranking as funding becomes available. At the beginning of each fiscal year, staff reviews requests at the top of the Sidewalk Priority List and determines how many projects to program. The number of locations and mileage of sidewalk constructed each year is dependent on funding levels. Due to the varying mileage and construction costs of individual projects, the number of projects constructed each year will vary.

D. **Public Meeting(s)**: CDOT will hold a minimum of 2 public information meetings to provide residents and property owners with information about the project and receive input. In addition, CDOT will ask residents to provide feedback regarding design concerns. Subsequent meetings may be held as necessary to identify project scope, determine the most appropriate side of the street for sidewalk installation, present a conceptual design, and/or illustrate design modifications based upon public input.

E. **Petitions**

1. **Thoroughfares**: Petitions are not required for projects on thoroughfares.

2. **Non-Thoroughfares – Petitions**: Following the public meeting a petition is required to confirm continued support for the sidewalk project.
   a. A petition form will be provided by CDOT to the lead petitioner. The petition must include signatures from at least 60% of property owners on both sides of the requested street segment to be valid. Reverse frontage parcels will not count toward the total number of parcels in calculating the required percentage of signatures.
   b. The lead petitioner will have 30 days to return a valid petition to the City. The deadline date will be provided on the petition.
   c. CDOT staff will validate that the petition includes the required number of signatures.
i. If the petition passes, the sidewalk project will move toward final design and construction. The City will notify in writing all property owners on both sides of the requested street segment that a valid petition has been submitted and that the sidewalk will be constructed subject to available funding.

ii. If the petition does not pass, property owners must wait 3 years from the petition due date before attempting to submit another petition.

3. **Non-Thoroughfares – Appeals:** Any owner or tenant of property on either side of the street where a sidewalk is proposed, or any other person reasonably affected by the proposed change, may appeal a sidewalk petition by filing a written notice of appeal with CDOT.
   a. Written appeals must be received within 30 days of implementation.
   b. Appeals will be heard through a quasi-judicial proceeding before by the Department of Transportation Director or Deputy Director, or a hearing officer designated by the Department of Transportation Director or Deputy Director.
   c. The only issue that may be raised on appeal is whether the petition to gauge neighborhood consensus was properly completed as required by CDOT.
   d. A decision on appeal shall be subject to review by proceedings in the nature of certiorari instituted in the Superior Court of Mecklenburg County within thirty days. A certiorari appeal shall not automatically stay implementation of any proposed treatments.

F. **Final Design and Construction:** Following the first public meeting and the successful completion of any required petition process, the sidewalk project will move toward final design and construction. Additional public meetings may be held as necessary. Sidewalk installation efforts on existing streets often present a number of construction challenges such as insufficient right-of-way, poorly defined road edge, hilly terrain, and private landscaping in the right-of-way. To the extent practical, the City will design sidewalk installation projects to conform to the CDOT’s *Urban Street Design Guidelines* and *Sidewalk Design Guidelines*. However, due to retrofit challenges, staff will consider context sensitive design techniques where necessary and appropriate. All newly constructed sidewalks will conform to the requirements set forth by the *Charlotte Land Development Standards Manual* and the *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROW-AG)*.

VI. **AFFORDABLE HOUSING SIDEWALK REIMBURSEMENT MECHANISM**

In some cases affordable housing projects may be eligible to receive city sidewalk funding to support the replacement of existing substandard sidewalks along thoroughfares.

A. **Eligibility:** To be eligible for reimbursement of sidewalk replacement costs the affordable housing project must meet all of the following criteria.
   1. At least 25% of the units in the project must be reserved for households at or below 80% of the Area Median Income for a minimum of 10 years; and
   2. The requested reimbursement may only apply to the replacement of existing sidewalks on thoroughfares which do not meet the standards of the *Charlotte Land Development Standards Manual (CLDSM)*.
B. Process

1. **Verify Eligibility:** City staff will provide the “Affordable Housing Sidewalk Reimbursement Mechanism” to the applicant when an affordable housing application is received. The applicant should consult with city staff to determine if their proposed project includes any eligible sidewalk replacement.

2. **Prepare Cost Estimate:** If the project includes eligible sidewalk replacement, the applicant shall prepare a cost estimate for the incremental cost of replacing that sidewalk with a sidewalk that meets the standards of the CLDSM. Costs that would have been incurred by the project without the sidewalk replacement are not eligible for reimbursement. For example, many mobilization, grading, landscaping, and utility relocation costs would likely be incurred whether or not sidewalk replacement is a part of the proposed project. The applicant should submit the incremental cost estimate for eligible sidewalk replacement to CDOT’s Pedestrian Program Manager.

3. **Verify Reimbursement Amount:** City staff will review the incremental cost estimate for accuracy, discuss any discrepancies with the applicant, determine the appropriate reimbursement amount based on the incremental cost for eligible sidewalk replacement, and notify the applicant. If the applicant does not agree with the reimbursement amount determined by staff, the applicant may appeal that decision to the City Engineer. The appeal must be submitted in writing not later than 30 days after the applicant is notified of the staff-determined reimbursement amount. The City Engineer shall make a determination within a reasonable time, not exceeding 60 days, to uphold the staff decision or adjust the reimbursement amount as appropriate.

4. **Reimbursement Agreement or Departmental Transfer:** Once a reimbursement amount has been determined, CDOT will do one of the following depending upon the applicant’s preference.
   i. CDOT will prepare and enter into a Reimbursement Agreement with the applicant. Upon inspection of the completed improvements as outlined in the Reimbursement Agreement, CDOT will provide reimbursement to the applicant using funds from the City’s Pedestrian Program.
      OR
   ii. CDOT will initiate a departmental transfer from the Pedestrian Program into the Housing Trust Fund. The transferred funds will then be included as a part of the project’s loan from the Housing Trust Fund.

VII. EFFECTIVE DATE AND ADMINISTRATION

C. This policy is effective upon the adoption by City Council on April 23, 2018.

D. CDOT shall have primary responsibility for the implementation and administration of this policy and will recommend amendments, from time to time, to the City Council, for the purpose of keeping this policy complete and current.
VIII. DEFINITIONS

AAWT - Average Weekday Traffic Volumes Traffic is counted for 48-hours between Monday and Friday (no weekends) on thoroughfares. The average of two days is used to arrive at a 24-hour volume. Non-thoroughfare counts are taken for a 24-hour period, on school days only unless it is determined by staff that school traffic does not influence the street’s traffic volume. Holidays and special events are avoided. Count tubes are placed approximately 200 feet away from an intersection to avoid cars waiting and gather a more accurate count.

Double Frontage Parcel/Lot – A parcel/lot, other than a corner lot, with frontage along two parallel roadways.

Greenway Overland Connector – A planned greenway trail that consists of a sidewalk or multi-use pathway along a street that serves as the greenway and is part of the Mecklenburg County Greenway Master Plan.

Land Uses Serving Elderly or People with Disabilities – For the purposes of defining the ranking criteria, land uses which serve the elderly or people with disabilities, includes, but is not limited to, independent and dependent living facilities, active adult retirement communities, and disability specific organizations such as the Programs for Accessible Living, Lions Club and the Metrolina Association for the Blind.

Minor Sidewalk Gap – Small, typically less than 1/10 mile, gaps in the existing sidewalk network. Minor sidewalk gaps always connect to existing pedestrian facilities at both ends of the identified gap. Such minor gaps are not required to be ranked and evaluated through the formal process described in this Sidewalk Installation Policy. Instead, it is the policy of the Sidewalk and Pedestrian Safety Program to prioritize and fill these minor gaps as they are identified and funding is available.

Neighborhood Serving Land Uses – For the purposes of defining the ranking criteria, a neighborhood serving land use is a land use which primarily serves the surrounding neighborhood and includes, but is not limited to, grocery stores, pharmacies, post offices, libraries, banks, churches, restaurants, medical facilities, and YMCA/YWCAs.

Non-Thoroughfare – Also commonly called “local streets” or “neighborhood streets,” non-thoroughfares carry traffic from adjacent land uses to the larger thoroughfare system. For the purposes of this policy, the term “non-thoroughfare” includes any public street that is not classified as a Major- or Minor-Thoroughfare on the most recently adopted version of the Charlotte Regional Transportation Organization (CRTPO) Thoroughfare Plan.

Park – For the purposes of defining the ranking criteria, a park is defined as a recreational area, which includes City- or County-owned or maintained public parks, greenways, or recreation centers.

Reverse Frontage Parcel/Lot – A double frontage parcel/lot with its rear boundary along the proposed sidewalk project. Primary access is provided via a parallel roadway along the opposite side of the parcel/lot.
**Roadway-Related Safety Need** – A condition that warrants consideration of a sidewalk due to roadway design features such as limited horizontal and/or vertical curves that obstruct driver and pedestrian visibility. Engineering judgment by City staff will be used to determine if increased risks are present on the roadway.

**School** – For the purposes of defining the ranking criteria, a school is defined as any educational institution with an enrollment of 200 or more students in Grades 12 and under. Schools can be either public or private.

**Thoroughfare** – Also commonly called “arterials,” thoroughfares are public streets designed to carry high volumes of traffic over long trip distances through and within the city. For the purposes of this policy, the term “thoroughfare” includes any street identified on the most recently adopted version of the *Charlotte Regional Transportation Organization (CRTPO) Comprehensive Transportation Plan*. 
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Executive Summary

The greatest places in Charlotte are our most walkable places. The purpose of the Pedestrian Crossing Guidelines is to promote safe and convenient walking trips by establishing criteria for the appropriate installation of pedestrian crossing treatments in the City of Charlotte. The Pedestrian Crossing Guidelines address mid-block crossings as well as those at unsignalized intersections. These Guidelines update and replace the Pedestrian Mid-Block Guidelines (March 2005).

The Pedestrian Crossing Guidelines support the themes outlined in the Charlotte WALKS Pedestrian Plan by providing safe, useful, and inviting crossing opportunities. The Charlotte Department of Transportation (CDOT) established a Pedestrian Crossing Committee (PCC) to provide best practices and standardization. The PCC reviews and approves citizen requested crossings and participates in city-wide projects to promote consistency in pedestrian crossing treatments. The PCC is comprised of staff from several Divisions in CDOT and a representative from Charlotte Area Transit Systems.

The PCC follows four basic steps in the evaluation procedures for pedestrian crossing requests:

- **Step 1: Collect Site Specific Data**
- **Step 2: Determine if a Treatment Study is Justified**
- **Step 3: Conduct Detailed Treatment Study**
- **Step 4: Determine Appropriate Treatment**

There are a number of treatments to consider when providing great places to cross the street. Those treatments, described in greater detail in the Crossing Treatments section, depend on the context of the street and may include signs, marked crosswalks, flashing beacons, refuge islands, Pedestrian Hybrid Beacons, or traffic signals.

All evaluations of pedestrian crossing requests should consider traffic volumes, vehicle speeds, proximity to other crossing opportunities, and the adjacent land use context. Locations with higher vehicle volumes and speeds typically need higher levels of control, such as Pedestrian Hybrid Beacons or traffic signals, in order to establish safe crossing opportunities. Special emphasis, in terms of establishing more frequent crossings, is given to pedestrian-oriented areas with higher volumes of expected pedestrian traffic.
Introduction & Background

Purpose

The purpose of the Pedestrian Crossing Guidelines is to promote safe and convenient walking trips by establishing criteria for the appropriate installation of pedestrian crossing treatments in the City of Charlotte. The goal is to ensure that crossings, both mid-block and at intersections, are installed in a way that alerts motorists of pedestrian activity and gives pedestrians a safe and predictable walking environment.

This document updates and replaces the Pedestrian Mid-Block Guidelines (March 2005). The updated Guidelines address pedestrian crossings at unsignalized and mid-block locations. They are intended to implement pedestrian safety and mobility goals as outlined in the Transportation Action Plan, and to complement the Charlotte W ALKS Pedestrian Plan, Charlotte’s Urban Street Design Guidelines, the Charlotte Land Development Standards, and other locally adopted design standards by providing best practices based on current research and experience.

These Guidelines do not apply to school zones or signalized intersections as there are policies and best practices in place to specifically address those situations. Pedestrian crossing treatments on state maintained roadways should be approved by the North Carolina Department of Transportation (NCDOT).

Charlotte is committed to building a pedestrian network for people of all ages and abilities. The U.S. Access Board has developed the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG). The PROWAG guidelines provide technical assistance to ensure that sidewalks, pedestrian street crossings, and other facilities are usable for all pedestrians, including those with disabilities. Pedestrian treatments will be constructed to meet the PROWAG guidelines.

Walking is Transportation

Walking is the oldest and most basic form of human transportation. It requires no fare, no fuel, no license and no registration. Thus, walking is the most affordable and accessible mode of transportation. Research on walking suggests that simply adding sidewalks alone does not create walkable communities. Accessibility to adjacent land uses, street connectivity, sidewalk continuity and ease of street crossings are essential to creating and maintaining a walkable environment.

People are more likely to walk in areas with a diversity of land uses within a quarter mile radius, and where the street network is well connected. Providing well-designed crossings, whether at intersections or at mid-block locations, results in safety benefits to all pedestrians and demonstrates Charlotte’s commitment to create viable transportation choices.

The Pedestrian Crossing Guidelines promote the goals and objectives of the Charlotte WALKS Pedestrian Plan. Charlotte WALKS is the city’s first comprehensive pedestrian plan. It brings together a number of existing walkability initiatives and also identifies new strategies for meeting the pedestrian safety and walkability goals described in the Transportation Action Plan. At its core, Charlotte WALKS promotes walkability with safe, useful, and inviting crossing opportunities.
History of Charlotte’s Crossing Guidelines

The Charlotte Department of Transportation (CDOT) developed the first pedestrian crossing guidelines more than a decade ago. At the time, CDOT was one of a few agencies publishing best practices and formal guidance on the installation of crossing treatments for pedestrians. Since that time, many other agencies have adopted guidelines, and the research community has expanded available tools and resources. Over that decade, Charlotte implemented many policies that expand support of good pedestrian design.

Charlotte has made significant strides to increase pedestrian crossings city-wide. There were 55 new pedestrian crossings installed and 72 enhancements to existing pedestrian crossings in the two-year period from July 1, 2014 to June 30, 2016. (See the map below.)
Pedestrian Crossing Evaluation Procedures

Pedestrian Crossing Committee

CDOT established the Pedestrian Crossing Committee (PCC) as an interdisciplinary group to review and evaluate pedestrian crossing requests throughout the City. The PCC is comprised of staff from four CDOT divisions and representation from the Charlotte Area Transit System.

The PCC meets monthly to address citizen requests for pedestrian crossings. The PCC has authority to approve or deny pedestrian crossing requests from citizens. When requested, the PCC may also offer guidance and advice to other city teams working on pedestrian crossings as part of programmed projects or developer-initiated projects, however the PCC does not explicitly approve or deny those requests.

There are four basic steps in the consideration and evaluation procedures for pedestrian crossing requests:

- **Step 1: Collect Site Specific Data**
- **Step 2: Determine if a Treatment Study is Justified**
- **Step 3: Conduct Detailed Treatment Study**
- **Step 4: Determine Appropriate Treatment**

**Step 1: Collect Site Specific Data**
Typically, the Public Service Division of CDOT receives a citizen request for a pedestrian crossing at one or more locations along a street. CDOT staff collects site specific data including the street classification, average daily vehicular traffic volumes, the number of travel lanes, vehicle operating speed, posted speed limit, proximity to other crossing opportunities, and other relevant information. The information is shared with the PCC and the group determines if a detailed Treatment Study is justified. (See flowchart, opposite.)

**Step 2: Determine if a Treatment Study is Justified**
There are three primary ways that a location is considered for a detailed Treatment Study. (See Flowchart, opposite.) Pedestrian crossing requests in areas with pedestrian-oriented land uses automatically qualify for a detailed engineering evaluation. Evaluations take into consideration traffic volumes, vehicle speeds, proximity to existing crossing opportunities, the location of existing bus stops, and the adjacent land use context, among other important factors.

**Step 3: Conduct Treatment Study**
Once a location is selected for a Treatment Study, a subcommittee consisting of at least two PCC members conducts a detailed field review of the pedestrian crossing location. The subcommittee will determine the time of day and/or day of week when the most pedestrian activity is anticipated to conduct the field review. The subcommittee determines possible treatments given the roadway design, land uses, pedestrian activity, and other considerations. The subcommittee presents their findings to the PCC.

**Step 4: Determine Appropriate Treatments (if any)**
The subcommittee presents their findings and a potential recommendation to the PCC for discussion. The subcommittee may present multiple options based on the field conditions and other important information. It is also possible that the committee recommends no action. After discussion, the PCC finalizes the appropriate treatment and location(s). Approved projects are then placed on a list to determine potential future funding.
Pedestrian Crossing Evaluation Flowchart

Also see detailed explanation for Evaluation Criteria on pages C-8 and C-9.

- Pedestrian Oriented Land Use (see list on page C-8)
  - Traffic Volume (AADT greater than 3,000)
    - Vehicle Speed (Operating speed less than 45 mph)
      - Crossing Proximity (More than 500 feet to nearest crossing opportunity)
        - Pedestrian Volume (At least 20 pedestrians per day crossing at requested location)
          - Approved Treatment Study
          - Denied Treatment Study
**Evaluation Criteria**

These Guidelines establish the basic criteria to determine if a request should proceed to the detailed treatment study.

**Criteria 1: Pedestrian-Oriented Land Uses**
The highest priority is given to evaluation of crossing treatments in areas that have been designated as significant for pedestrians. The Transportation Action Plan, Urban Street Design Guidelines, Neighborhood Area Plans, and Comprehensive Neighborhood Investment Program strategy areas have identified many streets to focus efforts to improve the walking environment. There are many types of land uses that support/generate large volumes of pedestrians, such as transit stations, mixed-use developments that include residential and retail services (restaurants, coffee shops, bakeries, sidewalk cafes, grocery stores, dry cleaners, beauty salons, and other walk-up services), parks, libraries, greenways, and religious institutions, to name a few.

Pedestrian crossing requests that are located in one of the following areas automatically qualify for a Treatment Study:

- Main Streets as defined by the Urban Street Design Guidelines
- Central Business District
- Activity Centers, as defined by the Centers, Corridors, and Wedges Map
- Transit Oriented Development Areas
- Light Rail Station Areas
- Pedestrian Overlay Districts
- Streets adjacent to greenways or parks

If the request is not located in one of the pedestrian focus locations identified above, then proceed to Criteria 2 through 4.

**Criteria 2: Average Annual Daily Traffic**
AADT less than 3,000 vehicles per day means there is likely sufficient opportunities for pedestrians to cross the street comfortably without additional crossing enhancements.

**Criteria 3: Vehicle Operating Speed**
Vehicle speed is another important measure for determining the appropriateness of pedestrian crossing treatments. When vehicle operating speeds are more than 45 mph, pedestrians have difficulty judging gaps and making the decision to cross. In addition, pedestrian crashes at higher speeds are far more severe. Only 5% of pedestrian collisions at 20 mph result in death versus 85% at 40 mph. It is unsafe to install pedestrian treatments in these circumstances without higher level of traffic control, like a Pedestrian Hybrid Beacon or traffic signal, which stops cars to allow safe pedestrian crossings. As such, if vehicle speeds are greater than 45 mph, additional information on pedestrian volumes will be needed to evaluate whether a Pedestrian Hybrid Beacon or traffic signal is justified.
Criteria 4: Crossing Proximity to Existing Enhanced Crossing

The crossing proximity is the distance between the requested crossing location and the nearest traffic signal or other pedestrian crossing treatment. If the location is close to a traffic signal or other crossing treatment like a marked crosswalk, then additional treatments may not be justified. However, if the distance to the nearest signal, marked crosswalk, or pedestrian refuge island is greater than 500 feet, then additional crossing treatments may be needed to provide additional pedestrian crossing opportunities.

If the request location meets Criteria 2 through 4 it qualifies for a Treatment Study. If it does not meet any one of those three criteria, proceed to Criteria 5.

Criteria 5: Pedestrian Volume

If Criteria 1 through 4 are not satisfied, then pedestrian volume should be considered. The existing pedestrian volume alone should not dictate the need or desire for pedestrians to cross the street. In many instances, pedestrians will shy away from crossings if they are perceived unsafe or not convenient. Pedestrian-oriented land uses indicate a need for more frequent pedestrian crossings. So consideration of the latent pedestrian demand should be part of the evaluation for this criterion.

Are there at least 20 pedestrians per day crossing at this location?

If the answer is “yes,” this location qualifies for a Treatment Study. If the answer is “no” and the location is not anticipated to generate more demand, then an engineering evaluation is not recommended and no crossing treatments would be considered.

Locations may be re-evaluated when conditions change (for example, due to new development) or after a period of two years.
Crossing Treatments

There are a number of considerations that should be evaluated when determining the most appropriate treatment and location for pedestrian crossings. Those considerations include designs that are accessible to all ages and abilities, adequate sight distance to make decisions to cross the street, and street lighting for nighttime activity. The treatments described represent the approved list of treatments for use within the City of Charlotte. The installation of crossing treatments on state-maintained roadways should be approved by NCDOT.

Charlotte is committed to building a pedestrian network for people of all ages and abilities. The U.S. Access Board has developed the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROW AG). The PROW AG guidelines provide technical assistance to ensure that sidewalks, pedestrian street crossings, and other facilities are usable for all pedestrians, including those with disabilities. Pedestrian treatments will be constructed to meet the PROW AG guidelines.

Sight distance is a term used to describe the length of roadway visible to react to a possible conflict. Adequate sight distance should be provided for the vehicle to see and react to pedestrians crossing the street. It is just as important for pedestrians to have enough sight distance to make a determination to safely cross the street. Objects such as trees, bushes, signs, walls, parked cars or buildings near the street can greatly impact the sight distance. The Policy on Geometric Design of Highways and Streets published by AASHTO provides more detail on stopping sight distance. The “Support” section includes values for vehicle stopping sight distance based on AASHTO (see Tables 1 and 2). The available sight distance for a pedestrian to determine when to cross the street is also included in the “Support” section (see Table 3).

Street lighting is another important component of providing safe pedestrian crossings. Many pedestrian trips begin and end in the early morning or evening hours with limited ambient light. Nighttime evaluations of crossing locations should be considered based on the type of activity anticipated.

Finally, when recommending a crossing treatment, the PCC will provide guidance on the most appropriate location(s) to establish a pedestrian crossing. The PCC will consider the desired path of travel, adjacent building entrances, and the location of nearby bus stops, among other factors to determine the crossing location that is likely to serve the most pedestrians. That determination will be balanced with safety considerations, like sight distance and street lighting to identify the location(s) that will best satisfy the crossing need.
Signs & Pavement Markings

Pedestrian Warning Signs

Description: The pedestrian warning sign and in-street pedestrian paddle should adhere to the current edition of the Manual on Uniform Traffic Control Devices (MUTCD) for design, size, and placement. The warning sign if used at the crossing location should be used in combination with a directional downward arrow to denote the preferred crossing location. The in-street pedestrian crossing paddle may be used at locations with marked crosswalks to increase visibility of the crossing. CDOT uses a florescent yellow-green background color for both signs.

Objective: To warn motorists of pedestrian crossings and to designate the preferred crossing location.

Application: Warning signs can be used alone or may be required in combination with other treatments such as marked crosswalks or flashing beacons.

If used alone, the recommended variables are:
- AADT – Greater than 3,000 vehicles per day
Marked Crosswalks

Description: CDOT developed a high-visibility crosswalk marking that uses white lines in a bar-pair pattern. CDOT refers to the markings as piano-style crosswalks since they mimic the look of piano keys. The markings shall follow the MUTCD and the Charlotte Land Development Standards for materials, visibility, and installation.

Objective: To warn motorists of pedestrians crossing the street and to designate the preferred crossing location.

Application: The pedestrian warning sign should be used in conjunction with crosswalks. The high-visibility markings may be used in combination with some of the other treatments such as flashing beacons or Pedestrian Hybrid Beacons. If the markings are used alone, the recommended variables are:

1. Locations with AADT between 3,000 and 12,000 vehicles per day without a median or up to 15,000 vehicles per day with presence of median
2. Locations with AADT less than 3,000 vehicles per day may be considered if located within ¼ mile of light rail transit stations and have an exposure threshold of at least 100,000 (Multiply the highest 24 hour pedestrian volume by the AADT)
3. In all applications without supplemental treatments, the operating speed should be 40 mph or less.

Advance yield markings are not required; however, if used they should typically be placed 40 feet from the crosswalk. A “yield here to pedestrian sign” may also be used per the MUTCD in conjunction with the advance yield markings.
Green markings may be used with the piano-style crosswalks certain situations. Green color is used to denote shared-use crosswalks where both pedestrians and bicyclists are expected to cross. The initial use of this green crosswalk treatment has been reserved for street crossings of the Little Sugar Creek Greenway, Cross Charlotte Trail, and Rail Trail. Pattern or other decorative crosswalk other than CDOT’s piano-style requires an encroachment agreement or approval from the CDOT Director.
**Flashing Beacons & Traffic Signals**

**Flashing Beacon**

**Description:** A pedestrian-actuated flashing beacon used to supplement a pedestrian warning sign. Audible devices should be installed with flashing beacons to provide visually impaired pedestrians additional cues to cross the street. The message would indicate, “lights are flashing; vehicles may not yield.”

**Objective:** To warn motorists of pedestrian crossings, designate the preferred crossing location. The flashing beacon provides additional warning in locations with low driver yielding behavior.

**Application:** The flashing beacon, if used, shall be in combination with a marked crosswalk and pedestrian warning signs. The recommended variables are:
- AADT – Greater than 15,000 vehicles per day
- Operating speed – Less than 45 mph
- Preferred near universities, colleges, or other significant pedestrian generator
- Observed low compliance of driver yielding behavior at the crossing

*Pedestrian-actuated flashing beacon
Selwyn Avenue - Charlotte, NC*
Pedestrian Hybrid Beacon

Description: The Pedestrian Hybrid Beacon signaling system, formerly referred to as a HAWK signal, is a combination of a beacon flasher and a traffic control signal for marked crossings. It stops vehicles to allow pedestrians to safely cross. The beacon signal consists of a standard traffic signal head with yellow and red lenses.

1. The unit is normally in a dark mode until activated by a pedestrian.
2. When the pedestrian pushes the button, the signal begins with a flashing yellow indication to warn approaching drivers. The pedestrian faces a DON’T WALK indication.
3. The flashing yellow is followed by a solid yellow indication, advising drivers of the impending requirement to stop.
4. The signal is changed to a dual solid red indication and the pedestrian is shown a WALK indication.
5. Once the pedestrian signal changes to FLASHING DON’T WALK, the beacon changes to an alternating flashing red, allowing drivers to proceed if the pedestrian has cleared the driver’s travel lane.
6. The light then goes to dark mode until activated by a pedestrian.

Objective: To stop vehicles to allow pedestrian to cross while also allowing vehicles to proceed as soon as the pedestrians have passed.

Application: Pedestrian Hybrid Beacons should be placed at mid-block location to avoid confusion for intersecting street traffic. There are limited applications when a Pedestrian Hybrid Beacon may be used at an intersection; however, detailed design review of the conflicting turning movements must be evaluated. Pedestrian signs and marked crosswalks must be placed in combination with Pedestrian Hybrid Beacons.

- Pedestrian volume – MUTCD Figures 4F-1 and 4F-2 prescribes pedestrian and traffic volume warrants, which ranges from 20 to 100+ pedestrians depending on the crossing length
- AADT – Greater than 12,000
- Operating speed – Greater than 35 mph

Accessible Pedestrian signals should be installed to provide the visually impaired pedestrians audible cues to cross the street.
Traffic Signal

**Description:** A signal that consists of a standard traffic signal head with a red-yellow-green lens. The unit displays green indication until the pedestrian pushes a button. The signal changes to yellow, then red indication to warn the driver of the requirement to stop. The pedestrian faces a DON’T WALK indication until the vehicles are stopped then the pedestrian is shown a WALK indication. Only when the traffic signal displays green do the motorists proceed.

**Objective:** To control traffic and give the pedestrian the right-of-way over the vehicle.

**Application:** Signs and marked crosswalks must be placed in combination with the signal.
- Pedestrian volume – MUTCD Figures 4C-5 and 4C-6 prescribe pedestrian and traffic volume warrants, which ranges from 75 to 400 pedestrians depending on the vehicle speed
- AADT – Greater than 12,000 vehicles per day
- Operating speed – Greater than 35 miles per hour
Geometric Design

Raised Crosswalks

Description: These can be speed humps with a marked crosswalk or a raised intersection that includes marked crosswalks.

Objective: Calms traffic and physically elevates the pedestrian higher on the street to warn motorists of pedestrians crossing the street. In addition, directs pedestrian to the preferred crossing location and provides greater visibility to the pedestrian crossing the street.

Application: The high-visibility markings should be used in combination with warning signs or may be used in-street paddles. The standard pedestrian sign should be installed with marked crosswalks. The recommended variables are:

- Residential streets that meet the speed hump eligibility requirements
- Operating speed – Less than or equal to 25 mph

Raised Crosswalk

Princeton Road at Jameston Road - Charlotte, NC
Refuge Island

Description: A concrete or landscaped island with minimum dimensions of six feet (prefer eight feet) wide and 30 feet long placed in the center of the roadway separating opposing lanes of traffic. If the island is landscaped, a portion must be identified with concrete as the preferred crossing location. Refuge islands should ideally be 40 to 60 feet in length depending on the adjacent driveways or street intersections. Accessible ramps shall be provided.

Objective: To provide a place where pedestrians may wait outside the travel lanes until adequate gaps in traffic occur, allowing them to cross the street in two stages.

Application: Refuge islands are particularly useful in locations where speeds and volumes are higher. In locations with average annual daily traffic less than 15,000 vehicles per day and moderate vehicle speeds, marked crosswalks and pedestrian signs may be placed in combination with the refuge island. The width of the depressed area for accessible users should consider the types of uses which may include wheelchairs, bicycles, and strollers. The recommended variables are:

- AADT – refuge islands are ideally suited for streets with traffic greater than 12,000 vehicles per day
- Operating speed – Less than 45 mph

Pedestrian Refuge Island
Kings Drive - Charlotte, NC
**Median**

**Description:** A concrete or landscaped median that is larger in size than a refuge island and intended to provide a pedestrian crossing. Medians are typically 100 feet or more in length and a minimum of six feet (prefer eight feet) wide. If the median is landscaped, a portion must be identified with concrete as the preferred crossing location. Accessible ramps shall be provided at the crossing location. Medians can provide access management to limit conflict points and provide safer pedestrian crossings.

**Objective:** To provide a place where pedestrians and cyclists may wait outside the travel lanes until adequate gaps in traffic occur, allowing them to cross the street in two stages.

**Application:** Medians are particularly useful in locations where speeds and volumes are higher. In locations with lower AADT and operating speeds, marked crosswalks and pedestrian signs may be placed in combination with the medians. Wheelchair users need adequate width and waiting areas on the median. If used alone, the recommended variables are:

- AADT – medians are ideally suited for streets with traffic greater than 12,000 vehicles per day
- Operating speed – Greater than 35 mph
- Need to limit turning movements or provide access management

*Median with Marked Crosswalks and Pedestrian Warning Sign*
*Rozzelles Ferry Road - Charlotte, NC*
Other Treatments

Curb Extensions

Description: The curb and sidewalk extend across the parking lanes to the edge of the travel lanes to narrow the distance of the road that a pedestrian has to cross.

Objective: To shorten the crossing distance for pedestrians. Also, to improve the visibility of the pedestrians by bringing them closer to the center of the driver’s cone of vision.

Application: Streets where there is on-street parking are the ideal candidates. Marked crosswalks and pedestrian signs may be used in combination with the curb extensions. The recommended variables are:

- Average Annual Daily Traffic (AADT) – Greater than 3,000 vehicles per day

Curb Extension diagram illustrating shortened pedestrian crossing distance
(Image source: NACTO)
**Road Conversion**

**Description:** Reducing the number of travel lanes from four or more lanes to one travel lane in each direction. The extra space may be used to provide refuge islands, medians, bicycle lanes, exclusive turn lanes, and/or on-street parking with curb extensions.

**Objective:** To reduce the number of conflicts for pedestrians crossing the street.

**Application:** Street conversions are useful in locations where there is a wide cross section and traffic volumes are typically less than 20,000 vehicles per day. A detailed traffic analysis is needed to determine the appropriateness of a street conversion. If used alone, the recommended variables are:

- **AADT** – Less than 20,000 vehicles per day
- **Operating speed** – Between 35 and 45 mph

Road Conversion diagram illustrating a four lane section converted to a three lane section to provide a two-way left turn lane and bicycle lanes. The turn lane space can also provide intermittent refuge islands for pedestrian crossings.

FHWA
Supporting Resources

Stopping Sight Distance

Sight distance is a term used to describe the length of roadway visible to react to a possible conflict. Adequate sight distance should be provided for the vehicle to see and react to pedestrians crossing the street.

Objects such as trees, bushes, tall crops, signs, walls, parked cars or buildings near the street can greatly impact the sight distance.

The design speed noted in Table 1 is typically 5 mph greater than the posted speed limit of a street. Table 2 should be used when up or down grades of the street are greater than three percent.

Stopping Sight Distance

(Exhibit 3-1 from AASHTO’s A Policy on Geometric Design of Highways and Streets)

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<th>Design Speed (mph)</th>
<th>Brake Reaction Distance (ft)</th>
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### Stopping Sight Distance on Grades

*(Exhibit 3-2 from AASHTO’s A Policy on Geometric Design of Highways and Streets)*

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Pedestrian Crossing Sight Distance

Pedestrians need to have adequate sight distance to choose adequate gaps in the traffic to cross the street safely. The New Zealand Authority has published guidelines on the amount of sight distance a pedestrian needs based on walking speed, crossing distance, and operating speed of the vehicle. Table 3 provides quick reference for pedestrian crossing sight distance based on variable speeds.

\[
\text{Pedestrian Crossing Sight Distance (feet) = } \frac{\text{crossing distance (feet)}}{\text{walking speed (feet/sec)}} \times \frac{\text{operating speed (mph)}}{1.47}
\]

Considerations for crossing sight distance include:

- Average walking speed is 3.5 feet per second. Ages and abilities that fall outside the average should be considered but not less than 2.5 feet per second.
- Objects such as trees, bushes, signs, walls, parked cars or buildings near the street can greatly impact the sight distance. Efforts should be made to remove the sight obstructions when feasible.

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Modified Pedestrian Crossing Sight Distance
(Walking speed of 2.5mph for pedestrians with ages and/or abilities that fall outside the average)

<table>
<thead>
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References

The resources noted below were used in the literature review as part the update of the Pedestrian Crossing Guidelines.


NCDOT Pedestrian Crossings


