

THE CITY OF WILTON MANORS & THE BROWARD
METROPOLITAN PLANNING ORGANIZATION

WILTON MANORS TRANSPORTATION MASTER PLAN

Wilton Manors, FL

DRAFT Mobility Treatments Toolbox

September 2023

WILTON MANORS MOBILITY TOOLBOX

STREET DESIGN & TREATMENT SELECTION PROCESS

The following section describes a process for the identification of street cross sections elements and additional amenities in Wilton Manors. This guidance is anticipated to be used by planners, designers, and engineers as they implement street projects in the City. The selection process generally follows four phases:

1 **Define Street Context and Identify Street Typology**
Utilize information including available corridor space or right-of-way (ROW), existing and future projected traffic conditions, safety information, and existing and future land uses are key to determining the street's functional classification, context, and topology.

2 **Allocate Space to Accommodate All Users**
Based upon the identified topology, aggregate the minimum widths needed to accommodate all users and needs of the street such as:



Bicycle Facilities



Sidewalks



Travel Lanes



Amenity Space

3 **Refine Allocation by Considering Goals and Users**
Allocate any remaining ROW or prioritize space considering the priority of modes and users on the street, local goals, and key issues of the road.

4 **Add Toolbox Elements**
Considering user needs and goals for the street, select elements of the toolbox to achieve those goals.

What are Street Typologies?

Street typologies help provide context-specific design guidance to create streets which respond the local context and needs of an area.

STREET DESIGN ELEMENTS

Mobility Zone

Vehicle Travel Lanes: Typically, the number of vehicle travel lanes is determined based upon the existing and projected traffic volumes.

Travel Lane Width: Narrow travel lane widths can contribute to lower vehicle operating speeds. The AASHTO Green Book indicates that lanes as narrow as 10 feet do not result in an increase in crashes or reduced vehicle capacity on roads with speed limits of 45 mph or less. Lane widths may differ to accommodate larger vehicles like buses.

Speed Limits: Reducing speed limits can be an effective tool for reducing operational speeds, preventing crashes, and reducing crash severity. [NACTO City Limits: Setting Safe Speed Limits on Urban Streets](#) recommends setting speeds based upon the potential for conflicts and how busy a road is.

Right Sizing and Roadway Space Reallocation: On existing roadways where increasing safety and improving multimodal access is desired, it can be advantageous to reallocate roadway space from existing travel or parking lanes to provide space for walking, biking, or transit. Streets which are candidates for right sizing generally meet one or more the following criteria:

1. Average daily traffic volumes less than 20,000 per day on a 4-lane road;
2. Located in higher density commercial, mixed-use and downtown districts where people biking and transit service conflict with automobile traffic;
3. On high crash 4+ lane urban corridors; and/or
4. On designated primary bike routes where additional right-of-way is needed for bike lanes.

Sidewalk Zone

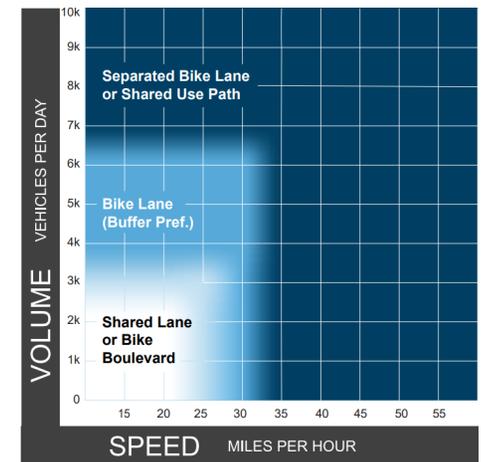
Sidewalk Width: Wider sidewalks are especially important in areas where there are large volumes of people walking to provide sufficient space for people to pass one another.

Landscape Buffer Width: Providing a landscaped increases the perception of safety and comfort of those walking or rolling. The buffer can also accommodate shade trees or other amenities for people walking such as resting places, wayfinding, or pedestrian lighting.

Bikeways

Bikeway Type: The type of bike facility and roadway context significantly impact the actual and perceived safety of those riding. [The FHWA Bikeway Selection Guide](#) recommends the following bike facilities based upon existing or expected roadway volumes and posted speeds.

It should be noted that this guidance is not comprehensive, and engineering judgement should be used to determine the facility type for the context. Additional factors to consider include number of lanes, presence of on-street parking, land use context, and others.



Source: FHWA Bikeway Selection Guide

Parking or Curb Zone

Time-limited and Metered Parking can be used in parking-scarce areas with direct business access to encourage turnover, increase utilization, and provide a revenue source. Time-limited parking can improve access to destinations by increasing parking availability.

Curb management is used to manage access along curbs throughout the day and can include permanent or time specific pick-up / drop-off zones, loading zones, flexible curb space, parking, and other elements. Vehicle parking can also be reallocated to bike parking, shared micromobility stations, parklets, etc.

Additional Design Guidance

Traffic Calming

Traffic calming measures can help to reduce speeding, limit cut-through traffic, and reduce reckless driving behavior. Traffic calming devices such as those described in the Toolbox, have a limited area of influence on driver behavior. Therefore, traffic calming devices generally should be at regular intervals in order to be effective at reducing vehicular speeds. The appropriate spacing depends on context, roadway users, and other elements. Some guidance includes:

- › The ITE Guidelines for the Design and Application of Speed Humps recommends spacing of 260' to 500' to keep 85th percentile operating speed between 25 and 30 mph.
- › Intersection treatments should be considered every one to two blocks on a traffic calmed street.
- › Traffic calming should be considered around crossings for people walking and biking.

Traffic Calmed Mid-Block Crossings and Offset Intersections. Elements like speed humps can be placed on both sides of a midblock crossing to reduce vehicular speeds both before the crossing and to prevent drivers from accelerating through the crossing. The same approach can be used at offset intersections to encourage drivers to slow down as they enter into the intersection. This helps to create a slow-zone between the two legs of the offset intersection, increasing visibility for drivers and comfort for people walking and biking across.

Back-out Parking

Historic development patterns allowed for wide swaths of back-out parking spaces to be constructed immediately adjacent to roadways. This has resulted in conflict points between those backing out and people crossing the driveway area on foot or bike. Additionally, this parking design requires drivers to back out into the travel lane, creating a potential conflict with through traffic.

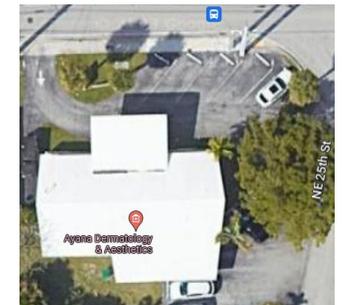
There is no one-size fits all solution to address the conflict points created with this type of development. The parking is most often located on private property and there is limited space to design around it. While policy changes have helped to ensure this type of development is no longer built, older properties are grandfathered in, so it is unlikely the property owners will modify the parking unless the property is redeveloped. Therefore, the challenges should be addressed in the concept design phase during project development, after the proposed typology has been selected. Some potential options include:

- › Working with property owners to purchase the private right of way and either:
 - › Remove the parking completely (only feasible if the property has access to additional parking).
 - › Remove some spaces and reconfigure the parking lot to have one access point, narrowing the driveway.
 - › Converting the parking to 90 degree parking, which increases visibility but does not address all conflicts.
- › Reallocating roadway space from existing median or travel lanes to allow drivers backing out space to perform the maneuver without entering into the travel lane.
- › Building a raised bikeway and sidewalk, acting as a raised crossing across the driveway and requiring drivers to reverse slowly to cross the multimodal space. Drainage should be carefully evaluated if this option is chosen.



 Curb cuts where drivers will reverse into the travel lane

Sample Alternative Parking Configurations in Wilton Manors



ROADWAY DESIGN CRITERIA

	Arterial		Collector		Local Street		Alley	
	Preferred	Allowable	Preferred	Allowable	Preferred	Allowable	Preferred	Allowable
Right of Way Width	80' min 100' Max		50' Min 70' Max		40' Min 50' Max		22' Min 30' Max	
Lanes								
2 (unmarked)	N/A		0-3k		0-3k		0-3k	
2	0-12k (10-16k with Left Turn Lane)		0-12k		N/A		N/A	
3	10-20k		N/A		N/A		N/A	
4	20-30k		N/A		N/A		N/A	
6	N/A		N/A		N/A		N/A	
Posted Speed	30 - 35		25 - 30		20 - 25		15-20	
Lane Width	11'	10'-12'	10'	10'-11'	10'	9'-11'	9'	9'-10'
Median Width	16'	12'-20'	12'	8'-16'	N/A		N/A	
Bikeway Type (Reference The FHWA Bikeway Selection Guide for Appropriate Facility Type)	Protected Bike Lane		Protected or Buffered Bike Lane		Shared Lane or Bike Lane		Shared Lane	
Bikeway Width	6' (sidewalk level) 7' (street level)	5-8'	6'	5-8'	6'	5-7'	N/A	
Bikeway Buffer Width	3'	2'-6'	3'	2'-4'	N/A	N/A	3'	
Shared Use Path Width	12'	8-16'	10'	8'-16'	N/A		N/A	
Sidewalk Width	8'	6'-20'	6'	6'-10'	6'	5'-8'	N/A	0'-5'
Landscape Buffer	3'	0'-8'	3'	0'-8'	5'	0'-10'	N/A	
On-Street Parking	Not Permitted		Allowable		Allowable		Not Permitted	
Parking Width	7'	7'-9'	7'	7'-9'	7'	7'-9'	N/A	
Curb & Gutter	2'		2'		2'		2'	

TREATMENT TOOLBOX

Traffic calming devices can help achieve the goals of a street, help influence driver behavior, and achieve local priorities. These tools—along with street topologies—can be used to help establish the modal priority for each road and provide safe and comfortable facilities for all road users.

TRAFFIC CALMING GOALS

The following X provides a list of the types of benefits that can be achieved through traffic calming. For each traffic calming device, these goals are listed in icon form to help illustrate the benefit of each treatment.



Reduce Crash Potential

Treatments which help reduce crash potential by either reducing conflicts or exposure.



Traffic Calming

Traffic calming treatments are specifically tailored toward reducing vehicular speeds and volumes increasing the safety for all road users by reducing the severity of crashes when they do happen.



Improve Safety and Comfort of People Biking

These treatments help create an environment where people of all ages and abilities would feel safe and comfortable riding a bike or using another form of micromobility. These devices may also help prioritize people biking at intersections or crossings.



Improve Safety and Comfort of People Walking

These tools help create an environment where people feel safe and comfortable walking, rolling, or using a mobility device to get around. These devices may also help prioritize people walking at intersections or crossings.

TRAFFIC CALMING TREATMENTS

	Arterial	Typology Collector	Local	Goals Achieved
Segment & Crossing Treatments				
Speed Table		X	X	  
Chicanes		X	X	 
Full Traffic Closures			X	   
Roundabout	X	X	X	  
Reduce/Tighten Curb Radii	X	X	X	   
Raised Intersections	X	X	X	  
Diverter				  
Raised Crosswalks	X	X	X	 
High Visibility Crosswalks	X	X	X	
Decorative Crosswalks	X	X	X	
Pedestrian Refuge Islands	X	X		  
Midblock Pedestrian Signal (MPS)	X	X		  
Rectangular Rapid Flashing Beacon (RRFB)		X	X	  
Protected Intersection	X	X	X	  
Bike Box	X	X	X	 
Two Stage Left Turn Queue Box	X	X	X	 
Conflict Markings	X	X	X	 
Centerline Hardening	X	X	X	   

	Arterial	Typology Collector	Local	Goals Achieved
Signal Treatments				
Leading Pedestrian Interval	X	X	X	 
Protected Pedestrian Phase	X	X	X	 
Pedestrian Recall (Fixed Signalization)	X	X	X	
All Pedestrian Phase	X	X	X	 
Adjustments for Slower Pedestrians	X	X	X	 
Bike Signals	X	X	X	 
Amenities				
Parcel Lockers	X	X	X	
Street Trees or Shade	X	X	X	 
Wayfinding	X	X	X	 
Bike or Micromobility Parking	X	X	X	 
eBike Charging	X	X		 
Bike Lockers	X	X	X	 
Pedestrian Lighting	X	X		 

SEGMENT & CROSSING TREATMENTS

Element	Example	Description	Application Guidance	Benefits	References / Resources
<p>Speed Table</p>	 <p>Source: NACTO, Urban Street Design Guide</p>	<p>A speed table is an elevated mound in the roadway intended to slow traffic. Similarly, speed cushions are smaller lumps across the road which leave gaps for emergency vehicles and bicycles.</p>	<ul style="list-style-type: none"> › Appropriate for local streets which provide access to adjacent properties, schools, parks, and other destinations where people are likely to walk and bike and slower traffic is desired. › Should be spaced at no more than 500 feet apart to achieve an 85th percentile speed of 25-34 mph. › Design considerations: clear sight distance, relatively flat cross slope, drainage, transit, and emergency services. 		<ul style="list-style-type: none"> › FDOT FDM 202 Section 202.3.8, FDOT Design Standard D520-030 › FHWA Traffic Calming ePrimer › NACTO Urban Street Guide: Speed Hump
<p>Chicanes</p>	 <p>Source: Fort Lauderdale</p>	<p>Chicanes create a curvey pathway in an otherwise straight road and encouraging vehicles to slow. Chicanes also increase the amount of public space available on a corridor.</p>	<ul style="list-style-type: none"> › Chicanes are intended for use on residential or low volume downtown streets. › Additional signing and striping can make drivers aware of the upcoming bend in the roadway. 		<ul style="list-style-type: none"> › FDOT FDM 202 Section 202.3.3 › NACTO Urban Street Design Guide: Chicane › FHWA Traffic Calming
<p>Curb Extensions / Bump Outs</p>	 <p>Source: Fort Lauderdale</p>	<p>Curb extensions, also known as bulb-outs or neckdowns, extend the sidewalk or curb line out into the travel or parking lane, which reduces the effective street width.</p>	<ul style="list-style-type: none"> › Generally applicable when there is a parking lane or wide travel lane › Can be used to narrow the street or in conjunction with crosswalks and other features to facilitate crossings for people walking › Medians can work as a center-running curb extension that narrows the road. › Design considerations: clear sight distance, relatively flat cross slope, drainage 		<ul style="list-style-type: none"> › FDOT FDM 202 Section 202.3.12 / FDM 222 Section 222.2.6 › FDM Chapter 212 › NACTO Urban Street Design Guide: Curb Extensions › FHWA Countermeasures

Element	Example	Description	Application Guidance	Benefits	References / Resources
<p>Full Traffic Closures</p>	 <p>Source: SANDAG</p>	<p>Streets can be closed to prevent vehicular traffic from using the road. This can be done using quick-build materials like planters or with permanent infrastructure.</p>	<ul style="list-style-type: none"> > Can be placed at intersections with residential streets to improve quality of life by reducing cut-through traffic and reduce vehicular volumes > Road closures can also provide permeability for people walking or biking and is often used along bike routes such as Bike Boulevards. > Temporarily street closures can provide space for block parties, street fairs, etc. 		<ul style="list-style-type: none"> > NACTO Urban Street Design Guide: Temporary Street Closures
<p>Roundabouts</p>	 <p>Source: Fort Lauderdale</p>	<p>A roundabout is a type of intersection where traffic is permitted to flow in one direction around a center island. Traffic approaching the roundabout yields to traffic already within the intersection.</p>	<ul style="list-style-type: none"> > Design intended to slow approaching vehicles > Can be used at intersections of both one-way and two-way streets > Design considerations: clear sight distance, relatively flat cross slope, drainage, transit, freight turn radii (if applicable), existing bike treatments, number of approach lanes, entry speeds, volumes. 		<ul style="list-style-type: none"> > NCHRP 1043 Guide for Roundabouts / FDOT FDM Section 213 > FDM Chapter 212 > FHWA Traffic Calming ePrimer > NACTO Urban Street Design Guide: Mini-roundabout
<p>Reduce/Tighten Curb Radii</p>	 <p>Source: NACTO, Urban Street Design Guide</p>	<p>Smaller corner radii directly impact vehicle turning speeds and crossing distances creating compact, safe intersections for people walking.</p>	<ul style="list-style-type: none"> > Turning speeds should be limited to 15 mph or less for the safety of people walking. > Standard curb radii are 10-15 feet but may be as small as 2 feet. 		<ul style="list-style-type: none"> > Urban Street Design Guide – Corner Radii > FDM Chapter 212

Element	Example	Description	Application Guidance	Benefits	References / Resources
<p>Raised Intersections</p>	 <p>Source: Fort Lauderdale</p>	<p>Similar to speed tables, raised intersections lift the height of the road to crosswalk level to encourage drivers to slow. They also make it more comfortable for people walking, rolling, or using an assistive mobility device to cross.</p>	<ul style="list-style-type: none"> > Most applicable in areas with higher existing or anticipated volumes of people walking or biking > Bollards along corners keep motorists from crossing into the space of people walking. > Design considerations: clear sight distance, relatively flat cross slope, drainage, transit, and emergency services 		<ul style="list-style-type: none"> > FDOT FDM 202 Section 202.3.8, FDOT Design Standard D520-030 > FDM Chapter 212 > FHWA Countermeasures > NACTO Raised Intersections
<p>Traffic Diverters</p>	 <p>Source: SANDAG</p>	<p>Median island traffic diverters require drivers to turn left or right, rather than driving through an intersection, while allowing people walking and biking to travel through the intersection.</p>	<ul style="list-style-type: none"> > Can be placed at intersections with residential streets to improve quality of life by reducing cut-through traffic and reduce vehicular volumes > Can help create lower-stress bike routes where mixed-traffic is expected by reducing traffic volumes 		<ul style="list-style-type: none"> > FHWA Traffic Calming ePrimer > NACTO: Urban Bikeway Design Guide: Volume Management

Element	Example	Description	Application Guidance	Benefits	References / Resources
<p>Raised Crosswalks</p>	 <p>Source: FHWA, Toolbox of Individual Traffic Calming Measures Part 2</p>	<p>Raised crosswalks elevate the crosswalk to sidewalk level, providing a level path for people using the crosswalk, encouraging vehicles to slow, and increasing visibility for both drivers and people in crosswalk.</p>	<ul style="list-style-type: none"> › Most applicable in areas with higher existing or anticipated volumes of people walking or biking › Can be used at mid-block crossings or to indicate priority of a shared use path across a driveway or side street › Should be considered for shared use path or separated bike lane crossings where motorists are required yield the right-of-way to people biking › Raised crosswalks should only be used on streets with speeds of 30 mph or less. › Design considerations: clear sight distance, relatively flat cross slope, drainage, transit, and emergency services 		<ul style="list-style-type: none"> › FDOT FDM 202 Section 202.3.8, FDOT Design Standard D520-030 › FDM Chapter 212 › FHWA Raised Crosswalks Tech Sheet › MUTCD Chapter 3B Pavement and Curb Markings
<p>High-visibility Crosswalks</p>	 <p>Source: Fort Lauderdale</p>	<p>Marked, high visibility crosswalks consist of reflective roadway markings and accompanying signage at intersections and priority pedestrian crossing locations.</p>	<ul style="list-style-type: none"> › Mid-block locations, especially in conjunction with other treatments › Crossings in downtown CBDs and at shared use path crossings › Uncontrolled intersections › Should be used at crossings with high volumes of people walking. › Should be placed within ¼ mile of major transit transfer locations. 		<ul style="list-style-type: none"> › MUTCD Chapter 3B, Pavement and Curb Markings › FHWA Crosswalk Visibility Enhancements Tech Sheet › PBIC Overview and Recommendations of High-Visibility Crosswalk Marking Styles

Element	Example	Description	Application Guidance	Benefits	References / Resources
<p>Decorative Crosswalks</p>	 <p>Source: Fort Lauderdale</p>	<p>Decorative crosswalks include paving bricks, stones, setts, cobbles, or lattice patterns, colored pavements or paint applied to the surface of a road to denote the crosswalk.</p>	<ul style="list-style-type: none"> › Anywhere placemaking is desired such as to distinguish a particular district, neighborhood, or a Main Street. › Recommend placement where high volumes of people are walking. 		<ul style="list-style-type: none"> › FHWA MUTCD Application of Colored Pavement
<p>Pedestrian Refuge Islands</p>	 <p>Source: NACTO, Urban Street Design Guide</p>	<p>Provides a protected space for people walking to cross half the roadway and wait until it is safe to cross the remainder.</p>	<ul style="list-style-type: none"> › Used in urban and suburban roads that are three or more lanes, traffic volumes are over 9,000 AADT per day, speeds are 35 mph and greater › Can be used at intersections or mid-block crossings › Especially recommended near transit stops or other pedestrian-focused sites 	  	<ul style="list-style-type: none"> › FDM Chapter 222 and Chapter 202 › FHWA STEP Guide › FHWA Pedestrian Refuge Island Tech Sheet › NACTO Urban Street Design Guidelines – Pedestrian Safety Islands
<p>Midblock Pedestrian Singal (MPS)</p>	 <p>Source: Fort Lauderdale</p>	<p>PHBs are a traffic control device that uses a sequence of lights to warn and control traffic at unsignalized locations. MPSs operate more similar to a standard semi-actuated vehicular traffic control signal at a midblock crossing.</p>	<ul style="list-style-type: none"> › PHBs and MPSs are intended for installation at midblock locations where pedestrians need to cross, and vehicle speeds or volumes are high. › PHBs and MPSs can be paired with high visibility crosswalks, pedestrian refuge islands, and pedestrian warning signs. 	  	<ul style="list-style-type: none"> › Florida Greenbook Chapter 8, Part G.1.b / FDOT FDM 222 Section 222.2.3.2 › FDM Chapter 222 and Chapter 202 › FHWA STEP Guide › FDOT TEM › MUTCD: Chapter 4F Guidelines, Warrant 4 - Pedestrian Volume

Element	Example	Description	Application Guidance	Benefits	References / Resources
<p>Rectangular Rapid-Flashing Beacon (RRFB)</p>	 <p>Source: Fort Lauderdale</p>	<p>RRFBs are user-actuated yellow flashing lights to improve safety at uncontrolled, marked crosswalks. They are used to alert drivers to stop where people walking have the right-of-way crossing a road.</p>	<ul style="list-style-type: none"> › Usually most applicable on 2-lane roads › Usually implemented at high-volume pedestrian crossings at mid-block locations or at intersections where signals are not warranted › RRFBs are often used with crosswalk visibility enhancements, pedestrian refuge island, and signage. 		<ul style="list-style-type: none"> › FHWA RRFB Fact Sheet › NACTO Urban Bikeway Design Guide › FDOT Safety Resources
<p>Protected Intersection</p>	 <p>Source: San Francisco Bicycle Coalition</p>	<p>A protected intersection allows people biking to queue in a location separated from vehicular traffic and to cross within a dedicated path. A corner island protects the queuing area and provides a space for motorists to yield to people biking or walking across the intersection.</p>	<ul style="list-style-type: none"> › Consider wherever there is a high demand for bicycle travel or where an intersection is creating a barrier between two low-stress facilities. › On roadways with posted speed of 45 mph or less and at intersections with bicycle facilities on all legs (or where they are planned to be implemented in the future). › Requires the use a dedicated bike signal to prevent a conflict between people biking straight through the intersection and right-turning traffic 		<ul style="list-style-type: none"> › NACTO Don't Give Up at the Intersection › NCHRP Research Report 926 › 2015 Massachusetts DOT Separated Bicycle Lane Planning &
<p>Bike Box</p>	 <p>Source: NACTO, Urban Bikeway Design Guide</p>	<p>A bike box is a designated area placed ahead of a travel lane at a signalized intersection in which people biking can safely get ahead of stopped traffic during a red light.</p>	<ul style="list-style-type: none"> › At signalized intersections with high volumes of bicycles and/or motor vehicles, especially where there may be right or left-turning conflicts between people biking and people driving › When the dominant motor vehicle traffic flows right and bicycle traffic continues through 		<ul style="list-style-type: none"> › FDOT FDM 223.2.1.5 › NACTO Urban Bikeway Design Guide - Bike Boxes

Element	Example	Description	Application Guidance	Benefits	References / Resources
<p>Two Stage Left Turn Queue Box</p>	 <p>Source: NACTO, Urban Bikeway Design Guide</p>	<p>A two-stage left-turn box is a marked area in an intersection in which people biking can safely wait and prepare to make a two-stage left-turn.</p>	<ul style="list-style-type: none"> › Two-stage left-turn boxes shall be placed in an area outside the travel paths of conflicting vehicles. › Where there is a desire to better accommodate left turning bicycle traffic. › Where a left turn is required to follow a designated bike route, access a shared-use path, or when the bicycle lane moves to the left side of the street 		<ul style="list-style-type: none"> › FDOT FDM 223.2.1.5 › NACTO Urban Bikeway Design Guide - Bike Boxes
<p>Conflict Markings</p>	 <p>Source: NACTO, Urban Bikeway Design Guide</p>	<p>Intersection crossing markings provide a clear boundary between the path of people biking and people driving.</p>	<ul style="list-style-type: none"> › Conflict markings should be placed along roadways with bike lanes or cycle tracks across wide, or complex signalized intersections where typical vehicle movements encroach into bicycle space. 		<ul style="list-style-type: none"> › NACTO Urban Bikeway Design Guide – Intersection Crossing Markings
<p>Centerline / Left Turn Hardening</p>	 <p>Source: Seattle, WA</p>	<p>A curb or delineator placed in the intersection to reduce left turning speeds and prevent corner cutting.</p>	<ul style="list-style-type: none"> › Areas where it is impossible to provide a pedestrian refuge island. › 6-foot preferred nose extension but no less than 2 feet. › May be installed with or without vertical elements; often mountable. 		<ul style="list-style-type: none"> › FDM Chapter 210.3.3 › NACTO Don't Give Up at the Intersection

SINGAL TREATMENTS

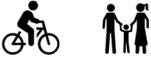
Element	Example	Description	Application Guidance	Benefits	References / Resources
<p>Lead Pedestrian Interval</p>	 <p>Source: FHWA, Leading Pedestrian Interval</p>	<p>Gives someone walking or rolling 3-7 seconds to enter the crosswalk before allowing conflicting vehicles to have a green light.</p>	<ul style="list-style-type: none"> Typically installed in areas with numerous pedestrian crashes, high pedestrian volumes, high volumes of school aged children or older adults, or where turning vehicles make it difficult for pedestrians to begin a crossing. 		<ul style="list-style-type: none"> FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations FHWA LPI Tech Sheet FHWA Safety Evaluation of Leading Pedestrian Intervals on Pedestrian Safety
<p>Protected Pedestrian Phase</p>	 <p>Source: NACTO, Transit Design Guide</p>	<p>All turning movements that conflict with someone walking—including right and turn on red—are not permitted during the pedestrian signal phase.</p>	<ul style="list-style-type: none"> Typically installed in areas with numerous pedestrian crashes, high pedestrian volumes, high volumes of school aged children or older adults, or where turning vehicles make it difficult for pedestrians to begin a crossing. 		<ul style="list-style-type: none"> FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations FHWA Safety Evaluation of Leading Pedestrian Intervals on Pedestrian Safety
<p>Pedestrian Recall (Fixed Signalization)</p>	 <p>Source: New York Post</p>	<p>Pedestrian signals are automatic and do not require someone walking to push a button.</p>	<ul style="list-style-type: none"> Installed in locations where large volumes of people walking are expected such as in downtowns or at intersections near schools Design considerations: coordination with signal timing, spacing between traffic signals, looking at desirable crossing intervals 		<ul style="list-style-type: none"> FHWA Traffic Signal Timing Manual NACTO Traffic Signal Phasing

Element	Example	Description	Application Guidance	Benefits	References / Resources
<p>All Pedestrian Phase</p>	 <p>Source: Avoision</p>	<p>An all-pedestrian phase no other conflicting traffic is allowed and people walking are permitted to cross the intersection in any direction.</p>	<ul style="list-style-type: none"> › Installed in locations where large volumes of people walking are expected such as in downtowns or at intersections near schools › Desirable where there are high-volume turning movements that conflict with pedestrians crossing 	 	<ul style="list-style-type: none"> › FHWA Facilities User Guide – Providing Safety and Mobility
<p>Adjustments for Slower Pedestrians</p>	 <p>Source: Bellingham Herald</p>	<p>Increase the pedestrian walking phase to accommodate people who may be a slower than the average walker such as people who use mobility devices or are over 65.</p>	<ul style="list-style-type: none"> › Anywhere where there are large volumes of people walking or it is expected people over the age of 65 or who may need to use a mobility device › 	 	<ul style="list-style-type: none"> › FHWA Pedestrian Characteristics
<p>Bike Signals</p>	 <p>Source: NACTO, Urban Bikeway Design Guide</p>	<p>Bike signals provide a dedicated signal for people biking to cross an intersection.</p>	<ul style="list-style-type: none"> › Where bike movement conflicts with vehicle movements during the same green phase › Where high volumes of people biking are expected such as near schools, downtowns, or other popular destinations 	 	<ul style="list-style-type: none"> › NACTO Urban Bikeway Design Guide – Cycle Signals

AMMENITIES

Element	Example	Description	Application Guidance	Benefits	References / Resources
<p>Parcel Lockers</p>	 <p>Source: Block Club Chicago</p>	<p>Consolidated delivery point for an area that provides secure package storage. Located in areas that are convenient for customers to pick up their parcels including in residential buildings, retail centers, and other public spaces.</p>	<ul style="list-style-type: none"> › Can be placed in residential, commercial, or public spaces where there is a large number of deliveries anticipated › Consider areas that could benefit from reduced dwell time from delivery trucks or where there are not dedicated loading zones 		<ul style="list-style-type: none"> › Building Healthy Cities: Urban Freight Solutions
<p>Street Trees or Shade</p>	 <p>Source: Fort Lauderdale</p>	<p>Trees planted in public right of way to provide shade for people walking and biking.</p>	<ul style="list-style-type: none"> › Appropriate for sidewalks with enough width to allow unobstructed ADA access › Important in high-pedestrian traffic areas, mixed use districts and downtowns › May also be planted in medians 	 	<ul style="list-style-type: none"> › NACTO Street Stormwater Guide › FDOT FDM 228
<p>Wayfinding</p>	 <p>Source: NACTO, Transit Street Design Guide</p>	<p>Signage that provides directions to destinations and other pertinent information.</p>	<ul style="list-style-type: none"> › Typically located on trails, near transit stops, and in downtown/commercial areas › Well-branded signs can contribute to place making 	 	<ul style="list-style-type: none"> › NACTO Transit Street Design Guide: System Wayfinding & Brand › NACTO Transit Street Design Guide: Passenger Information & Wayfinding

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<p>Bike or Micromobility Parking</p>	 <p>Source: Seattle Bike Blog</p>	<p>Designated areas to park bikes or micromobility devices (such as scooters). Usually located on wide sidewalks, repurposed parallel parking spots, or other areas which provide easy access to micromobility devices.</p>	<ul style="list-style-type: none"> › Should be located on sidewalk and intersection locations which don't impede pedestrian access or ADA compliance › Secure bike parking near transit can provide passengers with bike-to-transit access. Bicycle parking should be provided near transit stops and stations. › Bike racks should be used at cycling trip generators, typically in commercial areas, high-density residential areas and downtowns. They should be highly visible and within proximity of front entrances. 		<ul style="list-style-type: none"> › FHWA University Course on Bicycle and Pedestrian Transportation: Bicycle Parking and Storage › NACTO Transit Street Design Guide: Bike Parking
<p>eBike Charging</p>		<p>eBike parking that also provides an electrical outlet so that people riding eBikes can charge their battery.</p>	<ul style="list-style-type: none"> › These stations can be used in place of traditional bike parking and have the same application considerations. › Bike lockers and longer-term bike parking may also provide outlets for charging eBikes. › Can consider co-locating eBike Charging stations with public EV charging stations 		<ul style="list-style-type: none"> › FHWA Charging Planning Types
<p>Bike Lockers</p>	 <p>Source: NACTO, Transit Street Design Guide</p>	<p>Bike lockers are secure long-term storage that protects bikes from the elements and from theft.</p>	<ul style="list-style-type: none"> › Place near bike trip generators, transit stations, inside residential buildings, or at large employment centers › If outside, locate in a well-lit areas in full view of sidewalks and pedestrian paths, ideally where there is foot-traffic 		<ul style="list-style-type: none"> › NACTO Transit Street Design Guide: Bike Parking

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<p>Pedestrian Lighting</p>	 <p>Source: JBD Engineering</p>	<p>Lighting of pedestrian facilities is fundamental in increasing the safety of the road network for all users. Lighting not only improves drivers' visibility of people walking, but it also allows people walking to see their surroundings.</p>	<ul style="list-style-type: none"> > In crosswalks, visibility of pedestrians relies on background illuminance, luminaire location in relation its distance from the crosswalk, approaching vehicles, and height. > Photometric analysis determines the appropriate spacing of light fixtures so that light is equally spread along a corridor. 		<ul style="list-style-type: none"> > FDM Chapter 231 > NACTO Lighting Use and Design > FHWA Roadway Lighting Resources