City of Wilmington

Complete Streets Design Guidelines

March 2023

Wilmington Initiatives

Acknowledgements

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Wilmington Initiatives Management Committee

John Rago	City of Wilmington, Office of the Mayor
Tanya Washington	City of Wilmington, Office of the Mayor
Gwinn Kaminsky	City of Wilmington, Department of Land Use and Planning
Tim Lucas	City of Wilmington, Department of Land Use and Planning
Matt Harris	City of Wilmington, Department of Land Use and Planning
Kelly Williams	City of Wilmington, Department of Public Works
Steve Weber	City of Wilmington, Department of Public Works
Sean Park	City of Wilmington, Mayor's Office of Economic Development
Bill Thatcher	DART First State
Cathy Smith	DART First State
John Calnan	DART First State
Jared Kauffman	DART First State
John Sisson	DART First State
Ann Gravatt	Delaware Department of Transportation (DelDOT)
Chip Kneavel	Delaware Department of Transportation (DelDOT)
Pam Steinebach	Delaware Department of Transportation (DelDOT)
Jerry Lovell	Delaware Department of Transportation (DelDOT)
Cooper Bowers	Delaware Department of Transportation (DelDOT)
Matt Vincent	Delaware Department of Transportation (DelDOT)
Mike Hahn	Delaware Department of Transportation (DelDOT)
Paul Moser	Delaware Department of Transportation (DelDOT)
Kelly Valencik	Delaware Department of Transportation (DelDOT)
Susanne Laws	Delaware Department of Transportation (DelDOT)
Jeff Niezgoda	Delaware Department of Transportation (DelDOT)
Todd Pryor	Delaware Department of Transportation (DelDOT)
Diane Gunn	Kleinfelder, on behalf of Delaware Department of Transportation (DelDOT)
Dave Gula	Wilmington Area Planning Council (WILMAPCO)
Tigist Zegeye	Wilmington Area Planning Council (WILMAPCO)

Introduction

The purpose of this document is to support the development of a safe, context-sensitive transportation network that serves all users and integrates the planning and design of complete streets that foster a livable, sustainable, and economically vibrant community. “Complete Streets” means streets that are designed and operated to enable safe access for all users, so that pedestrians, bicyclists, motorists, and transit users of all ages and abilities are able to move along and across all public streets safely. These guidelines are intended for use by the City of Wilmington, private developers and residents as a reference for how to accommodate all users on existing and future city streets. Street types are categorized along a spectrum of complete street classes, each with its own user priorities, typical features, and design options.

The guidelines provided here are not intended to impose hard-and-fast “standards,” but instead, to offer consistent guidance to implement complete street principles in concert with the character of surrounding land uses and urban design conditions. The guidelines are not a substitute for a more thorough evaluation by an engineer or landscape architect upon implementation of facility improvements. These guidelines are general in nature, and further analysis and professional engineering judgement will be required to accommodate local conditions, including community concerns, topography, cost issues, right-of-way availability, permitting challenges, and funding opportunities, among other issues. Further guidance can be found in the documents listed in the Resources section.

Complete streets principles should be applied on all new City projects and privately funded developments, and incrementally on existing streets through a series of small improvements and activities over time.

DEVELOPMENT OF THE GUIDELINES

These guidelines were developed by reviewing relevant documents, conducting a survey of exemplary streets in Wilmington, and working with the Wilmington Initiatives members to discuss street types, example Wilmington streets, and proposed metrics. More information about guidance documents consulted and the Wilmington street survey can be found in the Appendix.

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Neighborhood Slow Street

Neighborhood Slow Streets provide access to residential houses. They are used for low-speed trips in and out of neighborhoods. Street design encourages slow speed interactions with bicyclists and crossing pedestrians. On-street parking can provide convenient access and further slows driving speeds. Design is sensitive to unique historic characteristics.

These streets provide one travel lane and may or may not include on-street parking or bike lanes, depending on width. Sidewalks, street trees, and pedestrian scale lighting are a high priority. Speeds should be low enough that pedestrians and bicyclists can use the travel lane when sidewalks or bike lanes are not present.

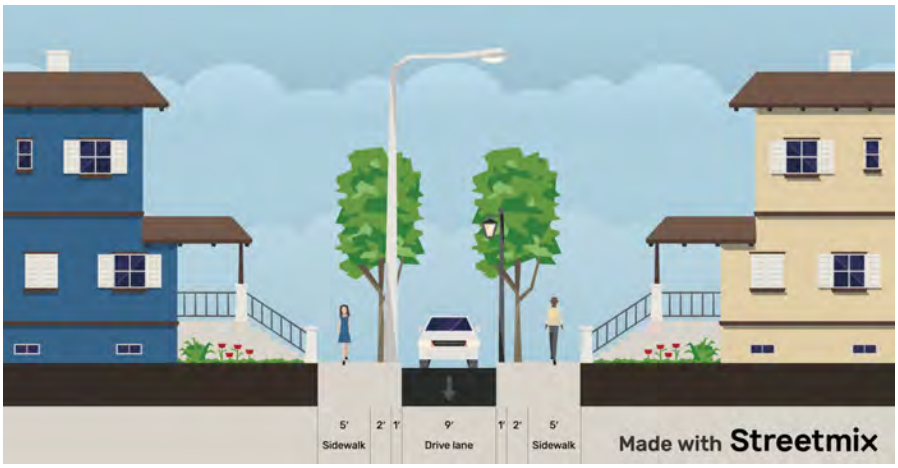
Neighborhood slow streets are not intended for through motor vehicle traffic and may use traffic calming to discourage through traffic and reduce speeds to create a comfortable environment for walking and bicycling.

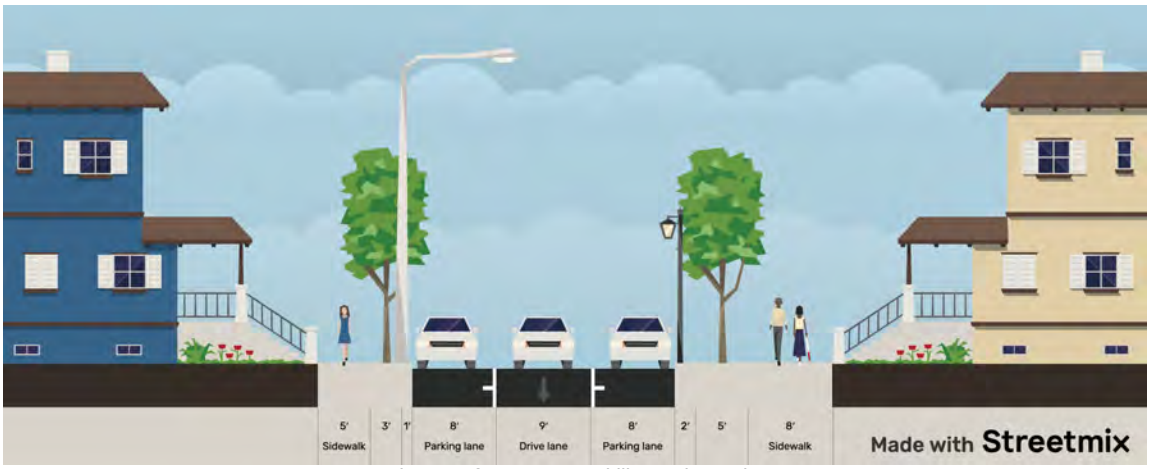
sample Wilmington streets:
W. 18th St at Woodlawn, S. Claymont St at A Street, Bancroft Pkwy 14th-17th, Stapler Pl at 14th

TYPICAL FEATURES

	Pedestrian and Bicycle Enhancements	Taffic Calming and Transit Enhancements	Landscaping and Lighting	Trafffic Management
High Priority	Sidewalks	N/A	Curb	N/A
Encouraged	Shared street	N/A	Pedestrian scale lighting Street trees	N/A
Allowed Depending on Circumstances	Bike lane Buffered bike lane Bicycle corral Bicycle rack Separated bike lane Shared use path	Chicane Curb extension Transit infrastructure	On-street parking Furnishing zone Planting strip Shoulder	Loading zones
Not Appropriate	N/A	Pedestrian refuge island Transit amenities Transit lane and bus priority Transit floating island	Median	Priority emergency route Truck route Center line yellow striping

Neighborhood Slow Street Design Guidelines





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DIMENSIONS

Target Speed	**20 mph**
Speed Limit	**25 mph unless otherwise psoted**
Street Direction	**one-way**
Street Pavement Width (curb to curb)	**9–25′**
Moving Lanes	**1**
Moving Lane Width	**9′**
Parking Lanes	**0–2**
Parking Lane Width	**8′**
Curb Type	**raised 6″**
Curb Radius	**10′ max**
Pedestrian Realm Width	**8′ min**
Pedestrian Clear Zone Width	**5′ min** **8′ desirable**

OTHER FEATURES

Median	**not allowed**
Street Tree Priority	**encouraged**
Typical Planter Type	**planting strip** **tree pit**
Typical Bike Way Type	**shared street**
Bike Enhancements	**optional: bike parking**
Pedestrian Lighting Priority	**encouraged**
Street Lighting Type	**priority: pedestrian scale** **allowed: cobra head**

City Core Slow Street

City Core Slow Streets provide for short distance, low-speed trips within the Downtown commercial business district. Street design encourages slow speed interactions with bicyclists and crossing pedestrians.

These streets provide one or two travel lanes and on-street parking to allow for convenient access to businesses and to help mitigate driving speeds. Designs vary widely based on one- or two-way operation, parking configuration, and adjacent land uses. Due to slow speeds and narrow lane widths, bicyclists typically operate in a shared lane. Where widths permit, a buffered or separated bike lane may be used.

Sidewalks and pedestrian scale lighting are a high priority to create a comfortable walking environment. Street trees are desired where they do not interfere with visibility of businesses.

sample Wilmington streets:
Tatnall St at 8th, 9th St at Jefferson, Market St at 6th, Justison St at Harlan, Lombard St at 9th

TYPICAL FEATURES

	Pedestrian and Bicycle Enhancements	Taffic Calming and Transit Enhancements	Landscaping and Lighting	Trafffic Management
High Priority	Sidewalks	N/A	Curb Pedestrian scale lighting On-street parking	N/A
Encouraged	Bike rack Sharrow Shared street	Transit infrastructure	Furnishing zone Street trees	Loading zones
Allowed Depending on Circumstances	Bike lane Buffered bike lane Separated bike lane Bike corral	Transit amenities Curb extension	Planting strip Shoulder	Priority emergency route Center line yellow striping
Not Appropriate	Shared use path	Pedestrian refuge island Chicane Transit lane and bus priority Transit floating island	Median	Truck route

City Core Slow Street Design Guidelines

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DIMENSIONS

Target Speed	**20 mph**
Speed Limit	**25 mph unless otherwise posted**
Street Direction	**one-way, two-way**
Street Pavement Width (curb to curb)	**24–42′** **22–30′ at crosswalk**
Moving Lanes	**1–2**
Moving Lane Width	**9-10′**
Parking Lanes	**1–2**
Parking Lane Width	**8′**
Curb Type	**raised 6″**
Curb Radius	**10′ max**
Pedestrian Realm Width	**8-24′**
Pedestrian Clear Zone Width	**5′ min** **8′ desirable**

OTHER FEATURES

Median	**not allowed**
Street Tree Priority	**encouraged**
Typical Planter Type	**tree pit**
Typical Bike Way Type	**shared street** **sharrow**
Bike Enhancements	**priority: bike parking**
Pedestrian Lighting Priority	**required**
Street Lighting Type	**required: pedestrian scale** **allowed: cobra head**

City Core Connector

City Core Connector streets transition from streets with larger traffic volumes into downtown and neighborhood contexts. They connect neighborhoods to downtown. Street design balances motor vehicle use with pedestrians and bicyclists.

Design with only two travel lanes and on-street parking sends subtle cues to road users that the character is transitioning away from a faster speed context, naturally resulting in slower speed operation. Traffic speeds and volumes create the need for striped bicycle lanes to accommodate cyclists. Where space is limited, shared lane markings may be necessary.

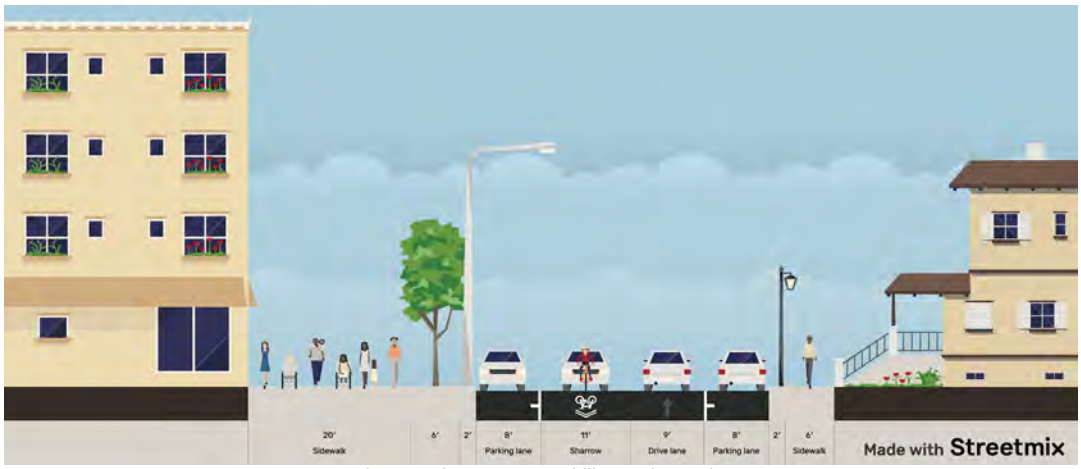
Sidewalks and pedestrian scale lighting are a high priority to create a comfortable walking environment. Commercial activity calls for a wider pedestrian zone than on more residential streets. Street trees are a high priority.

sample Wilmington streets:
Orange St at 9th, Union St at 8th, Heald St at C Street

TYPICAL FEATURES

	Pedestrian and Bicycle Enhancements	Taffic Calming and Transit Enhancements	Landscaping and Lighting	Trafffic Management
High Priority	Sidewalks	N/A	Curb	N/A
Encouraged	Buffered bike lane Separated bike lane Bike rack	Transit infrastructure Transit amenities	Pedestrian scale lighting On-street parking Planting strip Street trees	Center line yellow striping
Allowed Depending on Circumstances	Sharrow Bike lane Shared use path Bike corral	Curb extension Pedestrian refuge island Transit floating island	Furnishing zone Shoulder	Loading zones Priority emergency route Truck route
Not Appropriate	Shared street	Chicane Transit lane and bus priority	Median	N/A

City Core Connector Design Guidelines



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DIMENSIONS

Target Speed	**25 mph**
Speed Limit	**25 mph unless otherwise posted**
Street Direction	**one-way, two-way**
Street Pavement Width (curb to curb)	**28-56′**
Moving Lanes	**1–2**
Moving Lane Width	**9-11′**
Parking Lanes	**1–2**
Parking Lane Width	**8′**
Curb Type	**raised 6″**
Curb Radius	**15′ max**
Pedestrian Realm Width	**8′ min** **18-28′ desirable**
Pedestrian Clear Zone Width	**6′ min** **12-20′ desirable**

OTHER FEATURES

Median	**not allowed**
Street Tree Priority	**encouraged**
Typical Planter Type	**planting strip** **tree pit**
Typical Bike Way Type	**buffered bike lane**
Bike Enhancements	**priority: bike parking**
Pedestrian Lighting Priority	**encouraged**
Street Lighting Type	**priority: pedestrian scale** **allowed: cobra head**

Neighborhood Connector

Neighborhood Connectors bring residents to and from their Neighborhood Slow Street to other parts of the city or region. They provide an opportunity for road users to transition between the Primary Connector and Gateway Corridors with higher traffic volumes to the low-speed character of the neighborhood.

Smooth traffic flow is a priority, but these streets may also serve as important bicycle and pedestrian connections. Dedicated space for pedestrians and bicyclists is important. SInce there is less commercial activity, the pedestrian zone may be smaller than on the City Core Connectors.

Similar to the City Core Conector, design with only two travel lanes and on-street parking sends subtle cues to road users that the character is transitioning away from a higher volume context, naturally resulting in slower speed operation.

sample Wilmington streets:
Washington St at 25th, Delaware Ave at Bancroft, Baynard Blvd at 20th, Concord Ave at Jefferson

TYPICAL FEATURES

	Pedestrian and Bicycle Enhancements	Taffic Calming and Transit Enhancements	Landscaping and Lighting	Trafffic Management
High Priority	Sidewalks	N/A	Curb	Center line yellow striping
Encouraged	Buffered bike lane	Transit infrastructure Transit amenities	Pedestrian scale lighting Planting strip Street trees	N/A
Allowed Depending on Circumstances	Shared use path Sharrow Bike lane Separated bike lane Bike rack Bike corral	Curb extension Pedestrian refuge island Transit floating island	On-street parking Furnishing zone Shoulder Median	Priority emergency route
Not Appropriate	Shared street	Chicane Transit lane and bus priority	N/A	Loading zones Truck route

Neighborhood Connector Design Guidelines

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DIMENSIONS

Target Speed	**25 mph**
Speed Limit	**25 mph unless otherwise posted**
Street Direction	**two-way**
Street Pavement Width (curb to curb)	**34–40′**
Moving Lanes	**2**
Moving Lane Width	**9–11′**
Parking Lanes	**1–2**
Parking Lane Width	**8′**
Curb Type	**raised 6″**
Curb Radius	**15′ max**
Pedestrian Realm Width)	**8′ min**
Pedestrian Clear Zone Width	**5′ min** **8′ desirable**

OTHER FEATURES

Median	**allowed**
Street Tree Priority	**encouraged**
Typical Planter Type	**planting strip**
Typical Bike Way Type	**buffered bike lane**
Bike Enhancements	**optional: bike parking**
Pedestrian Lighting Priority	**encouraged**
Street Lighting Type	**priority: pedestrian scale** **allowed: cobra head**

Primary Connector

Primary Connectors emphasize efficient travel between other connector and corridor streets. Turn lanes may be provided at intersections to keep traffic flowing smoothly.

Motor vehicle movement is prioritized, but bicycle facilities may be important for providing multimodal access to job centers and other destinations.Due to higher traffic volumes, dedicated bicycle facilities are considered a high priority

Street design includes four travel lanes with narrow to medium lane width, a medium to large curb radius, and limited on-street parking.

sample Wilmington streets:
4th St at Tatnall, Northeast Blvd at 24th, Lancaster Ave at Ford, Pennsylvania Ave at Bancroft

TYPICAL FEATURES

	Pedestrian and Bicycle Enhancements	Taffic Calming and Transit Enhancements	Landscaping and Lighting	Trafffic Management
High Priority	N/A	Transit infrastructure Transit amenities	Curb or Shoulder	Center line yellow striping
Encouraged	Buffered bike lane Separated bike lane	Transit lane and bus priority Transit floating island	Street trees Furnishing zone	N/A
Allowed Depending on Circumstances	Bike lane Sidewalks Shared use path Bike rack	Curb extension Pedestrian refuge island	Pedestrian scale lighting Planting strip On-street parking Median	Truck route Priority emergency route Loading zones
Not Appropriate	Shared street Sharrow Bike corral	Chicane	N/A	N/A

Primary Connector Design Guidelines

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DIMENSIONS

Target Speed	**30 mph**
Speed Limit	**25 mph unless otherwise posted**
Street Direction	**two-way**
Street Pavement Width (curb to curb)	**30-60′**
Moving Lanes	**3–4**
Moving Lane Width	**9–11′**
Parking Lanes	**0–1**
Parking Lane Width	**N/A**
Curb Type	**raised 6″ or shoulder**
Curb Radius	**15 max′**
Pedestrian Realm Width	**10′ min**
Pedestrian Clear Zone Width	**5′ min** **8′ desirable**

OTHER FEATURES

Median	**allowed**
Street Tree Priority	**encouraged**
Typical Planter Type	**planting strip**
Typical Bike Way Type	**buffered bike lane** **separated bike lane**
Bike Enhancements	**optional: bike parking**
Pedestrian Lighting Priority	**allowed**
Street Lighting Type	**pedestrian scale or cobra head**

Gateway Corridor

Gateway Corridors provide high traffic volume connections to freeways. They serve as a transition from motor vehicle only freeways to multimodal connector streets.

Gateway Corridors are configured with 4–6 lanes for traffic flow, as their primary function is the efficient movement of motor vehicles. They have wider travel lanes and a larger curb radius.

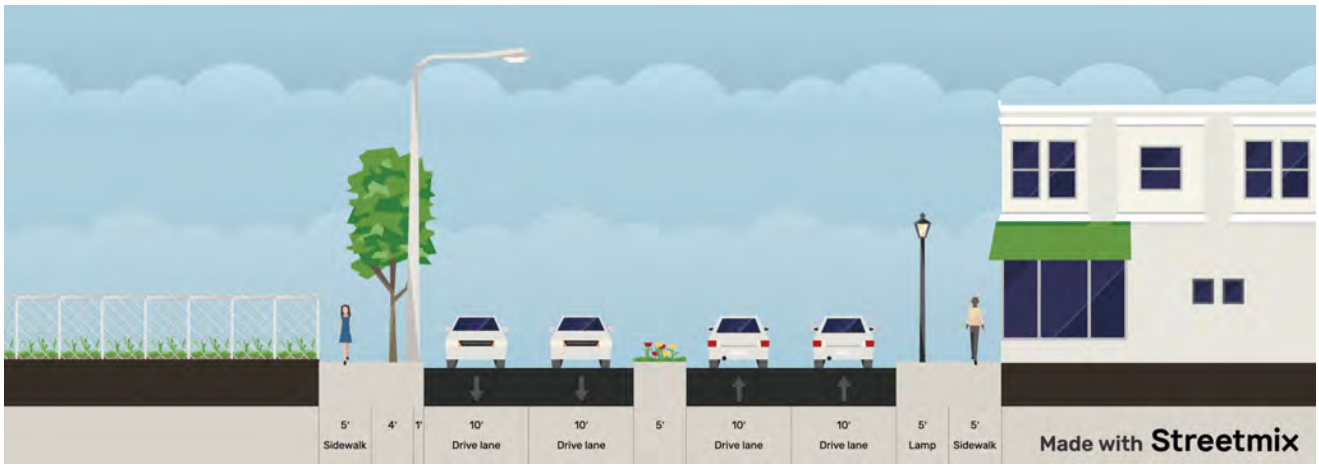
Pedstrian zones are optional, but facilities for pedestrians and bicyclists should be provided along these routes where they are expected. For safety, pedestrian and bicycle facilities should be sufficiently separated from motor vehicle traffic either through buffers or vertical separation features.

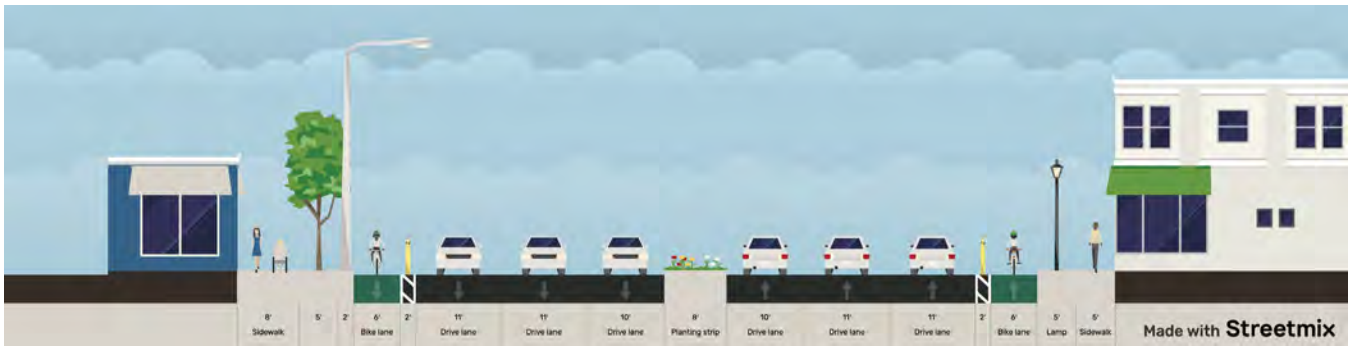
sample Wilmington streets:
Washington Blvd at Irving, MLK Blvd at Justison, Delaware Ave at Adams

TYPICAL FEATURES

	Pedestrian and Bicycle Enhancements	Taffic Calming and Transit Enhancements	Landscaping and Lighting	Trafffic Management
High Priority	N/A	Transit infrastructure Transit amenities	Curb or Shoulder Median Planting strip	Center line yellow striping
Encouraged	Separated bike lane	Pedestrian refuge island Transit lane and bus priority Transit floating island	Street trees	Truck route Priority emergency route
Allowed Depending on Circumstances	Buffered bike lane Sidewalks Shared use path Bike rack	Curb extension	Furnishing zone Pedestrian scale lighting	N/A
Not Appropriate	Bike lane w/o buffering or separation Shared street Sharrow Bike corral	Chicane	On-street parking	Loading zones

Gateway Corridor Design Guidelines





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DIMENSIONS

Target Speed	**35 mph**
Speed Limit	**25 mph unless otherwise posted**
Street Direction	**two-way**
Street Pavement Width (curb to curb)	**40–84′**
Moving Lanes	**4–6 travel lanes + possible turning lanes**
Moving Lane Width	**10–11′**
Parking Lanes	**0**
Parking Lane Width	**N/A**
Curb Type	**raised 6″ or shoulder**
Curb Radius	**15′ max**
Pedestrian Realm Width	**10′ min**
Pedestrian Clear Zone Width	**5′ min 8′ desirable**

OTHER FEATURES

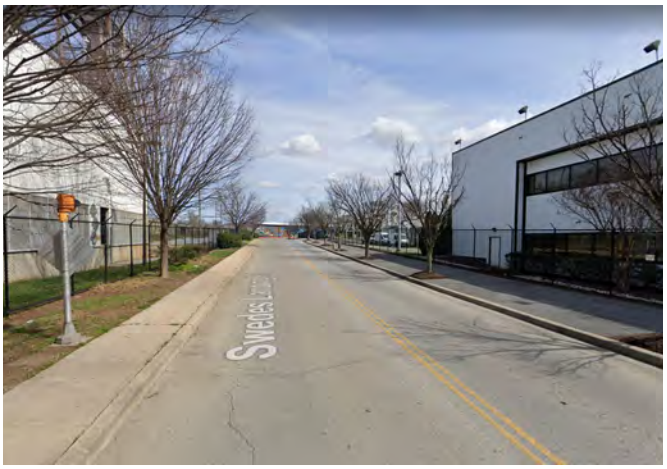
Median	**required**
Street Tree Priority	**encouraged**
Typical Planter Type	**planting strip**
Typical Bike Way Type	**separated bike lane**
Bike Enhancements	**optional: bike parking**
Pedestrian Lighting Priority	**allowed**
Street Lighting Type	**pedestrian scale or cobra head**

Industrial Business Access

Industrial Business Access Corridors provide access to major employment centers. These streets have a significant transportation connectivity function and serve as a destination for employment activity. Roadway design must accommodate large trucks.

These streets tend to be auto-oriented, and separated bicycle and pedestrian facilities are necessary to create a comfortable walking and bicycling environment.

Industrial Business Access Corridors configured with 2-4 lanes for traffic flow, as their primary function is the efficient movement of motor vehicles. They have wide travel lanes and a larger curb radius.

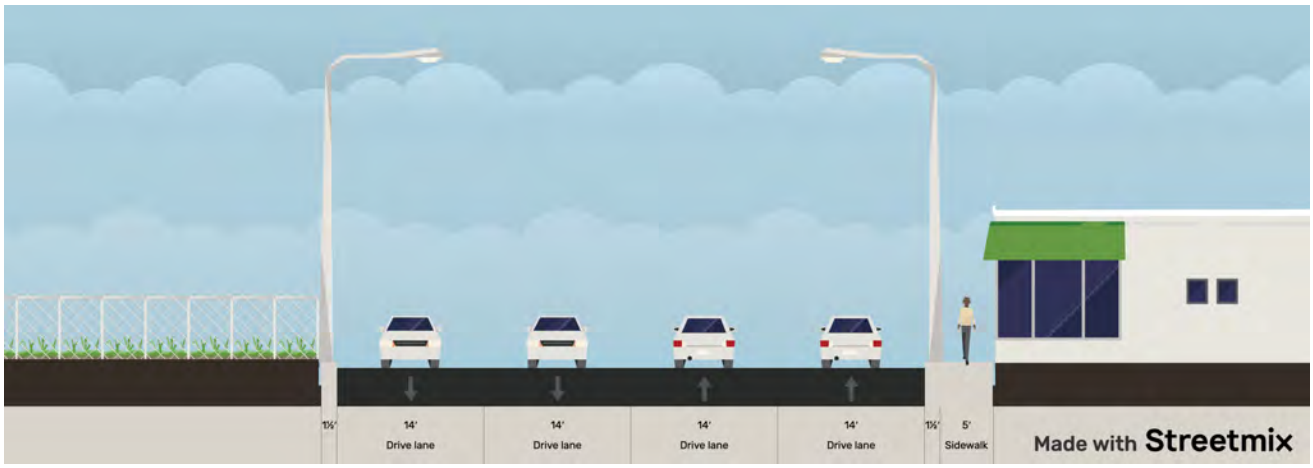


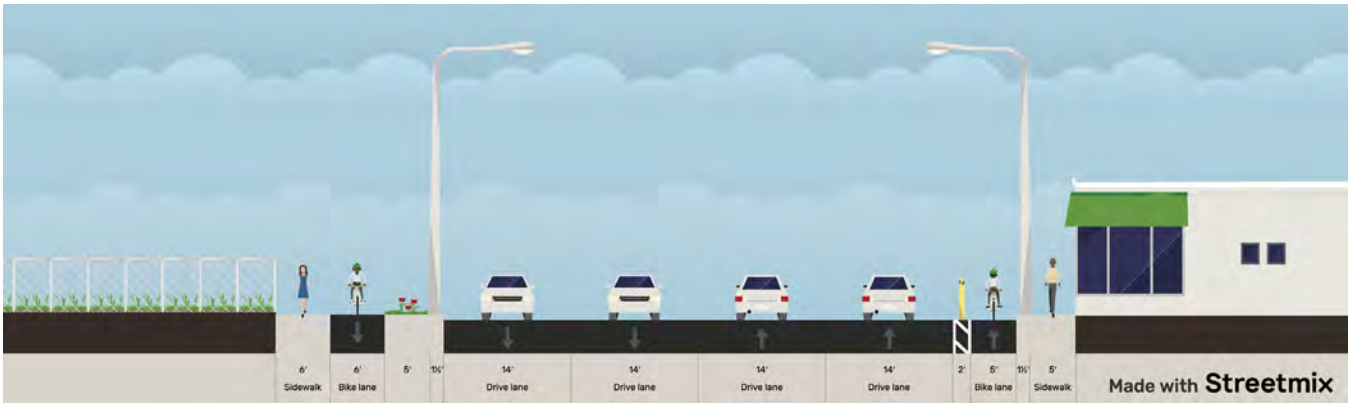
sample Wilmington streets:
Swedes Landing Rd at 5th, Christina Ave at Old Ferry Rd, Front St at Lombard

TYPICAL FEATURES

	Pedestrian and Bicycle Enhancements	Taffic Calming and Transit Enhancements	Landscaping and Lighting	Trafffic Management
High Priority	N/A	N/A	Curb or Shoulder	Center line yellow striping
Encouraged	Sidewalks	N/A	N/A	Truck route Priority emergency route
Allowed Depending on Circumstances	Separated bike lane Shared use path Buffered bike lane Bike rack	Pedestrian refuge island Curb extension Transit infrastructure Transit amenities Transit lane and bus priority Transit floating island	Furnishing zone Median Pedestrian scale lighting Planting strip Street trees	N/A
Not Appropriate	Bike lane w/o buffering or separation Shared street Sharrow Bike corral	Chicane	On-street parking	Loading zones

Industrial Business Access Design Guidelines





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DIMENSIONS

Target Speed	**35 mph**
Speed Limit	**25 mph unless otherwise posted**
Street Direction	**two-way**
Street Pavement Width (curb to curb)	**30–32′**
Moving Lanes	**2**
Moving Lane Width	**12′**
Parking Lanes	**0**
Parking Lane Width	**N/A**
Curb Type	**raised 6″ or shoulder**
Curb Radius	**20′ max**
Pedestrian Realm Width	**6′ min***
Pedestrian Clear Zone Width	**5′ min***

*** Exceptions allowed in locations where there should not be pedestrian activity for safety or security reasons**

OTHER FEATURES

Median	**allowed**
Street Tree Priority	**allowed**
Typical Planter Type	**planting strip**
Typical Bike Way Type	**separated bike lane shared use path**
Bike Enhancements	**optional: bike parking**
Pedestrian Lighting Priority	**allowed**
Street Lighting Type	**pedestrian scale or cobra head**

Shared Use Path - Sidepaths & Trails

A shared use path is a path for use by bicyclists and pedestrians that is separated from the roadway. It may travel adjacent to a roadway (a sidepath) or as a route independent of a roadway (a trail).

Shared use paths provide two-way travel for walking, bicycling, jogging, and skating. Depending on the width available, they may or may not have separate areas designated for walking and jogging versus wheeled travel.

Shared use paths offer many opportunities for creative stormwater management, landscaping, furnishings, and public art. Particular attention should be paid to lighting, espcially for shared use trails away from a roadway.

sample Wilmington streets:
Riverwalk, NAME OF NEW PATH THROUGH WETLAND PARK?

TYPICAL FEATURES

	Pedestrian and Bicycle Enhancements	Taffic Calming and Transit Enhancements	Landscaping and Lighting	Trafffic Management
High Priority	Shared use path	N/A	Curb or Shoulder	N/A
Encouraged	N/A	N/A	Pedestrian scale lighting Planting strip Street trees	N/A
Allowed Depending on Circumstances	Bike lane Sidewalks Bike rack Separated bike lane	N/A	Furnishing zone Median	N/A
Not Appropriate	Shared street Sharrow Bike corral	Pedestrian refuge island Transit amenities Transit lane and bus priority Transit infrastructure Transit floating island Curb extension Chicane	On-street parking	Center line yellow striping Loading zones Truck route Priority emergency route

Shared Use Path Design Guidelines

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DIMENSIONS

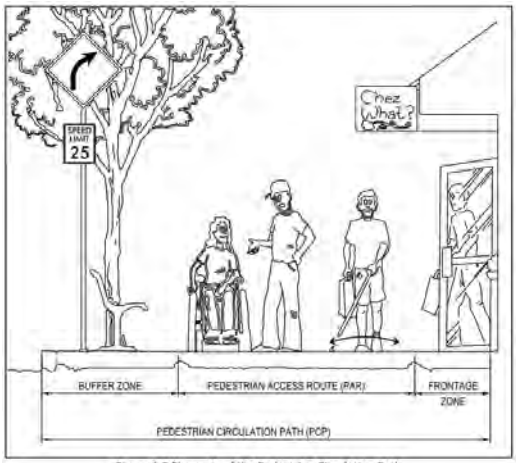
Target Speed	**N/A**
Speed Limit	**N/A**
Street Direction	**two-way**
Street Pavement Width (curb to curb)	**9–25'**
Moving Lanes	**N/A**
Moving Lane Width	**N/A**
Parking Lanes	**N/A**
Parking Lane Width	**N/A**
Curb Type	**raised 6" or shoulder**
Curb Radius	**N/A**
Pedestrian Realm Width	**13' min* 15-17' desirable**
Pedestrian Clear Zone Width	**8' min 10-12' desirable**

OTHER FEATURES

Median	**allowed**
Street Tree Priority	**encouraged**
Typical Planter Type	**planting strip**
Typical Bike Way Type	**Shared use path**
Bike Enhancements	**optional: bike parking**
Transit Facilities	**N/A**
Traffic Calming Features	**N/A**
Pedestrian Lighting Priority	**encouraged**
Street Lighting Type	**pedestrian scale or cobra head**

* A narrower buffer may be considered if there is a physical barrier between the path and roadway

Definitions

Bicycle Corral	An array of bicycle racks located within an on-street parking space
Bicycle Rack	A durable, secured fixture, used to lock bicycles to for short-term parking
Bike Lane	A painted travel lane for the exclusive use of bicyclists
Buffered Bike Lane	A conventional bike lane paired with a designated striped buffer space between the bike lane and adjacent motor vehicle travel lane and/or parking lane. The minimum bicycle travel area (not including buffer) is 5 feet wide. Buffers should be at least 2 feet wide. Buffers between the bike lane and the parking lane decreases the likelihood that bicyclists will be impeded by open car doors of parked vehicles.
Cartway	The paved roadway surface from roadway edge or curb to the opposite roadway edge or curb
Chicane	A series of curb extensions, on-street parking, or other physical features located on alternating sides of a street to add horizontal deflection of motor vehicles to encourage motorists to maintain a desired slow speed. Chicanes discourage or make it impossible for drivers to drive in a straight line, which can reduce vehicular speeds.
Curb Extension	***Also called bulbout, neckdown, choker*** An extension of the sidewalk into an on-street parking lane. Curb extensions are intended to expand pedestrian space, reduce crossing distances, and improve visibility of pedestrians.
Curb Radius	The curved edge of a street at an intersection, measured at the inside edge of the vehicular tracking along the curb. A larger curb radius allows faster turning speeds. The smaller the curb radius, the smaller the pedestrian crossing distance and the more slowly the vehicle is forced to make the turn.
Furnishing Zone	The space between the cartway and the portion of the sidewalk where pedestrians walk. Signs, utilities, and mailboxes are placed in the furnishing zone. The furnishing zone may be landscaped with street trees and plantings or fully paved in areas with increased pedestrian activity. DelDOT's Pedestrian Accessibility Standards Manual refers to this area as the "Buffer Zone" (see image below).  Figure 1.2 Elements of the Pedestrian Circulation Path
Median	Raised islands placed in the middle of the roadway. Medians can be used to narrow travel lanes, to provide a pedestrian refuge at crosswalk locations, and to provide an opportunity for landscaping and street trees.
Pedestrian Clear Zone	The area of the sidewalk with no obstructions. The pedestrian clear zone should be at least 6' wide in any commercial, mixed use, or dense residential area and minimum 5' wide in all other places. This width permits side-by-side walking, meeting and passing events, and turning and maneuvering space that meets accessibility guidelines. DelDOT's Pedestrian Accessibility Standards Manual refers to this area as the "Pedestrian Access Route." See image in Furnishing Zone definition.

Pedestrian Realm	The portion of the street dedicated to pedestrian activity. The pedestrian realm includes the pedestrian clear zone and the furnishing zone. In higher density areas, the pedestrian realm typically extends from the building façade to the curb. In lower density areas, the pedestrian realm typically extends from a lawn, landscaped area, or parking lot to the curb. DelDOT's Pedestrian Accessibility Standards Manual refers to this area as the "Pedestrian Circulation Path." See image in Furnishing Zone definition.
Pedestrian Refuge Island	A median island in the center of the roadway to offer pedestrians a place to stop. Refuge islands reduce crossing distances for pedestrians by allowing them to cross each travel direction independently.
Planting Strip	The area between the back of the curb and the sidewalk where street trees, shrubs, and grass are planted
Separated Bike Lane	A bike lane that is physically separated from motor vehicle lanes and sidewalks with a vertical element such as a bollard or curb
Shared Street	A low-speed, low volume street where bicyclists, pedestrians and motorists all operate within the cartway. Shared streets have no separate bike lanes. They may or may not have sidewalks on one or both sides of the street.
Shared Use Path	***Also called sidepath when adjacent to a roadway*** A path for use by bicyclists and pedestrians that is separated from the roadway. A shared use path may travel adjacent to a roadway or as a route independent of a roadway. They provide two-way travel for walking, bicycling, jogging, and skating. The minimum pathway width is 8' In low volume situations, although 10-12' is more desirable. For paths adjacent to roadways, the minimum separation from the roadway is 5 on low speed roadways, although 6.5' is more desirable. Separation narrower than 5 feet is not recommended, but may be accommodated with the use of a physical barrier between the sidepath and the roadway (AASHTO 2012).
Sharrow	A roadway marking used on roads without bike lanes to alert drivers to the presence of bicycles on roads that have no dedicated bike lanes
Sidewalk	The portion of the street that provides a dedicated space intended for use by pedestrians. Sidewalks are physically separated from the roadway by a curb or landscaped buffer space.
Street Tree	A tree located within a public right-of-way, same as right-of-way tree
Transit Amenities	Facilities that augment Transit Infrastructure,such as a shelter, bench, trash can, lighting, etc. Newly constructed or improved stop pads shall follow DelDOT's M-9 specifications.
Transit Floating Island	A bus stop that is placed between the motorized lane and bike lane
Transit Infrastructure	An area for bus riders to alight and disembark from a bus that includes a bus stop sign, and could include Transit Amenities. Newly constructed or improved stop pads shall follow DelDOT's M-9 specifications.
Transit Lane and Bus Priority	A lane of travel restricting all other modes of travel other than a bus or transit vehicle. This allows includes space for a bus to jump the queue at a red light.
Target Speed	The desirable velocity at which vehicles should travel on a street. Features of the street should be designed to encourage drivers to stay at or below the target speed.
Tree Pit	The opening in a sidewalk for planting a tree. A typical minimum size is 4'x4'. A more desirable size if space allows is 5'x10'. In areas with higher pedestrian activity, tree pits are generally covered by grates or other durable material. In areas with lower pedestrian activity, tree pits may have mulch or plantings.

Resources

American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning, Design, and Operation of Pedestrian Facilities (2004)

American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities (2012)

City of Gaithersburg, MD Street Design Standards and Traffic Calming Best Practices (2018)

City of New Haven Complete Streets Design Manual (2010)

City of Portsmouth Complete Streets Design Guidelines (2017)

Delaware Department of Transportation (DelDOT) Complete Streets in Delaware: A Guide for Local Governments (2011)

Delaware Department of Transportation (DelDOT) Complete Streets Policy (2010)

Delaware Department of Transportation (DelDOT) Delaware Traffic Calming Design Manual (2012)

Delaware Department of Transportation (DelDOT) Pedestrian Accessibility Manual (2021)

Delaware Department of Transportation (DelDOT) Road Design Manual (2011)

Federal Highway Administration (FHWA) Noteworthy Local Policies that Support Safe and Complete Pedestrian and Bicycle Networks (2016)

Federal Highway Administration (FHWA) Separated Bike Lane Planning and Design Guide (2015).

Institute of Transportation Engineers (ITE) Designing Walkable Urban Thoroughfares: A Context Sensitive Approach (2010)

Institute of Transportation Engineers (ITE) Implementing Context Sensitive Design on Multimodal Thoroughfares: A practitioner's Handbook (2017)

National Association of City Transportation Officials (NACTO) Urban Street Design Guide (2013)

National Association of City Transportation Officials (NACTO) Urban Transit Street Design Guide (2015)

National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide (2012)

National Transportation Safety Board (NTSB) Safety Study: Reducing Speeding-Related Crashes Involving Passenger Vehicles (2017)

New Jersey Department of Transportation (NJDOT) – State of New Jersey Complete Streets Design Guide (no date)

Urban, Rural and Suburban Complete Streets Design Manual, City of Northampton and Communities in Hampshire County, MA (2017)

*Walkable City Rule*s by Jeff Speck (2018)

Appendix

Appendix A:
White Paper: Street Design Policies & Design Manuals, Hurley-Franks & Associates, 2019

This white paper summarizes the different approaches cities have taken to address street design as well as elements that are commonly found in multiple design manuals. Manuals to review were selected based on cities that have similar population levels as Wilmington, similar employment levels as Wilmington, and/or in areas with similar urban design charactistics as Wilmington.

Appendix B:
Crashes, Speeds, & Lane Widths: Presentation to Wilmington Initiatives, Hurley-Franks & Associates, 2022

Hurley-Franks and Assocaites prepared this presentation for the Wilmington Initiatives Committee to summarize industry data about the relationship between vehicle crashes, traffic speeds, and lane widths.

Appendix C:
Wilmington Street Type Survey, Hurley-Franks & Associates, 2021

Hurley-Franks and Assocaites conducted this synoptic survey to measure key urban design features of sample streets. Streets to measure were identified by the Wilmington Initiatives Management Committee as good examples of existing streets to cover each potential street type category.

Appendix A:
White Paper:
Street Design Policies & Design Manuals, Hurley-Franks & Associates, 2019

This white paper summarizes the different approaches cities have taken to address street design as well as elements that are commonly found in multiple design manuals. Manuals to review were selected based on cities that have similar population levels as Wilmington, similar employment levels as Wilmington, and/or in areas with similar urban design charactistics as Wilmington.

White Paper: Street Design Policies & Design Manuals

INTRODUCTION

In the past several years, many cities have adopted design manuals related to street design. This white paper summarizes the different approaches cities have taken to address street design as well as elements that are commonly found in multiple design manuals. Manuals to review were selected based on cities that have similar population levels as Wilmington, similar employment levels as Wilmington, and/or in areas with similar urban design charactistics as Wilmington (see listing in Appendix).

STREET DESIGN IMPLEMENTATION MODELS

Some are adopted by the governing body and others are developed and instituted through staff authority. One common arrangement is for the governing body to adopt a general "policy," often just a few pages, while the detailed design manual, typically 50-200 pages, is instituted administratively.

ELEMENTS COMMON TO STREET DESIGN MANUALS

A review of a selection of recent design manuals shows that they have great variability in their level of detail and in the topics they cover. There seems to be a relationships between the size of the place and the length of the design manual: smaller towns and cities often have guides of less than 50 pages, while large cities often have guides greater than 200 pages long.

Although there is no standard format or set of topics these guides cover, there are elements that appear in multiple guides:

- Policy/goal/guiding principles
- Benefits of complete streets
- Street types
- Approval and/or waiver process
- "Palette" of key elements/design features of specific types of facilities
- Concept plans for proposed improvements
- Implementation plan

The only element included in every guide review was some discussion of the policy background, goals, authority, and/or design principles for the guide.

Elements in Street Design Guide Manuals

	New Haven CT	New Britain CT	Gaithersburg MD	Northhampton MA	Portsmouth NH
Goals and Guiding Principles	✓	✓	✓	✓	✓
Benefits of Complete Streets	✓	✓			
Street Types			✓		✓
Map of Types		⊙			✓
"Palette" of Design Features or Facilities	✓	⊙	✓	✓	
Project Approval Process	✓		✓		
Concept Plans for Proposed Improvements		✓			
Implementation Plan	✓	✓			

✓ Includes this element
⊙ Somewhat includes this element, but not fully

Goals and Guiding Principles

Most documents begin with some statement policy or goals for street design. If a "Complete Streets," "Vision Zero," or other street design policy has been adopted by Executive Order or vote of the governing body, this section often re-states key sections of that directive. Other guides include design principles from national organizations, such as Livable Communities or Complete streets, or present their own set of local principles related to street design.

Common goals include:

- Improve mobility and access for users of all abilities, including vulnerable populations, such as children, elderly, disabled, and people with access to a car
- Slow speeds
- Improve safety
- Design flexibility
- Prioritize or encourage walking, biking, and transit
- Make streets a comfortable public space

EXAMPLES:

AIA Ten Principles for Livable Communities – New Britain

Guiding Principles page – New Haven

Benefits of Complete Streets

Many of the documents, especially the longer documents, include sections providing education or advocacy for the benefits of Complete Streets, or why changes from the conventional street design approach are needed.

Common benefits referenced include:

- Speed reduction reduces pedestrian fatality risk.
- Reduced pavement can mean lower maintenance costs and/or generate less heat island effect.
- Street design creates a "place," not just a thruway. The placemaking provides quality of life amenities people want and can support economic development.
- Reduced driving lowers carbon emissions and air pollution.
- Increased walking and biking leads to health benefits.

EXAMPLES:

Slower speed street design – Gaithersburg

Street Typology

Many documents present a typology of streets, with a defined set of street types. The street types are typically defined through a combination of description, metrics, and illustration.

The street types are not defined by AASHTO functional classifications. Instead, they present a more varied and nuanced set of street designs based on the character of the street and its existing or desired surrounding land use. The types do not just define features of the cartway, but consider all of the space from building to building, so they include features of the pedestrian space.

The definition and illustration for each type covers numerous elements, typically including:

- Purpose of street type
- Target speed
- Lane width
- Number of travel lanes

- On-street parking
- Sidewalks and furnishing zones
- Bike facilities

The table below provides an example of the range of street types in Portsmouth, NH.

Key Features of Portsmouth Street Types

Street Type	Target Speed (mph)	Lane widths (in ft)	Number Lanes	On Street Parking	Sidewalk	Bikes	Other
Neighborhood slow street	20	10	2 max, no centerline	High priority, 8’	Optional, 5’ min + 3’ furnishing zone	In roadway, sharrows	Access to residences Prioritizes ped/bike
City core slow street	20	10	2 max, no centerline	High priority, 8’	Required, 8-12’ + 4’ furnishing zone	In roadway, sharrows	Local downtown streets Prioritizes ped/bike and on-street parking
City core connector	25	11	2 max, no centerline	High priority, 8’	Required, 5’ min + 3’ furnishing zone	High priority, Bike lane, 5-6’ min + buffer 2’ min	Transition from higher speed streets to downtown core Balance ped/bike and motor vehicle Prioritizes movement over access
Neighborhood connector	30	11	2 max, w/ centerline	Optional, 8’	Required, 5’ min + 3’ furnishing zone	High priority, Bike lane, 5-6’ min + buffer 2’ min	Link neighborhoods to each other and to higher-speed streets Prioritizes motor vehicles but may also serve important ped/bike connections Multi-use path, 10’, given as alternative to sidewalk/bike lane
Primary connector	30	11	2 max, w/ centerline	Optional, 8’	Optional, 5’ min + 5’ furnishing zone	High priority, Bike lane, 5-6’ min + buffer 2’ min	Prioritizes motor vehicle movement Multi-use path, 10’, given as alternative to sidewalk/bike lane

Street Type	Target Speed (mph)	Lane widths (in ft)	Number Lanes	On Street Parking	Sidewalk	Bikes	Other
Gateway corridor	35	11	2-4, w/ centerline	None	High priority, 5' + 5' furnishing zone min	High priority, Bike lane, 6' min + buffer 3' min	High-speed, high-volume connections to freeways Multi-use path, 10', given as alternative to sidewalk/bike lane
Industrial/ business access	35	11	2 max, w/ centerline	None	High priority, 5' + 5' furnishing zone min	Optional, Bike lane, 6' min + buffer 3' min	Freight and commercial vehicle activity areas Multi-use path, 10', given as alternative to sidewalk/bike lane

EXAMPLES:

Creating a Complete Streets Typology (Cartway and Pedestrian Space) – New Britain

Sidewalk Zone – St. Paul

How to use this guide – Portysmouth

Street type example pages – Portsmouth

Summary street design table – Gaitherberg

Mixed-Use Boulevard – Gaithersburg

Street Types Map

Some of the documents include a map showing where particular street types are applied. New Britain does not define a street typology in its document, but it does include a "Purpose, Use, and Character of Streets" Map that identifies the location of two types of "framework streets" (mobility streets and destination streets), supporting streets/multi-purpose neighborhood streets, and gateway intersections.

EXAMPLES:

Street Types Map – Portsmouth

City Core Connector Map – Portsmouth

Purpose, Use, and Character of Streets Map – New Britain

"Toolbox" of Design Features or Facilities

Several documents include a section on "how" to design complete streets, often providing an educational "palette" or "toolbox" of possible design elements. These toolboxes vary in the type and number of tools they include, as well as the level of detail provided. Some include just a brief description and photograph (New Haven), while others provide more design guidance about which locations are appropriate for the tool and how to construct them (Gaithersburg).

EXAMPLES:

Toolbox page – New Haven

Separated Bike Lanes – Gaithersburg

"Chicanes"/Mid-Block Deflection – Gaithersburg

Parklets – North Hampton

Project Approval Process

Less common is a defined street design or project approval process. For example, New Haven describes both the city and community role through four steps of the process: project initiation, plan development, funding & design, and installation. Gaithersburg defines a waiver process to seek permission to deviate from the Road Code.

EXAMPLES:

Street design process – New Haven

Project request form – New Haven

Waiver process – Gaithersburg

Concept Plans for Proposed Improvements

Most of the documents do not include concept plans for specific locations; however, New Britain provides that example. The Master Plan chapter of the document identifies assets and challenges in New Britain, design principles for the Master Plan, example traffic analysis for a road diet and roundabout intersection improvement, and discussion of placemaking elements, such as public art, parks, streets trees, street furniture, etc. The plan includes a map showing potential locations for road diets and related key intersection improvements. The document goes on to present concept plans for 5 study areas, with discussion of existing conditions, photos and illustrations of existing conditions, discussion of design challenges, proposed design treatments, and concept plan illustrations for each of the study areas.

EXAMPLES:

Road Diet and Key Intersection Map – New Britain

Broad Street & Little Poland Study Area Design Concepts – New Britain

Implementation Plan

Some manuals, particularly those that take a "toolbox" or concept plan approach, include a section discussing funding, phasing, and/or implementation strategies.

EXAMPLES:

Project Phases Map – New Britain

KEY TOPICS / ISSUES

- Relationship of speed to safety, especially ped/bike safety
- Non-intrusive versus physical speed control treatments
    - Non-intrusive treatments are measures that do not physically constrain vehicular maneuvers, but instead provide visual cues, education, and enforcement to achieve the desired slow speeds. These treatments are easy to implement on existing streets, but are less effective at reducing speeds than physical treatments. Non-intrusive treatments include: education signs, gateway treatments, pavement markings, traffic signal timing, speed display signs, additional fine signs, and speed cameras.
    - Physical treatments to control speeds include changes in horizontal and vertical alignments, lane narrowing, and intersection treatments. They are constructed and installed to physically narrow or create shifts in the travel way to affect the speeds that can be comfortably traveled by motorists. – Gaithersburg
    - Old paradigm
        - "Forgives" behavior through design, assumes worst case
        - Consequence of mistakes for drivers are minimized
        - Appropriate for high speeds, but encourages high-risk behavior, including driving too fast
    - New paradigm: proactive design
        - Create design that influences people's behavior
        - Guides users through physical and environmental cues
        - Slow vehicle speeds
        - Encourages walking, biking, transit use

        - Speed management is key to implementing complete streets
        - Every mode, not just cars, needs quality accommodation: safe, direct, comfortable, low-stress
        - Maximize design for goals, not just for cars with minimum accommodation for other modes
- Design by LOS vs target speed (target set by desired outcome, not 85th percentile current speed)
- Impact of lane widths and road widths on speed
    - ITE says 10' should be default width for general purpose lanes at 45 mph or less
- Impact of curb radii on speed
- Impact of target design vehicle – if target design vehicle is larger, will force wider lanes, wider intersections, bigger curb radii
        - A design vehicle is the vehicle-type that must regularly be accommodated on a roadway for the purpose of designing the road. The design vehicles used for geometric street designs should reflect the predominant intended users of the street in question. In addition, all street designs must meet minimum standards for fire department and other emergency vehicle access and must consider the needs of sanitation vehicles used for street cleaning, refuse collection, and snow clearing. – New Haven
        - Do you really have to design for the largest vehicle possible?
        - Trucks that only come occasionally don't have to be the design vehicle. Accommodate it, but allow it to encroach, or swing wide, or do a 3-point turn. Fine if that only happens occasionally.
        - Set design vehicle for the largest vehicle that commonly, daily uses the street (like UPS truck).
- Street typology approach vs toolbox approach to street design guide
    - Toolbox approach is primarily educational, and design is still done on case-by-case basis – no predictability (but seems more common)
    - Street typology approach forces decision on key elements (like lane widths), which provides predictability, but:
        - Typical cross-sections not referenced:
        - Assessment of Minneapolis implementation indicated that the typical cross-sections provided in guidance documents were not routinely referenced because unique factors influence or dictate design on a case-by-case basis
- Common elements in street types
    - Description/intended purpose
    - Priority: access vs mobility, motor vehicle v sped/bike

- Target speed
- Number of lanes
- Lane widths
- On-street parking
- Ped/bike facilities, including lane widths, buffer zones, landscaping/furniture zones, sidewalk
- Medians
- Striping

APPENDIX

OVERVIEW OF GUIDES REVIEWED

RESOURCES & EXAMPLES

EXAMPLES FROM GUIDES

OVERVIEW OF GUIDES REVIEWED

New Haven CT

Complete Streets Design Manual (117 pgs)

- Extensive document includes:
    - Brief overview of complete streets policy adopted by Board of Alderman
    - Description of New Haven context: infrastructure, demographics, safety concerns, community involvement in complete streets
    - Overview description of complete streets: public spaces, relation to land use, multi-modal context sensitive
    - Benefits of complete streets and relationship to guiding principles
    - Street design process describing city and community role at each step of the process
    - Discussion of "engineering considerations," including application of other relevant standards (AASHTO etc), roadway "functional" classifications vs street typologies, vehicle design speeds, design vehicles/emergency access/sanitation, intersections, on-street parking, ped/bicycle use, public transportation, ped access in construction zones, environmental design, land use context
    - "How to create complete streets," including a description of "toolbox" elements, such as sidewalk widening, bumpouts, crosswalk markings, bike routes, road narrowing, roundabouts, etc.
    - Discussion of how to measure impacts
    - Discussion of funding and strategy for retrofitting streets
    - Appendices include form to request project, maps of land use and functional street classifications, construction details (for elements such as bumpouts, speed hump, etc), "decision matrix" with criteria/consideration for deciding whether certain design features are appropriate to a specific location, overview of bicycle boulevard and bicycle parking, tree policies
- Does **not** define street types or typical cross sections

New Britain CT

Complete Streets Master Plan for Downtown (127 pgs)

Also has:

Complete Streets Resolution (2)

Public Works Construction Specifications (258)

- Master Plan identifies 12 Complete Street projects
- Map lays out two types of "framework streets" (mobility streets and destination streets), supporting streets/multi-purpose neighborhood streets, and gateway intersections

- Extensive document includes:
    - Chapter providing education about livable community principles and complete streets methodology, with maps showing framework of streets and potential "road diet" streets
    - Master Plan section identifies assets and challenges in New Britain, design principles for the Master Plan, example traffic analysis for a road diet and roundabout intersection improvement, and discussion of placemaking elements, such as public art, parks, streets trees, street furniture, etc
    - Concept plans for 5 study areas, with discussion of existing conditions, photos and illustrations of existing conditions, discussion of design challenges, proposed design treatments, and concept plan illustrations
    - Chapter highlighting bus connectivity needs
    - Analysis and design recommendations for wayfinding and historical signage
    - Inventory, descriptions and photos of monuments and memorials
    - Summary of Bicycle Connectivity Plan
    - "Palette and Standards" chapter that provides description, standards, and photos of various complete streets design elements, including pavers, crosswalks, sidewalk ramps, pedestrian lighting, street trees and planters, medians, bike racks, street furniture
    - Implementation chapter outlines tasks, phasing, and funding sources for implementing improvements proposed in the Master Plan

Gaithersburg MD

Street Design Standards and Traffic Calming Best Practices (45)

- References Complete Streets and Vision Zero concepts
- Defines 16 street types, with ranges:
    - 10-35 mph
    - 2-6 lanes
    - 10-11' lane widths
    - variety of sidewalk & bike conditions
- One-page summary chart includes key metrics for all 16 types
- Each type has description, list of key features, and one or more example street sections (1-2 pgs per type)
- Applies to future and retrofitted roads, both City and private
- Specifies a waiver process to deviate from standards
- City Road Code defines 10' as preferred lane width, except for transit lanes, which may be 11'
- Refers to other guides for intersection and driveway design
- About half of the document is educational, with several chapters that provide description, brief placement guidance, brief overview of advantages and disadvantages, and illustrations of various kinds of design elements:

- Physical treatments to slow speed: horizontal curves, mid-block deflections, raised median island, speed hump, speed lump/pillow, speed table/raised crosswalk, raised intersection, curb extension, neighborhood traffic circles, traffic signal timing, radar speed displays
- Additional design treatments: back-in angle parking, floating bus stops, and valley gutter
- Bicycle facilities: shared use paths, separated bike lanes, bike lane with adjacent parking, bike lane without parking, beveled/sloping curb, priority shared lanes

Northhampton, MA

Urban, Rural and Suburban Complete Streets Design Manual (52)

- Guide for the City and communities throughout the county; guide notes that City already has some requirements that exceed standards in the manual
- Does **not** define street types or typical cross sections
- Provides educational guidance about a variety of pedestrian facilities, bike facilities, and shared use path crossings
- For each "facility," guide provides description, illustration and list of common design features, assessment of cost (low-med-hi), notes on typical application, photographs of local examples, description of maintenance needed, additional notes, and references
- Pedestrian facilities:
  - Local Shared Roadway
  - Local Street Entrances
  - Pedestrian Lane
  - Sidewalks
  - Sidewalk Design at Driveways
  - Street Trees
  - Raised Crosswalk
  - Center Islands
  - Parklets
- Bicycle facilities:
  - Bikeway Facility Selection Matrix
  - Marked Shared Roadways
  - Bicycle-Accessible Shoulders
  - Advisory Bike Lanes
  - On-Street Bike Lanes
  - Buffered Bike Lanes
  - Bike Lanes at Intersections
  - Sidepaths
- Shared use path crossings:
  - Basic Path Crossings
  - Median Crossings

- Active Enhanced Crossings
- Sidepath Crossings

Portsmouth NH

Complete Streets Design Guidelines (36)

Also has:

Complete Streets Policy (4)

- Defines 7 street types, with ranges:
  - 20-35 mph
  - 2-4 lanes
  - 10-11' lane widths
  - variety of sidewalk & bike conditions
- For each street type, guide includes (4 pgs per type):
  - Description and photo of typical context
  - Map of which streets fit into classification
  - Key attributes of typical location
  - Graphic of typical cross section
  - List of design features
  - Standards related to ped/bikes
  - Cartway standards, including operating speed
  - Street features, such as bike/ped enhancements, traffic calming, curbside management, and traffic management
- Types:
  - Neighborhood slow street
  - City core slow street
  - City core connector
  - Neighborhood connector
  - Primary connector
  - Gateway corridor
  - Industrial/business access

RESOURCES & EXAMPLES

National or State Guidance Documents

- DelDOT – Road Design Manual
- DelDOT – Complete Streets in Delaware: A Guide for Local Governments
- NACTO – Delaware Traffic Calming Design Manual
- NJDOT – Complete Streets Design Guide
- NACTO – Urban Street Design Guide
- NACTO – Urban Bikeway Design Guide
- ITE – Designing Walkable Urban Thoroughfares: A Context Sensitive Approach
- ITE – Implementing Context Sensitive Design on Multimodal Thoroughfares
- FHA – Noteworthy Local Policies that Support Safe and Complete Pedestrian and Bicycle Networks
- NTSB -
- Reducing Speeding- Related Crashes Involving Passenger Vehicles,
- Jeff Speck – *Walkable City Rules*

Conventional Public Works Manuals

Conventional Public Works Manuals address a much wider range of issues than just street design, including stormwater, utilities, construction specifications, permitting, and other topics. Some include a great amount of detail about street design and others include only minimal detail about streets.

I identified two "good" examples of Public Works Manuals based on recommendations from colleagues.

- Cornelius, OR
- Asheville, NC

Local Street Design Policies & Guides

Many cities have adopted policies or design manuals related to street design. Some are adopted by the governing body and others are developed and instituted through staff authority. One common arrangement is for the governing body to adopt a general "policy," often just a few pages, while the detailed design manual, typically 50-200 pages, is instituted administratively.

Some design guides address street design throughout an entire municipality; others pertain only to a specific area, typically the downtown or more urban portion. Some guides are

general in nature and cover all design elements. Others are directed towards specific policy goals, such as “green streets” or “traffic calming.” Numerous examples point to “complete streets.”

I identified example street design policies and manual by searching for policies and guides from Wilmington’s “peer” cities and by asking for recommendations of good street design policies and manuals from colleagues. I defined “peer” cities through a combination of population, employment, urban form, and geographic area. I included a few examples from cities both significantly larger and cities significantly smaller than Wilmington.

City	**2017 Estimated Population**	**Notes**
Philadelphia PA	1,580,900	• Complete Streets Design Handbook (182 pgs) • Green Street Design Manual (96)
Charlotte NC	859,000	• Urban Street Design Guidelines (296)
Baltimore MD	611,600	• Complete Streets Ordinance (16) • Design Manual in process
Minneapolis MN	422,300	• Complete Streets Policy • Downtown Public Realm Framework Plan • Vision Zero Policy • Pedestrian Master Plan • Bike Master Plan • Design Guidelines for Streets and Sidewalks (300+)
St Paul MN	306,600	• Street Design Manual (198)
Pittsburgh	302,400	• Complete Streets Executive Order • Complete Streets Resolution (13) • Design Guidelines in process
New Haven CT	131,000	• Complete Streets Design Manual (117)
Gary IN	76,400 *2019 Nonfarm employment: 276,300*	• None
New Britain CT	72,700	• Complete Streets Resolution (2) • Complete Streets Master Plan for Downtown (not design manual) (127) • Public Works Construction Specifications (258)
Frederick City MD	71,400	• Complete Streets Resolution (5) • No design guide • Public Works Construction Specifications (135)

City	2017 Estimated Population	Notes
Passaic City NJ	71,200	• Complete Streets Policy adopted by County, but not by City
Wilmington DE	**71,106** ***2019 Nonfarm employment: 358,800***	
Union City NJ	70,400	• Complete Streets Policy • No design guide
Gaithersburg MD	68,700	• Street Design Standards and Traffic Calming Best Practices (45)
Mt Vernon City NY	68,700	• None
Northhampton, MA	28,500	• Urban, Rural and Suburban Complete Streets Design Manual (52)
Portsmouth NH	21,800	• Complete Streets Policy (4) • Complete Streets Design Guidelines (36)

EXAMPLES FROM GUIDES

Goals and Guiding Principles

AIA Ten Principles for Livable Communities – New Britain

Guiding Principles page – New Haven

Benefits of Complete Streets

Slower speed street design – Gaithersburg

Street Typology

Creating a Complete Streets Typology (Cartway and Pedestrian Space) – New Britain

Sidewalk Zone – St. Paul

How to use this guide – Portsmouth

City Core Slow Street – Portsmouth

Summary street design table – Gaithersburg

Mixed-Use Boulevard – Gaithersburg

Street Types Map

Street Types Map – Portsmouth

City Core Connector Map – Portsmouth

Purpose, Use, and Character of Streets Map – New Britain

"Toolbox" of Design Features or Facilities

Toolbox page – New Haven

Separated Bike Lanes – Gaithersburg

"Chicanes"/Mid-Block Deflection – Gaithersburg

Parklets – North Hampton

Project Approval Process

Street design process – New Haven

Project request form – New Haven

Waiver process – Gaithersburg

Concept Plans for Proposed Improvements

Road Diet and Key Intersection Map – New Britain

Broad Street & Little Poland Study Area Design Concepts – New Britain

Implementation Plan

Project Phases Map – New Britain

To transform downtown New Britain into the vibrant downtown it once was, the Master Plan is based on applying these key principles for livable and sustainable communities*:

1. Design on a Human Scale

Compact, pedestrian-friendly communities allow residents to walk to shops, services, cultural resources, and jobs and can reduce traffic congestion and benefit people's health.

2. Provide Choices

People want variety in housing, shopping, recreation, transportation, and employment. Variety creates lively neighborhoods and accommodates residents in different stages of their lives.

3. Encourage Mixed-Use Development

Integrating different land uses and varied building types creates vibrant, pedestrian-friendly and diverse communities.

4. Preserve Urban Centers

Restoring, revitalizing, and infilling urban centers takes advantage of existing streets, services and buildings and avoids the need for new infrastructure. This helps to curb sprawl and promote stability for city neighborhoods.

5. Vary Transportation Options

Giving people the option of walking, biking and using public transit, in addition to driving, reduces traffic congestion, protects the environment and encourages physical activity.

6. Build Vibrant Public Spaces

Citizens need welcoming, well-defined public places to stimulate face-to-face interaction, collectively celebrate and mourn, encourage civic participation, admire public art, and gather for public events.

7. Create a Neighborhood Identity

A "sense of place" gives neighborhoods a unique character, enhances the walking environment, and creates pride in the community.

8. Protect Environmental Resources

A well-designed balance of nature and development preserves natural systems, protects waterways from pollution, reduces air pollution, and protects property values.

9. Conserve Landscapes

Open space, farms, and wildlife habitat are essential for environmental, recreational, and cultural reasons.

10. Design Matters

Design excellence is the foundation of successful and healthy communities.

**Amercian Institute of Architects, Ten Principles for Livable Communities*

4.3 GUIDING PRINCIPLES FOR NEW HAVEN COMPLETE STREETS

safety & slow vehicle speeds

Traffic injuries and fatalities are predictable and often preventable, and there is a direct correlation between vehicle speeds and injury/fatality rates. New Haven streets should be designed with safety of all users as a priority, and vehicle speeds limited, with the goal of reducing injuries and fatalities.

connectivity

Connectivity is essential if non-motorized transportation is to be a viable and desirable option. New Haven streets should be designed to provide connectivity that satisfies travel needs with redundant routes in an intact network system.

human health

New Haven streets should be designed to increase opportunities for active transportation (walking, cycling, etc.) and to decrease air pollution and particulate levels caused by motor vehicles.

livability

Livable cities are characterized by a built environment that enhances quality of life, strengthens community ties, encourages civic engagement, and promotes health. New Haven public spaces (streets) should be designed with livability in mind, with the goal of enhancing quality of life in our city.

context

New Haven streets should be designed to respect and enhance the distinctive identity of our city, its urban character, and its cultural and historical context.

equity

Public spaces such as streets should embody the democratic ideals of equality, freedom, individual rights and responsibilities, protection of minorities, transparency, accountability and the rule of law. New Haven streets should be designed to provide for the needs and safety of all users, particularly people with disabilities, the elderly, children, and people who cannot afford a private vehicle.

aesthetics

Aesthetically pleasing surroundings – such as public art, well-maintained landscaping, and human-scale architecture – enhance the experience of using a street and make it a place where people want to be. New Haven streets should be designed with consideration for aesthetic elements, including materials, lighting, landscaping, street furniture, and maintenance.

economic development

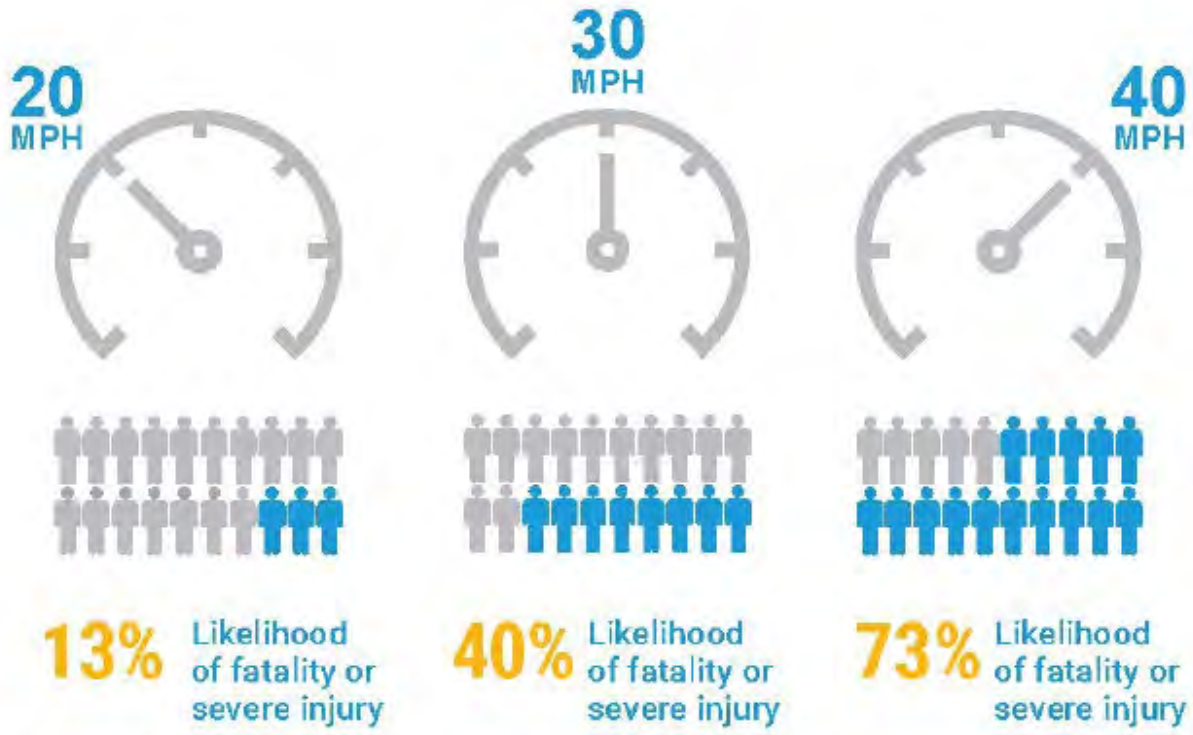
Well-designed streets support economic vitality by drawing customers to businesses and providing access and transportation options for reaching businesses. New Haven streets should be designed to support New Haven's framework for current and future development and contribute to the city's economic vibrancy.

environment

New Haven streets should be designed to support and encourage non-motorized transport, thereby decreasing vehicle miles travelled (VMT), leading to reductions in both air pollution and carbon emissions and better management of storm water runoff.

3.0 Slower Speed Street Design

Higher motor vehicle speeds increase the likelihood of crashes by reducing the drivers' cone of vision and making it more difficult for drivers to stop or maneuver to avoid a crash. Higher speeds also increase the severity of crashes by producing greater kinetic energy, which determines the force of impact when there is a crash. Thus, speed is one of the major causes behind serious traffic accidents. The graphic below shows the impact of small increases in speed on the survival rate of a person hit by a car.



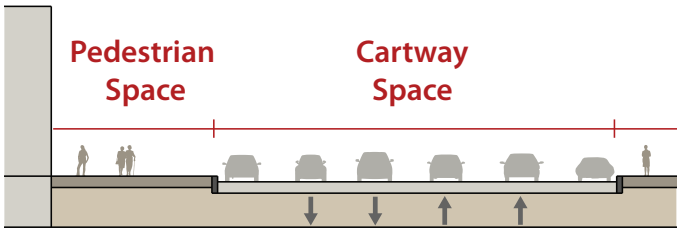
Impact Speed and a Pedestrian's Risk of Severse Injury or Death, Brian Tefft- AAA Foundation for Traffic Safety, 2011

Most of the street types in the City of Gaithersburg Street Design Standards have design speeds of 25 mph or less. A combination of design treatments are necessary to encourage motorists to drive at the desired speeds. These design treatments are often referred to as "traffic calming features," and are intended to provide physical and visual cues to drivers to achieve the desired driver behavior. Ideally, new roadway designs should include traffic calming concepts, such as changes in horizontal alignment and narrow lane widths. The City of Gaithersburg's Road Code identifies 10 ft. as the preferred lane width for most roads. An exception is 11 ft. for transit lanes. Research has shown that 10 and 11 ft. lanes improve safety and comfort without negatively impacting traffic operations or vehicular capacity when implemented as part of a well-designed and integrated network. Additional traffic calming features discussed in this document are considered to support horizontal alignment shifts, including vertical changes in grade, intersection turning speed control, and signing and markings. The benefit of many of these treatments is that they can also be added to existing roads to address travel speed issues not considered in the original street design.

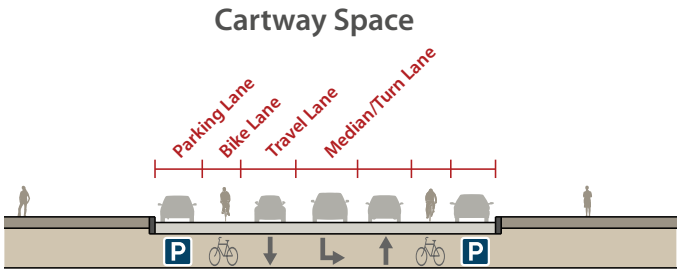
Creating a Complete Streets Typology

In transportation planning, streets are traditionally characterized by their functional classification, which broadly defines design and operational characteristics, primarily as they relate to serving motor vehicles. To develop a Complete Streets Master Plan for New Britain, a new typology which accommodates all modes was needed. Using the components below, streets were rethought to consider all of the space that occurs from building to building, so that pedestrian, bicycle, transit and vehicular needs could be considered and balanced.

Each street is comprised of a cartway space, which accommodates vehicles between the curbs, and a pedestrian space, which is the exclusive realm for people between the curb and the building line.

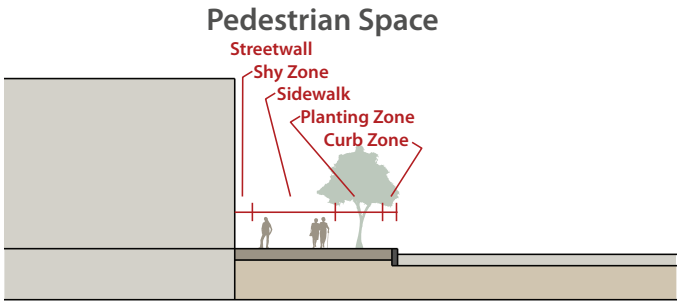


Depending on its use, the cartway space is further defined by the number and use of each travel lane, and other features, such as whether bicycles and parking are accommodated.



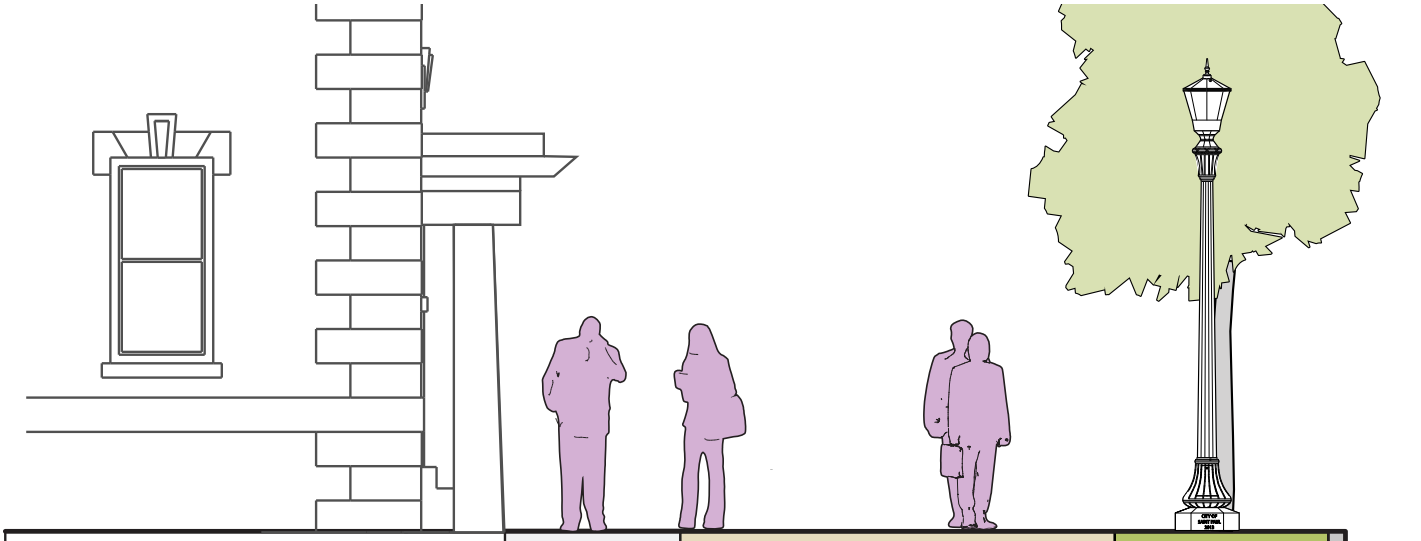
A well-designed pedestrian space encourages walking, which in turn, supports the local business environment. The pedestrian space can be further defined by a number of components:

- Adjacent to the building line or streetwall, a "shy" zone is a space immediately adjacent to the building wall where doors open and pedestrians generally do not walk.
- The sidewalk space is a clear area whose primary purpose is to facilitate pedestrian movement.
- The planting zone is where street trees, pedestrian scale lighting and utilities are provided.
- The curb zone is adjacent to the cartway, and is designed with adjacent cartway features, such as parking, in mind.



Sidewalks and the Zone System

Zone Definition & Widths



STREET TYPE	Frontage Zone		Pedestrian Zone		Boulevard & Furnishings Zone		Curb & Gutter (varies)
	Pref.	Min. des.	Preferred	Minimum Desirable	Pref.	Min. des.	
Downtown Streets	2’	0’	12’	8’	6’	5’	
Mixed-Use Corridor Streets	2’	0’	8’	6’	6’	5’	
Residential Corridor Streets	2’	0’	5’	5’	6’	5’	
Neighborhood Streets	2’	0’	6’	6’	6’	5’	
Industrial Streets	2’	0’	5’	5’	6’	5’	
Parkways	Varies		6’	5’	10’	6’	

Table Notes: St. Paul is a built environment. These dimensions reflect ideals which may or may not be achieved.

Section

Introduction
Street Design: Behind the Curb
Street Design: Between the Curbs
Street Design: Intersections
Implementation

Street Type Application

Downtown
Mixed Use Corridor
Residential Corridor
Neighborhood
Industrial
Parkway

Related Treatments

Boulevard Planting
Roadway Lighting
Off-Street Paths
Travel Lanes
Marked Crosswalks
Pedestrian and Traffic Signals
Bump Outs

References

MnDOT Design Manual
State Aid Manual
Comprehensive Plan
Standard Plates

How to Use This Guide

The City of Portsmouth Complete Street Guidelines present the fundamental design elements and dimensions for creating a complete street. Each street classification is presented in a standard layout, for easy access to critical information. Refer to the annotated pages below to understand what details are provided.

Street Classification and Description

A photo and description of how the street fits into the City of Portsmouth transportation and land use context.

Typical Application

Key attributes of where the street classification is most appropriate

Street Classification Map

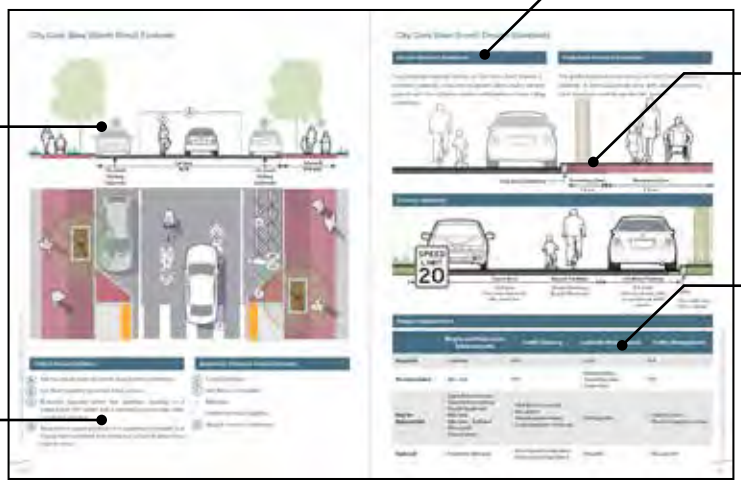
A mapped identification of which streets in the city fit the classification.

Typical Cross Section

A graphic representation of a potential version of the street type. Even within classifications, street layouts may vary.

Design Features

A list of design features applied on this street class, some of which are identified on the illustration above.



Pedestrian/Bicycle Network

Standards related to meeting bicycle and pedestrian travel needs.

Cartway Standards

Standards related to the paved cartway, including recommended operating speed.

Street Features

Specific street features which may be required for a certain street type, a high priority, appropriate in limited circumstances, not required, or not at all appropriate for each street classification/ typology.

Street Class:

City Core Slow Street

City Core Slow Streets provide for short distance, low speed trips within the Downtown commercial business district. Motorists on these streets are occasionally downtown residents but more typically visitors. In consequence the street design encourages slow speed interactions with bicyclists and crossing pedestrians.

These streets provide on-street parking to allow for convenient access to businesses, and to help mitigate driving speeds. City Core Slow Streets prioritize bicyclists and crossing pedestrians.

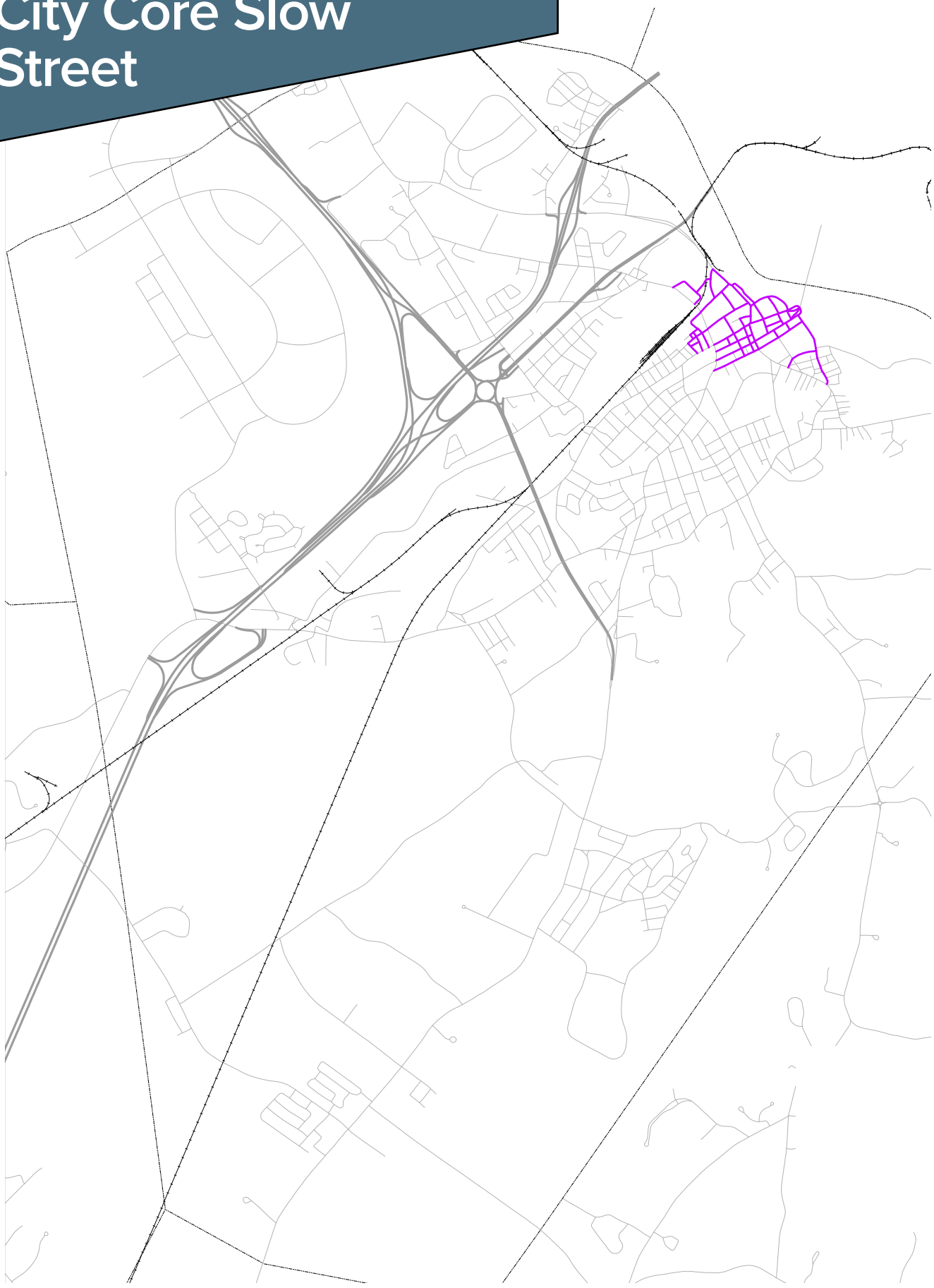
Image Source: David Wilson via FLickr (CC BY 2.0)

Typical Application

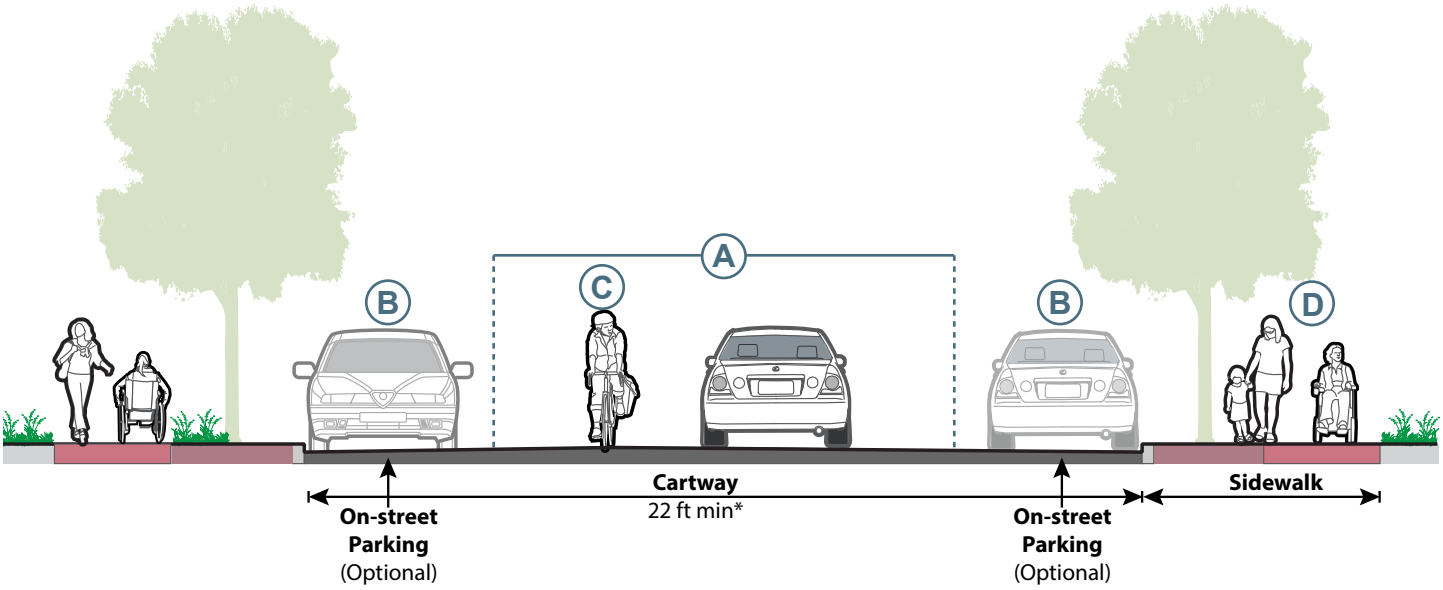
- Local streets in the downtown district.
- Prioritizes pedestrian and bicyclist users and motor vehicle parking over motor vehicle traffic.
- Designs vary widely, based on one-way operation, parking configuration, and adjacent commercial land uses.

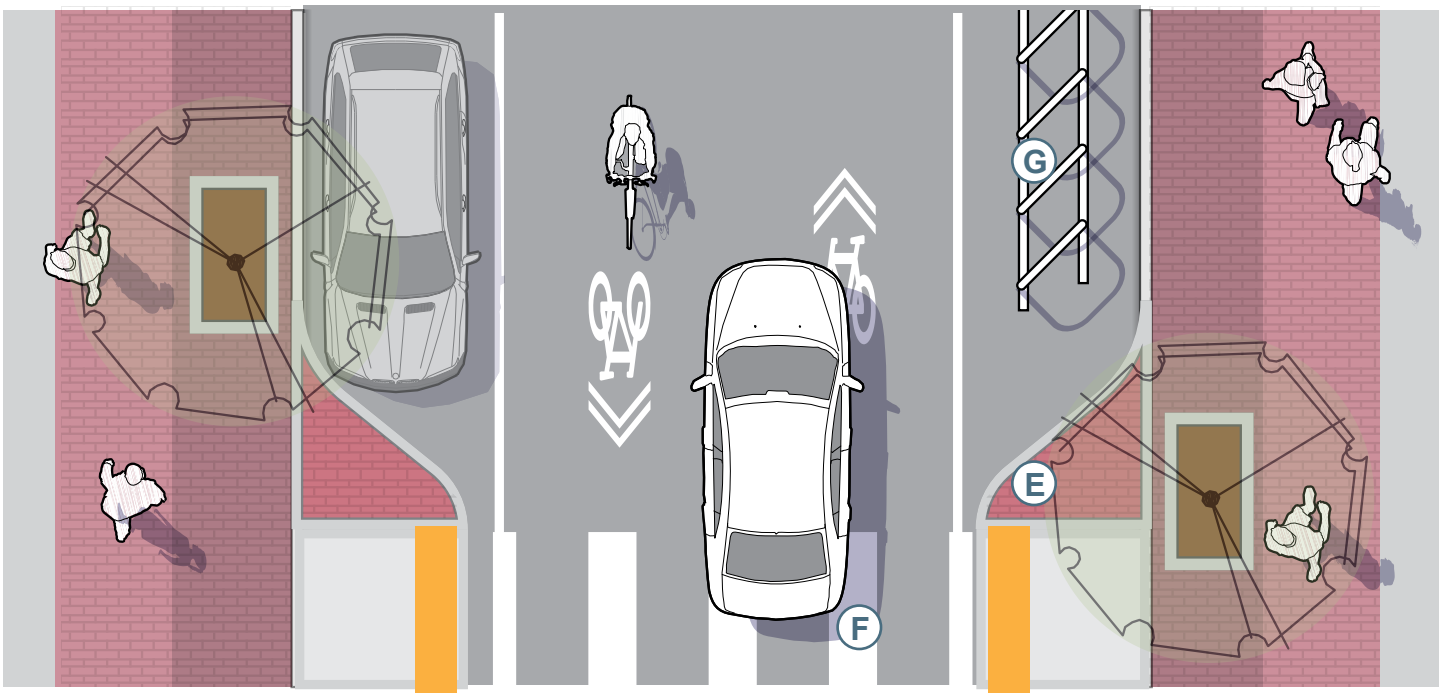
A bike corral provides a large number of bicycle parking spaces without impacting usable sidewalk space.

City Core Slow Street



City Core Slow Street: Common Street Features





Critical Design Features

- **A** Narrow travel lanes to create slow-speed conditions.
- **B** On-street parking provides easy access.
- **C** Bicyclists operate within the roadway, typically in a shared lane. No center line is marked to encourage safe, courteous passing.
- **D** Pedestrians generally walk on a separated sidewalk, but should feel confident that motorists will yield when they wish to cross.

Additional Potential Design Features

- **E** Curb Extension
- **F** Mid-Block Crosswalk
- Benches
- Pedestrian scale lighting
- **G** Bike corral on roadway

* Some City Core Slow Streets may have an additional 2 ft of flexible space in their cross-section R.O.W's.

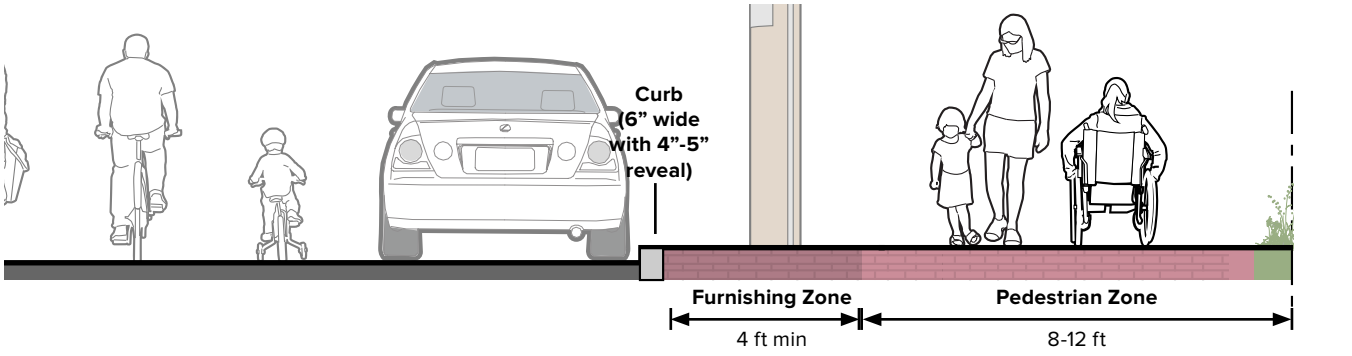
City Core Slow Street: Design Guidelines

Bicycle Network

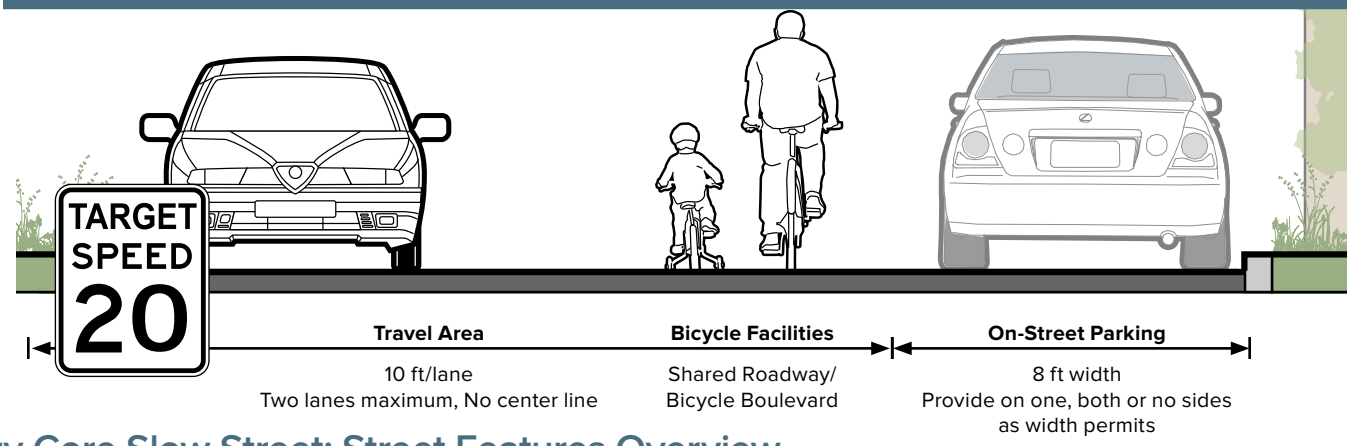
The recommended bikeway on City Core Slow Streets include **shared lane markings** or a **bicycle boulevard**. Slow motor vehicle speeds and low volumes create comfortable on-road riding conditions. In rare contexts, **buffered** or regular **bike lanes** may be appropriate.

Pedestrian Network

Sidewalks are required on City Core Slow Streets. A wide pedestrian zone with paved furnishing zone maximizes usable pedestrian space. In some cases, where streets may lack sidewalks, create a **shared street** where pedestrians walk in the cartway.



Cartway



City Core Slow Street: Street Features Overview

	Bicycle and Pedestrian Enhancements	Traffic Calming	Curbside Management	Traffic Management
Required	• Sidewalks	N/A	• Curb • Street Lighting	N/A
High Priority	• Bike racks	N/A	• On-street parking • Furnishing zone • Street trees	N/A
Appropriate in Limited Circumstances	• Signed bicycle route • Shared lane markings • Bicycle boulevard • Bike lane • Buffered bike lane • Bike corral • Shared street	• Mid-Block Crosswalk • Bus shelter • Raised speed reducer • Curb extension / bulb out	• Planting strip	• Loading zones • Priority emergency route
Not Required	• Sidepath • Separated bike lane	• Bus pull-off • Pedestrian refuge island	• Shoulder	N/A
Not Appropriate	N/A	• Chicanes • Yield street	N/A	• Truck Route • Center line striping (double yellow)

2.0 New Street Design Standards Chart

The minimum requirements and other characteristics for each street type, is included in the summary chart below; design treatments for medians and alternatives for on street parking are also provided. The chart contains elements and dimensions that encourage multimodal use of the roadway: slower design speeds, fewer travel lanes, wider sidewalks, greater bicycle accommodation and reference paving criteria. In addition, exemptions and alternatives to the Street Design Standards are outlined in footnotes.

City of Gaithersburg Street Types	Minimum Right-of-Way[1]	Design Speed	Total # of Travel Lanes	Preferred Lane Width (Transit Route-Outer Lanes)	Minimum Median Width[7]	Minimum Cross-over spacing	Min. Buffer[6]	Minimum Landscape and Furniture Zone (Desired)[6]	Preferred Turning Radius	On Street Parking (Back-in Angle Parking)	Minimum Sidewalk (Desired)	Minimum Bike Facility	Paving Section per Montgomery County Standard Detail as modified by Subsection 19-15(d, f, h)	Curb Detail per Montgomery County Standard Detail MC#s or MDSHA Detail MD#
Mixed Use Boulevard A	77′	25 mph	2	10′ (11′)	none	300′	2′	6′	15′	8′ (20′)	6′ (8′)	6.5′ SBL[2]	Std. No. MC-214.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Mixed Use Boulevard B	87′	25 mph	3	10′ (11′)	none	300′	2′	6′	15′	8′ (20′)	6′ (8′)	6.5′ SBL[2]	Std. No. MC-214.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Mixed Use Boulevard C	113′	25 mph	4	10′ (11′)	16′	300′	2′	6′	15′	8′ (20′)	6′ (8′)	6.5′ SBL[2]	Std. No. MC-214.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Park Boulevard A	60′	25 mph	2	10′	none	300′	2′	8′	15′	none	10′ SUP	10′ SUP[4]	Std. No. MC-214.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Park Boulevard B	79′	25 mph	2	10′ (11′)	16′	300′	2′/1′	6′ (8′)	15′	none (8′)[3]	6′	6.5′ SBL[2]	Std. No. MC-214.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Park Boulevard C	92′	25 mph	4	10′ (11′)	16′	300′	2′	6′ (8′)	15′	none	10′ SUP	10′ SUP[4]	Std. No. MC-214.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Park Boulevard D	99′	25 mph	4	10′ (11′)	16′	300′	2′/1′	6′ (8′)	15′	none	6′	6.5′ SBL[2]	Std. No. MC-214.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Main Street	64′	25 mph	2	10′	none	N/A	none	6′	15′	8′[5]	8′	None[5]	Std. No. MC-212.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Neighborhood Residential	62′	20 mph	2	10′	none	N/A	1′	6′	15′	8′ (20′)	6′	None	Std. No. MC-212.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Shared Street	50′	10 mph	2	10′	none	N/A	1′	6′	15′	none	8′	None	Std. No. MC-212.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Alley	20′	15 mph	2	10′	none	N/A	none	none	15′	none	none	None	Std. No. MC-211.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Frontage Road A	33′	20 mph	1	10′	6′	N/A	none	3′	15′	8′	6′	None	Std. No. MC-212.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Frontage Road B	43′	20 mph	2	10′	6′	N/A	none	3′	15′	8′	6′	None	Std. No. MC-212.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Commercial Service Road	40′	20 mph	2	11′	none	300′	none	3′	15′	none	6′	None	Std. No. MC-214.01	MC#s 100.01, 101.01, 102.01, 104.01, or MD-620.02
Commercial Throughway A	98′	35 mph	4	11′	18′	300′	2′	6′	30′	none	10′ SUP	10′ SUP[4]	MDSHA Heavy Duty Pavement Section for a Principal Arterial	MD-620.02
Commercial Throughway B	120′	35 mph	6	11′	18′	300′	2′	6′	30′	none	10′ SUP	10′ SUP[4]	MDSHA Heavy Duty Pavement Section for a Principal Arterial	MD-620.02

Note: Preferred values are the suggested values not to be exceeded.

SBL= Separated Bike Lane

SUP= Shared Use Path

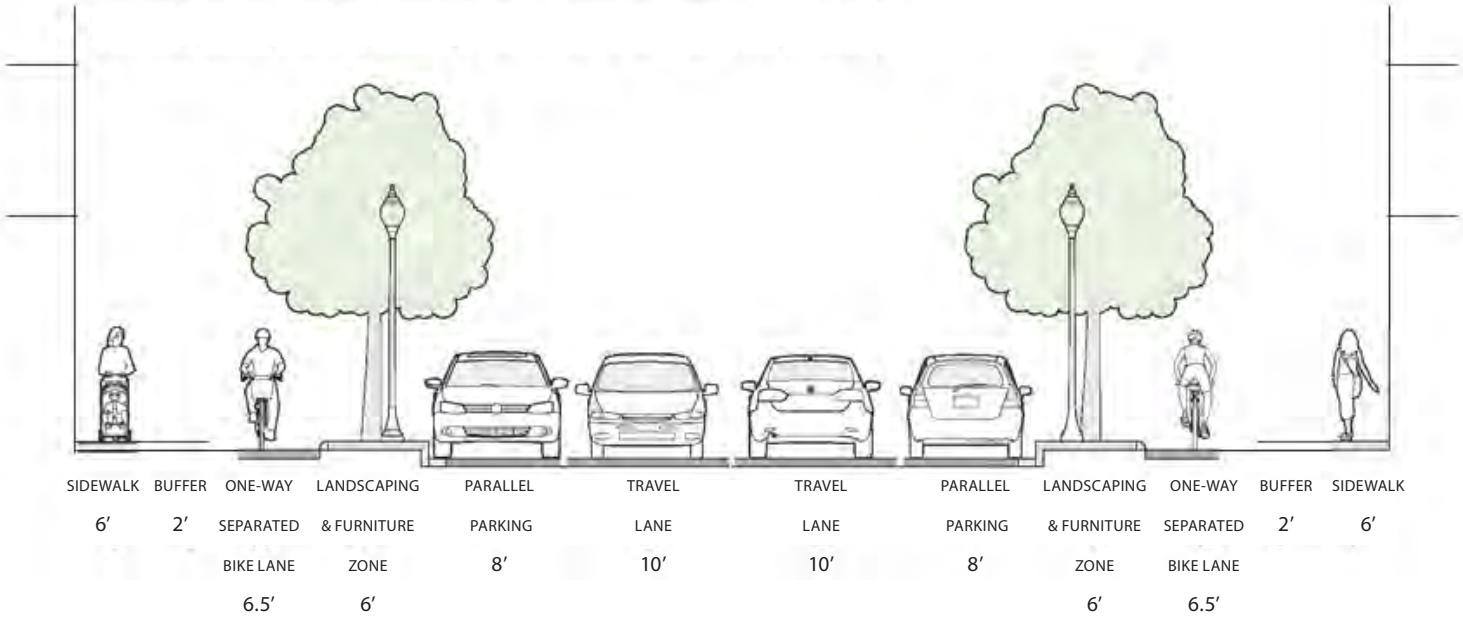
Mixed-Use Boulevard

Mixed-Use Boulevards are significant roadways that travel efficiently through medium- to high-density mixed-use areas. Buildings along mixed-use boulevards are located close to the street. Mixed-use boulevards experience heavy transit, pedestrian and bicycle activity and, as such, require slow vehicular speeds, wide sidewalks and short crossings to ensure the safety of all users. Separated bike lanes are recommended on this type of roadway.

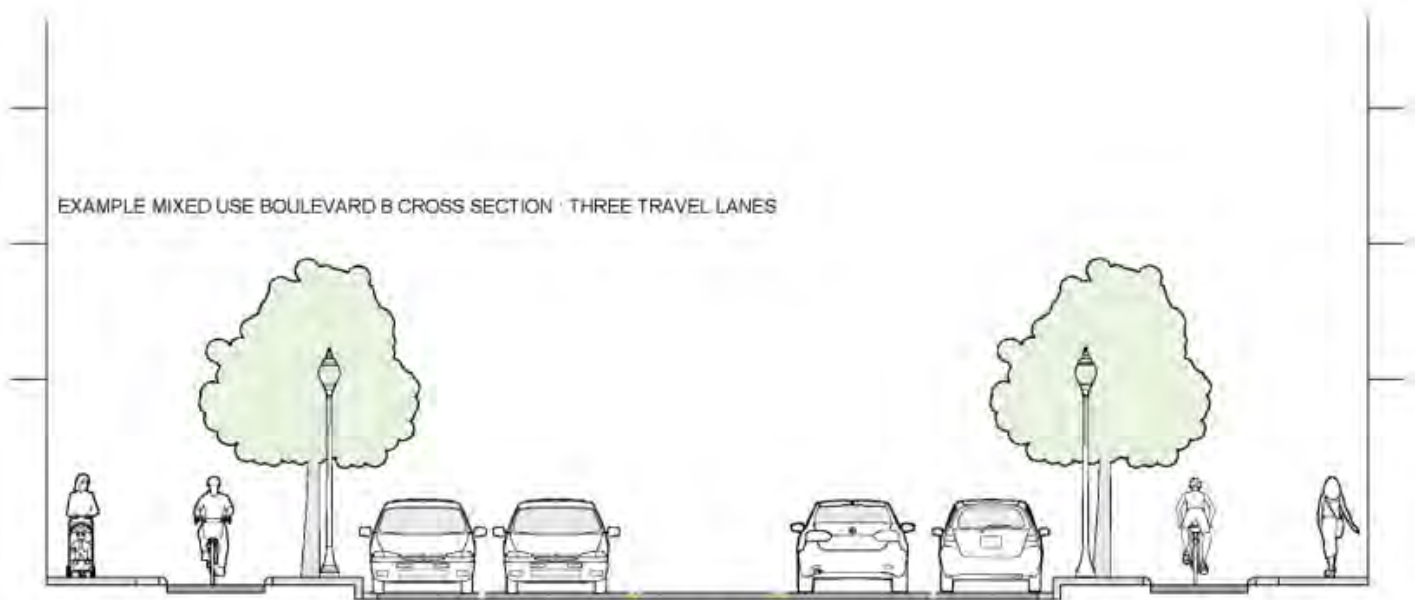
Street Type	Description	Typical Features
Mixed Use Boulevard	• Buildings close to street • Mix of commercial and residential uses • Medium to high density land use • Some are major transit routes • Medium to heavy pedestrian/bike activity • Slow speeds (25 mph)	• 2-4 travel lanes • Median • Sidewalks & bike facilities • Street furniture & enhanced lighting • On-street parking (optional)

Note that in some cases, separated bike lanes may be replaced by on-street bicycle facilities or a two-way separated bike lane with a 10' minimum width on one side of the road. Replacing separated bike lanes with shared use paths on mixed-use boulevards will require a road code waiver.

EXAMPLE MIXED USE BOULEVARD A CROSS SECTION : TWO TRAVEL LANES

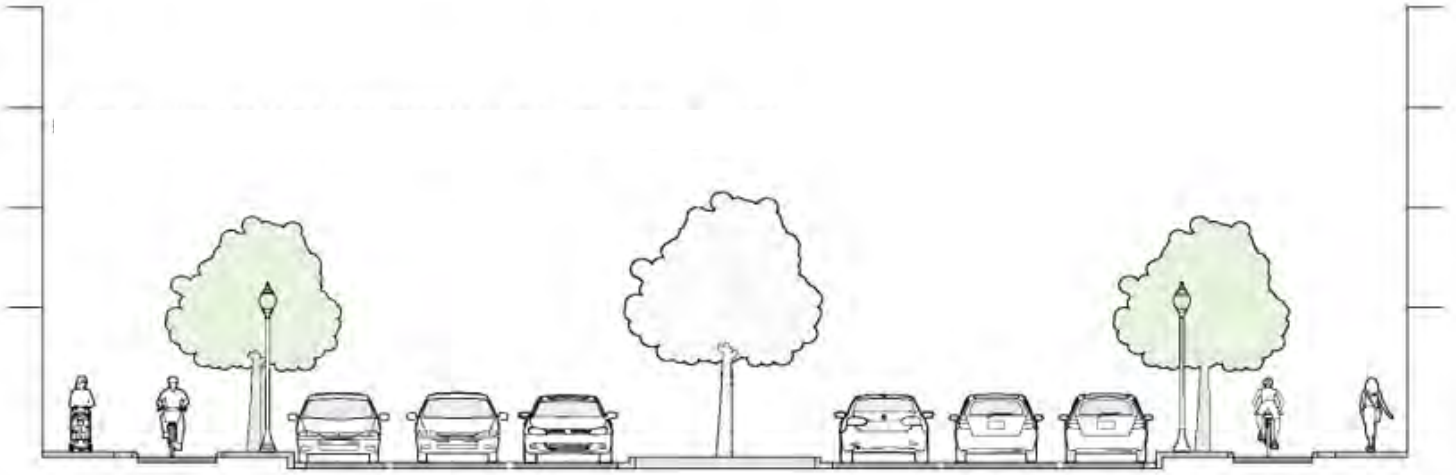


EXAMPLE MIXED USE BOULEVARD B CROSS SECTION : THREE TRAVEL LANES



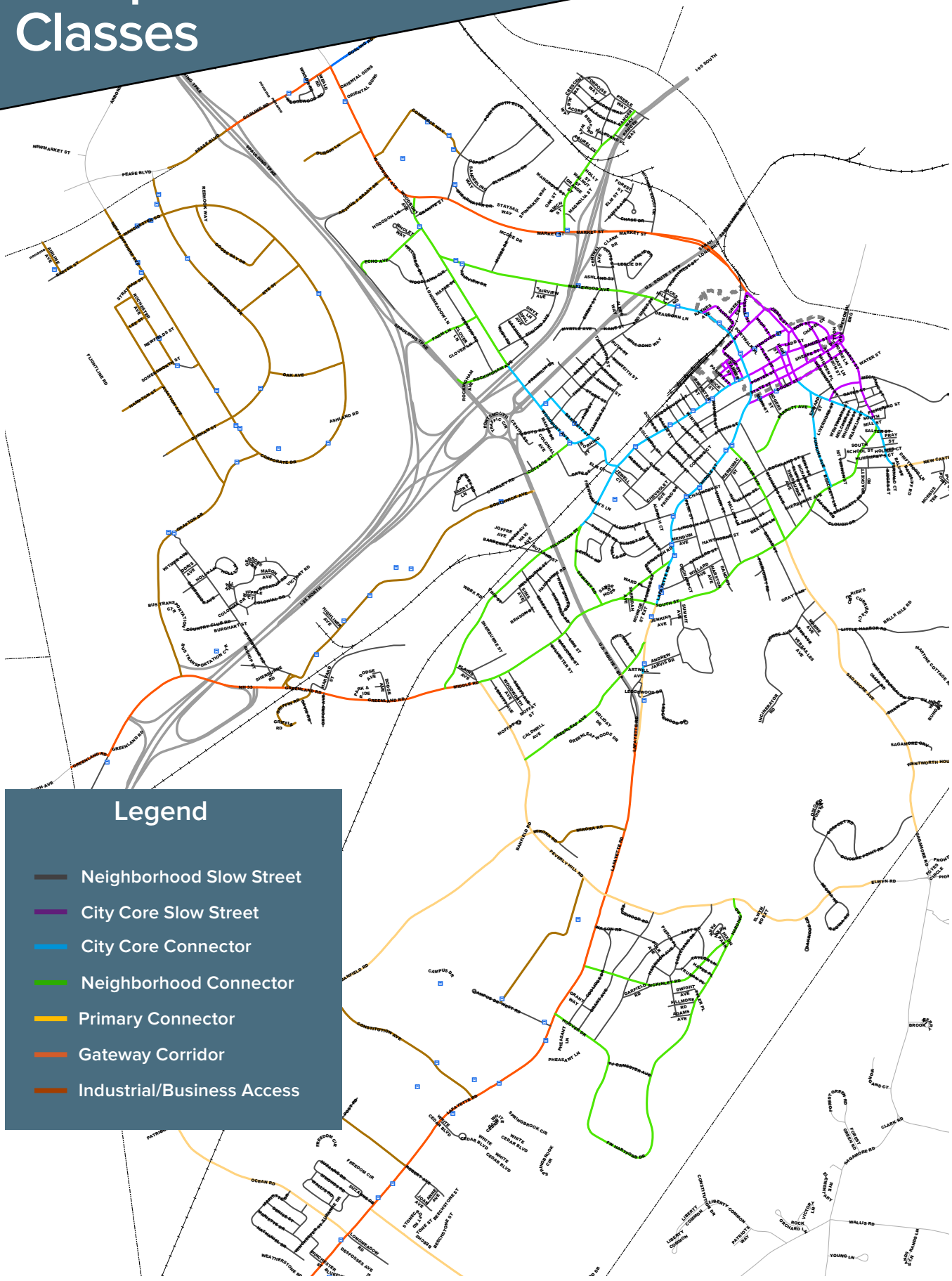
SIDEWALK	BUFFER	ONE-WAY SEPARATED BIKE LANE	LANDSCAPING & FURNITURE ZONE	PARALLEL PARKING	TRAVEL LANE	CENTER TURN LANE	TRAVEL LANE	PARALLEL PARKING	LANDSCAPING & FURNITURE ZONE	ONE-WAY SEPARATED BIKE LANE	BUFFER	SIDEWALK
6′	2′	6.5′	6′	8′	10′	10′	10′	8′	6′	6.5′	2′	6′

EXAMPLE MIXED USE BOULEVARD C CROSS SECTION : FOURTRAVEL LANES



SIDEWALK	BUFFER	ONE-WAY SEPARATED BIKE LANE	LANDSCAPING & FURNITURE ZONE	PARALLEL PARKING	TRAVEL LANE	TRAVEL LANE	MEDIAN	TRAVEL LANE	TRAVEL LANE	PARALLEL PARKING	LANDSCAPING & FURNITURE ZONE	ONE-WAY SEPARATED BIKE LANE	BUFFER	SIDEWALK
6′	2′	6.5′	6′	8′	10′	10′	16′	10′	10′	8′	6′	6.5′	2′	6′

Complete Street Classes



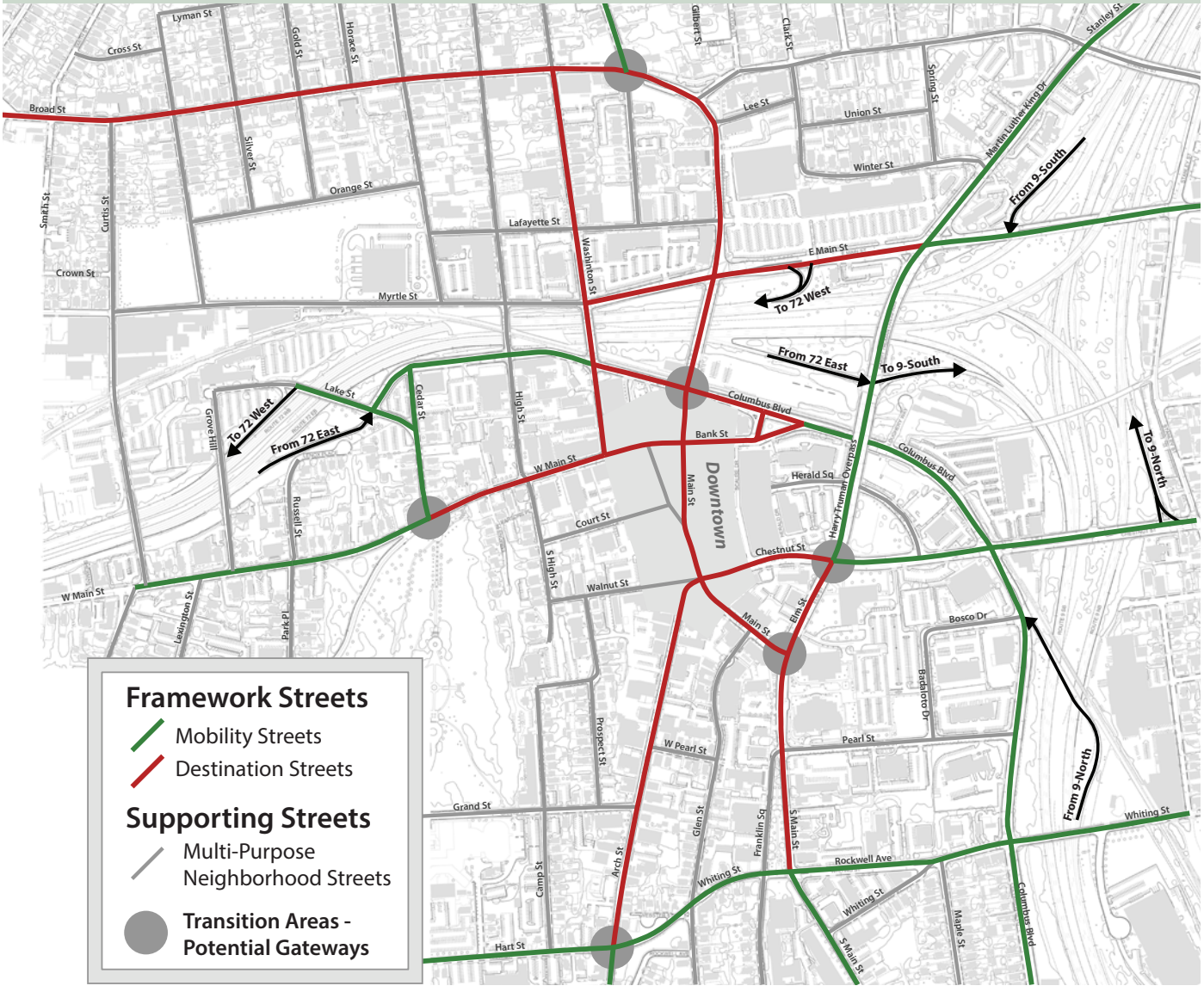
City Core Connector

Rethinking Roadway Dimensions for a Complete Streets Typology

New Britain has many streets which appear to have excess capacity. To develop a Complete Streets typology, each street's relationship with adjacent land uses and its function serving pedestrians, bicyclists, and transit, as well as cars, was examined. Existing physical and operational conditions were studied and each street's cartway and pedestrian space was assessed. Each street was then categorized by whether its primary purpose was as a framework street (those providing mobility or access to a destination), or as a supporting street (more local, multi-purpose street). Framework streets with what appeared to have excess capacity (i.e. more travel lanes than necessary to adequately serve auto travel) were then considered candidates for redesign.

The purpose, use and character for each street was then defined, with elements such as number, width and purpose of travel lanes, parking and bicycle facilities if provided, sidewalk and urban space character and dimensions, typical street furnishings, and setback and street wall character.

Purpose, Use and Character of Streets



7.1 COMPLETE STREETS TOOLBOX

7.1.1 Sidewalk Widening

ADA standards specify a minimum of 5 feet clear path width to accommodate two wheelchairs passing each other. Generally, sidewalks should be as wide as possible to accommodate foot traffic, given available street width. No existing sidewalks should be reduced in the course of street widening projects. Opportunities for widening sidewalks and narrowing streets should be considered whenever roads are reconstructed.


Chapel Street, New Haven

7.1.2 ADA Compliant Curb Ramps

Access for all users is an important part of any Complete Street. Per ADA guidelines, wheelchair ramps with detectable warning strips should be installed wherever a sidewalk crosses a curb, and existing ramps should be upgraded to meet current ADA guidelines.


Curb ramp, New Haven

7.1.3 Street Furniture

Functional and aesthetically pleasing street furniture contributes to a pleasant walking environment and supports the use of the street as a public space. Examples of street furniture include benches, lighting, bike racks and shelters, bus stop shelters, newsstands, informational signs and kiosks, and waste receptacles. Proper design and application is essential to maintain functionality and accessibility of the sidewalk.


Bus shelter on Church Street, New Haven

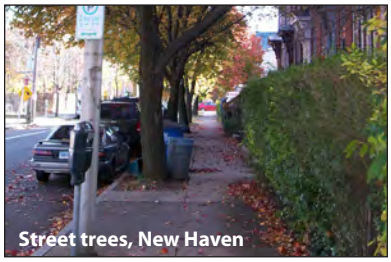
7.1.4 Crosswalks

Crosswalks should generally be installed at controlled intersections and should be placed to minimize crossing distances and conflicts between pedestrians and vehicles. Midblock crosswalks on arterials and collector roads will be considered as needed, subject to traffic studies and engineering judgment. In most cases, midblock crosswalks should be installed in conjunction with other tools such as bump-outs. High visibility crosswalks (also known as International Style) are preferred over designs consisting of two parallel lines as volumes warrant.


Crosswalk with in-road pedestrian sign, New Haven

7.1.5 Tree Belt Enhancements

Street trees and other landscaping not only provide aesthetic enhancements to a street, but also help mitigate air pollution, provide shade and lower temperatures, and provide opportunities for better stormwater control. Proper maintenance is key to the success of planted areas. Opportunities for widening tree belts and narrowing streets should be considered whenever roads are reconstructed.


Street trees, New Haven

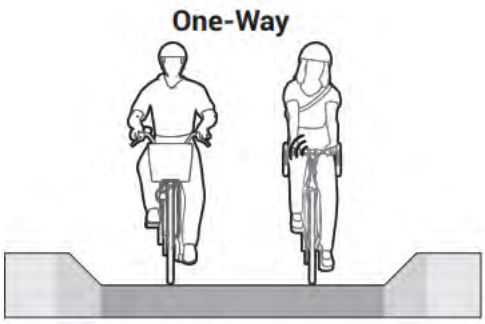
Separated Bike Lanes

Description: Separated bike lanes are exclusive bikeways that combine the user experience of a side path with the on-street infrastructure of a conventional bike lane. They are physically separated from motor vehicles traffic and distinct from the sidewalk.

Placement & Design Guidance: They are preferred in higher density areas, adjacent to commercial and mixed-use development, and near major transit stations or locations where observed or anticipated pedestrian volumes will be higher. Lane widths should be chosen based upon the anticipated number of bicyclists in a typical peak hour shown in the tables below. Generally, the bike lane should be sufficiently wide to enable passing maneuvers between cyclists, typically 6.5 feet wide for one-way lanes and 10 feet wide for two-way lanes. Beveled or mountable curbs (see page 44) are recommended to ease access to the adjacent sidewalk. Separated bike lanes may be installed at the street level with raised buffers, Flexible delineators (“flex posts”), and/or on street parking physically separating the bike lane from vehicular traffic.

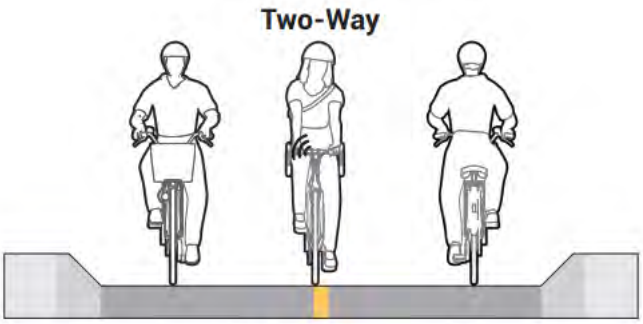
Advantages: Separated bike lanes are more attractive to a wider spectrum of bicyclists, some of whom, such as children and seniors, ride at slower speeds. Separated bike lanes have been documented to significantly increase bicycling. Physical separation prevents motor vehicles from driving, stopping, or waiting in the bikeway. Provides greater comfort to pedestrians by separating them from bicyclists.

Disadvantages: Raised buffers provide the greatest level of separation from traffic, but will often require road reconstruction. The proximity to objects or vertical curbs along the bike lane edge can reduce the effective width of the bike lane and user comfort. Challenging to implement in constrained corridors and may require context-sensitive solutions.



at least 6.5 ft. recommended to enable passing movements

Same Direction Bicyclists/Peak Hour	Bike Lane Width (ft.)	
	Rec.	Min.
<150	6.5	5.0
150-750	8.0	6.5
>750	10.0	8.0



at least 10 ft. recommended to enable passing movements

Bidirectional Bicyclists/Peak Hour	Bike Lane Width (ft.)	
	Rec.	Min.
<150	10.0	8.0
150-400	11.0	10.0
>400	14.0	11.0

Example detail of separated bike lanes (Source: Montogmery County Bicycle Facility Design Toolkit, 2017)

Chicanes / Mid-Block Deflections

Description: Curb extensions, on-street parking, or other physical features located on alternating sides of a street to add horizontal deflection on an otherwise straight section of roadway. They can be uses on one-way and two-way streets.

Placement: These treatments are placed mid-block where a median or other non-traversable barrier separates the travel directions near the chicane. When used where vehicles travel in both directions with no physical separation between the travel directions vehicles tend to cross the centerline to make their travel path as smooth as possible. This behavior is a potential safety concern and contributes to a general ineffectiveness of the device in terms of speed reduction. In the case of two-way streets, it may be appropriate to provide a median between the on-coming travel lanes to help achieve the desired motorist travel path.

For chicane treatments, the curb extension or other physical barriers are typically installed in sets of three to introduce an S-shaped travel path; mid-block deflections are often only one or two barriers. For both treatment types, the spacing between the barriers and the available travel lane width for vehicles influences the extent of vehicle speed control. Closer spaced barriers and narrower travel way widths promote slower speeds, but must be balanced with the need to accommodate design vehicles. Where narrower travel lanes are desired but larger vehicles need to be accommodated, the barriers can be designed as mountable truck aprons. The distance between chicanes or mid-block deflections should be no more than 500-feet to maintain the slow speeds.

Advantages: Requires slow vehicle speeds approaching and navigating the treatment. In the case of chicanes, they can also provide an opportunity for added greenery.

Disadvantages: Narrows travel-way for on-road bicyclists and can be an obstacle for large vehicles. May require additional delineation to assist snow plow drivers.

Mid-block deflection through use of on-street parking (Cambridge, MA)

Speed (mph)	Spacing (feet)
10	250
15	300
20	400
25	500

PARKLETS

A parklet is a seasonal or year-round outdoor space typically the size of an on-street parking space. These mini-parks are often designed for passive recreation and may include planters, benches, café tables and chairs. Additionally, parklets can be designed to include bike corrals, fitness equipment, chess boards and other activities.

Relative Cost: Medium

Typical Application

- Parklets can enhance commercial district or neighborhood vitality, especially in areas currently lacking public space or in locations where sidewalk space is constrained.
- The nature of a parklet will vary based on factors such as size, location, surrounding land uses and the duration of the installation. Parking availability should be considered when determining the overall benefit of parklet installation against parking loss.
- Parklets are generally located within an on-street parking lane, and does not impede motor vehicle or bicycle through travel.

Design Features

(A) Parklets are often constructed on custom or pre-frabricated platform that rests on the street pavement. This allows them to meet the grade of adjacent sidewalks, extending the pedestrian zone.

- Parklet design should comply with ADA standards and be easily accessible from the sidewalk. Avoid placement near intersections and do not block fire hydrants or bus stops.
- Parklets must be designed and located in areas so as not to restrict stormwater runoff or cause other drainage issues.

Parklets can be implemented on a trial basis using temporary materials to quickly transform a space (sometimes called a "tactical urbanism" project). Simple tables and plants create a pleasant resting environment in this parklet.

Streetscape furnishing manufacturer Dero produces a modular parklet platform for easy deployment.

Photo Source: dero.com

Further Considerations

- Because parklets may require the removal of an on-street parking space, outreach to adjacent property owners and businesses is critical.
- Most municipalities require a permitting process for both temporary and permanent parklet installations.
- Temporary or permanent placement adjacent to a crosswalk allows the parklet to function as a *de facto* curb extension and can improve pedestrian safety by shortening crossing distances.

Maintenance

In many communities parklet permit applicants, often business owners or community organizations, agree to maintain the parklet and renew the permit annually. The applicant is usually responsible for daily cleaning, sweeping, and maintenance of plants, in and around the parklet installation, for the season or indefinitely, depending on the agreement.

References

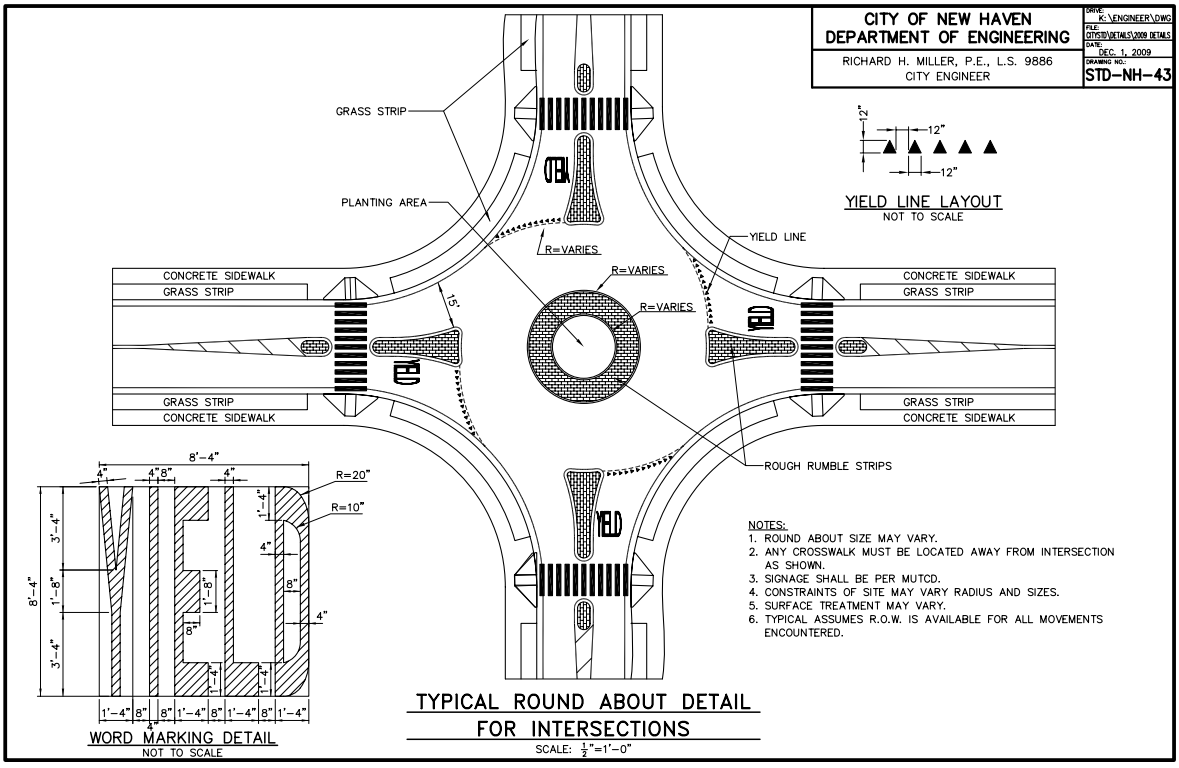
City of San Francisco - Pavement to Parks. San Francisco Parklet Manual". 2013.

Madeline Brozen, Anastasia Loukaitou-Sideris, Colleen Callahan. Reclaiming the Right-of-Way: A Toolkit for Creating and Implementing Parklets. UCLA Luskin School of Public Affairs. 2012.

5. Street Design Process

The Complete Streets Design Manual aims to formalize a process for community participation in the street re-design processes in the City of New Haven. While the City has a history of working with community groups to address traffic safety problems, public interest in the details of such processes have reached historic levels. For this reason, it is timely to develop a protocol for constructive engagement between community members and city staff.

Such a process provides the best opportunity for transparency and accountability from both parties. City staff will not need to risk angering residents and residents need not submit to changes without a process through which their concerns can be addressed. Projects can be initiated either by community request or through the on-going maintenance and reconstruction done by the City. Both 'work flows' are subject to an open design process guided by the goals outlined in this document. This will ensure that infrastructure investments will support not only mobility, but the guiding principles of Complete Streets—connectivity, human health, safety, equity, aesthetics, economic development, environmental protection and livability—as prioritized jointly by neighbors and city staff.



The citizens of the City of New Haven have a vested interest in the changes that occur in the public spaces of their communities, including their streets. Given access to pertinent information, input from qualified professionals and a participatory process that allows for thoughtful collaboration between educated citizens and city staff, final street designs will result in changes that most clearly reflect the desires and needs of the community.

The steps described below can assist New Haven residents, neighborhood groups, elected officials and City staff in navigating a street design process that will effectively address traffic, safety and other street-related issues.

1. Project Initiation

city role

CITY-INITIATED PROJECTS

- *Identify project location, scope and goals. Goals should be consistent with the Complete Streets Policy and Guiding Principles.*

community role

COMMUNITY-INITIATED PROJECTS

- *Identify project goals. Goals should be consistent with the Complete Streets Policy and Guiding Principles (see Chapters 1 & 4 of this manual).*
- *Submit Complete Streets Project Request Form (see Appendix) to City Engineer.*

2. Plan Development

city role

- *Review Project Request Form for community-initiated projects.*
- *Collect and analyze data as necessary.*
- *Conduct initial screening of street design tools. (Decision matrices are included in the appendices.)*
- *Meet with community members and stakeholders to review design options.*

community role

- *Work with City staff to form consensus around design plan.*

3. Funding & Design

city role

- *Rank and prioritize project.*
- *Identify and secure project funding.*
- *Develop final design.*
- *Secure appropriate approvals.*
- *Meet with community members and stakeholders to review design.*

community role

- *Identify and secure outside funding sources and possible maintenance partners.*

4. Installation

city role

- *Construct project*
- *Perform post-construction evaluation of project effectiveness*
- *If temporary measure installed, collect data to monitor effectiveness and hold public meeting to elicit feedback and discuss permanent options.*

community role

- *Work with City to evaluate effectiveness of project.*
- *Perform maintenance if applicable.*

APPENDIX A: PROJECT REQUEST FORM

PROJECT INFO

Project Name
Project Location and Limits
Contact
Brief Description of Project
Project Impetus
Project Goals
Estimated Cost of Project (if known)
Funding Sources (if known)

CONSISTENCY WITH COMPLETE STREETS POLICY & GUIDING PRINCIPLES

Describe project context, including adjacent land uses, neighborhood character, and existing transportation system
Classification of affected street(s)

Describe how proposed project supports Guiding Principles for Complete Streets. *See page 16 of this Manual for descriptions of each principle.*
Safety and slow vehicle speeds
Connectivity
Human health
Livability
Context
Equity
Aesthetics
Economic development
Environment

2.2 Waiver Process

Waivers from the Road Code are allowed provided that suitable evidence is presented as outlined in Sec. 19-17. – Deviations from Standards and Road Code of the City Code. Requests must be submitted in writing and may be granted based upon the sound engineering, technical judgment, and required findings. Overall findings must demonstrate that the deviation from the standards are in the public interest, reflect the land use context, that requirements for safety, function, fire protection, multimodal needs, and maintainability are fully met. The City Council may grant waivers provided that the applicant presents findings for the following:

- There are existing physical limitations that preclude the full accommodation of the Standards; and /or
- A city approved traffic impact analysis supports the waiver from the Standards; and /or
- It can be demonstrated that the waiver is necessary to meet the requirements or intent of Chapter 8 “Erosion and Sediment Control and Stormwater Management,” or Chapter 22, “Trees and Forest Conservation”; and
- That the granting of such waivers will not result in decreased multi-user functionality for the road users and the general public; and
- That the granting of such waivers will not adversely affect safety or operations; and
- That the granting of such waivers for public roads will not adversely affect future maintenance and its associated costs.

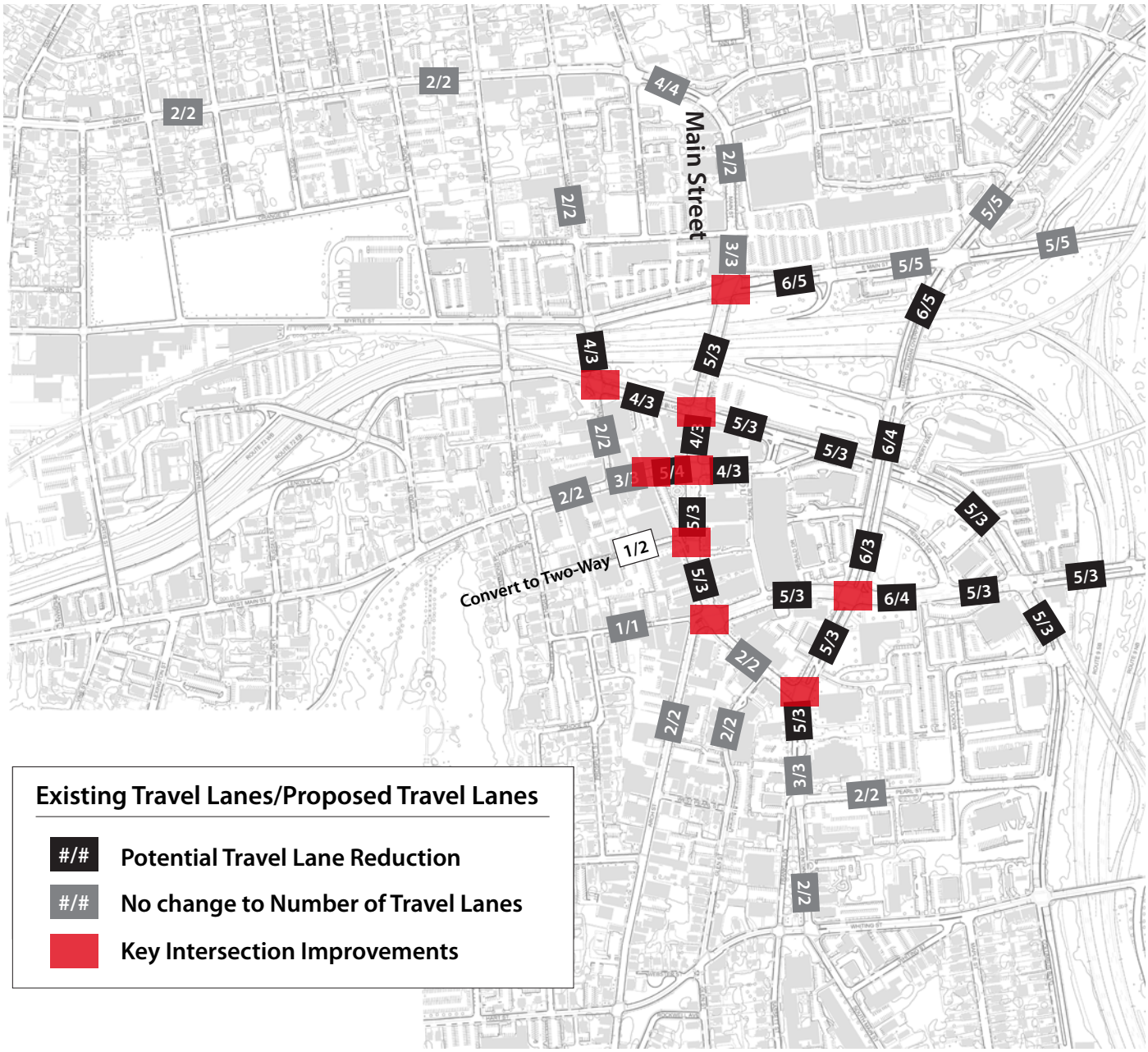
As noted in the Street Design Standards Chart, waivers are required per the following:

For new road construction, waivers in accordance with Chapter 19 and this regulation must be granted when a proposed design incorporates elements below the minimum design standards, includes design speeds higher than those defined, eliminates a proposed facility or element, or includes a design feature identified as requiring a waiver within the typology.

The retrofitting of privately owned and maintained roads subject to these regulations must incorporate to the greatest extent possible all elements related to the roads’ corresponding typology with the complete deletion of specific elements or facilities requiring the granting of waivers in accordance with Chapter 19 and these regulations.

Retrofitting of existing roads owned and or maintained by the City will incorporate to the greatest extent possible all elements related to the roads corresponding typology. No granting of waivers are required for City projects.

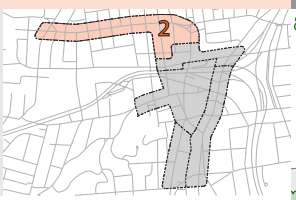
Key Intersections



Road diets also provide opportunities to create opportunities at intersections to benefit pedestrians. Bump-outs, improved pedestrian signalization and high-visibility crosswalks are proposed to shorten crossing distances for pedestrians. In concert with a road diet's reduced section, intersection improvements are proposed at nine locations (above). Of these, six are located on the Main Street corridor, the City's main thoroughfare.

2: Broad Street & Little Poland

Broad Street
from Booth St to Burritt St



Existing Conditions:

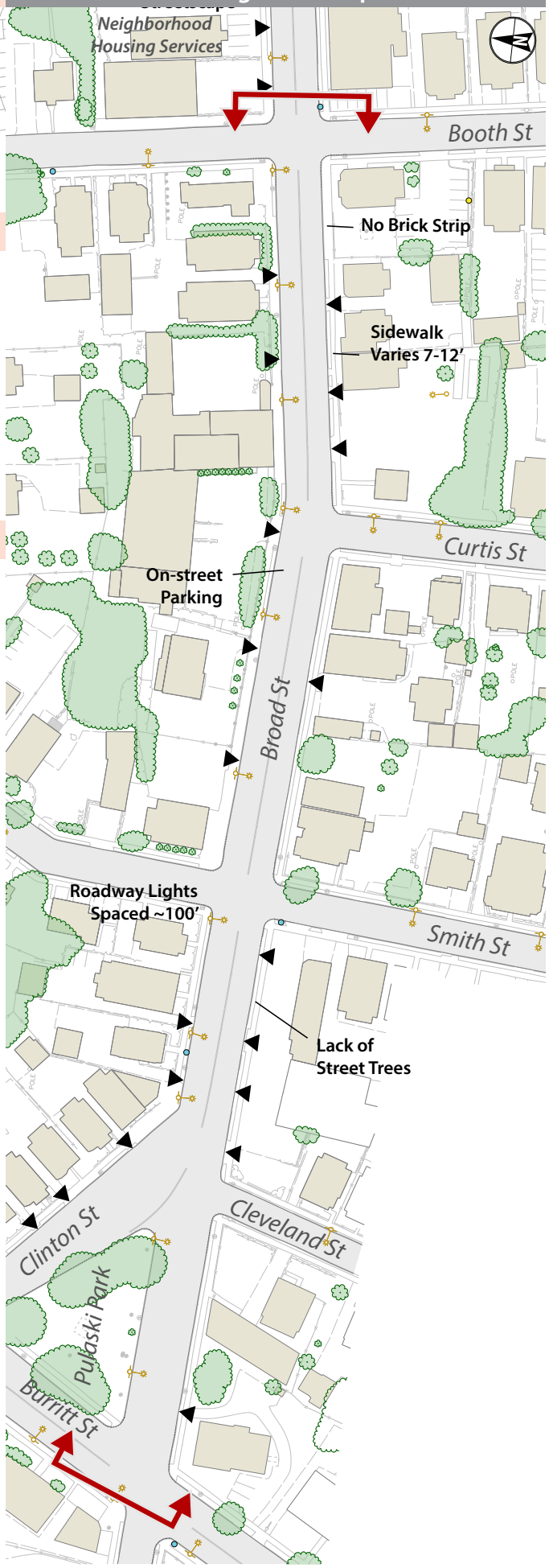
Like the previous section, Broad Street here does not have a pedestrian-friendly scale for its entire length. Near Burritt, Broad Street becomes vary wide, and wider still at Pulaski Park, which has a confusing traffic pattern and a sea of pavement. Recently completed improvements limit the ability to make major changes, and overhead utilities pose a challenge. The addition of pedestrian amenities - from street furniture to capital improvements, such as bump-outs - should be the focus of future improvements here as well.

Design Challenges:

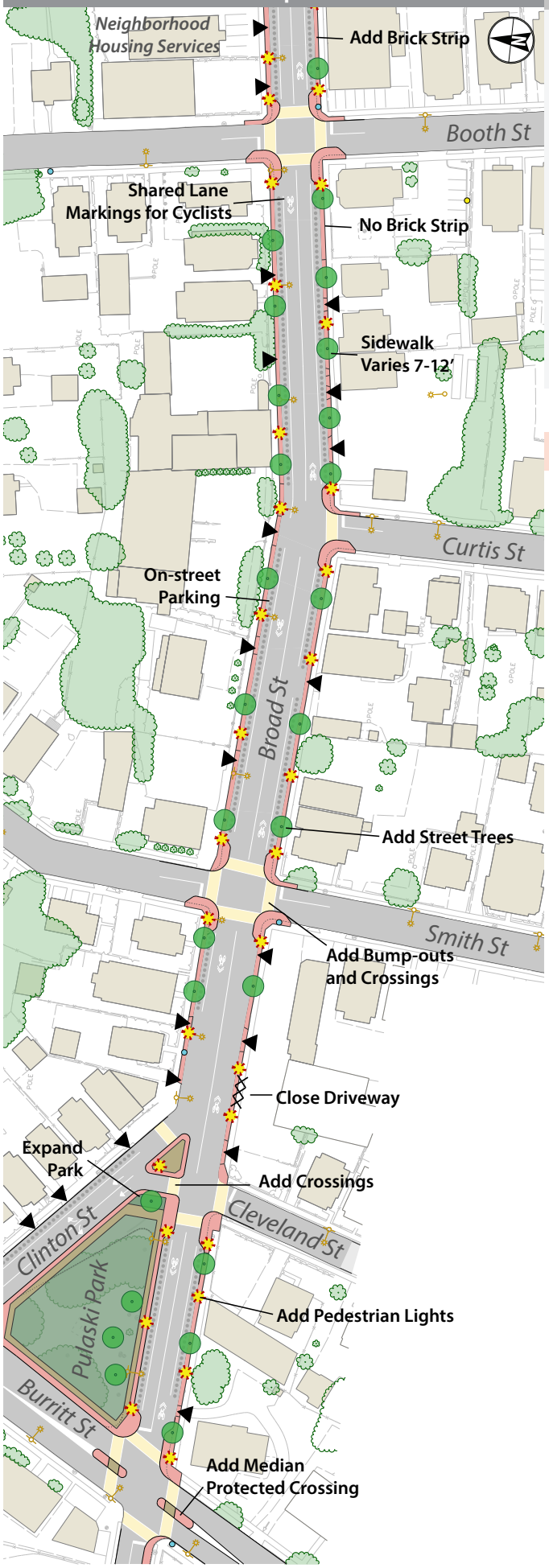
- Varying roadway width conditions - 40' curb-to-curb street (two 12' travel lanes with 8' parking lanes); 46' curb-to-curb, west of Curtis Street
- Confusing traffic circulation with a sea of pavement at Pulaski Park
- Massive amount of overhead utilities and large numbers of service laterals
- Driveways interrupt the streetscape
- Sidewalk has no brick strip treatment
- Lack of street trees
- Roadway lighting spaced at approximately 100' intervals

Overhead Utilities on Broad at Booth

Existing Streetscape



Streetscape Plan



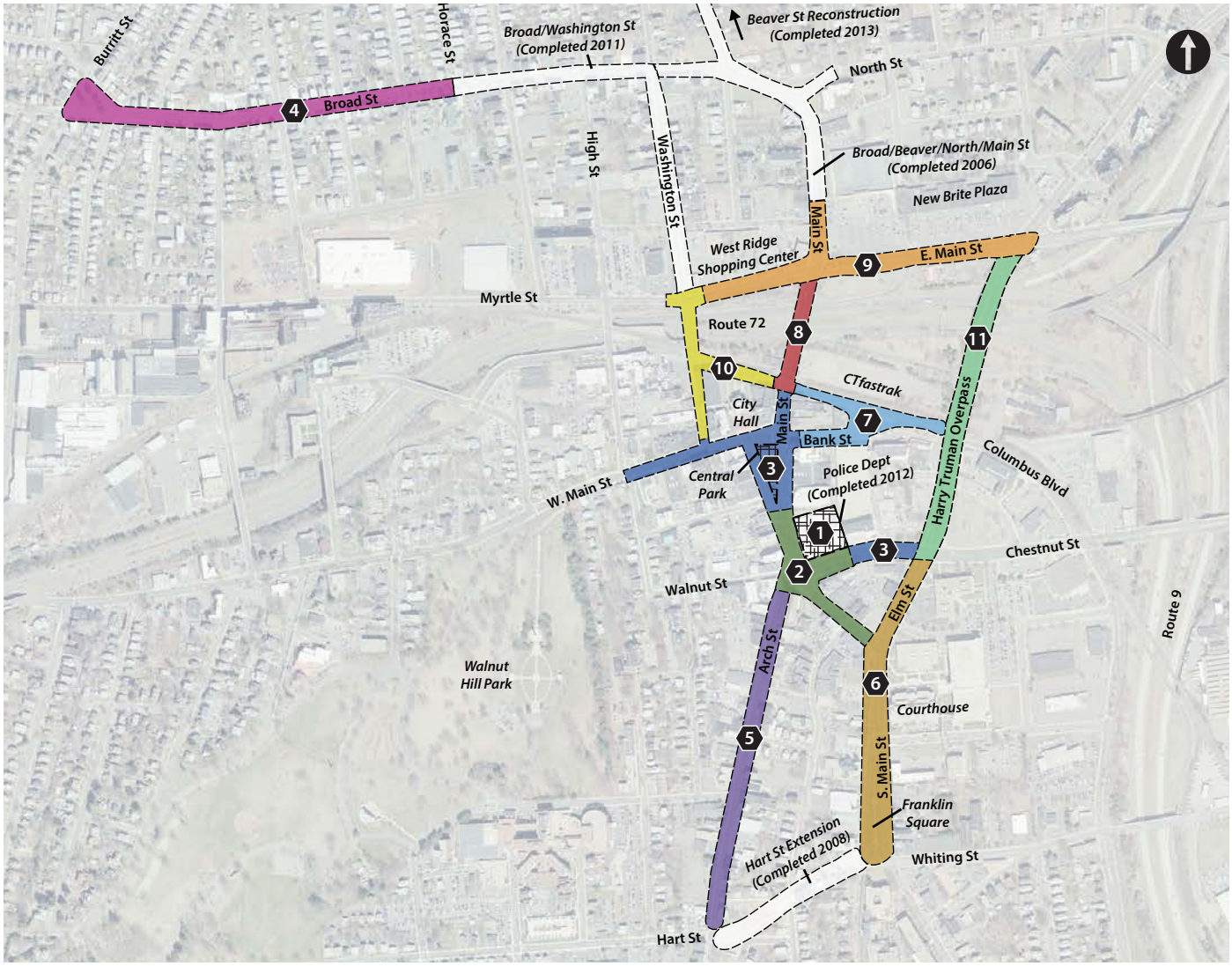
Existing Elements / Plan Elements

Existing Elements	Plan Elements
Pedestrian Lighting	New Ped Lighting
Driveways	Closed Driveways
Trees	New Trees
Parking Meters	Brick Strip
Hydrants	Bike Lanes
Roadway Lighting	Parking/Loading
Trash	Wayfinding Signs
Section Match Line	Sculpture

Design Solutions:

- Continue stamped concrete brick treatment
- Bump-outs and crosswalks to shorten pedestrian crossing distances at intersections
- New street trees and planters
- Additional ornamental pedestrian lighting
- Look for public art opportunities
- Expand Pulaski Park to also serve as a terminus gateway and improve confusing traffic circulation
- Provide a consistent 40' road diet on the section of Broad near Burritt Street and by Pulaski Park
- Either place utilities completely underground, or partially underground (such as service laterals)

Project Phases



Phase	Name	Status	Cost	Funding Source
1	Police Station / Parking Lot / Main	Complete	$0.4	City Bond (approved)
2	Main / Chestnut / Arch	Construction	$1.3	ConnDOT TOD Grant (.75M); City Bond (.55M approved)
3	Central Park / Main / W. Main	In Design	$3.8*	TCSP (1.3M); STP Urban (2.5M); City Match (.8M)
4	Broad Street (Horace to Burritt)	In Design	$4.5*	City Bond (approved); STPU (possible)
5	Arch Street	In Design	$1.6*	City Bond (approved)
6	Elm / S. Main	In Design	$1.4*	City Bond (approved)
7	Columbus / Bank (Bus Livability)	Planning	$2.9*	HUD Bus Livability Grant (1.6M); City Bond (approved)
8	Main St. Overpass over SR. 72	Planning	$2.3*	undetermined
9	Main / E. Main	Not Active	$1.8*	undetermined
10	Washington/Columbus Streetscape	Not Active	$1.0*	undetermined
11	Harry Truman Overpass	Construction	$4.0*	undetermined
12	Medians, Crosswalks, & Paving streetscape	Not Active	$2.1*	undetermined
Costs in Millions (Estimated)		**Total:**	**$26.8***	

Appendix B:
Crashes, Speeds, & Lane Widths: Presentation to Wilmington Initiatives Hurley-Franks & Associates, 2022

Hurley-Franks and Assocaites prepared this presentation for the Wilmington Initiatives Committee to summarize industry data about the relationship between vehicle crashes, traffic speeds, and lane widths.

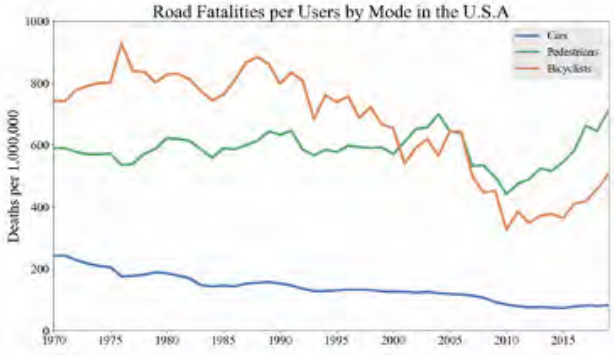
Crashes, Speeds, & Lane Widths

WILMINGTON INITIATIVES
MAY 2022

Fatalities are increasing for peds and bikes

In the US, but not in the Netherlands – Policy & design matter

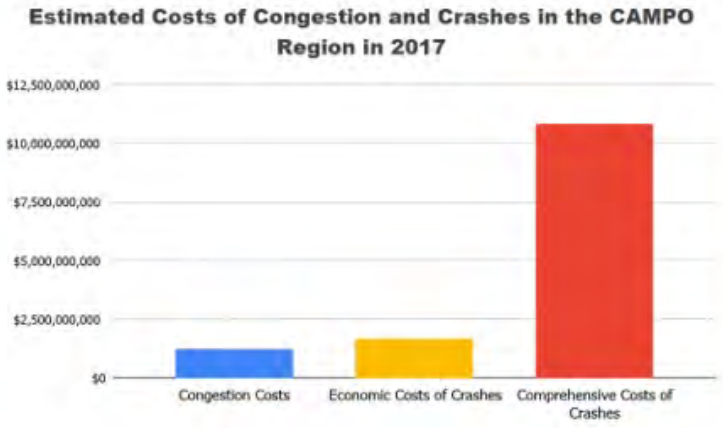
Credit: University of Connecticut



Credit: University of Connecticut

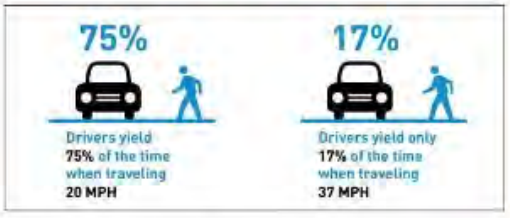
Economic costs of crashes can be higher than congestions costs

The National Safety Council estimates the Comprehensive Cost of each motor vehicle death (which includes economic costs plus quality of life costs based on empirical studies of what people are willing to pay to avoid health and safety risks from crashes) at $11.1 million (a total of $430 billion, based on 2020 motor vehicle deaths in the US). The average Comprehensive Cost of a disabling injury is $1.2 million.

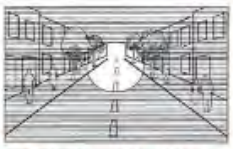


Speed is crucial

WHY SPEED MATTERS



Field of vision at 15 MPH



Field of vision at 30 to 40 MPH

Target Speed = Design Speed = Posted Speed

NACTO recommends designing streets for the "target speed":

> "Design streets using target speed, the speed you intend for drivers to go, rather than operating speed. The 85th percentile of observed target speeds should fall between 10–30 mph on most urban streets." https://nacto.org/publication/urban-street-design-guide/design-controls/design-speed/

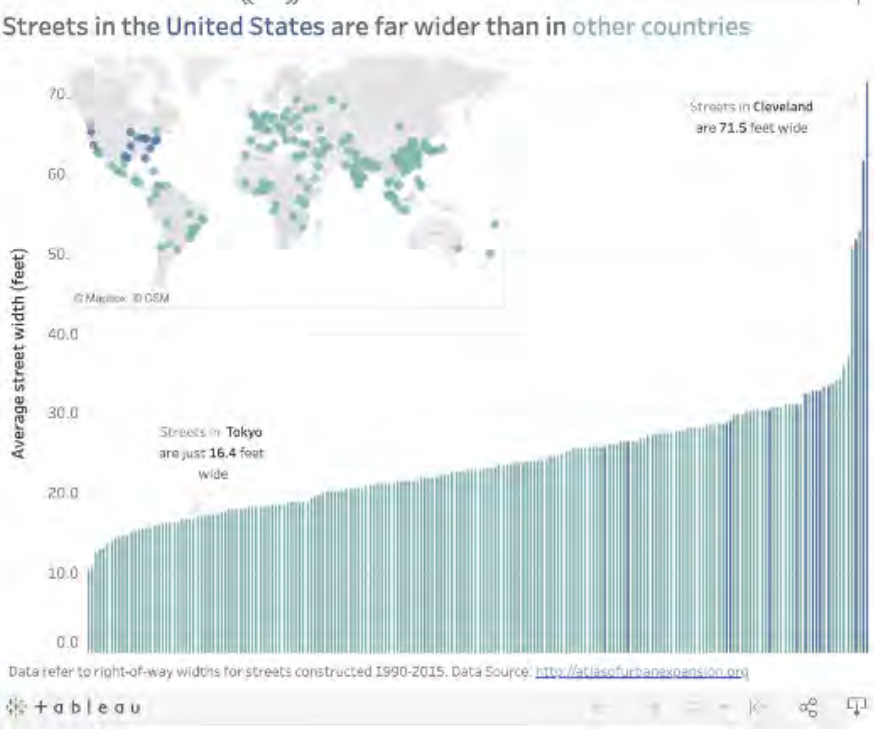
FHWA defines a "self-enforcing road" as:

> "a roadway that is planned and designed to encourage drivers to select operating speeds in harmony with the posted speed limit." For these roads, the target speed, design speed, and posted speed limit should all be the same.https://www.fhwa.dot.gov/publications/research/safety/17098/005.cfm

Lane Widths & Speeds

Wider lane widths are associated with higher travel speeds.

Streets in the US are much wider on average than streets in other countries.



Lane Width Recommendations

- NACTO Urban Street Design Guide
  - 11' as the widest travel lane for urban streets, and only for "Very Large Streets"
  - 10' for "Medium Streets"
- Institute of Transportation Engineers
  - Target speeds of 25-35 mph
  - 10-11' for almost all streets in the General Urban and Urban Core contexts
  - The only exception is a recommendation of 10-12' for 4-6-lane Boulevards in the General Urban context (but only 10-11' in the Urban Core context)
  - Notes that narrower lane widths may be used on lower speed residential streets

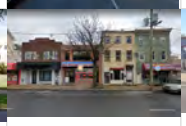
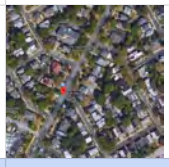
Wilmington Vehicles

- DART buses are 102" (8.5') wide, or 126" (10.5') with mirrors
- Garbage trucks are 9' plus or minus 2"
- Fire trucks are just over 8'

Appendix C: Wilmington Street Type Survey, Hurley-Franks & Associates, 2021

Hurley-Franks and Assocaites conducted this synoptic survey to measure key urban design features of sample streets. Streets to measure were identified by the Wilmington Initiatives Management Committee as good examples of existing streets to cover each potential street type category.

Wilmington Street Type Survey

Category	Neighborhood Slow Street	City Core Slow Street	Neighborhood Connector	City Core Connector	Primary Connector	Gateway Corridor	Industrial Business Access
Example Blocks	West 18th Street, between Woodlawn and Riverview Rd S. Claymont Street, A Street to Lobdell St Bancroft Parkway, Pennsylvania Ave to 14th St Stapler Place (between 14th & 16th)	Market St, between 6th & 7th Tatnall St, between 8th & 9th Union St, between 7th & 8th 9th St, between Jefferson & Wollaston Justison St, Hollingsworth to Harlan	Washington St, 25th to 26 St Bancroft Pkway, between 16th and 17th Lombard St, between 9th & 10th Delaware Ave, Bancroft to Grant Baynard Blvd, 20th to 21st	4th St, between Tatnall & Orange St Orange, 9th to 10th St Heald, between C and D St	Washington Blvd, between Irving and W Lea Blvd Northeast Blvd, E 24th & 25th St Lancaster Ave, between Ford & Colonial Ave Pennsylvania Ave, between Bancroft & Grant Concord Ave, between Jefferson & Washington	MLK Blvd, between Justison & West St Delaware Ave, Adams to Jefferson St	Swedes Landing Rd, 4th to 7th St Christina Ave, between 495 & Old Ferry Rd Front St, Lombard to Church
Sample Street							
Sample Private Frontage							
Sample Aerial							
STREET INFORMATION							
Street Direction	1 way, 2 way	1 way, 2 way	1 way, 2 way	1 way, 2 way	2 way	2 way	2 way, 1 way
Street Pavement Width (curb to curb)	22-34'	26-56' (22-42' @ crosswalk)	24-40'	28-60'	30-58'	34-60'	30-32'
Building to building face width	52-245'	44-87'	50-227'	50-80'	58-182'	200' or n/a	43-690' or n/a
Spatial Width	20-62'	44-87'	41-130'	50-70'	58-162'	10-158'	40-294' or n/a
# Vehicle Lanes	1	1, 2	1-4	2-4	2, 4, 6 (4+2 turning lanes)	7, 9 (6+3 turning lanes)	1-2
Vehicle Lane Width		10-12'	9-10'	9-10'	9-11'	9-15'	14'
# Parking Lanes	2	2	1-2	1-2	0, 2	0-1	0-1
Parking Lane Width		6-9'	10'	10'		10'	
Curb Radius	7-25'	11-25'	6-14'	6-18'	9-24'	23'	10-34'
Pedestrian Realm Width (Ped Zone + Furnishing/Landscape Zone)	7-13'	6-19' (22' @ crosswalk)	5.5-21'	6-21'	5-10'	0-35'	0-15'
Ped Zone Width	4.5-7'	3-13'	3-8'	6-13'	2.5-8'	0-19'	0-12'
Planter Type	continuous, tree wells	continuous, tree wells	continuous, none	continuous, tree well, none	none, continuous	continuous	continuous, none
Bike Way Type	mixed traffic	mixed traffic, sharrow, bike lane	mixed traffic	mixed traffic	mixed traffic	mixed traffic	mixed traffic
CONTEXT INFORMATION							
Adjacent Block Perimeter	1160-2000'	965-1685'	1010-2080'	1200-1375'	980-1900'	irregular	irregular
Avg Lot Coverage	10-95%	80-100%	40-100%	50-100%	40-100%	5-95%	30-90%
Buildout percentage @ sidewalk	50-100%	90-100%	60-100%	50-100%	40-100%	10-95%	0-80%
Front Setback	0-50'	0-10'	0-41'	0-14'	0-50'	0-46'	0-9' or n/a
Ground Level Function	residential, institutional	commercial, residential	residential, institutional, commercial	commercial, residential, institutional	commercial, residential, park	commercial, institutional	industrial/commercial

Wimlington Street Type Survey

Category	Neighborhood Slow Street	Neighborhood Slow Street	Neighborhood Slow Street	Neighborhood Slow Street	Neighborhood Slow Street
Location	West 18th Street, between Woodlawn and Riverview Rd	S. Claymont Street, A Street to Lobdell St	Bancroft Parkway, Pennsylvania Ave to 14th St	Stapler Place (between 14th & 16th)	RANGE
Block address	2300-2240 W 18th St	300-344 S Claymont St	1300-1310 N Bancroft Pkwy	1400-1433 Stapler Pl	
Aerial					
Street					
Private Frontage					
STREET INFORMATION					
Street Direction	1 way	1 way	2 way	1 way	1 way, 2 way
Street Pavement Width (curb to curb)	24'	34'	24'	22'	22-34'
Building to building face width	73'	64-168'	240-245'	52.5-70'	52-245'
Spatial Width (visual definition created by trees or buildings)	57'	62.5'	20'	31'	20-62'
# Vehicle Lanes	1	1	1 (different directions separated by wide landscape median)	1	1
Vehicle Lane Width	(no striping)	(no striping)	(no striping)	(no striping)	?
# Parking Lanes	2	2	2	2	2
Parking Lane Width	(no striping)	(no striping)	(no striping)	(no striping)	?
Curb Radius	25.5'	7'	10'	12.5'	7-25'
Median	no	no	yes	no	
Pedestrian Realm Width (Ped Zone + Furnishing/Landscape Zone)	7-9.3'	10-12.5'	12-13'	10'	7-13'
Pedestrian Zone Width	4.5-7'	7'	5.5'	5-6.5'	4.5-7'
Planter Type	continuous	continuous, tree wells	continuous	continuous, tree wells	continuous, tree wells
Planting Pattern	regularly spaced	regularly spaced	regularly spaced	regularly spaced	
Bike Way Type	Mixed traffic	mixed traffic	mixed traffic	mixed traffic	mixed traffic
CONTEXT INFORMATION					
Adjacent Block Perimeter (rounded to nearest 5')	1560-1860'	1300-1305'	1865-2000'	1160-1190'	1160-2000'
Average Lot Coverage (lots facing block face)	25-95%	30-80%	10-30%	70-85%	10-95%
Buildout percentage @ sidewalk	70-90%	100%	50-80%	60-100%	50-100%
Front Setback	17-25	0'	40-50'	5-14.5'	0-50'
Ground Level Function	Residential	residential E, institutional (school) W	residential*, institutional (church)	residential	residential, institutional

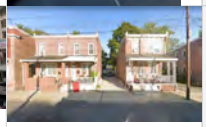
Wimlington Street Type Survey

Category	City Core Slow Street	City Core Slow Street	City Core Slow Street	City Core Slow Street	City Core Slow Street	City Core Slow Street
Location	Market St, between 6th & 7th	Tatnall St, between 8th & 9th	Union St, between 7th & 8th	9th St, between Jefferson & Wollaston	Justison St, Hollingsworth to Harlan	RANGE
Block address	600-719 N Market St	800-898 N Tatnall St	701-727 N Union St	503-512 W 9th St	401-401 Justison St	
Aerial						
Street						
Private Frontage						
						
STREET INFORMATION						
Street Direction	2 way	1 way	1 way	1 way	2 way	1 way, 2 way
Street Pavement Width (curb to curb)	38' (22' @ crosswalk)	30'	56' (42' @ crosswalk)	26'	42' (26' @ crosswalk)	26-56' (22-42' @ crosswalk)
Building to building face width	63'	44'	87'	54-60'	67'	44-87'
Spatial Width (visual definition created by trees or buildings)	44'	39-48'	87'	60'	48'	44-87'
# Vehicle Lanes	2	1	2	1	2	1, 2
Vehicle Lane Width	10'	(no striping)	12'	(no striping)	12'	10-12'
# Parking Lanes	2	2	2	2	2	2
Parking Lane Width	7'	(no striping)	8-9'	(no striping)	6'	6-9'
Curb Radius	12'	12'	11'	11'	25'	11-25'
Median	no	no	no	no	no	
Pedestrian Realm Width (Ped Zone + Furnishing/Landscape Zone)	14' (22' @ crosswalk)	6-10'	7-19'	12'	18' (22' @ crosswalk)	6-19' (22' @ crosswalk)
Pedestrian Zone Width	8'	3-7'	5-10'	6-10'	6-13'	3-13'
Planter Type	tree wells	continous	n/a	continuous	continous	continuous, tree wells
Planting Pattern	regularly spaced	regularly spaced	n/a	regularly spaced	regularly spaced	
Bike Way Type	sharrow street	mixed traffic	bike lane	mixed traffic	mixed traffic	mixed traffic, sharrow, bike lane
CONTEXT INFORMATION						
Adjacent Block Perimeter (rounded to nearest 5')	965-1175'	1515-1685'	1270-1380'	1375-1415'	1295-1330'	965-1685'
Average Lot Coverage (lots facing block face)	100%	100%	80-100%	100%	100%	80-100%
Buildout percentage @ sidewalk	100%	100%	90-100%	90-100%	100%	90-100%
Front Setback	0'	0'	0-10'	0-6'	0'	0-10'
Ground Level Function	commercial	commercial*, residential	residential*, commercial	residential	residential, commercial	commercial, residential

Wimlington Street Type Survey

Category	Neighborhood Connector	Neighborhood Connector	Neighborhood Connector	Neighborhood Connector	Neighborhood Connector	Neighborhood Connector
Location	Washington St, 25th to 26 St	Bancroft Pkway, between 16th and 17th	Lombard St, between 9th & 10th	Delaware Ave, Bancroft to Grant	Baynard Blvd, 20th to 21st	RANGE
Block address	2500-2531 Washington St	1600-1607 N Bancroft Pkwy	905-937 N Lombard St	2024-2100 Delaware Ave	1905-2014 Baynard Blvd	
Aerial						
Street						
Private Frontage						
						
STREET INFORMATION						
Street Direction	2 way	2 way	1 way	2 way	2 way	1 way, 2 way
Street Pavement Width (curb to curb)	34'	24'	24'	36'	40'	24-40'
Building to building face width	78'	227'	50'	94-105'	135-156'	50-227'
Spatial Width (visual definition created by trees or buildings)	70'	43'	41-130'	47'	53'	41-130'
# Vehicle Lanes	2	1	1	2	4 (2 Off Peak Parking Lanes)	1-4
Vehicle Lane Width	9'	(no striping)	(no striping)	10'	9'	9-10'
# Parking Lanes	2	1	2	2	2 (Off Peak)	1, 2
Parking Lane Width	(no striping)	(no striping)	(no striping)	(no striping)	10'	10'
Curb Radius	8-10'	11'	12'	8-14'	6'	6-14'
Median	no	yes	no	no	no	
Pedestrian Realm Width (Ped Zone + Furnishing/Landscape Zone)	5.5-9'	13'	12'	10-14'	21'	5.5-21'
Pedestrian Zone Width	3-7'	6'	4-8'	5'	7-8'	3-8'
Planter Type	none	continous	continous	continuous	continous	continuous, none
Planting Pattern	n/a	regularly spaced	regularly spaced	regularly spaced	regularly spaced	
Bike Way Type	mixed traffic	mixed traffic	mixed traffic	mixed traffic	mixed traffic	mixed traffic
CONTEXT INFORMATION						
Adjacent Block Perimeter (rounded to nearest 5')	1310-1415'	1420-2080'	1010-1405'	1460	irregular block shape	1010-2080'
Average Lot Coverage (lots facing block face)	70%	40-70%	60-100%	80-100%	50-80%	40-100%
Buildout percentage @ sidewalk	90-100%	60-80%	100%	90-95%	70-90%	60-100%
Front Setback	5-18'	31-41'	0'	22-33'	17-35'	0-41'
Ground Level Function	residential	residential	residential*, institutional (temple & church)	residential*, institutional (school)	residential*, commercial	residential, institutional, commercial

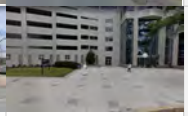
Wimlington Street Type Survey

Category	City Core Connector	City Core Connector	City Core Connector	City Core Connector
Location	4th St, between Tatnall & Orange St	Orange, 9th to 10th St	Heald, between C and D St	RANGE
Block address	205A-225 W 4th St	901-925 N Orange St	600-628 S Heald St	
Aerial				
Street				
Private Frontage				
				
STREET INFORMATION				
Street Direction	2 way	1 way	1 way	1 way, 2 way
Street Pavement Width (curb to curb)	60'	28'	40'	28-60'
Building to building face width	80'	50'	57-74'	50-80'
Spatial Width (visual definition created by trees or buildings)	70'	50'	57'	50-70'
# Vehicle Lanes	4	2	2	2-4
Vehicle Lane Width	9'	9'	10'	9-10'
# Parking Lanes	2	1	2	1, 2
Parking Lane Width	(no striping)	10'	(no striping)	10'
Curb Radius	13'	8'	6-18'	6-18'
Median	no	no	no	
Pedestrian Realm Width (Ped Zone + Furnishing/Landscape Zone)	12'	11'	6-21'	6-21'
Pedestrian Zone Width	7-9'	7'	6-13'	6-13'
Planter Type	tree well*, continous	none	continous	continuous, tree well, none
Planting Pattern	regularly spaced	n/a	episodic (1 single tree)	
Bike Way Type	mixed traffic	mixed traffic	mixed traffic	mixed traffic
CONTEXT INFORMATION				
Adjacent Block Perimeter (rounded to nearest 5')	1225-1230'	1200-1375'	irregular block shape	1200-1375'
Average Lot Coverage (lots facing block face)	100%	50-100%	50-100%	50-100%
Buildout percentage @ sidewalk	100%	85-100%	50-100%	50-100%
Front Setback	0'	0'	0-14'	0-14'
Ground Level Function	commercial*, residential	commercial	residential*, institutional (church), commercial	commercial, residential, institutional

Wimlington Street Type Survey

Category	Primary Connector	Primary Connector	Primary Connector	Primary Connector	Primary Connector	Primary Connector
Location	Washington Blvd, between Irving and W Lea Blvd	Northeast Blvd, E 24th & 25th St	Lancaster Ave, between Ford & Colonial Ave	Pennsylvania Ave, between Bancroft & Grant	Concord Ave, between Jefferson & Washington	RANGE
Block address	4300-4304 Washington Blvd	2400-2499 Northeast Blvd	2702-2713 Lancaster Ave	2100-2101 Pennsylvania Ave	300A-318 Concord Ave	
Aerial						
Street						
Private Frontage						
						
STREET INFORMATION						
Street Direction	2 way	2 way	2 way	2 way	2 way	2 way
Street Pavement Width (curb to curb)	30-42'	30'	40'	58'	40'	30-58'
Building to building face width	180-182'	130'	92-133'	90'	58'	58-182'
Spatial Width (visual definition created by trees or buildings)	127-162'	130'	92-133'	90'	58'	58-162'
# Vehicle Lanes	4 (+2 turning lanes)	4	4	4	2	2, 4, 6 (4+2 turning lanes)
Vehicle Lane Width	11'	10'	9'	9-10'	11'	9-11'
# Parking Lanes	0	0	0	0	2	0, 2
Parking Lane Width	n/a	n/a	n/a	n/a	(no striping)	
Curb Radius	24'	10'	9'	13'	13-17'	9-24'
Median	yes	yes	no	no	no	
Pedestrian Realm Width (Ped Zone + Furnishing/Landscape Zone)	6-10'	5-6'	5-9'	10'	9'	5-10'
Pedestrian Zone Width	6'	3-4'	2.5-8'	5-6'	6'	2.5-8'
Planter Type	continous	none	none	continous	none	none, continuous
Planting Pattern	regularly spaced	n/a	n/a	n/a	n/a	
Bike Way Type	mixed traffic	mixed traffic	mixed traffic	mixed traffic	mixed traffic	mixed traffic
CONTEXT INFORMATION						
Adjacent Block Perimeter (rounded to nearest 5')	irregular block shape	irregular block shape	irregular block shape	1675-1900'	980-1320'	980-1900'
Average Lot Coverage (lots facing block face)	40-50%	90%	50-100%	0 or 100%	0 or 100%	40-100%
Buildout percentage @ sidewalk	70-80%	50%	40-100%	0 or 100%	0 or 100%	40-100%
Front Setback	40-50'	8-38'	16-18'	4-9'	0'	0-50'
Ground Level Function	residential	commercial	residential*, commercial	commercial	residential, park	commercial, residential, park

Wimlington Street Type Survey

Category	Gateway Corridor	Gateway Corridor	Gateway Corridor	Industrial Business Access	Industrial Business Access	Industrial Business Access	Industrial Business Access
Location	MLK Blvd, between Justison & West St	Delaware Ave, Adams to Jefferson St	RANGE	Swedes Landing Rd, 4th to 7th St	Christina Ave, between 495 & Old Ferry Rd	Front St, Lombard to Church	RANGE
Block address	400 MLK Blvd	601-700 Delaware Ave		500 Swedes Landing Rd	603-701 Christina Ave	500-700 E Front St	
Aerial							
Street							
Private Frontage							
							
STREET INFORMATION							
Street Direction	2 way	2 way	2 way	2 way	2 way	1 way	2 way, 1 way
Street Pavement Width (curb to curb)	34-60'	43'	34-60'	30'	32'	30'	30-32'
Building to building face width	200'	n/a	200' or n/a	85'	690'	43' or n/a	43-690' or n/a
Spatial Width (visual definition created by trees or buildings)	158'	10'	10-158'	42'	n/a	40-294'	40-294' or n/a
# Vehicle Lanes	6 (+3 turning lanes)	7	7, 9 (6+3 turning lanes)	2	2	1	1-2
Vehicle Lane Width	9-15'	10'	9-15'	14'	14'	(no striping)	14'
# Parking Lanes	0	1	0-1	0	0	1	0-1
Parking Lane Width	n/a	10'	10'	n/a	n/a	(no striping)	
Curb Radius	23'	irregular	23'	34'	n/a	10'	10-34'
Median	yes	yes		no	no	no	
Pedestrian Realm Width (Ped Zone + Furnishing/Landscape Zone)	0-23'	5-35'	0-35'	6-15'	0	11'	0-15'
Pedestrian Zone Width	0-5'	2-19'	0-19'	6-12'	n/a	11'	0-12'
Planter Type	continous	continous	continuous	continous	continous	none	continuous, none
Planting Pattern	episodic	regularly spaced		regularly spaced	n/a	n/a	
Bike Way Type	mixed traffic	mixed traffic	mixed traffic	mixed traffic	mixed traffic	mixed traffic	mixed traffic
CONTEXT INFORMATION							
Adjacent Block Perimeter (rounded to nearest 5')	irregular block shape	irregular shape block	irregular	irregular block shape	irregular block shape	irregular block shape	irregular
Average Lot Coverage (lots facing block face)	10-70%	5-95%	5-95%	80-90%	90%	30%	30-90%
Buildout percentage @ sidewalk	10-40%	80-95%	10-95%	0-30%	0%	50-80%	0-80%
Front Setback	46'	0'	0-46'	9'	n/a	0'	0-9' or n/a
Ground Level Function	commercial, institutional (firehouse)	commercial*, institutional (church, hospital), cemetary	commercial, institutional	industrial/commercial	industrial/commercial	industrial/commercial	industrial/commercial

Wilmington Initiatives

SEAL OF THE CITY OF WILMINGTON DELAWARE