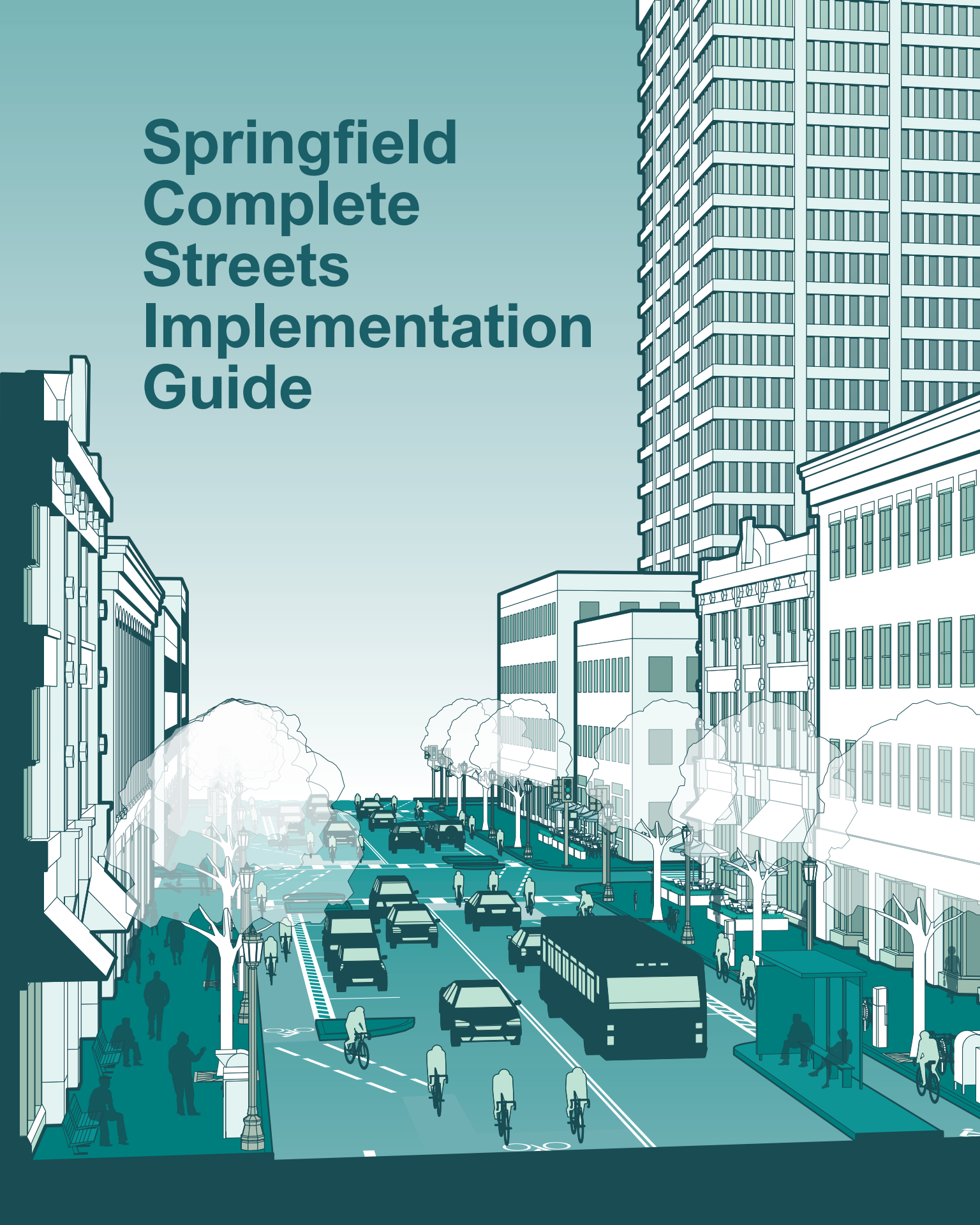
# Springfield Complete Streets Implementation Guide



# Acknowledgments

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# Springfield's Complete Streets

## Streets direct people; they move goods; they accommodate cars, buses, and bicycles; they provide social connections, and ultimately they establish the platform for the rest of the city to build upon.

An efficient street network that easily moves traffic is desirable, but it should not be prioritized to the exclusion of a street designed for the human scale—one that adds daily life to a city and accommodates all modes of transportation equally. This is the intent of the design recommendations for new streets and the reconfiguration of existing streets in Springfield.

This Complete Streets Implementation Guide prioritizes safe streets that can be used equally by all modes of transportation. Pedestrian safety measures have been incorporated into the design recommendations, such as curb extensions, well-marked street crossings, and crossing islands. It also provides guidance on how to incorporate bicycle accommodations into the street system where appropriate. Streetscape elements, such as accessible and well-scaled sidewalks with room for tree plantings and landscape are part of the composition too. Taking into consideration the role of transit and vehicular traffic in the street design is also essential. The collection of these elements go toward a rich and functional street network.

A Complete Streets approach to transportation planning in Springfield augments pre-existing assets including the city's street grids and well-scaled blocks. These assets provide a logical framework from which to work. The street character and its adjacent uses will also help to influence the type of interventions needed in its redesign. For instance, an active retail street may have more cafe space and seating areas. This "implementation guide" shows how these streetscape elements can be distributed depending on the condition of the street and its desired

character. The pressing issue for Springfield is determining how to transform those streets that are less hospitable into streets that cater to people walking, bicycling, and taking transit, as well as vehicular traffic.

This issue arises on a number of occasions. Springfield is challenged by urban thoroughfares that are often oversized compared to their current capacity. Looking at ways to retrofit these streets—breaking them down into component parts—is part of the intent of this guide. There are also streets that are a comfortable scale; however, the allocation of space for different uses is not distributed well. In these cases there are opportunities to increase the pedestrian realm without affecting the efficiency of traffic circulation or capacity. Resizing travel lanes, adding on-street parking and bike lanes, and widening sidewalks are ways in which streets could be improved. This guide will illustrate that there are multiple ways to work within the existing right-of-way to construct a more ideal street.

These are some examples of how this "implementation guide" can be of use. It presents best practices for improving the appeal and function of streets. It also provides different street types from which to draw guidance. Consider these types as precedents, drawing from them the appropriate techniques and interventions needed to make a better street. This booklet is an information guide, as much as it is a toolkit.

The ultimate intent of a complete streets approach is to improve the safety and comfort for all users. By reducing design speeds, narrowing crossing distances and adding protected bike lanes—to name just a few—we are prioritizing personal safety in the design of our streets and cities for all age groups and users.

This booklet was developed in 2014 as part of the City of Springfield's LiveWell Springfield initiative to promote healthy behavior and sustainable economic development.

It is a companion piece to the City's new Complete Streets Pedestrian and Bicycling Plan and the city's proposed Complete Streets Network available here: http://www.livewellspringfield.org/pedestrian-bike-plan/

# Street Types

## Downtown Commercial

These are the most important and most heavily-trafficked streets in Downtown Springfield. Downtown Commercial Streets, examples of which include Dwight Street, Chestnut Street, and Main Street, contain a mix of office, commercial, and institutional buildings and see high volumes of vehicular, pedestrian, and bicycle traffic.

Downtown Commercial Streets should be designed to accommodate the needs of all user groups. They should also incorporate urban design amenities and become vibrant centers of Springfield's civic and commercial life in and of themselves.

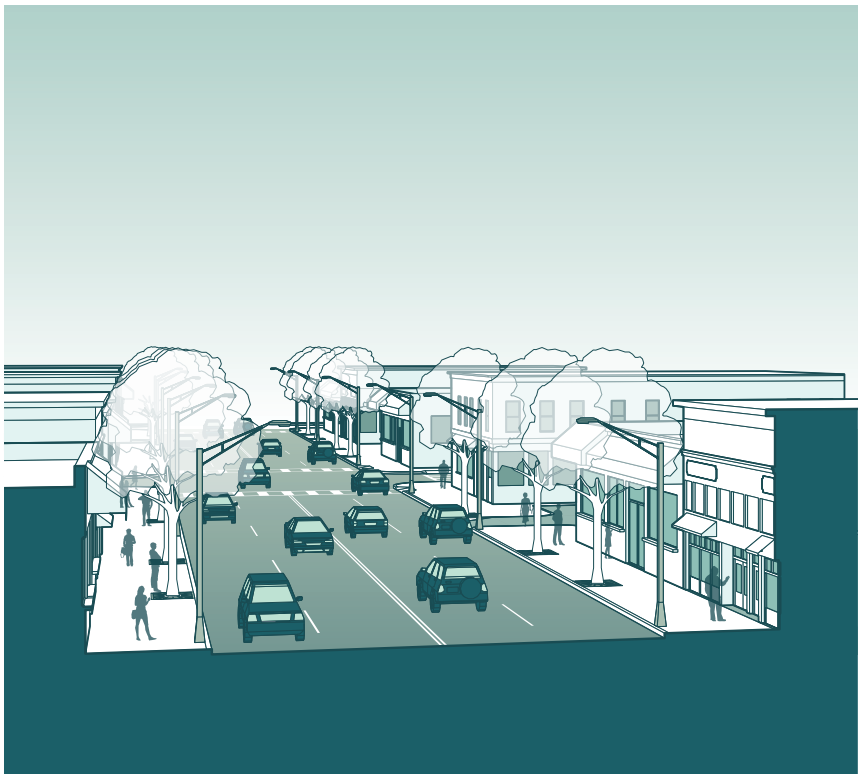
Equivalent MassDOT Classification:
Urban Principal Arterial

## Downtown Cross Street

These are the typical secondary streets found in downtown Springfield. They form the connective tissue between major streets and often contain parking and loading zones that are vital to downtown's functions. Many of these streets are also one-way. Streets such as Worthington, Bridge and Taylor St would fall into this category.

Redesigning Downtown Cross Streets requires being imaginative about their future role. More than passive parking zones, these streets can become urban destinations in their own right. On streets with relatively low traffic speed and volume, new bicycle facilities can help complete important connections in the overall network.

Equivalent MassDOT Classification:
Urban Collector

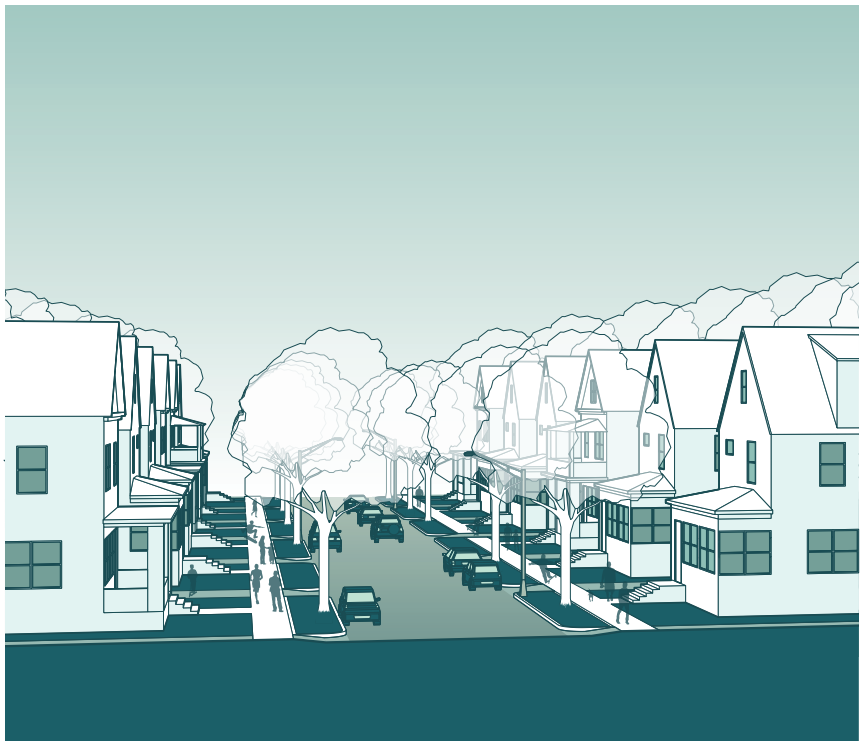


## Neighborhood Connectors

Neighborhood Connectors are the major thoroughfares that connect neighborhoods to downtown and each other. They form the backbone of Springfield's street network and provide continuous routes for pedestrians, cyclists, and vehicles. In neighborhood centers, these streets can also become the de facto main street. Local examples of this type of street, such as Boston Road and Sumner Ave, may range in scale and activity.

Redesigning Neighborhood Connectors requires balancing the need to efficiently and safely move vehicles, transit, and cyclists against the opportunity to create vibrant neighborhood destinations.

Equivalent MassDOT Classification:
Urban Principal/Minor Arterial

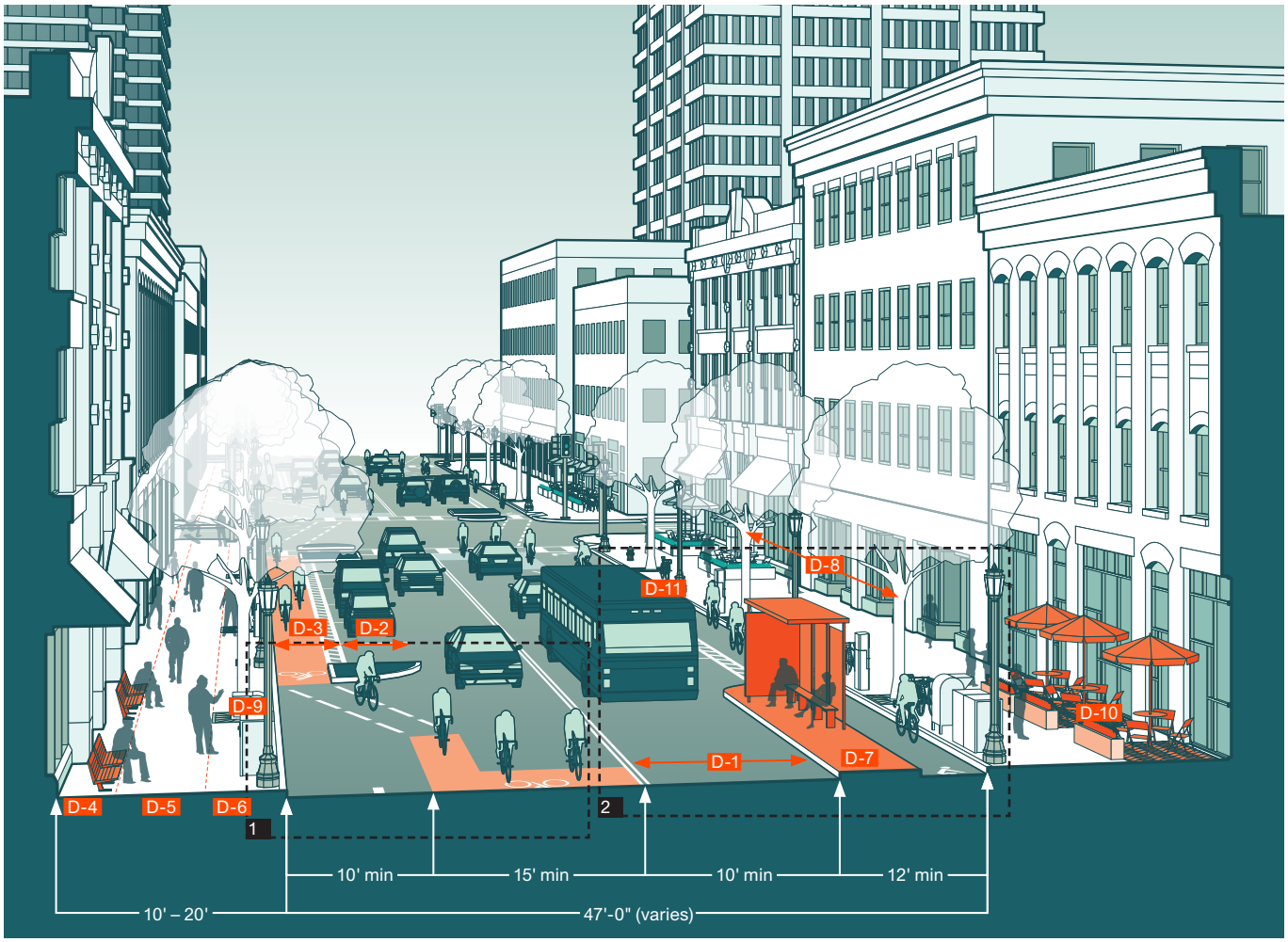


## Residential Street

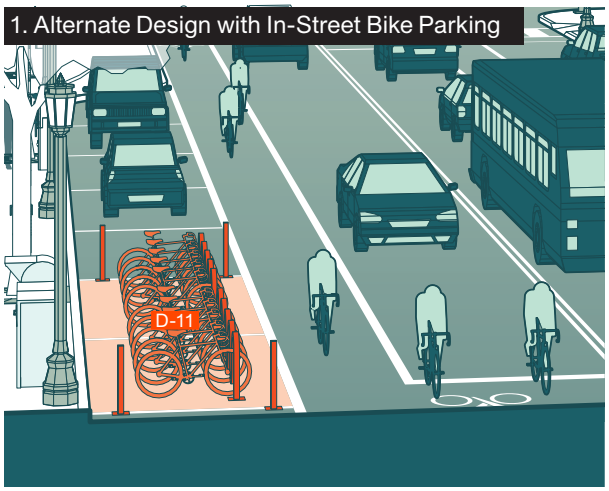
Residential Streets are found all over the neighborhoods of Springfield, from Old Hill to Belmont Heights. They are used for local trips and frequently have on-street parking.

Residential Streets should be designed to maximize residents' safety and quality of life. Designs should encourage lower vehicular speed and the sharing of roadway space between all user groups. Residential Streets should also be retrofitted with greenscape and stormwater infrastructure to enhance their aesthetic appeal and ecological function.

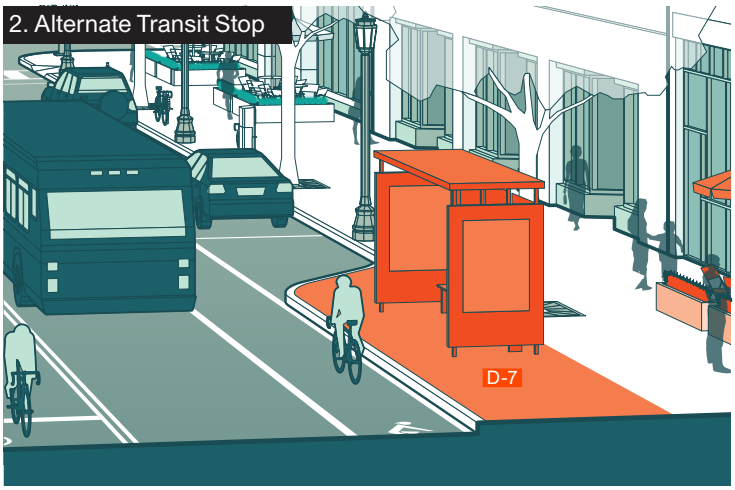
Equivalent MassDOT Classification:
Urban Collector/Local Road




1. Alternate Design with In-Street Bike Parking




2. Alternate Transit Stop



Best Practices

# Downtown Commercial

| | Design Elements and Key Dimensions | Considerations |
|---|---|---|
| Roadway | D-1 10' minimum for travel lanes and turn lanes; 11' minimum for bus lanes;<br>D-2 7' minimum for on-street parking lanes;<br>D-3 5' minimum for on-street bike lanes; 6' is preferred (diagram shows a 3'-wide buffer). | · Narrower lane width has limited impact on road capacity and is associated with a reduction in travel speed;<br>· A high volume of heavy vehicles may require a minimum lane width of 11';<br>· In frequent loading zones, parking lanes may need to become wider. |
| Sidewalk | Total sidewalk width for this street type should be at least 10', divided into zones as follows:<br>D-4 Frontage zone: 0 – 2';<br>D-5 Pedestrian zone: 8' – 12';<br>D-6 Amenity zone: 1'-6" – 6'; minimum for street tree installation is 2'-6". | · Where sidewalk cafes are desired D-10, the preferred width for the frontage zone is 6';<br>· The pedestrian zone must be kept clear of all obstructions;<br>· The minimum width for the pedestrian zone for ADA is 4', with 5' of width every 200'. |
| Transit and Bicycle | D-3 5' minimum (6' preferred) for on-street bike lanes;<br>D-7 Bus bulbs should be at least 40' long and 6' wide. | · Physically separated bicycle facilities, as shown, should be considered on streets with high volume of bicycle traffic;<br>· Where possible, dedicated, physically separated facilities should be placed behind transit stops, as shown. |
| Landscape and stormwater treatment | D-8 On-center spacing of street trees should be 25' to 30' while maintaining adequate clearance from street furniture, loading zones, and intersections. | · For optimal street tree health, allow tree pit size to be 4'×8'. Consider maximizing soil volume by using structural soil in a covered tree trench.<br>· Appropriate tree species should be chosen so as not to interfere with store entrances and signage. |
| Street furniture and street management | D-9 All street furniture should be located a minimum of 18" from the edge of the curb. | · Consider alternative sidewalk uses such as bicycle and motorcycle parking D-11 in lieu of regular parking spaces, especially if narrow sidewalk width doesn't permit bicycle parking;<br>· Consider replacing single-space parking meters with smart, multi-space meters, which increase user convenience and allow variable pricing. |

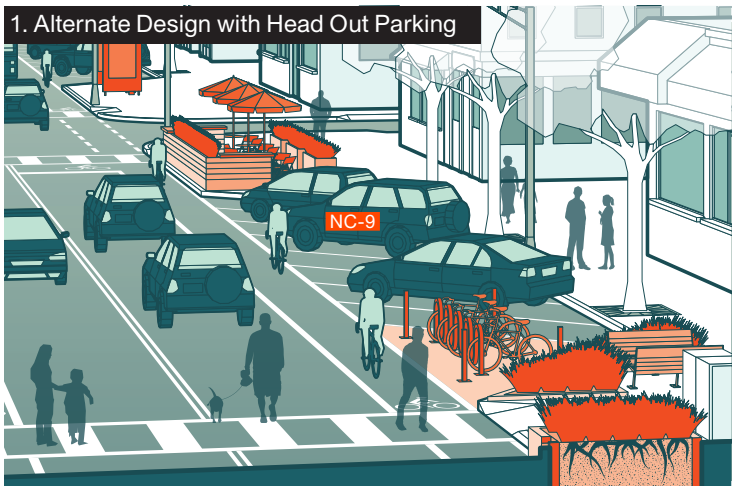

DC-7
DC-5
DC-6
DC-1
DC-2
DC-3
DC-4
8' min
20' min
7' min
10' – 16'
35'-0" (varies)

Best Practices

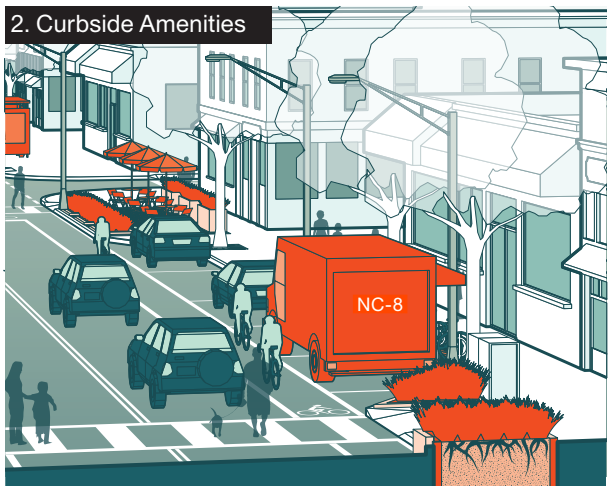
# Downtown Cross Street

| | Design Elements and Key Dimensions | Considerations |
|---|---|---|
| Roadway | Refer to “Downtown Commercial” for the minimum dimensions of travel lanes;<br>DC-1 Contra-flow bike lanes should have a minimum width of 5'; the buffer should have a minimum width of 3'. | · Midblock “neckdowns” create pinch points in the street where pedestrians can cross more safely. They are also effective for reducing vehicular speed. |
| Sidewalk | Total sidewalk width for this street type should be at least 10', divided into zones as follows:<br>DC-2 Frontage zone: 0 – 2';<br>DC-3 Pedestrian zone: 5' – 8';<br>DC-4 Amenity zone: 1'-6" – 6'; minimum for street tree installation is 2'-6". | · Where sidewalk dimensions are constrained, consider using curb extensions to locate additional amenities and greenscape. |
| Transit and Bicycle | DC-1 5' minimum (6' preferred) for on-street bike lanes.<br>DC-5 Where dimensions for a bike lane do not exist and traffic speed is sufficiently low, sharrows can be used to indicate a shared bike lane. Sharrow markings must be placed sufficiently far away from the curb (at least 11') to avoid opening car doors. | · Contra-flow bike lanes shown on this page can provide convenient connections on one-way streets and are useful for completing missing links in the bicycle network.<br>· While there are no fixed dimensional requirements for shared bike lanes, design consideration must be given to the cyclists’ level of comfort, which is impacted by vehicular speed, lane geometry, and cyclists’ sightlines. |
| Landscape and stormwater treatment | DC-6 Stormwater planters are a greenscape alternative to street trees. They can be engineered to fit different constraints. When used on curb extensions, a typical width is 5'-6". | · Stormwater planters can contain a variety of plant types. Where visibility is important, such as at street crossings, they should be designed with low vegetation.<br>· Stormwater planters are ideal snow storage spaces in the winter. |
| Street furniture and street management | DC-7 On-center spacing should be between 50' and 60' for acorn-style street lights. | · Alternative curbside uses such as bicycle and scooter parking and food trucks, identified in “Downtown Commercial”, are also appropriate for Downtown Cross Streets, especially where sidewalk dimensions are constrained. |


1. Alternate Design with Head Out Parking

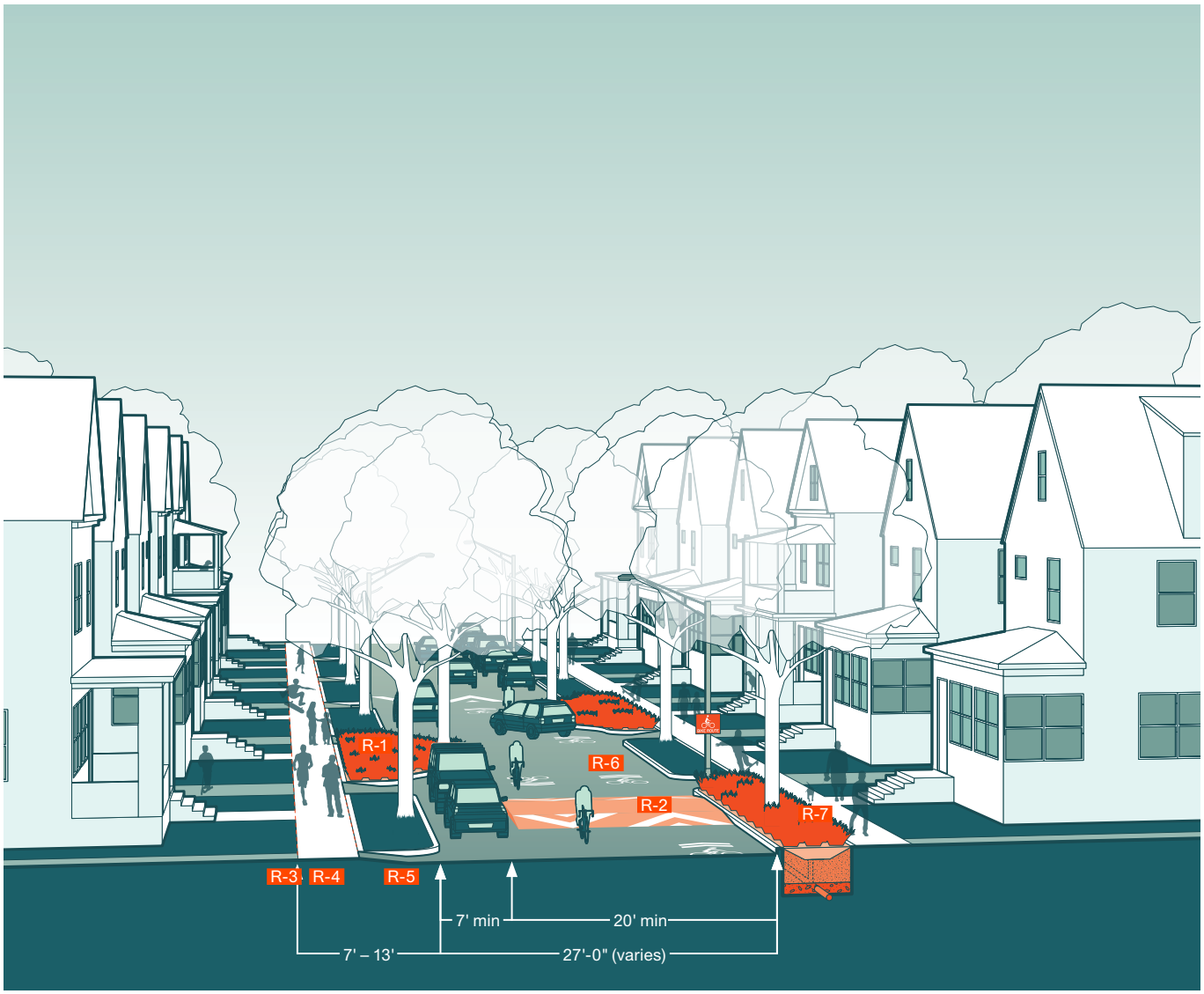



2. Curbside Amenities



# Neighborhood Connector

| | Design Elements and Key Dimensions | Considerations |
|---|---|---|
| Roadway | Refer to “Downtown Commercial” for the minimum dimensions of travel and parking lanes;<br>NC-1 Bike lanes adjacent to narrow parking lanes with high turn-over should be at least 6' wide;<br>NC-2 Curb extensions into the parking lane are typically 6' wide, and can be as long as needed to accommodate desired programs. | · Curb extensions reduce crossing distance and enhance pedestrians’ perception of comfort and safety. They can also include streetscape amenities such as transit stops, seating and sidewalk cafes, and greenscape.<br>· If room allows consider back-in/head-out angled parking. NC-9 This type of on-street parking provides additional safety by allowing the driver to easily see oncoming vehicular and bicycle traffic. |
| Sidewalk | Total sidewalk width for this street type should be at least 7':<br>NC-3 Frontage zone: 0 – 2';<br>NC-4 Pedestrian zone: 5' – 8';<br>NC-5 Amenity zone: 1'-6" – 6'; minimum for street tree installation is 2'-6". | · Where sidewalk dimension are constrained, consider using curb extensions to locate additional amenities and greenscape. |
| Transit and Bicycle | NC-1 Bike lanes adjacent to narrow parking lanes with high turn-over should be at least 6' wide;<br>NC-6 Bus bulbs, if provided, should be at least 40' long and 6' wide. | · The recommended location for transit stops is after the intersection. “Far-side” stops such as these increase pedestrian safety. |
| Landscape and stormwater treatment | Refer to “Downtown Commercial” for guidelines on street trees;<br>NC-7 Stormwater planters are an ideal application on curb extensions, where their typical width is 5'-6". | · Stormwater planters can contain a variety of plant types. Where visibility is important, such as at street crossings, they should be designed with low vegetation. |
| Street furniture and street management | NC-8 On Neighborhood Connectors serving as busy neighborhood main streets where sidewalk space is at a premium, consider curbside amenities such as in-street bicycle parking and food truck spaces in addition to regular parking spaces. | · The placement of street furniture on the sidewalks must not interfere with the 5' minimum clearance for the pedestrian path of travel. |


R-1
R-6
R-2
R-7
R-3
R-4
R-5
7' min
20' min
7' – 13'
27'-0" (varies)

# Residential

| | Design Elements and Key Dimensions | Considerations |
|---|---|---|
| Roadway | Residential streets are low-speed, low-volume environments, typically without clearly demarcated lanes. Roadway design features should focus on encouraging low speed.<br>R-1 Chicanes create "S" curves in the roadway by alternating the side of parking;<br>R-2 Speed humps, typically 3" high and with a ramp length of 6', also reduce speed. They need to be clearly marked to alert drivers and cyclists. | · Chicanes create opportunities to introduce additional greenscape elements. To maintain sightlines, the height of plantings should be low;<br>· Features to reduce speed should be used in series to effectively discourage speeding between them;<br>· Speed humps should provide visual cues for snow plow operators. |
| Sidewalk | Total sidewalk width for this street type should be at least 7':<br>R-3 Frontage zone: 0 – 2';<br>R-4 Pedestrian zone: 5';<br>R-5 Amenity zone: 1'-6" – 6'. | · Wide greenscape zones, where they exist on Residential streets, are ideal places for enhanced greenscape and stormwater treatments such as open tree trenches and rain gardens. |
| Transit and Bicycle | R-6 On streets with low traffic speed and volume, separate bicycle facilities are not necessary. Quiet residential streets are ideal places to implement "bicycle boulevards". | · "Bicycle boulevards" can be enhanced with pavement markings and wayfinding signage. |
| Landscape and stormwater treatment | R-7 Rain gardens are slightly depressed landscape areas in the frontage zone that can slow, filter, and convey stormwater runoff. | · Rain gardens function in a similar way to stormwater planters but can be more appropriate on Residential streets where a more natural aesthetic is desired. |


I-1
9' min
I-2
I-3
50' min
I-4
I-5
I-6
I-6
I-7
10' min
I-8
I-9
I-10

# Intersections

| | Design Elements and Key Dimensions | Considerations |
|---|---|---|
| Roadway | Roadway design at intersections focuses on reducing conflict between turning and through movements for both vehicles and bicycles:<br>I-1 Right turn lanes should be placed to the right of bicycle lanes (similarly, left turn lanes to the left of bicycle lanes); they should be as short as possible and a minimum of 9' wide. | I-9 Curb geometry at intersections impacts vehicular speed and safety. A small physical turning radius (10'~) reduces speed and allows greater sidewalk space for pedestrians. Parking lanes and bike lanes increase effective turning radius. |
| Transit and Bicycle | Bicycle accommodation at intersections focuses on providing clear, direct, and continuous facilities that minimize conflict with vehicle movements:<br>I-2 Physically separate facilities (cycle tracks) should transition into a regular bike lane at intersections;<br>I-3 Bike lanes should be to the left of right turn lanes; dashes indicating the transition should begin a minimum of 50' from the intersection;<br>I-4 **Bike boxes** place cyclists in front of vehicular traffic, increasing their visibility and reducing conflict;<br>I-5 **Two-stage turn queue boxes** offer a safe way to make left turns at multi-lane intersections. | • Where bicycle lanes go through unsignalized or complicated intersections, or where bicycles may not be anticipated, consider striping the bicycle lane through the intersection with dashed lines supplemented with sharrows;<br>• Where possible, transit stops should be located at the far side of the intersection and behind any physically separated bicycle facility. Consult “Downtown Commercial” for dimensions of bus bulbs. |
| Sidewalks | I-6 Consider using **curb extensions** at intersections to incorporate street amenities;<br>I-7 Crosswalks should be at least 10' wide and aligned with the incoming direction of travel. | I-10 Curb ramps need to be installed per ADA requirements, and should contain **detectable warning strips**. |
| Street furniture and street management | I-8 Consider using **leading pedestrian intervals**, **transit priority**, and **dedicated bicycle phases** in signal timing to enhance the level of service for pedestrians, transit, and cyclists. | |

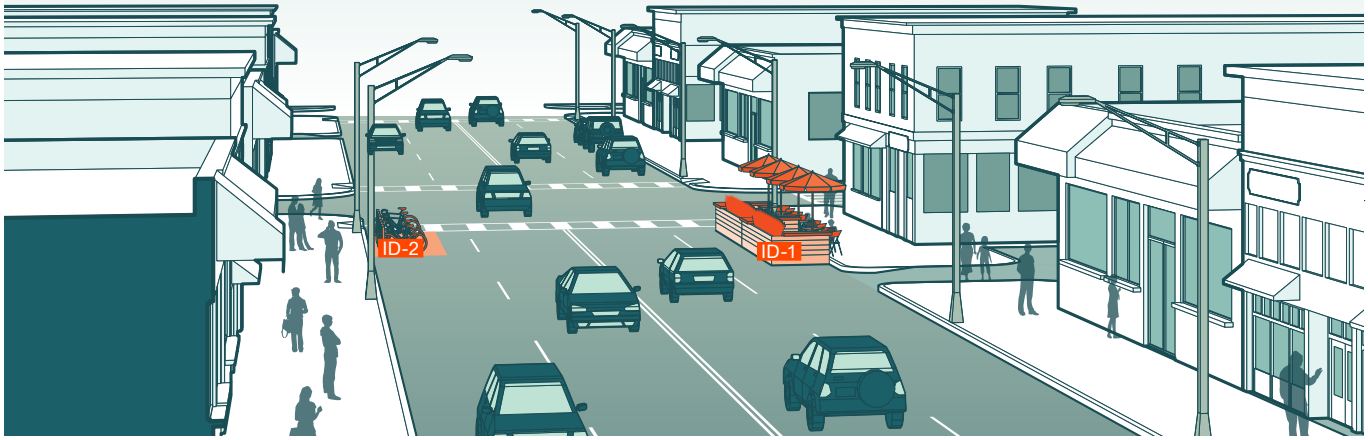
Best Practices

# Interim Design Strategies

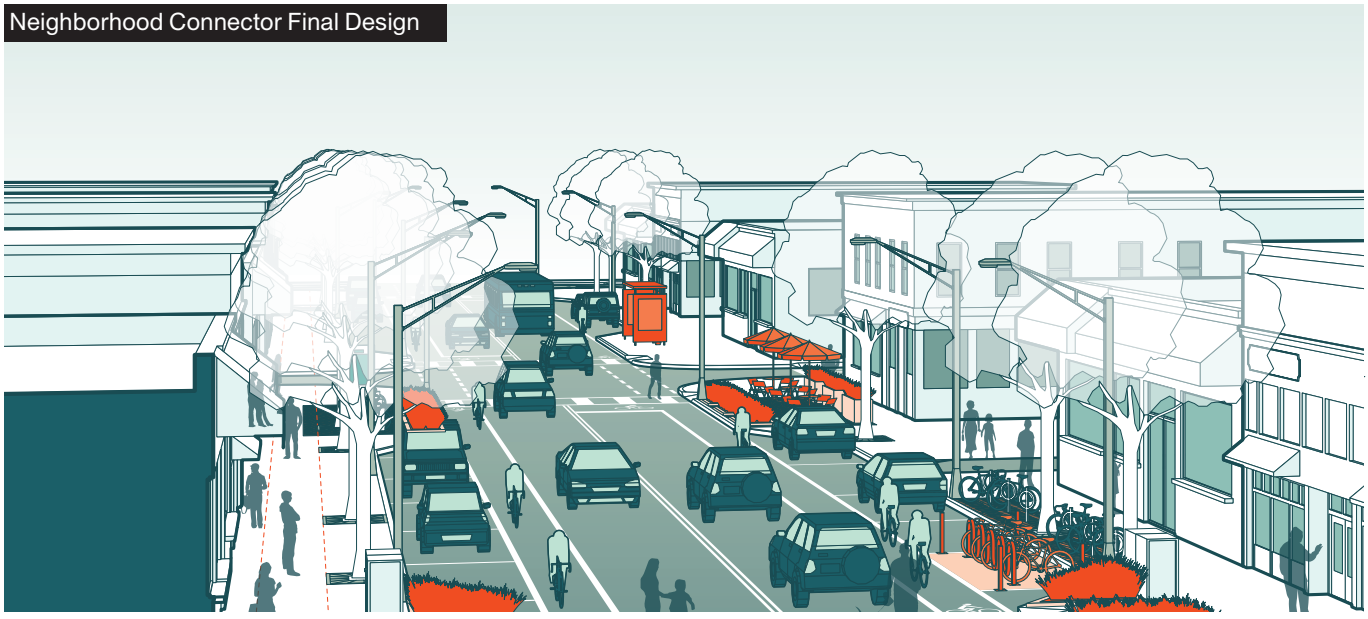
Street redesign and reconstruction projects are usually multi-year, multi-agency efforts that require significant investments of time and money. In advance of such significant commitments, **interim design solutions** can help test and refine final design solutions, build crucial community support, and improve quality of life in a relatively quick and cost-effective way.

The interim strategies shown here focus on reclaiming curbside space for multi-purpose use and traffic calming. They can serve as a first step in a longer-term street redesign project.

Neighborhood Connector Interim Phase

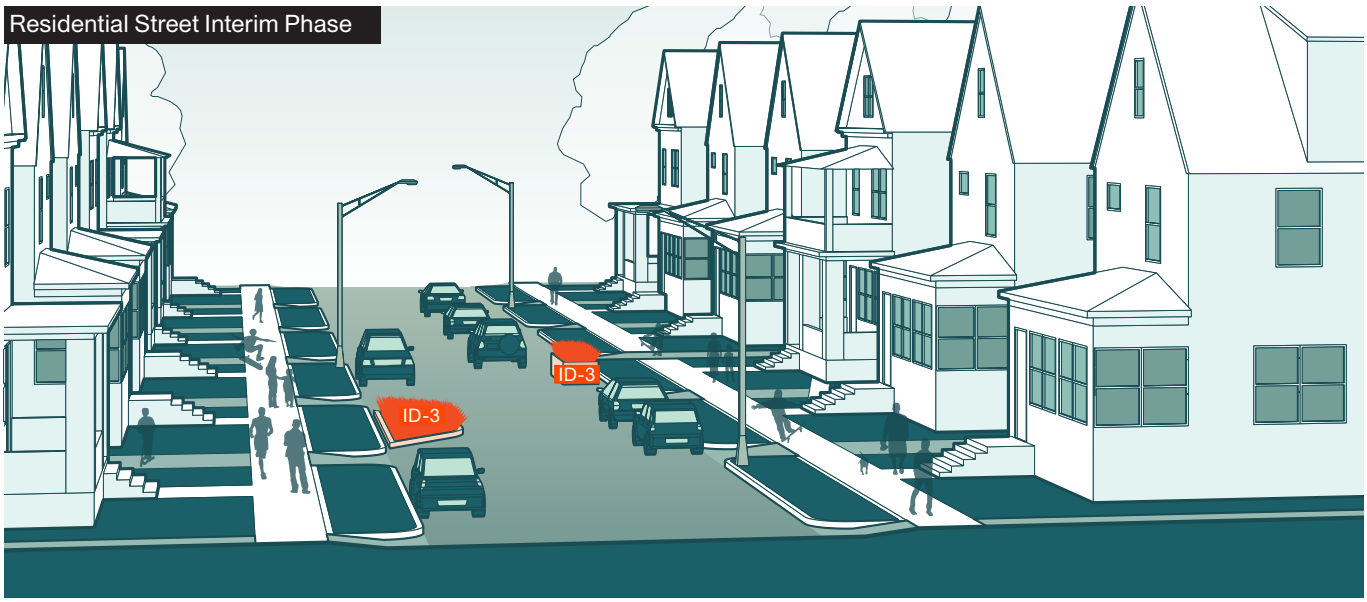



Neighborhood Connector Final Design



| | Design Elements and Key Dimensions |
|---|---|
| Parklets | ID-1 These platforms can take up to several parking spaces and increase valuable sidewalk space for seating, outdoor cafes, etc. |
| In-street Bike Parking | ID-2 Up to 12 bike spaces can fit into a single parking space. In addition to freeing up sidewalk space, in-street bike parking reduces crossing distance at intersections and effectively serves as a curb extension. |

| | Design Elements and Key Dimensions |
|---|---|
| Traffic Calming | ID-3 Planters and **temporary offset islands** can create traffic calming street configurations ahead of full curb relocation. |




# City of Springfield Complete Streets Map


## Downtown One-way



## Downtown Two-way



## Neighborhood Main Street



## Neighborhood Street



## Yield Street



## ntial Boulevard



## Boulevard



## Transit Corridor