



City of Appleton

100 North Appleton Street
Appleton, WI 54911-4799
www.appleton.org

Meeting Agenda - Final Municipal Services Committee

Monday, March 25, 2024

4:30 PM

Council Chambers, 6th Floor

1. Call meeting to order
2. Pledge of Allegiance
3. Roll call of membership
4. Approval of minutes from previous meeting

[24-0337](#) Minutes from March 11, 2024.

Attachments: [03-11-24 MSC Minutes.pdf](#)

5. Public Hearing/Apearances

6. Action Items

[24-0216](#) Approve the proposed modification to the Central Business District Street Vendors Ordinance.

Attachments: [CBD Street Vendor.pdf](#)

Legislative History

2/26/24 Municipal Services held
Committee
Held to next scheduled meeting.

3/11/24 Municipal Services held
Committee
Held to next scheduled meeting.

[24-0338](#) Approve the Complete Streets Documents:

- a. Complete Streets Policy
- b. Pedestrian Crossing Improvements Policy
- c. Priority Project Locations
- d. Complete Streets Design Guide

Attachments: [Appleton Complete Streets Policy & Worksheet \(3-25-24 MSC\).pdf](#)
[Appleton Ped Crossing Improvement Policy with Map \(3-25-24 MSC\).pdf](#)
[Appleton CS Priority Locations \(3-25-24 MSC\).pdf](#)
[Appleton Complete Streets Design Guide \(3-25 MSC\).pdf](#)

[24-0339](#) Approve the new roadway design parameters for Lumbini Estates Subdivision.

Attachments: [Lumbini Estates New Street Design.pdf](#)

[24-0347](#) Request to accept Signals and ITS Standalone Program Grant funding from the Wisconsin DOT to replace signal equipment at controlled intersections. (This item shows as an action item on both Municipal Services Committee and Finance Committee Agendas)

Attachments: [2024.03.25 SISP Grant Request.pdf](#)

7. Information Items

8. Adjournment

Notice is hereby given that a quorum of the Common Council may be present during this meeting, although no Council action will be taken.

Reasonable Accommodations for Persons with Disabilities will be made upon Request and if Feasible.



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Meeting Minutes - Final Municipal Services Committee

Monday, March 11, 2024

4:30 PM

Council Chambers, 6th Floor

1. Call meeting to order

2. Pledge of Allegiance

3. Roll call of membership

Present: 3 - Van Zeeland, Meltzer and Siebers

Excused: 2 - Alfheim and Doran

4. Approval of minutes from previous meeting

[24-0275](#)

Minutes from February 26, 2024

Attachments: [02-26-24 MSC Minutes.pdf](#)

**Siebers moved, seconded by Meltzer, that the Minutes be approved. Roll Call.
Motion carried by the following vote:**

Aye: 3 - Van Zeeland, Meltzer and Siebers

Excused: 2 - Alfheim and Doran

5. **Public Hearing/Appearances**

6. **Action Items**

[24-0276](#)

Approve the installation of all-way stop control at the intersection of Capitol Drive and Conkey Street. Follow up to a six month trial period.

Attachments: [Conkey Capitol \(post 6-mo eval for 2-way stop to all-way stop\).pdf](#)

Siebers moved, seconded by Meltzer, that the Report Action Item be recommended for approval. Roll Call. Motion carried by the following vote:

Aye: 3 - Van Zeeland, Meltzer and Siebers

Excused: 2 - Alfheim and Doran

[24-0277](#)

Approve the proposed parking change on Drew Street, north of North Street. Follow up to a six month trial period.

Attachments: [Drew n-o North \(post 6-mo eval\).pdf](#)

Siebers moved, seconded by Meltzer, that the Report Action Item be recommended for approval. Roll Call. Motion carried by the following vote:

Aye: 3 - Van Zeeland, Meltzer and Siebers

Excused: 2 - Alfheim and Doran

[24-0278](#)

Approve request from Northcentral Construction Corporation for a temporary street occupancy permit within Oneida Street and Harris Street for the construction of Rise Apartment for a period ending on June 30, 2024.

Attachments: [Rise Apartments 24-025-T.pdf](#)

Siebers moved, seconded by Meltzer, that the Report Action Item be recommended for approval. Roll Call. Motion carried by the following vote:

Aye: 3 - Van Zeeland, Meltzer and Siebers

Excused: 2 - Alfheim and Doran

[24-0279](#)

Approve request from RYE Restaurant for an annual street occupancy permit along 308 W. College Avenue for a window box overhang/obstruction.

Attachments: [RYE Window Planter - Amenity.pdf](#)

Siebers moved, seconded by Meltzer, that the Report Action Item be recommended for approval. Roll Call. Motion carried by the following vote:

Aye: 3 - Van Zeeland, Meltzer and Siebers

Excused: 2 - Alfheim and Doran

[23-1251](#)

Resolution #11-R-23 Overnight Parking

Attachments: [#11-R-23 Overnight Parking.pdf](#)
[Overnight Parking Resolution #11-R-23 Staff memo.pdf](#)
[Overnight Parking Resolution Additional Information_Final.pdf](#)

Held for two meeting cycles.

Meltzer moved, seconded by Siebers, that the Report Action Item be held. Roll Call. Motion carried by the following vote:

Aye: 3 - Van Zeeland, Meltzer and Siebers

Excused: 2 - Alfheim and Doran

[24-0216](#)

Approve the proposed modification to the Central Business District Street Vendors Ordinance.

Attachments: [CBD Street Vendor.pdf](#)

Held to next scheduled meeting.

Van Zeeland moved, seconded by Siebers, that the Report Action Item be held. Roll Call. Motion carried by the following vote:

Aye: 3 - Van Zeeland, Meltzer and Siebers

Excused: 2 - Alfheim and Doran

7. Information Items

[24-0280](#)

Lawe Street Public Information Meeting Notice, March 18, 2024.

Attachments: [Lawe Street Public Information Meeting.pdf](#)

[24-0281](#)

Interstate 41 (I41) Expansion Project Public Meetings and Construction Overview.

Attachments: [I41 Project Update.pdf](#)

[24-0282](#)

Inspection Division Permit Summary Comparison for February 2024.

Attachments: [Inspection Report - February 2024.pdf](#)

8. Adjournment

Siebers moved, seconded by Meltzer, that the meeting be adjourned. Roll Call. Motion carried by the following vote:

Aye: 3 - Van Zeeland, Meltzer and Siebers

Absent: 2 - Alfheim and Doran



"... meeting community needs ... enhancing quality of life."

DEPARTMENT OF PUBLIC WORKS
Engineering Division
100 North Appleton Street
Appleton, WI 54911
TEL (920) 832-6474

To: Municipal Services Committee
From: Danielle Block, P.E. Director of Public Works
Date: February 20, 2024
Re: Request for Central Business District Street Vendors Ordinance Modification

As part of the initiative to address nightlife safety concerns, staff has identified a modification to the existing Central Business District Street Vendor Ordinance. The following recommendation seeks to reduce gatherings at and around bar close time, reduce the opportunities for crowding, improve visibility along corridors and provide safer access on and along the sidewalk and amenity strips of the downtown area. Staff recommends amending the permissible hours for Street Vendor (Food Trucks) in the Central Business District, requiring Food Trucks to end service by 12:00 am Midnight rather than the current time of 4:00 am.

The entirety of the Central Business District Street Vendor Code is included as an attachment. Staff is recommending modification to Sec. 9-639 Conduct of business generally – CBD street vendors (e), as shown below.

(e) A licensee may vend, sell or dispose of, or offer to sell, vend, or dispose of goods, wares, or merchandise, between the hours of 8:00 a.m. and 9:00 p.m., except between Drew Street and Richmond Street on College Avenue, where sales shall be allowed between 8:00 a.m. and ~~4:00 a.m.~~12:00 a.m. (midnight).

**DIVISION 3. CENTRAL BUSINESS DISTRICT
STREET VENDORS**

Sec. 9-626. Purpose.

It is the intent of the Common Council to control and regulate the use of streets and sidewalks to the end that the safe use of sidewalks by pedestrians and roads by vehicles is ensured and the health, safety and general welfare of the public is protected and maintained. Consistent with this policy, the purpose of these regulations is to assure the safe and orderly performance of selling on streets and sidewalks within the Central Business District.

(Ord 73-12, §1, 8-21-12)

Sec. 9-627. Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Amenity strip shall mean the area between the curb and the defined pedestrian right-of-way along College Avenue between Richmond Street and Drew Street. On all other streets, amenity strip shall mean a minimum four- (4-) foot width between the curb and an eight- (8-) foot pedestrian right-of-way.

CBD street vendor means any person who sells or offers for sale any goods, wares, merchandise, or services for sale in the CBD (Central Business District) from any mobile unit which is propelled by human power, including mobile food establishments.

Mobile food establishment means a restaurant or retail food establishment where food is served or sold from a movable vehicle, push cart, or trailer which periodically or continuously changes location and requires a service base to accommodate the unit for servicing, cleaning, inspection and maintenance or except as specified in the Wisconsin Food Code. Mobile food establishment does not include a vehicle which is used solely to transport or deliver food or a common carrier regulated by the state or federal government.

Mobile sidewalk/amenity strip unit shall mean a pushcart or other device which is on wheels and of sufficiently lightweight construction that it can be moved from place to place by one (1) adult person without any auxiliary power. The device shall not be motorized so as to move on its own power.

On-street unit shall mean any vehicle or pedal-powered unit that is readily movable, and designed and equipped to prepare, serve, or sell food.

Vehicle shall mean any motor vehicle as defined by Wis.

Stats. §340.01(35) or trailer as defined by Wis. Stats. §340.01(71).
(Ord 25-05, §1, 4-12-05; Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-628. License and Street Occupancy Permit required.

(a) No CBD street vendor shall vend, sell or dispose of or offer to vend, sell or dispose of goods, wares or merchandise, produce or any other thing at any place whatsoever within the CBD without first obtaining a license as set forth in this division. Licensees may obtain no more than two (2) Street Occupancy Permits for any portion of the Central Business District west of Appleton Street; and no more than two (2) Street Occupancy Permits for any portion of the Central Business District east of Appleton Street.

(b) No more than eight (8) Street Occupancy Permits for mobile sidewalk/amenity strip units shall be issued between Appleton Street and Richmond Street. No more than eight (8) Street Occupancy Permits for mobile sidewalk/amenity strip units shall be issued between Appleton Street and Drew Street on College Avenue. This shall include all vendors using such units, whether vending goods or food.

(c) No more than two (2) Street Occupancy Permits for mobile sidewalk/amenity strip units shall be issued per block. One (1) block shall be defined to mean the area between intersections on a single side of the street.

(d) No more than eight (8) Licenses may be issued for on-street units.
(Ord 25-05, §1, 4-12-05; Ord 76-11, §1, 4-12-11; Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12; Ord 11-22, §1m 1-19-22)

Sec. 9-629. Liability insurance.

To hold a Street Occupancy Permit, the permit holder must have in force liability insurance and must agree to indemnify, defend and hold the City, its employees and agents harmless against all claims, liability, loss, damage, or expense incurred by the City as a result of any injury to or death of any person or damage to property caused by or resulting from the activities for which the permit is granted. As evidence of liability insurance, the permit holder shall furnish a Certificate of Insurance, on a form acceptable to the City, evidencing the existence of adequate liability insurance naming the City of Appleton, its employees and agents as additional insureds in an amount not less than one million dollars (\$1,000,000). Whenever such policy is cancelled, not renewed, or materially changed the insurer and the permit holder shall notify the City of Appleton by certified mail.

(Ord 25-05, §1, 4-12-05; 76-11, §1, 4-12-11; Ord 3-12, §1,

LICENSES, PERMITS AND BUSINESS REGULATIONS

1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-630. Application for license; license fees.

(a) **Non-food vendors.** Any person desiring to engage in business vending goods other than mobile food establishments, for which a license is required under this division shall obtain a Street Occupancy Permit/License Application form from the Department of Public Works. The application shall state the nature of and the place where the business is to be carried on, a general description of the things intended to be sold, disposed of or contracted for, the name, date of birth and permanent address of all the employees to be covered by such license, the name and address of the person the applicant represents, and the place of residence of the applicant for the two (2) years previous. The requirements of §9-631 shall be complied with before the permit is issued. At the time of filing the application, an application fee shall be paid to the Director of Finance to cover the cost of the investigation of the facts stated in the application. The amount of the initial application fee shall be on file in the Department of Public Works. For purposes of this section, an initial application is any application by a person who has not held a valid license under this division within three (3) years of the date of application. The application shall be sworn to by the applicant and filed with the Department of Public Works, and shall contain such additional information as the Chief of Police and City Sealer shall require for the effective enforcement of this division and the safeguarding of the residents of the City from fraud, misconduct or abuse. Religious, charitable, patriotic or philanthropic agencies or their agents shall be required to comply with §9-641 et seq.

(b) **Food vendors.** Any person desiring to engage in business as a mobile food establishment, for which a license is required under this division shall first obtain a Mobile Food Service License from the Department of Health. The Department of Health will advise the applicant of the available locations for mobile sidewalk/amenity strip units. The applicants then obtain a Street Occupancy Permit/License Application form from the Department of Public Works. The application shall state the nature of and the place where the business is to be carried on, a general description of the foodstuffs to be sold, the name, date of birth and permanent address of all the employees to be covered by such license, the name and address of the person the applicant represents, and the place of residence of the applicant for the two (2) years previous. The requirements of §9-631 shall be complied with before the permit is issued. At the time of filing the application, an application fee shall be paid to the Director of Finance to cover the cost of the investigation of the facts stated in the application. The amount of the initial application fee shall be on file in the Department of Public Works. For purposes of this section, an initial application is any application by a person who has not held a valid license under this division within three (3) years of the date

of application. The application shall be sworn to by the applicant and filed with the Department of Public Works, and shall contain such additional information as the Chief of Police shall require for the effective enforcement of this division and the safeguarding of the residents of the City from fraud, misconduct or abuse. Religious, charitable, patriotic or philanthropic agencies or their agents shall be required to comply with §9-641 et seq.

(Ord 25-05, §1, 4-12-05; Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-631. License investigation.

Upon receipt of an application for a license under this division, the Chief of Police and Sealer of Weights and Measures shall institute such investigation of the applicant as they deem necessary for the protection of the public good, and shall endorse their approval or disapproval upon the application within a reasonable time, not to exceed seven (7) working days, after it has been filed. The Department of Public Works shall issue approved Street Occupancy Permits/Licenses in accordance with such findings after presentation by the applicant of a receipt of the Director of Finance showing payment of the required fee. Should the investigations in this division include a recommendation for denial, the Department of Public Works shall refer the license to the Municipal Services Committee for action.

(Ord 25-05, §1, 4-12-05; Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-632. Bond.

If the Chief of Police determines from his or her investigation of the application for a license under this division that the interests of the City or of inhabitants of the City require protection against possible misconduct of the licensee or if the applicant is otherwise qualified but due to causes beyond his or her control is unable to supply all of the information required by §9-630, he or she may require the applicant to file with the City Clerk a bond in the sum of five hundred dollars (\$500) with surety acceptable to the Department of Public Works, running to the City, conditioned that the applicant will fully comply with the ordinances of the City and laws of the state relating to peddlers, solicitors, canvassers or transient merchants and guaranteeing to any citizen of the City doing business with him or her that the property purchased will be delivered according to the representations of the applicant, provided that action to recover on any such bond shall be commenced within six (6) months after the expiration of the license of the principal.

(Ord 25-05, §1, 4-12-05; Ord 76-11, §1, 4-12-11; Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-633. Issuance and term of Street Occupancy Permit/License; restrictions on use; identification card.

(a) In order to obtain a CBD Street Vendor Street Occupancy Permit/License, the license holder must exhibit a valid certificate of insurance as required by §9-628 of this article. Licenses and Street Occupancy Permits required under this division shall be issued on a calendar year basis beginning on January 1 and expiring on December 31.

(b) Street Occupancy Permits/Licenses for CBD Street Vendors using mobile sidewalk/amenity strip units shall be issued on a calendar year basis beginning on January 1 and expiring on December 31. At the time of the application for a Street Occupancy Permit, there shall be notification to the business at the address applied for, and the adjacent business owners.

(c) Mobile food establishments with on-street units shall not receive a Street Occupancy Permit, however they will require a license under this article, the fee for which shall be the same as for the Street Occupancy Permit/License.

(d) All Street Occupancy Permits/Licenses shall be numbered in the order in which they are issued and shall state clearly the place where the business may be carried on, including the location of mobile sidewalk/amenity strip units used by CBD street vendors, as well as the kind of goods, wares and merchandise to be sold, disposed of or contracted for, the dates of issuance and expiration of the license.

(e) The Department of Public Works, by the method they deem appropriate, shall clearly designate the location on the amenity strip each mobile sidewalk/amenity strip unit is licensed to use for sales. In no circumstance shall any of said licensed areas be within twenty (20) feet of another mobile sidewalk/amenity strip unit's licensed area.

(f) Licenses issued under this division shall not be valid on the following special event days: Flag Day Parade, License to Cruise/Octoberfest, and Christmas Parade; and no vendor shall operate within the Farmers Market solely under this permit. Any CBD vendor must obtain space from the Farmers Market organizers to operate within those confines. No CBD vendor may operate within a two (2) block radius of any other special event held within the corporate limits of the city. No license shall be granted to a person under eighteen (18) years of age unless a street trade permit is obtained pursuant to W.S.A. §103.25 and no applicant to whom a license has been refused or who has had a license which has been revoked shall make further application until a period of at least six (6) months has elapsed since the last previous rejection or revocation, unless he or she can show that the reason for such rejection or revocation no longer exists. Every license holder, while exercising his or her license, shall post the license in a

conspicuous place on the premises or his or her person and shall exhibit the license upon demand of any officer, customer or prospective vendee. A license shall not be assignable and any holder of such license who allows it to be used by any other person shall be in violation of this division. Whenever a license is lost or destroyed, a duplicate in lieu thereof may be issued by the Department of Public Works under the original application upon the filing with him or her by the license holder of an affidavit setting forth the circumstances of the loss and what, if any, search has been made for the recovery of the license, and upon the payment of a fee. All licensees shall be issued a photo identification card by the City Clerk at the time the license is issued. Any agent or employee of the licensee shall obtain a photo identification card. The amount of the fee for the lost license and photo identification card shall be on file in the office of the City Clerk.

(g) Any licensee under this division who wishes to change the location of mobile sidewalk/amenity strip units licensed under this division shall be allowed to request one (1) change in location per unit during a license year. The licensee must relinquish the Street Occupancy Permit/License for the abandoned location, and obtain a Street Occupancy Permit/License for the new location. An administrative fee, on file with the Department of Public Works shall be charged for the change and re-issuance of the license. The new location must meet all the applicable restrictions under this division.
(Ord 285-05, §1, 4-12-05; Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-634. Appeal of denial of license.

If the investigating authority denies an application for a license under this division, the Department of Public Works shall forthwith notify the applicant by certified mail, return receipt requested, of the denial and the reason therefore. The notice shall indicate the date and time of the review of the denial by the Municipal Services Committee and the right of the applicant to appear before the Committee. The Municipal Services Committee shall hear any person for or against granting the license and shall report its recommendation to the Common Council, which shall grant or deny the license.
(Ord 25-05, §1, 4-12-05; Ord 76-11, §1, 4-12-11; Ord 3-12, §1, 1-10-12, Ord 73-12, §1, 8-21-12)

Sec. 9-635. Revocation of license.

The Common Council may revoke any license under this division pursuant to §9-29 for violation by any vendor or his or her employee or agent of any provision of this division or any ordinance of the City which renders future vending inimical to the public health, safety or welfare, or for fraud or misrepresentation in solicitation under this division.

LICENSES, PERMITS AND BUSINESS REGULATIONS

(Ord 25-05, §1, 4-12-05; Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-636. Renewal of CBD Street Vendor Licenses.

In order to renew a CBD Street Vendor Street Occupancy Permit/License, the license holder must exhibit to the Department of Public Works a valid certificate of insurance as required by §9-629 above. A CBD Street Vendor using a mobile sidewalk/amenity strip unit who wishes to retain the same location upon renewal of a license must renew their Street Occupancy Permit/License no later than December 15, otherwise the location will be made available to any licensee. The same procedure for initial application shall apply to renewals.

(Ord 25-05, §1, 4-12-05; Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-637. Surrender of license; alteration of license; failure to display license.

On the expiration of a license issued under this division, the holder shall surrender the license to the Chief of Police. No person shall alter or change in any manner any license issued under the provisions of this division, and such alteration or the failure of the holder of the license to display the license in a conspicuous place on the premises or his or her person or to exhibit the license upon demand of any officer or customer or prospective vendee shall be cause for revocation of such license.

(Ord 25-05, §1, 4-12-05; Ord 76-11, §1, 4-12-11; Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-638. Prepayments.

All orders taken by a license holder under this division who accepts or receives payment or deposit of money in advance of final delivery shall be in writing, in duplicate, stating the terms thereof and the amount paid in advance, and one (1) copy shall be given to the purchaser at the time the deposit of money is paid.

(Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-639. Conduct of business generally – CBD street vendors.

A CBD street vendor holding a license under this division shall be subject to the following:

(a) A licensee shall not falsely or fraudulently misrepresent the quantity, character or quality of any article offered for sale or offer for sale any unwholesome or tainted food or foodstuffs, nor intentionally misrepresent to any prospective customer the purpose of his or her solicitation, the name of the business of his or her principal, if any, the source of supply of the goods, wares or merchandise which he or she sells or offers for sale or the disposition of the proceeds or profits of his or her sales.

(b) A licensee shall not use the license provided by the City after expiration or revocation of the license.

(c) A licensee shall keep the premises in a clean and sanitary condition and the foodstuffs offered for sale well covered and protected from dirt, dust and insects. All food vendors shall comply with the requirements of state and local authorities, including, but not limited to, the provisions of Article VI of this chapter.

(d) A licensee shall not operate in a congested area where such operation impedes or inconveniences public use. No licensee shall engage in the licensed business in any public park, playground, school, library or other public premises. For the purpose of this subsection, the judgment of a police officer, exercised in good faith, shall be deemed conclusive as to whether the area is congested or the public impeded or inconvenienced.

(e) A licensee may vend, sell or dispose of, or offer to sell, vend, or dispose of goods, wares, or merchandise, between the hours of 8:00 a.m. and 9:00 p.m., except between Drew Street and Richmond Street on College Avenue, where sales shall be allowed between 8:00 a.m. and 4:00 a.m.

(f) The operating area shall not exceed thirty-two (32) square feet of sidewalk/amenity strip area, including the area of the mobile unit, the operator, and when externally located, a trash receptacle.

(g) The length of the mobile unit shall not exceed eight (8) feet.

(h) The height of the mobile unit, excluding canopies, umbrellas, or transparent enclosures, shall not exceed six (6) feet.

(i) The mobile unit shall be entirely self-contained in regards to gas, water, electricity, and equipment required for operation of the unit. This includes any signage associated with the vendor.

(j) No person may conduct business on a sidewalk in any of the following places:

- (1) Within twenty (20) feet of the intersection of the sidewalk with any other sidewalk except on the amenity strip on College Avenue between Drew Street and Richmond Street.
- (2) Within ten (10) feet of the extension of any building entrance or doorway to the curb line.
- (3) Within fifty (50) feet of the main entrance of any business selling same or similar products during the hours said business is open for the

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sale of said products, unless written permission is granted by said business and such documentation is placed on file with the Department of Public Works.

- (4) Once a vendor is licensed, and a Street Occupancy Permit has been obtained, the change of use of those businesses in buildings within the fifty (50) feet limitation noted above shall not affect an existing license nor the timely renewal of the same.

(k) All persons conducting business on a sidewalk or amenity strip must pick up any paper, cardboard, wood or plastic containers, wrappers, or any litter in any form that is deposited by any person on the sidewalk or street within twenty-five (25) feet of the place of conducting business. Each person conducting business on a sidewalk or amenity strip under the provisions of this division shall carry a suitable container for placement of such litter by customers or other persons.

(l) Vendors shall maintain their sales location in a clean, hazard-free condition, and shall not discharge materials onto the sidewalk, gutters or storm drain. All liquid residue must be cleaned up, or in the alternative, protective matting may be placed on the amenity strip to absorb any liquid residue. Said matting must be removed when the vendor closes for the day.

(m) No person may make any loud unreasonable noise of any kind by vocalization or otherwise for the purpose of advertising or attracting attention to his or her wares.

(n) No person shall conduct business as defined herein at a location other than that designated on his or her Street Occupancy Permit/License.

(o) No permitted mobile sidewalk/amenity strip units shall be left unattended on a sidewalk or amenity strip nor remain on the sidewalk or amenity strip between 4:00 a.m. and 8 a.m.
(Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12)

Sec. 9-640. Vending of products from vehicles or other on-street unit in the public streets.

(a) No food shall be sold from a vehicle other or on-street unit in any public street in the City of Appleton except in compliance with the requirements of this section and §9-639 above.

(b) Any vehicle or other on-street unit used for vending food in any public street must be designed and constructed specifically for the purpose of vending the product or products to be vended.

(c) Each such vehicle or other on-street unit used for

vending food shall be licensed for such use by the Department of Health.

(d) If such vehicle or other on-street unit is a motor vehicle, it must have valid license plates and registration as provided by Chapter 341 of the Wisconsin Statutes.

(e) A vehicle or other on-street unit which is operated for the purpose of selling food from the unit in the public streets shall be operated only by a person who shall have obtained a license under this division.

(f) In addition, the operator or the owner of any motor vehicle shall furnish proof of current insurance issued by an insurance company authorized to do business in the State of Wisconsin and shall maintain such insurance as a condition of licensing under this division. The insurance shall provide coverage for bodily injury, including accidental death, as well as for claims for property damage which may arise from the operations under the license. The policy limits of such insurance shall be the same as those required in §9-629 above.

(g) Amplified music or other sounds from any vehicle used for the purpose of vending products in the public streets shall comply with the applicable requirements of Chapter 12, Article IV of this code pertaining to noise.

(h) No sales shall be made from a vehicle except from the curbside of said vehicle.

(i) No sales shall be made within fifty (50) feet of the main entrance of a licensed food establishment during the hours said business is open to the public unless written permission is granted by an authorized representative of that establishment to the permit holder.

(j) No vehicle may violate any traffic or parking statute or ordinance when stopping to make sales. This includes plugging parking meters, if applicable and not remaining in a location for a longer period of time than the meter allows. Meter bags will not be issued to license holders under this article.

(k) No on-street unit may park adjacent to a sidewalk café or an establishment with a Street Occupancy Permit for tables and chairs when the tables and chairs are present on the amenity strip.
(Ord 3-12, §1, 1-10-12; Ord 73-12, §1, 8-21-12; Ord 12-22, §1, 1-19-22)

Editor's Note: Chapter 9, Division 3 was repealed and recreated via ordinance 3-12 adopted by the Common Council on January 1, 2012, published January 9, 2012 and became effective January 10, 2012.

Editor's Note: Chapter 9, Division 3 was repealed and recreated via ordinance 73-12 adopted by the Common Council on August 15, 2012, published August 20, 2012 and became effective August 21, 2012.

Vision

Appleton will strategically use resources to plan, design, build and maintain a multi-modal network of streets so that community gathering and traveling by walking, rolling, biking, transit, and driving is a safe and positive experience for people of all backgrounds, ages and abilities, supporting Appleton's local economy, health and environment.

Scope

The Complete Streets Policy applies to all transportation projects, including new construction, reconstruction, rehabilitation and maintenance projects and street projects related to land subdivision or development. Safety and mobility for the most vulnerable road users will be prioritized in planning, project scoping, design, implementation, and maintenance, while all modes are considered. Examples of vulnerable road users can include people walking, rolling or on bicycle, people with disabilities, children or elderly people and people with economic or other barriers that limit their transportation options.

During construction projects and repair work, accommodations will be provided for pedestrians, cyclists, transit users and motor vehicles to provide safe and comfortable temporary access or detours. Private development that affects access to the public right-of-way must provide accommodations or detours for all users.

Deviations

The Complete Streets Policy allows City staff to draw from the best-known practices available and is not intended to limit discretion in City decision-making. Deviations from the Complete Streets Policy are anticipated under the following circumstances:

- Accommodation for the specified users is prohibited, such as on interstate freeways
- The cost of accommodation is excessively disproportionate to the need or probable use, or there is a documented absence of current and future need as specified by adopted long-range plans, including local and regional comprehensive and transportation plans
- A project along the same corridor is programmed in the future to provide accommodations for specific user groups
- The project is an emergency repair such as a broken water main. Temporary accommodations for all modes currently served by the corridor should still be made when feasible.

The Director of Public Works shall provide in writing the rationale for deviations from the Complete Streets Policy when requested by the Common Council.

Design Guidelines

The Appleton Complete Street Design Guidelines and Downtown Streetscape Design Guide will serve as primary design guidance. Appleton will continually look to best practices in national design guidance.

Design decisions will be documented using the Complete Streets Checklist.

Supervisors in the Department of Public Works and the Community & Economic Development Department will be encouraged to provide or make available training on the Complete Streets Policy and

Design Guidelines for all staff who are responsible for site and road improvements, operations and maintenance and for external partners including partner agency staff and private land developers, to support implementation of the policy.

Land Use and Context

Transportation projects will reflect the needs of the surrounding context, including existing and planned future development, specialized land uses such as parks or schools, and the presence of vulnerable users such as youth, seniors, people with disabilities, and low-income residents or workers.

New or revised land use policies, land use and transportation plans and zoning ordinances will be required to reflect and align with the Complete Streets policy.

Coordination

The Department of Public Works will be responsible for coordinating an inter-agency Complete Streets Policy approach as appropriate with internal city departments, East Central Wisconsin Regional Plan Commission, Outagamie County, Calumet County, Winnebago County, Wisconsin Department of Transportation, neighboring municipalities, and other internal and external stakeholders as appropriate. The Community & Economic Development Department and Public Works Department will be responsible for working with private developers to implement the Complete Streets policy through new subdivision or land development.

Implementation

This policy will be implemented by leveraging and prioritizing existing resources as well as seeking additional funding that supports safety and mobility for all users.

Appleton will review the annual capital budgeting process for opportunities to implement this policy. Opportunities include:

- Prioritize reconstruction and rehabilitation projects that meet the goals of the Complete Streets policy by filling in a gap in a user network (pedestrian, bicycle, transit, auto)
- Prioritize reconstruction and rehabilitation projects that serve vulnerable users, such as youth, seniors, people with disabilities and low-income residents or workers
- Prioritize reconstruction and rehabilitation projects that serve areas of the city with high potential for active trips, or that meet other city-adopted mobility goals
- Set aside funding for specific network priorities, such as closing pedestrian or bicycle network gaps or making stand-alone crossing improvements
- Set aside funding for Complete Streets demonstration and quick build projects

The Public Works Department will proactively share the Complete Streets policy with other road authorities, including Outagamie County, Calumet County, Winnebago County, and Wisconsin Department of Transportation, and will encourage agency partners to implement the Complete Streets policy on roadways within city limits.

The Public Works Department and Community and Economic Development Department will seek funding from outside sources to implement the Complete Streets policy.

Reporting and Evaluation

The Department of Public Works will provide an annual update on implementation of the Complete Streets policy, including:

- Infrastructure: a summary of infrastructure improvements aimed at improving safety and mobility, including pedestrian and bicycle infrastructure improvements
- Safety: Updated severe and fatal crash statistics for all modes of transportation, including demographic data as available, using data from the Wisconsin Department of Transportation

This policy will be reviewed for consistency with other City policies no less than every ten years.

Project Overview

Street name:

Project extent:

Funding source / potential grant opportunities:

Construction Year:

Partner road authority agencies / bordering communities:

Aldermanic District:

Context

This section summarizes the context for the street project. For more background information on the street context questions, see pages 7-11 of the Appleton Complete Streets Design Guide.

What type of project is this?

Reconstruction | Resurfacing | Spot Improvements | New Streets / Urbanizing Streets | Quick Build

What is the official class designation of the street?

Local | Collector | Arterial

What is the existing land use context?

Residential | Commercial | Mixed-Use | Industrial / Business Park | Park / School

Are there any anticipated land use or development changes in the future?

Is any part of the segment on a priority network?

Bike Network | Transit Network | Other

Does this project fall within an area of highest equity concern (in the top 20%)?

Yes | No

Are there any known equity considerations for the area served by this street project, i.e., priority populations in the project area, or destinations that serve priority populations?

Complete Streets Design Process: Layout

This section documents the design process for layout decisions. For more background information on the street layout questions, see pages 12-25 of the Appleton Complete Streets Design Guide.

What preferred cross section did you use as a starting point?

Are the preferred widths met for all street elements?

If any widths did not meet the preferred width, please document why:

Complete Streets Design Process: Traffic Calming and Multimodal Street Improvements

This section documents the design process for layout decisions. For more background information on the traffic calming, see pages 27-63 of the Appleton Complete Streets Design Guide.

What are the primary conflicts between modes that cause safety or mobility barriers?

Wide ROW | Wide Travel lanes | Long Crossing Distance | Large turning radius | High Travel Speeds | Limited Sight Lines | Heaving Volume of Turning Vehicles | High Speeds of Turning Vehicles | Known Crash History | High Demand Area for Walking and Bicycling | Impervious Surface Reduction | Maintenance Vehicle Turning Movements

Which conflicts most affect vulnerable road users who are walking, rolling, or bicycling?

Wide ROW | Wide Travel lanes | Long Crossing Distance | Large turning radius | High Travel Speeds | Limited Sight Lines | Known Crash History | Turning Conflicts

Which traffic calming features are used to address the identified issues?

Is there a traffic calming feature on every block segment and intersection? If no, please document why not:

Community Engagement Summary

How was the community engaged in this design process?

If equity priority populations have been identified, how were individuals from this population engaged?

What themes were heard from the community?

Pedestrian Crossing Improvement Policy, Appleton, Wisconsin

March 20, 2024

Vision

To improve access to destinations, the City of Appleton will invest in pedestrian crossing improvements using a consistent prioritization process grounded in the latest evidence on roadway safety treatments that are aligned with the Complete Streets Policy and Complete Streets Design Guide.

Definitions

Pedestrian crossings include marked and unmarked crosswalks at the intersections of two streets. A mid-block crosswalk shall be defined as any marked crosswalk that is not located within an intersection.

All marked crosswalks shall lead from one safe landing zone to another. A safe landing zone is considered as an area where a pedestrian is safe from vehicle conflict while waiting to cross or when finished crossing. This may include curb and gutter modifications and a concrete ramp installation meeting Proposed Right of Way Accessibility Guidelines (PROWAG) requirements.

Crosswalks shall be placed in areas where there is sufficient stopping sight distance for the posted speed limit and lighting for nighttime use on higher functional classification streets.

In all cases, intersection crosswalks shall be signed and marked in compliance with the Manual on Uniform Traffic Control Devices (MUTCD) and the Wisconsin Supplement to the MUTCD.

Implementation of Pedestrian Crossing Improvements

Pedestrian crossings shall be evaluated for safety improvements and enhanced as needed as part of programmed street maintenance projects in accordance with the Complete Streets Policy.

Pedestrian crossing improvements shall be prioritized based on the attached methodology, considering safety, potential for walking trips, equity and proximity to parks, schools, commercial areas, trails, transit stops and major barriers, such as the river or railroad. Corridors with multiple priority intersections may be considered for a corridor improvement study.

Projects identified through the prioritization methodology will be considered for inclusion in the recommended annual Capital Improvement Program. The Traffic Section will recommend projects that may include: 1) corridor improvement studies, 2) corridor pilot projects, 3) intersection demonstration projects, 4) intersection capital projects.

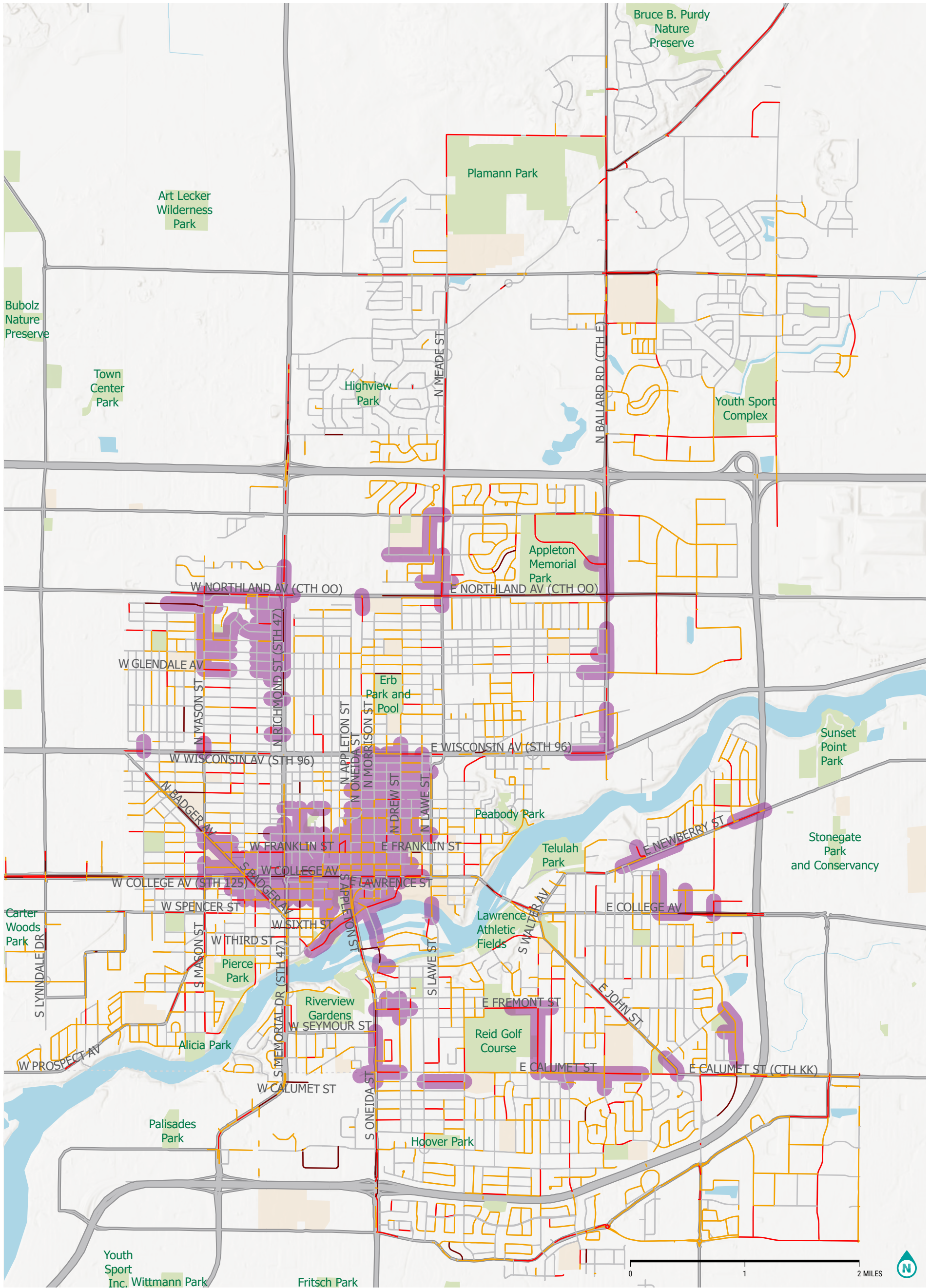
It is recommended that the prioritization methodology dataset be reviewed and updated every 5 years.

All requests to implement a pedestrian crossing improvement outside of the capital improvement program will be reviewed by the Traffic Section. Any requests that are administratively denied may appeal the decision to the Common Council through the Municipal Services Committee.

Crossing Improvement Prioritization Methodology

Crossings will be prioritized based on the following criteria, as shown on the attached map:

- On the Comprehensive Safety Analysis Plan (CSAP) crash analysis model provided by the East Central Wisconsin Regional Planning Commission
- Within the highest 10% of active trip potential areas
- Within the highest 10% of areas of high equity concern
- Located within 100 feet of a parcel zoned as a park or school, trail, transit stop, or parcel zoned for commercial use
- Crossing of major barriers: major roadways, the Fox River, and railroads



CROSSING PRIORITIZATION

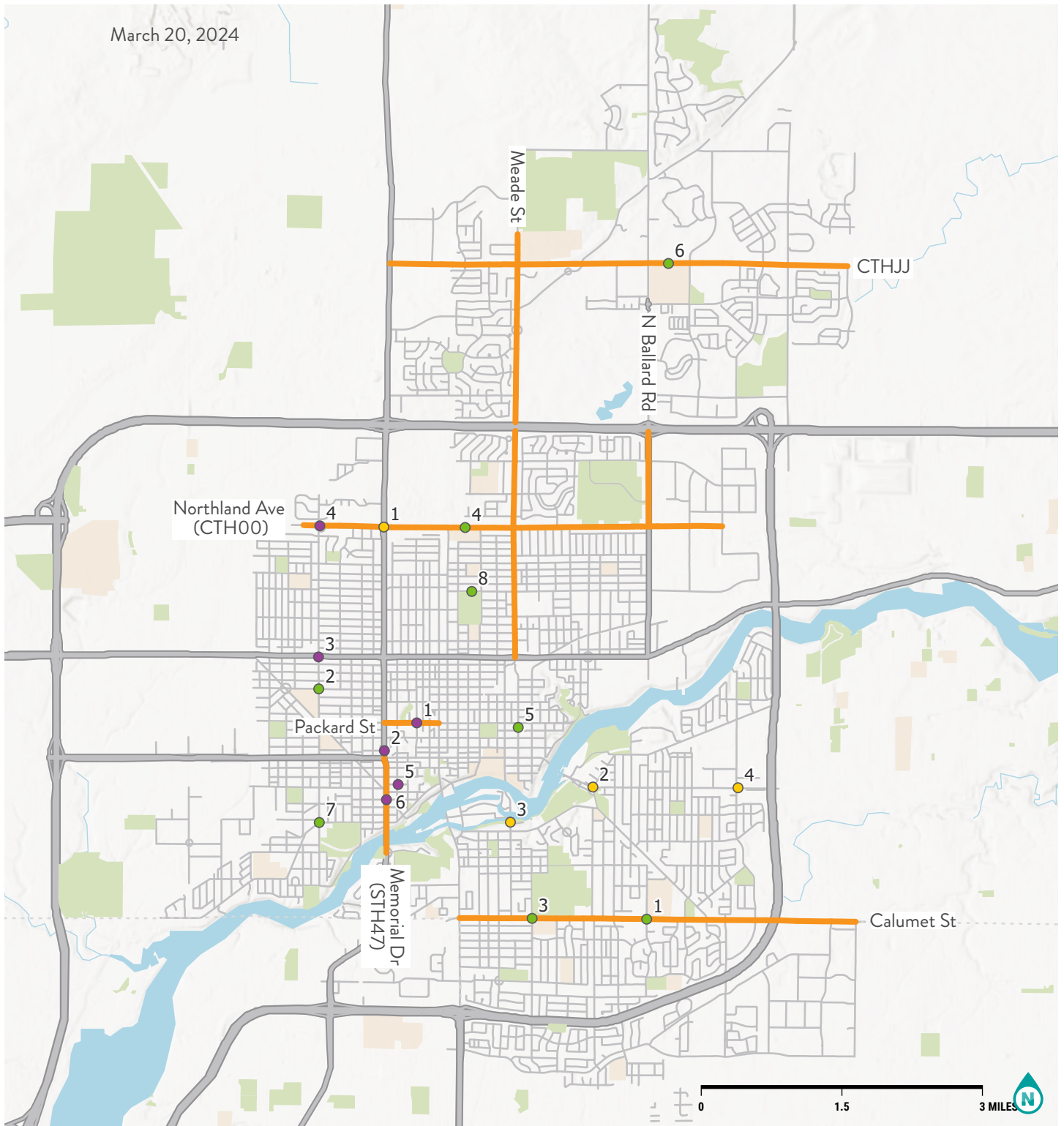
CITY OF APPLETON
COMPLETE STREETS STUDY

- Top 10% Community Priorities Score*
- Street Segment Crash Analysis Rank****
- Top 100
- 100 - 499
- 500 - 2499
- 2500+

*Equity and density of trips combined account for 75% of the Community Priorities Score (37.5% each) and the remaining factors account for 25% of the score (5% each for crossing a major barrier, proximity to parks/schools, commercial areas, trails and transit)

**Crash Analysis Rank comes from the East Central Wisconsin Regional Planning Commission's Comprehensive Safety Action Plan and includes risk factors like speed and right of way width as well as crash data.

March 20, 2024



DRAFT PRIORITY PROJECT LOCATIONS

CITY OF APPLETON
COMPLETE STREETS STUDY

Potential Project Category

- Downtown/High Active Trip Potential
- School/Park
- Other Spot Location
- Priority Arterial or Collector



See accompanying spreadsheet for project number key

Corridors

1. Calumet St - S Oneida St to E John St
2. Meade St - Wisconsin Ave (STH96) to north city limits
3. Northland Ave (CTH00) - west city limit to east city limit
4. CTHJJ - west city limit to east city limit
5. W Packard St - N Richmond St (STH47) to N Appleton St
6. Memorial Dr (STH47) - River Road to W College Ave
7. N Ballard Rd - Northland Ave (CTH00) to STH41

Unique Hazards

1. W Northland Ave (CTH00) and N Richmond St (STH47) Roundabout
2. E College Ave and E John St Roundabout
3. Newberry Trail Crossing at Lawe St
4. E College Ave and S Kensington Dr

School and Park Crossings

1. E Calumet St and S Schaefer St
2. W Winnebago St and N Mason St
3. E Calumet St and S Carpenter St
4. E Northland Ave (CTH00) at N Oneida St or N Meade St
5. N Meade St at E North St or E Eldorado St
6. Edgewood Dr at North High School
7. W Prospect Ave and S Mason St
8. E Glendale Ave at N Morrison St or N Drew St

Downtown / High Active Trip Areas

1. W Packard St and N Division St
2. W Washington St and N Richmond St (STH47)
3. W Wisconsin Ave (STH96) and N Mason St
4. W Northland Ave (CTH00) and N Mason St
5. W Seventh St and S State St
6. W Fifth St and S Memorial Dr (STH47)

Note: Projects are not listed in order of priority

COMPLETE STREETS DESIGN GUIDE

City of Appleton, WI

03.2024 **alta**

DOCUMENT OVERVIEW

What is a Complete Street?

Complete streets are multi-faceted and holistic streets that support multimodal transportation, active commerce, and vibrant communities. They meet the needs of a growing and thriving city by improving safety, enhancing access, and leading to even more growth in the community.

This design guide is an evolution and update of ongoing efforts over the past 15 years. Appleton adopted its first Complete Streets policy in 2006 and has been incorporating Complete Streets practices into street design beginning in the early 2010s.

Complete street elements or designs have been implemented on a number of Appleton Streets, including:

- Badger Ave (Packard to Wisconsin)
- John St (College to Calumet)
- Newberry St (Schaefer to STH 441)
- Prospect Ave (Haskell to W city limits)
- Glendale Ave (Richmond to Mason)
- Madison St / Maple St intersection
- Linwood Ave (College to Badger)
- Evergreen Dr (Richmond to Haymeadow)

How can the Design Guide be used?

This design guide should be used to support City of Appleton staff in identifying and implementing complete street design solutions from initial concept through final engineering. The design guide is intended to support and augment existing street design policies and standards, including the most recent complete streets policy.

The three sections of the design guide, as included in the table of contents, provide a framework for incorporating complete street elements into a broad array of contexts and project budgets.

TABLE OF CONTENTS

01

COMPLETE STREET CROSS-SECTIONS

6

Recommended street configurations and widths based on street class and context. Use this section as the starting point for any street design or resurfacing.

02

DESIGN GUIDE TOOLKIT

26

A comprehensive toolkit of design elements for complete streets. Includes street design elements along the street, mid-block, and at intersections.

03

TRAFFIC CALMING RETROFIT PROGRAM

64

An overview of quick-build traffic calming and sample approach for a typical neighborhood. Includes recommendations for quick-build interventions of recommendations in Sections 01 and 02.

WHAT ARE THE COSTS AND BENEFITS OF COMPLETE STREETS?

COSTS



Cost

In most locations, the cost of constructing complete streets is comparable to conventional streets.

BENEFITS



Economy

Complete streets support greater business access and walkability, and have been shown to support new businesses and increased employment.



Safety

Complete street designs result in fewer crashes, injuries, and deaths for people walking, biking, and driving.



Mobility

Complete streets designed for all modes of travel expand the capacity of streets as well as individuals' mobility choices.



Health

Complete streets encourage people to walk and bike, which is associated with improved health outcomes for people at all stages of life.



Environment

Complete streets make the built environment more accessible for non-motorized modes, reducing the impact of travel on the environment. They can also provide more space for plants and wildlife habitat.

HOW LONG WILL IT TAKE?



200+ Years at the Current Rate

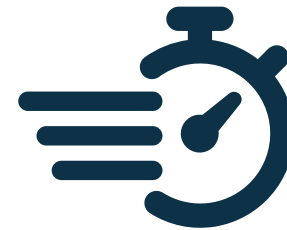
A complete build-out of Appleton's streets would take over 200 years given current rates of funding for street reconstruction or resurfacing.



Accelerator #1: Quick-build

Quick-build techniques utilize relatively inexpensive materials such as paint and flex posts to add traffic calming to existing roadways.

Reference traffic calming retrofit program and policy in Section 3.



Accelerator #2: Diversified Implementation and Funding Strategies

Diversifying federal, state, and local funding streams will allow for increased complete street projects.

Reference funding information on pg. 69.

01

COMPLETE STREET CROSS-SECTIONS

WHAT FACTORS INFLUENCE COMPLETE STREET DESIGN?

For any complete street project, four primary factors should be considered.

1. **Type of Street Project:** What is the nature of the street construction project and how much of the street is being reconstructed? This will determine whether or not the entire right of way (ROW) or a portion of it is being reconstructed.
2. **Street Classification:** What is the functional classification of the street?
3. **Context:** What is the surrounding context for the street? This has a major impact on the character and function of the complete street design.
4. **Priority Street:** Is this street a part of a larger regional network for mobility, such as a regional bike or transit network?

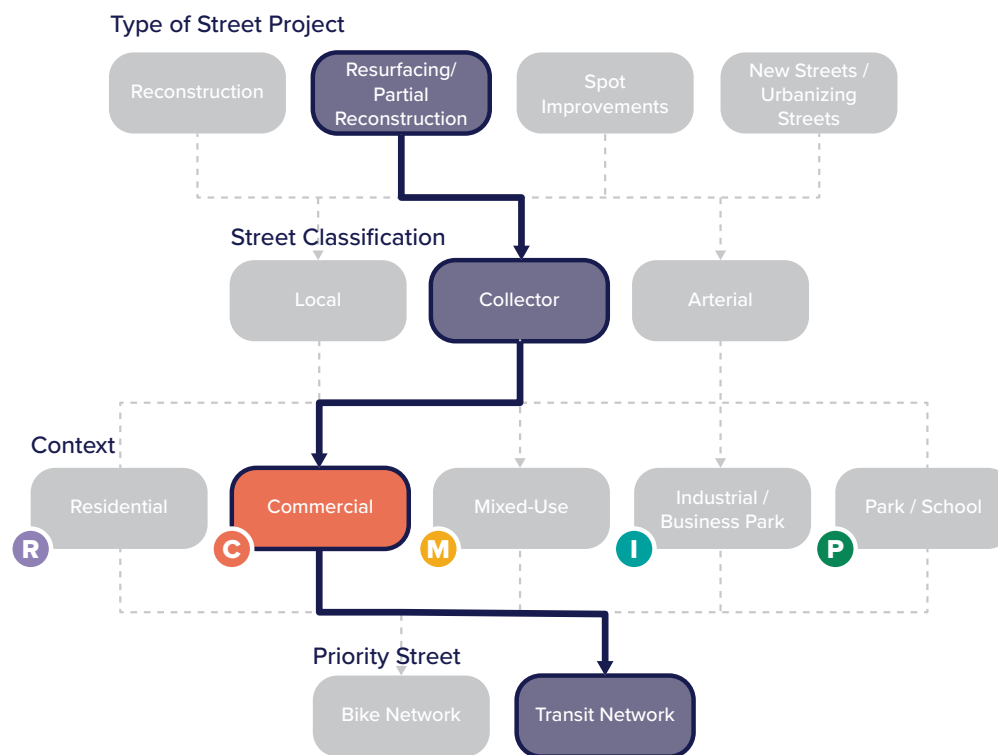


Figure 1: Decision making flowchart to guide the complete street design. An example set of attributes is shown, but almost any combination is feasible.

TYPES OF STREET PROJECTS

Every street construction project will fall into one or more of the following categories. Each project type may have different impacts to existing ROW and street width.



Full reconstruction

Full reconstruction involves completely tearing out an existing roadway and installing a new stone base layer as well as a new paved driving surface, often with all new concrete curb and gutter. These types of projects provide the opportunity to adjust street width.

Full reconstruction projects maintain the existing ROW.



Resurfacing/ Partial Reconstruction

Resurfacing/partial reconstruction projects maintain the original base layer, but apply a new pavement overlay. Portions of the concrete curb & gutter may be replaced.

While resurfacing projects maintain the existing street width, they do provide an opportunity to re-stripe a roadway and make minor geometric changes.



Spot improvements

Spot improvements are typically added to address a specific issue along a roadway, such as frequent speeding, unsafe crossings, or high traffic volumes.

Spot improvements can be independent of complete street redesign, and tend to be located at intersections or mid-block.



New street

A new street can be added to create a new connection where there previously was not a street. Adding a street will involve the installation of a base layer and pavement overlay, which allows for many design possibilities for the new street.

New streets are typically established when new and redevelopment projects occur. The ROW width is determined at that time.

STREET CLASSIFICATION

Appleton's street network is made up of local, collector, and arterial streets. These classifications are set by the City and differ from Wisconsin DOT classifications. This study does not include private roads or streets outside of the public ROW.



Local

Local roadways feature lower speed limits and a greater frequency of stop-controlled intersections. The primary role of local roadways to provide direct access to homes and businesses throughout the community.

70.2% of all public streets in Appleton

247.3 miles in length

55% of local streets in Appleton feature a 60ft ROW and 32ft Face to Face (F-F) width.



Collector

Collectors are low to moderate capacity roadways that connect local roadways and arterials. These roadways vary greatly between different contexts and typically feature moderate speed limits, multiple travel lanes, and relatively high-volumes of transit and bike traffic.

15.1% of all public streets in Appleton

53.4 miles in length

29.3% of collectors in Appleton feature with a 66ft ROW and 36ft F-F width.



Arterial

Arterials feature the greatest vehicular speed limits, traffic volumes, and number of lanes. These roadways provide long-distance and uninterrupted travel. Arterial roadways frequently extend beyond Appleton and into other jurisdictions.






14.7% of all public streets in Appleton

52.0 miles in length

Arterials are the least consistent street class in Appleton with highly variable ROW and street widths.

CONTEXT

The complete street design needs to respond to the nearby land-use context. This ensures that the street reflects the character and function to support the adjacent community. It should be noted that context may vary along a singular corridor, and it can change over time with new development or redevelopment.

Context	Description	Key Features
 Residential	Quiet residential streets with relatively low traffic volumes and speeds. Though they have lower activity levels relative to other street types, they play a key role in supporting the character and comfort of a neighborhood.	<ul style="list-style-type: none"> • Traffic calming for slow streets • Ample street terrace for urban greening
 Commercial	Corridors with large amounts of adjacent commercial land uses that often include retail and office uses. Commercial corridors feature significant day-time and weekend demand, and require a full suite of multimodal access options.	<ul style="list-style-type: none"> • Wide sidewalk and space for amenities • Traffic calming • Multimodal infrastructure
 Mixed-Use	Corridors with a blend of commercial, residential, and other land uses. Mixed-Use corridors typically feature significant demand and need to serve a wide range of modes of transportation and functional uses of the street.	<ul style="list-style-type: none"> • Wide sidewalk and space for amenities • Traffic calming • Multimodal infrastructure
 Industrial or Business Park	Industrial or business parks are employment hubs and need to be able to serve a broad range of vehicle traffic, including personal vehicle and freight traffic, as well as multimodal access for commuters and transit users.	<ul style="list-style-type: none"> • Maintain roadway function to support large businesses • Provide sidewalks, sidepaths, and urban greening for employees
 Park or School	Parks or schools serve high levels of bike and pedestrian traffic. Safety is critical, as these land uses serve higher percentages of vulnerable street users such as youth and seniors. Ample traffic calming is essential to these land uses.	<ul style="list-style-type: none"> • Wide sidewalk • Ample traffic calming with safe crossings

PRIORITY STREET CONSIDERATIONS

The complete street design needs to align with the multimodal goals and ongoing planning efforts of the region, in particular the existing local and regional bike and transit planning.



Bike and Trail Network. Outagamie County has recently drafted a Bicycle and Pedestrian plan including recommendations for the growth of Appleton's bike network. Appleton has also established a Downtown Streetscape Design Guide, which recommends various street types in Appleton's downtown, many of which contain bike facilities.

Reference plans:

- Outagamie County Bicycle and Pedestrian Plan (pending adoption, 2023)
- ECWRPC Bike & Pedestrian Plan (2021)
- Appleton Trails Master Plan (2017)
- City of Appleton On-Street Bike Lane Plan (2010)



Transit. Appleton worked with Valley Transit (VT) to establish a Transit Development Plan (TDP) in 2020 to evaluate Valley Transit's vision/mission statements, short and long term goals, and reevaluate its transportation programs to ensure effective and efficient transportation to its clientele.

Reference plans:

- City of Appleton Transit Development Plan (2020)



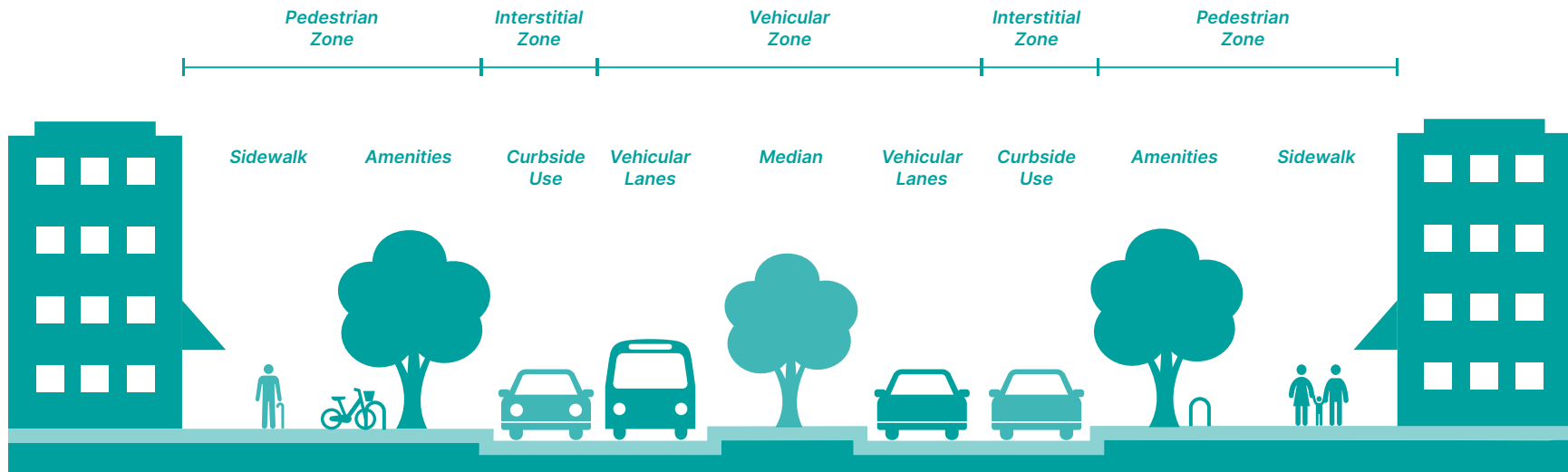
Additional Plans. Many other plans include content that impacts or overlaps with this guide, including aspects of street design, school-specific recommendations, or policies.

Reference plans:

- City of Appleton Downtown Streetscape Design Guide (2021)
- ECWRPC Complete Streets Policy (2018)

WHAT GOES INTO A STREET?

The figure below highlights the typical complete street cross-sections included in this guide. While this list is not exhaustive, it presents a starting place for most streets in Appleton*.



*Any street design and development project needs to consider utilities

Pedestrian Zone:

- **Sidewalk:** A designated, paved space for pedestrian travel.
- **Sidepath:** A designated, paved space for pedestrians, bicyclists, and users of other mobility devices.
- **Amenity Zone:** A space along the sidewalk that can contain amenities such as seating, bike racks, plants, transit stops, and more.

Interstitial Zone:

- **Curb & Gutter:** A space designed to prevent the roadway or pedestrian zone from flooding by allowing for drainage.
- **Parking:** A space designated for vehicle parking.
- **On-Street Bike Infrastructure:** A designated facility for those using a bicycle, scooter, or other mobility device.

Vehicular Zone:

- **Vehicular lanes:** A space for vehicles to travel.
- **Center turn lane:** A lane for vehicles that will be turning left across the opposite travel lane.
- **Median:** A physical element that divides the two directions of travel; it can contain plants, public art, and can serve as a pedestrian crossing refuge.

Figure 2: Elements of a typical complete street cross-section.

DESIGN STANDARDS

Table 1 below indicates typical dimensions for street elements based on street classification and context*.

All width dimensions are in feet, and organized as:

Preferred - Minimum - Maximum

Zone	Name	Local				Collector				Arterial			
		R	C M	P	I	R	C M	P	I	R	C M	P	I
Pedestrian Zone	Sidewalk	5-5-6	8-5-10	5-5-6	6-5-6	5-5-6	8-5-10	5-5-6	6-5-6	5-5-6	8-5-10	5-5-6	6-5-6
	Sidewalk at back of curb	7-7-8	10-7-12	7-7-8	8-7-8	7-7-8	10-7-12	7-7-8	8-7-8	7-7-8	10-7-12	7-7-8	8-7-8
	Sidepath**	N/A			10-8-12. For high-usage routes, a 5ft parallel walkway is recommended.								
	Amenity (café seating)	N/A	6-5-8	N/A	N/A		6-5-8		N/A		6-5-8		N/A
	Amenity (parkway with trees)	5 to 8+ -5-8+. Along arterials or roadways without a curbside parking lane, additional width is highly recommended.											
Interstitial Zone	Curb	0.5-0.5-1. Wider curbs may be more common in downtown areas.											
	Gutter	1-1-2+. For bike lanes, a widened integral gutter should be used whenever possible.											
	Bike Lane**	N/A				6-5-6. Where space allows, buffered or protected bike lanes are preferred.							
	Buffered Bike Lane**	N/A				8-7-8+. For arterial roads, protected bike lanes are preferred.							
	Protected Bike Lane**	N/A				8-7-8+							
Vehicular Zone	Parking	7-7-7.5	7.5-7.5-8		8-7.5-9								
	Vehicle Lane (excluding gutter)	9-9-10	10-10-12										
	Median	N/A				Varies-6-10+. 6ft is the minimum recommended width for pedestrian refuge islands at crossings. Wider medians allow for trees.							
	Bus Lane / Truck Route	10-10-11	11-11-12										

*The preferred widths on all cross-sections represent a starting point for design. Specific site conditions may result in min or max dimensions being more appropriate.

**Bike infrastructure may vary and selection of infrastructure type will depend upon context and available right-of-way.

Table 1: Design standards for complete street cross-section elements.

TYPICAL CROSS-SECTIONS

Table 2 below highlights the typical complete street cross-sections included in this guide. While this list is not exhaustive, it presents a starting place for most streets in Appleton. The cross sections on the following pages illustrate a variety of preferred cross sections. When the requirements for a preferred cross section cannot be met, the minimum widths for the complete street can be explored.

	ID	Pg	Name	Description	Contexts	When to use*
Local	L.1	16	Residential Traditional Local	Residential local street with parking along both sides.	R	<ul style="list-style-type: none"> High parking demand
	L.2	16	Residential Smart Local	Residential local street with parking along one side.	R	<ul style="list-style-type: none"> Average to low parking demand Constrained ROW
	L.3	17	Generic Traditional Local	Local street with parking along both sides.	C M P I	<ul style="list-style-type: none"> High parking demand
	L.4	17	Generic Smart Local	Local street with parking along one side.	C M P	<ul style="list-style-type: none"> Average to low parking demand Constrained ROW
	L.5	18	Industrial Smart Local with Sidepath	Industrial local street with parking along one side and a sidepath.	I	<ul style="list-style-type: none"> Average to low parking demand Critical corridor for bike connectivity
Collector	C.1	19	Low-Density Residential Collector	Residential collector street with parking along one side and a sidepath.	R P I	<ul style="list-style-type: none"> Residential low-density neighborhoods Medium to low parking demand
	C.2	19	Bike Priority Collector	Residential collector street with buffered bike lanes on both sides.	R P I	<ul style="list-style-type: none"> Critical corridor for bike connectivity Average to low parking demand
	C.3	20	Multimodal Collector	Commercial collector with parking along one side and bike lanes along both sides.	C M P I	<ul style="list-style-type: none"> Critical corridor for bike connectivity Average to low parking demand
	C.4	20	Generic Traditional Collector	Adaptable collector with parking along both sides.	R C M P I	<ul style="list-style-type: none"> High parking demand areas only, particularly in commercial areas
	C.5	21	Generic Smart Collector	Adaptable collector with parking along one side.	R C M P I	<ul style="list-style-type: none"> Average to low parking demand
Arterial	A.1	22	Boulevard	Arterial with center median and protected bike lanes.	R P I	<ul style="list-style-type: none"> Critical corridor for bike connectivity Road diet and impervious surface reduction
	A.2	22	Multimodal Arterial	Arterial with parking on one side and protected bike lanes.	C M P I	<ul style="list-style-type: none"> Critical corridor for bike connectivity High to average parking demand
	A.3	23	Constrained Arterial	Arterial with protected bike lanes.	R C M P I	<ul style="list-style-type: none"> Critical corridor for bike connectivity Constrained ROW
	A.4	24	Multi-Lane Commercial Destination	Multi-lane arterial with parking on both sides and wide street terrace.	C M	<ul style="list-style-type: none"> Only for commercial areas where multiple lanes and parking is necessary
	A.5	25	Multi-Lane Boulevard	Multi-lane arterial with center median and sidepaths.	C M P I	<ul style="list-style-type: none"> Only appropriate for outlying areas where multiple lanes is necessary

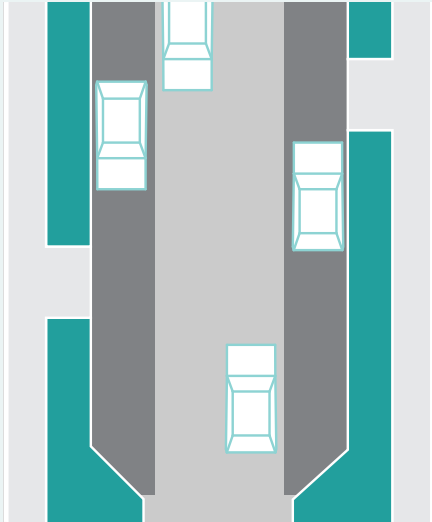
*Using parking demand to inform an appropriate cross-section should consider existing parking use as well as future land-use decisions and expectations.

Table 2: Typical cross-section reference table.

LOCAL STREETS

Local streets make up the majority of the street network. The preferred local street cross-section varies based on parking demand, ROW constraints, and desired impervious surface reduction, per Figure 3.

Figure 3: Local street parking strategy.

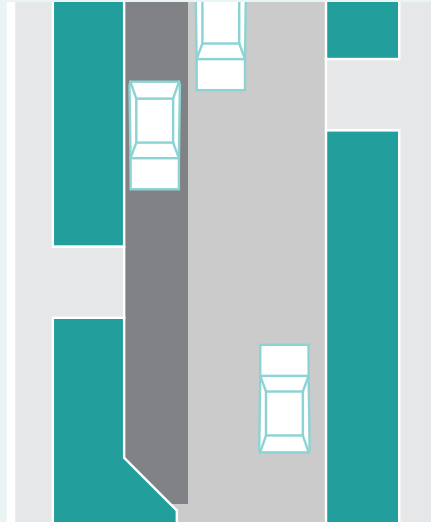


Traditional (L.1/L.3)

- Parking both sides
- 32ft to 36ft street width based on context

Applications:

- High parking demand

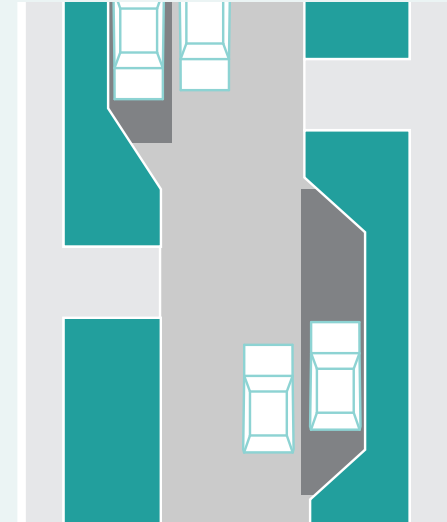


Smart Street (L.2/L.4/L.5)

- Parking one side, may present challenges if along street with alternating overnight parking restrictions
- 26ft to 29ft street width based on context
- 50% parking capacity and up to 13% less impervious surface than parking on both sides

Applications:

- Average to low parking demand
- Constrained space due to narrow ROW, utilities, or existing street trees



Alternating Smart Street

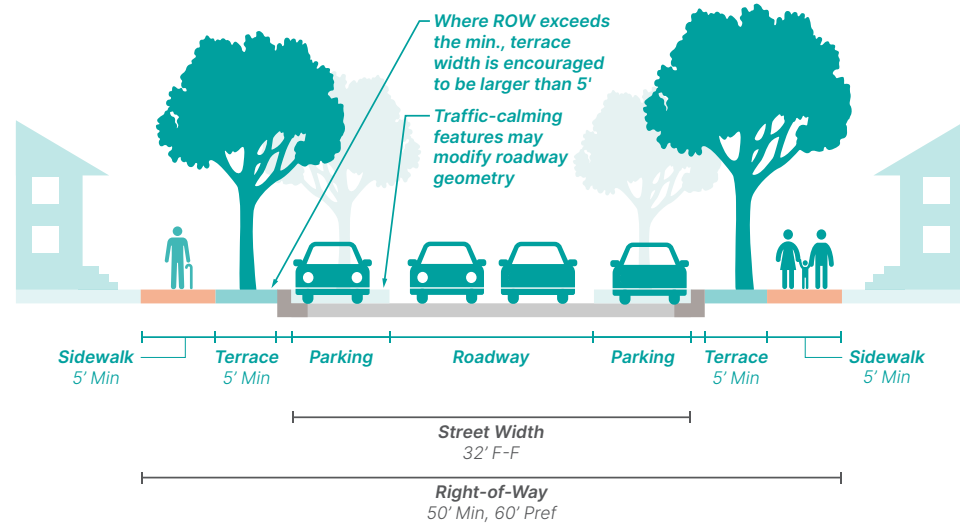
- Modified version of the Smart Street with alternating parking on both sides
- 25% to 50% parking capacity and up to 19% less impervious surface than parking on both sides

Applications:

- Low parking demand
- Locations where parking is desired on both sides

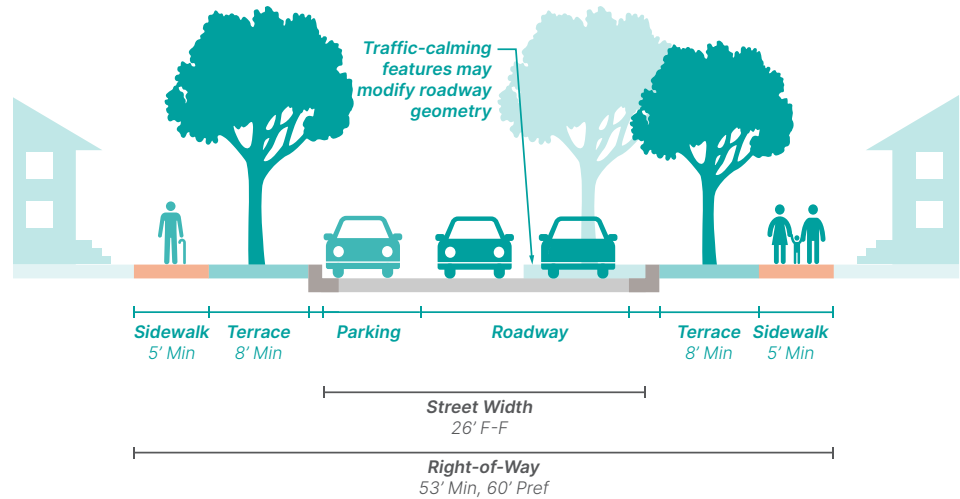
L.1 Residential Traditional Local

Street Width	32ft F-F
ROW	50ft Min, 60ft Preferred
Parking	2 sides
Context	R
Description	Residential local street with parking along both sides.
Use	<ul style="list-style-type: none"> High parking demand on both sides of the street
Traffic Calming Features	<ul style="list-style-type: none"> Curb extensions Pinch points Speed humps Speed tables Street trees



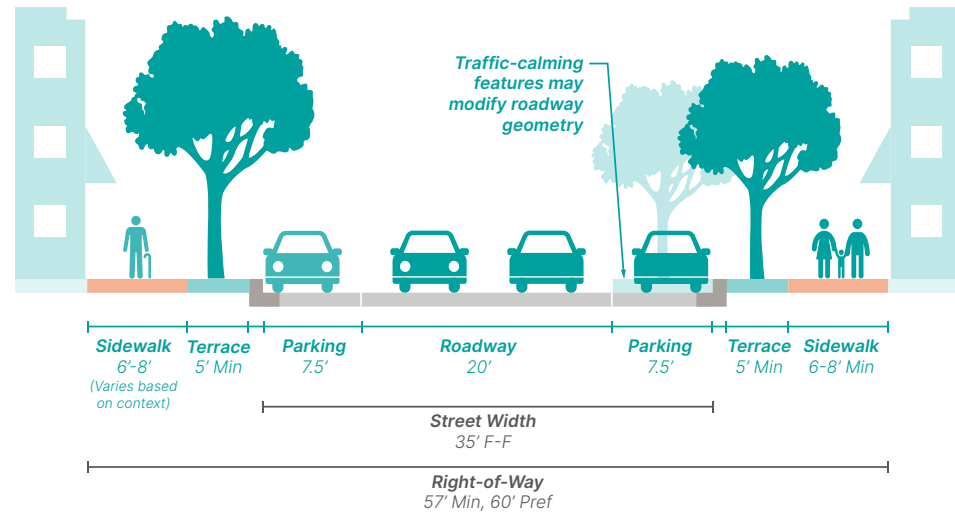
L.2 Residential Smart Local

Street Width	26ft F-F
ROW	53ft Min, 60ft Preferred
Parking	1 side
Context	R
Description	Residential local street with parking along one side. Cross-section features widened tree terraces and reduced impervious surface.
Use	<ul style="list-style-type: none"> Average to low parking demand Constrained space due to narrow ROW, utilities, or existing street trees
Traffic Calming Features	<ul style="list-style-type: none"> Curb extensions Pinch points Chicanes Speed humps Speed tables Street trees



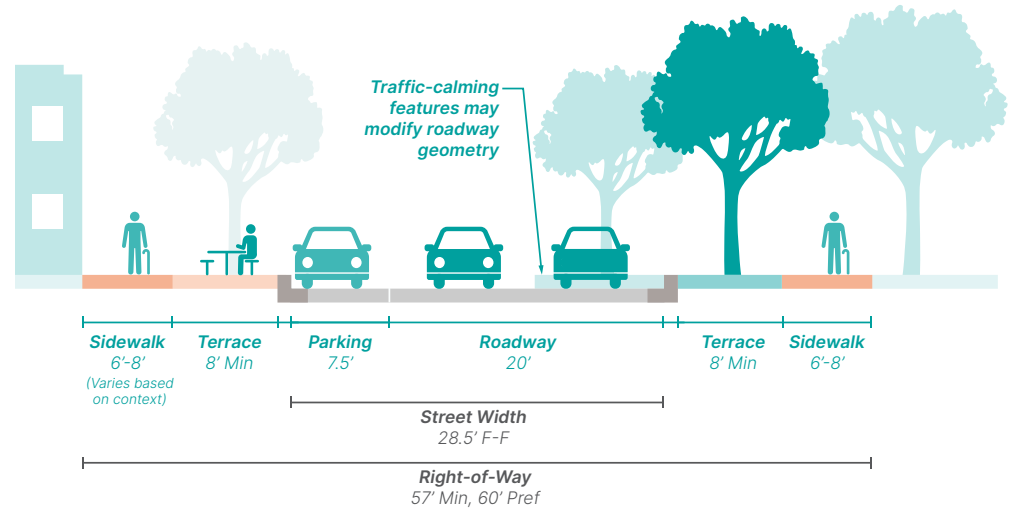
L.3 Generic Traditional Local

Street Width	35ft F-F
ROW	57ft Min, 60ft Preferred
Parking	2 sides
Context	C M P I
Description	Local street with parking along both sides.
Use	<ul style="list-style-type: none"> High parking demand on both sides of the street
Traffic Calming Features	<ul style="list-style-type: none"> Curb extensions Pinch points Speed humps Speed tables Street trees



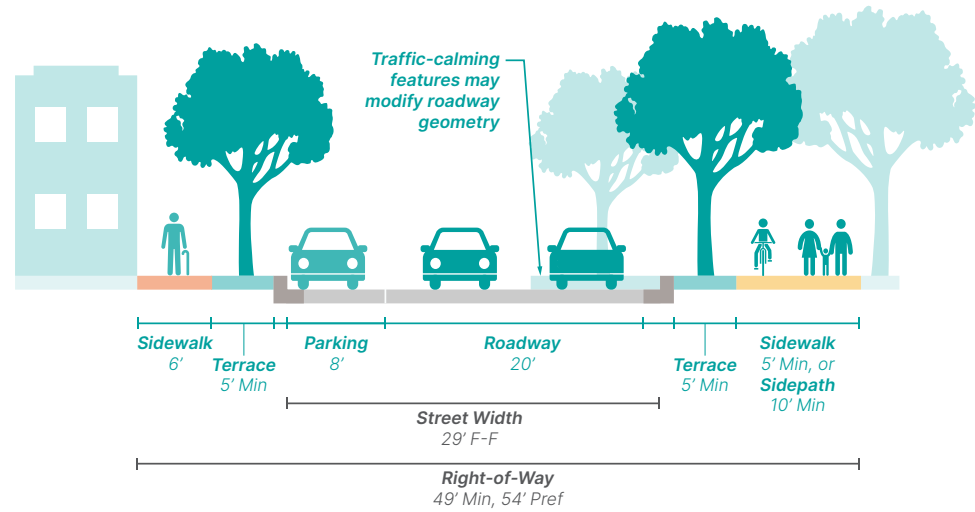
L.4 Generic Smart Local

Street Width	28.5ft F-F
ROW	57ft, 60ft Preferred
Parking	1 side
Context	C M P
Description	Local street with parking along one side. Cross-section features widened tree terraces and reduced impervious surface.
Use	<ul style="list-style-type: none"> Average to low parking demand Constrained space due to narrow ROW, utilities, or existing street trees
Traffic Calming Features	<ul style="list-style-type: none"> Curb extensions Pinch points Chicanes Speed humps Speed tables Street trees



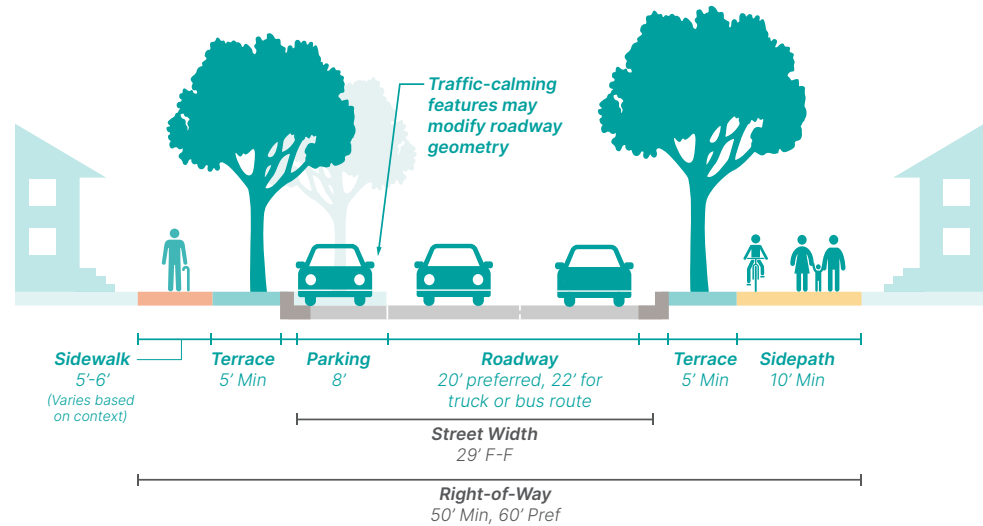
L.5 Industrial Smart Local with Sidepath

Street Width	29ft F-F
ROW	49ft, 54ft Preferred
Parking	1 side
Context	I
Description	Industrial local street with parking along one side. Cross-section features widened tree terraces and reduced impervious surface.
Use	<ul style="list-style-type: none"> • Average to low parking demand • Constrained space due to narrow ROW, utilities, or existing street trees • Critical corridor for bike connectivity
Traffic Calming Features	<ul style="list-style-type: none"> • Curb extensions • Pinch points • Chicanes • Speed humps • Speed tables • Street trees



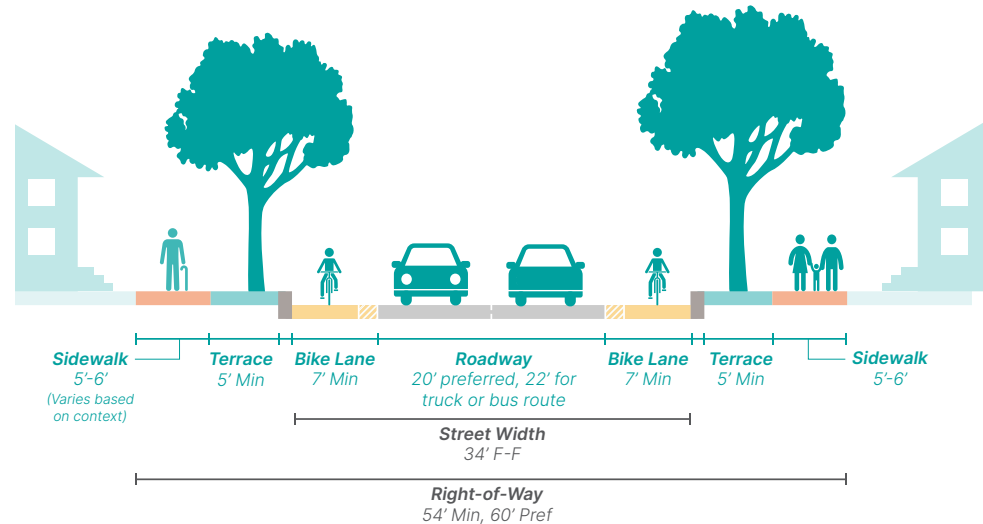
C.1 Low-Density Residential Collector

Street Width	29ft F-F
ROW	50ft Min, 60ft Preferred
Parking	1 side
Context	R P I
Description	Residential collector street with parking along one side and a sidepath along the opposite side.
Use	<ul style="list-style-type: none"> Residential collectors in outlying lower-density neighborhoods Low parking demand May also apply to park/school and industrial contexts in outlying areas
Traffic Calming Features	<ul style="list-style-type: none"> Curb extensions Mid-block crossings Street trees



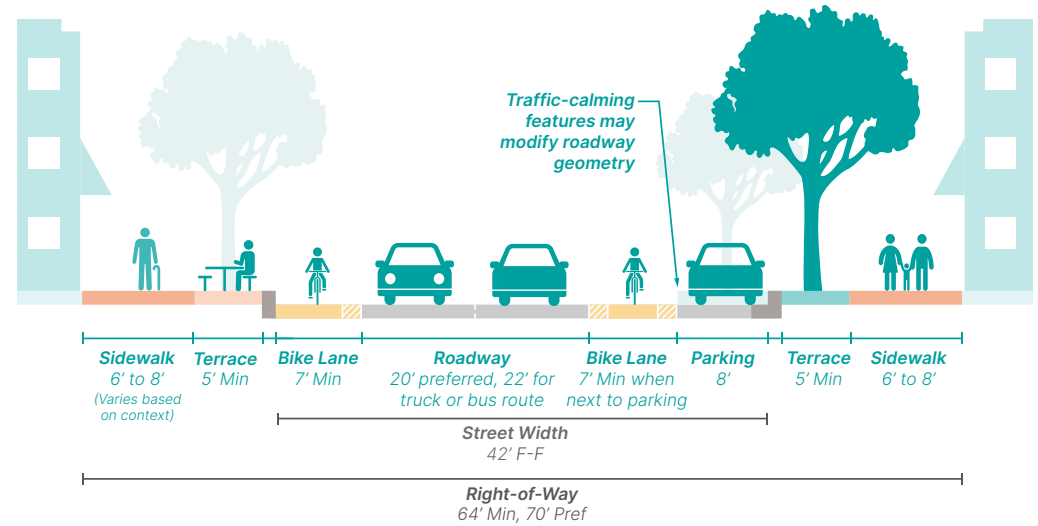
C.2 Bike Priority Collector

Street Width	34ft F-F
ROW	54ft Min, 60ft Preferred
Parking	None
Context	R P I
Description	Residential collector street with buffered bike lanes on both sides. Cross-section features widened tree terraces and reduced impervious surface.
Use	<ul style="list-style-type: none"> Critical corridor for bike connectivity Average to low parking demand
Traffic Calming Features	<ul style="list-style-type: none"> Speed tables Mid-block crossings Street trees



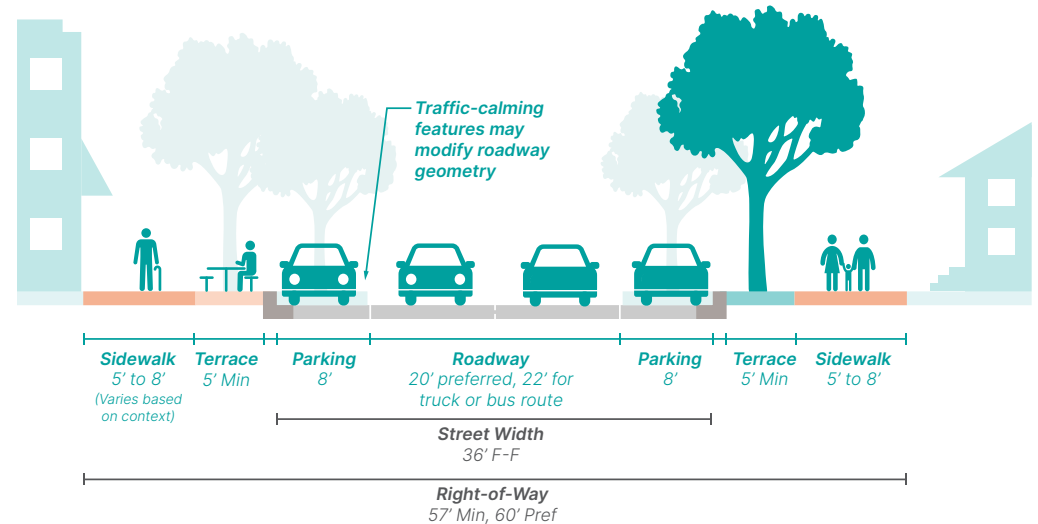
C.3 Multimodal Collector

Street Width	42ft F-F
ROW	64ft Min, 70ft Preferred
Parking	1 side
Context	C M P I
Description	Commercial collector with parking along one side and bike lanes along both sides.
Use	<ul style="list-style-type: none"> • Critical corridor for bike connectivity • Average to low parking demand
Traffic Calming Features	<ul style="list-style-type: none"> • Curb extensions • Speed tables • Mid-block crossings • Street trees



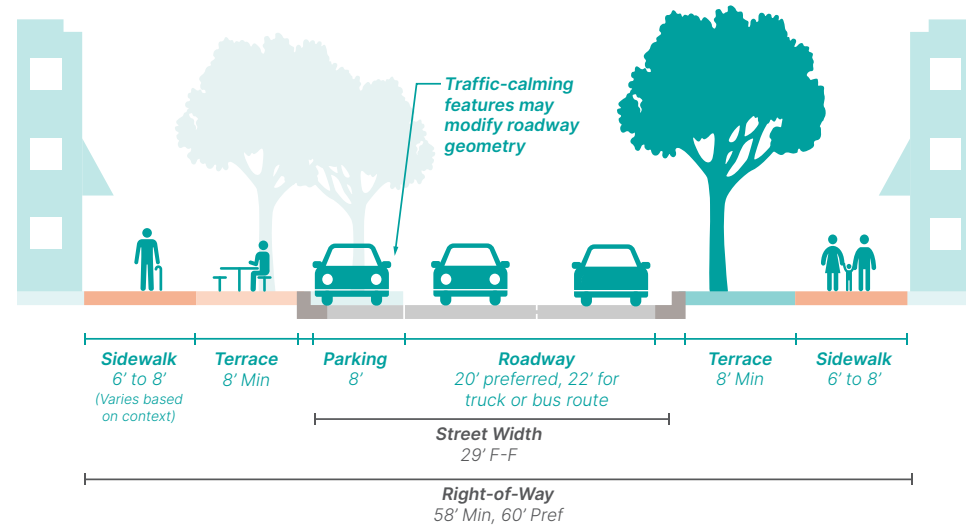
C.4 Generic Traditional Collector

Street Width	36ft F-F
ROW	57ft Min, 60ft Preferred
Parking	2 sides
Context	R C M P I
Description	Adaptable collector with parking along both sides. Cross-section can be adapted to multiple contexts.
Use	<ul style="list-style-type: none"> • High parking demand areas only, particularly in commercial or mixed-use areas
Traffic Calming Features	<ul style="list-style-type: none"> • Curb extensions • Pinch points • Speed tables • Mid-block crossings • Speed tables, Street trees



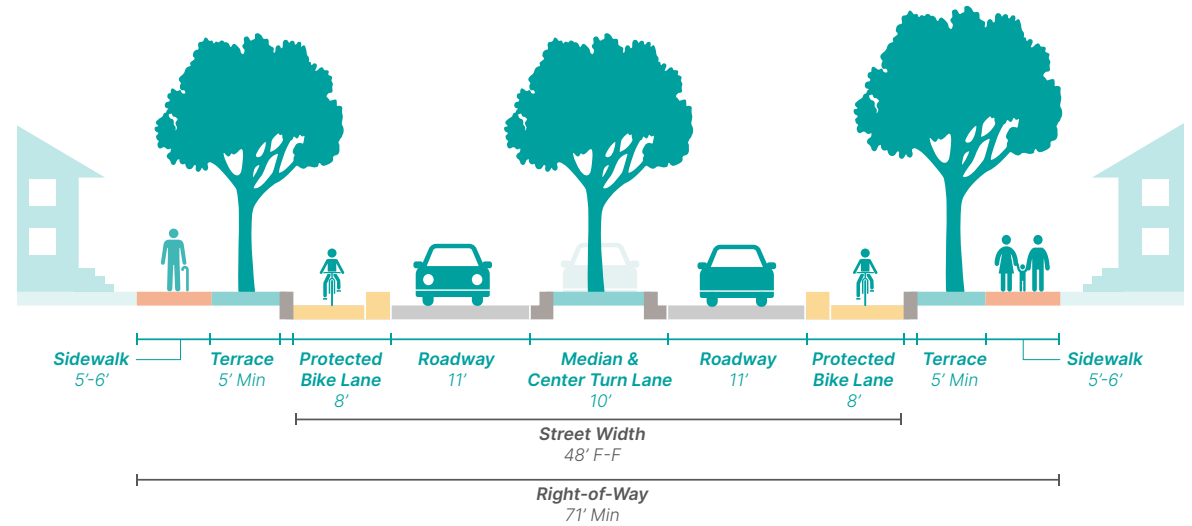
C.5 Generic Smart Collector

Street Width	29ft F-F
ROW	58ft Min, 60ft Preferred
Parking	1 side
Context	R C M P I
Description	Adaptable collector with parking along one side. Cross-section features widened tree terraces and reduced impervious surface, and can be adapted to multiple contexts.
Use	<ul style="list-style-type: none"> • Corridors that are not critical for bike connectivity • Average to low parking demand • Commercial or mixed-use streets with demand for widened amenity zone
Traffic Calming Features	<ul style="list-style-type: none"> • Curb extensions • Chicane • Speed tables • Mid-block crossings • Street trees



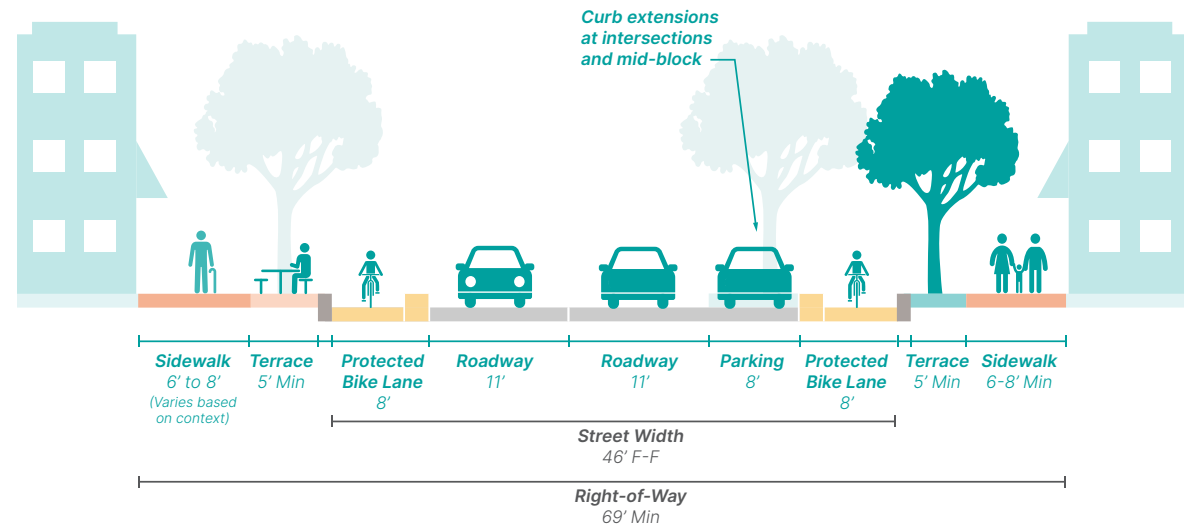
A.1 Boulevard

Street Width	48ft F-F
ROW	71ft Min
Parking	None
Context	R P I
Description	Arterial with center median and protected bike lanes.
Use	<ul style="list-style-type: none"> • Critical corridor for bike connectivity • Road diet and impervious surface reduction
Traffic Calming Features	<ul style="list-style-type: none"> • 4 to 3 road diet • Mid-block crossings • Median • Street trees



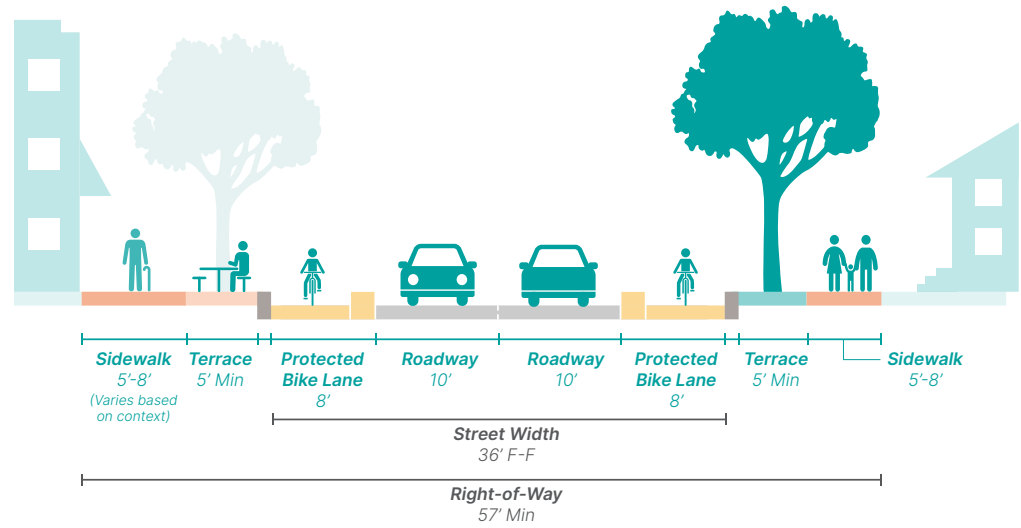
A.2 Multimodal Arterial

Street Width	46ft F-F
ROW	69ft Min
Parking	1 side
Context	C M P I
Description	Arterial with parking on one side and protected bike lanes.
Use	<ul style="list-style-type: none"> • Critical corridor for bike connectivity • High to average parking demand, particularly in commercial, mixed-use, or school contexts
Options Traffic Calming Features	<ul style="list-style-type: none"> • Curb extensions • Mid-block crossings • Street trees



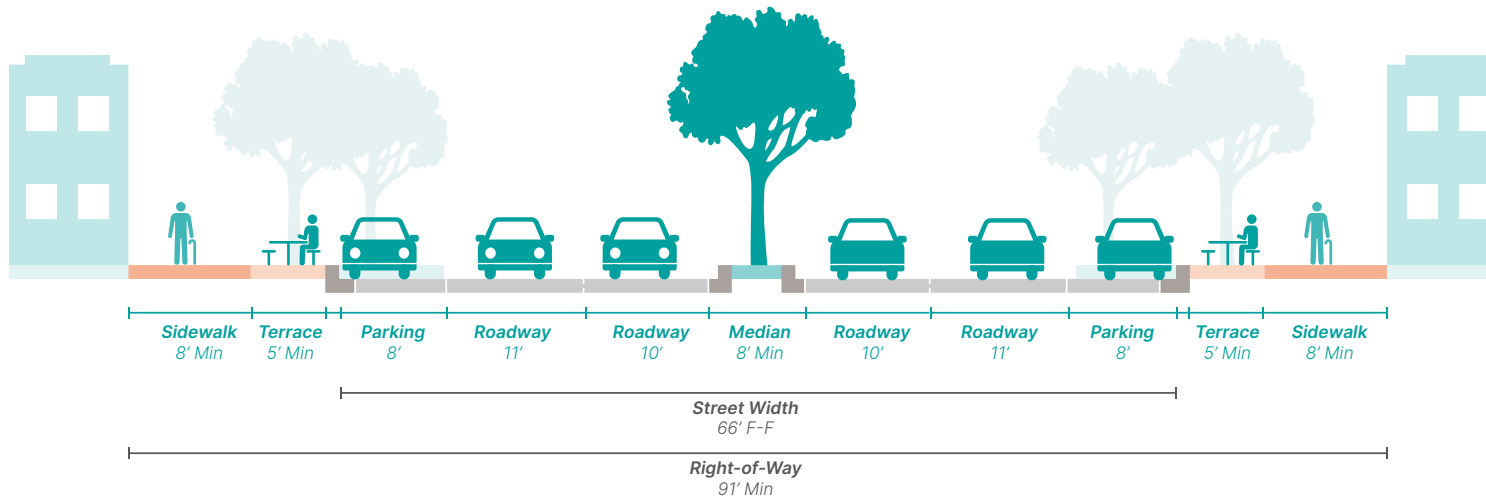
A.3 Constrained Arterial

Street Width	36ft F-F
ROW	57ft Min
Parking	None
Context	R C M P I
Description	Arterial with protected bike lanes.
Use	<ul style="list-style-type: none"> • Critical corridor for bike connectivity • Constrained ROW
Traffic Calming Features	<ul style="list-style-type: none"> • Mid-block crossings • Street trees



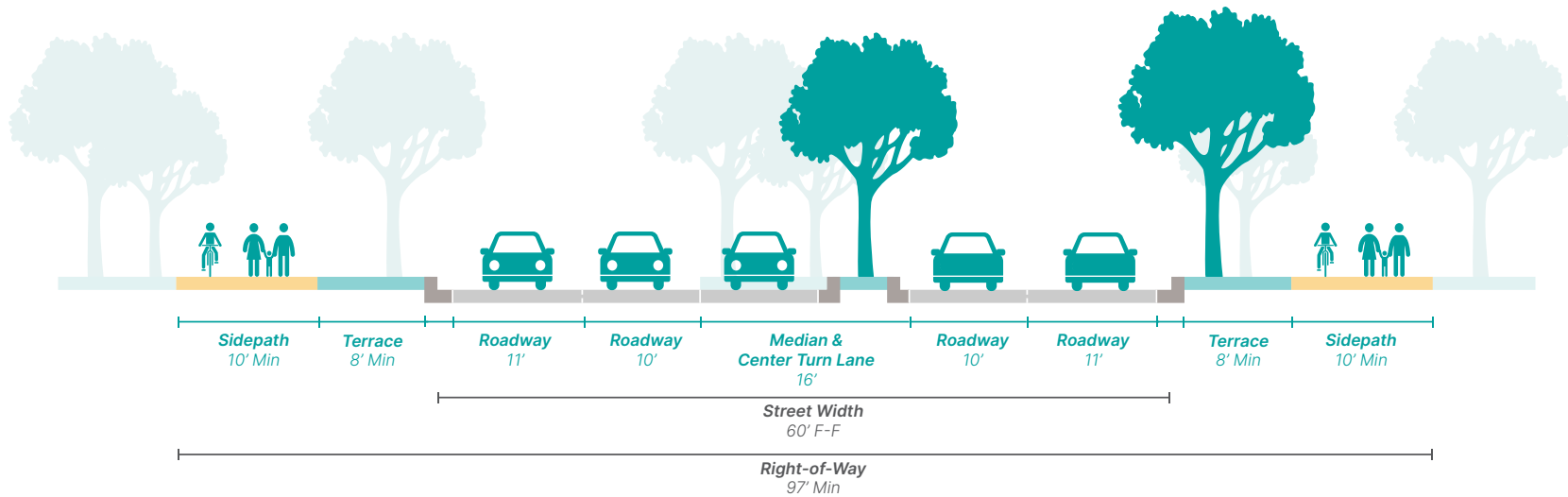
A.4 Multi-Lane Commercial Destination

Street Width	66ft F-F
ROW	91ft Min
Parking	2 sides
Context	C M
Description	Multi-lane arterial with parking on both sides and wide street terrace.
Use	<ul style="list-style-type: none"> • Multi-lane arterials should be minimized • Only appropriate for commercial areas where multiple lanes are necessary • Only appropriate for areas with wide ROW • High parking demand for commercial services
Traffic Calming Features	<ul style="list-style-type: none"> • Curb extensions • Median • Pedestrian refuge island • Street Trees



A.5 Multi-Lane Boulevard

Street Width	60ft F-F
ROW	97ft Min
Parking	None
Context	C M P I
Description	Multi-lane arterial with center median and sidepaths.
Use	<ul style="list-style-type: none"> • Multi-lane arterials should be minimized • Only appropriate for outlying areas where multiple lanes are necessary • Only appropriate for areas with wide ROW
Traffic Calming Features	<ul style="list-style-type: none"> • Median • Pedestrian refuge island • Street Trees



02

DESIGN GUIDE TOOLKIT

HOW TO USE THE DESIGN GUIDE TOOLKIT

Traffic calming elements slow drivers and improve the street function and experience for all users.

This chapter includes detailed cutsheets for a wide range of traffic calming elements. There is no one-size-fits-all approach to traffic calming, and each element has specific locations for use, design features, and maintenance considerations. Traffic calming features are organized by:

1. **General Traffic Calming Treatments:** Geometric traffic calming features that feature a wide range of uses along a street.
2. **Intersection & Mid-block Crossing Treatments:** Geometric modifications for intersections and mid-block crossings.
3. **Multimodal Street Improvements:** Street infrastructure for bikes and transit.
4. **Intersection Operations & Signal Modifications:** Signal and operational modifications to intersections and mid-block crossings.



DESIGN ELEMENTS OVERVIEW

Table 3 below highlights the design elements that can be used in complete street cross-sections. While this list is not exhaustive, it presents a starting place for most streets in Appleton.

Category	Design Element	Pg	Location	Classifications	Quick-Build Option
General Traffic Calming Treatments	Curb Extensions	34	Segment, Intersection	Arterial, Collector, Local	Yes
	Speed Tables	35	Segment	Collector, Local	-
	Speed Humps	36	Segment	Collector, Local	-
	Speed Cushions	37	Segment	Collector, Local	-
	Median Chokers	38	Segment	Collector, Local	Yes
	Pinchpoints	39	Segment, Intersection	Collector, Local	Yes
	Chicanes	40	Segment	Collector, Local	Yes
	Four- to Three-Lane Conversion	41	Segment, Intersection	Arterial, Collector	-
	Street Trees	42	Segment	Arterial, Collector, Local	-
Intersection & Mid-block Crossing Treatments	Corner Radii Design	44	Intersection	Arterial, Collector, Local	Yes
	Raised Crosswalks	45	Segment, Intersection	Collector, Local	Yes
	Raised intersections	46	Segment, Intersection	Collector, Local	Yes
	Mini Traffic Circles	47	Intersection	Local	Yes
	Mountable Truck Aprons	48	Intersection	Arterial, Collector, Local	-
	Pedestrian Refuge Islands	49	Segment, Intersection	Arterial, Collector	Yes
	One-way Diverter	50	Intersection	Arterial, Collector, Local	Yes
	Diagonal Diverter	51	Intersection	Collector, Local	Yes
Multimodal Street Improvements	Bus Stops	53	Segment, Intersection	Arterial, Collector, Local	Yes
	Bicycle Boulevard	54	Segment, Intersection	Collector, Local	Yes
	Bike Lanes	55	Segment, Intersection	Arterial, Collector	Yes
	Protected Bike Lanes	56	Segment, Intersection	Arterial, Collector	Yes
	Sidewalk	57	Segment, Intersection	Arterial, Collector, Local	-
Intersection Operations & Signal Modifications	No Right Turn on Red	59	Intersection	Arterial, Collector, Local	-
	Rectangular Rapid Flashing Beacon (RRFB)	60	Segment, Intersection	Arterial, Collector	-
	Pedestrian Hybrid Beacon (PHB)	61	Segment, Intersection	Arterial, Collector	-
	Hardened Left Turns	62	Intersection	Arterial, Collector	Yes
	Exclusive Pedestrian Phase	63	Intersection	Arterial, Collector	-

Table 3: Design elements reference guide.

APPLICATION OF DESIGN ELEMENTS

The design elements in this section can be utilized to address specific challenges, as illustrated in Table 4.

The specific distribution and application of design elements will vary based on a variety of factors including context and project budget.

Design Element	Traffic calming and high-speed reduction	Increase pedestrian priority and reduce crossing distances	Expand multimodal access & mobility	Increase pervious surfaces and urban greening
Curb Extensions	Yes	Yes		Yes
Speed Tables	Yes	Yes		
Speed Humps	Yes			
Speed Cushions	Yes			
Median Chokers	Yes			Yes
Pinchpoints	Yes	Yes		Yes
Chicanes	Yes			Yes
Four- to Three-Lane Conversion	Yes	Yes		Yes
Street Trees	Yes			Yes
Corner Radii Design	Yes	Yes		
Raised Crosswalks	Yes	Yes		
Raised intersections	Yes	Yes		
Pedestrian Refuge Islands	Yes	Yes		Yes
Mini Traffic Circles	Yes			Yes
Mountable Truck Aprons			Yes	
One-way Diverter	Yes			
Diagonal Diverter	Yes			
Bus Stops			Yes	
Bicycle Boulevard			Yes	
Bike Lanes			Yes	
Protected Bike Lanes	Yes		Yes	
Sidepath			Yes	
No Right Turn on Red		Yes		
Hardened Left Turns		Yes		
Rectangular Rapid Flashing Beacon (RRFB)		Yes		
Pedestrian Hybrid Beacon (PHB)		Yes		
Exclusive Pedestrian Phase		Yes		

Table 4: Design elements application guide.

WINTER MAINTENANCE

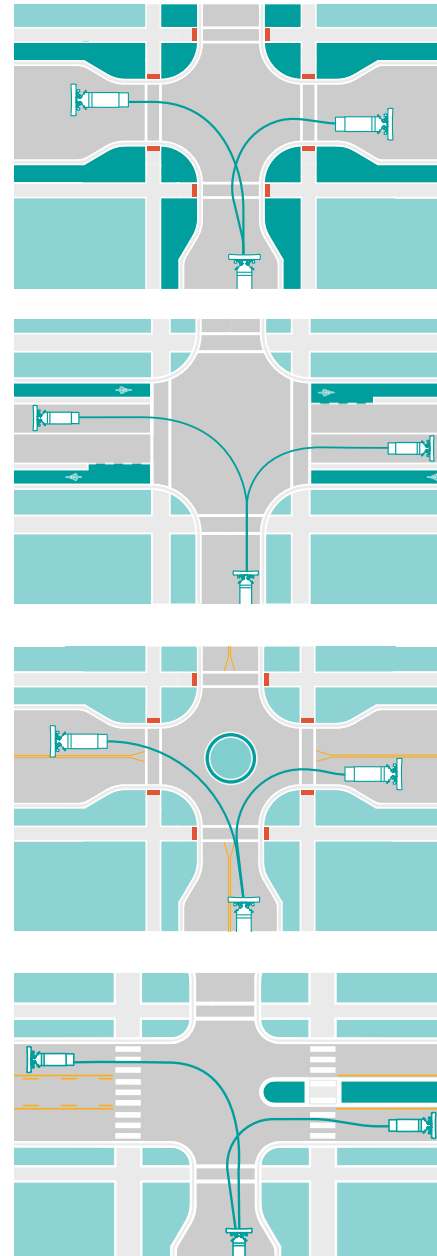
Elements of complete streets may increase equipment and labor costs associated with snow removal. In general, standard maintenance equipment (e.g. large truck-mounted plows) moving in a straight line represent the least-cost conditions for snow removal. For complete street elements that modify the roadway geometry, plows may need to slow down to avoid causing damage to curb heads or other infrastructure.

Some complete streets elements, such as sidepaths, are too narrow to use the most cost-efficient large-scale equipment for snow removal. These elements may also limit the space available to store snow while maintaining pedestrian and bike access. This can result in a greater need for snow hauling, and associated labor and equipment cost increases.

MAINTENANCE VEHICLES

As mentioned above, complete street traffic calming features may present new challenges for winter maintenance. Turning movements of winter maintenance vehicles are critical to consider in all complete street designs, and have been factored into the guidance of each element.

Figure 4: Turning movements for 3-axle snow plow, based on auto-turn analysis.



Assumptions:

At local intersections, plows may curve outside of their lane when making left or right turns. Reference corner radii design on pg. 44.

At most collector and arterial intersections, streets should be design for plows to turn without impacting oncoming travel lanes. Reference corner radii design on pg. 44.

At traffic circles, it is expected that plows will be allowed to short-cut the circuit when making a left turn. Reference traffic circles on pg. 47.

At pedestrian refuge islands on narrow arterials or collectors, it is expected that plows turning right from a local street may curve outside of their lane. Reference pedestrian refuge islands on pg. 49.

WINTER MAINTENANCE CONSIDERATIONS



Snow on mini traffic circle. Post Crescent.



Recessed thermoplastic bike lane symbol. Alta.



Snow stored in ROW. Minnesota Dept. of Health.

Navigating Traffic Calming Features

Various traffic calming features in this section modify the horizontal and vertical geometry of the roadway. Features should be designed with slopes, grades, and radii that ensure that winter maintenance can occur. Maintenance considerations have been included for each traffic calming element in the design guide beginning on page 33, where applicable.

Recessed Thermoplastic Pavement Markings

Milling the area of pavement 3mm in depth where durable pavement markings are applied has shown to be effective in reducing damage as a result of snowplows. This method increases installation costs but reduces long-term maintenance costs and maintains roadway function.

Plan Roadways with Sufficient Right of Way

On new roadways or full reconstructions, the street design should provide adequate for snow storage space. Street designs should provide street terraces or buffers for snow storage to ensure that plows can clear the entire roadway, bike lanes, and sidewalks.



Striping, paint, and curb cues. SF Bike Coalition.



Snow stored in bike lane buffer. Henry Pan.



Cycle track plowing. Streets.mn.

Edge-of-roadway Visual Cues

Pavement markings, striping, curbs, and other visual cues at ground-level are indicators of a bicycle travel way when the ground is clear, but they lose their utility, and can become hazardous after snow. For these reasons, it is important to provide alternative visual cues. Piling snow in the buffer of protected bikeways to deter parking in protected bike lanes, and along the sidewalk furnishing zone helps visually define path of travel and helps snow plow operators identify curb lines. This is especially critical when a bike facility bends in/ out around curb extensions, median islands or other transitions.

Store Snow in The Bike Lane Buffer

Where bike lanes have a wide, painted buffer, snow may be able to be stored in the buffer between the motor vehicle lane and bike lane. This requires the roadway plow to plow snow to the right, and the bike lane plow to plow snow to the left. This method may be useful where there is insufficient snow storage areas between the bike lane and the sidewalk. While this method creates a de-facto protected bike lane, snow melt should be considered. During the day, stored snow can melt and flow across the bike lane, resulting in an icy bikeway surface condition. This needs to be countered with a deicing operation.

Small Snow Plow Vehicles

Many cities use specialized plows referred to as 'downsized street maintenance vehicles'. These smaller vehicles are able to clear confined travelways such as separated bike lanes, sidewalks, and trails. Cities can also use existing maintenance vehicles with mounted snow blades as a more cost-effective and time-efficient solution.

GENERAL TRAFFIC CALMING TREATMENTS

A variety of geometric interventions can be added to a roadway to slow traffic while also improving the look, feel, and function of the roadway. These treatments include both horizontal and vertical treatments and both physically and psychologically encourage slower traffic speeds. Treatments include:

Curb Extensions

Curb extensions are a traffic calming & pedestrian safety measure that help delineate parking and shorten crossing distance.

Speed Tables

Speed tables share the same characteristics as raised crossings, but are placed mid-block instead of at an intersection.

Speed Humps

Speed humps provide vertical deflection to slow vehicles down and facilitate uninterrupted bicycle and emergency vehicle access.

Speed Cushions

Speed cushions are speed humps with cut-throughs that allow emergency vehicles to pass through while still requiring standard vehicles to slow down.

Median Chokers

Median chokers are horizontal traffic calming devices that narrow or deflect vehicle paths to reduce speed.

Pinchpoints

Pinchpoints narrow the roadway, restricting motorists from operating at high speeds when driving on local streets while providing a widened pedestrian realm along the street.

Chicanes

Chicanes are a series of raised/delineated curb extensions or parking bays on alternating sides of a street forming an S-shaped travel way to reduce motor vehicle speeds.

Four-lane to Three-Lane Conversion

A four-lane to three-lane conversion, also commonly referred to as completing a “Road Diet” or “right-sizing the road” is generally described as the removal of travel lanes from a roadway to utilize the space for other uses or travel modes.

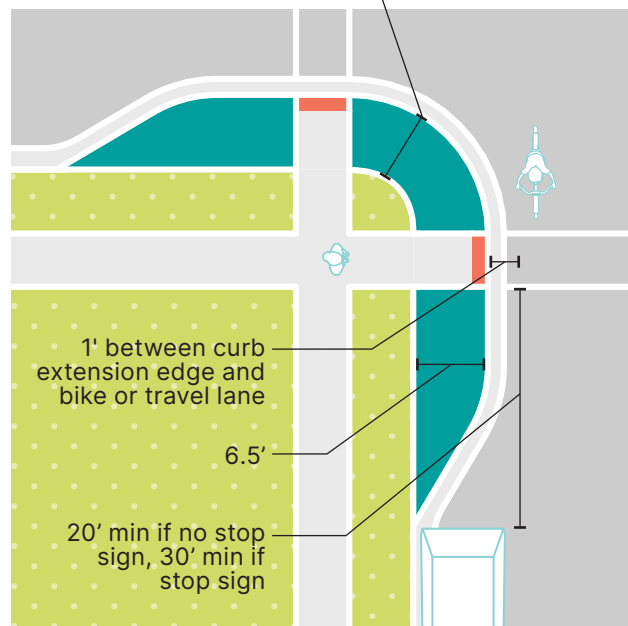
Street Trees

While street trees increase pedestrian comfort by providing shade and a barrier to moving traffic, they also encourage motorists to slow down as they make the roadway feel narrower.

CURB EXTENSIONS

Curb Extensions are a traffic calming and pedestrian safety measure that help delineate parking, maximize landscaping, and shorten crossing distance, giving pedestrians and bicyclists a better chance to see and be seen before committing to crossing. In addition to shortening crossing distances and slowing traffic, they protect parked cars and provide space for trash receptacles and other amenities without blocking the sidewalk.

Curb Radius varies by street classification, context, and vehicle types - Reference "Corner Radii Design"(pg.44)



Typical Application

- Arterial, Collector, and Local Roads.
- May be placed mid-block or at an intersection.
- May be combined with crossing treatments.
- Most effective on streets with parking lanes.

Features

- In most cases, the curb extensions should be designed to transition between the extended curb and the running curb to approximately match the existing no parking/no standing area design standards.
- Curb extensions are most appropriate where there is an on-street parking lane and where transit and bicyclists would be traveling outside the curb edge for the length of the street.
- The turning needs of larger vehicles, such as school buses or emergency vehicles, need to be considered in curb extension design at intersections. For curb radii requirements, reference Table 6 (on page 44).
- Curb extensions should not block bicycle lanes or shoulders being used by bicyclists. In locations with protected bike lanes next to a parking lane, the curb extension begins at the inside edge of the bike lane and occupies the parking lane.
- Curb extensions can contain grass, landscaping, decorative concrete, public art, and tree grates in larger curb extensions.

Quick-Build Option

- Quick-build implementation with paint, traffic tape, and flexible posts.

Maintenance Considerations

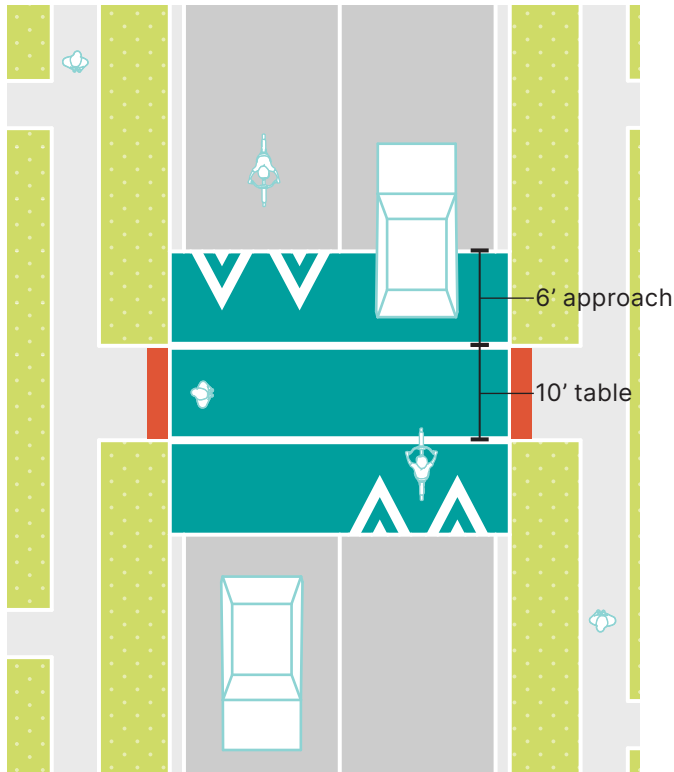
- For efficient street sweeping and snow plowing, minimum radius for the reverse curves of the transition is 10 feet and the two radii should be balanced to be nearly equal.

SOURCES

NACTO Urban Street Design Guide: curb-extensions
 FHWA Pedestrian Safety Guide and Countermeasure Selection System
 Appleton Downtown Streetscape Design Guide

SPEED TABLE

Speed tables share the same characteristics as raised crossings, but are placed mid-block instead of at an intersection. With this placement, they are often applied in conjunction with curb extensions. They work by raising the entire wheelbase of a vehicle to reduce its traffic speed. Speed tables may be used on collector streets and/or transit and emergency response routes.



Typical Application

- Collector, Local and in some circumstances, Arterial Roads.
- Applied mid-block to reduce vehicle traffic speed.
- May be used on collector streets.

Features

- Speed tables should be designed to the following criteria:
 - » Slopes should not exceed 1:10 or be less steep than 1:25
 - » Speed tables may be built at 3-6" in height, with 3-4" most commonly recommended
- Speed tables should not be applied on streets wider than 50 feet. If applied on two-way streets, speed tables may be applied in both directions.
- Locate vertical speed control elements where sufficient visibility and lighting is available.
- Speed tables can be installed using unit pavers or other differentiating materials as a strategy to help highlight and define the speed table for motorists, bicyclists, and pedestrians.
- Speed tables shall be accompanied by a warning sign (MUTCD W17-1).

Maintenance Considerations

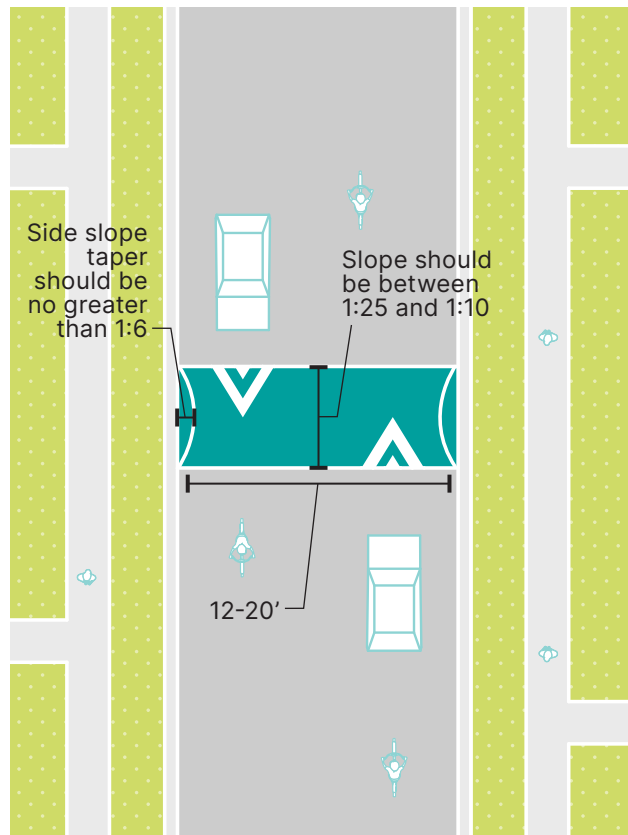
- Use of differentiating materials, such as unit pavers, may require additional maintenance responsibilities.

SOURCES

- NACTO Urban Street Design Guide: Speed Table
FHWA Pedestrian Safety Guide and Countermeasure Selection System: Speed Table/
Humps/Cushions
FHWA Traffic Calming ePrimer: Module 3: Toolbox of Individual Traffic Calming
Measures Part 2: Speed Table

SPEED HUMP

Speed humps provide vertical deflection requiring vehicles to slow down. They facilitate uninterrupted bicycle travel & emergency vehicle access.



Typical Application

- Residential Local Street or any street where the primary function is to provide access to abutting residential property, school, park, or community center.
- Also appropriate for Residential Collectors.
- Along roadways where speed management is needed.

Features

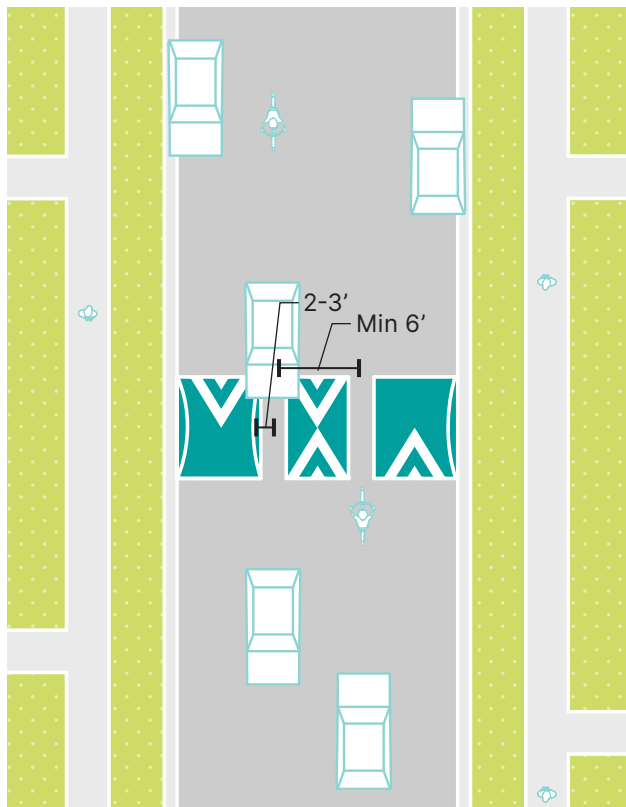
- Speed Humps should be designed to the following criteria:
 - » Slopes should not exceed 1:10 or be less steep than 1:25
 - » Side slopes on tapers should be no greater than 1:6
- Speed humps are elongated mounds with a parabolic cross section.
- Spacing to be determined based on individual project constraints and target speeds. Humps should be spaced no more than a max 500' apart to achieve an 85th percentile speed of 25-35mph.
- Vertical speed devices may be paired with curb extensions or chokers that also narrow the traversable roadway for greater impact.
- Design is an elongated mound in the street that is between 12 and 20 feet in length and 3-4 inches tall.
- Vertical speed devices are typically designed with sides that taper off at the gutter for drainage. This design may be modified to end the taper further from the gutter to create a wide, flat surface for a bicycle bypass lane, if desired.
- Avoid placement in sharp horizontal or vertical curves.
- Speed humps should be paired with warning signage (MUTCD W17-1).

SOURCES

- NACTO Urban Street Design Guide: Speed Hump
- FHWA Pedestrian Safety Guide and Countermeasure Selection System: Speed Table/Humps/Cushions
- FHWA Traffic Calming ePrimer: Module 3: Toolbox of Individual Traffic Calming Measures Part 2: Speed Hump

SPEED CUSHION

Speed cushions are speed humps with cut-throughs that allow emergency vehicles to pass through unimpeded while still requiring typical passenger vehicles to slow down (emergency vehicles have wider wheel bases than typical cars). Speed cushions provide vertical deflection that forces vehicles to slow down.



Typical Application

- Collector and Local Roads.
- Along roadways where speed management is needed.
- As a preferred alternative to a speed hump on a primary emergency response route or on a transit route with frequent service.
- Locate speed cushions where there is sufficient lighting and clear visibility.

Features

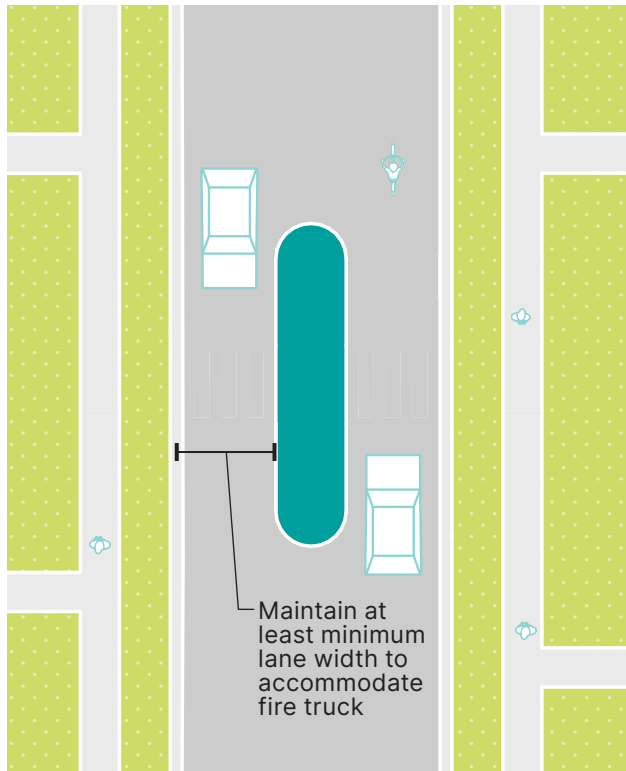
- Speed Cushions should be designed to the following criteria:
 - » Slopes should not exceed 1:10 or be less steep than 1:25
 - » Side slopes on tapers should be no greater than 1:6
- Cutouts in the speed cushions are positioned such that a passenger vehicle cannot pass it without traveling over a portion of the raised pavement.
- Short centerlines and/or traversable features such as flexposts will allow emergency vehicle passage while preserving the full impact of the hump to non-emergency vehicles.
- Speed cushions may be paired with curb extensions or chokers that also narrow the traversable roadway for greater impact.
- A speed cushion is typically designed with sides that taper off at the gutter for drainage. This design may be modified to end the taper further from the gutter to create a wide, flat surface for a bicycle bypass lane, if desired.
- Speed cushions should be paired with warning signage (MUTCD W17-1.)

SOURCES

NACTO Urban Street Design Guide: Speed Cushion
FHWA Pedestrian Safety Guide and Countermeasure Selection System: Speed Table/Humps/Cushions
FHWA Traffic Calming ePrimer: Module 3: Toolbox of Individual Traffic Calming Measures Part 2: Speed Cushion

MEDIAN CHOKER

Median chokers are horizontal traffic calming devices that narrow or deflects vehicle paths to reduce speed. They can be combined with a pedestrian crossing to allow pedestrians and/or bicyclists to cross a roadway in stages, reducing exposure, increasing visibility and improving overall safety. Additionally, trees/landscaping can be integrated within medians to improve the appearance of the roadway.



Typical Application

- Arterial, Collector, and Local Roads.
- As traffic calming along roadway, possibly where excess width is present.
- As a mid-block or a “gateway” treatment from a collector or arterial street to a lower speed neighborhood street.
- Can be used as a pedestrian refuge if placed at a crosswalk.

Features

- Lane widths should be wide enough to accommodate emergency vehicles.
- May require removal of some on-street parking to accommodate median and horizontal shifts.
- Can be combined with raised crosswalks/curb extensions to improve speed reduction.
- Avoid blocking driveway access with this treatment.
- May be painted or constructed from temporary materials, but they are most effective when defined by a raised curb and landscaped.
- May be partially or fully mountable in some cases. See “Mountable Aprons” on pg. 48.
- May be continuous through an intersection and configured to allow pedestrian and bicycle traffic to pass but divert motor vehicles as a volume control method. See “One-Way Diverter” on pg. 50.
- Generally will not impact roadway drainage as main feature is in the center.

Quick-Build Option

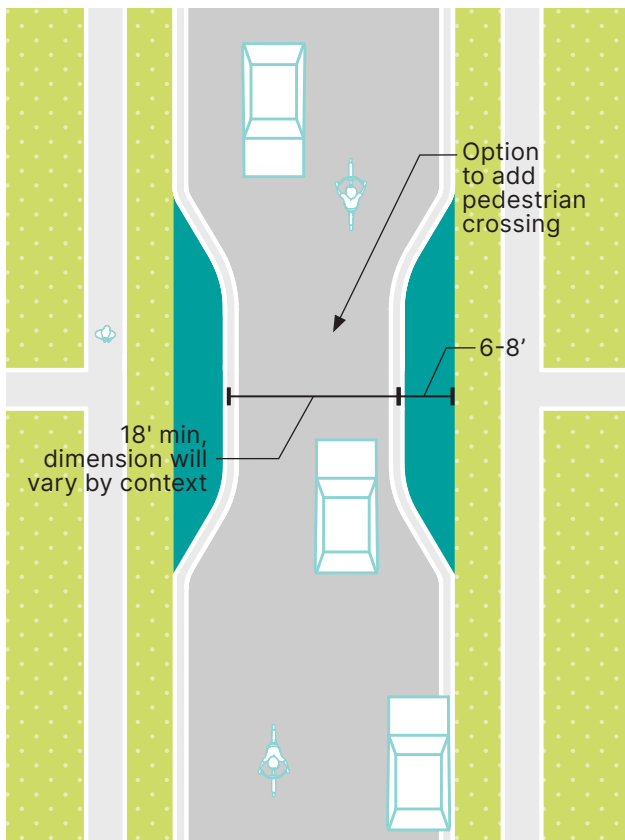
- Quick-build implementation with paint, traffic tape, and flexible posts.

SOURCES

NACTO Urban Street Design Guide: Speed Reduction Mechanisms
FHWA Traffic Calming ePrimer - Module 3: Median Island

PINCHPOINT

When used as a traffic-calming treatment, mid-block curb extensions are often referred to as “pinchpoints” or “chokers.” Pinchpoints narrow the roadway, restricting motorists from operating at high speeds when driving on local streets while providing a widened pedestrian realm/opportunity for the addition of trees/landscaping along the street.



Typical Application

- Arterial, Collector, and Local Roads.
- Can be spaced along the roadway as needed.
- Can be used on a one-lane or two-lane two-way street.
- Can be used on arterial, collector, or local streets in an urban or suburban setting at all levels of traffic volume.
- Can be used to facilitate mid-block pedestrian crossings of low-volume streets. These crossings don't need to be marked unless volumes exceed 3,000 vehicles per day, or if mid-block destinations warrant a more visible treatment.

Features

- The goal of a pinchpoint is to narrow the road, effectively reducing vehicle speeds.
- Width of pinchpoint will vary based on street context and classification. For two-way roads, the width of pinchpoint should align with lane width minimums. For example, a local residential minimum width is 18ft.
- A pinchpoint can be created using roadside islands that do not connect to the curb.
- Street trees can be planted in curb extensions that are aligned with the parking lane of a roadway to narrow the profile of the road. Bike racks can be added in curb extensions.
- In some cases on wider roadways, pinchpoints can be paired with a median to reduce the possibility of opposing vehicle conflicts.

Quick-Build Option

- Quick-build implementation with paint, traffic tape, and flexible posts.

Maintenance Considerations

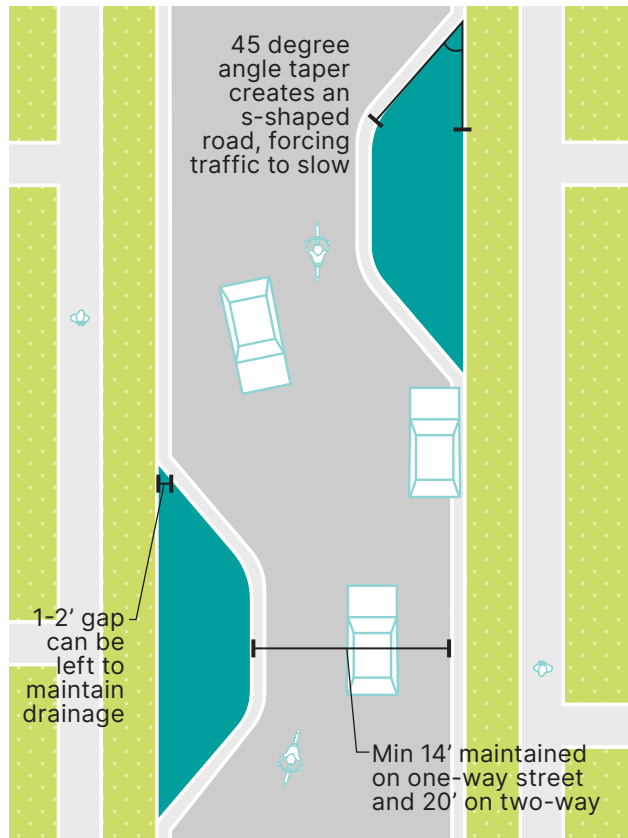
- For efficient street sweeping and snow plowing, minimum radius for the curves and reverse curves of the transition is 10 feet.

SOURCES

NACTO Urban Street Design Guide: Pinchpoint
NACTO Urban Street Design Guide: Speed Reduction Mechanisms
FHWA Traffic Calming ePrimer: Module 3: Toolbox of Individual Traffic Calming Measures
Part 2: Choker

CHICANE

Chicanes are a series of raised/delineated curb extensions, or parking bays on alternating sides of a street forming an S-shaped travel way. Speed is reduced for motor vehicles by requiring drivers to shift horizontally through narrowed travel lanes. Chicanes can allow for both directions of traffic to pass at a time or just one direction. Trees/landscaping can also be added to chicanes.



Typical Application

- Local or low-volume Collector Roads.
- As a traffic-calming treatment option along a mid-block section of a low-volume roadway.
- Can be used on a one-lane or two-lane, two-way road.
- Can be installed with urban (curb/gutter) or rural (ditch) contexts.
- Chicanes could include stormwater collection features.

Features

- On wider streets, bicycle bypasses in one or both directions can be added to the outside.
- The turning needs of larger vehicles, such as school buses or emergency vehicles, may need to be considered through the chicane. Mountable curbs may be necessary.
- Curb extensions (if used) must be designed to provide adequate drainage. Floating islands may be used to maintain existing drainage.
- Crosswalks should not be integrated with this treatment as motorists should be only concerned with horizontal deflection.
- May impact on-street parking if curb extensions displace parking.

Quick-Build Option

- Quick-build implementation with paint, traffic tape, and flexible posts.

Maintenance Considerations

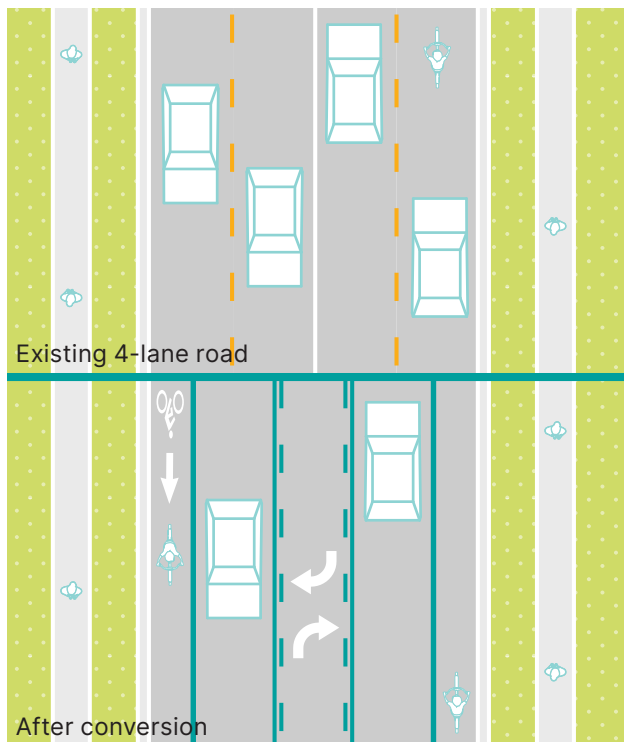
- For efficient street sweeping and snow plowing, minimum radius for the curves and reverse curves of the transition is 10 feet.

SOURCES

NACTO Urban Street Design Guide: Chicane
FHWA Pedestrian Safety Guide and Countermeasure Selection System: Chicanes

4-LANE TO 3-LANE CONVERSION

A four-lane to three-lane conversion, also commonly referred to as completing a “Road Diet” or “right-sizing the road” is generally described as the removal of travel lanes from a roadway to utilize the space for other uses or travel modes. This most commonly takes the form of a conversion of an undivided four lane roadway to a three-lane undivided roadway made up of two through lanes and a center two-way left-turn lane (TWLTL). The reduction of lanes allows the roadway cross section to be reallocated for other uses such as bike lanes, pedestrian refuge islands, transit uses, and/or parking.



Typical Application

- Arterial, Collector, and Local Roads.
- This treatment can be applied on four-lane undivided roads, including along transit and emergency response routes. The following volumes can be considered:
 - » Less than 10,000 ADT: Great candidate in most cases. Capacity most likely will not be affected.
 - » 10,000-15,000 ADT: Good candidate in many cases. Intersection analyses should be conducted and signal re-timing should be considered in conjunction with implementation.
 - » 15,000-20,000 ADT: Good candidate in some instances; however, capacity could be affected depending on conditions. A corridor analysis should be conducted before implementing.
 - » Greater than 20,000 ADT: A feasibility study should be completed to determine if the location is a good candidate. Some agencies have had success with these conversions on high-volume roads.

Features

- Conversion may create additional space for bike lanes, wider sidewalks or amenity zones, or add street parking (if not previously existing).
- If street parking is existing, a conversion won't necessarily impact it.
- Factors that must be considered before completing a conversion:
 - » Speeds, Level of Service (LOS)
 - » Quality of Service (perceived level of safety)
 - » ADT
 - » Peak hour and peak direction
 - » Turning volumes and patterns
 - » Vehicle traffic that is frequently stopping/moving slow

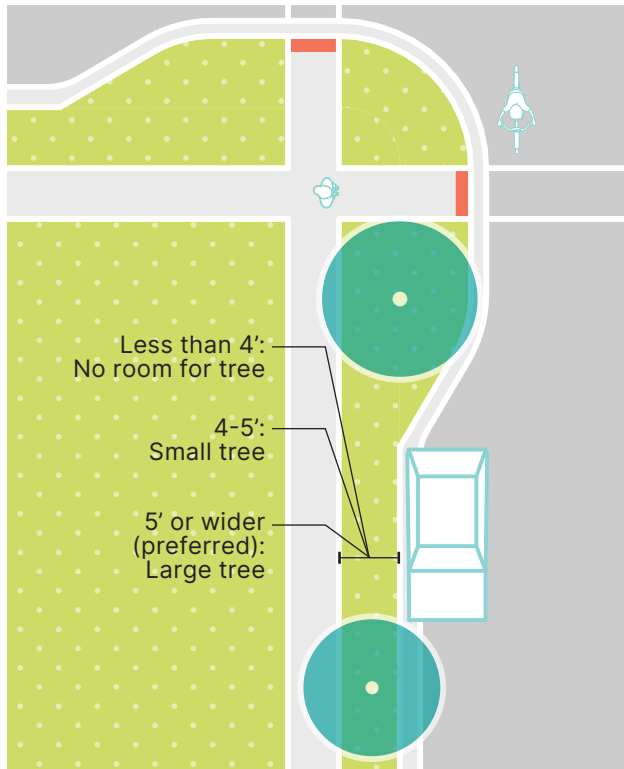
SOURCES

FHWA Highway Safety Program - Proven Safety Countermeasures: Road Diets (Roadway Configuration)

FHWA Safety Program - Road Diet Informational Guide

STREET TREES

Street trees (managed through the Stormwater Utility) can increase comfort for pedestrians and bicyclists by lowering temperatures, filtering air and water, and helping with stormwater management. The presence of trees can make walking and biking facilities feel more comfortable and appealing, contributing to mode shift and reducing greenhouse gas emissions. On tree-lined streets people tend to drive more slowly, reducing the risk of collisions.



Typical Application

- Trees may be planted in the right-of-way if they do not negatively impact sight lines and where adequate soil volume is available.

Features

- Provide as much soil volume as feasible to extend life/increase health of street trees. As a rule of thumb, a small tree (20-30ft), medium tree (30-60ft), and large tree (60ft+), should be provided a minimum of 600, 900, and 1200 cubic feet respectively of high-quality rootable (loose, aerated, water storing) soil.
- In commercial areas, tree grates and raised planters may be considered to provide additional space for amenities. In most other locations, tree grates are discouraged due to the reduction in tree health, needed maintenance, and lack of accessible pedestrian space provided.
- The City Forester will determine suitable tree species.

Maintenance Considerations

- Irrigate if feasible to help trees survive drought or heat stress.
- Salt spray can damage trees. Injury to evergreen trees is apparent in the late winter, while it takes longer to manifest in deciduous trees. Avoid salt damage by selecting salt-tolerant trees, using road salt alternatives, and covering smaller trees in burlap.
- Select trees that won't interfere with overhead lines.

SOURCES

Wisconsin DNR Urban Tree Planting Resources
 Minneapolis Street Design Guide: Boulevards and Furnishing: Street Trees

INTERSECTION & MID-BLOCK CROSSING TREATMENTS

Modifications at intersections and mid-block crossings provide safer pedestrian and bike crossings, and encourage slower speeds by vehicles. These treatments modify intersection and mid-block geometry to shorten crossing distances, make pedestrians more visible to vehicles, and control vehicular turning movements. Treatments include:

Corner Radii Design

A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach.

Raised Crosswalks

Raised crosswalks allow pedestrians and bicyclists to cross at sidewalk level while forcing vehicles to slow down.

Raised Intersections

Raised intersections provide vertical deflection at an entire intersection, forcing vehicles to slow down.

Pedestrian Refuge Islands

Pedestrian refuge islands are used at mid-block crossings or at intersections that allow pedestrians/bicyclists to cross a roadway in stages, reducing exposure and increasing visibility while providing the same traffic-calming effects as a median choker.

Mini Traffic Circles

Mini traffic circles are raised or delineated islands placed at minor street intersections to encourage slower vehicle movements and manage conflicts at the intersection.

Mountable Aprons

Mountable aprons limit turning speed for passenger vehicles while still allowing larger vehicles to complete the turn.

One-way Diverter

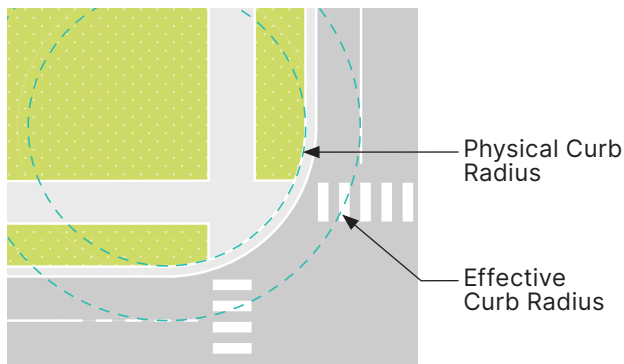
One-way diverters, also known as “half closures,” block vehicle travel for motor vehicles in one direction while preserving two-way bicyclist access.

Diagonal Diverter

Diagonal diverters may be placed at a local road to local road four-way intersection and require all motor vehicle traffic to turn, while allowing bicyclist and pedestrian through movements.

CORNER RADII DESIGN

The size of a curb’s radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach. During the design phase, the chosen radius should be the smallest possible for the circumstances and consider the effective radius in any design vehicle turning calculations.



Intersection Type	Minimum Effective Curb Radius (ft)
No turning movement	2
Local-Local	12
Local-Collector	15
Collector-Collector	18
Collector-Arterial	18
Arterial-Arterial	18

Table 5: Effective corner radii reference table

Typical Application

- All corners have a radius, but size varies on context. Size is related directly to the length of the crosswalk.
- Standard curb radii are 10-15 ft, but the curb radius may be as small as 2 ft where there are no turning movements.
- Wide outside travel lanes, on-street parking and bike lanes create a larger effective turning radius and therefore allow a smaller physical curb radius.
- Turning speeds should be limited to 15mph or less.
- Minimize effective turning radius by employing of the following techniques:
 - » Select smallest possible design vehicle
 - » Accommodate trucks and buses on designated truck/bus routes
 - » Restrict right turn on red to minimize interaction between turning vehicles and crossing pedestrians and cyclists. Reference "No Right Turn on Red", page 59
 - » Design so emergency vehicles may use full intersection to turn

Features

- Corners have two critical dimensions which must be considered together.
 - » The physical radius controls the pedestrian experience.
 - » The effective radius is the widest turning arc that a vehicle can take through the corner and is larger than the physical radius.
 - » Curb radius choice involves desired pedestrian area of the corner, street classifications, design vehicle turning radius, intersection geometry, and if on-street parking/bike lane (or both) are between the travel lane and curb.

Quick-Build Option

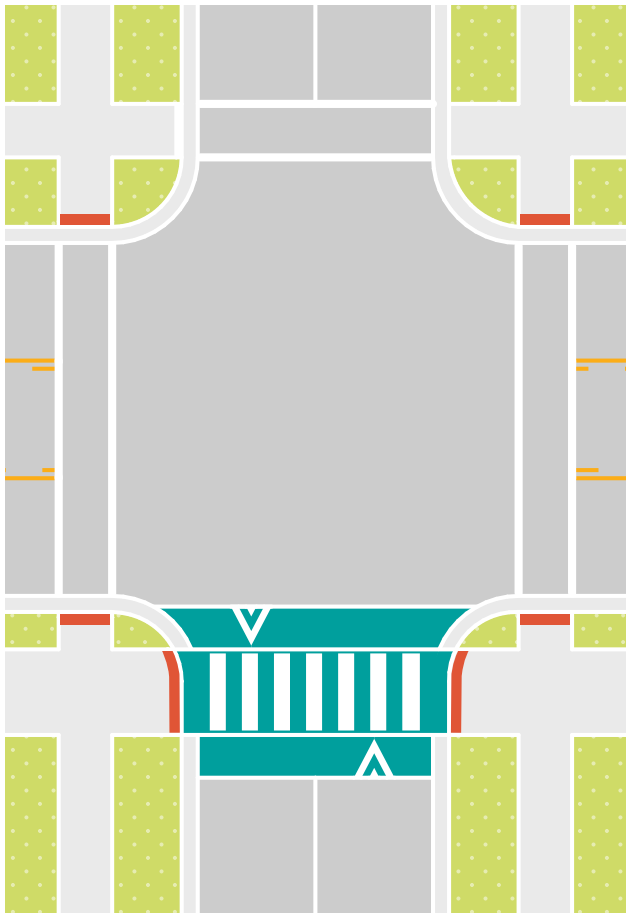
- Quick-build implementation with paint, traffic tape, and flexible posts.

SOURCES

NACTO Urban Street Design Guide: Corner Radii
Global Street Design Guide: Corner Radii

RAISED CROSSWALK

Raised Crosswalks give priority to pedestrians and bicyclists, allowing them to cross at sidewalk level, and require vehicles to slow down. They can be implemented at mid-block crossings, intersections, or along the major street at side streets.



Typical Application

- Residential Collector and Local Roads. Can be applied on a low-speed Arterial Road through a commercial district.
- Along roadways where speed management is needed.
- At an intersection within a school zone, local business district or on a walking route.
- Can be placed mid-block or at an intersection.
- May not be appropriate for primary emergency vehicle routes or streets that provide access to emergency medical services.
- Appropriate for bus transit routes if speeds are low.
- Avoid using raised crosswalks on steep streets as they can act as ramps for bicyclists and vehicles.

Features

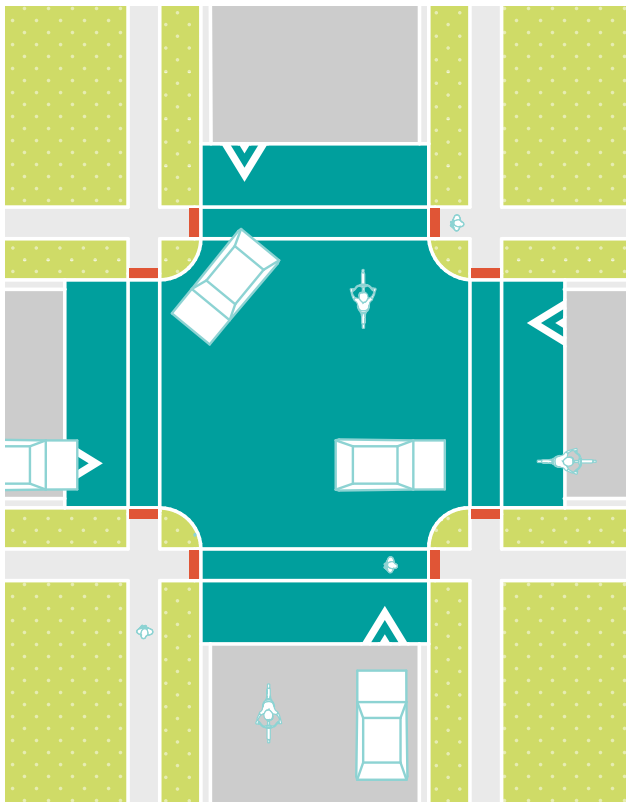
- Crosswalk markings will depend on context.
- In most cases, vertical transition will be designed similar to a speed table with heights of 3-6".
- Drainage must be adequately accommodated through inlet relocation or open channels along the sides. These designs allow for a fully raised crosswalk, which is preferable for pedestrians with disabilities.
- Raised crosswalks can also be provided with an open section on the sides utilizing a conventional curb ramp though this design does not provide all of the benefits of the fully raised design.
- Raised crosswalks may be paired with curb extensions or chokers that also narrow the traversable roadway and provide improved sight distance to pedestrians.

SOURCES

NACTO Urban Street Design Guide: Intersections of major and minor streets
FHWA Traffic Calming e-Primer: speed management/traffic calming

RAISED INTERSECTIONS

Raised intersections provide vertical deflection at an entire intersection requiring vehicles to slow down. The road level is raised to the sidewalk level and the surface can be built with a variety of materials such as asphalt, concrete, or pavers. The crosswalks are also elevated. The pedestrian space is often differentiated with bollards, materials, and detectable warnings.



Typical Application

- Intersections of Collector and Local Roads. Can be applied on a low-speed Arterial Road in a business district with significant pedestrian activity.
- At smaller signalized, or unsignalized intersections.
- At residential and smaller business district contexts.
- At offset intersections as a shared lane/street treatment.
- At junctions of multiple bicycle boulevards where slowing vehicles in all directions is desirable.
- At an intersection within a school zone on a walking route.

Features

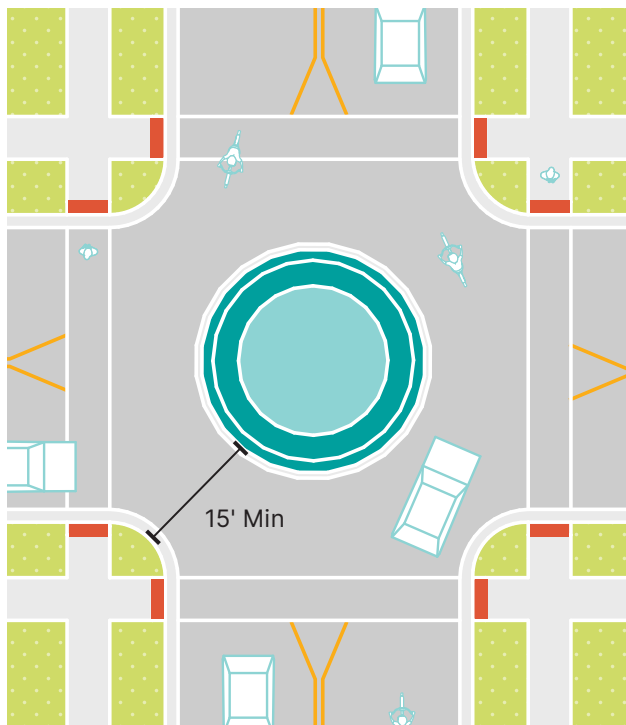
- Raised intersections are typically raised to be flush with the sidewalk, typically between 3-6".
- Crosswalks do not need to be marked, however this is recommended.
- Bollards may be used at corners to keep motorists from crossing into the pedestrian space. Bollards should be strategically placed to avoid impacting the movement of pedestrians and cyclists.
- To make the division between the raised intersection and the sidewalk clear, contrasting colors and/or materials from the sidewalk should be used to construct the raised crosswalk.
- Users with visual impairments may have trouble if they cannot detect the edge of the pedestrian space; therefore, truncated domes should be used.
- The turning needs of larger vehicles, such as school buses or emergency vehicles, may need to be considered in raised intersection design, especially at intersections with significant truck/bus traffic.
- The raised transitions must be designed to provide adequate drainage.
- The vertical transition will be designed similar to a speed table.

SOURCES

NACTO Urban Street Design Guide: Raised Intersections
 NACTO Urban Bikeway Design Guide: Major Street Crossings
 FHWA Traffic Calming e-Primer: Raised Intersection

MINI TRAFFIC CIRCLES

Mini Traffic Circles are raised or delineated islands placed at minor street intersections. They encourage slower vehicle movements and manage conflicts at the intersection so that users may enter in all directions with a yield on entry control. Raised island design can vary and may include mountable curbs or aprons, landscaping, and signage.



Typical Application

- Junction of two Local Roads or of a Local and Collector Road.
- At low-volume uncontrolled intersections that may not justify signalization.
- At junctions of multiple bicycle boulevards where slowing vehicles in all directions is desirable.
- Where it is desirable to maintain bicycle momentum and a stop sign would otherwise be needed.

Features

- Maintain 15' min clear from the corner to the edge of the circle.
- Crosswalks not needed at most local road to local road intersections.
- Signage is not required. For traffic circles with specific safety issues, an MUTCD warning sign may be placed in the middle.
- Traffic circles may include a mountable apron to accommodate the turning radii of larger vehicles like fire trucks or school buses (see pg. 48). The island may be fully mountable if needed at constrained intersections.
- Consider drainage and if there is a valley gutter along one of the streets, this may make the vehicle path uncomfortable.
- Non-mountable portion of traffic circle may include landscape, public art, and permanent signage, contingent on meeting required horizontal offsets and maintaining sight triangles.
- Shared lane markings may be provided within the intersection in the center of the circulating lane to encourage proper bicyclist lane positioning and discourage vehicle passing.

Quick-Build Option

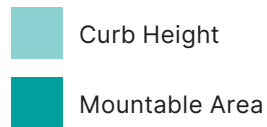
- Quick-build implementation with paint, traffic tape, flexible posts, and/or plastic or rubber curbs.

SOURCES

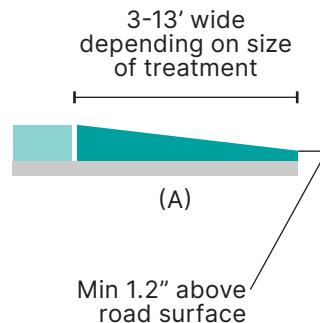
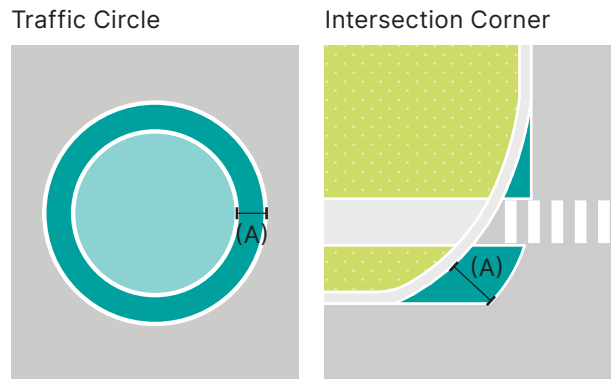
Bikesafe Bicycle Safety Guide and Countermeasure Selection System: Mini-Circles

MOUNTABLE APRONS

Mountable aprons limit turning speed for passenger vehicles while still allowing larger vehicles to complete the turn. This creates a tighter effective radius for smaller vehicles while still accommodating large trucks without endangering other road users.



Mountable Apron Examples:



Typical Application

- Single radius curb aprons with mountable zone are designed to be usable for the vast majority of vehicles. Only vehicles such as fire trucks or design vehicles (e.g., DL-23 delivery truck) are expected to mount the curbs. Dual radius curb aprons with a defined apron area are intended for encroachment by larger vehicles on a more frequent basis, while providing a tighter radius for managed vehicles.

Features

- To be effective as a pedestrian safety measure, a truck apron must:
 - » Deter smaller vehicles from turning across it
 - » Clearly convey to drivers of larger control vehicles that it is traversable
 - » Be traversable by large vehicles without threatening stability
 - » Deter pedestrians and bicyclists from stopping or queuing on it
- A surface the same color as the sidewalk reinforces distinction from the roadway for drivers, but may encourage pedestrians to stand on it. A more differentiated apron distinguishes it from the roadway and sidewalk, but if the surface looks too “nice” it may be unclear that it can be driven over.
- For raised aprons, the profile of the edge of the mountable element determines how easily a vehicle can mount it.
- A **traversable curb** is better for the stability of larger design and control vehicles, but may not provide enough deterrence for some managed passenger vehicles. A **mountable curb** typically has a steeper bevel, providing more deterrence to passenger vehicles.

Maintenance Considerations

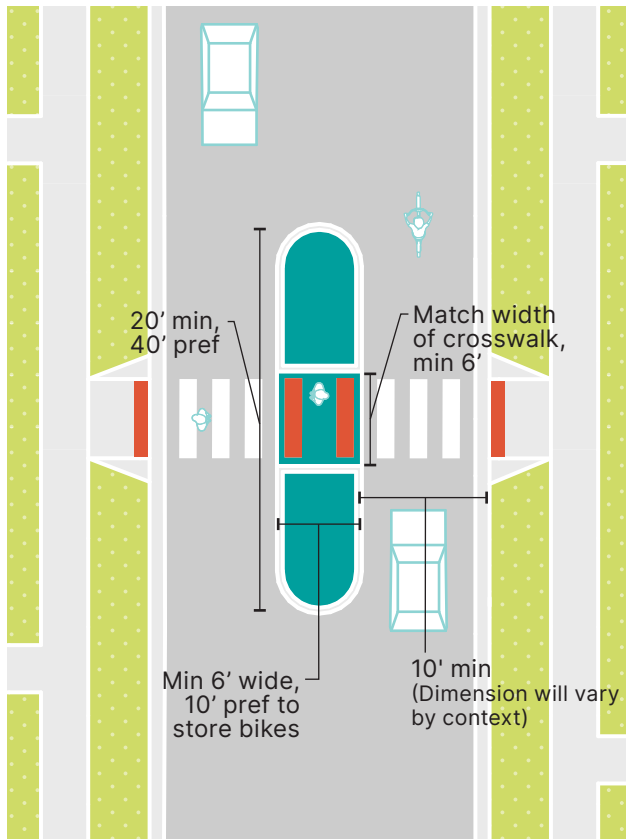
- The ability of the apron to function during and after snow events and its compatibility with snow removal equipment should be considered in design.

SOURCES

Corner Design for All Users - Alta
 USDOT Roundabouts: An Informational Guide
 NACTO - Don't Give Up at the Intersection

PEDESTRIAN REFUGE ISLANDS

Pedestrian Refuges or “islands” are protected areas across a roadway or in an intersection that allow pedestrians and/or bicyclists to cross a roadway in stages, reducing exposure, increasing visibility and improving overall safety. They also slow traffic down as cars navigate between the median and the curb, and provide a space for trees/landscaping.



Typical Application

- Arterial, Collector, and Local Roads.
- Applied on roadways with center turn lanes or medians that are at least 6' wide (to accommodate wheelchair users), at least 20' long (40' preferred), and are appropriate at signalized or unsignalized crosswalks.
- At low-volume uncontrolled intersections that may not justify signalization but would benefit from additional gaps by breaking the crossing into two stages.
- Where center turn lanes or existing raised medians already exist.

Features

- One goal of a pedestrian refuge island is to narrow the road, effectively reducing vehicle speeds.
- For bicycles, 10' of storage is desirable as some bikes may be longer than 6'. Angled refuges may be used to increase storage length.
- For pedestrians, the refuge island must be accessible, preferably with an at-grade passage through the island rather than ramps and landings.
- Narrow medians with bicycle/pedestrian cut-throughs can be used on streets without turn lanes to provide volume reduction without acting as a refuge.
- Refuge Islands should be paired with crosswalks, and include advance pedestrian warning signage if installed at uncontrolled crossings.
- When crossing multi-lane roadways, consider configuration with overhead RRFBs for improved yielding compliance.
- Turning vehicles should be able to navigate around the refuge without mounting it.

Quick-Build Option

- Quick-build implementation with paint, traffic tape, signs, and flexible posts.

SOURCES

NACTO Urban Street Design Guide: Pedestrian Safety Islands
FHWA Bicycle Safety Guide and Countermeasure Selection System: Medians and Crossing Islands

ONE-WAY TRAFFIC DIVERTER

One-way diverters also known as “half closures” block vehicle travel for motor vehicles in one direction while preserving two-way bicyclist access. This treatment may help reduce motor vehicle volumes where they exceed target volumes. Through this treatment, pedestrian exposure while crossing is reduced and comfort/priority is increased for bicyclists.



Typical Application

- Local Roads, or Local Road/Collector or Arterial Road intersection.
- Where motor vehicle volume reduction may be desirable to meet thresholds.
- To increase comfort and bicycle priority along a designated bike route, like a bicycle boulevard.

Features

- Crosswalk markings will depend on context.
- The island or curb extension may be partially or fully mountable if needed at constrained intersections.
- May be combined with an optional median diverter on the major street to further physically restrict vehicle access.
- May include a large curb extension or a median island to channelize entering bicyclists and exiting vehicles.
- Emergency response vehicles can maneuver around a one-way diverter when responding to an emergency.
- Consider width of opening and type of access in design to ensure motorists comply with restrictions.
- May shift traffic to adjacent streets.

Quick-Build Option

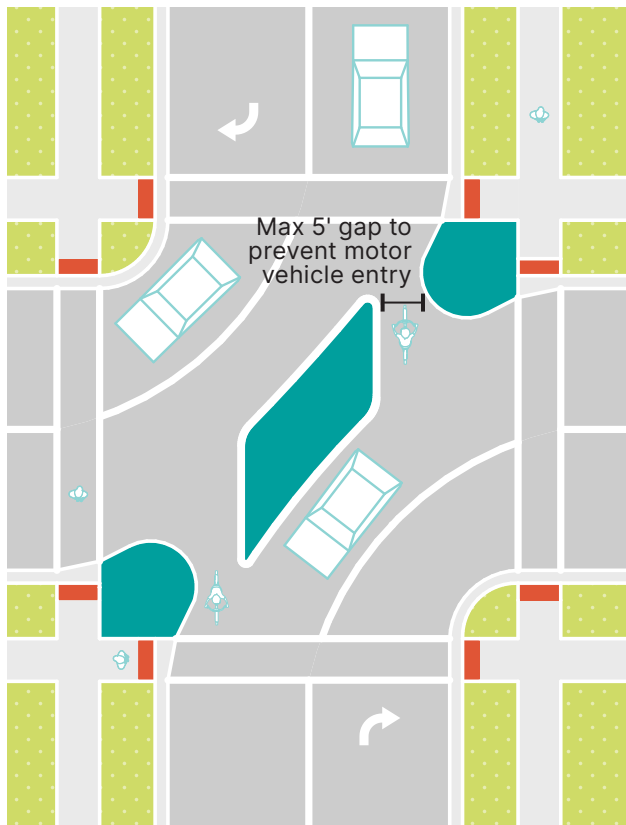
- Quick-build implementation with paint, traffic tape, signage, and flexible posts.

SOURCES

FHWA Traffic Management: Diverters
NACTO Urban Bikeway Design Guide: Volume Management

DIAGONAL DIVERTER

Diagonal diverters may be placed at a local road to local road four-way intersection and require all motor vehicle traffic to turn, while allowing bicyclist and pedestrian through movements. This treatment creates two smaller unconnected intersections. Diverters provide an opportunity for landscaping, stormwater management, benches, or other streetscape features.



Typical Application

- Minor Collector and Local Roads.
- Also appropriate for Subdivision Roads.
- At intersections of two designated bike routes, like bicycle boulevards where traffic diversion is desirable.
- Where motor vehicle volume reduction may be desirable to meet thresholds.

Features

- Crosswalk markings (if provided) will depend on context.
- Stop controlled approaches recommended in all directions for safety.
- Integrate trees/landscaping to improve appearance of the roadway.
- May include a large curb extension or a median island to channelize entering bicyclists and exiting vehicles.
- Bike access channels may be designed to be traversable by emergency response vehicles.
- Bicyclist access may be directional on the sides or central in the middle through diverter and can be level with the road or ramped to curb level.
- May shift traffic to adjacent streets.
- Diverter reduces overall network connectivity for motor vehicles.
- Vehicle lane widths should not be narrowed to more than 10 feet with larger widths preferred to accommodate larger turning vehicles.

Quick-Build Option

- Quick-build implementation with paint, traffic tape, signage, and flexible posts.

SOURCES

FHWA Traffic Management: Diverters
NACTO Urban Bikeway Design Guide: Volume Management

MULTIMODAL STREET IMPROVEMENTS

Complete streets aim to make transportation feel comfortable for all roadway users. This means alternative modes to cars, such as bicycles and buses should also be accommodated.

Common multimodal street improvements include:

Bus Stops

Bus stops with space and amenities to provide a safe and comfortable user experience for transit users. May require additional coordination with federal and regional (Valley Transit) agencies.

Bicycle Boulevard

Bicycle boulevards are quiet neighborhood streets with low vehicle volumes & speeds.

Bike Lanes (Standard and Buffered)

On-street bike lanes designate an exclusive space for bicyclists through the use of striping, pavement markings, and signage.

Protected Bike Lanes

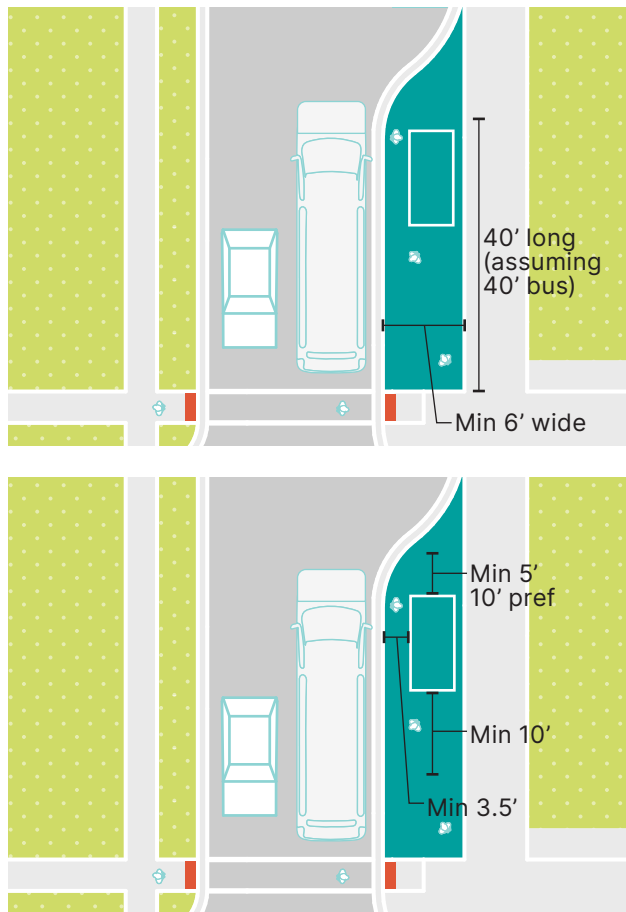
Protected bike lanes are on-street bikeways that are physically separated from vehicle traffic by a vertical element between the bikeway and the vehicular travel lane.

Sidepath

Sidepaths provide a travel area separate from motorized traffic for bicyclists, pedestrians, skaters, wheelchair users, joggers, and other users.

BUS STOPS

Design of bus stops involves thinking about specific placement/location as well as site-specific design features. Bus stops should be planned based on federal and regional (Valley Transit) standards and processes. Specific features may require additional coordination with Valley Transit.



Typical Application

- Along transit routes - standard bus or Bus Rapid Transit (BRT) routes.

Features

- Shelters should be provided on routes with high boarding numbers.
- Bus bulbs should be used if offset bus lanes are provided, where merging into traffic may be difficult, or where passengers could benefit from a designated waiting area. If included at the same height as the sidewalk, they should be 40' long and at least 6' wide. If there is a step up to the sidewalk, they should extend at least 10' wide to accommodate a ramp.
- Three categories of bus stop locations:
 - » Far Side Bus Stop: most common type, allows pedestrians to cross the street behind the bus instead of in front. This style also increases the visibility of crossing pedestrians on multi-lane roadways.
 - » Near-Side: Used on long blocks where near-side stop connects well with pedestrian destinations like parks or schools, on one-way, one-lane streets where passing is not allowed, where traffic-calming features, parking, or driveways restrict the potential for far-side stops.
 - » Mid-block Bus Stop: On long blocks with many destinations or at major transit stops with multiple buses queuing.
- Bus stops must be easily accessible by sidewalk, and appropriate street crossings should be included nearby. They must meet ADA standards (landing pads, curb heights) and include sufficient lighting.
- Space around bus stop should meet intended demand/ridership.

Maintenance Considerations

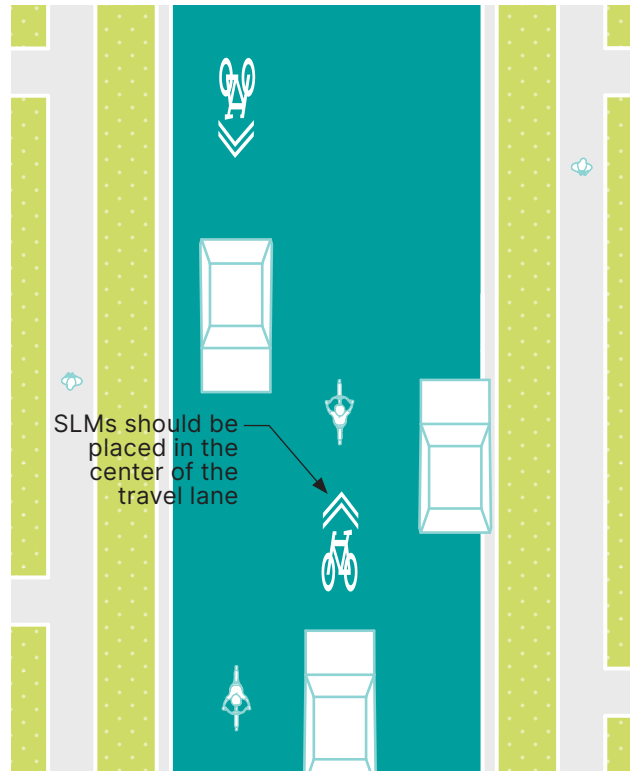
- Shelters should be composed primarily of steel and with few moving parts; Construct shelter with graffiti, weather, salt, and rust resistant materials.
- Place trash receptacles at/near bus shelters to maintain a clean area.

SOURCES

NACTO Urban Street Design Guide: Bus Stops
Project for Public Spaces: Bus Shelters

BICYCLE BOULEVARD

Bicycle boulevards are quiet neighborhood streets with low vehicle volumes & speeds. Bicyclists and pedestrians are prioritized by managing vehicle speeds and volumes (traffic calming elements). Signage and pavement markings are also incorporated. Bicycle boulevard features should be determined on a case-by-case basis, using engineering judgment to achieve appropriate vehicle speeds and volumes.



Typical Application

- Local Roads.
- Low-volume, low-speed streets. Utilize traffic calming to maintain or establish low volumes and discourage vehicle cut through/speeding.
- Continuous routes that make direct connections, including parallel routes to arterials and collectors that are less suitable for low-stress bikeways.

Features

- Signs, shared lane markings (SLMs), and traffic calming elements as needed to achieve appropriate vehicle speeds and volumes are the minimum treatments necessary to designate a street as a bicycle boulevard.
- SLMs, also commonly referred to as “sharrows”, have been proven to impact bicyclist riding position. Keep them outside of the “door zone” of parked cars by positioning them in the center of the lane.
- Intersection crossings should be designed to enhance comfort and minimize delay for bicyclists and pedestrians of diverse skills and abilities.
- R4-11 “May Use Full Lane” sign is recommended along the route.
- Use engineering judgment to determine appropriate traffic calming measures.
- Greening, stormwater management, and a robust street tree canopy can contribute to traffic calming and bicyclist & pedestrian comfort.

Quick-Build Option

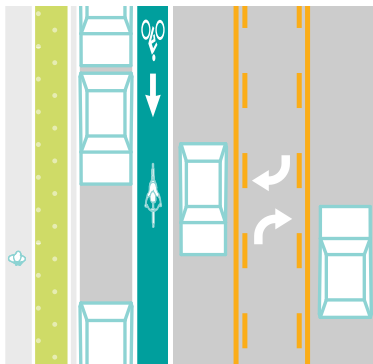
- Quick-build implementation with stencils and signage; option to add other traffic-calming quick-build elements (such as curb extensions, mini traffic circles, etc.)

SOURCES

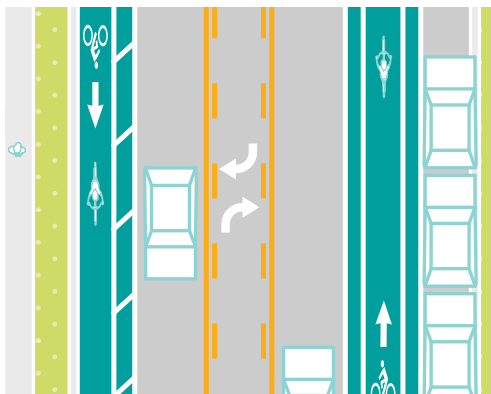
NACTO Urban Bikeway Design Guide: Bicycle Boulevards

BIKE LANES

On-street bike lanes designate an exclusive space for bicyclists through the use of striping, pavement markings, and signage. Bike lanes are located directly adjacent to motor vehicle travel lanes and are typically used in the same direction as motor vehicle traffic. A buffer of 2' at minimum is recommended to add space between bicycle and motor vehicle traffic.



Standard Bike Lane



Buffered Bike Lane (shown with and without parking lane)

Typical Application

- Bike lanes may be used on any street with adequate space, but are most effective on streets with moderate traffic volumes 3,000-5,000.
- Appropriate for skilled adult riders on most streets. May be appropriate for children when configured as 6+ ft wide lanes on lower-speed, lower-volume streets with one lane in each direction.

Features

- Buffered bike lanes features a buffer width of 2' minimum, 3' preferred. A buffer is especially important when parking has high turnover. In general, standard bike lanes should be used in only constrained ROW.
- Minimum width of the bike lane is 5'. However, 7' is preferred to facilitate safe passing behavior. These widths do not include the gutter pan or buffer.
- Include a bicycle lane pavement legend at the beginning of the bike lane, beginning and end of bike lane pockets, approaches and far side of arterial crossings, and major changes in direction. MUTCD recommends every 80 ft - 1,000 ft depending on land use context. Place markings to minimize wear from turning motor vehicles.
- The R3-17 "Bike Lane" sign is optional, but recommended in most contexts.

Maintenance Considerations

- Bike lane striping and markings will require higher maintenance where vehicles frequently traverse over them at intersections, driveways, parking lanes, and along curved or constrained segments of roadway.
- Bike lanes should be maintained so there are no pot holes, cracks, uneven surfaces or debris. Manhole covers within bike lanes should be adjusted to be flush with the pavement when repaving occurs.

Quick-Build Option

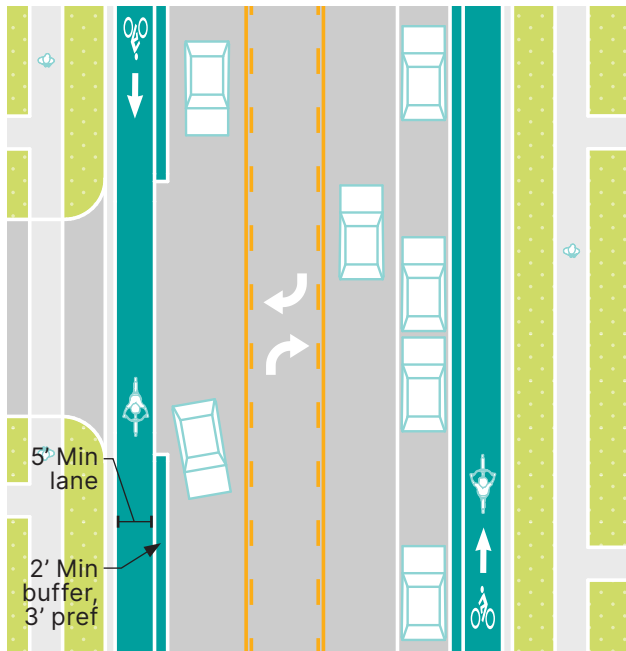
- Quick-build implementation with paint, traffic tape, and signs.

SOURCES

NACTO Urban Bikeway Design Guide: Conventional Bike Lanes
FHWA Pedestrian Safety Guide and Countermeasure Selection System

PROTECTED BIKE LANES

Protected bike lanes are on-street bikeways that are physically separated from vehicle traffic by a vertical element between the bikeway and the vehicular travel lane. Protected bike lanes typically share the same elevation as adjacent travel lanes, but the bikeway could also be raised above street level, either below or equivalent to sidewalk level.



Typical Application

- Along streets on which conventional bicycle lanes would be stressful because of multiple lanes, high traffic volumes (10,000-15,000 ADT), high traffic speeds (35+ mph), high incidence of double parking, higher truck traffic (10% of total ADT) and high parking turnover.

Features

- Pavement markings, symbols and/or arrow markings must be placed at the beginning of the bikeway and at intervals along the facility.
- Maximize effective operating space by placing curbs or delineator posts as far from the through bikeway space as practicable.
- Include green conflict marks at crossing points like intersections/driveways.
- Use wide bikeway (7'+) in high bicycle traffic areas to allow passing.
- Protected bike lanes may be designed at the street level, at curb level, or at an interim elevation between the top of the curb and street.
- Parking should be prohibited 30' in advance of intersections and driveways to improve visibility. Clearly mark parking prohibition through red curbs & signage.
- Vehicular turning movement restrictions are strongly encouraged where applicable, including No Right Turn on Red (see pg.58) and dedicated left turn phases.

Maintenance Considerations

- Bike lane striping and markings will require higher maintenance where vehicles frequently traverse over them.
- Access points along the facility should be provided for street sweeper vehicles to enter/exit the separated bikeway.
- Construct plow-compatible noses when using concrete curb barriers.

Quick-Build Option

- Quick-build implementation with paint, traffic tape, signage, and flexible posts.

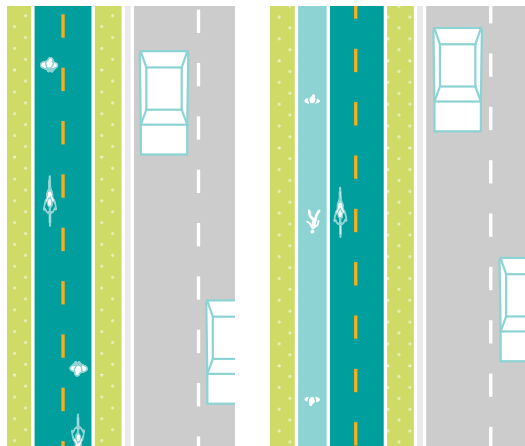
SOURCES

FHWA Separated Bike Lane Planning and Design Guide
NACTO One-Way Protected Cycle Tracks

SIDEPATH

Sidepaths provide a travel area separate from motorized traffic for bicyclists, pedestrians, skaters, wheelchair users, joggers, and other users. They are desirable for bicyclists of all skill levels preferring separation from traffic.

Treatment	Scenario	Min Width
Shared-Use Path	Occasional mix of users	10' Path
Separated-Use Path	High concentration of users	10' Cycle Track, 5' Pedestrian Track



Shared-Use Path

Separated-Use Path

Typical Application

- Adjacent to roadways, especially higher volume, higher speed corridors and roadways that are in close proximity to schools.

Features

- 10' minimum width. Additional width is recommended along corridors with higher concentration of bicyclists and pedestrians. Consider separate pedestrian track (5' minimum width) in high-traffic areas.
- 5' minimum buffer measured from edge of sidepath and edge of roadway.
- Overhead clearance should be 8' minimum, 10' recommended.
- A 2' or greater shoulder on both sides of the path should be provided.
- Provide solid centerlines on tight/blind corners and transitions, on approaches to roadway crossings, or where visibility concerns exist.
- Sidepaths utilize pedestrian walk signals. Vehicular turning movement restrictions are strongly encouraged where applicable, including No Right Turn on Red (see pg. 59) and dedicated left turn phases.

Maintenance Considerations

- Can be plowed just as a sidewalk would be plowed.
- Per Appleton policy, snow removal on sidepaths is the responsibility of the adjacent residential property owner.

SOURCES

NACTO Urban Street Design Guide: Intersections of major and minor streets
FHWA Traffic Calming e-Primer: speed management/traffic calming

INTERSECTION OPERATIONS & SIGNAL MODIFICATIONS

To calm traffic on roadways, sometimes physical changes are not needed, but rather, signal improvements can be added to improve the flow and safety of traffic on an existing roadway.

No Right Turn on Red

Eliminating right turn on red allows pedestrians to cross the street safely during their designated phase without worrying about a motorist pulling out in front of them.

Rectangular Rapid Flashing Beacon (RRFB)

RRFBs are generally used on streets with two to three lanes and flash when activated by bicyclists or pedestrians to increase awareness that drivers must yield to crosswalk users.

Hardened Left Turns

Left-turn hardening involves the use of modular curbs, vertical delineators, and striping at intersections to slow left-turning vehicles and to prevent “corner cutting.”

Pedestrian Hybrid Beacon (PHB)

PHBs, also called High-intensity Activated Crosswalks (HAWKs), are used to improve non-motorized crossings at major roadways.

Exclusive Pedestrian Phase

An exclusive pedestrian phase at a signalized crossing, also called a “pedestrian scramble” stops all vehicular movement and gives pedestrians crossing the intersection in all directions a chance to cross.

Accessible Pedestrian Signal (APS)

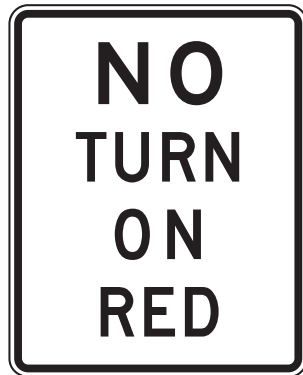
Accessible pedestrian signals are devices that communicate information about the crossing intervals at signalized intersections to pedestrians who are low vision, blind, or have hearing loss through audible, visual, or vibrotactile methods.

NO RIGHT TURN ON RED

Allowing Right Turn on Red (RTOR) at a signalized intersection makes it so motorists can turn right on a red light so long as the roadway is clear of traffic moving to the right. While this treatment allows for flow of traffic, it has had a negative effect on pedestrians and cyclists legally crossing the roadway. Motorists tend to be focused on watching for traffic approaching from the left and often fail to pay attention to pedestrians and cyclists to their right. Drivers turning right on red tend to pull fully into the crosswalk in order to get a full view of oncoming traffic from the left. Despite the law requiring motorists to come to a full stop and yield to cross street traffic and pedestrians before turning right, many roll through the crosswalk without stopping.



R10-11



R10-11a

Typical Application

- RTOR restrictions should be strongly considered in areas with high pedestrian traffic volumes. This includes areas like downtowns, school zones, near parks, or in residential neighborhoods.
- RTOR restrictions should be used at all school crossings.
- RTOR should also be banned at intersections with sidepaths or shared use paths.
- Part-time RTOR prohibitions during the busiest times of the day may be sufficient to address the problem. Blankout signs could be used in this instance.

Features

- The No Turn on Red with the red ball (R10-11) may draw more attention to the sign than the sign with only text (R10-11a or b).

SOURCES

FHWA Signs and Signal: Right Turn on Red Restrictions
Pedestrian Safety Guide and Countermeasure Selection System: Right Turn on Red Restrictions

RECTANGULAR RAPID FLASHING BEACON (RRFB)

Rectangular Rapid Flashing Beacons (RRFBs) are placed as a supplemental feature to a combined bicycle/pedestrian crossing, and are generally used on streets with two to three lanes. The beacons are activated by a push button, and flash when activated to increase awareness that drivers must yield to crosswalk users.



Typical Application

- May be considered at mid-block crossings and intersections where signalization is not warranted.
- May also be considered to cross lower speed (<35mph) streets with up to two travel lanes in each direction with the presence of a median refuge.

Features

- Bicyclists are directed to mount the corner using a dedicated bicycle ramp and to cross using the existing crosswalk.
- Bicyclists and pedestrians use the same push button.
- Median refuge islands may be paired with RRFB crossings.
- Passive detection may be added to the RRFB system to activate the warning lights even if the button is not pressed.

SOURCES

NACTO Urban Bikeway Design Guide: Active Warning Beacon for Bike Route at Unsignalized Intersection
Pedestrian Safety Guide and Countermeasure Selection System: Rectangular Rapid Flashing Beacon (RRFB)

PEDESTRIAN HYBRID BEACON (PHB)

Pedestrian Hybrid Beacons, also called High-intensity Activated Crosswalks (HAWKs), are used to improve non-motorized crossings at major roadways. They also provide a lower-cost signalization option than a full signal.



Typical Application

- At existing uncontrolled intersections with enough complexity that stopping traffic to provide safe crossings is desirable.
- Existing pedestrian oriented half signals may be modified to Hybrid Beacons to meet current FHWA guidance.
- To provide pedestrian and bicycle priority at a minor street crossing without incentivizing or attracting additional through vehicle traffic.
- At an intersection within a school zone on a walking route.

Features

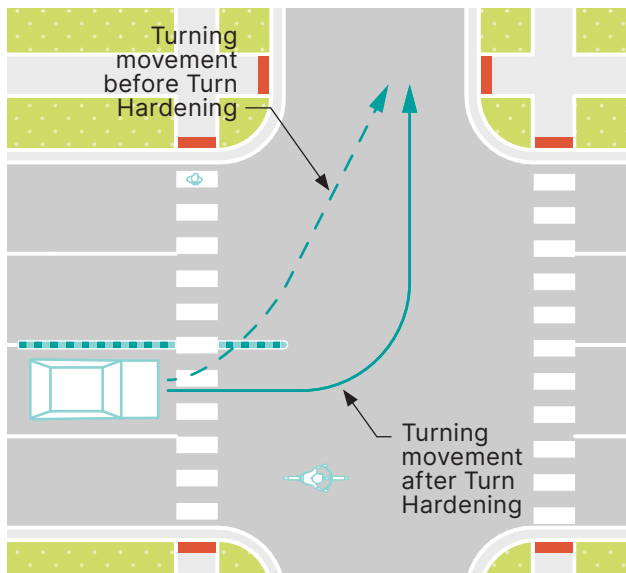
- Vehicles on the cross-street will not receive any signal indication and are controlled by a stop sign.
- Bicycle crossings are typically directional and adjacent to the curb; however, it is also possible to consolidate both directions of bicycle travel to one side of the intersection if geometry is advantageous.
- Per the FHWA, bicycle signals may not be combined with a Hybrid Beacon. Bicycles must use the pedestrian signal indication.
- Blankout signs that restrict conflicting vehicle movements from the minor cross-street are recommended to be present and active during beacon operation to reduce potential conflicts.
- Pedestrian crossings may be included on both sides of the street.

SOURCES

NACTO Urban Bikeway Design Guide: Hybrid Beacon for Bike Route Crossing of Major Streets
Pedestrian Safety Guide and Countermeasure Selection System: Pedestrian Hybrid Beacon (PHB)

HARDENED LEFT TURNS

Left-turn hardening involves the use of modular curbs, vertical delineators, and striping at intersections to slow left-turning vehicles and to prevent “corner cutting.” Two common treatments are centerline hardening, or placing modular curbs where the centerline meets the intersection, and slow turn wedges, which involve striping and delineators at intersection corners to slow left-turning vehicles at intersections between two one-way streets. These treatments enhance the separation between travel directions, help to guide vehicles into the proper receiving lane, and slow vehicle speeds as the complete a turn.



Typical Application

- Left-turn hardening is typically installed at intersections where a minor street intersects with a major street, with the elements addressing left-turns from the minor street onto the major street. It is most useful at intersections with high volumes of pedestrians and where high-speed left turns made by vehicles are a major issue.
- Two types:
 - » Hardened centerlines, typically installed using modular curbs and vertical delineators, are installed in line with the centerline approaching an intersection. The installation may extend to the stop bar, crosswalk, or even further into the intersection.
 - » Slow turn wedges are installed at corners of an intersection in line with on-street parking and on the far side of crosswalks. Their installation typically involves pavement markings and vertical delineators.

Features

- Hardening elements may be installed with different heights of vertical elements to accommodate larger vehicles/different sight lines.
- Elements could include rubber parking stops and/or flex posts.

Quick-Build Option

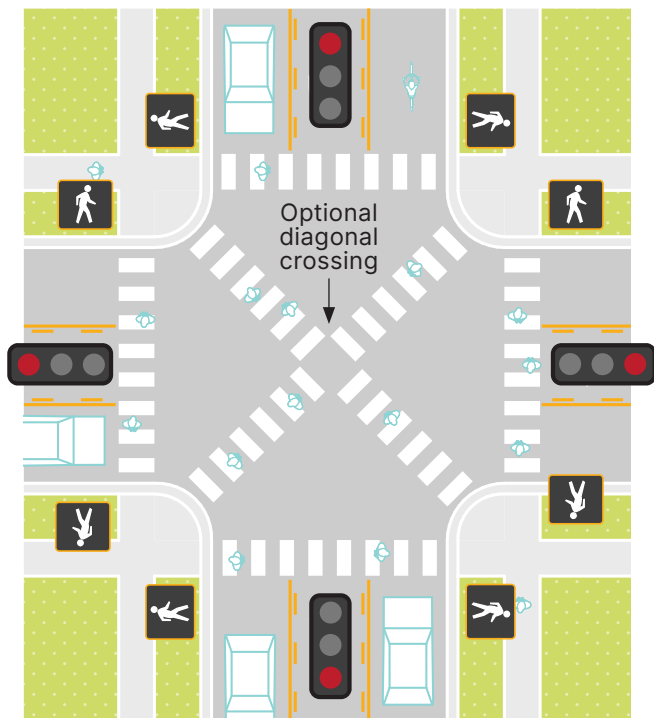
- Quick-build implementation traffic tape and rubber parking stops, flexible posts, and/or plastic curbs.

SOURCES

NACTO Don't Give Up at the Intersection
VDOT Left-Turn Hardening Brochure

EXCLUSIVE PEDESTRIAN PHASE

An exclusive pedestrian phase at a signalized crossing, also called a “pedestrian scramble” stops all vehicular movement and gives pedestrians crossing the intersection in all directions a chance to cross, even the opportunity to cross diagonally. Because exclusive pedestrian phasing causes all traffic to stop moving through the intersection, the safety benefit to pedestrians from this technology can be significant due to the elimination of pedestrian-vehicle conflicts.



Typical Application

- An exclusive pedestrian phase is an established safety measure for downtown areas with high pedestrian crossing movements.
- Exclusive pedestrian phasing, compared with concurrent signal phasing or none at all, yields measurable reductions in collisions only when pedestrian volume exceeds 1,200 persons per day.
- Exclusive phasing is appropriate for intersections where the time ratio of combined through-traffic phases to pedestrian phases is lower than 0.5.
- An alternative to this concept is to prohibit left and right turning vehicles moving in parallel to the crosswalk from turning when a pedestrian is detected in the crosswalk by a passive pedestrian sensor. This system activates LED turn prohibition signs when pedestrians are detected.

Features

- Prohibiting turning vehicles from moving across the crosswalks when pedestrians are detected using passive pedestrian sensors would decrease the impact on congestion (no queued cars waiting for an opportunity to turn) and eliminate the pedestrian-vehicle conflict that may occur during pedestrian non-scramble phases.
- A UConn study published in 2017 has shown that while the overall number of crashes is reduced with this intervention, crashes involving pedestrians at intersections with exclusive pedestrian phasing tend to be more severe. This is because pedestrians may be unwilling to wait through all the vehicle phases to cross during the pedestrian phase, leading to collisions.

SOURCES

FHWA Pedestrian Safety - Report to Congress: Assessment of Developmental and Pre-Deployment Advanced Technologies
T2 Center Traffic Signal Brief: Concurrent Pedestrian Phasing and Leading Pedestrian Interval (LPI)

03

TRAFFIC CALMING RETROFIT PROGRAM

HOW TO USE THE TRAFFIC CALMING RETROFIT PROGRAM?

The traffic calming retrofit program provides strategies for implementing low-cost and high-impact traffic calming features on an accelerated timeline.

Traffic calming retrofit, often referred to as "quick-build" or "demonstration projects", utilizes inexpensive materials such as paint, flex posts, planters, and prefabricated traffic control devices to allow for quick implementation of many of the traffic calming elements outlined in Chapter 2. This chapter includes:

1. **Program Overview:** An overview of what quick-build projects are and the process, funding, and staffing needed to guide implementation.
2. **Neighborhood Traffic Calming Study:** Geometric modifications for intersections and mid-block crossings.



PROGRAM OVERVIEW

WHAT IS QUICK-BUILD?

Quick-build projects are shorter-term, low-cost, and temporary roadway projects used to improve complete streets for walking, bicycling, and community safety. There are a wide range of street and spot improvement projects that may be considered for quick-build, outlined on pg. 28.

Project Materials

Common project materials include:

- White and/or yellow traffic paint
- Temporary pavement marking tape
- Stencils
- Signage
- Colorful paint
- Flexible posts
- Plastic curbs
- Planters, boulders, and barriers
- Spot improvements to curbs

WHAT ARE THE BENEFITS?

Quick to build. Quick-build projects have significantly shorter timelines to implement than conventional complete street construction projects; some smaller quick-build projects take less than 24 hours.

Short-term to long-term. Quick-build projects can be in place for anywhere from one day to multiple years, depending on the intended purpose and materials used. Longer projects such as those that are in place for multiple years may be more focused on providing long-term traffic calming benefits or for evaluating the success of various complete street elements.

Low cost. Quick-build projects are generally a fraction of the cost of conventional complete street construction projects. The cost of quick-build projects will vary depending on the type, size and duration of the project as well as the materials used. In general, material costs range from \$100 to \$10,000 per installation.

Desired Outcomes. Quick-build projects allow communities to evaluate potential infrastructure improvements before investing in permanent changes. Benefits of using a quick-build approach include:

- Test improvements before investing in permanent changes.
- Inspire action, build support for project implementation, and increase public engagement by inviting stakeholders to test out projects.
- Increase understanding of various transportation needs in the community.
- Encourage people to work together in new ways, strengthening relationships between government agencies, elected officials, non-profit organizations, local businesses, and community residents.
- Gather data from real-world use of streets and public spaces.



WHAT IS THE PROCESS FOR IMPLEMENTING QUICK-BUILD PROJECTS?

The process for installing a quick-build project will differ from project to project, but the following timeline in Figure 5 below provides a standard approach for success.

ARE DEDICATED STAFF REQUIRED TO MANAGE THE PROGRAM?

Implementing a traffic calming retrofit program will require additional staff to be hired to manage the program. These hires will create new ongoing costs.

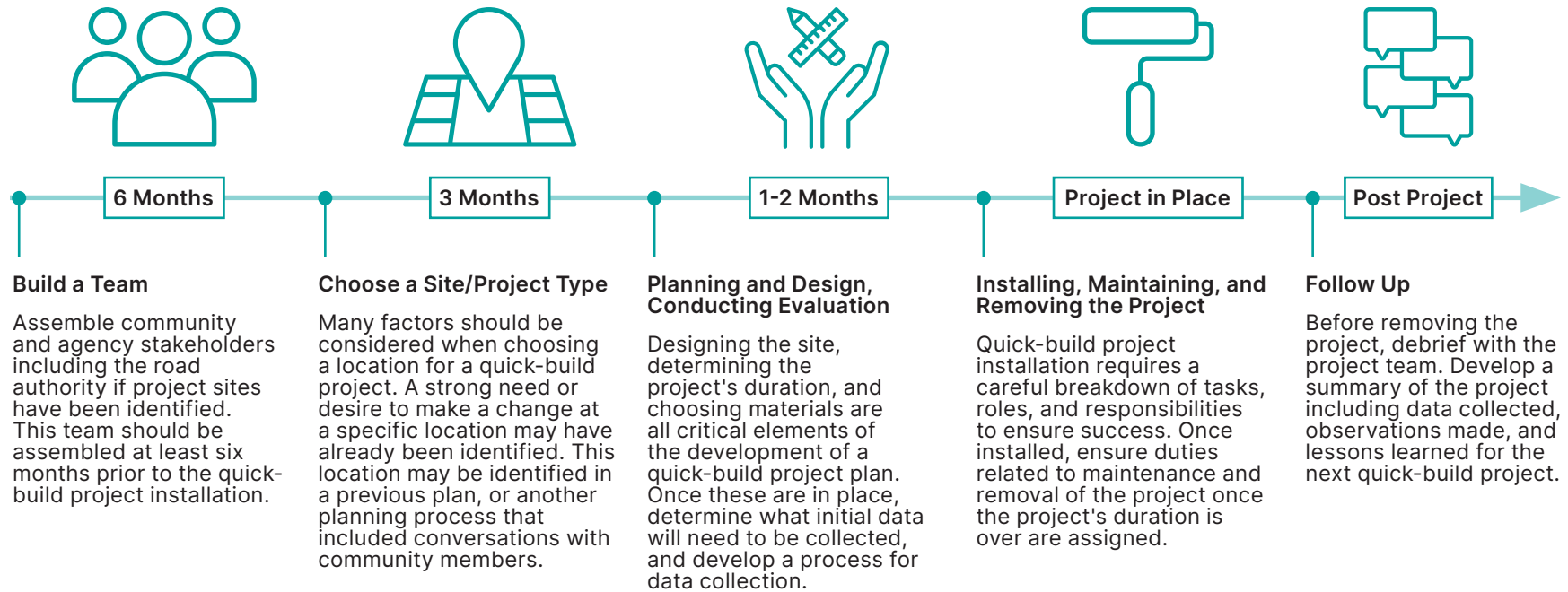


Figure 5: Typical quick-build project process

WHAT ARE THE FUNDING STRATEGIES FOR QUICK-BUILD PROJECTS?

Funding for quick-build projects may be available from a range of local, state, and federal agencies or non-profit organizations. Many of these funding sources can be used for other types of complete street reconstruction projects in addition to quick-build.

Non-Profit Sources

People for Bikes Community Grants

Agency: People for Bikes

Funding for projects that make bicycling better. Up to \$10,000.

AARP Community Challenge Grant

Agency: AARP

Provides small grants to fund quick-action projects that can help communities become more livable for people of all ages. The 2023 rounds of funding included demonstration grants aimed at advancing solutions that build capacity toward Transportation Systems Change. These grant opportunities range from approximately \$30,000 to \$50,000 per project.

Local and State Sources

Local and Regional Funding

Local and regional funds such as general fund, sales tax revenue, and Air Quality District funds are often the best sources.

Community Development Block Grant

(Wisconsin Department of Administration Division of Energy, Housing and Community Resources)

Public facilities funds support infrastructure and facility projects for communities. Examples of eligible projects include improvements, repairs, or expansions of streets, drainage systems, water and sewer systems, sidewalks, and community centers. Up to \$1 million.

State Infrastructure Bank Program

(WISDOT)

Loans for transportation infrastructure improvements that preserve, promote, and encourage economic development or promote transportation efficiency, safety, and mobility. Loans can be used in conjunction with other federal or state programs, or to finance an entire project.

Federal Sources: FHWA has provided a matrix of funding programs for bicycle and pedestrian project, see [Pedestrian and Bicycle Funding Opportunities: U.S. Department of Transportation Transit, Safety, and Highway Funds](#).

SS4A/Safe Streets for All (FHWA)

Competitive grant; 5-year program at \$1 billion/year.

Active Transportation Infrastructure Investment (FHWA)

\$1 billion over 5 years (\$200 million/year); funding for active transportation projects.

Reconnecting Communities (FHWA)

\$500 million (and up to \$1 billion in future appropriation); competitive grant program for planning or construction.

RAISE (FHWA)

\$1 billion over 5 years (\$200 million/year); funding for active transportation projects.

Transportation Alternatives Program (TAP) Grant (WisDOT)

Reimbursement program (80% federally funded, 20% match); funding for active transportation projects.

NEIGHBORHOOD TRAFFIC CALMING STUDY

The following pages illustrate diagrams of quick-build implementation for a 6×6 block neighborhood in Appleton. The recommendations illustrate appropriate applications of complete street elements along streets and at intersections, including local, collector, and arterial streets.

The recommendations are intended to provide general guidance on the types and locations for common quick-build elements. These diagrams may be used as a starting point for designing quick-build interventions for a neighborhood or street, but should be noted that recommendations may vary based on specific context, intended use, and cost limitations.

The following pages include the following:

- Overview Diagram: An entire 6×6 neighborhood including a range of contexts as well as local, collector, and arterial streets. (pg. 71)
- Local Street Diagram: A zoom-in of quick-build interventions for a local street. (pg. 72)
- Collector Street Diagram: A zoom-in of quick-build interventions for a collector street. (pg. 73)
- Arterial Street Diagram: A zoom-in of quick-build interventions for an arterial street. (pg. 74)



OVERVIEW TRAFFIC CALMING RETROFIT DIAGRAM

LEGEND:

- 1 Curb extensions
- 2 Traffic circle
- 3 Pinchpoint with mid-block crossings
- 4 Pedestrian refuge island
- 5 Buffered bike lanes
- 6 Protected bike lanes
- 7 4-lane to 3-lane conversion
- 8 No right turn on red
- 9 Exclusive pedestrian phase

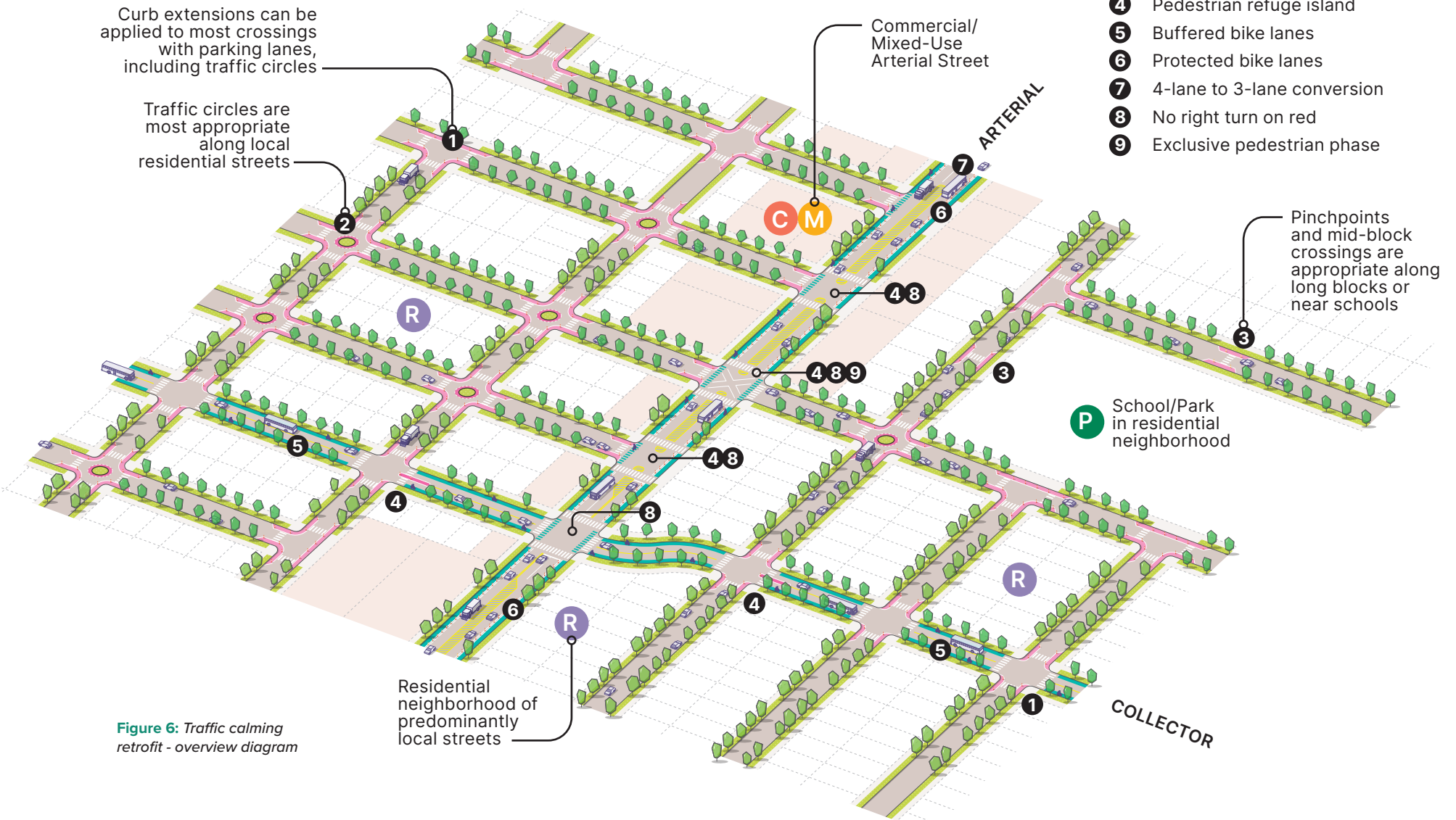


Figure 6: Traffic calming retrofit - overview diagram

LOCAL STREET TRAFFIC CALMING RETROFIT

Traffic calming retrofit for local streets emphasizes safe routes to parks and schools, as well as elements that slow vehicular speeds and prevent cut-through traffic, such as curb extensions or mini traffic circles. Where local streets meet arterials or collectors, additional elements such as pedestrian refuge islands and turning restrictions may be considered.

At collector or arterial intersections with no parking lane, curb extensions should only be located on the local street legs

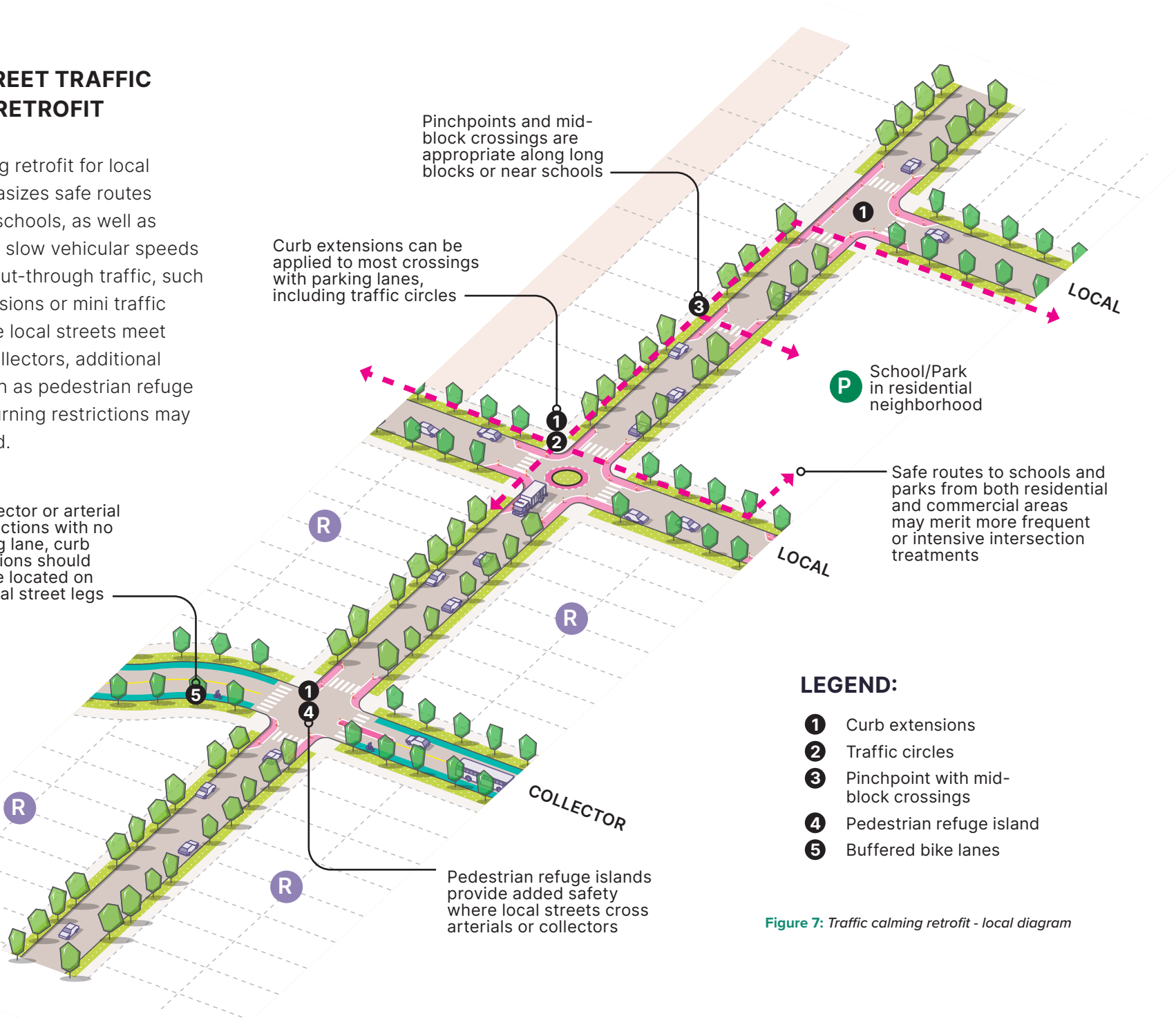
Pinchpoints and mid-block crossings are appropriate along long blocks or near schools

Curb extensions can be applied to most crossings with parking lanes, including traffic circles

P School/Park in residential neighborhood

Safe routes to schools and parks from both residential and commercial areas may merit more frequent or intensive intersection treatments

Pedestrian refuge islands provide added safety where local streets cross arterials or collectors



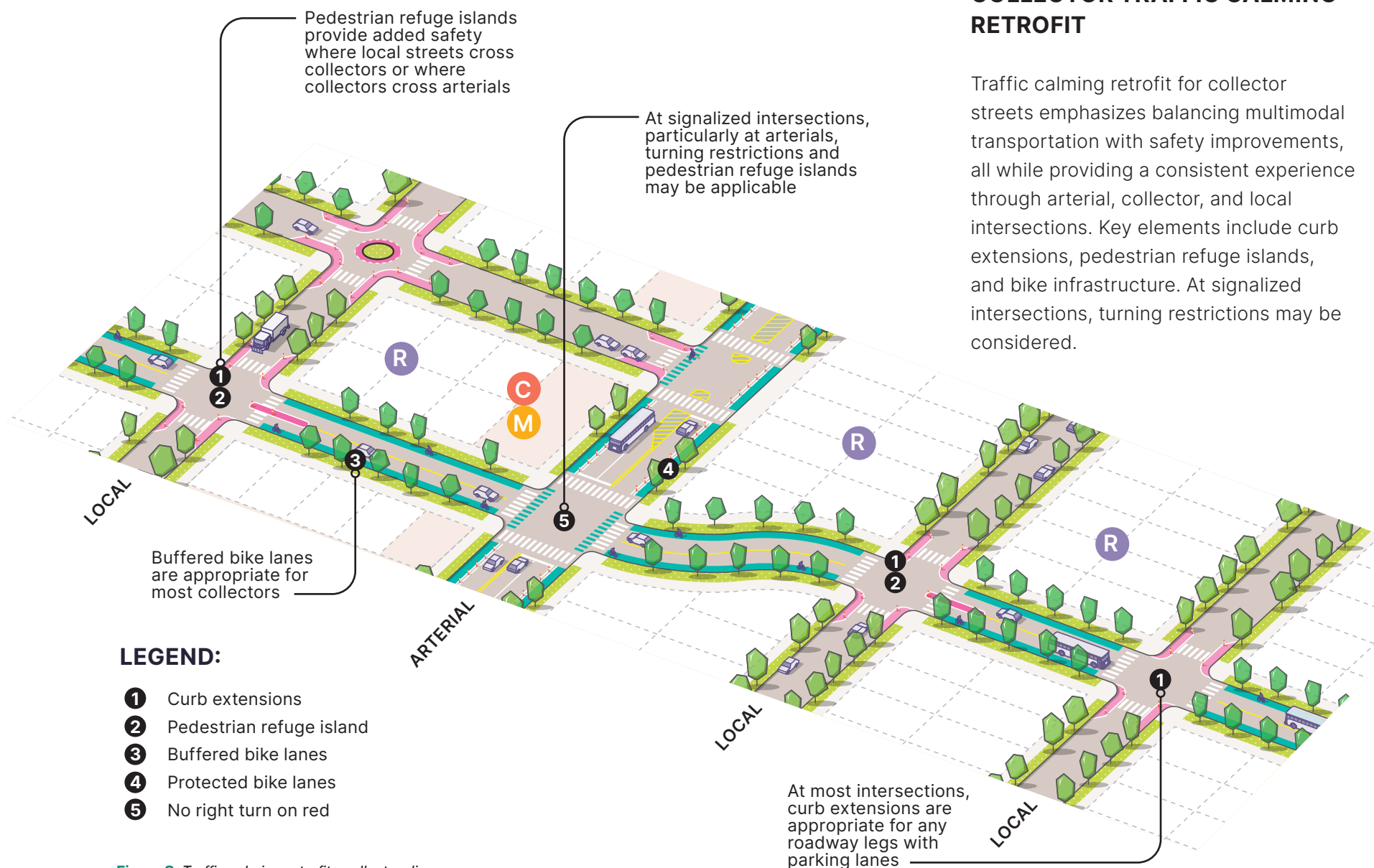
LEGEND:

- 1** Curb extensions
- 2** Traffic circles
- 3** Pinchpoint with mid-block crossings
- 4** Pedestrian refuge island
- 5** Buffered bike lanes

Figure 7: Traffic calming retrofit - local diagram

COLLECTOR TRAFFIC CALMING RETROFIT

Traffic calming retrofit for collector streets emphasizes balancing multimodal transportation with safety improvements, all while providing a consistent experience through arterial, collector, and local intersections. Key elements include curb extensions, pedestrian refuge islands, and bike infrastructure. At signalized intersections, turning restrictions may be considered.



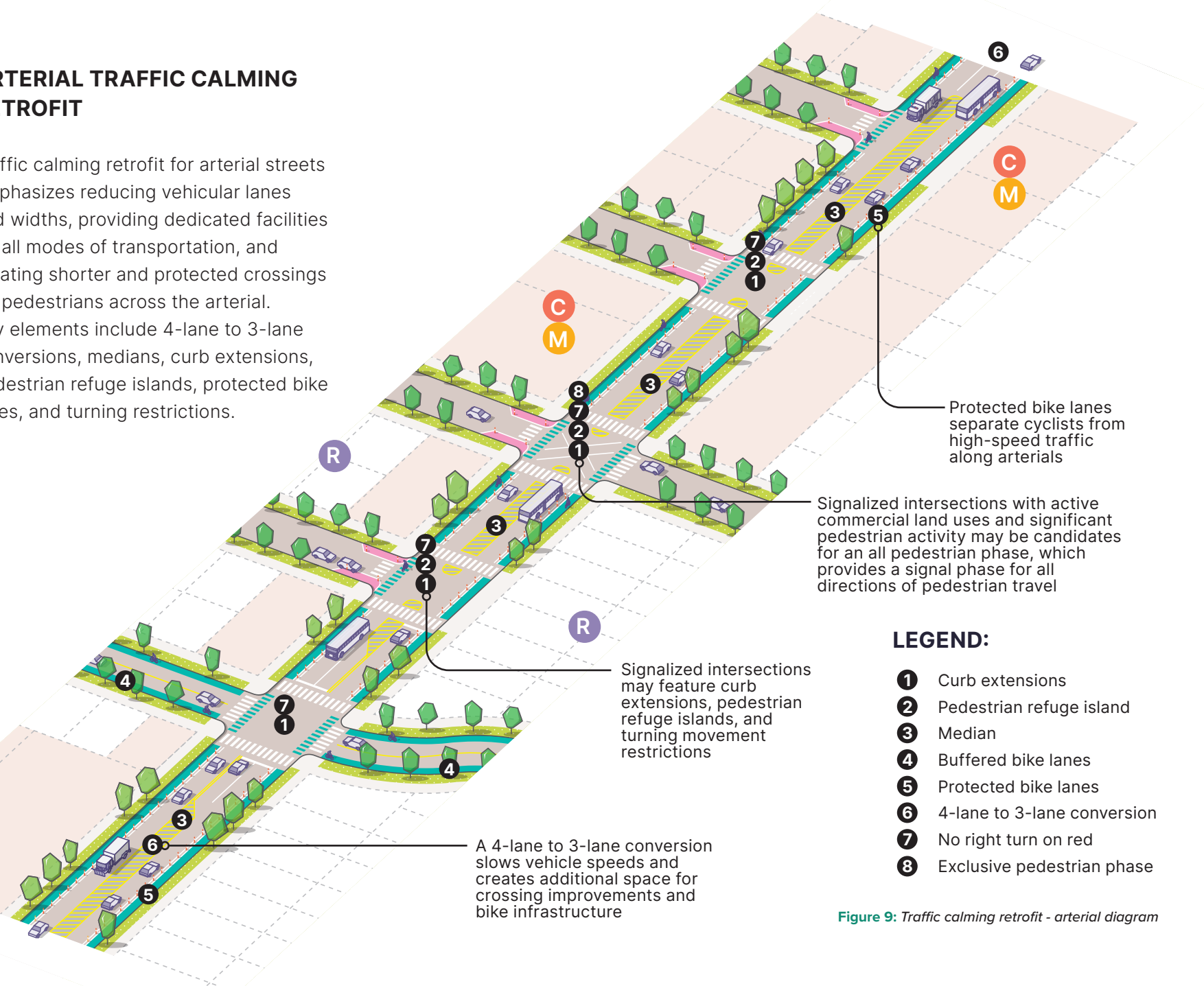
LEGEND:

- ① Curb extensions
- ② Pedestrian refuge island
- ③ Buffered bike lanes
- ④ Protected bike lanes
- ⑤ No right turn on red

Figure 8: Traffic calming retrofit - collector diagram

ARTERIAL TRAFFIC CALMING RETROFIT

Traffic calming retrofit for arterial streets emphasizes reducing vehicular lanes and widths, providing dedicated facilities for all modes of transportation, and creating shorter and protected crossings for pedestrians across the arterial. Key elements include 4-lane to 3-lane conversions, medians, curb extensions, pedestrian refuge islands, protected bike lanes, and turning restrictions.



Protected bike lanes separate cyclists from high-speed traffic along arterials

Signalized intersections with active commercial land uses and significant pedestrian activity may be candidates for an all pedestrian phase, which provides a signal phase for all directions of pedestrian travel

Signalized intersections may feature curb extensions, pedestrian refuge islands, and turning movement restrictions

A 4-lane to 3-lane conversion slows vehicle speeds and creates additional space for crossing improvements and bike infrastructure

- LEGEND:**
- 1 Curb extensions
 - 2 Pedestrian refuge island
 - 3 Median
 - 4 Buffered bike lanes
 - 5 Protected bike lanes
 - 6 4-lane to 3-lane conversion
 - 7 No right turn on red
 - 8 Exclusive pedestrian phase

Figure 9: Traffic calming retrofit - arterial diagram



DEPARTMENT OF
**PUBLIC
WORKS**

MEMORANDUM

Date: 3/25/24

To: Municipal Services Committee

From: Danielle Block, Director of Public Works

Pete Neuberger, City Engineer

Eric Lom, City Traffic Engineer

Subject: Lumbini Estates Subdivision – new street design

As a process improvement, the Department of Public Works will be bringing new street design criteria to Municipal Services Committee for approval prior to the final plat and corresponding Development Agreements. The street criteria approval process will provide the necessary documentation to proceed with the development discussions, ensure that roadway design elements are transparent and constructed per plan in future years.

Action Item:

Approve the roadway design parameters for the proposed streets in the proposed Lumbini Estates Subdivision:

- Resunga Court from Un-named street to cul-de-sac:
 - Local street
 - 60' right of way.
 - Construct new road with the width of future concrete pavement to be 26' from face of curb to face of curb with the radius of the cul-de-sac bulb to be 44.5' to the face of curb.
 - 5' concrete sidewalks on both sides.
 - Parking allowed on one side only.
- Saket Street from Midway Road to Un-named street:
 - Local street
 - 60' right of way.
 - Construct new road with the width of future concrete pavement to be 26' from face of curb to face of curb.
 - 5' concrete sidewalks on both sides.
 - Parking allowed on one side only.
- Vail Lane from west of Solitude Lane to Un-named street:
 - Local street
 - 60' right of way.
 - Construct new road with the width of future concrete pavement to be 26' from face of curb to face of curb.
 - 5' concrete sidewalks on both sides.
 - Parking allowed on only one side.

- Un-named street from Plank Road to Vail Lane:
 - Local street
 - 60' right of way.
 - Construct new road with the width of future concrete pavement to be 26' from face of curb to face of curb.
 - 5' concrete sidewalks on both sides.
 - Parking allowed on only one side.



DEPARTMENT OF
**PUBLIC
WORKS**

MEMORANDUM

Date: March 20, 2024
To: Municipal Services Committee
Finance Committee
From: Mike Hardy, Assistant City Traffic Engineer
Subject: Grant Acceptance Request – Signals and ITS Standalone Program

At the August 21, 2023, Municipal Services Committee (MSC) meeting, approval was given to apply for grant funds through the Wisconsin Department of Transportation (WisDOT) Signals and ITS Standalone Program (SISP). The City owns and maintains 82 signal-controlled intersections. This grant would procure the majority of the software/licensing needs for the City (prorated cost structure), and about 25% of the intersection controllers. The grant would replace 21 existing traffic signal computers/controllers and software along WisDOT connecting highways through Appleton (STH 47 and STH 96). The total estimated cost is \$220,750, of which the City's cost share would be 10% (\$22,075). The Department of Public Works (DPW) received notice on January 11, 2024, that our entire amount requested was approved by WisDOT.

During the month of January, DPW also reviewed 2023 account balances and had discussions with the Community and Economic Development Department regarding the potential to fund all traffic signal controllers/software in year 2024 through ARPA Funds. On January 22, 2024, the Finance Committee reviewed the ARPA fund designation in the amount of \$360,000 to upgrade the traffic equipment. Completing all related work in 2024 is critical to avoid cost increases and to allow coordination of procurement between both funding streams.

DPW is now requesting the approval of:

1. Acceptance of the SISP grant funds in the amount of \$198,675.
 - a. This grant will replace 21 existing traffic signal computers/controllers and software along WisDOT connecting highways through the City of Appleton. The total estimated cost is \$220,750, of which the City's cost share would be 10% (\$22,075).

Below are other funding aspects related to this project that fall under separate Finance Committee Action Items:

1. ARPA MOU in the amount of \$360,000.
 - a. The ARPA funds would allow for the procurement of 61 traffic signal controllers and the related software.
2. Spending authority in the amount of \$22,075 – 2023 Carryover Request.
 - a. Approval of this Special Consideration Carryover Request allows for the project to be completed in one year (2024). The request utilizes unused Capital Projects Funds from 2023.

With acceptance of the grant funding, the entirety of the City's traffic signal controllers and software will be replaced in 2024. The net cost to the City will be \$22,075. This item shows as an action item on both Municipal Services Committee and Finance Committee Agendas.



**Original
STATE/MUNICIPAL FINANCIAL
AGREEMENT FOR A SIGNALS &
ITS STANDALONE PROGRAM
PROJECT**

Date: January 4, 2024
 I.D.: 3700-30-62
 Road Name: STH 47, 96, 125
 Title: City of Appleton
 Limits: STH 47, 96, and 125 connecting highway
 County: Outagamie
 Roadway Length: 0.01 mile

The signatory **city of Appleton**, hereinafter called the Municipality, through its undersigned duly authorized officers or officials, hereby requests the State of Wisconsin Department of Transportation, hereinafter called the State, to initiate and affect the highway or street improvement hereinafter described.

The authority for the Municipality to enter into this agreement with the State is provided by Section 86.25(1), (2), and (3) of the Statutes.

NEEDS AND ESTIMATE SUMMARY:

Existing Facility - Describe and give reason for request: The existing signals is outdated and obsolete.

Proposed Improvement - Nature of work: This project will replace the 21 existing controllers with Econolite controllers and Centrac control software. These 21 locations are along the existing Connecting Highway routes within the Appleton. The existing locations are Siemens controllers with Tactics control software. This project is to address the combination of aged equipment and shortcoming for Siemens products, equivalent to Wisconsin DOT's recent transitions to Econolite in the Regions.

Describe non-participating work included in the project and other work necessary to finish the project completely which will be undertaken independently by the municipality:

Phase	Total Est. Cost	Federal/State Funds	%	Municipal Funds	%
ID 3700-30-62	\$ 220,750	\$ 198,675	90%	\$ 22,075	10%
Total Cost Distribution	\$ 220,750	\$ 198,675	90%	\$ 22,075	10%

*Construction **ID 3700-30-62** state funding is limited to \$198,675 (State fiscal year 2025)

This request shall constitute agreement between the Municipality and the State; is subject to the terms and conditions that follow (pages 2 – 4); is made by the undersigned under proper authority to make such request for the designated Municipality, upon signature by the State, and delivery to the Municipality. The initiation and accomplishment of the improvement will be subject to the applicable federal and state regulations. No term or provision of neither the State/Municipal Financial Agreement nor any of its attachments may be changed, waived or terminated orally but only by an instrument in writing executed by both parties to the State/Municipal Financial Agreement.

Signed for and in behalf of the city of Appleton (please sign in blue ink)	
Name (print)	Title
Signature	Date
Signed for and in behalf of the State (please sign in blue ink)	
Name	Title
Signature	Date

TERMS AND CONDITIONS:

1. The Municipality shall pay to the State all costs incurred by the State in connection with the improvement which exceeds federal/state financing commitments or are ineligible for federal/state financing. Local participation shall be limited to the items and percentages set forth in the Summary of Costs table, which shows Municipal funding participation. In order to guarantee the Municipality’s foregoing agreements to pay the State, the Municipality, through its above duly authorized officers or officials, agrees and authorizes the State to set off and withhold the required reimbursement amount as determined by the State from General Transportation Aids or any moneys otherwise due and payable by the State to the Municipality.
2. Funding of each project phase is subject to inclusion in an approved program and per the State’s Facility Development Manual (FDM) standards. Federal aid and/or state transportation fund financing will be limited to participation in the costs of the following items as specified in the Summary of Costs:
 - (a) Design engineering and state review services.
 - (b) Real Estate necessitated for the improvement.
 - (c) Compensable utility adjustment and railroad force work necessitated for the project.
 - (d) The grading, base, pavement, curb and gutter, and structure costs to State standards, excluding the cost of parking areas.
 - (e) Storm sewer mains, culverts, laterals, manholes, inlets, catch basins, and connections for surface water drainage of the improvement; including replacement and/or adjustments of existing storm sewer manhole covers and inlet grates as needed.
 - (f) Construction engineering incidental to inspection and supervision of actual construction work, except for inspection, staking, and testing of sanitary sewer and water main.
 - (g) Signing and pavement marking necessitated for the safe and efficient flow of traffic, including detour routes.

- (h) Replacement of existing sidewalks necessitated by construction and construction of new sidewalk at the time of construction. Sidewalk is considered to be new if it's constructed in a location where it has not existed before.
 - (i) Replacement of existing driveways, in kind, necessitated by the project.
 - (j) New installations or alteration resulting from roadway construction of standard State street lighting and traffic signals or devices. Alteration may include salvaging and replacement of existing components.
3. Work necessary to complete the improvement to be financed entirely by the Municipality or other utility or facility owner includes the following items:
- (a) New installations of or alteration of sanitary sewers and connections, water, gas, electric, telephone, telegraph, fire or police alarm facilities, parking meters, and similar utilities.
 - (b) New installation or alteration of signs not necessary for the safe and efficient flow of traffic.
 - (c) Coordinate, clean up, and fund any hazardous materials encountered during construction. All hazardous material cleanup work shall be performed in accordance to state and federal regulations.
 - (d) Damages to abutting property due to change in street or sidewalk widths, grades, or drainage.
 - (e) Conditioning, if required, and maintenance of detour routes.
 - (f) Repair of damages to roads or streets caused by reason of their use in hauling materials incidental to the improvement.
 - (g) Maintain all portions of the project that lie within its jurisdiction for such maintenance through statutory requirements, in a manner satisfactory to the state and shall make ample provision for such maintenance each year.
 - (h) Use the WisDOT Utility Accommodation Policy unless the Municipality adopts a policy which has equal or more restrictive controls.
4. State Disbursements:
- (a) Payment by the State to the Municipality shall be made on a regular basis upon presentation of vouchers for expenditures incurred during prior periods of the project duration subject to the allowable maximum payment. Exceptions to this schedule will be made as appropriate. In general, State reimbursements will be made after sufficient proof of payment is sent to the State.
 - (b) A final adjustment of state payments will be made upon completion of the State's audit of the project. If the State's audit establishes that the State paid more than its share of the eligible project costs, the Municipality shall refund to the State upon demand a sum equal to the overpayment.
5. If the Municipality should withdraw the project, it shall reimburse the State for any costs incurred by the State in behalf of the project.
6. The Municipality shall assume general responsibility for all public information and public relations for the project and to make a fitting announcement to the press and such outlets as would generally alert the affected property owners and the community of the nature, extent, and timing of the project and arrangements for handling traffic within and around the projects.
7. Basis for local participation:
- (a) Construction: Cost for construction are 90% Federal/State and 10% Municipal up to a maximum of \$220,750. Any overages shall be funded by the Municipality.

Comments and Clarification: This agreement is an active agreement that may need to be amended as the project is designed. It is understood that these amendments may be needed as some issues have not been fully evaluated

or resolved. The purpose of this agreement is to specify the local and state involvement in funding the project. A signed agreement is required before the State will prepare or participate in the preparation of detailed designs, acquire right-of-way, or participate in construction of a project that merits local involvement.

REQUEST TO APPLY FOR/ACCEPT GRANT FUNDS



PART #1: Request to Apply for Grant Funds

(complete before submission of grant application; email to grants@appleton.org)

APPLICANT DEPARTMENT: DPW

DATE: 08/09/2023

APPLICANT DEPARTMENT GRANT CONTACT NAME/TITLE: Mike Hardy/Assistant City Traffic Engineer

COMMITTEE OF JURISDICTION: Municipal Services Committee

NAME OF GRANT/FUNDING SOURCE: SISP / Wisconsin DOT

AMOUNT OF GRANT REQUEST: \$ 220,750

LOCAL MATCH REQUIREMENT: \$ 22,075

SOURCE OF MATCH: General Fund Non-General Fund Not Applicable

TIMEFRAME OF GRANT: 07/01/2024 through 06/30/2025

TYPE OF GRANT REQUEST: Monetary Other (explain under 'purpose of grant')

PURPOSE OF GRANT (summary): This project will replace the 21 existing traffic signal controllers with Econolite controllers and Centrac control software. These 21 locations are along the existing Wisconsin DOT Connecting Highway routes (Hwy 47, 96 & 125) within the Appleton.

How does the grant meet City/Department/Program goals? Safe & Reliable Transportation

What are the personnel requirements (include both existing and new staff) of the grant? 0.1 FTE

DEPARTMENT HEAD SIGNATURE: _____

PART #2: Request to Accept Grant Funds

(complete after notification of grant award; email to grants@appleton.org)

AMOUNT OF GRANT AWARD: \$ 220,750

FEDERAL/STATE ID #: 3700-30-62

LOCAL MATCH REQUIREMENT: \$ 22,075

Please describe the source of match, if applicable: 2024 DPW Budget Amendment

Please describe any major changes in proposed grant-funded activities: Up to 90% Reimbursement with proof of payment

Reimbursements are eligible for purchases made after July 1, 2024, with a reimbursement deadline of December 1, 2025.

PART	TO:	DATE:	TO:	DATE:	TO:	DATE:
#1: Request to Apply	Finance Dept		COJ – Info/Action		FAC – Info/Action	
#2: Request to Accept	Finance Dept		COJ – Action		FAC – Action	

COJ = Committee of Jurisdiction

FAC = Finance and Administration Committee