Active Transportation Programs Design Guide

PSRC BPAC Meeting

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Active Transportation Programs Engineer
March 12, 2024

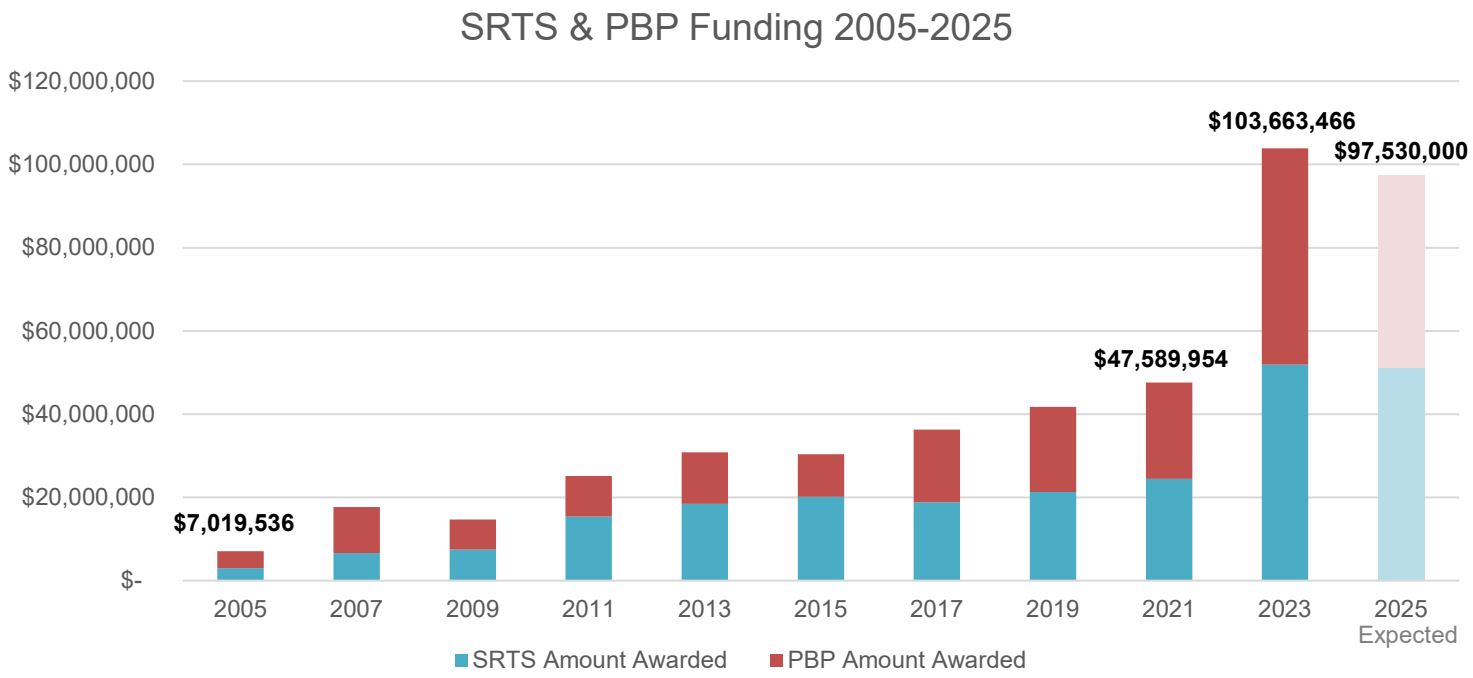
Safe Routes to School and Pedestrian/Bicyclist Programs

- Aim to improve safety for pedestrians and bicyclists
- All roads
- All public agencies & Tribal governments are eligible
- Projects must:
  - Comply with funding requirements
  - No match is required

Photo of bike lane, parking lane and sidewalk

	Pedestrian/Bicyclist Program	Safe Routes to School Program
Program purpose	- Eliminate pedestrian and bicyclist fatal and serious injury traffic crashes. - Increase the availability of connected pedestrian and bicyclist facilities that provide low traffic stress and serve all ages and abilities. - Increase the number of people that choose to walk and bike for transportation.	- Enable and encourage children, including those with disabilities, to walk, roll, and bicycle to school. - Make bicycling and walking to school a safer and more appealing form of transportation, encouraging a healthy and active lifestyle from an early age. - Facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.
Estimated available funding amount	$23,190,000	$25,575,000
Funding source	State	Federal and State
Applications due date	May 31, 2024	June 7, 2024

Program Funding Over Time



Project Ranking

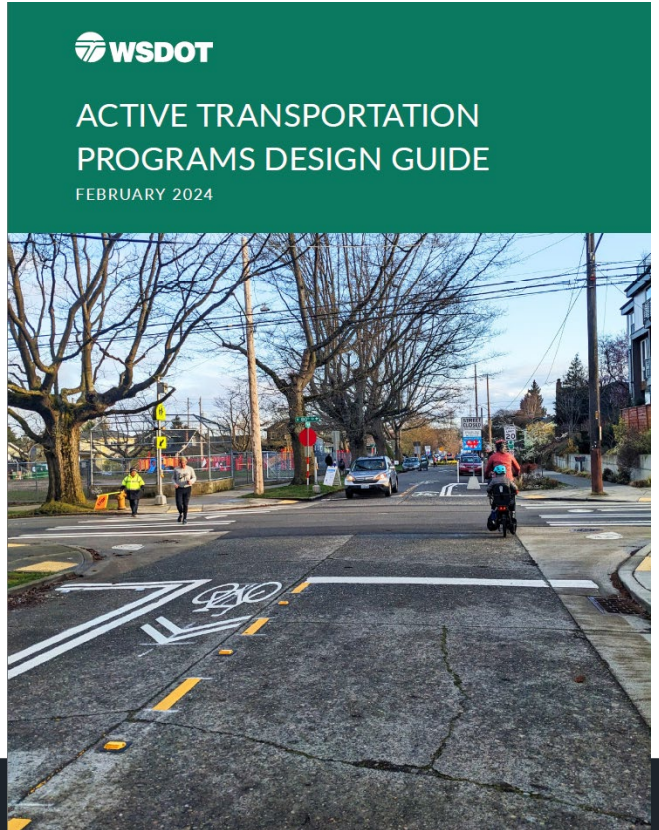
Category	Max Category Points	Subcategory	Max Subcategory Points
Safety	40	Safety Treatments	24
		Safety Need	16
Equity	25	Highest Equity Need Census Tract	20
		Community Engagement	5
Mobility with Considerations for Equity	10		
Deliverability	10		
Value	10		
Geographic Diversity	5		
Total	100		

Training on Applications

- Overview Webinar
  - March 11 (recording available)
- Design Guide Trainings
  - March 13
  - March 20
  - March 27
- Application Process Workshop
  - April 15

- For more information about the funding programs, visit:
  - Safe Routes to School Program
  - Pedestrian & Bicycle Program

Active Transportation Programs Design Guide



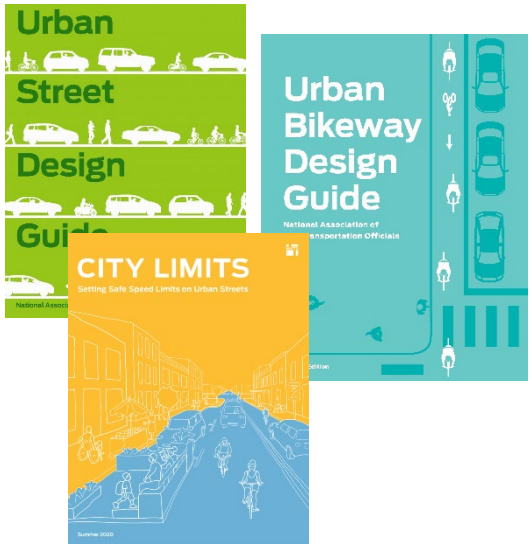
Purpose of the Design Guide

- Establishes common definitions of the treatments for these funding programs
- Expands on the prior list of treatments with design guidance
- Simplifies project development and application for funding
- Emphasizes “how” to design treatments

When Does the Guide Apply

- SRTS and PBP applications on local or county roads
- On state routes, comply with WSDOT Design Manual and related agency standards

References Informing the Guide



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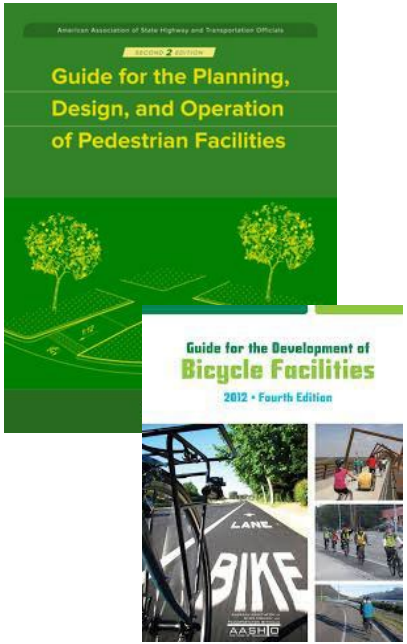
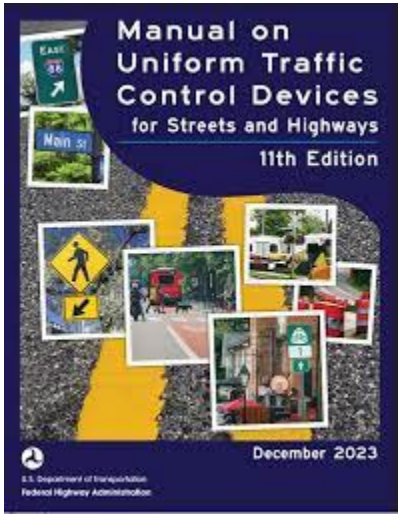


AASHTO

FHWA

Updated References

- Refer to the [WSDOT MUTCD Webpage](#) for up-to-date information on the 11th Edition
- PROWAG as adopted



U.S. Access Board
Advancing Full Access and Inclusion for All

Design Guide Review

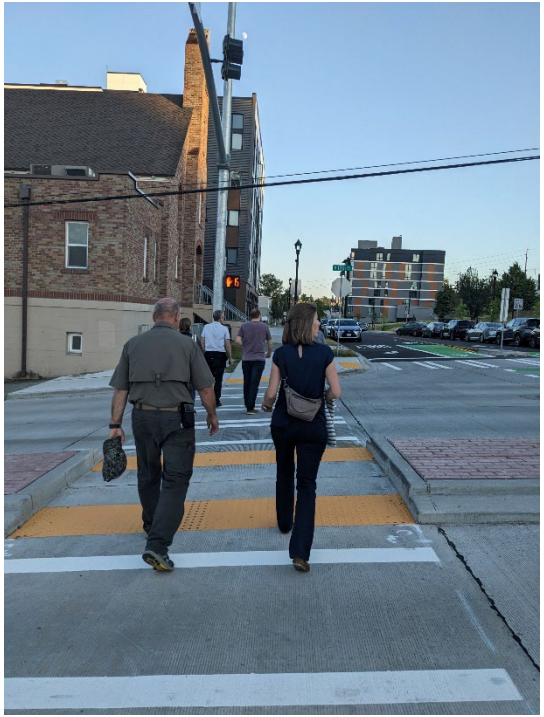
- WSDOT technical team
- Cities, counties, Tribes, funding partners, MPOs
- Disability Rights Washington’s Disability Mobility Initiative

Guide Outline

- Part 1 – Guide overview
  - Introduction
  - How to use this guide
  - Additional guidance
- Part 2 – Treatment toolbox
  - Speed management treatments
  - Crossing and intersection treatments
  - Grade-separated treatments
  - Illumination
  - ADA improvements
  - Linear treatments designed for bicyclists
  - Linear treatments designed for pedestrians
  - Linear treatments designed for pedestrians and bicyclists

How to Use the Guide

- Select the treatments you'd like to include
- Review the design criteria for those treatments
- Refer to the plan sheet details if applicable



7. Chicanes

DESCRIPTION

Chicanes are a speed management strategy that use alternating curves or lane shifts to direct a driver back and forth along a road. This movement encourages slower speeds for drivers and can also discourage drivers from using roads prioritized for pedestrians and bicyclists. Bicycle boulevards can include chicanes to slow drivers and provide a safer place for bicyclists to ride.

FIGURE 11. CHICANES IN SEATTLE, WA. SOURCE: DONGHO CHANG.

DESIGN GUIDANCE

Implement chicanes with the construction of physical barriers that extend from the curb on alternating sides along a road. Physical barriers may include curbed landscape areas or other similar treatments. Because of their shape and relationship to the through curb line, these treatments also make good candidates for green stormwater infrastructure locations. Alternatively, to create a chicaning effect, consider alternating highly used on-street parking (angled or parallel) between lane shifts if contextually appropriate, such as along a neighborhood street or commercial corridor.

If implemented along a two-way road with two full-width lanes, consider a median or hardened centerline treatment to prevent drivers from cutting a straight path across the centerline.[45] This treatment is not necessary if chicanes are located on neighborhood yield streets.

Along roads with bike lanes, continue bike lanes straight between the chicane and the curb or edge of roadway. Provide a 5-foot **minimum** clearance from the edge of the gutter to the face of the chicane curb. When using this arrangement, paint chicane curbing white to ensure visibility by bicyclists and consider object markers to increase visibility. Provide curb radii or tapered entrances on the upstream side of the bike lane cut through at a minimum (don't design the curb with sharp corners at the entry side of the bike lane cut through). Consider drainage effects and snow or leaf removal with this design.

Provide sufficient width for emergency vehicle access and large vehicles at slow speed if along a route with high truck or bus volumes. For corner or midblock treatments intended to reduce pedestrian crossing distances refer to curb extension.

DESIGN APPLICABILITY

- Local streets or lower-volume roads.
- One-lane, one-way, and two-lane, two-way roads.
- Roads with or without curb and gutter.
- Typically roads with 30 mph or less posted speeds.
- Compatible with transit routes if designed properly to accommodate buses.

[45] FHWA. "3.5 Chicane." *Traffic Calming e-Primer*.

COMPLEMENTARY TREATMENTS

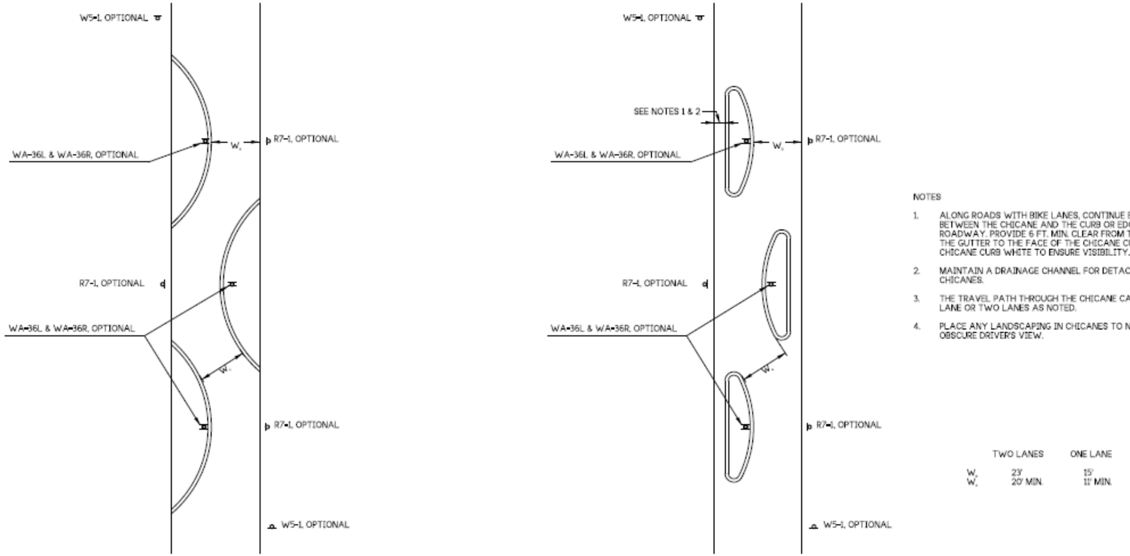
- Bicycle boulevard

MORE INFORMATION

- FHWA Traffic Calming e-primer

PLAN SHEET DETAILS

- 7- Chicanes



CURBLINE EXTENSION CHICANES

DETATCHED CHICANES WITH DRAINAGE CHANNEL

NOTES

1. ALONG ROADS WITH BIKE LANES, CONTINUE BIKE LANES BETWEEN THE CHICANE AND THE CURB OR EDGE OF ROADWAY. PROVIDE 6 FT. MIN. CLEAR FROM THE EDGE OF THE GUTTER TO THE FACE OF THE CHICANE CURB. PAINT CHICANE CURB WHITE TO ENSURE VISIBILITY.
2. MAINTAIN A DRAINAGE CHANNEL FOR DETACHED CHICANES.
3. THE TRAVEL PATH THROUGH THE CHICANE CAN BE ONE LANE OR TWO LANES AS NOTED.
4. PLACE ANY LANDSCAPING IN CHICANES TO NOT OBSCURE DRIVER'S VIEW.

	TWO LANES	ONE LANE
W	23'	15'
W	20' MIN.	11' MIN.

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DATE	12/11/2023			
PLOTTED BY	WelsgeB			
DESIGNED BY				
ENTERED BY				
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PROJ. ENGR.				
REGIONAL ADM.		REVISION	DATE	BY

REGION NO.	STATE	FED. AID PROJ. NO.
10	WASH	

JOB NUMBER

CONTRACT NO. | LOCATION NO.

WSDOT

PRELIMINARY PLAN

DATE — P.E. STAMP BOX • SEE SHEET C11 FOR SIGNATURE

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WSDOT Active Transportation Programs
Design Guide
Plan Sheet Details

7 - Chicanes

PLAN REF NO

SHEET 5 OF 52 SHEETS

WSDOT

31. Rectangular rapid flashing beacon

DESCRIPTION

At some uncontrolled crossings, it can be difficult to achieve compliance with laws that require drivers to stop for pedestrians. One type of device proven to improve driver yielding compliance at crossings is the rectangular rapid flashing beacon (RRFB). RRFBs include a pedestrian crossing sign and an intense and rapid flashing beacon activated by a pedestrian detector or push button. These devices provide immediate service to pedestrians with little or no wait times.

FIGURE 38. RRFB IN EVERETT, WA. SOURCE: DONGHO CHANG.

DESIGN GUIDANCE

Design RRFBs in accordance with FHWA's Interim Approval (IA-21). WSDOT has received statewide interim approvals for use on all local jurisdiction-owned roadways and state highways.[124] As such, consider RRFBs only at uncontrolled marked crossing locations.

FHWA INTERIM APPROVAL

Place one RRFB on either side of the crosswalk and on the median or pedestrian refuge island as applicable. Install RRFBs with connection to a power source or as a standalone device with solar panels. Consider placement of the beacons based on maintenance considerations, site context, and pedestrian desire lines. At four-way intersections consider placement with two beacons at both crossings of a four-way intersection, with one beacon at each approach leg, or at one leg of crossing as appropriate.

Consider the use of pedestrian pushbuttons with the RRFB. Pedestrian pushbuttons at RRFBs include a locator tone and "yellow lights are flashing" spoken message played twice. Note, the pushbutton shall not include vibrotactile features indicating a walk interval[125] and as such, may not provide sufficient communication for pedestrians who are blind or deaf and blind.

At intersections where a bicyclist may use the RRFB from an on-street bike facility, consider a curbside pushbutton for bicyclists.

At some locations, consider the following in place of the pedestrian crossing sign (W11-2) within the assembly:

- Pedestrian and bicyclist crossing sign (W11-15) where the crossing will serve a pedestrian and bicyclist facility such as a shared-use path or sidewalk with adjacent bike lane.
- School sign (S1-1) near schools.

Consider pedestrian and bicyclist illumination at crosswalk with RRFBs to improve visibility of pedestrians and bicyclists using the crosswalk. Coordinate a maintenance plan prior to installation to ensure continued usability of the treatment.

[124] WSDOT. 2023. "Changes and experimentations for the Manual on Uniform Traffic Control Devices."
[125] U.S. Access Board. 2023. *Public Right-of-Way Accessibility Guidelines.*

DESIGN APPLICABILITY

- Intersections or midblock locations.
- Most effective at multilane crossings with posted speeds below 40 mph.[126]
- Usually at high-volume pedestrian crossings, but also consider for school crossings, priority bicycle route crossings, or locations where bike facilities/trails cross roads at mid-block locations.
- For more information on applicability of RRFBs, refer to FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations Table 1.

COMPLEMENTARY TREATMENTS

- High-visibility crosswalk
- Stop line at an uncontrolled crosswalk
- Pedestrian refuge island

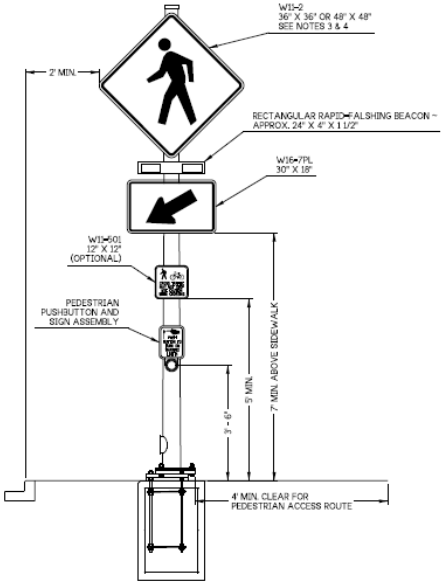
MORE INFORMATION

- FHWA Proven Safety Countermeasures – Rectangular Rapid Flashing Beacons
- FHWA Interim Approval 21 – Rectangular Rapid-Flashing Beacons at Crosswalks
- WSDOT Traffic Manual

PLAN SHEET DETAILS

- 31 - Rectangular Rapid Flashing Beacon

[126] FHWA. 2018. Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations.



RECTANGULAR RAPID FLASHING BEACON (RRFB)

NOTES

1. REFER TO STOP LINE AT UNCONTROLLED CROSSWALK FOR RECOMMENDED PLACEMENT OF RRFBS AT CROSSWALKS ALONG WITH STOP LINES, HIGH-VISIBILITY CROSSWALKS, AND SUPPLEMENTAL CROSSING SIGNAGE.
2. REFER TO WSDOT PLAN SHEET DETAIL 18-22 FOR A POSSIBLE RRFB DETAIL.
3. AT SHARED USE PATH CROSSINGS, USE A W11-15 SIGN IN PLACE OF THE W11-2.
4. AT SCHOOL CROSSINGS, USE A S1-1 SIGN IN PLACE OF THE W11-2. USE FLUORESCENT YELLOW-GREEN W16-7PR AS APPROPRIATE TO BE CONSISTENT WITH THE COLOR OF THE S1-1.

W11-501
(12" x 12")

PEDESTRIAN SYMBOL HEIGHT = 4" (IN)
BICYCLE SYMBOL HEIGHT = 3" (IN)
LETTERS = 2" C
LEGEND = BLACK
BACKGROUND = YELLOW

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P.E. STAMP BOX • SEE SHEET CTL FOR SIGNATURE — DATE

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Design Guide
Plan Sheet Details

31 - Rectangular Rapid Flashing Beacon

PLAN SET NO.

SHEET 32 OF 52 SHEETS

Questions

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