Designing for Bicycle Safety

Building it better

April 21, 2022

SAN MATEO COUNTY Transportation Authority

alta

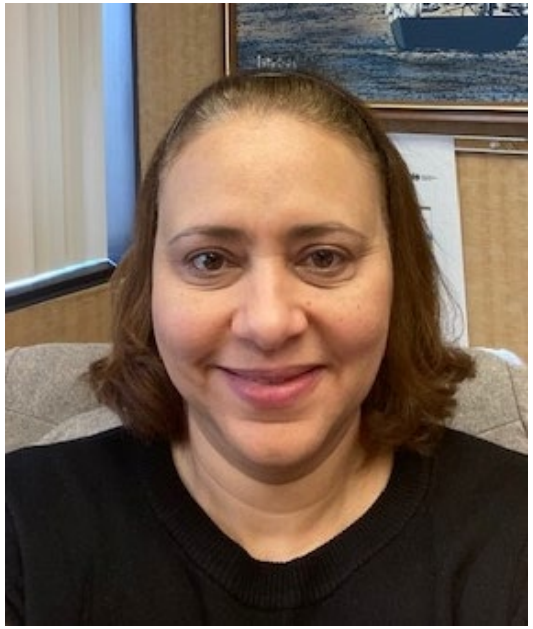
Agenda

- Welcome
- Introductions
- Why are we here?
- Safe Bicycle Facilities Design
  - Retrofitting Roadways
  - Different Types of Bikeways
  - Protected Intersections and other Design Considerations
  - Traffic Control Devices including Bicycle Signals
  - Bicycle Parking and other Streetscaping Elements
  - Opportunities for Implementation
- Funding Bicycle Projects
- Q&A throughout!

For Participants:

- Be ready to answer questions on your computer for live Zoom polls
- Turn off background apps, email, and silence phone
- **Raise your hand to ask questions throughout!**
- The presentation will be recorded and available upon request

Introductions



Heba El-Guindy
SMCTA
Deputy Director

Joe Gilpin
Alta Planning and Design
Principal

Patrick Gilster
SMCTA
Manager of Programming
& Monitoring

Introduce yourself to us by adding your name, organization, and email into the chat!

WHY ARE WE HERE?

Transportation Authority

The San Mateo County Transportation Authority (TA) manages the voter approved Measure A & Measure W sales taxes that fund various types of transportation improvements. The TA is striving to better incorporate Complete Streets across all our programs.

Highways | Local Streets and Roads | Grade Separations | Transit | Pedestrian and Bicycle | Transportation Demand Management

Primary Objectives

1. Consider Infrastructure Projects from Multimodal and Equitable Transportation System Lens
2. Improve Roadway Comfort and Sense of Security with Best Practice Design and Operational Principles
3. Increase the Cycling Modal Share and Improve Access and Connectivity to Transit and Land Uses
4. Create Competitive Multimodal Projects on the regional, state, and national levels

Poll: Did You Attend The Pedestrian and/or Complete Streets Introduction in January and March?

ISSUES & CONCERNS

Safety – San Mateo County Bicycle Involved Crashes

1,187
Crashes Involving Bicyclists

9 Fatalities
1,218 Injuries

10%
Result in a fatal or life altering injury

17%
Occurred on State Highways

3 Root Causes
Totalling **57%** of Crashes


Failure to Yield by Driver


Improper Turning

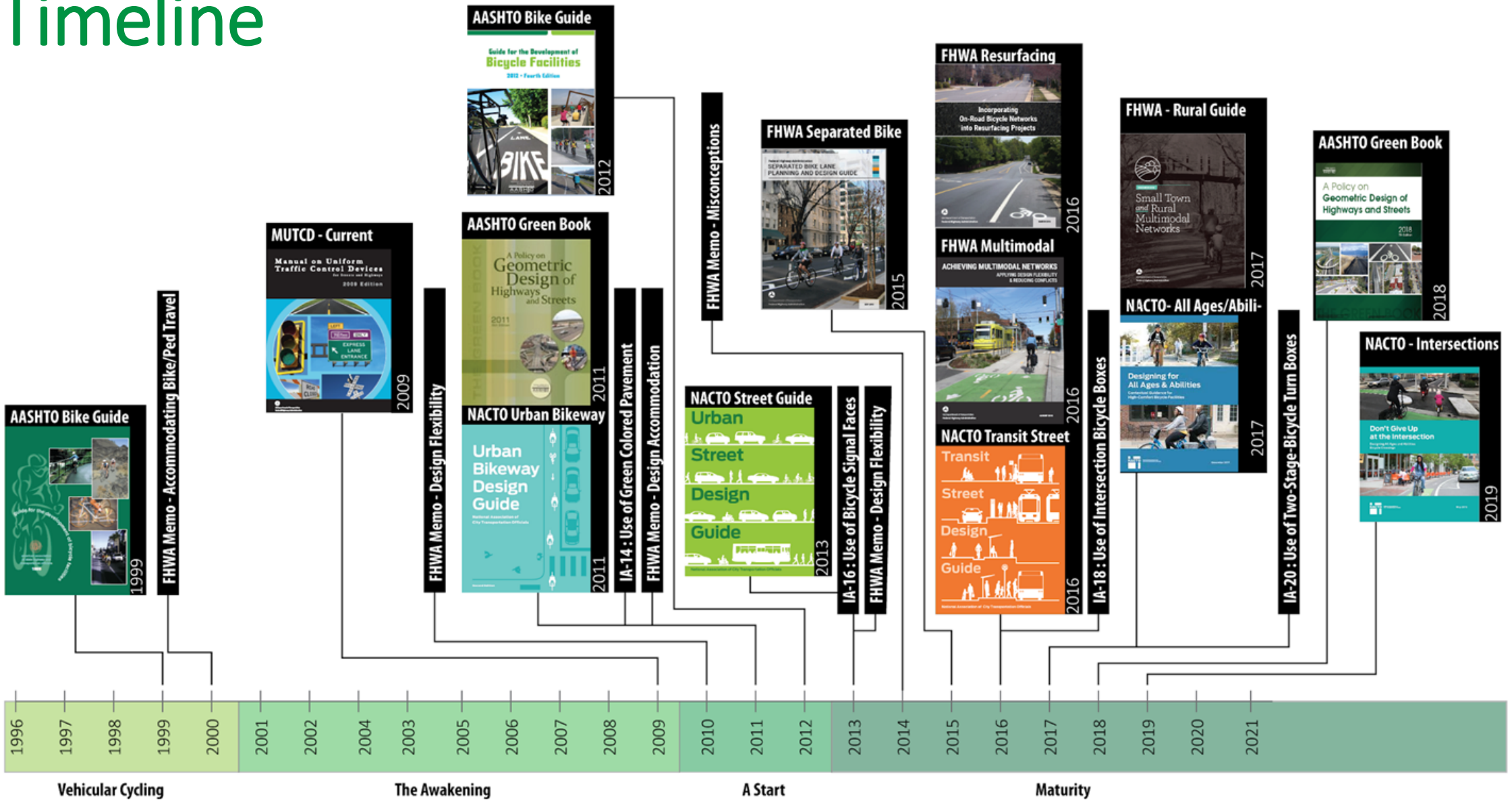

Unsafe Speed

Data 2014-2018: Source San Mateo County Comprehensive Bicycle and Pedestrian Master Plan Update

Improve Bicycle Safety

- We are getting better at designing safer streets for bicyclists!
- There is limited research on most topics as design variability is high. What is clear is that:
  - There is safety in numbers
  - If you built it, they will come
  - The greater the separation from moving auto traffic, the more types of bicyclists use the route
  - Details matter, especially at crossings and intersections

Timeline


AASHTO Bike Guide
1999
FHWA Memo - Accommodating Bike/Ped Travel
MUTCD - Current
2009
AASHTO Bike Guide
2012
AASHTO Green Book
2011
NACTO Urban Bikeway
2011
FHWA Memo - Design Flexibility
IA-14 : Use of Green Colored Pavement
FHWA Memo - Design Accommodation
FHWA Memo - Misconceptions
FHWA Separated Bike
2015
NACTO Street Guide
2013
IA-16 : Use of Bicycle Signal Faces
FHWA Memo - Design Flexibility
FHWA Resurfacing
2016
FHWA Multimodal
2016
NACTO Transit Street
2016
IA-18 : Use of Intersection Bicycle Boxes
FHWA - Rural Guide
2017
NACTO- All Ages/Abili-
2017
IA-20 : Use of Two-Stage-Bicycle Turn Boxes
AASHTO Green Book
2018
NACTO - Intersections
2019
1996
1997
1998
1999
2000
2001
2002
2004
2003
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Vehicular Cycling
The Awakening
A Start
Maturity

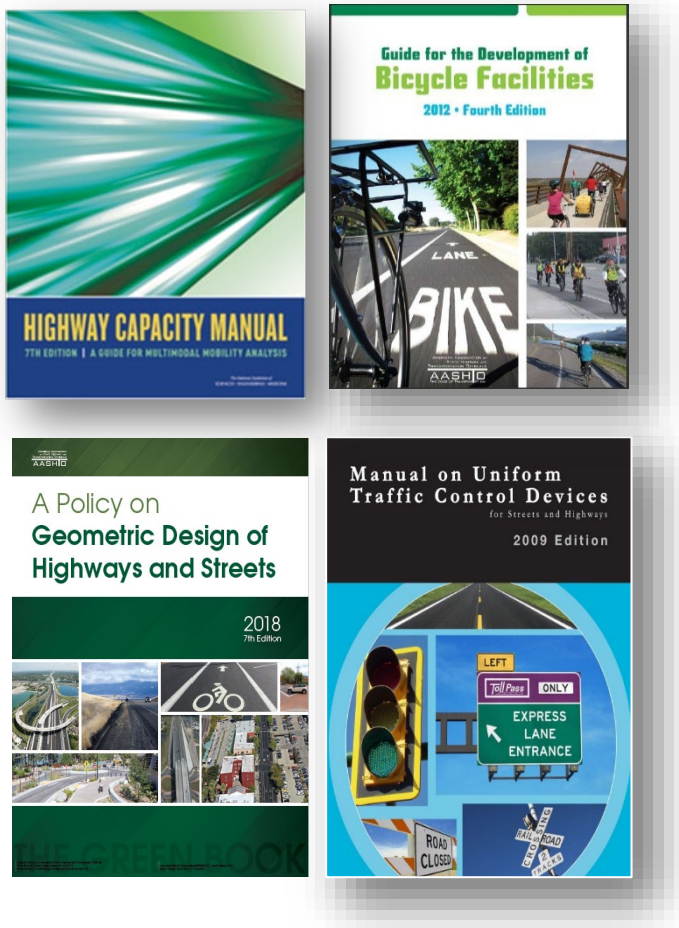
National Standards at the Moment

ALL MAJOR BIKEWAY GUIDES / STANDARDS UNDER IMMINATE UPDATE

C/CAG Comprehensive Bicycle & Pedestrian Plan (2021) includes a Treatment Toolkit local agencies can reference.

https://ccag.ca.gov/wp-content/uploads/2021/05/CBPP_Appendix-A_Design-Toolkit.pdf

Timeline


HIGHWAY CAPACITY MANUAL
7TH EDITION | A GUIDE FOR MULTIMODAL MOBILITY ANALYSIS
Guide for the Development of
Bicycle Facilities
2012 • Fourth Edition
LANE
BIKE
AASHTO
A Policy on
Geometric Design of
Highways and Streets
2018
7th Edition
Manual on Uniform
Traffic Control Devices
for Streets and Highways
2009 Edition
LEFT
Toll Pass
ONLY
EXPRESS
LANE
ENTRANCE
ROAD
CLOSED

+


Urban
Street
Design
Guide
National Association of City Transportation Officials
Federal Highway Administration
SEPARATED BIKE LANE
PLANNING AND DESIGN GUIDE
Incorporating
On-Road Bicycle Networks
into Resurfacing Projects
Urban
Bikeway
Design
Guide
National Association of
City Transportation Officials
ACHIEVING MULTIMODAL NETWORKS
APPLYING DESIGN FLEXIBILITY
& REDUCING CONFLICTS
Small Town
and Rural
Multimodal
Networks

Improve Bicycle Comfort

Comfort Typology of Bicyclists

Design User Profile	Non-Bicyclist	Interested but Concerned	Somewhat Confident	Highly Confident
Bicycling Preferences	Uncomfortable bicycling in any condition, have no interest in bicycling, or are physically unable to bicycle.	Often not comfortable with bike lanes, may bike on sidewalks even if bike lanes are provided; prefer off-street or separate bicycle facilities or quiet or traffic-calmed residential roads. May not bike at all if bicycle facilities do not meet needs for perceived comfort.	Generally prefer more separated facilities, but are comfortable riding in bicycle lanes or on paved shoulders if need be.	Comfortable riding with traffic, will use roads without bike lanes.
Percent of General Public	31-37%	51-56%	5-9%	4-7%

Level of Traffic Stress

- Based on “Low Stress Bicycling and Network Connectivity”, Mineta Transportation Institute, Report 11-19, May 2012
- Classifies road segments based on perceived safety issues and close proximity to traffic
- Allows for quick assessment of system connectivity without burden of more data intensive systems, (MMLOS).
- Most data is readily available
- Intuitive to the public, staff, stakeholders

Level of Traffic Stress

LTS 1 – Tolerable for all ages and abilities

LTS 2 – Comfortable for mainstream adults

LTS 3 – Acceptable for Enthused & Confident Bicyclists

LTS 4 – Only acceptable for Strong & Fearless Bicyclists

C/CAG
City/County Association of Governments of San Mateo County

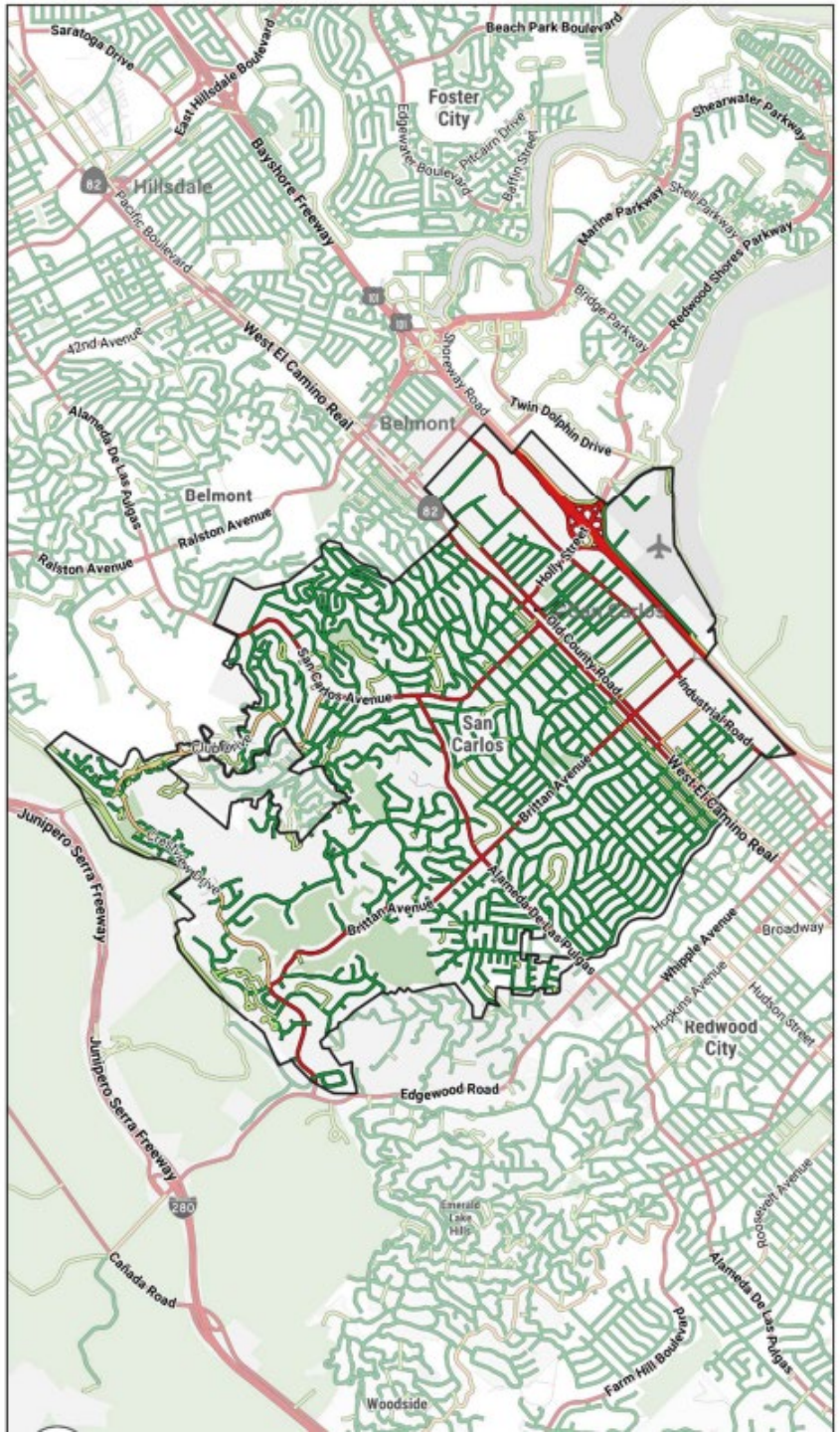
San Carlos
Comprehensive Bicycle and Pedestrian Plan Update (CBPP)

Level of Traffic Stress

Stress Level
- LTS 1
- LTS 2
- LTS 3
- LTS 4

Transit
- BART
- Caltrain
- Rail Transit

Water
Airport
Park



C/CAG
City/County Association of Governments of San Mateo County

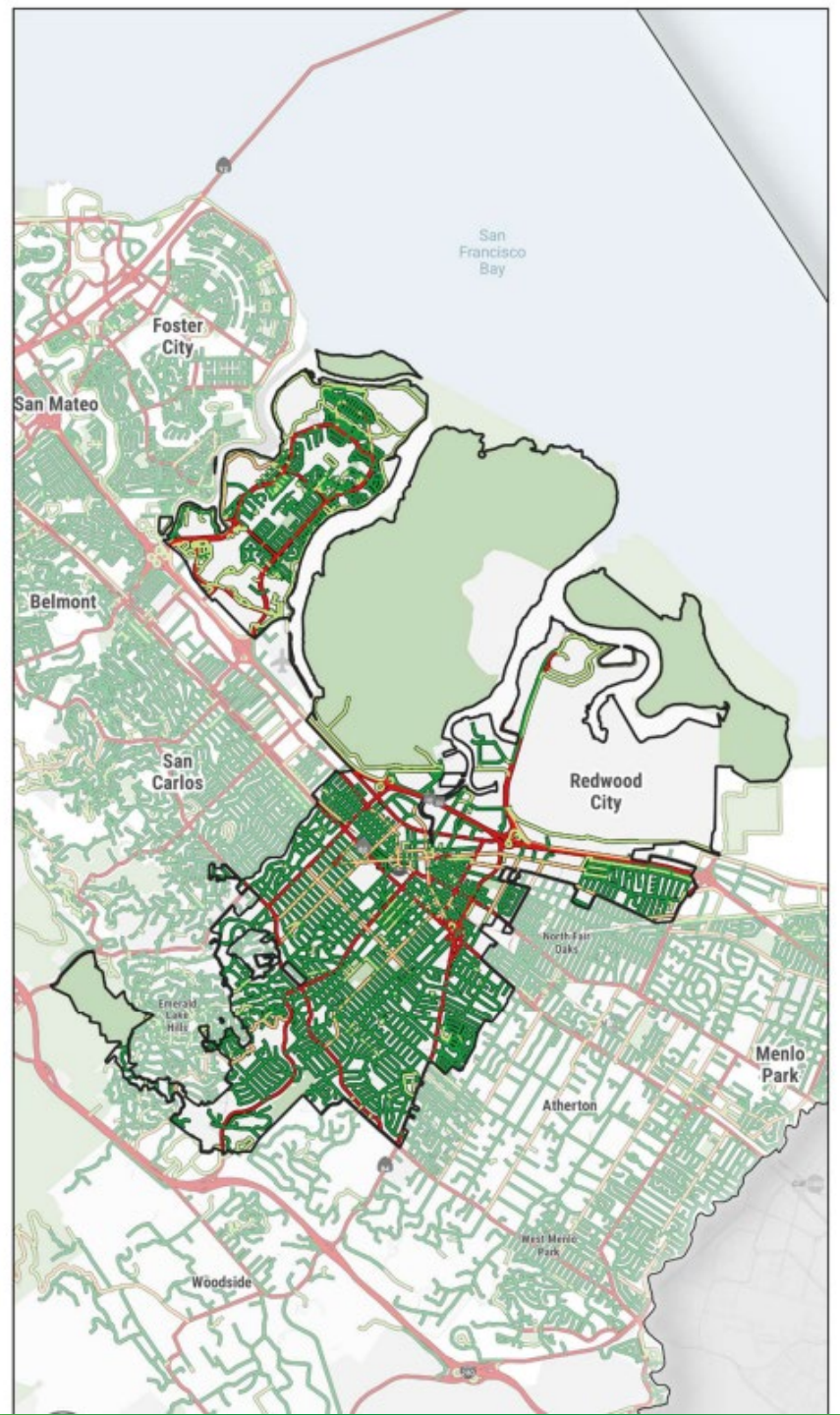
Redwood City
Comprehensive Bicycle and Pedestrian Plan Update (CBPP)

Level of Traffic Stress

Stress Level
- LTS 1
- LTS 2
- LTS 3
- LTS 4

Transit
- BART
- Caltrain

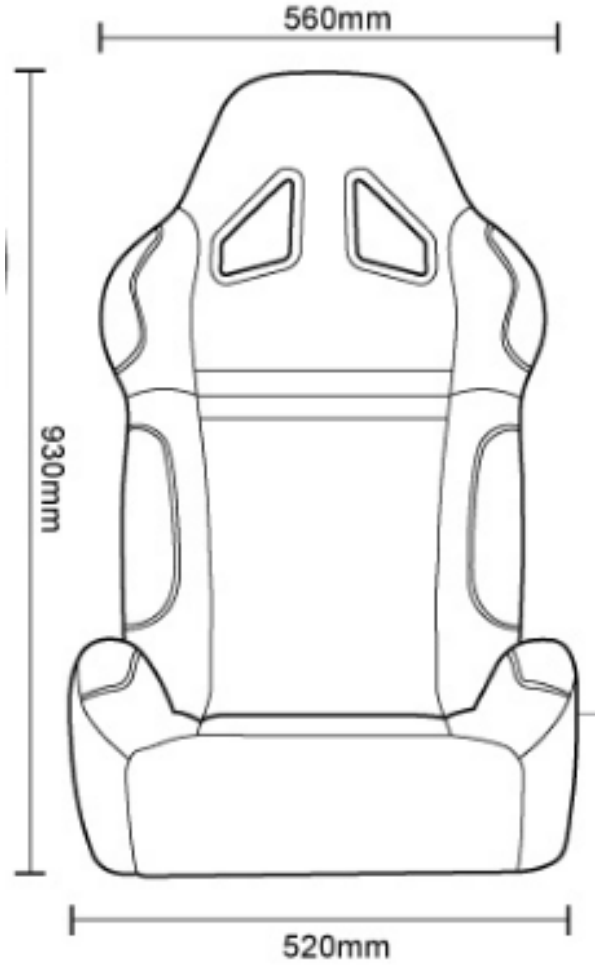
Rail Transit
Water
Airport
Park



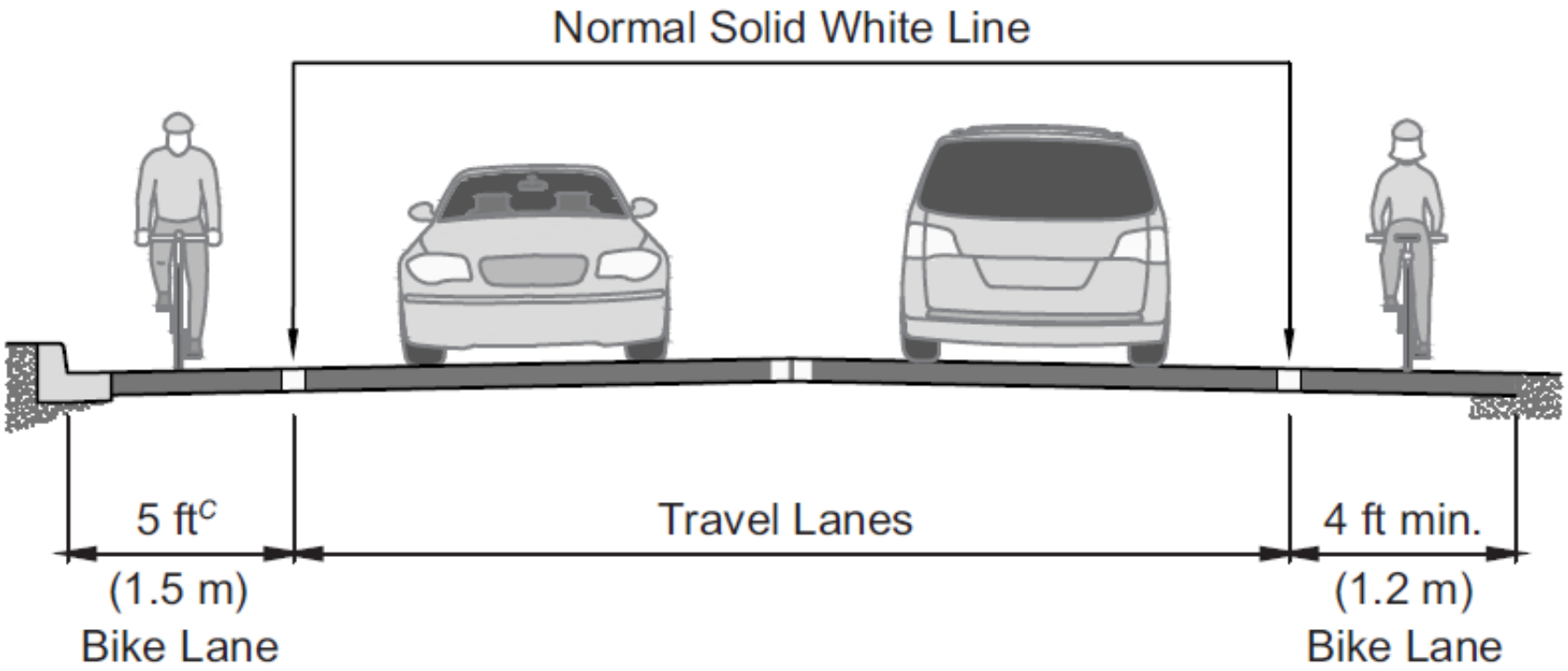
2-Ways to Use LTS:

1 Improve Connections

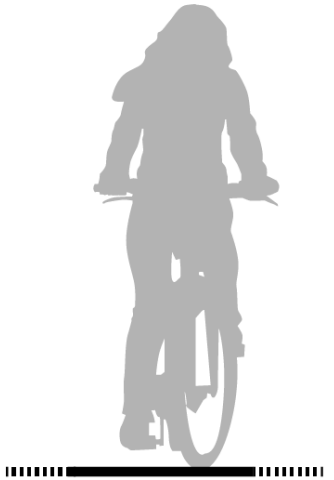
2 Improve Routes


560mm
930mm
520mm

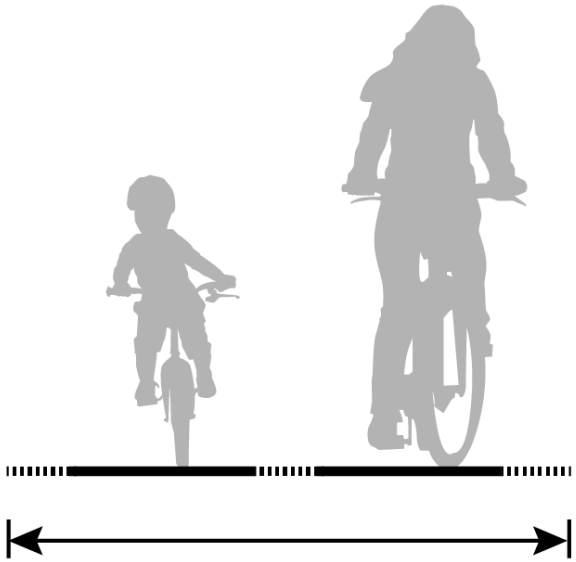

TANGO


Normal Solid White Line
5 ftC
(1.5 m)
Bike Lane
Travel Lanes
4 ft min.
(1.2 m)
Bike Lane

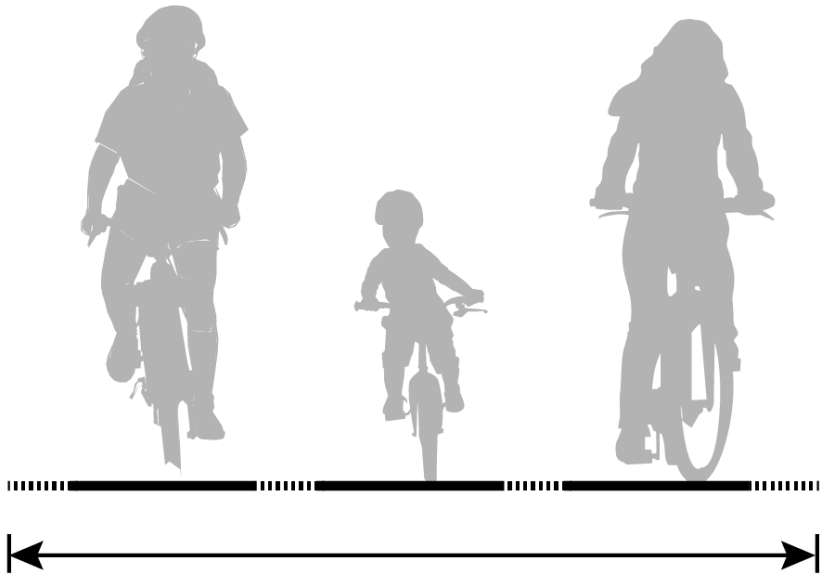
But…



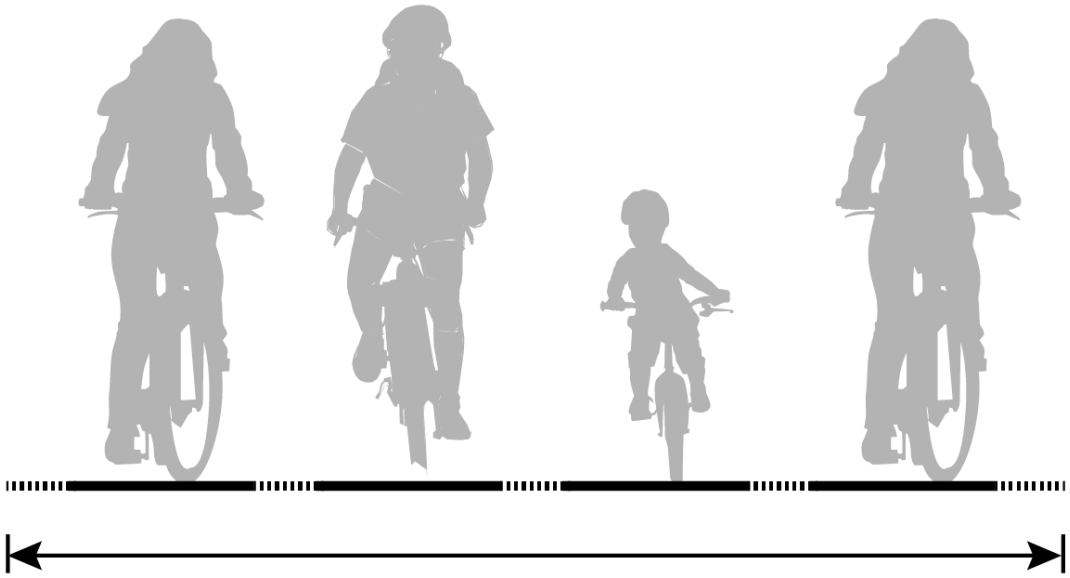
Minimum Operating
Envelope
4 ft



Side by Side
Operating Envelope
7 ft



Side by Side and
Passing Envelope
10.5 ft



Two Pairs
Passing Envelope
14 ft

Find the Space

Resurfacing and Reconstruction

Find the Space!

Reconstruction

Opportunity - 50 years or more!

- Design multimodal from the beginning
- Avoid minimum dimensions
- Future proof

Retrofit

Opportunity – 10 years or more!

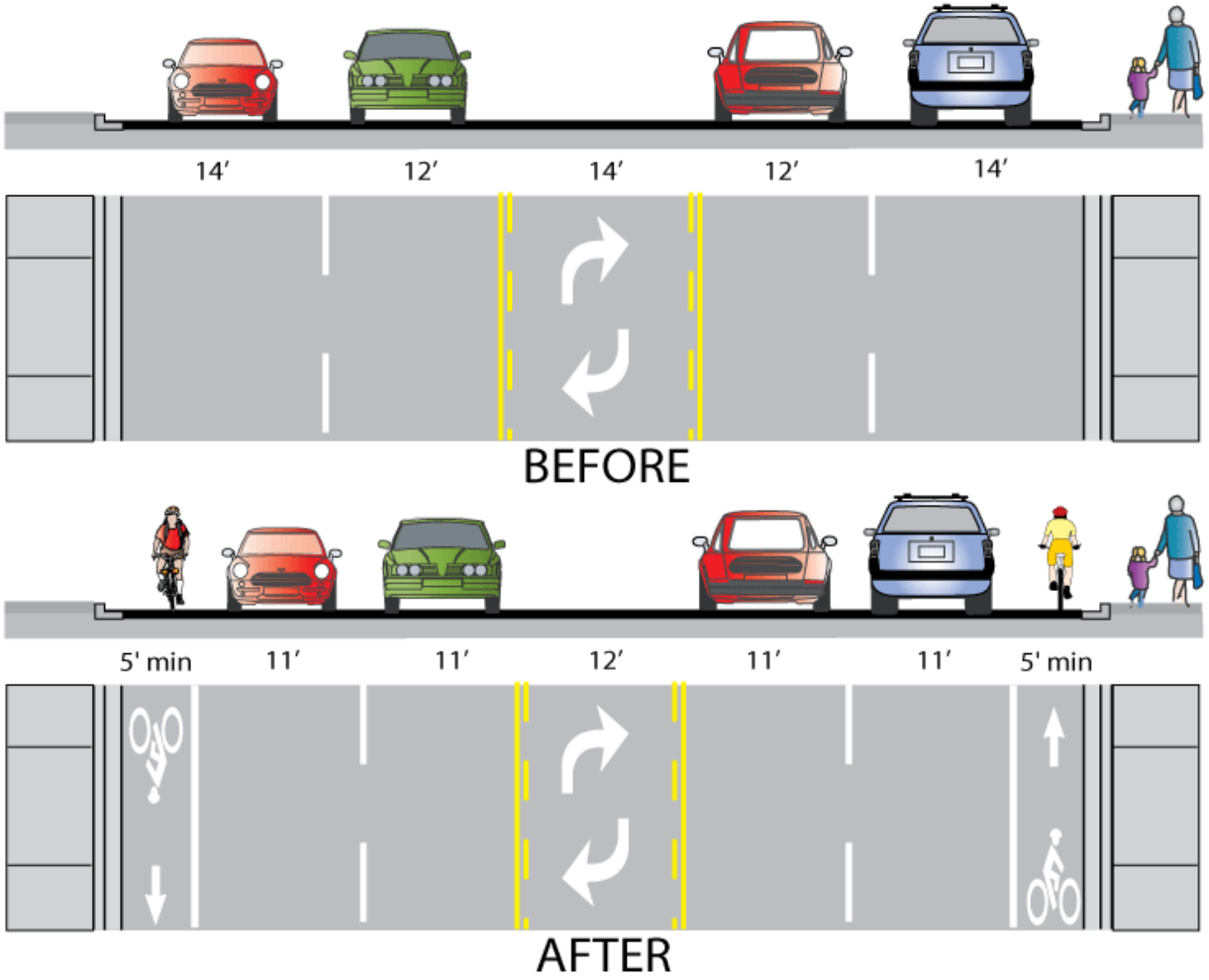
- Maximize the space available
- Try for targeted geometric improvements
- Consider interim materials

Find the Space!

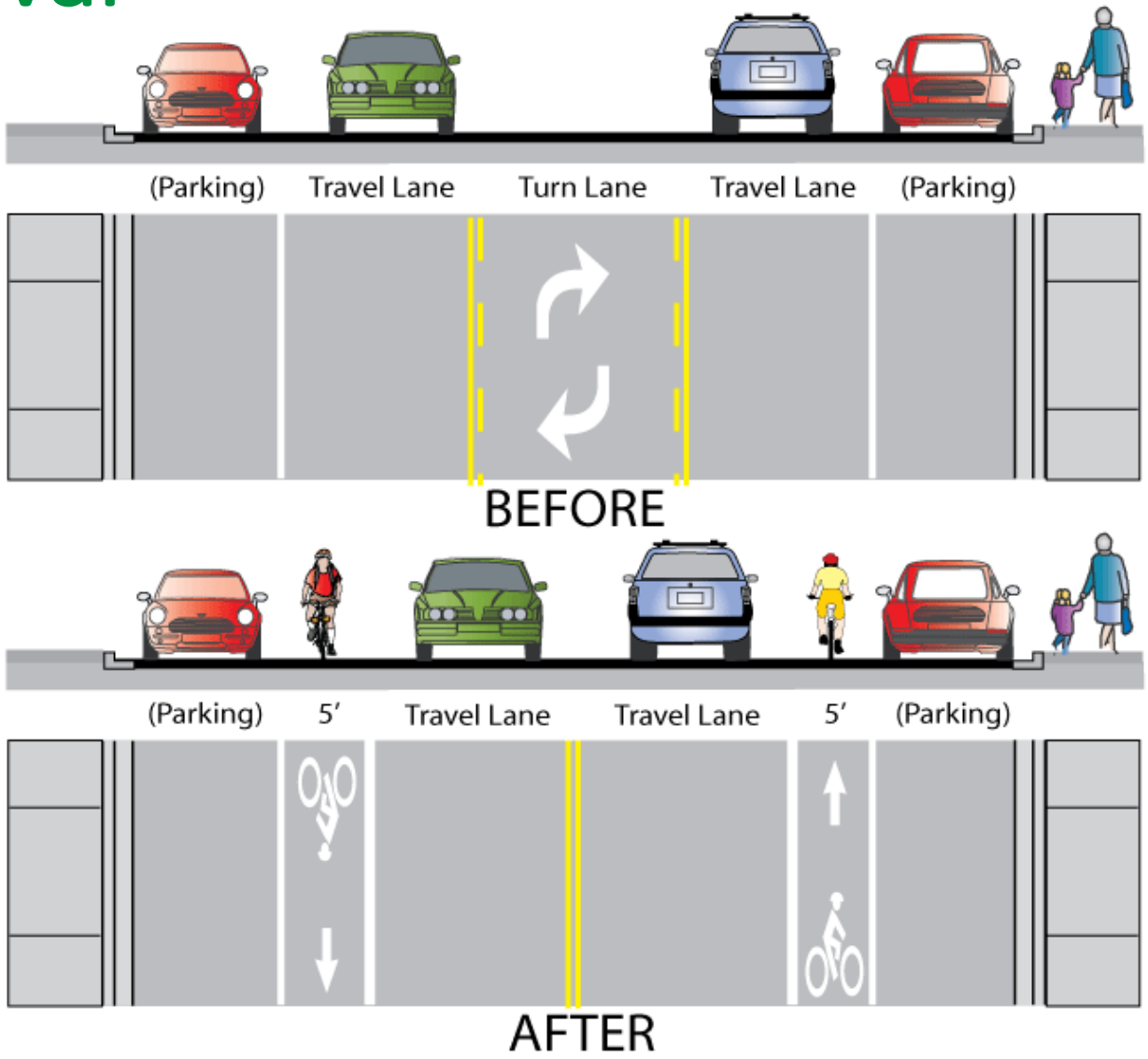
Quiz: What are the ways we can reconfigure the roadway when resurfacing to ‘create space’ for bicycle facilities?

- Narrow Lanes
- Reconfigure / Remove Lanes
- Remove Parking

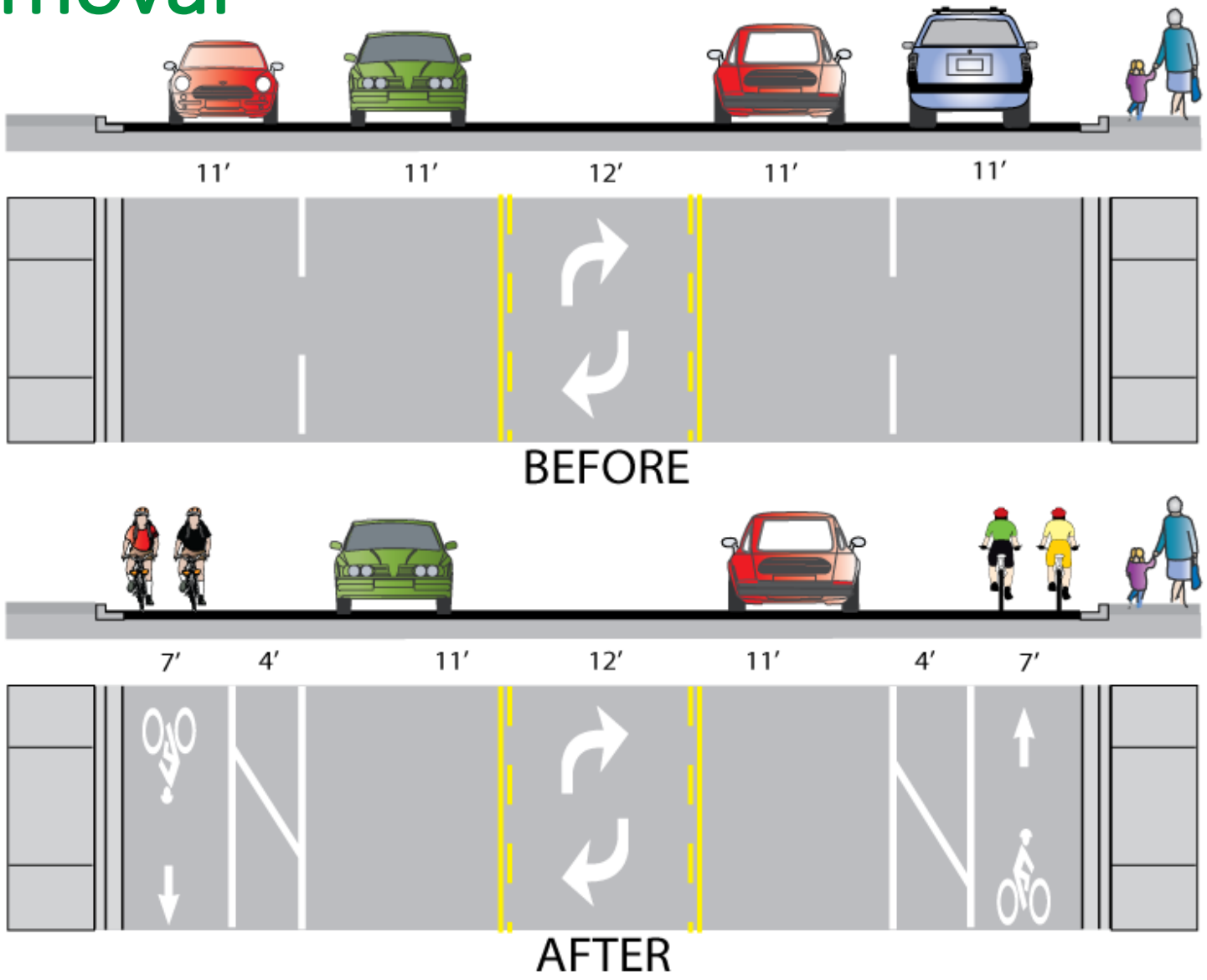
Lane Narrowing



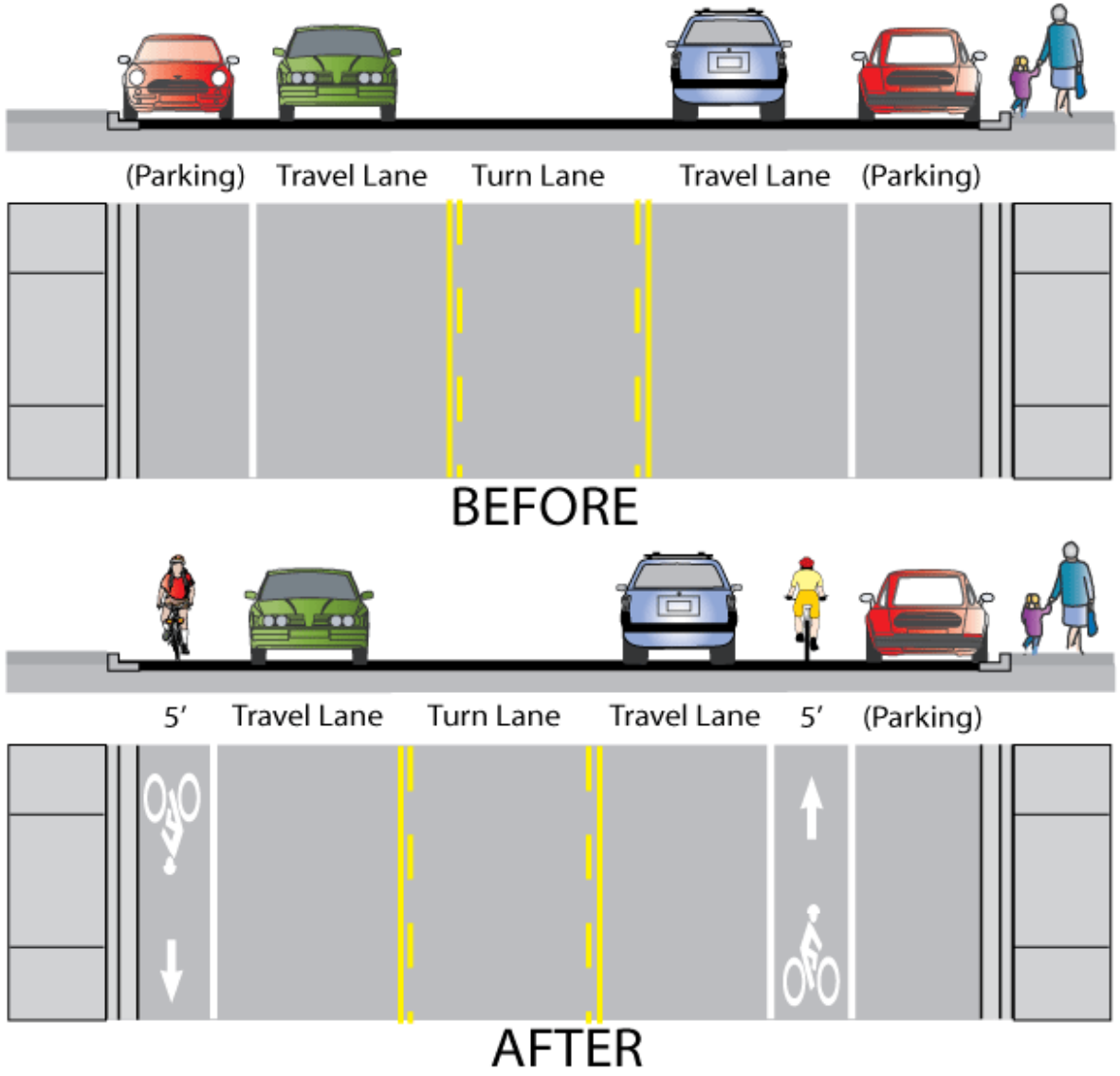
Lane Removal



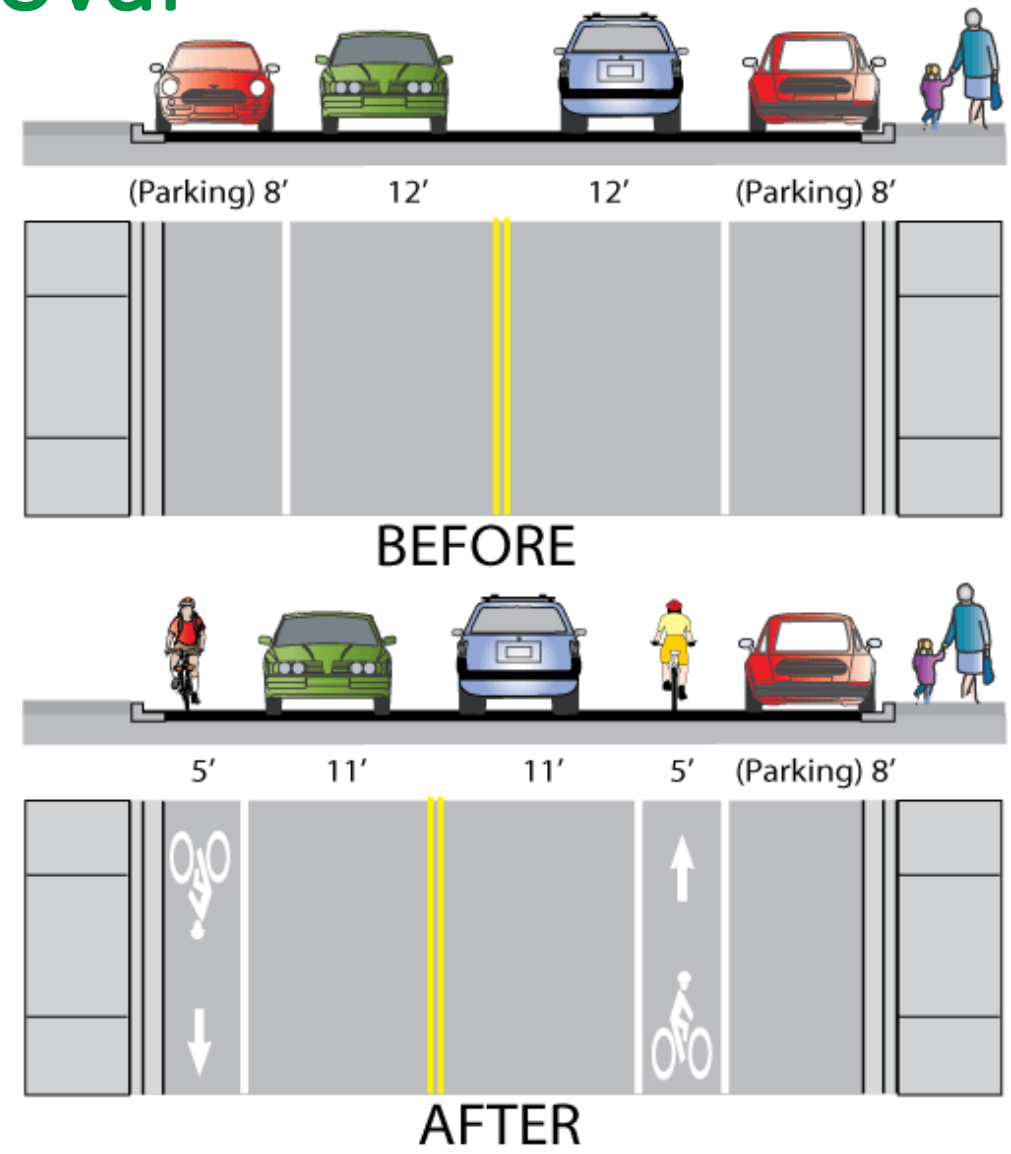
Lane Removal



Parking Removal



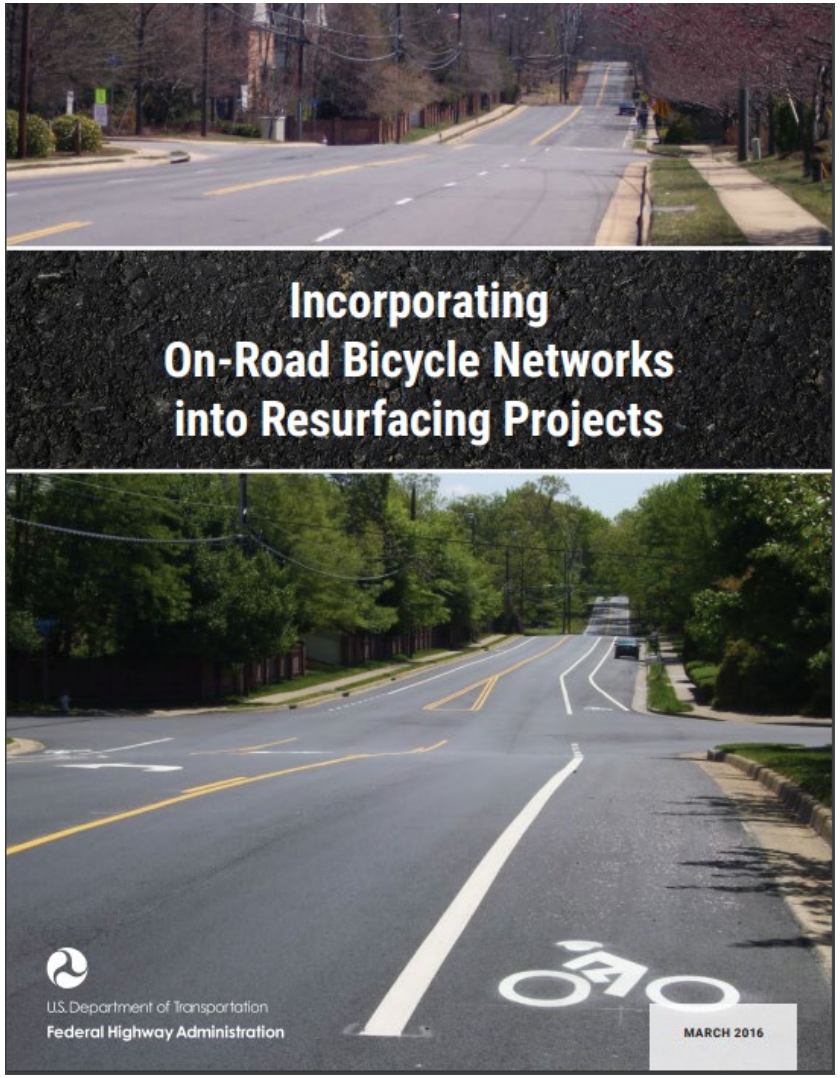
Parking Removal



Find the Space!

"Installing bicycle facilities during roadway resurfacing projects is an efficient and cost-effective way for communities to create connected networks of bicycle facilities."

https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/resurfacing_workbook.pdf



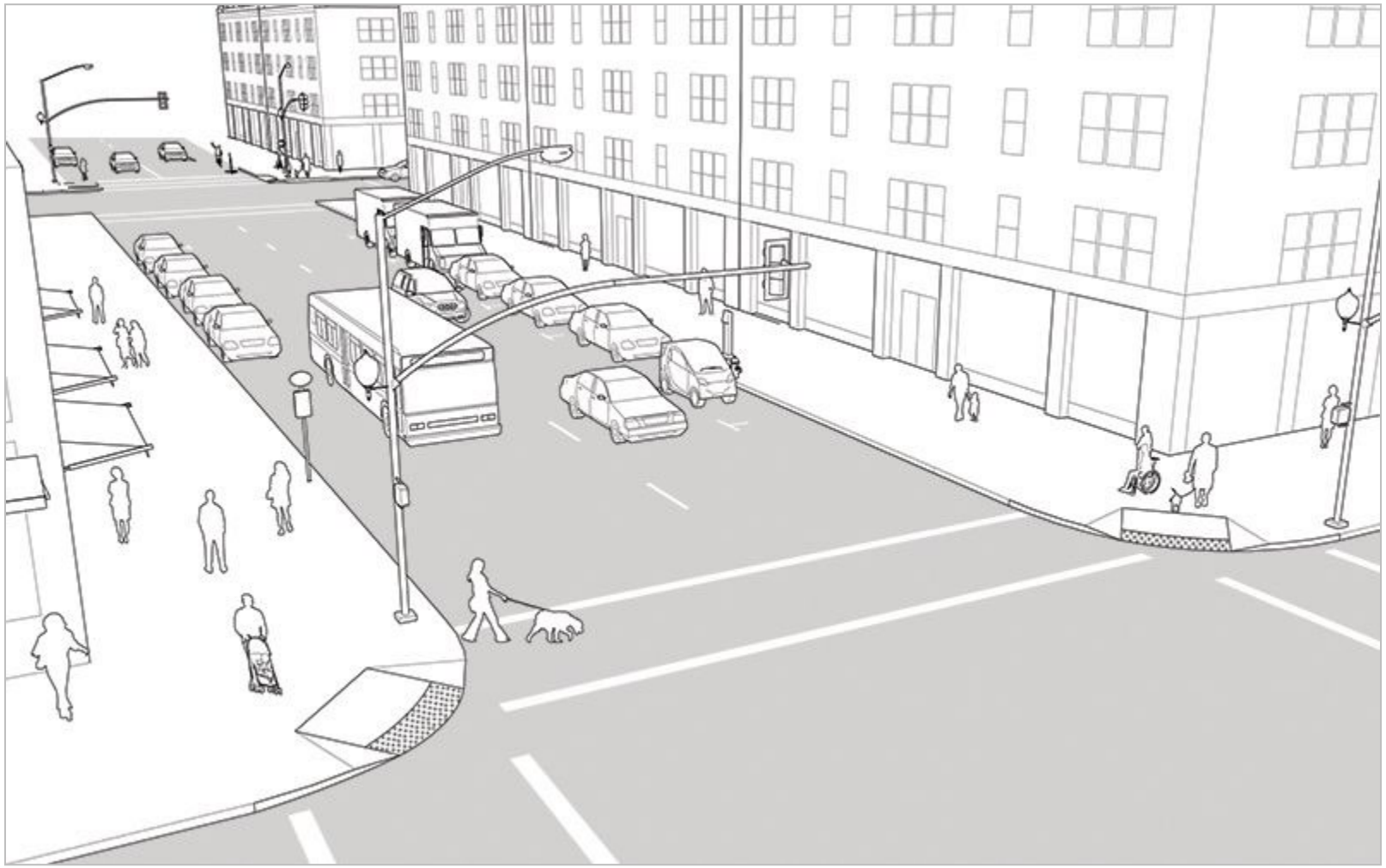
Use All of the Space!

San Carlos, CA – Alameda De Las Pulgas

Use the Space!

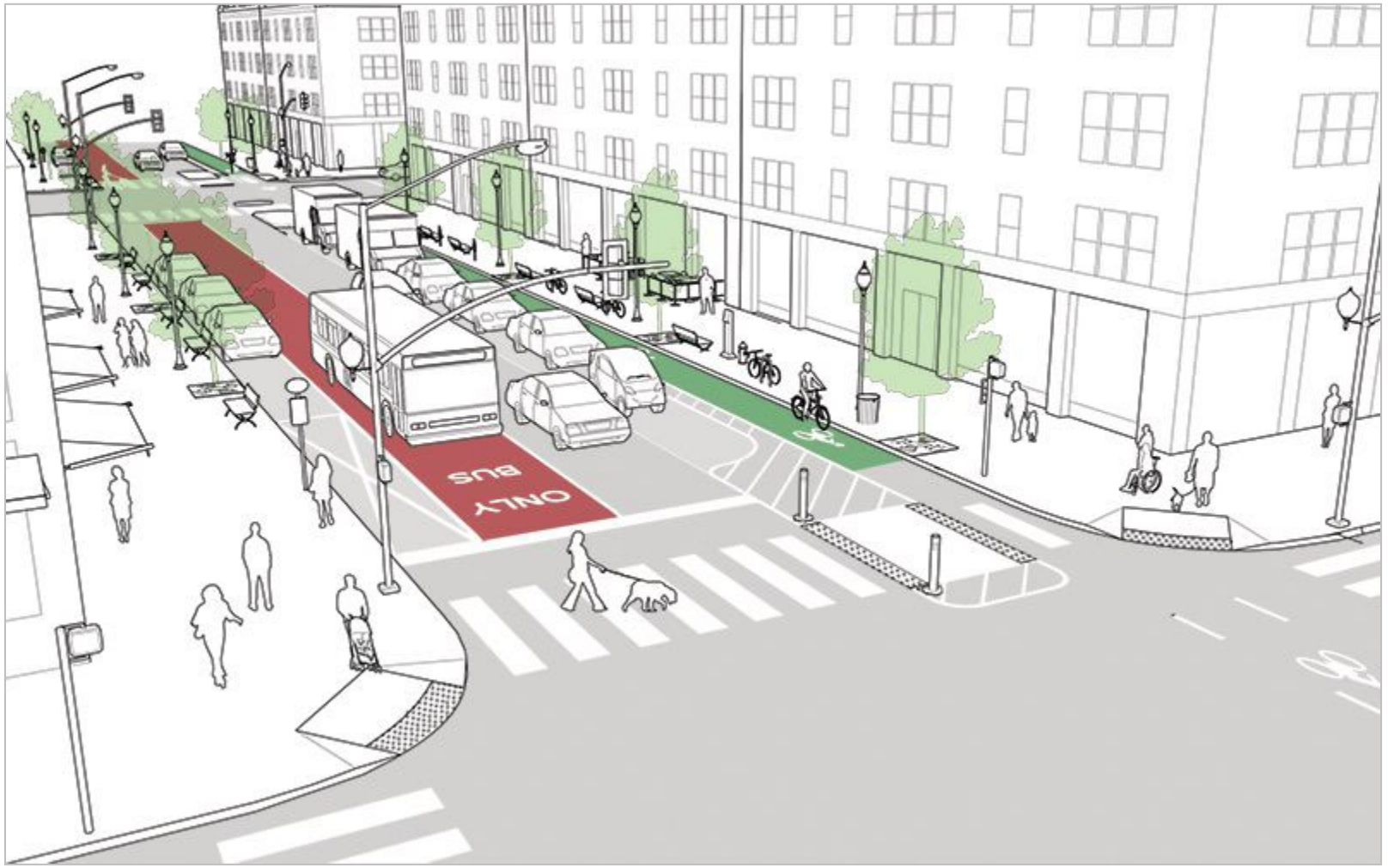
- Signs
- Signals
- Roadway Markings
- Planters & Trees
- Bike Parking and Street Furniture
- Colored Lanes (bike/bus)
- Surface Treatments (epoxied gravel; paint)
- Stones/Boulders
- Superficial Construction (islands, etc)
- Programming & Events
- Part-Time Closures
- Flexible Parking Lane

Use the Space!



EXISTING CONDITIONS

Use the Space!



INTERIM REDESIGN

Use the Space!

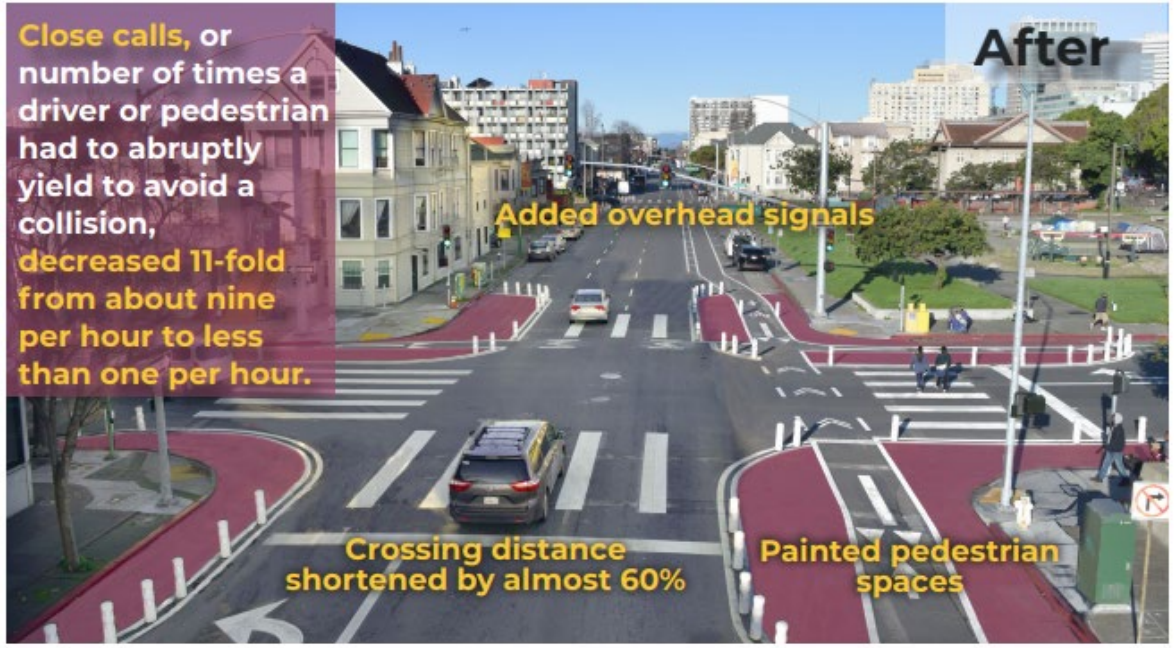
RECONSTRUCTION

Use the Space!

San Jose, CA

Use the Space!

Oakland, CA



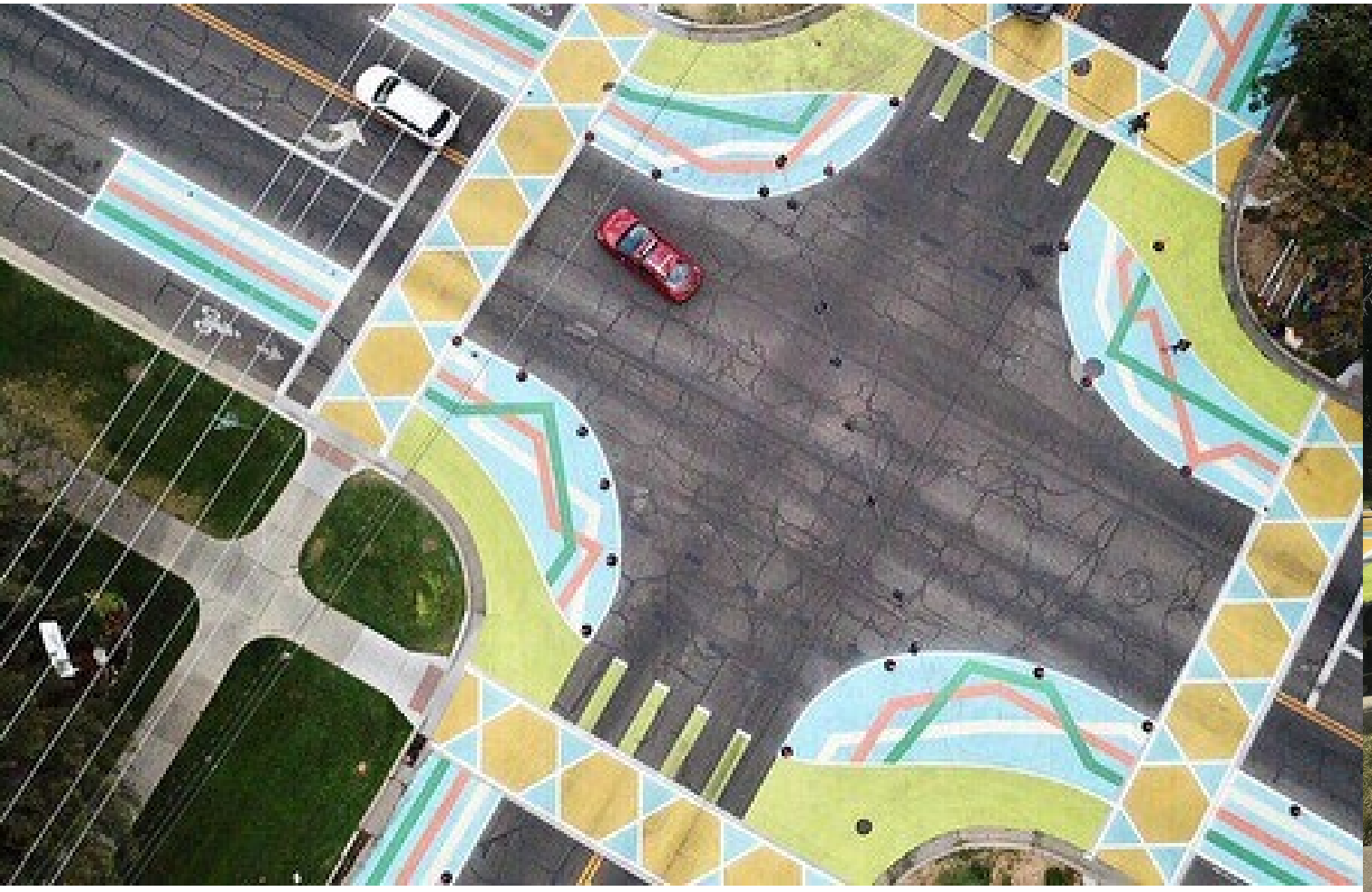
alta

Use the Space!

Culver City, CA

Santa Monica, CA

Use the Space!



Use the Space!

Class II Bike Lanes

Key Things to Know

Topics for Class II Bike Lanes

1. Go Beyond the Minimums
2. Consider effective width
3. Maximize separation with buffering
4. Enhance where possible
    1. Mid-block
    2. Intersections
5. Special Design Cases

Go Beyond the Minimums

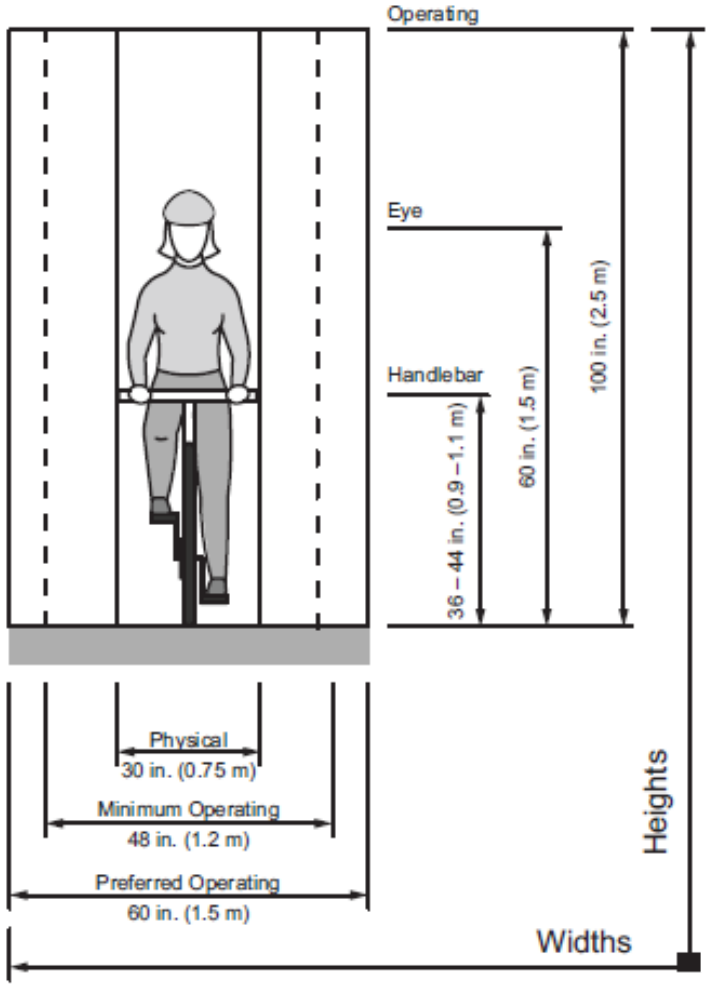
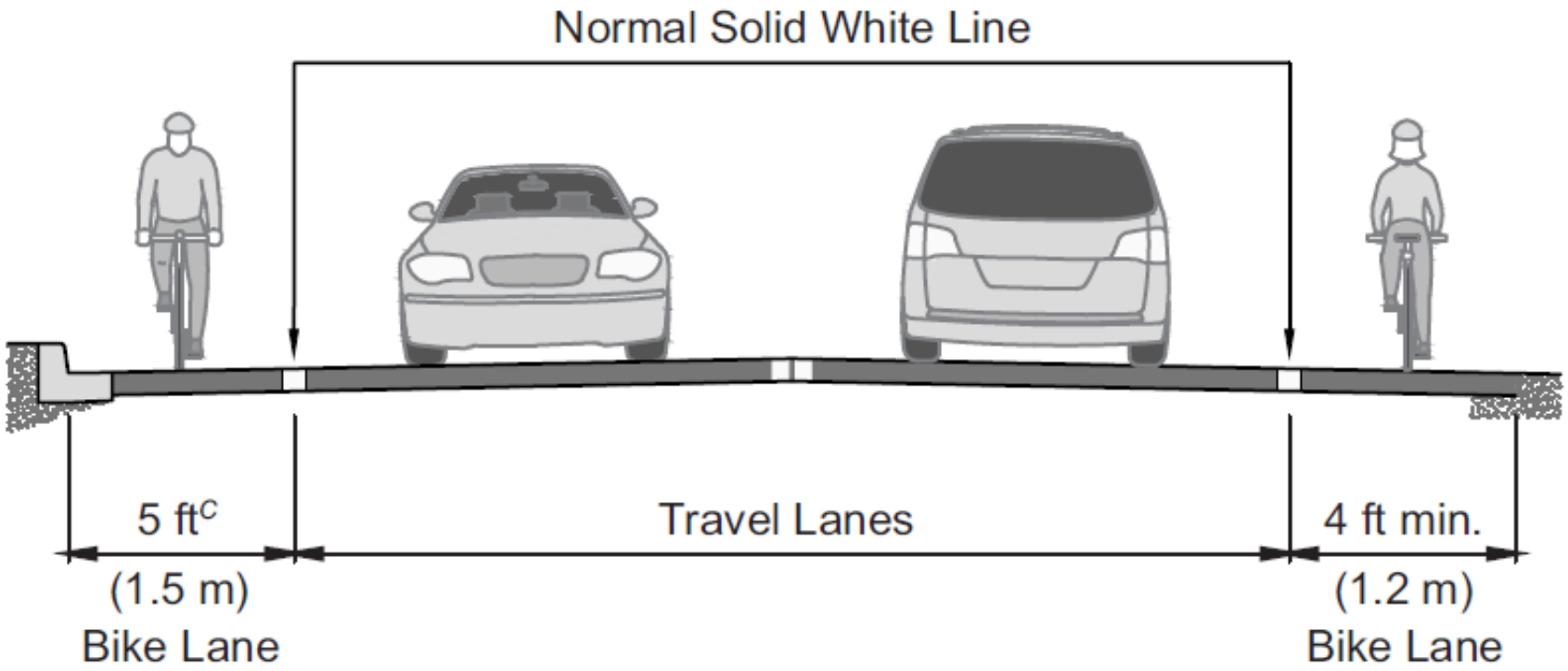
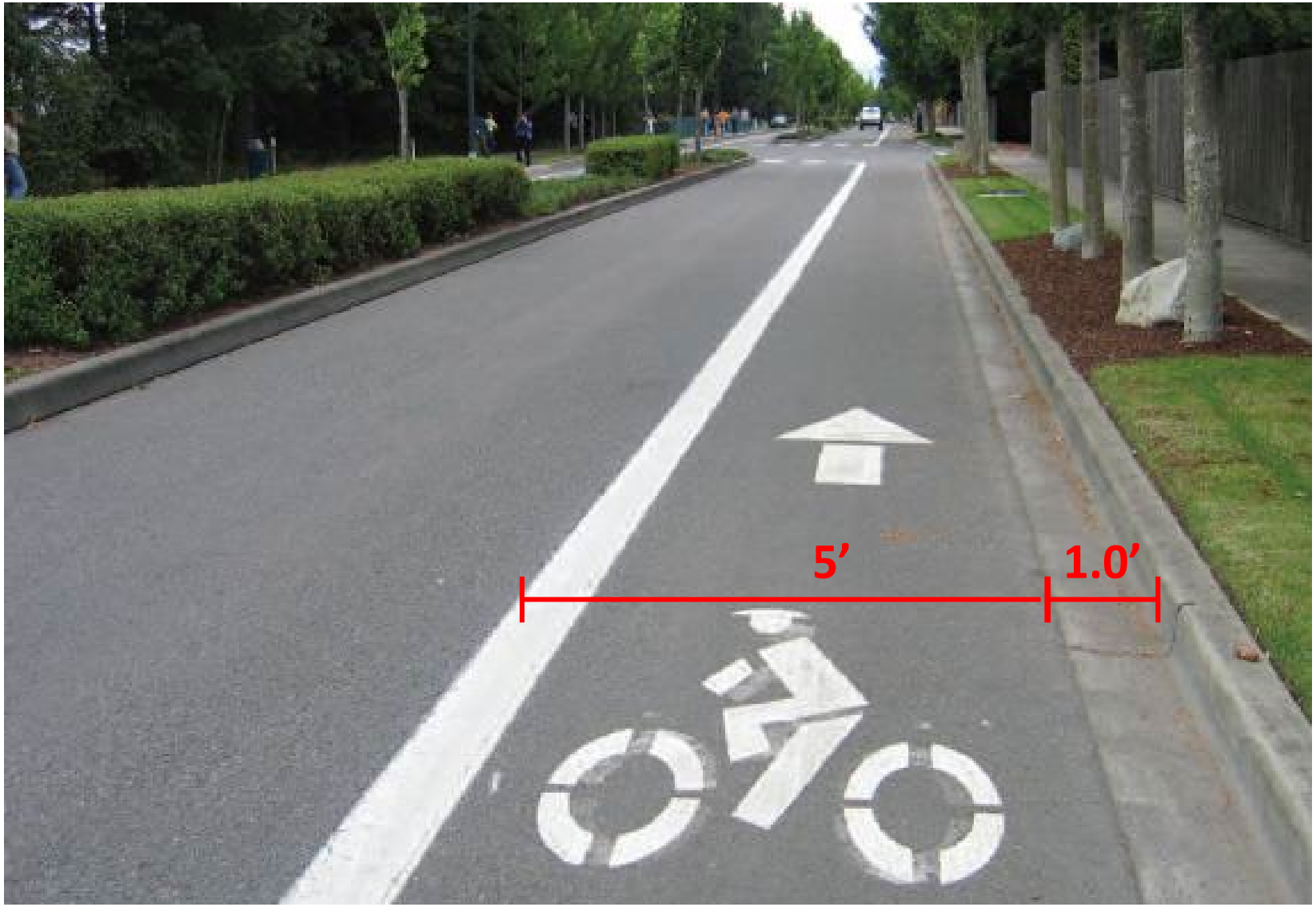


Figure 3-1. Bicyclist Operating Space



Consider Effective Widths

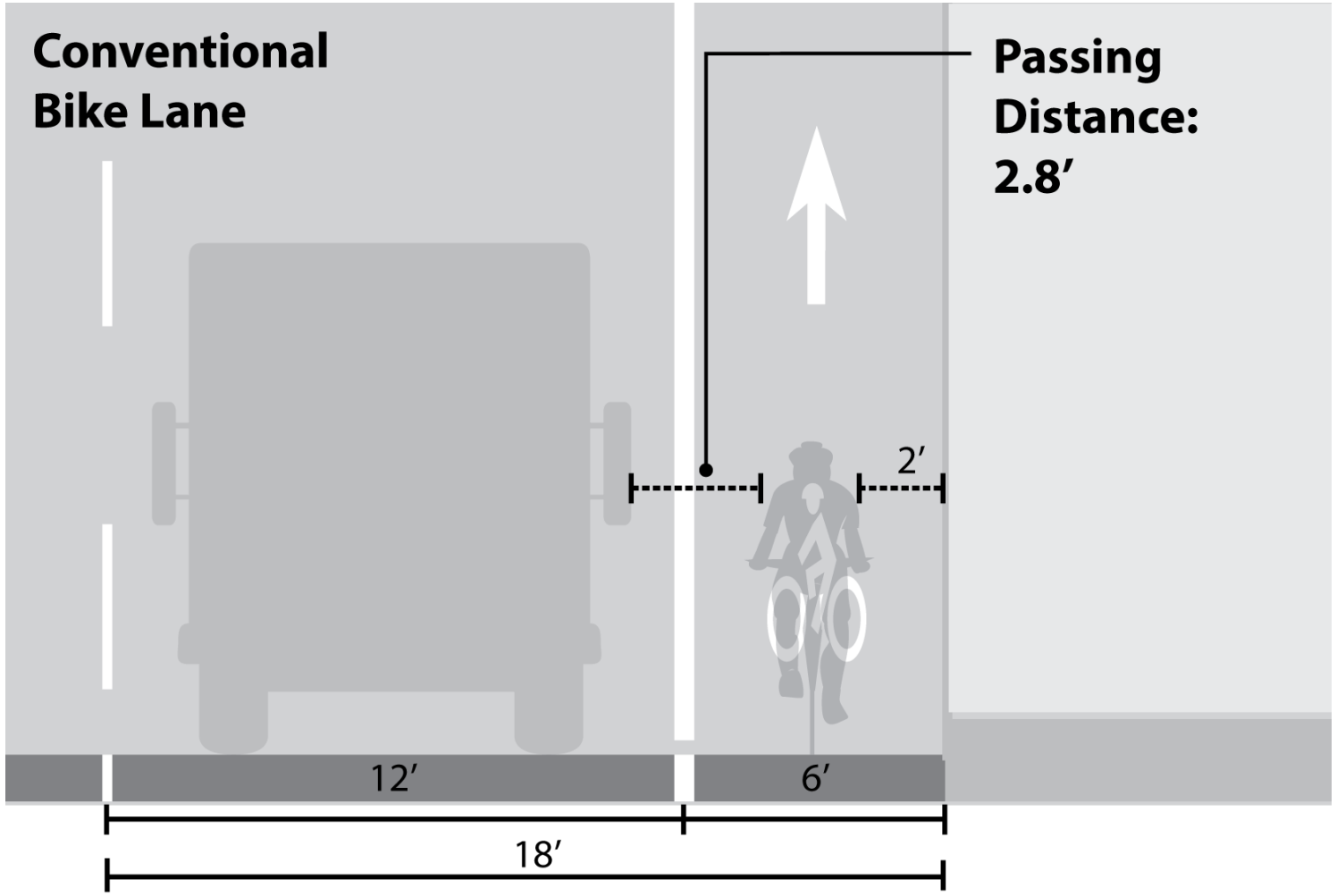
Consider Effective Widths



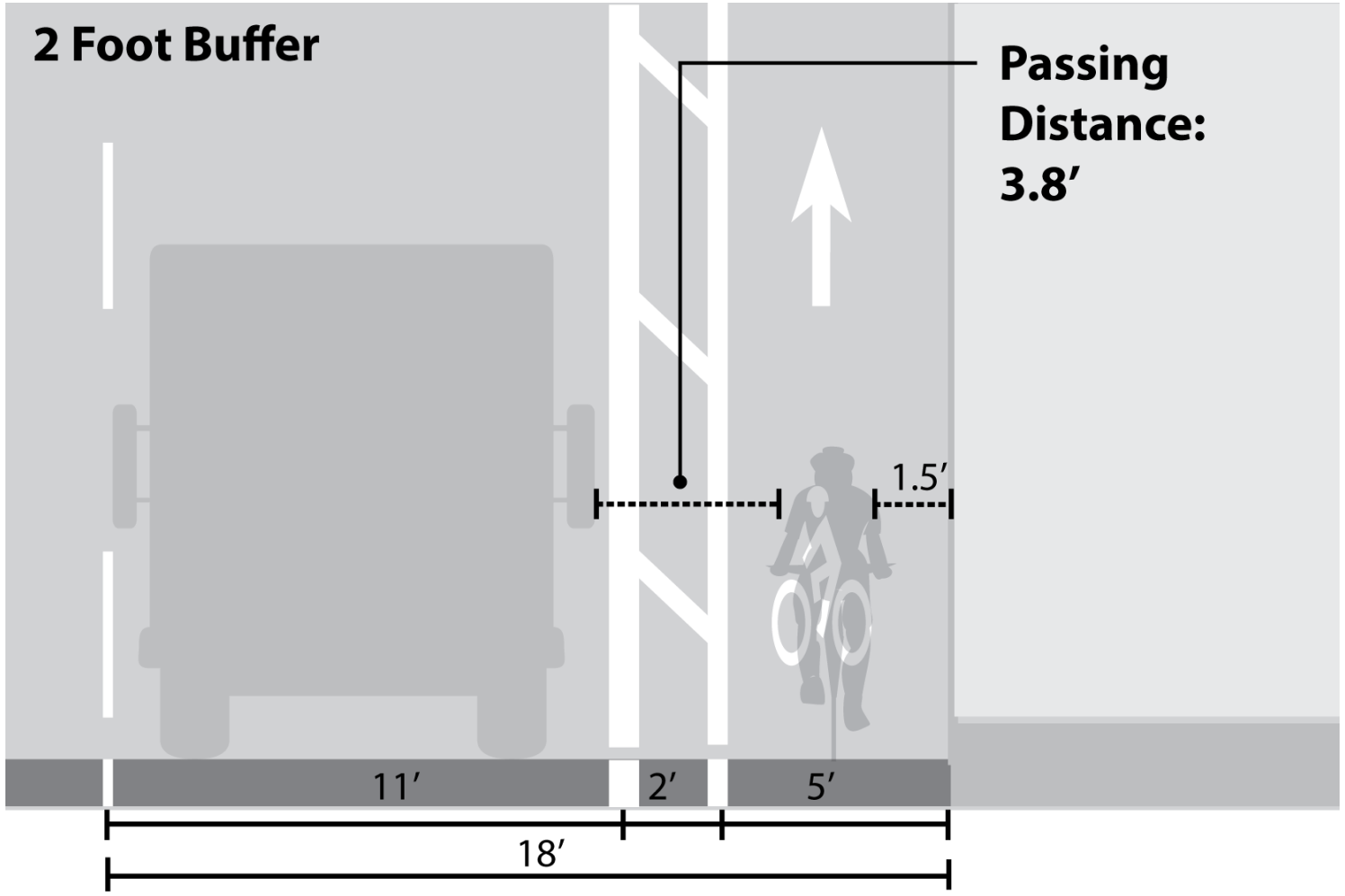
Consider Effective Widths

Consider Effective Widths

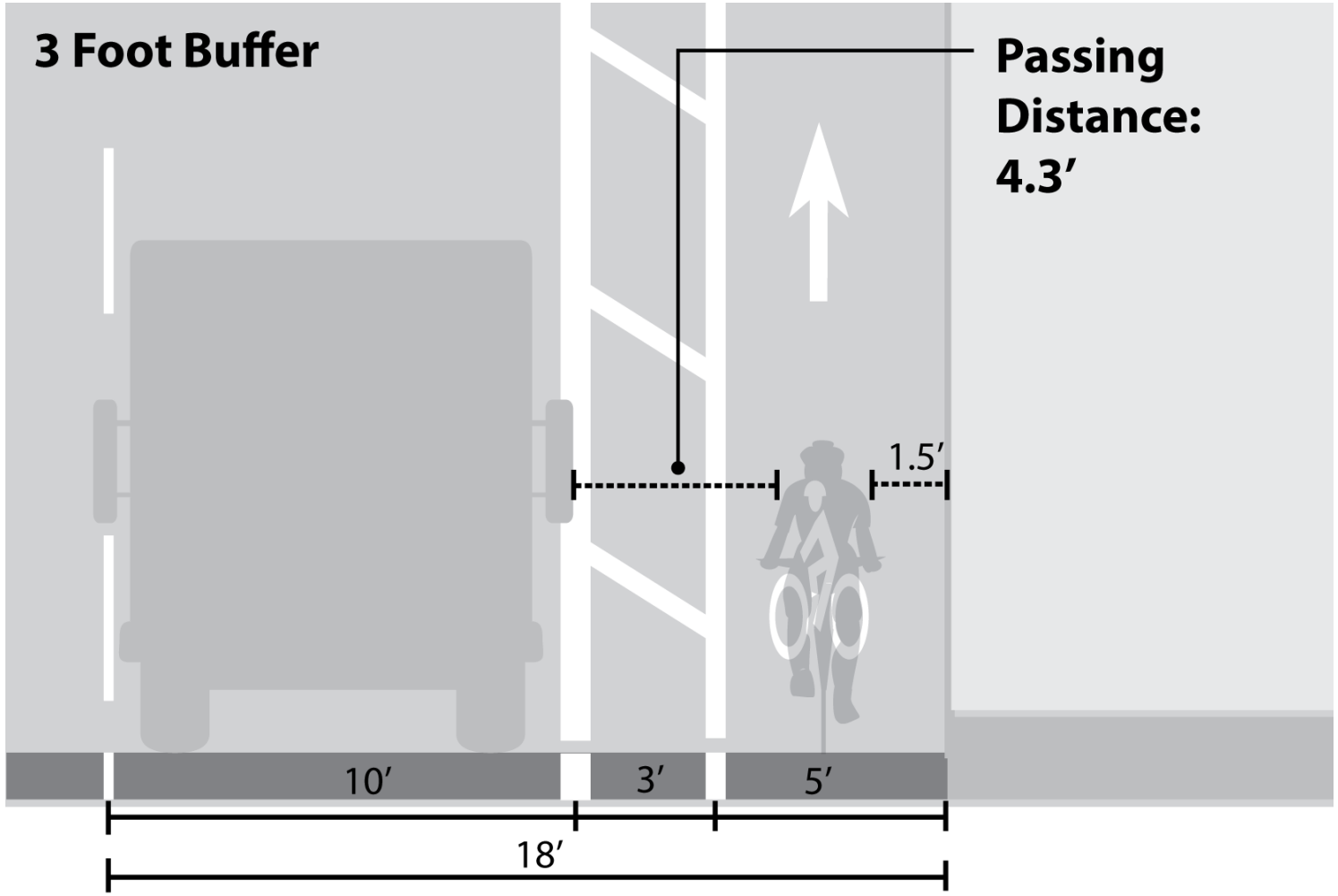
Impact of Buffer



Impact of Buffer



Impact of Buffer



Buffered Bike Lanes

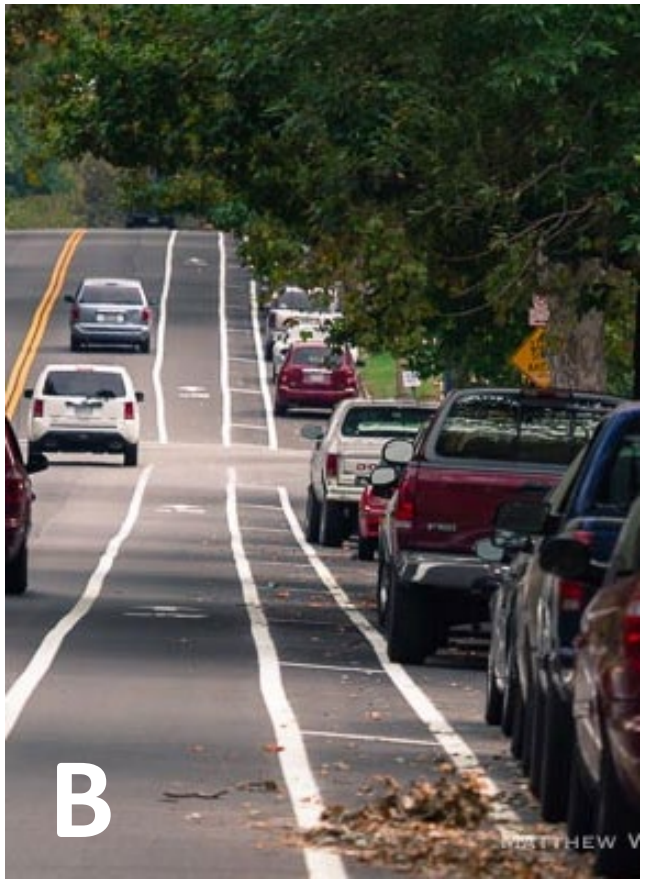
Pasadena, CA – credit: Boyonabike.com

Buffered Bike Lanes

Carlsbad, CA – credit: Boyonabike.

Parking Side vs. Travel Side

Quiz: If you could have one buffer, which one would you want as a bicyclist?

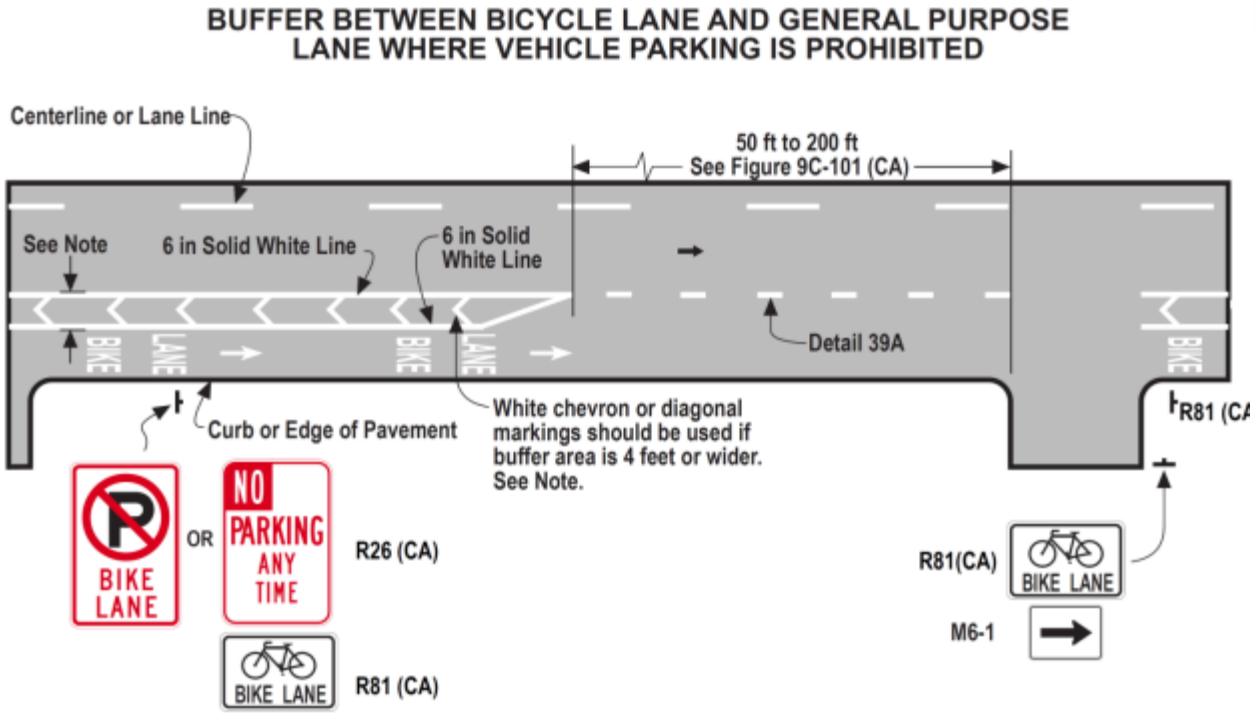


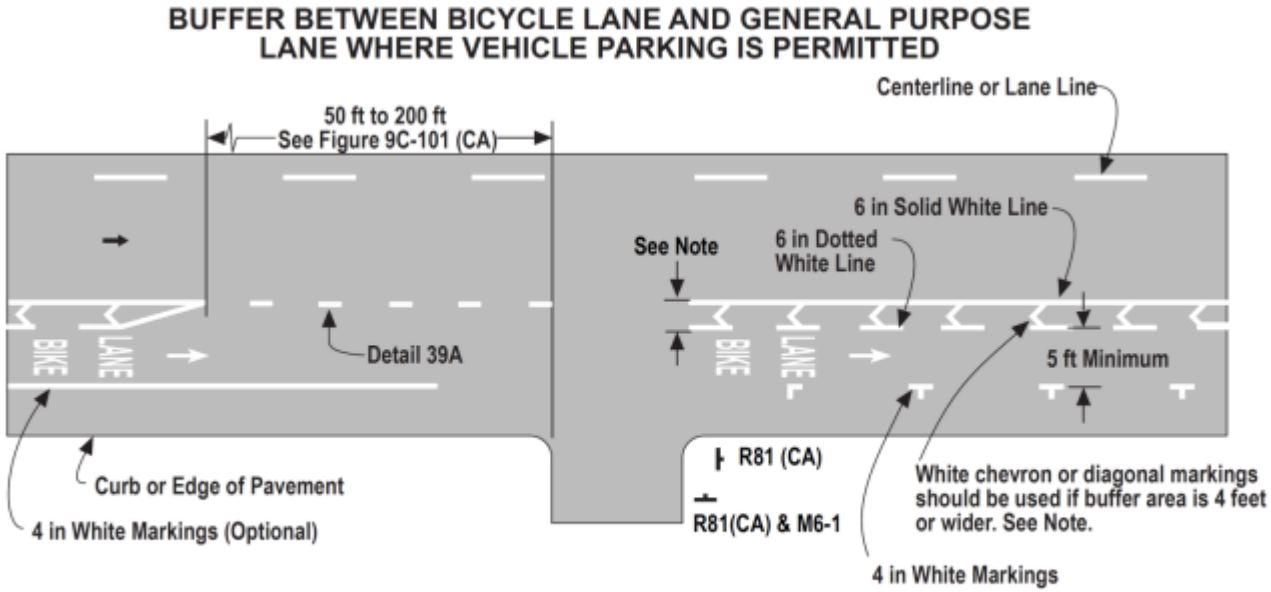
Buffered Bike Lanes

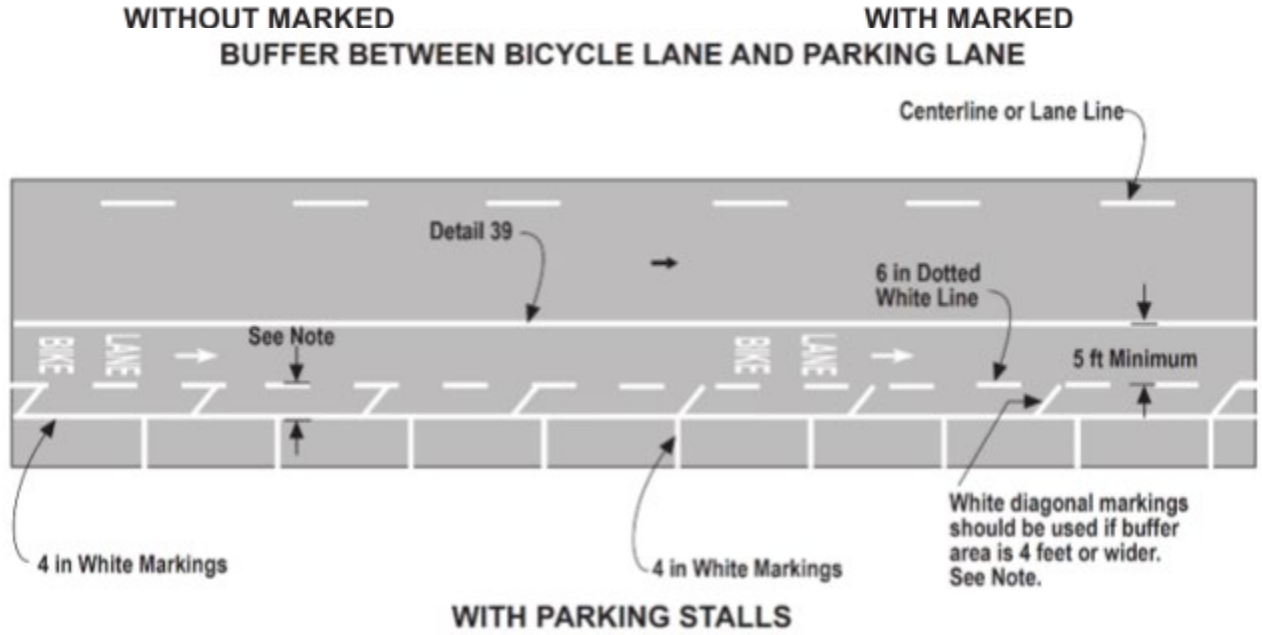
Davis, CA – credit: Davis Enterprise

CAMUTCD

What does it say?





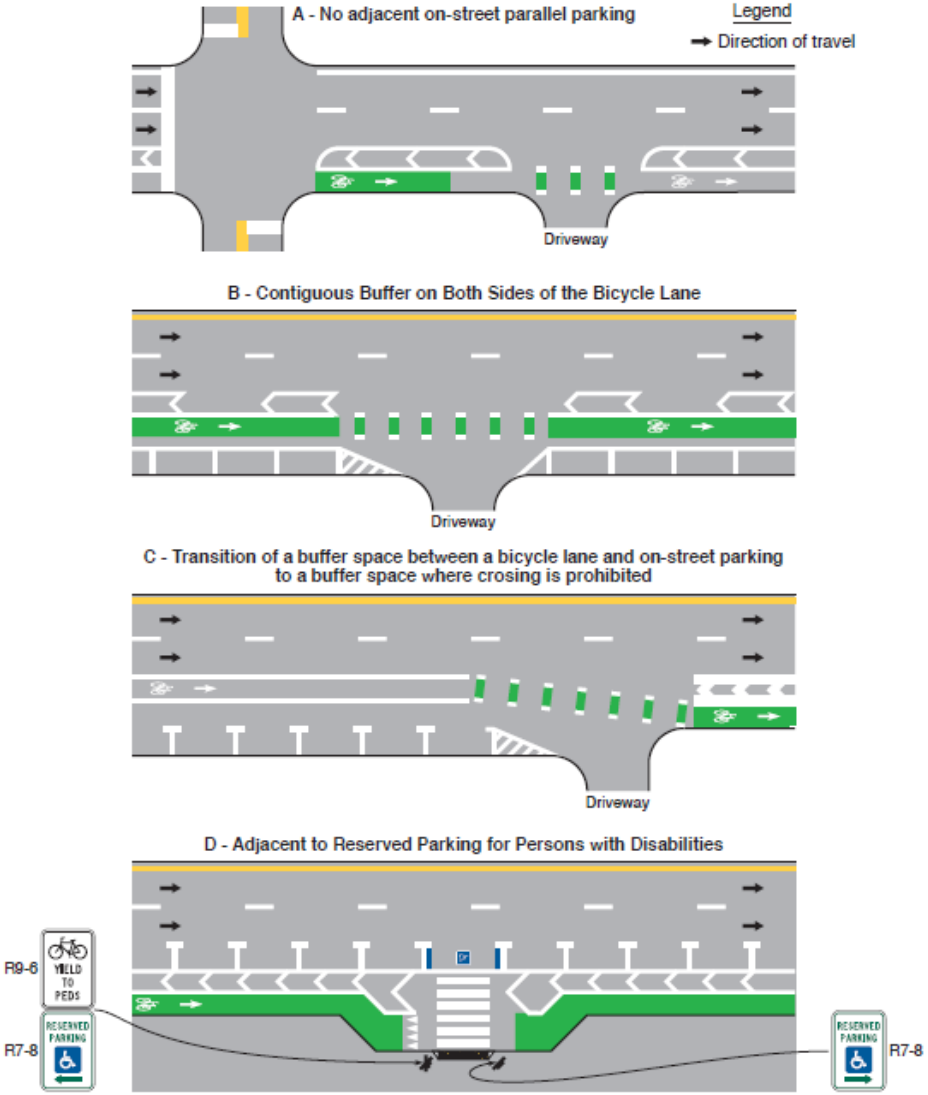


National MUTCD

Draft MUTCD – what does it say?

Figure 9E-7. Examples of Lane Markings for Separated Bicycle Lanes
(Sheet 1 of 3)

Figure 9E-6. Examples of Markings for Buffer-Separated Bicycle Lanes



Enhance Bike Lanes – Add Color

Davis, CA

Enhance Bike Lanes – Rumble Strips

No!

Yes!

Enhance Bike Lanes – Intersections

Special Design Cases

- Railroad Tracks
- 60-90 degree crossing

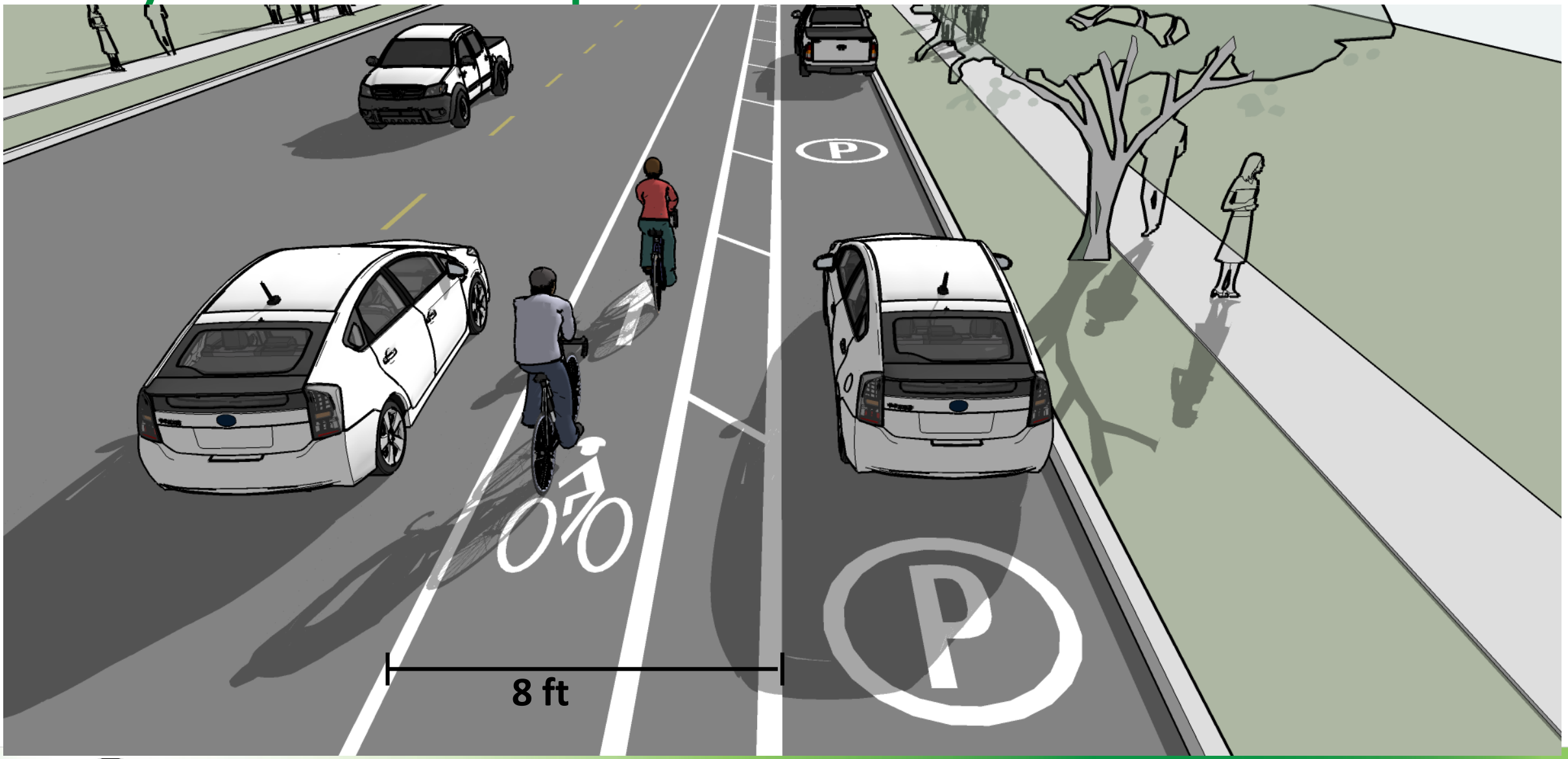
Special Design Cases

- Curb inlets
- Utility covers

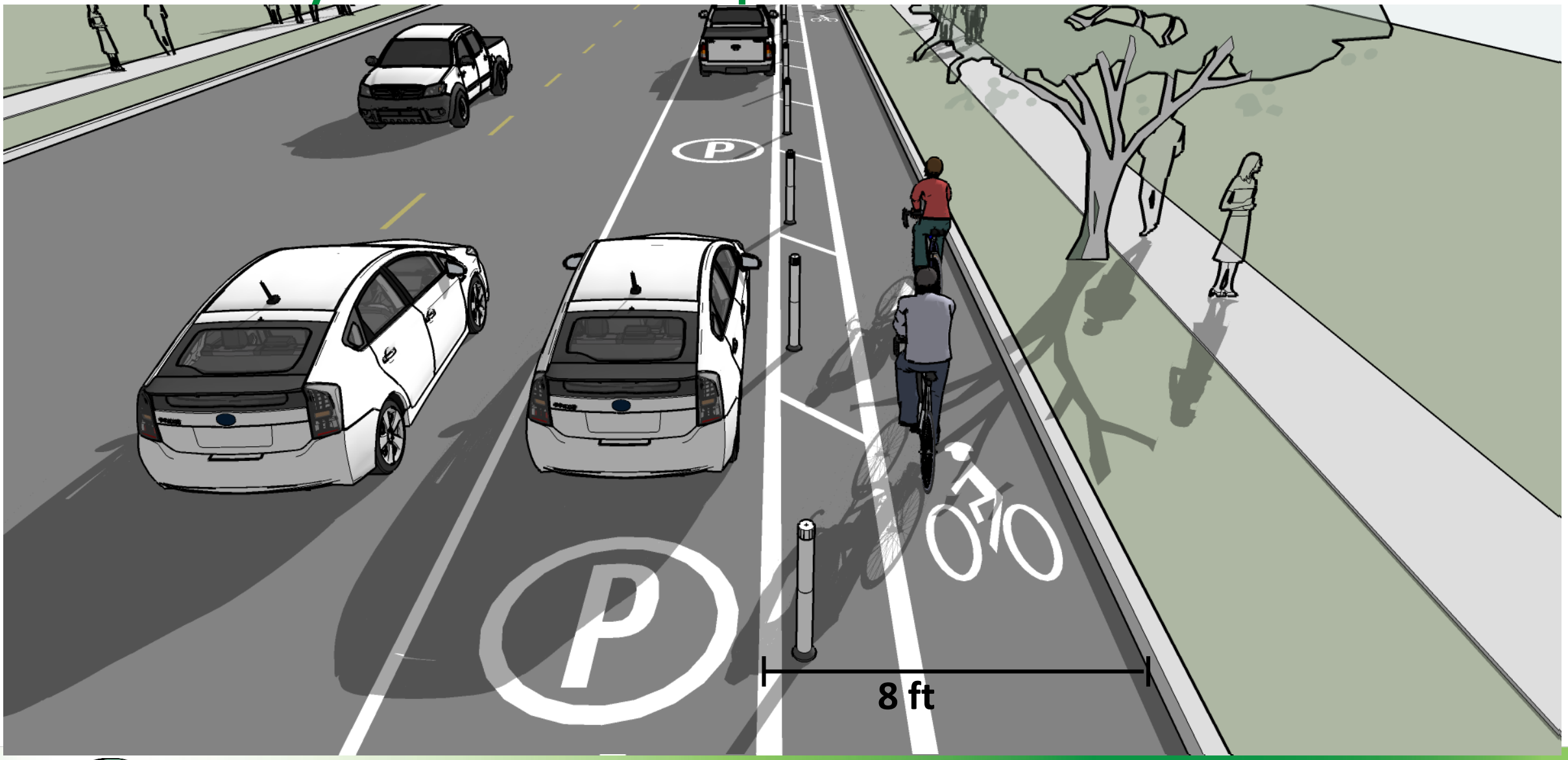
Class IV – Separated Bike Lanes

State of the Practice…

If you have the space to do this…

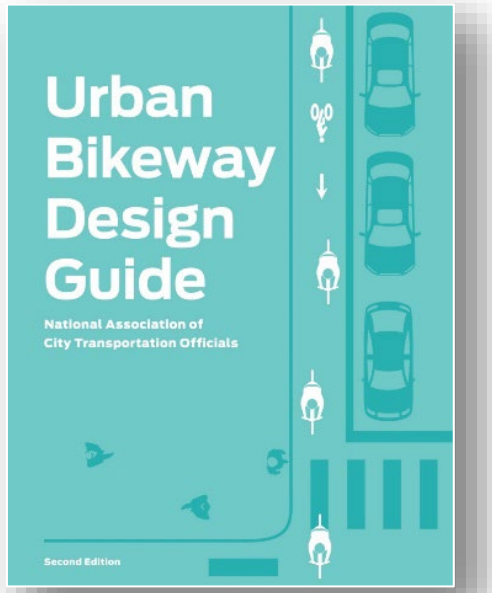


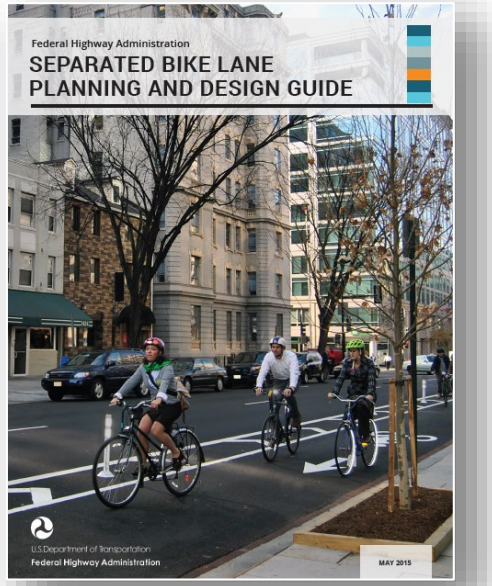
… then you have the space to do this.



Where to Get Design Guidance

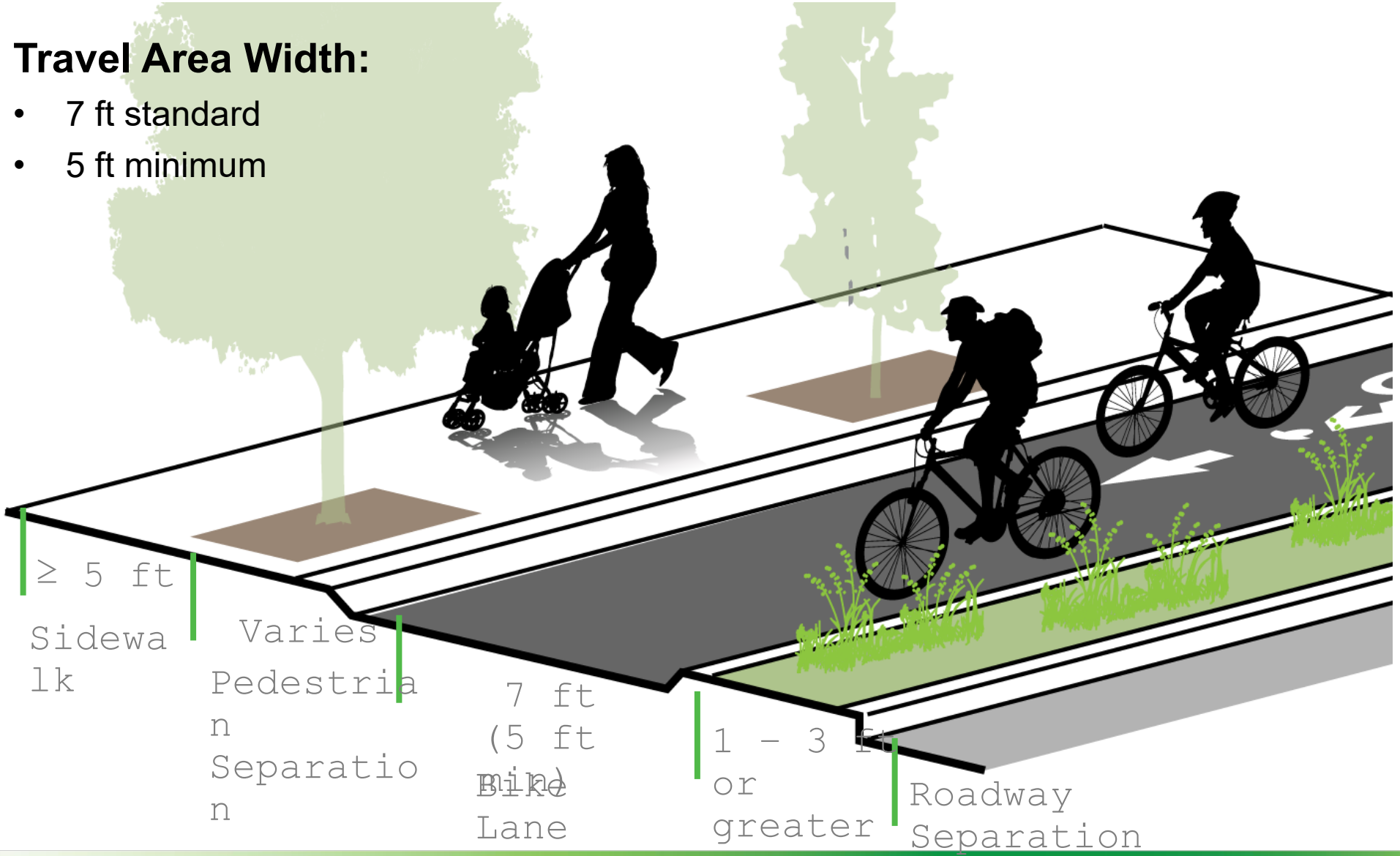
- NACTO UBDG (2011)
  - (under update)
- FHWA Separated Bike Lane Planning & Design Guide (2015)
- Design Information Bulletin 89-01 – Caltrans
- CAMUTCD – Part 9



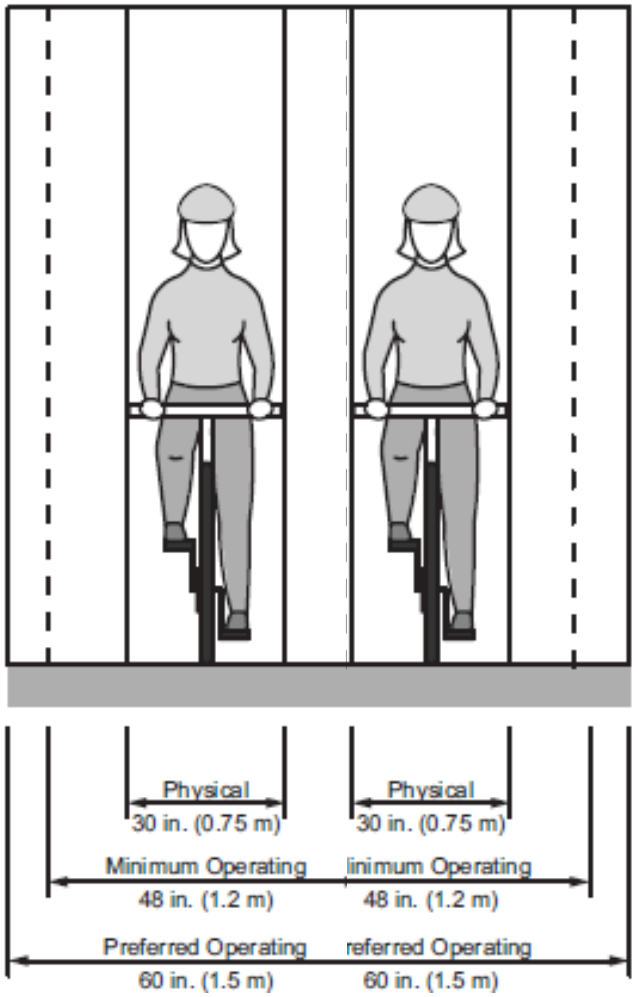


Travel Area Width:

- 7 ft standard
- 5 ft minimum

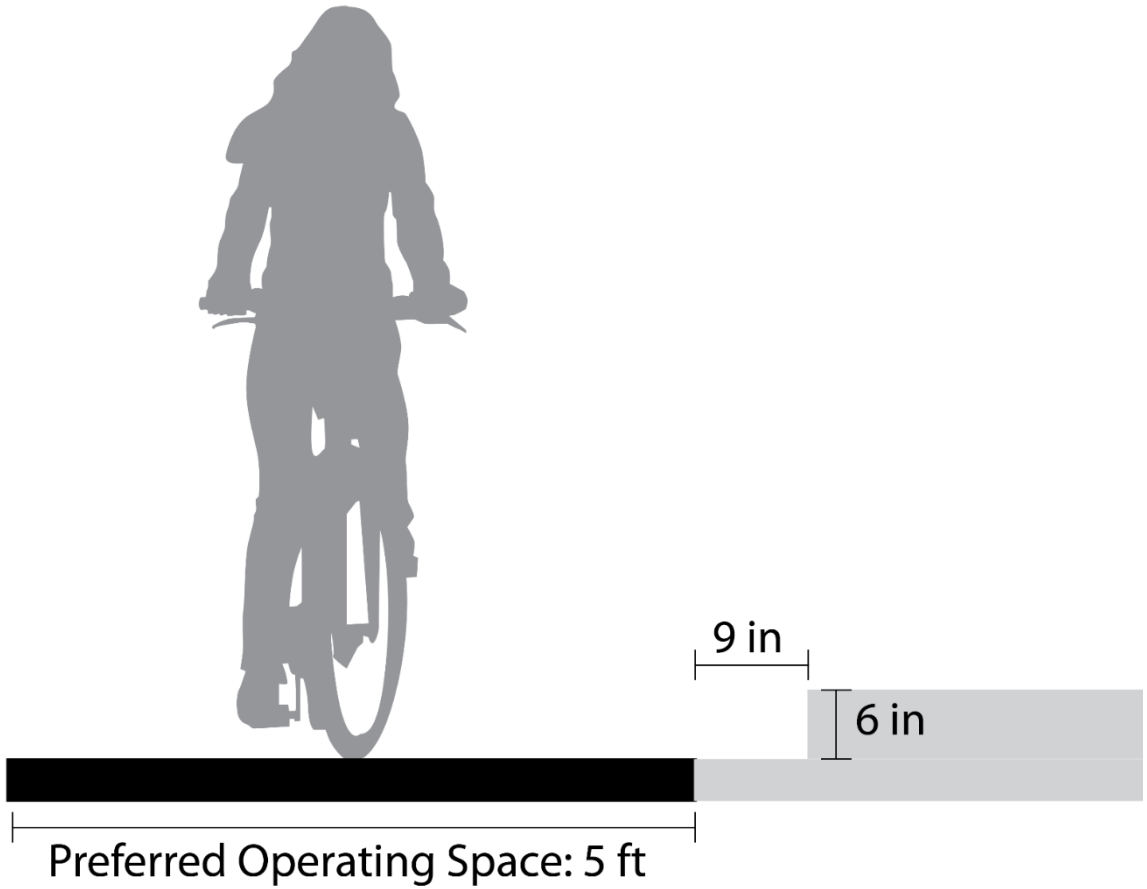


How Wide Should the Lane be?

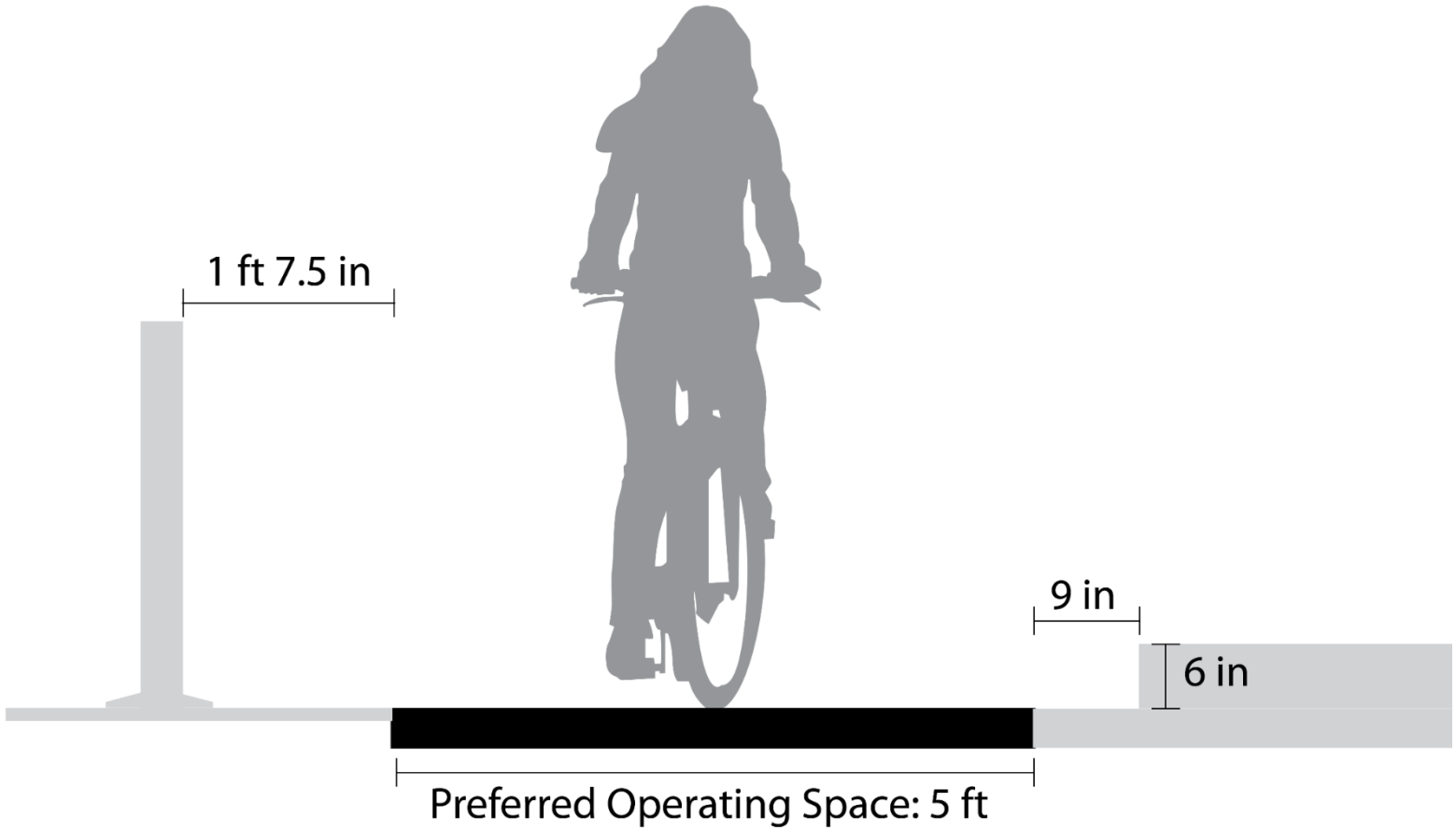


Effective Operating Space

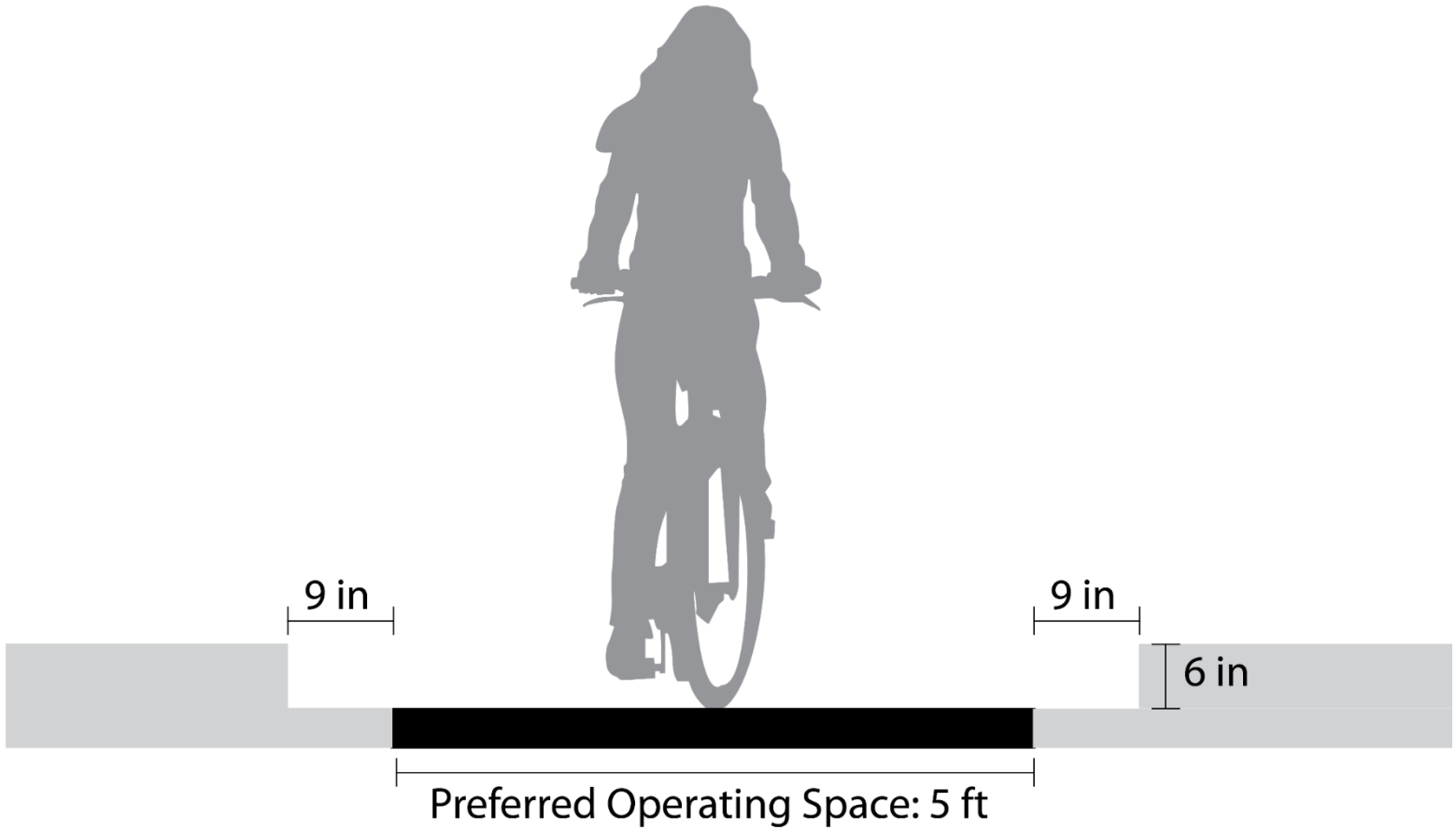
Effective Operating Space



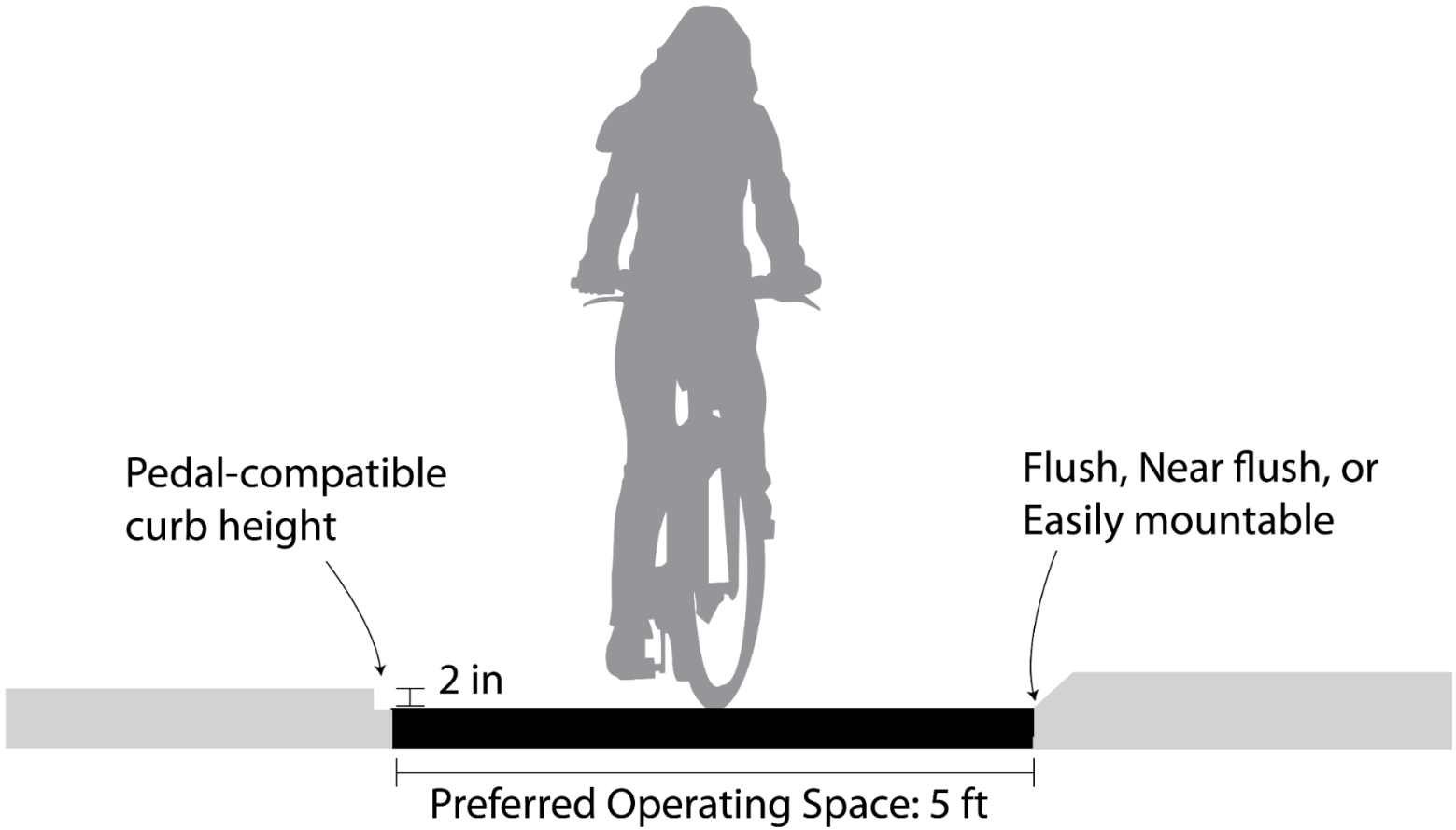
Effective Operating Space

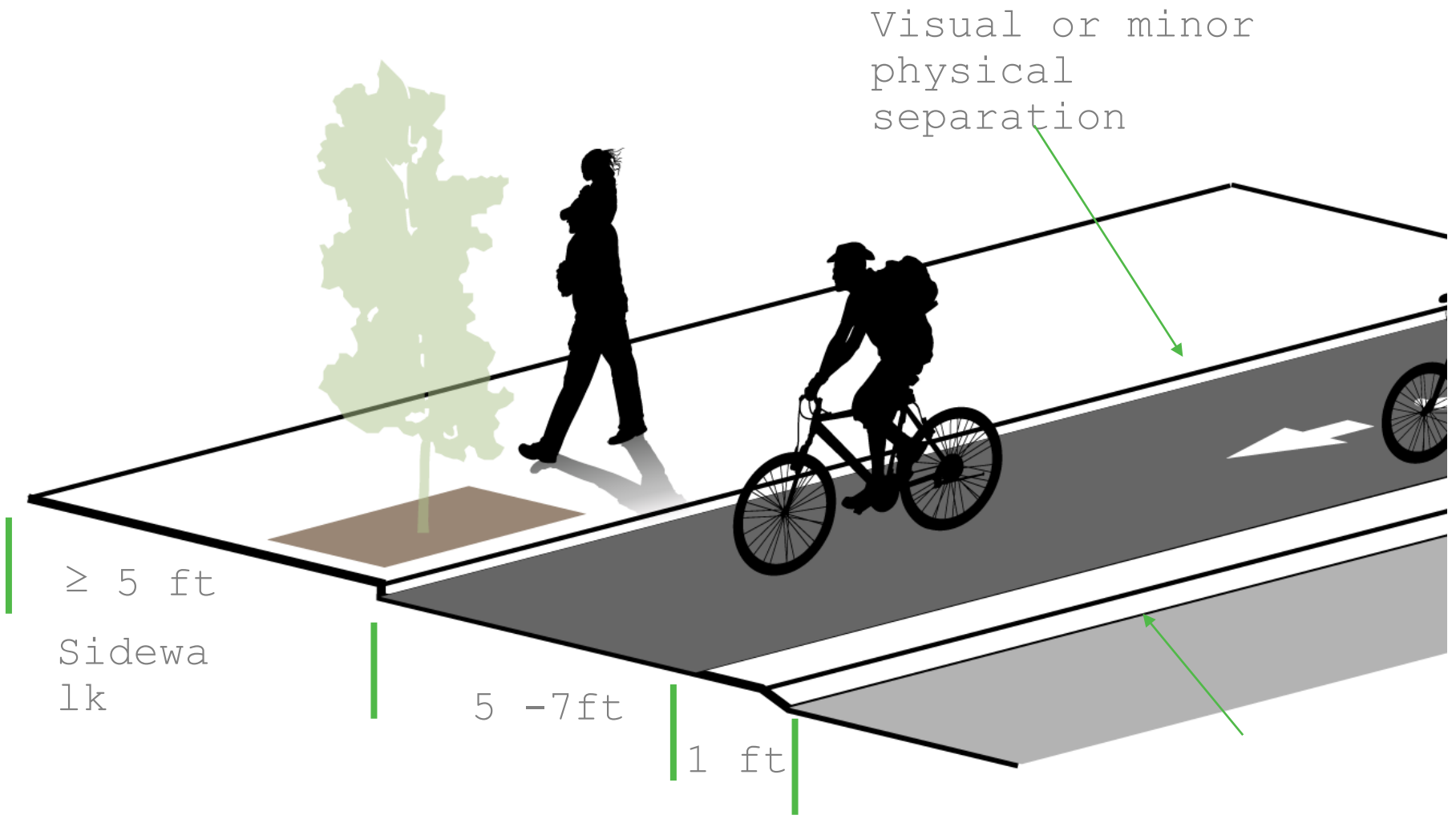


Effective Operating Space



Effective Operating Space




Visual or minor physical separation
≥ 5 ft
Sidewalk
5 -7ft
1 ft

Enhance Bike Lanes – Intersections

Barrier Types

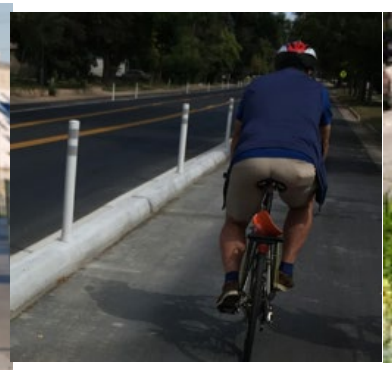
Retrofit

- Parked Cars
- Flexible delineators
- Bollards
- Planters
- Modular curbs

Reconstruction

- Medians
- Raised with vertical or mountable curb
- Pedestrian Safety Islands



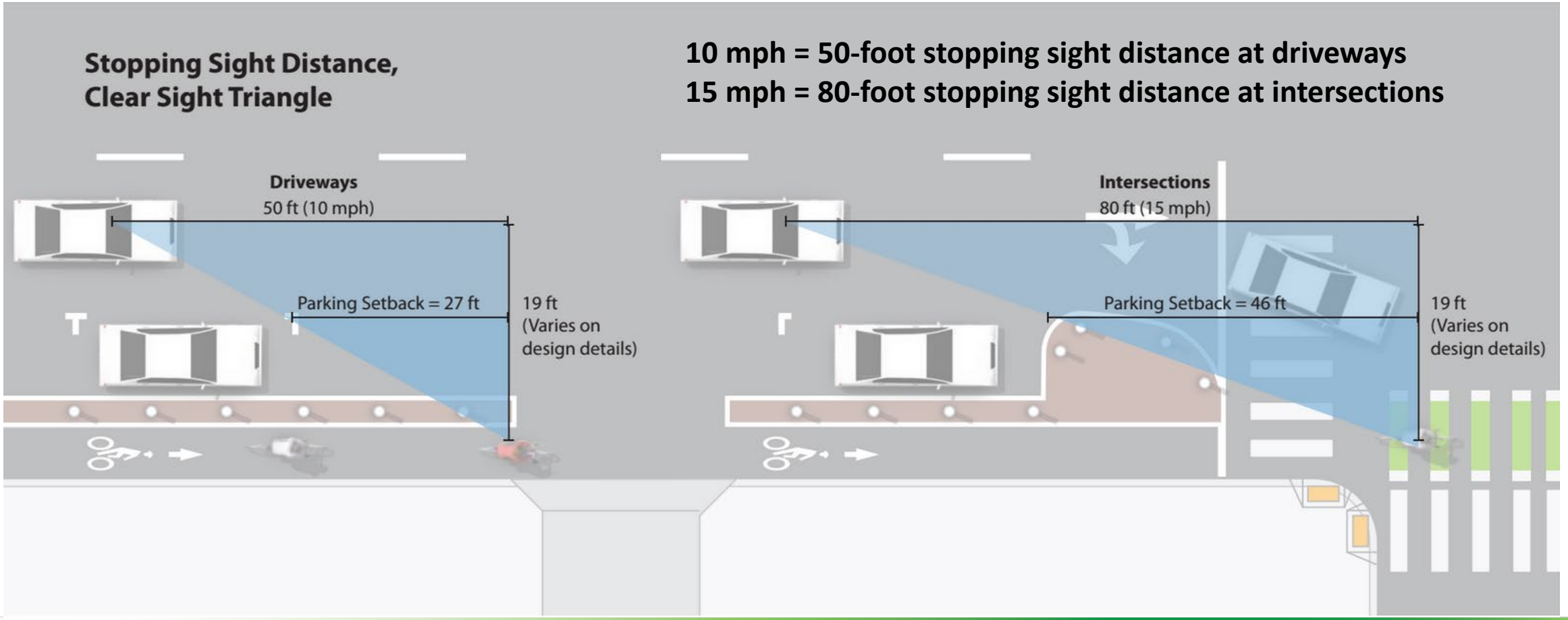



What about Driveways / Conflict Points?

1. Clear visibility
2. Appropriate Markings (awareness and conspicuity)
3. Slow turning
    1. Raise crossing
    2. Compact corner
    3. Set back crossing

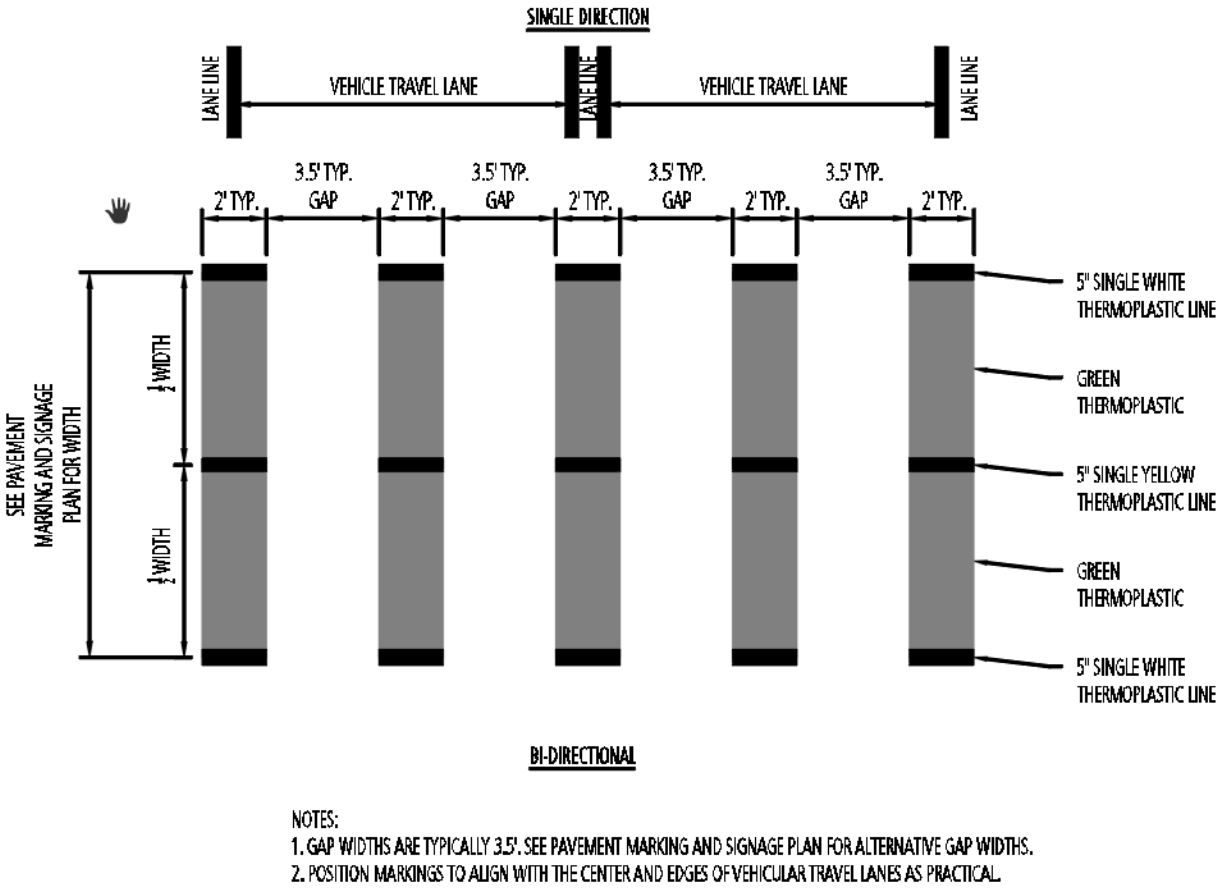
Conflict Points – Driveways - Visibility

Dimensions to be based on the design speed of the roadway, as reported in Table 9-21 Stopping Sight Distance for Turning Roadways in AASHTO's A Policy on Geometric Design of Highways and Streets,



Conflict Points – Driveways - Markings

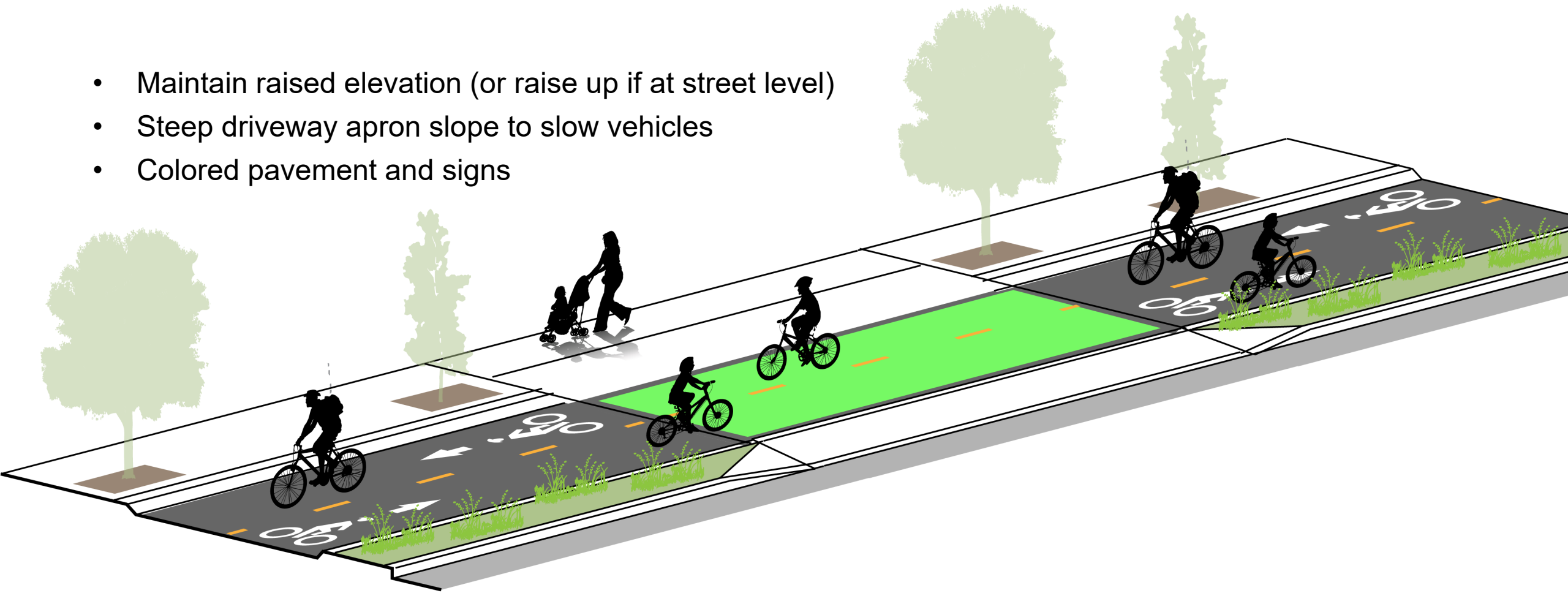
CAMUTCD – 2’ dashes with gaps between 2 and 6’



NOTES:
1. GAP WIDTHS ARE TYPICALLY 3.5'. SEE PAVEMENT MARKING AND SIGNAGE PLAN FOR ALTERNATIVE GAP WIDTHS.
2. POSITION MARKINGS TO ALIGN WITH THE CENTER AND EDGES OF VEHICULAR TRAVEL LANES AS PRACTICAL.

Conflict Points – Driveways – Turning Speed

- Maintain raised elevation (or raise up if at street level)
- Steep driveway apron slope to slow vehicles
- Colored pavement and signs



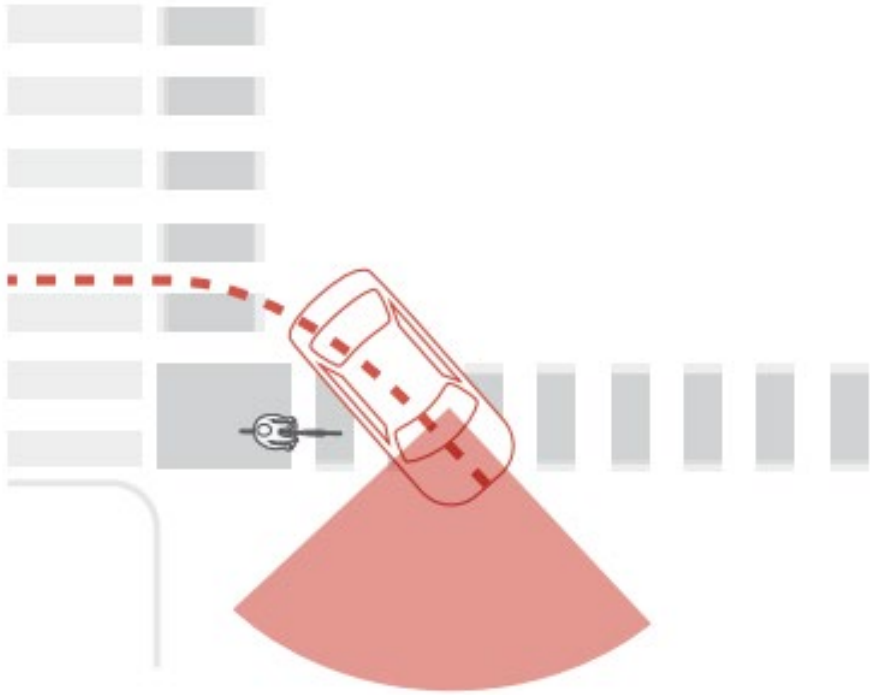
Conflict Points – Driveways – Turning Speed

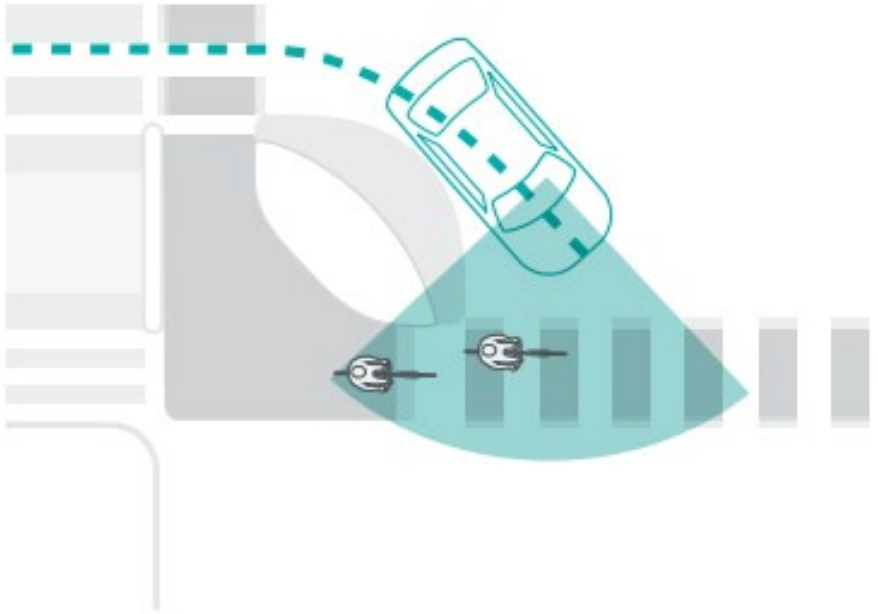
Seattle, WA

Conflict Points – Driveways – Compact

Fremont, CA

Conflict Points – Driveways – Set Back





Source: NACTO

Conflict Points – Driveways – Set Back

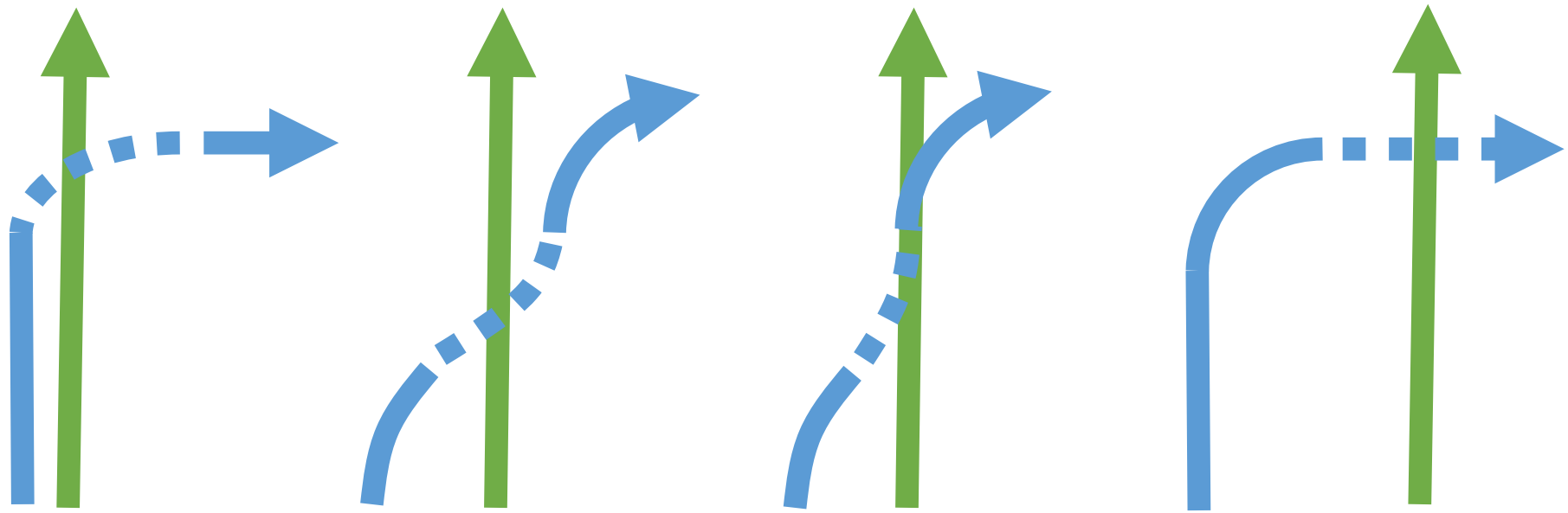
Intersection Treatments

Getting People on Bikes Safely and COMFORTABLY through intersections

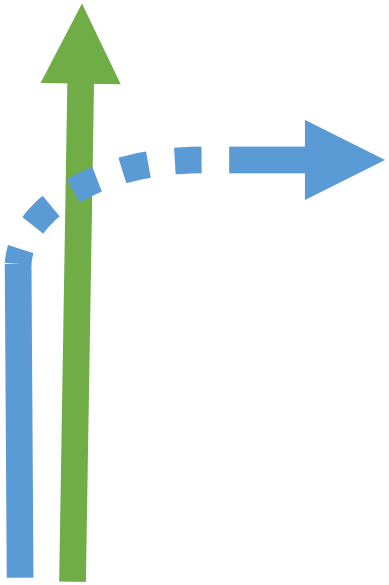
Managing Right Turns

There are many existing designs that interact right turning vehicles and bicyclists very differently

We need to manage comfort vs safety… ideally providing both!

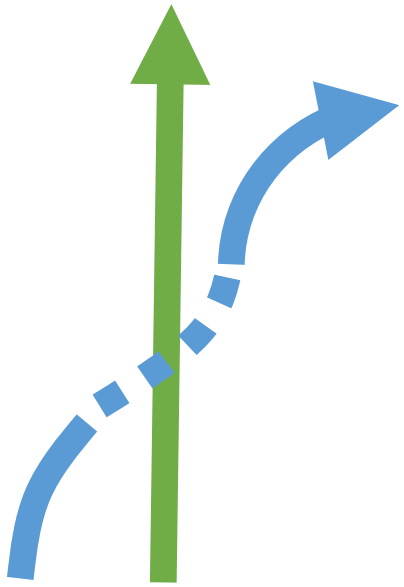


Right Turns – Which of These is Safer?



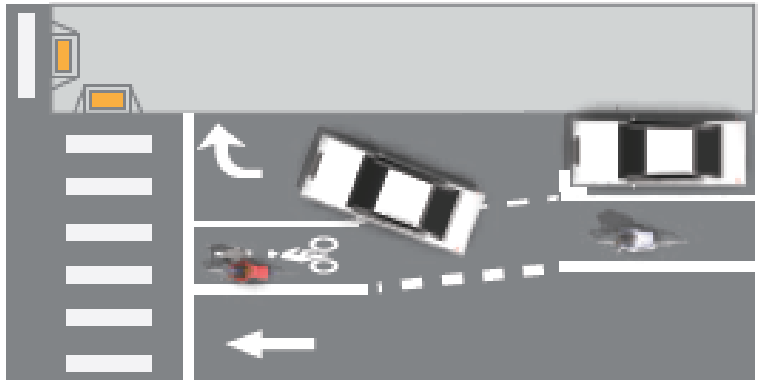
OR

Through Bike Lane

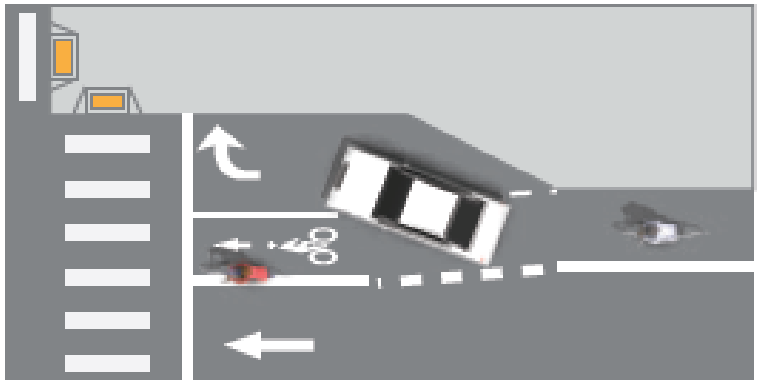


Auxiliary Right-Turn-Only Lane Added

These are appropriate conditions for use of through bike lanes.



Parking lane into right-turn-only lane. Through bike lanes provide bicycle priority within weaving area

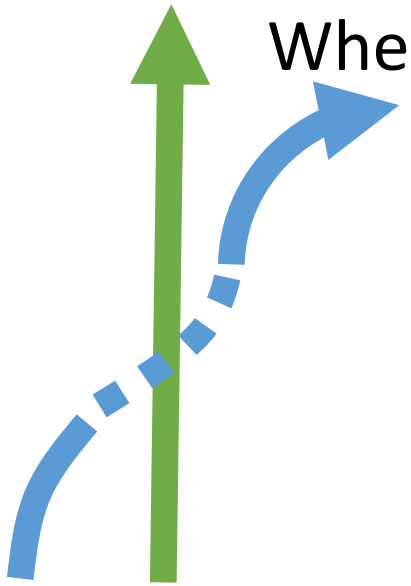


Right-turn-only lane added at intersection with throat widening. Through bike lanes provide bicycle priority within weaving area.

Through Bike Lane

Los Angeles, CA

Through Bike Lane

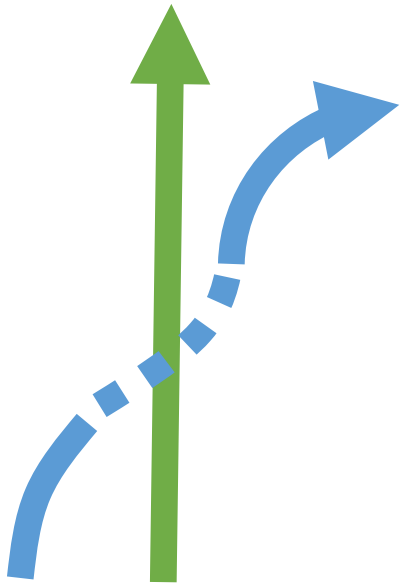


Where are we asking people to ride? Is this comfortable or low-stress?

Safe

Comfort

Through Bike Lane



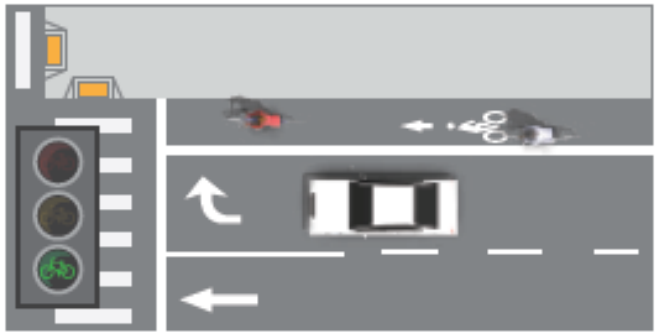
Through Bike Lane – Drop Lane

Is this a good idea?

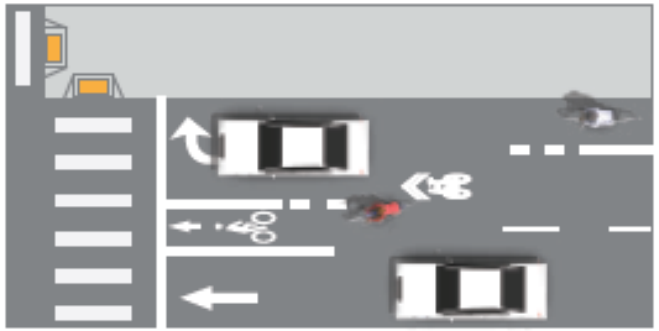
Safe

Comfort

Through Bike Lane – Drop Lane



Exclusive bicycle signal phase used to separate conflicting movements.



Bicycle lane dropped in advance of the intersection encourages bicyclists to merge across as gaps permit. Shared lane markings may be used to provide additional guidance.

Bicyclists are not provided priority in weaving area and must use caution to merge across potentially high-speed motor vehicle traffic. Dotted lane line transition areas to through bike lanes should not be provided at these locations.

Through Bike Lane – Drop Lane

Safe

Comfort

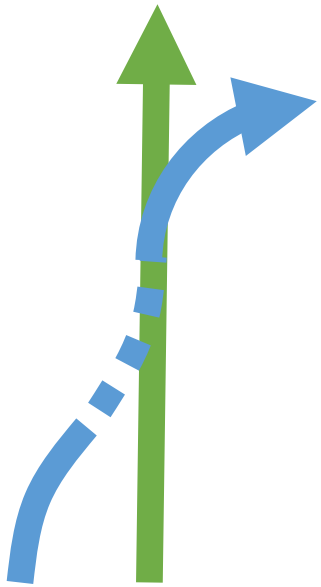
We will return to bike signals later…

Through Bike Lane – Drop Lane

Safe

Comfort

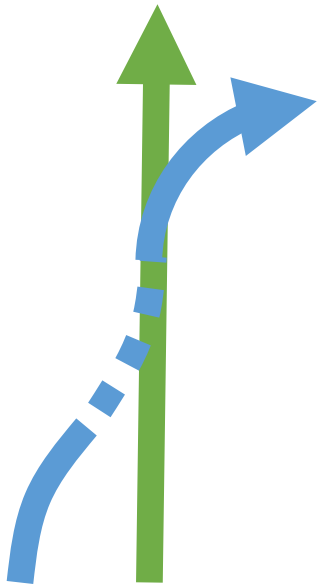
Shared Turn Lane / Mixing Zone



Safe

Comfort

Shared Turn Lane / Mixing Zone

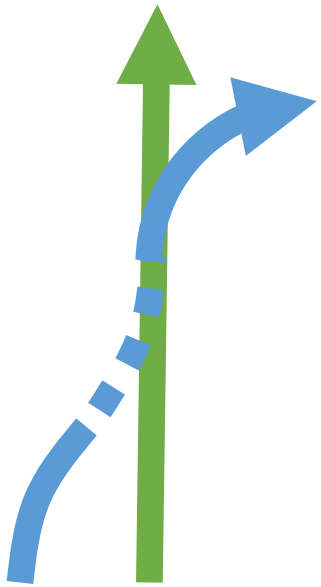


Safe

Comfort

Saint Louis, MO

Shared Turn Lane / Mixing Zone

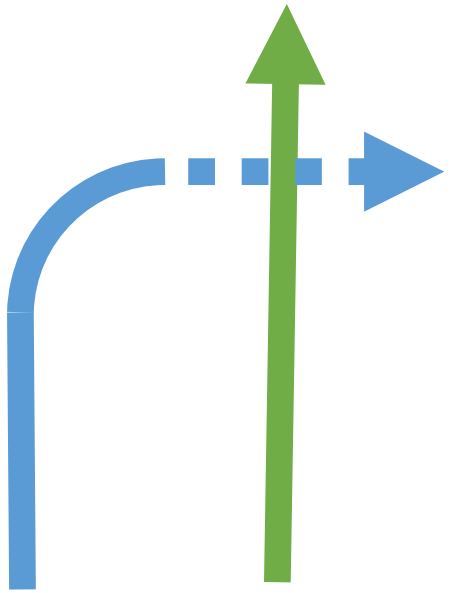


Safe

Comfort

San Francisco, CA, Credit: bike to everything

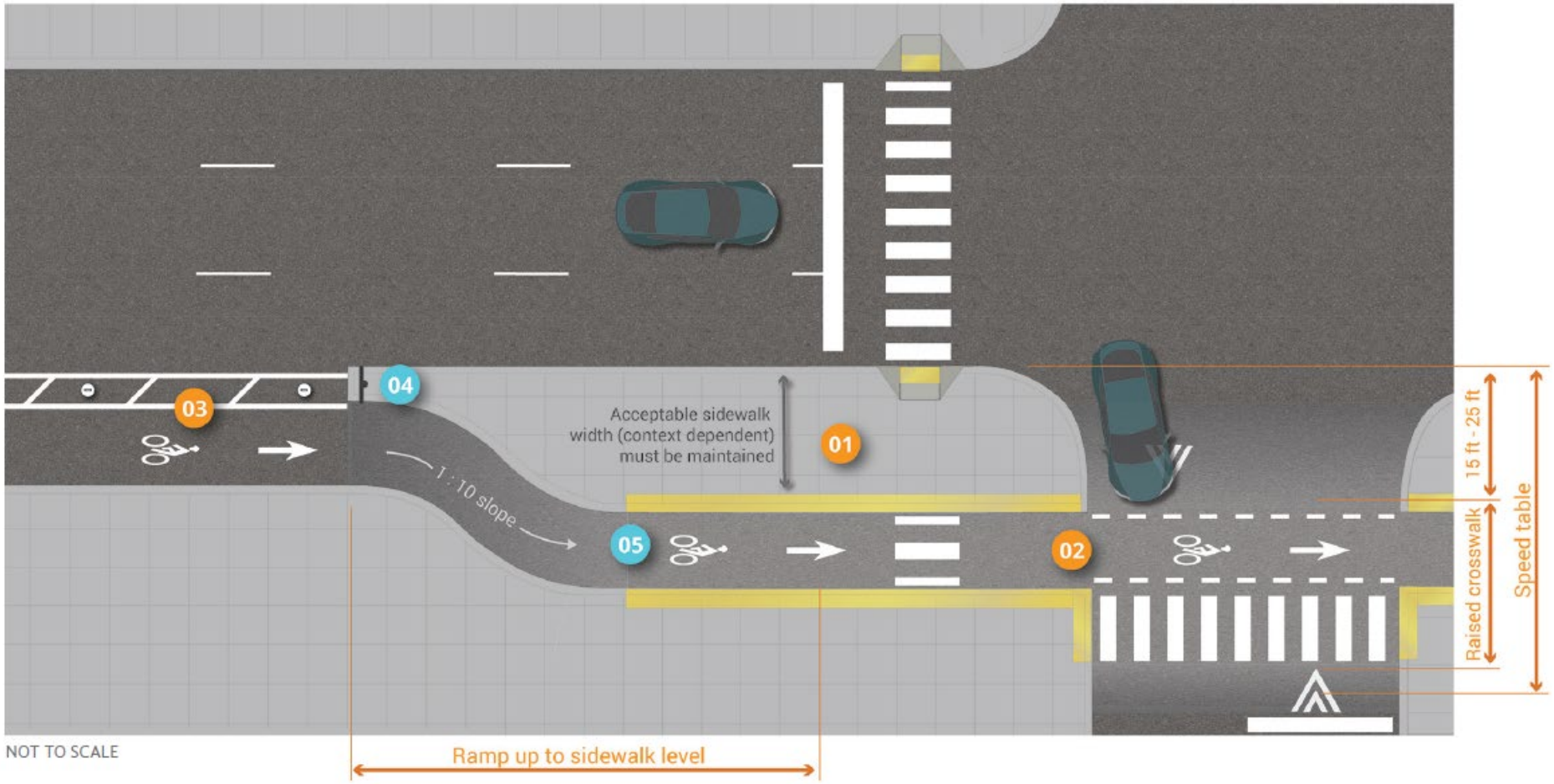
Bend Out / Protected Corner



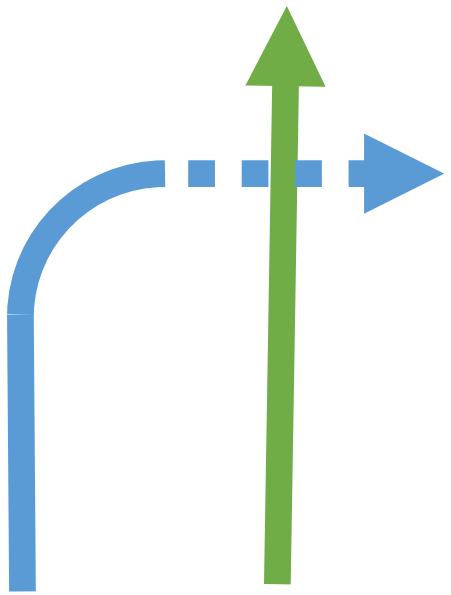
Safe

Comfort

FHWA Separated Bike Lane Planning and Design Guide (2015)



Bend Out / Protected Corner

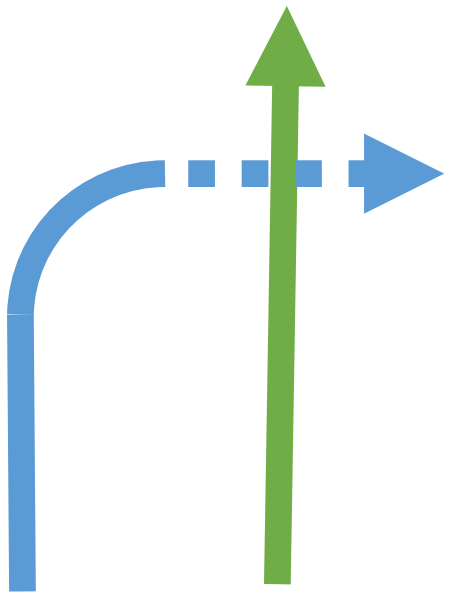


Safe

Comfort

Santa Monica, CA

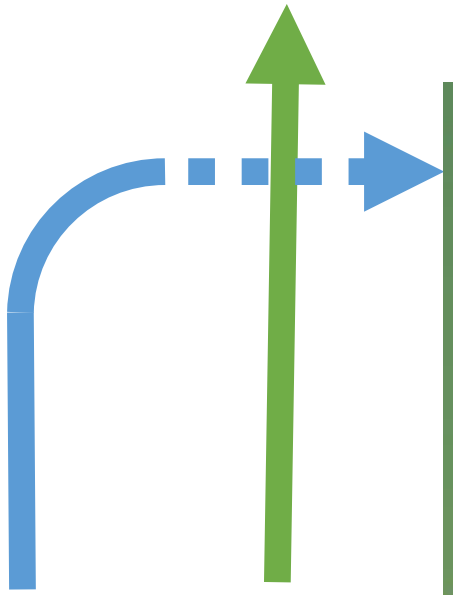
Bend Out / Protected Corner



Safe

Comfort

Bend Out / Protected Corner



Safe

Comfort

+ **96%** of drivers approaching a bicyclist yielded and 100% of drivers approaching a pedestrian yielded.

+ **98%** of vehicles turned at speeds at or below the speed limit.

9th and Division Street Protected Intersection

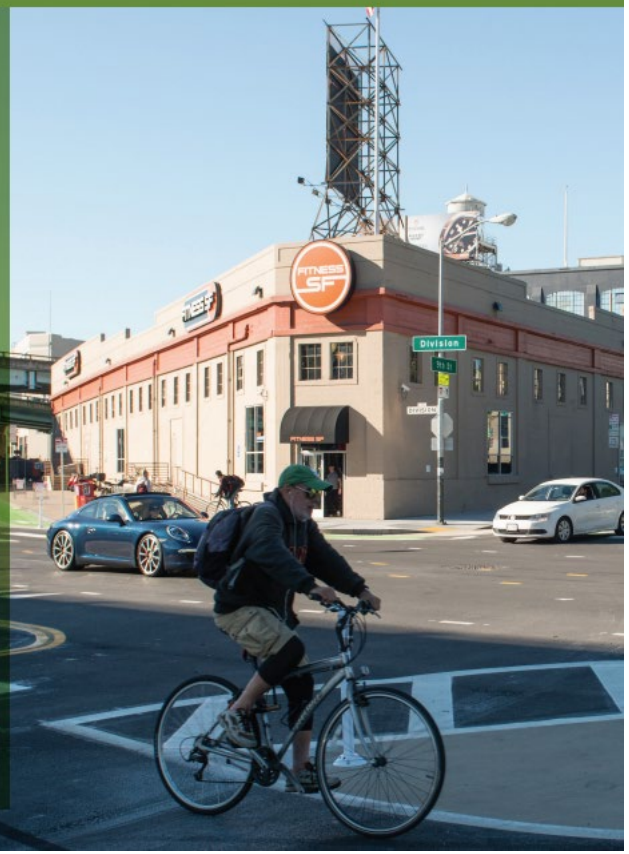
San Francisco's first protected intersection

+ **96%** of drivers approaching a bicyclist yielded and 100% of drivers approaching a pedestrian yielded.

+ **98%** of vehicles turned at speeds at or below the speed limit.

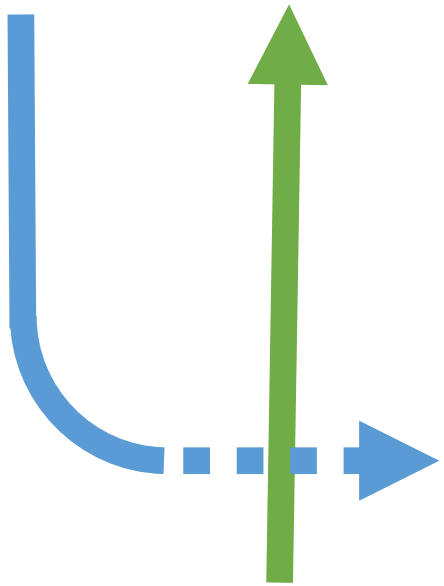
+ Up to **85%** of bicyclists and **55%** of pedestrians reported their level of comfort and feeling of safety increased.

- **80%** of vehicles on San Bruno Avenue and **50%** of vehicles on 9th Street blocked the bike lanes/crosswalk while waiting for a gap in traffic.



Managing Left Turns

The FHWA estimates that eliminating permissive left turns can reduce the number of expected crashes by 70% (CMF .30, CRF 70%)

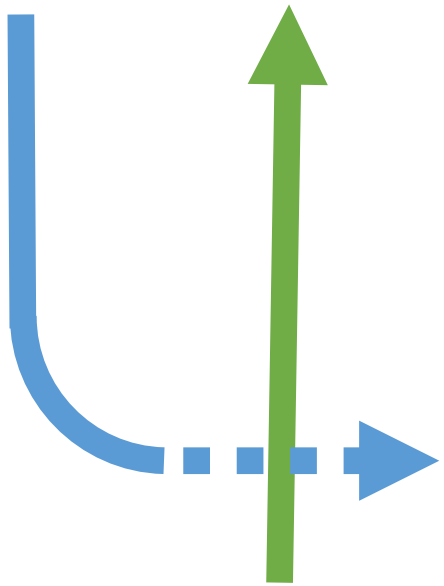


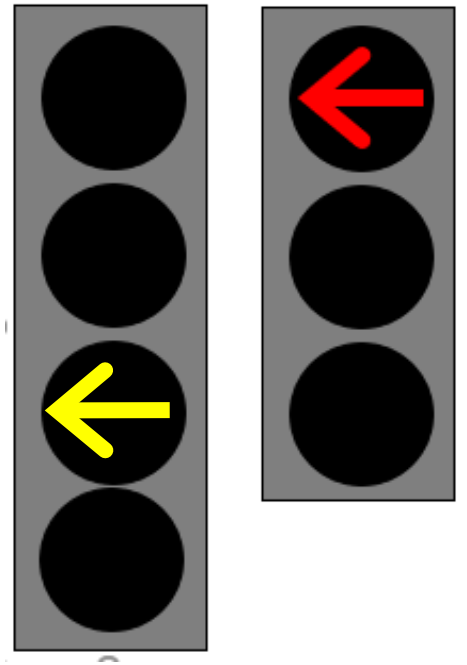
If you can't eliminate permissive lefts –

Same techniques in play

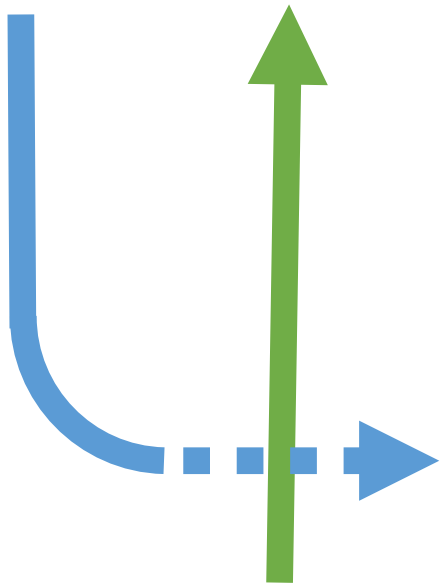
- Left turning Warnings
- Hardened Centerlines

Managing Left Turns - Warnings





Managing Left Turns – Hardened Centerline



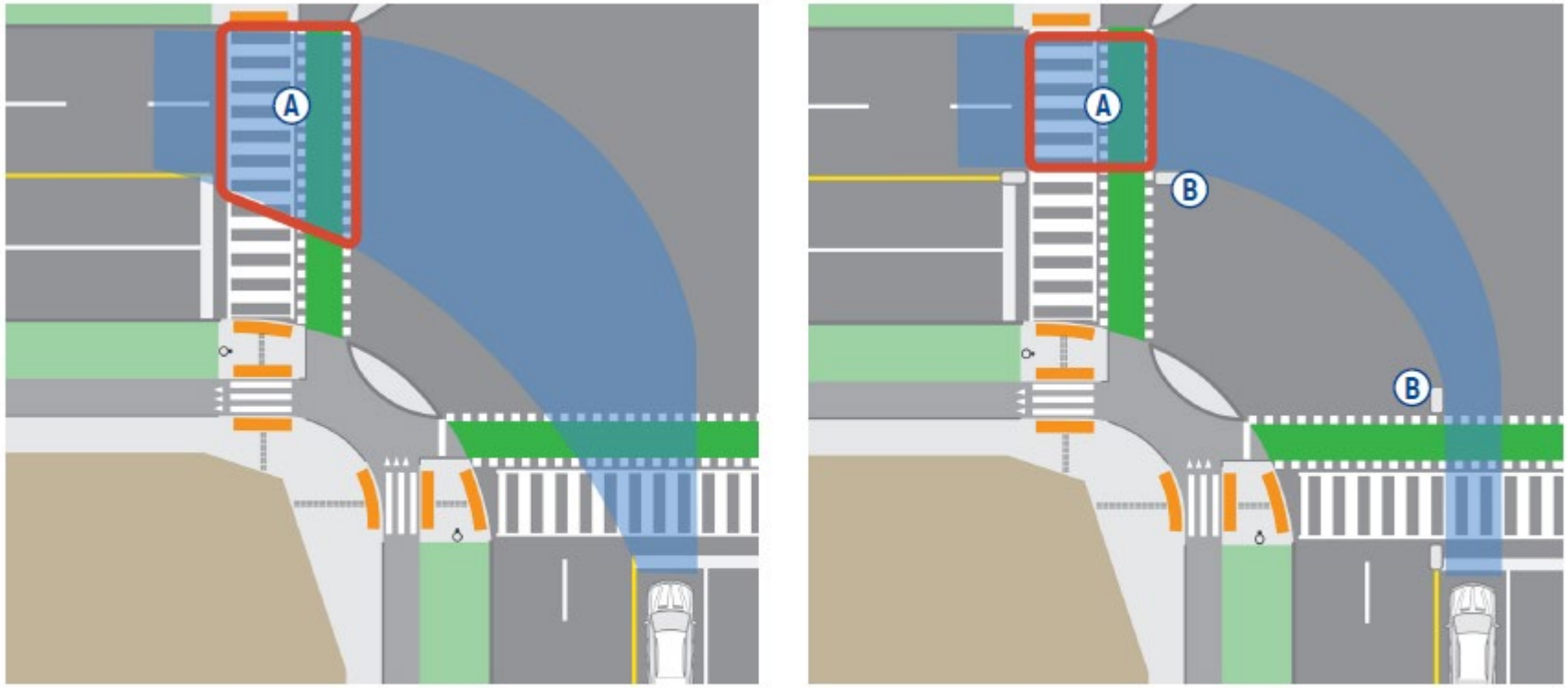


Figure 5.7. Comparison of turn radius and conflict zone for left turns without (left) and with centreline hardening (right)

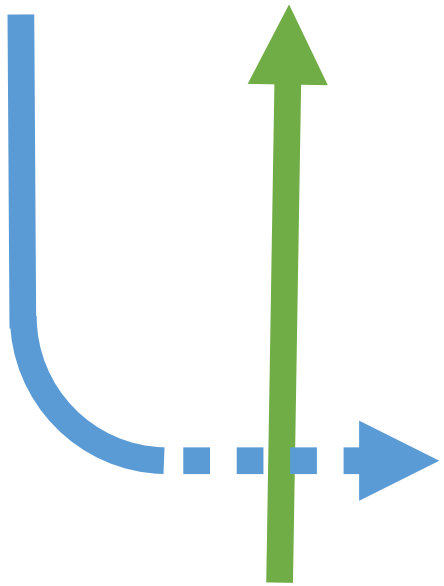
Design Features

(A) Conflict zone between left-turning vehicles and vulnerable road users

(B) Centreline hardening

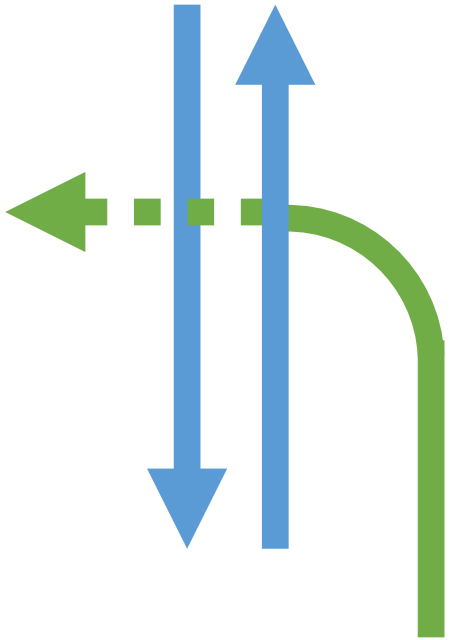
Managing Left Turns – Hardened Centerline

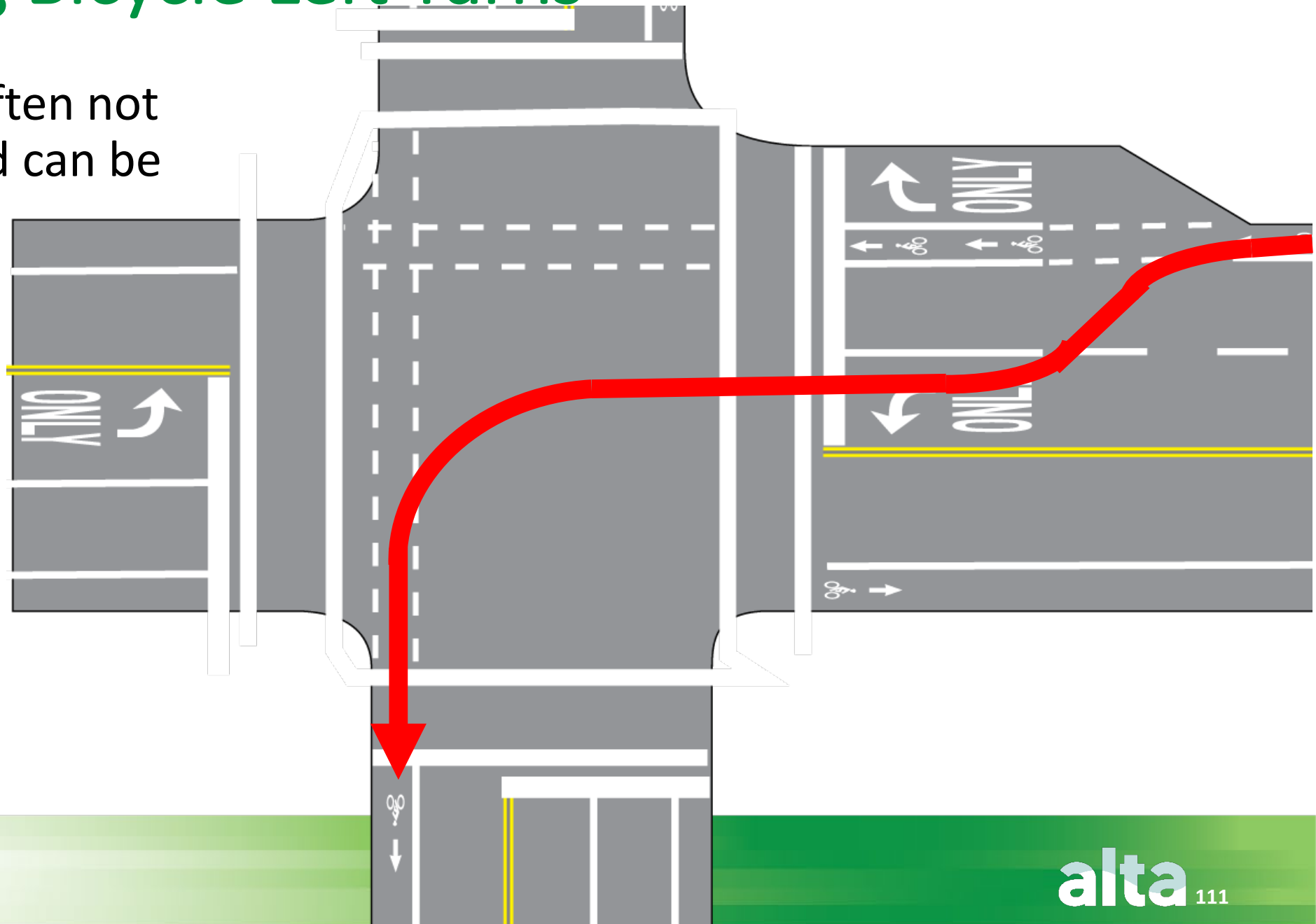
Hardened Centerline – Oakland, CA – Adeline Street at 18th Street



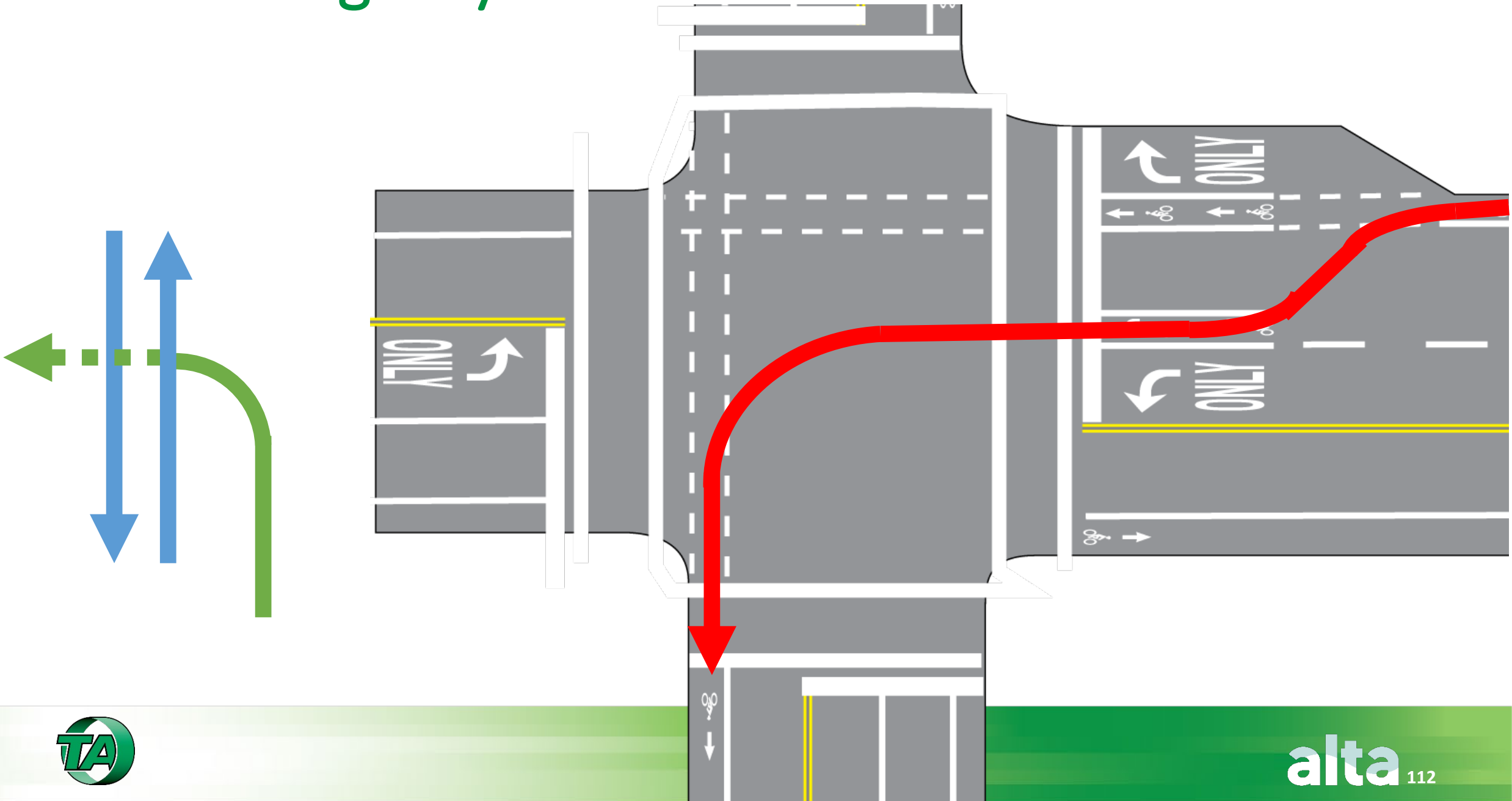
Facilitating Bicycle Left Turns

Left Turns are often not comfortable and can be confusing

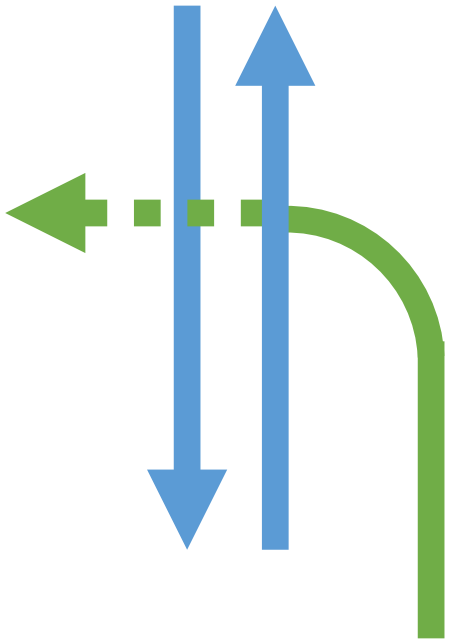


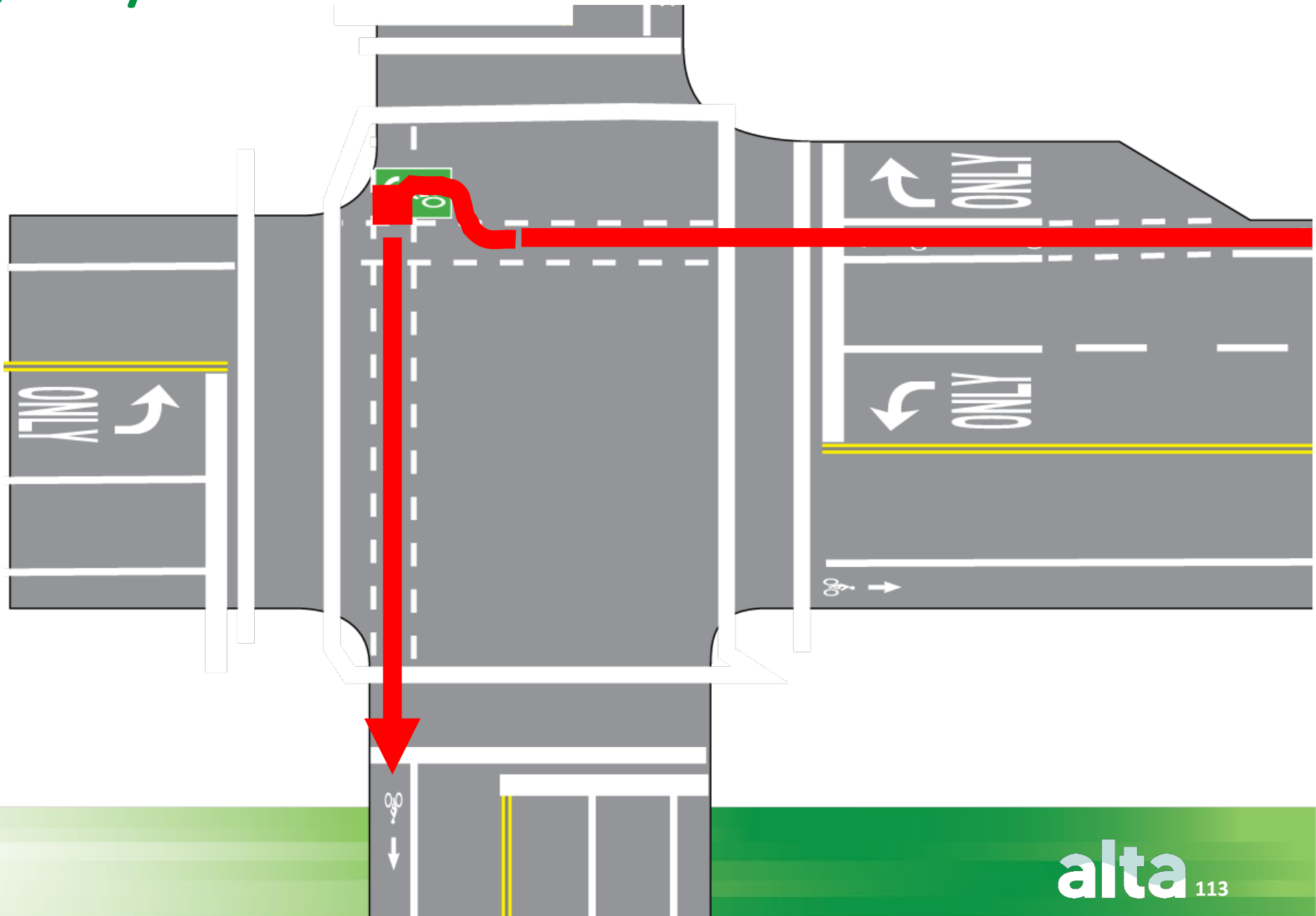


Facilitating Bicycle Left Turns – Turn Lane

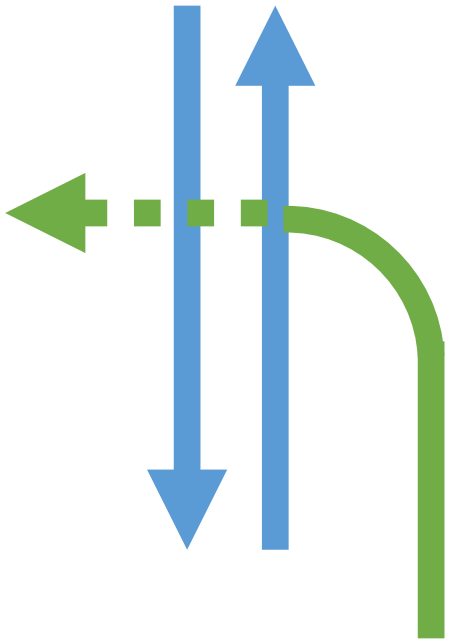


Facilitating Bicycle Left Turns – Turn Box



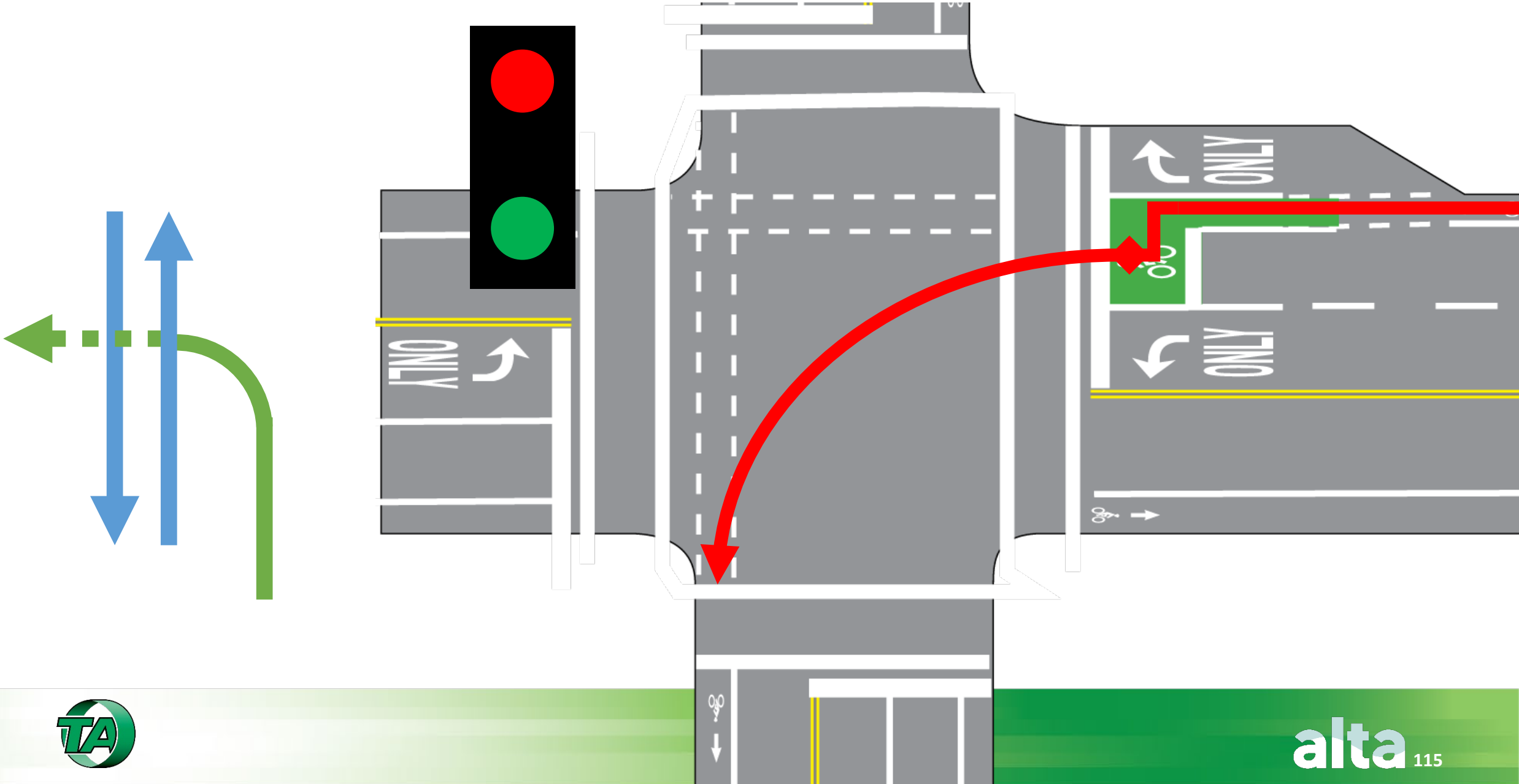


Facilitating Bicycle Left Turns – Turn Box

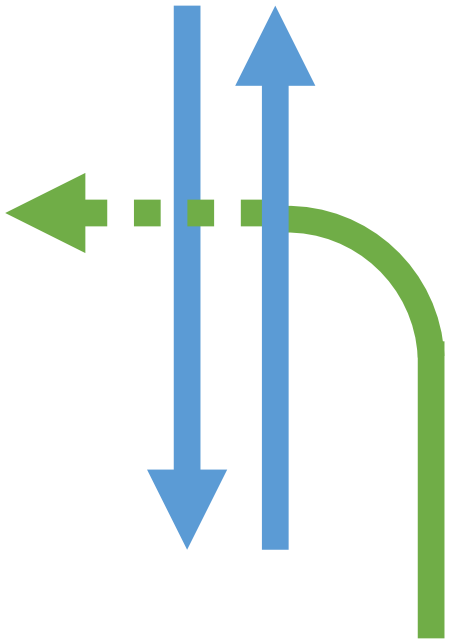


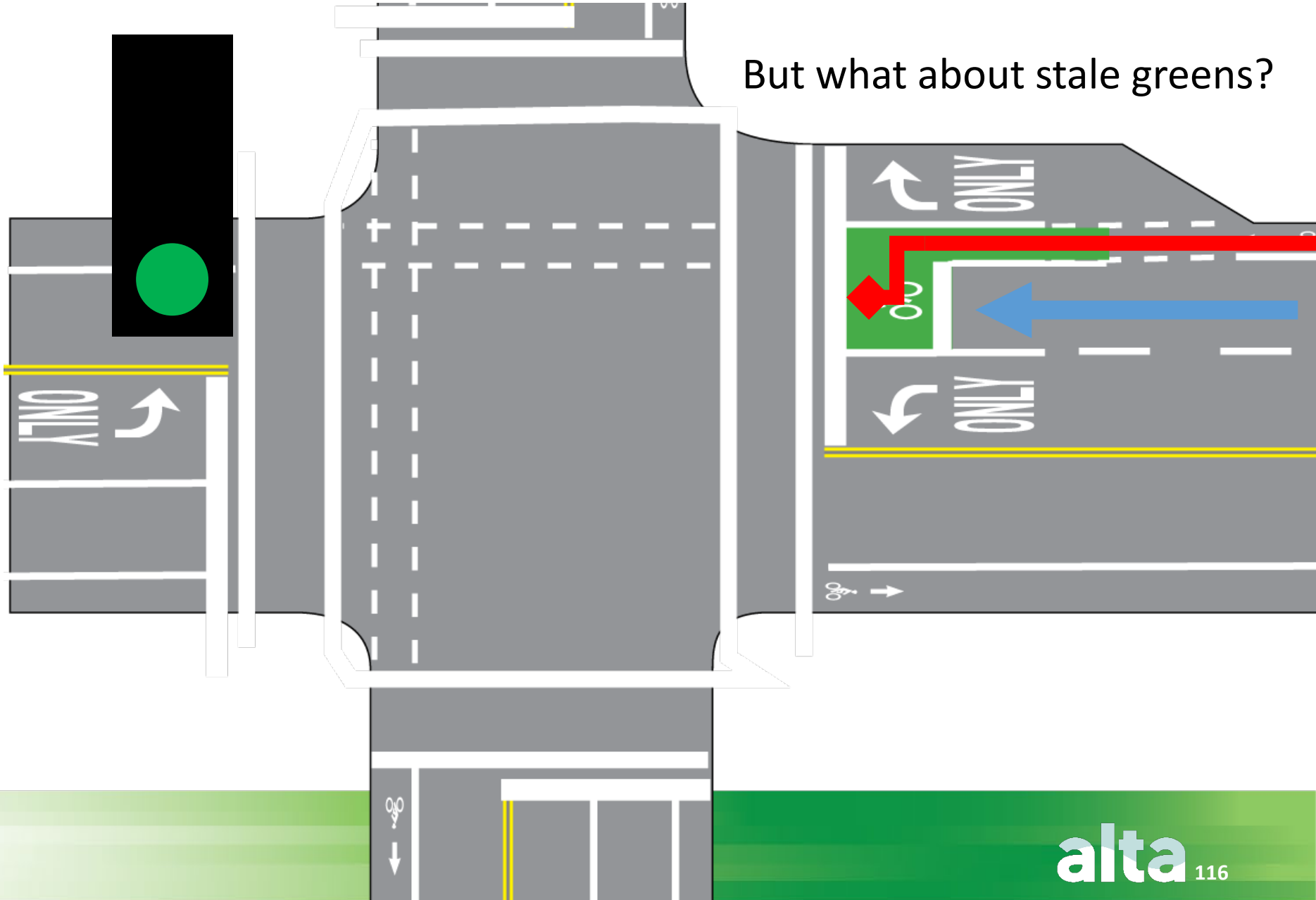
San Francisco, CA,
Credit: SFMTA

Facilitating Bicycle Left Turns – Bike Box



Facilitating Bicycle Left Turns – Bike Box



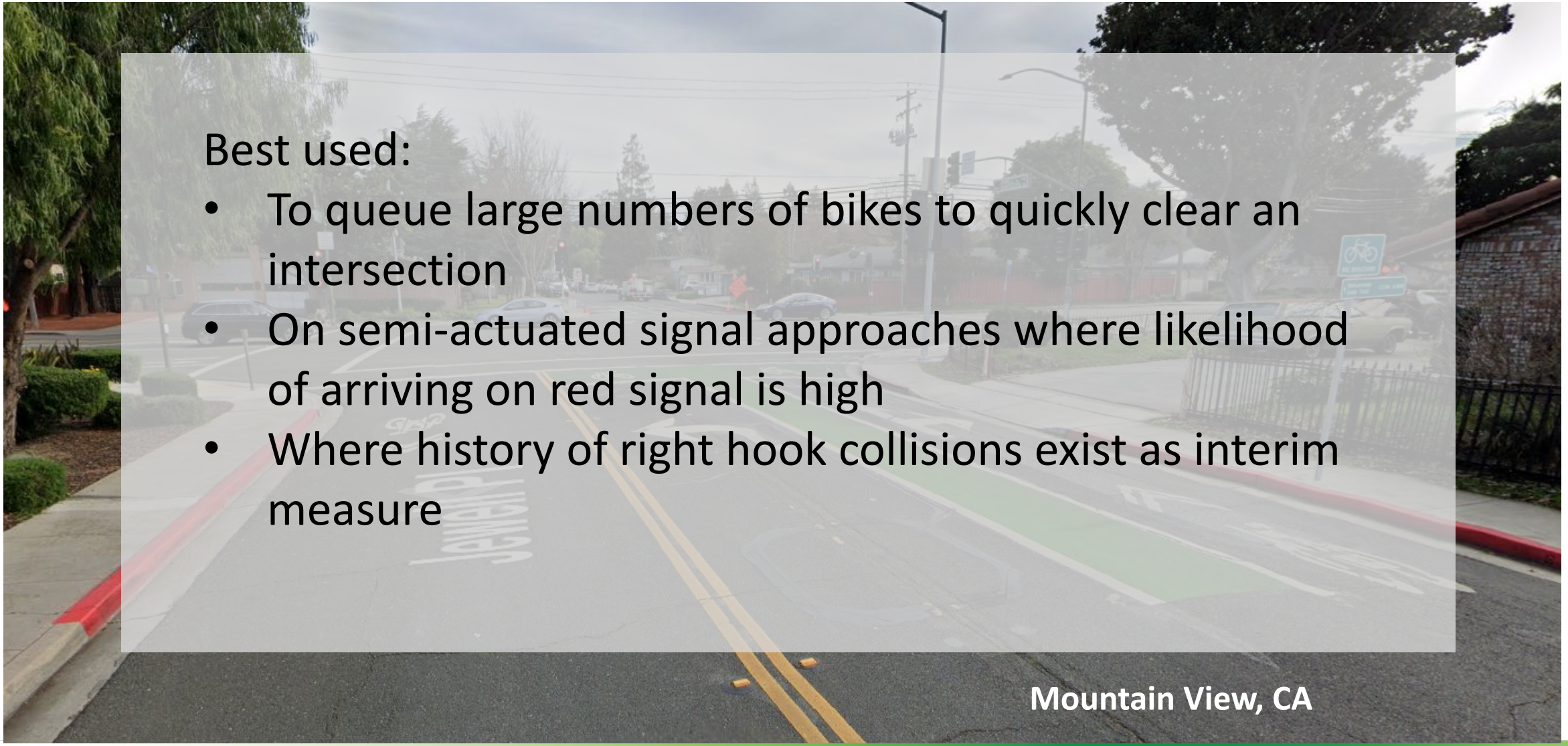


But what about stale greens?

Bike Boxes

Mountain View, CA

Bike Boxes

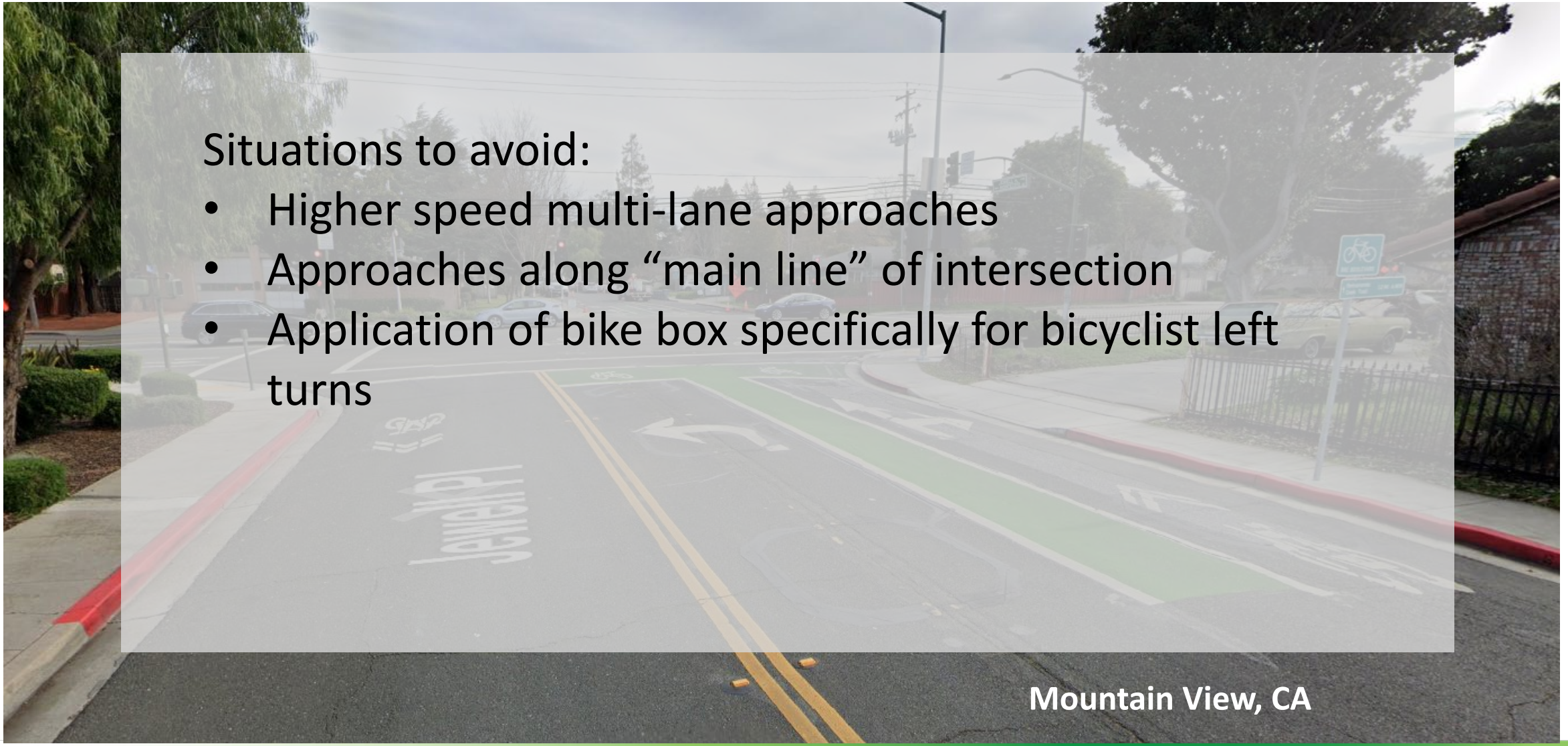


Best used:

- To queue large numbers of bikes to quickly clear an intersection
- On semi-actuated signal approaches where likelihood of arriving on red signal is high
- Where history of right hook collisions exist as interim measure

Mountain View, CA

Bike Boxes



Situations to avoid:

- Higher speed multi-lane approaches
- Approaches along “main line” of intersection
- Application of bike box specifically for bicyclist left turns

Mountain View, CA

Bike Boxes

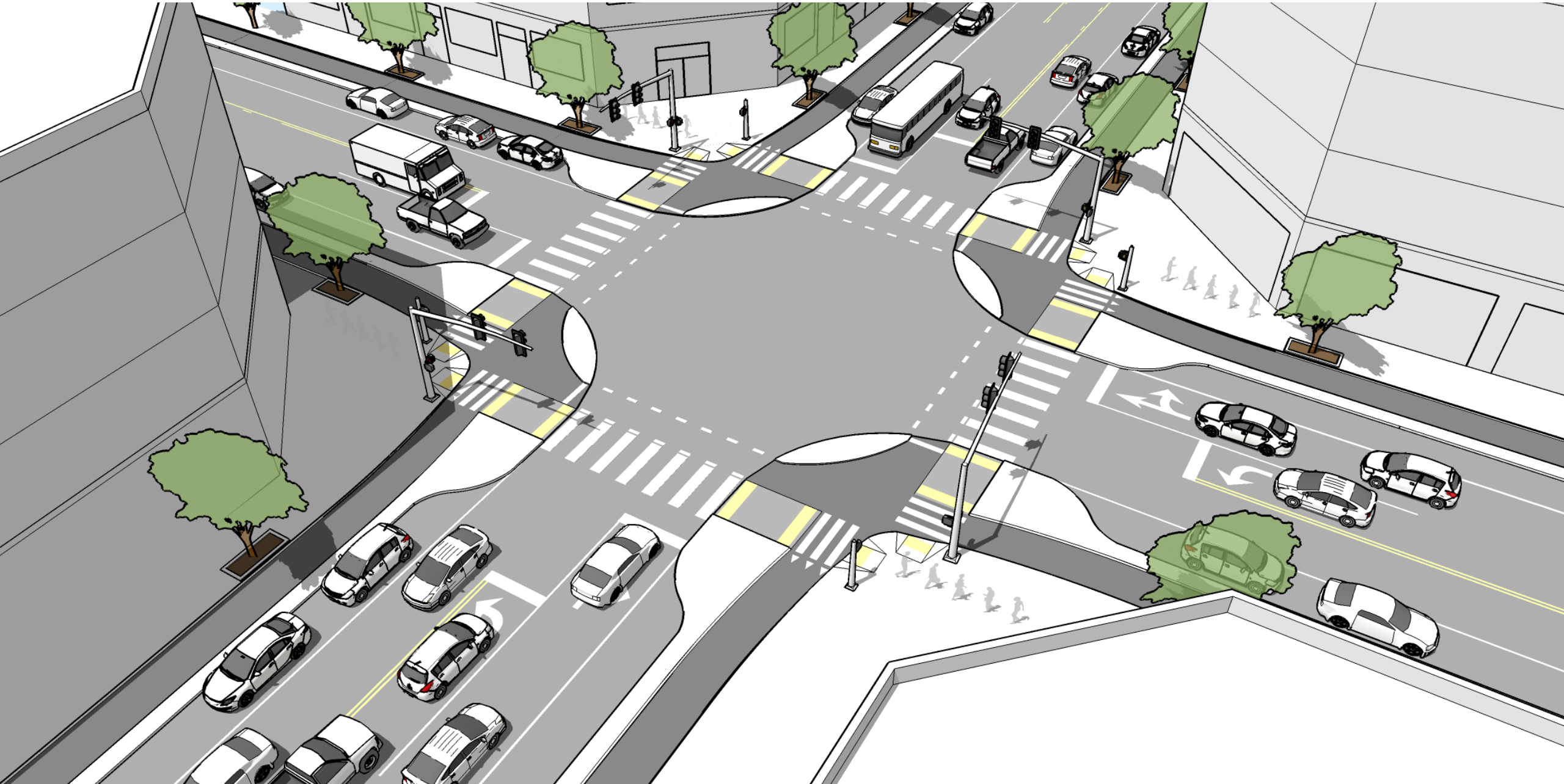
San Carlos, CA

Protected Intersections

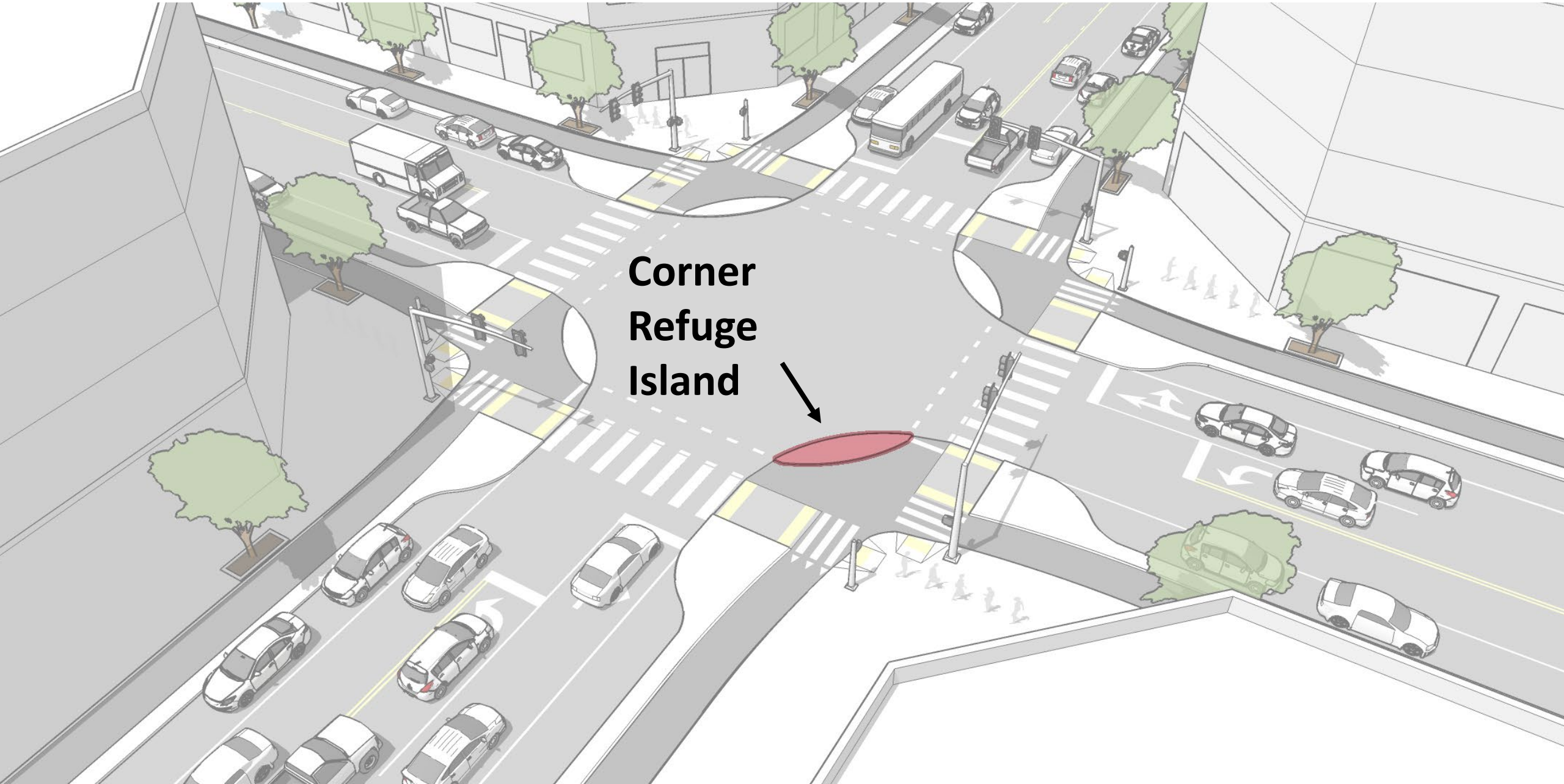
Comfort & Safety

Protected Intersections

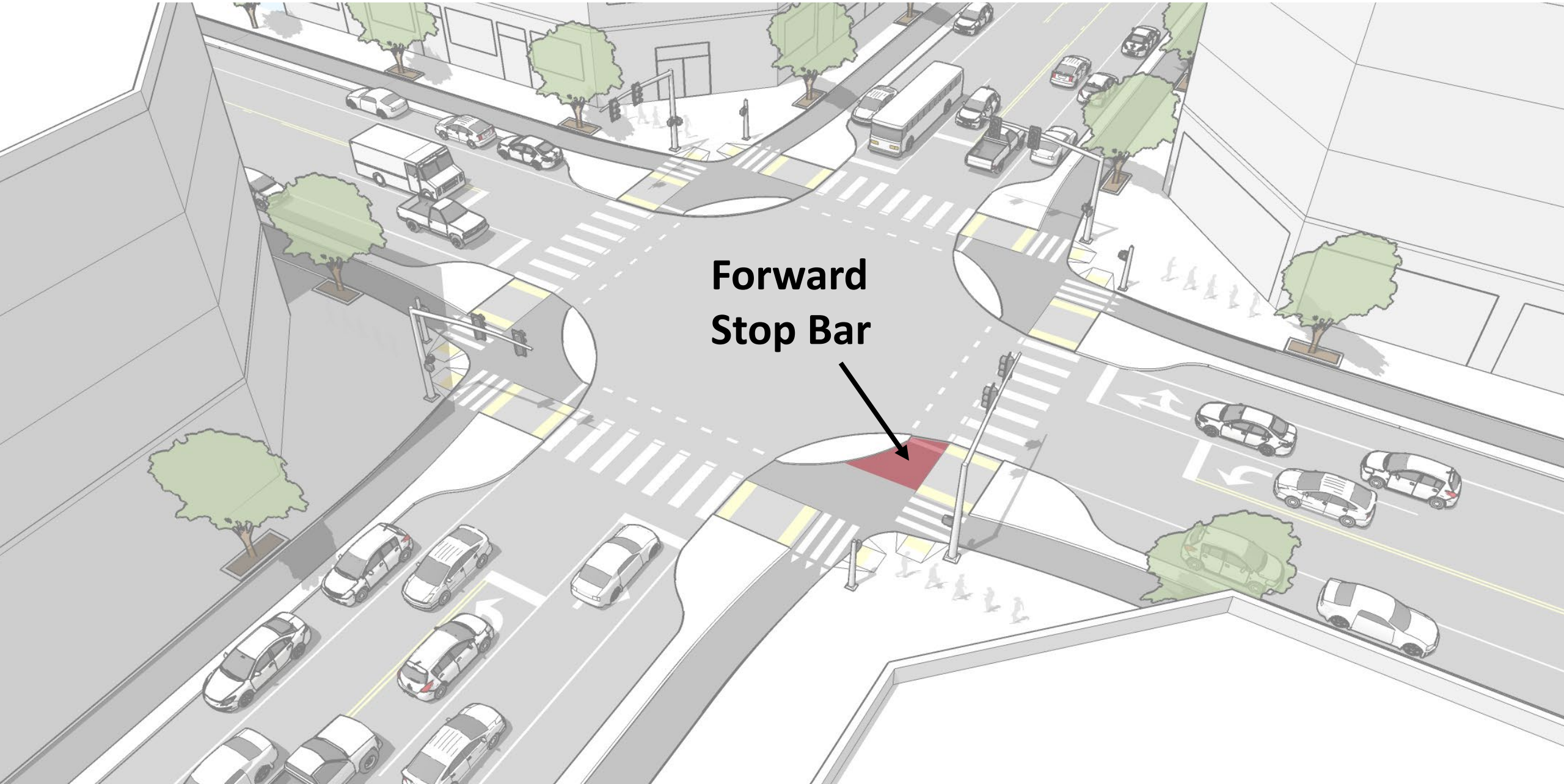
Protected Intersection



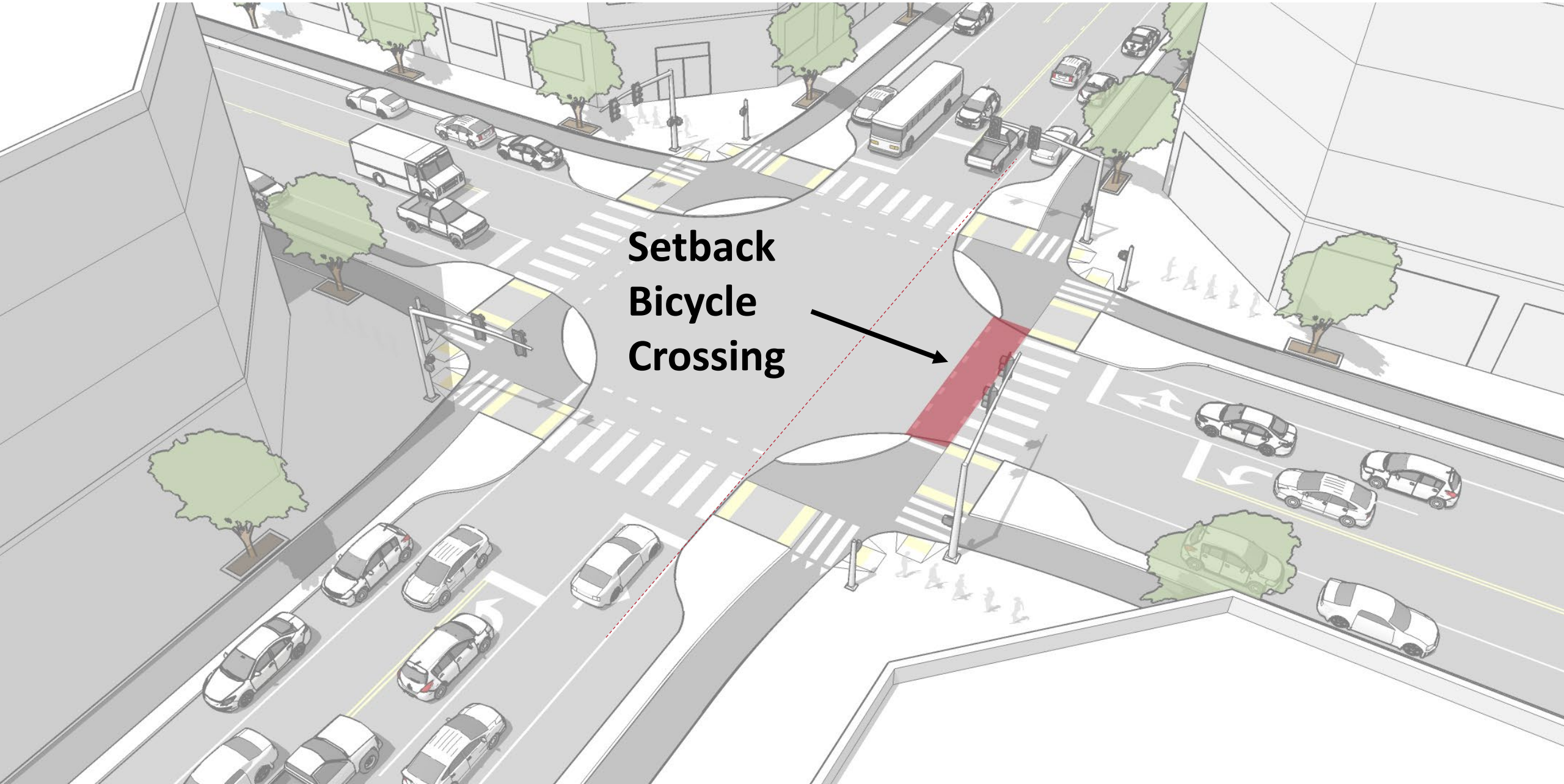
Protected Intersection



Protected Intersection



Protected Intersection



A Few Ways to Build it

Full Construction

San Luis Obispo, CA


Davis, CA

Fremont, CA

A Few Ways to Build it

Surface Concrete - Retrofit

Berkeley, CA

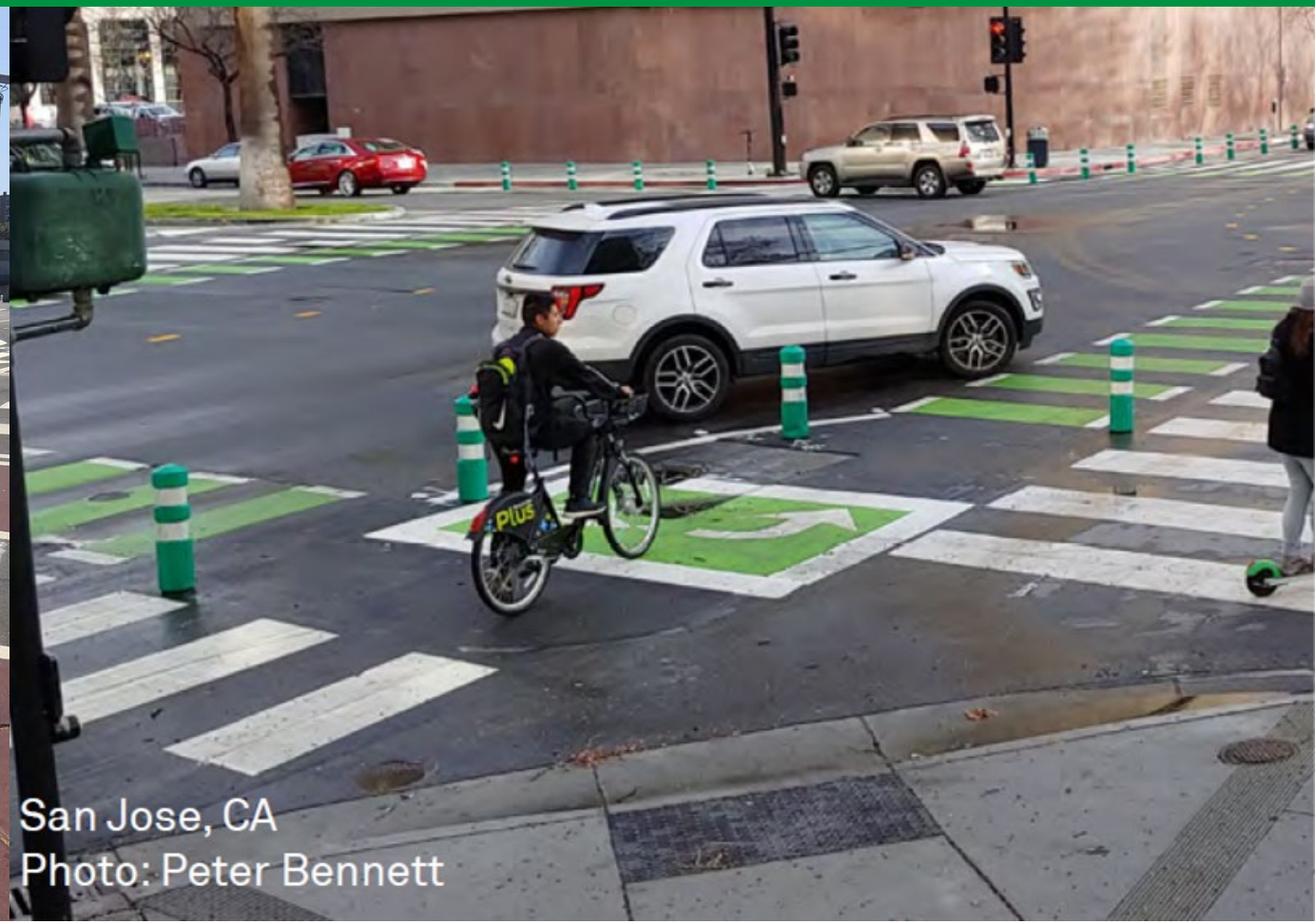
Salt lake City, UT


Fremont, CA

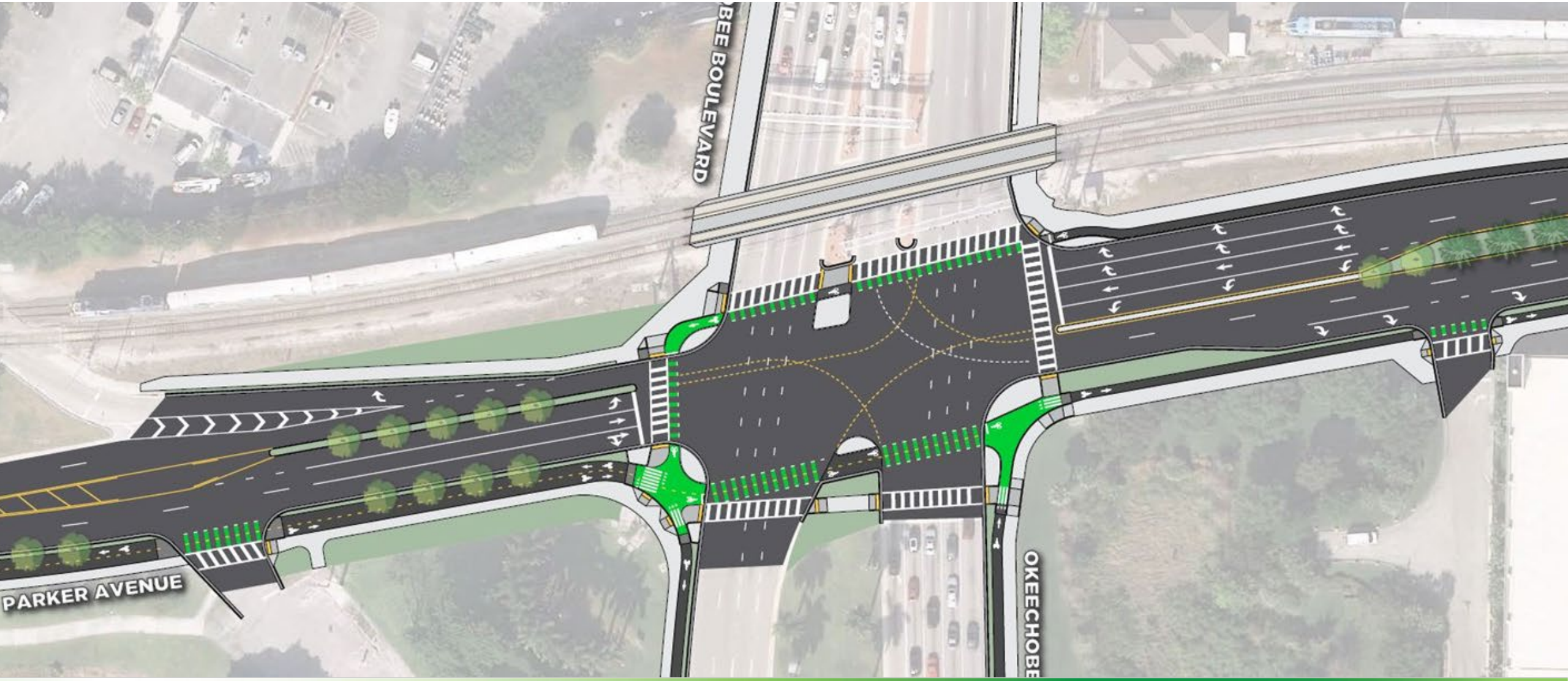
A Few Ways to Build it

Paint and Posts

Oakland, CA


San Jose, CA
Photo: Peter Bennett

Special Uses - Transitions



Bike Signals

How and when to use them…

Where Was the First US Bike Signal?

Chicago, IL
Tucson, AZ
Davis, CA
Portland, OR
New York, NY

Contextual Uses for Bike Signals

1

Separate bikes from turning cars

- High volumes of turning vehicles
  - >150/hr in peak for one-way
  - >50/hr in peak for two-way
- Multiple Turn Lanes (only option)
- In locations with drop lanes (previously covered)

Long Beach, CA

Contextual Uses for Bike Signals

2 Provide direction for contra-flow bike movements

- Contra-flow bike lanes against one-way streets
- Two-way Class IV bike lanes in most situations

Denver, CO

Contextual Uses for Bike Signals

3 Low Volume Bike Boulevard Crossings

- As part of many possible configurations of crossing treatments… more on this to come…

Fort Collins, CO

Contextual Uses for Bike Signals

4

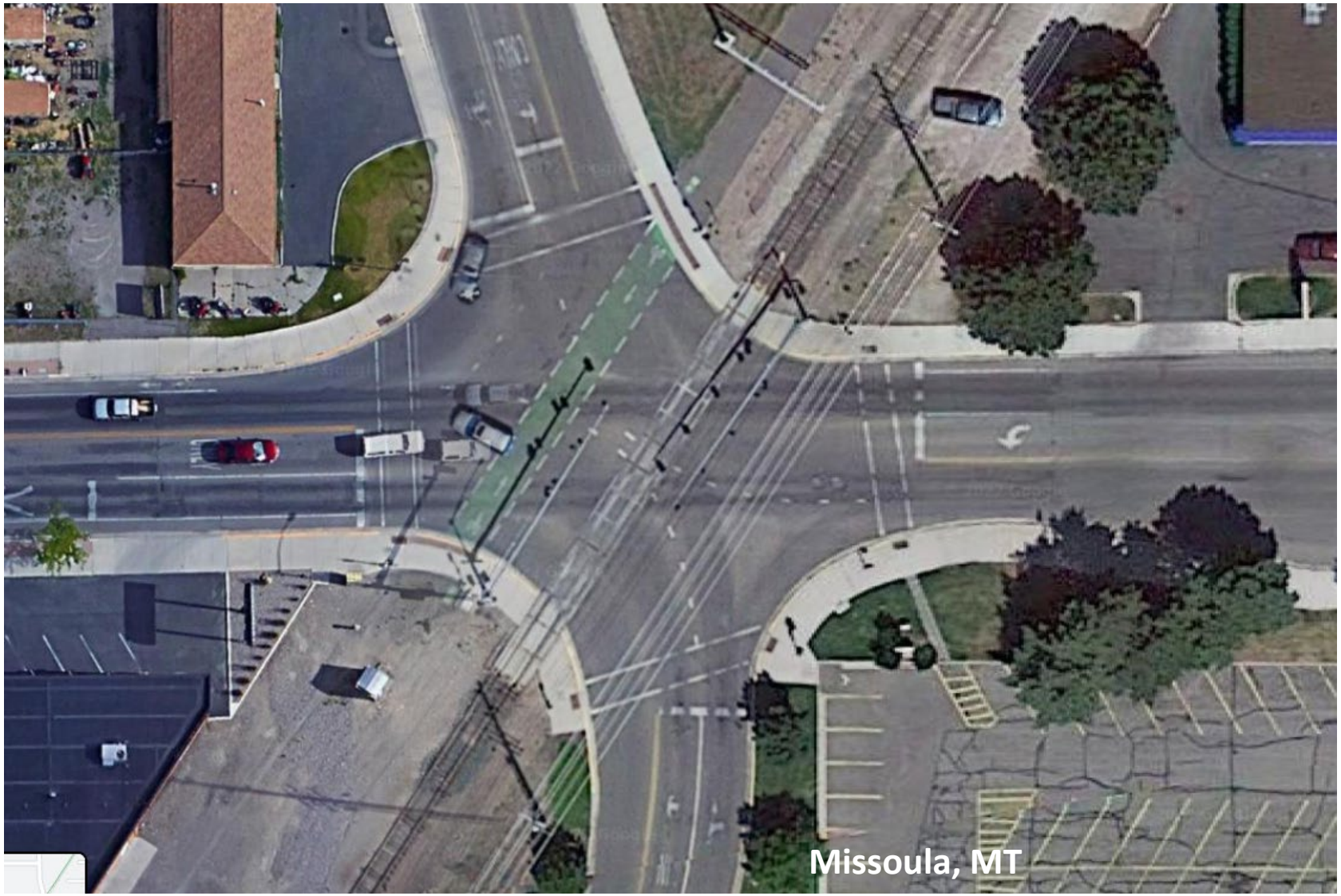
For bike only or diagonal approaches – Unique Geometry

- Class I or IV crossings
- Unique intersections

Missoula, MT

Contextual Uses for Bike Signals

4



Contextual Uses for Bike Signals

5 Transitions

Off-street to on-street

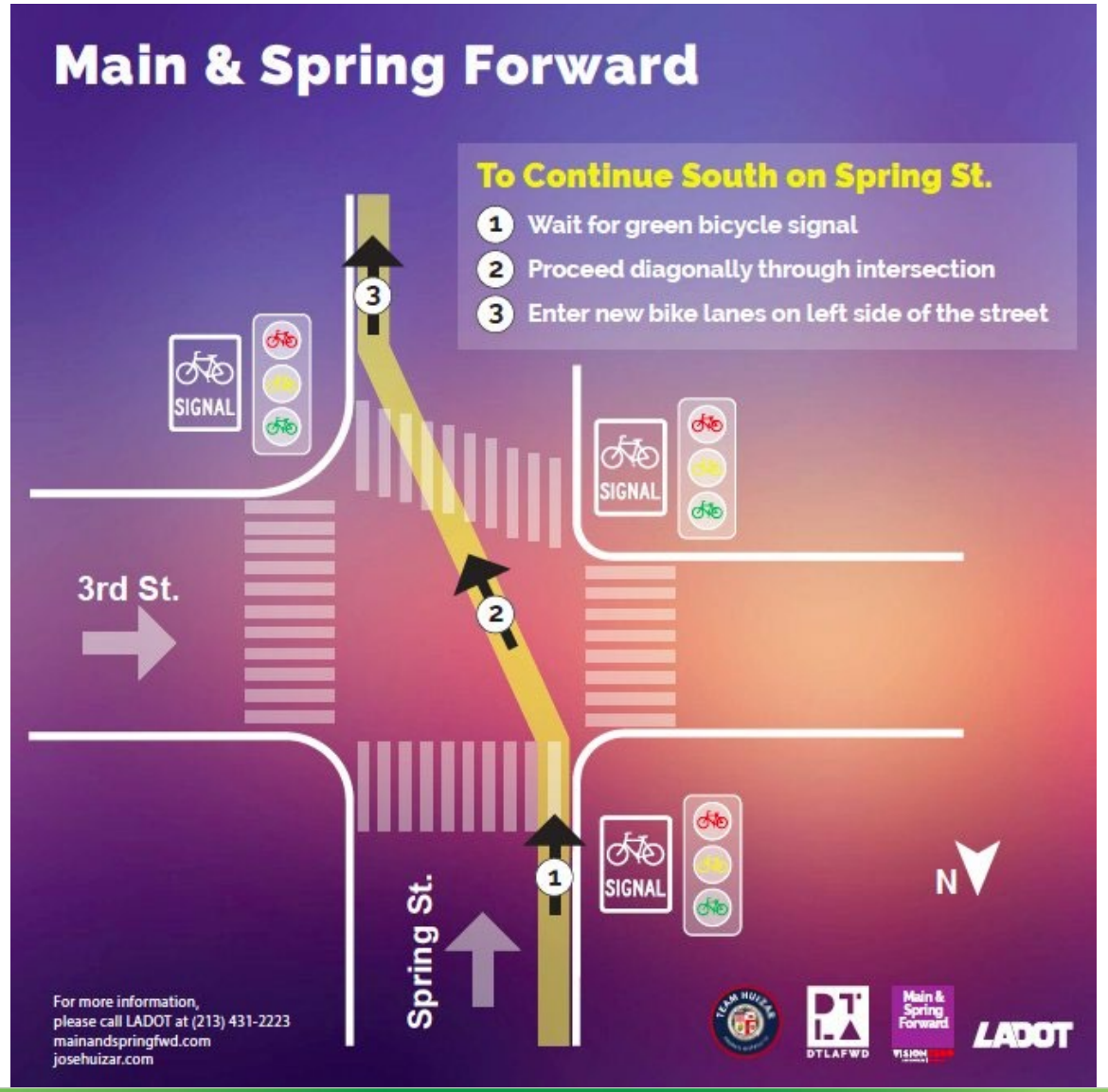
Portland, OR

Contextual Uses for Bike Signals

6

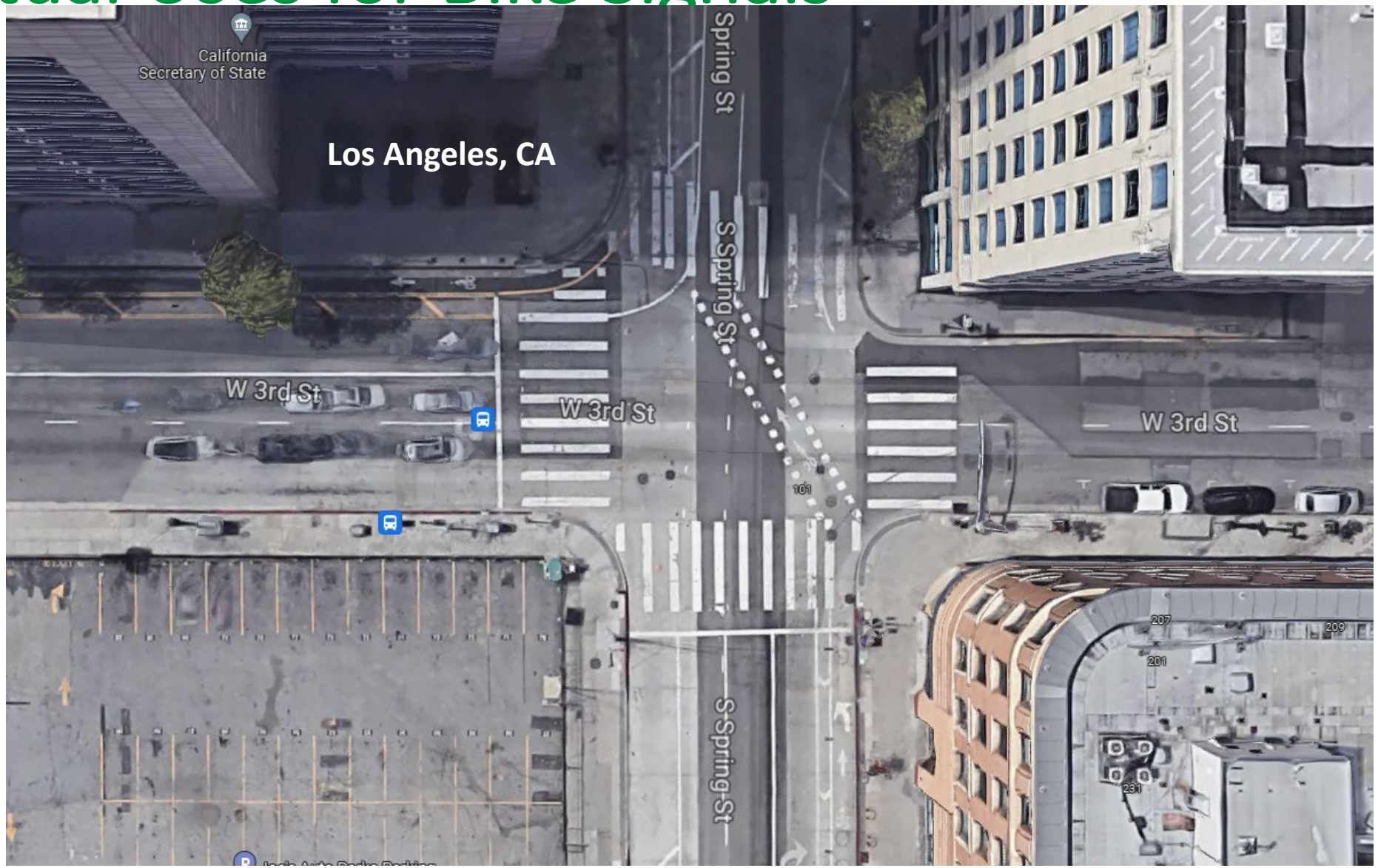
Crossovers – Unique Geometry

- Right side bike lane to left side bike lane
- Separated bikeway transitions



Contextual Uses for Bike Signals

6 Crossovers



Contextual Uses for Bike Signals

7 Reduce Delay

- Bicyclist speeds higher than pedestrian speeds
- Clearance times shorter
- The signal can be actuated
  - by peds (longer crossing time) or
  - bikes (shorter crossing time)

Portland, OR

Bike Signal Restrictions

- Must have exclusive bike facilities – no shared lanes
- No use with Hybrid Beacons
- No bicycle scrambles
- No Leading Bicycle Interval (LBI)

Special Considerations

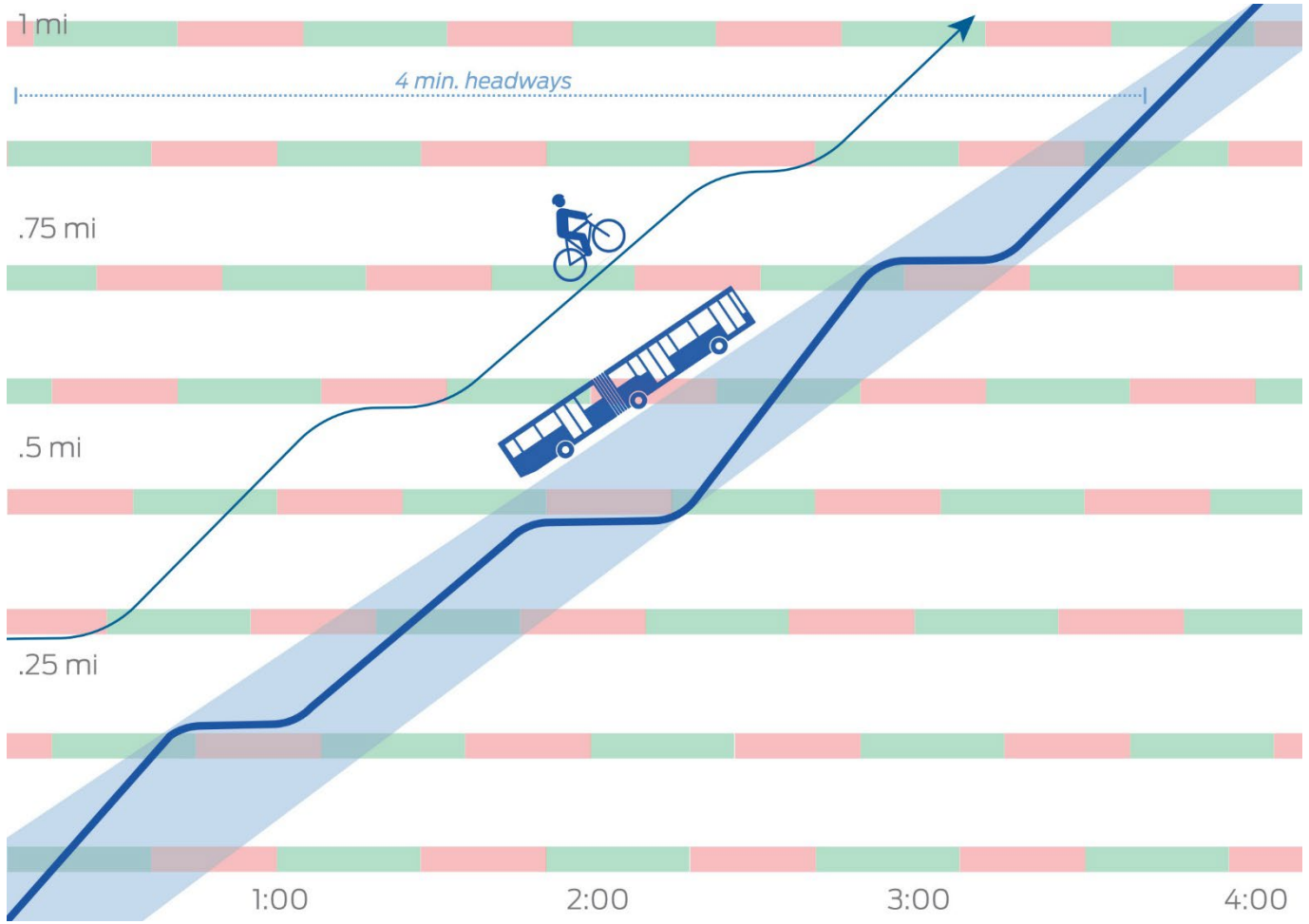
- Short Bicycle Green Intervals
- Large Intersections (red light)
- Bicycle Compliance
- Bicycle Progression
- Vehicle Delay
- Signal Actuation or Recall?
  - Bicycle Detection

Transit Stops and Bike Facilities

High level review

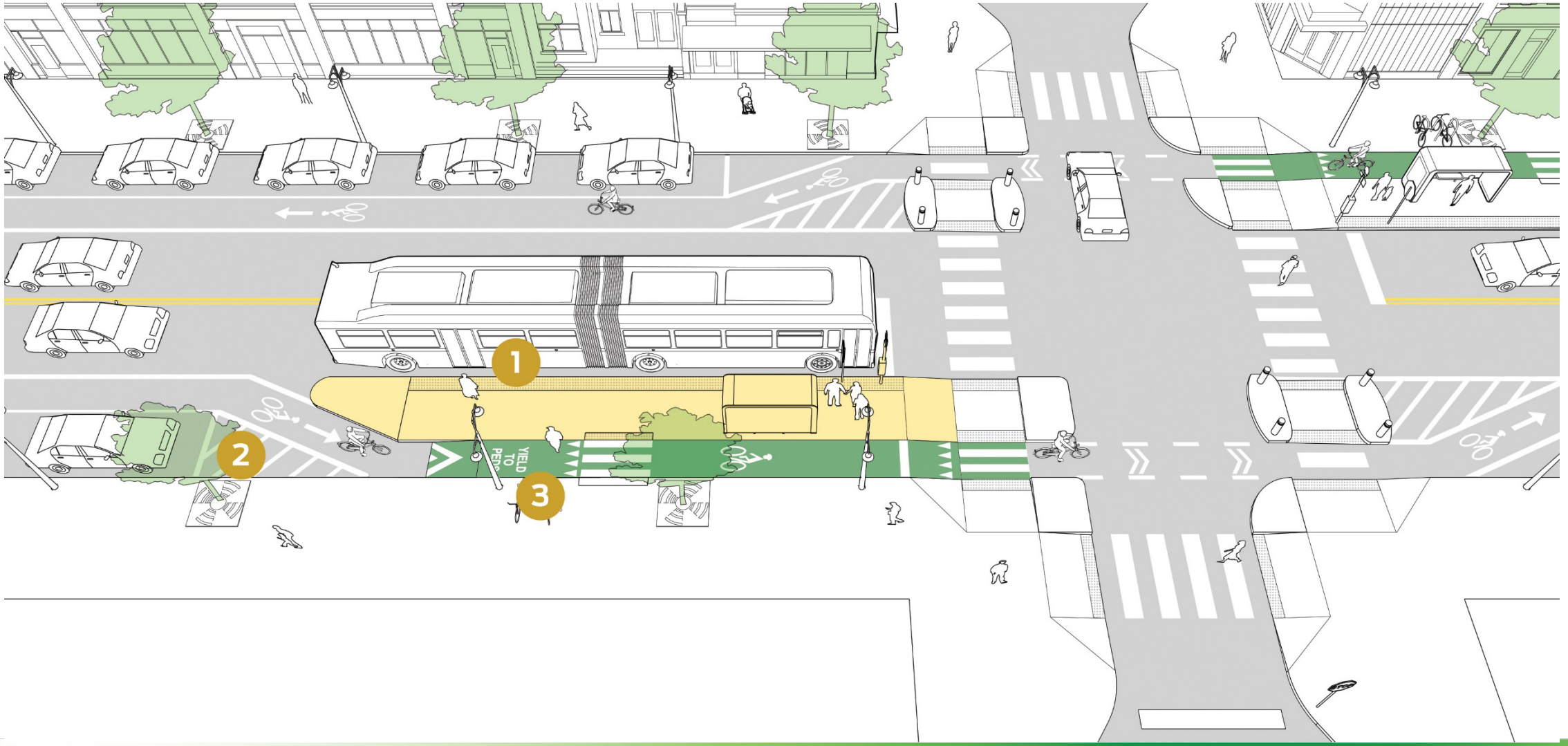
Bus Stops & Bikes

- Overall progression of buses and bikes is similar
- Creates “leapfrogging”



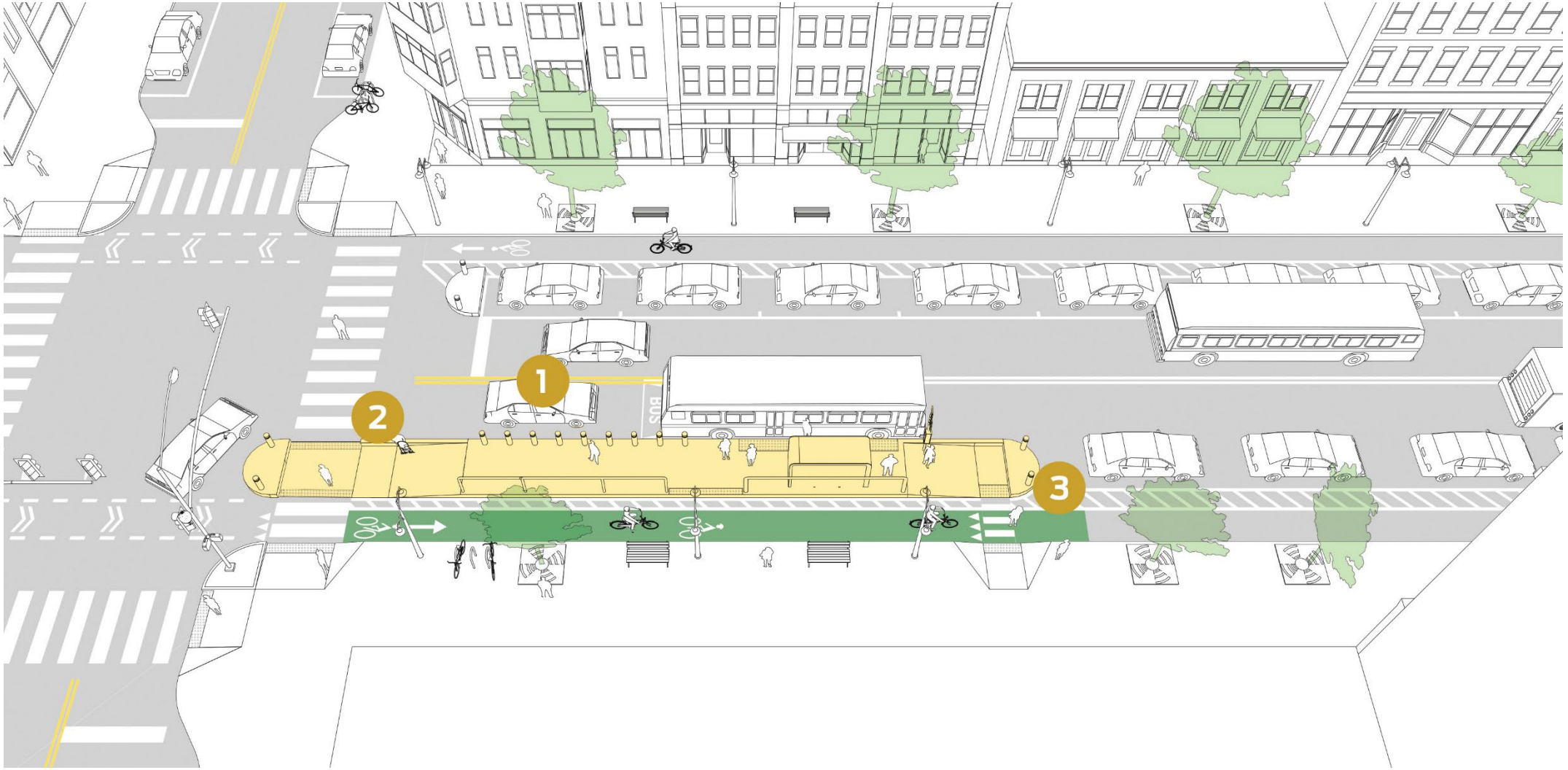
Bus Stops & Bikes

Bus Stops & Bikes



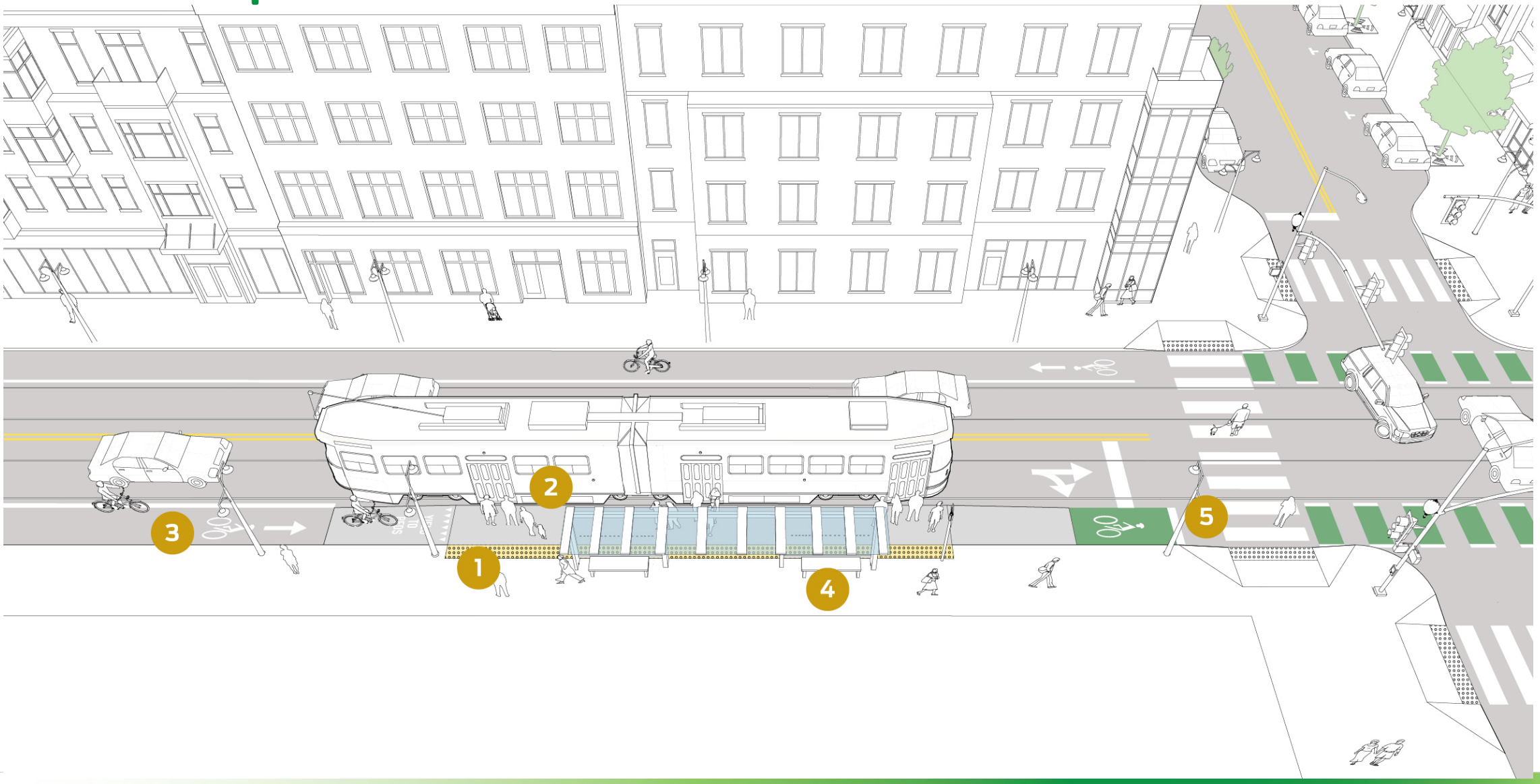
Bus Stops & Bikes

Bus Stops & Bikes

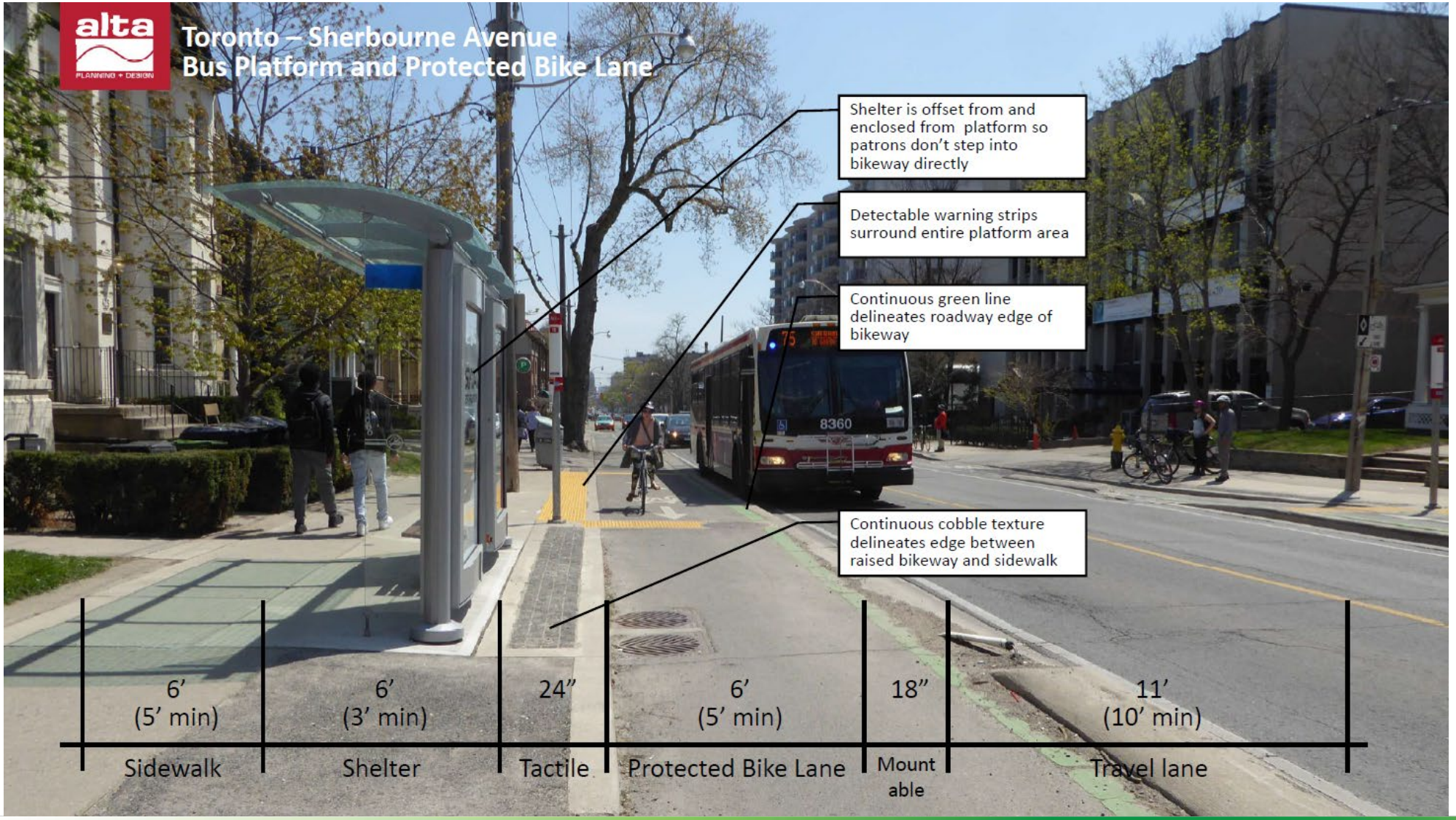


Bus Stops & Bikes

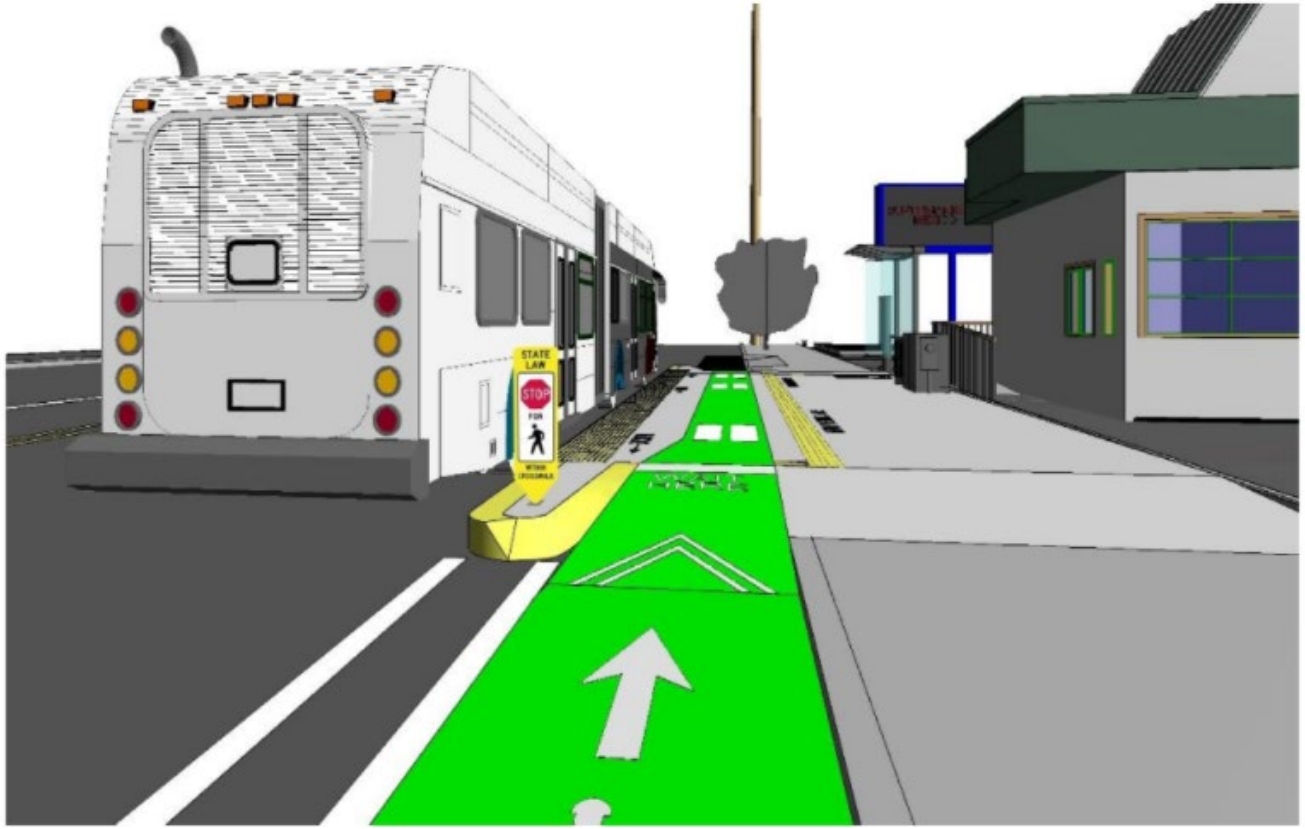
Bus Stops & Bikes



Bus Stops & Bikes



Bus Stops & Bikes



Bus Stops & Bikes

Bicycle Parking

Where, when and how much?

Short Term Parking

Short Term Parking

Long Term Parking

Long Term Parking

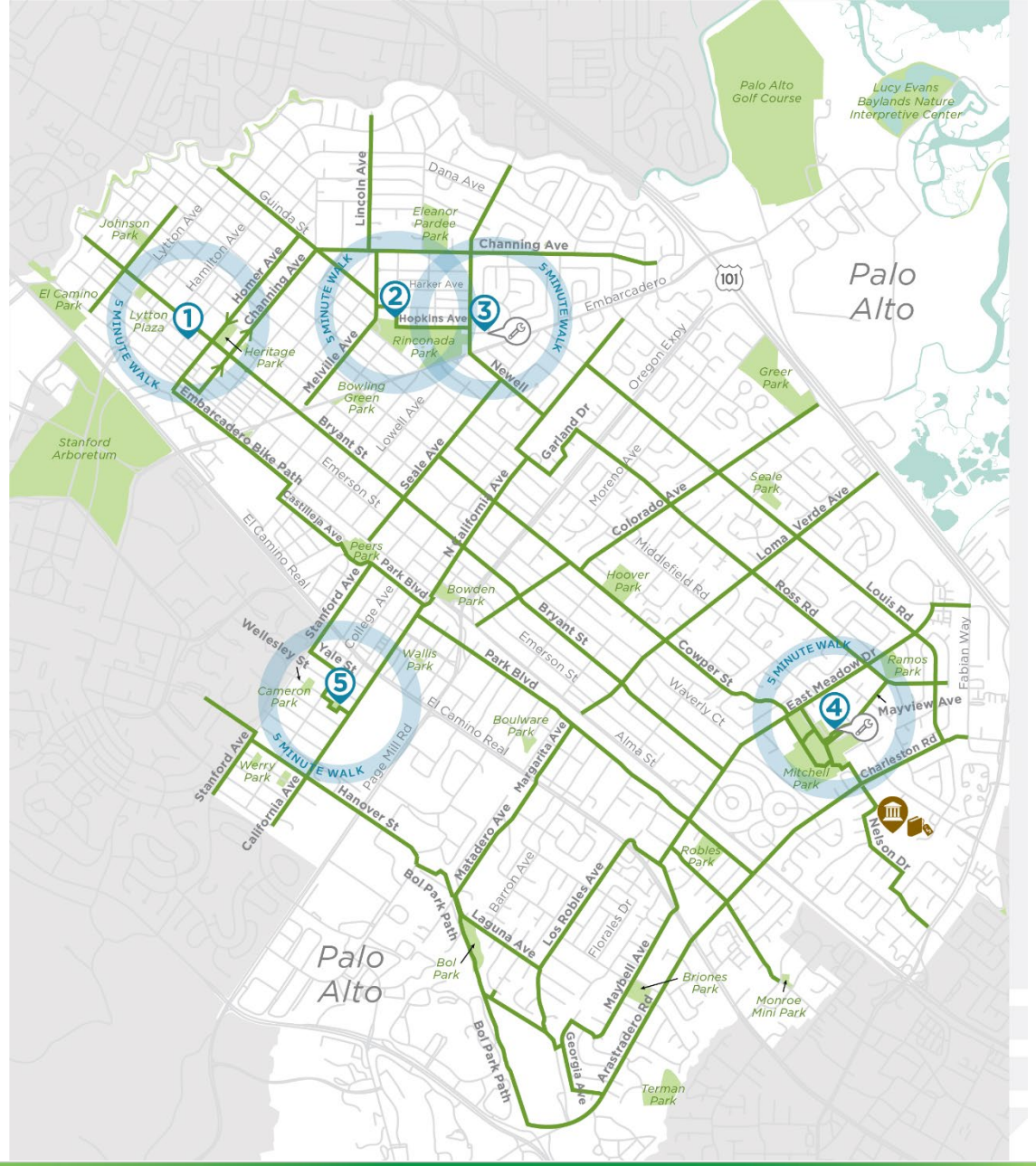
Class III Bicycle Routes & Boulevards

Make good use of low-hanging fruit

Local Roadways

Advantages:

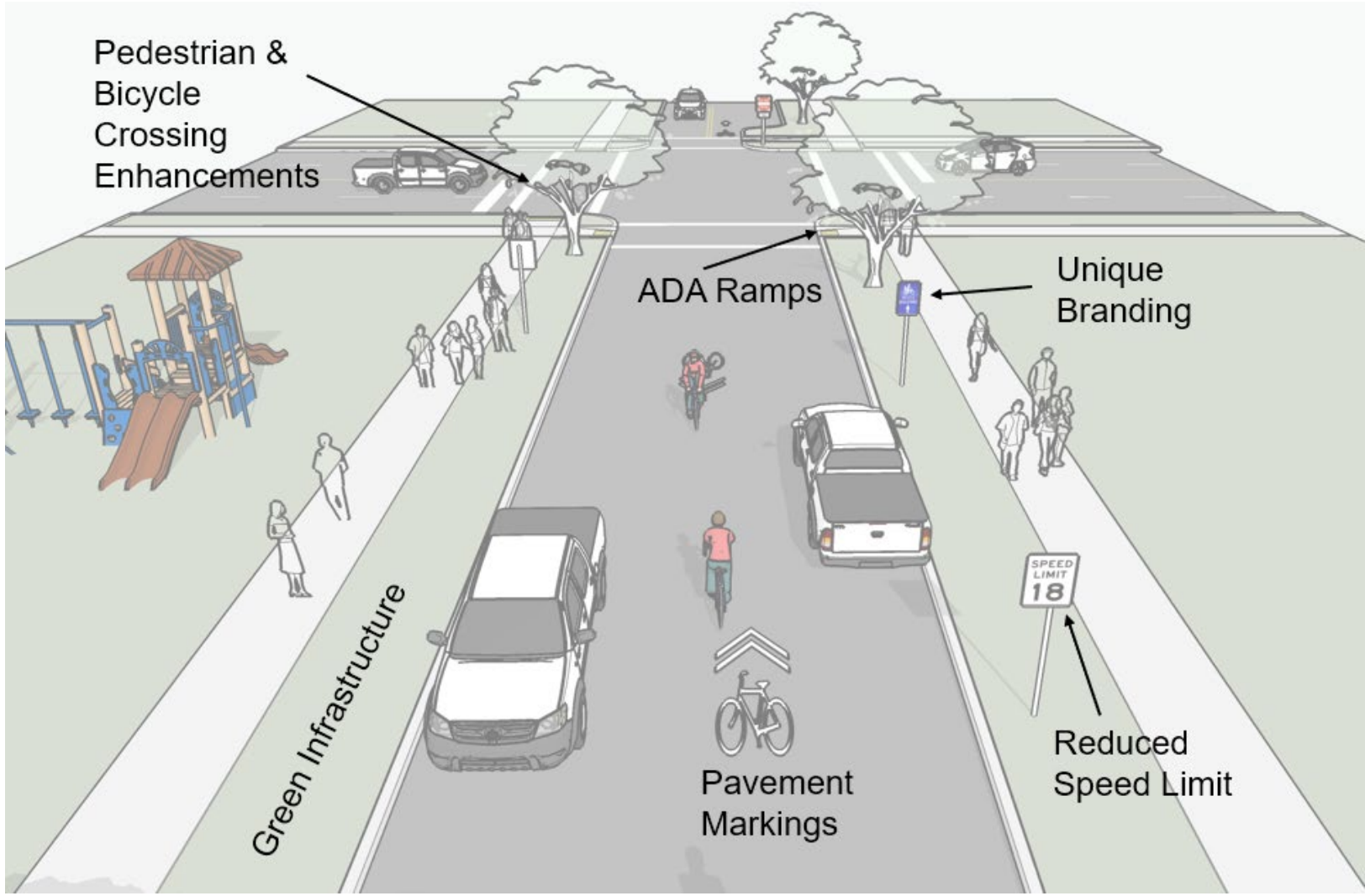
- Typically more than 60% of most cities!
- Already have more compatible conditions for walking/biking



Quiz: What produces discomfort for bicyclists?

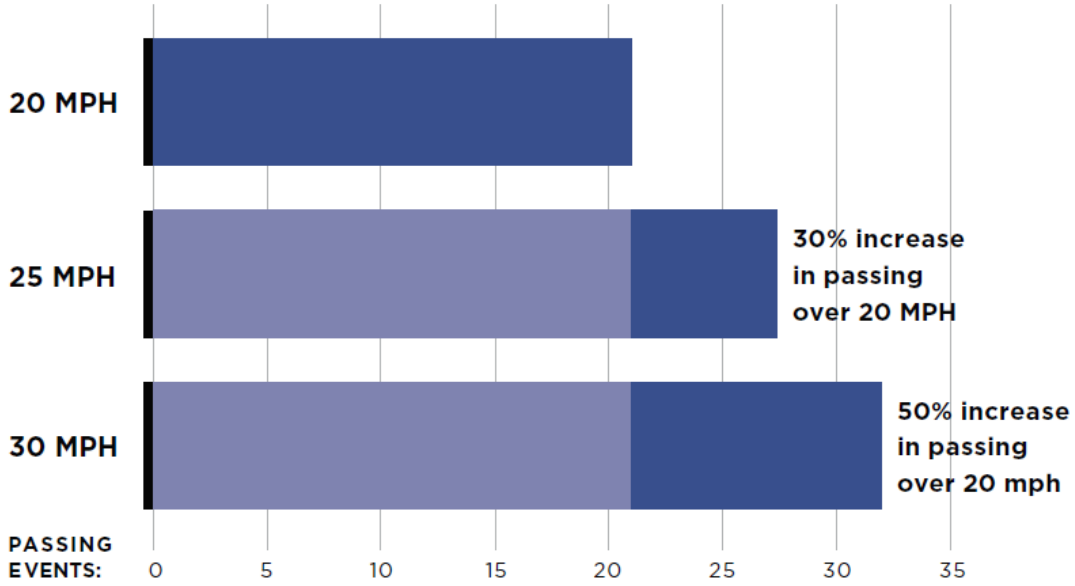
Fundamental Elements

- Traffic Compatibility
  - Speed Management
  - Volume Management
- Street Crossings
  - Collector/Arterial Crossings
  - Offset Crossings
- Look & Feel
  - Green Infrastructure
  - Pavement Markings & Signage
  - Branding



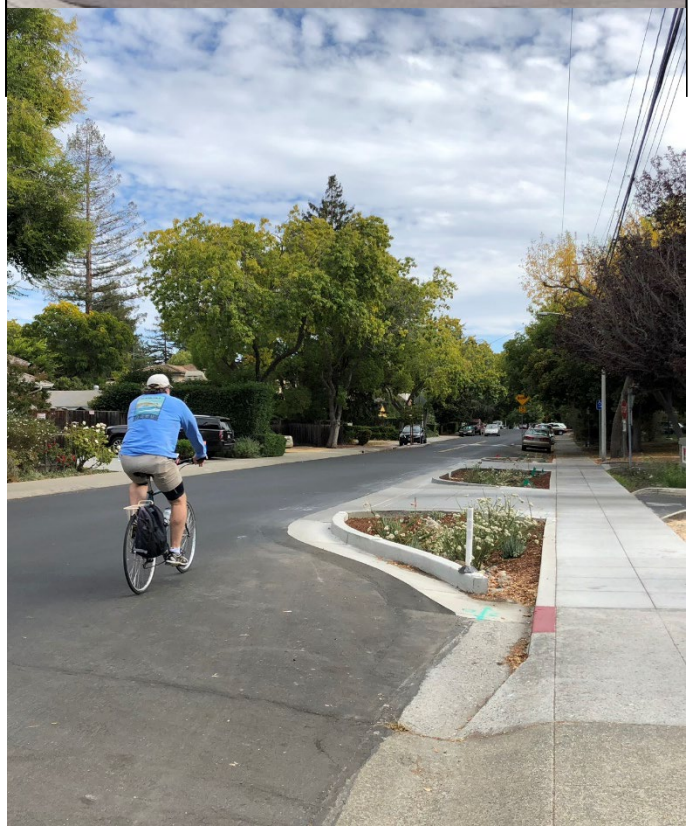
Keep Speeds Low

- Establish Compatible Speed
  - 25mph max posted speed,
  - 20mph preferred
- Lower Speeds with Speed Management Techniques
  - Horizontal Elements
  - Vertical Elements



Horizontal Traffic Calming

- Neighborhood Traffic Circles
- Curb Extensions
- Chicanes
- Pinch Points
- Painted Intersections/Murals



Vertical Traffic Calming

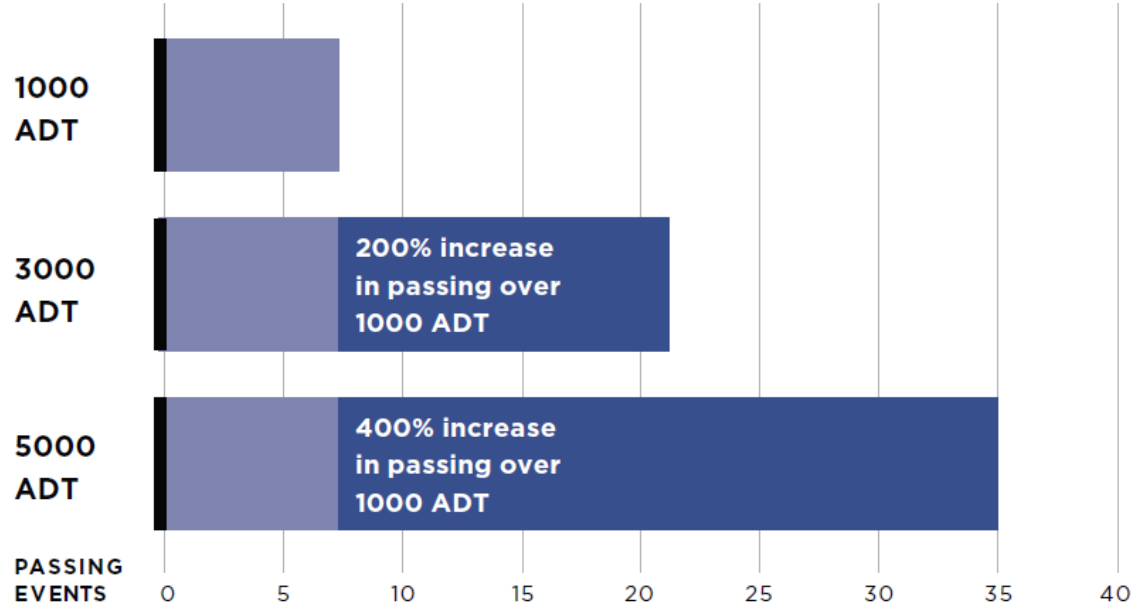
- Speed humps, bumps, & cushions
- Raised Intersections

Palo Alto, CA (both)

Keep Volumes Low

Prevent route from being used as a cut through route

- Full closures
- Partial closures
- Diverters / forced turns



Full Closures

- End of block typically
- Can also be mid block (less common)

San Luis Obispo, CA

Partial Closures

Regulate vehicle flow at minor intersections. Typical let local traffic out of neighborhood, but forces them to enter at a different point.

- Consider fire access
- Pass through and bulbout examples

Diverters

- Vehicles are forced to turn 90 degrees in both directions, bikes may proceed straight
- Opportunity for beautification/ placemaking

Forced Turns

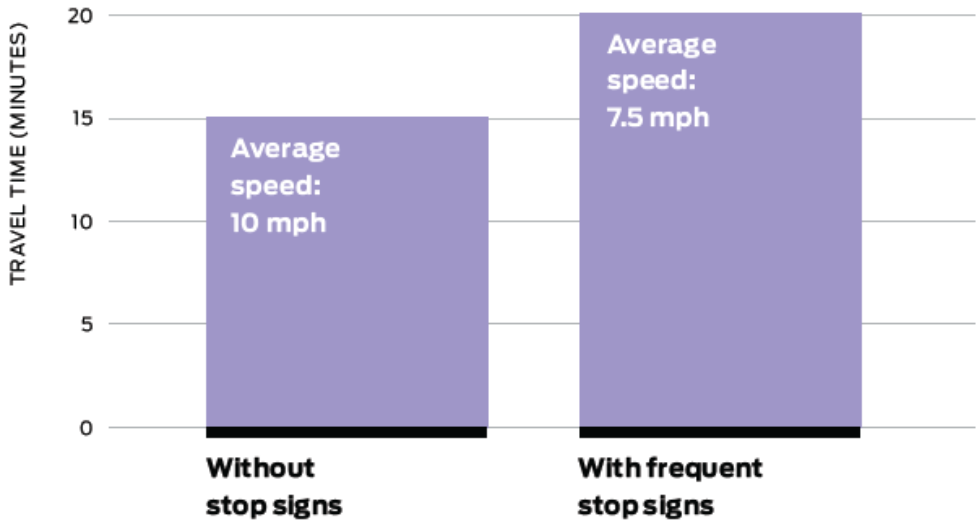
- Vehicles are forced to turn 90 degrees in both directions, bikes may proceed straight
- Opportunity for beautification/ placemaking

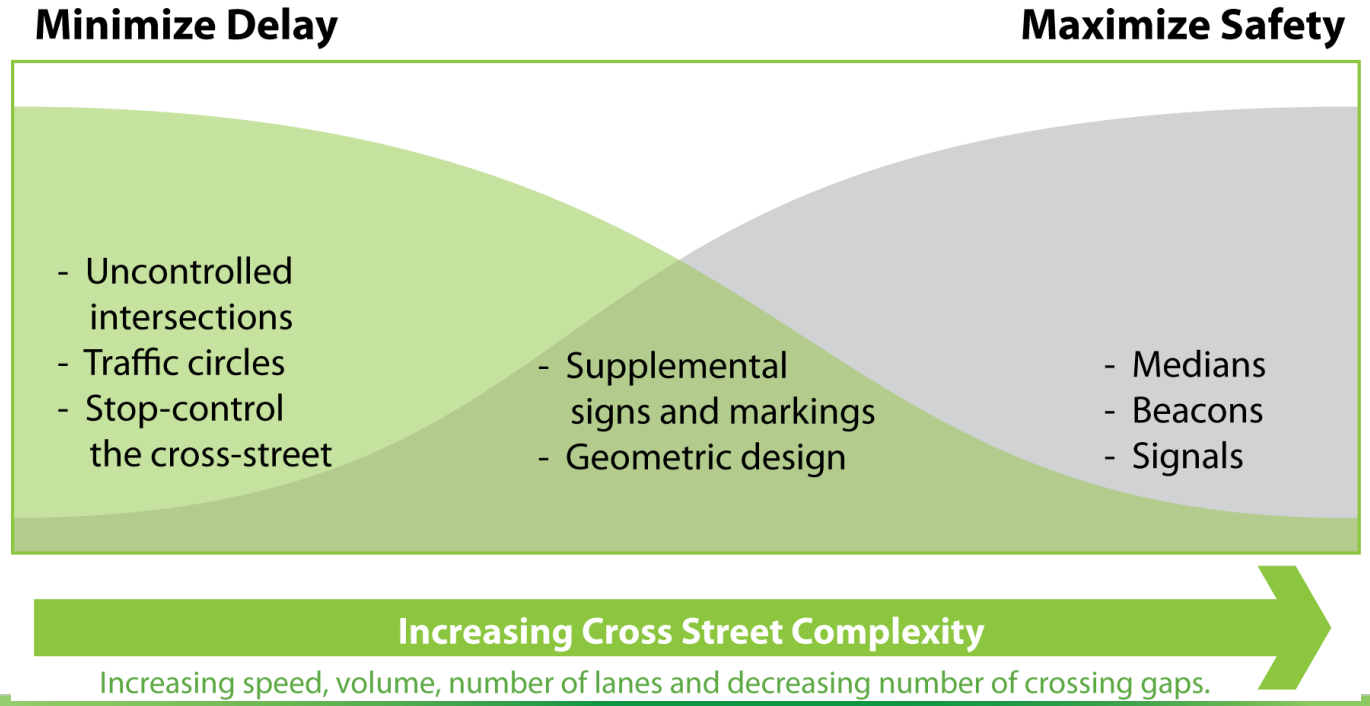
Berkeley, CA

Redwood City, CA

Bicycle Momentum

- Frequent stopping adds significantly to overall bicycle travel time as well as costs bicyclists valuable energy in having to regain speed.
- Preserving momentum can be a key element in successful projects and encompasses minor and major intersections. This principle should be combined with speed and volume management to avoid the route becoming more attractive to drivers.
  - Flip stop signs or use yield control
  - Traffic circles
  - Low-wait time crossings





Safe Routes to School - Child Compatibility

- Low volumes and speeds even more important
- Need full signal control or grade separation
- Adult involvement: “Bike Trains”, “Walking School Buses”

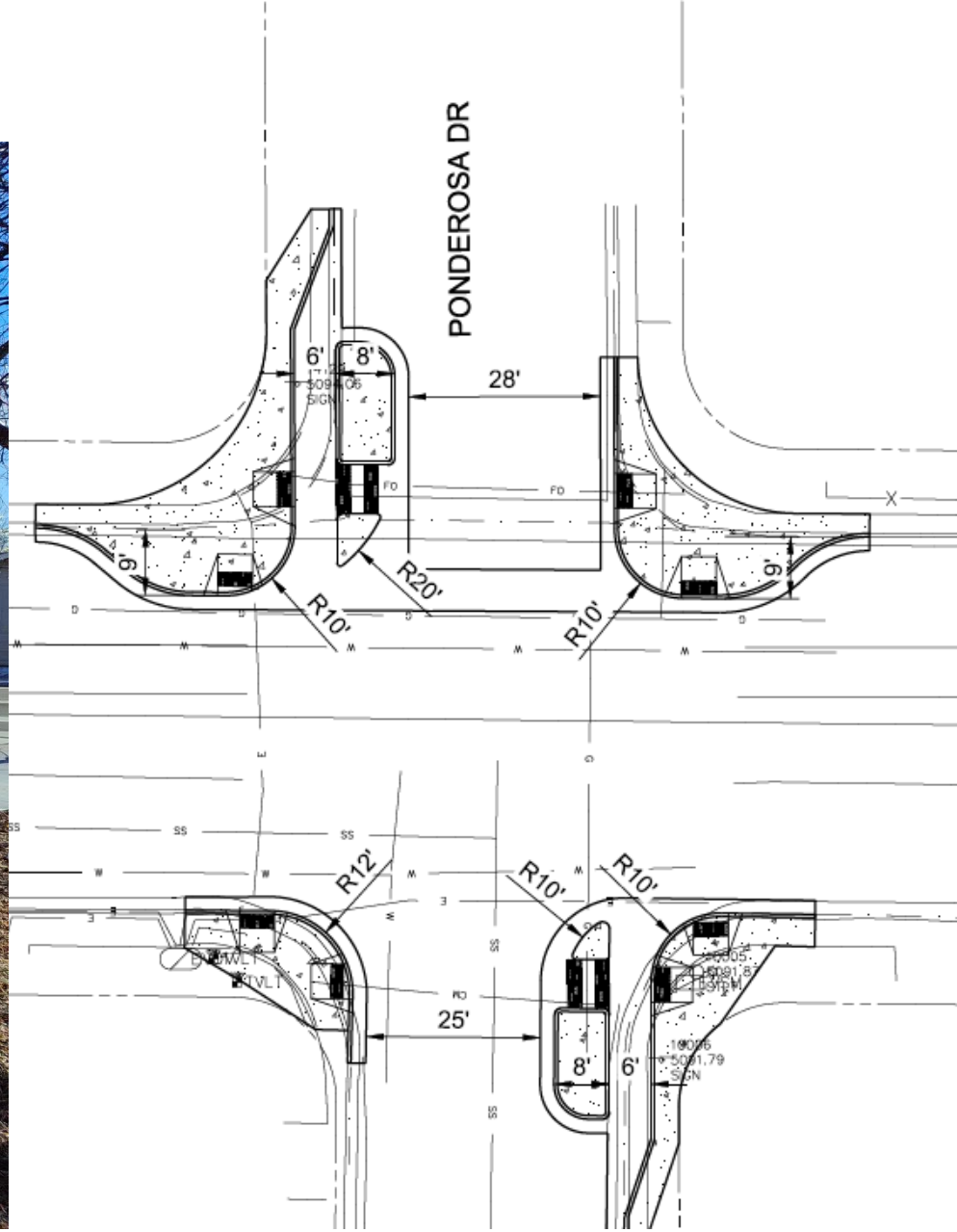
Major Street Crossings

Palo Alto, CA

Portland, OR

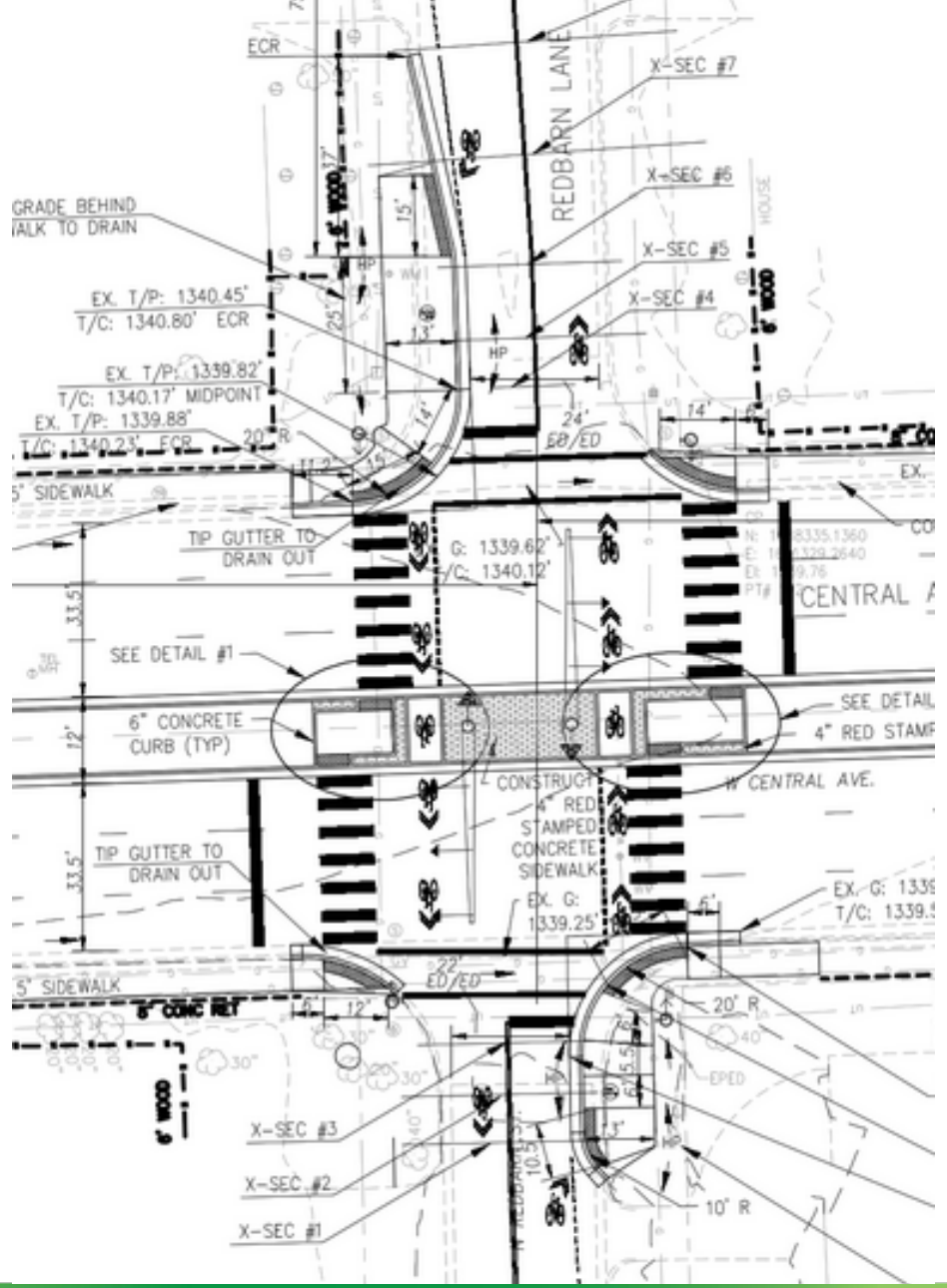
Major Street Crossings

Fort Collins, CO

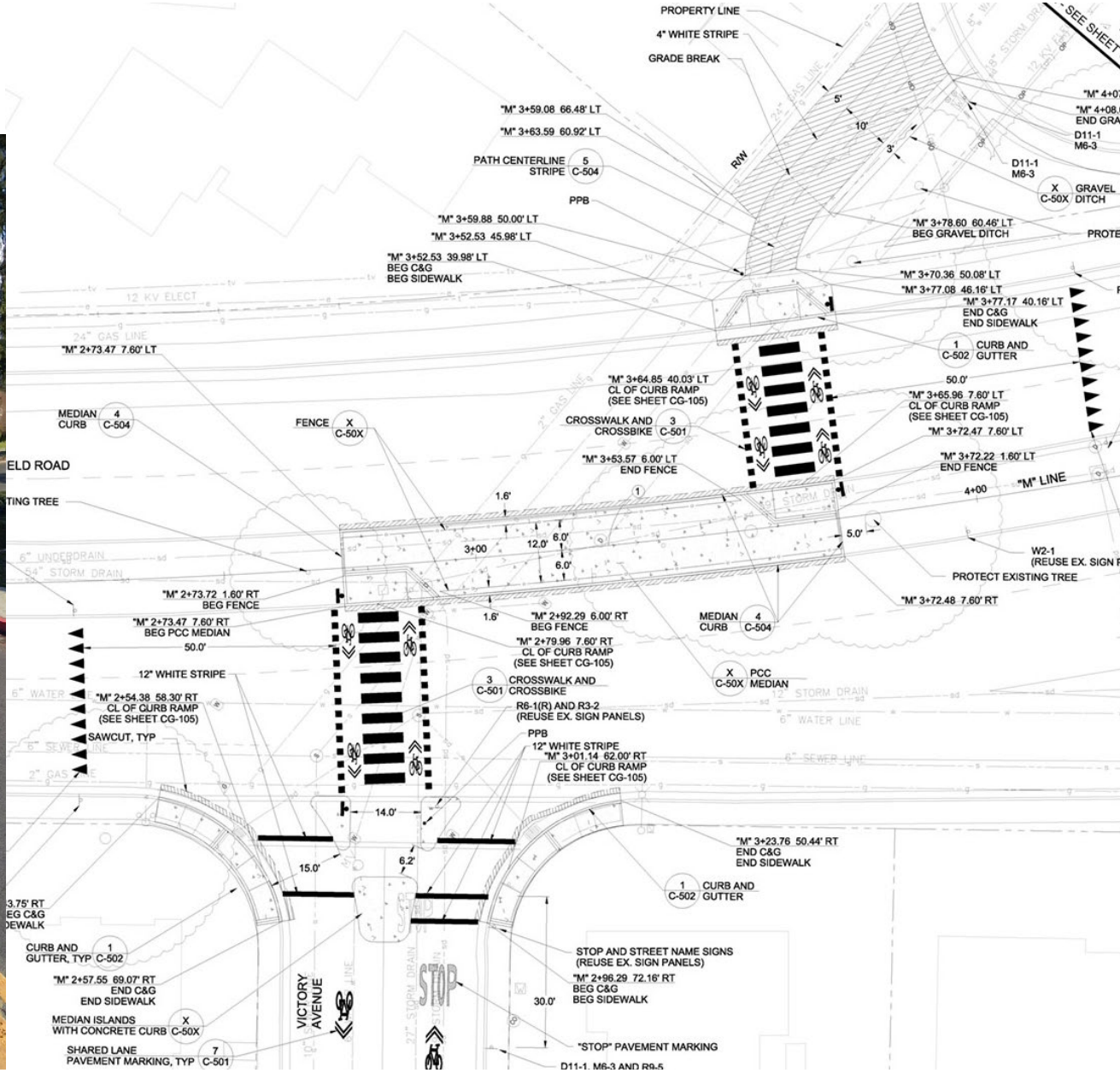


Major Street Crossings

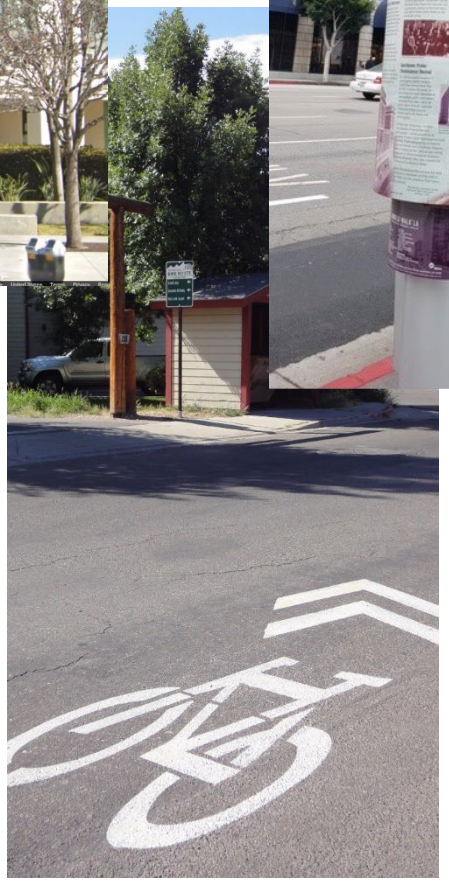
Wichita, KS



Major Street Crossings



Branding/Wayfinding



When Are Upcoming Funding Opportunities?

Patrick Gilster

SMCTA Manager of Programming & Monitoring

Utilize Funding

- Federal
  - RAISE
  - INFRA
- State
  - Active Transportation Program
  - Highway Safety Improvement Program
  - Local Partnership Program
- Regional/Countywide
  - Measure A (SMCTA)
  - Measure W (SMCTA)
  - Measure M (C/CAG)
  - One Bay Area (MTC)

C/CAG Comprehensive Bicycle & Pedestrian Plan (2021) includes a complete list of state and local funding sources:

Funding Source	Administering Agency	Weblink
State Funding Sources		
California Active Transportation Program	California Transportation Commission	www.dot. ca.gov/hq/ LocalPrograms/atp
California Office of Traffic Safety Grants	California Office of Traffic Safety	www.ots.ca.gov/ Grants/default. asp
Highway Safety Improvement Program	Caltrans	www.dot. ca.gov/hq/ LocalPrograms/hsip.html
Affordable Housing and Sustainable Communities Program	California Strategic Growth Council	www.sgc.ca.gov/Grant-Programs /AHSCProgram.html
Sustainable Transportation Planning Grants	Caltrans	https://dot.ca.gov/programs/transportation-planning/regional-planning/sustainable-transportation-planning-grants
Recreational Trails Program	California Department of	http://ohv.parks.ca.gov/?page_id=24881

https://ccag.ca.gov/wp-content/uploads/2021/06/San-Mateo-County-Comprehensive-Bicycle-and-Pedestrian-Plan-Update-Final-Plan.pdf

How will the TA incorporate Complete Streets?

- **Highway Program:**
  - Measure W allows pedestrian and bicycle projects along/across the highway system to be funded
  - Projects of Countywide Significant are being re-evaluated to include multimodal elements
- **Bicycle & Pedestrian Program:**
  - Quick build projects may be prioritized for the small capital projects category
  - Class III Bike Routes will no longer be funded, only Neighborhood Routes with sufficient traffic calming
  - Jurisdictions will need to show bike projects improve comfort levels
  - Extra “readiness” points will be given for jurisdiction staff who attend SMCTA technical trainings

2022 Calls for Projects Opportunities

Alternative Congestion Relief (ACR) & Transportation Demand Management (TDM) Program

- CFP is out now! Due in May
- Example Bike projects include:
  - Enhanced crossing treatments and detection
  - Short-term or long-term bicycle parking
  - Mobility hub planning and design
  - E-bike subsidies
  - Bike/scooter-share subsidies

Sub-Categories	Competitive Funds
ITS Planning & Design	$885,600.00
TDM Competitive Funds	$3,075,000.00
Small/Coastal (30%)	*$922,500.00*
Mid/Large (70%)	*$2,152,500.00*
ACR/TDM Planning Funds	$775,800.00
Total	**$4,736,400.00**

For more information on this category, see the recently adopted SMCTA ACR/TDM Plan:

https://www.smcta.com/Projects___Programs/TDM.html

2022 Calls for Projects Opportunities

Bicycle & Pedestrian Program

- CFP will be released in **August**
- Example Bike planning:
  - Bicycle Plans
  - Corridor Improvement Plans
  - Intersection/Crossing Studies
  - Vision Zero/High Injury Networks
- Example capital projects
  - Quick build bicycle projects
  - Road diets or reconfigurations
  - Protected intersections

Sub-Categories	Competitive Funds
Capital	$16,713,350
Capital - Large	*$11,197,945*
Capital - Small	*$5,545,676*
Planning/Promotion	$592,325
Safe Routes to School	$439,825
Total	**$17,775,771**

For more information on this category and see past successful projects visit:

https://www.smcta.com/Projects___Programs/Pedestrian_and_Bicycles.html

Thank you!

If you have any questions please contact:

Patrick Gilster at *gilsterp@samtrans.com*

Heba El-Guindy at *el-guindyh@samtrans.com*