Bikeways 201: Bikeway Planning and Engineering

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10 | 15 | 2011
NACTO Workshop - Chicago IL

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Urban Bikeway Design Guide

- ‘Conventional’ bike lanes
- Colored bike lanes
- Buffered bike lanes
- Contra-flow bike lane
- Bike boxes
- Two-stage turn queue boxes
- Intersection crossing markings
- Bike signals
- Bike route signage
- Cycle tracks

Attracting a Different Type of Rider

"Riding a bicycle should not require bravery"

– Roger Geller, Portland Office of Transportation

Source: Portland Office of Transportation - Survey on public attitudes towards cycling

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Cycle Tracks

One-way Cycle Track

Separated Bikeways/CycleTracks in SF

Division Street

Alemany Boulevard

Laguna Honda Boulevard

Two-way Cycle Track

Montreal, Quebec

Unexpected Turn Movements

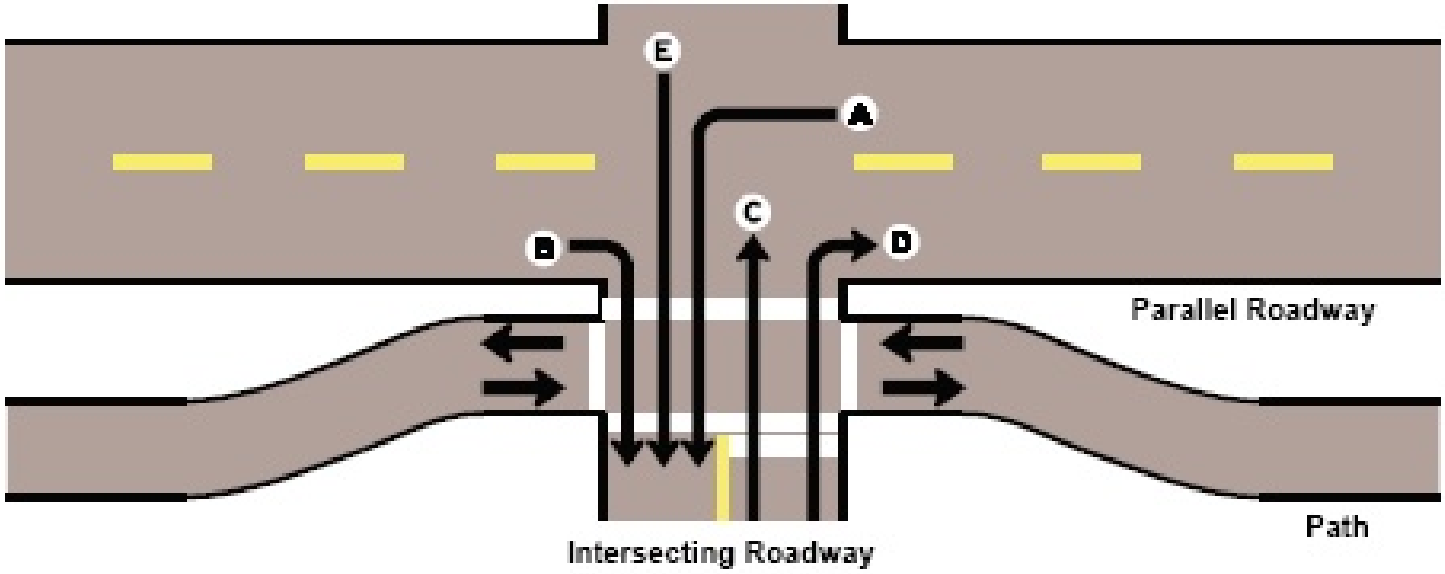
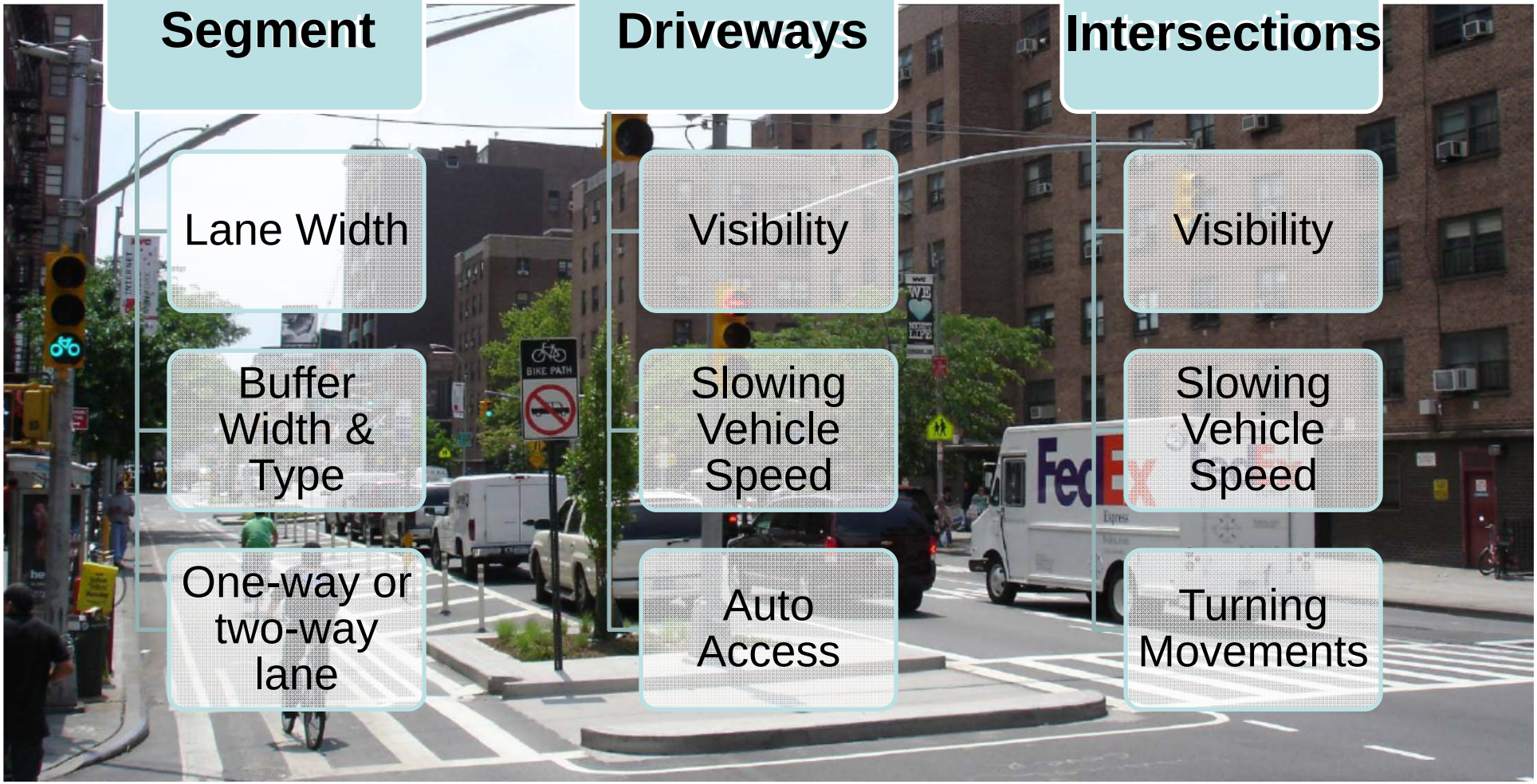


Figure 22. Example of Adjacent Path Intersection

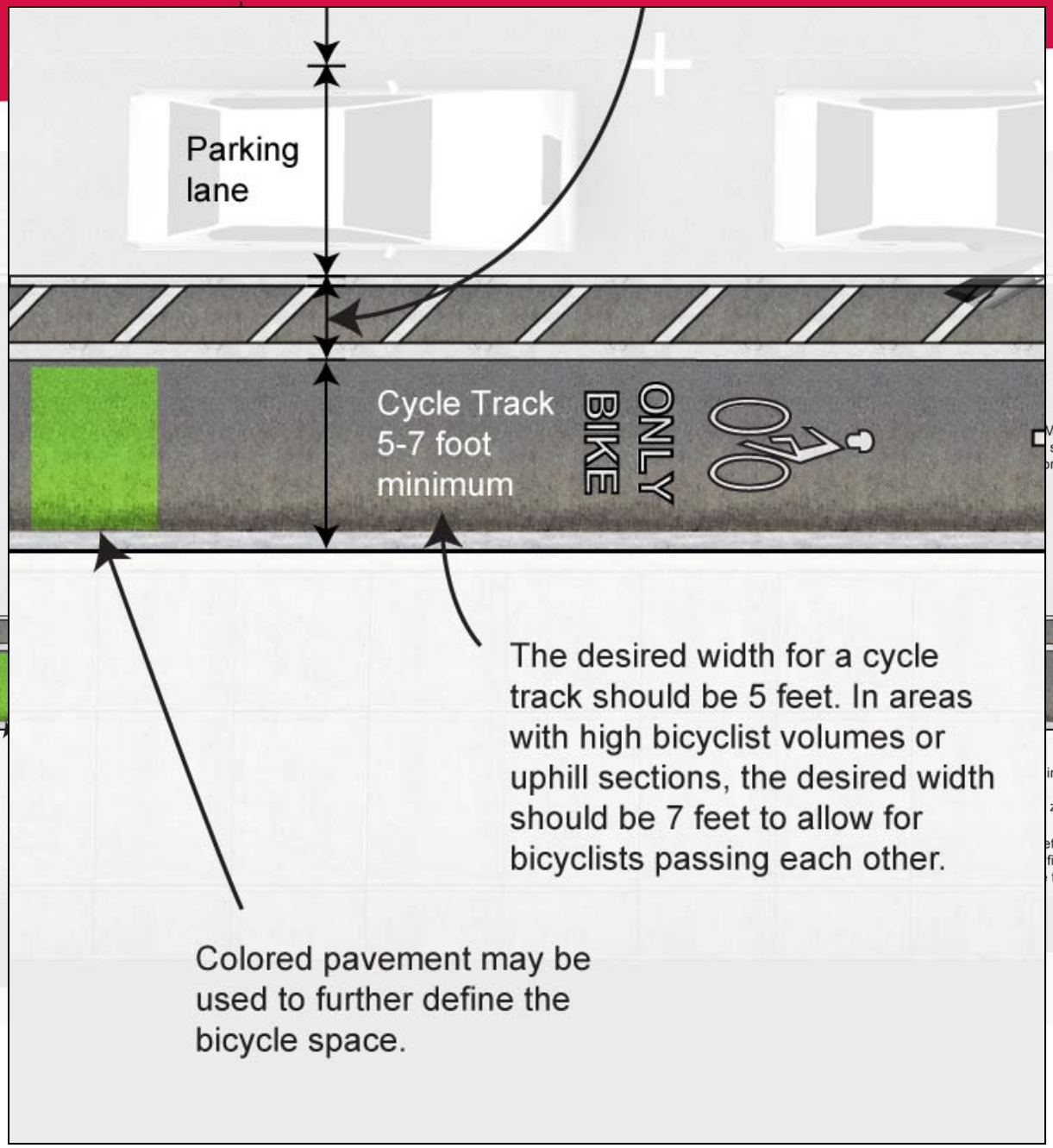
Bi-directional paths/tracks can create unexpected movements at intersections and driveways

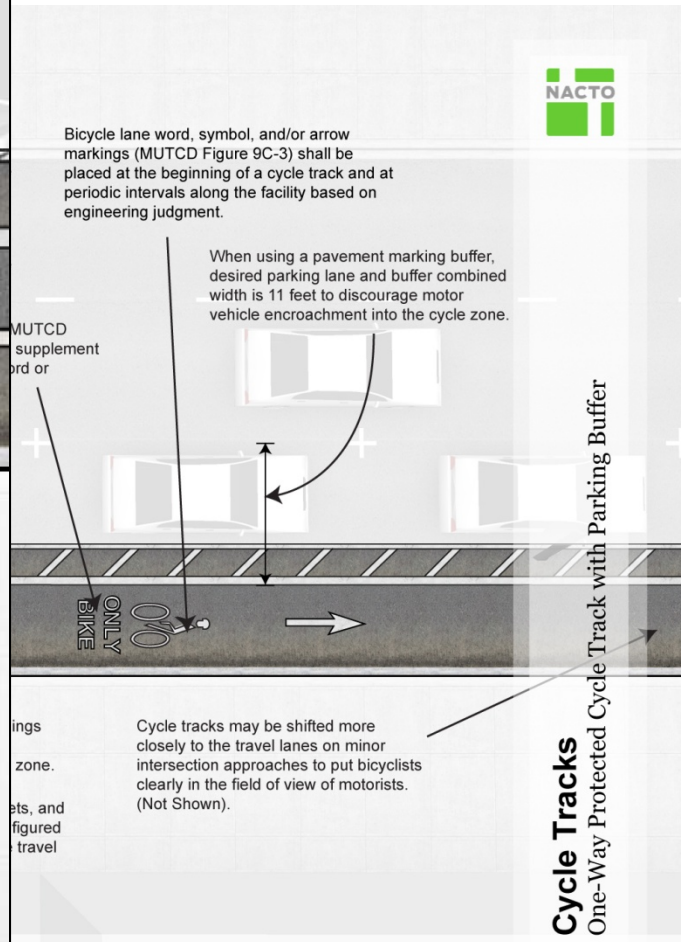
Consider using single direction paths where there are many driveways and intersections

Facility Elements



Technical Guidance





Potential for Blockages and Reduced Room for Passing

Rolled curbs aid passing/leaving path

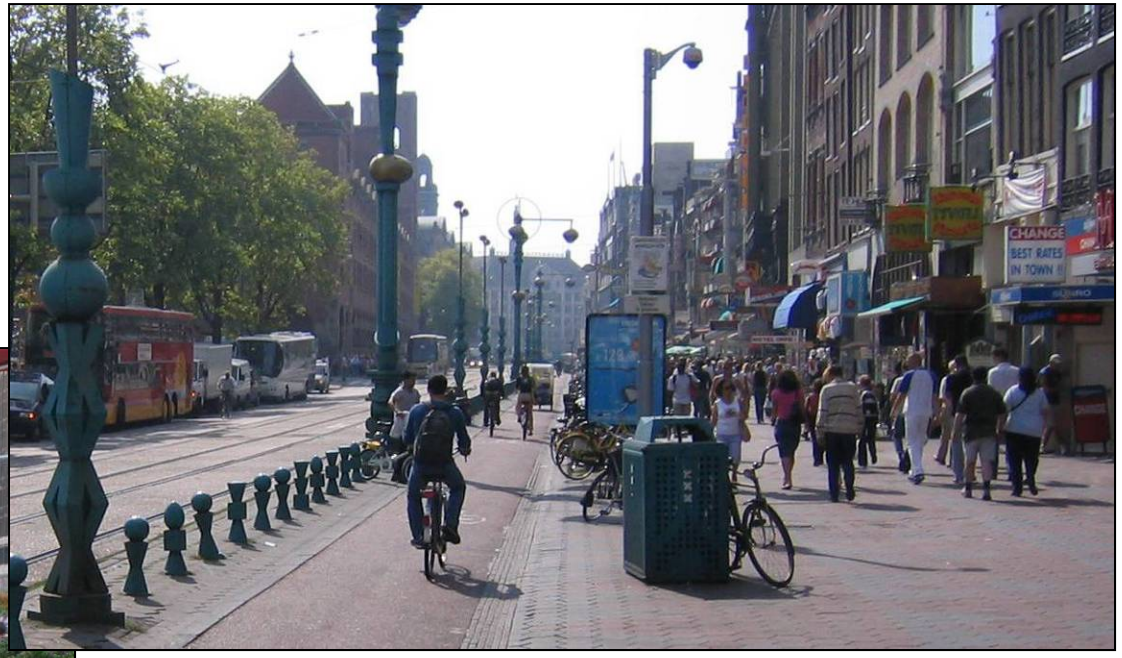
Minimum 6.5’ (~2.0m) width to allow for side by side riding and passing

Maintenance: Sweeping and Snow

- Make path wide enough for street sweeper/plows
- Buy smaller street sweepers/plows

Conflicts with Pedestrians

Appropriate widths, good separation

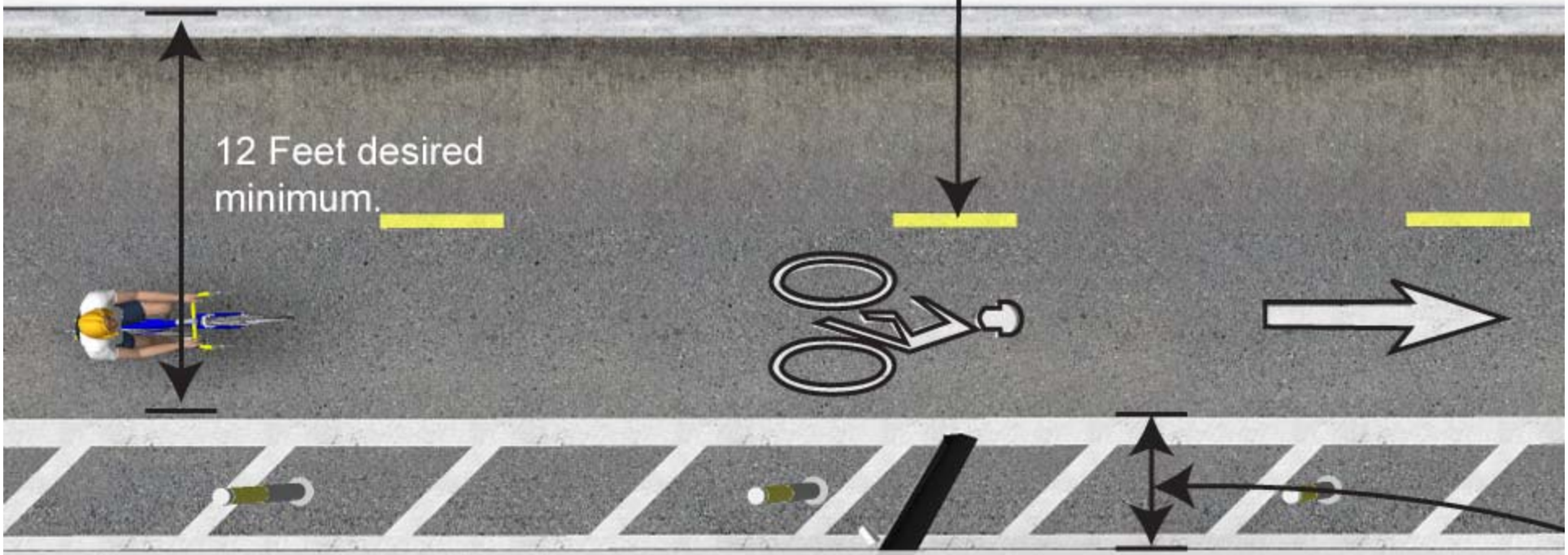


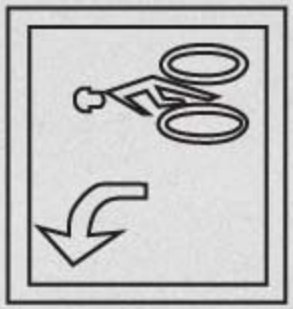
Ped demand very high, need for better lane placement and separation

Two-Way Cycle Track

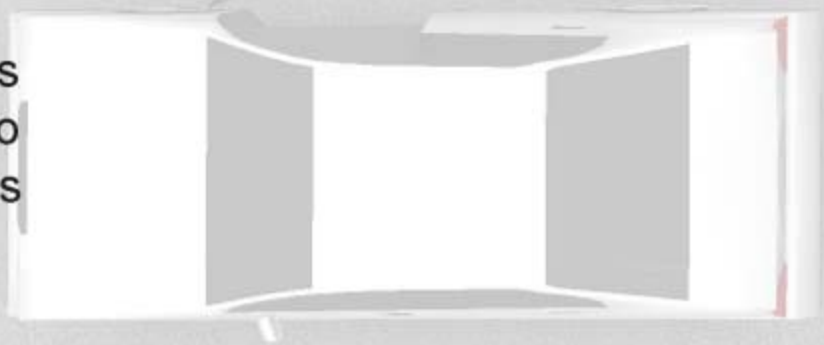
The desirable two-way cycle track width is 12 feet. Minimum width in constrained locations is 8 feet.

A dashed yellow line should be used to separate two-way bicycle traffic and to h distinguish the cycle track from any adja pedestrian area.



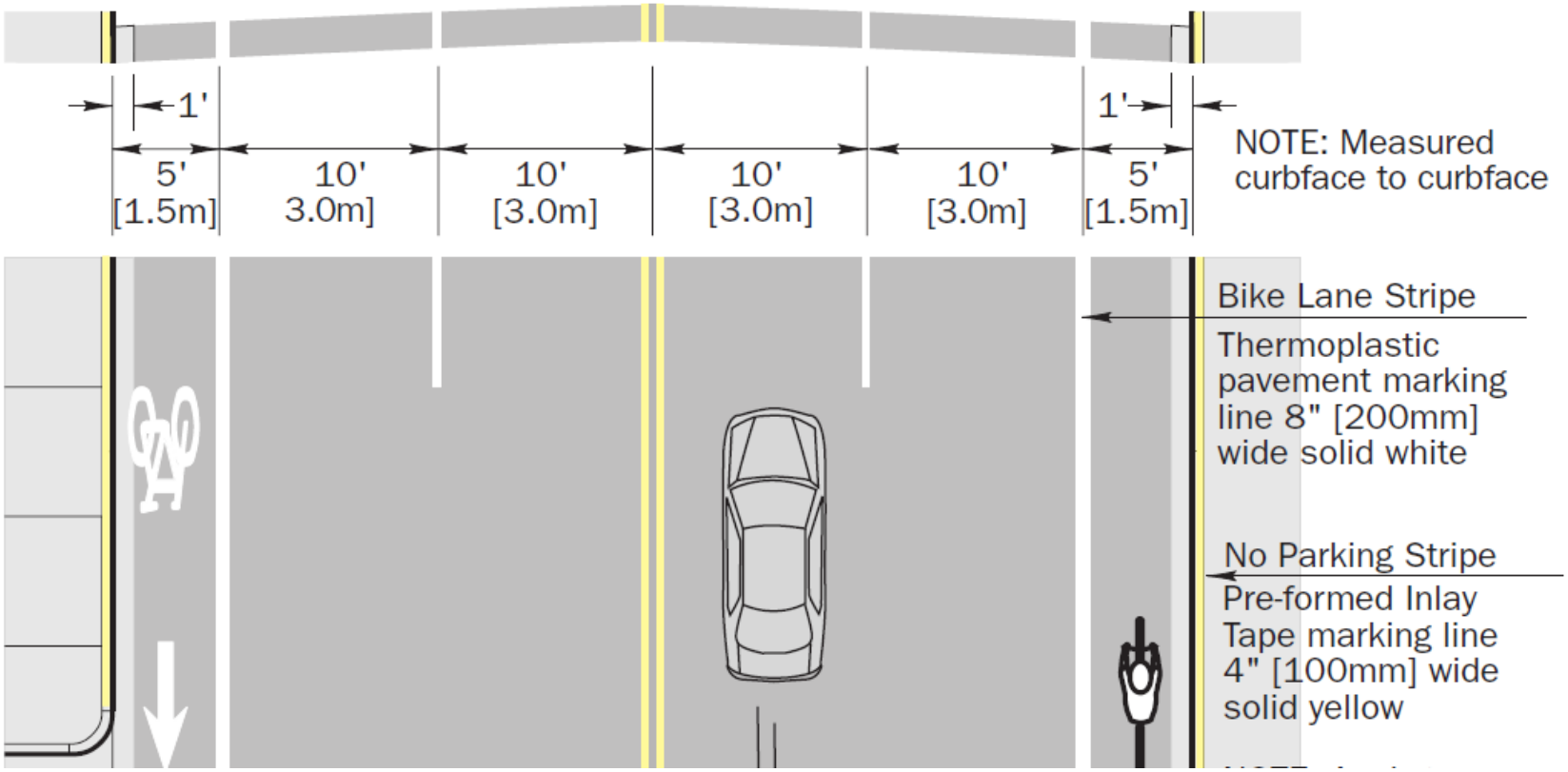


Two-stage turn boxes should be provided to assist in making turns from the cycle track facility.

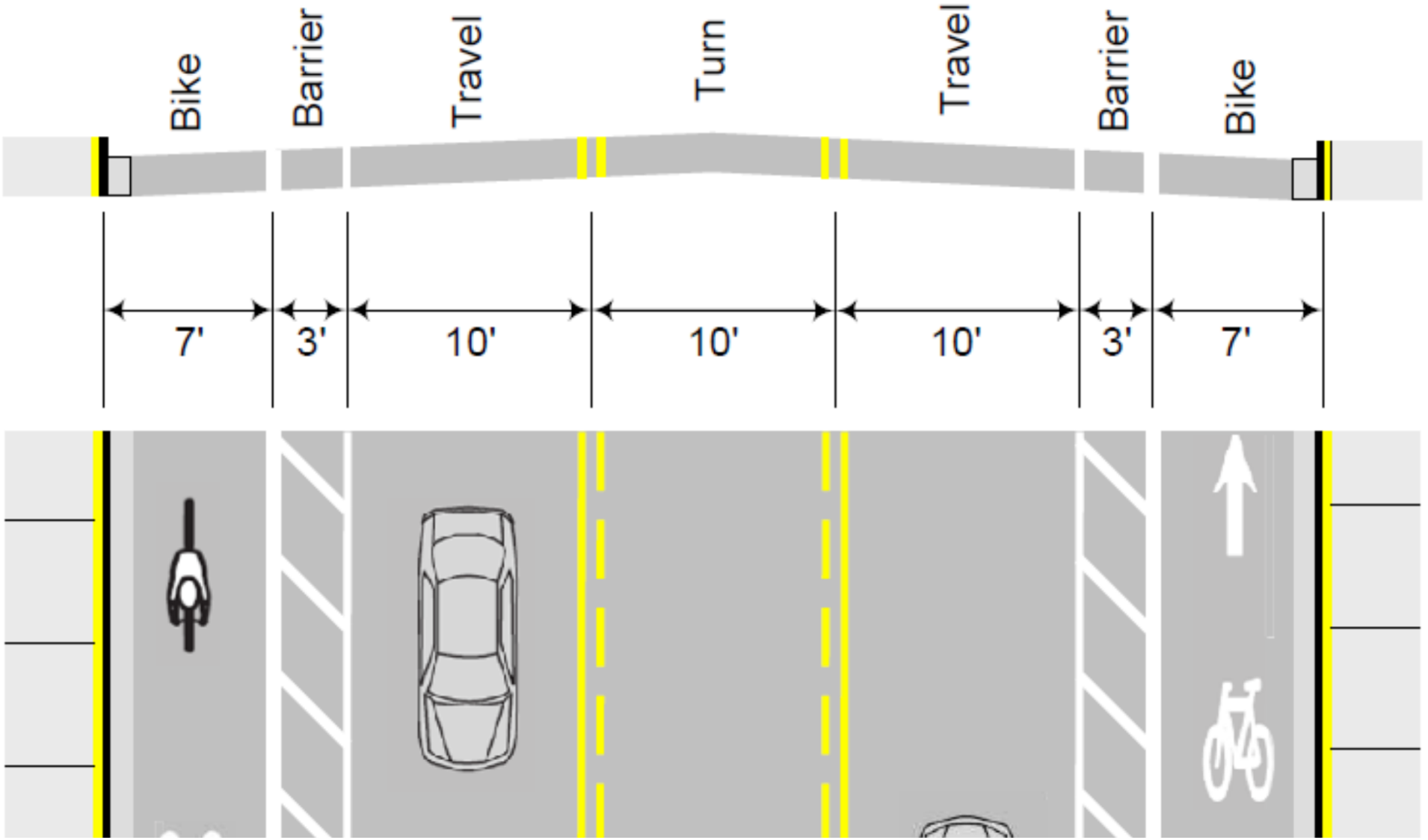


Cross Section Design

Bike Lane on 50' Wide Street
No Parking on Both Sides

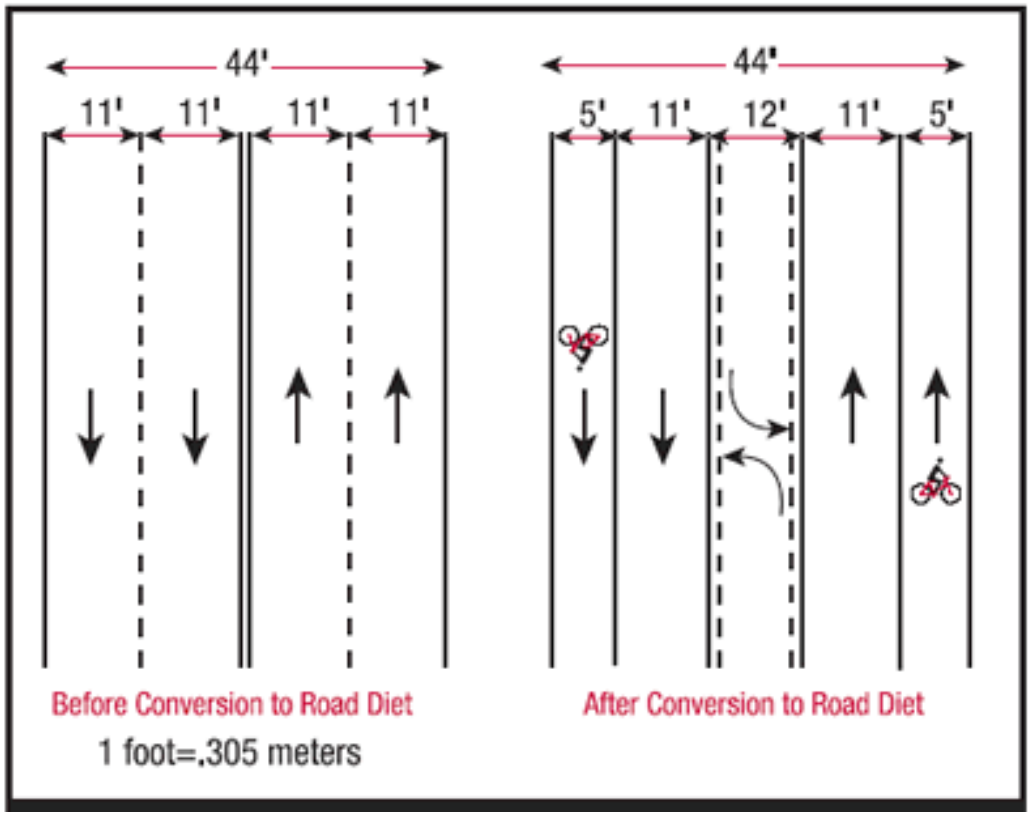


One-way Cycle Track
50' Wide Two-way Street (No Parking Both Sides)



Road Diets

Excess capacity removed, extra space reallocated for other purposes:
- Bike Lanes
- Wider Sidewalks
- Median (raised/planted or street level/painted)



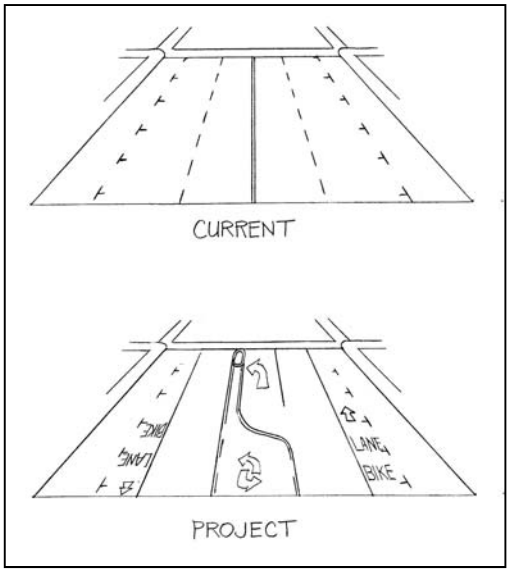
FHWA diagram

Rules of Thumb

Two cut-offs for classic 4-to-3 road diet:

1) ~20,000 vehicles per day

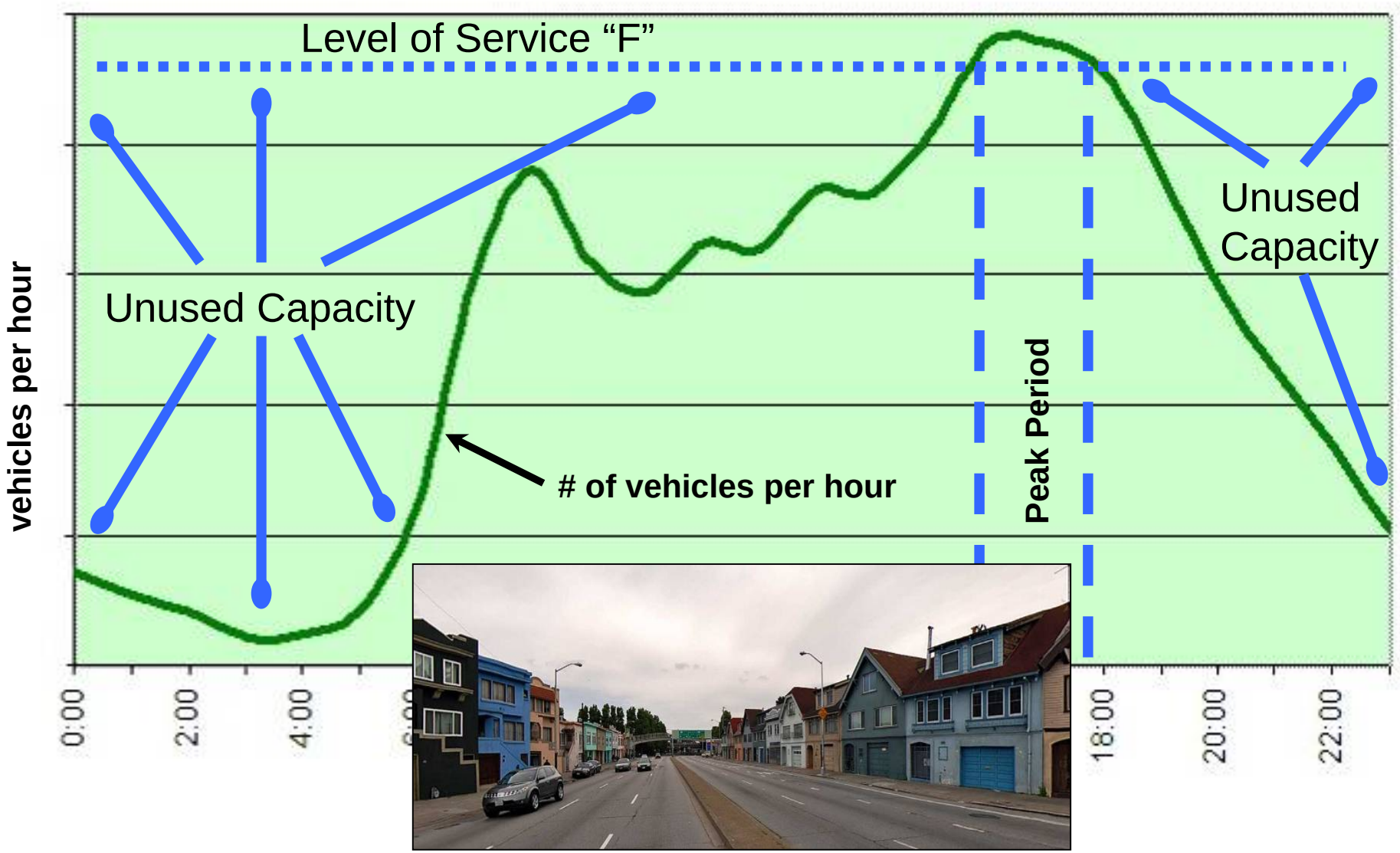
2) ~1000 vehicles per hour per direction



Also, peak hour volume is approx 10% of ADT

ie. if pk hr = 800 vph, ADT ~8000vpd

Designing for Peak Motor Vehicle Flow



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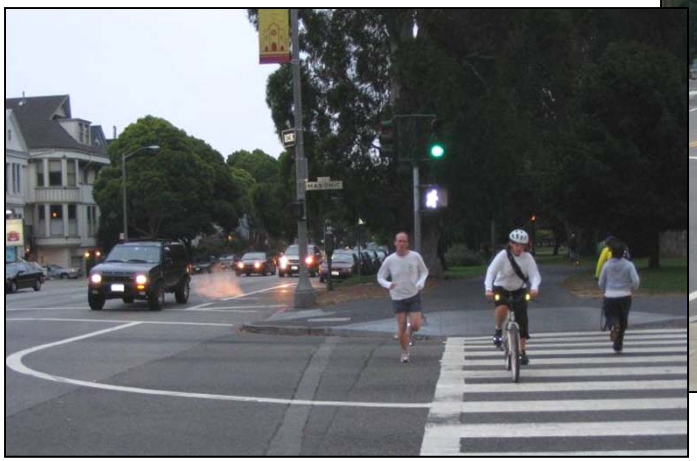
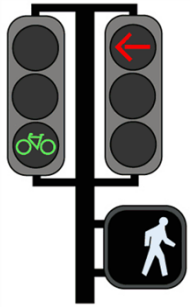
Intersections

Turn Conflicts/Intersections

- Bring cyclists down to roadway level
- Improve sightlines
- Signalize
- Slow turning drivers
- Add high visibility markings





Transition to Bike Lane

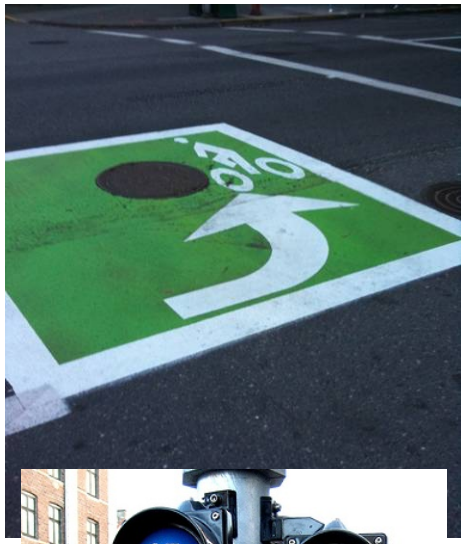
Transition to Bike Lane with Bike Box

Merging Area

Cycle Track Intersection Approach—Merging Area

New York City

Left Turns from Cycle Tracks



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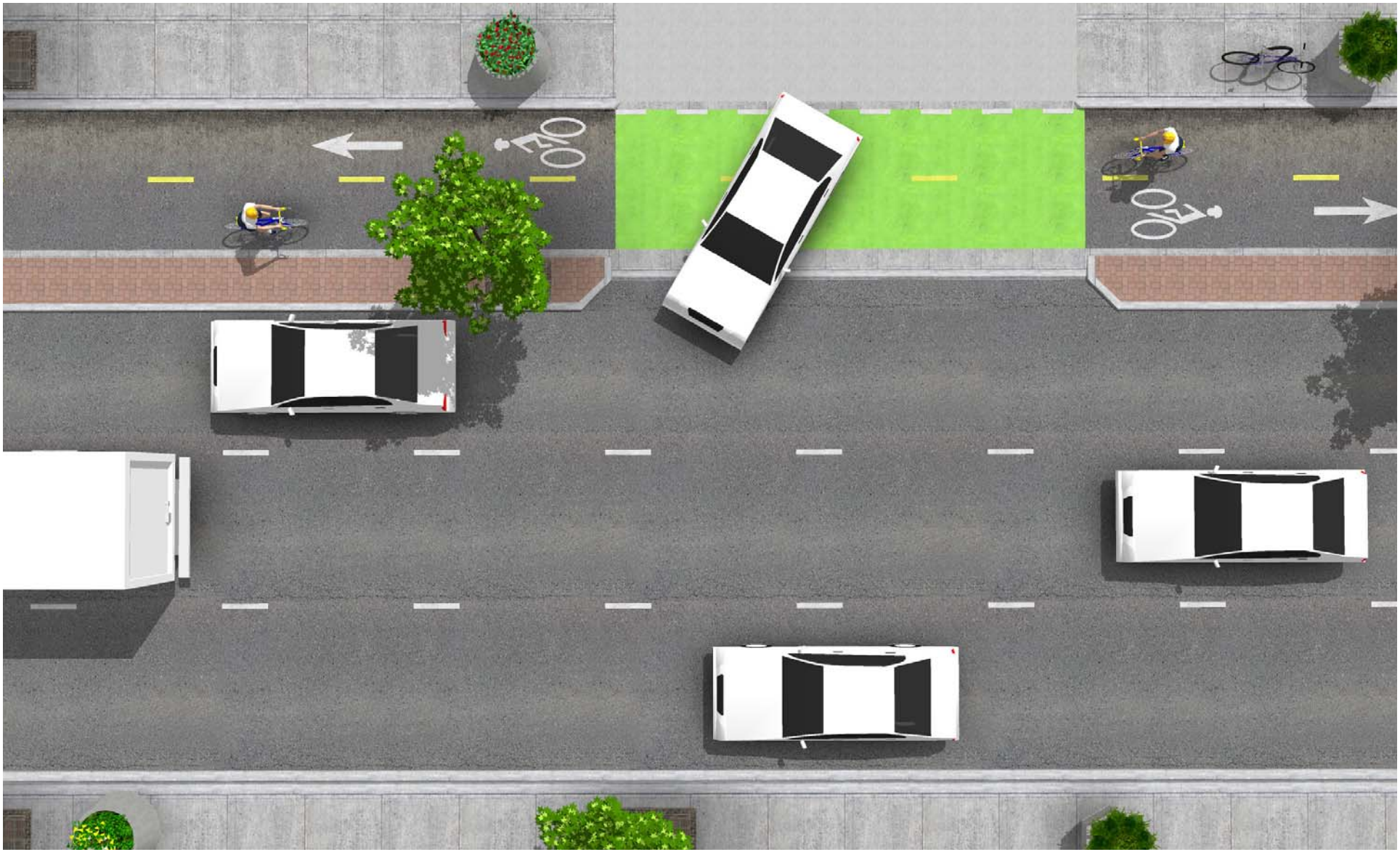
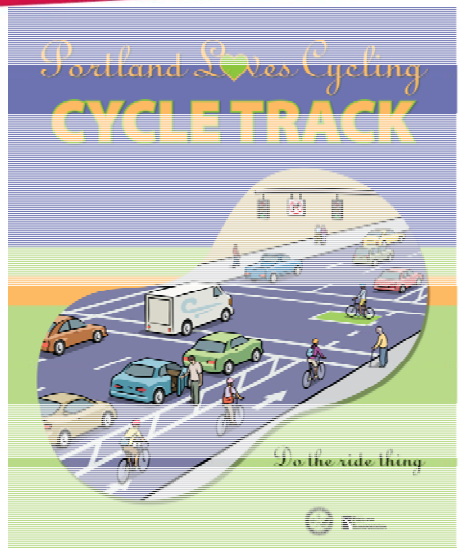
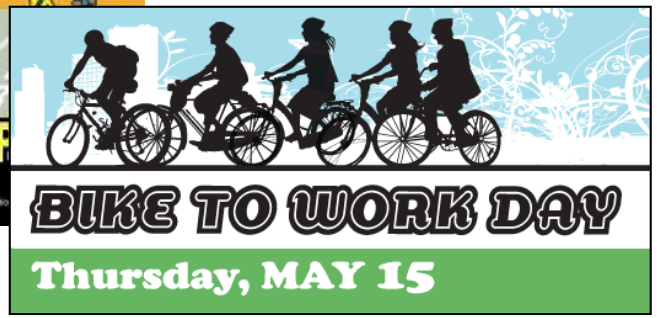
Driveway Crossing Treatments



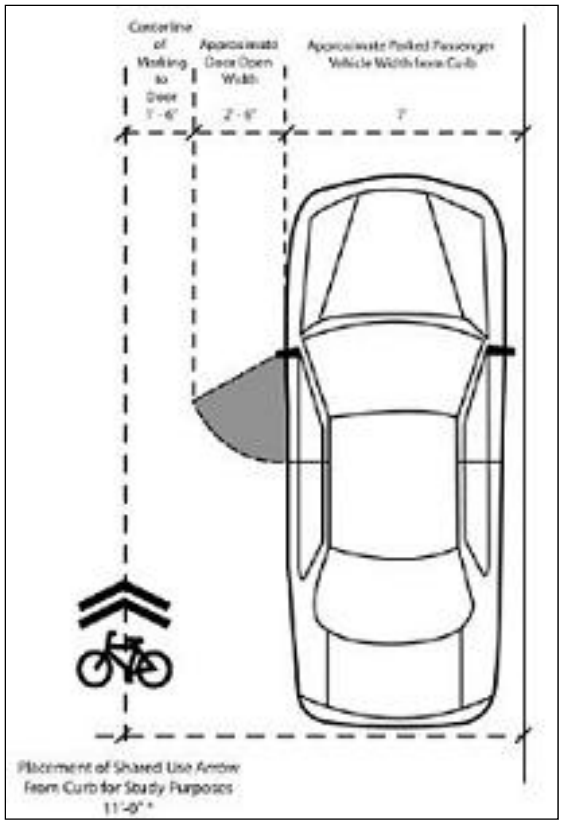
Prevent Poor Design

Education & Outreach





Other Treatments/Measures: Shared Lane Markings (sharrows)



Contraflow Bike Lanes

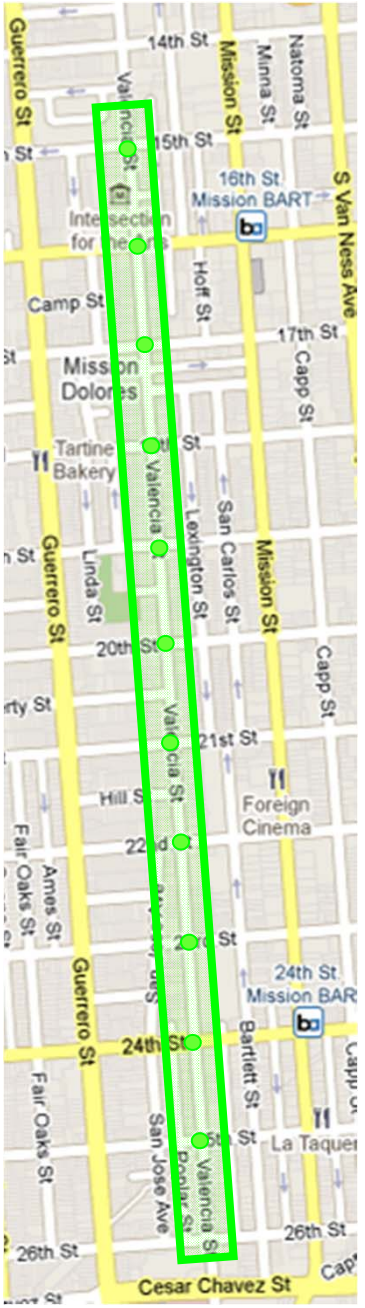
Scott Street Bike Box and Left Turn Lane

Colored Bicycle Facilities

- **Higher Visibility**
- **Marketing/Branding**
- **However, cost is 5x to 10x cost of regular bike lane/marking**

Valencia Green Wave

- Signals timing set to 13 mph progression at 11 intersections
- One of SF's highest-use bicycle corridors (700 cyclists during 1.5 hour count – up from 220)
- Parallel corridors ideal for transit (Mission) and automobile traffic (Guerrero)
- SF's complex grid and topography limit where green waves can be implemented



Pavement to Parks - “Parklets”

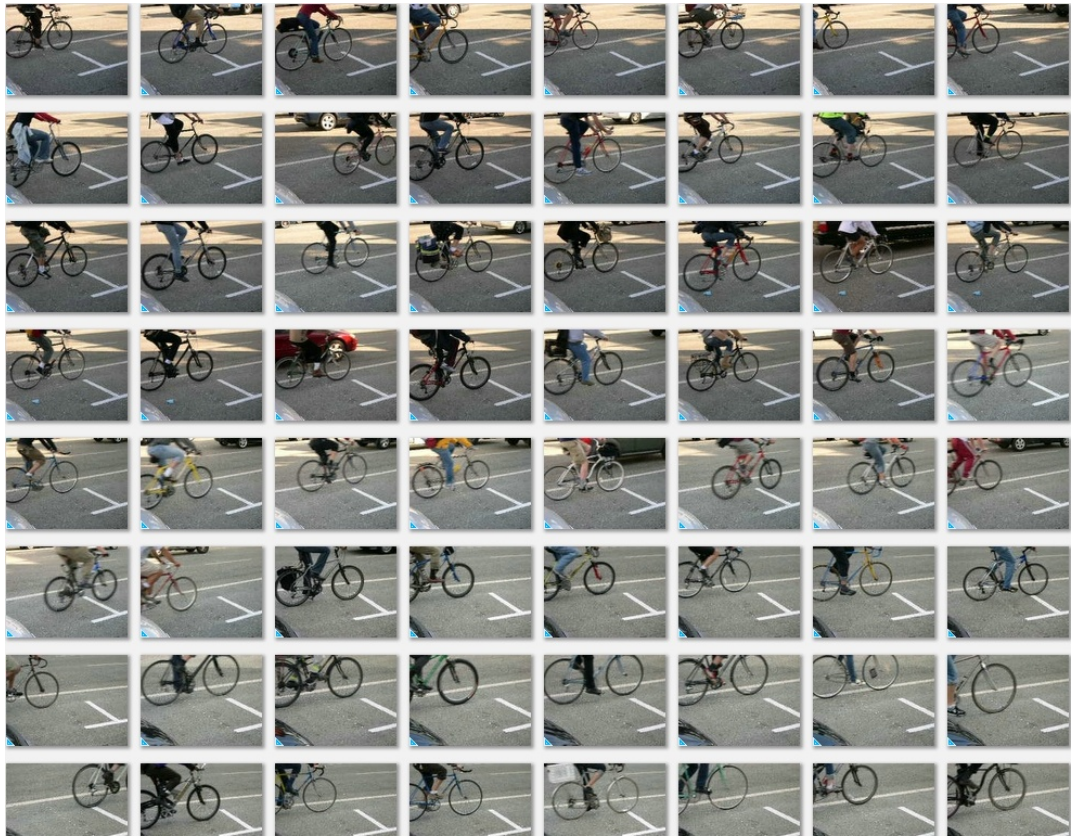
Car parking spaces converted to ped/bike uses

Good for business!

On-Street Bike Parking/Corrals

1 car space
=
10 to 12 bike spaces

Dooring Treatments and Intersection Designs



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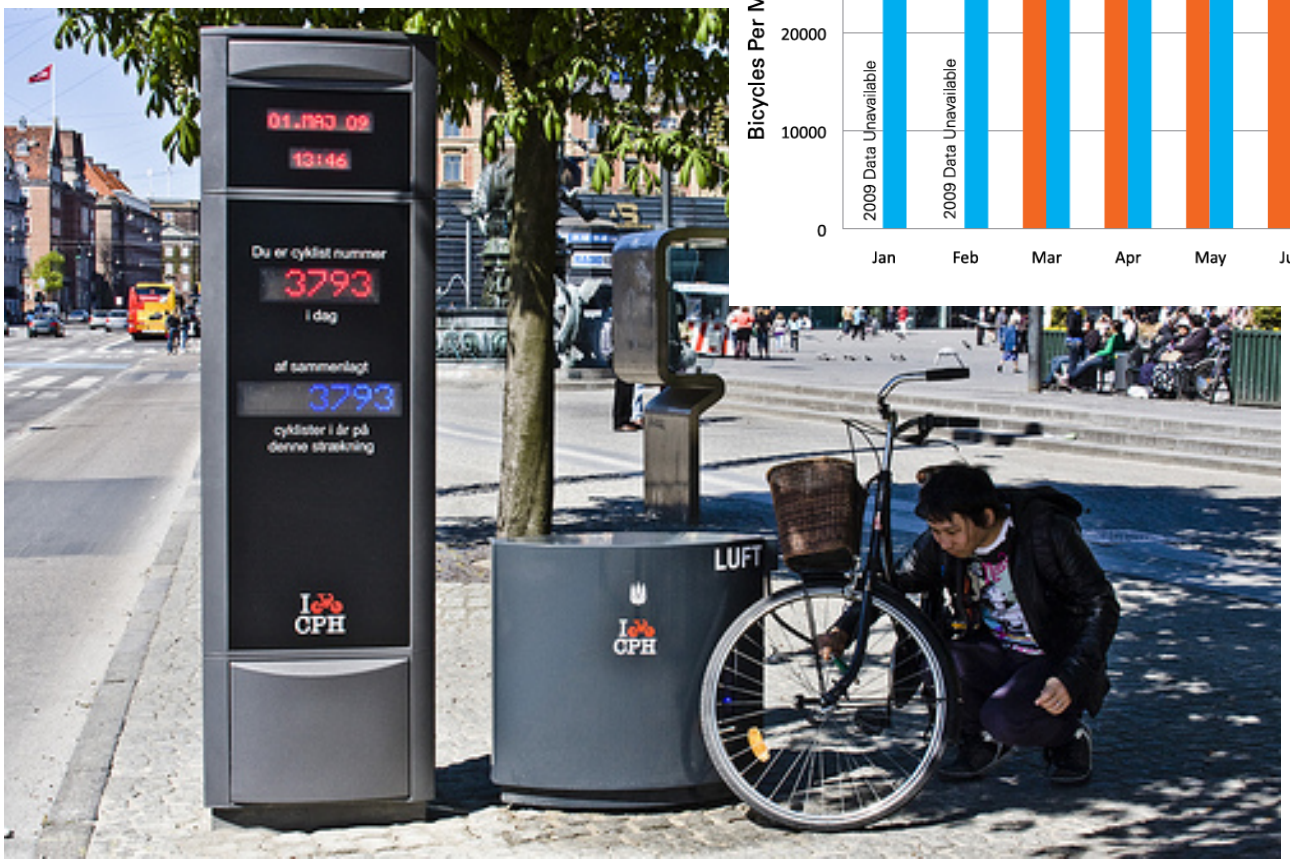
Lower Speed Limits and Prevailing Speeds

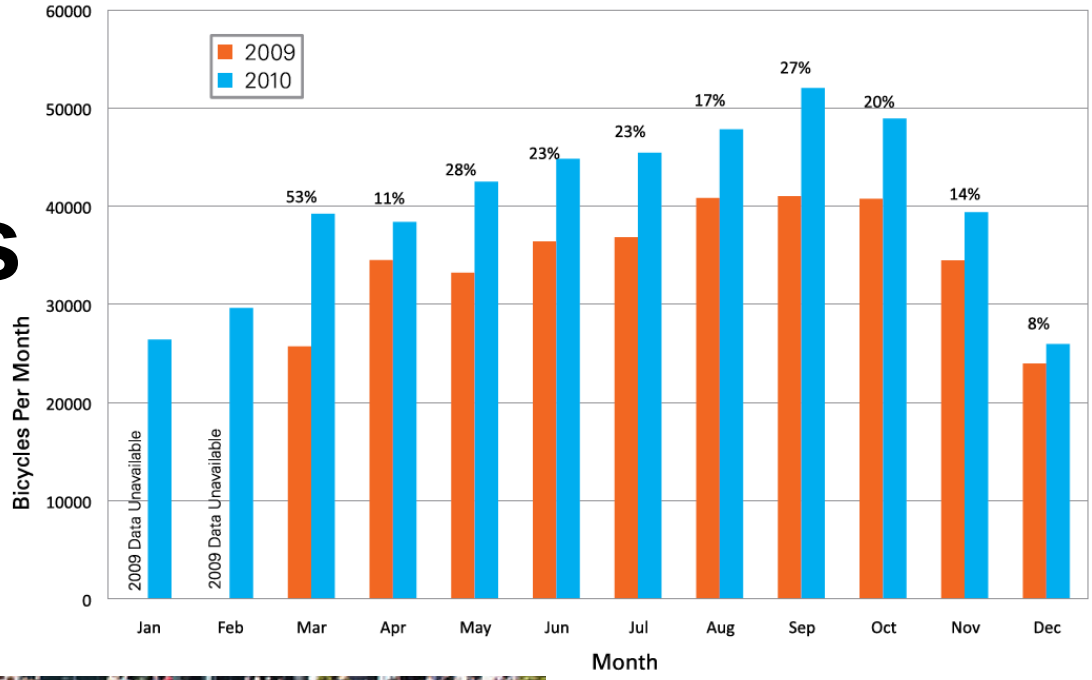
Bike Routes, Home Zones, School Zones, Neighborhood Arterials

<u>Recently done or underway:</u>

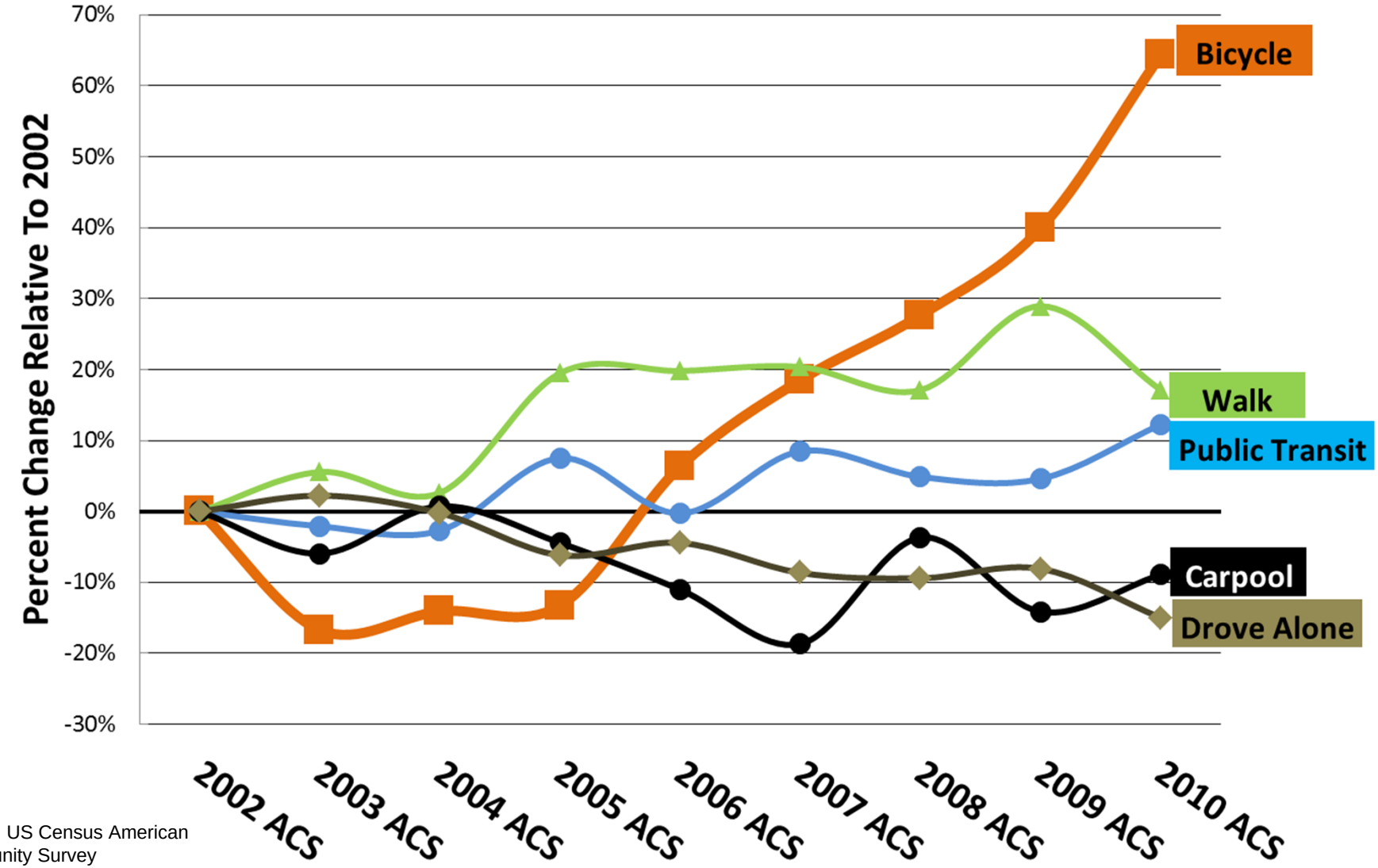
Masonic Avenue
Folsom Street
Howard Street
King Street
The Embarcadero
John Muir Drive
Broadway Tunnel

Automatic Bike Counters





Changes in Mode Share in SF



Source: US Census American Community Survey

Thank you!

Q/A…