

The BRT Complete Street: How BRT and Bicycles can Coexist

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Bus & Paratransit Conference



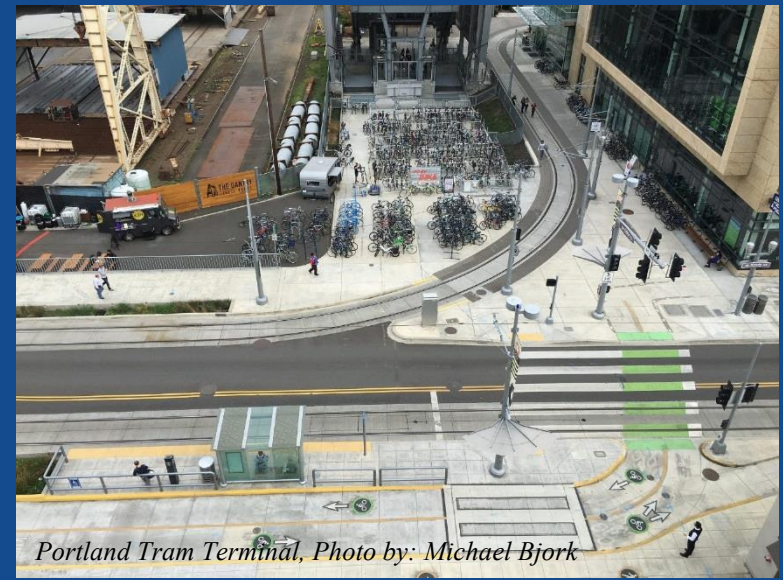
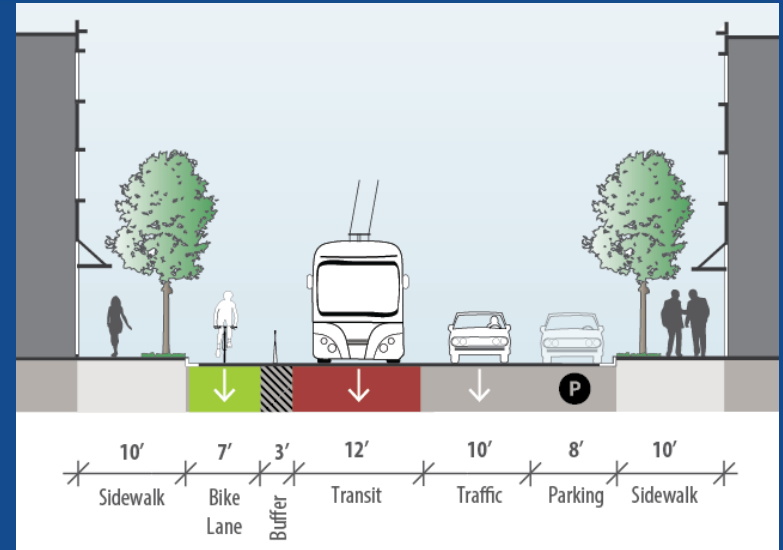
The BRT Complete Street Presentation Overview

1. Benefits of bicycle facilities along BRT routes
2. Example of BRT with Bicycle Facilities in Seattle
3. Design approaches for bicycle facilities alongside BRT



BRT Complete Street Benefits

- BRT projects affect all street users
- Bicycle facilities can be mutually beneficial
- Bicyclists are often transit riders



Roosevelt High Capacity Transit Corridor, Seattle, WA

- RDHCT Corridor identified as a top priority in the 2012 Seattle Transit Master Plan
- Connects Downtown, South Lake Union, Eastlake, U District, Roosevelt, and Northgate
- Identified in Move Seattle Levy as a RapidRide (BRT) corridor



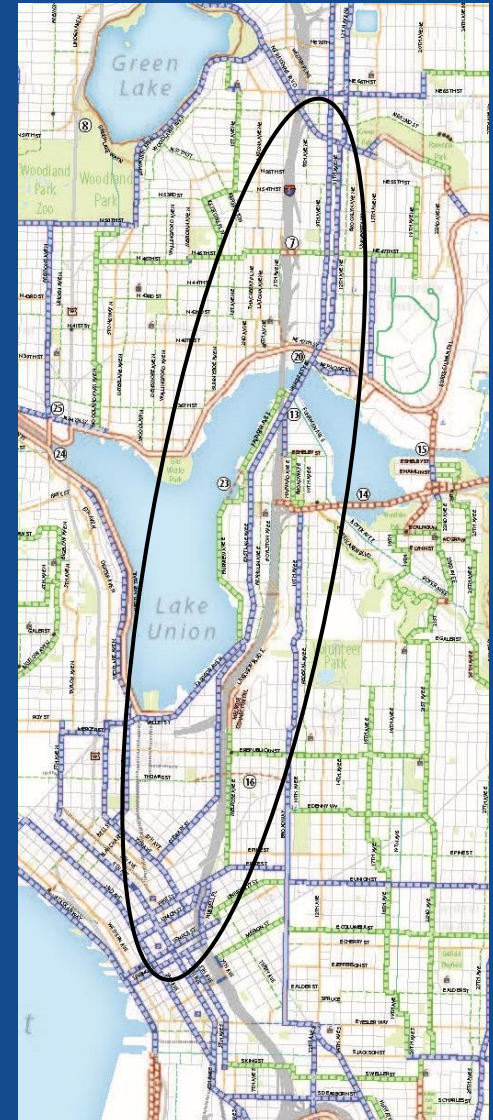
Roosevelt High Capacity Transit Corridor, Seattle, WA



- Mode: BRT or Rapid Streetcar
- Purpose and Need
- Design Alternatives

Roosevelt High Capacity Transit Corridor, Seattle, WA

- Mode Priorities
 - Transit
 - Planned Bicycle Facilities
 - Pedestrian
 - Automobiles
 - Freight
 - Curb Use



Roosevelt High Capacity Transit Corridor, Seattle, WA

- Community Input Process
 - Speedier transit
 - Protected bicycle lanes
 - Parking and loading zones



BRT and Bicycle Design Considerations

- BRT
 - Prioritize Transit wherever possible
 - Dedicated lanes through congested areas
- Bicycle facilities
 - Design for all ages and abilities
 - Safe station interaction
 - Complete street principles



The BRT Complete Street Design Guidance

- Local Design Manual
- NACTO Guidance

The screenshot shows the NACTO website interface for the Transit Street Design Guide. At the top left is the NACTO logo, a menu icon, and a search icon. The text 'National Association of City Transportation Officials' is displayed on the right. Below the navigation bar, there is a 'Transit Street Design Guide' title with a small icon, a green 'PURCHASE GUIDE' button, and a 'GUIDE NAVIGATION' dropdown menu. The main content area features six thumbnail images with labels: 'Introduction' (a street with a red transit lane), 'Transit Streets' (a street with a red transit lane and a bus), 'Stations & Stops' (a transit station with a shelter), 'Station & Stop Elements' (a transit station with a shelter and a map), 'Transit Lanes & Transitways' (a street with a red transit lane and a bus), and 'Intersections' (a street intersection with a red transit lane and a bus).

Recommended Corridor Concept – Transit Improvements

- Based on Targeted Investment Approach to BRT
 - Full BRT too capital intensive
- TSP
- Bus lanes
- Queue jump lanes at congested intersections



Recommended Corridor Concept – Bicycle Facilities

- Continuous all ages and abilities route
- Bicycle facilities for 100% of corridor
 - Two-way protected bike lanes
 - Protected bike lanes
 - Sharrows (with Parallel route)



NACTO: Two-way Protected Bike Lane

Design Guidance

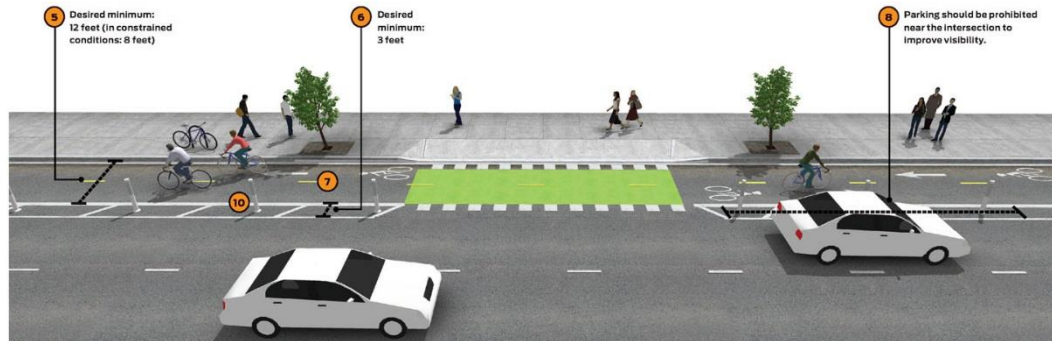
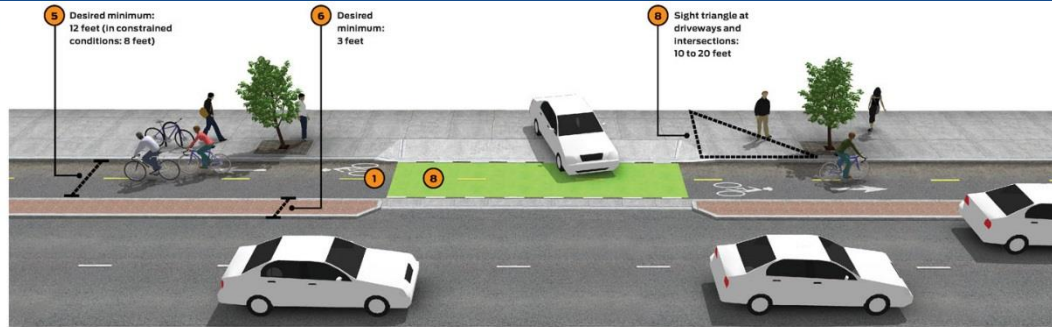
Two-Way Cycle Track

Required Features

- 1 Bicycle lane word, symbol, and/or arrow markings (MUTCD Figure 9C-3) shall be placed at the beginning of a cycle track and at periodic intervals along the facility to define the bike lane direction and designate that portion of the street for preferential use by bicyclists.
- 2 If configured on a one-way street, a "ONE WAY" sign (MUTCD R6-1, R6-2) with "EXCEPT BIKES" plaque shall be posted along the facility and at intersecting streets, alleys, and driveways informing motorists to expect two-way traffic.
- 3 A "DO NOT ENTER" sign (MUTCD R5-1) with "EXCEPT BIKES" plaque shall be posted along the facility to only permit use by bicycles.
- 4 Intersection traffic controls along the street (e.g., stop signs and traffic signals) shall also be installed and oriented toward bicyclists traveling in the contra-flow direction.

Recommended Features

- 5 The desirable two-way cycle track width is 12 feet. Minimum width in constrained locations is 8 feet.⁴²
- 6 When protected by a parking lane, 3 feet is the desired width for a parking buffer to allow for passenger loading and to prevent dooring collisions.⁴³
- 7 A dashed yellow centerline should be used to separate two-way bicycle traffic and to help distinguish the cycle track from any adjacent pedestrian area.
- 8 Driveways and minor street crossings are a unique challenge to cycle track design. A review of existing facilities and design practice has shown that the following guidance may improve safety at crossings of driveways and minor intersections:
 - If the cycle track is parking protected, parking should be prohibited near the intersection to improve visibility. The desirable no-parking area is 30 feet from each side of the crossing.⁴⁴
 - For motor vehicles attempting to cross the cycle track from the side street or driveway, street and sidewalk furnishings and/or other features should accommodate a sight triangle of 20 feet to the cycle track from minor street crossings, and 10 feet from driveway crossing.
 - Color, yield lines, and "Yield to Bikes" signage should be used to identify the conflict area and make it clear that the cycle track has priority over entering and exiting traffic.⁴⁵



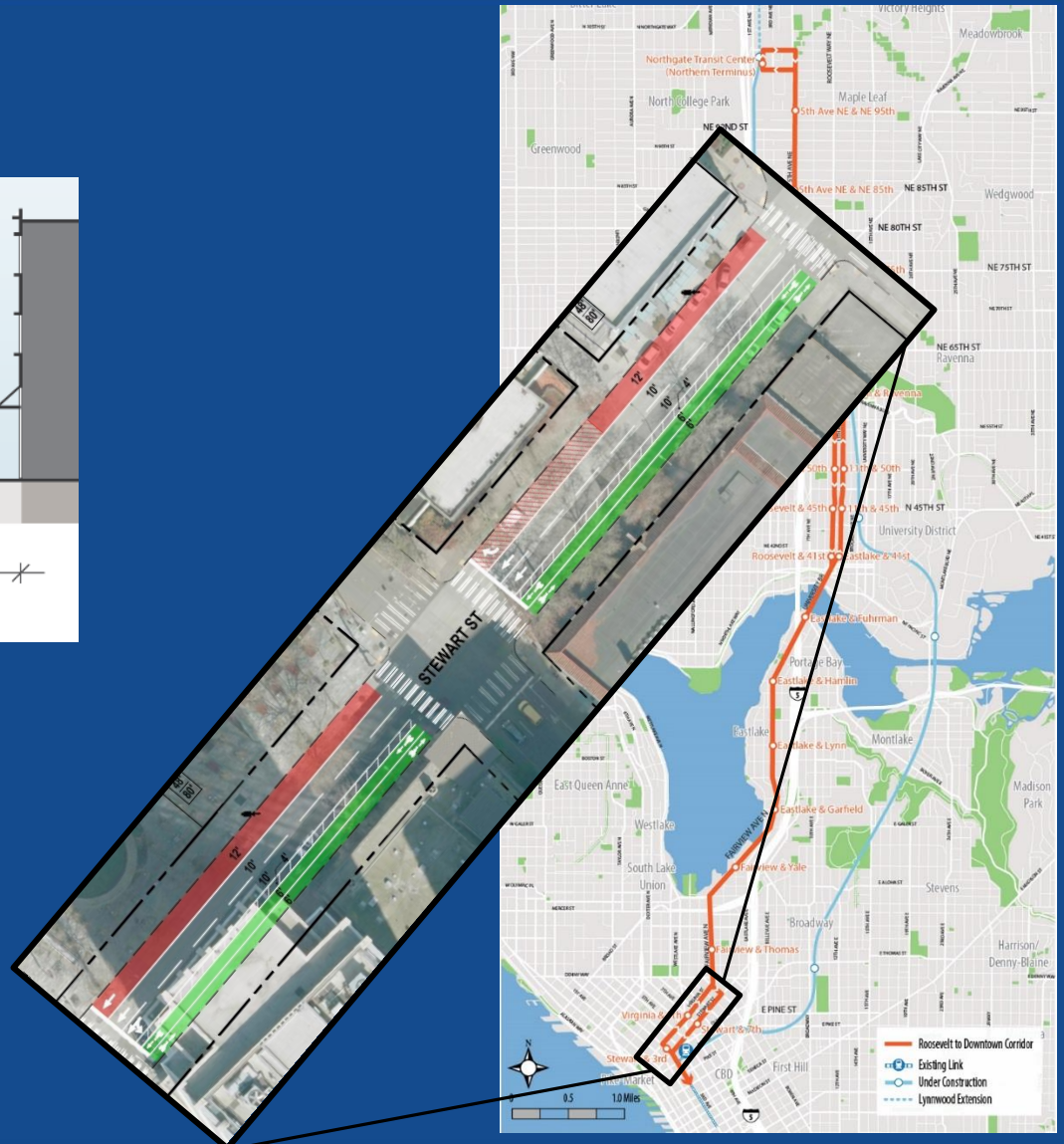
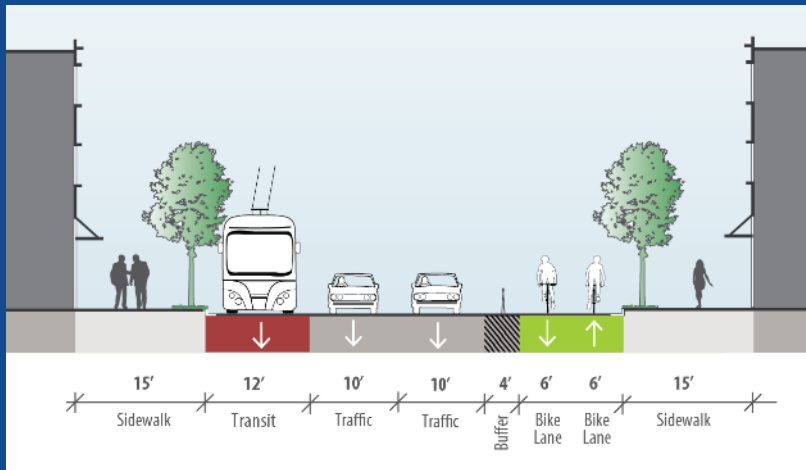
New York, NY

NACTO Transit Street Design Guidelines



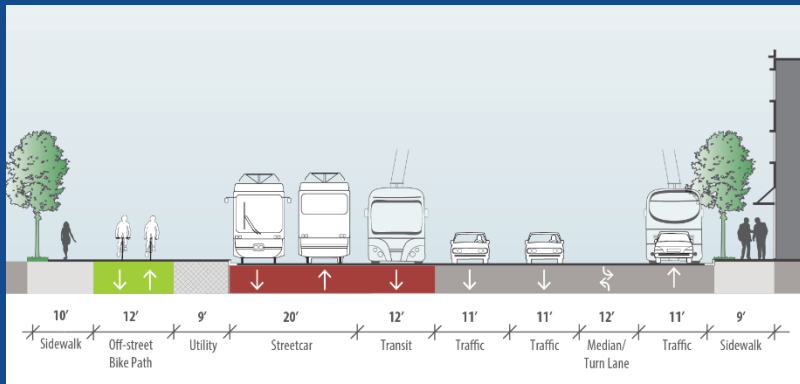
Two-way Protected Bike Lane

Stewart Street

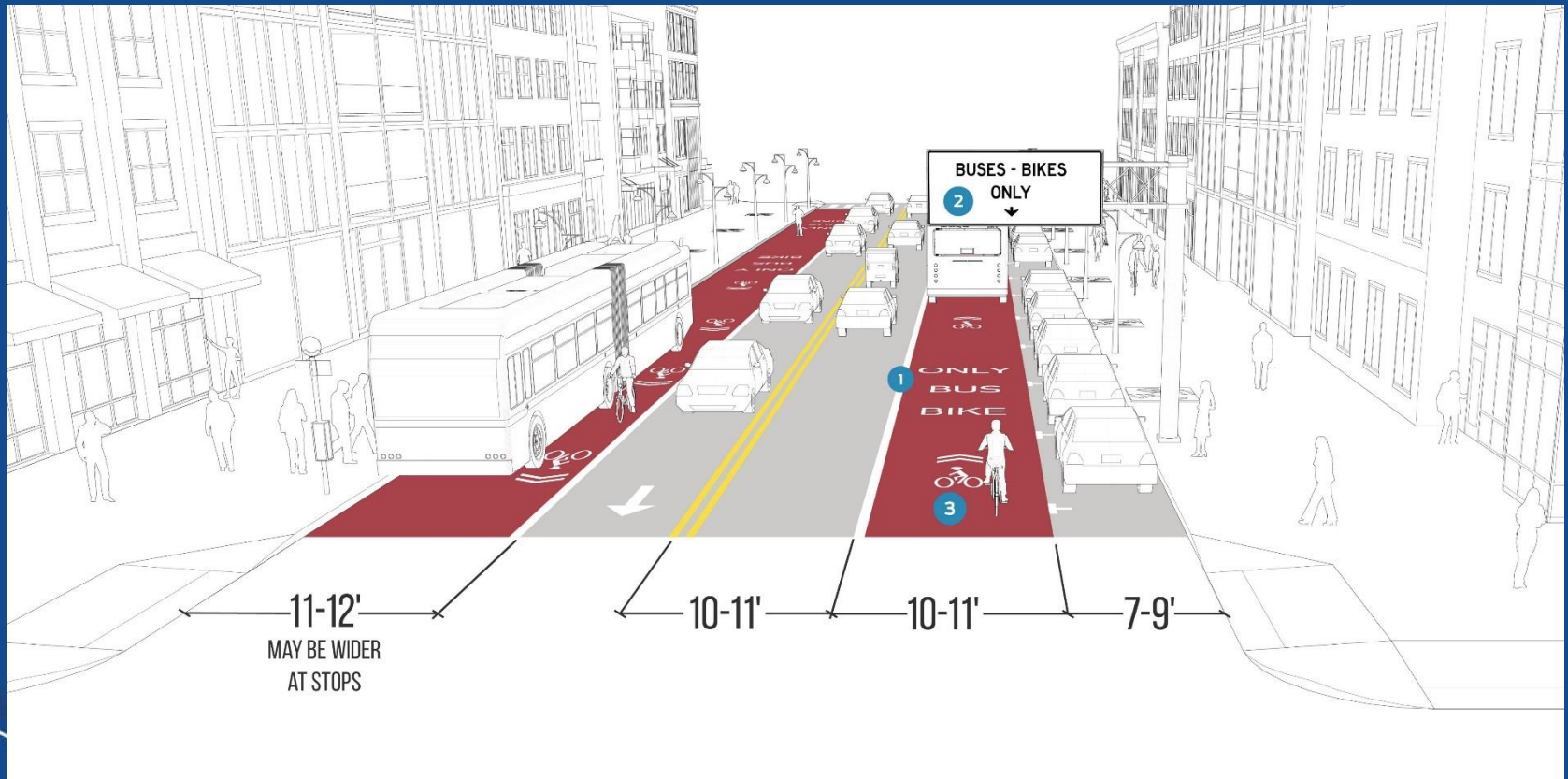


Two-way Protected Bike Lane

Fairview Street at Aloha

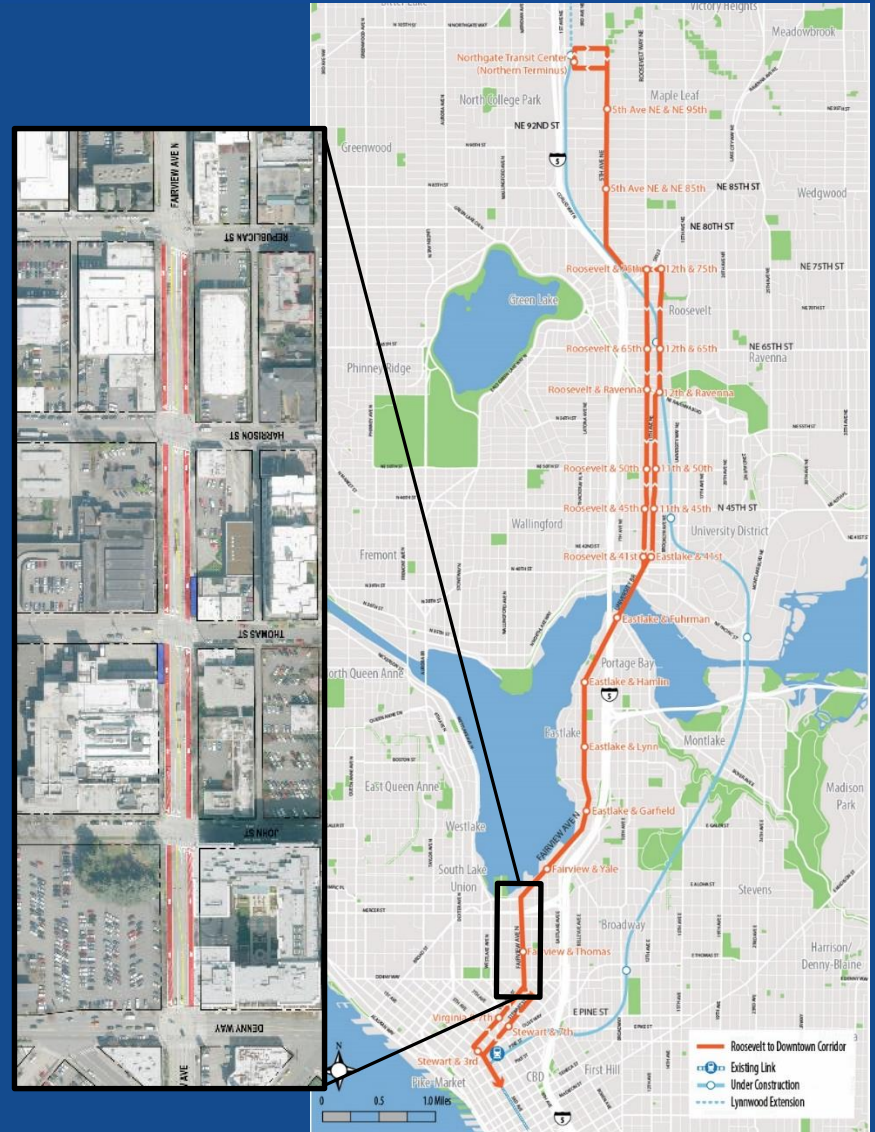
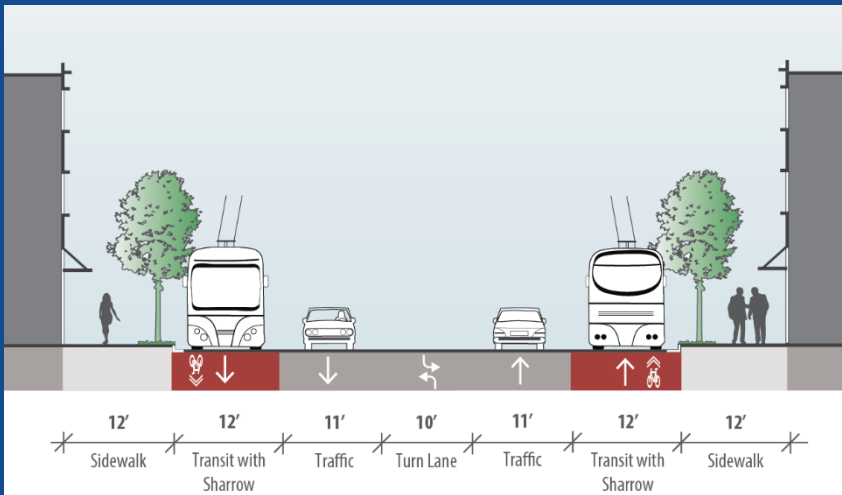


NACTO: Transit Lane with Sharrow



Transit Lane with Sharrow

Fairview Street at Harrison



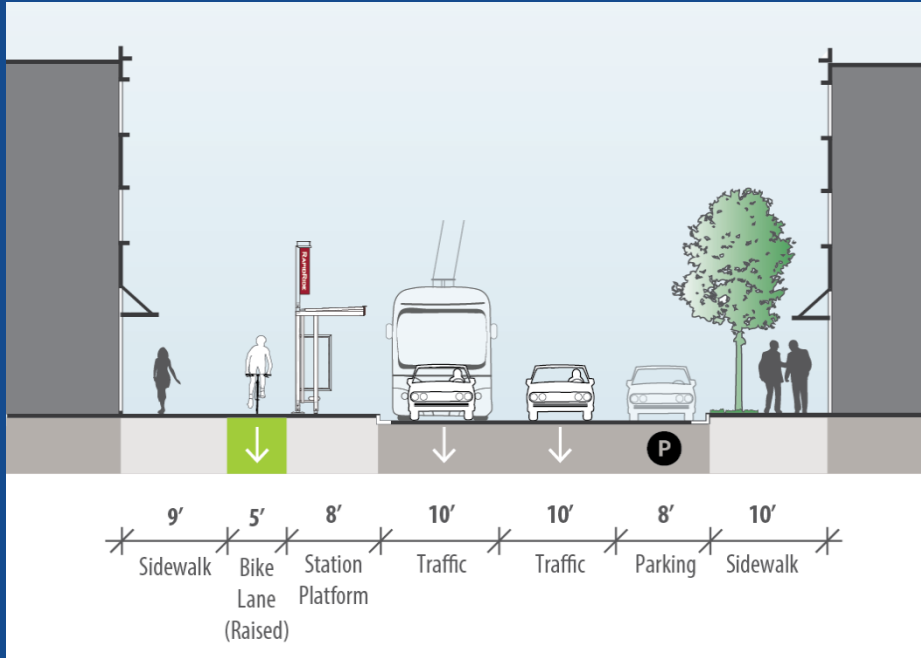
NACTO: Intersections and Transit Stops

- Principles:
 - Minimize person delay, maximize safety
 - Prioritize for Reliability
 - Signal upgrades and dedicated lanes
 - Separate Problematic Movements

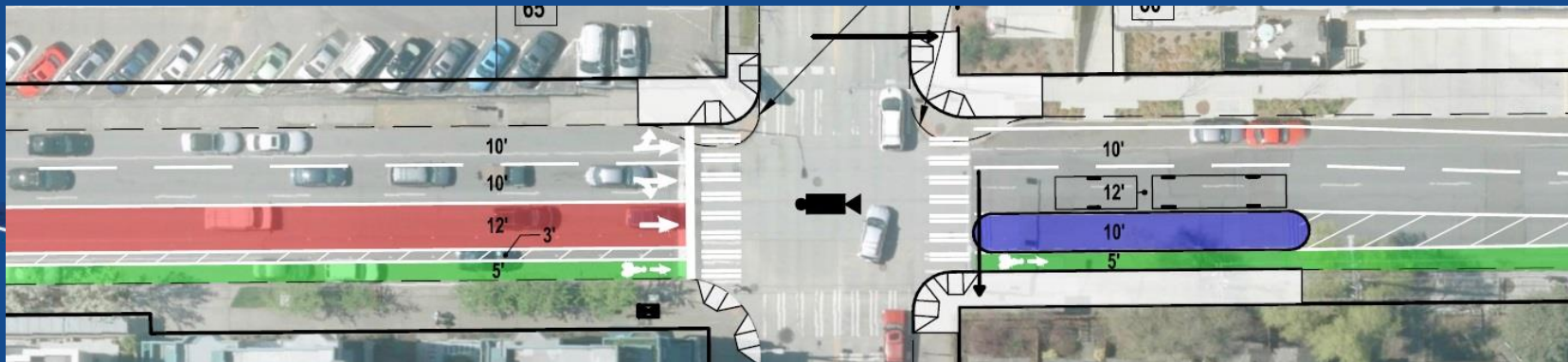


Washington Street, Chicago: Photo by J. Greenfield

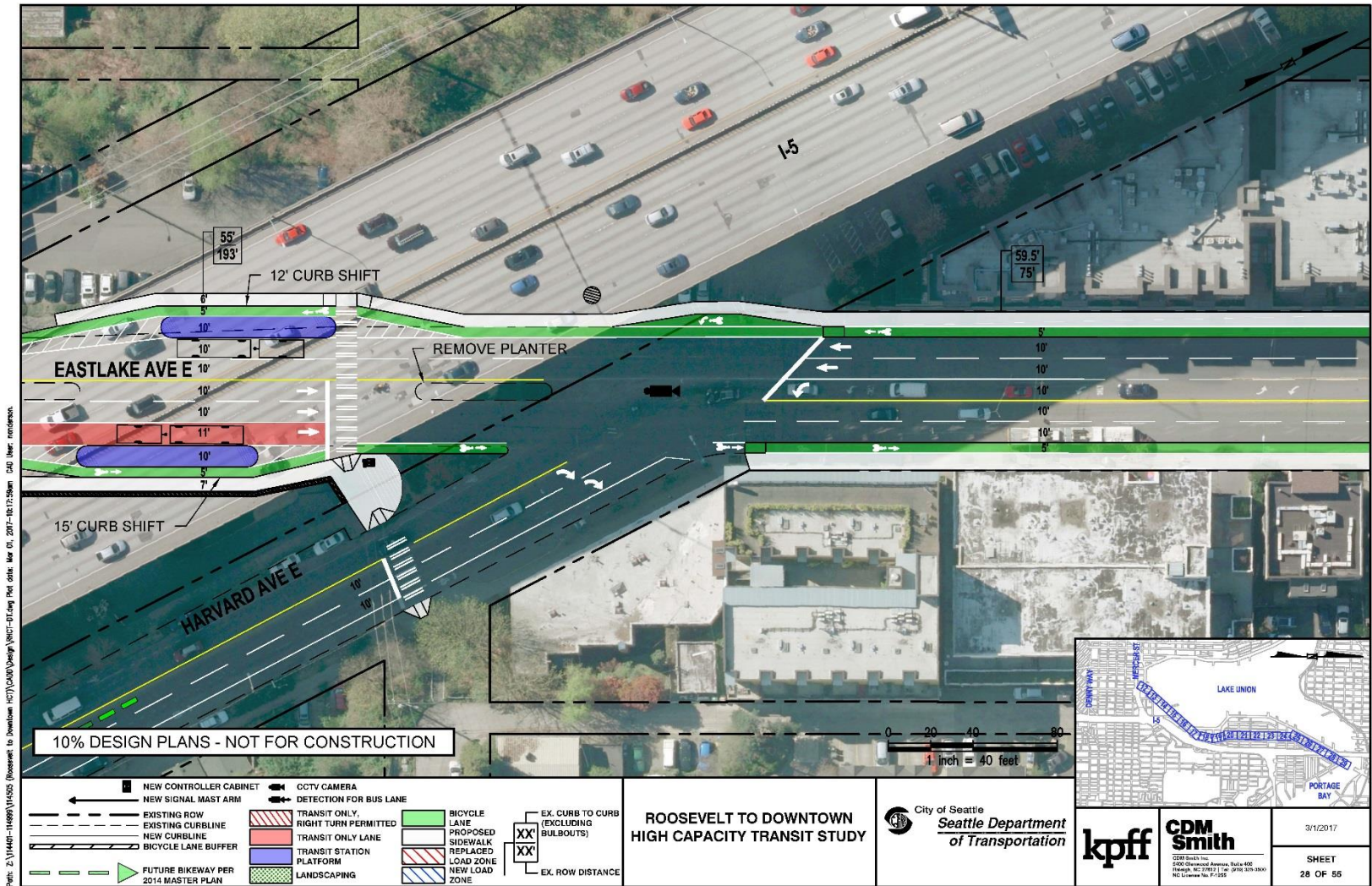
Intersections and Transit Stops



Washington Street, Chicago

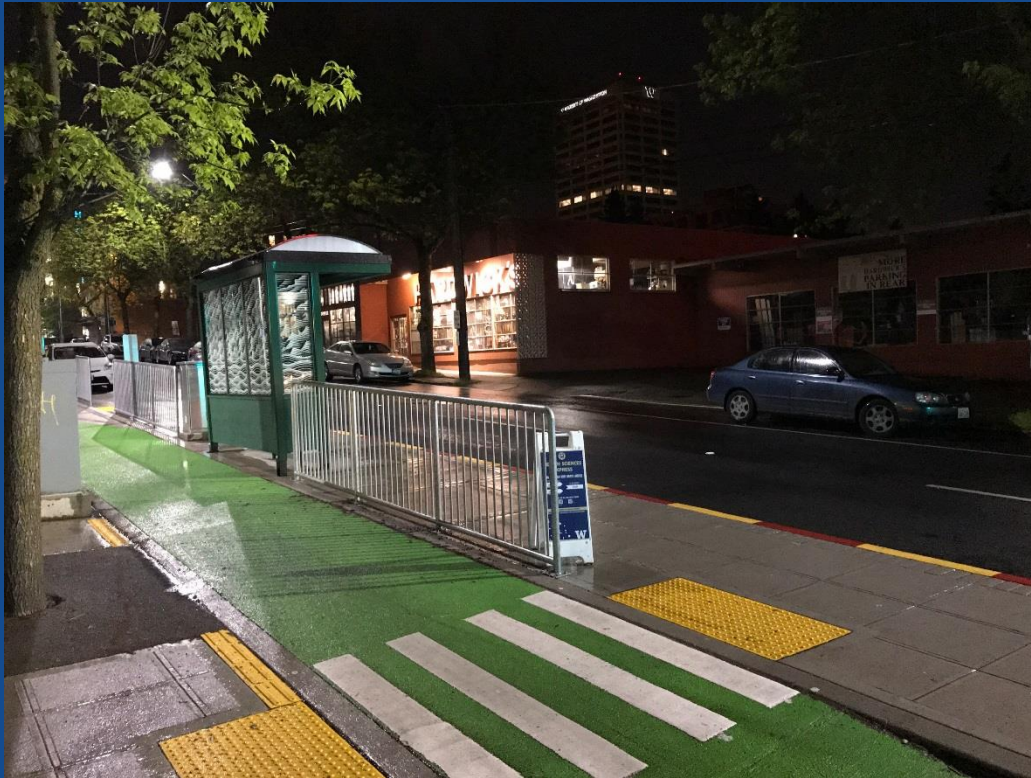


Intersections and Transit Stops



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