New Technology in Bicycle Facilities

SCAG Bikeways Toolbox for ATP
Rock Miller, PE
Stantec Consulting
949-923-6021
Rock.Miller@stantec.com
Starting Points

• Your Agency Bike Master Plan
• A good map
• Your Existing Infrastructure
• A modern Design Guide
  • NACTO is on-line
Bike Route (Class III) Treatments
Bicycle Boulevard

- Minor Street Modified to Suit Bicycling
- Low Auto Traffic and Speeds
- Traffic Controls Optimized for Bicycling
Bicycle Boulevards

• Portland, Berkeley, Palo Alto and others
• Parallel to Important Routes
• Appealing to All Classes of Users
• Residents enjoy Traffic Calming
• Alternate Name: Neighborhood Greenways
Good Candidates

- Long Continuous Back Streets
- Streets that have a history of traffic calming needs
- Under 3000 cars per day upon completion
- Provide access to cycling destinations
- Easy to find in grids, but may be found in newer layouts
Compact Roundabout, Long Beach
Compact RAB, Austin TX
Rain Garden, Portland OR
Rain Garden Inlet
Bicycle Lanes

- Can Often Fit on Existing Roadways
- Increase Confidence for Bicyclists
- Increase Certainty for Motorists
- Shall be One Way Facilities
- Less Attractive above 40 mph
Bike Lane (Class II) Treatments

• Restripe to Narrow Lanes
• Prohibit Parking, if Possible
• Tailor to Existing Funding Sources
• Look for Road Diets
  • Work well on 60-64 foot streets
  • Width common in So. Cal.
• Well-suited for 4-lane Undivided
Bike Lane Widths

- 5 ft (1.5m) beyond marked parking stalls
- 4 ft (1.2m) beyond pavement edge
- 3 ft (.9m) beyond gutter
Doororing

• Bicycle Collision with Opening Car Door
• Great Potential for Injury to Bicyclists
• Underscores need for Adequate Width
Bike Lanes with Parking

- 12 ft (3.6m) minimum, may pose Dooring risks
- 13 ft (3.9m), more desirable
- 14 ft (4.2m): Most can ride outside door zone
- More parking activity = greater width
  - Some advocacy groups are opposed to bike lanes due to frequent inadequate width
- No Definitive Study, but evidence suggests even narrow lanes may reduce door risk compared to no lanes.
Bicycle Lane Striping

- Generally adhere to width standards
  - Six-inch wide white stripe
  - Skip approaching intersections
- Use care in intersection treatments
Green has “Interim Approval” for Use Now
Green Bike Lane

- Green Paint or Coatings in Conflict Areas have FHWA Interim Approval
  - Anyone can Use
  - Must Notify Caltrans
  - $3-6 / sf
Green Lane Treatments

Green must be bounded by white at this time
Green Lane Treatments

These treatments do not meet Current Standards. Green must be bounded by white.
Colored Bike Lane

- Continuous Non-Green Coloring Allowed as Architectural Treatment, not for Traffic Control
Lane Lines Across Intersections

Now Allowable in CA
Lane Lines Across Intersections

- Copenhagen
Left Side Bicycle Lanes

• Formerly not Allowed by Design Guides.
• On One Way Streets
• Now in CA MUTCD
  • Sacramento, CA
Buffered Bicycle Lanes

• Now Standard and Allowable in California
• Need 8 ft or More to use effectively
Buffered Bicycle Lanes

Buffer between bicycle lane and general purpose lane where vehicle parking is permitted.

- 50 ft to 200 ft See Figure WC-101 (CA)
- Centerline or Lane Line
- 5 in Solid White Line
- 6 in Dotted White Line
- 4 in White Markings

Without marked parking stalls:
- Curb or edge of pavement
- 4 in White Markings (Optional)

With marked parking stalls:
- White chevrons or diagonal markings should be used if buffer area is 4 feet or wider. See Note
- 4 in White Markings

Note: 18 in Minimum for Buffered Area Width. The Buffer Area Width includes the width of the parallel White Lines

NOT TO SCALE

Stantec
Contraflow Bicycle Lanes

Figure 9C-105 (CA), Example of Contraflow Bicycle Lanes
Difficult Locations

- Optional Turn Lanes
- Trap Turn Lanes
  - Both Require Bikes to Weave to continue Straight
Floating Lane, San Francisco

- Useful when 15+ feet is available for parking and peak hour traffic lane
  - Bike lane next to curb when lane is in use
  - Bike lane next to parking when parking is allowed

“Floating Bike Lane” when no parking is allowed The Embarcadero, Harrison to Howard Streets.
Floating Lane Overhead Sign

• Lexington, KY
Median Bikeways

• Requires control of all turns across Bikeway or low volume roadway
Bicycle Box

• Long Beach, CA
• Requires Federal and State Demonstration Approval
• Many Experiments Underway in the U.S.
• Possible MUTCD 2017
Bike Boxes

Victoria, BC

Auckland, NZ
Class IV Treatments

- Cycle Tracks
- Separated Bikeways
- Protected Bikeways
9th Avenue, New York City

- Bike lane along left side (avoids transit)
- Left turn signals + bicycle signals
  - Reduces conflicts between cyclists and turning vehicles (also pedestrians)

Project won ITE Award in 2008
No Federal demonstration status
Long Beach, CA

- One or two way cycling
- Works well on downtown One Way Streets
- Curbs, planters, parking, etc
- Must be able to sweep
- $30k per Signal intersection for poles and bike signals
Montreal Cycle Track
Montreal Traffic Control
Vancouver Cycle Track

- Street closed to cars to allow outdoor dining on cycle track on weekends.
Calgary AB
Cycle Track Opportunities

- Temple City, CA
- Street wide enough for 6 lanes
- Traffic only needs 4 lanes
- Minimal Driveways
- Landscape and new pavement can get expensive ($20/sf)
Cycle Track Opportunity

• Street narrowed to make room for Cycle Track
• Redondo Beach CA
  • Connects Hermosa Beach to Redondo Beach Pier
  • Open Spring 2015
Questions