Lessons from a Short Term Deployment of Protected Bike Lanes

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Western District ITE
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“I cannot give you a sure-fire formula for success, but I can give you a formula for failure: Try to please everybody all the time.”

- Herbert Bayard Swope, American Journalist and Editor
Presentation Outline

• Background
• Installation
• Analysis and findings
• Follow up
Ada County Highway District

- Single purpose, countywide road district
- Independently governed
- 2200 roadway miles to maintain
- 220 miles of “conventional” on-street bike lanes
How Did We Get Here?

- Study of Downtown Boise (DBIP) – 2012/13
  - Strong public and stakeholder support
  - Bicycle needs
- “Walkability” study from redevelopment agency – 2013
- Boise City encouraged approval for bicycle network
- ACHD wanted broader public input and operational testing
Stakeholder Input

• Public meetings
  – Bike lanes only a small part of process

• Tight timeframe

• Limited stakeholder interaction

• Preferred longer deployment
## Boise Bikes

**Source:** League of American Bicyclists

### Population: 200,000 to 300,000

<table>
<thead>
<tr>
<th>City</th>
<th>Population</th>
<th>% Bike Commuters</th>
<th># of Bike Commuters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madison, WI</td>
<td>245,674</td>
<td>5.2%</td>
<td>12,323</td>
</tr>
<tr>
<td>Boise, ID</td>
<td>216,280</td>
<td>3.2%</td>
<td>6,916</td>
</tr>
<tr>
<td>Huntington Beach, CA</td>
<td>201,304</td>
<td>1.9%</td>
<td>3,616</td>
</tr>
<tr>
<td>Richmond, VA</td>
<td>217,053</td>
<td>1.9%</td>
<td>4,006</td>
</tr>
<tr>
<td>Arlington, VA</td>
<td>226,908</td>
<td>1.8%</td>
<td>4,018</td>
</tr>
<tr>
<td>St. Paul, MN</td>
<td>297,644</td>
<td>1.5%</td>
<td>4,455</td>
</tr>
<tr>
<td>Rochester, NY</td>
<td>209,974</td>
<td>1.5%</td>
<td>3,150</td>
</tr>
<tr>
<td>Gilbert, AZ</td>
<td>235,282</td>
<td>1.3%</td>
<td>3,045</td>
</tr>
<tr>
<td>Lincoln, NE</td>
<td>273,002</td>
<td>1.3%</td>
<td>3,638</td>
</tr>
<tr>
<td>Chandler, AZ</td>
<td>254,275</td>
<td>1.1%</td>
<td>2,831</td>
</tr>
<tr>
<td>Irvine, CA</td>
<td>240,520</td>
<td>1.0%</td>
<td>2,405</td>
</tr>
<tr>
<td>Scottsdale, AZ</td>
<td>230,502</td>
<td>1.0%</td>
<td>2,303</td>
</tr>
<tr>
<td>Glendale, AZ</td>
<td>231,529</td>
<td>1.0%</td>
<td>2,319</td>
</tr>
<tr>
<td>Oxnard, CA</td>
<td>205,424</td>
<td>0.9%</td>
<td>1,856</td>
</tr>
<tr>
<td>Buffalo, NY</td>
<td>251,699</td>
<td>0.9%</td>
<td>955</td>
</tr>
<tr>
<td>Norfolk, VA</td>
<td>245,428</td>
<td>0.9%</td>
<td>1,072</td>
</tr>
</tbody>
</table>
Key Bicycle Network Considerations

- Downtown/neighborhood connectivity
- Traffic speeds
- Strong support for adding additional bicycle lanes
Test Network

Capitol Blvd.
Main St.
Idaho St.
Capitol Blvd.
Capitol Blvd.

- Four northbound lanes, 11’-14’ lane widths
- Major river crossing
- Gateway to downtown
- Access to regional university (Boise State)
- 22000 ADT
- Posted 30 mph speed limit
Idaho St.

- Two/three lanes westbound, w/on-street parking
- “Town Center” arterial
- Major regional hospital at east end of corridor
- Largely commercial
- Two block on-street bus loading zone
- 5000 - 10000 ADT
- Posted 30 mph

Source: Google Maps
Main St.

- Two/three lanes eastbound lanes, w/on-street parking
- Major downtown arterial
- Regional hospital at east end of corridor
- Largely commercial, some residential
- 6000 - 11000 ADT
- Posted 30 mph

Source: Google Maps
Pilot Test Process

- Tight timeframe for installation
- Media and stakeholder “blitz”
- “All hands on deck”
- Extensive use of white tubular delineators
- Bike boxes
- Cost - $50,000
- Duration of test – five weeks
- Data collection
  - Bike counts
  - Travel time
Stripe Removal
Stripe Removal

- Old stripes
- New stripe
Technical Challenges

- Street irregularities
- End of route transitions
- Intersection conflicts
- “Advance bike box” compliance
- “Left turn queue box” placement and use
- “Floating” parking
- Bus stops
- Accessible parking spaces
- Deliveries
Cross Section Changes
Rudimentary Plan Set

CAPITOL BLVD. BUFFERED BIKE LANE CONCEPT PLANS
Begin/End Route Transitions

- Easy on Capitol, Idaho; tougher on Main
- Less “critical” for project
- Would need to be addressed in final implementation
Main St. Entry

Source: Google Maps
Idaho St. Entry

Source: Google Maps
Advance Bike Boxes

- NACTO guidelines
- Installed two with project
- “No Turn on Red” restrictions
- Not well respected
  - Driver compliance
  - Bicycles
The Good...
...and the Not So Good
Right/Left Turn Queue Boxes

• NACTO guidelines
• Installed 15 with project
• “No Turn on Red” for two of the corridors
• Some confusion on use
Look to the Delivery Guys!
Bus Stops

- Coordinated with transit agency
  - Needed curbside loading
  - Lane entry taper
- Still had to make adjustments during project
“Floating” Parking

Works well when substantially occupied

Doesn’t work as well when occasionally occupied
Data Collection

• No predetermined thresholds for success/failure
  – Bike counts, on and off street
  – Weather and school release
  – Travel time
    • 7-9am
    • 4-6pm
  – Manual/machine traffic counts
Peak Hour Volumes - Travel Time Summary

Comparing “Before” Conditions with “During” Conditions

<table>
<thead>
<tr>
<th>Volume Change</th>
<th>Travel Time Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capitol</td>
<td>Down 9%</td>
</tr>
<tr>
<td>Main &amp; Idaho</td>
<td>No Change</td>
</tr>
</tbody>
</table>

*Critical p.m. peak hour on Idaho found only a 7% increase in travel time
## Bicycle Observations

<table>
<thead>
<tr>
<th>Time</th>
<th>Avg Temp 7–9 AM/4–6 PM</th>
<th>% Counts in Rain</th>
<th>Bikes per Hr on Test Streets</th>
<th>% Bikes on Sidewalk on Test Streets</th>
<th>% Bikes Riding Wrong Way on Test Streets in Street</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before (April)</td>
<td>40°/63°</td>
<td>40%/27%</td>
<td>12</td>
<td>56%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>During</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During Test (May)</td>
<td>42°/69°</td>
<td>13%/13%</td>
<td>24</td>
<td>25%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>After</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After Test (July)</td>
<td>59°/92°</td>
<td>0%/0%</td>
<td>21</td>
<td>54%</td>
<td>7%</td>
</tr>
<tr>
<td>After Test (Sept)</td>
<td>56°/77°</td>
<td>0%/0%</td>
<td>22</td>
<td>56%</td>
<td>5%</td>
</tr>
</tbody>
</table>
Left Side Bike Lane
Bike Lanes and Bulb Outs
Bike Box Placement
Pilot Test Summary

- Poor transition into test area
- Short duration test, minimal painting
- Minimal intersection treatments
- Small increase in travel times – Main & Idaho
- Lane configuration critical on Capitol
- Cost: $50,000 installation; $10,000 removal
Lessons Learned

- Driveways, garage entrances are significant challenges
- Left side bike lane not desirable
- Laws/regulations need more scrutiny
- Business communication important
- Public concerns
  - 600 emails, 11,000 surveys
  - Green boxes confusing
  - Little use of bike lanes
  - Bikes don’t follow rules
  - Increased congestion
Epilogue – Capitol Blvd.

- Chip seal, summer 2015
- Buffered bike lane
- Bike box
- No additional on-street or “floating” parking

Source: Google Maps
Left Turn Queue Boxes
Advance Stop Bar
Bike Box Brochure

- Original by City of Portland, OR
- On site and website
- Handed out water bottles
  - At proposed location
  - Area grocery stores
- Effective marketing tool
Bike Box Compliance

- Compliance Study – Sept. 2015
  - Noon hour
- Obey bike box – 53%
- Obey “right turn on red” – 47%
- Bike count – 22 in lane, 21 on sidewalk
Epilogue – Main/Idaho Sts.

• 2016 - Initiated comprehensive study
  – Ongoing
  – Incorporate buffered elements
  – Transit considerations
  – Rethink left side bike lane

• Commission meeting July 6\textsuperscript{th}, 2016
  – Reconsideration request from Boise City
  – Deferred for now
Questions?

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