



Don't Give Up at the Intersection!

Implementing Protected Intersection Designs



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Presenters



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- 01 What is a Protected Intersection?
- 02 Benefits of Design Elements
- 03 Implementation Examples
- 04 Key Considerations
- 05 Resources
- 06 Takeaways



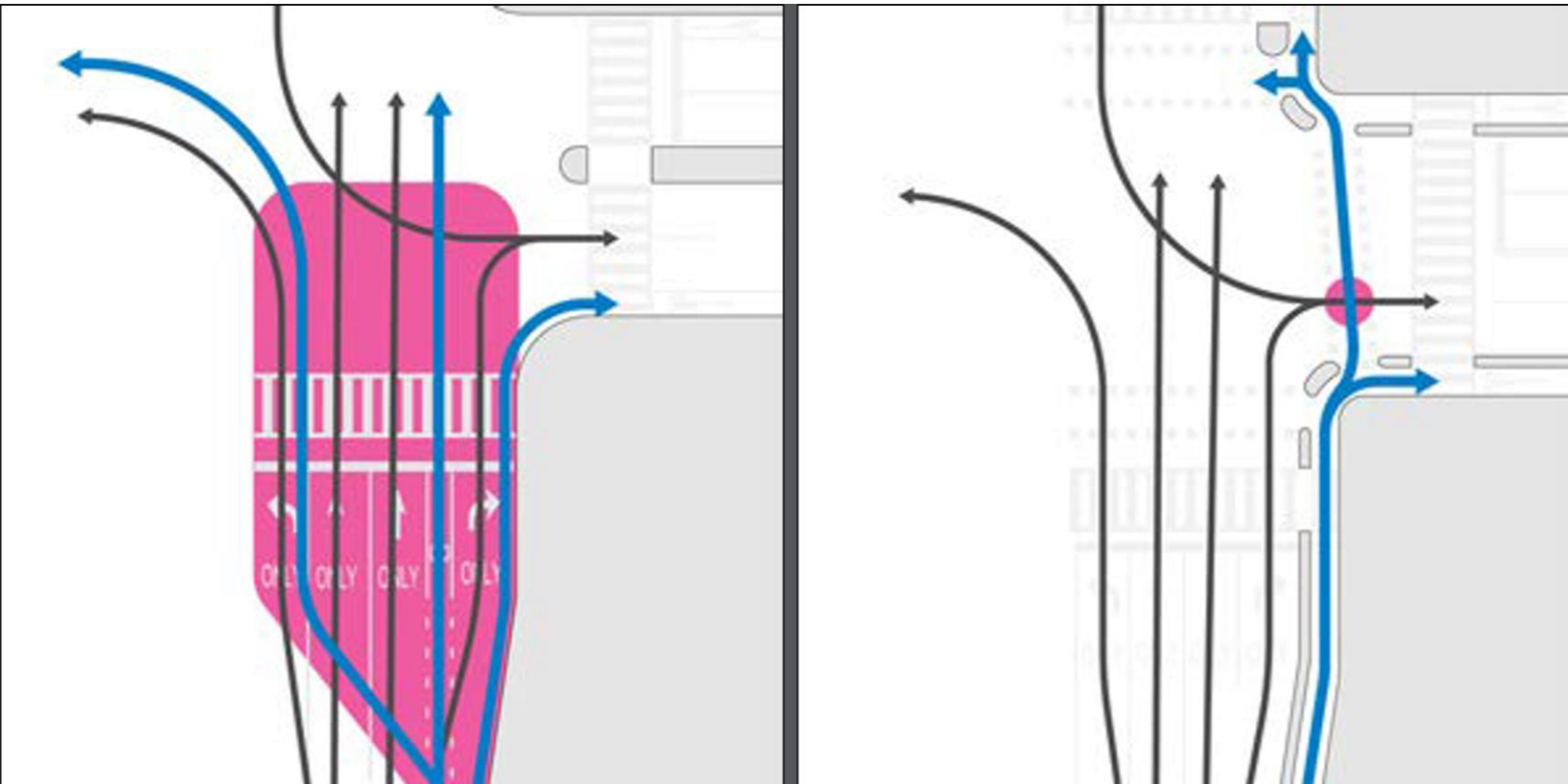


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What is a Protected Intersection?

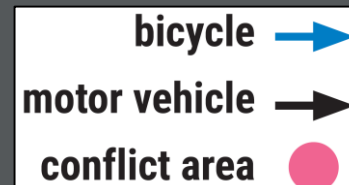


Comparison of Bicyclist Exposure at Intersections



Conventional Bike Lanes
or Shared Lanes

Protected Intersection

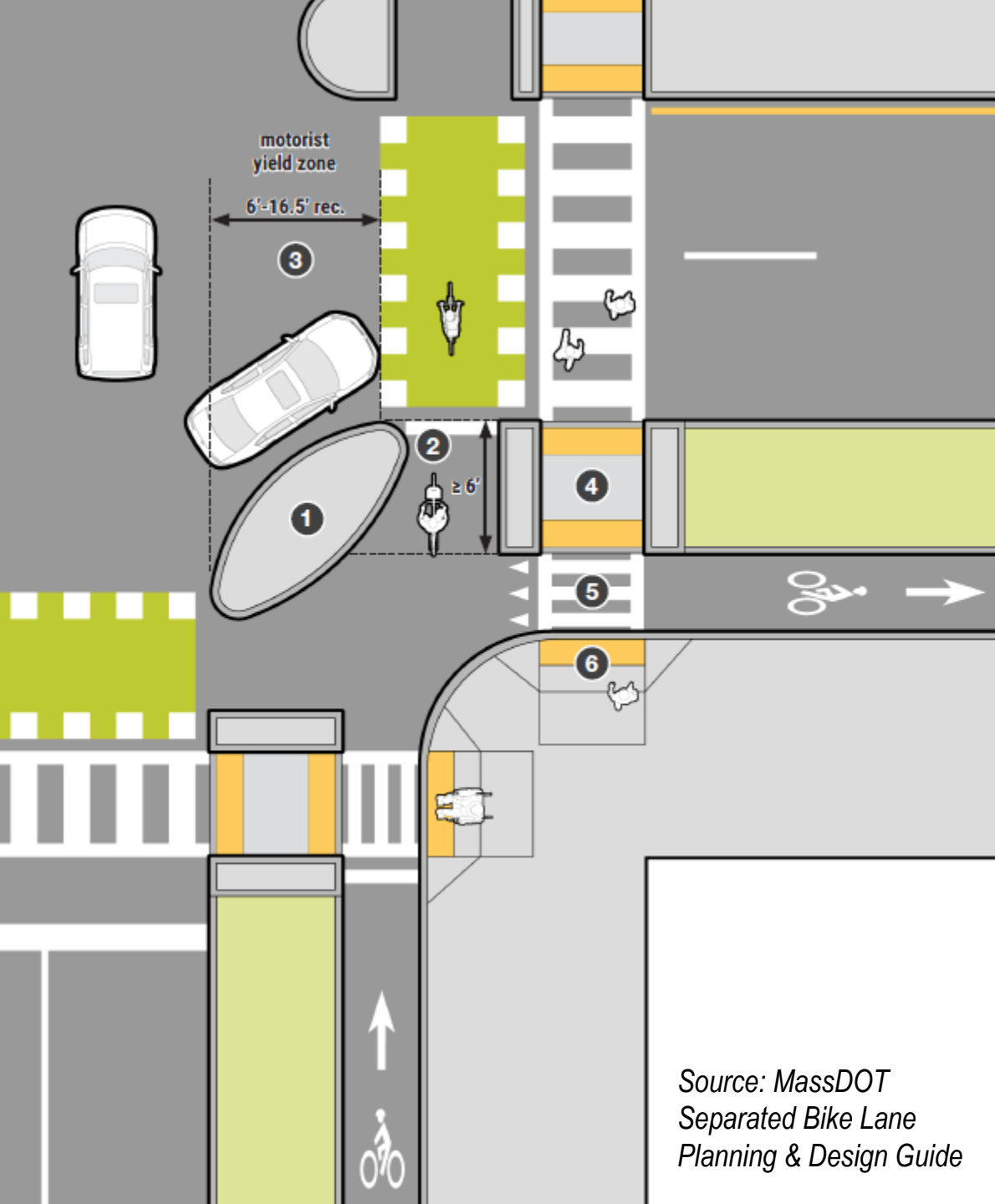


Design Principles:

- Minimize exposure to conflicts
- Reduce speeds at conflict points
- Communicate right-of-way priority
- Provide adequate sight distance

Protected Intersections Elements

1. Corner Refuge Island
2. Forward Bicycle Queuing Area
3. Motorist Yield Zone
4. Pedestrian Crossing Island
5. Pedestrian Crossing of Separated Bicycle Lane
6. Pedestrian Curb Ramp



Source: MassDOT
Separated Bike Lane
Planning & Design Guide



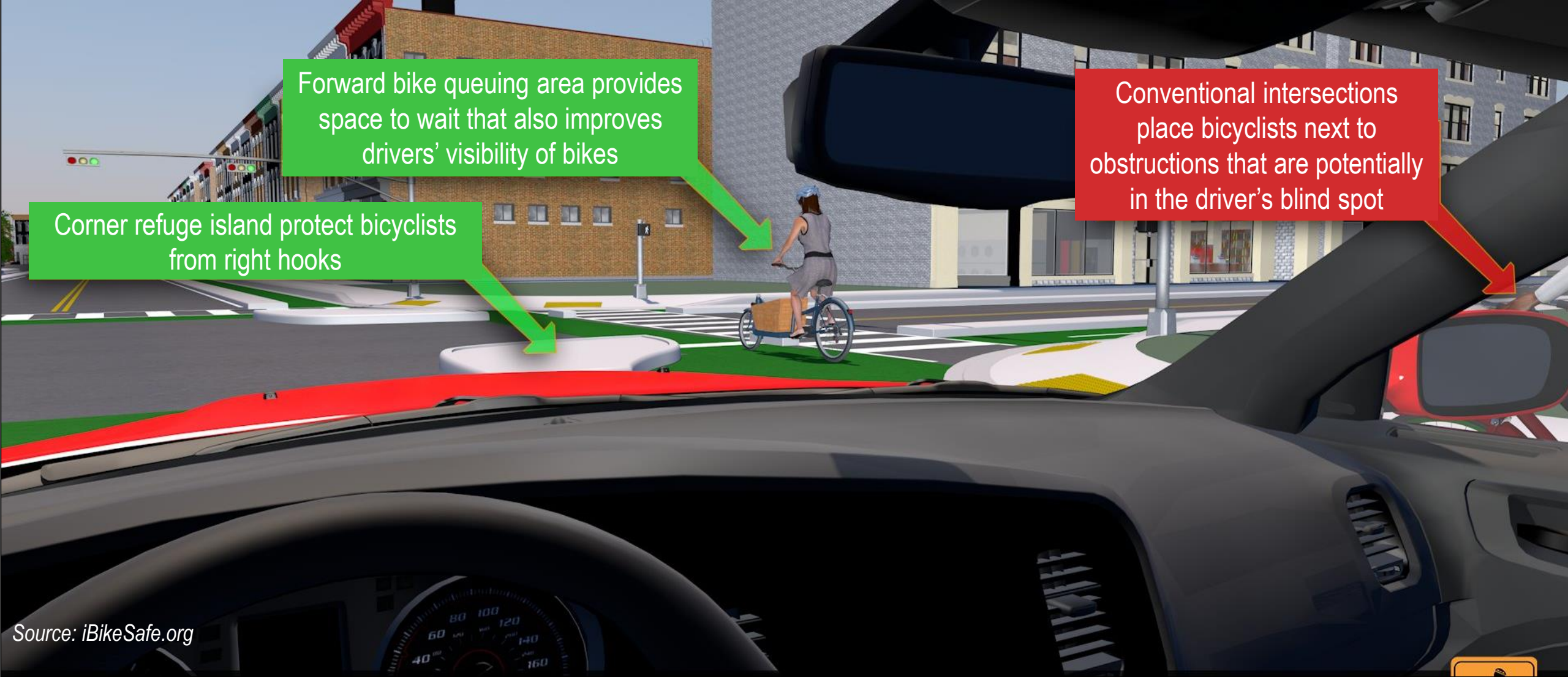
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Benefits of Design Elements



Benefits of Corner Islands

- Protects cyclists from right turning traffic
- Creates space for forward bike queuing area
- Reduces crossing distances
- Control motorist turning speeds
- Can be modified for appropriate design vehicle



Forward bike queuing area provides space to wait that also improves drivers' visibility of bikes

Corner refuge island protect bicyclists from right hooks

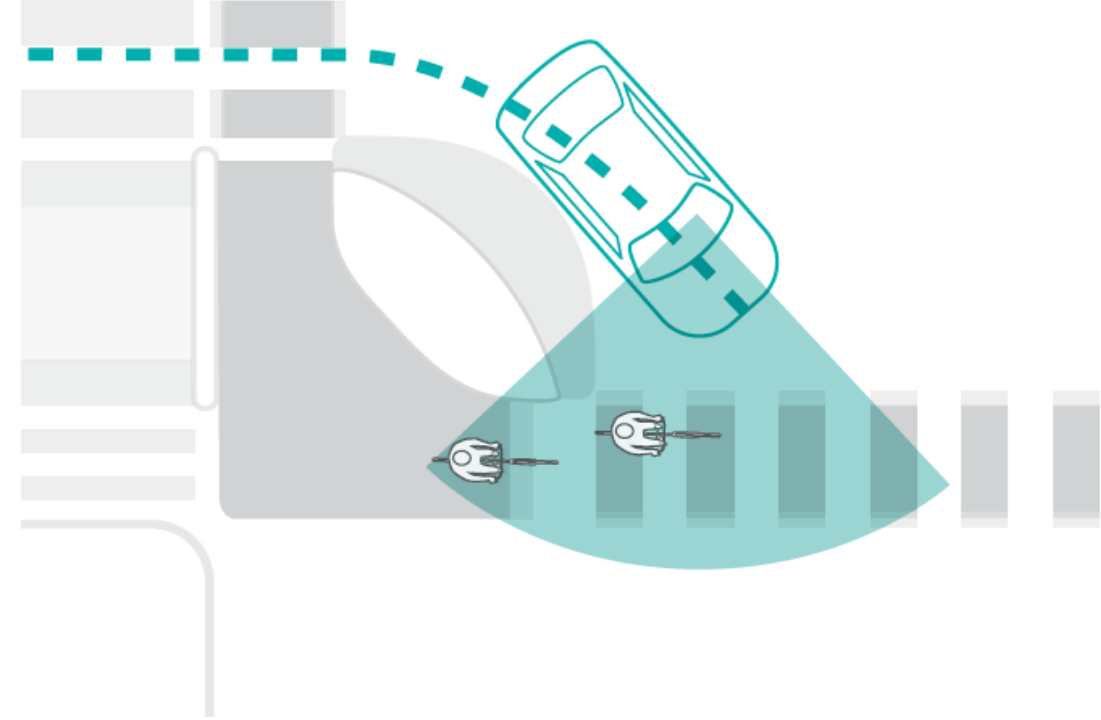
Conventional intersections place bicyclists next to obstructions that are potentially in the driver's blind spot

Source: iBikeSafe.org

Benefits of Forward Bike Queuing Area

Benefits of Motorist Yield Zone

- Improves visibility
- Creates space for drivers to yield
- Helps reduce turning vehicle blockage of through traffic
- Provides additional time for bicyclists & pedestrians to react to turning vehicles





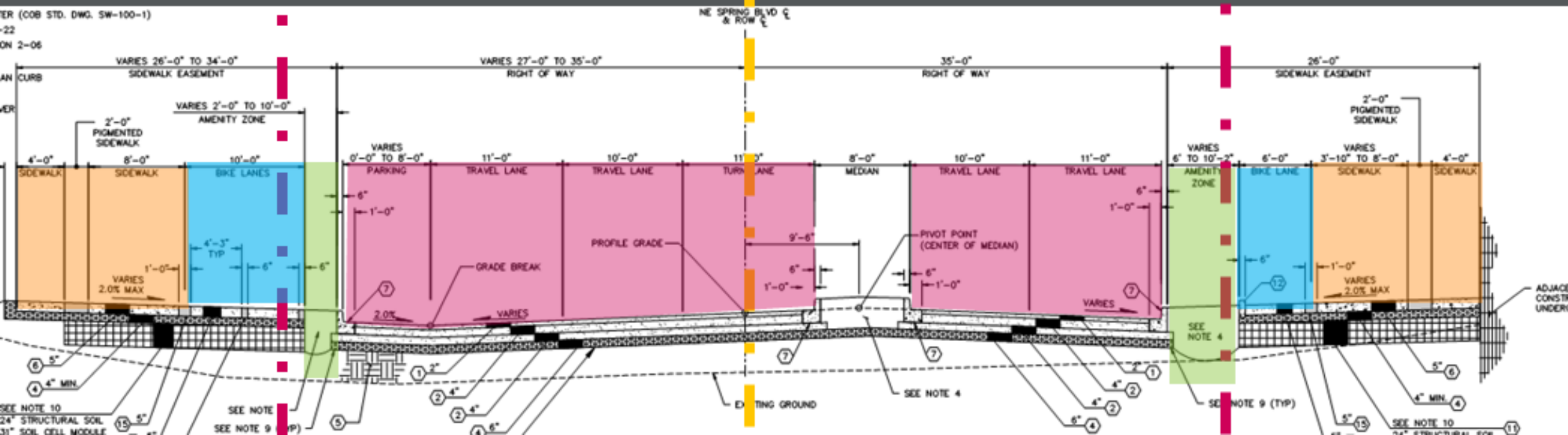
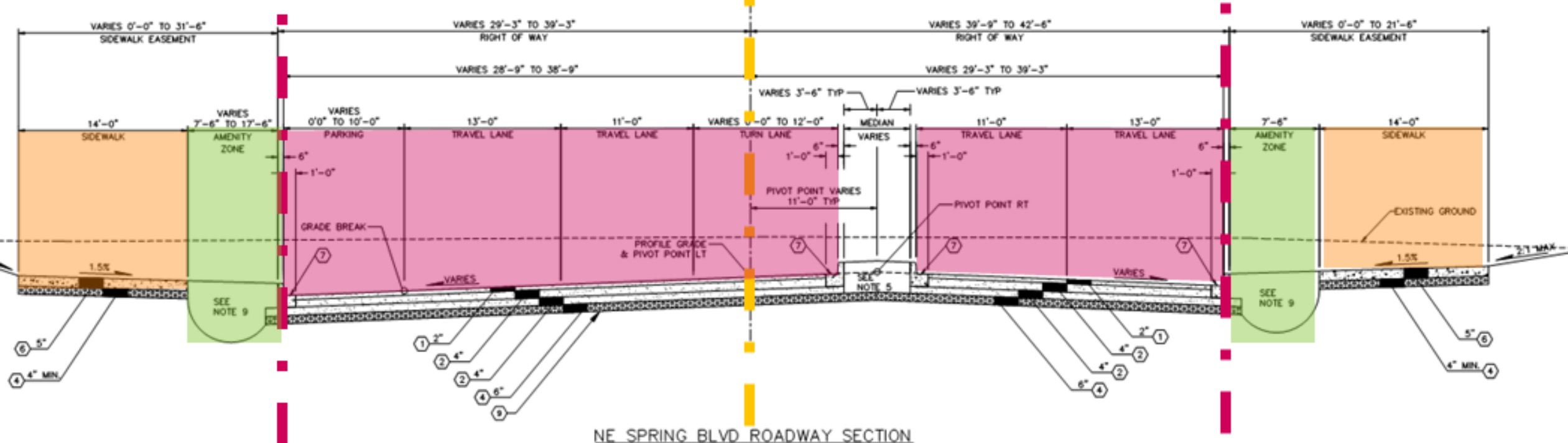
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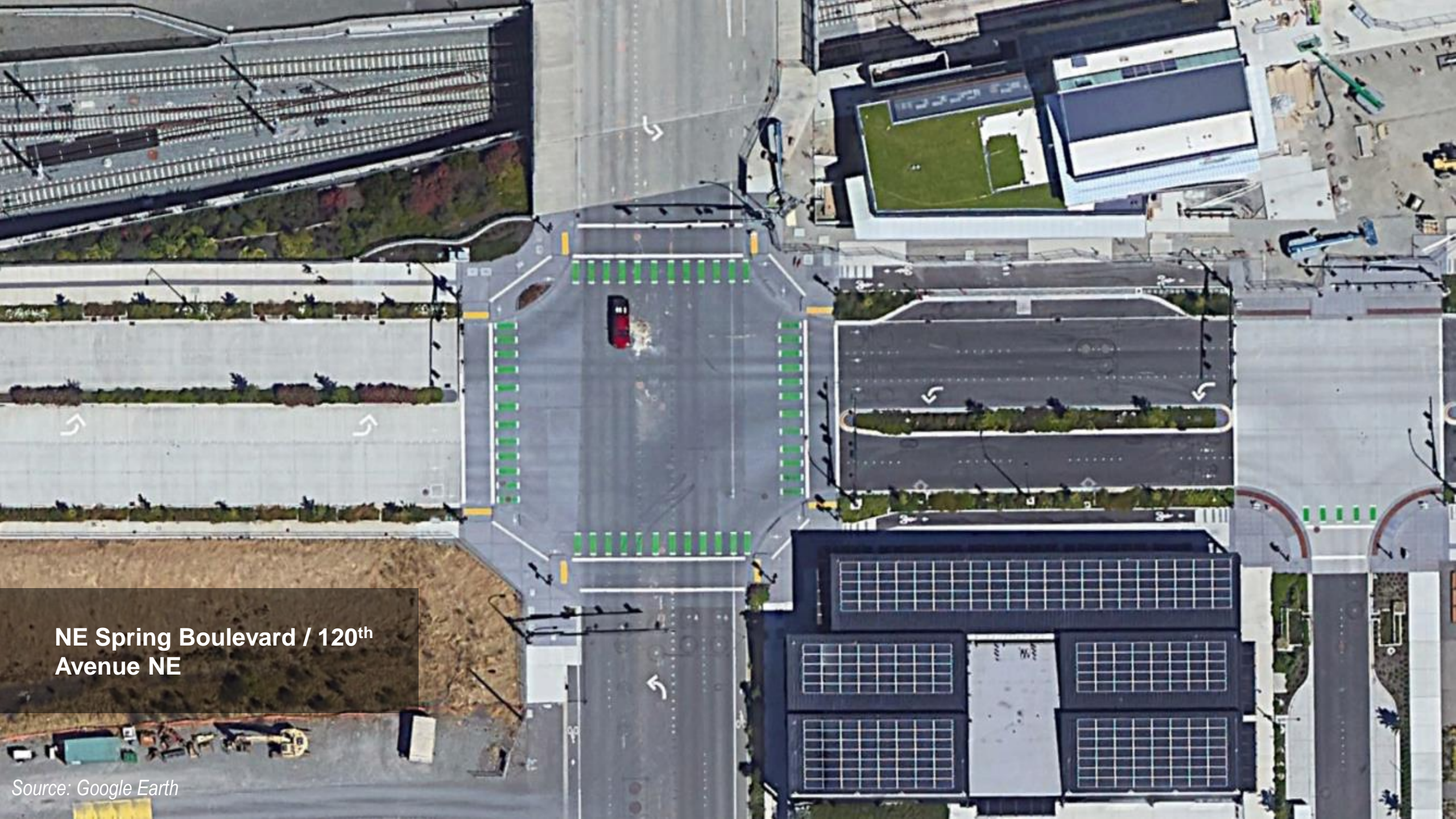
Implementation Examples



NE Spring Boulevard, Bellevue, WA

- | | |
|---------------------------------------|---|
| East Link Station | NE Spring Blvd: 116th Ave NE to 120th Ave NE (Zone 1) |
| Future Local Street | NE Spring Blvd: 120th Ave NE to 124th Ave NE (Zone 2) |
| Eastside Rail Corridor | NE Spring Blvd: 130th Ave NE to 132nd Ave NE (Zone 4) |
| Sound Transit East Link (2016 - 2023) | 130th Ave NE: BelRed Road to NE 20th Street |
| 124th: NE 8th to NE 12th | Spring District |





**NE Spring Boulevard / 120th
Avenue NE**

Source: Google Earth





Lessons Learned

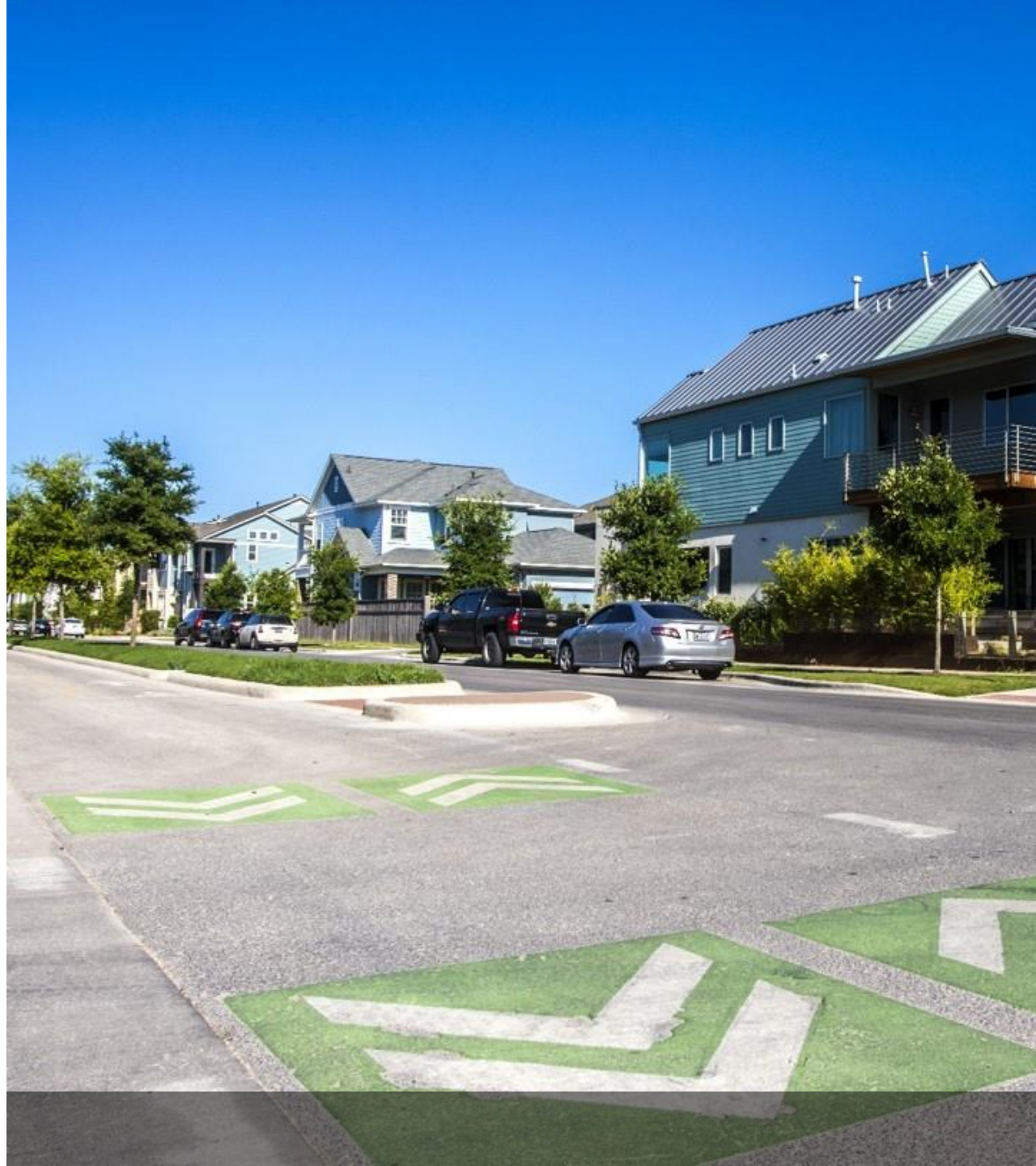
- Ideal design requires a lot of space – plan for that in advance
- Accommodate smaller corner space with bike/ped mixing zone
- Separate bike area with directional delineators
- Need high contrast at curb line



**Mueller, Austin, TX
Manor Road at Tilley Street**














Mueller, Austin, TX



Mueller, Austin, TX

Streets & Bike Network

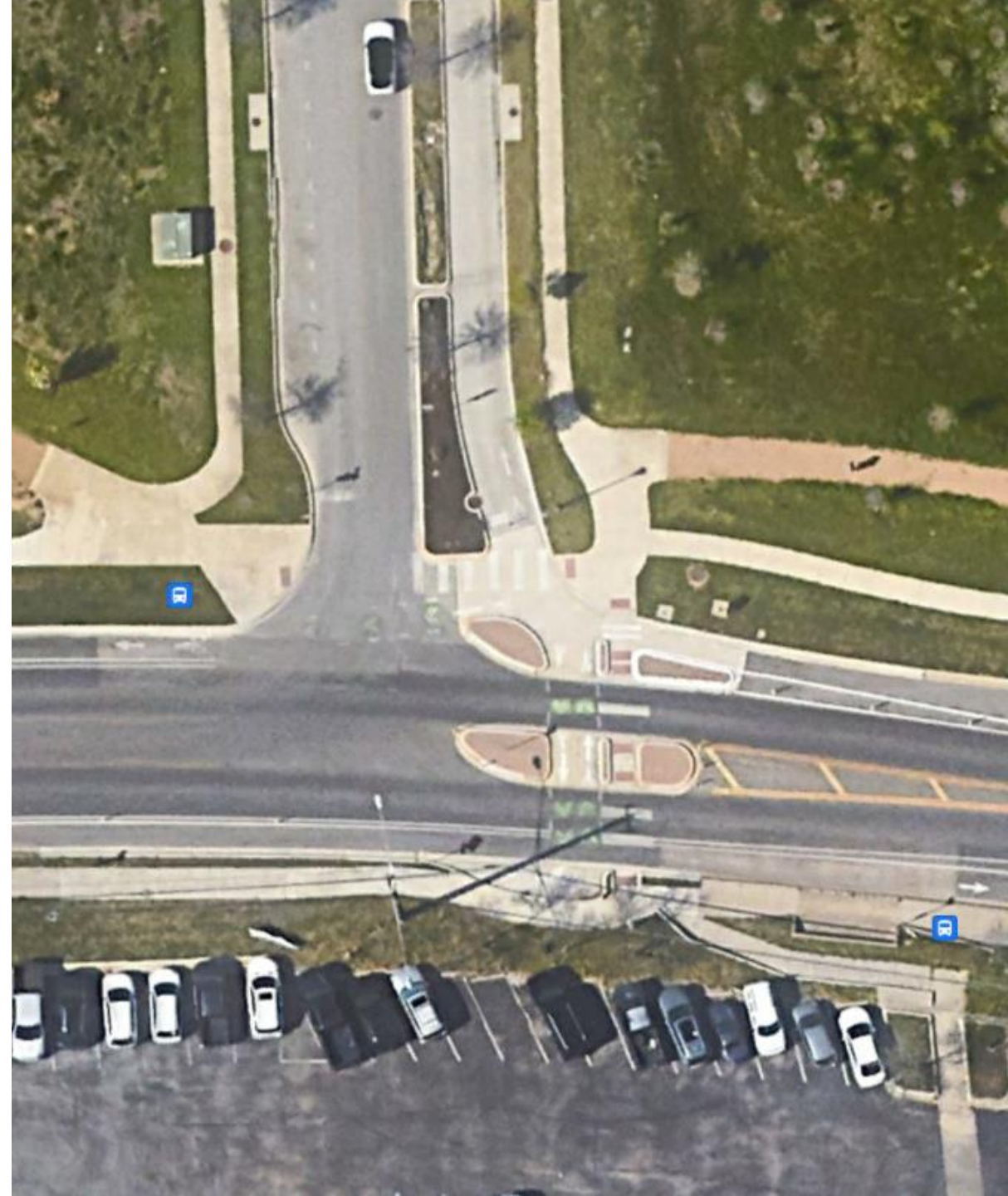
-  51ST STREET
-  COMMUNITY BOULEVARD
-  ALDRICH STREET
-  NEIGHBORHOOD CONNECTOR STREET
-  PARK BOULEVARD
-  GREENWAY EXTENSION STREET
-  NEIGHBORHOOD LOCAL STREET
-  OFF-STREET SHARED PATH
-  ON-STREET BIKE LANES
-  CYCLE TRACKS
-  PROTECTED INTERSECTION



Manor Rd at Tilley St

Features

- T-intersection of collector (Manor Rd) & local street (Tilley St)
- Tilley St stop control
- Median island on Manor Rd
- Bike network: intersection of buffered bike lanes (Manor Rd) & two-way cycle track (Tilley St)
- Jughandle for bike left turn across Manor Rd to two-way cycle track





Zach Scott St at Berkman Dr

Features

- 4-leg intersection of two local streets
- All-way stop control
- Bike network: Intersection of two-way cycle track (Zach Scott St) with one-way cycle tracks (Berkman Dr)





Lessons Learned

- PI can be used at unsignalized locations & individual corners
- Tight designs with vertical curbs will be impacted
- Use delineators and mountable curbs
- Frequent need for maintenance





04

Key Considerations

Candidate Screening Data & Process

Bike Facilities	Bike Ridership
On-Street Parking	Located in Funded Corridor
Intersection Crashes	Size of Intersection
Posted Speed	Right-of-Way



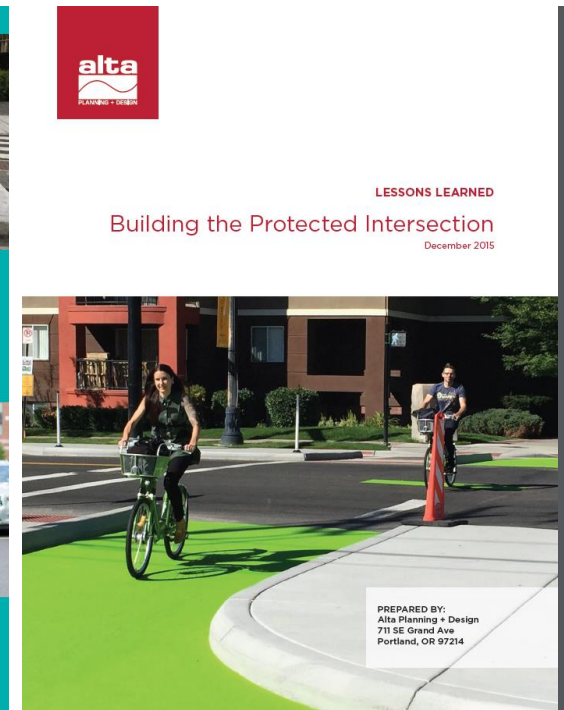
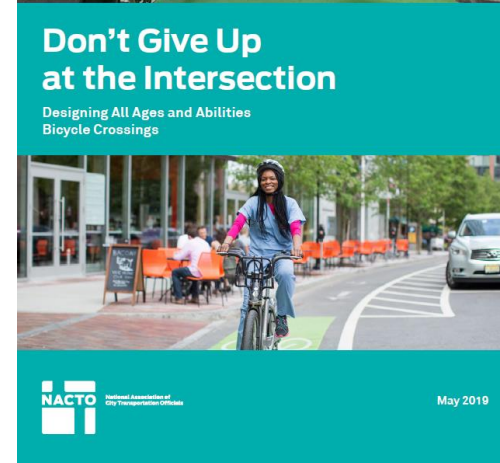
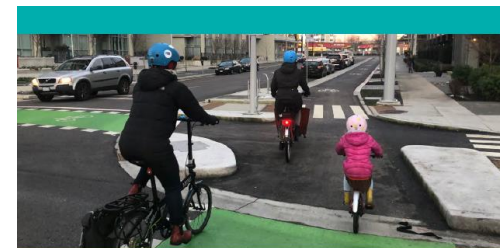
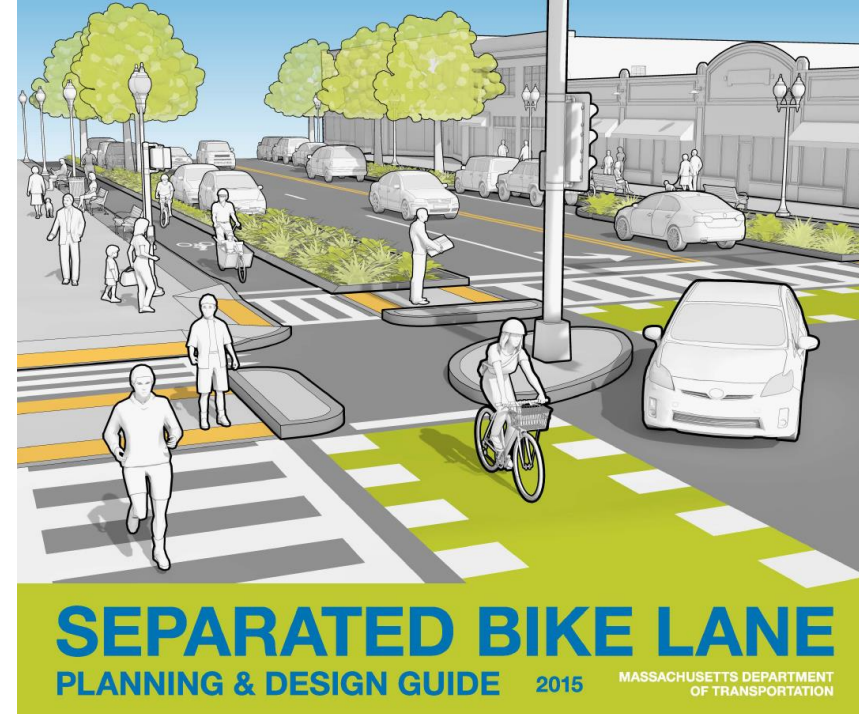
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Resources

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Videos

- Protected Intersections for Bicyclists
www.protectedintersection.com
- How to Use a Protected Intersection (City of San Luis Obispo)
www.youtube.com/watch?v=GJ-qwudnABA
- Protected Bike Lanes & More (WalkSafe / Bike Safe)
www.youtube.com/watch?v=jCeSeUBmXwE
- Making a Community Safer for Pedestrians – A Protected Intersection (USDOT NHTSA) www.nhtsa.gov/pedestrian-safety/making-community-safer-pedestrians





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06

Takeaways

Takeaways

- PIs include design features that address key intersection design principles to improve safety
- Apply PI design elements into all projects, where feasible; the earlier in the process, the better
- Establish a screening process to identify high priority candidate locations
- Consider short term improvements & plan for implementation
- Seek funding opportunities



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QUESTIONS