

Overview of On-Street Bicycle Facility Treatments

Developing Bicycle Facility
Design Guidance Through The
AMATS Bicycle Plan Implementation

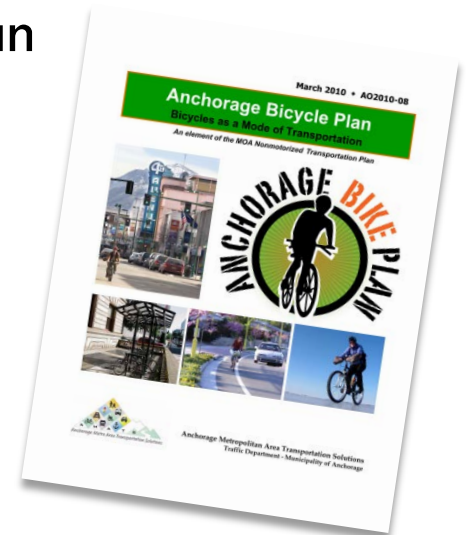


Colin Singleton, EIT | CRW Civil Engineering Group, LLC

DOT&PF Quarterly Design Meeting #56, January 24, 2017

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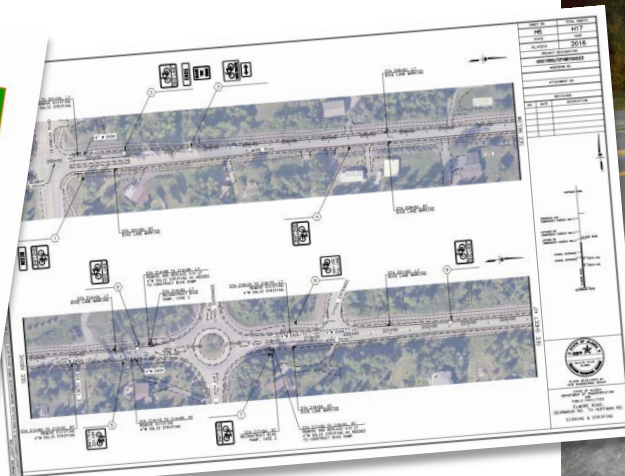
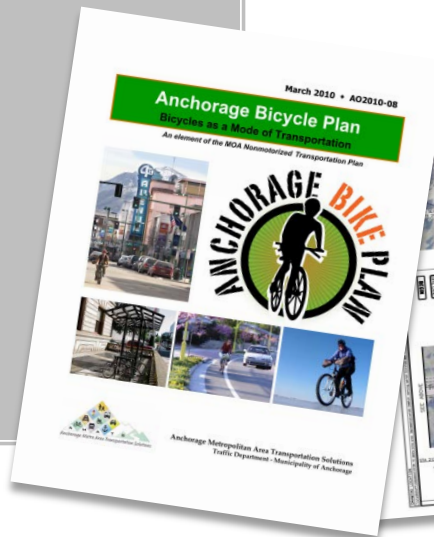


AMATS BIKE PLAN IMPLEMENTATION



3

- ❑ Began Fall 2014
- ❑ Implements 2010 Anchorage Bicycle Plan
- ❑ Reviewed over 250 projects for design and construction
- ❑ First group of projects constructed Fall 2016



Overview

4

- ❑ AMATS Bicycle Plan Implementation process
- ❑ Types of bicycle facilities
- ❑ Standard treatments for bicycle facilities
- ❑ Challenges during implementation process
- ❑ Design recommendations

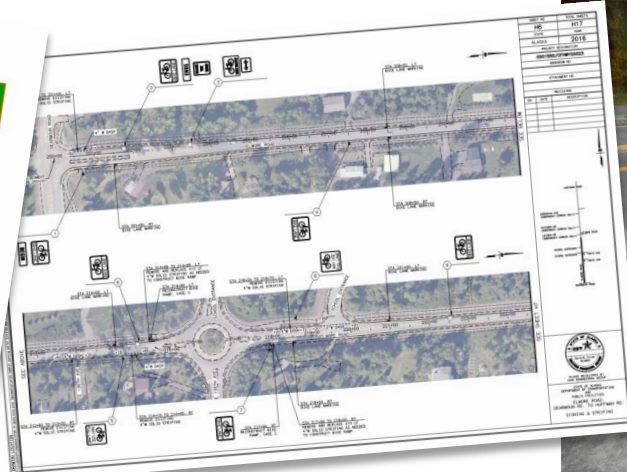
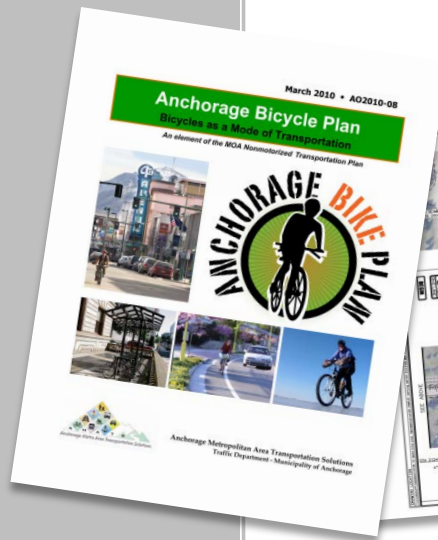




AMAT'S BIKE PLAN IMPLEMENTATION



6





What we started with...

Chapter 3. Recommended Bicycle Network

Table 6. Recommended Bicycle Network

| Core/ Collision Route | Bicycle System | Separated Pathway & T2T Connector ^a | Bicycle Network Project (Priority A projects: ✓) | Type | Construction Year ^b | Distance (miles) | Estimated Project Cost ^c |
|-----------------------------|-------------------|---|---|------|-----------------------------------|---------------------|---|
| bicycle lane | | | ✓ C Street – O'Malley to 10th Avenue | S | | 6.3 | \$220,000 |
| | sep. path | | ✓ Campbell Trail – Seward Highway undercrossing | R | 2015 | 0.1 | |
| | sep. path | | Campbell Airstrip Road – Bivouac Parking to Tudor Road | DC | | 2.25 | \$3,000,000 |
| | bicycle lane | | Campbell Airstrip Road – Bivouac Parking to Tudor Road | R | | 2.25 | |
| | sep. path | | Campbell Trail – Tudor Center Drive to Tudor Crossing | R | 2009 | 0.4 | |
| | sep. path | | Campbell Trail – Lake Otis Parkway undercrossing | DS | | 0.1 | \$15,000,000 |
| | sep. path | | Campbell Trail Spur – Dimond Blvd. to trail, west side C Street | DS | | 0.05 | \$300,000 |
| | sep. path | | ✓ Campbell Trail lighting | DC | | 4 | \$2,500,000 |
| | shoulder | | Checkmate Drive – Tudor Road to Northern Lights Blvd. | S, M | | 1.06 | \$34,000 |
| | sep. path | | ✓ Chester Creek Trail – Goose Lake to Westchester Lagoon widening | DC | | 4 | \$4,000,000 |
| | sep. path | | Chester Creek Trail – repaving to correct tree roots. | DC | | | \$2,000,000 |
| | sep. path | | Chester Creek Connection – Colgate Drive to Patterson Drive | DC | | 0.42 | \$1,200,000 |
| | sep. path | | ✓ Chester Trail – Ambassador Drive to E. Northern Lights Blvd. | DC | 2009 | 1.85 | |
| | sep. path | | Chester Trail – UAA Pathway | DC | 2009 | 0.6 | |
| | sep. path | | Chester Trail Spur – Castle Heights Park to trail | DC | | 0.07 | \$200,000 |
| | sep. path | | ✓ Coastal Trail – connection to Ship Creek Trail | DC | | 0.64 | \$1,700,000 |
| | sep. path | | ✓ Coastal Trail – Westchester Lagoon to Earthquake Park widening | DC | | 2.5 | \$2,500,000 |
| | shared | | Colgate Drive – Baxter Drive to Chester Creek | S | | 0.2 | \$6,500 |
| | shared | | Collins Drive – Jewel Lake Road to Strawberry Road | S | | 0.6 | \$20,000 |
| | shared | | Cordova Street – 3rd Avenue to Ship Creek Trail | S, M | | 0.34 | \$12,000 |
| | bicycle lane | | Cordova Street – 10th Avenue to 3rd Avenue | S, M | | 0.47 | \$15,000 |
| | bicycle lane | | Cordova Street – 16th Avenue to 10th Avenue | S, M | | 0.44 | \$14,000 |
| | shared | | Craig Drive – Boniface Drive to Nunaka Valley Park | S | | 0.25 | \$8,000 |
| bicycle lane | | | ✓ DeArmour Road – Seward Highway to 140th Avenue | S, M | | 1.42 | \$46,000 |
| | sep. path | | DeArmour Road – 140th Avenue to Hillside Drive | R | L RTP | 2 | |
| | sep. path | | ✓ DeBarr Road – Orca Blvd. to Turpin Street | DC | | 2.56 | \$3,154,000 |



What we started with...

Chapter 3. Recommended Bicycle Network

Table 6. Recommended Bicycle Network

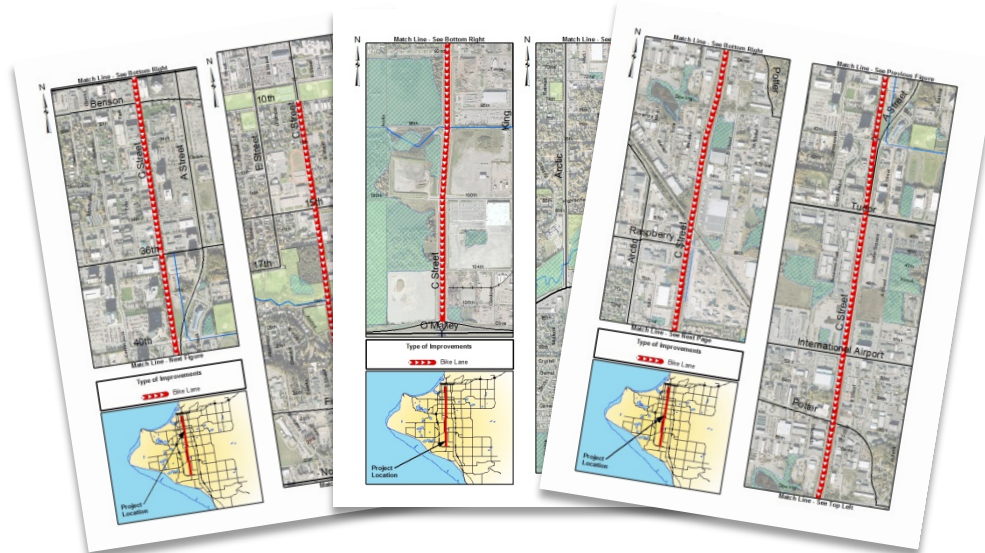
| Core/ Collision Route | Bicycle System | Separated Pathway & T2T Connector ^a | Bicycle Network Project (Priority A projects: ✓) | Type | Construction Year ^b | Distance (miles) | Estimated Project Cost ^c |
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| | shared | | Cordova Street – 3rd Avenue to Ship Creek Trail | S, M | | 0.34 | \$12,000 |
| | bicycle lane | | Cordova Street – 10th Avenue to 3rd Avenue | S, M | | 0.47 | \$15,000 |
| | bicycle lane | | Cordova Street – 16th Avenue to 10th Avenue | S, M | | 0.44 | \$14,000 |
| | shared | | Craig Drive – Boniface Drive to Nunaka Valley Park | S | | 0.25 | \$8,000 |
| | bicycle lane | | ✓ DeArmour Road – Seward Highway to 140th Avenue | S, M | | 1.42 | \$46,000 |
| | sep. path | | DeArmour Road – 140th Avenue to Hillside Drive | R | L RTP | 2 | |
| | sep. path | | ✓ Debar Road – Orca Blvd. to Turpin Street | DC | | 2.56 | \$3,154,000 |



Implementation Process

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- Reviewed feasibility of proposed project
 - ▣ Confirmed if bicycle facility type is appropriate
 - ▣ Analyzed existing facilities
 - ▣ Considered future projects on/adjacent to corridor
 - ▣ Updated cost estimate with preliminary engineering



Types of Bicycle Facilities

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Facilities from Anchorage Bicycle Plan...

Chapter 3. Recommended Bicycle Network

Table 6. Recommended Bicycle Network

| Core/ Collision Route | Bicycle System | Separated Pathway & T2T Connector ^a | Bicycle Network Project (Priority A projects: ✓) | Type | Construction Year ^b | Distance (miles) | Estimated Project Cost ^c |
|-----------------------------|-------------------|---|---|------|-----------------------------------|---------------------|---|
| | shared | | Monte Road – Old Glenn Highway to Echo Street | S | | 0.47 | \$15,000 |
| bicycle lane | | | ✓ North Eagle River Access Road – Old Glenn Highway to Powder Ridge Drive | S, M | | 0.66 | \$ 21,000 |
| | shared | | Oberg Road – Homestead Drive to Deer Park Drive | S | | 0.53 | \$17,000 |
| | | sep. path | ✓ Old Glenn Highway – South Birchwood Loop to Peters Creek | DC | L RTP | 5.20 | |
| shoulder | | | ✓ Old Glenn Highway – Voyles Road to end | S, M | | 1.23 | \$40,000 |
| | shared | | South Birchwood Loop Road – Glenn Highway to N. Birchwood Loop Road | S | | 4.34 | \$139,000 |
| bicycle lane | | | ✓ South Birchwood Loop Road – Hillcrest Drive to Old Glenn Highway | S, M | | 1.0 | \$67,800 |
| shared | | | ✓ West Parkview Terrace | S | | 1.0 | \$50,000 |
| | shared | | Voyles Blvd. – Old Glenn Highway to end | S | | 0.73 | \$24,000 |
| study (Area H) | | | Hiland Road and Glenn Highway – park-and-ride facility | D, C | | | \$200,000 |

Table Legend

| | |
|--------------|---|
| bicycle lane | Bicycle lane |
| boulevard | Bicycle boulevard |
| sep. path | Separated pathway |
| shared | Shared road |
| shoulder | Paved shoulder bikeway |
| sweep | Sweep |
| study | Study area for bicycle friendly solutions |

Project Type

| | |
|----|--|
| B | Structure – bridge |
| DC | Design, construction |
| DS | Design study |
| M | Add striping & markings |
| R | Design, construction with road project |
| S | Add signage |

✓ Indicates that the project is a top-priority or Priority A, project. These projects have been identified as Priority A based on either inclusion in the core bicycle network or locations with a high number of bicycle-vehicle crashes, plus the presence of road width sufficient to add bicycle lane marking.

Notes:

On-road bicycle lanes are the preferred facility and are contingent on establishing and identifying a plan for funding and maintenance.

Costs are provided for budgeting purposes.

^a Separated pathway and T2T connector projects that cost more than \$500,000 for construction are typically major stand-alone construction projects. These projects will be constructed with roadway projects or by using special funding sources.

^b L RTP indicates that the project is listed in the *Anchorage Bowl 2025 Long-Range Transportation Plan with 2027 Revisions* (2025 L RTP).

^c Costs are estimated for striping and signage projects and for other bicycle network projects that are not scheduled in the 2025 L RTP or other Capital Improvement Program.

Types of Bicycle Facilities

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Facilities from Anchorage Bicycle Plan...

Chapter 3. Recommended Bicycle Network

Table 6. Recommended Bicycle Network

| Core/ Collision Route | Bicycle System | Separated Pathway & T2T Connector ^a | Bicycle Network Project (Priority A projects: ✓) | Type | Construction Year ^b | Distance (miles) | Estimated Project Cost ^c |
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| | shared | | Monte Road – Old Glenn Highway to Echo Street | S | | 0.47 | \$15,000 |
| bicycle lane | | | ✓ North Eagle River Access Road – Old Glenn Highway to Powder Ridge Drive | S, M | | 0.66 | \$21,000 |
| | shared | | Oberg Road – Homestead Drive to Deer Park Drive | S | | 0.53 | \$17,000 |
| | | sep. path | ✓ Old Glenn Highway – South Birchwood Loop to Peters Creek | DC | LRTP | 5.20 | |
| | | | ✓ Old Glenn Highway – Montezuma Road to end | S, M | | 1.23 | \$40,000 |
| | | | | S | | 4.34 | \$139,000 |
| | | | | S, M | | 1.0 | \$67,800 |
| | | | | S | | 1.0 | \$50,000 |
| | | | | S | | 0.73 | \$24,000 |
| | | | | D, C | | | \$200,000 |

Table Legend

| |
|--------------|
| bicycle lane |
| boulevard |
| sep. path |
| shared |
| shoulder |
| sweep |
| study |

Bicycle lane

Bicycle boulevard

Separated pathway

Shared road

Paved shoulder bikeway

Sweep

Study area for bicycle friendly solutions

Priority A, project. These projects have been identified as bicycle network or locations with a high number of road width sufficient to add bicycle lane marking.

and are contingent on establishing and identifying a

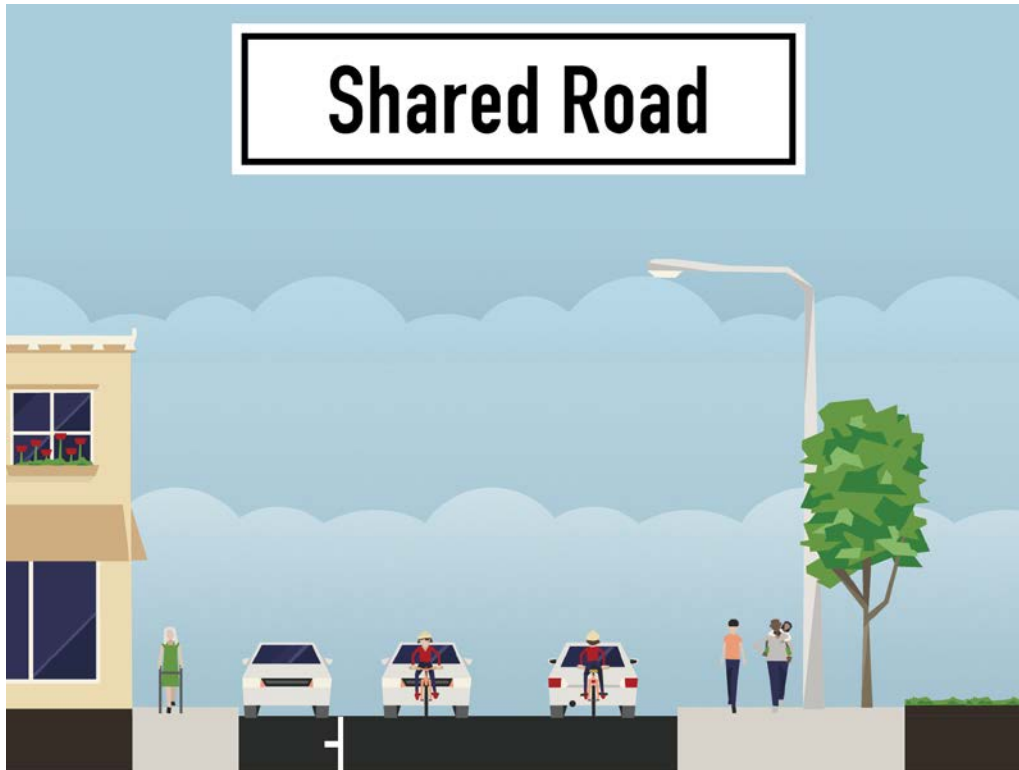
projects that cost more than \$500,000 for construction are. These projects will be constructed with roadway

Anchorage Bowl 2025 Long-Range Transportation

projects and for other bicycle network projects that are Improvement Program.

Types of Bicycle Facilities

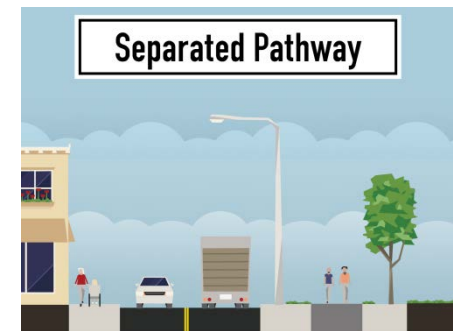
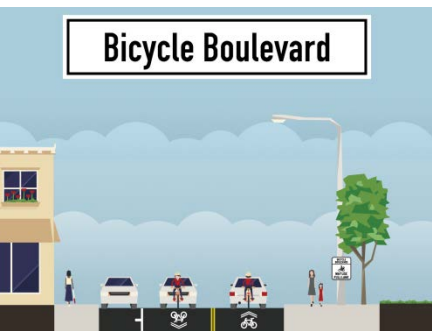
12



- Shared road is the most basic facility, where bicycles share the travel lane with vehicles
- Whether specifically striped or not, bicycles are legally able to operate in every road that is not designated as a controlled access facility
- Low volumes, low vehicle speeds
- Common on local roads

Types of Bicycle Facilities

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Least

Separation from Vehicles

Greatest

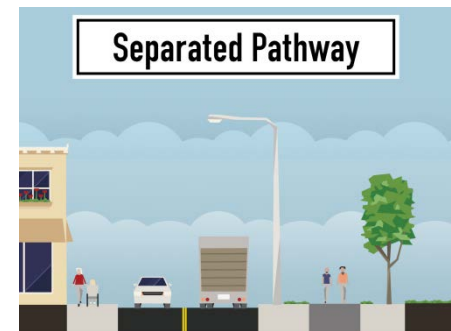
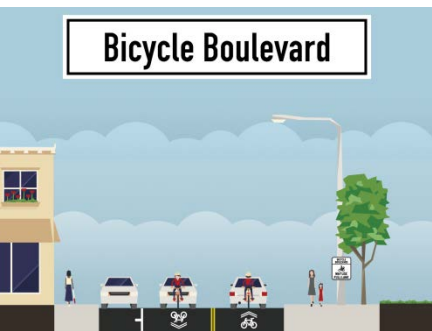
Least

Traffic Volumes/Speeds

Greatest

Types of Bicycle Facilities

14

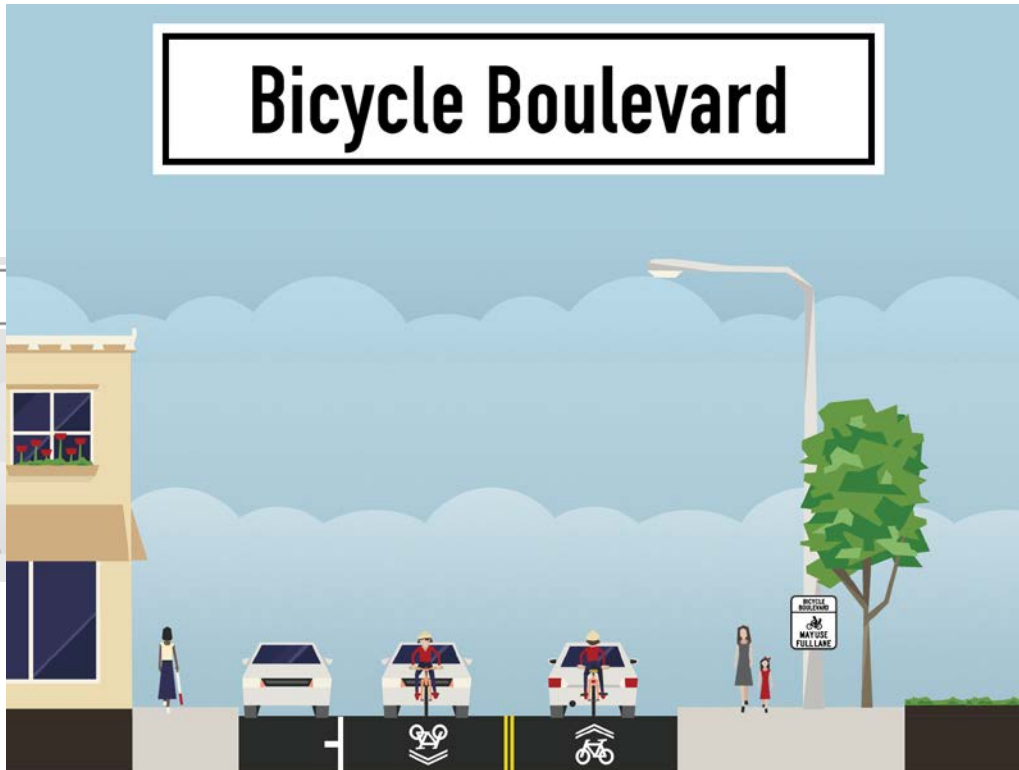


On all on-street bicycle facilities:

- ❑ Cyclists are required to obey traffic rules as a motor vehicle
- ❑ Cyclists must always ride in the direction of travel
- ❑ Cyclists should consider wearing reflective clothing and having lights at all times

Types of Bicycle Facilities

15

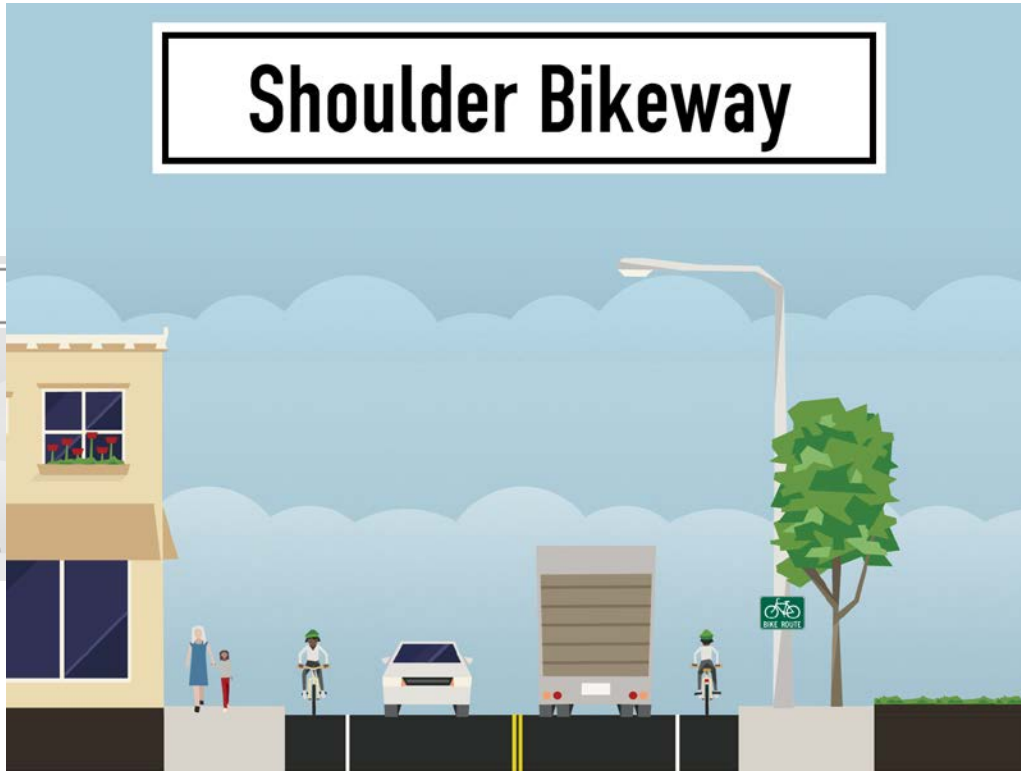


- ❑ Bicycles share the travel lane with vehicles
- ❑ Low volumes, low vehicles speeds
- ❑ Low turnover parking
- ❑ Shared lane pavement markings and signage
- ❑ May have specific signs to highlight bike-friendly corridor

Types of Bicycle Facilities

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Shoulder Bikeway



- ❑ Bicycles ride outside vehicle travel lane on the paved shoulder
- ❑ Whether signed as a bike route or not, pedestrians may also use the paved shoulder in the absence of pedestrian facilities
- ❑ Common on rural roads

Types of Bicycle Facilities

17

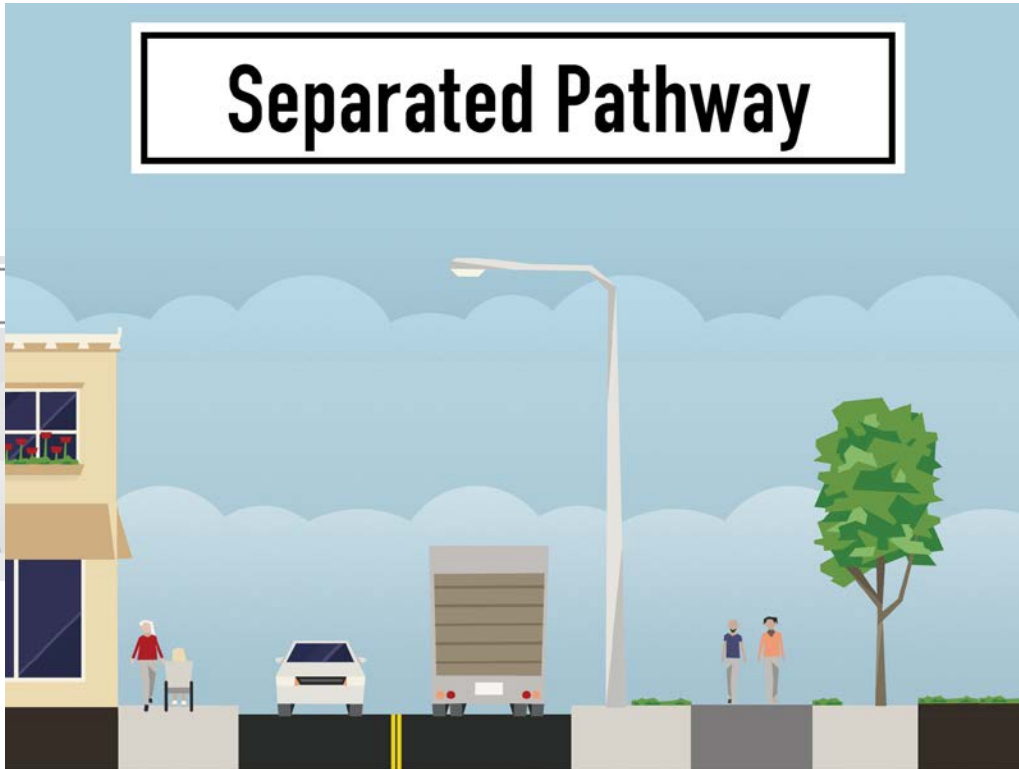


- ❑ Bicycles ride outside vehicle travel lane in a designated lane, separate from pedestrian facilities
- ❑ Bicycle lane pavement markings and signage
- ❑ Preferable to shoulder bikeways on roads with shoulders and pedestrian facilities

Types of Bicycle Facilities

18

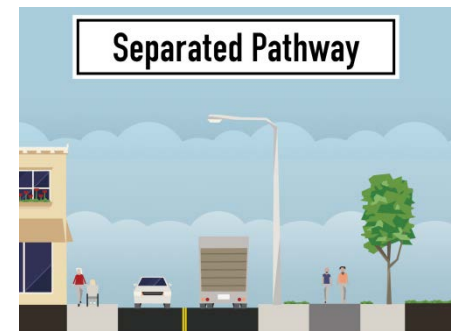
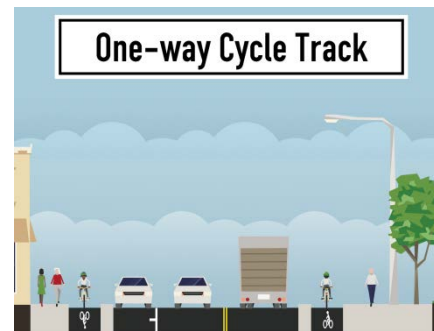
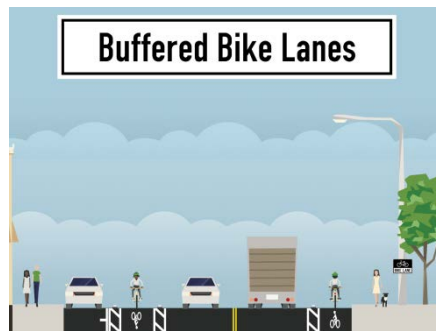
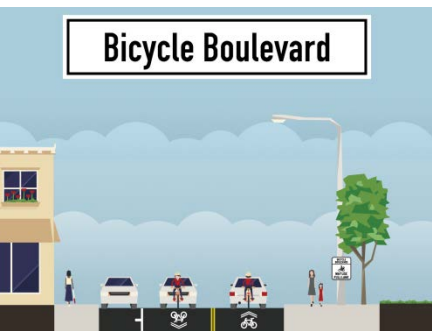
Separated Pathway



- ▣ Bicycles ride outside of the travelled way on a separate facility, sometimes with a separate ROW
- ▣ Bicycles share the pathway with pedestrians as a multi-use facility
- ▣ Bicycles are expected to ride consistent with pedestrian speeds and obey crosswalk signals and all pedestrian signs

Types of Bicycle Facilities

19



Least

Separation from Vehicles

Greatest

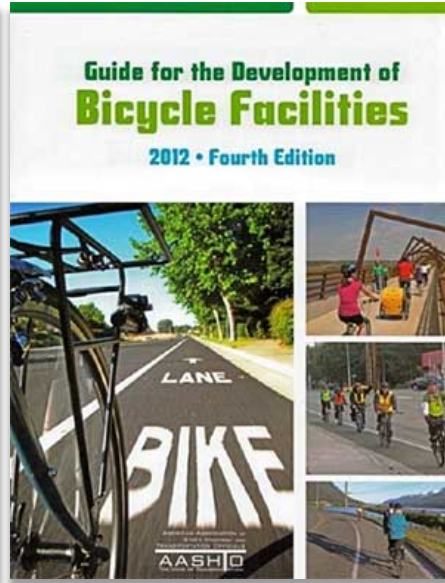
Least

Traffic Volumes/Speeds

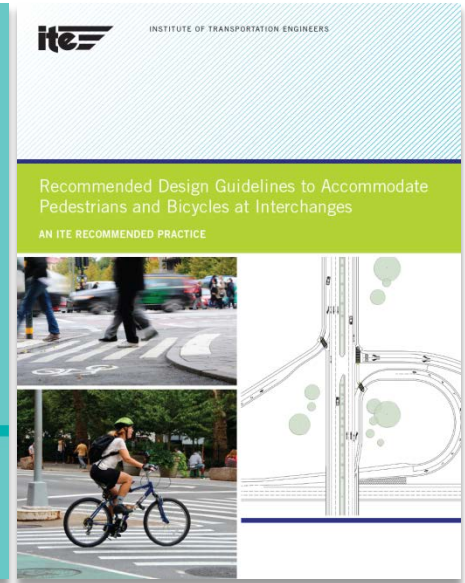
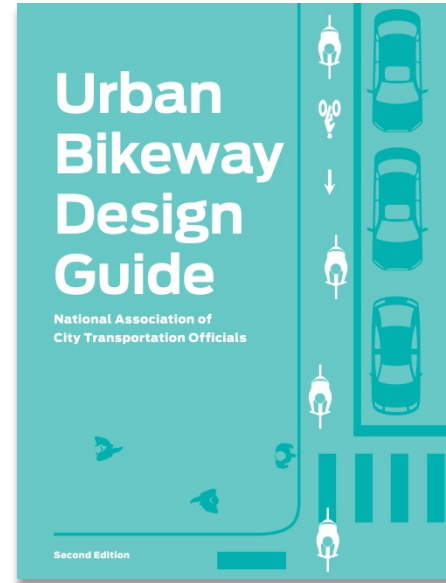
Greatest

Existing Design Guidance

20



Standards

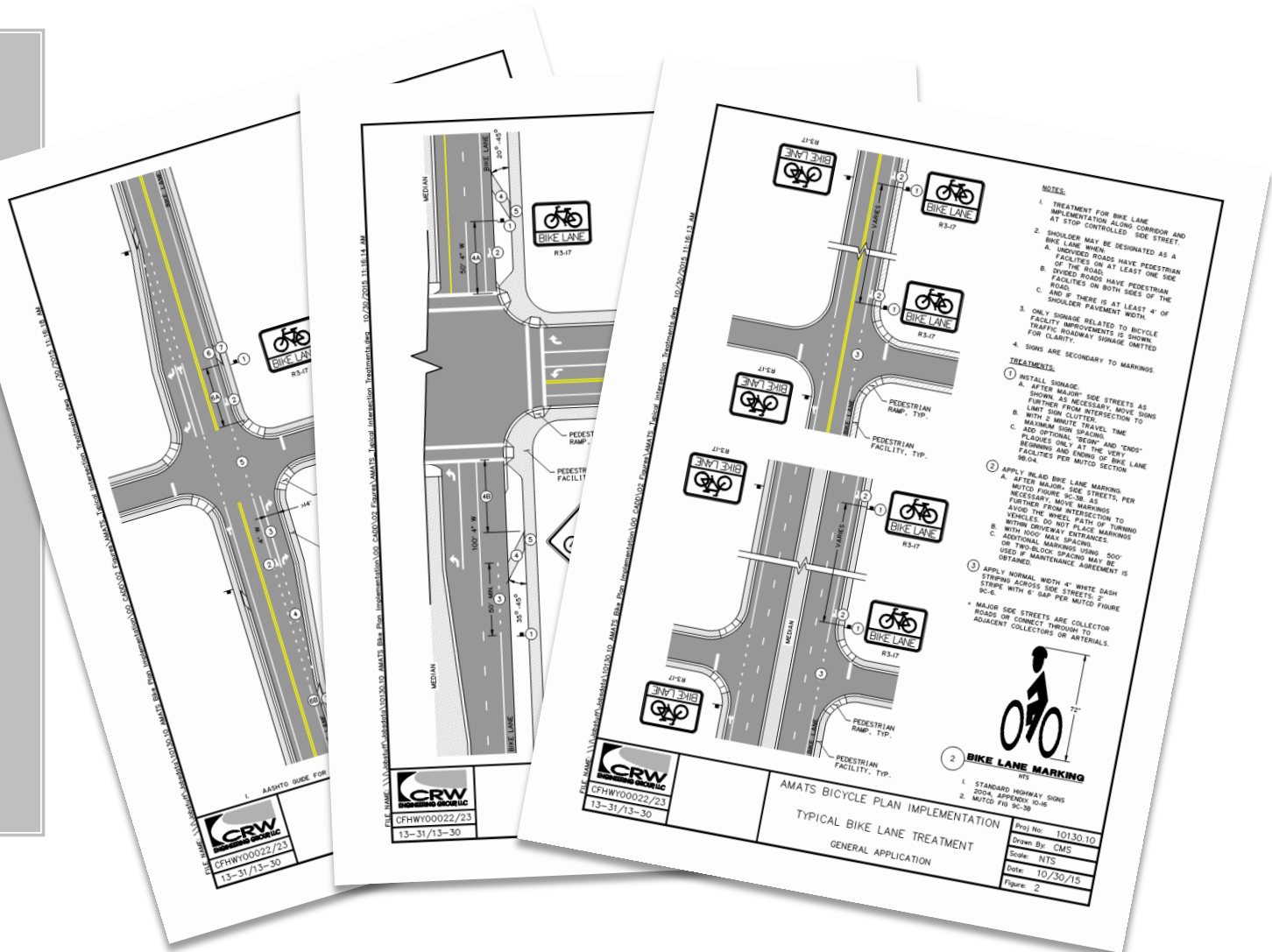


Guides

On-Street Bicycle Facility Treatment Figures

21

Can be found
on Central
Region
Directory
under:
'Design
Guidance >
Bike Lanes'



Standard Treatment: Shared Lane

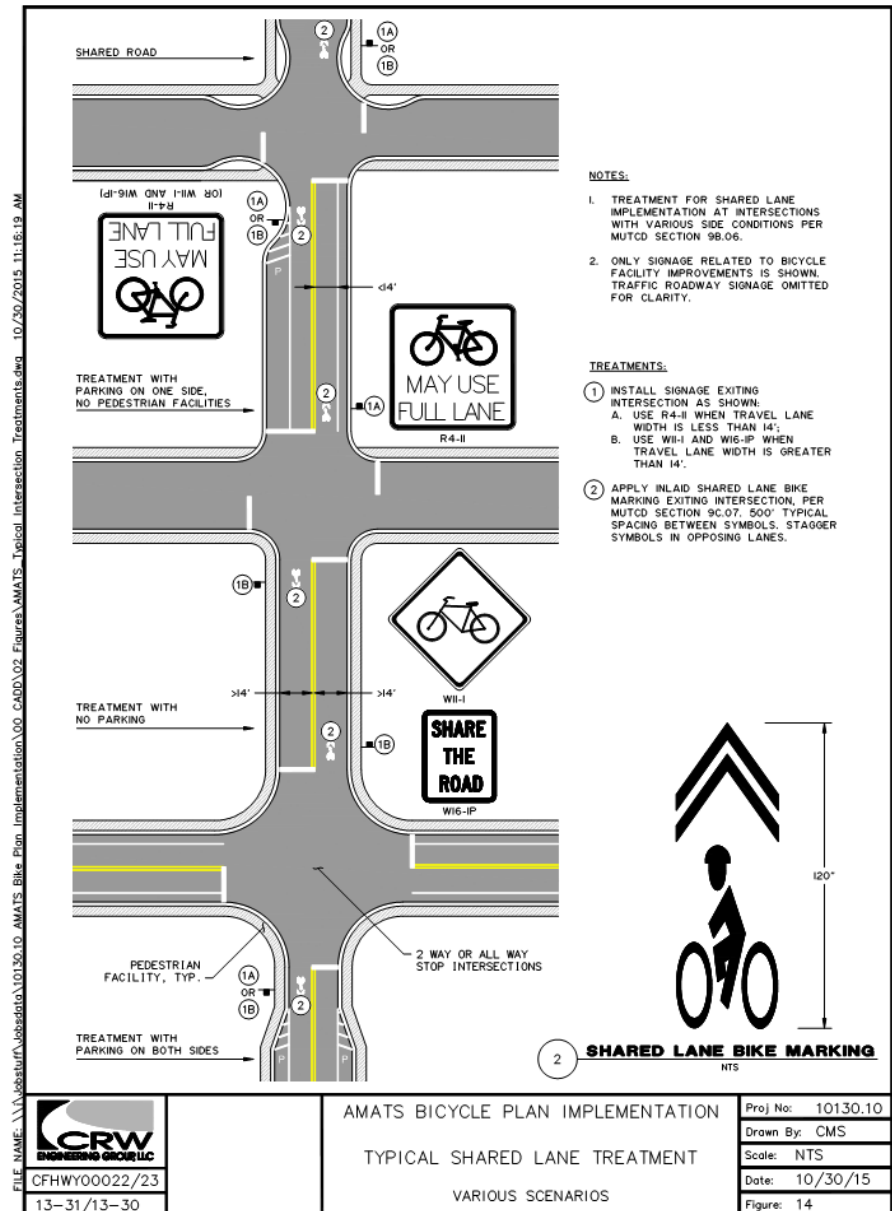
22

Install signage exiting intersection as shown:

- Use R4-11 when travel lane width is less than 14';
- Use W11-1 and W16-1P when travel lane width is greater than 14'

Apply inlaid shared lane bike marking

- Exiting intersection, per MUTCD Section 9C.07.
- 500' Typical spacing between symbols.
- Stagger symbols in opposing lanes.

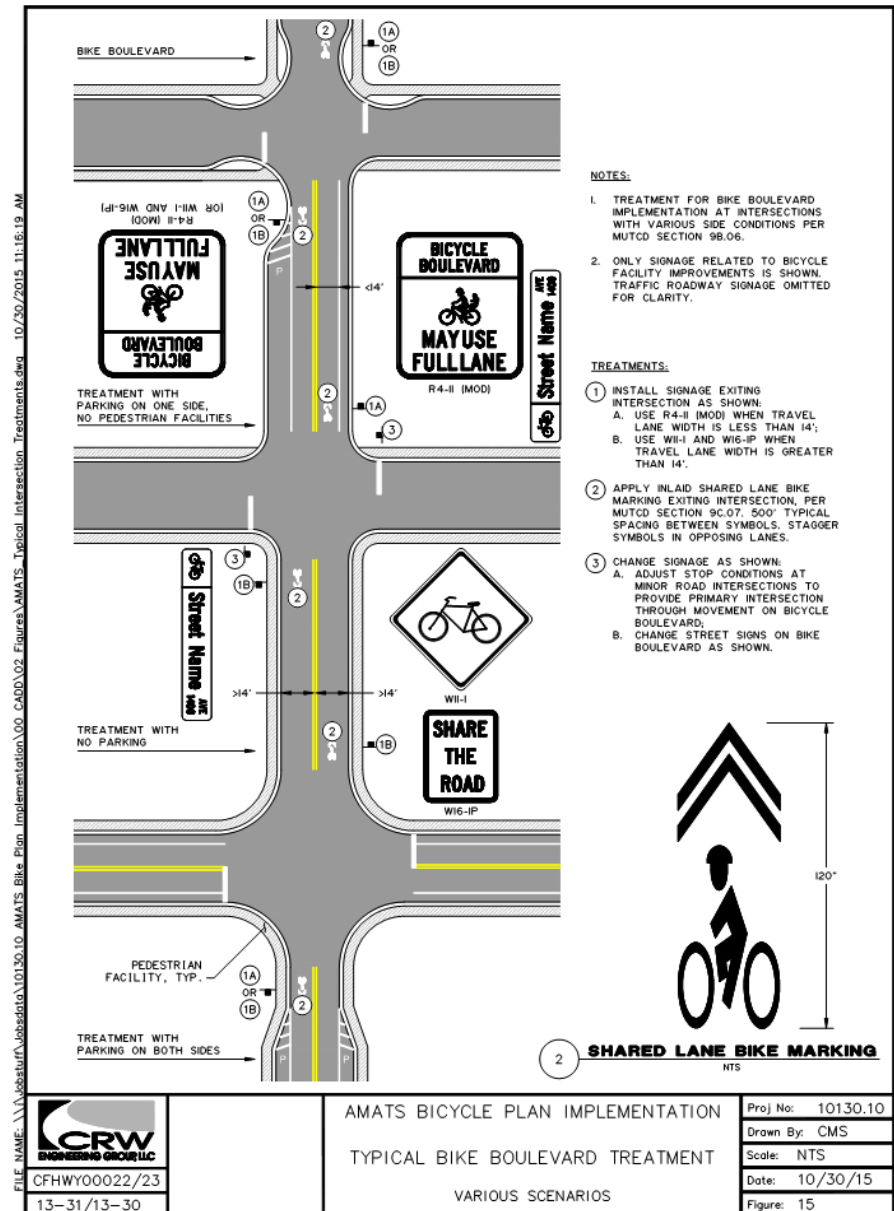


Standard Treatment: Bicycle Boulevard

23

Change signage as shown:

- ❑ Adjust stop conditions at minor road intersections to provide primary intersection through movement on bicycle boulevard
- ❑ Change street signs on bike boulevard as shown.

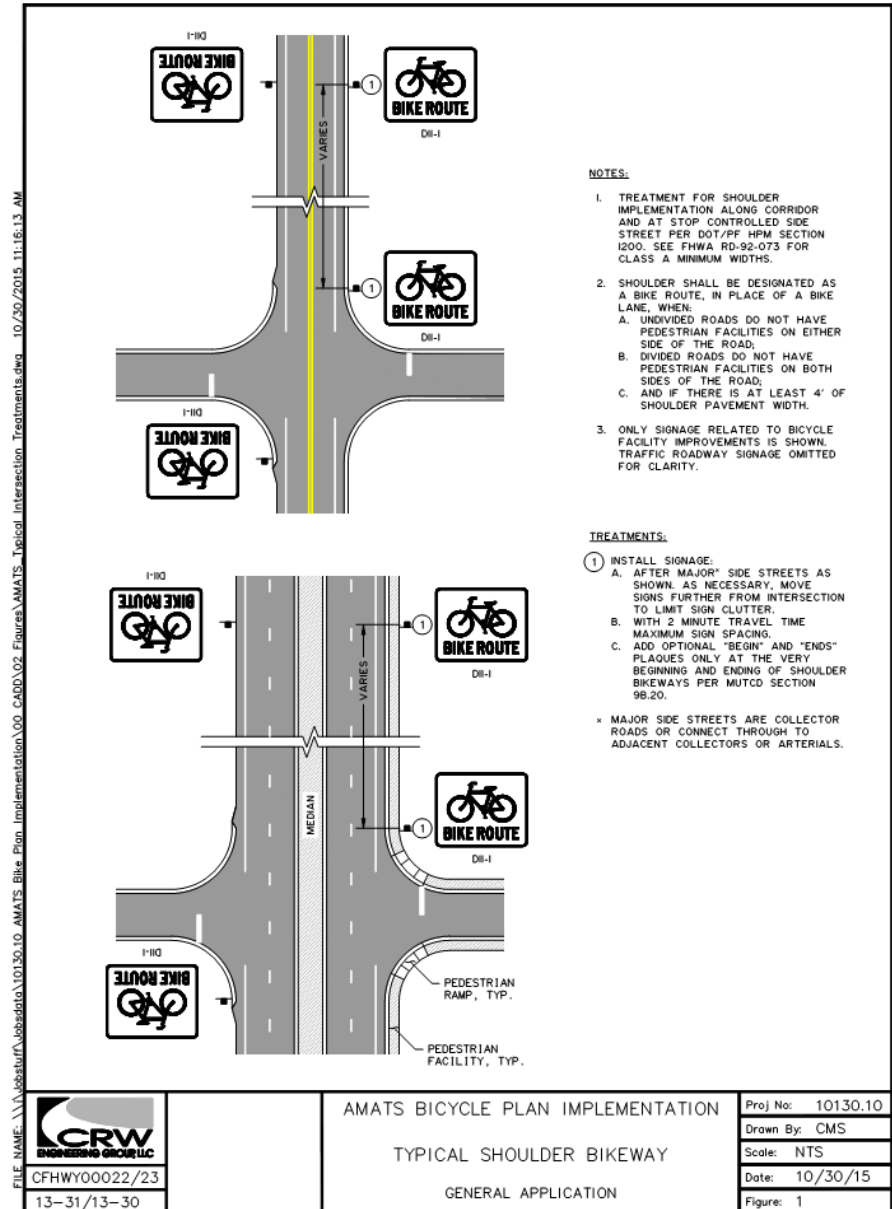


Design Criteria: Shoulder Bikeway

24

Shoulder shall be designated as a bike route, in place of a bike lane, when:

- ❑ Undivided roads do not have pedestrian facilities on either side of the road
- ❑ Divided roads do not have pedestrian facilities on both sides of the road
- ❑ And if there is at least 4' of shoulder pavement width

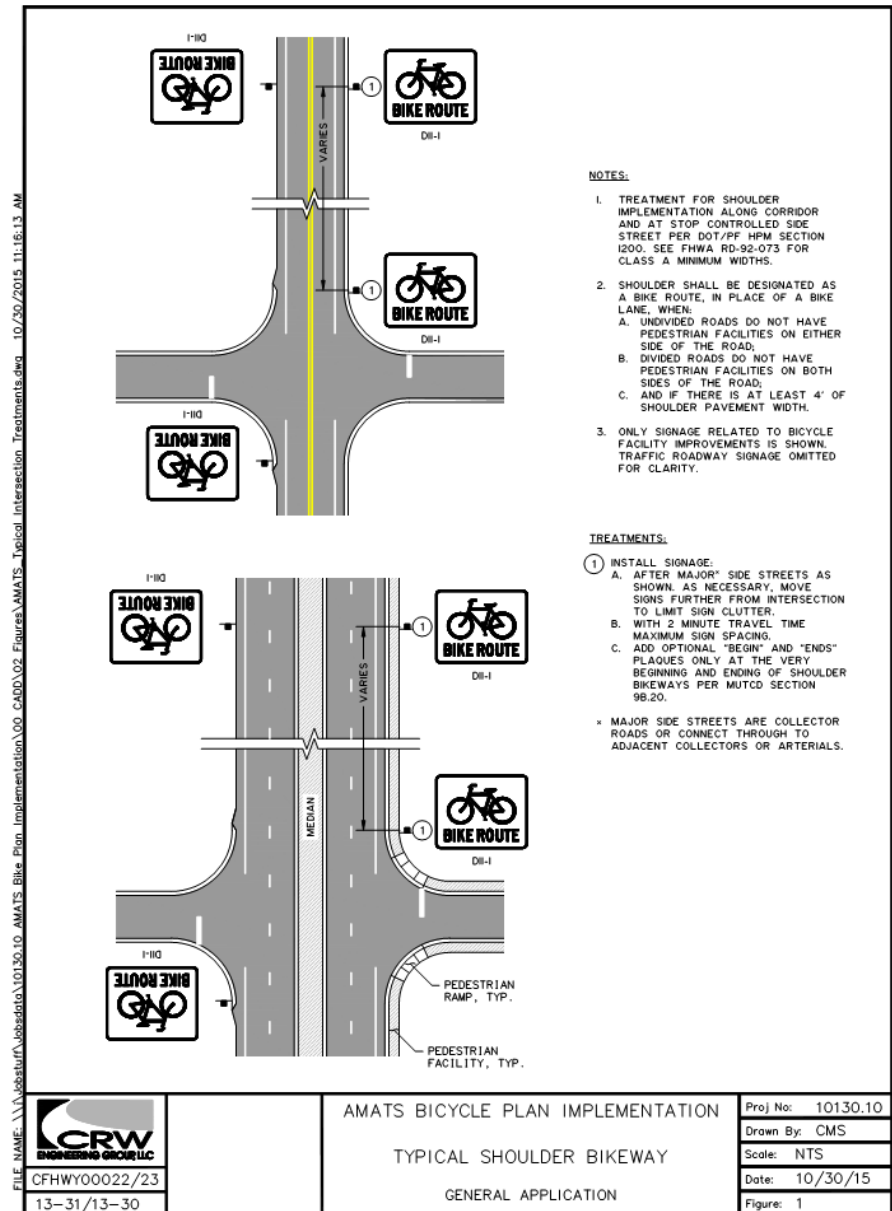


Standard Treatment: Shoulder Bikeway

25

Install signage:

- ❑ After major side streets as shown. As necessary, move signs further from intersection to limit sign clutter.
- ❑ With 2 minute travel time maximum sign spacing.
- ❑ Add optional “Begin” and “Ends” plaques only at the very beginning and ending of shoulder bikeways per MUTCD Section 9B.20.



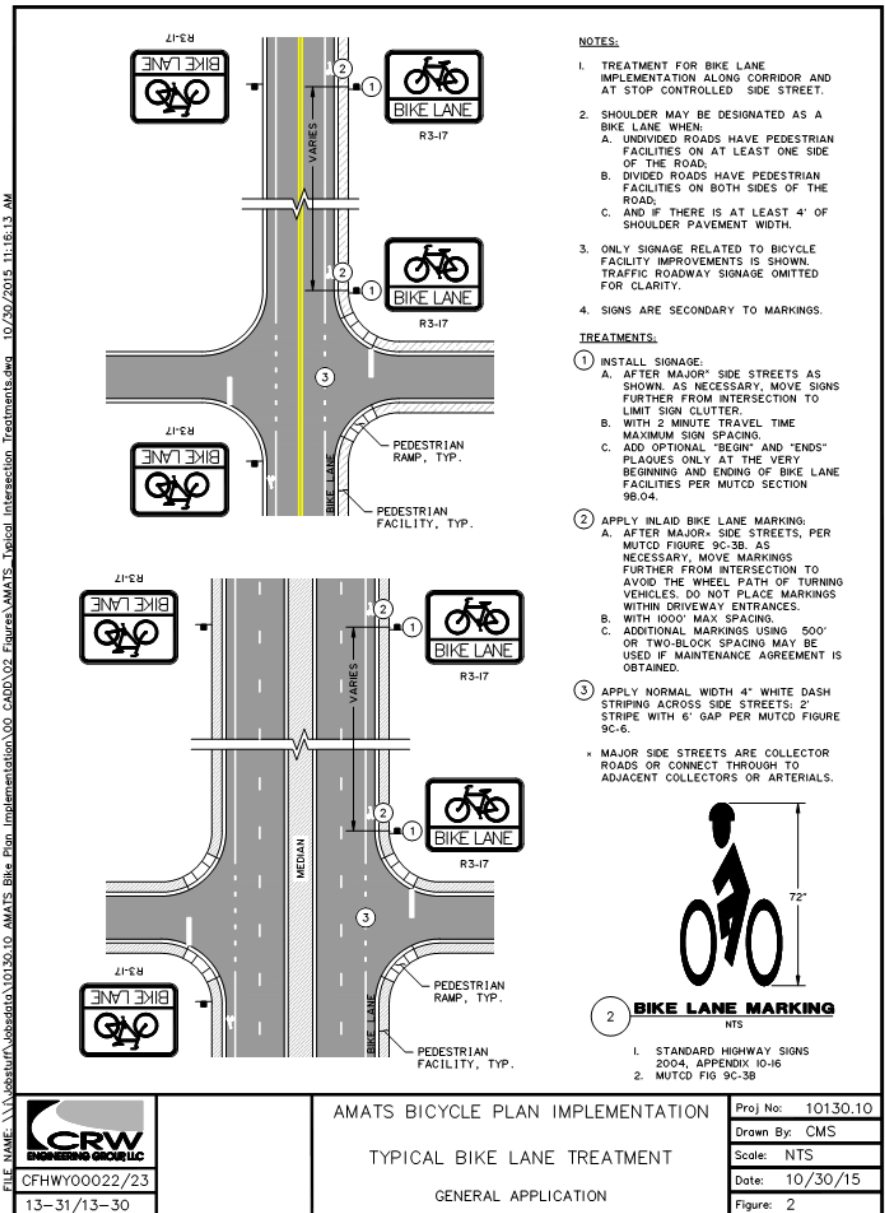
Design Criteria: Bike Lanes

26

Shoulder may be designated as a bike lane when:

- Undivided roads have pedestrian facilities on at least one side of the road
- Divided roads have pedestrian facilities on both sides of the road
- And if there is at least 4' of shoulder pavement width

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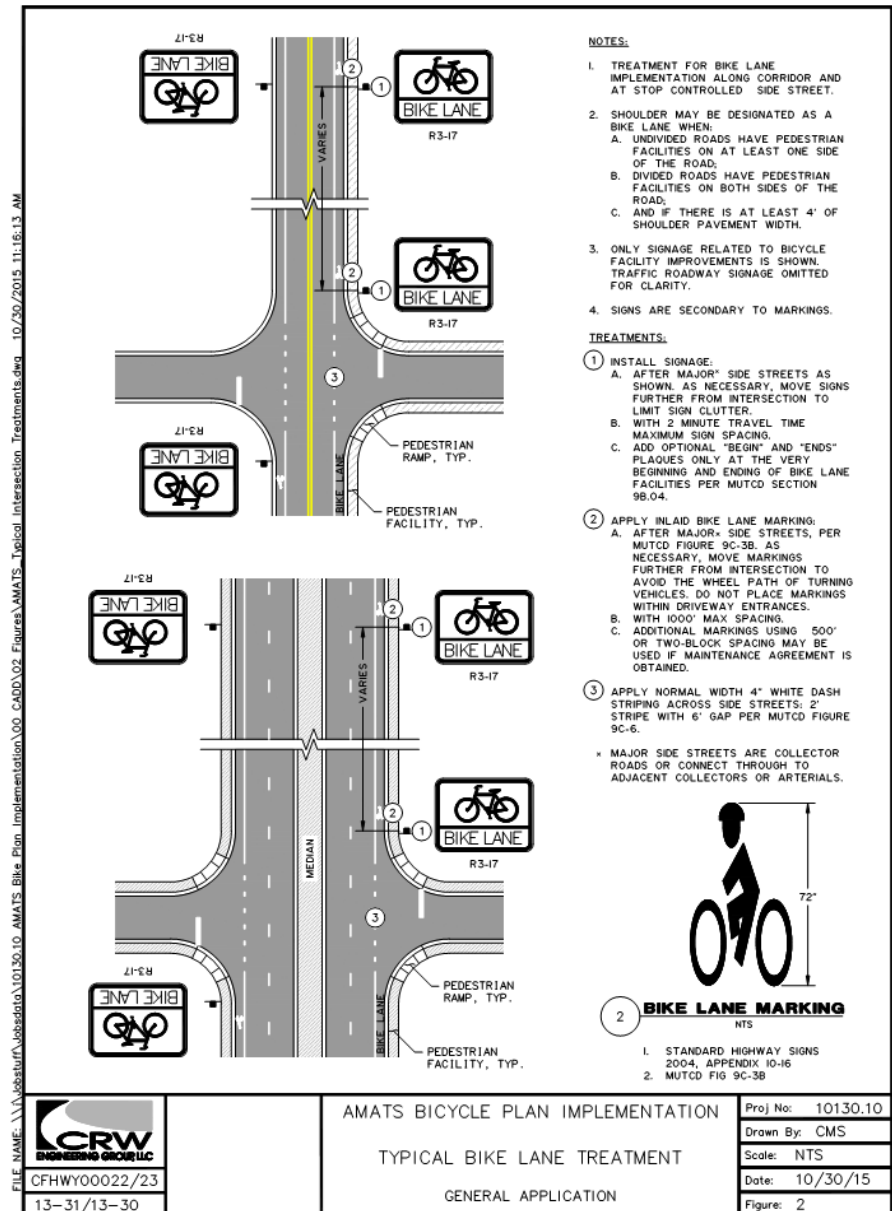


Standard Treatment: Bike Lanes

27

Install signage:

- After major side streets as shown. As necessary, move signs further from intersection to limit sign clutter.
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- Add optional “Begin” and “Ends” plaques only at the very beginning and ending of shoulder bikeways per MUTCD Section 9B.04.

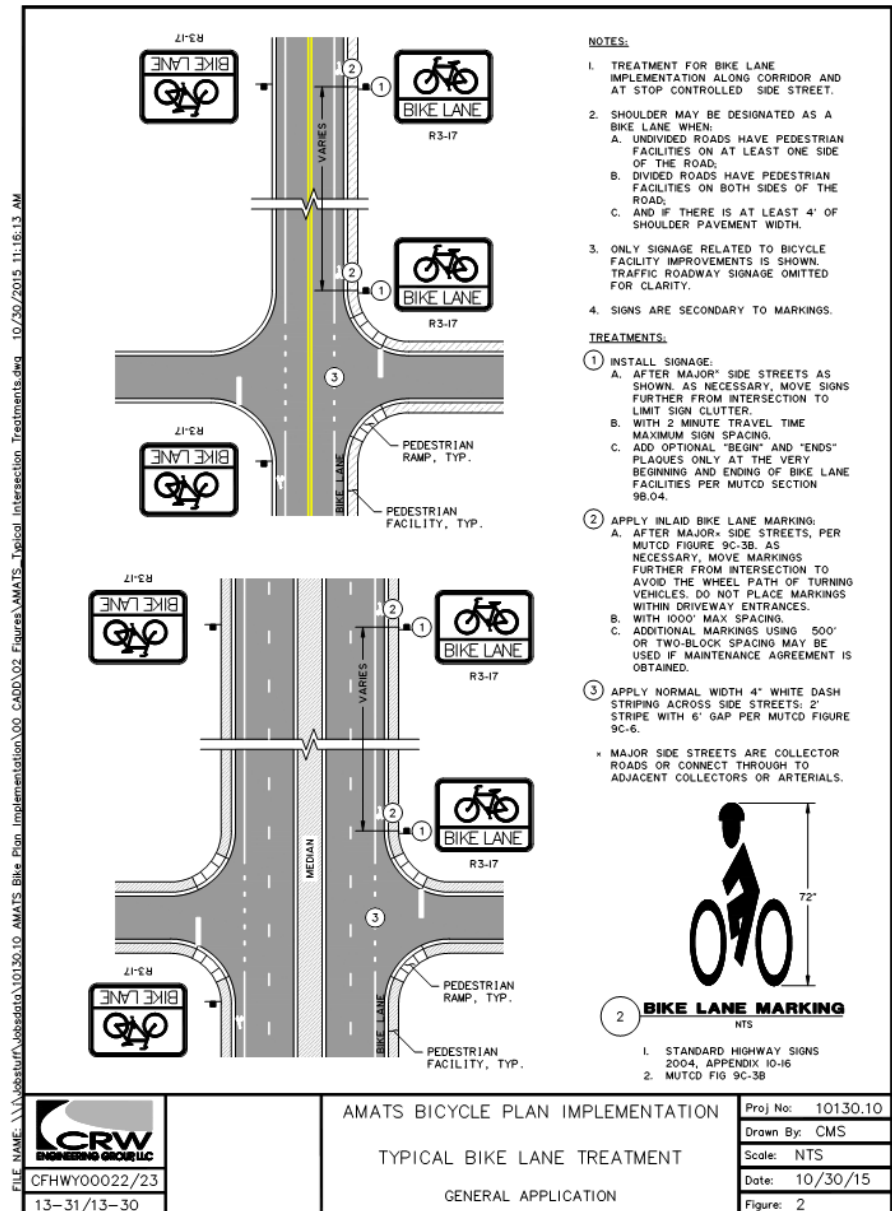


Standard Treatment: Bike Lanes

28

Apply inlaid bike lane markings:

- After major side streets, per MUTCD Figure 9C-3B. As necessary, move markings further from intersection to avoid the wheel path of turning vehicles. Do not place markings within driveway entrances
- With 1000' max. spacing.
- Additional markings using 500' or two block spacing may be used if maintenance agreement is obtained.



Challenges during implementation process

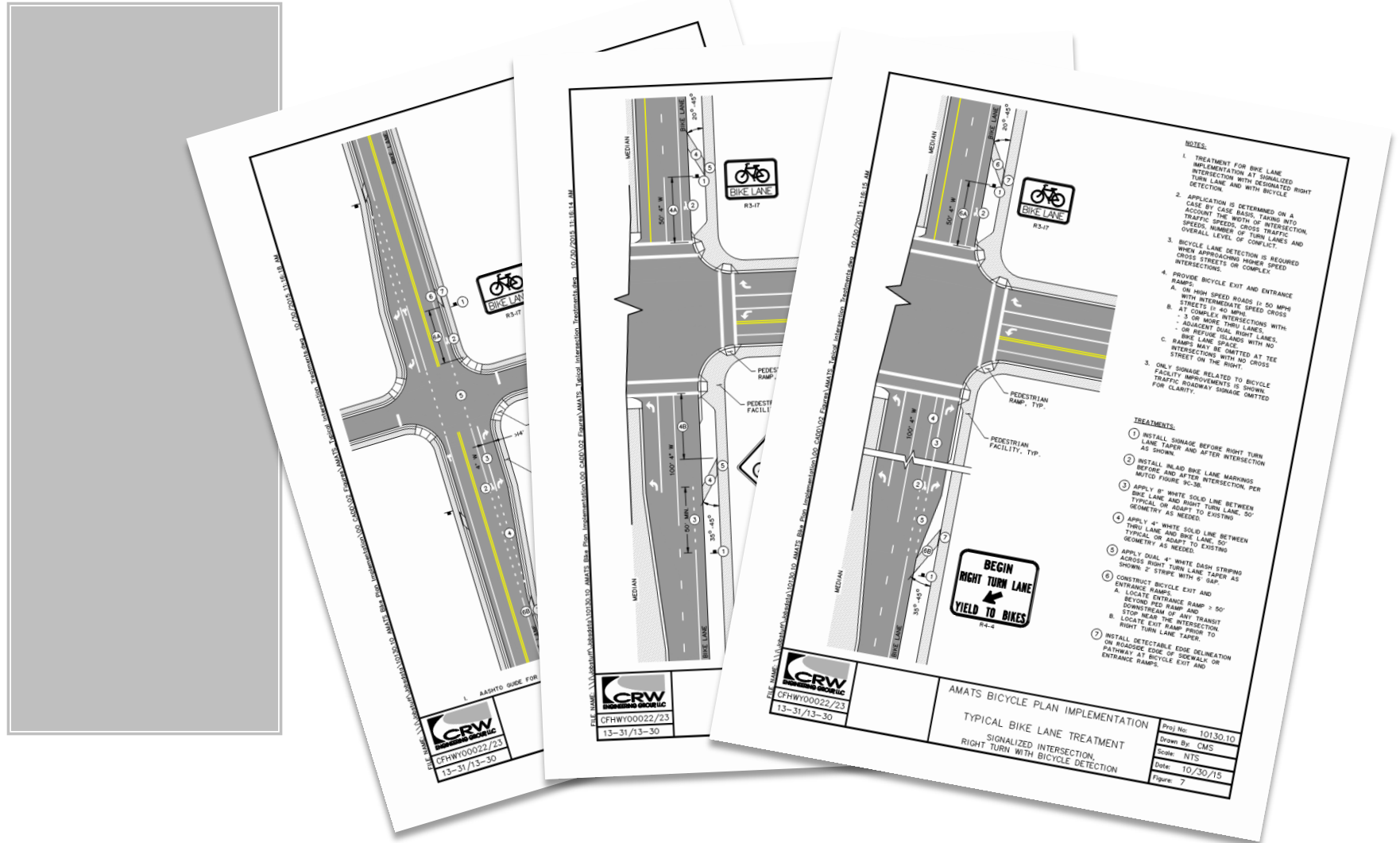
29

Treatments
are not 'one
size fits all'...

- ☐ Shoulder width varies throughout the corridor
- ☐ Pedestrian facilities vary throughout the corridor
- ☐ Maybe no existing bicycle facilities to connect to
- ☐ Condition of existing pavement
- ☐ Condition of existing pavement markings
- ☐ Maintenance considerations
- ☐ Functionality in winter conditions
- ☐ Not all intersections are the same

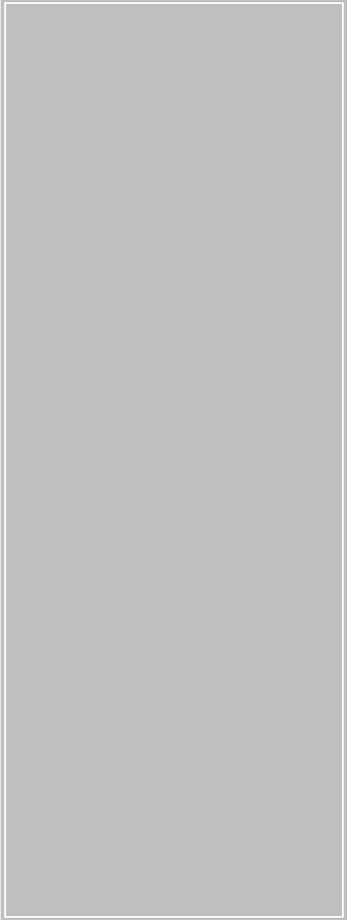
On-Street Bicycle Facility Treatment Figures

30



Primary Challenges for Cyclists at Intersections

31

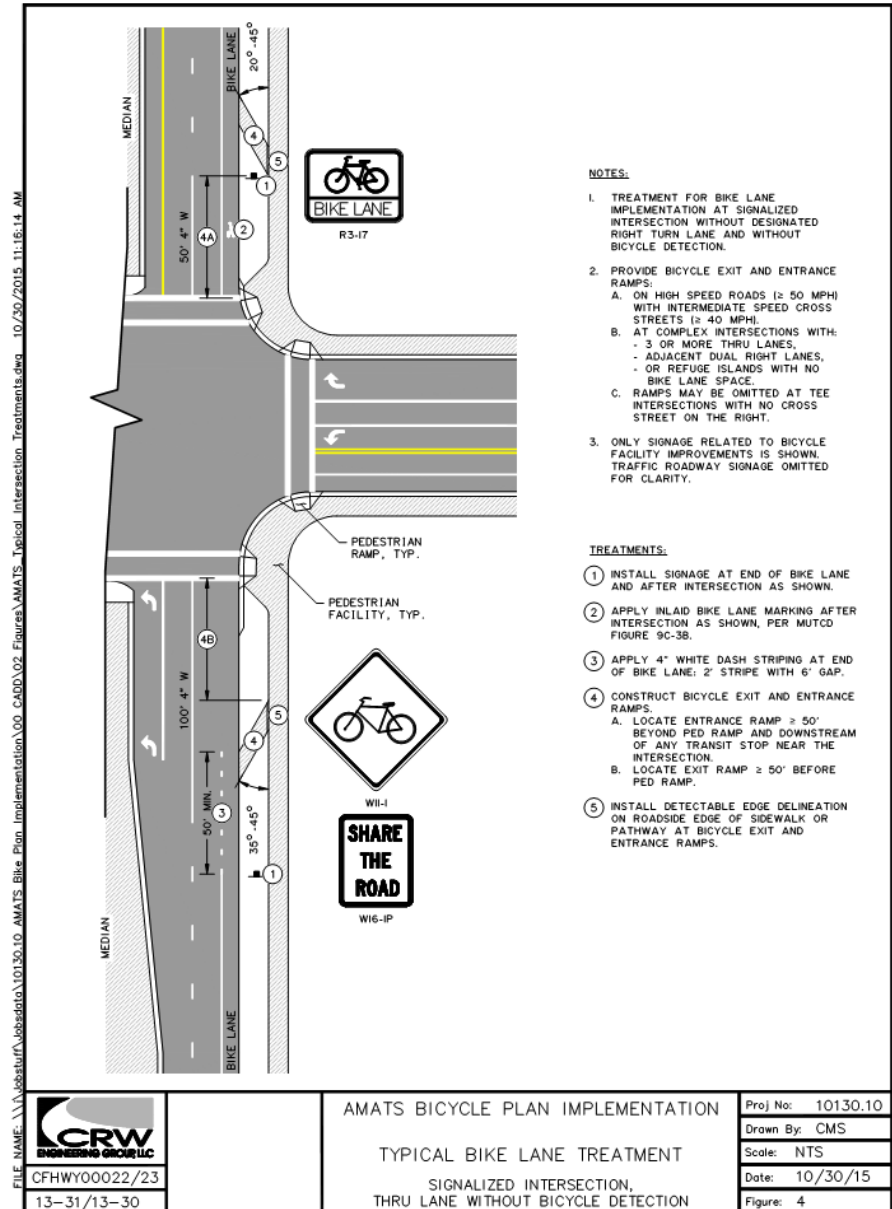
- 
- Potential conflicts with right turning traffic
 - Lack of bicycle detection at the intersection
 - Length of turn lane where a bicyclist is either between travel lanes

Potential Conflicts With Right Turning Traffic

32

There are six common scenarios:

- ❑ One combined through/right turn lane
- ❑ One right turn lane
- ❑ One drop lane
- ❑ Two right turn lanes
- ❑ One right turn lane and one combined through/right turn lane
- ❑ T-intersection with left turn lane and right turn lane

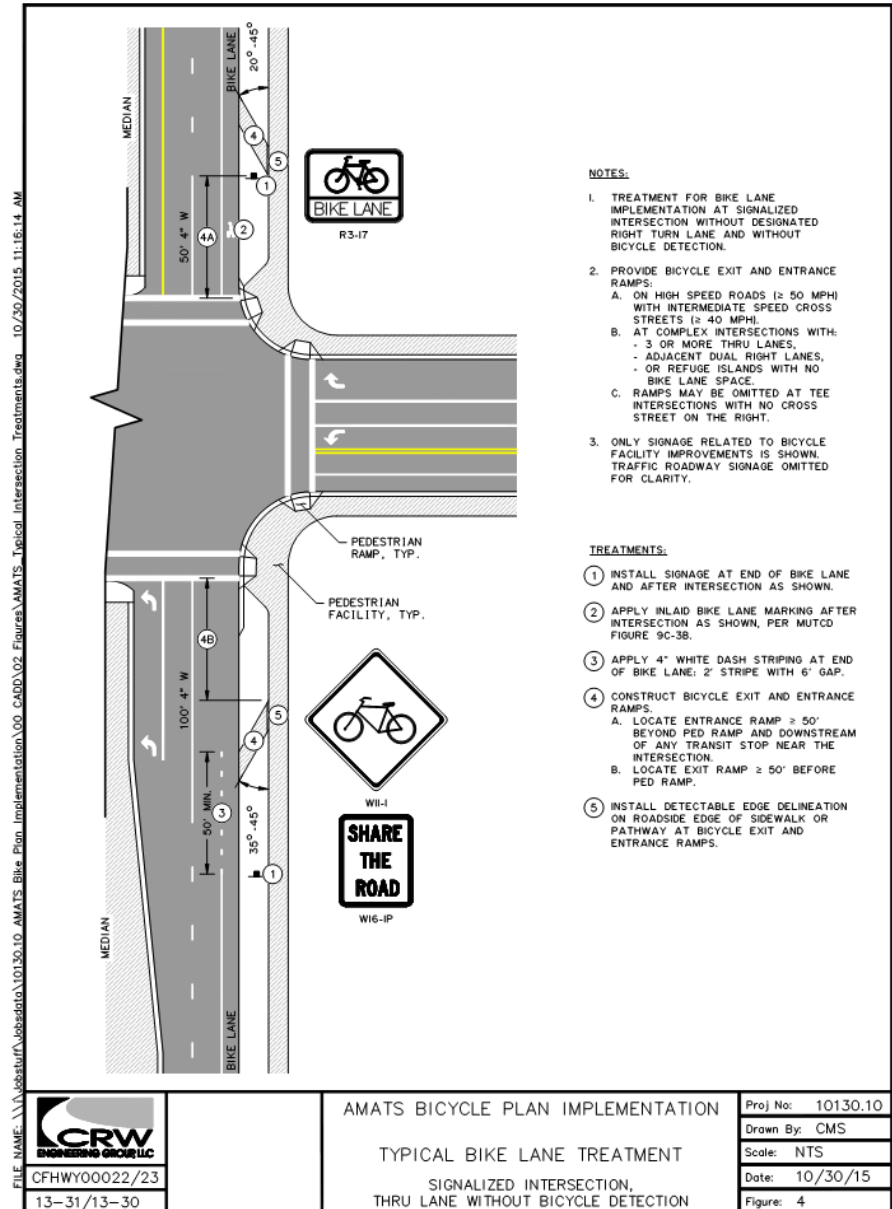


Potential Conflicts With Right Turning Traffic

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- ❑ T-intersection with left turn lane and right turn lane



Intersections Come in All Shapes and Sizes

34



Combined through/right, no space for through bike lane – Arctic Blvd & Fireweed Ln Nbound

Intersections Come in All Shapes and Sizes

35



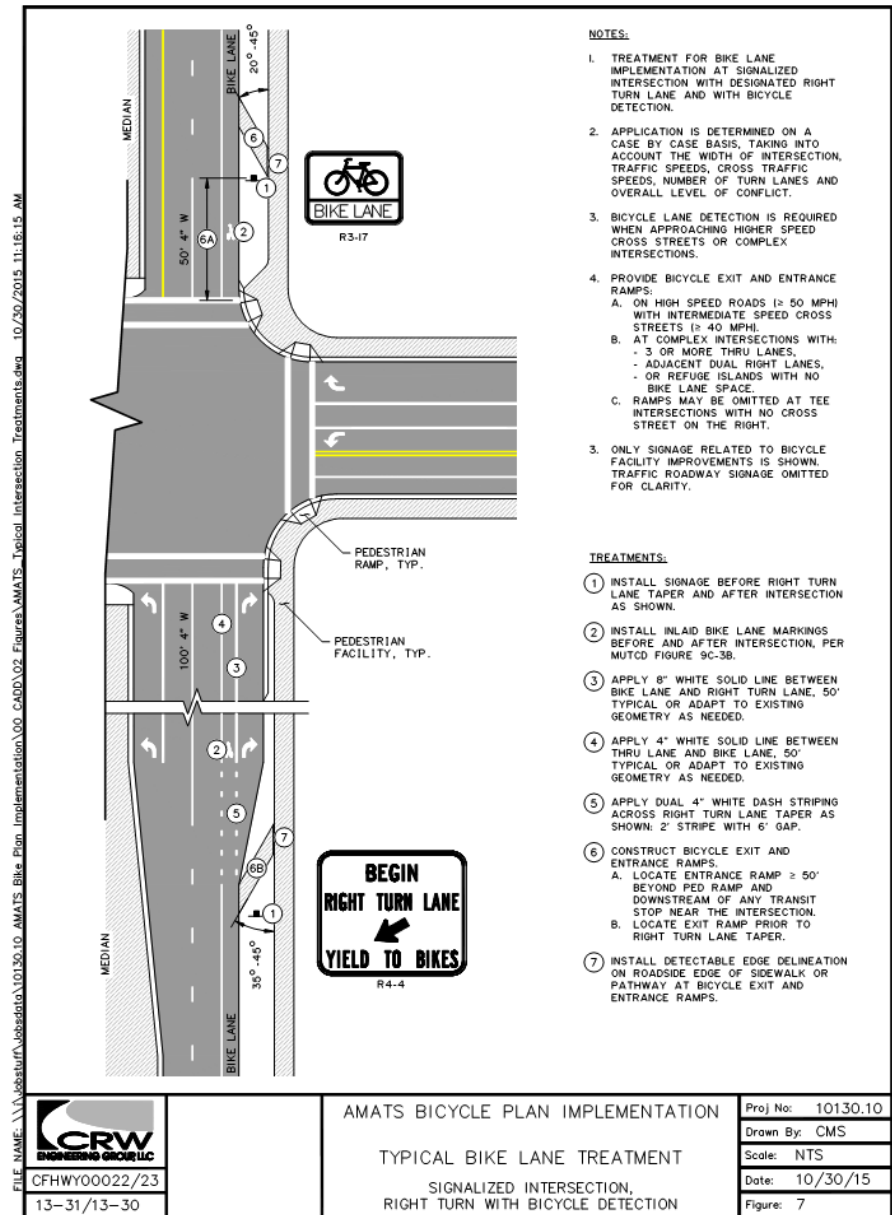
Combined through/right, space for through bike lane – A St & 9th Ave Nbound

Potential Conflicts With Right Turning Traffic

36

There are six common scenarios:

- ❑ One combined through/right turn lane
- ❑ One right turn lane
- ❑ One drop lane
- ❑ Two right turn lanes
- ❑ One right turn lane and one combined through/right turn lane
- ❑ T-intersection with left turn lane and right turn lane



Intersections Come in All Shapes and Sizes

37



Right turn lane, no space for through bike lane – Arctic Blvd & N. Lights Blvd Sbound

Intersections Come in All Shapes and Sizes

38



Right turn lane, space for through bike lane – A St & 33rd Ave Nbound

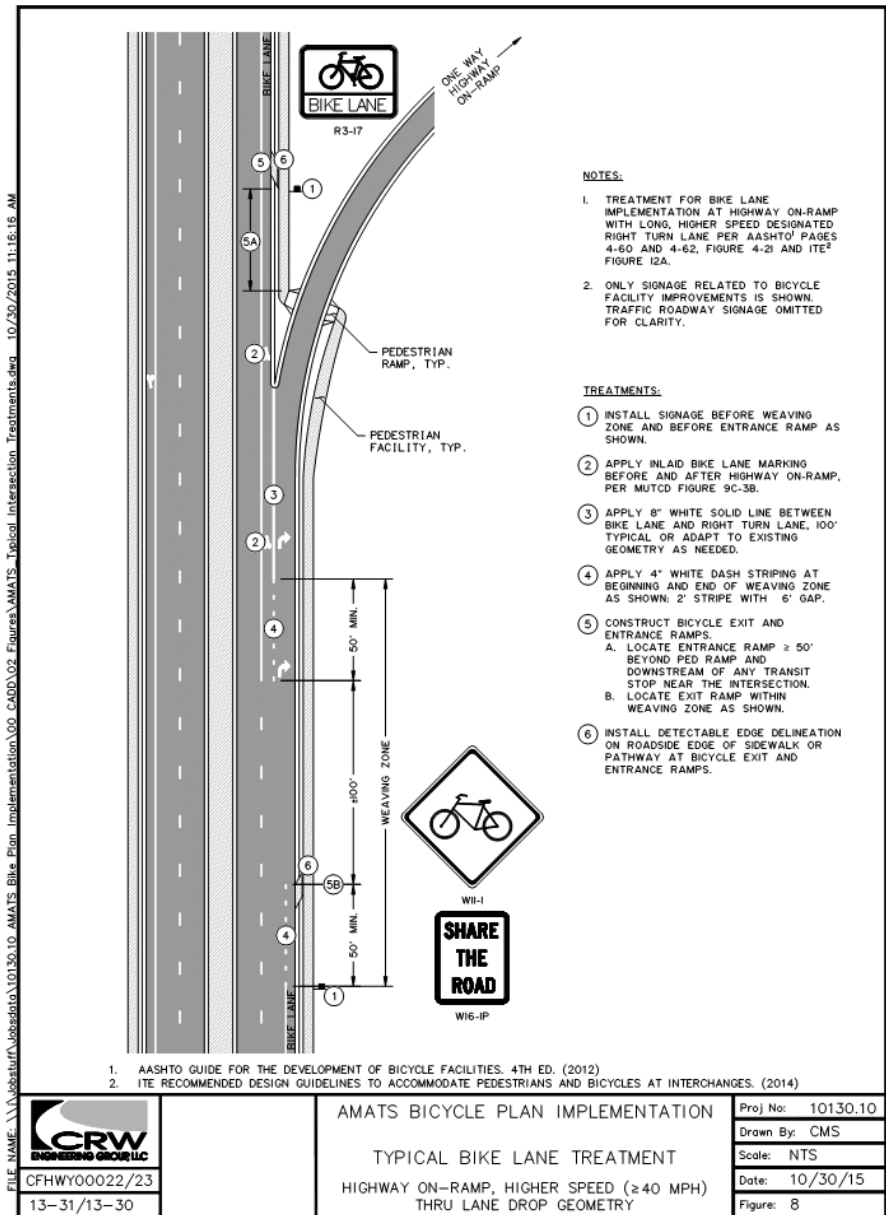
Potential Conflicts With Right Turning Traffic

39

There are six common scenarios:

- ❑ One combined through/right turn lane
- ❑ One right turn lane
- ❑ One drop lane
- ❑ Two right turn lanes
- ❑ One right turn lane and one combined through/right turn lane
- ❑ T-intersection with left turn lane and right turn lane

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Potential Conflicts With Right Turning Traffic

40

There are six common scenarios:

- ❑ One combined through/right turn lane
- ❑ One right turn lane
- ❑ One drop lane
- ❑ Two right turn lanes
- ❑ One right turn lane and one combined through/right turn lane
- ❑ T-intersection with left turn lane and right turn lane

Intersections Come in All Shapes and Sizes

41



Double right turn lane, space for through bike lane – A St & Benson Blvd Nbound

Intersections Come in All Shapes and Sizes

42



Combined through/right, right turn, no space for through bike lane – C St & N. Lights Blvd Sbound

Intersections Come in All Shapes and Sizes

43

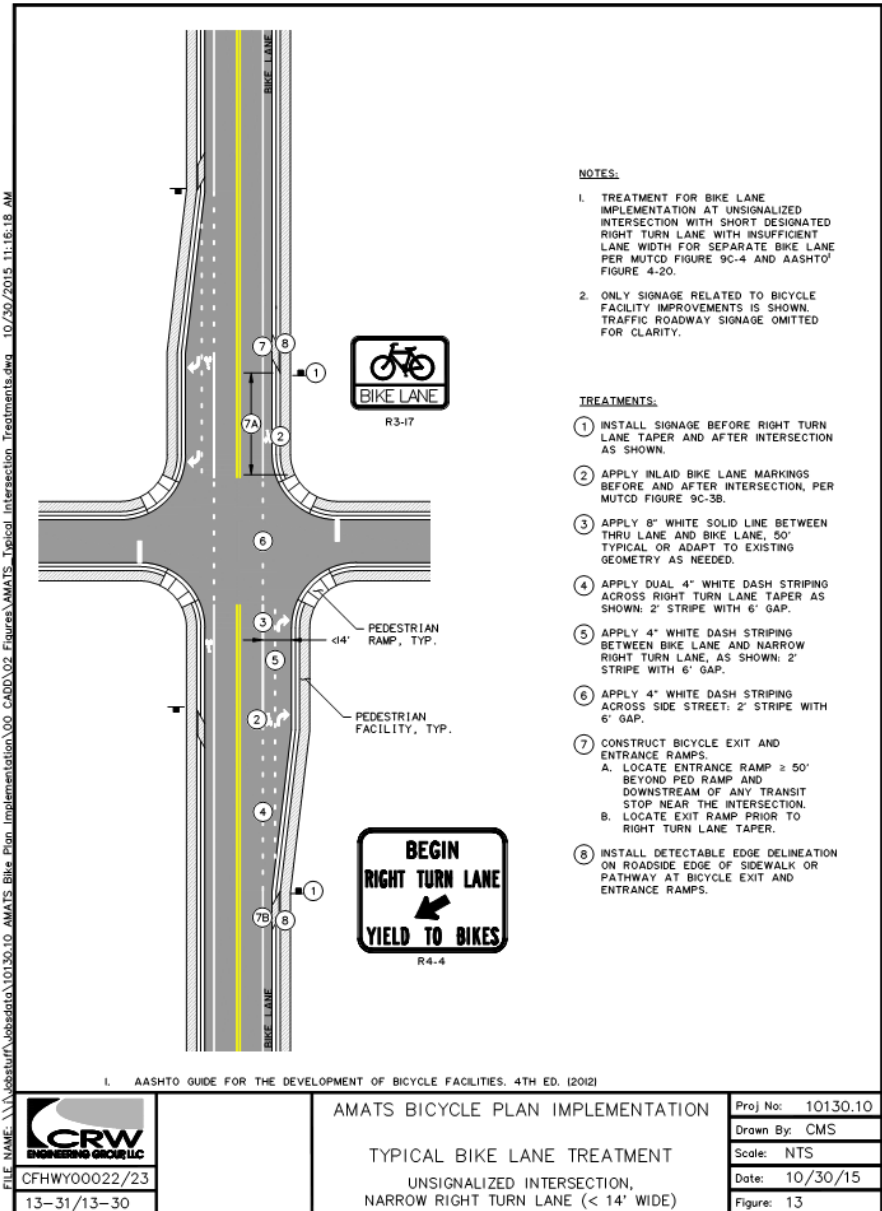


Left and right turn lanes, no space for through bike lane – G St & 9th Ave Sbound

Potential Conflicts With Right Turning Traffic

44

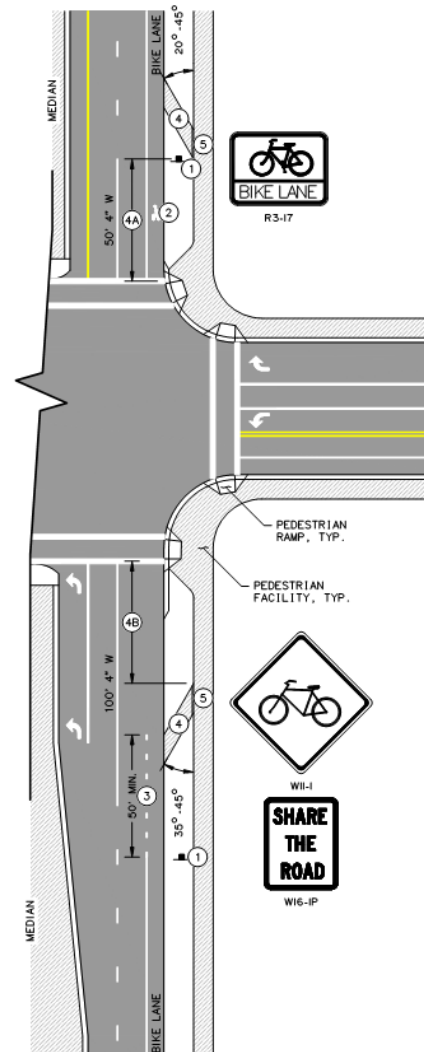
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Bicycle Detection at Intersections

45

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NOTES:

1. TREATMENT FOR BIKE LANE IMPLEMENTATION AT SIGNALIZED INTERSECTION WITHOUT DESIGNATED RIGHT TURN LANE AND WITHOUT BICYCLE DETECTION.
2. PROVIDE BICYCLE EXIT AND ENTRANCE RAMP:
 - A. ON HIGH SPEED ROADS (≥ 50 MPH) WITH INTERMEDIATE SPEED CROSS STREETS (≥ 40 MPH).
 - B. AT COMPLEX INTERSECTIONS WITH:
 - 3 OR MORE THRU LANES,
 - ADJACENT DUAL RIGHT LANES,
 - OR REFUGE ISLANDS WITH NO BIKE LANE SPACE.
 - C. RAMP MAY BE OMITTED AT TEE INTERSECTIONS WITH NO CROSS STREET ON THE RIGHT.
3. ONLY SIGNAGE RELATED TO BICYCLE FACILITY IMPROVEMENTS IS SHOWN. TRAFFIC ROADWAY SIGNAGE OMITTED FOR CLARITY.

TREATMENTS:

- ① INSTALL SIGNAGE AT END OF BIKE LANE AND AFTER INTERSECTION AS SHOWN.
- ② APPLY INLAID BIKE LANE MARKING AFTER INTERSECTION AS SHOWN, PER MUTCD FIGURE 9C-38.
- ③ APPLY 4' WHITE DASH STRIPING AT END OF BIKE LANE; 2' STRIPE WITH 6' GAP.
- ④ CONSTRUCT BICYCLE EXIT AND ENTRANCE RAMP:
 - A. LOCATE ENTRANCE RAMP $\geq 50'$ BEYOND PED RAMP AND DOWNSTREAM OF ANY TRANSIT STOP NEAR THE INTERSECTION.
 - B. LOCATE EXIT RAMP $\geq 50'$ BEFORE PED RAMP.
- ⑤ INSTALL DETECTABLE EDGE DELINEATION ON ROADSIDE EDGE OF SIDEWALK OR PATHWAY AT BICYCLE EXIT AND ENTRANCE RAMP.



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AMATS BICYCLE PLAN IMPLEMENTATION

TYPICAL BIKE LANE TREATMENT

SIGNALIZED INTERSECTION,
THRU LANE WITHOUT BICYCLE DETECTION

Proj No: 10130.10

Drawn By: CMS

Scale: NTS

Date: 10/30/15

Figure: 4

Bicycle Entrance and Exit Ramps

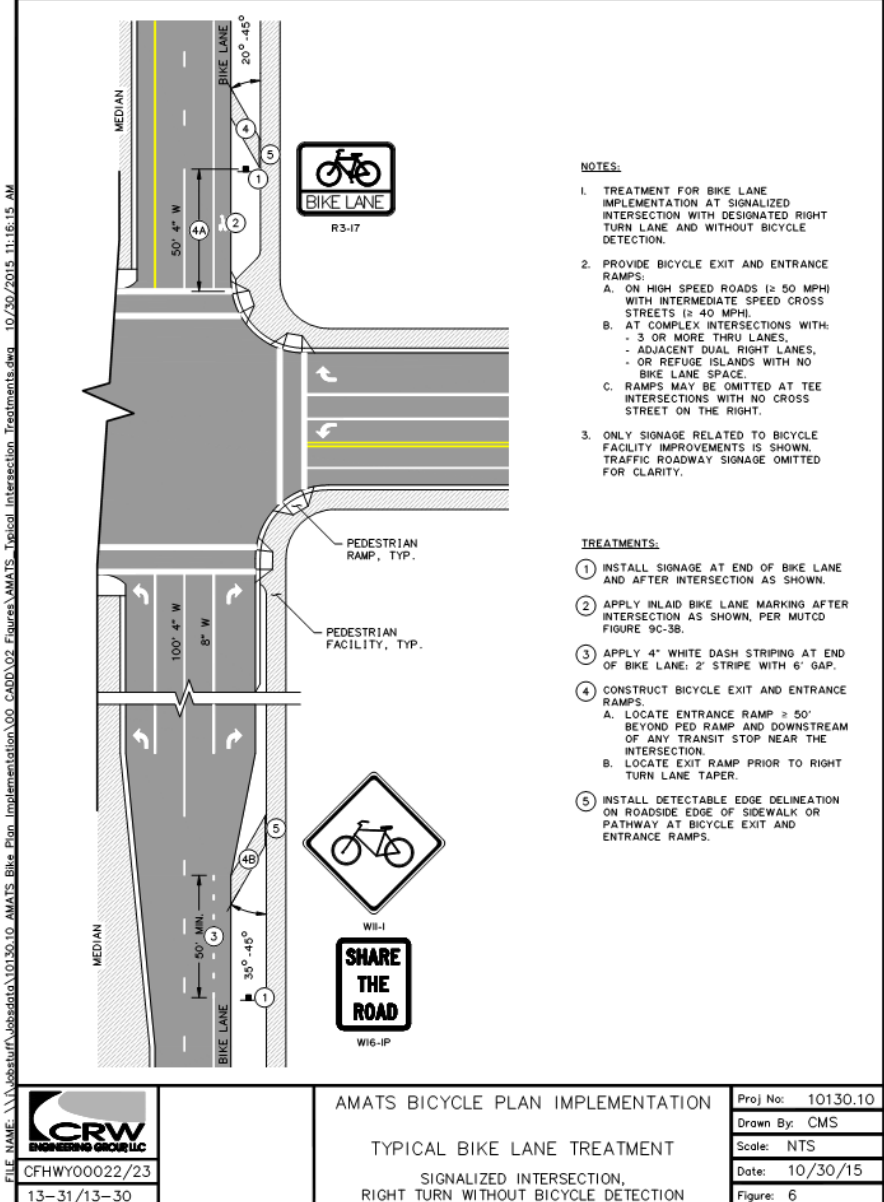
46



Bicycle Detection at Intersections

47

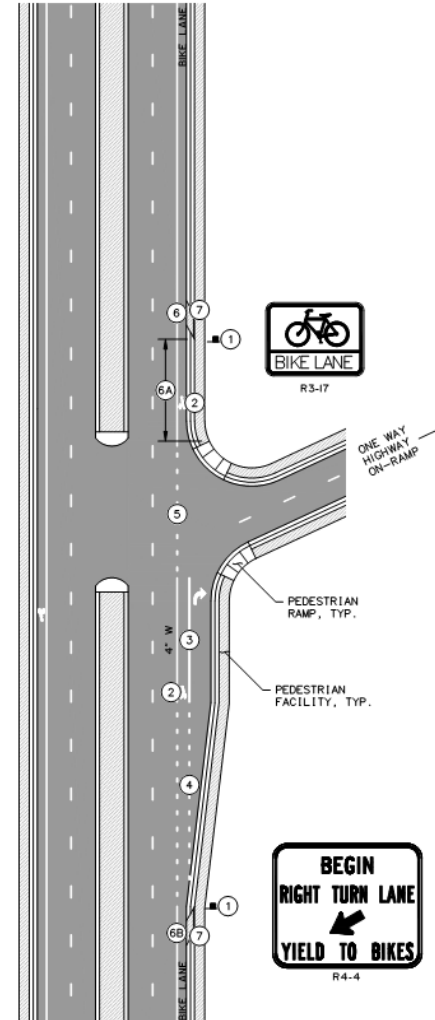
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Length of Turn Lanes

48

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NOTES:

1. TREATMENT FOR BIKE LANE IMPLEMENTATION AT HIGHWAY ON-RAMP WITH SHORT, LOW SPEED OR LOW VOLUME DESIGNATED RIGHT TURN LANE PER AASHTO PAGE 4-62, FIGURE 4-20 AND 4-43 AND ITE² FIGURE 11A.
2. ONLY SIGNAGE RELATED TO BICYCLE FACILITY IMPROVEMENTS IS SHOWN. TRAFFIC ROADWAY SIGNAGE OMITTED FOR CLARITY.

TREATMENTS:

1. INSTALL SIGNAGE BEFORE RIGHT TURN LANE TAPER AND AFTER ON-RAMP AS SHOWN.
2. APPLY INLAID BIKE LANE MARKINGS BEFORE AND AFTER ON-RAMP, PER MUTCD FIGURE 9C-3B.
3. APPLY 8" WHITE SOLID LINE BETWEEN BIKE LANE AND RIGHT TURN LANE; 50' TYPICAL OR ADAPT TO EXISTING GEOMETRY AS NEEDED.
4. APPLY DUAL 4" WHITE DASH STRIPING ACROSS RIGHT TURN LANE TAPER AS SHOWN; 2' STRIPE WITH 6' GAP.
5. APPLY 4" WHITE DASH STRIPING ACROSS ON-RAMP; 2' SKIP STRIPE WITH 6' GAP.
6. CONSTRUCT BICYCLE EXIT AND ENTRANCE RAMPS.
 - A. LOCATE ENTRANCE RAMP $\geq 50'$ BEYOND PED RAMP AND DOWNSTREAM OF ANY TRANSIT STOP NEAR THE INTERSECTION.
 - B. LOCATE EXIT RAMP PRIOR TO RIGHT TURN LANE TAPER.
7. INSTALL DETECTABLE EDGE DELINEATION ON ROADSIDE EDGE OF SIDEWALK OR PATHWAY AT BICYCLE EXIT AND ENTRANCE RAMPS.

1. AASHTO GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES. 4TH ED. (2012)
2. ITE RECOMMENDED DESIGN GUIDELINES TO ACCOMMODATE PEDESTRIANS AND BICYCLES AT INTERCHANGES. (2014)



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13-31/13-30

AMATS BICYCLE PLAN IMPLEMENTATION

TYPICAL BIKE LANE TREATMENT

HIGHWAY ON-RAMP, LOW SPEED (≤ 35 MPH)
SHORT RIGHT TURN LANE GEOMETRY

Proj No: 10130.10

Drawn By: CMS

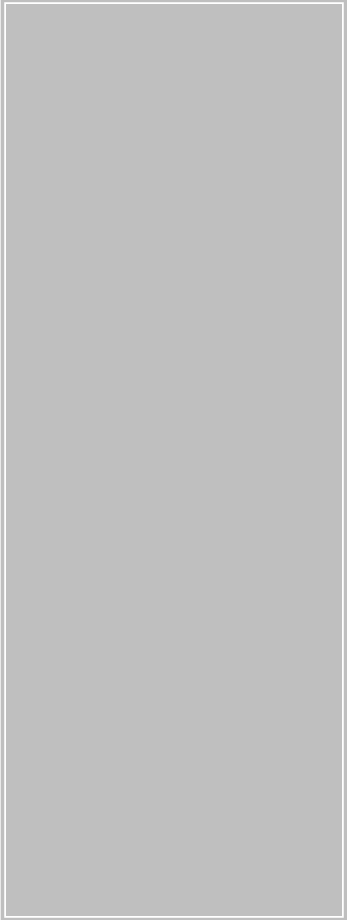
Scale: NTS

Date: 10/30/15

Figure: 10

Considerations When Designing Intersections

49

- 
- ☐ Is a bicycle facility proposed on this route?
 - ☐ Existing bicycle facilities exiting the intersection?
 - ☐ What are the potential vehicle-bicycle conflicts?
 - ☐ Length of turn lanes
 - ☐ Existing pavement width, and turn lane widths
 - ☐ Are turn lane widths sized correctly?
 - ☐ Can lane widths be reallocated?
 - ☐ Location of loop detectors
 - ☐ Bicycle Detection

Takeaways

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- Bicycle facility types are applicable in different contexts
- Standard treatment figures address some gaps in existing guidelines, challenging intersections
- Treatments and existing bicycle infrastructure is a work in progress

