

Conducting Bicycle Road Safety Audits



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July 31, 2018



Housekeeping

⇒ **Problems with audio?**

Dial into the phone line instead of using “mic & speakers”

⇒ **Webinar issues?**

Re-Load the webpage and log back into the webinar. Or send note of an issue through the Question box.

⇒ **Questions?**

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Archive and Certificates

Archive posted at www.pedbikeinfo.org/webinars

- ⇒ Copy of presentations
- ⇒ Recording (within 1-2 days)
- ⇒ Links to resources

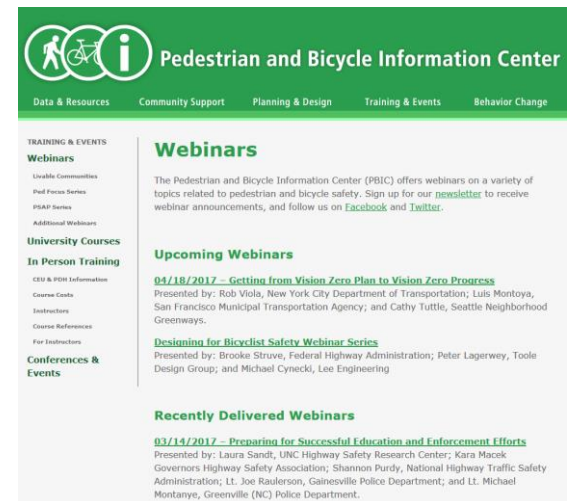
Follow-up email will include...

- ⇒ Link to certificate of attendance
- ⇒ Information about webinar archive



Webinars and News

- ⇒ Find upcoming webinars and webinar archives at pedbikeinfo.org/webinars
- ⇒ Follow us for the latest PBIC News
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The screenshot shows the website for the Pedestrian and Bicycle Information Center (PBIC). The header includes the PBIC logo and navigation links: Data & Resources, Community Support, Planning & Design, Training & Events, and Behavior Change. The main content area is titled "Webinars" and contains the following information:

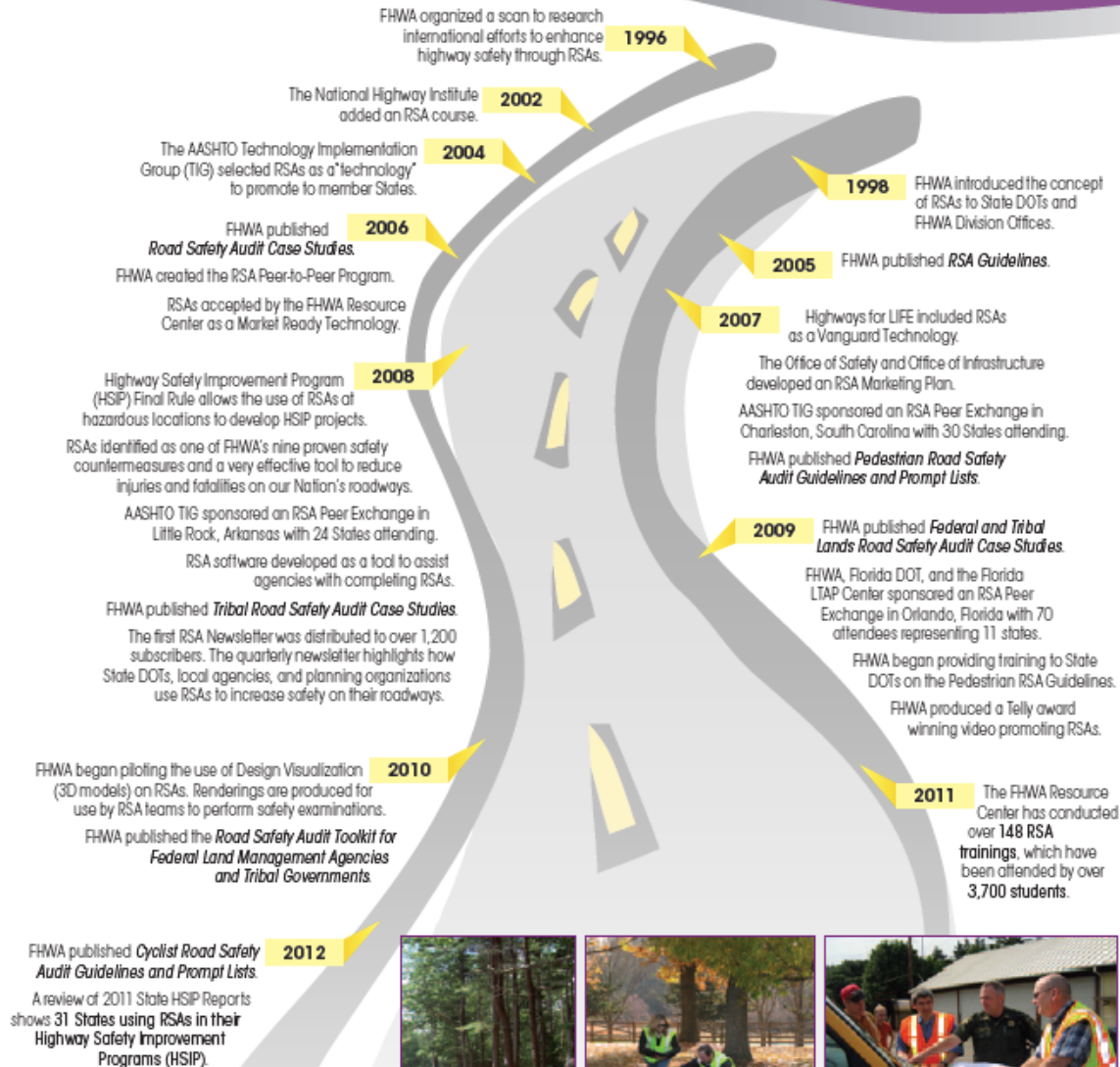
- Webinars:** The Pedestrian and Bicycle Information Center (PBIC) offers webinars on a variety of topics related to pedestrian and bicycle safety. Sign up for our [newsletter](#) to receive webinar announcements, and follow us on [Facebook](#) and [Twitter](#).
- Upcoming Webinars:**
 - 04/18/2017 – Getting from Vision Zero Plan to Vision Zero Progress**
Presented by: Rob Viola, New York City Department of Transportation; Luis Montoya, San Francisco Municipal Transportation Agency; and Cathy Tuttle, Seattle Neighborhood Greenways.
 - Designing for Bicyclist Safety Webinar Series**
Presented by: Brooke Struve, Federal Highway Administration; Peter Lagerwey, Toole Design Group; and Michael Cynecki, Lee Engineering
- Recently Delivered Webinars:**
 - 03/14/2017 – Preparing for Successful Education and Enforcement Efforts**
Presented by: Laura Sandt, UNC Highway Safety Research Center; Kara Macek, Governors Highway Safety Association; Shannon Purdy, National Highway Traffic Safety Administration; LT. Joe Raulerson, Gainesville Police Department; and LT. Michael Montanye, Greenville (NC) Police Department.



The screenshot shows the Facebook page for the Pedestrian and Bicycle Information Center. The page features the PBIC logo, the name "Pedestrian and Bicycle Information Center", and the website address www.pedbikeinfo.org. The page is categorized as a "Government Organization" and has 3,509 likes and 3,446 followers. The main content area displays a "VISION ZERO STRATEGIES SERIES" video thumbnail. The page also includes a "Send Message" button and a "Create a Page" link in the left sidebar.



The Road to RSA Success





Bicycle Road Safety Audits

Presented by
Elissa Goughnour

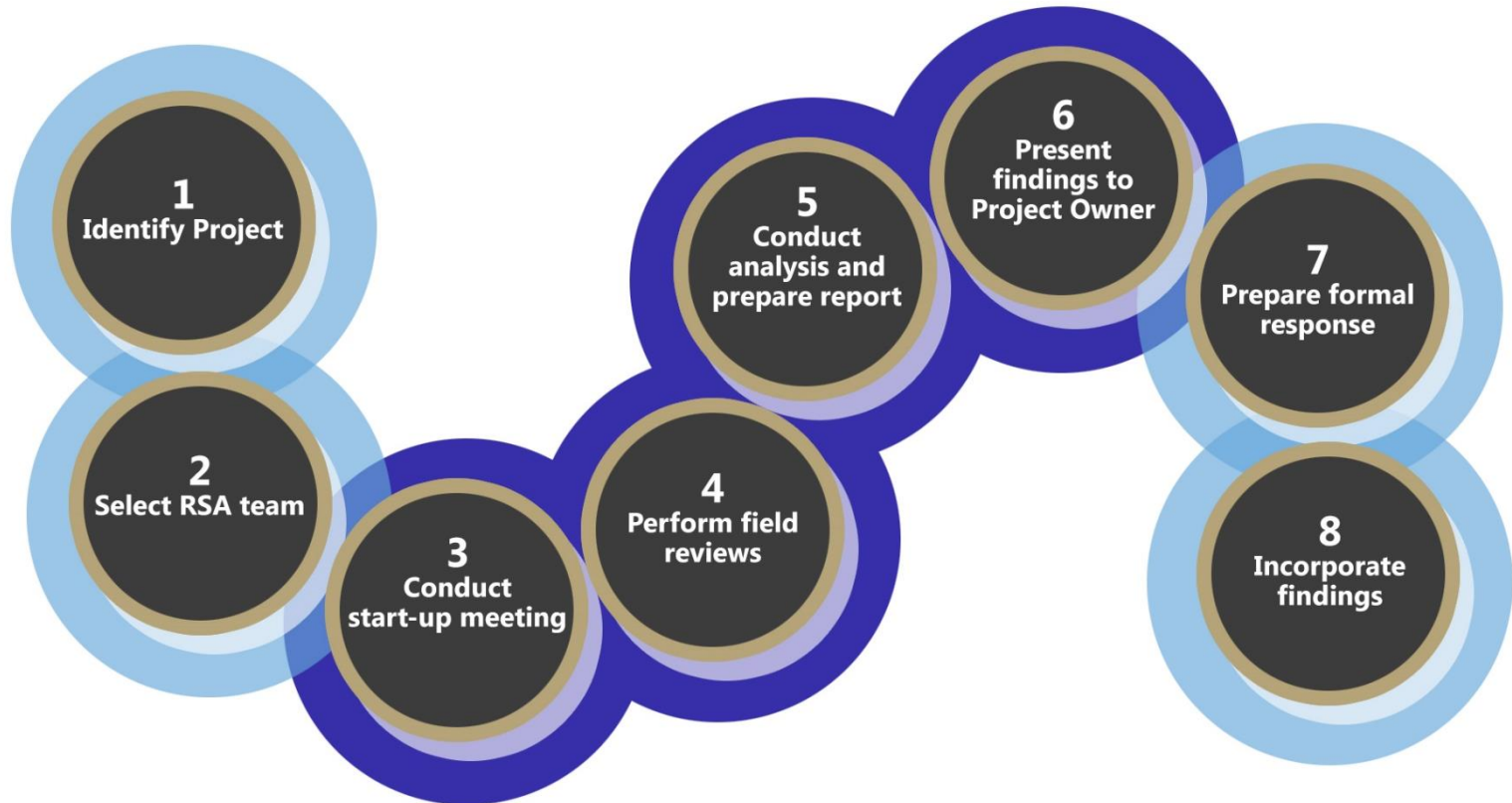
Topics Covered in this Presentation

- What is an RSA?
- What is the purpose of a bicycle RSA guide?
- Review bicycle RSA guide content
 - Background
 - Tools
 - Prompt Lists


What is a Road Safety Audit?

A road safety audit is a formal safety performance examination of an existing or future road or intersection by an independent multidisciplinary RSA team.

RSA Process



Responsibilities

-  RSA Team
-  Design Team / Project Owner

Why a Bicycle RSA Guide?

- RSAs may not adequately consider cyclists.
- RSAs can be used to address cyclists' issues.
- Crash data typically does not tell the whole story.



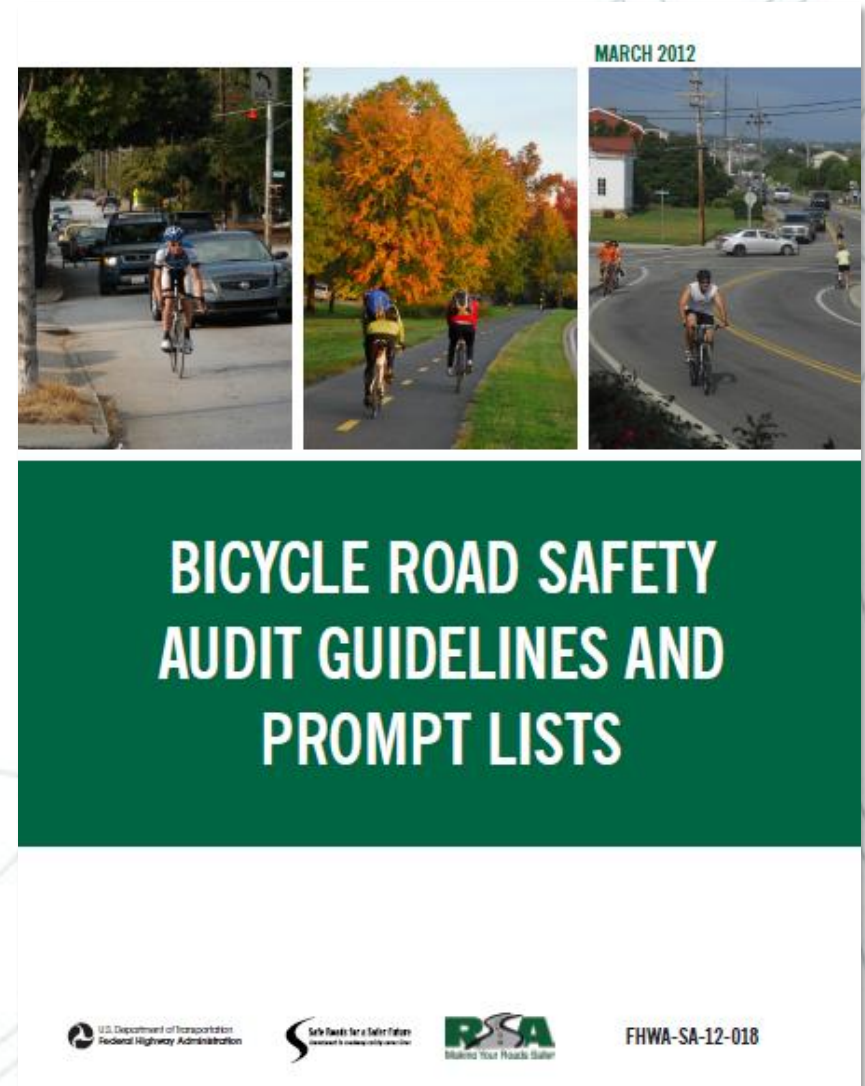
Purpose of Guide



Provide transportation agencies and RSA teams with a better understanding of the needs of bicyclists of all abilities in the transportation system when conducting an RSA.

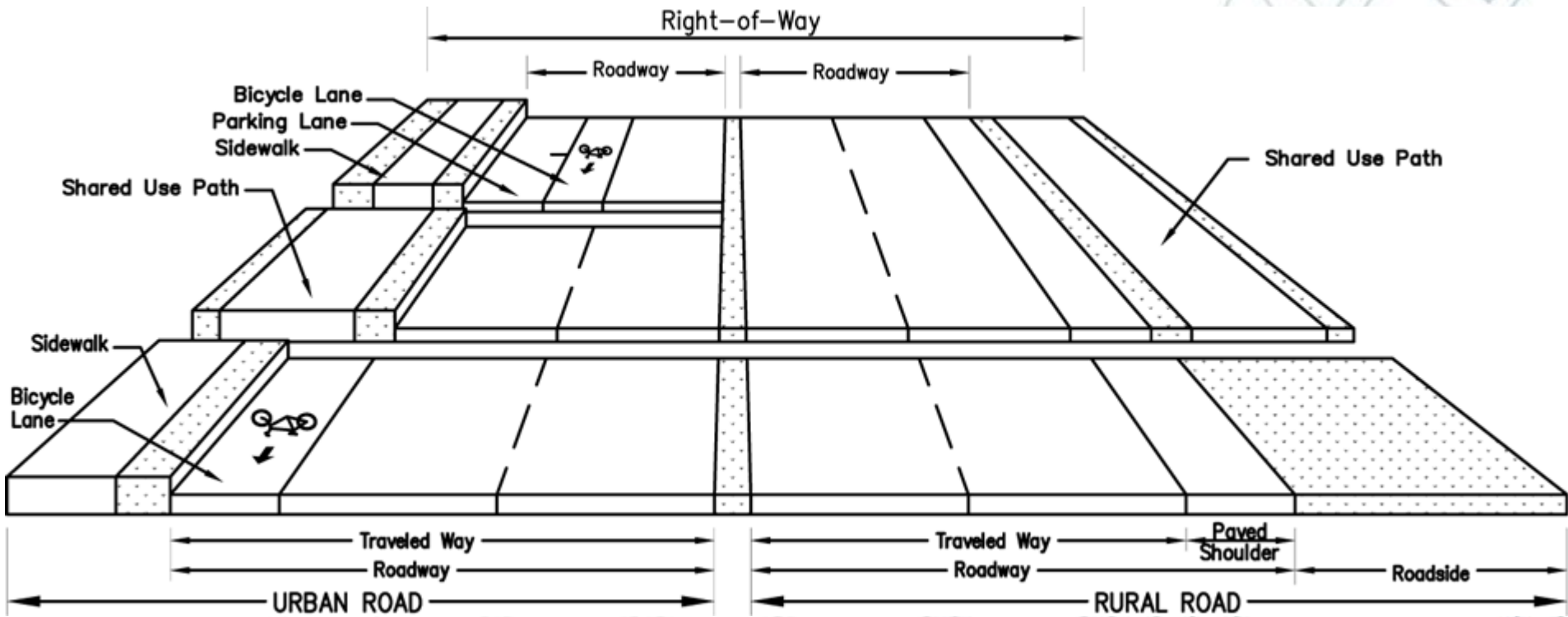
Bicycle RSA Guide Outline

1. Introduction
2. Principles of Bicyclist Safety
3. Bicyclists in the RSA Process
4. Using the Prompt Lists
5. Prompt Lists



https://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa12018/

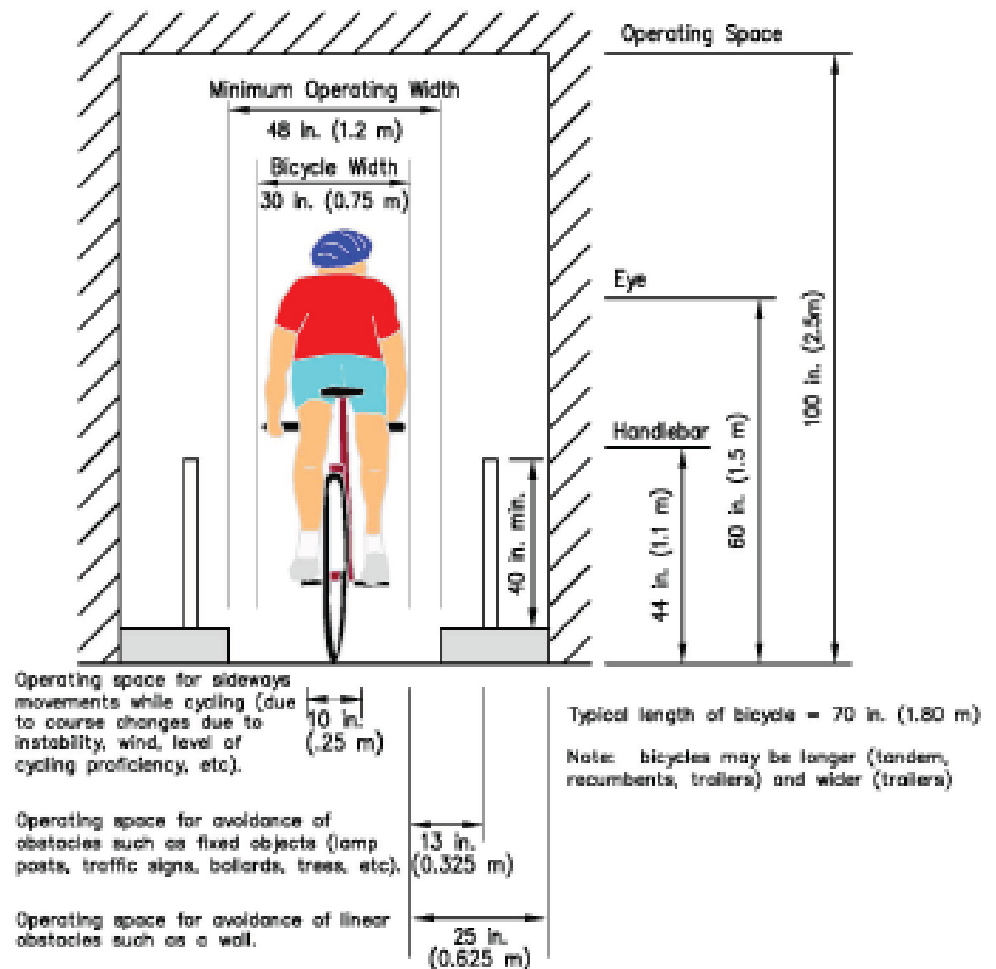
Principles of Bicyclist Safety



Principles of Bicyclist Safety

The Characteristics of Cyclists

- Space
- Length
- Stability
- Speed
- Vulnerability



Principles of Bicyclist Safety

- Surface condition
 - Impact bicyclist more than motorist
- Speed
 - Increase crash severity
- Volume
 - Make maneuvering in traffic more difficult
- Heavy Vehicles
 - Larger width
 - Bus activity
 - Pavement deterioration

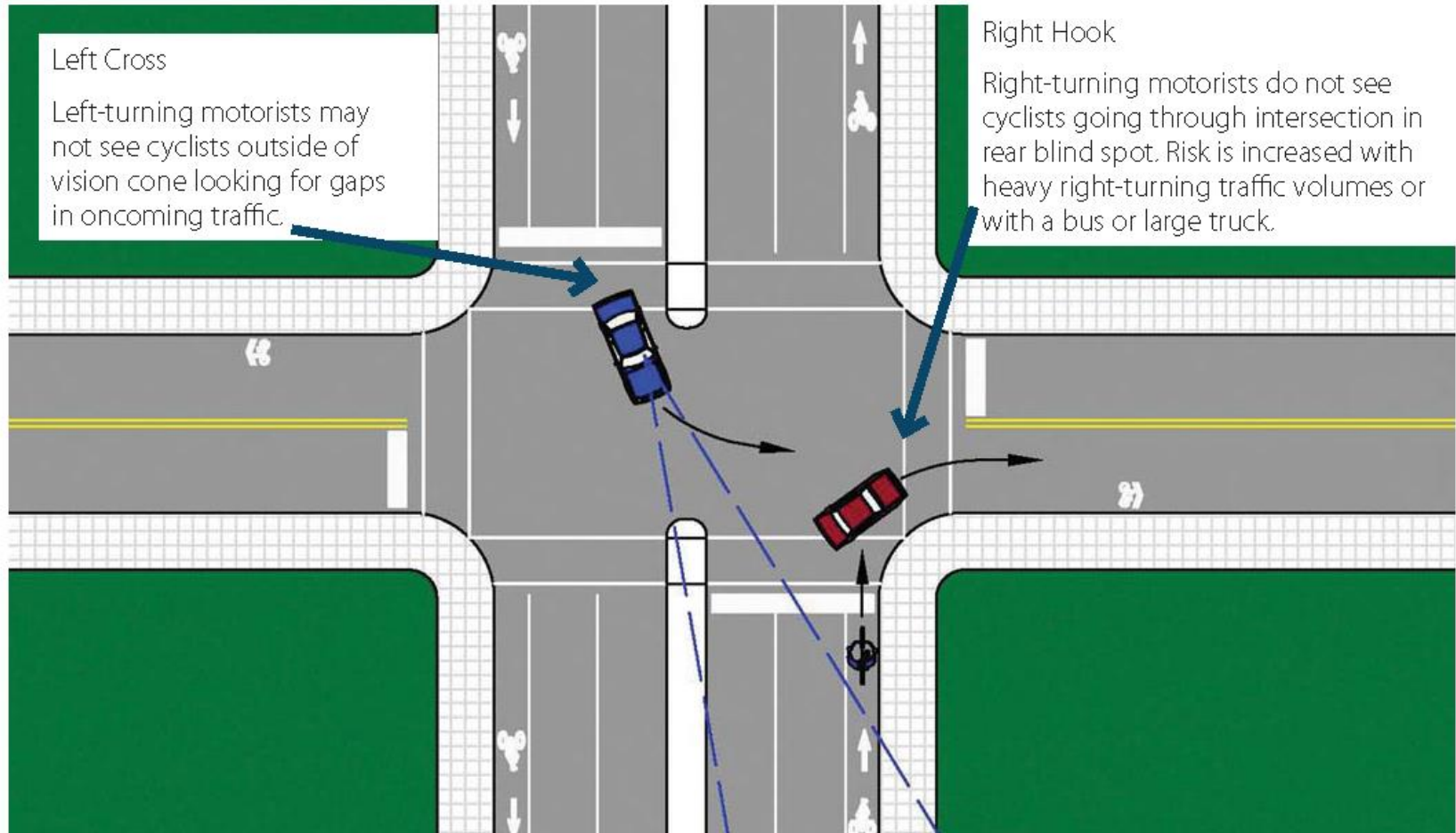


Principles of Bicyclist Safety

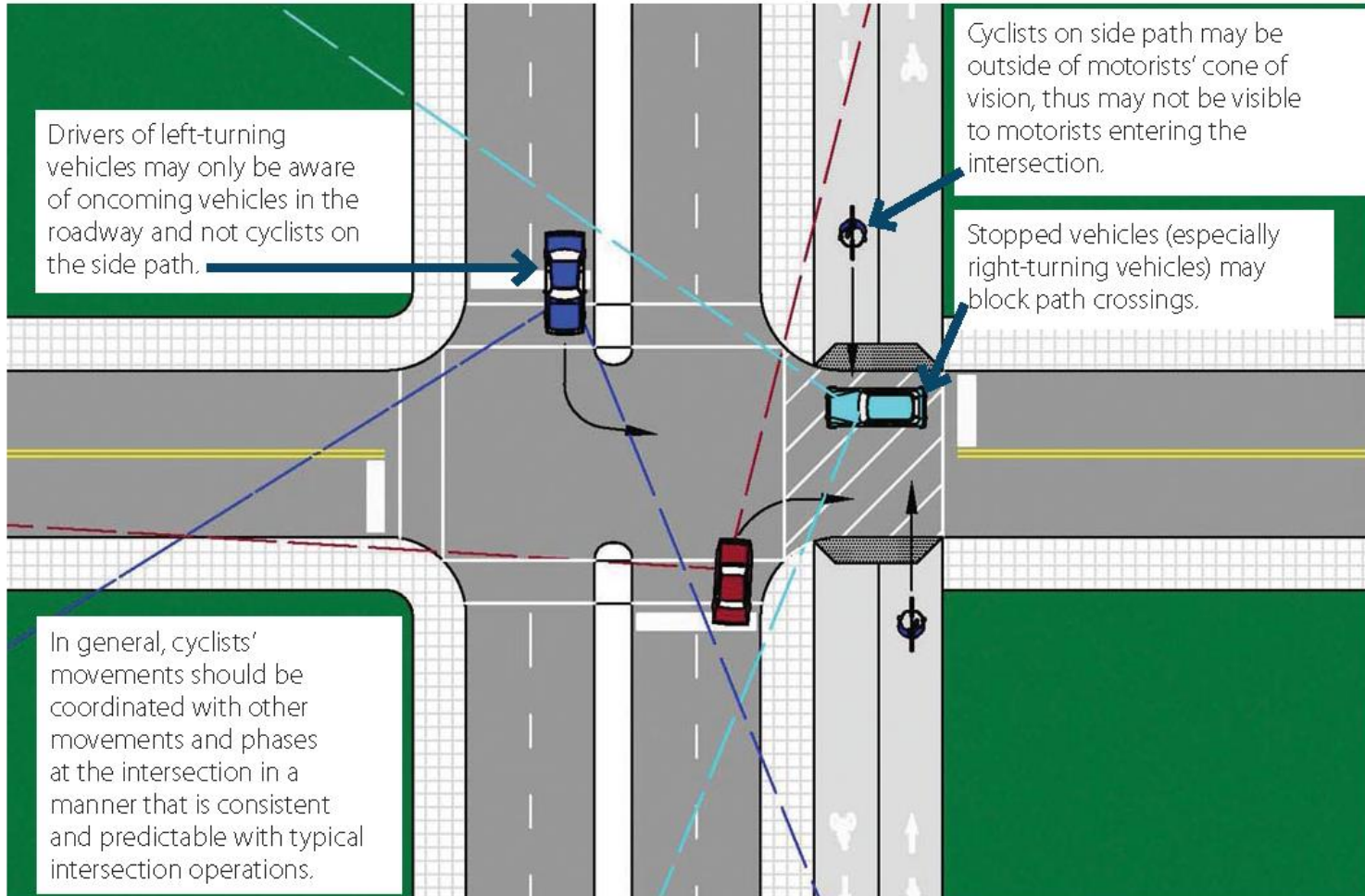
A photograph of a cyclist riding on a city street. The cyclist is wearing a backpack and is riding on the right side of the road. In the background, there are mountains and a clear blue sky. The street has several cars and utility poles. There are also some banners hanging from a pole on the left side of the road.

- The Cycling Network
 - Directness
 - Continuity and Connectivity
 - Comfort

Factors That Contribute to Bicycle Crashes



Factors That Contribute to Bicycle Crashes



Master Prompt List

RSA Zones				
A. Street or Path	B. Structures	C. Intersections, Crossings, and Interchanges	D. Transitions	E. Transit
1. Presence & Availability				
Are cyclists accommodated?				
2. Design & Placement				
Are design features present that adversely impact the use of the facility by cyclists?	Are bridges/tunnels designed adequate for accommodation on both directions?	Are intersection/interchange designs adequate for accommodation on both directions?	Are transition areas designed with logical placement and adequate width for accommodation on both directions?	Are transit facilities designed with adequate width for accommodation on both directions?
3. Operations				
Are there suitable provisions for the facility given the characteristics of the path (speed, volume, traffic, and classification)?				
Do access management practices detract from cycling safety?				
Do access management practices detract from the safety of other modes?				
Do access management practices cause concern for cyclists?				

Are design features present that adversely impact the use of the facility by cyclists

Detailed Prompt List

A.2.2: Are there adequate cycling provisions on both sides / directions of the roadway?



On-road accommodations: Accommodations for cyclists are needed on both sides of a two-way roadway and certain one-way roadway pairs to accommodate desire lines of cyclists. Aside from issues of connectivity conflicts arise when two-way accommodations for cyclists are not present. This roadway has a shoulder on one side of the road only. There are several potential issues associated with this cross-section:

- 1) cyclists are encouraged to ride against traffic;
- 2) cyclists and pedestrians are subject to conflicts on the shoulder;
- 3) cyclists approach intersections and driveways from the right, creating an expectancy conflict with motor vehicle traffic; and,
- 4) connectivity to destinations on the opposite side of the road is not provided, potentially resulting in unpredictable maneuvers by cyclists.

Off-road accommodations: Separated bicycle facilities should provide bi-directional access for cyclists. However, a side path may cause several issues with driver expectancy. Crash risks can increase when a driver making a right turn from the major approach or the minor approach, looking for oncoming traffic from the left, does not see a cyclist approaching from the right.

These Guidelines emphasize considering the context of the cycling environment from a “behind the handlebars” perspective.



<https://safety.fhwa.dot.gov/rsa/>

Questions?

www.vhb.com

Elissa Goughnour | egoughnour@vhb.com | 000.000.0000



Offices located throughout the east coast

HOW TO CONDUCT A ROAD SAFETY AUDIT

A decorative graphic consisting of several parallel white lines of varying thicknesses, slanted diagonally from the bottom-left towards the top-right, set against a blue gradient background.



RSA Team

Design Team / Project Owner

1

Identify project

2

Select RSA team

3

Conduct
start-up meeting

4

Perform field
reviews

5

Conduct
analysis and
prepare report

6

Present
findings to Project
Owner

7

Prepare formal
response

8

Incorporate findings

- ▶ Who is initiating the assessment?
- ▶ Who is the project owner?
- ▶ In what stage of its life is the project?
- ▶ What is the scope of the assessment?



IDENTIFY THE PROJECT

- ▶ Range of expertise
- ▶ Key stakeholders
- ▶ Decision-makers for debrief

- ▶ Design
- ▶ Traffic
- ▶ Safety
- ▶ Planning
- ▶ Maintenance
- ▶ DOT staff
- ▶ City staff
- ▶ Emergency response
- ▶ Bicycle advocate
- ▶ School district

SELECT RSA TEAM



- ▶ Explanation an RSA and expectations
- ▶ Information to bring and be prepared to discuss
- ▶ Resources needed
- ▶ Meeting space
- ▶ Agenda for meeting



PRE-MEETING COMMUNICATION

Information

- ▶ As-builts or other survey showing curb-to-curb width of roadway
- ▶ Crash reports with location and narrative
- ▶ Planning documents
- ▶ Design documents

Resources

- ▶ Transportation to site
- ▶ Vests and hard hats
- ▶ Tape measure or wheel
- ▶ Notepads and clip boards
- ▶ Digital cameras/video
- ▶ Bikes?

PRE-MEETING PREPARATION

Making the choice

- ▶ Characteristics of site
- ▶ Capabilities of participants
- ▶ Availability of bikes
 - ▶ Bike share
 - ▶ Outreach organization
 - ▶ Bike rental shops

Preparing for ride

- ▶ Rules of the road
- ▶ Lead and sweep
- ▶ Rally point
- ▶ Route
- ▶ Time of day

TO BIKE OR NOT TO BIKE



- ▶ Near the site
- ▶ Available for duration
- ▶ Projector and screen
- ▶ Internet connection
- ▶ Flip charts, markers, tape
- ▶ Seating arrangement



MEETING SPACE

▶ Day One

- ▶ Introductions
- ▶ Instruction on RSA process
- ▶ Review/Discussion of Process
- ▶ Site visit (walking)

▶ Night One

- ▶ Site visit (car)

▶ Day Two

- ▶ Discussion of first insights/reactions
- ▶ Continued site visit
- ▶ Identify positive features
- ▶ Identify opportunities
- ▶ Selection of recommendations

▶ Night Two

- ▶ Facilitators compile information

▶ Day Three

- ▶ Finalize presentation
- ▶ Presentation to decision-makers

MEETING AGENDA

- ▶ Introduction
- ▶ Project Team
- ▶ Project History
- ▶ Observations
- ▶ Opportunities

- ▶ Next Steps
 - ▶ Short term/long range
 - ▶ Funding sources
 - ▶ Partners
 - ▶ Project owner response

PRESENTATION OUTLINE



What's Working

- Multiagency coordination and support for projects
- \$26 million construction project (\$41 million total project cost)
 - Continuous sidewalk
 - Continuous bike lanes with markings
 - Drainage
 - Signal interconnection
 - Good faith effort to address work zone concerns
- Center turn lane (TWLTL)
- Snow removal
- Connectivity planning



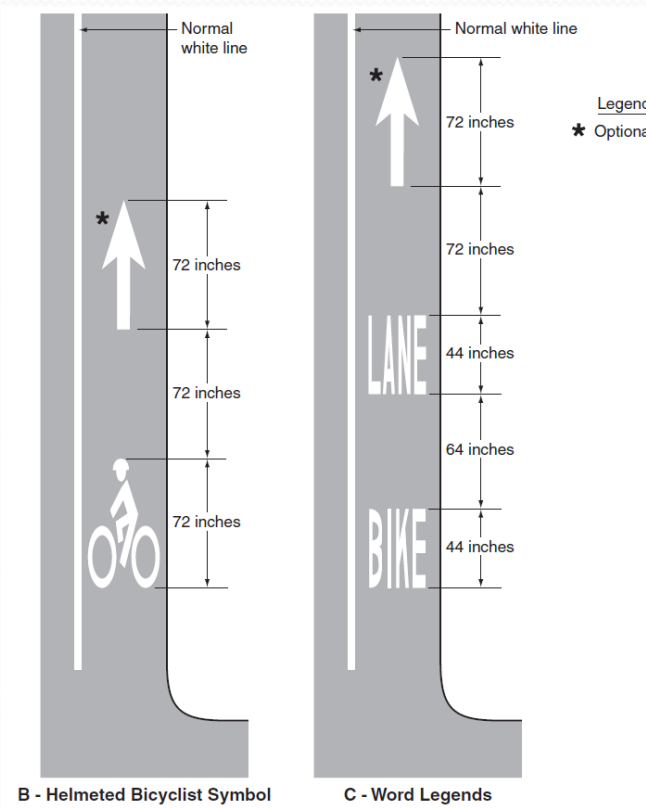
Opportunities for Improvement

- Signing and Striping
 - Wayfinding to intersecting trails and alternate routes
 - Advance signs
 - Street names
 - Warning for pedestrian and bicyclist crossings
 - Bike lane marking
 - Symbol rather than text
 - Interval
 - Directional arrow
 - Buffers
 - Bike lane signs
 - Durable striping materials

Illuminated Street Signs



Bike Lane Marking



Bikeway Signing

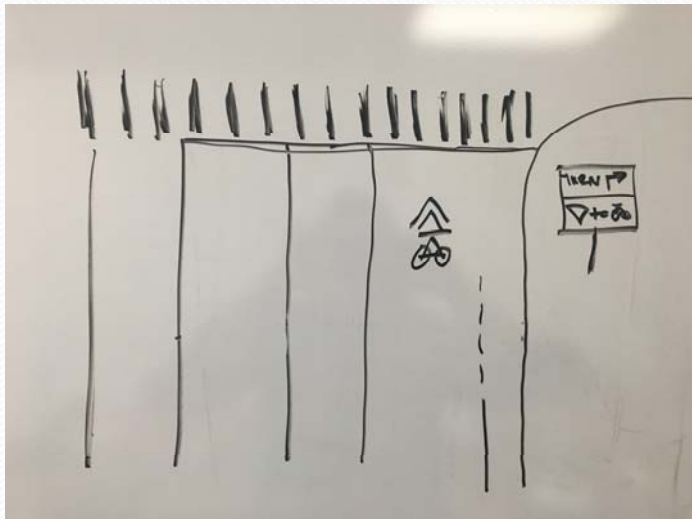


R7-9



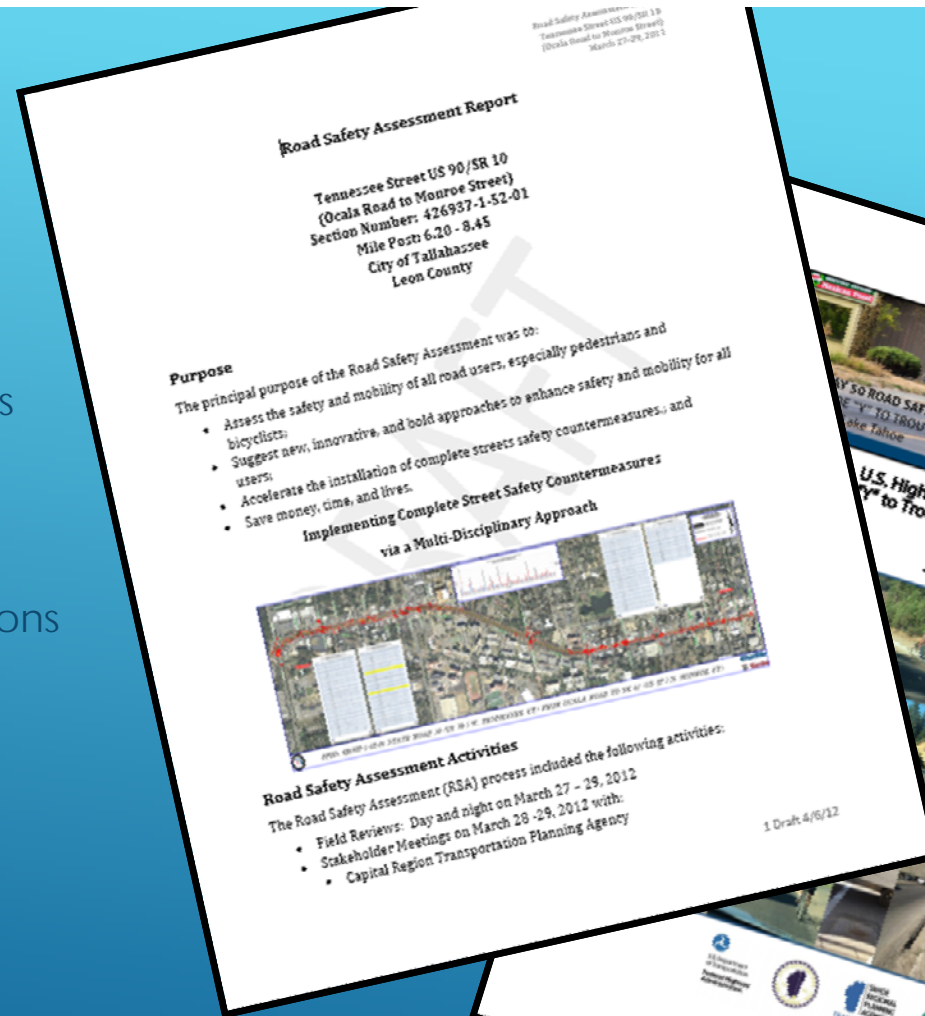
R7-9a



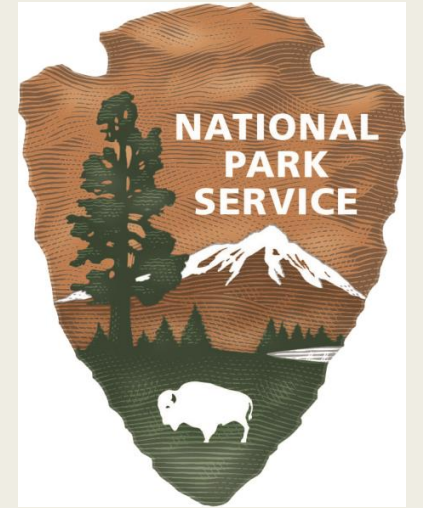


- ▶ RSA Team
 - ▶ Facilitators write the report
 - ▶ Participants review
 - ▶ Submit report to decision-makers
- ▶ Project owner/decision-maker
 - ▶ Respond to recommendations
 - ▶ Act on selected recommendations

FOLLOW-UP



Bike RSA Examples



Grand Teton National Park





Road Safety Assessment Gros Ventre Junction Grand Teton National Park September 19, 2012



Safety Concerns

Road user interaction

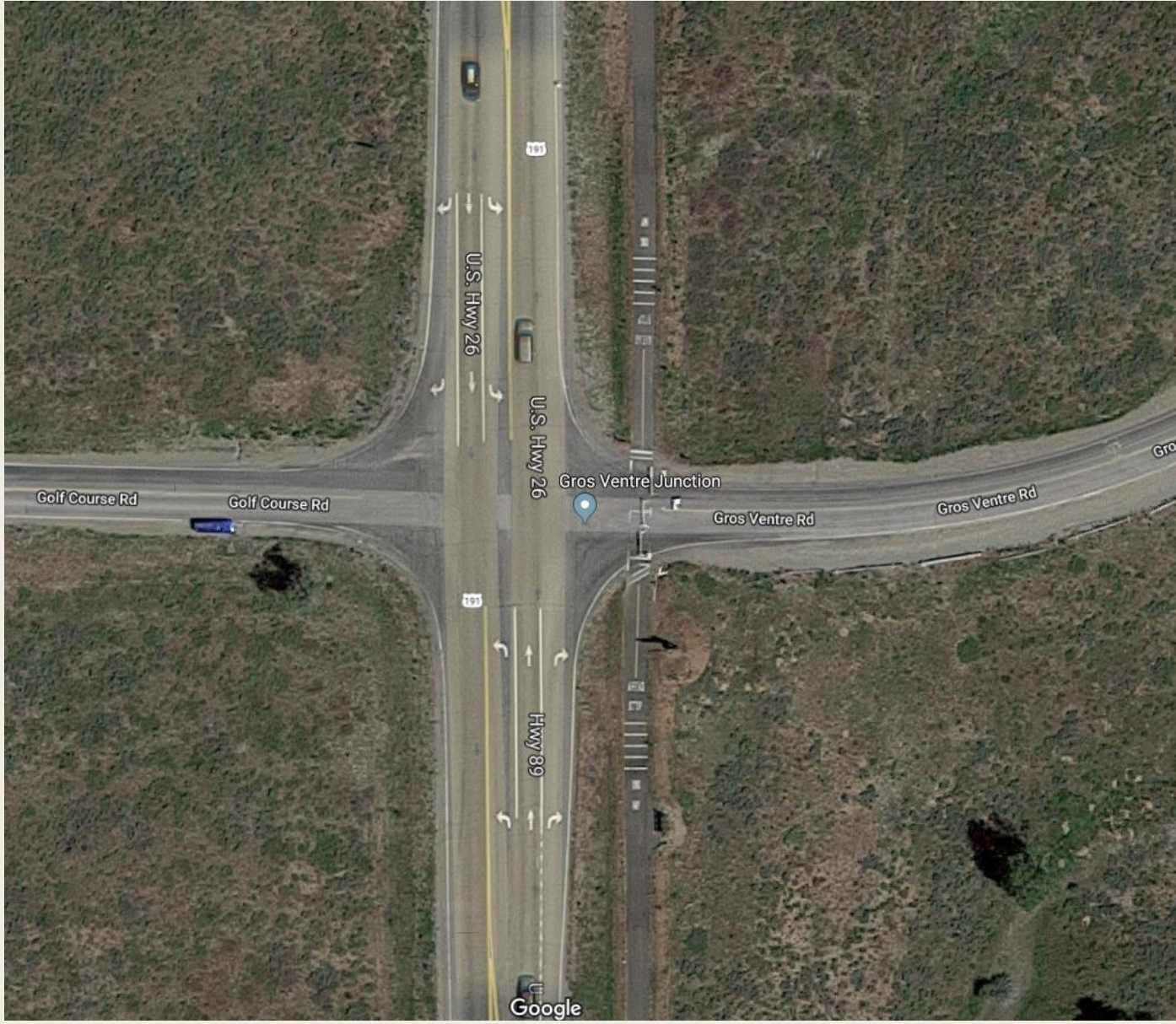
Bike Path

- ✘ Bicycle not stopping, should they stop?
- ✘ Numerous turning movement onto Gros Ventre

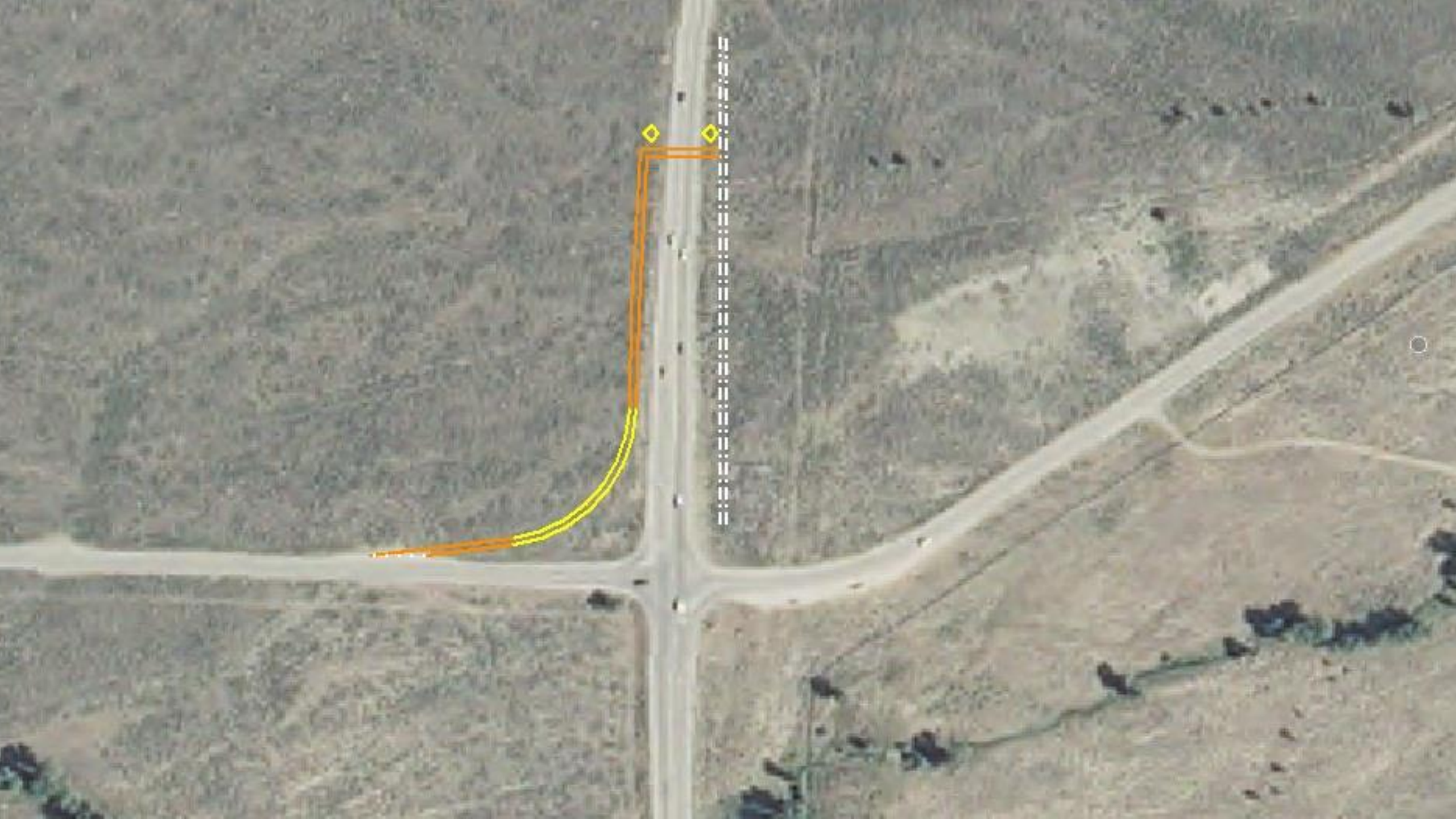
Highway 89

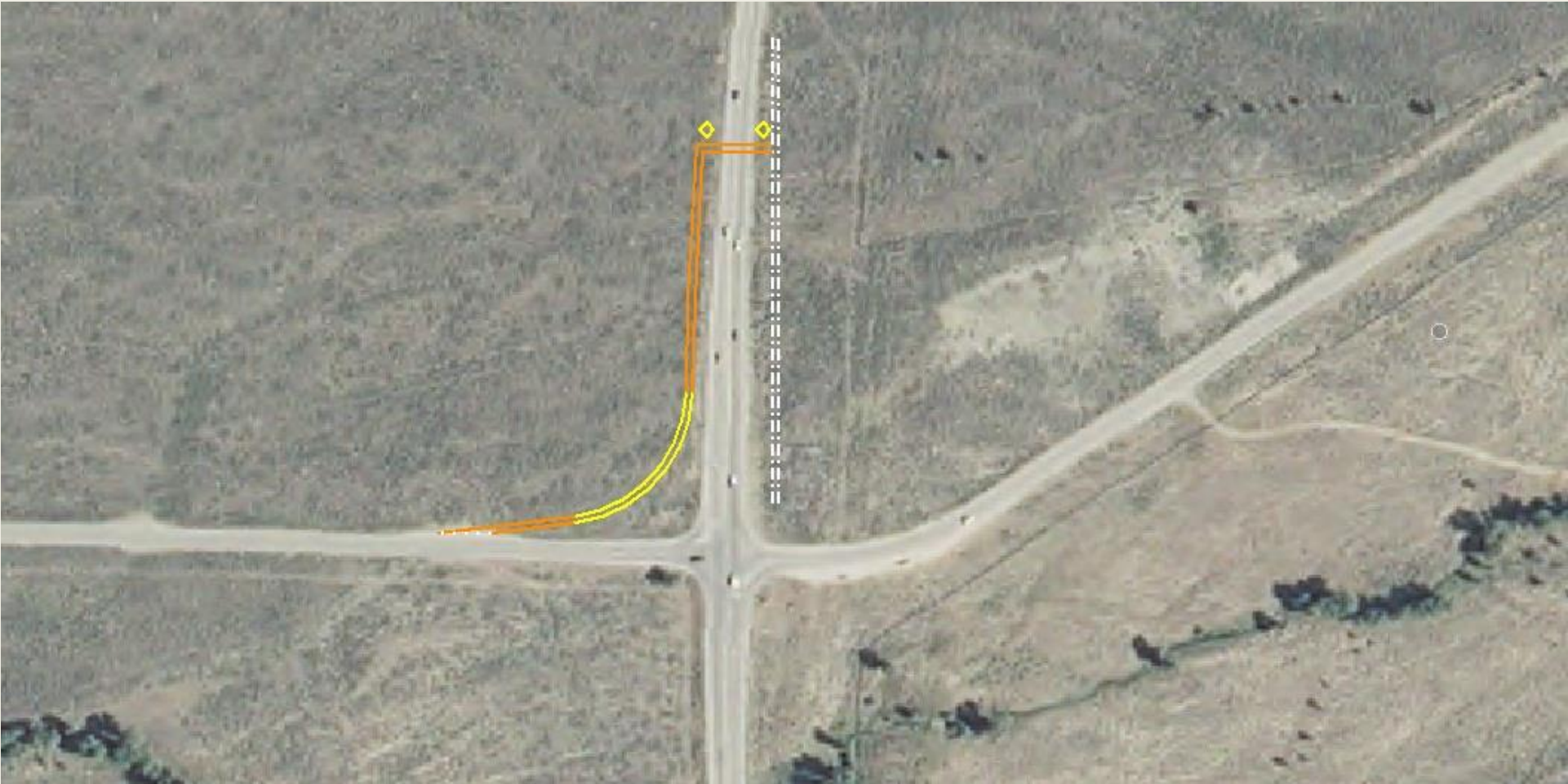
- ✘ Road width 5 lanes
- ✘ High speeds
- ✘ Local, visitors, commercial
- ✘ Potential severity





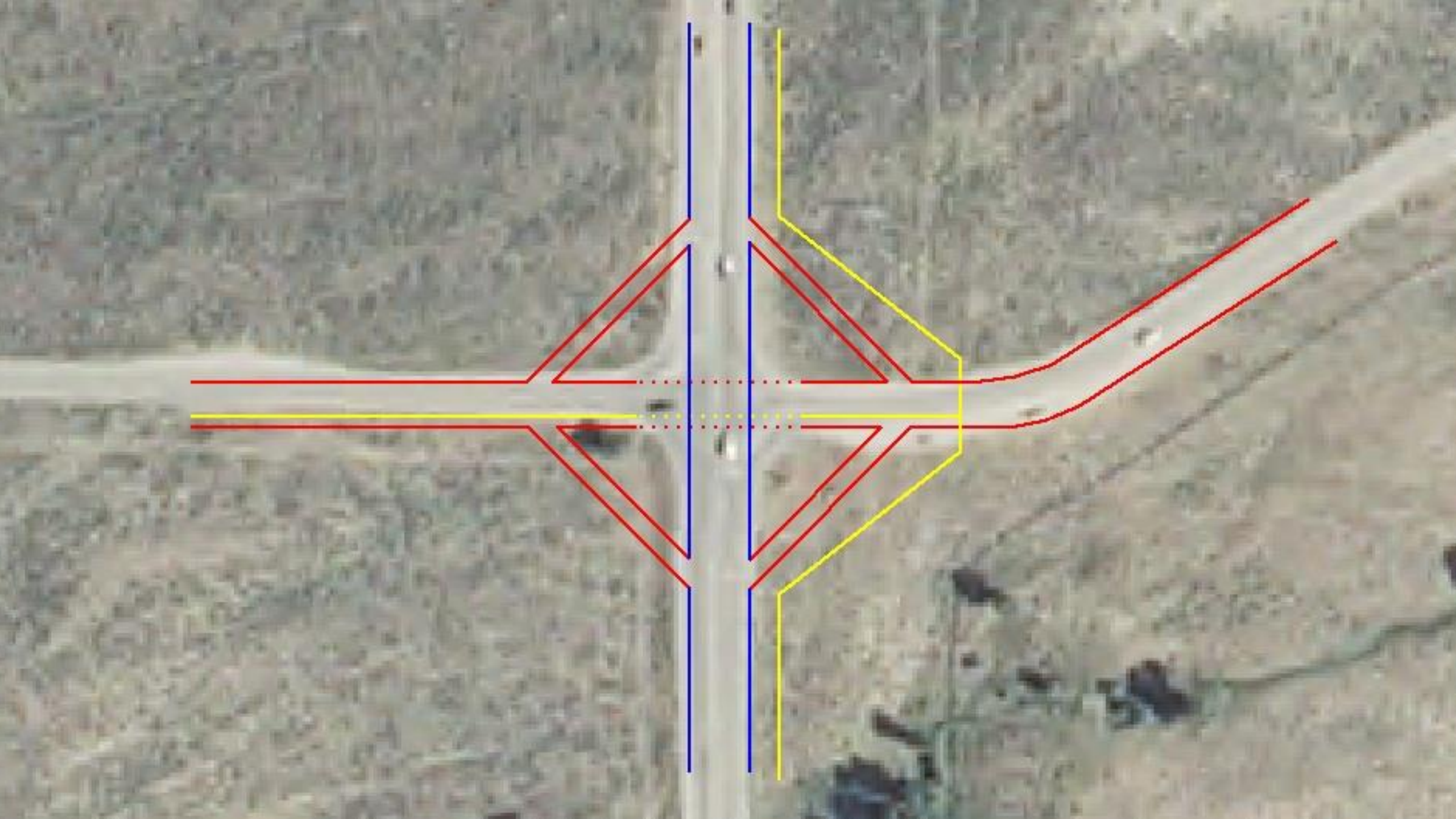








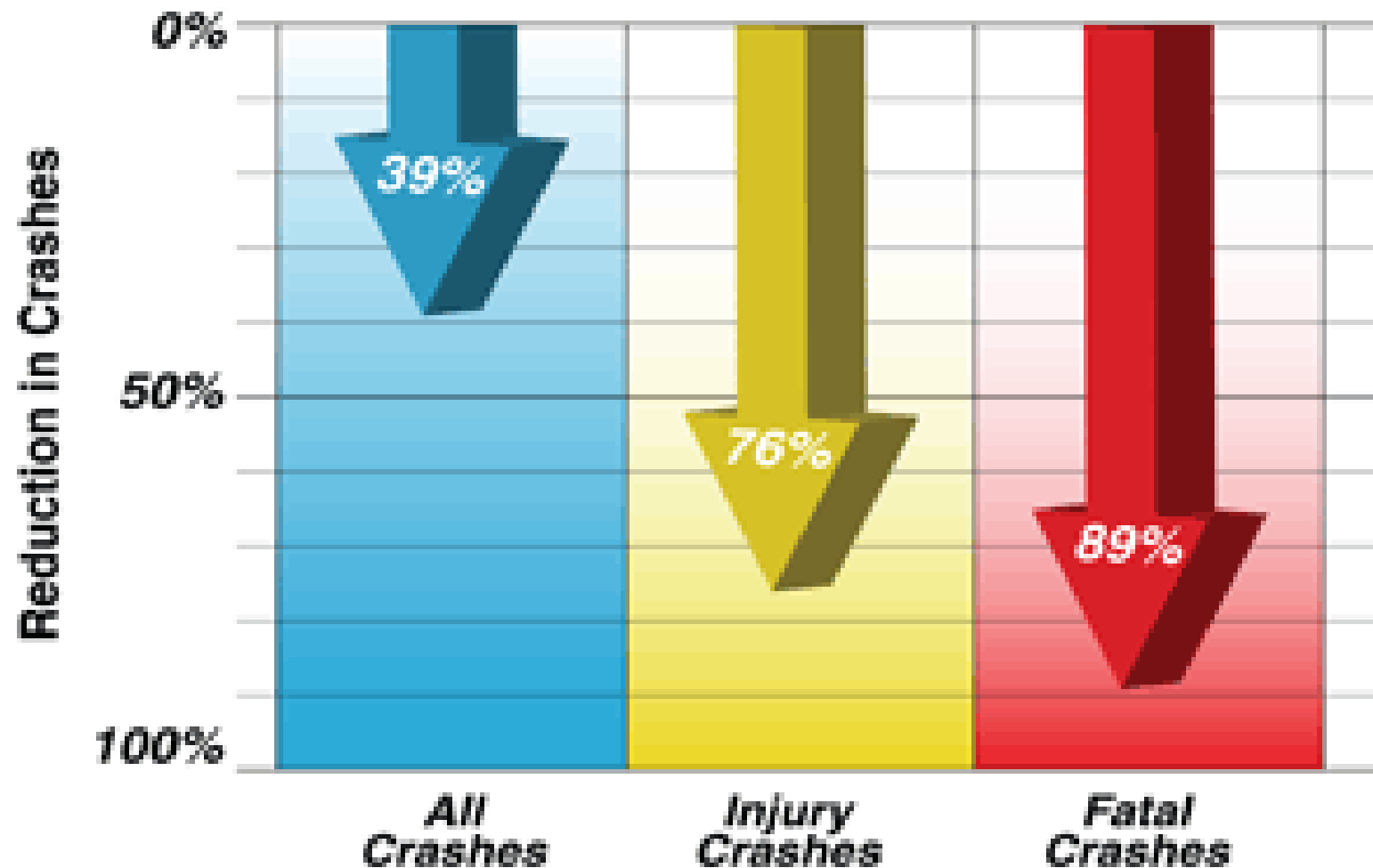






Safety Improvement

Reduction in Crashes After Conversion to Roundabouts (23 Intersections)





Moose

Kelly

Teton Village

Moose
Wilson Rd

191

Wilson

22

Jackson



Teton Village

Aerial Tram
Jackson Hole Mountain Resort

Airport

Moose-Wilson Rd.

Gros Ventre Rd.

Jackson Hole Golf & Tennis

South Boundary to GTNP

The Aspens

National Museum of Wildlife Art

National Wildlife Refuge

Stilson

R Park
Emily's Pond

Spring Gulch Rd.

Jackson Peak

Wilson

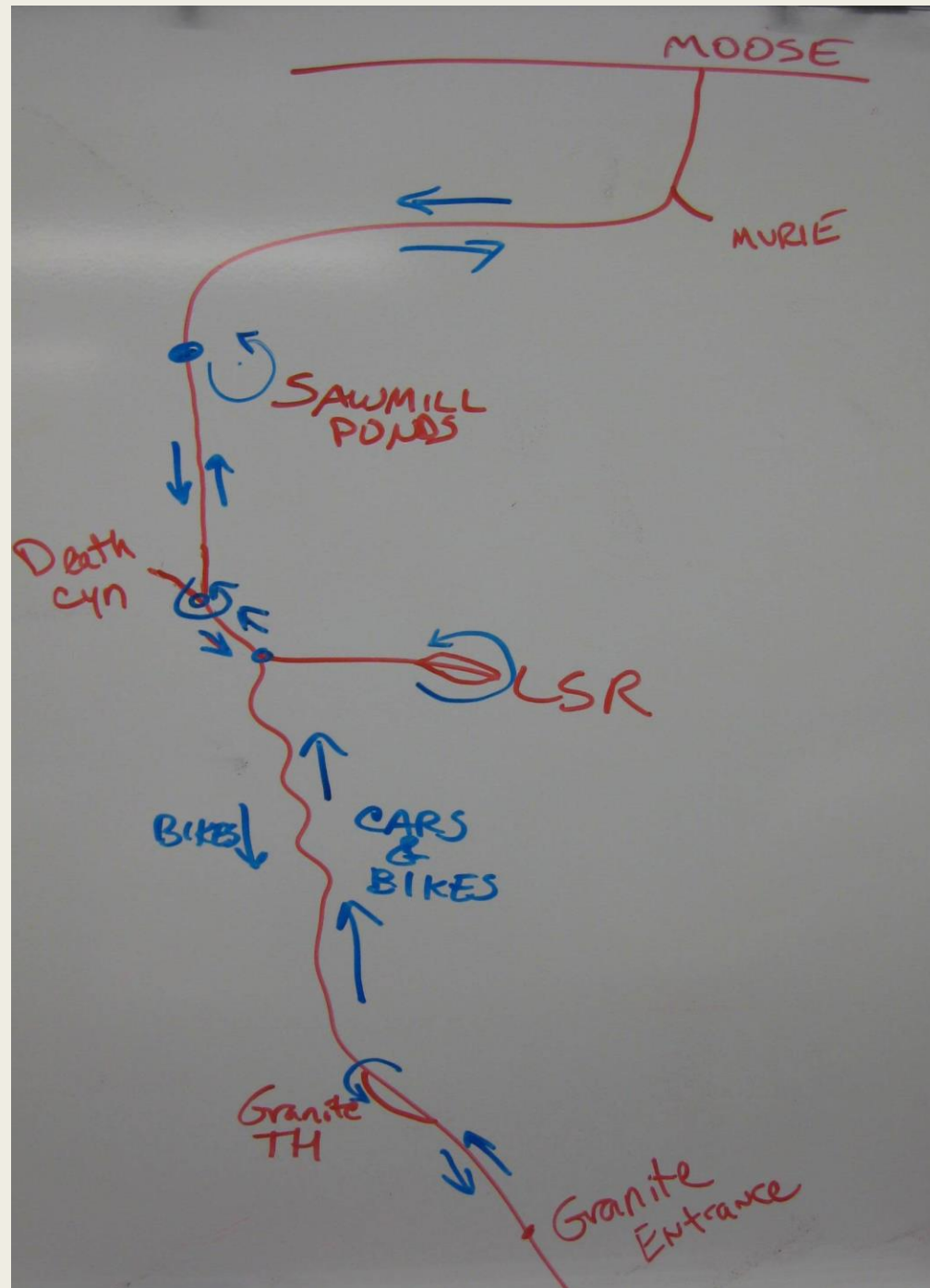
J.H. & Greater Yellowstone Visitor Center

Jackson



**Moose Wilson Adaptive Management
Strategy (AMS) Review of One Way Option
Grand Teton National Park
September 20, 2012**

experience Overview





COMMENT ON MOOSE-WILSON ROAD PRELIMINARY ALTERNATIVES BY SEPTEMBER 15, 2014

Time is short – if you don't want the Moose-Wilson Road to be closed or gated – Act Now for safe public access and a complete pathway!

Until September 15th, the Public Comment period is open for the Grand Teton National Park Moose-Wilson Road and Pathway.

Please comment **today** to **support public access** on the Moose-Wilson Road with reduced traffic and **a safe pathway**.

Thanks to many public comments in the EIS Scoping (the initial planning step) the National Park Service included open public access to the Moose-Wilson corridor and a safe pathway in one of the draft alternatives – Alternative D. **At this step in the NPS planning process, we need to request that Alternative D be studied as the preferred alternative.**

We need you to submit a comment for this next phase of the EIS by September 15 at the link below.











Moose Wildlife

25



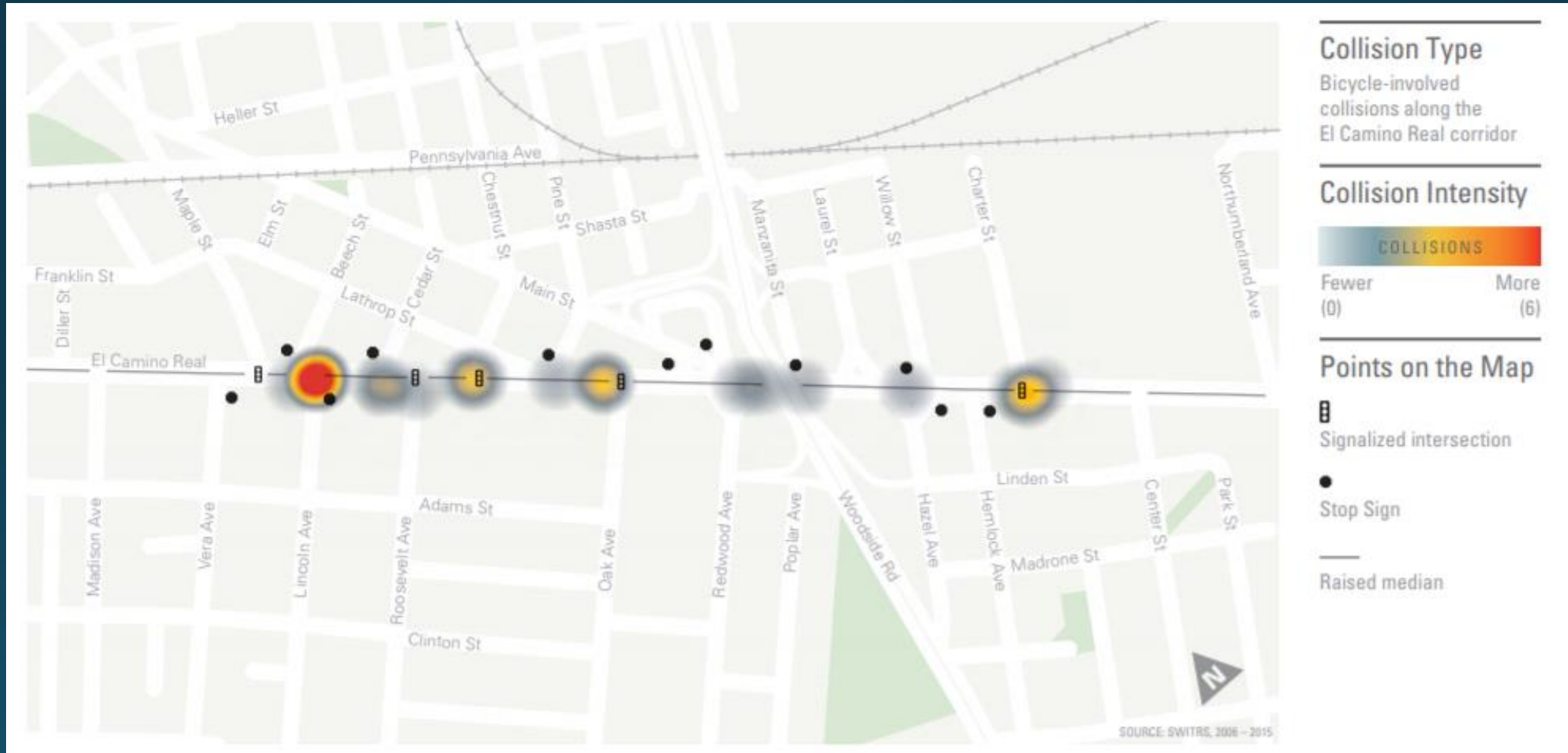
Redwood City
June 12-14, 2018

Bicycle Road Safety Audit

Thank You



Bicycle Crash Profiles



Bicycle Collision Profiles

What Do We Know about These Collisions?



25

Total collisions



28%

Broadside at signal



20%

Exiting side streets
and driveways



16%

Full access unsignalized
intersections



12%

At complex intersections



40%

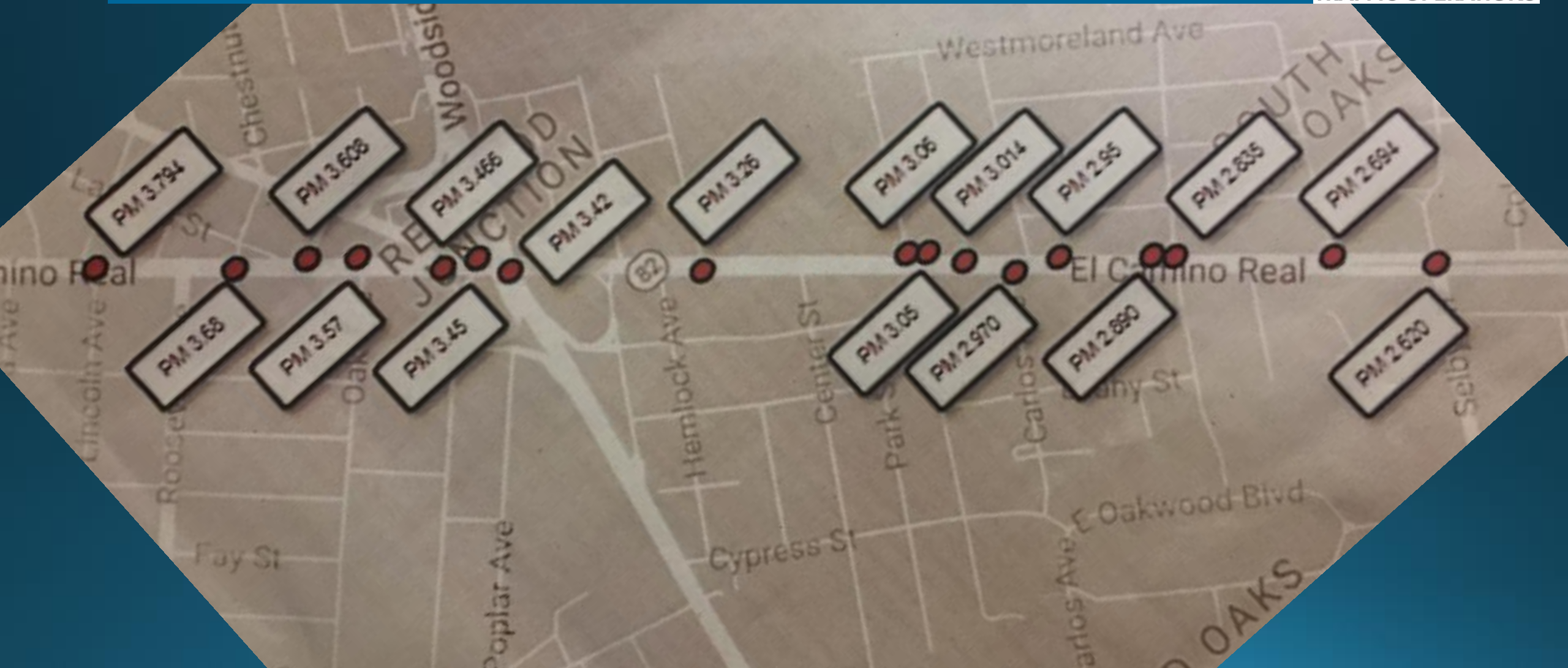
- Other factors
- High traffic speed and shared travel lane
 - Right hook
 - Wrong way bicycling

Note: Percentages do not add up to 100% due to overlapping collision types

Bicycle Crash Profiles



TRAFFIC OPERATIONS



El Camino Real



El Camino Real



El Camino Real



El Camino Real



El Camino Real



El Camino Real



El Camino Real



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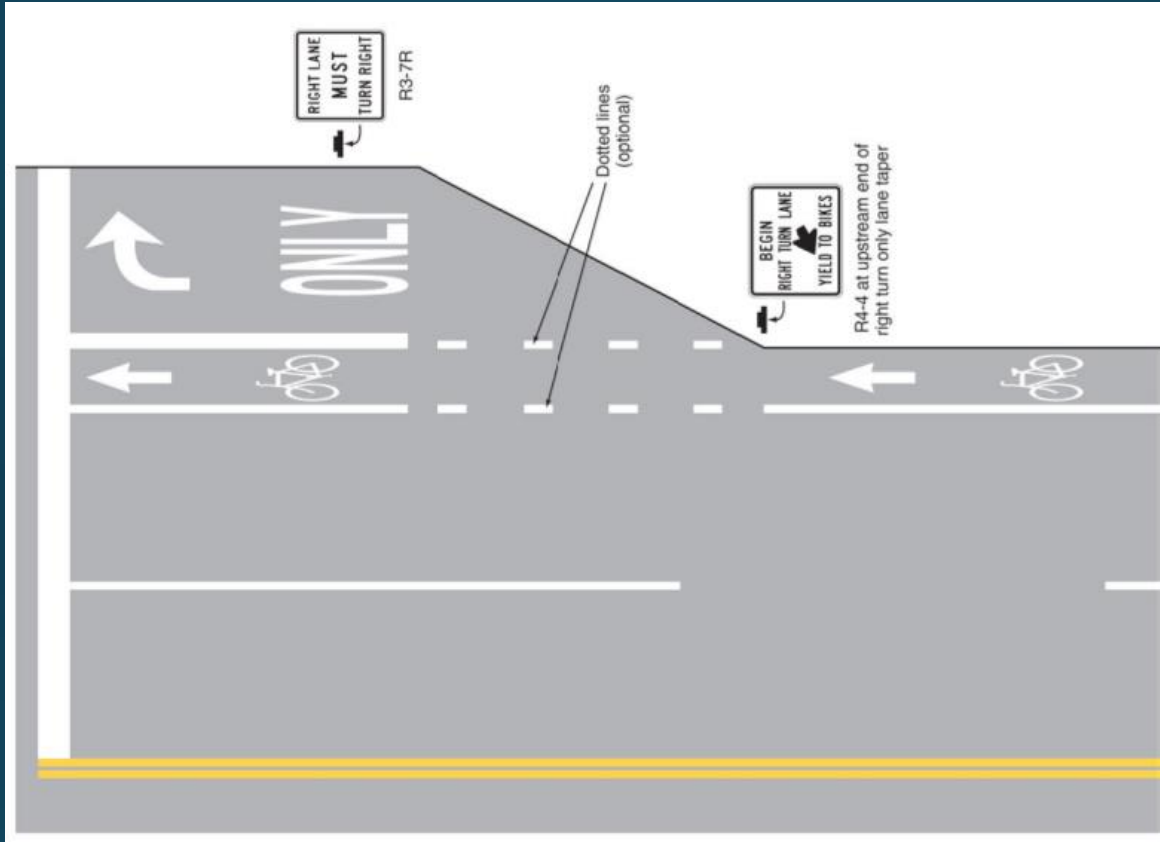
El Camino Real



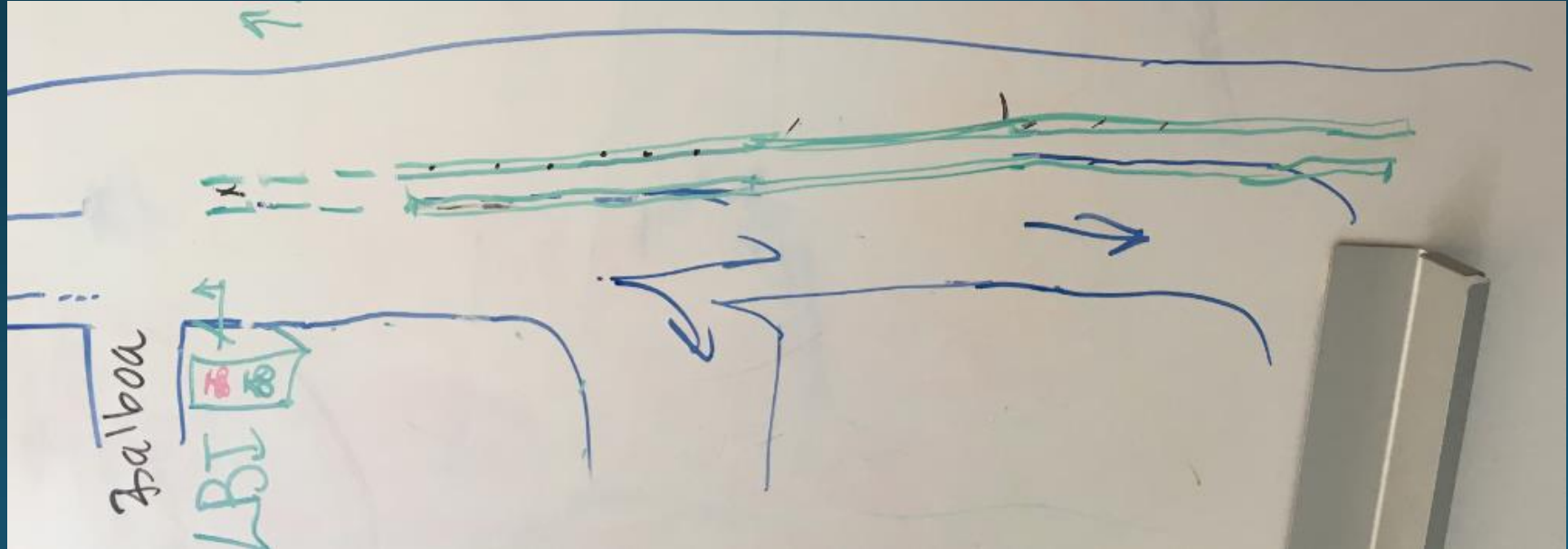
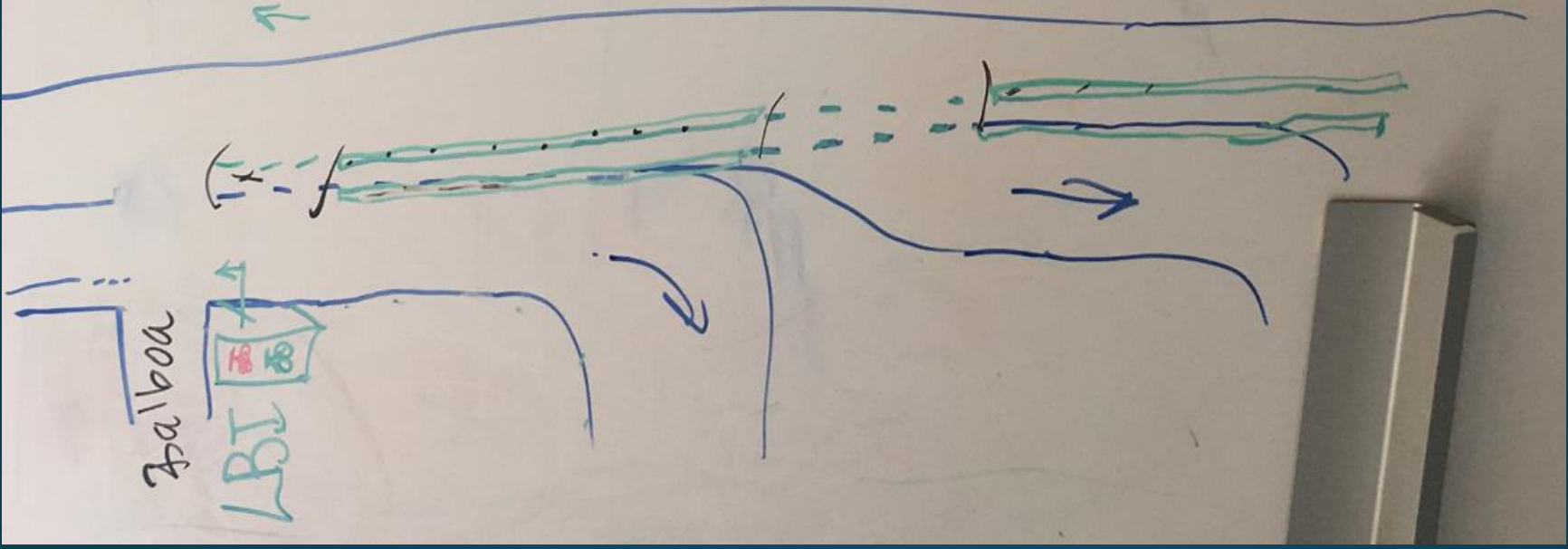


Newport Beach
June 5-7, 2018

Bicycle Road Safety Audit









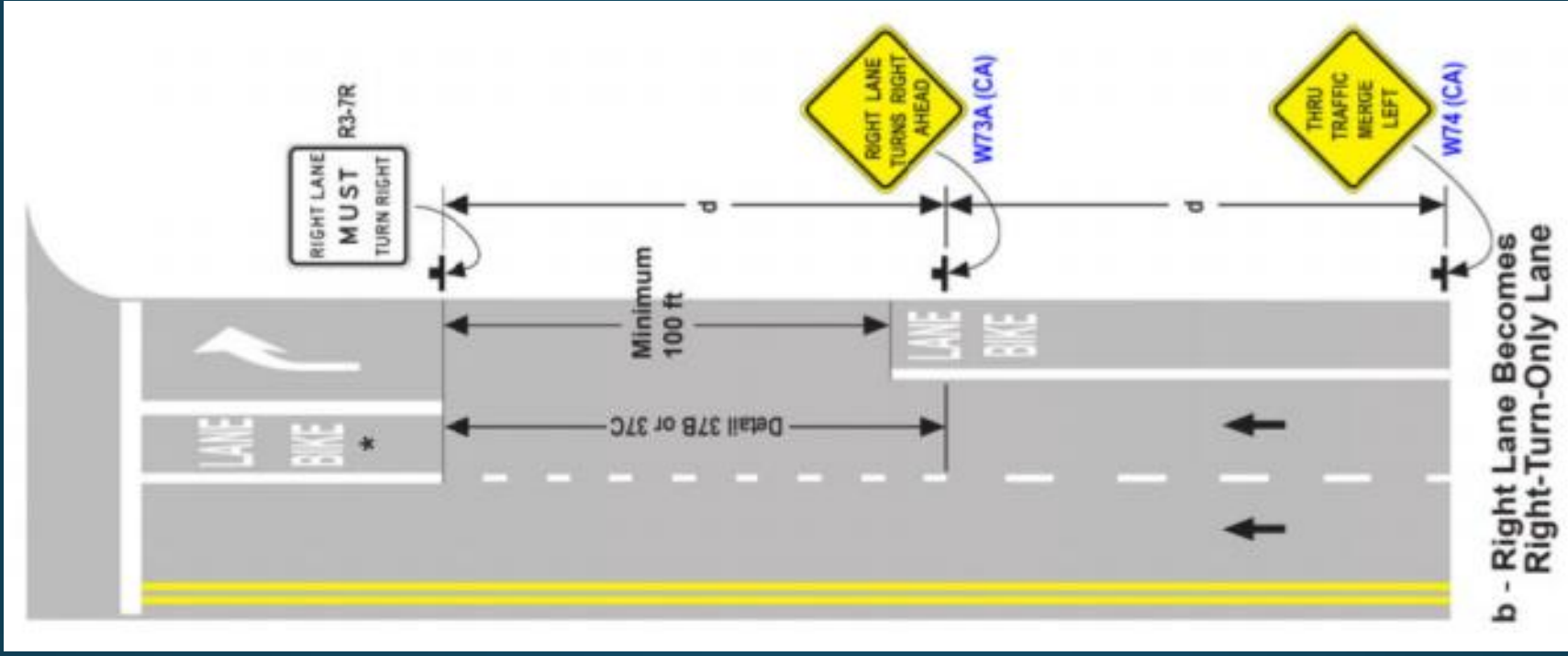




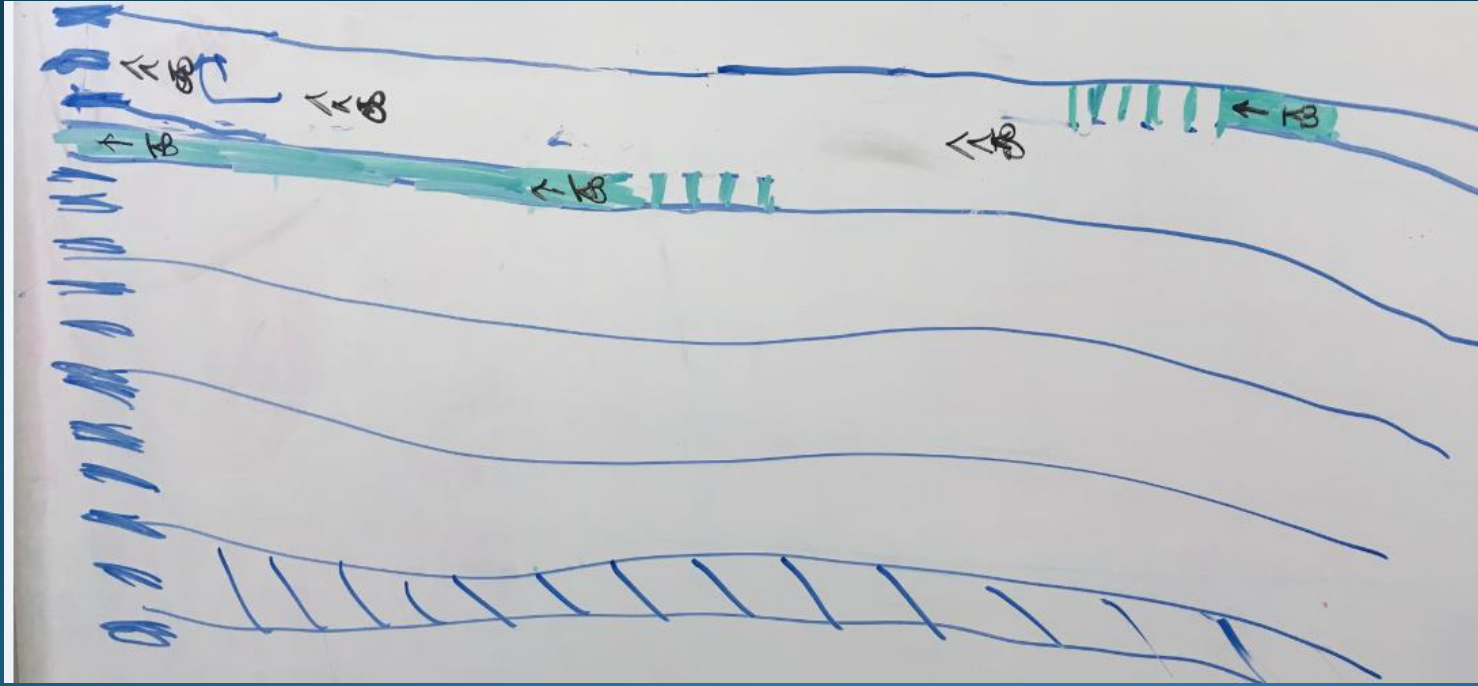








b - Right Lane Becomes Right-Turn-Only Lane





Next Steps

- Working meeting with design team for 010 project at PCH and Superior Ave.
- Go Human demonstration project
 - two-way contra-flow bike lane at Riverside
 - sidewalk extension at Riverside
 - armadillos at PCH Newport Boulevard interchange weave areas

Discussion

⇒ Send us your questions



⇒ Follow up with us:

⇒ Becky Crowe rebecca.crowe@dot.gov

⇒ Elissa Goughnour egoughnour@vhb.com

⇒ Brooke Struve brooke.struve@dot.gov

⇒ Craig Allred craig.allred@dot.gov

⇒ General Inquiries pbic@pedbikeinfo.org

⇒ Archive at www.pedbikeinfo.org/webinars

