

Complete Streets at Varying Scales: Challenges and Opportunities

Purdue Road School – Session 112

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**CDM
Smith**

Agenda

- Introduction
- Complete Streets at the Indiana Statewide Scale
- Complete Streets on an INDOT/LPA project
- Complete Streets Case Study of US 67 in Texas
- Complete Streets National Perspectives

Defining Complete Streets

- Complete Streets serve everyone. They enable safe access for all users—pedestrians, bicyclists, transit riders and drivers—and balance freight and emergency vehicle access.
- A Complete Street in a rural area is different than in an urban area; however, both balance safety and access for all users.



Complete Streets Applies to All Settings

Urban



Chicago, IL

Suburban



Danbury, CT

Rural



US 67, TX

A SINGLE SYSTEM

For any context, all **travel modes** need to be considered simultaneously to create **complementary travel networks** integrated with the communities and **variety of travel needs** served.



Complete Streets at the Indiana Statewide Scale

INDOT Complete Streets Guideline & Policy

Main Objective:

Design and build roads that...

- Safely and comfortably accommodate all users (motorists, cyclists, pedestrians, transit, and freight)
- Benefit all ages and abilities
- Promote Americans with Disabilities Act (ADA) acceptable provisions



Not a funding program, but a policy to guide planners, designers, and engineers.

INDOT Active Transportation Plan

- INDOT is working on the first ever Active Transportation Plan for Indiana
- Survey was held in latter half of 2018
 - Walking most popular for less than half-mile trips
 - Driving most popular for more than half-mile trips
 - Cycling sweet spot is 1-3 miles
 - Reason people don't bike/walk more often: SAFETY
- Bicycle and Pedestrian Facility Type Guide (draft form)
- More deliverables expected



Indiana Infrastructure Assets

35,897,597 annual unlinked passenger trips via **PUBLIC TRANSIT**, including bus and commuter trains



105,928 miles of **PUBLIC ROADS**,
of which 11,169 are State-owned



19,291 **BRIDGES**,
of which 5,747 are State-owned



4,134 miles of **RAIL**
with 1.5B tons of
cargo annually



**3 PORTS &
225 MARITIME
TERMINALS**



117 public-use
AIRPORTS



3,600 miles of
TRAILS & BIKEWAYS



90 miles from
SOUTH BEND to
CHICAGO MILLENNIUM
station



428 miles of
**INLAND
WATERWAYS**



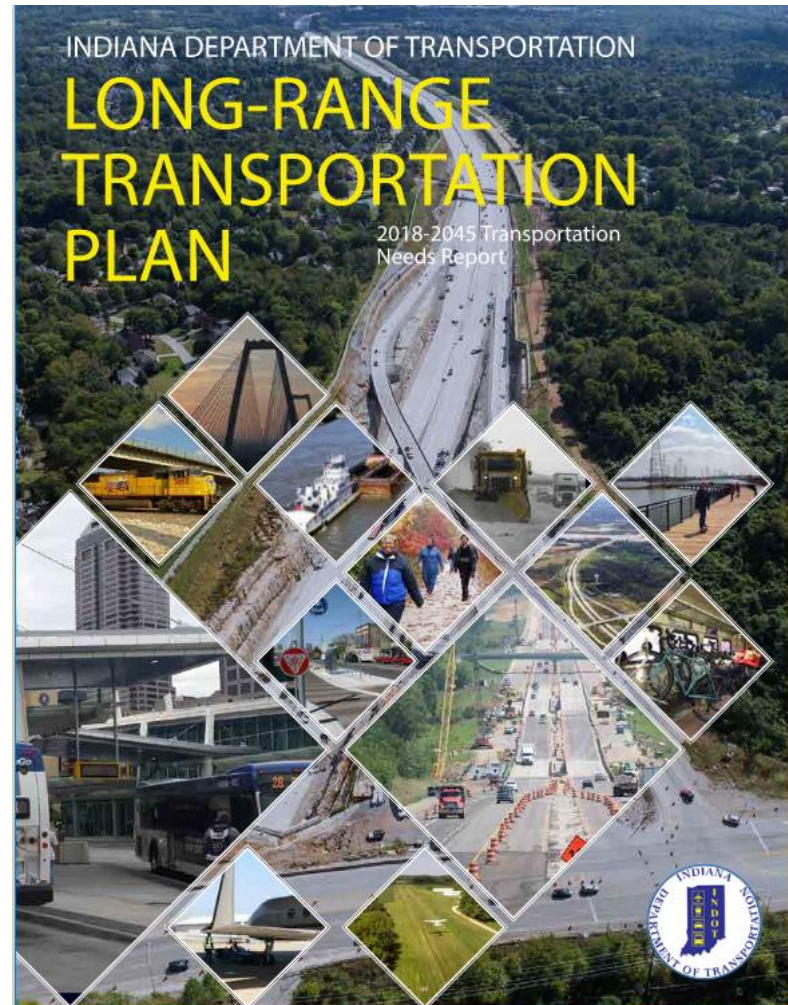
Source: INDOT LRTP



INDOT Long-Range Transportation Plan

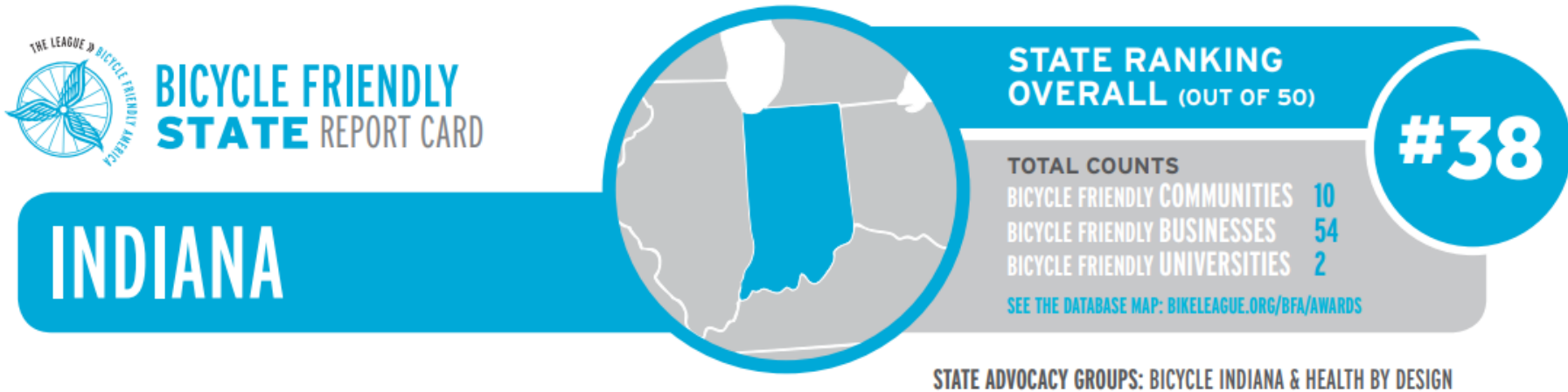
- Policy Goals
 - Safe & Secure Travel
 - Economic Competitiveness and Quality of Life
 - Multimodal Mobility
 - Environmental Responsibility

These goals apply to Complete Streets!



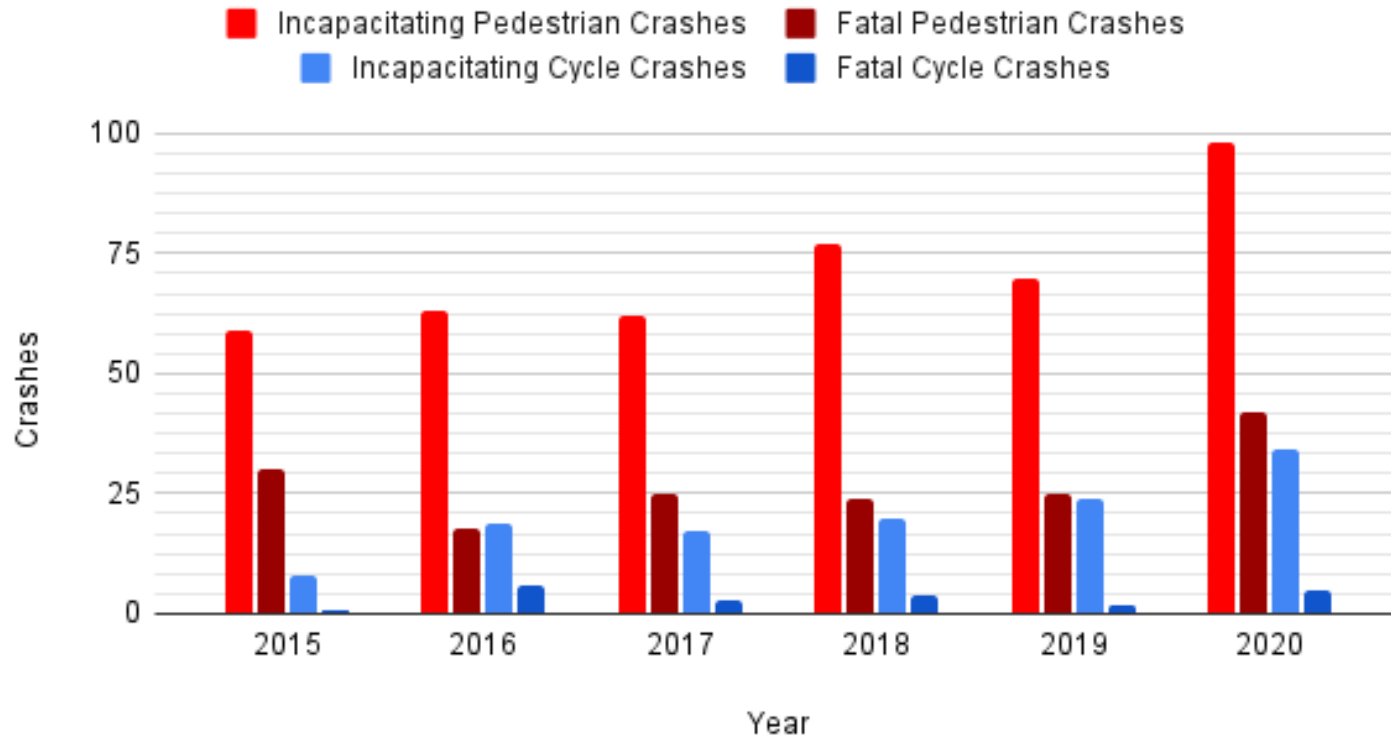
Pedestrian and Bicyclist Safety

- Continued investment in safe infrastructure also helps decrease motor vehicle-related bicycle and pedestrian injuries and fatalities.



Indianapolis Pedestrian and Bike Crash Data

Indianapolis Pedestrian & Pedalcyclist Crashes



Source: Indianapolis Metropolitan Planning Organization

Pedestrian and Bicyclist Safety

- Indiana Strategic Highway Safety Plan (2016)
 - Emphasis areas include Bicycles and Pedestrians
- Bicycles involved in about 1-2% of all severe crashes
- Pedestrians involved in about 10% of all severe crashes
- Strategies to improve are Complete Streets strategies
 - Speed management
 - Improve infrastructure to reduce contributing factors
 - Intersection design
 - Roadway design
 - Traffic control devices

Source: Indiana SHSP



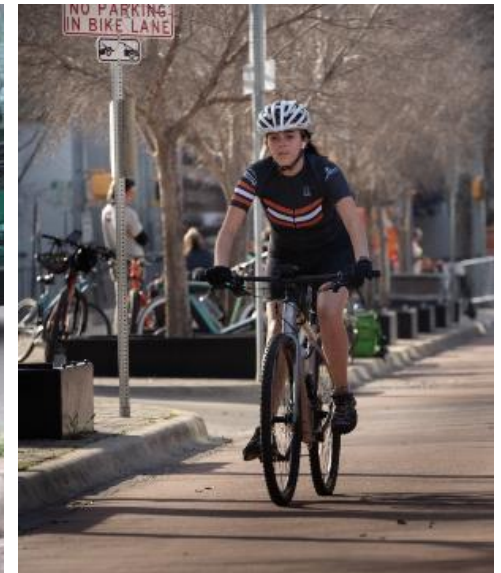
Indiana Design Manual – Chapter 51

CHAPTER 51

Special Design Elements

- Pedestrian Infrastructure
 - Sidewalk
 - Shared-Use Path
 - Curb Ramps
 - Street Crossings
 - Accessible Pedestrian Signal
 - Transit Stops
- Bicycle Infrastructure
 - Bikeway
 - Bicycle Lane
 - Shared Lane/Roadway
 - Shared-Use Path
 - Bike Parking
- Transit Infrastructure
 - Bus Stop
 - Bus Turnout
 - Bus Shelter

NOTE: This chapter is currently being re-written and its content will be included in Chapter 307 in the future.





Complete Streets on an INDOT/LPA Project

US 36 / SR 9 ATL and Pedestrian Connectivity

- INDOT Project
 - US 36/SR 9 Added Travel Lanes (Des. 1702936/1802854)
- LPA Project (Town of Pendleton)
 - US 36 Pedestrian Connectivity (Des. 2001127)
- Project Goals
- Leveraging the Combined Projects
 - Holistic improvement
 - Cost effective
 - **Partnering between INDOT and LPA**

Corridor Users:

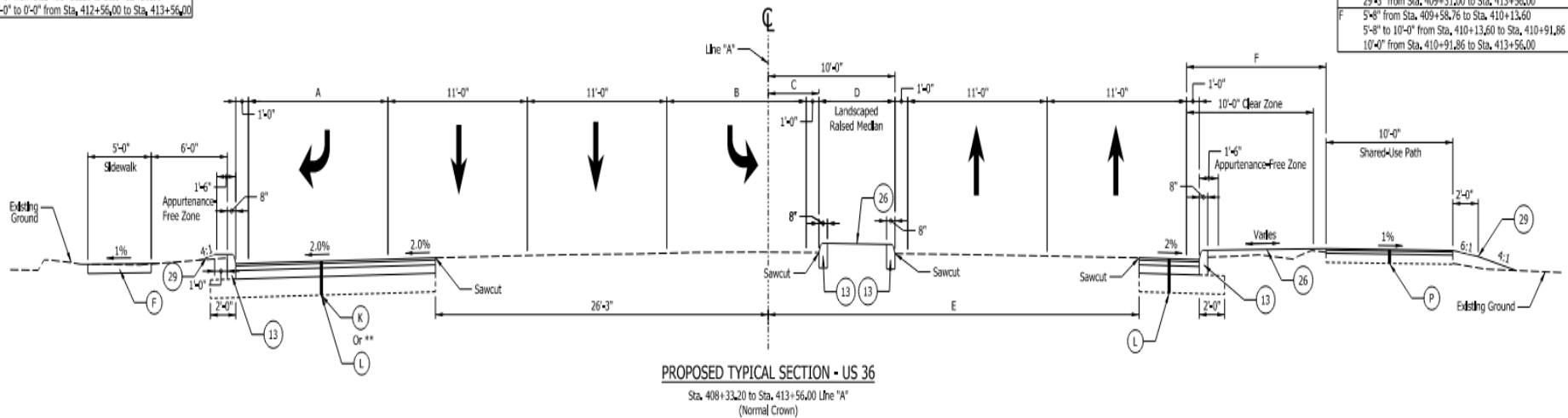
- Pedestrians
- Bicyclists
- Passenger Cars
- Freight Trucks
- Emergency Vehicles
- School Buses

Before and After

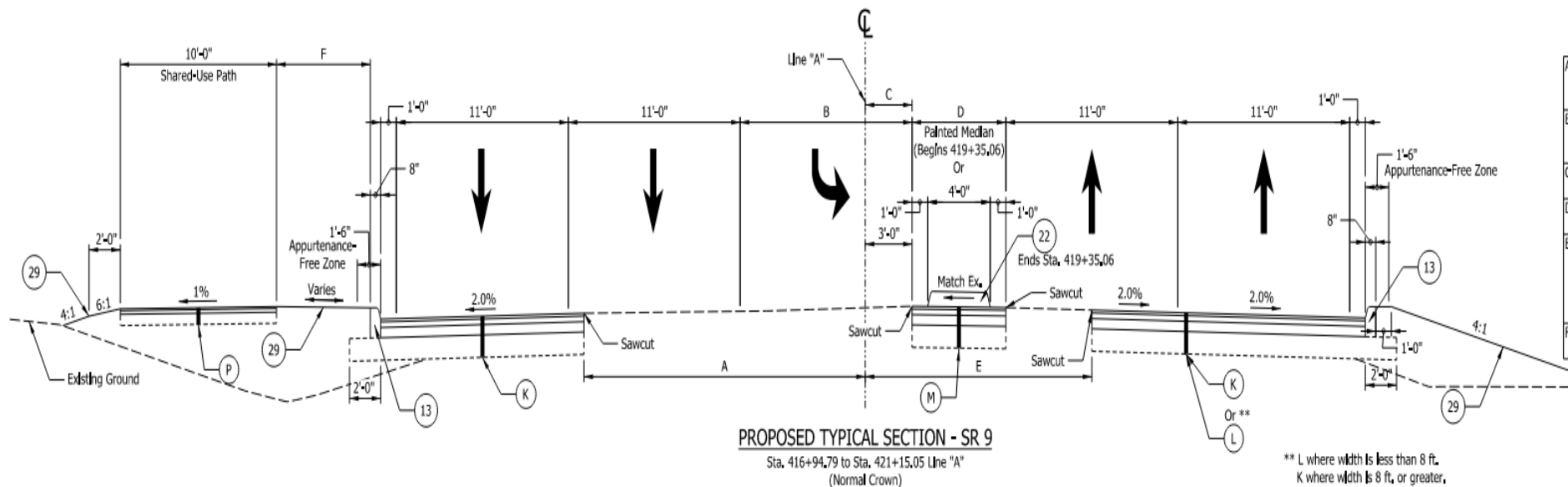


B 11'-0" from Sta. 408+33.20 to Sta. 412+56.00
 11'-0" to 0'-0" from Sta. 412+56.00 to Sta. 413+56.00

29'-3" from Sta. 409+31.00 to Sta. 413+56.00
 F 5'-8" from Sta. 409+58.76 to Sta. 410+13.60
 5'-8" to 10'-0" from Sta. 410+13.60 to Sta. 410+91.86
 10'-0" from Sta. 410+91.86 to Sta. 413+56.00



Before and After



Complete Streets Features Used

- New sidewalk and shared-use paths with buffers
- Accessible pedestrian signals
- ADA-compliant curb ramps
- Pedestrian refuge islands
- High visibility crosswalks
- Pedestrian lighting/signing
- Amenity areas (benches)
- Bike/Ped counter
- Traffic calming measures
 - Raised medians
 - Minimized corner radii
 - Minimized lane widths – kept one 12' lane in each direction for NTN



Google

Pedestrian lighting will match existing town lighting



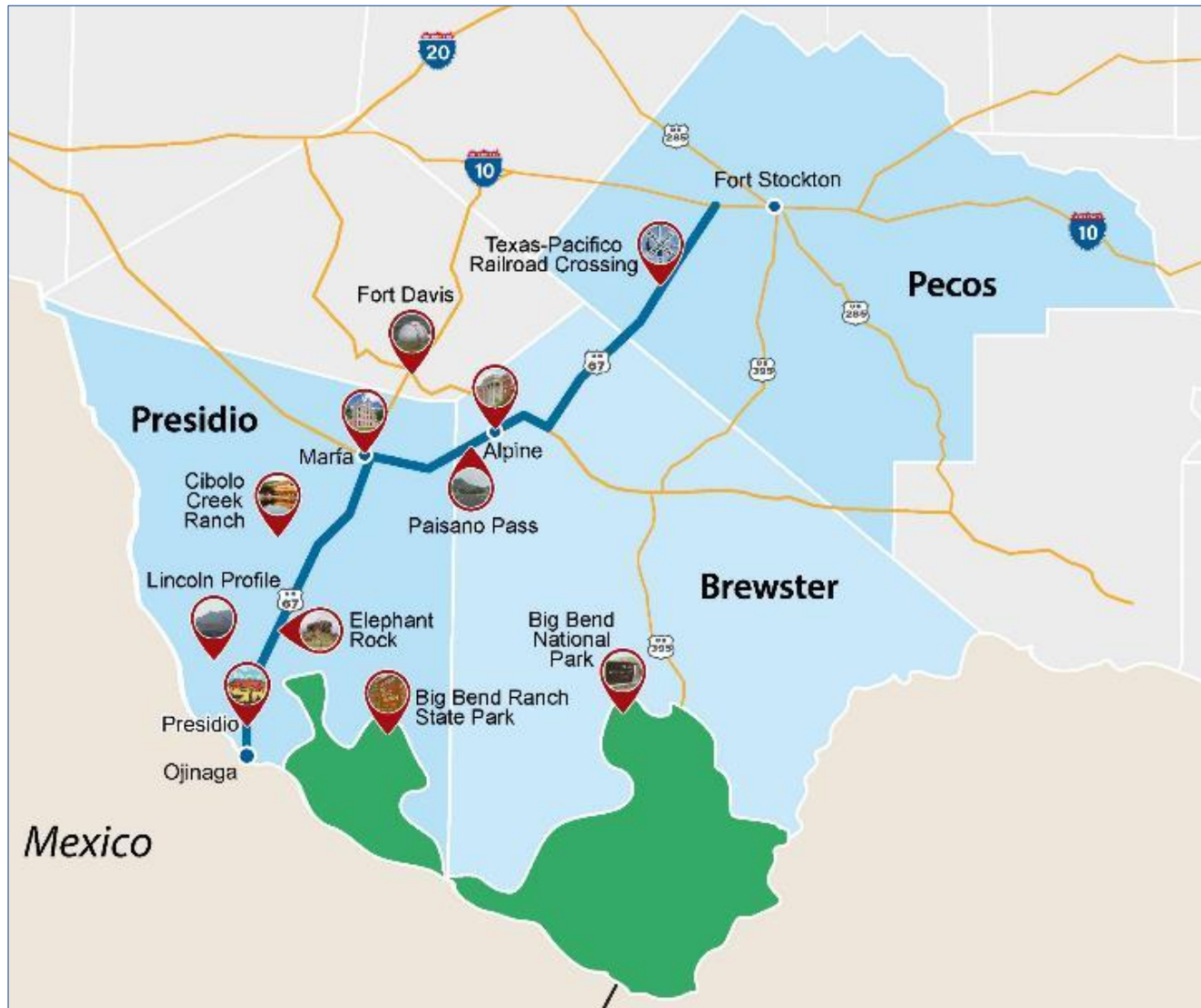
Example Bike/Ped Counter (UrbanMULTI by ecocounter)



Complete Streets Case Study of US 67 – Implementation at the Local Scale and Recommendations

Martin Guttenplan, AICP, PMP, Complete Streets Coordinator

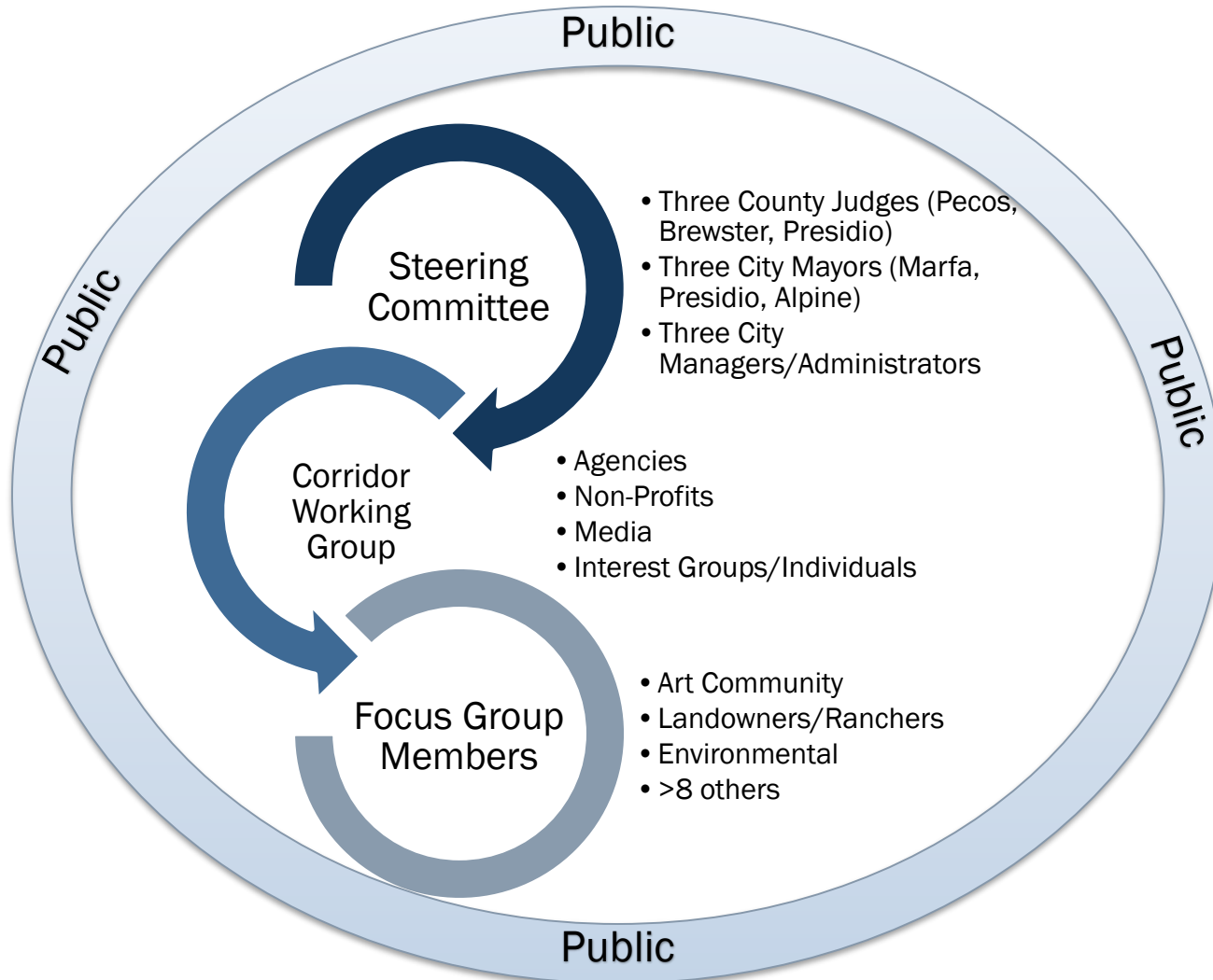
Location





Public Outreach Approach

TxDOT Team



Bus Tours



Who Attended?

- Stakeholders
- Elected officials from communities along the corridor
- Representatives from transportation agencies and organizations



Why a Bus Tour?

- Build relationships
- Gather meaningful stakeholder input
- Better inform potential study champions
- Discuss location-specific concerns
- Identify community concerns
- Provide a forum for collaborative discussion and brainstorming solutions



Measures of Public Engagement

Quantitative Outputs

- 2,100 website views
- 467 virtual open house views
- 875 people attended public meetings
- 272,000 social media views

Qualitative Outcomes

- 32,000 population in three-county area; broad outreach using multiple techniques
- 900 written/survey comments; input received from public meetings
- 12 study goals established and ranked by the public

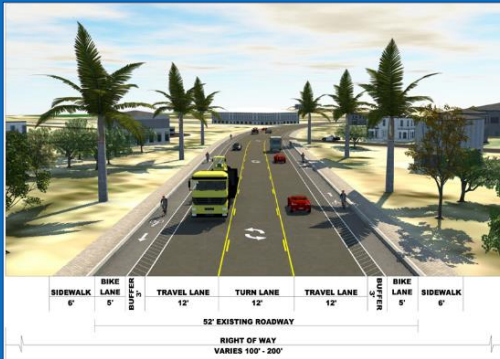


Complete Streets Case Study of US 67 – Recommendations

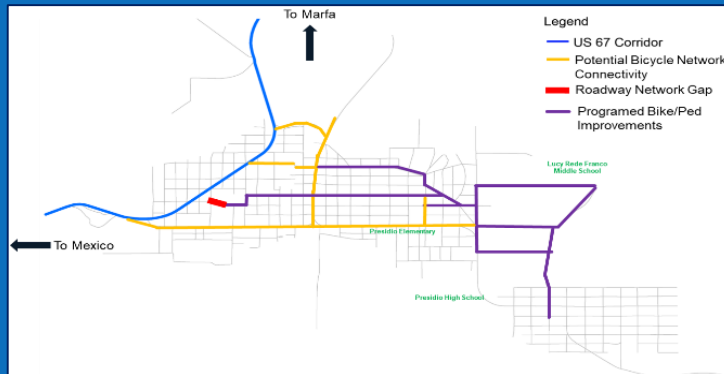


US 67 Complete Streets Alternatives

URBAN SOLUTIONS

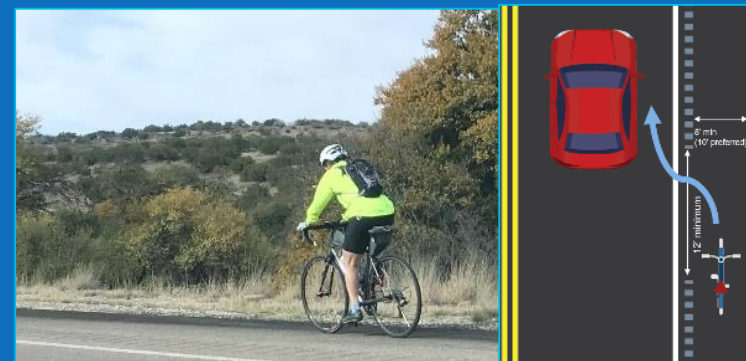


NETWORK SOLUTIONS



Potential bicycle network improvements off US 67 in Presidio. There are similar recommendations for all three communities

RURAL SOLUTIONS



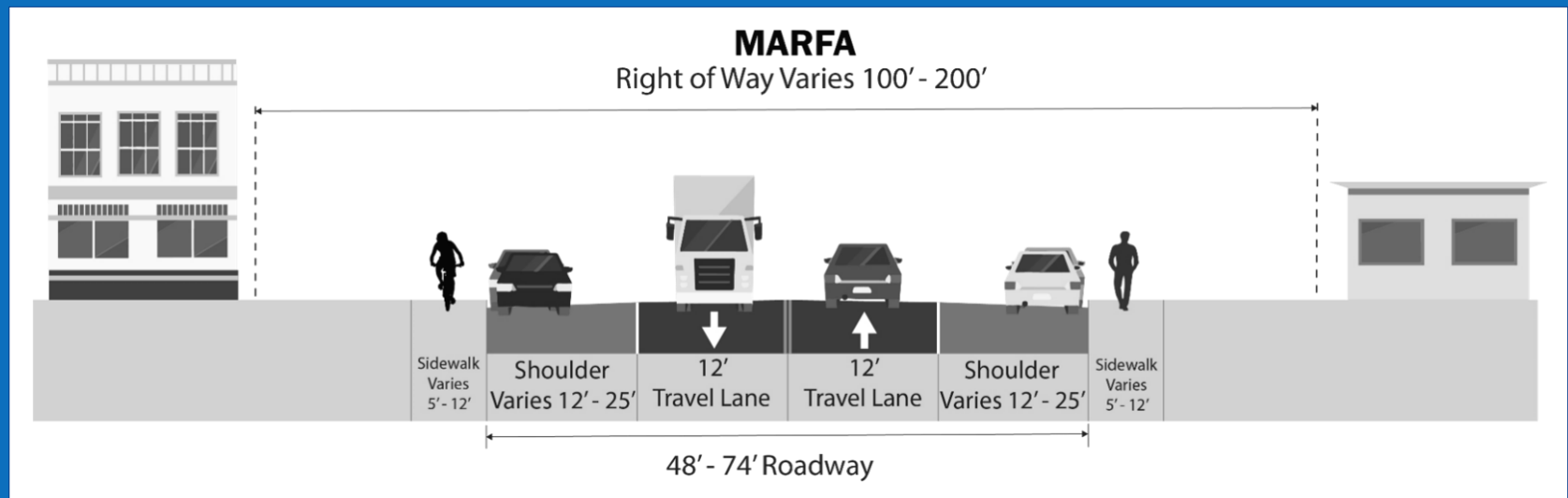
Rumble strips reduce crashes for motor vehicles but can cause a bicyclist to fall. Gaps allow bicyclists avoid hazards and debris.

Urban Solutions – Marfa is Different

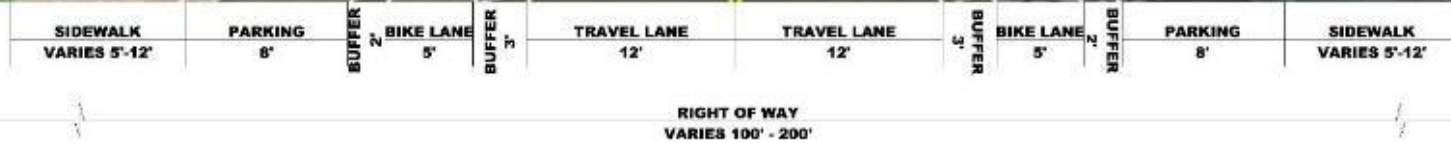


- Increased need and public desire for bicycle and pedestrian facilities
- Significant tourism industry
- Local bicycle share, Bike Marfa

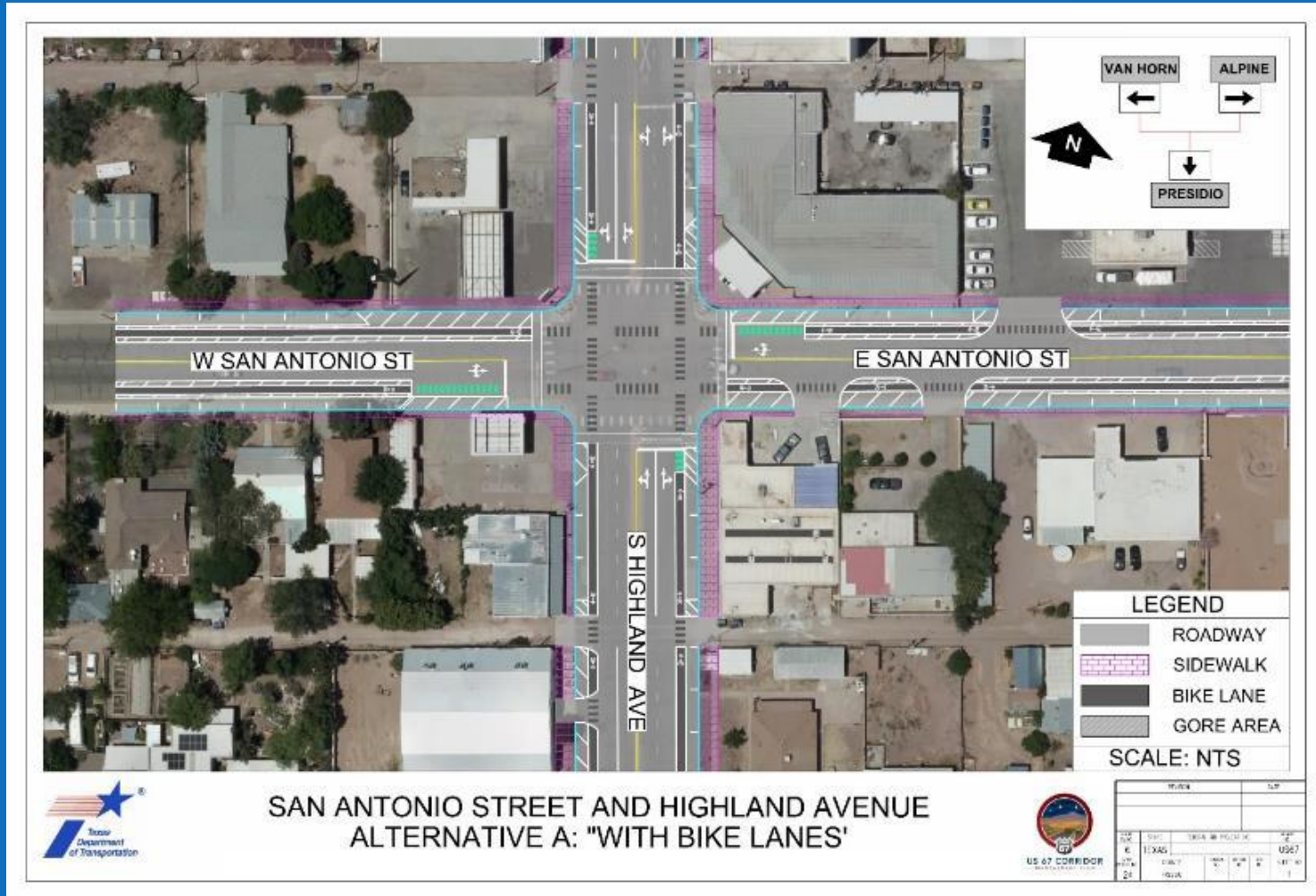
Urban Solutions – Marfa Existing Typical Section



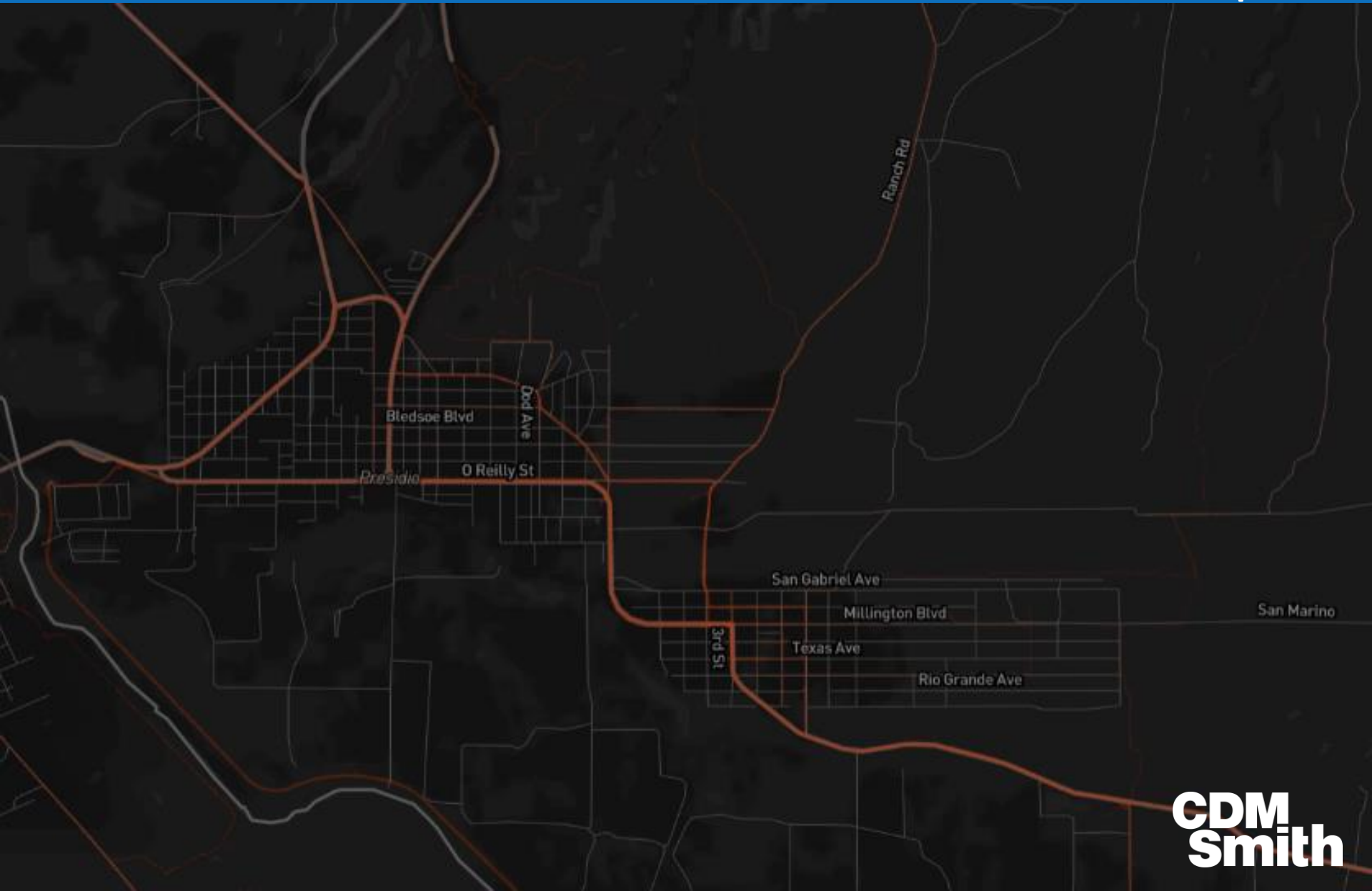
Urban Solutions – Marfa Bicycle Lane with Striped Buffer



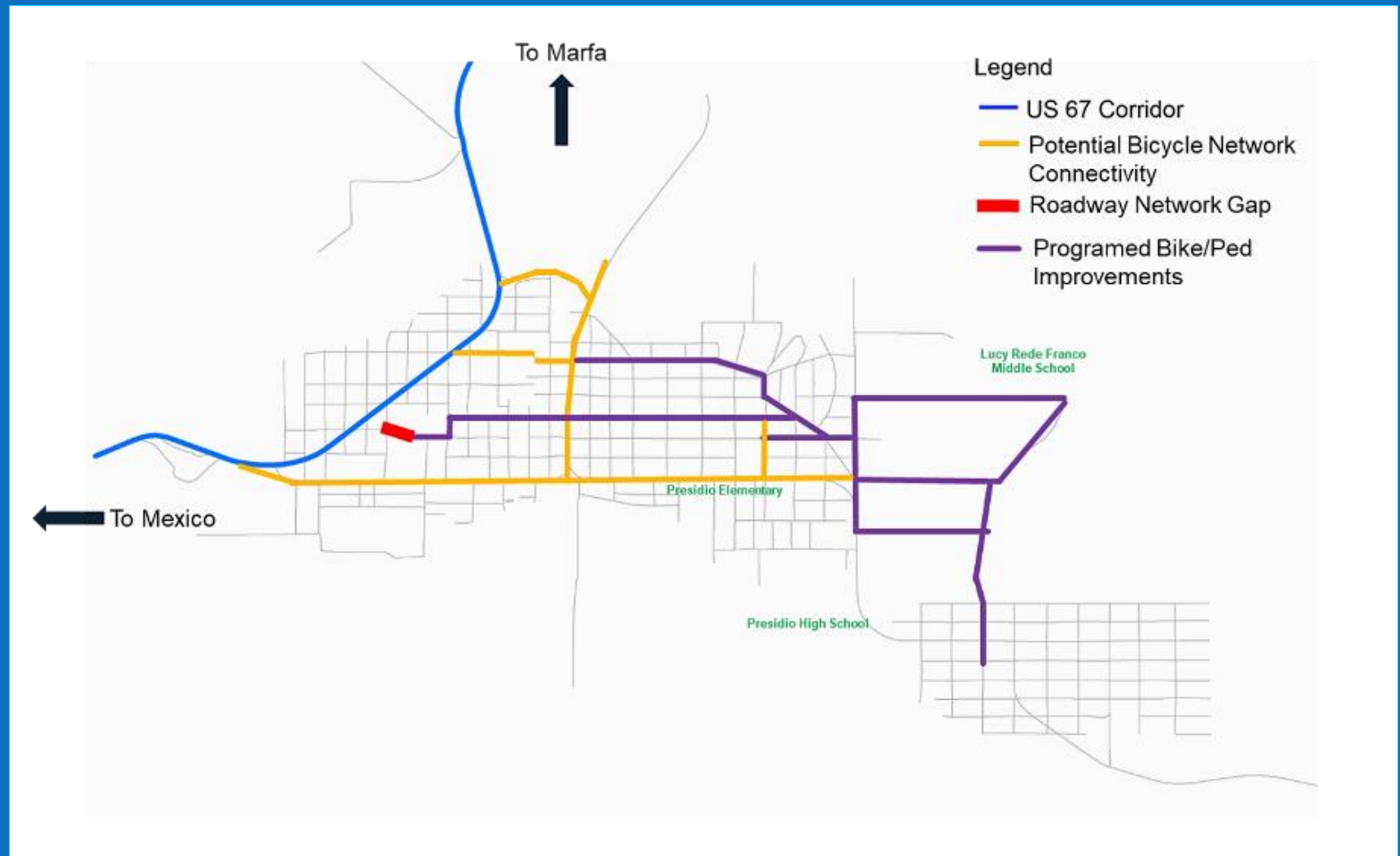
Urban Solutions – Marfa Bicycle Lane with Stripped Buffer



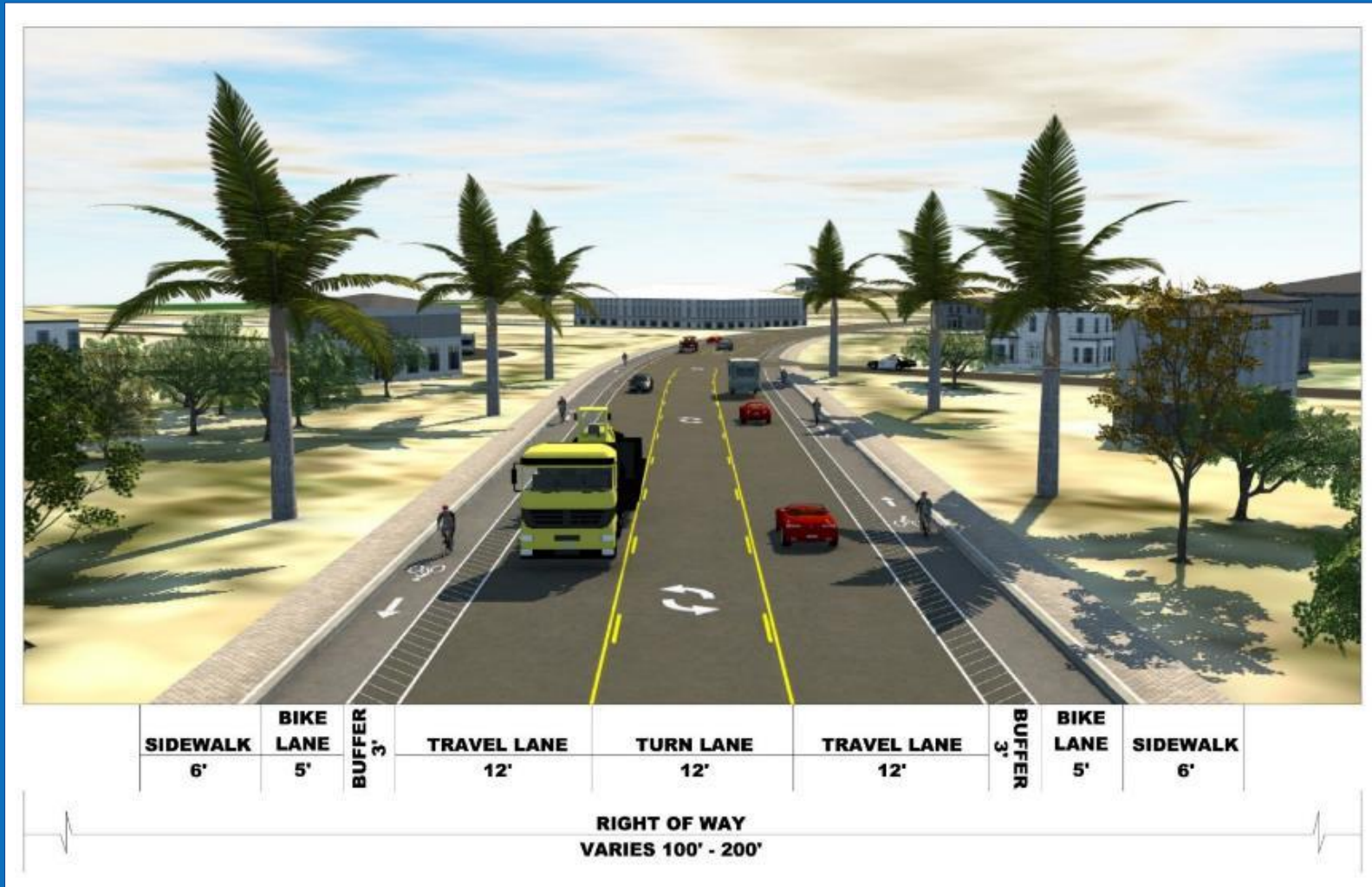
Network Solutions – Presidio STRAVA Heat Map



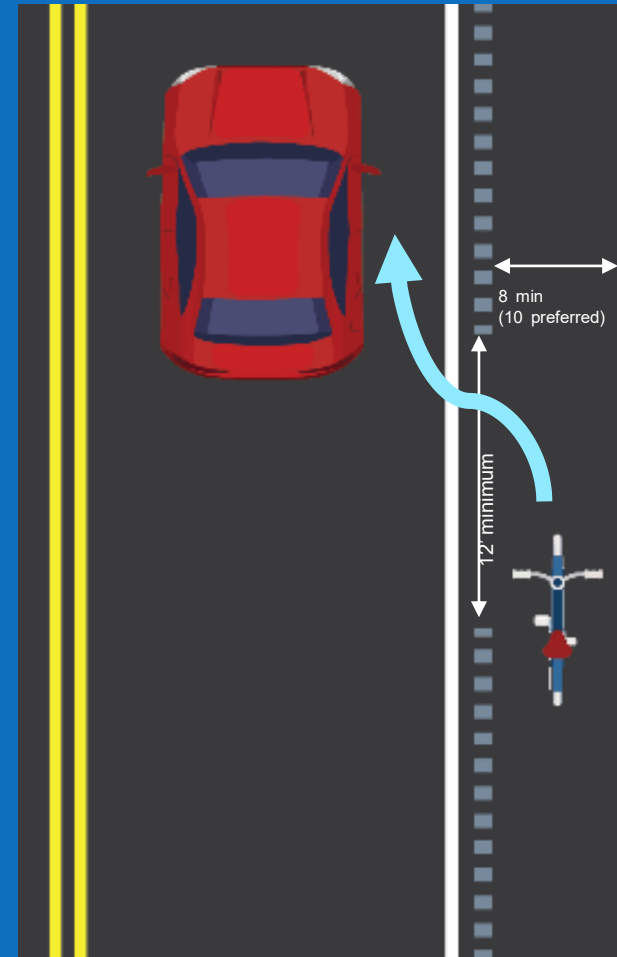
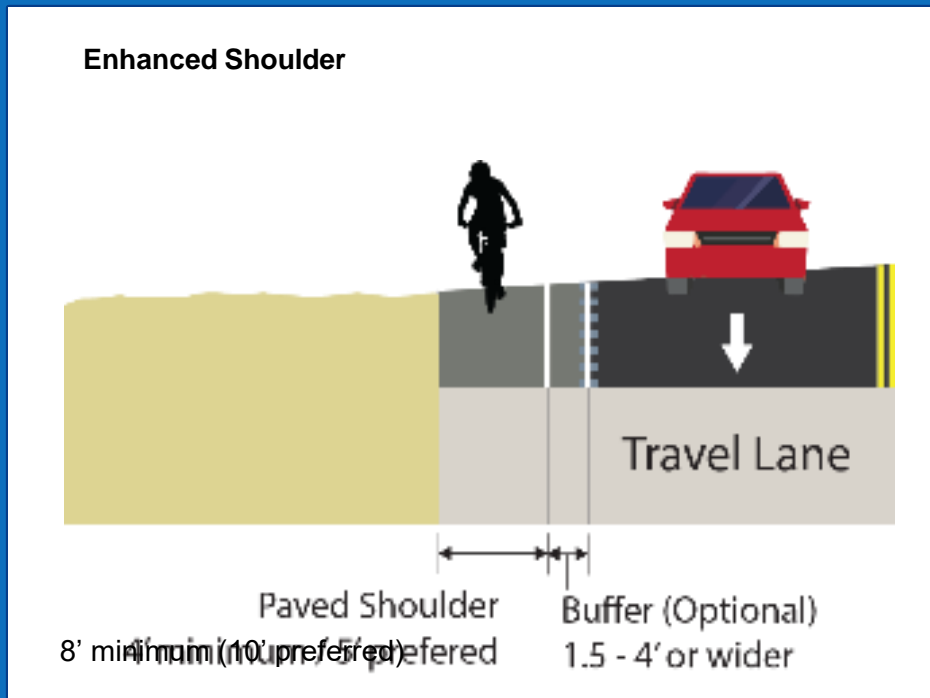
Network Solutions – Designate Bicycle Network



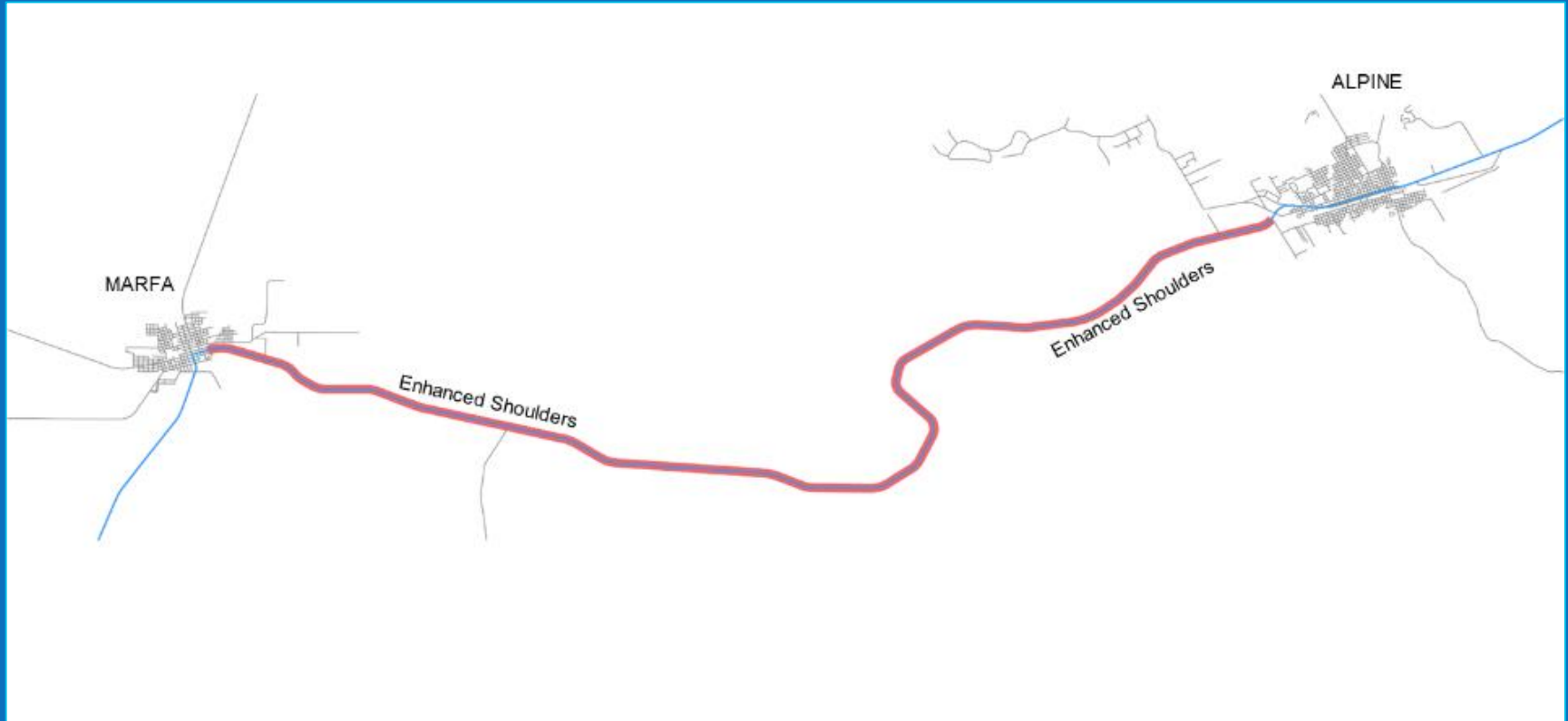
Network Solutions – Presidio Enhanced Cross Section



Rural Solutions for US 67 - Enhanced Shoulders



Rural Solutions – Enhanced Shoulders



Key Takeaways

1. The US 67 Corridor Master Plan was developed to meet the unique needs of a rural corridor in West Texas.
2. Public outreach led to significant feedback and demand for Complete Streets.
3. Complete Streets Solutions met public demands for bicycle/pedestrian needs while balancing freight travel.
4. Used TxDOT guidelines and standards for bicycle and pedestrian facilities in rural contexts.
5. Toolbox of Complete Streets Solutions for corridor communities' future plans and implementation
6. TxDOT has moved forward with recommendations and several improvements are being implemented

Complete Streets National Perspectives



Expanding Complete Streets Concepts to Apply to the Area and Corridors

- Includes multiple streets, parks, raingardens etc.
- Each serving multiple and different function
- Calls for thinking outside of silos
- Calls for multiple practices and disciplines



The word “corridor” may imply transportation or movement, but to be “complete,” consideration to area is essential.



Building Coalitions Between City Departments

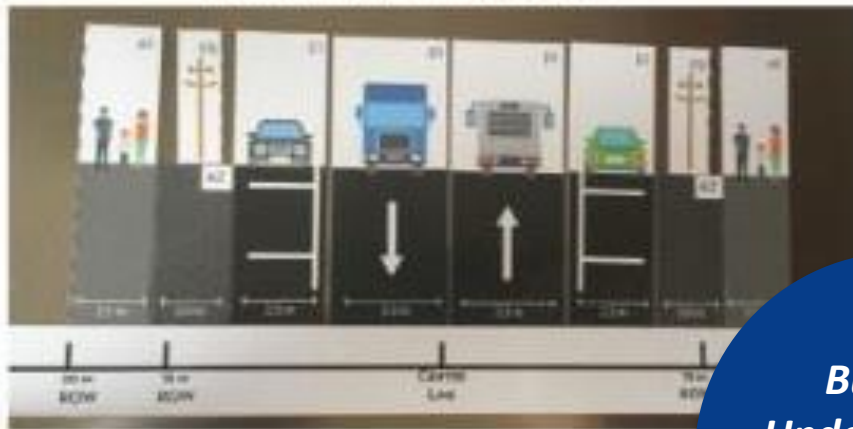
- Break down silos!
- Better connect
 - Streets
 - Parks
 - Water
 - Planning
 - Other Departments



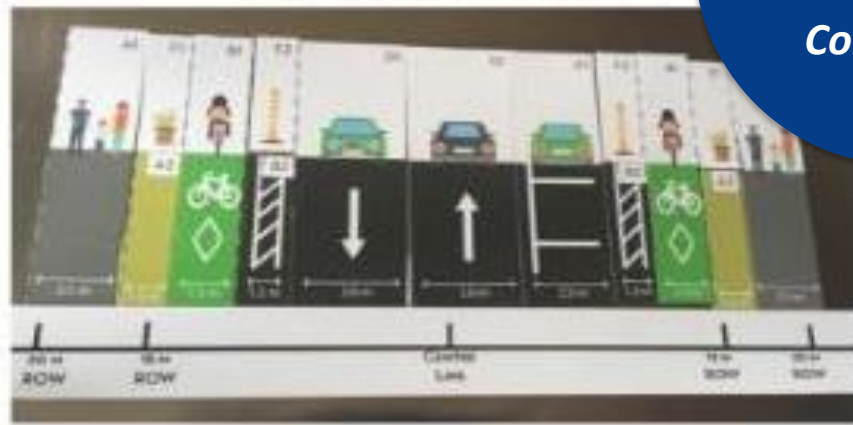
CDM Smith's long-term contract with the Philadelphia Water Department has required extensive collaboration with many departments and stakeholders.

Complete Corridors Evaluate Trade-Offs and Build Consensus

BLOOR STREET BEFORE



BLOOR STREET NOW



Building Understanding Helps Build Consensus



Complete Streets Game:
<https://www.tcat.ca/resources/complete-streets-game/>

Typical Profile of a Complete Street or Corridor

Establishing Context



Elizabeth Kelly, Portsmouth, New Hampshire



FDOT: Context Classification System

- Multiple contexts
- Include fine-grained neighborhood context
- Acknowledges one design does not fit all

Typology might include:

- Low-volume, slow residential streets
- Shared streets
- Bicycle priority streets (bike boulevards)
- Higher-volume commercial streets
- Transit priority streets
- Greenways and multi-use trails

Tiered Systems of Prioritization Within Each Mode

TRANSIT:

- Tier 1: Proposed dedicated lanes/near transit stations
- Tier 2: Mixed use lanes or express services
- Tier 3: Local bus service

BICYCLE AND PEDESTRIAN:

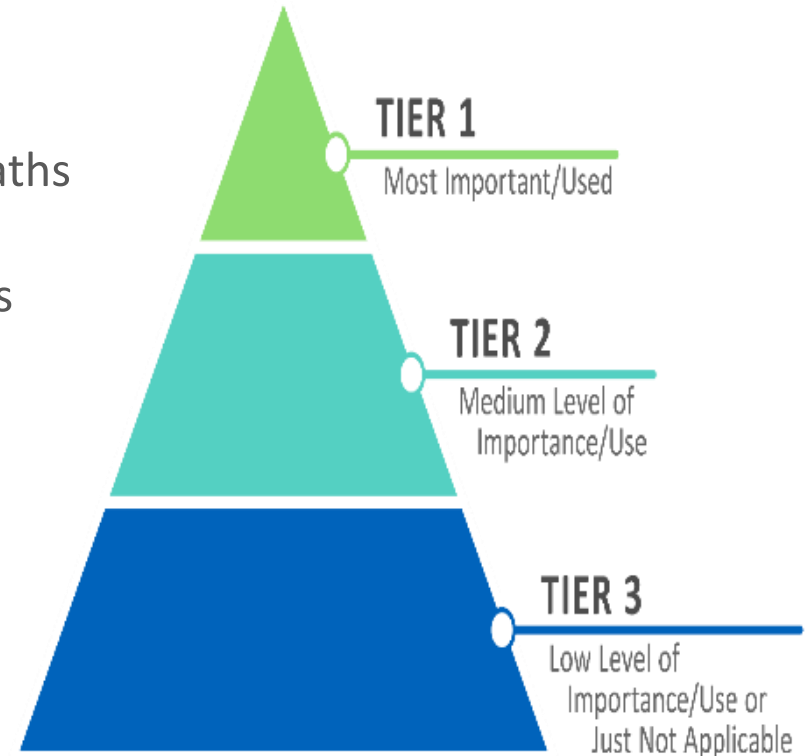
- Tier 1: High – Cycle tracks, shared use paths
- Tier 2: Medium – Buffered bike lanes
- Tier 3: Low – Bike lanes, paved shoulders

FREIGHT:

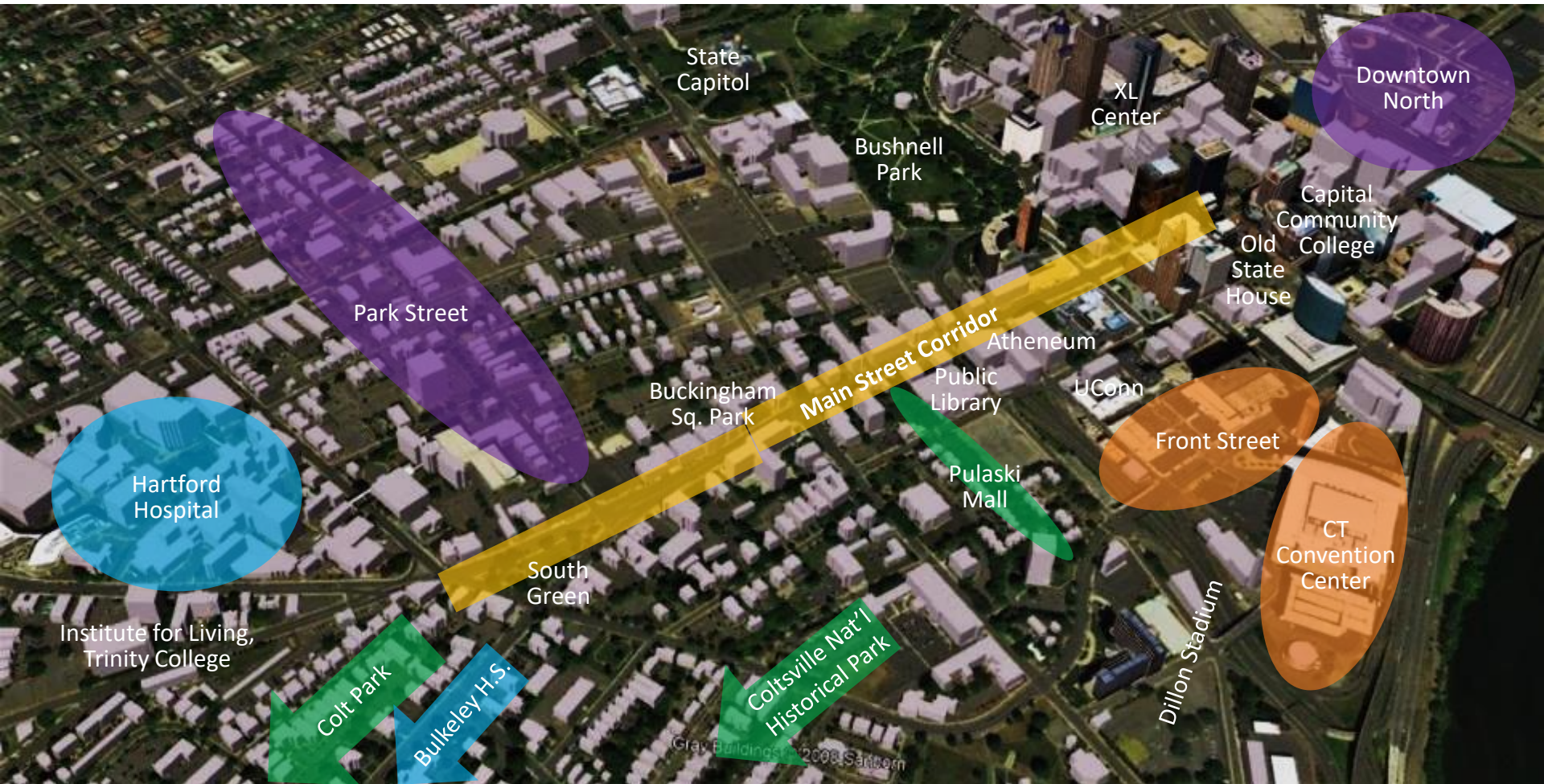
- Tier 1: Inter-regional transportation
- Tier 2: Last mile connection
- Tier 3: Local freight and delivery

AUTO:

- Level of service
- Traffic volumes
- Travel distances
- Consider ITS infrastructure investment levels

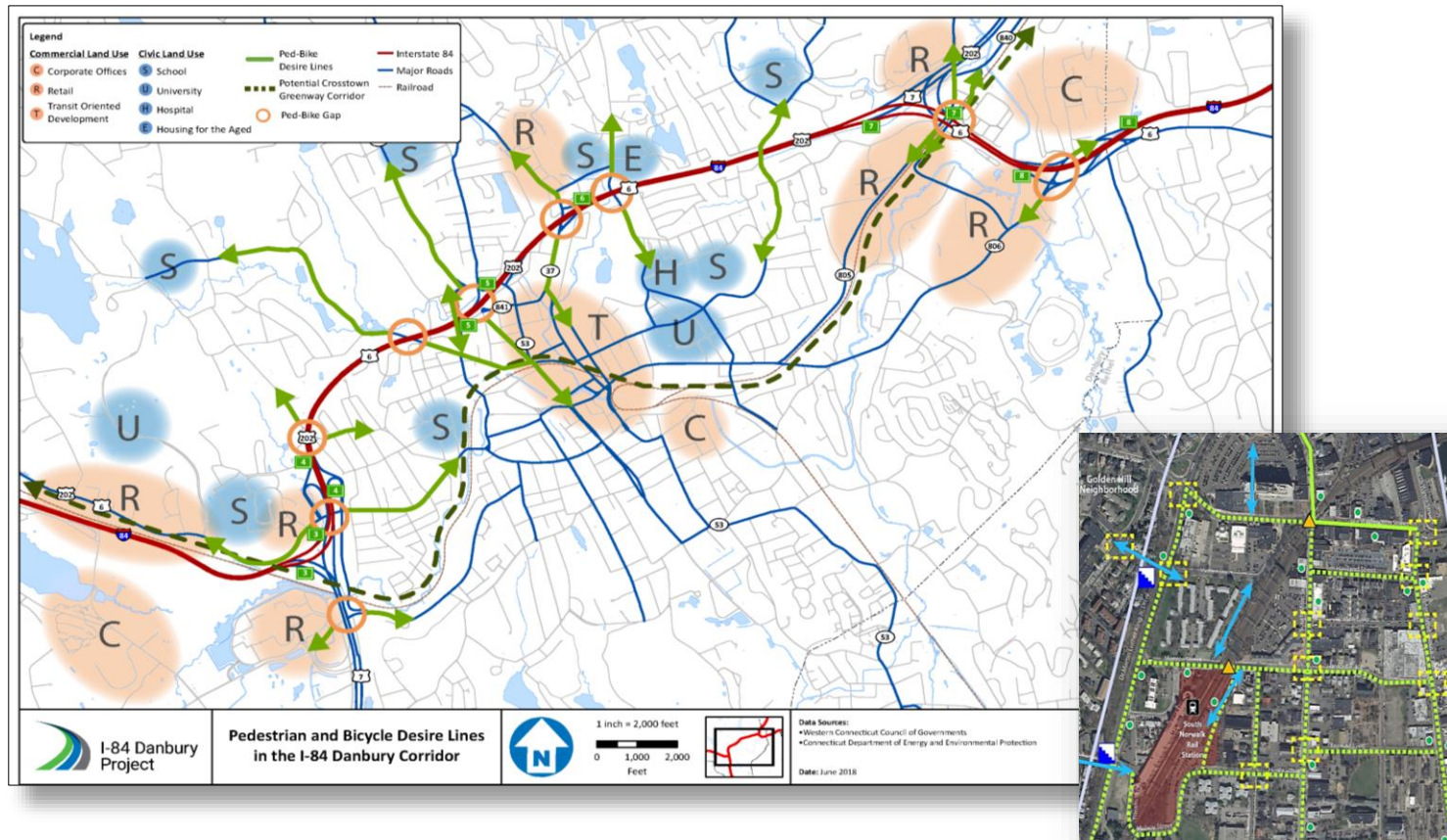


Project Level: Assessing Community Assets and Connectivity Needs



Project Level: Assessing the Needs

Multimodal Gap Analysis



- Bike Ped Latent Demand
- First and Last Mile Connectivity

FHWA Complete Streets Report to Congress

- US Congress asked DOT to "review its current policies, rules, and procedures to determine their impact on safety for road users, particularly those outside automobiles"
- [Moving to a Complete Streets Design Model](#) - Submitted March 2, 2022
- Great link to resources



Getting past the design manual and thinking about how the design is utilized by the end user.

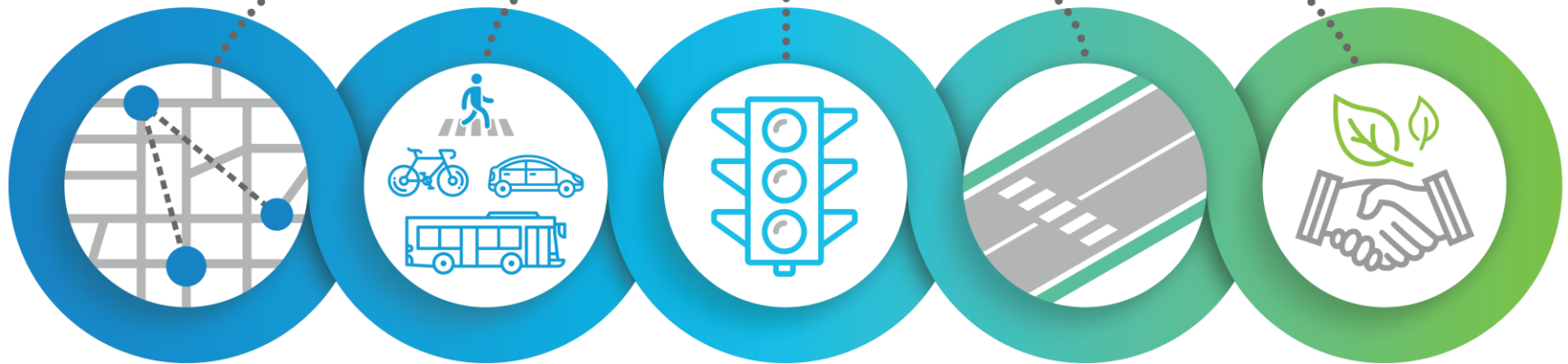
Key Takeaways from Report to Congress

- Make Complete Streets FHWA's **default approach** for funding and designing non-access-controlled roadways.
- Accelerate adoption of standards and guidance that promote safety and accessibility for all users...
 - Partner with universities and related organizations to develop education and training programs
- Reinforce **safety for all users** in the interpretation of design standards, guidelines, and project review processes.
 - Encourage planning for complete and connected multimodal networks at the Statewide and regional level.



Integrated Water, Environment, and Transportation Solutions are Essential to Complete Streets/Corridors

INTEGRATE



Make it urban center and corridor based

Consider all modes and develop Complete Streets

Optimize the existing system in low cost ways

Integrate ongoing maintenance/pavement improvements

Consider equity and environmental challenges



Thank You!

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