



Refinement Plan

# Terrebonne

## Public Meeting #2

# Welcome!



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# Public Meeting #2 Overview

- **Project Purpose**

Improving safety, mobility, accessibility, and regional connectivity within the Terrebonne community and along US 97.

- **Tell us what you think!**

Tonight, review the preferred alternative and let staff know if there is anything else we should consider.





CROOKED  
RIVER  
RANCH

97

Lower Bridge Way

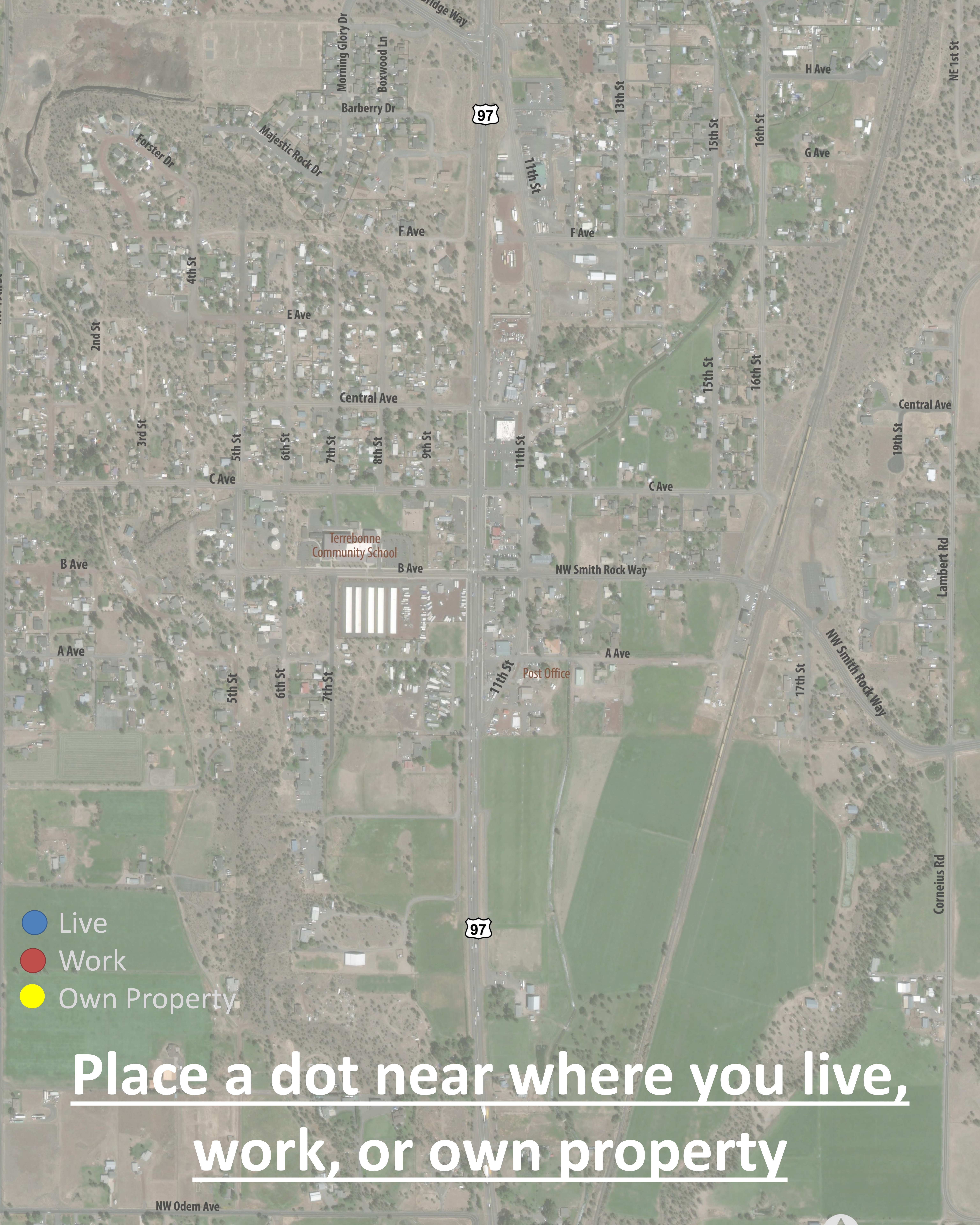
TERREBONNE

Smith Rock Way

- Live
- Work
- Own Property

Place a dot near where you live,  
work, or own property





- Live
- Work
- Own Property

Place a dot near where you live,  
work, or own property

NW Odem Ave



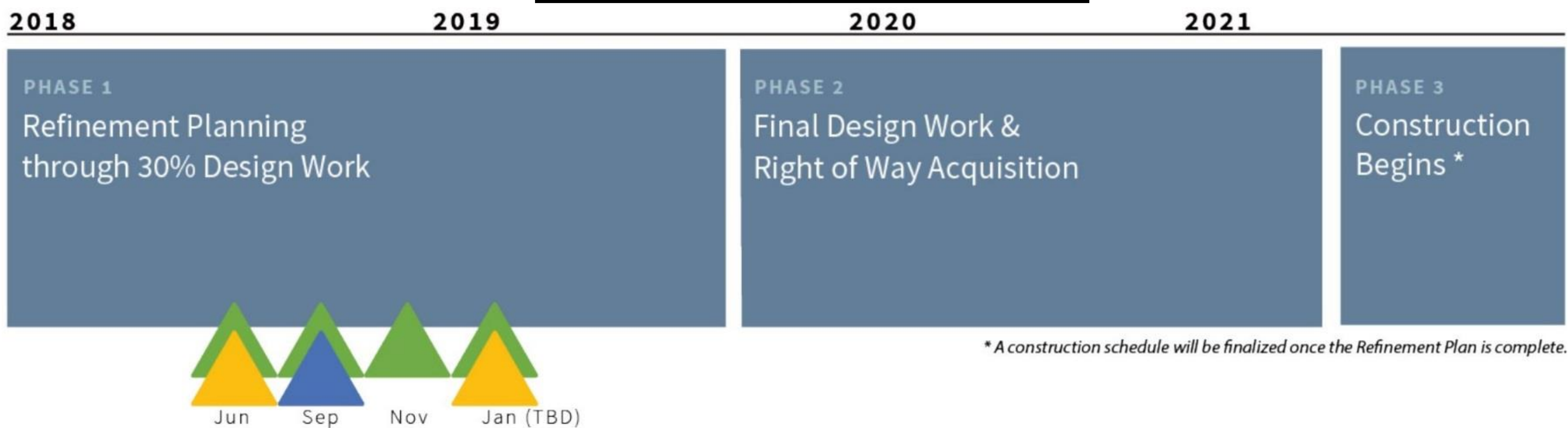


# Meeting & Overall Project Schedule

## January 9<sup>th</sup> Public Meeting #2 Schedule

- 6:00-6:15pm Review information and talk with staff
- 6:15-6:45pm Watch a formal presentation
- 6:45-8:00pm Review information and direct questions and comments to staff
- 8:00pm Adjourn

## Overall Project Schedule



### SCHEDULED MEETINGS

- ▲ Advisory Committee Meeting
- ▲ Concept Development Workshop
- ▲ Public Meeting



# Project Goals, Objectives, and Evaluation Criteria

Goal	Objective	Evaluation Criteria
<p><b>Community &amp; Livability:</b> Balance east-west connectivity with US 97 mobility needs to match community values and interests.</p>	<ul style="list-style-type: none"> <li>• Increase transportation choices on US 97 by adding or improving bicycle and pedestrian routes, crossing, and connections to transit, including a crossing at US 97 &amp; B Street which serves as a school crossing and scenic bike route crossing.</li> <li>• Link regional and local routes to key attractors on US 97, such as shopping, schools, residential areas, and other community destinations.</li> <li>• Provide a transportation network that accommodates local, commuter, and region traffic, including freight movements along US 97.</li> </ul>	<ul style="list-style-type: none"> <li>• Does the proposed project element serve people that live in, work in, and/or visit Terrebonne?</li> <li>• Are there any significant barriers to or impacts that would result from the proposed project element, such as the presence of significant natural resources or require acquisition of property contaminated by Haz Mat?</li> <li>• Do the proposed project elements increase noise impacts to the neighbors or impact parks, schools or churches?</li> <li>• What are the right of way impacts of the proposed project element - # of businesses relocated, #of residential properties impacted, impacts to public facilities, etc.</li> </ul>
<p><b>Accessibility:</b> provide infrastructure that supports accessible transportation options for all users.</p>	<ul style="list-style-type: none"> <li>• Address the identified existing and future year 2040 gaps and deficiencies (needs) within the study area.</li> <li>• Provide well-designed, visible, safe, and convenient infrastructure and crossings for all users (e.g., agricultural equipment).</li> </ul>	<ul style="list-style-type: none"> <li>• Does the proposed project element address existing gap or deficiency in the vehicular, transit, bicycle and/or pedestrian network?</li> </ul>
<p><b>Safety and Health:</b> enable people to safely and comfortably drive, walk, run or cycle in and through the Community, including along and across US 97, for all types of trips.</p>	<ul style="list-style-type: none"> <li>• Address safety, comfort, and security of people driving, walking, and biking along and across US 97.</li> <li>• Use transitional and traffic calming techniques to slow traffic to posted speeds.</li> </ul>	<ul style="list-style-type: none"> <li>• Does the proposed project element address an area with a crash history or risk factor? Is it expected to improve safety or slow speeds?</li> <li>• Does the proposed project element reduce the level of stress experienced by pedestrians and/or cyclists?</li> </ul>

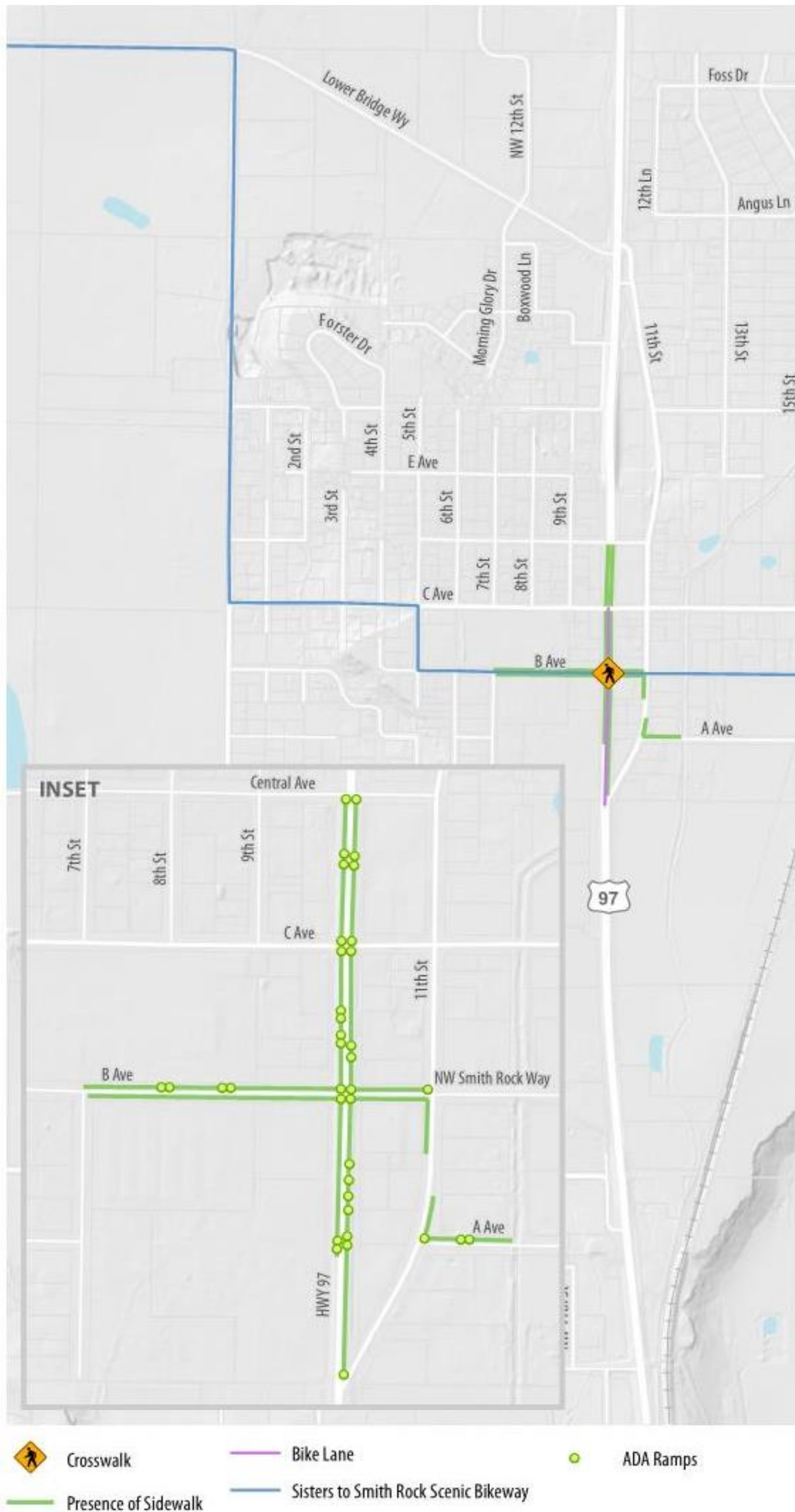


# Project Goals, Objectives, and Evaluation Criteria

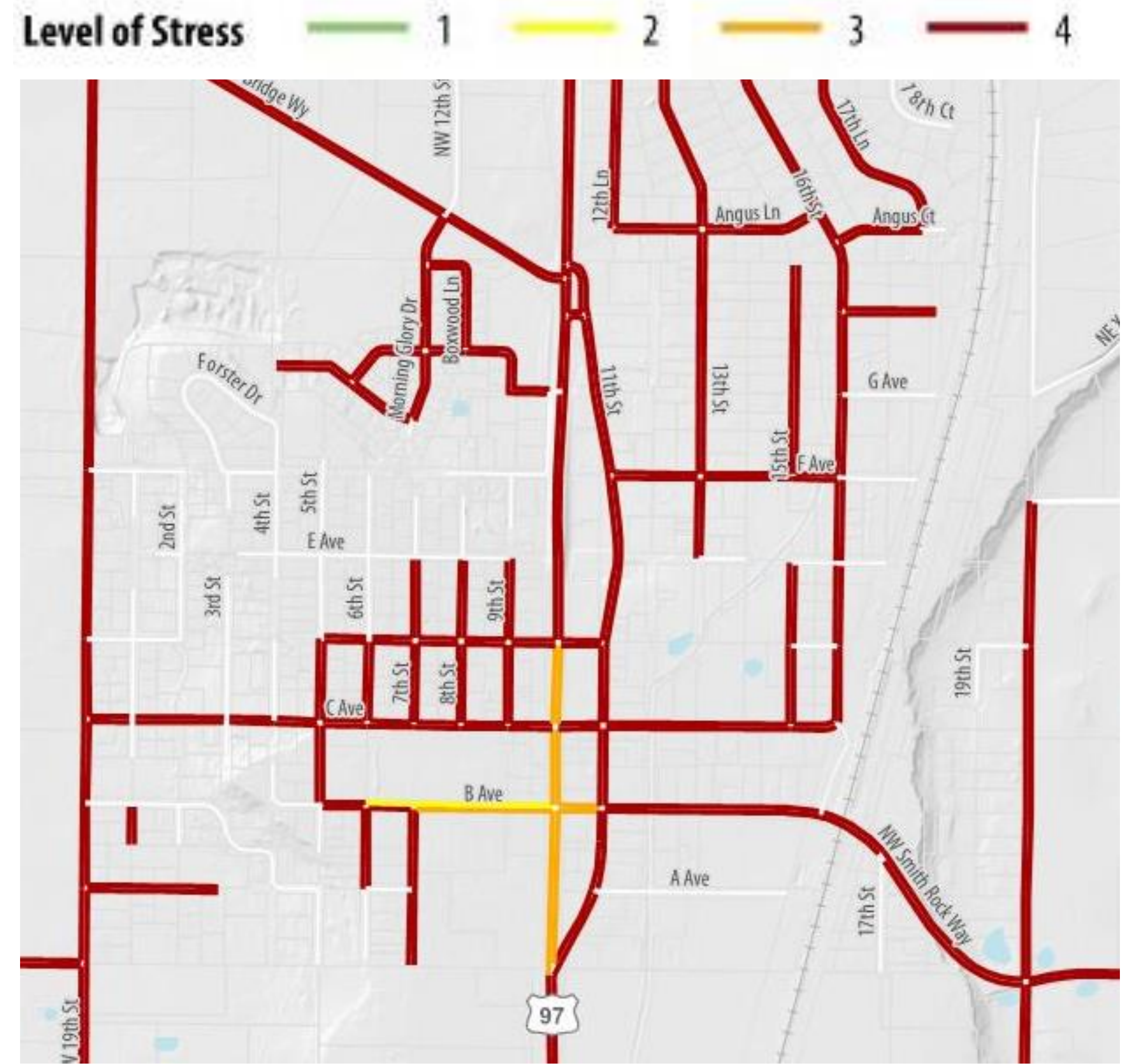
Goal	Objective	Evaluation Criteria
<p><b>Mobility:</b> Provide a safe and efficient transportation system for all modes of travel, including local trips, through trips on the highway, emergency services, and freight.</p>	<ul style="list-style-type: none"> <li>• Evaluate all potential US 97 alternatives, such as maintaining the existing US 97 alignment, creating a highway couplet with 11th Street or constructing a bypass east or west of the existing alignment.</li> <li>• Identify and evaluate all potential at-grade and grade separated solutions for the Lower Bridge Way/US 97 intersection in concert with the development of the alternative alignments for US 97.</li> <li>• Maintain the carrying and dimensional capacity for statewide freight movement on US 97.</li> </ul>	<ul style="list-style-type: none"> <li>• Does the proposed project element meet mobility targets on US97 through 2040?</li> <li>• Does the proposed project element represent an investment that works toward the long-term solution for the corridor?</li> <li>• Does the proposed project element maintain or enhance the carrying and dimensional capacity for statewide freight movement?</li> <li>• Does the proposed project element enhance east-west connectivity within the community?</li> </ul>
<p><b>Financial Responsibility:</b> use resources efficiently and invest in infrastructure that will serve the Community and statewide highway for years to come.</p>	<ul style="list-style-type: none"> <li>• Achieve maximum return on the \$20 million allocated for improvements in the Terrebonne community</li> </ul>	<ul style="list-style-type: none"> <li>• What is the planning-level cost estimate of the proposed project element?</li> <li>• Can the preferred plan be implemented with the money allocated?</li> <li>• Does the benefit exceed the cost over a 20-year horizon?</li> </ul>
<p><b>Economic Vitality:</b> encourage visitors and investment in the recreational, agricultural, business areas nearby and served by US 97.</p>	<ul style="list-style-type: none"> <li>• Provide connections to businesses and natural areas within and near the Terrebonne community.</li> <li>• Attract tourist and investment dollars to the greater Terrebonne community</li> </ul>	<ul style="list-style-type: none"> <li>• Does the proposed project element address mobility and serviceability for local and regional freight activity?</li> <li>• Does the proposed project element support business activity in and around the community (e.g., the Smith Rock State Park)?</li> <li>• Does the proposed project element improve pedestrian and/or bicycle access to businesses and natural areas in and around the community?</li> </ul>



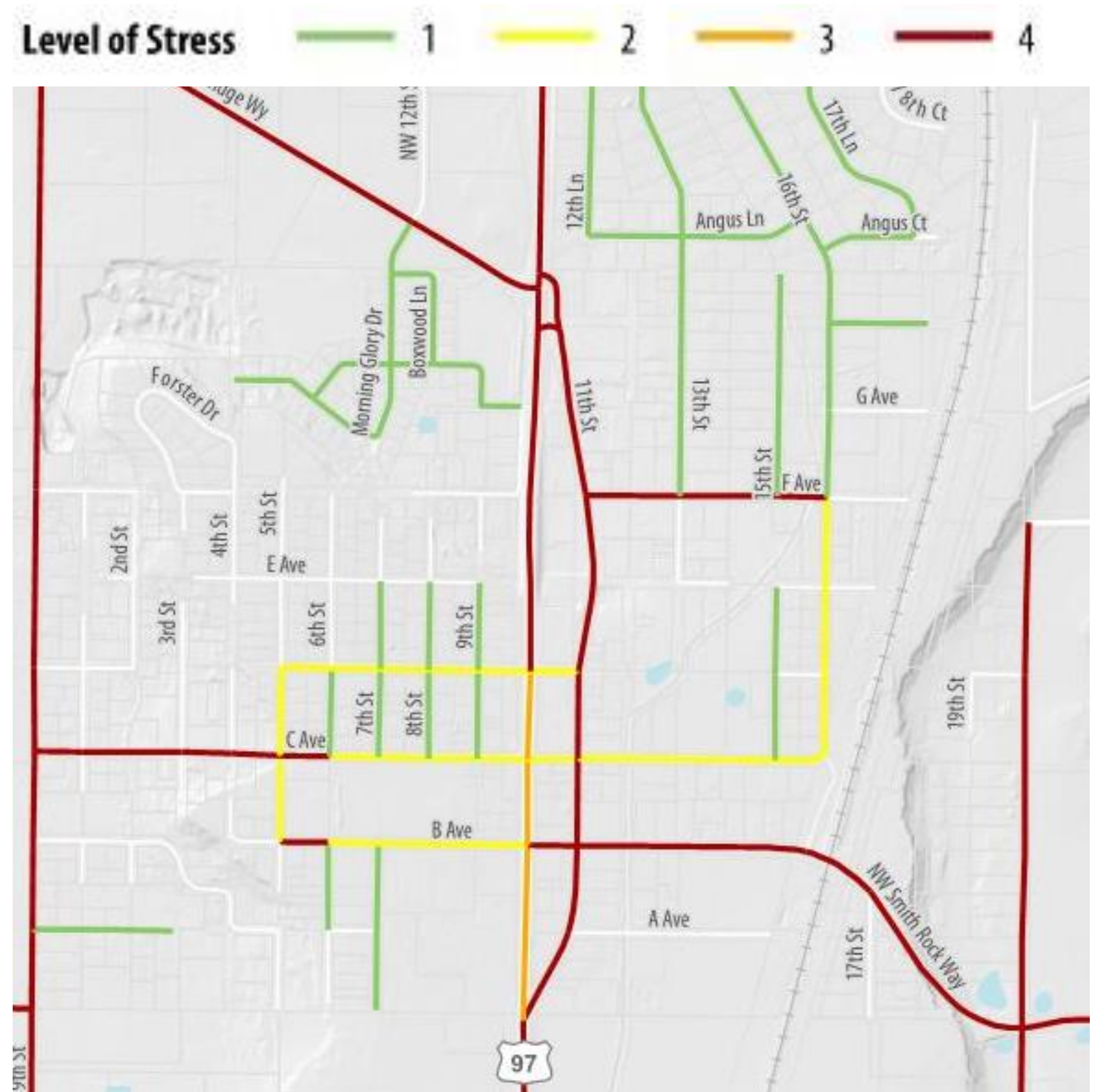
# Existing Conditions – Multimodal



**Existing Multimodal System**



**Pedestrian Level of Traffic Stress**



**Bicycle Level of Traffic Stress**



# Existing Conditions – Speeds

## US 97 Posted Speed

## US 97 Recorded Speed





# Existing Conditions – Trucks

- High freight corridor (~20-25% trucks)



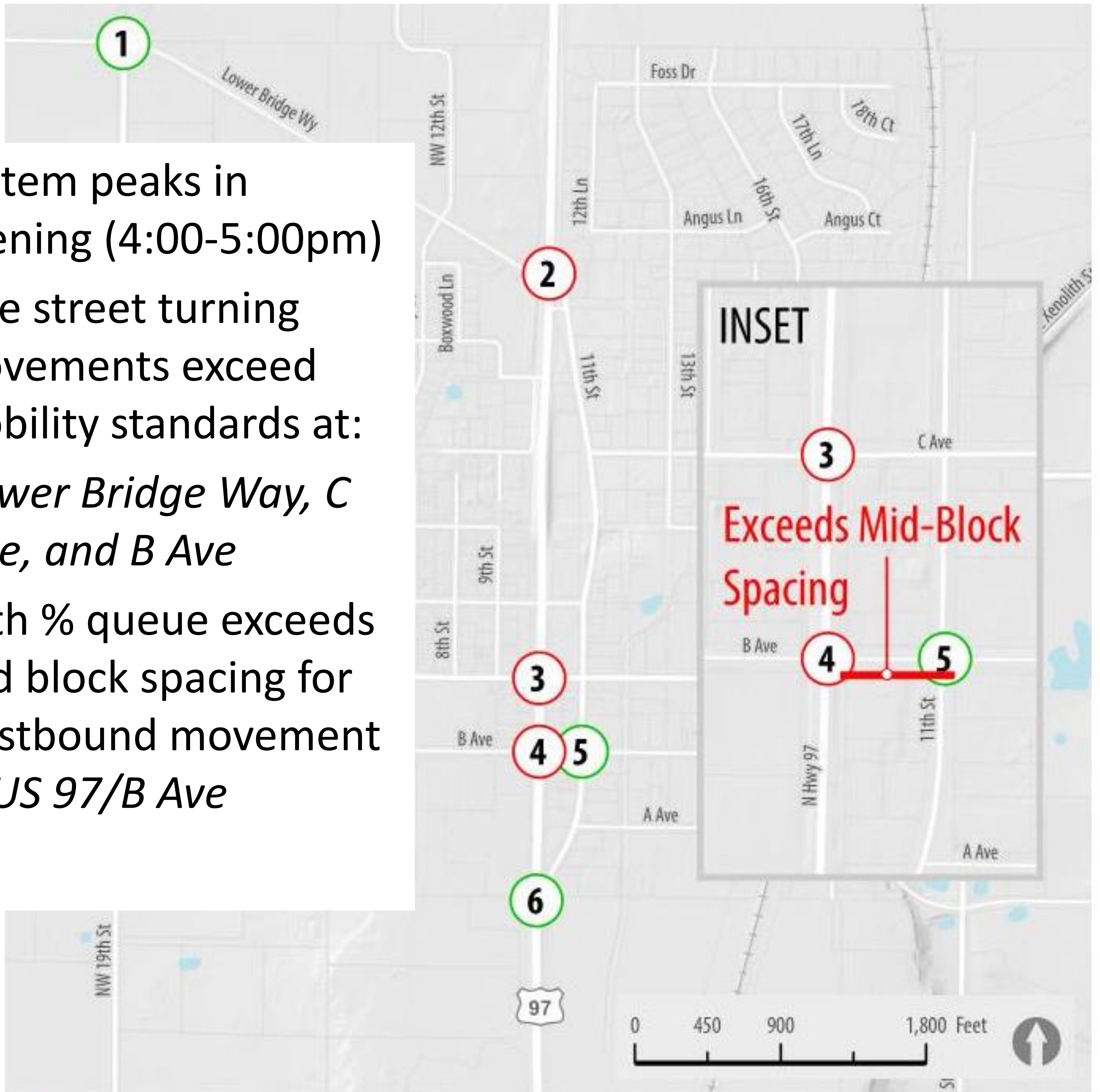
## Over Dimensional Loads on US 97 2013-2015, Nov. 2017 – Aug. 2018

<b>Number of Loads</b>	<b>Total</b>	<b>90</b>
<b>Width</b>	Average	18 feet
	<b>Max</b>	<b>26 feet</b>
<b>Length</b>	Average	116 Feet
	<b>Max</b>	<b>330 Feet</b>
<b>Weight</b>	Average	220,000 lbs
	<b>Max</b>	<b>818,680 lbs</b>



# Existing Conditions – Operations

- System peaks in evening (4:00-5:00pm)
- Side street turning movements exceed mobility standards at:  
*Lower Bridge Way, C Ave, and B Ave*
- 95th % queue exceeds mid block spacing for westbound movement at *US 97/B Ave*



○ Exceeding Side Street Mobility Standards

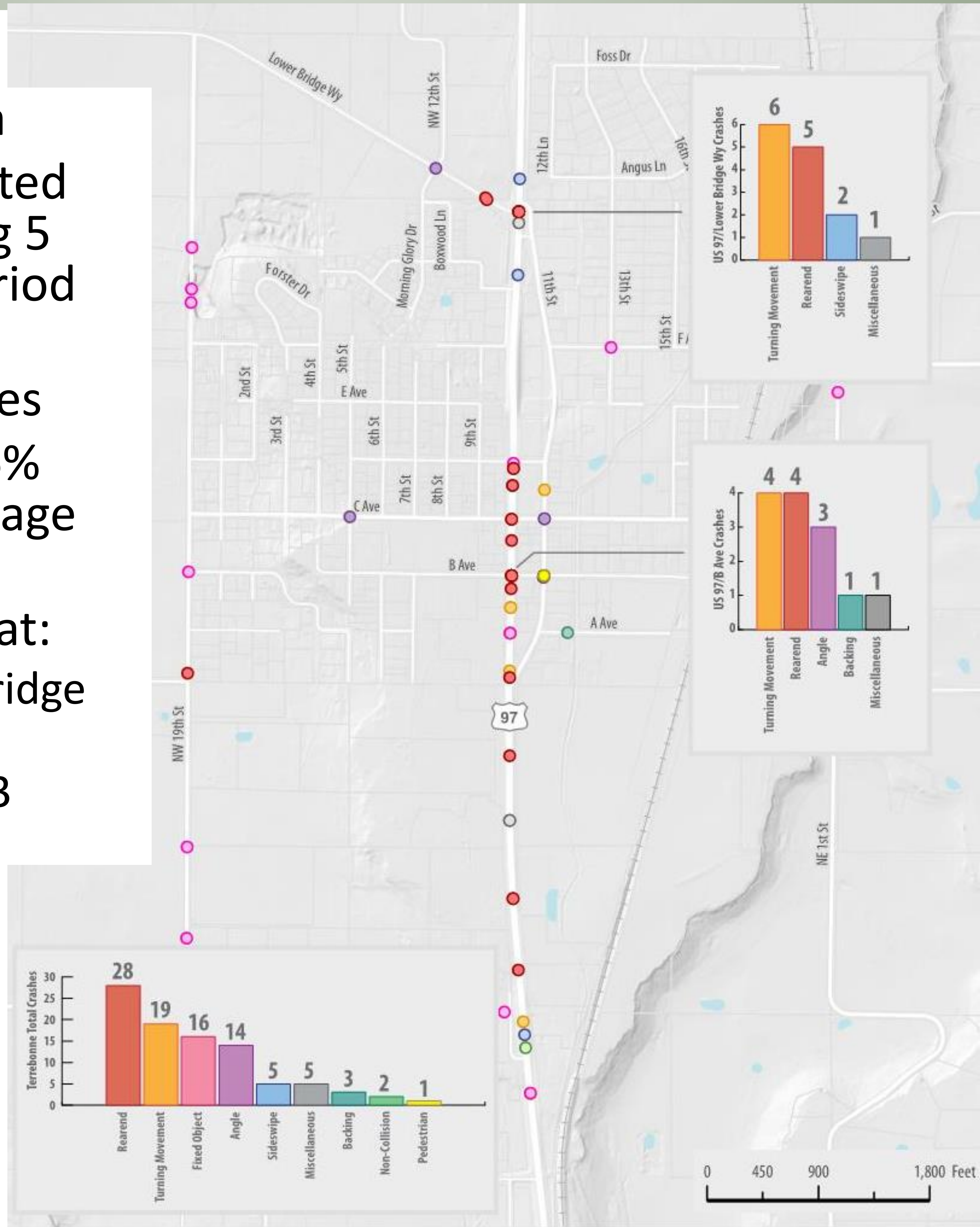
○ Meets Side Street Mobility Standards



# Existing Conditions – Crash Data

## 2012-2016 Data

- 93 total reported crashes during 5 year study period (2012-2016)
- No fatal crashes
- 44% injury, 56% Property Damage Only (PDO)
- Total Crashes at:  
US97/Lower Bridge Way= 14  
US97/B Ave=13



- |                                |                 |                 |
|--------------------------------|-----------------|-----------------|
| ● Rear-End                     | ● Angle         | ● Backing       |
| ● Turning Movement             | ● Sideswipe     | ● Non-collision |
| ● Fixed-Object or Other-Object | ● Miscellaneous | ● Pedestrian    |

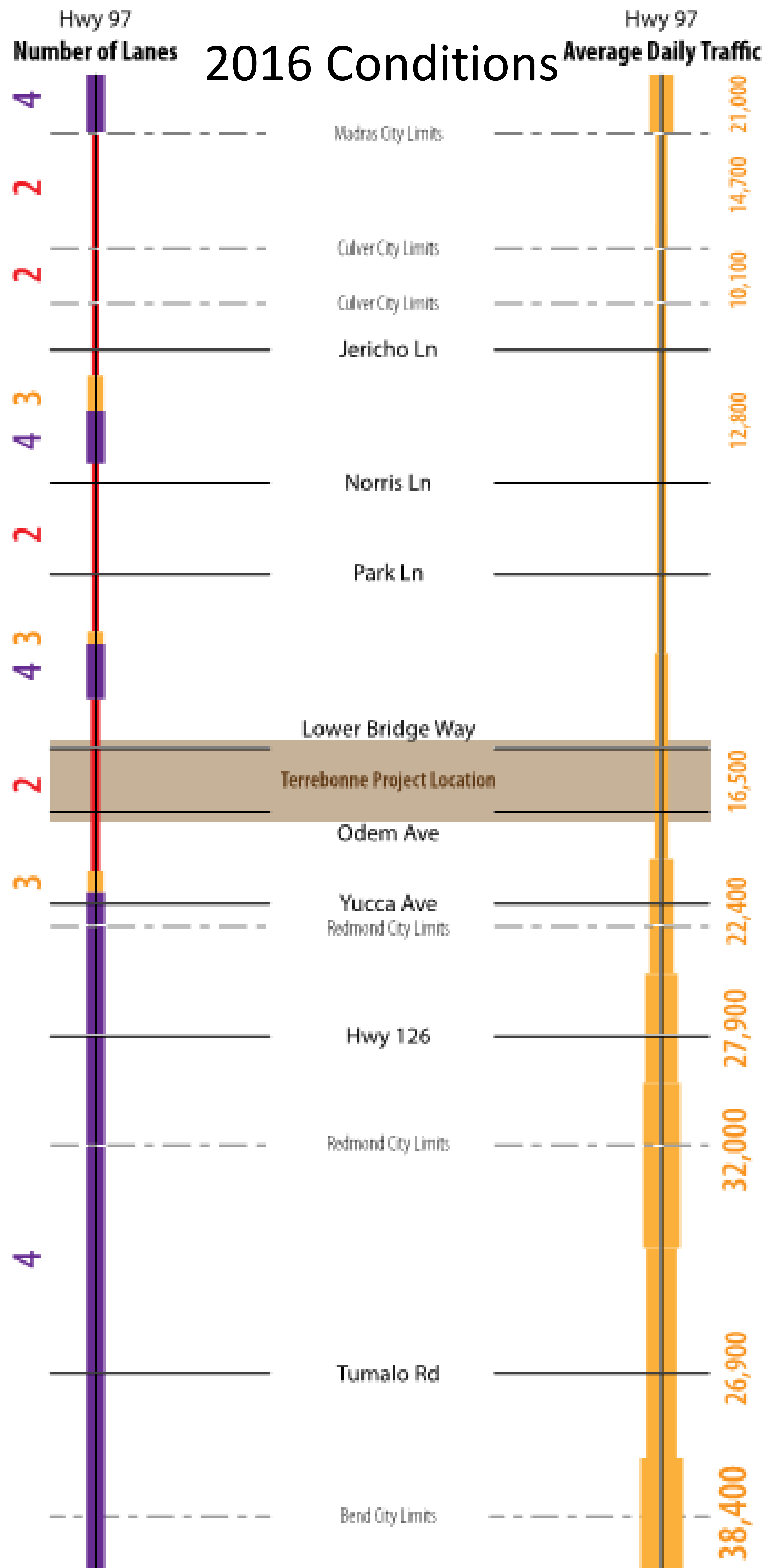


# US97 Long-Term Needs

Average Daily Traffic (ADT) on US 97 through Terrebonne is anticipated to grow to 32,000 by 2040. This will meet or exceed the two-lane capacity of US 97 within Terrebonne.



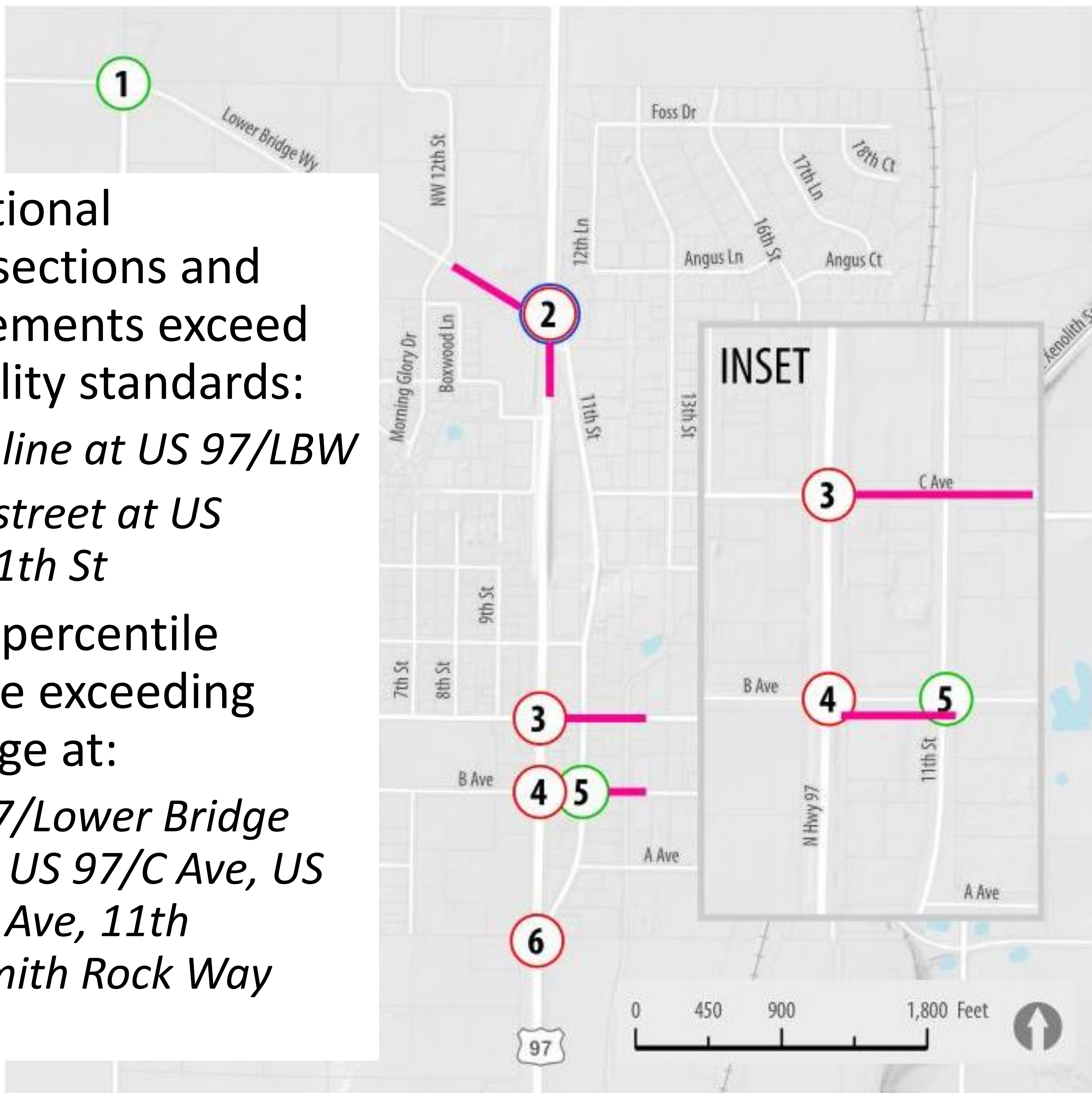
Truck traffic is also expected to remain high along the US 97 corridor.





# Future Conditions – Operations

- Additional intersections and movements exceed mobility standards:  
*Mainline at US 97/LBW*  
*Side street at US 97/11th St*
- 95th percentile queue exceeding storage at:  
*US 97/Lower Bridge Way, US 97/C Ave, US 97/B Ave, 11th St/Smith Rock Way*





# Summary of Corridor Needs

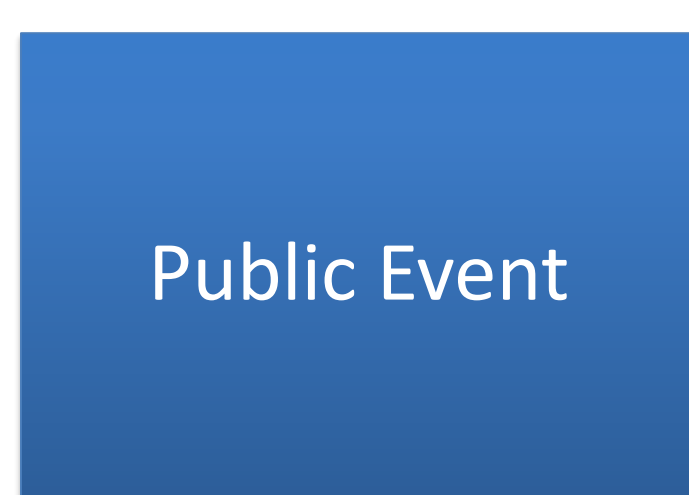
- Highway demand will necessitate some form of 2 NB and 2 SB lanes
- Provide connectivity and access for all users in Terrebonne
- Address US97/Lower Bridge Way Capacity/Safety
- Address US97 / B Avenue Capacity
- US 97 is a key freight corridor



# How Did We Get Here?



**Legend:**



Public Event



Advisory Committee Meeting



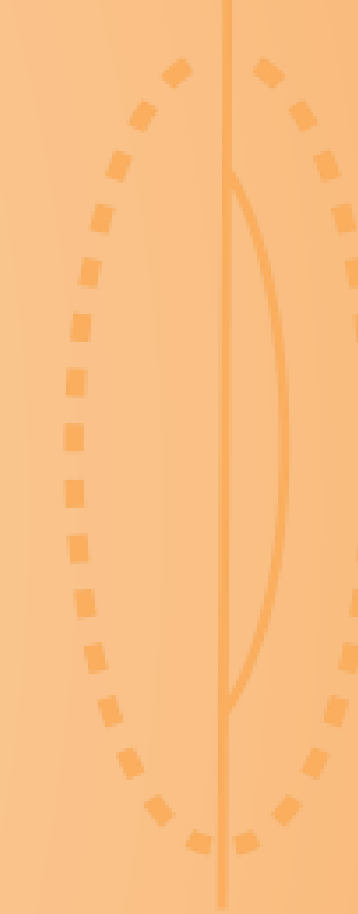
Technical Memorandum



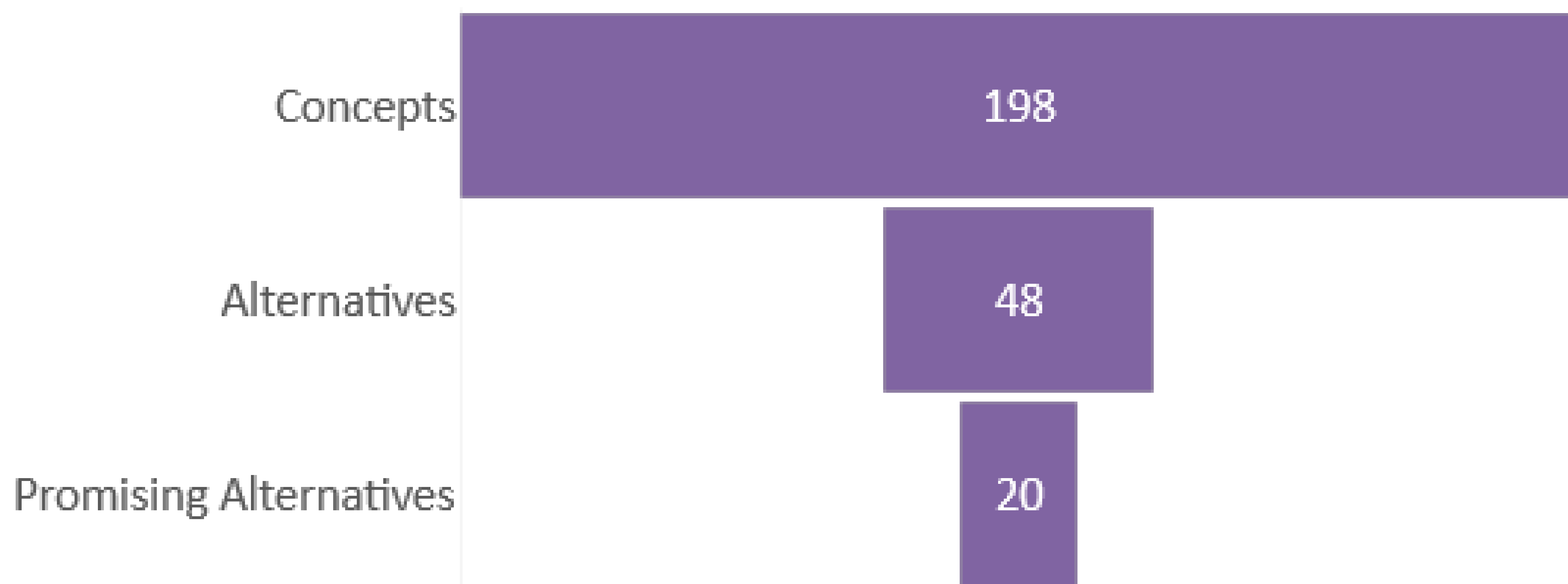
Preferred Alternative Selection



# Concept Development Workshop Summary



- Three Day Workshop September 11th-13th
- Over 130 participants
- Concepts Developed
  - 64 Corridor Alignments
  - 102 Intersections
  - 32 Transitions
- Concepts grouped and evaluated



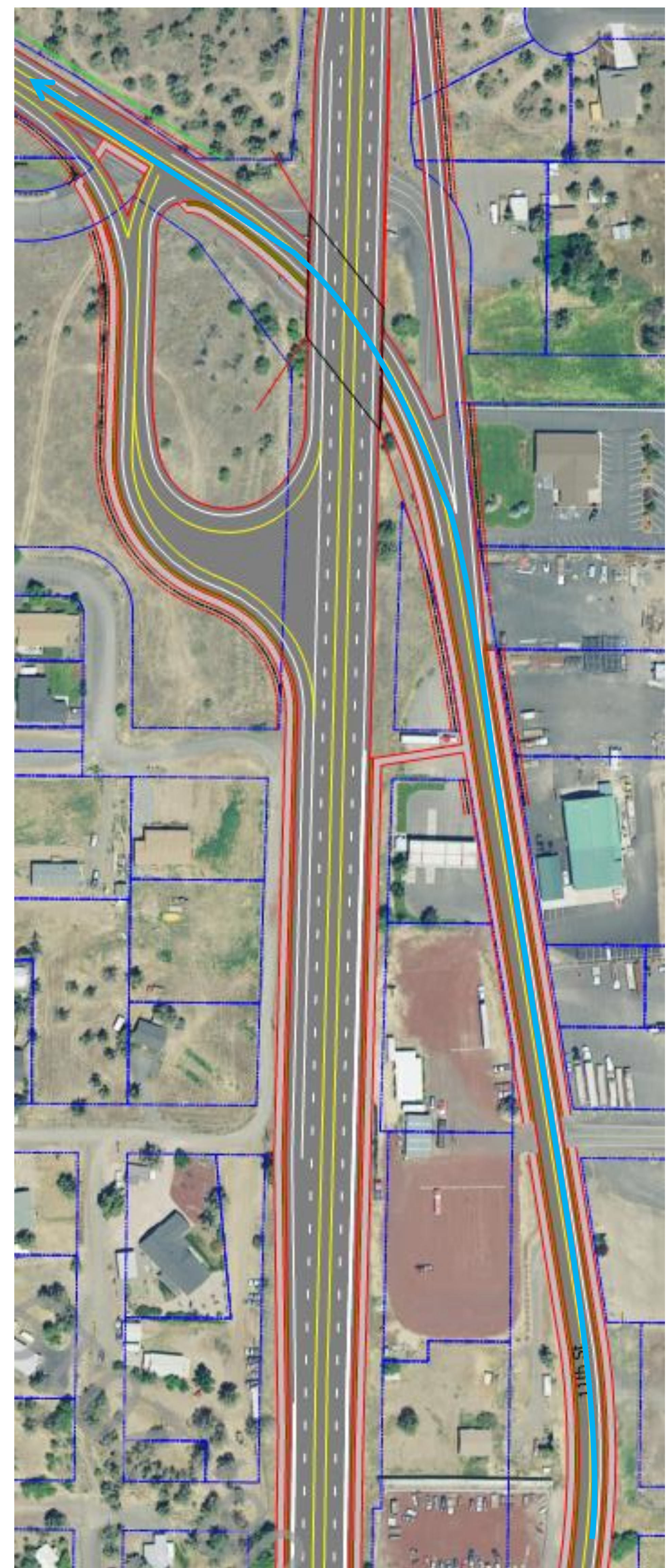
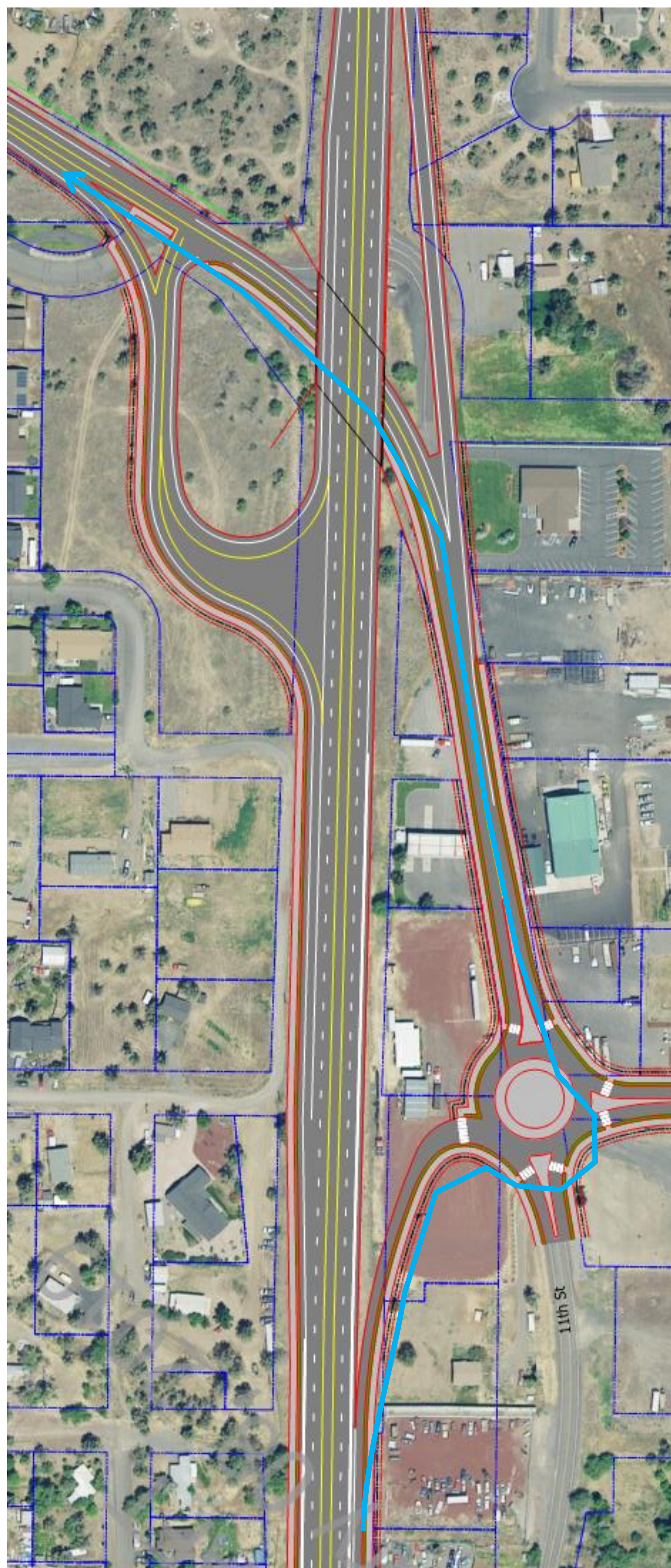


# Alternatives – Accessing Lower Bridge Way Northbound

Couplet

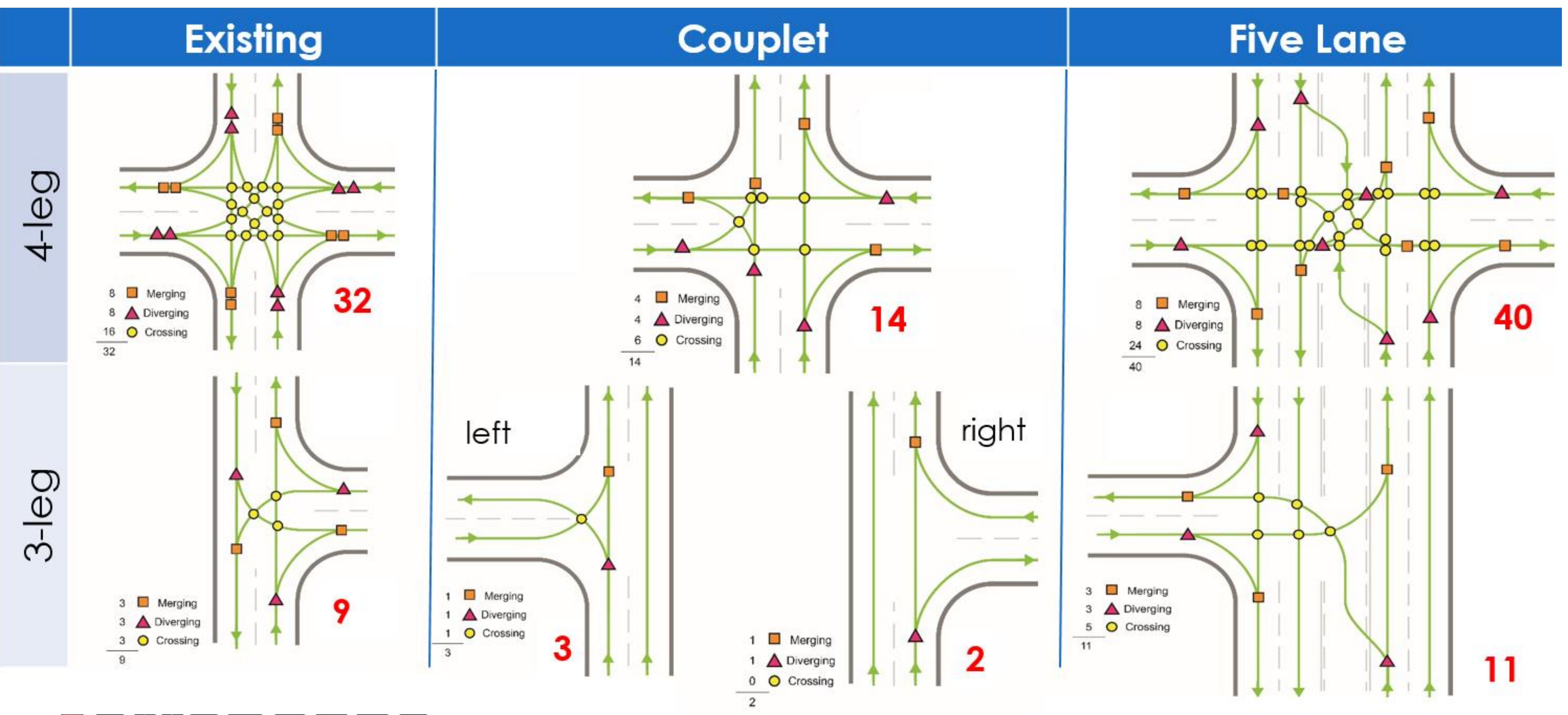
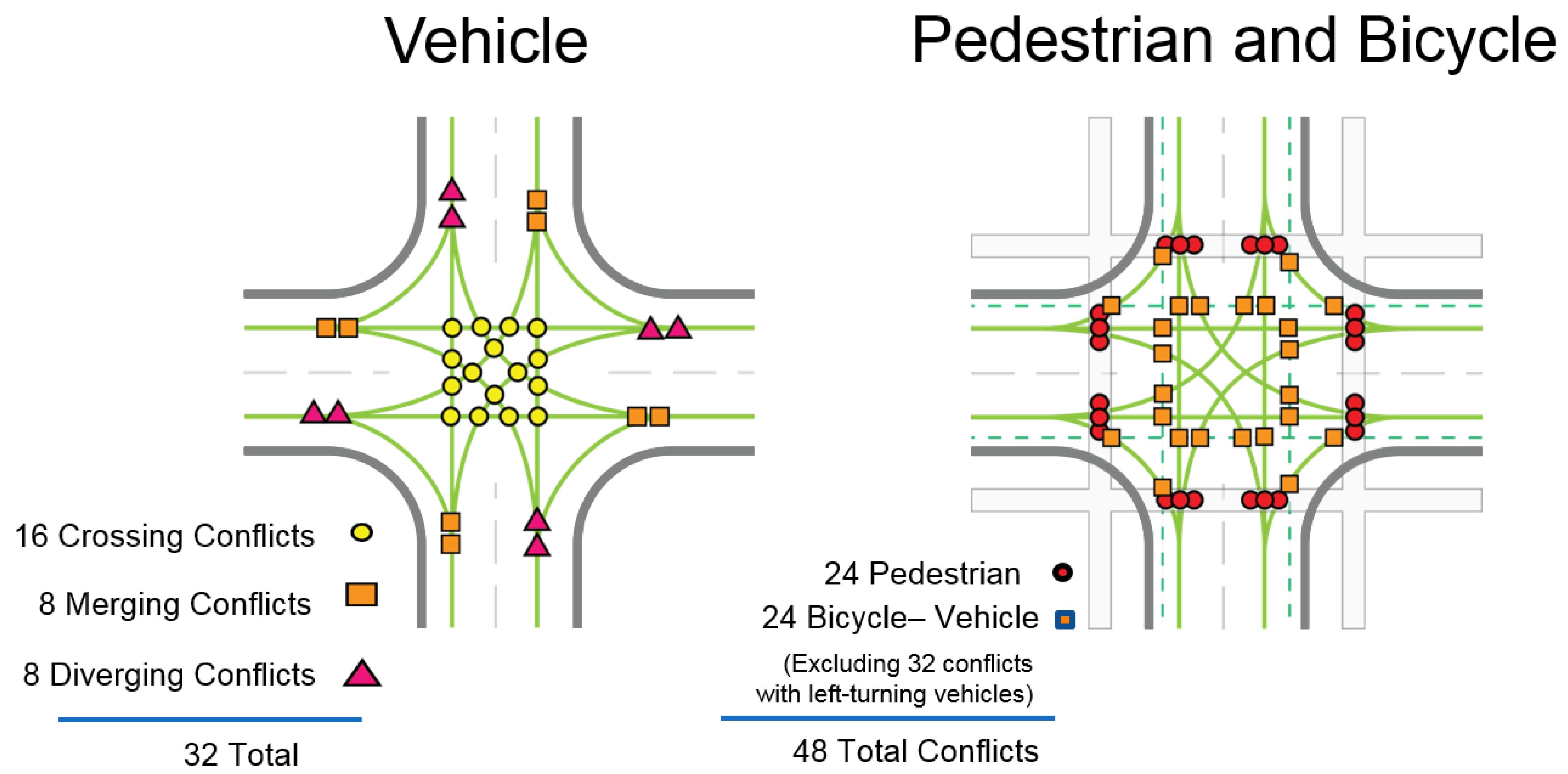
Five-Lane w/Offramp

Five-Lane w/o Offramp  
and Diversion





# Conflict and Accessibility Assessment



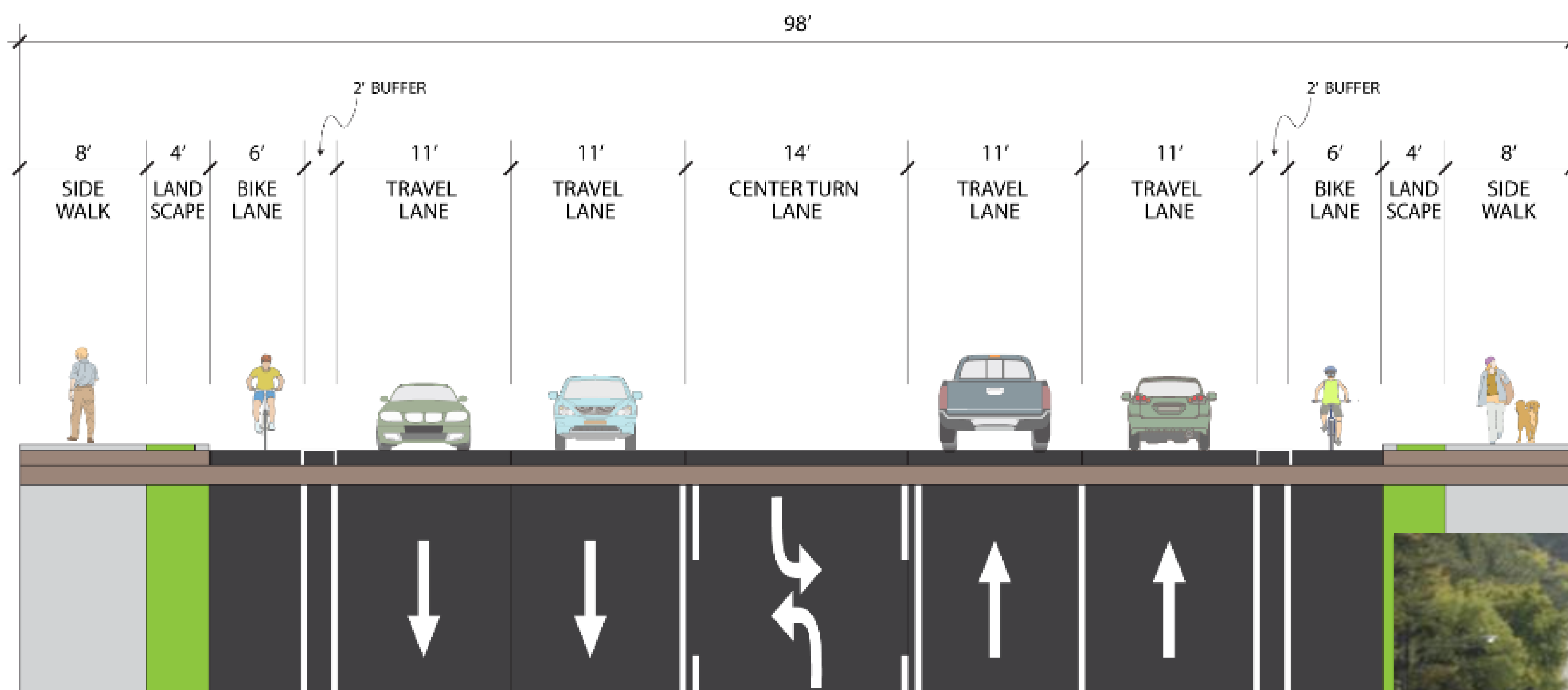
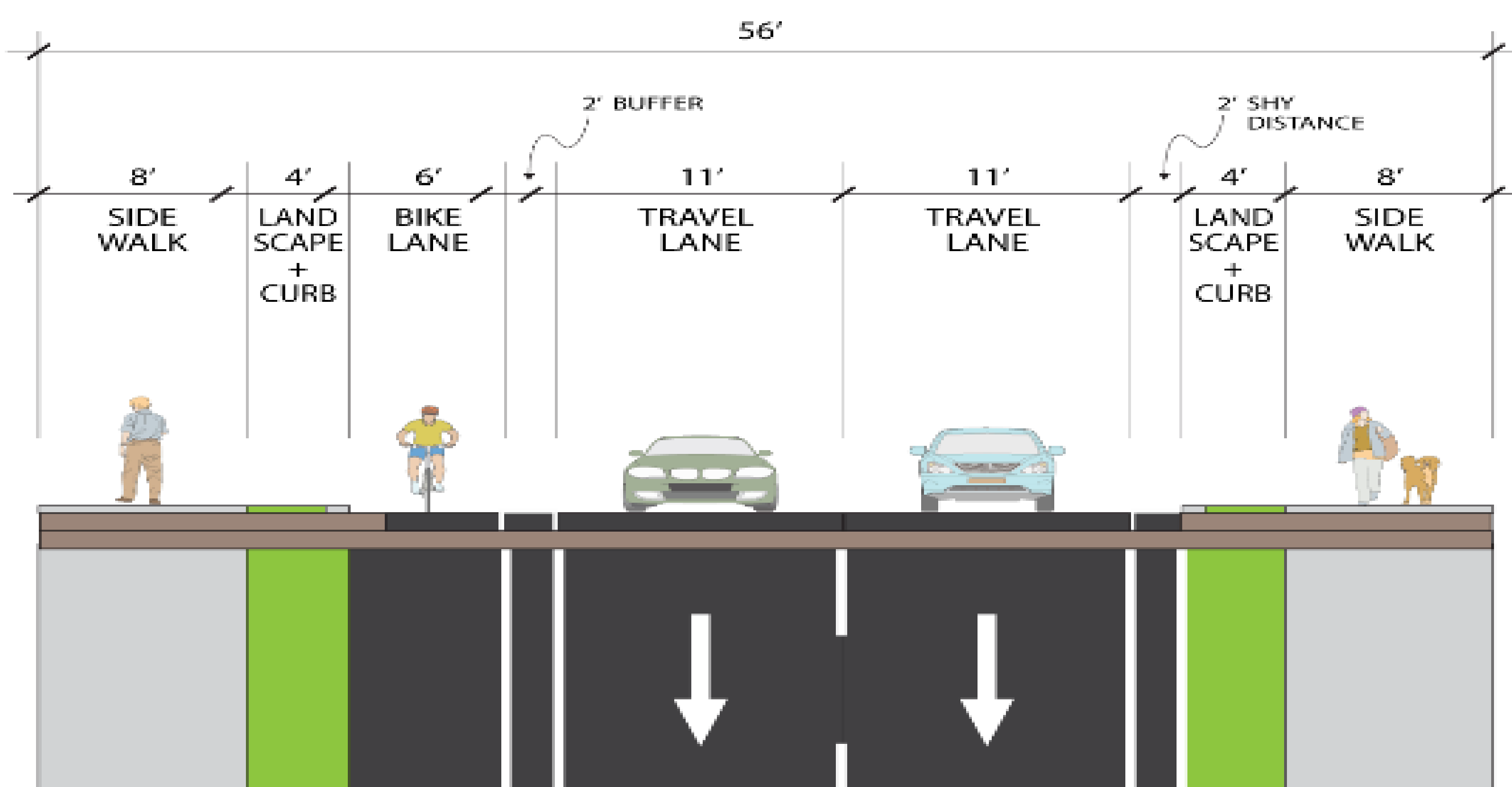
- Couplet **reduces** all conflicts by 60%
- Couplet has 63% **less** conflicts than 5-lane
- 5-lane **increases** crossing conflicts by 19%
- Couplet **reduces** crossing conflicts by 64%

Condition	Merging	Diverging	Crossing	Total
Existing	185	185	289	659
Couplet	79	79	105	263
Five Lane	185	185	343	713



# Pedestrian and Bicycle Exposure

Alternative	Traffic Flow	Total Number of Lanes	Exposure
Couplet	One-Way	4 [2 lanes (US 97) + 2 lanes(11 <sup>th</sup> )]	64' (32' widest)
Five Lane	Two-Way	7 [5 lanes (US 97) + 2 lanes(11 <sup>th</sup> )]	86' (54' widest)





# Alternatives Cost Comparison

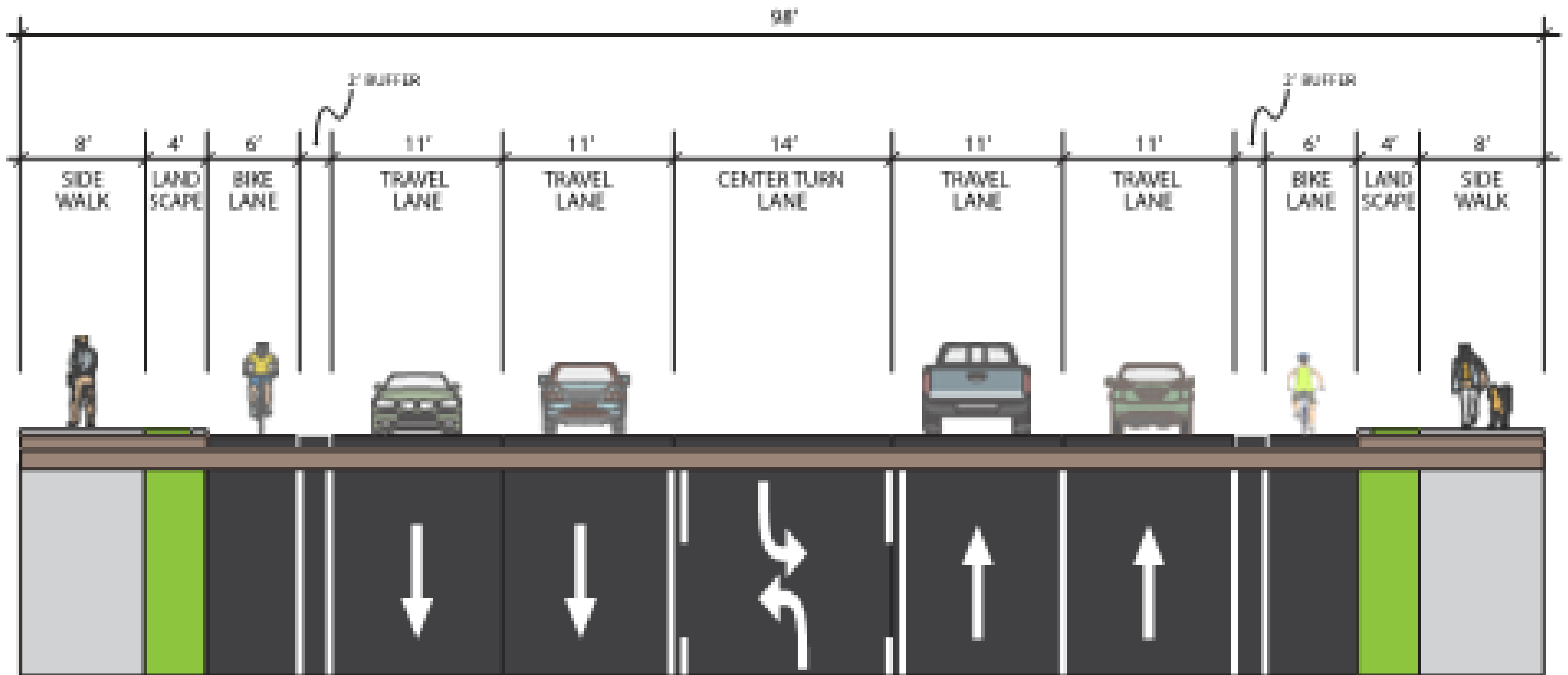
Cost estimate includes cost of construction, design engineering, construction engineering, and right-of-way. This estimate also includes transitional costs such as speed reduction and pedestrian crossing infrastructure. *It does not include local road circulation improvements.*

Intersection Elements	Preliminary Cost Estimate
<b>Couplet</b> South of Central Avenue (B Avenue Configuration) North of Central Avenue (Fly-under)	<b>Total= \$22.5M</b> \$6.9M \$15.6M
<b>Five-Lane</b> South of Central Avenue (Traffic Signal) North of Central Avenue (Fly-under)	<b>Total = \$25.9M</b> \$5.4M \$20.5M

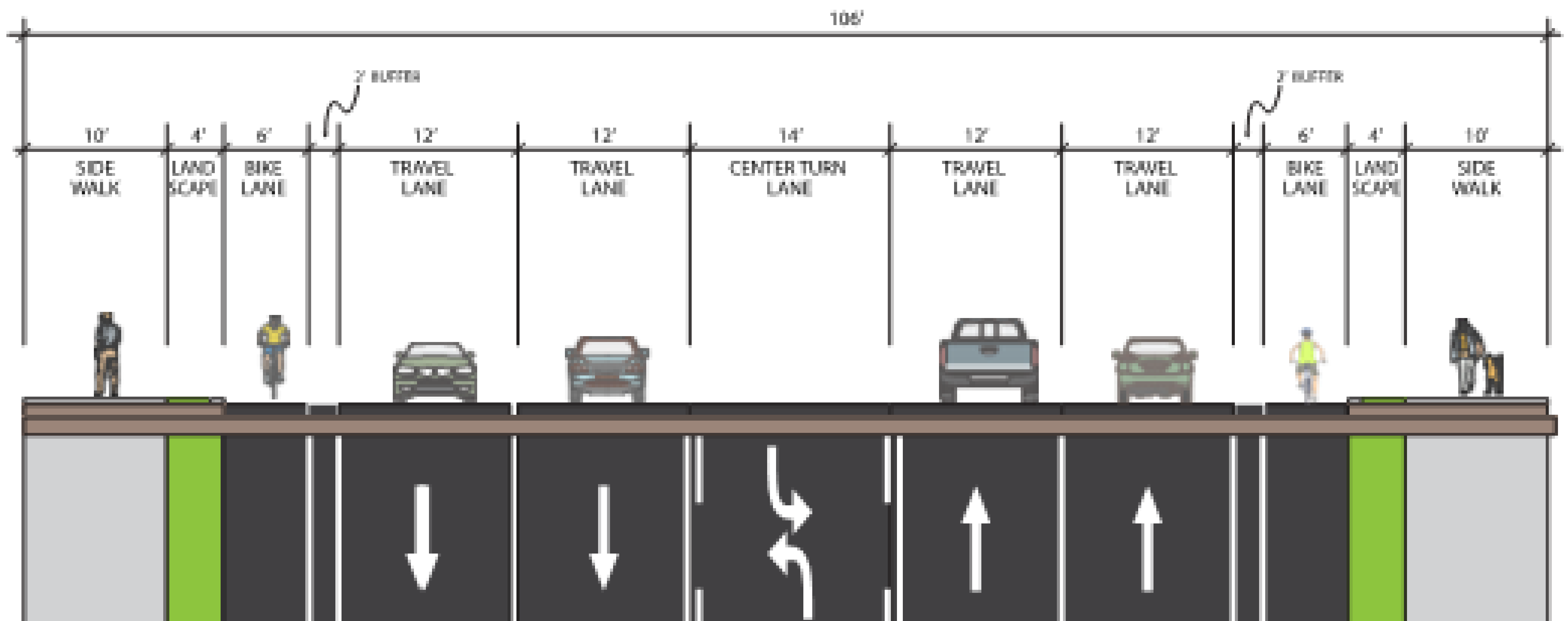


# Five-Lane Cross Section Refinements

RECOMMENDED



PREVIOUS





# Preferred Plan

## Couplet – US 97 & 11<sup>th</sup> Street

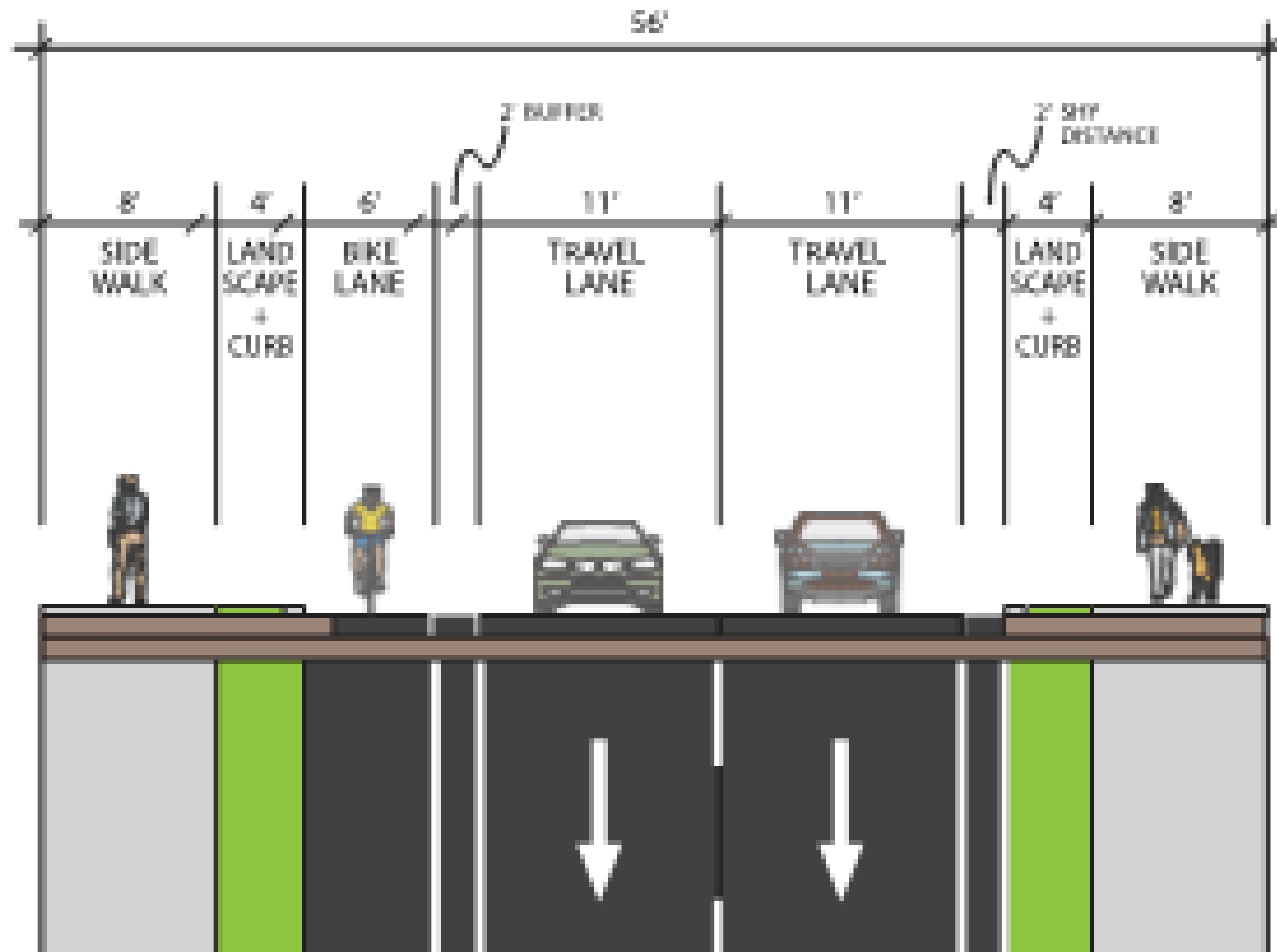
- Two, one way roads
- “Chicane” south of existing US 97/11<sup>th</sup> Street intersection
- One-way westbound at B Avenue
- Northbound left flyunder at US 97/Lower Bridge Way
- **Total Cost of Preferred Plan = \$22.5M**



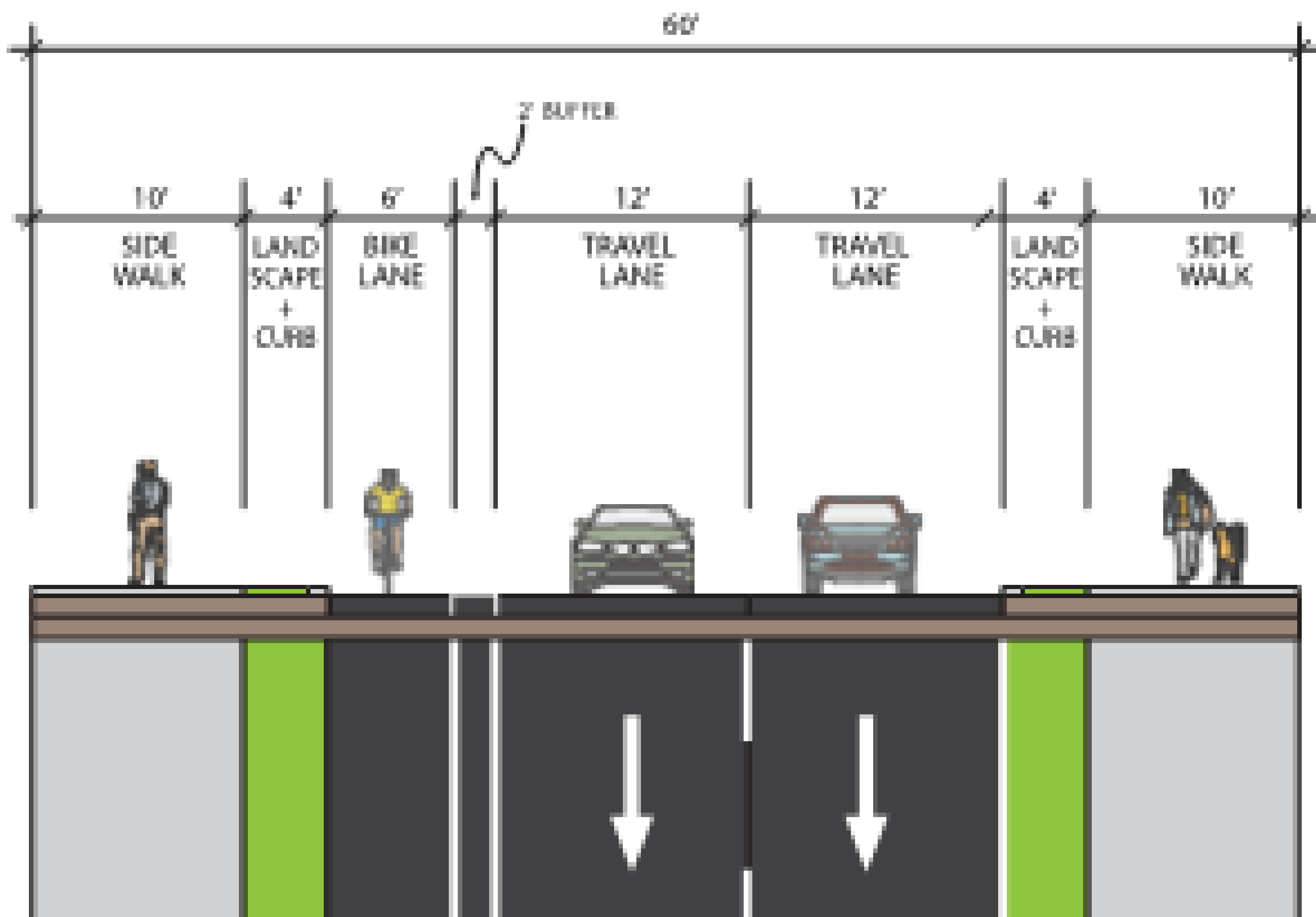


# Couplet Cross Section Refinements

RECOMMENDED



PREVIOUS





# Recommended Speed Reduction Techniques

Speed reduction is a high concern for those living in the community and traveling through the community. The following treatments have been considered and recommended as shown below for the preferred couplet system alternative:



Speed Feedback Sign



Welcome Signs



Chicanes and Lateral shifts



Street Lighting  
(with Banners)



Landscaping



Curbed Roadway with  
Bike Lane and Sidewalk



# Speed Zones



Posted Speed (mph) 35 40 45 55



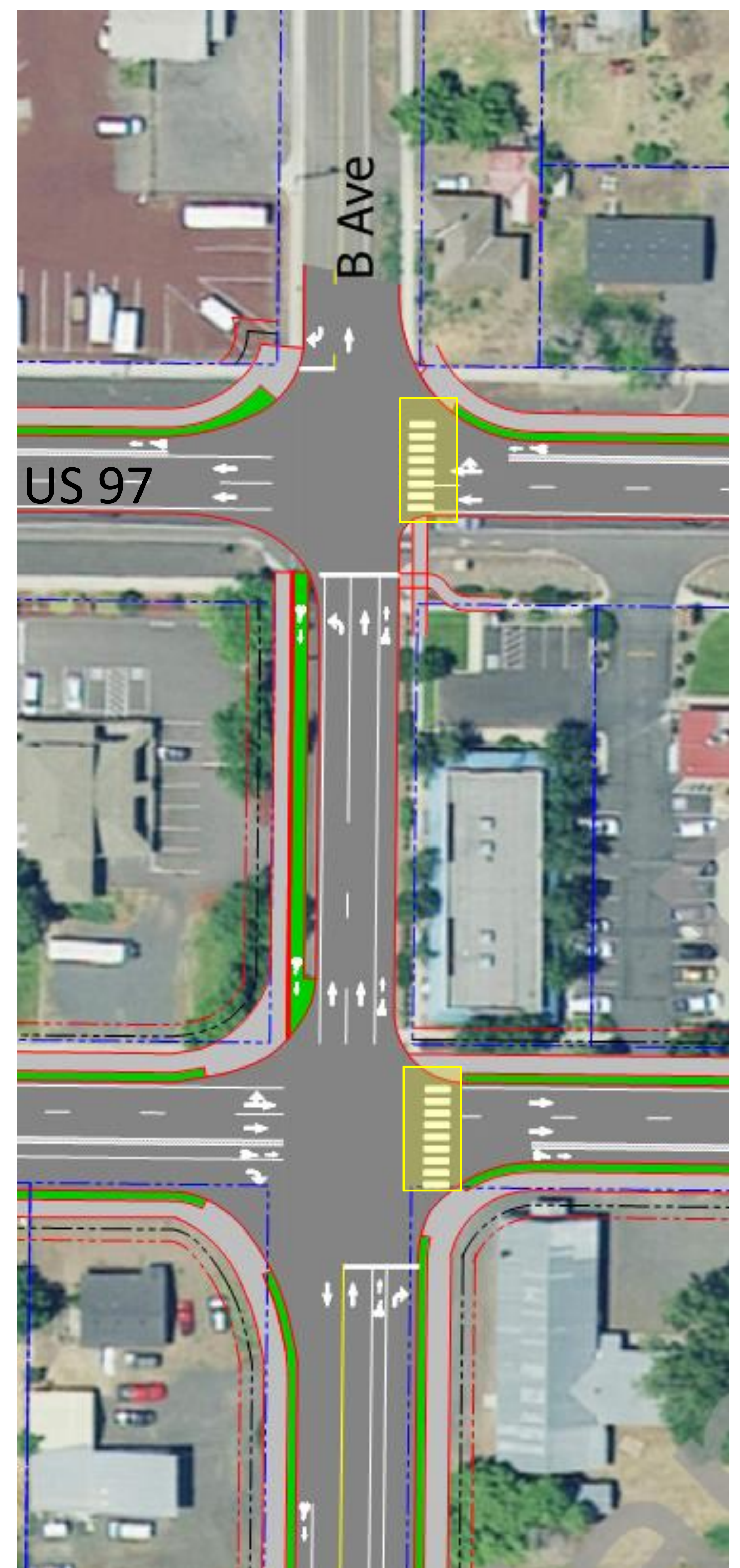


# Pedestrian Improvements

RRFBs use an irregular flashing pattern (similar to emergency vehicle flashers) that are activated by pedestrians manually pushing a button or automotive pedestrian detection. The RRFB has been proven to increase the yielding behavior of drivers at crosswalks. **RRFBs are recommended for installation at US 97/B Avenue and 11<sup>th</sup> Street/B Avenue (Smith Rock Way)**



**Rectangular Rapid Flash Beacon**





# Local Circulation Improvements

To enhance local circulation to the Terrebonne system, alternative connectivity routes were identified throughout the community. These routes provide connections to the grid system in the downtown area to address gaps in the existing infrastructure. **Project “16” is recommended as part of the preferred alternative.**

## Local Connection Priority

- High
- Medium
- Low

