



Refinement Plan

**Terrebonne**

**Concept Development  
Workshop**

**Welcome!**



[www.TerrebonneRefinementPlan.com](http://www.TerrebonneRefinementPlan.com)



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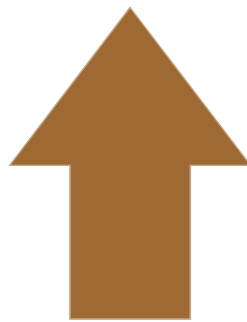


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# Concept Development Workshop Overview

- **Project Purpose**

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

- **Concept Development Workshop**

Opportunity for public input, comments, and concept designs. Using tactile-based scaled tools and instruments, participants will be able to develop reasonable improvement concepts for the corridor alignment, intersections, and highway transitions elements of the project



CROOKED  
RIVER  
RANCH

Lower Bridge Way

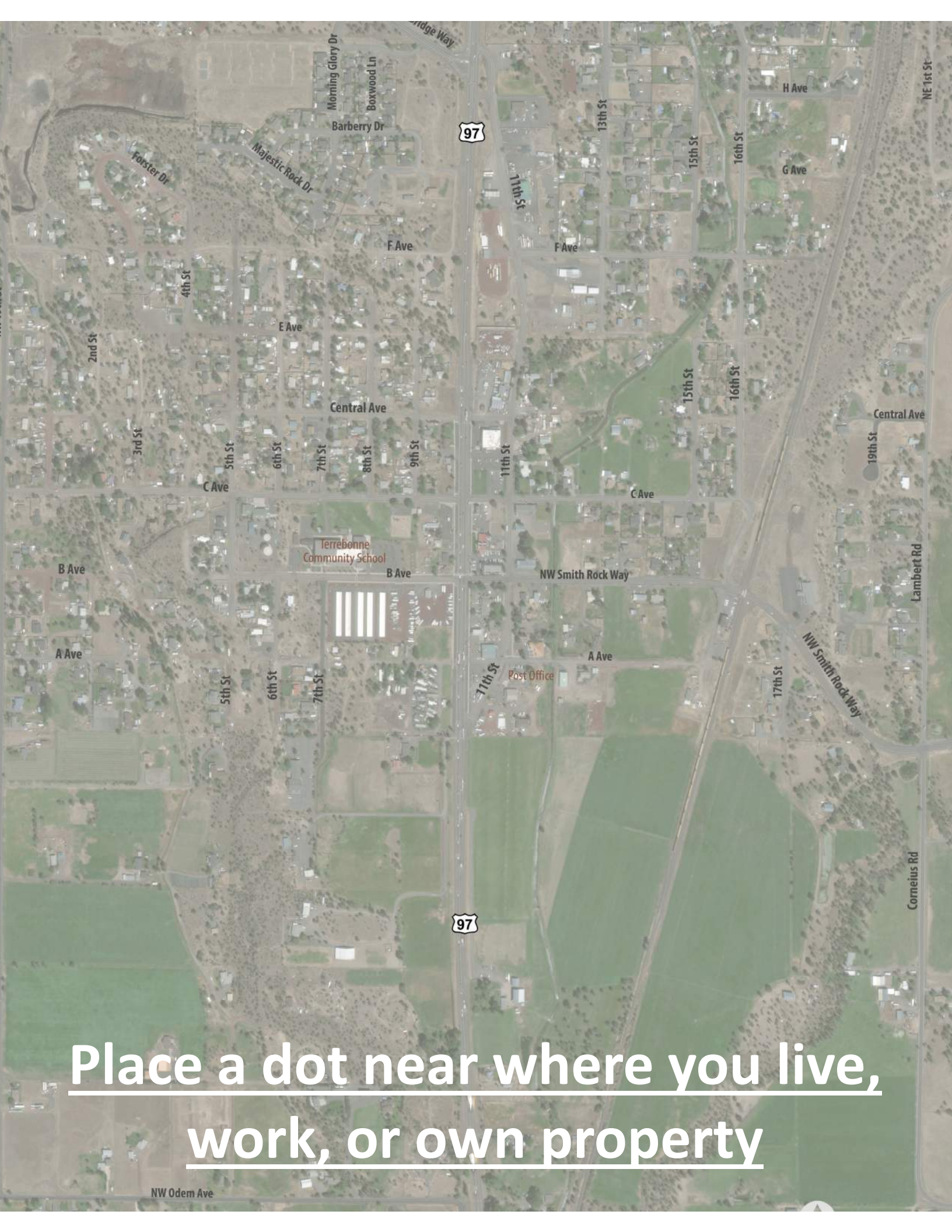
97

TERREBONNE

Smith Rock Way

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





97

97

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

NW Odem Ave

# Location and Schedule of Events

## Gym

Opening Presentation

Display Board Viewing

Corridor Alignment Workshop Station (A)



## Cafeteria

Intersection Workshop Station (I)

Highway Transitions Workshop Station (T)



# Workshop & Overall Project Schedule

## September 11<sup>th</sup> Concept Development Workshop Schedule

	6:00	6:30	7:00	7:30	8:00
Opening Presentation and Display Board Viewing Period					
Breakout Workshop Session #1					
Breakout Workshop Session #2					
Breakout Workshop Session #3					

## Overall Project Schedule



### SCHEDULED MEETINGS

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



# Advisory Committee Members

The Terrebonne Refinement Plan will be guided by a group of volunteer Advisory Committee (AC) members:

- **John Williams**, Crooked River Ranch and Greater Terrebonne Citizens' Action Committee
- **Mark Swick**, Terrebonne Hardware
- **Chuck Forward**, Bike/Ped Representative
- **Mike McIntosh**, Redmond School District
- **Peter Russell**, Deschutes County Planning
- **Captain Paul Garrison**, Deschutes County Sheriff's Office
- **Cody Smith**, Deschutes County Public Works
- **Mae Huston / Jeff Rasmussen**, Jefferson County
- **Dale Crawford**, Deschutes County Planning Commission
- **Phil Henderson**, Deschutes County Board of Commissioners
- **Nick Kezele**, Greater Terrebonne Citizens' Action Committee
- **Eric Sande**, Tourism Representative
- **Scott Brown**, Recreational Representative
- **Dylan Stott**, Community Member At-Large
- **Randy Lunsford**, Community Member At-Large
- **Kelsey Rook**, Community Member At-Large

# Thank You For Attending!

**Join us Thursday, September 13<sup>th</sup> from 6-8pm** at the Terrebonne Community School to hear the outcomes from the Workshop, including:

- All identified potential alternative solutions
- Initial evaluation results
- Identification of the most promising alternatives
- Next steps



## **Can't make the closeout meeting?**

Visit the drop-in alternate viewing session on Sept. 12<sup>th</sup> from noon to 1pm at the Grange

## **Stay Connected**

Visit the project website to keep up-to-date on project events and deliverables

[www.TerrebonneRefinementPlan.com](http://www.TerrebonneRefinementPlan.com)



# Project Goals, Objectives, and Evaluation Criteria

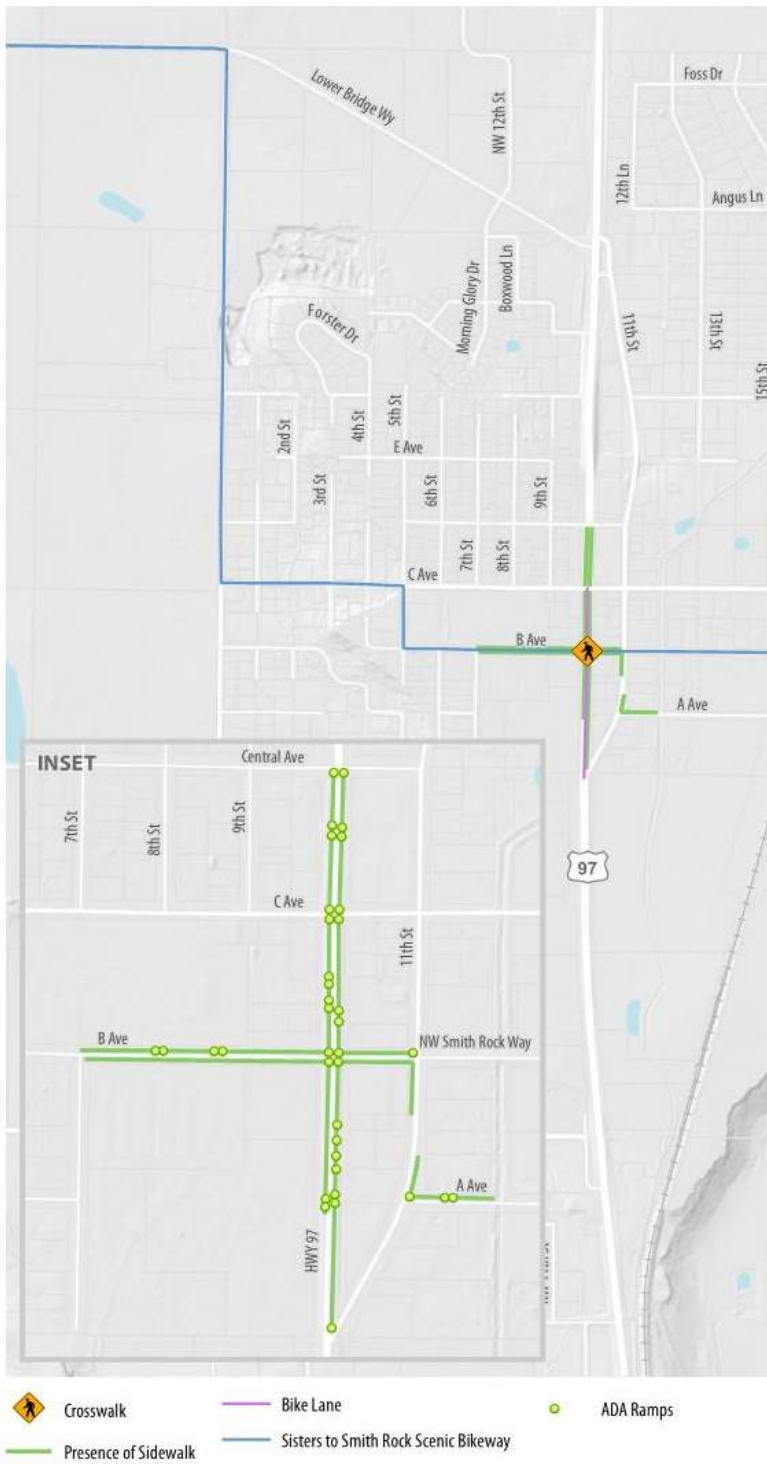
Goal	Objective	Evaluation Criteria
<p><b>Community &amp; Livability:</b> Balance east-west connectivity with US 97 mobility needs to match community values and interests.</p>	<ul style="list-style-type: none"> <li>• Increase transportation choices on US 97 by adding or improving bicycle and pedestrian 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

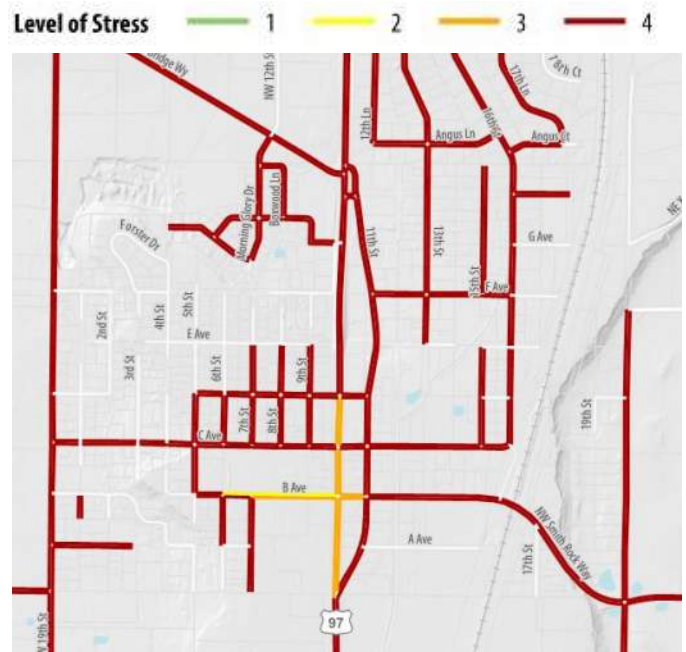
Goal	Objective	Evaluation Criteria
<p><b>Mobility:</b> Provide a safe and efficient transportation system for all modes of travel, including local trips, through trips on the highway, emergency services, and freight.</p>	<ul style="list-style-type: none"> <li>• Evaluate all potential US 97 alternatives, 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>



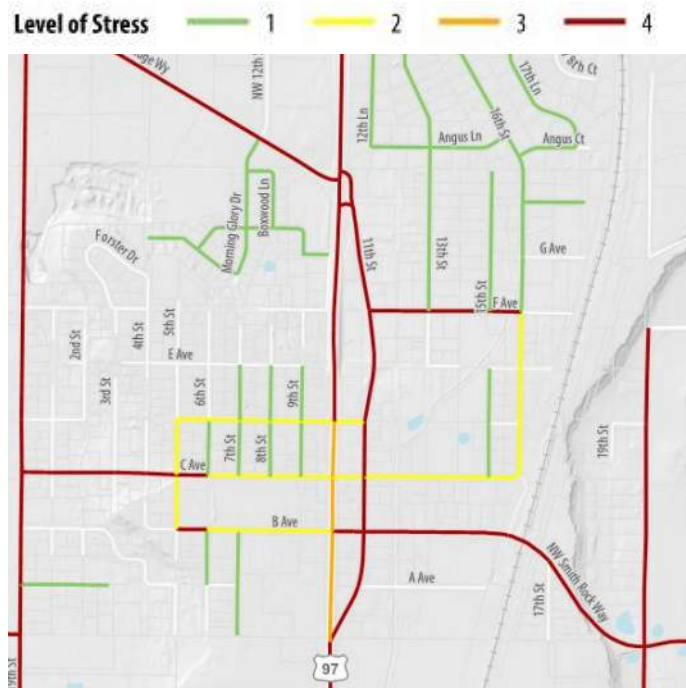
# Existing Conditions – Multimodal



**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)

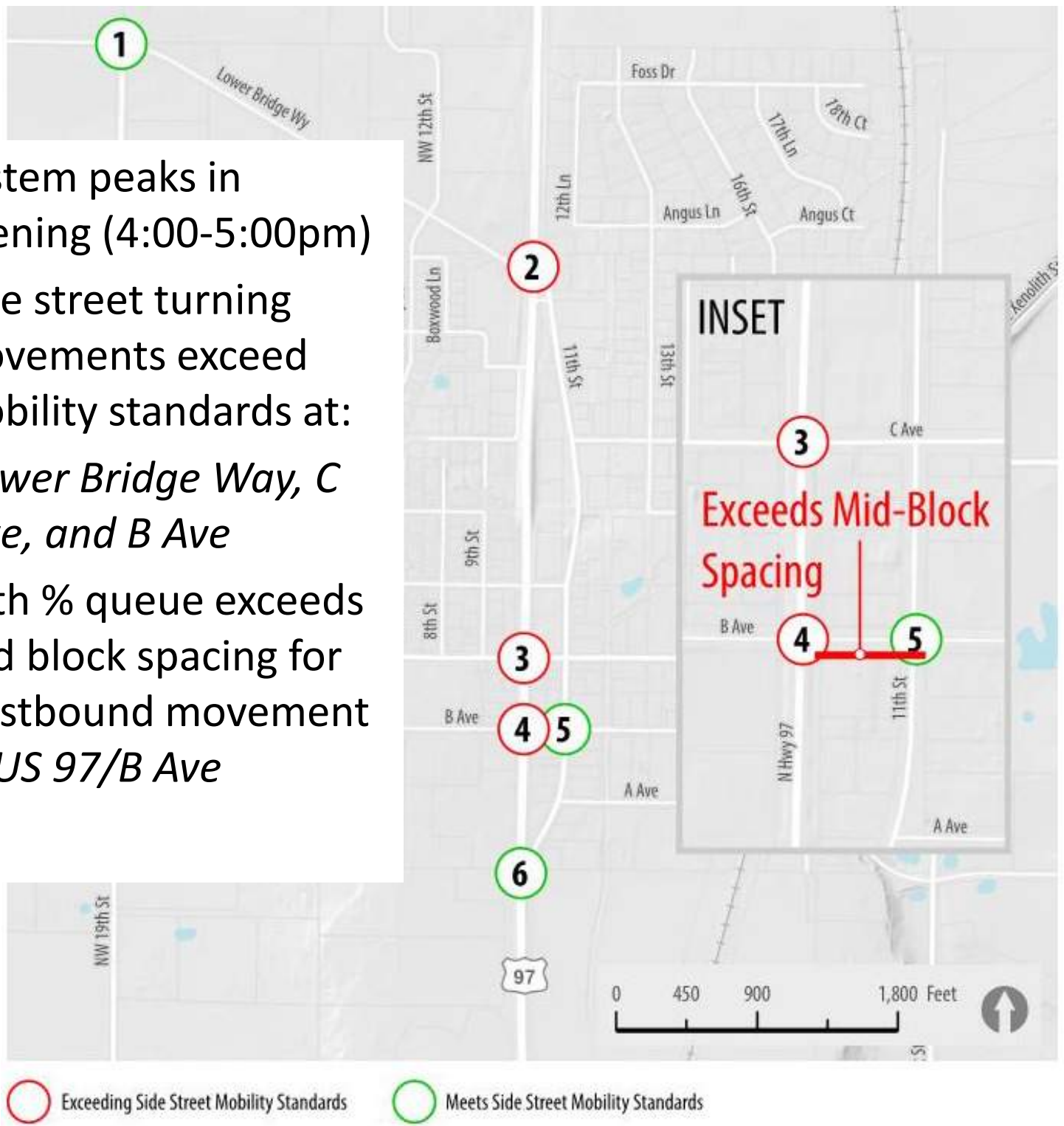


## Over Dimensional Loads on US 97 2013-2015, Nov. 2017 – Aug. 2018

<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

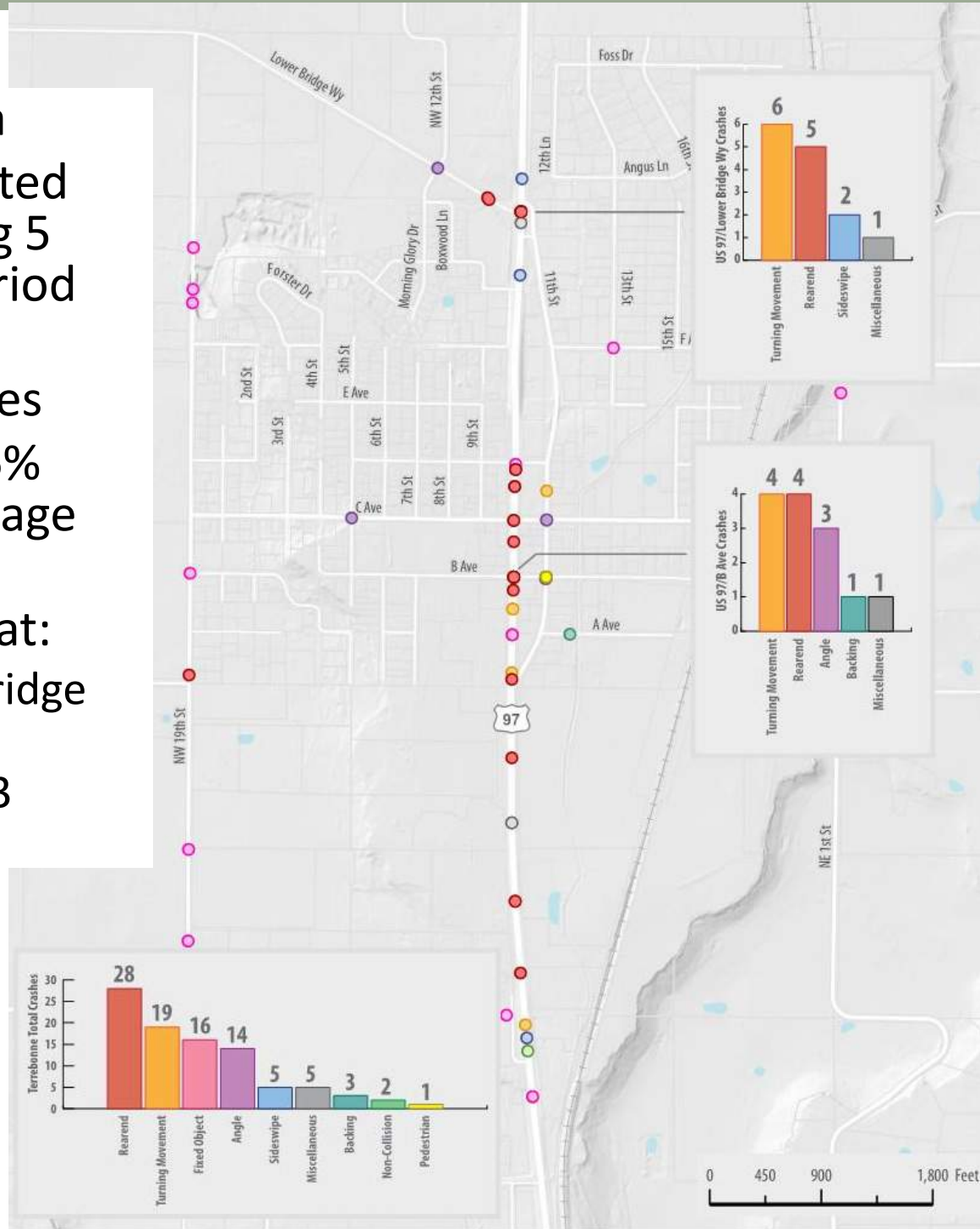
- System peaks in evening (4:00-5:00pm)
- Side street turning movements exceed mobility standards at:  
*Lower Bridge Way, C Ave, and B Ave*
- 95th % queue exceeds mid block spacing for westbound movement at *US 97/B Ave*



# 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
- Turning Movement
- Fixed-Object or Other-Object
- Angle
- Sideswipe
- Miscellaneous
- Backing
- Non-collision
- Pedestrian

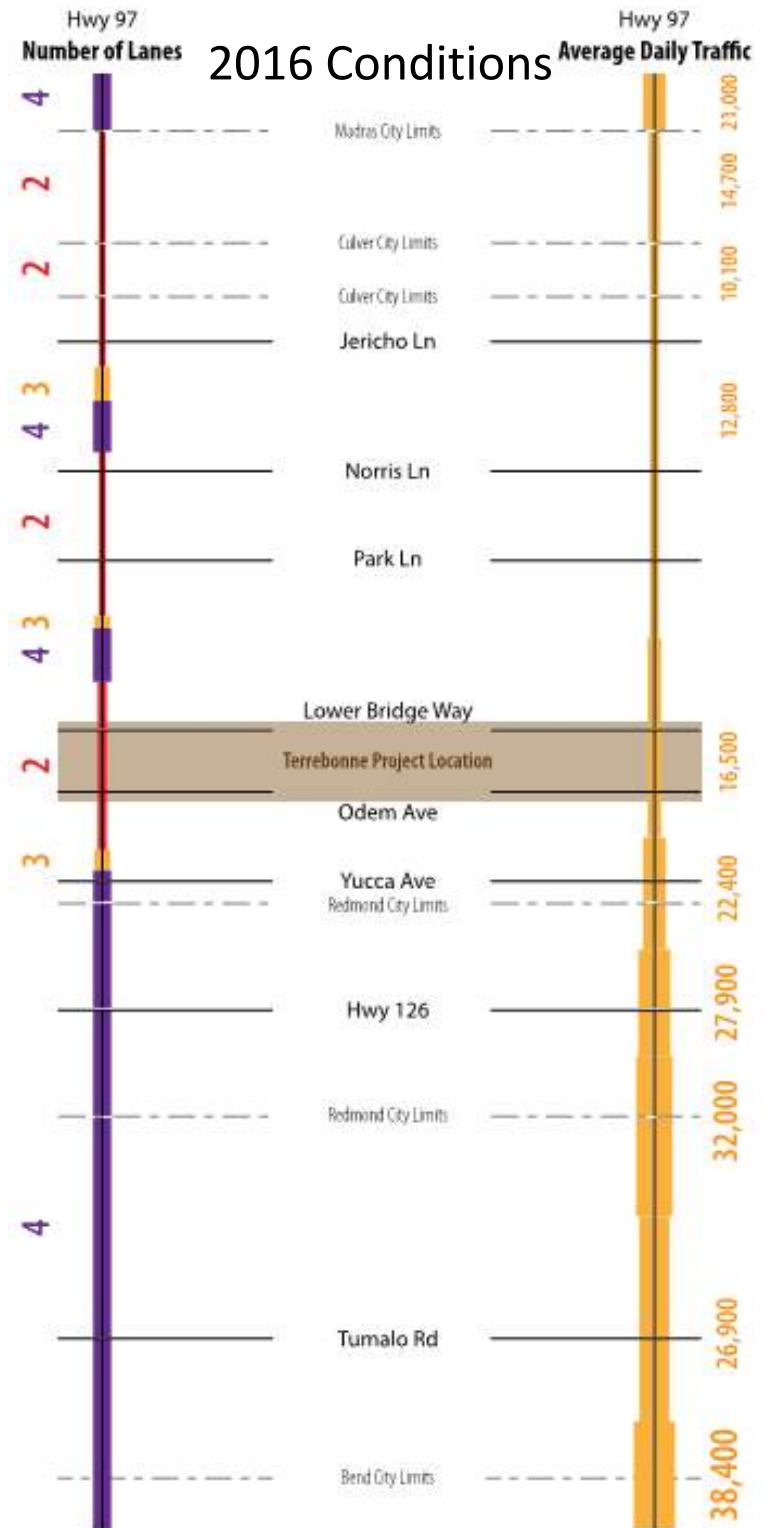


# US97 Long-Term Needs

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.

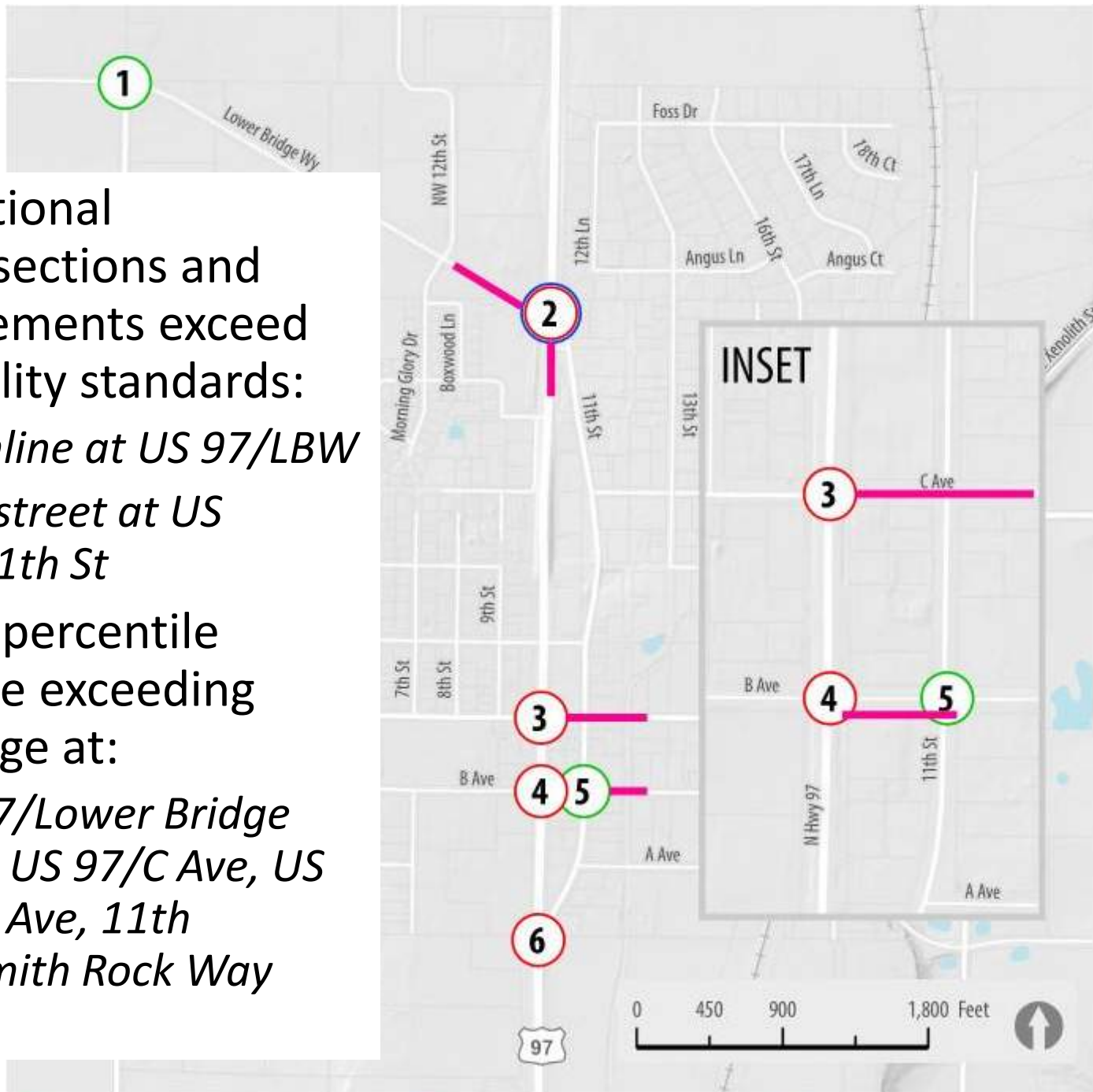


Truck traffic is also expected to remain high along the US 97 corridor.

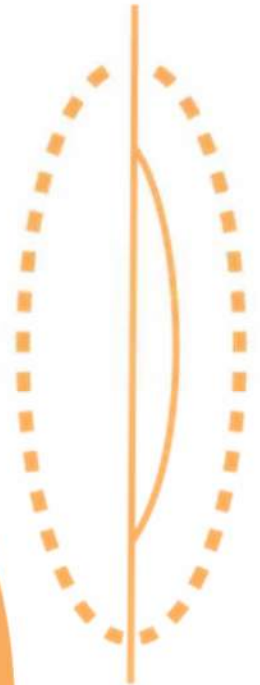


# Future Conditions – Operations

- 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*



# Corridor Alignment





# Corridor Alignment

## Questions to Consider:

- Where does the community ultimately want the highway alignment?
  - Main Street* – How would additional lanes impact the community?
  - Couplet* – How would a couplet impact traffic flow and congestion?
  - Bypass* – Where might a bypass be most appropriate?
- What form should highway take to address long-term capacity and community needs?
- How do these alternative alignments fit within existing right-of-way, address future traffic needs, and meet the identified goals, objectives, and evaluation criteria?



# Corridor Alignment Example Locations

## Main Street



US 97 Bend, OR



US 395 Hermiston, OR



OR99W Newberg, OR

## Couplet



OR 126 Redmond, OR



US 97 Madras, OR



US 26 Sandy, OR

## Bypass



US 101 Cannon  
Beach, OR



US 97 Wasco, OR



OR 18 Sheridan, OR



# Corridor Alignment Alternative Tools

## Your Workshop Tools:



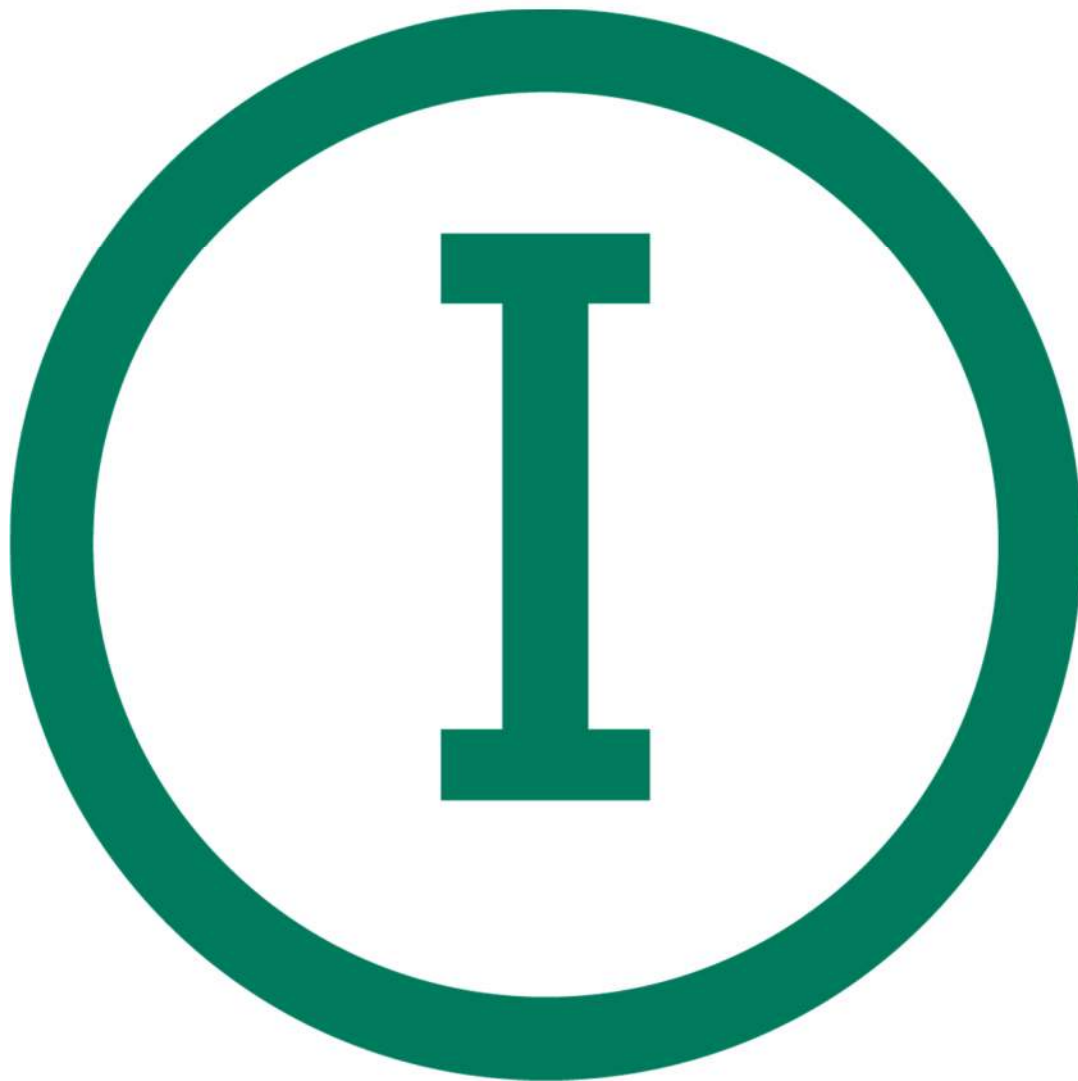
## How much might improvement costs?

Corridor Elements	Cost Magnitude
New Interchanges	\$20 to \$35 Million
New Bypass Alignment (Interim 2-lane)	\$6 to 8 Million per mile
New Bypass Alignment (4-lane)	\$9 to 11 Million per mile
Widening US97 (3 to 5 lanes)	\$5 to 8 Million (Lower Bridge Way to 11 <sup>th</sup> )
Converting 11 <sup>th</sup> Street (NB 2-lanes)	\$4 to 6 Million (existing alignment)

e.g. New 4-mile bypass w/two interchanges ~\$65M to \$100M\*



# Intersections



# Intersections

## Questions to Consider:

- What could be a viable intersection improvement at Lower Bridge Way/US 97?
- What other intersections need to be enhanced and what improvements are reasonable?
- How should pedestrians and bicyclists be accommodated at intersections?





# US 97/Lower Bridge Way Example Locations

## At-Grade Intersection



Signal - La Pine, OR – US 97  
Size: ~2 Acres



Roundabout - Sisters, OR – US 20  
Size: ~2 Acres

## Grade Separated Interchange



Cannon Beach, OR – US 101  
Size: ~3 Acres



Redmond, OR – US 97  
Size: ~13 Acres



Springfield, OR – OR 126  
Size: ~22 Acres

## Alternative Intersection Forms



Bend, OR – US 97  
Size: ~8 Acres



Chapel Hill, NC – US 15  
Size: ~10 Acres



Lebanon, OR – OR 34  
Size: ~6 Acres



# Intersections Alternative Tools

## Your Workshop Tools:



## How much might improvement costs?

Corridor Elements	Cost Magnitude
New Signalized Intersection	\$1 to 2 Million
New Roundabout Intersection	\$2 to 4 Million
Alternative Intersection Forms	\$1 to 7 Million
New Interchanges	\$20 to \$35 Million

# Highway Transition



# Highway Transition

## Questions to Consider:

- As a driver, what makes you change speeds when you are on a highway?
- What elements are effective in slowing down drivers?
- How can we improve pedestrian and bicycle crossings of US 97?
- What streetscape is most appropriate for Terrebonne?





# Highway Transition Concepts for Consideration

## Gateway Treatments



Speed Feedback Sign



Community Gateway Sign



Roundabout Gateway

## Pedestrian & Bicycle Crossing Treatments



Pedestrian Undercrossing  
Palo Alto, CA – California Ave

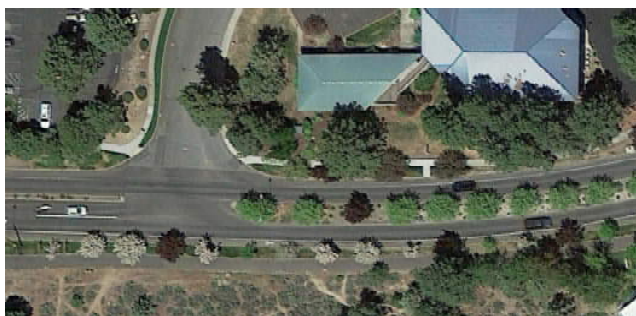


Pedestrian Over Crossing  
Portland, OR – I-5



Rectangular Rapid Flashing Beacon  
Beaverton, OR – Science Dr

## Cross Section Treatments



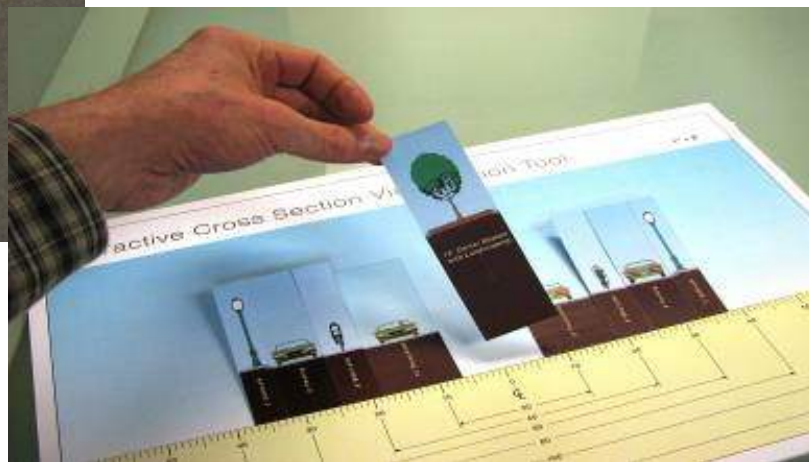
Landscaped Medians/Shoulders  
Bend, OR – Colorado Ave



Curb Bulb-outs & Narrowed Lanes  
Sisters, OR – US 20

# Highway Transition Alternative Tools

## Your Workshop Tools:



## How much might improvement costs?

Corridor Elements	Cost Magnitude
Rectangular Rapid Flash Beacon	\$50,000
Pedestrian Overpass	\$2 to 4 Million
Pedestrian Underpass	\$1.5 to 2.5 Million
New Roundabout Intersection	\$2 to 4 Million