

Safe Accommodation of Pedestrians and Bicyclists in Work Zones and Post Construction Conditions

US Route 5 Brattleboro

2019 Northeast Traffic Safety Conference

October 28, 2019

Introduction

Project Owner

VTrans

- Ken Upmal, P.E. – Project Manager

Engineer of Record

Green International Affiliates, Inc.

- Erik Atkins, P.E. – Project Manager

Agenda

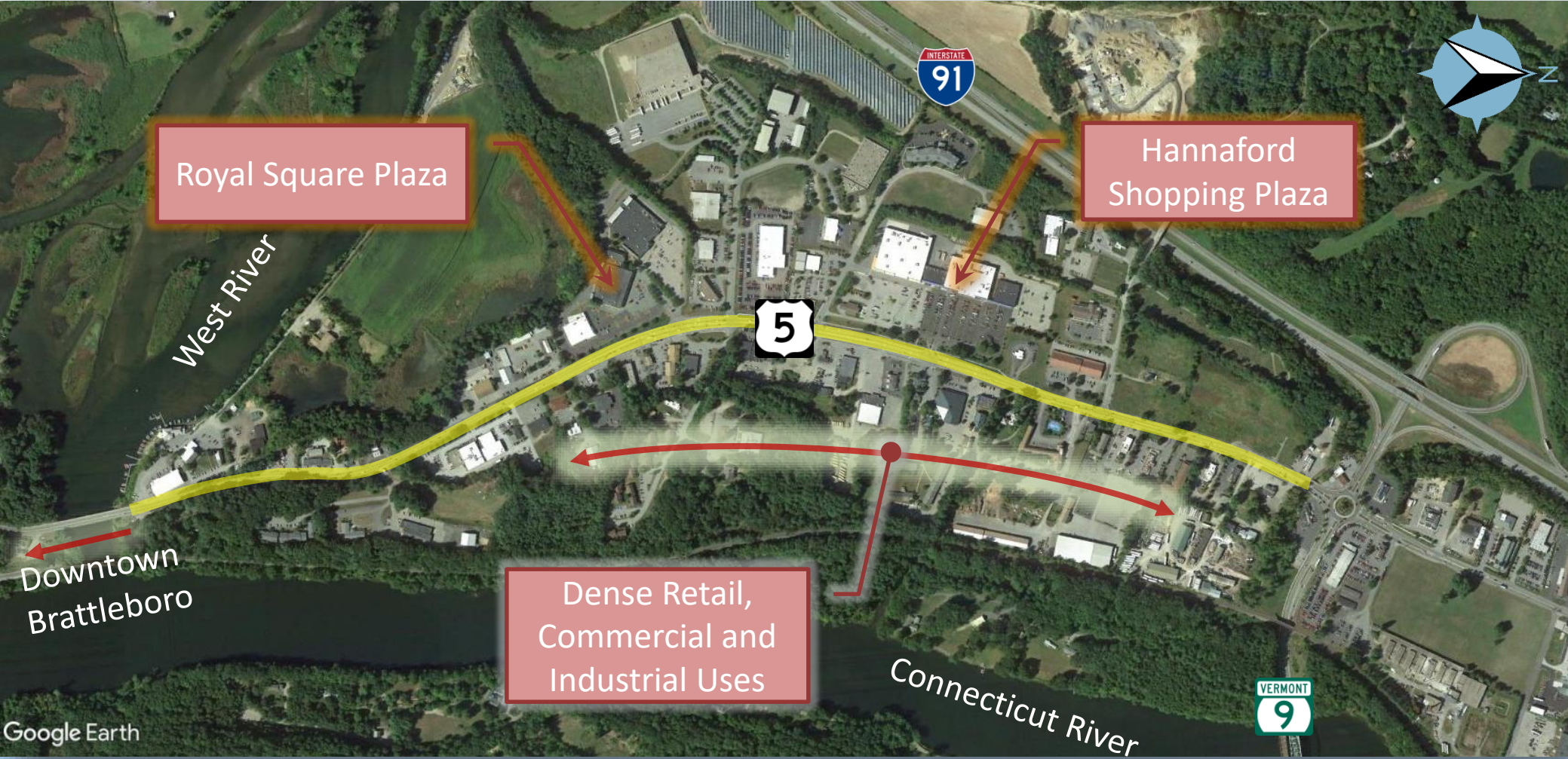
- **Project Purpose**
- **Pre-Construction Conditions and Issues**
- **Proposed Design**
- **Construction Work Zone Accommodations**

Project Purpose

Project Purpose

Improve safety and mobility for motorists, pedestrians and bicyclists within the Putney Road Corridor

Project Location



Pre-Construction Conditions and Issues

- **Minor Arterial Two Lane Roadway on the NHS**
- **High traffic volumes**
- **Corridor is predominantly retail and commercial use**
- **High volume of left in and left out movements creating conflict points**
- **Poor pedestrian and bicycle accommodations**
 - **Limited sidewalks**
 - **Narrow shoulders with some bike lanes**
 - **No crosswalks**
- **Poor access management**
- **Transit stops are not pedestrian friendly**

Pre-Construction Conditions and Issues

- **Improvements need to consider Brattleboro Town Plan and zoning**
 - **Neighborhood Center to the south**
 - **Service Center to the north**
- **Both areas are car centric and lack full pedestrian and bicycle accessibility from Putney Road**

High Traffic Volumes

Section	AADT		DHV		% Trucks		% Dist	
	2020	2040	2020	2040	2020	2040	2020	2040
US Route 5 @ Fairfield Plaza	16,700	18,600	1,700	1,900	0.8	1.0	52	52
US Route 5 @ Technology Drive	17,000	19,000	1,800	2,000	1.7	2.2	51	51
US Route 5 @ Hannaford Plaza	16,900	18,900	1,800	2,000	2.6	3.5	55	55
US Route 5 @ Black Mountain Road	17,200	19,200	1,800	2,000	2.0	2.7	53	53

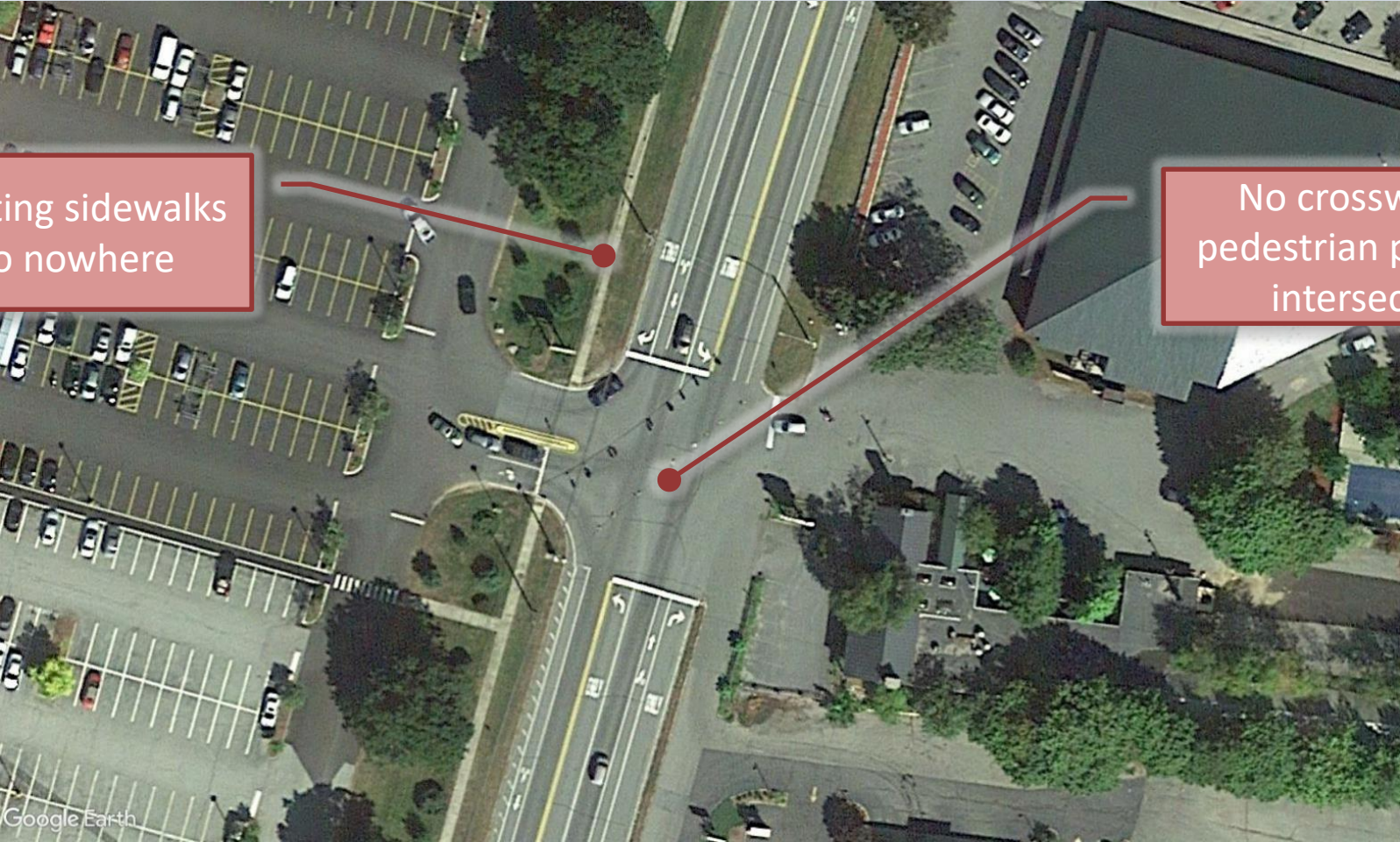
Poor Pedestrian and Bicycle Accommodations



Evidence of heavy pedestrian traffic with no sidewalk

Narrow shoulders are not adequate for bicycles

Poor Pedestrian and Bicycle Accommodations



Existing sidewalks to nowhere

No crosswalks or pedestrian phasing at intersections

Poor Pedestrian and Bicycle Accommodations



No curb opening

No crosswalks or pedestrian phasing at intersections

Poor Pedestrian and Bicycle Accommodations



Long curb openings create hazards for bicyclists







Poor access management is common along the corridor

Transit Stops

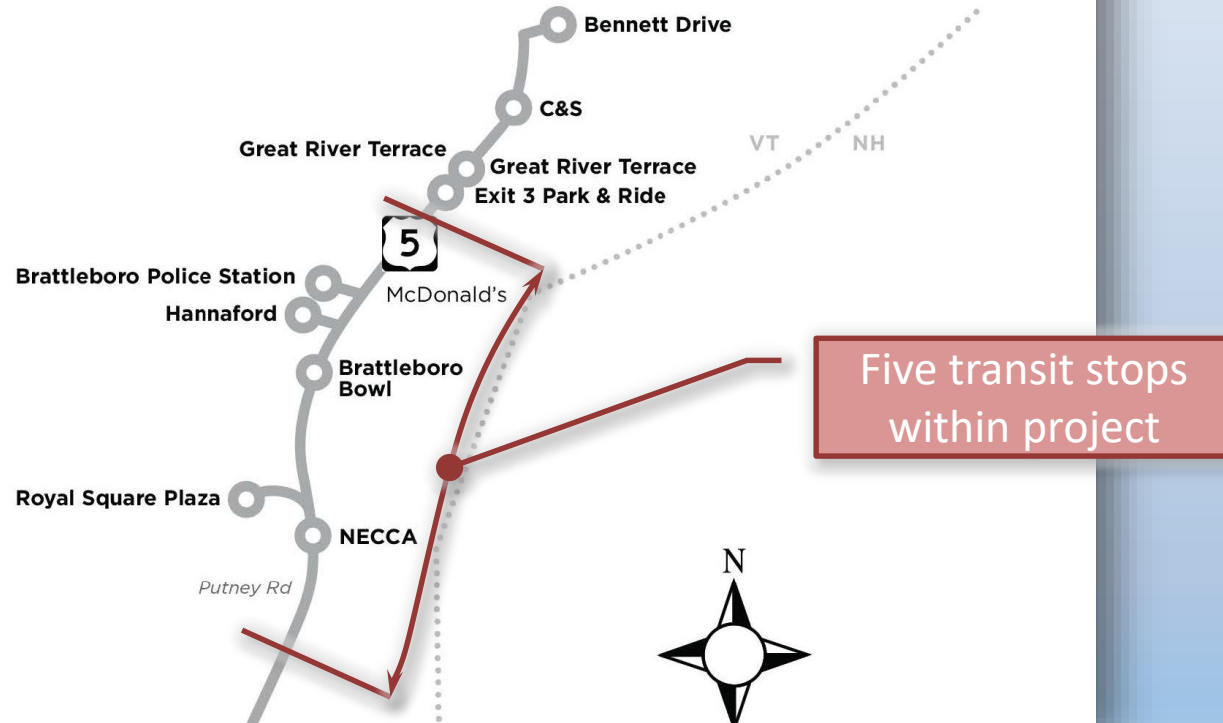
Provides transit access to busy retail, commercial and industrial areas. Also provides important access to police station and methadone clinic

Weekday Brattleboro Bus Routes

KEY

-  **Red Line Route**
-  **Red Line Bus Stop**
-  **Blue Line Route**
-  **Blue Line Bus Stop**
-  **White Line Route**
-  **White Line Bus Stop**

Bus stops are noted in bold.
Places not in bold type are points of interest.
Map not to scale or complete.



Source: The Current Weekday Bus Route Map

No Pedestrian Friendly Transit Stops

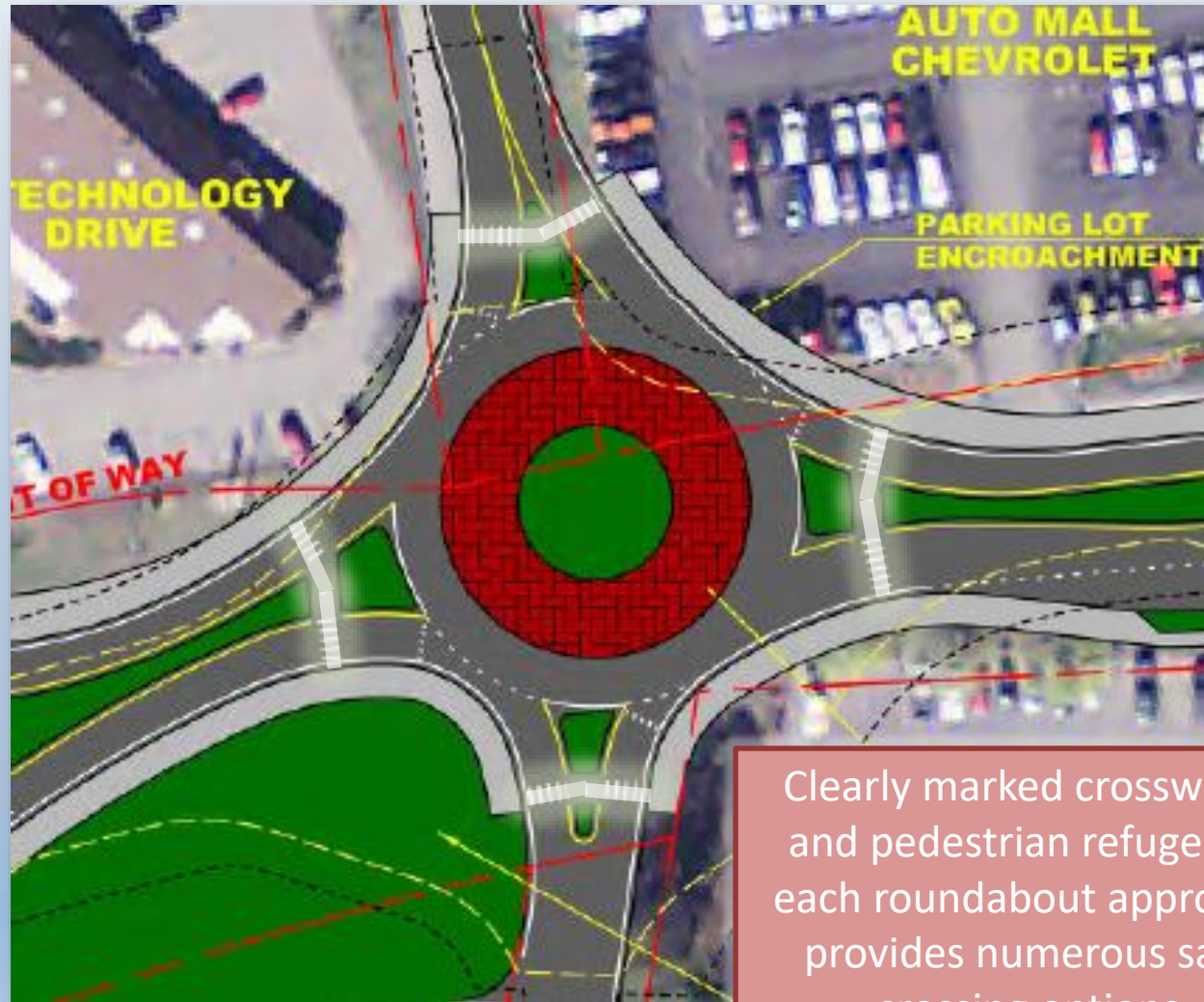


Underutilized bus shelter/stop. No accessible routes to and from shelter.

Construction and Post-Construction Objectives

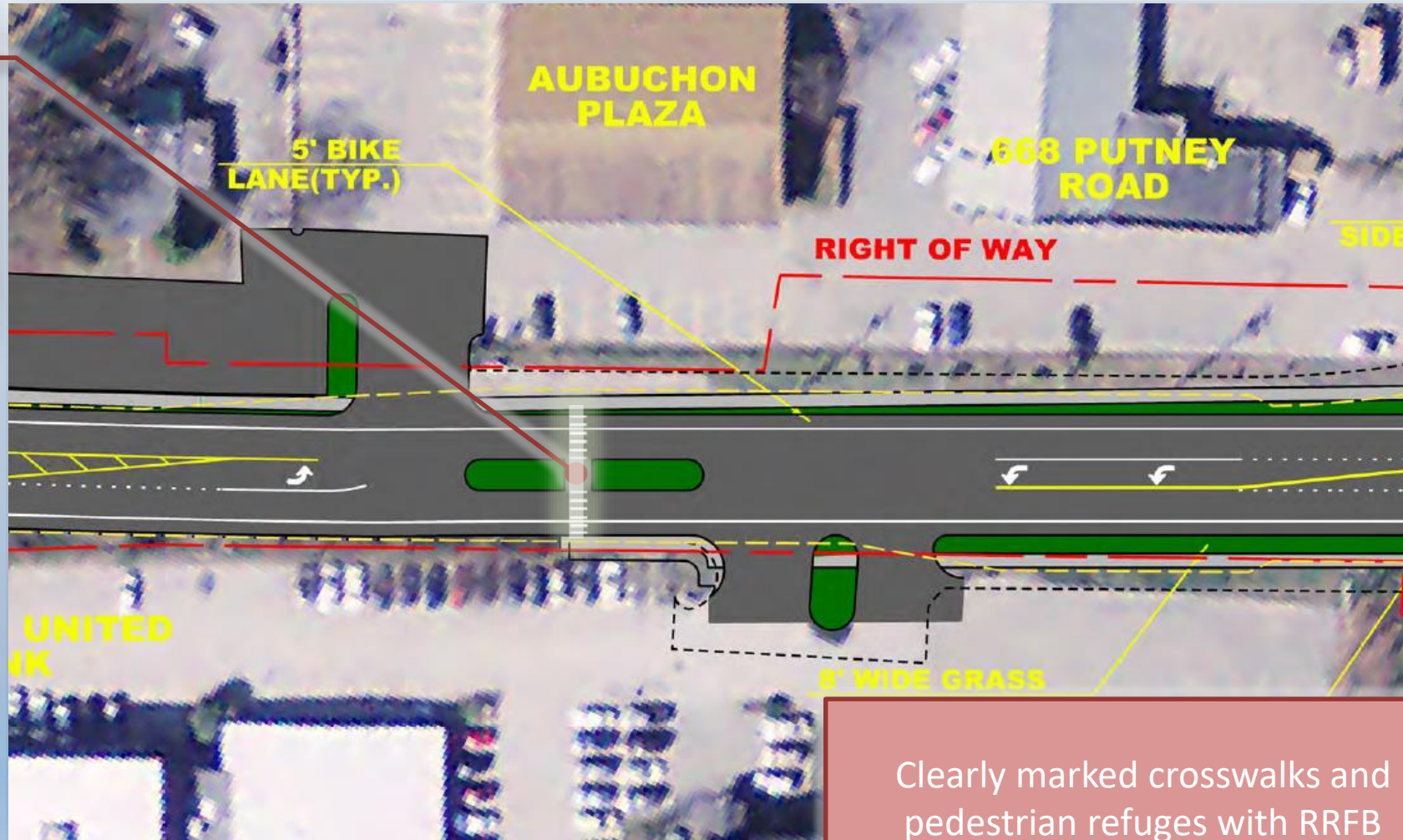
- **Provide ADA/PROWAG compliant sidewalks and bike accommodations throughout the project**
- **Provide safe opportunities for pedestrian crossings**
 - Provide crosswalks
 - Provide Rectangular Rapid Flashing Beacons at select locations
- **Eliminate left in and left out vehicular movements to reduce conflicts**
- **Improve access management**
- **Improve transit accessibility**
- **Provide pedestrian and bicycle accommodations throughout construction**
 - 2018 Vermont Bicycle and Pedestrian Work Zone Traffic Control Guide

Proposed Pedestrian and Bicycle Improvements



Clearly marked crosswalks and pedestrian refuges at each roundabout approach provides numerous safe crossing options

Proposed Pedestrian and Bicycle Improvements



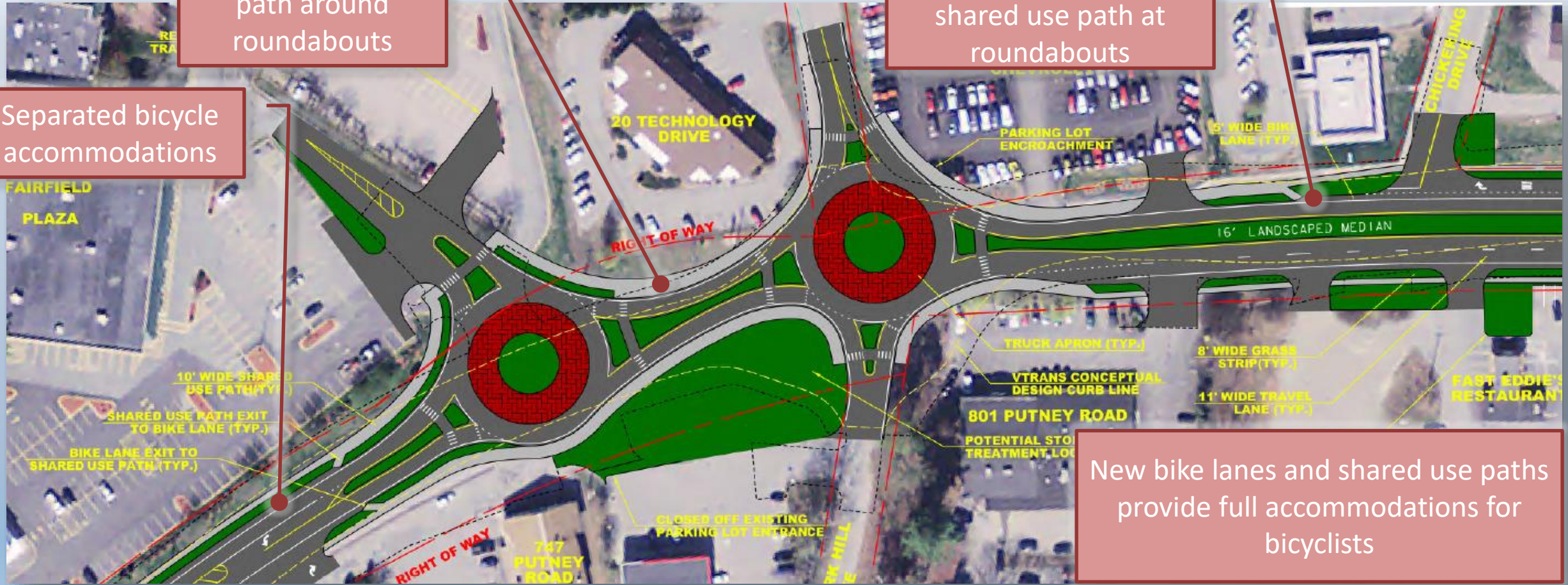
Clearly marked crosswalks and pedestrian refuges with RRFB

Proposed Pedestrian and Bicycle Improvements

Wide shared use path around roundabouts

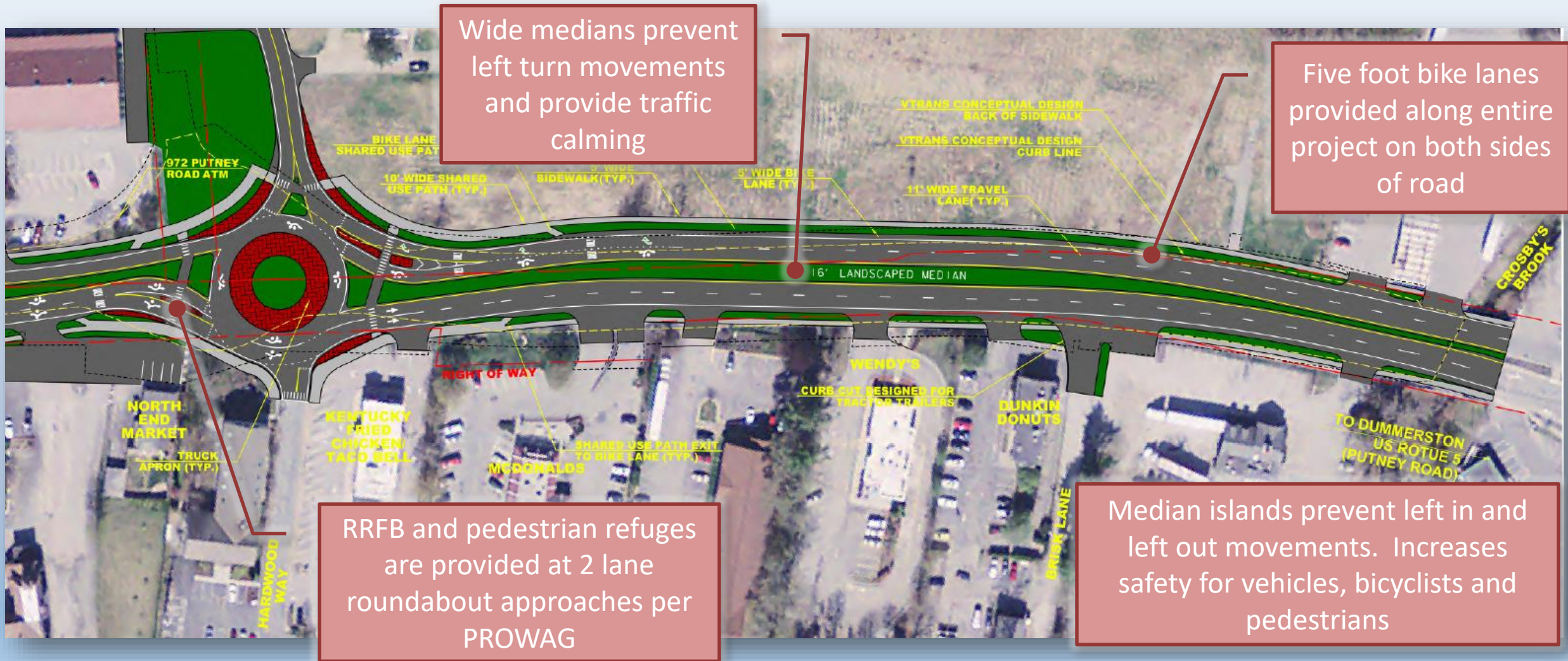
Bike lane drops onto shared use path at roundabouts

Separated bicycle accommodations



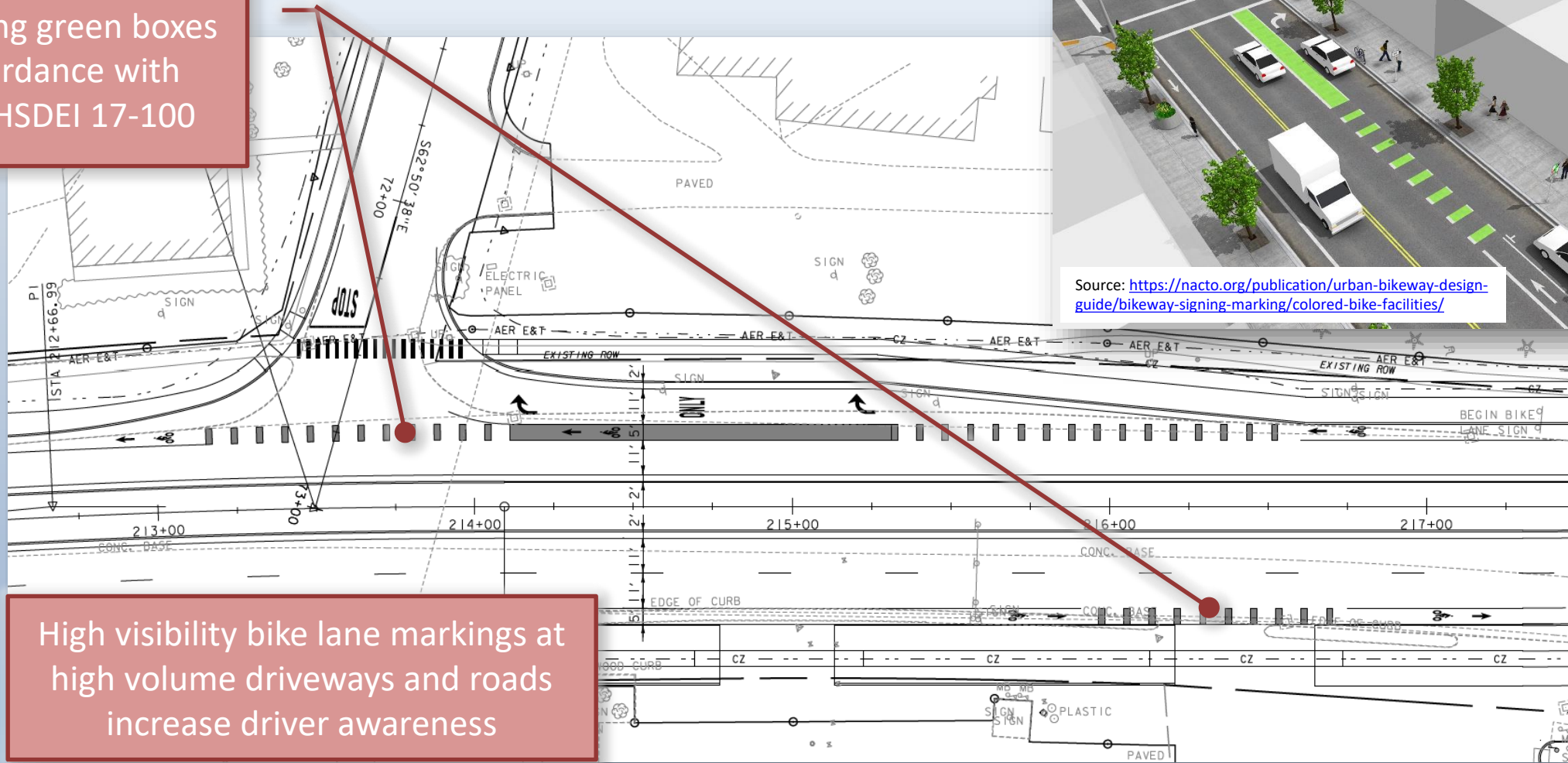
New bike lanes and shared use paths provide full accommodations for bicyclists

Proposed Pedestrian and Bicycle Improvements



Proposed Pedestrian and Bicycle Improvements

Alternating green boxes in accordance with VTrans HSDEI 17-100



High visibility bike lane markings at high volume driveways and roads increase driver awareness

Pedestrians and Bicycles in the Work Zone

- **Safe accommodations for pedestrians and bicycles used to be an afterthought during construction**
- **Level of temporary accommodations need to be commensurate with existing facility at a minimum**
- **Providing safe accommodations can be complicated and require additional area**
- **Need to allow for means and methods. Require site specific plans from Contractor**



Source: Route 2A Safety Improvements Facebook Page

Proper pedestrian management is critical during construction.

Pedestrians and Bicycles in the Work Zone

Steep slopes required temporary widening for pedestrians



Steep slope

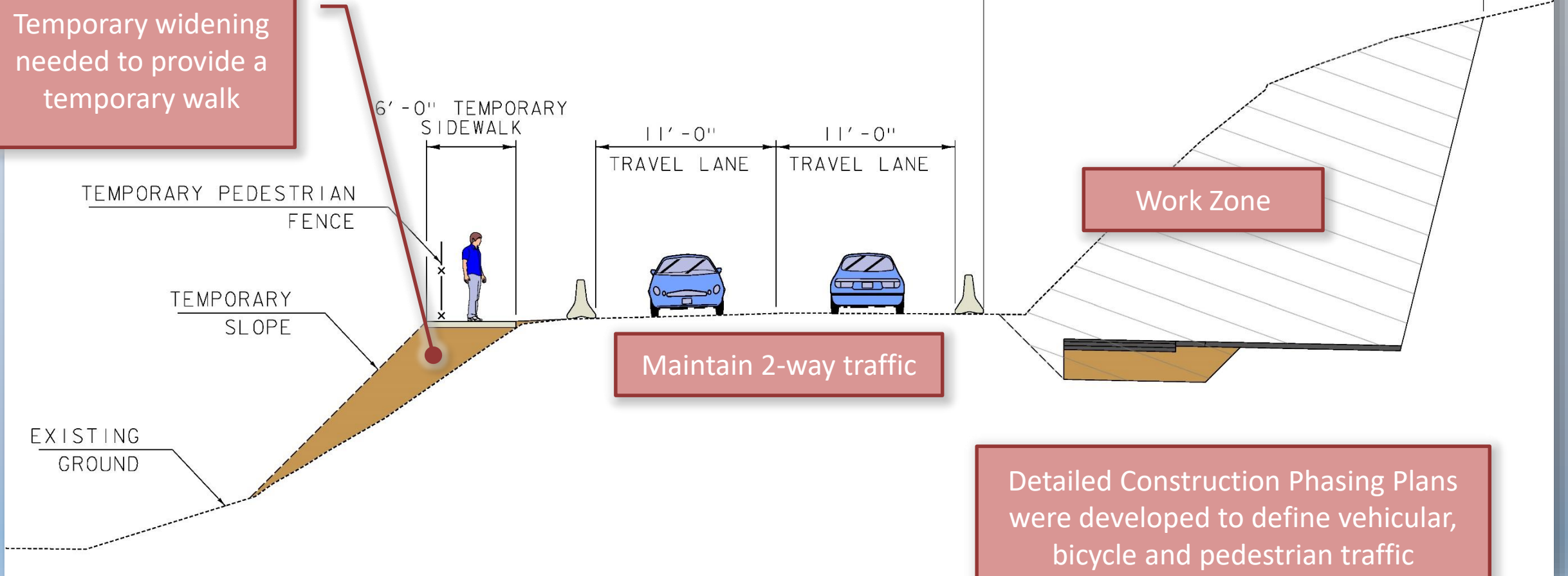
Steep slope

Pedestrians currently walk here

Source: Google Maps Street View

Pedestrians and Bicycles in the Work Zone

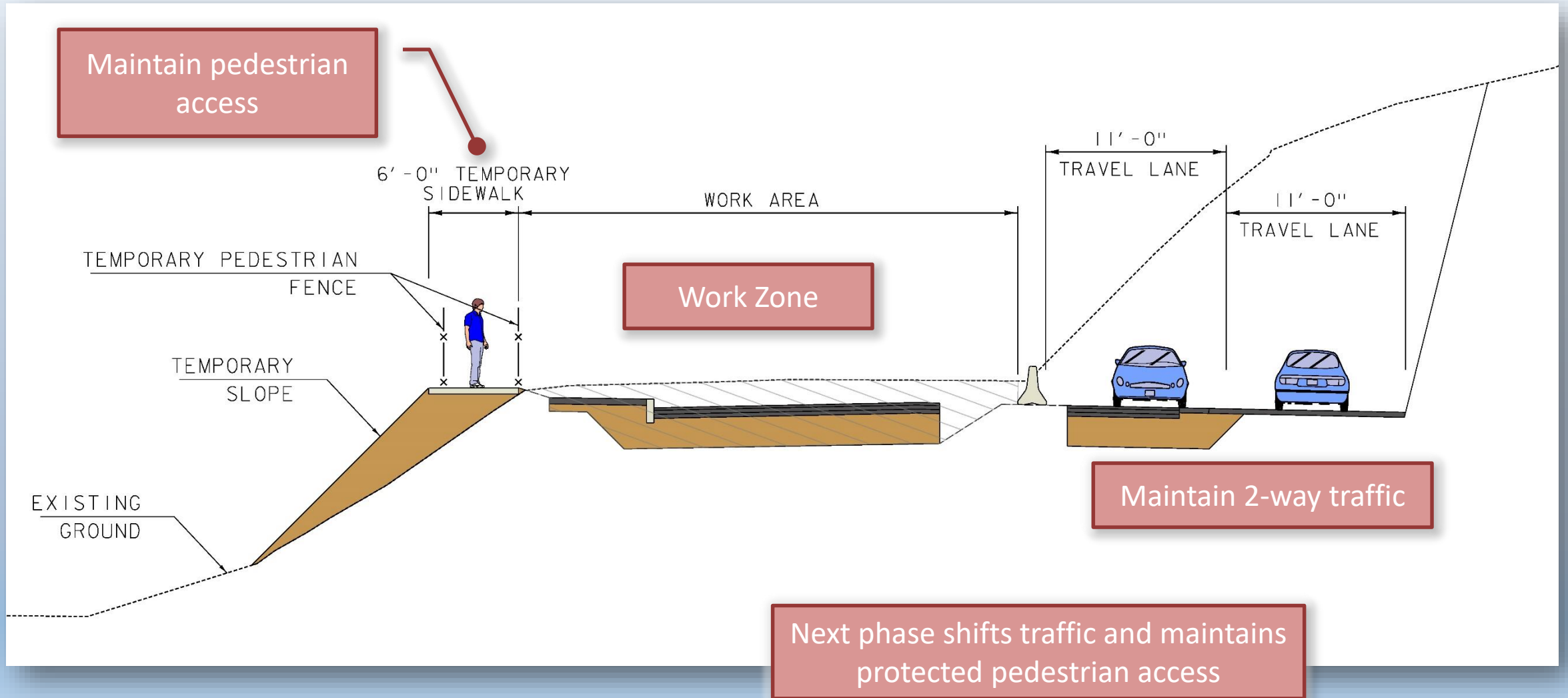
Temporary widening needed to provide a temporary walk



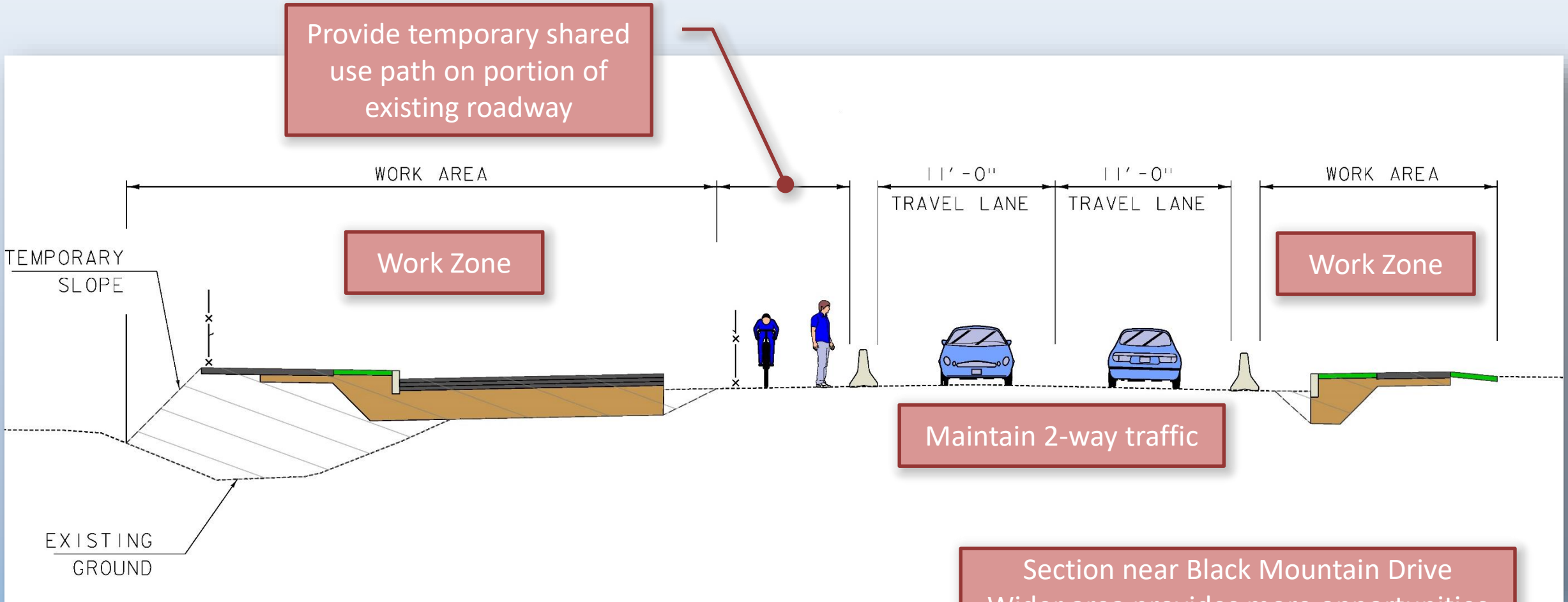
Maintain 2-way traffic

Detailed Construction Phasing Plans were developed to define vehicular, bicycle and pedestrian traffic maintenance requirements

Pedestrians and Bicycles in the Workzone



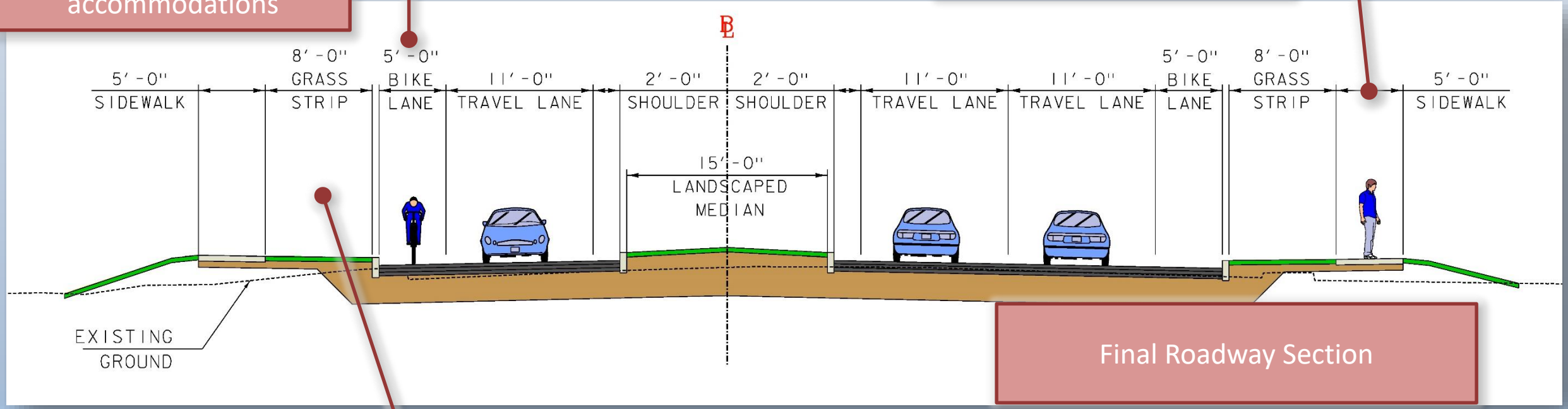
Pedestrians and Bicycles in the Work Zone



Proposed Pedestrian and Bicycle Improvements

Marked bike lanes on each side of the road provides separated bicycle accommodations

New ADA/PROWAG compliant sidewalks on each side of the road



Wide buffer provides separation from traffic and opportunities for landscaping

Take Aways

- **Pedestrian and bicycle accommodations during construction is essential and requires early planning and design of project**
- **Consider pedestrian and bicycle traffic generators and destinations in your design**
- **Follow MUTCD and State and/or local Guidelines**
- **Involve local stakeholders to help understand needs**

Questions

Thank you!

