



## **S.R. 535 CORRIDOR PLANNING STUDY** FM #437174-1 and #437175-1

FROM U.S. 192 TO INTERSTATE 4

### **Title VI**

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Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting either:

#### **District 5 Office**

**Florida Department of Transportation**

**Jennifer Smith**  
**District 5 Title VI Coordinator**  
**719 South Woodland Boulevard**  
**DeLand, FL 32720**  
**(386) 943-5367**  
**Jennifer.Smith2@dot.state.fl.us**

#### **Central Office**

**Florida Department of Transportation**

**Jacqueline Paramore**  
**State Title VI Coordinator**  
**605 Suwannee Street, MS 65**  
**Tallahassee, FL 32399-0450**  
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**Jacqueline.Paramore@dot.state.fl.us**



# S.R. 535 CORRIDOR PLANNING STUDY FM #437174-1 and #437175-1

FROM U.S. 192 TO INTERSTATE 4

## Why You Are Here:

- To participate in the Corridor Planning Study process
- To review the future build alternatives along S.R. 535
- To provide your thoughts, concerns, and comments regarding the project

## Stay Informed by:

By visiting our website  
[www.cflroads.com](http://www.cflroads.com)

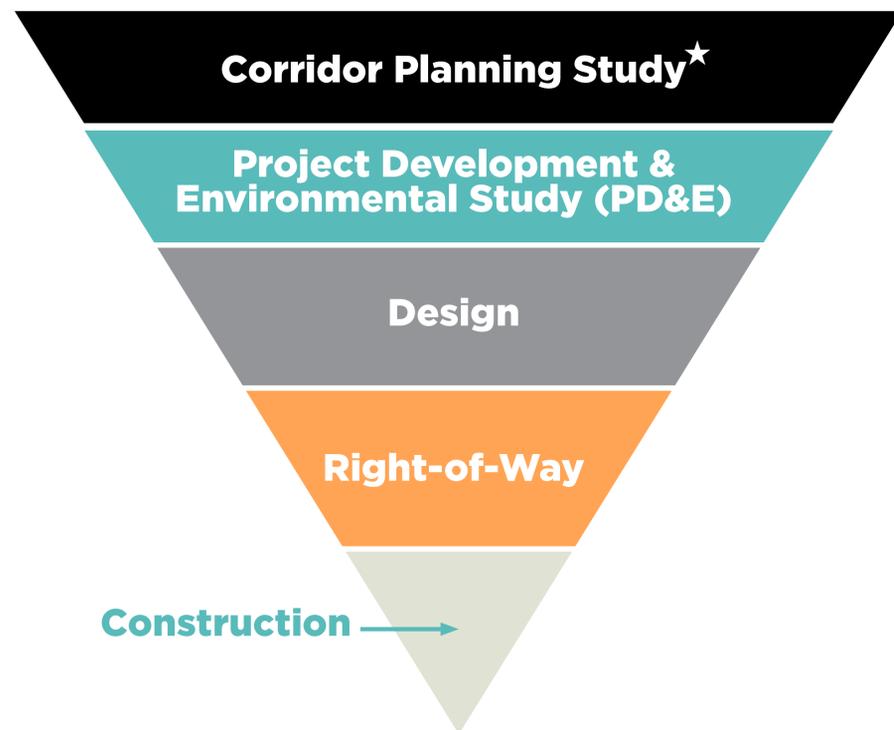
By contacting Ms. Heather Garcia  
 Florida Department of Transportation

719 S. Woodland Boulevard  
 DeLand, FL 32720  
 (386) 943-5077  
[heather.garcia@dot.state.fl.us](mailto:heather.garcia@dot.state.fl.us)

## How Can You Get Involved?

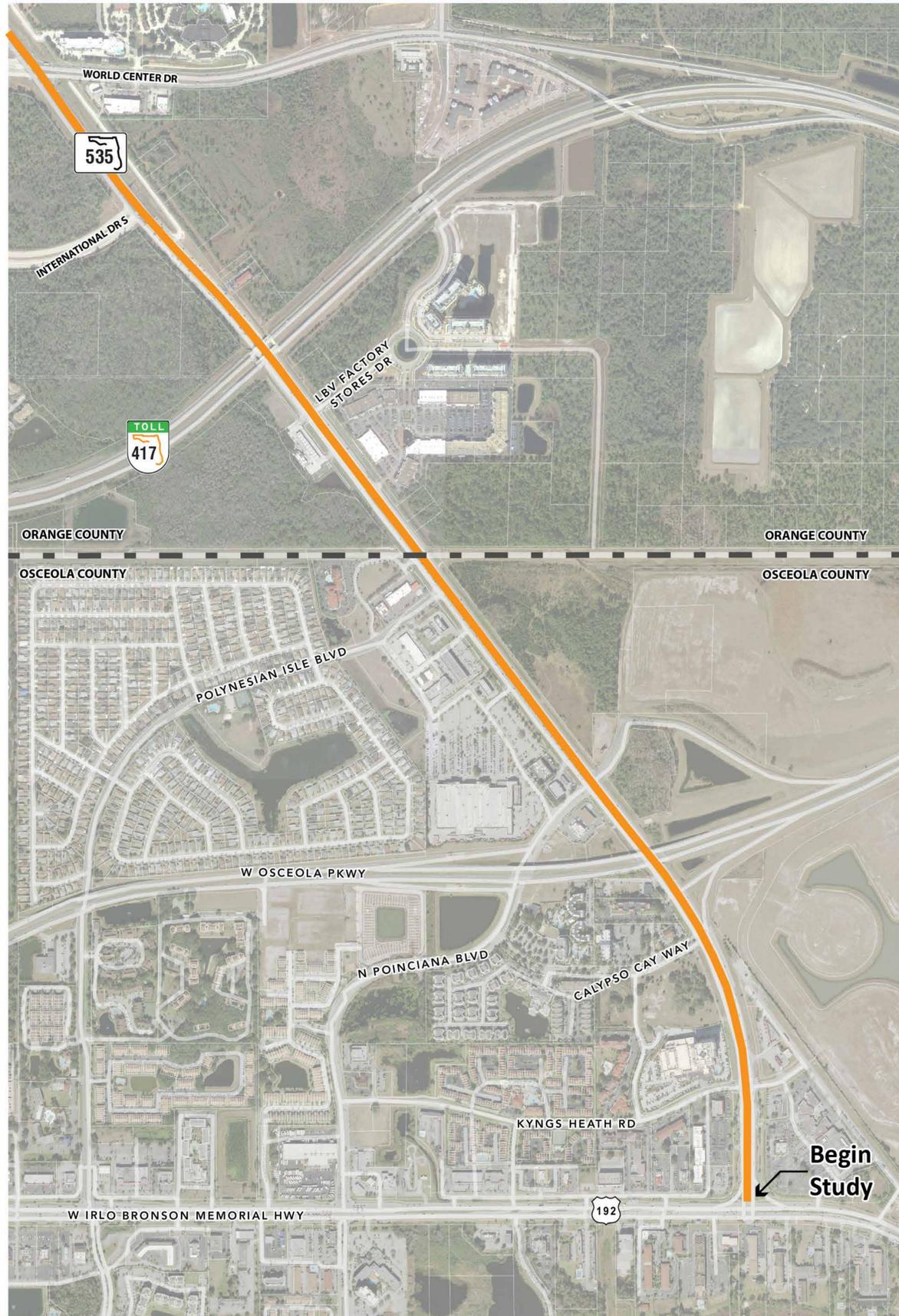
- Participate in open discussion with the project team
- Ask questions about specific aspects of the project
- Fill out a comment form with your input
- Visit the project website at [www.cflroads.com](http://www.cflroads.com) and search by FM number: FM #437174-1 and #437175-1

## Where We Are:



Design, Right-of-Way, and Construction are not funded

TASK	2016												2017											
	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Begin Study	★																							
Existing Conditions Analysis																								
Project Visioning Team Kick-Off Meeting			★																					
Future Conditions Analysis / Purpose & Need																								
Project Visioning Team Meeting #1																								
Existing Conditions Public Meeting																								
Alternatives Development																								
Project Visioning Team Meeting #2																								
Future Alternatives Public Meeting																								
Project Wrap Up																								



Aerial Image Fly Date: March 2016



### Study Corridor

- Study Corridor
- County Line

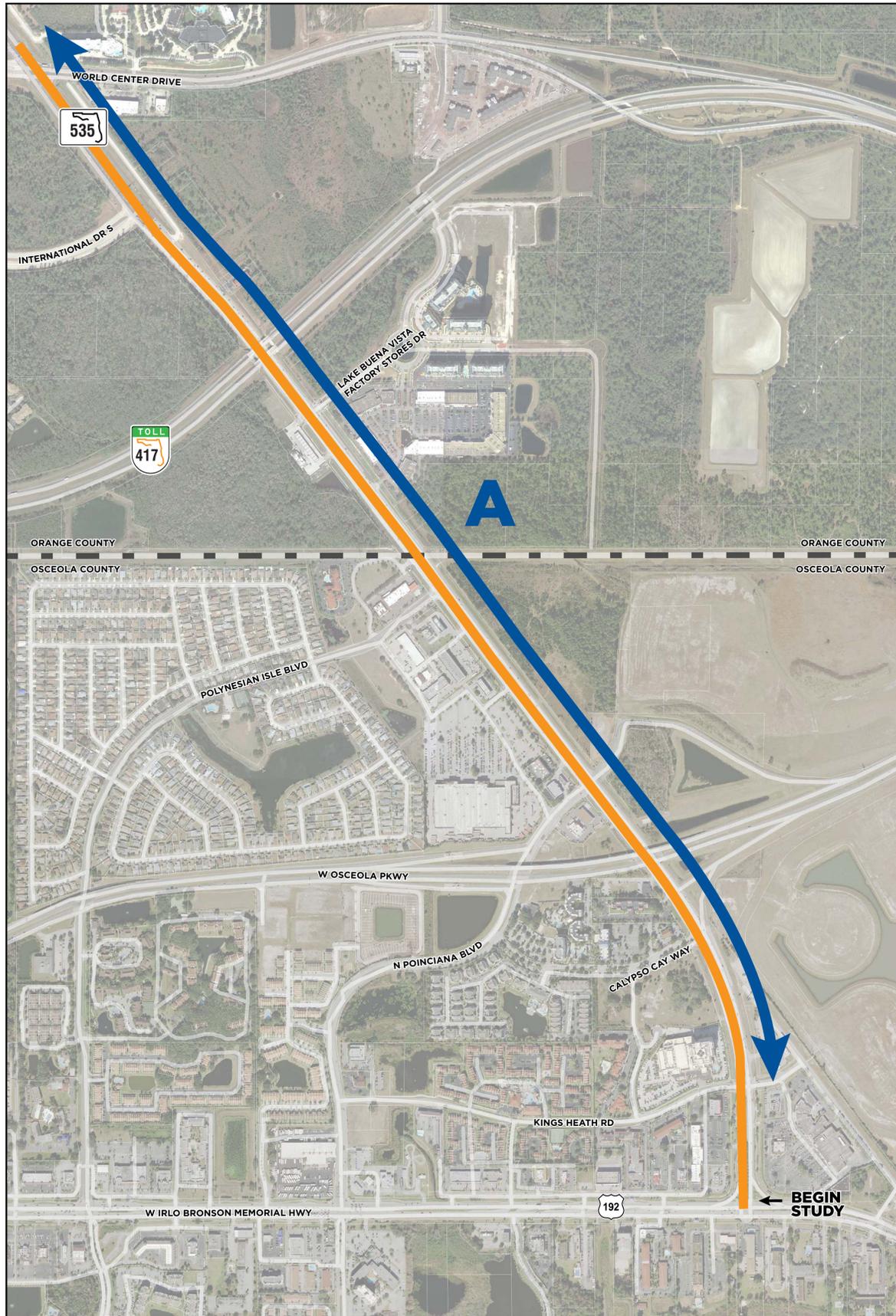


Figure No. 1  
**TYPICAL SECTION  
 KEY MAP**

- Study Corridor
- - - County Line
- Typical Section Location A
- Typical Section Location B

Scale in Miles

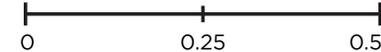


Figure No. 2

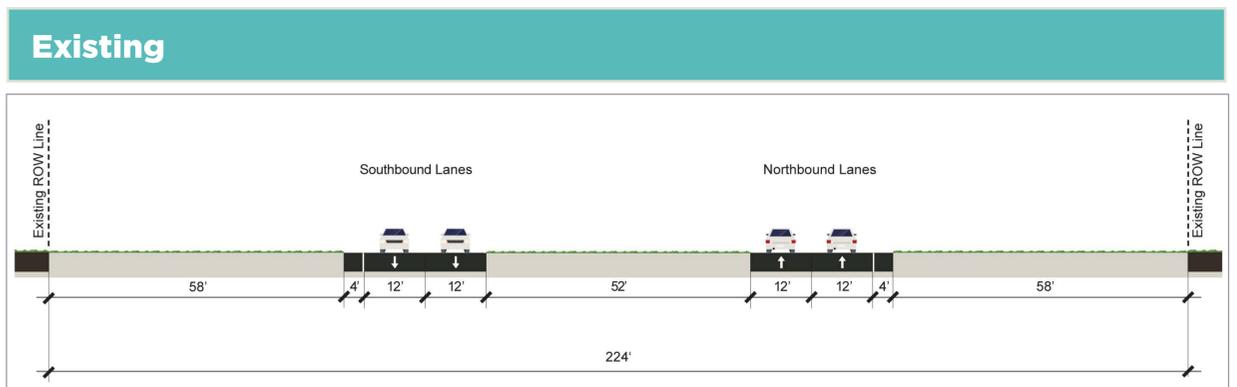
# S.R. 535 from Kyngs Heath Road to Vistana Drive

Widen Travel Lanes to Outside

See **Location "A"** on **Figure 1** - Typical Section Key Map

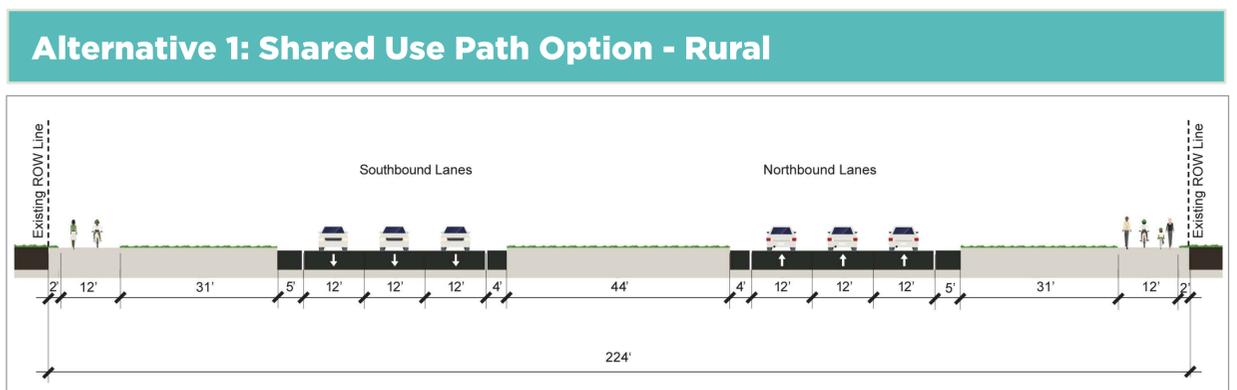
## Existing

- Four 12' travel lanes; two in each direction
- 4' paved outside shoulders
- 52' median



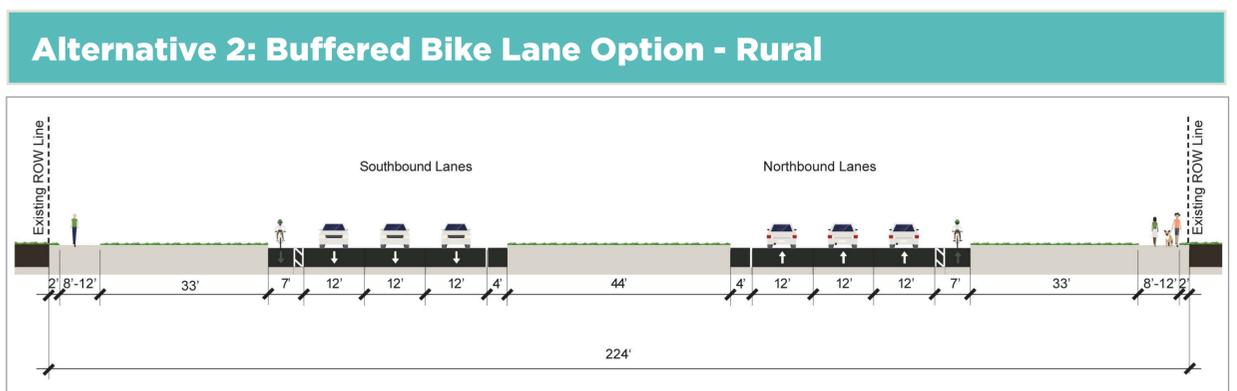
## Alternative 1

- Add one 12' travel lane in each direction to the outside of existing lanes
- Widen outside shoulders to 5'
- Add 4' inside shoulders
- Provide 12' shared-use path near the Right-of-Way line



## Alternative 2

- Add one 12' travel lane in each direction to the outside of existing lanes
- Provide 7' buffered bicycle lanes outside of travel lanes
- Add 4' inside shoulders
- Provide 8'-12' shared-use path near the Right-of-Way line



## Alternative 3

- Add one 12' travel lane in each direction to the outside of existing lanes
- Provide 7' buffered bicycle lanes outside of travel lanes
- Add 4' inside shoulders
- Add curb and gutter to both inside and outside shoulders
- Provide 8'-12' shared-use path near the Right-of-Way line

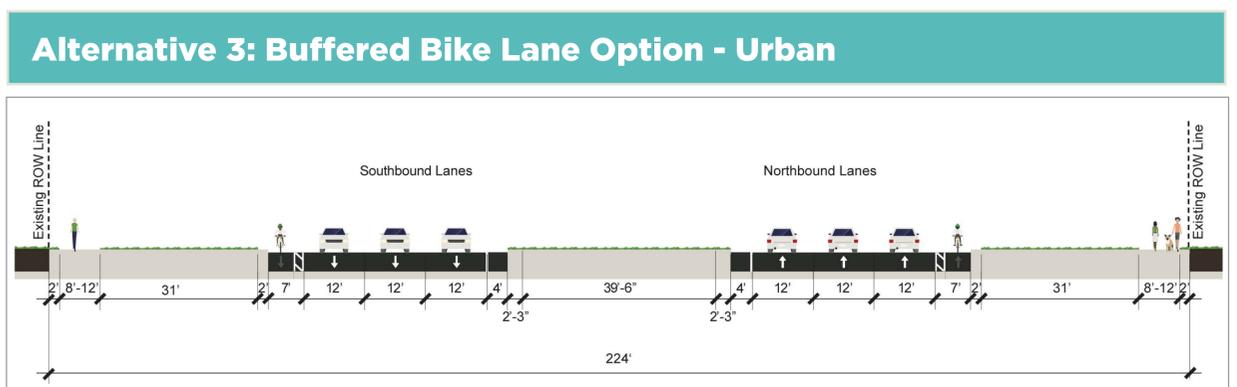


Figure No. 3

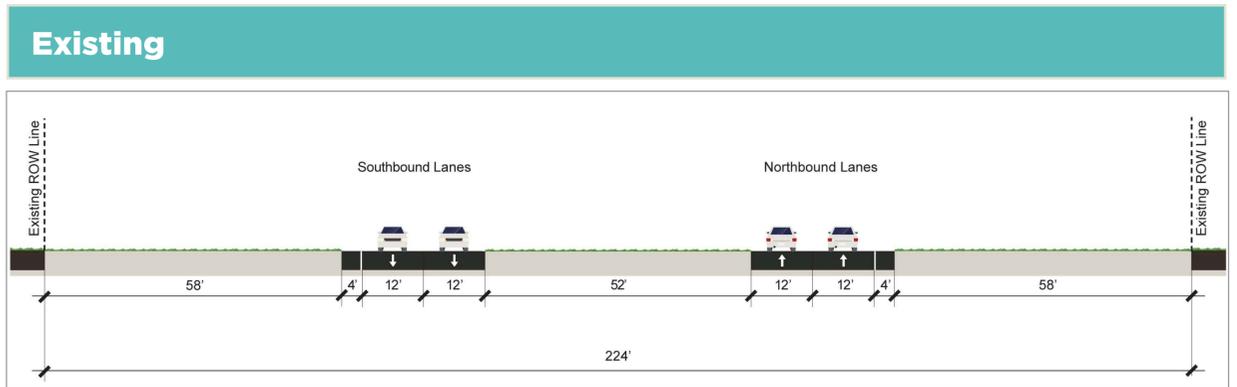
# S.R. 535 from Kyngs Heath Road to Vistana Drive

## Widen Travel Lanes to Inside

See **Location "A"** on **Figure 1** - Typical Section Key Map

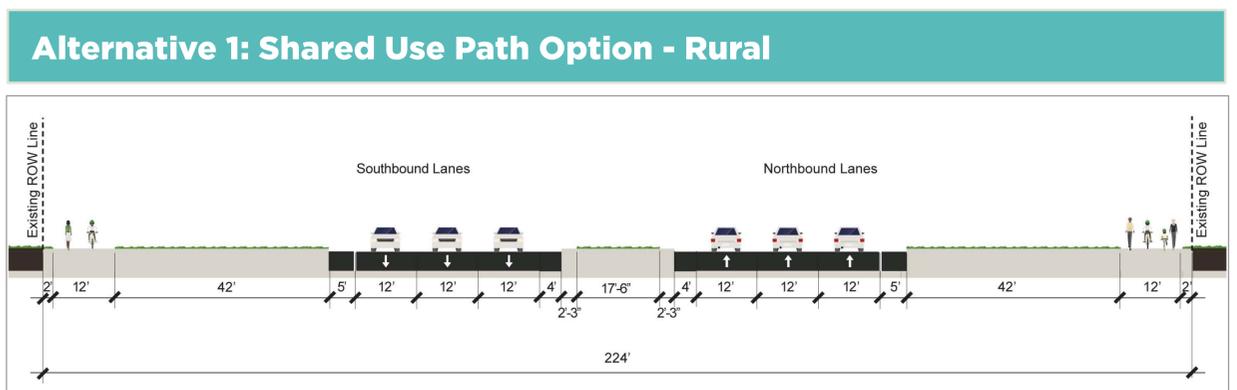
### Existing

- Four 12' travel lanes; two in each direction
- 4' paved outside shoulders
- 52' median



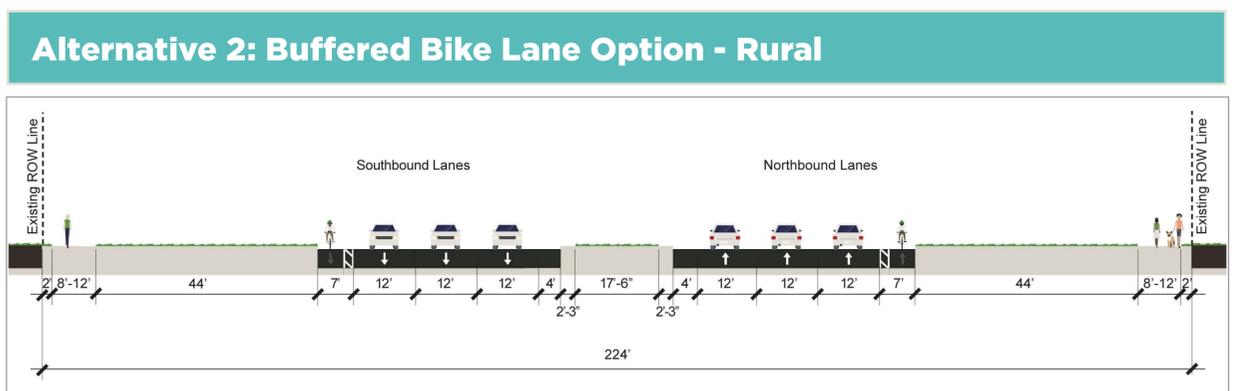
### Alternative 1

- Add one 12' travel lane in each direction to the inside of existing lanes
- Widen outside shoulders to 5'
- Add 4' inside shoulders
- Add curb and gutter to inside shoulders
- Provide 12' shared-use path near the Right-of-Way line



### Alternative 2

- Add one 12' travel lane in each direction to the inside of existing lanes
- Provide 7' buffered bicycle lanes outside of travel lanes
- Add 4' inside shoulders
- Add curb and gutter to inside shoulders
- Provide 8'-12' shared-use path near the Right-of-Way line



### Alternative 3

- Add one 12' travel lane in each direction to the inside of existing lanes
- Provide 7' buffered bicycle lanes outside of travel lanes
- Add 4' inside shoulders
- Add curb and gutter to both inside and outside shoulders
- Provide 8'-12' shared-use path near the Right-of-Way line

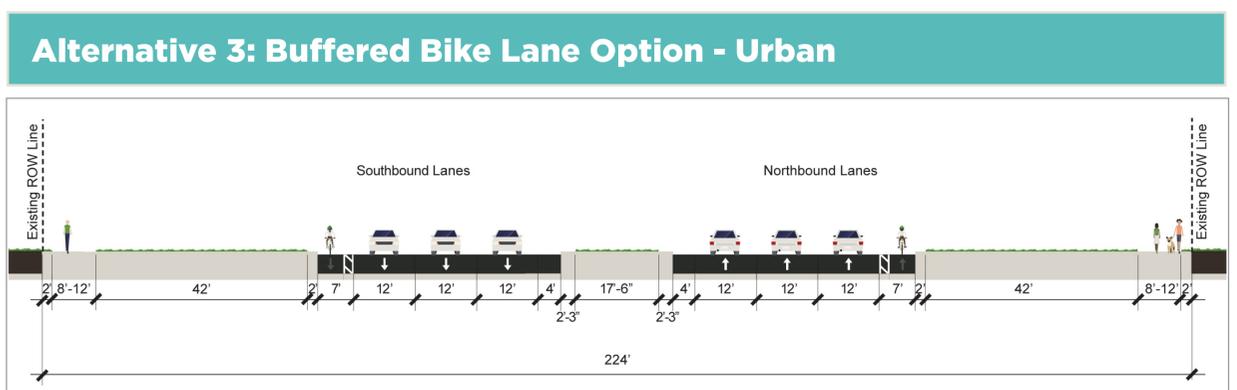


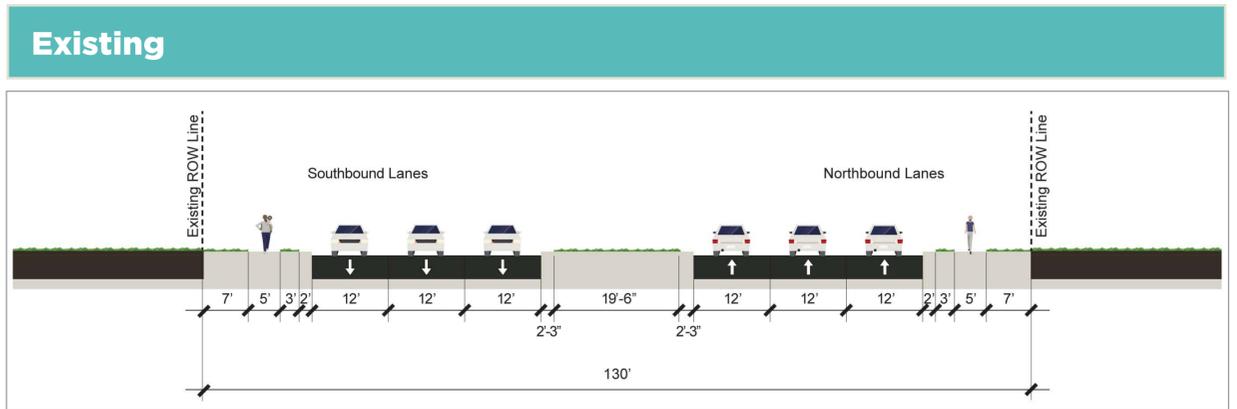
Figure No. 4

# S.R. 535 from Vistana Drive to Interstate 4

See **Location “B”** on **Figure 1** - Typical Section Key Map

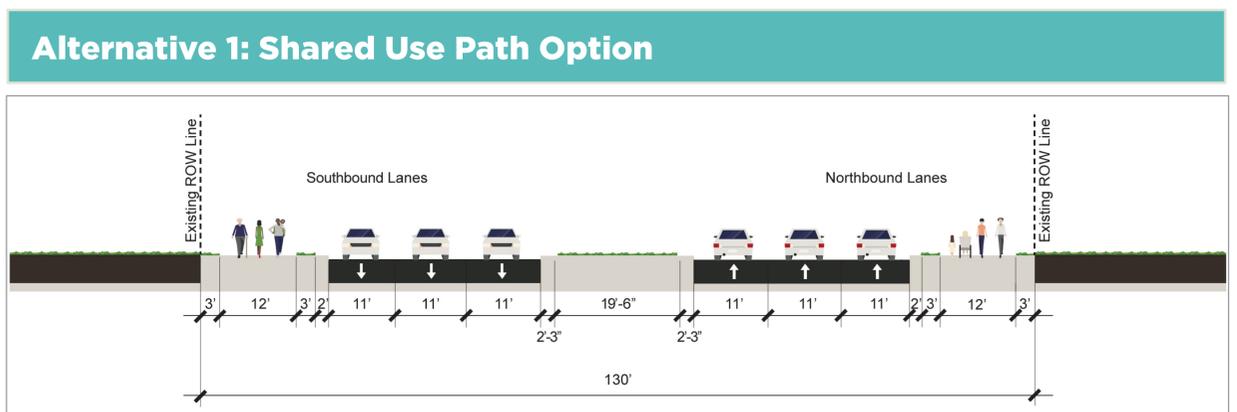
## Existing

- Six 12' travel lanes; three in each direction
- Curb and gutter on both inside and outside shoulders
- 5' sidewalk approximately 5' from roadway



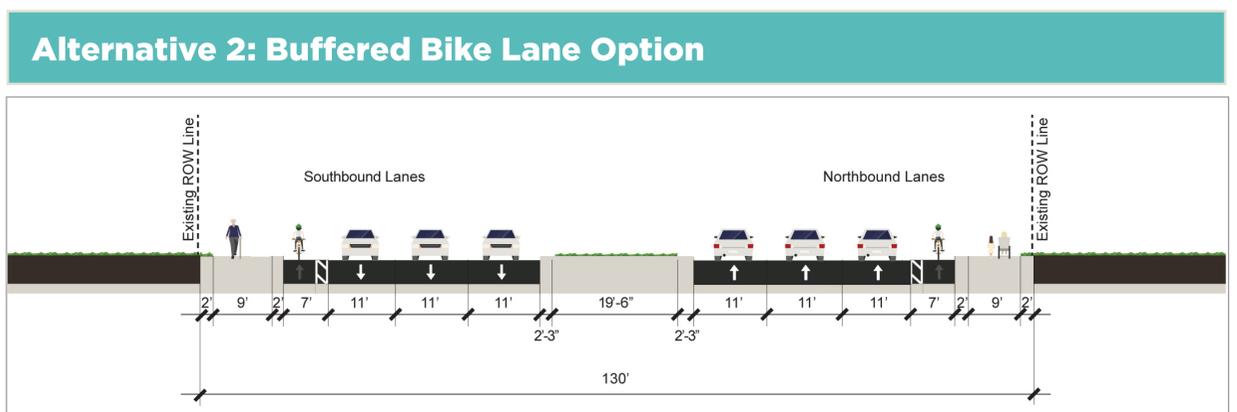
## Alternative 1

- Narrow lane widths to 11'
- Rebuild curb and gutter on outside shoulder
- Widen sidewalk to be a 12' shared-use path



## Alternative 2

- Narrow lane widths to 11'
- Provide 7' buffered bicycle lanes outside of travel lanes
- Rebuild curb and gutter on outside shoulder
- Widen sidewalk to be a 9' shared-use path



## Alternative 3

- Narrow lane widths to 11'
- Narrow median to 22' from 24' and rebuild inside shoulder curb and gutter
- Provide 7' buffered bicycle lanes outside of travel lanes
- Rebuild curb and gutter on outside shoulder
- Widen sidewalk to be a 10' shared-use path

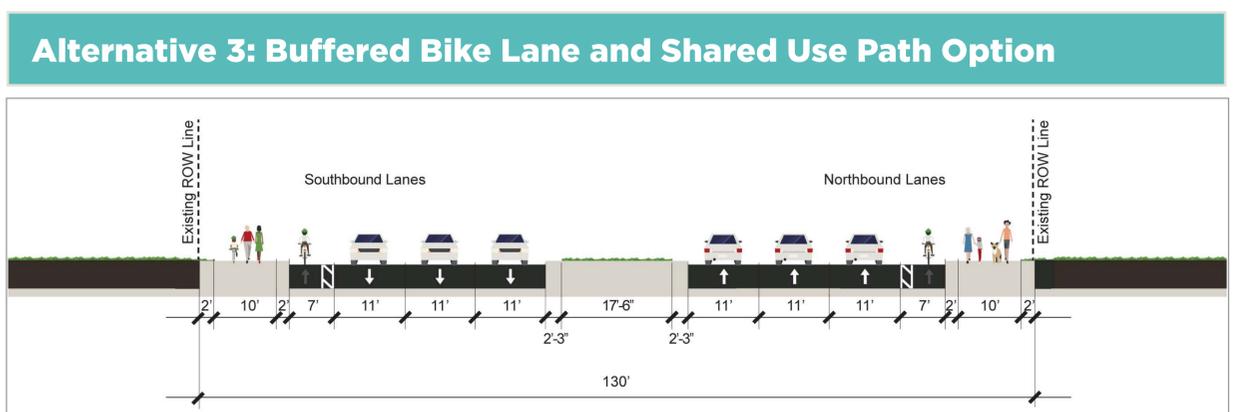
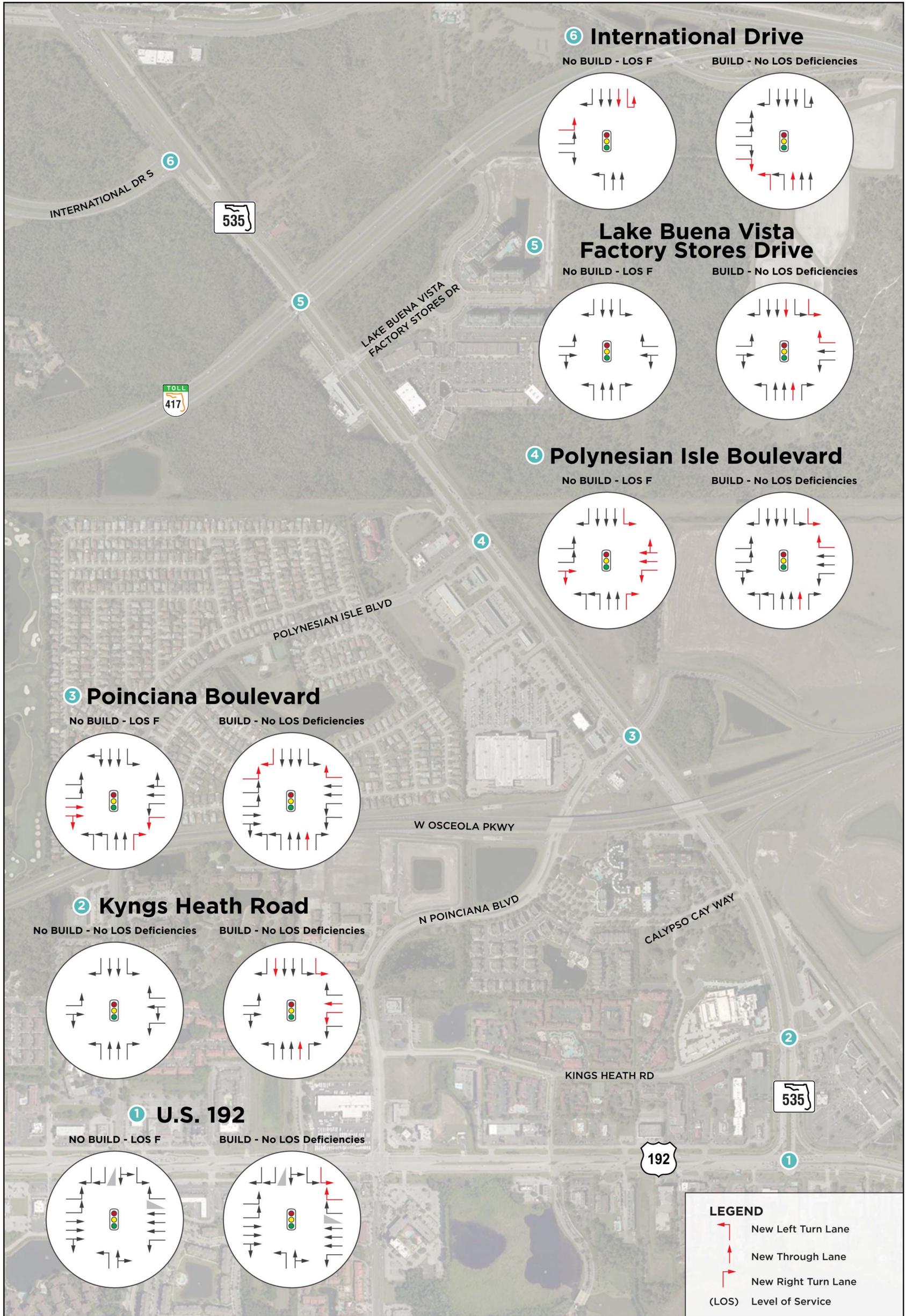


Figure No. 5

# Intersection Improvements





## Figure No. 6 Restricted Crossing U-Turn (RCUT) Information

AN INNOVATIVE, PROVEN SOLUTION FOR IMPROVING SAFETY AND MOBILITY AT SIGNALIZED AND UNSIGNALIZED INTERSECTIONS

### What is a Restricted Crossing U-turn (RCUT)?

- The Restricted Crossing U-Turn (RCUT) is an innovative intersection design that improves safety and operations by changing how minor road traffic crosses or turns left at a major road.
- At an RCUT, drivers stopped at the minor road waiting to cross or turn left no longer must navigate a complex intersection of two directions or traffic often traveling at a high speed.
- Instead, all minor road traffic makes a right turn followed by a U-turn at a designated location—either signalized or unsignalized—to continue in the desired direction.
- The RCUT is suitable for a wide variety of locations and circumstances, such as a corridor treatment along signalized routes to minimize travel times while maximizing capacity and managing speed.
- RCUTs work well when consistently used at intersections along a corridor, but they also can be used effectively at individual intersections.

### Improving Safety and Operations

- Comparing a conventional four-leg intersection to an equivalent RCUT design, and accounting for the U-turn locations on both sides of the main intersection, the total number of conflict points is reduced from 32 to 18—a nearly 50 percent reduction.

- The RCUT design improves overall roadway operations, even when considering the additional distance traffic entering from the minor road must travel.
- While RCUTs can cause a slight increase in travel time during periods of low traffic volumes, they have been shown to decrease delay during periods of higher volumes, reducing the time it takes to clear an intersection and resume normal travel speeds.

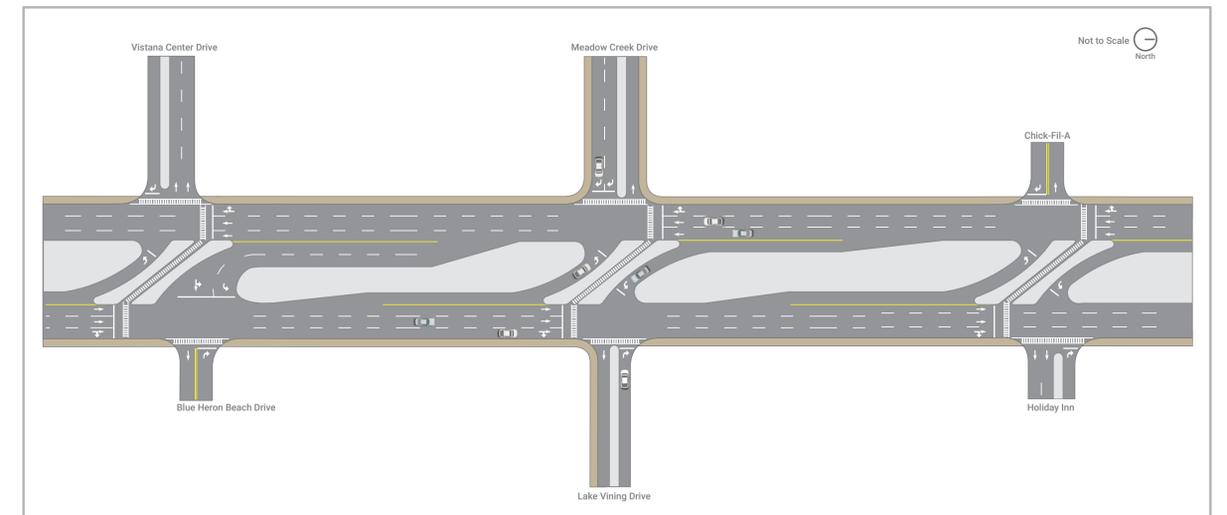
### Meeting the Needs of the Community

- Access to local businesses and commercial areas can be maintained because the U-Turns accommodate all movements.
- When signalized, the RCUT provides great flexibility in traffic signal timing to accommodate unbalanced traffic flow that may result from commuter patterns or retail developments.
- This includes pedestrian crossings that are accessible to all users, and when signalized, phases that accommodate both pedestrians and bicycles.
- The channelization used in the RCUT design can serve as effective refuge islands for pedestrian crossings and/or as bicycle queuing areas.

### RCUT Intersection in Troy, Michigan



### RCUT Example from Vistana Center Drive to North of Meadow Creek Drive



Representative diagram for illustrative purposes only

Source\*:

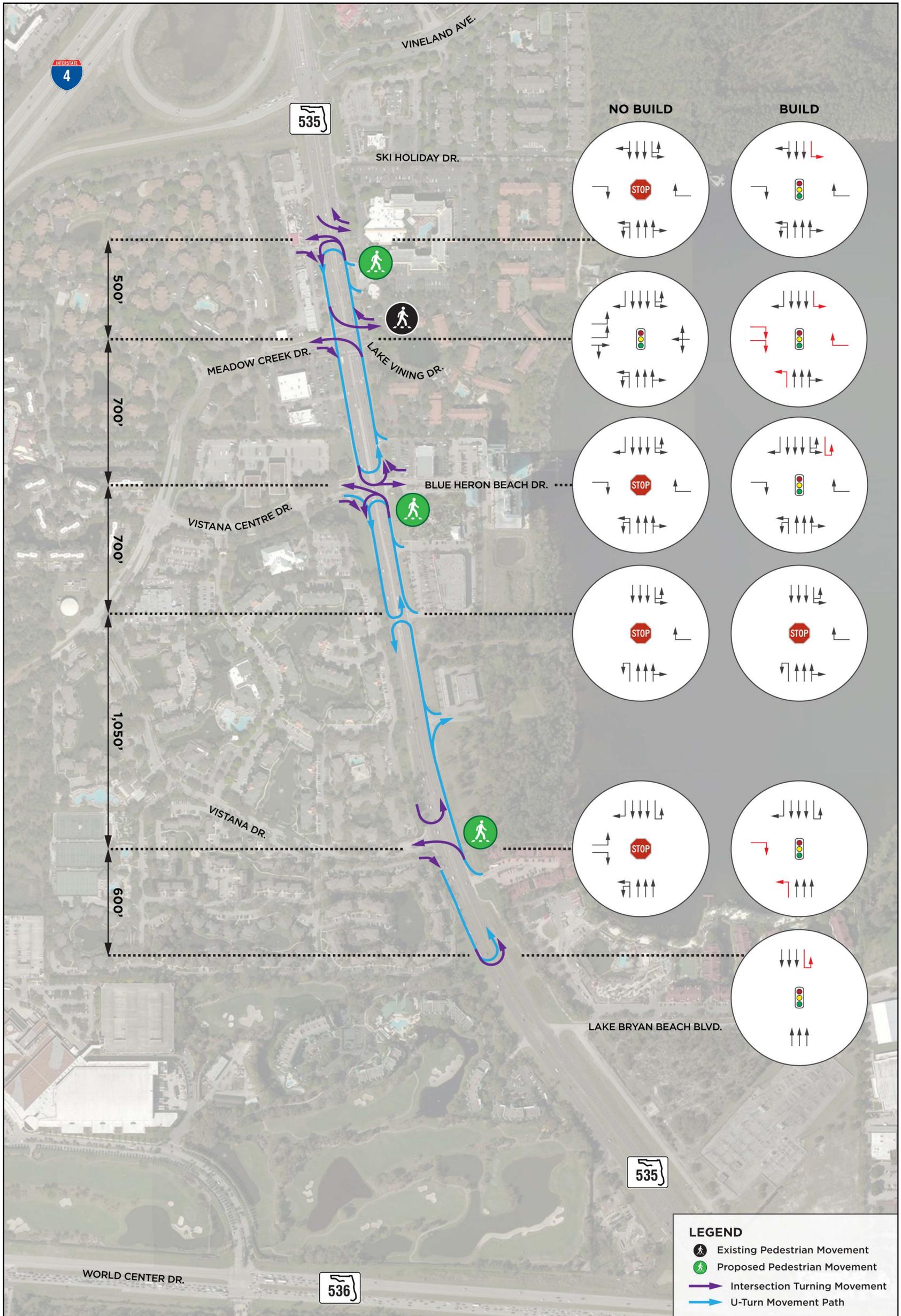


U.S. Department of Transportation  
Federal Highway Administration

\* Information presented on this board originates from the FHWA RCUT Intersection Brochure but has been modified by Kittelson & Associates, Inc. for the purposes of this meeting.

Figure No. 7

# Potential RCUT Intersection Lane Configurations



Scale in Feet  
0 500 1,000 North



## Figure No. 8 Displaced Left Turn (DLT) Information

### AN INNOVATIVE, PROVEN SOLUTION FOR IMPROVING SAFETY AND MOBILITY AT SIGNALIZED INTERSECTIONS

#### What is a Displaced Left Turn Intersection?

- The Displaced Left Turn (DLT) Intersection implements unopposed left turns at intersections by moving traffic over to the other side of the road in advance.
- Traffic crosses opposing through lanes at a separate signalized intersection before the main intersection, entering a parallel left turn lane separated from opposing lanes.
- At the main intersection, left turning and through traffic move simultaneously, increasing efficiency and safety by reducing conflict.
- The DLT is best-suited to intersections with moderate to high overall traffic volumes, and especially to those with very high or unbalanced left turn volumes.
- It can be a competitive alternative to a full, grade-separated interchange.

#### Safety and Operational Benefits

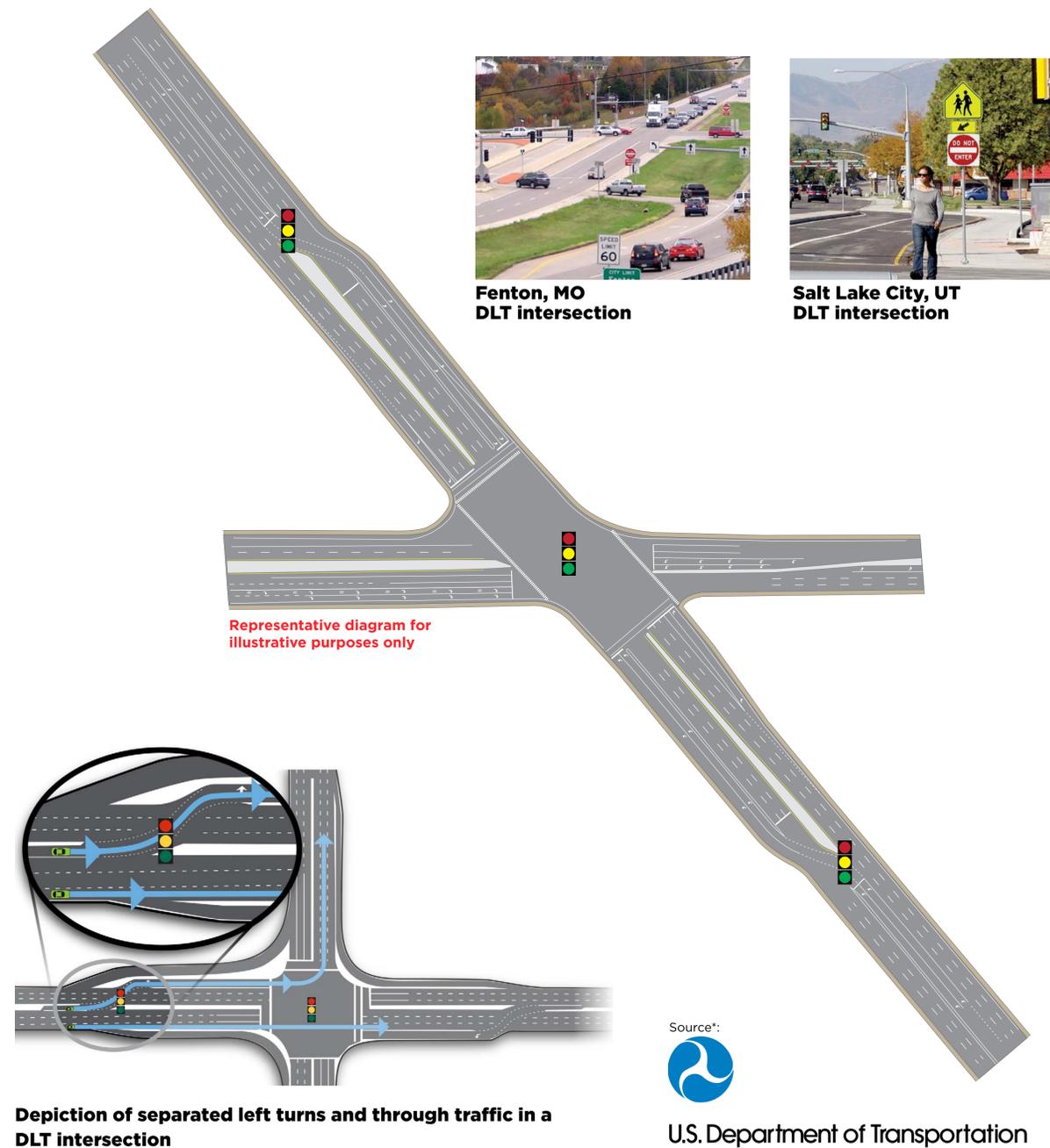
- The DLT design reduces the total number and overall severity of vehicle-to-vehicle conflict points. Conflict points decrease from 32 to 28 when a conventional intersection is converted to a full DLT.

- A study by FHWA using traffic models to compare performance between DLT intersections and equivalent conventional signalized intersections showed the following:
  - » A partial DLT with crossovers on only select intersection approaches increased throughput by about 20 percent and significantly reduced delay by up to 30-40 percent.
- DLT intersections have been constructed in several states, including Colorado, Louisiana, Maryland, Missouri, New York, Ohio, Texas, and Utah.

#### A Cost-Effective Way to Meet Community Needs

The DLT design is flexible and can be tailored to meet the needs of a particular intersection and all of its users.

- Provisions for walking and biking must be considered throughout the project development process, with the needs of pedestrians and bicycles shaping the overall design of the DLT accordingly.
- This includes pedestrian crossings that are accessible to all users, and traffic signal phases that accommodate both pedestrians and bicycles.



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**Federal Highway Administration**

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