

## VA 7 **STARS** Study

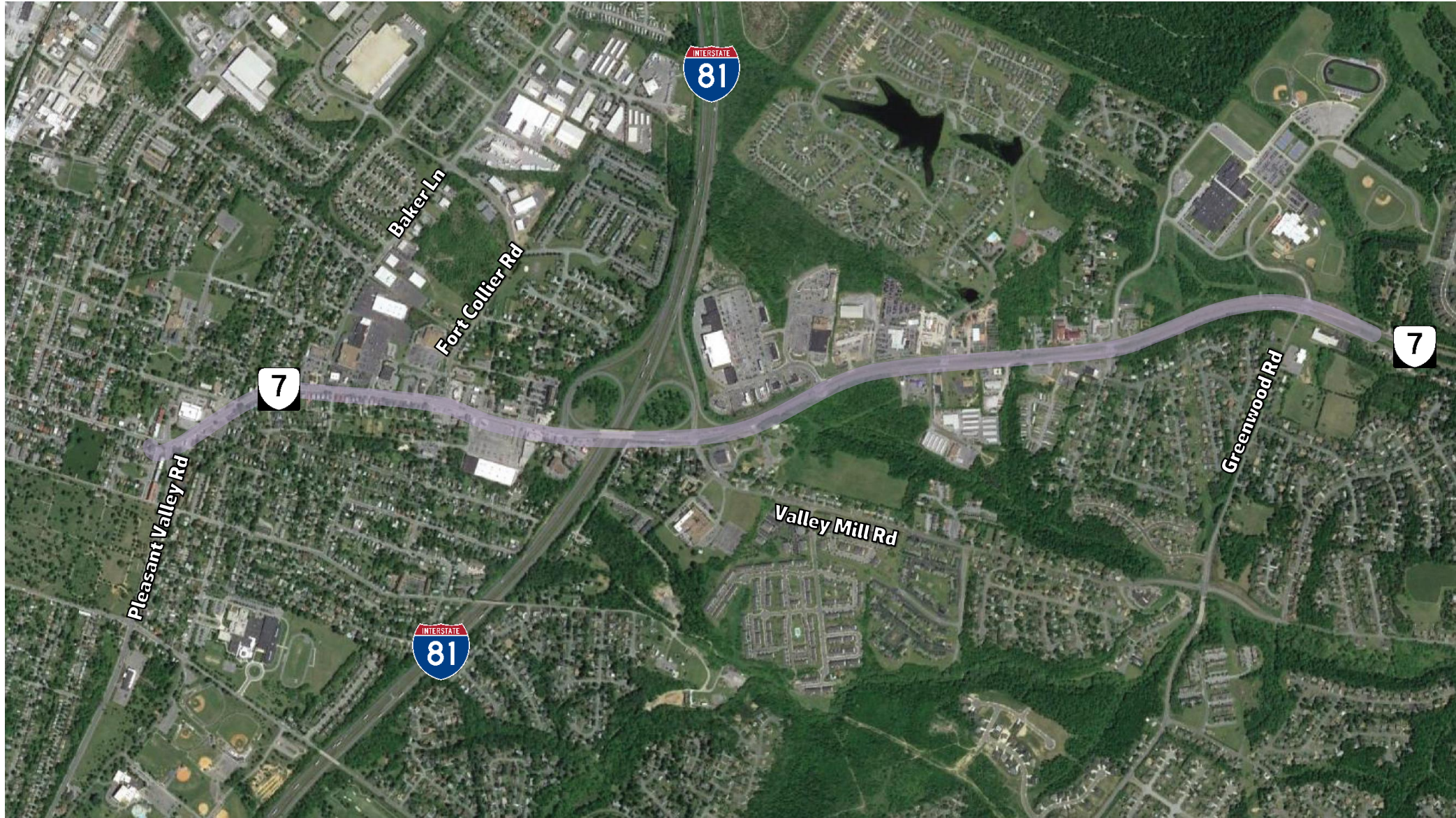
### Agenda

1. **Introductions / Goal of Today's Meeting**
2. **Summary of Route 7 Existing Conditions**
3. **Route 7 Future Conditions**
4. **Recommendations**
5. **Next Steps**

## Goal of today's meeting is to:

- Provide an overview of the Route 7 Recommendations

# Study Area

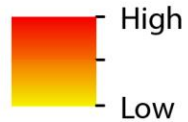


# Crash Density - All Crashes

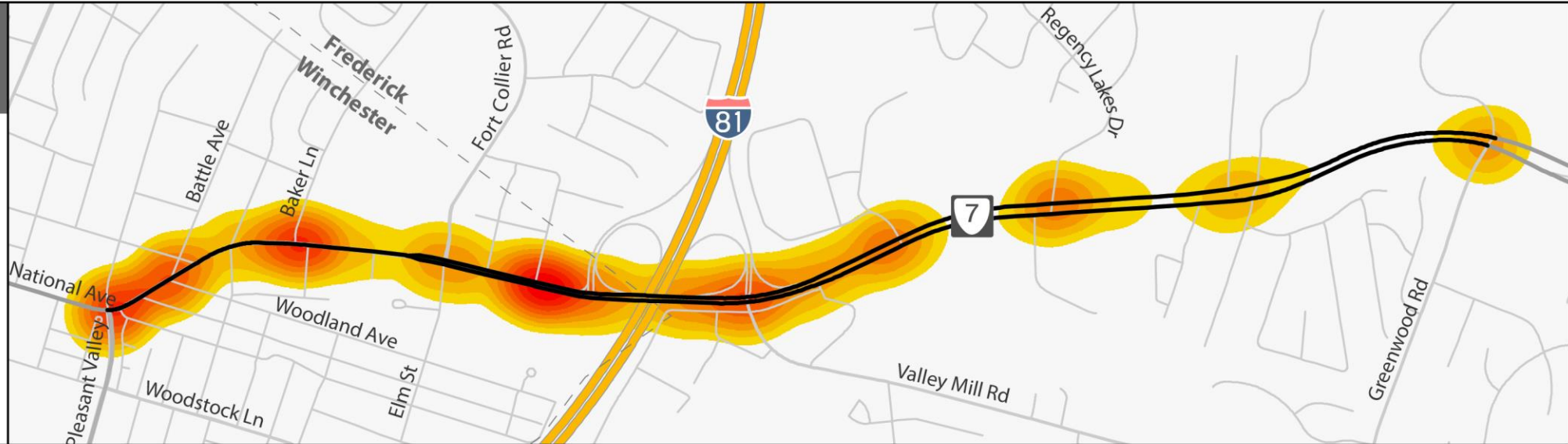
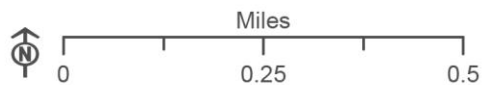
## Route 7 STARS

Study Corridor

### Crash Density



533 Total Crashes



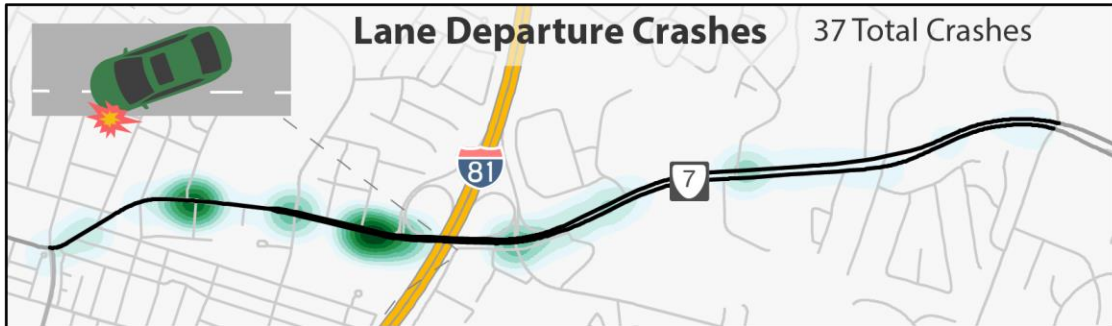
### Rear End Crashes

264 Total Crashes



### Lane Departure Crashes

37 Total Crashes



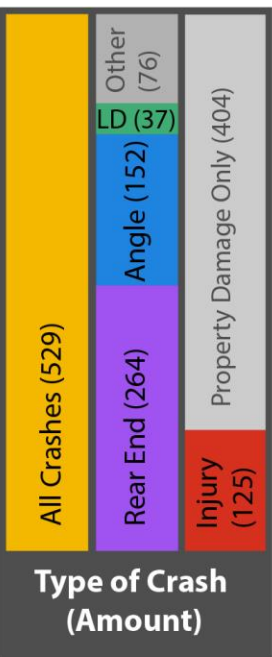
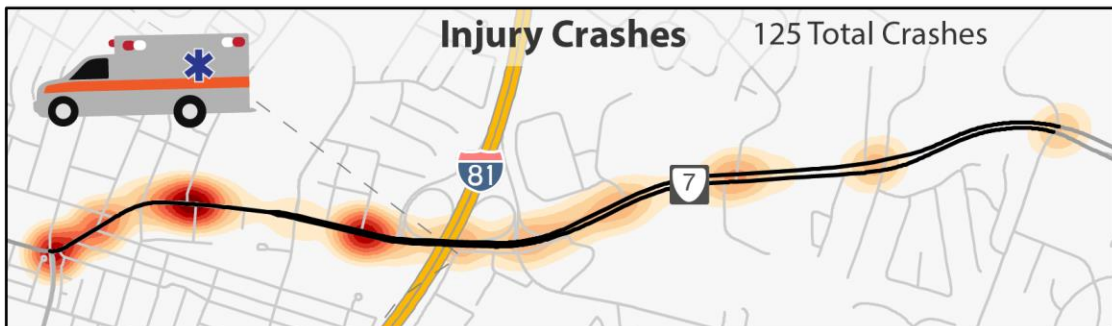
### Angle Crashes

152 Total Crashes



### Injury Crashes

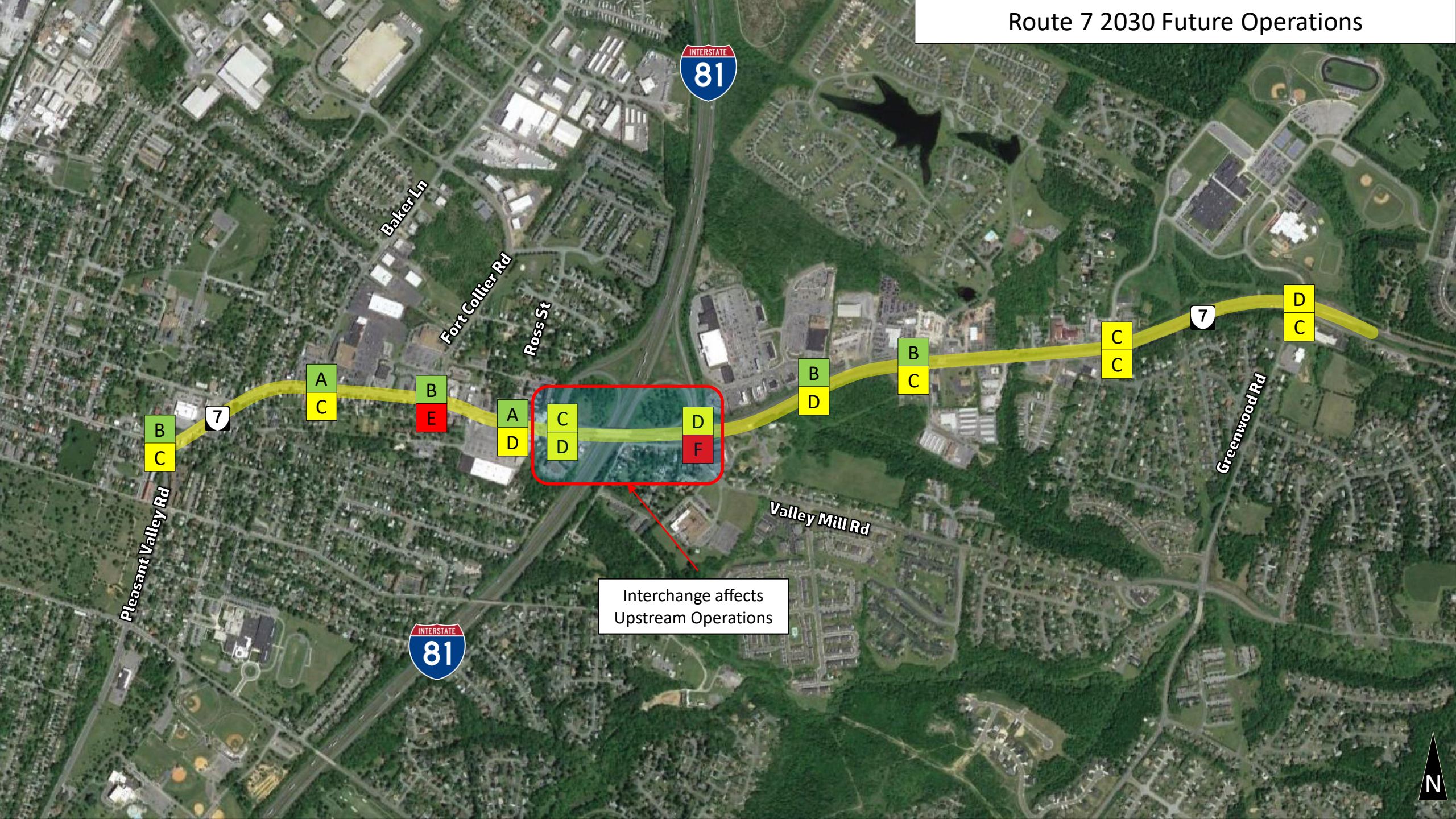
125 Total Crashes



# Route 7 Existing Conditions



# Route 7 2030 Future Operations



Interchange affects  
Upstream Operations



Route 7 2030 Future Operations  
Interchange Operational Impacts Removed

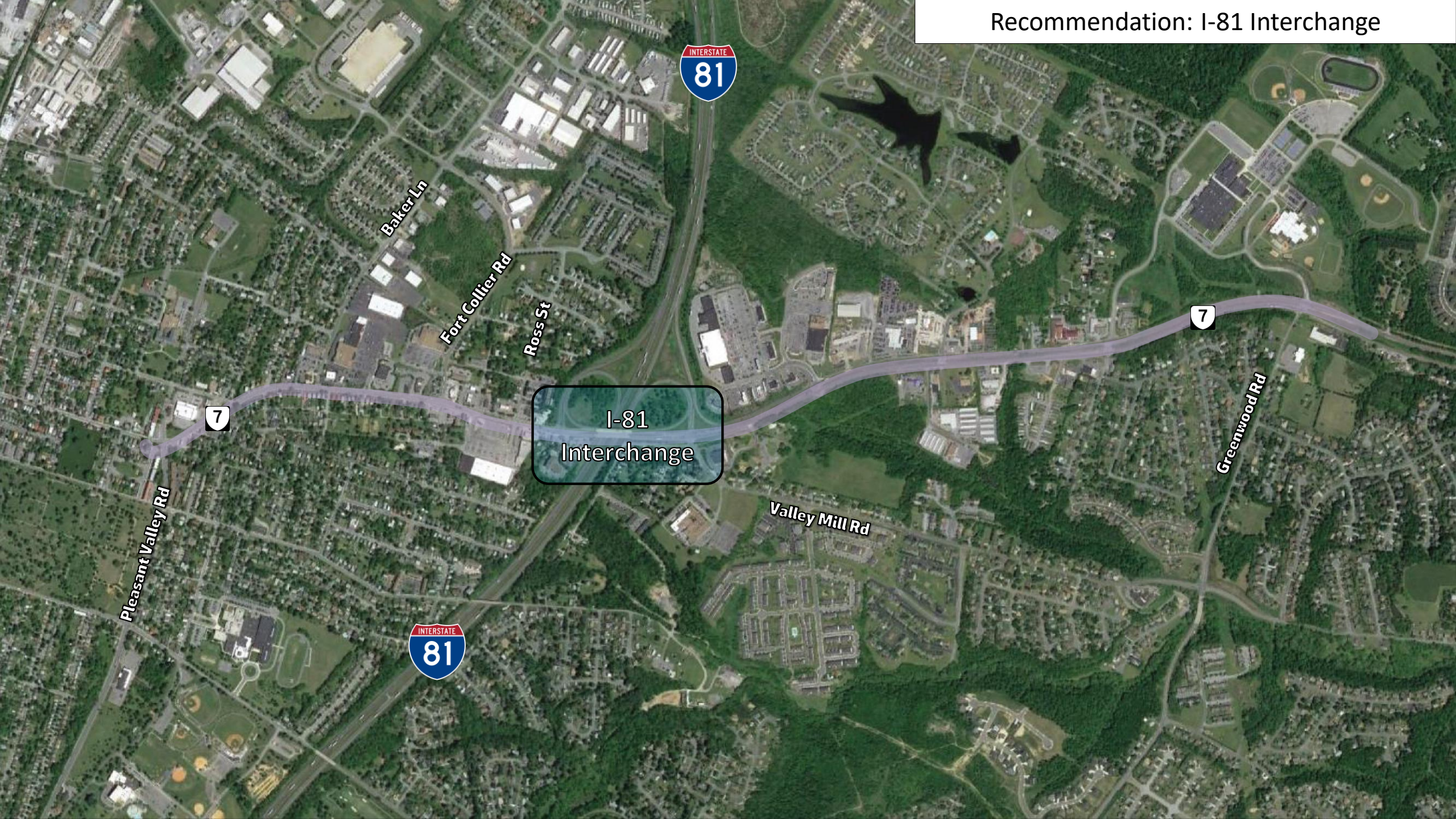


## Recommendation Toolbox

- Roundabout
- Re-routed Traffic Movements
- Modified Signal Phasing
- Access Management
- Modified Signal Phasing
- Turn Lane Extensions



Recommendation: I-81 Interchange



I-81  
Interchange



Pleasant Valley Rd

Baker Ln

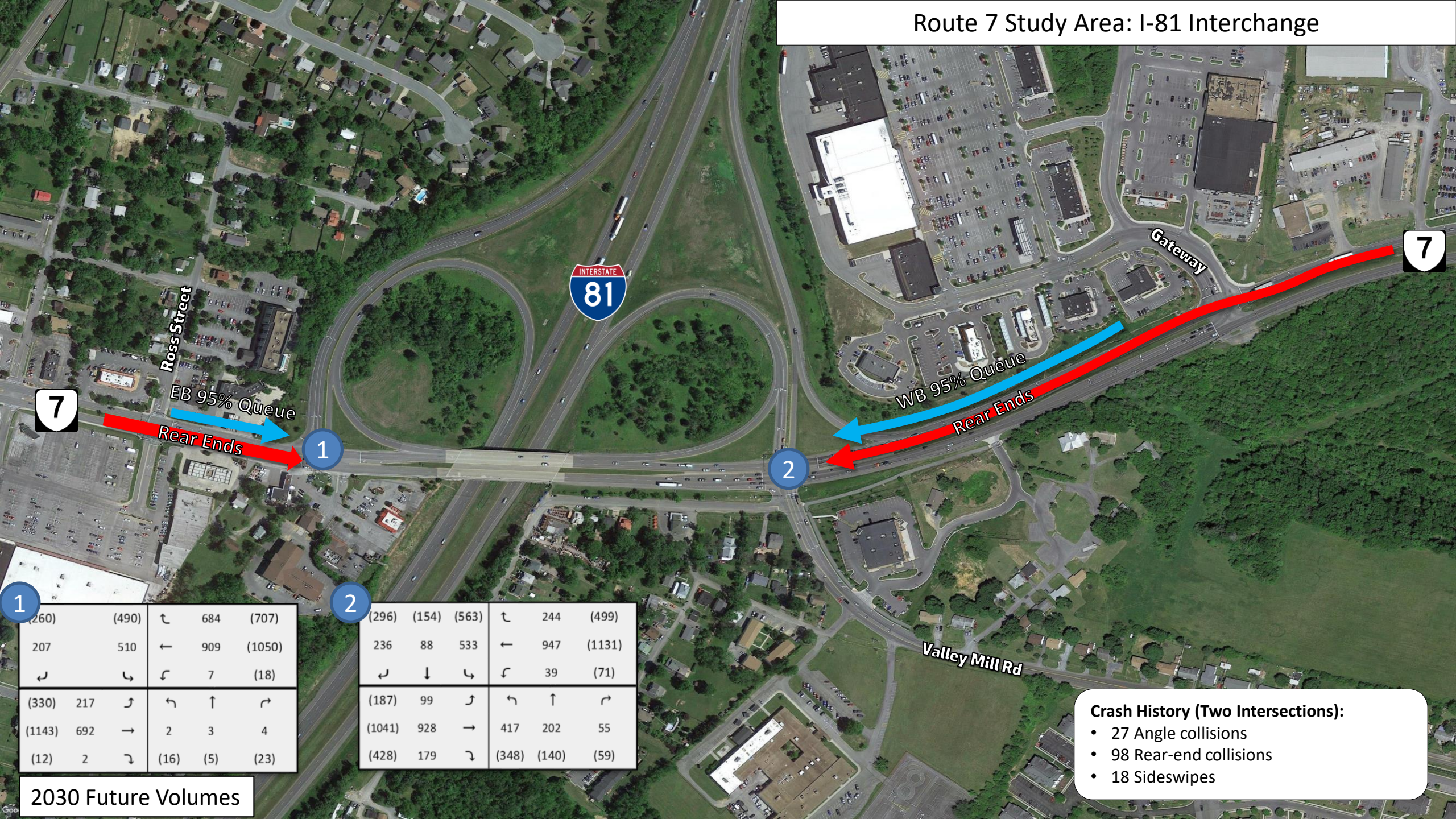
Fort Collier Rd

Ross St

Valley Mill Rd

Greenwood Rd

# Route 7 Study Area: I-81 Interchange



**1**

|        |       |   |      |        |      |
|--------|-------|---|------|--------|------|
| (260)  | (490) | ↖ | 684  | (707)  |      |
| 207    | 510   | ← | 909  | (1050) |      |
| ↷      | ↘     | ↙ | 7    | (18)   |      |
| (330)  | 217   | ↘ | ↖    | ↑      | ↗    |
| (1143) | 692   | → | 2    | 3      | 4    |
| (12)   | 2     | ↘ | (16) | (5)    | (23) |




2030 Future Volumes

**2**

|        |       |       |       |       |        |
|--------|-------|-------|-------|-------|--------|
| (296)  | (154) | (563) | ↖     | 244   | (499)  |
| 236    | 88    | 533   | ←     | 947   | (1131) |
| ↷      | ↓     | ↘     | ↙     | 39    | (71)   |
| (187)  | 99    | ↘     | ↖     | ↑     | ↗      |
| (1041) | 928   | →     | 417   | 202   | 55     |
| (428)  | 179   | ↘     | (348) | (140) | (59)   |

- Crash History (Two Intersections):**
- 27 Angle collisions
  - 98 Rear-end collisions
  - 18 Sideswipes

### 3. Route 7 Study Area: I-81 Interchange Challenges

-  Right-of-Way
-  Future Widening
-  Maintenance of Traffic



## Pursue Interim Recommendations

- Extend Eastbound Route 7 Left-turn Lane at Southbound I-81 Ramp
- Relocate Valley Mill Road alignment to Winchester Gateway

## Interchange Improvement Feasibility Study

- Extend horizon year beyond 2030
  - Consider scenario planning
- Model I-81 Widening
- Explore multiple alternatives with more versatile software – VISSIM
  - Density, delay, travel times, queuing, and O-D
- Environmental Constraints Assessment
- ROW Impact Evaluation

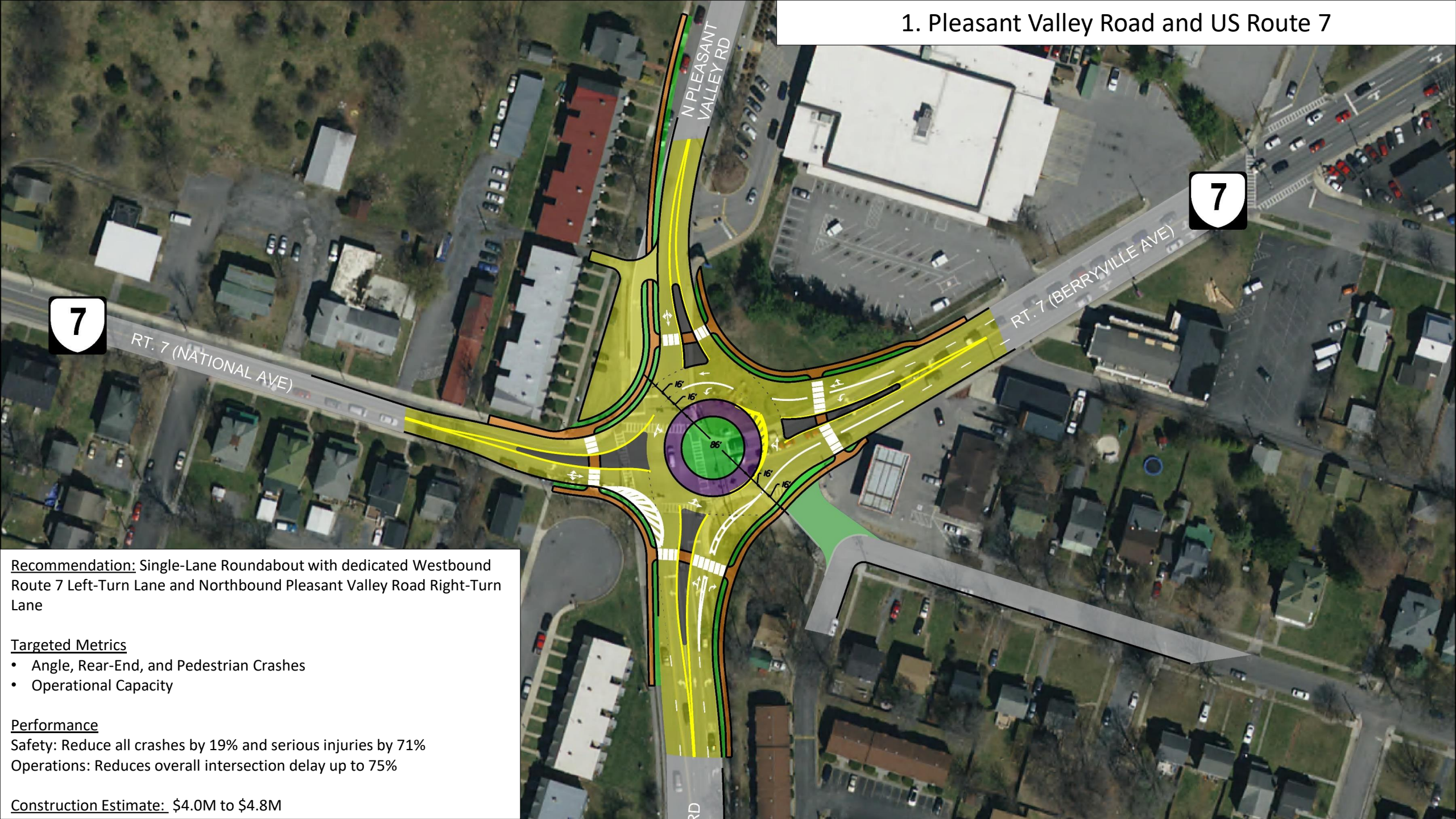
# Route 7 2030 Future Operations No Build



# Route 7 2030 Future Operations Recommendation Overview



# 1. Pleasant Valley Road and US Route 7



**Recommendation:** Single-Lane Roundabout with dedicated Westbound Route 7 Left-Turn Lane and Northbound Pleasant Valley Road Right-Turn Lane

### Targeted Metrics

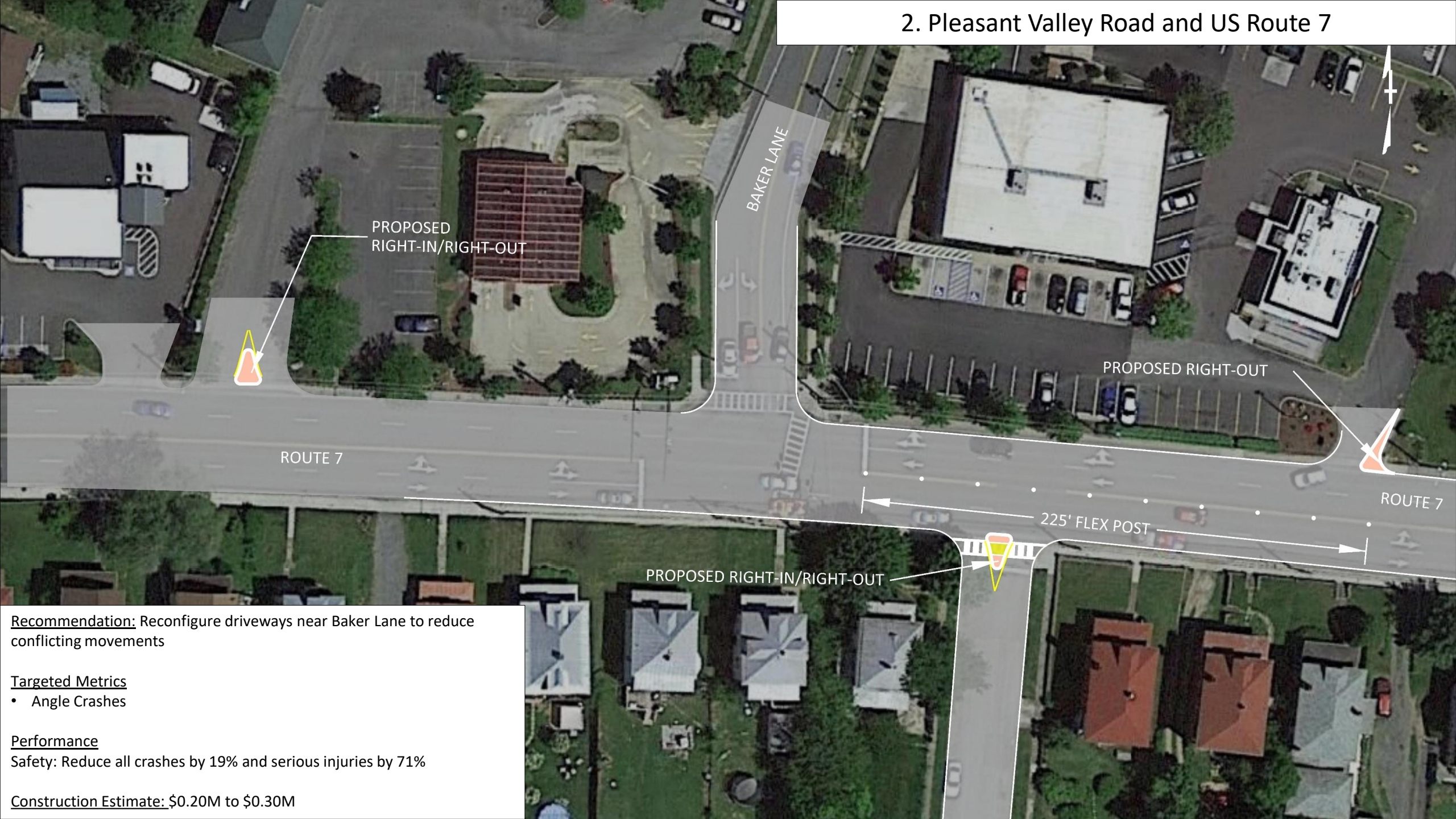
- Angle, Rear-End, and Pedestrian Crashes
- Operational Capacity

### Performance

Safety: Reduce all crashes by 19% and serious injuries by 71%  
Operations: Reduces overall intersection delay up to 75%

Construction Estimate: \$4.0M to \$4.8M

## 2. Pleasant Valley Road and US Route 7



PROPOSED RIGHT-IN/RIGHT-OUT

ROUTE 7

BAKER LANE

PROPOSED RIGHT-OUT

ROUTE 7

225' FLEX POST

PROPOSED RIGHT-IN/RIGHT-OUT

**Recommendation:** Reconfigure driveways near Baker Lane to reduce conflicting movements

**Targeted Metrics**

- Angle Crashes

**Performance**

Safety: Reduce all crashes by 19% and serious injuries by 71%

**Construction Estimate:** \$0.20M to \$0.30M



### 3. US Route 7 between Fort Collier Road and I-81 Ramp



#### Recommendation:

- Reconfigure and Improve Traffic Signal Operations
- Perform Access Management
- Provide connection between Fort Collier Road and Atwell Avenue

#### Targeted Metrics

- Angle, Rear-End, and Pedestrian Crashes
- Queuing at the Left-Turn onto I-81 Southbound
- Operational deficiencies on side streets

### 3. US Route 7 between Fort Collier Road and I-81 Ramp

Recommendation:

- Split Phasing with Dual Lefts on Fort Collier Road
- Extended Westbound Route 7 Left-Turn Lane
- Minor Street Right-Turn on Red Restrictions

Performance

- Increased capacity and improved operations
- Improved Pedestrian Safety
- Reduction in Angle and Head-On collisions from Minor Streets

Recommendation:

- Reconfigure intersection to right-in/right-out permitting lefts from Eastbound Route 7 onto Atwell Ave

Performance

- Reduces minor and serious injuries up to 23%



ROUTE 7

FORT COLLIER ROAD

ATWELL AVENUE

TRUCKS  
USE  
RIGHT  
LANE

R4-5

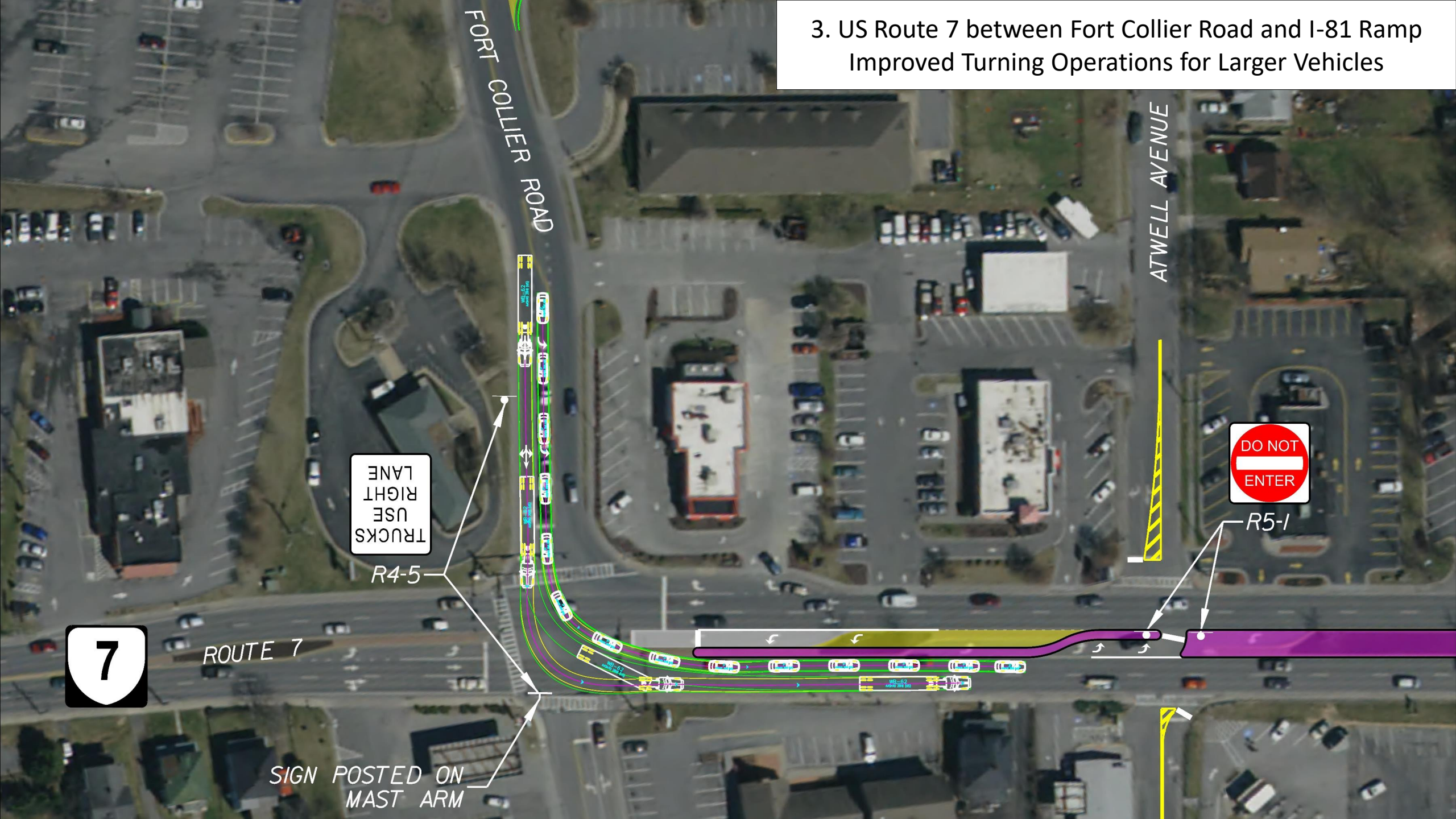
SIGN POSTED ON  
MAST ARM



R5-1



### 3. US Route 7 between Fort Collier Road and I-81 Ramp Improved Turning Operations for Larger Vehicles



TRUCKS  
USE  
RIGHT  
LANE

R4-5



ROUTE 7

SIGN POSTED ON  
MAST ARM



R5-1

FORT COLLIER ROAD

ATWELL AVENUE

### 3. US Route 7 between Fort Collier Road and I-81 Ramp

Recommendation:

- Extended Eastbound Route 7 Left-Turn Lane
- Minor Street Right-Turn on Red Restrictions

Performance

- Increased Left-Turn Lane Capacity
- Improved Pedestrian Safety

Recommendation:

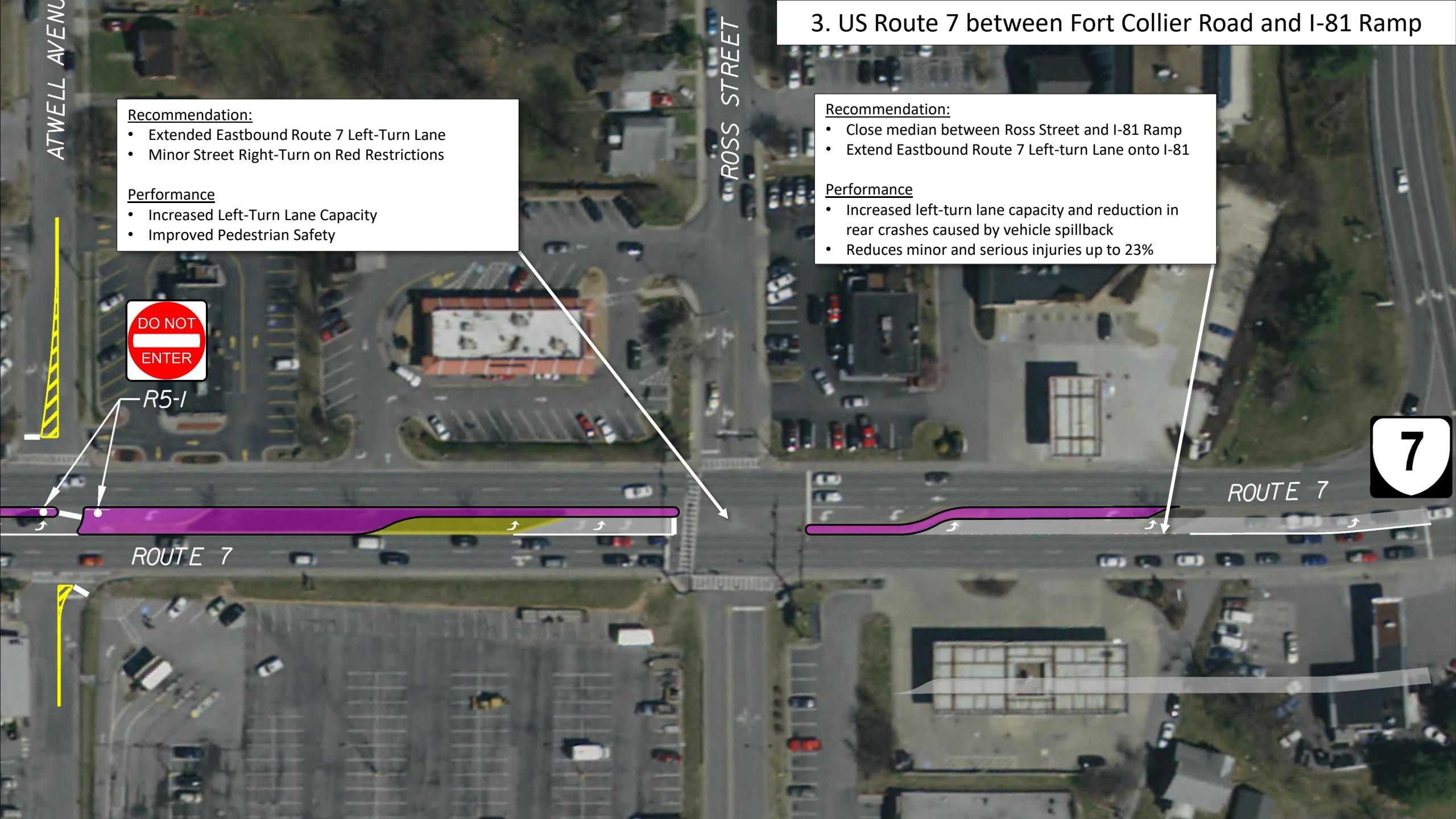
- Close median between Ross Street and I-81 Ramp
- Extend Eastbound Route 7 Left-turn Lane onto I-81

Performance

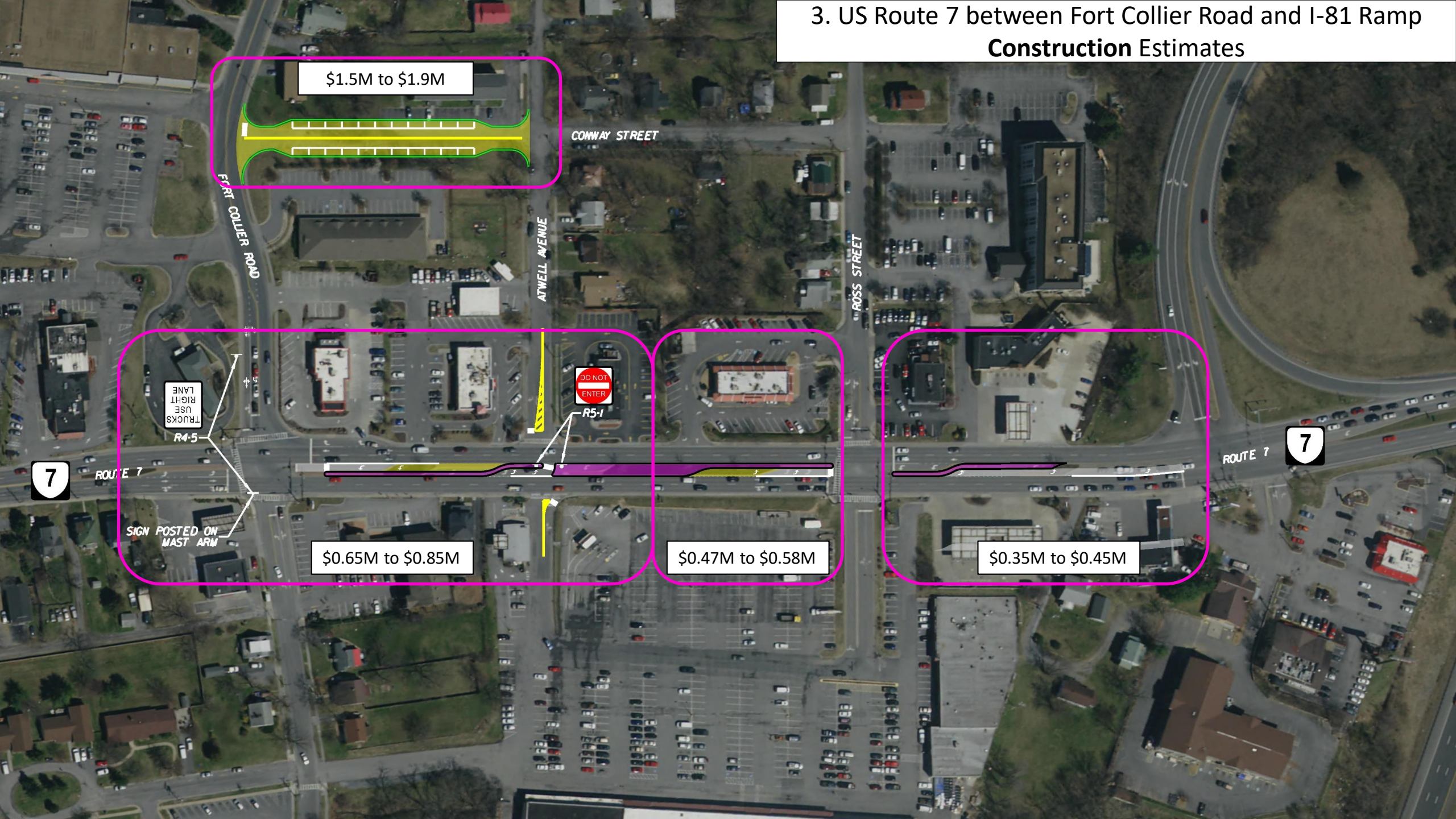
- Increased left-turn lane capacity and reduction in rear crashes caused by vehicle spillback
- Reduces minor and serious injuries up to 23%



R5-1



### 3. US Route 7 between Fort Collier Road and I-81 Ramp Construction Estimates



\$1.5M to \$1.9M

CONWAY STREET

FORT COLLIER ROAD

ATWELL AVENUE

ROSS STREET

TRUCKS USE  
RIGHT LANE  
R4-5

DO NOT  
ENTER  
R5-1

7

ROUTE 7

SIGN POSTED ON  
MAST ARM

\$0.65M to \$0.85M

\$0.47M to \$0.58M

\$0.35M to \$0.45M

ROUTE 7

7

## 4. Millbrook Drive and US Route 7

### Recommendation:

- Reconfigure intersection to Thru-Cut by removing minor approach through movements. Redirect Westbound Route 7 left-turning vehicles to the intersection of First Wood Drive and Route 7.

### Targeted Metrics

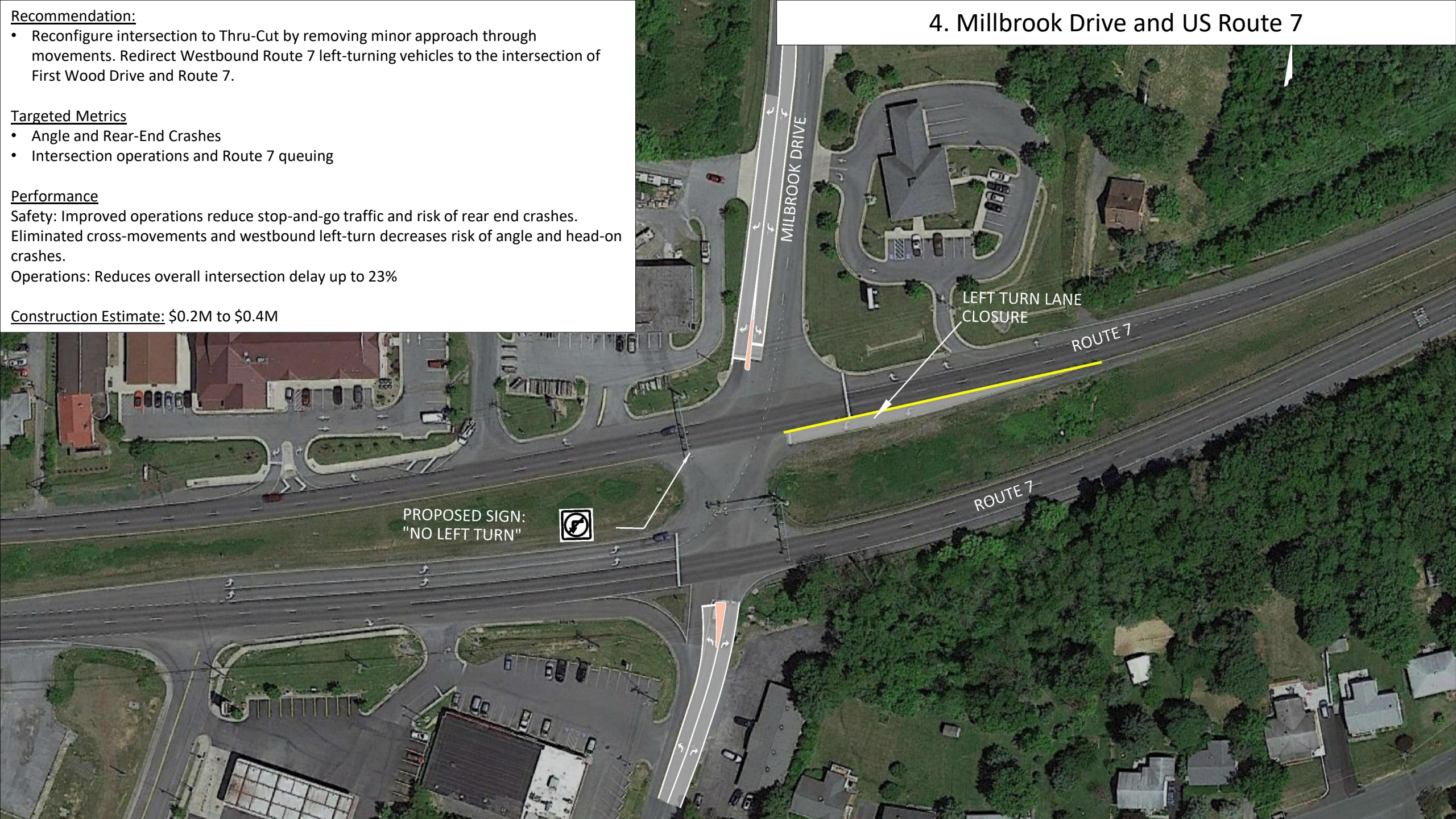
- Angle and Rear-End Crashes
- Intersection operations and Route 7 queuing

### Performance

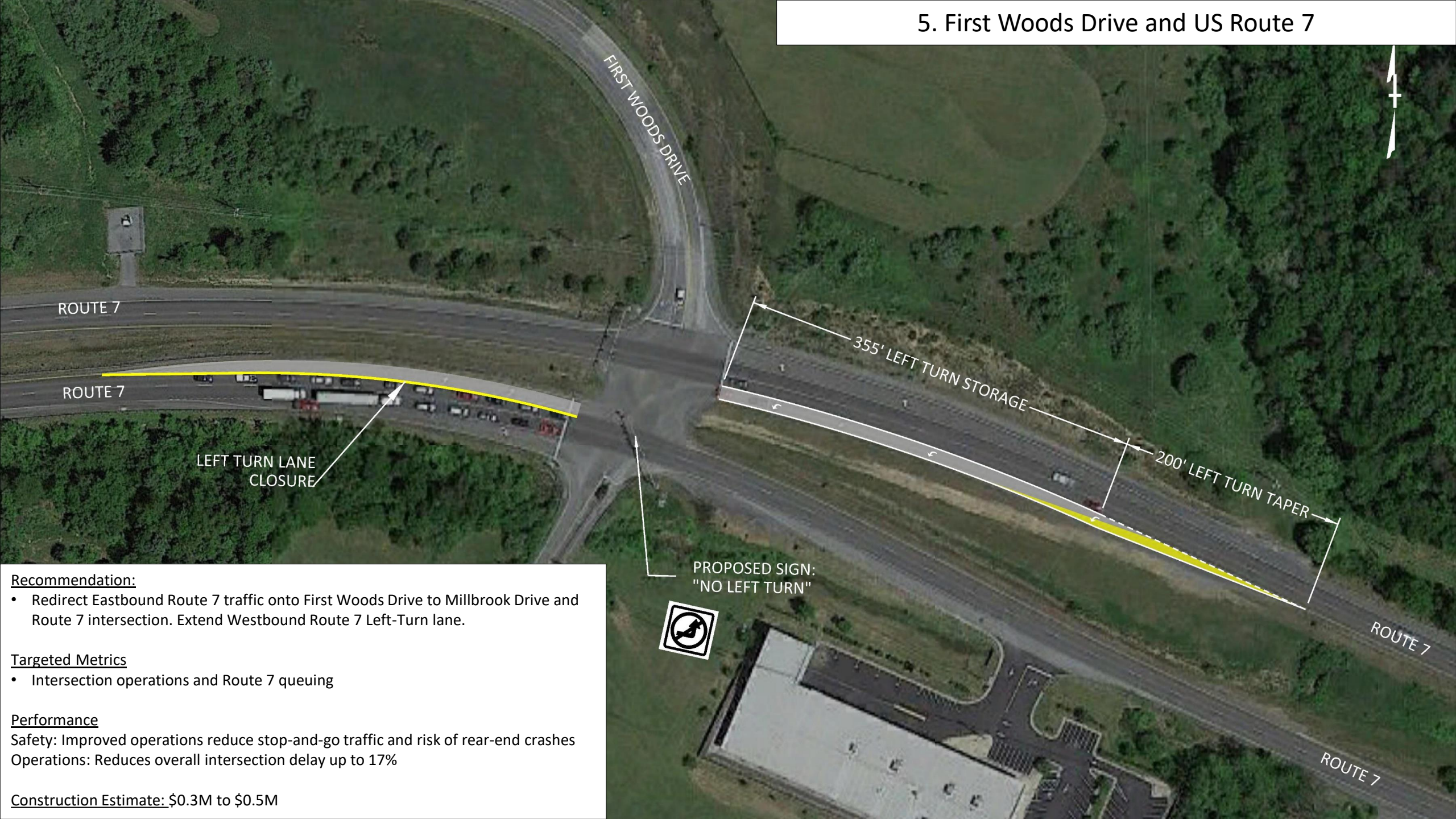
Safety: Improved operations reduce stop-and-go traffic and risk of rear end crashes. Eliminated cross-movements and westbound left-turn decreases risk of angle and head-on crashes.

Operations: Reduces overall intersection delay up to 23%

Construction Estimate: \$0.2M to \$0.4M



# 5. First Woods Drive and US Route 7



**Recommendation:**

- Redirect Eastbound Route 7 traffic onto First Woods Drive to Millbrook Drive and Route 7 intersection. Extend Westbound Route 7 Left-Turn lane.

**Targeted Metrics**

- Intersection operations and Route 7 queuing

**Performance**

Safety: Improved operations reduce stop-and-go traffic and risk of rear-end crashes  
Operations: Reduces overall intersection delay up to 17%

**Construction Estimate:** \$0.3M to \$0.5M

- **Public Input on Recommendations**
  - **Online survey**
- **Draft Study Report**



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