

ROUTE 33 (EAST MARKET STREET) CORRIDOR IMPROVEMENT STUDY

Update for HRMPO

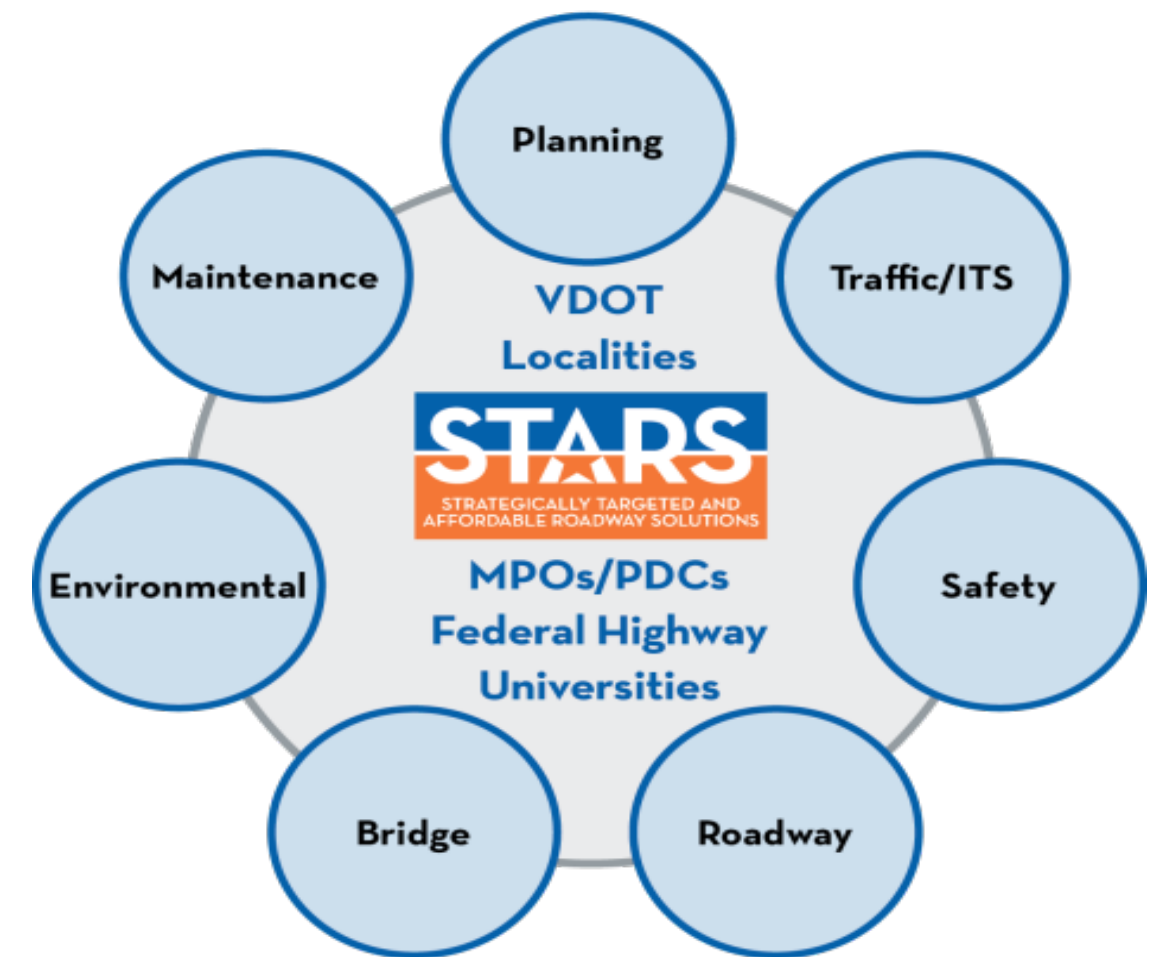
February 21, 2019



STARS PROGRAM GOALS

- **STARS = Strategically Targeted and Affordable Roadway Solutions**
- **Develop alternatives to relieve congestion and solve critical safety challenges for SYIP \$\$ requests**
- **Data driven approach**

STARS Project Stakeholders



ROUTE 33 WORKING GROUP

VDOT
Planning
Residency
Traffic Engineering & Operations
Location & Design
Transportation Mobility & Planning

Local & Regional Stakeholders
City of Harrisonburg Public Works
City of Harrisonburg Transit
HRMPO
Rockingham County Community Development

Consultant Team
Kimley-Horn & Associates
Jacobs/CH2M

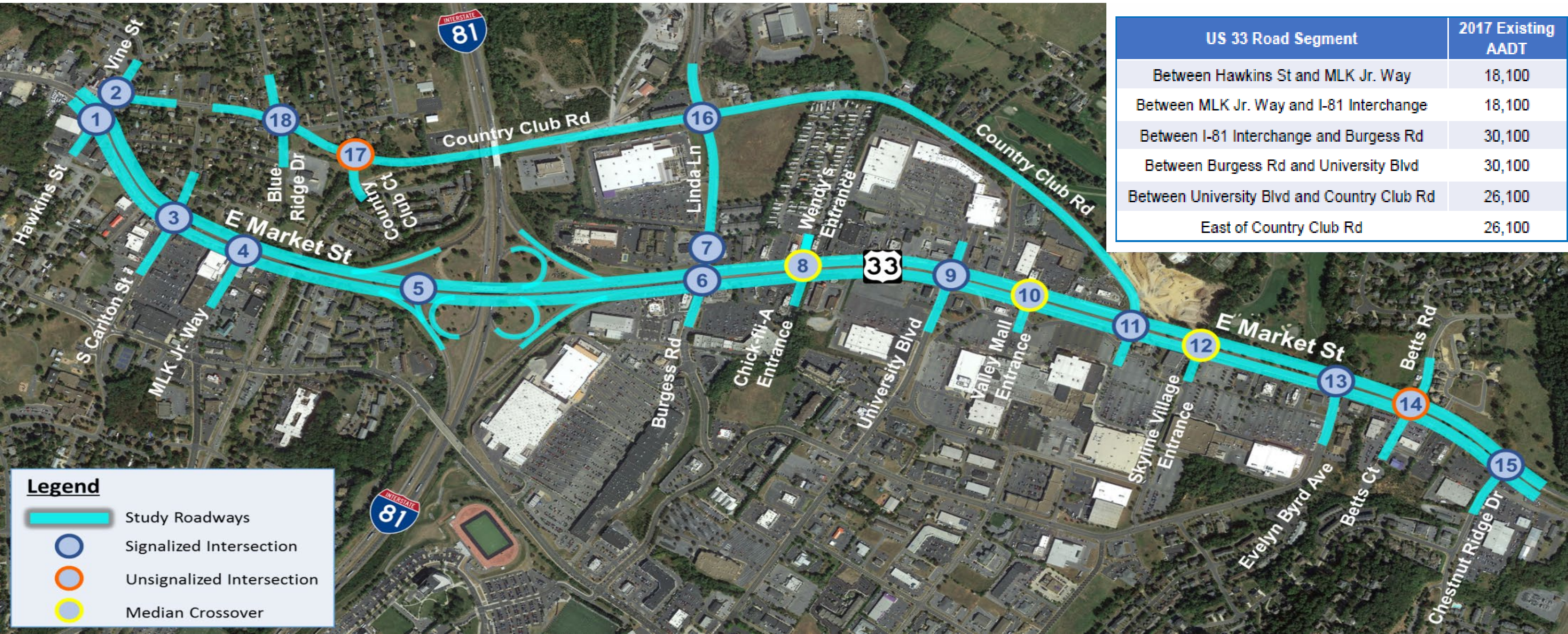
BACKGROUND - ROUTE 33 STUDY

■ **Project Purpose**

- Study operational and safety conditions on Route 33, East Market Street in Harrisonburg
- Evaluate planned Martin Luther King, Jr. Way extension from Route 33 to Country Club Road
- Identify alternatives to improve safety and operations

STUDY AREA

- 2.1-mile segment of Route 33
- ~30 commercial entrances/mile with 9 signals
- ~150 acres existing commercial development directly fronting Route 33



US 33 Road Segment	2017 Existing AADT
Between Hawkins St and MLK Jr. Way	18,100
Between MLK Jr. Way and I-81 Interchange	18,100
Between I-81 Interchange and Burgess Rd	30,100
Between Burgess Rd and University Blvd	30,100
Between University Blvd and Country Club Rd	26,100
East of Country Club Rd	26,100

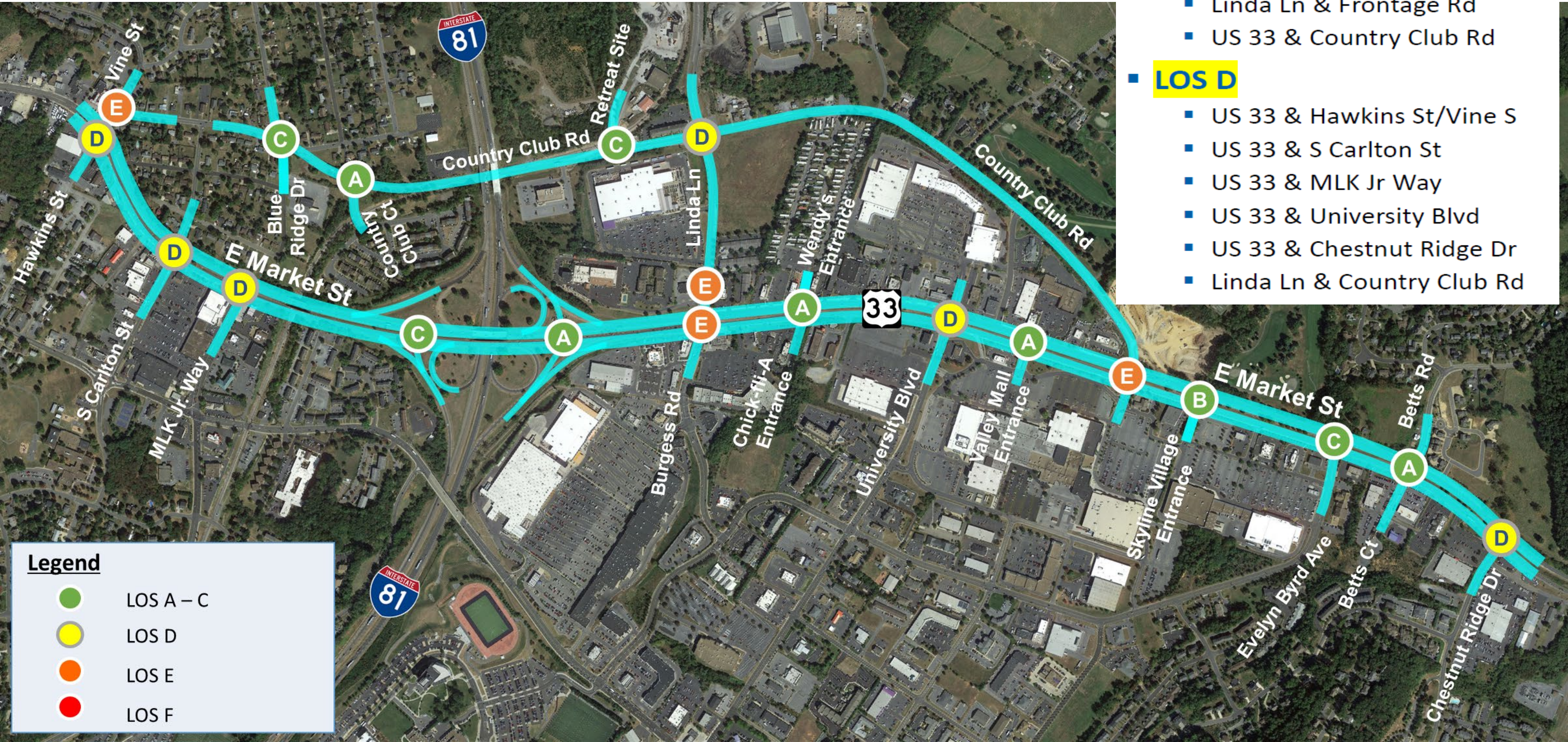
No BUILD CONDITIONS (2025) PM PEAK HOUR

LOS E

- Vine St & Country Club Rd/Sheetz
- US 33 & Burgess Rd/ Linda Ln
- Linda Ln & Frontage Rd
- US 33 & Country Club Rd

LOS D

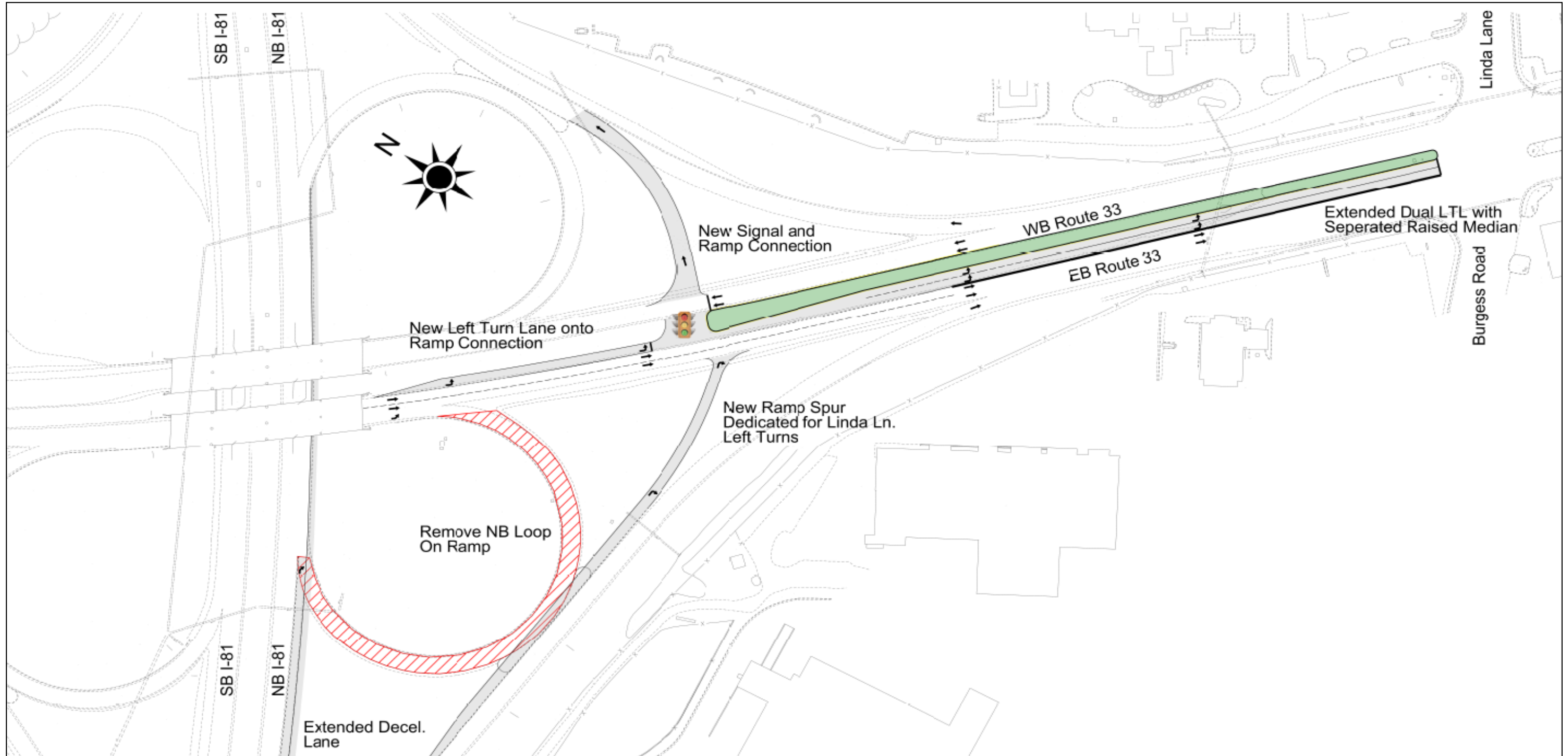
- US 33 & Hawkins St/Vine S
- US 33 & S Carlton St
- US 33 & MLK Jr Way
- US 33 & University Blvd
- US 33 & Chestnut Ridge Dr
- Linda Ln & Country Club Rd



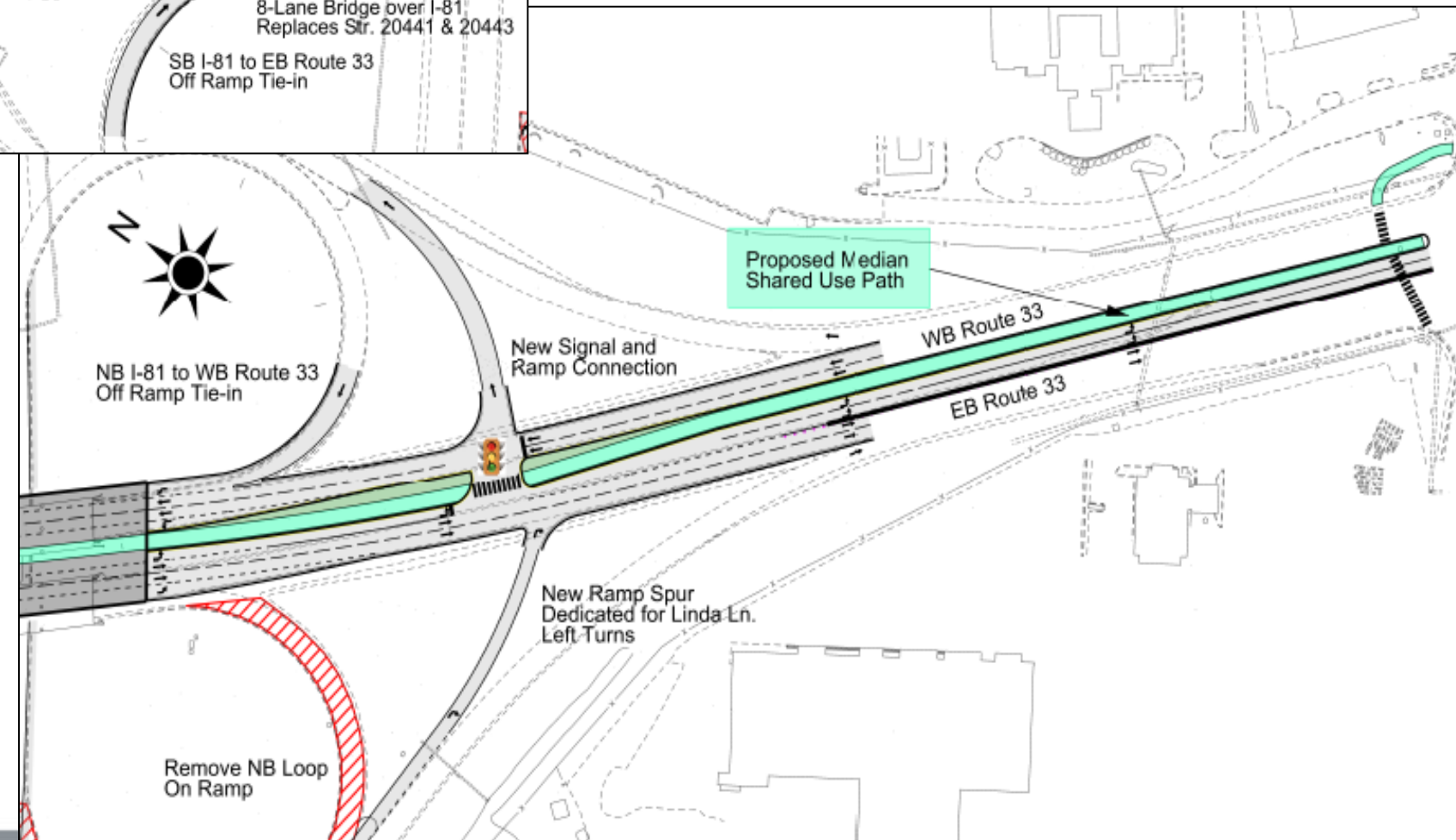
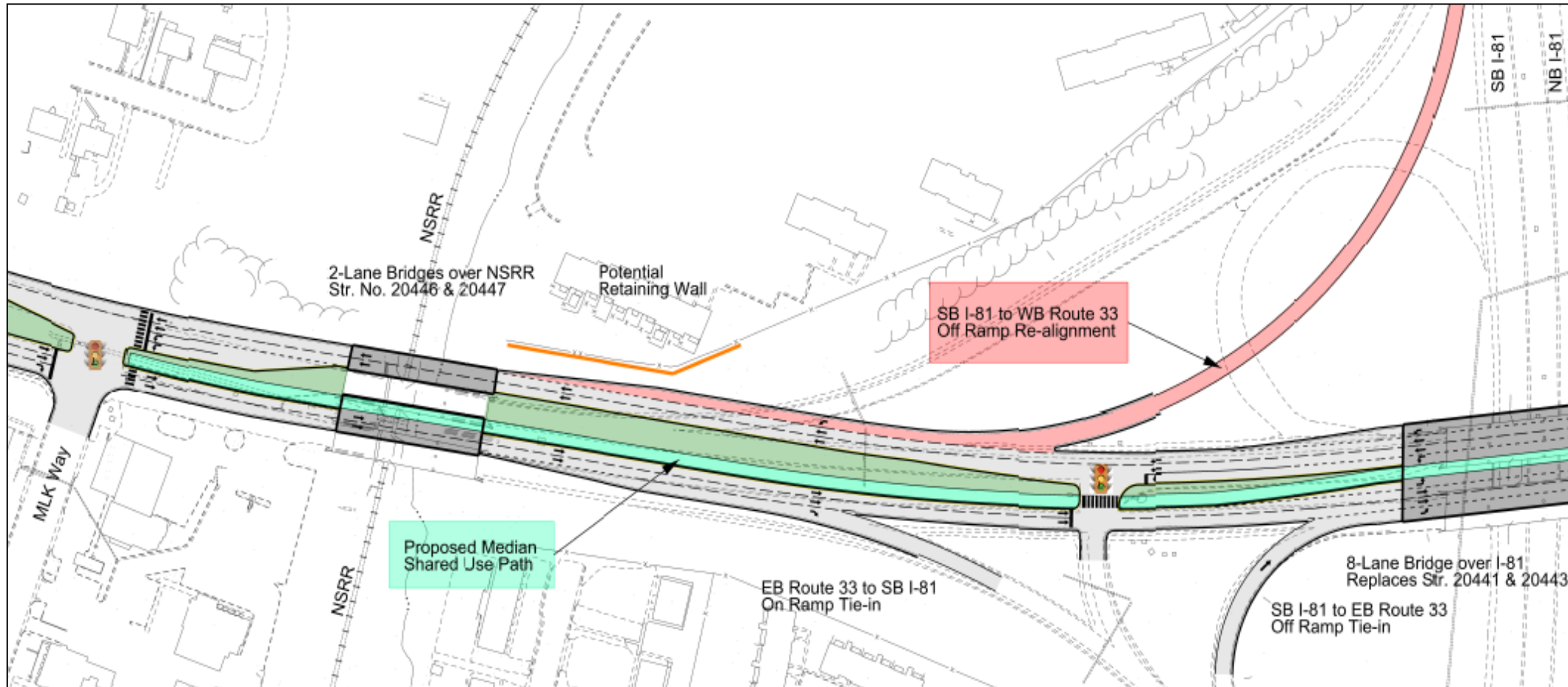
Legend

- LOS A – C
- LOS D
- LOS E
- LOS F

SMART SCALE ROUND 2 FUNDED PROJECT

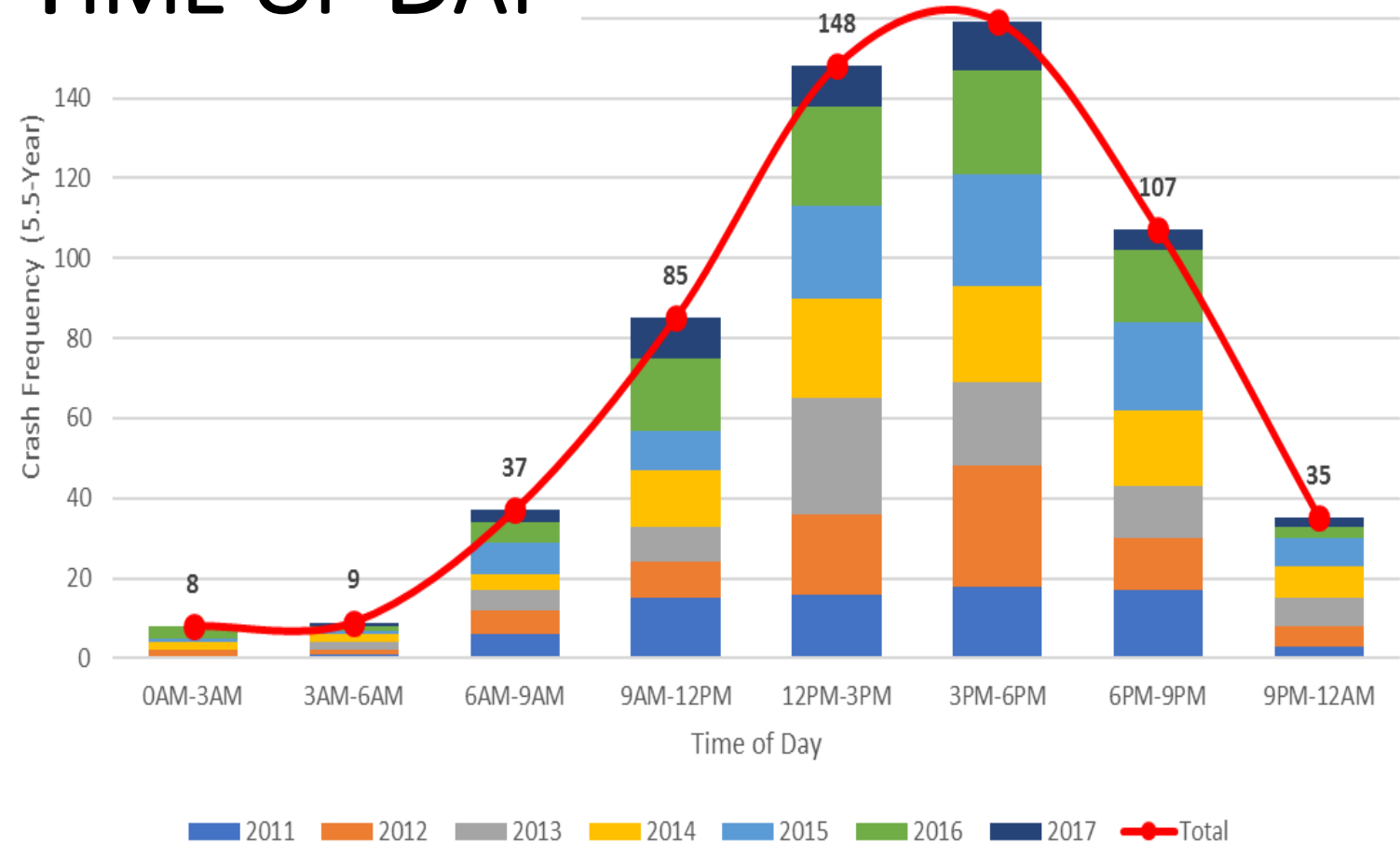


SMART SCALE ROUND 3 APPLICATION

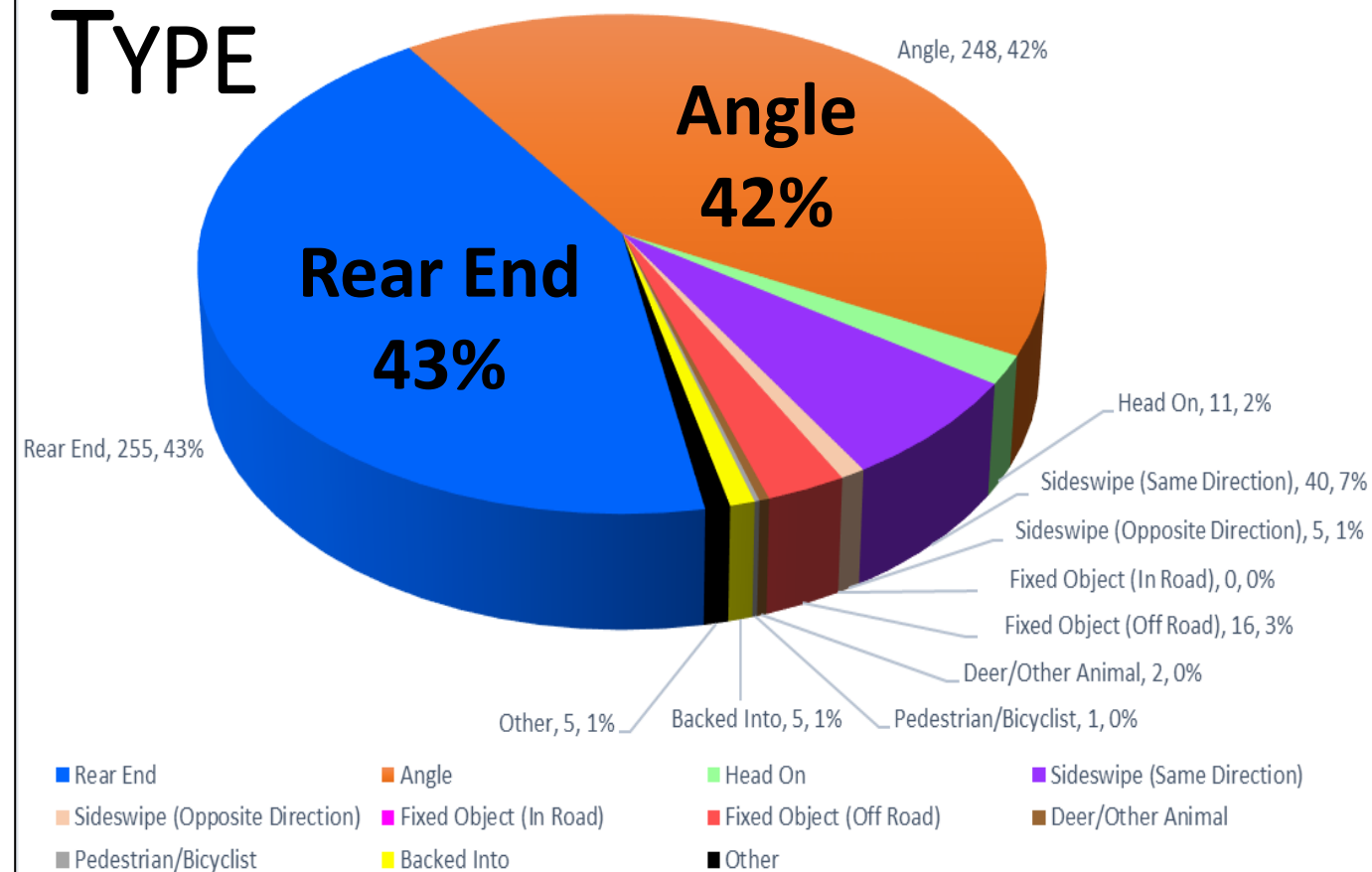


CRASH PATTERN ANALYSIS

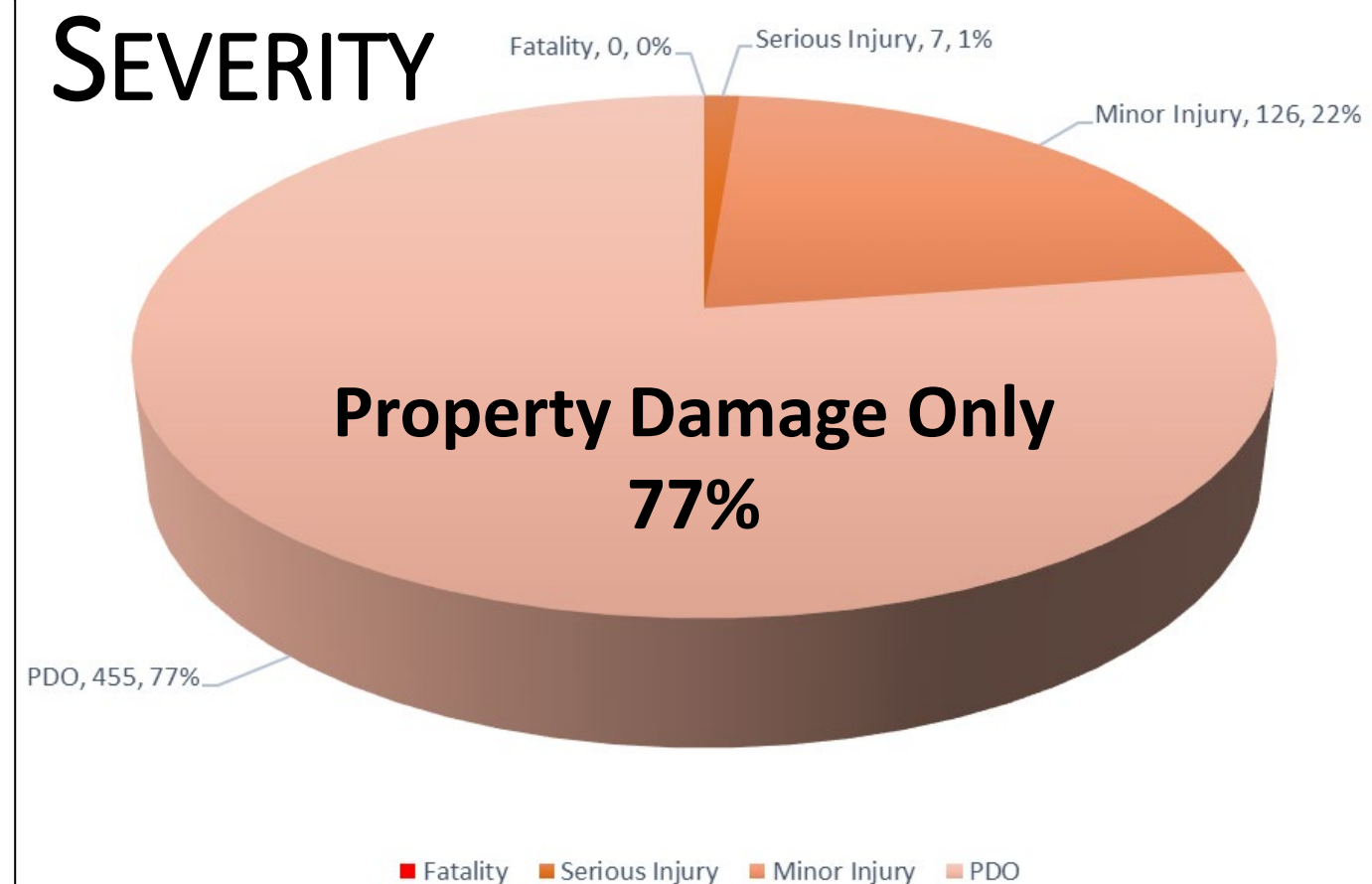
TIME OF DAY



TYPE



SEVERITY

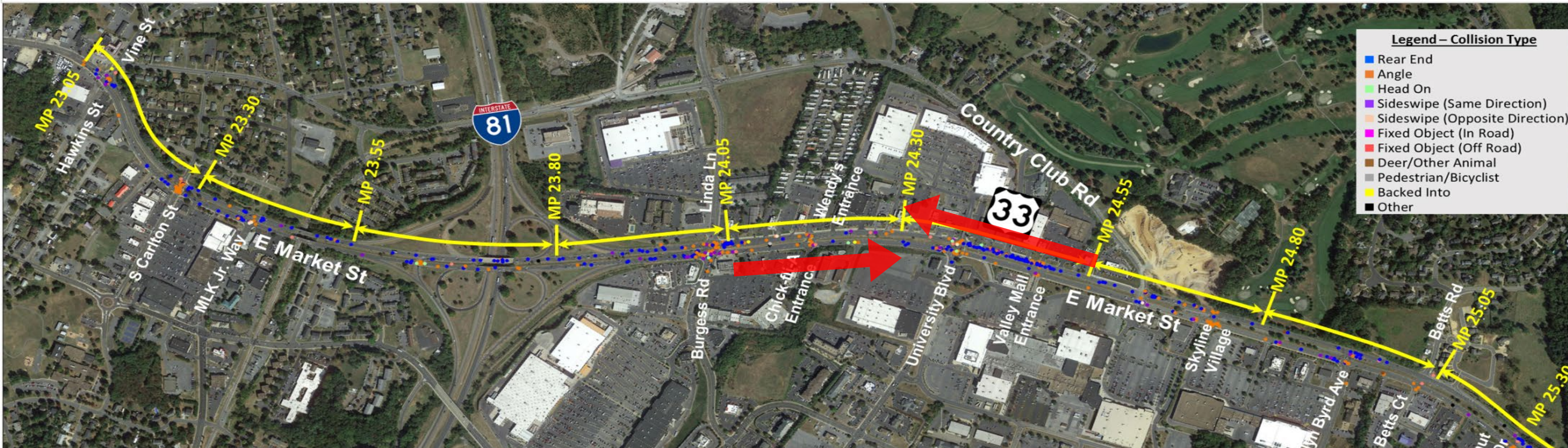
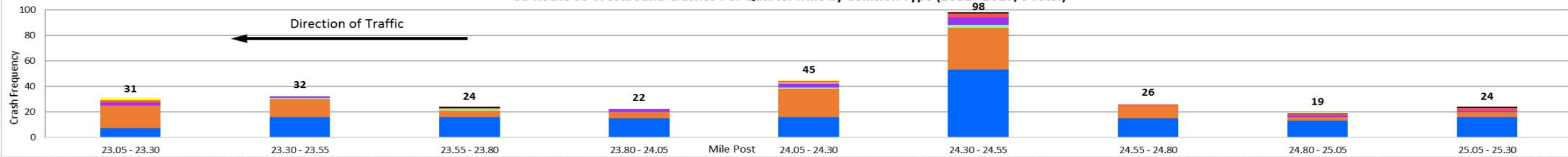


INTERSECTION CRASH TOTALS (2011 – MID 2017)

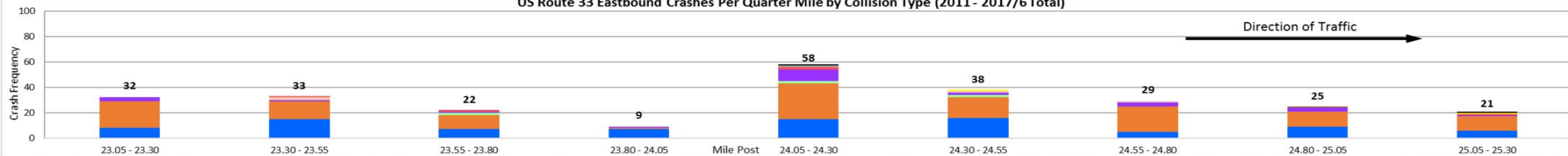


SEGMENT CRASH FREQUENCY (2011 – MID 2017)

US Route 33 Westbound Crashes Per Quarter Mile by Collision Type (2011 - 2017/6 Total)



US Route 33 Eastbound Crashes Per Quarter Mile by Collision Type (2011 - 2017/6 Total)



ALTERNATIVES DEVELOPMENT

#	Intersection	Build Alternative		
		1	2	3
1	Hawkins/Vine Streets	Remove traffic signal at Vine St & Country Club Rd/Sheetz Extend LT restriction on Vine St from US 33 to Chamber of Commerce entrance	Remove traffic signal at Vine St & Country Club Rd/Sheetz Sheetz entrance remains full access, no change to LT restriction	Remove traffic signal at Vine St & Country Club Rd/Sheetz Extend LT restriction on Vine St from US 33 to Chamber of Commerce entrance
2	Vine St & Country Club Rd	Right In-Right Out on Country Club Rd	Right In-Right Out on Country Club Rd	Right In-Right Out on Country Club Rd
3	MLK Jr Way and Extension	MLK Extension from US 33 to Country Club Rd Park and Ride Transit Center	MLK Extension from US 33 to Country Club Rd Park and Ride Transit Center	MLK Extension from US 33 to Country Club Rd Park and Ride Transit Center
4	MLK Jr Way Extension at Country Club Rd	Mini-Roundabout	Modern Roundabout	Traffic Signal
5	Burgess Rd/Linda Ln	Median on Burgess Rd Close frontage road on Linda Ln Create new full access entrance to Linda Ln through private parcels to Lowe's	Median on Burgess Rd Right In-Right Out on Linda Ln frontage road	Median on Burgess Rd
6	University Blvd	Partial RCUT, restricting side-street thru movement (University Blvd-Kroger LT signal phase; thru/RT diverted to RT only)	Extend NB LT lane on University Blvd to 500 ft	Extend NB LT lane on University Blvd to 500 ft
7	Valley Mall Crossover	Directional Median	Directional Median	Directional Median
8	Country Club Rd	Partial RCUT, restricting side-street thru movement (Country Club-Mall Entrance LT signal phase; thru/RT diverted to RT only)	Partial RCUT, restricting side-street thru movement (Country Club-Mall Entrance LT signal phase; thru/RT diverted to RT only)	
9	Skyline Village Crossover	Directional Median with EB LT lane	Directional Median with EB LT lane	
10	Evelyn Byrd Ave	Continuous Green-T	Continuous Green-T	Continuous Green-T
11	Betts Ct/Betts Rd	Directional Median	Directional Median	Directional Median
12	Chestnut Ridge Dr	Continuous Green-T	Continuous Green-T	Continuous Green-T

Improvement Summary Sheet - Preferred Alternative

1 - Vine Street: Right-In Right-Out to Replace Traffic Signal at Country Club Road

Project Benefits

- Reduces queue on Vine St from ~600 ft to ~300 ft
- Reduces delay by 65% overall
- Improves from LOS E to A at Country Club Rd

Planning Level Cost Estimate

Phase	Six-Year Improvement Program
Preliminary Engineering	\$ 95,000
ROW and Utility Relocation	\$ 0
Construction	\$ 475,000
Total Cost =	\$ 570,000

Note 1: Cost estimates reported in 2018 dollars

Note 2: Could necessitate funding for construction easements

Project Schedule

Months				Total	Preliminary Engineering
6	12	8	26		
					Construction

Vine Street Improvements: US Route 33 and Country Club Road Intersection



This project not to be implemented until after extending MLK Jr. Way

Improvement Summary Sheet - Preferred Alternative

2 Martin Luther King Jr. Way: Extension

Project Benefits

- Reduces traffic on Route 33 through I-81 interchange and at Linda Ln
- Provides Transit Center and Park & Ride

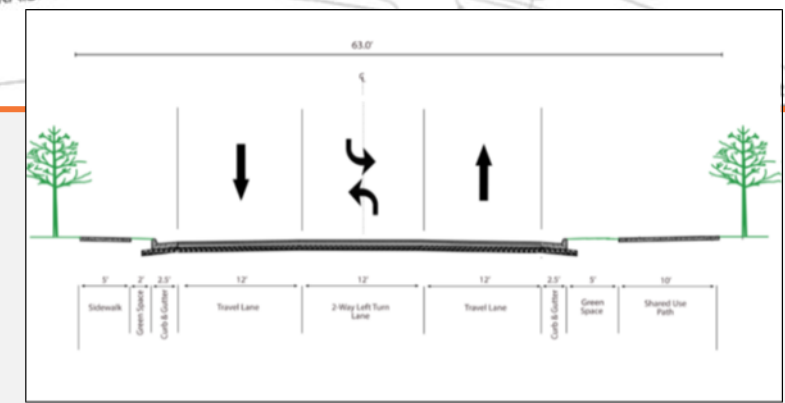
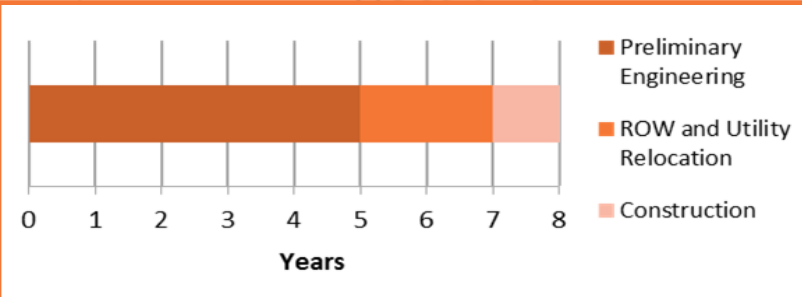
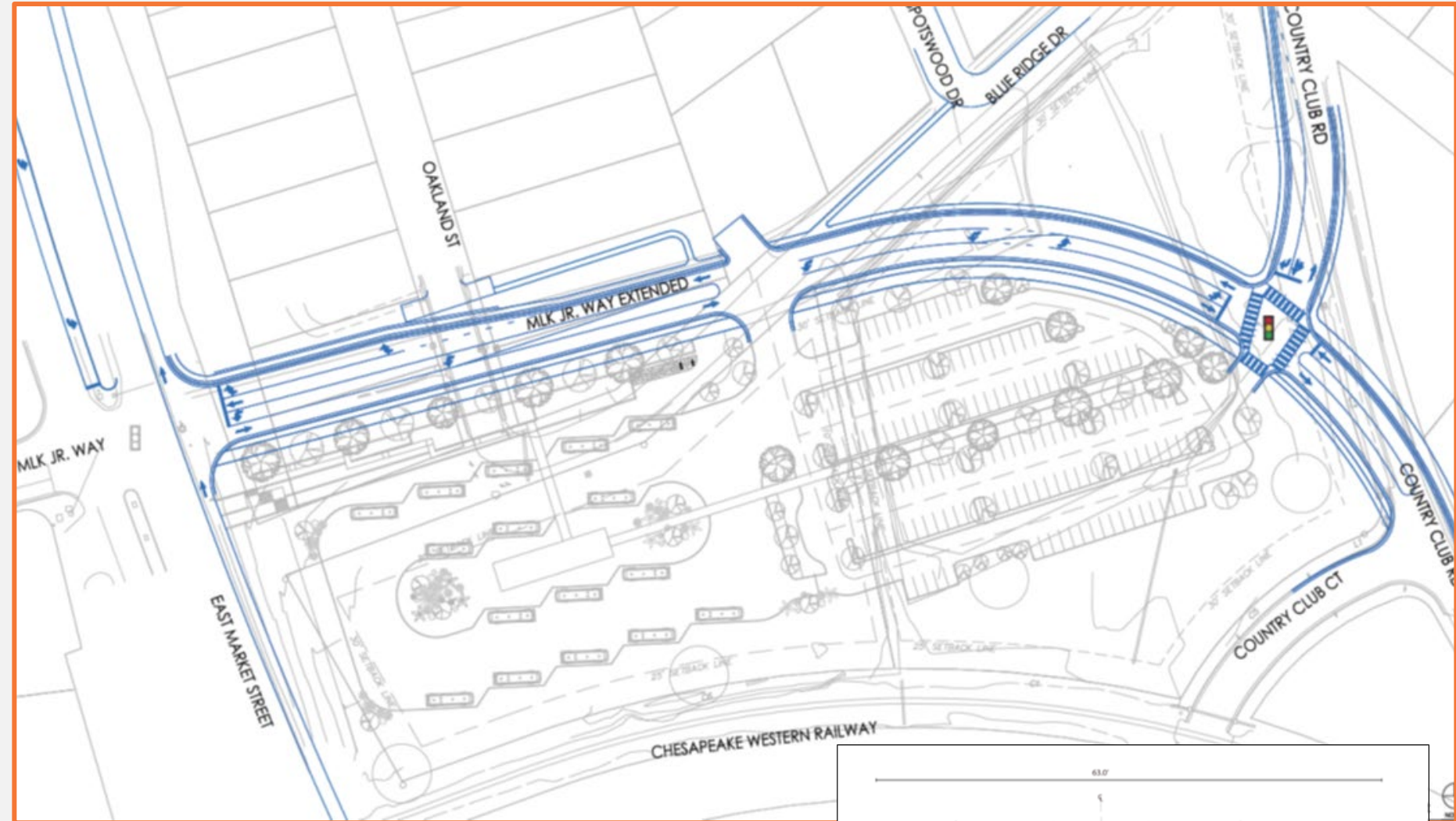
Planning Level Cost Estimate

Phase	Six Year Improvement Program
Preliminary Engineering	\$ 1,546,000
ROW and Utility Relocation	\$ 1,600,000
Construction	\$ 12,889,000
Total Cost =	\$ 16,035,000

Source: Harrisonburg Downtown Transit Center, Conceptual Design Report, March 14, 2018 (Estimate by VHB using PCES)

Note: Cost estimates reported in 2018 dollars

Preliminary Concept Design



Typical Section of Martin Luther King Jr. Way Extended

Source: Harrisonburg Downtown Transit Center, Conceptual Design Report, March 14, 2018

Improvement Summary Sheet - Preferred Alternative

3 - Burgess Road/Linda Lane: Burgess Rd Median and Removal of Traffic Signal at Linda Ln/Frontage Rd

Project Benefits

- 48% delay reduction overall
- Improves from LOS E - E to C - D
- Reduces conflict points along Burgess Road

Planning Level Cost Estimate

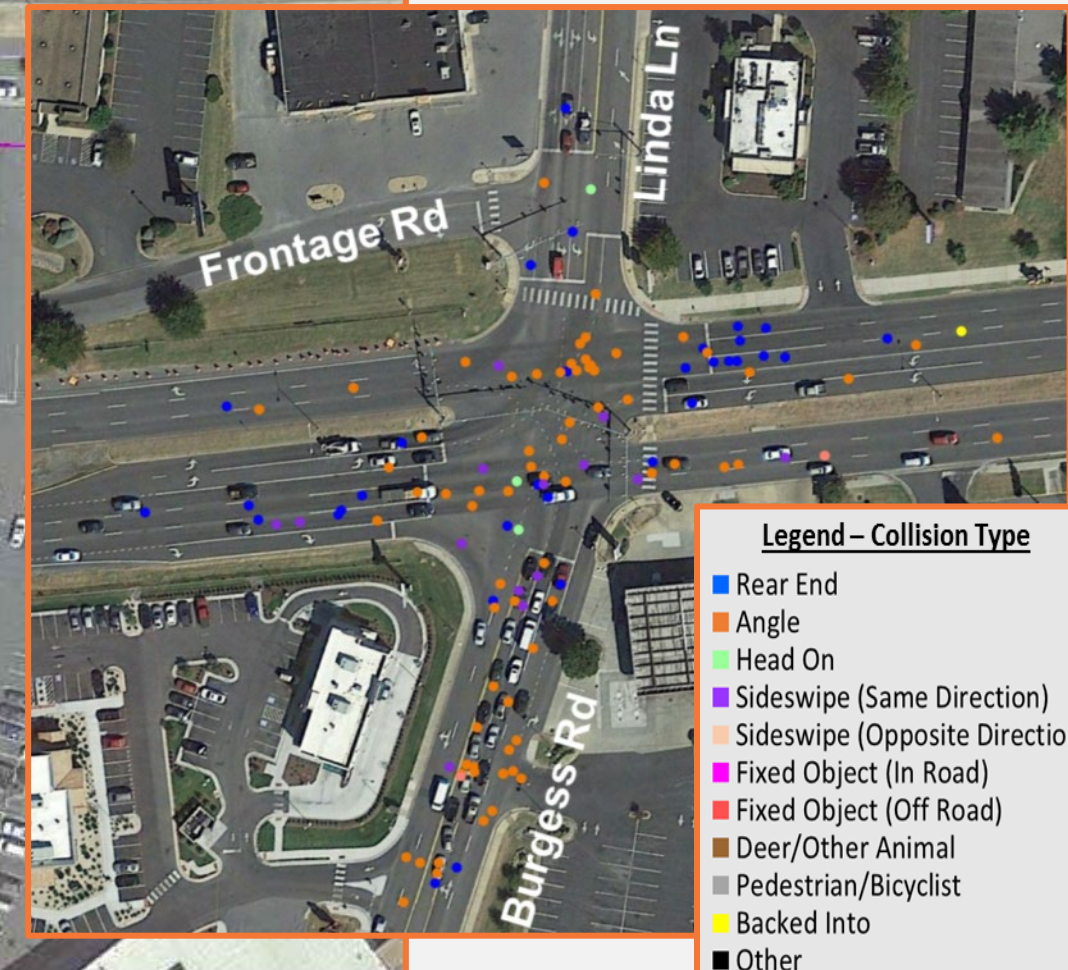
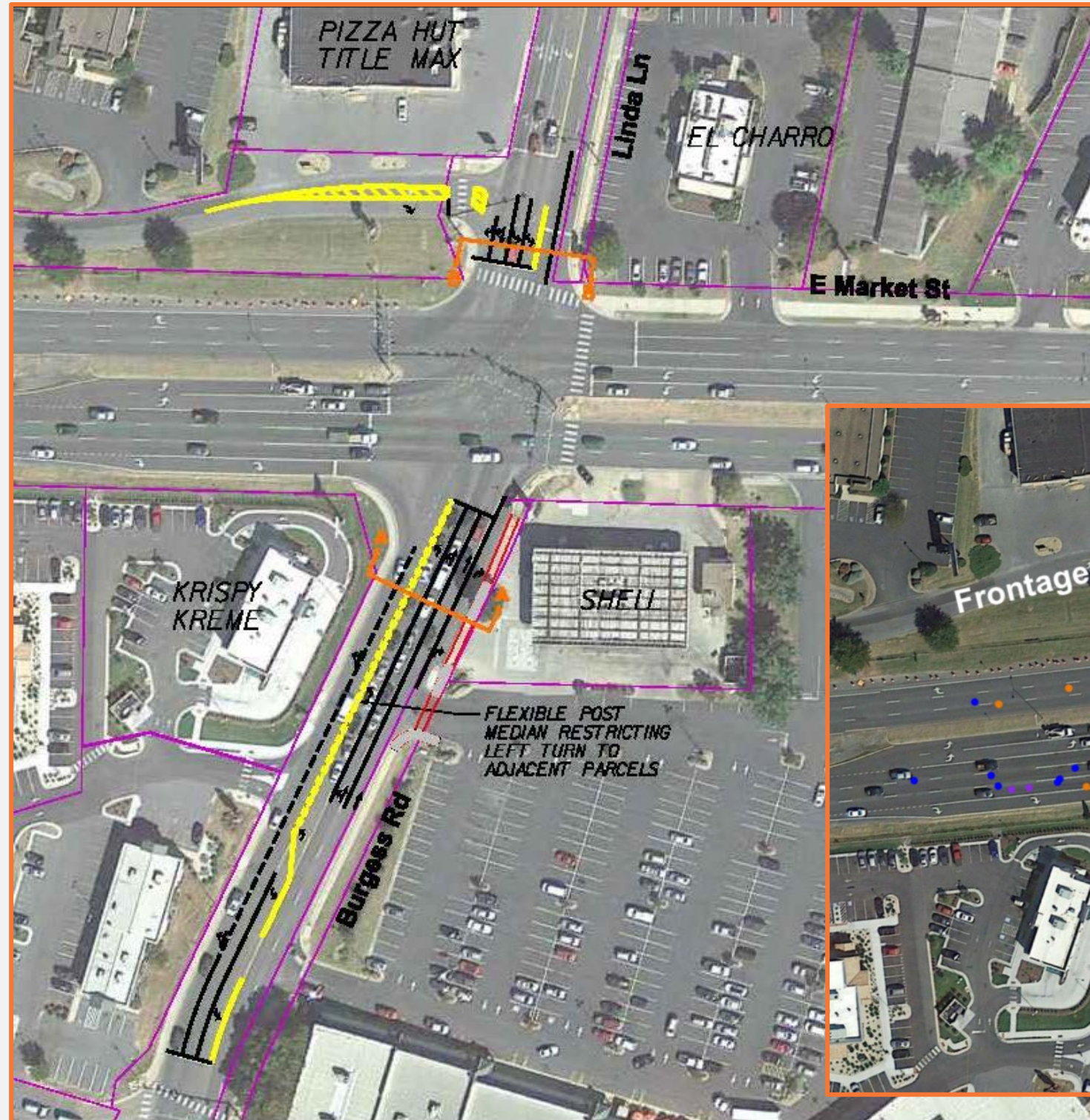
Phase	Six-Year Improvement Program
Preliminary Engineering	\$ 103,000
ROW & Utilities	\$ 0
Construction	\$ 517,500
Total Cost =	\$ 620,500

Note 1: Cost estimates reported in 2018 dollars
 Note 2: Could necessitate funding for CN easements

Project Schedule

Months				
6	12	10	Total	
				Preliminary Engineering
				ROW and Utility Relocation
				Construction

Burgess Road/Linda Lane Intersection Improvements



Legend - Collision Type

- Blue: Rear End
- Orange: Angle
- Green: Head On
- Purple: Sideswipe (Same Direction)
- Light Blue: Sideswipe (Opposite Direction)
- Pink: Fixed Object (In Road)
- Red: Fixed Object (Off Road)
- Brown: Deer/Other Animal
- Grey: Pedestrian/Bicyclist
- Yellow: Backed Into
- Black: Other

Improvement Summary Sheet - Preferred Alternative

4 - University Boulevard: Extension of Northbound Left-Turn Lanes

Project Description

- Extension of NB left-turn lanes on University Boulevard to 500'
- NB left-turn PM peak hour movement is 669 vehicles per hour

Planning Level Cost Estimate

Phase	Six-Year Improvement Program
Preliminary Engineering	\$ 8,000
ROW and Utility Relocation	\$ 0
Construction	\$ 220,000
Total Cost =	\$ 228,000

Note: Cost estimates reported in 2018 dollars; assumes mill & repave

Project Schedule

Months				
			Total	
4	4	4	12	
				Preliminary Engineering
				ROW and Utility Relocation
				Construction

University Boulevard Improvements



Improvement Summary Sheet - Preferred Alternative

5 - Valley Mall Crossover: Directional Median

Project Benefits

- Reduces the number of crossing conflict points on Route 33
- Removes left-turn traffic from side streets
- Retains access from Route 33 into retail areas on both sides of corridor

Planning Level Cost Estimate

Phase	Six-Year Improvement Program
Preliminary Engineering	\$ 22,000
ROW and Utility Relocation	\$0
Construction	\$ 111,000
Total Cost =	\$ 133,000

Note 1: Cost estimates reported in 2018 dollars

Note 2: Could necessitate funding for construction easements

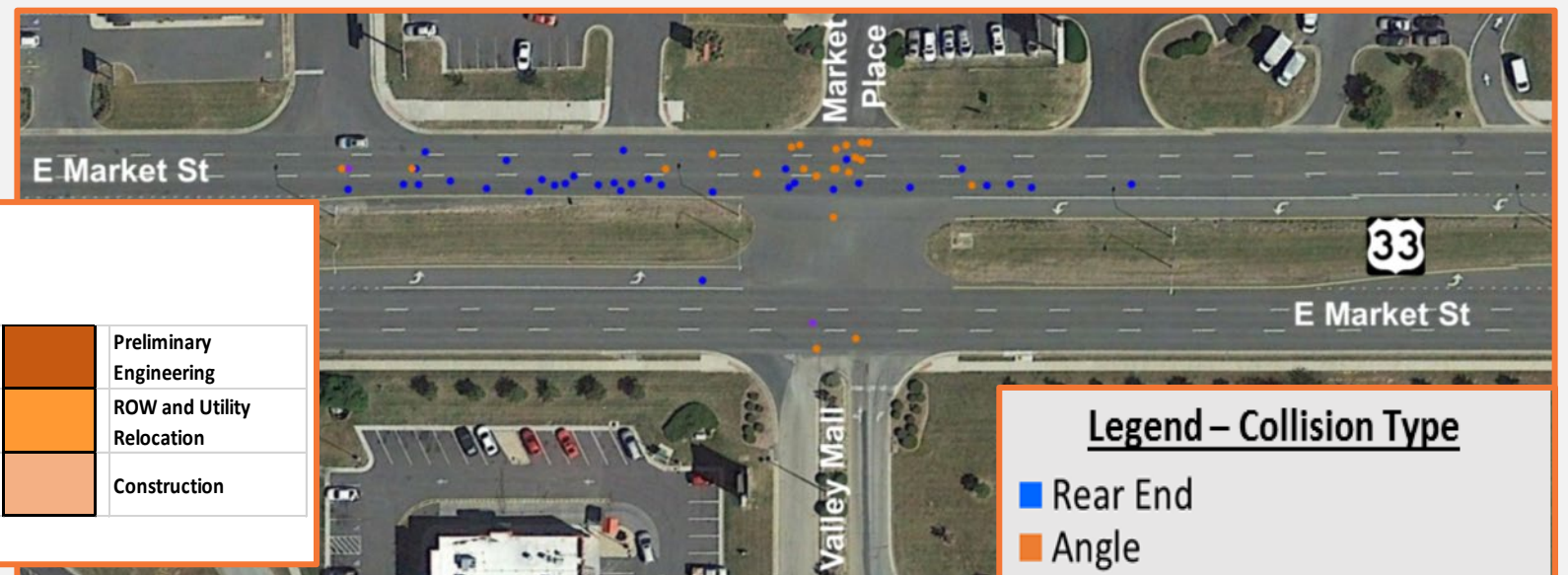
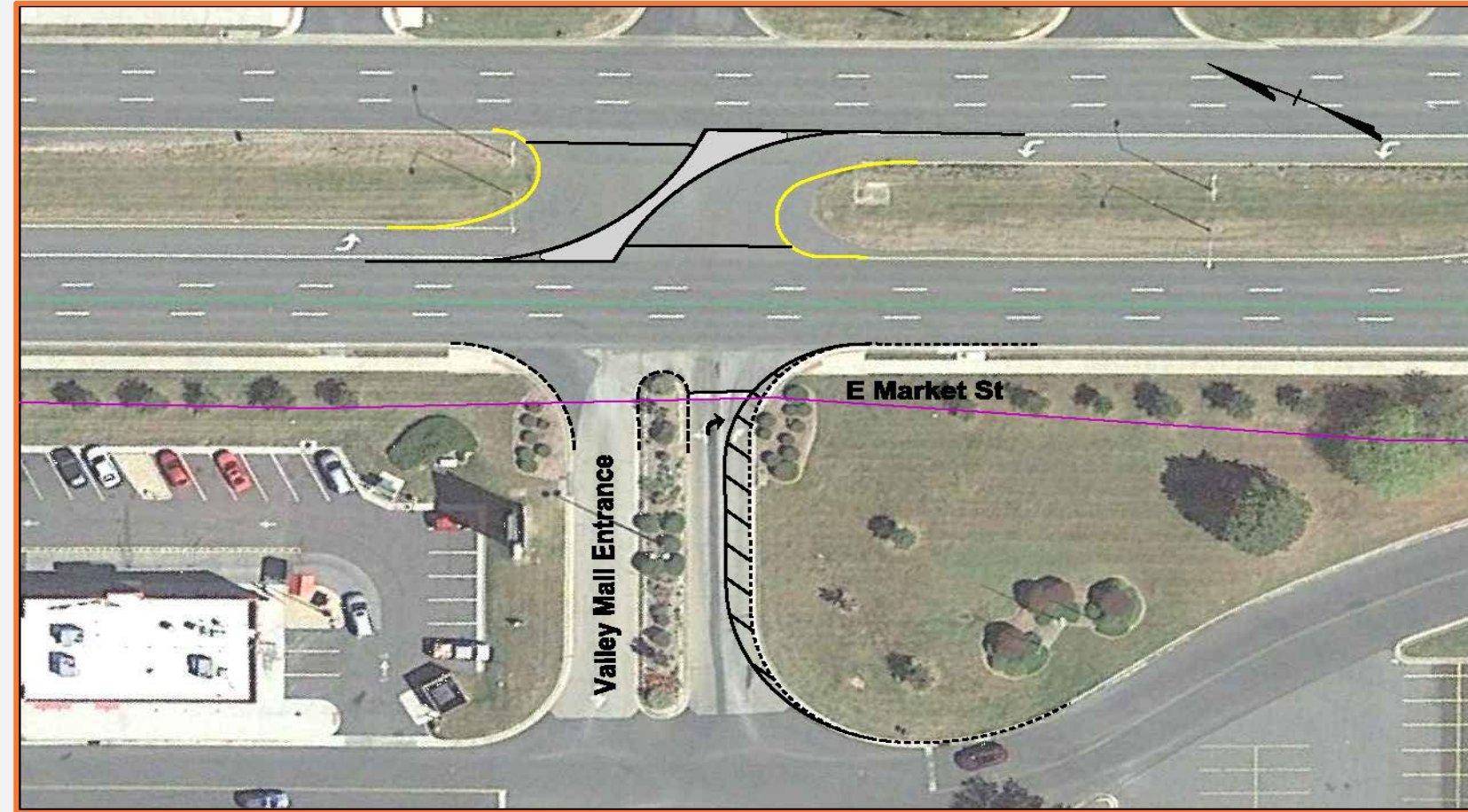


US Route 33 at Valley Mall Entrance

Project Schedule

Months				Total	Activity
6	12	8	26		
					Preliminary Engineering
					ROW and Utility Relocation
					Construction

Valley Mall Crossover Improvements



Legend – Collision Type

- Rear End
- Angle

Improvement Summary Sheet - Preferred Alternative

6 - Skyline Village Crossover: Directional Median

Project Benefits

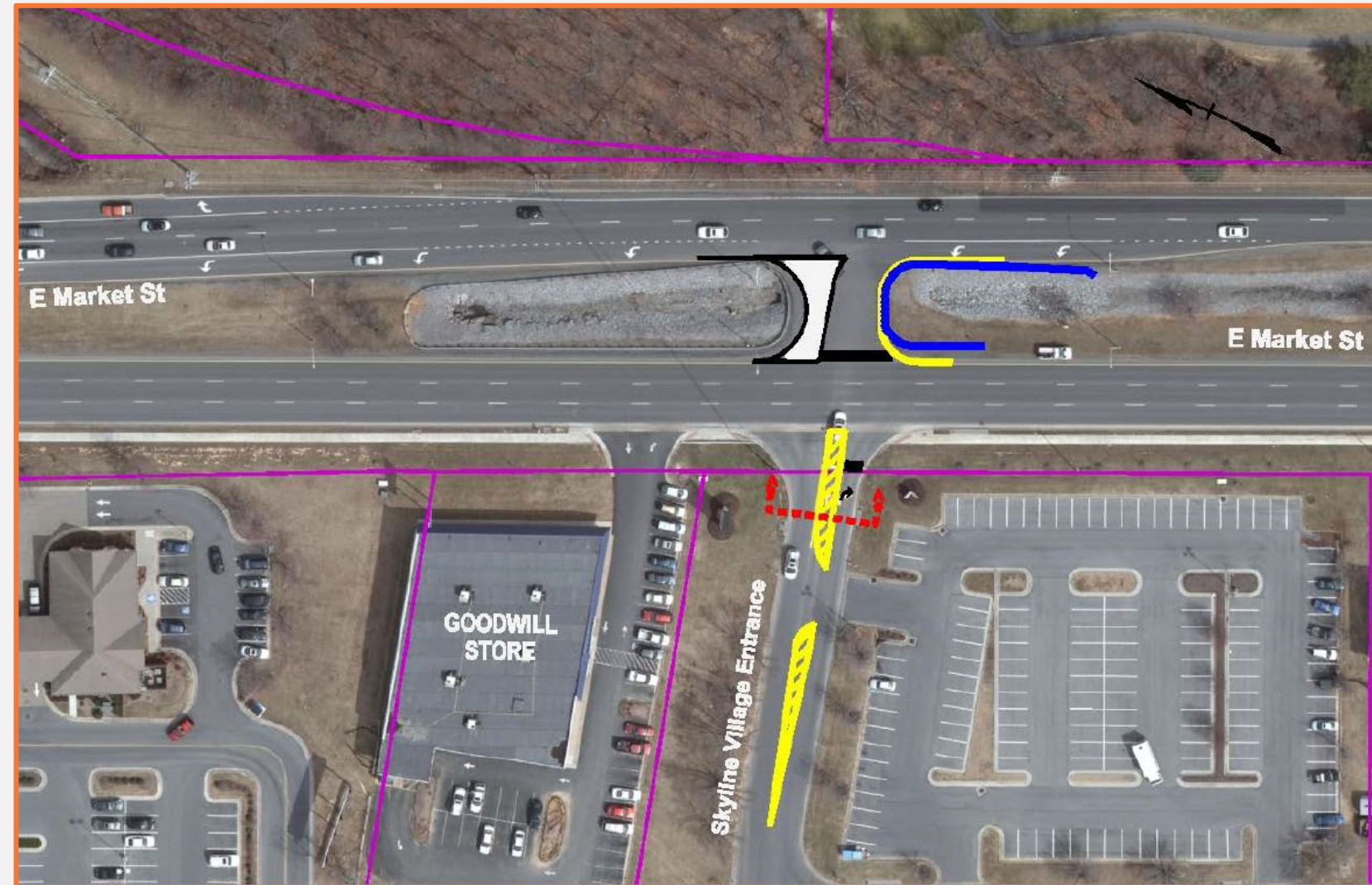
- Reduces the number of crossing conflict points on Route 33
- Removes left-turn traffic from side streets
- Retains access from Route 33 into retail areas

Planning Level Cost Estimate

Phase	Six-Year Improvement Program
Preliminary Engineering	\$ 39,000
ROW and Utility Relocation	\$0
Construction	\$ 188,000
Total Cost =	\$ 227,000

Note: Cost estimates reported in 2018 dollars

Skyline Village Crossover Improvements

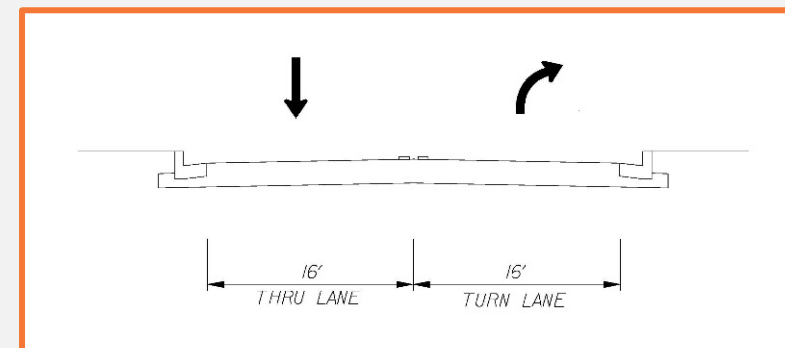


Project Schedule

Months				
			Total	Preliminary Engineering
6	12	8	26	ROW and Utility Relocation
				Construction



US Route 33 at Skyline Village Crossover



Typical Section A-A: SKYLINE VILLAGE ENTRANCE

Improvement Summary Sheet - Preferred Alternative

7 - Evelyn Byrd Avenue: Continuous Green-T (CGT) Intersection

Project Benefits

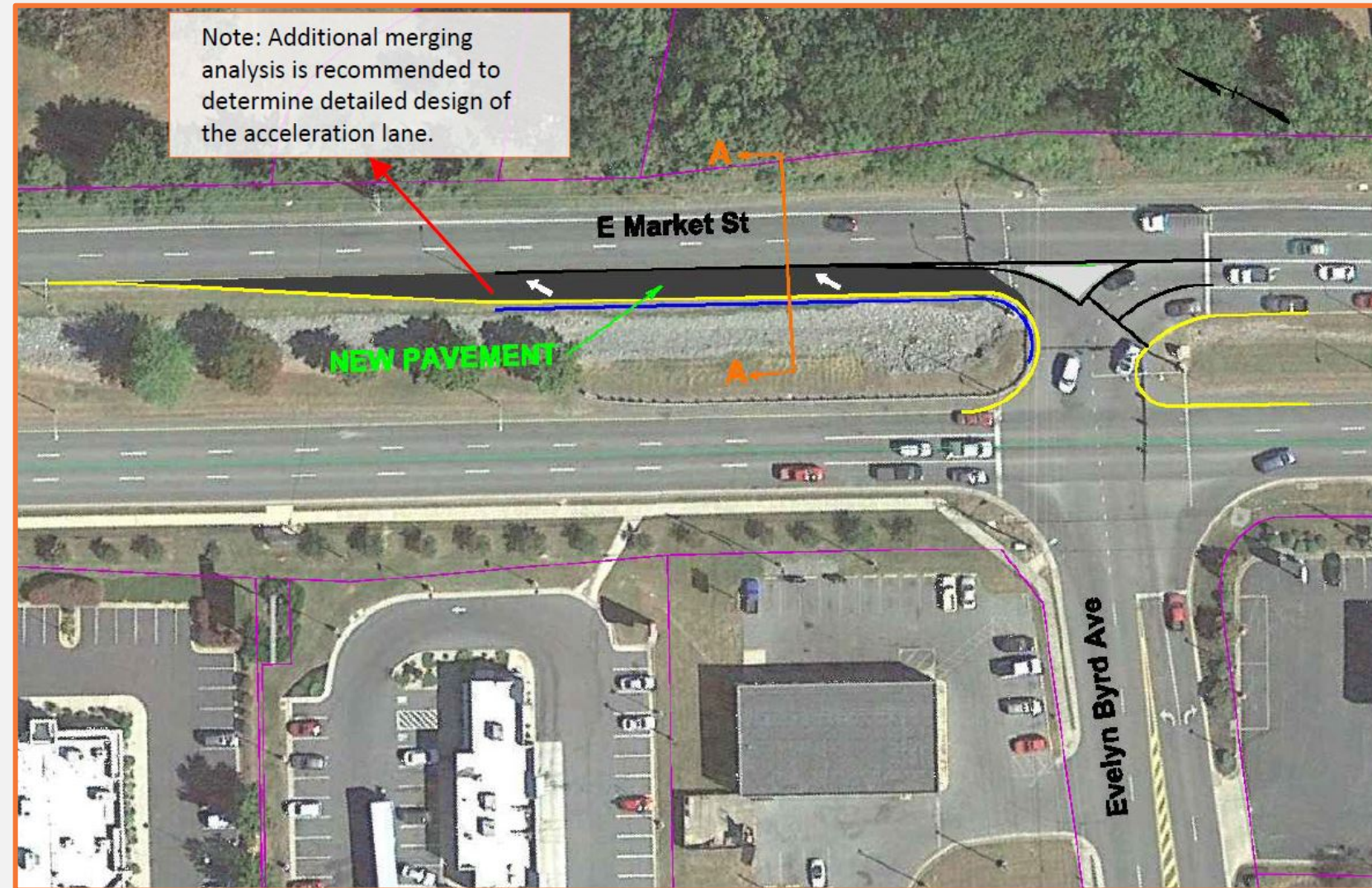
- **Contributes toward WB travel time improvement**
- Improves traffic signal coordination
- Reduces potential for angle crashes

Planning Level Cost Estimate

Phase	Six Year Improvement Program
Preliminary Engineering	\$ 160,000
ROW and Utility Relocation	\$0
Construction	\$ 801,000
Total Cost =	\$ 961,000

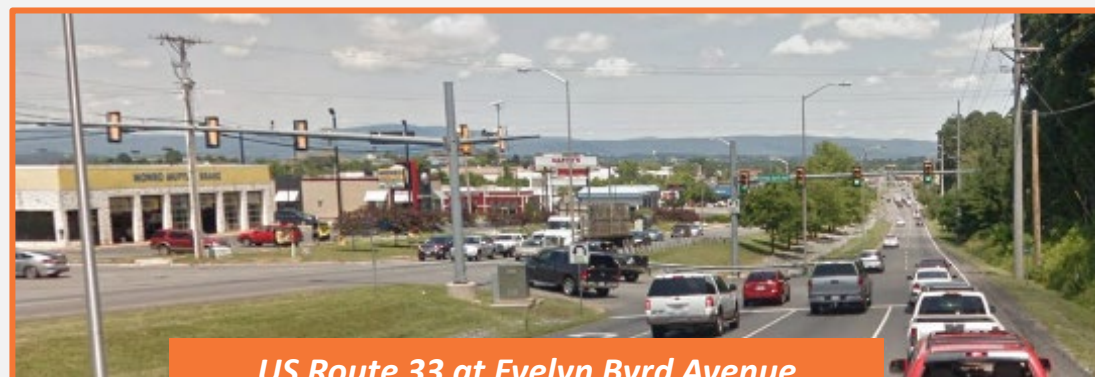
Note: Cost estimates reported in 2018 dollars

Improvements at US Route 33 and Evelyn Byrd Avenue

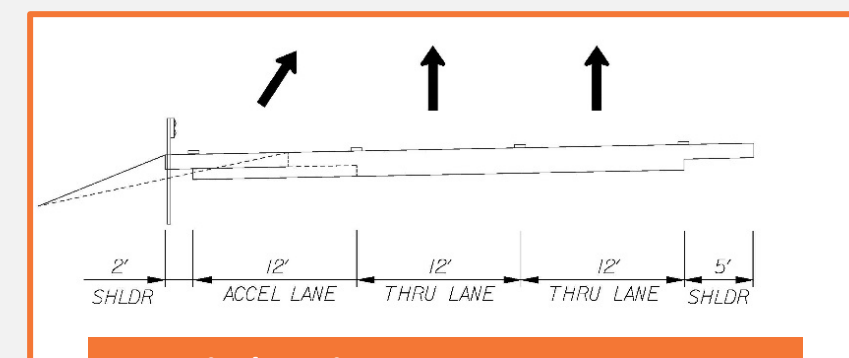


Project Schedule

Months				
8	4	12	Total	
				Preliminary Engineering
				ROW and Utility Relocation
				Construction



US Route 33 at Evelyn Byrd Avenue



Typical Section A-A: E MARKET STREET

Improvement Summary Sheet - Preferred Alternative

8 - Betts Ct/Betts Rd and Chestnut Ridge Dr: Continuous Green-T (CGT) Intersection

Project Benefits

- 52% delay reduction at Chestnut Ridge Drive
- Improves traffic signal coordination & reduces travel times
- Reduces potential for angle crashes

Planning Level Cost Estimate

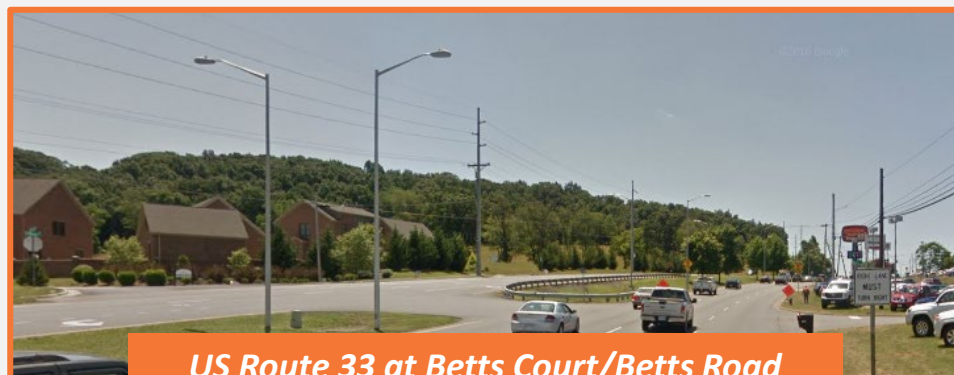
Phase	Six Year Improvement Program
Preliminary Engineering	\$ 188,000
ROW and Utility Relocation	\$0
Construction	\$ 943,500
Total Cost =	\$ 1,131,500

Note 1: Cost estimates reported in 2018 dollars

Note 2: Could necessitate funding for construction easements

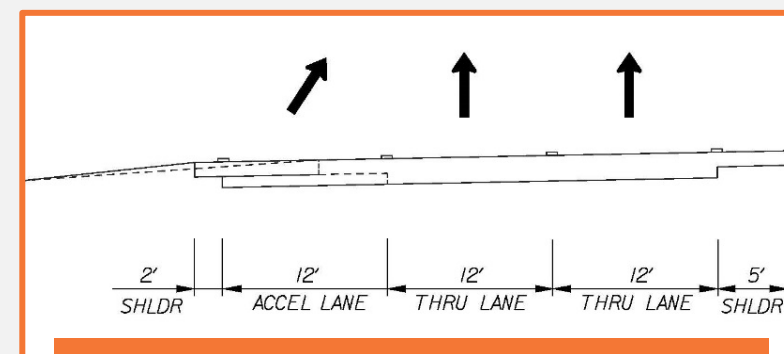
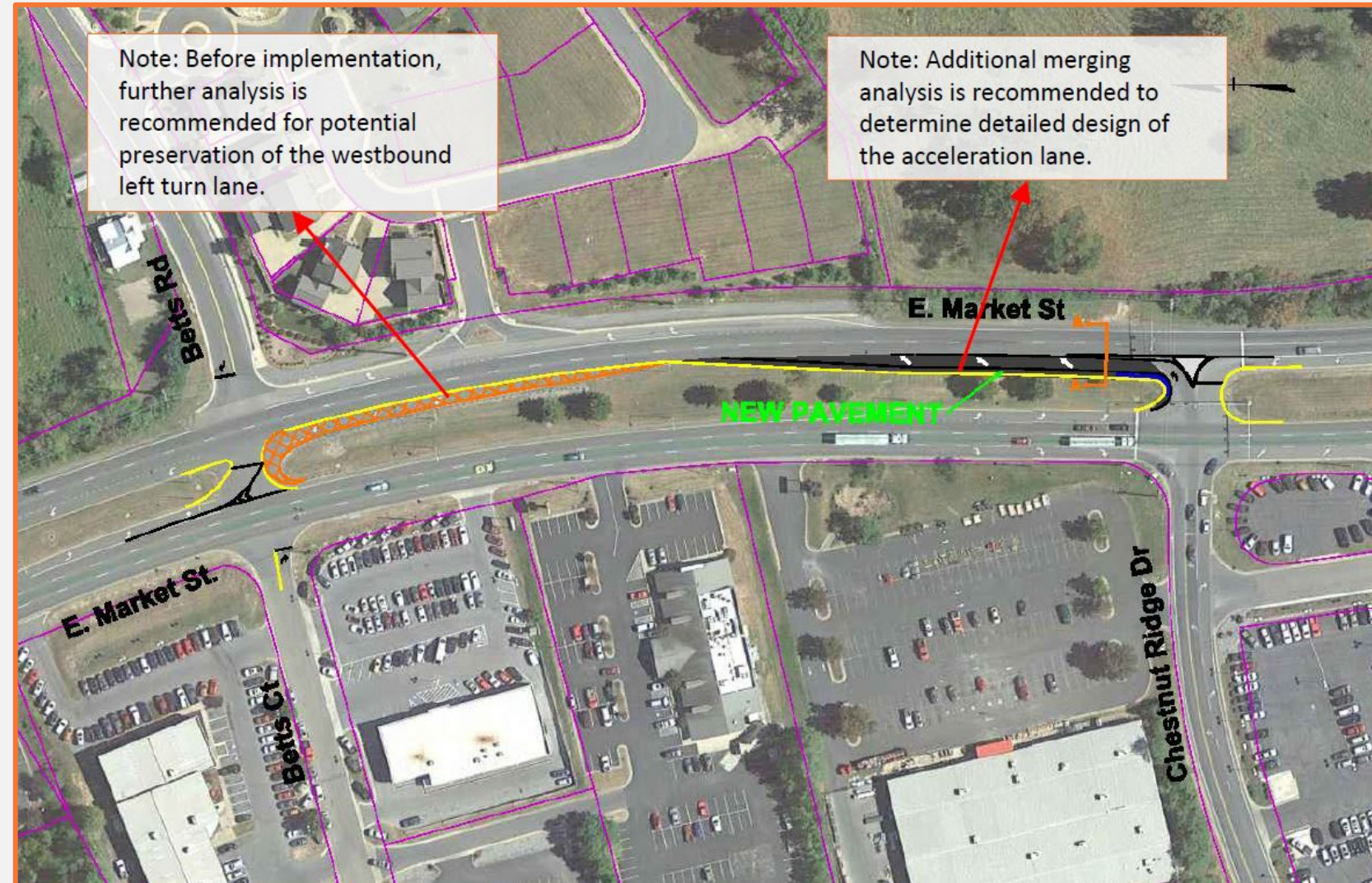
Project Schedule

Months				Total	Preliminary Engineering
8	12	12	4		
					Construction



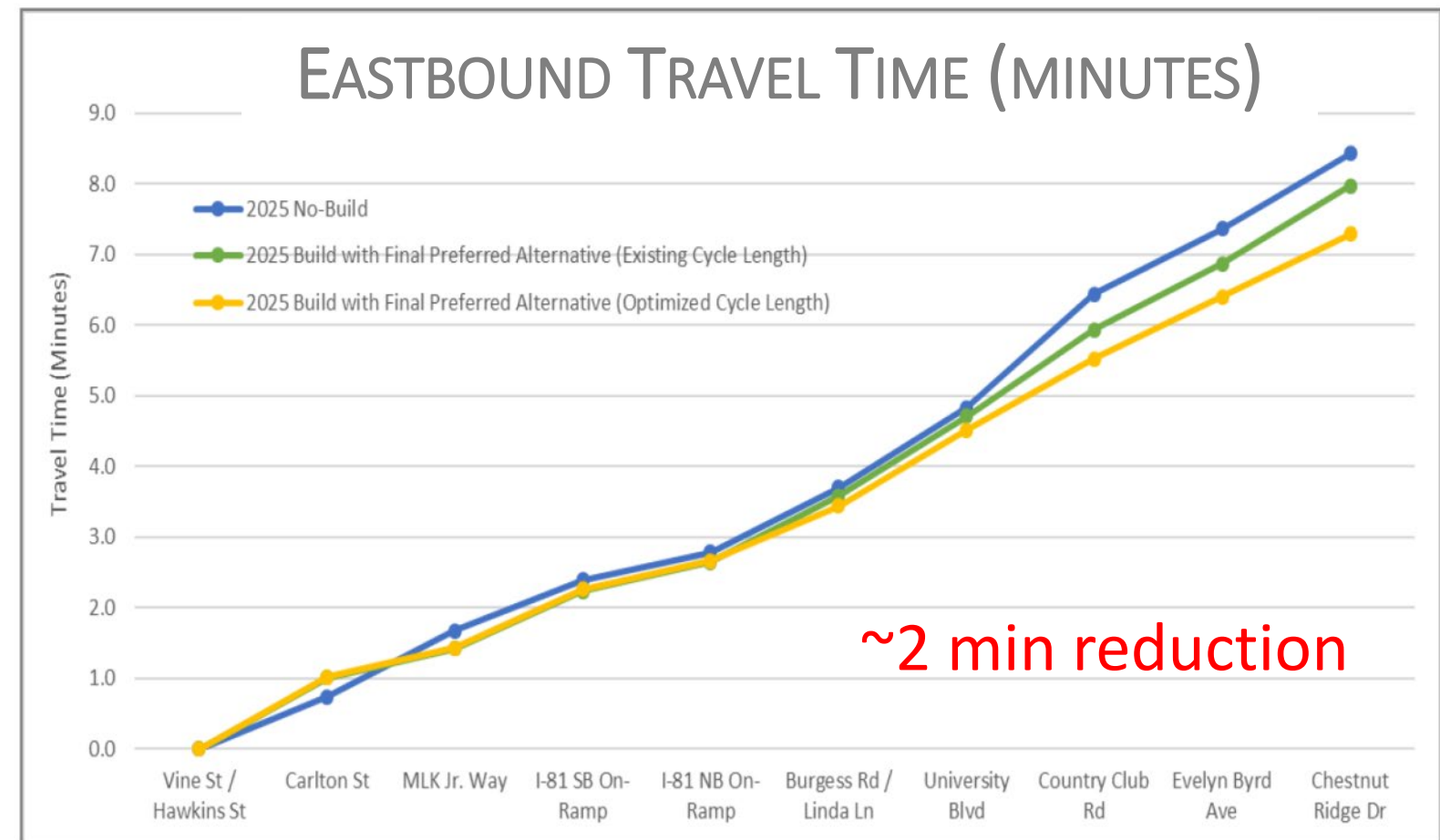
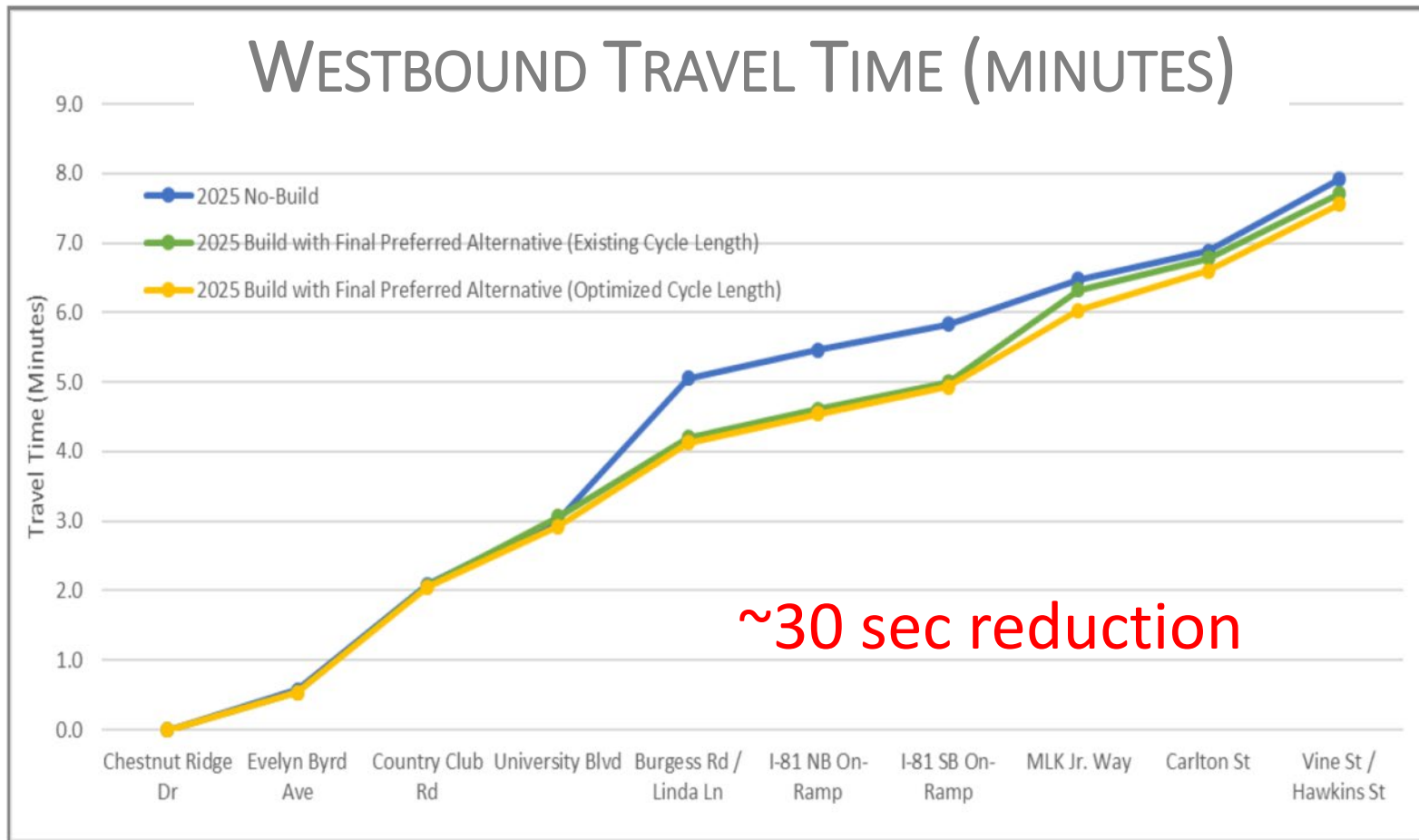
US Route 33 at Betts Court/Betts Road

Betts Court/Betts Road and Chestnut Ridge Drive Improvements



Typical Section A-A – E. MARKET STREET

SUMMARY OF FINDINGS – CORRIDOR TRAVEL TIME



OUTCOMES

- **Thoughts from City staff**
- **Next steps for project recommendations**

STARS

STRATEGICALLY TARGETED AND
AFFORDABLE ROADWAY SOLUTIONS

ROUTE 33 (EAST MARKET STREET) CORRIDOR STUDY

Thank you!

