

Project Overview | CU-23-08

Route 654 (Barracks Road) from Georgetown Road to US 29 Business (Emmet Street)



Project Fact Sheet	
VDOT District	Culpeper
Locality	City of Charlottesville/ Albemarle County
Corridor Length	0.79 miles
Nearby Transit Connections	Charlottesville Area Transit
Nearby Bikeways	Some SUP on Emmet St and Barracks Rd (east of Emmet St) with more programmed
Functional Classification	Minor Arterial
Speed Limit	35 mph

Project Purpose, Goals, & Objectives

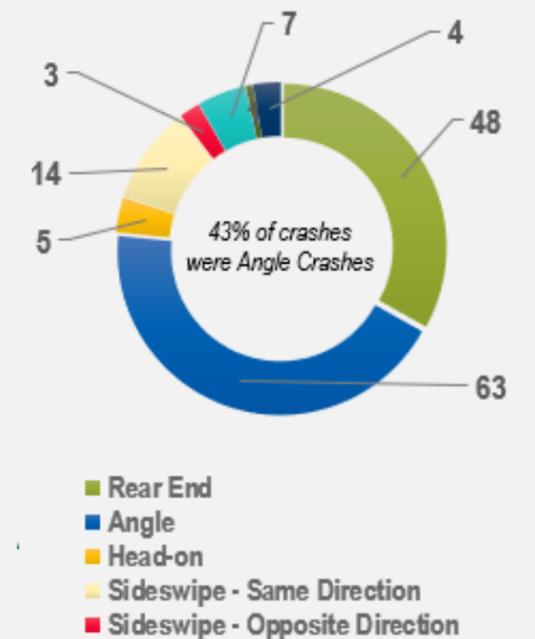
Analyze the operational and safety issues identified along Barracks Road on providing enhanced safety and transportation demand management.

Identify cost-effective preferred improvement alternatives that address the deficient conditions and prioritize safety and accessibility.

Issues in the Study Area

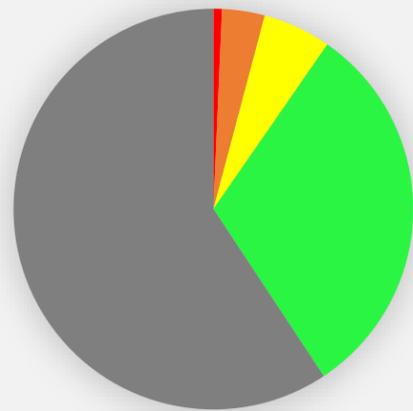
- 145 crashes (2018-2022) within 150 feet of an intersection. 36, 19 and 30 crashes associated with US 29 SB, NB ramps and Emmet St intersections, respectively.
- No bike lanes along Barracks Rd, only on Millmont St.
- There are bus stops along Barracks Rd at Surrey Rd, N Bennington Rd and Cedars Ct; there is also a bus stop on Georgetown Rd near Barracks Rd
- Capacity preservation is one of the public concern in the study area. Queueing was observed at Georgetown Rd, US 29 Ramps, Millmont St and Emmet St N.
- Sidewalks are only continuous on the north side of Barracks Rd. Most curb ramps are not ADA compliant. Ped signals – with push buttons and countdown heads at Emmet St, Millmont St, and Georgetown Rd. No ped signal head on the west leg at Millmont St.

Crash By Type

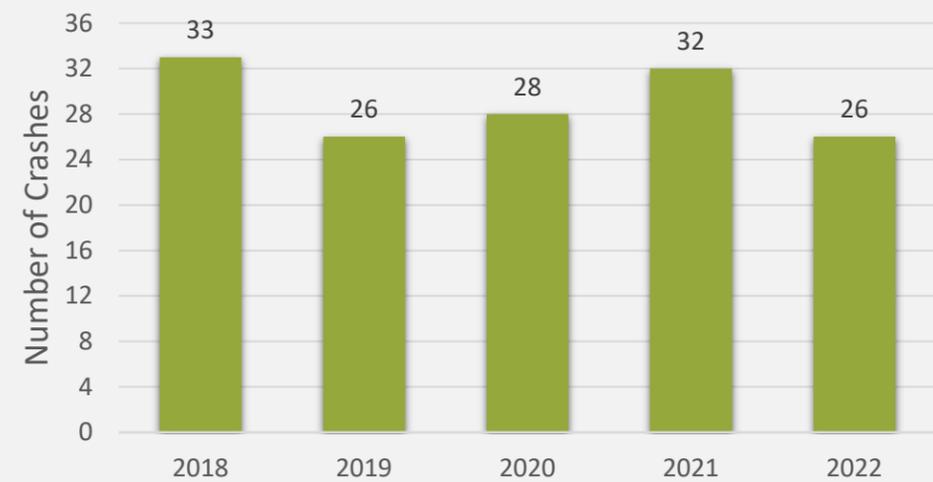
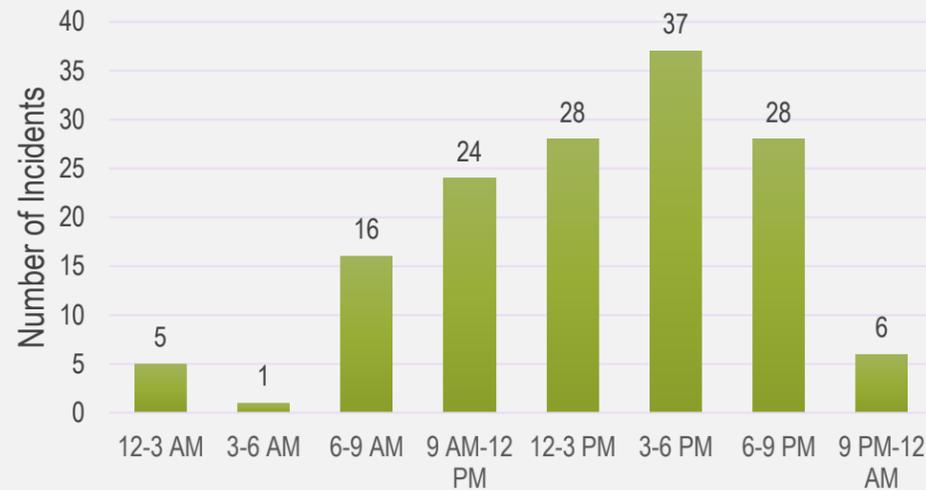


Safety Needs

Needs Identification Summary



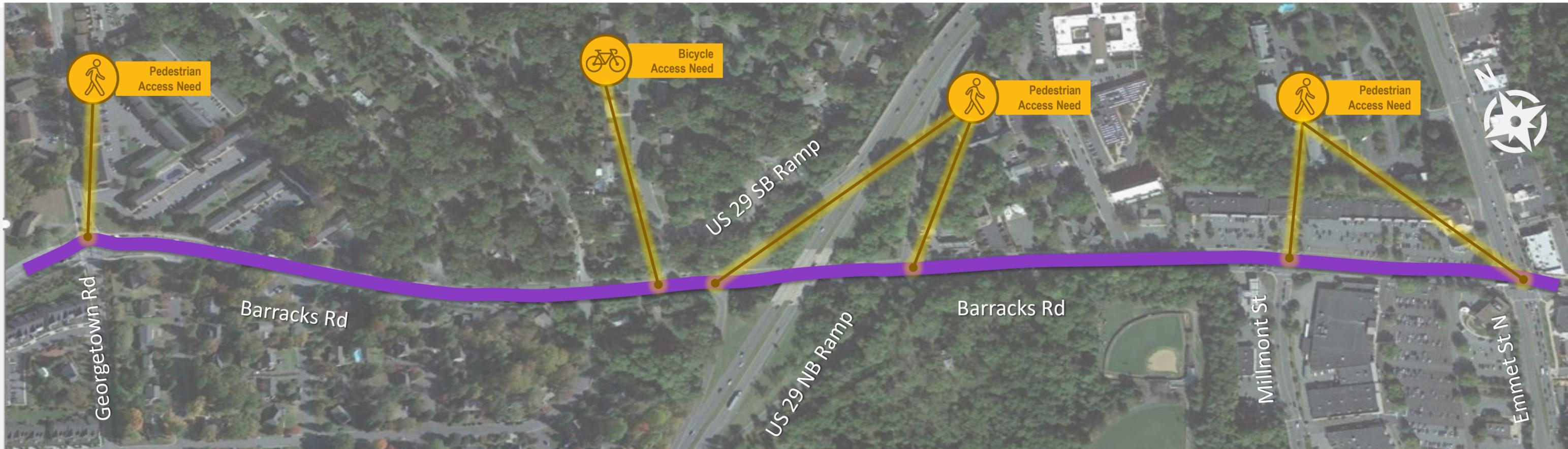
- 59% Property Damage Only
- 31% Nonvisible Injury
- 6% Visible Injury
- 3% Severe Injury
- 1% Fatality





Bicycle and Pedestrian Safety and Accessibility Needs

Bicycle and Pedestrian Safety and Accessibility Needs Identification Summary



Bicycle and Pedestrian Safety & Accessibility Summary

- VTrans identifies this corridor as VERY HIGH NEED for Bicycle Access and HIGH NEED for Pedestrian Access
- No pedestrian crashes
- Sidewalks
 - Continuous Sidewalk on the north side throughout and south side east of Cedars Street (City Segment).
 - Crosswalks – markings are present and there are curb ramps at Georgetown Rd, Millmont St, and Emmet St
 - Ped signals – with push buttons and countdown heads are present at the crosswalks listed above, except west leg at Millmont St
- Bikes
 - No existing bike facilities on corridor – existing bike lanes present along Millmont St

Bicycle and Pedestrian Improvements

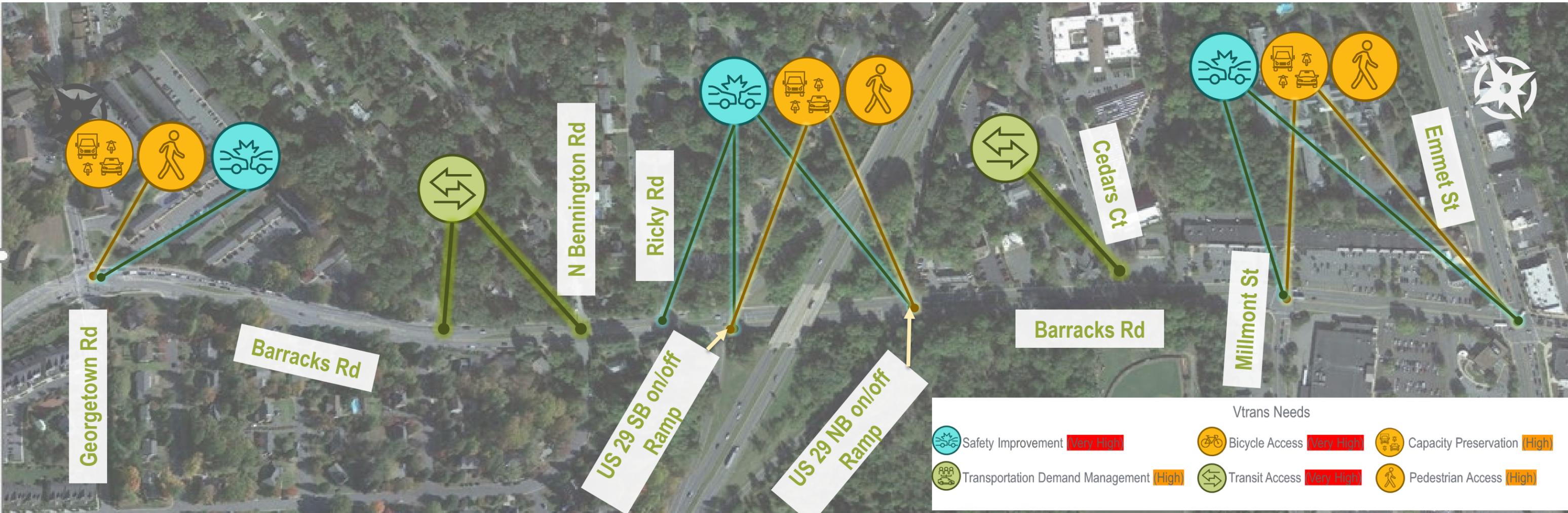
- Add ped/heads, buttons and crosswalks
 - US 29 SB on/off-ramp north and south leg
 - US 29 NB on/off-Ramp north and south leg
 - Only signal ped/heads west leg at Millmont St
- Fill in sidewalk gaps on the south side of Barracks Rd
- Consider a SUP instead of on-road bicycle facilities
- Consider upgrading substandard existing sidewalk and crosswalk facilities
- Charlottesville Bicycle & Pedestrian Mobility Plan calls for on-road bike lanes along Barracks Rd
- Thomas Jefferson PDC bike & Pedestrian Plan – Urban Bike Lane Corridor.
- Future Land Use Plan - Urban Mixed-Use Node

Legend

	Bicycle Access Need		Pedestrian Access Need
	Activity Center		Pedestrian Safety Need
 Proposed Bike Lane, SUP, or sidewalk			

VTrans Needs

VTrans Needs Summary



145 crashes (2018-2022) within 150 feet of an intersection. 36, 19 and 30 crashes associated with US 29 SB, NB ramps and Emmet St intersections, respectively.
Access management concerns between Georgetown Rd and Millmont St

There are bus stops along Barracks Rd at Surrey Rd, N Bennington Rd and Cedars Ct.

Sidewalks are continuous on the north side only. Most curb ramps are not ADA compliant Ped signals are present at Georgetown Rd, Millmont St, and Emmet St - with push buttons and countdown heads. No ped signal heads on the west leg at Millmont St.

No bicycle facilities along Barracks Rd, only on Millmont St

Capacity preservation is one of the public concern in the study area. Queueing was observed at Georgetown Rd, 29 Ramps, Millmont St and Emmet St N.

Georgetown Road and the Barracks Road Corridor to the Bypass

Recommended Improvements (Phase 2)



Barracks Rd & Georgetown Rd Roundabout - S1

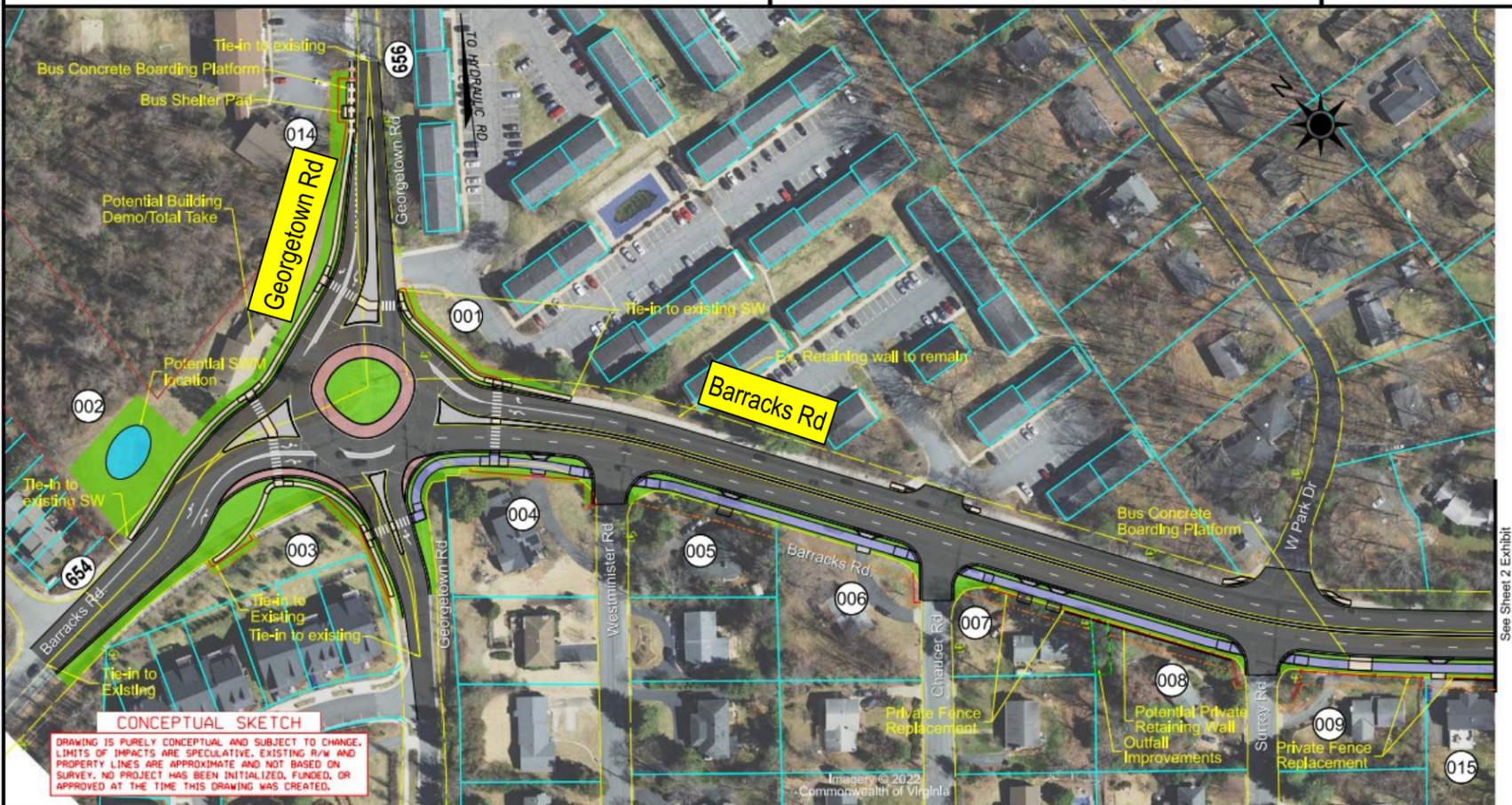
June 2024

Legend

	Prop. Pavement		Proposed ROW
	Prop. Raised Median		Proposed Perm. Easement
	Prop. Concrete S/W		Proposed Temp. Easement
	Prop. Truck Apron		Existing ROW (from GIS)
	Prop. SWM Locations		Existing Property Boundary (from GIS)
	Prop. Grassed Area		Existing Utility Poles (OH) (from GIS)
	Prop. 10' Shared-use Path		

Location: Albemarle County

SCALE: 0' 50' 100'



Improvement Description

- A hybrid roundabout at the Georgetown Road intersection.
 - Pedestrian crossings of all the intersection legs
- 10' Shared Use Path on the south side of Barracks Road from Georgetown Road to the Bypass
- Install a raised median barrier from Georgetown Road to the Bypass
- Update sidewalk CG-12's along Westbound Barracks Rd.

These improvements are expected to significantly improve safety at the Georgetown Road intersection and along the segment from Georgetown Road to the Bypass by implementing access management through the raised median. The roundabout will operate significantly better than the existing traffic signal. Finally, the Shared Use Path will provide a missing link for pedestrians and bicyclists and better connect the transit stops for pedestrians.

Preliminary Cost Estimate

Project cost estimates were developed based on information available at the time of study and should be reassessed prior to submitting funding applications.

Phase	Cost Estimate (2024 Dollars)
Preliminary Engineering	\$2,921,000
ROW and Utility Relocation	\$7,999,800
Construction	\$16,285,500
Total Cost	\$27,206,300

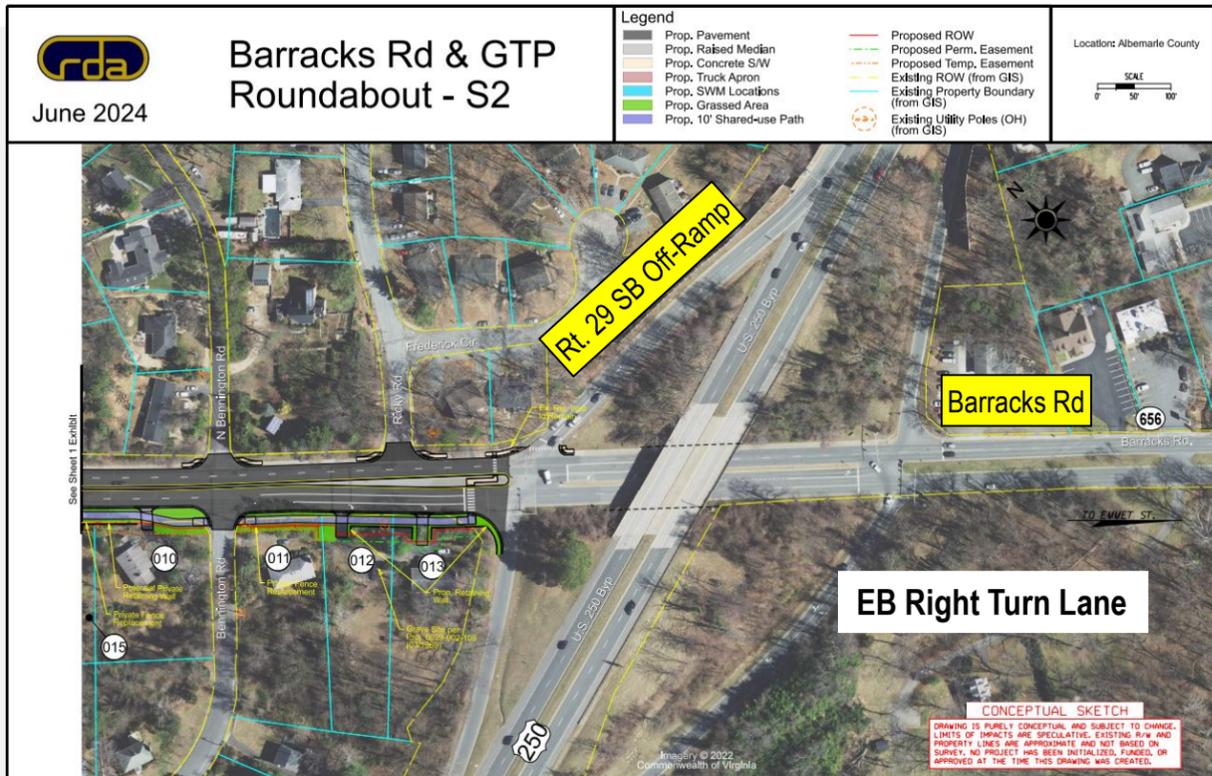
Traffic Operations Results

Georgetown Road and Barracks Road Average Delay		
Alternative	Overall Intersection AM Peak	Overall Intersection PM Peak
No Build (2045)	38.0	54.8
Roundabout (2045)	9.2	12.3

Safety Results

- The Georgetown Road roundabout has a CMF value of 0.52; a 48% reduction in all crashes is anticipated.
- Installing the Shared Use Path on the south side of Barracks Road has a bicycle crash CMF value of 0.75; a 25% reduction in bicycle crashes is anticipated.

Rt. 29 Southbound Off-Ramp and Barracks Road Recommended Improvements (Phase 2)



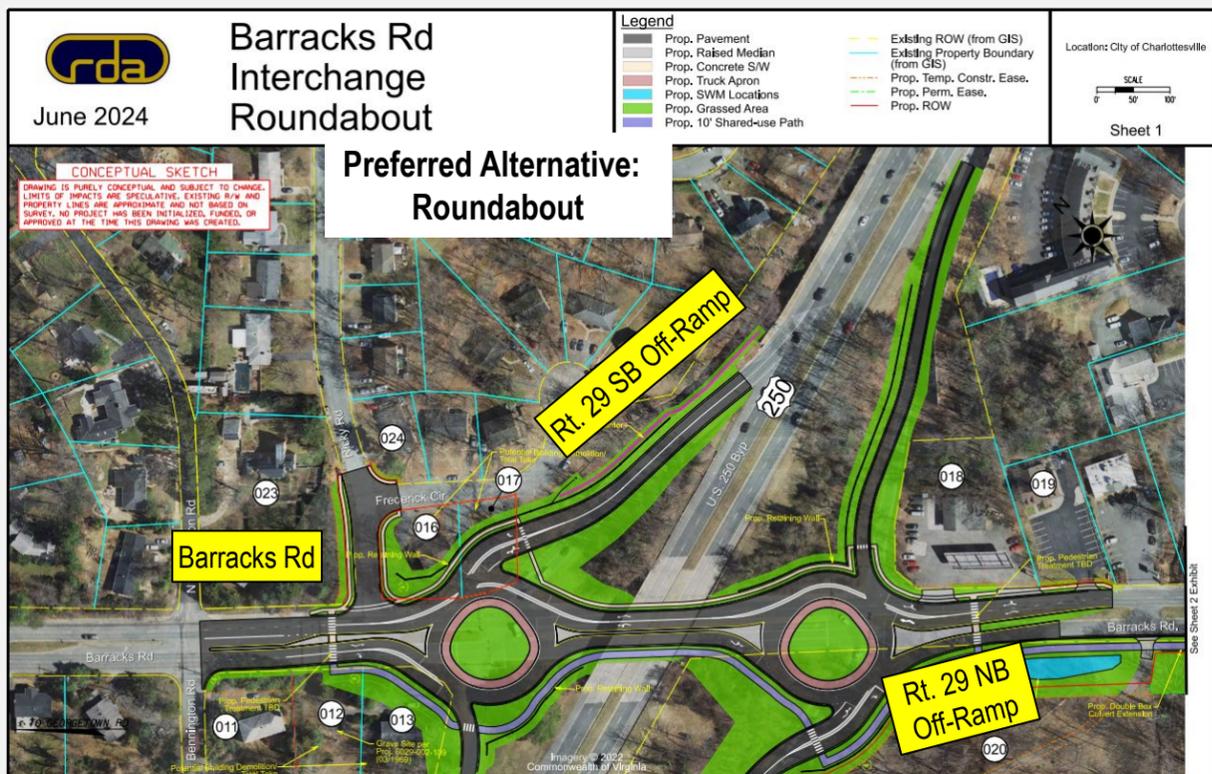
Traffic Operations Results

Rt. 29 Bypass SB Off-Ramp Average Delay		
Alternative	Overall Intersection AM Peak	Overall Intersection PM Peak
No Build (2045)	12.6	28.0
EB Right Turn Lane (2045)	10.6	26.1
Roundabout (2045)	7.7	14.1

Improvement Description

- An eastbound right turn lane on Barracks Road at the Rt. 29 southbound Bypass off-ramp was proposed.
- Preferred Alternative: A hybrid roundabout at the Rt. 29 southbound Bypass off-ramp.
 - Pedestrian crossings of 3 of the 4 intersection legs
- Preferred Alternative: 10' Shared Use Path on the south side of Barracks Road through the Bypass interchange

The preferred alternative improvements are projected to significantly improve safety at the Rt. 29 southbound Bypass off-ramp intersection. The roundabout will operate markedly better than the existing traffic signal in the PM peak hour. Finally, the Shared Use Path will provide a missing link for pedestrians and bicyclists and better connect the transit stops for pedestrians.



Safety Results

- The eastbound right turn lane installation has a CMF value of 0.96 for all crash types and 0.91 for injury crashes, representing 4% and 9% reductions, respectively.
- The Rt. 29 Bypass SB Off-Ramp roundabout has a CMF value of 0.52; a 48% reduction in all crashes is anticipated.
- Installing the Shared Use Path on the south side of Barracks Road has a bicycle crash CMF value of 0.75, which is anticipated to reduce bicycle crashes by 25%.

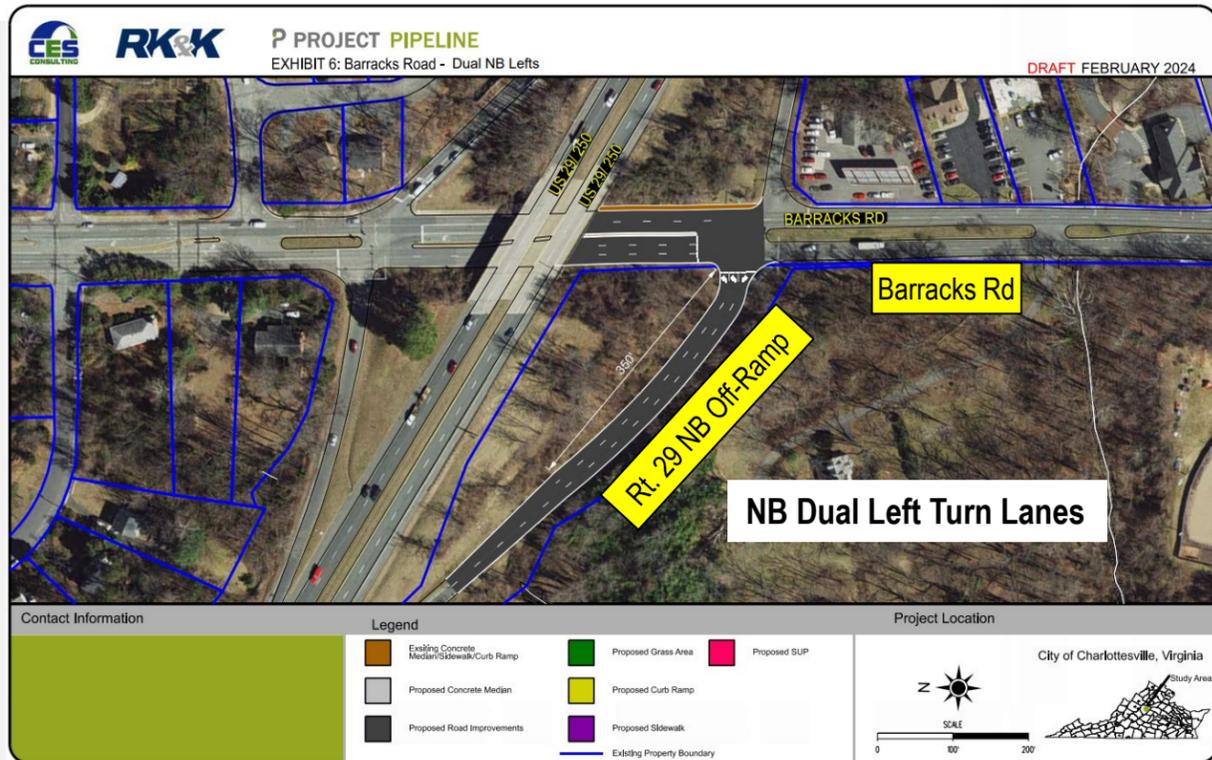
Preliminary Cost Estimate

Project cost estimates were developed based on information available at the time of study and should be reassessed prior to submitting funding applications. **Note:** The cost estimate includes both Barracks Road interchange termini roundabouts and the Shared Use Path from the interchange to Emmet Street.

Phase	Cost Estimate (2024 Dollars)
Preliminary Engineering	\$4,577,000
ROW and Utility Relocation	\$14,170,000
Construction	\$29,100,000
Total Cost	\$65,889,000

Rt. 29 Northbound Off-Ramp and Barracks Road

Recommended Improvements (Phase 2)



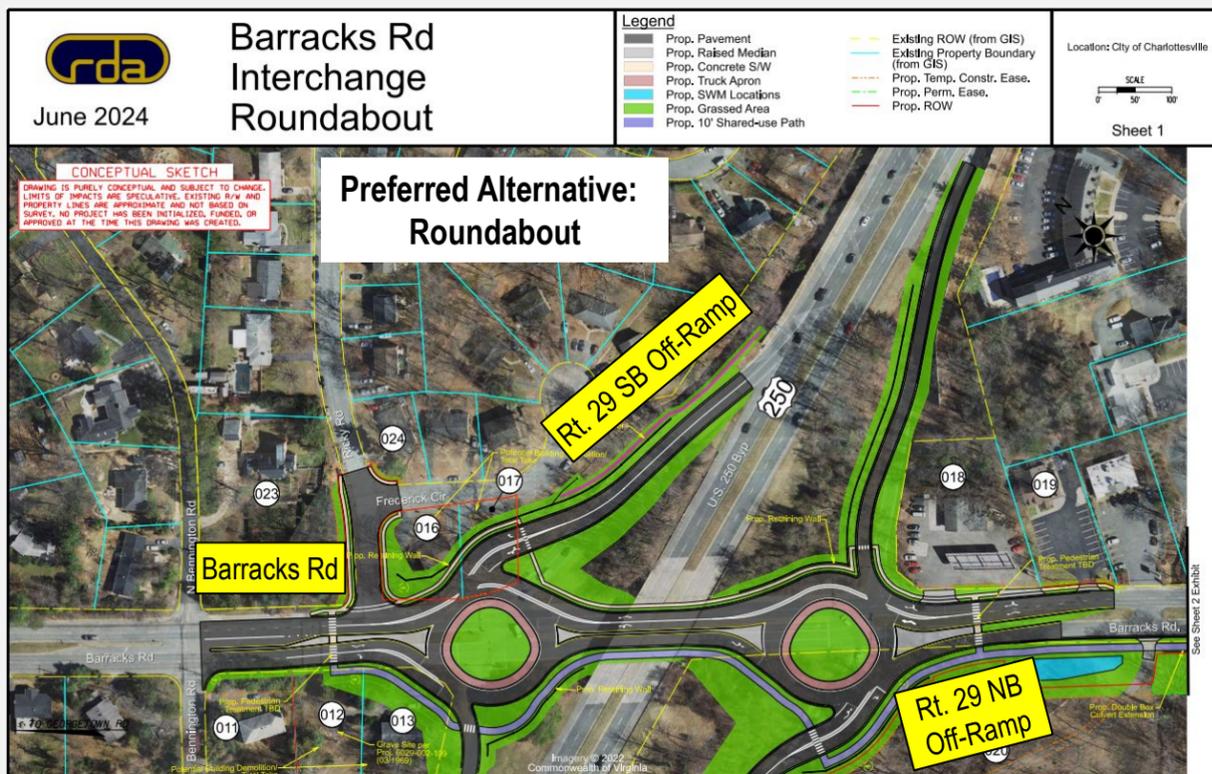
Traffic Operations Results

Rt. 29 Bypass NB Off-Ramp Average Delay		
Alternative	Overall Intersection AM Peak	Overall Intersection PM Peak
No Build (2045)	38.7	55.1
NB Dual Left Turn Lane (2045)	34.7	49.1
Roundabout (2045)	12.2	23.0

Improvement Description

- Northbound dual left turn lanes on the Rt. 29 northbound Bypass off-ramp was proposed.
- Preferred Alternative: A hybrid roundabout at the Rt. 29 northbound Bypass off-ramp.
 - Pedestrian crossings of 3 of the 4 intersection legs
- Preferred Alternative: 10' Shared Use Path on the south side of Barracks Road through the Bypass interchange

The preferred alternative improvements are projected to significantly improve safety at the Rt. 29 northbound Bypass off-ramp intersection. The roundabout will operate markedly better than the existing traffic signal in both peak hours. Finally, the Shared Use Path will provide a missing link for pedestrians and bicyclists and better connect the transit stops for pedestrians.



Safety Results

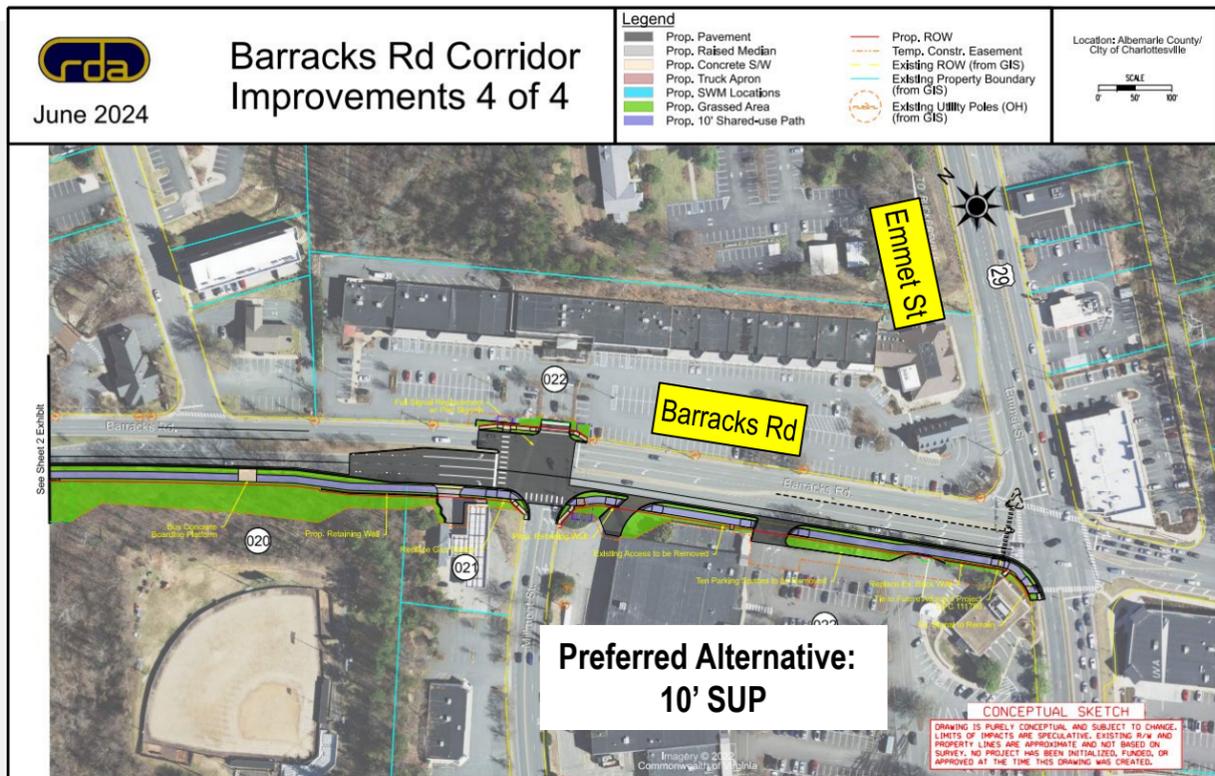
- Installing dual left turn lanes has a CMF value of 0.75, a 25% reduction in all crash types.
- The Rt. 29 Bypass SB Off-Ramp roundabout has a CMF value of 0.52, a 48% reduction in all crashes is anticipated.
- Installing the Shared Use Path on the south side of Barracks Road has a bicycle crash CMF value of 0.75, a 25% reduction in bicycle crashes is anticipated.

Preliminary Cost Estimate

Project cost estimates were developed based on information available at the time of study and should be reassessed prior to submitting funding applications. **Note:** The cost estimate includes both Barracks Road interchange termini roundabouts and the Shared Use Path from the interchange to Emmet Street.

Phase	Cost Estimate (2024 Dollars)
Preliminary Engineering	\$4,577,000
ROW and Utility Relocation	\$14,170,000
Construction	\$29,100,000
Total Cost	\$65,889,000

Barracks Road (East of the Bypass) Bicycle and Pedestrian Recommended Improvements (Phase 2)



Safety Results

- Installing the Shared Use Path on the south side of Barracks Road has a bicycle crash CMF value of 0.75, a 25% reduction in bicycle crashes is anticipated.

Improvement Description

- Preferred Alternative: 10' Shared Use Path on the south side of Barracks Road from the Bypass to Emmet Street.

The Shared Use Path will provide a missing link for pedestrians and bicyclists and better connect the transit stops for pedestrians. This segment of Shared Use Path is part of a continuous segment from Georgetown Road to Emmet Street.

Preliminary Cost Estimate

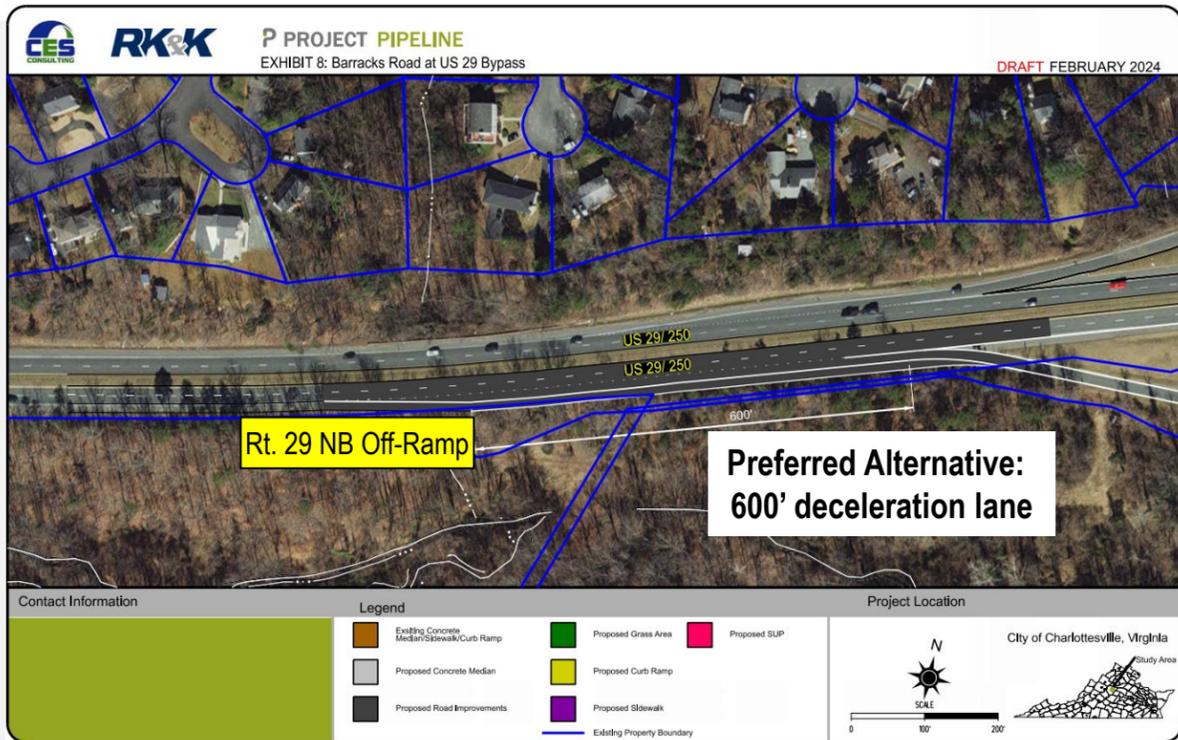
Project cost estimates were developed based on information available at the time of study and should be reassessed prior to submitting funding applications.

Note: The cost estimate includes both Barracks Road interchange termini roundabouts and the Shared Use Path from the interchange to Emmet Street.

Phase	Cost Estimate (2024 Dollars)
Preliminary Engineering	\$4,577,000
ROW and Utility Relocation	\$14,170,000
Construction	\$29,100,000
Total Cost	\$65,889,000

Rt. 29 Northbound Bypass Off-ramp Deceleration Lane

Recommended Improvements (Phase 2)



Safety Results

- Extending the Rt. 29 Bypass Off-Ramp to a length of 600 feet has a CMF = 0.155, which means the crashes are anticipated to be reduced by 84.5% in the influence area of the deceleration lane.

Improvement Description

- Preferred Alternative: Lengthening the Rt. 29 northbound Bypass off-ramp deceleration lane to 600 feet of full-width storage.

The 600-foot deceleration lane will provide the standard deceleration length for this off-ramp, allowing motorists the proper amount of distance to decelerate from the Bypass to the off-ramp towards Barracks Road.

Preliminary Cost Estimate

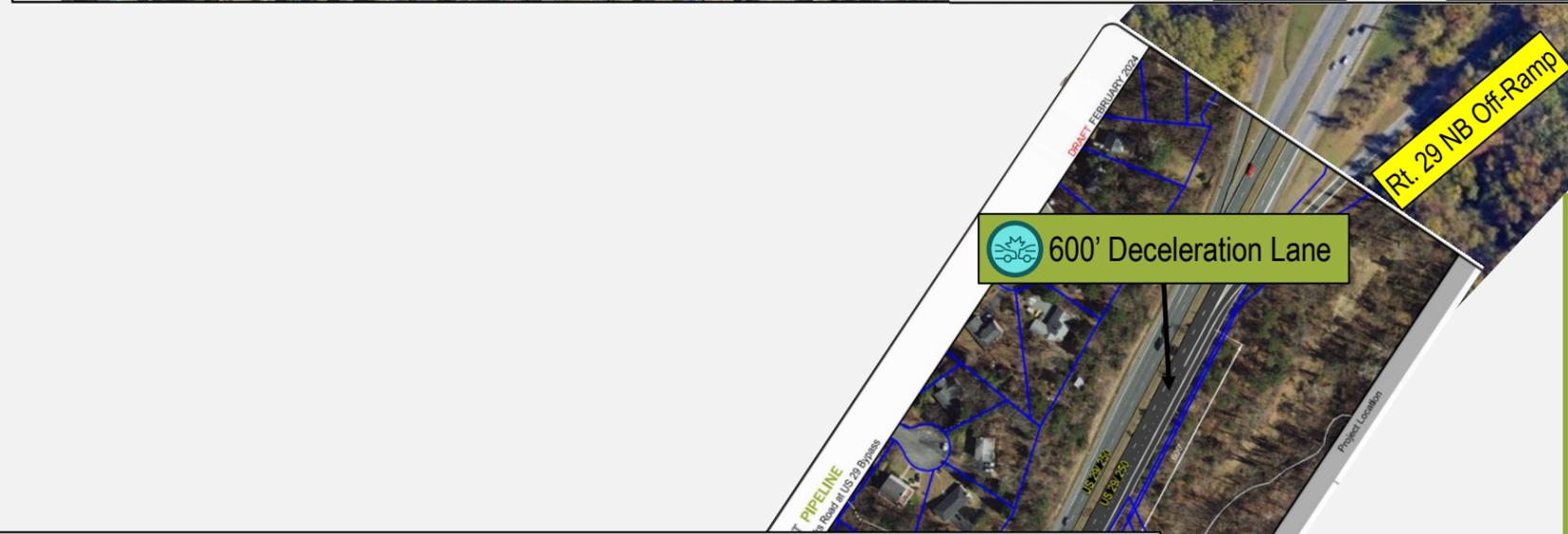
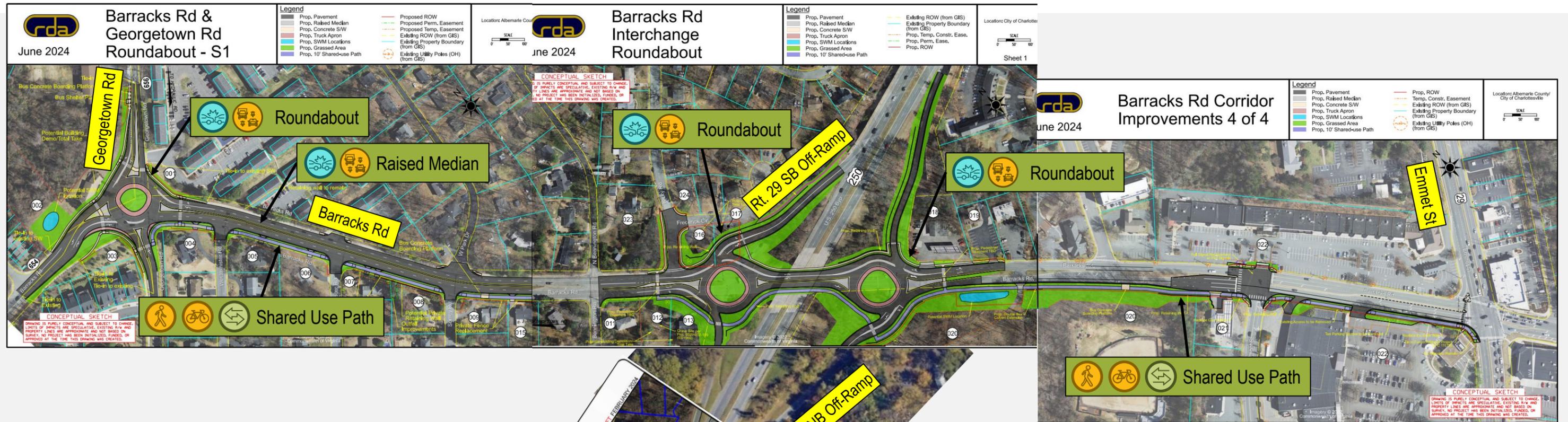
Project cost estimates were developed based on information available at the time of study and should be reassessed prior to submitting funding applications.

VDOT prepared the cost estimates for this Pipeline study. It only prepared estimates for the recommendations that were being included in the current round of Smart Scale applications. The Rt. 29 northbound Bypass off-ramp was not included in the applications, so no cost estimate was prepared.

Phase	Cost Estimate (2024 Dollars)
Preliminary Engineering	\$
ROW and Utility Relocation	\$
Construction	\$
Total Cost	\$

Preferred Alternative VTRANS Needs Addressed

Vtrans Needs and Improvements Summary



VTRANS Needs Addressed

The VTRANS Needs at this location, and the proposed improvements to alleviate the needs include:

Safety Improvement/Capacity Preservation/Transportation Demand Management

- Install a roundabout at the Georgetown Road intersection.
- Install a roundabout at the Rt. 29 Bypass southbound off-ramp intersection.
- Install a roundabout at the Rt. 29 Bypass northbound off-ramp intersection.
- Install a raised median from Georgetown Road to the Bypass.
- Extend the Rt. 29 Bypass northbound off-ramp to a length of 600 feet.

Bicycle/Pedestrian/Transit Access

- Install a 10' Shared Use Path on the south side of Barracks Road from Georgetown Road to the Bypass.
- Install a 10' Shared Use Path on the south side of Barracks Road from the Bypass to Emmet Street.

Legend:

 - Design Feature to Address Vtrans Needs

Vtrans Needs		
Safety Improvement Very High	Bicycle Access Very High	Capacity Preservation High
Transportation Demand Management High	Transit Access Very High	Pedestrian Access High