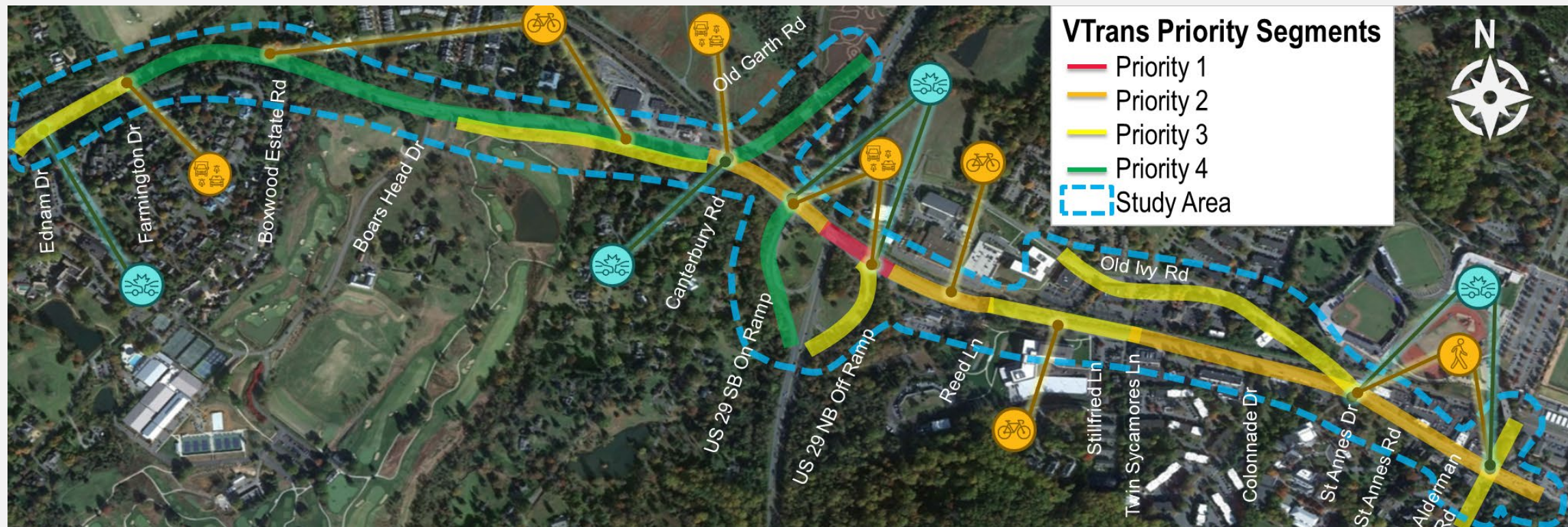


Project Overview | CU-23-09

Route 250 (Ivy Road) from Ednam Drive to Alderman Road



VDOT District	Culpeper
Locality	City of Charlottesville/ Albemarle County
Corridor Length	1.86 miles
Nearby Bikeways	Shared Use Path (SUP) along Ivy Rd
Number of Crossover	9
Functional Classification	Other Principal Arterial
Speed Limit	35 mph

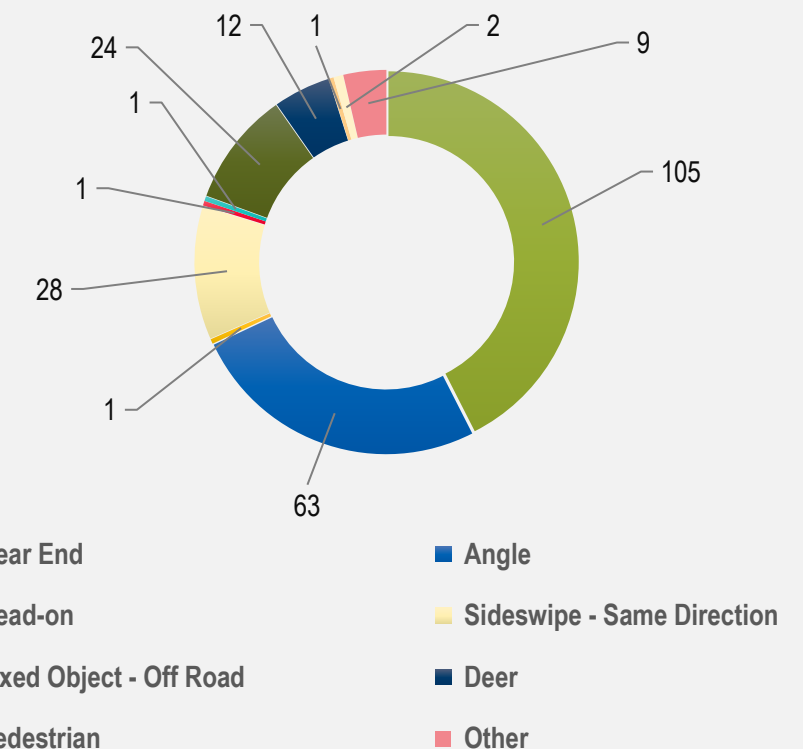
Project Purpose, Goals, & Objectives

Analyze the operational and safety issues identified along Ivy Road and the Ivy Road interchange to provide enhanced safety and transportation demand management.

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

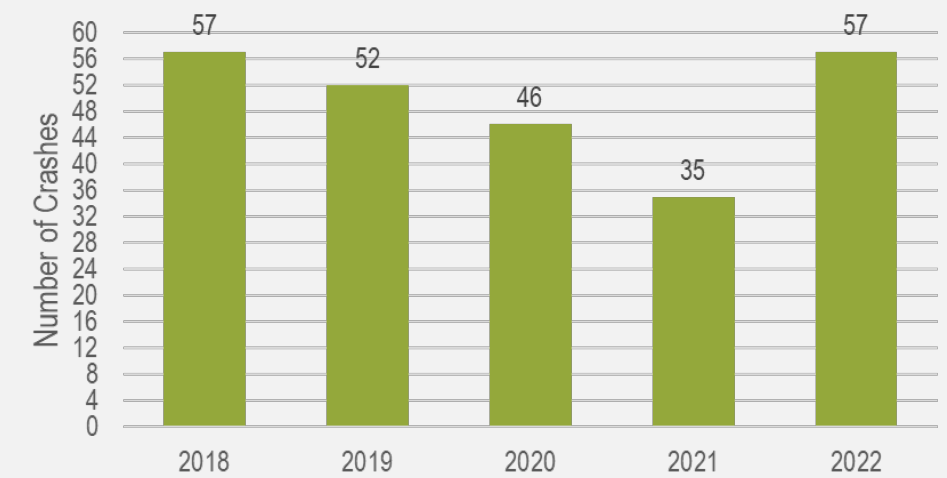
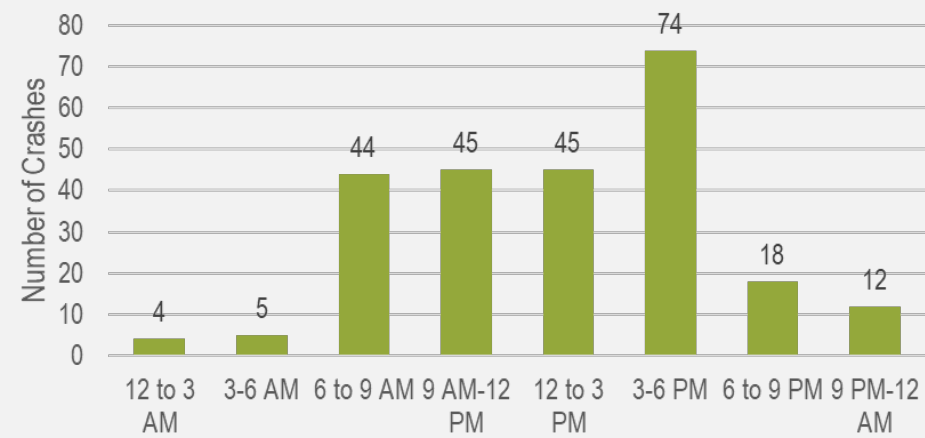
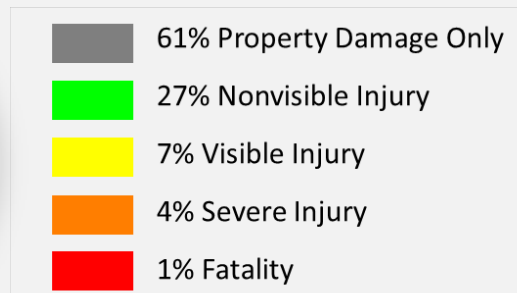
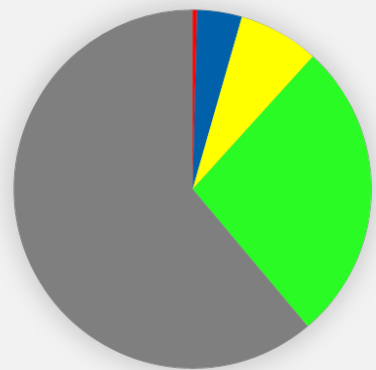
Issues in the Study Area

- 247 crashes (2018-2022) within 150 feet of an intersection. 11, 21, 12, 10, 10 and 12 crashes associated with Ednam Dr, Canterbury Rd, US 29 SB Ramp, US 29 NB Ramp, Old Ivy Rd, and Alderman Rd intersections, respectively.
- There are sharrows (shared arrows – bikes share lane with vehicles) marked from Ednam Dr through the interchange. A marked bike lane exists on eastbound Ivy from Stillfried Ln to Alderman Rd and on westbound Ivy from Copley Rd to Old Ivy. There are no existing shared use paths (SUPs) on the corridor.
- There aren't bus stops along Ivy Road, but the nearest one is on Emmet St N.
- Congestion is one of the public concern in the study area. Queueing was observed at Farmington Dr, Canterbury Rd, and US 29 Ramps intersections.
- Sidewalks are continuous on both sides only from Old Ivy Rd to Alderman Rd intersection. Only curb ramps are ADA compliant at Old Ivy Rd, and Alderman Rd. Ped signals - with buttons and countdown heads are only at Old Ivy Rd and Alderman Rd intersections.



Safety Needs

Needs Identification Summary



Bicycle and Pedestrian Safety and Accessibility Needs

Bicycle and Pedestrian Safety and Accessibility Needs Identification Summary

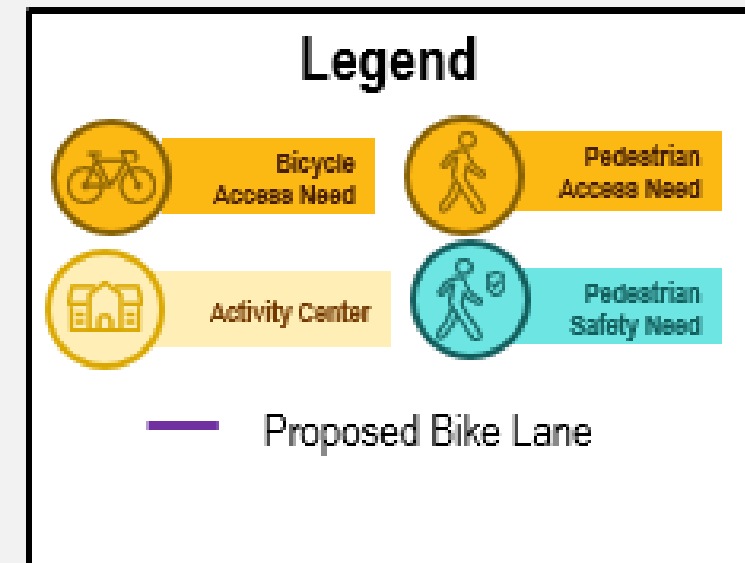


Bicycle and Pedestrian Safety & Accessibility Summary

- VTrans identifies this corridor as VERY HIGH NEED for Transit Access, Transit Access for (EEA), TDM and HIGH NEED for Congestion Mitigation
- 1 pedestrian crashes at Old Ivy Rd / Ivy Rd intersection
- Sidewalks
 - Continuous Sidewalk on both sides along Ivy Rd from Old Ivy Rd to Alderman Rd intersection.
 - Crosswalks – markings are present and many curb ramps are ADA compliant only at Old Ivy Rd and Alderman Rd. Ped signals - with buttons and countdown heads at the following intersections with Ivy Road – Canterbury Rd, Old Ivy Rd, and Alderman Rd.
- Bikes
 - Existing Shared Use Path present along Ivy Rd (SUP).

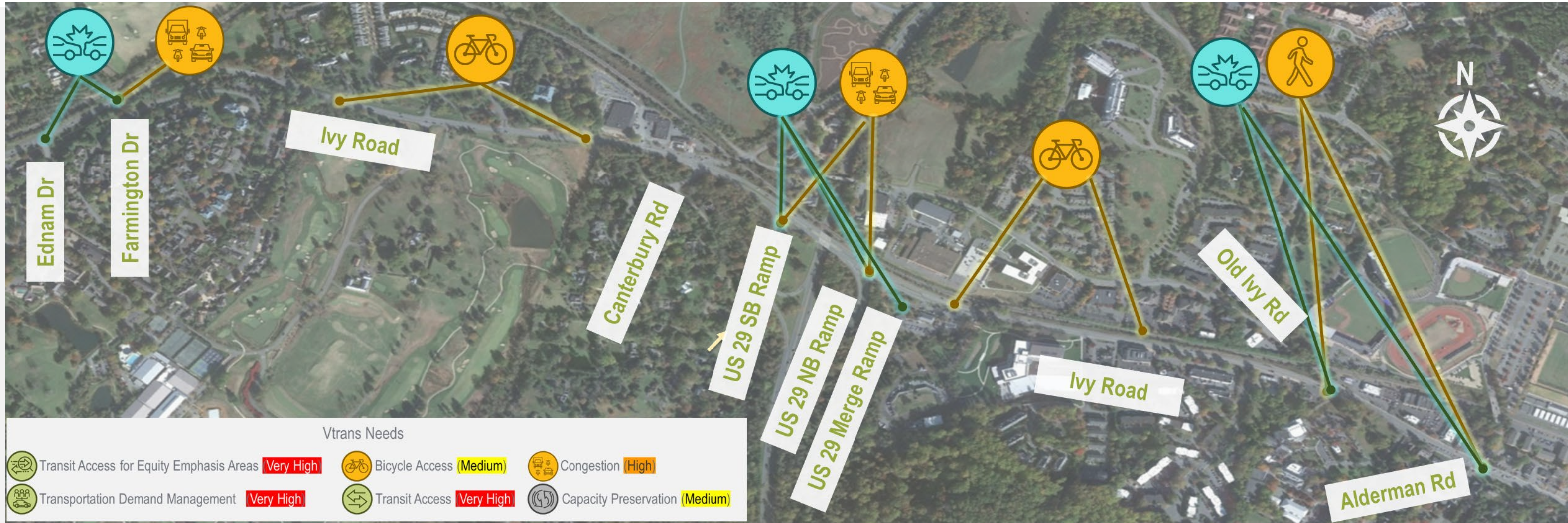
Bicycle and Pedestrian Improvements

- Add ped/heads, buttons and crosswalks
 - US 29 SB On-Ramp intersection
 - US 29 NB On-Ramp intersection
 - Ednam Dr and Alderman Rd
- One Community planning efforts, City of Charlottesville, Albemarle MPO Bicycle & Pedestrian Mobility Plan calls for bike lanes along Ivy Rd.
- Thomas Jefferson PDC bik & Pedestrian Plan – Urban Bike Lane Corridor.
- Bicycle and Pedestrian Plan – Bicycle Vision Network – Ivy Rd as Arterial On-Road Corridor -> Recommended Bicycle Lane
- Future Land Use Plan – Urban Mixed Use Corridor & Education.



VTrans Needs

VTrans Needs Summary



247 crashes (2018-2022) within 150 feet of an intersection. 11, 21, 12, 10, 10 and 12 crashes associated with Ednam Dr, Canterbury Rd, US 29 SB Ramp, US 29 NB Ramp, Old Ivy Rd, and Alderman Rd intersections, respectively.



There are sharrows (shared arrows – bikes share lane with vehicles) marked from Ednam Dr through the interchange. A marked bike lane exists on eastbound Ivy from Stillfried Ln to Alderman Rd and on westbound Ivy from Copley Rd to Old Ivy. There are no existing shared use paths (SUPs) on the corridor.



There aren't bus stops along Ivy Rd, only the nearest bus stop is on Emmet St N.



Congestion is one of the public concern in the study area. Queueing was observed at Farmington Dr, Canterbury Rd, and US 29 Ramps intersections.



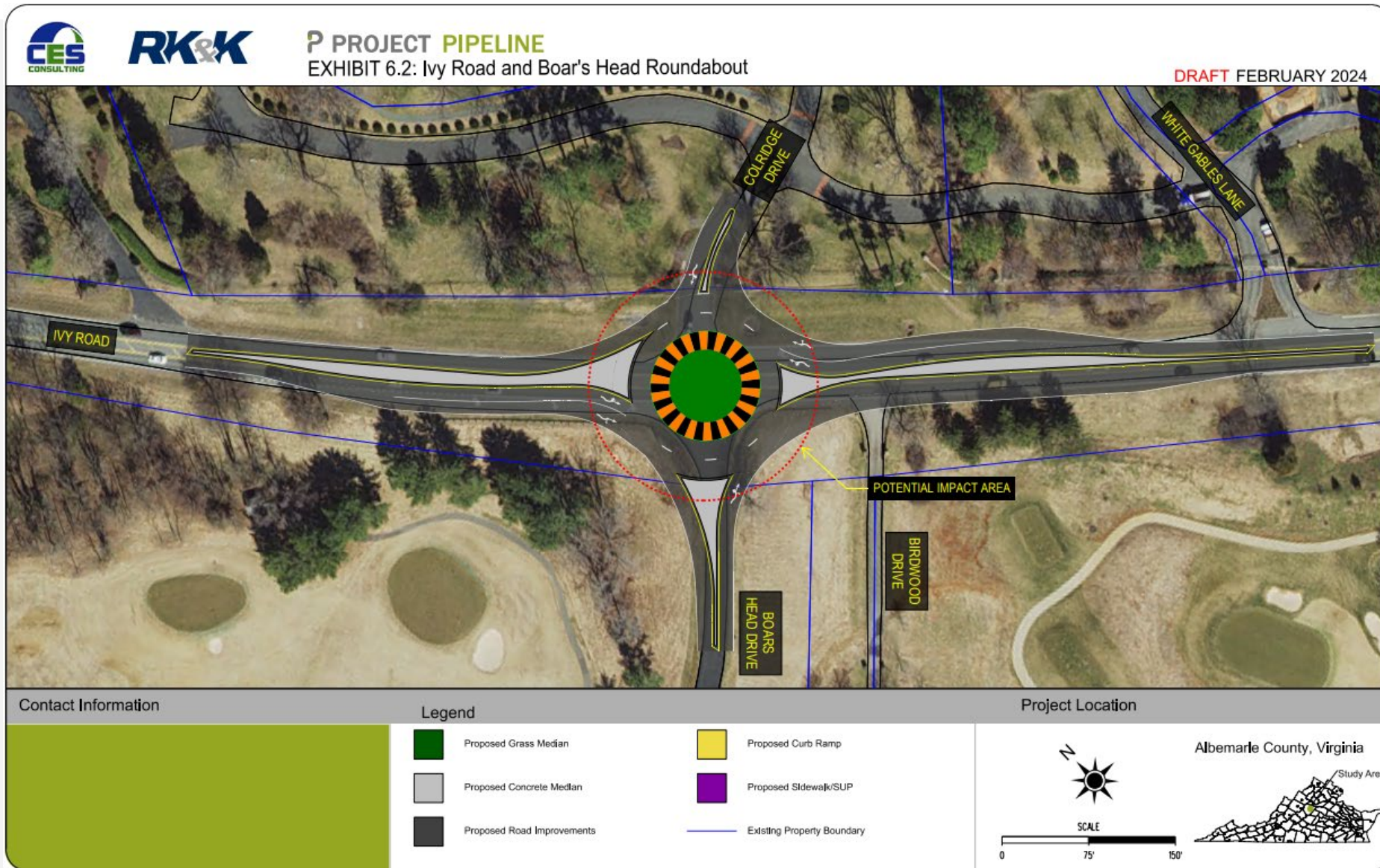
Sidewalks are continuous only on both sides at Old Ivy Rd to Alderman Rd intersection. Only curb ramps are ADA compliant at Old Ivy Rd, and Alderman Rd. Ped signals - with buttons and countdown heads are at the following intersections with Ivy Road – Canterbury Rd, Old Ivy Rd, and Alderman Rd.



The closest park & ride lot is at Tee Lane Park Post (3.3 miles to the south of US 29).

Boars Head Drive Hybrid Roundabout

Recommended Improvements – Short Term (Phase 2)



Improvement Description

- A hybrid roundabout at the Boars Head Drive intersection.
- Install a raised median barrier from Boars Head Drive to Canterbury Road/Old Garth Road.

These improvements are expected to significantly improve safety at the Boars Head Drive intersection and along the segment from Boxwood Estate Driveway to White Gables Lane by implementing access management through the raised median. The roundabout will operate significantly better than the existing traffic control (on the minor street approaches).

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 (2025 Dollars)
Preliminary Engineering	\$1,609,400
ROW and Utility Relocation	\$984,000
Construction	\$5,604,560
Total Cost	\$8,197,960

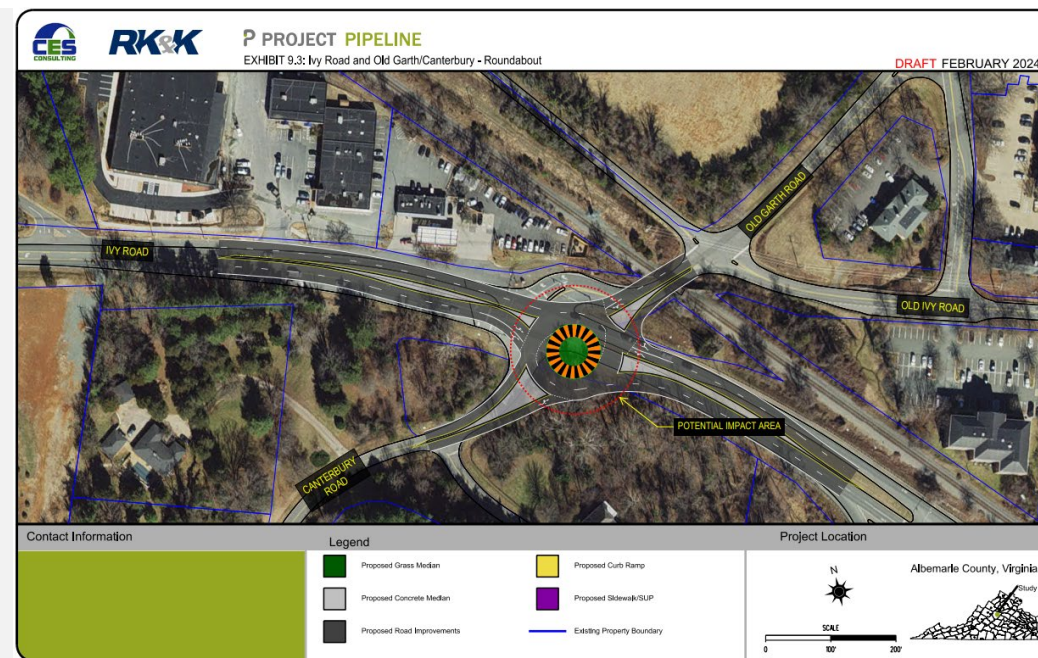
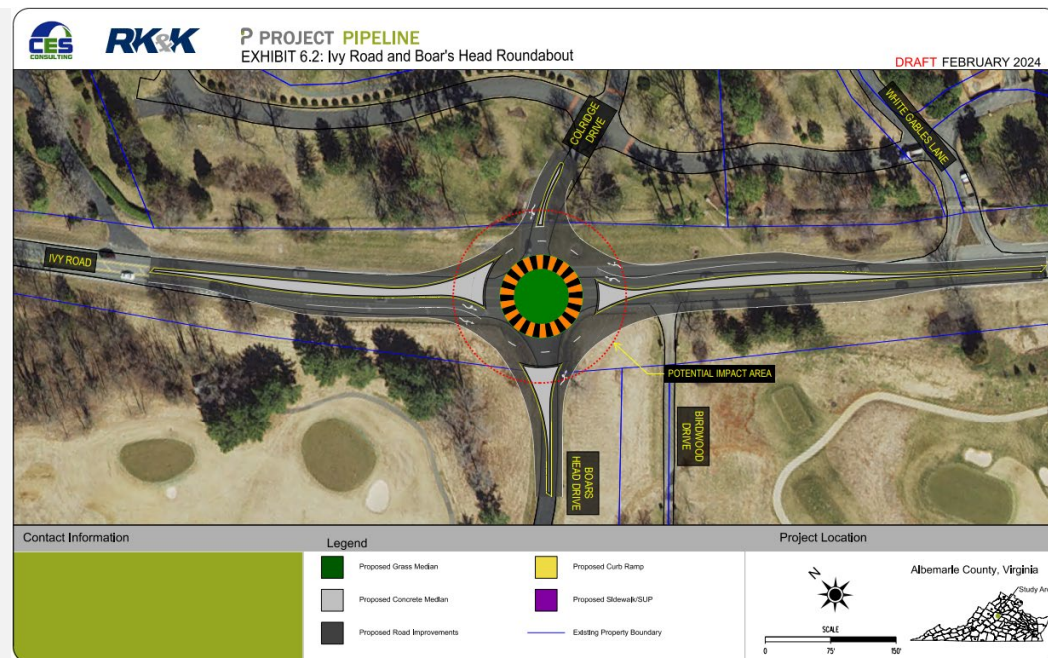
Traffic Operations Results

Safety Results

- The Boars Head Drive roundabout has a CMF value of 0.28; a 72% reduction in all crashes is anticipated.
- Install a raised median barrier has a CMF value of 0.29; a 71% reduction in all crashes is anticipated.

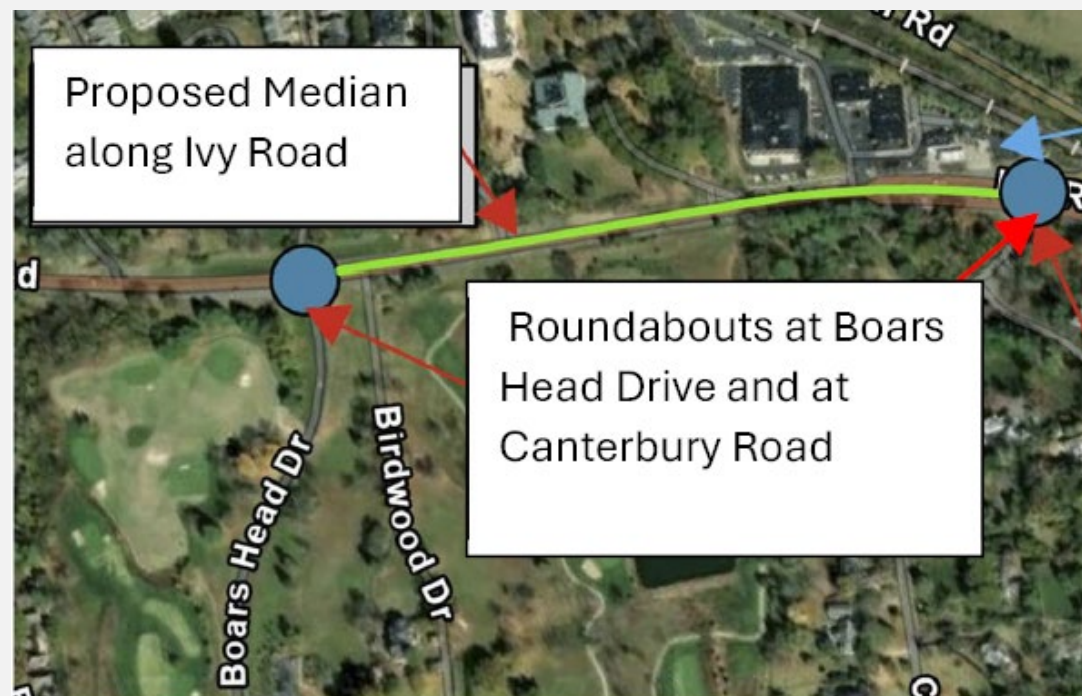
Raised Median – Boars Head Drive to Canterbury Road

Recommended Improvements – Short Term (Phase 2)



Improvement Description

- Install a raised median on Ivy Road to prevent left turns between Boars Head Drive and Canterbury Road. This recommendation relies on the proposed roundabouts at Boars Head Drive and Canterbury Road to facilitate U-turn movements.



Safety Results

- Installing the raised median on Ivy Road has a CMF value of 0.29, a 71% reduction in crashes is anticipated.

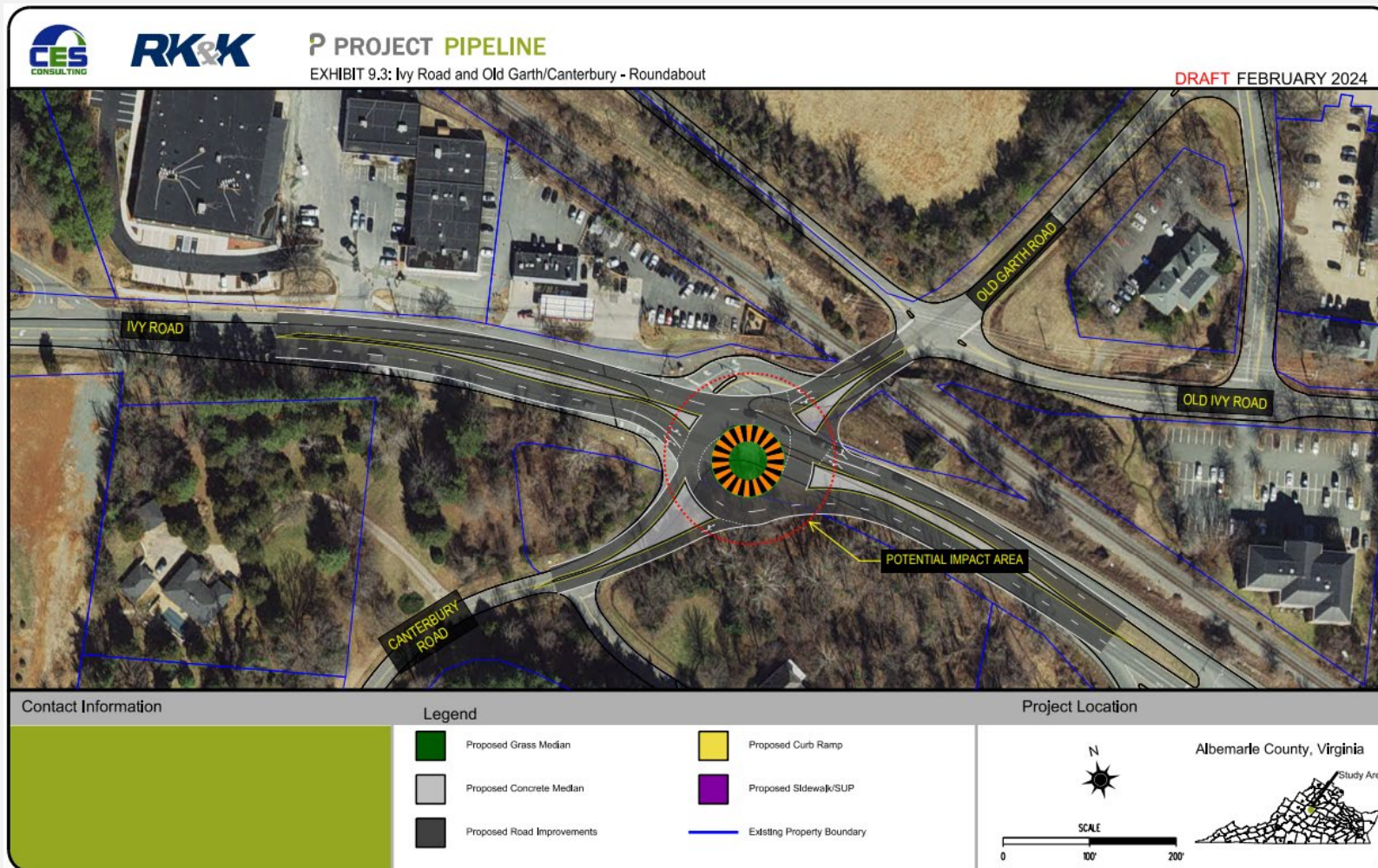
Preliminary Cost Estimate

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

Phase	Cost Estimate (2025 Dollars)
Preliminary Engineering	\$1,436,250
ROW and Utility Relocation	\$1,509,600
Construction	\$6,389,135
Total Cost	\$9,334,985

Canterbury Road/Old Garth Road Hybrid Roundabout

Recommended Improvements - Short Term (Phase 2)



Improvement Description

- A hybrid roundabout at the Canterbury Road/Old Garth Road intersection.
- Install a raised median barrier from Boars Head Drive to Canterbury Road/Old Garth Road.

This improvement is expected to significantly improve safety at the Canterbury Road/Old Garth Road intersection. The roundabout will operate significantly better than the existing traffic signal.

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 (2025 Dollars)
Preliminary Engineering	\$1,649,700
ROW and Utility Relocation	\$1,814,600
Construction	\$7,168,123
Total Cost	\$10,632,423

Traffic Operations Results

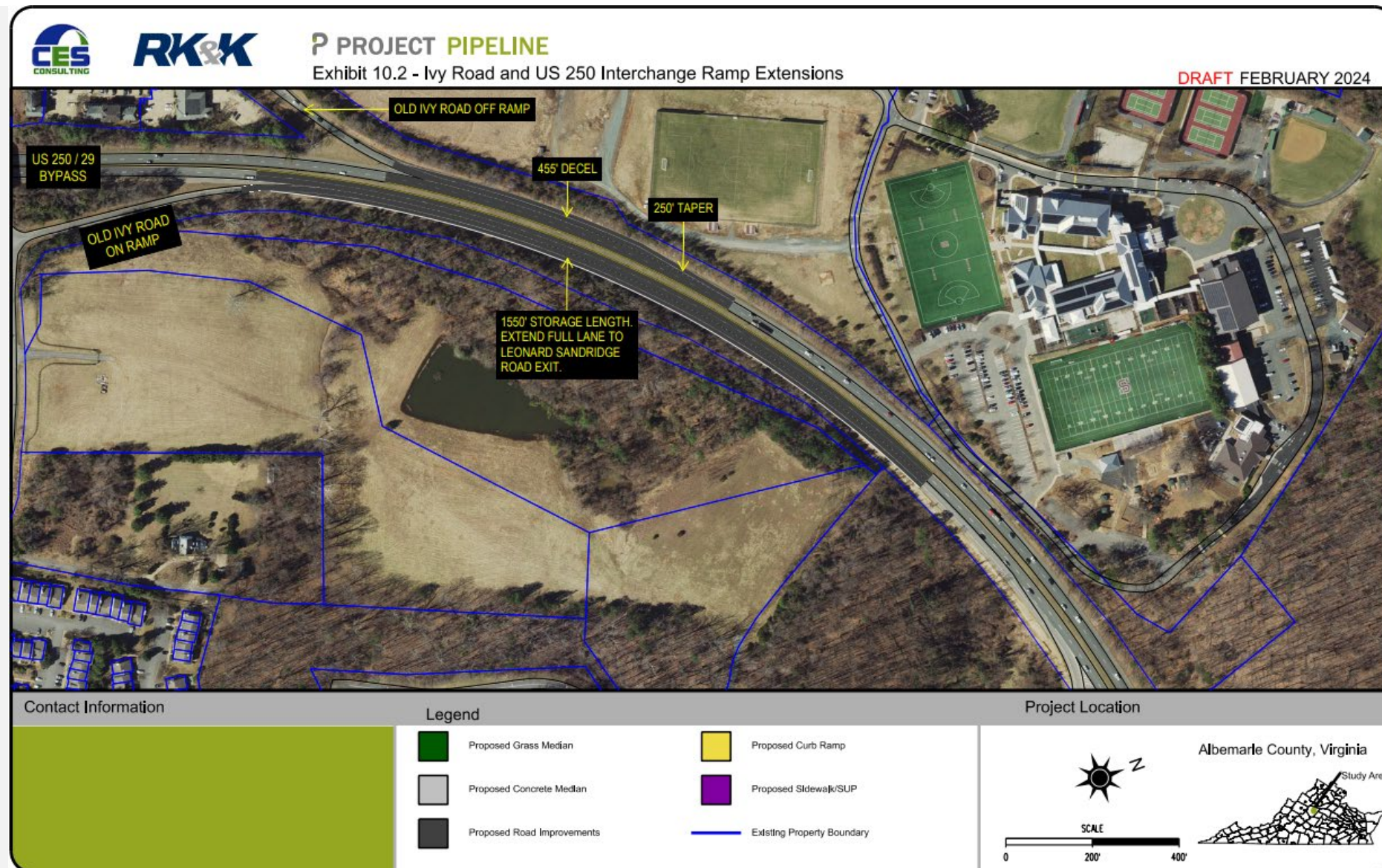
Canterbury Road/Old Garth Road and Ivy Road Average Delay		
Alternative	Overall Intersection AM Peak	Overall Intersection PM Peak
No Build (2045)	30.7	43.9
Roundabout (2045)	10.1	11.8

Safety Results

- The Canterbury Road/Old Garth Road roundabout has a CMF value of 0.52; a 48% reduction in all crashes is anticipated.

US 250 Interchange Bypass On/Off-ramp Acceleration Deceleration Lanes (north of Ivy Road)

Recommended Improvements - Short Term (Phase 2)



Traffic Operations Results

	Type	# Lanes	Analyses	NB 2045		BD 2045	
				AM	PM	AM	PM
Bypass NB On-Ramp at Old Ivy Road	Merge	2	Density (D), pc/mi/ln	27.0	26.8	18.5	18.6
			Level of Service (LOS)	C	C	B	B
			Speed (mph)	49.9	50	50.5	50.5
			Input Volume (vph)	2,678	2,670	2,678	2,670
Bypass SB Off-Ramp at Old Garth Road	Diverge	2	Density (D), pc/mi/ln	12.7	23.6	8.5	19.5
			Level of Service (LOS)	B	C	A	B
			Speed (mph)	46	45.9	46	54.9
			Input Volume (vph)	1,822	3,046	1,822	3,046

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..

Improvement Description

- Preferred Alternative: Lengthening the US 250 northbound Bypass On-ramp acceleration lane to 1,550 feet of full-width storage, extending the on-ramp to the Leonard Sandridge Road exit.
- Preferred Alternative: Lengthening the US 250 southbound Bypass Off-ramp deceleration lane to 455 feet of full-width storage. The 455-foot deceleration lane will provide the standard deceleration length for this off-ramp.

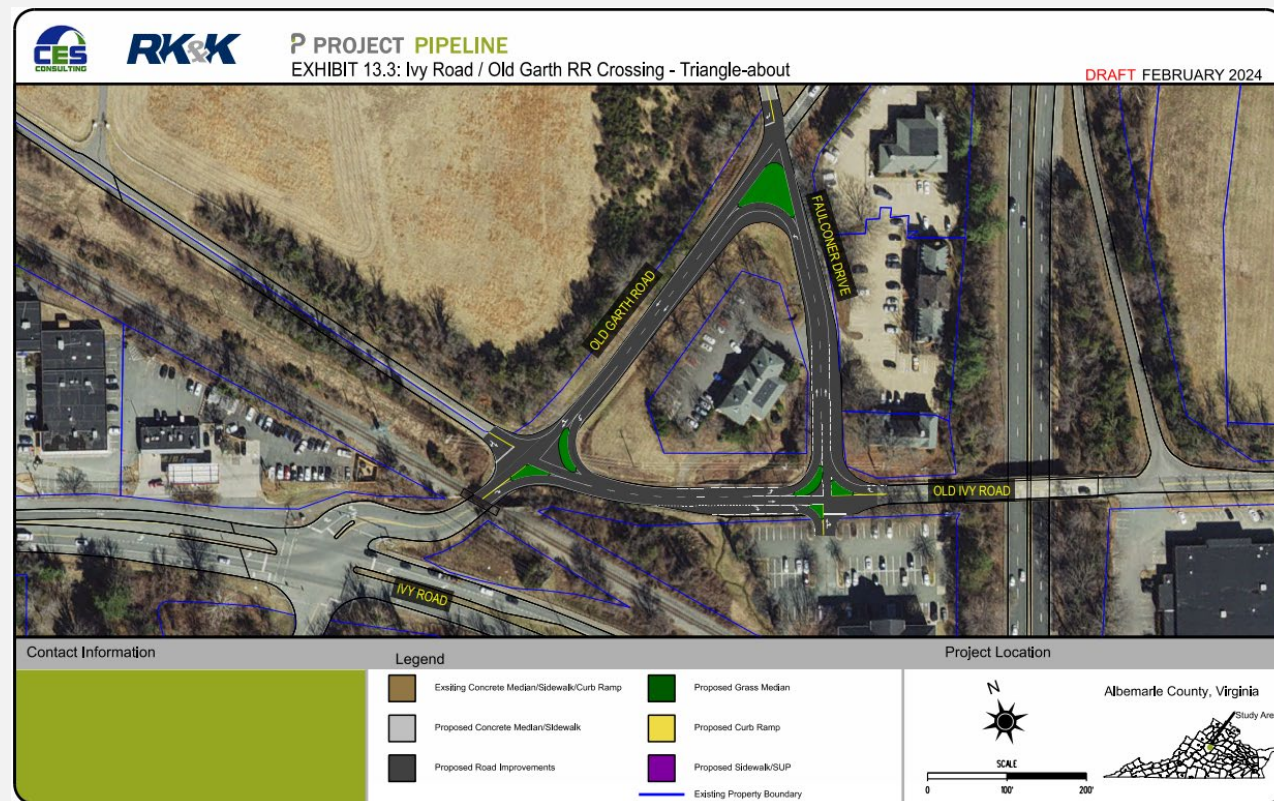
Safety Results

- Extending the US 250 Bypass northbound On-Ramp to a length of 1,550 feet has a CMF = 0.594, which means the crashes are anticipated to be reduced by 40.6% in the influence area of the acceleration lane.
- Extending the US 250 Bypass SB Off-Ramp to a length of 455 feet has a CMF = 0.241, which means the crashes are anticipated to be reduced by 75.9% in the influence area of the deceleration lane.

Phase	Cost Estimate (2025 Dollars)
Preliminary Engineering	\$956,400 (NB) / \$621,400 (SB)
ROW and Utility Relocation	\$0 (NB) / \$0 (SB)
Construction	\$2,554,390 (NB) / \$1,532,320 (SB)
Total Cost	\$3,510,790 (NB) / \$2,153,720 (SB)

Old Ivy Road “Triangle-about”

Recommended Improvements - Short Term (Phase 2)



Improvement Description

- A “Triangle-about” at the Old Ivy Road intersection.
 - Converts the existing Old Garth Road/Old Ivy Road area from two-way streets to one-way streets within an “intersection triangle” comprised of Old Garth Road, Old Ivy Road, and Faulconer Drive. Vehicles travel in a counterclockwise direction when viewed from above. These intersections function like a large roundabout, improving the flow of vehicles between intersections and into and out of the area.

Safety Results

- There are no applicable CMFs for this unique recommendation for a “Triangle-about.”

Traffic Operation Results

Traffic analysis results were pulled from a recent ATCS study, which recommended the “Triangle-about.”

Intersection #1	Old Garth Rd EB Approach	US 29 SB Ramp WB Approach	Old Ivy Rd SEB Approach	Old Ivy Rd NWB Approach	Overall Intersection
AM PEAK HOUR					
LOS	A	A	F	n/a	E
Delay (sec/veh)	0.0	4.4	625.1	n/a	44.4
95th Percentile Queue (ft)	0 (EB R)	47 (WB L) 0 (WB TR)	321 (SE TR)	n/a	—
Distance to Nearest Upstream Intersection (ft)	240	420	3900	n/a	—
PM PEAK HOUR					
LOS	A	A	E	n/a	A
Delay (sec/veh)	0.0	2.5	35.7	n/a	3.1
95th Percentile Queue (ft)	0 (EB R)	22 (WB L) 0 (WB TR)	40 (SE TR)	n/a	—
Distance to Nearest Upstream Intersection (ft)	240	420	3900	n/a	—
Intersection #2	Old Ivy Rd EB Approach	Old Ivy Rd WB Approach	Driveway NB Approach	Faulconer Dr SB Approach	Overall Intersection
AM PEAK HOUR					
LOS	A	A	D	n/a	A
Delay (sec/veh)	1.0	0.0	30.6	n/a	1.0
95th Percentile Queue (ft)	10 (EB L) 0 (EB T) 0 (EB R)	0 (WB R)	1 (NB TR)	n/a	—
Distance to Nearest Upstream Intersection (ft)	340	350	n/a	n/a	—
PM PEAK HOUR					
LOS	A	A	C	n/a	A
Delay (sec/veh)	0.4	0.0	18.1	n/a	0.8
95th Percentile Queue (ft)	3 (EB L) 0 (EB T) 0 (EB R)	0 (WB R)	9 (NB TR)	n/a	—
Distance to Nearest Upstream Intersection (ft)	340	350	n/a	n/a	—
Intersection #3	US29 SB Off-Ramp WB Approach	Faulconer Dr NB Approach	Faulconer Dr SB Approach	Overall Intersection	
AM PEAK HOUR					
LOS	A	C **	E	B **	
Delay (sec/veh)	0.0	20.8 **	40.7	11.2 **	
95th Percentile Queue (ft)	0 (WB LT) 0 (WB R)	0 (NB L) 95 (NB T)	155 (SB R)	—	
Distance to Nearest Upstream Intersection (ft)	880*	410	1700	—	
PM PEAK HOUR					
LOS	A	A	C	A **	
Delay (sec/veh)	0.0	3.7 **	17.0	2.6 **	
95th Percentile Queue (ft)	0 (WB LT) 0 (WB R)	0 (NB L) 18 (NB T)	29 (SB R)	—	
Distance to Nearest Upstream Intersection (ft)	880*	410	1700	—	

* Approximate ramp storage capacity. If exceeded, vehicle queue extends onto mainline US 29.
** Calculated manually due to channelized NBL turn lane. Synchro/SimTraffic cannot model channelized left turns.

Preliminary Cost Estimate

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

Phase	Cost Estimate (2025 Dollars)
Preliminary Engineering	\$519,600
ROW and Utility Relocation	\$0
Construction	\$1,392,320
Total Cost	\$1,911,920



Improvement Description

- Two-way Signalized Traffic at the Old Ivy Road railroad underpass.
 - Remove the eastbound left turn movement at Ivy Road and Old Ivy Road
- Install sidewalk along Old Ivy Road from Ivy Road to Faulkner Way.

These improvements are expected to significantly improve pedestrian safety along Old Ivy Road. The proposed modifications to include the railroad underpass in the traffic signal will have minor impacts on the delay at the intersection of Ivy Road and Old Ivy Road.

Traffic Operations Results

Old Ivy Road and Ivy Road Average Delay		
Alternative	Overall Intersection AM Peak	Overall Intersection PM Peak
No Build (2045)	14.1	16.4
Build (2045)	21.5	24.6

Safety Results

- Installing a sidewalk has a pedestrian crash CMF value of 0.598, a 40% reduction in pedestrian crashes.

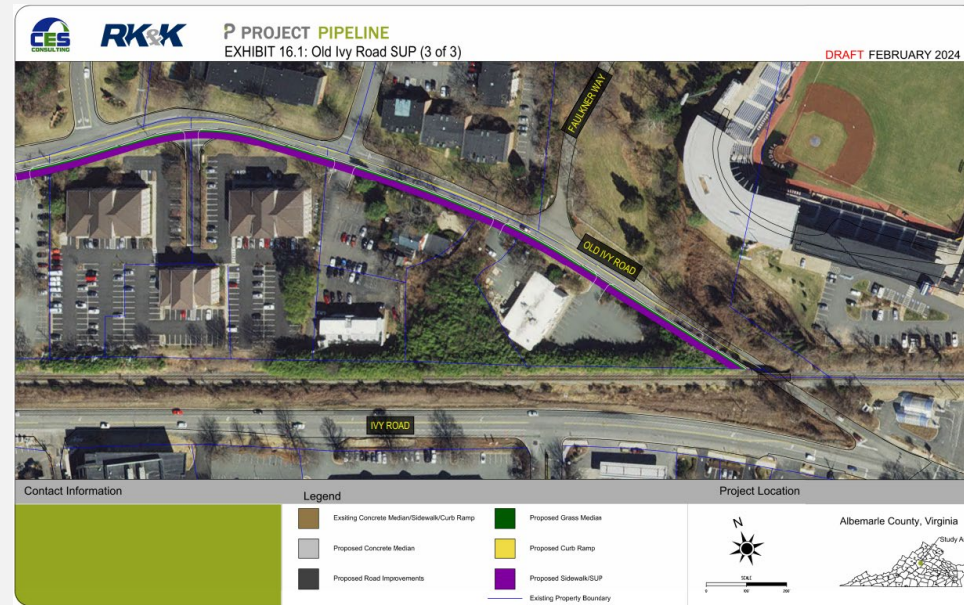
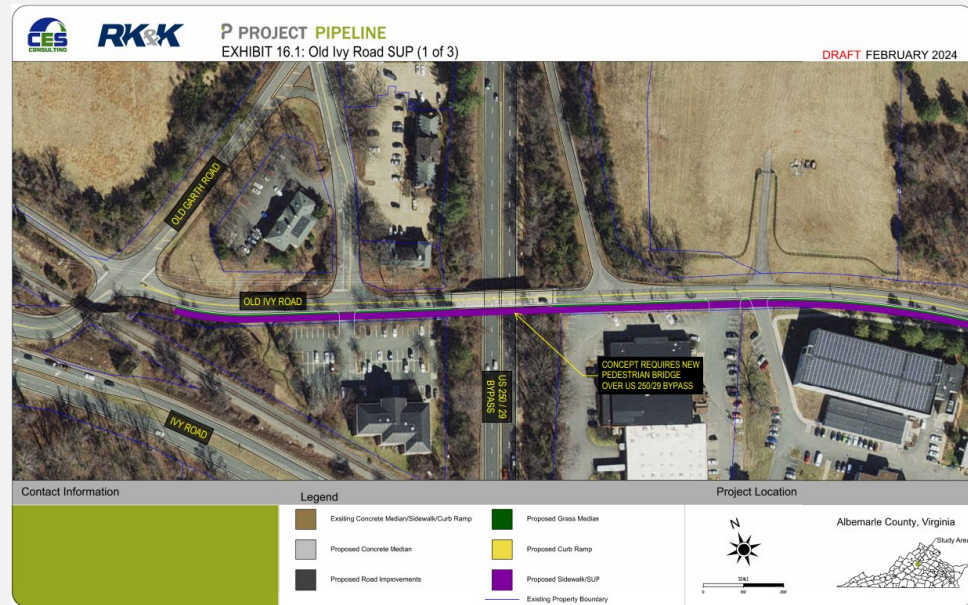
Preliminary Cost Estimate

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 (2025 Dollars)
Preliminary Engineering	\$598,000
ROW and Utility Relocation	\$0
Construction	\$1,593,884
Total Cost	\$2,192,684

Old Ivy Road Shared Use Path

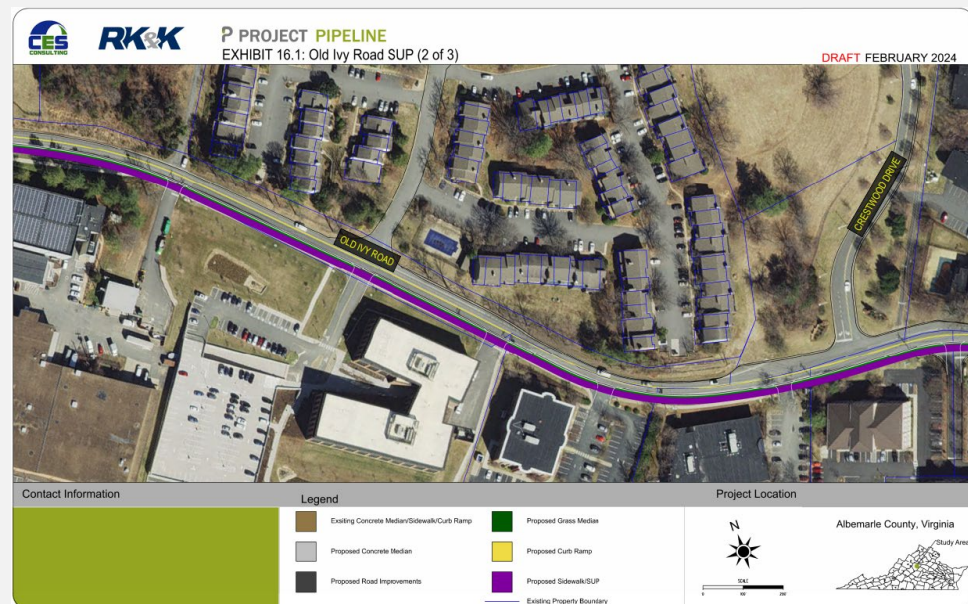
Recommended Improvements – Short Term (Phase 2)



Improvement Description

- Preferred Alternative: 10' Shared Use Path on the south side of Ivy Road from the Bypass to Old Ivy Road.

The Shared Use Path will provide a missing link for pedestrians and bicyclists and better connect the transit stops for pedestrians.



Safety Results

- Installing the Shared Use Path on the south side of Ivy Road has a bicycle crash CMF value of 0.41, a 59% reduction in bicycle crashes is anticipated; and it has a pedestrian crash CMF value of 0.598, a 40% reduction in pedestrian crashes is anticipated.

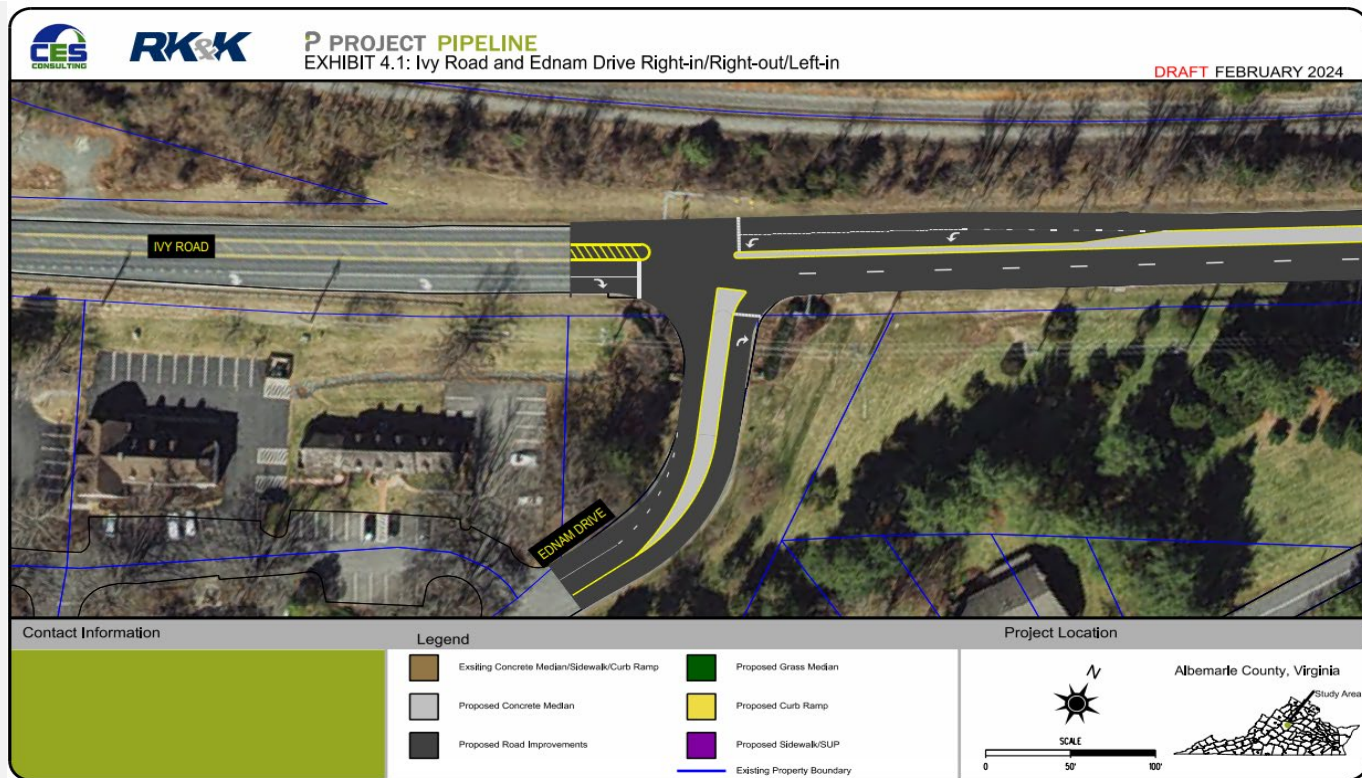
Preliminary Cost Estimate

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

Phase	Cost Estimate (2025 Dollars)
Preliminary Engineering	\$1,436,250
ROW and Utility Relocation	\$1,509,600
Construction	\$6,389,135
Total Cost	\$9,334,985

Ednam Drive Right-In/Right-Out & Left-In Only

Recommended Improvements - Long Term (Phase 2)



Improvement Description

- A right-in/right-out & left-in only at the Ednam Drive intersection.

These improvement is expected to significantly improve safety at the Ednam Drive intersection. This alternative will operate with approximately the same delay as the existing traffic signal.

Traffic Operations Results

Safety Results

- The Ednam Drive right-in/right-out & left-in only has a CMF value of 0.55; a 45% reduction in all crashes is anticipated.

Preliminary Cost Estimate

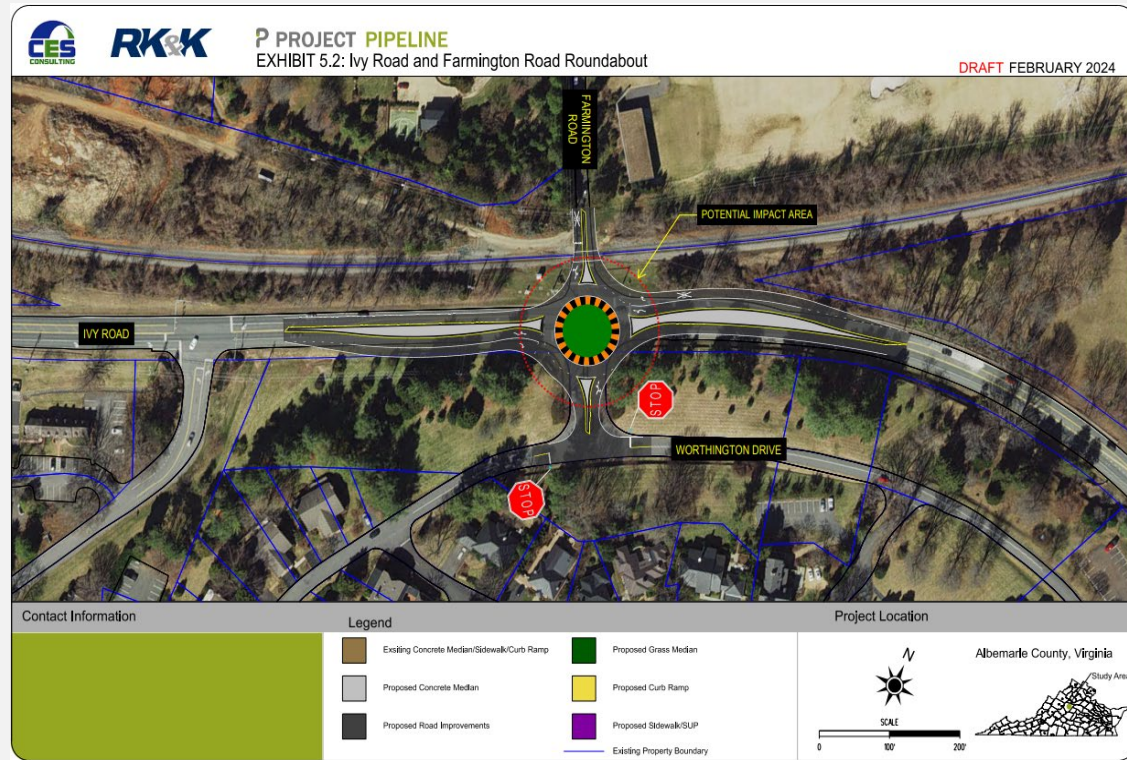
Cost estimates were not developed for the long term recommendations.

Ednam Drive Right-In/Right-Out & Left-In Only Average Delay		
Alternative	Overall Intersection AM Peak	Overall Intersection PM Peak
No Build (2045)	14.1	10.4
Build (2045)	13.7*	10.2*

* Highest individual movement delay

Farmington Drive – Hybrid Roundabout

Recommended Improvements – Long Term (Phase 2)



Improvement Description

- A hybrid roundabout at the Farmington Drive intersection.

This improvement is expected to significantly improve safety at the Farmington Drive intersection. The roundabout will operate significantly better than the existing traffic signal in the PM peak hour.

Traffic Operations Results

Safety Results

- The Farmington Drive roundabout has a CMF value of 0.52; a 48% reduction in all crashes is anticipated.

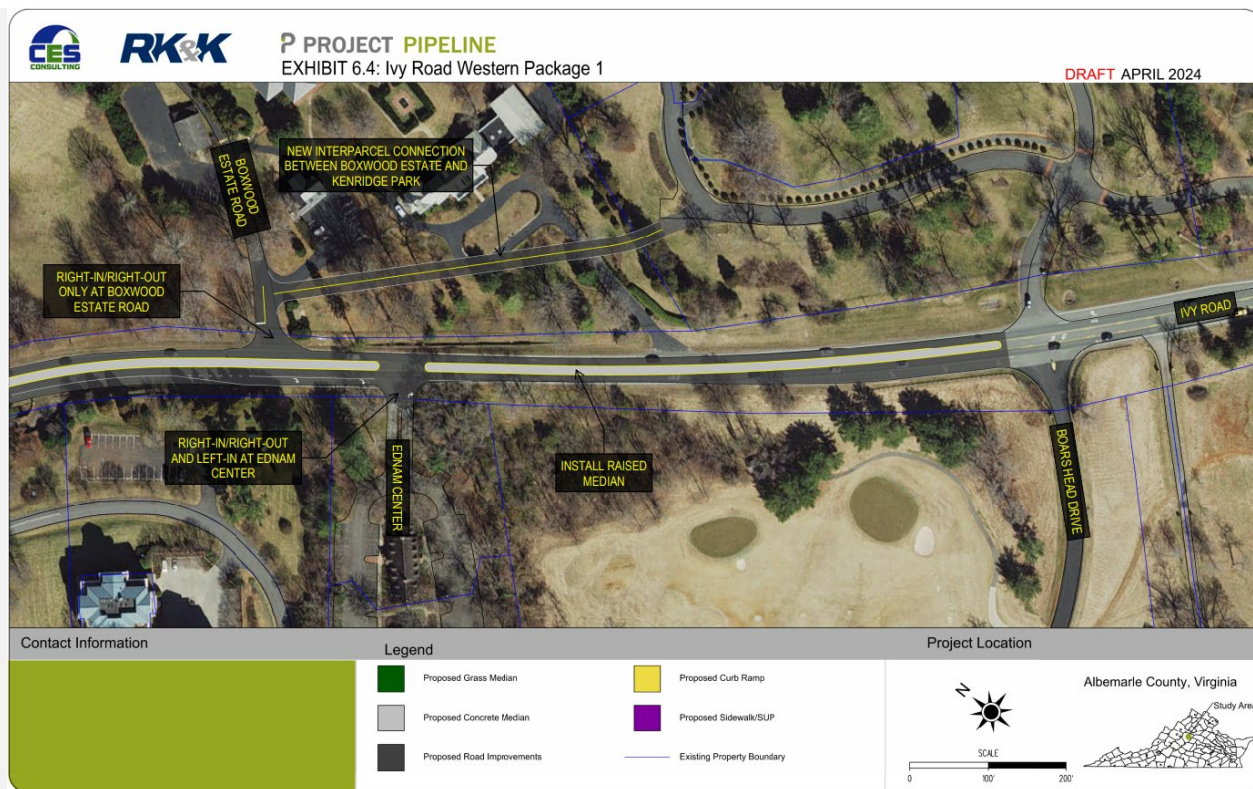
Preliminary Cost Estimate

Cost estimates were not developed for the long term recommendations.

Farmington Drive and Ivy Road Average Delay		
Alternative	Overall Intersection AM Peak	Overall Intersection PM Peak
No Build (2045)	11.9	31.8
Roundabout (2045)	9.6	10.0

Boxwood Estate Road & Ednam Center – Right-In/Right-Out

Recommended Improvements – Long Term (Phase 2)



Improvement Description

- Install a raised median from Farmington Drive to Boars Head Drive.
 - Boxwood Estate Road becomes right-in/right-out only
 - Ednam Center becomes right-in/right-out and left in only
 - Boxwood Driveway becomes right-in/right out only

These improvements are expected to significantly improve safety on this segment of Ivy Road. U-turn movements created by the raised median would be facilitated at the proposed Boars Head Drive roundabout (short-term improvement) and the proposed Farmington Drive roundabout (long-term improvement).

Traffic Operations Results

Boxwood Estate Average Delay		
Alternative	Lowest Individual Movement AM Peak	Lowest Individual Movement PM Peak
No Build (2045)	32.0	44.3
Build (2045)	17.1	30.3

Safety Results

- Changing intersections of Boxwood Estate Road & Ednam Center to be right-in/right-out has a CMF value of 0.55, a 45% reduction in intersection crashes is anticipated.
- Installing raised median along Ivy Road has a CMF value of 0.29, a 71% reduction in intersection crashes is anticipated.

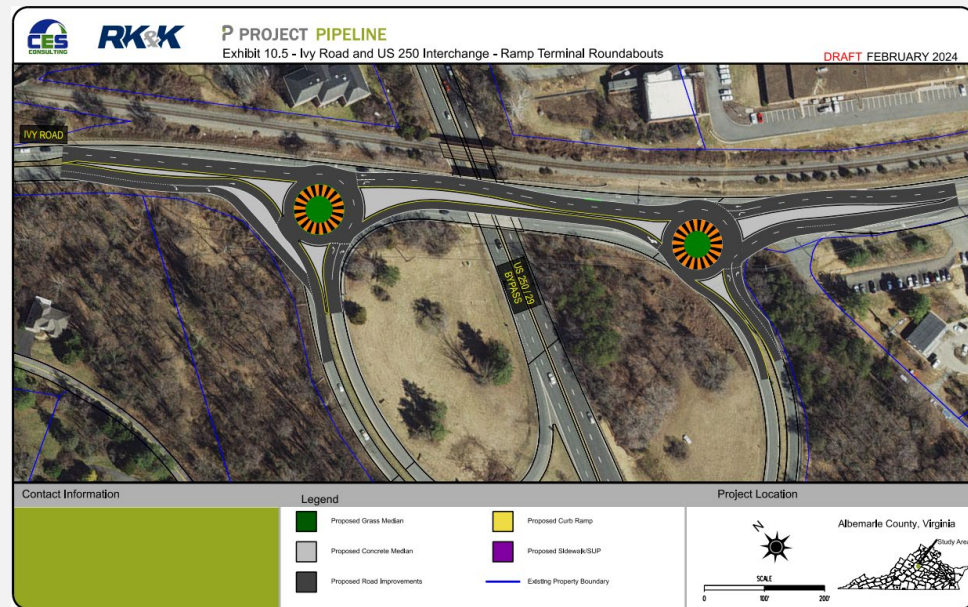
Preliminary Cost Estimate

Cost estimates were not developed for the long term recommendations.

NB & SB Bypass Ramp Terminal – Hybrid Roundabouts



Recommended Improvements – Long Term (Phase 2)



Rt. 29 Bypass SB and NB Off-Ramp Intersections Average Delay		
Alternative	Overall Intersection AM Peak	Overall Intersection PM Peak
No Build (2045) SB Ramp	12.0	22.6
Roundabout SB Ramp(2045)	7.0	15.0
No Build (2045) NB Ramp	25.9	16.1
Roundabout (2045) NB Ramp	12.6	8.0

Improvement Description

- Preferred Alternative: Hybrid Roundabouts at the Rt. 29 southbound and northbound Bypass off-ramp intersections.

The preferred alternative improvements are projected to significantly improve safety at the Rt. 29 southbound and northbound Bypass off-ramp intersections. The roundabout will operate markedly better than the existing traffic signal in both peak hours.

Safety Results

- The Rt. 29 Bypass SB and NB Off-Ramp roundabouts have a CMF value of 0.52; a 48% reduction in all crashes is anticipated.

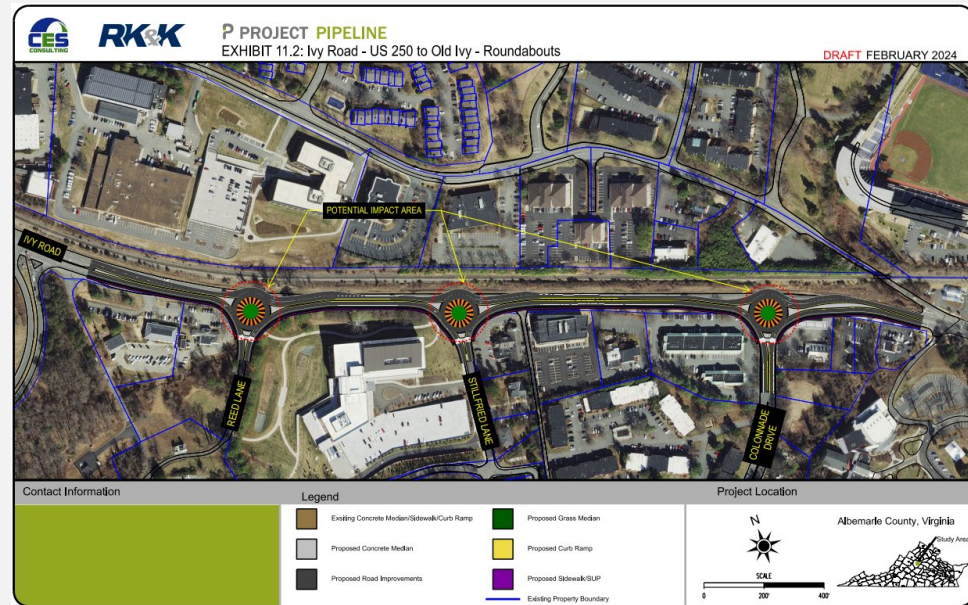
Preliminary Cost Estimate

Cost estimates were not developed for the long term recommendations.

Roundabouts – At Reed Lane, Stillfried Lane, and Colonnade Drive Intersections



Recommended Improvements – Long Term (Phase 2)



Safety Results

- The Reed Lane, Stillfried Lane, and Colonnade Drive roundabouts have a CMF value of 0.56; a 44.0% reduction in all crashes is anticipated.
- Installing raised median along Ivy Road has a CMF value of 0.29, a 71% reduction in intersection crashes is anticipated.

Improvement Description

- Install roundabouts at Reed Lane, Stillfried Lane, and Colonnade Drive intersections.
- Install a Raised Median – From west of Reed Lane to Colonnade Drive.

The preferred alternative improvements are projected to significantly improve safety and traffic flow.

Traffic Operations Results

Intersection Average Delay		
Alternative	Overall Intersection AM Peak	Overall Intersection PM Peak
Reed Ln. No Build (2045)	21.0*	41.9*
Reed Ln. Roundabout (2045)	11.0	10.5
Stillfried Ln. No Build (2045)	25.4*	135.2*
Stillfried Ln. Roundabout (2045)	12.0	8.0
Colonnade Dr. No Build (2045)	24.5*	49.9*
Colonnade Dr. Roundabout (2045)	8.6	8.4

*Highest individual movement delay.

Preliminary Cost Estimate

Cost estimates were not developed for the long term recommendations.