MEMORANDUM

To: Ebadurahman Ahmadi, Traffic Safety Engineer
Prince William County
5 County Complex Ct., Ste. 290
Prince William, VA 22192

From: David Samba, PE, PTOE, PTP, RSP1, RSP2
Brooke Adams, PE
Becca Sulla

Kimley-Horn and Associates, Inc.

Date: August 7, 2024

Subject: Darbydale/Forestdale Retrofitting Project

Implementation Recommendations Memorandum

Introduction

Prince William County initiated the Darbydale/Forestdale Avenue Retrofitting Project ("Project") with the goal of enhancing safety for people who walk, drive, and bike at the intersections of: Eastlawn Avenue and Darbydale Avenue, Forestdale Avenue and Ferndale Road (north), and Forestdale Avenue and Ferndale Road (south).

The project builds on a previous planning study by the Virginia Office of Intermodal Planning and Investment (OIPI), providing the necessary technical evaluations and design to allow Prince William County to seek state, regional, and federal funding to construct and implement the recommended improvements. The subject corridors were identified as priority locations in the County's 2022 Roadway Incident Management Program (RIMP). Since 2015 there have been 26 total crashes in the intersection vicinities, with 30 percent of crashes resulting in injuries (for a total of 15 people injured). The crash history; the proximity of pedestrian generators such as transit stops, Bel Air Elementary School, George Hampton Middle School, Logan Park, and Birchdale Recreation Center; the planned mixed-used development community; and the fact that the corridors are located within an equity emphasis area underscore the critical and urgent need to develop traffic and pedestrian safety concepts. Doing so will address safety needs for some of the County's most vulnerable, lower-income, and racially diverse communities.

Prince William County was awarded funds through the Metropolitan Washington Council of Governments' (MWCOG) Regional Roadway Safety Program to further develop concepts for safety

improvements. This technical memorandum presents the project background, existing conditions, and implementation recommendations resulting from the grant award.

PROJECT BACKGROUND

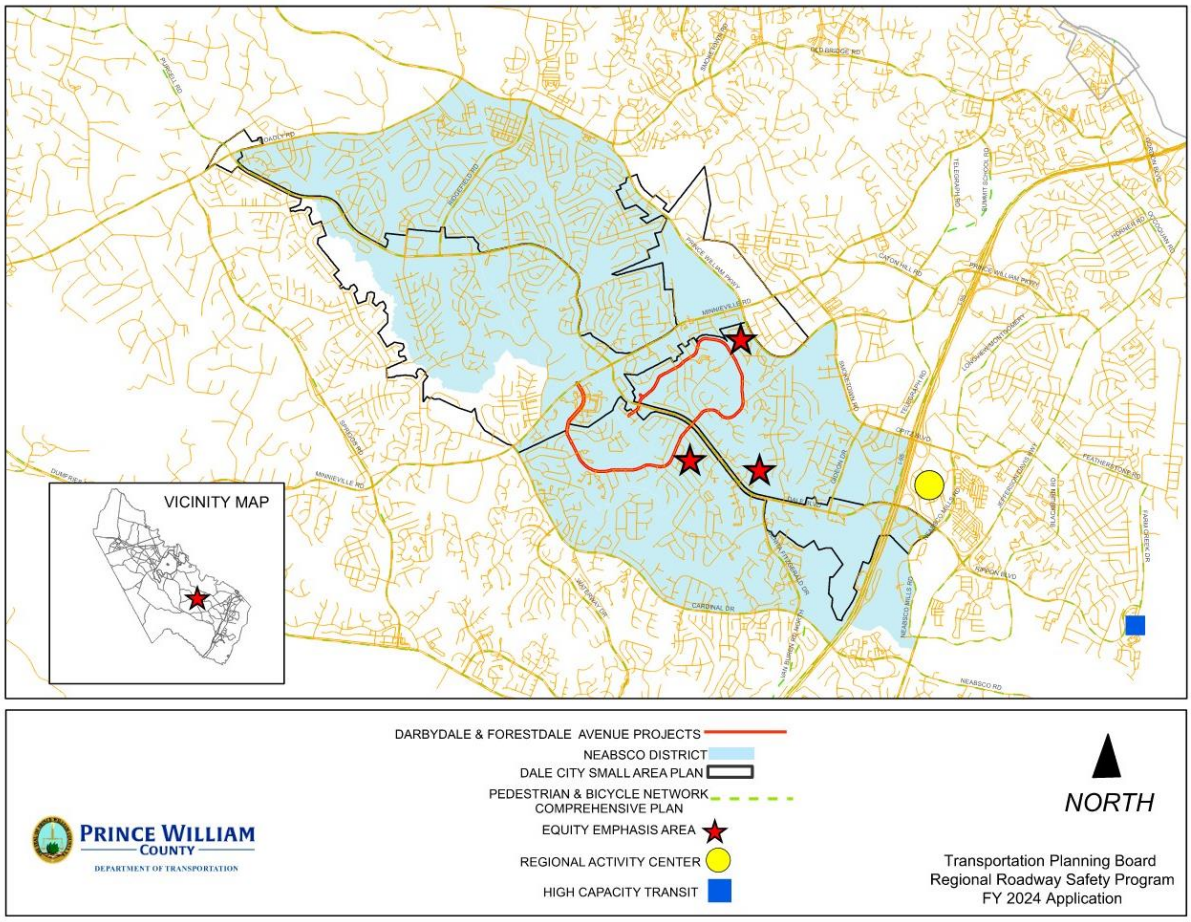
The study area for this project, shown in Figure 1, includes the following three (3) intersections:

- Eastlawn Avenue and Darbydale Avenue
- Forestdale Avenue and Ferndale Road (north)
- Forestdale Avenue and Ferndale Road (south)

Figure 1: Project Study Intersections

Darbydale Avenue and Forestdale Avenue, State Route 1826, are both identified as legacy roadways in Prince William County. Legacy roads are roadways that were designed based on outdated traffic and mobility assumptions which, as the land use and transportation needs of the community continue

to change, experience severe issues related to traffic and pedestrian safety. The Darbydale /Forestdale Avenue Corridor, like most legacy roads in Prince William, is in an older and established neighborhood that primarily houses lower-income families and minority communities. Darbydale Avenue and Forestdale Avenue serve two Equity Emphasis Areas (EEA) (Census Tracts 9004.03 and 9004.09) as well as George Hampton Middle School, which has a significant volume of students that walk to school, as shown in Figure 2.



Source: Prince William County

Figure 2: Project Study Area Vicinity Map

Project Design Methodology

An existing conditions assessment was conducted to collect relevant data, at all three study intersections. This assessment included data collection (traffic counts and crash data), previous study review, survey, and a field visit. This information was then reviewed and used in identifying countermeasures for the design recommendations. Relevant federal, state, and county standards were reviewed when determining appropriate countermeasures. Coordination with Prince William County and VDOT staff was ongoing throughout the project to verifying the selected countermeasures to be used in the 30% plan design development.

Existing Conditions

Precision Measurements, Inc conducted a ground survey of the study area on Thursday, February 9, 2024 to locate utilities and any other potential physical conflicts. This survey was used to inform the design of potential modifications to the roadway and other facilities.

Kimley-Horn conducted field observations on Monday, April 8, 2024. Field observations taken in the field included, but were not limited to, existing intersection geometry, ADA and pedestrian accommodations, traffic control signs, and pavement markings throughout the corridor. Utility locations were also verified in the field.

The 5-year crash history along Forestdale Avenue and Darbydale Avenue in the vicinity of the three study intersections was reviewed to determine potential safety improvements along the corridor. Historic crash data was obtained from VDOT's open data portal, Virginia Roads[1], and used in a safety analysis of the study area. Since 2015, a total of 26 crashes have occurred at the intersections and of those crashes 27% resulted in injuries (13 people injured).

[1] https://www.virginiaroads.org/

The traffic count data is summarized below:

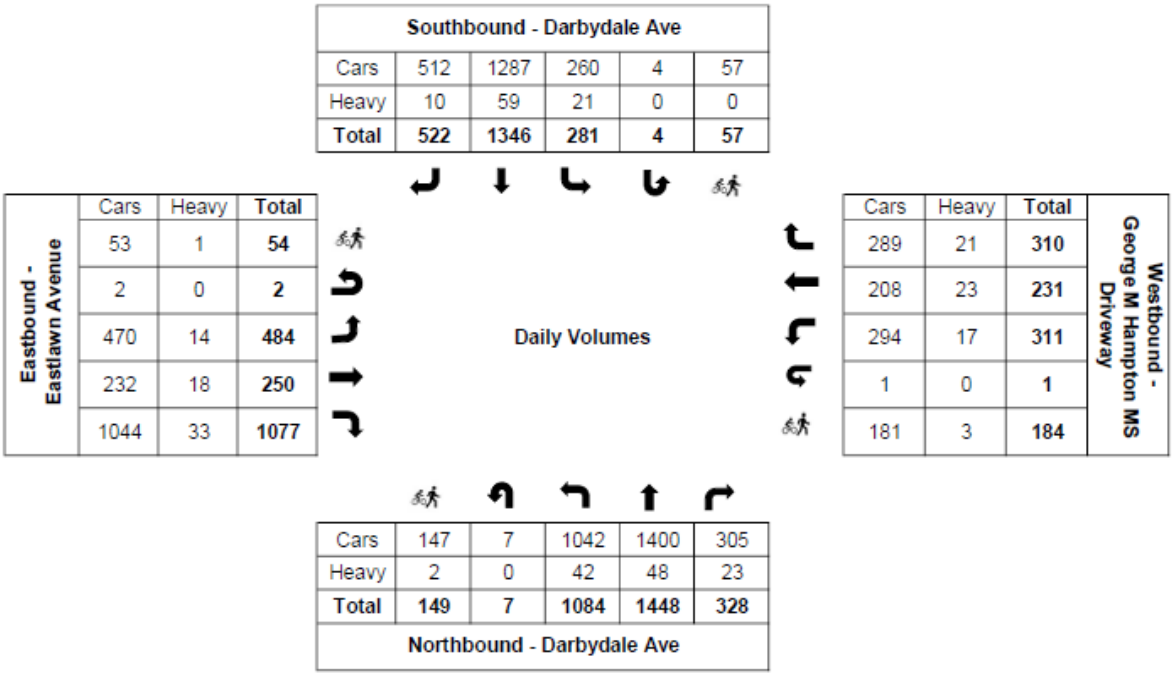


Figure 3: Eastlawn Avenue and Darbydale Avenue Traffic Counts

The summation of ADT from each intersecting roadway is approximately 8,000 vehicles/day, with heavy vehicle percentage of 4.2 percent.

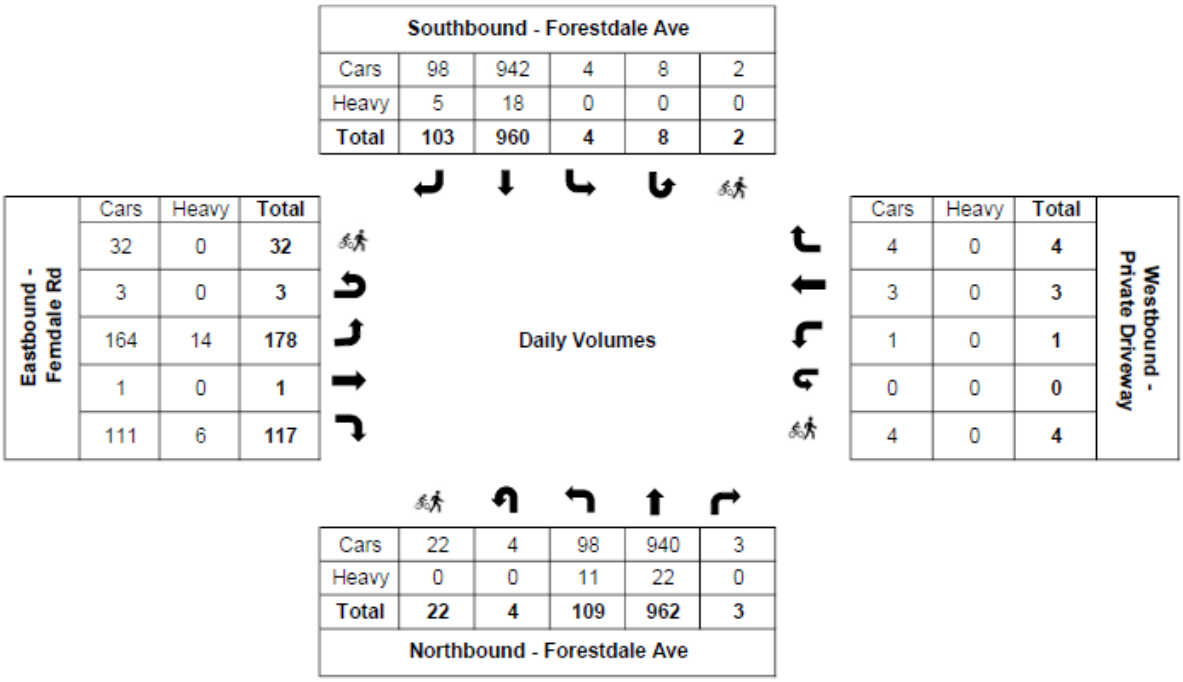


Figure 3: Forestdale Avenue and Ferndale Road (north) Traffic Counts

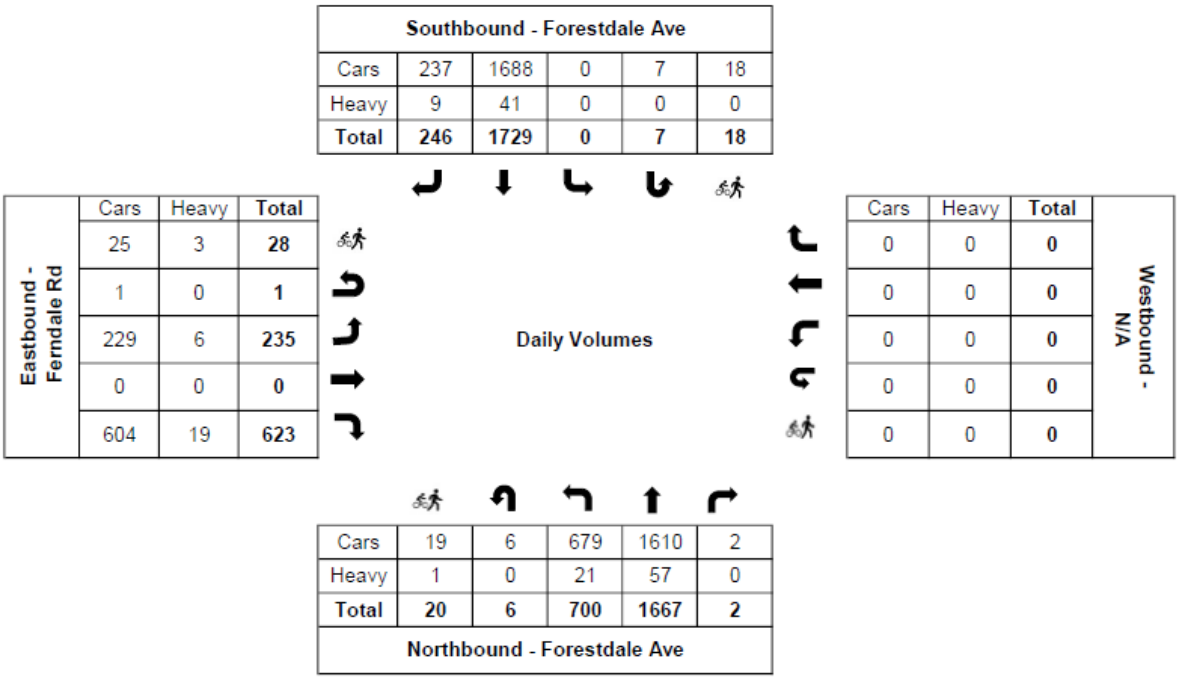


Figure 4: Forestdale Avenue and Ferndale Road (south) Traffic Counts

Both Forestdale and Ferndale Road intersections have a lower volume of traffic compared to Eastlawn. The north intersection is 2,460 vehicles/day and the south intersection is 5,216 vehicles/day.

Proposed Improvements

Previous planning studies, traffic count data, survey information, and field data were reviewed to determine appropriate potential improvements at the three study area intersections. Relevant federal, state, and local design standards were referenced for this process as well.

References include:

- Virginia Department of Transportation (VDOT) Roadway Design Manual
- Prince William County Design and Construction Standards Manual (PWC DCSM)
- Virginia Department of Transportation RDM Appendix A3 for roundabout design guidance

The following tables summarize the proposed improvements at each of the intersections.

Eastlawn Avenue and Darbydale Avenue

A mini-roundabout is proposed at the Eastlawn Avenue and Darbydale Avenue intersection. This intersection is adjacent to George M. Hampton Middle School and experiences higher volumes of pedestrian activity. The traffic count data satisfies roundabout eligibility per VDOT Road Design Manual. Table 1 summarizes the opportunities and issues of implementation.

Table 1: Potential Improvements at Eastlawn Avenue and Darbydale Avenue

Proposed Improvement	Opportunities	Issues
Proposed mini-roundabout (within existing ROW) and signage	• Reduces the number of vehicular conflict points • Promotes lower vehicle speeds • ADT meets VDOT eligibility criteria for mini roundabout (<10,000 v/d, less than 5% heavy vehicles)	• Temporary construction easements are likely • Grading impacts undetermined • Potential utility relocations
Upgraded ADA-compliant curb ramps on all four crossings	• Compliance with current PROWAG standards	N/A
Realignment of all four crosswalks per updated mini-roundabout design	• Shorter crossing distances for pedestrians	N/A
Restricted parking	• Improve pedestrian visibility	• Removal of existing parking spaces
Lighting enhancements	• Improve visibility for all users	• Utility provider easement likely

Grading for the roundabout improvements was not evaluated during this preliminary design stage. Therefore, temporary easements are approximate and it is anticipated that the existing pavement will be replaced to provide adequate cross slopes for the circulatory roadway. Subsurface utility elevations are unknown at this time. Survey is recommended in future design phases to identify conflicts with proposed improvements.

Autoturn analysis confirms the feasibility of a school bus (AASHTO S-BUS 40) navigating the design geometry. Concrete splitter islands are proposed for pedestrian safety, however these installations can be flush and designed with color-contrasting pavement markings if desired by the County. The fully-traversable central island is 55' wide and inscribed diameter is 87', meeting the VDOT standard guidance for roundabout design. Further coordination with Dominion Energy is needed regarding lighting options, service connection, and potential utility easements.

Forestdale Avenue and Ferndale Road (north)

Table 2 identifies the proposed improvements at the Forestdale Avenue and Ferndale Road northern intersection. Curb extensions are proposed as a traffic calming measure and for pedestrian safety. The curb extensions are designed to accommodate turning movements for a school bus. The east leg of the intersection serves a private driveway and the curb extensions are designed to accommodate a standard truck turning radius.

Table 2: Potential Improvements at Forestdale Avenue and Ferndale Road (north)

Proposed Improvement	Opportunities	Issues
Proposed concrete curb extensions on all four corners of the intersection	• Promotes slower speeds • Improves visibility for pedestrians	• Temporary construction easements likely
Upgraded ADA-compliant curb ramps on all crossings	• Compliance with current PROWAG standards	N/A
Realignment of all four crosswalks and updated pavement markings	• Increases mobility and accessibility (ADA) • Shorter crossing distances	N/A
Restricted parking	• Increases visibility for pedestrians	• Removal of existing parking spaces

Forestdale Avenue and Ferndale Road (south)

Table 3 identifies similar improvements at the Forestdale Avenue and Ferndale Road southern intersection. The curb extensions are designed to accommodate turning movements for a school bus. The curb extension on the southeast side of the intersection results in a driveway extension. Drainage improvements are identified to ensure adequate runoff from the intersection, however analysis for pipe sizing and inlet calculations were not conducted with this design phase.

Table 3: Potential Improvements at Forestdale Avenue and Ferndale Road (south)

Proposed Improvement	Opportunities	Issues
Proposed concrete curb extensions on both corners of the intersection and continuous extension on southeast side of intersection	• Promotes slower speeds • Improves visibility for pedestrians	• Driveway conflict with unknown grading impacts • Potential temporary construction easements
Upgraded ADA-compliant curb ramps on all crossings	• Compliance with current PROWAG standards	N/A
Realignment of all three crosswalks and upgraded pavement markings	• Increases mobility and accessibility (ADA) • Shorter crossing distances	N/A
Restricted parking	• Increases visibility for pedestrians	• Removal of existing parking spaces

Implementation Recommendations and Next Steps

- School coordination – Prince William County staff will coordinate with Prince William County Public Schools to obtain necessary approvals for the roundabout preliminary design at the Eastlawn Avenue and Darbydale Avenue study intersection.
- VDOT approval – PWC staff will coordinate with VDOT on final approval of preliminary plans, including any necessary permits and design requirements that would need to be incorporated into future design phases.
- Prince William County will use the cost estimate provided for the design recommendations to influence budget decisions, outline timing for design and construction schedules, and submit funding requests

Potential Funding Sources

- County Funding – This project can be considered for incorporation into the PWC CIP through the PWC budgetary process
- Safe Streets and Roads for All (SS4A) Grant Program – The SS4A program funds regional and local initiatives that aim to prevent roadway deaths and serious injuries. The SS4A FY25 program for Implementation Grant funding would be appropriate for this project. This project's intersection improvements would likely need to be combined for consideration.
- Transportation Alternatives - VDOT solicits TA project applications on a biennial basis. For information on funding guidelines, see https://www.vdot.virginia.gov/doing-business/for-localities/local-assistance/transportation-alternatives/

Attachments

Traffic Counts

Survey file

Proposed Design Files

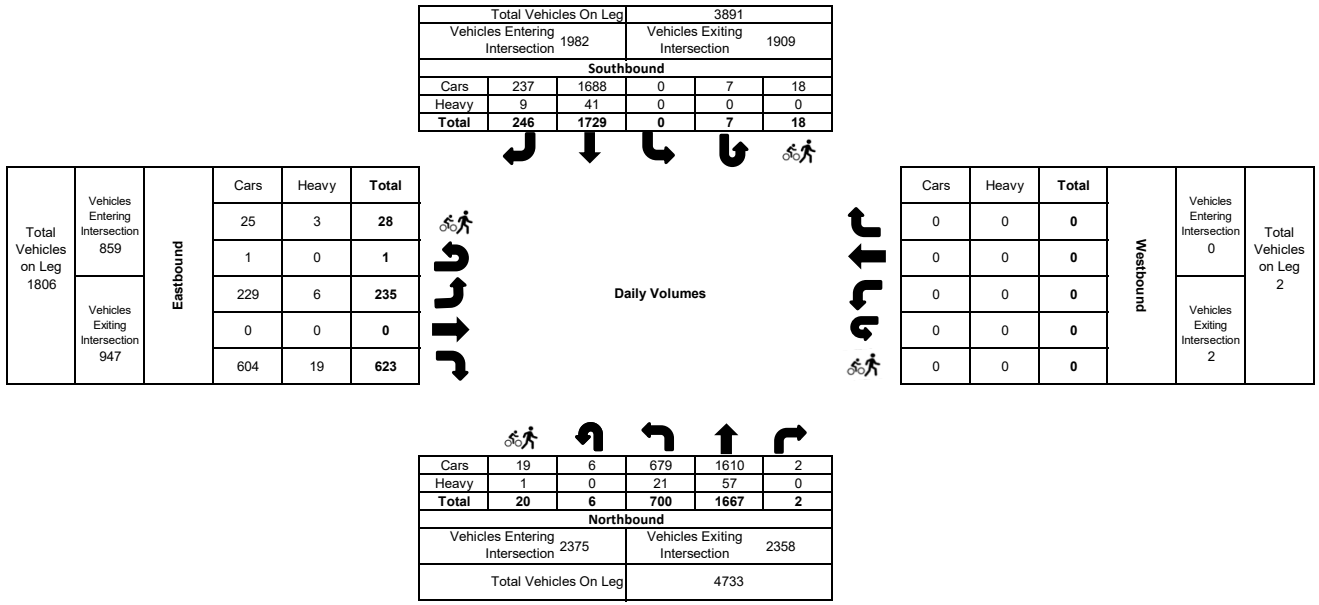
Ferndale South
0 0
Thursday, May 2023

AM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	
7:45 AM	0	0	45	5	0	*50*	0	0	0	0	0	*0*	0	27	15	0	0	*42*	0	2	0	26	5	*28*	**120**
8:00 AM	0	0	30	6	0	*36*	0	0	0	0	0	*0*	0	15	18	1	0	*34*	0	1	0	7	1	*8*	**78**
8:15 AM	0	0	22	9	0	*31*	0	0	0	0	0	*0*	0	22	24	0	0	*46*	0	3	0	4	0	*7*	**84**
8:30 AM	0	0	31	15	2	*46*	0	0	0	0	0	*0*	0	40	14	0	0	*54*	0	3	0	12	0	*15*	**115**
Peak Hour Total	0	0	128	35	2	*163*	0	0	0	0	0	*0*	0	104	71	1	0	*176*	0	9	0	49	6	*58*	**397**
PHF	0.000	0.000	0.711	0.583	0.250	*0.815*	0.000	0.000	0.000	0.000	0.000	*0.000*	0.000	0.650	0.740	0.250	0.000	*0.815*	0.000	0.750	0.000	0.471	0.300	*0.518*	**0.827**

PM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	
2:30 PM	0	0	32	2	0	*34*	0	0	0	0	0	*0*	0	21	34	0	2	*55*	0	4	0	16	1	*20*	**109**
2:45 PM	0	0	34	6	2	*40*	0	0	0	0	0	*0*	0	20	27	0	0	*47*	0	5	0	12	0	*17*	**104**
3:00 PM	0	0	25	7	0	*32*	0	0	0	0	0	*0*	1	22	30	0	1	*53*	0	4	0	20	0	*24*	**109**
3:15 PM	0	0	36	7	0	*43*	0	0	0	0	0	*0*	0	18	45	0	6	*63*	0	3	0	22	1	*25*	**131**
Peak Hour Total	0	0	127	22	2	*149*	0	0	0	0	0	*0*	1	81	136	0	9	*218*	0	16	0	70	2	*86*	**453**
PHF	0.000	0.000	0.882	0.786	0.250	*0.866*	0.000	0.000	0.000	0.000	0.000	*0.000*	0.250	0.920	0.756	0.000	0.375	*0.865*	0.000	0.800	0.000	0.795	0.500	*0.860*	**0.865**



Darbydale Eastlawn
0 0
Wednesday, June 7, 2023

AM Peak Hour

	Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
		U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	
719	7:30 AM	0	17	8	2	1	*27*	0	11	4	9	4	*24*	0	6	23	11	5	*40*	0	0	13	13	0	*26*	**117**
	7:45 AM	0	28	10	3	3	*41*	0	21	15	19	14	*55*	0	5	14	31	6	*50*	0	0	28	22	1	*50*	**196**
	8:00 AM	0	35	14	0	8	*49*	0	32	19	27	22	*78*	0	0	13	38	12	*51*	0	0	30	12	1	*42*	**220**
	8:15 AM	0	11	13	2	2	*26*	0	31	14	20	7	*65*	0	6	16	38	3	*60*	0	0	20	15	1	*35*	**186**
	Peak Hour Total	0	91	45	7	14	*143*	0	95	52	75	47	*222*	0	17	66	118	26	*201*	0	0	91	62	3	*153*	**719**
	PHF	0.000	0.650	0.804	0.583	0.438	*0.730*	0.000	0.742	0.684	0.694	0.534	*0.712*	0.000	0.708	0.717	0.776	0.542	*0.838*	0.000	0.000	0.758	0.705	0.750	*0.765*	**0.817**

PM Peak Hour

	Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
		U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	
675	2:45 PM	0	15	19	16	0	*50*	0	3	2	4	4	*9*	0	14	31	16	5	*61*	0	9	7	16	1	*32*	**152**
	3:00 PM	0	16	15	5	12	*36*	0	22	14	31	41	*67*	0	15	15	11	49	*41*	0	5	4	15	6	*24*	**168**
	3:15 PM	0	11	27	10	5	*48*	0	21	22	27	35	*70*	0	29	28	10	48	*67*	0	3	5	12	3	*20*	**205**
	3:30 PM	0	3	27	13	2	*43*	0	15	10	8	0	*33*	0	16	20	4	0	*40*	0	4	3	27	4	*34*	**150**
	Peak Hour Total	0	45	88	44	19	*177*	0	61	48	70	80	*179*	0	74	94	41	102	*209*	0	21	19	70	14	*110*	**675**
	PHF	0.000	0.703	0.815	0.688	0.396	*0.885*	0.000	0.693	0.545	0.565	0.488	*0.639*	0.000	0.638	0.758	0.641	0.520	*0.780*	0.000	0.583	0.679	0.648	0.583	*0.809*	**0.823**

Total Vehicles On Leg			4399		
Vehicles Entering Intersection	2153		Vehicles Exiting Intersection		2246
Southbound					
Cars	512	1287	260	4	57
Heavy	10	59	21	0	0
Total	**522**	**1346**	**281**	**4**	**57**

Total Vehicles on Leg 3652	Vehicles Entering Intersection 1813	Vehicles Exiting Intersection 1839	**Eastbound**	Cars	Heavy	**Total**
				53	1	**54**
				2	0	**2**
				470	14	**484**
				232	18	**250**
				1044	33	**1077**

Daily Volumes

Cars	Heavy	**Total**	**Westbound**	Vehicles Entering Intersection 853	Vehicles Exiting Intersection 860	Total Vehicles on Leg 1713
289	21	**310**				
208	23	**231**				
294	17	**311**				
1	0	**1**				
181	3	**184**				

Cars	147	7	1042	1400	305
Heavy	2	0	42	48	23
Total	**149**	**7**	**1084**	**1448**	**328**
Northbound					
Vehicles Entering Intersection	2867		Vehicles Exiting Intersection		2741
Total Vehicles On Leg			5608		

Ferndale North
0 0
Wednesday, May 31, 2023

AM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	
8:00 AM	0	0	1	4	0	*5*	0	0	0	0	0	*0*	0	1	27	0	2	*28*	0	1	0	0	1	*1*	**34**
8:15 AM	0	0	9	5	1	*14*	0	0	0	0	0	*0*	0	1	14	0	0	*15*	0	1	0	2	1	*3*	**32**
8:30 AM	1	0	7	5	0	*13*	0	0	0	0	1	*0*	1	10	15	0	3	*26*	0	18	0	9	0	*27*	**66**
8:45 AM	0	0	10	4	0	*14*	0	0	0	0	0	*0*	0	6	11	0	0	*17*	0	26	0	9	4	*35*	**66**
Peak Hour Total	1	0	27	18	1	*46*	0	0	0	0	1	*0*	1	18	67	0	5	*86*	0	46	0	20	6	*66*	**198**
PHF	0.250	0.000	0.675	0.900	0.250	*0.821*	0.000	0.000	0.000	0.000	0.250	*0.000*	0.250	0.450	0.620	0.000	0.417	*0.768*	0.000	0.442	0.000	0.556	0.375	*0.471*	**0.750**

PM Peak Hour

Time	Southbound						Westbound						Northbound						Eastbound						VEHICLE TOTAL
	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	U Turns	Left Turns	Straight Through	Right Turns	Crosswalk Crossings	*Vehicle Approach Total*	
2:45 PM	0	0	16	7	0	*23*	0	0	0	0	1	*0*	0	3	15	0	0	*18*	0	1	0	3	3	*4*	**45**
3:00 PM	0	0	20	9	0	*29*	0	0	0	0	0	*0*	0	7	20	0	0	*27*	0	0	0	1	0	*1*	**57**
3:15 PM	0	0	28	6	0	*34*	0	1	0	0	0	*1*	0	2	16	2	3	*20*	0	21	0	5	3	*26*	**81**
3:30 PM	0	0	16	3	1	*19*	0	0	0	0	1	*0*	0	1	12	0	11	*13*	0	22	0	15	0	*37*	**69**
Peak Hour Total	0	0	80	25	1	*105*	0	1	0	0	2	*1*	0	13	63	2	14	*78*	0	44	0	24	6	*68*	**252**
PHF	0.000	0.000	0.714	0.694	0.250	*0.772*	0.000	0.250	0.000	0.000	0.500	*0.250*	0.000	0.464	0.788	0.250	0.318	*0.722*	0.000	0.500	0.000	0.400	0.500	*0.459*	**0.778**

Total Vehicles On Leg			2227		
Vehicles Entering Intersection	1075		Vehicles Exiting Intersection	1152	
Southbound					
Cars	98	942	4	8	2
Heavy	5	18	0	0	0
Total	**103**	**960**	**4**	**8**	**2**

Total Vehicles on Leg 517	Vehicles Entering Intersection 299	**Eastbound**	Cars	Heavy	**Total**
			32	0	**32**
			3	0	**3**
	Vehicles Exiting Intersection 218		164	14	**178**
			1	0	**1**
			111	6	**117**

Daily Volumes

Cars	Heavy	**Total**	**Westbound**	Vehicles Entering Intersection 8	Total Vehicles on Leg 16
4	0	**4**			
3	0	**3**			
1	0	**1**		Vehicles Exiting Intersection 8	
0	0	**0**			
4	0	**4**			

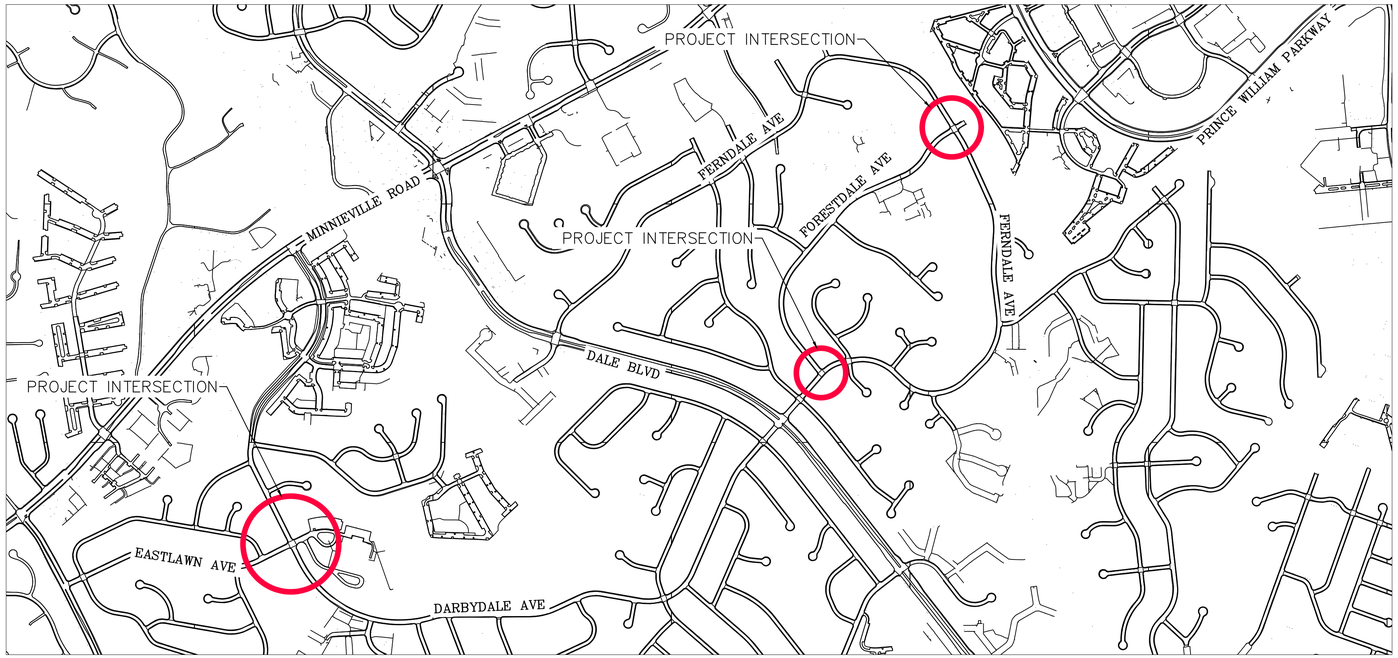
Cars	22	4	98	940	3
Heavy	0	0	11	22	0
Total	**22**	**4**	**109**	**962**	**3**
Northbound					
Vehicles Entering Intersection	1078		Vehicles Exiting Intersection	1082	
Total Vehicles On Leg			2160		

INDEX OF SHEETS

FUNCTIONAL CLASSIFICATION	
STREET NAME	DARBYDALE AVENUE – SC-1826
STREET CLASS	MAJOR COLLECTOR
AADT (2022)	MINNIEVILLE ROAD TO EASTLAWN AVE: 4,000
AADT (2022)	EASTLAWN AVE TO DALE BLVD: 5,000

FUNCTIONAL CLASSIFICATION	
STREET NAME	FORESTDALE AVENUE – RTE-1826
STREET CLASS	MINOR COLLECTOR
AADT (2022)	FULLERTON ROAD TO BEAUMONT ROAD: 2,800
AADT (2022)	BEAUMONT ROAD TO HEREFORD ROAD: 1,900

PRINCE WILLIAM COUNTY, VIRGINIA
MWCOG REGIONAL ROADWAY SAFETY PROGRAM
(RRSP) PROGRAM FY2024



DARBYDALE/FORESTDALE AVENUE RETROFITTING PROJECT

National Capital Region
Transportation Planning Board

THIS PROJECT WAS FUNDED BY THE NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD'S (TPB) REGIONAL ROADWAY SAFETY PROGRAM. TPB IS THE FEDERALLY DESIGNATED METROPOLITAN PLANNING ORGANIZATION (MPO) FOR METROPOLITAN WASHINGTON. IT IS RESPONSIBLE FOR DEVELOPING AND CARRYING OUT A CONTINUING, COOPERATIVE, AND COMPREHENSIVE TRANSPORTATION PLANNING PROCESS IN THE METROPOLITAN AREA. MEMBERS OF THE TPB INCLUDE REPRESENTATIVES OF THE TRANSPORTATION AGENCIES OF THE STATES OF MARYLAND AND VIRGINIA AND THE DISTRICT OF COLUMBIA, 24 LOCAL GOVERNMENTS, THE WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY, THE MARYLAND AND VIRGINIA GENERAL ASSEMBLIES, AND NONVOTING MEMBERS FROM THE METROPOLITAN WASHINGTON AIRPORTS AUTHORITY AND FEDERAL AGENCIES. THE TPB IS STAFFED BY THE DEPARTMENT OF TRANSPORTATION PLANNING AT THE METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS (COG).

30% SUBMITTAL

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PRINCE WILLIAM COUNTY
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

TITLE SHEET

DATE 7/31/24

SCALE 1" = 25'

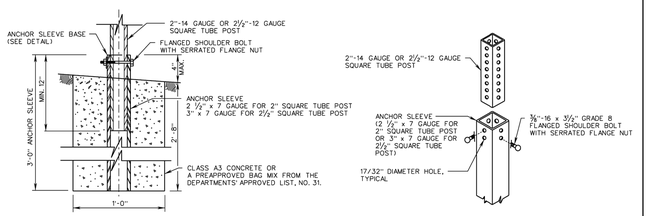
SHEET NUMBER 1

SIGNING AND PAVEMENT MARKING NOTES:

1. ALL PROPOSED SIGNING AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH PRINCE WILLIAM COUNTY CONSTRUCTION STANDARDS.
2. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED IN THE PAVEMENT MARKING LEGEND.
3. ANY EXISTING PAVEMENT MARKINGS THAT WILL CONFLICT WITH PROPOSED PAVEMENT MARKINGS SHALL BE COMPLETELY ERADICATED.
4. LIMITS SHOWN OF PROPOSED MARKINGS ARE APPROXIMATE AND SHALL BE MODIFIED IN THE FIELD TO ENSURE THAT PROPOSED PAVEMENT MARKINGS CONTINUE UNTIL EXISTING PAVEMENT MARKINGS CAN BE MATCHED.
5. LIMITS OF PARKING LANE MARKINGS ARE APPROXIMATE.
6. PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND SHALL BE MODIFIED IN THE FIELD TO AVOID CONFLICT WITH UNDERGROUND UTILITIES OR OTHER CONSTRUCTIONS.
7. PROPOSED SIGNS SHALL BE INSTALLED SO THAT NO PORTION OF THE SIGN PANEL OVERHANGS ADJACENT ROADWAY PAVEMENT, I.E. SHALL NOT HANG IN FRONT OF A FACE OF CURB.
8. PROPOSED SIGNS AND POSTS SHALL BE INSTALLED SO THEY DO NOT BLOCK THE VISIBILITY OF ANY EXISTING SIGNS OR SIGNALS.
9. PROPOSED SIGNS AND POSTS SHALL BE CLEAR OF EXISTING FIRE HYDRANTS, SURFACE UTILITY, AND OVERHEAD UTILITY EQUIPMENT A MINIMUM OF 10 FEET.
10. FOR NEW POST INSTALLATION, THE CONTRACTOR SHALL VERIFY THAT THERE ARE NOT CONFLICTING UNDERGROUND OR OVERHEAD UTILITIES.
11. IF SIGNS ARE MOUNTED ON A POLE NOT OWNED BY THE COUNTY, WRITTEN PERMISSION MUST BE OBTAINED FROM THE OWNER (UTILITY COMPANY OR PROPERTY OWNER). THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING REQUIRED PERMISSION.
12. ALL SIGN LOCATIONS SHOWN ON THE PLANS ARE SCHEMATIC AND MAY NOT REFLECT ACTUAL FIELD LOCATION. THE CONTRACTOR SHALL VERIFY EACH LOCATION PRIOR TO INSTALLING A SIGN. IF AT ANY POINT THE CONTRACTOR FINDS A CONFLICT, THE CONTRACT SHALL CONTACT THE ENGINEER PRIOR TO INSTALLING THE PROPOSED SIGN. PROPOSED SIGN LOCATIONS CAN BE ADJUSTED AS APPROVED BY THE ENGINEER.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING WITH MATCHING MATERIALS ANY PAVEMENT, PAVEMENT MARKINGS, CURB AND GUTTER, SIDEWALK, ETC. THAT ARE DAMAGED DURING CONSTRUCTION.
14. INSTALLATION OF TRAFFIC SEPARATOR IS TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. DIMENSIONS, MATERIALS, AND ATTACHMENTS MAY VARY BETWEEN MANUFACTURERS. COLOR OF SEPARATOR SHALL MATCH COLOR OF APPLICABLE EDGE LINE.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK ZONE SIGNING, DELINEATION, PAVEMENT MARKINGS AND ANY OTHER TRAFFIC CONTROL DEVICES NECESSARY TO PERFORM THE WORK. THE WORK ZONE TRAFFIC CONTROL SHALL CONFORM TO THE CURRENT EDITION OF THE VIRGINIA WORK AREA PROTECTION MANUAL. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL IMMEDIATELY REMOVE ALL TEMPORARY DEVICES.
16. PRINCE WILLIAM COUNTY DEPARTMENT OF TRANSPORTATION, TRAFFIC AND SAFETY ENGINEERING BRANCH MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENTS OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION. CERTIFIED RESPONSIBLE LAND DISTURBER IS REQUIRED TO ATTEND PRE-CONSTRUCTION MEETINGS.
17. ALL EXISTING RESIDENTIAL AND COMMERCIAL ENTRANCES SHALL REMAIN OPEN AT ALL TIMES UNLESS OTHERWISE DIRECTED BY THE COUNTY ENGINEER.
18. SIDEWALKS AND CROSSWALKS SHALL REMAIN OPEN AT ALL TIMES UNLESS OTHERWISE DIRECTED BY THE COUNTY ENGINEER.
19. ALL LANE WIDTHS SHALL BE A MINIMUM OF 10 FEET DURING CONSTRUCTION.
20. LANE CLOSURES REQUIRE A MINIMUM OF 5 BUSINESS DAYS ADVANCE NOTICE TO COUNTY ENGINEER FOR APPROVAL.
21. SOURCE OF BASE MAPPING IS 2024 PRECISION MEASUREMENTS SURVEY. ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO ORDERING MATERIALS FOR CONSTRUCTION. WHEN THESE PLANS ARE IN CONFLICT WITH ACTUAL SITE CONDITIONS, ANY DISCREPANCY SHALL BE REPORTED TO THE COUNTY ENGINEER PRIOR TO BEGINNING WORK. PROPOSED PAVEMENT MARKINGS AND SIGNAGE MAY BE ADJUSTED AS DIRECTED BY THE COUNTY ENGINEER.
22. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING MISS UTILITY PRIOR TO BEGINNING WORK. ANY DAMAGE TO UTILITIES MUST BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT HIS OR HER EXPENSE.
23. FIRE AND RESCUE SERVICES MUST BE NOTIFIED IMMEDIATELY (703-792-6810) IN THE EVENT THAT UNUSUAL ITEMS SUCH AS TANKS, CYLINDERS, UNIDENTIFIED CONTAINERS, ETC. WHICH COULD CONTAIN POTENTIALLY HAZARDOUS MATERIALS ARE DISCOVERED OR OBSERVED. ALL ACTIVITIES MUST CEASE AND NOT BE RESUMED UNTIL AUTHORIZATION TO PROCEED IS GIVEN BY THE FIRE MARSHAL'S OFFICE.
24. PROPOSED LIGHT LOCATIONS ARE SUGGESTED AS A PEDESTRIAN SAFETY ENHANCEMENT. PHOTOMETRIC ANALYSIS WAS NOT CONDUCTED WITH THIS DESIGN.

2016 ROAD & BRIDGE STANDARDS

STP-1



FOUNDATION TYPE A — ANCHOR SLEEVE BASE DETAIL

VDOT ROAD AND BRIDGE STANDARDS		A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.	SPECIFICATION REFERENCE
SHEET 4 OF 12	REVISION DATE	SQUARE TUBE SIGN POST	
1321.13	NEW 01/15	FOUNDATION TYPE A DETAILS	700
		VIRGINIA DEPARTMENT OF TRANSPORTATION	

2016 ROAD & BRIDGE STANDARDS

SIGN SCHEDULE

	MUTCD STANDARD	PANEL SIZE W	PANEL SIZE H	QUANTITY	PROPOSED SIGN STRUCTURE STD.
	R1-1	30"	30"	7	STP-1 SPD-5 TYPE A
	R1-2 R6-5P	36" 30"	36" X 36" 30"	4	STP-1 SPD-5 TYPE A
	R4-7	24"	30"	4	STP-1 SPD-5 TYPE A
	R6-1R	36"	12"	4	STP-1 SPD-5 TYPE A
	R7-1 (LEFT)	12"	18"	10	STP-1 SPD-5 TYPE A
	R7-1 (RIGHT)	12"	18"	9	STP-1 SPD-5 TYPE A
	W2-6 W16-9P	30" 21"	30" 15"	4 4	STP-1 SPD-5 TYPE A
	S1-1 W16-7P	36" 21"	36" X 36" 15"	8 8	STP-1 SPD-5 TYPE A

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PRINCE WILLIAM COUNTY
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

GENERAL NOTES - 1

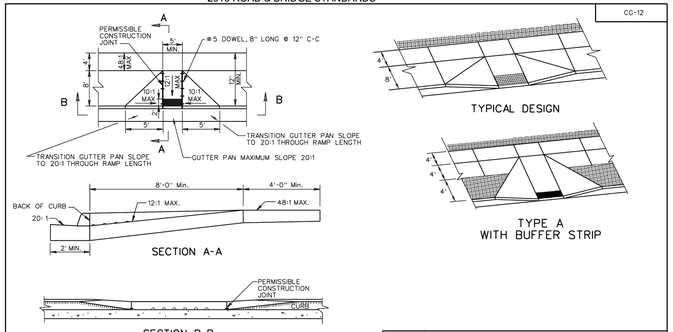
DATE 7/31/24

SCALE 1" = 25'

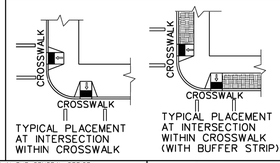
SHEET NUMBER 2A

2016 ROAD & BRIDGE STANDARDS

CG-12



EXAMPLE INSTALLATION METHODS - SEE PLANS FOR LAYOUT



NOTES:

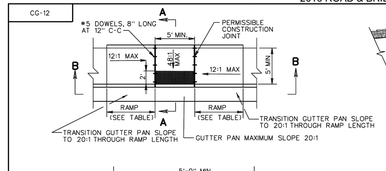
1. FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.
2. THIS DESIGN TO BE USED FOR CONSTRUCTION THAT INCORPORATES WIDER SIDEWALK, LANDING (4' WIDE) REQUIRED AT TOP OF CURB RAMP. MINIMUM CURB RAMP LENGTH 8 FEET FOR NEW CONSTRUCTION.
3. GUTTER PAN SHALL BE A MAXIMUM SLOPE OF 20:1 AT THE RAMP OPENING.
4. DIAGONAL PLACEMENT IS NOT PERMITTED.

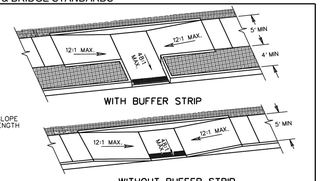
SPECIFICATION REFERENCE	A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.	VDOT ROAD AND BRIDGE STANDARDS
105 502 504	CG-12 DETECTABLE WARNING SURFACE TYPE A (PERPENDICULAR) APPLICATION VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE 04/19 SHEET 2 OF 5 204.02

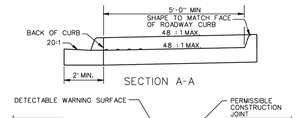
2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

CG-12





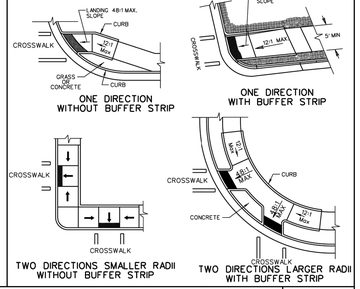


NOTES:

1. FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.
2. THE REQUIRED LENGTH OF A PARALLEL RAMP IS LIMITED TO 15 FEET, REGARDLESS OF THE SLOPE.
3. GUTTER PAN SHALL BE A MAXIMUM SLOPE OF 20:1 AT THE RAMP OPENING.
4. DIAGONAL PLACEMENT IS NOT PERMITTED.

TYPE B PARALLEL APPLICATION		
ROADWAY GRADE IN PERCENT	MINIMUM RAMP LENGTH IN FEET	
	4" CURB	6" CURB
0	4	6
1	5	7
2	5	8
3	6	9
4	8	12
5	10	15
6	14	15

EXAMPLE INSTALLATION METHODS - SEE PLANS FOR LAYOUT

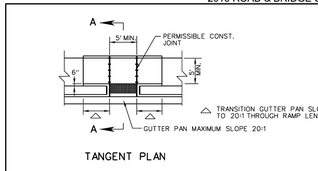


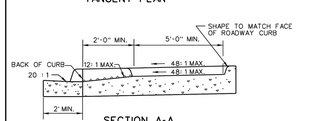
VDOT ROAD AND BRIDGE STANDARDS	A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.	SPECIFICATION REFERENCE
SHEET 3 OF 5 204.03	CG-12 DETECTABLE WARNING SURFACE TYPE B (PARALLEL) APPLICATION VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE 04/19	105 502 504

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

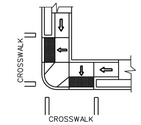
CG-12





TYPE C PARALLEL & PERPENDICULAR APPLICATION		
ROADWAY GRADE IN PERCENT	MINIMUM RAMP LENGTH IN FEET	
	4" CURB	6" CURB
0	2	4
1	2	5
2	3	5
3	3	6
4	4	8
5	5	10
6	7	14
7	13	15
8	15	15

THE REQUIRED LENGTH OF A PARALLEL RAMP IS LIMITED TO 15 FEET, REGARDLESS OF THE SLOPE.

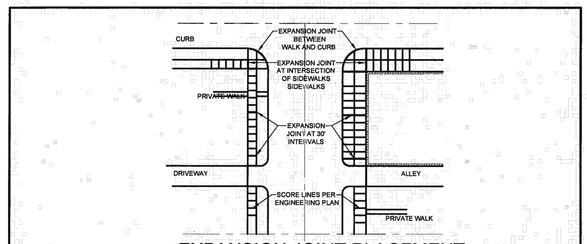


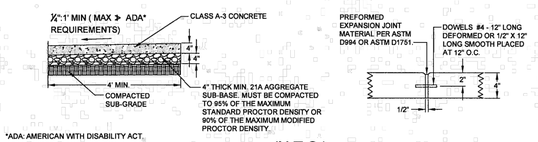
NOTES:

1. FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.
2. THE SELECTION OF CURB TYPE AND THE CONFIGURATION OF THE BUFFER STRIP MAY VARY TO MEET EXISTING FIELD CONDITIONS AND ROADWAY GEOMETRICS PROVIDING THE DIMENSIONS AND SLOPES ARE AS NOTED.
3. THIS COMBINED (PARALLEL & PERPENDICULAR) DESIGN CAN BE USED WITH ADJOINING BUFFER STRIP. LANDING AT BOTTOM OF TWO SLOPING SIDES WITH 5' X 5' MIN. DIMENSIONS. THE SHORT PERPENDICULAR RUN TO THE STREET CAN BE PROTECTED BY A LANDSCAPED SETBACK OR CONNECTED TO THE SIDEWALK WITH A WARPED SURFACE.
4. GUTTER PAN SHALL BE A MAXIMUM SLOPE OF 20:1 AT THE RAMP OPENING.
5. DIAGONAL PLACEMENT IS NOT PERMITTED.

SPECIFICATION REFERENCE	A COPY OF THE ORIGINAL SEALED AND SIGNED DRAWING IS ON FILE IN THE CENTRAL OFFICE.	VDOT ROAD AND BRIDGE STANDARDS
105 502	CG-12 DETECTABLE WARNING SURFACE TYPE C (PARALLEL & PERPENDICULAR) APPLICATION VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE 04/19 SHEET 4 OF 5 204.04

2016 ROAD & BRIDGE STANDARDS



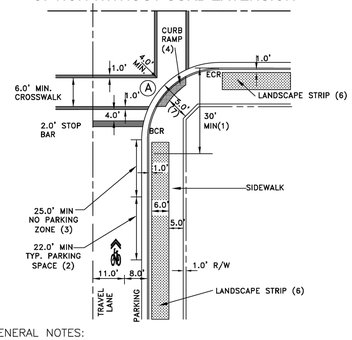


NOTES:

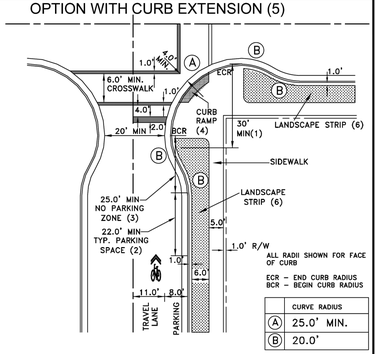
1. SCORING OF CONCRETE SLAB SHALL BE SAW CUT NOT MORE THAN 3/16" IN WIDTH AND NOT MORE THAN ¼" DEEP.
2. THE EXPANSION JOINTS SHALL BE ½" WIDE AND SHALL BE THE FULL THICKNESS OF THE CONCRETE SLAB, AND SHALL BE OF PRE-FORMED EXPANSION JOINT MATERIAL CONFORMING TO THE REQUIREMENTS OF ASTM D994 ASPHALT OR ASTM D1751 FIBRE. EXPANSION MATERIAL SHALL BE SECURED IN A MANNER THAT WILL PREVENT MOVEMENT OR DISPLACEMENT OF CONCRETE DURING PLACEMENT.
3. THE EXPANSION JOINTS SHALL BE PLACED PERPENDICULAR TO CONCRETE CURB AT A DISTANCE OF 30' OR COINCIDING WITH THE SCORING.
4. DOWELS SHALL BE PLACED AT THE END OF A SIDEWALK PLACEMENT, AT INTERRUPTIONS FOR A DRIVEWAY, OR IF SIDEWALK SLABS ARE POURED AT DIFFERENT TIMES.
5. SAWING OF JOINTS SHALL BE CONDUCTED AS SOON AS THE CONDITION OF THE CONCRETE PERMITS AND BEFORE ANY RANDOM CRACKING APPEARS.
6. ALL STRUCTURAL ITEMS TO CONFORM TO THE LATEST EDITION OF UNIFORM STATEWIDE BUILDING CODE (USBC) REQUIREMENTS.
7. PRIOR TO CONSTRUCTION, ALL STRUCTURAL CROSS SECTIONS SHALL BE REVIEWED BY A QUALIFIED STRUCTURAL AND/OR GEOTECHNICAL ENGINEER, AND MODIFIED AS NECESSARY BASED ON THE SITE SPECIFIC GEOTECHNICAL REPORT.

STANDARD CONCRETE SIDEWALK		DATE
	DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES	CSSW-1
APPROVED DATE	ALEXANDRIA VIRGINIA	PAGE X

OPTION WITHOUT CURB EXTENSION



OPTION WITH CURB EXTENSION (5)



CURVE RADIUS	
A	25.0' MIN.
B	20.0'

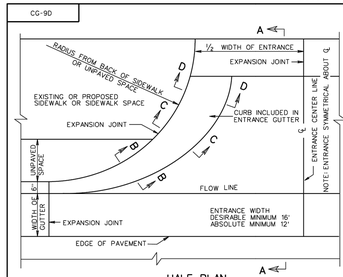
GENERAL NOTES:

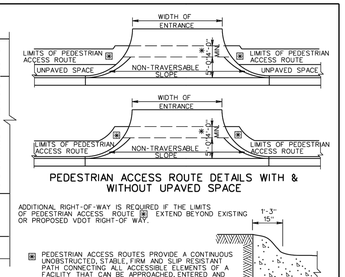
1. Street trees shall be placed a minimum of 30' from the face of curb of the intersecting street or entrance and outside the line of sight on all sides of the intersection.
2. Parallel parking spaces are 22' long and 8' wide.
3. "No Parking Zone" is measured from the end or beginning of curb return radius for a minimum distance of 25' or longer to accommodate intersection sight distance, transit, and turning movements.
4. Refer to current VDOT CG-12 standards for design of curb ramps and other available curb ramp options.
5. An optional curb extension to the edge of parking at intersection corners is permitted.
6. Street Trees must be planted in landscape strips no less than 6' wide that are adjacent to the sidewalk and behind the back of curb.
7. Sidewalk width at corners must be maintained by truncating property boundary if necessary.
8. Extra right-of-way may be needed at signalized intersection.
9. A separate plan for landscaping and irrigation inside the right-of-way should be submitted to VDOT for review and approval.
11. Shared bicycle lane markings should be placed in accordance with the latest version of the Manual of Uniform Traffic Control Devices (MUTCD).

Detail No.				
650.16	UAS-1	COUNTY OF PRINCE WILLIAM VIRGINIA	LAYOUT DESIGN FOR STREET IN URBAN CENTERS (SHEET 4 OF 4)	Date 7/15/14

2016 ROAD & BRIDGE STANDARDS

CG-9D



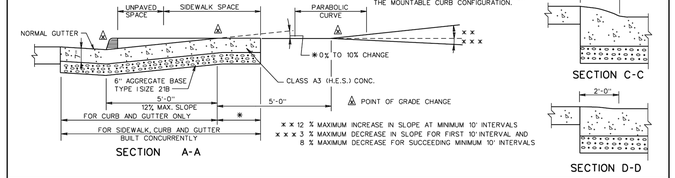


ADDITIONAL RIGHT-OF-WAY IS REQUIRED IF THE LIMITS OF PEDESTRIAN ACCESS ROUTE Ⓟ EXTEND BEYOND EXISTING OR PROPOSED VDOT RIGHT-OF WAY.

Ⓟ PEDESTRIAN ACCESS ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.

✱ IF PEDESTRIAN ACCESS ROUTES Ⓟ ARE BEING PROVIDED, A MINIMUM 4' TRAVERSABLE WIDTH IS REQUIRED WITH A MAX. 2% CROSS SLOPE.

WHEN USED IN CONJUNCTION WITH STANDARD CG-3 OR CG-7, THE CURB FACE ON THIS STANDARD IS TO BE ADJUSTED TO MATCH THE MOUNTABLE CURB CONFIGURATION.



VDOT ROAD AND BRIDGE STANDARDS	STANDARD ENTRANCE GUTTER	SPECIFICATION REFERENCE
SHEET 1 OF 1 203.03	REVISION DATE 07/15	VIRGINIA DEPARTMENT OF TRANSPORTATION	502

2016 ROAD & BRIDGE STANDARDS

30% SUBMITTAL

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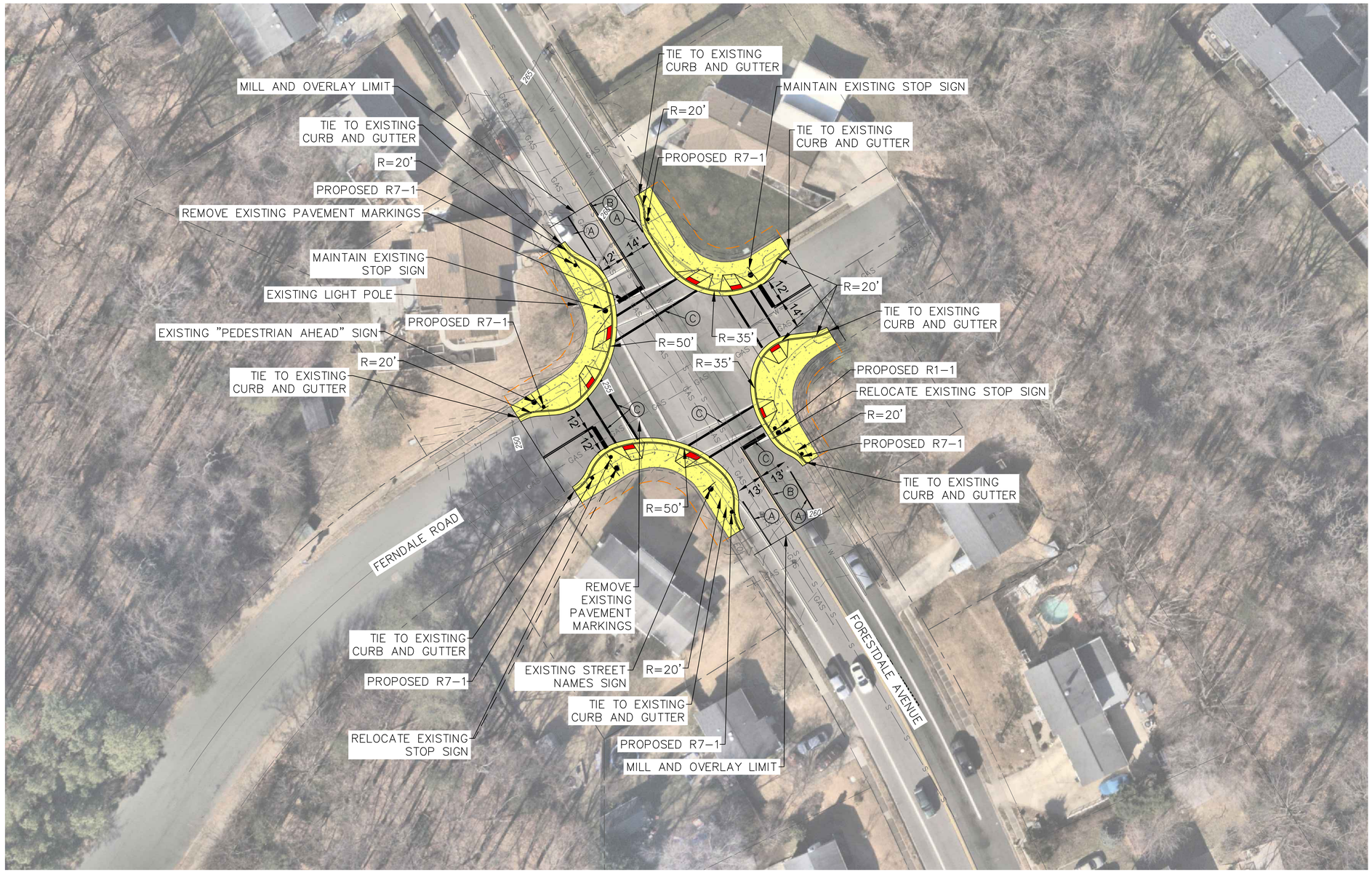
PRINCE WILLIAM COUNTY
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

GENERAL NOTES -2

DATE 7/31/24

SCALE 1" = 25'

SHEET NUMBER 2B



NORTH

GRAPHIC SCALE IN FEET
0 12.5 25 50

PAVEMENT MARKING LEGEND

- (A) TYPE B, CLASS 1, WHITE, 6" WIDTH
- (B) TYPE B, CLASS 1, YELLOW, DOUBLE LINE: 4" WIDTH & 4" WIDTH, 4" SPACE
- (C) TYPE B, CLASS 1, WHITE, 24" WIDTH

NOTES

1. INSTALL NEW ADA CURB RAMP.
2. ALL SIGNS SHOWN ON PLAN TO BE INSTALLED ON NEW POLES EXCEPT WHERE OTHERWISE NOTED.

- PROPOSED DETECTABLE WARNING SURFACE
- PROPOSED CONCRETE PAVEMENT
- EXISTING PROPERTY LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED SIGN

30% SUBMITTAL

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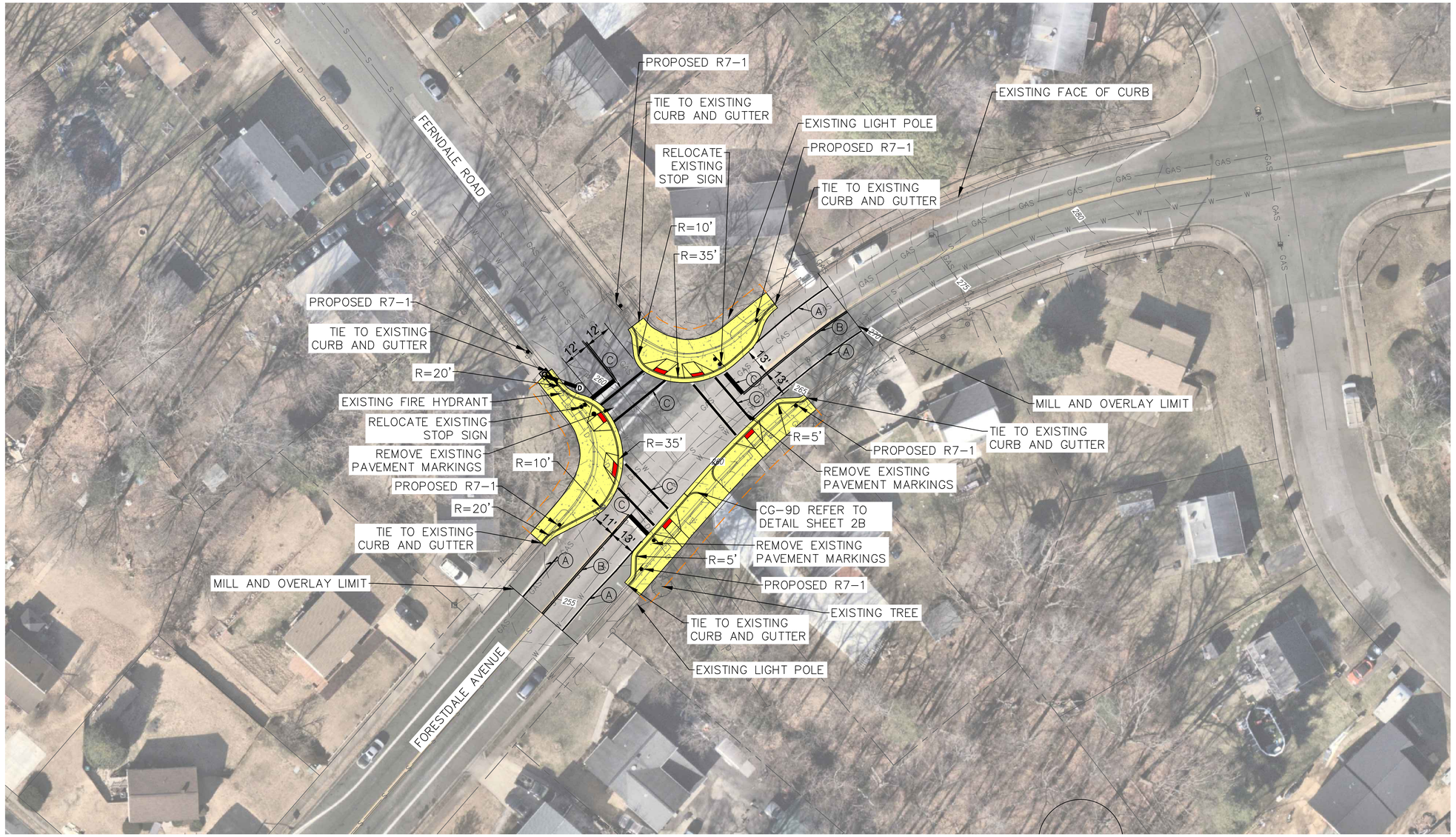
PRINCE WILLIAM COUNTY
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

FORESTDALE AND FERNDALE AVE NORTH

DATE 7/31/24

SCALE 1" = 25'

SHEET NUMBER 3



PAVEMENT MARKING LEGEND

- (A) TYPE B, CLASS 1, WHITE, 6" WIDTH
- (B) TYPE B, CLASS 1, YELLOW, DOUBLE LINE: 4" WIDTH & 4" WIDTH, 4" SPACE
- (C) TYPE B, CLASS 1, WHITE, 24" WIDTH

NOTES

1. INSTALL NEW ADA CURB RAMP.
2. ALL SIGNS SHOWN ON PLAN TO BE INSTALLED ON NEW POLES EXCEPT WHERE OTHERWISE NOTED.

- PROPOSED DETECTABLE WARNING SURFACE
- PROPOSED CONCRETE PAVEMENT
- EXISTING PROPERTY LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED SIGN
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER INLET
- (D) PROPOSED STORMWATER MANHOLE

30% SUBMITTAL

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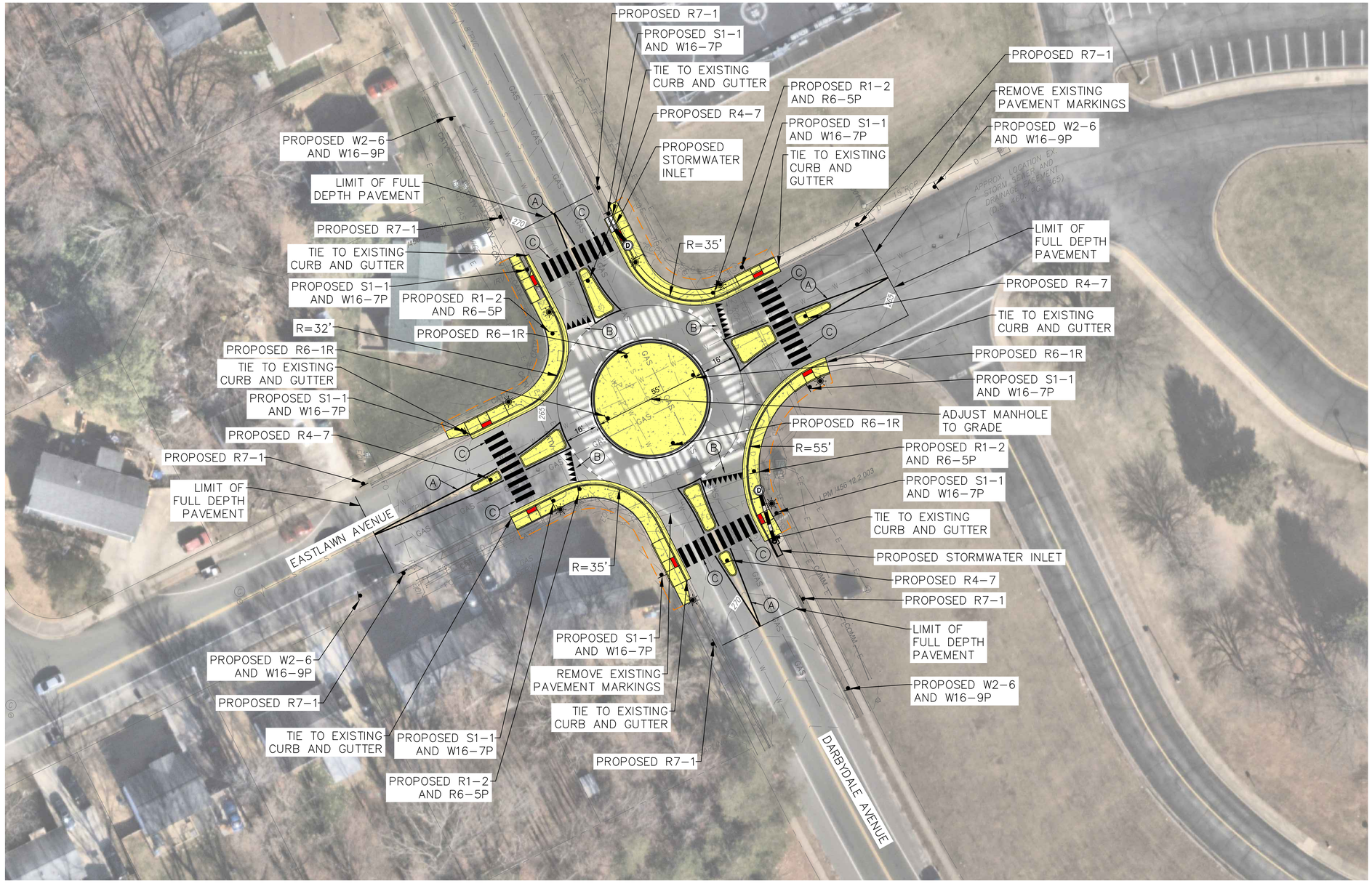
PRINCE WILLIAM COUNTY
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

FORESTDALE AND FERNDALE AVE SOUTH

DATE 7/31/24

SCALE 1" = 25'

SHEET NUMBER 4



GRAPHIC SCALE IN FEET
0 12.5 25 50

PAVEMENT MARKING LEGEND

- (A) TYPE B, CLASS 1, YELLOW, 4" WIDTH
- (B) TYPE B, CLASS 1, WHITE, YIELD MARKING
- (C) TYPE B, CLASS I, WHITE, 24" WIDTH

NOTES

1. DO NOT DISTURB EXISTING STORMWATER INLETS.
2. ROUNDABOUT CENTER ISLAND TO BE MOUNTABLE CURB (VDOT STD. CG-3 AND TRAFFIC-RATED CONCRETE.
3. ALL CONCRETE SPLITTER ISLANDS TO BE VDOT STD. CG-2.
4. ALL UTILITY HANDHOLES AND MANHOLES TO BE ADJUSTED TO FINISHED GRADE.
5. ALL SIGNS SHOWN ON PLAN TO BE INSTALLED ON NEW POLES EXCEPT WHERE OTHERWISE NOTED.

- PROPOSED DETECTABLE WARNING SURFACE
- PROPOSED CONCRETE
- PROPOSED LANDSCAPING
- EXISTING PROPERTY LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED SIGN
- PROPOSED LIGHT LOCATION
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER INLET
- (D) PROPOSED STORMWATER MANHOLE

30% SUBMITTAL

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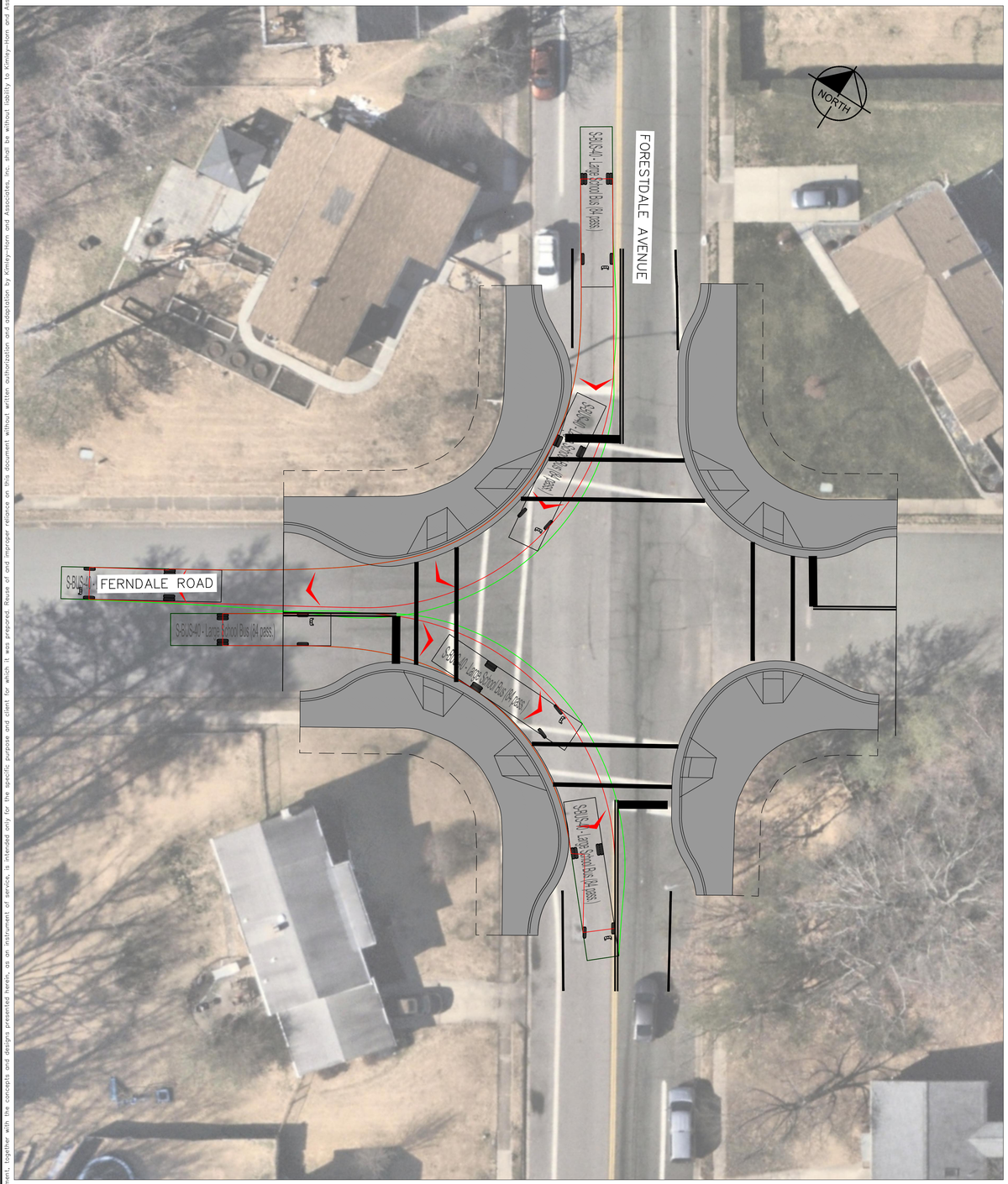
PRINCE WILLIAM COUNTY
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

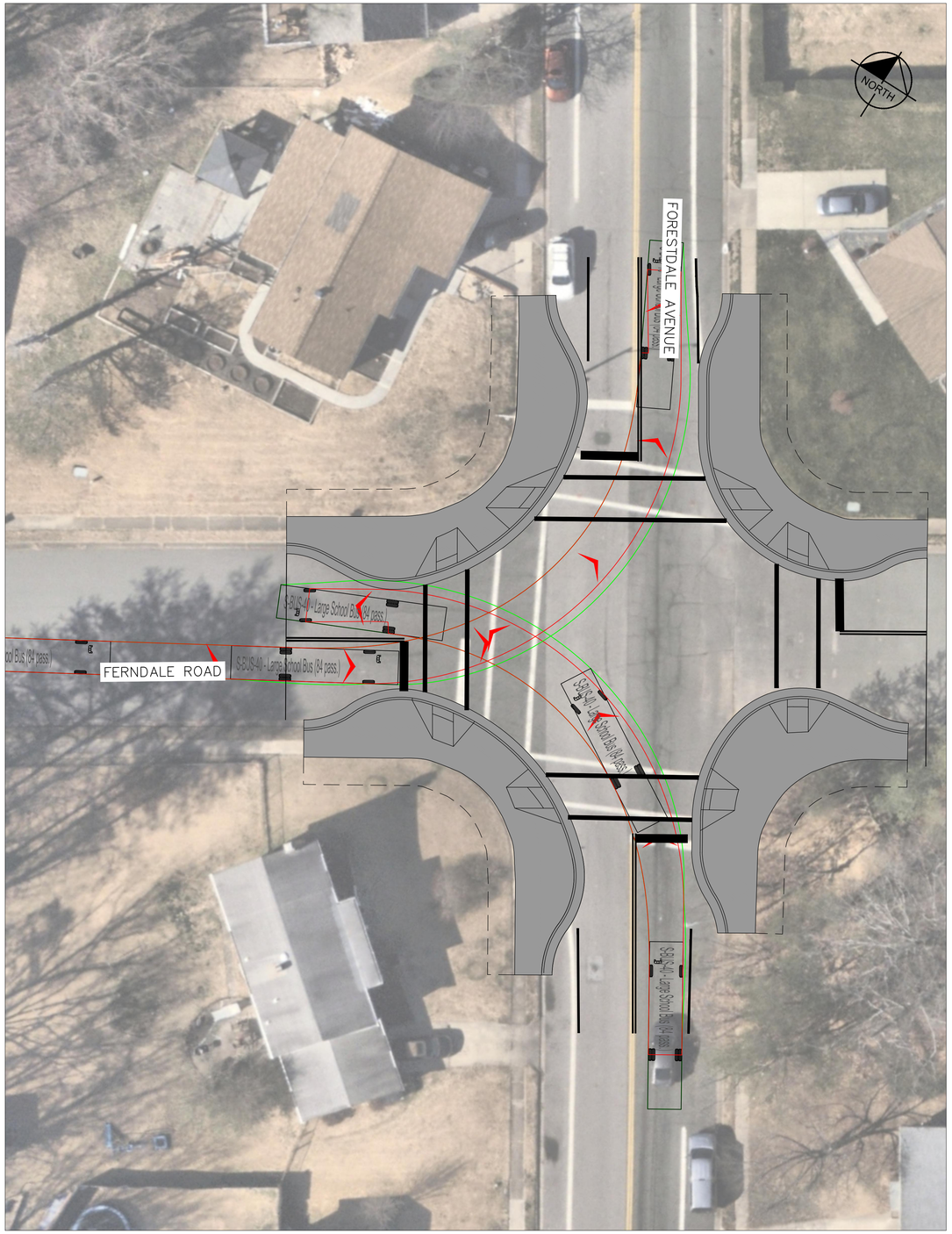
DARBYDALE AVE

DATE 7/31/24

SCALE 1" = 25'

SHEET NUMBER 5





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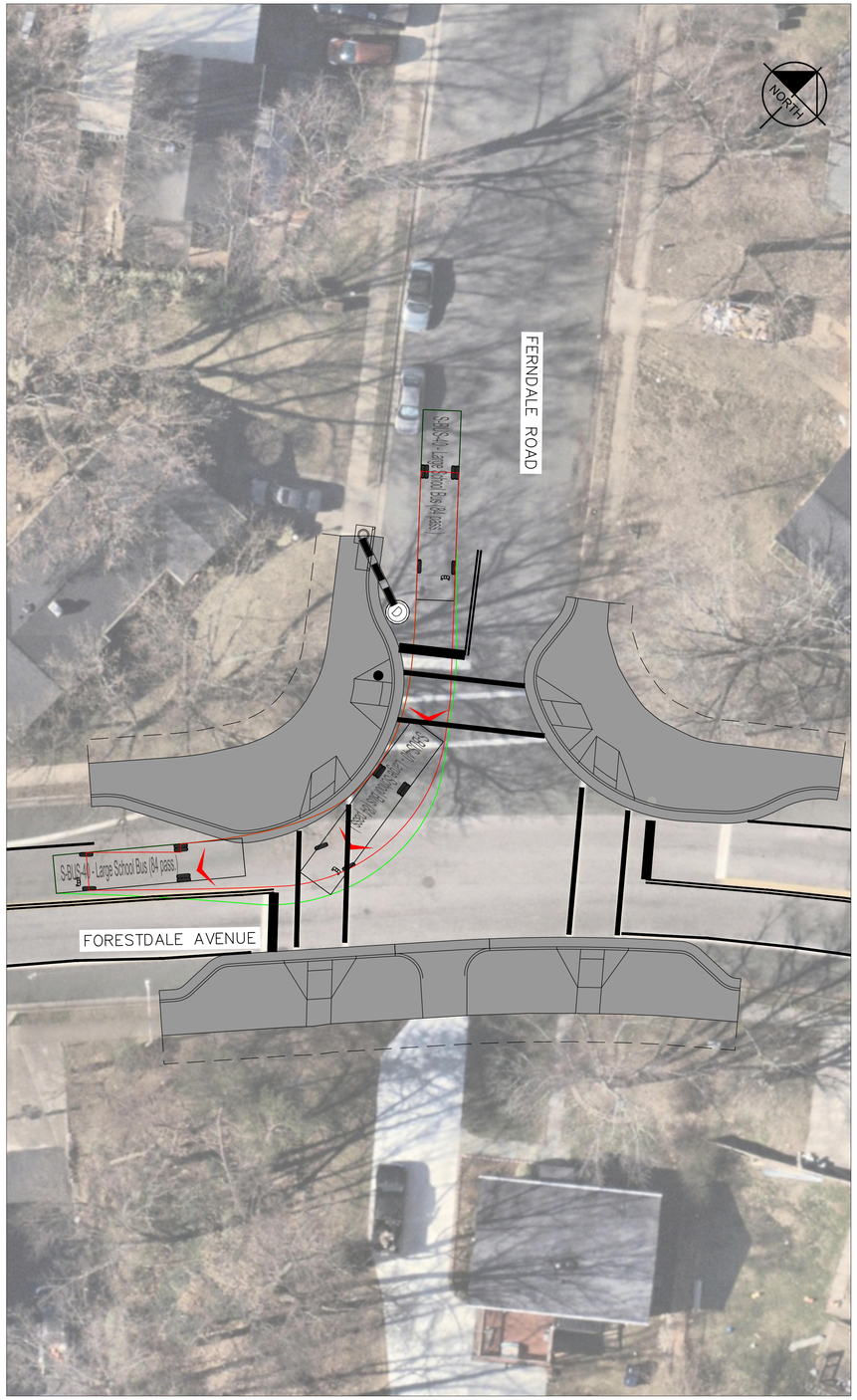
PRINCE WILLIAM COUNTY
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

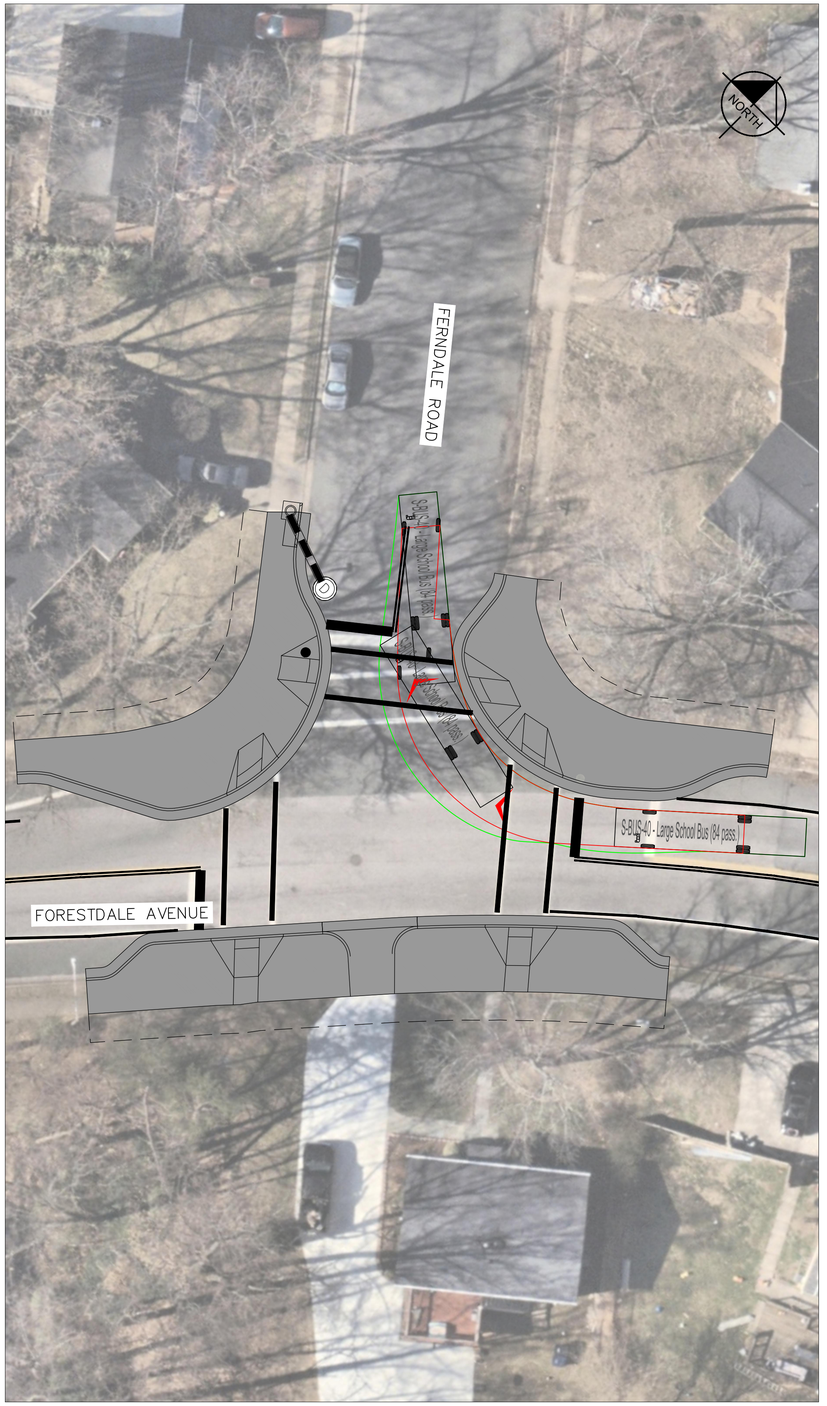
AUTOTURNS

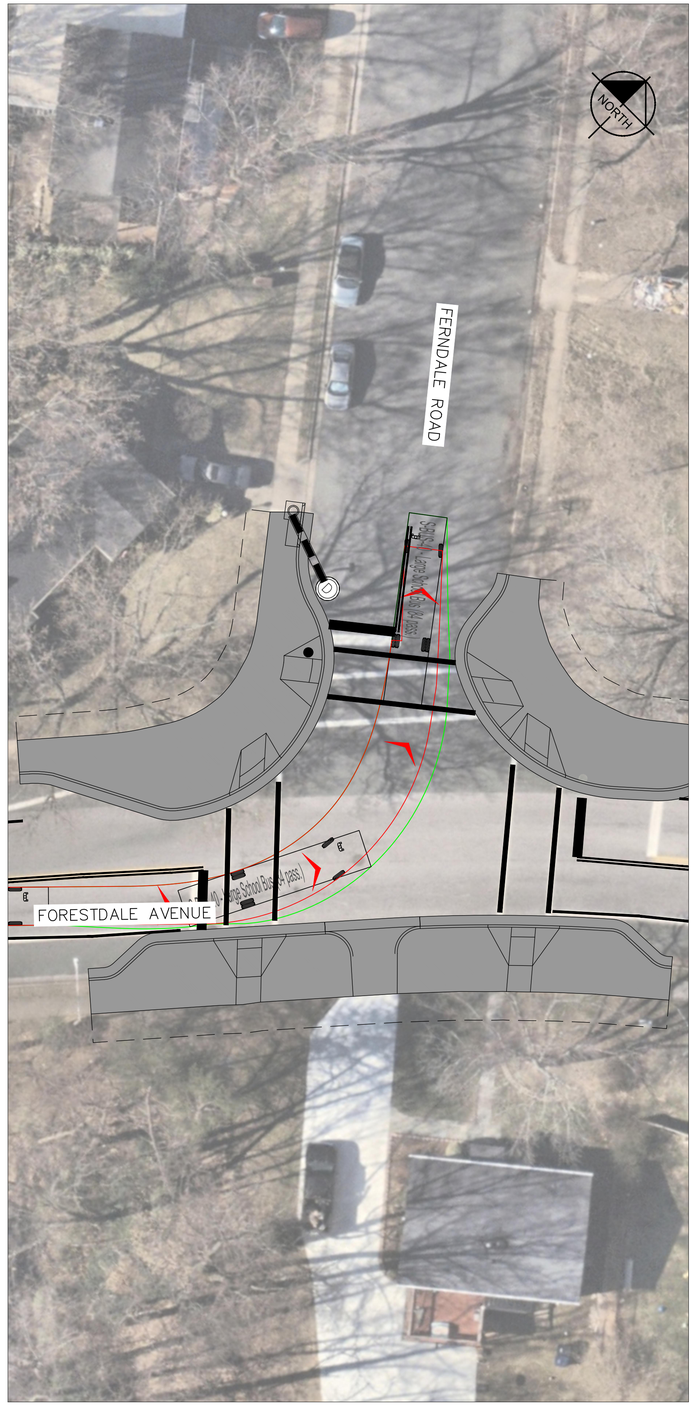
DATE 7/31/24

SCALE 1'' = 15'

SHEET NUMBER 6







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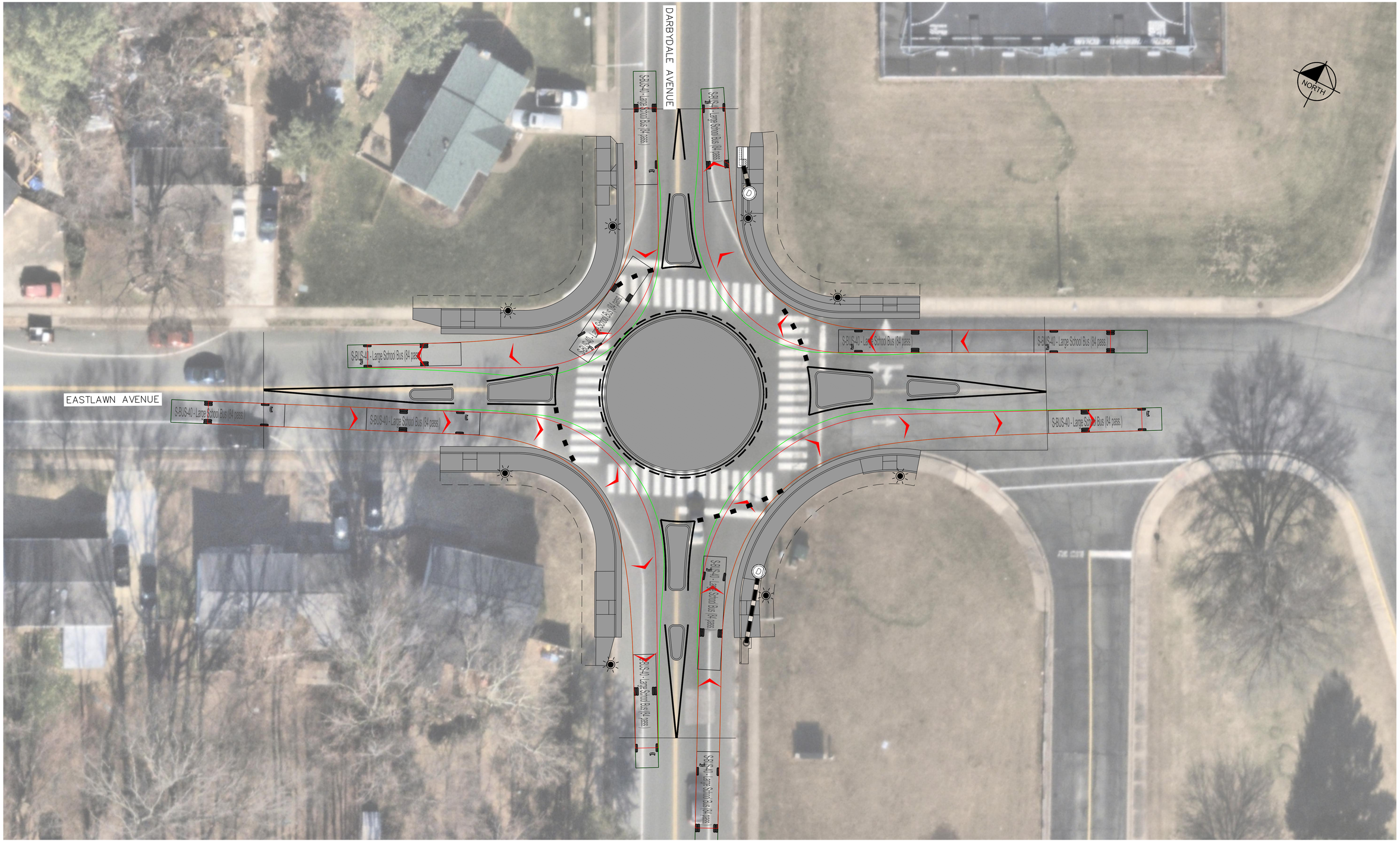
PRINCE WILLIAM COUNTY
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

AUTOTURNS

DATE 7/31/24

SCALE 1" = 15'

SHEET NUMBER 7



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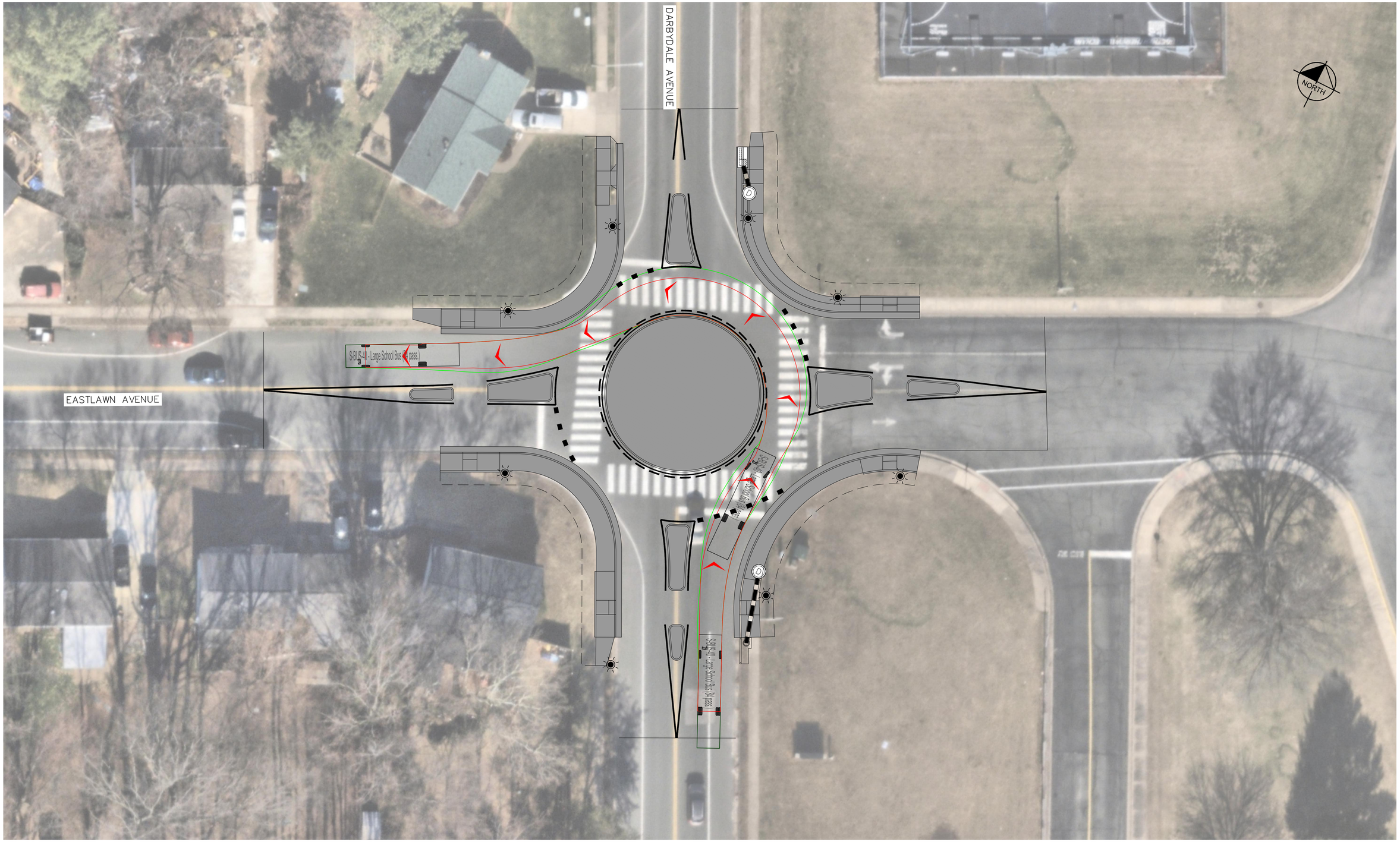
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

AUTOTURNS

DATE 7/31/24

SCALE 1'' = 15'

SHEET NUMBER 8



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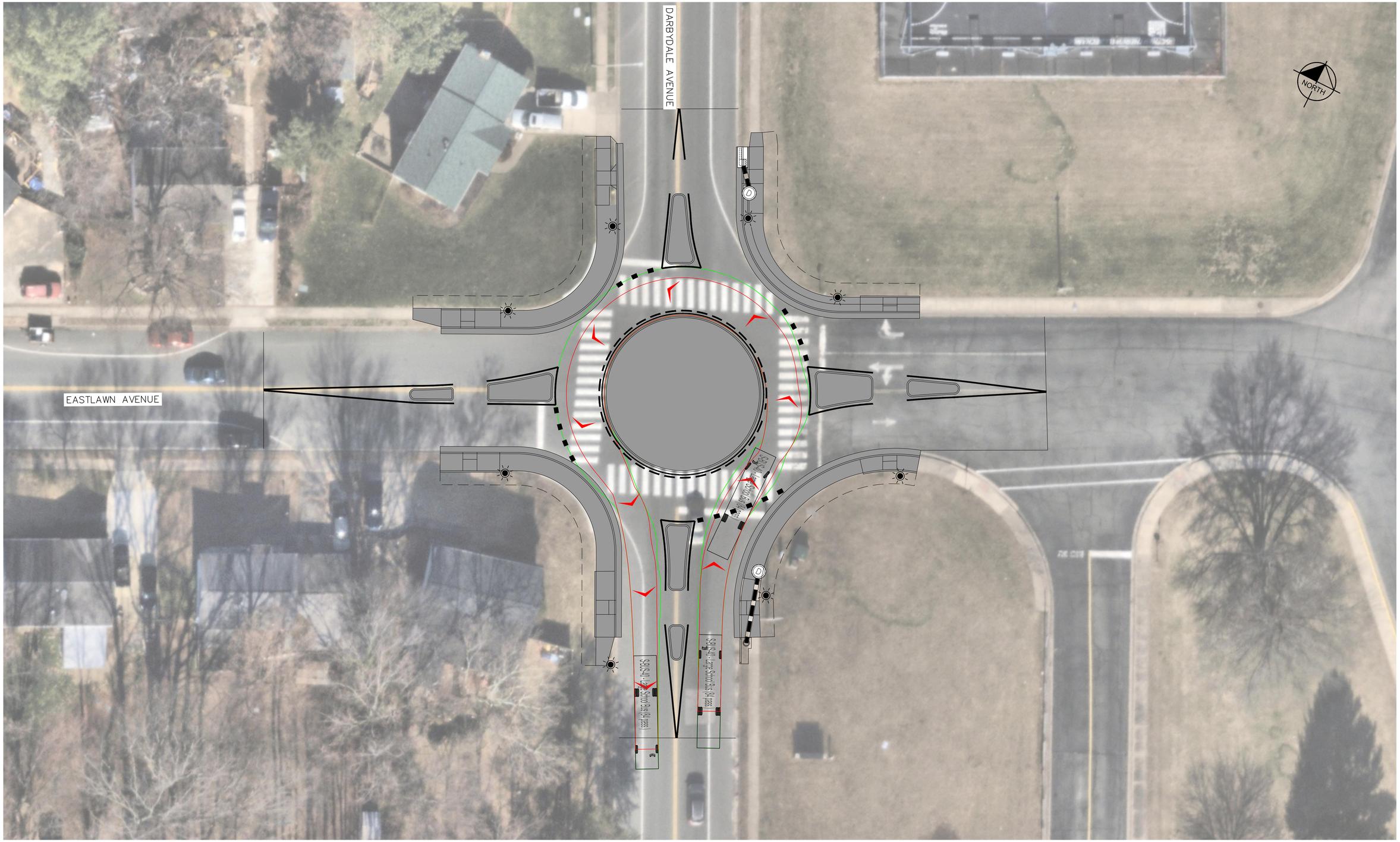
PRINCE WILLIAM COUNTY
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

AUTOTURNS

DATE 7/31/24

SCALE 1'' = 15'

SHEET NUMBER 9



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PRINCE WILLIAM COUNTY
TASK ORDER 24-08
DARBYDALE/FORESTDALE AVENUE
RETROFITTING PROJECT

AUTOTURNS

DATE 7/31/24

SCALE 1'' = 15'

SHEET NUMBER 10

Darbydale/Forestdale Retrofitting Project
Opinion of Probable Cost

8/7/2024

Forestdale Avenue and Ferndale Road North Summary		
Phase	**Total Amount (2024$)**	**Total Amount (2025$)**
Preliminary Engineering (15%)	$ 16,000	$ 16,800
Environmental and Federal Oversight (10%)	$ 11,000	$ 11,550
Construction	$ 133,000	$ 139,650
Right-of-Way (inc. Utilities)	$ 50,000	$ 52,500
Project SubTotal	$ 210,000	$ 220,500
Contingency (50%)	*$ 105,000*	$ 110,250
Project Total	**$ 315,000**	**$ 330,750**

Breakdown					Assume 5% Inflation
Item Description	**Units**	**Estimated Qty**	**Unit Price**	**Amount (2024$)**	**Amount (2025$)**
Construction (CN)					
Mobilization	LS	8	Constr. %	$ 7,000	$ 7,350
Maintenance of Traffic	LS	8.5	Constr. %	$ 8,000	$ 8,400
Constr. Surveying	LS	3	Constr. %	$ 3,000	$ 3,150
Pavement M&O	SY	1163	$ 10	$ 11,633	$ 12,200
Full Depth Pavement (SM-9.5D)	TON	12	$ 140	$ 1,680	$ 1,750
Full Depth Pavement (IM-19.0A)	TON	18	$ 125	$ 2,250	$ 2,350
Full Depth Pavement (BM-25.0A)	TON	49	$ 115	$ 5,635	$ 5,900
Full Depth Pavement (21B)	TON	38	$ 40	$ 1,520	$ 1,600
Sawcut Asphalt Pavement	LF	450	$ 2	$ 900	$ 950
Curb & Gutter CG-6	LF	450	$ 45	$ 20,250	$ 21,250
Concrete Sidewalk (Including CG-12, Depth 4" Class A4)	SY	515	$ 60	$ 30,900	$ 32,450
Detectable Warning Surface	SY	12	$ 265	$ 3,180	$ 3,350
Pavement Markings Type B, Class 1 - 24" White	LF	50	$ 10	$ 500	$ 550
Pavement Markings Type B, Class 1 - 6" White	LF	260	$ 5	$ 1,300	$ 1,350
Pavement Markings Type B, Class 1 - 4" yellow	LF	200	$ 5	$ 1,000	$ 1,050
Sign Panel	SF	12	$ 40	$ 480	$ 500
Sign Post	LF	8	$ 20	$ 160	$ 150
Relocate Existing 1 Post Ground Mounted Sign Panel	EA	4	$ 250	$ 1,000	$ 1,050
Silt Fence	LF	400	$ 15	$ 6,000	$ 6,300
Seeding (lime, fertilizer and mulch)	SY	220	$ 2	$ 440	$ 450
			CN Subtotal	***$106,000.00***	***$112,000.00***
Other CN Items					
Constr. Engineering & Inspection	LS	25	Constr. %	$ 27,000	$ 28,350
			CN Total	**$133,000.00**	**$ 139,650.00**
Right of Way					
Temporary Esmts Acquisition	SF	2000	$ 20	$ 40,000	$ 42,000
Permanent Esmts Acquisition	SF		$ 40	$ -	$ -
Utility Relocation Contingency	LS	1	$ 10,000	$ 10,000	$ 10,500
			RW Total	**$ 50,000**	**$ 52,500**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Notes:

1) Based on assumed improvements included in concept plan
2) Earthwork is not included
3) Utility relocation is estimated

Darbydale/Forestdale Retrofitting Project
Opinion of Probable Cost

8/7/2024

Forestdale Ave and Ferndale Road South Summary		
Phase	**Total Amount (2024$)**	**Total Amount (2025$)**
Preliminary Engineering (15%)	$ 16,000	$ 16,800
Environmental and Federal Oversight (10%)	$ 11,000	$ 11,550
Construction	$ 136,000	$ 142,800
Right-of-Way (inc. Utilities)	$ 42,000	$ 44,100
Project SubTotal	$ 205,000	$ 215,250
Contingency (50%)	*$ 103,000*	$ 108,150
Project Total	**$ 308,000**	**$ 323,400**

Breakdown					Assume 5% Inflation
Item Description	**Units**	**Estimated Qty**	**Unit Price**	**Amount (2024$)**	**Amount (2025$)**
Construction (CN)					
Mobilization	LS	8	Constr. %	$ 7,000	$ 7,350
Maintenance of Traffic	LS	8.5	Constr. %	$ 8,000	$ 8,400
Constr. Surveying	LS	3	Constr. %	$ 3,000	$ 3,150
Pavement M&O	SY	1021	$ 10	$ 10,211	$ 10,700
Full Depth Pavement (SM-9.5D)	TON	9	$ 140	$ 1,260	$ 1,300
Full Depth Pavement (IM-19.0A)	TON	14	$ 125	$ 1,750	$ 1,850
Full Depth Pavement (BM-25.0A)	TON	38	$ 115	$ 4,370	$ 4,600
Full Depth Pavement (21B)	TON	29	$ 40	$ 1,160	$ 1,200
Sawcut Asphalt Pavement	LF	350	$ 2	$ 700	$ 750
Curb & Gutter CG-6	LF	350	$ 45	$ 15,750	$ 16,550
Entrance Gutter CG-9D	SY	13	$ 90	$ 1,170	$ 1,250
Concrete Sidewalk (Including CG-12, Depth 4" Class A4)	SY	400	$ 60	$ 24,000	$ 25,200
Detectable Warning Surface	SY	8	$ 265	$ 2,120	$ 2,250
Pavement Markings Type B, Class 1 - 24" White	LF	40	$ 10	$ 400	$ 400
Pavement Markings Type B, Class 1 - 6" White	LF	400	$ 5	$ 2,000	$ 2,100
Pavement Markings Type B, Class 1 - 4" yellow	LF	250	$ 5	$ 1,250	$ 1,300
Sign Panel	SF	9	$ 40	$ 360	$ 400
Sign Post	LF	6	$ 20	$ 120	$ 150
Relocate Existing 1 Post Ground Mounted Sign Panel	EA	2	$ 250	$ 500	$ 550
Stormwater Drop Inlet	EA	1	$ 5,500	$ 5,500	$ 5,800
Stormwater Manhole	LF	14	$ 750	$ 10,500	$ 11,050
Stormwater Pipe (15")	LF	15	$ 125	$ 1,875	$ 1,950
Silt Fence	LF	315	$ 15	$ 4,725	$ 4,950
Inlet Protection	EA	2	$ 300	$ 600	$ 650
Seeding (lime, fertilizer and mulch)	SY	175	$ 2	$ 350	$ 350
			CN Subtotal	***$109,000.00***	***$114,000.00***
Other CN Items					
Constr. Engineering & Inspection	LS	25	Constr. %	$ 27,000	$ 28,350
			CN Total	**$136,000.00**	**$ 142,800.00**
Right of Way					
Temporary Esmts Acquisition	SF	1575	$ 20	$ 31,500	$ 33,100
Permanent Esmts Acquisition	SF		$ 40	$ -	$ -
Utility Relocation Contingency	LS	1	$ 10,000	$ 10,000	$ 10,500
			RW Total	**$ 42,000**	**$ 44,100**

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Notes:

1) Based on assumed improvements included in concept plan
2) Earthwork is not included
3) Utility relocation is estimated

Darbydale/Forestdale Retrofitting Project
Opinion of Probable Cost

8/7/2024

Darbydale Avenue Summary		
Phase	**Total Amount (2024$)**	**Total Amount (2025$)**
Preliminary Engineering (15% of construction cost)	$ 80,000	$ 84,000
Environmental and Federal Oversight (10% of construction cost)	$ 53,000	$ 55,650
Construction	$ 664,000	$ 697,200
Right-of-Way (inc. Utilities)	$ 280,000	$ 294,000
Project SubTotal	$ 1,077,000	$ 1,130,850
Contingency (50%)	*$ 539,000*	$ 565,950
Project Total	**$ 1,616,000**	**$ 1,696,800**

Breakdown					Assume 5% Inflation
Item Description	**Units**	**Estimated Qty**	**Unit Price**	**Amount (2024$)**	**Amount (2025$)**
Construction (CN)					
Mobilization	LS	8	Constr. %	$ 36,000	$ 37,800
Maintenance of Traffic	LS	8.5	Constr. %	$ 38,000	$ 39,900
Constr. Surveying	LS	3	Constr. %	$ 13,000	$ 13,650
Pavement M&O	SY	1100	$ 10	$ 11,000	$ 11,550
Full Depth Pavement (SM-9.5D)	TON	27	$ 140	$ 3,780	$ 3,950
Full Depth Pavement (IM-19.0A)	TON	42	$ 125	$ 5,250	$ 5,500
Full Depth Pavement (BM-25.0A)	TON	113	$ 115	$ 12,995	$ 13,650
Full Depth Pavement (21B)	TON	87	$ 40	$ 3,480	$ 3,650
Curb & Gutter CG-6	LF	1000	$ 45	$ 45,000	$ 47,250
Curb CG-3	LF	175	$ 35	$ 6,125	$ 6,450
Curb CG-2	LF	350	$ 30	$ 10,500	$ 11,050
Concrete Sidewalk (Including CG-12, Depth 4" Class A4)	SY	280	$ 60	$ 16,800	$ 17,650
Concrete Islands (Class A3)	CY	230	$ 850	$ 195,500	$ 205,300
Detectable Warning Surface	SY	16	$ 265	$ 4,240	$ 4,450
Pavement Markings Type B, Class 1 - 24" White	LF	400	$ 10	$ 4,000	$ 4,200
Pavement Markings Type B, Class 1 - 6" White Dashed	LF	180	$ 5	$ 900	$ 950
Pavement Markings Type B, Class 1 - 4" yellow	LF	550	$ 5	$ 2,750	$ 2,900
Yield Markings	EA	26	$ 100	$ 2,600	$ 2,750
Sign Panel	SF	181	$ 40	$ 7,240	$ 7,600
Sign Post	LF	119	$ 20	$ 2,380	$ 2,500
New Streetlight	EA	8	$ 10,000	$ 80,000	$ 84,000
Stormwater Drop Inlet	EA	2	$ 5,500	$ 11,000	$ 11,550
Stormwater Manhole	LF	10	$ 750	$ 7,500	$ 7,900
Stormwater Pipe (15")	LF	30	$ 125	$ 3,750	$ 3,950
Silt Fence	LF	400	$ 15	$ 6,000	$ 6,300
Inlet Protection	EA	3	$ 300	$ 900	$ 950
Seeding (lime, fertilizer and mulch)	SY	220	$ 2	$ 440	$ 450
			CN Subtotal	***$531,000.00***	***$558,000.00***
Other CN Items					
Constr. Engineering & Inspection	LS	25	Constr. %	$ 133,000	$ 139,650
			CN Total	**$664,000.00**	**$ 697,200.00**
Right of Way					
Temporary Esmts Acquisition	SF	2000	$ 20	$ 40,000	$ 42,000
Permanent Esmts Acquisition (Improvements within School Property)	SF	5000	$ 40	$ 200,000	$ 210,000
Utility Relocation Contingency	LS	4	$ 10,000	$ 40,000	$ 42,000
			RW Total	**$ 280,000**	**$ 294,000**

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Prepared By Kimley-Horn

Darbydale/Forestdale Avenue Retrofitting Project

REGIONAL ROADWAY SAFETY PROGRAM FY 2024

Metropolitan Washington Council of Governments

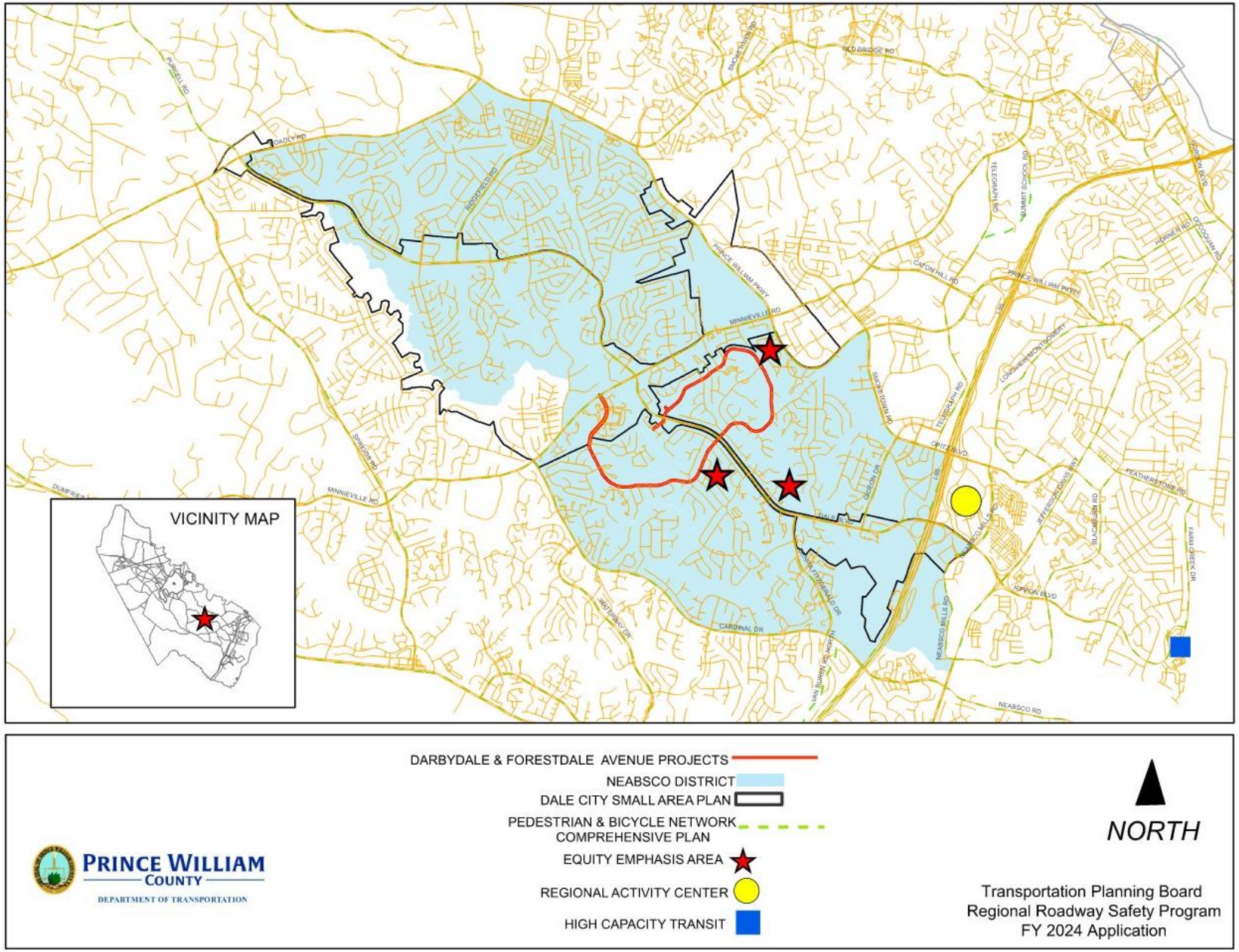
Kimley»Horn

Project Background

- The Darbydale/Forestdale Avenue Retrofitting Project is focused on enhancing safety for people who walk, drive, and bike at the intersections of:
  - Eastlawn Avenue and Darbydale Avenue
  - Forestdale Avenue and Ferndale Road (north)
  - Forestdale Avenue and Ferndale Road (south)

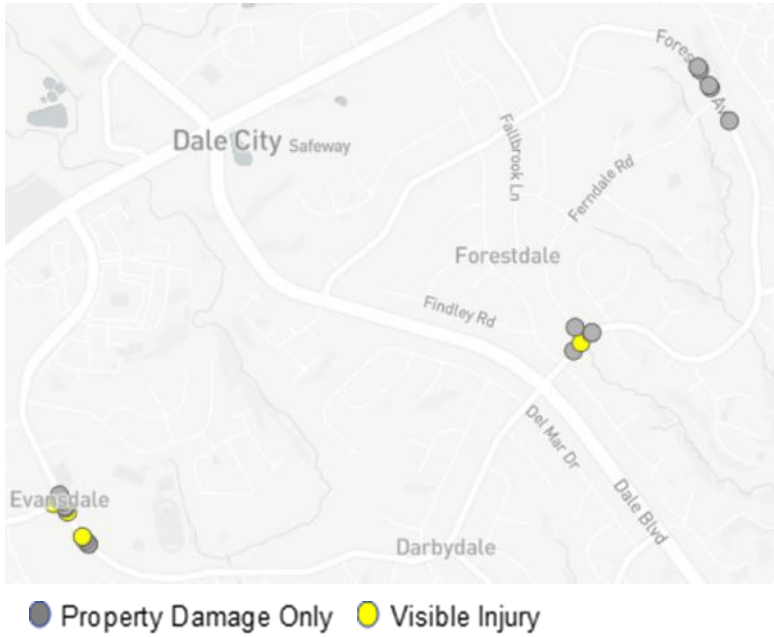
Project Background

- Darbydale Avenue and Forestdale Avenue, State Route 1826, are ***legacy roadways*** in Prince William County
  - Designed based on **outdated traffic and mobility assumptions**
  - ***No longer in alignment*** with changing which land use and transportation needs of the community
  - Experience **severe issues related to traffic and pedestrian safety**.
- The Darbydale /Forestdale Avenue Corridor is framed by an older and established neighborhood that primarily houses lower-income families and minority communities.
- Darbydale/Forestdale Avenue serves two Equity Emphasis Areas (EEA) (Census Tracts 9004.03 and 9004.09) as well as George Hampton Middle School.



Project Background

- This project identified safety countermeasures to retrofit the three intersections
- Since 2015, a total of 26 crashes have occurred at the intersections
  - Of those crashes 27% resulted in injuries (13 people injured)
- The project builds on a previous planning study conducted by Virginia Office of Intermodal Planning and Investment (OIPI), providing the necessary technical evaluations and design to allow Prince William County to seek state, regional, and federal funding to construct and implement the recommended improvements.



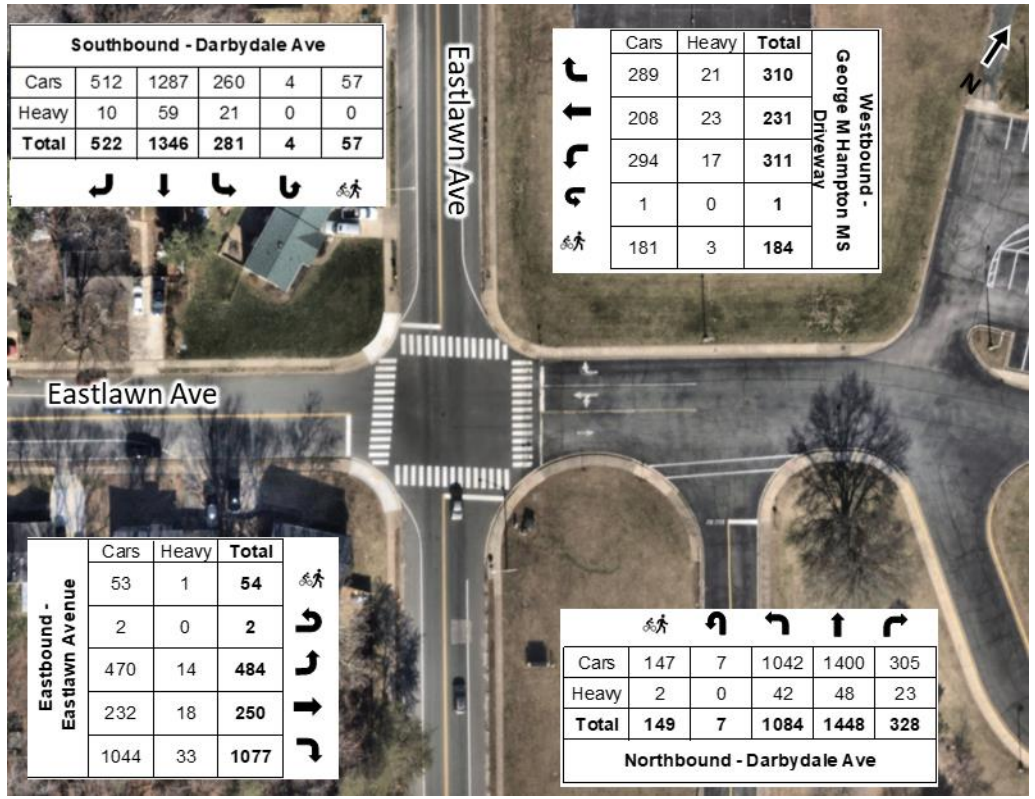
Project Design Methodology

- Existing Conditions Assessment
  - Data Collection - *Traffic Counts, Crash Data*
  - Previous OIPI planning study
  - Survey and field visit
- Design Development and Considerations
  - Countermeasure identification
    - Roundabout design considerations
- County and VDOT coordination
- Recommendations

Existing Conditions

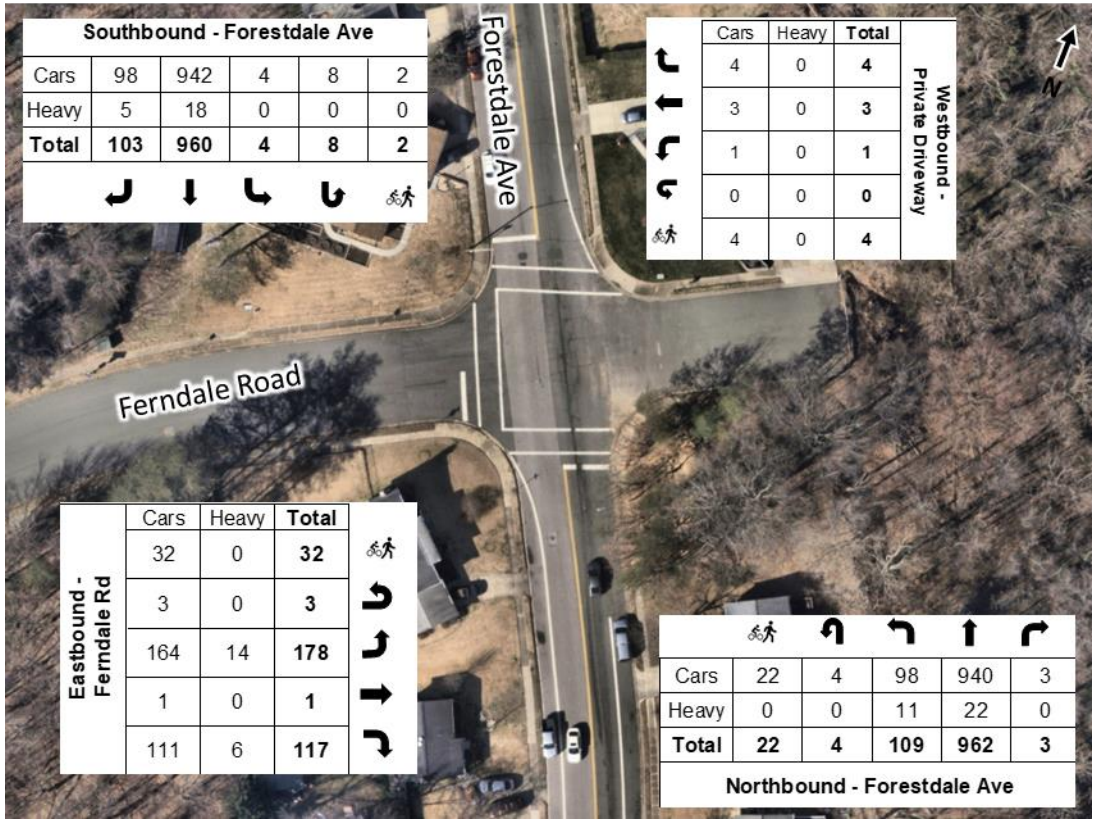
Eastlawn Avenue and Darbydale Avenue

- Existing Conditions Considerations:
  - Crash data
  - Traffic counts
  - All designs must be within existing right-of-way (ROW)
- Key Findings:
  - Potential conflict with the existing driveway on the northwest intersection leg
  - Existing high visibility crosswalks at all four crosswalks
  - Curb ramp upgrades needed at all four intersection quadrants to meet VDOT design guidance and ADA requirements
  - Pavement marking upgrades needed



Forestdale Avenue and Ferndale Road (north)

- Existing Conditions Considerations:
  - Crash data
  - Traffic counts
  - East leg of the intersection is private property
- Key Findings:
  - Sediment build-up in the southeast quadrant of intersection
  - Curb ramp upgrades needed at all four intersection quadrants to meet VDOT design guidance and ADA requirements
  - Pavement marking upgrades needed



Southbound - Forestdale Ave					
Cars	98	942	4	8	2
Heavy	5	18	0	0	0
Total	**103**	**960**	**4**	**8**	**2**

Westbound - Private Driveway	Cars	Heavy	Total
	4	0	**4**
	3	0	**3**
	1	0	**1**
	0	0	**0**
	4	0	**4**

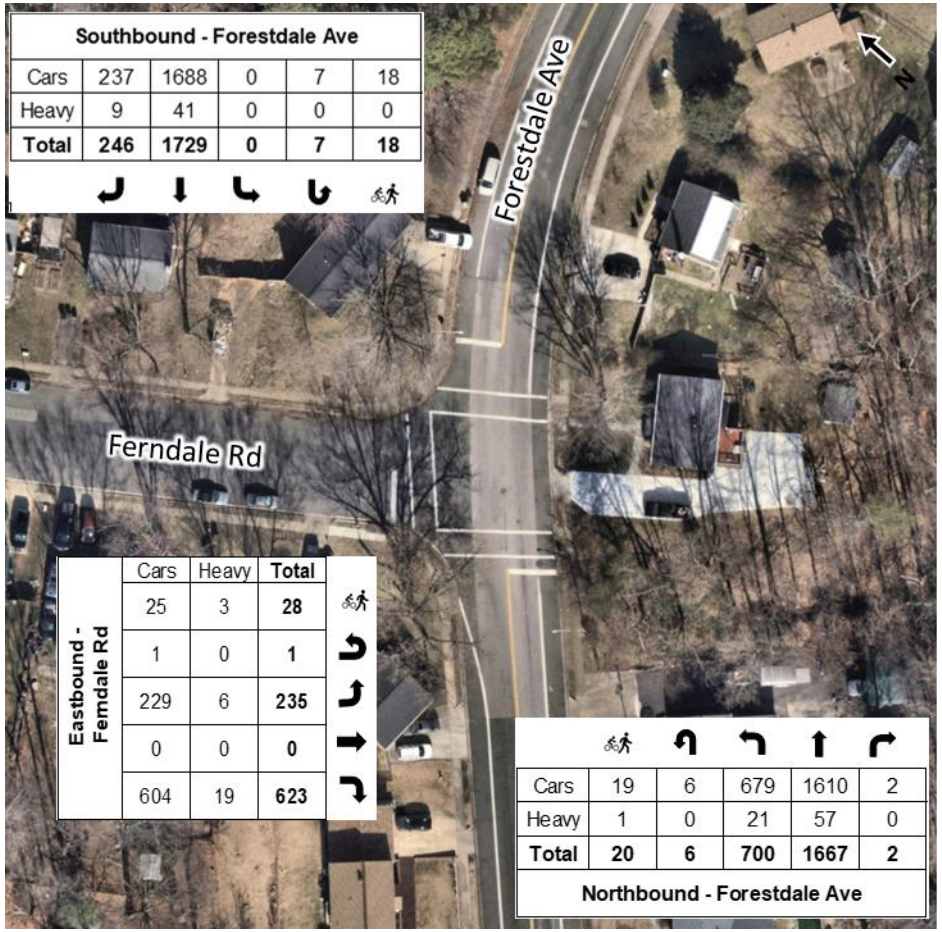
Eastbound - Ferndale Rd	Cars	Heavy	Total
	32	0	**32**
	3	0	**3**
	164	14	**178**
	1	0	**1**
	111	6	**117**

Cars	22	4	98	940	3
Heavy	0	0	11	22	0
Total	**22**	**4**	**109**	**962**	**3**

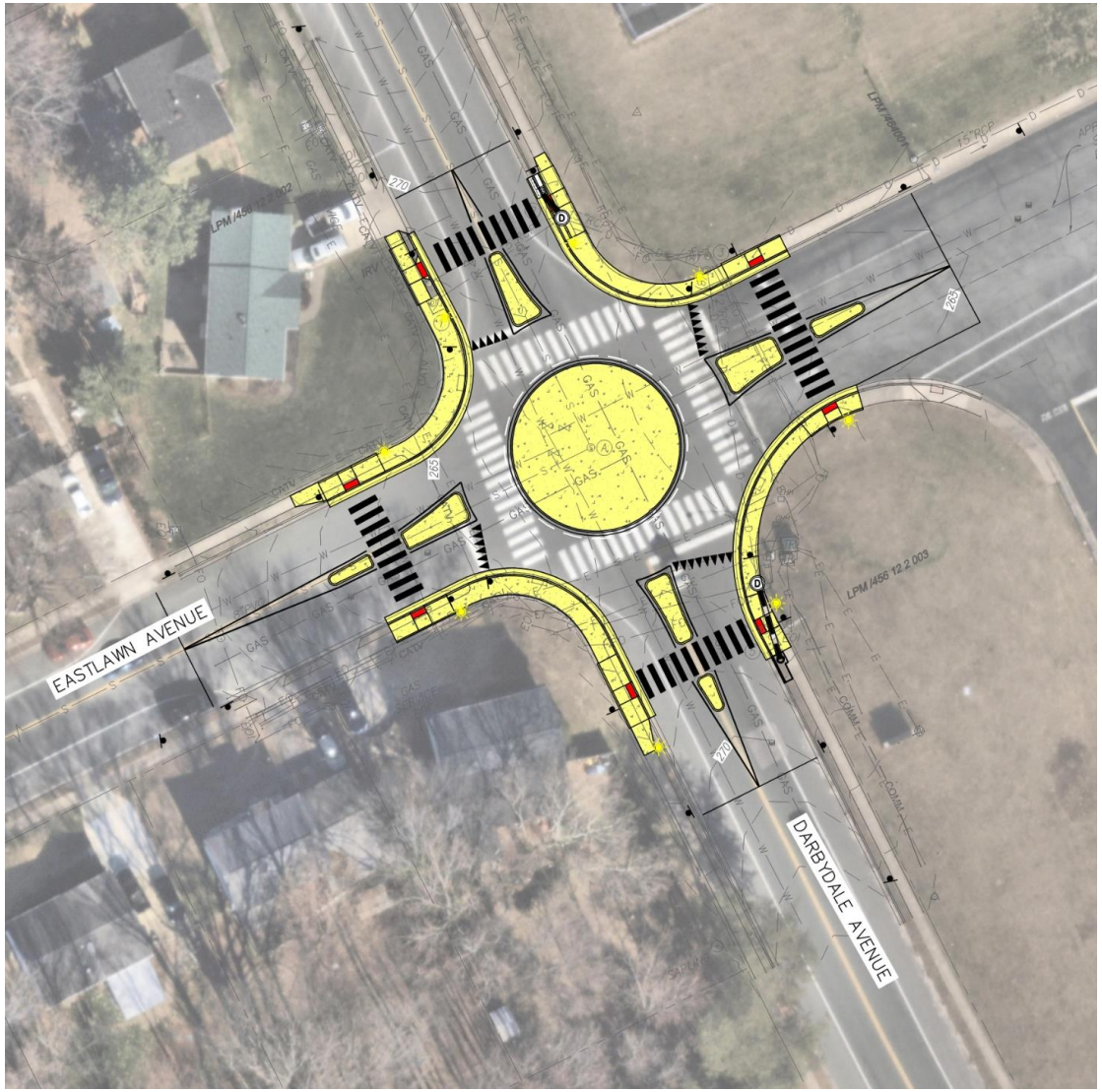
Northbound - Forestdale Ave

Forestdale Avenue and Ferndale Road (south)

- Existing Conditions Considerations:
  - Crash data
  - Traffic counts
- Key Findings:
  - Steep slope on east leg of the intersection creating potential grading concerns
  - Potential utility conflicts in northwest quadrant of intersection
  - Potential driveway conflicts
  - Pavement marking upgrades needed
  - Curb ramp upgrades needed at all three intersection corners to meet VDOT design guidance and ADA requirements



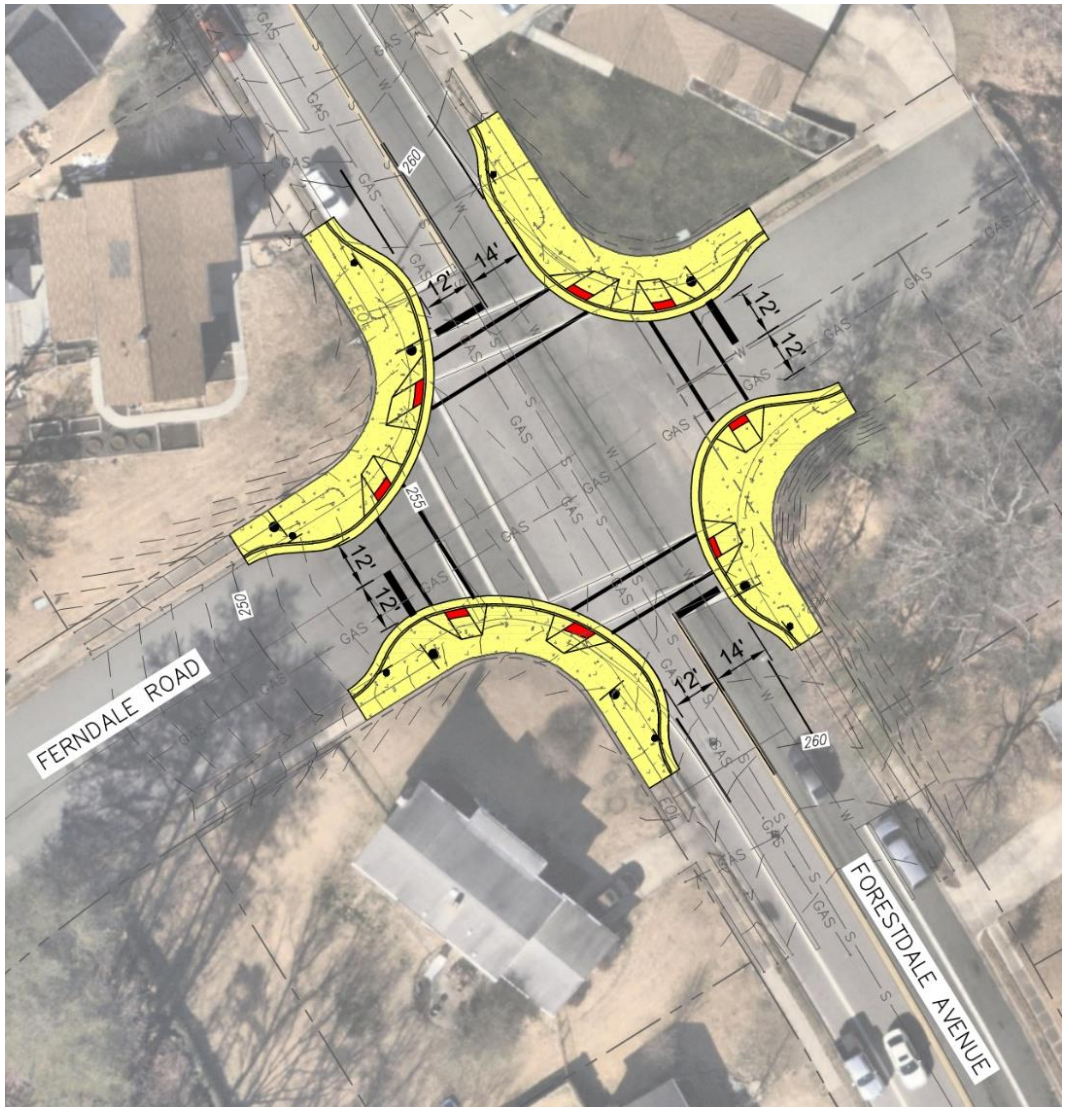
Recommendations



Eastlawn Avenue and Darbydale Avenue

Recommendations:

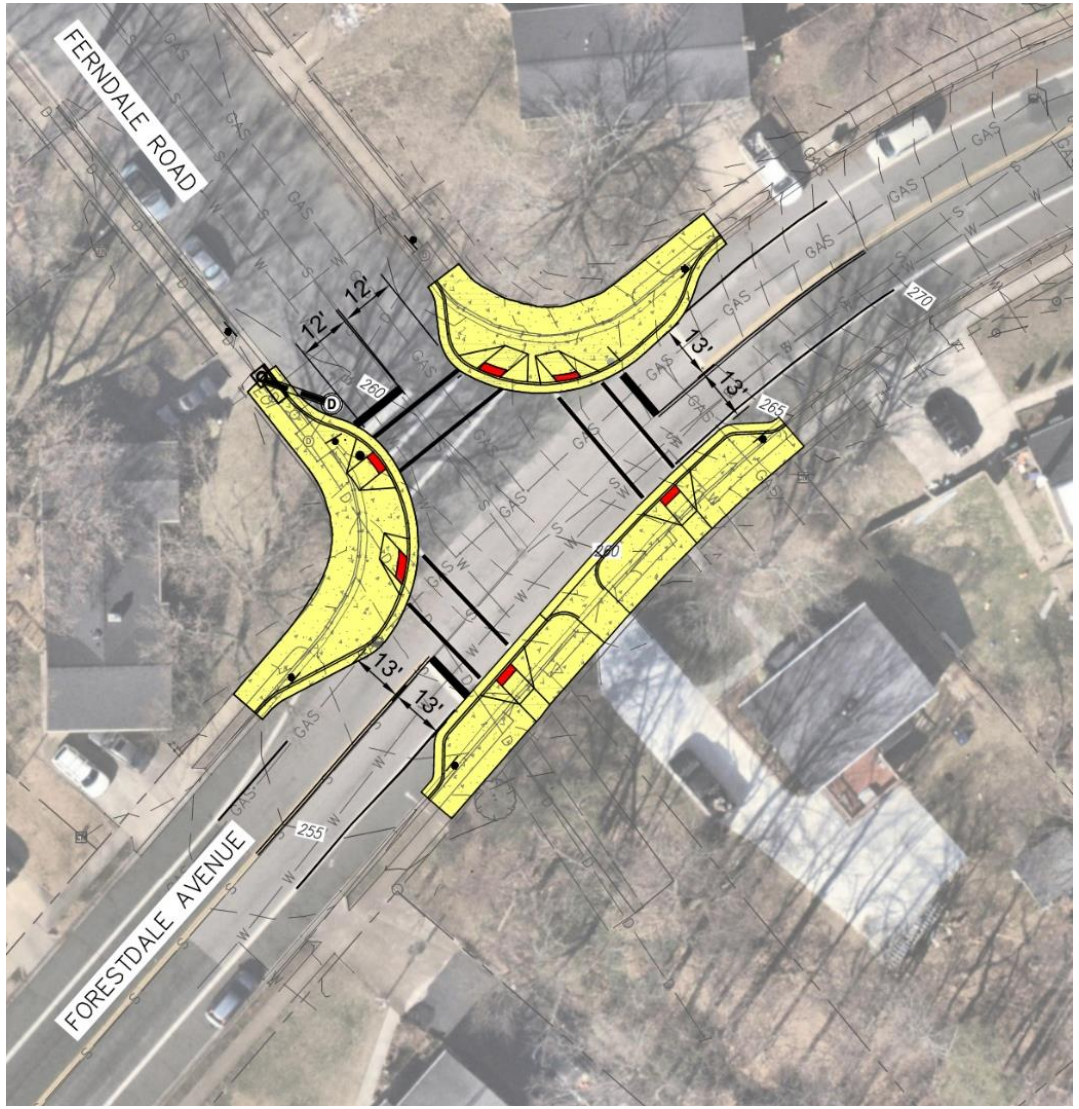
- Proposed mini-roundabout within existing ROW
- Upgraded ADA-compliant curb ramps on all crossings
- Mini-roundabout signage
  - W2-6 and W16-9P
- Realignment of all four crosswalks
- Updated pavement markings
- Restricted parking to improve pedestrian visibility



Forestdale Avenue and Ferndale Road (north)

Recommendations:

- Proposed concrete curb extensions on all four corners of the intersection
- Upgraded ADA-compliant curb ramps on all crossings
- Realignment of all four crosswalks
- Updated pavement markings
- Restricted parking to improve pedestrian visibility



Forestdale Avenue and Ferndale Road (south)

Recommendations:

- Proposed concrete curb extensions on both corners and continuous extension on southeast side of intersection
- Upgraded ADA-compliant curb ramps on all crossings
- Realignment of all three crosswalks
- Updated pavement markings
- Restricted parking to improve pedestrian visibility

Implementation Actions

- Next steps
  - School coordination – Prince William County staff will coordinate with the Prince William County Public Schools to obtain necessary approvals for the design at the Eastlawn Avenue and Darbydale Avenue study intersection.
  - VDOT approval – PWC staff will coordinate with VDOT on final approval of plans, including any necessary permits and design requirements.

- Potential Funding Sources
  - County Funding – CIP, budgetary process – The County can utilize funding through the Capital Improvement Program to cover additional engineering and construction costs.
  - SS4A – SS4A funding can be applied for and directed towards the design and implementation of this project. This project would likely need to be combined to be included as a larger project to be considered for SS4A funds.
  - TA funding – Transportation Alternatives funding can be used to advance the project's design and fund the public outreach process.