CRAWFORD DRIVE SIDEWALK GAP REPORT

Crawford Drive from Rockcrest Circle to Hillcrest Park

Twinbrook Safe Routes to School and Transit Access Feasibility Studies
City of Rockville Contract No. BCS 2017-01H

December 2024

Prepared For:

City of Rockville
111 Maryland Ave,
Rockville, Maryland 20850

Prepared By:

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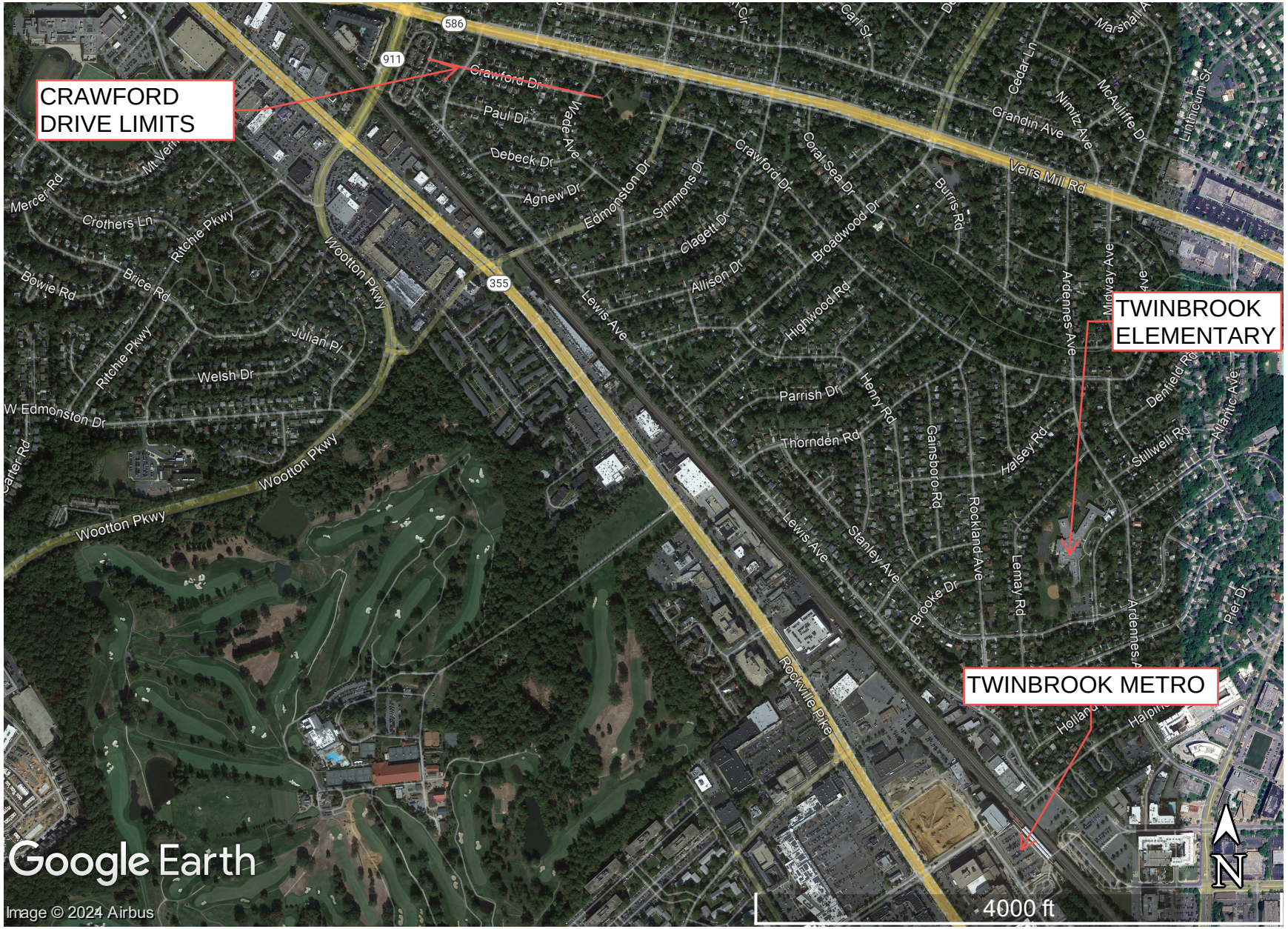
TABLE OF CONTENTS



CRAWFORD DRIVE
FIGURE 1: LOCATION MAP

I. PROJECT INTRODUCTION

This report has been prepared for the City of Rockville as one of their Vision Zero Projects. Vision Zero is a priority initiative of the Mayor and Council to create safe and livable neighborhoods. The Twinbrook Safe Routes to School and Transit Access feasibility study focuses on improving multimodal access and mobility in the Twinbrook neighborhood in Rockville. The goal of this project is to evaluate the feasibility of constructing new sidewalks along roads and identify opportunities to improve intersection safety for all modes of transportation, especially for trips to and from Twinbrook Elementary School and the Twinbrook Metro Station.

The following sidewalk segments were studied:

1. Brooke Drive between Lewis Avenue and Rockland Avenue
2. Crawford Drive between Rockcrest Circle and Hillcrest Park
3. Crawford Drive between Atlantic Avenue and Ardennes Avenue
4. Halsey Road between Henry Road and Ardennes Avenue
5. Lemay Road between Vandegrift Avenue and Ardennes Avenue
6. Midway Avenue between Crawford Dive and Stillwell Road
7. Wade Avenue between Edmonston Drive and Crawford Drive

The intersections studied included:

1. Ardennes Avenue and Crawford Drive
2. Ardennes Avenue and Halsey Road
3. Ardennes Avenue and Halpine Road
4. Ardennes Avenue and Ridgway Avenue
5. Ardennes Avenue and Wainwright Avenue
6. Chapman Avenue and Bouic Avenue
7. Chapman Avenue and Twinbrook Parkway
8. Lemay Road and Ridgway Avenue

This project was funded by a Maryland Department of Transportation (MDOT) Transportation Alternatives (TA) Program grant, and the improvements and cost estimate are proposed by the project team consisting of Mercado Consultants and AECOM.

II. PROJECT DESCRIPTION

This report discusses the feasibility of sidewalk improvements along both sides of Crawford Drive between Rockcrest Circle and Hillcrest Park. Please see Appendix A for the sidewalk options and cost estimate.

III. DESIGN CRITERIA AND ASSUMPTIONS

The design criteria used for the proposed sidewalks comes from the ADA Standards for Accessible Design and the recently adopted Public Right-of-Way Accessibility Guidelines. A 5-foot minimum width sidewalk is proposed to meet this standard. The running slopes on the ramps are 12:1 maximum, and the proposed landing pads are a minimum of 5-foot x 5-foot with a 48:1 maximum cross-slope. The depressed landing pads located at crossings contain a 2-foot wide minimum detectable warning surface.

The buffer between the proposed sidewalk and back of curb is a minimum 2-foot but may vary to avoid impacts with utilities or trees. Proposed sidewalk must also tie into adjacent existing sidewalk where applicable.

It is assumed the sidewalk is also proposed entirely within the City of Rockville's right-of-way. Temporary construction easements will only be necessary for driveway reconstruction to tie-in to existing driveway grades. Driveways will be reconstructed in-kind. Impacted fences, mailboxes, and other resident belongings located within the City of Rockville's right-of-way are to be relocated. Impacted steps or resident walkways are to be reconstructed to tie into the proposed sidewalk. The study looked at shifting sidewalk to avoid moving utilities such as inlets, fire hydrants, and utility poles. At a time of more detailed design, the City of Rockville should coordinate with Pepco about moving utility poles.

Retaining walls or knee walls are to be proposed at locations with steep slope adjacent to the proposed sidewalk.

Marked crosswalks are proposed at intersections along the proposed sidewalk. Proposed marked crosswalks are to include advanced warning signage and stop bars at stop-controlled intersections. The MD MUTCD is to be followed for crosswalk placement. Per the MD MUTCD marked crosswalks are to be 6-foot wide minimum.

The Fire Department Access Performance-Based Design Guide also dictates the roadway clear width to be 20-feet minimum for emergency vehicles. The curb radius recommended at intersections is 25-feet minimum and was used to upgrade curb radii throughout the site. Intersections used specific AASHTO design vehicles proposed by the City of Rockville.

IV. EXISTING CONDITIONS

Crawford Drive is an undivided two-way road, classified as a secondary residential street. The westernmost limits of the study, the intersection of Crawford Drive and Rockcrest Circle, is located 1.7 miles from the Twinbrook Metro Station and 1.6 miles from Twinbrook Elementary. The easternmost limits of the study, the intersection of Crawford Drive and Hillcrest Park, is located 1.5 miles from the Twinbrook Metro Station and 1.3 miles from Twinbrook Elementary School.

The proposed sidewalk gap on Crawford Drive extends from Rockcrest Circle to Hillcrest Park and measures approximately 1350 linear feet. The limits of Crawford Drive are intersected by three streets, Rockcrest Circle, Gail Avenue, and Wade Avenue. None of the intersecting roads have existing sidewalk to tie into on either side of the road. There is another sidewalk feasibility study for proposed sidewalk on either side of the intersecting Wade Avenue.

Existing utilities poles are located on the north side of Crawford Drive for entire study limits. There is also an existing fire hydrant on the south side of Crawford Drive near the intersection of Wade Avenue. There are many trees on both sides of Crawford Drive. The roadway clear width is approximately 25-feet along Crawford Drive. Although all residents along Crawford Drive have a driveway, there are multiple cars parking along the street.

Please see Appendix B for existing site photos.

V. CRASH DATA

There were no police-reported crashes at this location during the 2018-2022 study period.

VI. ALTERNATIVES CONSIDERED

Two alternatives, one per side, were considered for the sidewalk gap along Crawford Drive. The alternative on the north side of Crawford Drive, Option 1, was designed using the criteria mentioned in the Design Criteria and Assumptions section. The buffer in Option 1 is a consistent 2-foot buffer throughout the sidewalk gap limits, except where it decreases to no buffer to avoid impacting a utility post. Option 1 also includes an approximately 113-foot long knee wall behind the sidewalk at 1008, 1010, and 1012 Crawford Drive. Option 1 impacts include tree removal (8), bush removal (7), driveway impact (17), and easements required (1).

The alternative on the south side of Crawford Drive, Option 2, was also designed with a 2-foot buffer across most of the sidewalk gap's limits, except for a segment where the buffer increases to 3-feet to avoid impacting a fire hydrant. Option 2 also includes an approximately 303-foot long knee wall behind the sidewalk between the corner of Crawford Drive and Gail Avenue and 1011 Crawford Drive. Other impacts of Option 2 include tree removal (9), bush removal (16), driveways impact (21), and easements required (1).

Options 1 and 2 both upgrade curb radii to 25-feet at intersections and tie into adjacent existing sidewalk at Hillcrest Park. Both options propose marked crosswalks across Gail Avenue, and Wade Drive.

VII. PUBLIC INPUT

Residents and the Study Team participated in the walk the block meeting for Crawford Drive sidewalk gap on May 21st. The primary concerns were related to the proximity of the sidewalk to the right-of-way, and if the sidewalk would require property impacts. Some other questions the residents had were regarding the width and material of the sidewalk. They also had questions about who would pay for grading behind the sidewalk or pay for knee walls if required. Another resident asked if on-street parking would remain. There was another question about who would pay for fence replacement or removal. One resident suggested lowering the speed limit on Crawford Drive instead of proposing sidewalks. Please see Appendix C for formal resident comments received for this location.

VIII. RECOMMENDATIONS

The study team recommends proceeding with Option 1 as the most feasible option for construction. The study team came to this conclusion based on several factors. A few residents showed opposition to proposed sidewalk on their side (Option 2 – southside) during the walk the segment and formal comments. Option 1 also has a significantly lower cost as the required knee wall is significantly shorter. Option 1 also had fewer trees needed to be removed for the installation of the proposed sidewalk. There are also less impacts outside of the City of Rockville's right-of-way for the proposed Option 1.

A. IMPACTS:

Option 1 impacts include:
- Tree removal: 8
- Bush removal: 7
- Driveways impacted: 17
- Easements required: 1

Option 2 impacts include:
- Tree removal: 9
- Bush removal: 16
- Driveways impacted: 21
- Easements required: 2

B. COST ESTIMATE:

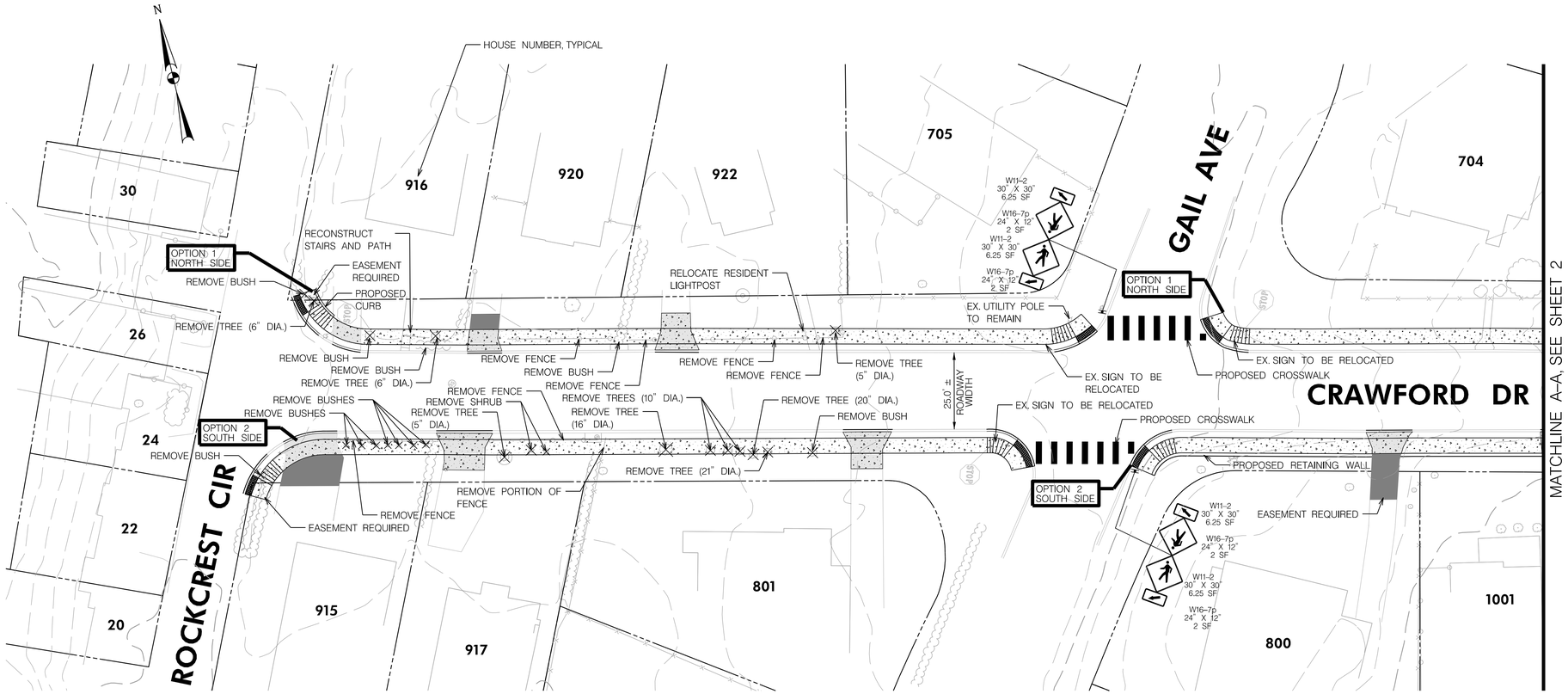
Project cost was estimated using the unit cost method plus an overall 40% contingency to reflect the current level of study. Unit costs were gathered for proposed items in each option and quantities were gathered. The unit costs used were derived from similar projects within Montgomery County. The approximate cost for constructing Option 1 is $377,000 and for Option 2 is $496,000. Please see Appendix A for cost estimate breakdown.

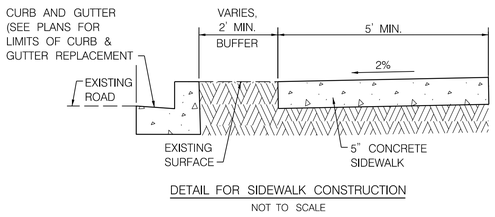
IX. SUMMARY

Construction of the sidewalk on Crawford Drive is deemed feasible. Sidewalks may be constructed on either side (north or south) with similar impacts. Option 1, the north side, is the recommended option for construction. Option 1 does not require as long a knee wall as Option 2, 113-foot long knee wall compared to 303-foot long wall. This is one of the main differences in the construction costs. Option 1 also has less impact to trees.

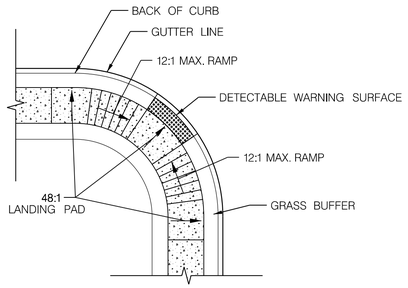
APPENDIX A:

PLAN SHEET(S) AND ESTIMATE





DETAIL FOR SIDEWALK CONSTRUCTION
NOT TO SCALE



NOTES:

1. DIRECTION OF 2% CROSS SLOPE WILL BE CONSISTENT WITH EXISTING DRAINAGE CONDITIONS.
2. A CURB SHALL BE ADDED TO THE BACK OF THE SIDEWALK WHERE NEEDED TO PROTECT EXISTING LANDCAPE AND WHERE THE SLOPE BEHIND THE SIDEWALK IS GREATER THAN 10 PERCENT.
3. EXISTING MULCH BEDS SHALL RETURN TO MULCH BEDS IF DISTURBED.

LEGEND

- 5 INCH CONCRETE SIDEWALK
- CONCRETE REMOVAL
- 8 INCH PORTLAND CEMENT CONCRETE DRIVEWAY
- 8 INCH ASPHALT DRIVEWAY
- DETECTABLE WARNING SURFACE
- NEW CURB
- APPROX. RIGHT OF WAY
- ADA RAMP

OPTION 1 NOTES:

1. TREES TO BE REMOVED: 8
2. BUSHES/HEDGES TO BE REMOVED: 7
3. KNEE WALL LENGTH (LF): 113
4. EASEMENTS REQUIRED: 1

OPTION 2 NOTES:

1. TREES TO BE REMOVED: 9
2. BUSHES/HEDGES TO BE REMOVED: 16
3. KNEE WALL LENGTH (LF): 303
4. EASEMENTS REQUIRED: 2

DRAFT

MERCADO CONSULTANTS, INC.

DEPARTMENT OF PUBLIC WORKS
CITY OF
ROCKVILLE
111 MARYLAND AVE. ROCKVILLE, MARYLAND

NOTE: TOPOGRAPHY BASED ON MOBILE LIDAR SCAN

20' 0 20' 40'
SCALE: 1" = 20'

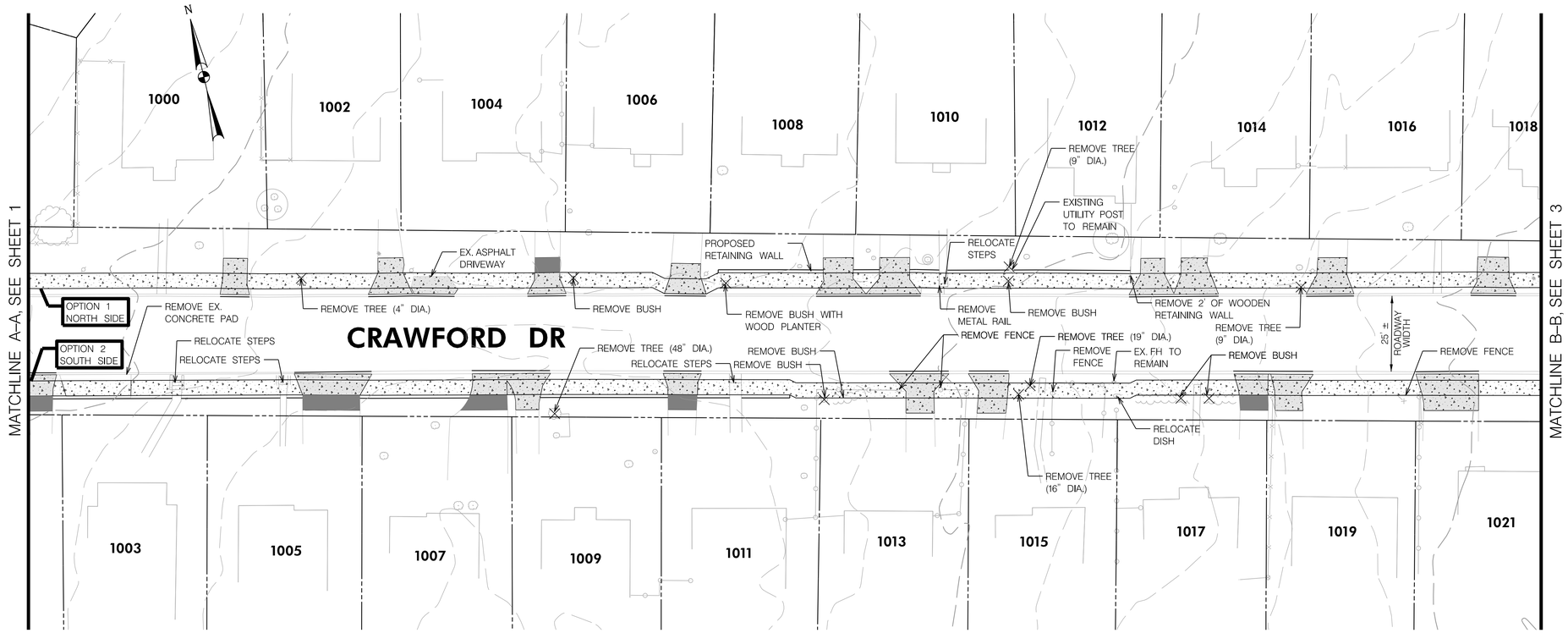
SIDEWALK GAP PLANS
CRAWFORD DR FROM ROCKCREST CIR TO HILL CREST PARK - OPTIONS 1 AND 2

TWINBROOK SAFE ROUTES TO SCHOOL AND TRANSIT ACCESS FEASIBILITY STUDIES
City of Rockville, Maryland

DATE SUBMITTED: 10/07/2024
CONTRACT NO. BCS 2017-01H

SCALE 1"=20'

SHEET NO. 1 OF 3



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- NEW CURB
- APPROX. RIGHT OF WAY
- ADA RAMP

MERCADO CONSULTANTS, INC.

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CRAWFORD DR FROM ROCKCREST CIR TO HILL CREST PARK - OPTIONS 1 AND 2

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City of Rockville, Maryland

DATE SUBMITTED: 10/07/2024
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SCALE 1"=20'

SHEET NO. 2 OF 3

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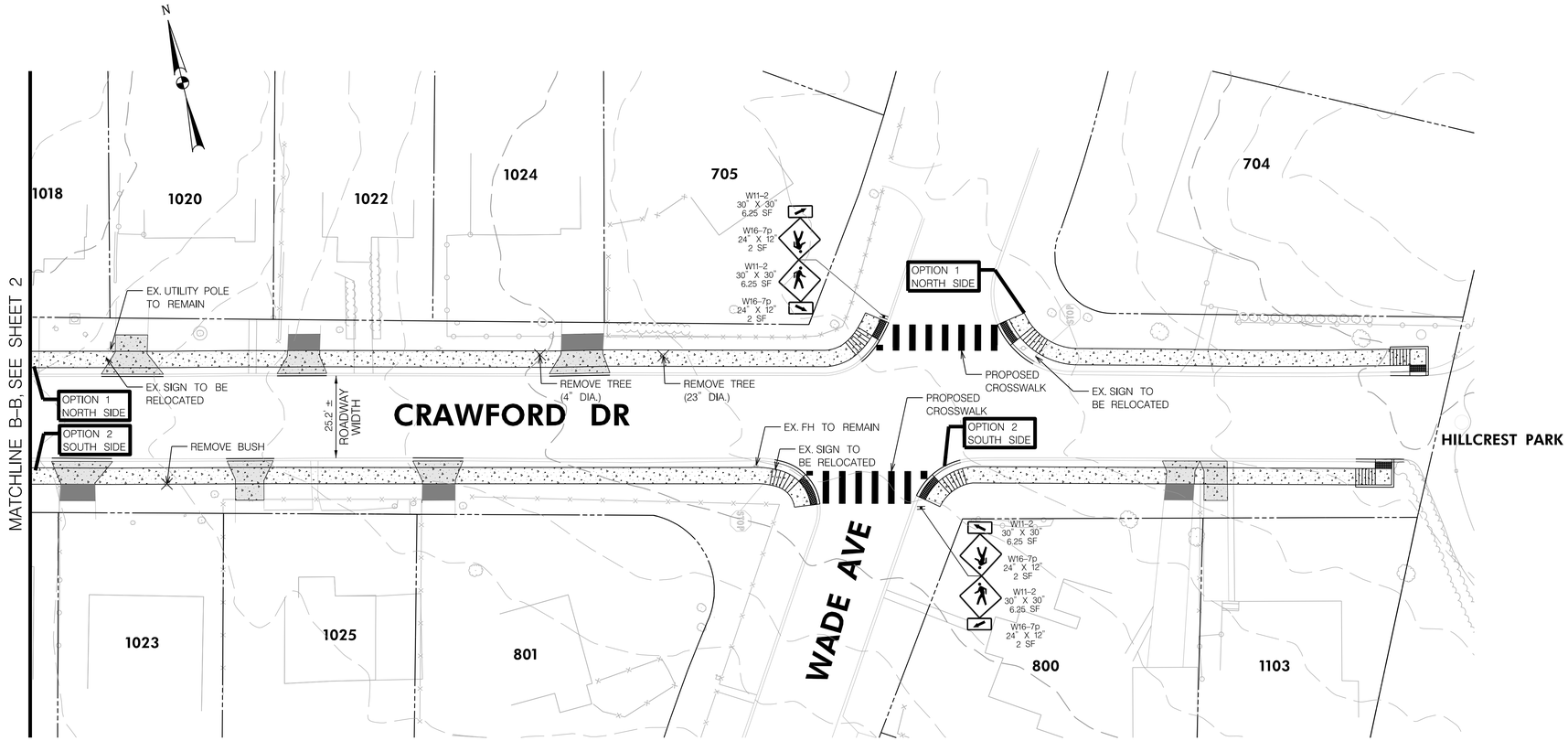

LEGEND

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DEPARTMENT OF PUBLIC WORKS
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111 MARYLAND AVE. ROCKVILLE, MARYLAND

NOTE: TOPOGRAPHY BASED ON MOBILE LIDAR SCAN

20' 0 20' 40'
SCALE: 1" = 20'

DRAFT

SIDEWALK GAP PLANS
CRAWFORD DR FROM ROCKCREST CIR TO HILL CREST PARK – OPTIONS 1 AND 2

TWINBROOK SAFE ROUTES TO SCHOOL AND TRANSIT ACCESS FEASIBILITY STUDIES
City of Rockville, Maryland

DATE SUBMITTED: 10/07/2024
CONTRACT NO. BCS 2017-01H

SCALE 1"=20'

SHEET NO. 3 OF 3

MERCADO CONSULTANTS. INC.

Engineer's Cost Estimate

Contract No. BCS 2017-01H
Twinbrook Safe Routes to School and
Transit Access Feasibility Studies
Crawford Drive - Option 1
December 30, 2024

ITEM NO.	CATEGORY CODE	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
	CATEGORY 1					
		TREE REMOVAL	EA	8	$1,000.00	8,000.00
		BUSH REMOVAL	EA	7	$250.00	1,750.00
					CATEGORY 1 TOTAL	**$9,750.00**
	CATEGORY 2					
		CLASS 1 EXCAVATION	CY	133	$60.00	$7,980.00
					CATEGORY 2 TOTAL	**$7,980.00**
	CATEGORY 3					
		STEPS OR PATH RELOCATION (SET)	EA	12	$500.00	$6,000.00
		KNEE WALL	LF	113	$350.00	$39,550.00
					CATEGORY 3 TOTAL	**$45,550.00**
	CATEGORY 4					
					CATEGORY 4 TOTAL	**$0.00**
	CATEGORY 5					
		HOT ASPHALT MIX FOR DRIVEWAY	TON	4	$175.00	$700.00
		PAVEMENT MARKINGS FOR CROSSWALK	LF	141	$5.00	$705.00
					CATEGORY 5 TOTAL	**$1,405.00**
	CATEGORY 6					
		5 INCH CONCRETE FOR SIDEWALK	CY	86	$1,000.00	$86,000.00
		7 INCH CONCRETE FOR DRIVEWAY	CY	41	$1,500.00	$61,500.00
		TYPE A CURB ANY HEIGHT OR DEPTH	LF	32	$100.00	$3,200.00
		TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	LF	347	$150.00	$52,050.00
					CATEGORY 6 TOTAL	**$202,750.00**
	CATEGORY 7					
					CATEGORY 7 TOTAL	**$0.00**
	CATEGORY 8					
		SHEET ALUMINUM SIGN	SF	33	$45.00	1,485.00
					CATEGORY 8 TOTAL	**$1,485.00**
					SUBTOTAL	**$268,920.00**
					40% CONTINGENCY	**$107,568.00**
					TOTAL	**$376,488.00**

MERCADO
CONSULTANTS. INC.

Engineer's Cost Estimate

Contract No. BCS 2017-01H
Twinbrook Safe Routes to School and
Transit Access Feasibility Studies
Crawford Drive - Option 2
December 30, 2024

ITEM NO.	CATEGORY CODE	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
	CATEGORY 1					
		TREE REMOVAL	EA	9	$1,000.00	9,000.00
		BUSH REMOVAL	EA	16	$250.00	4,000.00
					CATEGORY 1 TOTAL	**$13,000.00**
	CATEGORY 2					
		CLASS 1 EXCAVATION	CY	154	$60.00	$9,240.00
					CATEGORY 2 TOTAL	**$9,240.00**
	CATEGORY 3					
		STEPS OR PATH RELOCATION (SET)	EA	12	$500.00	$6,000.00
		KNEE WALL	LF	303	$350.00	$106,050.00
					CATEGORY 3 TOTAL	**$112,050.00**
	CATEGORY 4					
					CATEGORY 4 TOTAL	**$0.00**
	CATEGORY 5					
		HOT ASPHALT MIX FOR DRIVEWAY	TON	15	$175.00	$2,625.00
		PAVEMENT MARKINGS FOR CROSSWALK	LF	112	$5.00	$560.00
					CATEGORY 5 TOTAL	**$3,185.00**
	CATEGORY 6					
		5 INCH CONCRETE FOR SIDEWALK	CY	84	$1,000.00	$84,000.00
		7 INCH CONCRETE FOR DRIVEWAY	CY	48	$1,500.00	$72,000.00
		TYPE A CURB ANY HEIGHT OR DEPTH	LF	21	$100.00	$2,100.00
		TYPE A COMBINATION CURB AND GUTTER ANY HEIGHT OR DEPTH	LF	380	$150.00	$57,000.00
					CATEGORY 6 TOTAL	**$215,100.00**
	CATEGORY 7					
					CATEGORY 7 TOTAL	**$0.00**
	CATEGORY 8					
		SHEET ALUMINUM SIGN	SF	33	$45.00	1,485.00
					CATEGORY 8 TOTAL	**$1,485.00**
					SUBTOTAL	**$354,060.00**
					40% CONTINGENCY	**$141,624.00**
					TOTAL	**$495,684.00**

APPENDIX B:

SITE PHOTOS

Crawford Drive – Looking Northwest toward Rockcrest Circle

Crawford Drive – Looking Southwest toward Rockcrest Circle

Crawford Drive – Looking East from Rockcrest Circle

Crawford Drive – Looking East toward Gail Avenue

Crawford Drive – Looking West toward Gail Avenue

Crawford Drive – Looking Southeast toward proposed Knee Wall

Crawford Drive – Looking East toward Wade Avenue

Crawford Drive – Looking West toward Wade Avenue

Crawford Drive – Looking East toward Hillcrest Park

APPENDIX C:

RESIDENT COMMENTS

Resident Comment 1:
I see some missing relevant details in the map coverage of my small section of Crawford. Viewing the map with Crawford intersecting with Wade, details not indicated include:

1) my house, XXXX Crawford, on S. side of Crawford, is not indicated, other than property lines.
2) my driveway (concrete) and that of my neighbor (asphalt), running parallel to our mutual property line, are not shown. Property is even marked with “No Driveway."
3) Hillcrest Park, at the end of the road, next to my house, is not indicated on the map.
3) how the proposed sidewalks would connect with 1 of the current 2 Hillcrest Park paved paths/entrances (or a new one?) is not shown.

If such things matter here, putting the sidewalk on my side of the short Crawford extension to the park would affect my front yard and the side yard of my neighbor and 2 driveways. A sidewalk on the other side would affect the side of 1 yard, no driveways, and is flatter/less grade.

Have effects on drainage been considered? Will the new design curbs cause more problems, catch more debris, than the current curbs, which are rounded/curved, have no sharp/right angle? There are no storm sewers on the 1000 or 1100 block of Crawford, nor also uphill around the corner on Wade! With my house and neighboring Hillcrest park downhill, water collecting from far up Crawford and also Wade runs down the street sides in front of my house and dumps into Hillcrest Park, eventually entering a storm sewer downhill near the tennis court and Edmonston Drive entrance. Will any of that be changed (the parts involving Crawford Drive)? Will the new curbs help, hinder or not affect storm water flow, debris (particularly leaves in Fall, ice/snow in winter; particularly behind the wheels of parked cars) collecting and dams forming large pools in the street along the curb etc.?
Also, even without debris damns forming, the area of Crawford right at the entrance to Hillcrest park is visibly lower and water normally pools/collects there. With this at the Crawford Drive connection with the park sidewalks, seems a good time to fix this chronic problem.

Resident Comment 2:
I reside at XXX Crawford Dr. and would be greatly impacted by the proposed sidewalk installation on my street. While I understand the desire for improved safety for pedestrians, the proposals, especially for the south side option in the 900 block of Crawford Dr. will ruin the landscaping in my yard and that of my neighbors. This landscaping has been present in our yards for decades. Improvements by me and my neighbors have cost thousands of dollars, none of which appears in your concept drawings to be replaced.

Additionally, the sidewalk installation would greatly reduce the front yard space that has been present since the development was created in the 1940’s.

Lastly, there just is not that much pedestrian traffic on this short block of Crawford Dr. to warrant such a massive impact on our properties, not to mention the high cost.

I strongly oppose Option #1 (South Side) proposal for this project.

Thank you.