

SIDEWALK FEASIBILITY STUDY

MD 168 (Nursery Road)

**From Hammonds Ferry Road to MD 648E (Baltimore
Annapolis Boulevard)**

Arundel County

CONTRACT NO. BCS 2005-13G, TASK NO. 57

July 2014

Prepared For

**MARYLAND STATE HIGHWAY ADMINISTRATION
OFFICE OF HIGHWAY DEVELOPMENT
INNOVATIVE CONTRACTING DIVISION (ICD)
707 N. CALVERT STREET
BALTIMORE, MARYLAND 21202**

Prepared By



**100 SOUTH CHARLES STREET
TOWER II, SUITE 1000
BALTIMORE, MARYLAND 21201**

EXECUTIVE SUMMARY

This feasibility study is performed for the SHA Innovative Contracting Division under a statewide Fund 79 Sidewalk Projects. The project limits for this MD 168 (Nursery Road) study are from Hammond Ferry Road to MD 648E (Baltimore-Annapolis Boulevard) for a length of 6,900 ft, located in Linthicum Heights, Anne Arundel County, Maryland. Both sides of MD 168 are evaluated for sidewalk feasibility.

Existing Conditions

MD 168 is a 2-lane, 2-way urban minor arterial road, travelling in an east-west direction. The posted speed on MD 168 is 30 mph. Hammonds Ferry Road is a 2-lane, 2-way urban arterial and forms a 4-way intersection with MD 168. MD 648E is a 2-lane, 2-way, urban minor arterial. The Nursery Road Light Rail station is at the intersection of MD 648E and MD 168. One (1) overpass and two (2) underpasses are encountered along this corridor. One bridge is for I-695 over MD 168 and two bridges carry MD 168 over the Baltimore-Washington Parkway in two separate locations. This corridor is not on the National Highway System.

Feasibility

The proposed improvements include widening to accommodate a 4-foot shoulder, curb and gutter, 5-foot ADA compliant sidewalks, sidewalk ramps, grinding and resurfacing the length of the project, and three small retaining walls. Two of the retaining walls are needed along the south side of MD 168 to maintain existing access to residential driveways and reduce right-of-way (ROW) impacts. The third retaining wall is needed to run the sidewalk behind the piers under the I-695 Bridge.

Constraints

Limited ROW and overhead utilities lining both sides of the road present a challenge to keeping the impacts to a minimum. Additionally the three bridges present along this corridor limit options significantly.

One culvert near the limit of work to the east of the project may need to be extended. Sediment build-up is causing the water to back-up into the culvert and limiting positive flow. Environmental permitting may be needed to address this situation.

Bicycle compatibility can be accommodated with extensive ROW needs for approximately one third of the corridor leading to the eastern limit of work at the intersection with MD 648B.

Impacts and Flaws

Utility pole relocations will be required to place new sidewalks along MD 168. The storm water management requirements for this project will have additional impacts depending on types and locations of proposed ESD facilities. Potential for numerous small ROW takes to accommodate full improvements may limit the scope of these improvements. A proposed sidewalk may have impacts to an existing soccer field and therefore a potential 4f issue may be expected.

Alternatives Considered

After reviewing the corridor, two options have been created. Option 1 is providing full compatibility for both pedestrians and bicyclists along the entire corridor. Option 2 is to provide full compatibility between Hammond Ferry Road and Terrace Manor Drive. Between Terrace Manor Drive and Baltimore Annapolis Blvd the work necessary to provide full compatibility is more appropriate for this type of project.

not

17

Cost Estimate

The estimated construction cost for Option 1: full compatibility improvements is \$6.1 million. This includes 14.4% administrative overhead cost and a 40% contingency factor. Utility relocations cost is estimated to be \$1.6 million, calculated as 40% of the neat construction cost. The ROW cost is not included.

The estimated construction cost for Option 2 is \$2.0 million. This includes 14.4% administrative overhead cost and a 40% contingency factor. Utility relocations cost is estimated to be \$0.5 million, calculated as 40% of the neat construction cost. The ROW cost is not included.

July 28, 2014

MEMORANDUM

TO: Mr. Jason A. Ridgway, Director
Office of Highway Development

FROM: Lisa Choplin, P.E.
Chief, Innovative Contracting Division

BY: Jacobs Engineering Group

SUBJECT: Fund 79 – Sidewalk Feasibility Study

PROJECT: MD 168 (Nursery Road) from Hammonds Ferry Road to MD 648E
(Baltimore Annapolis Boulevard)

The purpose of this memorandum is to provide a feasibility study to the SHA's Innovative Contracting Division for statewide Fund 79 Sidewalk Projects. The project limits for this study along MD 168 (Nursery Road) are Hammonds Ferry Road to the West and MD 648E (Baltimore Annapolis Boulevard) to the East. This site will be referred to as MD 168. The SHA project request for MD 168 is to evaluate both sides of MD 168 for sidewalk and bike lane feasibility.

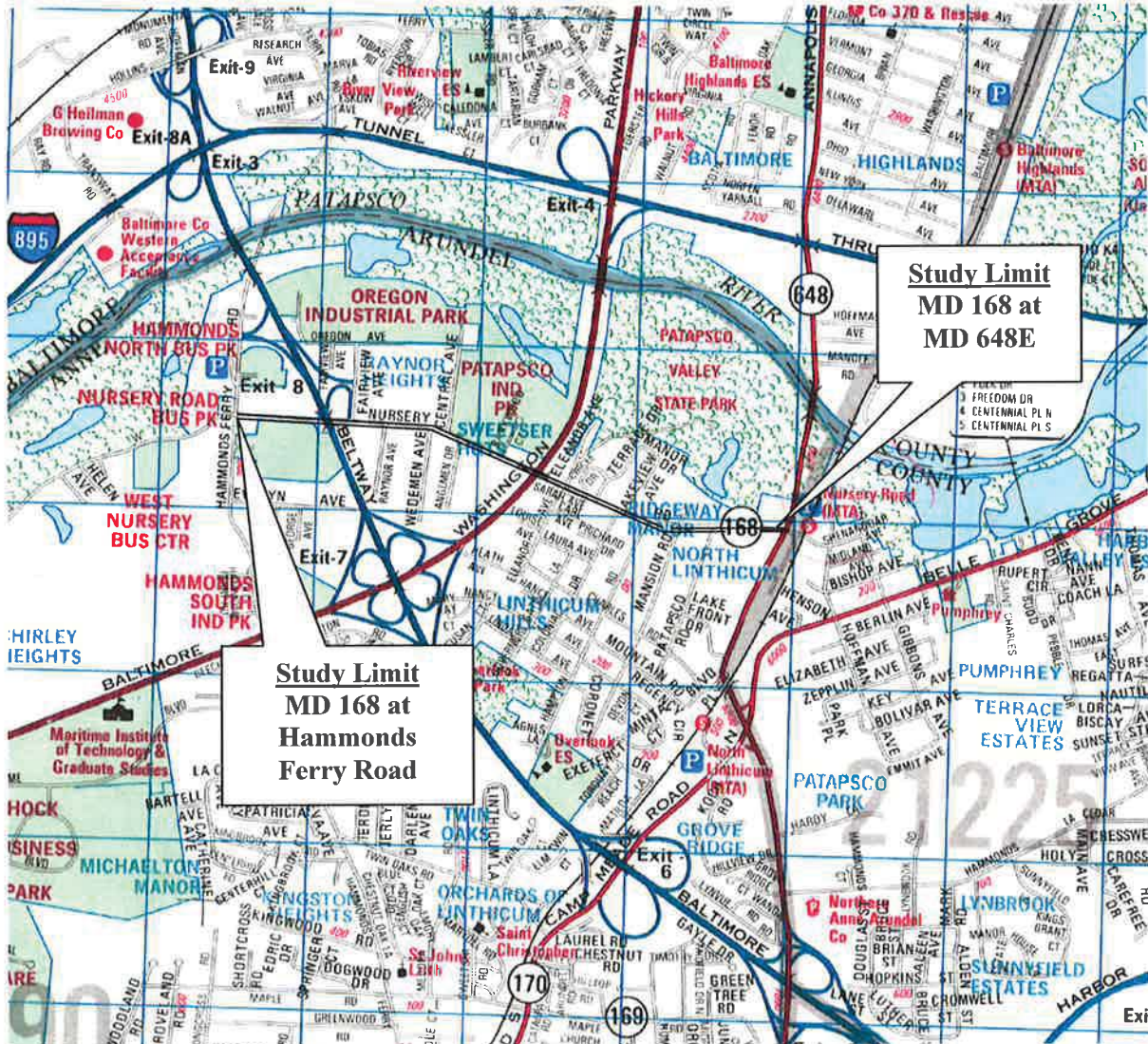
EXISTING CONDITIONS

Information on the existing site conditions was gathered from the SHA Highway Location Reference Report, ADC mapping and field investigation. The project site is located in Linthicum, Maryland in Anne Arundel County. MD 168 (Nursery Road) is a two-lane, two-way urban minor arterial road, travelling in an east-west direction. This corridor is not on the National Highway System. The posted speed for MD 168 is 30 MPH.

The project length is approximately 6,900 ft. Hammonds Ferry Road, a two-lane, two-way urban arterial, forms a 4-way intersection with MD 168 at the western limit of the project. MD 648E, a two-lane, two-way, urban minor arterial intersects MD 168 at the eastern limit of work near the Nursery Road Light Rail station.

Approximately a third of the length of this corridor already accommodates pedestrian traffic. The eastern two third of this project, mostly a residential area, is lacking pedestrian accessibility while the western third provides accessibility via either old or recently placed sidewalks with continuity only on the south side. One (1) overpass and two (2) underpasses are encountered along this corridor. One bridge is for I-695 over MD 168 and two bridges carry MD 168 over the Baltimore-Washington Parkway in two separate locations.

Figure 1 shows the location of the project site and roads in the vicinity.



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Anne Arundel County, Maryland
Permitted Use Number 20612203

Figure 1 - Location Map

FIELD DATA COLLECTION

Field data collection was conducted on Monday November 25, 2013. Table 1 describes general information about the MD 168 (Nursery Road) project limit.

Table 1 - Assessment and Feasibility Summary

			Comments
1	Roadway Name	MD 168 (Nursery Road)	
2	Roadway Classification	Urban Minor Arterial	Not on NHS.
3	Direction of Travel	East-West	
4	Posted Speed Limit	30 MPH	
5	Overall Pavement Width	24 – 46 ft	
6	Travel Lane Width	11 - 12 ft	
7	Shoulder Width	0 - 10 ft	
8	On-Street Parking (Signed or Regulated)	None	
9	Open Section or Closed Section	Closed Section Open Section	<ul style="list-style-type: none"> • Closed Section – on the west up to Barkwood Court • Open Section – from Barkwood Court to MD 648E
10	Horizontal Alignment	Curve	
11	Vertical Alignment	Rolling	
12	AADT	10,770	
13	Traffic Controls	Signals	Signal at Hammonds Ferry Road, Signal at Fairview Avenue, Signal at MD 648E
14	Transit Stops Locations	Bus	Bus Route #17
15	Pedestrian/Bicycle Facilities	Existing Sidewalk/Wide Shoulders	Short segments of existing sidewalk and wide shoulders exist throughout the corridor
16	Crosswalk Locations	2 locations (at the project limits)	Marked crosswalks at MD 648E and unmarked crosswalks at Hammonds Ferry Road
17	Roadside Elements	Yes	There is intermittent existing W-Beam traffic barrier on both sides of MD 168.
18	Drainage Structures	Inlets and culverts	There are numerous inlets in the curbed sections.
19	Structures	3	I-695 over MD 168, MD 168 over BW Parkway SB, MD 168 over BWI Parkway NB (the two bridges over BW Parkway are new)
20	Utilities/Lighting	Yes	<ul style="list-style-type: none"> • Utility poles along both sides. • Lighting arms mounted to utility poles on the north side. • Sewer Manholes • Fiber Optic Markers
21	Adjacent Land Use		<ul style="list-style-type: none"> • Continuous residential properties and developments line both sides of MD 168. • Continuous Commercial and Industrial complexes on both sides of the road primarily on the west end of MD 168. • Light Rail Transit Station – Nursery Road Stop.

ASSESSMENT FINDINGS

Based on field data collection, the sidewalk concept was developed as described in the following text. See the attached plans for the complete sidewalk layout.

1. Proposed Sidewalk Connection on South Side of MD 168 (Nursery Road):

I-695 Bridge Structure

From the south side of MD 168 (looking east), The existing sidewalk under the I-695 Baltimore Beltway Bridge. A retaining wall will be needed to move the sidewalk behind the piers to make room for the bike lane next to the road.



(Begin Proposed Sidewalk)

The proposed sidewalk will connect at the existing sidewalk terminus just East of the McDonalds Parking Lot. New ADA compliant sidewalk will be constructed adjacent to the back of existing curb and continue to east.



The proposed sidewalk will be offset from proposed face of curb to avoid existing utilities where necessary.



MD 168 Nursery Road over MD 295

New curb will be constructed gradually reducing the width of the existing shoulder to provide a 4' bike lane and a 5' sidewalk crossing the two bridges over MD 295.



The proposed bike lane will require the utility pole to be relocated. The proposed 5' sidewalk will eliminate this tree. Going around the tree would require significantly more right of way.

A slight roadway shift may be necessary to avoid impacts to the adjacent residence.



A retaining wall is needed behind the 5' sidewalk. The existing fence will have to be relocated.



A retaining wall will be needed to limit right of way impacts.



The culvert just west of the BP station at the East end of the project. This culvert is partially blocked. It needs sediment removal and possibly a culvert extension.



A bike lane and a 5' shoulder will be placed next to the right turn lane. The utility pole at the intersection will have to be replaced.



2. Proposed Sidewalk Connection on North Side of MD 168 (Nursery Road):

Hammonds Ferry Intersection

The north east corner needs to be reconstructed with a larger radius. Currently, large trucks making the turn hit the curb and ride up on the sidewalk making an unsafe condition for pedestrians.



I-695 Bridge over MD 168

The existing shoulder will be narrowed to a 4' bike path with a sidewalk behind the curb. Another curb will be built behind the sidewalk to tie into the bridge slope protection in front of the pier.



Shell Gas Station at the intersection with Fairview Avenue

The existing landscaped island along MD 168 will be replaced with a sidewalk. A large utility pole will also be relocated. The right turn lane length will be shortened.



To line up with the gas station island this utility pole will also need to be relocated.



The sidewalk will be angled back to tie into the existing sidewalk at the KFC while avoiding the existing pole.



A bike lane and 5' sidewalk will be constructed here with the existing curb reconstructed to form a smooth transition. The existing steps at the property will need to be reconstructed. A retaining wall will be constructed to minimize right of way impacts.



Tie into existing sidewalk at Central Avenue. The sidewalk offset changes from 0' to 5' to avoid existing utilities.



MD 168 Bridge over MD 295

The existing shoulder across the bridge will be modified to be a bike lane, curb and gutter and a 5' sidewalk. The existing shoulder will gradually be narrowed from the last intersection before the bridge to the bridge.



The existing 10' shoulder will be reduced to a bike lane and 5' shoulder to reduce impacts to adjacent properties. The existing stairs will need to be reconstructed.



The edge of shoulder and the flat area next to the road are being used as a parking lane for 2 houses on the north side of MD 168. A wide concrete apron with an eight foot wide pad behind the sidewalk is proposed to accommodate these parking spaces.



In front of the landscape wall will be a bike lane and 5' sidewalk. The existing utility pole in front of the landscape wall will need to be relocated.



The sidewalk will be offset from the face of proposed curb to avoid these utility poles.



Reconstruct the existing timber wall to go behind the sidewalk.



The existing wide pavement next to the soccer field is being used for parking. An apron and a concrete parking stripe will be installed with the sidewalk running behind the parking area. This will necessitate property takes and potential impacts to the ball field. At this point in time there is no indication of the exact dimensions of the ball field. This is a potential 4F impact.



A bike lane will be installed with a 5' sidewalk behind the curb. The sidewalk will shift around the pole. It is not possible to have the entire segment of sidewalk with an offset because the large culvert is protected by the traffic barrier.



The corner next to the empty lot needs to be reconstructed to tie into the bike lane.



SUMMARY

Feasibility	<ul style="list-style-type: none">• Installing sidewalk along both sides of MD 168 is feasible.
Constraints	<ul style="list-style-type: none">• Right-of-way is very limited.• Space for SWM is very limited.• Utility poles will need relocation on both sides of the road.• Three bridges within the project limit the typical section.• Two large culverts crossings may need extension.
“Fatal Flaws”	<ul style="list-style-type: none">• Installing sidewalk on the north side next to the soccer field may involve a 4f impact.• Additional Right-Of-Way and impacts will be necessary for the installation of stormwater management ESD facilities.

MAINTENANCE OF TRAFFIC

Because of the limited width of roadway, bridges, and culverts, it is anticipated that temporary lane closures with flagger operations will be needed during construction.

In order to minimize impacts to traffic operations, the work area should be limited to what the contractor can complete in the work day.

RIGHT-OF-WAY

Right of way limits need to be confirmed. Potentially, all work activities can be performed from the roadside. There are several properties where right of way takes are anticipated on both the north and the south of MD 168.

NEPA/ENVIRONMENTAL APPROVAL STATUS PERMIT/APPROVALS

<i>Required</i>	<u>Permit/Approval</u>	<u>Comments/Status</u>
Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Reforestation Law – Approval <i>Required for impacts > 1ac.</i>	
Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Roadside Tree Permit <i>Required for tree removals < 1 acre</i>	
Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Forest Conservation Act Permit for <i>stand-alone PNRs non-linear impacts</i>	
Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	SWM/E&S Control Permit	
Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	NPDES General Permit for Construction activity <i>Greater than 5 acres of disturbance</i>	
Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	Joint Permit Application (JPA) MDE Wetlands/ Waterways, COE MDSPG-2, Water Quality) or floodplains	
Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Individual Permit Application (IPA) – COE 404, greater than 1 acre impact	
Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	General Waterway Construction Permit (GWCP)	
Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Regional Letter of Authorization (RLOA)	
Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	U.S. Coast Guard Permit (Bridge Hydraulic Div. would apply)	



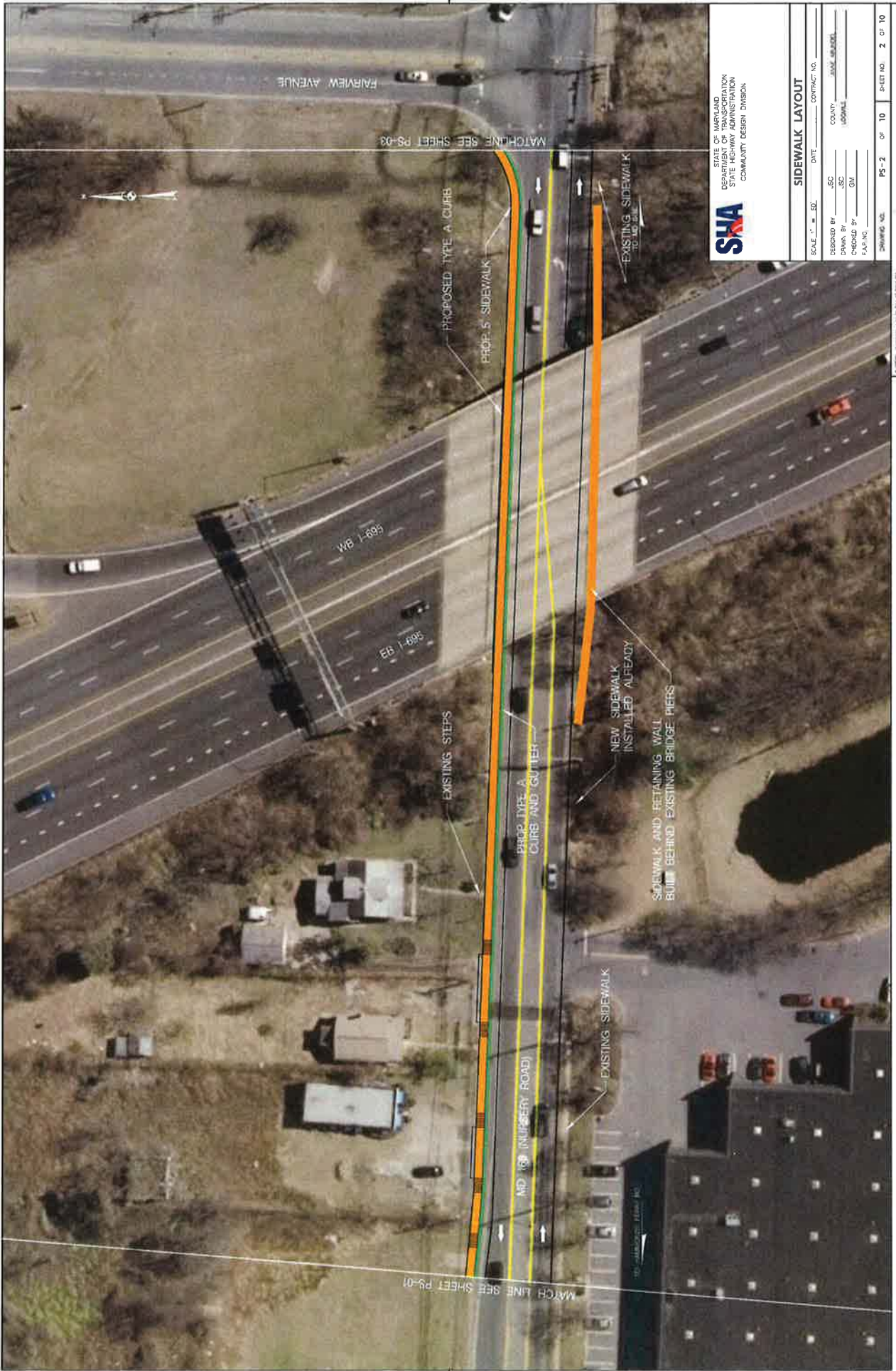
STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 COMMUNITY DESIGN DIVISION

MD 188 (NURSERY ROAD)
 HAMMONDS FERRY ROAD TO
 MD 648E BALTIMORE ANNAPOLIS BLVD

SIDEWALK LAYOUT

SCALE: " = 50'	DATE:	CONTRACT NO.:
DESIGNED BY: JSC	COUNTY: ANNAPOLIS	
DRAWN BY: GM	CHECKED BY: GM	
FAP NO.:		
DRAWING NO.:	PS-1	CS-10
	SHEET NO.:	1 OF 10

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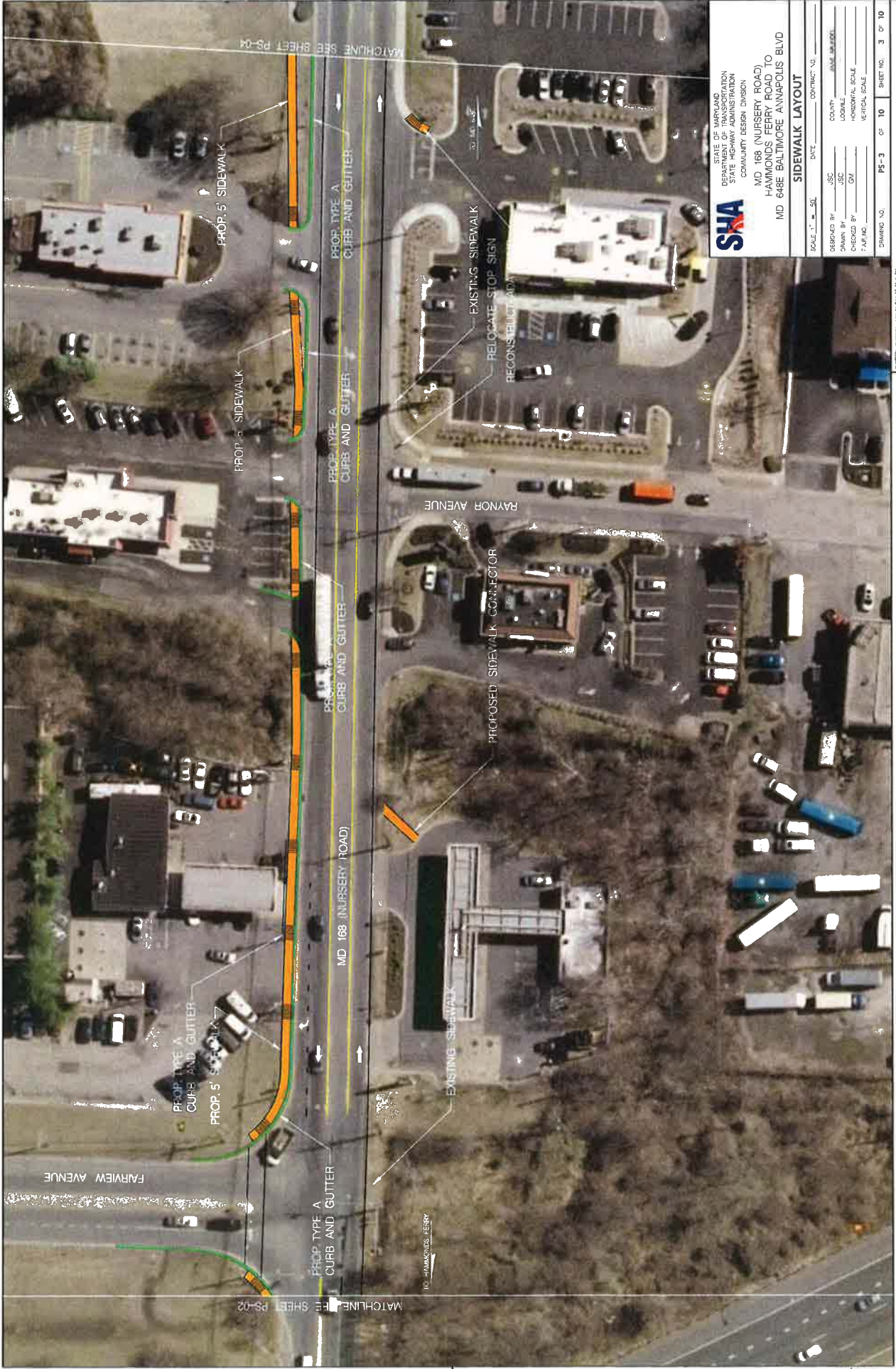
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 STATE HIGHWAY ADMINISTRATION
 COMMUNITY DESIGN DIVISION

SIDEWALK LAYOUT

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DESIGNED BY: JSC	COUNTY: _____	ROW MODEL: _____
DRAWN BY: JSC	LOCAL: _____	
CHECKED BY: DM		
P.A.P. NO. _____		
DRAWING NO. PS-2	OF 10	SHEET NO. 2 OF 10

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BY: chdrl



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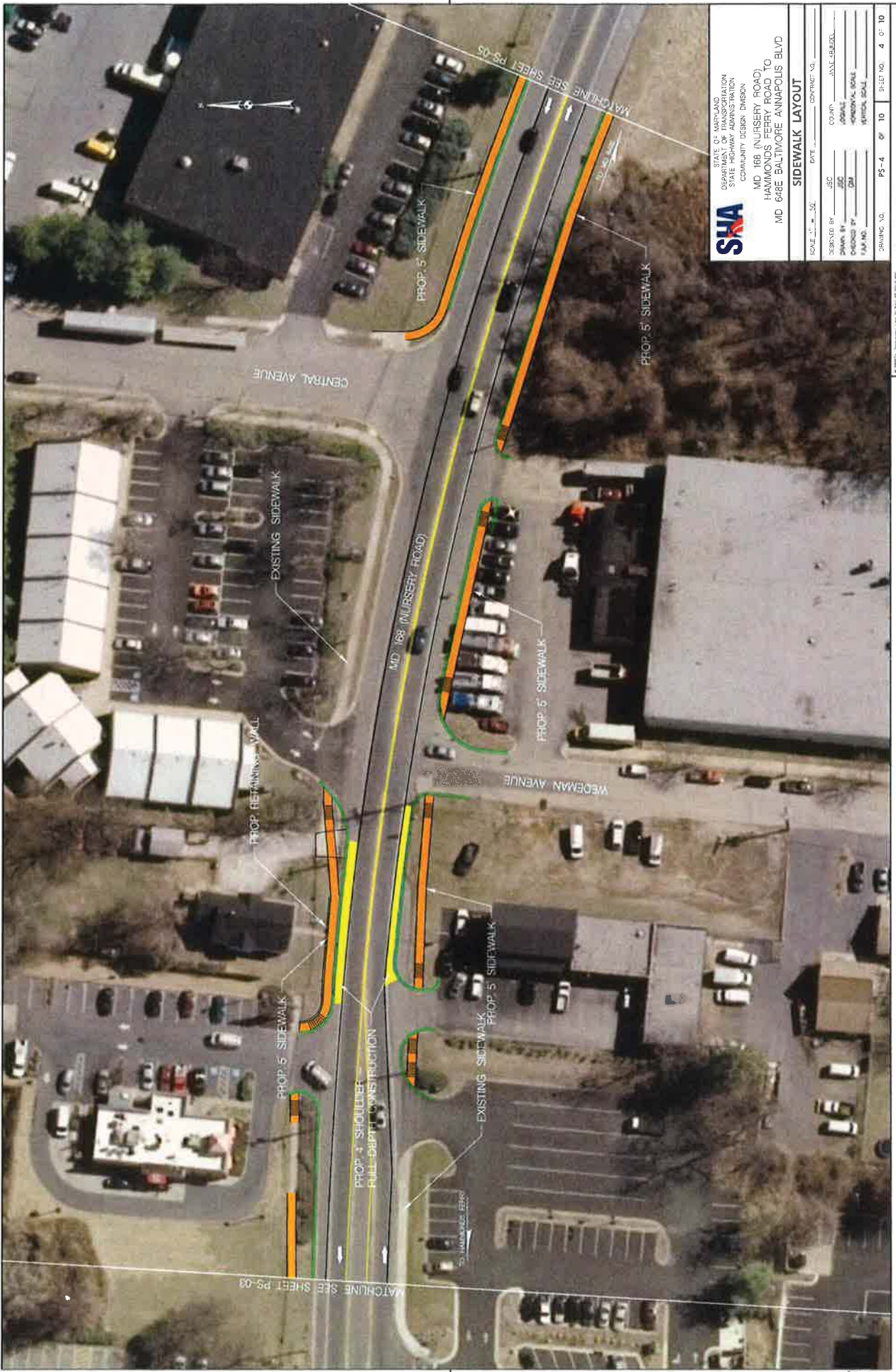
MD 168 (NURSERY ROAD)
 HAMMOND'S FERRY ROAD TO
 MD 686 BALTIMORE ANNAPOLIS BLVD

SIDEWALK LAYOUT

SCALE: 1" = 50'	DATE:	CONTRACT NO.:
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CHECKED BY: CM	HORIZONTAL SCALE:	
F.A.P. NO.:	VERTICAL SCALE:	
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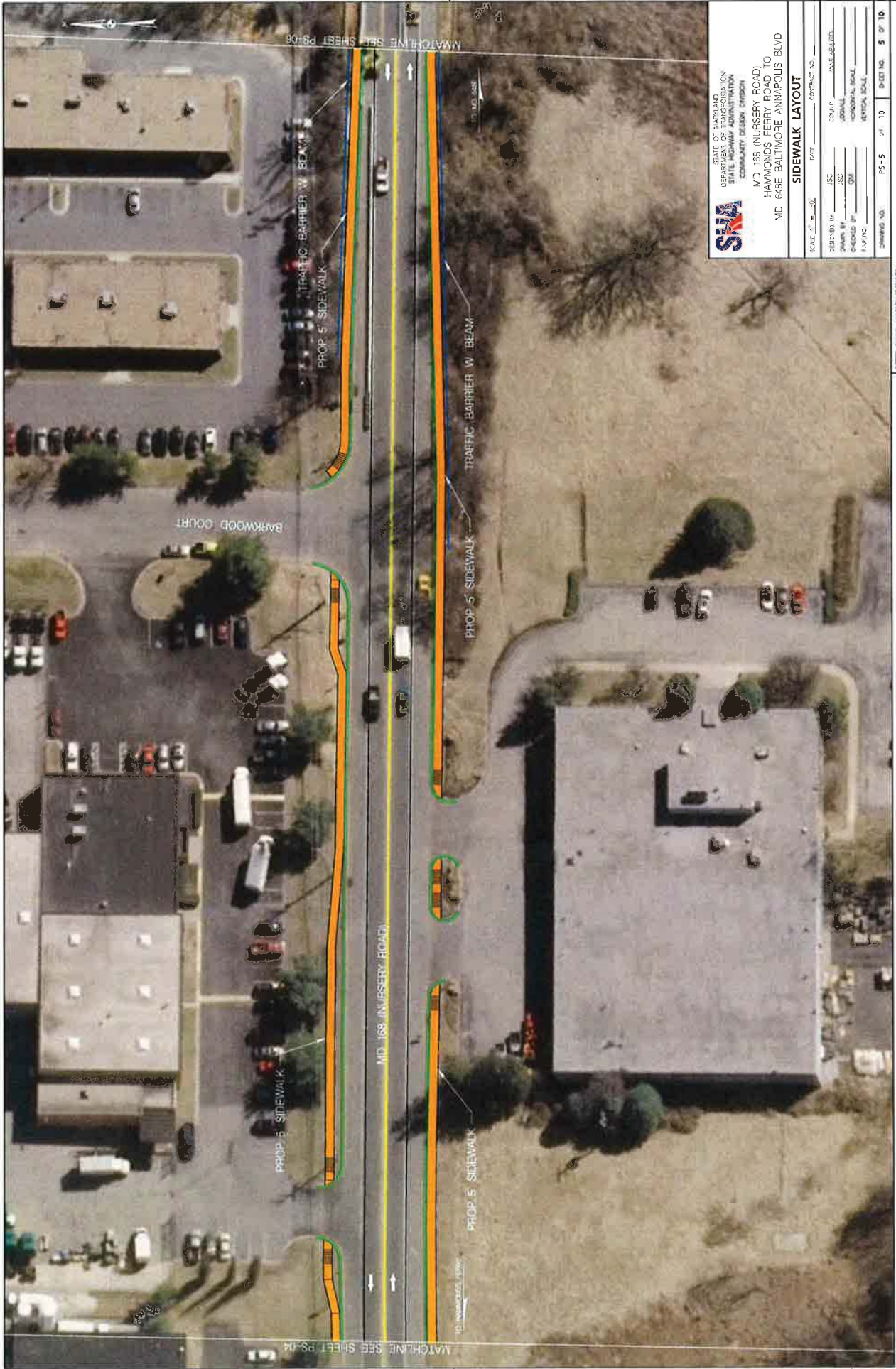
BY: ghilotti



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 STATE HIGHWAY ADMINISTRATION
 COMMUNITY DESIGN DIVISION
 MD 168 (NURSERY ROAD)
 HAMMOND CENTER ROAD TO
 MD 668E BALTIMORE ANNAPOLIS BLVD

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JSC	JVAL	08/11/2011			
CHECKED BY		DATE		SHEET NO.	
DM	DM	08/11/2011		PS-4	4 OF 10
PROJECT NO.		SHEET NO.		SHEET NO.	
PS-4		08/11/2011		4 OF 10	

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 COMMUNITY DESIGN DIVISION

MD 168 (NURSERY ROAD)
 HANNAH'S PERRY ROAD TO
 MD 686 BALTIMORE ANNAPOLIS BLVD

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PS-5	01 10		
SHEET NO.		5 OF 10	

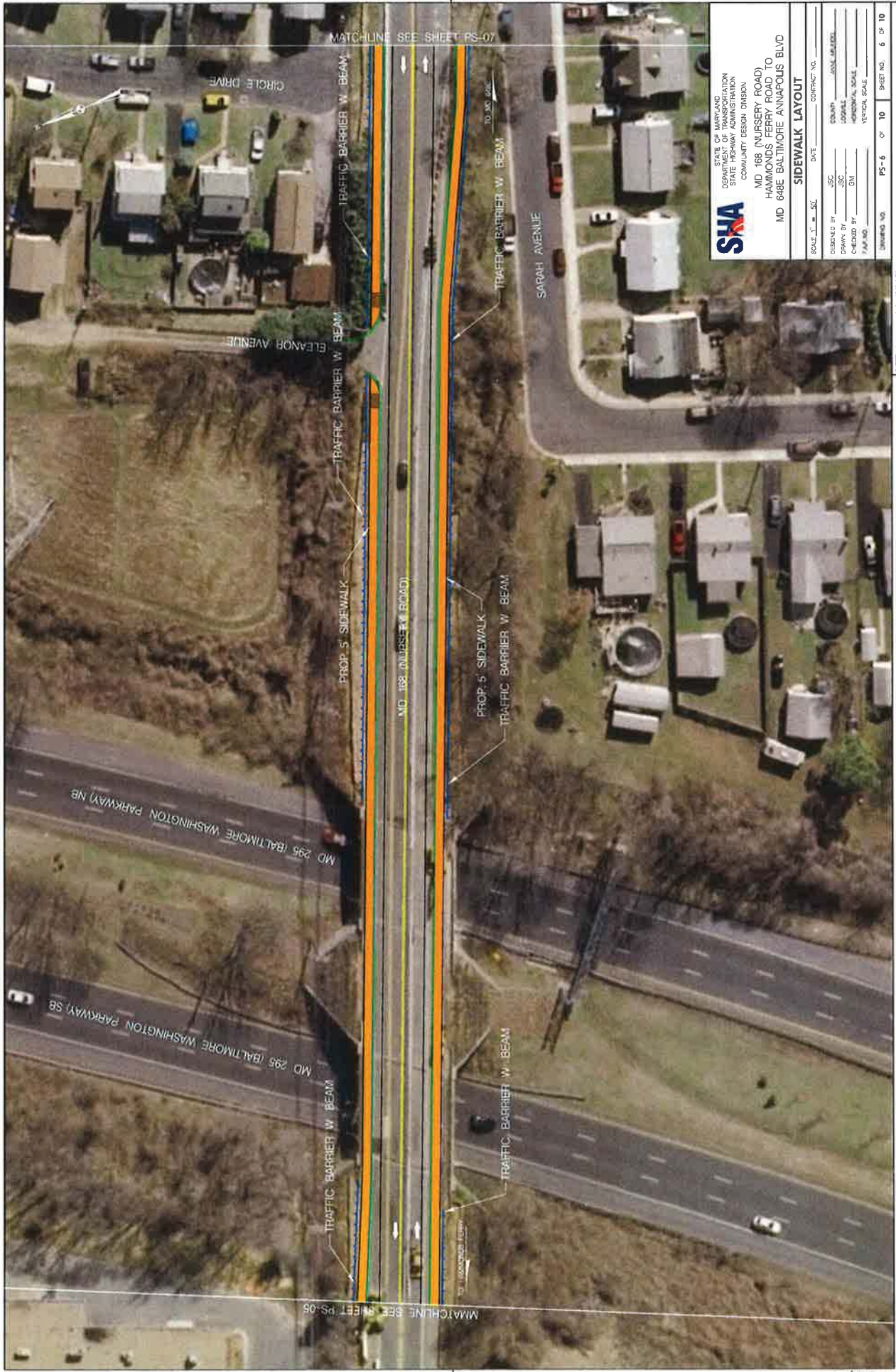
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MATCHLINE SEE SHEET PS-06

MATCHLINE SEE SHEET PS-04



BY: *ehd*



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STREET DESIGN DIVISION
COMMUNITY DESIGN DIVISION

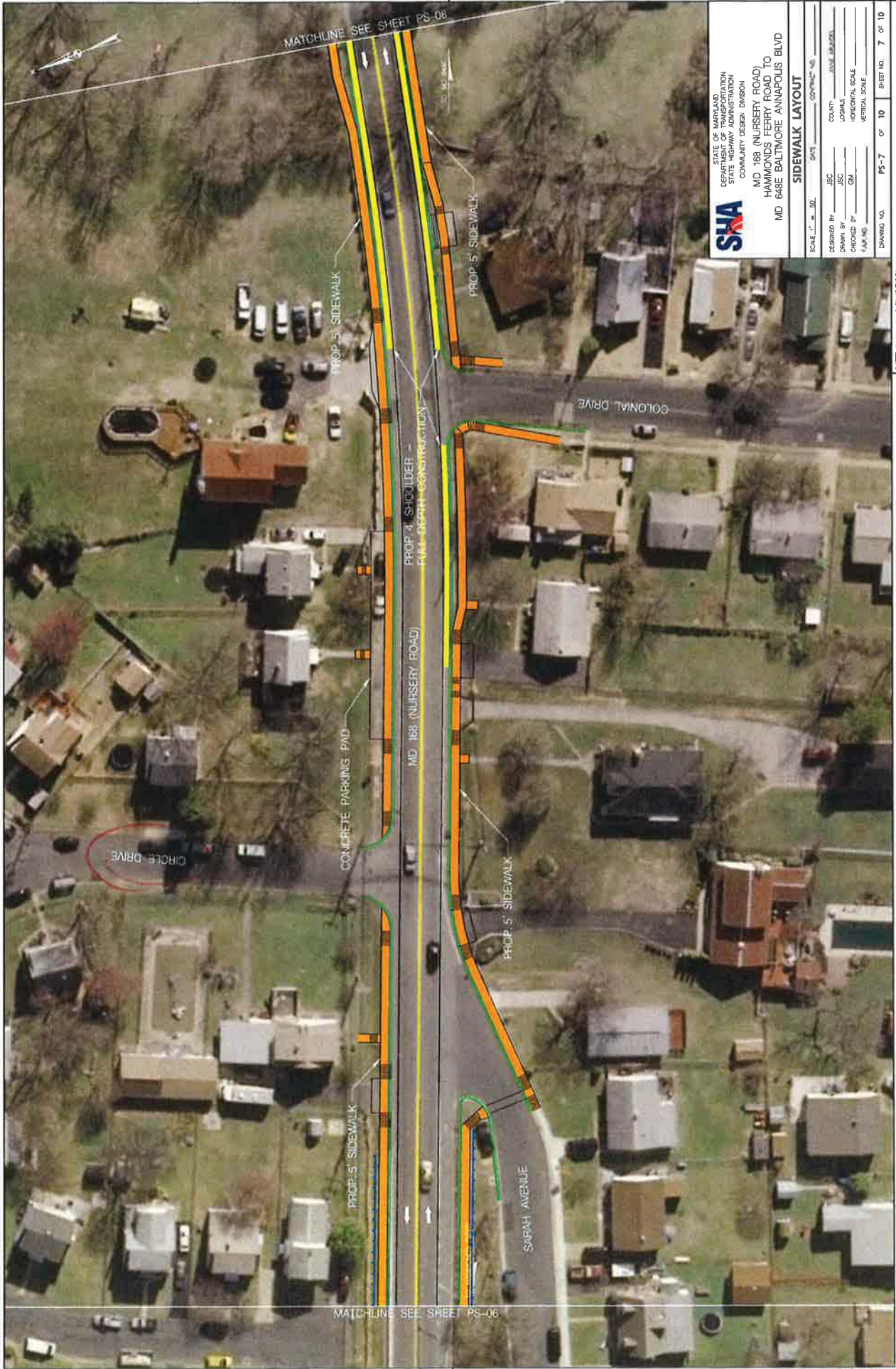
MD 168 (NURSERY ROAD)
HAMMONDS FERRY ROAD TO
MD 688E BALTIMORE ANNAPOLIS BLVD

SIDEWALK LAYOUT

SCALE: 1" = 30'	DATE: _____	CONTRACT NO. _____
DESIGNED BY: JSC	COUNTY: _____	LOCAL AGENCY: _____
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CHECKED BY: GM	HORIZONTAL SCALE: _____	VERTICAL SCALE: _____
DATE: _____	PROJECT NO. PS-6	SHEET NO. 6 OF 10

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BY: ctk/rl



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 COMMUNITY DESIGN DIVISION

MID 168 (NURSERY ROAD)
 HAWMONS FERRY ROAD TO
 MID 648E BALTIMORE ANNAPOLIS BLVD

SIDEWALK LAYOUT

SCALE: 1" = 50'	DATE:	CONTRACT NO.:
DESIGNED BY: JSC	COUNTY: ANNE ARUNDEL	
DRAWN BY: JSC	LOCALITY: LODES	
CHECKED BY: DM	HORIZONTAL SCALE:	
DATE: 1/1/10	VERTICAL SCALE:	
DRAWING NO. PS-7	OF 10	SHEET NO. 7 OF 10

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BY: cdk/lyt



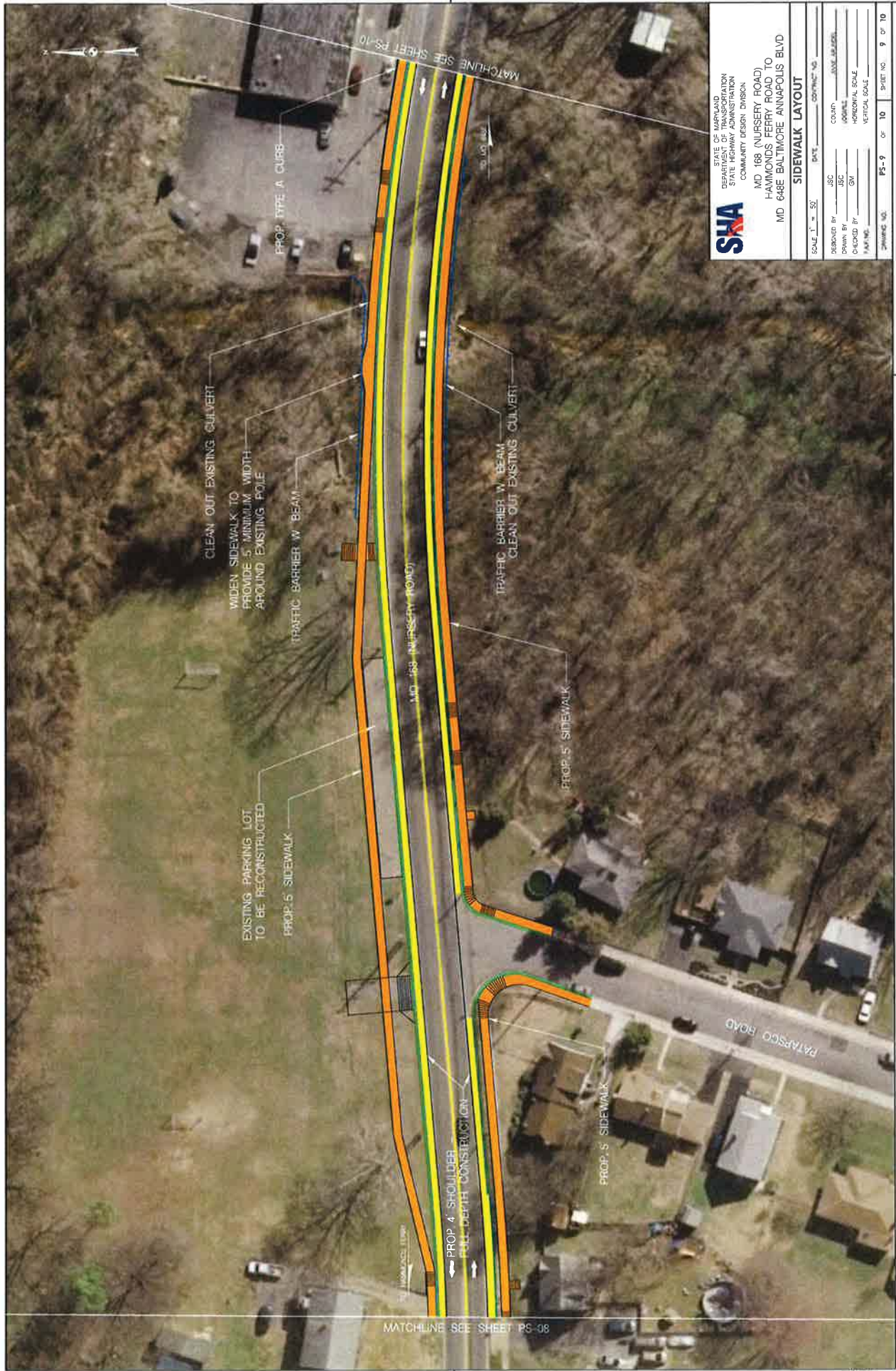
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MD 168 (NURSERY ROAD)
 HAYMONDS FERRY ROAD TO
 MD 648E BALTIMORE ANNAPOLIS BLVD

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CHECKED BY: GW	HORIZONTAL SCALE: _____
DATE: _____	VERTICAL SCALE: _____
DRAWING NO. PS-8	SHEET NO. 8 OF 10

Aerial photograph provided by Google Earth. All other information is the property of the State of Maryland.

BY: cndrj



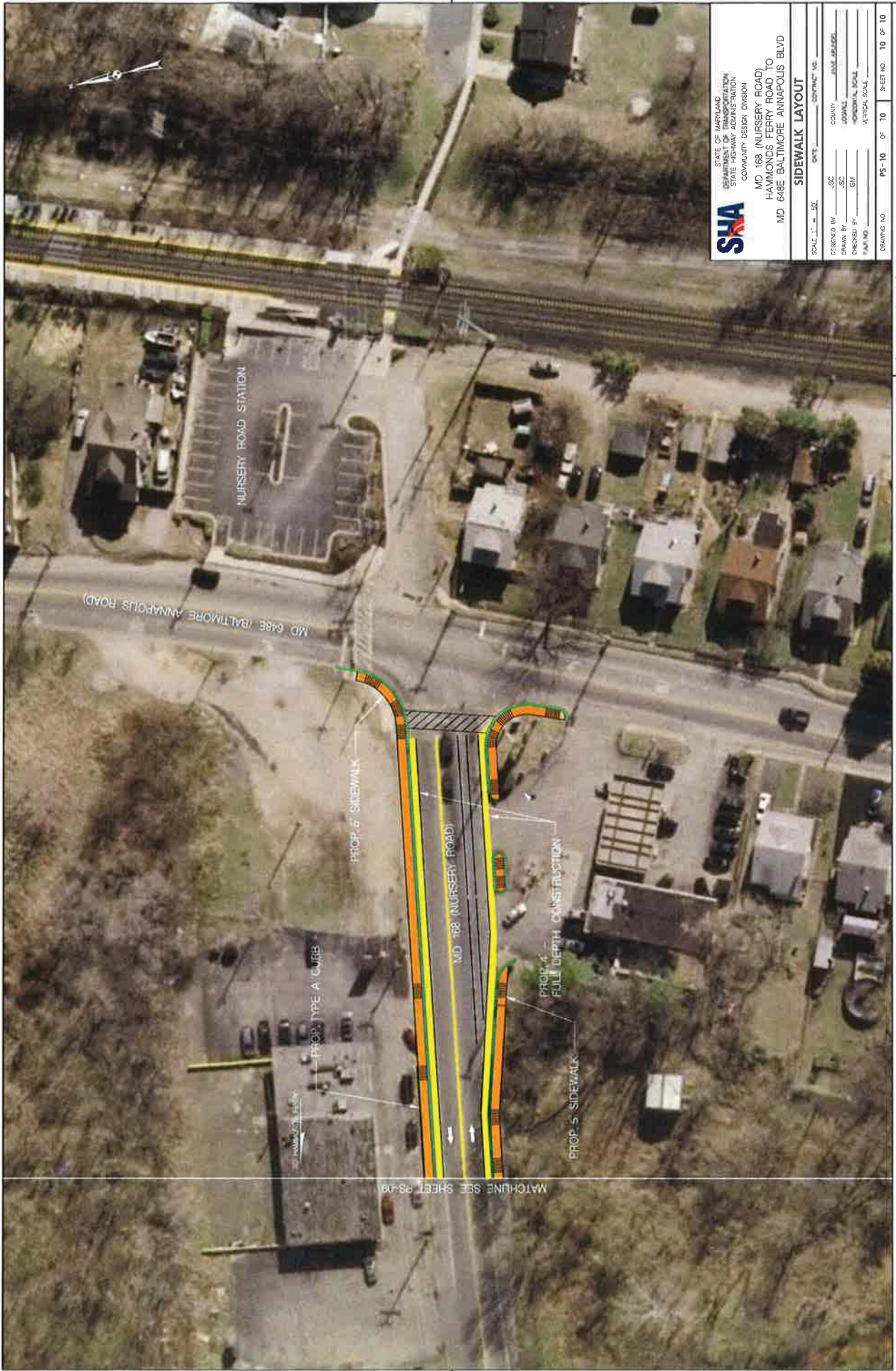
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MD 168 (NURSERY ROAD)
 HAMMONDS FERRY ROAD TO
 MD 648E BALTIMORE ANNAPOLIS BLVD

SIDEWALK LAYOUT

SCALE: 1" = 50'	DATE: 03/11/10	SHEET NO. 9	OF 10
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DATE: 03/11/10	DATE: 03/11/10	DATE: 03/11/10	
PROJECT NO. PS-9	DATE: 03/11/10	SHEET NO. 9	

NOTED: WORKING COPY. SEE SHEET PS-08 FOR THE COMPLETE LAYOUT. FOR MORE INFORMATION, CONTACT THE COMMUNITY DESIGN DIVISION AT (410) 326-7000.



MATCHLINE SEE SHEET PS-09

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 DIVISION OF HIGHWAY DESIGN
 COUNTY DESIGN DIVISION

MD 168 (NURSERY ROAD)
 HAMMONDS FERRY ROAD TO
 MD 648E BALTIMORE ANNAPOLIS BLVD

SIDEWALK LAYOUT

SCALE: 1" = 50'	DATE: _____	CONTRACT NO: _____
DESIGNED BY: JSC	COUNTY: ANNAPOLIS	
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CHECKED BY: DM	HORIZONTAL SCALE: _____	
PAVING NO: _____	VERTICAL SCALE: _____	
DRAWING NO: PS-10	OF: 70	SHEET NO: 10 OF 10

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BY: [signature]

option 1

MARYLAND STATE HIGHWAY ADMINISTRATION
 MD 28 (POINT OF ROCKS) SIDEWALK FEASIBILITY
 FUND 79 - SIDEWALK
 PREPARED BY: JACOBS
 PRELIMINARY ESTIMATE

ITEM NO.	CATEGORY CODE NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT COST	TOTAL
CATEGORY 1 - PRELIMINARY						
1001	100000	20% OF CATEGORIES 2,4,5 & 6	LS	1	\$339,415.00	\$ 339,415
CATEGORY 1 SUBTOTAL =						\$ 339,415
CATEGORY 2 - GRADING						
2001	201000	CLASS 1 EXCAVATION	CY	950	\$22.00	\$ 20,900
2002	202000	COMMON BORROW	CY	900	\$33.00	\$ 29,700
CATEGORY 2 SUBTOTAL =						\$ 50,600
CATEGORY 3 - DRAINAGE						
3001	300000	40% OF CATEGORIES 2,4,5 & 6	LS	1	\$678,830	\$ 678,830
CATEGORY 3 SUBTOTAL =						\$ 678,830
CATEGORY 4 - STRUCTURES						
4001		RETAINING WALL	ls	1	\$374,400.00	\$ 374,400
CATEGORY 4 SUBTOTAL =						\$ 374,400
CATEGORY 5 - PAVING						
5001		HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE PG64-22 LEVEL-2	TON	4050	\$100.00	\$ 405,000
5002		HOT MIX ASPHALT SUPERPAVE 25.0 MM FOR BASE PG64-22 LEVEL-2	TON	700	\$75.00	\$ 52,500
5003	520113	6 INCH GRADED AGGREGATE BASE COURSE	SY	1800	\$11.00	\$ 19,800
5004	530100	GRINDING HOT MIX ASPHALT PAVEMENT 0 INCH TO 2 INCH	SY	31200	\$4.30	\$ 134,160
5005	56114	6 INCH PORTLAND CEMENT CONCRETE PAVEMENT FOR DRIVEWAY MIX 6	SY	975	\$88.00	\$ 85,800
CATEGORY 5 SUBTOTAL =						\$ 697,260
CATEGORY 6 - SHOULDERS						
6001	624300	STANDARD TYPE A COMBINATION CURB & GUTTER 12 INCH GUTTER PAN 8 INCH DEPTH	LF	10805	\$18.00	\$ 194,490
6002	655105	4 INCH CONCRETE SIDEWALK	SF	50805	\$6.00	\$ 304,830
6003	655120	DETECTABLE WARNING SURFACE FOR CURB RAMPS	SF	310	\$40.00	\$ 12,400
6004	660482	TRAFFIC BARRIER W BEAM USING 6' POST	LF	1495	\$17.00	\$ 25,415
6005	661390	TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT BRIDGE END POST	EA	6	\$1,200.00	\$ 7,200
6006	661530	TYPE G TRAFFIC BARRIER END TREATMENT	EA	4	\$850.00	\$ 3,400
6007	661510	TYPE C TRAFFIC BARRIER END TREATMENT	EA	4	\$2,200.00	\$ 8,800
	661540	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	EA	2	\$800.00	\$ 1,600
	634100	STANDARD TYPE A CURB 8 INCH X 16 INCH	LF	370	\$44.00	\$ 16,280
CATEGORY 6 SUBTOTAL =						\$ 574,815
CATEGORY 7 - LANDSCAPING						
7001	700000	5% OF CATEGORIES 2,4,5 AND 6	LS	1	\$84,854	\$ 84,854
CATEGORY 7 SUBTOTAL =						\$ 84,854
CATEGORY 8 - TRAFFIC						
CATEGORY 8 SUBTOTAL =						\$ -
Subtotal						\$ 2,800,174
Contingencies (PI)						40%
						\$ 1,120,070
Subtotal (Net Construction)						\$ 3,920,243
Overhead & Administration						14.4%
Utilities						\$ 564,515
Subtotal (Utilities)						\$ 1,568,097
Right of Way						48.0%
Subtotal (Right of Way)						\$ 1,881,716
TOTAL PROJECT COST						\$ 6,052,856
						Say \$ 6,053,000

FROM F-14

FROM F-15

FROM F-16

FROM F-3

FROM A-2

FROM F-22

Wall Calculation

Footers:	Thickness	Width	Length	Volume(CF)	Volume(CY)
Wall:	1.5	7.5	950	10687.5	395.9
	10.5	1	950	9975	369.4
					765

Option 2

MARYLAND STATE HIGHWAY ADMINISTRATION
 MD 168 SIDEWALK FEASIBILITY - OPTION 2
 FUND 79 - SIDEWALK
 PREPARED BY: JACOBS
 PRELIMINARY ESTIMATE

ITEM NO.	CATEGORY CODE NO.	ITEM DESCRIPTION	UNIT	QTY.	UNIT COST	TOTAL
CATEGORY 1 - PRELIMINARY						
1001	100000	20% OF CATEGORIES 2,4,5 & 6	LS	1	\$110,778.00	\$ 110,778
CATEGORY 1 SUBTOTAL =						\$ 110,778
CATEGORY 2 - GRADING						
2001	201030	CLASS 1 EXCAVATION	CY	100	\$22.00	\$ 2,200
2002	202065	COMMON BORROW	CY	900	\$33.00	\$ 29,700
CATEGORY 2 SUBTOTAL =						\$ 31,900
CATEGORY 3 - DRAINAGE						
3001	300000	40% OF CATEGORIES 2,4,5 & 6	LS	1	\$221,556	\$ 221,556
CATEGORY 3 SUBTOTAL =						\$ 221,556
CATEGORY 4 - STRUCTURES						
4001		RETAINING WALL	ls	1	\$200,000.00	\$ 200,000
CATEGORY 4 SUBTOTAL =						\$ 200,000
CATEGORY 5 - PAVING						
5001		HOT MIX ASPHALT SUPERPAVE 9.5 MM FOR SURFACE, PG64-22, LEVEL-2	TON	15	\$100.00	\$ 1,500
5002		HOT MIX ASPHALT SUPERPAVE 25.0 MM FOR BASE, PG64-22, LEVEL-2	TON	55	\$75.00	\$ 4,125
5003	520113	6 INCH GRADED AGGREGATE BASE COURSE	SY	110	\$11.00	\$ 1,210
5004	530100	GRINDING HOT MIX ASPHALT PAVEMENT 0 INCH TO 2 INCH	SY	10	\$43.00	\$ 430
5005	56114	6 INCH PORTLAND CEMENT CONCRETE PAVEMENT FOR DRIVEWAY MIX 6	SY	100	\$38.00	\$ 3,800
CATEGORY 5 SUBTOTAL =						\$ 15,635
CATEGORY 6 - SHOULDERS						
6001	634300	STANDARD TYPE A COMBINATION CURB & GUTTER 12 INCH GUTTER PAN 8 INCH DEPTH	LF	4390	\$18.00	\$ 79,020
6002	655105	3 INCH CONCRETE SIDEWALK	SF	28235	\$6.00	\$ 169,410
6003	655120	DETECTABLE WARNING SURFACE FOR CURB RAMPS	SF	100	\$40.00	\$ 4,000
6004	660482	TRAFFIC BARRIER W BEAM USING G POST	LF	1585	\$17.00	\$ 26,945
6005	661390	TRAFFIC BARRIER THRIE BEAM ANCHORAGE AT BRIDGE END POST	EA	4	\$1,200.00	\$ 4,800
6006	661530	TYPE G TRAFFIC BARRIER END TREATMENT	EA	0	\$850.00	\$ -
6007	661510	TYPE C TRAFFIC BARRIER END TREATMENT	EA	3	\$2,300.00	\$ 6,900
	661540	TYPE K TRAFFIC BARRIER END TREATMENT, ANY OPTION	EA	3	\$800.00	\$ 2,400
	634100	STANDARD TYPE A CURB 8 INCH X 16 INCH	LF	370	\$44.00	\$ 16,280
CATEGORY 6 SUBTOTAL =						\$ 306,355
CATEGORY 7 - LANDSCAPING						
7001	700000	5% OF CATEGORIES 2,4,5 AND 6	LS	1	\$27,695	\$ 27,695
CATEGORY 7 SUBTOTAL =						\$ 27,695
CATEGORY 8 - TRAFFIC						
CATEGORY 8 SUBTOTAL =						\$ -
Subtotal						\$ 913,919
Contingencies (PI)						\$ 365,567
Subtotal (Near Construction)						\$ 1,279,486
Overhead & Administration						\$ 184,246
Utilities						\$ -
Subtotal (Utilities)						\$ 111,794
Right of Way						\$ -
Subtotal (Right of Way)						\$ -
TOTAL PROJECT COST						\$ 1,975,526
						Say \$ 1,976,000

FROM F-14

180
80
190
430

FROM F-15

Wall Calculation

	Thickness	Width	Length	Volume(CF)	Volume(CY)
Footer:	1.5	7.5	950	= 10687.5	395.8
Wall:	10.5	1	950	= 9975	369.4
					765

925 SF

	Surface Course	Base Course 8	Sub Base	Incl 12.086667	Incl 48.346667	Lay 102.777778
	2	8	1			

16812.41

700'S
6300
107100
6.37045
170

FROM F-16

FROM F-3

FROM A-2

FROM F-22