



U.S. Army Corps
of Engineers
Baltimore District

Public Notice

In Reply to Application Number
CENAB-OP-RMN (The Howard Research & Development
Corp./ Columbia Crescent/Infrastructure) 2014-61063-M36

PN 14-69

Comment Period: December 15, 2014 to January 15, 2015

THE PURPOSE OF THIS PUBLIC NOTICE IS TO SOLICIT COMMENTS FROM THE PUBLIC REGARDING THE WORK DESCRIBED BELOW. NO DECISION HAS BEEN MADE AS TO WHETHER OR NOT A PERMIT WILL BE ISSUED AT THIS TIME.

This District has received an application for a Department of the Army permit pursuant to Section 404 of the Clean Water Act (33. U.S.C. 1344) as described below:

APPLICANT: Mr. Robert Jenkins
The Howard Research & Development Corporation
10221 Wincopin Circle, Suite 300
Columbia, Maryland 21044

WATERWAY AND LOCATION:

Unnamed tributaries to the Little Patuxent River, and adjacent non-tidal wetlands, adjacent to Merriweather Post Pavilion, in Columbia's New Town District, Columbia, Howard County, Maryland

PROPOSED WORK AND PURPOSE:

The proposed project is the construction of a multi-phased, mixed-use development, including residences, office buildings, commercial space, a hotel and conference center, cultural and recreational facilities, a fire station, associated roadways, utilities, and infrastructure, and wetland and stream mitigation. Impacts to jurisdictional waters of the U.S., including wetlands, will occur due to discharges of fill for construction of roadways, including two bottomless arch culverts and a bridge, two pedestrian boardwalks, 8-inch sanitary sewer and 16-inch potable water lines, stormwater outfalls, and wetland and stream mitigation. Where possible, project construction impacts were located in areas where stream mitigation will occur to minimize overall project impacts.

The proposed project will have permanent impacts to 18,117 square feet and temporary impacts to 3,685 square feet of non-tidal wetlands; these totals include 16,198 square feet of permanent impacts and 3,685 square feet of temporary impacts to forested wetlands and 1,979 square feet of permanent impacts to emergent wetlands. The project will also permanently impact 975 linear feet (1,397 square feet) and temporarily impact 130 linear feet (130 square feet) of non-tidal stream channel. The project's proposed mitigation will temporarily impact 19,158 square feet of non-tidal wetlands and permanently impact 1,828 linear feet (13,057 square feet) of non-tidal stream channel. On-site project mitigation will provide for the creation of 37,762 square feet of forested wetlands and 2,004 square feet of emergent wetlands, the enhancement of 14,091 square feet of forested wetlands, and the restoration of 1,828 linear feet (13,057 square feet) of stream channel. Although not part of the required mitigation to offset project impacts, the applicant proposes to create an additional 20,608 square feet of forested wetlands and

20,290 square feet of emergent wetlands. Project impacts have been avoided and minimized through the use of two bottomless arch culverts, a bridge, and locating other project impacts, such as utility line stream crossings, in areas where stream restoration will occur.

All work is to be completed in accordance with the enclosed project and mitigation plans. If you have any questions concerning this matter, please contact Mr. John Policarpo at (410) 962-4522 or at john.n.policarpo@usace.army.mil.

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonable may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors, which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are conservation, economic, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, and consideration of property ownership and in general, the needs and welfare of the people.

The evaluation of the impact of the work described above on the public interest will include application of the Clean Water Act Section 404(b)(1) Guidelines promulgated by the Administrator, U.S. Environmental Protection Agency, under authority of Section 404 of the Clean Water Act.

The Corps of Engineers is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments provided will become part of the public record for this action. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Written comments concerning the work described above related to the factors listed above or other pertinent factors must be received by the District Engineer, U.S. Army Corps of Engineers, Baltimore District, ATTN: Mr. John Policarpo, CENAB-OP-RMN, P.O. Box 1715, Baltimore, Maryland 21203-1715, within the comment period specified above.

WATER QUALITY CERTIFICATION: The applicant is required to obtain a water quality certification in accordance with Section 401 of the Clean Water Act from the Maryland Department of the Environment. Any written comments concerning the work described above which relate to water quality certification must be received by the Wetlands and Waterways Program, Maryland Department of the Environment, Montgomery Park Business Center, 1800 Washington Boulevard, Suite 430, Baltimore, Maryland 21230-

1708 within the comment period as specified above to receive consideration. The Section 401 certifying agency has a statutory limit of one year from the date of this public notice to make its decision.

The applicant must obtain any State or local government permits which may be required.

A preliminary review of this application indicates that the proposed work will not affect Federally listed threatened or endangered species or their critical habitat, pursuant to Section 7 of the Endangered Species Act, as amended. As the evaluation of this application continues, additional information may become available which could modify this preliminary determination.

Review of the latest published version of the National Register of Historic Places indicates that no registered properties listed as eligible for inclusion, therein, are located at the site of the proposed work. Currently unknown archeological, scientific, prehistoric, or historical data may be lost or destroyed by the work to be accomplished under the request permit.

Any person who has an interest which may be adversely affected by the issuance of this permit may request a public hearing. The request, which must be in writing, must be received by the District Engineer, U.S. Army Corps of Engineers, Baltimore District, ATTN: Mr. John Policarpo, CENAB-OP-RMN, P.O. Box 1715, Baltimore, Maryland 21203-1715, within the comment period as specified above to receive consideration. Also it must clearly set forth the interest which may be adversely affected by this activity and the manner in which the interest may be adversely affected.

It is requested that you communicate this information concerning the proposed work to any persons know by you to be interested and not being known to this office, who did not receive a copy of this notice.

FOR THE DISTRICT ENGINEER:

Joseph P. DaVia
Chief, Maryland Section Northern

DOWNTOWN CRESCENT PHASE I STREAM AND WETLAND MITIGATION

CLIENT



HOWARD RESEARCH
AND DEVELOPMENT CORPORATION
10221 WINCOPIN CIRCLE, SUITE 300
COLUMBIA, MD 21044

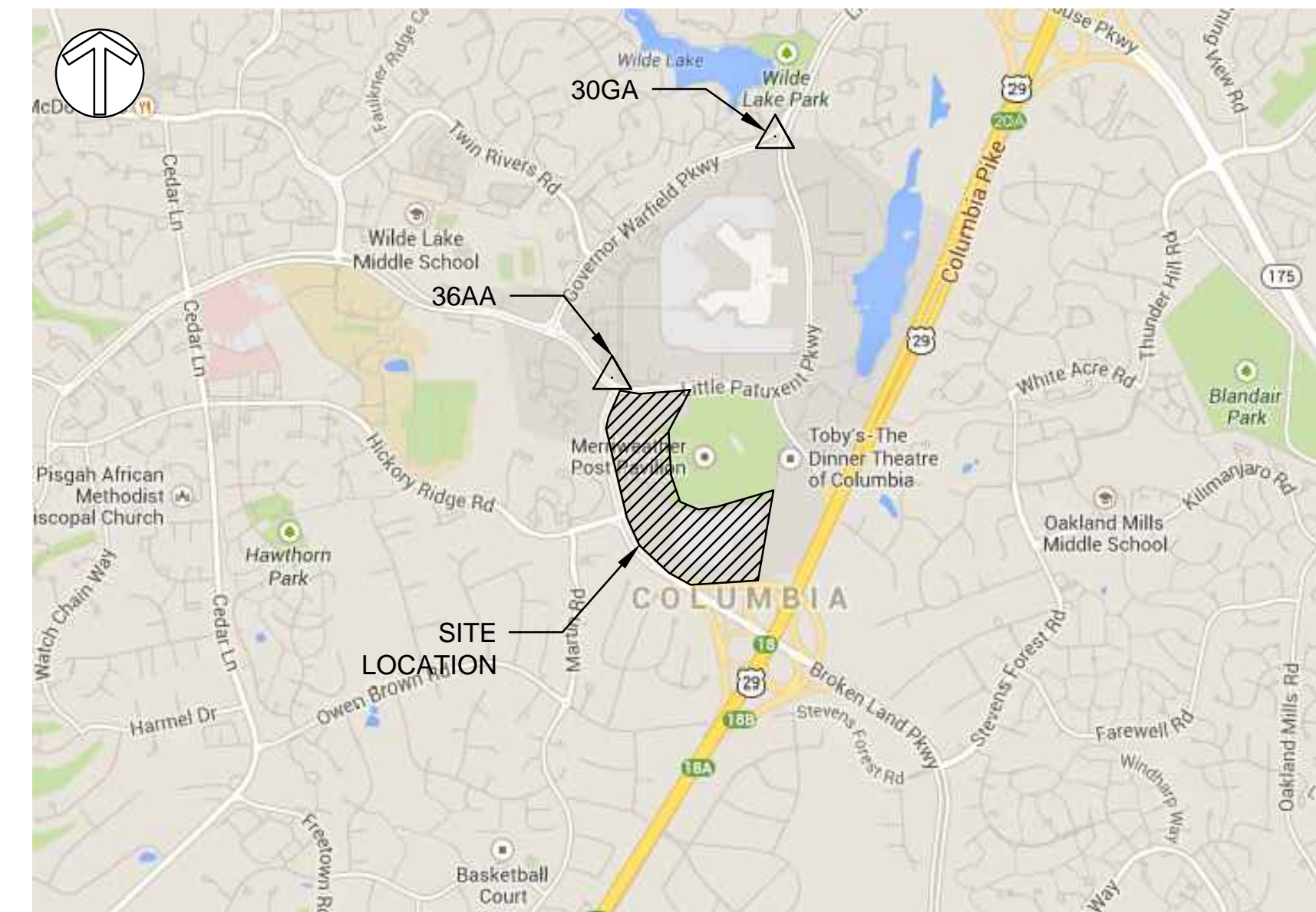
DATE: ISSUES / REVISIONS

LEGEND

EXISTING	PROPOSED
MAJOR CONTOUR	MAJOR CONTOUR
MINOR CONTOUR	MINOR CONTOUR
100 - YEAR FLOODPLAIN	THALWEG
WETLAND BUFFER	WATER SURFACE
WETLAND BUFFER	TOP OF BANK
SANITARY SEWER	100 - YEAR FLOODPLAIN
STORM DRAIN	LIMIT OF DISTURBANCE
WATER SUPPLY	SILT FENCE
ELECTRIC	SUPER SILT FENCE
GAS	BLAZE ORANGE FENCE
COMMUNICATIONS	ROAD
TREELINE	TRAIL
PROPERTY LINE	RIFFLE
TREE	CASCADE
TRAVERSE POINT	TREE REMOVAL
TRAFFIC POLE	STAGING AND STOCKPILING AREA
ELECTRIC JUNCTION BOX	MULCH ACCESS ROAD
STORMDRAIN MANHOLE	HARDWOOD MATTING
GAS METER	STABILIZED CONSTRUCTION ENTRANCE
GAS VALVE	SANDBAGS
WATER METER	DIRTBAG OR OTHER APPROVED SEC DEVICE
WATER VALVE	DEWATERING DEVICE
FIRE HYDRANT	PUMP AROUND PIPE
SEWER MANHOLE	
SEWER CLEAN OUT	
TELCO MANHOLE	
TELCO RISER	
SIGN	
LIGHT POLE	
UTILITY POLE	
GUY WIRE	
ELECTRIC MANHOLE	
TRANSFORMER	
CONCRETE SIDEWALK	
ASPHALT WALK/PATH	

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07	GRADING & EROSION AND SEDIMENT CONTROL
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SCALE 1" = 2,000'

VICINITY MAP

ADC MAP COORD. MAP: 4935 GRID: C7

TOPOGRAPHIC AERIAL SURVEY WAS PERFORMED ON MARCH 2007 BY MCKENZIE SNYDER AND TOPOGRAPHIC FIELD SURVEY ON AUGUST, 2011 BY GUTSHICK, LITTLE AND WEBER.

COORDINATES BASED ON NAD '83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS Nos. 36AA, 30GA

THE ELEVATIONS SHOWN HEREON ARE BASED ON NAVD '88 DATUM.

THE EXISTING UTILITIES SHOWN HEREIN WERE DERIVED FROM AVAILABLE PUBLIC RECORDS AND FIELD LOCATIONS BY GUTSHICK, LITTLE AND WEBER, P.A. THE CONTRACTOR MUST DIG TEST PITS BY HAND AT ALL UTILITY CROSSINGS AND CONNECTION POINTS TO VERIFY EXACT LOCATION.



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DOWNTOWN CRESCENT PHASE I MITIGATION PLAN

ENGINEERS CERTIFICATE	
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT	
SIGNATURE OF ENGINEER (PRINTNAME BELOW SIGNATURE)	DATE
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SIGNATURE OF DEVELOPER (PRINTNAME BELOW SIGNATURE)	DATE

TITLE SHEET	
PROJECT NO. : 13020.01	SCALE: AS SHOWN
SEAL:	BY: TB,SH CHECK: CS
DWG. NO. : 01 OF 26	

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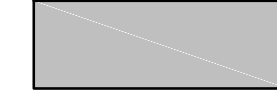
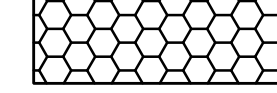


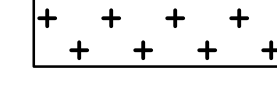


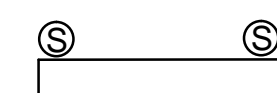

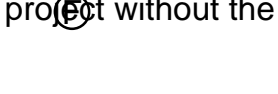
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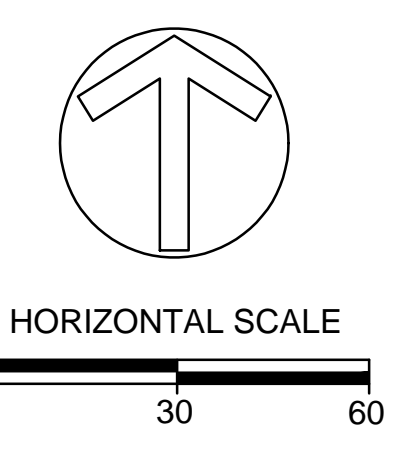

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**DOWNTOWN
 CRESCENT PHASE I
 MITIGATION PLAN**

**GRADING &
 EROSION AND
 SEDIMENT CONTROL**

WETLAND MITIGATION LEGEND

-  PFO WETLAND CREATION
-  PFO WETLAND ENHANCEMENT
-  PEM WETLAND CREATION
-  CULVERT REMOVAL
-  PFO WETLAND CREATION WITH STORMWATER AUGMENTATION
-  STORMWATER UGUMENTATION
-  ADDITIONAL PFO WETLAND CREATION
-  ADDITIONAL PEM WETLAND CREATION
-  STREAM CROSS SECTION
-  GROUNDWATER WELL



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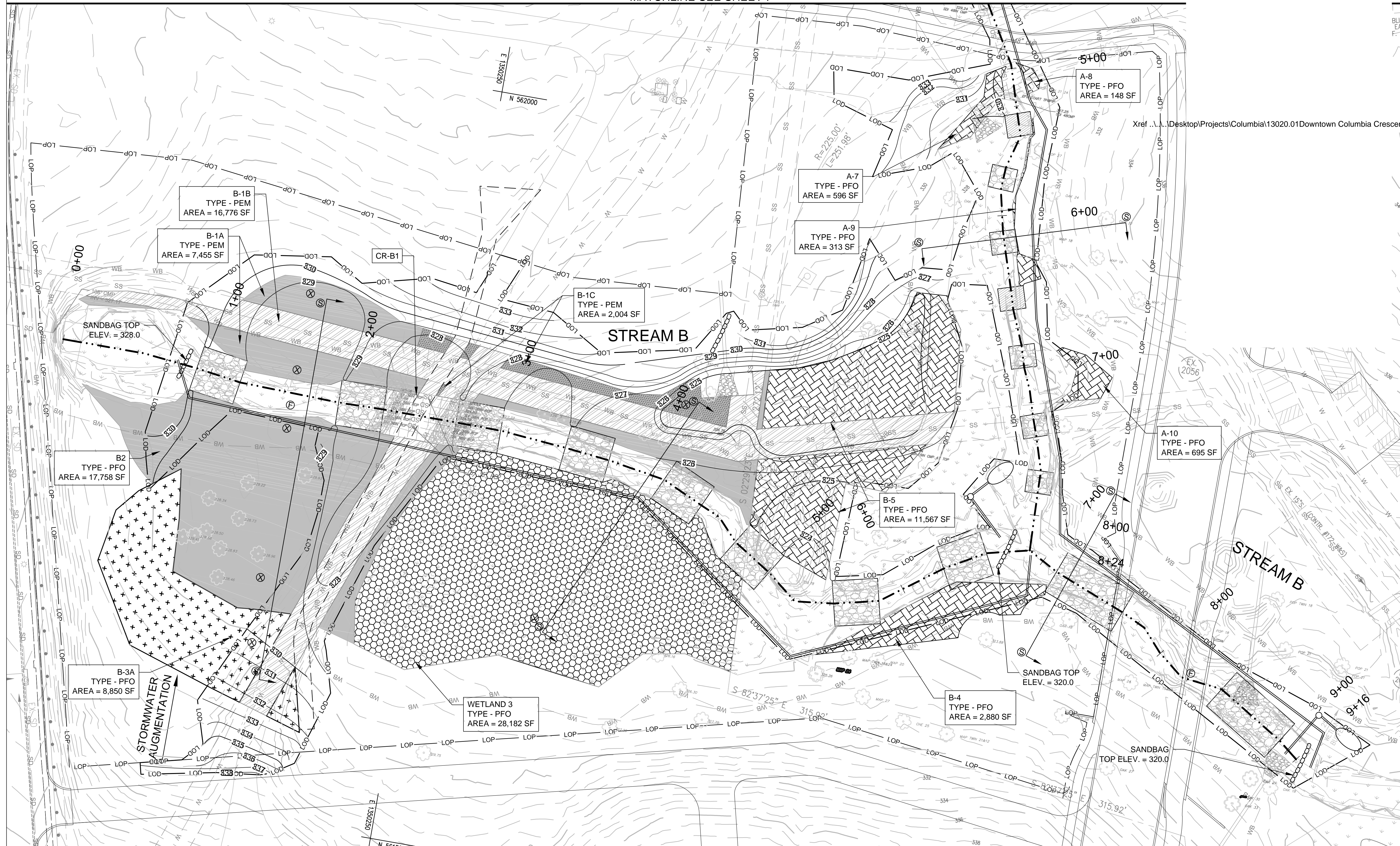
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**APPROVED
 PLANNING BOARD OF HOWARD COUNTY**
 DATE _____

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE _____
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE _____
 DIRECTOR DATE _____

MATCHLINE SEE SHEET 7



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Howard Hughes
THE HOWARD HUGHES CORPORATION

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**DOWNTOWN
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PROJECT NO.:	13020.01	SCALE:	1" = 30'
SEAL:		BY:	TB,SH
		CHECK:	CS
		DWG. NO.:	

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE _____

CHIEF, DIVISION OF LAND DEVELOPMENT DATE _____

DIRECTOR DATE _____

APPROVED
PLANNING BOARD OF HOWARD COUNTY

DATE _____

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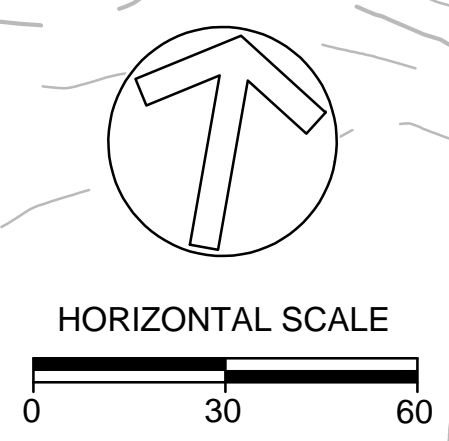
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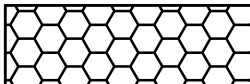
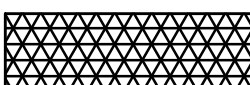

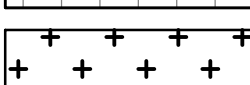
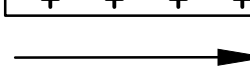


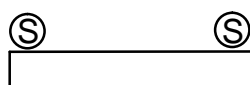


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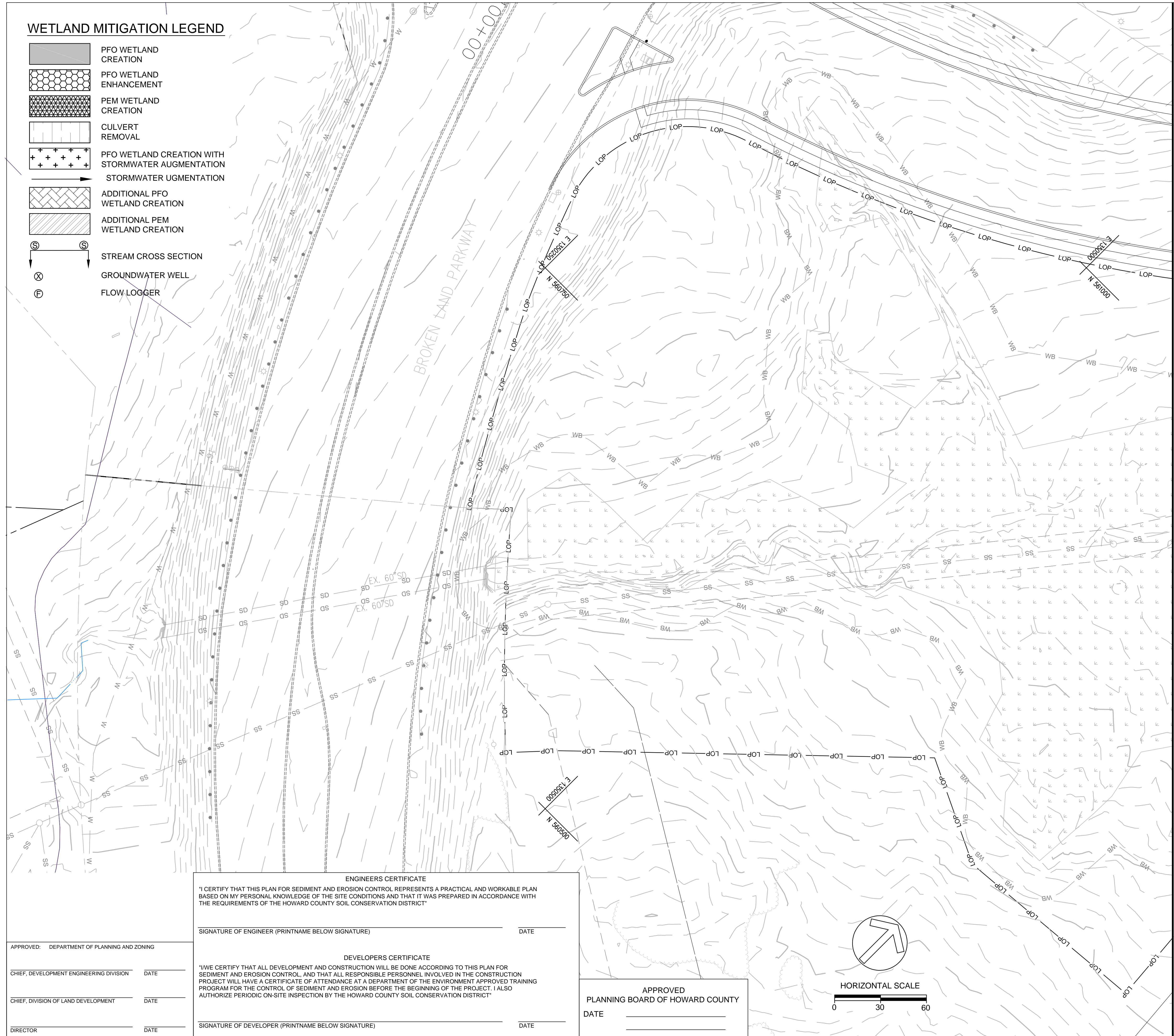
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WETLAND MITIGATION LEGEND

-  PFO WETLAND CREATION
-  PFO WETLAND ENHANCEMENT
-  PEM WETLAND CREATION
-  CULVERT REMOVAL
-  PFO WETLAND CREATION WITH STORMWATER AUGMENTATION
-  STORMWATER AUGMENTATION
-  ADDITIONAL PFO WETLAND CREATION
-  ADDITIONAL PEM WETLAND CREATION
-  STREAM CROSS SECTION
-  GROUNDWATER WELL
-  FLOW LOGGER



MATCHLINE SEE SHEET 10

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**DOWNTOWN
CRESCENT PHASE I
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**GRADING & EROSION
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CONTROL**

PROJECT NO.: 13020.01 SCALE: 1" = 30'
SEAL: BY: TB,SH CHECK: CS
DWG. NO.:

09 OF 26

ENGINEERS CERTIFICATE

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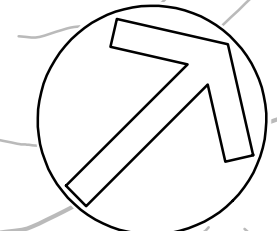
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HORIZONTAL SCALE



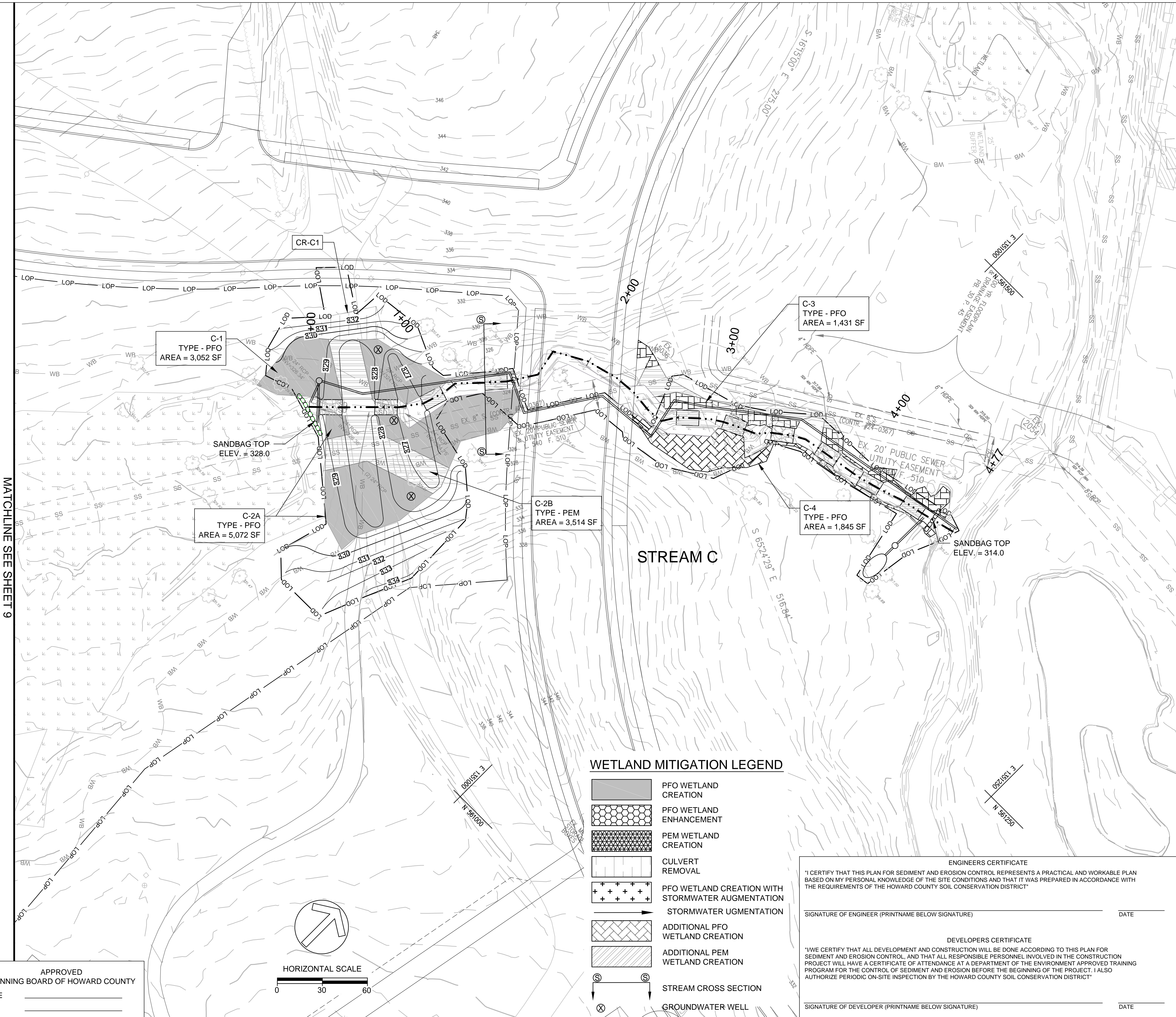
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION _____ DATE _____
CHIEF, DIVISION OF LAND DEVELOPMENT _____ DATE _____
DIRECTOR _____ DATE _____

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MATCHLINE SEE SHEET 9

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DOWNTOWN CRESCENT PHASE I MITIGATION PLAN

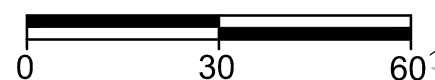
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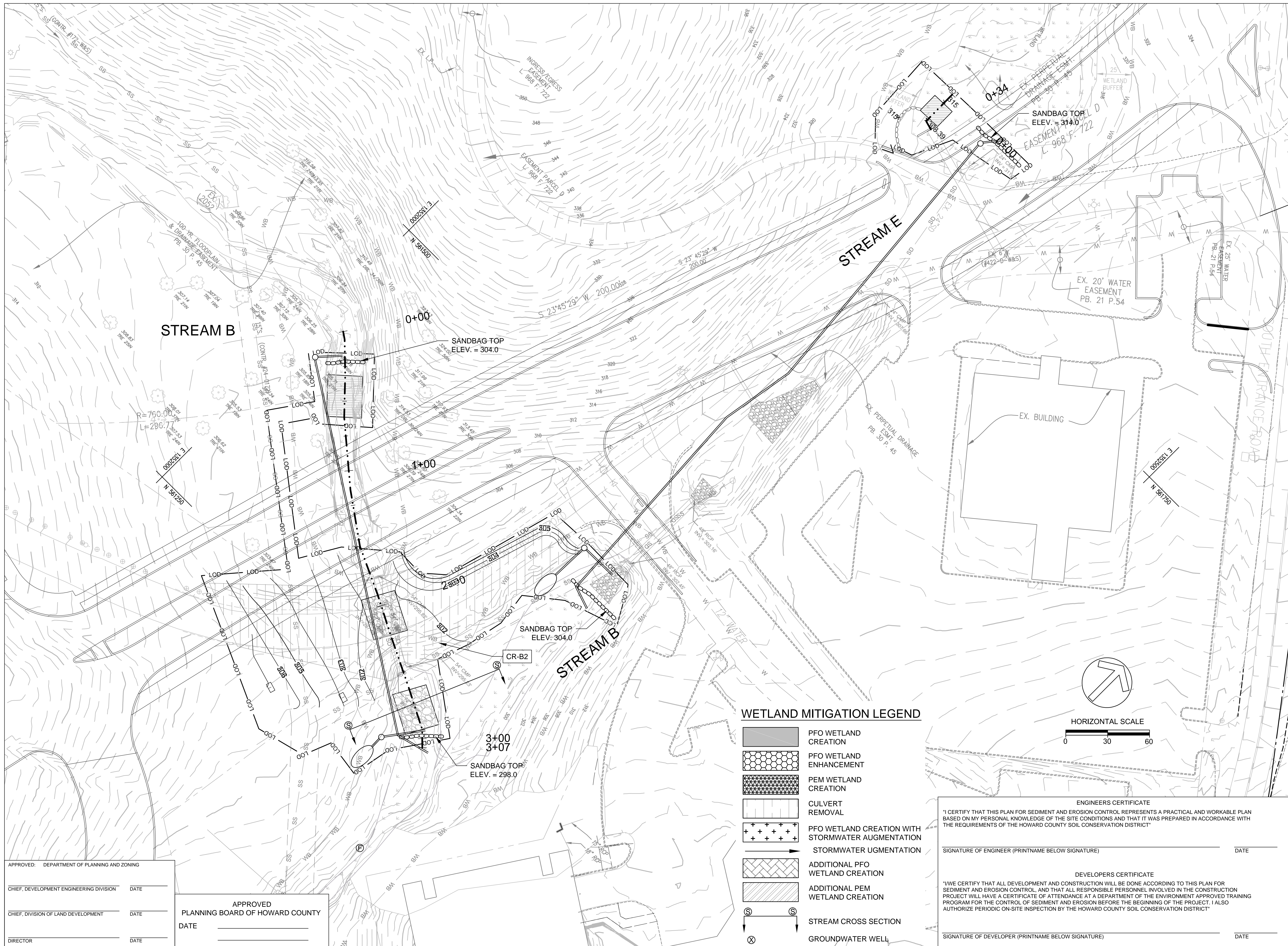
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PLANNING BOARD OF HOWARD COUNTY
DATE _____

HORIZONTAL SCALE





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TITLE: _____

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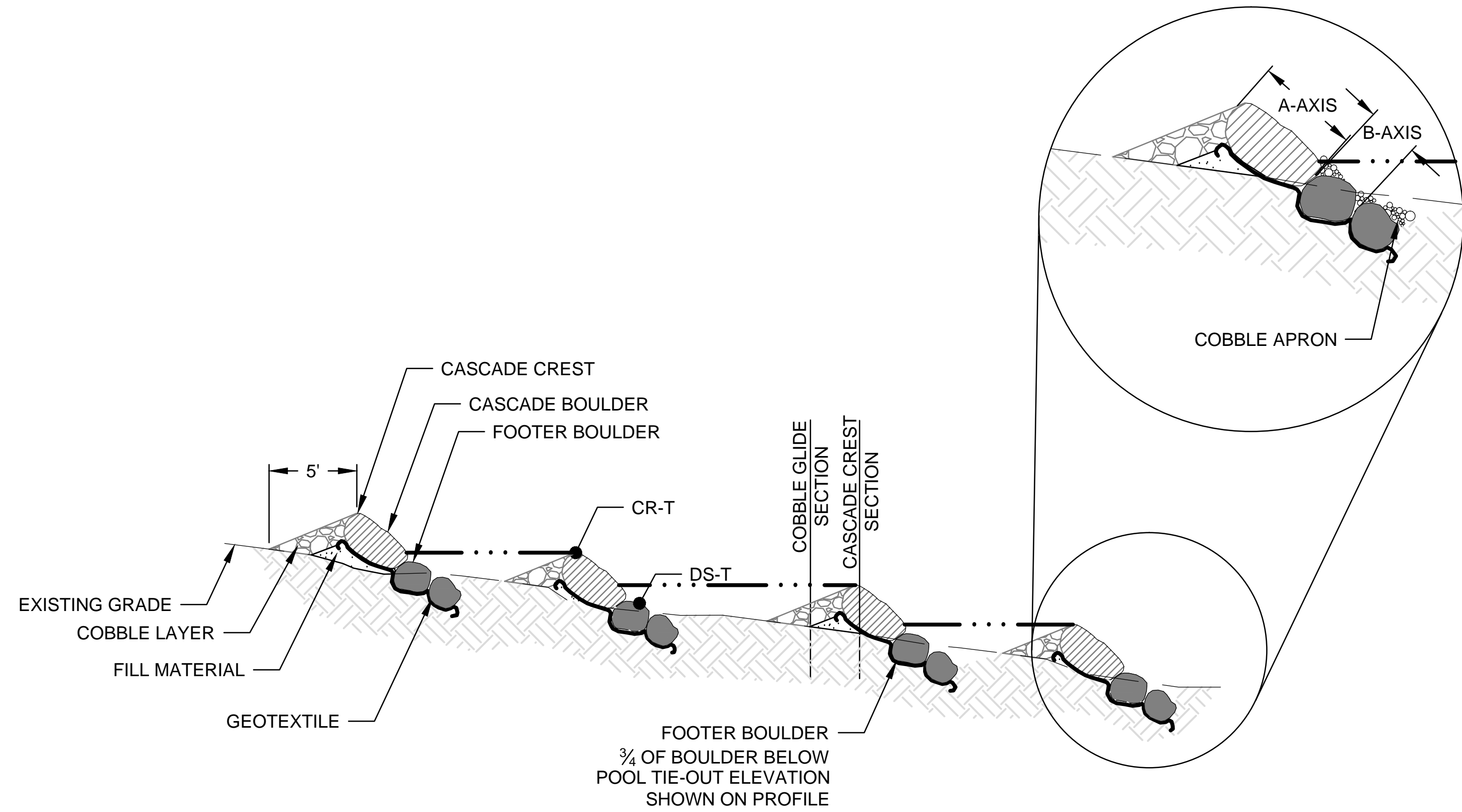
CHIEF, DEVELOPMENT ENGINEERING DIVISION _____ DATE _____

CHIEF, DIVISION OF LAND DEVELOPMENT _____ DATE _____

DIRECTOR _____ DATE _____

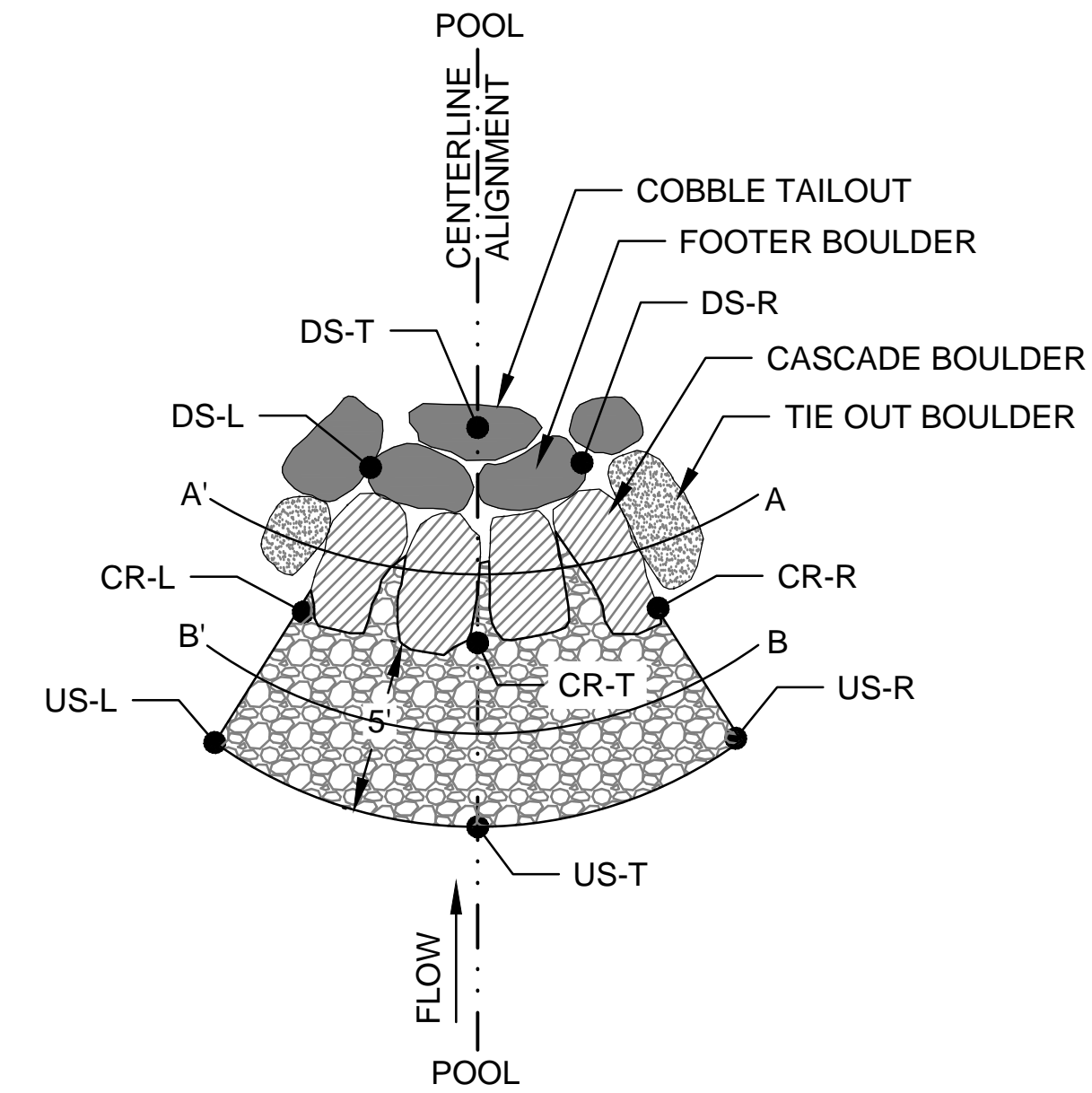
APPROVED
PLANNING BOARD OF HOWARD COUNTY

DATE _____



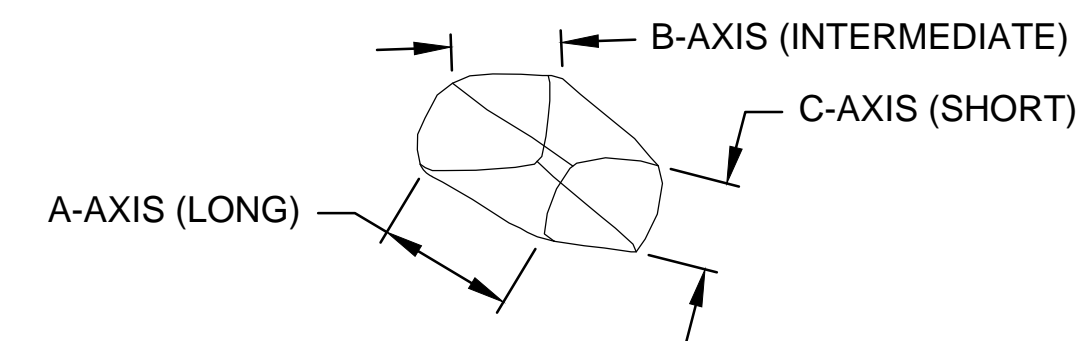
CASCADe
CENTERLINE PROFILE

NOT TO SCALE



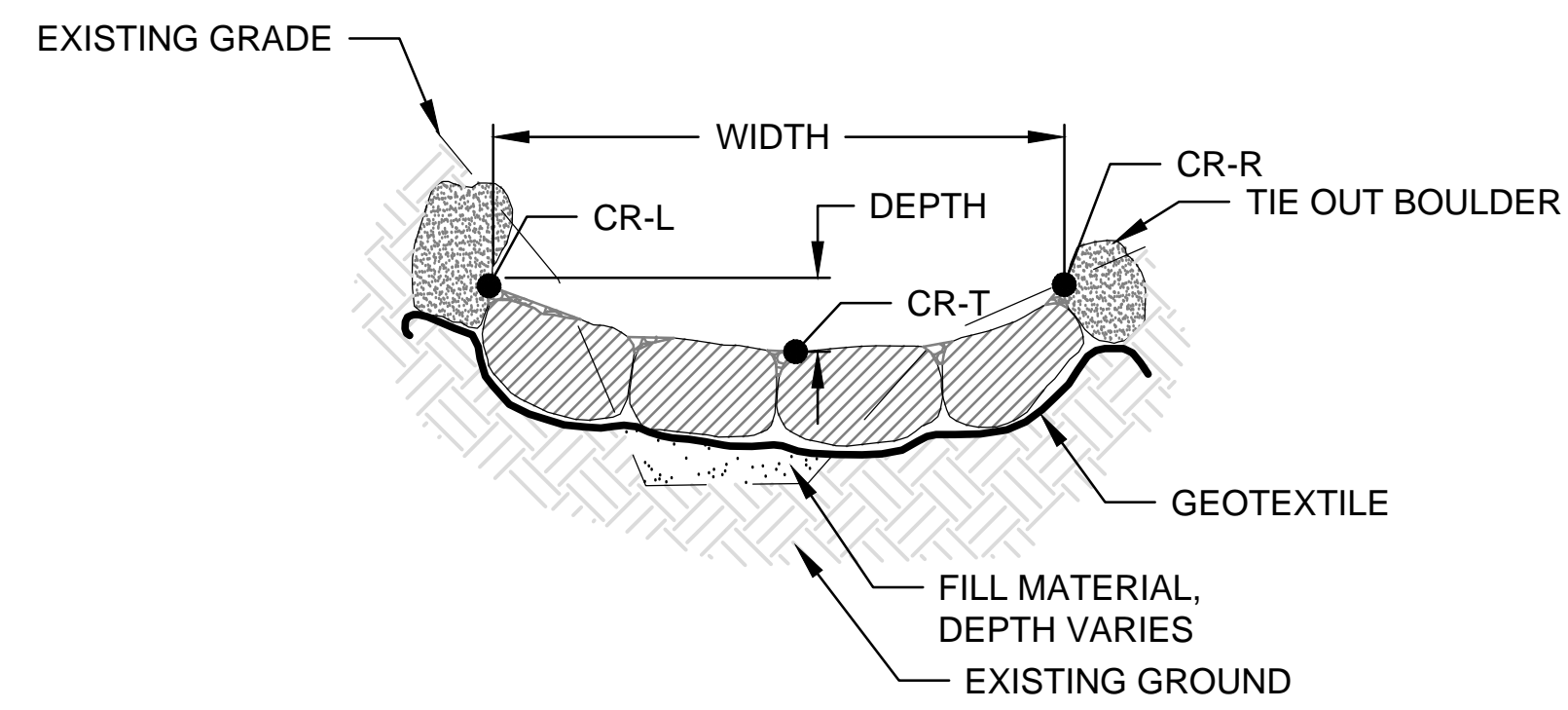
CASCADe
PLAN VIEW

NOT TO SCALE



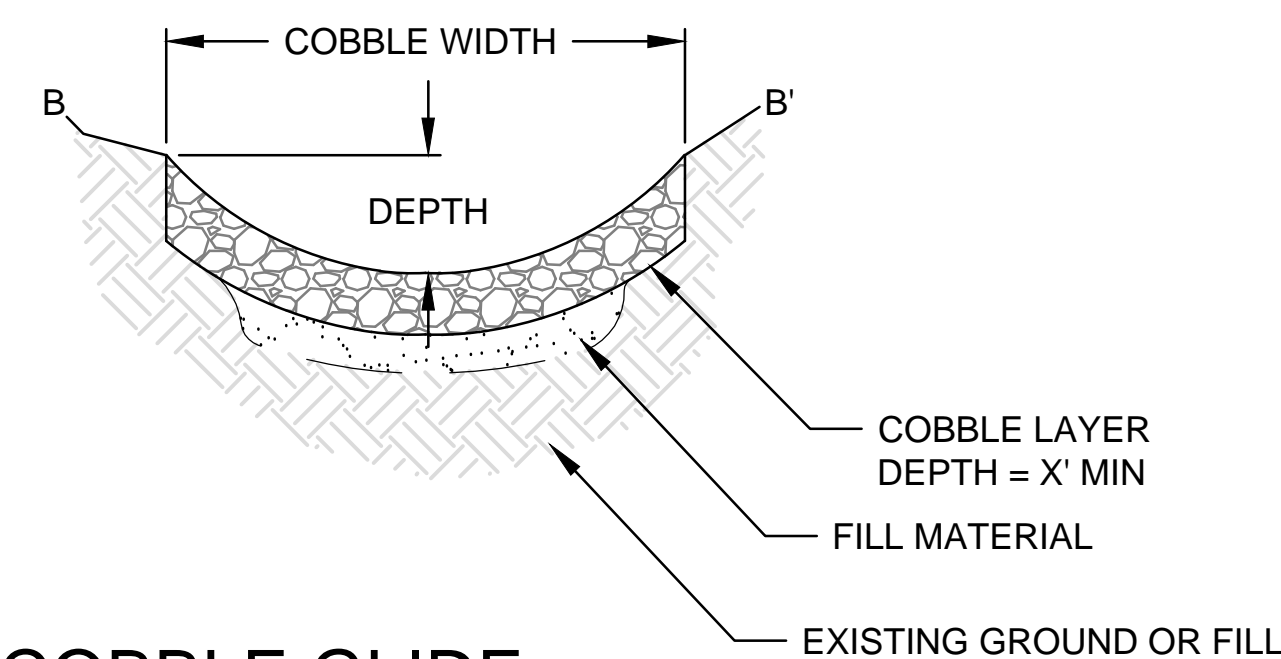
BOULDER AXIS

NOT TO SCALE



CASCADe CREST
SECTION A-A'

NOT TO SCALE



COBBLE GLIDE
SECTION B-B'

NOT TO SCALE

BOULDER DIMENSIONS			
	A-AXIS	B-AXIS	C-AXIS
CASCADe			
FOOTER			
TIE-OUT			

NOTES

- GAPS BETWEEN BOULDERS SHALL BE CHINKED WITH COBBLE
- TYPICALLY, CASCADe BOULDER A-AXIS WILL BE ORIENTED IN DIRECTION OF FLOW. FOOTER BOULDERS A-AXIS WILL BE ORIENTED PERPENDICULAR TO FLOW.
- SEE SPECIFICATIONS FOR COBBLE SIZE AND DEPTH

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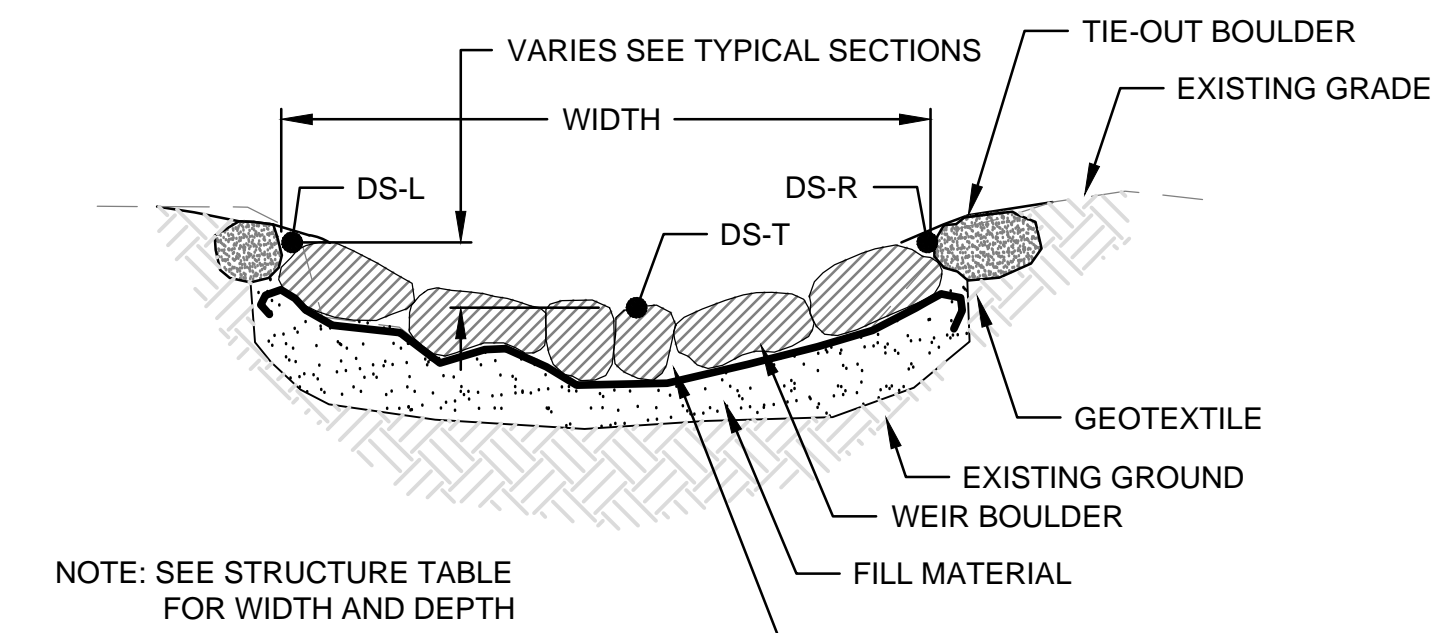
DOWNTOWN
CRESCENT PHASE I
MITIGATION PLAN

DETAILS

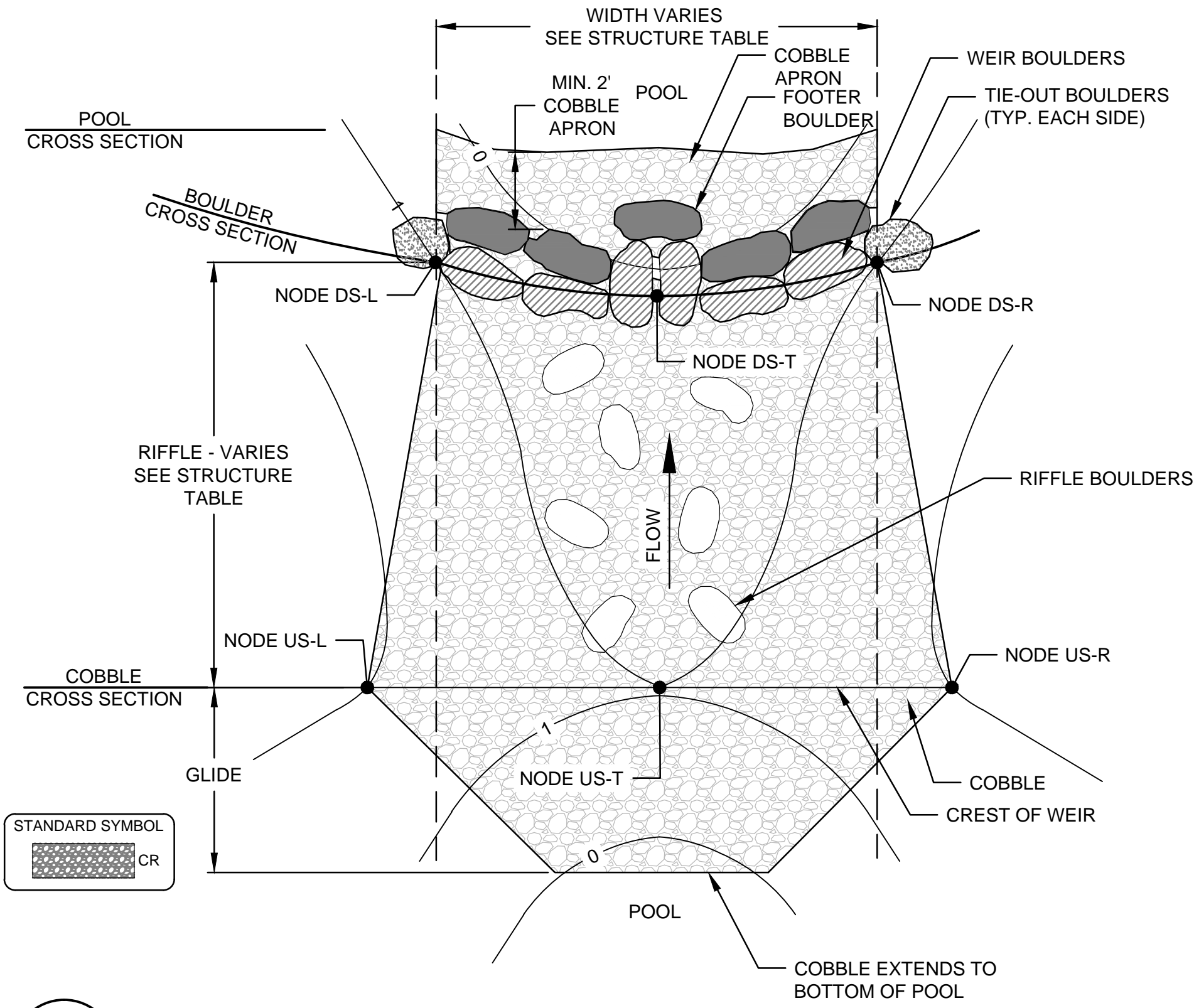
PROJECT NO.: 13020.01 SCALE: 1" = 30'

SEAL: BY: TB,SH CHECK: CS

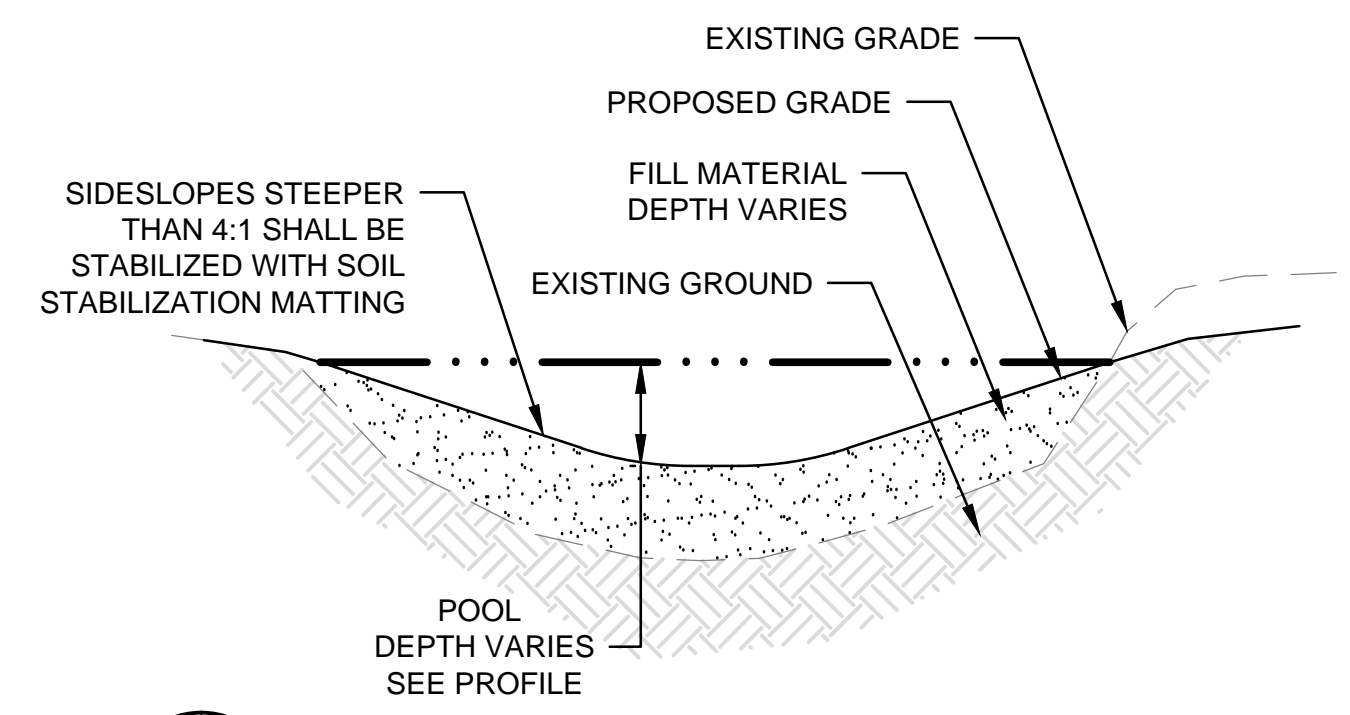
DWG. NO.:



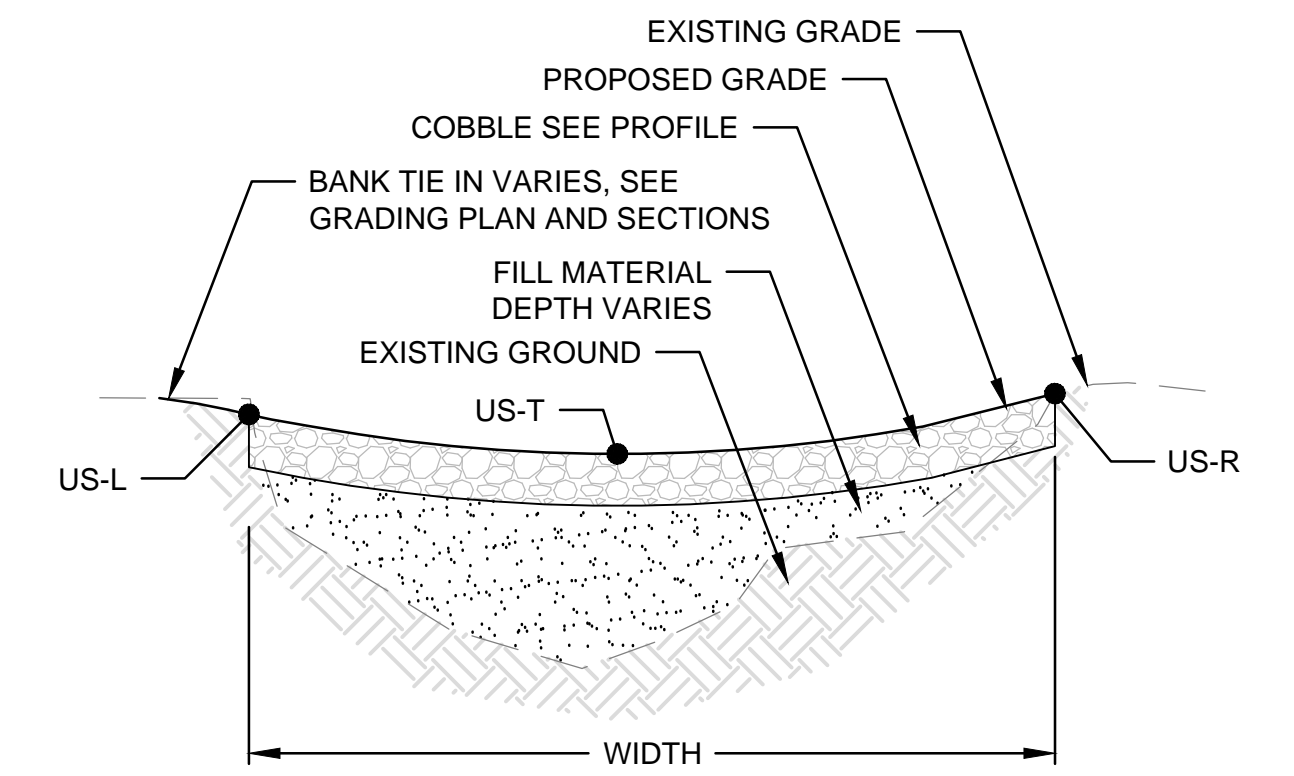
RIFFLE BOULDER CROSS SECTION NOT TO SCALE



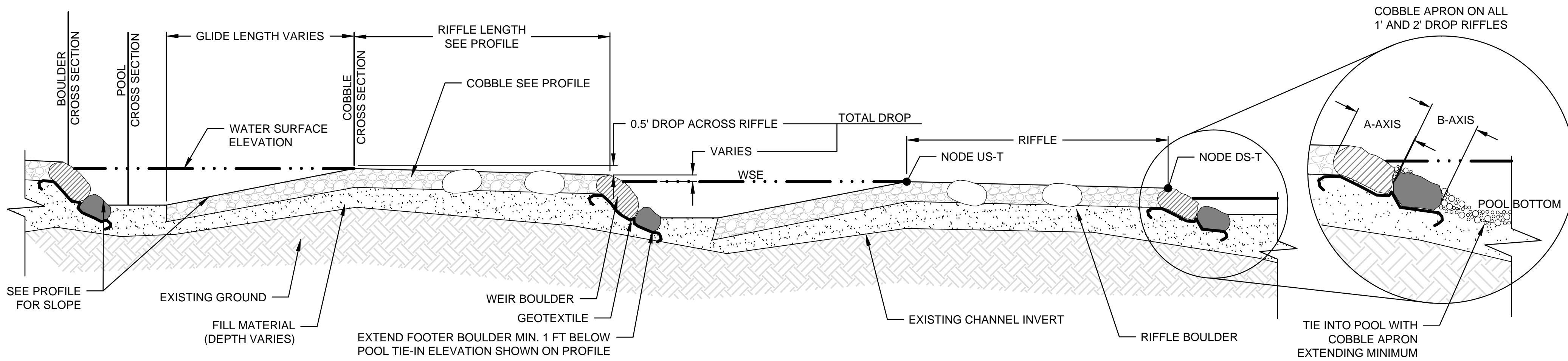
RIFFLE PLAN VIEW NOT TO SCALE



RIFFLE POOL CROSS SECTION NOT TO SCALE



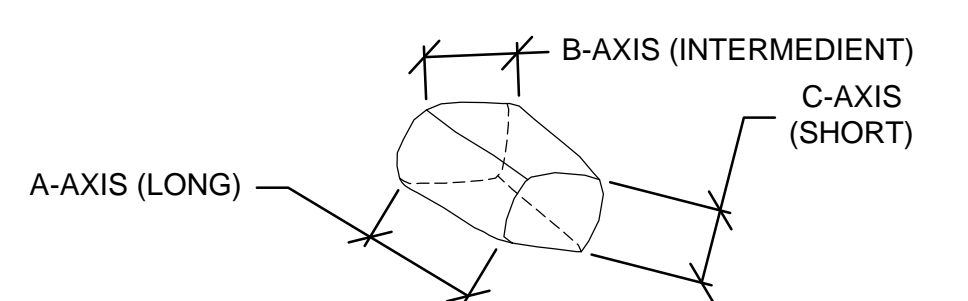
RIFFLE COBBLE CROSS SECTION NOT TO SCALE



GRADATION TABLE	COBBLE		GRAVEL
	UPDATE	UPDATE	ALL REACHES
CUMULATIVE % FINER	SIZE (IN)	SIZE (IN)	SIZE (IN)
0	0.5	0.5	1/4
16	2.2	1.3	X
50	7.0	4.0	1
84	17.5	10.0	2
100	43.8	25.0	3

NOTE: SALVAGED STREAMBED MATERIAL OR IMPORTED GRAVEL SHALL BE WASHED INTO COBBLE IN 6" LIFTS AT AN APPROXIMATE RATIO OF 75% COBBLE TO 25% GRAVEL.

- RIFFLE NOTES:
1. TIE-OUT BOULDER SHALL EXTEND PAST THE CORNER NODES DS-R & DS-L A MIN. OF ONE BOULDER LENGTH INTO EXISTING BANK. WHERE THIS CONFLICTS WITH EXISTING TREE ROOTS OR BEDROCK, TIE-OUT BOULDER MAY BE ELIMINATED OR ADJUSTED AT DIRECTION OF ENGINEER.
 2. RIFFLE BOULDERS SHALL BE INCORPORATED IN A RANDOM PLACEMENT WITHIN MIDDLE THIRD OF SECTIONS TO COVER APPROXIMATELY 25% OF THE RIFFLE SURFACE AREA. TOP OF RIFFLE BOULDERS SHALL EXTEND A MAXIMUM OF 2" ABOVE COBBLE SURFACE.
 3. BOTH OUTER THIRDS OF SECTION TO BE COVERED WITH 3" OF BLOWN COMPOST, INCORPORATED INTO VOIDS, SEE DETAIL.



RIFFLE BOULDER AXIS NOT TO SCALE

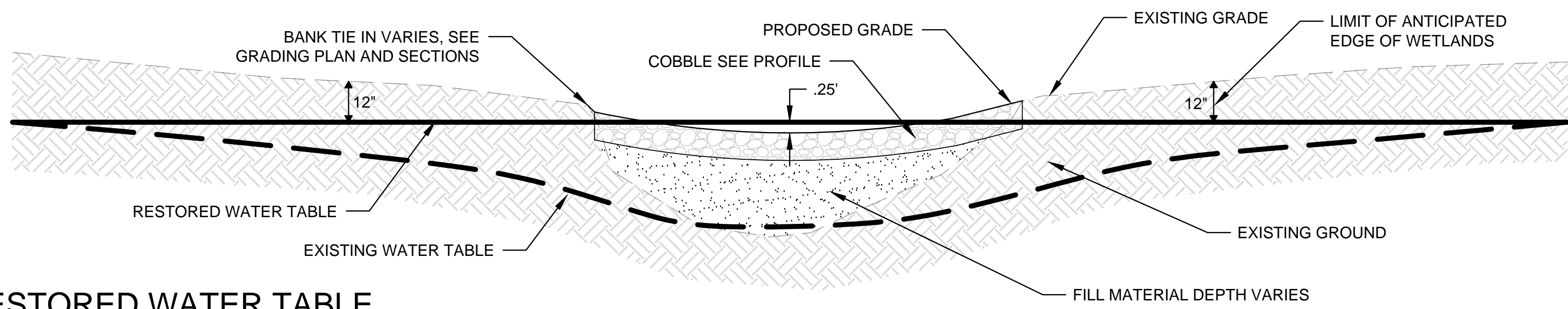
BOULDER TYPE	BOULDER DIMENSIONS (FT)		
	A-AXIS	B-AXIS	C-AXIS
WEIR	3	2.5	2
FOOTER	3	2.5	2
TIE-OUT	3	2.5	2
SPLASH	3	2.5	2
RIFFLE	3	2.5	2

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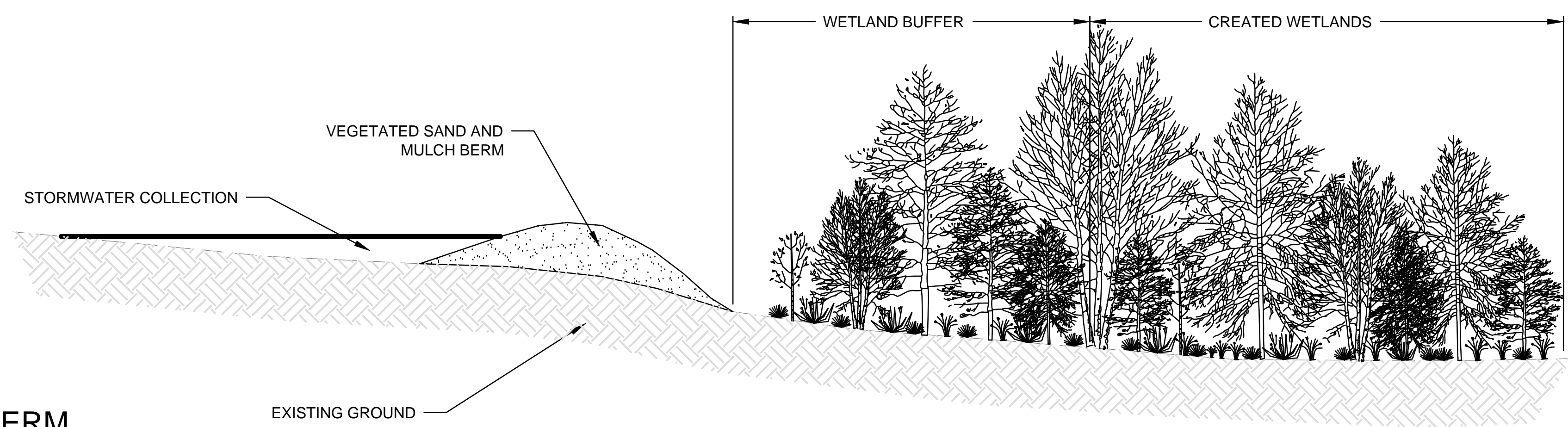
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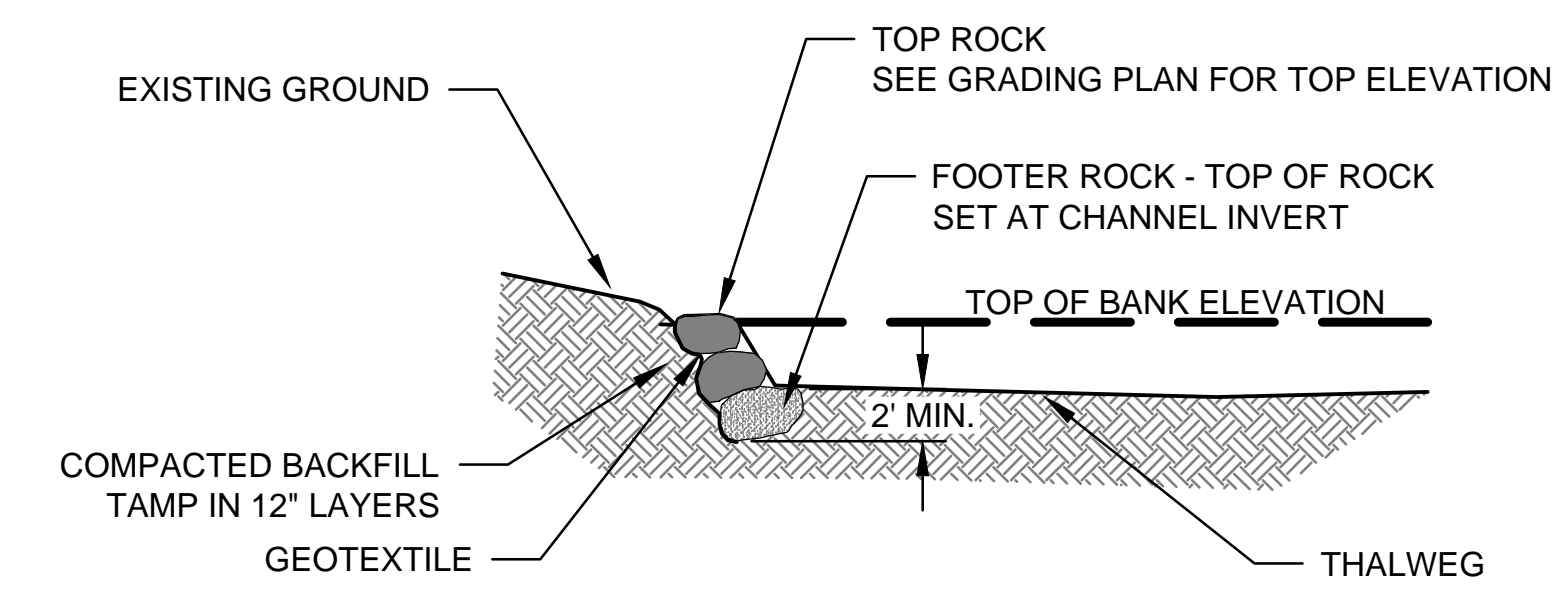
RESTORED WATER TABLE

NOT TO SCALE



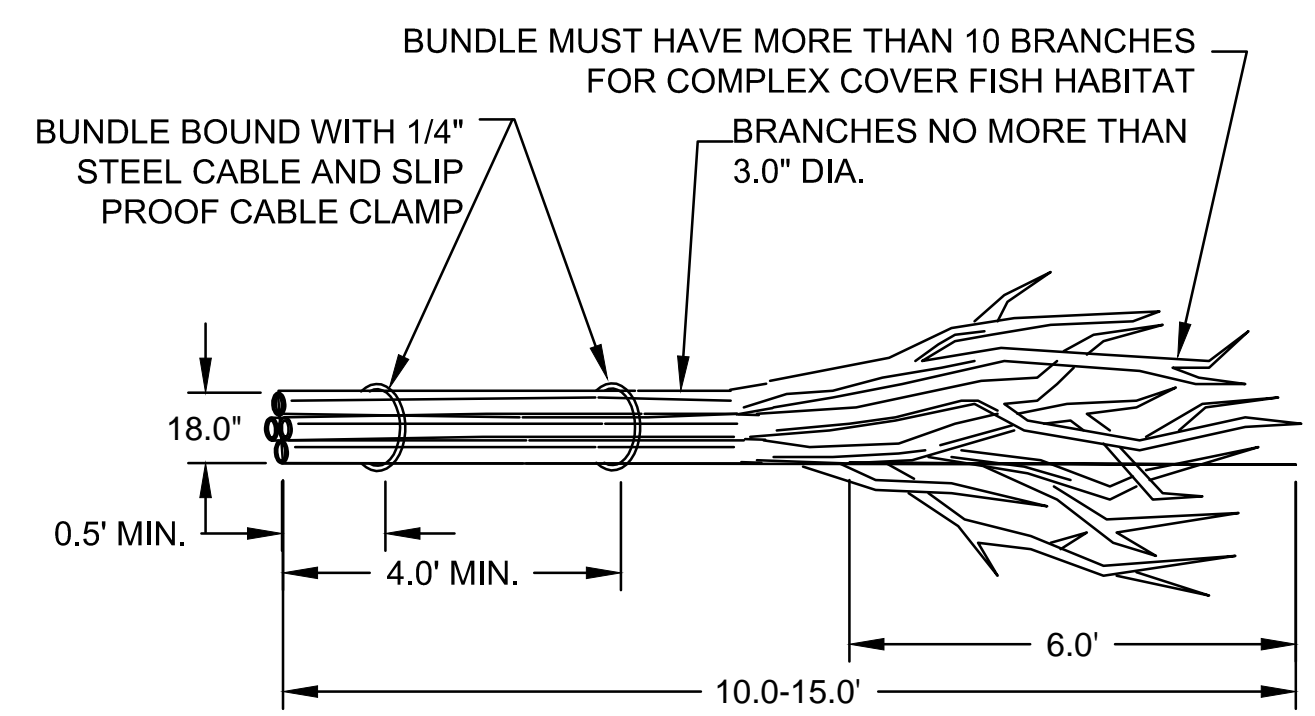
BERM
STORMWATER SEEPAGE BERM

NOT TO SCALE



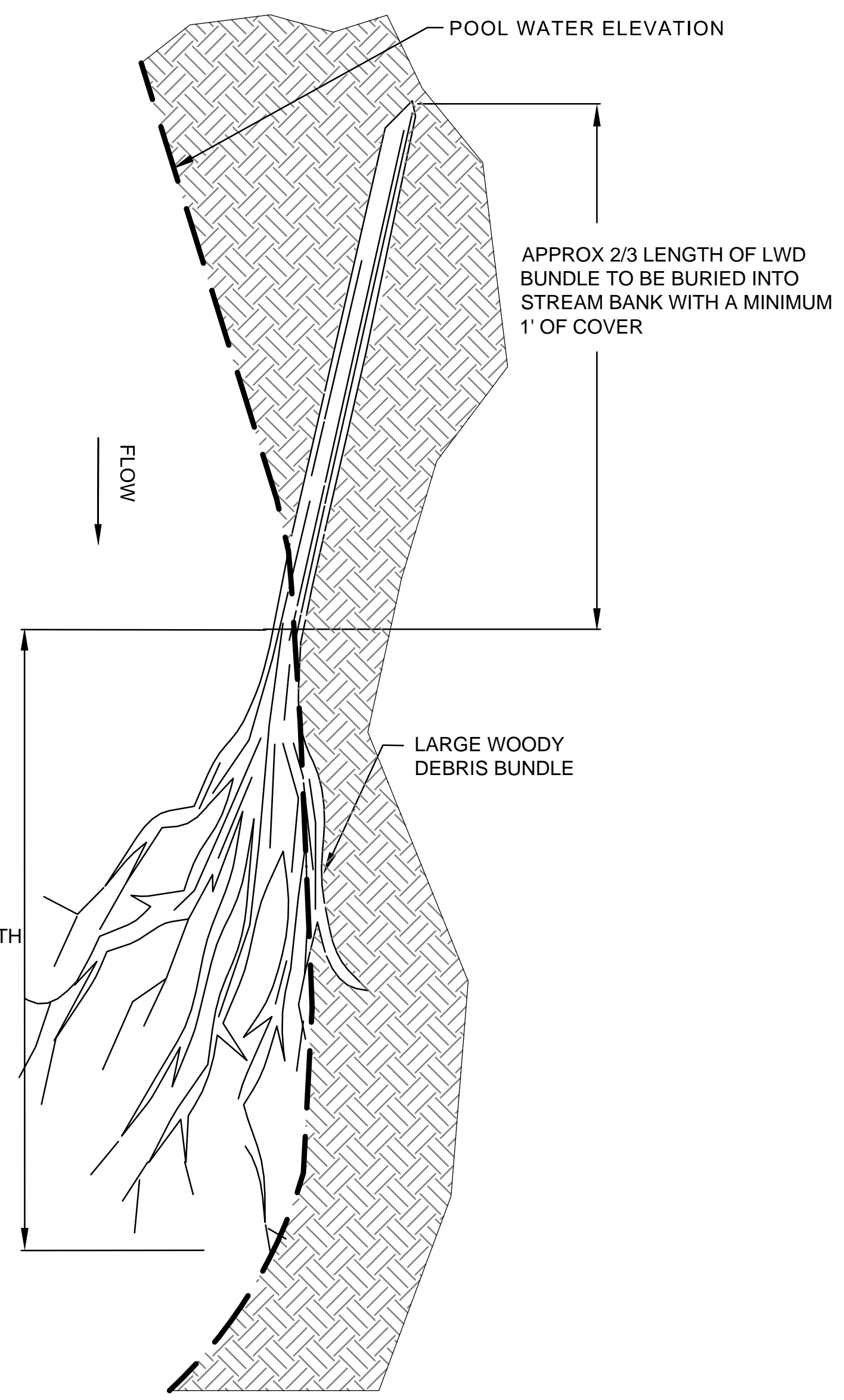
BOULDER TOE PROTECTION
CROSS SECTION

NOT TO SCALE



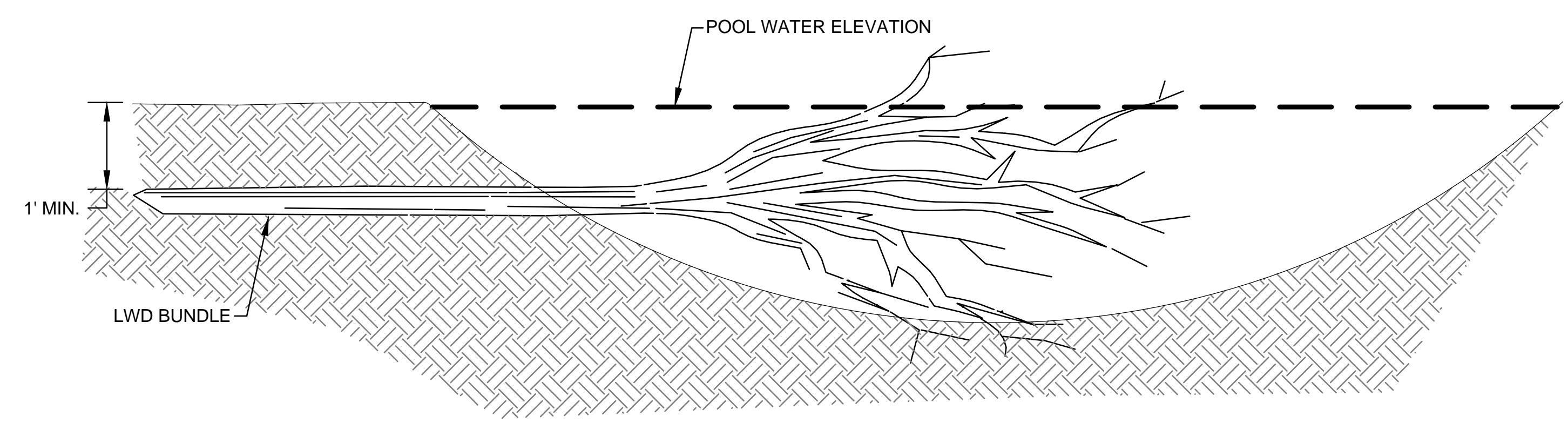
INSTREAM LARGE WOODY DEBRIS (LWD)
LARGE WOODY DEBRIS BUNDLE

NOT TO SCALE



INSTREAM LARGE WOODY DEBRIS (LWD)
PLAN VIEW- TYPICAL

NOT TO SCALE



INSTREAM LARGE WOODY DEBRIS (LWD)
CROSS SECTION

NOT TO SCALE

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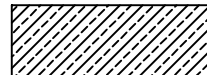
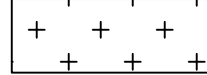

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PLANNING BOARD OF HOWARD COUNTY
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APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION _____ DATE _____
CHIEF, DIVISION OF LAND DEVELOPMENT _____ DATE _____
DIRECTOR _____ DATE _____



LEGEND

-  ZONE 1 - WET MEADOW
-  ZONE 2 - SUPPLEMENTAL FLOODPLAIN FOREST
-  ZONE 3 - FLOODPLAIN FOREST
-  ZONE 4 - MESIC FOREST
-  ZONE 5 - UPLAND FOREST
-  ZONE 6 - UPLAND MEADOW

CLIENT



HOWARD RESEARCH
AND DEVELOPMENT CORPORATION
10221 WINCOPIN CIRCLE, SUITE 300
COLUMBIA, MD 21044

DATE: ISSUES / REVISIONS



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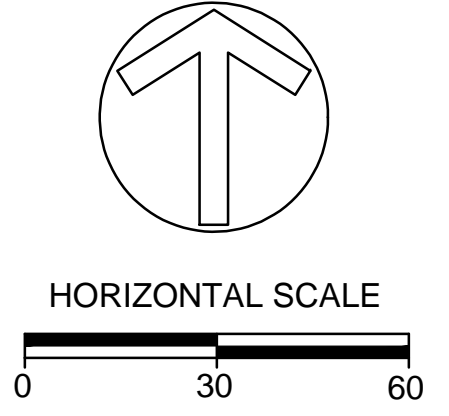
**DOWNTOWN
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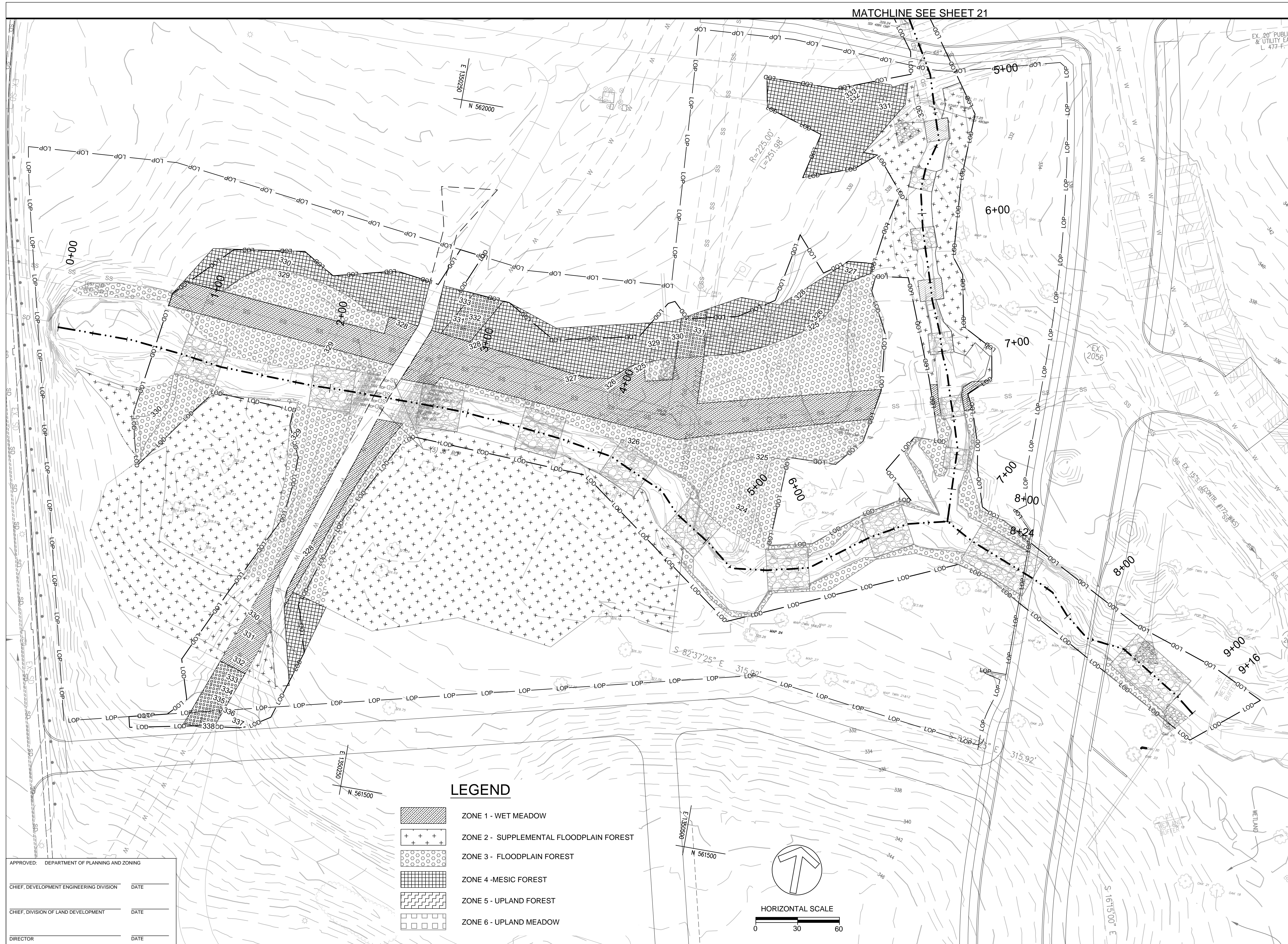
PLANTING PLAN

PROJECT NO.:	13020.01	SCALE:	1" = 30'
SEAL:		BY:	TB,SH
		CHECK:	CS
		DWG. NO.:	

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Howard Hughes
THE HOWARD HUGHES CORPORATION

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**DOWNTOWN
CRESCENT PHASE I
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TITLE:

PLANTING PLAN

PROJECT NO.:	13020.01	SCALE:	1" = 30'
SEAL:		BY:	TB,SH
		CHECK:	CS
		DWG. NO.:	
22 OF 26			

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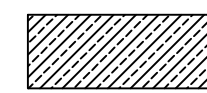
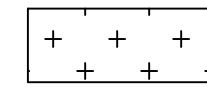
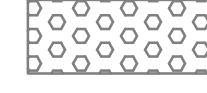
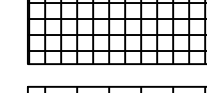
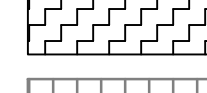

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR DATE

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- ZONE 1 - WET MEADOW
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 - ZONE 6 - UPLAND MEADOW

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**DOWNTOWN
CRESCENT PHASE I
MITIGATION PLAN**

PLANTING PLAN

PROJECT NO.:	13020.01	SCALE:	1" = 30'
SEAL:		BY:	TB,SH
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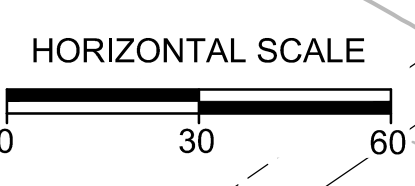
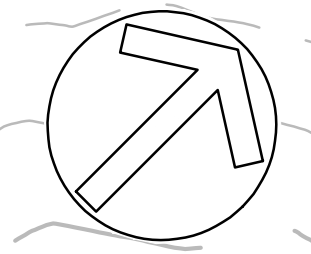
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MATCHLINE SEE SHEET 23

LEGEND

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PLANTING PLAN

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		CHECK:	CS
		DWG. NO.:	

**Resource Impact Tabulation Chart
Columbia Crescent**

AREA DESIGNATION	WETLAND IMPACTS (SF)		WETLAND BUFFER IMPACTS (SF)		IMPACTS TO WATERS OF THE U.S. (LF/SF)		100-YEAR FLOODPLAIN IMPACTS (SF)		FLOODPLAIN FILL (CUBIC YARDS)	
	PERM	TEMP	PERM	TEMP	PERM	TEMP	PERM	TEMP	PERM	TEMP
PHASE I										
Crossing 1	3,029 (FO)	0	8,913	0	0	0	0	13,479	0	3,861
Area 1 Storm Drain	113 (FO)	0	165	0	0	0	0	0	0	0
Pedestrian Boardwalk	0	0	0	0	0	0	0	4,685	0	210
Crossing 2, Water Line & Storm Drains	0	0	0	0	0	0	0	0	0	0
Hickory Ridge Extension	1,979 (EM)	0	6,077	0	0	0	0	4,979	0	2,225
Crossing 3	0	0	0	0	0	0	0	0	0	0
PHASE II										
Pedestrian Boardwalk	0	1,471 (FO)	0	612	0	0	0	0	1,558	0
Crossing 5, Water and Sewer Relocation	0	0	0	0	0	0	0	12,942	2,226	4,742
Crossing 6	249 (FO)	159 (FO)	1,790	0	111,222	0	9,721	0	0	0
Crossing 7, Storm Drain, Grading for NS Connector	7,661 (FO)	218 (FO)	8,081	40	311,622	0	14,824	218	2,220	0
PHASE III										
Crossing 4	5,146 (FO)	2,214 (FO)	10,301	2,441	553,553	130/130 ^a	6,720	3,551	16,062	0
Storm Drains (North and Middle)	0	0	95	2,548	0	0	5,458	10,820	1,713	0
Storm Drain (South)	0	0	0	0	0	0	117	456	0	0
Mitigation Impacts										
Area 1	0	5,843 (FO) ^b	0	1,098	0	323/646 ^a	647	12,182	0	0
Area 2	0	8,643 (FO) ^b	0	8,221	0	347/694 ^a	0	26,138	0	0
Area 3	0	2,494 (FO) ^b	0	3,718	0	282/2,886 ^a	0	37,109	0	0
Area 4	0	1,723 (FO) ^b	0	3,291	0	562/6,560 ^a	100	25,209	0	0
Area 5	0	455 (FO) ^b	0	3,101	0	215/430 ^a	0	21,713	0	0
Area 6	0	0	0	0	0	119/1,841 ^a	0	20,558	0	0
DEVELOPMENT IMPACT TOTALS										
Forested	18,117	3,685	35,422	5,641	975/1,397	130/130	72,925	18,829	31,033	0
Emergent	16,198	3,685	0	0	0	0	0	0	0	0
MITIGATION IMPACT TOTALS	1,979	0	0	0	0	1,828/13,057	747	144,909	0	0
Mitigation required	0	0	0	0	0	0	0	0	0	0
Mitigation to be provided	34,375 ^c	0	0	0	975/1,397	0	0	0	0	0
	53,857 ^{**}	0	0	0	1,828	0	0	0	0	0

* 2:1 mitigation required for all impacts except Phase 2 pathway which is 0.5:1 and Hickory Ridge Extension which is 1:1.
 ** Mitigation includes creation of 37,762 sf forested wetlands, creation of 2,004 sf of emergent wetlands, and enhancement of 14,091 sf forested wetlands
^a These Impacts are classified as Permanent-No Loss by the Army Corps of Engineers

Revised 10/1/14



VICINITY MAP

Scale: 1"=2000'

VICINITY MAP COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

DMW

DAFT MCCUNE WALKER INC



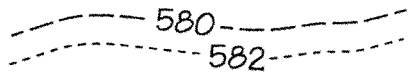
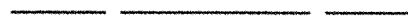



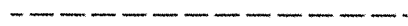
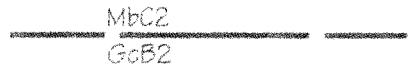







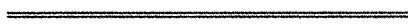

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5 ELECTION DISTRICT *RCU 10/30/14 KMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: Date: 07/01/14 Drawn By: GMO

Wed Oct 29 07:51:01 2014

LEGEND

	SUBJECT PROPERTY LINE
	ADJACENT PROPERTY LINE
	EXISTING CONTOURS
	EDGE OF PAYEMENT
	€ OF EXISTING ROAD
	€ OF EXISTING STREAM
	EXISTING TREE LINE
	EASEMENT LINE
	SOILS LINE
	FIELD LOCATED WETLAND / STREAM LIMITS
	25' STATE BUFFER
	100-YEAR FLOODPLAIN
	IMPACTS TO WETLANDS (FO) -- FORESTED (EM) --EMERGENT (P)--PERMANENT (T)--TEMPORARY (T*) --TEMPORARY (MDE), PERMANENT/NO NET LOSS (ACOE)
	IMPACTS TO WATERS OF THE US
	IMPACTS TO WETLAND BUFFERS
	IMPACTS TO FLOODPLAIN
	PUMP AROUND PRACTICE
	SAND BAGS FOR SEDIMENT AND EROSION CONTROL

LEGEND COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

7 ELECTION DISTRICT *REW 10/30/14 HMM* COUNCILMANIC DISTRICT 4

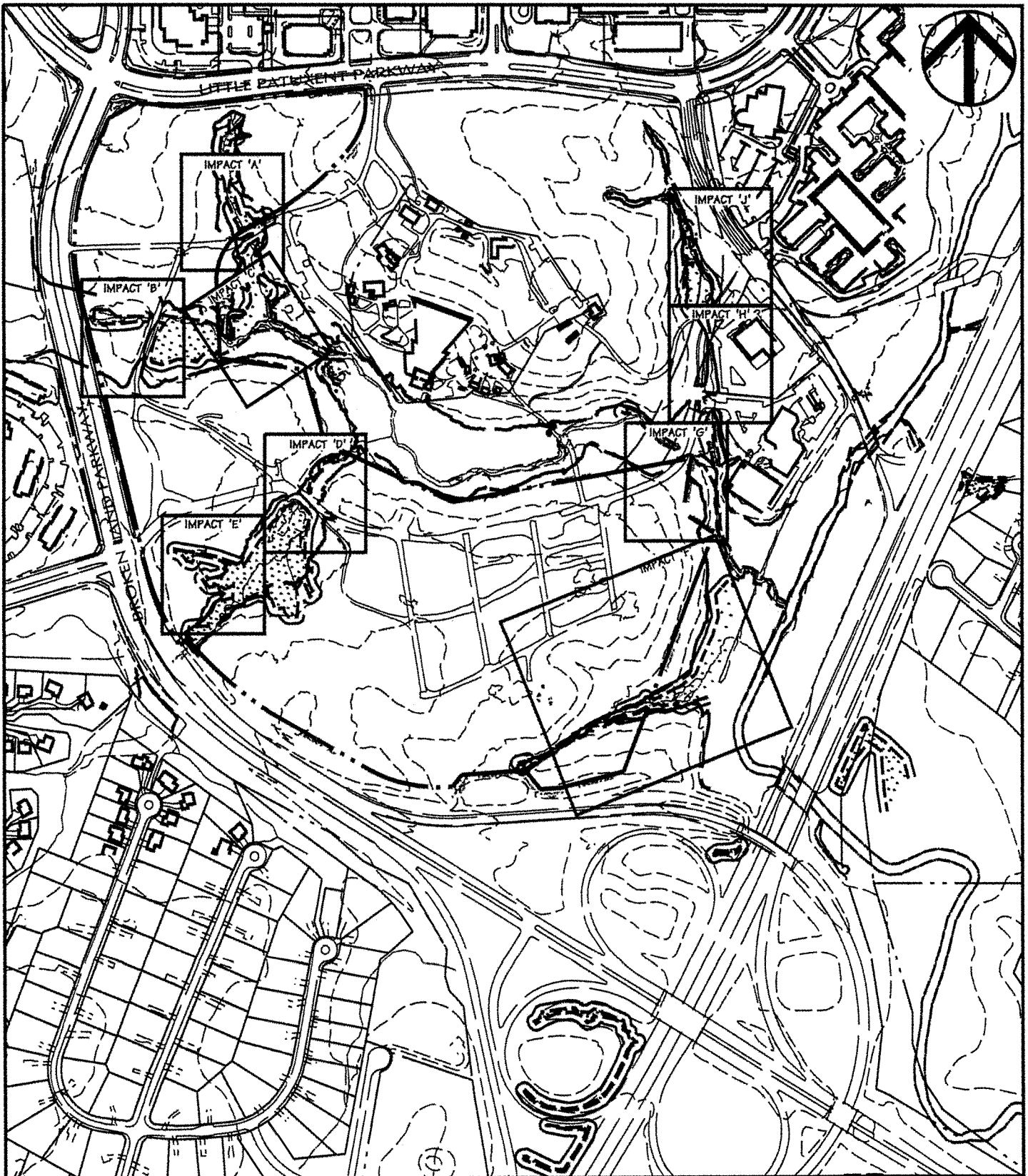
Job No. 04038.A2 | Scale: | Date: 07/25/13 | Drawn By: GMO

DMW

DAFT McCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

Wed Oct 29 07:51:38 2014



DEVELOPMENT IMPACTS KEY SHEET
COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

DMW

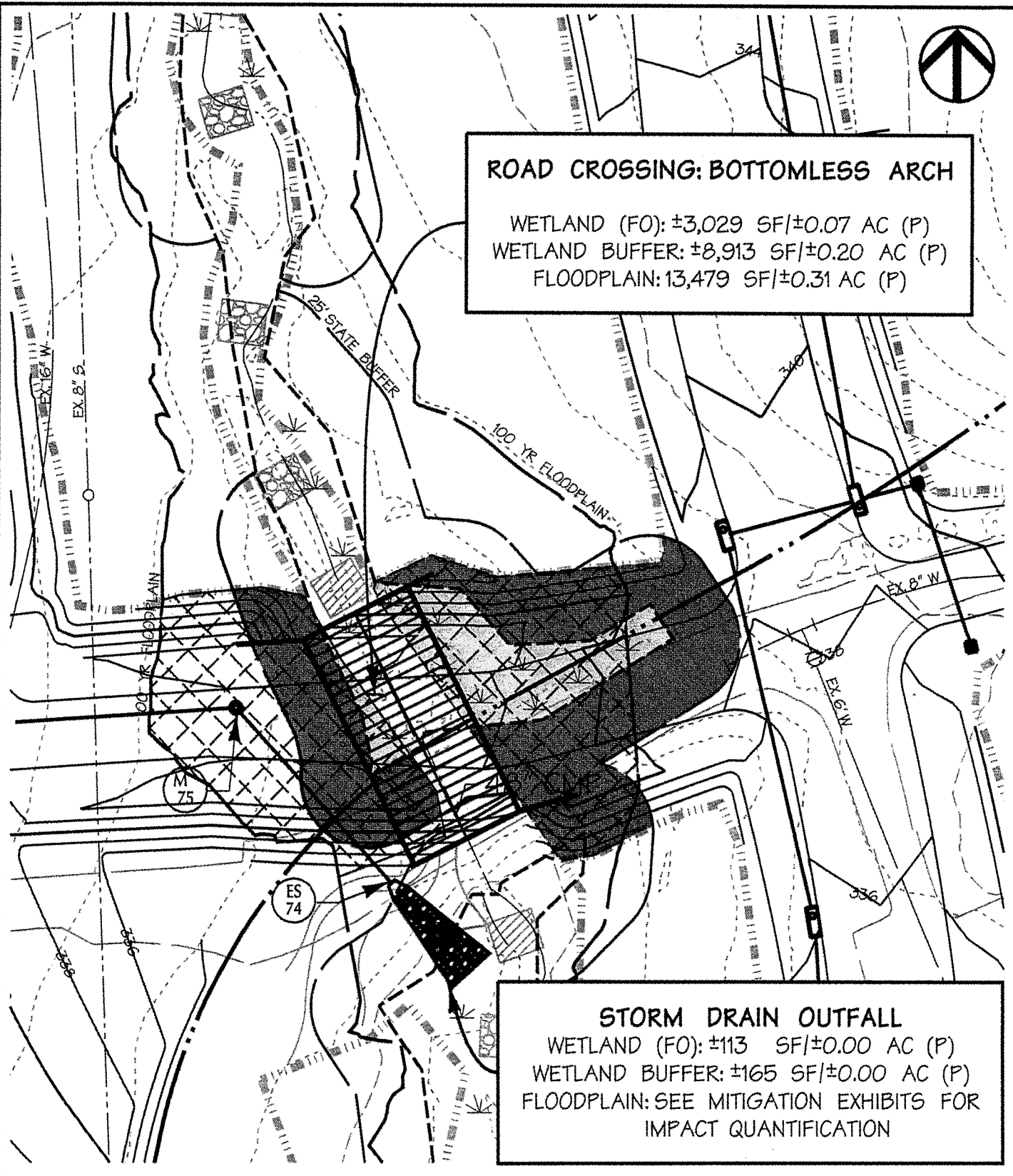
DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT *REV 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1"=500' Date: 7/14 Drawn By: HMM

Wed Oct 29 08:29:25 2014



ROAD CROSSING: BOTTOMLESS ARCH

WETLAND (FO): ±3,029 SF/±0.07 AC (P)
 WETLAND BUFFER: ±8,913 SF/±0.20 AC (P)
 FLOODPLAIN: 13,479 SF/±0.31 AC (P)

STORM DRAIN OUTFALL

WETLAND (FO): ±113 SF/±0.00 AC (P)
 WETLAND BUFFER: ±165 SF/±0.00 AC (P)
 FLOODPLAIN: SEE MITIGATION EXHIBITS FOR
 IMPACT QUANTIFICATION

IMPACT EXHIBIT 'A'
 STREAM CROSSING #1
 AND STORM DRAIN
COLUMBIA CRESCENT
 BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

5 ELECTION DISTRICT *REN 10/30/14 KMM* COUNCILMANIC DISTRICT 4

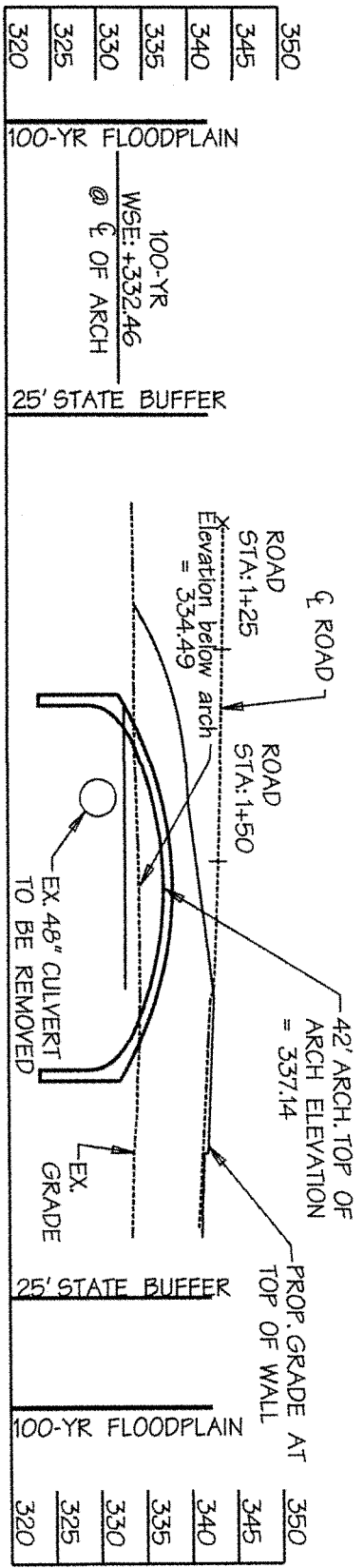
Job No. 04038.A2 Scale: 1"=50' Date: 07/01/14 Drawn By: GMO

DMW

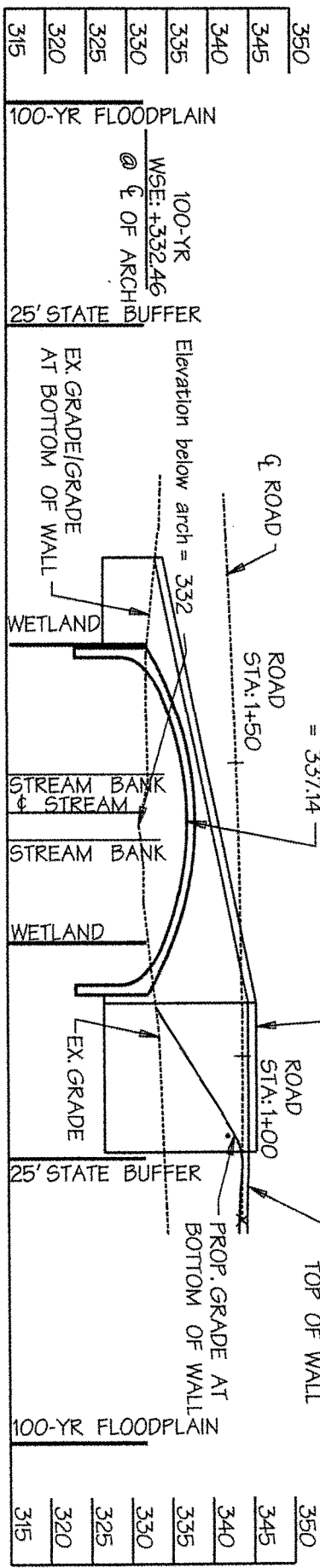
DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

Wed Oct 29 07:52:04 2014



NOTE: PROPOSED GRADE AT BOTTOM OF WALL AND STREAM BANK WILL BE PER BIO-HABITATS STREAM RESTORATION PLAN



PROFILE

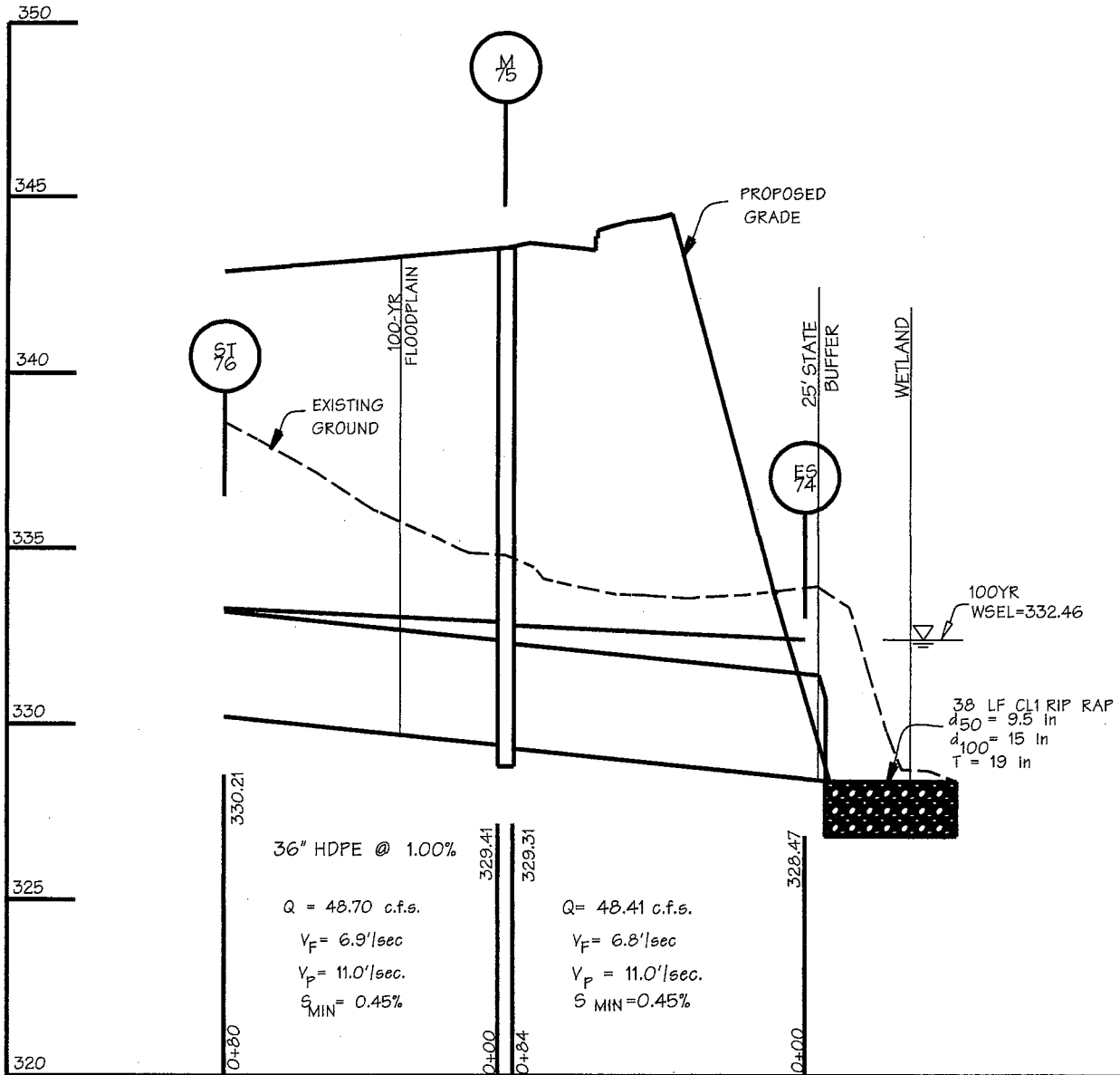
SCALE: HORIZ. 1"=20'
VERT. AS SHOWN

IMPACT EXHIBIT 'A.1'
ROAD CROSSING #1
42' BOTTOMLESS ARCH
COLUMBIA CRESCENT
BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

5 ELECTION DISTRICT 4
Job No. 04038.A2
Scale: 1"=20'
Date: 7/12/2014
Drawn By: HMM



DAFT MCCUNE WALKER INC
200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM



IMPACT EXHIBIT 'A.2'
STORM DRAIN PROFILE
(AREA 1)
COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

5 ELECTION DISTRICT *REN 10/30/14 HMM* COUNCILMANIC DISTRICT 4

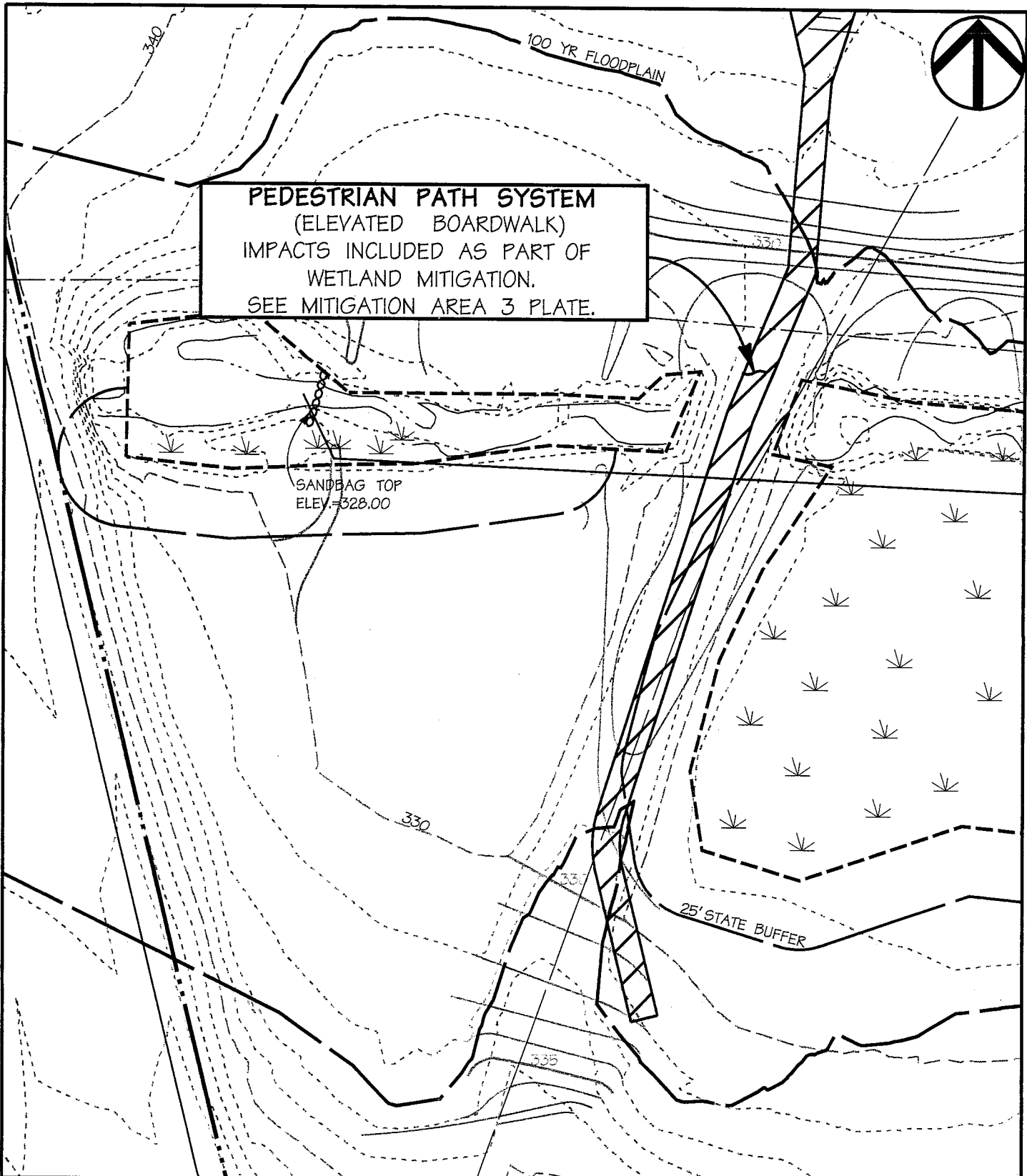
Job No. 04038.A2 Scale: 1" = 50' Date: 7/1/2014 Drawn By: HMM

DMW

DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

Tue Oct 28 16:55:08 2014



PEDESTRIAN PATH SYSTEM
 (ELEVATED BOARDWALK)
 IMPACTS INCLUDED AS PART OF
 WETLAND MITIGATION.
 SEE MITIGATION AREA 3 PLATE.

SANDBAG TOP
 ELEV.=328.00

IMPACT EXHIBIT 'B'
COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW

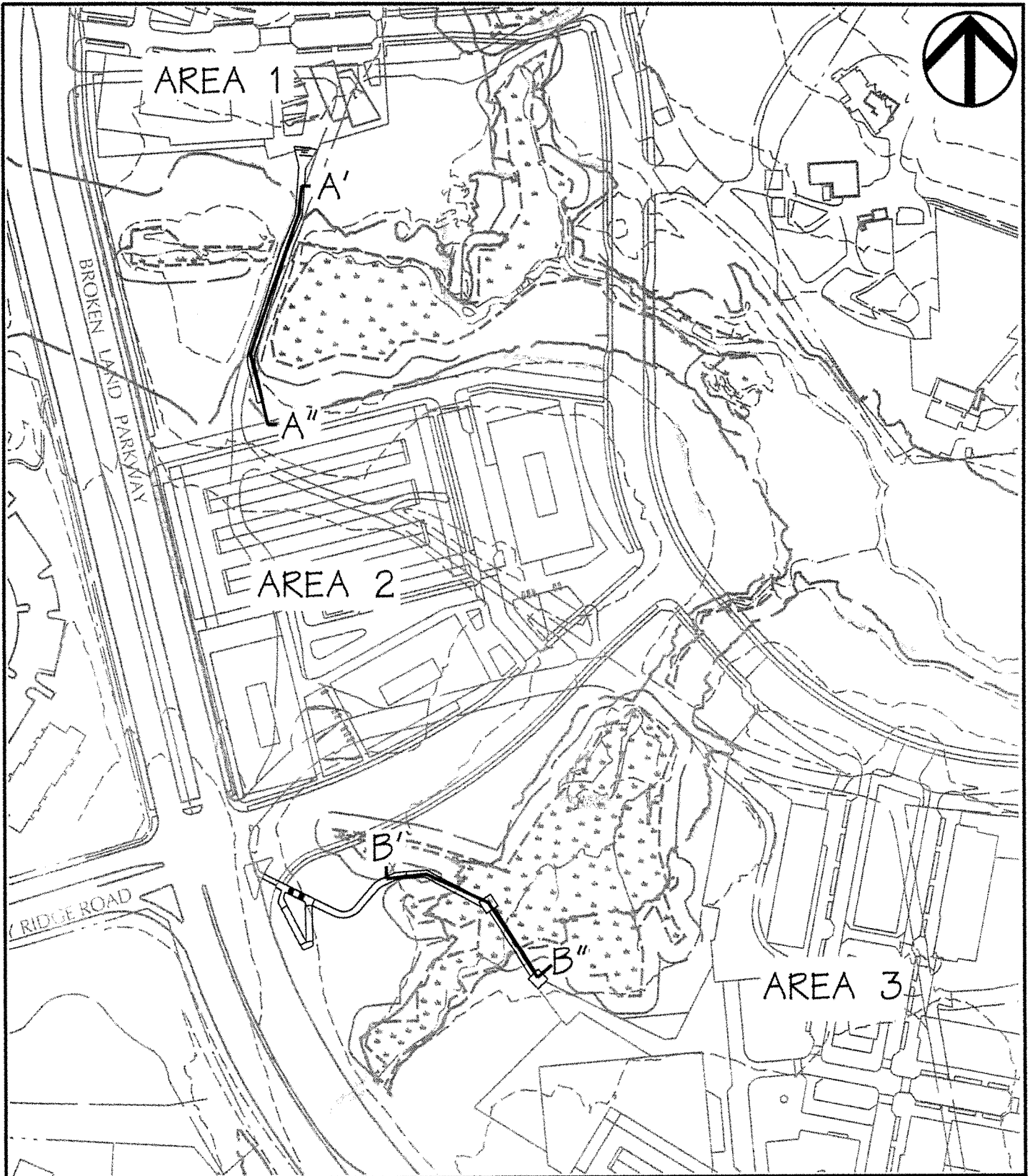
DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT *Rw 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1" = 50' Date: 7/14 Drawn By: HMM

Wed Oct 29 09:57:09 2014



IMPACT EXHIBIT 'B.1'
 BOARDWALK SECTION KEY SHEET
 COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW

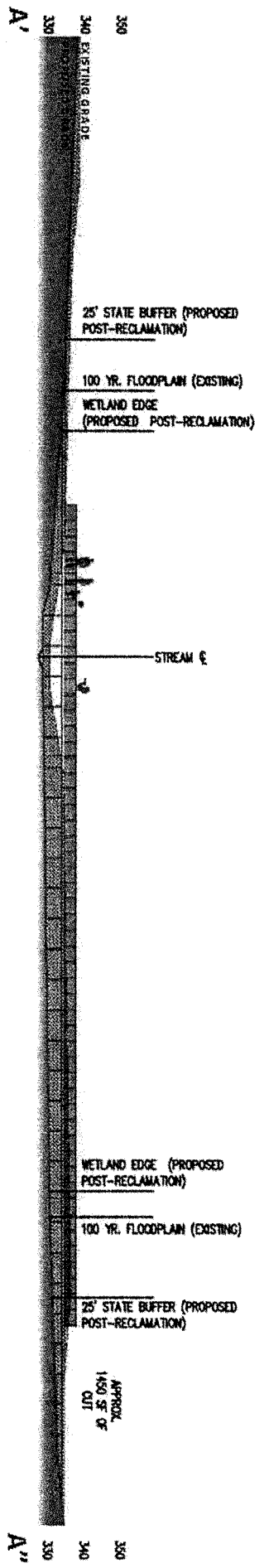
DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

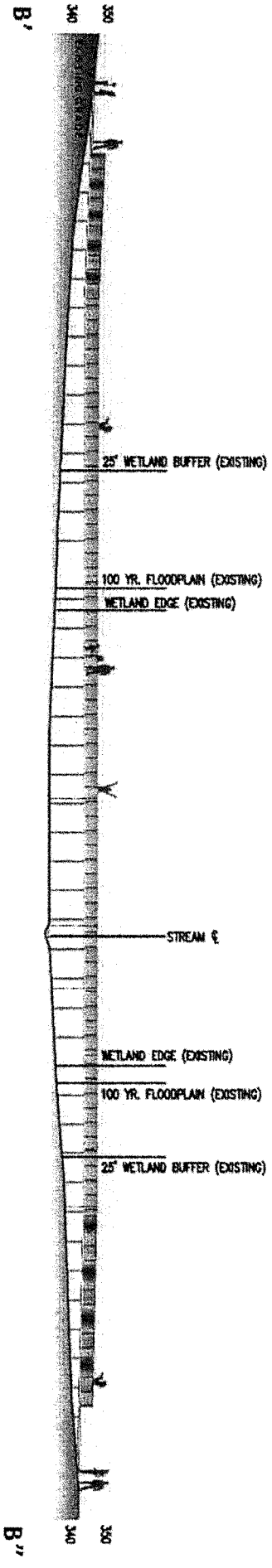
5 ELECTION DISTRICT *RW 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1" = 200' Date: 7/1/2014 Drawn By: HMM

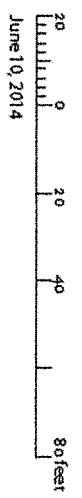
Wed Oct 29 07:55:04 2014



SECTION A
NOTE: RAMPED TRAIL PORTION AT VARIOUS SLOPES



SECTION B
NOTE: RAMPED TRAIL PORTION AT VARIOUS SLOPES



IMPACT EXHIBIT 'B.2'
BOARDWALK CROSS SECTIONS
COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

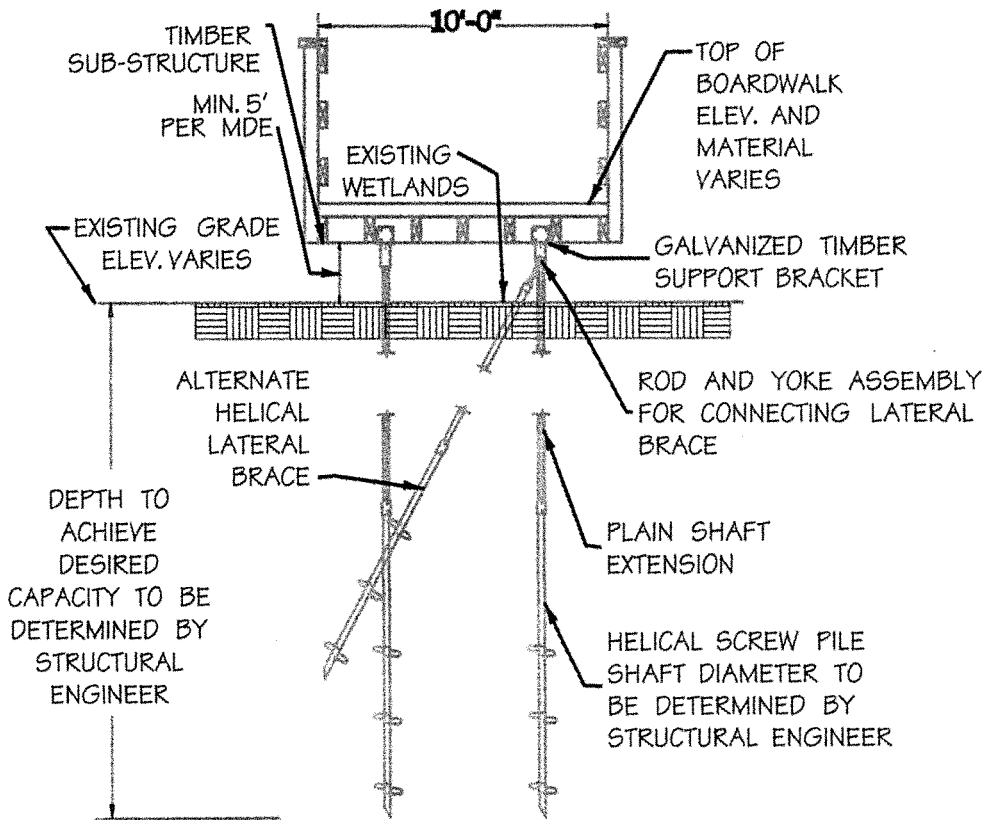
5 ELECTION DISTRICT 4
JUN 10 2014
MUNICIPAL DISTRICT 4

Job No. 04038.A2 Date: 7/2/2014 Drawn By: HMM

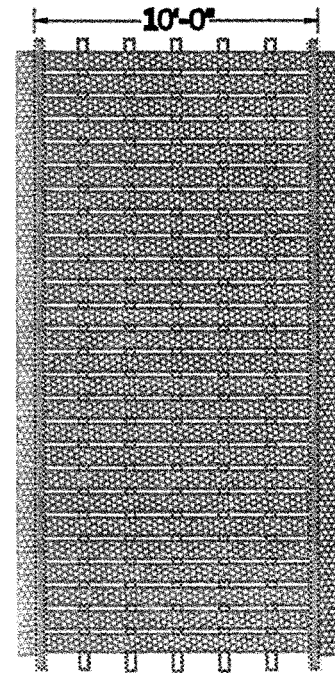
DMW

DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM



PROFILE



PLAN

NOT FOR CONSTRUCTION

IMPACT EXHIBIT 'B.3'
 TYPICAL BOARDWALK PLAN AND PROFILE
 COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW

DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

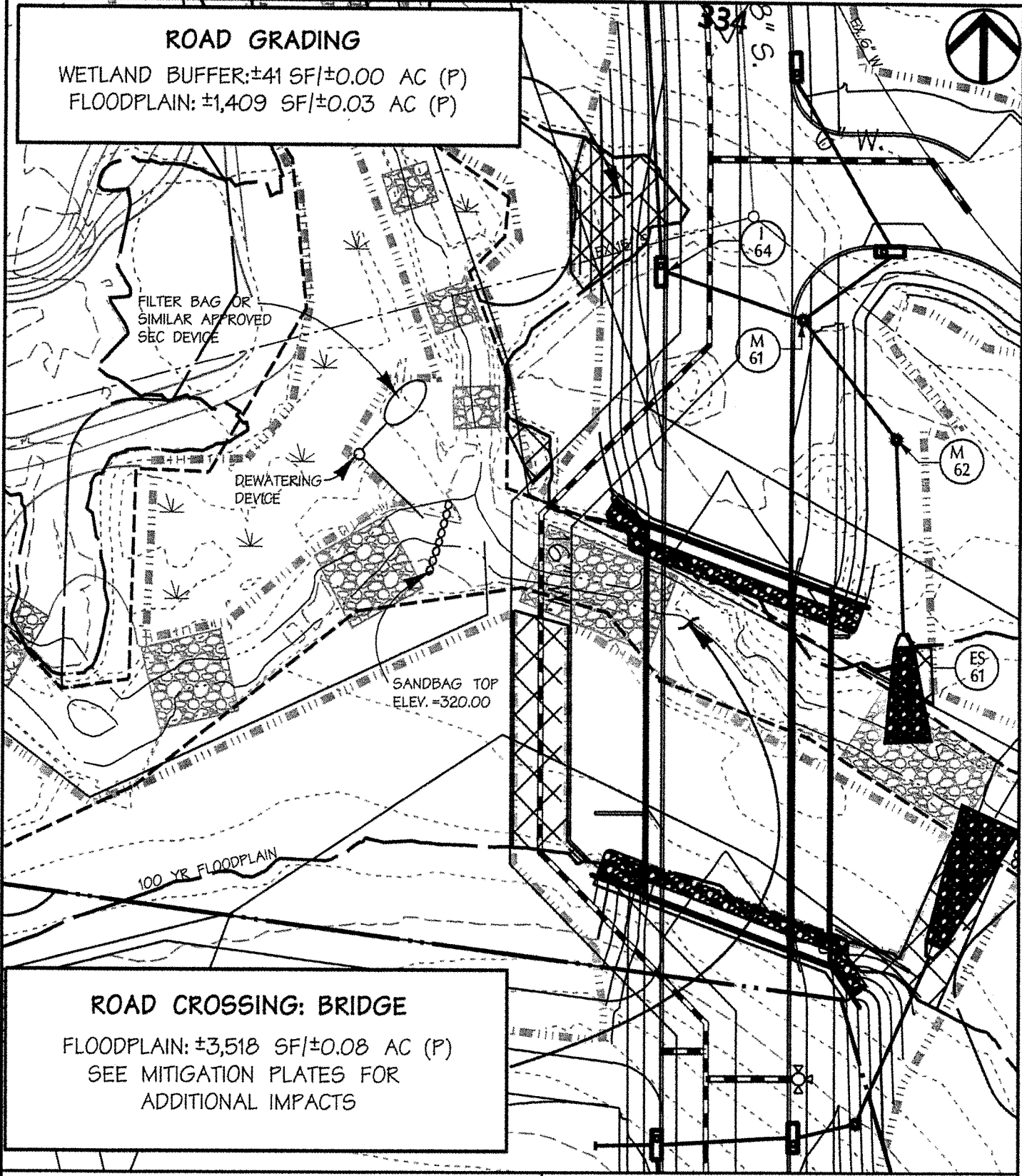
5 ELECTION DISTRICT *Ren 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 SCALE: NTS Date: 7/1/2014 Drawn By: DRC

Wed Oct 29 07:55:44 2014

ROAD GRADING

WETLAND BUFFER: ±41 SF/±0.00 AC (P)
 FLOODPLAIN: ±1,409 SF/±0.03 AC (P)



ROAD CROSSING: BRIDGE

FLOODPLAIN: ±3,518 SF/±0.08 AC (P)
 SEE MITIGATION PLATES FOR
 ADDITIONAL IMPACTS

IMPACT EXHIBIT 'C'
 STREAM CROSSING #2
COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

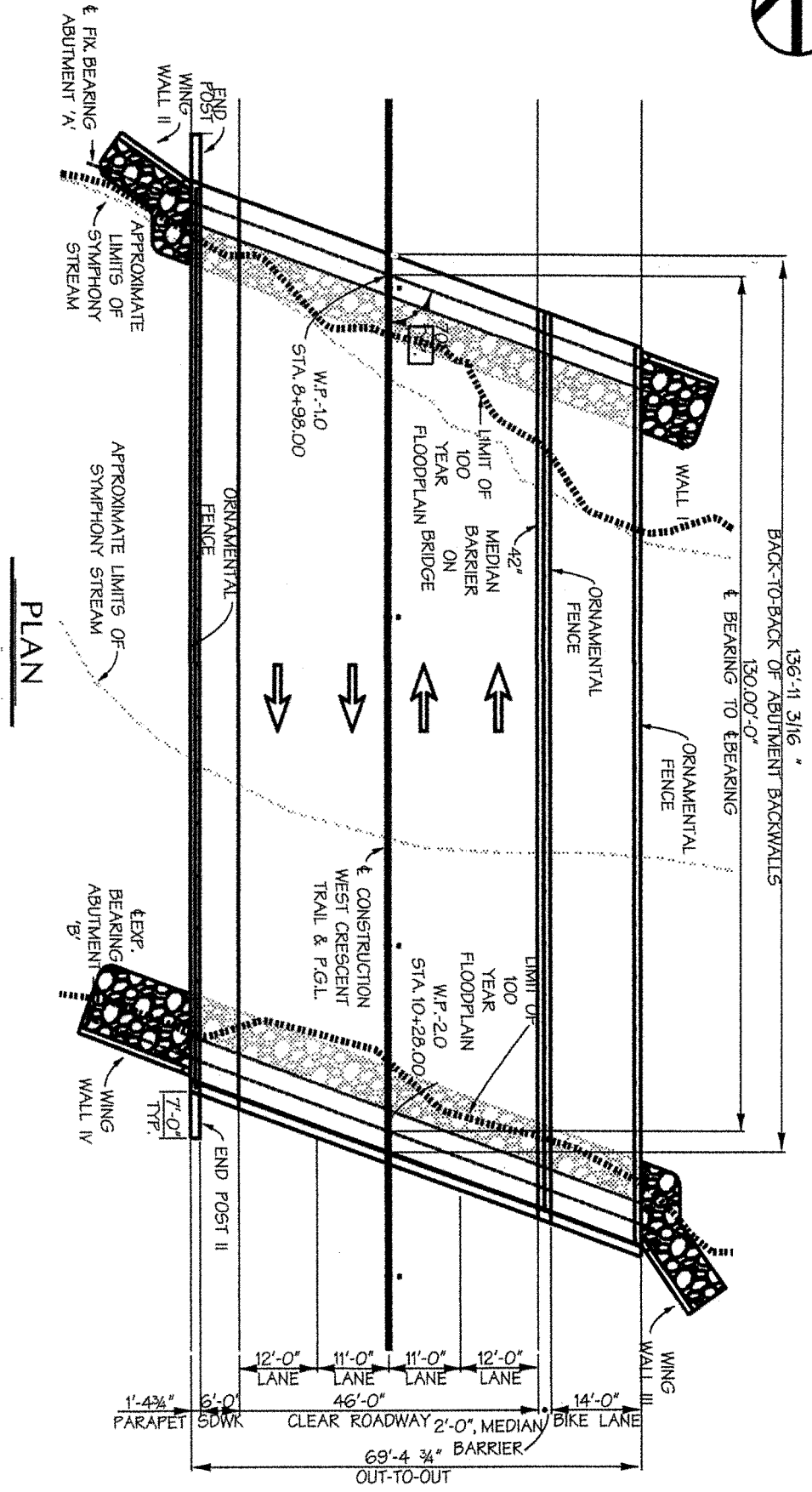


DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT *Rev 10/30/14 HMM* COUNCILMANIC DISTRICT 4
 Job No. 04038.A2 Scale: 1" = 50' Date: 7/1/2014 Drawn By: HMM

Wed Oct 29 10:00:17 2014



PLAN

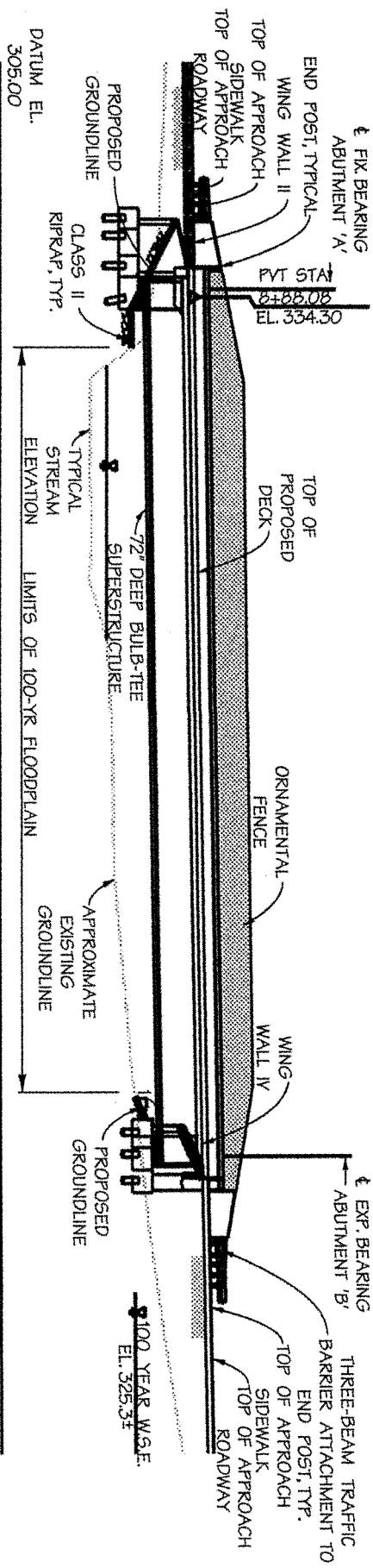
IMPACT EXHIBIT 'C.1'
 ROAD CROSSING #2: BRIDGE PLAN
 COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

5 ELECTION DISTRICT ROAD DISTRICT 4
 Job No. 04038.A2 Scale: 1" = 25'
 Date: 7/12/2014 Drawn By: HMM



DAFT MCCUNE WALKER INC
 200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

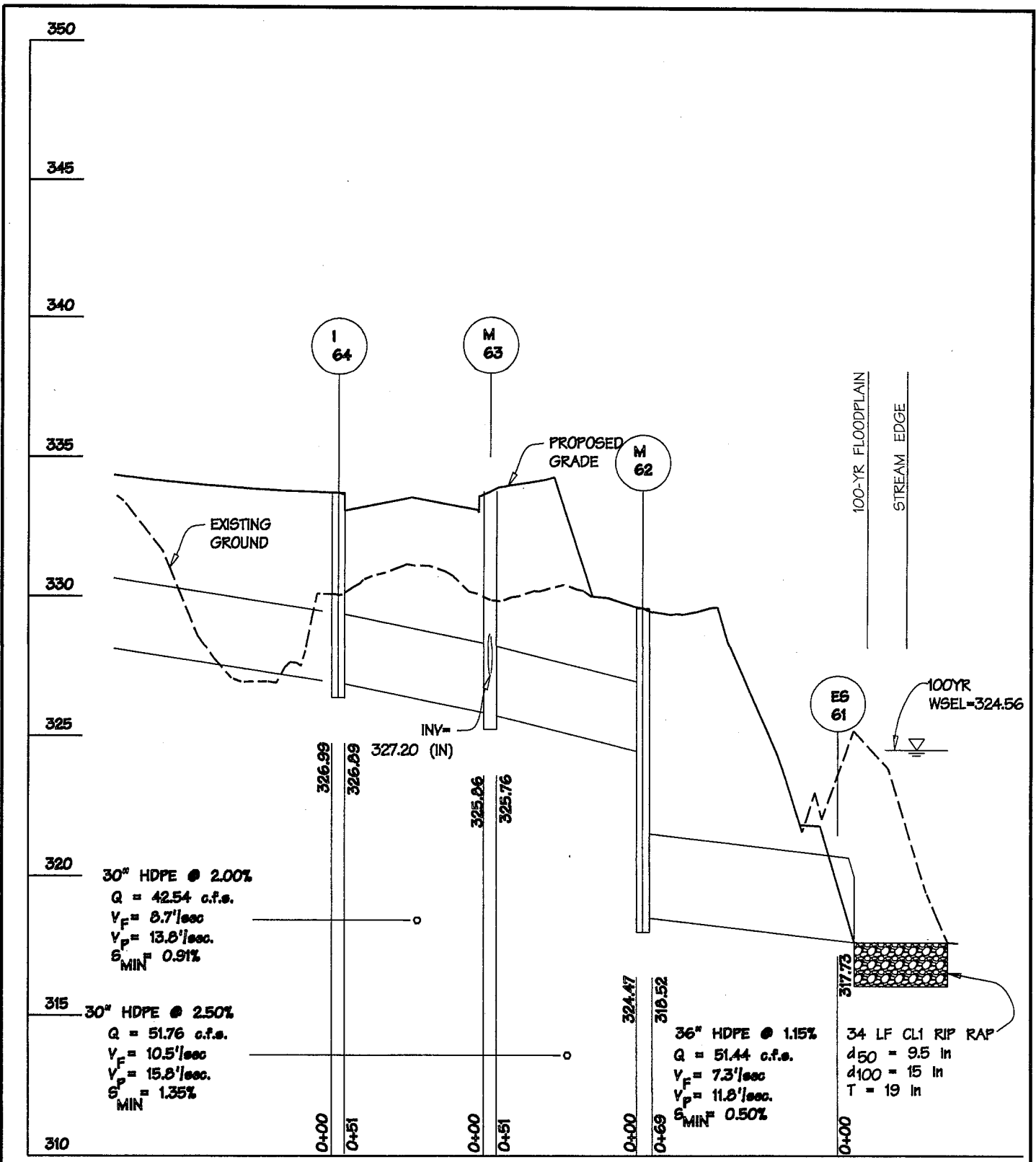


PROFILE

SCALE: 1" = 25'

IMPACT EXHIBIT 'C.2'
 ROAD CROSSING #2
 BRIDGE PROFILE
 COLUMBIA CRESCENT
 BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND
 5 ELECTION DISTRICT 4
 JOB NO. 04038.A2
 DATE: 6/28/14
 WMMW COUNCILMANIC DISTRICT 4
 DRAWN BY: HMM

DMW
 DAFT MCCUNE WALKER INC
 200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM



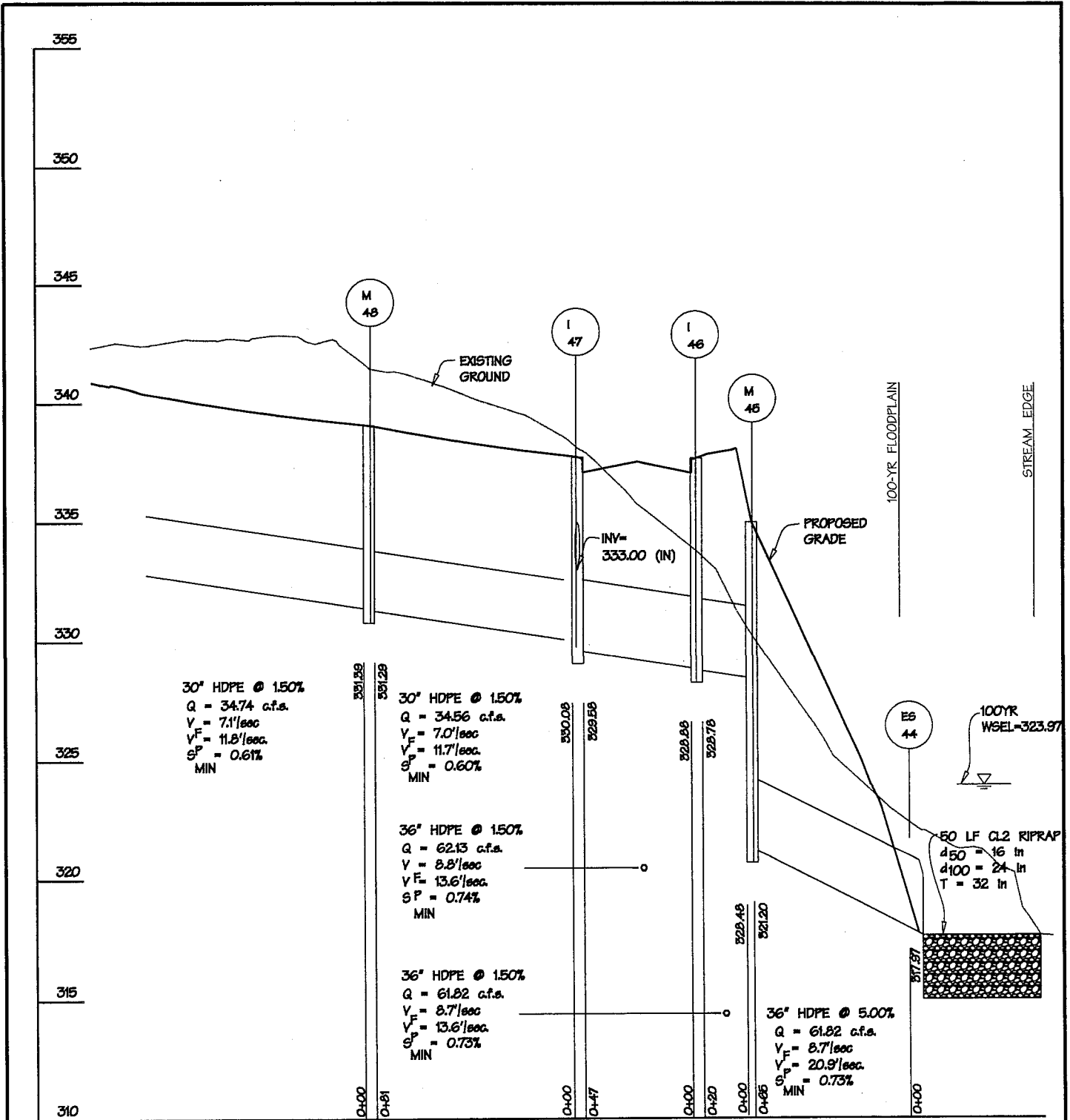
IMPACT EXHIBIT 'C.3'
STORM DRAIN PROFILE
 (CROSSING #2 NORTH)
COLUMBIA CRESCENT
 BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND



DAFT MCCUNE WALKER INC
 200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT *Rev 10/30/14 HMM* COUNCILMANIC DISTRICT 4
 Job No. 04038.A2 Scale: 1"=50' Date: 7/01/2014 Drawn By: HMM

F:\1 Oct 31 11:04:20 2014



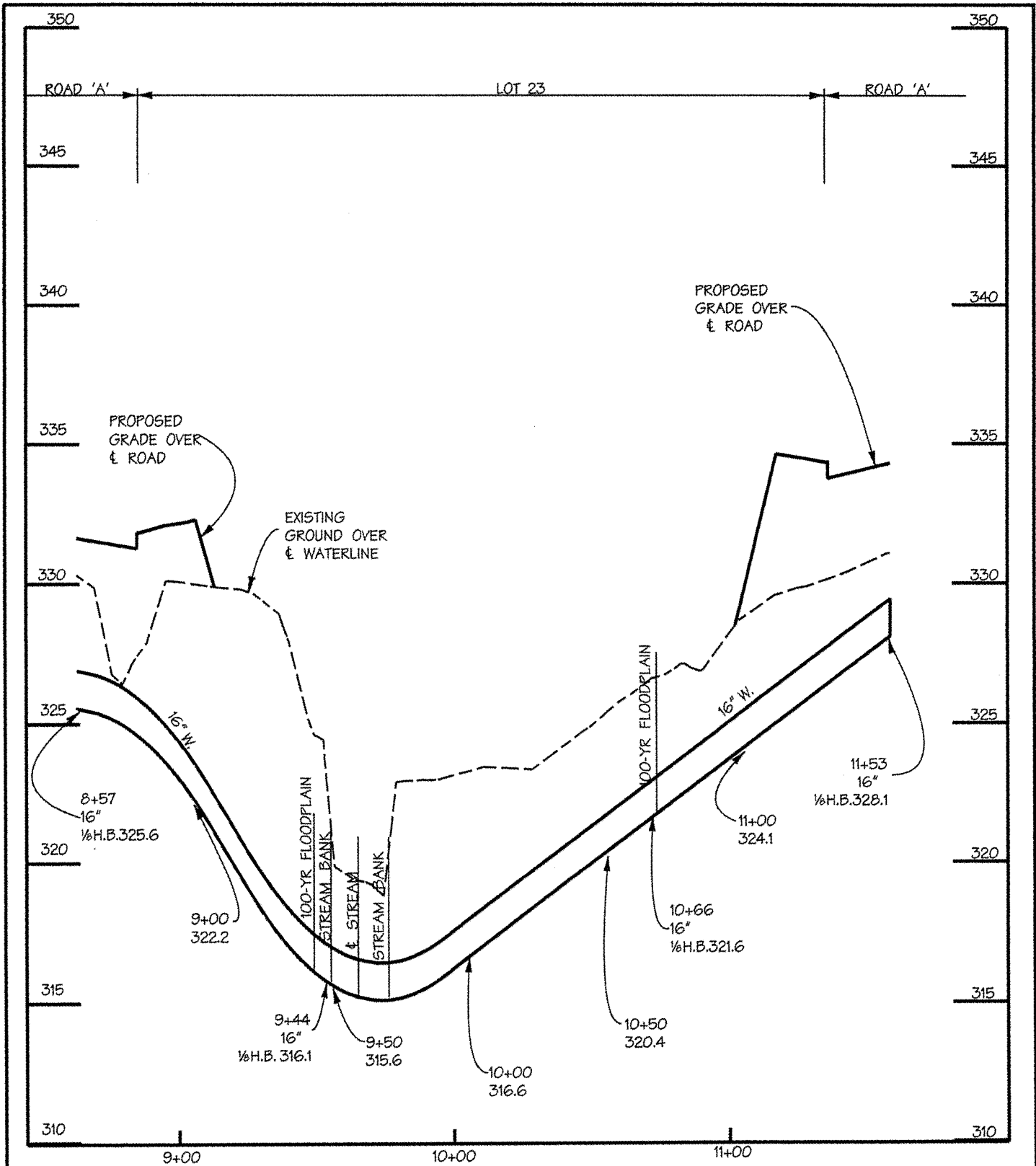
IMPACT EXHIBIT 'C.4'
 STORM DRAIN PROFILE
 (CROSSING #2 SOUTH)
COLUMBIA CRESCENT
 BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW
 DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT *Rev 10/30/14 HMM* COUNCILMANIC DISTRICT 4
 Job No. 04038.A2 Scale: 1" = 60' Date: 7/01/2014 Drawn By: HMM

F:\1 Oct 31 11:19:48 2014



IMPACT EXHIBIT 'C.5'
WATER LINE PROFILE
COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND



DAFT McCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT *REW 10/30/14 HMM* COUNCILMANIC DISTRICT 4

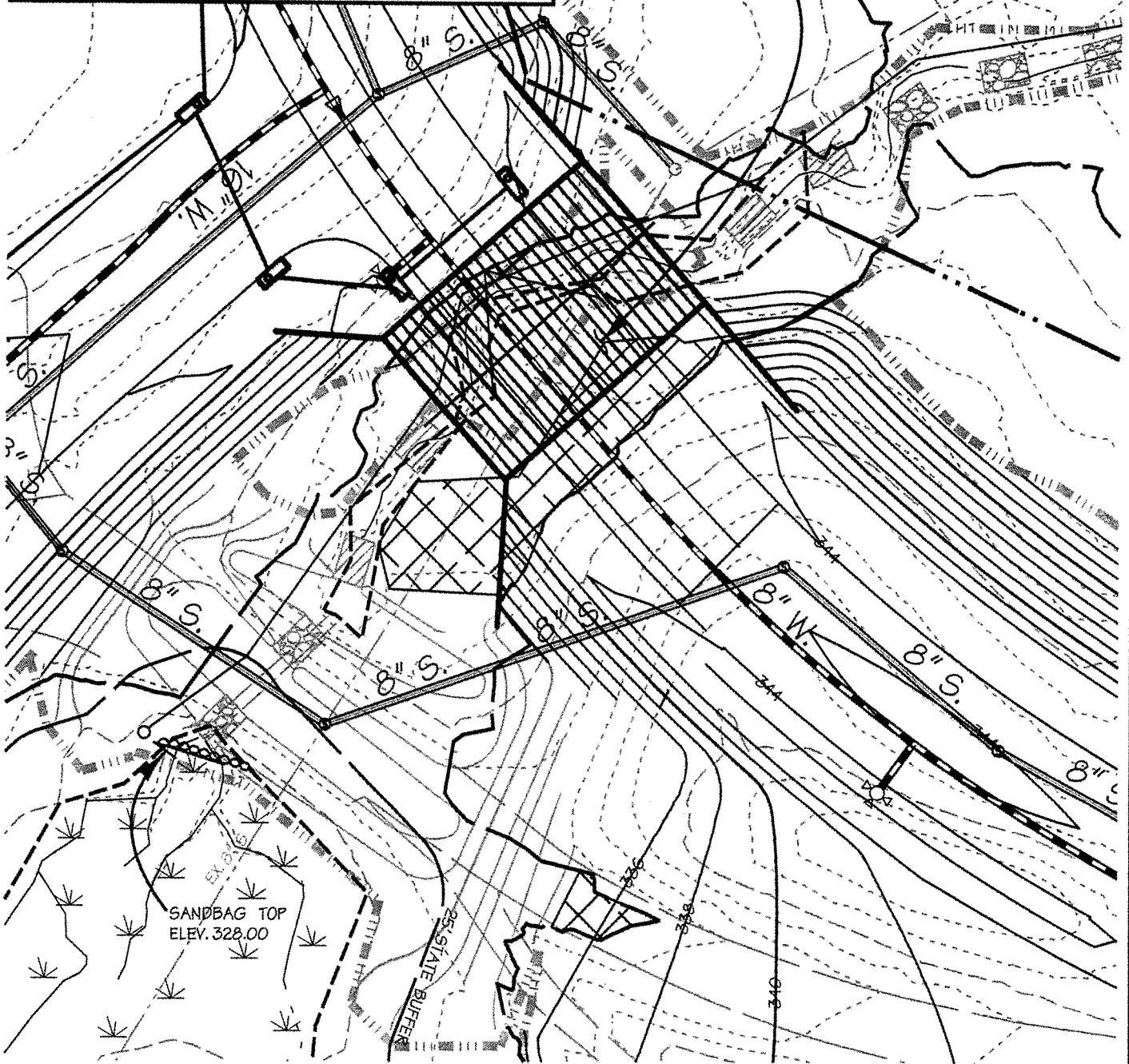
Job No. 04038.A2 Scale: 1"=50' Date: 7/1/2014 Drawn By: HMM

Wed Oct 29 07:58:45 2014

ROAD CROSSING: BOTTOMLESS ARCH

AND SANITARY SEWER

FLOODPLAIN: ±4,979 SF/±0.11 AC (P)
TEMPORARY FLOODPLAIN IMPACTS FOR
PROPOSED SANITARY SEWER INCLUDED
ON MITIGATION AREA 4 PLATE



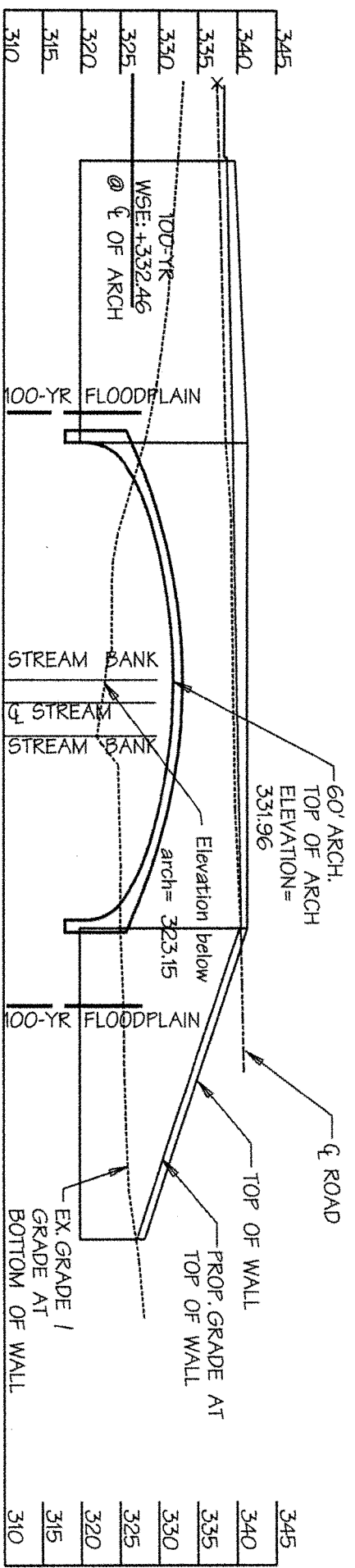
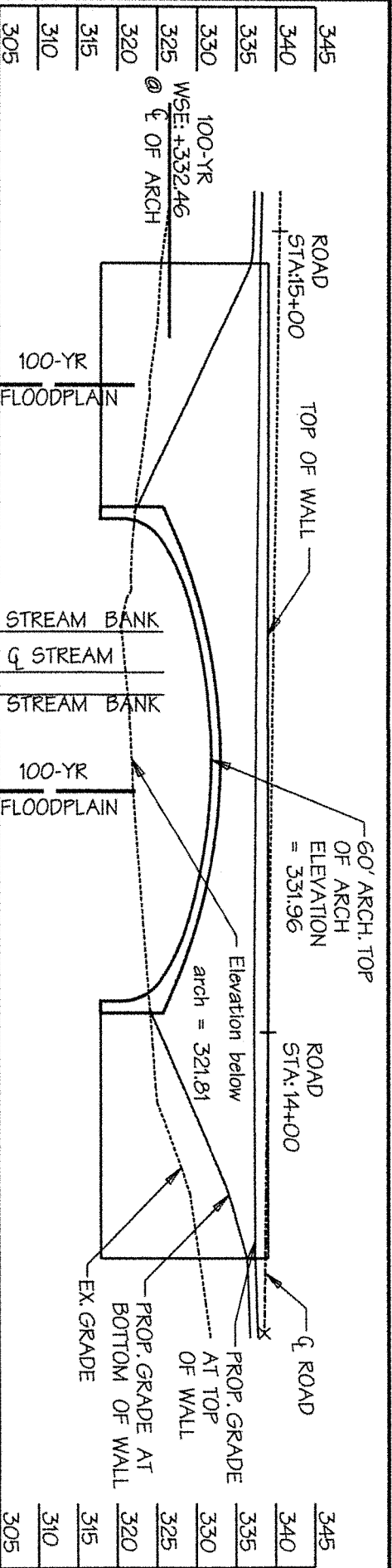
IMPACT EXHIBIT 'D'
STREAM CROSSING #3
COLUMBIA CRESCENT
BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

DMW
DAFT McCUNE WALKER INC

5 ELECTION DISTRICT *RW 1030114 HMM* COUNCILMANIC DISTRICT 4
Job No. 04038.A2 Scale: 1"=50' Date: 07/1/14 Drawn By: GMO

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

Wed Oct 29 10:00:17 2014



PROFILE

SCALE: HORIZ. 1"=20'
VERT. AS SHOWN

IMPACT EXHIBIT 'D.1'
ROAD CROSSING #3
WITH 60' BOTTOMLESS ARCH
COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

5 ELECTION DISTRICT (RW 10/30/12) MWM COUNCILMANIC DISTRICT 4
Job No. 04038.A2 Scale: 1" = 20' Date: 7/2/2014 Drawn By: HMM



DAFT MCCUNE WALKER INC
200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

GRADING FOR ROAD

WETLAND(EM): ±1,979 SF/±0.05 AC (P)
 WETLAND BUFFER: ±6,077 SF/±0.14 AC (P)

Hatched area represents boardwalk

PEDESTRIAN PATH SYSTEM
 (ELEVATED BOARDWALK)

WETLAND (FO): ±1,471 SF/±0.03 AC (T)
 WETLAND BUFFER: ±612 SF/±0.01 AC (T)
 FLOODPLAIN: ±1,558 SF/±0.04 AC (T)
 (SEE EXHIBITS B.2 & B.3 FOR DETAILS)

IMPACT EXHIBIT 'E'
 HICKORY RIDGE ROAD EXTENSION

COLUMBIA CRESCENT
 BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW

DAFT McCUNE WALKER INC
 200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

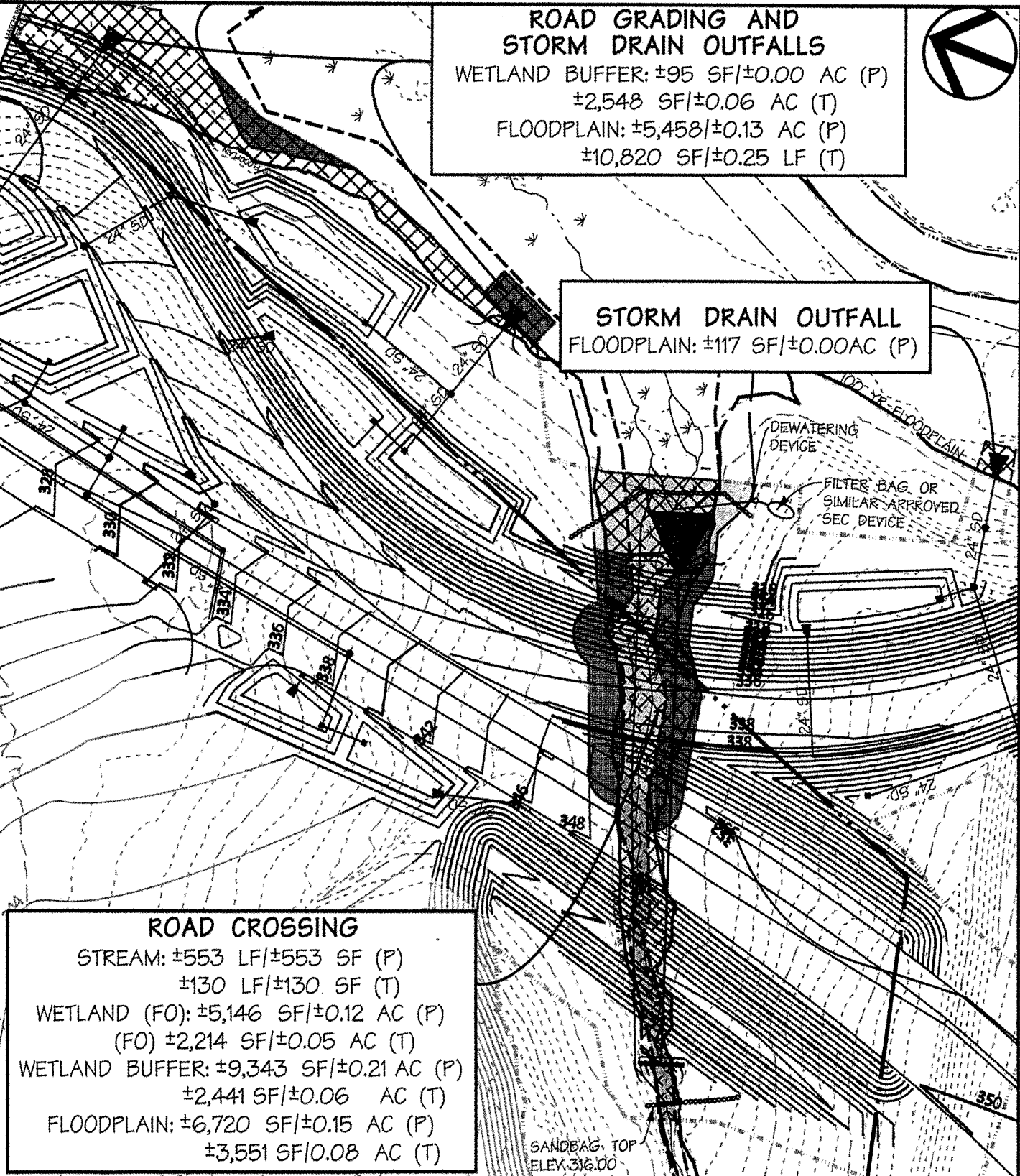
5 ELECTION DISTRICT *REW 10/30/14 HMM* COUNCILMANIC DISTRICT 4
 Job No. 04038.A2 Scale: 1" = 50' Date: 07/14 Drawn By: GMO

**ROAD GRADING AND
STORM DRAIN OUTFALLS**
 WETLAND BUFFER: ±95 SF/±0.00 AC (P)
 ±2,548 SF/±0.06 AC (T)
 FLOODPLAIN: ±5,458/±0.13 AC (P)
 ±10,820 SF/±0.25 LF (T)



STORM DRAIN OUTFALL
 FLOODPLAIN: ±117 SF/±0.00AC (P)

DEWATERING
DEVICE
 FILTER BAG, OR
SIMILAR APPROVED
SEC DEVICE



ROAD CROSSING
 STREAM: ±553 LF/±553 SF (P)
 ±130 LF/±130 SF (T)
 WETLAND (FO): ±5,146 SF/±0.12 AC (P)
 (FO) ±2,214 SF/±0.05 AC (T)
 WETLAND BUFFER: ±9,343 SF/±0.21 AC (P)
 ±2,441 SF/±0.06 AC (T)
 FLOODPLAIN: ±6,720 SF/±0.15 AC (P)
 ±3,551 SF/0.08 AC (T)

SANDBAG TOP
ELEV. 316.00

IMPACT EXHIBIT 'F'
 STREAM CROSSING #4
COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND



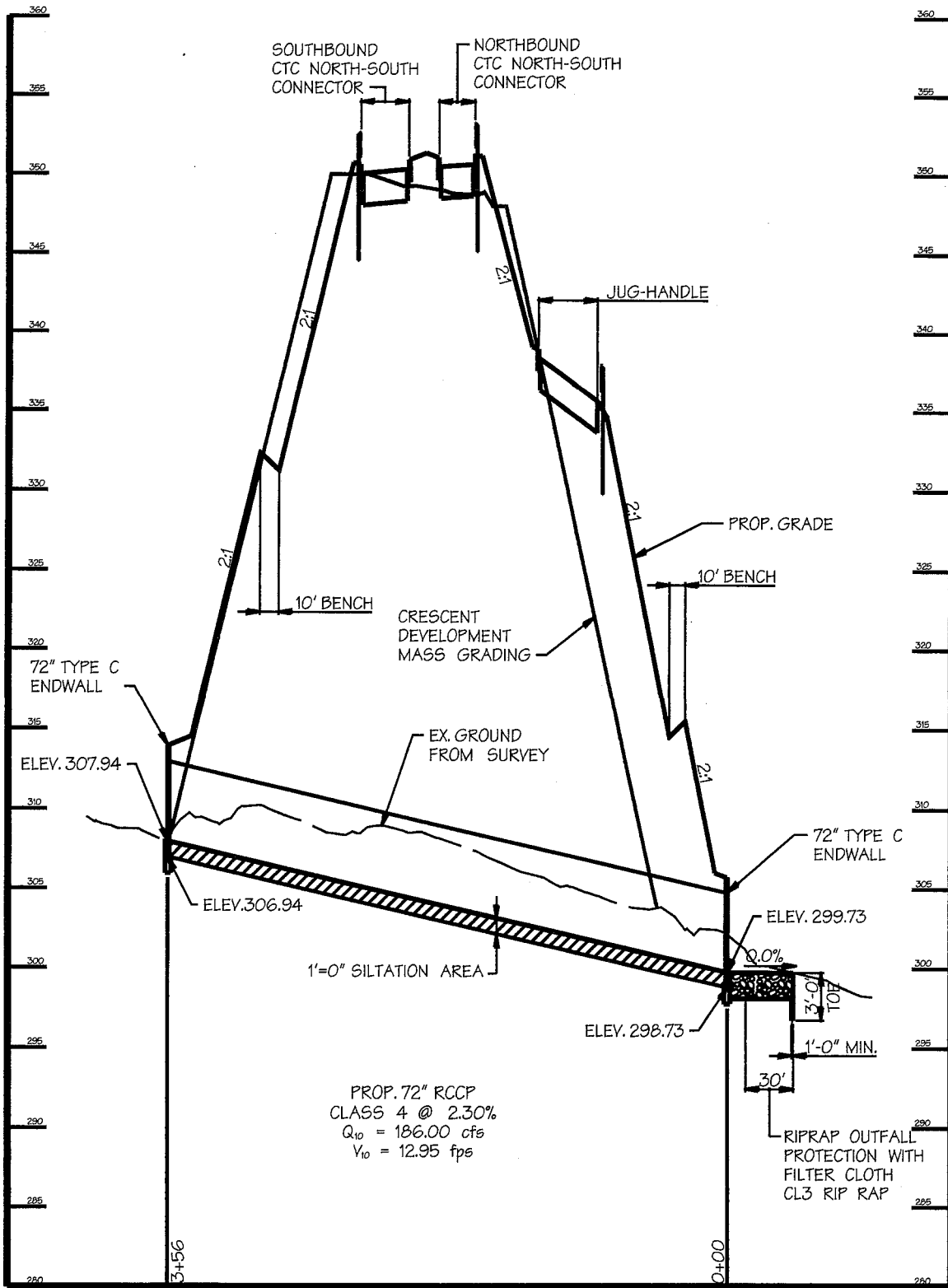
DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT *RW 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1"=100' Date: 7/1/2014 Drawn By: HMM

Wed Oct 29 10:02:13 2014



IMPACT EXHIBIT 'F.1'
 CROSSING #4: 72" CULVERT
 COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW

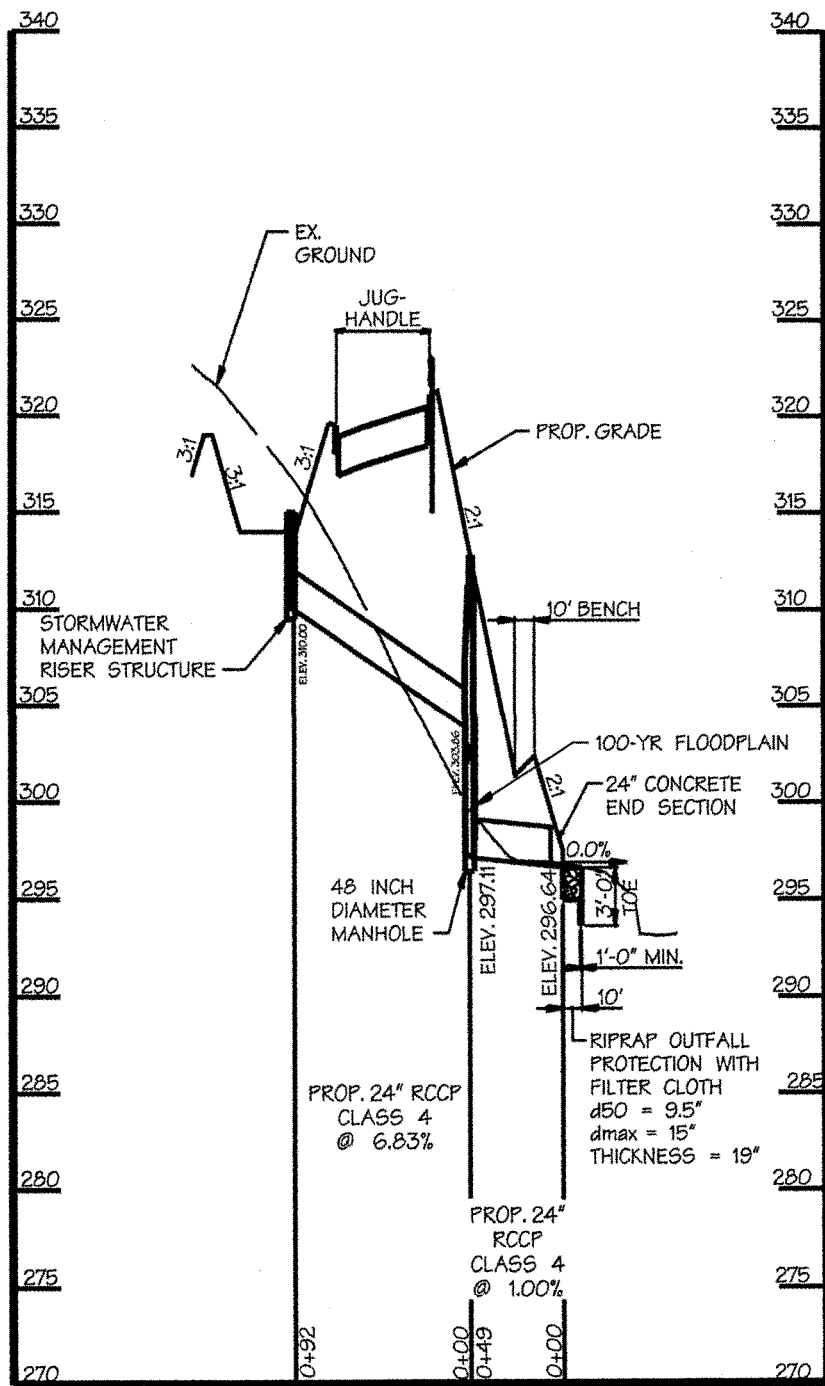
DAFT McCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT *26N 10 130 114 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1"=100' Date: 7/01/2014 Drawn By: HMM

F:\1 Oct 31 10:49:11 2014



IMPACT EXHIBIT 'F.2'
STORM DRAIN PROFILE
 (JUG-HANDLE NORTH)
COLUMBIA CRESCENT
 BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW

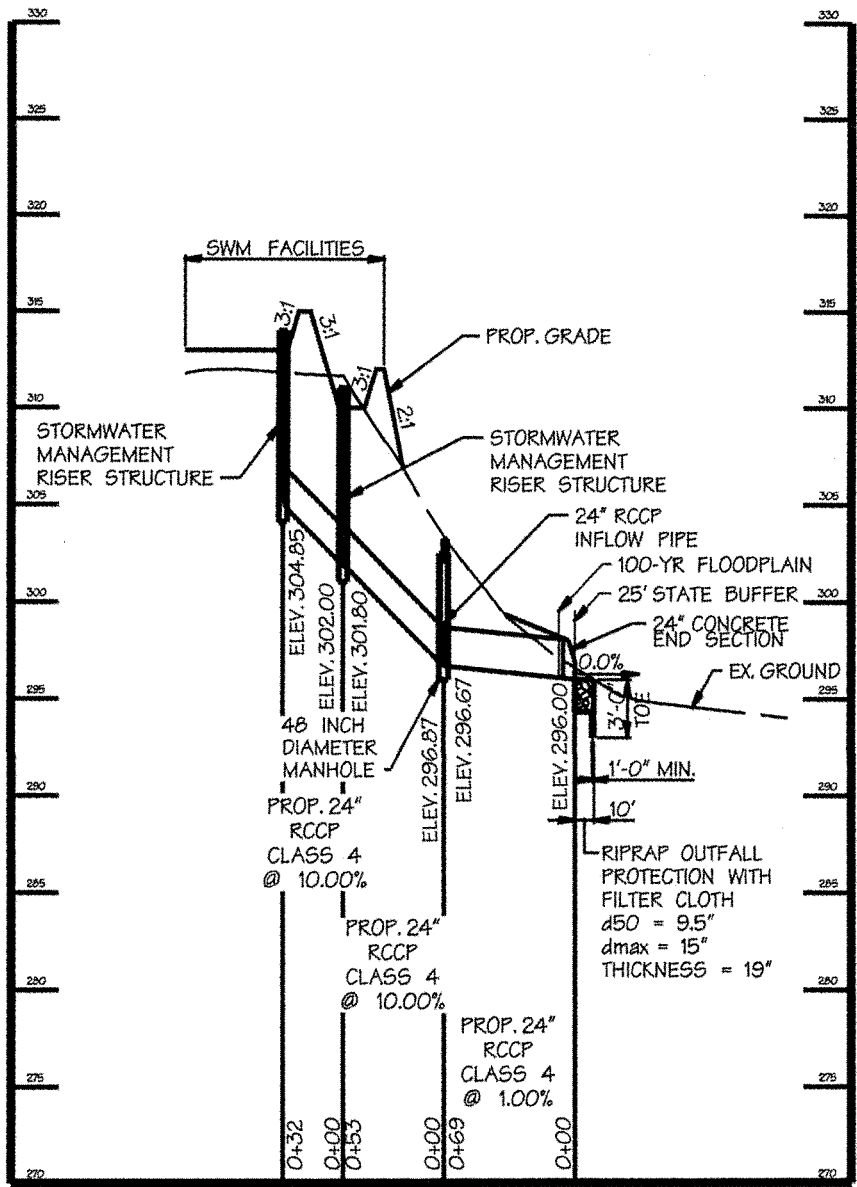
DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT *Rev 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 | Scale: 1"=100' | Date: 7/01/2014 | Drawn By: HMM

Wed Oct 29 08:59:51 2014



IMPACT EXHIBIT 'F.3'
 STORM DRAIN PROFILE
 (JUG-HANDLE MIDDLE)
 COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

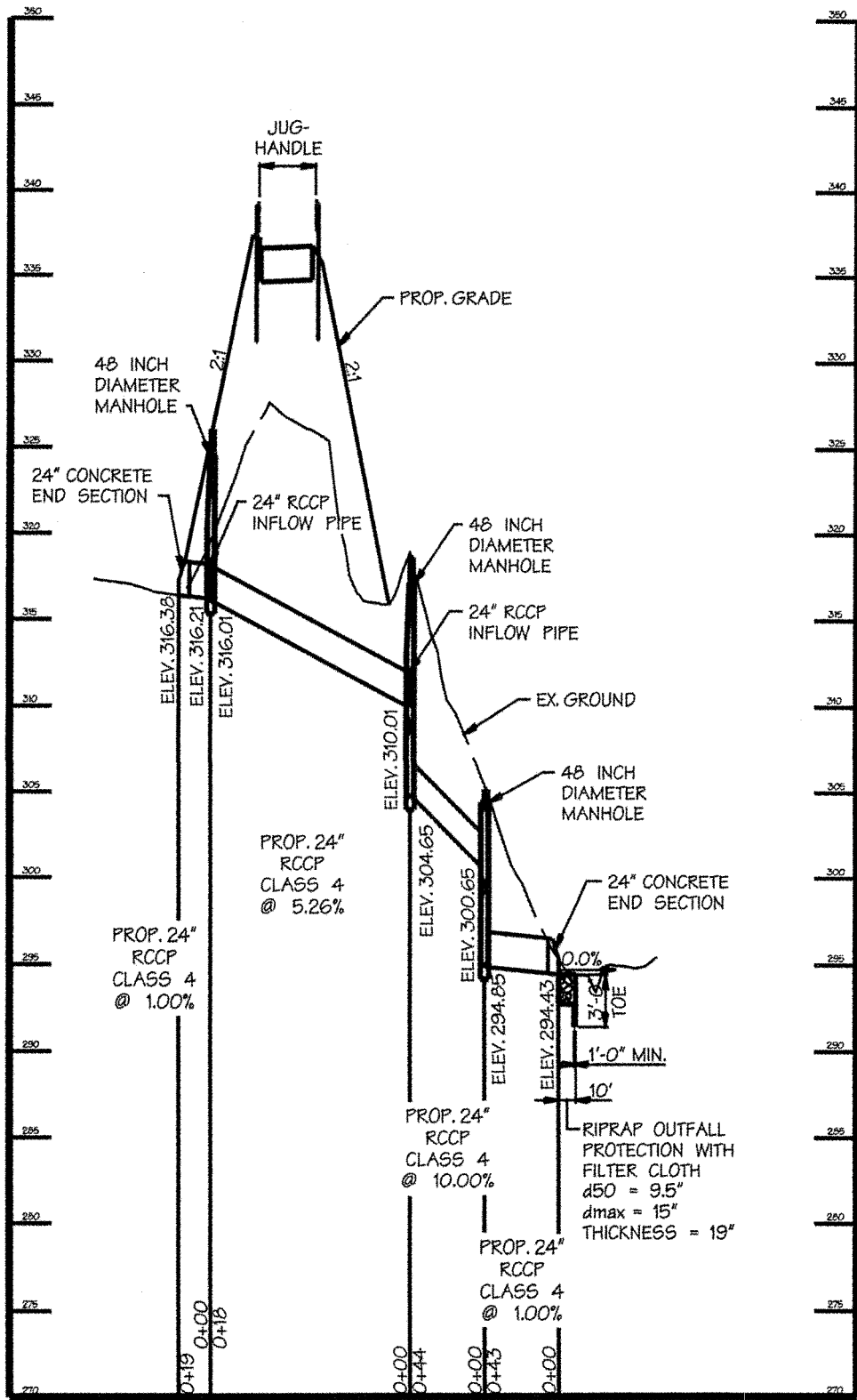
5 ELECTION DISTRICT *Rev 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1"=100' Date: 7/1/2014 Drawn By: HMM

DMW

DAFT McCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM



IMPACT EXHIBIT 'F.4'
 STORM DRAIN OUTFALL
 (JUG-HANDLE SOUTH)
 COLUMBIA CRESCENT
 BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW

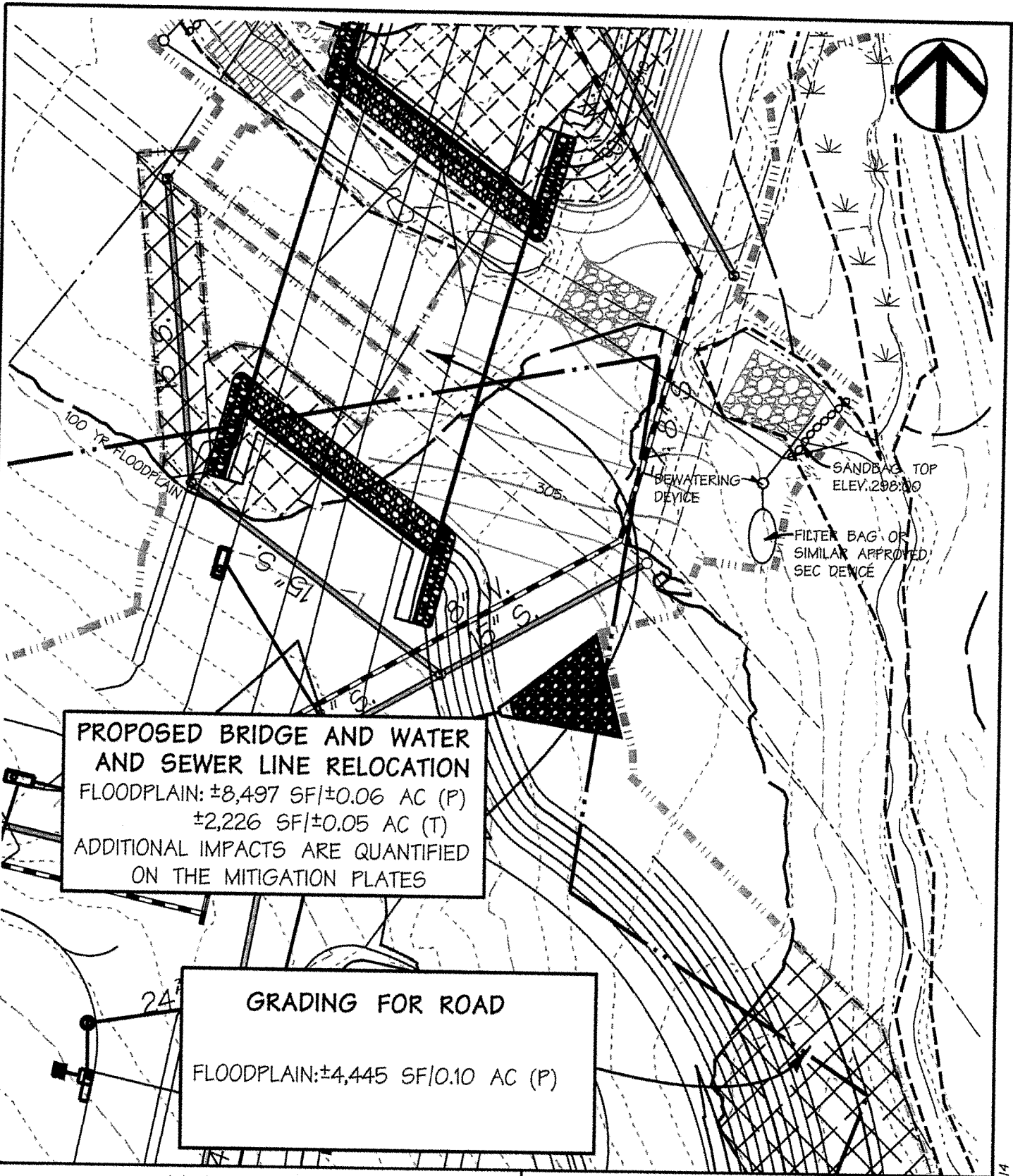
DAFT McCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT (9, 10, 30) 14 HMM COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1" = 100' Date: 7/01/2014 Drawn By: HMM

Wed Oct 29 09:02:00 2014



PROPOSED BRIDGE AND WATER AND SEWER LINE RELOCATION
 FLOODPLAIN: ±8,497 SF/±0.06 AC (P)
 ±2,226 SF/±0.05 AC (T)
 ADDITIONAL IMPACTS ARE QUANTIFIED ON THE MITIGATION PLATES

GRADING FOR ROAD
 FLOODPLAIN: ±4,445 SF/0.10 AC (P)

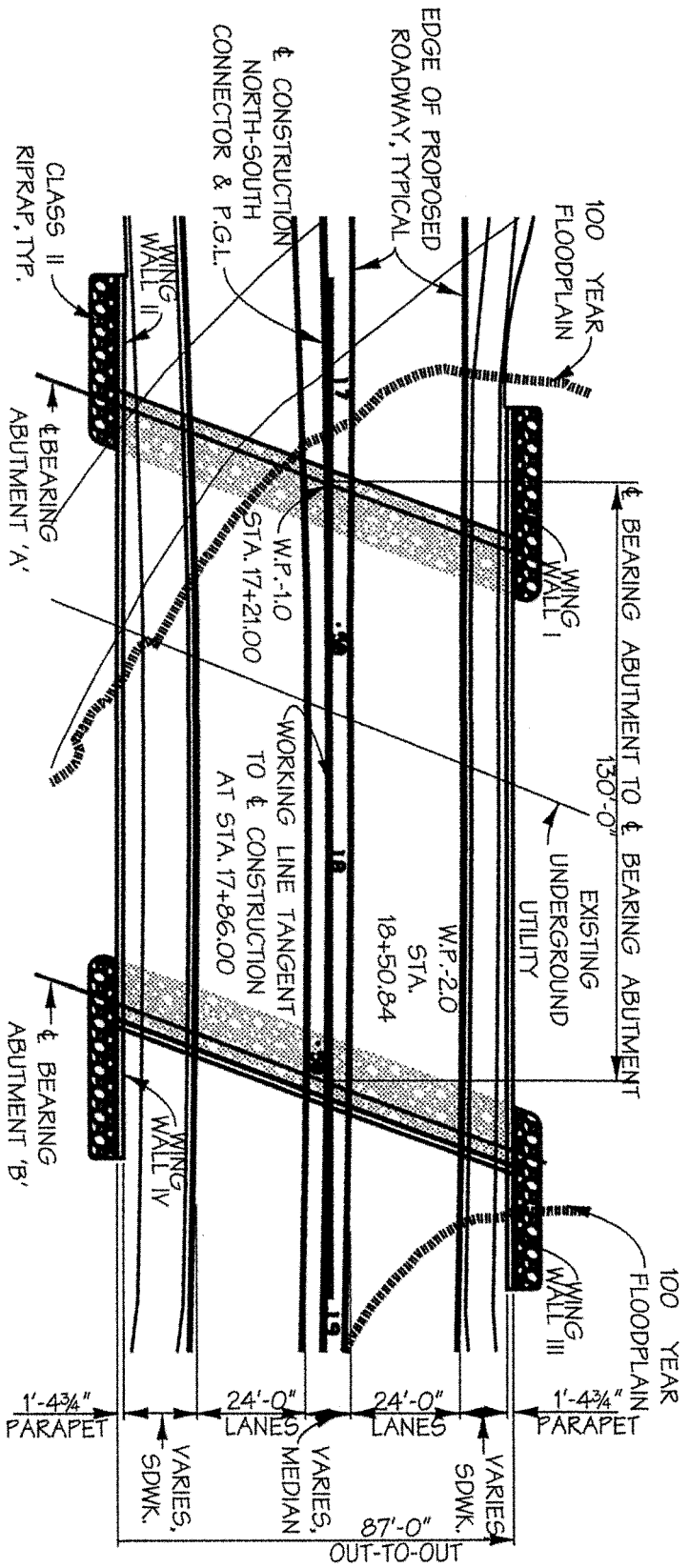
IMPACT EXHIBIT 'G'
 STREAM CROSSING #5
COLUMBIA CRESCENT
 BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

5 ELECTION DISTRICT *REW 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1" = 50' Date: 07/01/14 Drawn By: GMO

DMW
 DAFT MCCUNE WALKER INC
 200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

Wed Oct 29 10:02:50 2014



PLAN

SCALE: 1" = 40'

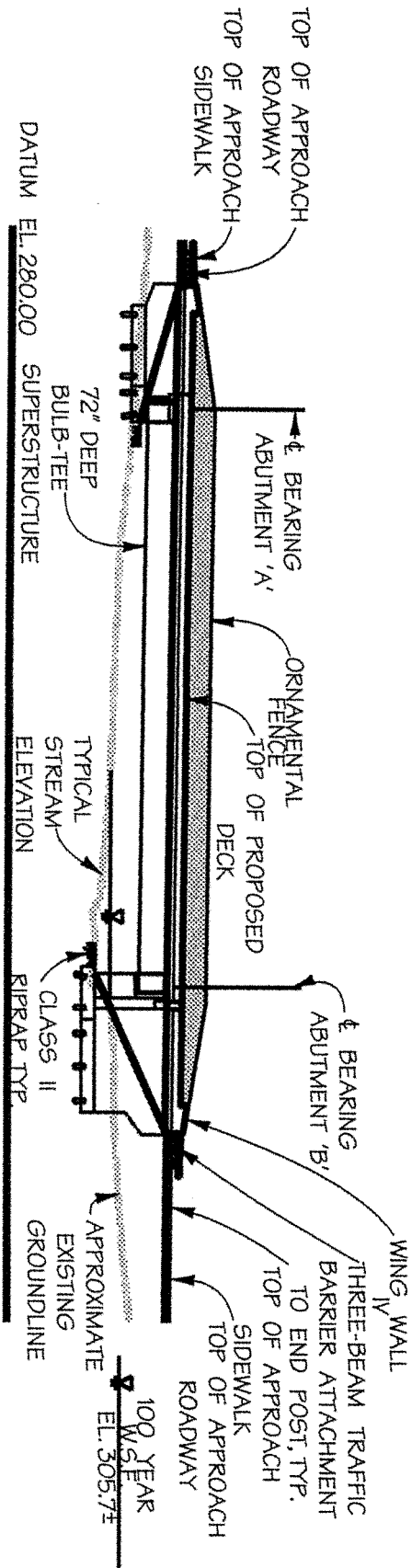
IMPACT EXHIBIT 'G.1'
 STREAM CROSSING #5
 BRIDGE PLAN VIEW
 COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

5 ELECTION DISTRICT 4
 JOB No. 04038.A2 Scale: 1" = 40' Date: 7/12/2014
 Drawn By: HMM



DAFT MCCUNE WALKER INC
 200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM



PROFILE

SCALE: 1" = 40'

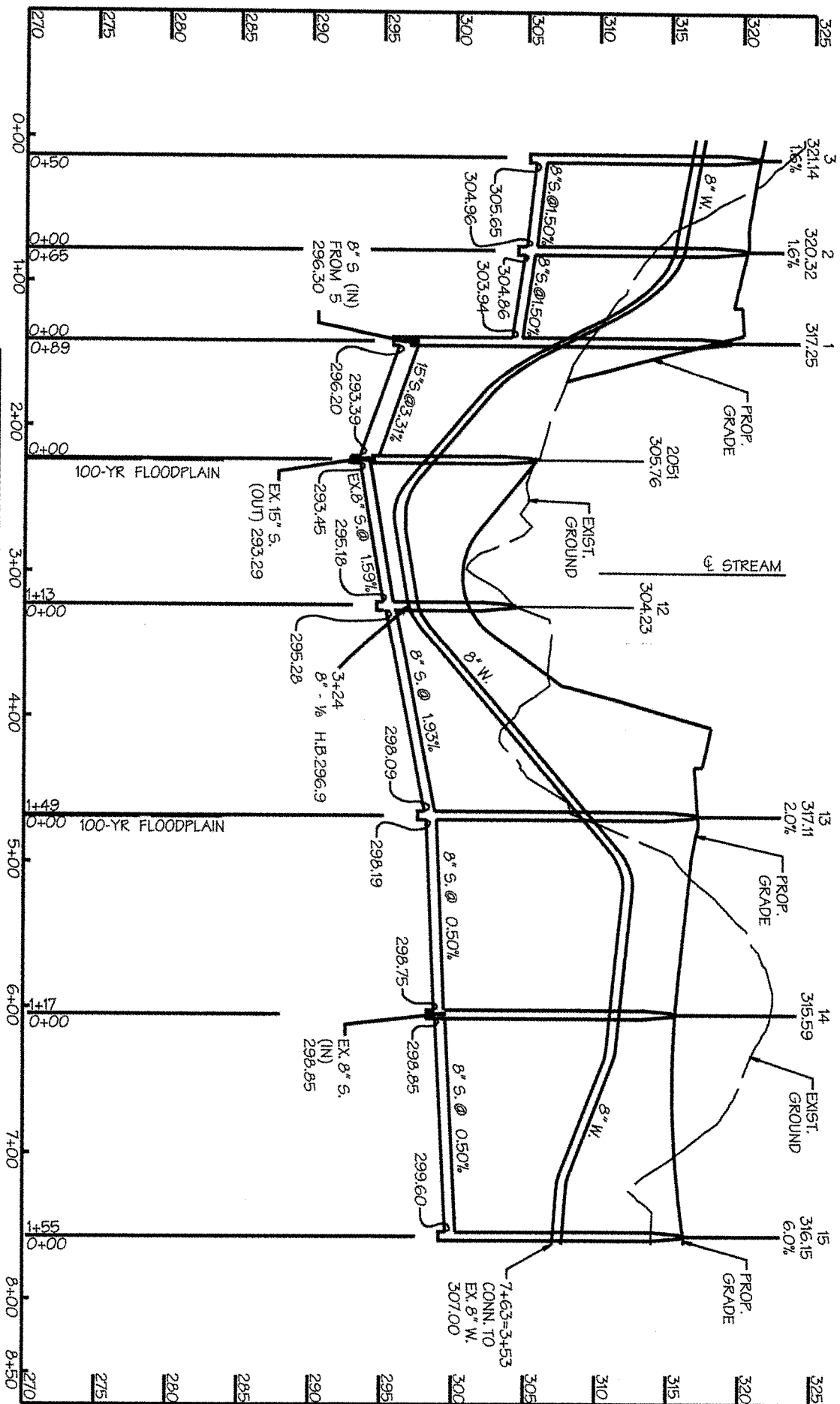
IMPACT EXHIBIT 'G.2'
 STREAM CROSSING #5
 BRIDGE PROFILE
 COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

5 ELECTION DISTRICT 4
 Scale: 1" = 40' Date: 7/12/2014 Drawn By: HMM

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PROFILE

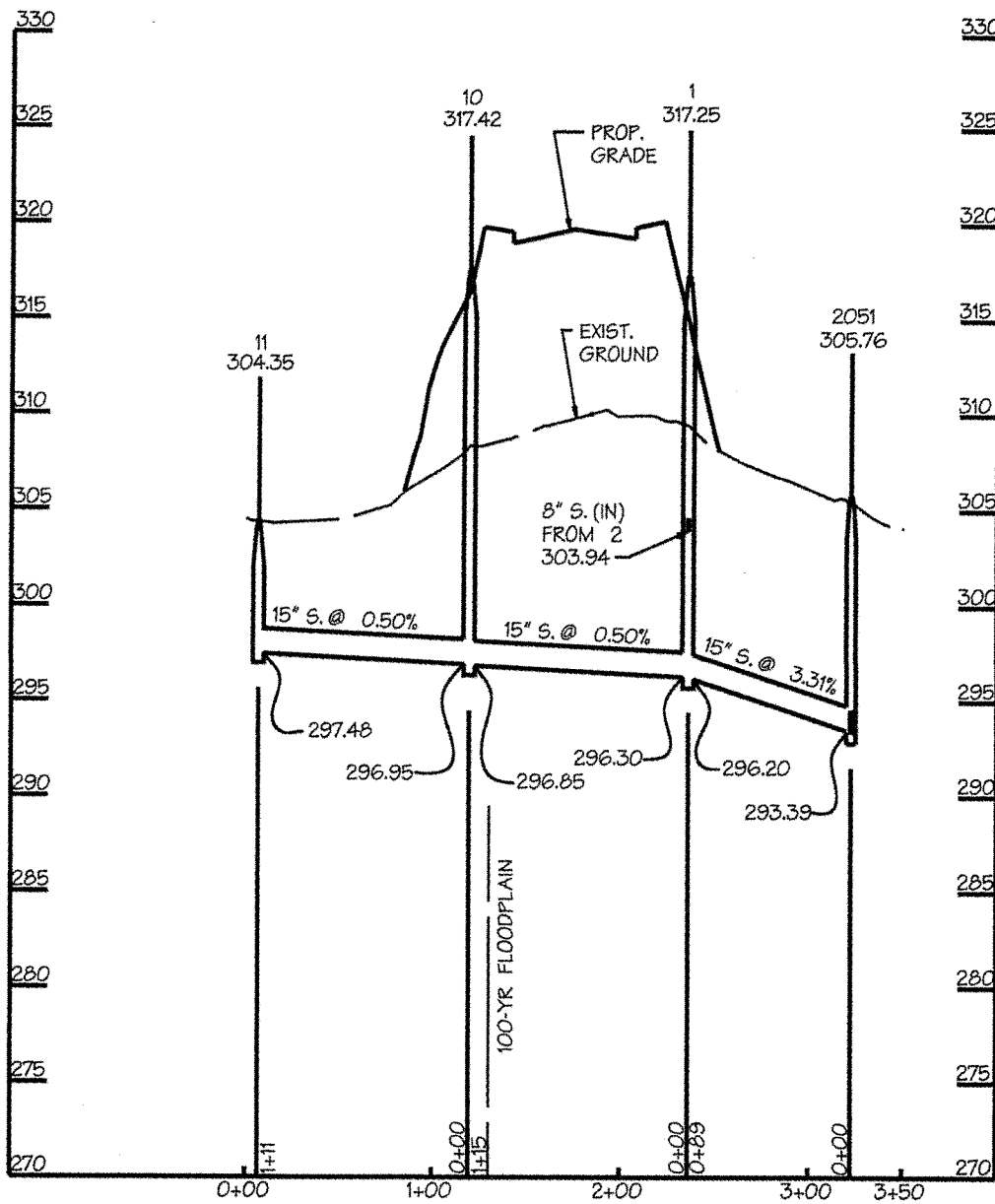
SCALE: HORIZ. 1"=100'
VERT. AS SHOWN

IMPACT EXHIBIT 'G.3
PROPOSED WATER LINE, 8" AND 15" SEWER
RELOCATION AND AREA 3 SEWER LINE
COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND
5 ELECTION DISTRICTS
Job No. 04038.A2
Scale: 1" = 100'
Date: 7/01/2014
Drawn By: HMM



DAFT MCCUNE WALKER INC
200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
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PROFILE

SCALE: HORIZ. 1"=100'
VERT. AS SHOWN

IMPACT EXHIBIT 'G.4'
SEWER RELOCATION
COLUMBIA CRESCENT
BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

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5 ELECTION DISTRICT *FEW 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1"=100' Date: 7/01/2014 Drawn By: HMM

Wed Oct 29 08:15:36 2014



**PROPOSED ROAD,
CULVERT REPLACEMENT
AND STORM DRAIN OUTFALL**
 STREAM: ±137 LF/±274 SF (P)
 WETLAND(FO): ±1,002 SF/±0.02 AC (P)
 WETLAND BUFFER: ±3,016 SF/±0.07 AC (P)
 FLOODPLAIN : ±7,528 SF/±0.17 AC (P)

EX. MANHOLE
TO BE REMOVED

**CULVERT REPLACEMENT AND
SEWER RELOCATION**
 STREAM: ±111 LF/±222 SF (P)
 WETLAND (FO): ±249 SF/±0.01 AC (P)
 (FO) ±159 SF/±0.00 AC (T)
 WETLAND BUFFER: ±1,790 SF/0.04 AC (P)
 FLOODPLAIN: ±9,721 SF/±0.22 AC (P)

IMPACT EXHIBIT 'H'
 STREAM CROSSINGS #6 AND 7
COLUMBIA CRESCENT

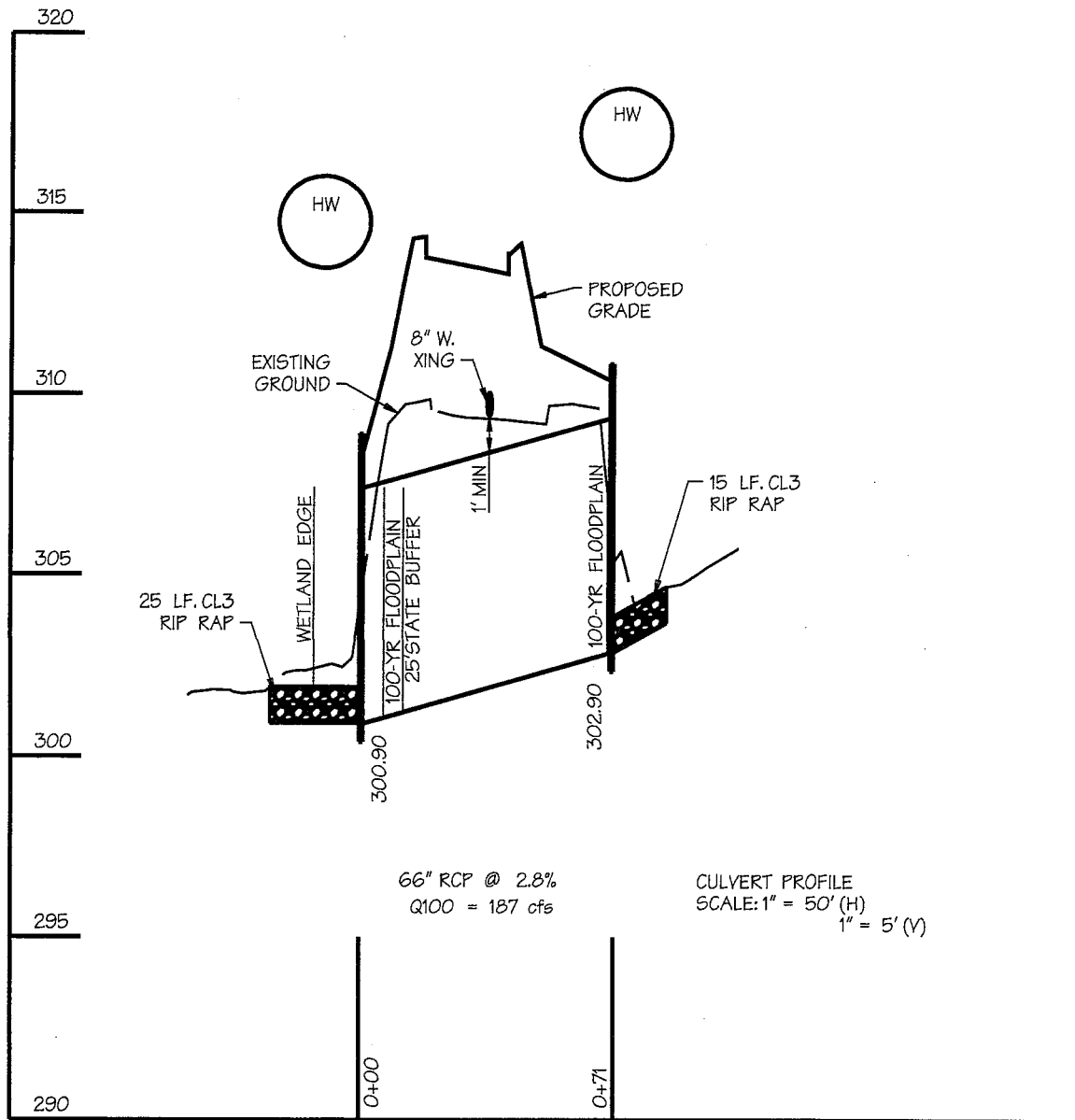
BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

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200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
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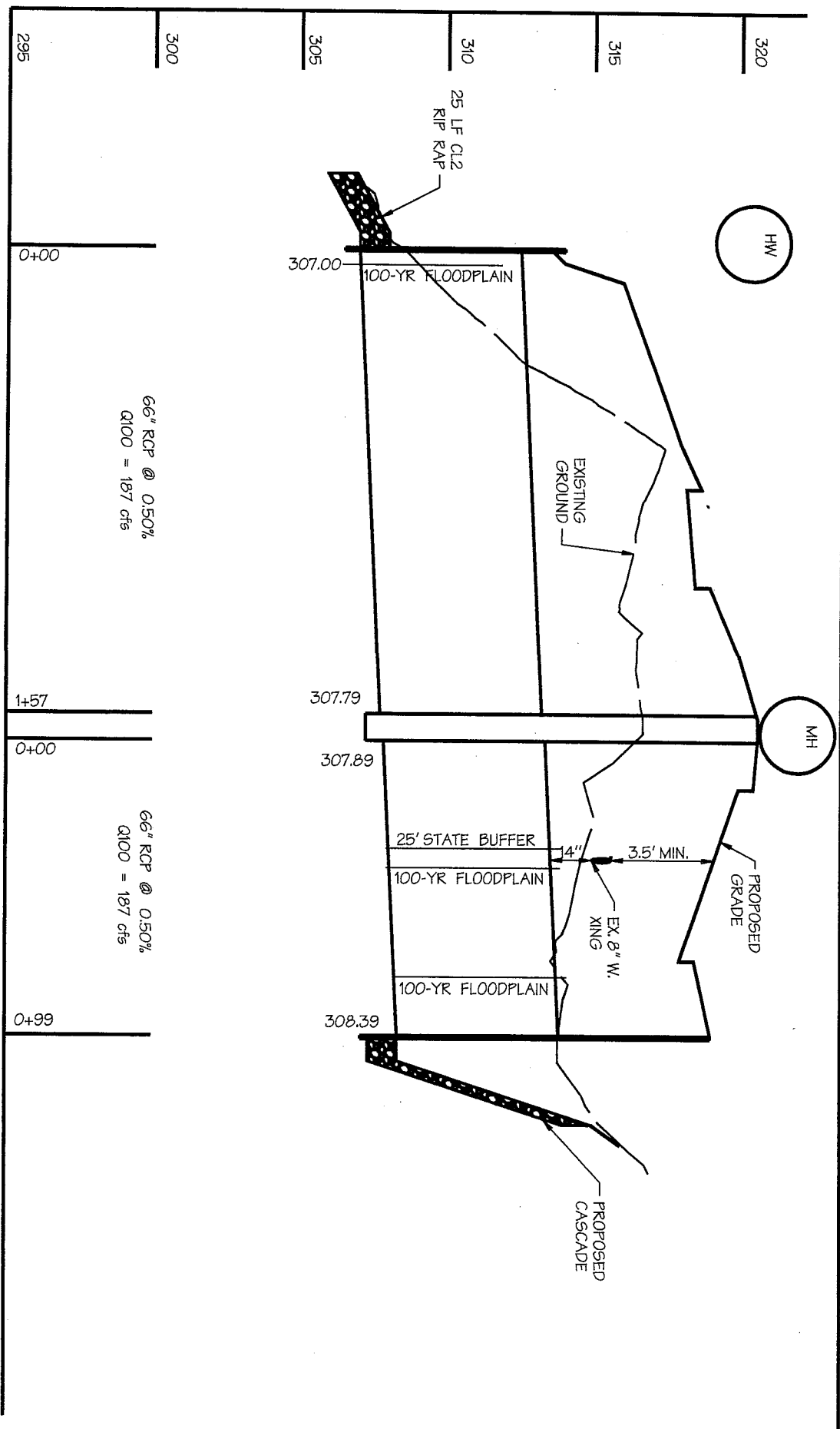
5 ELECTION DISTRICT *REV 10/30/14* *AMM* COUNCILMANIC DISTRICT 4
 Job No. 04038.A2 Scale: 1"=50' Date: 07/1/2014 Drawn By: GMO



IMPACT EXHIBIT 'H.1'
 CROSSING #6-CULVERT REPLACEMENT
 COLUMBIA CRESCENT
 BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW
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 200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
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5. ELECTION DISTRICT *REN 10/30/14 HMM* COUNCILMANIC DISTRICT 4
 Job No. 04038.A2 Scale: 1" = 50' Date: 7/01/2014 Drawn By: HMM



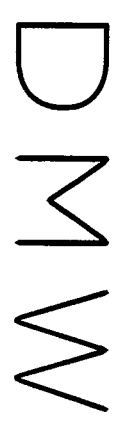
66" RCP @ 0.50%
Q100 = 187 cfs

66" RCP @ 0.50%
Q100 = 187 cfs

PROFILE

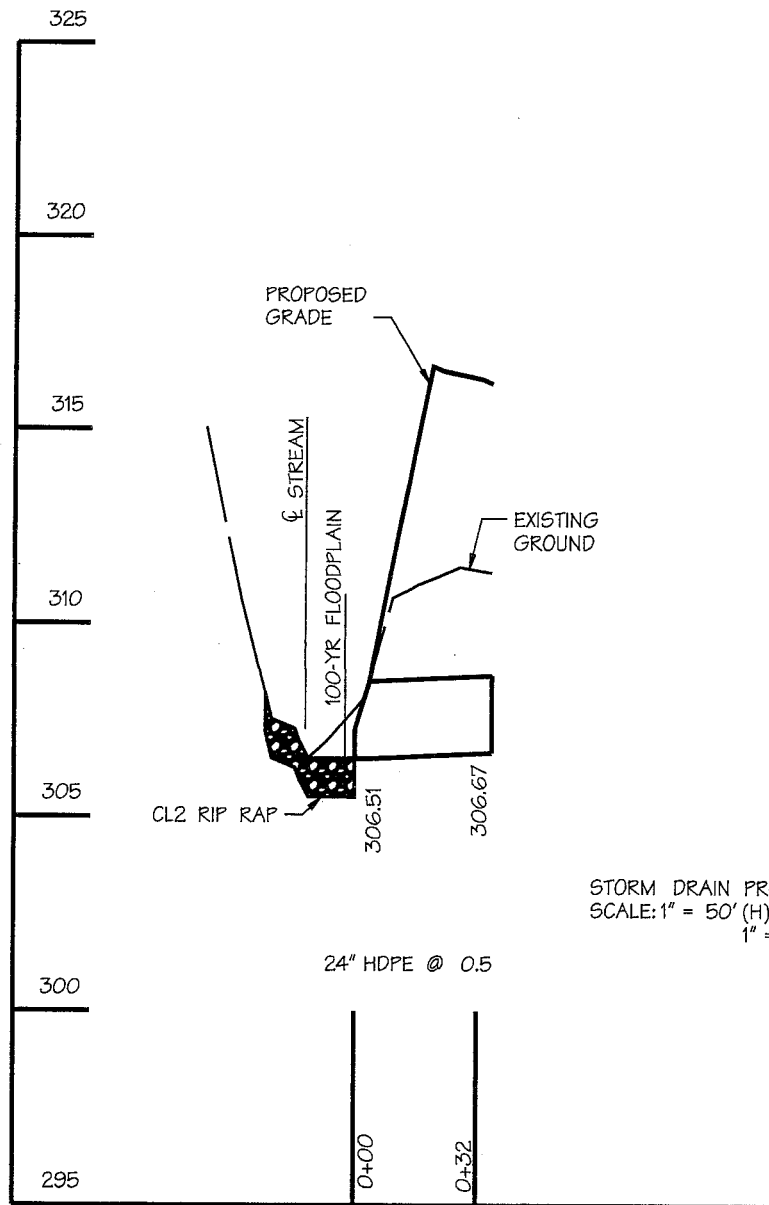
SCALE: HORIZ. 1"=50'
VERT. AS SHOWN

IMPACT EXHIBIT 'H.2'
CROSSING #7-CULVERT REPLACEMENT
COLUMBIA CRESCENT
BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND



5 ELECTION DISTRICT *REV 10/30/14* *HMM* COUNCILMANIC DISTRICT 4
JOB No. 04038.A2 Scale: 1" = 50' Date: 7/01/2014 Drawn By: HMM

DAFT MCCUNE WALKER INC
200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM



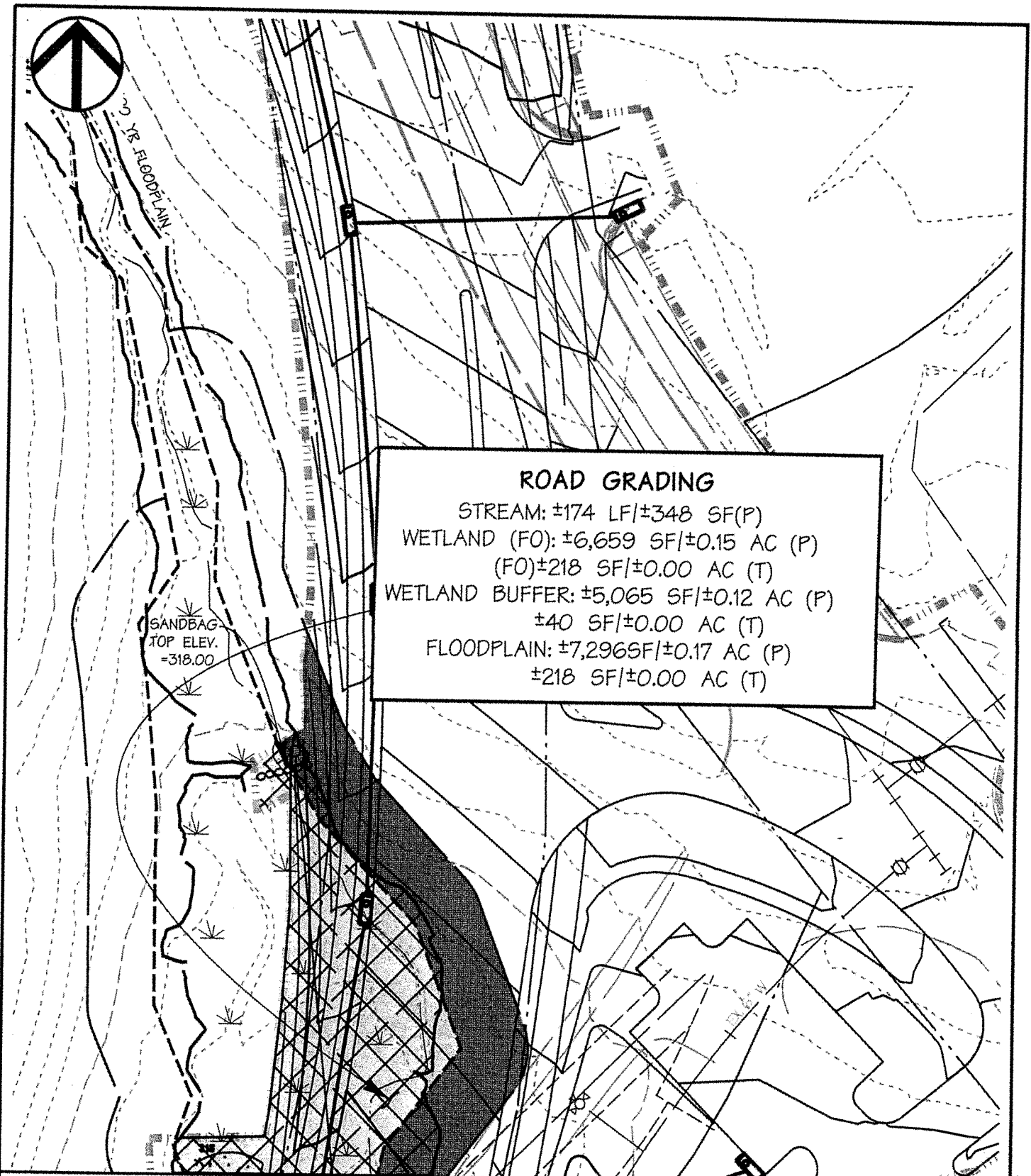
IMPACT EXHIBIT 'H.3'
STORM DRAIN PROFILE
(BELOW CROSSING #7)
COLUMBIA CRESCENT
BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

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200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
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5 ELECTION DISTRICT *REV 10/30/14 HMM* COUNCILMANIC DISTRICT 4
Job No. 04038.A2 | Scale: 1" = 50' | Date: 7/01/2014 | Drawn By: HMM

Tue Oct 28 15:51:17 2014



ROAD GRADING

STREAM: ±174 LF/±348 SF(P)
 WETLAND (FO): ±6,659 SF/±0.15 AC (P)
 (FO)±218 SF/±0.00 AC (T)
 WETLAND BUFFER: ±5,065 SF/±0.12 AC (P)
 ±40 SF/±0.00 AC (T)
 FLOODPLAIN: ±7,296SF/±0.17 AC (P)
 ±218 SF/±0.00 AC (T)

SANDBAG
TOP ELEV.
=318.00

IMPACT EXHIBIT 'J'
COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

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5 ELECTION DISTRICT *Rev 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1"=50' Date: 07/25/13 Drawn By: GMO

Wed Oct 29 10:04:21 2014

STREAM RESTORATION

STREAM: ±323 LF/ ±646 SF (T*)
 WETLAND (FO): ±5,843 SF/±0.13 AC (T*)
 WETLAND BUFFER: ±1,098 SF/±0.03 AC (T)
 FLOODPLAIN: ±12,182 SF/±0.28 AC (T)



**MITIGATION AREA 1
 COLUMBIA CRESCENT**

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW

DAFT McCUNE WALKER INC

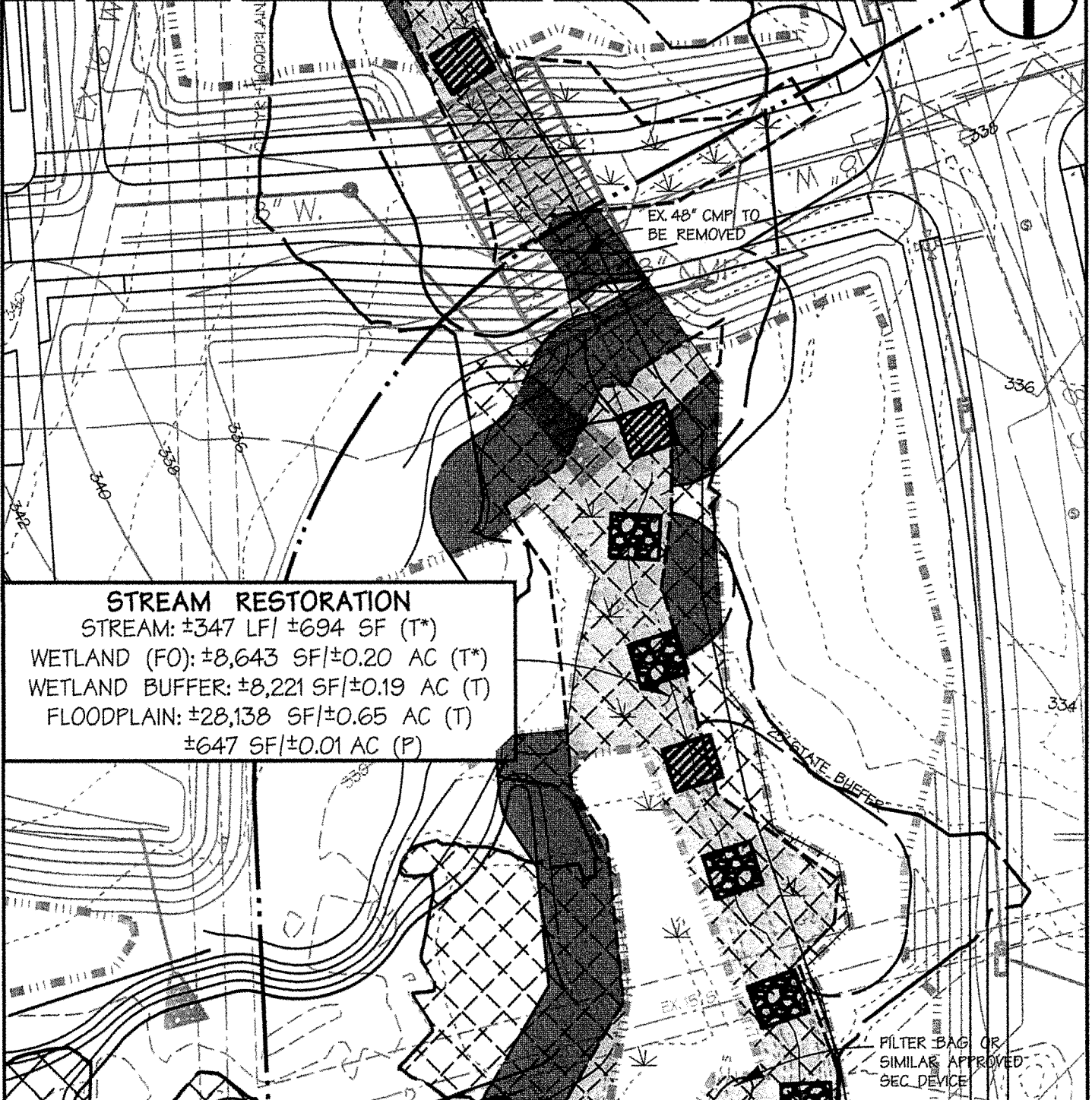
200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

5 ELECTION DISTRICT *Rev 10/30/14* *HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1"=50' Date: 7/14 Drawn By: HMM

Wed Oct 29 08:21:39 2014

MATCHLINE SHEET 1



STREAM RESTORATION

STREAM: ±347 LF/ ±694 SF (T*)
WETLAND (FO): ±8,643 SF/±0.20 AC (T*)
WETLAND BUFFER: ±8,221 SF/±0.19 AC (T)
FLOODPLAIN: ±28,138 SF/±0.65 AC (T)
±647 SF/±0.01 AC (P)

FILTER BAG OR
SIMILAR APPROVED
SEC. DEVICE

MATCHLINE SHEET 4

**MITIGATION AREA 2
COLUMBIA CRESCENT**

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

DMW

DAFT MCCUNE WALKER INC

200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
P : 410 296 3333 F : 410 296 4705 WWW.DMW.COM

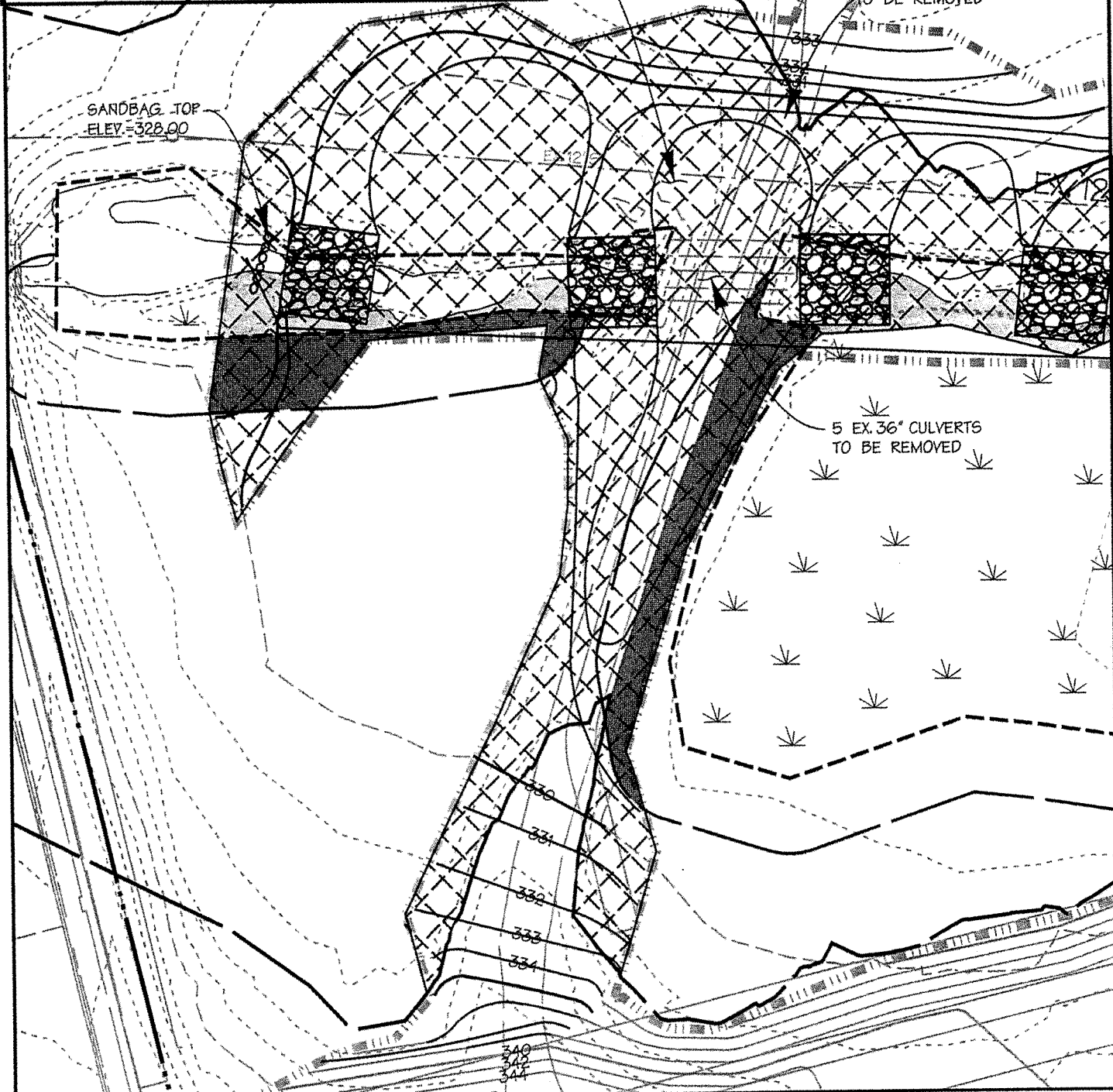
5 ELECTION DISTRICT *Rev 10/30/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 | Scale: 1" = 50' | Date: 7/14 | Drawn By: HMM

P:\04038.A\ENGR\04038.EXHMIT 2

Wed Oct 29 08:22:02 2014

**STREAM RESTORATION
AND WETLAND MITIGATION**
 STREAM: ±262 LF/±2,886 SF (T*)
 WETLAND(FO): ±2,494 SF/±0.06 AC (T*)
 WETLAND BUFFER: ±3,718 SF/±0.09 AC (T)
 FLOODPLAIN: ±37,109 SF/±0.85 AC (T)



**MITIGATION AREA 3
COLUMBIA CRESCENT**

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

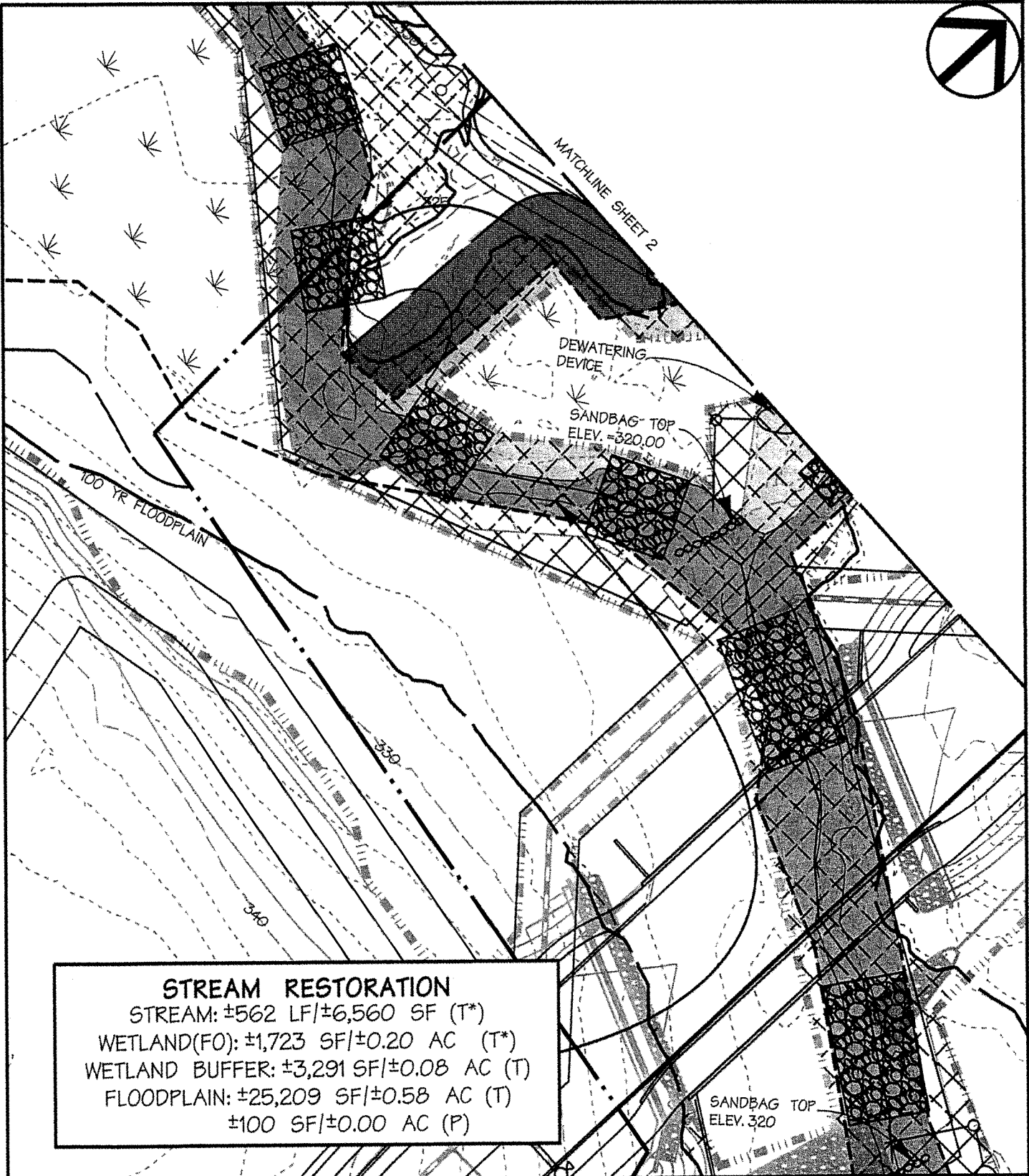
DMW

DAFT MCCUNE WALKER INC

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5 ELECTION DISTRICT *REV 10/30/14 HMM*
 Job No. 04038.A2 Scale: 1" = 50' Date: 7/14 Drawn By: HMM

Wed Oct 29 09:23:03 2014



STREAM RESTORATION
 STREAM: ±562 LF/±6,560 SF (T*)
 WETLAND(FO): ±1,723 SF/±0.20 AC (T*)
 WETLAND BUFFER: ±3,291 SF/±0.08 AC (T)
 FLOODPLAIN: ±25,209 SF/±0.58 AC (T)
 ±100 SF/±0.00 AC (P)

**MITIGATION AREA 4
 COLUMBIA CRESCENT**

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

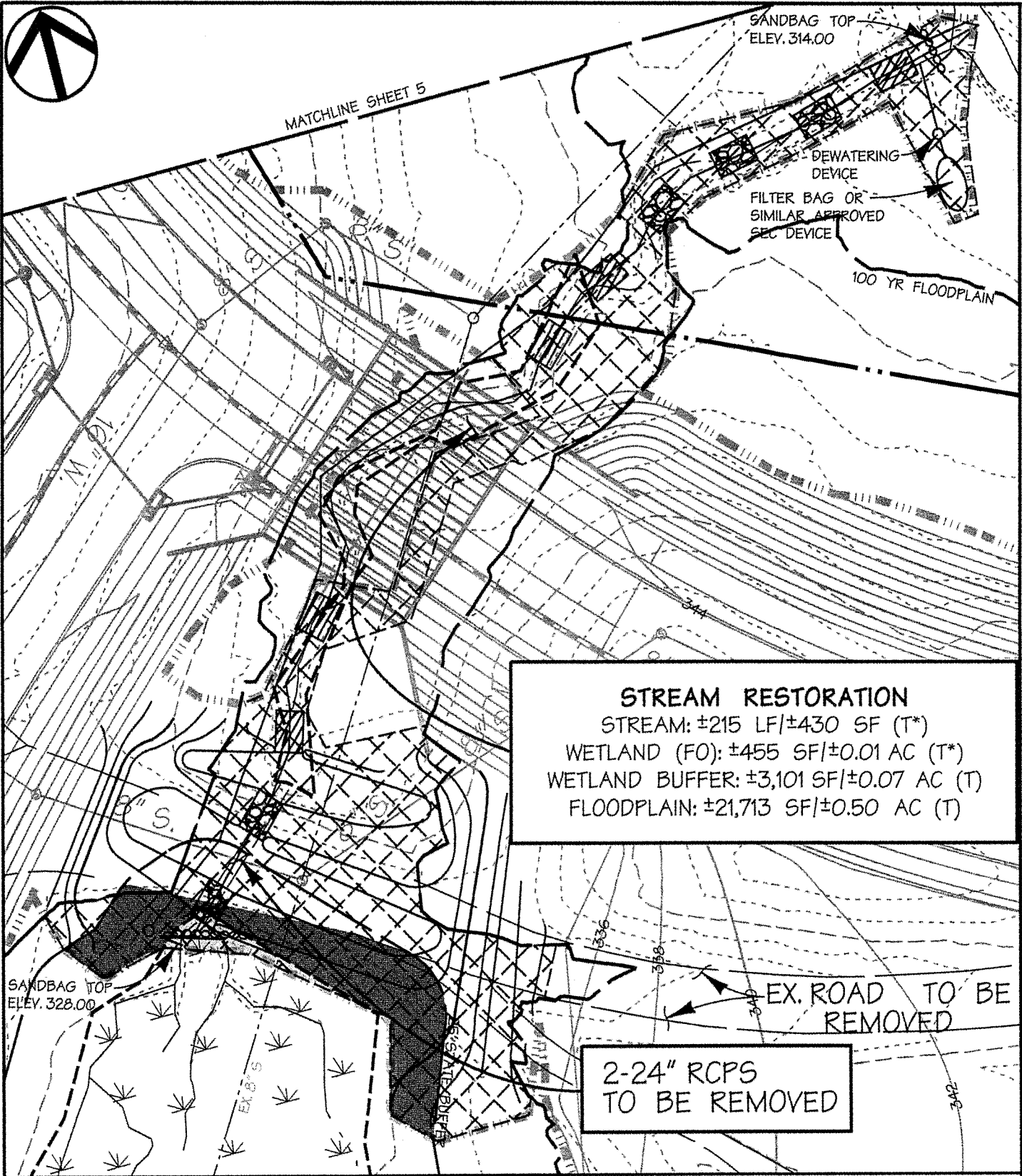
DMW

DAFT MCCUNE WALKER INC

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5 ELECTION DISTRICT *REV 10/30/14 HMM*
 Job No. 04038.A2 Scale: 1" = 50' Date: 7/1/2014 Drawn By: HMM

Wed Oct 29 09:21:08 2014



STREAM RESTORATION
 STREAM: ±215 LF/±430 SF (T*)
 WETLAND (FO): ±455 SF/±0.01 AC (T*)
 WETLAND BUFFER: ±3,101 SF/±0.07 AC (T)
 FLOODPLAIN: ±21,713 SF/±0.50 AC (T)

2-24" RCPS
 TO BE REMOVED

**MITIGATION AREA 5
 COLUMBIA CRESCENT**

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

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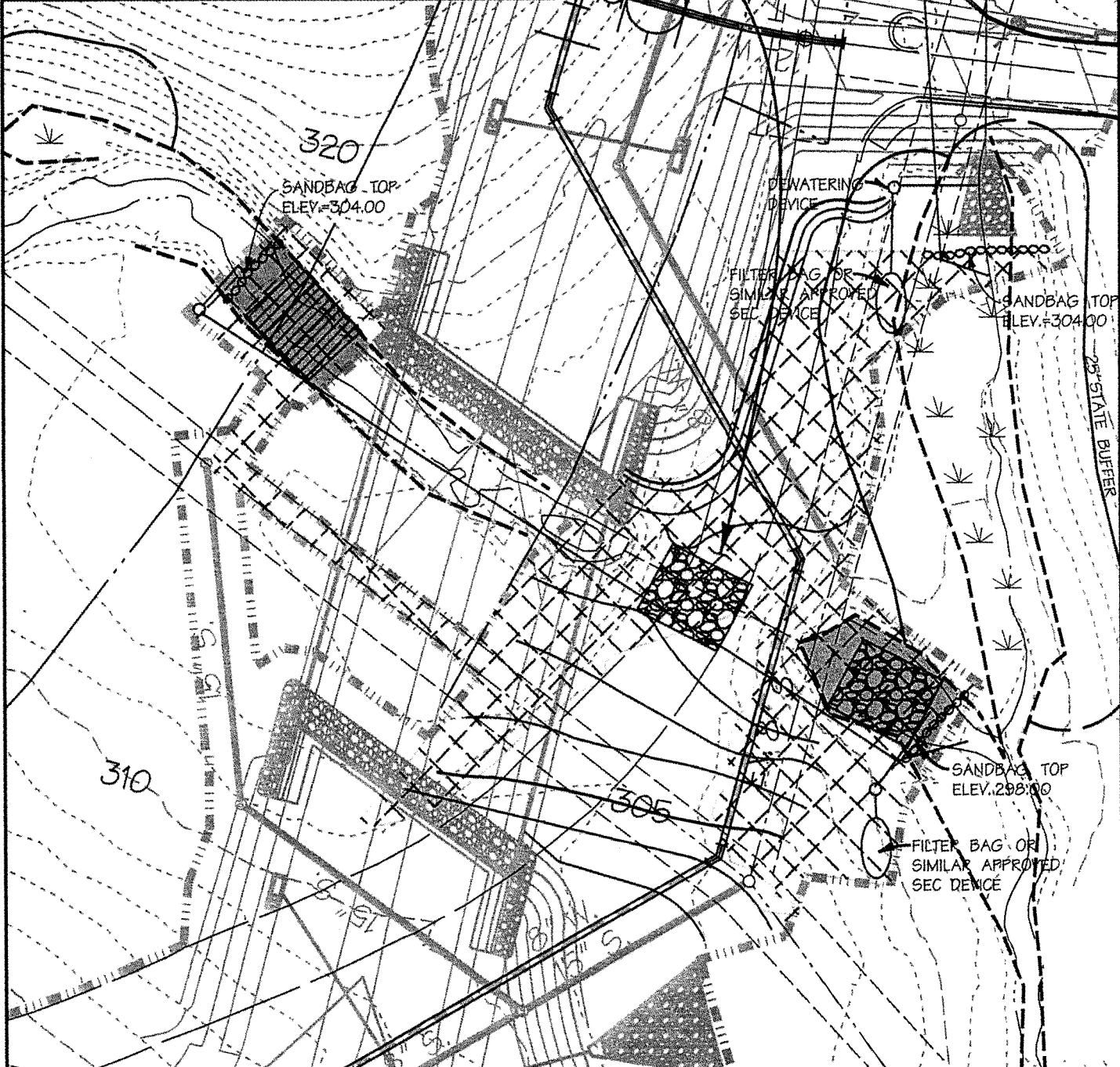
5 ELECTION DISTRICT *Rev 10/30/14 HMM*

Job No. 04038.A2 Scale: 1" = 50' Date: 7/14 Drawn By: HMM

Wed Oct 29 09:23:39 2014

STREAM RESTORATION

STREAM: ±119 LF/±1,841 SF (T*)
 FLOODPLAIN: ±20,558 SF/±0.47 AC (T)



MITIGATION AREA 6 COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

DMW

DAFT MCCUNE WALKER INC

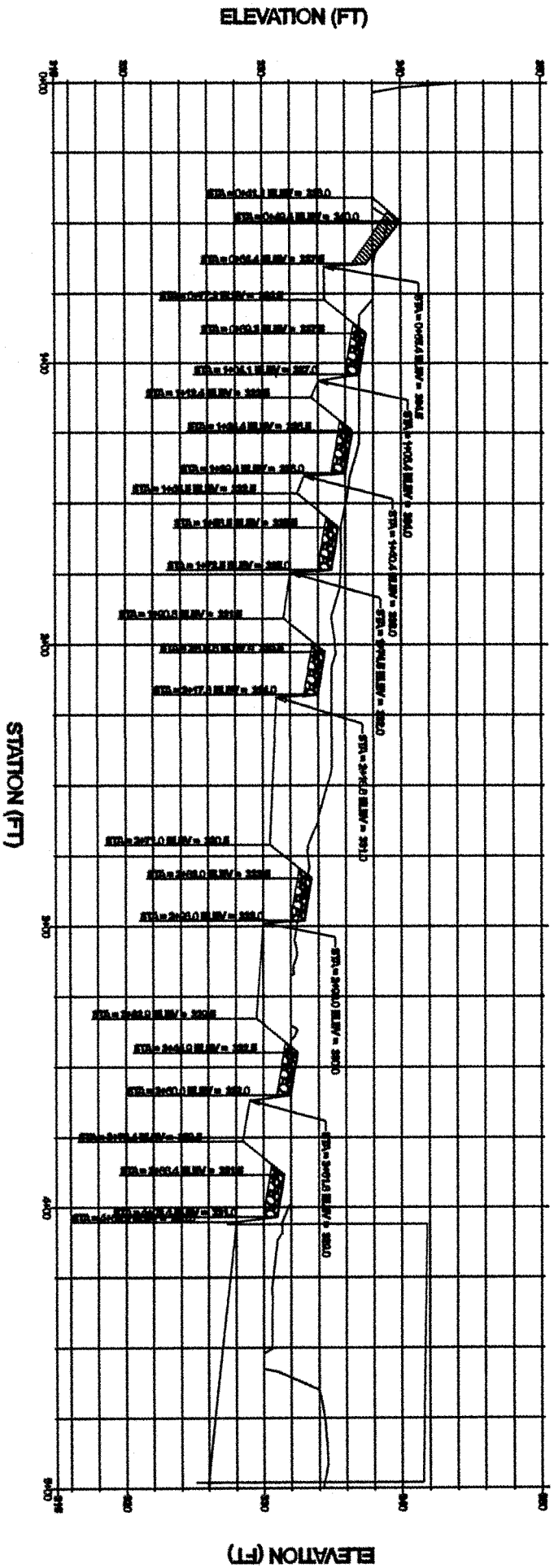
200 EAST PENNSYLVANIA AVENUE • TOWSON, MD 21286
 P: 410 296 3333 F: 410 296 4705 WWW.DMW.COM

7 ELECTION DISTRICT *Rev 10/20/14 HMM* COUNCILMANIC DISTRICT 4

Job No. 04038.A2 Scale: 1"=50' Date: 7/1/2014 Drawn By: HMM

Wed Oct 29 09:28:21 2014

PROFILE VIEW OF STREAM A STA 0+00 - 5+00



STREAM RESTORATION PROFILE #1

COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

5 ELECTION DISTRICT 4

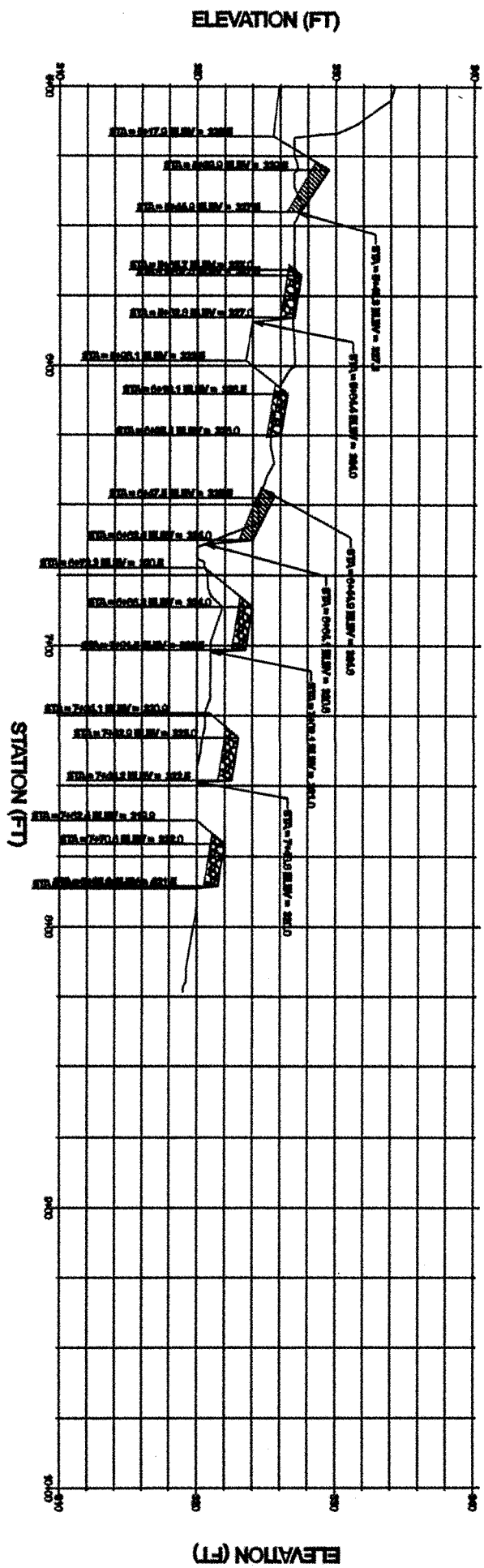
Job No. 04038.A2 Date: 7/1/2014 Drawn By: HMM



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PROFILE VIEW OF STREAM A STA 5+00 - 7+85.8



STREAM RESTORATION PROFILE #2

COLUMBIA CRESCENT

BROKENLAND PARKWAY
 HOWARD COUNTY
 COLUMBIA, MARYLAND

5 ELECTION DISTRICT 4

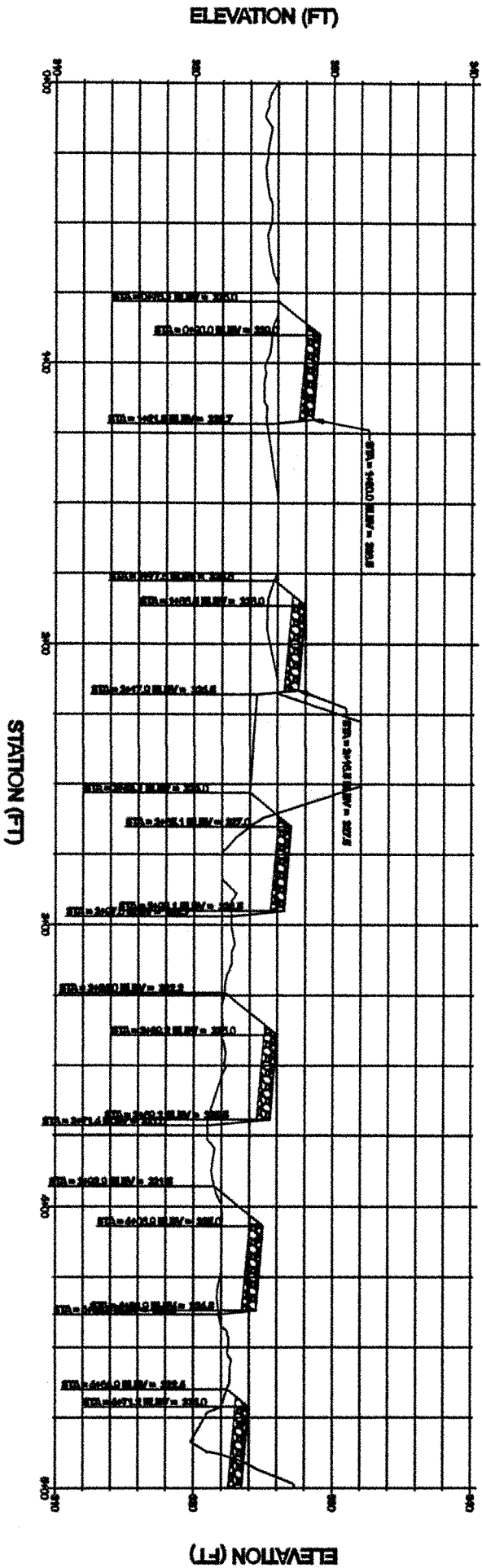
Job No. 04038.A2 Date: 7/1/2014 Drawn By: HMM

DMW

DAFT MCCUNE WALKER INC

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PROFILE VIEW OF STREAM B UPPER STA 0+00 - 5+00



STREAM RESTORATION PROFILE #3

COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

5 ELECTION DISTRICTS

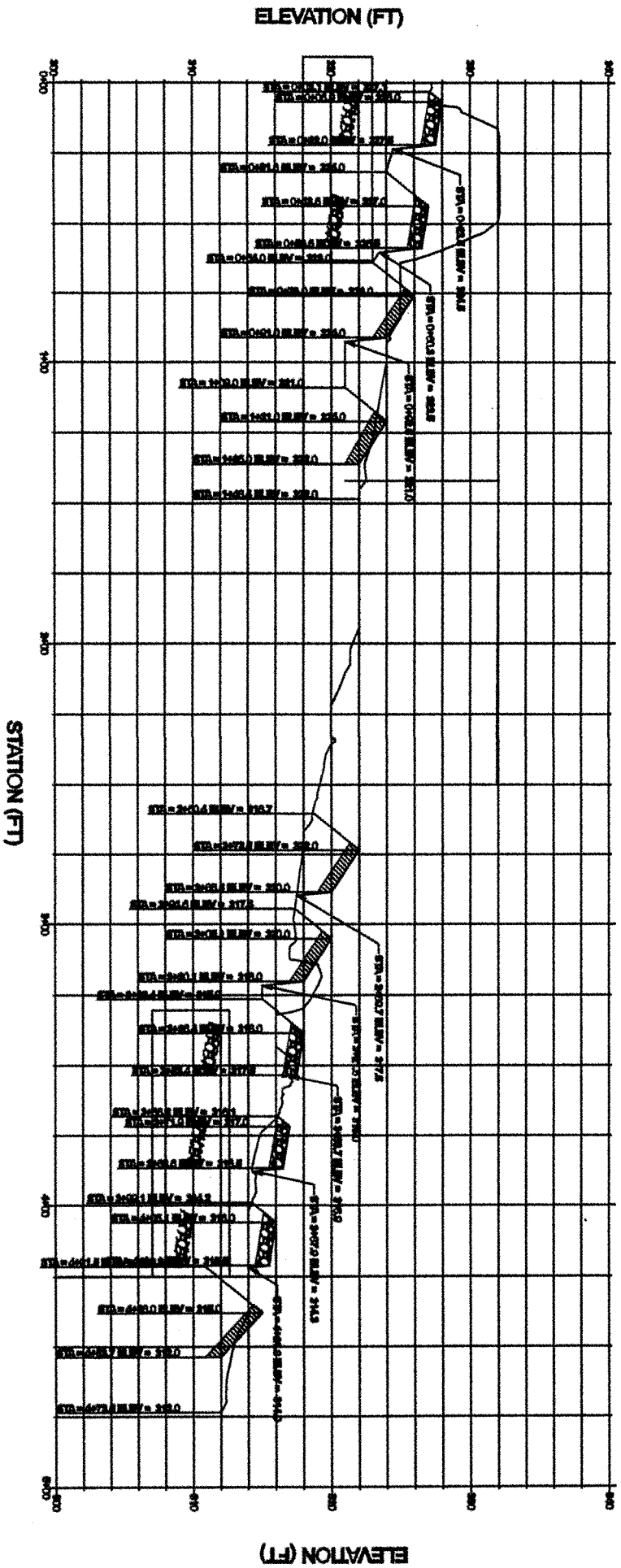
Job No. 04038.A2 Date: 7/12/2014 Drawn By: HMM

DMW

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PROFILE VIEW OF STREAM C STA 0+00 - 4+73.5



STREAM RESTORATION PROFILE #5

COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

5 ELECTION DISTRICT 4

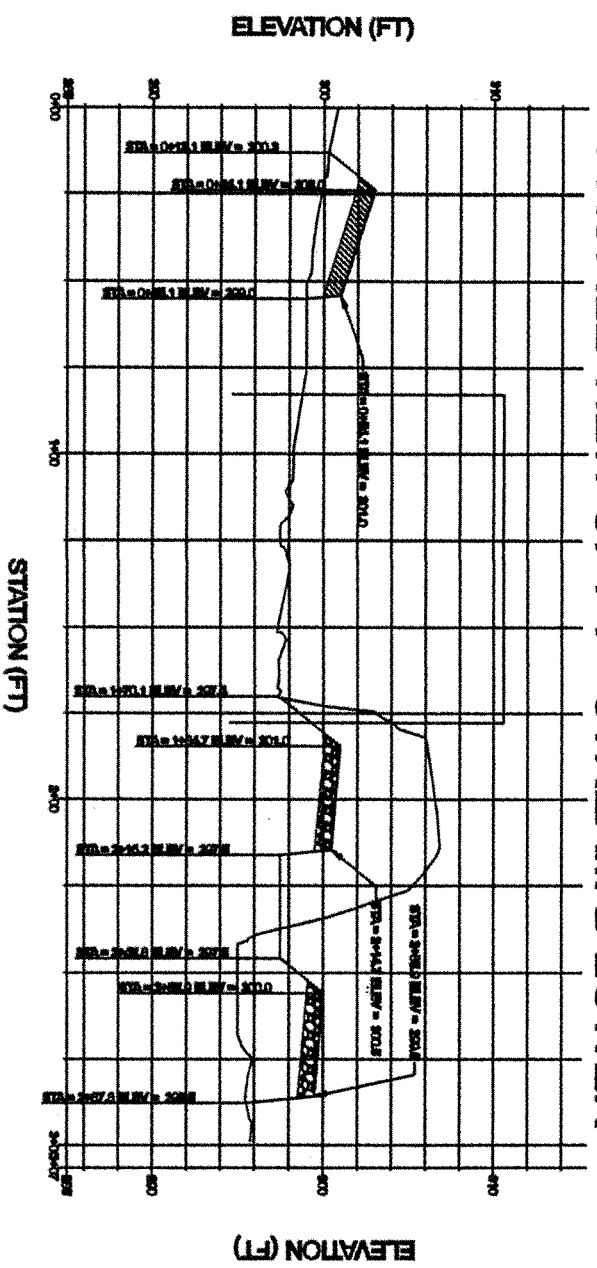
Job No. 04038.A2 Date: 7/2014 Drawn By: HMN

DMW

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PROFILE VIEW OF PV - STREAM B LOWER



STREAM RESTORATION PROFILE #6

COLUMBIA CRESCENT

BROKENLAND PARKWAY
HOWARD COUNTY
COLUMBIA, MARYLAND

5 ELECTION DISTRICT 4

Job No. 04038.A2 Date: 7/1/2014 Drawn By: HMM



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