FINAL ROAD CONSTRUCTION, GRADING AND STORMWATER MANAGEMENT PLANS

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'

ZONING: R-20

TAX MAP No. 30, GRID No. 2

PARCEL No. 86

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 4/30/2015

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5-7-15

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5.5.15

REVISIONS

NO.	DESCRIPTION	DATE
1	REVISE LOTS, REMOVE PARCEL 'C', ADD LOTS AND REVISE ADDRESSES	4/3/15
2	REVISE SHEET INDEX TO ADD SHEET 40	10/12/16

SHEET INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2-4	WELLFORD DRIVE PLAN & PROFILE
5	DEMO PLAN
6-7	GRADING AND SEDIMENT CONTROL PLAN
8-9	SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
10-11	STREET TREE & LANDSCAPE PLAN
12	STREET TREE & LANDSCAPE NOTES & DETAILS
13-22	STORMWATER MANAGEMENT PLAN VIEWS & DETAILS
23-24	STORM DRAIN DRAINAGE AREA MAP & SOILS MAP
25	ROADWAY DETAILS
26-30	STORM DRAIN PROFILES
31	PRIVATE S.W.M. NOTES AND DETAILS & SEDIMENT CONTROL DETAILS
32	GENERAL PLAN AND CULVERT SECTION
33	BOX CULVERT SECTION (UNREINFORCED)
34	BOX CULVERT AND WINGWALL SECTION (REINFORCED)
35	BOX CULVERT AND WINGWALL DETAILS
36	HEADWALL PLAN AND ELEVATION
37	STANDARD DETAILS
38	BORING LOGS
39	GUARDRAIL DETAILS
40	RETAINING WALL CONSTRUCTION DETAILS

STREET LIGHT CHART

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
WELLFORD DRIVE	0+31	28'R	150-WATT H.P.S. PREMIER POST TOP MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.
	2+50	15'R	
WELLFORD DRIVE	5+12	15'R	100-WATT H.P.S. PREMIER POST TOP MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.
	7+50	15'L	
	11+30	15'L	
	13+80	22'R	
	17+20	15'L	
	19+48	15'L	
	22+33	15'L	
	24+85	15'L	
	27+10	15'L	
	29+85	15'L	
	32+05	15'R	

ROADWAY INFORMATION CHART

ROAD NAME	CLASSIFICATION	DESIGN SPEED	R/W WIDTH
WELLFORD DRIVE	PUBLIC ACCESS STREET	30 M.P.H.	50'

TRAFFIC CONTROL SIGNS

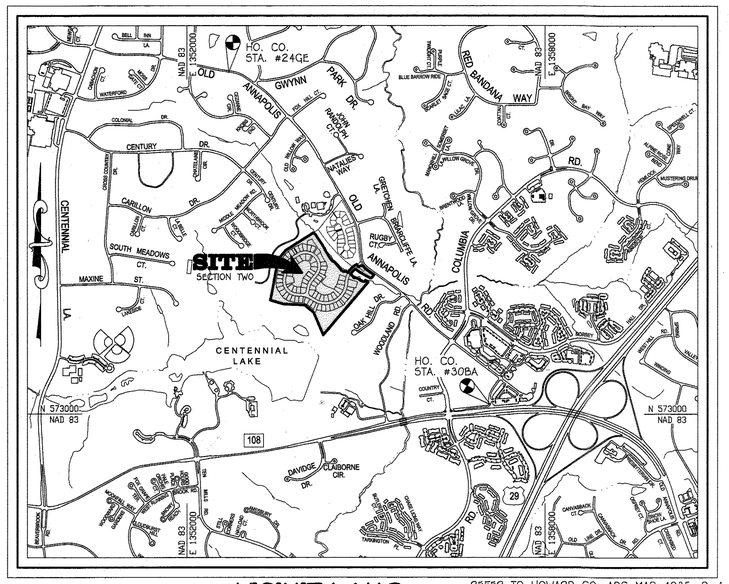
ROAD NAME	CENTERLINE STA.	POSTED SIGN	SIGN CODE
WELLFORD DRIVE	0+50 L	STOP	R1-1
WELLFORD DRIVE	2+00 R	SPEED LIMIT 25	R2-1
WELLFORD DRIVE	3+50 L	STOP AHEAD	W3-1
WELLFORD DRIVE	11+30 L	SPEED LIMIT 25	R2-1
* WELLFORD DRIVE	33+98 R	STOP	R1-1

* MOUNT TO STREET LIGHT POLE

SEE SHEET 37 FOR "NO PARKING BETWEEN SIGNS" DETAIL AND CHART.

STORMWATER MANAGEMENT PRACTICES

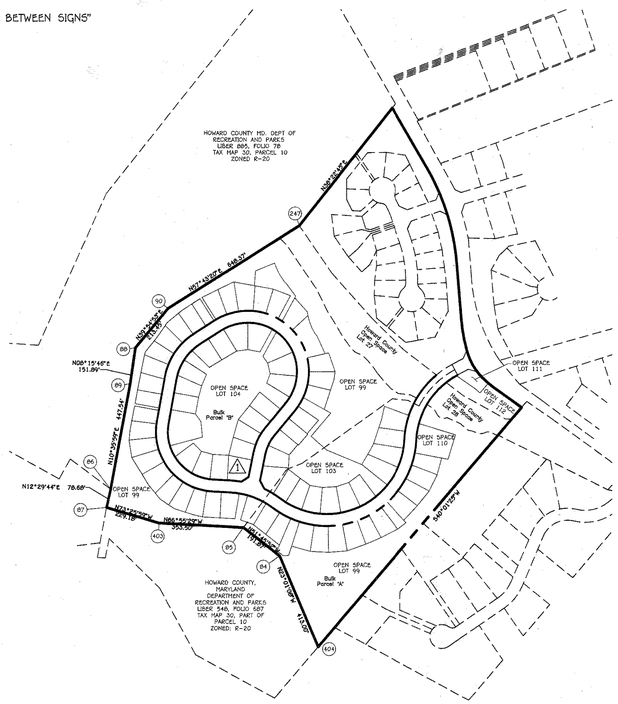
LOT No.	ADDRESS		DRY WELLS M-5 (NUMBER)
30	8619	WELLFORD DRIVE	2
31	8623	WELLFORD DRIVE	2
32	8627	WELLFORD DRIVE	2
36	8645	WELLFORD DRIVE	1
37	8649	WELLFORD DRIVE	2
38	8653	WELLFORD DRIVE	2
39	8659	WELLFORD DRIVE	2
40	8663	WELLFORD DRIVE	2
41	8667	WELLFORD DRIVE	2
42	8673	WELLFORD DRIVE	2
43	8677	WELLFORD DRIVE	2
44	8681	WELLFORD DRIVE	2
45	8685	WELLFORD DRIVE	2
46	8689	WELLFORD DRIVE	2
62	8765	WELLFORD DRIVE	2
63	8775	WELLFORD DRIVE	2
64	8779	WELLFORD DRIVE	2
65	8783	WELLFORD DRIVE	2
77	8618	WELLFORD DRIVE	2
78	8614	WELLFORD DRIVE	2
79	8610	WELLFORD DRIVE	1



VICINITY MAP

SCALE: 1" = 1200'

REFER TO HOWARD CO. ADC MAP 4935, D-1



METES AND BOUNDS

SCALE: 1" = 300'

LEGEND

SYMBOL	DESCRIPTION
102	EXISTING CONTOUR 2' INTERVAL
100	EXISTING CONTOUR 10' INTERVAL
102	PROPOSED CONTOUR 2' INTERVAL
100	PROPOSED CONTOUR 10' INTERVAL
SF SF	SILT FENCE
	DRAINAGE LIMITS
L.O.D.	LIMIT OF DISTURBANCE
	EXISTING TREELINE
	WETLANDS BUFFER
	WETLANDS LIMITS
FP	FLOODPLAIN LIMITS
ESD #21	STORMWATER MANAGEMENT DEVICE
	STORM DRAIN
	STREET LIGHT (proposed) STREET LIGHT (existing)
	STREET TREE (proposed)
	STREET TREE (existing)
	PROPOSED MAILBOX BANK
B-21A	BORING LOCATION
	DRYWELL LOCATION
	PROPOSED GABIONS

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE. THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.

2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS / BUREAU OF ENGINEERING / CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST (5) WORKING DAYS PRIOR TO THE START OF WORK.

3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

4. TRAFFIC CONTROL DEVICES:
a. THE R1-1 (STOP) SIGN AND THE STREET SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
b. THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
c. ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MdMUTCD).
d. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED ("QUICK PUNCH"), SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

5. THIS SUBDIVISION PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE 10-06-13 ZONING REGULATIONS PER COUNCIL BILL NO. 32-2013. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS OR PARCELS MUST COMPLY WITH SETBACKS AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF A BUILDING OR GRADING PERMIT APPLICATION.

6. COORDINATES BASED ON NAVD'88 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 24GE AND NO. 30BA

Station No. 24GE	N 578,706.5244	E 1,352,699.6688	Elev. = 445.695
Station No. 30BA	N 573,149.0939	E 1,357,083.1735	Elev. = 397.140

7. SUBJECT PROPERTY ZONED R-20, USING THE R-ED REGULATIONS. THIS PROPERTY IS SUBJECT TO COUNCIL BILL No. 2, "SECTION 128A.1.J OF THE ZONING REGULATIONS (CB-2-2012) WHICH ALLOWS SUNROOMS AND ROOM EXTENSIONS NOT MORE THAN 10 FEET INTO THE REAR SETBACK ALONG NOT MORE THAN 60% OF THE REAR FACE OF THE DWELLING ON A LOT WHICH ADJOINS OPEN SPACE ALONG A MAJORITY OF THE REAR LOT LINE FOR R-ED LOTS RECORDED AFTER THE EFFECTIVE DATE OF 5/13/12."

8. BACKGROUND INFORMATION:
a. SUBDIVISION NAME: CENTENNIAL LAKE OVERLOOK (FORMERLY MASON PROPERTY)
b. TAX MAP NO.: 30
c. PARCEL NO.: 86
d. ZONING: R-20
e. ELECTION DISTRICT: SECOND
f. GROSS AREA OF TRACT = 46.487 ACRES
g. NUMBER OF BUILDABLE LOTS: 70 (Section Two)
h. NET DENSITY = 42.981 x 2 UNITS/ACRE = 86. TRANSFER INTO PROPERTY @ 10% = 8, MAX. DENSITY ALLOWED = 93
i. NUMBER OF OPEN SPACE LOTS: 14
j. NUMBER OF NON-BUILDABLE BULK PARCELS: 0
k. AREA OF BUILDABLE LOTS: 12.109 ACRES
l. AREA OF OPEN SPACE LOTS: 16.249 ACRES
m. AREA OF NON-BUILDABLE BULK PARCELS: 0.00 ACRES
n. AREA OF PUBLIC ROADWAY TO BE DEDICATED: 3.805 ACRES
o. AREA OF FLOODPLAIN = 3.046 ACRES
p. AREA OF 25% OR GREATER SLOPES = 0.460 ACRES (outside floodplain)
q. NET AREA OF TRACT = 42.981 ACRES
r. PREVIOUS FILE NUMBERS: ECP-12-053, WP-13-096 (see note no. 32), SP-13-004, PB-399, F-14-002

9. OPEN SPACE TABULATION
a. SEE CHART THIS SHEET
b. RECREATIONAL OPEN SPACE REQUIRED FOR PROJECT TOTAL = (300 SQ.FT. PER UNIT) = 27,900 SQ.FT.
PROVIDED RECREATIONAL OPEN SPACE (LOT 104) = 29,526 SQ.FT.

10. THERE ARE AREAS OF STEEP SLOPES LOCATED ON THIS PROPERTY AS DEFINED BY THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, SECTION 16.116.b., (0.46 Ac. outside of floodplain).

11. NO NOISE STUDY IS REQUIRED FOR THIS PROJECT.

12. EXISTING WATER IS PUBLIC (CONTRACT No. 801 W&S & 24-4764-D)
EXISTING SEWER IS PUBLIC (CONTRACT Nos. 801 W&S, 521-S-1A & 24-4764-D)

13. SOILS INFORMATION TAKEN FROM HOWARD COUNTY SOIL SURVEY ISSUED JULY 1968, MAP No. 19.

14. EXISTING PAVING AND/OR STRUCTURES LOCATED ON SITE ARE TO BE RAZED AS SHOWN ON PLAN (SHEET 5). THE EXISTING DWELLING ON PROPOSED LOT 84 IS TO REMAIN.

15. BOUNDARY OUTLINE BASED ON FIELD RUN SURVEY PERFORMED BY FISHER COLLINS AND CARTER, INC. DATED JANUARY, 2012.

16. TOPOGRAPHIC CONTOURS BASED ON AERIAL SURVEY PERFORMED BY HARFORD AERIAL SURVEYS, INC. DATED DECEMBER, 2011 AND SUPPLEMENTED WITH FIELD RUN TOPOGRAPHY PREPARED BY FISHER, COLLINS AND CARTER, INC. DATED MARCH, 2012.

17. ALL FILL AREAS WITHIN ROADWAYS AND UNDER STRUCTURES SHALL BE COMPACTED TO A MINIMUM OF 95% COMPACTION OF AASHTO T-180.

18. STORMWATER MANAGEMENT WILL BE PROVIDED IN ACCORDANCE WITH THE 2010 MDE, CHAPTER 5 REGULATIONS AND THE LATEST HOWARD COUNTY DESIGN MANUAL, VOL. I, CHAPTER 5 ADOPTED ON OR AROUND MAY 4, 2010. GROUNDWATER RECHARGE VOLUME WILL BE PROVIDED THROUGH THE USE OF STONE RESERVOIRS LOCATED BENEATH THE VARIOUS ESD FACILITIES. THE REQUIRED ESD VOLUMES WILL BE PROVIDED BY BIO-RETENTION (F-6), MICRO BIO-RETENTION (M-6), DRYWELLS (M-5) AND INFILTRATION BERMS (M-4). OVERBANK FLOOD PROTECTION VOLUME AND EXTREME FLOOD VOLUMES ARE NOT REQUIRED FOR THIS SITE.
THE STORMWATER MANAGEMENT FACILITIES (M-6 & F-6) WILL BE PRIVATELY OWNED BY H.O.A. AND JOINTLY MAINTAINED BY H.O.A. AND HOWARD COUNTY. HOWARD COUNTY'S MAINTENANCE RESPONSIBILY ONLY PERTAINS TO THE INLET STRUCTURES AND STORM DRAIN PIPE FOR THE BIO-RETENTION FACILITIES (M-6 & F-6) ADJACENT TO ROADWAY. ALL LANDSCAPING, UNDERDRAINS, CLEAN-OUTS AND FILTER MEDIA IS THE RESPONSIBILY OF THE HOMEOWNER'S ASSOCIATION. THE H.O.A. OR PRIVATE HOMEOWNER IS RESPONSIBLE FOR ALL OTHER FACILITIES (F-1), (M-5) AND (M-4).

19. SEVERAL SPECIMEN TREES ARE LOCATED ON-SITE AND HAVE BEEN SHOWN ON THESE PLANS.

20. FLOODPLAIN STUDY SHOWN HEREON WAS PREPARED BY FISHER, COLLINS & CARTER, INC. DATED MARCH, 2012 AND WAS APPROVED ON March 14, 2013.

21. TRAFFIC STUDY WAS PREPARED BY THE TRAFFIC GROUP, INC. DATED JANUARY, 2012 AND WAS APPROVED March 14, 2013.

22. THE FOREST STAND DELINEATION AND WETLAND DELINEATION FOR THIS PROJECT WAS PREPARED BY MCCARTHY & ASSOCIATES, INC. DATED MARCH, 2012.

23. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.

24. NO KNOWN CEMETERIES EXIST WITHIN THIS SUBDIVISION. ONE HISTORIC STRUCTURE EXISTS ON-SITE, HO 401, SQUIRREL HILL, WHICH WILL REMAIN ON PROPOSED LOT 84. THIS PLAN CAME TO THE HISTORIC DISTRICT COMMISSION ON JUNE 7, 2012 FOR ADVISORY COMMENTS.

25. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE WETLANDS, STREAMS OR THEIR REQUIRED BUFFERS, UNLESS THE ACTIVITIES ARE CONSIDERED NECESSARY OR WAIVERS ARE APPROVED BY THE DEPARTMENT OF PLANNING AND ZONING. ROAD CONSTRUCTION FOR ROAD 'A' AND INSTALLATION OF SEWER AND/OR STORM DRAINS IN THE FLOODPLAIN, STREAM BUFFER AND/OR WETLAND BUFFER SHALL BE CONSIDERED ESSENTIAL DISTURBANCE BY DPZ IN ACCORDANCE WITH SECTION 16.116(c) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.

26. THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, INC. DATED AUGUST, 2012 AND WAS APPROVED ON March 14, 2013.

27. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

28. TRASH AND RECYCLING COLLECTION WILL BE PROVIDED ALONG THE COUNTY ROADWAY WITHIN 5' OF THE ROAD.

29. THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION HAS BEEN FULFILLED BY PROVIDING 3.81 ACRES OF ON-SITE FOREST RETENTION AND 5.28 ACRES OF ON-SITE REFORESTATION FOR A TOTAL OF 9.09 ACRES. THERE IS NO SURETY REQUIRED FOR ON-SITE FOREST RETENTION. SURETY FOR ON-SITE REFORESTATION @ $0.50/SQ. FT. FOR 229,997 SQ. FT. = $114,999.00 WAS POSTED UNDER F-14-002.

30. DURING THE INSTALLATION PROCESS OF PUBLIC WATER AND SEWER, THE WELL AND SEPTIC AT 9725 ANNAPOLIS ROAD AND AT 9725-A ANNAPOLIS ROAD, ELLICOTT CITY, MARYLAND 21042 WILL BE PROPERLY ABANDONED/SEALED IN CENTENNIAL LAKE OVERLOOK, UNDER THIS SECTION TWO, CONTRACT No. 24-4764-D AND THE HOWARD COUNTY HEALTH DEPARTMENT WILL BE NOTIFIED. DOCUMENTATION OF PROPER ABANDONMENT OF THE WELL BY A LICENSED WELL DRILLER AND PROPER ABANDONMENT OF THE SEPTIC SYSTEM WILL BE FORWARDED TO THE HOWARD COUNTY HEALTH DEPARTMENT.

31. HISTORIC STRUCTURE EXISTS ON LOT 84. THE HISTORIC DISTRICT COMMISSION MET ON JUNE 7, 2012 FOR ADVISORY COMMENTS ON CASE NO. H0401, SQUIRREL HILL AND RECOMMENDED RETAINING THE EXISTING HOUSE. NO NEW BUILDING EXTENSIONS TO THE HOUSES ON LOT 84 ARE TO BE CONSTRUCTED AT A DISTANCE LESS THAN THE ZONING REGULATIONS ALLOW.

Open Space Tabulation

Description	Total Site	Section One	Section Two
Open Space Required: (50% Of Gross Area)	23.244 Ac. (0.50 x 46.487 Ac.)	7.164 Ac. (0.50 x 14.328 Ac.)	16.080 Ac. (0.50 x 32.159 Ac.)
Total Area Of Open Space Provided:	23.527 Ac.	7.282 Ac.+ (Lots 24 + 25 + 26 + 27 + 28) (0.858 Ac. + 0.030 Ac. + 3.131 Ac. + 2.454 Ac. + 0.809 Ac.)	16.245 Ac.+ (Lots 99 Thru 112)
Total Area Of Non-Credited Open Space Provided:	0.276 Ac.	0.057 Ac.+ (Lots 24 + 25 + 26 + 27 + 28) (0.000 Ac. + 0.030 Ac. + 0.023 Ac. + 0.000 Ac. + 0.004 Ac.)	0.194 Ac.+ (Lots 99 + 100 +104 + 108) (3,194 Sq. Ft. + 2,190 Sq. Ft. + 2,384 Sq. Ft. + 695 Sq. Ft.)
Total Area Of Credited Open Space Provided:	23.276 Ac.	7.225 Ac.+ (Lots 24 + 25 + 26 + 27 + 28) (0.858 Ac. + 0.000 Ac. + 3.108 Ac. + 2.454 Ac. + 0.805 Ac.)	16.051 Ac.+ (Lots 99 Thru 112)

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 29276 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 4/17/15

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20746, Expiration Date 2-22-17."

SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

GENERAL NOTES CONTINUED:

32. THIS PLAN IS SUBJECT TO WAIVER PETITION WP-13-096 TO ALLOW FOR THE REMOVAL OF 15 SPECIMEN TREES (No. 1, 9, 10, 12-16, 18-20, 23, 24, 37 & 39) WITHIN THE PROJECT BOUNDARY AND FOR WAIVES TO THE FINAL PLAT TO ALLOW AN ADJOINER DEED TRANSFER BETWEEN PARCELS. THE WAIVER WAS APPROVED ON JANUARY 14, 2013 WITH THE FOLLOWING CONDITIONS:

1. APPROVAL IS GIVEN FOR A READJUSTMENT OF THE PARCEL LOT LINE BETWEEN THE FIRST AND SECOND PARCELS OF LAND AS DESCRIBED IN DEEDS IDENTIFIED UNDER LIBER 0729, FOLIO 329 AND LIBER 1801, FOLIO 400 FOR PARCEL 86 LOCATED ON TAX MAP No. 30. A NEW DEED SHALL BE RECORDED IN THE LAND RECORDS OFFICE OF HOWARD COUNTY IDENTIFYING THE PARCEL LINE ADJUSTMENT AND A COPY OF THE RECORDED DEED FORWARDED TO THIS DEPARTMENT FOR FILE RETENTION.

2. APPROVAL IS GIVEN FOR REMOVAL OF 15 SPECIMEN TREES AS SHOWN AND IDENTIFIED ON THE REVISED WAIVER PETITION EXHIBIT DATED JANUARY 9, 2013. PROPOSED PERIMETER LANDSCAPING, ON-SITE FOREST CONSERVATION RETENTION AND PLANTING EASEMENT AREAS, STREET TREE PLANTING AND RETENTION OF OVER HALF THE REMAINING SPECIMEN TREES WILL SERVE TO MITIGATE SPECIMEN TREE REMOVAL.

33. THE HOMEOWNERS ARTICLES OF INCORPORATION DOCUMENTS HAVE BEEN RECORDED WITH THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION.

34. THE HOMEOWNER'S COVENANTS AND RESTRICTIONS ARE RECORDED SIMULTANEOUSLY WITH THE FINALPLAT FOR F-14-081 IN THE LAND RECORDS OF HOWARD COUNTY, MD.

35. PERIMETER LANDSCAPING AND SWM SCREENING SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE LANDSCAPE MANUAL. SURETY IN THE AMOUNT OF $16,650.00 FOR 52 SHADE TREES AND 7 EVERGREEN TREES SHALL BE PROVIDED WITH THE DEVELOPERS AGREEMENT FOR THIS FINAL PLAN, F-14-081.

OWNER/DEVELOPER

BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

REVISED
CENTENNIAL LAKE OVERLOOK
(FORMERLY MASON PROPERTY)
SECTION TWO
BUILDABLE LOTS 29 - 98
AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 3, 2015
SHEET 1 OF 40

F-14-081

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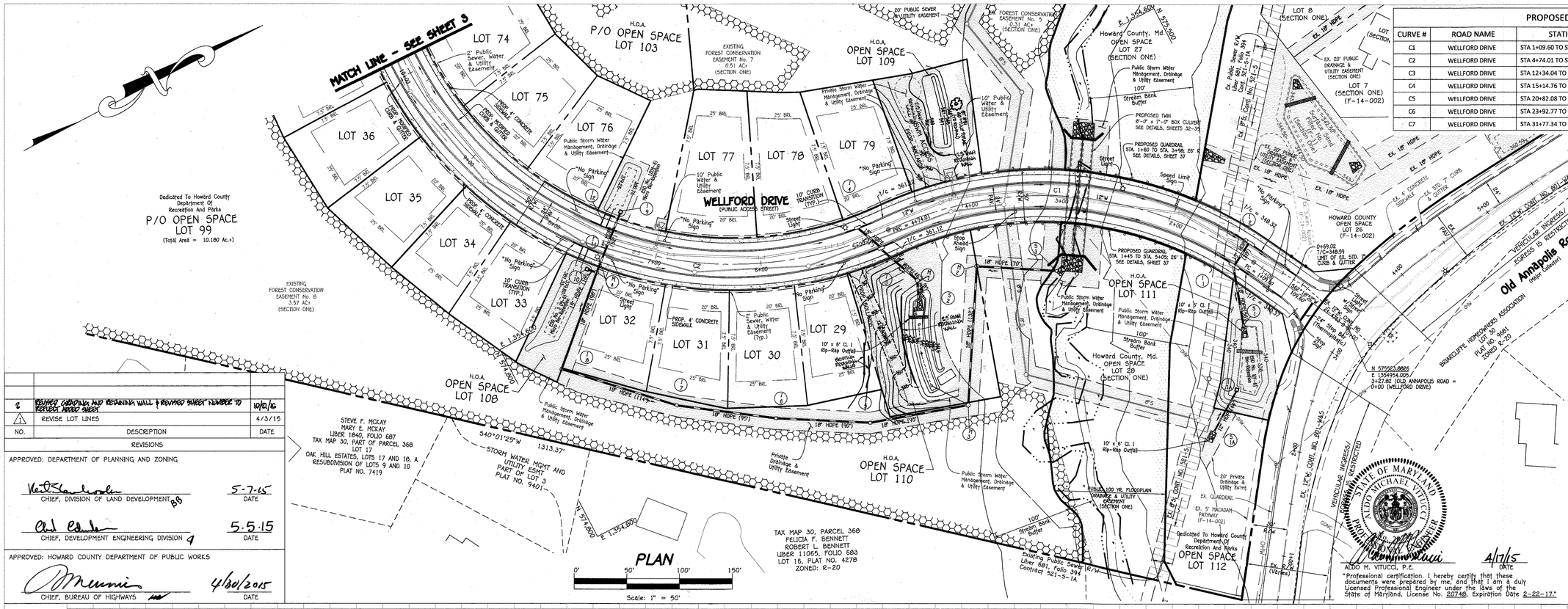
PROPOSED ALIGNMENT CURVE TABLE						
CURVE #	ROAD NAME	STATION	RADIUS	LENGTH	DELTA	TANGENT	CHORD
C1	WELLFORD DRIVE	STA 1+09.60 TO STA 4+74.01	350.00'	364.41'	016°22'13"	348.17'	S32° 29' 14.62"W
C2	WELLFORD DRIVE	STA 4+74.01 TO STA 12+34.04	350.00'	760.04'	016°22'13"	619.26'	S64° 52' 12.29"W
C3	WELLFORD DRIVE	STA 12+34.04 TO STA 14+43.08	350.00'	209.03'	016°22'13"	205.94'	N70° 01' 47.43"W
C4	WELLFORD DRIVE	STA 15+14.76 TO STA 18+96.89	225.00'	382.13'	025°27'53"	337.83'	N38° 29' 07.40"W
C5	WELLFORD DRIVE	STA 20+82.08 TO STA 22+88.46	250.00'	206.38'	022°55'06"	200.57'	N33° 49' 04.85"E
C6	WELLFORD DRIVE	STA 23+92.77 TO STA 30+44.14	230.00'	651.37'	024°54'40"	454.50'	S41° 24' 00.07"E
C7	WELLFORD DRIVE	STA 31+77.34 TO STA 32+81.49	210.00'	104.15'	027°17'01"	103.08'	S25° 31' 29.87"W



NOTES:
1. SEE SHEETS 13-22 FOR THE DETAILED 10 SCALE PLAN VIEWS FOR THE ESD FACILITIES.
2. SEE SHEET 37 FOR GUARDRAIL DETAILS AND "NO PARKING BETWEEN SIGNS" SIGN DETAIL.

NO.	DESCRIPTION	DATE
2	REVISED GRADING AND RETAINING WALL & REVISED SHEET NUMBERS TO REFLECT ROAD SHEET	10/12/16
1	REVISE LOT LINES	4/3/15

REVISIONS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5-7-15

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5-5-15

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 4/30/2015

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 4/17/15

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

REVISED CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20

TAX MAP No. 30 — GRID No. 2 — PARCEL No. 86
2ND ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

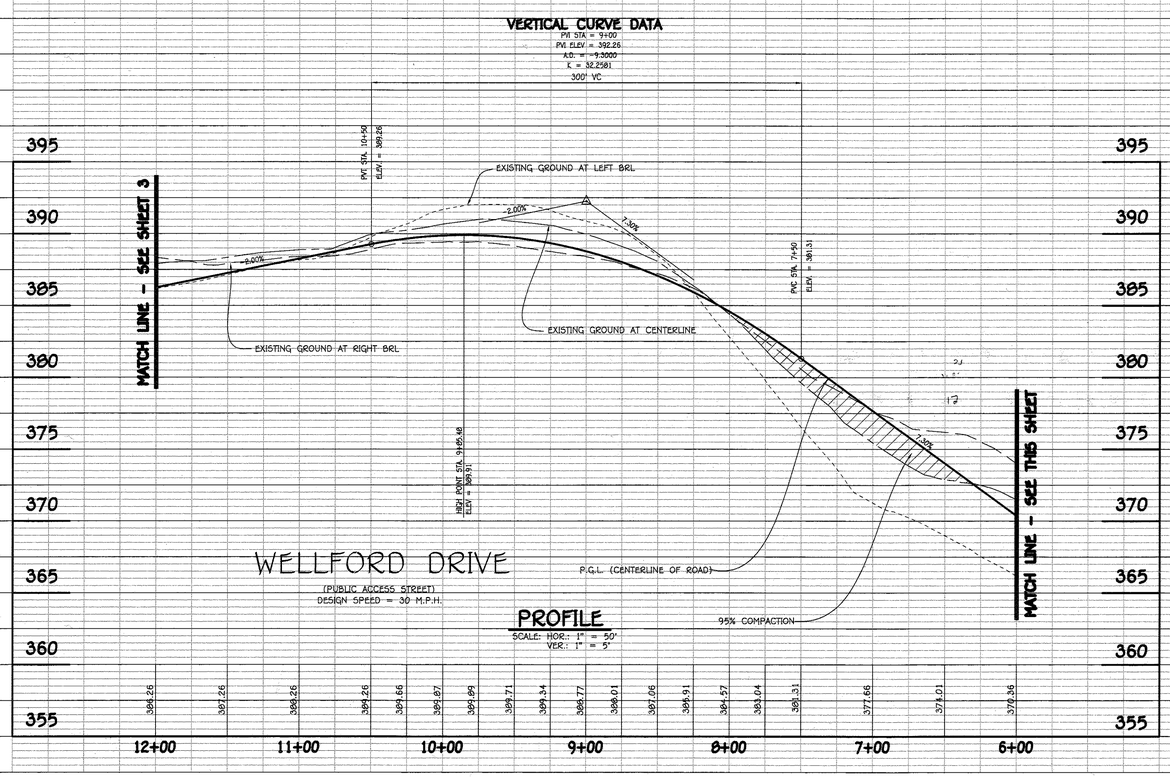
WELLFORD DRIVE

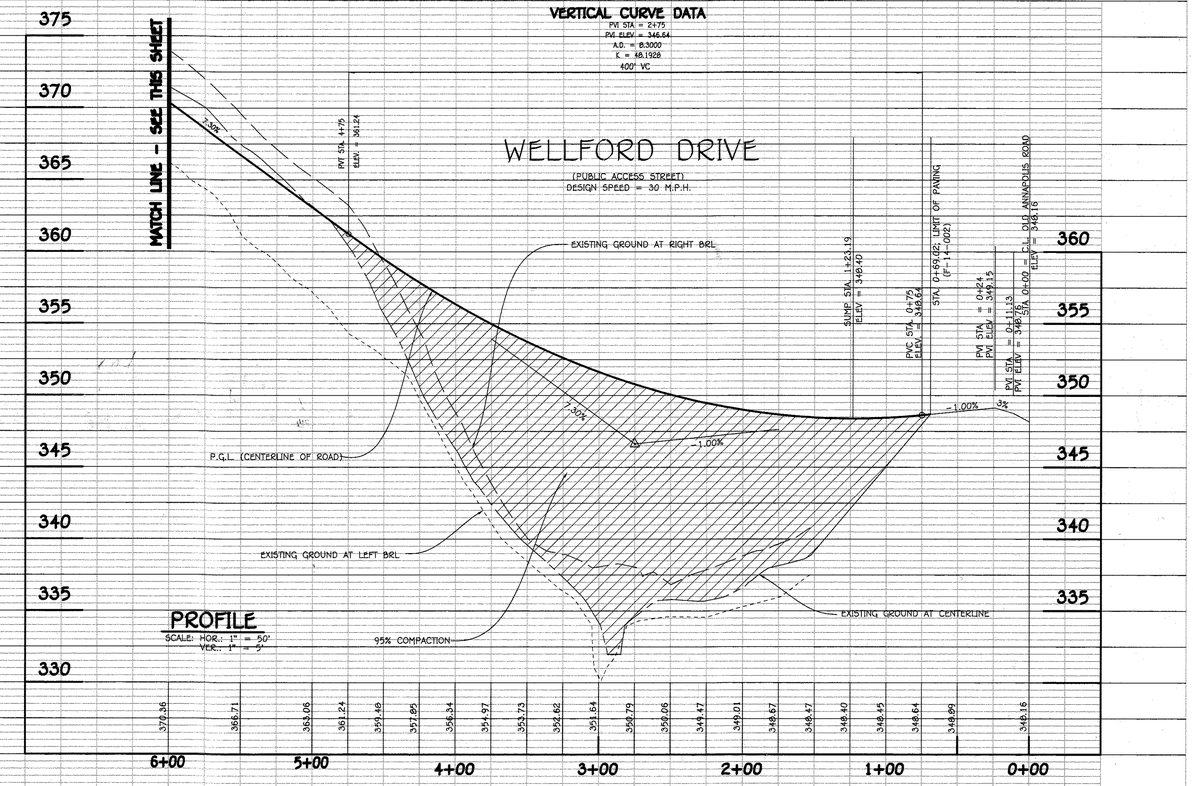
PLAN AND PROFILE

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

SCALE: As Shown	DATE: APRIL 3, 2015	DWG. NO. 2 OF 40
DES. R.A.I./J.C.L.	DRN. J.C.L.	CHK. A.M.V.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

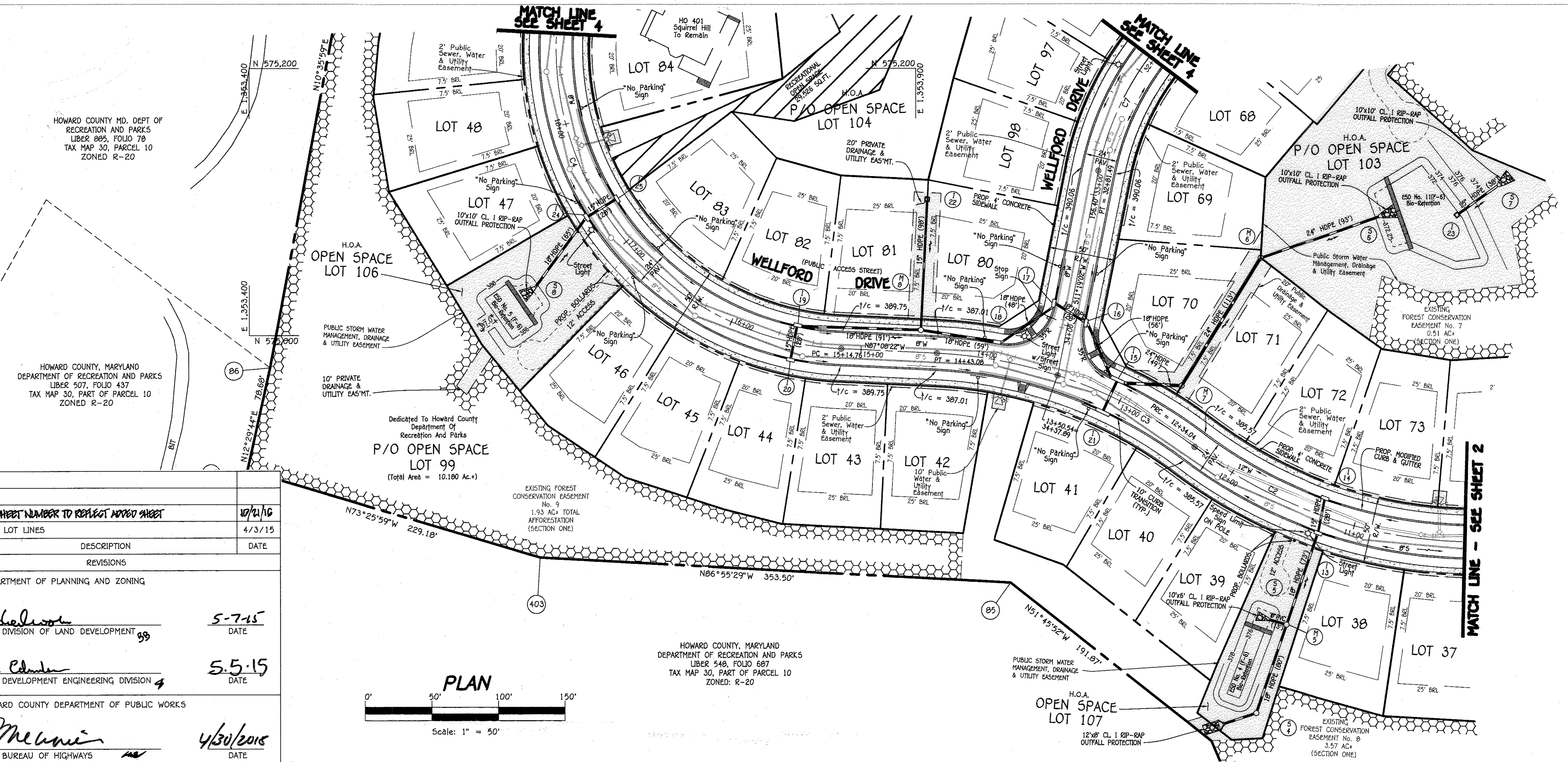




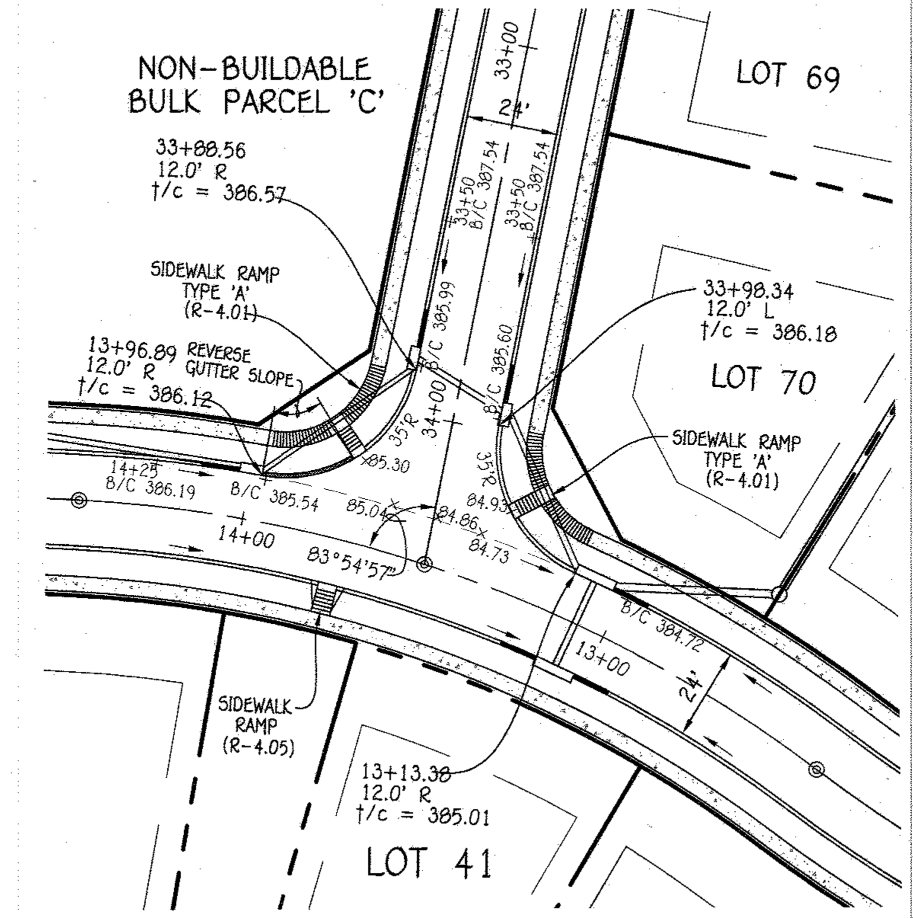
I:\2011\11042\dwgs\finals section two\Redline Revision 1-13-15\11042 sheet 2-4 road plans new mylar.dwg 4/3/2015 7:35:56 AM, 1:1

▬▬▬ – DENOTES NO PARKING ZONE

NOTES:
1. SEE SHEETS 13-22 FOR THE DETAILED 10 SCALE PLAN VIEWS FOR THE ESD FACILITIES.
2. SEE SHEET 37 FOR GUARDRAIL DETAILS AND "NO PARKING BETWEEN SIGNS" SIGN DETAIL.



NOTE: SEE SHEET 25 FOR FILLET PROFILES.



DETAIL
Scale: 1" = 40'

2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16
1	REVISE LOT LINES	4/3/15
NO.	DESCRIPTION	DATE
	REVISIONS	

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5-7-15

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5.5.15

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 4/30/2015

ALDO M. VITUCCI, P.E. — DATE 4/17/15

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

REVISED

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 – 98 AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

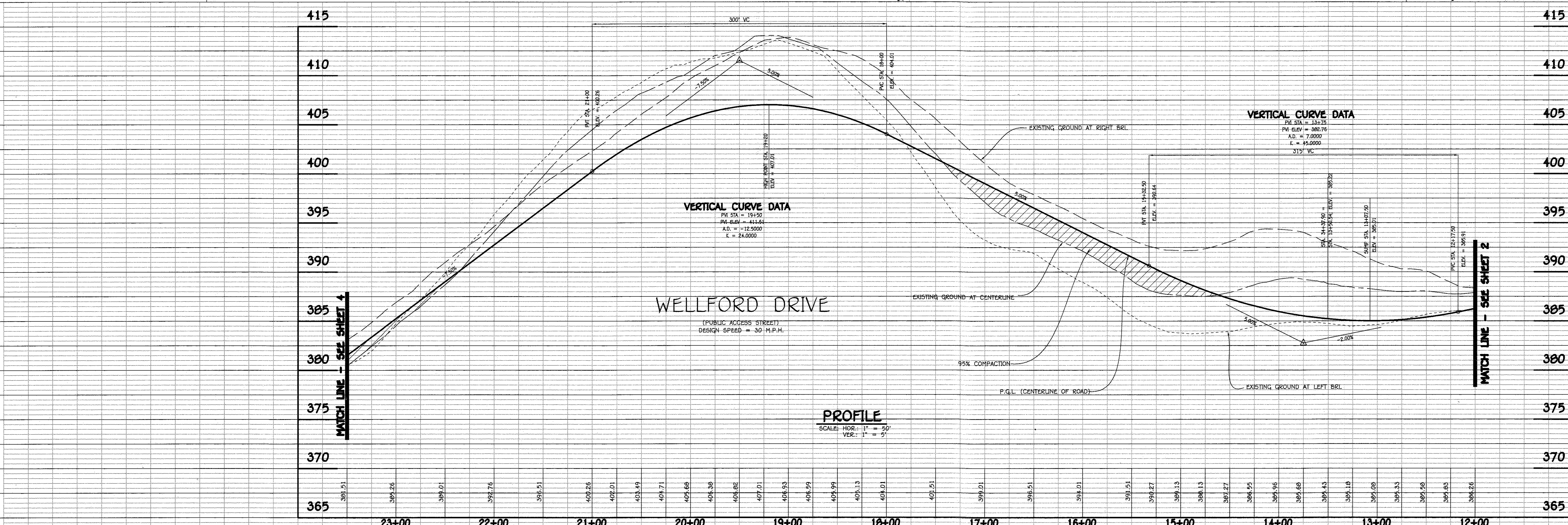
WELLFORD DRIVE

PLAN AND PROFILE

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

SCALE: As Shown	DATE: APRIL 3, 2015	DWG. NO. 3 OF 40
DES. R.A.I./J.C.L.	DRN. J.C.L.	CHK. A.M.V.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK – 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 – 2855



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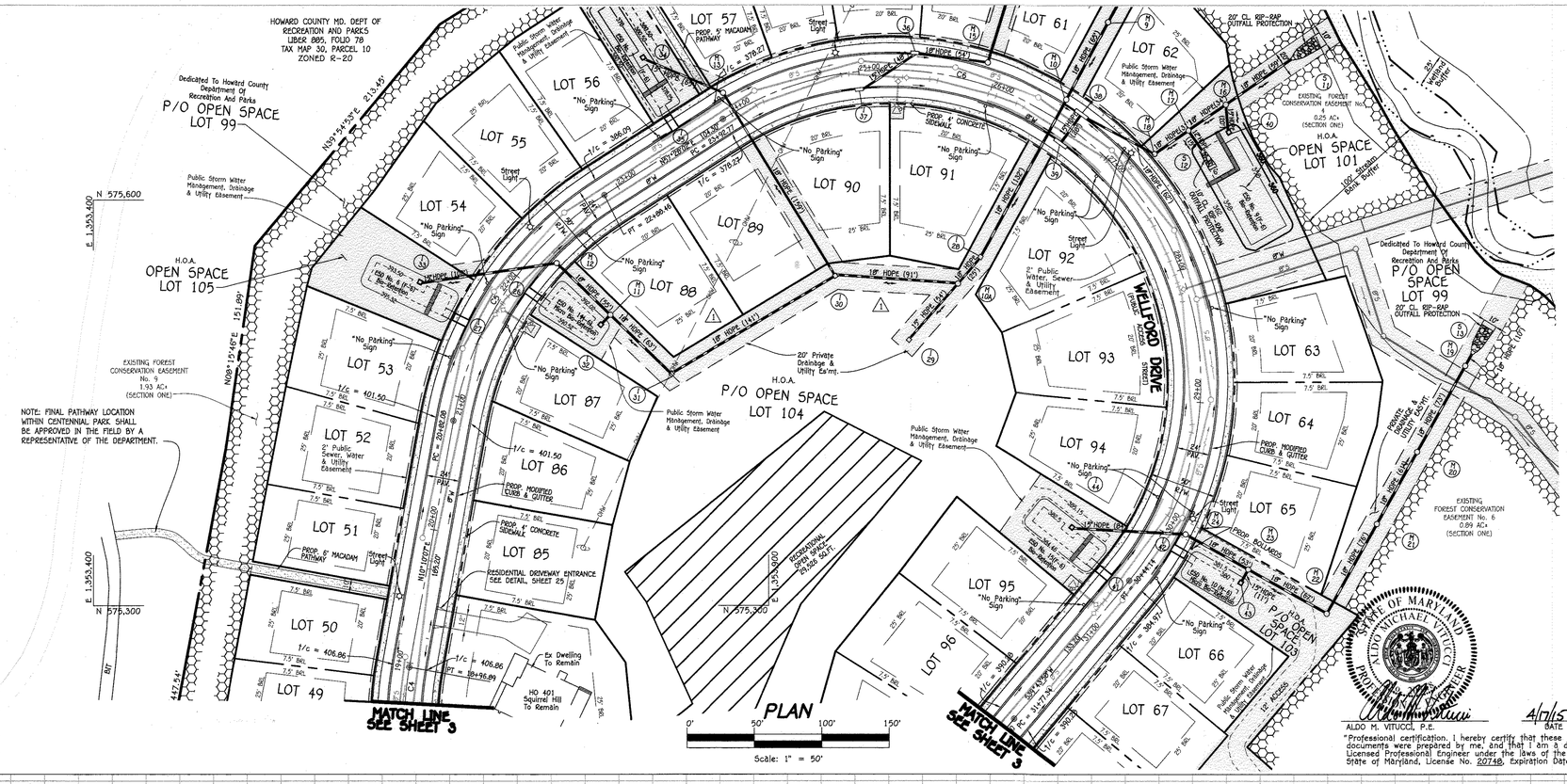
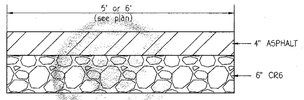




MACADAM PATHWAY DETAIL
NO SCALE

NOTE: FINAL PATHWAY LOCATIONS WITHIN CENTENNIAL PARK SHALL BE APPROVED IN THE FIELD BY A REPRESENTATIVE OF THE DEPARTMENT.

– DENOTES NO PARKING ZONE

NOTES:
1. SEE SHEETS 13-22 FOR THE DETAILED 10 SCALE PLAN VIEWS FOR THE ESD FACILITIES.
2. SEE SHEET 37 FOR GUARDRAIL DETAILS AND "NO PARKING BETWEEN SIGNS" SIGN DETAIL.

NO.	DESCRIPTION	DATE
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/15
1	REVISE LOT LINES AND STORM DRAIN	4/3/15

REVISIONS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5-7-15

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5.5.15

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 4/30/2015

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 4/17/15

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of The State of Maryland, License No. 20748, Expiration Date 2-22-17."

REVISED CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 – 90 AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20

TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

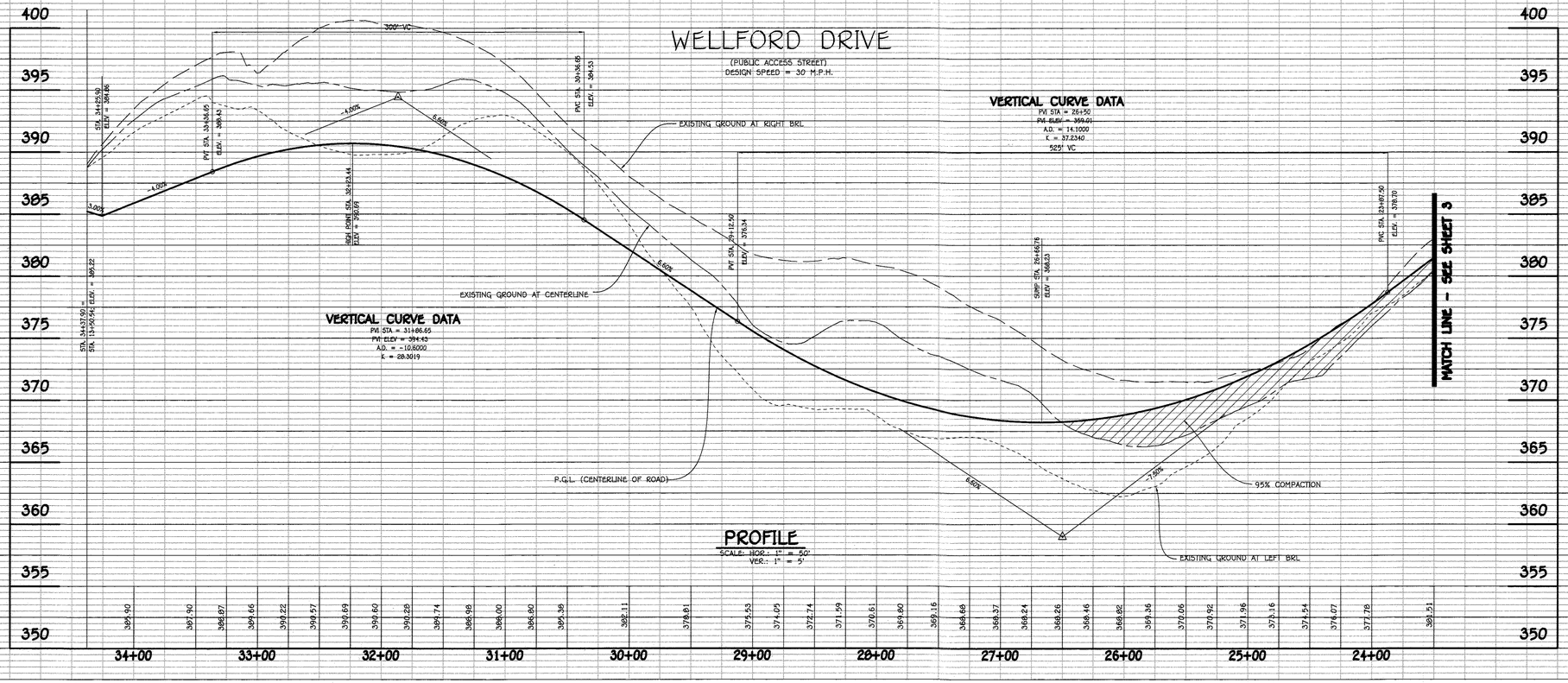
WELLFORD DRIVE

PLAN AND PROFILE

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

SCALE: As Shown	DATE: APRIL 3, 2015	DWG. NO. 4 OF 40
DES. R.A.I./J.C.L.	DRN. J.C.L.	CHK. A.M.V.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK – 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 – 2855



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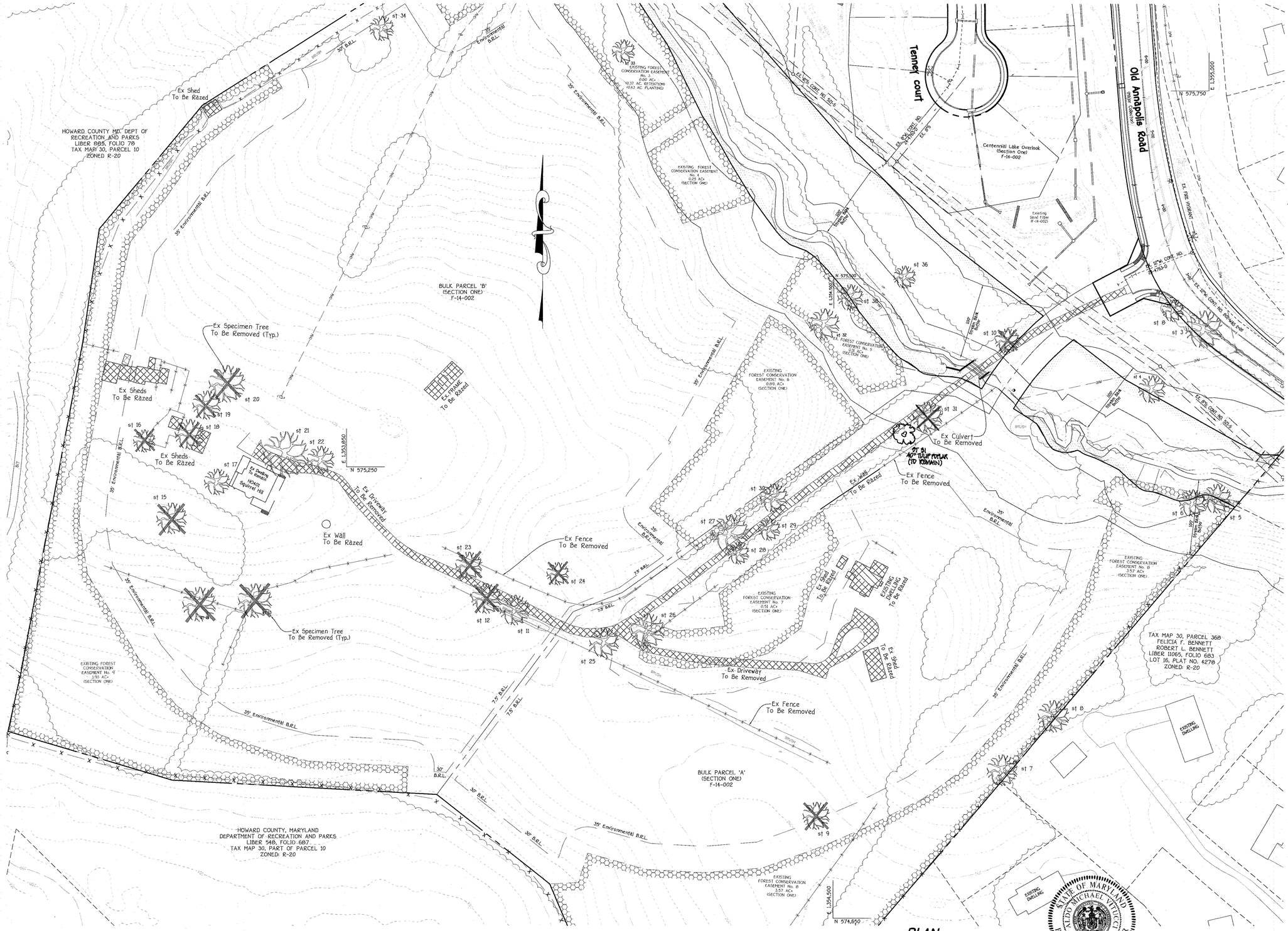

ENGINEER'S CERTIFICATE

I Hereby Certify That This Plan For Erosion And Sediment 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 Guidelines And Specifications Of The Howard Soil Conservation District.

Signature — Date: 5/30/14

DEVELOPER'S CERTIFICATE

"I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents, As Are Deemed Necessary."

Signature Of Developer — Date: 5/30/14

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

District Howard Soil Conservation Dist. — Date

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date: 6-24-14

Chief, Development Engineering Division — Date: 6-16-14

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — Date: 6-10-14

REVISIONS		
NO.	DESCRIPTION	DATE
1	Revise Title Block.	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET, ADD 40" SPECIMAL TREE TO REMAIN	10/24/16

SPECIMEN TREES REMOVED IN SECTION ONE

Number	Common Name	Species Name	DBH (inches)	Condition
1	sugar maple	Acer saccharum	31	Good
37	pin oak	Quercus palustris	30	Good
39	yellow-poplar	Liriodendron tulipifera	30	Fair-Good

SPECIMEN TREES TO BE REMOVED

Number	Common Name	Species Name	DBH (inches)	Condition
9	pin oak	Quercus palustris	35	Good
10	red maple	Acer rubrum	33	Fair
12	red maple	Acer rubrum	39	Good
13	black oak	Quercus velutina	46	Fair
14	black oak	Quercus velutina	46	Good
15	eastern white pine	Pinus strobus	39	Good
16	black walnut	Juglans nigra	32	Fair-Good
18	box-elder	Acer negundo	41	Fair
19	Norway maple	Acer platanoides	41	Good
20	black oak	Quercus velutina	51	Good
23	red maple	Acer rubrum	35	Fair-Good
24	yellow-poplar	Liriodendron tulipifera	33	Fair

- DENOTES SPECIMEN TREE TO BE REMOVED

SPECIMEN TREES TO REMAIN

Number	Common Name	Species Name	DBH (inches)	Condition
2	white oak	Quercus alba	31	Good
3	white oak	Quercus alba	49	Good
4	yellow-poplar	Liriodendron tulipifera	36	Good
5	northen red oak	Quercus rubra	39	Fair
6	northen red oak	Quercus rubra	38	Good
7	scarlet oak	Quercus coccinea	43	Good
8	southern red oak	Quercus falcata	38	Good
11	red maple	Acer rubrum	39	Good
17	slippery elm	Ulmus rubra	35	Good
21	white oak	Quercus alba	59	Good
22	princess tree	Paulownia tomentosa	36	Fair
25	red maple	Acer rubrum	39	Fair
26	red maple	Acer rubrum	47	Fair
27	red maple	Acer rubrum	50	Good
28	red maple	Acer rubrum	31	Fair
29	red maple	Acer rubrum	30	Poor-Fair
30	American sycamore	Platanus occidentalis	38	Fair
31	yellow-poplar	Liriodendron tulipifera	40	Good
32	yellow-poplar	Liriodendron tulipifera	39	Good
33	red maple	Acer rubrum	31	Fair
34	Norway maple	Acer platanoides	32	Fair
35	pin oak	Quercus palustris	36	Fair-Good
36	red maple	Acer rubrum	31	Fair
38	red maple	Acer rubrum	33	Fair

DEMO PLAN
CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 & 112
OPEN SPACE LOTS 99 THRU 111

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 5 OF 40

PLAN

0' 60' 120' 180'
Scale: 1" = 60'

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE: 5/30/14

"Professional certification I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

F-14-081

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TEMPORARY STONE OUTLET SEDIMENT TRAP #3 DATA

INITIAL D.A. = 0.26 Ac.±
FINAL D.A. = 0.73 Ac.±
STORAGE REQUIRED
WET = 1800 x 0.73 = 1,314 CuFt.
DRY = 1800 x 0.73 = 1,314 CuFt.
STORAGE PROVIDED
WET = 1,314 CuFt. @ ELEV. = 338.20
DRY = 1,314 CuFt. @ ELEV. = 338.95
BOTTOM ELEV. = 337.00
STORAGE DEPTH = 3'
TOP OF EMBANKMENT = 340.00
CLEAN OUT ELEV. = 337.62
BOTTOM L x W = 58' x 18'

TEMPORARY STONE OUTLET SEDIMENT TRAP #4 DATA

INITIAL D.A. = 2.41 Ac.±
FINAL D.A. = 2.68 Ac.±
STORAGE REQUIRED
WET = 1800 x 2.68 = 4,824 CuFt.
DRY = 1800 x 2.68 = 4,824 CuFt.
STORAGE PROVIDED
WET = 4,824 CuFt. @ ELEV. = 348.88
DRY = 4,824 CuFt. @ ELEV. = 349.67
BOTTOM ELEV. = 348.00
STORAGE DEPTH = 4'
TOP OF EMBANKMENT = 352.00
CLEAN OUT ELEV. = 348.41
BOTTOM L x W = 79' x 67'
WEIR CREST ELEV. = 350.00
WEIR CREST WIDTH = 12'
FOR 1-YR. TEMP. STORAGE REQ'D. = 0.15 AC.FT.
1-YR. TEMP. STORAGE PROVIDED @ 349.93 = 0.15 AC.FT.

SEDIMENT BASIN #2 DATA

INITIAL D.A. = 3.55 Ac.±
FINAL D.A. = 4.33 Ac.±
STORAGE REQUIRED
WET = 1800 x 4.33 = 7,794 CuFt.
DRY = 1800 x 4.33 = 7,794 CuFt.
STORAGE PROVIDED
WET = 7,794 CuFt. @ ELEV. = 373.25
DRY = 7,794 CuFt. @ ELEV. = 374.80
BOTTOM ELEV. = 372.00
STORAGE DEPTH = 2.61'
TOP OF EMBANKMENT = 376.88
CLEAN OUT ELEV. = 372.62
BOTTOM L x W = 87' x 78'
RISER CREST ELEV. = 374.98
RISER CREST WIDTH = 11.3'
FOR 1-YR. TEMP. STORAGE REQ'D. = 0.16 AC.FT.
1-YR. TEMP. STORAGE PROVIDED @ 374.73 = 0.16 AC.FT.

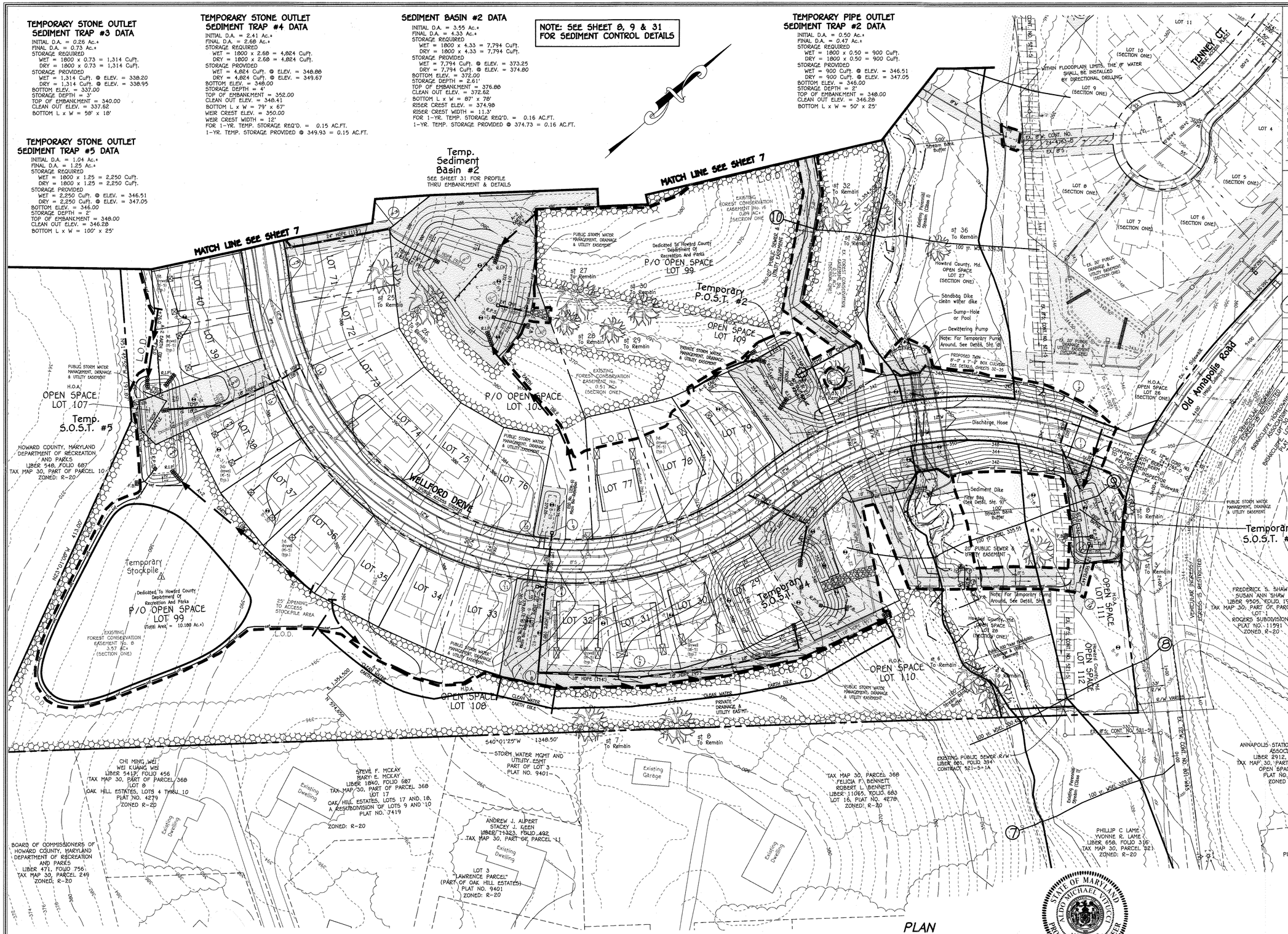
NOTE: SEE SHEET 8, 9 & 31 FOR SEDIMENT CONTROL DETAILS

TEMPORARY PIPE OUTLET SEDIMENT TRAP #2 DATA

INITIAL D.A. = 0.50 Ac.±
FINAL D.A. = 0.47 Ac.±
STORAGE REQUIRED
WET = 1800 x 0.50 = 900 CuFt.
DRY = 1800 x 0.50 = 900 CuFt.
STORAGE PROVIDED
WET = 900 CuFt. @ ELEV. = 346.51
DRY = 900 CuFt. @ ELEV. = 347.05
BOTTOM ELEV. = 346.00
STORAGE DEPTH = 2'
TOP OF EMBANKMENT = 348.00
CLEAN OUT ELEV. = 346.28
BOTTOM L x W = 50' x 25'

TEMPORARY STONE OUTLET SEDIMENT TRAP #5 DATA

INITIAL D.A. = 1.04 Ac.±
FINAL D.A. = 1.25 Ac.±
STORAGE REQUIRED
WET = 1800 x 1.25 = 2,250 CuFt.
DRY = 1800 x 1.25 = 2,250 CuFt.
STORAGE PROVIDED
WET = 2,250 CuFt. @ ELEV. = 346.51
DRY = 2,250 CuFt. @ ELEV. = 347.05
BOTTOM ELEV. = 346.00
STORAGE DEPTH = 2'
TOP OF EMBANKMENT = 349.00
CLEAN OUT ELEV. = 346.28
BOTTOM L x W = 100' x 25'



ENGINEER'S CERTIFICATE

I Hereby Certify That This Plan For Erosion And Sediment 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 Soil Conservation District.

Signature Of Engineer — Date: 4/7/15

DEVELOPER'S CERTIFICATE

"I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents, As Are Deemed Necessary."

Signature Of Developer — Date: 4/10/15

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

District Howard Soil Conservation Dist. — Date: 4/23/15

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date: 5-7-15

Chief, Development Engineering Division — Date: 5.5.15

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — Date: 4/30/2015

REVISIONS

NO.	DESCRIPTION	DATE
1	REVISE LOTS, REMOVE PARCEL 'C' AND REVISE STORM DRAIN	4/3/15
2	REVISE SHEET NUMBER TO REFLECT SURVEY PLAT, ADD SPECIMAN TREE TO REMAIN	10/2/15

SEDIMENT CONTROL LEGEND

—SSF— SSF — SSF—	SUPER-SILT FENCE
—SF— SF — SF—	SILT FENCE
—SF/TP— —SF/TP—	SILT FENCE AND TREE PROTECTION FENCE
S.C.E.	STABILIZED CONSTRUCTION ENTRANCE
TYPE A-2	EARTH DIKE
L.O.D.	LIMIT OF DISTURBANCE
R.R.P.	RIP-RAP INFLOW PROTECTION
S.I.P.	STANDARD INLET PROTECTION
S.I.P.	STANDARD INLET PROTECTION w/SUPER SILT FENCE
C.I.P.	CURB INLET PROTECTION
R.P.S.	REMOVEABLE PUMPING STATION
F.B.	FILTER BAG

NOTE: CONSTRUCTION OF HOUSES AFFECTED BY THE INSTALLATION OF SEDIMENT CONTROLS IS TO BE DELAYED UNTIL PERMISSION IS RECIEVED FROM THE SEDIMENT CONTROL INSPECTOR (LOTS 29-30 & 60-63).

NOTE: THE CONTRACTOR SHALL COORDINATE WITH THE INSPECTOR IN REGARDS TO THE REQUIREMENT THAT NO MORE THAN 20-ACRES OF "OPEN" GROUND SHALL BE DISTURBED AT ANY GIVEN TIME.

NOTE: ANY SEDIMENT CONTROLS DAMAGED BY UTILITY INSTALLATION ARE TO BE REPAIRED IMMEDIATELY.

PLAN
0' 50' 100' 150'
Scale: 1" = 50'

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE: 4/7/15

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

REVISED GRADING & SEDIMENT CONTROL PLAN
CENTENNIAL LAKE OVERLOOK
(FORMERLY MASON PROPERTY)

SECTION TWO
BUILDABLE LOTS 29 - 98 AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 3, 2015
SHEET 6 OF 40

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

F-14-081

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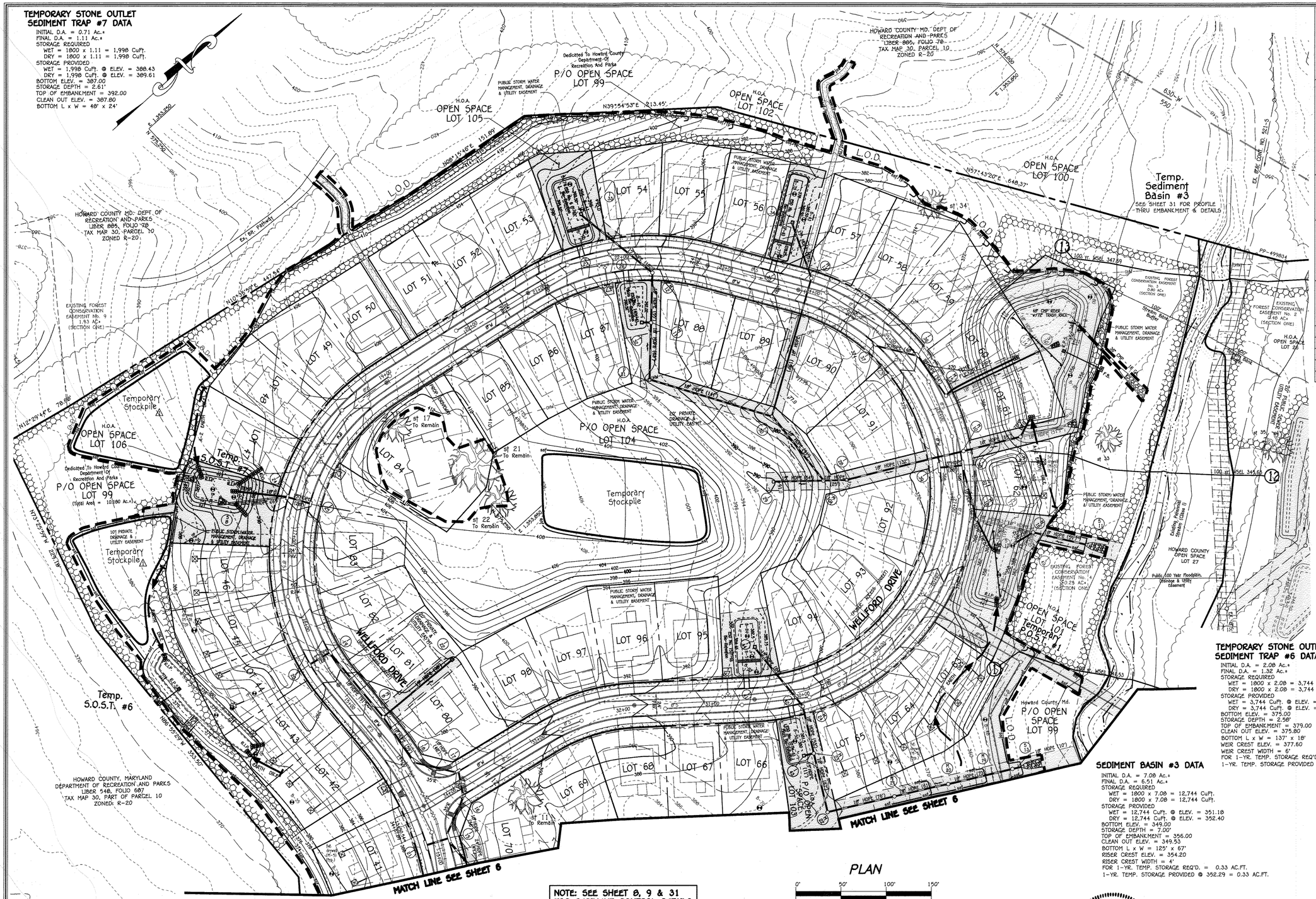
TEMPORARY STONE OUTLET SEDIMENT TRAP #7 DATA

INITIAL D.A. = 0.71 Ac.±
FINAL D.A. = 1.11 Ac.±
STORAGE REQUIRED
WET = 1800 x 1.11 = 1,998 CuFt.
DRY = 1800 x 1.11 = 1,998 CuFt.
STORAGE PROVIDED
WET = 1,998 CuFt. @ ELEV. = 388.43
DRY = 1,998 CuFt. @ ELEV. = 389.61
BOTTOM ELEV. = 387.00
STORAGE DEPTH = 2.61'
TOP OF EMBANKMENT = 392.00
CLEAN OUT ELEV. = 387.80
BOTTOM L x W = 48' x 24'



NOTE: SEE SHEET 8, 9 & 31 FOR SEDIMENT CONTROL DETAILS

PLAN

0' 50' 100' 150'
Scale: 1" = 50'

ENGINEER'S CERTIFICATE

I Hereby Certify That This Plan For Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Condition And That It Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District.

Signature Of Engineer — Date 4/7/15

DEVELOPER'S CERTIFICATE

"I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents, As Are Deemed Necessary."

Signature Of Developer — Date 4/10/15

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

District Howard Soil Conservation Dist. — Date 4/23/15

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date 5.7.15

Chief, Development Engineering Division — Date 5.5.15

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — Date 4/20/2015

REVISIONS

NO.	DESCRIPTION	DATE
1	REVISE LOTS, REMOVE PARCEL 'C' AND REVISE STORM DRAIN	4/3/15
2	REVISE SHEET NUMBER TO REFLECT NEXT SHEET	10/9/15

SEDIMENT CONTROL LEGEND

- 65F — 55F — 55F — SUPER-SILT FENCE
- 5F — 5F — 5F — SILT FENCE
- 5F/TP — 5F/TP — SILT FENCE AND TREE PROTECTION FENCE
- S.C.E. — STABILIZED CONSTRUCTION ENTRANCE
- TYPE A-2 — EARTH DIKE
- L.O.D. — LIMIT OF DISTURBANCE
- R.R.P. — RIP-RAP INFLOW PROTECTION
- S.I.P. — STANDARD INLET PROTECTION
- 65F S.I.P. — STANDARD INLET PROTECTION w/SUPER SILT FENCE
- C.I.P. — CURB INLET PROTECTION
- R.P.S. — REMOVEABLE PUMPING STATION
- F.B. — FILTER BAG

NOTE: CONSTRUCTION OF HOUSES AFFECTED BY THE INSTALLATION OF SEDIMENT CONTROLS IS TO BE DELAYED UNTIL PERMISSION IS RECIEVED FROM THE SEDIMENT CONTROL INSPECTOR (LOTS 29-30 & 60-63).

NOTE: THE CONTRACTOR SHALL COORDINATE WITH THE INSPECTOR IN REGARDS TO THE REQUIREMENT THAT NO MORE THAN 20-ACRES OF "OPEN" GROUND SHALL BE DISTURBED AT ANY GIVEN TIME.

NOTE: ANY SEDIMENT CONTROLS DAMAGED BY UTILITY INSTALLATION ARE TO BE REPAIRED IMMEDIATELY.

TEMPORARY STONE OUTLET SEDIMENT TRAP #6 DATA

INITIAL D.A. = 2.08 Ac.±
FINAL D.A. = 1.32 Ac.±
STORAGE REQUIRED
WET = 1800 x 2.08 = 3,744 CuFt.
DRY = 1800 x 2.08 = 3,744 CuFt.
STORAGE PROVIDED
WET = 3,744 CuFt. @ ELEV. = 376.42
DRY = 3,744 CuFt. @ ELEV. = 377.58
BOTTOM ELEV. = 375.00
STORAGE DEPTH = 2.58'
TOP OF EMBANKMENT = 379.00
CLEAN OUT ELEV. = 375.80
BOTTOM L x W = 137' x 18'
WEIR CREST ELEV. = 377.60
WEIR CREST WIDTH = 6'
FOR 1-YR. TEMP. STORAGE REQ'D. = 0.10 AC.FT.
1-YR. TEMP. STORAGE PROVIDED @ 377.85 = 0.10 AC.FT.

SEDIMENT BASIN #3 DATA

INITIAL D.A. = 7.08 Ac.±
FINAL D.A. = 6.51 Ac.±
STORAGE REQUIRED
WET = 1800 x 7.08 = 12,744 CuFt.
DRY = 1800 x 7.08 = 12,744 CuFt.
STORAGE PROVIDED
WET = 12,744 CuFt. @ ELEV. = 351.18
DRY = 12,744 CuFt. @ ELEV. = 352.40
BOTTOM ELEV. = 349.00
STORAGE DEPTH = 7.00'
TOP OF EMBANKMENT = 356.00
CLEAN OUT ELEV. = 349.53
BOTTOM L x W = 125' x 67'
RISER CREST ELEV. = 354.20
RISER CREST WIDTH = 4'
FOR 1-YR. TEMP. STORAGE REQ'D. = 0.33 AC.FT.
1-YR. TEMP. STORAGE PROVIDED @ 352.29 = 0.33 AC.FT.

TEMPORARY PIPE OUTLET SEDIMENT TRAP #1 DATA

INITIAL D.A. = 2.42 Ac.±
FINAL D.A. = 3.52 Ac.±
STORAGE REQUIRED
WET = 1800 x 3.52 = 6,366 CuFt.
DRY = 1800 x 3.52 = 6,366 CuFt.
STORAGE PROVIDED
WET = 6,366 CuFt. @ ELEV. = 359.95
DRY = 6,366 CuFt. @ ELEV. = 361.15
BOTTOM ELEV. = 358.00
STORAGE DEPTH = 4.30'
TOP OF EMBANKMENT = 362.30
CLEAN OUT ELEV. = 359.40
BOTTOM L x W = 152' x 24'
RISER CREST ELEV. = 361.15
RISER CREST WIDTH = 2'
FOR 1-YR. TEMP. STORAGE REQ'D. = 0.17 AC.FT.
1-YR. TEMP. STORAGE PROVIDED @ 361.30 = 0.17 AC.FT.

FLOODPLAIN SUMMARY

STA.	Q100 c.f.s.	W.S. ELEVATION	VELOCITY (f.p.s.)	Remarks
1	919.00	327.88	0.59	
2	919.00	327.88	0.41	
3	----	----	----	Ex. 72" Culvert
4	919.00	327.88	0.81	
5	919.00	327.88	0.91	
6	919.00	327.96	1.78	
7	919.00	328.85	3.03	
8	919.00	330.21	7.22	
9	919.00	334.64	4.05	
9.5	----	----	----	Twin Box Culverts
10	799.5	339.77	10.19	
11	799.5	343.13	2.03	
12	799.5	344.16	8.32	
13	799.5	347.80	4.59	

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(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STATE OF MARYLAND — ALDO M. VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 4/7/15

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

REVISED GRADING & SEDIMENT CONTROL PLAN
CENTENNIAL LAKE OVERLOOK
(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 3, 2015
SHEET 7 OF 40

F-14-081

E:\2011\11042\dwg\Finals section two\Redline Revision 1-13-15\11042 sheet 6-7 grading plan new mylar.dwg, 4/6/2015 8:26:57 AM, 1:1

SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS (B-4-2)

A. Soil Preparation

1. Temporary Stabilization

a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.

b. Apply fertilizer and lime as prescribed on the plans.

c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.

2. Permanent Stabilization

a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:

i. Soil pH between 6.0 and 7.0.
ii. Soluble salts less than 500 parts per million (ppm).
iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
iv. Soil contains 1.5 percent minimum organic matter by weight.
v. Soil contains sufficient pore space to permit adequate root penetration.

b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.

c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.

e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.

3. Topsoiling is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

c. The original soil to be vegetated contains material toxic to plant growth.

d. The soil is so acidic that treatment with limestone is not feasible.

4. Areas having slopes steeper than 2:1 require special consideration and design.

5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2 inches in diameter.

b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.

c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

6. Topsoil Application

a. Erosion and sediment control practices must be maintained when applying topsoil.

b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.

c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.

2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.

3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.

4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.

5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

TEMPORARY SEEDING NOTES (B-4-4)

Definition

To stabilize disturbed soils with vegetation for up to 6 months.

Purpose

To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.

2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.

3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

Temporary Seeding Summary

Hardiness Zone (from Figure B.3): 6b Seed Mixture (from Table B.1):				Fertilizer Rate (10-20-20)	Lime Rate
Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
BARLEY	96	3/1 - 5/15, 8/15 - 10/15	1"	436 lb/ac (10 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
OATS	72	3/1 - 5/15, 8/15 - 10/15	1"		
RYE	112	3/1 - 5/15, 8/15 - 10/15	1"		

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PERMANENT SEEDING NOTES (B-4-5)

A. Seed Mixtures

1. General Use

a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.

b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.

c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency. d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary .

2. Turfgrass Mixtures

a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.

i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.

iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.

Notes:
Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line

c. Ideal Times of Seeding for Turf Grass Mixtures Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a) Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b) Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 6b Seed Mixture (from Table B.3): 8					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P_2O_5	K_2O	
8	TALL FESCUE	100	Mar. 1-May 15 Aug. 1-Oct. 15	1/4-1/2 in.	45 lbs. per acre (1.0 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

a.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

b.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

OWNER/DEVELOPER

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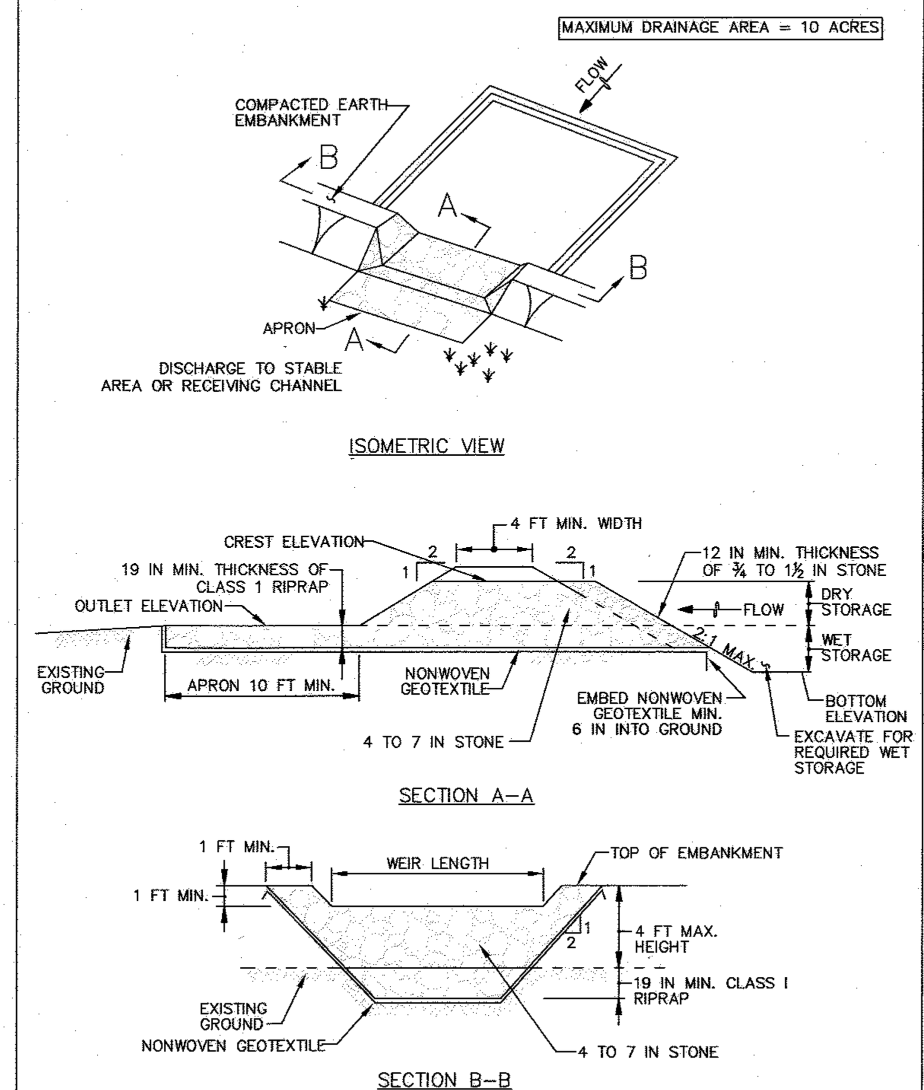
DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STANDARD SYMBOL: ST-II

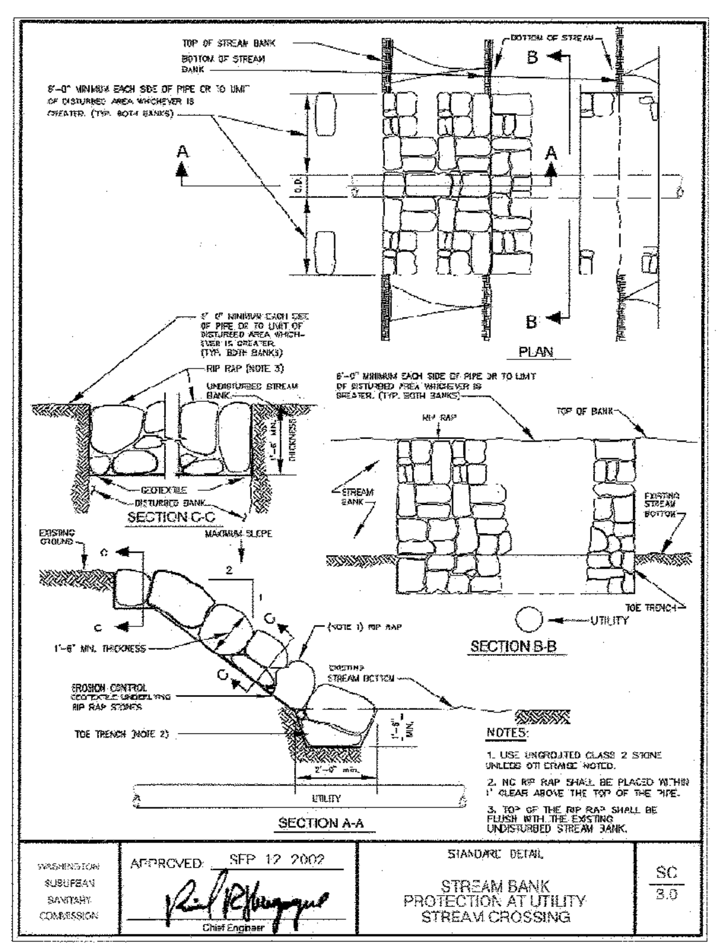


CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
2. CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
3. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
4. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE WEIR CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
5. MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
6. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE BOTTOM AND SIDES OF OUTLET AND APRON PRIOR TO PLACEMENT OF RIPRAP. OVERLAP SECTIONS OF GEOTEXTILE AT LEAST 1 FOOT WITH THE SECTION NEARER TO THE TRAP PLACED ON TOP. EMBED GEOTEXTILE AT LEAST 6 INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
7. USE CLEAN 4 TO 7 INCH RIPRAP TO CONSTRUCT THE WEIR. USE CLASS I RIPRAP FOR THE APRON. USE OF RECYCLED CONCRETE EQUIVALENT IS ACCEPTABLE.
8. PLACE 1 FOOT OF CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE ON THE UPSTREAM FACE OF THE WEIR.
9. CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO APPROVED PLAN, AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
10. STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.
11. REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (50% OF WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION.
12. WHEN DEWATERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.
13. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

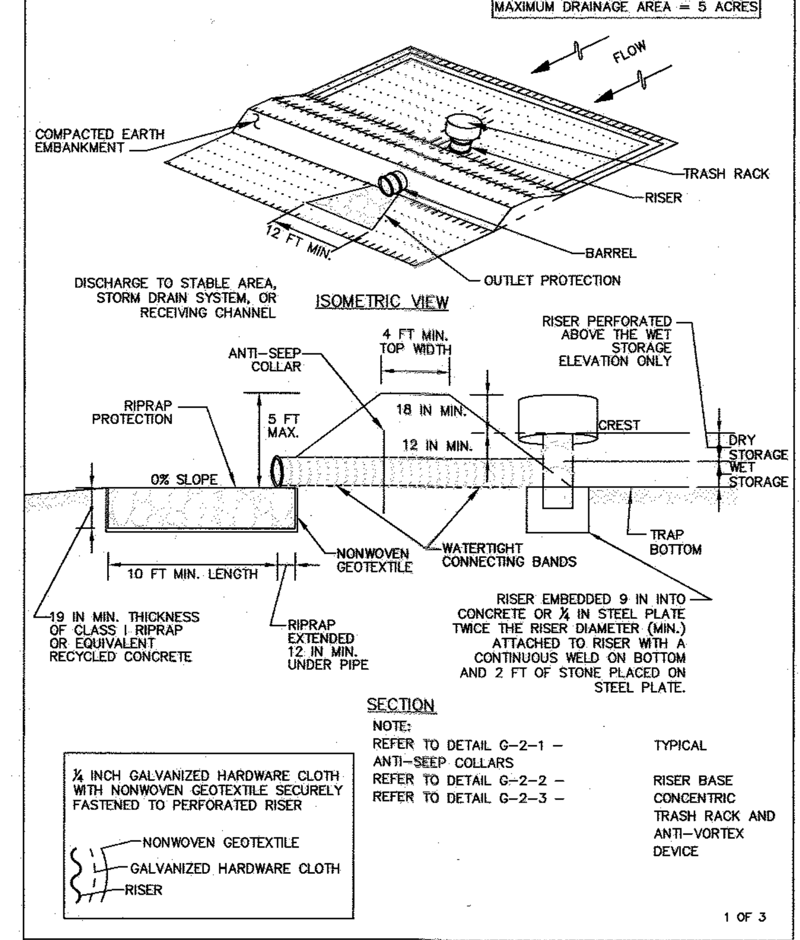
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

STANDARD SYMBOL: ST-I



1 OF 3

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

STANDARD SYMBOL: ST-I

CONSTRUCTION SPECIFICATIONS

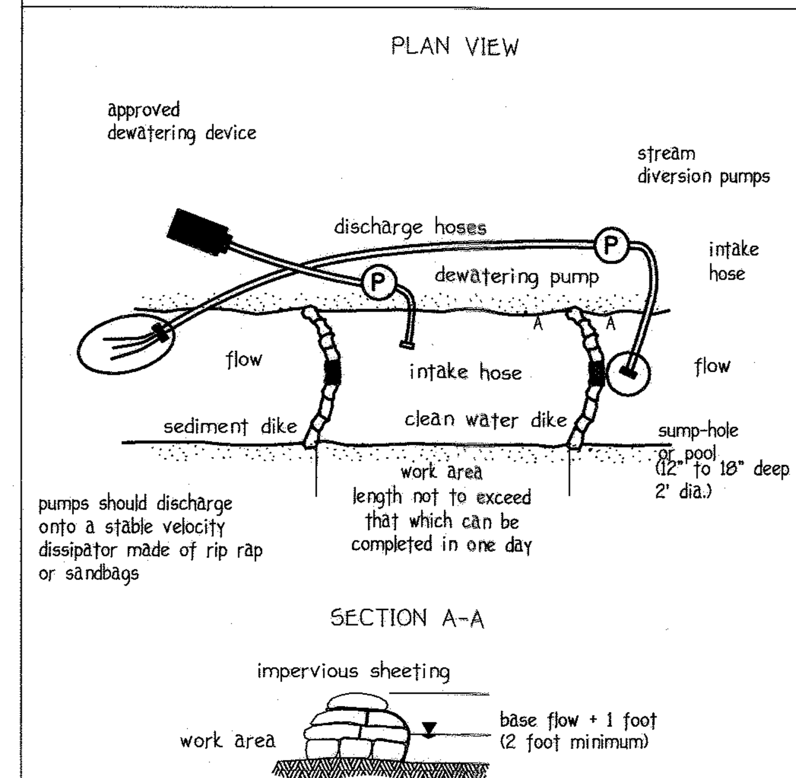
1. CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
2. CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
3. PERFORATE THE RISER WITH 1 INCH DIAMETER HOLES SPACED 6 INCHES ON CENTER WITH THE LOWEST PERFORATIONS AT THE WET STORAGE ELEVATION OR PROVIDE A HORIZONTAL OR VERTICAL DRAW-DOWN DEVICE PERFORATED ACCORDING TO APPROVED PLAN. DO NOT PERFORATE THE RISER WITHIN 6 INCHES OF THE TOP OF THE HORIZONTAL BARREL.
4. SET RISER/BARREL ASSEMBLY PRIOR TO EMBANKMENT CONSTRUCTION. MAKE ALL PIPE CONNECTIONS WATERTIGHT. OFFSET RISER FROM EMBANKEMENT TO ACCOMODATE PLACEMENT OF THE TRASH RACK. ANCHOR THE RISER WITH EITHER A REINFORCED CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. MAKE CONCRETE BASES AT LEAST TWICE THE RISER DIAMETER AND 18 INCHES THICK WITH THE RISER EMBEDDED 9 INCHES.
5. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
6. HAND COMPACT IN 4 INCH LAYERS FILL MATERIAL AROUND THE PIPE SPILLWAY. PLACE A MINIMUM OF 2 FEET OF HAND COMPACTED BACKFILL OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
7. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE RISER CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
8. MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
9. WRAP THE RISER WITH ¼ INCH GALVANIZED HARDWARE CLOTH THEN WRAP WITH NONWOVEN GEOTEXTILE. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE. EXTEND HARDWARE CLOTH AND GEOTEXTILE AT LEAST 6 INCHES ABOVE THE HIGHEST PERFORATIONS AND AT LEAST 6 INCHES BELOW THE LOWEST PERFORATIONS. OVERLAP, FOLD AND FASTEN WHERE ENDS OF GEOTEXTILE COME TOGETHER TO PREVENT BYPASS. REPLACE GEOTEXTILE AS NECESSARY TO PREVENT CLOGGING.
10. USE STRAPS OR CONNECTING BANDS AT THE TOP AND BOTTOM OF THE GEOTEXTILE TO HOLD THE GEOTEXTILE AND HARDWARE CLOTH IN PLACE.
11. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
12. STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.
13. CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO THE APPROVED PLAN AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
14. REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (50% OF WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.
15. WHEN DEWATERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.
16. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

2 OF 3

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP-AROUND PRACTICE



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.2-3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMITS. (2 WEEKS)

2. NOTIFY "MISS UTILITY" AT LEAST 48 HOURS BEFORE BEGINNING ANY WORK AT 1-800-257-7777. NOTIFY HOWARD COUNTY OFFICE OF CONSTRUCTION/INSPECTION DIVISION AT 410-313-1870 AT LEAST 24 HOURS BEFORE STARTING ANY WORK. IN ADDITION, NOTIFY AT&T PRIOR TO ANY ACTIVITY WITHIN THEIR EASEMENT.

3. CONSTRUCTION ON THIS PROJECT MAY NOT BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASINS ARE ONSITE.

4. INSTALL STABILIZED CONSTRUCTION ENTRANCE. (1 DAY)

5. INSTALL SUPER-SILT FENCE AND TREE PROTECTION WHERE SHOWN ON THE PLANS. DEMO EXISTING DWELLING, ACCESSORY STRUCTURES, DRIVEWAY AND SPECIMEN TREES AS SHOWN ON SHEET 5.

6. CLEAR AND GRUB WHERE PLANNED DISTURBANCE IS NECESSARY FOR INSTALLATION OF SEDIMENT CONTROL MEASURES, ROADWAY CONSTRUCTION AND LOT CONSTRUCTION. (8 WEEKS)

7. AFTER PERMISSION IS GRANTED BY THE SEDIMENT CONTROL INSPECTOR, BEGIN INSTREAM CONSTRUCTION OF CONCRETE BOX CULVERTS IN ACCORDANCE WITH MDE WATERWAY CONSTRUCTION MEASURES AND PERMIT CRITERIA. (4 WEEKS)

8. INSTALL SEDIMENT CONTROL TRAPS AND BASINS. (4 WEEKS)

9. INSTALL EARTH DIKES TO SEDIMENT TRAPS ALONG WITH THE PROPOSED BAFFLES AS SHOWN ON THE PLANS. ALL RUNOFF FROM THE ROADS WILL BE CONTINUALLY DOVERTED INTO TRAPS/ BASINS VIA EARTH DIKES OR CONVERT TO MACADAM BERMS AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. OBTAIN PERMISSION FROM INSPECTOR AFTER CONSTRUCTING THESE TRAPS AND EARTH DIKES. (2 WEEKS)

10. AFTER PERMISSION IS GRANTED BY THE SEDIMENT CONTROL INSPECTOR, GRADE SITE TO SUBGRADE AND STABILIZE USING TEMPORARY SEEDING NOTES. (6 WEEKS)

11. INSTALL STORM DRAIN SYSTEM AS SHOWN ON THE PLANS. BLOCK OFF M-1, M-5, I-24, M-15 & M-18 TO THE OUTFALL AND INSTALL 18" FLEXIBLE PIPE TO OUTFALL INTO THE PROPOSED TRAP OR BASIN. BLOCK OFF M-6 AND INSTALL 24" FLEXIBLE PIPE INTO THE PROPOSED SEDIMENT BASIN #2. (8 WEEKS)

12. DIVERT THE STORM DRAIN OUTFALLS BY PROVIDING TEMPORARY FLEXIBLE PIPE. (2 WEEKS)

13. INSTALL WATER MAIN AND SEWER MAIN AS SHOWN ON THE SEWER AND WATER PLANS. (8 WEEKS)

14. INSTALL ROADWAY BASE COURSE PAVING. (6 WEEKS)

15. STABILIZE ALL DISTURBED AREAS. (5 DAYS)

16. APPLY TACK COAT TO BASE COURSE PAVING AND LAY SURFACE COURSE. (4 WEEKS)

17. WHEN ALL CONTRIBUTING AREAS TO THE SEDIMENT CONTROL DEVICES HAVE BEEN STABILIZED AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, THE DEVICES MAY BE REMOVED AND/OR BACKFILLED AND THE REMAINING AREAS BROUGHT TO FINAL GRADE. THIS INCLUDES THE INSTALLATION OF THE BIO-RETENTION FACILITIES (M-6 & F-6) TO TREAT THE ROADWAY RUNOFF. IN ADDITION, INSTALL THE PROPOSED INFILTRATION BERM (M-4) AND SURFACE SAND FILTER (F-1). (6 WEEKS)

18. UPON COMPLETION OF ROADWAY CONSTRUCTION, STABILIZE AREAS AND REMOVE TEMPORARY DEVICES INCLUDING THE THREE (6) BULKHEADS LOCATED WITHIN M-1, M-5, M-6, I-24, M-15 & M-18. (3 DAYS)

19. NOTIFY HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS FOR A FINAL INSPECTION OF THE COMPLETED PROJECT.

20. AFTER CONSTRUCTION OF THE FINAL STORMWATER FACILITY HAS BEEN COMPLETED, THE DEVELOPER MUST HAVE AN AS-BUILT PLAN PREPARED AND SUBMITTED TO HOWARD COUNTY BY THE PROJECT ENGINEER.

21. THE CONTRACTOR SHALL COORDINATE WITH THE INSPECTOR IN REGARDS TO THE REQUIREMENT THAT NO MORE THAN 20-ACRES OF "OPEN" GROUND SHALL BE DISTURBED AT ANY GIVEN TIME. THIS MAY BE ACCOMPLISHED BY GRADING ONE PARCEL AT A TIME, IF REQUIRED.

NOTE: CONTRACTOR SHALL CLEAN AND RESTORE THE RECEIVING PONDS OF ANY AND ALL SEDIMENT, TO THEIR ORIGINALLY DESIGNED GRADE.

NOTE: THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON ALL SEDIMENT AND EROSION CONTROL STRUCTURES SHOWN HEREON AFTER EACH RAINFALL AND ON A DAILY BASIS. REMOVE SEDIMENT FROM S.O.S.T.'s, P.O.S.T.'S AND SEDIMENT BASINS WHEN CLEANOUT ELEVATIONS ARE REACHED. ALL SEDIMENT MUST BE PLACED UPSTREAM OF AN APPROVED BASIN DEVICE.

NOTE: NO REVISION TO THE SEQUENCE OF CONSTRUCTION WILL BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE HOWARD SCD.

NOTE: CONSTRUCTION OF THE HOUSES AFFECTED BY THE INSTALLATION OF SEDIMENT CONTROLS IS TO BE DELAYED UNTIL PERMISSION IS RECEIVED FROM THE SEDIMENT CONTROL INSPECTOR.

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1) A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).
2) ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3) FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, b) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4) ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
5) ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
6) SITE ANALYSIS:

TOTAL AREA OF SITE	46.487	ACRES
AREA DISTURBED	25.6	ACRES
AREA TO BE ROOFED OR PAVED	8.9	ACRES
AREA TO BE VEGETATIVELY STABILIZED	16.7	ACRES
TOTAL CUT	75,936	CU.YDS.
TOTAL FILL	40,411	CU.YDS.
OFFSITE WASTE/BORROW AREA LOCATION	N/A	

7) ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8) ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
9) ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
10) TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
11) ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.
12) A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 ACRE PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PROCEEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

STATE OF MARYLAND – ALDO MICHAEL VITUCCI – No. 20748 – PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. 5/30/14 DATE

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

ENGINEER'S CERTIFICATE

I Hereby Certify That This Plan For Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Condition And That It Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District.

Signature Of Engineer 5/30/14 Date

DEVELOPER'S CERTIFICATE

"I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents, As Are Deemed Necessary."

Signature Of Developer 5/30/14 Date

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

District Howard Soil Conservation Dist. 6/5/14 Date

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development BB 6-24-14 Date

Chief, Development Engineering Division 6.16.14 Date

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways HS 6.10.14 Date

REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria

A. Incremental Stabilization - Cut Slopes
1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
2. Construction sequence example (Refer to Figure B.1):
a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

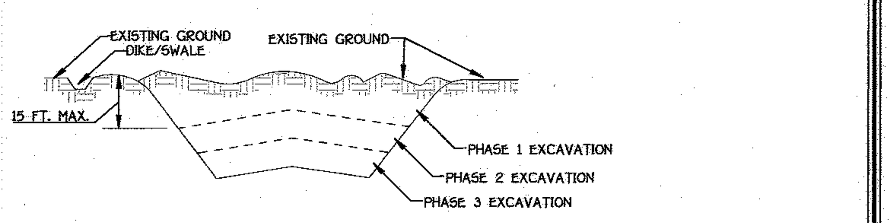


Figure B.1: Incremental Stabilization - Cut

B. Incremental Stabilization - Fill Slopes
1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
4. Construction sequence example (Refer to Figure B.2):
a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
c. Place Phase 1 fill, prepare seedbed, and stabilize.
d. Place Phase 2 fill, prepare seedbed, and stabilize.
e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

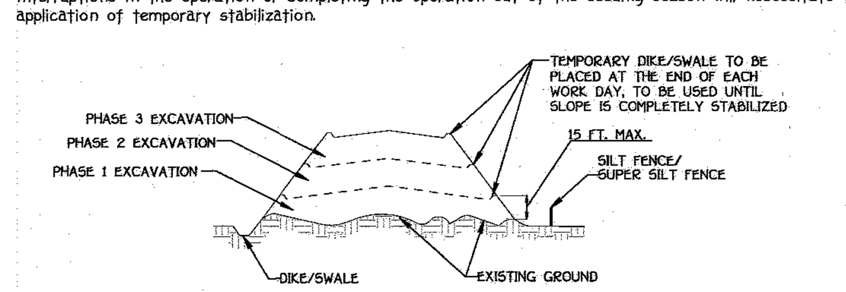


Figure B.2: Incremental Stabilization - Fill

SEDIMENT AND EROSION CONTROL NOTES & DETAILS

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

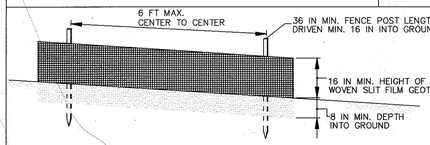
BUILDABLE LOTS 29 - 98 & OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 8 OF 40

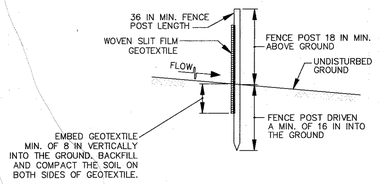
F-14-081

DETAIL E-1 SILT FENCE

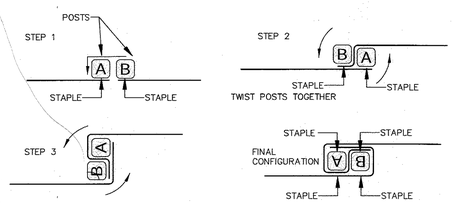
STANDARD SYMBOL —SF—



ELEVATION



CROSS SECTION



JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP VIEW)

CONSTRUCTION SPECIFICATIONS

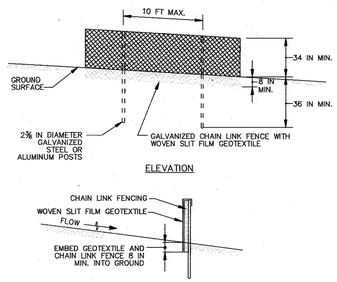
1. USE WOOD POSTS 1¾ X 1¾ ± 1/16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL —SSF—



ELEVATION

CROSS SECTION

CONSTRUCTION SPECIFICATIONS

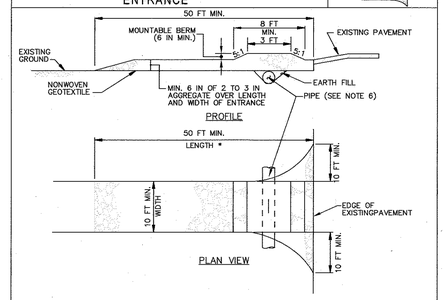
1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL SCE



CONSTRUCTION SPECIFICATIONS

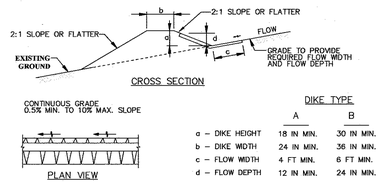
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL A-1 (PLACE DESIGNATION (e.g. A-1) ON FLOW CHANNEL SIDE OF DIKE.)



CROSS SECTION

PLAN VIEW

	DIKE TYPE A	DIKE TYPE B
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

A-1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)

A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.

A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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ENGINEER'S CERTIFICATE

"I Hereby Certify That This Plan For Erosion And Sediment 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 Standards And Specifications Of The Howard Soil Conservation District."

Signature — Date 5/30/14

DEVELOPER'S CERTIFICATE

"I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents, As Are Deemed Necessary."

Signature Of Developer — Date 5/30/14

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

District Howard Soil Conservation Dist. — Date 6/5/14

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date 6-24-14

Chief, Development Engineering Division — Date 6-16-14

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — Date 6-10-14

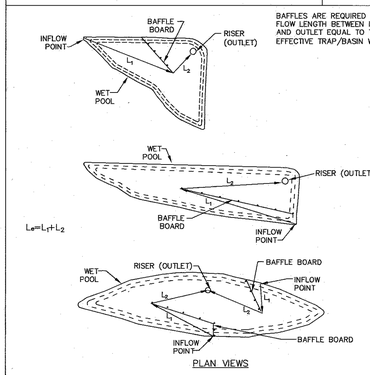
REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16

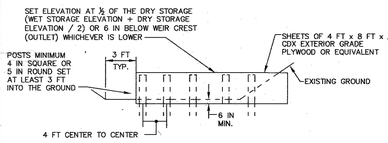
DETAIL G-2-4 BAFFLE BOARDS

STANDARD SYMBOL —BB

BAFFLES ARE REQUIRED TO PROVIDE A FLOW LENGTH BETWEEN INFLOW POINT AND OUTLET EQUAL TO TWICE THE EFFECTIVE TRAP/BASIN WIDTH.



PLAN VIEWS



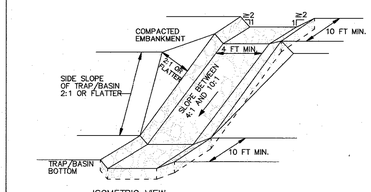
BAFFLE DETAIL

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

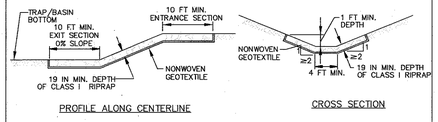
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL D-3-1 RIPRAP INFLOW PROTECTION

STANDARD SYMBOL RRP



ISOMETRIC VIEW



PROFILE ALONG CENTERLINE — CROSS SECTION

CONSTRUCTION SPECIFICATIONS

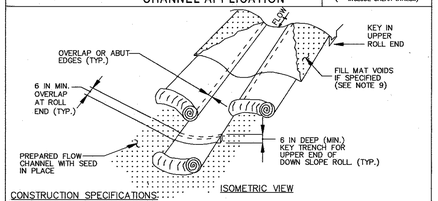
1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.
2. CONSTRUCT INFLOW CHANNEL WITH CLASS I RIPRAP OR EQUIVALENT RECYCLED CONCRETE LINING TO A MINIMUM DEPTH OF 19 INCHES (2 x D_{50}) AND A 1 FOOT DEEP FLOW CHANNEL. INFLOW RIPRAP PROTECTION CHANNEL MUST HAVE A TRAPEZOIDAL CROSS SECTION WITH 2:1 OR FLATTER SIDE SLOPES AND A 4 FOOT MINIMUM BOTTOM WIDTH.
3. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
4. BLEND RIPRAP INTO EXISTING GROUND.
5. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL PSSMC – * lb/ft² (* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

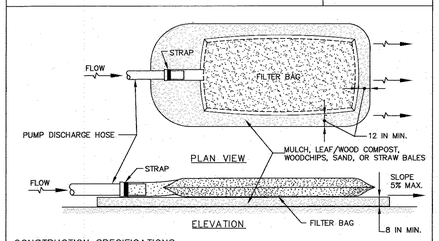
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 ½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-4 FILTER BAG

STANDARD SYMBOL ⊠FB



CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D-4491
PERMITTIVITY (SEC⁻¹)	1.2 SEC⁻¹	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

SEDIMENT AND EROSION CONTROL NOTES & DETAILS

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 9 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 8-9 sed con details.dwg, C-09_F-14-081 sheet 9, 5/30/2014 9:01:40 AM, 1:1

Approved: Department Of Planning And Zoning

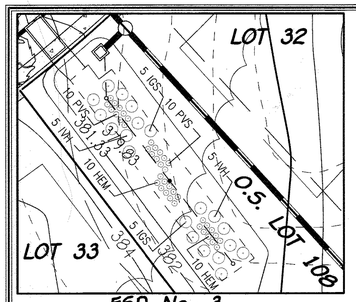
Chief, Division Of Land Development	5-7-15 Date
Chief, Development Engineering Division	5-5-15 Date

Approved: Howard County Department Of Public Works

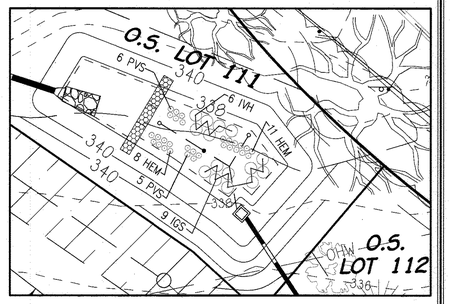
Chief, Bureau Of Highways	4/30/2015 Date

REVISIONS

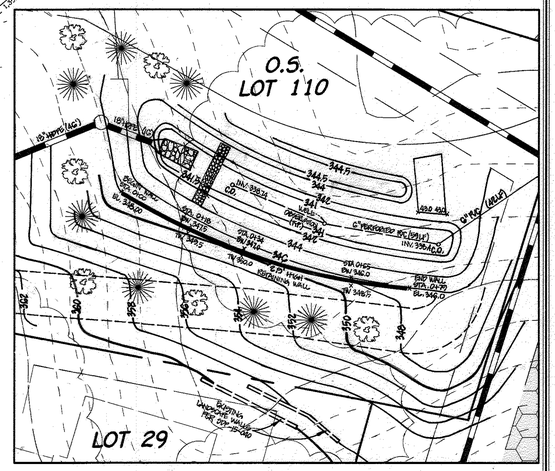
NO.	DESCRIPTION	DATE
1	REVISE LOTS, REMOVE PARCEL 'C', REVISE STORM DRAIN & GRADING	4/3/15
2	REVISE GRADING AND RETAINING WALL & REVISE SHEET NUMBER TO REFLECT MASTER SHEET	10/21/16



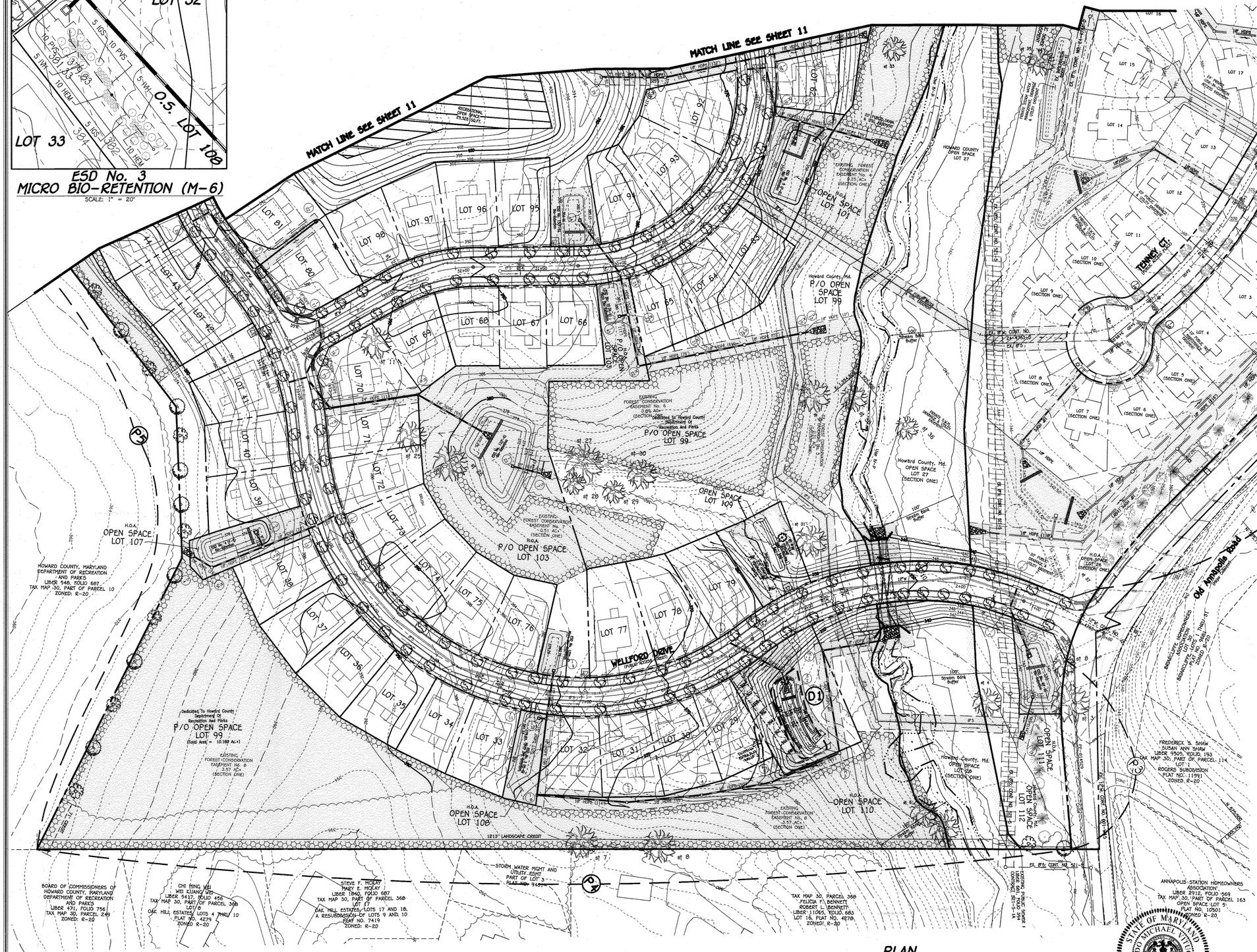
ESD No. 3
MICRO BIO-RETENTION (M-6)
SCALE: 1" = 20'



ESD No. 1 - BIO-RETENTION (F-6)
SCALE: 1" = 20'



ESD No. 2 - SANDFILTER (F-1)
SCALE: 1" = 20'



PLAN
0' 60' 120' 180'
Scale: 1" = 60'

LANDSCAPE DEVELOPER'S CERTIFICATE

I/We certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that upon completion a letter of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Name — 4/10/15 Date

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — 4/17/15 DATE

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

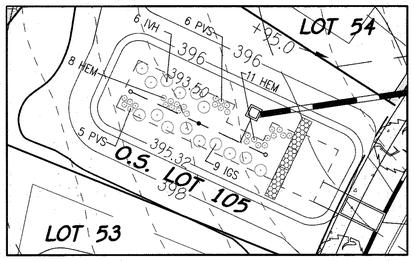
REVISED STREET TREE & LANDSCAPE PLAN
CENTENNIAL LAKE OVERLOOK
(FORMERLY MASON PROPERTY)

SECTION TWO
BUILDABLE LOTS 29 - 98
AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 3, 2015
SHEET 10 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Redline Revision 1-13-15\11042 sheet 10-11 landscape plan new mylar.dwg, 4/3/2015 8:50:43 AM 1:1



ESD No. 6 - BIO-RETENTION (F-6)

SCALE: 1" = 20'

SPECIMEN TREES TO REMAIN

Number	Common Name	Species Name	(inches)	Condition
2	white oak	Quercus alba	31	Good
3	white oak	Quercus alba	49	Good
4	yellow-poplar	Liriodendron tulipifera	36	Good
5	northen red oak	Quercus rubra	39	Fair
6	northen red oak	Quercus rubra	38	Good
7	scarlet oak	Quercus coccinea	43	Good
8	southern red oak	Quercus falcata	38	Good
11	red maple	Acer rubrum	39	Good
17	slippery elm	Ulmus rubra	35	Good
21	white oak	Quercus alba	59	Good
22	princess tree	Paulownia tomentosa	36	Fair
25	red maple	Acer rubrum	39	Fair
26	red maple	Acer rubrum	47	Fair
27	red maple	Acer rubrum	50	Good
28	red maple	Acer rubrum	31	Fair
29	red maple	Acer rubrum	30	Poor-Fair
30	American sycamore	Platanus occidentalis	38	Fair
31	yellow-poplar	Liriodendron tulipifera	40	Good
32	yellow-poplar	Liriodendron tulipifera	39	Good
33	red maple	Acer rubrum	31	Fair
34	Norway maple	Acer platanoides	32	Fair
35	pin oak	Quercus palustris	36	Fair-Good
36	red maple	Acer rubrum	31	Fair
38	red maple	Acer rubrum	33	Fair

NOTE: SEE DEMO PLAN, SHEET 5 FOR SPECIMEN TREES TO BE REMOVED.

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date: 5-7-15

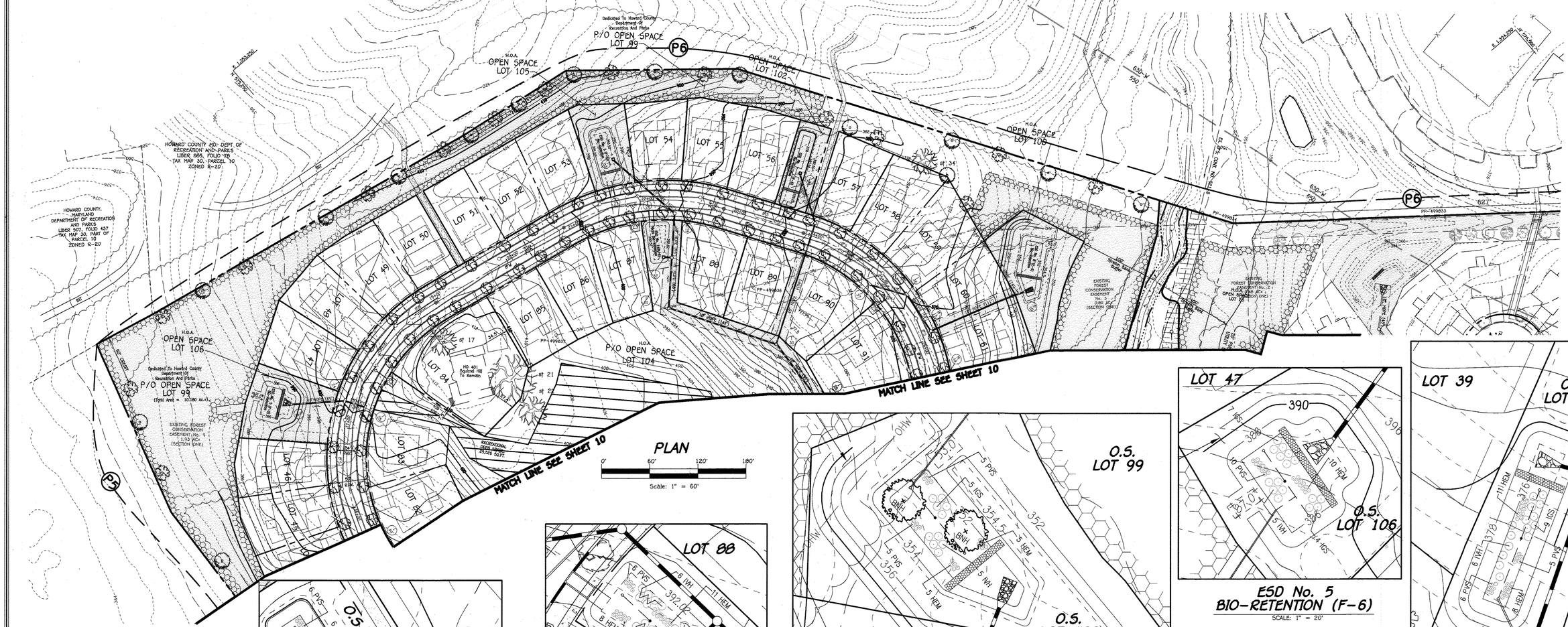
Chief, Development Engineering Division — Date: 5-5-15

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — Date: 4/30/2015

REVISIONS

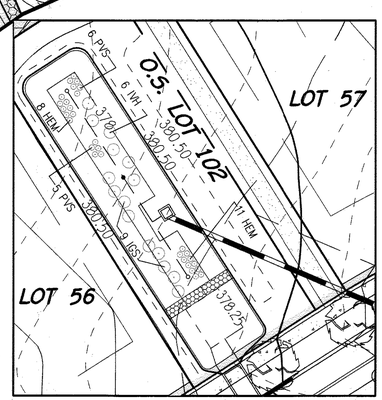
NO.	DESCRIPTION	DATE
1	REVISE LOTS, REMOVE PARCEL 'C', REVISE STORM DRAIN & GRADING	4/3/15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16



PLAN

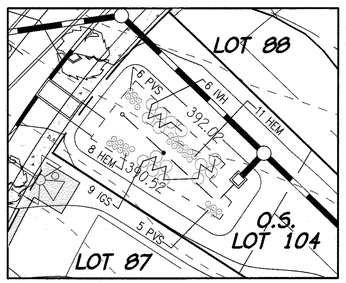
0' 60' 120' 180'

Scale: 1" = 60'



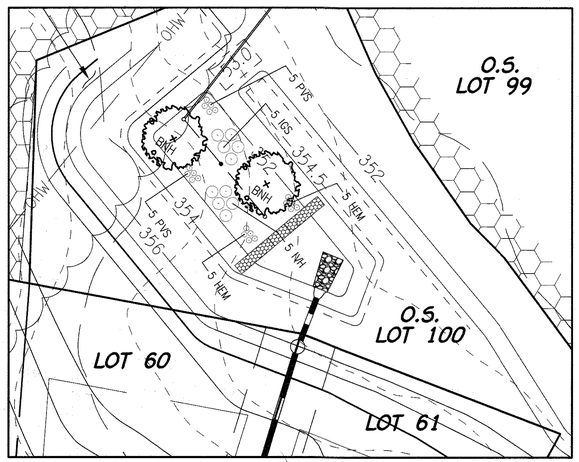
ESD No. 7 - BIO-RETENTION (F-6)

SCALE: 1" = 20'



ESD No. 14
MICRO BIO-RETENTION (M-6)

SCALE: 1" = 20'

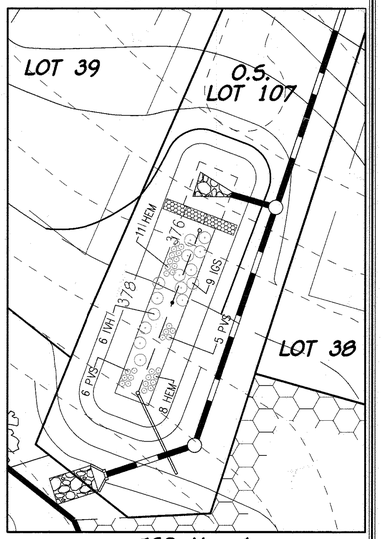


ESD No. 8 - BIO-RETENTION (F-6)

SCALE: 1" = 20'

ESD No. 5
BIO-RETENTION (F-6)

SCALE: 1" = 20'



ESD No. 4
BIO-RETENTION (F-6)

SCALE: 1" = 20'

LANDSCAPE DEVELOPER'S CERTIFICATE

I/We certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that upon completion a letter of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Name — Date: 4/20/15

OWNER/DEVELOPER

BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STATE OF MARYLAND — ALDO M. VITUCCI — No. 20745 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE: 4/17/15

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20745, Expiration Date 2-22-17."

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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REVISED STREET TREE & LANDSCAPE PLAN
CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98
AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 3, 2015
SHEET 11 OF 40

F-14-081

I:\2011\11104\Cadwg\Finals section two\Redline Revision 1-13-15\11042 sheet 10-11 landscape plan rev mylar.dwg, 4/3/2015 9:03:03 AM, 1:1

Approved: Department Of Public Works

Chief, Bureau Of Highways — Date 6/18/14

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date 6-24-14

Chief, Development Engineering Division — Date 6.16.14

REVISIONS		
NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE GRADING AND RETAINING WALL & REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16

PLANTING SPECIFICATIONS

Plants, related material, and operations shall meet the detailed description as given on the plans and as described herein.

All plant material, unless otherwise specified, shall be nursery grown, uniformly branched, have a vigorous root system, and shall conform to the species, size, root and shape shown on the plant list and the American Association of Nurserymen (AAN Standards. Plant material shall be healthy, vigorous, free from defects, decay, disfiguring roots, sun scald injuries, abrasions of the bark, plant disease, insect pest eggs, borers and all forms of insect infestations or objectionable disfigurements. Plant material that is weak or which has been cut back from larger grades to meet specified requirements will be rejected. Trees with forked leaders will not be accepted. All plants shall be freshly dug, no heeled-in plants from cold storage will be accepted.

Unless otherwise specified, all general conditions, planting operations, details and planting specification shall conform to "Landscape Specification Guidelines for Baltimore-Washington Metropolitan Areas", (hereinafter "Landscape Guidelines") Approved by the Landscape Contractors Association of Metropolitan Washington and the Potomac Chapter of the American Society of Landscape Architect, latest edition, including all agends.

Contractor shall be required to guarantee all plant material for a period of one year after date of acceptance in accordance with the appropriate section of the Landscape Guidelines. Contractor's attention is directed to the maintenance requirements found within the one year specifications including watering and replacement of specified plant material.

Contractor shall be responsible for notifying utility companies, utility contractors and "Miss Utility" a minimum of 48 hours prior to beginning any work. Contractor may make minor adjustments in spacing and location of plant material to avoid conflicts with utilities. Damage to existing structure and utilities shall be repaired at the expense of the Contractor.

Protection of existing vegetation to remain shall be accomplished by the temporary installation of 4 foot high snow fence or blaze orange safety fence at the drip line.

Contractor is responsible for installing all material in the proper planting season for each plant type. All planting is to be completed within the growing season of completion of site construction.

Bid shall be base on actual site conditions. No extra payment shall be made for work arising from site conditions differing from those indicated on drawings and specifications.

Plant quantities are provided for the convenience of the contractor only. If discrepancies exist between quantities shown on plan and those shown on the plant list, the quantities on the plan take precedence.

All shrubs shall be planted in continuous trenches or prepared planting beds and mulched with composted hardwood mulch as details and specified except where noted on plans.

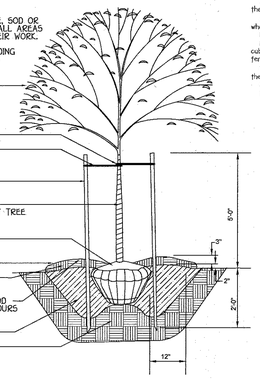
Positive drainage shall be maintained in planting beds (2 percent slope).

Planting mix shall be as follows: Deciduous Plants - Two parts topsoil, one part well-rotted cow or horse manure. Add 3 lbs. of standard fertilizer per cubic yard of planting mix. Evergreen Plants - two parts topsoil, one part humus or other approved organic material. Add 3 lbs. of evergreen (acidic) fertilizer per cubic yard of planting mix. Topsoil shall conform to the Landscape Guidelines.

Weed Control: Incorporate a pre-emergent herbicide into the planting bed following recommended rates on the label. Caution: Be sure to carefully check the chemical used to insure its adaptability to the specific ground cover to be treated.

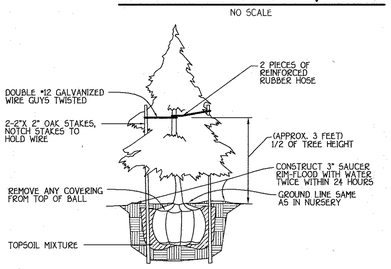
All areas within contract limits disturbed during or prior to construction not designated to receive plants and mulch shall be fine graded and seeded.

This plan is intended for landscape use only. See other plan sheets for more information on grading, sediment control, layout, etc.



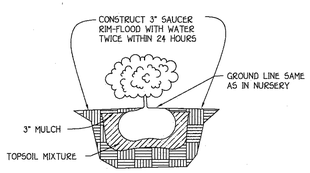
SHADE TREE PLANTING DETAIL

NO SCALE



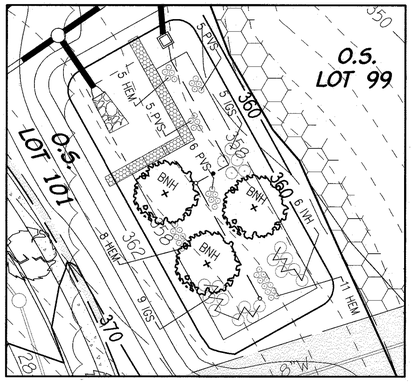
EVERGREEN TREE PLANTING DETAIL

NO SCALE



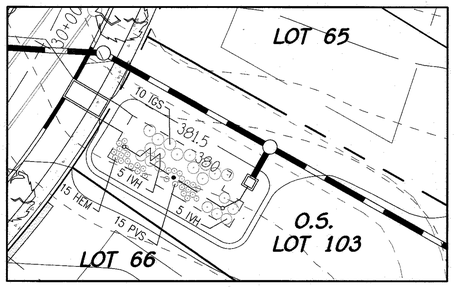
SHRUB PLANTING DETAIL

NO SCALE



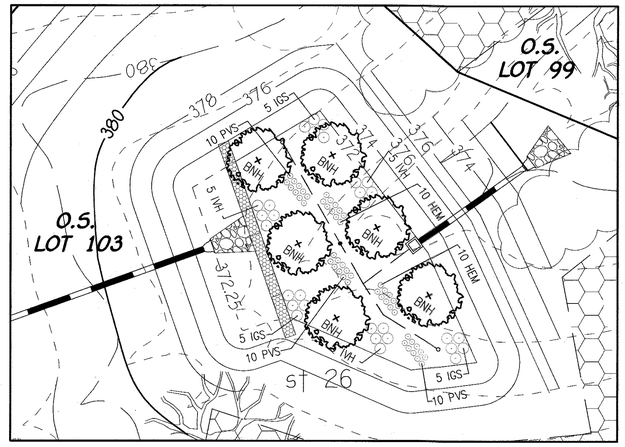
ESD No. 9 - BIO-RETENTION (F-6)

SCALE: 1" = 20'



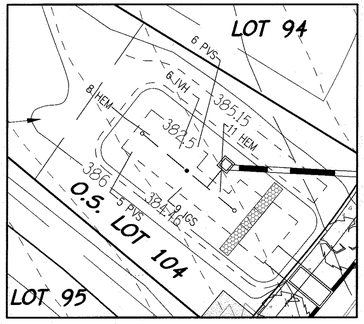
ESD No. 10 - MICRO BIO-RETENTION (M-6)

SCALE: 1" = 20'



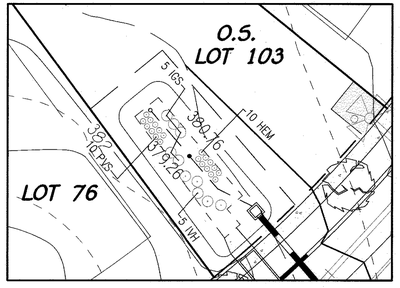
ESD No. 11 - BIO-RETENTION (F-6)

SCALE: 1" = 20'



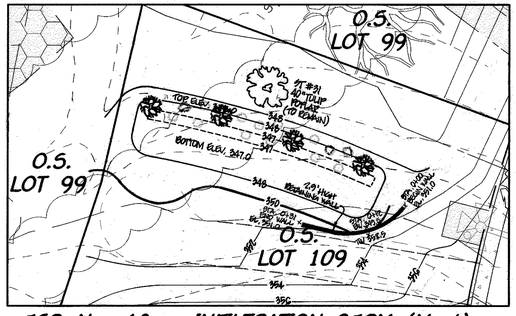
ESD No. 15 - BIO-RETENTION (F-6)

SCALE: 1" = 20'



ESD No. 12 - MICRO BIO-RETENTION (M-6)

SCALE: 1" = 20'



ESD No. 13 - INFILTRATION BERM (M-4)

SCALE: 1" = 20'

SCHEDULE A PERIMETER LANDSCAPE EDGE

PERIMETER	CATEGORY (PROPERTIES/ ROADWAYS)	LANDSCAPE TYPE	LINEAR FEET OF OF ROADWAY FRONTAGE PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED			NUMBER OF PLANTS PROVIDED		
						SHADE TREES	EVERGREEN TREES	SHRUBS	SHADE TREES	EVERGREEN TREES	SHRUBS
P-1	ADJACENT TO ROADWAY	B	404.77'	NO	NO	8	10	-	8	10	-
P-2	ADJACENT TO ROADWAY	B	572.22'	NO	NO	11	14	-	11	14	-
P-3	ADJACENT TO ROADWAY	B	240.35'	YES (51-2, 36" White Oak & 57-3, 49" White Oak)	NO	3	6	-	3	6	-
P-4	ADJACENT TO PERIMETER	A	1313.37'	YES (1213')	NO	2	-	-	2	-	-
P-5	ADJACENT TO PERIMETER	A	1187.37'	YES (131')	NO	18	-	-	18	-	-
P-6	ADJACENT TO PERIMETER	A	2166.39'	YES (10 TREES PLANTED SECTION ONE)	NO	36	-	-	26	-	-
P-7	SIDE TO ROADWAY	B	57'	NO	NO	1	1	-	1	1	-
P-8	SIDE TO ROADWAY	B	57'	NO	NO	1	1	-	1	1	-

NOTE: P-1 THRU P-3, PART OF P-6, P-7 AND P-8 WERE PLANTED UNDER SECTION ONE.
THE LANDSCAPE SURETY IN THE AMOUNT OF $21,690.00 FOR PERIMETER LANDSCAPE REQUIREMENTS (48 SHADE TREES, 47 EVERGREEN TREES AND 8 SHRUBS) OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL WAS PROVIDED WITH THE DEVELOPERS AGREEMENT UNDER THE SECTION ONE PLAN (F-14-002).

PLANT LIST (SCHEDULE 'A' & 'D')

SYMBOL	QTY.	BOTANICAL AND COMMON NAME	SIZE
	29	PRUNUS SARGENTII SARGENT CHERRY	2 1/2-3" CAL.
	23	ACER GRISEUM PAPERBARK MAPLE	2 1/2-3" CAL.
	7	PINUS STROBUS EASTERN WHITE PINE	6' - 8' HT.

NOTE: TREE TYPES MAY BE SUBSTITUTED WITH A HOWARD COUNTY APPROVED SPECIES FROM THE HOWARD COUNTY LANDSCAPE MANUAL.

PERIMETER LANDSCAPING AND SWM SCREENING SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED 52 SHADE TREES & 7 EVERGREEN TREES SHALL BE PROVIDED WITH THE DEVELOPER'S AGREEMENT FOR THIS FINAL PLAN (F-14-081) IN THE AMOUNT OF $16,650.00

SCHEDULE D STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF PERIMETER	D-1 : 282'
NUMBER OF TREES REQUIRED & PROVIDED: SHADE TREES / EVERGREEN TREES	6 / 7
CREDIT FOR EXISTING VEGETATION (NO, YES AND #)	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND #)	NO

PLANT MATERIAL- INFILTRATION BERM No. 13

QUANTITY	NAME	MAXIMUM SPACING (FT.)
4	TREES	AS SHOWN
15	SHRUBS	24" - 36"

TREES

SARGENT CHERRY
AUTUMN FLAME RED MAPLE
EASTERN REDBUD
PIN OAK
HEDGE MAPLE
RED FLOWERING DOGWOOD

ANY OF THE TREES LISTED MAY BE USED

SHRUBS

BAYBERRY
SPICEBUSH
ARROWWOOD
WINTERBERRY
INKBERRY
WITCH HAZEL
BUTTONBUSH BUCKEYE
BOTTLEBRUSH BUCKEYE

ANY OF THE SHRUBS LISTED MAY BE USED

NOTES:

Should any tree designated for preservation for which landscaping credit is given, die prior to release of bonds, the owner will be required to replace the tree with the equivalent species or with a tree which will obtain the same height, spread and growth characteristics. The replacement tree must be a minimum of 3 inches in caliper and installed as required in the Howard County landscape manual.
At the time of plant installation, all trees listed and approved on the landscape Plan, shall comply with the proper height requirement in accordance with the Howard County Landscape Manual. In addition, no substitutions or relocations of the required plantings may be made without prior review and approval from the Department of Planning and Zoning. Any deviations from the approved Landscape Plan may result in denial or delay in the release of landscape surety until such time as all required materials are planted and/or revisions are made to the road drawing plans.

The Owner, tenants and/or their agents shall be responsible for maintenace of the required perimeter landscaping. All plant materials shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All the other required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced.

STREET TREE SCHEDULE

QTY. required	QTY. provided	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
1/40 l.f. = 3438'/40 = 85.95 85.95 x 2 = 172 trees	172 trees	CLADRASTIS LUTEA YELLOWWOOD	2 1/2-3" CAL.	ALONG PUBLIC R/W WELLFORD DRIVE (SEE PLAN)

NOTES: 1. FINAL PLACEMENT OF STREET TREES WILL OCCUR IN THE FIELD AND BE PLACED A MINIMUM OF 30 FEET FROM ALL SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB, BE LOCATED WITH CONSIDERATION OF UNDERGROUND UTILITIES AND STRUCTURES AND MAINTAIN A MINIMUM 5 FEET DISTANCE ON CENTER FROM A DRAIN INLET STRUCTURE, 5 FEET FROM AN OPEN SPACE ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.

2. FINANCIAL SURETY FOR THE REQUIRED 172 STREET TREES HAS BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $51,600.00

PLANT MATERIAL- BIO-RETENTION No. 1

QUANTITY	NAME	MAXIMUM SPACING (FT.)
30	MIXED PERENNIALS	36" o.c.
15	SHRUBS	36"-40" o.c.

PLANT MATERIAL- MICRO BIO-RETENTION No. 3

QUANTITY	NAME	MAXIMUM SPACING (FT.)
40	MIXED PERENNIALS	36" o.c.
20	SHRUBS	36"-40" o.c.

PLANT MATERIAL- BIO-RETENTION No. 4

QUANTITY	NAME	MAXIMUM SPACING (FT.)
30	MIXED PERENNIALS	36" o.c.
15	SHRUBS	36"-40" o.c.

PLANT MATERIAL- BIO-RETENTION No. 5

QUANTITY	NAME	MAXIMUM SPACING (FT.)
20	MIXED PERENNIALS	36" o.c.
16	SHRUBS	36"-40" o.c.

PLANT MATERIAL- BIO-RETENTION No. 6

QUANTITY	NAME	MAXIMUM SPACING (FT.)
30	MIXED PERENNIALS	36" o.c.
15	SHRUBS	36"-40" o.c.

PLANT MATERIAL- BIO-RETENTION No. 7

QUANTITY	NAME	MAXIMUM SPACING (FT.)
30	MIXED PERENNIALS	36" o.c.
15	SHRUBS	36"-40" o.c.

PLANT MATERIAL- BIO-RETENTION No. 8

QUANTITY	NAME	MAXIMUM SPACING (FT.)
20	MIXED PERENNIALS	36" o.c.
10	SHRUBS	36"-40" o.c.
2	TREE	AS SHOWN

PLANT MATERIAL- BIO-RETENTION No. 9

QUANTITY	NAME	MAXIMUM SPACING (FT.)
40	MIXED PERENNIALS	36" o.c.
20	SHRUBS	36"-40" o.c.
3	TREE	AS SHOWN

PLANT MATERIAL- MICRO BIO-RETENTION No. 10

QUANTITY	NAME	MAXIMUM SPACING (FT.)
30	MIXED PERENNIALS	36" o.c.
20	SHRUBS	36"-40" o.c.

PLANT MATERIAL- BIO-RETENTION No. 11

QUANTITY	NAME	MAXIMUM SPACING (FT.)
50	MIXED PERENNIALS	36" o.c.
30	SHRUBS	36"-40" o.c.
6	TREE	AS SHOWN

PLANT MATERIAL- MICRO BIO-RETENTION No. 12

QUANTITY	NAME	MAXIMUM SPACING (FT.)
20	MIXED PERENNIALS	36" o.c.
10	SHRUBS	36"-40" o.c.

PLANT MATERIAL- MICRO BIO-RETENTION No. 14

QUANTITY	NAME	MAXIMUM SPACING (FT.)
30	MIXED PERENNIALS	36" o.c.
15	SHRUBS	36"-40" o.c.

PLANT MATERIAL- BIO-RETENTION No. 15

QUANTITY	NAME	MAXIMUM SPACING (FT.)
30	MIXED PERENNIALS	36" o.c.
15	SHRUBS	36"-40" o.c.

NOTES:
Plant Material Must Cover At Least 50% Of The Surface Area Of The Bio-retention

See Plant Material Charts For Quantities And Spacing

LEGEND

HEM - Hemerocallis Mix	Variety for all season bloom
PVS - Panicum virgatum 'Shenandoah'	Red Switch Grass
IVH - Itea Virginica 'Little Henry'	Virginia Sweetspire
IGS - Ilex Glabra 'Shamrock'	Shamrock Inkberry
BNH - Betula nigra 'Heritage'	River Birch 2-1/2" cal. min.

LANDSCAPE DEVELOPER'S CERTIFICATE

I/We certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that upon completion a letter of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Name — Date 5/30/14

OWNER/DEVELOPER

BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

LANDSCAPE NOTES & DETAILS

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 12 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 10-12 landscape plan.dwg, C-12_F-14-081 sheet 12, 5/30/2014 9:06:20 AM, 1:1

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (F-6 & M-6) (FACILITY Nos. 1, 3-12, 14 & 15)

1. The owner shall maintain the plant material, mulch layer and soil layer annually. maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.

2. The owner shall perform a plant in the spring and in the fall each year. during the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material. Treat diseased trees and shrubs and replace all deficient stakes and wires.

3. The owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.

4. The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

Infiltration and Filter System Construction Specifications

Infiltration and filter systems either take advantage of existing permeable soils or create a permeable medium such as sand for WQ, and Qv v. In some instances where permeability is great, these facilities may be used for Qp as well. The most common systems include infiltration trenches, infiltration basins, sand filters, and organic filters.

When properly planted, vegetation will thrive and enhance the functioning of these systems. For example, pre-treatment buffers will trap sediments that often are bound with phosphorous and metals. Vegetation planted in the facility will aid in nutrient uptake and water storage. Additionally, plant roots will provide arteries for stormwater to permeate soil for groundwater recharge. Finally, successful plantings provide aesthetic value and wildlife habitat making these facilities more desirable to the public.

Design Constraints:

> Planting buffer strips of at least 20 feet will cause sediments to settle out before reaching the facility, thereby reducing the possibility of clogging.
> Determine areas that will be saturated with water and water table depth so that appropriate plants may be selected (hydrology will be similar to bioretention facilities, see figure A.5 and Table A.4 for planting material guidance).
> Plants known to send down deep taproots should be avoided in systems where filter fabric is used as part of facility design.
> Test soil conditions to determine if soil amendments are necessary.
> Plants shall be located so that access is possible for structure maintenance.
> Stabilize heavy flow areas with erosion control mats or sod.
> Temporarily divert flows from seeded areas until vegetation is established.
> See Table A.5 for additional design considerations.

Bio-retention

Soil Bed Characteristics

The characteristics of the soil for the bioretention facility are perhaps as important as the facility location, size, and treatment volume. The soil must be permeable enough to allow runoff to filter through the media, while having characteristics suitable to promote and sustain a robust vegetative cover crop. In addition, much of the nutrient pollutant uptake (nitrogen and phosphorus) is accomplished through absorption and microbial activity within the soil profile. Therefore, soils must balance their chemical and physical properties to support biotic communities above and below ground.

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should be less than 25% by volume (Environmental Quality Resources (EQR), 1996; Engineering Technology Inc. and Biohabitats, Inc. (ETAB), 1993). Soils should fall within the SM, ML, SC classifications or the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.5"/hr) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 1" in diameter. Brush or weeds from noxious weeds (e.g., Johnson Grass, Mugwort, Nutsedge, and Canada Thistle or other noxious weeds as specified under COMAR 15.08.01.05) should not be present in the soils. Placement of the planting soil should be in 12 to 18 lifts that are loosely compacted (tamped lightly with a backhoe bucket or traversed by dozer tracks). The specific characteristics are presented in Table A.3.

Table A.3 Planting Soil Characteristics

Parameter	Value
pH range	5.2 to 7.00
Organic matter	1.5 to 4.0% (by weight)
Magnesium	35 lbs. per acre, minimum
Phosphorus (phosphate - P2O5)	75 lbs. per acre, minimum
Potassium (potash -K2O)	85 lbs. per acre, minimum
Soluble salts	500 ppm
Clay	10 to 25 %
Silt	30 to 55 %
Sand	35 to 60%

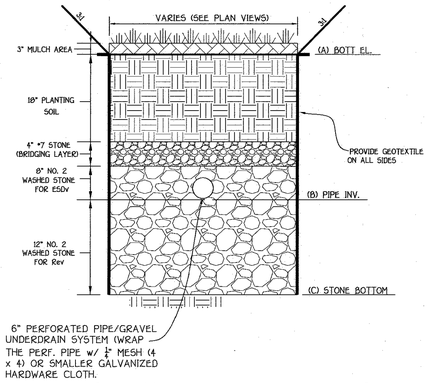
Mulch Layer

The mulch layer plays an important role in the performance of the bioretention system. The mulch layer helps maintain soil moisture and avoids surface sealing, which reduces permeability. Mulch helps prevent erosion, and provides a microenvironment suitable for soil biota at the mulch/soil interface. It also serves as a pretreatment layer, trapping the finer sediments, which remain suspended after the primary pretreatment.

The mulch layer should be standard landscape style, single or double shredded hardwood mulch or chips. The mulch layer should be well aged (stockpiled or stored for at least 12 months), uniform in color, and free of other materials, such as weed seeds, soil, roots, etc. The mulch should be applied to a maximum depth of three inches. Grass clippings should not be used as a mulch material.

Planting Guidance

Plant material selection should be based on the goal of simulating a terrestrial forested community of native species. Bioretention simulates an upland species ecosystem. The community should be dominated by trees, but have a distinct community of understory trees, shrubs and herbaceous materials. By creating a diverse, dense plant cover, a bioretention facility will be able to treat stormwater runoff and withstand urban stresses from insects, disease, drought, temperature, wind, and exposure.
The proper selection and installation of plant materials is key to a successful system. There are essentially three zones within a bioretention facility (Figure A.5). The lowest elevation supports plant species adapted to standing and fluctuating water levels. The middle elevation supports plants that like drier soil conditions, but can still tolerate occasional inundation by water. The outer edge
is the highest elevation and generally supports plants adapted to dryer conditions. A sample of appropriate plant materials for bioretention facilities are included in Table A.4. The layout of plant material should be flexible, but should follow the general principals described in Table A.5. The objective is to have a system, which resembles a random, and natural plant layout, while maintaining optimal conditions for plant establishment and growth. For a more extensive bioretention plan, consult ETAB, 1993 or Claytor and Schueler, 1997.

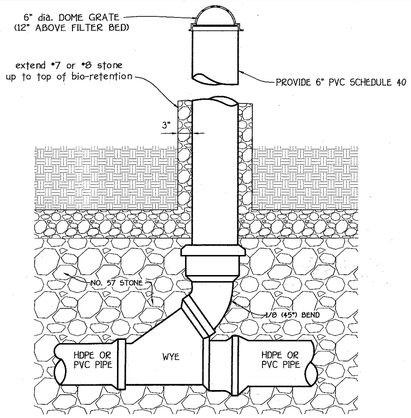


(FACILITY Nos. 3, 10, 12 & 14) MICRO BIO-RETENTION (M-6) SECTION

NO SCALE

NOTE: PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW.

FACILITY NO.	A	B	C
BIO-RETENTION No. 3	379.83	377.33	376.33
BIO-RETENTION No. 10	380.00	377.50	376.50
BIO-RETENTION No. 12	379.26	376.76	375.76
BIO-RETENTION No. 14	390.52	388.02	387.02



TYPICAL CLEAN-OUT DETAIL

NO SCALE

NOTES:
UNDERDRAIN PIPE SHALL BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28 OR AASHTO-M- 278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED 4" RIGID PIPE (e.g., PVC OR HDPE).

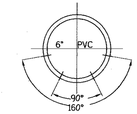
PERFORATIONS SHALL BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (No. 4 OR 4 x 4) GALVANIZED HARDWARE CLOTH.

GRAVEL LAYER SHALL BE (No. 57 STONE PREFERRED) AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.

THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.

A RIGID, NON PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQ.FT.) TO PROVIDE A CLEANOUT PORT AND MONITOR PERFORMANCE OF THE FILTER.

A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".



PIPE SIZE: 6"
HOLE SIZE: 3/8"
CENTER TO CENTER: 3"
ROWS OF HOLES: 2 @ 90°
2 @ 180° (+/-3°)

SCH40 PVC PERFORATED UNDERDRAIN PIPE DETAIL FOR HORIZONTAL DRAIN PIPE

NO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 6-10-14
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6.16.14

REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block.	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16

B.4.C Specifications for Micro-Bioretention, Rain Gardens, Landscape Infiltration & Infiltration Berms

1. Material Specifications

The allowable materials to be used in these practices are detailed in Table B.4.1.

2. Filtering Media or Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)

Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).

Clay Content - Media shall have a clay content of less than 5%.

pH Range -Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material

Recommended plant material for micro-bioretention practices can be found in Appendix A, Section A.2.3.

5. Plant Installation

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3".Shredded or chipped hardwood mulch is the only accepted mulch. Fine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8 th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rotofill area fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains

Underdrains should meet the following criteria:

Pipe- Should be 4"to 6"diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4 rigid pipe (e.g., PVC or HDPE).

Perforations - If perforated pipe is used, perforations should be 3/8" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a 1/4"(4 or 4x4) galvanized hardware cloth.

Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.

The main collector pipe shall be at a minimum 0.5% slope.

A rigid, non-perforated observation well must be provided (one per every 1,000 square feet) to provide a clean-out port and monitor performance of the filter.

A 4" layer of pea gravel (1/4" to 3/8"stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

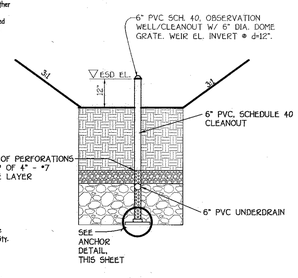
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous

These practices may not be constructed until all contributing drainage area has been stabilized

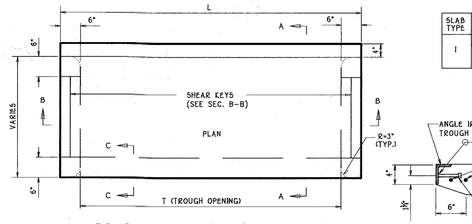
Table B.3.1 Material Specifications for Sand filters

Material	Specifications/Test Method	Size	Notes
sand	clean AASHTO-M-6 of ASTM-Cconcrete sand	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are note acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No' "rock dust" can be used for sand
peat	ash content: < 15% pH range: 5.2 to 4.9 loose bulk density 0.12 to 0.15 g/cc	N/a	The material must be reed-sedge hemic peat, shredded, uncompacted, uniform, and clean.
leaf compost		N/a	
underdrain gravel	AASHTO-M-43	0.375" to 0.75"	
geotextile fabric (if required)	ASTM-D-4833 (puncture strength lb.) ASTM-D-4632 (Tensile Strength lb.)	0.08" thick equivalent opening size of #80 sieve	Must maintain 125 gpm per sq. ft. flow rate. Note: a 4" peat gravel layer may be substituted for geotextiles meant to "separate" sand filter layers.
impermeable liner (if required)	ASTM-D-4833 (thickness) ASTM-D-412 (tensile strength 1,100 lb., elongation 200%) ASTM-D-624 (Tear resistance - 150 lb./in) ASTM-D-471 (water adsorption +8 to -2% mass)	30 mil thickness	Liner to be ultraviolet resistant. A geotextile fabric should be used to protect the liner from puncture.
underdrain piping	F 758, Type PS 28 or AASHTO-M-278	4" - 6" rigid schedule 40 PVC or SDR35	3/8" perf. @ 6" on center, 4 holes per row, minimum of 3" of gravel over pipes; not necessary underneath pipes
concrete (cast-in-place)	MSHA Standards and Specs. Section 902, Mix No. 3, f'c = 3500 psi, normal weight, air-entrained, reinforcing to meet ASTM-615-60	N/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or precast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland
concrete (pre-cast)	per pre-cast manufacturer	N/a	SEE ABOVE NOTE
non-rebar steel	ASTM A-36	N/a	structural steel to be hot-dipped galvanized ASTM-A-123



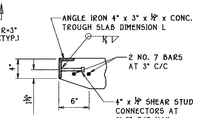
SECTION @ OBSERVATION WELL LOCATION

NOT TO SCALE



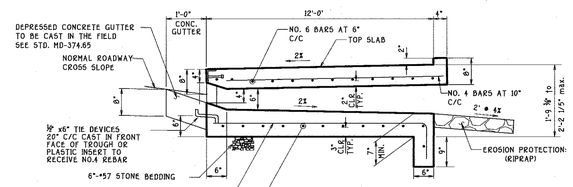
SLAB TYPE	L	T
I	6'-0"	5'-0"

PRECAST CONCRETE TOP SLAB

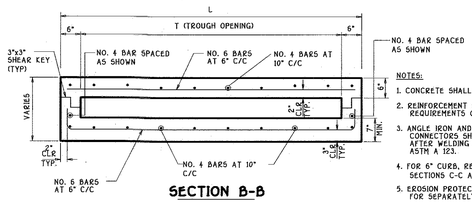


NOTE: FOR 6" CURB, SEE NOTE 4 BELOW.

SECTION C-C



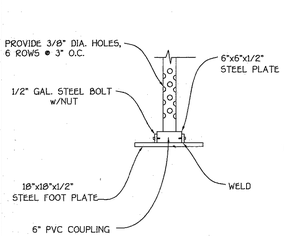
SECTION A-A



NOTES:
1. CONCRETE SHALL BE MIX # 6 (4500 PSI).
2. REINFORCEMENT STEEL SHALL MEET THE REQUIREMENTS OF ASTM A615, GRADE 60.
3. ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123.
4. FOR 6" CURB, REFER TO MD 374.55-01, SECTIONS C-C AND D-D.
5. EROSION PROTECTION TO BE PAID FOR SEPARATELY.

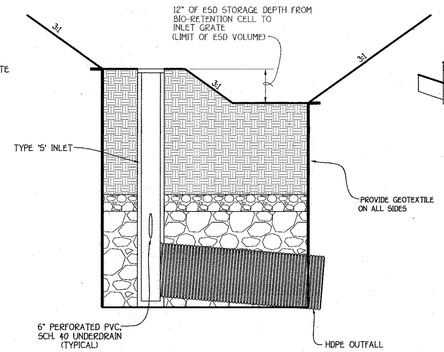
SECTION B-B

PRECAST OR CAST IN PLACE COG/COS OPENING FOR 8" CURB (5' TROUGH OPENING ONLY)



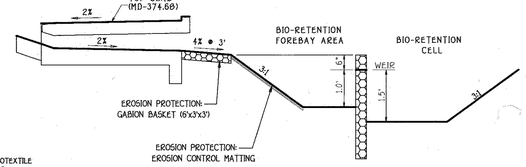
OBSERVATION WELL ANCHOR DETAIL

NO SCALE



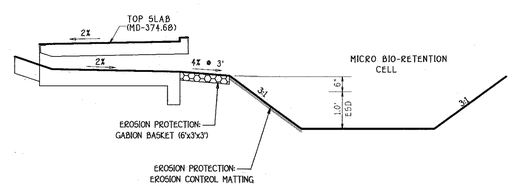
TYPICAL INLET STRUCTURE DETAIL @ BIO-RETENTION

NO SCALE



SCHEMATIC SECTION FLOW INLET INTO BIO-RETENTION FOREBAY

NO SCALE



SCHEMATIC SECTION FLOW INLET INTO MICRO BIO-RETENTION

NO SCALE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

0' 10' 15' 20'
Scale: 1" = 10'

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER
ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

STORMWATER MANAGEMENT PLANS

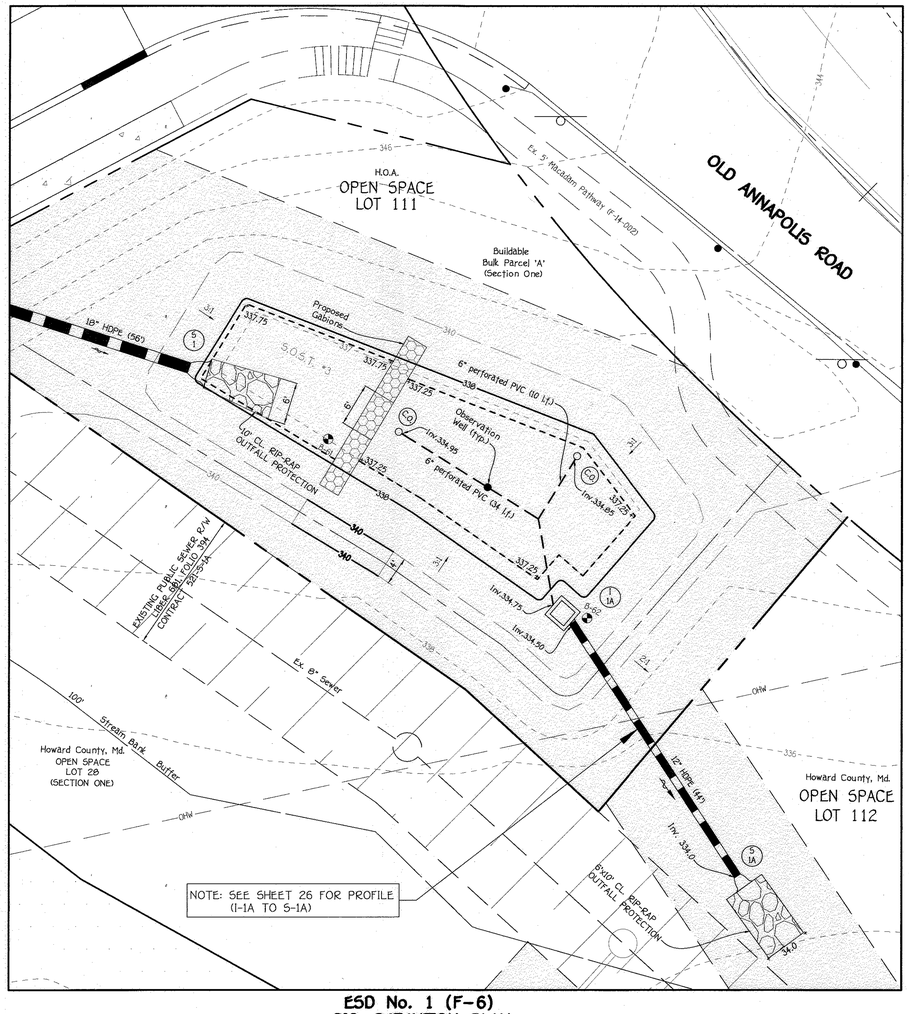
CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)
SECTION TWO
BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 13 OF 40

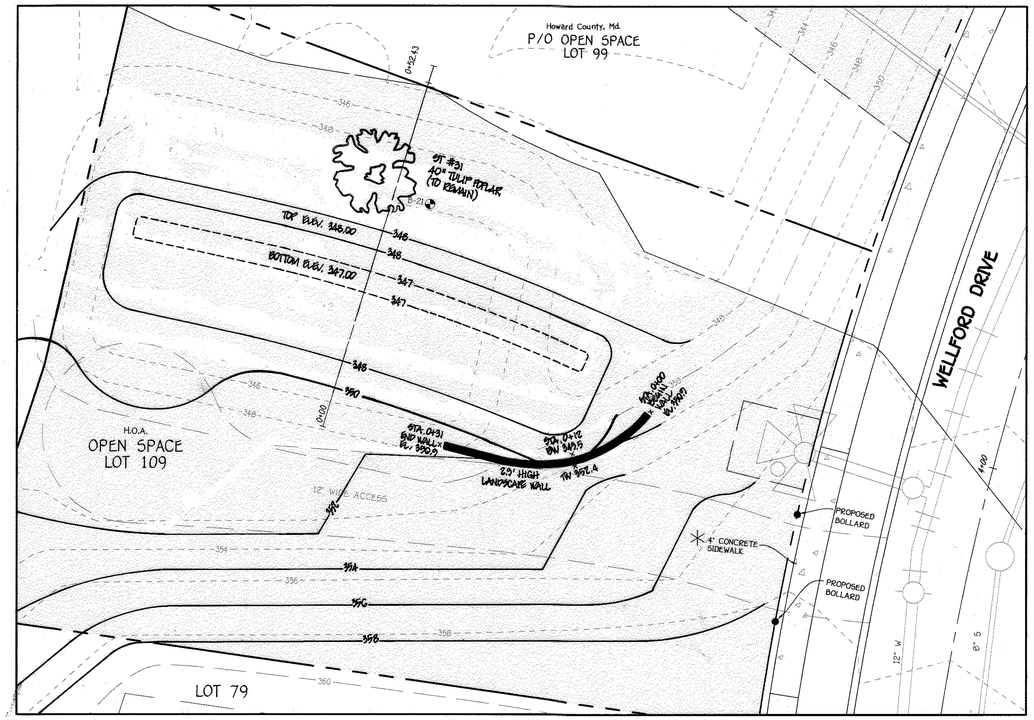
F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 13-22 swm plans.dwg, C-13_F-14-081 sheet 13, 5/30/2014 9:13:12 AM, 1:1



ESD No. 1 (F-6)
BIO-RETENTION PLAN

SCALE: 1" = 10'



NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) A MINIMUM OF 10' ON EITHER SIDE OF THE PROPOSED BOLLARD.

PRIVATELY OWNED & MAINTAINED BY H.O.A.

ESD No. 13 (M-4)
INFILTRATION BERM PLAN

SCALE: 1" = 10'

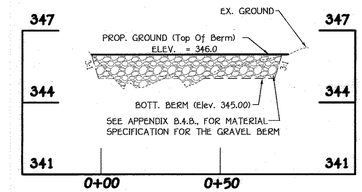
APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	6.10.14 DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	6-24-14 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	6.16.14 DATE

REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE CONTOUR AND RETAINING WALL AND SHOW EXISTING SPECIMEN TREE & REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/12/16

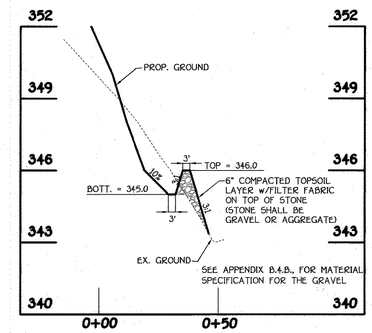
OPERATION AND MAINTENANCE SCHEDULE FOR INFILTRATION BERMS (M-4)

1. BERM SHOULD BE INSPECTED REGULARLY TO ENSURE THAT PONDING WATER DOES NOT CREATE NUISANCE CONDITIONS.
2. SIGNS OF CONCENTRATED FLOW AND OTHER SURFACE EROSION SHOULD BE REPAIRED TO PROMOTE SHEET FLOW.
3. A DENSE MAT OF VEGETATION SHOULD BE PRESENT AT ALL TIMES. VEGETATION SHOULD BE REPLACED AS NEEDED.
4. WHEN INFILTRATION BERMS ARE INCORPORATED IN A SYSTEM USING OTHER PRACTICES, THE MAINTENANCE CRITERIA FOR THAT PRACTICE SHALL ALSO BE CONSIDERED.



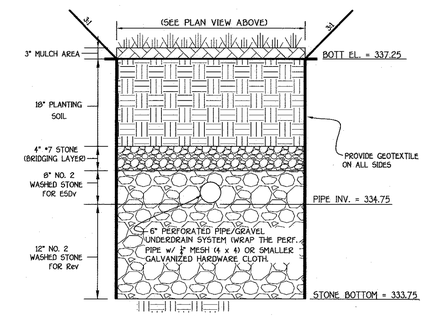
PROFILE ALONG TOP OF BERM (M-4)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



SECTION THRU BERM (M-4)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



(ESD No. 1) BIO-RETENTION (F-6) SECTION

NO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (F-6)

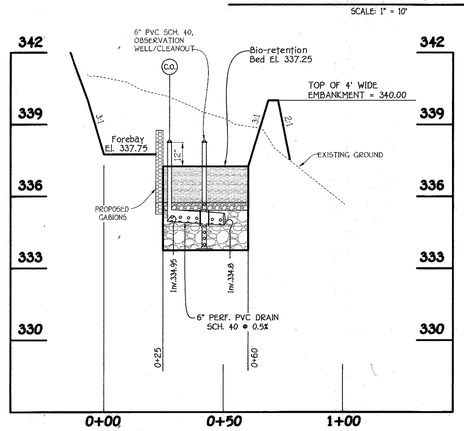
1. The owner shall maintain the plant material, mulch layer and soil layer annually. maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.

2. The owner shall perform a plant in the spring and in the fall each year. during the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material. Treat diseased trees ans shrubs and replace all deficient stakes and wires.

3. The owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.

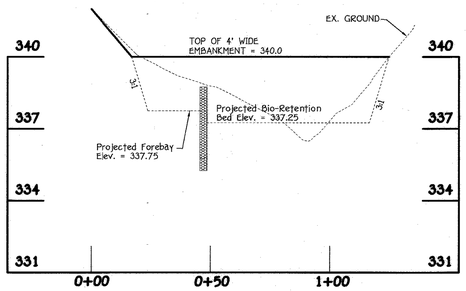
4. The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

NOTE: THE STORMWATER MANAGEMENT FACILITIES (M-6) WILL BE PRIVATELY OWNED BY H.O.A. AND JOINTLY MAINTAINED BY H.O.A. AND HOWARD COUNTY. HOWARD COUNTY'S MAINTENANCE RESPONSIBLY ONLY PERTAINS TO THE INLET STRUCTURES AND STORM DRAIN PIPE FOR THE MICRO BIO-RETENTION FACILITIES (M-6). ALL LANDSCAPING, UNDERDRAINS, CLEAN-OUTS AND FILTER MEDIA IS THE RESPONSIBLY OF THE HOMEOWNER'S ASSOCIATION. THE H.O.A. OR PRIVATE HOMEOWNER IS RESPONSIBLE FOR ALL OTHER FACILITIES (F-6), (M-5) AND (M-4).



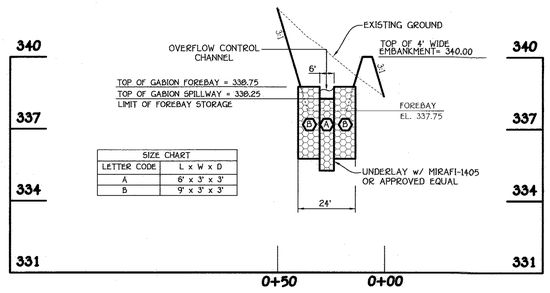
SECTION THRU BIO-RETENTION (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



(ESD No. 1)
PROFILE ALONG TOP OF EMBANKMENT (F-6)

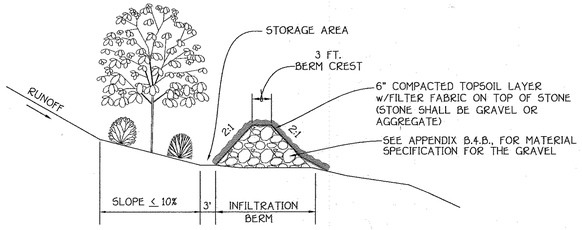
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



SIZE CHART	
LETTER CODE	L x W x D
A	6' x 3' x 3'
B	9' x 3' x 3'

(ESD No. 1) GABION FOREBAY PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



TYPICAL SECTION – INFILTRATION BERM (M-4)

NO SCALE

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20746 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20746, Expiration Date 2-22-15."

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

0' 10' 15' 20'
Scale: 1" = 10'

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STORMWATER MANAGEMENT PLANS
ESD Nos. 1 & 13

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)
SECTION TWO
BUILDABLE LOTS 29 – 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 14 OF 40

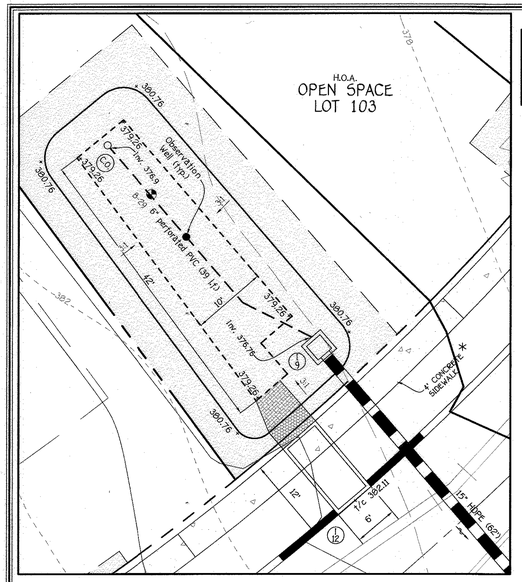
F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 13-22 swm plans.dwg, C-14_F-14-081 sheet 14, 5/30/2014 9:16:33 AM, 1:1

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6-10-14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6-16-14

REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT APPRO SHEET	10/21/15



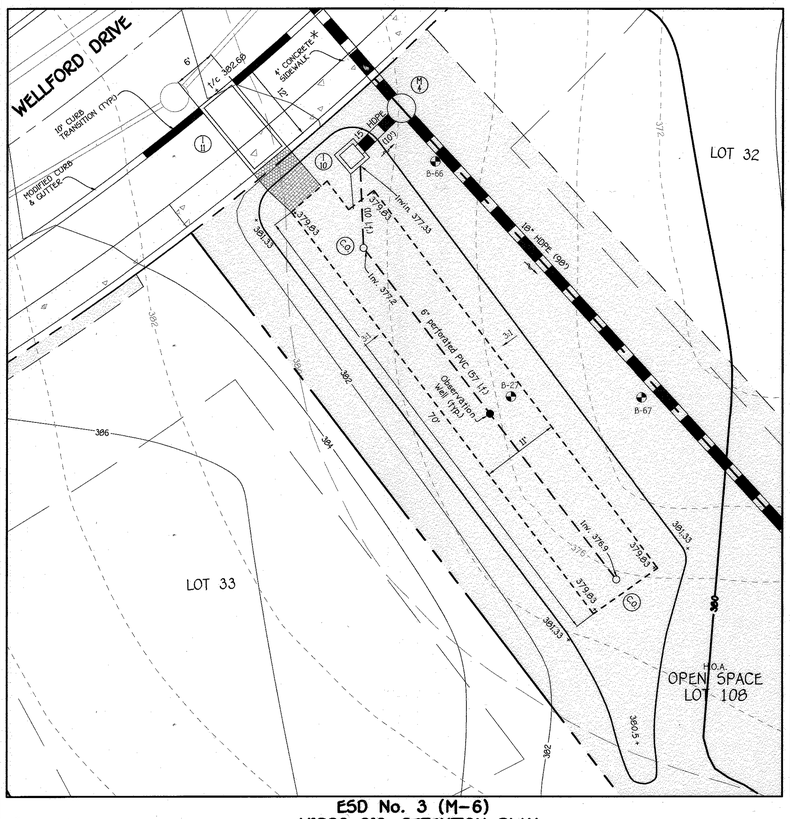
NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) A MINIMUM OF 25' ON EITHER SIDE OF THE PROPOSED COG/COS INLET OPENING.

NOTE: SEE SHEET 13 FOR TYPICAL MICRO BIO-RETENTION (M-6) SECTION.

ESD No. 12 (M-6) MICRO BIO-RETENTION PLAN

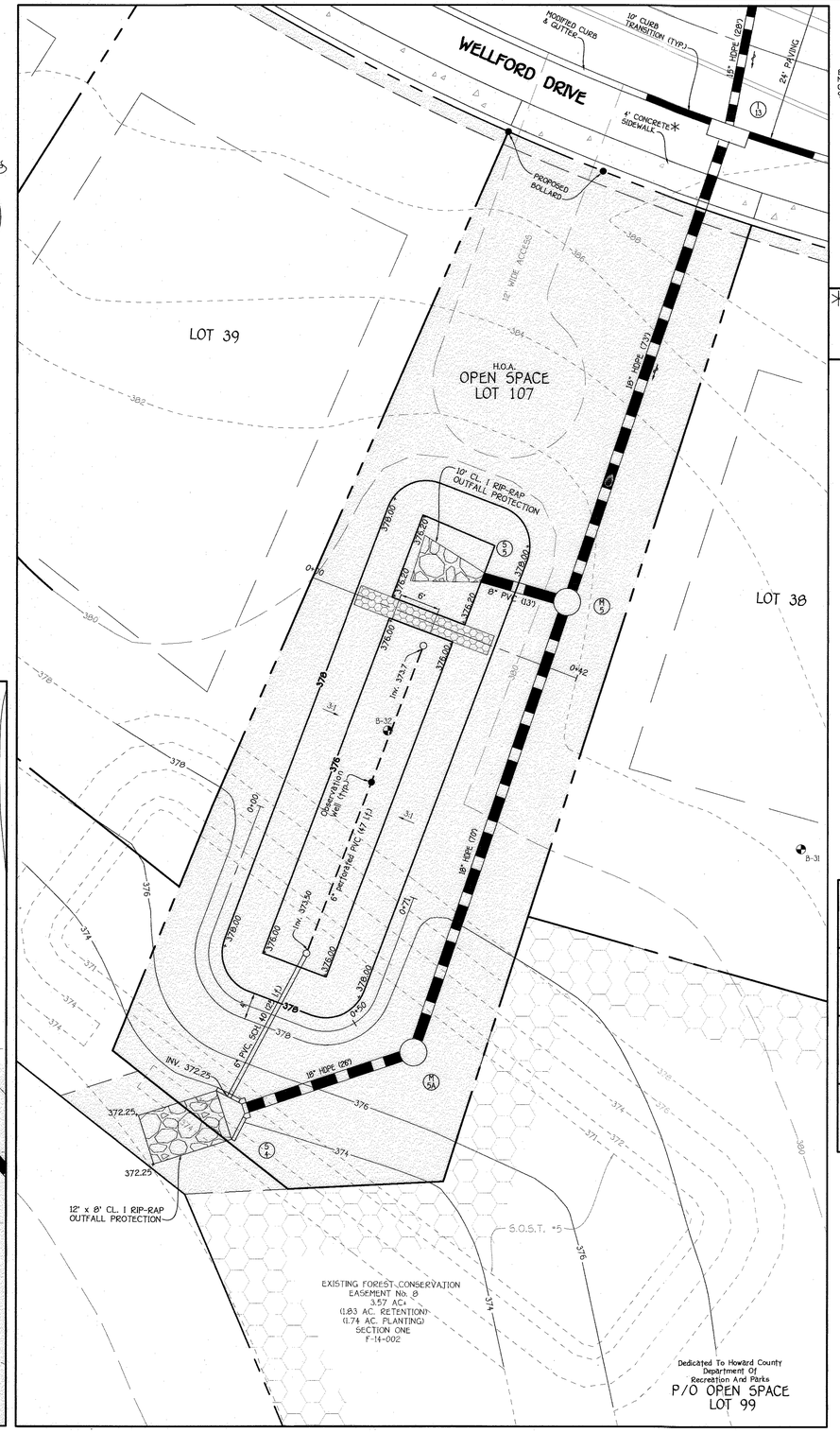
SCALE: 1" = 10'

NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) ALONG THE FRONT OF OPEN SPACE LOT 108.



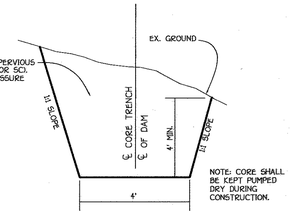
ESD No. 3 (M-6) MICRO BIO-RETENTION PLAN

SCALE: 1" = 10'



ESD No. 4 (F-6) BIO-RETENTION PLAN

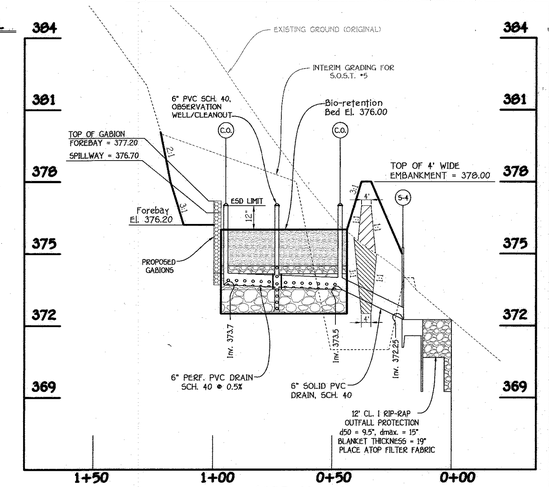
SCALE: 1" = 10'



CORE TRENCH DETAIL

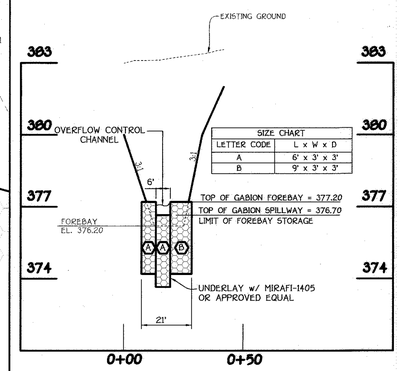
NOT TO SCALE

NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) ALONG THE FRONT OF OPEN SPACE LOT 107.



(ESD No. 4) SECTION THRU BIO-RETENTION (F-6)

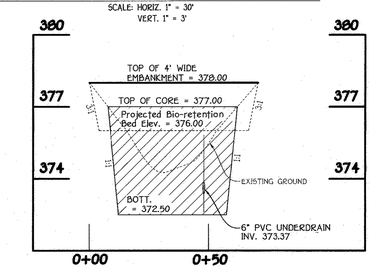
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



(ESD No. 4) GABION FOREBAY PROFILE

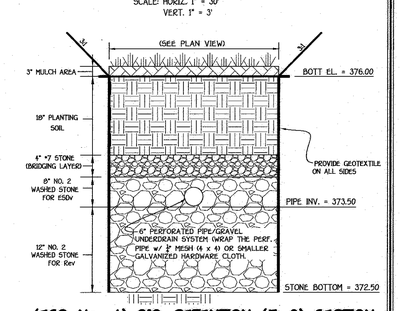
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

NOTE: SEE SHEET 27 FOR STORM DRAIN PROFILES.



ESD No. 4 PROFILE ALONG TOP OF EMBANKMENT (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



(ESD No. 4) BIO-RETENTION (F-6) SECTION

NO SCALE

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20746 — PROFESSIONAL ENGINEER

5/30/14

ALDO M. VITUCCI, P.E. — DATE

"Professional certification I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20746, Expiration Date 2-22-15."

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

0' 10' 15' 20'
Scale: 1" = 10'

STORMWATER MANAGEMENT PLANS
ESD Nos. 3, 4 & 12

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO
BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 15 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 13-22 swm plans.dwg, C-15_F-14-081 sheet 15, 5/30/2014 9:17:31 AM, 1:1

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-10-14

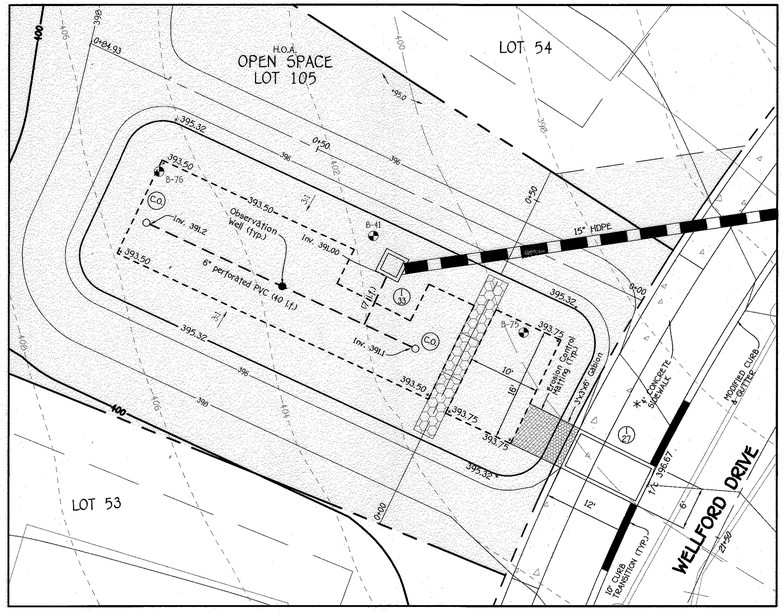
APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-24-14

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6-16-14

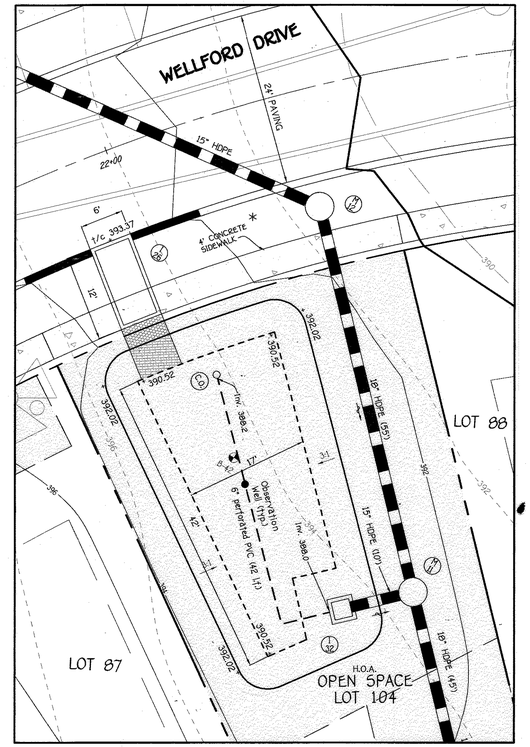
REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/2/16



ESD No. 6 (F-6)
BIO-RETENTION PLAN
SCALE: 1" = 10'

NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) ALONG THE FRONT OF OPEN SPACE LOT 105.

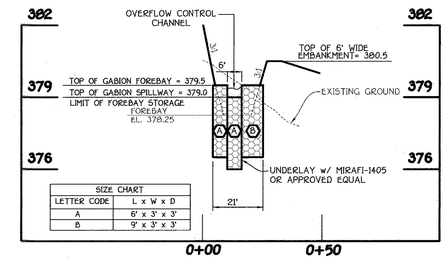


ESD No. 14 (M-6)
MICRO BIO-RETENTION PLAN
SCALE: 1" = 10'

NOTE: SEE SHEET 13 FOR TYPICAL MICRO BIO-RETENTION (M-6) SECTION.

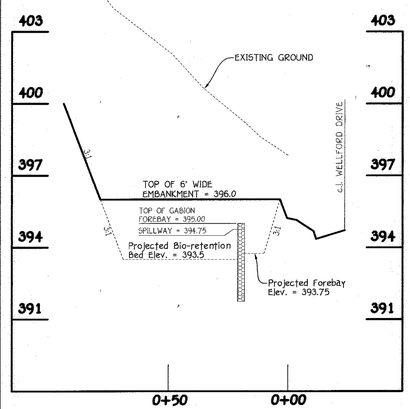
NOTE: SEE SHEET 29 FOR STORM DRAIN PROFILES.

NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) ALONG THE FRONT OF OPEN SPACE LOT 104.

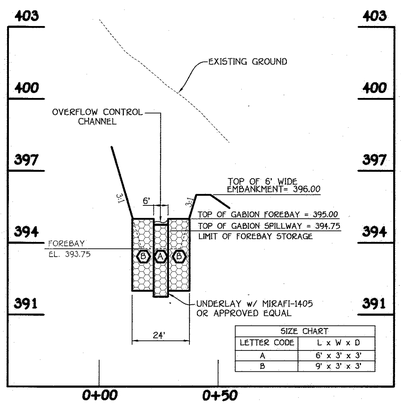


(ESD No. 7) GABION FOREBAY PROFILE
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

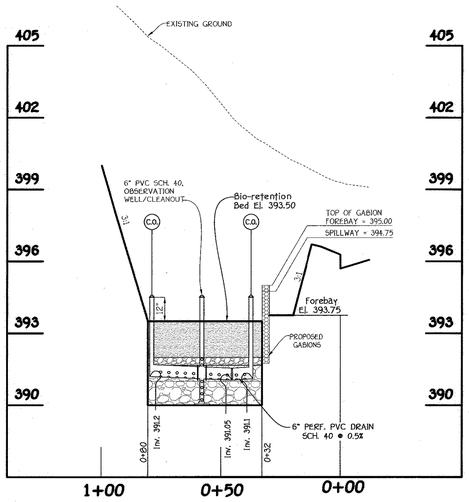
ESD No. 7
PROFILE ALONG TOP OF EMBANKMENT (F-6)
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



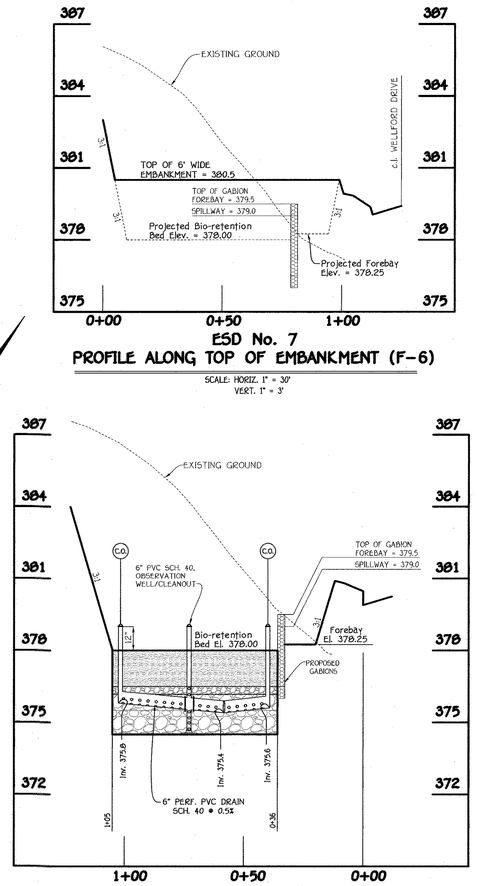
ESD No. 6
PROFILE ALONG TOP OF EMBANKMENT (F-6)
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



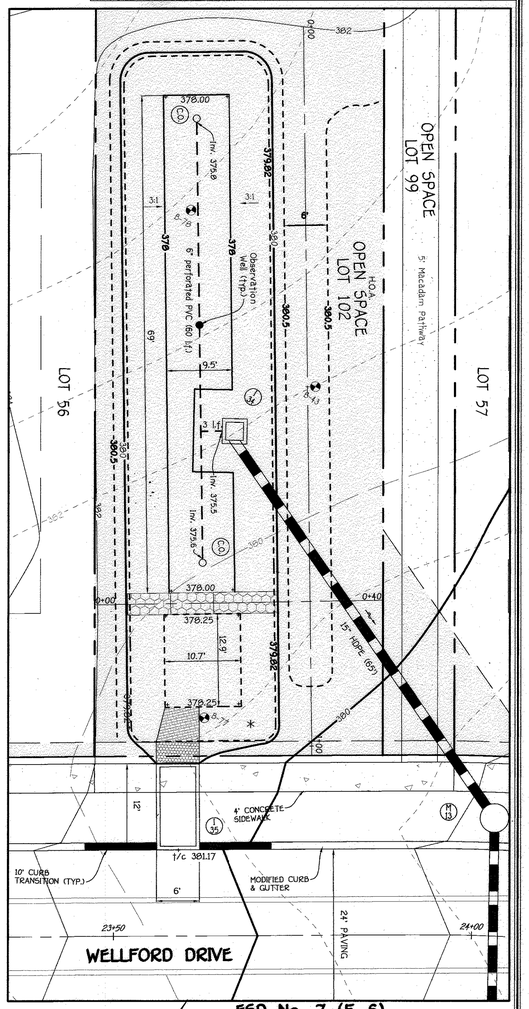
(ESD No. 6) GABION FOREBAY PROFILE
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



ESD No. 6
SECTION THRU BIO-RETENTION (F-6)
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

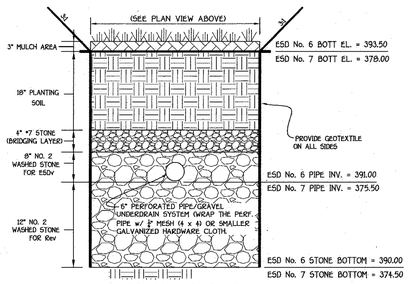


ESD No. 7
SECTION THRU BIO-RETENTION (F-6)
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



ESD No. 7 (F-6)
BIO-RETENTION PLAN
SCALE: 1" = 10'

NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) ALONG THE FRONT OF OPEN SPACE LOT 99 & 102.



ESD No. 6 & 7
BIO-RETENTION (F-6) SECTION
NO SCALE

0' 10' 15' 20'
Scale: 1" = 10'

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

STORMWATER MANAGEMENT PLANS
ESD Nos. 6, 7 & 14

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)
SECTION TWO
BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 16 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 13-22 swm plans.dwg, C-16_F-14-081 sheet 16, 5/30/2014 9:18:50 AM, 1:1

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6-10-14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6-16-14

REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBERS TO REFLECT ADDED SHEET	10/2/16

NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) ALONG THE FRONT OF OPEN SPACE LOT 106.

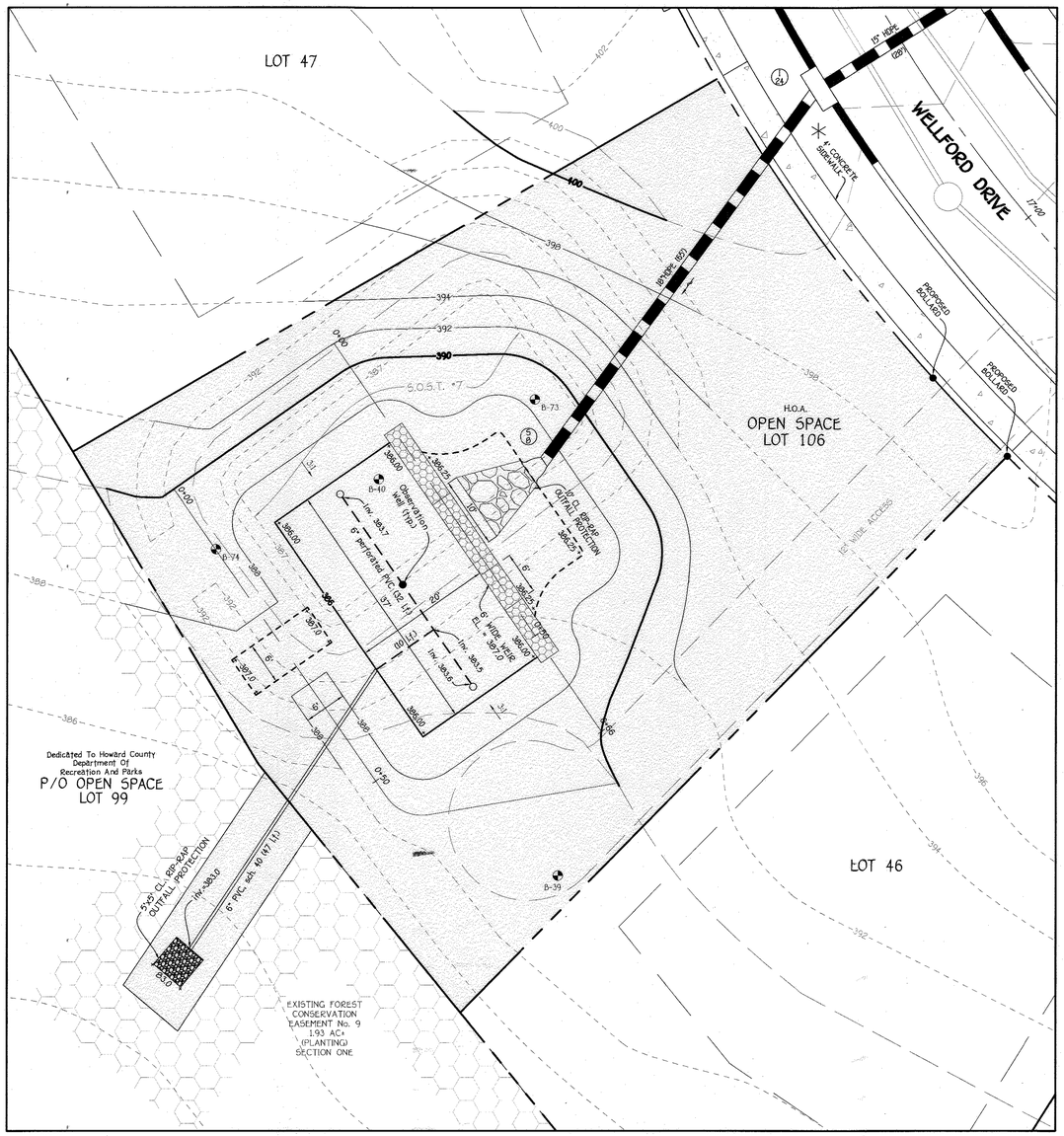
OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (F-6)

1. The owner shall maintain the plant material, mulch layer and soil layer annually, maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.

2. The owner shall perform a plant in the spring and in the fall each year. during the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material, Treat diseased trees &ns shrubs and replace all deficient stakes and wires.

3. The owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.

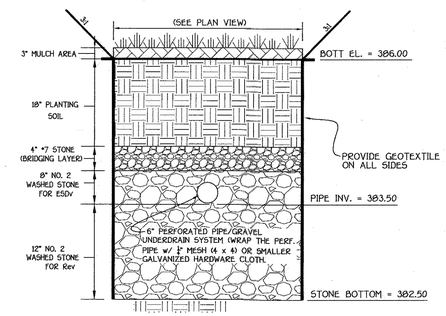
4. The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.



ESD No. 5 (F-6) BIO-RETENTION PLAN

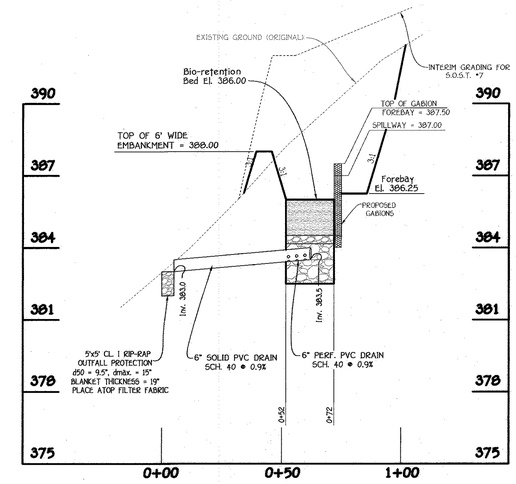
SCALE: 1" = 10'

NOTE: SEE SHEET 20 FOR STORM DRAIN PROFILE.



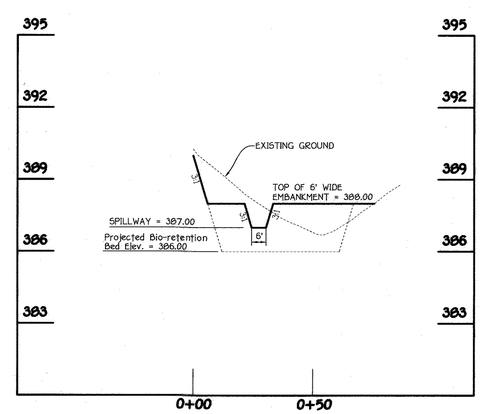
ESD No. 5 BIO-RETENTION (F-6) SECTION

NO SCALE



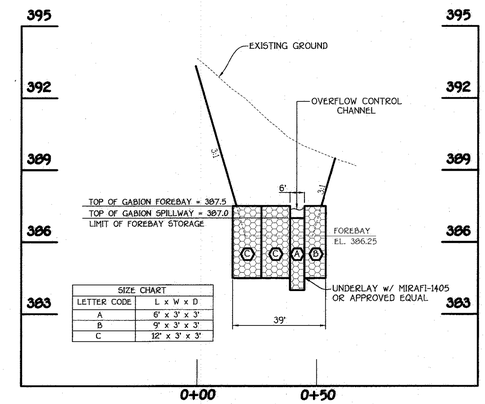
SECTION THRU BIO-RETENTION (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



ESD No. 5 PROFILE ALONG TOP OF EMBANKMENT (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



SIZE CHART	
LETTER CODE	L x W x D
A	6' x 3' x 3'
B	9' x 3' x 3'
C	12' x 3' x 3'

(ESD No. 5) GABION FOREBAY PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/20/14

"Professional certification I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER

BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

0' 10' 15' 20'
Scale: 1" = 10'

STORMWATER MANAGEMENT PLANS
ESD No. 5

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

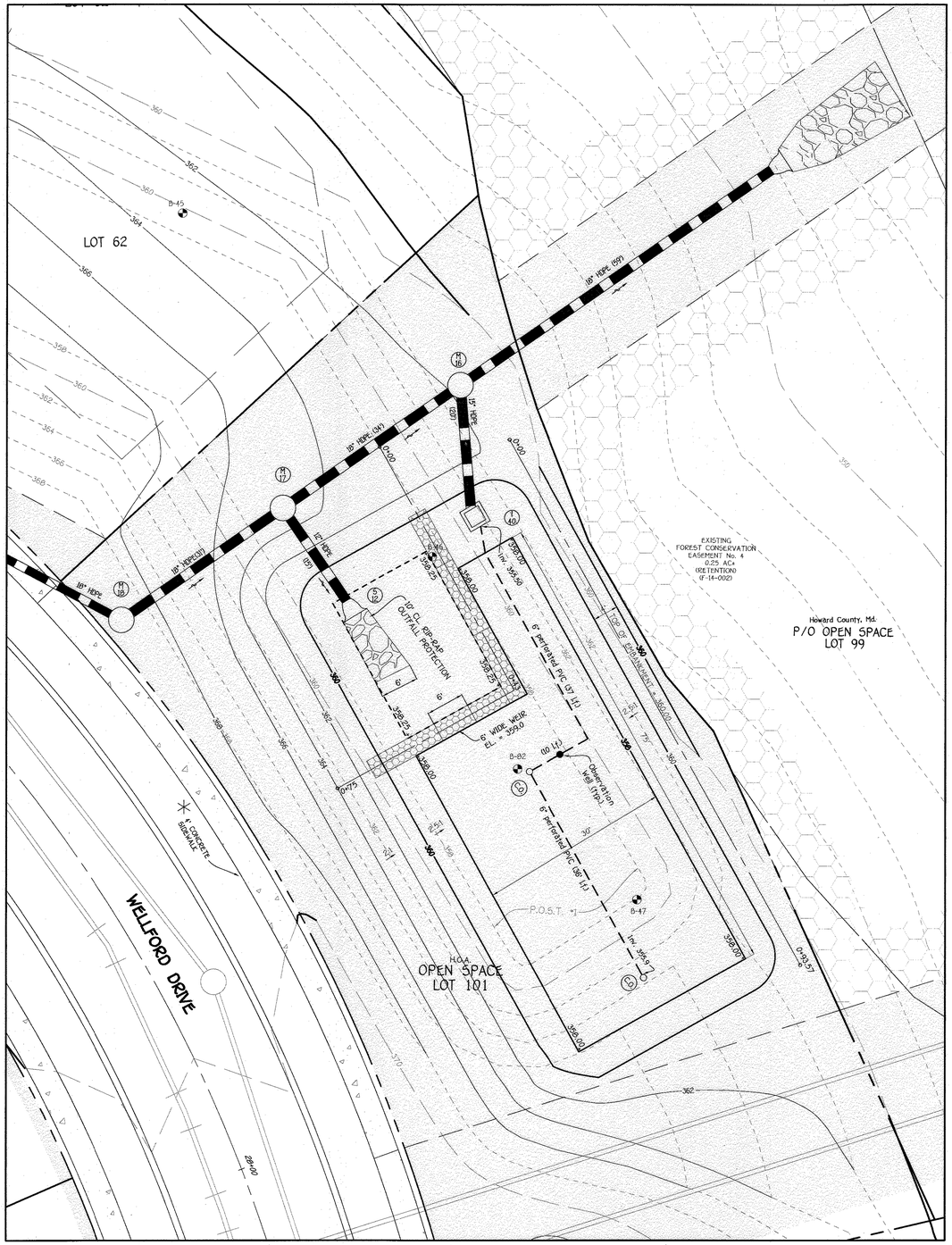
SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 17 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 13-22 swm plans.dwg, C-17_F-14-081 sheet 17, 5/30/2014 9:19:48 AM, 1:1

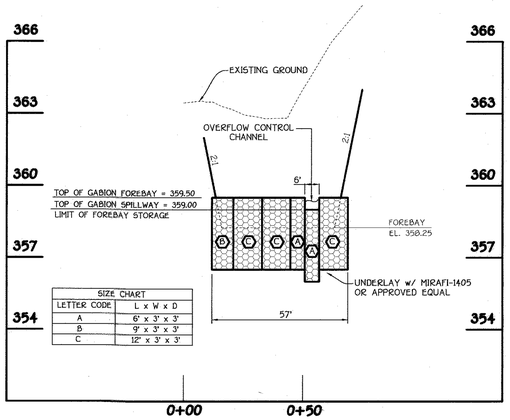


E5D No. 9 (F-6) BIO-RETENTION PLAN

SCALE: 1" = 10'

NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) ALONG THE FRONT OF OPEN SPACE LOT 101.

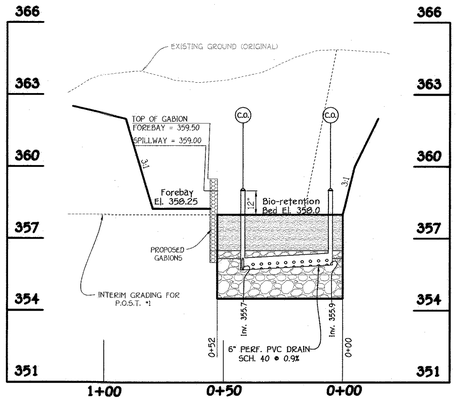
NOTE: SEE SHEET 30 FOR PROFILE (I-40 TO M-6 & I-39 TO S-11)



SIZE CHART	
LETTER CODE	L x W x D
A	6' x 3' x 3'
B	9' x 3' x 3'
C	12' x 3' x 3'

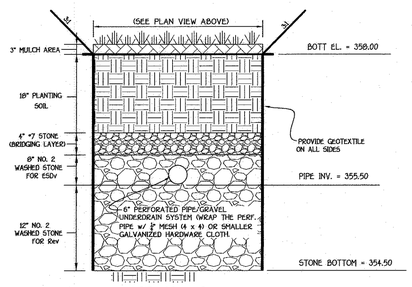
(E5D No. 9) GABION FOREBAY PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



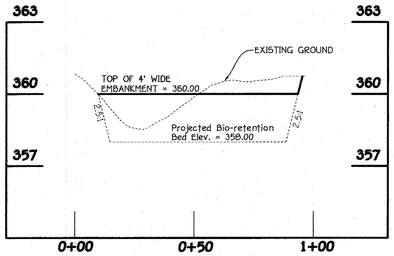
SECTION THRU BIO-RETENTION (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



E5D No. 9 BIO-RETENTION (F-6) SECTION

NO SCALE



E5D No. 9 PROFILE ALONG TOP OF EMBANKMENT (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS	DATE 6.10.14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6.16.14

REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16

OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (F-6)

1. The owner shall maintain the plant material, mulch layer and soil layer annually. maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.

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4. The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

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ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER

BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071).

0' 10' 15' 20'
Scale: 1" = 10'

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

STORMWATER MANAGEMENT PLANS
E5D No. 9

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

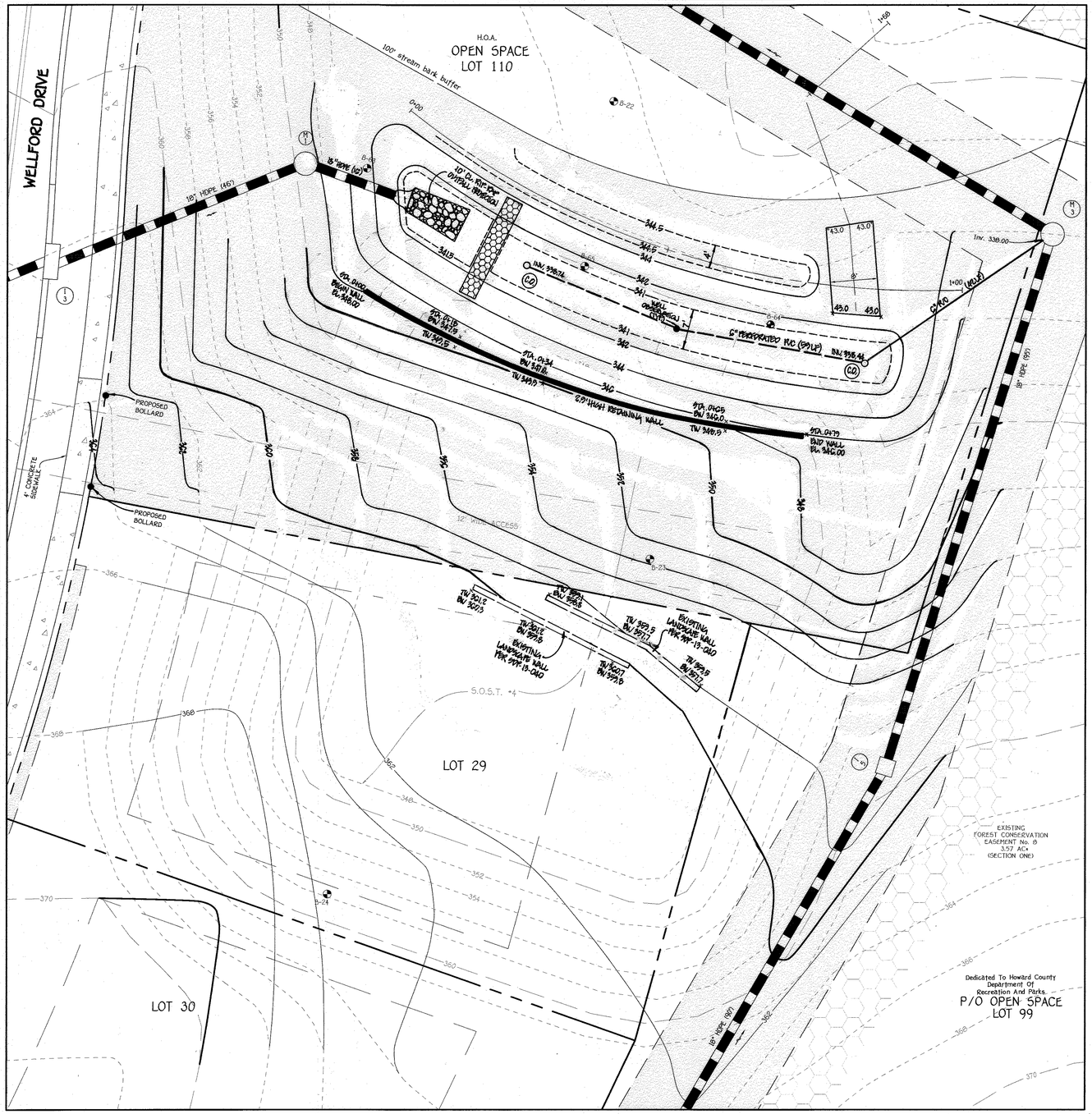
A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20

TAX MAP No. 30	GRID No. 2	PARCEL No. 86
2ND ELECTION DISTRICT	HOWARD COUNTY, MARYLAND	
SCALE: AS SHOWN	DATE: MAY 30, 2014	

SHEET 18 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 13-22 swm plans.dwg, C-18_F-14-081 sheet 18, 5/30/2014 9:20:49 AM, 1:1

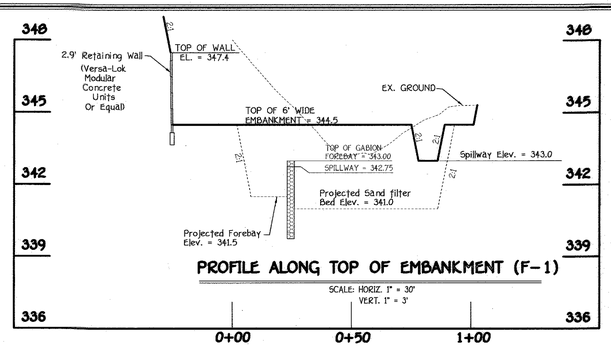


PRIVATELY OWNED & MAINTAINED BY H.O.A.

ESD No. 2
SAND FILTER (F-1) PLAN

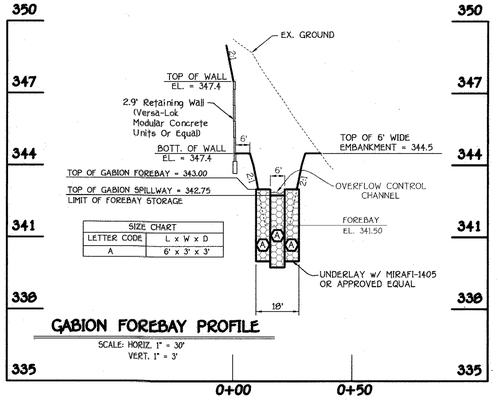
SCALE: 1" = 10'

NOTE: SEE SHEET 26 FOR STORM DRAIN PROFILE.



PROFILE ALONG TOP OF EMBANKMENT (F-1)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



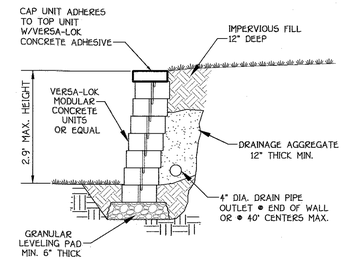
SIZE CHART	
LETTER CODE	L x W x D
A	6' x 3' x 3'

GABION FOREBAY PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SURFACE STORMWATER FILTRATION SYSTEMS (F-1)

1. THE STORMWATER WETLAND FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.
2. THE TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF ONCE PER YEAR, WHEN VEGETATION REACHES 18" IN HEIGHT OR AS NEEDED.
3. FILTERS THAT HAVE A GRASS COVER SHALL BE MOWED A MINIMUM OF THREE (3) TIMES PER GROWING SEASON TO MAINTAIN A MAXIMUM GRASS HEIGHT OF LESS THAN 12 INCHES.
4. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
5. VISIBLE SIGNS OF EROSION IN THE FACILITY SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
6. REMOVE SILT WHEN IT EXCEEDS FOUR (4) INCHES DEEP IN THE FOREBAY.
7. FILTER MATERIAL MUST BE REPLACED WHEN WATER REMAINS ON THE SURFACE OF THE FILTER BED FOR MORE THAN 24 HOURS FOLLOWING A 1 OR 2 YEAR STORM EVENT OR MORE THAN 48 HOURS AFTER A 10 YEAR STORM EVENT.
8. A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
9. THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
10. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION SYSTEM HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.



CONCRETE BLOCK RETAINING WALL DETAIL

NO SCALE

Sand Filter Specifications

1. Material Specifications for Sand Filters
The allowable materials for sand filter construction are detailed in Table B.3.1.
2. Sand Filter Testing Specifications

Underground sand filters, facilities within sensitive groundwater aquifers, and filters designed to serve urban hot spots are to be tested for water tightness prior to placement of filter media. Entrances and exits should be plugged and the system completely filled with water to demonstrate water tightness. Water tightness means no leakage for a period of 8 hours.

All overflow weirs, multiple orifices and flow distribution slots are to be field-tested to verify adequate distribution of flows.

3. Sand Filter Construction Specifications

Provide sufficient maintenance access (i.e., 12-foot-wide road with legally recorded easement). Vegetated access slopes are to be a maximum of 10% ; gravel slopes to 15% ; paved slopes to 25%.

Absolutely no runoff is to enter the filter until all contributing drainage areas have been stabilized.

Surface of filter bed is to be level.

All underground sand filters should be clearly delineated with signs so that they may be located when maintenance is due.

Surface sand filters may be planted with appropriate grasses: see MAA Approved Species List.

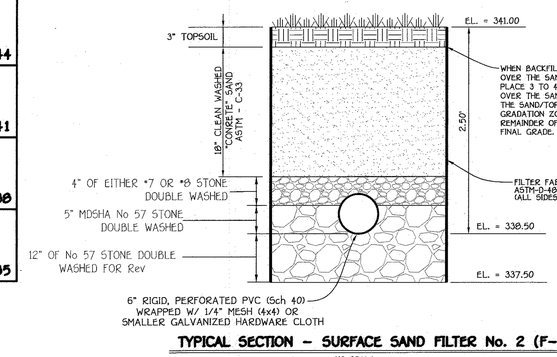
"Pocket" sandfilters (and residential bio-retention facilities treating areas larger than an acre) shall be sized with a' stone "window" that covers approximately 10% of the filter area. This "window" shall be filled pea gravel (3/4 inch stone).

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 6·10·14

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6.16.14

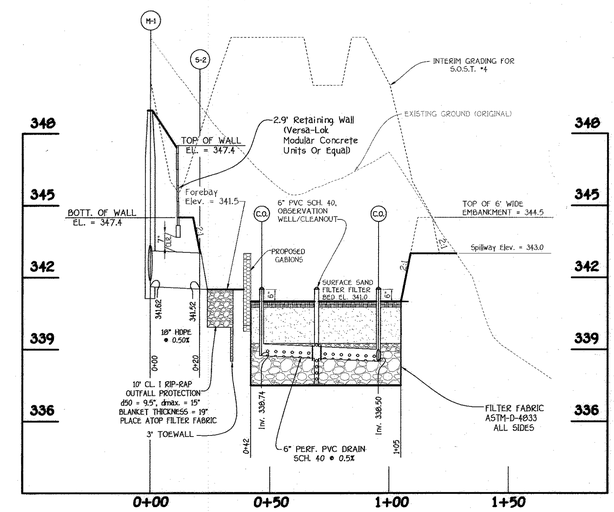
REVISIONS		
NO.	DESCRIPTION	DATE
1	Revise Title Block	4.3.15
2	REVISE GRADING, ADD RETAINING WALL, OPEN SPACE LOT 110 AND REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/9/15

NOTE: THE STORMWATER MANAGEMENT FACILITIES (M-6) WILL BE PRIVATELY OWNED BY H.O.A. AND JOINTLY MAINTAINED BY H.O.A. AND HOWARD COUNTY. HOWARD COUNTY'S MAINTENANCE RESPONSIBLY ONLY PERTAINS TO THE INLET STRUCTURES AND STORM DRAIN PIPE FOR THE MICRO BIO-RETENTION FACILITIES (M-6), ALL LANDSCAPING, UNDERDRAINS, CLEAN-OUTS AND FILTER MEDIA IS THE RESPONSIBLY OF THE HOMEOWNER'S ASSOCIATION. THE H.O.A. OR PRIVATE HOMEOWNER IS RESPONSIBLE FOR ALL OTHER FACILITIES (F-1), (F-6), (M-5) AND (M-4).



TYPICAL SECTION - SURFACE SAND FILTER No. 2 (F-1)

NO SCALE



SECTION THRU SAND FILTER (F-1)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

STATE OF MARYLAND — ALDO M. VITUCCI — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STORMWATER MANAGEMENT PLANS
ESD No. 2

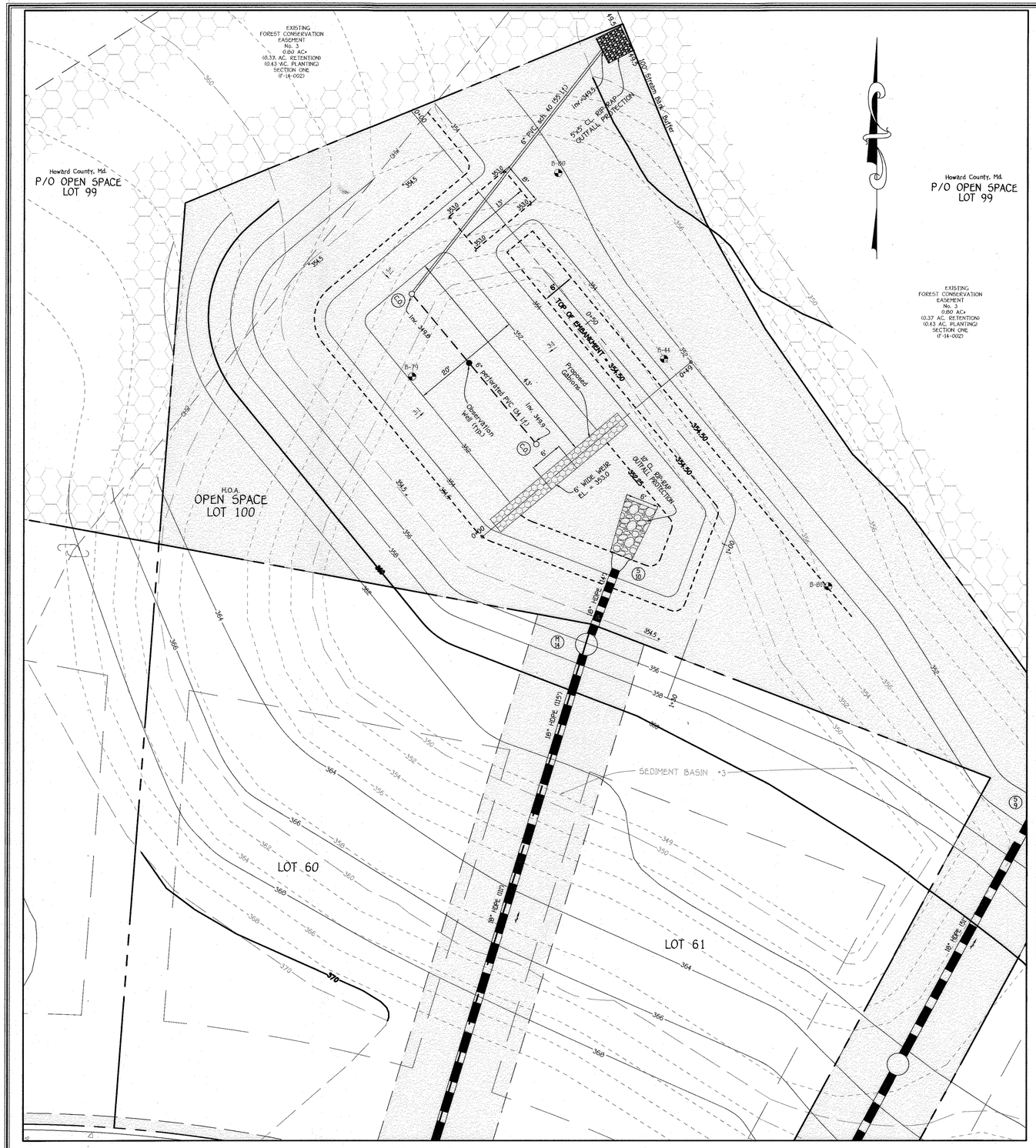
CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)
SECTION TWO
BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 19 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 13-22 swm plans.dwg, C-19_F-14-081 sheet 19, 5/30/2014 9:29:48 AM, 1:1



ESD No. 8 (F-6) BIO-RETENTION PLAN

SCALE: 1" = 10'

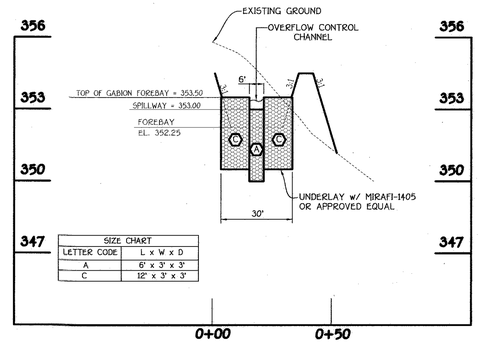
OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS (F-6)

1. The owner shall maintain the plant material, mulch layer and soil layer annually. maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.

2. The owner shall perform a plant in the spring and in the fall each year. during the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material. Treat diseased trees ans shrubs and replace all deficient stakes and wires.

3. The owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.

4. The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

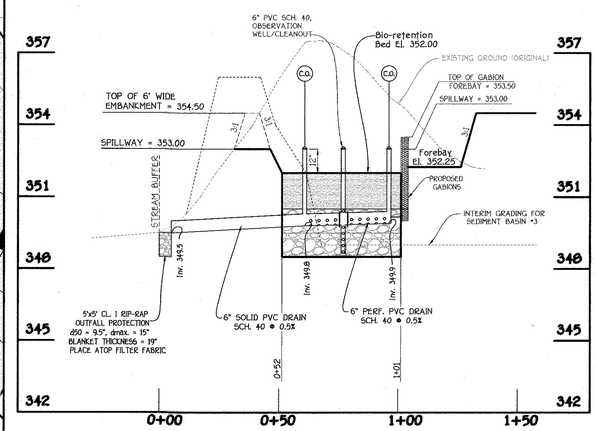


SIZE CHART	
LETTER CODE	L x W x D
A	6' x 3' x 3'
C	12" x 3' x 3'

(ESD No. 8) GABION FOREBAY PROFILE

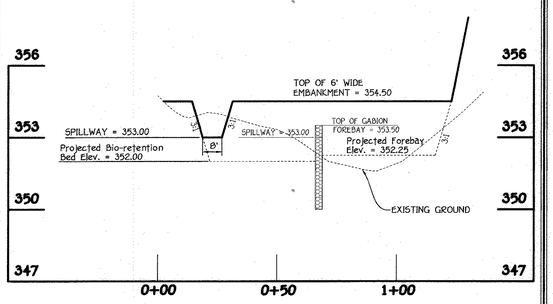
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

NOTE: SEE SHEET 30 FOR STORM DRAIN PROFILE.



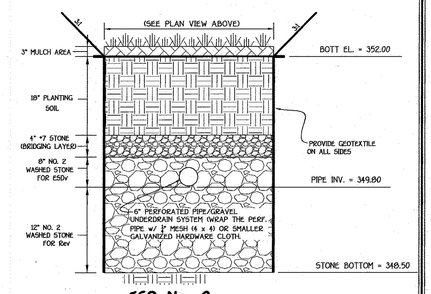
SECTION THRU BIO-RETENTION (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



ESD No. 8 PROFILE ALONG TOP OF EMBANKMENT (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



ESD No. 8 BIO-RETENTION (F-6) SECTION

NO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6-10-14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6-16-14

REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/12/16

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER

BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. DATE 5/20/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

STORMWATER MANAGEMENT PLANS
ESD No. 8

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

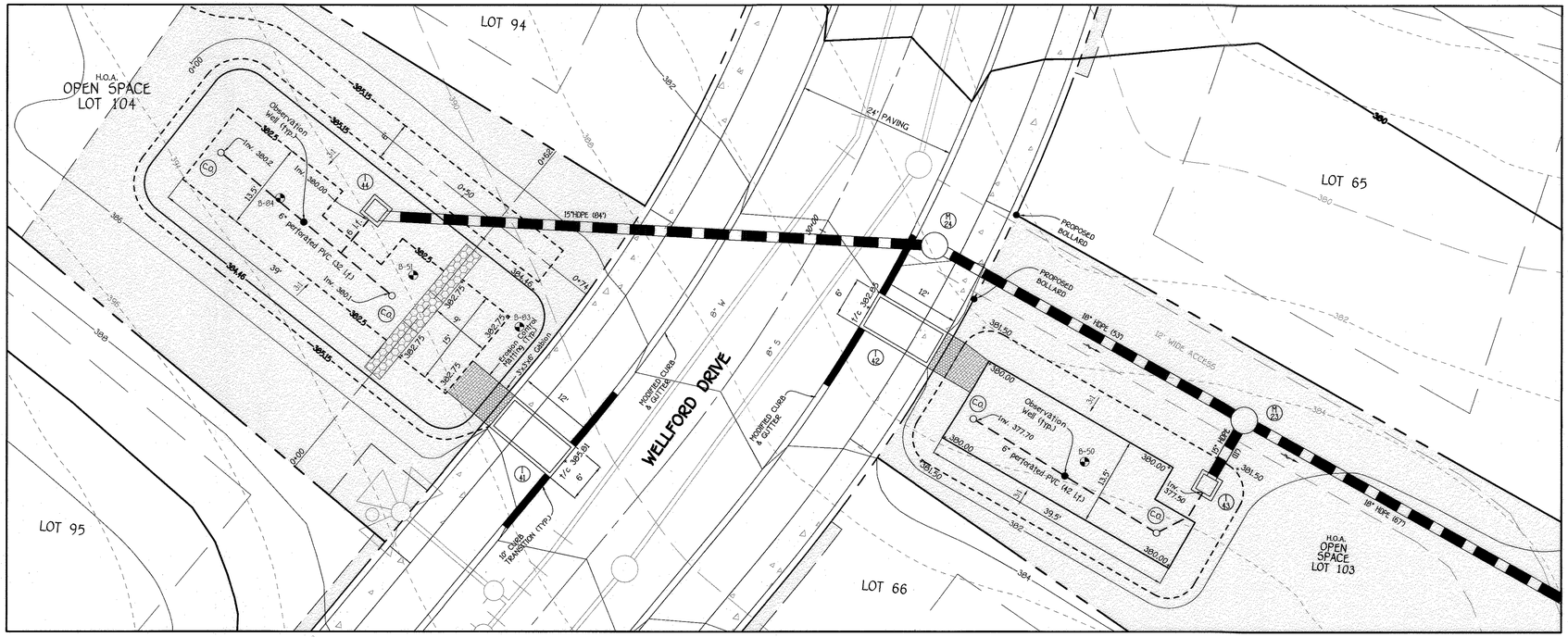
A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 20 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 13-22 swm plans.dwg, C-20_F-14-081 sheet 20, 5/30/2014 9:30:34 AM, 1:1

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6.10.14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6.16.14

REVISIONS		
NO.	DESCRIPTION	DATE
1	Revise Title Block	4.3.15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/6/16



NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) ALONG THE FRONT OF OPEN SPACE LOT 103.

NOTE: SEE SHEET 13 FOR TYPICAL MICRO BIO-RETENTION (M-6) SECTION.

NOTE: THE PROPOSED 4' SIDEWALK SHALL BE TRAFFIC BEARING (7" REINFORCED CONCRETE) ALONG THE FRONT OF OPEN SPACE LOT 104.

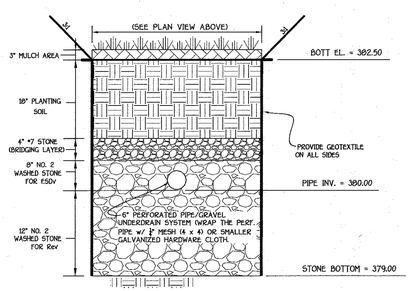
ESD No. 15 (F-6) BIO-RETENTION PLAN

SCALE: 1" = 10'

ESD No. 10 (M-6) MICRO BIO-RETENTION PLAN

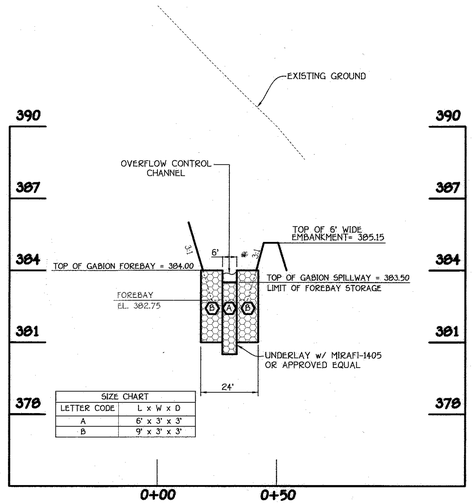
SCALE: 1" = 10'

NOTE: SEE SHEET 30 FOR PROFILE (1-44 TO 5-13 & 1-43 TO M-23)



ESD No. 15 BIO-RETENTION (F-6) SECTION

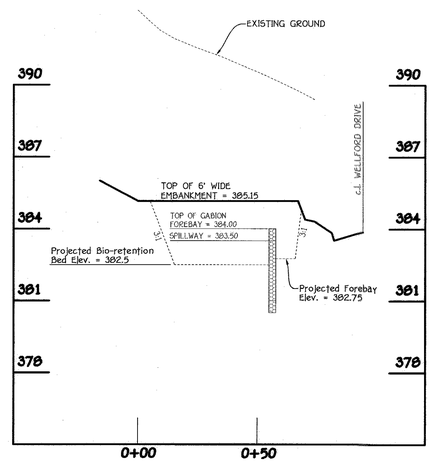
NO SCALE



SIZE CHART	
LETTER CODE	L x W x D
A	6' x 3' x 3'
B	9' x 3' x 3'

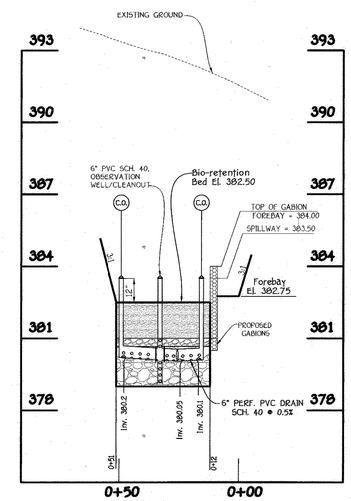
(ESD No. 15) GABION FOREBAY PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



ESD No. 15 PROFILE ALONG TOP OF EMBANKMENT (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



ESD No. 15 SECTION THRU BIO-RETENTION (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STORMWATER MANAGEMENT PLANS
ESD Nos. 10 & 15

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

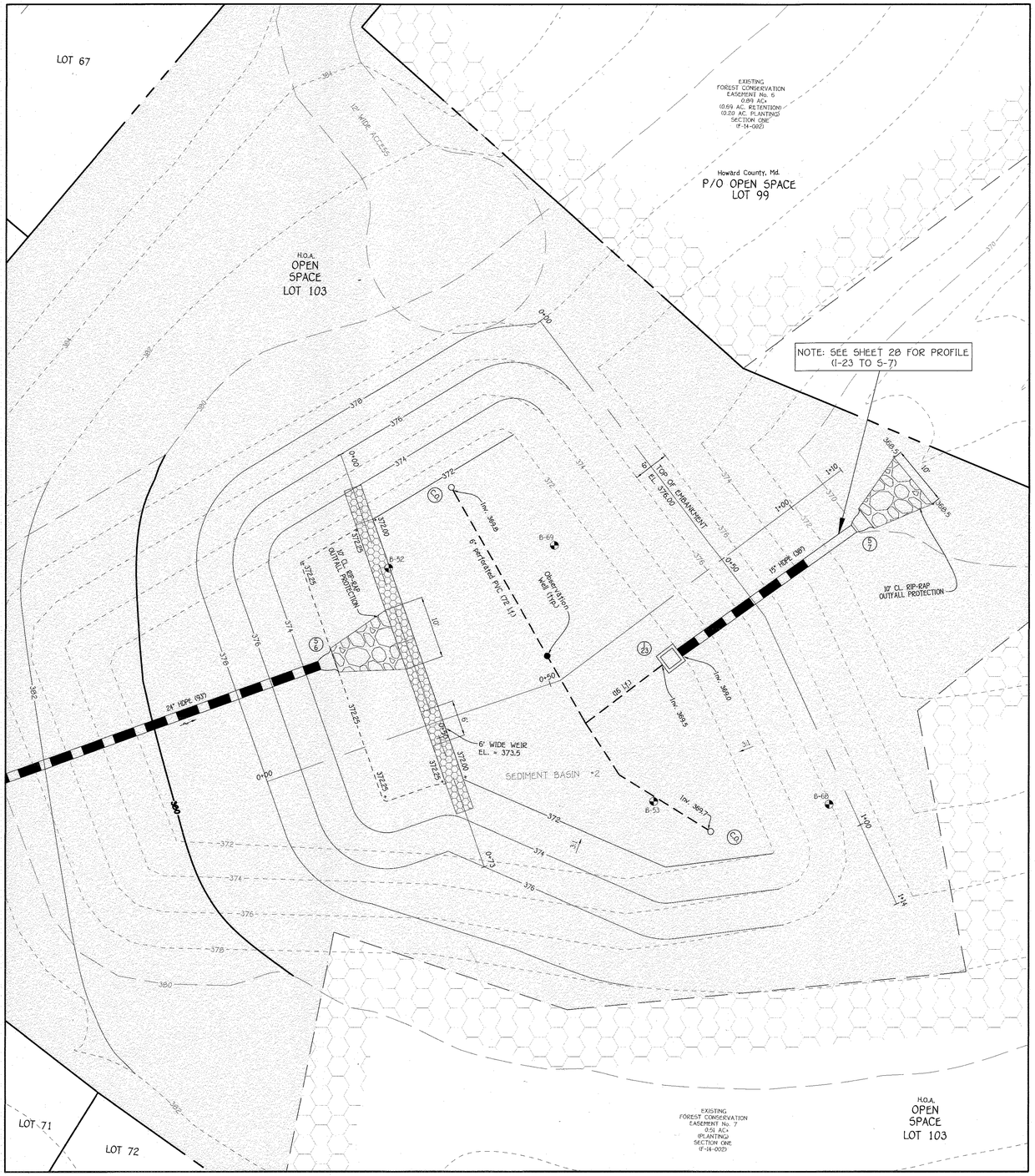
SECTION TWO

BUILDABLE LOTS 29 - 98 & OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 21 OF 40

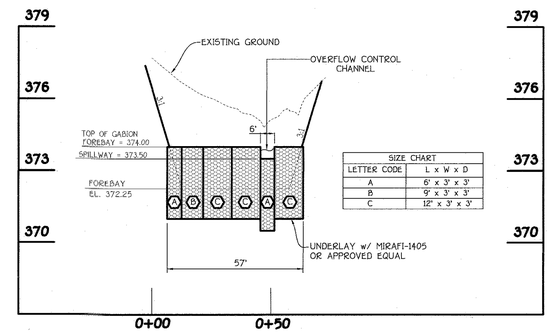
F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 13-22 swm plans.dwg, C-21_F-14-081 sheet 21, 5/30/2014 9:31:26 AM, 1:1



ESD No. 11 (F-6) BIO-RETENTION PLAN

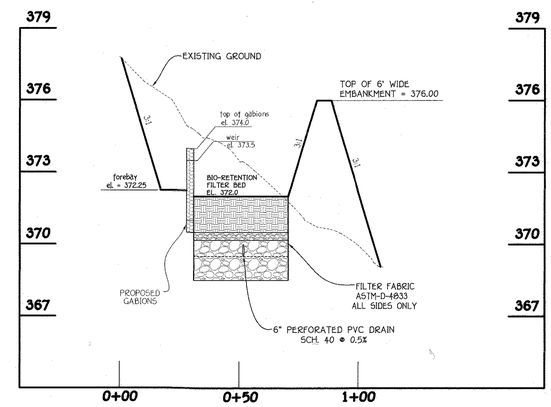
SCALE: 1" = 10'



SIZE CHART	
LETTER CODE	L x W x D
A	6' x 3' x 3'
B	9' x 3' x 3'
C	12' x 3' x 3'

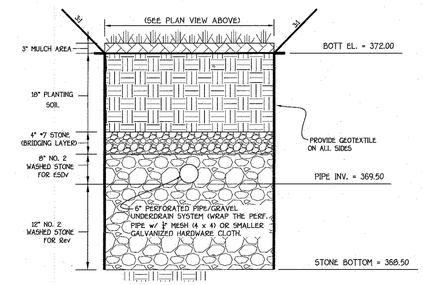
(ESD No. 11) GABION FOREBAY PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



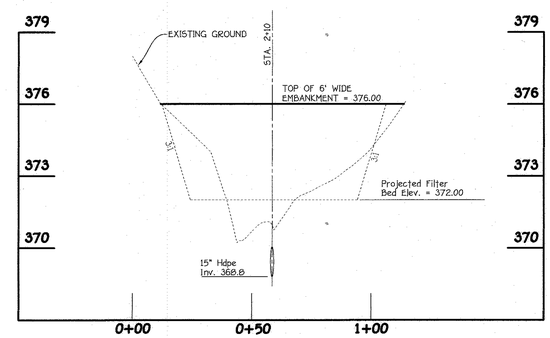
SECTION THRU S.W.M. FACILITY

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



ESD No. 11 BIO-RETENTION (F-6) SECTION

NO SCALE



ESD No. 11 PROFILE ALONG TOP OF EMBANKMENT (F-6)

SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 6·10·14

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/6/14

REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4·3·15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/28/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

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OWNER/DEVELOPER
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COLUMBIA, MARYLAND 21046
(410-720-5071)

STORMWATER MANAGEMENT PLANS
ESD No. 11

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO
BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 22 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 13-22 swm plans.dwg, C-22_F-14-081 sheet 22, 5/30/2014 10:42:12 AM, 1:1

Approved: Department Of Planning And Zoning

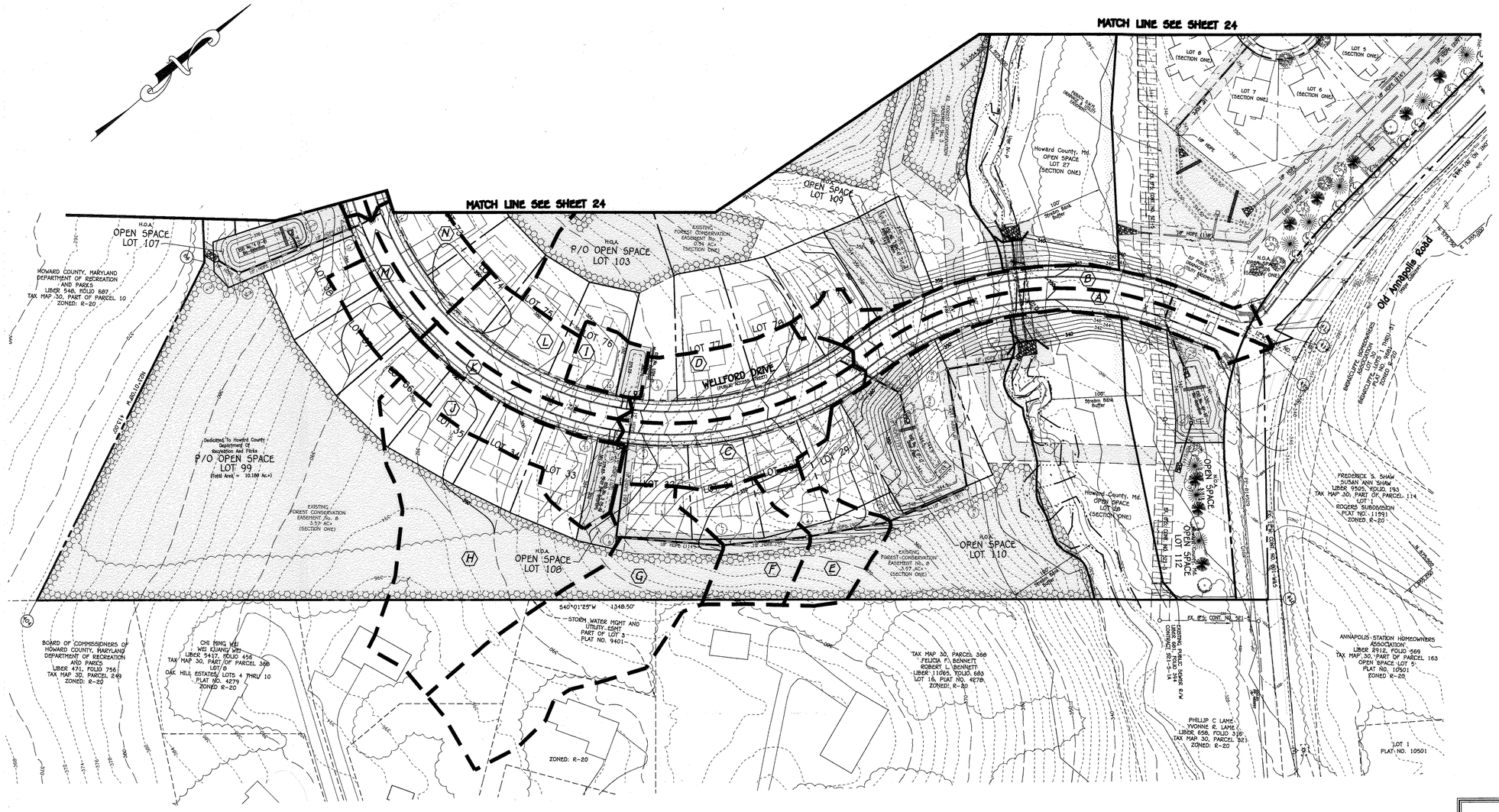
Chief, Division Of Land Development — Date: 5-7-15

Chief, Development Engineering Division — Date: 5.5.15

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — Date: 4/30/2015

REVISIONS		
NO.	DESCRIPTION	DATE
1	REVISE LOTS, REMOVE PARCEL 'C', REVISE STORM DRAIN AND GRADING	4/3/15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/2/15



DRAINAGE AREA DATA

STRUCTURE NO.	DRAINAGE AREA	AREA	'C'	ZONED	% IMP.
I-1	A	0.26 AC.	0.66	R-20	58
I-2	B	0.27 AC.	0.67		60
I-3	C	0.39 AC.	0.67		60
I-4	D	0.47 AC.	0.50		36
I-5	E	0.23 AC.	0.27		3
I-6	F	0.27 AC.	0.30		7
I-7	G	0.83 AC.	0.29		5
I-8	H	1.27 AC.	0.29		5
I-9	I	0.10 AC.	0.37		18
I-10	J	0.11 AC.	0.35		14
I-11	K	0.30 AC.	0.61		52
I-12	L	0.29 AC.	0.59		49
I-13	M	0.24 AC.	0.67		60
I-14	N	0.19 AC.	0.67		59
I-15	O	0.40 AC.	0.63		55
I-16	P	0.20 AC.	0.58		47
I-17	Q	0.72 AC.	0.40		22
I-18	R	0.24 AC.	0.62		52
I-19	S	0.24 AC.	0.62		52
I-20	T	0.34 AC.	0.61		51
I-21	U	0.61 AC.	0.64		56
I-22	V	0.55 AC.	0.37		17
I-23	W	1.36 AC.	0.33		11
I-24	X	0.29 AC.	0.36		38
I-25	Y	0.25 AC.	0.56		44
I-26	Z	0.35 AC.	0.64		56
I-27	AA	0.31 AC.	0.72		67
I-28	BB	0.67 AC.	0.26		2
I-29	CC	0.51 AC.	0.25		0
I-30	DD	1.59 AC.	0.26		1
I-31	EE	0.47 AC.	0.40		21
I-32	FF	0.09 AC.	0.45		28
I-33	GG	1.29 AC.	0.29		5
I-34	HH	0.99 AC.	0.30		7
I-35	II	0.27 AC.	0.68		62
I-36	JJ	0.28 AC.	0.67		59
I-37	KK	0.47 AC.	0.64		55
I-38	LL	0.61 AC.	0.71		66
I-39	MM	0.90 AC.	0.56		45
I-40	NN	0.19 AC.	0.25		0
I-41	OO				
I-42	PP				
I-43	QQ				
I-44	RR				

SOILS LEGEND

SOIL	NAME	CLASS	EROSION FACTOR (K.W)
Co	Codorus and Hatboro silt loams, 0 to 3 percent slopes	C	.37
GgB	Glenelg loam, 3 to 8 percent slopes	B	.20
GgC	Glenelg loam, 8 to 15 percent slopes	B	.20
GhB	Glenelg-Urban land complex, 0 to 8 percent slopes	B	.20
GmC	Glenville silt loam, 8 to 15 percent slopes	C	.37
GoB	Glenville-Codorus silt loams, 0 to 8 percent slopes	C	.37
MaC	Manor loam, 8 to 15 percent slopes	B	.28
MaD	Manor loam, 15 to 25 percent slopes	B	.24

PLAN

0' 60' 120' 180'

Scale: 1" = 60'

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE: 4/17/15

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

REVISED DRAINAGE AREA MAP
CENTENNIAL LAKE OVERLOOK
(FORMERLY MASON PROPERTY)
SECTION TWO
BUILDABLE LOTS 29 - 98
AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 3, 2015
SHEET 23 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Redline Revision 1-13-15\11042 sheet 23-24 da map new mylar.dwg, 4/3/2015 9:40:17 AM, 1:1

SOILS LEGEND

SOIL	NAME	CLASS	EROSION FACTOR (Kw)
Co	Codorus and Hatboro silt loams, 0 to 3 percent slopes	C	.37
GgB	Glenelg loam, 3 to 8 percent slopes	B	.20
GgC	Glenelg loam, 8 to 15 percent slopes	B	.20
GhB	Glenelg-Urban land complex, 0 to 8 percent slopes	B	.20
GmC	Glenville silt loam, 8 to 15 percent slopes	C	.37
GoB	Glenville-Codorus silt loams, 0 to 8 percent slopes	C	.37
MaC	Manor loam, 8 to 15 percent slopes	B	.28
MaD	Manor loam, 15 to 25 percent slopes	B	.24

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date: 5-7-15

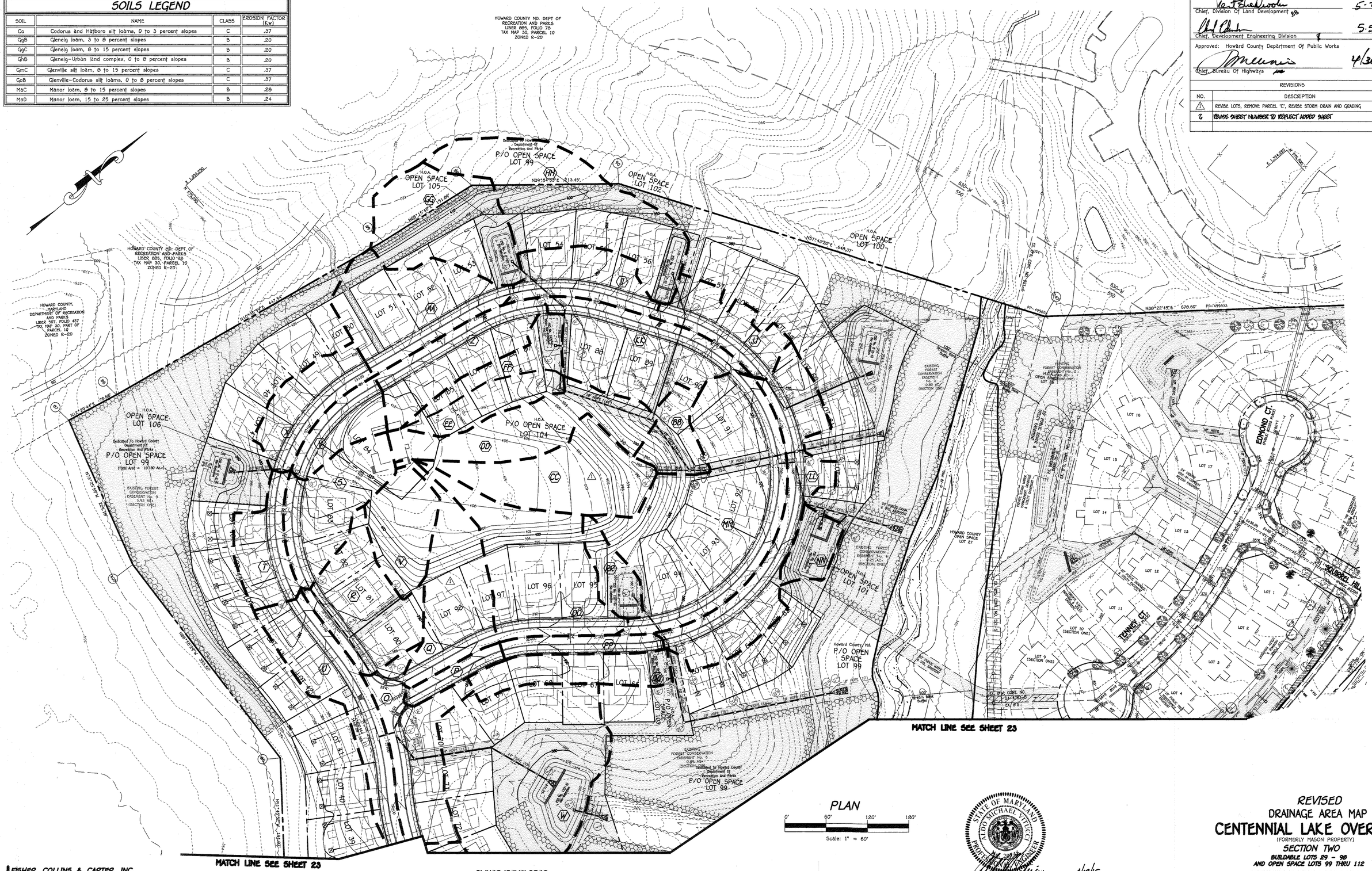
Chief, Development Engineering Division — Date: 5.5.15

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — Date: 4/30/2015

REVISIONS

NO.	DESCRIPTION	DATE
1	REVISE LOTS, REMOVE PARCEL 'C', REVISE STORM DRAIN AND GRADING	4/3/15
2	REMOVE SHEET NUMBER TO REPLACE ADDED SHEET	10/21/16



PLAN

Scale: 1" = 60'

FISHER, COLLINS & CARTER, INC.
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REVISED DRAINAGE AREA MAP
CENTENNIAL LAKE OVERLOOK
(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98
AND OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 3, 2015
SHEET 24 OF 40

F-14-081

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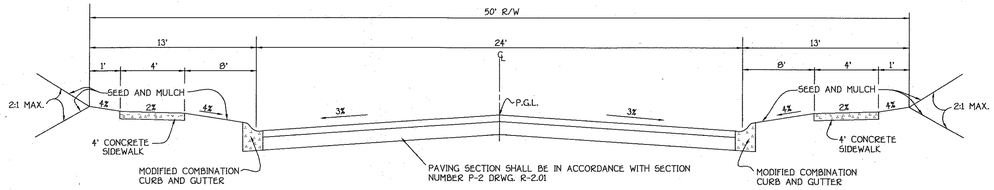


NOTE:
ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL VOLUME IV, STANDARD SPECIFICATION AND DETAILS FOR CONSTRUCTION.

TYPICAL ROADWAY SECTION

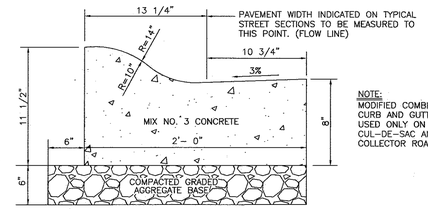
NO SCALE

ROADWAY INFORMATION CHART

ROAD NAME	CLASSIFICATION	DESIGN SPEED	ZONING	℄ STATION LIMITS	PAVING SECTION
WELLFORD DRIVE	PUBLIC ACCESS STREET	30 M.P.H.	R-20	0+69.02 TO 34+37.89	P-2

DETAIL R-2.01

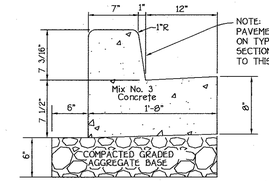
SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5	5 TO <7	>7	3 TO <5	5 TO <7	>7
		PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB			HMA WITH CONSTANT GAB		
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY; LOCAL ROADS: ACCESS PLACE, ACCESS STREET; CUL-DE-SACS: RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM, PG 64-22; LEVEL 1 (ESAL)	1.0	1.0	1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	2.0	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0	4.0



NOTE:
MODIFIED COMBINATION CURB AND GUTTER TO BE USED ONLY ON LOCAL, CUL-DE-SAC AND MINOR COLLECTOR ROADS.

MODIFIED COMBINATION CURB AND GUTTER

NO SCALE DETAIL R-3.01



NOTE:
PAVEMENT WIDTH INDICATED ON TYPICAL STREET SECTIONS TO BE MEASURED TO THIS POINT (FLOW LINE)

STD. 7" CONC. CURB AND GUTTER

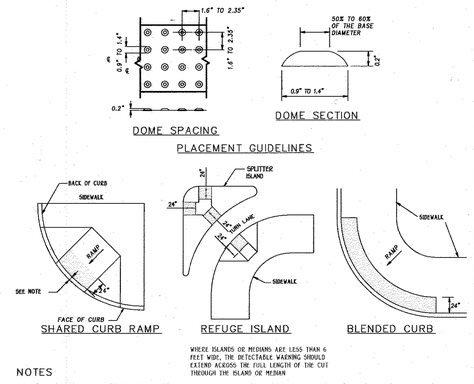
NO SCALE DETAIL R-3.01

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 6-10-14

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6-16-14

REVISIONS			
NO.	DESCRIPTION	DATE	
1	Revise Title Block		4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET		10/21/16

(MATT DETAILS OR OPTIONAL 12"x12" TILE TECH PAVERS(RED))



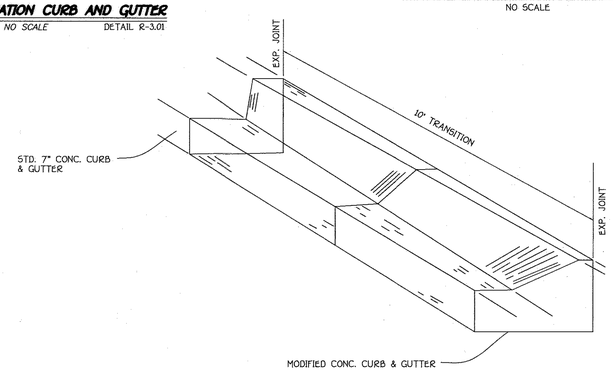
WHERE ISLANDS OR MEDIANS ARE LESS THAN 6 FEET WIDE, THE DETECTABLE WARNING SHOULD EXTEND ACROSS THE FULL LENGTH OF THE CUT THROUGH THE ISLAND OR MEDIAN

NOTES

1. THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 TO 8 INCHES FROM THE FACE OF CURB.
2. FOR SKEWED APPLICATIONS DETECTABLE WARNING SHALL BE PLACED SUCH THAT THE DOMES CLOSEST TO THE BACK OF CURB ARE NO LESS THAN 0.5" AND NO MORE THAN 3.0" FROM THE BACK OF CURB. TRUNCATED DOME SURFACES SHALL BE FABRICATED TO PROVIDE FULL DOMES ONLY.
3. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
4. DETECTABLE WARNING SURFACES ARE REQUIRED AT STREET CROSSING & SIGNALIZED INTERSECTIONS.

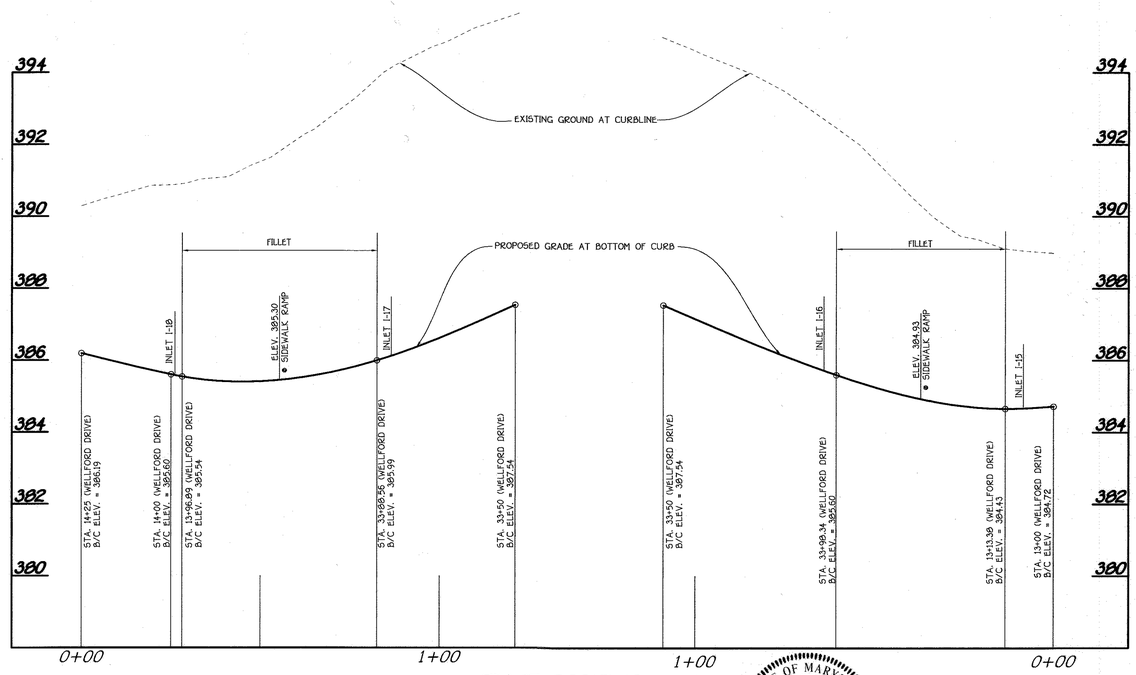
DETECTABLE WARNING SURFACE GUIDELINES

STD. DETAIL MD. 655-40



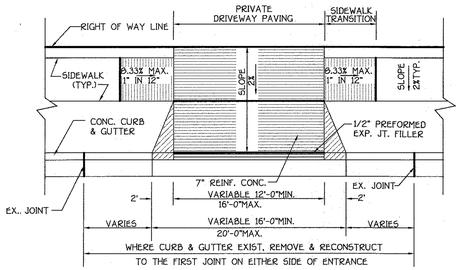
CONCRETE CURB & GUTTER TRANSITION

NO SCALE

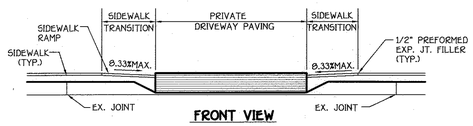


FILLET PROFILES

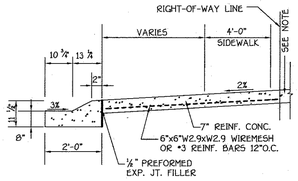
SCALE: HOR. : 1" = 20'
VER. : 1" = 2'



PLAN



FRONT VIEW



SECTION

NOTES

1. ALL RAMPS SHALL HAVE TEXTILE WARNING TEXTURE EXTENDING THE FULL WIDTH AND DEPTH OF THE RAMP.
2. PRIVATE DRIVEWAY PAVING (IF CONC. 1/2" PREFORMED EXP. JOINT FILLER IS TO BE PROVIDED AT THE RIGHT OF WAY LINE.)
3. TIE-IN GRADE OF PRIVATE DRIVEWAY SHALL NOT EXCEED 14%.

RESIDENTIAL DRIVEWAY ENTRANCE CLOSED SECTION W/MODIFIED COMBINATION CURB AND GUTTER AND SIDEWALK

NOT TO SCALE

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/30/14

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ROADWAY DETAILS

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

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A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 25 OF 40

F-14-081

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APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 4/30/2015

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5/7/15

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5-8-15

REVISIONS

NO.	DESCRIPTION	DATE
1	REVISE LOTS, REMOVE PARCEL 'C' AND REVISE STRUCTURE & PIPE SCHEDULE	4/3/15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16

STRUCTURE SCHEDULE

STRUCTURE NO.	TOP ELEVATION	INV.IN	INV.OUT	LOCATION (ROAD NAME/COORINATE)	ROAD STA.	OFFSET	TYPE AND WIDTH	REMARKS
# 1-1	348.62	338.92	344.72	WELLFORD DRIVE	1+23.19	12' L	A-10 (2.5')	D - 4.03
1-1A	338.25	334.75 (8")	334.65	N 575403.17 E 1354957.00	-----	-----	'S' INLET	D - 4.22
1-2	348.62	-----	345.00	WELLFORD DRIVE	1+23.19	12' R	A-10 (2.5')	D - 4.03
1-3	362.41	357.66	350.50	WELLFORD DRIVE	4+87	12' L	A-5 (2.5')	D - 4.01
# 1-4	362.28	-----	358.90	WELLFORD DRIVE	5+00	12' R	A-5 (2.5')	D - 4.01
# 1-5	THROAT = 357.00	346.21	345.96	N 575079.40 E 1354824.10	-----	-----	'D' INLET	D - 4.10
# 1-6	THROAT = 363.00	355.46	355.21	N 575002.01 E 1354778.96	-----	-----	'D' INLET	D - 4.10
# 1-7	THROAT = 369.00	363.61	363.36	N 574924.24 E 1354724.41	-----	-----	'D' INLET	D - 4.10
1-8	THROAT = 377.00	371.66	371.41	N 574843.25 E 1354643.47	-----	-----	'D' INLET	D - 4.10
1-9	380.26	376.76 (6")	376.50	WELLFORD DRIVE	7+45.5	31.2' R	'S' INLET	D - 4.22
1-10	380.83	377.33 (6")	376.58	WELLFORD DRIVE	7+56.4	30.9' L	'S' INLET	D - 4.22
1-11	382.68	-----	-----	WELLFORD DRIVE	7+64.7	12' L	COG/COS OPENING	MD - 374.68
1-12	382.11	-----	-----	WELLFORD DRIVE	7+56.6	12' R	COG/COS OPENING	MD - 374.68
1-13	388.00	384.06	382.56	WELLFORD DRIVE	11+23.5	12' L	A-5 (2.5')	D - 4.01
1-14	387.92	-----	384.34	WELLFORD DRIVE	11+27.4	12' R	A-5 (2.5')	D - 4.01
1-15	385.23	380.74, 380.44	379.94	WELLFORD DRIVE	13+07.50	12' R	A-10 (2.5')	D - 4.03
1-16	386.32	381.25	381.00	WELLFORD DRIVE	33+95.1	12' L	A-5 (2.5')	D - 4.01
1-17	386.72	381.78	381.53	WELLFORD DRIVE	33+85.4	12' R	A-5 (2.5')	D - 4.01
1-18	386.35	382.52	382.26	WELLFORD DRIVE	13+99.6	12' R	A-5 (2.5')	D - 4.01
1-19	391.73	387.46	387.21	WELLFORD DRIVE	15+50.1	12' R	A-5 (2.5')	D - 4.01
1-20	391.73	-----	387.74	WELLFORD DRIVE	15+50.1	12' L	A-5 (2.5')	D - 4.01
1-21	385.23	-----	380.99	WELLFORD DRIVE	13+07.50	12' L	A-10 (2.5')	D - 4.03
# 1-22	THROAT = 389.80	-----	386.28	WELLFORD DRIVE	14+55.7	114.7' R	'D' INLET	D - 4.10
1-23	373.00	369.50 (6")	369.00	N 575090.43 E 1354506.17	-----	-----	'S' INLET	D - 4.22
1-24	400.81	396.22	388.95	WELLFORD DRIVE	17+31	12' L	A-5 (2.5')	D - 4.01
1-25	400.81	-----	396.50	WELLFORD DRIVE	17+31	12' R	A-5 (2.5')	D - 4.01
1-26	393.37	-----	-----	WELLFORD DRIVE	21+95.7	12' R	COG/COS OPENING	MD - 374.68
# 1-27	396.67	-----	-----	WELLFORD DRIVE	21+51.7	12' L	COG/COS OPENING	MD - 374.68
# 1-28 △1	Throat = 371.80	367.58	367.33	N 575557.53 E 1354056.72	-----	-----	'D' INLET	D - 4.10
# 1-29 △1	Throat = 389.75	-----	381.00	N 575496.33 E 1354003.92	-----	-----	'D' INLET	D - 4.10
# 1-30 △1	Throat = 377.00	371.95, 370.94	370.69	N 575543.75 E 1353949.49	-----	-----	'D' INLET	D - 4.10
1-31 △1	Throat = 391.00	384.04	382.54	N 575471.34 E 1353827.91	-----	-----	'D' INLET	D - 4.10
1-32	391.52	388.00 (6")	387.25	WELLFORD DRIVE	22+11.7	71.1' R	'S' INLET	D - 4.22
1-33	394.50	391.00 (6")	390.25	WELLFORD DRIVE	21+61.4	57.7' L	'S' INLET	D - 4.22
1-34	379.00	375.50 (6")	374.75	WELLFORD DRIVE	23+66.9	70.1' L	'S' INLET	D - 4.22
1-35	381.17	-----	-----	WELLFORD DRIVE	23+58.9	12' L	COG/COS OPENING	MD - 374.68
1-36	370.58	366.33	366.08	WELLFORD DRIVE	25+40.5	12' L	A-5 (2.5')	D - 4.01
1-37	372.23	-----	366.81	WELLFORD DRIVE	24+99	12' R	A-5 (2.5')	D - 4.01
1-38	368.45	364.02	363.77	WELLFORD DRIVE	26+66.76	12' L	A-10 (2.5')	D - 4.03
1-39	368.45	-----	364.30	WELLFORD DRIVE	26+66.76	12' R	A-10 (2.5')	D - 4.03
1-40	359.00	355.50 (6")	354.75	WELLFORD DRIVE	27+38.7	81.3' L	'S' INLET	D - 4.22
1-41	385.81	-----	-----	WELLFORD DRIVE	30+51.7	12' R	COG/COS OPENING	MD - 374.68
1-42	382.85	-----	-----	WELLFORD DRIVE	30+06.5	12' L	COG/COS OPENING	MD - 374.68
1-43	381.00	377.50 (6")	377.21	WELLFORD DRIVE	30+04	69.3' L	'S' INLET	D - 4.22
1-44	383.50	380.00 (6")	379.25	WELLFORD DRIVE	30+39.8	57.8' R	'S' INLET	D - 4.22
# M-1	349.00	343.43	341.62	WELLFORD DRIVE	4+68	55.3' L	4' DIA. MANHOLE	G - 5.12
# M-2	344.00	331.65	331.40	N 575237.76 E 1354739.59	-----	-----	4' DIA. MANHOLE	G - 5.12
M-3	344.00	338.00 (6"), 338.00	336.50	N 575169.67 E 1354652.45	-----	-----	4' DIA. MANHOLE	G - 5.12
M-4	381.25	375.88, 375.88	375.63	WELLFORD DRIVE	7+47.5	30.6' L	4' DIA. MANHOLE	G - 5.12
* M-5	381.50	377.25	377.00, 376.33 (8")	WELLFORD DRIVE	11+23.4	86.3' L	4' DIA. MANHOLE	G - 5.12
M-5A	377.00	373.25	373.00	N 574716.43 E 1354155.65	-----	-----	4' DIA. MANHOLE	G - 5.12
M-6	387.50	376.16	374.16	N 575057.91 E 1354159.01	-----	-----	4' DIA. MANHOLE	G - 5.12
# M-7	385.70	379.45	379.20	WELLFORD DRIVE	12+66.2	32.3' R	4' DIA. MANHOLE	G - 5.12
# M-8	387.88	384.73, 384.48	384.23	WELLFORD DRIVE	14+55.7	15.5' R	4' DIA. MANHOLE	G - 5.12
M-9	362.50	355.30	351.50	WELLFORD DRIVE	26+48.7	80.9' L	4' DIA. MANHOLE	G - 5.12
M-10	368.38	362.80	356.60	WELLFORD DRIVE	26+51.6	16.0' L	4' DIA. MANHOLE	G - 5.12
M-11	392.00	385.55, 387.00	385.30	WELLFORD DRIVE	22+26	71.6' R	4' DIA. MANHOLE	G - 5.12
M-12	390.95	386.90	386.65	WELLFORD DRIVE	22+26.8	16.4' R	4' DIA. MANHOLE	G - 5.12
M-13	377.75	374.10	373.85	WELLFORD DRIVE	24+02.4	16.4' L	4' DIA. MANHOLE	G - 5.12
M-14	356.10	352.69	352.44	N 575807.37 E 1354094.57	-----	-----	4' DIA. MANHOLE	G - 5.12
M-15	369.10	363.25	359.00	WELLFORD DRIVE	25+91.8	16.4' L	4' DIA. MANHOLE	G - 5.12
M-16	362.00	357.38, 354.55	348.36	WELLFORD DRIVE	27+26	92.0' L	4' DIA. MANHOLE	G - 5.12
# * M-17	362.50	359.42	359.42, 358.42	WELLFORD DRIVE	27+23.7	58.5' L	4' DIA. MANHOLE	G - 5.12
# M-18	369.00	360.98	360.73	WELLFORD DRIVE	27+21.1	28.0' L	4' DIA. MANHOLE	G - 5.12
# M-19	349.26	344.85	344.75	N 575437.33 E 1354415.70	-----	-----	4' DIA. MANHOLE	G - 5.12
# M-20	367.17	362.25	351.42	N 575413.74 E 1354380.11	-----	-----	4' DIA. MANHOLE	G - 5.12
# M-21	377.54	370.70	365.91	N 575360.51 E 1354250.91	-----	-----	4' DIA. MANHOLE	G - 5.12
M-22	383.00	375.51	375.26	N 575294.20 E 1354313.18	-----	-----	4' DIA. MANHOLE	G - 5.12
M-23	381.90	377.10, 377.10	376.85	N 575326.84 E 1354255.13	-----	-----	4' DIA. MANHOLE	G - 5.12
M-24	381.90	378.41	378.16	WELLFORD DRIVE	29+94	16.0' L	4' DIA. MANHOLE	G - 5.12
△1 M-10A	376.75	368.33, 372.46	368.08	N 575537.82 E 1354040.14	-----	-----	4' DIA. MANHOLE	G - 5.12
5-1	339.25	337.80	----	WELLFORD DRIVE	0+81.76	57.8' L	18' FLARED END SECTION	**
# 5-1A	335.00	334.00	----	N 575366.49 E 1354981.46	-----	-----	12' FLARED END SECTION	**
5-2	343.02	341.52	----	WELLFORD DRIVE	4+77	75.6' L	18' FLARED END SECTION	**
5-3	331.50	330.00	----	WELLFORD DRIVE	3+08	71.3' L	18' FLARED END SECTION	**
5-4	375.25	372.25, 372.25 (6")	----	N 574708.51 E 1354130.69	-----	-----	TYPE 'A' HEADWALL	D - 5.11
# 5-5	376.87	376.20	----	WELLFORD DRIVE	11+33.8	87.1' L	8' MITERED PIPE END	
5-6	374.30	372.30	----	N 575089.25 E 1354247.41	-----	-----	24' FLARED END SECTION	**
# 5-7	369.75	368.50	----	N 575112.08 E 1354336.71	-----	-----	15' FLARED END SECTION	**
5-8	387.85	386.35	----	N 575036.01 E 1353614.61	-----	-----	18' FLARED END SECTION	**
5-9	352.10	350.60	----	N 575776.67 E 1354175.72	-----	-----	18' FLARED END SECTION	**
5-10	353.28	352.30	----	N 575820.90 E 1354099.97	-----	-----	18' FLARED END SECTION	**
# 5-11	346.30	344.80	----	N 576703.99 E 1354287.04	-----	-----	18' FLARED END SECTION	**
5-12	359.27	358.27	----	WELLFORD DRIVE	27+37.7	57.4' L	12' FLARED END SECTION	**
5-13	346.05	344.55	----	N 575496.03 E 1354420.58	-----	-----	18' FLARED END SECTION	**

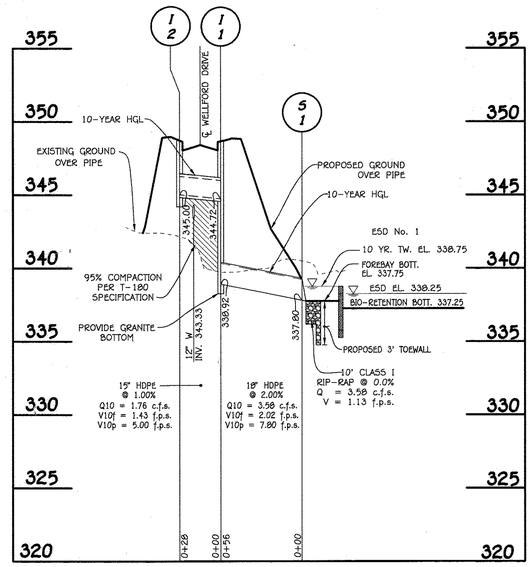
NOTE: TOP ELEVATION OF COG/COS OPENING IS AT 12' OFFSET FROM CENTERLINE ALONG WELLFORD DRIVE

*DENOTES 3' SEDIMENT CHAMBER BELOW 8" PVC INVERT

NOTE: SEE SHEET 13 FOR COG/COS OPENING DETAIL

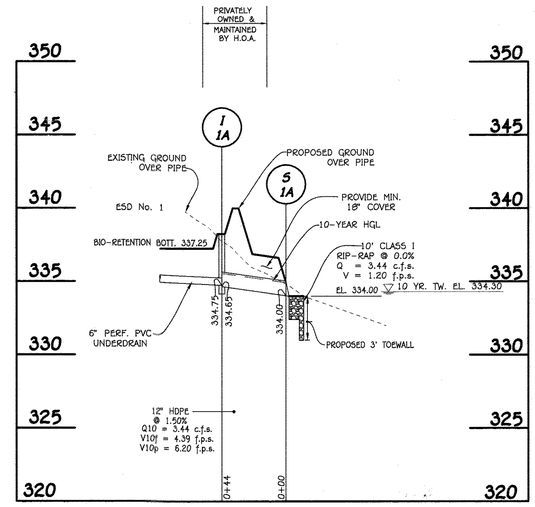
# DENOTES STRUCTURE TO BE PRIVATELY OWNED AND MAINTAINED BY H.O.A.

** - ADS (ADVANCED DRAINAGE SYSTEMS) OR EQUAL



PROFILE

SCALE: HORIZ. : 1" = 50'
VERT. : 1" = 5'



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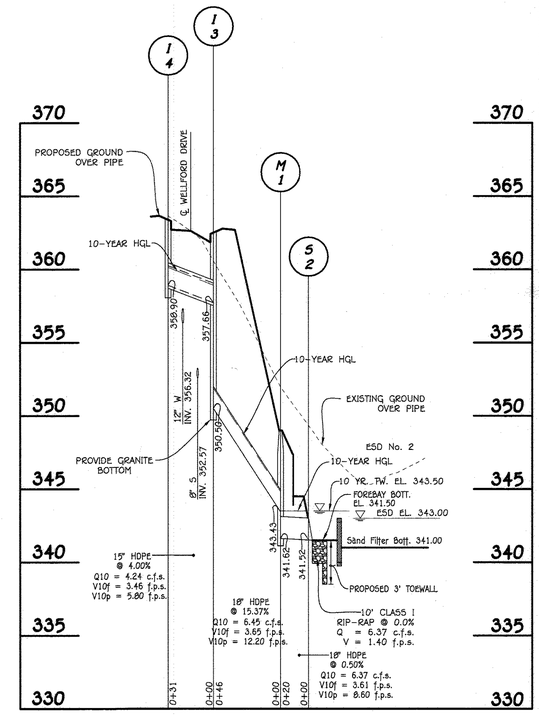

PROFILE

SCALE: HORIZ. : 1" = 50'
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PIPE SCHEDULE (PUBLIC)

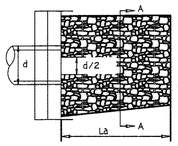
SIZE	CLASS	LENGTH
8"	PVC, SCH. 40	13 L.F.
12"	HDPE	15 L.F.
15"	HDPE	679 L.F.
18"	HDPE	1,278 L.F.
24"	HDPE	255 L.F.

NOTE: HDPE MAY BE SUBSTITUTED WITH RCCP, CL. IV PIPE MATERIAL.

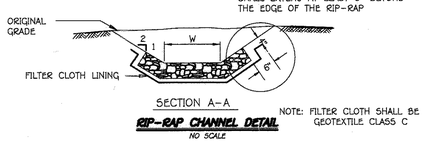
PIPE SCHEDULE (PRIVATE) △1

SIZE	CLASS	LENGTH
12"	HDPE	44 L.F.
15"	HDPE	119 L.F.
18"	HDPE	1,538 L.F.

NOTE: HDPE MAY BE SUBSTITUTED WITH RCCP, CL. IV PIPE MATERIAL.



PLAN VIEW



SECTION A-A

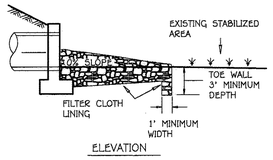
NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C

RIP-RAP CHANNEL DETAIL

NO SCALE

CONSTRUCTION SPECIFICATIONS FOR RIP-RAP OUTFALLS

1. The subgrade for the filter, riprap or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The rock or gravel shall conform to the specified grading limits when installed respectively in the riprap or filter.
3. Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.
4. Stone for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for riprap or gabion outlets shall be delivered and placed in a manner that will insure that it is reasonably homogenous with the smaller stones and spalls filling the voids between the larger stones. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

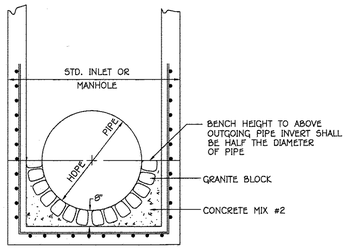


ELEVATION

RIP-RAP CHANNEL DESIGN DATA

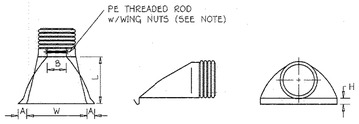
STRUCTURE	AREA (S.F.)	WETTED PERIMETER	R	$R^{2/3}$	S	$S^{1/2}$	W	d	n	V (f.p.s.)	Q (c.f.s.)	RIP-RAP SIZE D_{50}	RIP-RAP SIZE D_{MAX}	BLANKET THICKNESS	PIPE SIZE	La
5-1	3.18	11.34	0.2804	0.4266	0.005	0.0707	10'	0.30'	0.04	1.13	3.58	9.5"	15"	19"	18"	10'
5-2	4.61	11.90	0.3874	0.5297	0.005	0.0707	10'	0.425'	0.04	1.40	6.37	9.5"	15"	19"	18"	10'
# 5-3	6.11	12.46	0.4904	0.6204	0.005	0.0707	10'	0.55'	0.04	1.63	9.92	9.5"	15"	19"	18"	10'
5-4	2.41	11.03	0.2185	0.3609	0.005	0.0707	10'	0.23'	0.04	0.95	2.24	9.5"	15"	19"	18"	12'
5-5	1.21	6.85	0.1766	0.3129	0.005	0.0707	6'	0.19'	0.04	0.83	0.97	9.5"	15"	19"	8"	10'
5-6	7.21	14.46	0.4986	0.6273	0.005	0.0707	12'	0.55'	0.04	1.65	11.81	9.5"	15"	19"	24"	10'
# 5-7	2.98	10.39	0.2868	0.4331	0.005	0.0707	9'	0.31'	0.04	1.14	3.36	9.5"	15"	19"	15"	10'
5-8	2.52	11.07	0.2276	0.3709	0.005	0.0707	10'	0.24'	0.04	0.98	2.41	9.5"	15"	19"	18"	10'
# 5-9	7.47	12.95	0.5768	0.6916	0.005	0.0707	10'	0.66'	0.04	1.82	13.54	9.5"	15"	19"	18"	10'
5-10	2.85	11.21	0.2544	0.3997	0.005	0.0707	10'	0.27'	0.04	1.05	2.96	9.5"	15"	19"	18"	10'
5-11	5.02	12.06	0.4163	0.5559	0.005	0.0707	10'	0.46'	0.04	1.46	7.31	9.5"	15"	19"	18"	20'
5-12	0.61	8.34	0.0731	0.1733	0.005	0.0707	8'	0.075'	0.04	0.46	0.28	9.5"	15"	19"	12"	10'
5-13	3.29	11.39	0.2888	0.4351	0.005	0.0707	10'	0.31'	0.04	1.15	3.63	9.5"	15"	19"	18"	20'
# 5-1A	2.95	9.52	0.3099	0.4562	0.005	0.0707	8'	0.34'	0.04	1.20	3.44	9.5"	15"	19"	12"	10'

# DENOTES STRUCTURE TO BE PRIVATELY OWNED AND MAINTAINED BY H.O.A.



GRANITE BLOCK DETAIL

NOT TO SCALE



PART#	PIPE SIZE	A	B (max)	H	L	W
1210NF	12 in (300 mm)	6.50 in (165 mm)	10.00 in (254 mm)	6.50 in (165 mm)	25.00 in (635 mm)	29.00 in (737 mm)
1510NF	15 in (375 mm)	6.50 in (165 mm)	10.00 in (254 mm)	6.50 in (165 mm)	25.00 in (635 mm)	29.00 in (737 mm)
1810NF	18 in (450 mm)	7.50 in (191 mm)	15.00 in (381 mm)	6.50 in (165 mm)	32.00 in (813 mm)	35.00 in (889 mm)
2410NF	24 in (600 mm)	7.50 in (191 mm)	18.00 in (457 mm)	6.50 in (165 mm)	36.00 in (914 mm)	45.00 in (1143 mm)
3012NF	30 in (750 mm)	10.50 in (267 mm)	N/A	7.00 in (178 mm)	53.00 in (1346 mm)	68.00 in (1727 mm)
3612NF	36 in (900 mm)	10.50 in (267 mm)	N/A	7.00 in (178 mm)	53.00 in (1346 mm)	68.00 in (1727 mm)

ADS (ADVANCED DRAINAGE SYSTEMS)

NOTE: PE THREADED ROD W/WING NUTS PROVIDED FOR END SECTIONS 12" - 24". 30" - 36" END SECTIONS TO BE WELDED TO WELD PER MANUFACTURER'S RECOMMENDATIONS.

FLARED END SECTION DETAIL

0' 50' 100' 150'

Scale: 1" = 50'

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
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(410) 461 - 2855

OWNER/DEVELOPER

BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 4/17/15

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

REVISED
STORM DRAIN PROFILES

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 AND OPEN SPACE LOTS 99 THRU 112

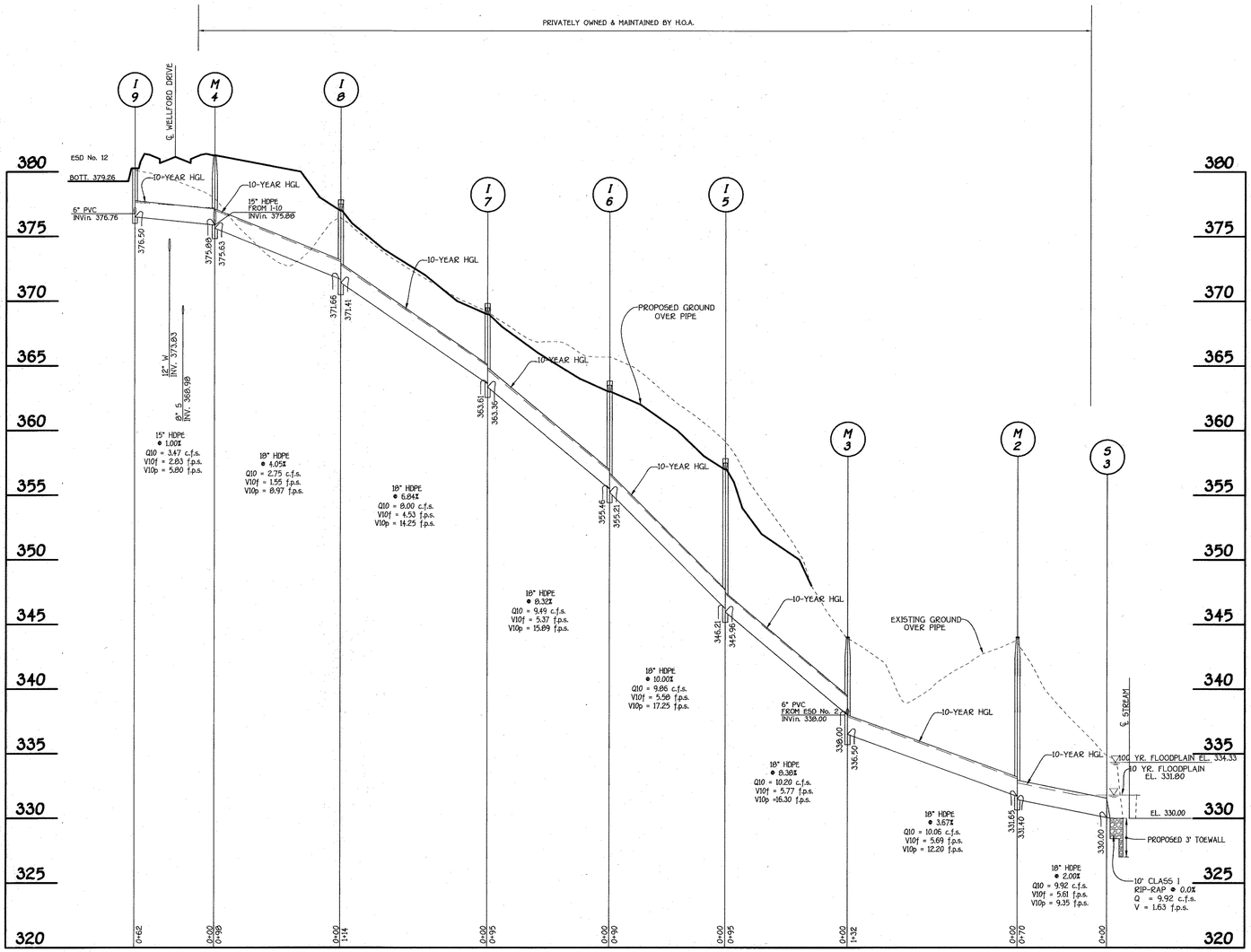
A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 3, 2015
SHEET 26 OF 40

F-14-081

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6-10-14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6-16-14

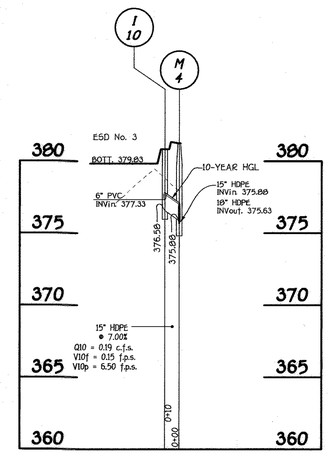
REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/2/16



PROFILE

SCALE: HORIZ. : 1" = 50'
VERT. : 1" = 5'



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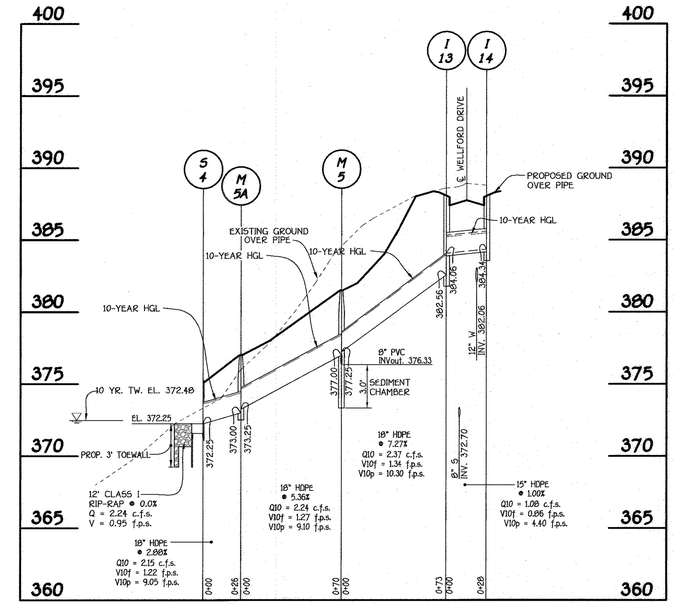

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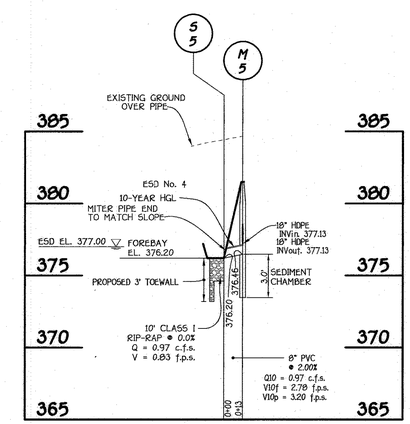

PROFILE

SCALE: HORIZ. : 1" = 50'
VERT. : 1" = 5'

0' 50' 100' 150'

Scale: 1" = 50'

STATE OF MARYLAND — ALDO M. VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

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STORM DRAIN PROFILES

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20

TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 27 OF 49

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 26-30 sd profiles.dwg, C-27_F-14-081 sheet 27, 5/30/2014 9:44:32 AM, 1:1

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-10-14

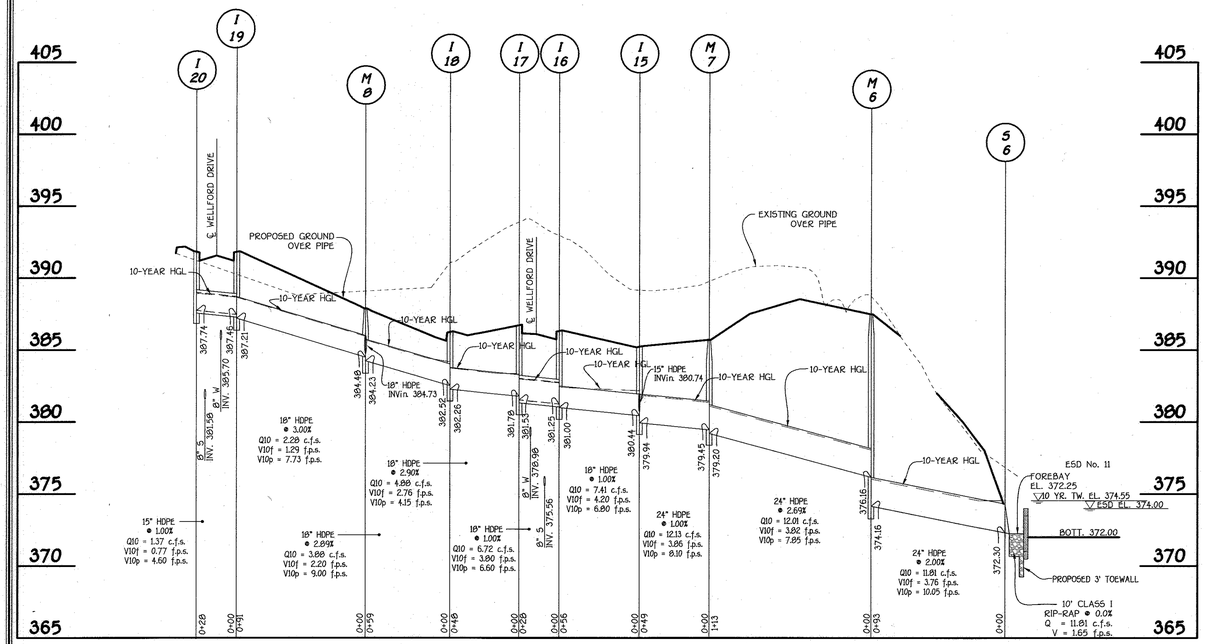
APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-24-14

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6-16-14

REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16



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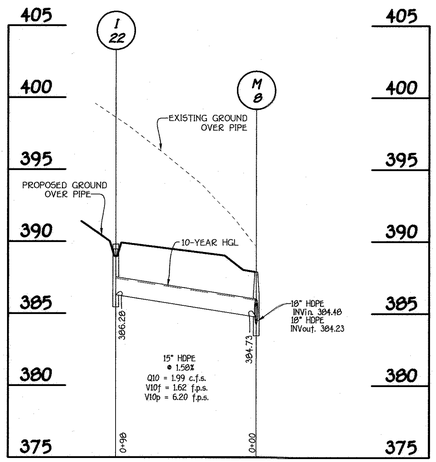

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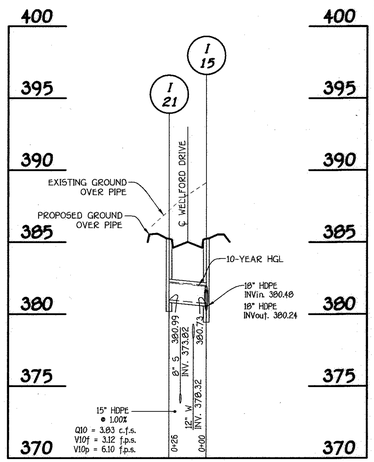

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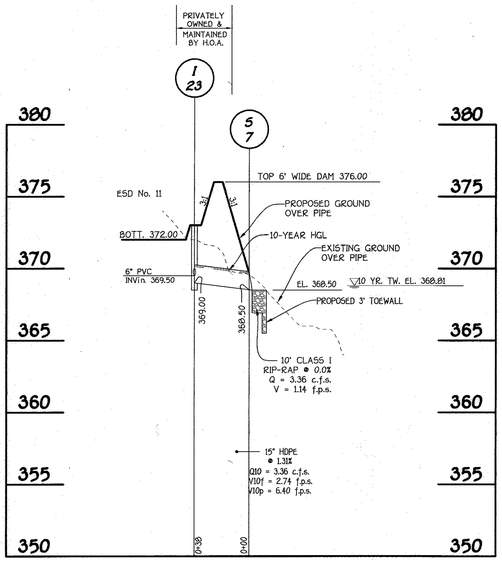

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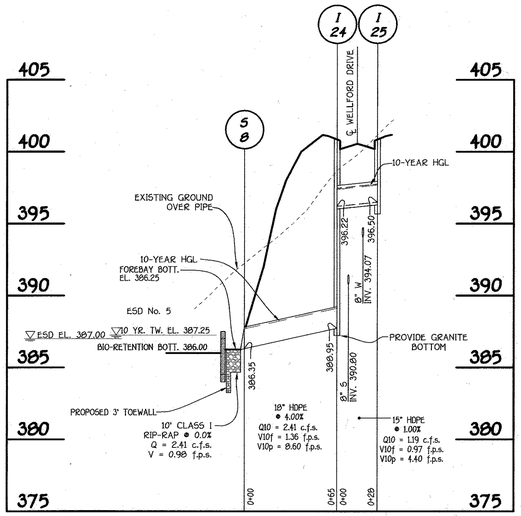

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0' 50' 100' 150'

Scale: 1" = 50'

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

STORM DRAIN PROFILES

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 28 OF 40

F-14-081

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
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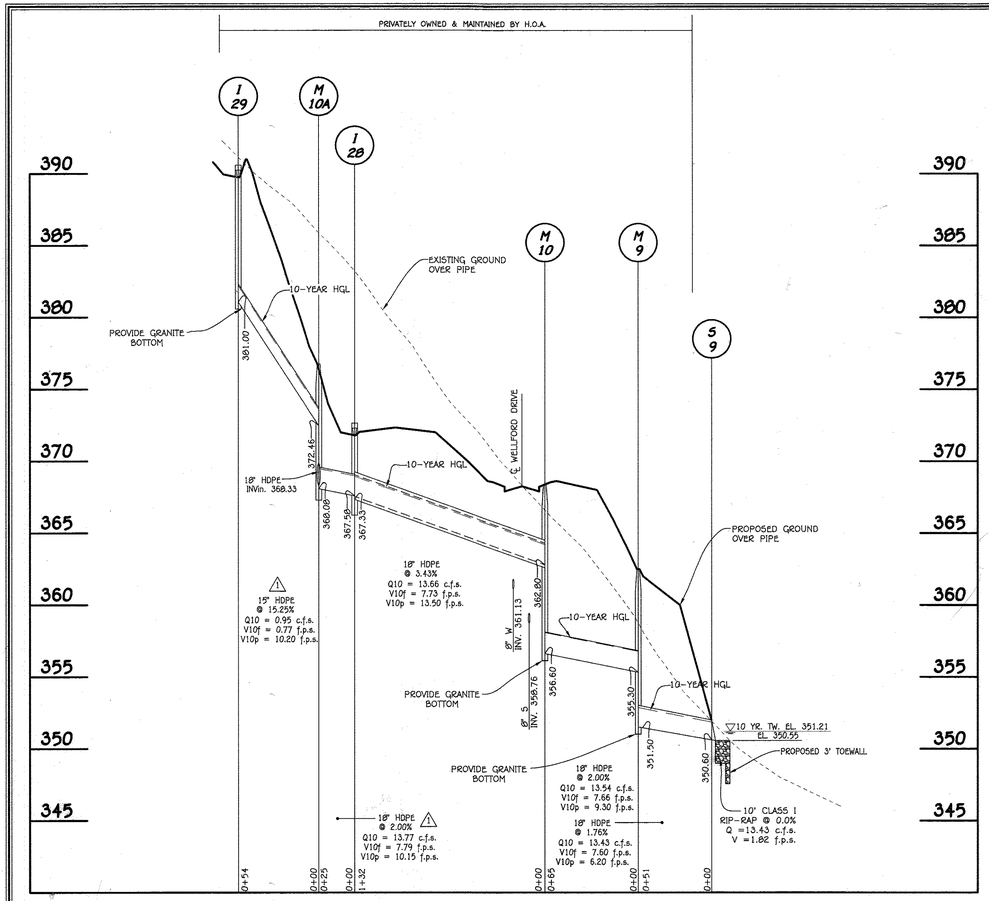
I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 26-30 sd profiles.dwg, C-28_F-14-081 sheet 28, 5/30/2014 9:45:19 AM, 1:1



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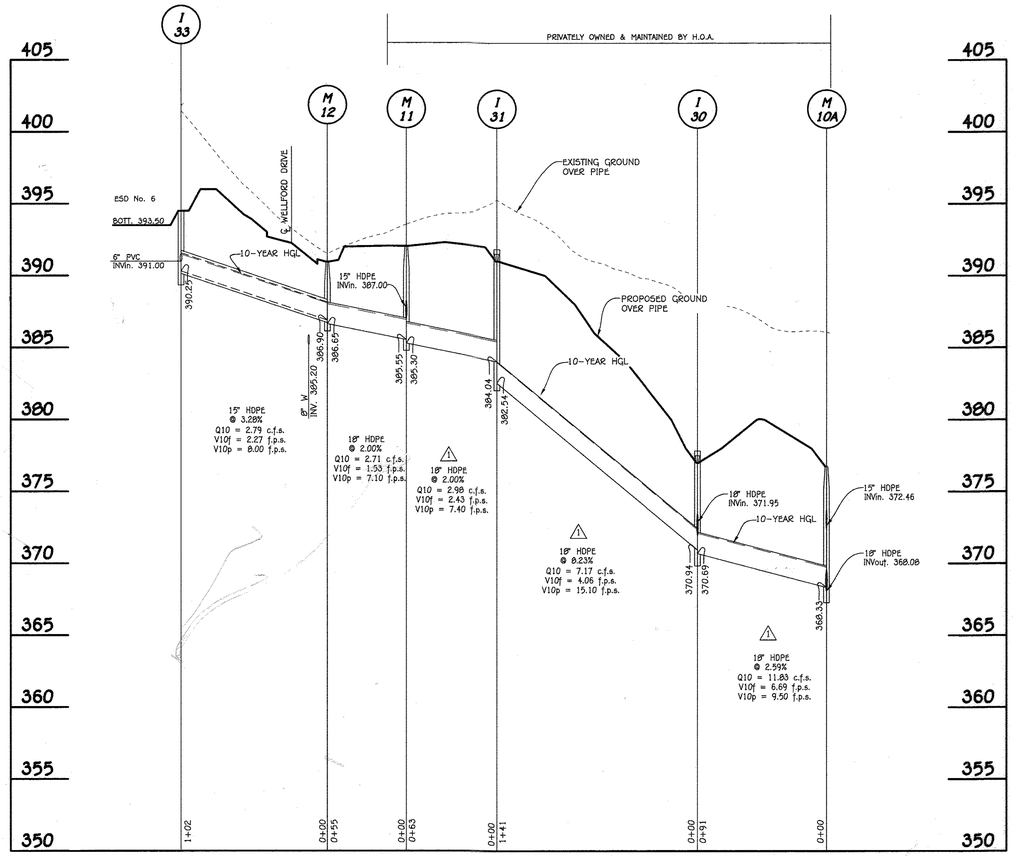

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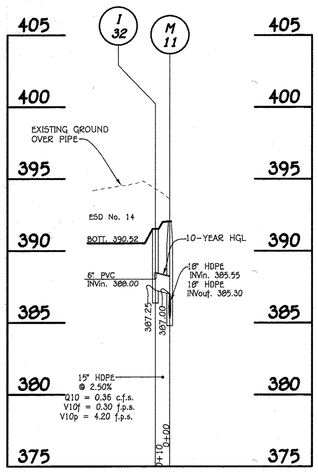

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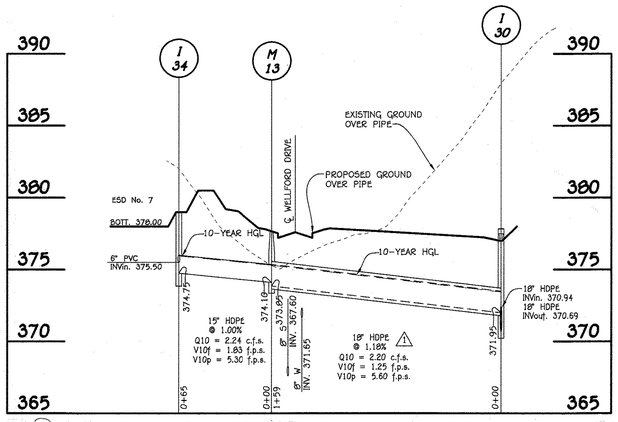

PROFILE

SCALE: HORIZ. : 1" = 50'
VERT. : 1" = 5'

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 4/30/2015

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 5/7/15

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 5-5-15

REVISIONS

NO.	DESCRIPTION	DATE
1	REVISE LOTS, REMOVE PARCEL 'C' AND REVISE STRUCTURE & PIPE SCHEDULE	2/4/15
2	RENUMBER SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16

0' 50' 100' 150'
Scale: 1" = 50'

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 4/17/15

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REVISED
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CENTENNIAL LAKE OVERLOOK

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SECTION TWO

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ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 3, 2015
SHEET 29 OF 40

F-14-081

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

I:\2011\11042\dwg\Finals section two\Redline Revision 1-13-15\11042 sheet 26 and 29 pd profiles new mylar.dwg, 4/3/2015 9:16:24 AM, 1:1

APPROVED: DEPARTMENT OF PUBLIC WORKS

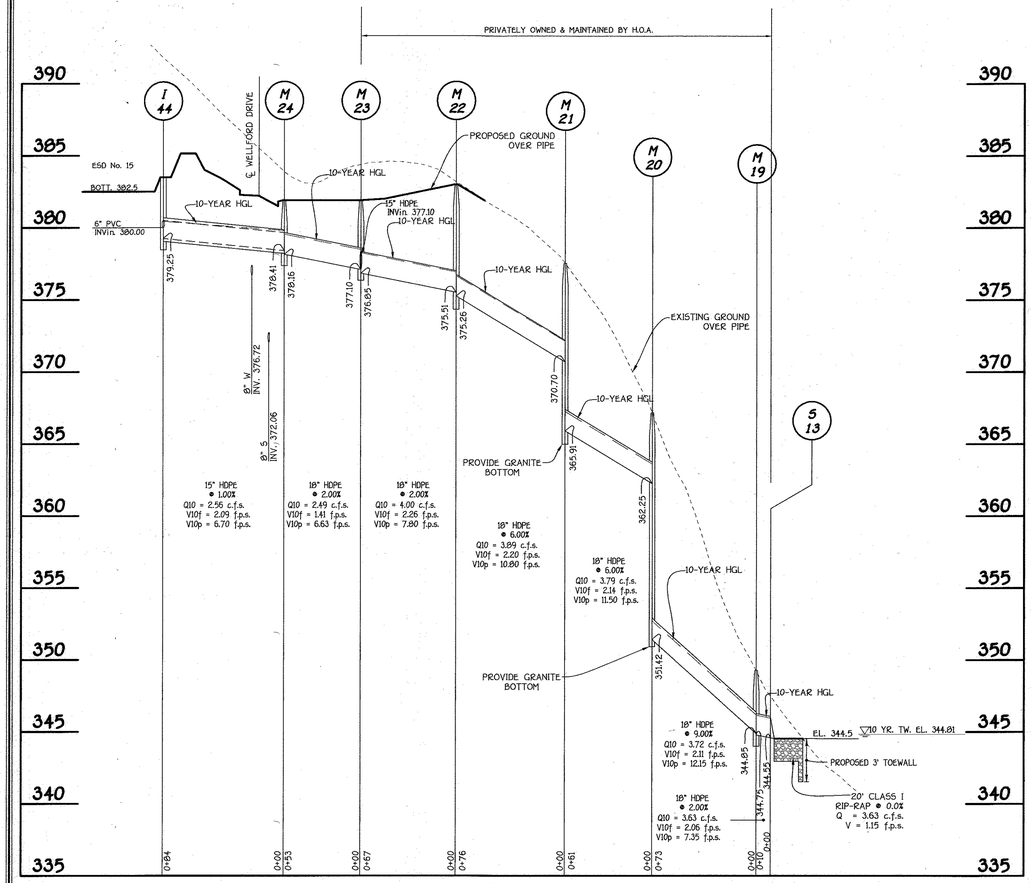
CHIEF, BUREAU OF HIGHWAYS — DATE 6-10-14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-24-14

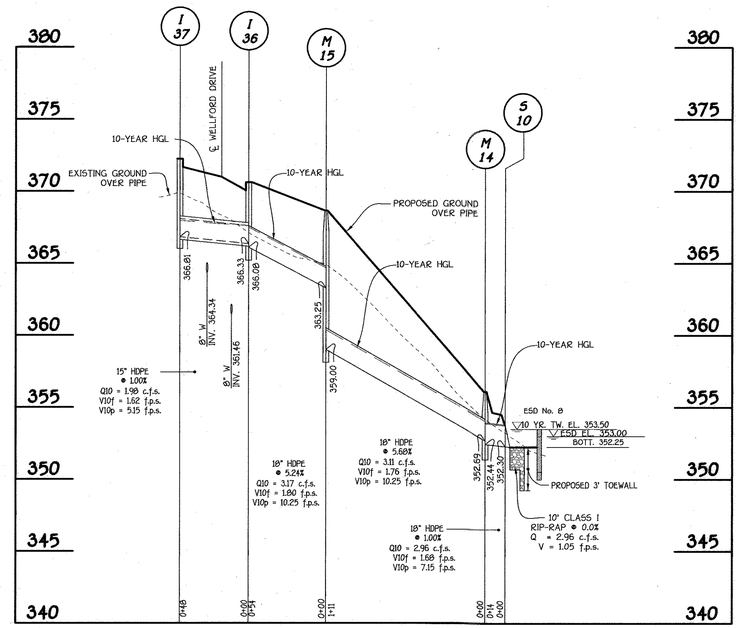
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6-16-14

REVISIONS		
NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	Revise sheet number to reflect added sheet	10/12/16



PROFILE

SCALE: HORIZ. : 1" = 50'
VERT. : 1" = 5'



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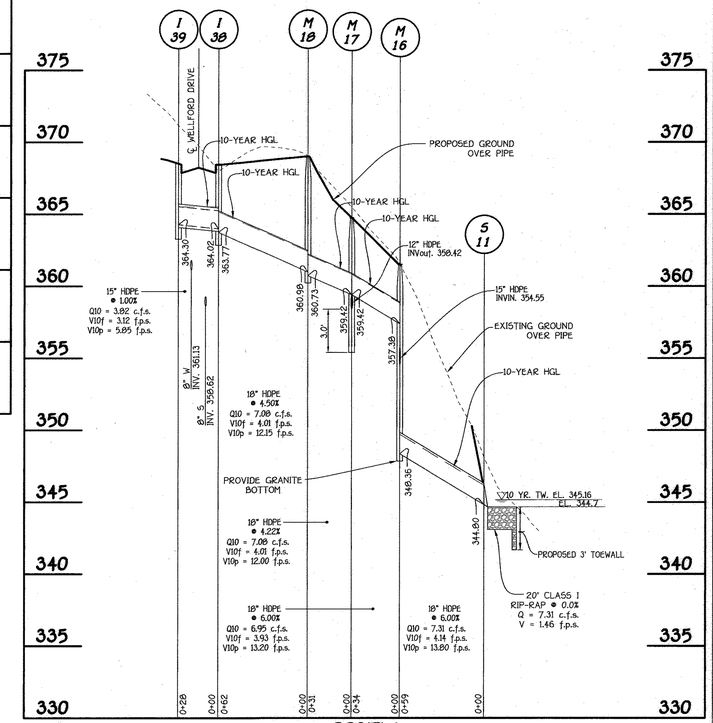

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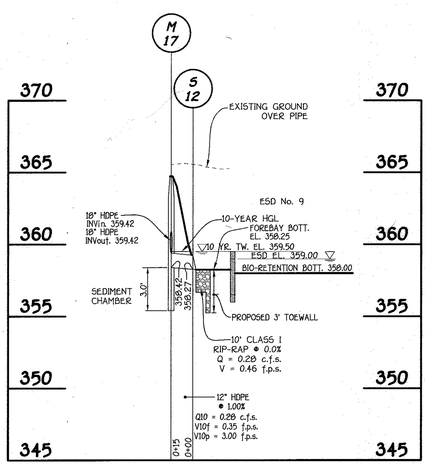

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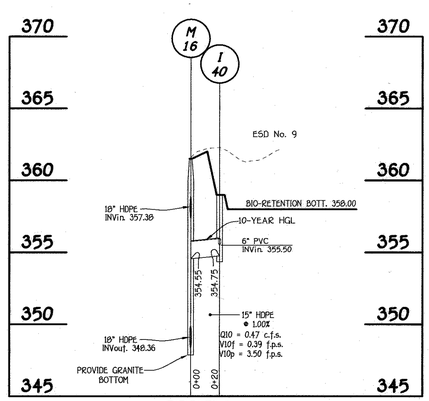

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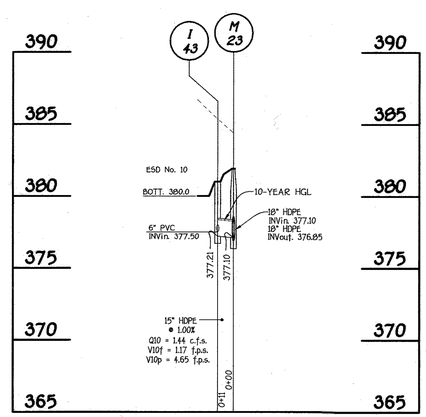

PROFILE

SCALE: HORIZ. : 1" = 50'
VERT. : 1" = 5'

0' 50' 100' 150'

Scale: 1" = 50'

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/22/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

FISHER, COLLINS & CARTER, INC.
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(410-720-5071)

STORM DRAIN PROFILES

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 30 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 26-30 sd profiles.dwg, C-30_F-14-081 sheet 30, 5/30/2014 9:47:32 AM, 1:1

ENGINEER'S CERTIFICATE

I Hereby Certify That This Plan For Erosion And Sediment 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 Standards And Specifications Of The Howard Soil Conservation District.

Signature Of Engineer — Date: 5/30/14

DEVELOPER'S CERTIFICATE

"I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents, As Are Deemed Necessary."

Signature Of Developer — Date: 5/30/14

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

District Howard Soil Conservation Dist. — Date: 6/24/14

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date: 6-24-14

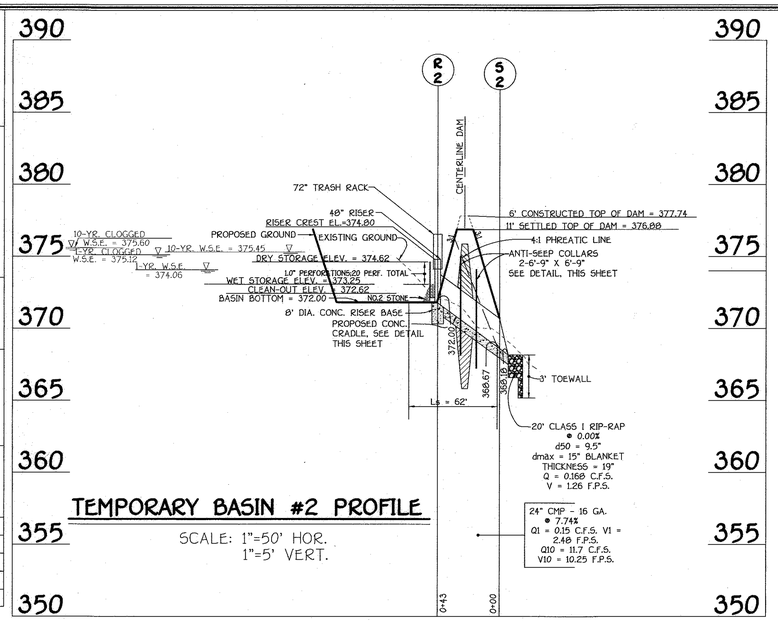
Chief, Development Engineering Division — Date: 6/16/14

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — Date: 6.10.14

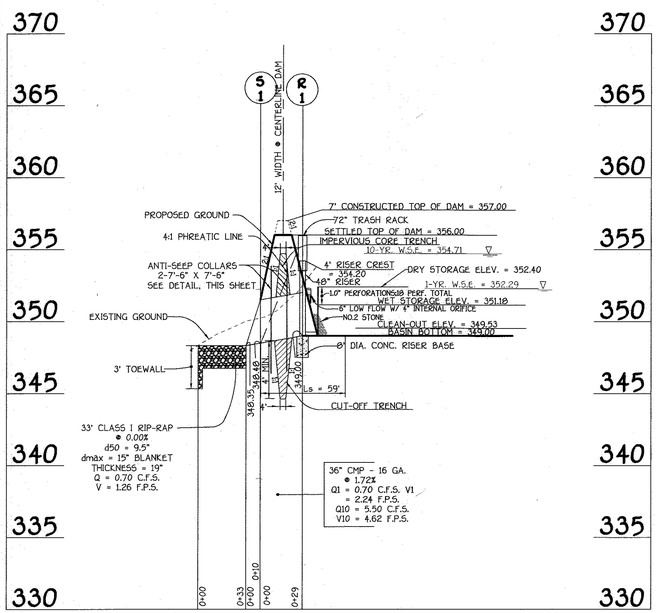
REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16



TEMPORARY BASIN #2 PROFILE

SCALE: 1"=50' HOR.
1"=5' VERT.

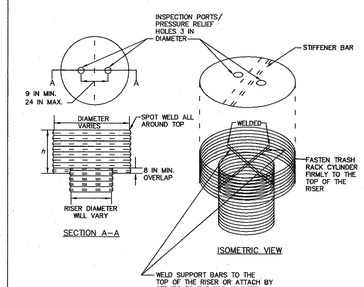


TEMPORARY BASIN #3 PROFILE

SCALE: 1"=50' HOR.
1"=5' VERT.

DETAIL G-2-3 CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

STANDARD SYMBOL TR



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-3 CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

STANDARD SYMBOL TR

TRASH RACK CYLINDER					MINIMUM TOP	
RISER DIAM. (IN)	DIAM. (IN)	THICKNESS (GAUGE)	h (IN)	MINIMUM SIZE SUPPORT BAR	THICKNESS (GAUGE)	STIFFENER
12	18	16	14	#6 REBAR	16	N/A
15	21	16	15	#6 REBAR	16	N/A
18	27	16	16	#6 REBAR	16	N/A
21	30	16	19	#6 REBAR	16	N/A
24	36	16	21	#6 REBAR	14	N/A
27	42	16	21	#6 REBAR	14	N/A
36	54	14	25	#8 REBAR	12	N/A
42	60	14	27	#8 REBAR	12	N/A
48	72	12	29	1¼ IN PIPE OR 1¼ x 1¼ x ¼ ANGLE	10	N/A
54	78	12	33	1½ IN PIPE OR 1½ x 1½ x ¼ ANGLE	10	N/A
60	90	12	37	1½ IN PIPE OR 1½ x 1½ x ¼ ANGLE	8	N/A
66	96	10	41	2 IN PIPE OR 2 x 2 x 3/16 ANGLE	8	2 x 2 x ¼ ANGLE
72	102	10	44	2 IN PIPE OR 2 x 2 x 3/16 ANGLE	8	2½ x 2½ x ¼ ANGLE
78	114	10	47	2½ IN PIPE OR 2 x 2 x ¼ ANGLE	8	2½ x 2½ x ¼ ANGLE
84	120	10	50	2½ IN PIPE OR 2½ x 2½ x ¼ ANGLE	8	2½ x 2½ x 3/16 ANGLE

NOTE:
THE ABOVE TRASH RACK AND ANTI-VORTEX DEVICE INFORMATION IS FOR CORRUGATED METAL PIPE ONLY. CONCRETE RISERS MUST MEET THE REQUIREMENTS OF MD 378.

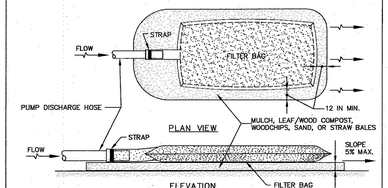
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-4 FILTER BAG

STANDARD SYMBOL FB



CONSTRUCTION SPECIFICATIONS

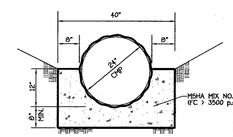
1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D-4491
PERMITTIVITY (SEC⁻¹)	1.2 SEC⁻¹	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



NOTE:
CONC. CRADLE TO BE POURED DIRECTLY AGAINST EARTH BANKS. IF BOTTOM OF TRENCH IS WIDER THAN THE CRADLE, SLOPING SIDES (FRAMED) SHALL BE USED.

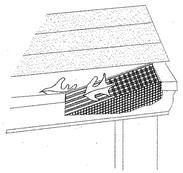
A2 CRADLE
NOT TO SCALE

STORMWATER MANAGEMENT NOTES

1. STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH THE 2000 MARYLAND STORMWATER DESIGN MANUAL.
2. CREDITS ARE GIVEN FOR DISCONNECTION OF IMPERVIOUS COVERS.
3. MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT SHALL BE LESS THAN 500 SQ. FT.
4. DRYWELLS SHALL BE PROVIDED AT LOCATIONS WHERE THE LENGTH OF DISCONNECTION IS LESS THAN 75' AT 5%. THE SIZE AND CONSTRUCTION OF THE DRYWELL SHALL BE IN ACCORDANCE WITH THE FIGURE 5.2 OF THE MANUAL AND THE DETAIL SHOWN ON THIS SHEET.
5. FINAL GRADING SHALL BE SHOWN ON SITE DEVELOPMENT PLAN.

Drywells

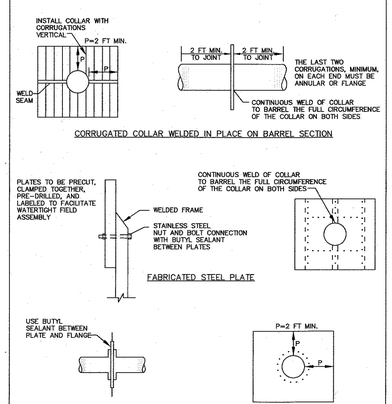
LOCATION	SIZE (LxWxDepth)	QUANTITY	ESDvol. PROVIDED
LOTS 30-32	12'x8'x4'	2 each lot	308 cu.ft./lot
LOTS 36	12'x8'x4'	2	308 cu.ft./lot
LOTS 37-45	12'x8'x4'	2 each lot	308 cu.ft./lot
LOTS 62-65	12'x8'x4'	2 each lot	308 cu.ft./lot
LOTS 77-79	12'x8'x4'	2 each lot	308 cu.ft./lot



GUTTER DRAIN FILTER DETAIL
NOT TO SCALE

DETAIL G-2-1 TYPICAL ANTI-SEEP COLLARS

STANDARD SYMBOL

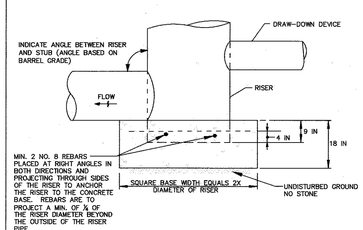


MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-2 CORRUGATED RISER BASE

STANDARD SYMBOL



CONSTRUCTION SPECIFICATIONS

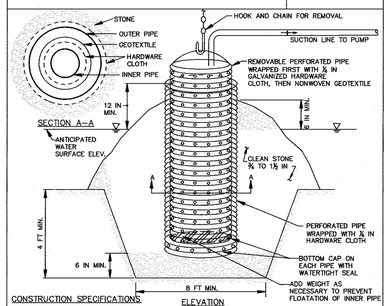
1. BOTTOM OF CONCRETE BASE TO BE PLACED ON UNDISTURBED, NATURAL GROUND.
2. NO STONE IS ALLOWED UNDER BASE. IF NECESSARY, TO ACHIEVE STABILITY INCREASE DEPTH OF CONCRETE BASE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-1 REMOVABLE PUMPING STATION

STANDARD SYMBOL RPS

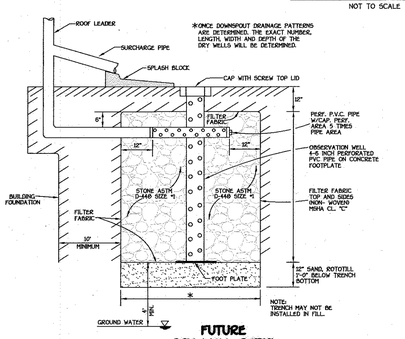


CONSTRUCTION SPECIFICATIONS

1. USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
2. USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
3. WRAP EACH PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH. ON INNER PIPE WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
4. EXCAVATE 8 FEET X 8 FEET X 4 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
5. SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION WHEN DEWATERING A BASIN).
6. BACKFILL PIT AROUND THE OUTER PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
7. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



FUTURE DRY WELL DETAIL
(LOTS 30-32, 36-46, 62-65 & 78-79)
NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR DRYWELLS (M-5)

a. The owner shall inspect the monitoring wells and structures on a quarterly basis and after every heavy storm event.
b. The owner shall record the water levels and sediment build up in the monitoring wells over a period of several days to insure trench drainage.
c. The owner shall maintain a log book to determine the rate at which the facility drains.
d. When the facility becomes clogged so that it does not drain down within a seventy two (72) hour time period, corrective action shall be taken.
e. The maintenance log book shall be available to Howard County for inspection to insure compliance with operation and maintenance criteria.
f. Once the performance characteristics of the infiltration facility have been verified, the monitoring schedule can be reduced to an annual basis unless the performance data indicates that a more frequent schedule is required.

FUTURE PRIVATE FACILITIES

NOTE: ALL PRIVATE FACILITIES ARE TO BE CONSTRUCTED & DETAILED AT THE SITE DEVELOPMENT PLAN PHASE, ONCE ACTUAL HOUSE TYPES ARE SELECTED.

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE: 5/30/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

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FUTURE S.W.M. NOTES AND DETAILS & SEDIMENT CONTROL DETAILS

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO
BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 31 OF 40

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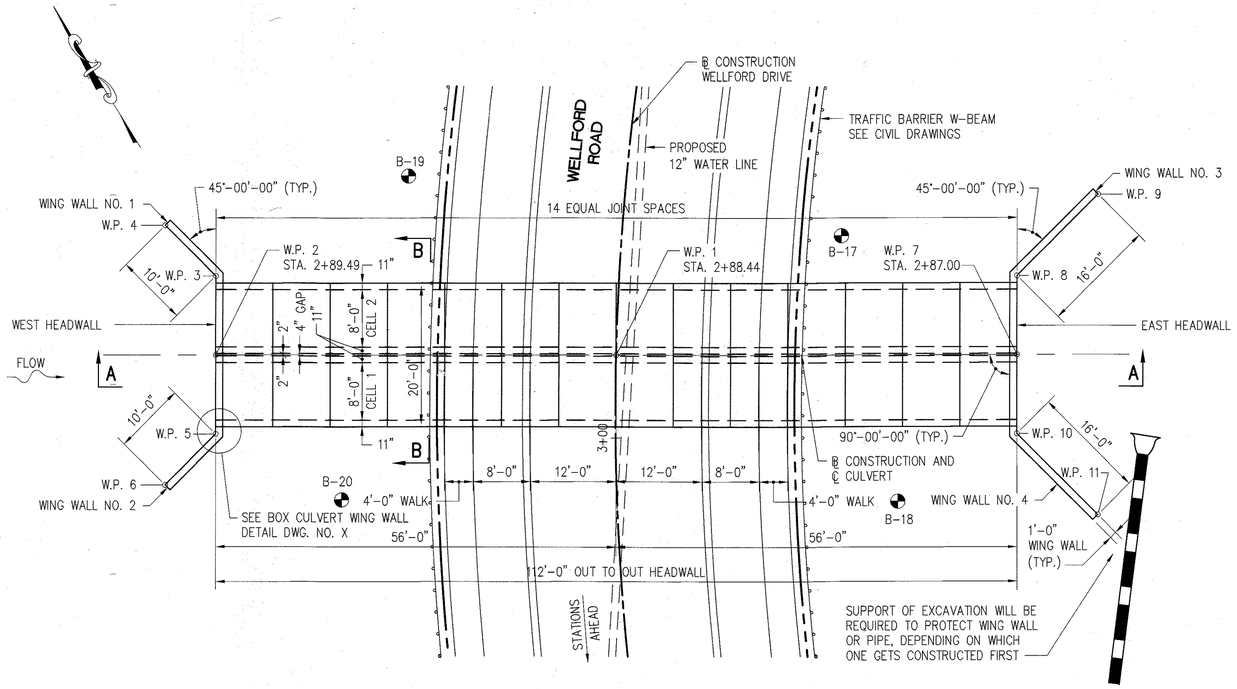
I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 31 Private swm details.dwg, C-31_F-14-081 sheet 31, 5/30/2014 11:32:02 AM, 1:1

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6-10-14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6-16-14

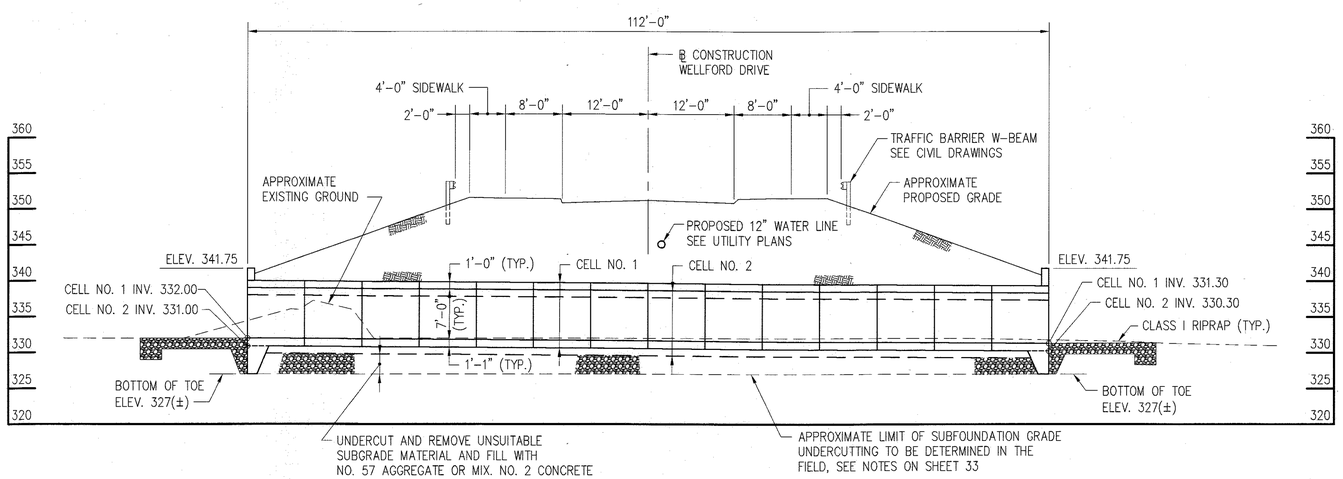
REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/2/16



GENERAL PLAN

SCALE: 1" = 10'



SECTION A-A
(CELL NO. 1 SHOWN)
(CELL NO. 2 BEYOND)

SCALE: 1" = 10'

NOTE:
EXISTING CULVERT, HEADWALLS, UTILITY POLES AND OVERHEAD LINES (NOT SHOWN FOR CLARITY), SHALL BE REMOVED PRIOR TO BEGINNING NEW CULVERT EXCAVATION AND CONSTRUCTION. SEE CIVIL DRAWINGS.

GENERAL NOTES

SPECIFICATIONS: SHA SPECIFICATIONS DATED JANUARY, 2001, REVISIONS THEREOF AND ADDITION THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.

HOWARD COUNTY STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (VOLUME IV DESIGN MANUAL).

AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES DATED 2002. FOR DESIGN, DIVISION I, SECTION 17.

LOADING: HS-27 AND MD TYPE 3 TRUCK.

CONCRETE: ALL PRECAST CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS. ALL CAST-IN-PLACE CONCRETE SHALL BE MIX NO. 3 (3,500 PSI).

REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. ALL SPLICES NOT SHOWN SHALL BE LAPPED AS PER BAR LAP CHARTS. MINIMUM COVER FOR ANY BAR SHALL BE 2", UNLESS OTHERWISE NOTED. THE BOTTOM AND SIDES OF ALL FOOTINGS SHALL HAVE 3" MINIMUM COVER.

FOR TIES AND STIRRUPS; STANDARD ACI BENDING TOLERANCES ARE MODIFIED TO PLUS (+) ZERO INCHES, MINUS (-) NORMAL ACI BENDING TOLERANCES.

ONLY GRADE 60 CAN BE USED ON THIS PROJECT.

KEYS: ALL KEYS NOMINAL SIZE.

PRECAST CULVERT DESIGN: SHOULD THE CONTRACTOR SUBMIT AN ALTERNATE PRECAST CULVERT, THE DESIGN AND DETAILS OF THE ALTERNATE PRECAST CULVERT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND ARE SUBJECT TO REVIEW, COMMENTS AND APPROVAL BY THE ENGINEER. SUBMIT TWO SETS OF DETAILED PLANS FOR REVIEW. INCLUDE ALL DETAILS IN THE PLANS, INCLUDING THE SIZE AND SPACING OF THE REQUIRED REINFORCEMENT NECESSARY TO BUILD THE PRECAST BOX CULVERT. INCLUDE CHECKED DESIGN CALCULATIONS FOR THE PRECAST MEMBERS COMPLYING WITH THE LATEST AASHTO STANDARD SPECIFICATIONS AND REQUIREMENTS DETAILED HEREIN. HAVE A MARYLAND REGISTERED PROFESSIONAL ENGINEER CHECK AND SEAL THE PLANS AND DESIGN CALCULATIONS. AFTER THE PLANS ARE REVIEWED AND, IF NECESSARY, THE CORRECTIONS MADE, SUBMIT ONE SET OF REPRODUCIBLE TRACINGS ON FULL SIZE SHEETS TO BECOME THE REVISED CONTRACT PLANS.

JOINTS BETWEEN PRECAST UNITS: PRODUCE THE PRECAST REINFORCED CONCRETE BOX SECTIONS WITH MALE AND FEMALE ENDS. DESIGN AND FORM THESE ENDS OF THE BOX SECTION SO, WHEN THE SECTIONS ARE LAID TOGETHER, THEY MAKE A CONTINUOUS LINE OF BOX SECTIONS WITH A SMOOTH INTERIOR FREE OF APPRECIABLE IRREGULARITIES IN THE FLOWLINE. THE INTERNAL JOINT FORMED AT THE MALE AND FEMALE ENDS OF THE PRECAST UNITS SHALL BE SEALED WITH EITHER BITUMEN/BUTYL SEALANT OR CLOSED-CELL NEOPRENE MATERIAL. THE INTERNAL JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS THE MATERIAL SHALL BE SHOWN ON THE SHOP DRAWINGS WHEN THEY ARE SUBMITTED FOR REVIEW.

SEAL THE EXTERNAL JOINT WITH AN OUTSIDE SEALER WRAP THAT IS AT LEAST 12 INCHES (300 MM) WIDE AND COVERS THE JOINT ON BOTH SIDES AND THE TOP OF THE BOX SECTION. USE CONWRAP CS-212 FROM CONCRETE SEALANTS, INC., EZ-WRAP FROM PRESS-SEAL GASKET CORPORATION, SEAL WRAP FROM MAR-MAC MANUFACTURING CO., INC., CADILLOC EXTERNAL PIPE JOINT FROM CADILLOC, OR AN APPROVED EQUAL FOR THE OUTSIDE SEALER WRAP. PLACE SEALER WRAP ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

HYDROLOGIC AND HYDRAULIC DATA: FOR HYDROLOGIC AND HYDRAULIC DATA, SEE CIVIL DRAWINGS.

WORKING POINT COORDINATES

WORKING POINTS	NORTHING	EASTING
W.P. 1	575,353.8467	1,354,726.1583
W.P. 2	575,383.3528	1,354,678.5624
W.P. 3	575,392.7020	1,354,684.3584
W.P. 4	575,402.4376	1,354,682.0741
W.P. 5	575,374.0036	1,354,672.7665
W.P. 6	575,371.7194	1,354,663.0309
W.P. 7	575,324.3405	1,354,773.7545
W.P. 8	575,333.6897	1,354,779.5504
W.P. 9	575,337.3444	1,354,795.1274
W.P. 10	575,314.9912	1,354,767.9587
W.P. 11	575,299.4142	1,354,771.6134

GREENMAN-PEDERSEN, INC.
GPI
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FAX: (301) 490-2649 www.gpinet.com

OWNER/DEVELOPER
BENZER HOMES CORP.
8365 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

REVISIONS		
NO.	DESCRIPTION	DATE
1	ADDED TRAFFIC BARRIER AND UTILITY REFERENCES	5/20/14

STATE OF MARYLAND
CHARLES S. NOLAN
No. 15212
12-24-14

CHARLES S. NOLAN, P.E. 1/7/14
DATE

"Professional certification. I hereby certify that these documents are prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 15212, Expiration Date 12-24-14."

GENERAL PLAN AND CULVERT PROFILE

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

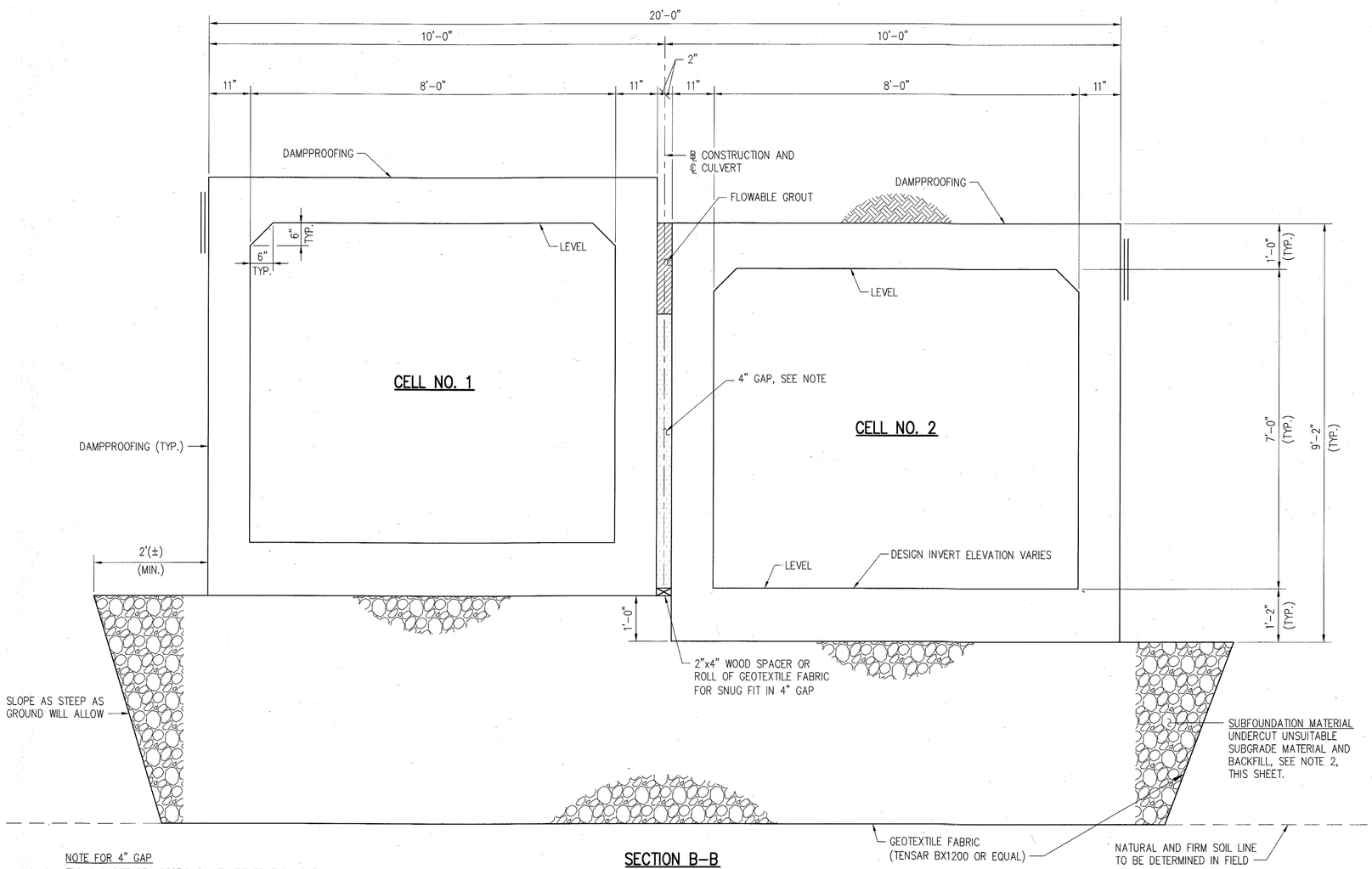
A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'

ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MARCH 10, 2014
SHEET 32 OF 40

F-14-081

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6·10·14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6·24·14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6·16·14

REVISIONS		
NO.	DESCRIPTION	DATE
1	Revise Title Block	4·3·15



NOTE FOR 4" GAP

FILL GAP BETWEEN SECTIONS WITH EITHER FLOWABLE FILL GROUT OR SAND WITH AT LEAST THE TOP TWO FEET FILLED WITH FLOWABLE GROUT.

SECTION B–B
(LOOKING UPSTREAM)

SCALE: 3/4" = 1'-0"

NOTES:

1. THE BOX CULVERT AND WING WALLS HAVE BEEN DESIGNED FOR A MAXIMUM BEARING PRESSURE OF 3,200 LBS/SQ. FT. VERIFICATION OF ADEQUATE BEARING CAPACITY WILL BE REQUIRED BY A GEOTECHNICAL ENGINEER PRIOR TO INSTALLING CULVERTS. THE FOLLOWING LATERAL PRESSURE PARAMETERS WERE USED FOR DESIGN THE CULVERT:
   EQUIVALENT FLUID PRESSURE: 45 (H) PSF FOR CULVERT AND 42 (H) PSF FOR WING WALLS, WHERE H IS THE HEIGHT OF THE PORTION OF WALL RETAINING SOIL IN FEET.
2. BASED ON THE "GEOTECHNICAL ENGINEERING STUDY" DATED SEPTEMBER 4, 2012 IT IS ANTICIPATED THAT SIGNIFICANT DEWATERING WILL BE REQUIRED AND THAT UNSUITABLE MATERIALS REQUIRING MODIFICATION OR REMOVAL WILL BE ENCOUNTERED AT OR NEAR FOUNDATION BEARING LEVELS. AS DEEMED NECESSARY BY THE ENGINEER, WHERE SOFT OR LOOSE MATERIAL IS ENCOUNTERED IN THE FOOTING EXCAVATIONS, THE UNSUITABLE MATERIALS SHOULD BE REMOVED AND REPLACED WITH LEAN (2000 PSI) CONCRETE OR WITH A CLEAN, WASHED #57 STONE OR OTHER APPROVED FREELY DRAINING COARSE–GRANULAR MATERIAL BACK TO THE PROPOSED CULVERT BEARING LEVEL.
3. IF THE LIMIT OF UNDER CUTTING OF UNSUITABLE MATERIAL IS LESS THAN 3'–0" FROM THE LOWEST CULVERT INVERT ELEVATION THE INVERT TOE WALL AND BOTTOM OF ADJACENT WING WALL FOOTING SHALL BE SET 3'–0" FROM THE LOWEST INVERT ELEVATION AT EACH END OF CULVERT CELL NO. 2.
4. FOR BORINGS, BACKFILL REQUIREMENTS AND MATERIALS AROUND THE CULVERT, ADDITIONAL CONSTRUCTION CONSIDERATIONS INCLUDING SITE PREPARATION DETERMINATION AND/OR CLASSIFICATION OF SUITABLE BACKFILL MATERIAL, REFER TO "GEOTECHNICAL ENGINEERING STUDY" DATED SEPTEMBER 4, 2012 AS COMPLETED BY HILLS–CARNES ENGINEERING ASSOCIATES, INC.
5. REINFORCEMENT NOT SHOWN. SEE SHEET 34 FOR DETAILS OF REINFORCEMENT.

GPI GREENMAN–PEDERSEN, INC.
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10977 GUILFORD ROAD ANNAPOLIS JUNCTION, MD 20701
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FAX: (301) 490–2649 www.gpinet.com

OWNER/DEVELOPER
BEXLEY HOMES CORP.
8265 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

REVISIONS		
NO.	DESCRIPTION	DATE
1	ADDED CONSTRUCTION RELATED NOTES	5/20/14
2	REVISE SHEET NUMBER TO REFLECT NEW SHEET	10/21/16

STATE OF MARYLAND
CHARLES S. NOLAN
No. 15212
PROFESSIONAL ENGINEER

CHARLES S. NOLAN, P.E. — DATE 1/7/14

"Professional certification. I hereby certify that these documents are prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 15212, Expiration Date 12–24–14."

TYPICAL CULVERT SECTION

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 – 98 **8**

OPEN SPACE LOTS 99 – 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'

ZONING: R–20

TAX MAP No. 30 GRID No. 2 PARCEL No. 86

2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN DATE: MARCH 10, 2014

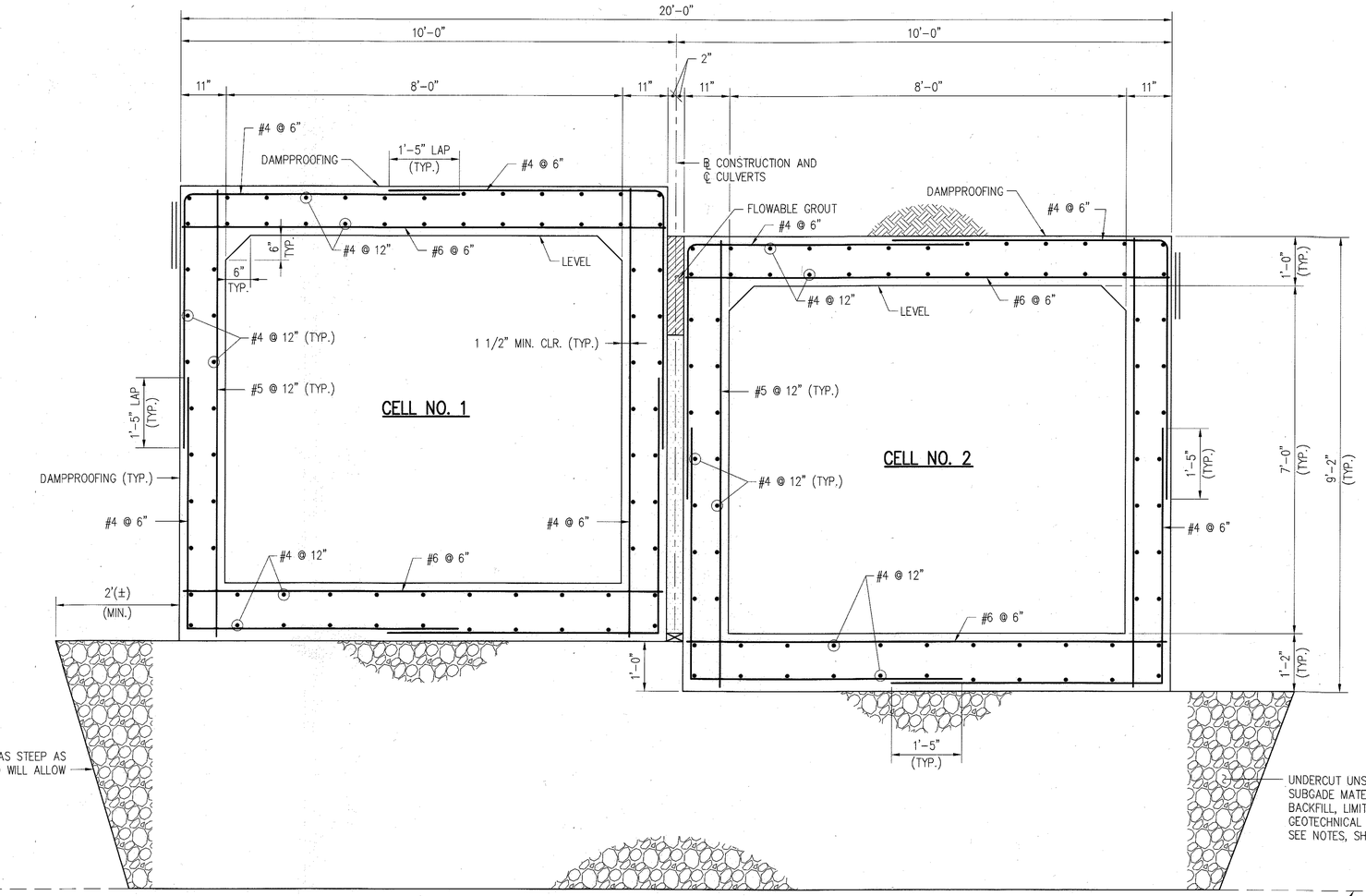
SHEET 33 OF 40

F-14-081

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6-10-14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6-16-14

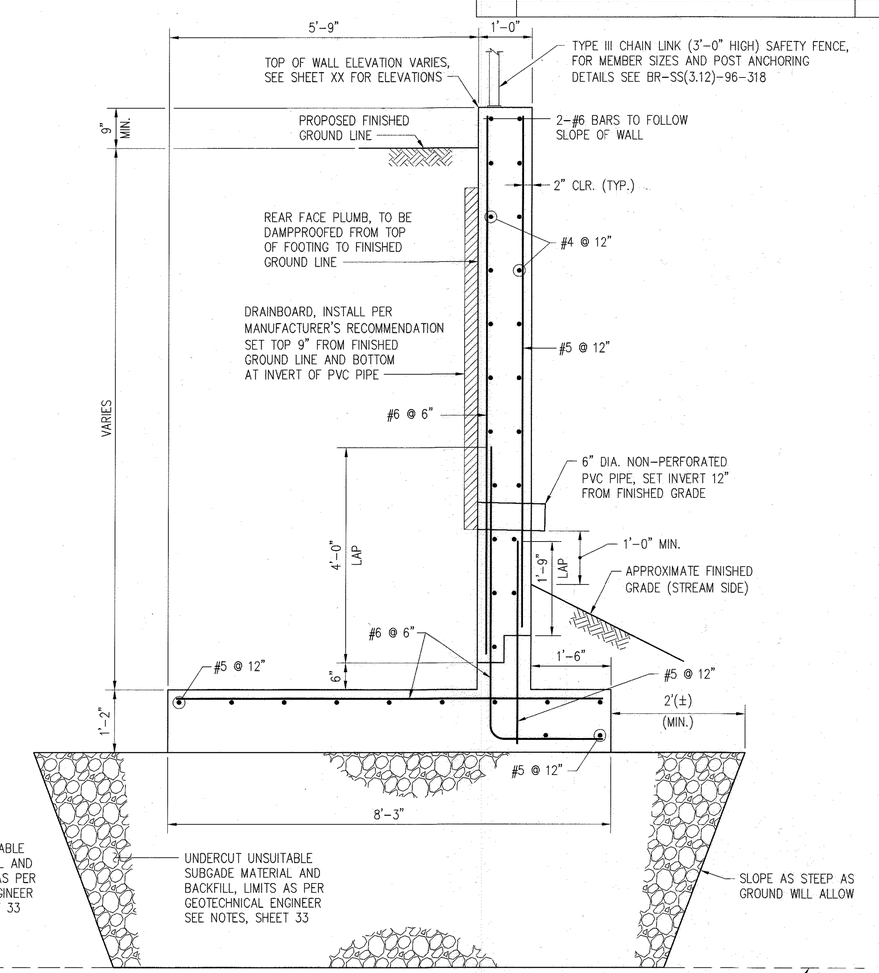
REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15



SECTION B–B – REINFORCEMENT (LOOKING UPSTREAM)

SCALE: 3/4" = 1'-0"



NOTE:
COVER FOR BAR IN FOOTING
2" AT TOP AND SIDES, 3" AT BOTTOM

TYPICAL WING WALL SECTION

SCALE: 3/4" = 1'-0"

NOTE:
FOR MAXIMUM DESIGN BEARING PRESSURE
SEE NOTES ON SHEET 33.

GPI GREENMAN-PEDERSEN, INC.
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FAX: (301) 490-2649 www.gpinet.com

OWNER/DEVELOPER
BEAZER HOMES CORP.
8975 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

REVISIONS		
NO.	DESCRIPTION	DATE
1	ADDED REINFORCEMENT DETAILS	5/20/14
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16

STATE OF MARYLAND
CHARLES S. NOLAN
No. 15212

CHARLES S. NOLAN, P.E. 1/7/14 DATE

"Professional certification. I hereby certify that these documents are prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 15212, Expiration Date 12-24-14."

BOX CULVERT AND WING WALL SECTION

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 & OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'

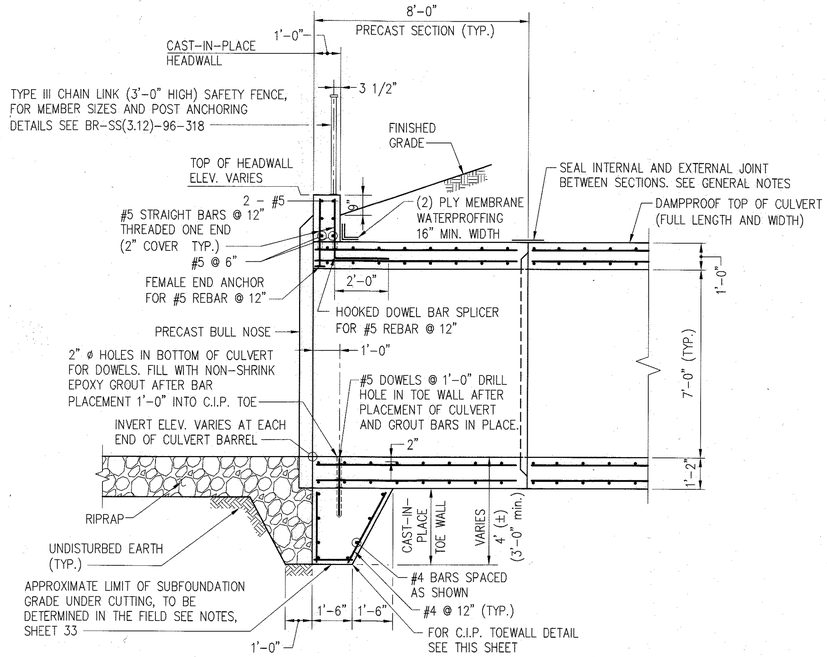
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MARCH 10, 2014

F-14-081

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6.10.14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6/16/14

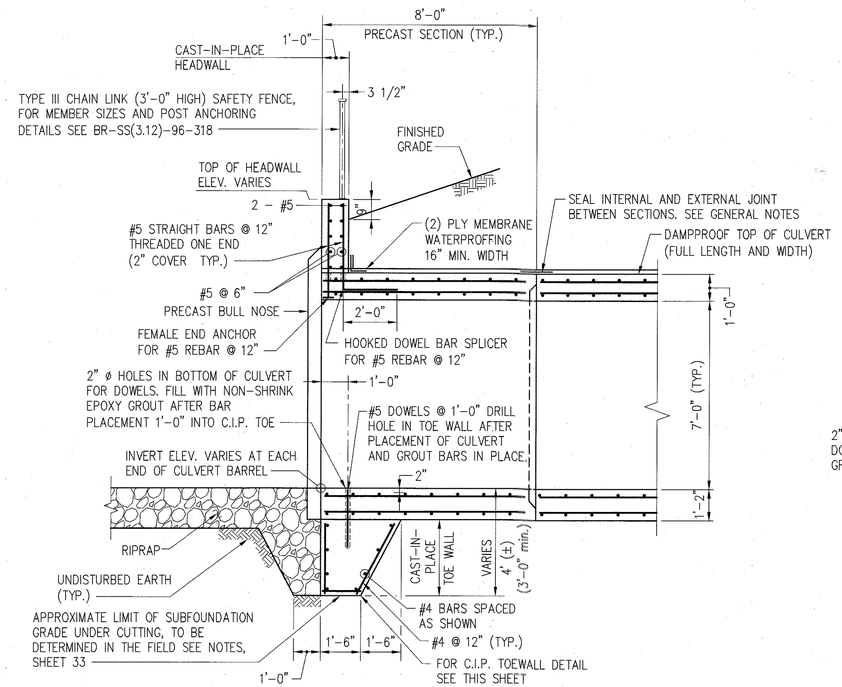
REVISIONS

NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15



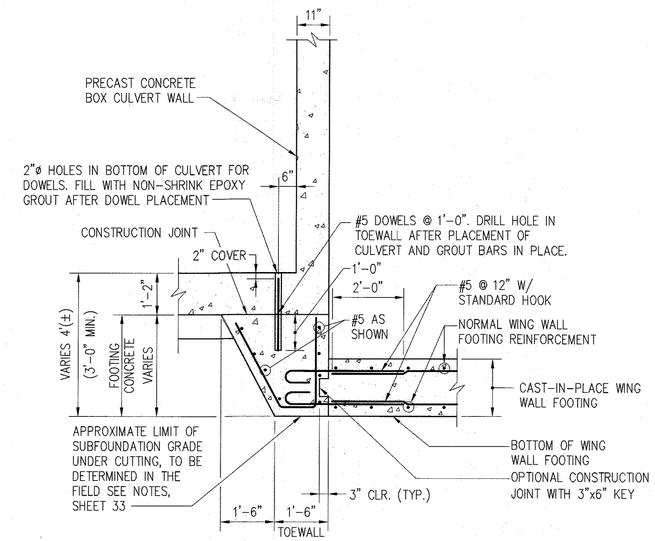
SECTION AT END OF CULVERT CELL NO. 1

SCALE: 3/8" = 1'-0'



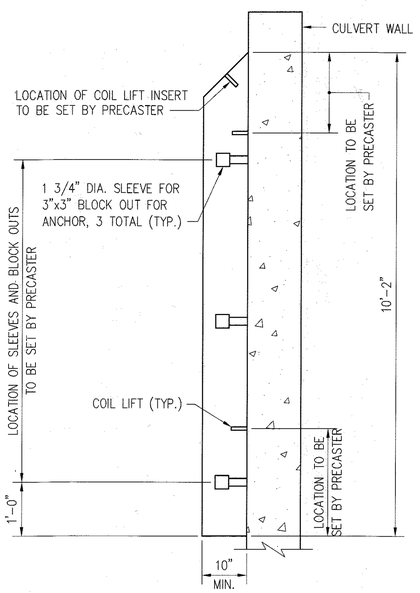
SECTION AT END OF CULVERT CELL NO. 2

SCALE: 3/8" = 1'-0'



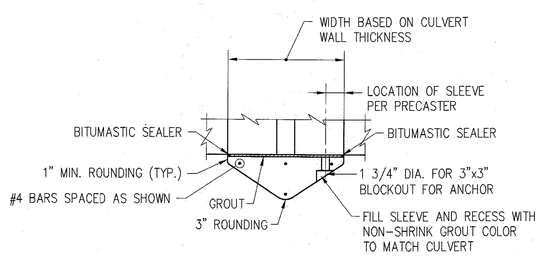
TYPICAL WINGWALL/CULVERT FOOTING CONNECTION

SCALE: 1/2" = 1'-0"

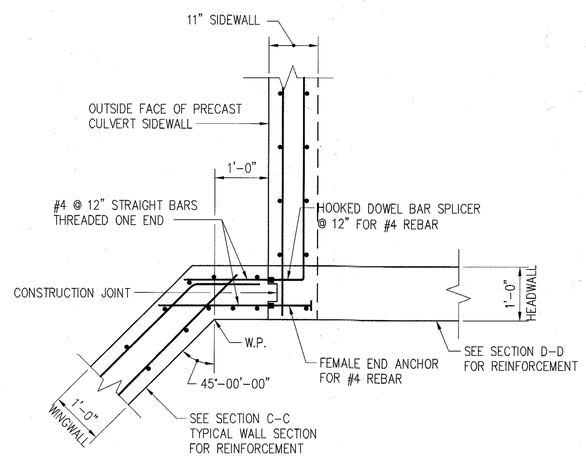


SIDE VIEW

NOTES:
1. USE 3/4" DIA. x 6 5/8" EPOXY ADHESIVE ANCHORS.
2. USE HIGH STRENGTH NON-SHRINK GROUT.
3. SEAL JOINT WITH A BITUMASTIC JOINT SEALER.



SECTION AT ANCHOR



DETAIL A – WING WALL TO CULVERT SIDEWALL CONNECTION

SCALE: 3/4" = 1'-0"

GREENMAN-PEDERSEN, INC.
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ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
10977 GUILFORD ROAD ANNAPOLIS JUNCTION, MD 20701
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

SUGGESTED PRECAST BULL NOSE DETAILS

NOT TO SCALE

OWNER/DEVELOPER
BEALE HOMES CORP.
8205 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

REVISIONS		
NO.	DESCRIPTION	DATE
1	ADDED REINFORCEMENT AND BULL NOSE DETAILS	5/20/14
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/14

STATE OF MARYLAND CHARLES S. NOLAN 15212

CHARLES S. NOLAN, P.E. 1/7/14
DATE

"Professional certification. I hereby certify that these documents are prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 15212, Expiration Date 12-24-14."

BOX CULVERT AND WING WALL DETAILS

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'

ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MARCH 10, 2014
SHEET 35 OF

F-14-081

APPROVED: DEPARTMENT OF PUBLIC WORKS

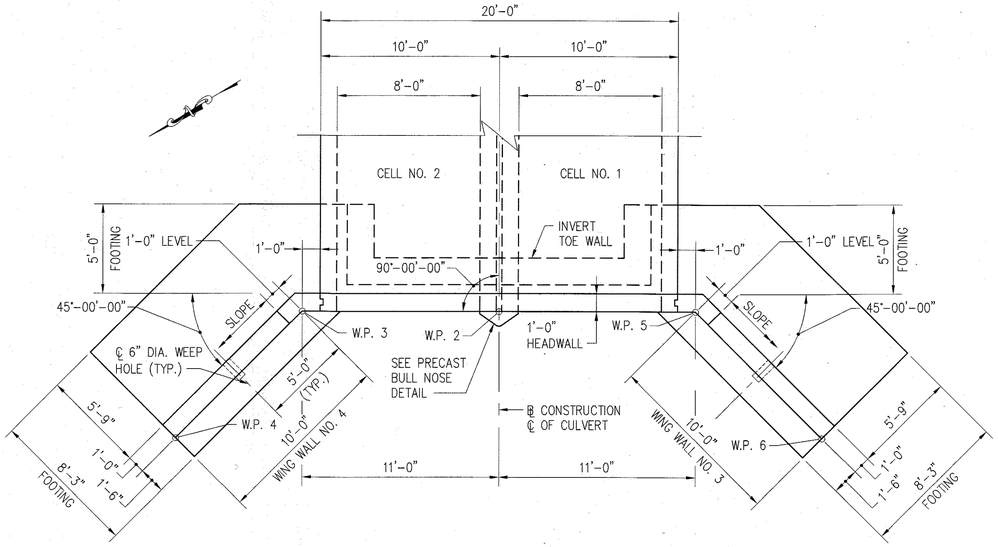
CHIEF, BUREAU OF HIGHWAYS — DATE 6-10-14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-24-14

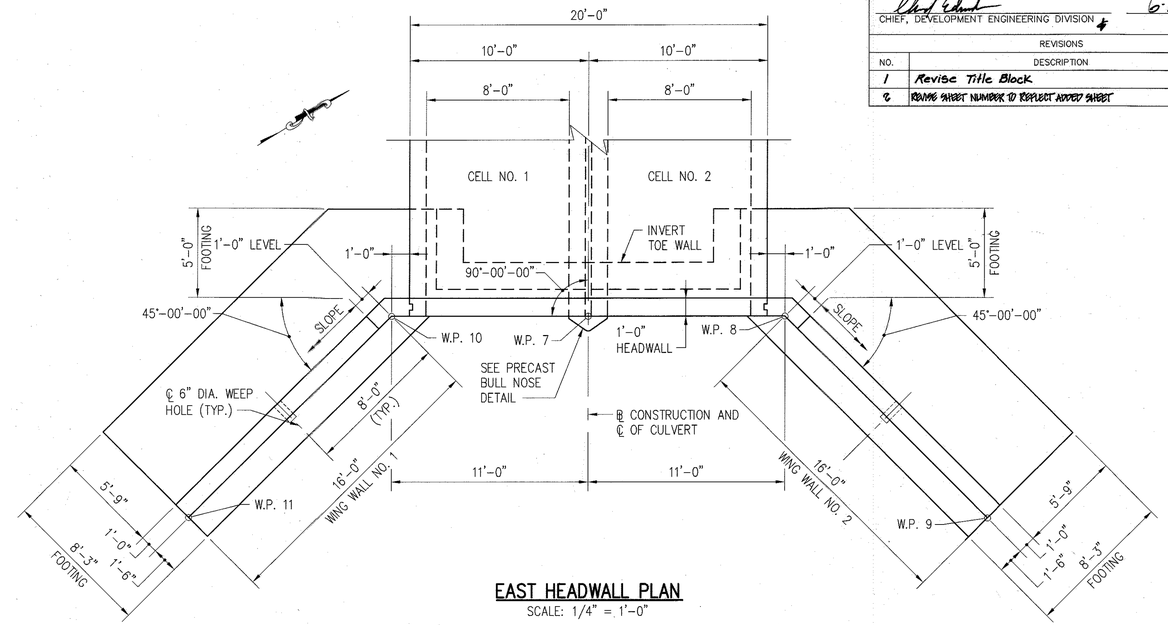
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6-16-14

REVISIONS		
NO.	DESCRIPTION	DATE
1	Revise Title Block	4-3-15
2	RENUMBER SHEET NUMBERS TO REFLECT ADDED SHEET	10/21/16



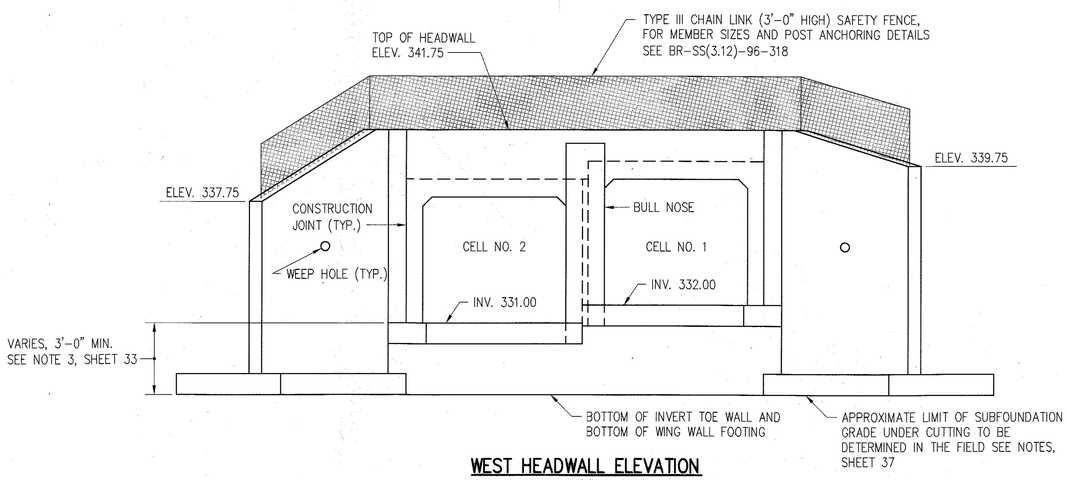
WEST HEADWALL PLAN

SCALE: 1/4" = 1'-0"



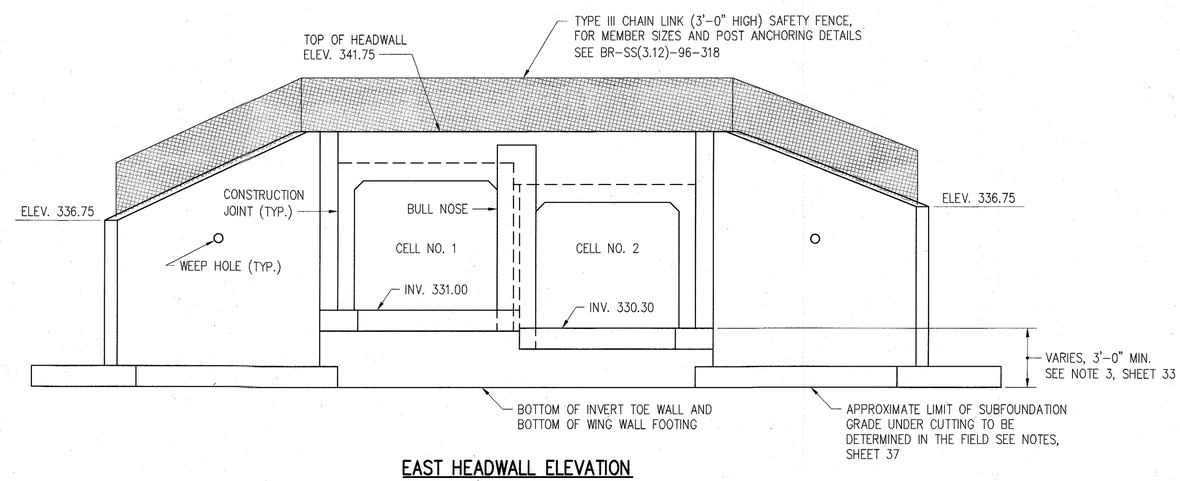
EAST HEADWALL PLAN

SCALE: 1/4" = 1'-0"



WEST HEADWALL ELEVATION

SCALE: 1/4" = 1'-0"



EAST HEADWALL ELEVATION

SCALE: 1/4" = 1'-0"

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OWNER/DEVELOPER
BENEK HOMES CORP.
8005 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-760-5071)

REVISIONS		
NO.	DESCRIPTION	DATE
1	ADDED NEW SHEET	5/20/14

STATE OF MARYLAND — CHARLES S. NOLAN — REG. NO. 15212 — PROFESSIONAL ENGINEER

CHARLES S. NOLAN, P.E. — DATE 5/20/14

"Professional certification. I hereby certify that these documents are prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 15212, Expiration Date 12-24-14."

HEADWALL PLAN AND ELEVATION

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'

ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MARCH 10, 2014
SHEET 36 OF 49

F-14-081

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6.10.14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-24-14

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6.16.14

REVISIONS		
NO.	DESCRIPTION	DATE
1	Revise Title Block	4.3.15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/16

GENERAL NOTES

Specifications: Latest SHA Specifications and Special Provisions for materials and construction. Latest AASHTO Standard Specifications for Highway Bridges for design.

Materials: Posts and rails shall conform to ASTM F-1083, Schedule 80. Fabric shall be 6 gauge, 2" PVC coated mesh conforming to 914.01.

All posts, braces, fittings and hardware shall be PVC coated. Coating shall conform to 914.03 except that nuts, bolts and washers shall also be PVC coated and touched up after installation.

All plates shall be steel conforming to ASTM A 709 Grade 36.

Anchor studs or anchor bolts shall conform to ASTM A 276, Type 430 or Type 304 stainless steel annealed, hot-finished, ultimate strength 70 000 psi min., 20% min. elongation. Threads may be rolled or cut.

Epoxy grout for anchor studs in cored holes shall conform to 932.11 (a).

PVC color for all elements of fence shall be black unless otherwise noted.

Construction: All longitudinal rails shall be parallel to top of parapet.

All posts shall be set normal to top of parapet for roadway grades 6% or less. For grades over 6% posts shall be set plumb.

The chain link fence shall be true to line, taut, tight fit to top of parapet, with 1/2" min. to 1" max. gap, and shall comply with the best practice for fence construction of this type.

Post and rails shall be permanently positioned before fabric is placed.

For post spacing see pertinent structure sheets.

Precoated longitudinal rails, if cut, shall have the cut end coated with PVC touch up material supplied by the manufacturer prior to erection.

If Contractor elects to place anchor studs after placing concrete parapet, newly placed rebars shall be located so that coring does not damage same, all holes shall be cored (not drilled) and the diameter of the cored holes for the anchor studs shall be 1/8".

Measurement and Payment: The furnishing, fabricating, erecting, etc., of all new chain link fence on the bridges, complete in place, will not be measured for payment but all costs thereof shall be included in the Contract lump sum prices for the pertinent Chain Link Safety Fence For Bridge Items.

The furnishing, fabricating, erecting, etc., of all new chain link fence anti-climb shields, complete in place, will be measured and paid for at the Contract unit prices per each for the pertinent Chain Link Safety Fence Anti-Climb Shield Items.

Any defects uncovered by the inspection of welds on base plates and poles shall be repaired or replaced by new members at no additional cost to the Administration.

APPROVAL — DIRECTOR OFFICE OF STRUCTURES — DATE: 6/27/95

REVISIONS: SHA 4-27-94; PRWA 11-11-97; SHA 3-15-01; PRWA 7-24-01

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

CHAIN LINK SAFETY FENCE-NEW STRUCTURES
GENERAL NOTES

PRWA APPROVAL — DATE: 11-3-16 — STANDARD NO. BR-SS(3.01)-75-21 — SHEET 1 OF 1

BAR SIZE	* LOCATION CATEGORY A	B	C
#4	2'-5"	1'-9"	1'-5"
#5	3'-0"	2'-2"	1'-9"
#6	3'-7"	2'-7"	2'-1"
#7	4'-4"	3'-1"	2'-6"
#8	5'-8"	4'-1"	3'-3"
#9	7'-2"	5'-1"	4'-1"
#10	9'-1"	6'-6"	5'-2"
#11	11'-1"	7'-11"	6'-4"

* LOCATION CATEGORY

A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in footings, pier caps, etc.
B - All bars not in Category A spaced less than 6" apart.
C - All bars not in Category A spaced 6" or more apart.

Note:
1. When bar lap is not specified on the Plans, the above dimensions shall be used.
2. These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
3. These bar laps only apply where the General Notes indicate "Reinforcing Steel Design, fs= 24,000 p.s.i."

APPROVAL — DIRECTOR OFFICE OF STRUCTURES — DATE: 4/30/99

REVISIONS: SHA 1-22-01; PRWA 8-23-03; SHA 9-29-06; PRWA 12-4-07

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

BAR LAP DIMENSIONS FOR
GRADE 60 REINFORCING STEEL
IN MIX NO. 6 (4500 P.S.I.) CONCRETE
NON-EPOXY COATED REINFORCING

PRWA APPROVAL — DATE: 6-8-90 — STANDARD NO. M16.051-80-122 — SHEET 1 OF 3

BAR SIZE	* LOCATION CATEGORY A	B	C
#4	2'-5"	1'-9"	1'-5"
#5	3'-0"	2'-2"	1'-9"
#6	3'-7"	2'-7"	2'-1"
#7	4'-10"	3'-6"	2'-10"
#8	6'-5"	4'-7"	3'-8"
#9	8'-1"	5'-9"	4'-8"
#10	10'-3"	7'-4"	5'-11"
#11	12'-7"	9'-0"	7'-3"

* LOCATION CATEGORY

A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in footings, pier caps, etc.
B - All bars not in Category A spaced less than 6" apart.
C - All bars not in Category A spaced 6" or more apart.

Note:
1. When bar lap is not specified on the Plans, the above dimensions shall be used.
2. These bar laps do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
3. These bar laps only apply where the General Notes indicate "Reinforcing Steel Design, fs= 24,000 p.s.i."

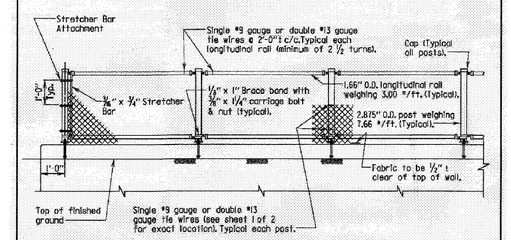
APPROVAL — DIRECTOR OFFICE OF STRUCTURES — DATE: 4/30/99

REVISIONS: SHA 1-22-01; PRWA 8-23-03; SHA 9-29-06; PRWA 12-4-07

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

BAR LAP DIMENSIONS FOR
GRADE 60 REINFORCING STEEL
IN MIX NO.3 (3500 P.S.I.) CONCRETE
NON-EPOXY COATED REINFORCING

PRWA APPROVAL — DATE: 6-8-90 — STANDARD NO. M16.071-81-127 — SHEET 3 OF 3



ELEVATION
Scale: 3/8" = 1'-0"

Notes:
For additional details see Std. No. BR-SS(3.041)-75-24.

APPROVAL — DIRECTOR OFFICE OF STRUCTURES — DATE: 8/8/96

REVISIONS: SHA 3-30-10; PRWA 9-24-13; SHA 1-14-14; PRWA

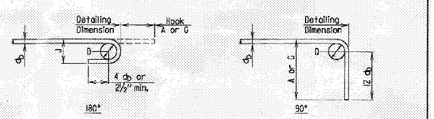
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

TYPE III CHAIN LINK SAFETY FENCE
RETAINING WALLS AND BOX CULVERTS

PRWA APPROVAL — DATE: — STANDARD NO. BR-SS(3.12)-96-318 — SHEET 2 OF 2

HOOKS
TABLE I
REFERENCES

1. ACI Types I thru 26
2. SHA Standard Pin Bending
3. SHA Radius Bending



BAR SIZE	RECOMMENDED END HOOKS, ALL GRADES: Finished bend diameter D, in.	180 - deg hook: A or G in	180 - deg hook: J, in.	90 - deg hook: A or G in
#3	2 1/4	5	3	6
#4	3	6	4	8
#5	3 3/4	7	5	10
#6	4 1/2	8	6	1-0
#7	5 1/4	10	7	1-2
#8	6	11	8	1-4
#9	9 1/2	1-3	11 3/4	1-1
#10	10 3/4	1-5	1-1 1/4	1-10
#11	12	1-7	1-2 3/4	2-0
#14	18 1/4	2-3	1-9 3/4	2-7
#18	24	3-0	2-4 1/2	3-5

APPROVAL — DIRECTOR OFFICE OF STRUCTURES — DATE: 8/27/97

REVISIONS: SHA -; PRWA -; SHA -; PRWA -

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

REINFORCING STEEL HOOK TABLES AND DIAGRAMS

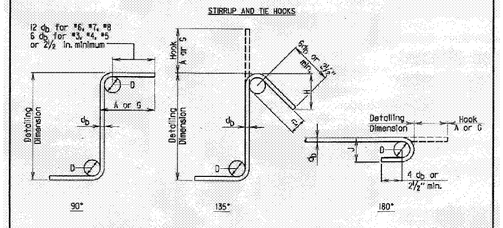
PRWA APPROVAL — DATE: — STANDARD NO. REBAR-BD(9.05)-97-320 — SHEET 1 OF 2

HOOKS
TABLE II
REFERENCES

1. ACI Types S1 thru S11
2. ACI Types T1 thru T8
3. SHA Ties and Stirrups

(Note: Tie and stirrup types supplied in sizes #3-#8)

STIRRUP AND TIE HOOKS



BAR SIZE	STIRRUP AND TIE HOOK DIMENSIONS, in.: D, in.	90 - deg hook: A or G	135 - deg hook: A or G	135 - deg hook: H_x approx
#3	1 1/2	4	4	2 1/2
#4	2	4 1/2	4 1/2	3
#5	2 1/2	6	5 1/2	3 3/4
#6	4 1/2	1-0	7 3/4	4 1/2
#7	5 1/4	1-2	9	5 1/4
#8	6	1-4	10 1/4	6

BAR SIZE	RECOMMENDED END HOOKS, ALL GRADES: Finished bend diameter D, in.	180 - deg hook: A or G in	180 - deg hook: J, in.
#3	2 1/4	5	3
#4	3	6	4
#5	3 3/4	7	5
#6	4 1/2	8	6
#7	5 1/4	10	7
#8	6	11	8

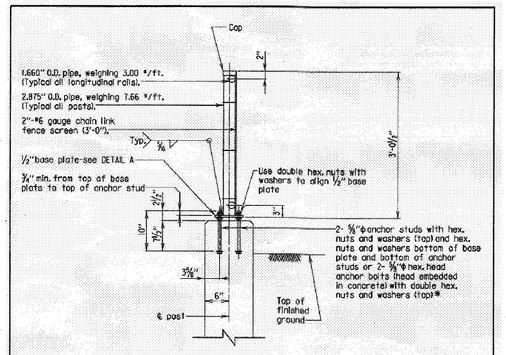
APPROVAL — DIRECTOR OFFICE OF STRUCTURES — DATE: 8/27/97

REVISIONS: SHA 12-3-97; PRWA -; SHA -; PRWA -

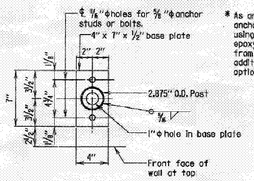
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

REINFORCING STEEL HOOK TABLES AND DIAGRAMS

PRWA APPROVAL — DATE: — STANDARD NO. REBAR-BD(9.05)-97-320 — SHEET 2 OF 2



TYPICAL SECTION
Scale: 3/4" = 1'-0"



DETAIL A
Scale: 1 1/2" = 1'-0"

* As an option, the Contractor may set the anchor studs after placing concrete wall using 7/8" dia. cored holes and an approved epoxy grout. Nuts and washers shall be omitted from the embedded ends of anchor studs. No additional compensation will be allowed for this option.

Note:
This fence shall be used on box culverts with headwalls located at the bottom of fill slopes.

APPROVAL — DIRECTOR OFFICE OF STRUCTURES — DATE: 8/8/96

REVISIONS: SHA 3-30-10; PRWA 9-24-13; SHA 1-14-14; PRWA -

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF STRUCTURES

TYPE III CHAIN LINK SAFETY FENCE
RETAINING WALLS AND BOX CULVERTS

PRWA APPROVAL — DATE: — STANDARD NO. BR-SS(3.12)-96-318 — SHEET 1 OF 2

GREENMAN-PEDERSEN, INC.
GPI
ENGINEERS, ARCHITECTS, PLANNERS, CONSTRUCTION ENGINEERS & INSPECTORS
10977 GUILFORD ROAD ANNAPOLIS JUNCTION, MD 20701
WASH. (301) 470-2772 BALT. (410) 880-3055
FAX: (301) 490-2649 www.gpinet.com

OWNER/DEVELOPER
BEAZER HOMES CORP.
8975 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

REVISIONS		
NO.	DESCRIPTION	DATE
1	ADDED NEW SHEET	5/20/14

STATE OF MARYLAND — CHARLES S. NOLAN — No. 15212 — PROFESSIONAL ENGINEER — 5/20/14

CHARLES S. NOLAN, P.E. — DATE 5/20/14

"Professional certification. I hereby certify that these documents are prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 15212, Expiration Date 12-24-14."

STANDARD DETAILS

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 & OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'

ZONING: R-20

TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MARCH 10, 2014
SHEET 37 OF 40

F-14-081

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-10-14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-24-14

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6-16-14

Table 1. Auger Probe Summary

Boring	Surface Elevation	Boring Depth Proposed	Boring Depth Drilled	At Completion Water (ft)	At Completion Cave-in (ft)
B-1	384.99	12	12	Dry	9.5
B-2	382.91	13	13	Dry	10.0
B-3	367.50	8	8	Dry	6.0
B-4	356.86	8	8	Dry	5.0
B-5	350.74	8	8	Dry	5.5
B-6	333.13	8	8	Dry	6.8
B-7	368.14	12	12	Dry	5.7
B-8	364.42	10	10	Dry	8.0
B-9	349.58	12	12	Dry	----
B-10	346.77	8	8	Dry	----
B-11	350.30	13	13	Dry	8.0
B-12	355.40	8	8	Dry	6.5
B-13	350.15	8	8	Dry	6.0
B-14	347.69	8	8	Dry	6.0
B-15	342.69	10	10	Dry	6.3
B-16	336.33	10	10	Dry	7.5
B-17	334.68	20	20	6.0	10.0
B-18	334.79	20	20	6.0	8.0
B-19	337.39	20	20	6.5	8.0
B-20	337.66	20 *	20	8.5	9.0
B-21	345.70	11	11	Dry	----
B-22	342.65	10	10	Dry	7.3
B-23	349.30	10	10	Dry	6.8
B-24	357.62	10	3.5	Dry	2.0
B-25	362.96	10	10	Dry	7.8
B-26	369.02	10	10	Dry	7.2
B-27	375.68	10	10	Dry	7.3
B-28	362.00	8	8	Dry	----
B-29	380.55	12	12	Dry	8.0
B-30	389.38	10	10	Dry	8.0
B-31	382.45	8	8	Dry	6.3
B-32	380.71	10	10	Dry	7.8
B-33	380.93	10	10	Dry	8.7
B-34	374.98	8	8	Dry	6.8
B-35	376.51	8	8	Dry	6.0
B-36	376.77	8	8	Dry	6.8
B-37	379.07	10	10	Dry	8.1
B-38	383.24	10	10	Dry	6.9
B-39	387.67	10	10	Dry	7.5
B-40	391.47	10	10	Dry	6.0
B-41	401.63	14	14	Dry	11.0
B-42	394.45	10	10	Dry	8.8
B-43	391.98	12	12	Dry	10.5
B-44	351.82	15	9	Dry *	6.0
B-45	361.34	10	10	Dry	8.5
B-46	363.38	10	10	Dry	6.2
B-47	363.80	10	10	Dry	6.5
B-48	353.07	12	12	Dry	7.5
B-49	375.29	10	10	Dry	7.0
B-50	385.56	12	12	Dry	9.0
B-51	391.80	18	18	Dry	14.0
B-52	378.14	12	12	Dry	7.5
B-53	374.48	12	12	Dry	8.0

* - Groundwater encountered at 8.5 ft while drilling in Boring B-44

- Auger Refusal encountered at depth shallower than proposed

Table 1. Auger Probe Summary

Boring	Surface Elevation	Boring Depth Proposed	Boring Depth Drilled	Depth to Water (ft)	Depth to Cave-in (ft)
B-54	367.80	12	12	6.8	8.0
B-55	368.25	12	12	Dry	7.7
B-56	347.52	12	12	5.2	6.3
B-57	351.85	13	13	5.4	7.7
B-58	349.76	13	13	7.8	8.2
B-59	344.89	10	10	7.5	7.6
B-60	342.43	10	10	5.0	6.3
B-61	339.98	10	10	Dry	7.1
B-62	338.19	10	10	Dry	7.0
B-63	349.68	12	12	Dry	7.0
B-64	365.03	12	12	Dry	6.3
B-65	344.67	12	12	6.6	9.3
B-66	375.86	10	10	Dry	7.3
B-67	372.86	10	10	Dry	7.2
B-68	373.54	12	12	Dry	8.3
B-69	374.57	12	12	Dry	8.3
B-70	387.96	12	12	Dry	9.3
B-71	382.46	12	12	Dry	8.3
B-72	337.39	10	10	Dry	8.0
B-73	393.62	12	12	Dry	8.3
B-74	389.82	10	10	Dry	7.9
B-75	399.66	12	12	Dry	8.5
B-76	404.68	18	18	Dry	14.0
B-77	378.15	12	12	Dry	8.7
B-78	385.62	16	16	Dry	11.7
B-79	358.42	20	19.3	8.0	14.5
B-80	351.76	15	15	6.0	10.0
B-81	351.43	15	13.8	4.0	10.8
B-82	363.35	10	10	Dry	6.3
B-83	390.35	18	18	Dry	14.3
B-84	392.66	20	20	Dry	16.0
B-85	371.54	14	14	4.3	6.8
B-86	369.05	14	14	7.5	10.0
B-87	363.35	12	12	Dry	7.0
B-88	355.62	12	12	2.1	8.5

Project Name: Mason Property — Boring No. B-7
Location: Howard County, Maryland — Job #: 12314A

SAMPLER: Datum n/a; Hammer Wt. 140 lbs.; Hole Diameter 6"; Foreman J. Balk; Surf. Elev. 368.14 ft; Hammer Drop 30 in.; Rock Core Diameter n/a; Inspector; Date Started 7/24/2012; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 7/24/2012

Elevation/Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
	Brown, damp, medium stiff, silt, some sand and rock fragments	1-inch topsoil	12		2-2-7	7
	Brown, moist, stiff, silt	No groundwater encountered while drilling	14		4-6-6	12
			15		4-5-6	11
	micaceous		15		4-5-8	13
	Brown, dry, hard, micaceous sandy silt		17		7-15-17	32
	Bottom of boring at 12.0 feet	Installed insitu pip to 6' in second hole				

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

	Ground Water	Cave in Depth
AT COMPLETION	Dry ft.	5.7' ft.
AFTER 24 HRS.	Dry ft.	4.2' ft.
AFTER ___ HRS.	___ ft.	___ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

Project Name: Mason Property — Boring No. B-11
Location: Howard County, Maryland — Job #: 12314A

SAMPLER: Datum n/a; Hammer Wt. 140 lbs.; Hole Diameter 6"; Foreman J. Balk; Surf. Elev. 350.30 ft; Hammer Drop 30 in.; Rock Core Diameter n/a; Inspector; Date Started 7/24/2012; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 7/24/2012

Elevation/Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
	Brown, damp, medium stiff, sandy silt with rock fragments	1-inch topsoil	5		2-2-4	6
	Brown, moist, medium stiff to stiff, silt, little sand	No groundwater encountered while drilling	16		4-5-5	10
			17		5-6-7	13
	Brown, moist, medium stiff, silt		15		3-3-3	6
	Brown, moist, medium stiff, micaceous silt, trace sand		16		2-4-4	8
	Bottom of boring at 13.0 feet	Installed insitu pipe to 6' in second hole				

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

	Ground Water	Cave in Depth
AT COMPLETION	Dry ft.	8.0' ft.
AFTER 24 HRS.	Dry ft.	6.6' ft.
AFTER ___ HRS.	___ ft.	___ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

Project Name: Mason Property — Boring No. B-15
Location: Howard County, Maryland — Job #: 12314A

SAMPLER: Datum n/a; Hammer Wt. 140 lbs.; Hole Diameter 6"; Foreman J. Balk; Surf. Elev. 342.69 ft; Hammer Drop 30 in.; Rock Core Diameter n/a; Inspector; Date Started 7/24/2012; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 7/24/2012

Elevation/Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
	Brown, damp, medium stiff, silt, little sand	1-inch topsoil	10		3-4-6	10
	Brown, moist, stiff, sandy silt		12		3-4-8	12
	Multi-colored, moist, dense, sand and rock fragments, some silt		18		7-28-12	40
	Tan, moist, stiff, sandy silt		12		5-6-7	13
	Bottom of boring at 10.0 feet	Installed insitu pipe to 5' in second hole				

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

	Ground Water	Cave in Depth
AT COMPLETION	Dry ft.	6.3' ft.
AFTER 24 HRS.	Dry ft.	6.0' ft.
AFTER ___ HRS.	___ ft.	___ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

Project Name: Mason Property — Boring No. B-54
Location: Howard County, Maryland — Job #: 12314A

SAMPLER: Datum n/a; Hammer Wt. 140 lbs.; Hole Diameter 6"; Foreman T. Carroll; Surf. Elev. 367.80 ft; Hammer Drop 30 in.; Rock Core Diameter n/a; Inspector n/a; Date Started 5/29/2013; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 5/29/2013

Elevation/Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
	Reddish- and yellowish-brown, moist, medium stiff to stiff, silty CLAY, some sand (CL-ML)	2-inches topsoil (filled farm land)	11		1-3-3	6
			14		4-6-5	11
	Brown, moist, medium dense, silty SAND, trace mica (SM) (Residual)		18		6-6-7	13
	Brown, moist, medium dense to loose, silty SAND, little weathered rock fragments, trace mica (SM) (Residual)		11		6-7-6	13
		Backfilled after 24 hours	17		6-5-5	10
	Bottom of boring at 12.0 feet	Offset and installed an insitu pipe at 6' in adjacent borehole.				

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

	Ground Water	Cave in Depth
AT COMPLETION	Dry ft.	8.5' ft.
AFTER 24 HRS.	6.8' ft.	8.0' ft.
AFTER ___ HRS.	___ ft.	___ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

BORING LOGS SHOWN HEREON REQUIRED INSITU TESTING.

Project Name: Mason Property — Boring No. B-60
Location: Howard County, Maryland — Job #: 12314A

SAMPLER: Datum n/a; Hammer Wt. 140 lbs.; Hole Diameter 6"; Foreman T. Carroll; Surf. Elev. 342.43 ft; Hammer Drop 30 in.; Rock Core Diameter n/a; Inspector n/a; Date Started 5/29/2013; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 5/29/2013

Elevation/Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
	Brown, moist, soft, silty CLAY (CL-ML)	2-inches topsoil (filled farm land)	14		2-2-3	5
	Brown, moist, stiff, silty CLAY, little sand (CL-ML)		16		5-7-6	13
			18		6-6-9	15
	Brown, moist, very loose, silty SAND AND WEATHERED MATERIAL (SM)	Backfilled after 24 hours	12		2-2-2	4
	Bottom of boring at 10.0 feet	Offset and installed an insitu pipe at 5' in adjacent borehole.				

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

	Ground Water	Cave in Depth
AT COMPLETION	Dry ft.	8.0' ft.
AFTER 24 HRS.	5.0' ft.	6.3' ft.
AFTER ___ HRS.	___ ft.	___ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

Project Name: Mason Property — Boring No. B-55
Location: Howard County, Maryland — Job #: 12314A

SAMPLER: Datum n/a; Hammer Wt. 140 lbs.; Hole Diameter 6"; Foreman T. Carroll; Surf. Elev. 368.25 ft; Hammer Drop 30 in.; Rock Core Diameter n/a; Inspector n/a; Date Started 5/29/2013; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 5/29/2013

Elevation/Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
	Reddish-brown, moist, medium stiff, to stiff, silty CLAY, little sand (CL-ML)	2-inches topsoil (filled farm land)	10		2-3-4	7
			18		3-4-6	10
	Orangish-brown to brown, moist, medium dense, silty SAND, trace mica (SM) (Residual)		18		5-5-5	10
			12		6-7-7	14
	Off white and grayish-brown, moist, medium dense, silty SAND, little weathered rock fragments, trace mica (SM) (Residual)	Backfilled after 24 hours	15		7-7-7	14
	Bottom of boring at 12.0 feet	Offset and installed an insitu pipe at 6' in adjacent borehole.				

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

	Ground Water	Cave in Depth
AT COMPLETION	Dry ft.	9.4' ft.
AFTER 24 HRS.	Dry ft.	7.7' ft.
AFTER ___ HRS.	___ ft.	___ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

Project Name: Mason Property — Boring No. B-57
Location: Howard County, Maryland — Job #: 12314A

SAMPLER: Datum n/a; Hammer Wt. 140 lbs.; Hole Diameter 6"; Foreman T. Carroll; Surf. Elev. 351.85 ft; Hammer Drop 30 in.; Rock Core Diameter n/a; Inspector n/a; Date Started 5/29/2013; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 5/29/2013

Elevation/Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
	Reddish-brown, moist, soft, silty CLAY (CL-ML)	2-inches topsoil (filled farm land)	10		2-2-3	5
			13		5-5-7	12
	Brown to yellow, moist, medium dense to dense, silty SAND, some rock fragments (SM)		15		6-21-14	35
	Yellow, brown and black, moist, loose to dense, silty SAND (SM) (Residual)	Groundwater encountered at 9.4' while drilling	14		6-3-5	8
		Backfilled after 24 hours	16		21-24-22	46
	Bottom of boring at 13.0 feet	Offset and installed an insitu pipe at 6' in adjacent borehole.				

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

	Ground Water	Cave in Depth
AT COMPLETION	9.3' ft.	11.3' ft.
AFTER 24 HRS.	5.4' ft.	7.7' ft.
AFTER ___ HRS.	___ ft.	___ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

Project Name: Mason Property — Boring No. B-58
Location: Howard County, Maryland — Job #: 12314A

SAMPLER: Datum n/a; Hammer Wt. 140 lbs.; Hole Diameter 6"; Foreman T. Carroll; Surf. Elev. 349.76 ft; Hammer Drop 30 in.; Rock Core Diameter n/a; Inspector n/a; Date Started 5/29/2013; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 5/29/2013

Elevation/Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
	Reddish-brown, moist, soft, silty CLAY (CL-ML)	2-inches topsoil (filled farm land)	8		2-2-2	4
			12		3-4-4	8
	Brown, moist, medium stiff, silty CLAY (CL-ML)		13		7-4-5	9
	Orange, black and brown, moist, loose, silty SAND, trace mica (SM) (Residual)		15		2-3-3	6
		Backfilled after 24 hours	17		14-16-18	34
	Brown, moist, dense, silty SAND, little weathered rock fragments (SM) (Residual)	Offset and installed an insitu pipe at 6' in adjacent borehole.				
	Bottom of boring at 13.0 feet					

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

	Ground Water	Cave in Depth
AT COMPLETION	Dry ft.	10.2' ft.
AFTER 24 HRS.	7.8' ft.	9.2' ft.
AFTER ___ HRS.	___ ft.	___ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

Project Name: Mason Property — Boring No. B-59
Location: Howard County, Maryland — Job #: 12314A

SAMPLER: Datum n/a; Hammer Wt. 140 lbs.; Hole Diameter 6"; Foreman T. Carroll; Surf. Elev. 344.89 ft; Hammer Drop 30 in.; Rock Core Diameter n/a; Inspector n/a; Date Started 5/29/2013; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 5/29/2013

Elevation/Depth	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
	Brown, moist, medium stiff, silty CLAY (CL-ML)	2-inches topsoil (filled farm land)	15		1-3-3	6
	Brown, moist, medium stiff to stiff, silty CLAY, little sand (CL-ML)		15		4-4-6	10
			16		8-5-6	11
	Brown, moist, loose, silty SAND AND WEATHERED MATERIAL (SM)	Backfilled after 24 hours	13		3-3-3	6
	Bottom of boring at 10.0 feet	Offset and installed an insitu pipe at 6' in adjacent borehole.				

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE

SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST

	Ground Water	Cave in Depth
AT COMPLETION	Dry ft.	8.0' ft.
AFTER 24 HRS.	7.5' ft.	7.8' ft.
AFTER ___ HRS.	___ ft.	___ ft.

BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

Revisions		
No.	Description	Date
1	Revise Title Block	4-3-15
2	REVISE SHEET NUMBER TO REFLECT ADDED SHEET	10/21/15

STATE OF MARYLAND — ALDO M. VITUCCI — No. 20748

ALDO M. VITUCCI, P.E. — DATE 5/30/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

BORING LOGS

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

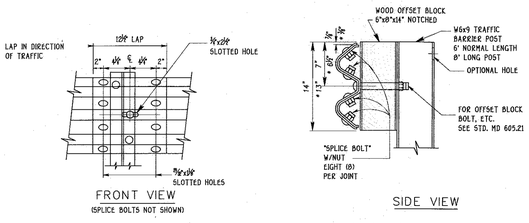
SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

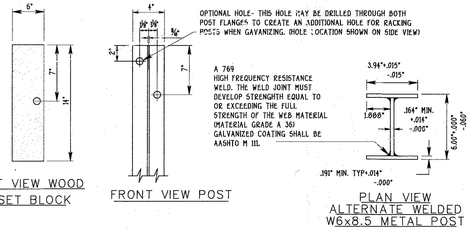
A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 38 OF 40

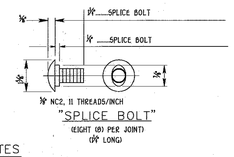
F-14-081

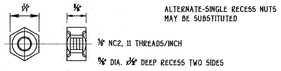
I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 36 Borings.dwg, C-36, F-14-081 sheet 36, 5/30/2014 11:35:55 AM, 1:1



TRAFFIC BARRIER W BEAM SPLICE JOINT





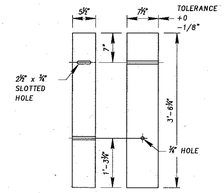


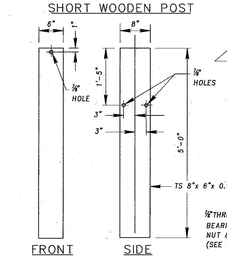
NOTES

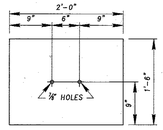
1. EXCEPT FOR THE DIMENSIONS SHOWN ON THE ALTERNATE WELDED W6x8.5 PLAN VIEW, ALL DIMENSIONS FOR HOLES, HOLE SPACING, LENGTHS, ETC. WILL REMAIN THE SAME AS THEY ARE FOR THE W6x9 POSTS AND WOOD OFFSET BLOCKS.
2. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21
3. POSTS SHALL BE SPACED 6'-3" C/C, UNLESS OTHERWISE STATED ON THE PLANS OR DIRECTED BY THE ENGINEER.

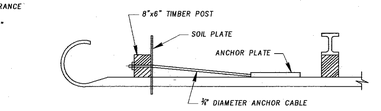
TRAFFIC BARRIER W BEAM METAL POST, W BEAM SPLICE AND WOOD OFFSET BLOCK

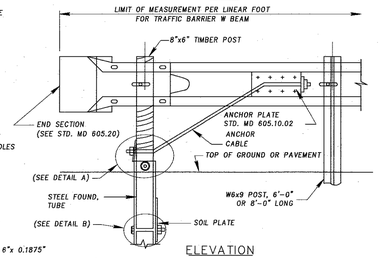
NOT TO SCALE — MD 605.23

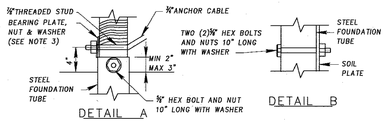


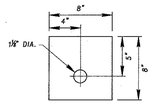










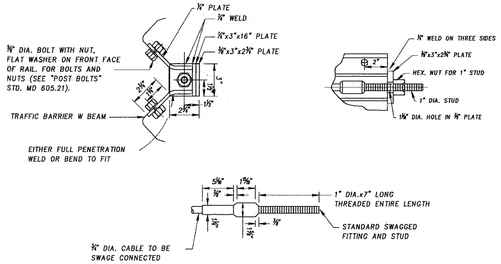


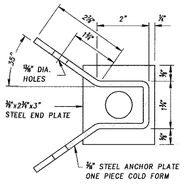
OPTION 2 (SHOWN ABOVE)
(FOUNDATION TUBE WITH SOIL PLATE)

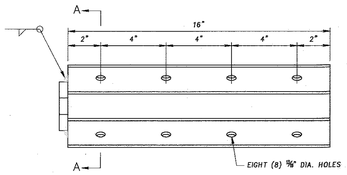
OPTION 3 (NOT SHOWN)
(FOUNDATION TUBE WITHOUT SOIL PLATE)
(SAME AS OPTION 2 EXCEPT STEEL FOUNDATION TUBE IS 6½' LONG)

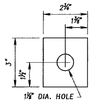
NOTES

1. NOTES ON STD. MD 605.10 APPLY TO OPTION 2 & 3.
2. IF THE FOUNDATION TUBE AND SOIL PLATE (OPTION 2) ARE DRIVEN INTO THE SOIL, PROPER CARE SHOULD BE TAKEN TO ENSURE THAT THE SOIL PLATE FASTENERS ARE NOT BROKEN DURING THE DRIVING PROCESS.
3. SECURE BEARING PLATE WITH 16 PENNY GALVANIZED NAIL TO PREVENT ROTATION OF PLATE.
4. SAME AS MD 605.01 NOTE 6









NOTE

1. FOR MOUNTING DETAILS SEE STD. MD 605.10.

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6-10-14
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 6-24-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 6-16-14

REVISIONS

NO.	DESCRIPTION	DATE
1	REVISE TITLE BLOCK	4-3-15
2	REVISE SHEET NUMBER TO REFLECT MODIFIED SHEET	10/21/16

NO PARKING SIGN LOCATION

ROAD NAME	CENTERLINE STA.	OFFSET
WELLFORD DRIVE	0+83	15' L
WELLFORD DRIVE	0+83	15' R
WELLFORD DRIVE	4+40	15' R
WELLFORD DRIVE	5+23	15' L
WELLFORD DRIVE	6+95	15' R
WELLFORD DRIVE	7+38	15' L
WELLFORD DRIVE	7+87	15' R
WELLFORD DRIVE	7+87	15' L
WELLFORD DRIVE	13+19	15' R
WELLFORD DRIVE	13+19	15' L
WELLFORD DRIVE	14+10	15' R
WELLFORD DRIVE	14+10	15' L
WELLFORD DRIVE	16+75	15' R
WELLFORD DRIVE	16+75	15' L
WELLFORD DRIVE	17+44	15' L
WELLFORD DRIVE	18+09	15' R
WELLFORD DRIVE	21+25	15' L
WELLFORD DRIVE	21+64	15' R
WELLFORD DRIVE	21+84	15' L
WELLFORD DRIVE	22+60	15' R
WELLFORD DRIVE	23+45	15' L
WELLFORD DRIVE	23+98	15' L
WELLFORD DRIVE	26+00	15' R
WELLFORD DRIVE	27+00	15' L
WELLFORD DRIVE	27+00	15' R
WELLFORD DRIVE	28+32	15' L
WELLFORD DRIVE	29+78	15' L
WELLFORD DRIVE	29+78	15' R
WELLFORD DRIVE	30+30	15' L
WELLFORD DRIVE	30+80	15' R
WELLFORD DRIVE	33+58	15' L
WELLFORD DRIVE	33+58	15' R

"NO PARKING" SIGN DETAIL

NOT TO SCALE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

OWNER/DEVELOPER
BEAZER HOMES CORP
8965 GUILFORD ROAD
COLUMBIA, MARYLAND 21046
(410-720-5071)

STATE OF MARYLAND — ALDO MICHAEL VITUCCI — No. 20748 — PROFESSIONAL ENGINEER

ALDO M. VITUCCI, P.E. — DATE 5/29/14

"Professional certification. I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-15."

GUARDRAIL DETAILS

CENTENNIAL LAKE OVERLOOK

(FORMERLY MASON PROPERTY)

SECTION TWO

BUILDABLE LOTS 29 - 98 &
OPEN SPACE LOTS 99 THRU 112

A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MAY 30, 2014
SHEET 39 OF 40

F-14-081

I:\2011\11042\dwg\Finals section two\Finals with lots 80-83, 86-98 removed\11042 sheet 37 guardrail and no parking.dwg, C-37_F-14-081 sheet 37, 5/30/2014 11:37:10 AM, 1:1

SPECIFICATIONS
MODULAR CONCRETE BLOCK RETAINING WALL

PART 1: GENERAL

1.01 DESCRIPTION

A. WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTION OF A MODULAR RETAINING WALL SYSTEM IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, DESIGN, AND DIMENSIONS SHOWN ON THE PLANS.

B. WORK INCLUDES PREPARING FOUNDATION SOIL, FURNISHING AND INSTALLING LEVELING PAD, UNIT DRAINAGE FILL AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS.

C. WORK INCLUDES FURNISHING AND INSTALLING GEOGRID SOIL REINFORCEMENT OF THE TYPE, SIZE, LOCATION, AND LENGTHS DESIGNATED ON THE CONSTRUCTION DRAWINGS.

1.02 DELIVERY, STORAGE AND HANDLING

A. CONTRACTOR SHALL CHECK ALL MATERIALS UPON DELIVERY TO ASSURE THAT THE PROPER TYPE, GRADE, COLOR, AND CERTIFICATION HAS BEEN RECEIVED.

B. CONTRACTOR SHALL PROTECT ALL MATERIALS FROM DAMAGE DUE TO JOB SITE CONDITIONS AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. DAMAGED MATERIALS SHALL NOT BE INCORPORATED INTO THE WORK.

PART 2: PRODUCTS

2.01 MODULAR CONCRETE RETAINING WALL UNITS

A. MODULAR CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING ARCHITECTURAL REQUIREMENTS:

FACE COLOR - COLOR MAY BE SPECIFIED BY THE OWNER.

FACE FINISH - SCULPTURED ROCK FACE IN ANGULAR TRI-PLANER OR FLAT CONFIGURATION. OTHER FACE FINISHES WILL NOT BE ALLOWED WITHOUT WRITTEN APPROVAL OF OWNER.

BOND CONFIGURATION - RUNNING WITH BONDS NOMINALLY LOCATED AT MIDPOINT VERTICALLY ADJACENT UNITS, IN BOTH STRAIGHT AND CURVED ALIGNMENTS.

EXPOSED SURFACES OF UNITS SHALL BE FREE OF CHIPS, CRACKS OR OTHER IMPERFECTIONS WHEN VIEWED FROM A DISTANCE OF 10 FEET UNDER DIFFUSED LIGHTING.

B. MODULAR CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1372 - STANDARD SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.

C. MODULAR CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING STRUCTURAL AND GEOMETRIC REQUIREMENTS MEASURED IN ACCORDANCE WITH APPROPRIATE REFERENCES:

COMPRESSIVE STRENGTH = 3000 PSI MINIMUM; ABSORPTION = 8% MAXIMUM (6% IN NORTHERN STATES) FOR STANDARD WEIGHT AGGREGATES;

DIMENSIONAL TOLERANCES = ±1/8" FROM NOMINAL UNIT DIMENSIONS NOT INCLUDING ROUGH SPLIT FACE, ±1/16"

UNIT HEIGHT - TOP AND BOTTOM PLANES; UNIT SIZE - 8" (H) x 18" (W) x 12" (D) MINIMUM;

UNIT WEIGHT - 75 LBS/UNIT MINIMUM FOR STANDARD WEIGHT AGGREGATES;

INTER-UNIT SHEAR STRENGTH - 1000 PLF MINIMUM AT 2 PSI NORMAL PRESSURE; AT 2 PSI NORMAL FORCE.

GEOGRID/UNIT PEAK CONNECTION STRENGTH - 1000 PLF MINIMUM

D. MODULAR CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING CONSTRUCTABILITY REQUIREMENTS: (IF APPLICABLE)

VERTICAL SETBACK = 1/8"± PER COURSE (NEAR VERTICAL) OR 1"+ PER COURSE PER THE DESIGN; ALIGNMENT AND GRID POSITIONING MECHANISM - FIBERGLASS PINS, TWO PER UNIT MINIMUM;

MAXIMUM HORIZONTAL GAP BETWEEN ERECTED UNITS SHALL BE - 1/2 INCH.

2.02 SHEAR CONNECTORS (IF APPLICABLE)

A. SHEAR CONNECTORS SHALL BE 1/2 INCH DIAMETER THERMOSET ISOPTHALIC POLYESTER RESIN-PROTRUDED FIBERGLASS REINFORCEMENT RODS OR EQUIVALENT TO PROVIDE CONNECTION BETWEEN VERTICALLY AND HORIZONTALLY ADJACENT UNITS. STRENGTH OF SHEAR CONNECTORS BETWEEN VERTICAL ADJACENT UNITS SHALL BE APPLICABLE OVER A DESIGN TEMPERATURE OF 10 DEGREES F TO + 100 DEGREES F. B. SHEAR CONNECTORS SHALL BE CAPABLE OF HOLDING THE GEOGRID IN THE PROPER DESIGN POSITION DURING GRID PRE-TENSIONING AND BACKFILLING.

2.03 BASE LEVELING PAD MATERIAL

A. MATERIAL SHALL CONSIST OF A COMPACTED #57 CRUSHED STONE BASE AS SHOWN ON THE CONSTRUCTION DRAWINGS.

2.04 UNIT DRAINAGE FILL

A. UNIT DRAINAGE FILL SHALL CONSIST OF #57CRUSHED STONE

2.05 REINFORCED BACKFILL

A. REINFORCED BACKFILL SHALL BE TYPE SM, BE FREE OF DEBRIS AND MEET THE FOLLOWING GRADATION TESTED IN ACCORDANCE WITH ASTM D-422 AND MEET OTHER PROPERTIES SHOWN ON THE PLAN:

SIEVE SIZE	PERCENT PASSING
2 INCH	100-75
3/4 INCH	100-75
NO. 40	0-60
NO. 200	0-35

PLASTICITY INDEX (PI) <10 AND LIQUID LIMIT <35 PER ASTM D-4318.

B. MATERIAL CAN BE SITE EXCAVATED SOILS WHERE THE ABOVE REQUIREMENTS CAN BE MET. UNSUITABLE SOILS FOR BACKFILL (HIGH PLASTIC CLAYS OR ORGANIC SOILS) SHALL NOT BE USED IN THE REINFORCED SOIL MASS.

2.06 GEOGRID SOIL REINFORCEMENT

A. GEOSYNTHETIC REINFORCEMENT SHALL CONSIST OF GEOGRIDS MANUFACTURED SPECIFICALLY FOR SOIL REINFORCEMENT APPLICATIONS AND SHALL BE MANUFACTURED FROM HIGH TENACITY POLYESTER YARN.

2.07 DRAINAGE PIPE

A. THE DRAINAGE PIPE SHALL BE PERFORATED CORRUGATED HDPE PIPE MANUFACTURED IN ACCORDANCE WITH ASTM D-1248.

PART 3 EXECUTION

3.01 EXCAVATION

A. CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. OWNER'S REPRESENTATIVE SHALL BE RESPONSIBLE FOR INSPECTING AND APPROVING THE EXCAVATION PRIOR TO PLACEMENT OF LEVELING MATERIAL OR FILL SOILS.

3.02 BASE LEVELING PAD

A. LEVELING PAD MATERIAL SHALL BE PLACED TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS, TO A MINIMUM THICKNESS OF 6 INCHES AND EXTEND LATERALLY A MINIMUM OF 6" IN FRONT AND BEHIND THE MODULAR WALL UNIT.

B. LEVELING PAD SHALL BE PREPARED TO INSURE FULL CONTACT TO THE BASE SURFACE OF THE CONCRETE UNITS.

3.03 MODULAR UNIT INSTALLATION

A. FIRST COURSE OF UNITS SHALL BE PLACED ON THE LEVELING PAD AT THE APPROPRIATE LINE AND GRADE. ALIGNMENT AND LEVEL SHALL BE CHECKED IN ALL DIRECTIONS AND INSURE THAT ALL UNITS ARE IN FULL CONTACT WITH THE BASE AND PROPERLY SEATED.

B. PLACE THE FRONT OF UNITS SIDE-BY-SIDE. DO NOT LEAVE GAPS BETWEEN ADJACENT UNITS. LAYOUT OF CORNERS AND CURVES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

C. INSTALL SHEAR/CONNECTING DEVICES PER MANUFACTURER'S RECOMMENDATIONS.

D. PLACE AND COMPACT DRAINAGE FILL WITHIN AND BEHIND WALL UNITS. PLACE AND COMPACT BACKFILL SOIL BEHIND DRAINAGE FILL. FOLLOW WALL ERECTION AND DRAINAGE FILL CLOSELY WITH STRUCTURE BACKFILL.

E. MAXIMUM STACKED VERTICAL HEIGHT OF WALL UNITS, PRIOR TO UNIT DRAINAGE FILL AND BACKFILL PLACEMENT AND COMPACTION, SHALL NOT EXCEED THREE COURSES.

3.04 STRUCTURAL GEOGRID INSTALLATION

A. GEOGRID SHALL BE ORIENTED WITH THE HIGHEST STRENGTH AXIS PERPENDICULAR TO THE WALL ALIGNMENT.

B. GEOGRID REINFORCEMENT SHALL BE PLACED AT THE STRENGTHS, LENGTHS, AND ELEVATIONS SHOWN ON THE CONSTRUCTION DESIGN DRAWINGS OR AS DIRECTED BY THE ENGINEER.

C. THE GEOGRID SHALL BE LAID HORIZONTALLY ON COMPACTED BACKFILL AND ATTACHED TO THE MODULAR WALL UNITS. PLACE THE NEXT COURSE OF MODULAR CONCRETE UNITS OVER THE GEOGRID. THE GEOGRID SHALL BE PULLED TAUT, AND ANCHORED PRIOR TO BACKFILL PLACEMENT ON THE GEOGRID.

D. GEOGRID REINFORCEMENTS SHALL BE CONTINUOUS THROUGHOUT THEIR EMBEDMENT LENGTHS AND PLACED SIDE-BY-SIDE TO PROVIDE 100% COVERAGE AT EACH LEVEL. SPLICED CONNECTIONS BETWEEN SHORTER PIECES OF GEOGRID OR GAPS BETWEEN ADJACENT PIECES OF GEOGRID ARE NOT PERMITTED.

3.05 REINFORCED BACKFILL PLACEMENT

A. REINFORCED BACKFILL SHALL BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF SLACK IN THE GEOGRID AND INSTALLATION DAMAGE.

B. REINFORCED BACKFILL SHALL BE PLACED AND COMPACTED IN LIFTS NOT TO EXCEED 6 INCHES WHERE HAND COMPACTION IS USED, OR 8 - 10 INCHES WHERE HEAVY COMPACTION EQUIPMENT IS USED. LIFT THICKNESS SHALL BE DECREASED TO ACHIEVE THE REQUIRED DENSITY AS REQUIRED.

C. REINFORCED BACKFILL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D698. THE MOISTURE CONTENT OF THE BACKFILL MATERIAL PRIOR TO AND DURING COMPACTION SHALL BE UNIFORMLY DISTRIBUTED THROUGHOUT EACH LAYER AND SHALL BE + 3% TO - 3% OF OPTIMUM.

D. ONLY LIGHTWEIGHT HAND-OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN 3 FEET FROM THE TAIL OF THE MODULAR CONCRETE UNIT.

E. TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY UPON THE GEOGRID REINFORCEMENT. A MINIMUM FILL THICKNESS OF 6 INCHES IS REQUIRED PRIOR TO OPERATION OF TRACKED VEHICLES OVER THE GEOGRID. TRACKED VEHICLE TURNING SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FROM DISPLACING THE FILL AND DAMAGING THE GEOGRID.

F. RUBBER TIRED EQUIPMENT MAY PASS OVER GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.

G. AT THE END OF EACH DAY'S OPERATION, THE CONTRACTOR SHALL SLOPE THE LAST LIFT OF REINFORCED BACKFILL AWAY FROM THE WALL UNITS TO DIRECT RUNOFF AWAY FROM WALL FACE. THE CONTRACTOR SHALL NOT ALLOW SURFACE RUNOFF FROM ADJACENT AREAS TO ENTER THE WALL CONSTRUCTION SITE.

3.06 CAP INSTALLATION

A. CAP UNITS SHALL BE GLUED TO UNDERLYING UNITS WITH AN ALL-WEATHER ADHESIVE RECOMMENDED BY THE MANUFACTURER.

3.07 FIELD QUALITY CONTROL

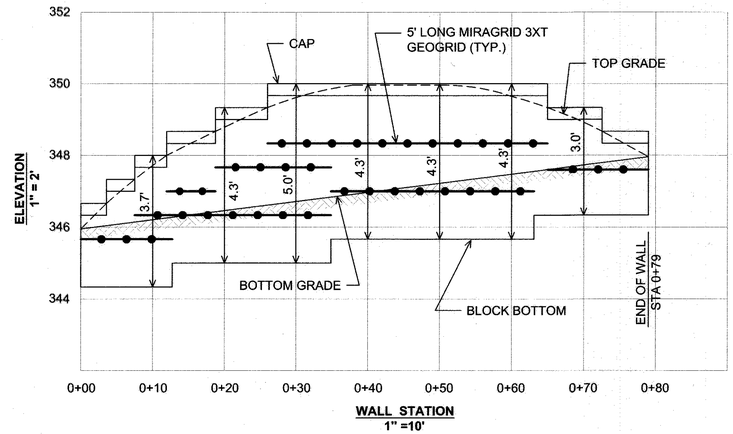
A. THE OWNER SHALL ENGAGE INSPECTION AND TESTING SERVICES, INCLUDING INDEPENDENT LABORATORIES, TO PROVIDE QUALITY ASSURANCE AND TESTING SERVICES DURING CONSTRUCTION.

B. AS A MINIMUM, QUALITY ASSURANCE TESTING SHOULD INCLUDE FOUNDATION SOIL INSPECTION, SOIL AND BACKFILL TESTING, VERIFICATION OF DESIGN PARAMETERS, AND OBSERVATION OF CONSTRUCTION FOR GENERAL COMPLIANCE WITH DESIGN DRAWINGS AND SPECIFICATIONS.

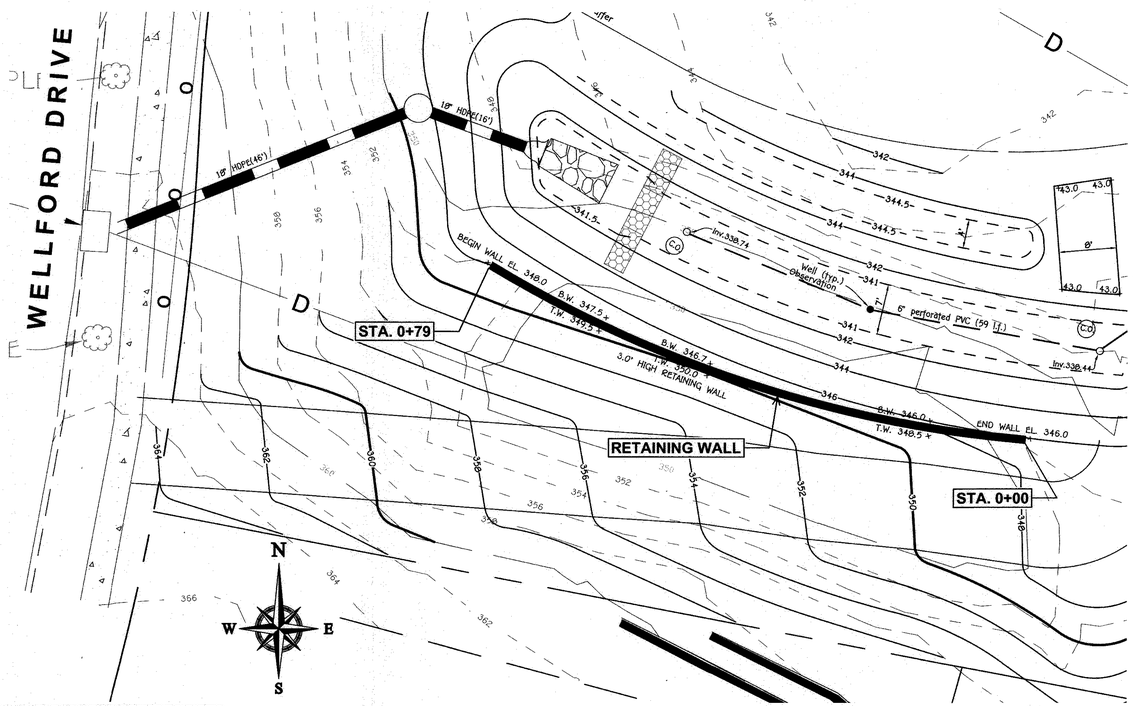
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS	DATE 11/28/2016
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 12/5/16
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 12-1-16

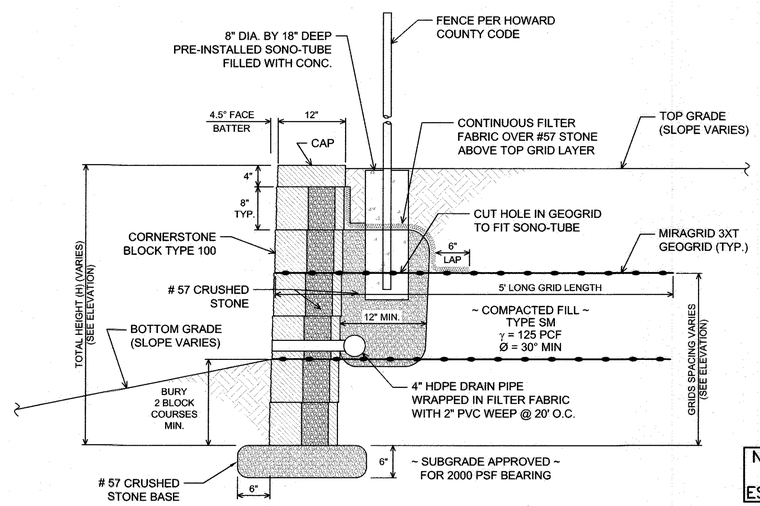
NO.	DESCRIPTION	DATE
	REVISIONS	



WALL ELEVATION



WALL LOCATION PLAN
1" = 10'



TYPICAL WALL SECTION
N.T.S.

NOTE: THE PURPOSE OF THIS PLAN IS TO ADD A RETAINING WALL TO ESD NO. 2 ON OPEN SPACE LOT 110

REVISED
FINAL ROAD CONSTRUCTION PLAN
CENTENNIAL LAKE OVERLOOK
(FORMERLY MASON PROPERTY)
SECTION TWO
BUILDABLE LOTS 29 THRU 98
AND OPEN SPACE LOTS 99 THRU 112
A RESUBDIVISION OF BUILDABLE BULK PARCELS 'A' & 'B'
ZONING: R-20
TAX MAP No. 30 GRID No. 2 PARCEL No. 86
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: NOVEMBER 7, 2016
SHEET 40 OF 40

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 14434, EXPIRATION DATE: 05/13/17.

STATE OF MARYLAND — RICHARD WARREN SHEPHERD — No. 14434 — REGISTERED PROFESSIONAL ENGINEER

OWNER/DEVELOPER
BEAZER HOMES CORP
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COLUMBIA, MARYLAND 21046
(410-720-5071)

HILLIS-CARNES ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A Annapolis Junction, Maryland
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F-14-081