

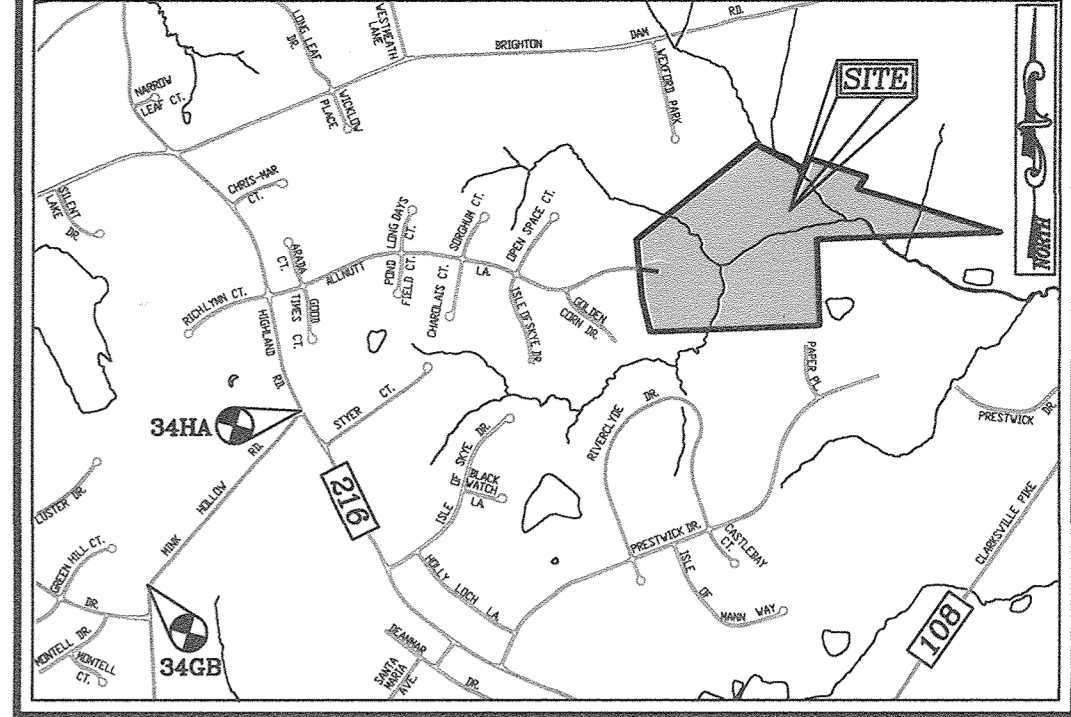
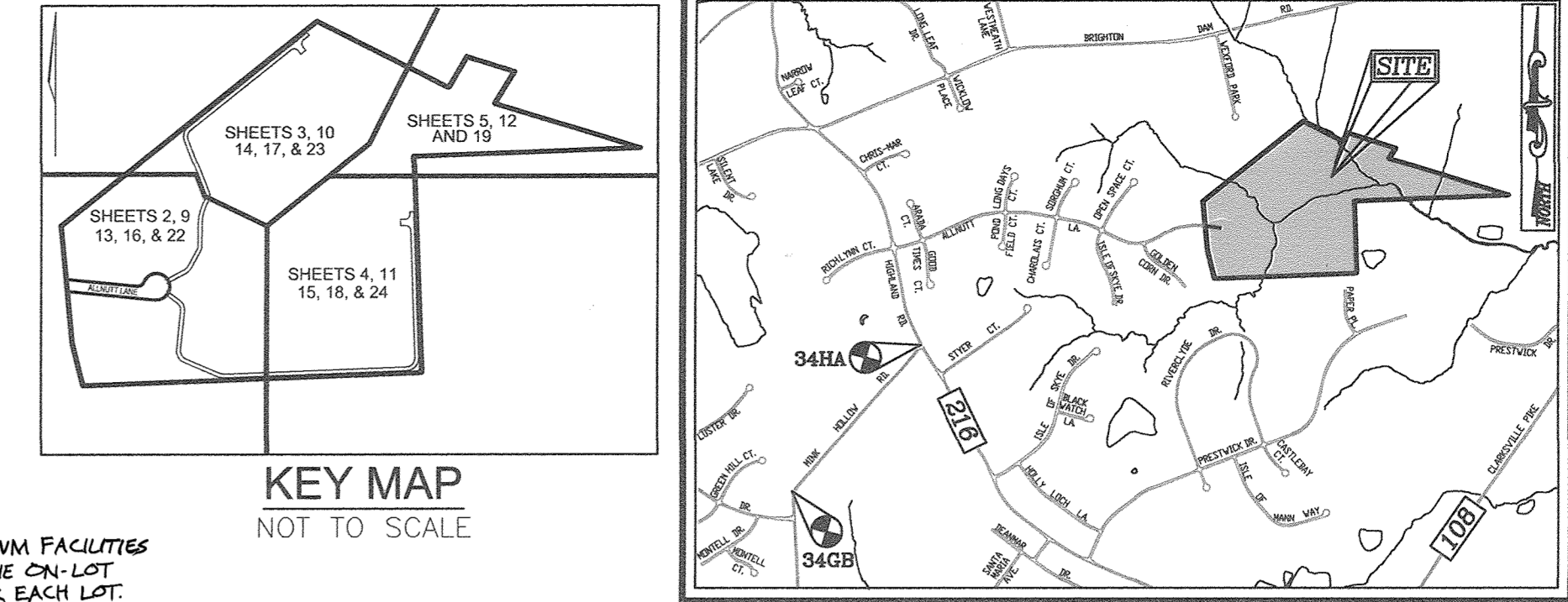
FINAL ROAD CONSTRUCTION PLAN

THE ESTATES AT RIVER HILL

LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'

A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1
13550 ALLNUTT LANE
HIGHLAND, MD 20777

LOT NUMBER	ADDRESS	GREEN ROOFS	PERMEABLE PAVEMENTS	REINFORCED TURF	DISCONNECTION OF ROOFTOP RUNOFF	DISCONNECTION OF NON-ROOFTOP RUNOFF	SHRETHLOW TO CONSERVATION AREAS	RAINWATER HARVESTING	SUBMERGED GRAVE WETLANDS	LANDSCAPE INFILTRATION	INFILTRATION BERMS	DRY WELLS	MICRO-BIORETENTION	RAIN GARDENS	SWALES	ENHANCED FILTERS
1	13550 ALLNUTT LANE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2	13550 ALLNUTT LANE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
3	13550 ALLNUTT LANE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
4	13550 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5	13550 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6	13550 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
7	13550 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
8	13550 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
9	13550 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
10	13550 ALLNUTT LANE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
11	13550 ALLNUTT LANE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
12	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
13	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
14	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
15	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
16	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
17	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
18	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
19	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
20	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
22	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
23	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
24	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
25	13550 OLIVIA WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO



[Symbol]	PROPERTY LINE
[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	ADJACENT PROPERTY LINE
[Symbol]	EXISTING EDGE OF PAVING
[Symbol]	EXISTING STREAM BUFFER
[Symbol]	EXISTING STREAM
[Symbol]	EXISTING WETLANDS
[Symbol]	EXISTING WETLAND BUFFER
[Symbol]	EX. PUBLIC 100-YEAR FLOOD PLAN
[Symbol]	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
[Symbol]	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
[Symbol]	EX. 25' EASEMENT FOR INGRESS AND EGRESS TO LOT 17 AND LOT 1 GREEN PROP. (PRIVATE) (PLAT 7671)
[Symbol]	EX. 24' WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
[Symbol]	EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
[Symbol]	EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 4622)
[Symbol]	PROP. PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
[Symbol]	PROP. 35' PRIVATE MONUMENT EASEMENT

LOCATION: TAX MAP 34, BLOCK 23
PARCEL: 389
5TH ELECTION DISTRICT
PRES. ZONING: RR-DEO
GROSS AREA OF PROJECT: 42.60 AC.
AREA OF RIGHT-OF-WAY DEDICATION: 0.59 AC.
PROPOSED USE OF SITE: RESIDENTIAL (SFD)
NUMBER OF RESIDENTIAL LOTS PROPOSED: 16 LOTS
AREA OF RESIDENTIAL LOTS PROPOSED: 20.83 AC.
AREA OF STREAM/BUFFER: 12.75 AC.
AREA OF WETLANDS/BUFFER: 9.22 AC.
AREA OF MODERATE SLOPES (15% - 24.99%): 0.00 AC.
AREA OF STEEP SLOPES (25% OR GREATER): 0.00 AC.
NET PROJECT AREA: 35.10 AC.
AREA OF EXISTING FOREST COVER: 12.60 AC.
AREA OF EXISTING FOREST COVER: 0.39 AC.
LIMIT OF DISTURBANCE: 6.96 AC.
AREA MANAGED BY ESDV (THIS PLAN): 6.96 AC.
MATURED AREA: 1.65 AC.
"GREEN" AREA: 4.78 AC.
DZP REFERENCES: ECP-16-004, WP-17-034, WP-17-128
SP-17-007

NO.	NORTH	EAST
214	558328.06	1324120.01
215	558033.30	1324682.79
216	558178.52	1324741.93
1013	558109.27	1324836.26
1014	557988.66	1324892.36
1015	557795.15	1324524.04
1009	557755.35	1324519.72
1007	556980.38	1324553.50
1004	556805.64	1323153.64
1000	556980.60	1323111.42
1010	557467.58	1323075.68

LOT	GROSS AREA	PIPESTEM AREA	NET AREA
1	48,313 SF	N/A	48,313 SF
2	52,769 SF	N/A	52,769 SF
3	50,112 SF	N/A	50,112 SF
4	53,373 SF	7,788 SF	45,585 SF
5	50,875 SF	7,256 SF	43,619 SF
6	50,227 SF	6,725 SF	43,502 SF
7	48,991 SF	6,193 SF	42,798 SF
8	58,803 SF	4,131 SF	54,672 SF
9	51,515 SF	3,430 SF	48,085 SF
10	41,257 SF	N/A	41,257 SF
11	44,194 SF	N/A	44,194 SF
12	48,837 SF	2,055 SF	46,782 SF
13	56,315 SF	4,012 SF	52,303 SF
14	57,679 SF	4,773 SF	52,906 SF
15	51,839 SF	5,574 SF	46,265 SF
B.P.P. 'A'	3.27 AC.	0.15 AC.	3.12 AC.

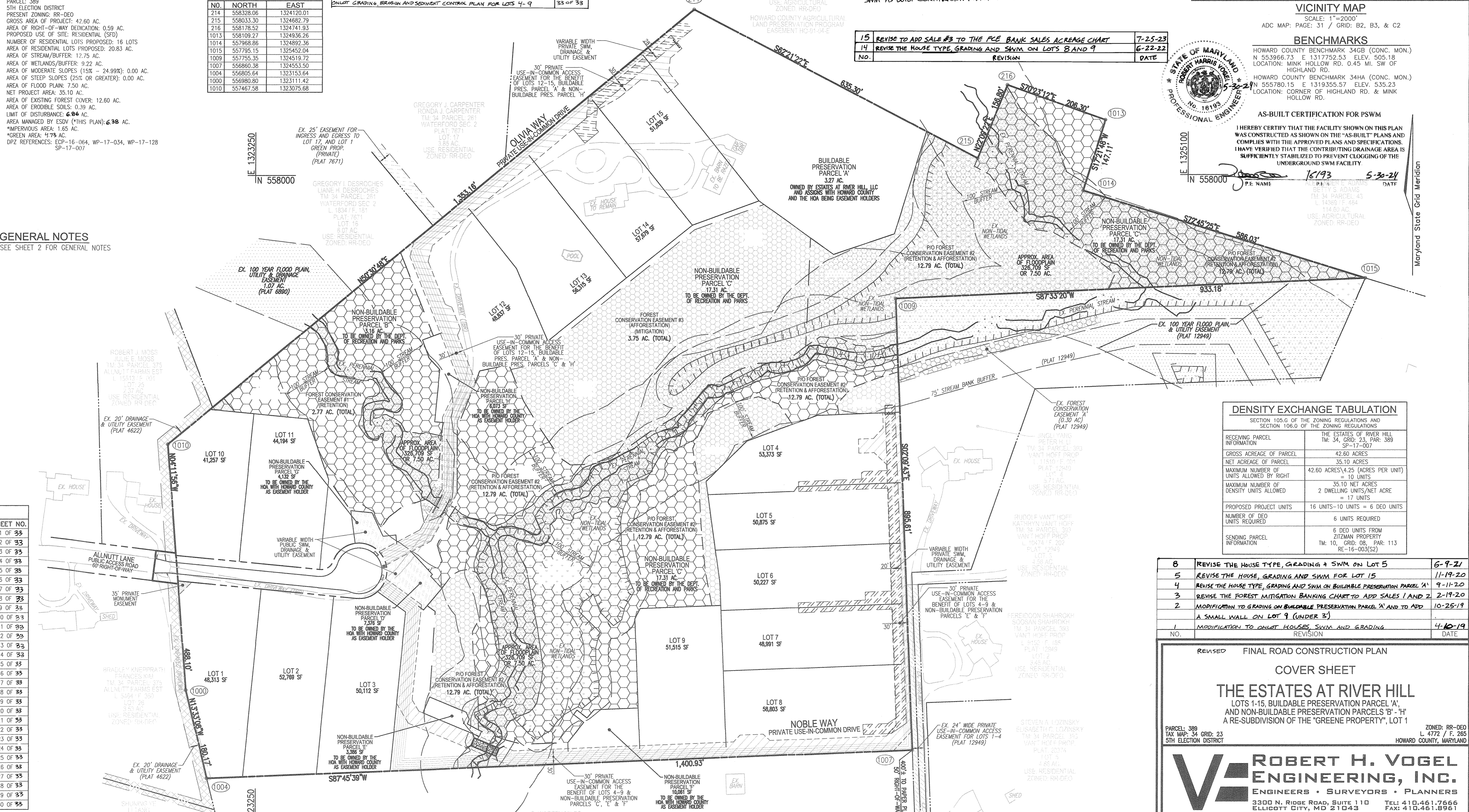
DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 33
GENERAL NOTES AND SITE DETAILS	2 OF 33
PUBLIC ROAD PLAN, PROFILES AND DETAILS	3 OF 33
OLIVIA WAY (PRIVATE USE-IN-COMMON) PROFILE AND DETAILS	4 OF 33
NOBLE WAY (PRIVATE USE-IN-COMMON) PROFILE AND DETAILS	5 OF 33
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SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN AND DRAINAGE MAP	7 OF 33
SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN AND DRAINAGE MAP	8 OF 33
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GENERAL NOTES
SEE SHEET 2 FOR GENERAL NOTES

ON-LOT GRADING, EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 1-3, 10 & 11	31 OF 33
ON-LOT GRADING, EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 12-15 & BUILDABLE PRESERVATION PARCEL 'A'	32 OF 33
ON-LOT GRADING, EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 4-9	33 OF 33

ON-LOT SWM NOTE:
THE AS-BUILT FOR THE ON-LOT SWM FACILITIES WAS PROVIDED AS PART OF THE ON-LOT SWM AS-BUILT CERTIFICATION FOR EACH LOT.

NO.	REVISION	DATE
15	REVISE TO ADD SALE #3 TO THE PCE BANK SALES ACRES CHART	7-25-23
14	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOTS 8 AND 9	6-22-22



RECEIVING PARCEL INFORMATION	THE ESTATES AT RIVER HILL TM. 34, GRID. 23, PAR. 389 SP-17-007
GROSS ACRES OF PARCEL	42.60 ACRES
NET ACRES OF PARCEL	35.10 ACRES
CROSS SECTION OF PARCEL	42.60 ACRES x 25 (ACRES PER UNIT) UNITS ALLOWED BY RIGHT = 10 UNITS
MAXIMUM NUMBER OF DENSITY UNITS ALLOWED	35.10 NET ACRES 2 DWELLING UNITS/NET ACRE = 17 UNITS
PROPOSED PROJECT UNITS	16 UNITS - 10 UNITS = 6 DED UNITS
NUMBER OF DED UNITS REQUIRED	6 UNITS REQUIRED
SENDING PARCEL INFORMATION	6 DED UNITS FROM ZITMAN PROPERTY TM. 10, GRID. 08, PAR. 113 RE-16-003(G2)

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
11/27/2018
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
12-2-18
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF LAND DEVELOPMENT
CHIEF, DIVISION OF LAND DEVELOPMENT
1-10-19
DATE

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS
COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT
DATE

PARKING TABULATION:
TOTAL NUMBER OF DWELLING UNITS PROPOSED: 16
PARKING SPACES REQUIRED:
OFF-STREET PARKING AND OVERFLOW/GUEST PARKING SPACES
2.0 SPACES PER UNIT = 32 SPACES
PARKING SPACES PROVIDED:
SFD = 2 GARAGE/2 DRIVEWAY
2 SPACES IN GARAGE = 32 SPACES (FOR 16 UNITS)
2 SPACES ON DRIVEWAY = 32 SPACES (FOR 16 UNITS)
-TOTAL REQUIRED = 32 SPACES
-TOTAL PROVIDED = 64 SPACES

NO.	REVISION	DATE
13	REVISE THE PLAN TO ADD AN EXTRA DRYWELL TO LOT 7 AND MODIFY THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESD PRACTICES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21

OWNER
ESTATES AT RIVER HILL, LLC
MICHAEL PFALZ, MEMBER
3675 PARK AVE., SUITE 301
ELLICOTT CITY, MD 21043
(410) 480-0023

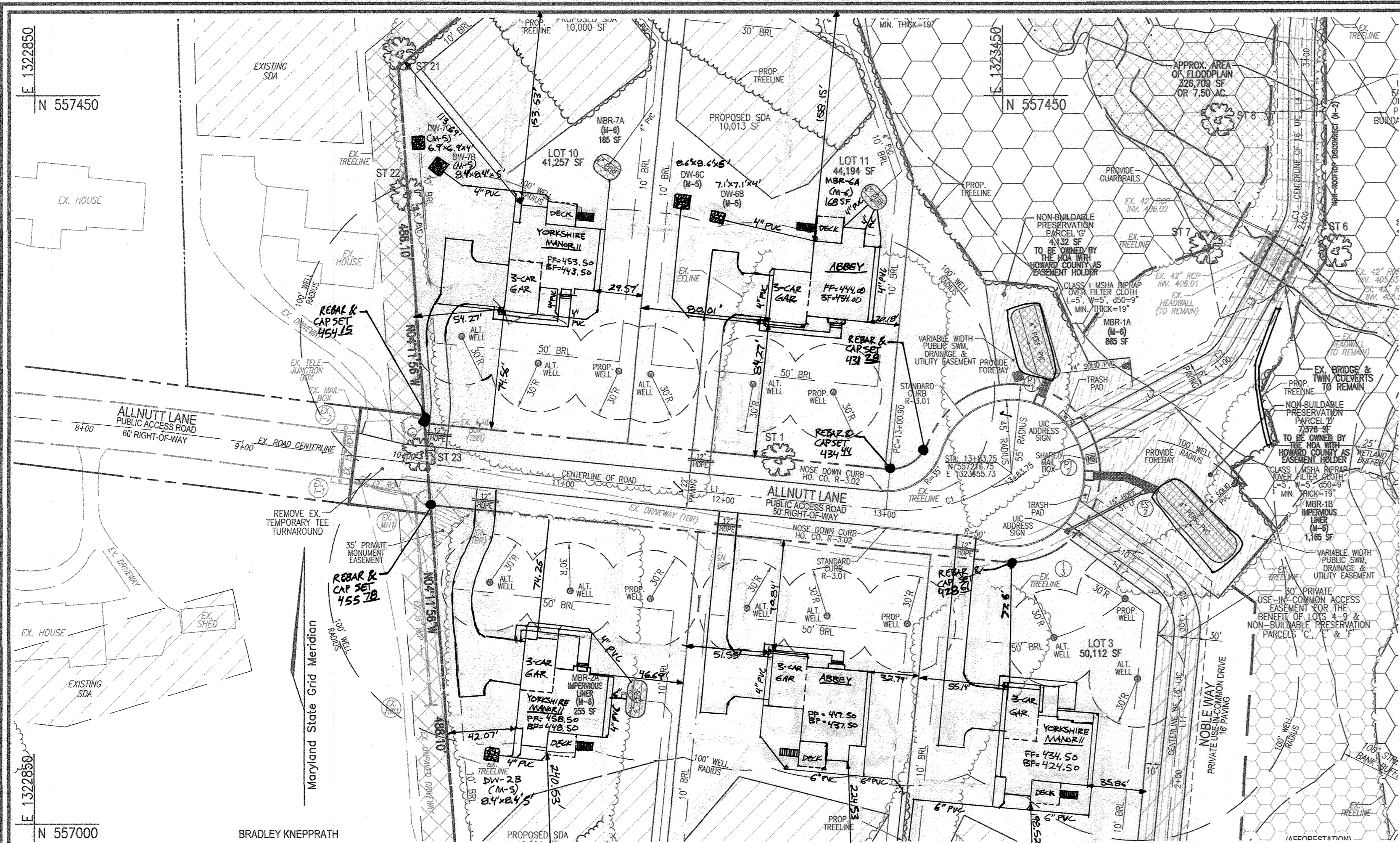
DEVELOPER
TRINITY HOMES MARYLAND, LLC
3675 PARK AVE., SUITE 301
ELLICOTT CITY, MD 21043
(410) 480-0023

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 N. RIDGE ROAD, SUITE 110
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: NOVEMBER 2018
SCALE: AS SHOWN
W.O. NO.: 15-39

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2020

1 SHEET OF 33



ALLNUTT LANE EXTENSION

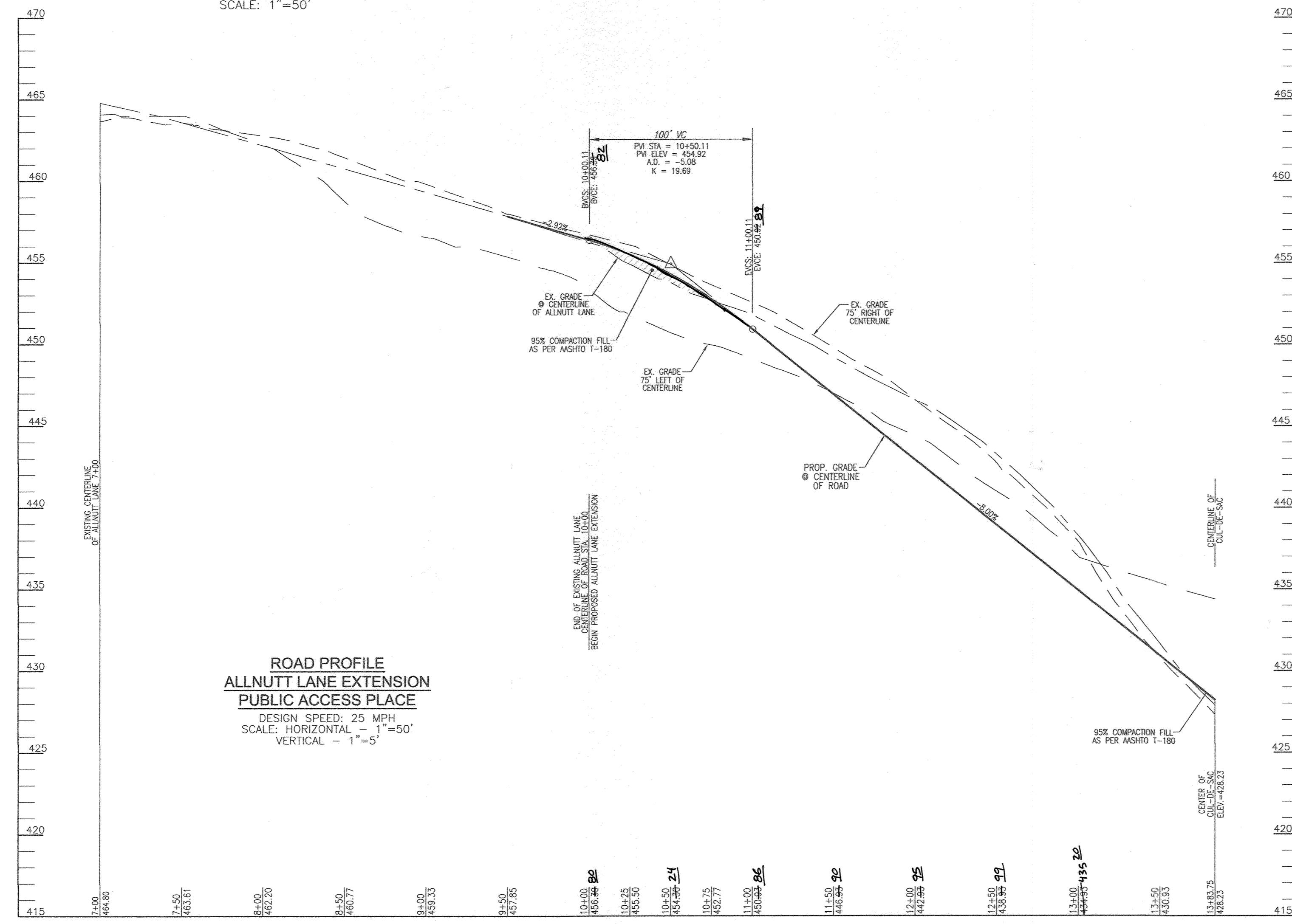
SCALE: 1"=50'

ALLNUTT LANE LINE TABLE

LINE	BEARING	DISTANCE
L1	S84°24'03"E	300.90'

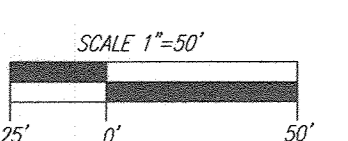
ALLNUTT LANE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TAN	CHORD
C-1	109.00'	82.85'	43°33'01"	43.54'	N73°49'27"E 80.87'



**ROAD PROFILE
ALLNUTT LANE EXTENSION
PUBLIC ACCESS PLACE**

DESIGN SPEED: 25 MPH
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 12-2-18

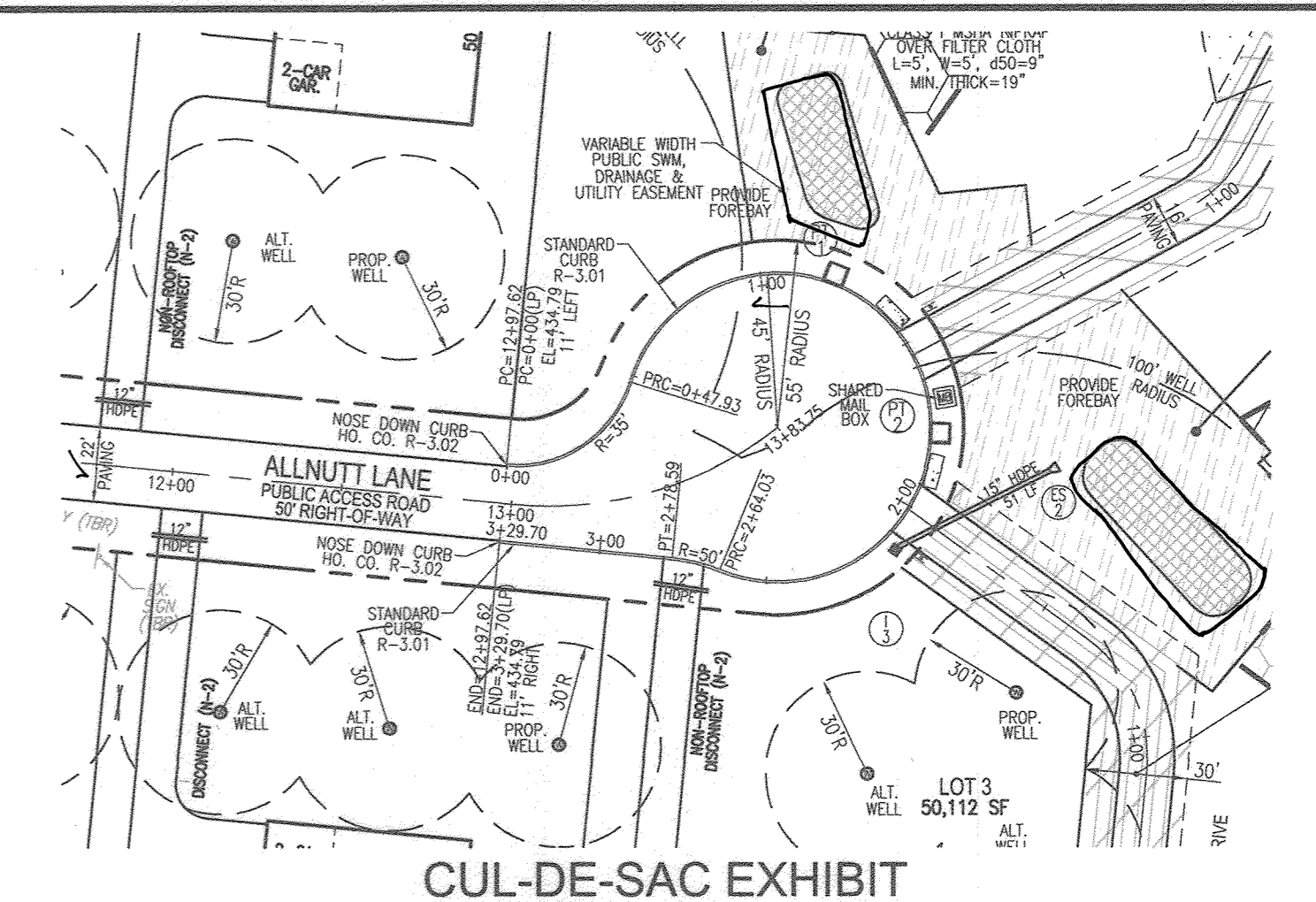
CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 1-10-19

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
- PROP. 25' PRIVATE MONUMENT EASEMENT
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA

NOTE:

MBR-1A AND MBR-1B ARE LOCATED IN A PUBLIC SWM EASEMENT. FACILITIES ARE TO BE PRIVATELY OWNED BY THE HOMEOWNERS ASSOCIATION AND JOINTLY MAINTAINED BY THE HOMEOWNERS ASSOCIATION AND HOWARD COUNTY.

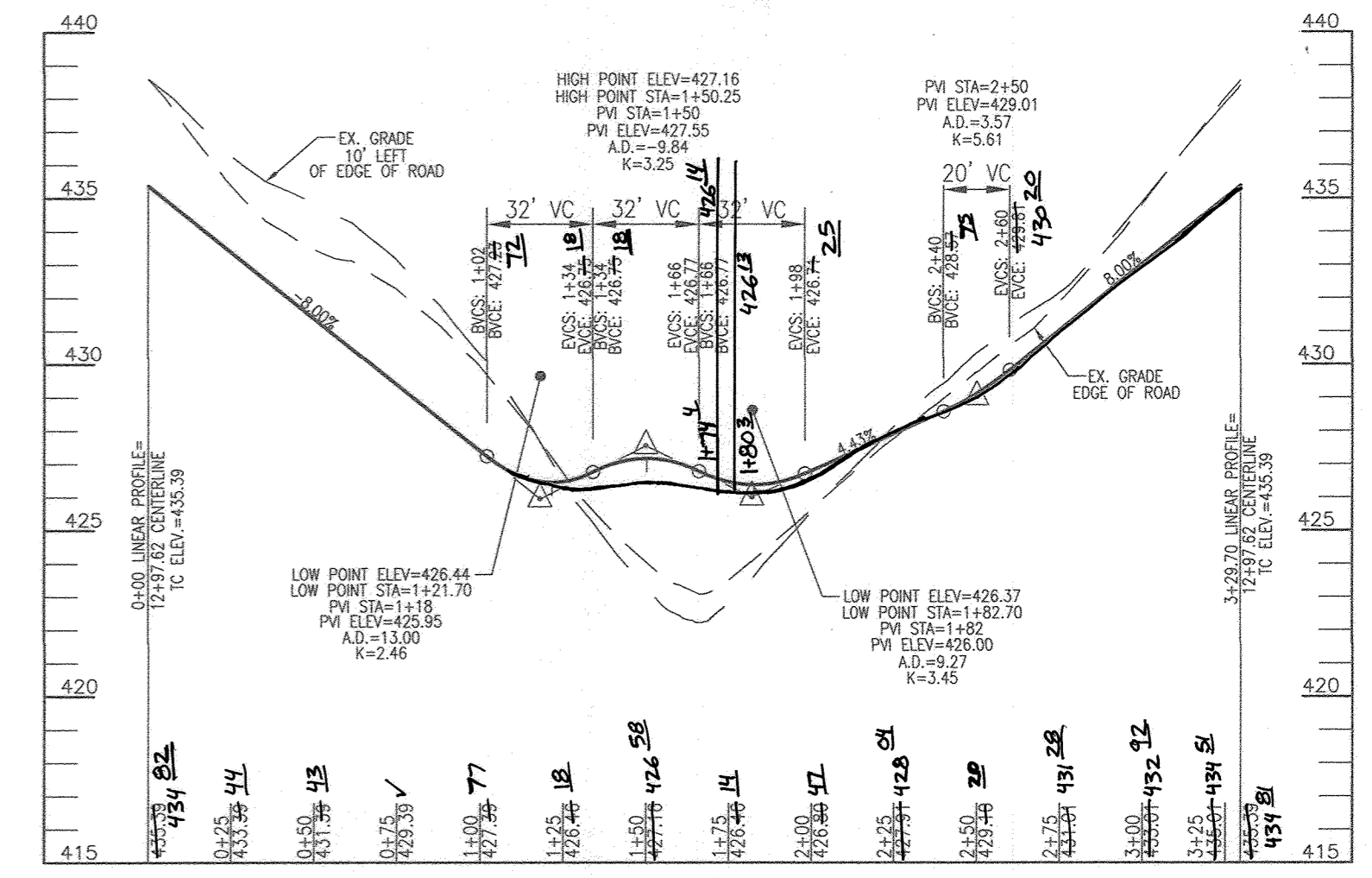


CUL-DE-SAC EXHIBIT

SCALE: 1"=50'

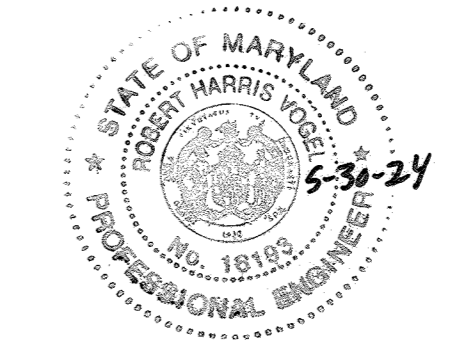
NOTE:

OLIVIA WAY AND NOBLE WAY SHALL UTILIZE HOWARD COUNTY DRIVEWAY DETAIL R-6.05. SEE DETAIL LOCATED ON SHEET 2



**LINEAR PROFILE
ALLNUTT LANE
PUBLIC ACCESS PLACE**

DESIGN SPEED: 25 MPH
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING URBAN AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

NAME: [Signature] P.E. NO. 16193 DATE: 6-30-24

OWNER
ESTATES AT RIVER HILL, LLC
3675 PARK AVE., SUITE 301
ELLICOTT CITY, MD 21043
(410) 480-0023

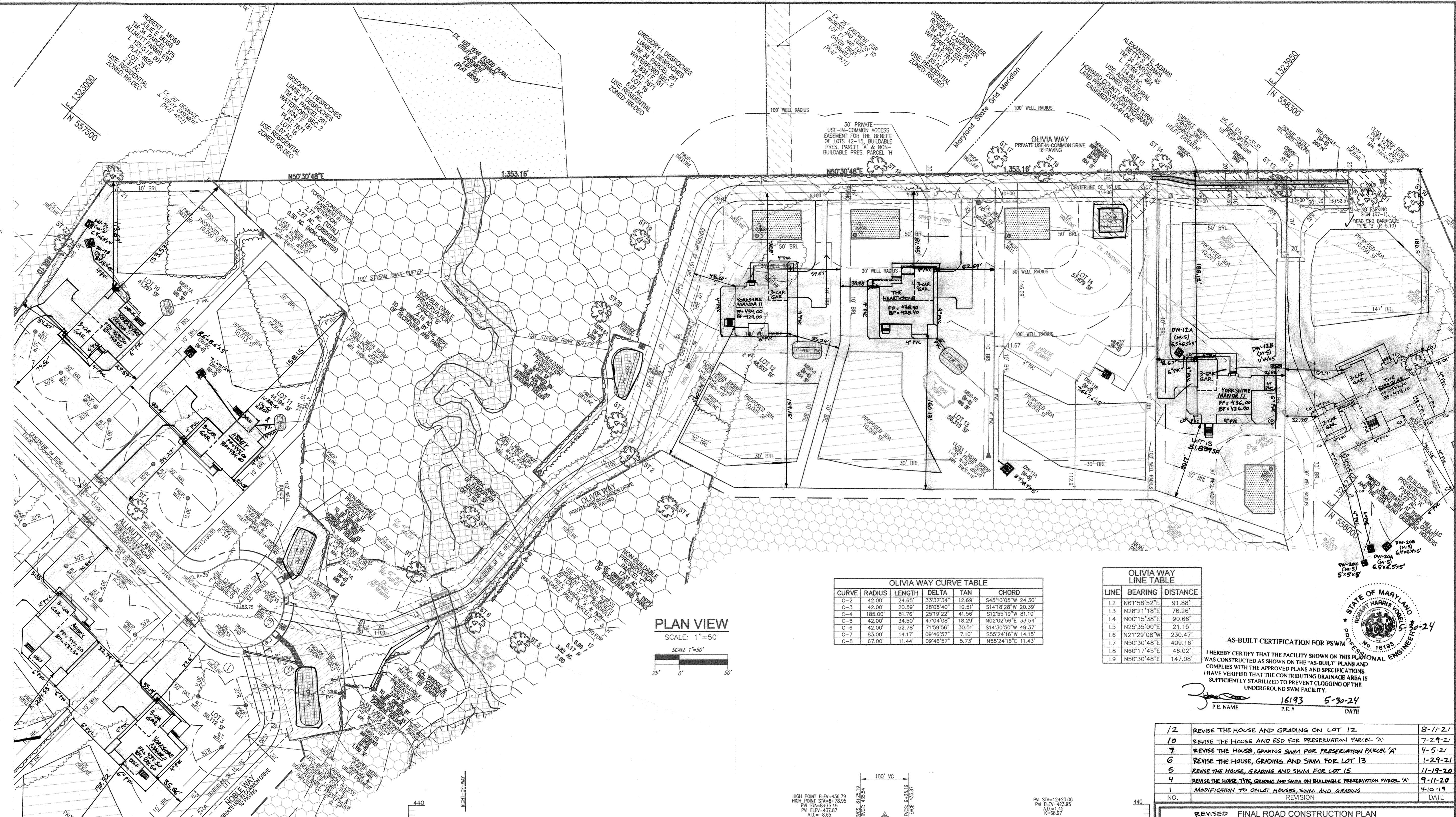
DEVELOPER
TRINITY HOMES MARYLAND, LLC
3675 PARK AVE., SUITE 301
ELLICOTT CITY, MD 21043
(410) 480-0023

NO. MODIFICATION TO EXIST HOUSE SWM AND GRADING		4-10-19
REVISION		DATE
REVISED FINAL ROAD CONSTRUCTION PLAN PUBLIC ROAD PLAN, PROFILES AND DETAILS		
THE ESTATES AT RIVER HILL LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1		
PARCEL: 389	ZONED: RR-DEO	
TAX MAP: 34 GRID: 23	L. 4772 / F. 285	
5TH ELECTION DISTRICT	HOWARD COUNTY, MARYLAND	
ROBERT H. VOGEL ENGINEERING, INC. ENGINEERS • SURVEYORS • PLANNERS 3300 N. RIDGE ROAD, SUITE 110 ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961		
DESIGN BY: RHY		PROFESSIONAL CERTIFICATE I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2026
DRAWN BY: JMR		
CHECKED BY: RHY		
DATE: NOVEMBER 2018		
SCALE: AS SHOWN		
W.O. NO.: 15-39		
3		SHEET OF 33

AS-BUILT DEC. 2023

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
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- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
- PROP. 35' PRIVATE MONUMENT EASEMENT
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA



PLAN VIEW
SCALE: 1"=50'

OLIVIA WAY CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TAN	CHORD
C-2	42.00'	24.65'	33°37'34"	12.69'	S45°10'05"W 24.30'
C-3	42.00'	20.59'	28°05'40"	10.51'	S14°8'28"W 20.39'
C-4	185.00'	81.76'	25°19'22"	41.56'	S12°35'19"W 81.10'
C-5	42.00'	34.50'	43°04'08"	18.39'	N02°12'56"E 33.54'
C-6	42.00'	52.78'	71°59'56"	30.51'	S14°30'50"W 49.37'
C-7	83.00'	14.17'	09°46'57"	7.10'	S55°24'16"W 14.15'
C-8	87.00'	11.44'	09°46'57"	5.73'	N55°24'16"E 11.43'

OLIVIA WAY LINE TABLE

LINE	BEARING	DISTANCE
L2	N61°58'52"E	91.88'
L3	N28°21'18"E	76.26'
L4	N00°15'38"E	90.66'
L5	N25°35'00"E	21.15'
L6	N21°29'08"W	230.47'
L7	N50°30'48"E	409.16'
L8	N60°17'45"E	46.02'
L9	N50°30'48"E	147.08'

AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLANALONG ENGINEERING WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

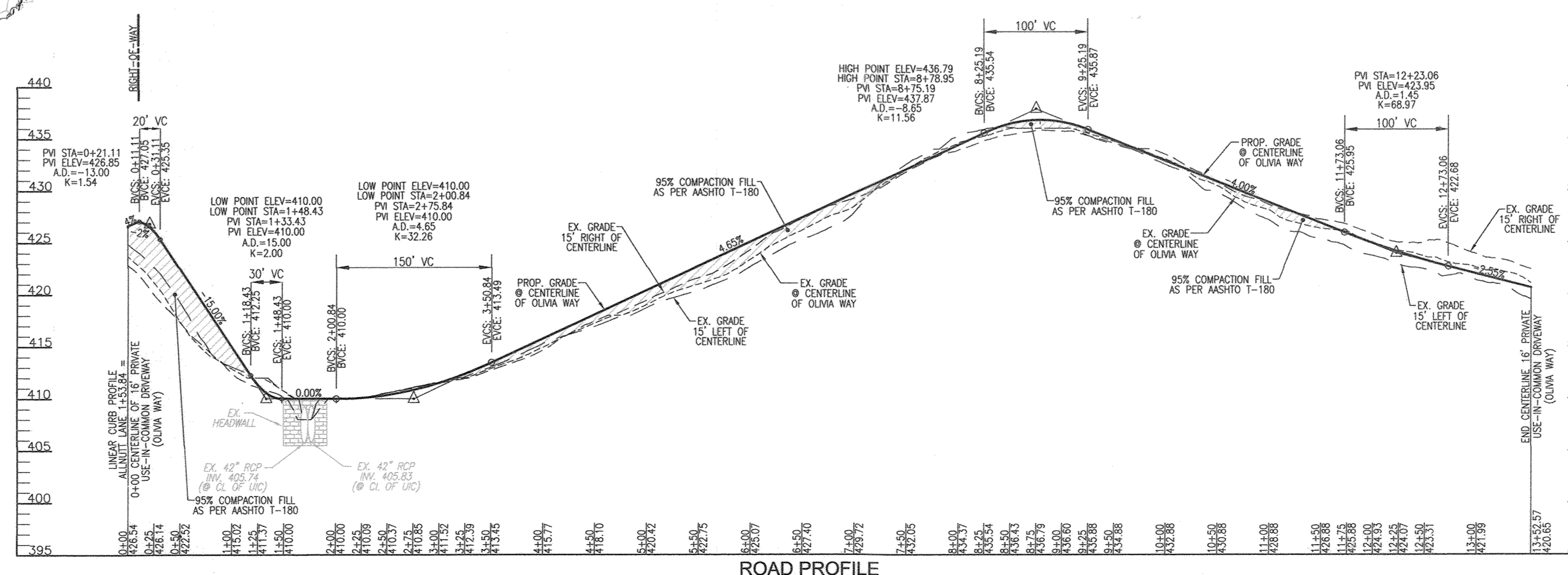
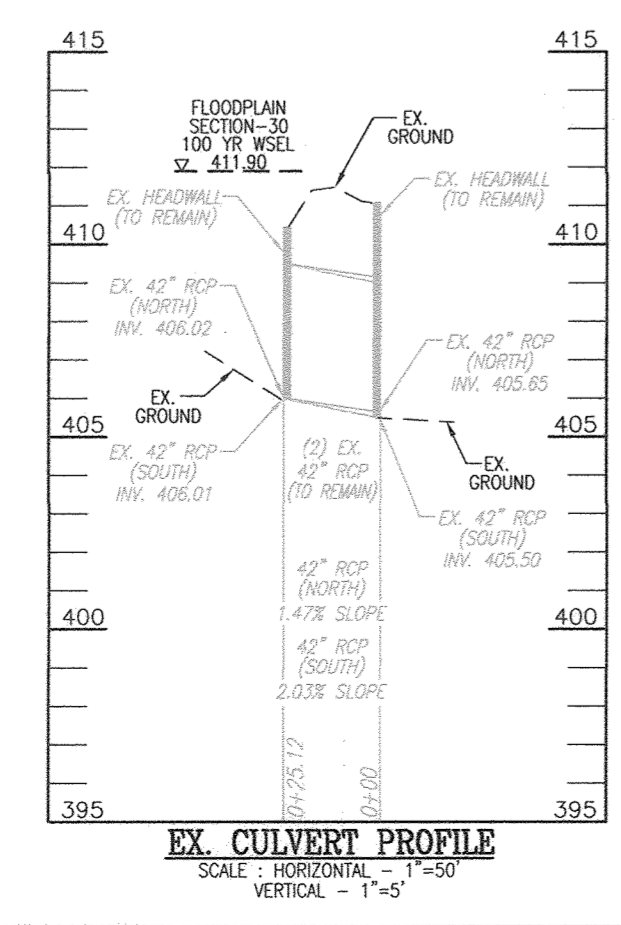
P.E. NAME: **16193** DATE: **5-30-24**

NO.	REVISION	DATE
12	REVISE THE HOUSE AND GRADING ON LOT 12	8-11-21
10	REVISE THE HOUSE AND ESD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM FOR LOT 13	1-29-21
5	REVISE THE HOUSE, GRADING AND SWM FOR LOT 15	11-19-20
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
1	MODIFICATION TO ONLOT HOUSES, SWM AND GRADING	4-10-19

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS *James* 11/27/2018 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *Chad* 12-2-18 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT *Robert* 1-10-19 DATE



OWNER
ESTATES AT RIVER HILL, LLC
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

DEVELOPER
TRINITY HOMES MARYLAND, LLC
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

REVISED FINAL ROAD CONSTRUCTION PLAN
OLIVIA WAY (PRIVATE 16' USE-IN-COMMON)
PROFILE AND DETAILS
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL 389 TAX MAP 34 GRID: 23 ZONED: RR-350
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

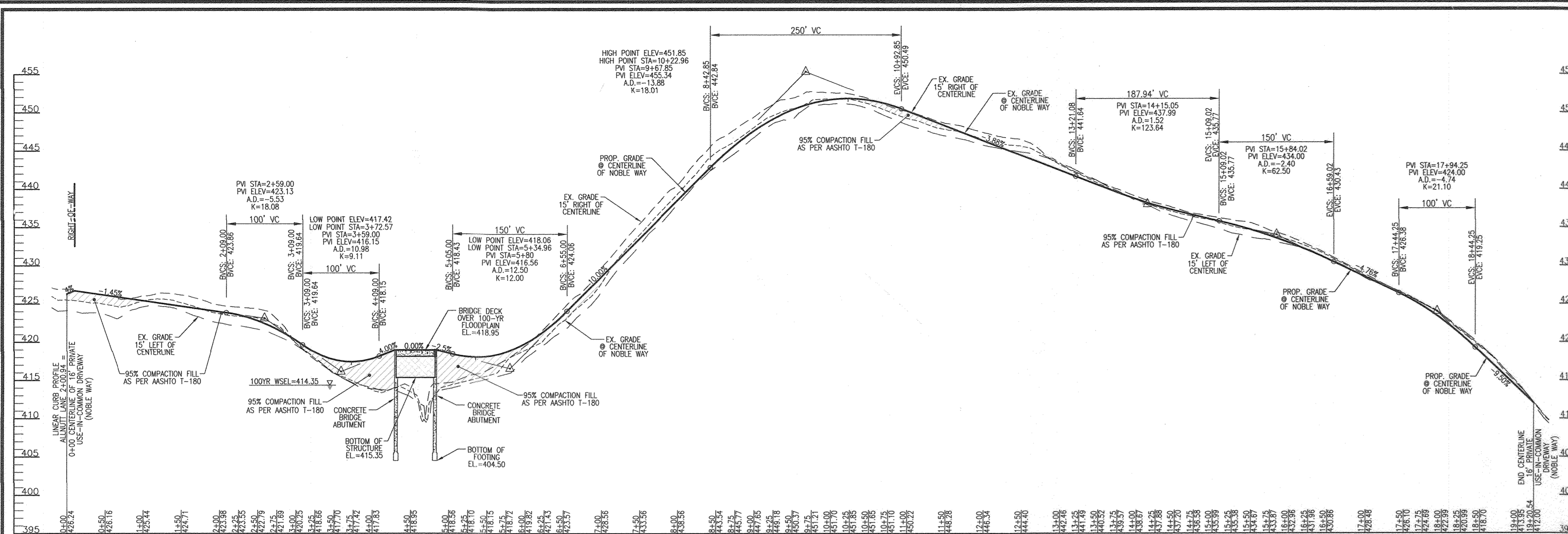
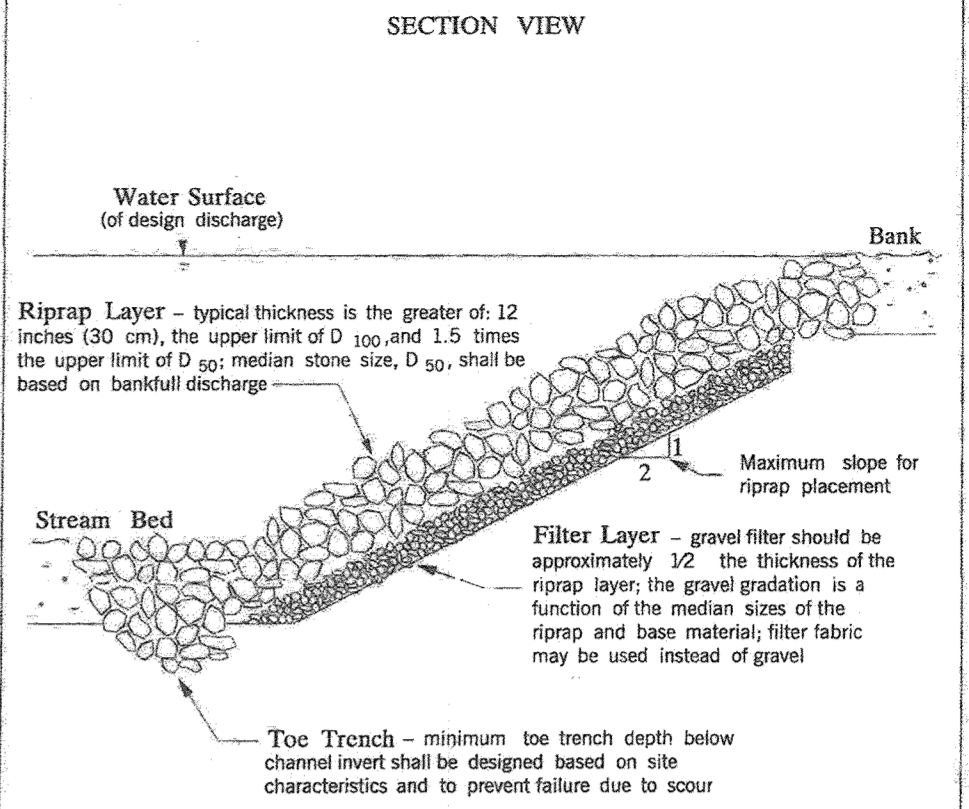
ROBERT H. VOGEL, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3900 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8991

PROFESSIONAL CERTIFICATE

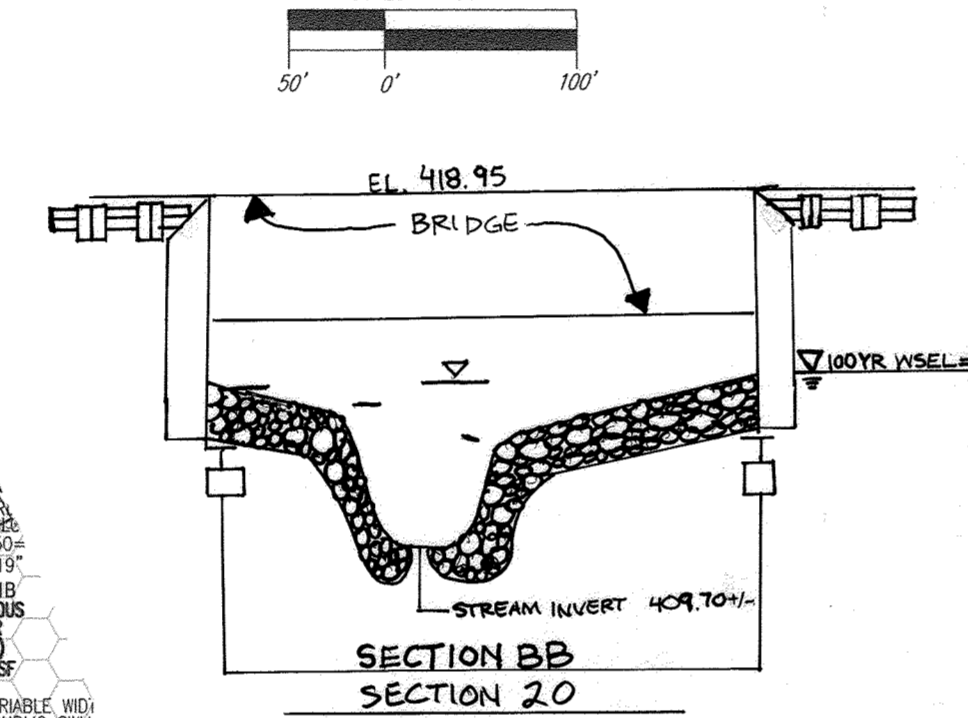
DESIGN BY: *RHV*
 DRAWN BY: *JMR*
 CHECKED BY: *RHV*
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.O. NO.: 15-39

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. MY LICENSE NO. IS 16193. EXPIRATION DATE: 09-23-2025

4 SHEET OF 33



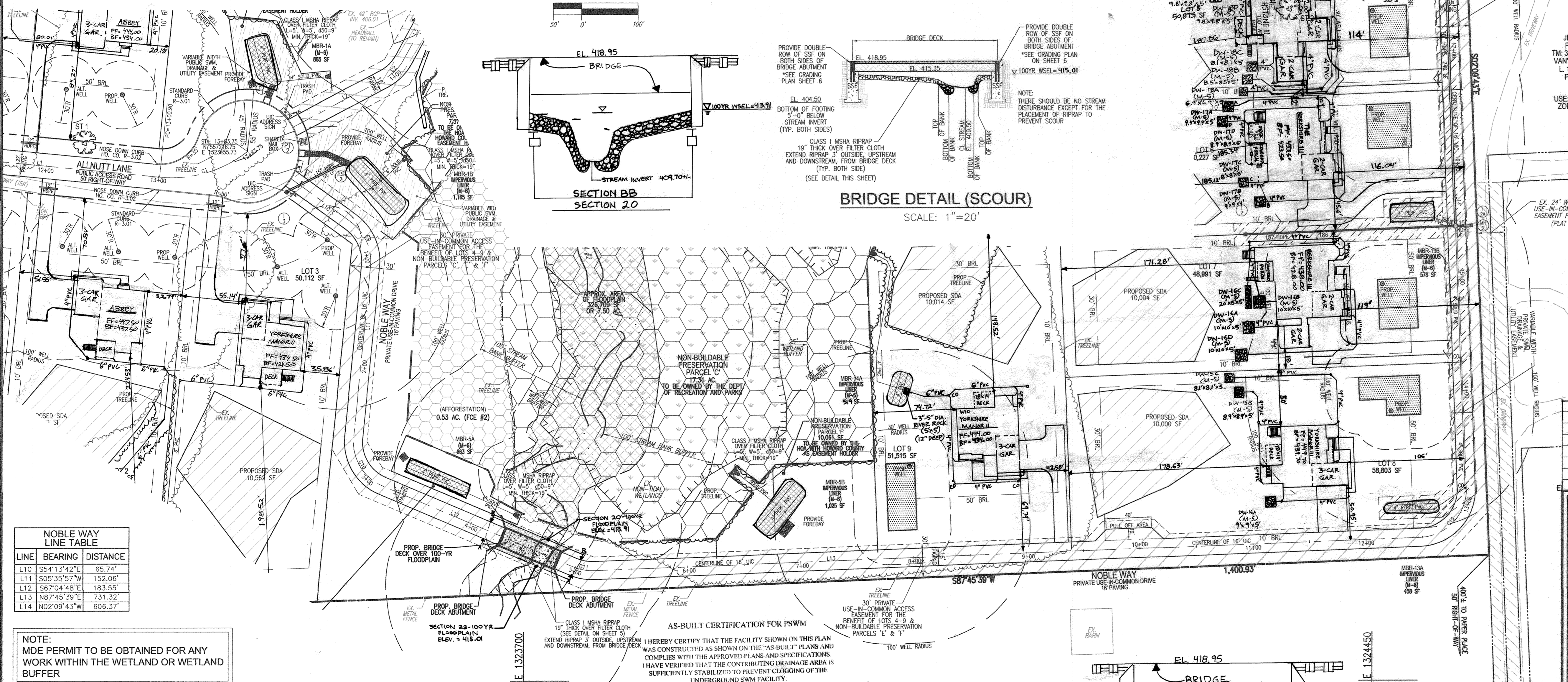
ROAD PROFILE
NOBLE WAY (PRIVATE 16' USE-IN-COMMON)
SCALE: HORIZONTAL - 1"=100'
VERTICAL - 1"=10'



BRIDGE DETAIL (SCOUR)
SCALE: 1"=20'

LEGEND:

[Symbol]	PROPERTY LINE
[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	ADVANT PROPERTY LINE
[Symbol]	EXISTING EDGE OF PAVING
[Symbol]	EXISTING STREAM BUFFER
[Symbol]	EXISTING STREAM
[Symbol]	EXISTING TREELINE
[Symbol]	PROPOSED TREELINE
[Symbol]	EXISTING WETLANDS
[Symbol]	EXISTING WETLAND BUFFER
[Symbol]	EXISTING SPECIMEN TREES
[Symbol]	EXISTING WOOD FENCE
[Symbol]	EXISTING METAL FENCE
[Symbol]	EX. PUBLIC 100-YEAR FLOOD PLAN
[Symbol]	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
[Symbol]	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
[Symbol]	EX. 24' WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
[Symbol]	EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
[Symbol]	PROP. SEWAGE DISPOSAL AREA
[Symbol]	PROP. WELL AREA



NOBLE WAY LINE TABLE

LINE	BEARING	DISTANCE
L10	S54°13'42"E	65.74'
L11	S05°35'57"W	152.06'
L12	S67°04'48"E	183.55'
L13	N67°45'39"E	731.32'
L14	N02°09'43"W	606.37'

NOTE:
MDE PERMIT TO BE OBTAINED FOR ANY WORK WITHIN THE WETLAND OR WETLAND BUFFER

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
11/27/2018
DATE

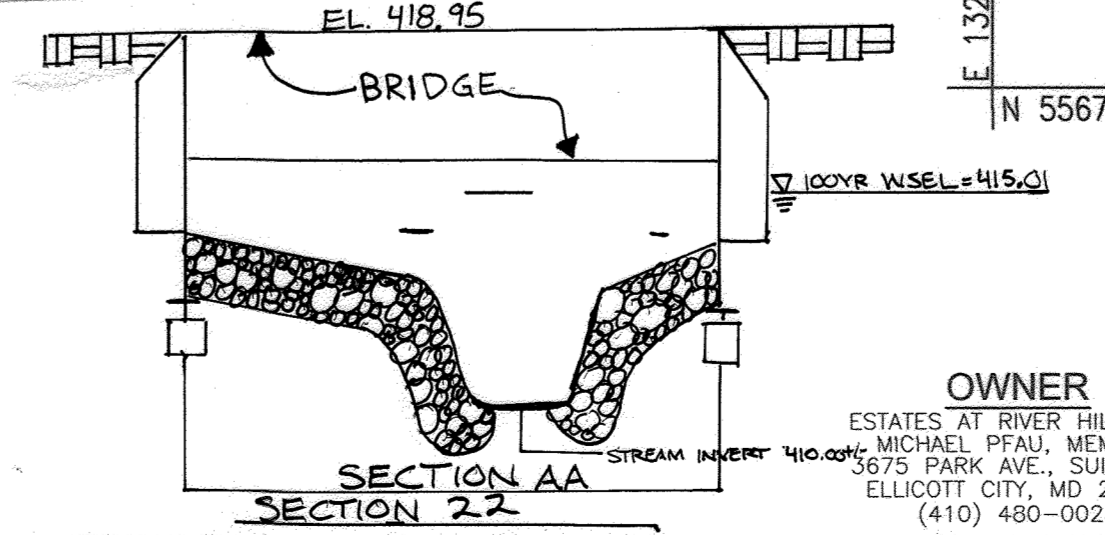
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
12-2-18
DATE

APPROVED: 1-10-19
DATE

NOBLE WAY CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TAN	CHORD
C-9	42.00'	43.89'	159°43'39"	24.18'	S24°18'52"E 41.89'
C-10	42.00'	53.28'	72°40'45"	30.90'	S30°44'25"E 49.78'
C-11	42.00'	18.44'	25°09'33"	9.37'	S79°39'35"E 18.29'
C-12	42.00'	65.92'	89°55'22"	41.94'	N42°47'58"E 59.36'

PLAN VIEW
SCALE: 1"=50'



SECTION AA
SECTION 2.2

NO.	REVISION	DATE
11	REVISE THE PLAN TO ADD AN EXTRA DRIVEWELL TO LOT 7 AND MODIFY THE HOUSE MODEL	11-22-21
10	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, BSP FRAMES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE GRADING & SWM ON LOT 5	6-9-21
7	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
6	MODIFICATION TO OTHER HOUSES, SWM AND GRADING	4-10-19

REVISION FINAL ROAD CONSTRUCTION PLAN
NOBLE WAY (PRIVATE USE-IN-COMMON) PROFILE AND DETAILS
THE ESTATES AT RIVER HILL
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B', 'H' A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

PARCEL: 389
TAX MAP: 34 GRID: 23
5TH ELECTION DISTRICT

ZONED: RR-DEO
L 4772 / F. 265

HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERS, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 N. RIDGE ROAD, SUITE 110 ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: NOVEMBER 2018
SCALE: AS SHOWN
W.O. NO.: 15-39

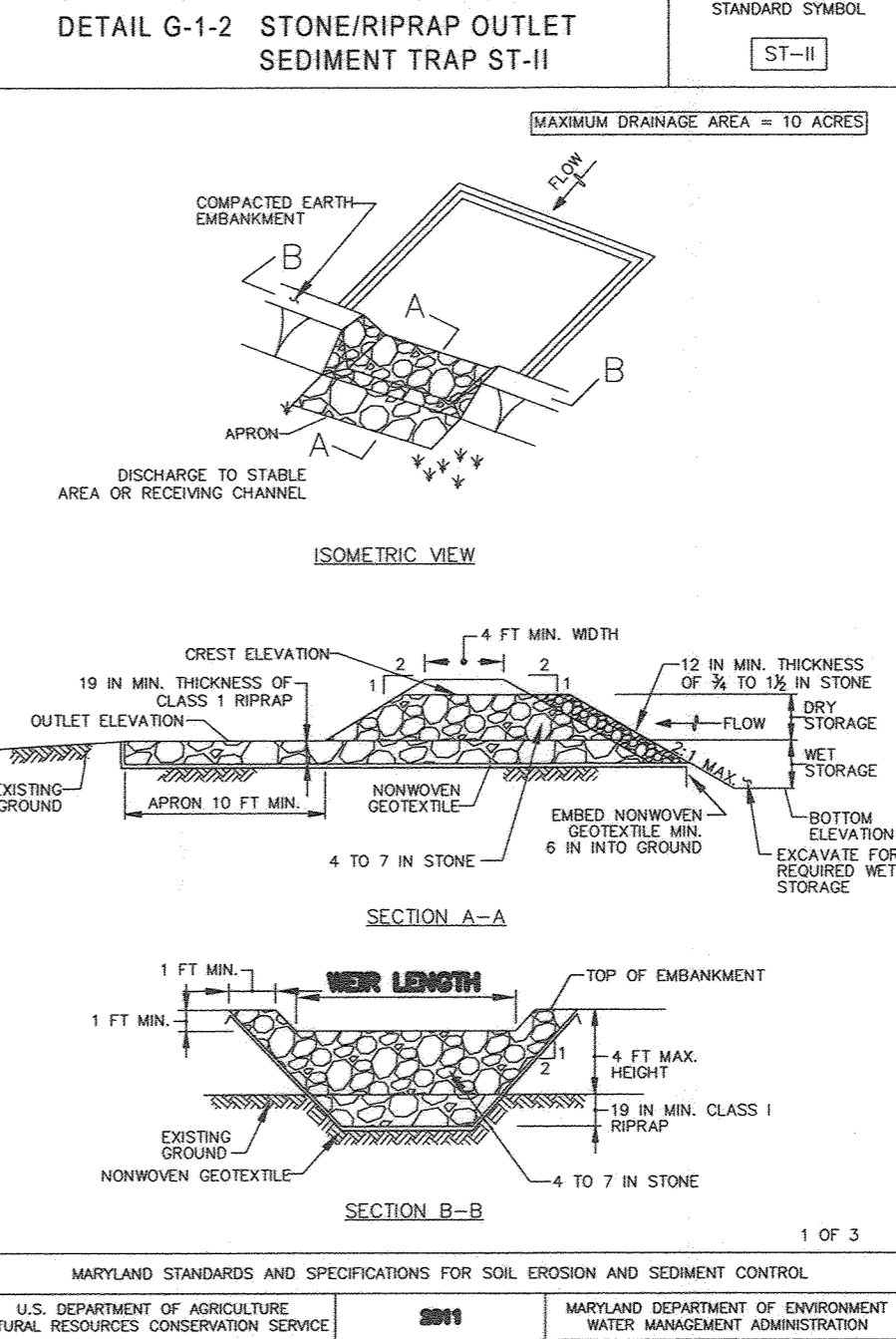
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 10-27-2022

5 SHEET OF 33

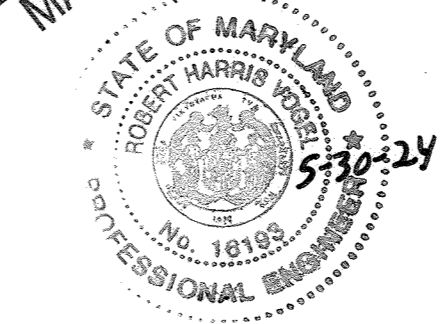
MATCHLINE - SHEET 7

NOTE: NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.

NOTE: PROVIDE DOUBLE ROW OF SUPER SILT FENCE AT ALL STREAM CROSSINGS.



LEGEND: Table listing various symbols and their corresponding features such as PROPERTY LINE, RIGHT-OF-WAY LINE, EXISTING METAL FENCE, EXISTING WOOD FENCE, EXISTING METAL FENCE, EX. PUBLIC 100-YEAR FLOOD PLAN, etc.



AS-BUILT CERTIFICATION FOR 'SWM': I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE 'AS-BUILT' PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THIS CONSTRUCTION AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP 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 CULVERT 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 1 RIPRAP FOR THE APRON. USE OF RECYCLED CONCRETE EQUIVALENT IS ACCEPTABLE. 8. PLACE 1 FOOT OF CLEAN 3/4 TO 1 1/2 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 (TOP OF WEIR 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 WOODS/VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION. 12. WHEN DETERMINING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL. 13. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

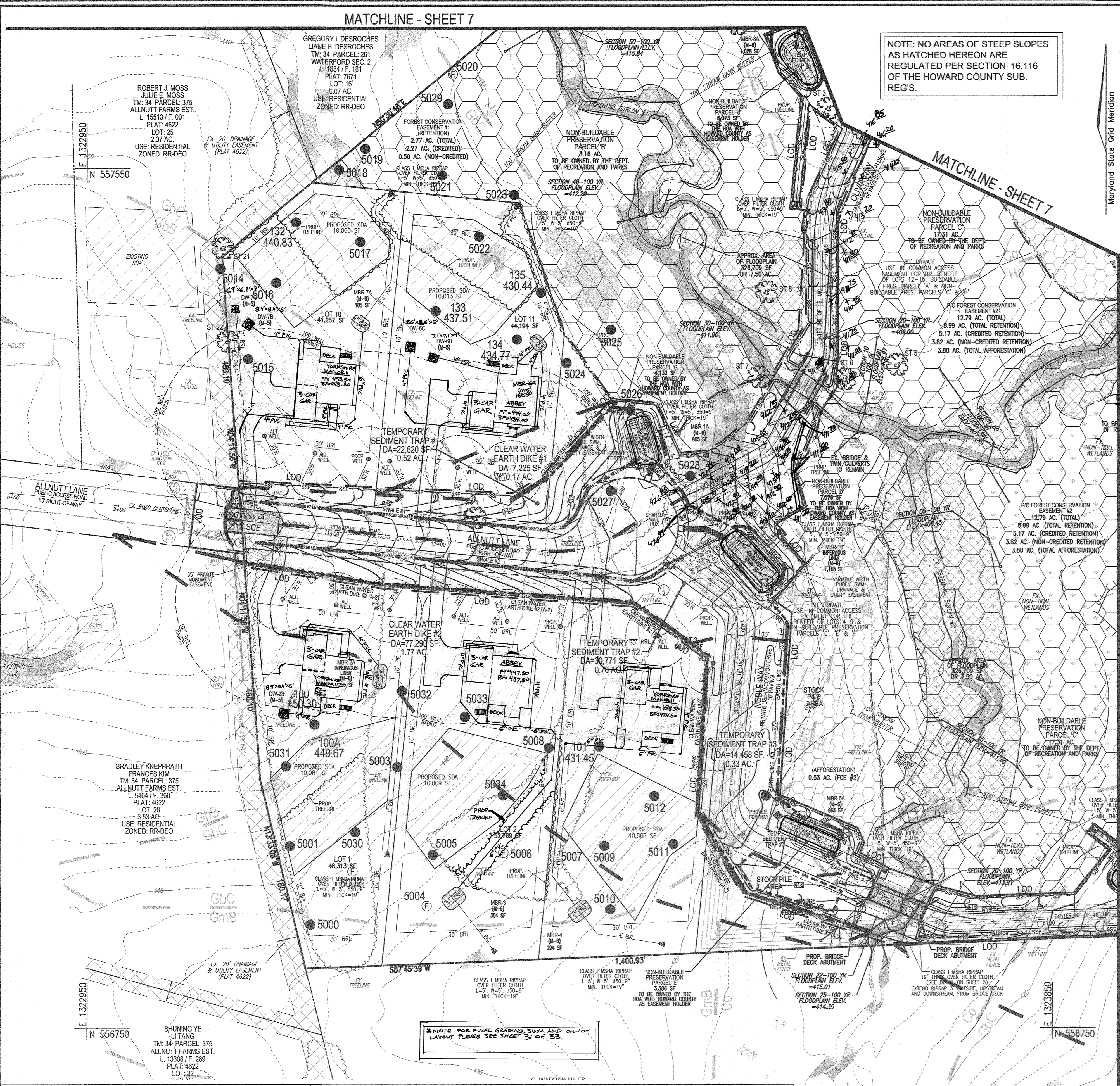
STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II. Table with columns: TRAP NO., DRAINAGE AREA - INITIAL, DRAINAGE AREA - INTERIM, DRAINAGE AREA - FINAL, TOTAL STORAGE REQUIRED, TOTAL STORAGE PROVIDED, WET STORAGE REQUIRED, WET STORAGE PROVIDED, DRY STORAGE REQUIRED, DRY STORAGE PROVIDED, EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION), TRAP BOTTOM ELEVATION, TRAP BOTTOM DIMENSIONS, WEIR LENGTH, WEIR CREST (DRY STORAGE) ELEVATION, CLEANOUT ELEVATION, TOP OF EMBANKMENT ELEVATION, SIDE SLOPE, EMBANKMENT TOP WIDTH, OUTLET PROTECTION - LENGTH, OUTLET PROTECTION - DEPTH.

SOILS LEGEND. Table with columns: SYMBOL, NAME/DESCRIPTION, GROUP, K-FACTOR, ERODIBLE. Includes symbols B0a, C0, G0B, G0C, G0b, H0.

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

APPROVED FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS. COUNTY HEALTH OFFICER HOWARD COUNTY HEALTH DEPARTMENT. DATE

OWNER: ESTATES AT RIVER HILL, LLC. DEVELOPER: TRINITY HOMES MARYLAND, LLC. DATE: 11/14/18.



NOTE: FOR FINAL GRADING SWM AND ON-LOT LAYOUT PLEASE SEE SHEET 3 OF 55.

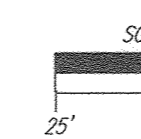
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS. CHIEF, BUREAU OF HIGHWAYS. DATE: 11/27/2018. APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. CHIEF, DEVELOPMENT ENGINEERING DIVISION. DATE: 12-2-18. APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. CHIEF, DIVISION OF LAND DEVELOPMENT. DATE: 1-10-19.

OWNER/DEVELOPER CERTIFICATION: I HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN. DATE: 11/5/18.

DESIGN CERTIFICATION: I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS. DATE: 11/14/18.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. DATE: 11/14/18.

GRADING PLAN. SCALE: 1"=50'



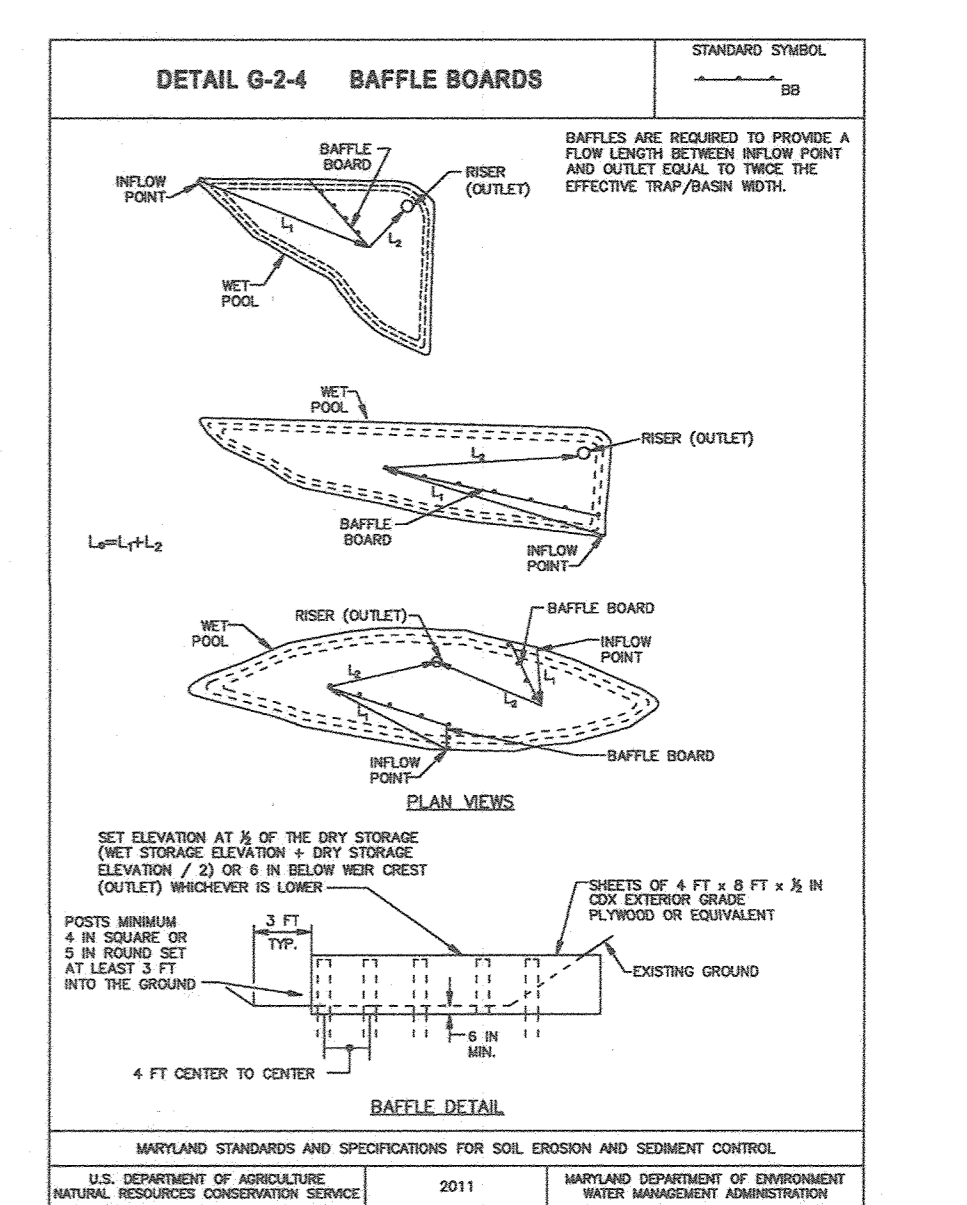
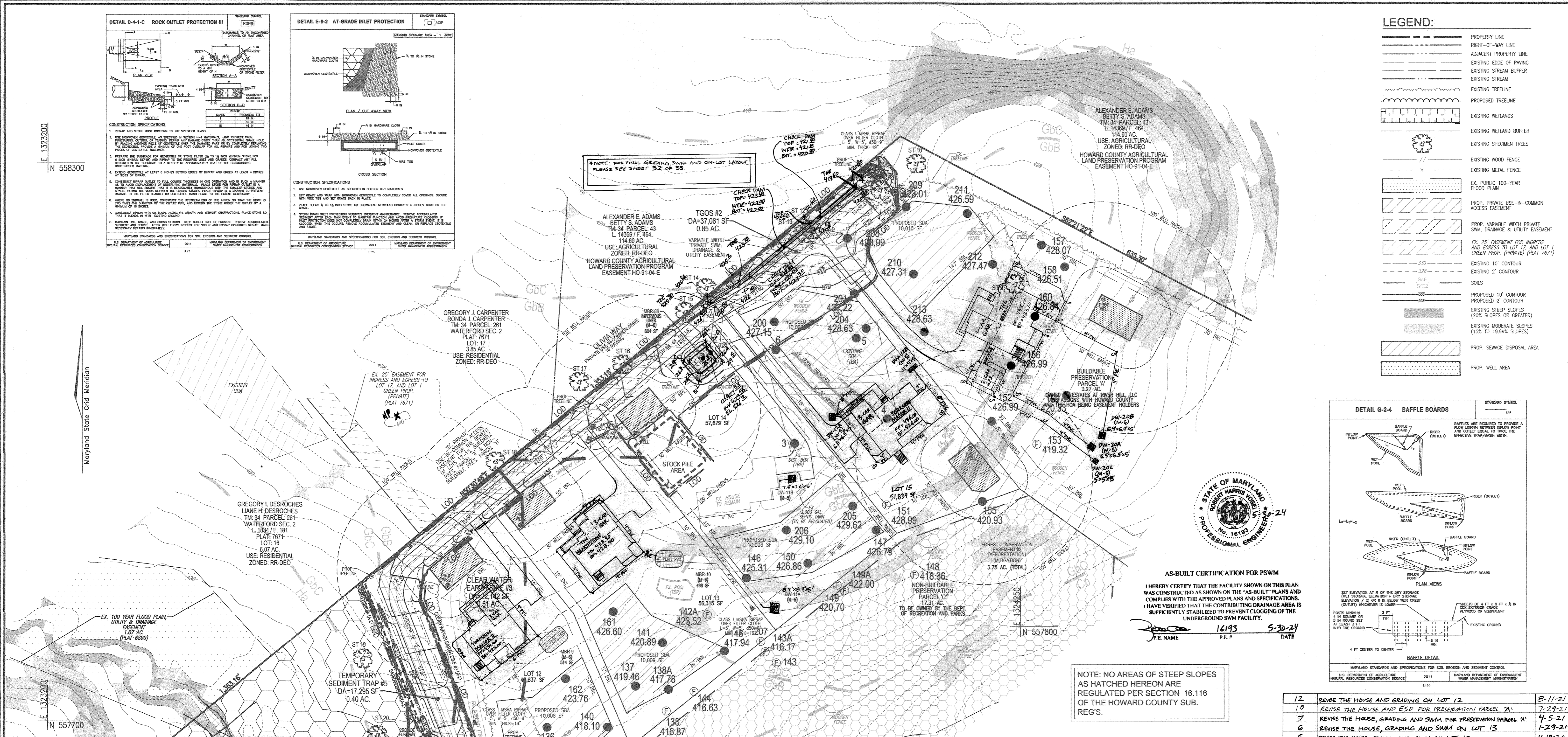
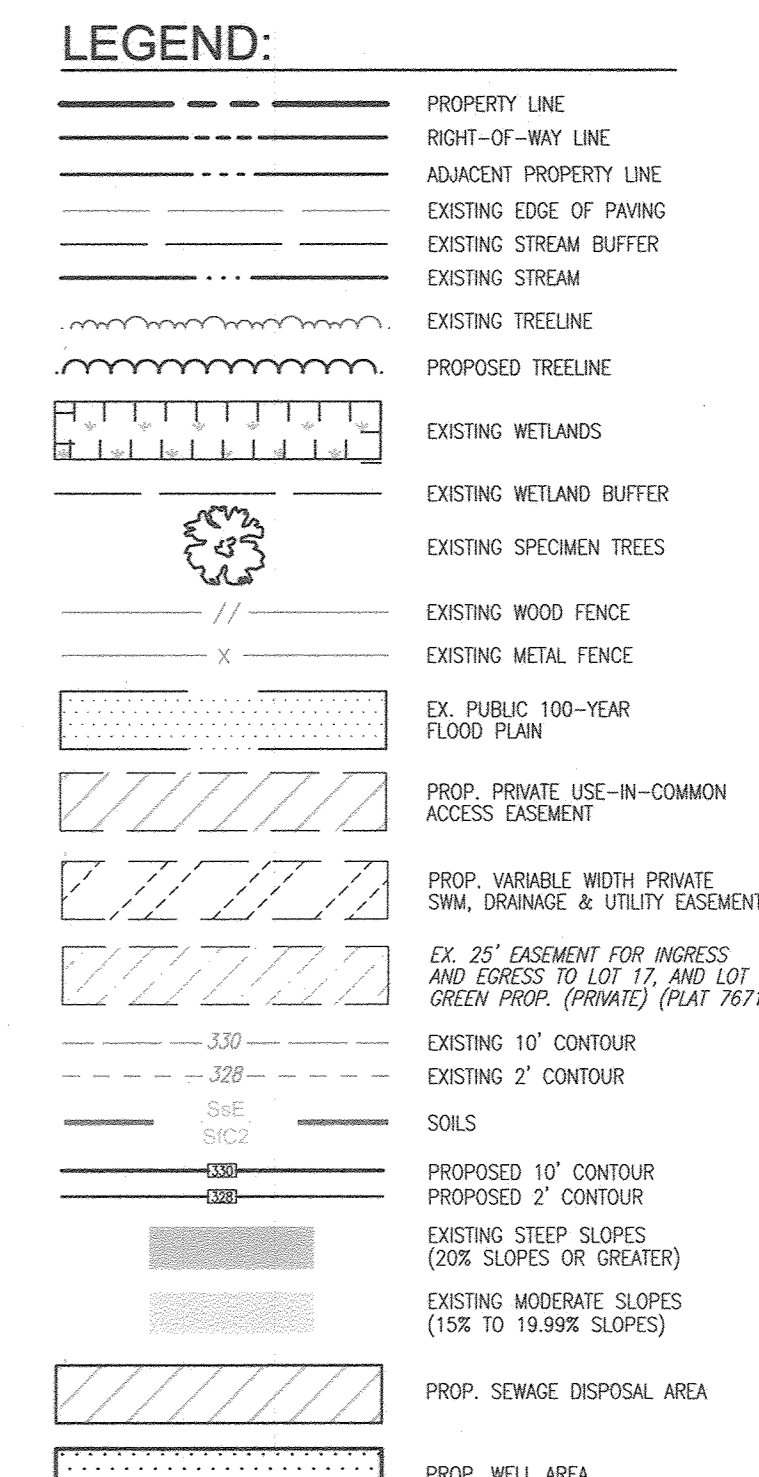
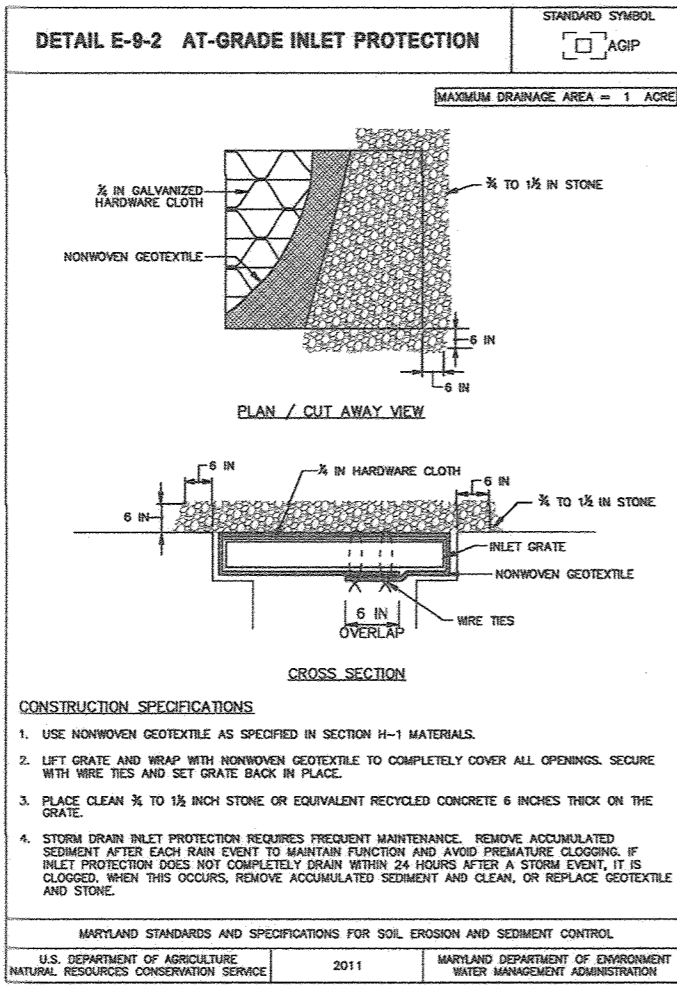
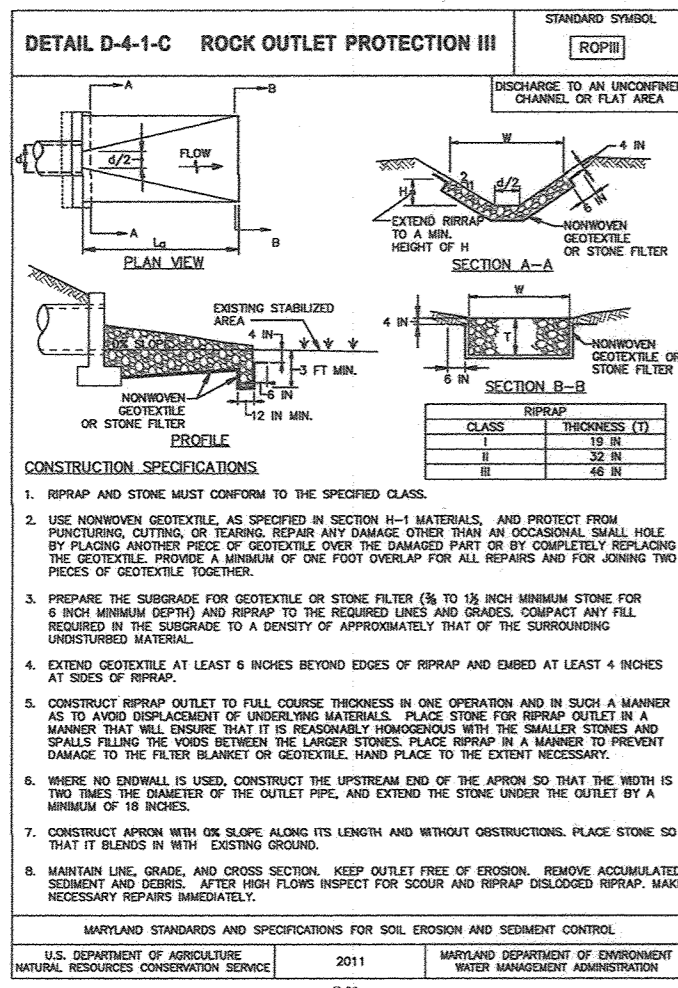
MODIFICATION TO ONLOT HOUSES SWM AND GRADING. REVISION: 4-10-19. DATE

REVISED FINAL ROAD CONSTRUCTION PLAN SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN AND DRAINAGE MAP THE ESTATES AT RIVER HILL. DATE: 11-21-18.

ROBERT H. VOGEL ENGINEERING, INC. ENGINEERS • SURVEYORS • PLANNERS. 3300 N. RIDGE ROAD, SUITE 110 ELLICOTT CITY, MD 21043. TEL: 410.461.7666 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE. DESIGN BY: RHV. DRAWN BY: JMR. CHECKED BY: RHV. DATE: NOVEMBER 2018. W.O. NO.: AS SHOWN. 15-39. SHEET 6 OF 33.

AS-BUILT DEC. 2023. 18-1064



SOILS LEGEND

SYMBOL	NAME/DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
BaA	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GbC	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ho	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL EROSION FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER: [Signature] DATE: [Blank]

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS: [Signature] DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION: [Signature] DATE: 12-2-18

CHIEF, DIVISION OF LAND DEVELOPMENT: [Signature] DATE: 1-10-19

THIS AREA DESIGNATES A PRIVATE SEWAGE AREA OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE AREAS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE AREA. RECORDATION OF A MODIFIED SEWAGE AREA SHALL NOT BE NECESSARY.

OWNER/DEVELOPER CERTIFICATION:
I HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

DESIGN CERTIFICATION:
I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS THAT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

ROBERT H. VOGEL
PRINTED NAME
MD REGISTRATION NO. 16193
R.L.S., OR R.L.A. (circle one)

GRADING PLAN
SCALE: 1"=50'

OWNER: ESTATES AT RIVER HILL, LLC
MICHAEL PFUJ, MEMBER
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

DEVELOPER: TRINITY HOMES MARY LAND, LLC
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] DATE: 11/24/18

TABLE 1: DRAINAGE AND STORAGE DATA

PARAMETER	INITIAL	FINAL	REQUIREMENT	PROVIDED
DRAINAGE AREA - INITIAL	0.85	0.85	ACRES	
DRAINAGE AREA - FINAL	0.85	0.85	ACRES	
TOTAL STORAGE REQUIRED	1530	1530	CF	
TOTAL STORAGE PROVIDED	1641	1641	CF	
BOTTOM ELEVATION	418.00	418.00	FT	
BOTTOM DIMENSIONS	8.5'x51'	8.5'x51'	FT x FT	
WEIR CREST STORAGE ELEVATION	420.25	420.25	FT	
TOP OF EMBANKMENT ELEVATION	421.00	421.00	FT	
SIDE SLOPE	2:1	2:1	H:V RATIO	
EMBANKMENT TOP WIDTH	3	3	FT	

NOTE: SEE SHEET 8 FOR DETAIL.

REVISIONS

NO.	REVISION	DATE
12	REVISE THE HOUSE AND GRADING ON LOT 12	8-11-21
10	REVISE THE HOUSE AND ESD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM ON LOT 13	1-29-21
5	REVISE THE HOUSE, GRADING AND SWM ON LOT 15	11-19-20
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
1	MODIFICATION TO ONLOT HOUSES, SWM AND GRADING	4-10-19

**REVISED FINAL ROAD CONSTRUCTION PLAN
SOILS MAP, GRADING, EROSION AND
SEDIMENT CONTROL PLAN AND DRAINAGE MAP
THE ESTATES AT RIVER HILL**
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',
AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H'
A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389
TAX MAP: 34 GRID: 23
5TH ELECTION DISTRICT

ZONED: RR-DEO
L 4772 / F 263
HOWARD COUNTY, MARYLAND

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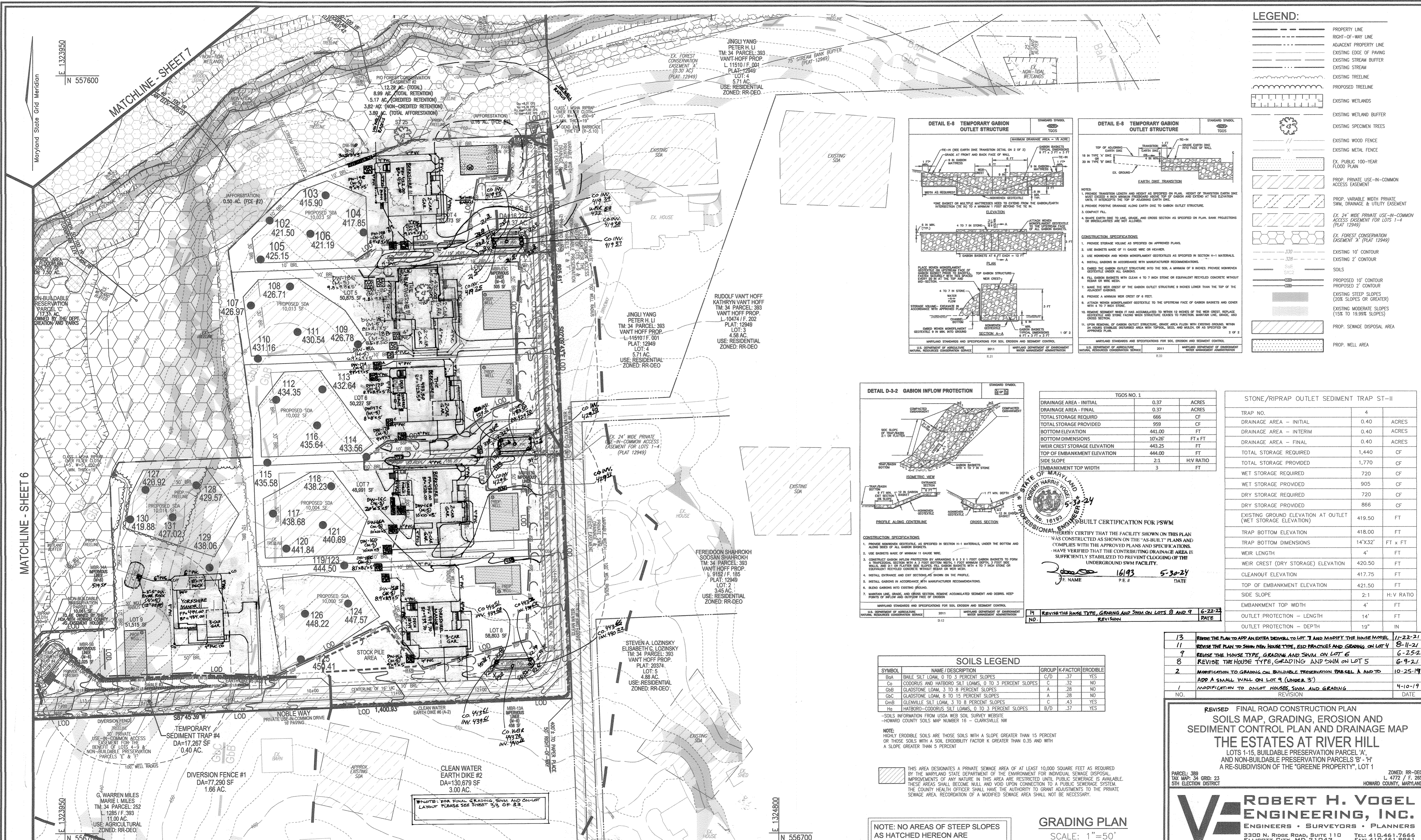
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7 SHEET OF 33

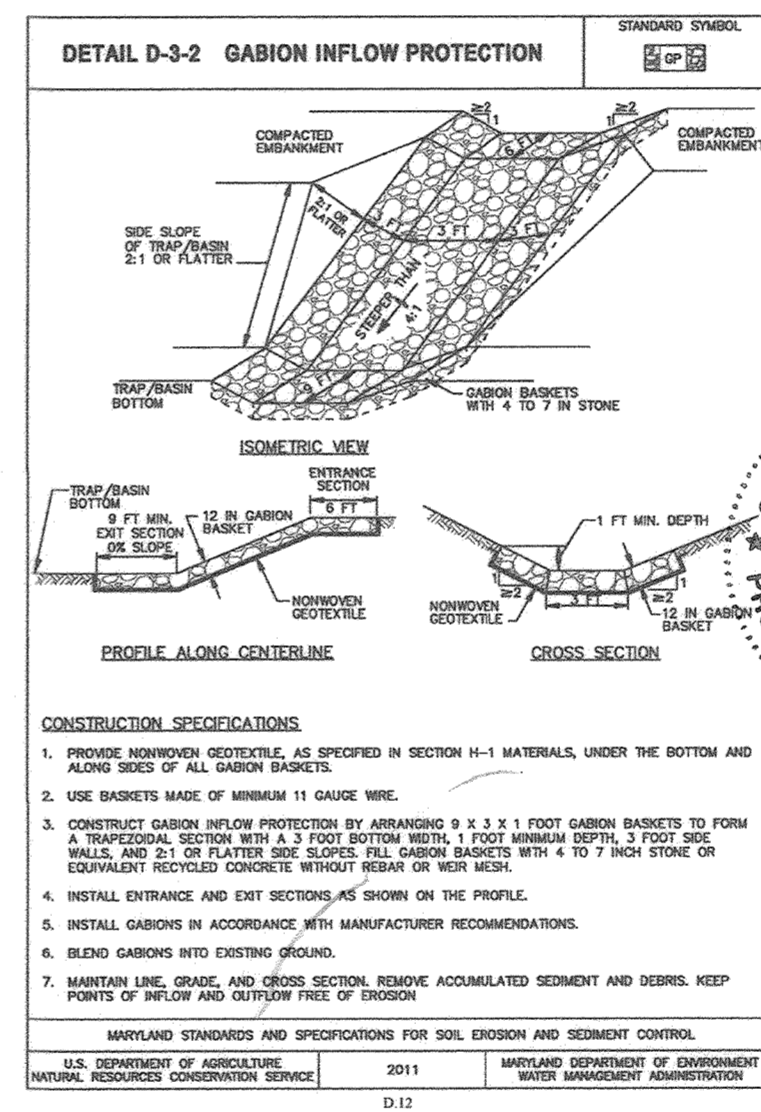
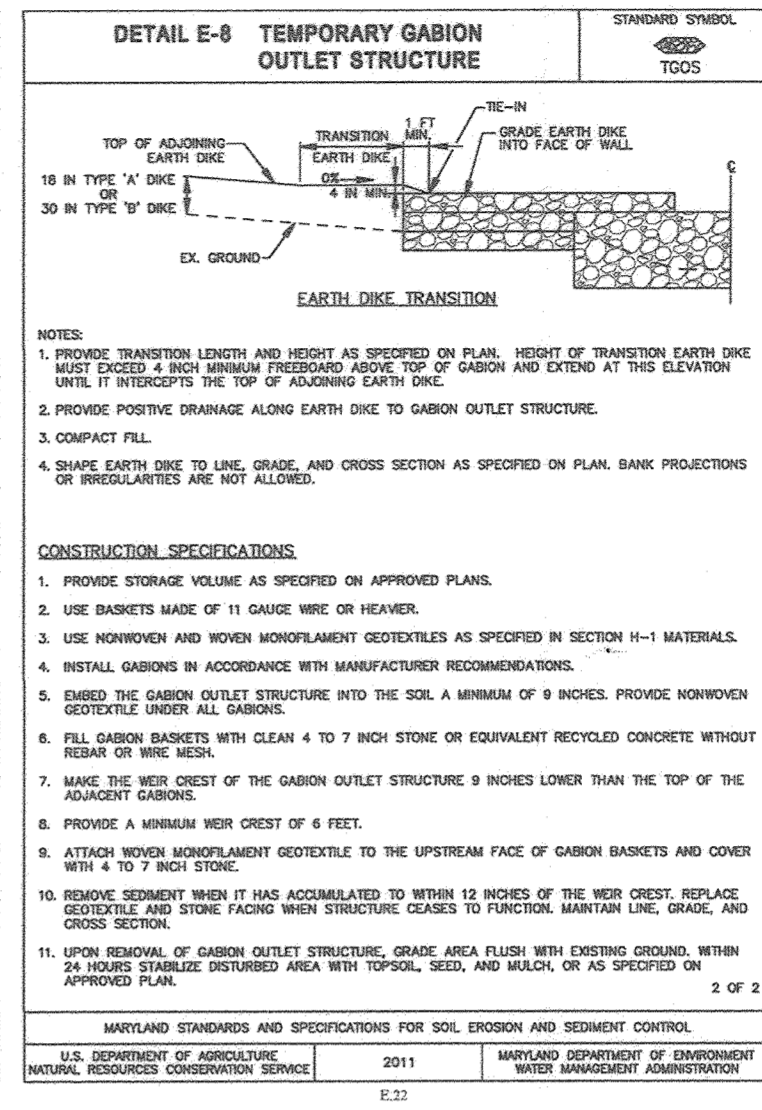
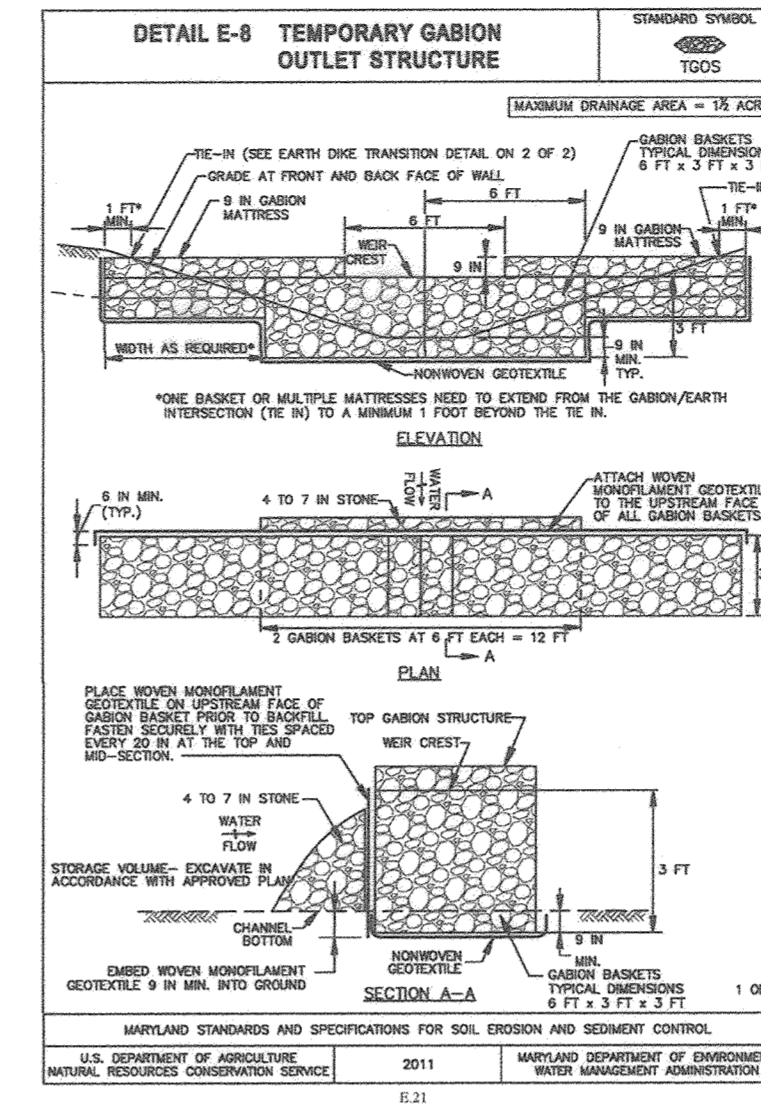
AS-BUILT DEC. 2023

F-18-094



LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAIN
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
- EX. 24" WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
- EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING SLEEP SLOPES (20% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 19.9% SLOPES)
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA



TGOS NO. 1

DRAINAGE AREA - INITIAL	0.37	ACRES
DRAINAGE AREA - FINAL	0.37	ACRES
TOTAL STORAGE REQUIRED	666	CF
TOTAL STORAGE PROVIDED	959	CF
BOTTOM ELEVATION	441.00	FT
BOTTOM DIMENSIONS	10'x26'	FT x FT
WEIR CREST STORAGE ELEVATION	443.25	FT
TOP OF EMBANKMENT ELEVATION	444.00	FT
SIDE SLOPE	2:1	H:V RATIO
EMBANKMENT TOP WIDTH	3	FT

STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

TRAP NO.	4	
DRAINAGE AREA - INITIAL	0.40	ACRES
DRAINAGE AREA - FINAL	0.40	ACRES
DRAINAGE AREA - INTERIM	0.40	ACRES
DRAINAGE AREA - FINAL	0.40	ACRES
TOTAL STORAGE REQUIRED	1,440	CF
TOTAL STORAGE PROVIDED	1,770	CF
WET STORAGE REQUIRED	720	CF
WET STORAGE PROVIDED	905	CF
DRY STORAGE REQUIRED	720	CF
DRY STORAGE PROVIDED	866	CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	419.50	FT
TRAP BOTTOM ELEVATION	418.00	FT
TRAP BOTTOM DIMENSIONS	14'x32'	FT x FT
WEIR LENGTH	4'	FT
WEIR CREST (DRY STORAGE) ELEVATION	420.50	FT
CLEANOUT ELEVATION	417.75	FT
TOP OF EMBANKMENT ELEVATION	421.50	FT
SIDE SLOPE	2:1	H:V RATIO
EMBANKMENT TOP WIDTH	4'	FT
OUTLET PROTECTION - LENGTH	14'	FT
OUTLET PROTECTION - DEPTH	19"	IN

SOILS LEGEND

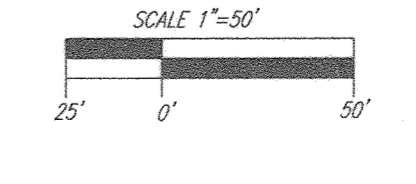
SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Ba	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Cc	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	A	.32	NO
GaB	GLAUSTONE LOAM, 3 TO 8 PERCENT SLOPES	C	.28	NO
GcB	GLAUSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Hs	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

THIS AREA DESIGNATES A PRIVATE SEWAGE AREA OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWAGE DISPOSAL THESE AREAS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE AREA. REORDINATION OF A MODIFIED SEWAGE AREA SHALL NOT BE NECESSARY.

NOTE: NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.

GRADING PLAN
SCALE: 1"=50'



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 11/27/2018
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12-2-18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT

OWNER/DEVELOPER CERTIFICATION:
 I HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR ME.

[Signature] 11/5/18
 OWNER/DEVELOPER SIGNATURE
 MICHAEL PEARL, MEMBER

DESIGN CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND FEASIBLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 11/21/18
 DESIGNER'S SIGNATURE
 ROBERT H. VOGEL
 NO. REGISTRATION NO. 16193
 (E), R.L.S., OR R.L.A. (circle one)

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 11/14/18
 HOWARD S.C.D.

APPROVED FOR PRIVATE WATER AND PRIVATE SEWAGE SYSTEMS

[Signature] N/A
 COUNTY HEALTH OFFICER
 HOWARD COUNTY HEALTH DEPARTMENT

OWNER
 ESTATES AT RIVER HILL, LLC
 MICHAEL PEARL, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER
 TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

REVISIONS

13	REVISE THE PLAN TO ADD AN EXTRA DOWNHILL TO LOT 7 AND MODIFY THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESD PRACTICES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19

NO. REVISION DATE

**REVISED FINAL ROAD CONSTRUCTION PLAN
 SOILS MAP, GRADING, EROSION AND
 SEDIMENT CONTROL PLAN AND DRAINAGE MAP
 THE ESTATES AT RIVER HILL**
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'
 A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

PARCEL: 389
 TAX MAP: 34 GRID: 23
 5TH ELECTION DISTRICT

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110
 ELLICOTT CITY, MD 21043
 TEL: 410.461.7666
 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 16193, EXPIRATION DATE: 09-27-2020

DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.O. NO.: 15-39

8 SHEET OF 33

THE ESTATES AT RIVER HILL
Runoff Coefficient Justification

Inlet #	Soil Group	Description	Area acres	Table 3.01 "C"	CA
INLET 1	C	O.S. Grass (Steep)	1.05	0.24	0.2520
	C	Impervious Area	0.22	0.86	0.1892
			1.27		0.4412
		C = 0.35			
		% Imp = 11			
INLET 1A	C	O.S. Grass (Steep)	0.05	0.24	0.0120
	C	Impervious Area	0.00	0.86	0.0000
			0.05		0.0120
		C = 0.24			
		% Imp = 0			
INLET 2	C	O.S. Grass (Steep)	1.03	0.24	0.2400
	C	Impervious Area	0.17	0.86	0.1482
			1.17		0.3862
		C = 0.33			
		% Imp = 9			
INLET 2A	C	O.S. Grass (Steep)	1.94	0.24	0.4656
	C	Impervious Area	0.11	0.86	0.0946
			2.05		0.5602
		C = 0.27			
		% Imp = 3			
INLET 3	C	O.S. Grass (Steep)	0.50	0.24	0.1200
	C	Impervious Area	0.20	0.86	0.1720
			0.70		0.2920
		C = 0.42			
		% Imp = 19			
PT-1	C	O.S. Grass (Steep)	0.00	0.24	0.0000
	C	Impervious Area	0.09	0.86	0.0774
			0.09		0.0774
		C = 0.86			
		% Imp = 100			
PT-2	C	O.S. Grass (Steep)	0.00	0.24	0.0000
	C	Impervious Area	0.09	0.86	0.0774
			0.09		0.0774
		C = 0.86			
		% Imp = 100			

THE ESTATES AT RIVER HILL
Runoff Coefficient Justification

Inlet #	Soil Group	Description	Area acres	Table 3.01 "C"	CA
CLUVERT LOT 1	C	O.S. Grass (Steep)	0.03	0.24	0.0072
	C	Impervious Area	0.01	0.86	0.0086
			0.04		0.0158
		C = 0.40			
		% Imp = 16			
CLUVERT LOT 2	C	O.S. Grass (Steep)	0.25	0.24	0.0600
	C	Impervious Area	0.11	0.86	0.0946
			0.36		0.1546
		C = 0.43			
		% Imp = 20			
CLUVERT LOT 3	C	O.S. Grass (Steep)	0.47	0.24	0.1128
	C	Impervious Area	0.19	0.86	0.1634
			0.66		0.2762
		C = 0.42			
		% Imp = 19			
CLUVERT LOT 10	C	O.S. Grass (Steep)	0.005	0.24	0.0012
	C	Impervious Area	0.005	0.86	0.0040
			0.010		0.0052
		C = 0.54			
		% Imp = 31			
CLUVERT LOT 11	C	O.S. Grass (Steep)	0.07	0.24	0.0168
	C	Impervious Area	0.05	0.86	0.0430
			0.12		0.0598
		C = 0.50			
		% Imp = 27			

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
BMA	BABLE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Cc	COODRUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GMB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
Gbc	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GMB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Hd	HATBORO-COODRUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE - HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE NN

NOTE:
HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING EDGE OF PAVING
	EXISTING STREAM BUFFER
	EXISTING STREAM
	EXISTING TREELINE
	PROPOSED TREELINE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	EXISTING SPECIMEN TREES
	EXISTING WOOD FENCE
	EXISTING METAL FENCE
	EX. PUBLIC 100-YEAR FLOOD PLAN
	EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
	PROP. PUBLIC SWM DRAINAGE & UTILITY EASEMENT
	PROP. 35' PRIVATE MONUMENT EASEMENT
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
	EXISTING MODERATE SLOPES (15% TO 19.9% SLOPES)
	DRAINAGE AREA DIVIDE
	PROPOSED MICRO-BIORETENTION FACILITY (M-6)
	PROPOSED DRY WELL (M-5)
	PROP. SEWAGE DISPOSAL AREA
	PROP. WELL AREA



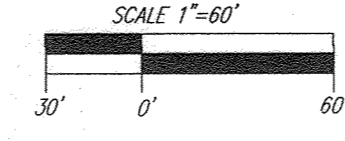
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 11/27/2018
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12.2.18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT

SD DRAINAGE AREA MAP

SCALE: 1"=60'



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

[Signature] 1/1/13 5:30-24
 P.E. NAME P.E.# DATE

OWNER
 ESTATES AT RIVER HILL, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 486-0023

DEVELOPER
 TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

NO.	MODIFICATION TO ONLY HOUSES SWM AND GRADING	REVISION	DATE
1			4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN DRAINAGE AREA MAP
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO
 TAX MAP: 34 GRD: 23 L. 4772 / F. 255
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7866
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 16193, EXPIRATION DATE: 09-27-2024

DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.O. NO.: 15-39

10 SHEET OF 33

AS-BUILT DEC. 2023

LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING EDGE OF PAVING
	EXISTING STREAM BUFFER
	EXISTING STREAM
	EXISTING TREELINE
	PROPOSED TREELINE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	EXISTING SPECIMEN TREES
	EXISTING WOOD FENCE
	EXISTING METAL FENCE
	EX. PUBLIC 100-YEAR FLOOD PLAN
	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
	EX. 25' EASEMENT FOR INGRESS AND EGRESS TO LOT 17, AND LOT 1 GREEN PROP. (PRIVATE) (PLAT 7671)
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
	EXISTING MODERATE SLOPES (15% TO 19.99% SLOPES)
	DRAINAGE AREA DIVIDE
	PROPOSED MICRO-BIORETENTION FACILITY (M-6)
	PROPOSED DRY WELL (M-5)
	PROP. SEWAGE DISPOSAL AREA
	PROP. WELL AREA



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
BaA	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GbC	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Hs	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE
 HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE NW

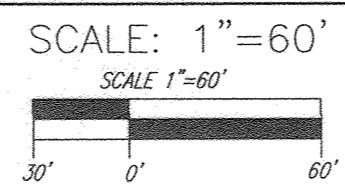
NOTE:
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 11/27/2018
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12-2-18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

SD DRAINAGE AREA MAP



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

[Signature] 16193 5-30-24
 P.E. DATE

OWNER
 ESTATES AT RIVER HILL, LLC
 MICHAEL PFALZ, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER
 TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

12	REVISE THE HOUSE AND GRADING ON LOT 12	8-11-21
10	REVISE THE HOUSE AND BSD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM FOR LOT 13	1-29-21
5	REVISE THE HOUSE, GRADING AND SWM FOR LOT 15	11-19-20
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL 'A' AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19
NO.	REVISION	DATE

REVISED FINAL ROAD CONSTRUCTION PLAN
 STORM DRAIN DRAINAGE AREA MAP
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO
 TAX MAP: 34 GRID: 23 L: 4772 / F: 285
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERS, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110 TEL: 410.481.7666
 ELLICOTT CITY, MD 21043 FAX: 410.481.8961

DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.O. NO.: 15-39

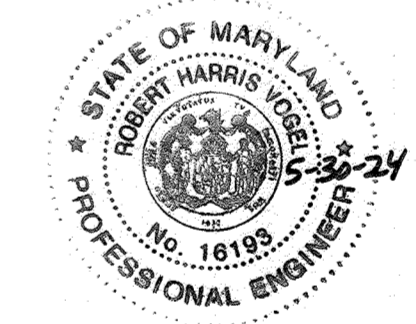
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 03-27-2026

11 SHEET OF 33



LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING EDGE OF PAWING
	EXISTING STREAM BUFFER
	EXISTING STREAM
	EXISTING TREELINE
	PROPOSED TREELINE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	EXISTING SPECIMEN TREES
	EXISTING WOOD FENCE
	EXISTING METAL FENCE
	EX. PUBLIC 100-YEAR FLOOD PLAN
	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
	EX. 24' WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
	EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
	EXISTING MODERATE SLOPES (15% TO 19.99% SLOPES)
	DRAINAGE AREA DIVIDE
	PROPOSED MICRO-BIORETENTION FACILITY (M-5)
	PROPOSED DRY WELL (M-5)
	PROP. SEWAGE DISPOSAL AREA
	PROP. WELL AREA



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

NAME: *Robert H. Vogel* NO. 16193 DATE: 5-30-24

14	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOTS 8 AND 9	6-22-22
13	REVISE THE PLAN TO ADD AN EXTRA DRYWELL TO LOT 7 AND MODIFY THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESP FRANCES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	INDICATION TO OBLIT HOUSE SWM AND GRADING	4-10-19
NO.	REVISION	DATE

REVISED FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN DRAINAGE AREA MAP
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 388 TAX MAP: 34 GRID: 23 ZONED: RR-DEO
 4772 / F. 285 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Ba	BALE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HARBOR SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GbC	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Hg	HARBOR-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE - HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE NW

NOTE:
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

OWNER
 ESTATES AT RIVER HILL, LLC
 MICHAEL PFAU, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER
 TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
James 11/27/2018
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
John 12-2-18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

Kate 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT

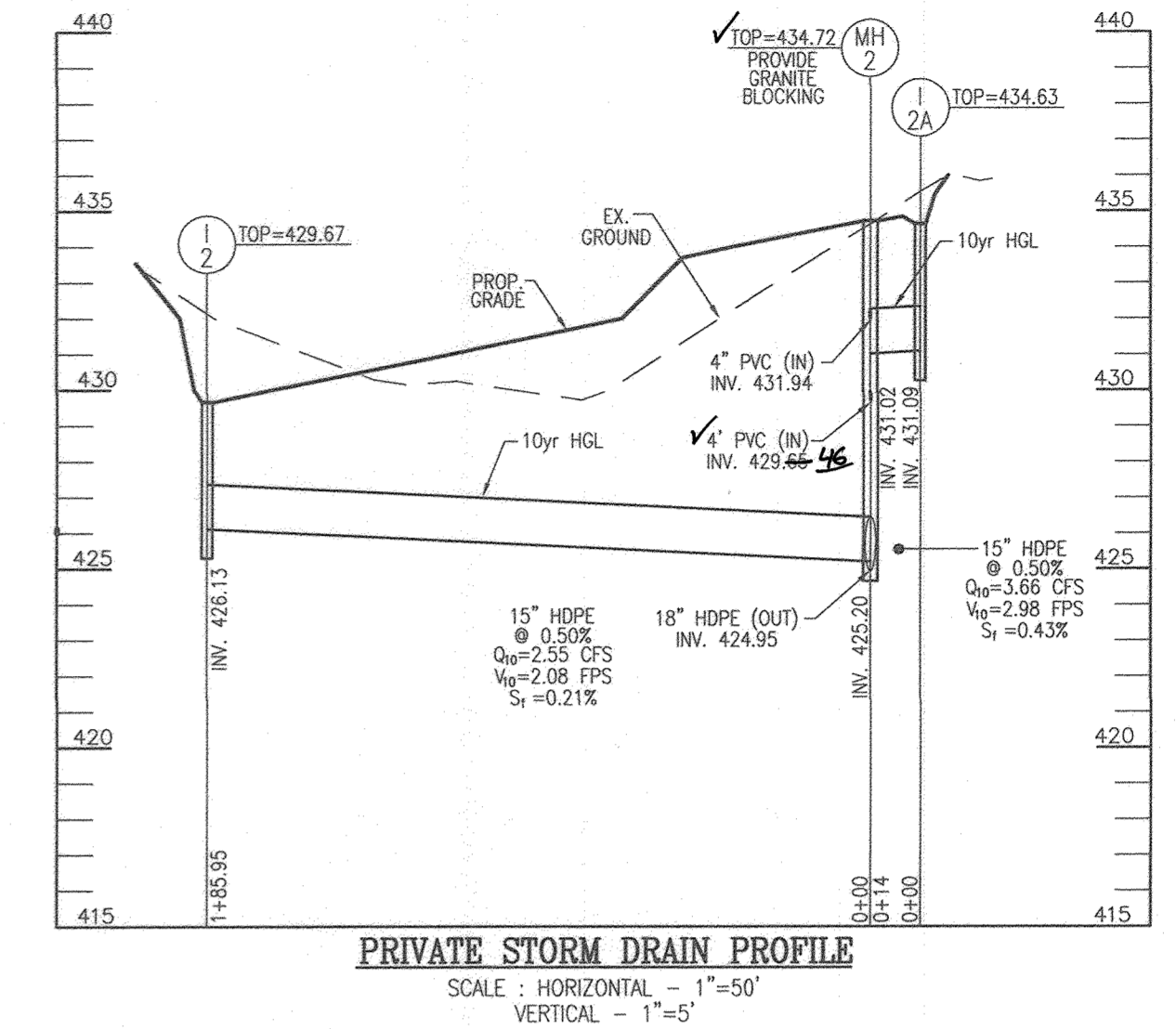
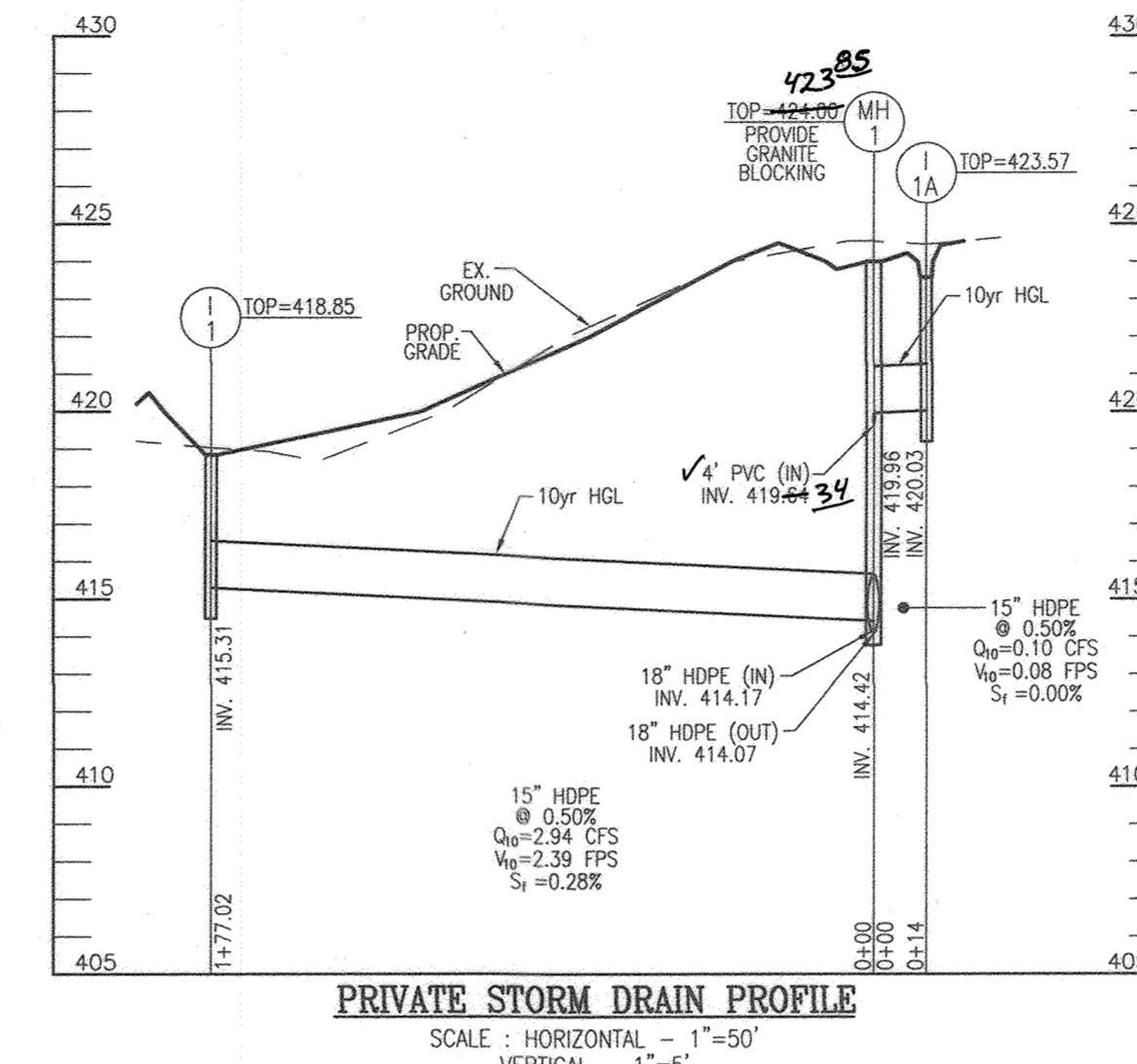
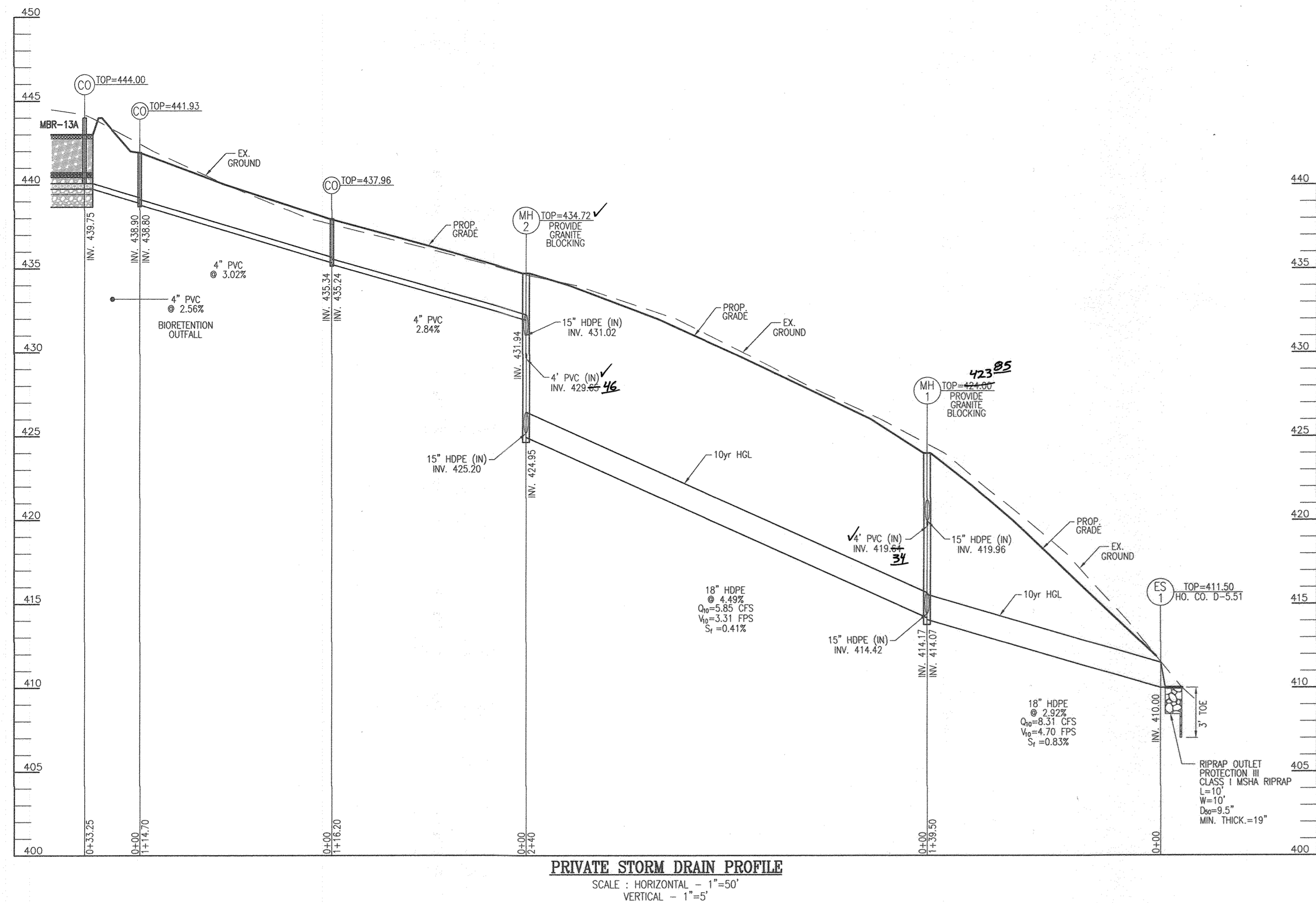
SD DRAINAGE AREA MAP
 SCALE: 1" = 60'
 SCALE 1" = 60'

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.O. NO.: 15-39

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 16193, EXPIRES DATE: 09-27-2024

12 SHEET OF 33

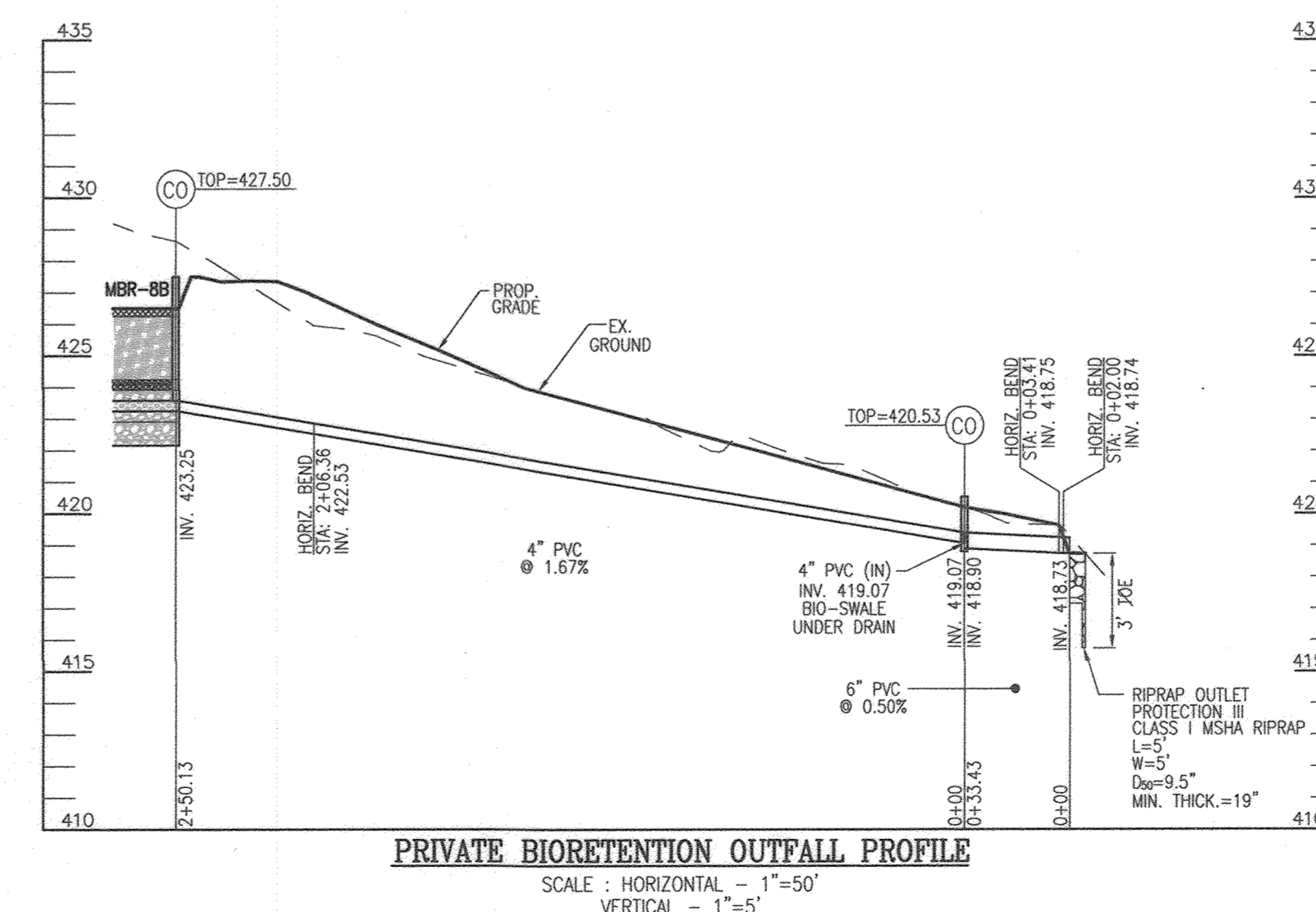
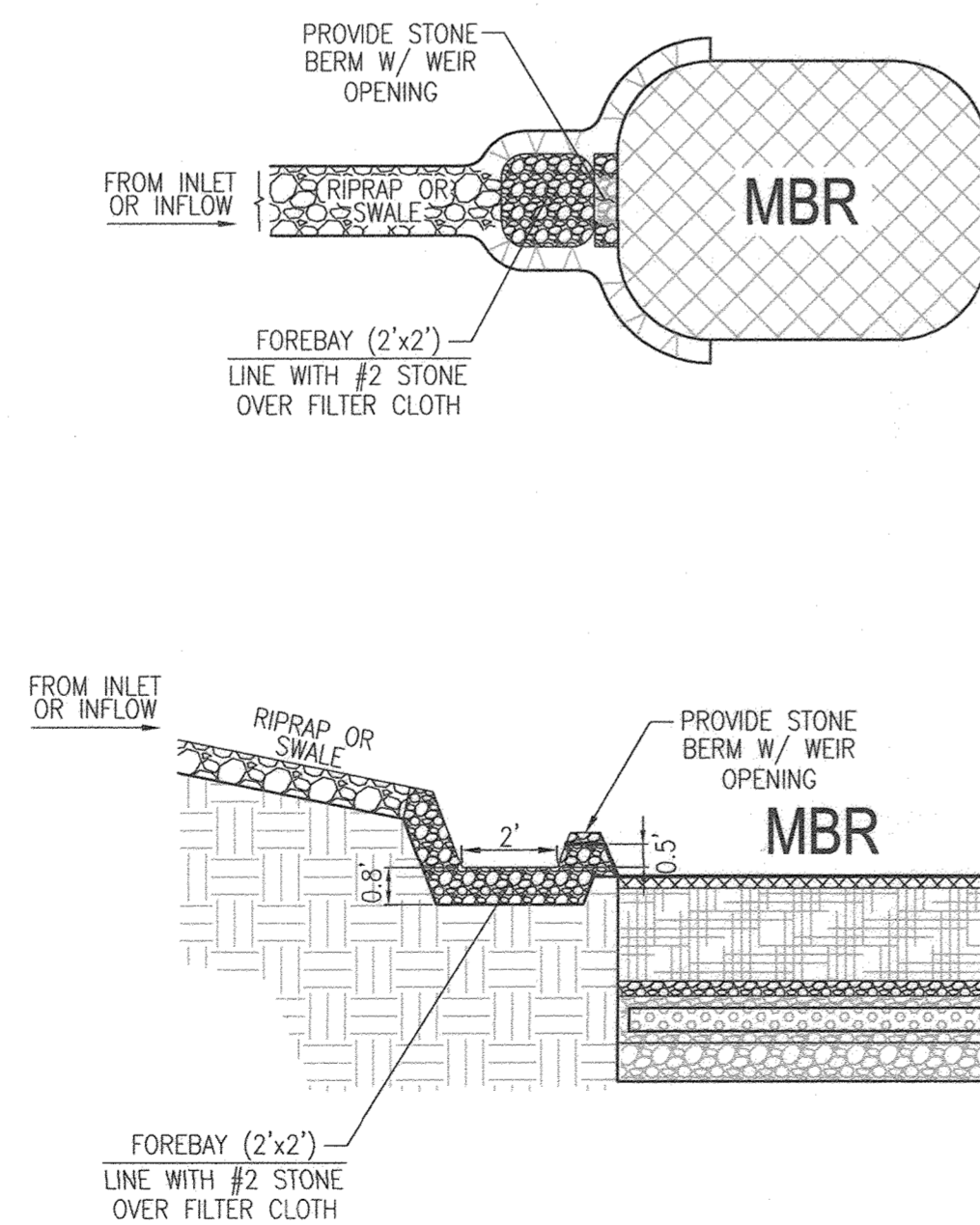
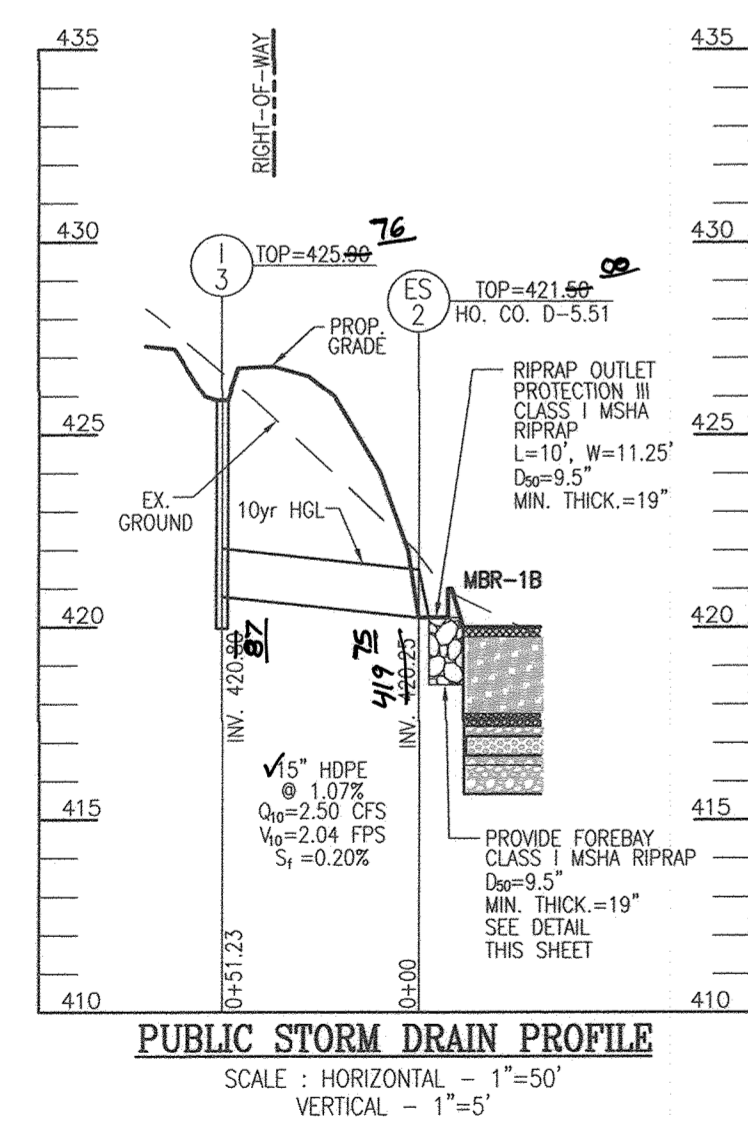


STRUCTURE SCHEDULE						
NO.	TYPE	LOCATION	TOP EL.	INV. IN	INV. OUT	COMMENTS
I-1	YARD INLET	N 557383.38 E 1324537.69	418.85	-	415.31	HO. CO. STD D-4.14
I-1A	YARD INLET	N 557390.61 E 1324528.48	423.57	-	420.03	HO. CO. STD D-4.14
I-2	YARD INLET	N 557143.22 E 1324337.73	428.67	-	426.13	HO. CO. STD D-4.14
I-2A	YARD INLET	N 557150.78 E 1324537.54	434.63	-	431.09	HO. CO. STD D-4.14
I-3	YARD INLET	N 557180.80 E 1323490.48	425.66	-	422.12	HO. CO. STD D-4.14
MH-1	4' STANDARD PRECAST MANHOLE	N 557390.08 E 1324514.49	424.00	414.07	422.82	HO. CO. STD G-5.12
MH-2	4' STANDARD PRECAST MANHOLE	N 557150.25 E 1324523.55	434.72	424.95	424.95	HO. CO. STD G-5.12
PT-1	PASS THROUGH	N 557261.54 E 1323472.98	426.44	-	425.24	MD 374.68 L=6' D=6"
PT-2	PASS THROUGH	N 557215.09 E 1323503.70	426.43	-	425.23	MD 374.68 L=6' D=6"
ES-1	18" RCP END SECTION	N 557529.48 E 1324559.23	411.50	-	410.00	HO. CO. STD D-5.51
ES-2	15" RCP END SECTION	N 557203.98 E 1323535.88	421.88	-	420.28	HO. CO. STD D-5.51

PIPE SCHEDULE		
SIZE	TYPE	LENGTH
4"	SOLID PVC	821 LF
4"	PERFORATED PVC	1,030 LF
6"	SOLID PVC	33 LF
12"	HDPE	80 LF
15"	HDPE	442 LF
18"	HDPE	380 LF



AS-BUILT CERTIFICATION FOR PS/WK
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
P.E. NAME: [Signature] P.E. #: 16193 DATE: 5-30-24



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS [Signature] 11/27/2018 DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION [Signature] 12-2-18 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT [Signature] 1-10-19 DATE

PROVIDE FOREBAY FOR MICRO-BIOTENTION INFLOW (MBR-1A, MBR-1B, MBR-5A, MBR-5B & MBR-8A)

OWNER: ESTATES AT RIVER HILL, LLC
MICHAEL PFALZ, MEMBER
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

DEVELOPER: TRINITY HOMES MARYLAND, LLC
3875 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

REVISED FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN PROFILES
THE ESTATES AT RIVER HILL
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 TAX MAP: 34 GRID: 23 ZONED: RR-DEO L 4772 / F, 285 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

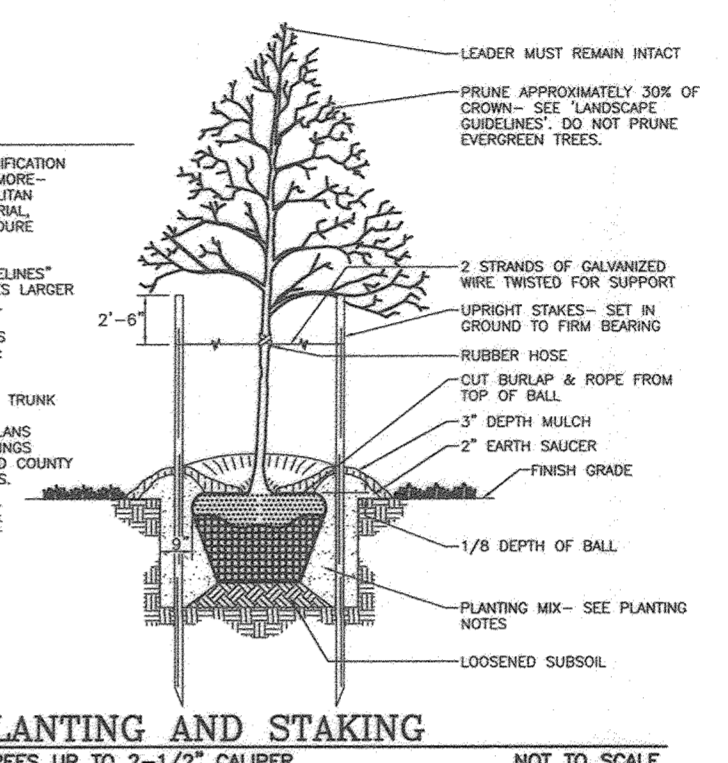
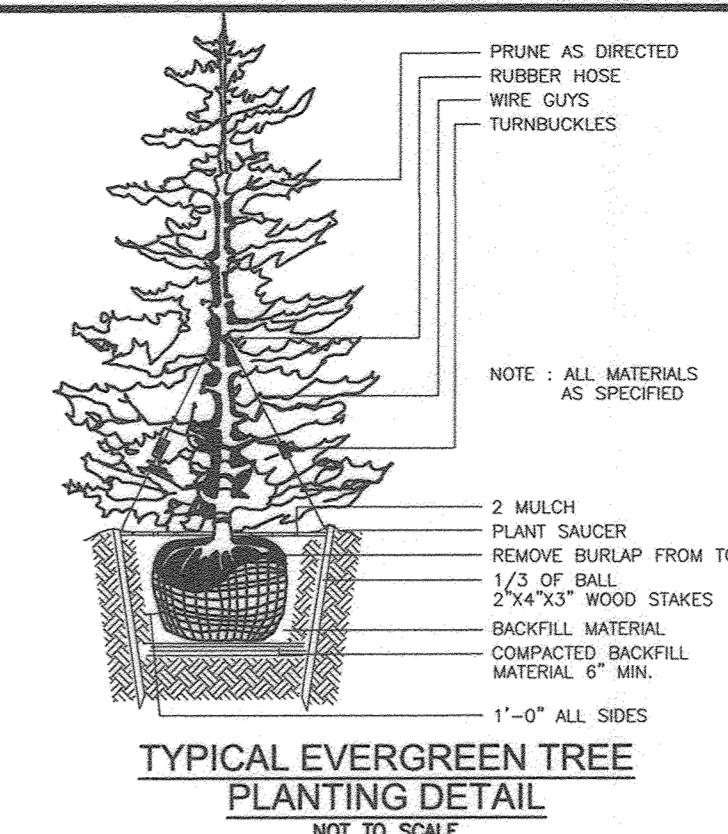
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
ELLCOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: NOVEMBER 2018
SCALE: AS SHOWN
W.O. NO.: 15-39

PROFESSIONAL CERTIFICATE
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13 SHEET OF 33

MATCHLINE - SHEET 15

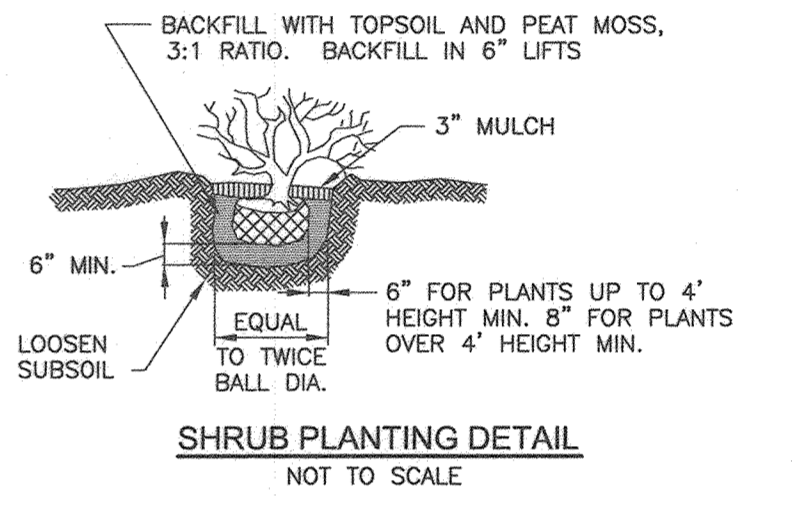


LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SWIM, DRAINAGE & UTILITY EASEMENT
- PROP. 35' PRIVATE MONUMENT EASEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA

- NOTES:**
- SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREA" FOR ALL MATERIAL, PRODUCT AND PROCEDURE SPECIFICATIONS.
 - SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
 - PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
 - KEEP MULCH 1" FROM TRUNK.
 - SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY ANNUAL REQUIREMENTS.
 - TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.

TREE PLANTING AND STAKING
DECIDUOUS TREES UP TO 2-1/2" CALIPER
NOT TO SCALE



SHRUB PLANTING DETAIL
NOT TO SCALE

SPECIMEN TREE CHART

NO.	SIZE (H x DBH)	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 1	30" x 45"		TULIP POPLAR	GOOD CONDITION	TO BE REMOVED
ST 3	35" x 52.5"		BLACK OAK	POOR CROWN AND SHAPE	TO BE REMOVED
ST 5	32" x 48"		TULIP POPLAR	TRIPLE STEMMED	TO REMAIN
ST 6	57" x 85.5"		RED OAK	GOOD, SPLITS TO THREE STEMS ABOVE BH	TO REMAIN
ST 7	44.5" x 66.75"		TULIP POPLAR	FAIR, SOME DIEBACK NOTED	TO REMAIN
ST 8	62.5" x 93.75"		TULIP POPLAR	FAIR, CROWN DIEBACK, TWO STEMS ABOVE BH	TO REMAIN
ST 21	44" x 66"		RED OAK	POOR, SEVERE DIEBACK	TO REMAIN
ST 22	38" x 57"		RED OAK	POOR, NOTABLE DIEBACK	TO REMAIN
ST 23	33.5" x 50.25"		TULIP POPLAR	POOR, TRUNK ROT	TO BE REMOVED

MATCHLINE - SHEET 16

NOTE:
BECAUSE THE PROPOSED LANDSCAPING WILL BE PLACED DIRECTLY ON THE PROPERTIES OF INDIVIDUAL LOT OWNERS, THE DEVELOPER OF THIS SUBDIVISION SHALL NOT "PASS" THE LANDSCAPING OBLIGATION ON TO A FUTURE HOME BUILDER OR TO FUTURE, INDIVIDUAL LOT BUYERS/OWNERS. THIS CAN CREATE AN UNDUABLE HARDSHIP TO THE LOT BUILDER OR THE INDIVIDUAL HOMEOWNER IN TERMS OF ENFORCEMENT SHOULD THE TREES NOT BE PLANTED OR DO NOT PASS INSPECTION. THE DEVELOPER SHOULD BE RESPONSIBLE FOR PLANTING THE TREES AND MAINTENANCE OF SUCH UNTIL ALL OF THE PLANTED TREES PASS LANDSCAPING INSPECTION.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 DATE: 11/27/2018
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 DATE: 12-2-18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: DATE: 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT

DEVELOPER'S/BUILDER'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 CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER: Michael P. Harris
 DATE: 1/16/19

LANDSCAPE PLAN
 SCALE: 1"=50'

SPECIMEN TREE MITIGATION:
 PROPOSED LANDSCAPE TREES WITH THE DESIGNATION OF "CF" ARE PROVIDED AS PART OF THE 2:1 MITIGATION REQUIRED FOR THE REMOVAL OF TEN SPECIMEN TREES.



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREAS ARE SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DATE: 5-30-24
 P.E.#: 16193

OWNER:
 ESTATES AT RIVER HILL, LLC
 MICHAEL PFUJ, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER:
 TRINITY HOMES MARY LAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

NO.	REVISION	DATE
1	MODIFICATION TO OWNER HOUSES SWM AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN
LANDSCAPE PLAN
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

PARCEL: 389
 TAX MAP: 34 GRID: 23
 5TH ELECTION DISTRICT

ZONED: RR-DEO
 L. 4772 / F. 285
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110
 ELLICOTT CITY, MD 21043
 TEL: 410.461.7666
 FAX: 410.461.8961

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DESIGN BY: RHY
 DRAWN BY: JMR
 CHECKED BY: RHY
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.O. NO.: 15-39

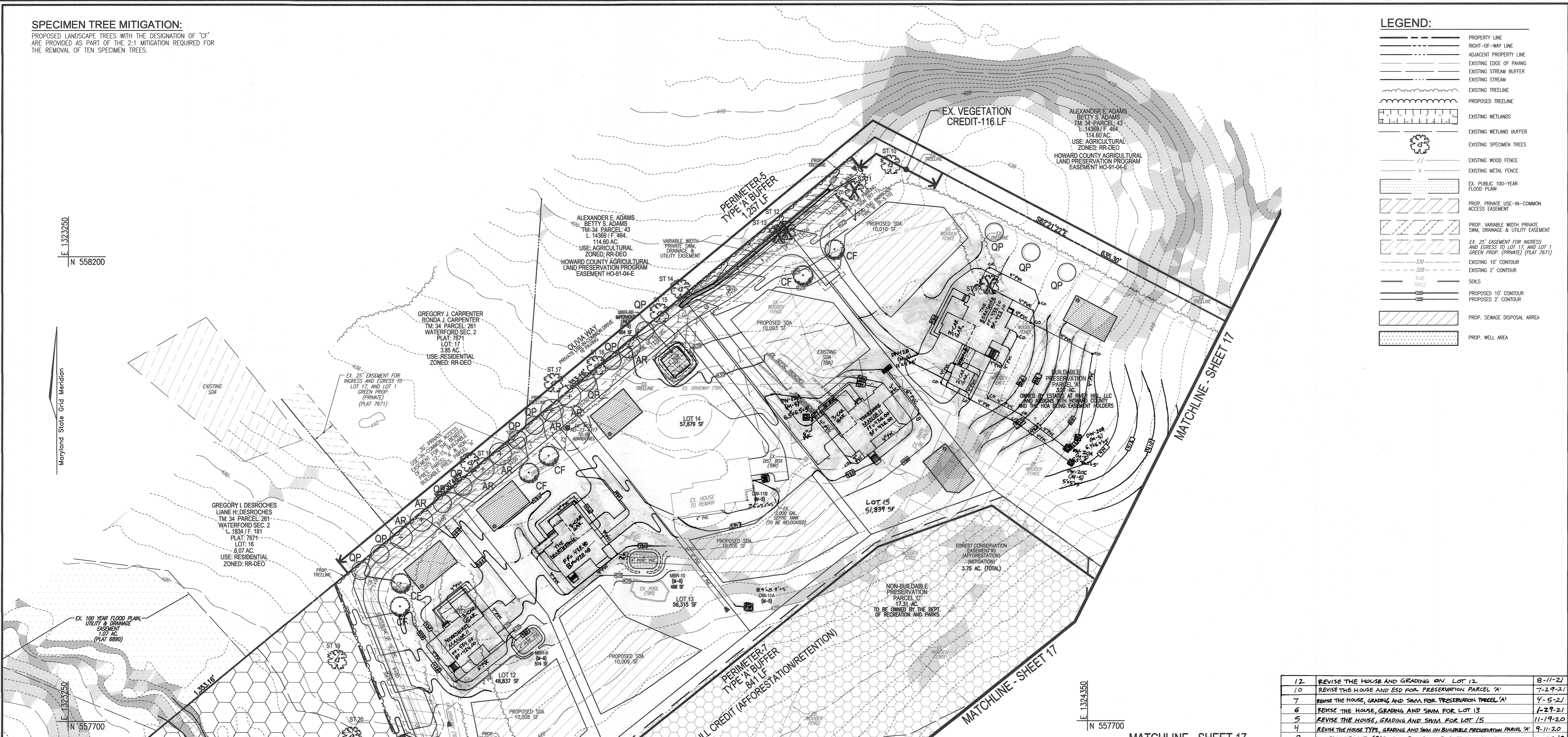
14 SHEET OF 33

SPECIMEN TREE MITIGATION:
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LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING EDGE OF PAVING
	EXISTING STREAM BUFFER
	EXISTING STREAM
	EXISTING TREELINE
	PROPOSED TREELINE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	EXISTING SPECIMEN TREES
	EXISTING WOOD FENCE
	EXISTING METAL FENCE
	EX. PUBLIC 100-YEAR FLOOD PLAN
	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
	EX. 25' EASEMENT FOR INGRESS AND EGRESS TO LOT 12 AND LOT 1 GREEN PROP. (PRIVATE) (PLAT 7671)
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	PROP. SEWAGE DISPOSAL AREA
	PROP. WELL AREA

E 1323250
 N 558200
 Maryland State Grid Meridian
 E 1323250
 N 557700



MATCHLINE - SHEET 14

MATCHLINE - SHEET 17
 MATCHLINE - SHEET 16

SPECIMEN TREE CHART

NO.	SIZE (DBH/HEIGHT)	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 2	30.5' / 45.75'		TULIP POPLAR	FAIR, SOME DIEBACK NOTED	TO BE REMOVED
ST 4	33' / 49.5'		BLACK OAK	POOR, DIEBACK NOTED	TO REMAIN
ST 9	30' / 45'		WHITE PINE	GOOD CONDITION	TO BE REMOVED
ST 10	31' / 46.5'		TULIP POPLAR	GOOD CONDITION	TO REMAIN
ST 11	42' / 63'		WHITE OAK	GOOD CONDITION	TO BE REMOVED
ST 12	39.5' / 59.25'		WHITE OAK	GOOD CONDITION	TO BE REMOVED
ST 13	30' / 45'		TULIP POPLAR	FAIR, LIMITED CROWN	TO BE REMOVED
ST 14	58.5' / 87.75'		TULIP POPLAR	POOR, TRUNK ROT	TO REMAIN
ST 15	33.5' / 50.25'		TULIP POPLAR	LIMITED CROWN	TO REMAIN
ST 16	31' / 46.5'		SILVER MAPLE	FAIR, LEANING	TO REMAIN
ST 17	47' / 70.5'		WHITE OAK	GOOD CONDITION	TO REMAIN
ST 18	34.5' / 51.75'		TULIP POPLAR	GOOD CONDITION	TO REMAIN
ST 19	45' / 67.5'		BLACK OAK	FAIR, LIMB DIEBACK	TO REMAIN
ST 20	37.5' / 56.25'		BLACK OAK	POOR, SEVERE DIEBACK	TO REMAIN

NO.	REVISION	DATE
12	REVISE THE HOUSE AND GRADING ON LOT 12	8-11-21
10	REVISE THE HOUSE AND ESD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM FOR LOT 13	1-29-21
5	REVISE THE HOUSE, GRADING AND SWM FOR LOT 15	11-19-20
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL 'A' AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 11/27/2018
 CHIEF, BUREAU OF HIGHWAYS

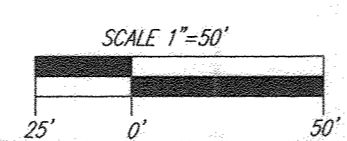
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12-2-18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT

DEVELOPER'S/BUILDER'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 CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

[Signature] 11/5/18
 SIGNATURE OF DEVELOPER

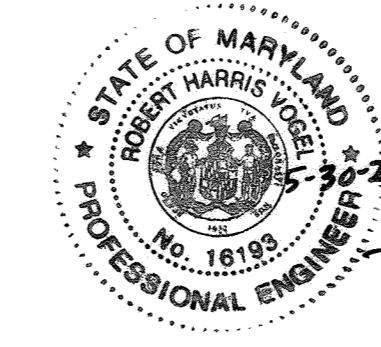


LANDSCAPE PLAN
 SCALE: 1"=50'

AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

[Signature] 16193 5-30-24
 P.E. # DATE



OWNER
 ESTATES AT RIVER HILL, LLC
 MICHAEL PFAU, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER
 TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

REVISED FINAL ROAD CONSTRUCTION PLAN
LANDSCAPE PLAN
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO
 TAX MAP: 34 GRD: 23 L: 4772 / F: 285
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERS & SURVEYORS, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHW
 DRAWN BY: JMR
 CHECKED BY: RHW
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.O. NO.: 15-39

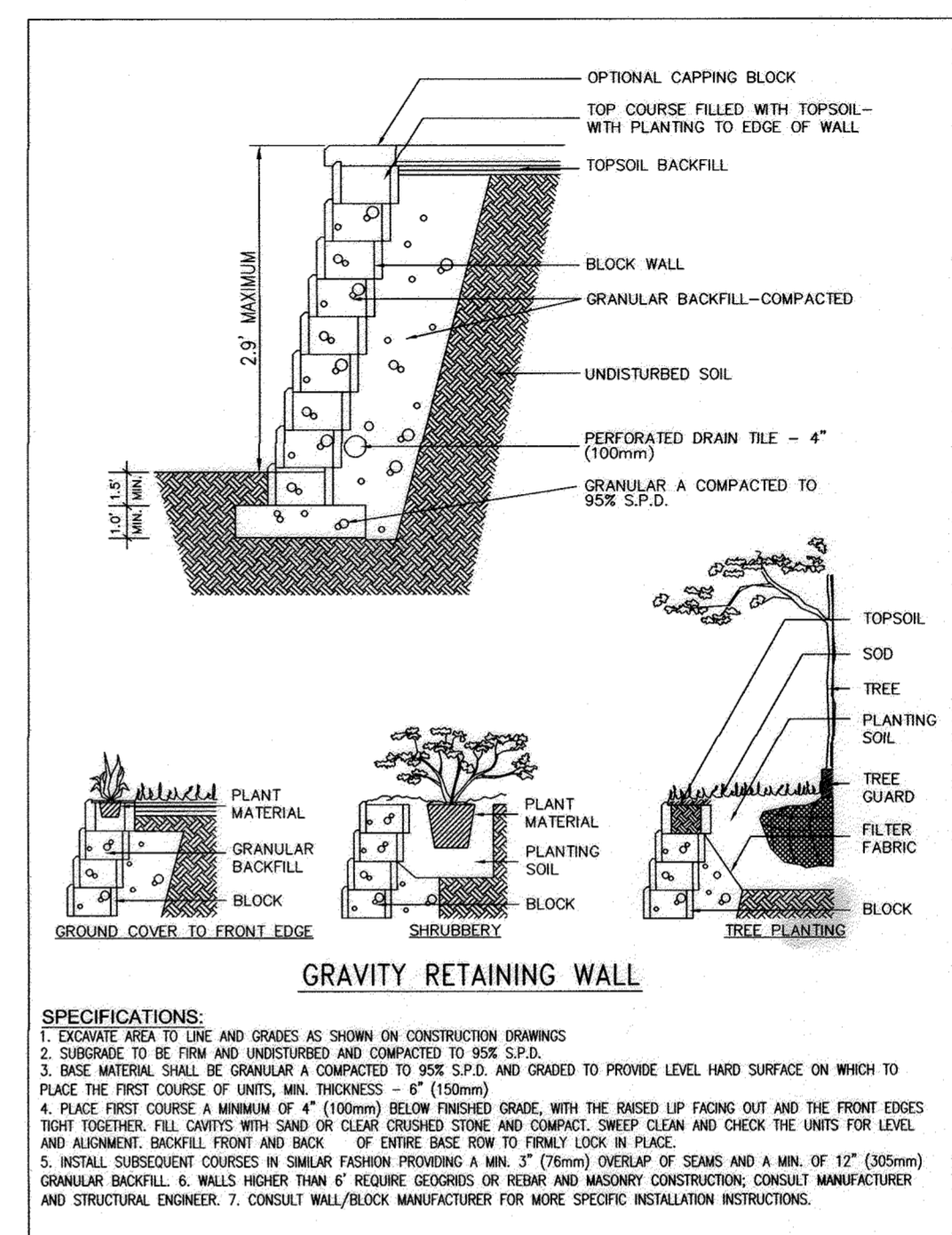
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15 SHEET OF 33



LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
- EX. 24' WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
- EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA



TYP. NON-STRUCTURAL WALL OR EQUAL



AS-BUILT CERTIFICATION FOR PSWM

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Robert H. Vogel 16193 5-30-24
P.E. NAME P.E.# DATE

SPECIMEN TREE MITIGATION:
PROPOSED LANDSCAPE TREES WITH THE DESIGNATION OF 'CF' ARE PROVIDED AS PART OF THE 2:1 MITIGATION REQUIRED FOR THE REMOVAL OF TEN SPECIMEN TREES.

SPECIMEN TREE CHART

NO.	SIZE (IN. DBH/FEET HEIGHT)	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 24	37" 55.5'		TULIP POPLAR	MAJOR TRUNK WOUND	TO BE REMOVED
ST 25	34.5" 51.75'		TULIP POPLAR	POOR, TRUNK CAVITY	TO REMAIN

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Joe 11/27/2018
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Michael 12-2-18
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kevin 1-10-19
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

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Michael 11/5/18
SIGNATURE OF DEVELOPER DATE

LANDSCAPE PLAN
SCALE: 1"=50'

NO.	REVISION	DATE
14	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOTS 8 AND 9	6-22-22
13	REVISE THE PLAN TO ADD AN EXTRA DRY WALL TO LOT 7 AND MODIFY THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESD PRACTICES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE GRADING AND SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ON LOT HOUSES SWM AND GRADING	4-10-19

FINAL ROAD CONSTRUCTION PLAN
LANDSCAPE PLAN
THE ESTATES AT RIVER HILL
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO
TAX MAP: 34 GRID: 23 L 4772 / F. 285
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS

3300 N. RIDGE ROAD, SUITE 110 ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: NOVEMBER 2018
SCALE: AS SHOWN
W.O. NO.: 15-39

HEREBY CERTIFY THAT THESE DOCUMENTS 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. 16193 EXPIRATION DATE: 09-27-2020

16 SHEET OF 33

LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING EDGE OF PAVING
	EXISTING STREAM BUFFER
	EXISTING STREAM
	EXISTING TREELINE
	PROPOSED TREELINE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	EXISTING SPECIMEN TREES
	EXISTING WOOD FENCE
	EX. PUBLIC 100-YEAR FLOOD PLAN
	EX. FOREST CONSERVATION EASEMENT #1 (2011 12949)
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS

GENERAL NOTES:

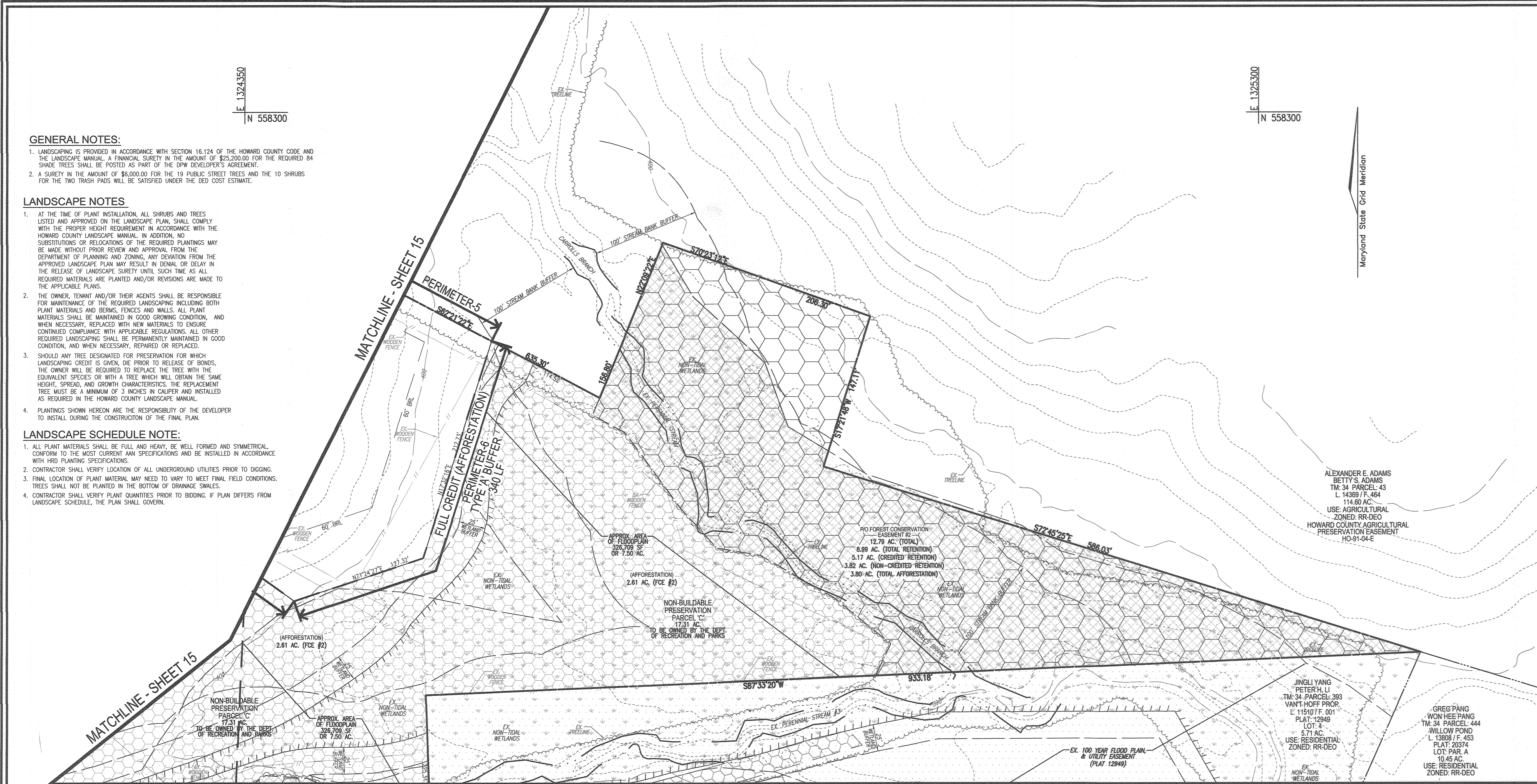
- LANDSCAPING IS PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF \$25,000.00 FOR THE REQUIRED 84 SHADE TREES SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT.
- A SURETY IN THE AMOUNT OF \$6,000.00 FOR THE 19 PUBLIC STREET TREES AND THE 10 SHRUBS FOR THE TWO TRASH PADS WILL BE SATISFIED UNDER THE BID COST ESTIMATE.

LANDSCAPE NOTES

- AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND 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 DEVIATION 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 APPLICABLE PLANS.
- THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. 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 OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
- SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN, 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.
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN.

LANDSCAPE SCHEDULE NOTE:

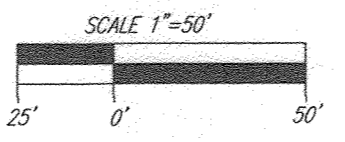
- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT MAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRD PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.



MATCHLINE - SHEET 16

LANDSCAPE PLAN

SCALE: 1"=50'



TRASH PAD LANDSCAPING

SYMBOL	QTY.	DESCRIPTION	SIZE	REMARKS
	10	DWARF JAPANESE YEW	3'-4" HT	B & B

STREET TREE CALCULATIONS

STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
ALLNUTT LANE EXT.	768/40	19	19

LANDSCAPING PLANT LIST

SYMBOL	KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
	AR	27	ACER RUBRUM 'RED SUNSET' RED SUNSET RED MAPLE	2 1/2"-3" CAL.	A
	QP	36	QUERCUS PHELLOS WILLOW OAK	2 1/2"-3" CAL.	
	CF	20	CORNUS FLORIDA WHITE FLOWERING DOGWOOD	8"-10" HGT.	
	AF	19	ACER RUBRUM 'AUTUMN FLAME' AUTUMN FLAME RED MAPLE	2 1/2"-3" CAL.	A

A. BE ADVISED THAT THESE SPECIES SHOULD NOT BE PLANTED ALONG PROJECT PERIMETERS ADJACENT TO HORSE PASTURES BECAUSE THE WILTED LEAVES, FLOWERS OR NEEDLES MAY BE TOXIC TO HORSES AND OTHER LIVESTOCK.

SCHEDULE A: PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO PERIMETER PROPERTIES AND ROADWAYS									SPECIMEN TREE MITIGATION	TOTAL
	1	2	3	4	5	6	7	8	9		
PERIMETER/FRONTAGE DESIGNATION	A	N/A	N/A	A	A	A	A	A	A		
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	830'	287'	402'	1,147'	1,257'	340'	841'	1,210'	1,114'		
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	YES* 366'	-	-	YES 207'	YES 116'	YES 340'	YES 841'	NO	YES 1,034'		
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	-	-	NO	NO	NO	NO	NO	NO		
NUMBER OF PLANTS REQUIRED (LF REMAINING)	464*	-	-	940*	1,141*	0	0	1,210*	80*		
SHADE TREES	1:60 8 (7*)	-	-	1:60 16	1:60 19	1:60 0	1:60 0	1:60 20	1:60 1	20	84
EVERGREEN TREES	-	-	-	-	-	-	-	-	-	-	-
SHRUBS	-	-	-	-	-	-	-	-	-	-	-
NUMBER OF PLANTS PROVIDED	7*	-	-	16	19	0	0	20	1	20	83*
SHADE TREES	-	-	-	-	-	-	-	-	-	-	-
EVERGREEN TREES	-	-	-	-	-	-	-	-	-	-	-
OTHER TREES (2:1 SUBSTITUTION)	-	-	-	-	-	-	-	-	-	-	-
SHRUBS (10:1 SUBSTITUTION)	-	-	-	-	-	-	-	-	-	-	-
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED	-	-	-	-	-	-	-	-	-	-	-

NOTE:
*CREDIT IS ALSO BEING TAKEN FOR SPECIMEN TREE #22.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 11/27/2018
 CHIEF, BUREAU OF HIGHWAYS

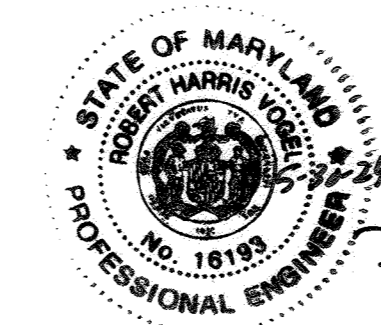
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12-2-18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT

DEVELOPER'S/BUILDER'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 CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXCUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

[Signature] 11/5/18
 SIGNATURE OF DEVELOPER DATE



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DATE: NOVEMBER 2018
 P.E. NAME: [Signature] P.E. # 16193

NO AS-BUILT INFORMATION SHOWN ON THIS SHEET

OWNER
 ESTATES AT RIVER HILL, LLC
 MICHAEL PEJAL, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER
 TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

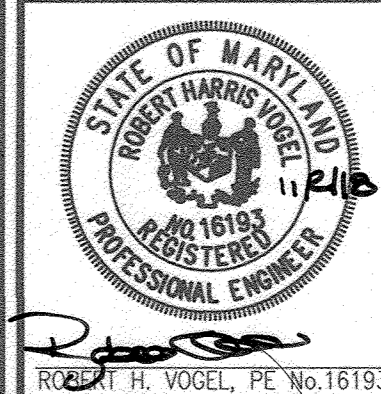
NO.	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19
	REVISION <td>DATE</td>	DATE

REVISED FINAL ROAD CONSTRUCTION PLAN
LANDSCAPE PLAN
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 L 4772 / F. 285
 TAX MAP: 34 GRID: 23
 5TH ELECTION DISTRICT

ZONED: RR-DEO
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL
ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110
 ELLICOTT CITY, MD 21043
 TEL: 410.461.7666
 FAX: 410.461.8961



DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.O. NO.: 15-39

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 16193 EXPIRES DATE: 08-27-2020

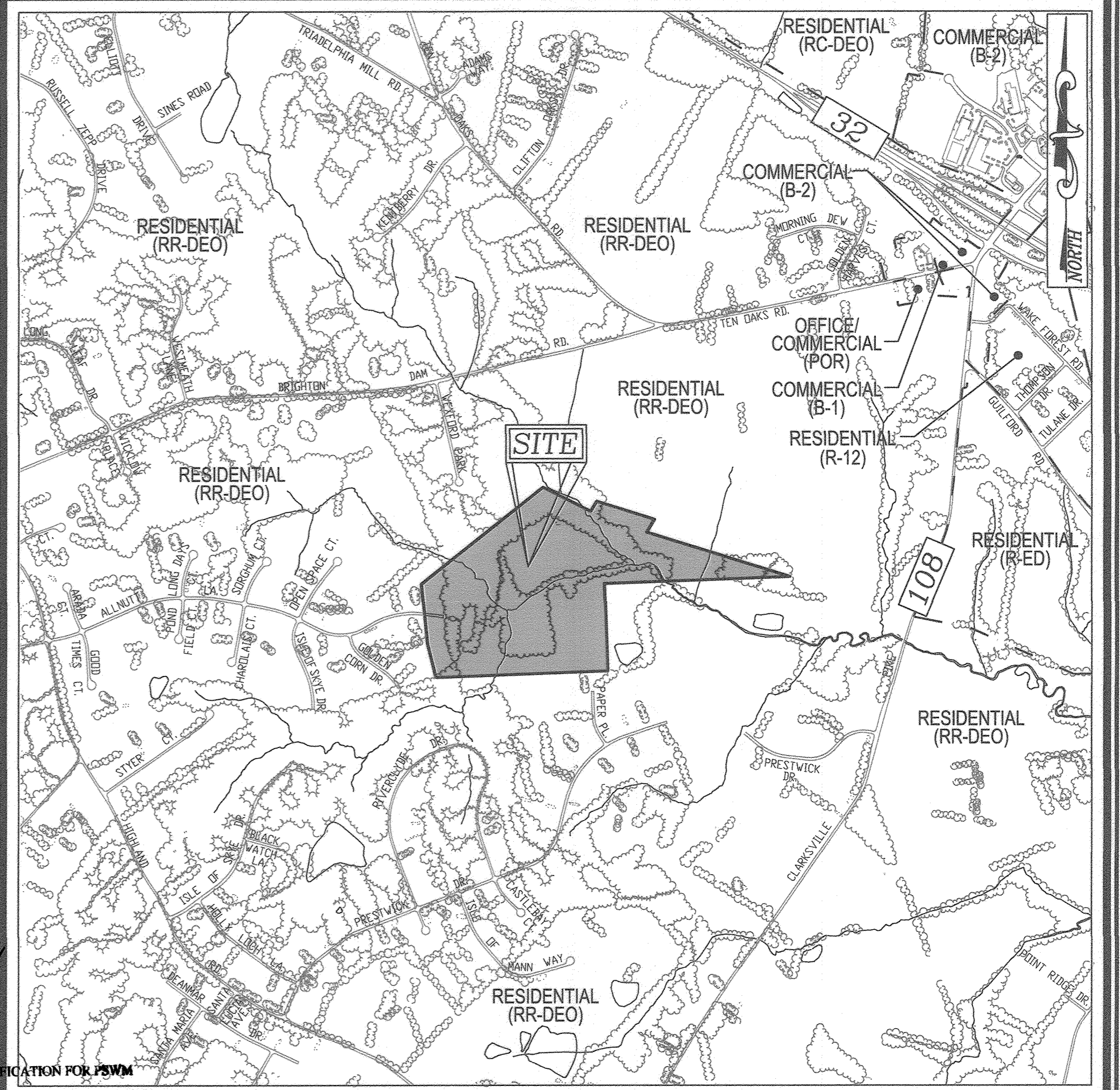
17 SHEET OF 33

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREETRINE
- PROPOSED TREETRINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 19.99% SLOPES)
- EX. 25' EASEMENT FOR INGRESS AND EGRESS TO LOT 17, AND LOT 1, GREEN PROP. (P/RAW) (PLAT 7571)
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- FOREST CONSERVATION SIGNS

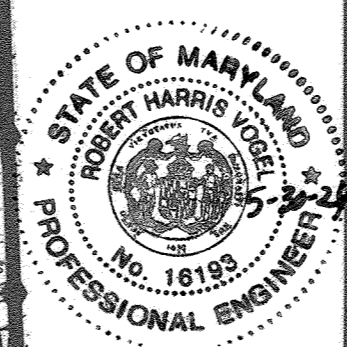
FOREST CONSERVATION LEGEND:

- FOREST CONSERVATION EASEMENT (RETENTION)
- FOREST CONSERVATION EASEMENT (NON-CREDITED RETENTION)
- FOREST CONSERVATION EASEMENT (AFFORESTATION)



E 1324550
N 558000

MATCHLINE: SHEET 19



AS-BUILT CERTIFICATION FOR P/RAW

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

NAME: **16193** P.E.# **5-30-24** DATE

Eco-Science Professionals, Inc.
Consulting Ecologists
P.O. Box 5096 Glen Arm, Maryland 21057 Telephone (410) 833-2460 Fax (410) 833-2488

MD DNR Qualified Professional USACOE Wetland Delinator
Certification # WDCP93MD061004B2
S.H.

WATERSHED NAME: MIDDLE PATUXENT RIVER
WATERSHED NUMBER: 02131106

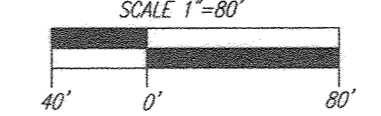
A. GROSS SITE AREA:	42.60 AC.
NET SITE AREA:	35.10 AC.
B. AREA OF 100-YEAR FLOODPLAIN:	7.50 AC. HEC-RAS
C. AREA OF WETLANDS AND BUFFERS(ONSITE):	9.22 AC.
D. AREA OF >25% STEEP SLOPES:	12.75 AC.
E. EXISTING FOREST:	0.00 AC.
F. ZONED:	RR-DEO
G. EXISTING USE:	RESIDENTIAL
H. PROPOSED USE:	RESIDENTIAL

GENERAL NOTES

- NO RARE, THREATENED OR ENDANGERED SPECIES OR THEIR HABITAT WERE OBSERVED ON THE PROPERTY.
- SURROUNDING LAND USE IS PRIMARILY RURAL DENSITY RESIDENTIAL DEVELOPMENT. APPROXIMATELY 4.0 ACRES OF FOREST IS PRESENT WITHIN 100 FEET OF THE SUBJECT PROPERTY.
- ALL WETLANDS AND STREAMS ON THE PROPERTY ARE PART OF THE MIDDLE PATUXENT RIVER WATERSHED (02-13-11). THE STREAMS ON SITE ARE CONSIDERED TO BE USE IV-P WATERS. PERENNIAL STREAMS WILL REQUIRE 100 FOOT BUFFERS, INTERMITTENT STREAMS WILL REQUIRE 50 FOOT BUFFERS AND WETLANDS WILL REQUIRE 25 FOOT BUFFERS.
- THERE IS APPROXIMATELY 7.50 ACRES OF 100 YEAR FLOODPLAIN LOCATED WITHIN THE LIMITS OF THIS SITE. APPROXIMATE FLOODPLAIN DELINEATION GENERATED FROM PRELIMINARY HEC-RAS ANALYSIS, PREPARED BY ROBERT H. VOGEL ENGINEERING.
- NO AREAS OF STEEP SLOPES AS SHOWN HEREON THE PLAN ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUBDIVISION REGULATIONS.
- THERE ARE NO HISTORIC STRUCTURES OR CEMETERIES ON THIS PROPERTY.
- THERE ARE 25 SPECIMEN TREES LOCATED ON, AND AROUND THE PERIMETER OF THE PROPERTY. THERE ARE NO KNOWN TREES THAT ARE STATE CHAMPION TREES AND OR TREES 75% OF THE SIZE OF THE STATE CHAMPION TREE ON THE PROPERTY.

FOREST CONSERVATION PLAN

SCALE: 1"=80'



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Ba	BALE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	37	YES
Co	CODORUS AND HARBOR SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	32	NO
Gcb	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	28	NO
Gcc	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	28	NO
Gmb	GRANVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	43	YES
Hb	HARBOR-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	37	YES

NOTE:
HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

OWNER: ESTATES AT RIVER HILL, LLC
MICHAEL PFAU, MEMBER
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

DEVELOPER: TRINITY HOMES MARY LAND, LLC
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
James 11/27/2018 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
Chad 12-2-18 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF LAND DEVELOPMENT
CHIEF, DIVISION OF LAND DEVELOPMENT
Karl 1-10-19 DATE

NO.	REVISION	DATE
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO OULIT HOUSES SWIM AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN
FOREST CONSERVATION PLAN AND FOREST MITIGATION PLAN
THE ESTATES AT RIVER HILL
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 369
TAX MAP: 34 GRID: 23
5TH ELECTION DISTRICT

ZONED: RR-DEO
L 4772, F, 285
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERS & SURVEYORS, INC.
3300 N. RIDGE ROAD, SUITE 110
ELLCOTT CITY, MD 21043
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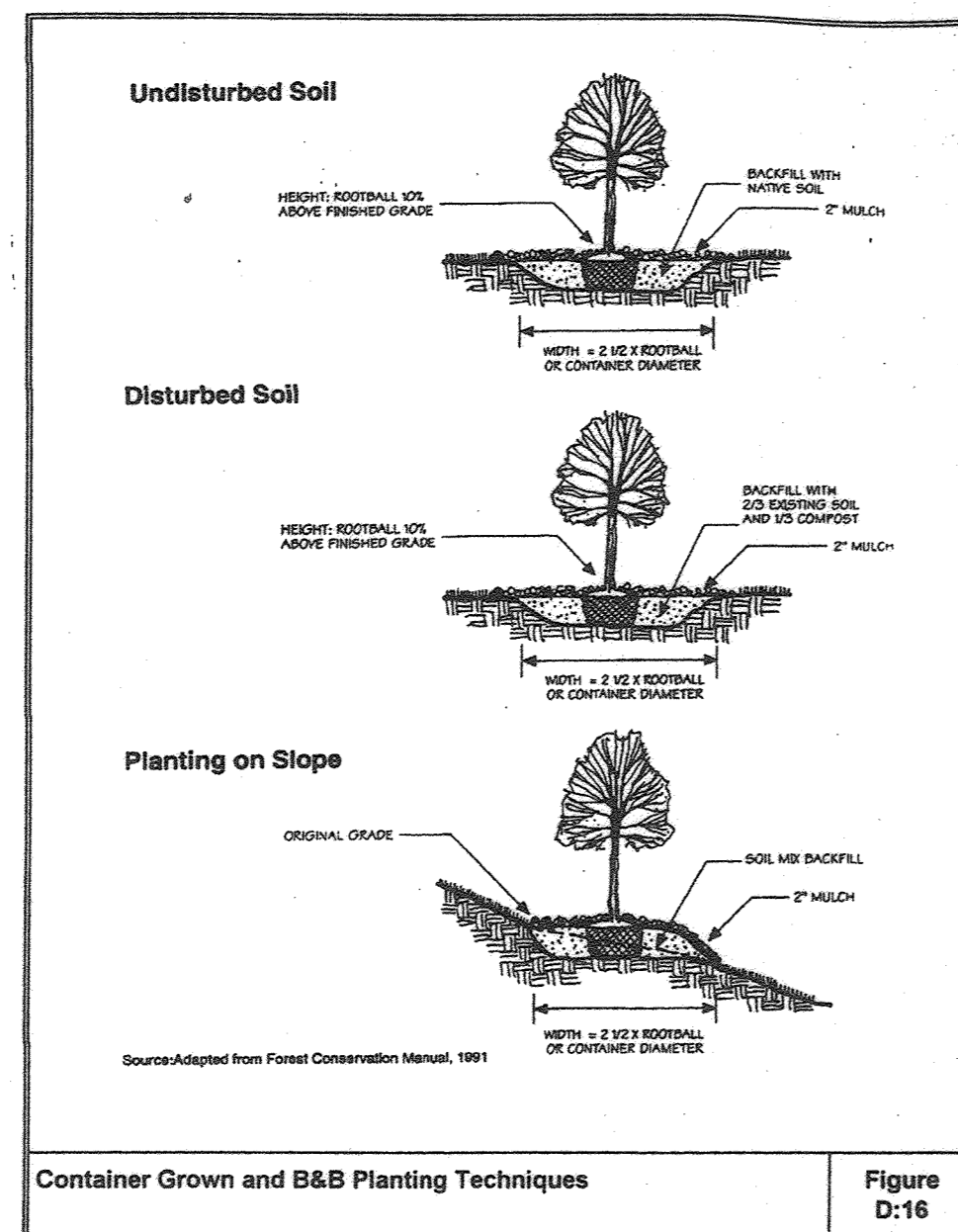
18 SHEET OF 33

REFORESTATION AREA MONITORING NOTES

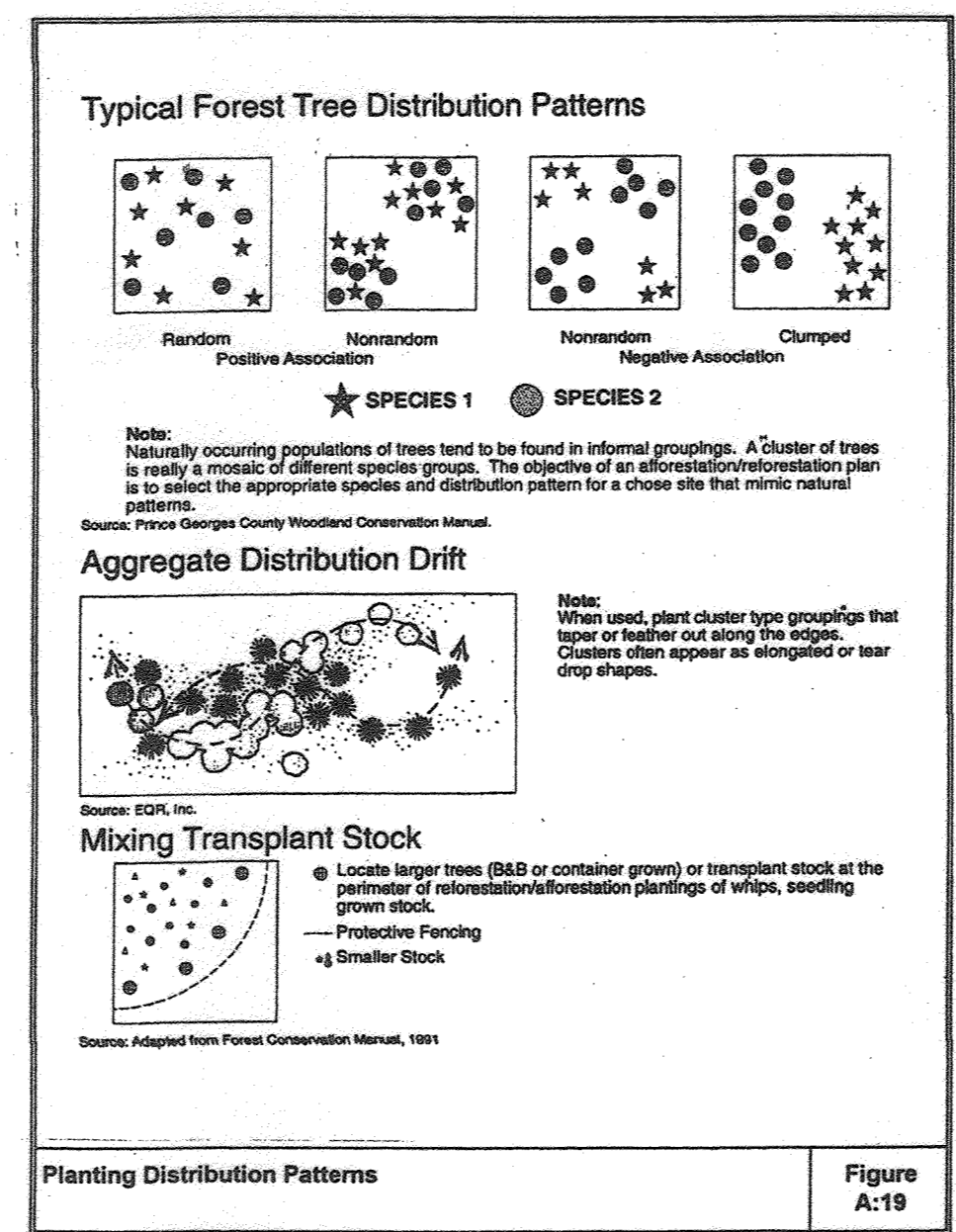
- MONTHLY VISITS DURING THE FIRST GROWING SEASON ARE TO ASSESS THE SUCCESS OF THE PLANTINGS AND TO DETERMINE IF SUPPLEMENTAL WATERING, PEST CONTROL OR OTHER ACTIONS ARE NECESSARY. EARLY SPRING VISITS WILL DOCUMENT WINTER KILL AND AUTUMN VISITS WILL DOCUMENT SUMMER KILL.
- THE MINIMUM SURVIVAL RATE SHALL BE 75% OF THE TOTAL NUMBER OF TREES PLANTED PER ACRE AT THE END OF THE TWO YEAR MAINTENANCE PERIOD. WILD TREE SEEDLINGS FROM NATURAL REGENERATION ON THE PLANTING SITE MAY BE COUNTED UP TO 50% TOWARD THE TOTAL SURVIVAL NUMBER IF THE ARE HEALTHY NATIVE SPECIES AT LEAST 12 INCHES TALL.
- SURVIVAL WILL BE DETERMINED BY A STRATIFIED RANDOM SAMPLING OF THE PLANTINGS. THE SPECIES COMPOSITION OF THE SAMPLE POPULATION SHOULD BE PROPORTIONATE TO THE AMOUNT OF EACH SPECIES IN THE ENTIRE PLANTING TO BE SAMPLED.
- EFFECTIVE MONITORING WILL ASSESS PLANT SURVIVABILITY DURING THE FIRST GROWING SEASON AND MAKE RECOMMENDATIONS FOR REINFORCEMENT PLANTINGS IF REQUIRED AT THAT TIME.

REFORESTATION PLANTING NOTES

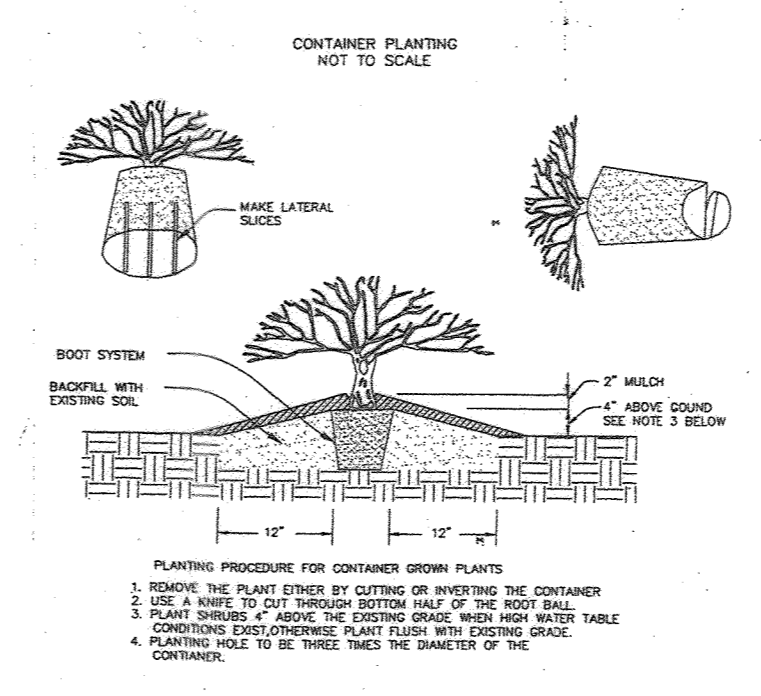
- AFFORESTATION AREAS MAY BE PLANTED AS SOON AS REASONABLE TO DO SO. LATE WINTER-EARLY SPRING PLANTINGS ARE PREFERRED. EARLIEST PLANTING DATES WILL VARY FROM YEAR TO YEAR BUT PLANTING MAY GENERALLY BEGIN AS SOON AS THE GROUND IS NO LONGER FROZEN. ALTERNATE PLANTING DATES MAY BE CONSIDERED AS CONDITION WARRANTS.
- SOIL AMENDMENTS AND FERTILIZATION RECOMMENDATIONS WILL BE MADE BASED UPON THE RESULTS OF SOIL ANALYSIS FOR NITROGEN, PHOSPHORUS, POTASSIUM, ORGANIC MATTER CONTENT AND pH. IF REQUIRED, FERTILIZER WILL BE PROVIDED USING A SLOW RELEASE, SOLUBLE 16-8-16 ANALYSIS DESIGNED TO LAST 5-8 YEARS CONTAINED IN POLYETHYLENE PERFORATED BAGS SUCH AS MANUFACTURED BY ADCO WORKS, P.O. BOX 310 HOLLIS, N.Y. 11423 OR APPROVED EQUAL.
- PLANT MATERIALS WILL BE PLANTED IN ACCORDANCE WITH THE PLANTING DETAILS AND PLANT SCHEDULE.
- PLANT MATERIAL SHALL BE NURSERY GROWN AND INSPECTED PRIOR TO PLANTING. PLANTS NOT CONFORMING TO THE AMERICAN STANDARD FOR NURSERY STOCK SPECIFICATIONS FOR SIZE, FORM, VIGOR, OR ROOTS, OR DUE TO TRUNK WOUNDS, BREAKAGE, DESICCATION, INSECT OR DISEASE MUST BE REPLACED.
- PLANTING STOCK MUST BE PROTECTED FROM DESICCATION AT ALL TIMES PRIOR TO PLANTING. MATERIALS HELD FOR PLANTING SHALL BE MOISTENED AND PLACED IN COOL SHADED AREAS UNTIL READY FOR PLACEMENT.
- NEWLY PLANTED TREES MAY REQUIRE WATERING AT LEAST ONCE PER WEEK DURING THE FIRST GROWING SEASON DEPENDING ON RAINFALL IN ORDER TO GET ESTABLISHED. THE INITIAL PLANTING OPERATION SHOULD ALLOW FOR WATERING DURING INSTALLATION TO COMPLETELY SOAK BACKFILL MATERIAL.
- MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE DIAGRAM PROVIDED AND SHALL CONSIST OF COMPOSTED, SHREDDED HARDWOOD BARK MULCH, FREE OF WOOD ALCOHOL.
- ALL NURSERY STOCK TO BE SPRAYED WITH DEER REPELLENT CONTAINING BITREX, SUCH AS REPELLEX. ALL NURSERY STOCK TO BE GROWN WITH DEER REPELLENT TABLETS IN GROWING MEDIUM, SUCH AS REPELLEX TABLETS.



Container Grown and B&B Planting Techniques Figure D-16



Planting Distribution Patterns Figure A-19



Size	Number Required per Acre	Approximate Spacing feet on center	Survivability Requirement At the end of the second growing season	
Container Grown 5, 7 Gallon or 1" Caliper B & B	200	15 x 15	75%	170

Notes:

- These stocking and survival requirements are the minimum numbers estimated to meet the definition of forest from bare land.
- In certain circumstances, any combination of the above mentioned stocking options, dry seeding, tree shelters, transplants, and/or natural regeneration may be appropriate strategies to fulfill the requirements of an approved FCD. They will be evaluated on a case-by-case basis by the approving authority.
- Spacing does not imply that trees or shrubs must be planted in a grid pattern.

Site Stocking Figure A-18

AFFORESTATION PLANTING SCHEDULE FOREST CONSERVATION EASEMENTS 7.55 ACRES			
EASEMENT #2: 3.80 AC. (AFFORESTATION) @ 200 TREES/AC. = 760 TREES			
QTY.	BOTANICAL NAME	SIZE	SPACING
152	BETULA NIGRA RIVER BIRCH	1" CAL.	15' x 15'
152	PLATANUS OCCIDENTALIS AMERICAN SYCAMORE	1" CAL.	15' x 15'
152	NYSSA SYLVATICA BLACK GUM	1" CAL.	15' x 15'
152	QUERCUS RUBRA RED OAK	1" CAL.	15' x 15'
152	TAXODIUM DISTICHUM COMMON BALD CYPRESS	1" CAL.	15' x 15'
EASEMENT #3: 3.75 AC. (AFFORESTATION) @ 200 TREES/AC. = 750 TREES			
QTY.	BOTANICAL NAME	SIZE	SPACING
150	BETULA NIGRA RIVER BIRCH	1" CAL.	15' x 15'
150	PLATANUS OCCIDENTALIS AMERICAN SYCAMORE	1" CAL.	15' x 15'
150	NYSSA SYLVATICA BLACK GUM	1" CAL.	15' x 15'
150	QUERCUS RUBRA RED OAK	1" CAL.	15' x 15'
150	TAXODIUM DISTICHUM COMMON BALD CYPRESS	1" CAL.	15' x 15'

(MITIGATION)

AFFORESTATION PROVIDED
7.55 ACRES
1" CALIPER TREES
1,510 TREES @ 200 TREES PER ACRE OR EQUAL

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
11-27-2018
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
12-2-18
CHIEF, DEVELOPMENT ENGINEERING DIVISION

1-10-19
CHIEF, DIVISION OF LAND DEVELOPMENT

STATE OF MARYLAND
5-30-21
PROFESSIONAL ENGINEER
NO. 16193

AS-BUILT CERTIFICATION FOR PSWM
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

NAME: [Signature] P.E.#: 16193 DATE: 5-30-21

NO AS-BUILT INFORMATION SHOWN ON THIS SHEET

OWNER: ESTATES AT RIVER HILL, LLC
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

DEVELOPER: TRINITY HOMES MARYLAND, LLC
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

1 REVISION TO EXIST HOUSES SWM AND GRADING 4-10-19
NO. REVISION DATE

Revised FINAL ROAD CONSTRUCTION PLAN
FOREST CONSERVATION PLAN
NOTES AND DETAILS
THE ESTATES AT RIVER HILL
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',
AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'
A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

PARCEL: 389 ZONED: RR-DEE
TAX MAP: 34 GRID: 23 L 4772 / F, 285
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
ELLCOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: NOVEMBER 2018
SCALE: AS SHOWN
W.O. NO.: 15-39

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 16193 EXPIRATION DATE: 09-27-2020

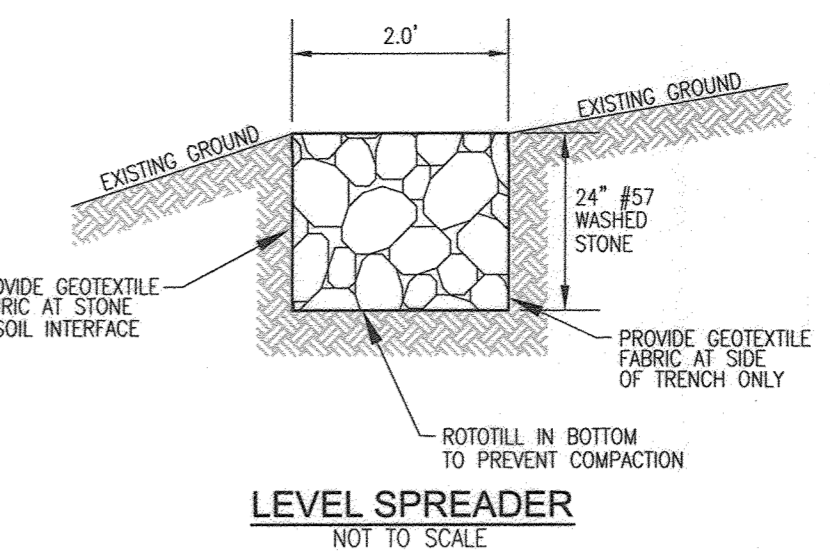
20 SHEET OF 33

MATCHLINE - SHEET 22

SYMBOL	NAME/DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Ba	BALE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	37	YES
Co	CODORUS AND HARBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	32	NO
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	28	NO
GbC	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	28	NO
GmB	GREENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	43	YES
Hb	HARBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	37	YES

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE
 -HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE, MD



LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREETRINE
- PROPOSED TREETRINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 1244)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SWM DRAINAGE & UTILITY EASEMENT
- PROP. 35' PRIVATE MONUMENT EASEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 19.99% SLOPES)
- DRAINAGE AREA DIVIDE
- PROPOSED MICRO-BIORETENTION FACILITY (M-6)
- PROPOSED DRY WELL (M-5)
- AREA OF DRAINAGE TO SHEETFLOW TO LEVEL SPREADER AND CONSERVATION (N-3)
- AREA OF DRAINAGE TO GO TO DRY WELL (M-5)
- AREA OF DRAINAGE TO GO TO MICRO BIO-RETENTION FACILITY (M-6)
- AREA OF DRIVEWAY DRAINAGE TO GO TO NON-ROOFTOP DISCONNECT (N-2)
- AREA OF ROOFTOP DRAINAGE TO GO TO ROOFTOP DISCONNECT (N-1)
- ROOFTOP DISCONNECT (N-1)
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA
- PROP. MBR TEST PIT

APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS

1. MATERIAL SPECIFICATIONS
 THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN 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 HINDERANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMOUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR § 8.02.03. 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 WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (80%-85%) AND COMPOST (15% TO 20%) OR SANDY LOAM (50%), CORNED SAND (20%), 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 IN TO THE SOIL TO INCREASE OR DECREASE PH.
 THERE SHALL BE AT LEAST ONE SOIL TEST PER PRACTICE. 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 PROVIDED 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 LOADERS, 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 CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGHOUT 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. PINE 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 MOST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH 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 BEE 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.

6. UNDERDRAINS
 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, IMPEDS THIS GOAL. ONLY AN FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET. THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

7. MISCELLANEOUS
 THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

AS-BUILT CERTIFICATION FOR PSMW

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF UNDERGROUND SWM FACILITY.

[Signature] 16193 5-30-24
 P.E. NAME DATE

TEST PIT	SURFACE ELEVATION	BORING DEPTH	CONDITION
300	448.84	11'	NO ROCK OR WATER PRESENT
301	431.87	10'	WATER PRESENT AT 421.87
302	425.69	9'	NO ROCK OR WATER PRESENT
303	420.57	9'	WATER PRESENT AT 411.57
309	441.73	12'	NO ROCK OR WATER PRESENT
310	428.00	12'	NO ROCK OR WATER PRESENT
311	418.42	9'	ROCK PRESENT AT 412.42

OPERATION AND MAINTENANCE SCHEDULE FOR JOINTLY MAINTAINED MICROBIORETENTION AREAS (M-6) (MBR-1A & MBR-1B)

- HOWARD COUNTY RESPONSIBLE FOR MAINTAINING PASS THROUGH INLETS PT-1 AND PT-2 AND ALL RIPRAP FOREBAYS ASSOCIATED WITH MBR-1A AND MBR-1B.
- HOMEOWNERS ASSOCIATION RESPONSIBLE FOR MAINTENANCE OF ALL UNDER DRAIN PIPES, OUTFALL PIPES AND OUTFALL RIPRAP.
- HOMEOWNERS ASSOCIATION RESPONSIBLE FOR ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EXCESS WORK. 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 VOL. II, TABLE A.4.1 AND 2.
- SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES. (DMA)
- MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS. (DMA)
- SOIL PROSDON TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS. (DMA)

REVISION

NO.	REVISION	DATE
1	MODIFICATION TO ONLOT HOUSE SWM AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN

STORMWATER MANAGEMENT DRAINAGE AREA MAP, NOTES, AND DETAILS

THE ESTATES AT RIVER HILL

LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO
 TAX MAP: 34 GRID: 23 L 4772 / F. 285
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.

ENGINEERS • SURVEYORS • PLANNERS

3900 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
 ELLIGOTT CITY, MD 21043 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

DESIGN BY: RHY
 DRAWN BY: JMR
 CHECKED BY: RHY
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.D. NO.: 15-39

I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 16193, EXPIRATION DATE: 09-27-2028

21 OF **33**



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 12-2-18

APPROVED: HOWARD COUNTY DEPARTMENT OF LAND DEVELOPMENT
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 1-10-19

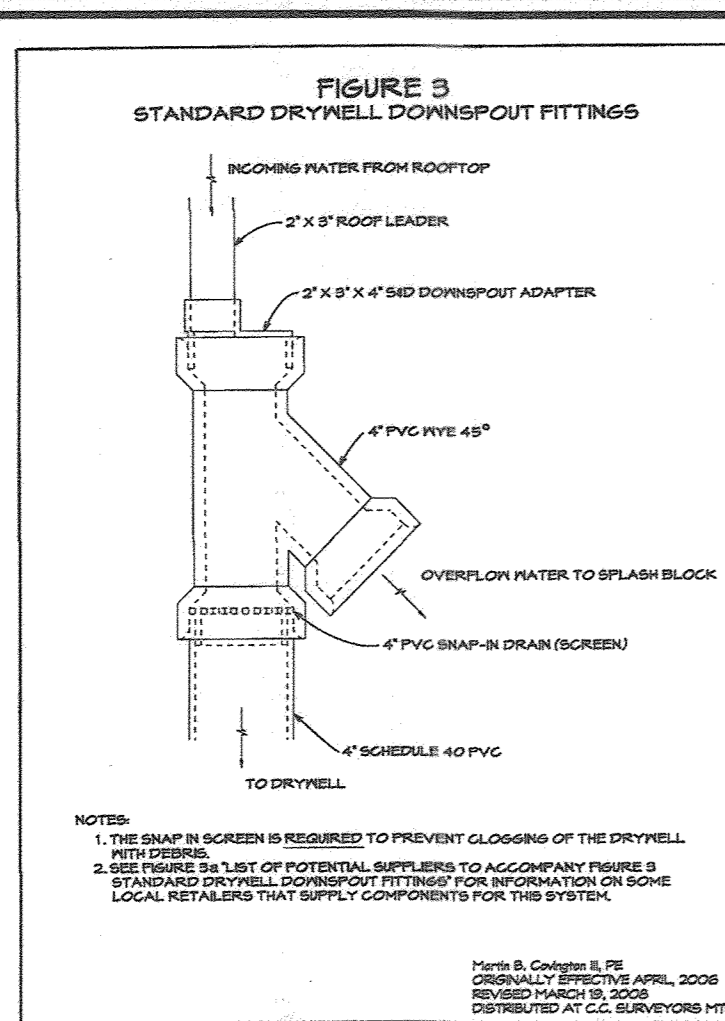
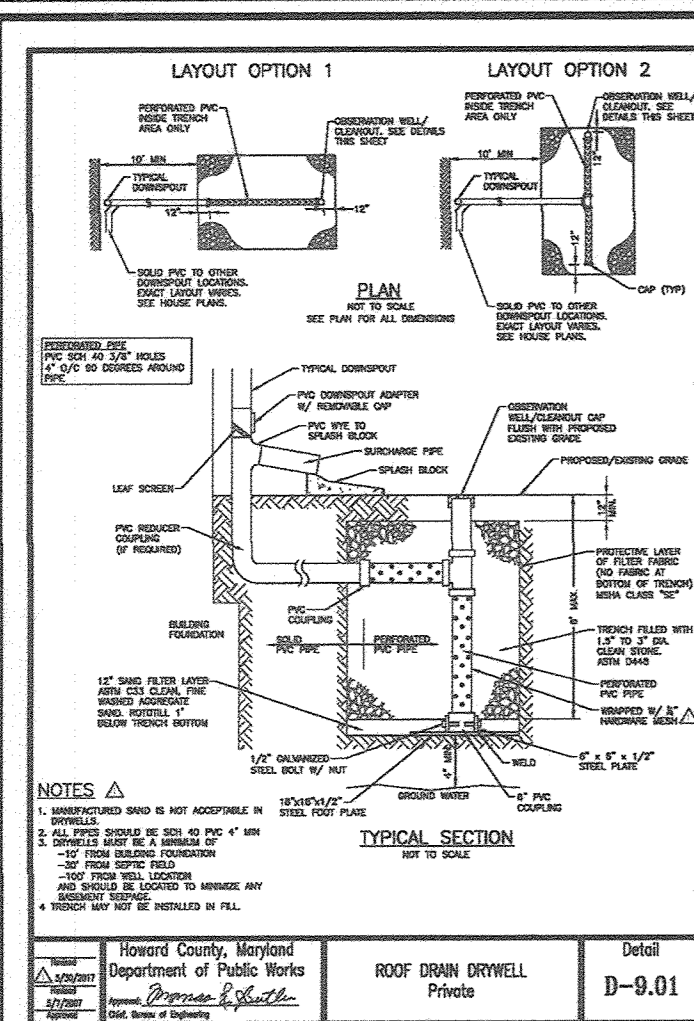
SWM DRAINAGE AREA MAP

SCALE: 1"=50'

SCALE 1"=30'

NOTE:

MBR-1A AND MBR-1B ARE LOCATED IN A PUBLIC SWM EASEMENT. FACILITIES ARE TO BE PRIVATELY OWNED BY THE HOMEOWNERS ASSOCIATION AND JOINTLY MAINTAINED BY THE HOMEOWNERS ASSOCIATION AND HOWARD COUNTY.



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER INFILTRATION TRENCHES (I-1) AND DRY WELLS (M-5)

1. THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS, AND AFTER EVERY LARGE STORM EVENT.
2. 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.
3. THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
4. 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.
5. THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
6. 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.

THE ESTATES AT RIVER HILL

STORMWATER TEST PITS

TEST PIT	SURFACE ELEVATION	BORING DEPTH	CONDITION
312	427.40	10'	NO ROCK OR WATER PRESENT
313	427.29	10'	NO ROCK OR WATER PRESENT
314	429.13	10'	NO ROCK OR WATER PRESENT

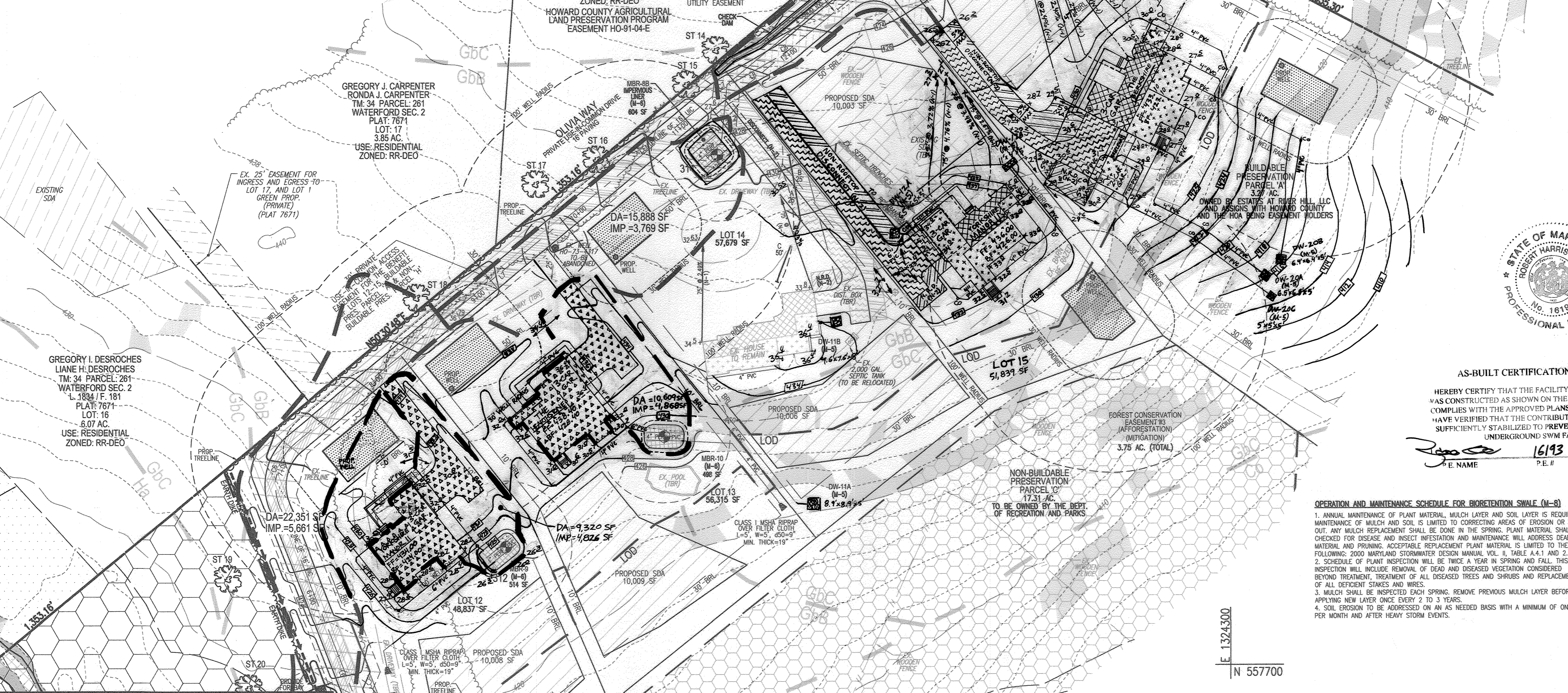
LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREENLINE
- PROPOSED TREENLINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAIN
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
- EX. 25' EASEMENT FOR INGRESS AND EGRESS TO LOT 17, AND LOT 1 GREEN PROP. (PRIVATE) (PLAT 7671)
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 19.9% SLOPES)
- DRAINAGE AREA DIVIDE
- PROPOSED MICRO-BIORETENTION FACILITY (M-6)
- PROPOSED DRY WELL (M-5)
- AREA OF DRAINAGE TO SHEETFLOW TO CONSERVATION (N-3)
- AREA OF DRAINAGE TO GO TO DRY WELL (M-5)
- AREA OF DRAINAGE TO GO TO MICRO-BIORETENTION FACILITY (M-6)
- AREA OF DRAINAGE TO GO TO NON-ROOFTOP DISCONNECT (N-2)
- AREA OF DRAINAGE TO GO TO ROOFTOP DISCONNECT (N-1)
- AREA OF DRAINAGE TO GO TO MICRO-BIORETENTION FACILITY (M-6) AND SHEETFLOW TO CONSERVATION (N-3)
- AREA OF DRAINAGE TO GO TO DRY WELL (M-5) AND SHEETFLOW TO CONSERVATION (N-3)
- AREA OF DRAINAGE TO GO TO BIOW-SWALE (M-8)
- ROOFTOP DISCONNECT (N-1)
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA
- PROP. MBR TEST PIT

Howards County, Maryland
Department of Public Works
Stormwater Management Division
11/27/2018
D-9.01

Howards County, Maryland
Department of Planning and Zoning
12.2.18

Howards County, Maryland
Department of Land Development
1-10-19



AS-BUILT CERTIFICATION FOR PWSM

HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DATE: 1/13/24
P.E. NAME: [Signature]
P.E. # 16193

OPERATION AND MAINTENANCE SCHEDULE FOR BIOW-SWALE (M-8)

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. 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 VOL. 3, TABLE A.4.1 AND 2.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT LIMBS AND BRANCHES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONE PER MONTH AND AFTER HEAVY STORM EVENTS.

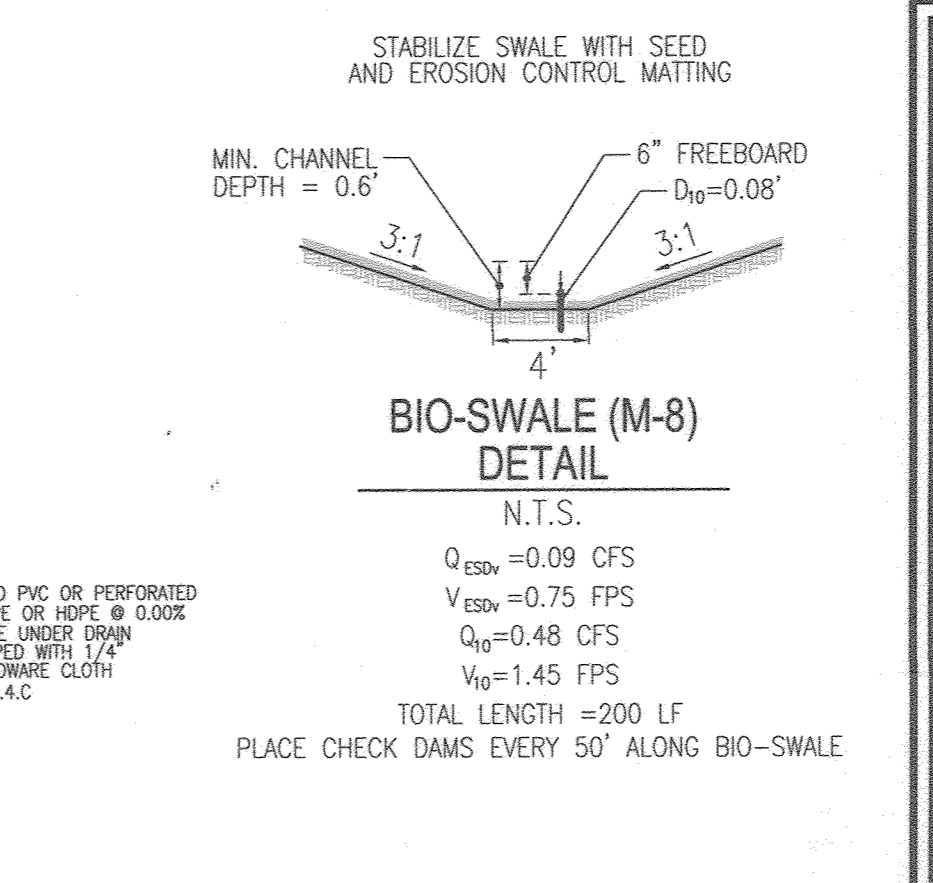
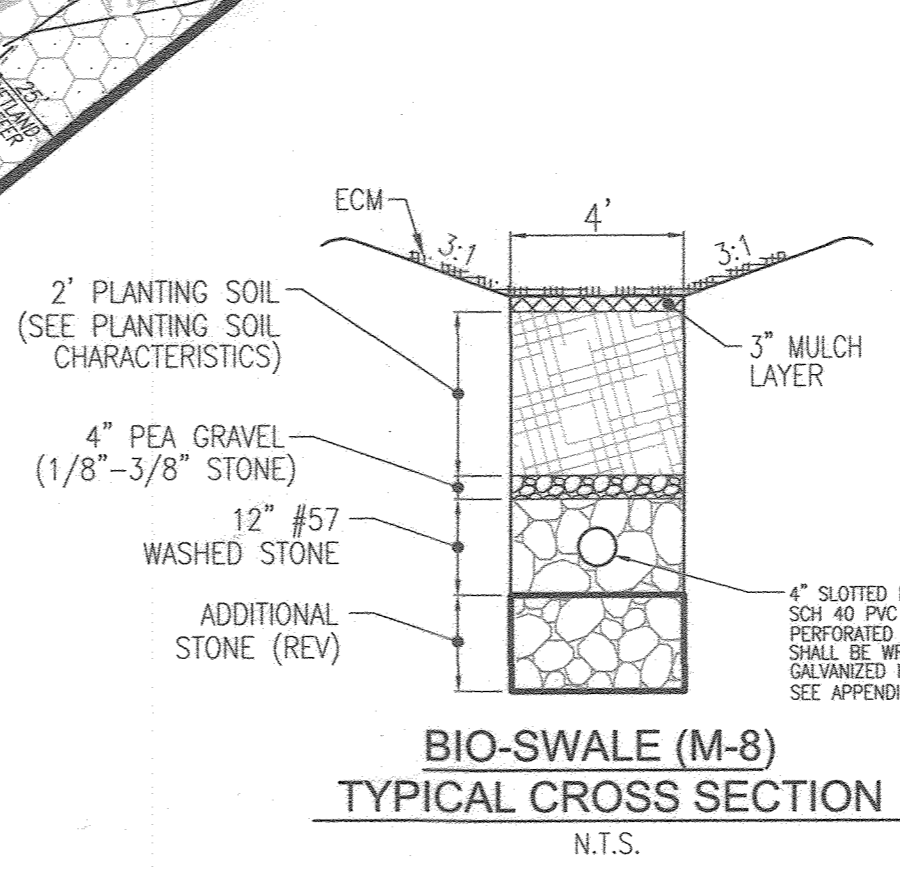
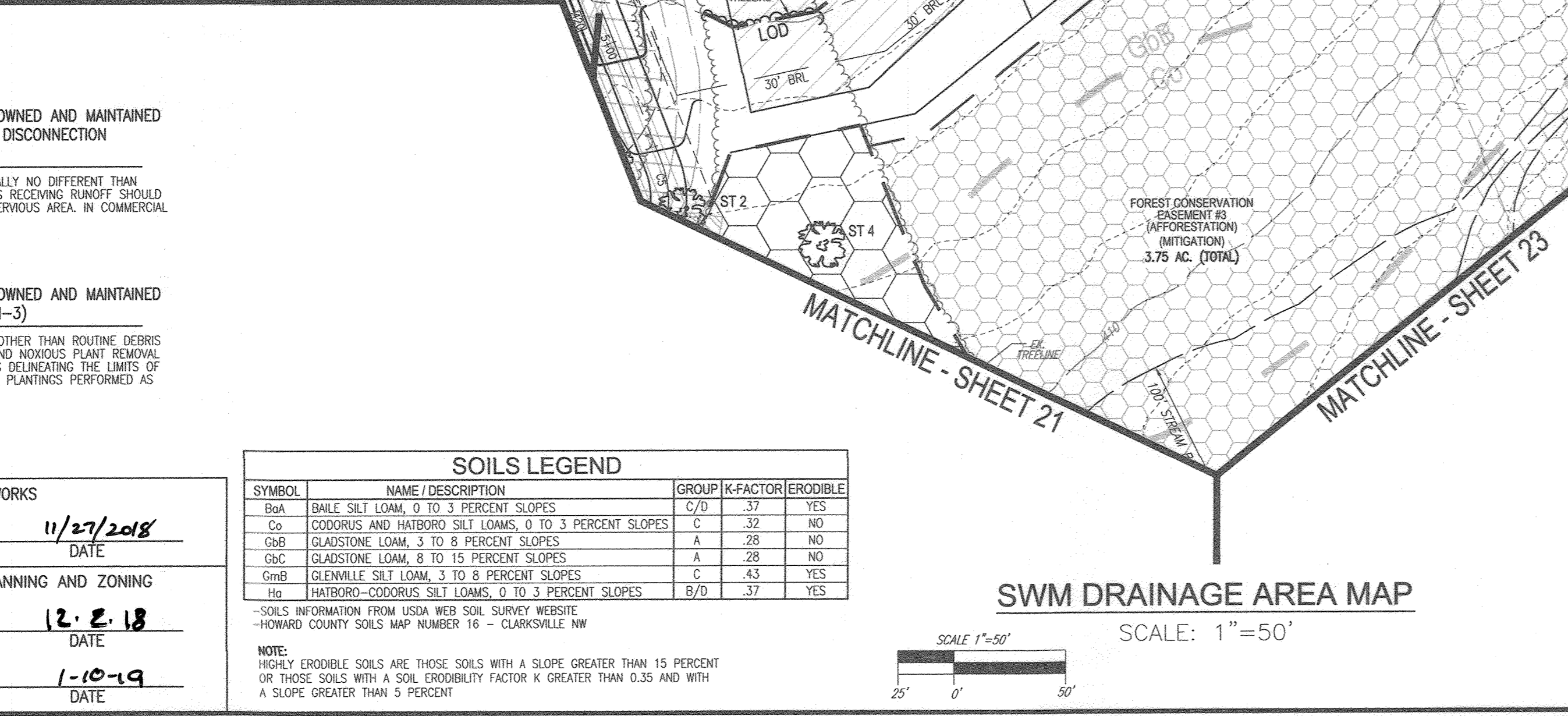
MATCHLINE - SHEET 21

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1) AND DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

1. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE CONSTRUCTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SHEETFLOW TO CONSERVATION AREA (N-3)

1. CONSERVATION AREAS SHALL REMAIN UNDISTURBED AND UNMANAGED OTHER THAN ROUTINE DEBRIS REMOVAL AND REPAIRING AREAS OF CONCENTRATED FLOW. INVASIVE AND NOXIOUS PLANT REMOVAL AND BI-ANNUAL MOWING FOR MEADOW AREAS MAY BE NEEDED. SIGNS DELINEATING THE LIMITS OF THE CONSERVATION AREA SHOULD BE MAINTAINED AND SUPPLEMENTAL PLANTINGS PERFORMED AS NEEDED.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
11/27/2018
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
12.2.18
CHIEF, DEVELOPMENT ENGINEERING DIVISION

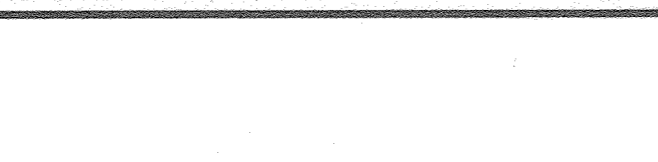
APPROVED: HOWARD COUNTY DEPARTMENT OF LAND DEVELOPMENT
1-10-19
CHIEF, DIVISION OF LAND DEVELOPMENT

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Bsk	BANK SILT LOAM, 0 TO 3 PERCENT SLOPES	C/O	.37	YES
Cs	CODORUS AND HAITBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
Gsb	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
Gbc	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
Gmb	GLENNVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Hs	HAITBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/O	.37	YES

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

DATE: 11/27/2018
HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE NW



SWM DRAINAGE AREA MAP
SCALE: 1"=50'

BIO-SWALE (M-8) TYPICAL CROSS SECTION
N.T.S.

BIO-SWALE LOCATED BETWEEN THE NORTHERN PROPERTY LINE AND OLIVA WAY

OWNER
ESTATES AT RIVER HILL, LLC
MICHAEL PEZALL, MEMBER
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

DEVELOPER
TRINITY HOMES MARY LAND, LLC
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

NO.	REVISION	DATE
12	REVISE THE HOUSE AND GRADING ON LOT 12	8-11-21
10	REVISE THE HOUSE AND ESD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM FOR LOT 13	1-29-21
5	REVISE THE HOUSE, GRADING AND SWM FOR LOT 15	11-19-20
4	REVISE THE HOUSE TYPE GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL 'A' AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO SHEET HOUSE SWM AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN
STORMWATER MANAGEMENT DRAINAGE AREA MAP, NOTES, AND DETAILS
THE ESTATES AT RIVER HILL
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B', 'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389
TAX MAP: 54 GRID: 23
SITE ELECTION DISTRICT

ZONED: RR-DEO
L 4772 / F. 285
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERS - SURVEYORS - PLANNERS
3800 N. RIDGE ROAD, SUITE 110
ELLCOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

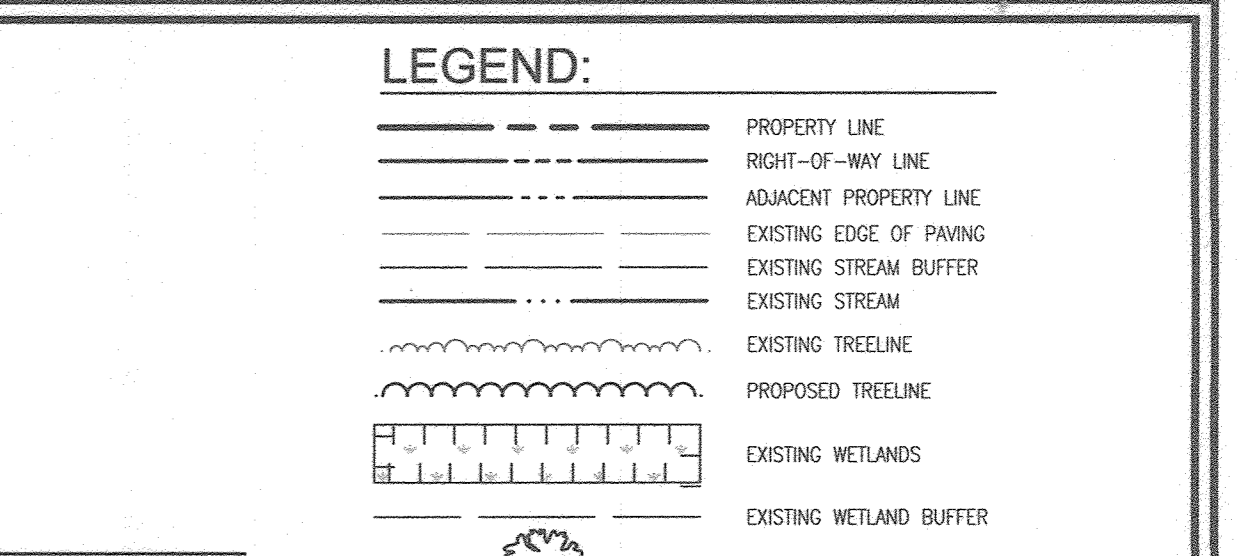
PROFESSIONAL CERTIFICATE

DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: NOVEMBER 2018
SCALE: AS SHOWN
W.O. NO.: 15-39

11/11/2018
STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER

22 SHEET OF 33

AS-BUILT DEC. 2023



Appendix B.4. Construction Specifications for Environmental Site Design Practices

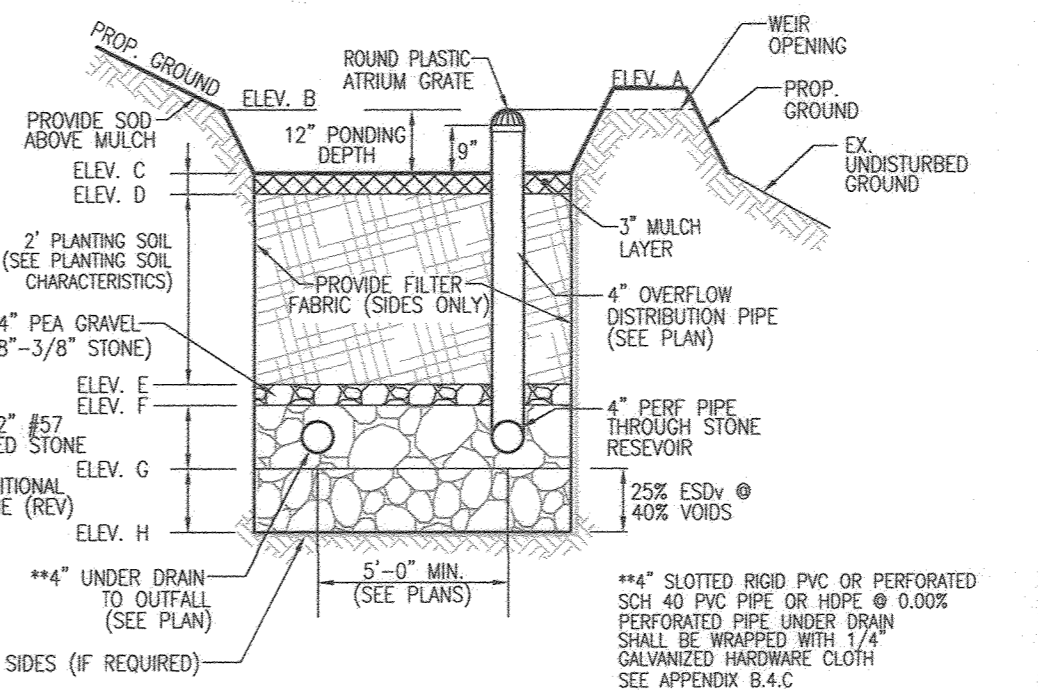
Table B.4.1 Materials Specifications for Micro-Bioretentation, Rain Gardens & Landscape Infiltration. A table with columns for Material, Specifications, and Notes.

STORMWATER TEST PITS: A table with columns for TEST PIT, SURFACE ELEVATION, BORING DEPTH, and CONDITION.

MICRO-BIORETENTION FACILITY ELEVATIONS (M-6) (SEE SITE LAYOUT ON SHEET 21): A table listing facility elevations for lots 1-14.

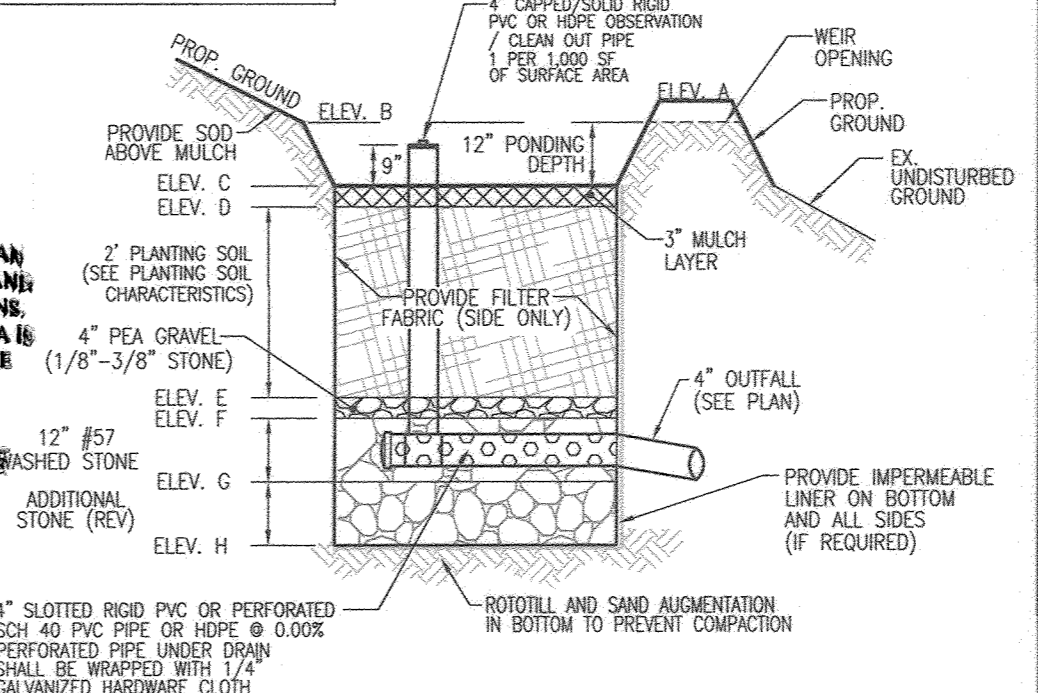
MICRO-BIORETENTION FACILITY ELEVATIONS (M-6) (SEE SITE LAYOUT ON SHEET 22): A table listing facility elevations for lots 1-14.

OPERATION AND MAINTENANCE SCHEDULE FOR (M-6) MICROBIORETENTION AREAS. A detailed paragraph describing the required annual maintenance and inspection procedures.



IMPERMEABLE LINER SPECIFICATIONS: A table with columns for generic fabric type, ASTM D-4033 (Synthetic), and ASTM D-4032 (Composite).

AS-BUILT CERTIFICATION FOR PSWM. A professional engineer's statement certifying that the facility was constructed according to the approved plans and specifications.



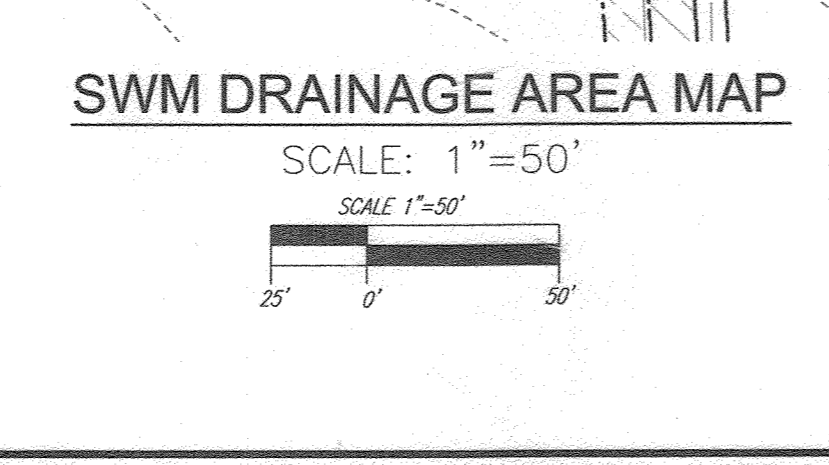
SOILS LEGEND: A table with columns for SYMBOL, NAME, DESCRIPTION, GROUP, K-FACTOR, and ERODIBLE.

Revisions table with columns for NO., REVISION, DATE, and a checkmark.

REVISED FINAL ROAD CONSTRUCTION PLAN. STORMWATER MANAGEMENT DRAINAGE AREA MAP, NOTES, AND DETAILS. THE ESTATES AT RIVER HILL.

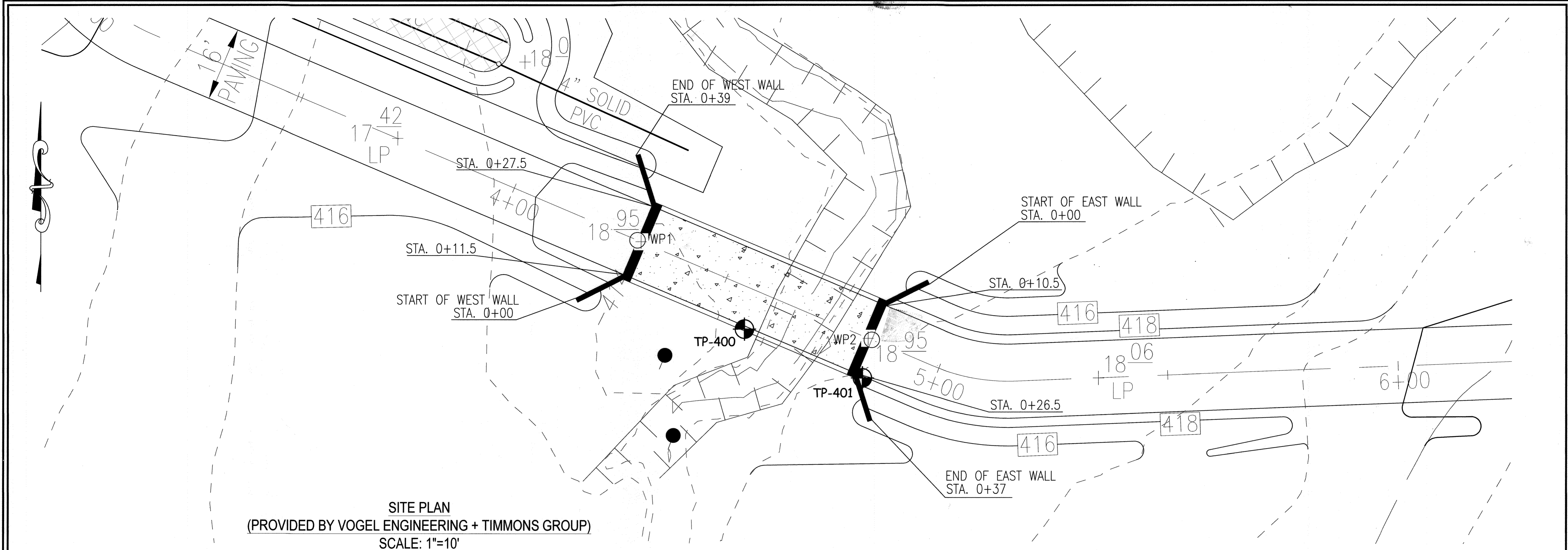
Professional Engineer seal for Robert H. Vogel, Engineers & Planners, Inc. Includes design and date information.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS. APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.



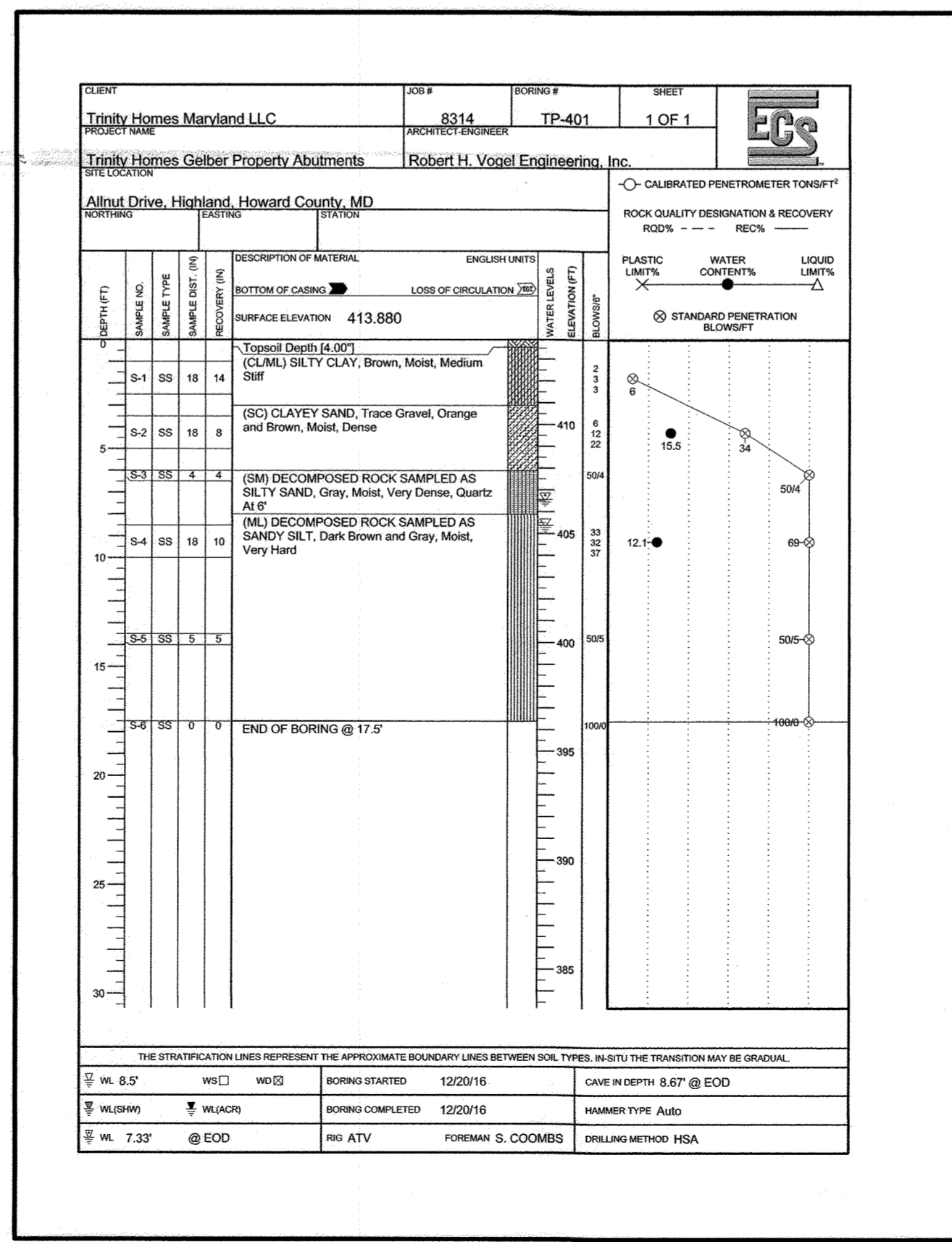
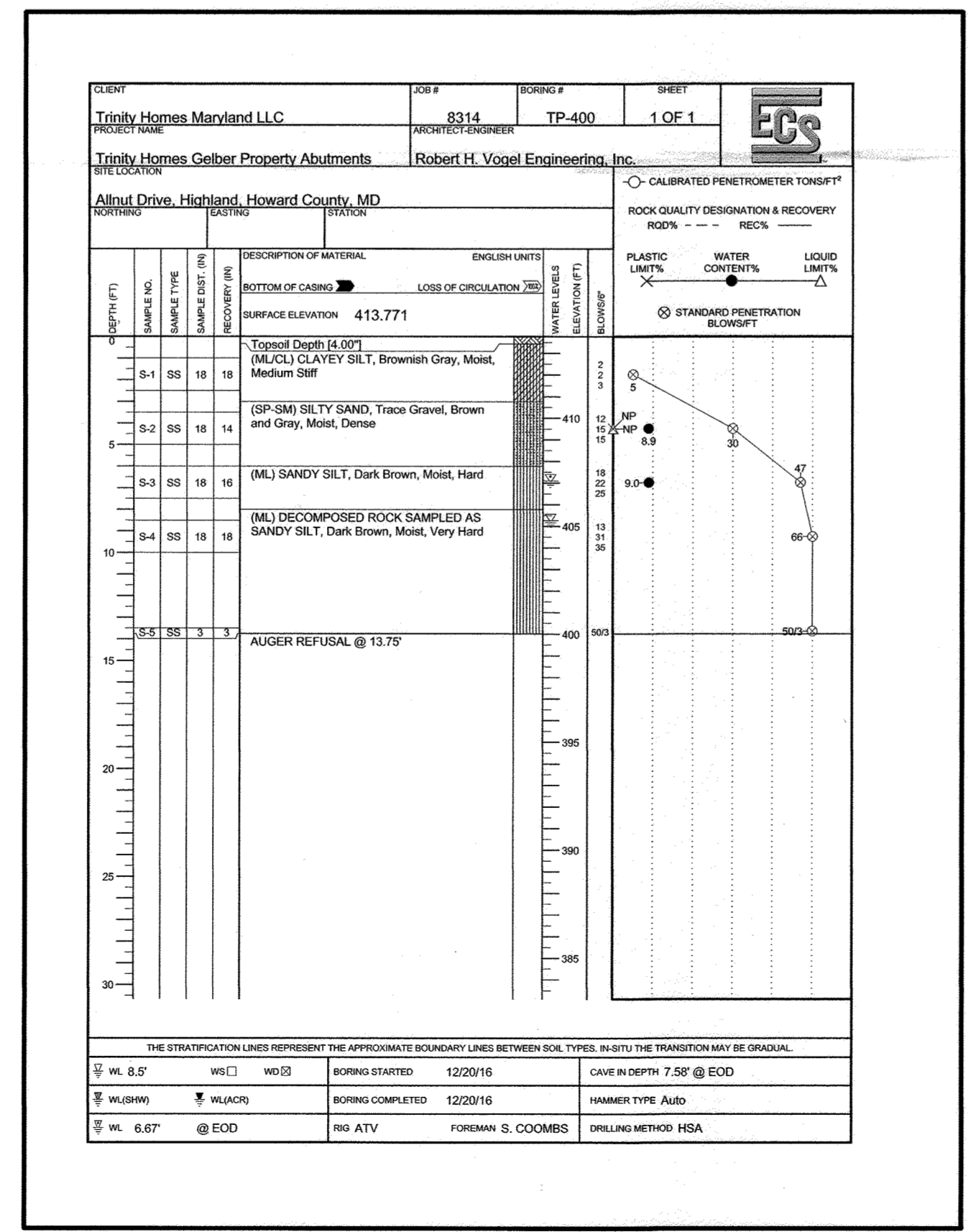
MICRO-BIORETENTION FACILITY ELEVATIONS (M-6) (SEE SITE LAYOUT THIS SHEET). A table with columns for LOT #, FACILITY, and various elevation values.

MICRO-BIORETENTION W/ WEIR OUTFALL NOT TO SCALE. OWNER: ESTATES AT RIVER HILL, LLC. DEVELOPER: TRINITY HOMES MARYLAND, LLC.



SITE PLAN
 (PROVIDED BY VOGEL ENGINEERING + TIMMONS GROUP)
 SCALE: 1"=10'

WORKING POINTS SCHEDULE			
POINT NO.	ROAD STA	NORTHING	EASTING
WP1	4+29.00	556877.79	1323680.17
WP2	4+84.21	556856.29	1323731.02



AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
 P.E. NAME: Robert H. Vogel P.E. NO.: 18193 DATE: 5-30-24

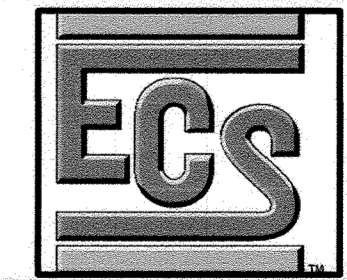
NO AS-BUILT INFORMATION SHOWN ON THIS SHEET

OWNER
 ESTATES AT RIVER HILL, LLC
 MICHAEL PFALL, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER
 TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

NO.	REVISION	DATE
1	MODIFIED TO CHECK HOUSE SWM AND GRADING	4-10-19

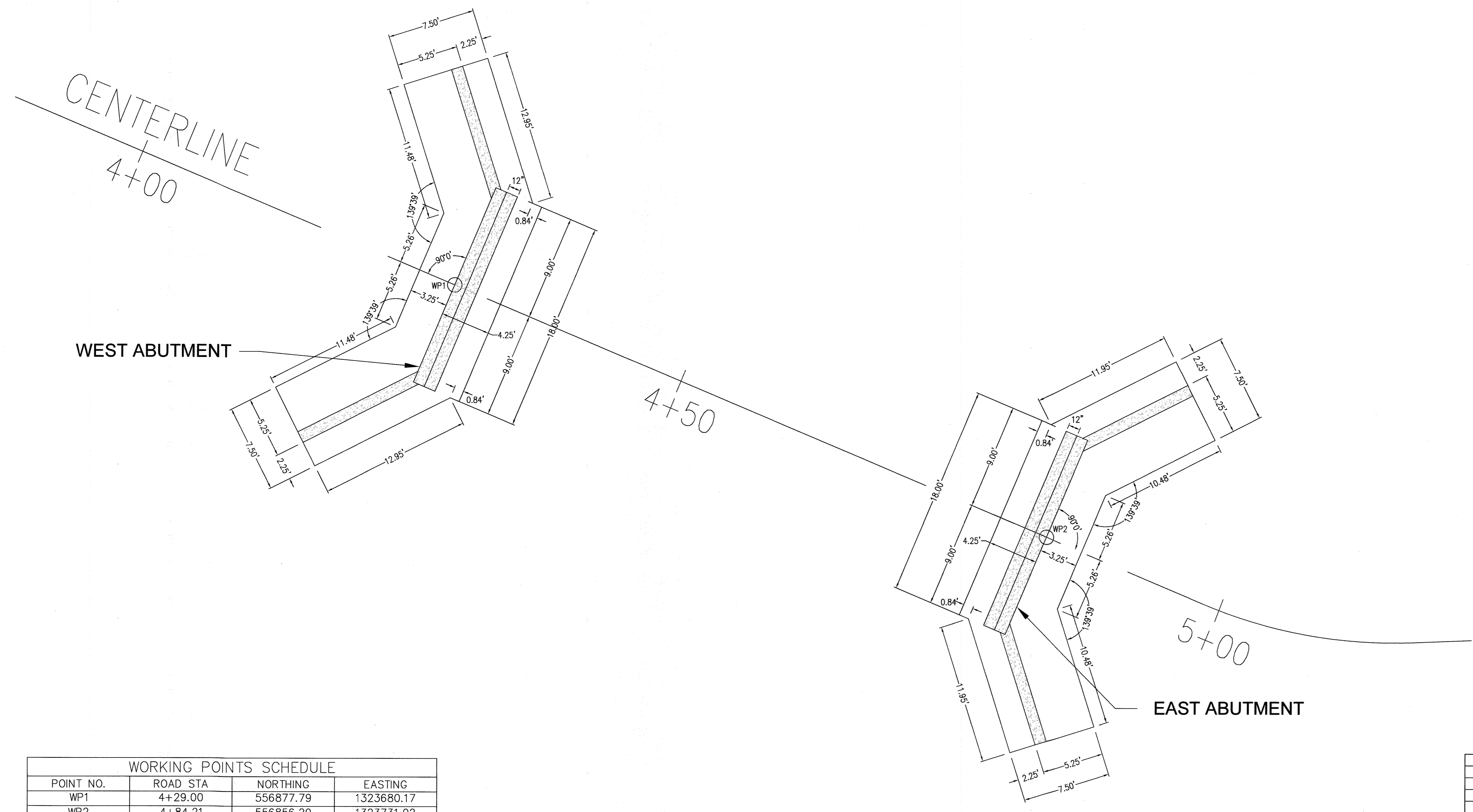
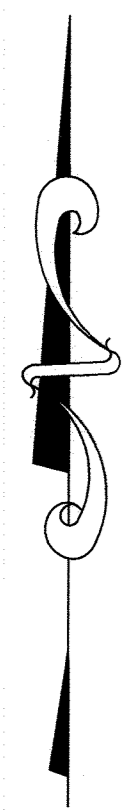
REVISED FINAL ROAD CONSTRUCTION PLAN
VEHICULAR BRIDGE - GENERAL PLAN
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1
 PARCEL: 389 ZONED: RR-DEO
 TAX MAP: 34 GRID: 23 L 4772 / F. 265
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND



1340 CHARWOOD ROAD
 SUITE B
 HANOVER, MARYLAND 21076
 PHONE: (410) 859-4300
 FAX: (410) 859-4324

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 29553 EXPIRATION DATE: 12-31-2019.
 DESIGN BY: _____ DMA
 DRAWN BY: _____ DMA
 CHECKED BY: _____ HMA
 DATE: _____ NOVEMBER 2018
 SCALE: _____ AS SHOWN
 W.O. NO.: _____ 8314
 HASAN M. ABOUMATAR, P.E.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12.2.18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 4
 [Signature] 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DIRECTOR [Signature]



WORKING POINTS SCHEDULE			
POINT NO.	ROAD STA	NORTHING	EASTING
WP1	4+29.00	556877.79	1323680.17
WP2	4+84.21	556856.29	1323731.02

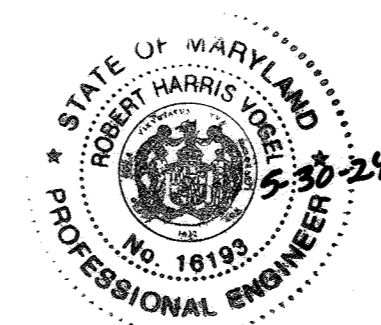
GEOMETRIC FOOTING LAYOUT
SCALE: 1"=5'

NO.	REVISION	DATE
1	MODIFICATION TO ONLOT HOUSES, SWM, AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN
VEHICULAR BRIDGE - GEOMETRIC LAYOUT
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'
 A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

PARCEL: 389 ZONED: RR-DEO
 TAX MAP: 34 GRID: 23 L: 4772 / F: 765
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

EGS
 1340 CHARWOOD ROAD
 SUITE E
 HANOVER, MARYLAND 21076
 PHONE: (410) 859 - 4300
 FAX: (410) 859 - 4324



AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN
 WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND
 COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS.
 I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS
 SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE
 UNDERGROUND SWM FACILITY.

Hasan M. Aboumatar
 P.E. # 16193 DATE 5-30-24

NO AS-BUILT INFORMATION SHOWN ON THIS SHEET

OWNER
 ESTATES AT RIVER HILL, LLC
 MICHAEL PFAU, MEMBER
 3875 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER
 TRINITY HOMES MARYLAND, LLC
 3875 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS
 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. 29553
 EXPIRATION DATE: 12-31-2019

DESIGN BY: DMA
 DRAWN BY: DMA
 CHECKED BY: HMA
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.O. NO.: 8314

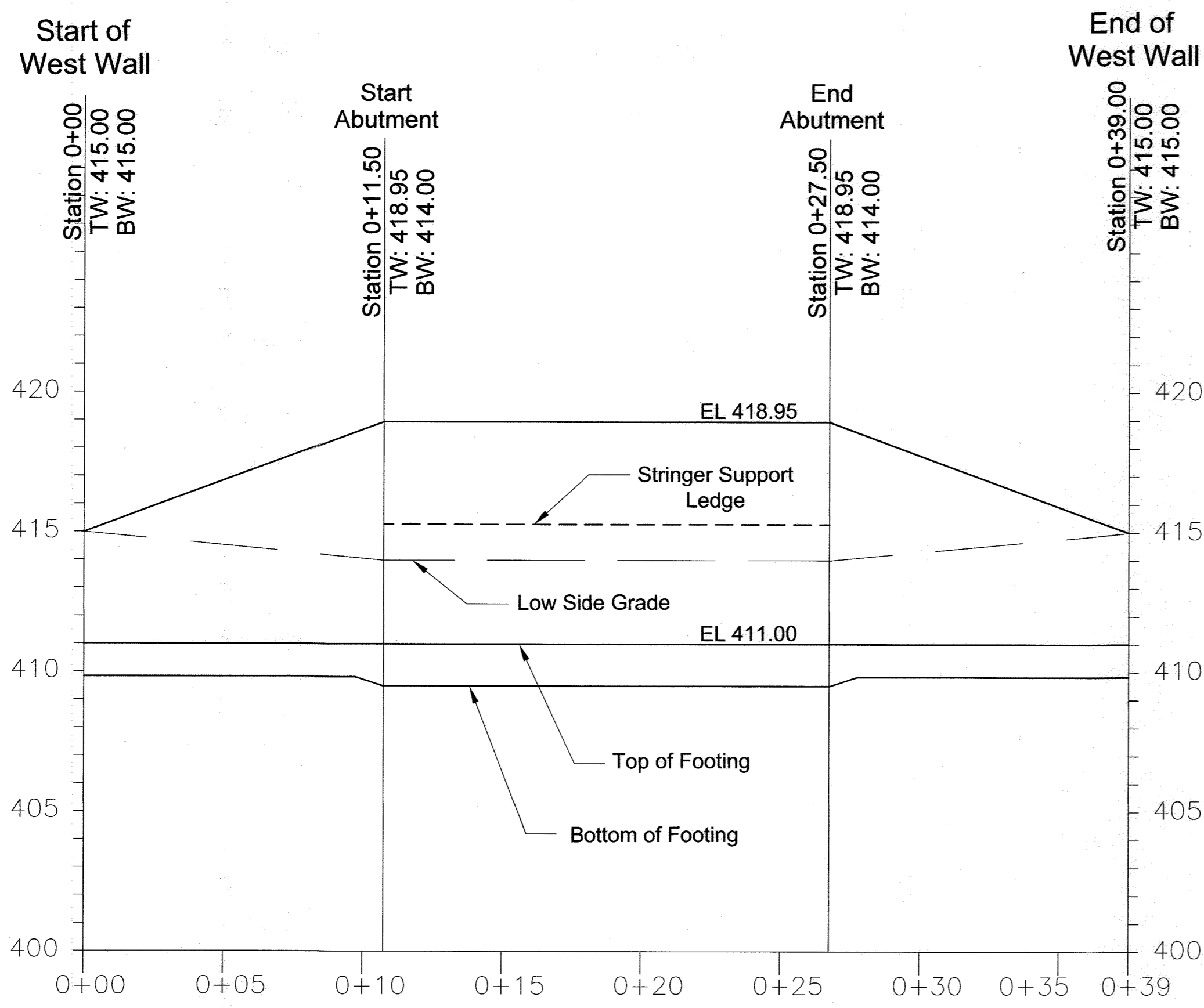
26 SHEET OF 33

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

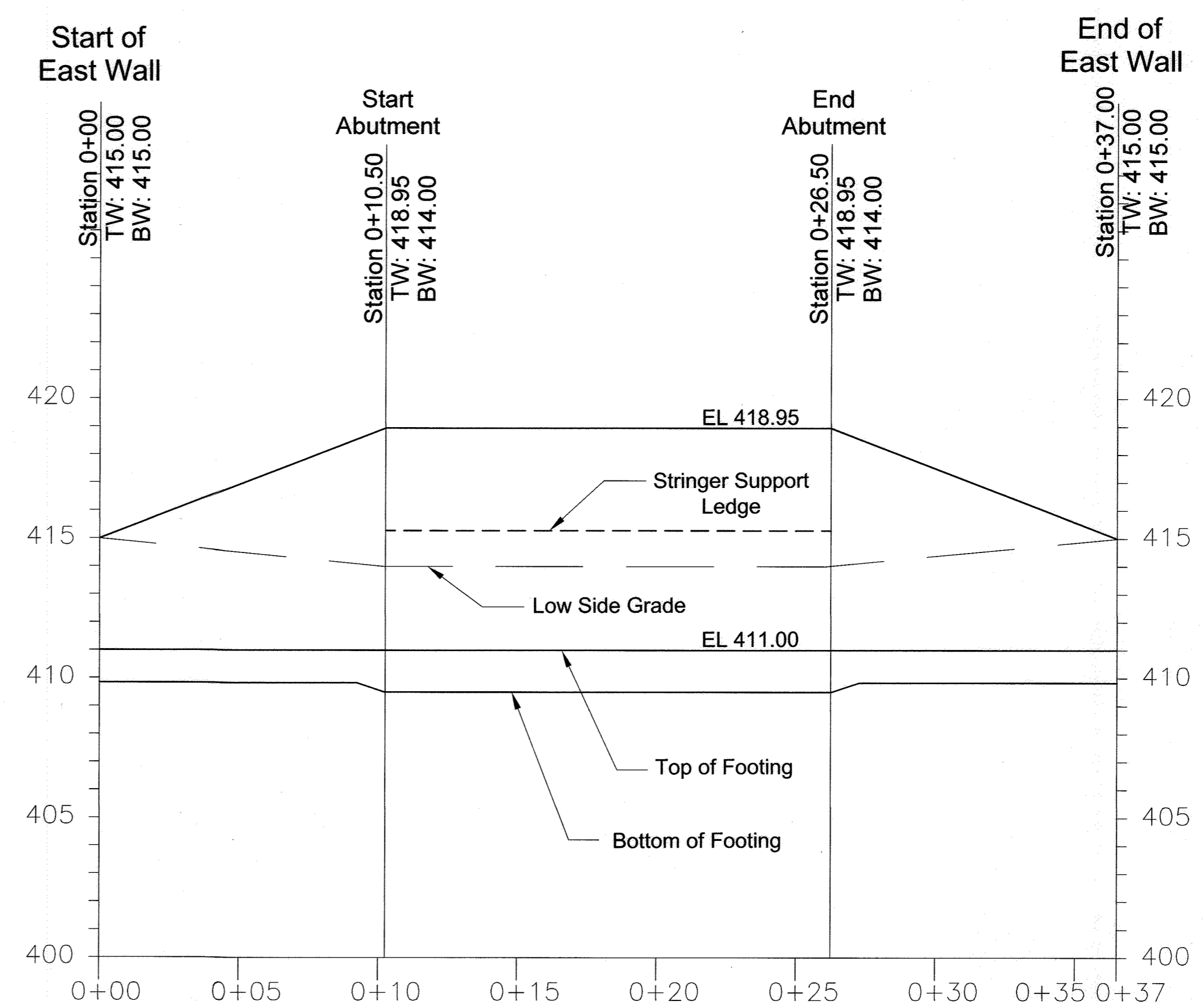
Robert Harrison 12-2-18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Ventura Oros 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

HA
 DIRECTOR



WEST WALL PROFILE
SCALE: 1"=4'



EAST WALL PROFILE
SCALE: 1"=4'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12-2-18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature] N/A
 DIRECTOR



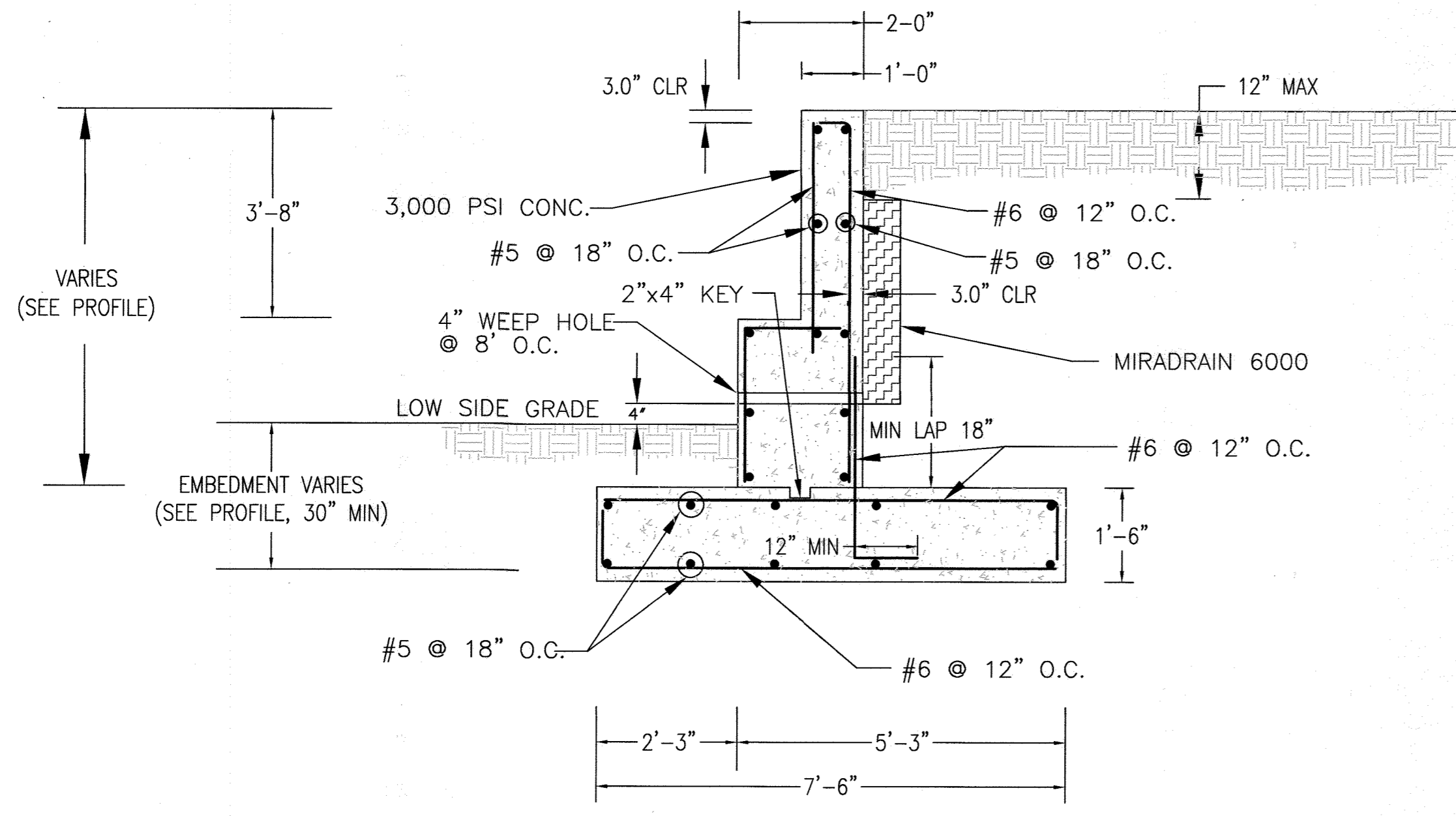
AS-BUILT CERTIFICATION FOR PSWM
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 [Signature] 16193 5-30-24
 P.E. NAME P.E.# DATE

NO AS-BUILT INFORMATION SHOWN ON THIS SHEET

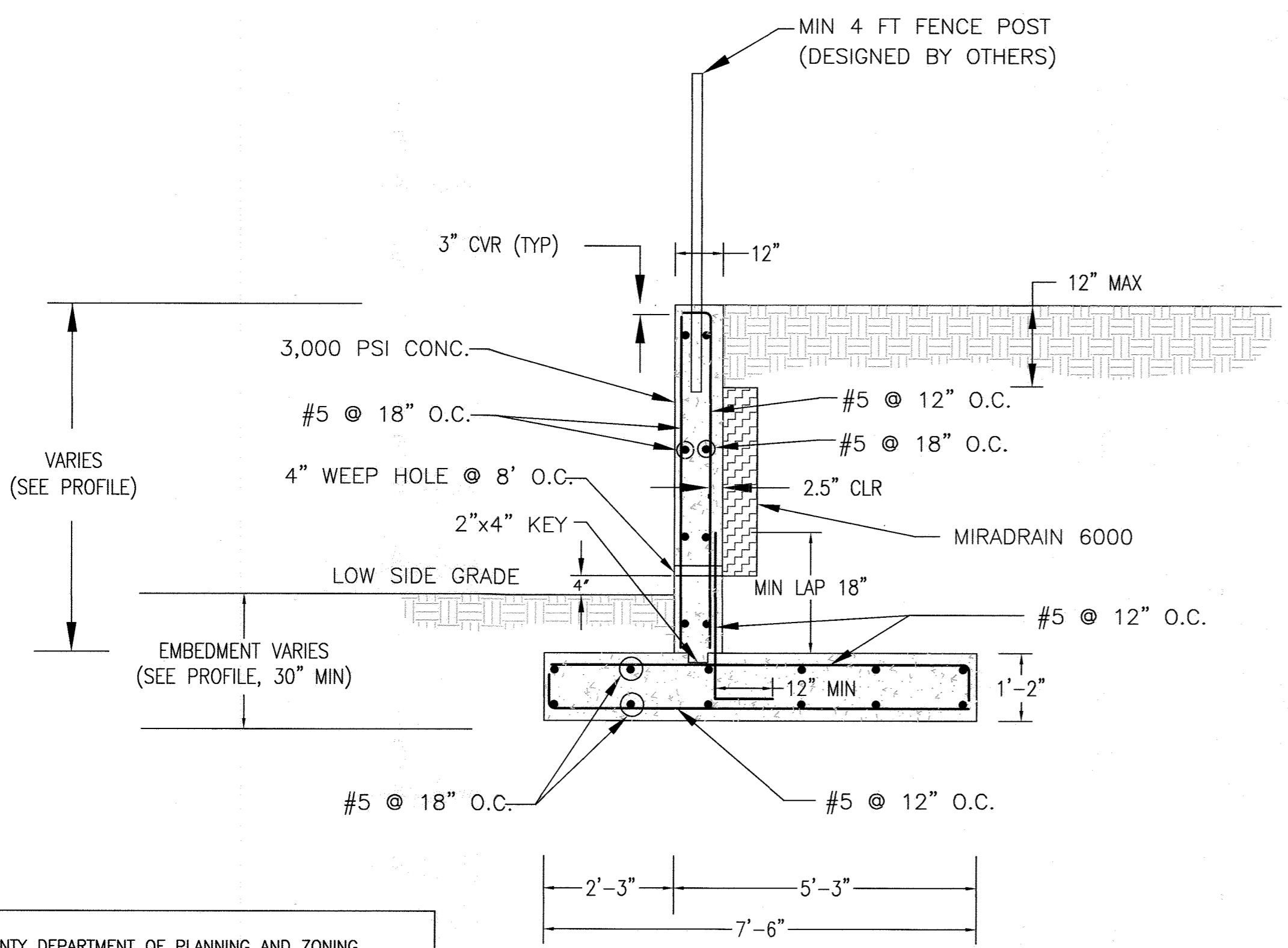
OWNER: ESTATES AT RIVER HILL, LLC
 MICHAEL PFAUL, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER: TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

NO.		MODIFICATION TO PLOT HOUSES SWM AND GRADING	4-10-19
REVISION			DATE
REVISED FINAL ROAD CONSTRUCTION PLAN			
VEHICULAR BRIDGE - PROFILES			
THE ESTATES AT RIVER HILL			
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1			
PARCEL: 389 TAX MAP: 34 GRID: 23 5TH ELECTION DISTRICT	ZONED: RR-DEO L 4772 / F. 265 HOWARD COUNTY, MARYLAND		
		1340 CHARWOOD ROAD SUITE B HANOVER, MARYLAND 21076 PHONE: (410) 859 - 4300 FAX: (410) 859 - 4324	
		PROFESSIONAL CERTIFICATE	
DESIGN BY: DMA		I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 29553 EXPIRATION DATE: 12-31-2019	
DRAWN BY: DMA			
CHECKED BY: HMA			
DATE: NOVEMBER 2018			
SCALE: AS SHOWN			
W.O. NO.: 8314		27 SHEET OF 33	



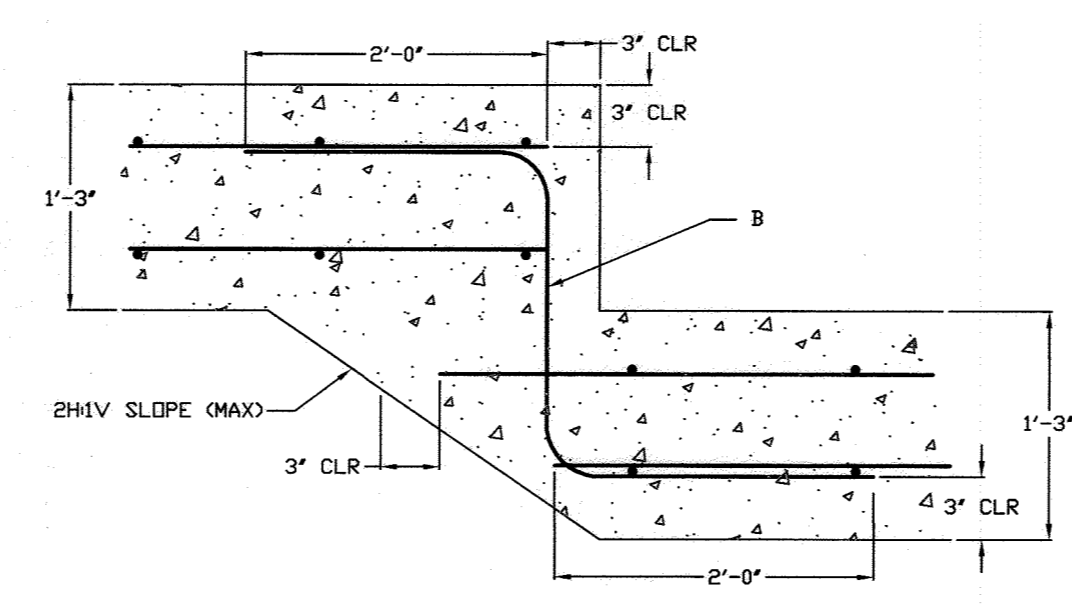
TYPICAL ABUTMENT DETAIL
(NOT TO SCALE)



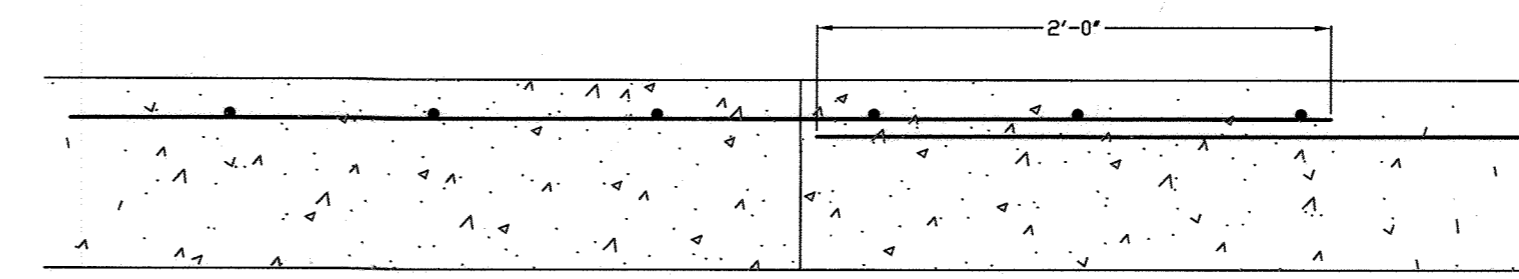
TYPICAL WINGWALL DETAIL
(NOT TO SCALE)

Abutment and Wing Wall Specifications and Guidelines

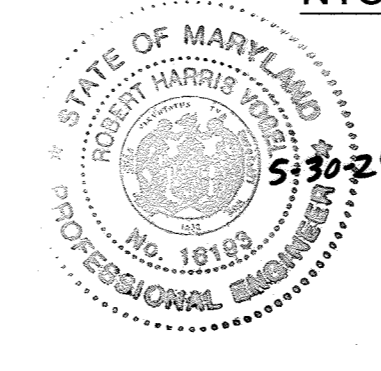
- Part 1: General**
- 1.01 Description
 A. Abutment and wing walls must be constructed under the supervision of a Maryland Registered Professional Engineer.
 B. Work includes preparation of foundation soils, furnishing all materials, and installing all materials to the lines and grades shown on the construction drawings.
- 1.02 Codes and Standards
 A. International Building Code - 2015, International Code Council, Inc.
 B. ACI Manual of Concrete Practice - Parts 1 Through 5 - 2001
 C. Manual of Standard Practice - Concrete Steel Reinforcing Institute
 D. American Society for Testing and Materials
- 1.03 Damage, Storage, and Handling
 A. The Contractor shall check the materials upon delivery to assure that the proper materials have been received.
 B. The Contractor shall properly handle and store the materials to prevent damage to the materials. Damaged materials shall not be incorporated into the wall.
- 1.04 Quality Assurance
 A. The Owner shall engage a qualified testing agency to provide observation and testing services as described below.
 B. Concrete Placement
 1. The agency shall inspect the formwork and reinforcing steel placement for compliance with the contract documents. Reinforcing steel should be inspected for correct size, quantity, and spacing.
 2. Fresh concrete shall be sampled in accordance with ASTM C 172, and tested for slump, air entrainment, and temperature.
 3. Test cylinders shall be molded in accordance with ASTM C 31. Four test cylinders shall be molded for each day's pour, or for every 50 cubic yards of concrete placed, whichever is greater.
 C. Fill Placement
 1. All soil fills shall be tested in accordance with ASTM D 2922.
 2. A minimum of one compaction test per lift should be made per 2,500 square feet of fill lift area, but not fewer than two tests per lift should be made.
 3. The elevations and locations of the field density tests should be clearly identified at the time of fill placement and compaction.
- Part 2: Materials**
- 2.01 Concrete
 A. Concrete shall conform to Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials
 B. Concrete shall have a minimum 28-day compressive strength of 3,000 psi.
 C. Concrete shall have a slump range of 2 to 5 inches and shall be air entrained to $\frac{5}{8}$ (+/- 1%) by volume.
 D. Concrete shall have a minimum density of 145 pcf and a maximum water-to-cement ratio of 0.45
- 2.02 Steel Reinforcement
 A. Steel reinforcing shall conform to ASTM A-615, Grade 60.
 B. Submit shop drawings at least 15 business days before date reviewed submittals will be needed. Shop drawings shall bear the contractor's stamp of approval which shall constitute that he has verified all field measurements, construction criteria, materials, and similar data, and has checked each drawing for completeness, coordination, and compliance with contract documents.
- 2.03 Soil Backfill
 A. Material should consist of soil classified as SM or more granular, in accordance with ASTM D 2487.
 B. Material should have no particle larger than 2.5 inches and shall contain no more than 30 percent, by weight, passing the U.S. No. 200 sieve.
 C. Materials should have a Liquid Limit less than 40, and a Plasticity Index less than 20.
 D. Material should have a minimum friction angle of 30 degrees.
 E. The Contractor should submit samples of the proposed backfill soils to the Geotechnical Engineer of Record for approval prior to their use.
- 2.04 Drainage Board
 A. Drainage board used behind the walls shall consist of Miradrain 6000.
- Part 3: Construction**
- 3.01 General
 A. All existing underground utilities shall be properly marked, and relocated if necessary, prior to construction.
 B. All proposed underground utilities or structures in the general wall area shall be completely installed prior to the construction of the wall.
 C. Protect all existing and/or new structures from damage by construction equipment. Immediately repair any damage that may occur.
- 3.02 Foundation
 A. The wall foundation shall be excavated to the grades and lines as shown on the construction drawings. Contractor should take care not to disturb foundation soils beyond the lines and grades shown. The foundation shall be poured against undisturbed soils.
 B. The foundation shall bear at the minimum embedment depths indicated, as measured from the final grade at the front of the wall.
 C. The foundation subgrade soils shall be tested by a qualified representative of the Geotechnical Engineer to verify the availability of the design bearing pressure of 4,000 psf.
 D. If unsuitable soils are encountered at design foundation levels, the unsuitable soils shall be removed and the over-excavated areas shall be replaced with compacted structural fill.
- 3.03 Steel Reinforcement
 A. All steel reinforcing shall have a minimum clear cover of 3 inches unless otherwise noted on the contract documents.
 B. Where applicable, splices for reinforcing steel shall be made by contact tension lap splices.
 C. Welding and field-bending of reinforcing steel is not permitted.
 D. Furnish all accessories, chairs, space bars, supports, etc. necessary to secure reinforcing.
- 3.04 Cast-in-Place Concrete
 A. Footing Concrete
 1. The vertical faces of the footing and key excavation may be used as forms for placement of foundation concrete.
 2. Foundation concrete, or protective mud mats, should be placed the same day that the foundation subgrade is approved.
 3. Provide concrete protection against freezing during placement and for 5 days thereafter.
 B. Wall Concrete
 1. Furnish and erect concrete forms to the lines and grades shown on the construction drawings.
 2. Make stops in concrete pours using vertical bulkheads.
 3. All reinforcing shall be continuous through joints and bulkheads.
 4. Chamfer exposed concrete corners 3/4" by 3/4" minimum.
 5. Provide 4" diameter weep holes every 8 feet along the bottom of the wall and at wall ends. The weep holes should be formed in place prior to concrete placement by using PVC pipe. Weep hole locations must not interfere with steel reinforcing, and shall be no greater than 4 inches above final grade at the front of the wall.
 6. Where a fence is required, it is recommended that the fence posts be installed during wall concrete placement. The fence posts shall have a minimum of 24 inches of embedment into the wall, and be located along the center of the wall. Alternatively, provide 4 inch diameter by 24 inch deep post holes at the designated fence post locations along the centerline of the wall. The post holes should be formed in place prior to concrete placement by using PVC pipe.
- 3.05 Backfilling
 A. All soil backfill shall conform to the material requirements of section 2.03.
 B. Backfill shall be moisture conditioned to within 2 percentage points of the optimum moisture content, as determined in accordance with ASTM D-698.
 C. Backfill shall be placed in loose lifts, not exceeding 8 inches in thickness, and then compacted to at least 95 percent of the maximum dry density, as determined in accordance with ASTM D-698.
 D. Backfilling shall not occur against the wall until the wall concrete has attained at least 75 percent of the 28-day design strength, and no earlier than 3 days after placement.
 E. Where feasible, maintain equal grades on each side of the wall during backfilling to prevent overturning and lateral movements. When the grade differential at the wall exceeds 12 inches, only hand-operated compaction equipment shall be allowed.
 F. Drainage boards shall be placed against the wall, extending from the weep hole up within 12 inches of final grade at the top of the wall.
- 3.06 Finish
 A. Final grades at the wall shall be established by the Contractor in the field.
 B. Final grades shall be stabilized and seeded per the approved civil plans unless noted otherwise on the site grading plans.
 C. Install a 4 ft fence at the top of the wall. If fence posts are installed subsequent to wall construction, the fence posts shall be grouted into the PVC post holes using 3,000 psi non-shrink grout.



FOOTING STEP
NTS



CONSTRUCTION JOINT
NTS



I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND DRAINAGE FACILITY.

DE. NAME: *Hasan M. Aboumatar* P.E. # 16193 DATE: 5-30-24

NO AS-BUILT INFORMATION SHOWN ON THIS SHEET

OWNER: ESTATES AT RIVER HILL, LLC
 MICHAEL PFAU, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER: TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

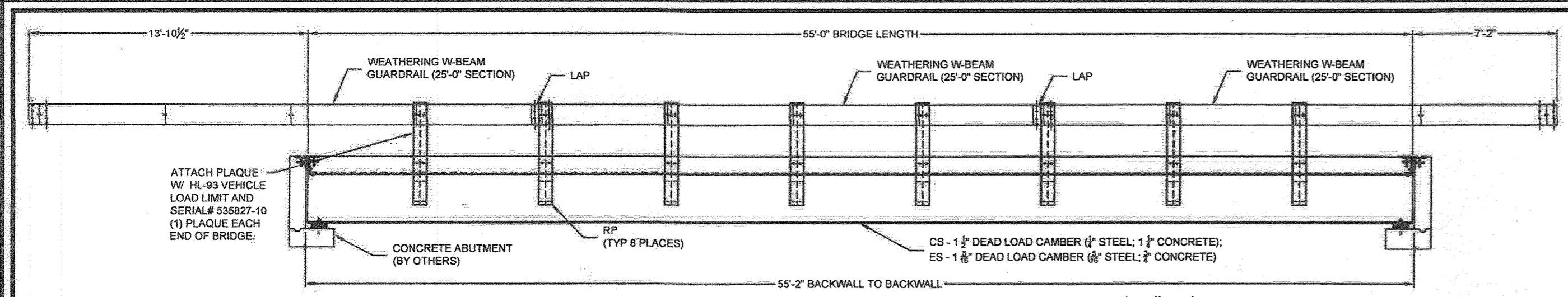
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Oliver P. ... 12-2-18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

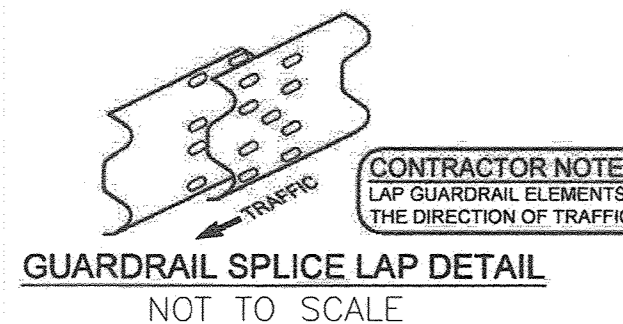
Vest ... 1-10-19
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

N/A
 DIRECTOR DATE

NO. MODIFICATIONS TO ONLOT HOUSES, SWAN AND GRADING		4-10-19
REVISION		DATE
REVISED FINAL ROAD CONSTRUCTION PLAN		
VEHICULAR BRIDGE - SECTIONS & DETAILS		
THE ESTATES AT RIVER HILL		
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1		
PARCEL: 369 TAX MAP: 34 GRID: 23 5TH ELECTION DISTRICT	ZONED: RR-DEO L 4772 / E. 265 HOWARD COUNTY, MARYLAND	
EGS		1340 CHARWOOD ROAD SUITE B HANOVER, MARYLAND 21076 PHONE: (410) 859-4300 FAX: (410) 859-4324
PROFESSIONAL CERTIFICATE		
I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 29553 EXPIRATION DATE: 12-31-2019		
DESIGN BY: DMA	DRAWN BY: DMA	CHECKED BY: HMA
DATE: NOVEMBER 2018	SCALE: AS SHOWN	W.O. NO.: 8314
HASAN M. ABOUMATAR, P.E.		28 SHEET OF 33



BRIDGE ELEVATION SCALE: 3/16"=1'



GUARDRAIL SPLICE LAP DETAIL NOT TO SCALE

CONTRACTOR/OWNER NOTE: W-BEAM GUARD RAILS EXTEND TO THE ENDS OF THE BRIDGE. RAIL POSTS, END TERMINATIONS, AND/OR TRANSITIONS BY OTHERS, NOT CONTECH.

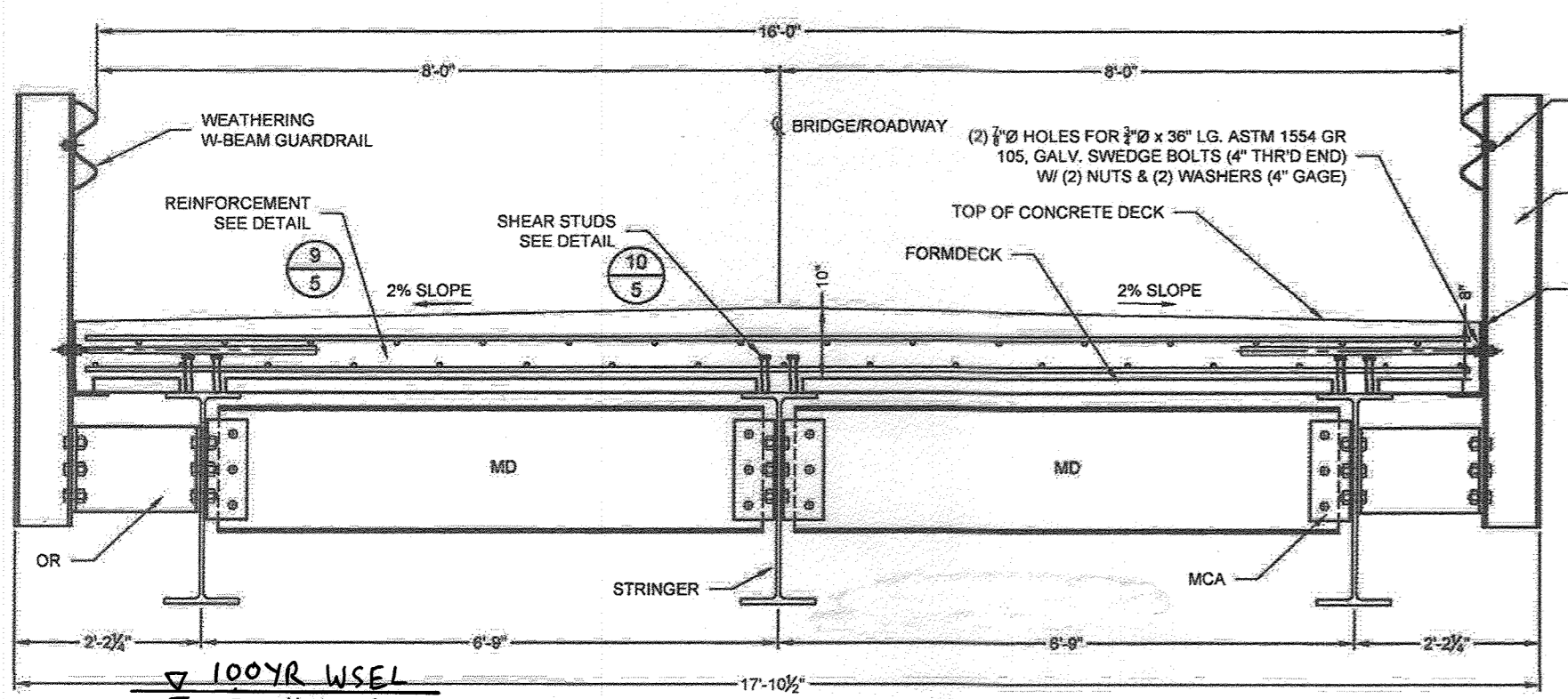
CONTRACTOR/OWNER NOTE: INSTALL W-BEAM GUARD RAILS AFTER INSTALLATION OF CONCRETE DECK, IF POSSIBLE.

CONTRACTOR NOTE: STRUCTURE WILL BE DELIVERED WITH SHEAR STUDS, OUTRIGGERS, AND CLIP ANGLES INSTALLED. FIELD ASSEMBLY OF THE W-BEAM, RAIL POSTS, SWEDGE BOLTS, DIAPHRAGMS, END DAMS, SIDE DAMS, FORMDECK, CLOSURE. ANGLES IS REQUIRED.

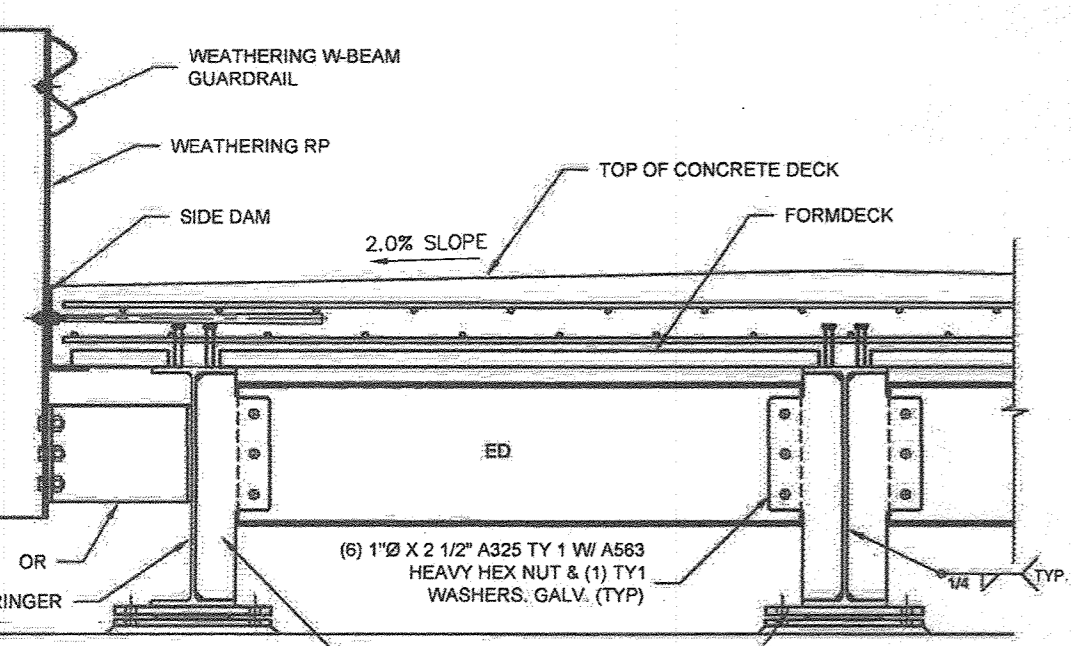
SCHEDULE OF MEMBERS

STRINGERS - ES, CS	W 30 x 108
END DIAPHRAGM - ED	W 18 x 35
MAIN DIAPHRAGM - MD	W 18 x 35
AUX DIAPHRAGM - AD	C 12 x 20.7
OUTRIGGER - OR	W 18 x 50
RAIL POST - RP	W 8 x 31
SIDE DAM - SD	BPLT 10 1/2 x 5 x 3/8
END DAM PLATE - EDP	PLT 10 x 1/2
END DAM ANGLE - EDA	L 4 x 4 x 1/2
END DAM COVER PLATE - EDCP	PLT 9 x 1/2
CLIP ANGLE - MCA, ACA	L 6 x 4 x 3/8

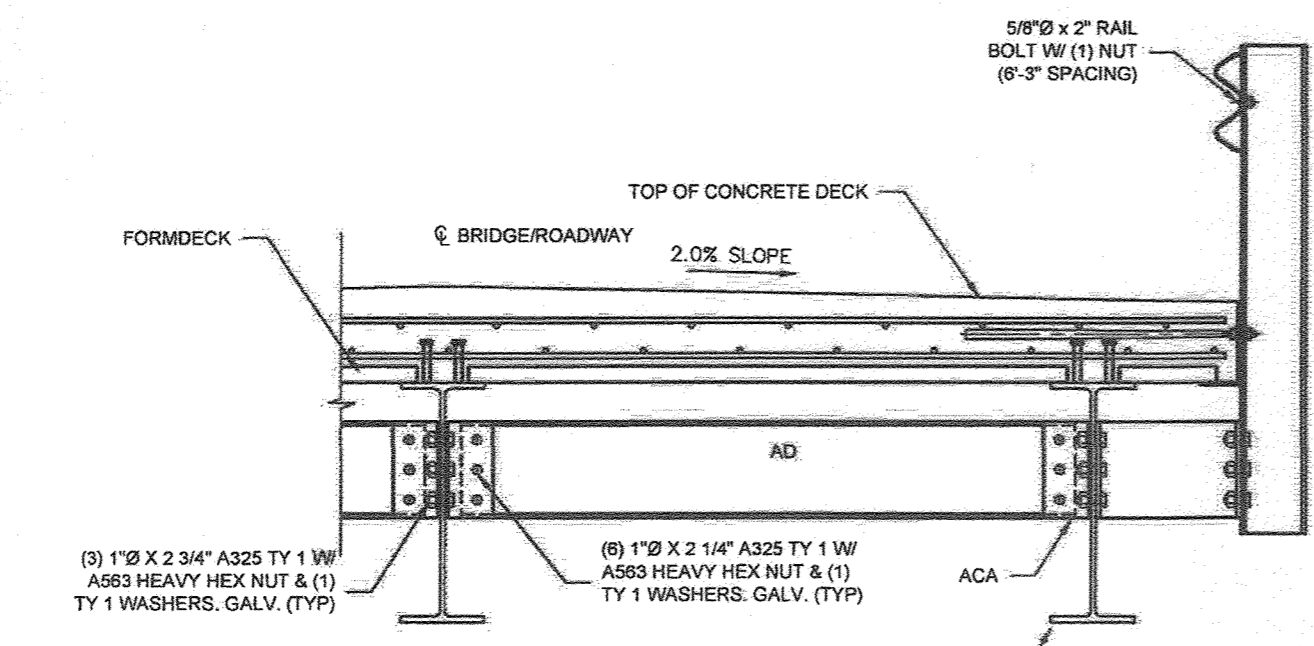
SHOP NOTE: APPLY ZINC PRIMER TO INSIDE FACE OF RAIL POST THAT WILL BE IN CONTACT WITH SIDE DAM & OUTRIGGER.



TYPICAL BRIDGE SECTION SCALE: 1/2"=1'



ED SCALE: 1/2"=1'



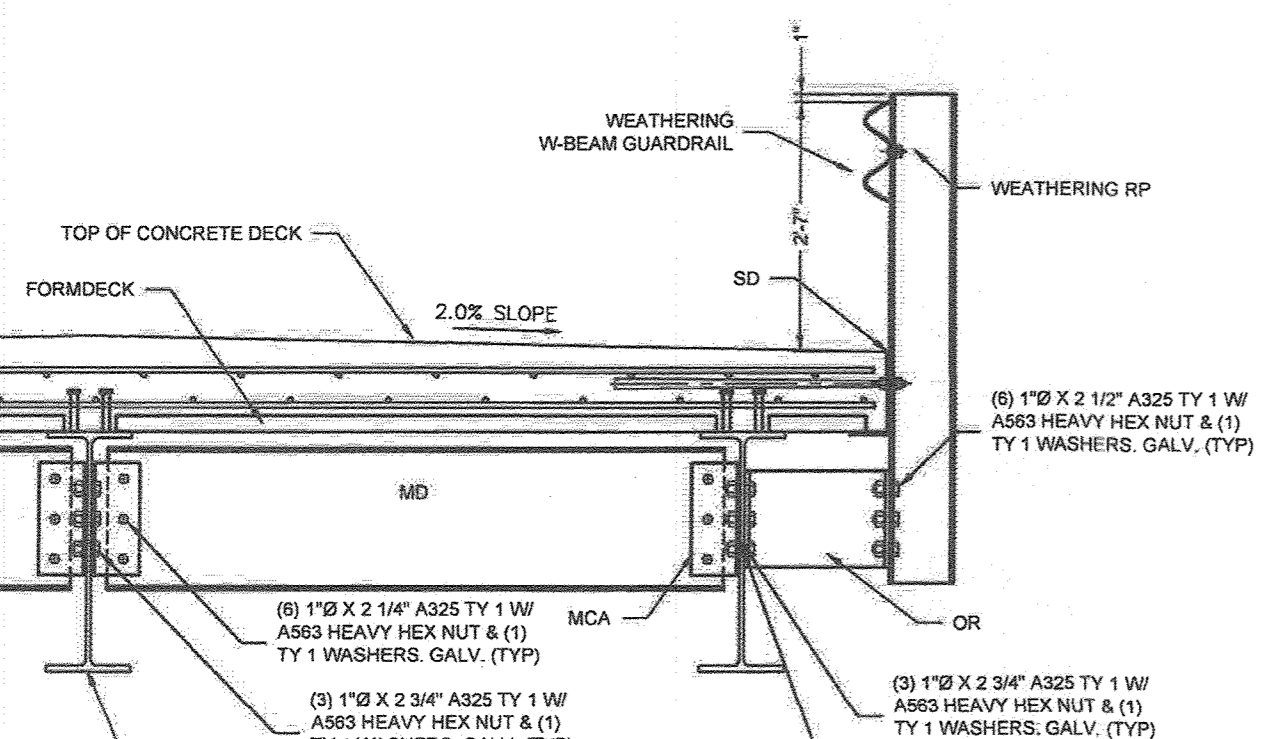
AD SCALE: 1/2"=1'

SHOP NOTE: APPLY ZINC PRIMER TO INSIDE FACE OF RAIL POST THAT WILL BE IN CONTACT WITH SIDE DAM & OUTRIGGER.

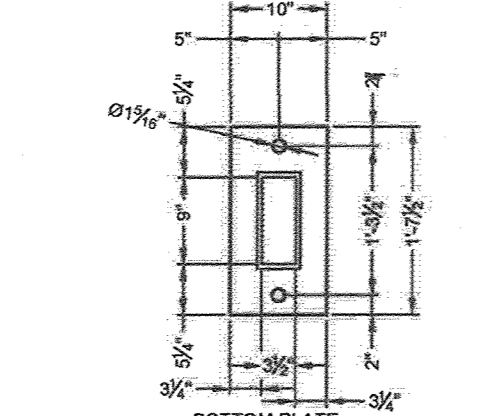
3 1/2" x 9" x 1/2" DUROMETER FABRIC REINFORCED TYPE PF BEARING PAD BONDED TO 4 1/2" x 10" x 10 GA PLATE TACK WELDED TO TOP OF BOTTOM PLATE

5 1/2" x 10" x 1/4" STAINLESS STEEL PLATE POLISHED ONE SIDE TACK WELDED TO BOTTOM OF TOP PLATE

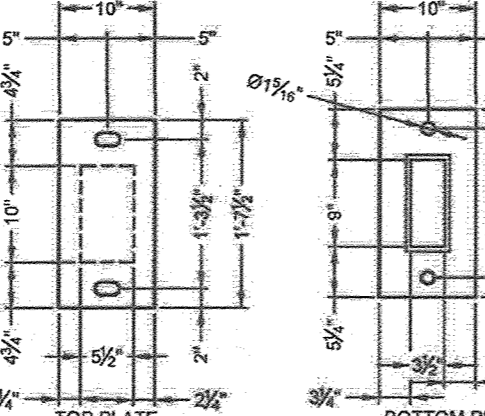
3 1/2" x 9" x 3/4" TEFLON BONDED TO 3 1/2" x 9" x 1/2" DUROMETER FABRIC REINFORCED TYPE PF BEARING PAD BONDED TO 4 1/2" x 10" x 10 GA PLATE TACK WELDED TO TOP OF BOTTOM PLATE



MD SCALE: 1/2"=1'

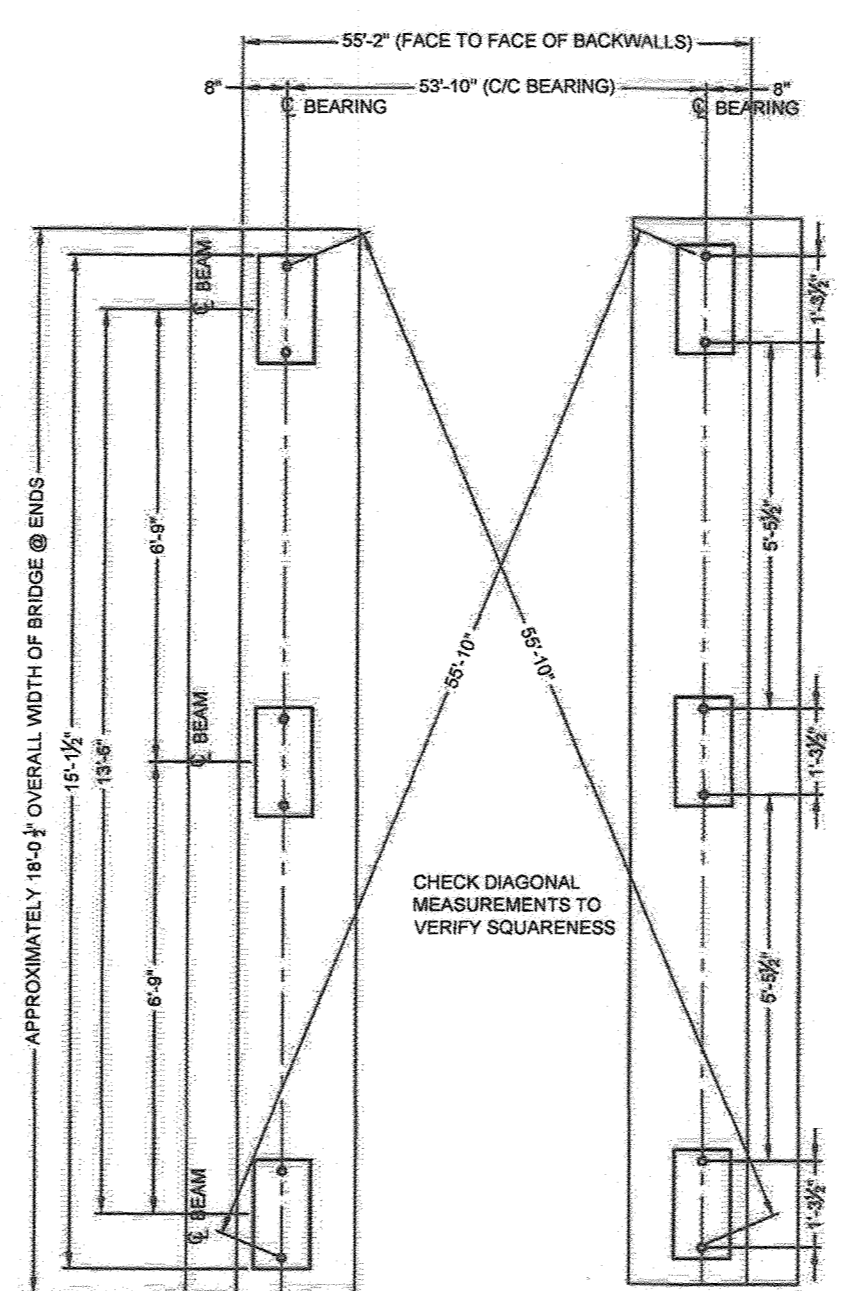


FIXED BEARING PAD (3 REQUIRED) NOT TO SCALE



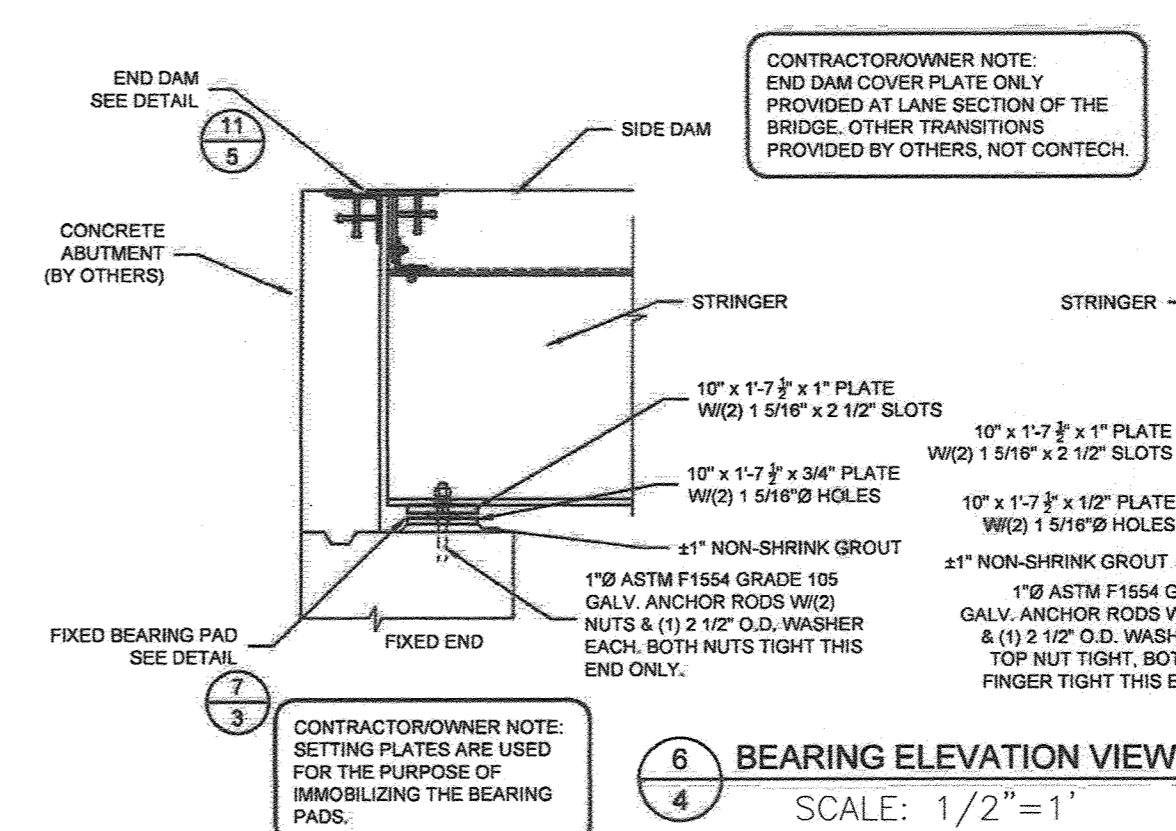
EXP. BEARING PAD (4 REQUIRED) NOT TO SCALE

CONTRACTOR/OWNER NOTE: W-BEAM GUARD RAILS EXTEND TO THE ENDS OF THE BRIDGE. RAIL POSTS, END TERMINATIONS, AND/OR TRANSITIONS BY OTHERS, NOT CONTECH.

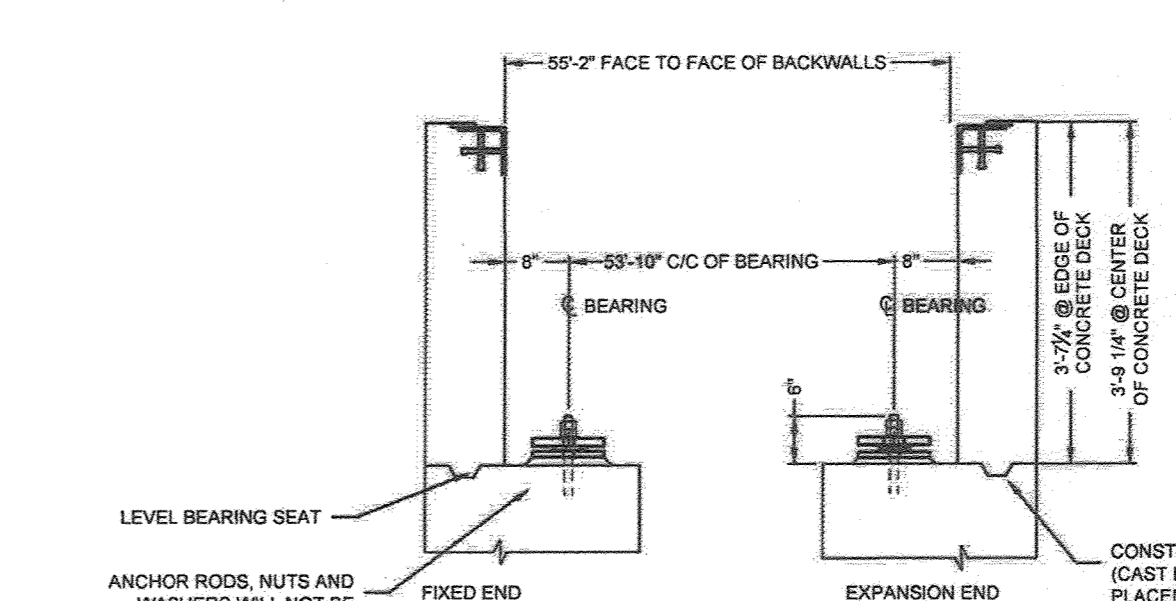


ABUTMENT PLAN SCALE: 3/8"=1'

CONTRACTOR/OWNER NOTE: VERIFY THAT THE MINIMUM CLEARANCE AT THE ABUTMENT SEAT EXCEEDS THE OVERALL BRIDGE WIDTH.



BEARING ELEVATION VIEW SCALE: 1/2"=1'

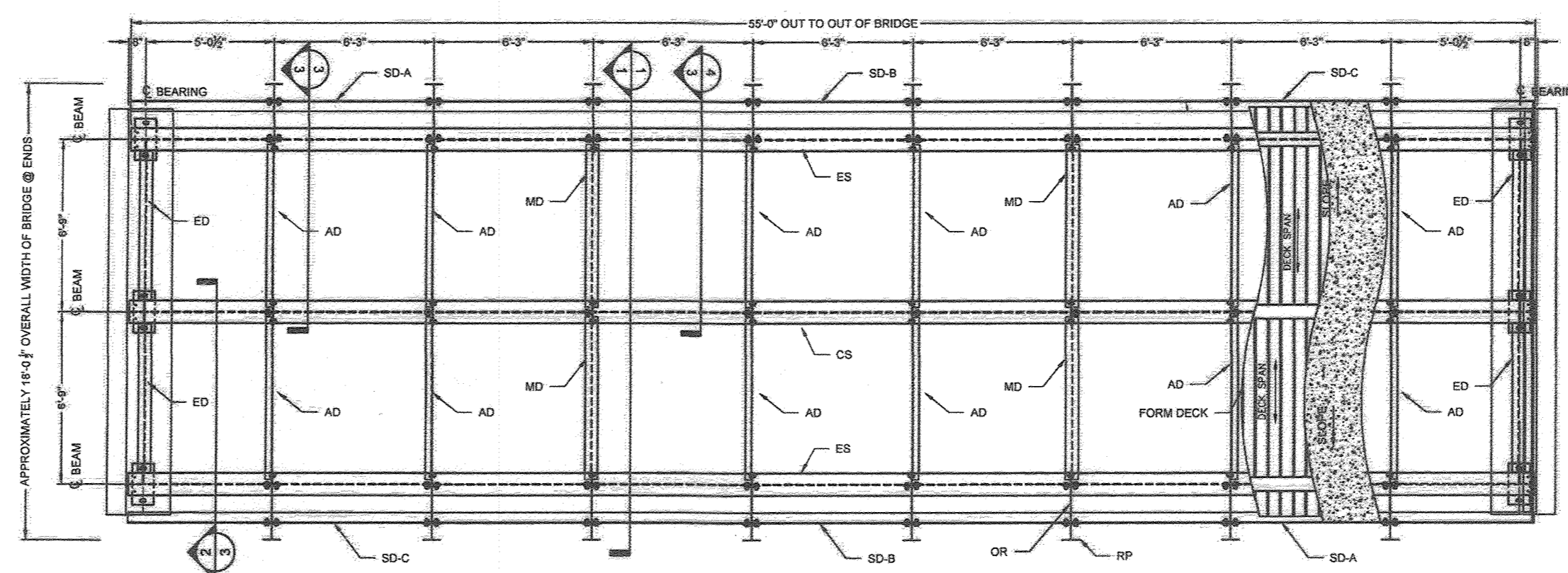


ABUTMENT ELEVATION SCALE: 1/2"=1'

CONTRACTOR/OWNER NOTE: SHIM PLATES BY OTHERS, NOT CONTECH.

COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED

BRIDGE REACTIONS	FIXED END		EXPANSION END	
	VERT (KIPS)	HORIZ (KIPS)	VERT (KIPS)	HORIZ (KIPS)
DEAD LOAD	82.7	0.0	82.7	0.0
VEHICLE LOAD (NO IMPACT)	77.4	0.0	77.4	0.0
VEHICLE LOAD (W IMPACT)	97.1	0.0	97.1	0.0
WIND LOAD	0.0	8.3	0.0	8.3
THERMAL LOAD	0.0	12.4	0.0	12.4



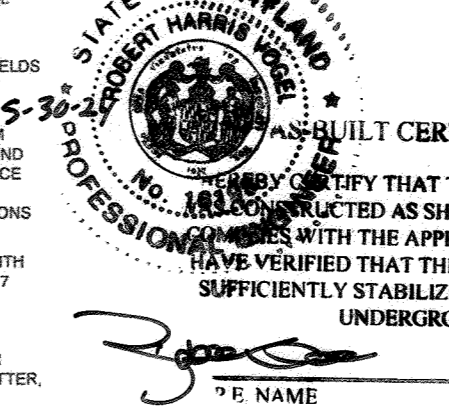
BRIDGE PLAN SCALE: 3/16"=1'

GENERAL NOTES

- ALL DESIGN STRESSES ARE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 7th EDITION, USING 1.80 BRIDGE DESIGN SPECIFICATIONS.
- BRIDGE MEMBERS ARE FABRICATED FROM HIGH STRENGTH, LOW ALLOY, ENHANCED ATMOSPHERIC CORROSION RESISTANT ASTM A572-50, ASTM A588, ASTM A588 OR ASTM A588 STRUCTURAL STEEL SHAPES AND PLATES, ALL STRUCTURAL STEEL TO BE F43-50,000 PSI.
- WELDING TO CONFORM WITH THE AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODE, ANSI/AASHTO D1-4 BRIDGE WELDING CODE FOR STRUCTURAL MEMBERS, LATEST REVISION. WELDING TO BE PERFORMED BY SUPERVISOR QUALIFIED IN ACCORDANCE WITH AWS PROCEDURES. WELDING ELECTRODES TO BE AWS E7018 SERIES. WELD PROCESS TO BE F43 OR GMAW. STRUCTURAL WELDS TO BE A MINIMUM OF 1/4" FILLET UNLESS SHOWN OTHERWISE. MINIMUM WELD SIZES DOES NOT APPLY TO SEAL WELDS.
- ALL CONNECTION BOLTS SHALL BE 1" DIA. A505-80 TYPE 1 WITH A563 OR D11 HEAVY HEX NUTS AND F438 TYPE 1 WASHERS UNLESS NOTED. FIELD CONNECTIONS SHALL BE MADE USING THE "TURN-OF-NUT" TIGHTENING METHOD IN ACCORDANCE WITH AASHTO SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR MARK BOLTS.
- ANCHOR BOLTS TO BE GALVANIZED ASTM F1554 GRADE 188 WITH A563 NUTS AND F438 WASHERS.
- SETTING PLATES SHALL BE PLACED ON SHIMS BY OTHERS. THE PERFORMED BEARING PADS AND THE BRIDGE SHALL THEN BE PLACED RESPECTIVELY ON THE SETTING PLATES. GROUTING SHOULD BE PERFORMED AFTER THE BRIDGE HAS BEEN PLACED TO ALLOW FOR FINAL VERTICAL ADJUSTMENT.
- LENGTH OF ANCHOR BOLTS AND FOUNDATION DETAILS ARE FOR GENERAL ARRANGEMENT PURPOSES ONLY. ACTUAL FOUNDATION AND SUBSTRUCTURE DESIGN, APPROACH RAILING, GROUNDING AND CLEARANCES, (FLOOD PLAN, ROADWAY, AND WATERWAY) ARE THE RESPONSIBILITY OF OTHERS.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI. REINFORCING SHALL CONFORM TO ASTM A615 GRADE 60. EPOXY COATING OF REINFORCING IS RECOMMENDED. ALL REBAR DEVELOPMENT LENGTHS AND LAP SPICES SHALL BE DETAILED AND FURNISHED IN ACCORDANCE WITH "CRSI" REINFORCEMENT: ANCHORAGE, LAP SPICES, AND CONNECTIONS". LATEST EDITION. REBAR SUPPLIED BY OTHERS.
- IF THE FINISHED CONCRETE DECK SHALL BE GIVEN A SHOP RESISTANT TEXTURE BY EITHER BURLAP OR CARPET DRAGGING, BROOKING, TRING, OR A COMBINATION OF THESE METHODS AS APPROVED BY THE OWNER AND AS SPECIFIED BY AASHTO. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE BRIDGE COMPONENTS FROM CONCRETE SPATTER AND REQUIRED CLEANING OF THE STRUCTURE RESULTING FROM SPLILLS.
- THE BRIDGE SHALL BE FORMED WITH NEW MILLENNIUM 200 GALVANIZED 2" x 36", 18 GA. COMPOSITE FLOOR DECK.
- THE FLOOR DECK SHALL BE ATTACHED USING POWDER ACTUATED PINS INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS OR BY ARC SPOT WELDING WITH A MINIMUM VISIBLE DIAMETER OF 5/8 INCHES. SPACING OF FASTENERS SHALL NOT EXCEED 24 INCHES.
- SHEAR STUDS SHALL BE MADE FROM COLD DRAWN BAR STOCK CONFORMING TO ASTM SPECIFICATION A198. ANCHORS SHALL HAVE A MINIMUM TENSILE STRENGTH OF 80 KSI AND SHALL BE SHOP INSTALLED WITH AUTOMATIC STUD WELDING EQUIPMENT IN ACCORDANCE WITH AWS D1.1. SHEAR STUDS SHALL BE 7/8" DIAMETER BY 5" LONG. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULL PROTECTION IN ACCORDANCE WITH OSHA REGULATIONS AS THEY RELATE TO BRIDGES WITH SHOP INSTALLED SHEAR STUDS.
- CLEANING: ALL EXPOSED SURFACES OF STEEL SHALL BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COATING SURFACES PREPARATION SPECIFICATIONS NO. 7 BRUSH-OFF BLAST CLEANING, SSPC-SP7 LATEST EDITION.
- FINISHING: (ALL BRIDGE STEEL EXCEPT RAILPOSTS)
 - ANY FLAT SURFACES WHICH SHALL BE IN CONTACT WITH OTHER FLAT SURFACES AFTER FABRICATION SHALL BE CLEANED, REMOVING ANY GREASE, OIL OR OTHER FOREIGN MATTER, PRIOR TO WELDING (VENTING IF OVER 16 SQUARE INCHES OF AREA).
 - AFTER WELDING BRIDGE, BRUSH BLAST ONLY TO REMOVE ANY EXCESS WELD RESIDUE, MILL SCALE AND STENCILING.
 - CONCRETE SHALL BE IMMERSUED IN AN ACID BATH TO REMOVE SURFACE RUST AND MILL SCALE TO PROVIDE A CHEMICALLY CLEAN METALLIC SURFACE AND THEN HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION.

DESIGN CRITERIA

- BRIDGE TYPE - STEEL STRINGER
- FLOOR DECK - NORMAL WEIGHT CONCRETE (150 PCF)
- FUTURE RESURFACING ALLOWANCE - 25 PSF
- HS-20 ASBESTO LIVE LOADING WITH IMPACT (1 LANE)
- MAX AVTT - 750
- WIND SPEED - 100 MPH
- ICE LOAD - 13.5 KIPS IN ACCORDANCE WITH AASHTO



NO AS-BUILT INFORMATION SHOWN ON THIS SHEET

OWNER: ESTATES AT RIVER HILL, LLC
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

DEVELOPER: TRINITY HOMES MARY LAND, LLC
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
11/27/2018
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
12.2.18
DATE

1-10-19
DATE

NO.	MODIFICATION TO PLANT, HOUSES, SWM AND GRADING	4-10-19
	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN

BRIDGE DESIGN NOTES AND DETAILS

THE ESTATES AT RIVER HILL

LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389
TAX MAP: 34 GRD: 23
3TH ELECTION DISTRICT

ZONED: RR-DEO
L 4772 / F. 285
HOWARD COUNTY, MARYLAND



DESIGN BY: _____

DRAWN BY: _____

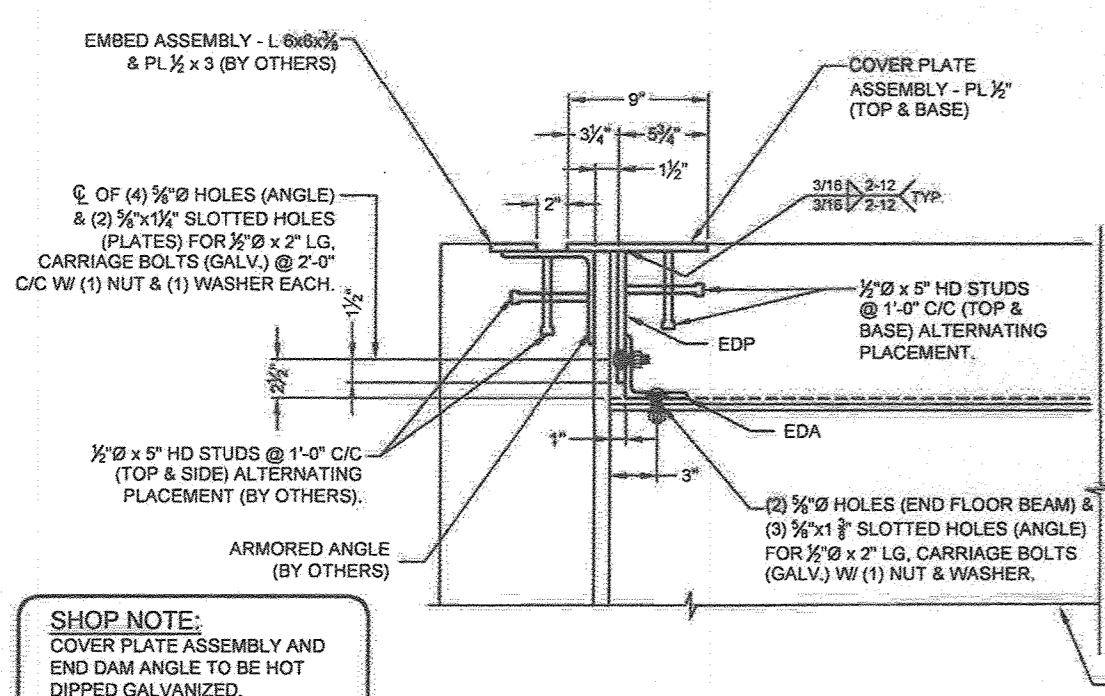
CHECKED BY: _____

DATE: SEPTEMBER 2018

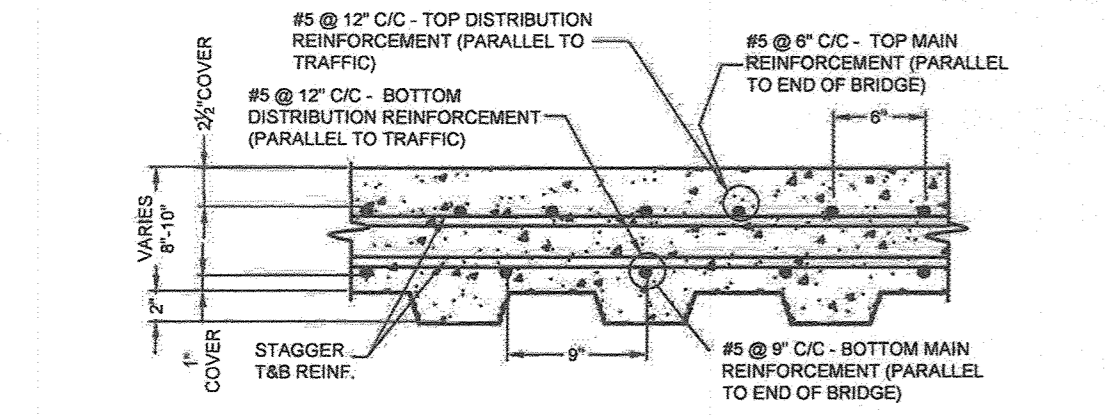
SCALE: AS SHOWN

W.O. NO.: 15-39

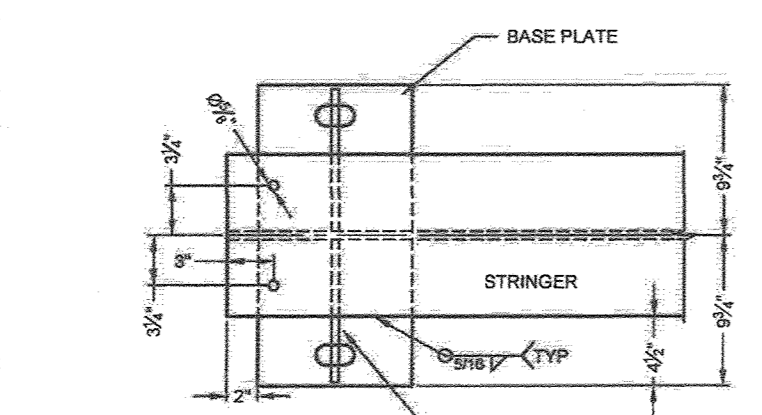
29 OF 33



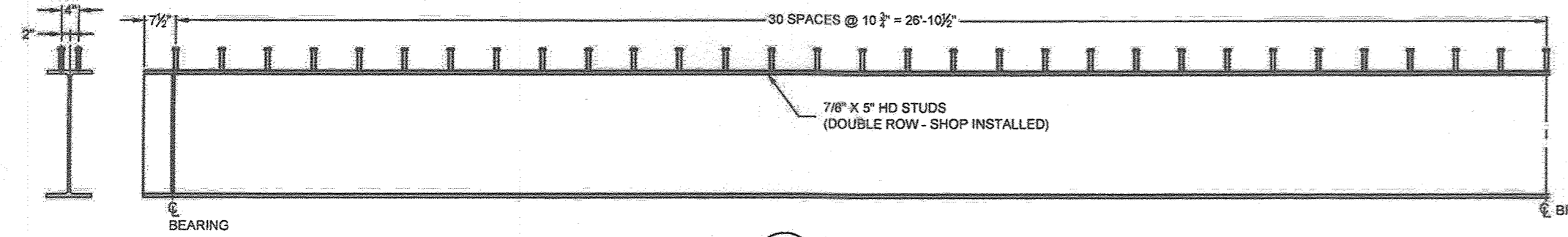
11 CONNECTION DETAIL
4 (END DAM / COVER PLATE ASSEMBLY)
SCALE: 1"=1"



9 CONCRETE DECK REINFORCEMENT
1
SCALE: 1"=1"



BEAM END DETAIL
SCALE: 1"=1"



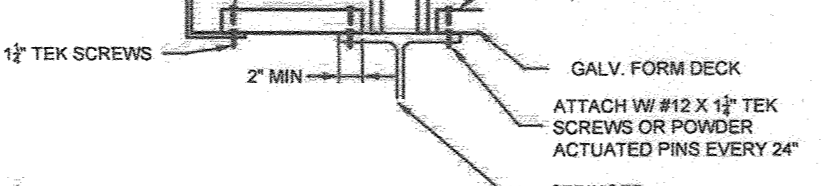
10 SHEAR STUD LAYOUT
1 (ALL STRINGERS)
SCALE: 3/8"=1"

GALVANIZING NOTE:
COVER PLATE ASSEMBLY AND END DAM ANGLE ONLY: HOT DIPPED GALVANIZED PER THE FOLLOWING:
A. ANY FLAT SURFACES WHICH SHALL BE IN CONTACT WITH OTHER FLAT SURFACES AFTER FABRICATION SHALL BE CLEANED, REMOVING ANY GREASE, OIL OR OTHER FOREIGN MATTER, PRIOR TO WELDING (VENT IF OVER 16 SQUARE INCHES IN AREA).
B. AFTER WELDING, BRUSH BLAST ONLY TO REMOVE ANY EXCESS WELD RESIDUE AND STENCILING.
C. MATERIAL SHALL BE IMMERSSED IN AN ACID BATH TO REMOVE SURFACE RUST AND MILL SCALE TO PROVIDE A CHEMICALLY CLEAN METALLIC SURFACE AND THEN HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION.

SHOP NOTE:
APPLY ZINC RICH PRIMER TO THE TOP OF THE END OF THE STRINGER THAT WILL BE IN CONTACT WITH END DAM ANGLE.

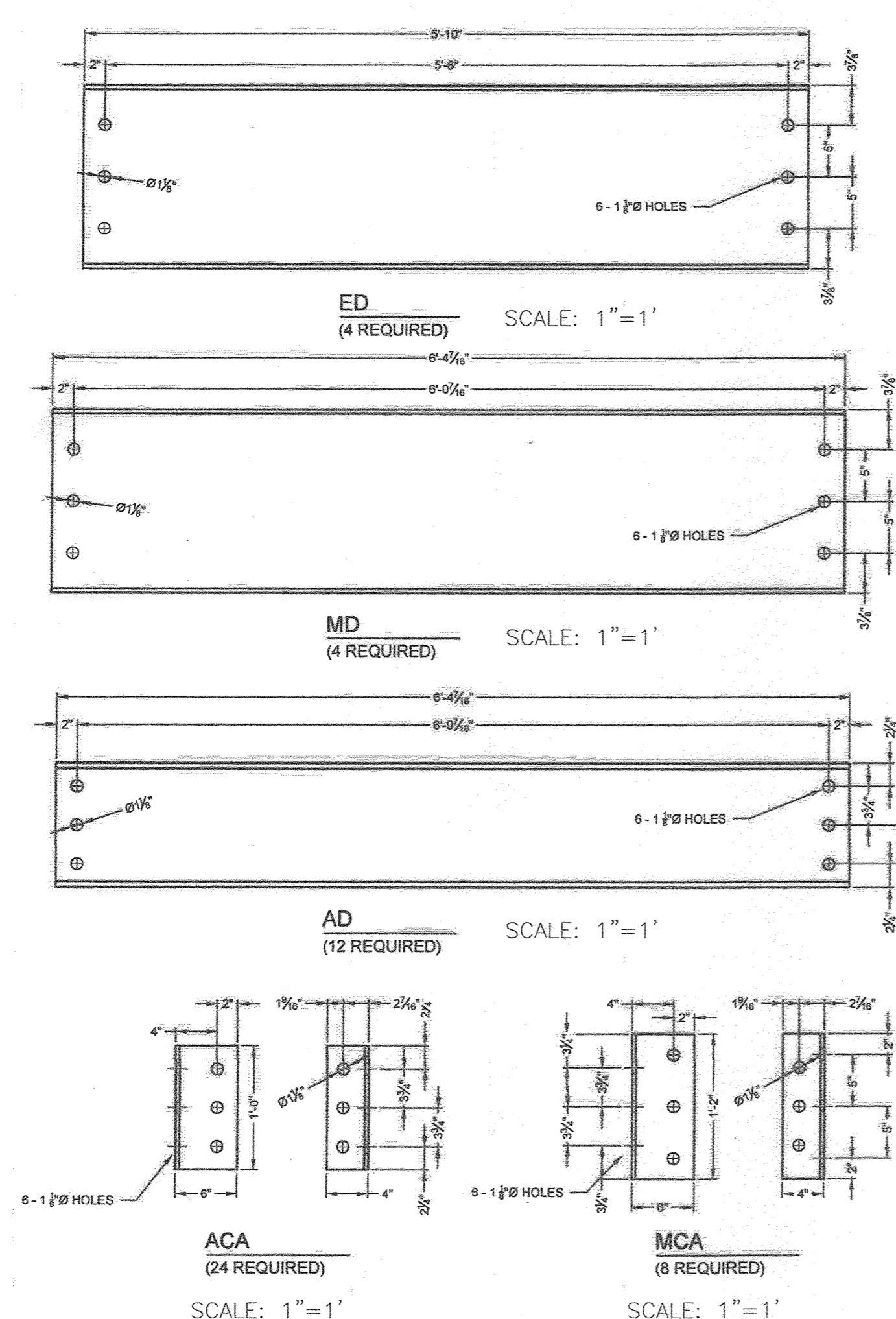
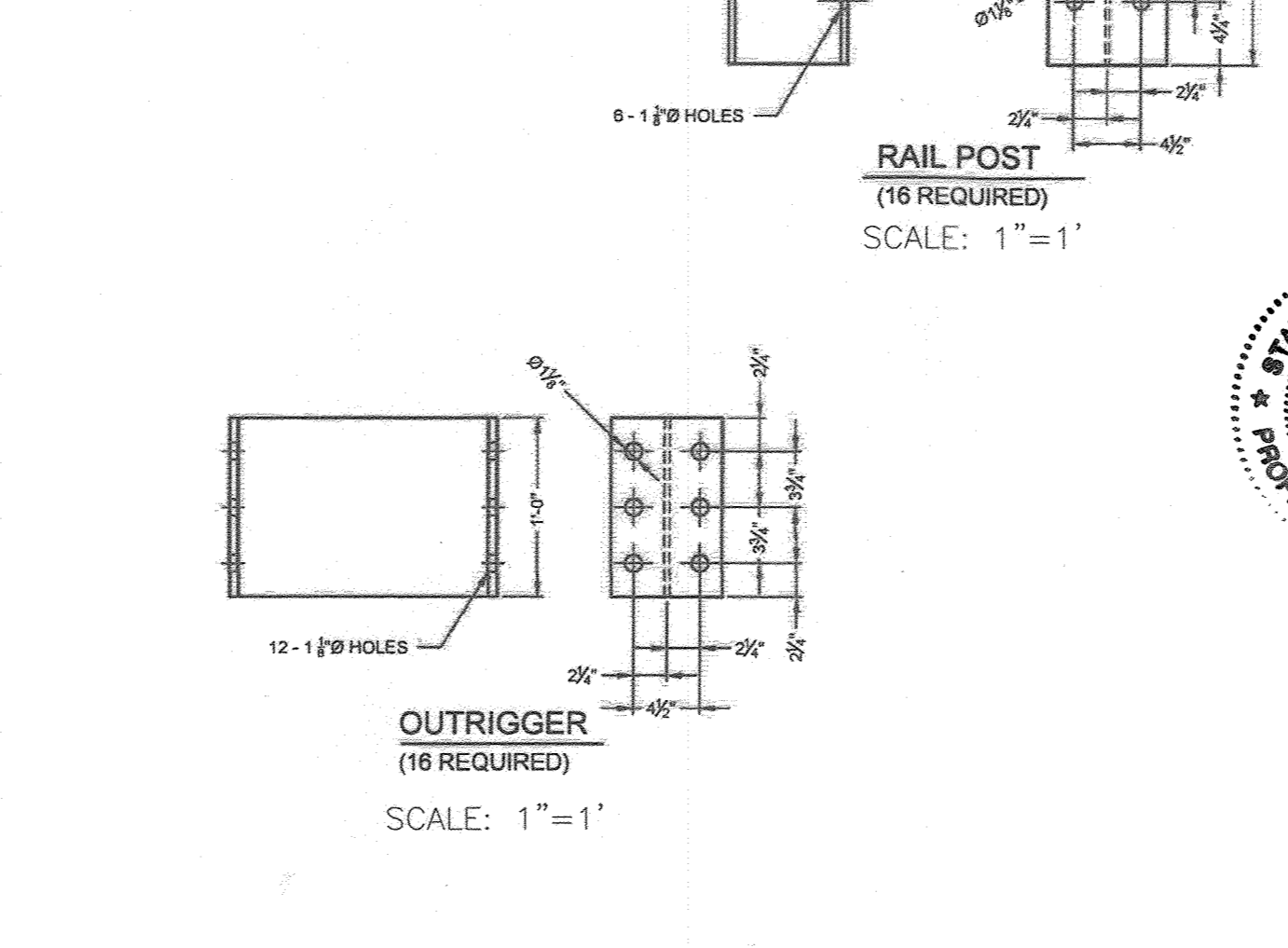
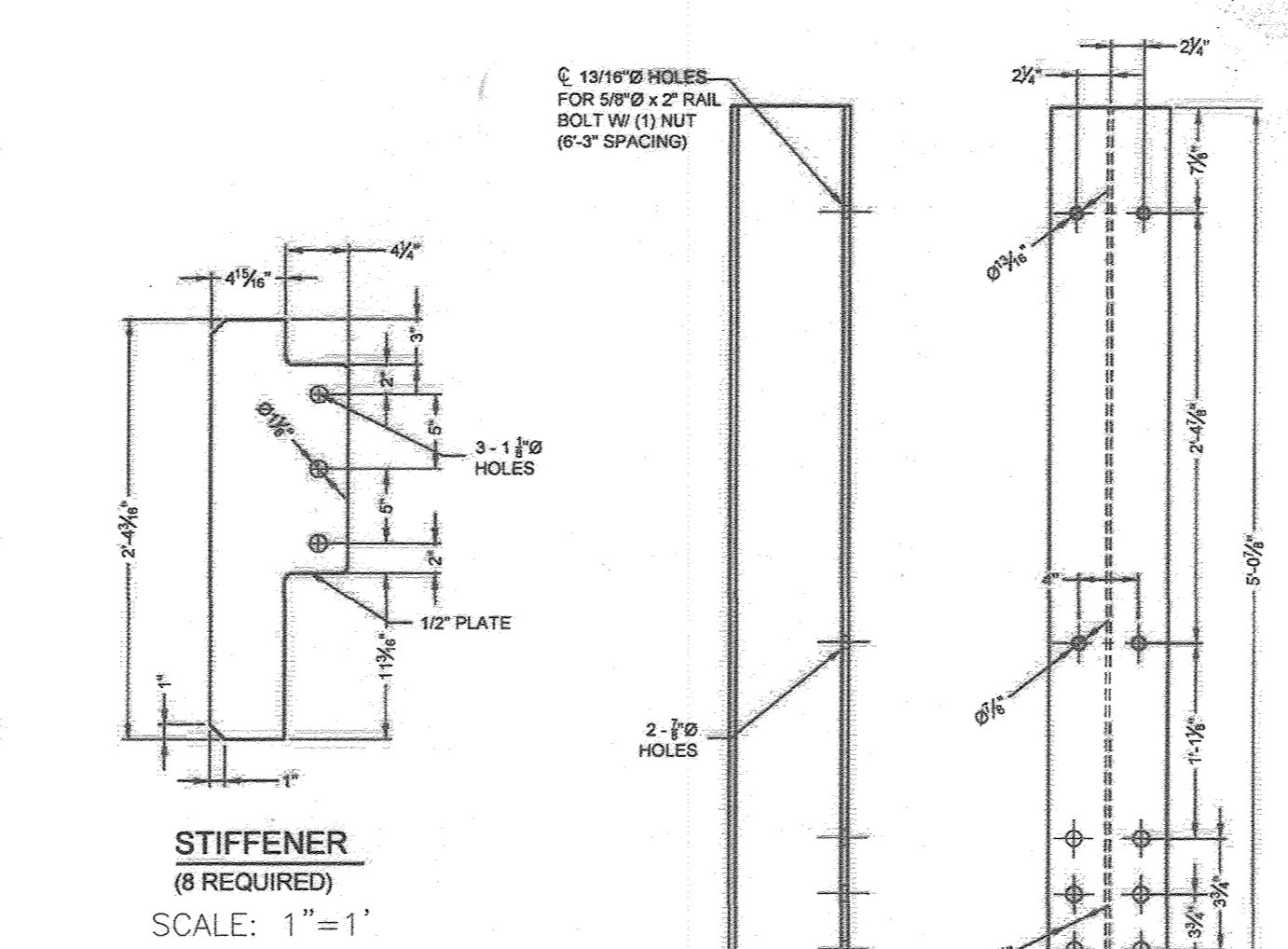
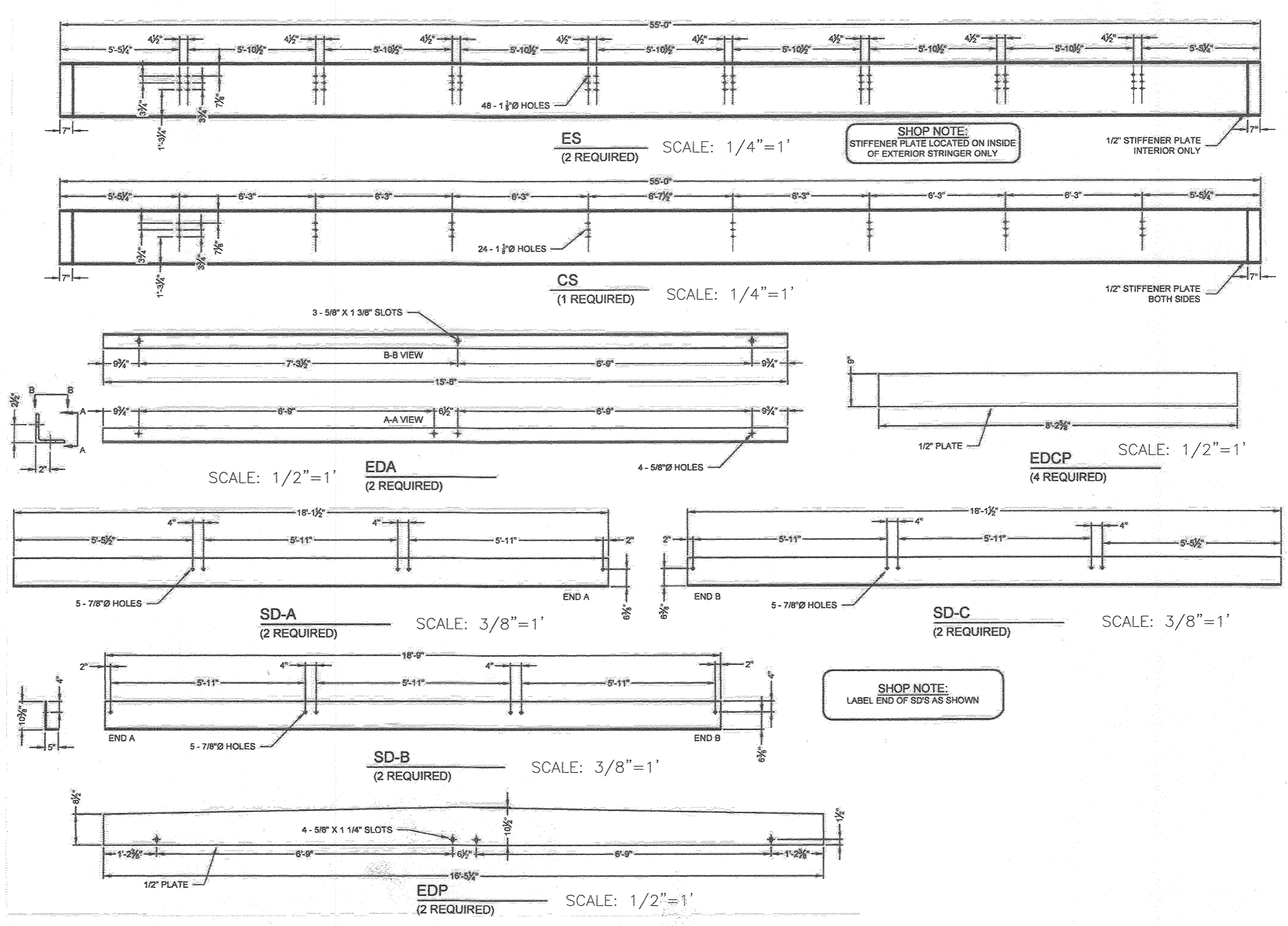
FORM DECK INSTALLATION
1. USE CARE TO AVOID DAMAGING THE INSTALLED FORM DECK FROM STACKING MATERIALS, DROPPING EQUIPMENT, OR HEAVY CONSTRUCTION TRAFFIC.
2. UNLESS OTHERWISE NOTED, ALL FORM DECK IS TO BE ATTACHED TO THE STRINGERS WITH #12 X 1 1/2 SELF-DRILLING FASTENERS OR 3/4 X 1" POWER ACTUATED FASTENERS. SELF-DRILLING SCREWS SHALL BE INSTALLED AS FOLLOWS:
-ALONG STRINGERS AND SIDE DAMS: EVERY OTHER FLUTE.
-ALONG SIDELAPS: SPACED AT 30" O.C. MAX.
3. FORM DECK SHALL BEAR AT A MINIMUM OF 2" ON ALL SUPPORTS.
4. CONCRETE SHALL NOT BE DUMPED ON FORM DECK TO A DEPTH GREATER THAN 12" ABOVE TOP OF FORM.

QUALITY ASSURANCE NOTES
1. ALL WELDS TO BE VISUALLY INSPECTED.



TYPICAL FORM DECK DETAILS
SCALE: 3/4"=1"

SHOP NOTE:
STIFFENER PLATE LOCATED ON INSIDE OF EXTERIOR STRINGER ONLY



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
11/27/2018
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
12.2.18
CHIEF, DIVISION OF LAND DEVELOPMENT
1-10-19



AS-BUILT CERTIFICATION FOR PSWM
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLEES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
16193
5-30-24

OWNER
ESTATES AT RIVER HILL, LLC
MICHAEL PFALZ, MEMBER
3675 PARK AVE., SUITE 301
ELLICOTT CITY, MD 21043
(410) 480-0023

DEVELOPER
TRINITY HOMES MARYLAND, LLC
ELLICOTT CITY, MD 21043
(410) 480-0023

NO AS-BUILT INFORMATION SHOWN ON THIS SHEET

1. MODIFICATION TO EXIST HOUSE, SWM AND GRADING		4-10-19
NO.	REVISION	DATE
CONTECH ENGINEERED SOLUTIONS LLC www.contechES.com 4301 Stee Highway 20 North, Alexandria, VA 22304 800-338-2347 133-883-7500 220-483-7047 FAX		
CONTINENTAL BRIDGE		
PROFESSIONAL CERTIFICATE		
DESIGN BY: _____	I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 28899, EXPIRATION DATE: 04-30-2019.	
DRAWN BY: _____		
CHECKED BY: _____		
DATE: SEPTEMBER 2018		
SCALE: AS SHOWN		
W.O. NO.: 15-39		
30 SHEET OF 33		

WARNING!
INSTALL HIGHLY VISIBLE AND PROTECTIVE DEVICES AROUND WELLS PRIOR TO COMMENCEMENT OF GRADING OPERATIONS. MAINTAIN PROTECTIVE DEVICES THROUGHOUT DURATION OF CONSTRUCTION ACTIVITIES

NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

NOTE: DIVERSION FENCE SHALL BE INSTALLED AS SHOWN HEREON OR AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR

NOTE: - SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

NOTE: STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDS. & SPECS. WHICHEVER IS MORE RESTRICTIVE.

NOTE: NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.

DIVERSION FENCE A
A = 0.83 AC.
IMP. = 0.17 AC.
GRASS = 0.66 AC.
Tc = 10.0 MIN.
Iz = 4.5
C = 0.15
Qz = (A)(C)(Iz)
Qz = (0.83)(0.15)(4.5)
Qz max = 0.56 CFS
V2 max = 2.00 FPS
S = 3.53%
n = 0.03

DIVERSION FENCE B
A = 0.57 AC.
IMP. = 0.14 AC.
GRASS = 0.43 AC.
Tc = 10.0 MIN.
Iz = 4.5
C = 0.12
Qz = (A)(C)(Iz)
Qz = (0.57)(0.12)(4.5)
Qz max = 0.31 CFS
V2 max = 1.67 FPS
S = 5.01%
n = 0.03

SPECIMEN TREE CHART

NO.	SIZE	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 21	44" DBH	66'	RED OAK	POOR, SEVERE DIEBACK	TO REMAIN
ST 22	38" DBH	57'	RED OAK	POOR, NOTABLE DIEBACK	TO REMAIN

- GENERAL NOTES**
- THIS SUBJECT PROPERTY IS ZONED RR-DEO.
 - PROPERTY OUTLINE SHOWN HEREON IS BASED ON FIELD BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JULY, 2016.
 - DEED REFERENCES: LIBER 18487 FOLIO 262
 - THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM HOWARD COUNTY GIS AND SUPPLEMENTED WITH FIELD RUN SURVEYS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH AND MAY OF 2016.
 - SOIL TYPES SHOWN HEREON ARE FROM THE USDA WEB SOIL SURVEY.
 - THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
 - DPZ REFERENCES: EOP-16-064, WP-17-034, WP-17-128, SP-17-007 & F-18-064

SOILS LEGEND

SYMBOL	NAME/DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
BaA	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GbC	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ha	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE
-HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE NW

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 6/3/2019

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 6.10.19

APPROVED: HOWARD COUNTY DEPARTMENT OF LAND DEVELOPMENT
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 6-11-19

OWNER/DEVELOPER CERTIFICATION:
 I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.
 MICHAEL PFAU, MEMBER
 DATE: 4/24/19
 PRINTED NAME & TITLE

DESIGNER CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS; THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE; AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 ROBERT H. VOGEL
 DATE: 5-8-19
 PRINTED NAME
 MD REGISTRATION NO. 16193
 (E.A. R.L.S. OR R.L.A. (circle one))

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 JOHN P. REUTER
 DATE: 5/24/19
 HOWARD S.C.D.

GRADING PLAN
 SCALE: 1" = 50'

OWNER
 ESTATES AT RIVER HILL, LLC
 MICHAEL PFAU, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER
 TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

LEGEND:

[Symbol]	PROPERTY LINE
[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	ADJACENT PROPERTY LINE
[Symbol]	EXISTING EDGE OF PAVING
[Symbol]	EXISTING STREAM BUFFER
[Symbol]	EXISTING STREAM
[Symbol]	EXISTING TREETRINE
[Symbol]	PROPOSED TREETRINE
[Symbol]	EXISTING WETLANDS
[Symbol]	EXISTING WETLAND BUFFER
[Symbol]	EXISTING SPECIMEN TREES
[Symbol]	EXISTING WOOD FENCE
[Symbol]	EXISTING METAL FENCE
[Symbol]	EX. PUBLIC 100-YEAR FLOOD PLAN
[Symbol]	EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12946)
[Symbol]	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
[Symbol]	PROP. PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
[Symbol]	PROP. 35' PRIVATE MONUMENT EASEMENT
[Symbol]	EXISTING 10' CONTOUR
[Symbol]	EXISTING 2' CONTOUR
[Symbol]	SOILS
[Symbol]	PROPOSED 10' CONTOUR
[Symbol]	PROPOSED 2' CONTOUR
[Symbol]	EXISTING STEEP SLOPES (25% SLOPES OR GREATER)
[Symbol]	EXISTING MODERATE SLOPES (15% TO 24.9% SLOPES)
[Symbol]	PROP. SEWAGE DISPOSAL AREA
[Symbol]	PROP. WELL AREA
[Symbol]	LOD
[Symbol]	LIMIT OF DISTURBANCE
[Symbol]	STABILIZED CONSTRUCTION ENTRANCE
[Symbol]	SSSF
[Symbol]	SILT FENCE
[Symbol]	DF
[Symbol]	DIVERSION FENCE

AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
 J. NAME: [Signature]
 P.E.#: 16193
 DATE: 5-30-24

NO AS-BUILT INFORMATION SHOWN ON THIS SHEET
 SCALE 1"=50'
 25' 0' 50'

NO.	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	REVISION	DATE
1			4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN
ON-LOT GRADING, EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 1-3, 10 & 11
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110
 ELLICOTT CITY, MD 21043
 TEL: 410.461.7666
 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE
 DESIGN BY: RHV
 DRAWN BY: JMR
 CHECKED BY: JMR
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.O. NO.: 15-39
 I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 16193, EXPIRATION DATE: 09-27-2020.
 31 SHEET OF 33

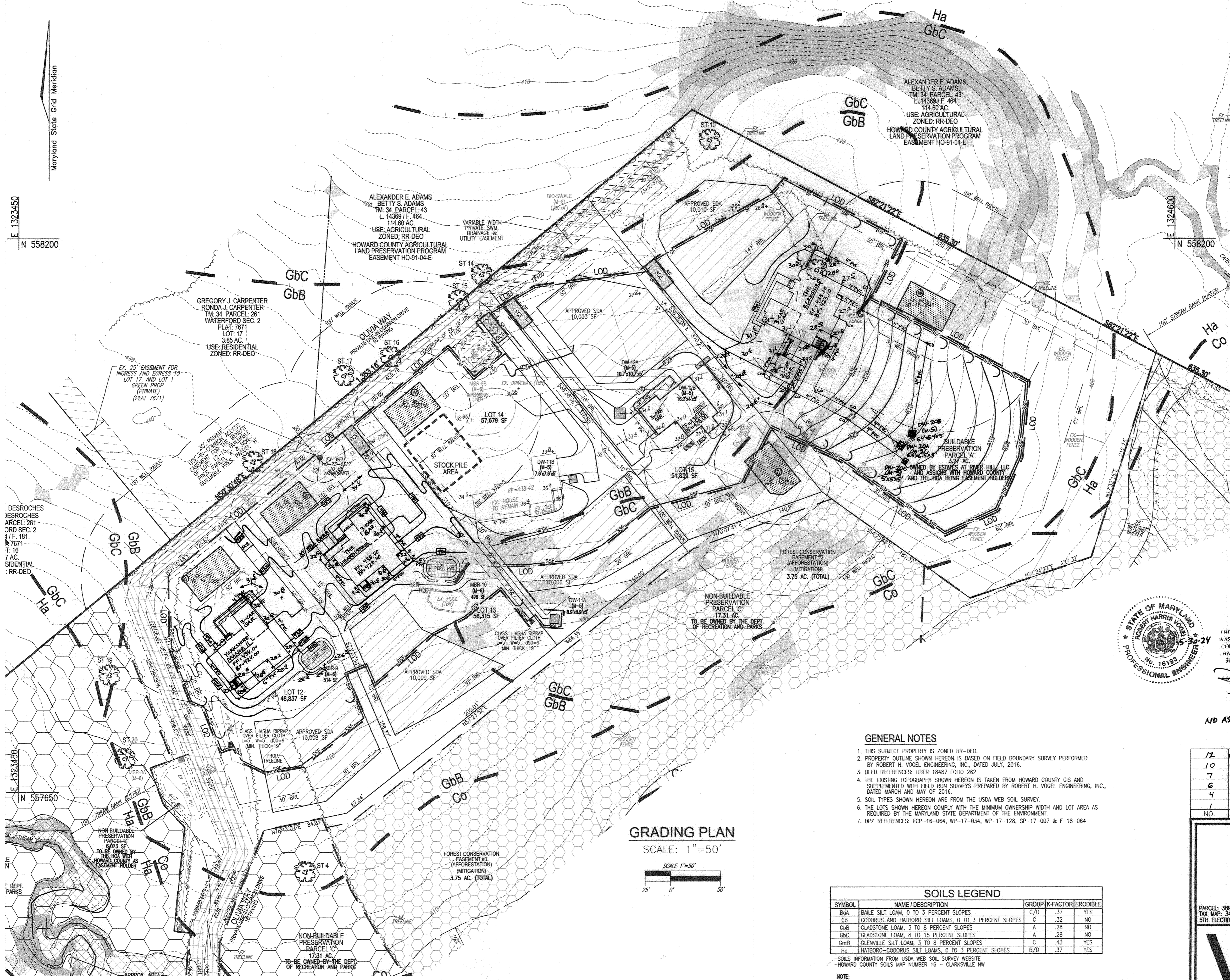
WARNING!
INSTALL HIGHLY VISIBLE AND PROTECTIVE DEVICES AROUND WELLS PRIOR TO COMMENCEMENT OF GRADING OPERATIONS. MAINTAIN PROTECTIVE DEVICES THROUGHOUT DURATION OF CONSTRUCTION ACTIVITIES

NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

NOTE:
- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

NOTE:
STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDS. & SPECS. WHICHEVER IS MORE RESTRICTIVE.

NOTE: NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.

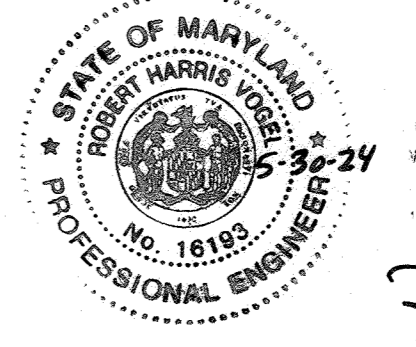


LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SWM DRAINAGE & UTILITY EASEMENT
- PROP. 35' PRIVATE MONUMENT EASEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING STEEP SLOPES (25% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 24.9% SLOPES)
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA
- LIMIT OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE
- SUPER SILT FENCE
- SILT FENCE

SPECIMEN TREE CHART

NO.	SIZE (IN. DBH/FEET RADII)	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 9	30"	45'	WHITE PINE	GOOD CONDITION	TO BE REMOVED



AS-BUILT CERTIFICATION FOR PSWM
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

NAME: *Robert H. Vogel* PE # 16193 DATE: 5-30-24

NO AS-BUILT INFORMATION SHOWN ON THIS SHEET

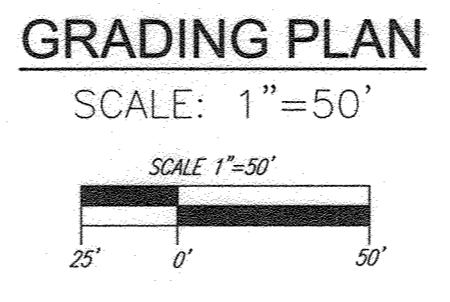
- GENERAL NOTES**
- THIS SUBJECT PROPERTY IS ZONED RR-DEO.
 - PROPERTY OUTLINE SHOWN HEREON IS BASED ON FIELD BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JULY, 2016.
 - DEED REFERENCES: LIBER 18487 FOLIO 262
 - THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM HOWARD COUNTY GIS AND SUPPLEMENTED WITH FIELD RUN SURVEYS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH AND MAY OF 2016.
 - SOIL TYPES SHOWN HEREON ARE FROM THE USDA WEB SOIL SURVEY.
 - THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
 - DPZ REFERENCES: ECP-16-064, WP-17-034, WP-17-126, SP-17-007 & F-18-064

SOILS LEGEND

SYMBOL	NAME/DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Ba	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HARBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GbB	GLAISTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GbC	GLAISTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ho	HARBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

-SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE
-HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE NW

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
James 6/3/2019
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Michael Pfaul 6-10-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION

Kurt Schwalbe 6-11-19
CHIEF, DIVISION OF LAND DEVELOPMENT

OWNER/DEVELOPER CERTIFICATION:
I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

Michael Pfaul 11/24/19
OWNER/DEVELOPER SIGNATURE DATE
MICHAEL PFAUL, MEMBER
PRINTED NAME & TITLE

DESIGN CERTIFICATION:
I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Robert H. Vogel 5-8-19
DESIGNER'S SIGNATURE DATE
ROBERT H. VOGEL
PRINTED NAME
MD REGISTRATION NO. 16193
P.E. R.L.S., OR R.L.A. (circle one)

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

John Robertson 5/24/19
HOWARD S.C.D. DATE

OWNER
ESTATES AT RIVER HILL, LLC
MICHAEL PFAUL, MEMBER
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

DEVELOPER
TRINITY HOMES MARYLAND, LLC
3675 PARK AVE., SUITE 301
ELLCOTT CITY, MD 21043
(410) 480-0023

REVISIONS

NO.	REVISION	DATE
1/2	REVISE THE HOUSE AND GRADING ON LOT 11	8-11-21
1/0	REVISE THE HOUSE AND BSD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM FOR LOT 13	1-29-21
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19
NO.	REVISION	DATE

REVISED FINAL ROAD CONSTRUCTION PLAN
ON-LOT GRADING, EROSION AND SEDIMENT CONTROL PLAN
FOR LOTS 12-15 & BUILDABLE PRESERVATION PARCEL A
THE ESTATES AT RIVER HILL
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',
AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'
A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO
TAX MAP: 34 GRID: 23 L 4772 F 265
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
ELLCOTT CITY, MD 21043 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE
DESIGN BY: RHV
DRAWN BY: JMR
CHECKED BY: RHV
DATE: NOVEMBER 2018
SCALE: AS SHOWN
W.O. NO.: 15-39

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A BUILT LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 08-27-2020

32 SHEET OF 33

WARNING!
INSTALL HIGHLY VISIBLE AND PROTECTIVE DEVICES AROUND WELLS PRIOR TO COMMENCEMENT OF GRADING OPERATIONS. MAINTAIN PROTECTIVE DEVICES THROUGHOUT DURATION OF CONSTRUCTION ACTIVITIES

NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

NOTE:
- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SILT FENCE SHALL BE CURLED UPHILL. NO MORE THAN 35 FEET APART
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

NOTE: STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDS. & SPECS. WHICHEVER IS MORE RESTRICTIVE.

NOTE: NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.

NO.	SIZE (IN. DBH @ 4.5 FT. ABOVE ST)	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 24	3"	55-3	TULIP POPLAR	MAJOR TRUNK WOUND	TO BE REMOVED

- GENERAL NOTES**
- THIS SUBJECT PROPERTY IS ZONED RR-DEO.
 - PROPERTY OUTLINE SHOWN HEREON IS BASED ON FIELD BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JULY, 2016.
 - DEED REFERENCES: LIBER 18487 FOLIO 262
 - THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM HOWARD COUNTY GIS AND SUPPLEMENTED WITH FIELD RUN SURVEYS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH AND MAY OF 2016.
 - SOIL TYPES SHOWN HEREON ARE FROM THE USDA WEB SOIL SURVEY.
 - THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
 - DRP REFERENCES: ECP-16-064, WP-17-034, WP-17-126, SP-17-007 & F-18-064

SYMBOL	NAME / DESCRIPTION	GROUP	K FACTOR	ERODIBLE
BaA	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GcB	GLAUSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GcC	GLAUSTONE LOAM, 8 TO 15 PERCENT SLOPES	C	.43	YES
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ho	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 6/3/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 6-10-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 6-11-19
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE



LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAWING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TRENCH
- PROPOSED TRENCH
- EXISTING WETLANDS
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAIN
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SHM, DRAINAGE & UTILITY EASEMENT
- PROP. 35' PRIVATE MONUMENT EASEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING STEEP SLOPES (25% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 24.99% SLOPES)
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA
- LOD
- SCE
- SIF

STATE OF MARYLAND
 ROBERT H. VOGEL, INC.
 PROFESSIONAL ENGINEERS
 LICENSE NO. 16193
 5-30-24
 AS-BUILT CERTIFICATION FOR P&WM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

NO AS-BUILT INFORMATION SHOWN ON THIS SHEET

NO.	REVISION	DATE
14	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOTS 8 AND 9	6-22-22
13	REVISE THE PLAN TO ADD AN EXTRA DECK WELL TO LOT 7 AND MODIFY THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESP, PRACTICES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO SHOW HOUSES, SWM AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN
 ON-LOT GRADING, EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 4-9
THE ESTATES AT RIVER HILL
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

PARCEL: 389
 TAX MAP: 34 GRID: 23
 5TH ELECTION DISTRICT

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110 ELLICOTT CITY, MD 21043
 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: RHY
 DRAWN BY: JMR
 CHECKED BY: RHY
 DATE: NOVEMBER 2018
 SCALE: AS SHOWN
 W.D. NO.: 15-39

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS 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. 16193 EXPIRATION DATE: 09-27-2026

OWNER/DEVELOPER CERTIFICATION:
 I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

[Signature] 4/24/19
 OWNER/DEVELOPER SIGNATURE DATE
 Michael F. Fox, member
 PRINTED NAME & TITLE

DESIGN CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 5-8-19
 DESIGNER SIGNATURE DATE
 Robert H. Vogel
 PRINTED NAME
 MD REGISTRATION NO. 16193
 (E) R.L.S. OR R.L.A. (circle one)

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 5/24/19
 HOWARD S.C.D. DATE

GRADING PLAN
 SCALE: 1"=50'

OWNER
 ESTATES AT RIVER HILL, LLC
 MICHAEL PFALL, MEMBER
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023

DEVELOPER
 TRINITY HOMES MARYLAND, LLC
 3675 PARK AVE., SUITE 301
 ELLICOTT CITY, MD 21043
 (410) 480-0023