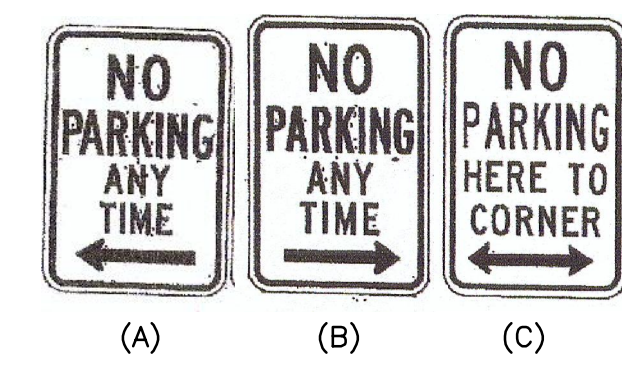


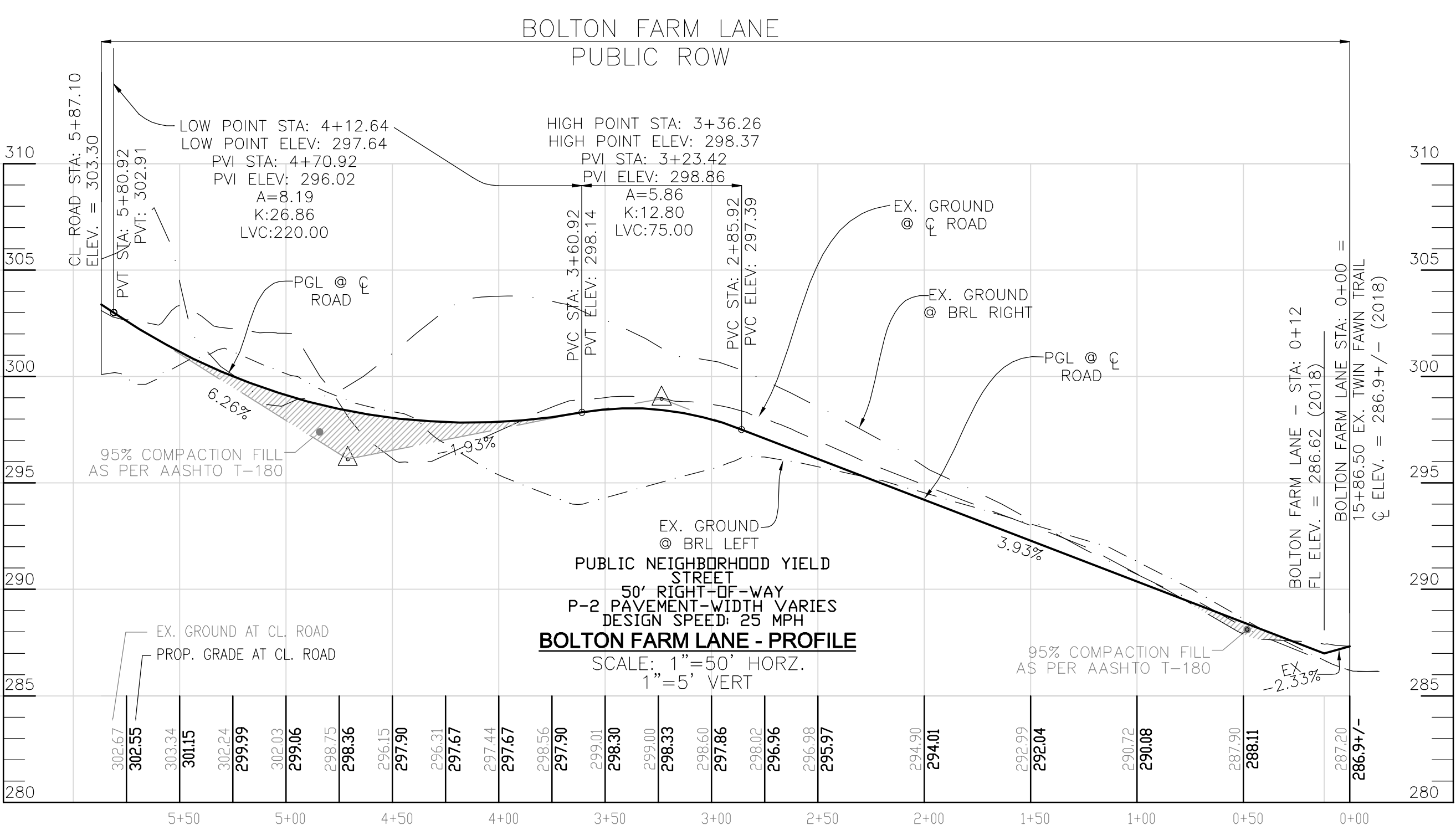
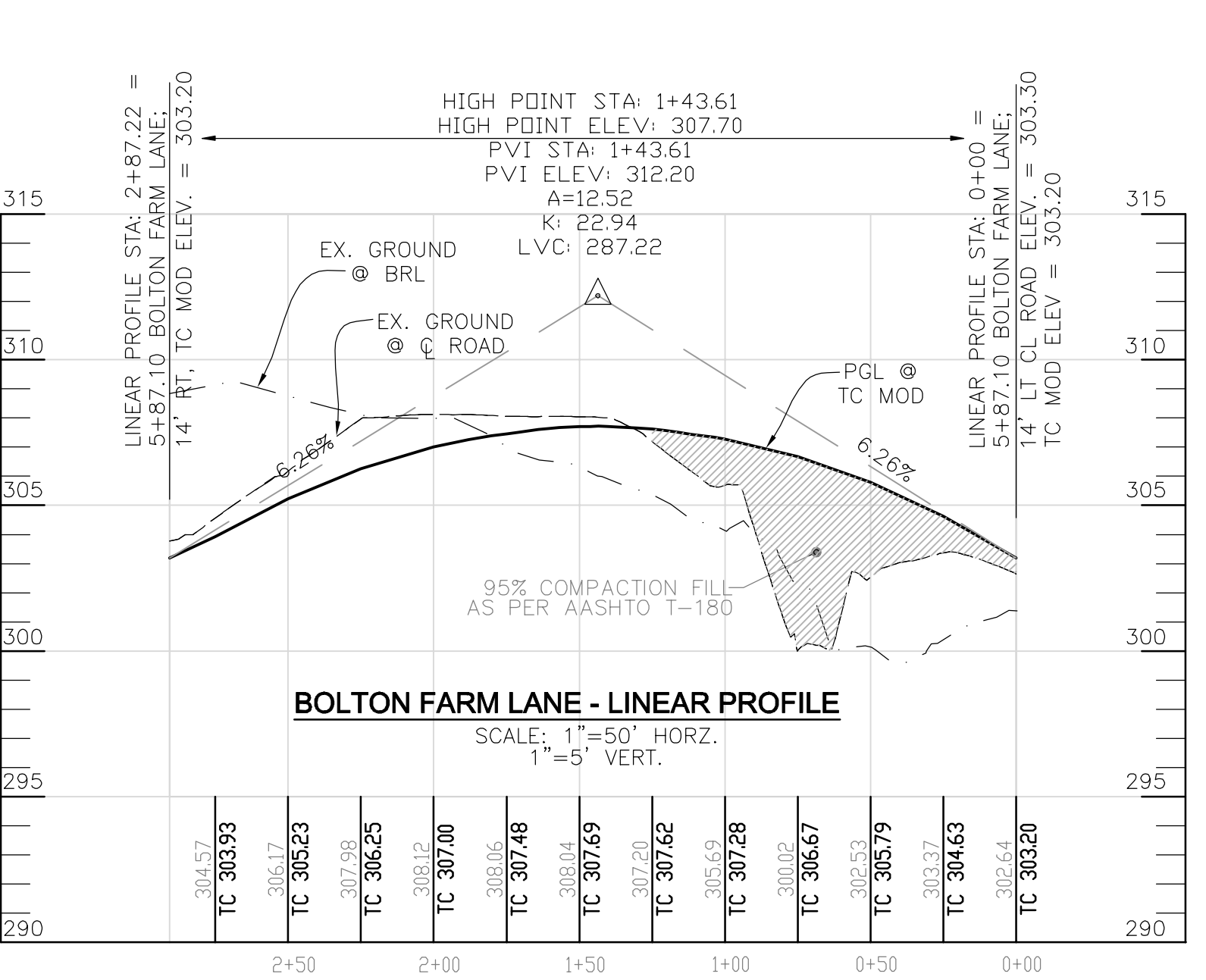
SIGNAGE LOCATION CHART				
ROAD NAME	STATION	OFFSET	TYPE	TYPE
TWIN FAWN LANE	15+49.06	16.28' R	"NO OUTLET" AND "STREET NAME" SIGN	
BOLTON FARM LANE	0+28.31	17.00' L	"STOP" AND "NO PARKING" SIGN	
BOLTON FARM LANE	0+32.85	17.00' R	"NO PARKING" SIGN - (R8-3a)	
BOLTON FARM LANE	0+72.92	17.00' R	"SPEED LIMIT" SIGN	
BOLTON FARM LANE	0+91.85	17.00' R	"NO PARKING" SIGN - (R8-3a)	
BOLTON FARM LANE	0+99.00	17.00' L	"NO PARKING" SIGN - (R8-3a)	
BOLTON FARM LANE	2+45	17.00' L	"NO PARKING" SIGN - (R8-3a)	
BOLTON FARM LANE	3+98.95	17.00' L	"NO PARKING" SIGN - (R8-3a)	



NOTE: ALL SIGN LOCATIONS ARE APPROXIMATE. HOWARD COUNTY TRAFFIC SHALL FIELD APPROVE OR MARK ALL SIGN LOCATIONS PRIOR TO ANY SIGNS BEING INSTALLED. CALL 410-313-5752.

ROADWAY INFORMATION CHART					
ROAD NAME	CLASSIFICATION	DESIGN SPEED	ZONING	CL STA LIMITS	PAVING SECTION
BOLTON FARM LANE	PUBLIC NEIGHBORHOOD YIELD STREET	25 M.P.H.	R-3C	0+00 - 6+50	P-2

CURVE DATA TABLE						
CURVE #	CURVE	ARC	RADIUS	TANGENT	DELTA	CHORD
C-1	2+58.10 - 3+75.97	117.87'	75.00'	75.06'	90°02'42"	N23°56'52"W 106.11'
C-2	5+07.10 - 5+64.65	57.55'	100.00'	29.60'	32°58'35"	N52°28'55"W 56.76'
C-3	LP0+00 - LP0+31.91	31.91'	35.00'	17.16'	52°13'47"	S62°08'30"E 30.81'
C-4	LP0+31.91 - LP2+55.32	223.41'	45.00'	34.87'	284°27'32"	N54°00'23"E 55.13'
C-5	LP2+55.32 - LP2+87.22	31.91'	35.00'	17.16'	52°13'47"	N09°52'45"W 30.81'

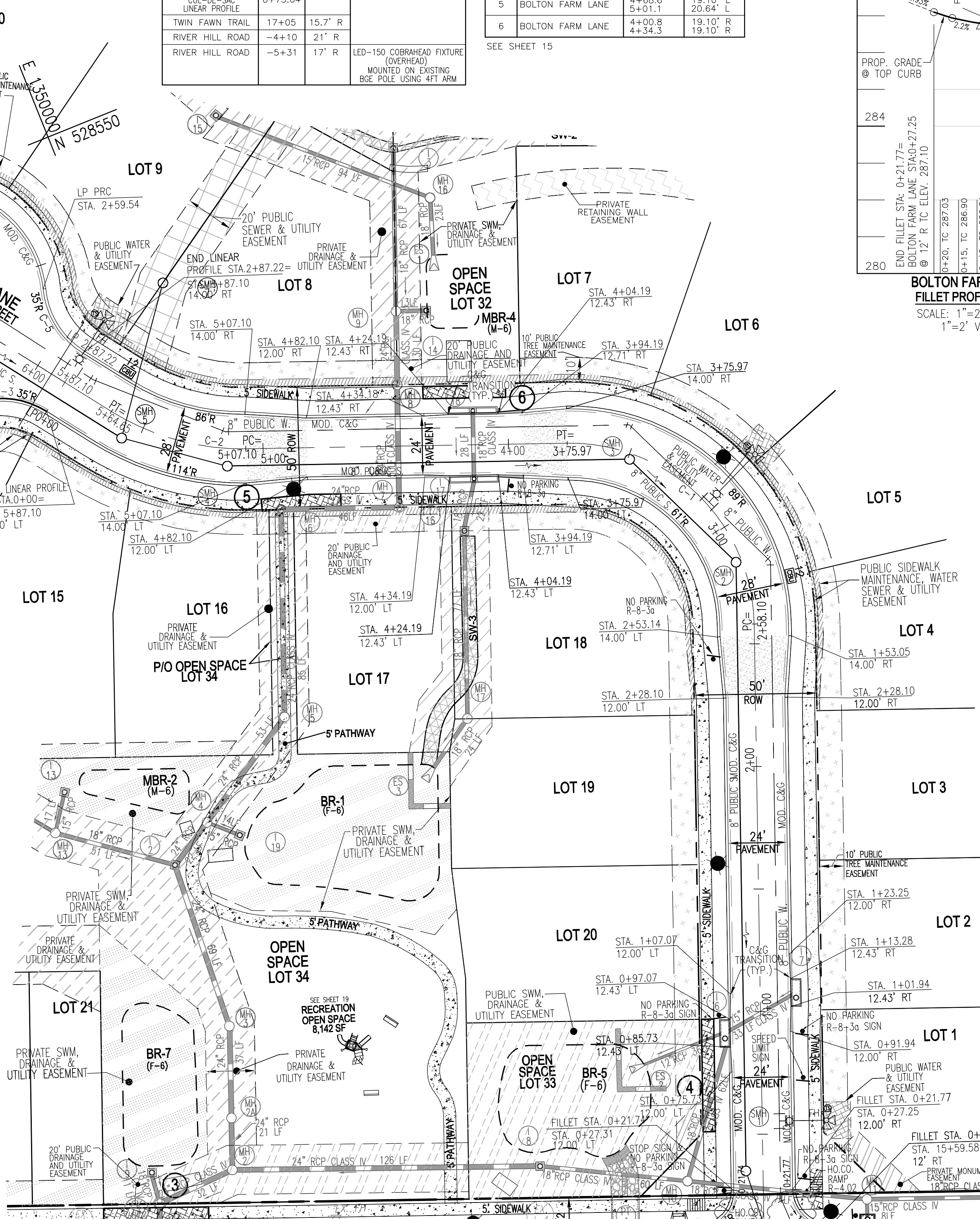
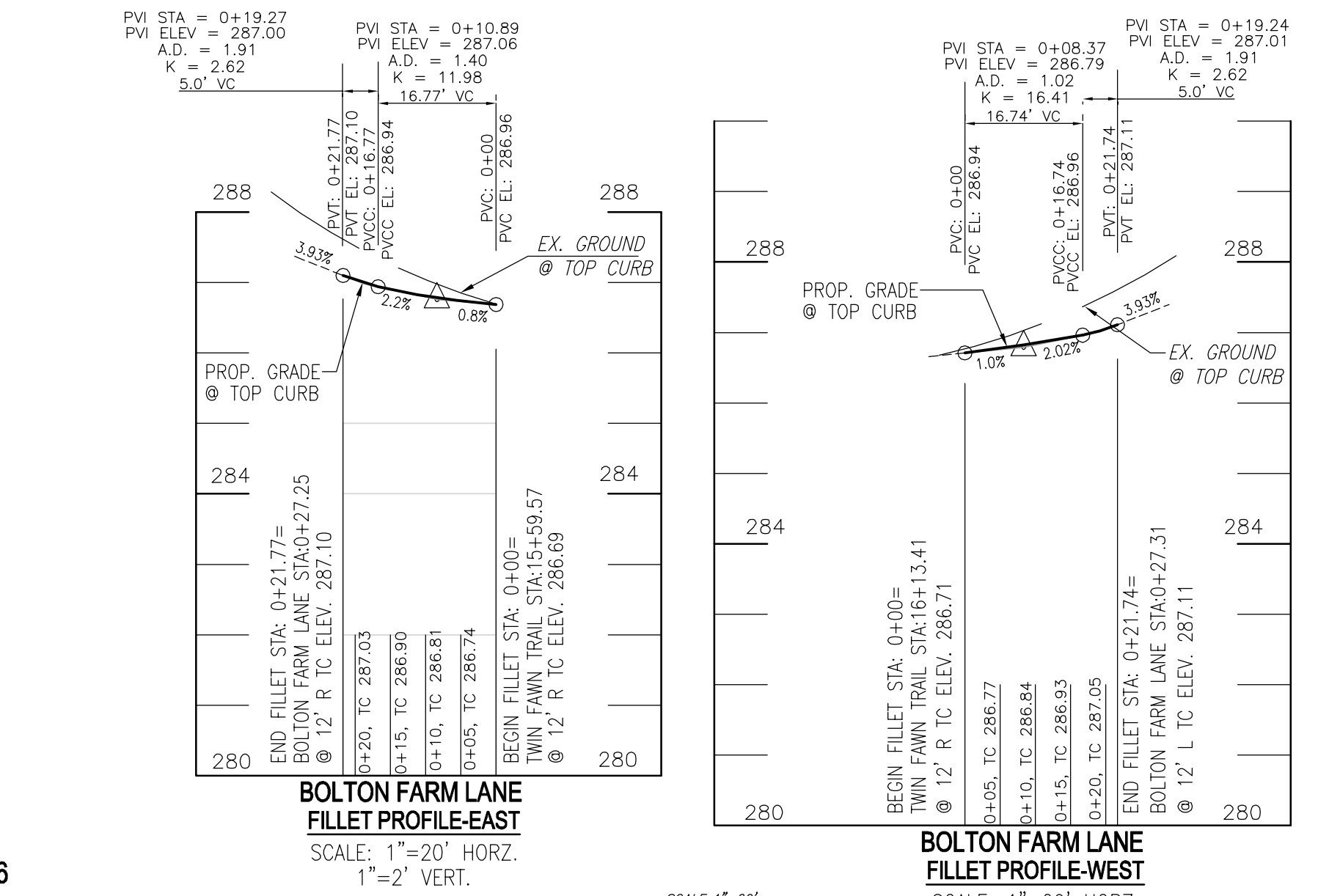


APPROVED: DEPARTMENT OF PUBLIC WORKS
 10/27/2023
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 10/26/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 10/27/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT

LEGEND:	
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING EDGE OF PAVING
	EXISTING WOOD FENCE
	EXISTING METAL FENCE
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	STORM DRAIN
	STREET LIGHT
	STREET SIGN
	SIDEWALK
	REINFORCED SIDEWALK
	VARIABLE WIDTH PUBLIC SIDEWALK EASEMENT
	VARIABLE WIDTH SIDEWALK EASEMENT
	PUBLIC 10' TREE MAINTENANCE EASEMENT
	PAVEMENT WIDTH TRANSITION AREA
	PRIVATE DRAINAGE & UTILITY EASEMENT
	PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
	PRIVATE SWM, DRAINAGE & UTILITY EASEMENT

STREET LIGHT TABLE			
STREET NAME	STA.	OFFSET	FIXTURE TYPE
BOLTON FARM LANE	0+18	27.4' R	
BOLTON FARM LANE	1+58	16.4' L	
BOLTON FARM LANE	3+20	18.4' R	
BOLTON FARM LANE	4+88	16.8' L	
BOLTON FARM LANE	0+73.64		LED-100 PREMIER COLONIAL POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
TWIN FAWN TRAIL	17+05	15.7' R	
RIVER HILL ROAD	-4+10	21' R	
RIVER HILL ROAD	-5+31	17' R	LED-150 COBRAHEAD FIXTURE (OVERHEAD) MOUNTED ON EXISTING BGE POLE USING 4FT ARM

REINFORCED SIDEWALK LOCATION			
NO.	ROAD NAME	STATION	OFFSET
1	RIVER HILL ROAD	-2+59	18.4' L
2	RIVER HILL ROAD	-2+79	18.4' L
3	TWIN FAWN LANE	-0+43	18.4' R
4	TWIN FAWN LANE	20+47	22.6' R
5	BOLTON FARM LANE	18+12.7	18.9' R
6	BOLTON FARM LANE	18+55.6	18.9' R
7	BOLTON FARM LANE	0+51.4	19.10' L
8	BOLTON FARM LANE	0+97.3	19.10' L
9	BOLTON FARM LANE	4+68.6	19.10' L
10	BOLTON FARM LANE	5+01.1	20.64' L
11	BOLTON FARM LANE	4+00.8	19.10' R
12	BOLTON FARM LANE	4+34.3	19.10' R



- NOTES:
- FOR STREET TREE LOCATIONS, REFER TO SHEET 11.
 - ALL STREET TREES AND/OR SIGN SHALL BE LOCATED 5' MIN. FROM PROPOSED DRAINAGE, UTILITY STRUCTURE.
 - THERE SHOULD BE A MINIMUM OF 20' BETWEEN STREET LIGHTS AND STREET TREES.
 - IN THE DIRECTION FACING A TRAFFIC CONTROL SIGN:
 - THERE SHALL BE A MINIMUM OF 30' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL STOP SIGNS.
 - THERE SHALL BE A MINIMUM OF 30' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL SIGNS OTHER THAN A STOP SIGN.
 - REFER TO SHEETS 10 AND 11 FOR STORMDRAIN PROFILES.
 - REFER TO SHEET 11 FOR STORMDRAIN STRUCTURE SCHEDULE.
 - REFER TO SHEET 3 FOR PROPOSED CENTRAL MAIL DELIVERY BOX (CBU) LOCATIONS. FINAL LOCATION SHALL BE AS DIRECTED BY THE US POSTAL SERVICE.
 - FOR HANDICAP RAMPS SEE DETAILS ON SHEET 3.
 - REFER TO SHEET 19 FOR PROJECT AMENITY DETAILS.

NO.	REVISION	DATE

OWNER: BEECHWOOD MANOR, LLC
 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

FINAL ROAD CONSTRUCTION PLANS

BOLTON FARM LANE ROAD PLAN & PROFILE

BEECHWOOD MANOR

LOTS 1-31 AND OPEN SPACE LOTS 32-34
 A SUBDIVISION OF TAX MAP 50-PARCEL 1

L. 20205 / F. 202
 TAX MAP: 50 GRD: 1
 6TH ELECTION DISTRICT
 DPT. REFERENCE: SEE SITE DATA

9111 RIVER HILL ROAD
 LAUREL, MD 20723

PARCEL: 001
 ZONED: R-3C
 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

TIMMONS GROUP

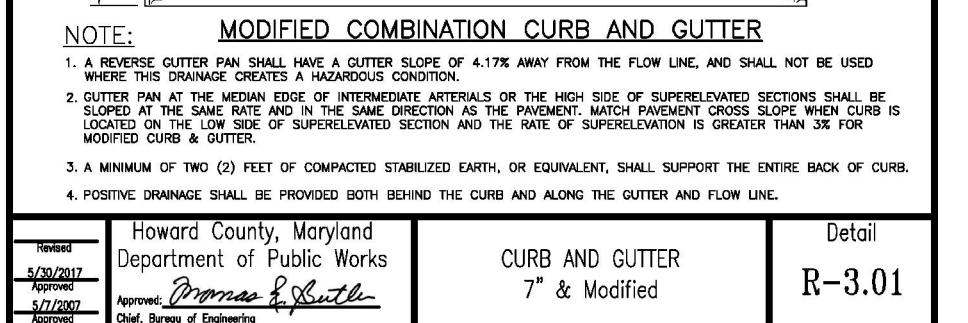
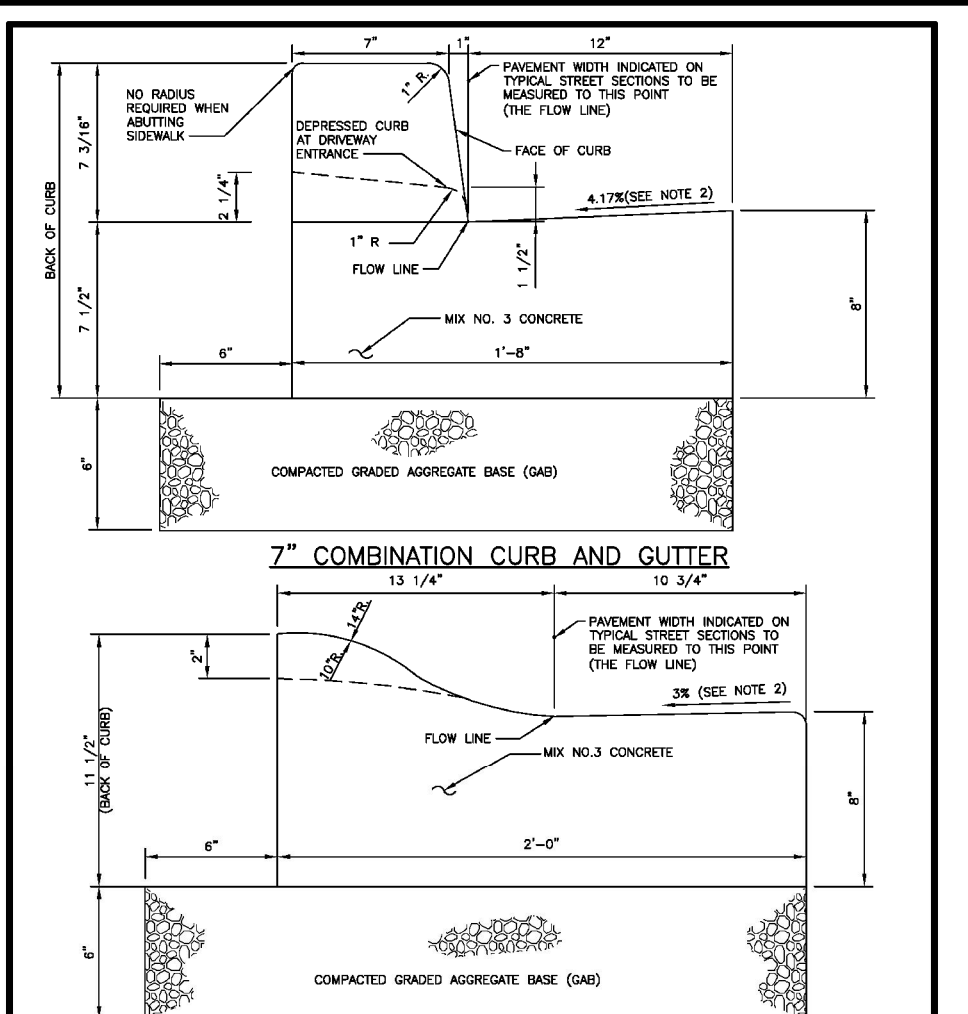
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: EDS
 DRAWN BY: JMR/JKG
 CHECKED BY: RHV
 DATE: AUGUST 2023
 SCALE: AS SHOWN
 W.O. NO.: 17-26

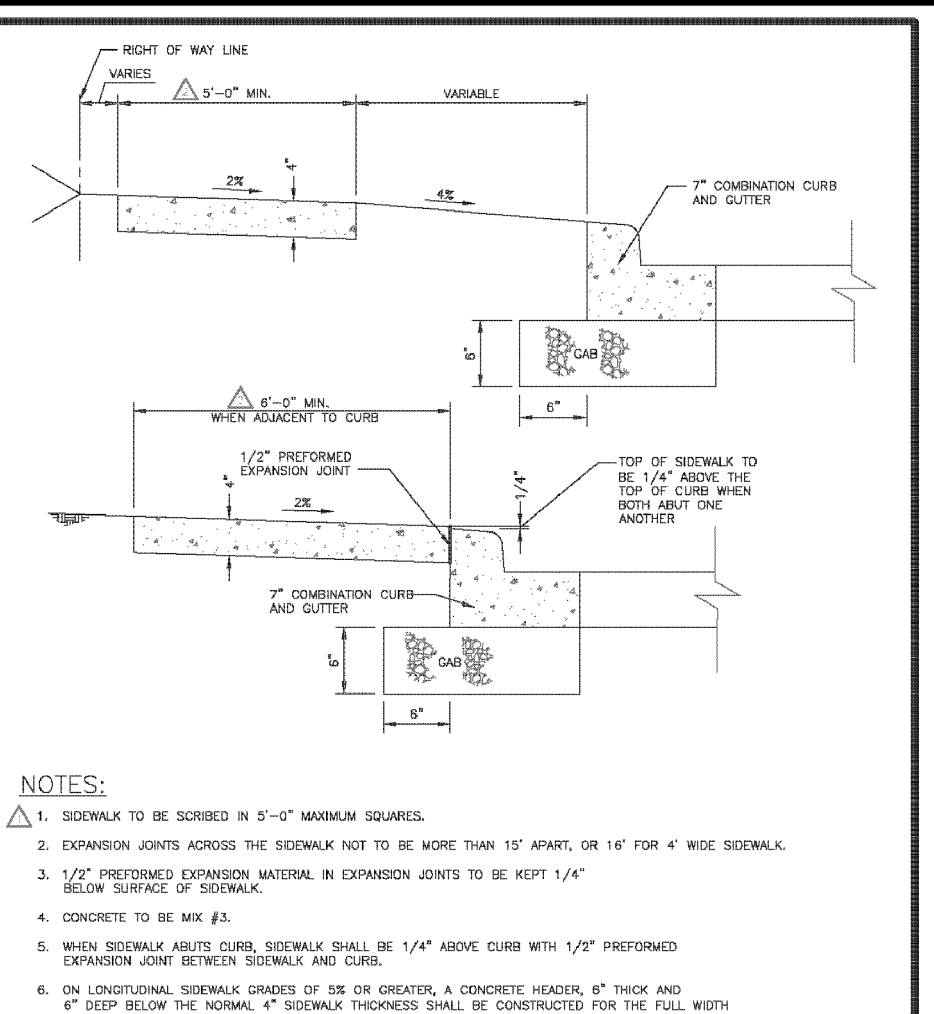
PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2024

STATE OF MARYLAND
 ROBERT W. VOGEL, PE No. 16193

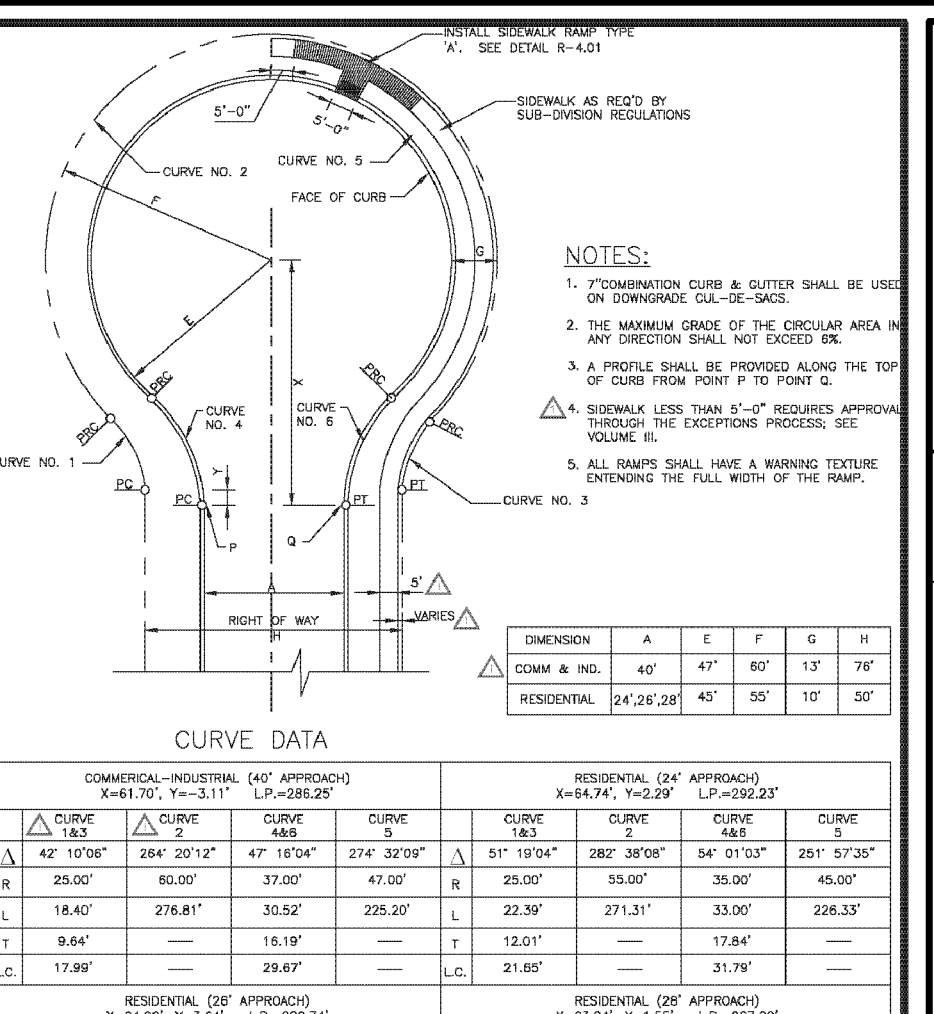
2 SHEET OF 21



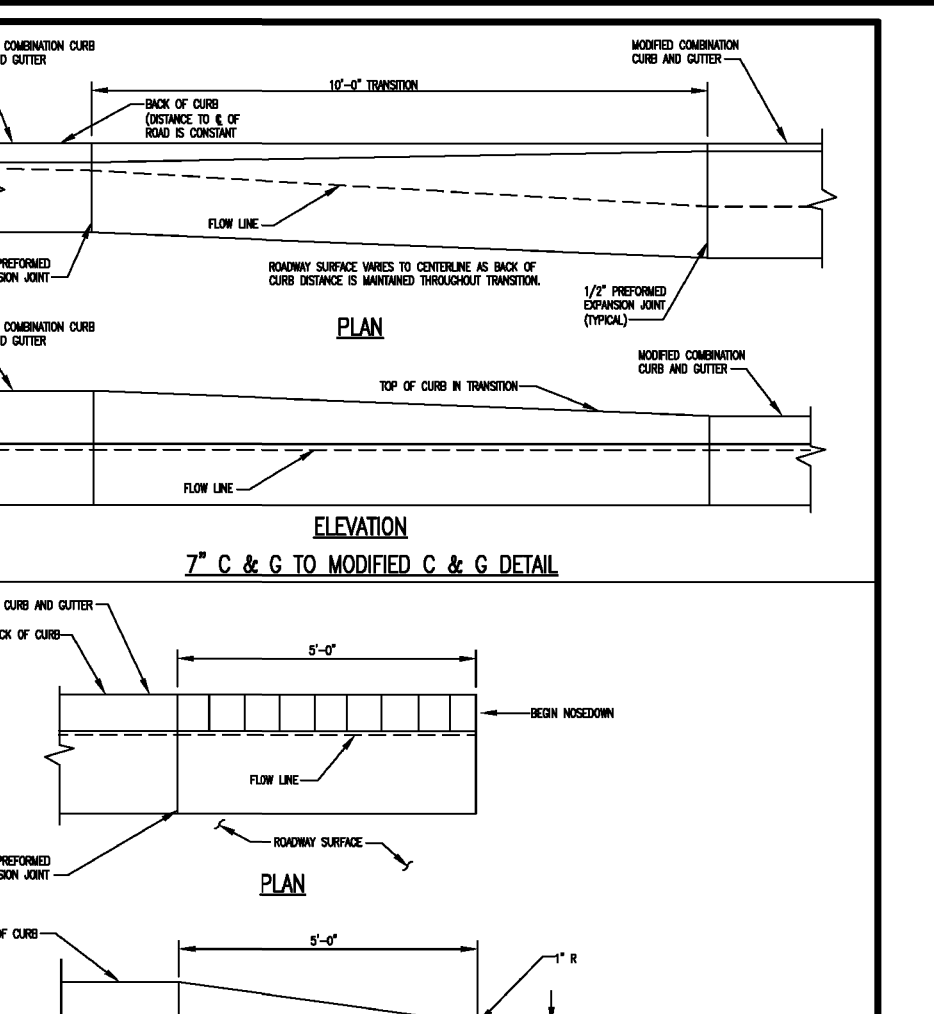
Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail CURB AND GUTTER 7\"/>
--	------------------------------------



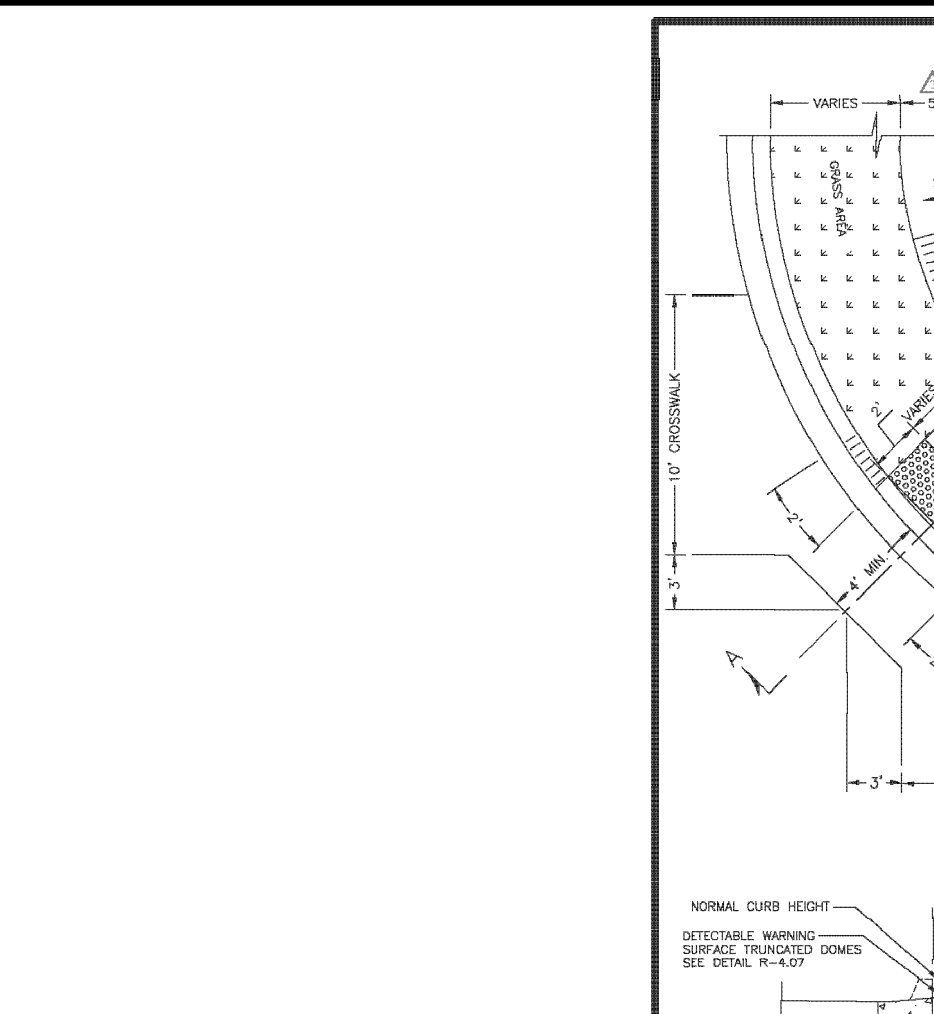
Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail CONCRETE SIDEWALK R-3.05
--	---------------------------------------



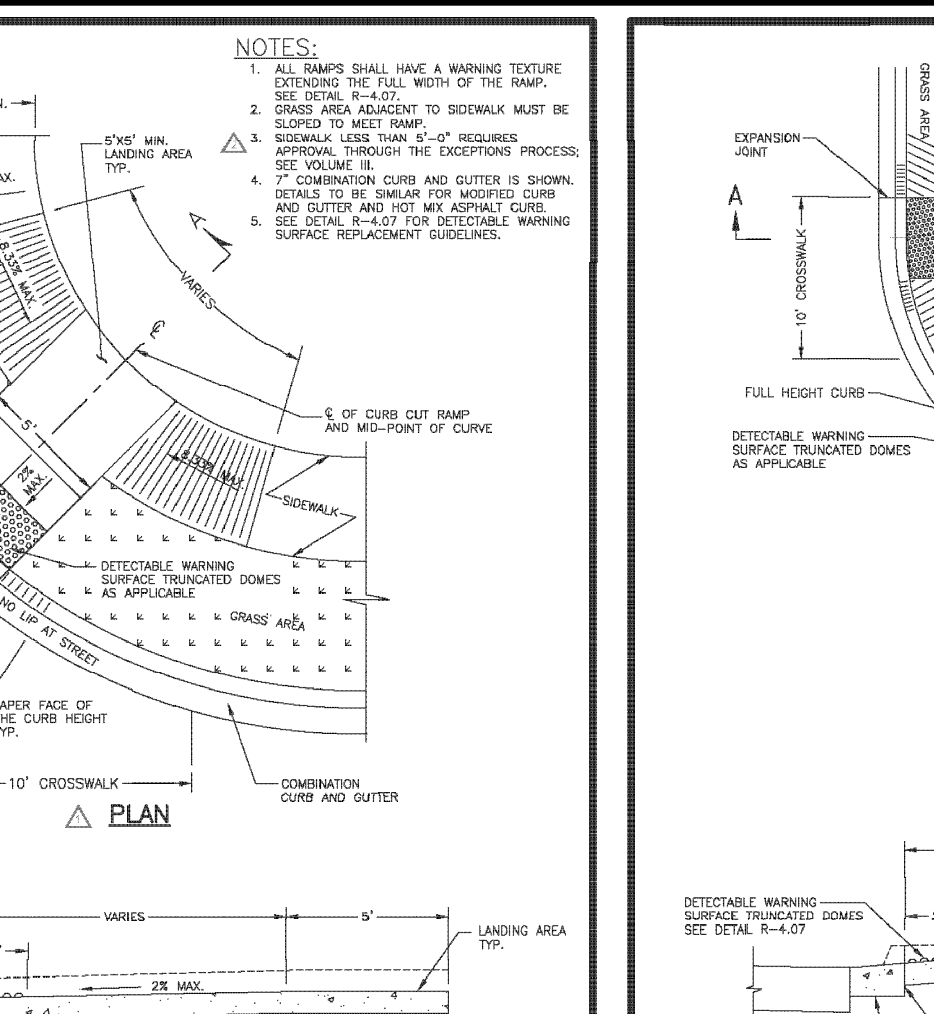
Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail CURB-DE-SC without Island R-5.01
--	--



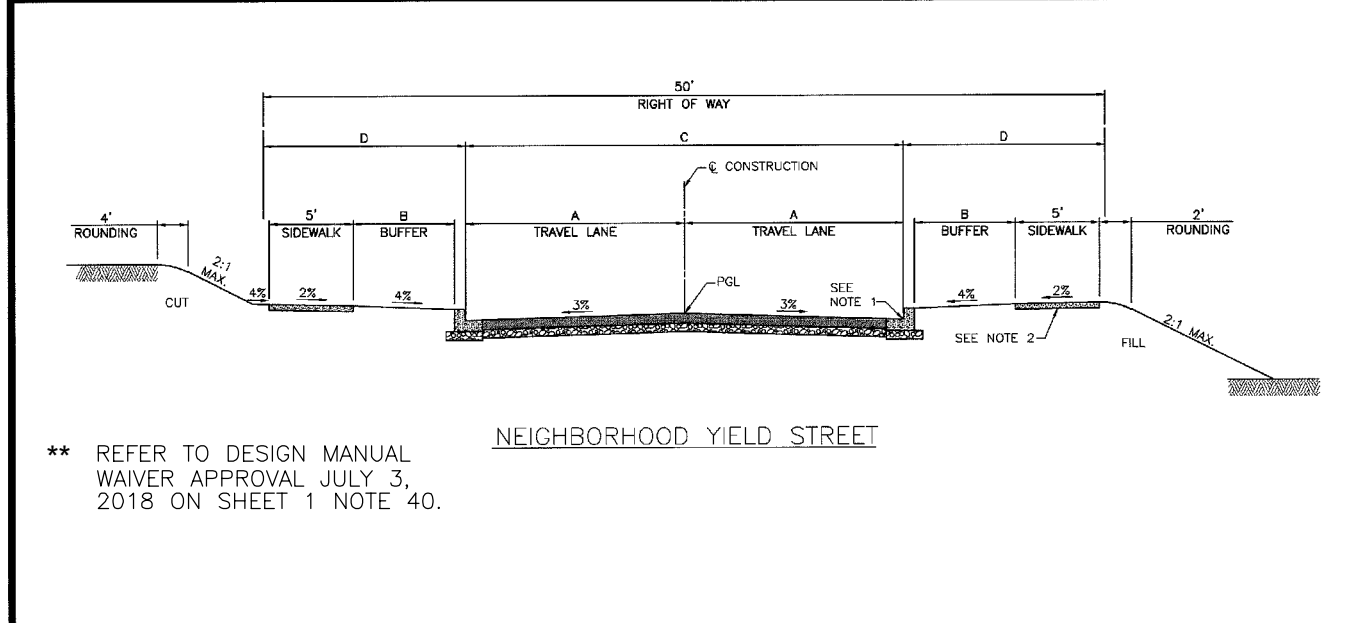
Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail CURB AND GUTTER 7\"/>
--	------------------------------------



Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail SIDEWALK RAMP Type A R-4.01
--	---



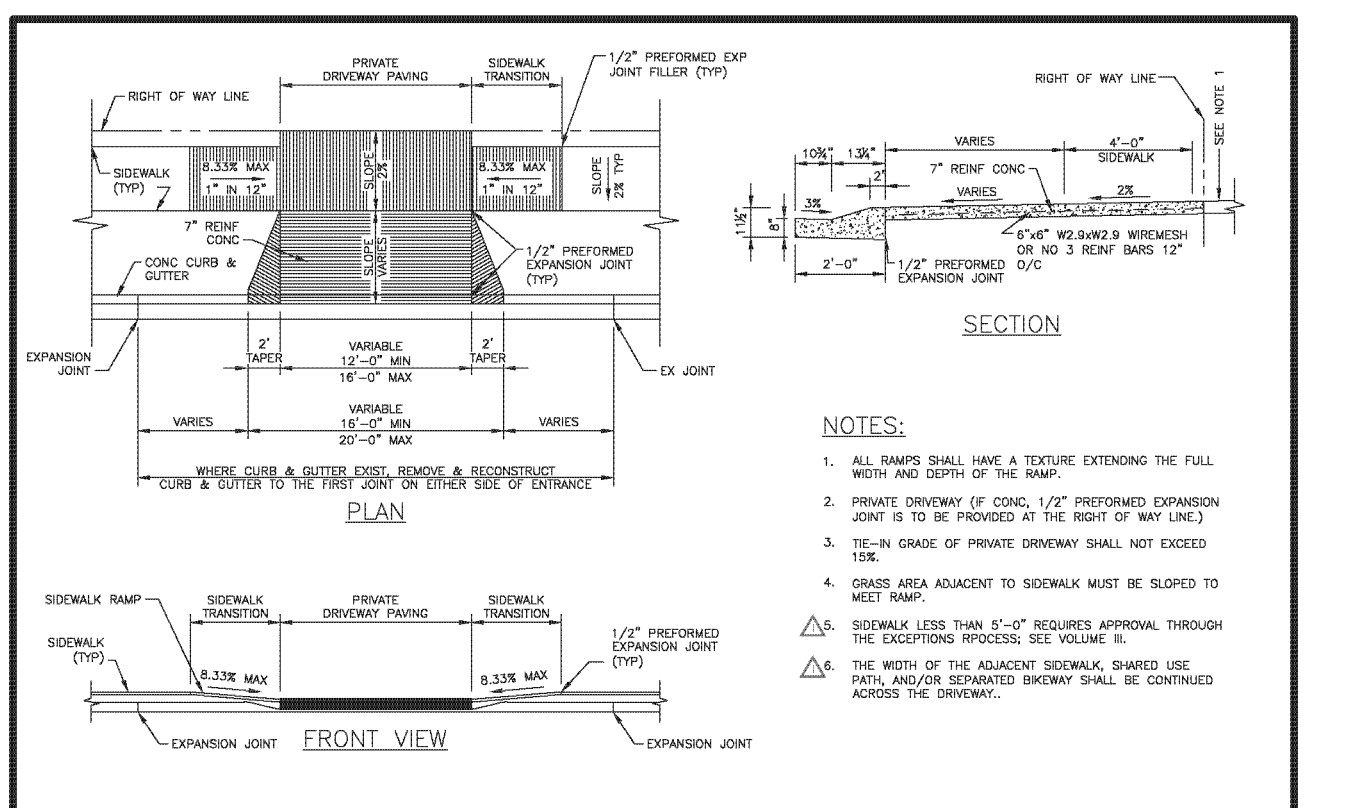
Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail SIDEWALK RAMP Type B R-4.03
--	---



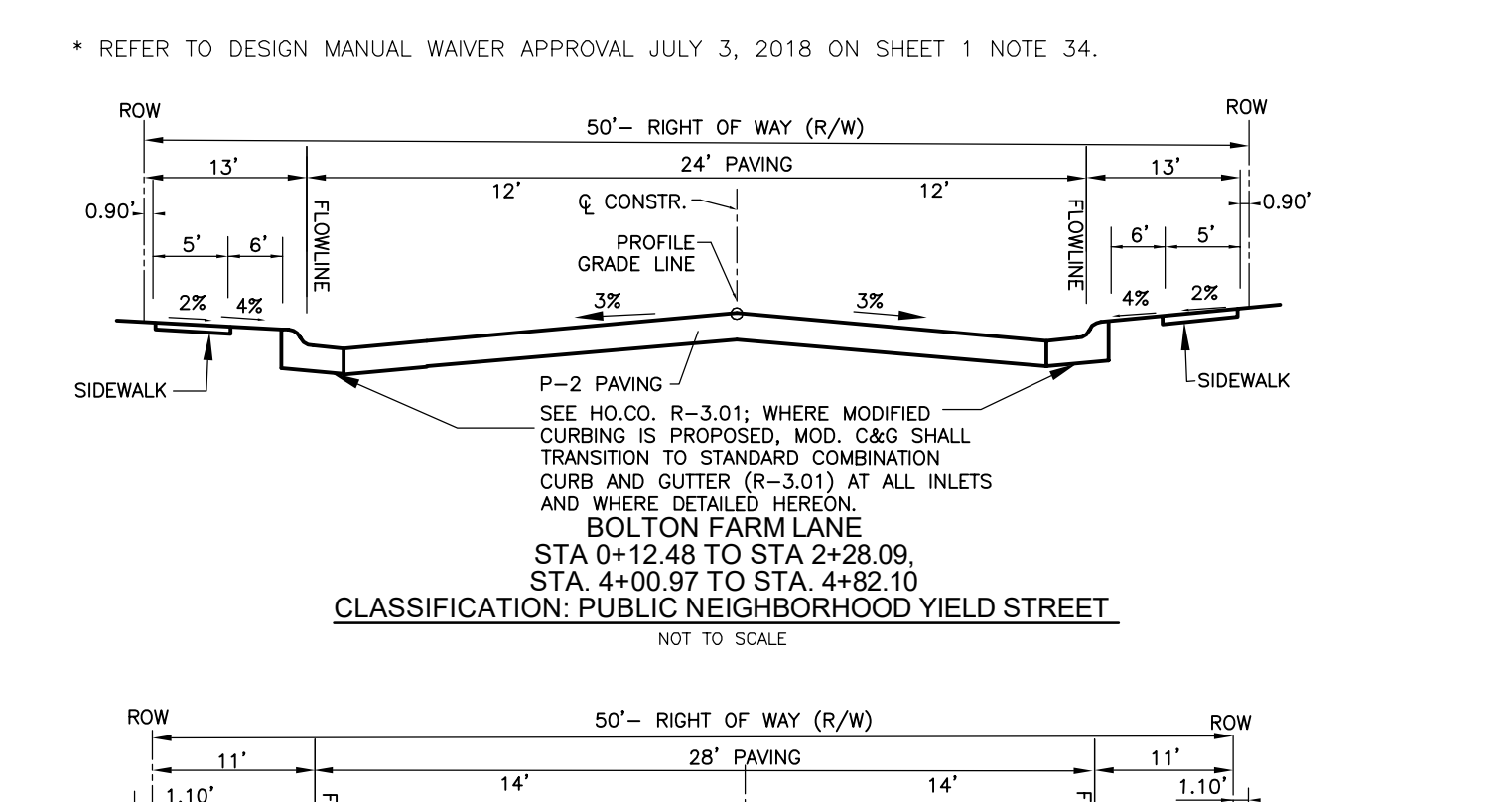
Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail TYPICAL SECTIONS Neighborhood Yield Street R-1.08
--	---

SECTION NUMBER	ROAD AND STREET CLASSIFICATION / TYPE	CALIFORNIA BEARING RATIO (CBR)	1 TO 4	5 TO 8	9 TO 13	14 TO 27	28 TO 42	43 TO 67	68 TO 100
P-1	NEW STREET TYPE	PAVEMENT MATERIAL (INCHES)	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-2	ALLEY	SUPERPAVE ASPHALT MIX FINAL SURFACE	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-3	NEIGHBORHOOD STREET	SUPERPAVE ASPHALT MIX FINAL SURFACE	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-4	NEIGHBORHOOD STREET	SUPERPAVE ASPHALT MIX FINAL SURFACE	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail PAVING SECTIONS P-1 to P-4 R-2.01
--	---

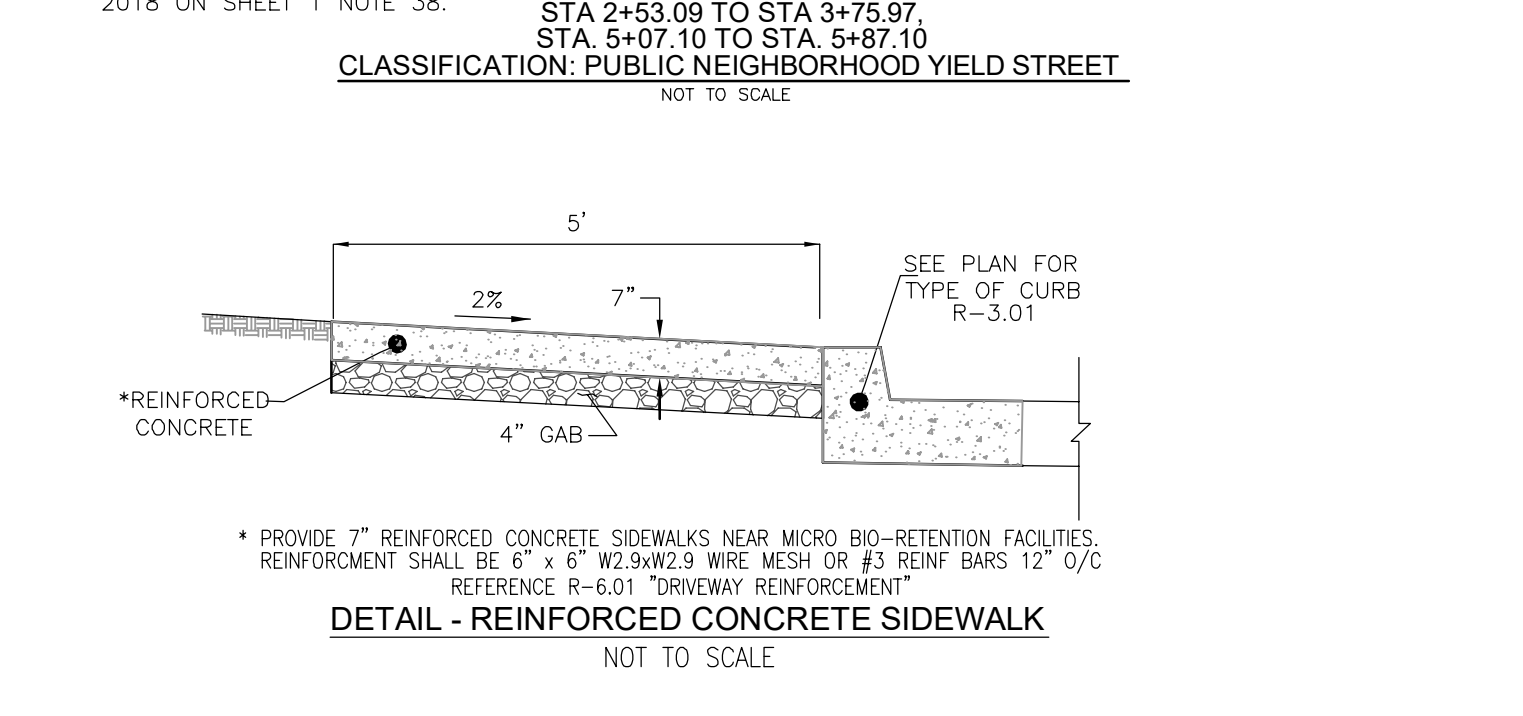


Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail RESIDENTIAL DRIVEWAY ENTRANCE Modified Combination Curb and Gutter Sidewalk Setback from Curb R-6.03
--	---

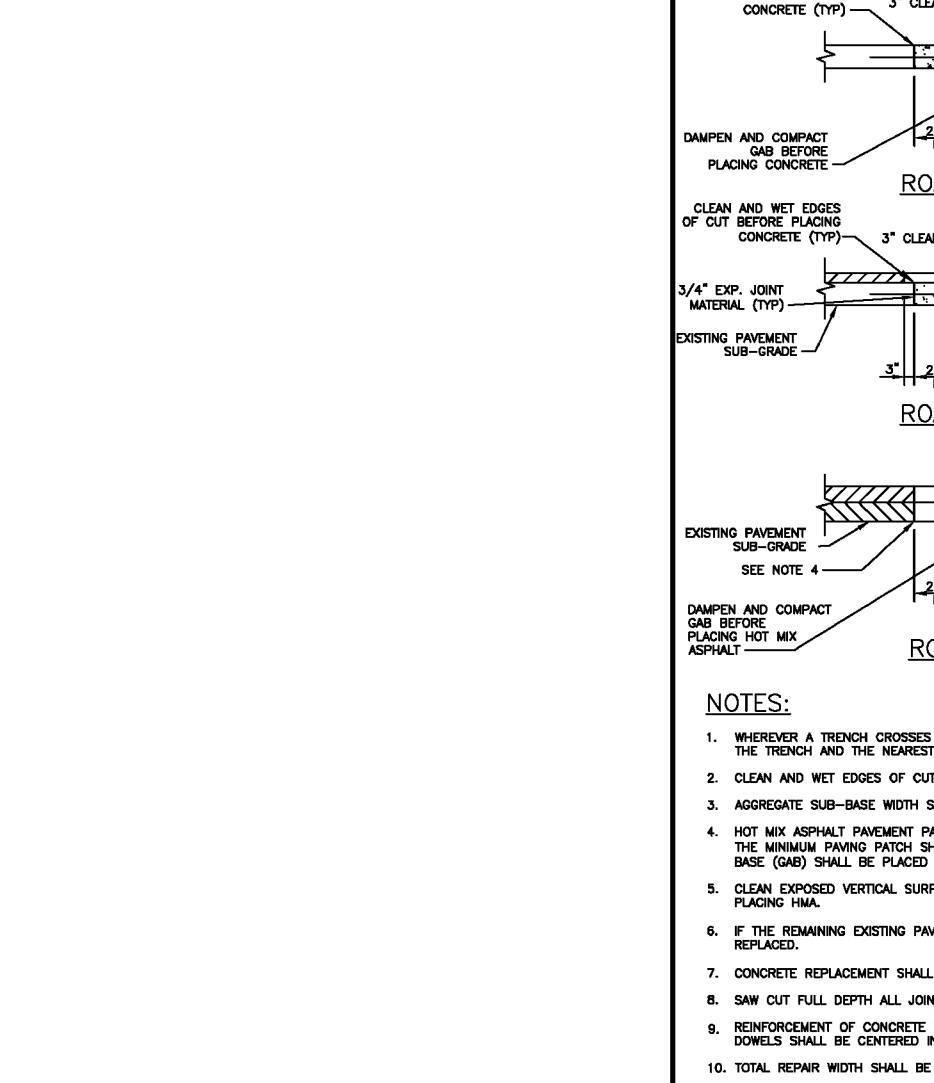


Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail CLASSIFICATION: PUBLIC NEIGHBORHOOD YIELD STREET R-3.01
--	--

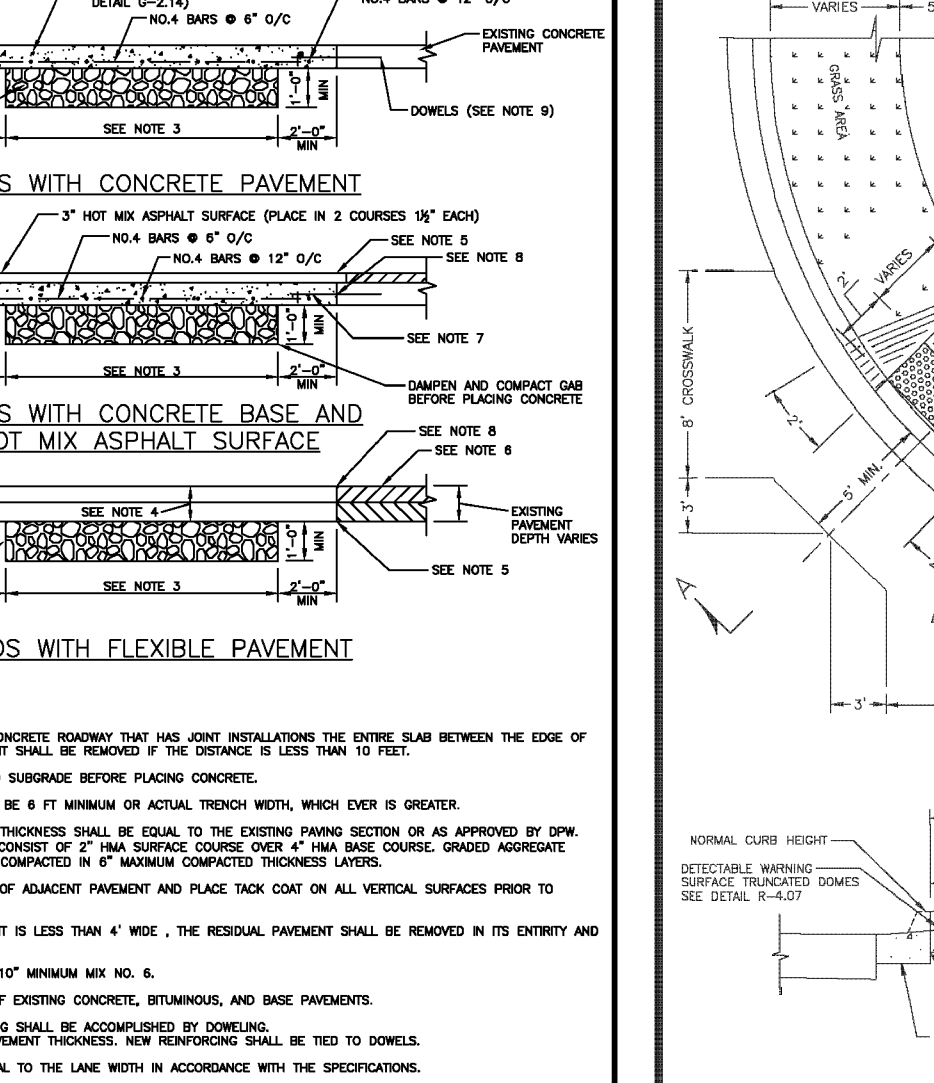
APPROVED: DEPARTMENT OF PUBLIC WORKS 10/27/2023	DATE
CHIEF, BUREAU OF HIGHWAYS	DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING 10/26/2023	DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
10/27/2023	DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE



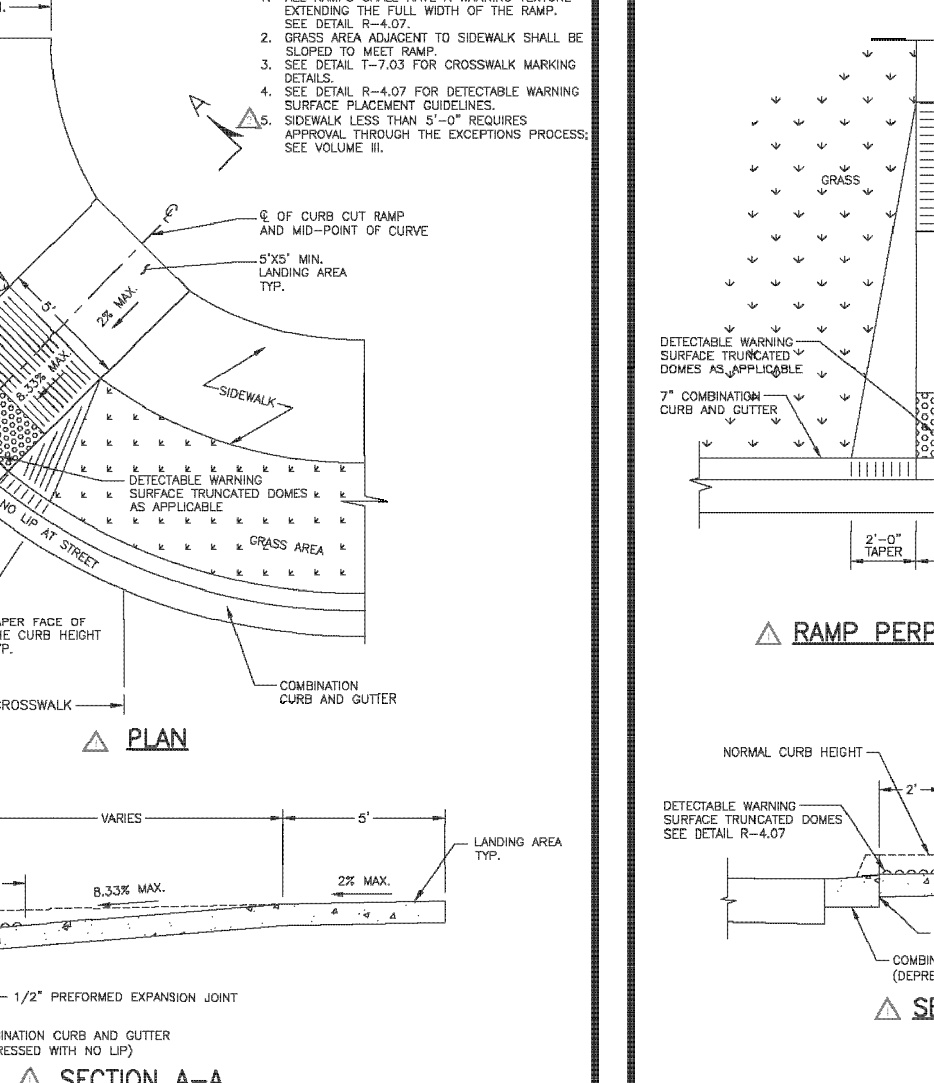
Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail DETAIL - REINFORCED CONCRETE SIDEWALK R-6.01
--	---



Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail ROADS WITH CONCRETE PAVEMENT R-4.01
--	--



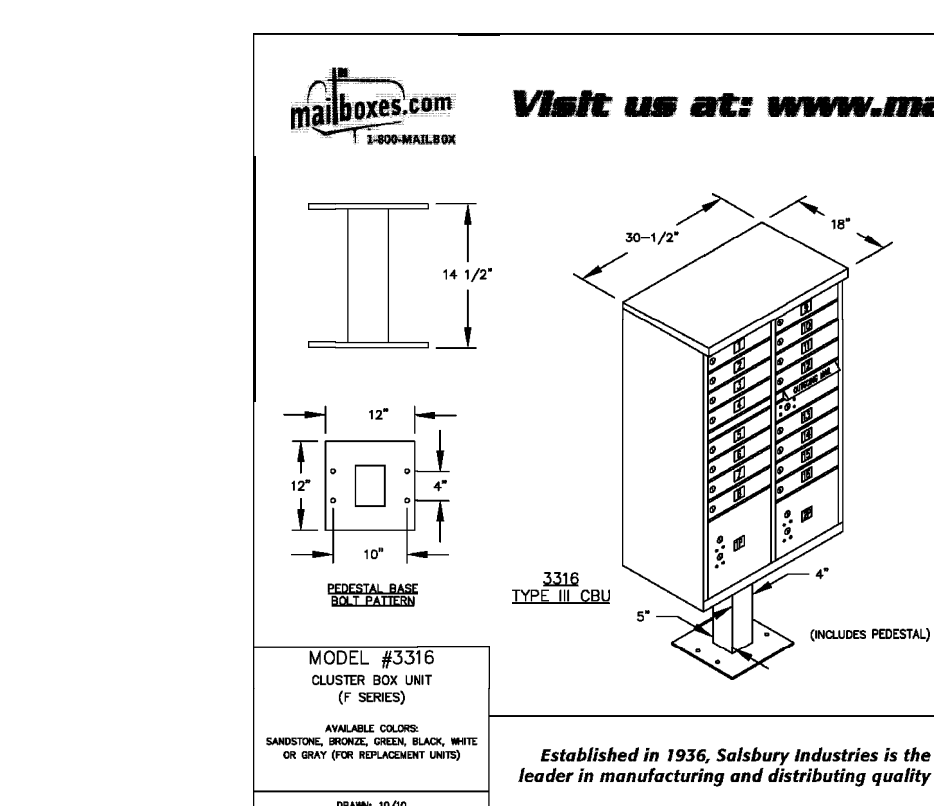
Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail ROADS WITH CONCRETE BASE AND HOT MIX ASPHALT SURFACE R-4.01
--	--



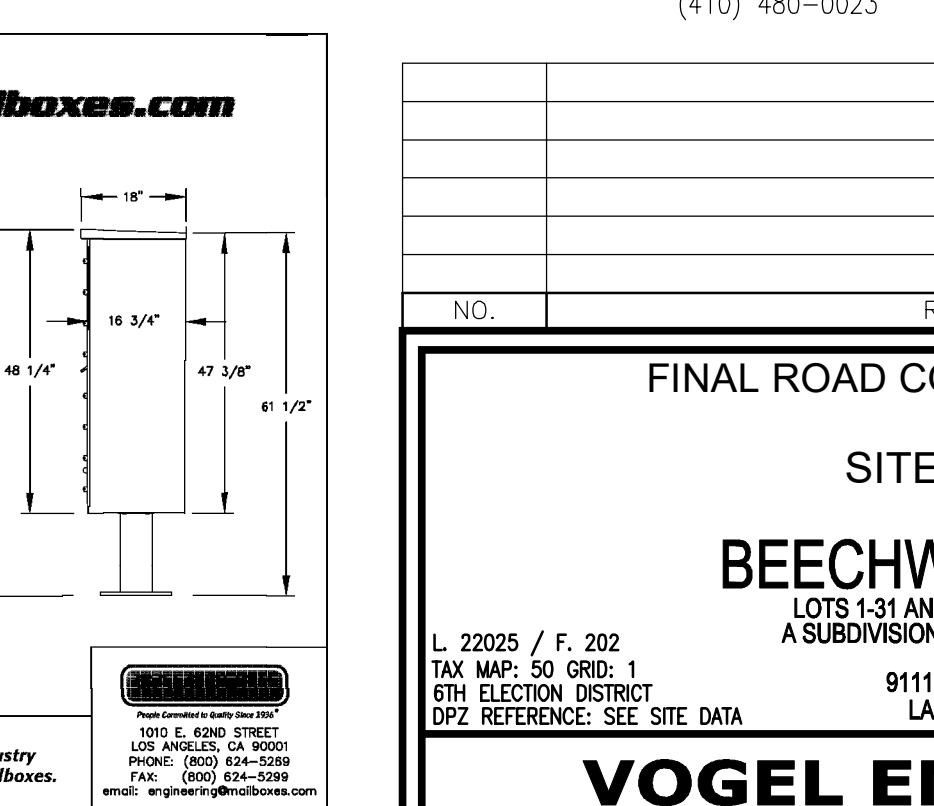
Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail ROADS WITH FLEXIBLE PAVEMENT R-4.01
--	--



Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail TYPICAL CENTRAL MAIL DELIVERY BOX (CBU) OR APPROVED EQUAL G-4.01
--	--



Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail RAMP PERPENDICULAR TO CURB R-4.05
--	--



Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail SIDEWALK RAMP Layout & Grading Perpendicular to Curb R-4.05
--	--

APPROVED: DEPARTMENT OF PUBLIC WORKS 10/27/2023	DATE
CHIEF, BUREAU OF HIGHWAYS	DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING 10/26/2023	DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
10/27/2023	DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE

Howard County, Maryland Department of Public Works Approved: <i>Priscilla S. Smith</i> Date: 10/27/2023	Detail DETAIL - REINFORCED CONCRETE SIDEWALK R-6.01
--	---

mailboxes.com Visit us at: www.mailboxes.com

MODEL #3316 CLUSTER BOX UNIT (7 SIZES)

Established in 1936, Salisbury Industries is the industry leader in manufacturing and distributing quality mailboxes.

SALSBURY INDUSTRIES MANUFACTURES CBU'S THAT ARE OFFICIALLY LICENSED BY THE U.S.P.S. SALSBURY 3300 SERIES CLUSTER BOX UNITS ARE MANUFACTURED TO U.S.P.S. "T" SPECIFICATIONS. THEY ARE AN OFFICIALLY LICENSED PRODUCT OF THE U.S. POSTAL SERVICE FOR CENTRALIZED MAIL DELIVERY. LICENSE NUMBER 1CDSE0-08-B-0026

CBU BOX LOCATIONS: SUBJECT TO CHANGE

TWIN FARM TRAIL
- ONE 12 UNIT "CLUSTER BOX UNIT" HAS BEEN PLACED NEAR LOT 27 TO SERVE LOTS 21 - 31

BOLTON FARM LANE
- ONE 12 UNIT "CLUSTER BOX UNIT" HAS BEEN PLACED NEAR LOT 4/5 TO SERVE LOTS 1 - 7 & 18 - 20

BOLTON FARM LANE
- ONE 12 UNIT "CLUSTER BOX UNIT" HAS BEEN PLACED NEAR LOT 9 TO SERVE LOTS 8 - 17

OWNER
BEECHWOOD MANOR, 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

FINAL ROAD CONSTRUCTION PLANS
SITE DETAILS
BEECHWOOD MANOR
LOTS 1-31 AND OPEN SPACE LOTS 32-34
A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L. 22025 / F. 202
TAX MAP: 50 GRID: 1
6TH ELECTION DISTRICT
REF. REFERENCE: SEE SITE DATA

9111 RIVER HILL ROAD
LAUREL, MD 20723

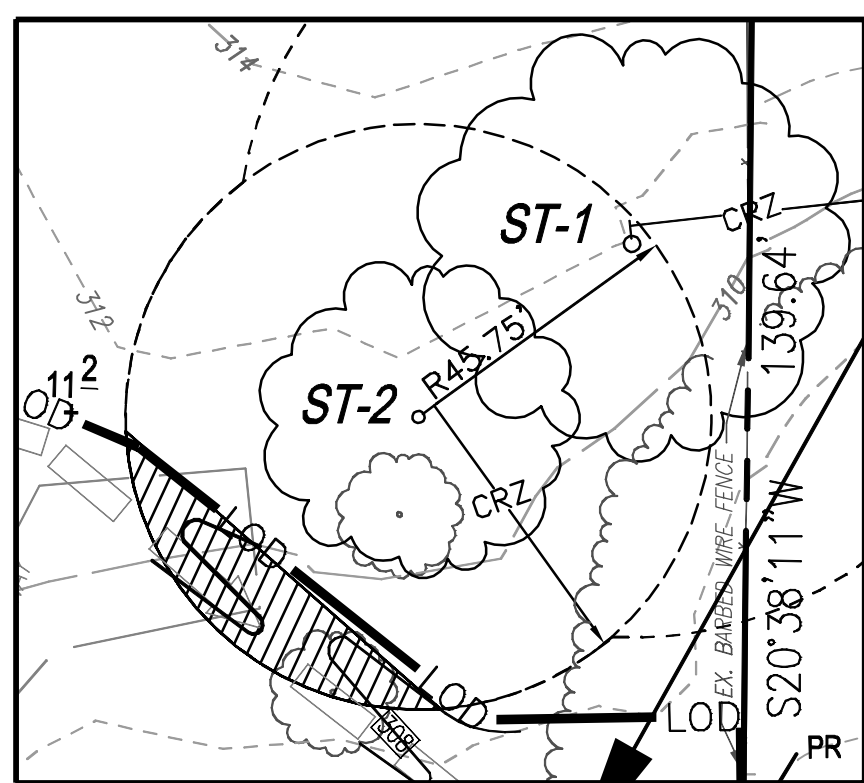
PARCEL: 001
ZONED: R-5C
EXPIRATION DATE: 08-27-2024

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLCOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

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 08-27-2024

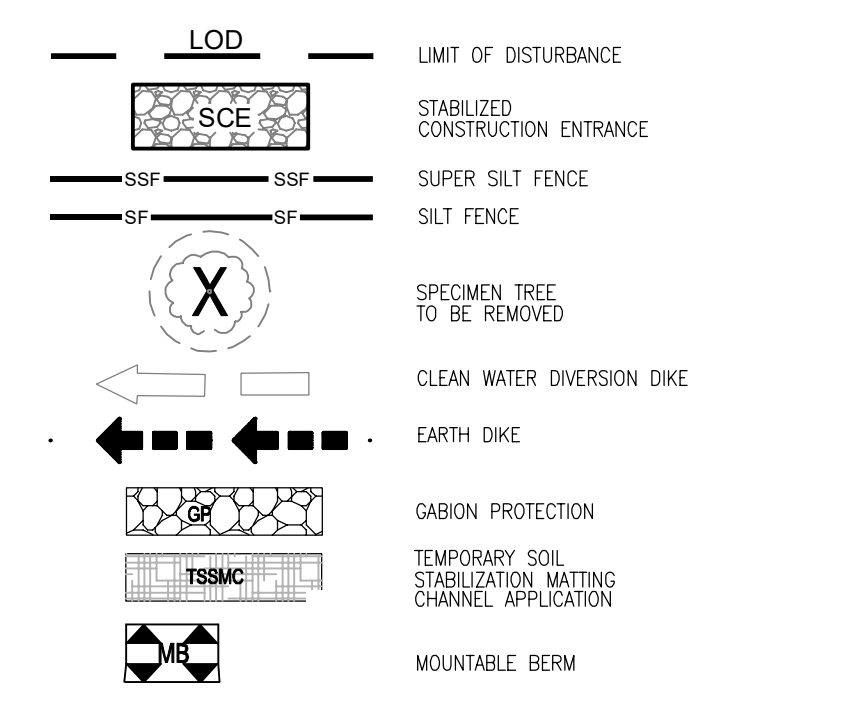
DESIGN BY: EDS
DRAWN BY: JMR/KG
CHECKED BY: RHW
DATE: AUGUST 2023
SCALE: AS SHOWN
W.O. NO.: 17-26

3 SHEET OF 21



SPECIMEN TREE #2 DISTURBANCE DETAIL
SCALE: 1"=30'
CRZ DISTURBANCE AREA CRZ OF ST-2 = 6575 SF
PROPOSED DISTURBANCE = 656 SF = 10% OF CRZ

SEDIMENT CONTROL LEGEND:



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

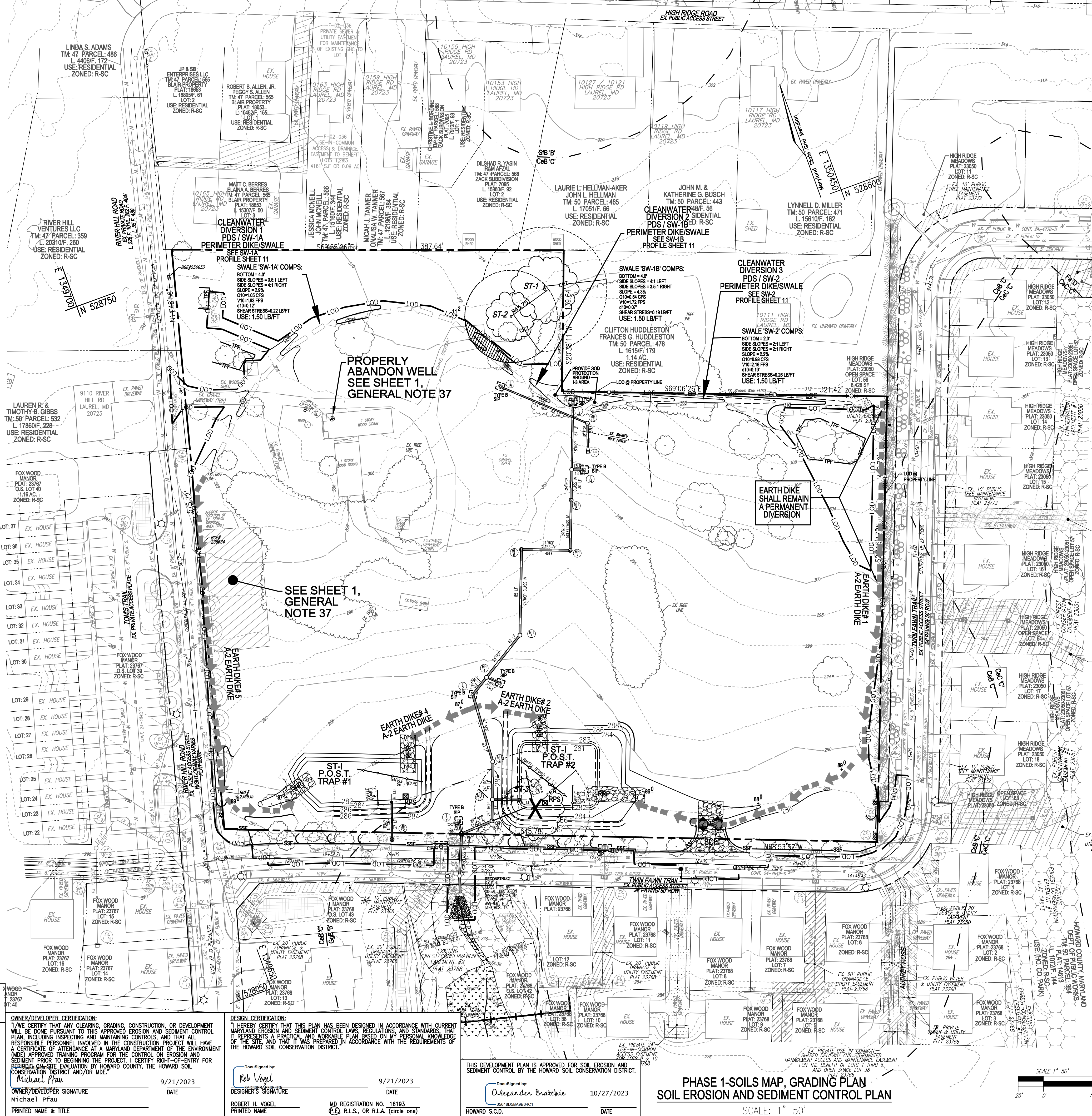
NOTE:
- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 25 FEET APART
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

SOILS LEGEND

SYMBOL	NAME/DESCRIPTION	GROUP	PERCENT CHILLUM	PERCENT CLAY	ERODIBLE
CeB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	C	24	NO	NO
GcP	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	24	NO	NO

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: DEPARTMENT OF PUBLIC WORKS
10/27/2023
CHIEF, BUREAU OF HIGHWAYS
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
10/26/2023
CHIEF, DEVELOPMENT ENGINEERING DIVISION
10/27/2023
CHIEF, DIVISION OF LAND DEVELOPMENT



LEGEND:

(Symbol)	PROPERTY LINE
(Symbol)	RIGHT-OF-WAY LINE
(Symbol)	ADJACENT PROPERTY LINE
(Symbol)	EXISTING EDGE OF PAVING
(Symbol)	EXISTING TREELINE
(Symbol)	EXISTING SPECIMEN TREES
(Symbol)	EXISTING WOOD FENCE
(Symbol)	EXISTING METAL FENCE
(Symbol)	EXISTING CURB AND GUTTER
(Symbol)	EXISTING SANITARY MANHOLE
(Symbol)	EXISTING SANITARY LINE
(Symbol)	EXISTING FIRE HYDRANT
(Symbol)	EXISTING WATER LINE
(Symbol)	EX. WETLAND BUFFER
(Symbol)	EX. STREAM
(Symbol)	EX. STREAM BUFFER
(Symbol)	EX. PUBLIC DRAINAGE & UTILITY EASEMENT (PLAT 23772 & 23768)
(Symbol)	EX. PUBLIC TREE MAINTENANCE EASEMENT (PLATS 23772 & 23768)
(Symbol)	EX. FOREST CONSERVATION EASEMENT (PLATS 14613, 23050-23051 & 23768)
(Symbol)	EX. PRIVATE USE-IN-COMMON ACCESS EASEMENT (PLAT 23768)
(Symbol)	EX. PUBLIC WATER & UTILITY EASEMENT (PLAT 23768)
(Symbol)	EX. PRIVATE SEWER & UTILITY EASEMENT (PLATS 23768)
(Symbol)	EX. PUBLIC SEWER & UTILITY EASEMENT (PLATS 23050-23051)
(Symbol)	EXISTING 10' CONTOUR
(Symbol)	EXISTING 2' CONTOUR
(Symbol)	SOILS

NOTES
1. ALL EARTH DIKES ARE TO BE PLACED IN WORKING ORDER AT THE END OF EACH WORKING DAY.
2. IMBRICATE SF/SSF IN 25' SEGMENTS AS REQUIRED UPHILL BY 2" IN ELEVATION.

OWNER
BEECHWOOD MANOR, 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

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
PHASE 1-SOILS MAP, GRADING PLAN
SOIL EROSION AND SEDIMENT CONTROL PLAN

BEECHWOOD MANOR
LOTS 1-31 AND OPEN SPACE LOTS 32-34
A SUBDIVISION OF TAX MAP 501-PARCEL 1

9111 RIVER HILL ROAD
LAUREL, MD 20723

PARCEL: 001
ZONED: R-SC
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLCOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

PROFESSIONAL CERTIFICATE

DESIGN BY: EDS
DRAWN BY: JMR/KG
CHECKED BY: RHY
DATE: AUGUST 2023
SCALE: AS SHOWN
W.O. NO.: 17-26

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

Rob Vogel
ROBERT H. VOGEL, PE No. 16193

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 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.

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.

APPROVED:
Michael Pfau
9/21/2023
Michael Pfau
9/21/2023
Michael Pfau
9/21/2023

PHASE 1-SOILS MAP, GRADING PLAN
SOIL EROSION AND SEDIMENT CONTROL PLAN

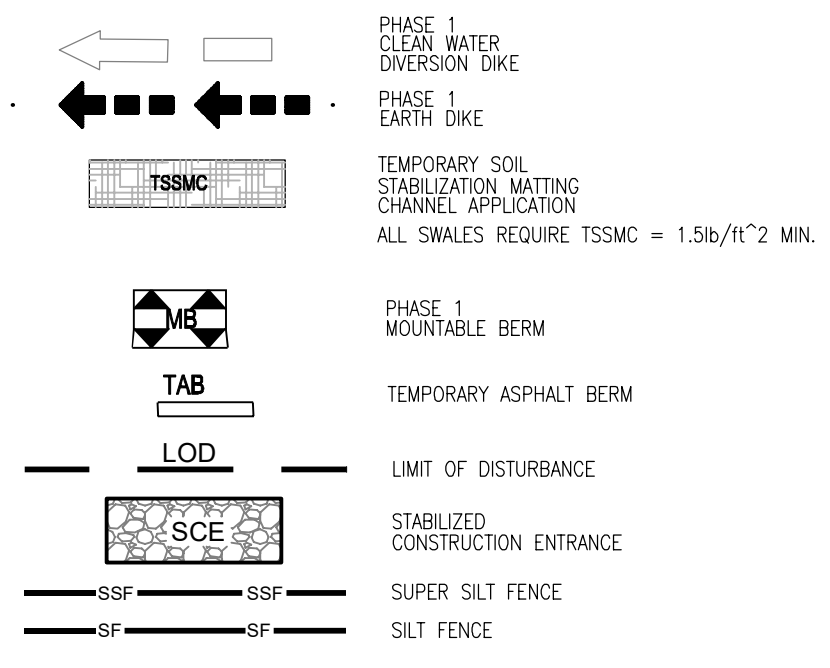
SCALE: 1"=50'

APPROVED:
Alexander Bratchie
10/27/2023
Alexander Bratchie
10/27/2023
Alexander Bratchie
10/27/2023

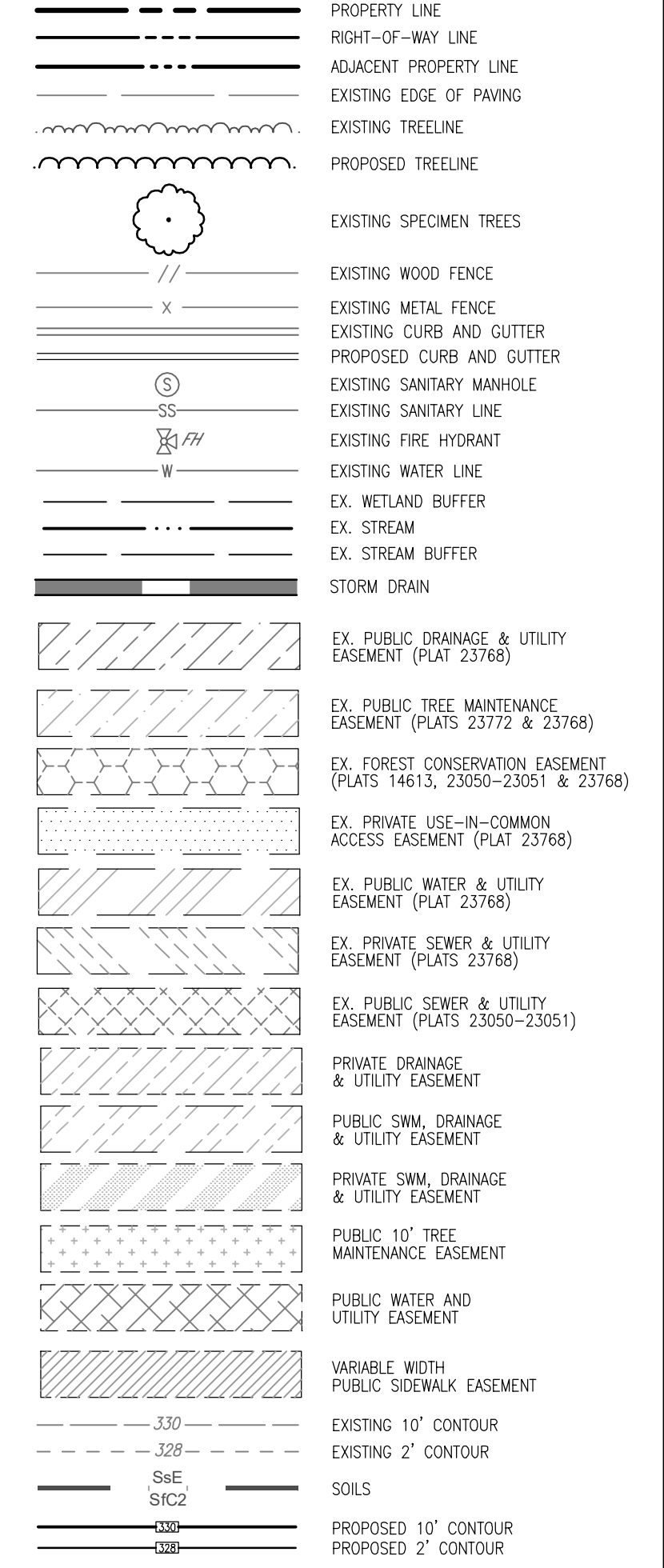
NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

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 25 FEET APART - DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

SEDIMENT CONTROL LEGEND:



LEGEND:



NOTE

PHASE 1 - SEDIMENT CONTROLS ARE SHOWN HEREON AND ARE TO BE UTILIZED. REMOVAL OF ANY DEVICE SHALL BE AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR.

OWNER: BEECHWOOD MANOR, LLC 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

Table with 3 columns: NO., REVISION, DATE

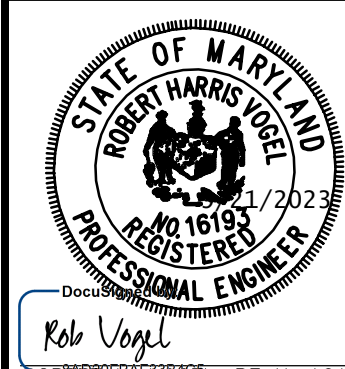
FINAL ROAD CONSTRUCTION PLANS
PHASE 2-SOILS MAP, GRADING PLAN
SOIL EROSION AND SEDIMENT CONTROL PLAN

BEECHWOOD MANOR
LOTS 1-31 AND OPEN SPACE LOTS 32-34
A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L. 2025 / F. 202 TAX MAP: 50 GRID: 1 6TH ELECTION DISTRICT DPZ REFERENCE: SEE SITE DATA 9111 RIVER HILL ROAD LAUREL, MD 20723 PARCEL: 001 ZONED: R-SC HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043 P: 410.461.7666 F: 410.461.8961 www.timmons.com



PROFESSIONAL CERTIFICATE
DESIGN BY: EDS
DRAWN BY: JMR/KG
CHECKED BY: RHY
DATE: AUGUST, 2023
SCALE: AS SHOWN
W.O. NO.: 17-26
5 SHEET OF 21

SOILS LEGEND table with columns: SYMBOL, NAME/DESCRIPTION, GROUP, VELOCITY, ERODIBLE

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

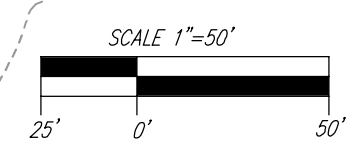
APPROVED: DEPARTMENT OF PUBLIC WORKS
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, BUREAU OF HIGHWAYS
CHIEF, DEVELOPMENT ENGINEERING DIVISION
CHIEF, DIVISION OF LAND DEVELOPMENT

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 (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
OWNER/DEVELOPER SIGNATURE
DATE: 9/21/2023
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 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.
Rob Vogel
DESIGNER'S SIGNATURE
DATE: 9/21/2023
ROBERT H. VOGEL
MD REGISTRATION NO. 16193
R.H.S., OR R.L.A. (circle one)

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
Alexander Bratchie
DATE: 10/27/2023
HOWARD S.C.D.

PHASE 2-SOILS MAP, GRADING PLAN
SOIL EROSION AND SEDIMENT CONTROL PLAN
SCALE: 1"=50'



HOWARD SOIL CONSERVATION DISTRICT STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD...

2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THE PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THEREOF...

3. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE LOD. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGON ON ONE GRADING UNIT (MAXIMUM AREA OF 1/2 AC PER GRADING UNIT) AT A TIME...

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...

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

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION: TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. PURPOSE: TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

1. GENERAL SPECIFICATIONS: A. CLASS OF TURFGRASS: SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.

2. SOD INSTALLATION: A. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.

PERMANENT SEEDING SUMMARY table with columns for HARNESS ZONE, SEED MIXTURE, APPLICATION, SEEDING DATES, FERTILIZER RATE, and LIME RATE.

NOTES: DURING GRADING AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE THE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL MEASURES SHOWN HEREON.

R-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TPOSSING AND SOIL AMENDMENTS

DEFINITION: THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION. PURPOSE: TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

1. TEMPORARY STABILIZATION: A. SEEDING: ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY.

2. APPLICATION: A. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION table with columns for HARNESS ZONE, SEED MIXTURE, APPLICATION, SEEDING DATES, FERTILIZER RATE, and LIME RATE.

NOTES: THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4-1 VEGETATIVE STABILIZATION.

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION: THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER. PURPOSE: TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

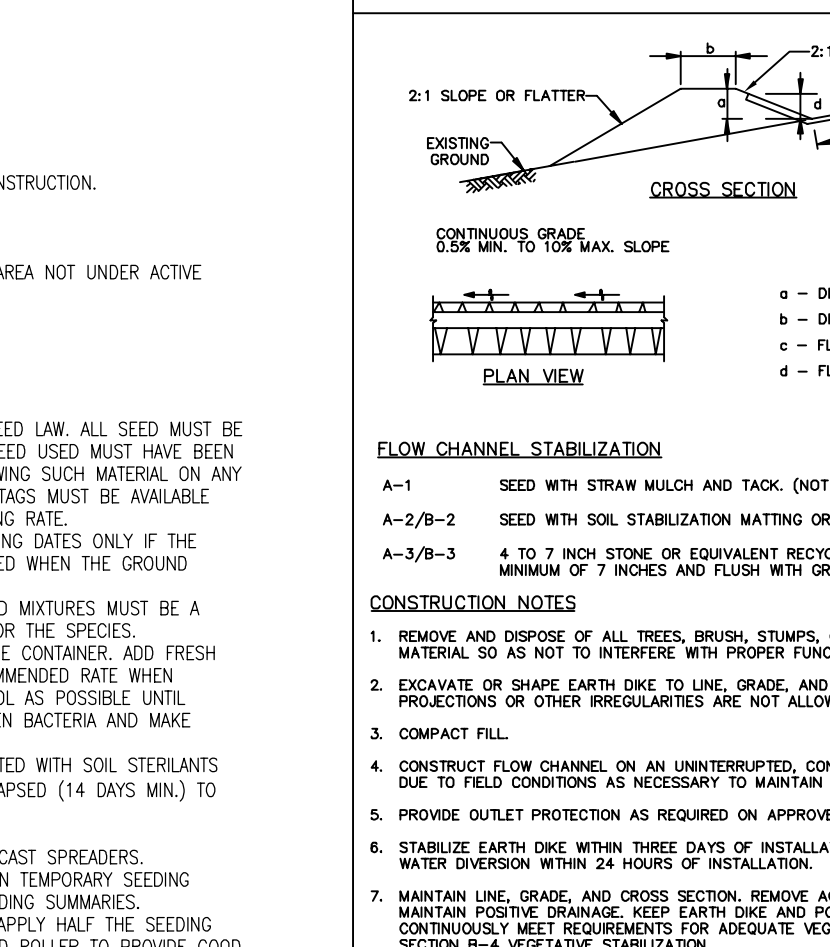
1. APPLICATION: A. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY.

2. APPLICATION: A. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY.

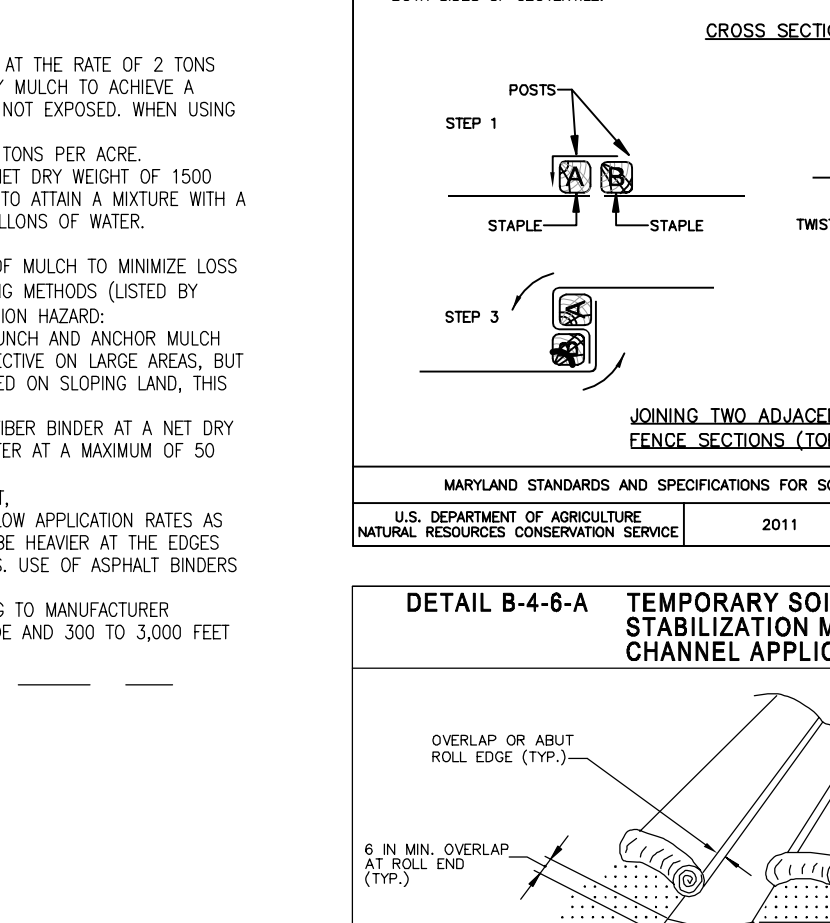
DEFINITION: A NET OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

NOTES: THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4-1 VEGETATIVE STABILIZATION.

DETAIL C-1 EARTH DIKE



CONSTRUCTION SPECIFICATIONS: 1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBSTRUCTIONABLE MATERIALS...

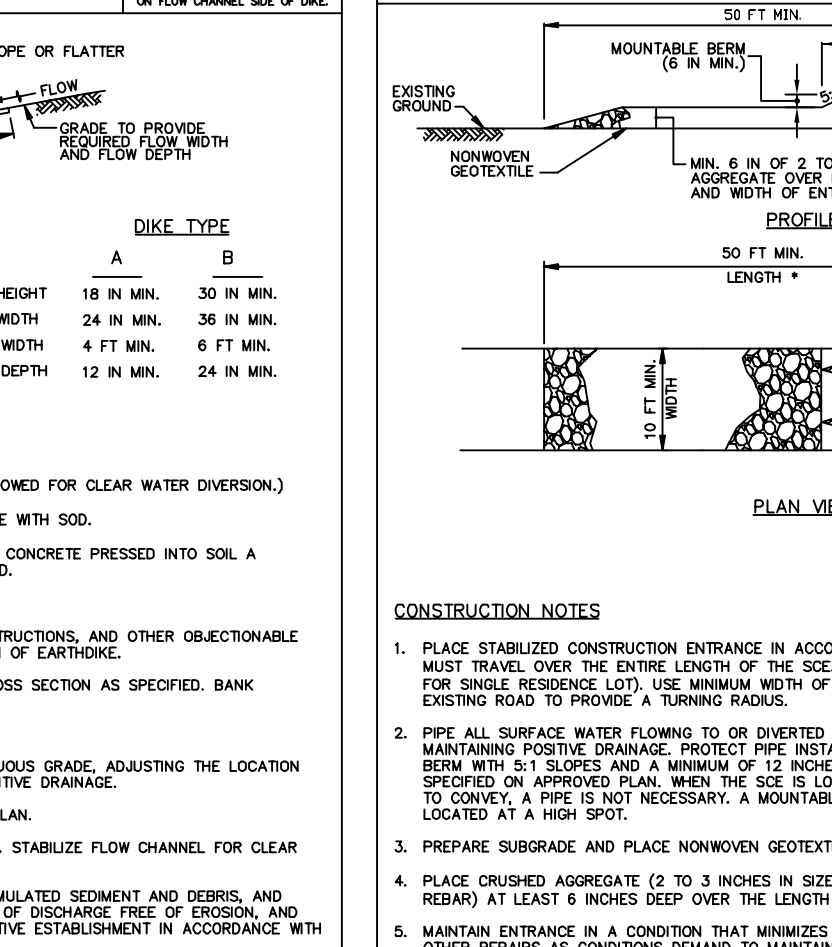


CONSTRUCTION SPECIFICATIONS: 1. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING. 2. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE...

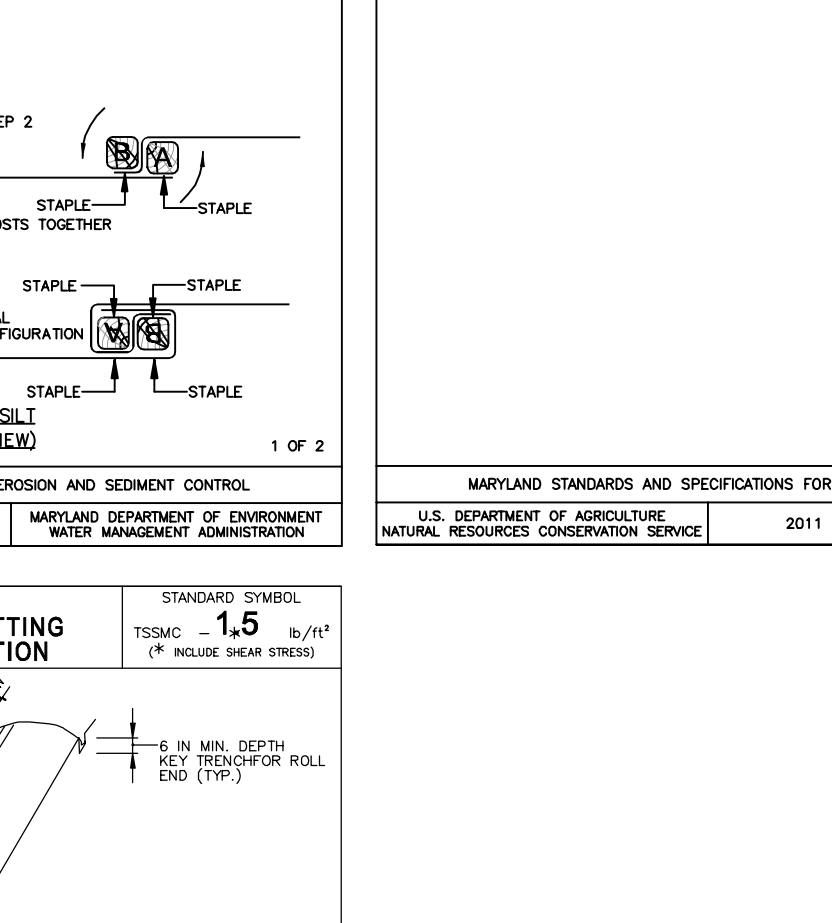


CONSTRUCTION SPECIFICATIONS: 1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE



CONSTRUCTION NOTES: 1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SEE USE MINIMUM LENGTH OF 50 FEET FOR SINGLE RESERVES (2) USE MINIMUM WIDTH OF 10 FEET...

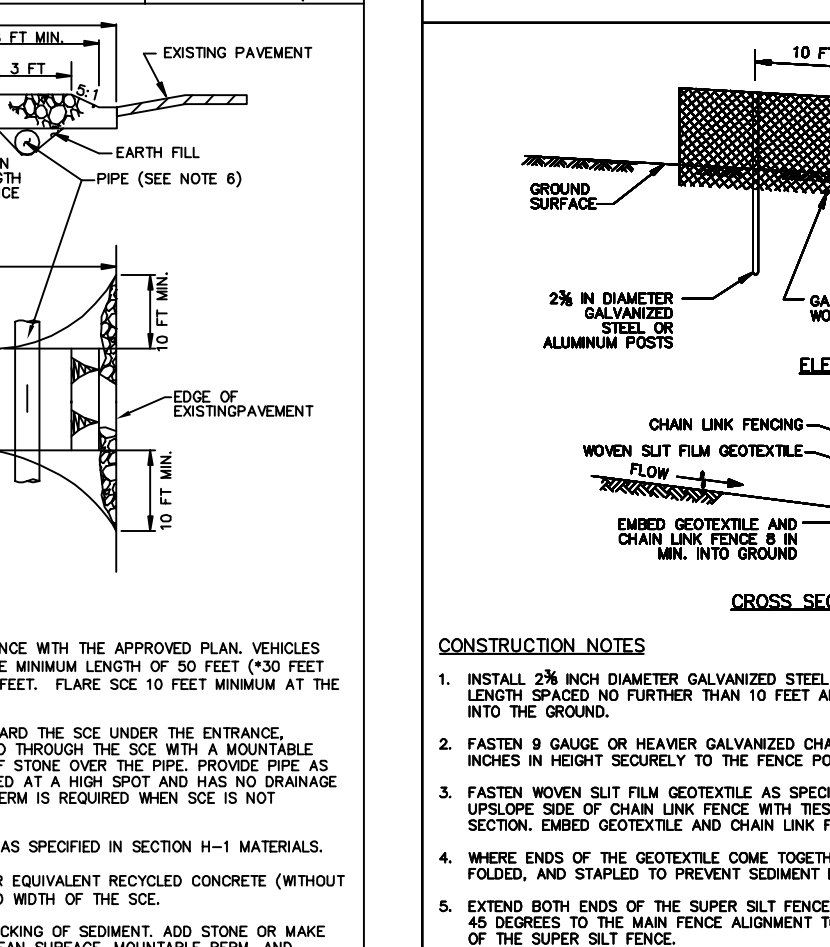


CONSTRUCTION SPECIFICATIONS: 1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBSTRUCTIONABLE MATERIALS...

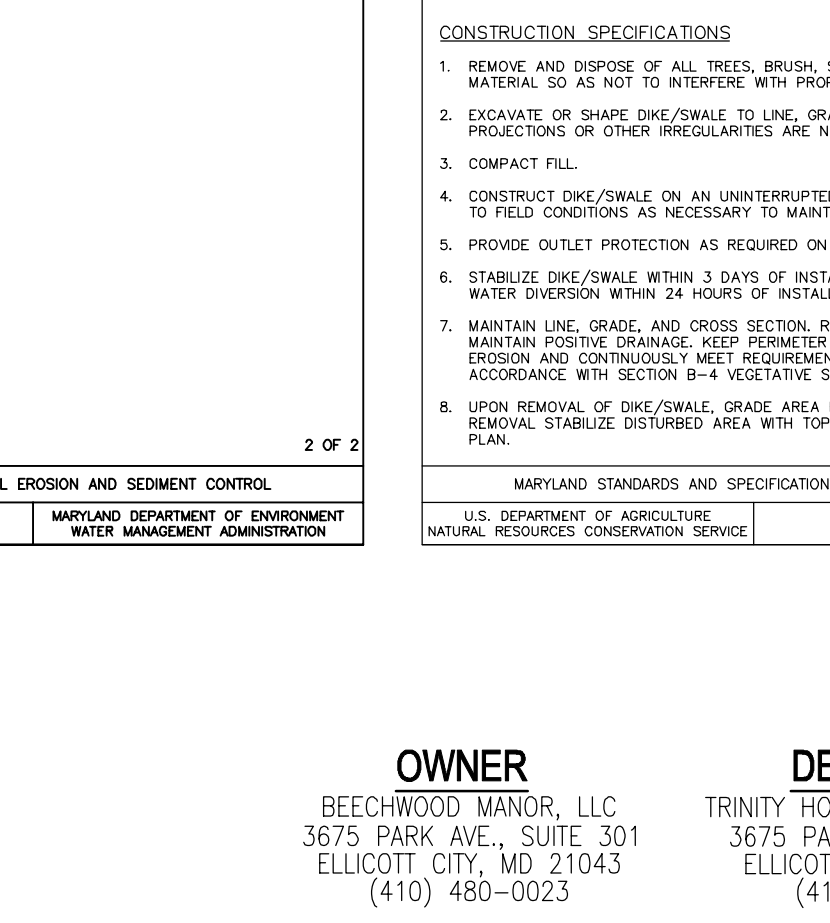


CONSTRUCTION SPECIFICATIONS: 1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBSTRUCTIONABLE MATERIALS...

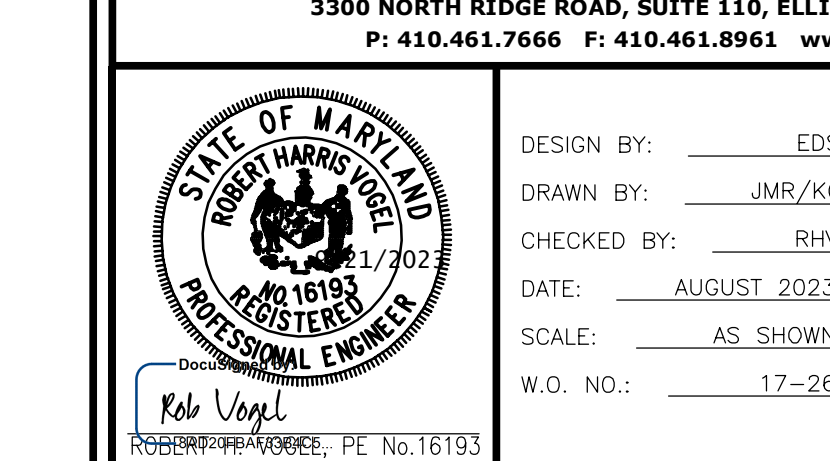
DETAIL E-3 SUPER SILT FENCE



CONSTRUCTION NOTES: 1. INSTALL 2x4 CHAIN LINK GALVANIZED STEEL POSTS OF 0.005 INCH WALL THICKNESS AND 3x6 FOOT LENGTHS IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR IRON RINGS...

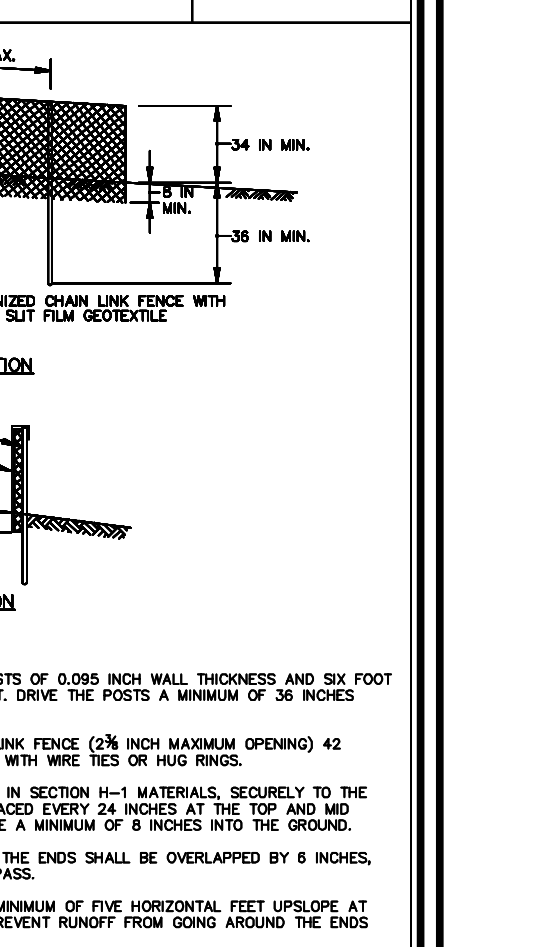


CONSTRUCTION SPECIFICATIONS: 1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBSTRUCTIONABLE MATERIALS...

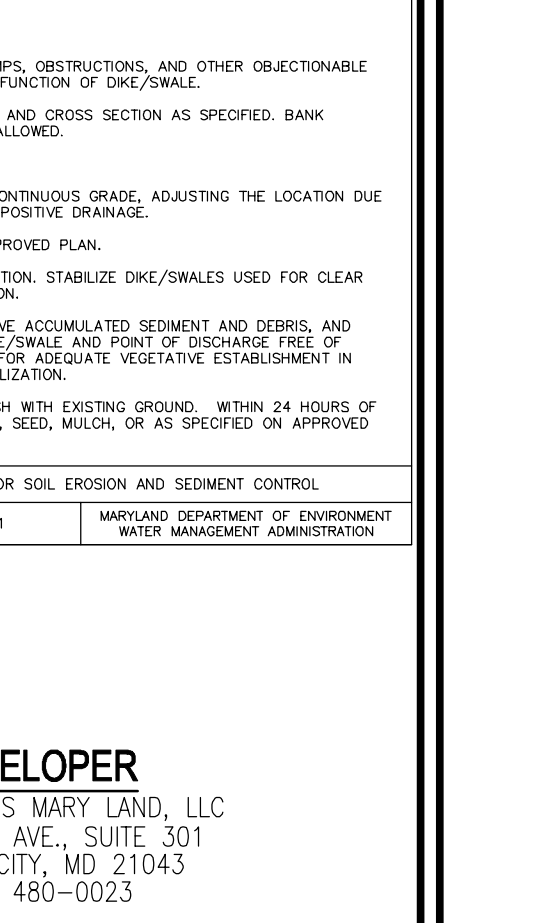


CONSTRUCTION SPECIFICATIONS: 1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBSTRUCTIONABLE MATERIALS...

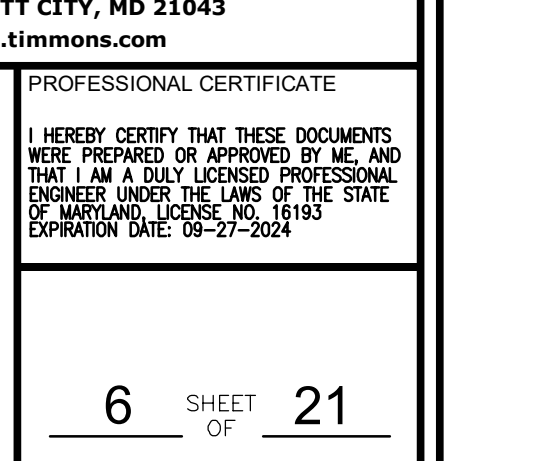
DETAIL C-3 PERIMETER DIKE/SWALE



CONSTRUCTION SPECIFICATIONS: 1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBSTRUCTIONABLE MATERIALS...



CONSTRUCTION SPECIFICATIONS: 1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBSTRUCTIONABLE MATERIALS...



CONSTRUCTION SPECIFICATIONS: 1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBSTRUCTIONABLE MATERIALS...

OWNER: BEECHWOOD MANOR, LLC 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

FINAL ROAD CONSTRUCTION PLANS SOIL EROSION AND SEDIMENT CONTROL PLAN NOTES AND DETAILS

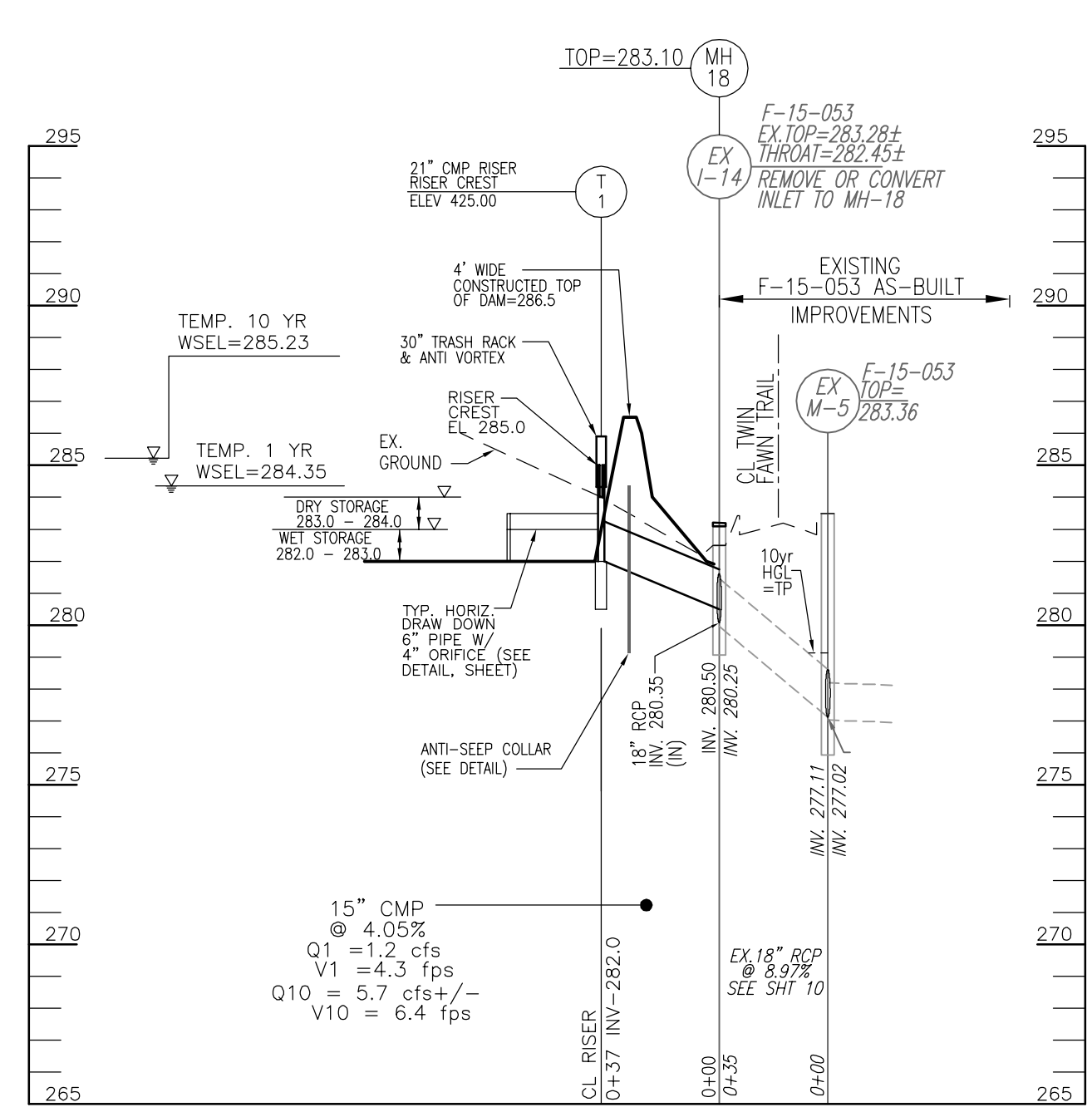
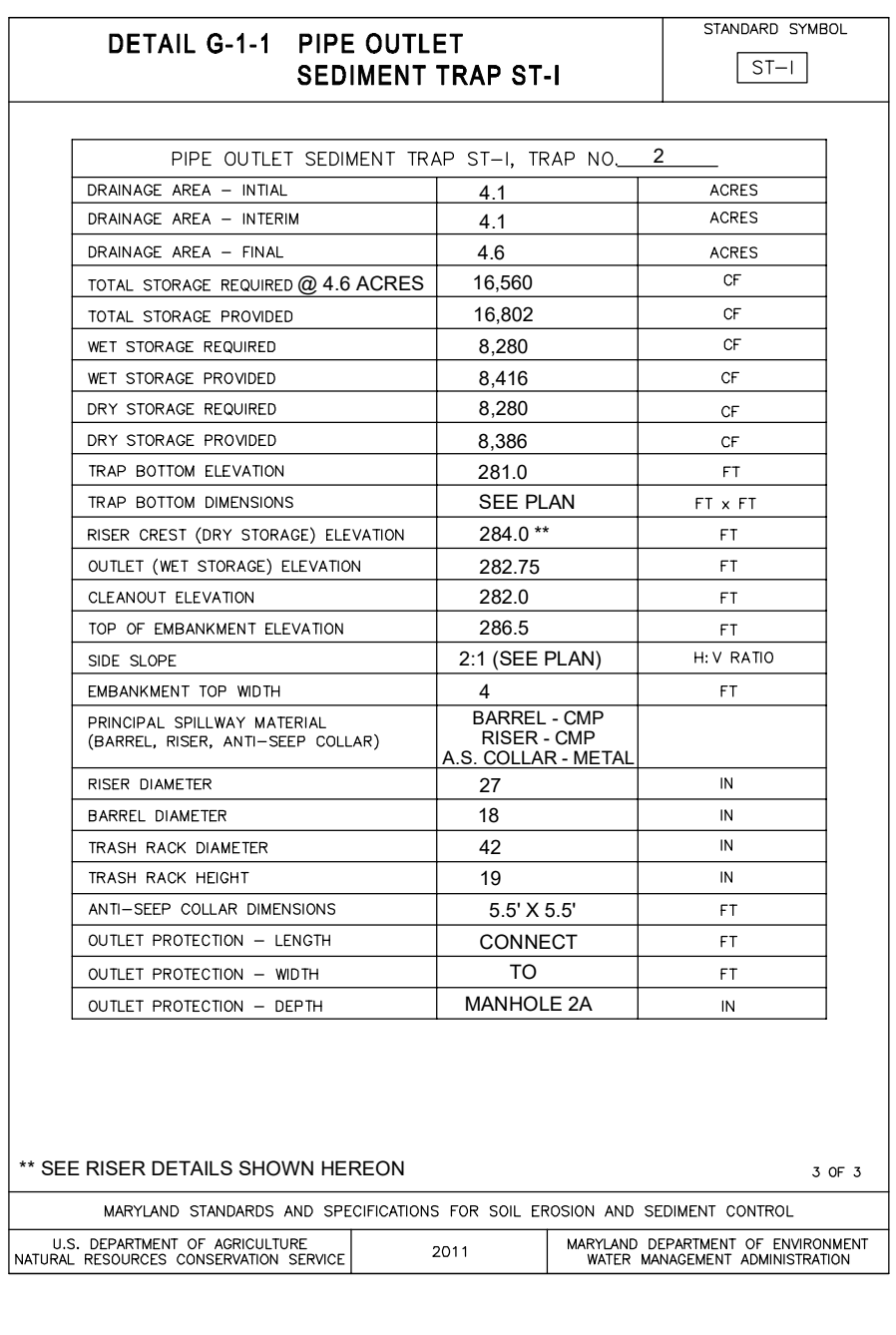
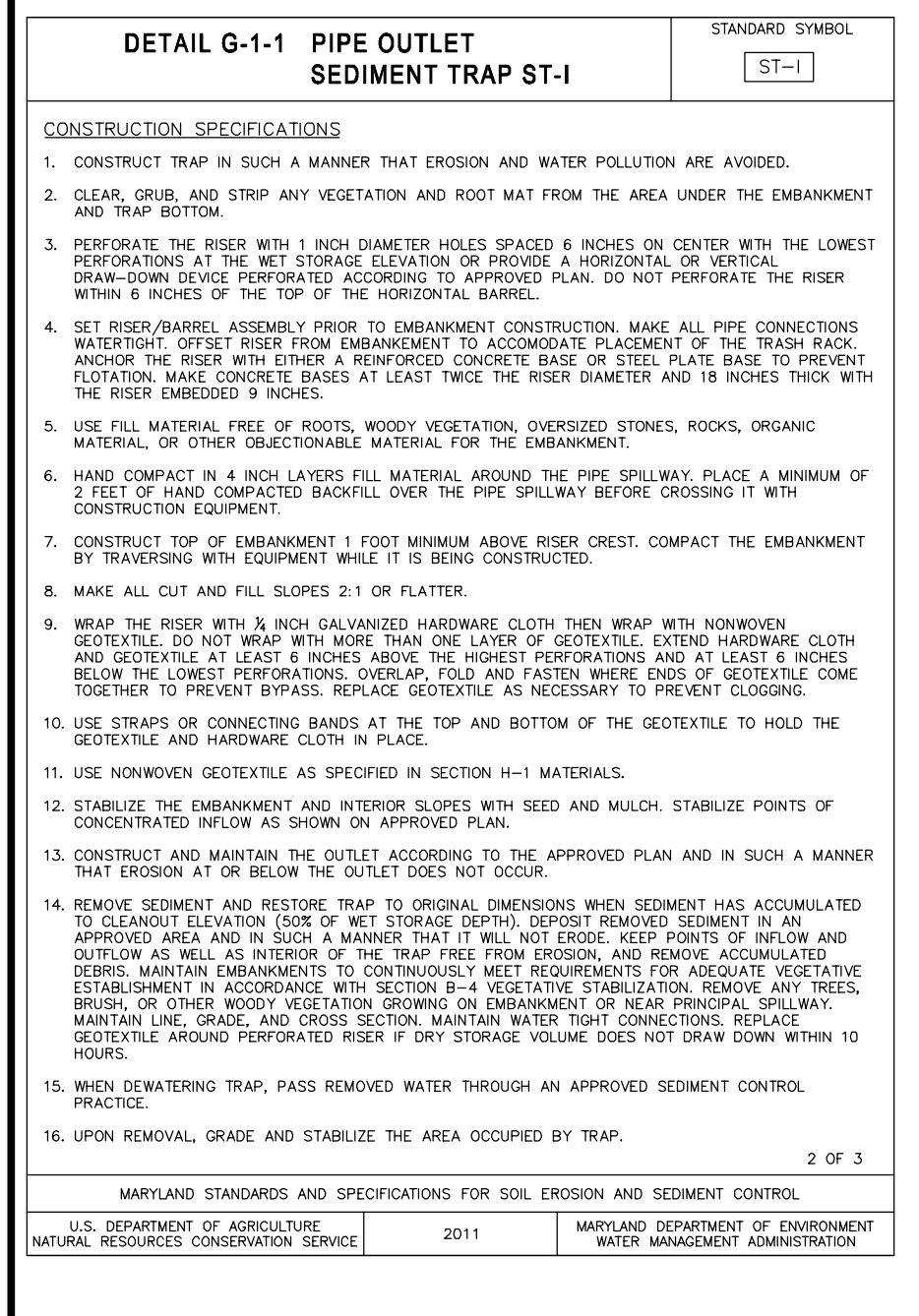
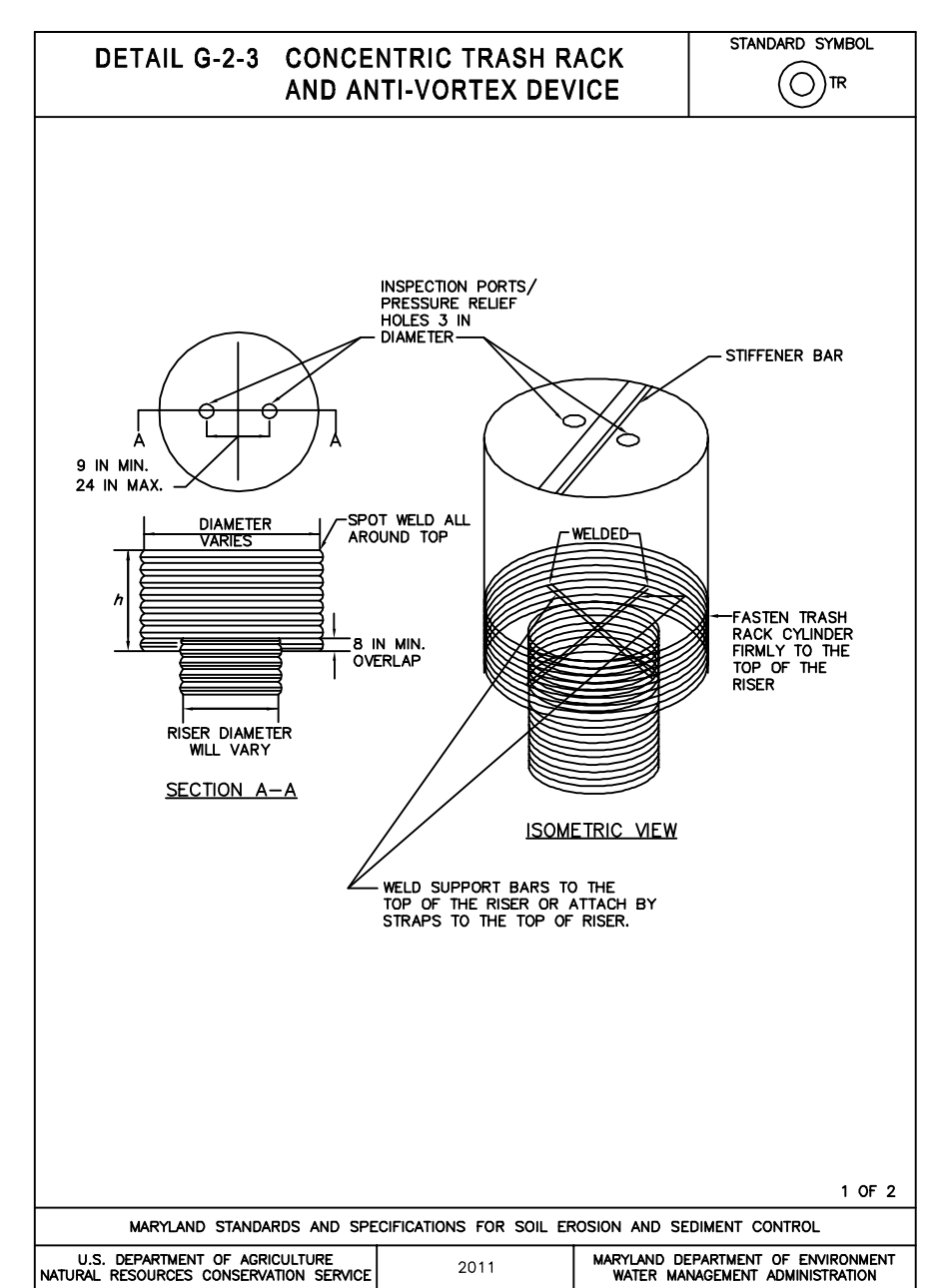
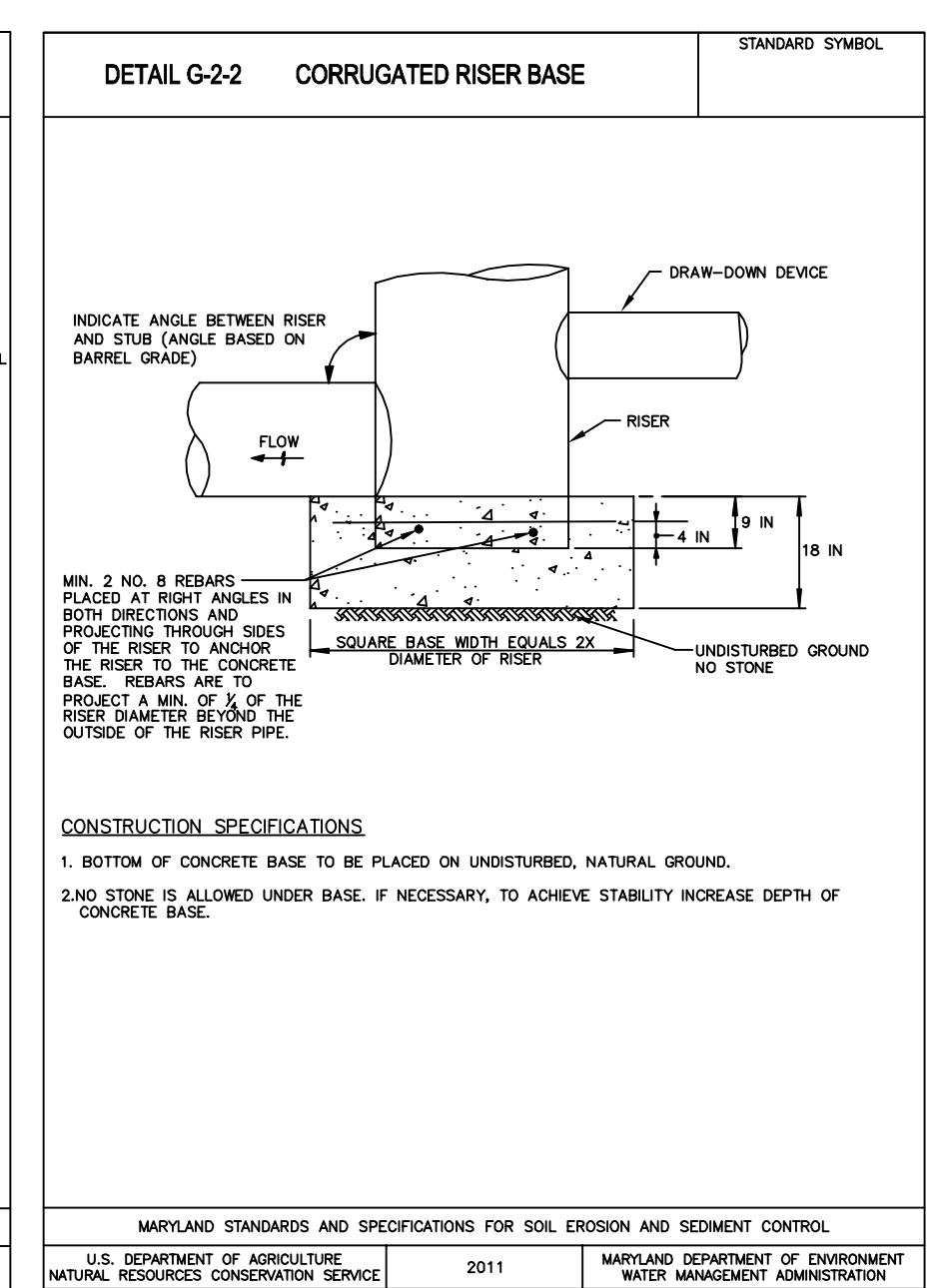
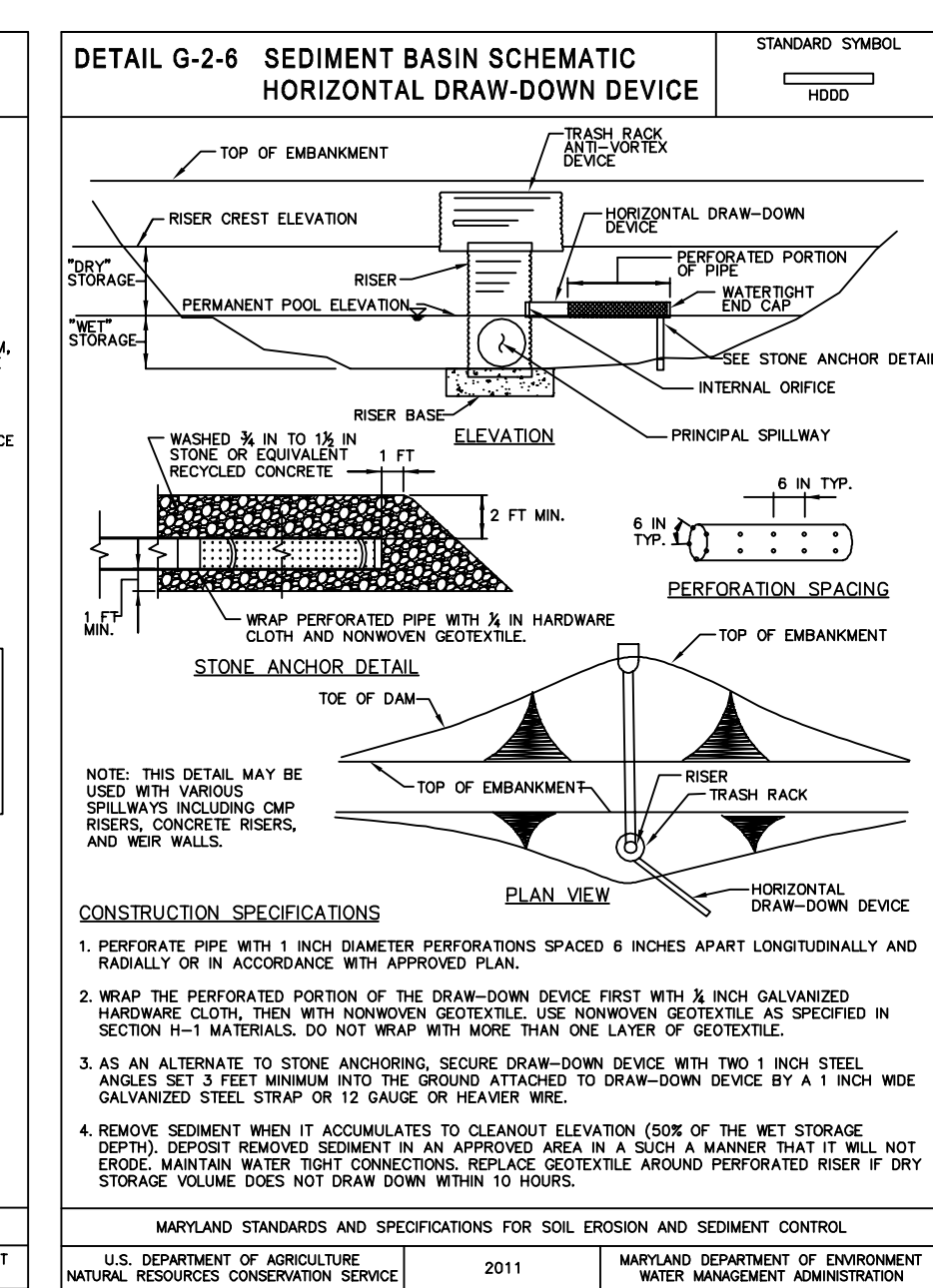
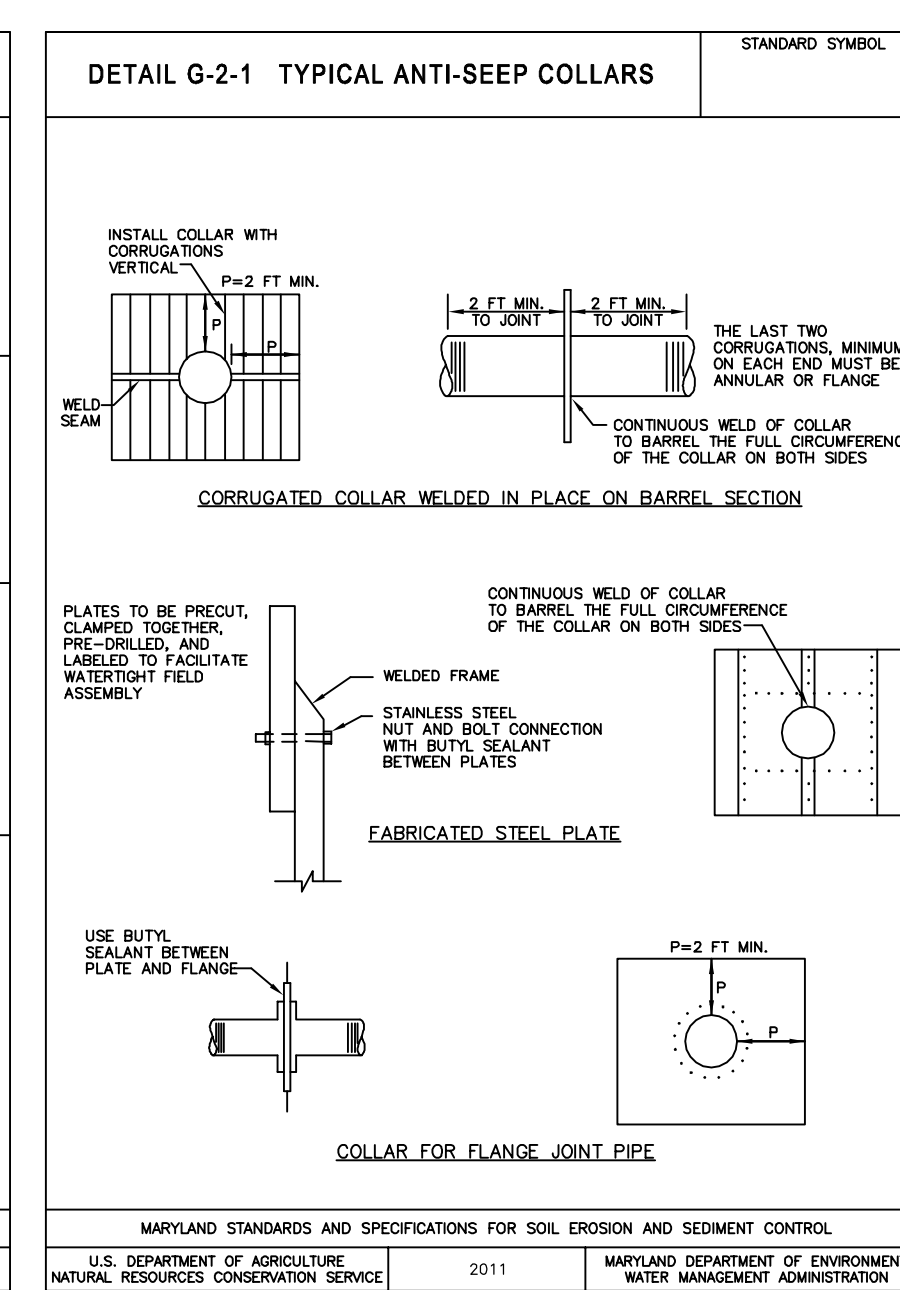
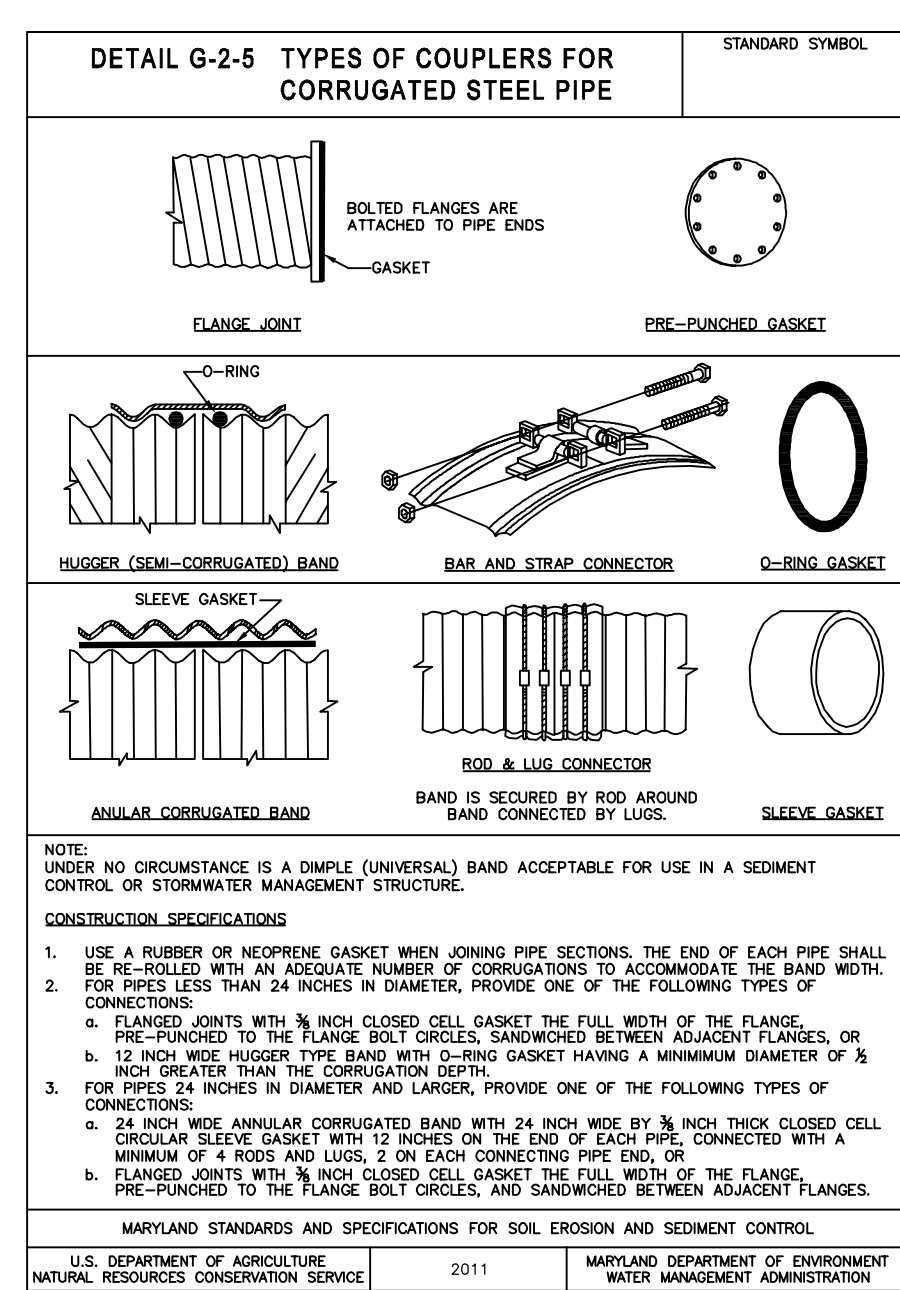
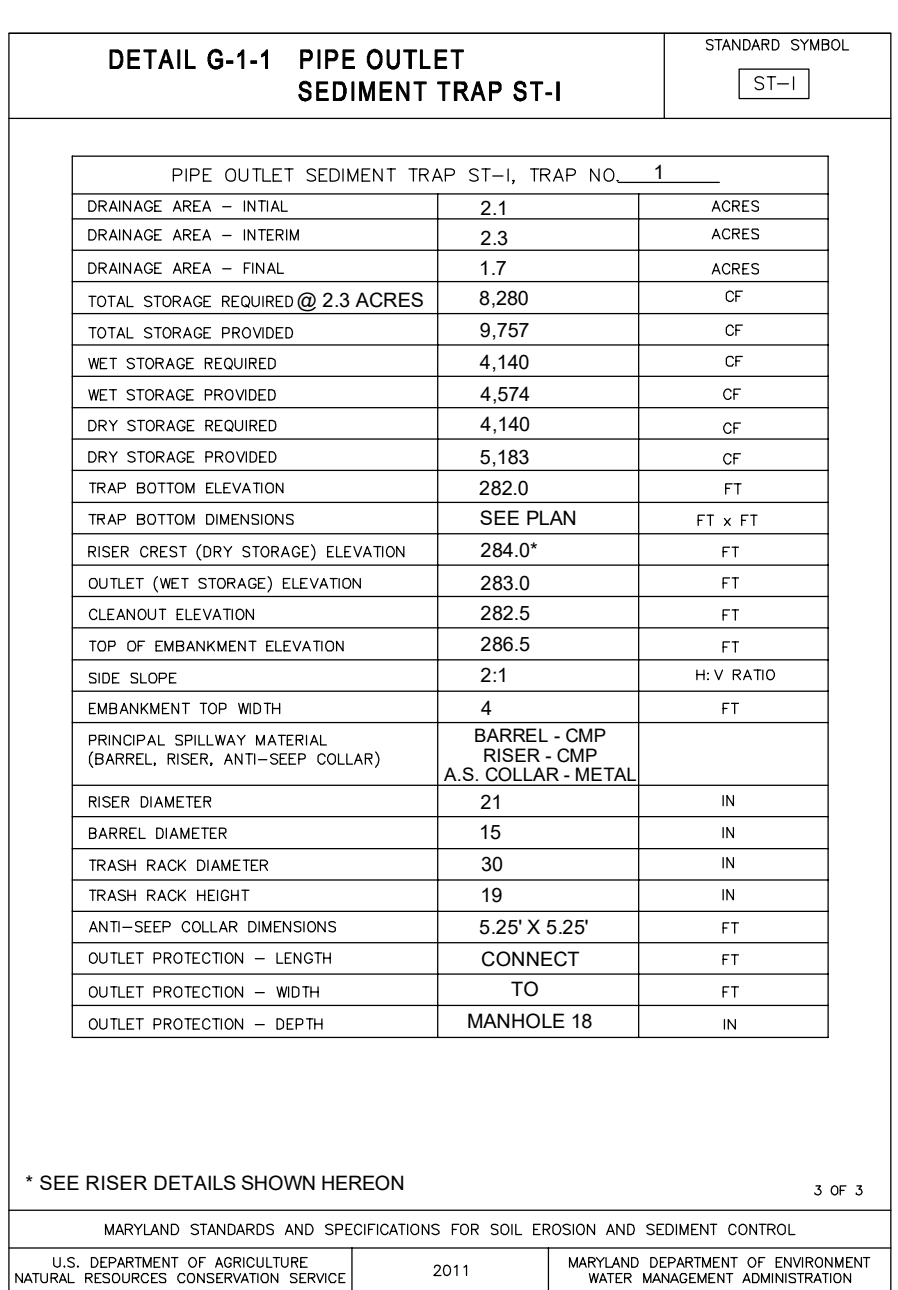
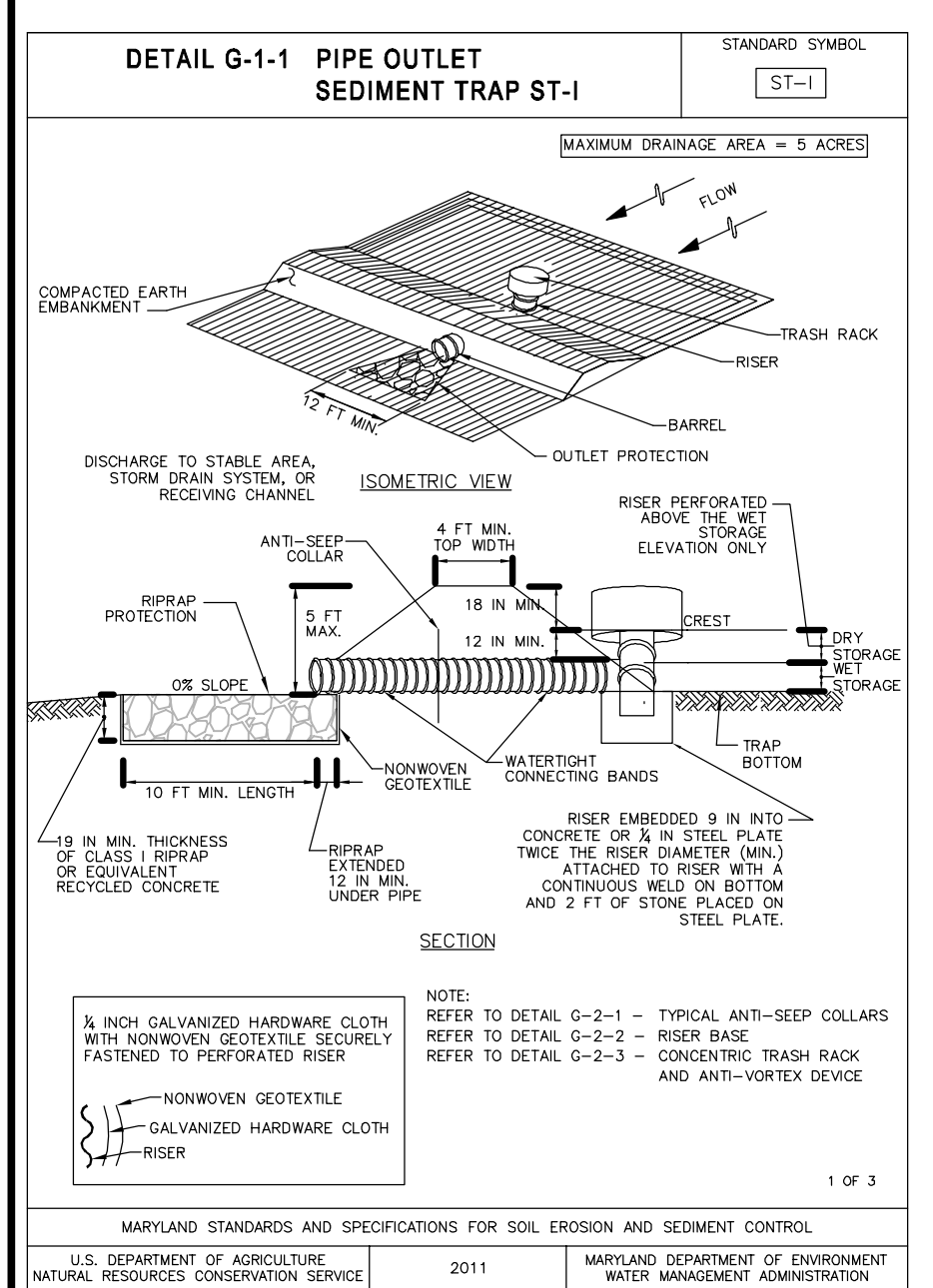
BEECHWOOD MANOR LOTS 1 AND 2 OPEN SPACE 30-34 A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L-22005 / F- 202 TAX MAP: 50 GRID: 1 6TH ELECTION DISTRICT 072 REFERENCE: SEE SITE DATA

VOGEL ENGINEERING

TIMMONS GROUP 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043 P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: EDS DRAWN BY: JMR/KG CHECKED BY: RHY DATE: AUGUST 2023 SCALE: AS SHOWN W.O. NO.: 17-26 6 SHEET OF 21



NOTE:
THE CENTER OF ANY REAR YARD SWALE SHALL BE LOCATED 15 FEET FROM THE HOUSE. THE FUTURE SITE DEVELOPMENT PLAN SHALL DETAIL AND DIMENSION THE FINAL OVER-LOT GRADING PROPOSAL.

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING SANITARY MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EX. WETLAND BUFFER
- EX. STREAM
- EX. STREAM BUFFER
- STORM DRAIN
- MICRO-BIORETENTION FACILITY (M-6)
- RAIN GARDEN STRUCTURE (M-7)
- EX. PUBLIC DRAINAGE & UTILITY EASEMENT (PLAT 23768)
- EX. PUBLIC TREE MAINTENANCE EASEMENT (PLATS 23772 & 23768)
- EX. FOREST CONSERVATION EASEMENT (PLATS 14613, 23050-23051 & 23768)
- EX. PRIVATE USE-IN-COMMON ACCESS EASEMENT (PLAT 23768)
- EX. PUBLIC WATER & UTILITY EASEMENT (PLAT 23768)
- EX. PRIVATE SEWER & UTILITY EASEMENT (PLATS 23768)
- EX. PUBLIC SEWER & UTILITY EASEMENT (PLATS 23050-23051)
- EX. WETLANDS
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- DRAINAGE AREA DIVIDE
- DRAINAGE SUBAREA DIVIDE
- PROP. DRAINAGE AREA DESIGNATION
- EXISTING DRAINAGE AREA DIVIDE F-15-053
- EX. DRAINAGE AREA DESIGNATION F-15-053

APPROVED F-15-053 INFORMATION

DRAINAGE AREA DATA

STRUCTURE NO.	DRAINAGE AREA	AREA	C'	ZONED	% IMP.
I-1	A	0.33 AC.	0.64	R-5C	61%
I-2	B	0.10 AC.	0.47	R-5C	40%
S-5	C	1.28 AC.	0.17	R-5C	2%
I-3	D	0.11 AC.	0.58	R-5C	50%
I-4	E	0.03 AC.	0.95	R-5C	100%
HW-2	F	6.51 AC.	0.29	R-5C	4%
I-9	G	0.22 AC.	0.70	R-5C	69%
I-15	H	0.23 AC.	0.42	R-5C	34%
I-8	I	0.06 AC.	0.29	R-5C	17%
I-7	J	0.72 AC.	0.29	R-5C	12%
I-16 (FUTURE)	K	0.35 AC.	0.75	R-5C	75%
I-11	L	0.10 AC.	0.61	R-5C	58%
I-12	M	0.44 AC.	0.37	R-5C	27%
I-5	N	0.26 AC.	0.81	R-5C	82%
I-6	O	0.13 AC.	0.95	R-5C	100%
I-13	P	0.12 AC.	0.61	R-5C	58%
I-7	Q	0.71 AC.	0.33	R-5C	12%
I-14	R	1.20 AC.	0.17	R-5C	2%
I-10	S	0.16 AC.	0.57	R-5C	52%
I-17	T	0.22 AC.	0.64	R-5C	55%

F-15-03 AREA LETTER	F-15-03 STRUCT. # NUMBER	F-15-03 DA ACRES	F-23-018 DA ACRES	NOTES
A	1	0.33	NOT APPLICABLE	
B	2	0.05	1.04	(1) ADDED I-5 DRAINAGE AREA REDUCED, ADDED I-4
C	S-5	1.28	1.03	
D	3	0.11	NOT APPLICABLE	
E	4	0.03	0.01	DRAINAGE AREA REDUCED, ADDED PT-1 HW REPLACED W/ MANHOLE
F	HW-2	6.51	NOT APPLICABLE	
G	9	0.22	NOT APPLICABLE	
H	15	0.23	NOT APPLICABLE	
I	8	0.06	NOT APPLICABLE	
J	7	0.72	0.22	(2) DRAINAGE AREA REDUCED, ADDED H-11
K	16	0.35	NOT APPLICABLE	
L	11	0.10	NOT APPLICABLE	
M	12	0.44	NOT APPLICABLE	DRAINAGE AREA REDUCED, (1)
N	5	0.26	NOT APPLICABLE	
O	6	0.13	0.42	(3) DRAINAGE AREA INCREASED
P	13	0.12	NOT APPLICABLE	
Q	7	0.71	NOT APPLICABLE	(2) DRAINAGE AREA REDUCED, ADDED H-11
R	14	1.20	NOT APPLICABLE	INLET REPLACED W/ MANHOLE
S	10	0.16	NOT APPLICABLE	
T	17	0.20	NOT APPLICABLE	

(1) INACCURATE F-15-053 DA DESIGNATION / COMPUTATION
 (2) SAME DRAINAGE AREA
 (3) REMOVED F-15-053 STRUCTURES HW-2 AND I-14 NOT APPLICABLE - F-23-18 DOES NOT DRAIN TO THIS AREA/STRUCTURE

APPROVED: DEPARTMENT OF PUBLIC WORKS
 10/27/2023

CHIEF, BUREAU OF HIGHWAYS
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 10/26/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
ChB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	C	.24	NO
GbB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	.24	NO

SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE
 -HOWARD COUNTY SOILS MAP NUMBER 28 - LAUREL 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
 BEECHWOOD MANOR, 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.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
STORM DRAIN - DRAINAGE AREA MAP
BEECHWOOD MANOR
 LOTS 1-31 AND OPEN SPACE LOTS 32-34
 A SUBDIVISION OF TAX MAP 50 - PARCEL 1
 9111 RIVER HILL ROAD
 LAUREL, MD 20723

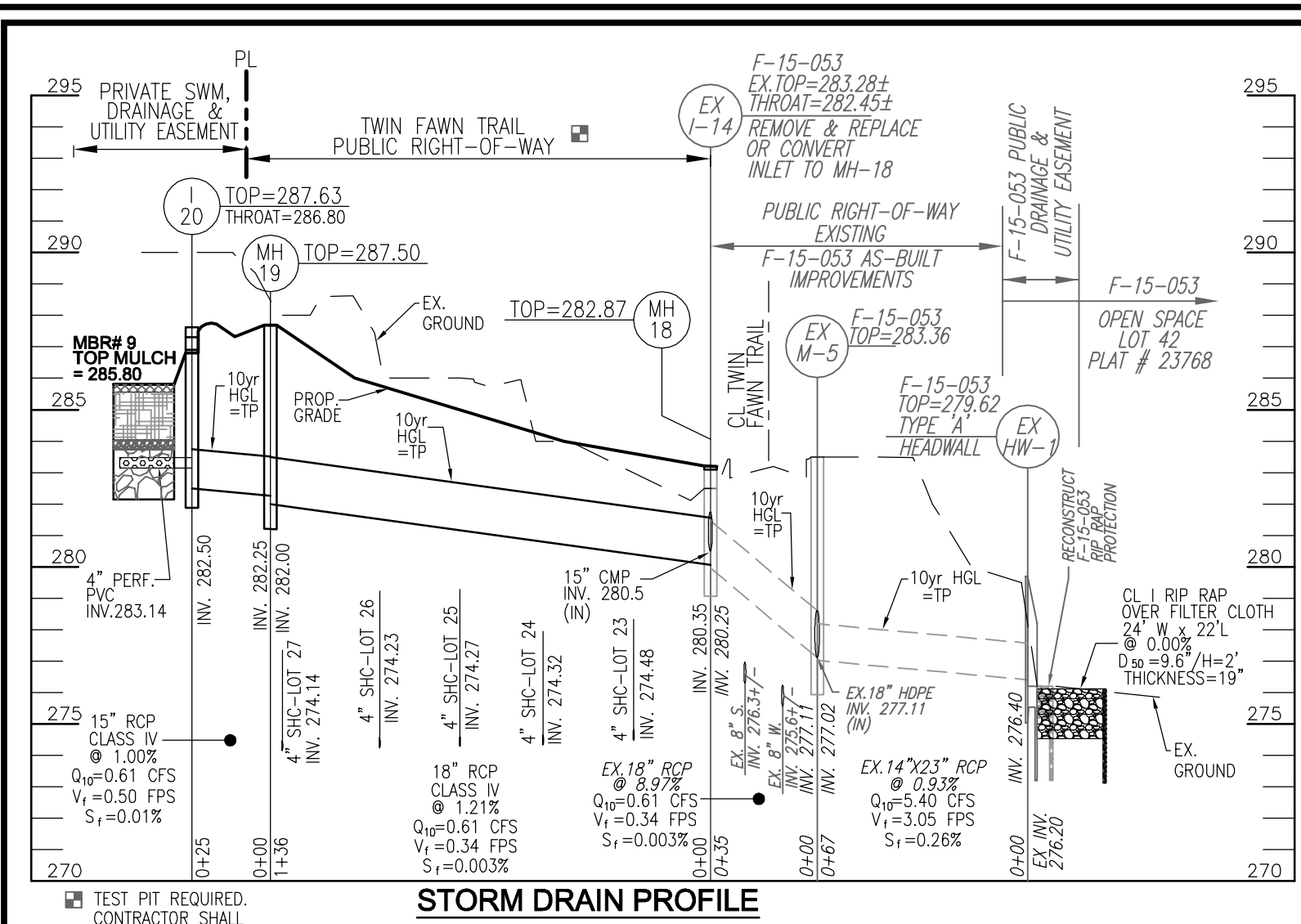
VOGEL ENGINEERING
TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A SOLE LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 08-27-2024

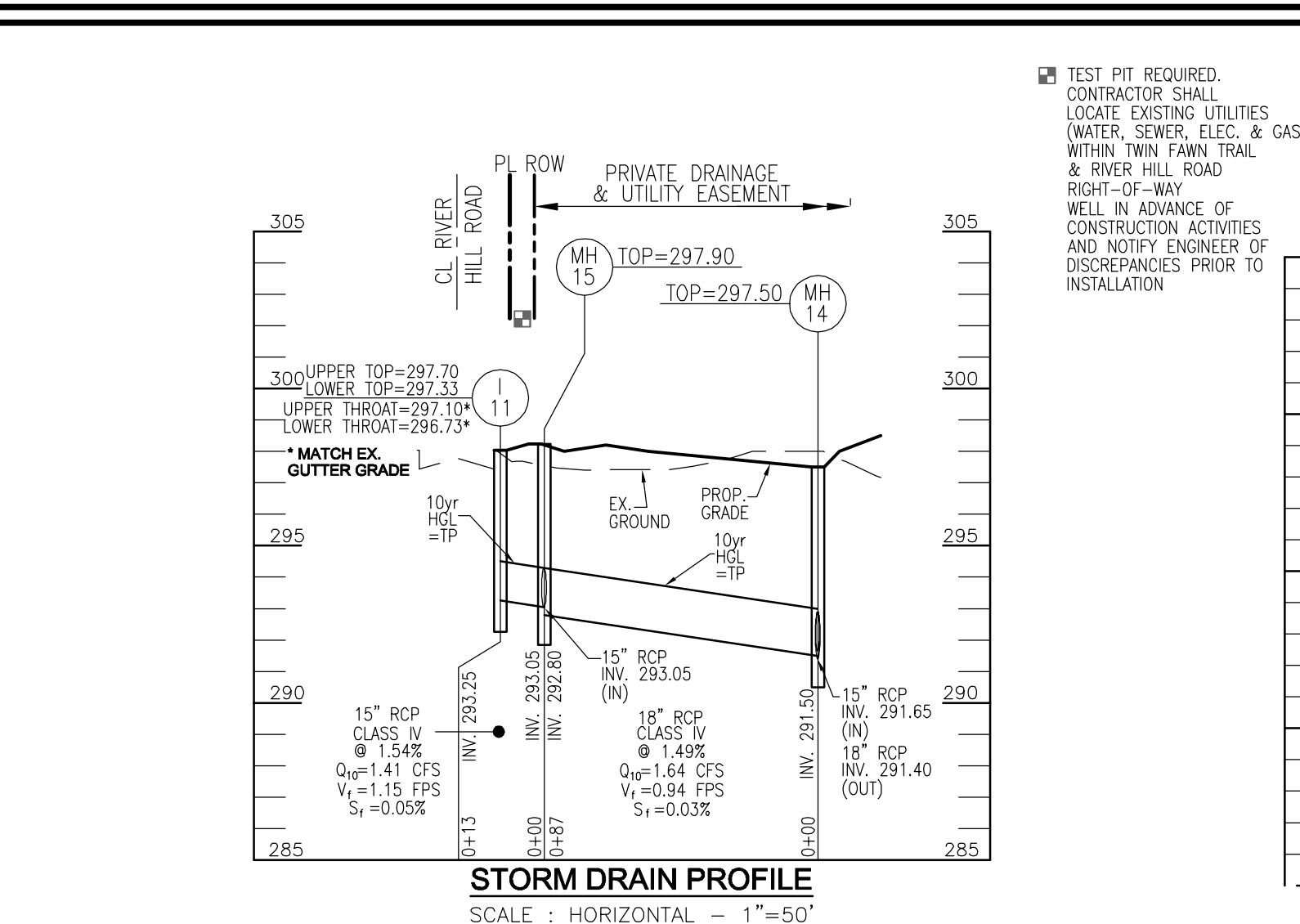
DESIGN BY: EDS
 DRAWN BY: JMR/KG
 CHECKED BY: RHV
 DATE: AUGUST 2023
 SCALE: AS SHOWN
 W.O. NO.: 17-26

9 SHEET OF 21

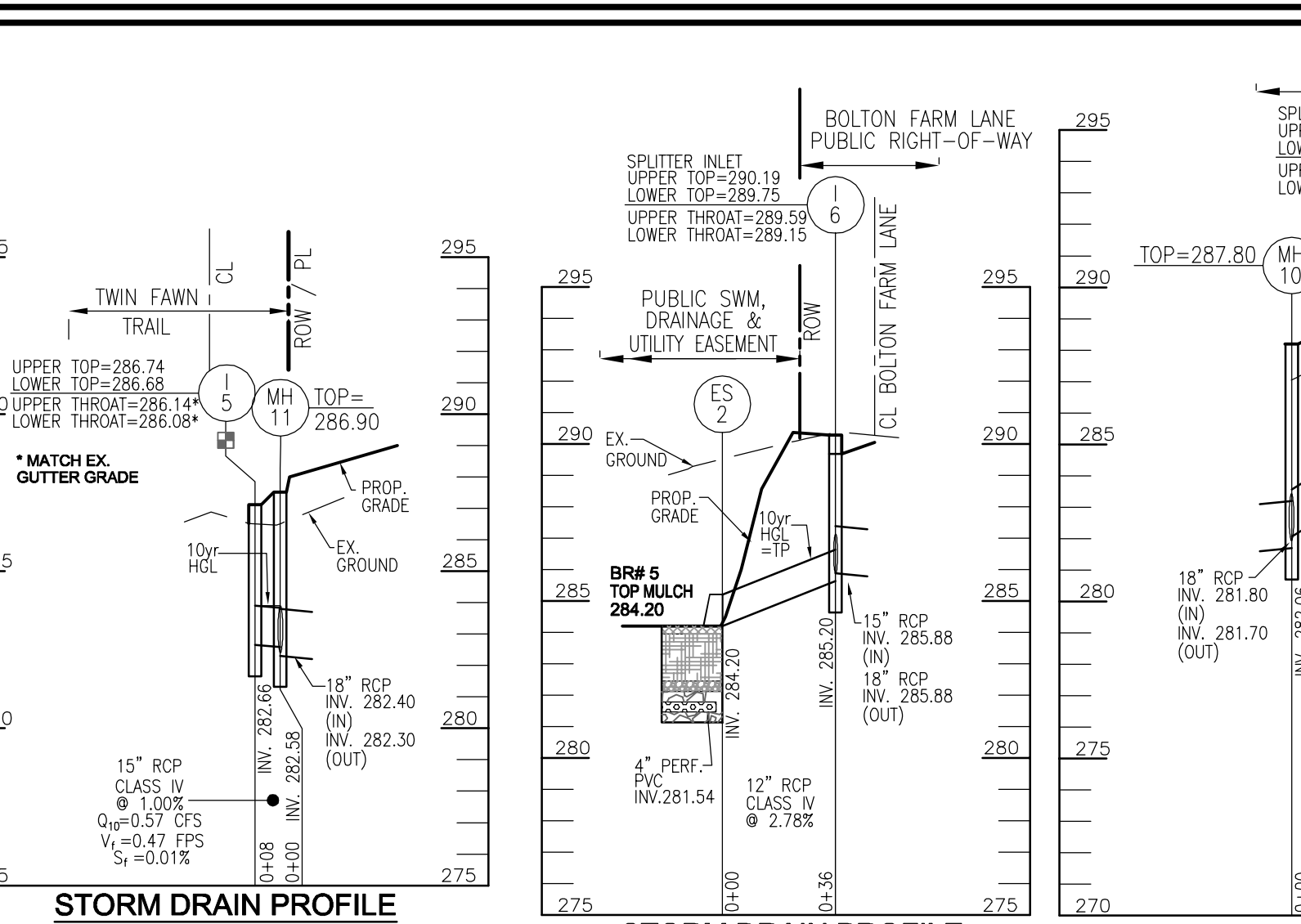
STORM DRAIN - DRAINAGE AREA MAP
 SCALE: 1"=50'



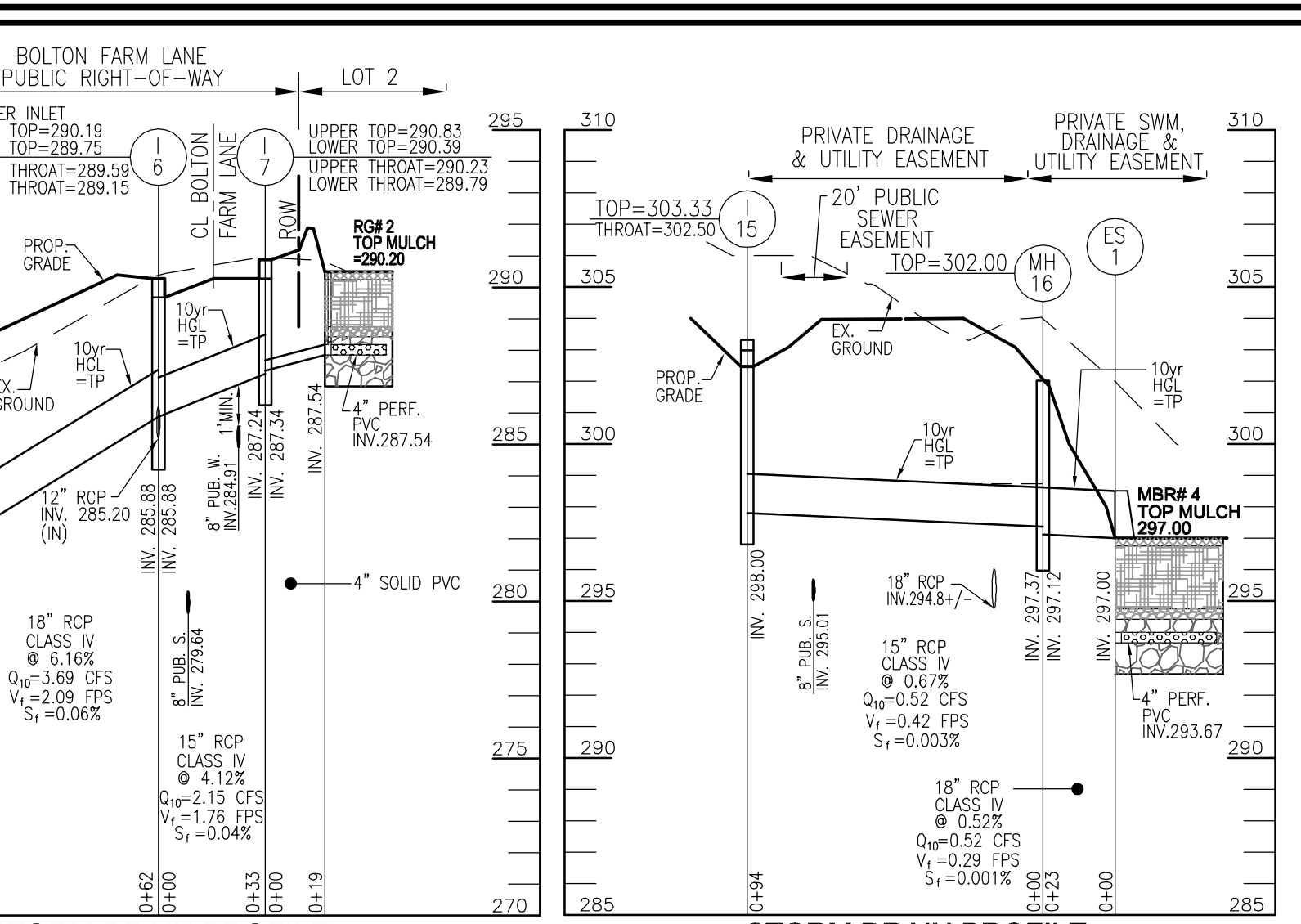
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



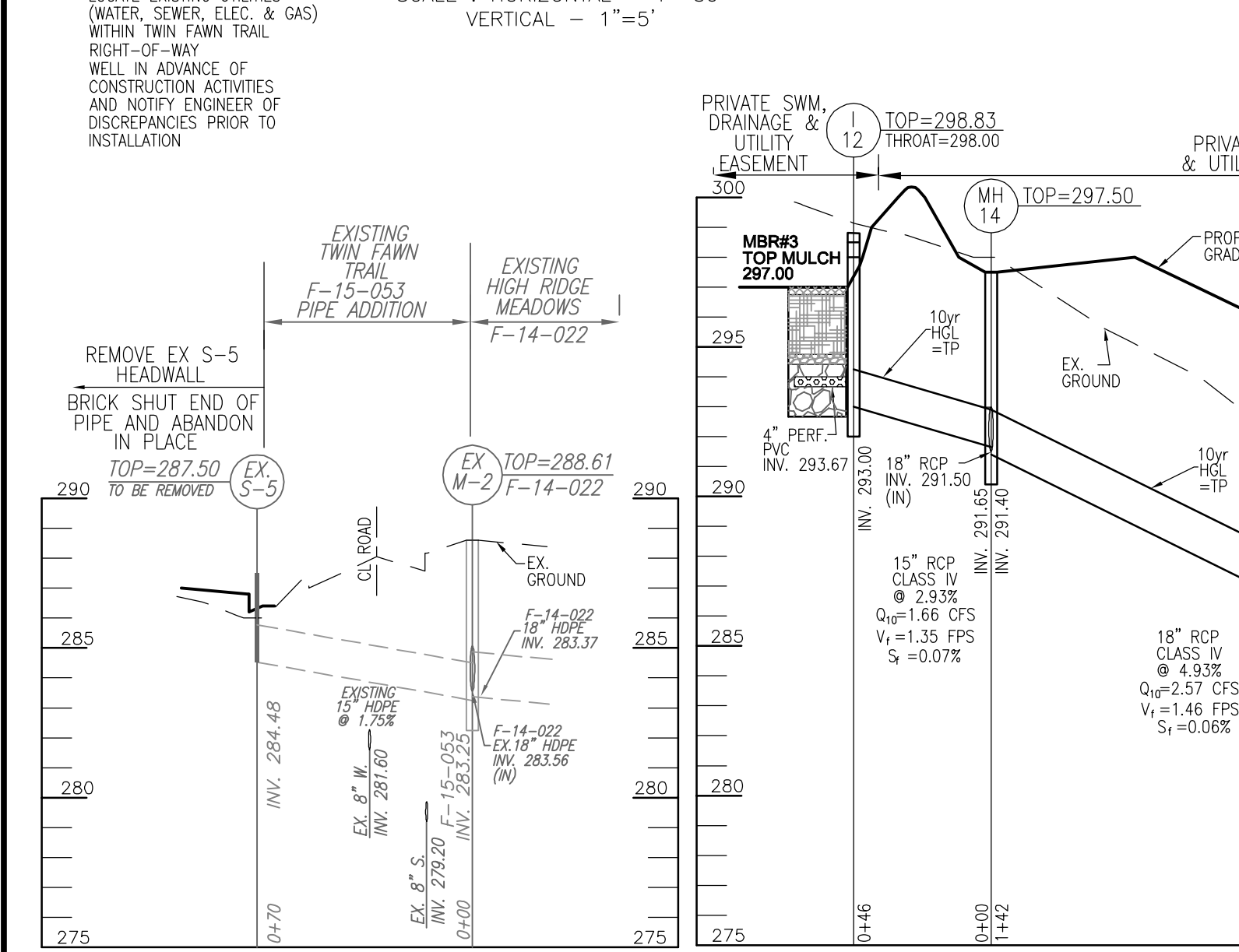
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



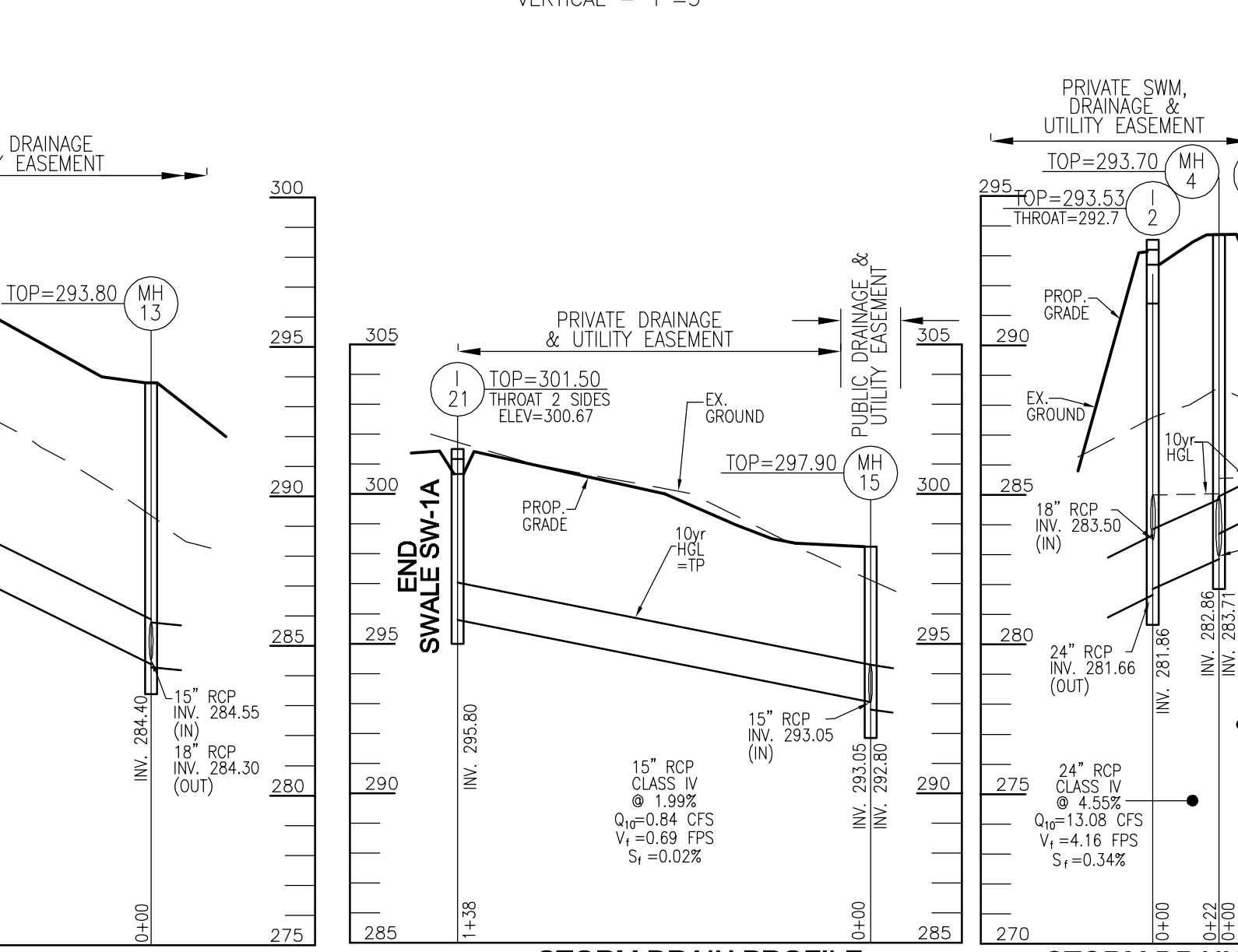
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



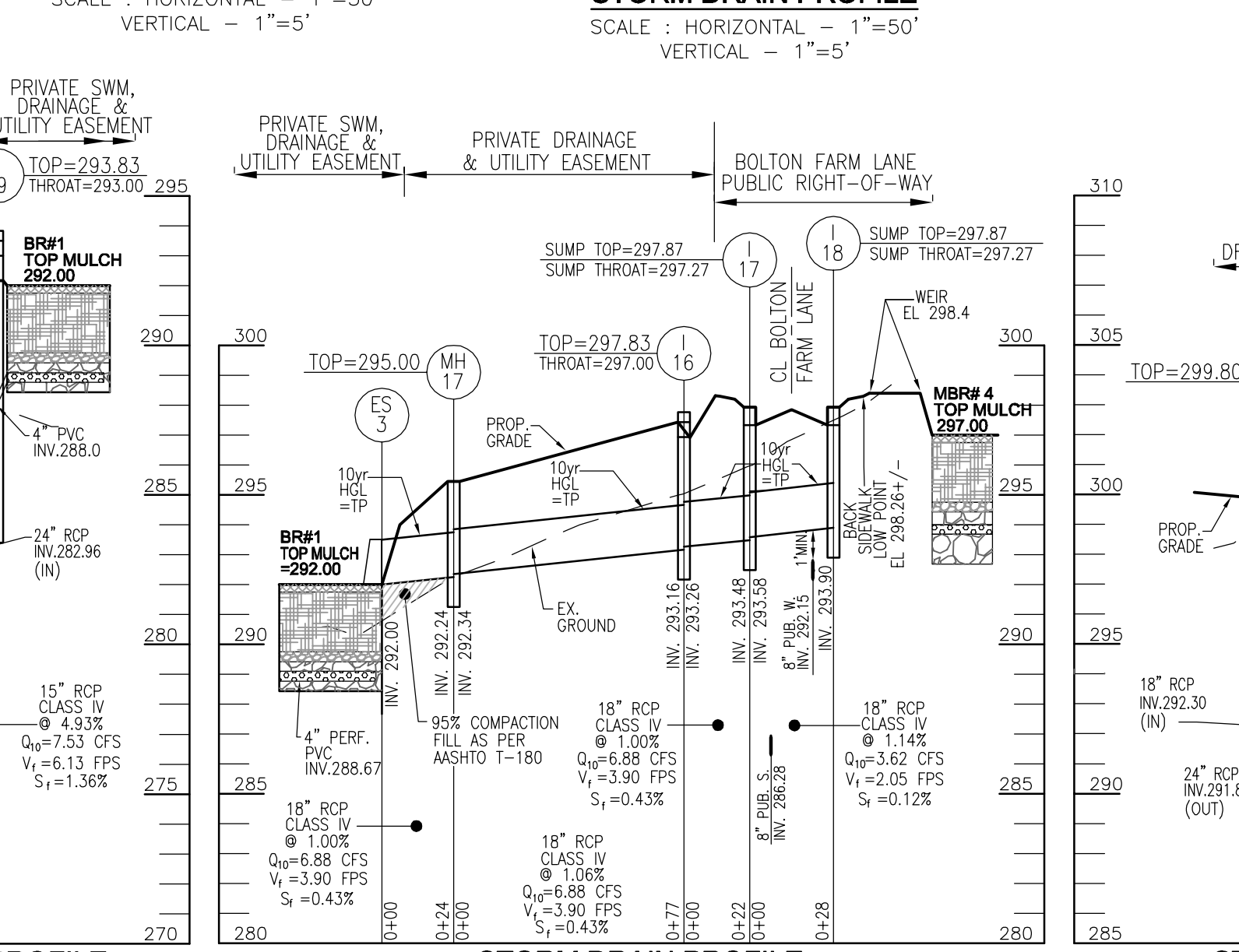
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



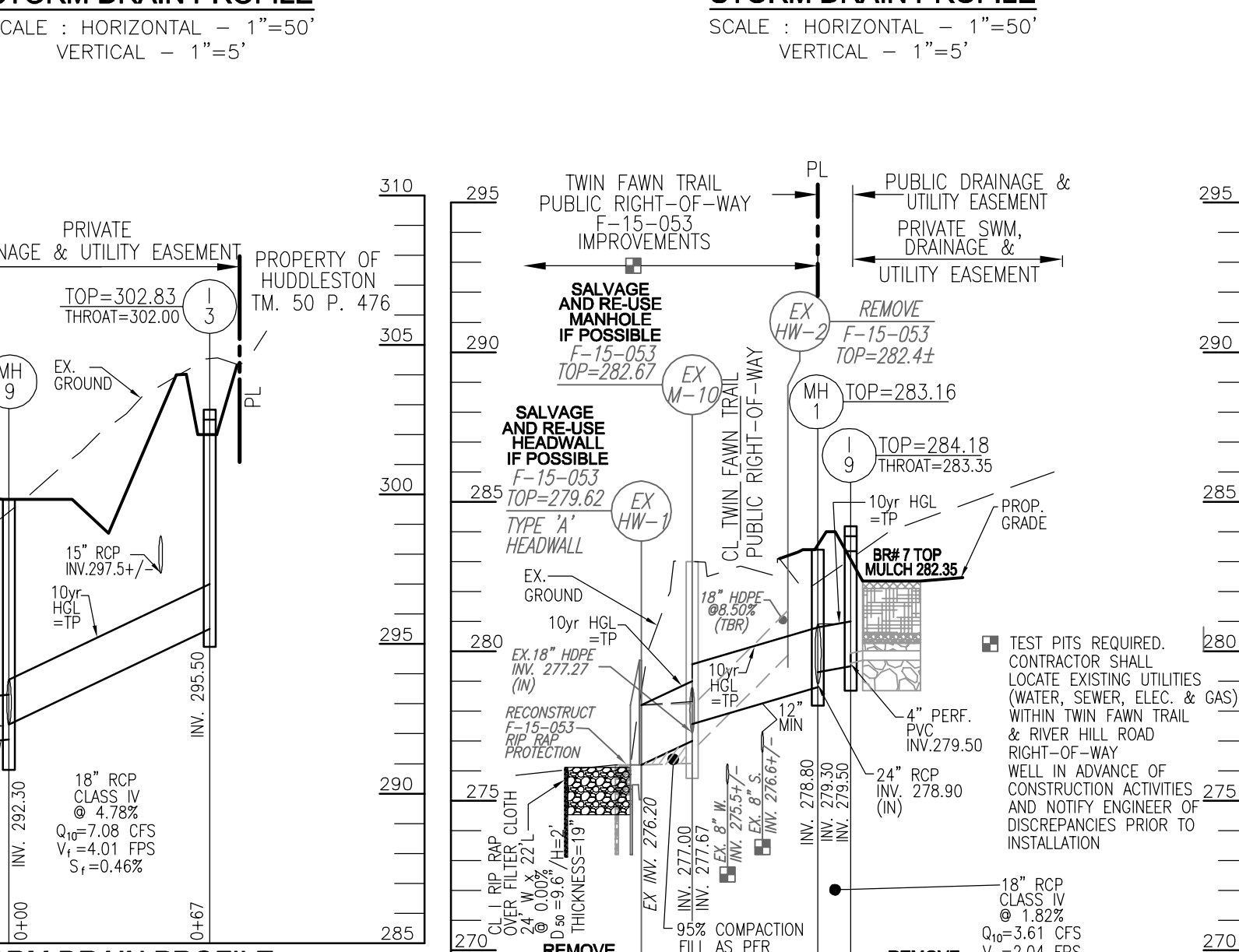
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



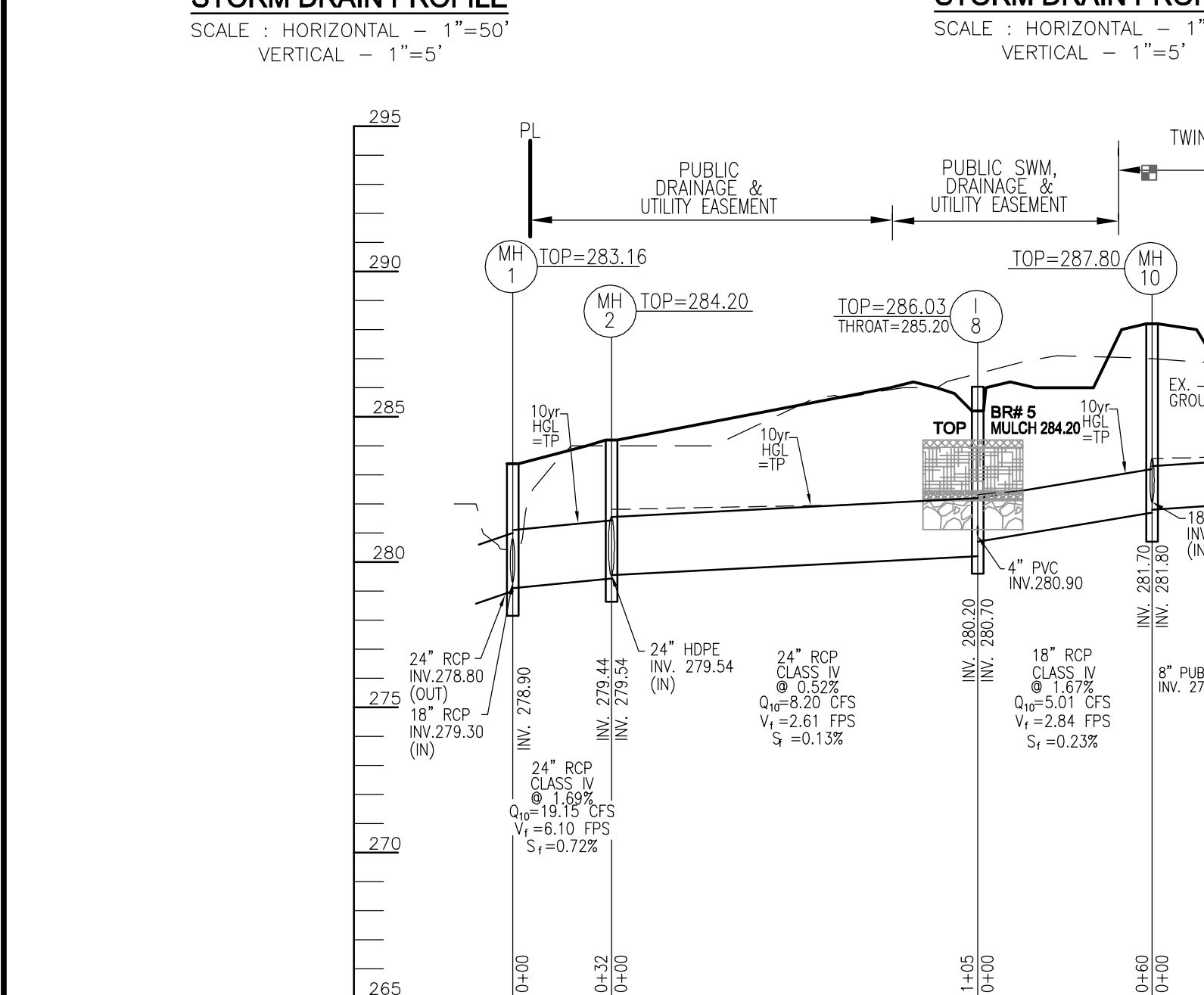
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



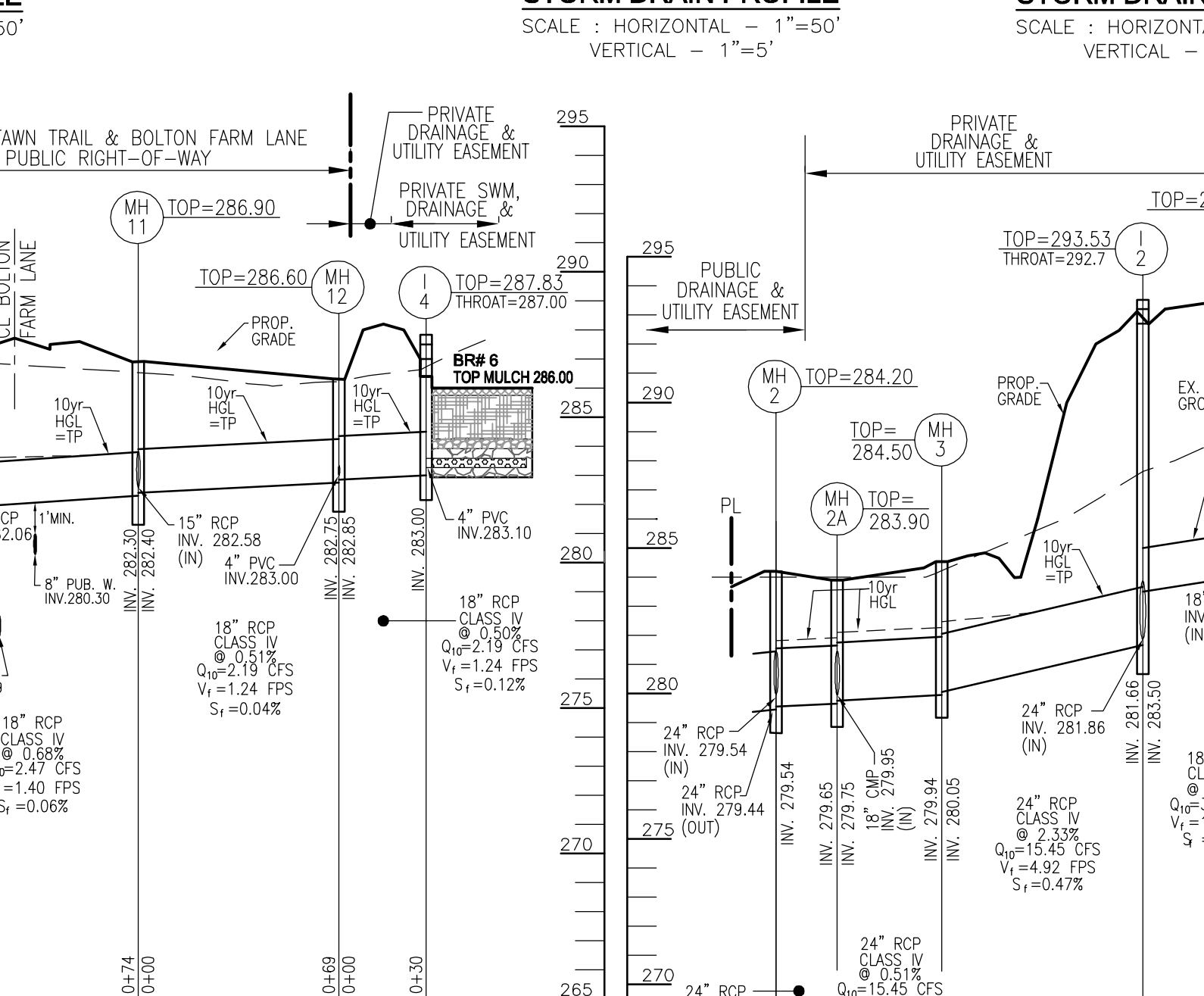
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



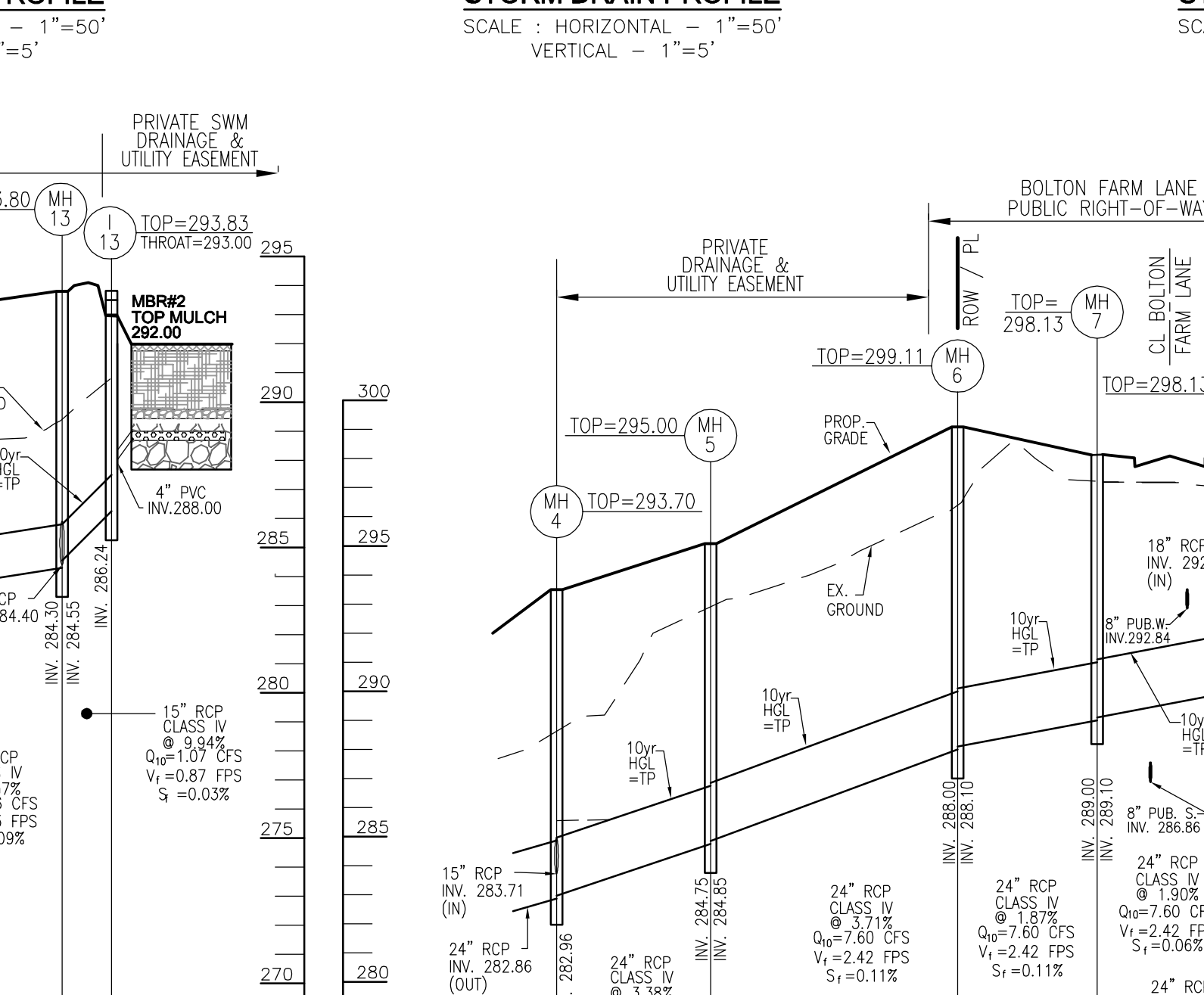
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



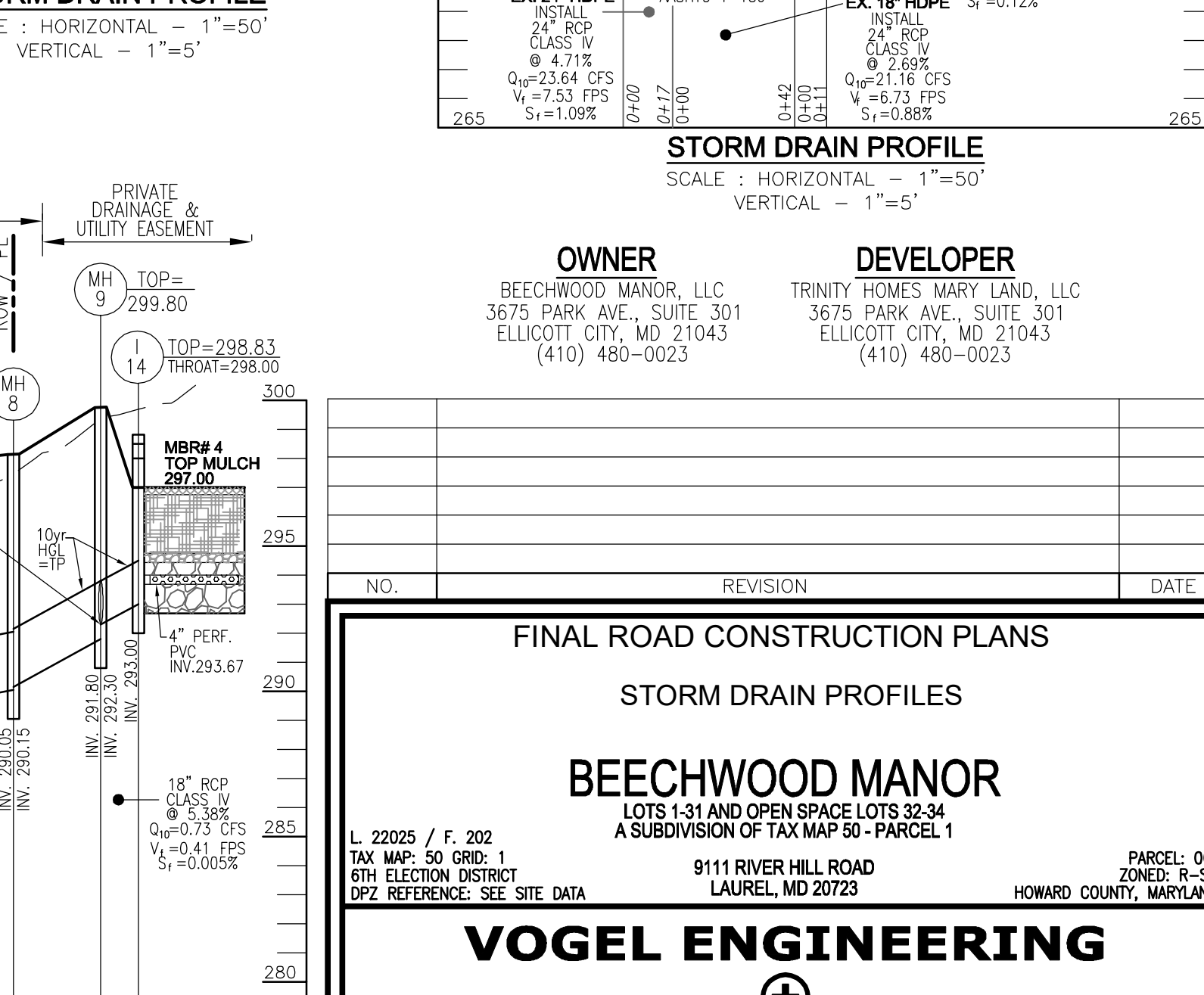
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

APPROVED: DEPARTMENT OF PUBLIC WORKS
 10/27/2023
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 10/26/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 10/27/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF PUBLIC WORKS
 10/27/2023
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 10/26/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 10/27/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF PUBLIC WORKS
 10/27/2023
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 10/26/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 10/27/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF PUBLIC WORKS
 10/27/2023
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 10/26/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 10/27/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT

OWNER
BEECHWOOD MANOR, 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

FINAL ROAD CONSTRUCTION PLANS
STORM DRAIN PROFILES
BEECHWOOD MANOR
 LOTS 1-31 AND OPEN SPACE LOTS 32-34
 A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L. 22025 / F. 202
 TAX MAP: 50 GRID: 2
 6TH ELECTION DISTRICT
 DPZ REFERENCE: SEE SITE DATA

9111 RIVER HILL ROAD
 LAUREL, MD 20723

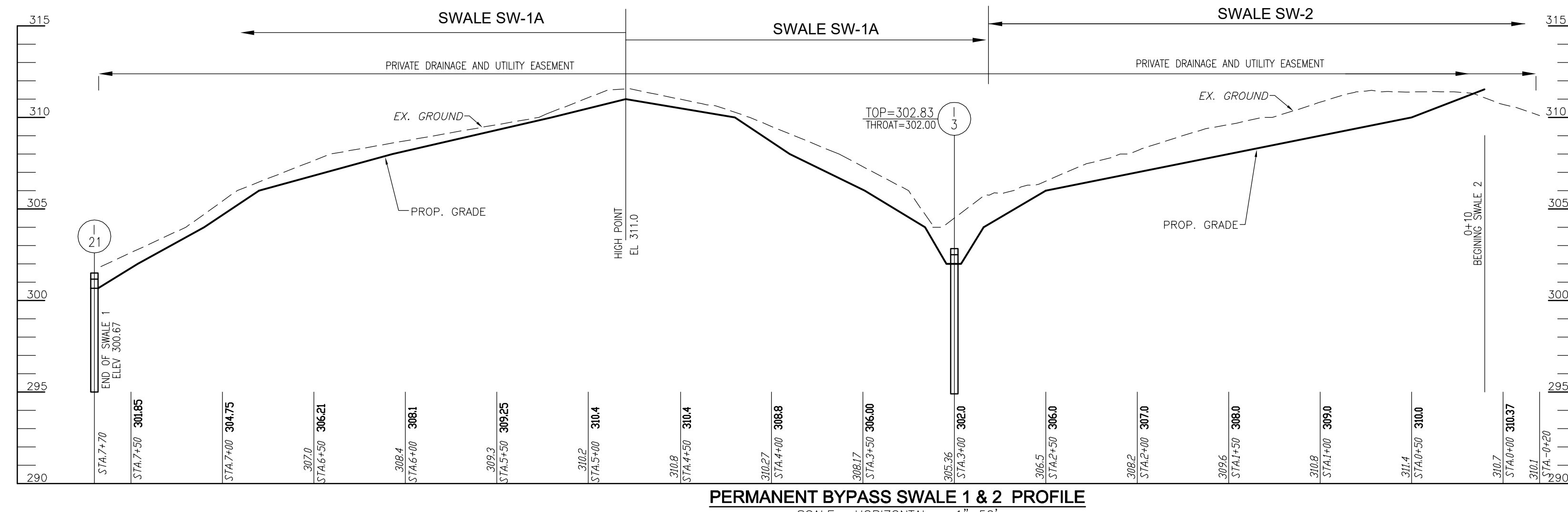
PARCEL: 001
 ZONED: R-3C
 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLCOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

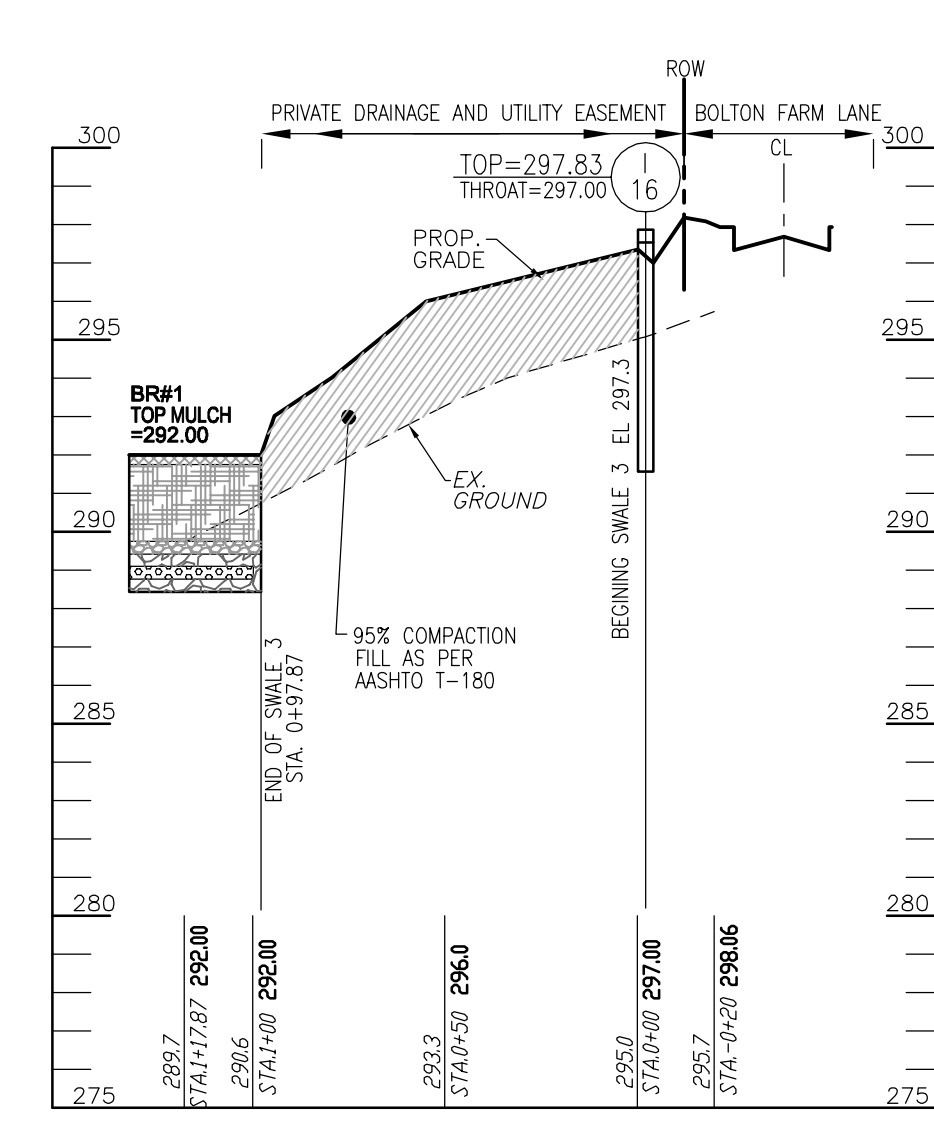
PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS
 WERE PREPARED OR APPROVED BY ME, AND
 THAT I AM A DULY LICENSED PROFESSIONAL
 ENGINEER UNDER THE LAWS OF THE STATE
 OF MARYLAND, LICENSE NO. 16193
 EXPIRES: 12/31/2024

DESIGN BY: EDS
 DRAWN BY: JMR/KG
 CHECKED BY: RHV
 DATE: AUGUST 2023
 SCALE: AS SHOWN
 W.O. NO.: 17-26

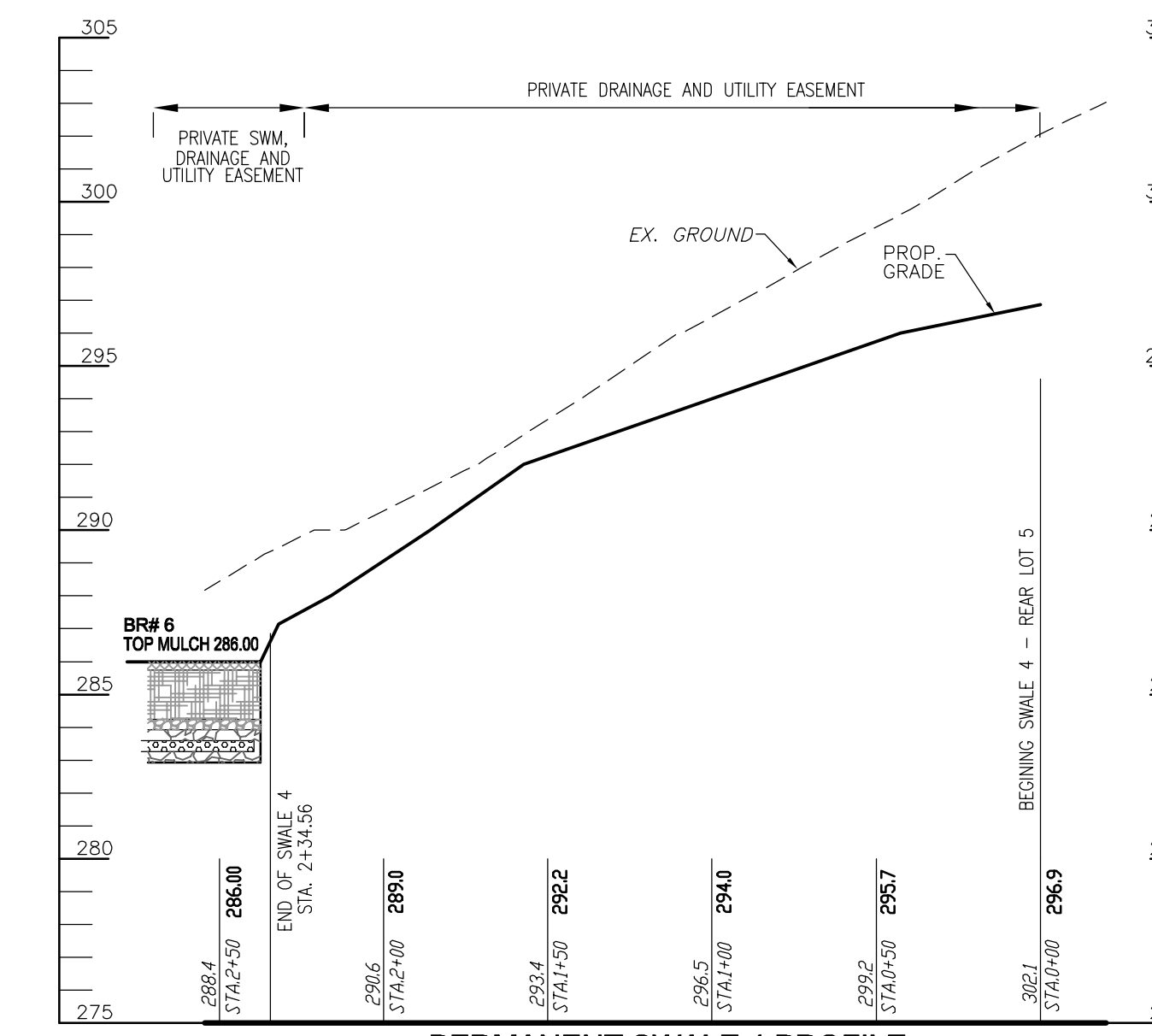
10 SHEET OF 21



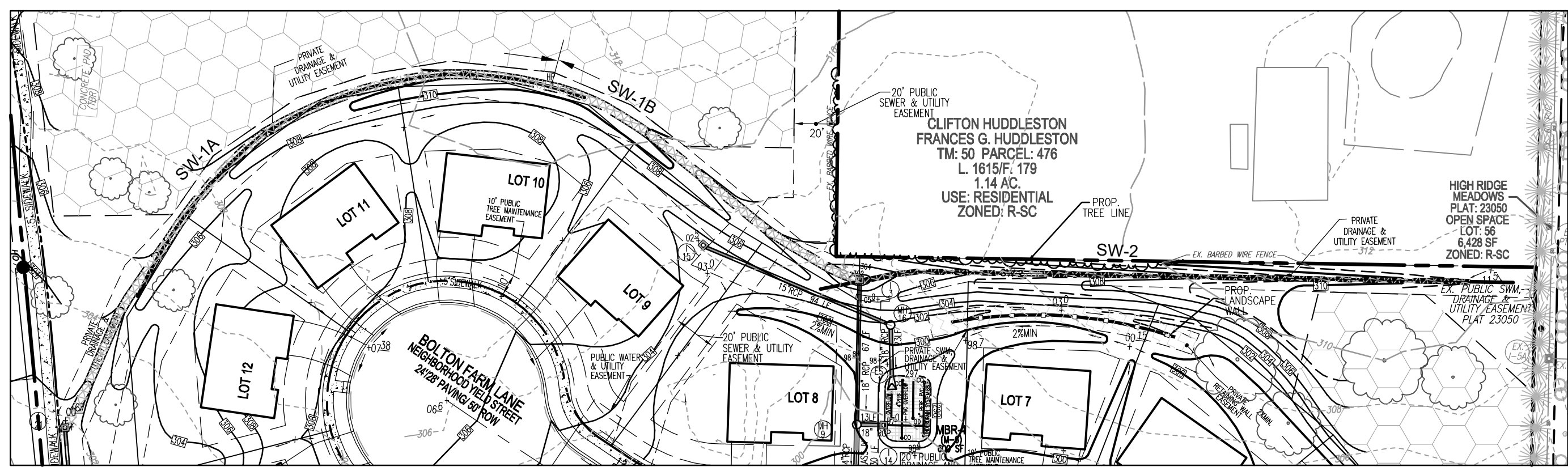
PERMANENT BYPASS SWALE 1 & 2 PROFILE
SCALE: HORIZONTAL = 1"=50'
VERTICAL = 1"=5'



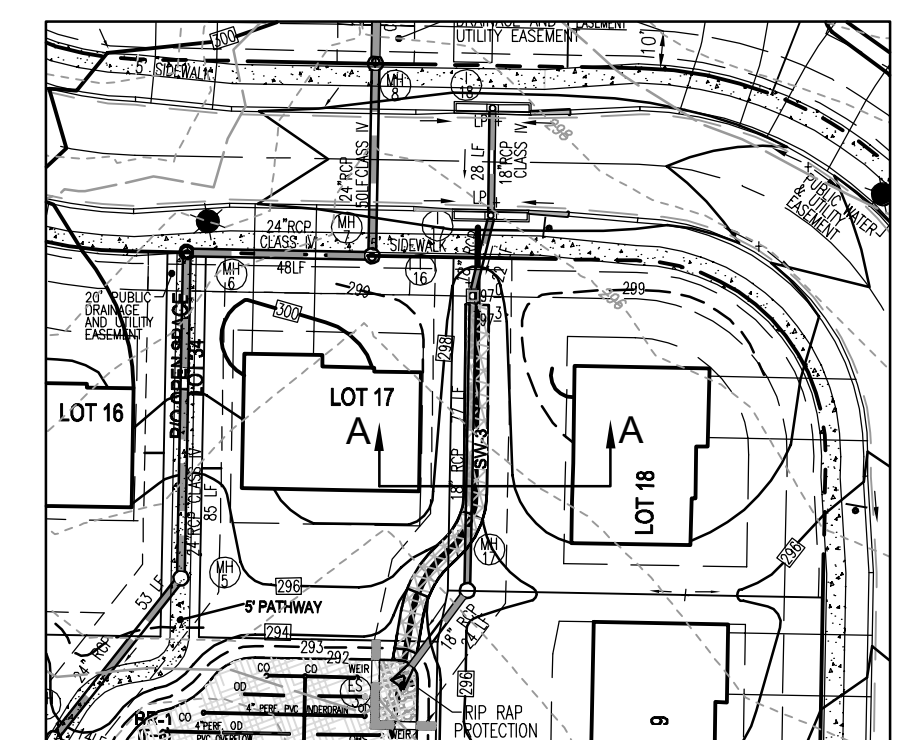
PERMANENT SWALE 3 PROFILE
SCALE: HORIZONTAL = 1"=50'
VERTICAL = 1"=5'



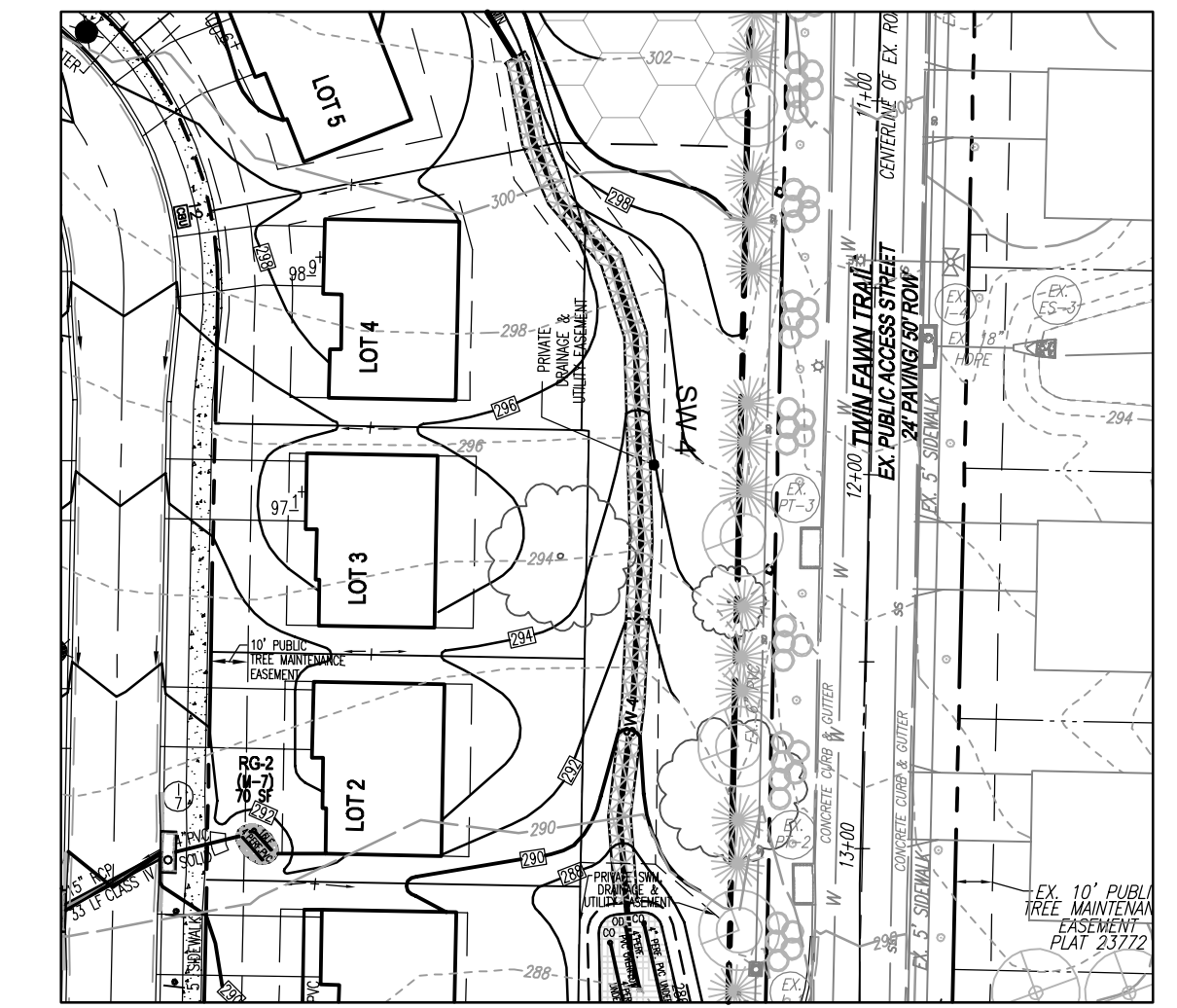
PERMANENT SWALE 4 PROFILE
SCALE: HORIZONTAL = 1"=50'
VERTICAL = 1"=5'



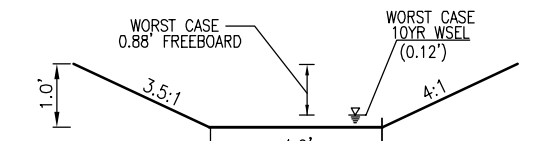
BYPASS GRASS SWALE #1 & 2
SCALE: 1"=50'



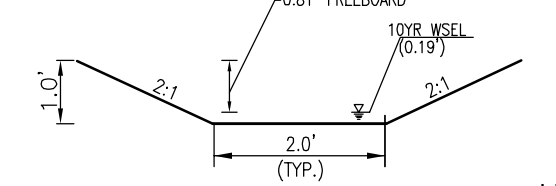
PERMANENT GRASS SWALE #3
SCALE: 1"=50'



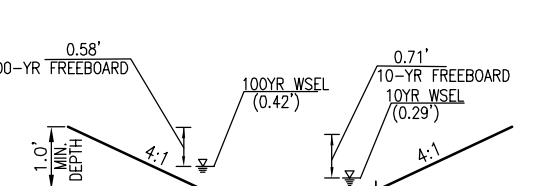
PERMANENT GRASS SWALE #4
SCALE: 1"=50'



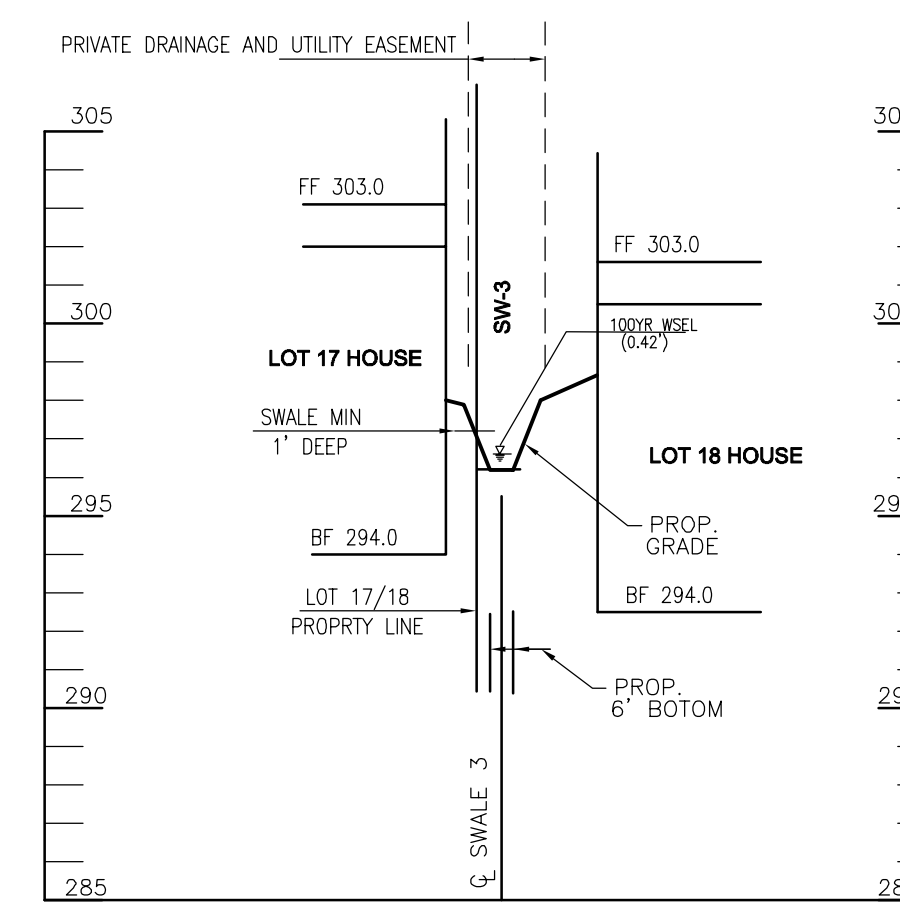
PERMANENT BYPASS GRASS SWALE SW-1A & SW-1B
TYPICAL CROSS SECTION (NOT TO SCALE)
SWALE 1A
 $Q_{10} = 1.05$ cfs $V_{10} = 1.93$ fps $d_{90} = 0.12$
CHANNEL SLOPE = 2.3%
LINE CHANNEL W/ TSSMC (1.5 LB/FT²)
SEE DETAIL SHEET 6



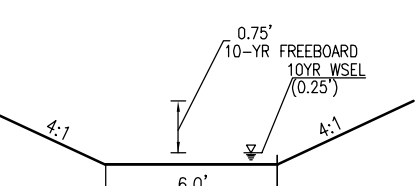
PERMANENT BYPASS GRASS SWALE SW-2
TYPICAL CROSS SECTION (NOT TO SCALE)
 $Q_{10} = 0.98$ cfs $V_{10} = 2.16$ fps $d_{90} = 0.19$
CHANNEL SLOPE = 2.2%
LINE CHANNEL W/ TSSMC (1.5 LB/FT²)
SEE DETAIL SHEET 6



PERMANENT GRASS SWALE SW-3
TYPICAL CROSS SECTION (NOT TO SCALE)
 $Q_{10} = 6.80$ cfs $V_{10} = 3.27$ fps $d_{90} = 0.27$
CHANNEL SLOPE = 2.8%
LINE CHANNEL W/ TSSMC (1.5 LB/FT²)
SEE DETAIL SHEET 6
* $Q_{100} = 13.16$ cfs $V_{100} = 4.06$ fps $d_{90} = 0.42$
CHANNEL SLOPE = 2.8%
*ULTIMATE HYDROLOGY



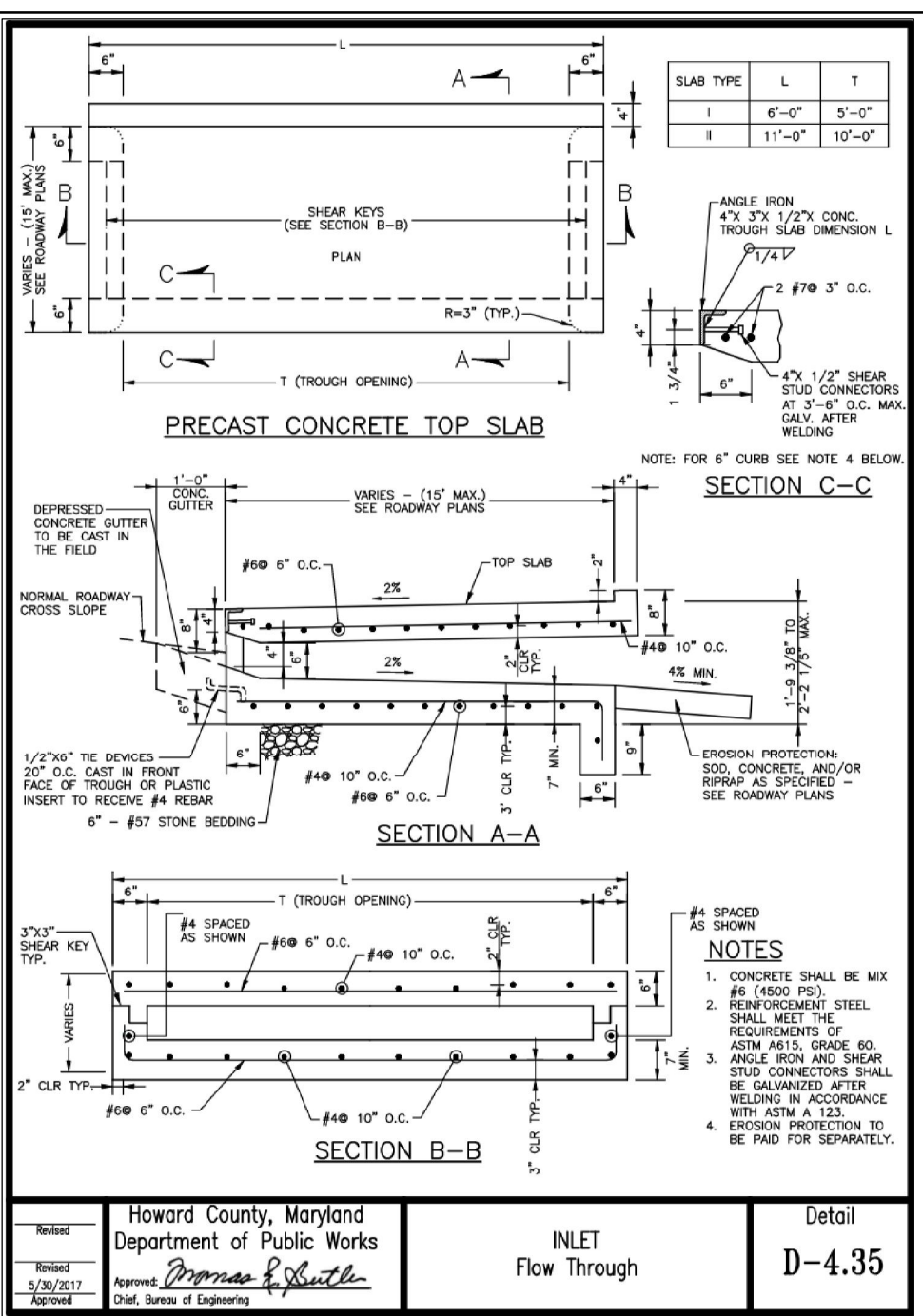
PERMANENT SWALE 3 SECTION A-A
SCALE: HORIZONTAL = 1"=50'
VERTICAL = 1"=5'



PERMANENT GRASS SWALE SW-4
TYPICAL CROSS SECTION (NOT TO SCALE)
 $Q_{10} = 6.58$ cfs $V_{10} = 3.84$ fps $d_{90} = 0.25$
CHANNEL SLOPE = 4.7%
LINE CHANNEL W/ TSSMC (1.5 LB/FT²)
SEE DETAIL SHEET 6

OWNER
BEECHWOOD MANOR, LLC
3675 PARK AVE., SUITE 301
ELLIOTT CITY, MD 21043
(410) 480-0023

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



Howard County, Maryland
Department of Public Works
Approved: *[Signature]* 10/27/2023
CHIEF, BUREAU OF HIGHWAYS

Approved: *[Signature]* 10/26/2023
CHIEF, DEVELOPMENT ENGINEERING DIVISION

Approved: *[Signature]* 10/27/2023
CHIEF, DIVISION OF LAND DEVELOPMENT

Size	Class	Total Length*
15"	RCP CLASS IV	54
18"	RCP CLASS IV	429
24"	RCP CLASS IV	315

* The total length of pipe is linear feet only.

Size	Class	Total Length*
12"	RCP CLASS IV	36
15"	RCP CLASS IV	334
18"	RCP CLASS IV	511
24"	RCP CLASS IV	286

* The total length of pipe is linear feet only.

STR #	TYPE	DEPTH REQ.	INV. IN	INV. OUT	TOP ELEV.	DETAIL	LOCATION	PUBLIC/PRIVATE	REMARKS
1	PASS THRU	D-13/7	286.75	286.51	D-4.25	16+42.80	12.42' RT	PUBLIC	H=10'0" T=10'0"

NOTE: INLET DEPTH AS NOTED. DIMENSION FROM 0.00 REF. FACE OF CURB TO BACK OF 4" RCP.

STR #	TYPE	INV. IN	INV. OUT	TOP ELEV.	DETAIL	LOCATION	REMARKS
L-2	TYPE 'D' INLET	283.80	281.86	281.66	D-4.10	E= 1349836.78 N= 520255.31	THROAT 4 SIDES
L-3	TYPE 'D' INLET	-	285.90	282.83	D-4.10	E= 1350128.78 N= 520483.16	THROAT 4 SIDES
L-4	TYPE 'D' INLET	283.10	283.00	287.83	D-4.10	E= 1350240.83 N= 520808.84	THROAT 4 SIDES
L-5	TYPE 'A-5' INLET	-	282.66	UPPER 286.74 LOWER 286.68	D-4.02	E= 1350143.87 N= 520013.56	-
L-6	TYPE 'A-10' INLET	285.88	285.20	285.88	D-4.03	E= 1350120.87 N= 52106.92	SPLITTER INLET
L-7	TYPE 'A-10' INLET	287.34	287.24	UPPER 290.83 LOWER 290.39	D-4.03	E= 1350150.00 N= 528113.11	-
L-8	TYPE 'D' INLET	280.70	280.90	286.20	D-4.10	E= 1350028.77 N= 520805.70	THROAT 4 SIDES
L-9	TYPE 'D' INLET	279.50	279.50	284.18	D-4.10	E= 1349891.08 N= 528142.61	THROAT 4 SIDES
L-11	TYPE 'A-10' INLET	-	282.25	UPPER 297.70 LOWER 297.33	D-4.03	E= 1349711.81 N= 528424.18	-
L-12	TYPE 'D' INLET	293.30	293.00	298.83	D-4.10	E= 1349783.50 N= 528435.77	THROAT 4 SIDES
L-13	TYPE 'D' INLET	288.00	286.24	293.83	D-4.10	E= 1349906.13 N= 528299.72	THROAT 4 SIDES
L-14	TYPE 'D' INLET	293.40	293.00	298.83	D-4.10	E= 1350116.42 N= 528426.63	THROAT 4 SIDES
L-15	TYPE 'D' INLET	-	293.00	303.33	D-4.10	E= 1350006.76 N= 528532.57	THROAT 2 SIDES
L-16	TYPE 'D' INLET	293.26	293.16	297.83	D-4.10	E= 1350097.24 N= 528314.21	THROAT 4 SIDES
L-17	COS-20	293.68	293.48	SUMP 297.87	MD-374.63	E= 1350108.77 N= 528355.68	-
L-18	COS-20	-	293.90	SUMP 297.87	MD-374.63	E= 1350116.76 N= 528381.68	-
L-19	TYPE 'D' INLET	288.00	284.40	293.83	D-4.10	E= 1349965.81 N= 528256.77	THROAT 4 SIDES
L-20	TYPE 'D' INLET	283.14	282.82	287.83	D-4.10	E= 1349886.51 N= 528221.71	THROAT 2 SIDES
L-21	TYPE 'D' INLET	-	296.80	287.83	D-4.10	E= 1349762.62 N= 52854.14	THROAT 2 SIDES
EB-1	18" HDPE END SECTION	-	297.80	296.50	-	E= 1350127.88 N= 528445.84	-
EB-2	12" HDPE END SECTION	-	284.20	285.20	-	E= 1350083.05 N= 528108.24	-
EB-3	18" HDPE END SECTION	-	292.00	293.50	-	E= 1350048.44 N= 528232.70	-

STR #	TYPE	INV. IN	INV. OUT	TOP ELEV.	DETAIL	LOCATION	REMARKS
EX-MH-10	4" MANHOLE	277.00	277.67	276.27	-	E= 1349883.73 N= 528091.22	F-15-893 (4)
EX-MH-11	TYPE 'A' HEADWALL	279.50	279.90	279.90	-	E= 1349857.85 N= 52075.72	F-15-893 (4)
MH-1	4" MANHOLE	279.50	279.90	281.18	05.12	E= 1349879.11 N= 52819.78	(1), SUMP # 16290.90
MH-2	4" MANHOLE	279.54	279.54	284.20	05.12	E= 1349911.87 N= 528131.31	-
MH-2A	4" MANHOLE	279.96	279.76	279.65	05.12	E= 1349919.45 N= 528151.11	-
MH-3	4" MANHOLE	280.00	279.94	284.50	05.12	E= 1349826.70 N= 528186.15	-
MH-4	4" MANHOLE	283.71	282.26	282.90	05.12	E= 1349856.86 N= 528264.61	-
MH-5	4" MANHOLE	284.86	284.75	295.00	05.12	E= 1350006.76 N= 528284.61	-
MH-6	4" MANHOLE	288.10	288.00	299.11	05.12	E= 1350031.21 N= 528373.64	(1)
MH-7	4" MANHOLE	289.10	289.00	298.13	05.12	E= 1350076.13 N= 528386.37	(1)
MH-8	4" MANHOLE	290.15	290.05	298.13	05.12	E= 1350094.13 N= 528403.02	(1)
MH-9	4" MANHOLE	292.30	292.30	291.80	05.12	E= 1350104.91 N= 528431.06	-
MH-10	4" MANHOLE	292.06	291.80	281.70	05.12	E= 1350082.23 N= 528071.57	-
MH-11	4" MANHOLE	292.00	292.00	282.90	05.12	E= 1350147.30 N= 528129.29	-
MH-12	4" MANHOLE	282.85	282.00	282.75	05.12	E= 1350212.22 N= 52798.29	-
MH-13	4" MANHOLE	284.55	284.40	292.80	05.12	E= 1349886.43 N= 528285.78	-
MH-14	4" MANHOLE	291.65	291.50	297.50	05.12	E= 1349810.66 N= 528093.13	-
MH-15	4" MANHOLE	293.00	292.90	292.90	05.12	E= 134973.78 N= 52843.06	-
MH-16	4" MANHOLE	297.37	297.12	302.00	05.12	E= 1350135.13 N= 52848.73	-
MH-17	4" MANHOLE	292.34	292.24	295.00	05.12	E= 1350069.70 N= 528264.09	-
MH-18	4" SHALLOW MH	280.35	280.35	282.87	05.12	E= 1349812.73 N= 528147.89	(2)
MH-19	4" MANHOLE	282.25	282.00	287.50	05.12	E= 1349885.57 N= 528194.54	(2)
MH-20	4" MANHOLE	290.00	283.60	294.00	05.12	E= 1349989.84 N= 528301.61	-

(1) OFFSET MANHOLE TOP SECTION, FRAME & COVER ROTATED AWAY FROM ROADWAY
 (2) OFFSET MANHOLE TOP SECTION, FRAME & COVER ROTATED TOWARD ROADWAY
 (3) REMOVE EX-F-15-893 NET-1A AND REPLACE WITH 4" SHALLOW MANHOLE
 (4) SALVAGE AND REUSE STRUCTURE IF POSSIBLE

FINAL ROAD CONSTRUCTION PLANS
SWALE AND STORM DRAIN PROFILES

BEECHWOOD MANOR
LOTS 1-31 AND OPEN SPACE LOTS 32-34
A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L 20205 / F 202
TAX MAP: 50 GRID: 1
6TH ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

9111 RIVER HILL ROAD
LAUREL, MD 20723

PARCEL: 001
ZONED: R-3C
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLIOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: EDS
DRAWN BY: JMR/KG
CHECKED BY: RHW
DATE: AUGUST 2023
SCALE: AS SHOWN
W.O. NO.: 17-26

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: 08-27-2024

11 SHEET OF 21

SPECIMEN TREE CHART					
NO.	SIZE (IN. DBH)	CRZ (FEET RADII)	COMMON NAME	CONDITION	COMMENTS
ST 1	41"	61.5'	SILVER MAPLE	POOR CONDITION, NOTLITE DIEBACK, LIMB DAMAGE	TO REMAIN
ST 2	30.5"	45.75'	SILVER MAPLE	POOR CONDITION, WIRE FENCING EMBEDDED, TWIN STEMS AT BREAST HEIGHT	TO REMAIN
ST 3	38"	57'	SILVER MAPLE	POOR CONDITION, TRUNK ROT NOTED AND WIRE FENCING EMBEDDED IN TRUNK	TO BE REMOVED

THIS PROJECT IS SUBJECT TO WP-18-138. ON JULY 16, 2018, THE PLANNING DIRECTOR APPROVED YOUR REQUEST FOR AN ALTERNATIVE COMPLIANCE WITH SECTION 16.1205(A)(7), WHICH IDENTIFIES STATE CHAMPION TREES, TREES 75% OF THE DIAMETER OF STATE CHAMPION TREES, AND TREES 30" IN DIAMETER OR LARGER AS FOREST RETENTION PRIORITIES. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:

1. THE REMOVAL OF SPECIMEN TREE #3 SHALL BE MITIGATED WITH THE PLANTING OF TWO (2) SHADE TREES WITH A MINIMUM 3 1/2" CALIPER. THE TREES SHOULD BE A NATIVE SPECIES AND IDENTIFIED FOR SPECIMEN TREE MITIGATION ON THE FINAL LANDSCAPE PLAN.

2. THIS APPROVAL IS ONLY FOR THE REMOVAL OF SPECIMEN TREE #3. REMOVAL OF ADDITIONAL SPECIMEN TREES SHALL NECESSITATE THE SUBMITTAL OF A NEW ALTERNATIVE COMPLIANCE REQUEST.

SPECIMEN TREE REPLACEMENT - PLANTING SCHEDULE				
SYM	KEY	QUAN	BOTANICAL NAME	CAT
QC	2	2	QUERCUS COCCINEA SCARLET OAK	B & B

-REPLACEMENT TREES REQUIRED PER THE APPROVED REMOVAL OF 2 SPECIMEN TREES IN ACCORDANCE WITH WP-18-138

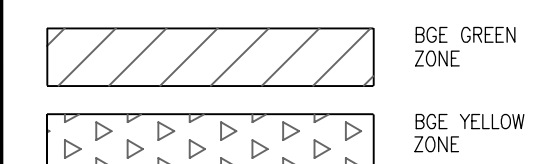
DPZ'S POLICIES GOVERNING THE PLACEMENT OF LANDSCAPING AND STREET TREES IN PROXIMITY TO BGE'S POWER LINES OR TRANSMISSION RIGHT-OF-WAY ARE BASED ON BGE'S PUBLISHED "PLANTING ZONE CONCEPT" WHICH SPECIFIES THE MAXIMUM ALLOWABLE SIZE OF PLANT MATERIALS FOR THREE DEFINED ZONES. AS THE DISTANCE FROM BGE EQUIPMENT INCREASES, SO DOES THE SIZE OF THE ALLOWABLE PLANT MATERIALS. THESE THREE ZONES ARE DEFINED AS FOLLOWS:

ZONE	DISTANCE FROM THE BGE POWER LINE OR TRANSMISSION RIGHT-OF-WAY	MAXIMUM HEIGHT OF VEGETATION
GREEN	UP TO 20 FEET	25 FEET
YELLOW	BETWEEN 20 FEET AND 45 FEET	40 FEET
RED	BEYOND 45 FEET	OVER 40 FEET

B G & E NOTES:

- BGE RESERVES THE RIGHT TO TRIM, TOP OR CUT DOWN ANY TREE IN PROXIMITY TO THE LINE THAT IN THE OPINION OF BGE SHALL BE DEEMED A HAZARD TO THE SAFE AND RELIABLE DELIVERY OF ELECTRICITY.
- THE DEPARTMENT OF PLANNING AND ZONING MAY AUTHORIZE THE TRIMMING OR REMOVAL OF TREES OR VEGETATION IMMEDIATELY ADJACENT TO THE BGE R/W OR EASEMENT, IF BGE DETERMINES THE TREES ARE COMPROMISING THE SAFETY OF A TRANSMISSION LINE LOCATED WITHIN THEIR UTILITY R/W OR EASEMENT. IF BGE INTENDS TO TRIM OR REMOVE TREES WITHIN A FOREST CONSERVATION EASEMENT, A LETTER SPECIFYING THE LOCATION AND SCOPE OF WORK, NEEDS TO BE SENT TO DPZ AT LEAST 30 DAYS IN ADVANCE OF UNDERTAKING THE WORK. DPZ UNDERSTANDS CONSTELLATION ENERGY'S NEED TO PROTECT ITS TRANSMISSION LINES AND WILL NOT UNREASONABLE WITH HOLD PERMISSION.
- CALL UTILITY TO MARK UP THE LOCATION OF EXISTING GAS LINE, BEFORE PLANTING STREET TREES ALONG RIVER HILL ROAD AND TWIN FAWN TRAIL & PLANT STREET TREES 10' AWAY FROM EXISTING GASLINE AS REQUIRED.

BGE LEGEND:



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
CaB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	C	24	NO
GdB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	24	NO

-SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE -HOWARD COUNTY SOILS MAP NUMBER 26 - LAUREL, MD
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

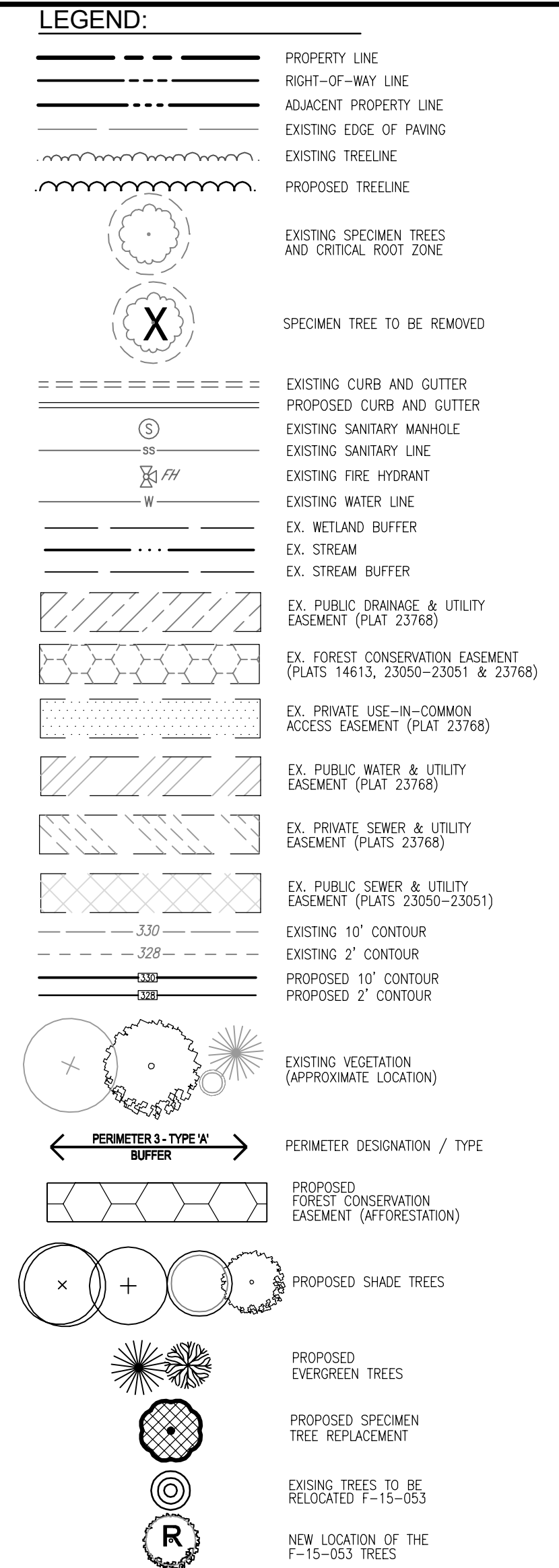
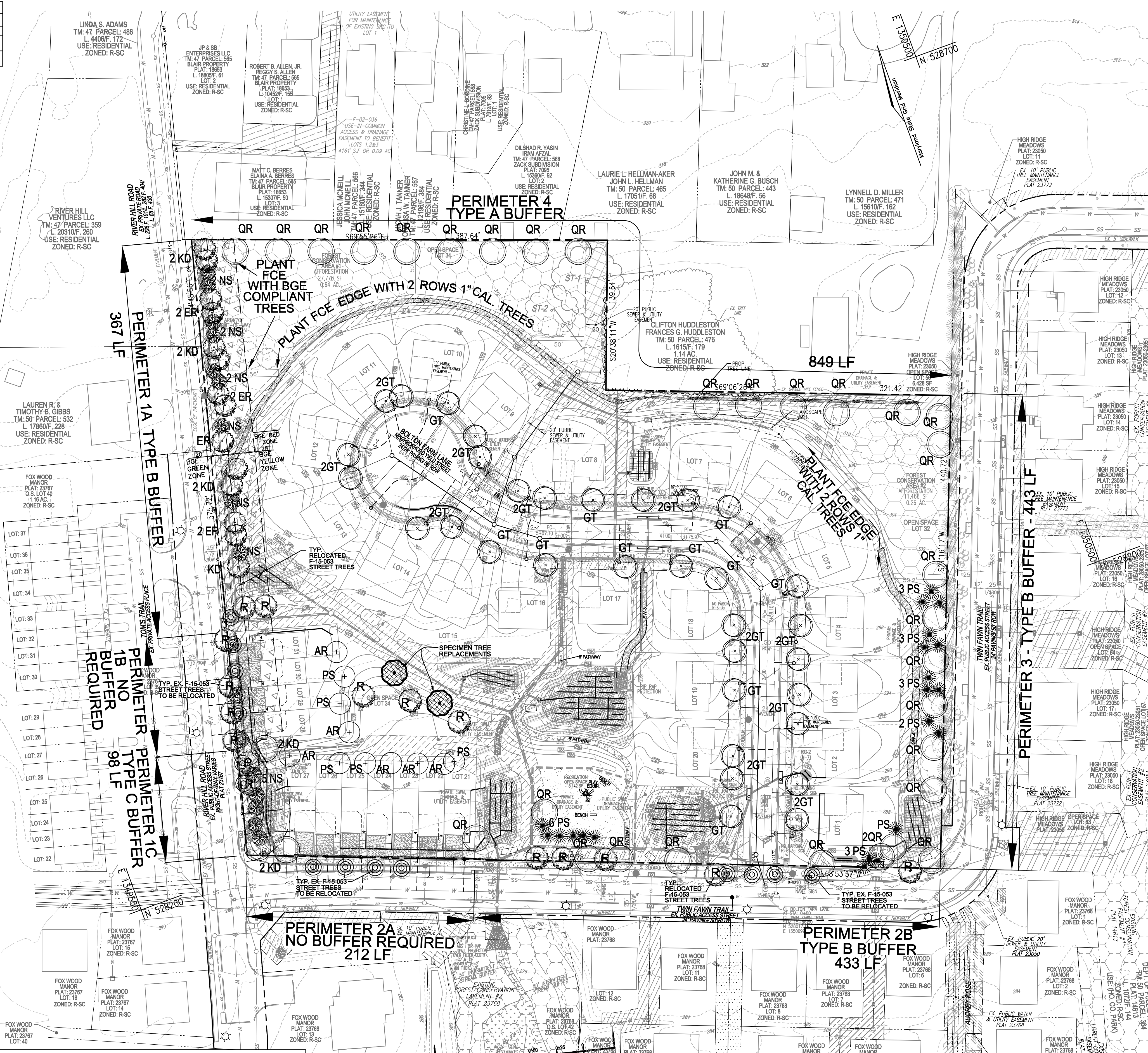
APPROVED: DEPARTMENT OF PUBLIC WORKS

DocuSigned by: *[Signature]* 10/27/2023
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DocuSigned by: *[Signature]* 10/26/2023
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DocuSigned by: *[Signature]* 10/27/2023
CHIEF, DIVISION OF LAND DEVELOPMENT DATE



- NOTES:**
- REFER TO SHEET 13 FOR LANDSCAPE SCHEDULE 'A', STREET TREE REQUIREMENTS AND LANDSCAPING NOTES AND DETAILS.
 - REFER TO SHEET 13 FOR FOREST CONSERVATION COMPUTATIONS, NOTES AND DETAILS.

OWNER
BEECHWOOD MANOR, LLC
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

FINAL ROAD CONSTRUCTION PLANS

LANDSCAPE PLAN

BEECHWOOD MANOR

LOTS 1-31 AND OPEN SPACE LOTS 32-34
A SUBDIVISION OF TAX MAP 50 - PARCEL 1

9111 RIVER HILL ROAD
LAUREL, MD 20723

VOGEL ENGINEERING

TIMMONS GROUP

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

PROFESSIONAL CERTIFICATE

DESIGN BY: EDS
DRAWN BY: JMR/KG
CHECKED BY: RHV
DATE: AUGUST 2023
SCALE: AS SHOWN
W.O. NO.: 17-26

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: 08-27-2024

12 SHEET OF **21**

DEVELOPER'S/BUILDER'S CERTIFICATE

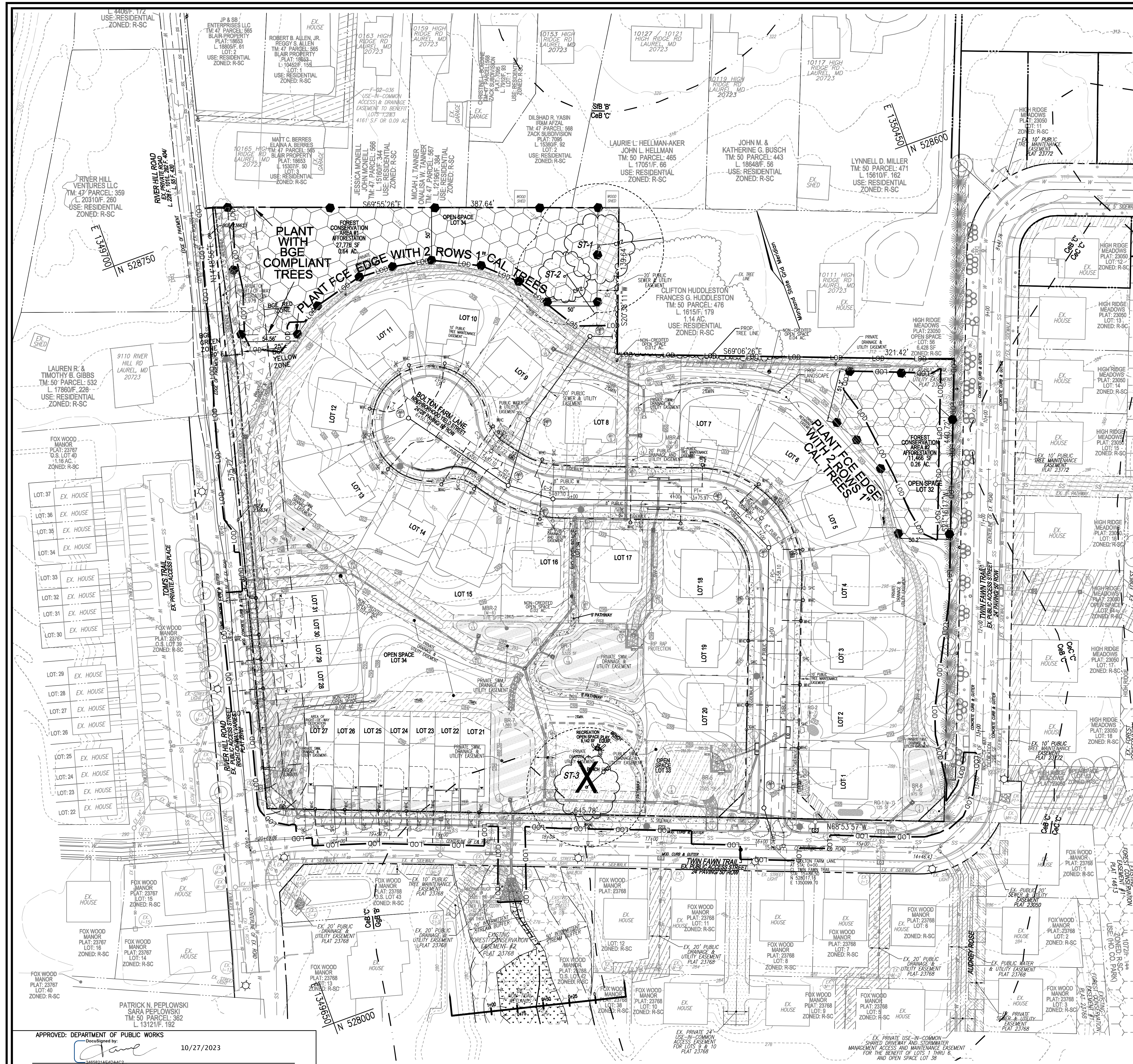
I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DocuSigned by: *[Signature]* 9/21/2023
SIGNATURE OF DEVELOPER DATE

LANDSCAPE PLAN

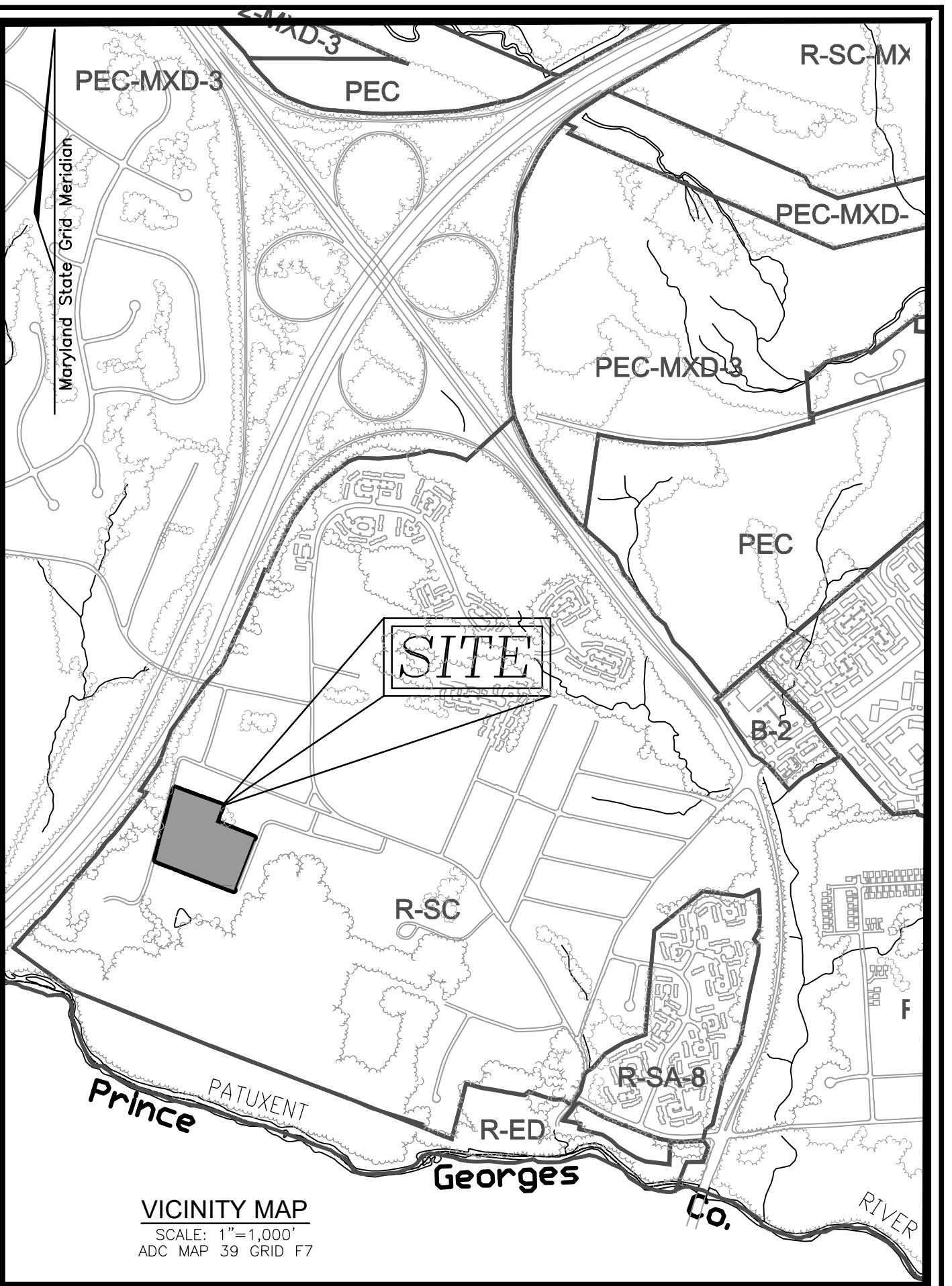
SCALE: 1"=50'

SCALE 1"=50'



LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING SPECIMEN TREES TO BE REMOVED
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EX. WETLAND BUFFER
- EX. STREAM
- EX. STREAM BUFFER
- STORM DRAIN
- EX. PUBLIC DRAINAGE & UTILITY EASEMENT (PLAT 23768)
- EX. PUBLIC TREE MAINTENANCE EASEMENT (PLATS 23772 & 23768)
- EX. FOREST CONSERVATION EASEMENT (PLAT 23768)
- EX. PRIVATE USE-IN-COMMON ACCESS EASEMENT (PLAT 23768)
- EX. PUBLIC WATER & UTILITY EASEMENT (PLAT 23768)
- EX. PRIVATE SEWER & UTILITY EASEMENT (PLATS 23768)
- EX. PUBLIC SEWER & UTILITY EASEMENT (PLATS 23050-23051)
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED FOREST CONSERVATION EASEMENT (AFFORESTATION)
- PR. PUBLIC SEWER EASEMENT
- PR. PUBLIC DRAINAGE EASEMENT



VICINITY MAP
SCALE: 1"=1,000'
ADC MAP 39 GRID F7

GENERAL NOTES

- WATERSHED NAME: PATUXENT RIVER UPPER
WATERSHED NUMBER: MDE 8-DIGIT 2131104
MDE 12-DIGIT WATERSHED #021311040940
- A. GROSS SITE AREA: 7.96 AC.
 - B. NET SITE AREA: 7.96 AC.
 - C. AREA OF 100-YEAR FLOODPLAIN: 0.00 AC.
 - D. AREA OF WETLANDS AND BUFFERS(ONSITE): 0.00 AC.
 - E. AREA OF STREAM AND BUFFERS(ONSITE): 0.00 AC.
 - F. AREA OF > 25% STEEP SLOPES: 0.00 AC.
 - G. EXISTING FOREST: 0.00 AC. (FSD)
 - H. ZONED: R-SC
 - I. EXISTING USE: RESIDENTIAL
 - J. PROPOSED USE: RESIDENTIAL

FOREST CONSERVATION WORKSHEET FOR

Net Tract Area									
A. Total (Gross) Tract Area	A =	8.00							
B. Area within 100-year Floodplain	B =	0.00							
C. Area of Wetlands and Buffers(ONSITE)	C =	0.00							
D. Net Tract Area	D =	8.00							
Land Use Category									
Insert the number "1" under the appropriate land use (limit to only one entry)									
	Rural LD	Rural MD	Resid. Suburban	Inst./Linear	Retail/Ind./Office	Mixed Use/PUD			
	0	0	1	0	0	0			
E. Afforestation Threshold									
F. Reforestation Threshold				(Net Tract Area x 15%)			E =	1.20	
				(Net Tract Area x 20%)			F =	1.60	
Existing Forest Cover									
G. Existing Forest Cover within the Net Tract Area	G =	0.00							
H. Area of Forest above Afforestation Threshold	H =	0.00							
I. Area of Forest above Reforestation Threshold	I =	0.00							
Break Even Point									
J. Break Even Point	J =	0.00							
K. Forest Clearing Permitted without Mitigation	K =	0.00							
Proposed Forest Clearing									
L. Total Area of Forest to be Cleared	L =	0.00							
M. Total Area of Forest to be Retained	M =	0.00							
Planting Requirements Inside Watershed									
N. Reforestation for Clearing above the Reforestation Threshold	N =	0.00							
P. Reforestation for Clearing below the Reforestation Threshold	P =	0.00							
Q. Credit for Retention above the Reforestation Threshold	Q =	0.00							
R. Total Reforestation Required	R =	0.00							
S. Total Afforestation Required	S =	1.20							
T. Total Reforestation and Afforestation Requirement	T =	1.20							
U. 75% of Total Obligation (Retention + Planting)	U =	0.90							
V. Planting Required Onsite to meet 75% Obligation	V =	0.90							
Planting Requirements Outside Watershed									
W. Total Planting within Development Site Watershed	W =	0.90							
X. Total Afforestation Required	X =	0.30							
Y. Remaining Planting within Watershed for Reforestation Credit	Y =	0.30							
Z. Reforestation for Clearing above the Reforestation Threshold	Z =	0.00							
AA. Reforestation for Clearing below the Reforestation Threshold	AA =	0.00							
BB. Credit for Retention above the Reforestation Threshold	BB =	0.00							
CC. Total Reforestation Required	CC =	0.00							
DD. Total Afforestation and Reforestation Requirement	DD =	0.30							

FOREST CONSERVATION LEGEND:

- EXISTING FOREST CONSERVATION EASEMENT
- PUBLIC FOREST CONSERVATION EASEMENT (AFFORESTATION)
- FOREST CONSERVATION SIGN

OWNER
BEECHWOOD MANOR, 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

FINAL ROAD CONSTRUCTION PLANS

FOREST CONSERVATION PLAN

BEECHWOOD MANOR

LOTS 1-31 AND OPEN SPACE LOTS 32-34
A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L. 20205 / F. 202
TAX MAP: 50 GRID: 1
6TH ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

9111 RIVER HILL ROAD
LAUREL, MD 20723

PARCEL: 001
ZONED: R-SC
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

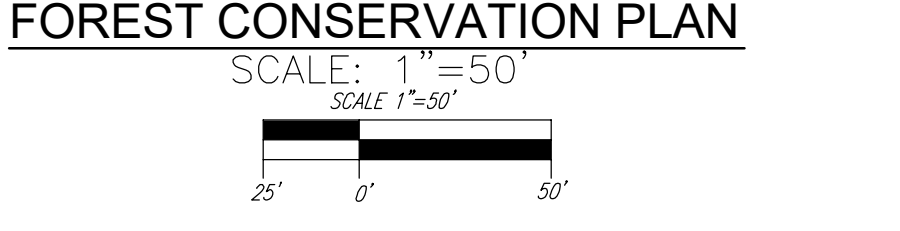
TIMMONS GROUP

3300 NORTH RIDGE ROAD, SUITE 110, ELLCOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

SOILS LEGEND

SYMBOL	NAME/DESCRIPTION	GROUP	K _f FACTOR	ERODIBLE
C8B	CHILLUM LOAM, 2 TO 3 PERCENT SLOPES	C	.24	NO
C8B	GLENELO LOAM, 3 TO 8 PERCENT SLOPES	B	.24	NO

—SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE DECEMBER 2022.
—HOWARD COUNTY SOILS MAP NUMBER 28 - LAUREL, NW



APPROVED: DEPARTMENT OF PUBLIC WORKS
10/27/2023

CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
10/26/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: CHIEF, DIVISION OF LAND DEVELOPMENT
10/27/2023

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS

J. Brody McAllister
SA Certified Affiliated
Cert ID: MA6471A
MD DWR FQA Qualif Professional

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: 09-27-2024

DESIGN BY: EDS.
DRAWN BY: JMR/KG
CHECKED BY: RHW
DATE: AUGUST 2023
SCALE: AS SHOWN
W.O. NO.: 17-26

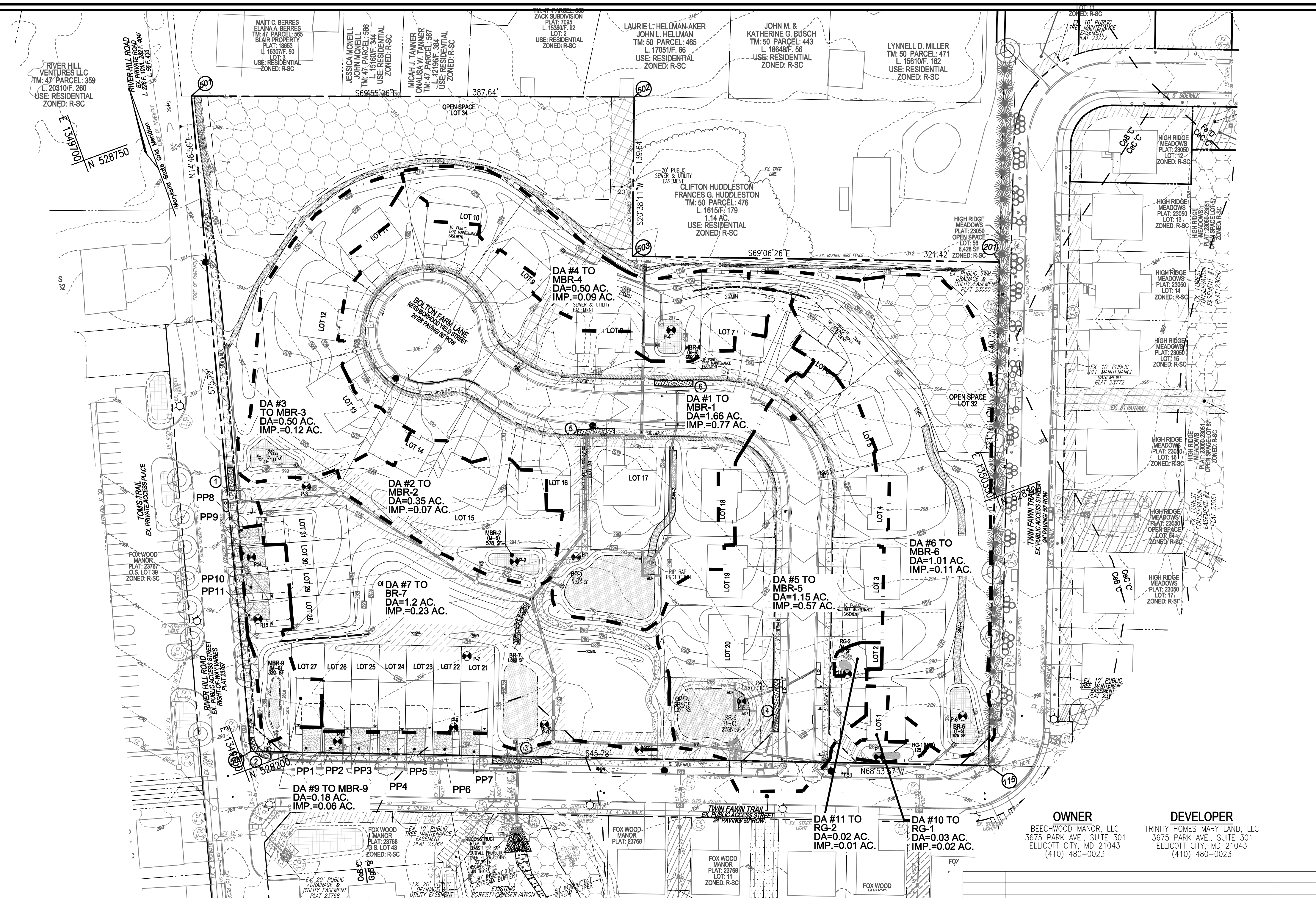
13 SHEET OF 21

LEGEND:

	PROPERTY LINE		PUBLIC WATER & UTILITY EASEMENT
	RIGHT-OF-WAY LINE		PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
	ADJACENT PROPERTY LINE		PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
	EXISTING EDGE OF PAVING		SIGN EASEMENT
	EXISTING TREELINE		EXISTING 10' CONTOUR
	PROPOSED TREELINE		EXISTING 2' CONTOUR
	EXISTING SPECIMEN TREES		SOILS
	EXISTING WOOD FENCE		10' CONTOUR
	EXISTING METAL FENCE		2' CONTOUR
	EX. PUBLIC DRAINAGE & UTILITY EASEMENT (PLAT 23768)		DRAINAGE AREA DIVIDE
	EX. PUBLIC TREE MAINTENANCE EASEMENT (PLATS 23772 & 23768)		PERMEABLE CONCRETE (A-2)
	EX. FOREST CONSERVATION EASEMENT (PLATS 14613, 23050-23051 & 23768)		TEST PIT LOCATION
	EX. PRIVATE USE-IN-COMMON ACCESS EASEMENT (PLAT 23768)		BIO RETENTION AND MICRO-BIORETENTION FACILITY (M-6 AND F-6)
	EX. PUBLIC WATER & UTILITY EASEMENT (PLAT 23768)		RAIN GARDEN STRUCTURE (M-7)
	EX. PRIVATE SEWER & UTILITY EASEMENT (PLATS 23768)		STORM DRAIN
	EX. PUBLIC SEWER & UTILITY EASEMENT (PLATS 23050-23051)		REINFORCED SIDEWALK

SEE DETAIL SHEET 3

BEECHWOOD MANOR - ESDv PER AREA COMPUTATIONS												
DEVELOPED / SITE AREA:		7.94	AC									
TARGET Pp:		1.60	IN									
SITE IMPERVIOUS:		2.25	PERCENT ESTIMATED									
SITE Rv:		0.3283	ESTIMATED									
Rv=0.05+0.009X1		(1.0x0.95xA)/12										
V min=1.0' rainfall		(2.6x0.95xA)/12										
V max=1yr rainfall=2.6"												
DA	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.60' PROVIDED	VOLUME IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS	
AREA 1	46.30	0.4667	72250	1.66	2810	7305	4496	4700	33450	0.77	0.89	BIO RETENTION #1 4700 3525 SF MICRO BIO
AREA 2	20.19	0.2317	15355	0.35	296	771	474	770	3100	0.07	0.28	MICROSCALE MICRO-BIO RETENTION #2 770 577.5 SF MICRO BIO
AREA 3	23.13	0.2582	21760	0.50	468	1217	749	800	5033	0.12	0.38	MICROSCALE MICRO-BIO RETENTION #3 800 600 SF MICRO BIO
AREA 4	18.54	0.2169	21700	0.50	392	1020	627	800	4023	0.09	0.41	MICROSCALE MICRO-BIO RETENTION #4 800 600 SF MICRO BIO
AREA 5	50.06	0.5006	50015	1.15	2086	5425	3338	3340	25040	0.57	0.57	BIO RETENTION #5 3340 2505 SF MICRO BIO
AREA 6	11.11	0.1500	44190	1.01	552	1436	884	1300	4911	0.11	0.90	BIO RETENTION #6 1300 975 SF MICRO BIO
AREA 7	19.78	0.2280	51365	1.18	976	2538	1562	2450	10160	0.23	0.95	BIO RETENTION #7 - OVERSIZED 2450 1837.5 SF MICRO BIO
AREA 9	33.25	0.3492	7880	0.18	229	596	367	425	2620	0.06	0.12	MICROSCALE MICRO-BIO RETENTION #9 425 318.75 SF MICRO BIO
AREA 10	64.14	0.6272	1450	0.03	76	197	121	125	930	0.02	0.01	MICROSCALE RAIN GARDEN #1 125 93.75 SF MICRO BIO
AREA 11	37.12	0.3840	1040	0.02	33	87	53	70	386	0.01	0.02	MICROSCALE RAIN GARDEN #2 70 52.5 SF MICRO BIO
PP1	100.00	0.9500	300	0.01	24	62	38	48	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 48 PERM DW @ 0.16 @ 12" PE EQUIVALENT = 2 48
PP2	100.00	0.9500	300	0.01	24	62	38	48	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 48 PERM DW @ 0.16 @ 12" PE EQUIVALENT = 2 48
PP3	100.00	0.9500	300	0.01	24	62	38	48	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 48 PERM DW @ 0.16 @ 12" PE EQUIVALENT = 2 48
PP4	100.00	0.9500	300	0.01	24	62	38	48	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 48 PERM DW @ 0.16 @ 12" PE EQUIVALENT = 2 48
PP5	100.00	0.9500	300	0.01	24	62	38	48	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 48 PERM DW @ 0.16 @ 12" PE EQUIVALENT = 2 48
PP6	100.00	0.9500	300	0.01	24	62	38	59	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 59 PERM DW @ 0.196 @ 12" PE EQUIVALENT = 2.5 59
PP7	100.00	0.9500	300	0.01	24	62	38	59	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 59 PERM DW @ 0.196 @ 12" PE EQUIVALENT = 2.5 59
PP8	100.00	0.9500	300	0.01	24	62	38	48	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 48 PERM DW @ 0.16 @ 12" PE EQUIVALENT = 2 48
PP9	100.00	0.9500	300	0.01	24	62	38	48	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 48 PERM DW @ 0.16 @ 12" PE EQUIVALENT = 2 48
PP10	100.00	0.9500	300	0.01	24	62	38	48	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 48 PERM DW @ 0.16 @ 12" PE EQUIVALENT = 2 48
PP11	100.00	0.9500	300	0.01	24	62	38	48	300	0.01	0.00	A-2 ALTERNATIVE SURFACE 48 PERM DW @ 0.16 @ 12" PE EQUIVALENT = 2 48
MEASURED PROJECT TOTALS	32.02	0.3382	290305	6.66	-	-	-	13090	15326	92953	2.13	4.53



STORMWATER MANAGEMENT DRAINAGE AREA MAP

SCALE: 1"=50'

TEST PIT DATA							
BORING #	APPROX EXIST GROUND ELEV	APPROX PROP GROUND ELEV	INVERT FACILITY / PRACTICE	MIN. DEPTH TO GROUNDWATER	BOTTOM PIT	REQ PIT DEPTH*	OBSERVED CONDITION
P-1	290.00	292.00	288.00	4.00	284.00	6.00	NO ROCK OR WATER @ 6.5'
P-2	290.50	292.00	288.00	4.00	284.00	6.50	NO ROCK OR WATER @ 7'
P-3	298.20	298.00	294.00	4.00	290.00	8.20	NO ROCK OR WATER @ 8.5'
P-4	301.20	297.00	293.00	4.00	289.00	12.20	NO ROCK OR WATER @ 12.5'
P-5	289.20	285.00	281.00	4.00	277.00	12.20	NO ROCK OR WATER @ 12.5'
P-6	287.90	286.00	282.00	4.00	278.00	9.90	NO ROCK OR WATER @ 11'
P-7	286.00	282.50	278.50	4.00	274.50	11.50	NOT DUG
P-8	283.00	282.00	278.00	4.00	274.00	9.00	NO ROCK OR WATER @ 9.5'
P-9	283.50	282.00	278.00	4.00	274.00	9.50	NO ROCK @ 10' WATER @ 10'
P-10	287.00	286.00	282.00	4.00	278.00	9.00	NO ROCK OR WATER @ 9.5'
P-11	290.20	290.00	286.00	4.00	282.00	8.20	NO ROCK OR WATER @ 7'
P-12	290.00	286.00	284.50	4.00	280.50	9.50	NO ROCK OR WATER @ 10'
P-13	285.00	285.80	284.30	4.00	280.30	4.70	NO ROCK OR WATER @ 8'
P-14	295.00	296.20	294.70	4.00	290.70	4.30	NO ROCK OR WATER @ 11'
P-15	292.00	294.20	292.70	4.00	288.70	3.30	NO ROCK OR WATER @ 4.5'

CERTIFIED TEST PITS TO VERIFY THE LOCATIONS OF GROUNDWATER AND/OR ROCK OPEN TEST PITS WERE OBSERVED BY TRINITY HOMES OCTOBER 2021.

REINFORCED SIDEWALK LOCATION			
NO.	ROAD NAME	STATION	OFFSET
1	RIVER HILL ROAD	-2+59	18.4' L
2	RIVER HILL ROAD	-2+79	18.4' L
3	TWIN FAWN LANE	20+47	22.6' R
3	TWIN FAWN LANE	18+12.7	18.9' R
4	BOLTON FARM LANE	0+51.4	19.10' L
5	BOLTON FARM LANE	0+97.3	19.10' L
4	BOLTON FARM LANE	4+68.6	19.10' L
6	BOLTON FARM LANE	5+01.1	20.64' L
4	BOLTON FARM LANE	4+00.8	19.10' R
6	BOLTON FARM LANE	4+34.3	19.10' R

SEE DETAIL SHEET 3

SOILS LEGEND					
SYMBOL	NAME / DESCRIPTION	GROUP	PERCENT SAND	PERCENT SILT	ERODIBLE
CeB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	C	24	ND	NO
GgB	GENELEC LOAM, 3 TO 8 PERCENT SLOPES	B	24	ND	NO

*SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE DECEMBER 2022.
*HOWARD COUNTY SOILS MAP NUMBER 28 - LAUREL 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: BEECHWOOD MANOR, LLC
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 _____

FINAL ROAD CONSTRUCTION PLANS
ESD - STORMWATER MANAGEMENT DRAINAGE AREA MAP

BEECHWOOD MANOR
LOTS 1-31 AND OPEN SPACE LOTS 32-34
A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L. 20205 / F. 202
TAX MAP: 50 PARCEL: 1
6TH ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

9111 RIVER HILL ROAD
LAUREL, MD 20723

PARCEL: 001
ZONED: R-SC
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELlicott CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

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: 10-27-2024

DESIGN BY: EDS
DRAWN BY: JMR/KG
CHECKED BY: R.V.
DATE: AUGUST 2023
SCALE: AS SHOWN
W.O. NO.: 17-26

15 SHEET OF 21

APPROVED: DEPARTMENT OF PUBLIC WORKS
10/27/2023

CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
10/26/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION

CHIEF, DIVISION OF LAND DEVELOPMENT

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

- MATERIAL SPECIFICATIONS**
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
- FILTERING MEDIA OR PLANTING SOIL**
THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERBERIS GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOxious WEEDS AS SPECIFIED UNDER COMPAR 15.01.01.02. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
 - SOIL COMPOST - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION).
 - ORGANIC CONTENT - MINIMUM BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
 - CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
 - PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMMONIUMS (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 PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER AND SULFUR. RESULTS ARE TO REFLECT THE SOIL PROFILE THROUGH THE 12" INCH COMPACTION ZONE. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

- COMPACTION**
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOUS TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.
COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TOOLS SHOULD BE USED TO REFRACTURE THE SOIL PROFILE THROUGH THE 12" INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL TO 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.

- PLANT MATERIAL**
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

- 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 BARK 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 DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/3RD 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 PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.
GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLACED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.
THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS, DEFECTS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZERS AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

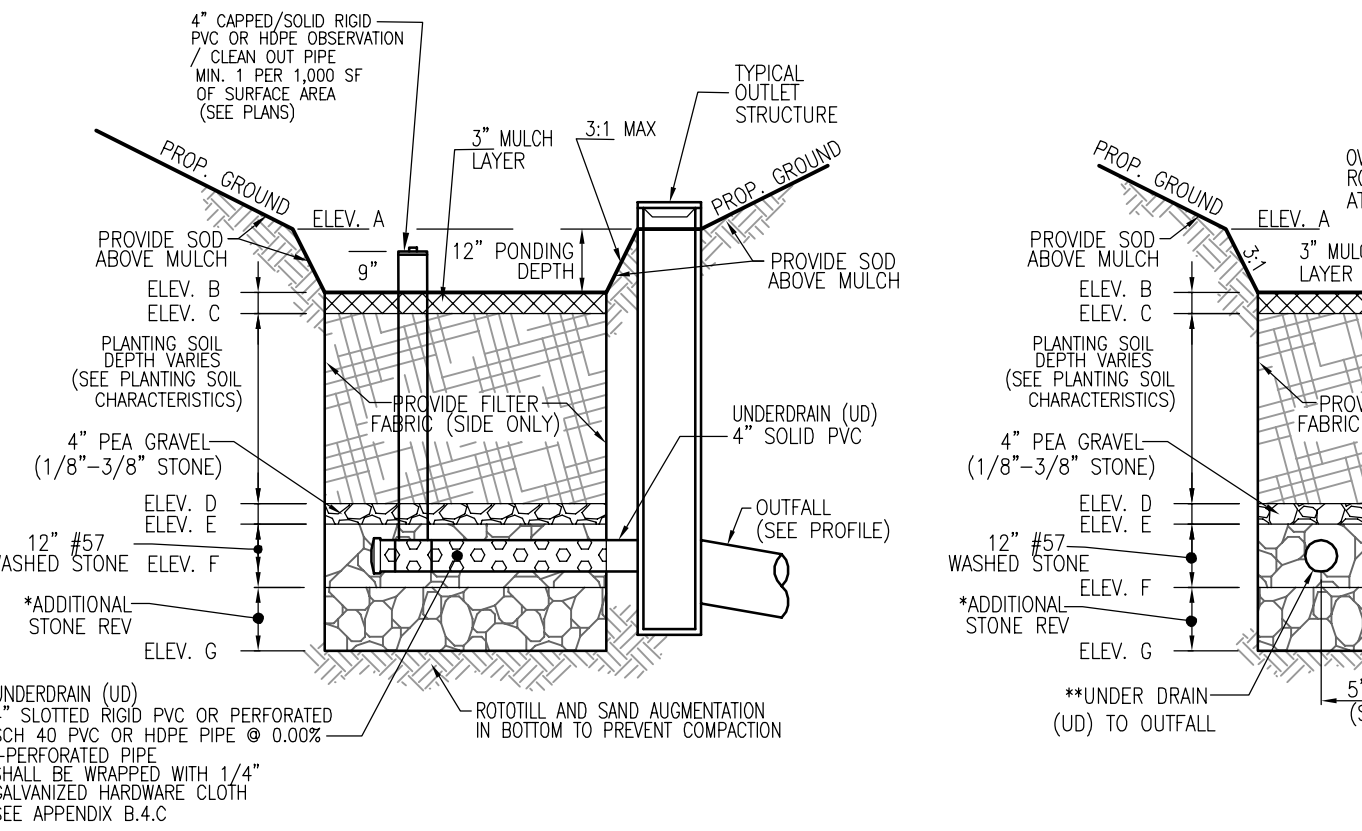
- UNDERDRAINS**
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
 - PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HOPE).
 - PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER FOOT. PIPE SHALL BE WRAPPED WITH 1/4" (4x4) GALVANIZED HARDWARE CLOTH.
 - GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 2" THICK ABOVE AND BELOW THE UNDERDRAIN.
 - THE MAIN COLLECTOR PIPE SHALL BE SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM 758, TYPE PS 28, OR AASHTO-M-278).
 - A BOD, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
 - A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 2".

THIS MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OR SURFACE AREA).

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

OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-6) RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), BIO-RETENTION (F-6) AND ENHANCED FILTERS (M-9)

- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT MATERIAL SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
- THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.



RAIN GARDEN (M-7), BIORETENTION (F-6) & MICRO-BIORETENTION (M-6) (UNDERDRAIN)

- NOT TO SCALE
*ADDITIONAL STONE PROVIDED FOR REV
- ONLY THE SIDES OF THE BIORETENTION, MICROBIORETENTION OR RAIN GARDEN ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE FACILITY WILL CAUSE THE FACILITY TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.
 - WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
 - PROVIDE 5" MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)

APPROVED: DEPARTMENT OF PUBLIC WORKS
 10/27/2023
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 10/26/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 10/27/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT

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

Table B.4.1 Materials Specifications for Micro-Bioretenention, Rain Gardens & Landscape Infiltration			
Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil	loamy sand (60-65%) & compost (35-40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	n/a	
Mesh	shredded hardwood	n/a	aged 6 months, minimum no pine or wood chips
Pea gravel/diaphragm and curtain drain	see gravel: ASTM-D-448	NO. 57 OR NO. 6 (1 1/2" to 3/4")	4" or 6" rigid schedule 40 PVC or SDR33
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile	n/a	n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" or 6" rigid schedule 40 PVC or SDR33	Sloped or perforated pipe, 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underdrain pipes. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth.
Poured in place concrete (if required)	MSHA Mix No. 3, F _c = 3500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 309.8/9; vertical loading (H-10 or H-20); allowable horizontal loading (based on soil properties) and analysis of potential cracking.
Sand	AASHTO M-6 or ASTM-C-33	0.02" to 0.64"	Sand substitutions such as Duquesne and Graystone (AASHTO #10) are not acceptable. No calcium carbide or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

Table B.3.2 Materials Specifications for Bioretention

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil	sand 35-60% silt 30-55% clay 10-25%	n/a	USDA soil types loamy sand, sandy loam or loam
mulch	shredded hardwood	n/a	aged 6 months, minimum
pea gravel/diaphragm and curtain drain	see gravel: ASTM-D-448	see gravel: No. 6 stone: 2" to 5"	
geotextile	Class "C" - apparent opening size (ASTM-D-4755), peak tensile strength (ASTM-D-4632), puncture resistance (ASTM-D-8833)	n/a	for use as necessary beneath underdrains only
underdrain gravel	AASHTO M-43	0.075" to 0.75"	
underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR33	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; and necessary, underdrain pipes.
poured in place concrete (if required)	MSHA Mix No. 3, F _c = 3500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 309.8/9; vertical loading (H-10 or H-20); allowable horizontal loading (based on soil properties) and analysis of potential cracking.
sand (1' deep)	AASHTO M-6 or ASTM-C-33	0.02" to 0.064"	Sand substitutions such as Duquesne and Graystone #10 are not acceptable. No calcium carbide or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

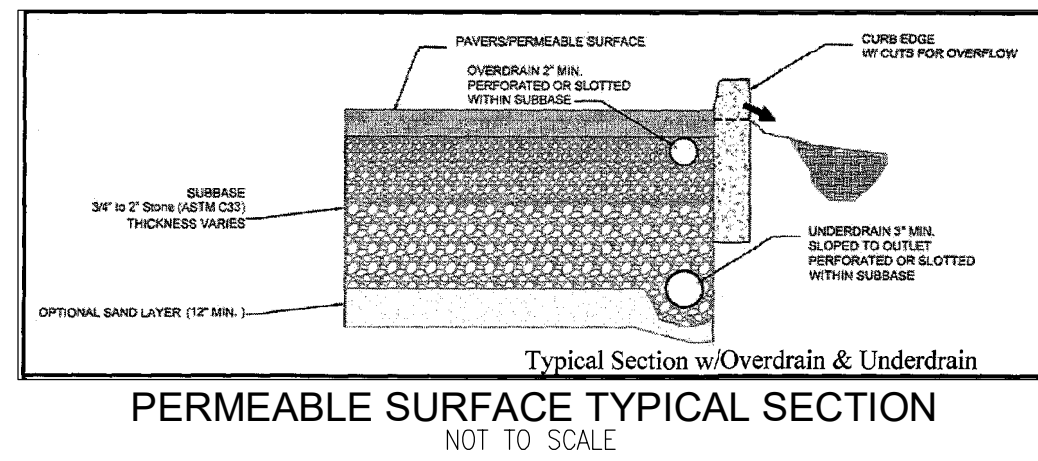
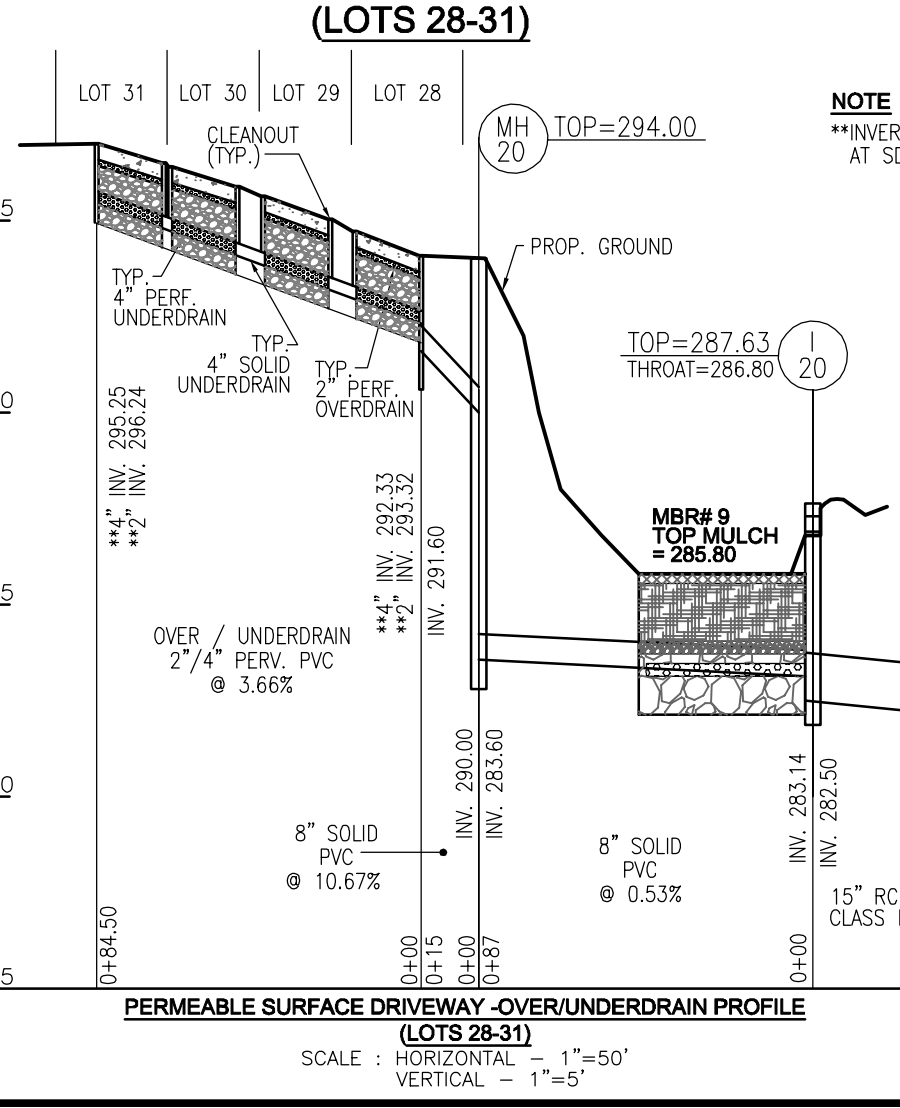
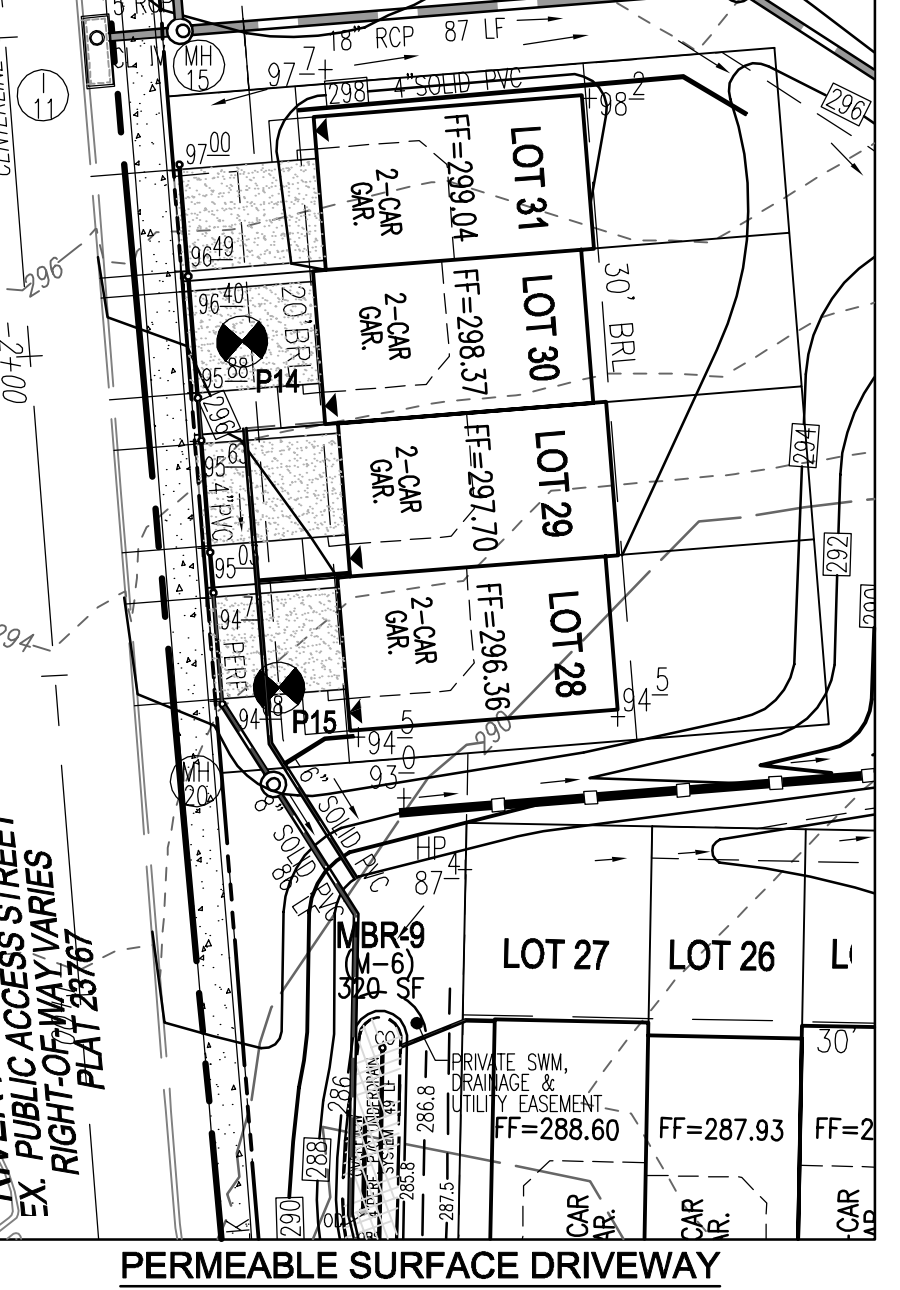
- PERMEABLE PAVEMENTS CONSTRUCTION CRITERIA:**
THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH PERMEABLE PAVEMENT:
 - EROSION AND SEDIMENT CONTROL: FINAL GRADING FOR INSTALLATION SHOULD NOT TAKE PLACE UNTIL THE SURROUNDING SITE IS STABILIZED. IF THIS CANNOT BE ACCOMPLISHED, RUNOFF FROM DISTURBED AREAS SHALL BE DIVERTED AROUND PROPOSED PAVEMENT LOCATIONS.
 - SOIL COMPACTION: SUB SOILS SHALL NOT BE COMPACTED. CONSTRUCTION SHOULD BE PERFORMED WITH LIGHTWEIGHT, WIDE TRACK EQUIPMENT TO MINIMIZE COMPACTION. EXCAVATED MATERIALS SHOULD BE PLACED IN A CONTAINED AREA.
 - DISTRIBUTION SYSTEMS: OVERDRAIN, UNDERDRAIN, AND DISTRIBUTION PIPES SHALL BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS (SEE APPENDIX B.4). THE UPSTREAM ENDS OF PIPES SHOULD BE CAPPED PRIOR TO INSTALLATION. ALL UNDERDRAIN OR DISTRIBUTION PIPES USED SHOULD BE INSTALLED FLAT ALONG THE BED BOTTOM.
 - SUBBASE INSTALLATION: SUBBASE AGGREGATE SHALL BE CLEAN AND FREE OF FINES. THE SUBBASE SHALL BE PLACED IN LIFTS AND LIGHTLY ROLLED ACCORDING TO THE SPECIFICATIONS (SEE APPENDIX B.4).

- INSPECTION:**
REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:
 - DURING EXCAVATION TO SUB GRADE.
 - DURING PLACEMENT AND BACKFILL OF ANY DRAINAGE OR DISTRIBUTION SYSTEM(S).
 - DURING PLACEMENT OF THE CRUSHED STONE SUBBASE MATERIAL.
 - DURING PLACEMENT OF THE SURFACE MATERIAL.
 - UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

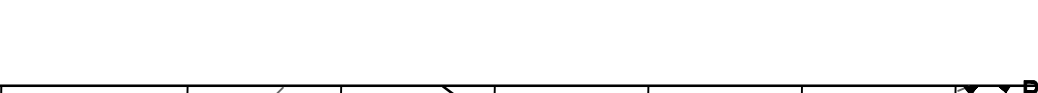
- MAINTENANCE CRITERIA:**
THE FOLLOWING PROCEDURES SHOULD BE CONSIDERED ESSENTIAL FOR MAINTAINING PERMEABLE PAVEMENT SYSTEMS:
 - PAVEMENTS SHOULD BE USED ONLY WHERE REGULAR MAINTENANCE CAN BE PERFORMED. MAINTENANCE AGREEMENTS SHOULD CLEARLY SPECIFY HOW TO CONDUCT ROUTINE TASKS TO ENSURE LONG-TERM PERFORMANCE.
 - PAVEMENT SURFACES SHOULD BE SWEEP AND VACUUMED TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING SYSTEMS AND COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
 - DRAINAGE PIPES, INLETS, STONE EDGE DRAINS, AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE SHOULD BE CLEANED OUT AT REGULAR INTERVALS.
 - TRUCKS AND OTHER HEAVY VEHICLES CAN GRIND DIRT AND GRIT INTO THE POROUS SURFACES, LEADING TO CLOGGING AND PREMATURE FAILURE. THESE VEHICLES SHOULD BE PREVENTED FROM TRACKING AND SPILLING MATERIAL ONTO THE PAVEMENT.
 - DECIDERS SHOULD BE USED IN MODERATION. WHEN USED, DECIDERS SHOULD BE NON-TOXIC AND ORGANIC AND CAN BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT. SNOW PLOWING SHOULD BE DONE CAREFULLY WITH BLADES SET ONE-INCH HIGHER THAN NORMAL. FLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)

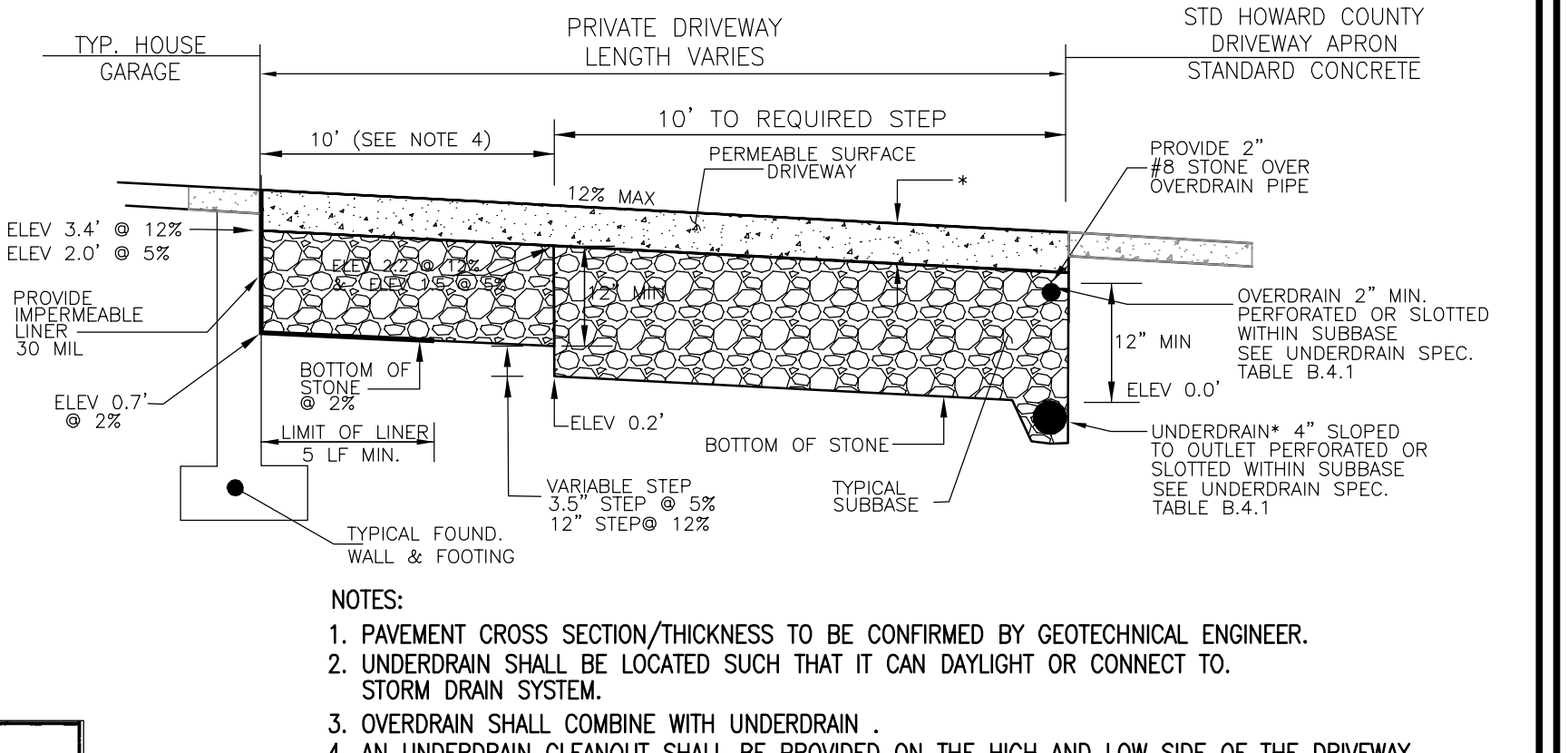
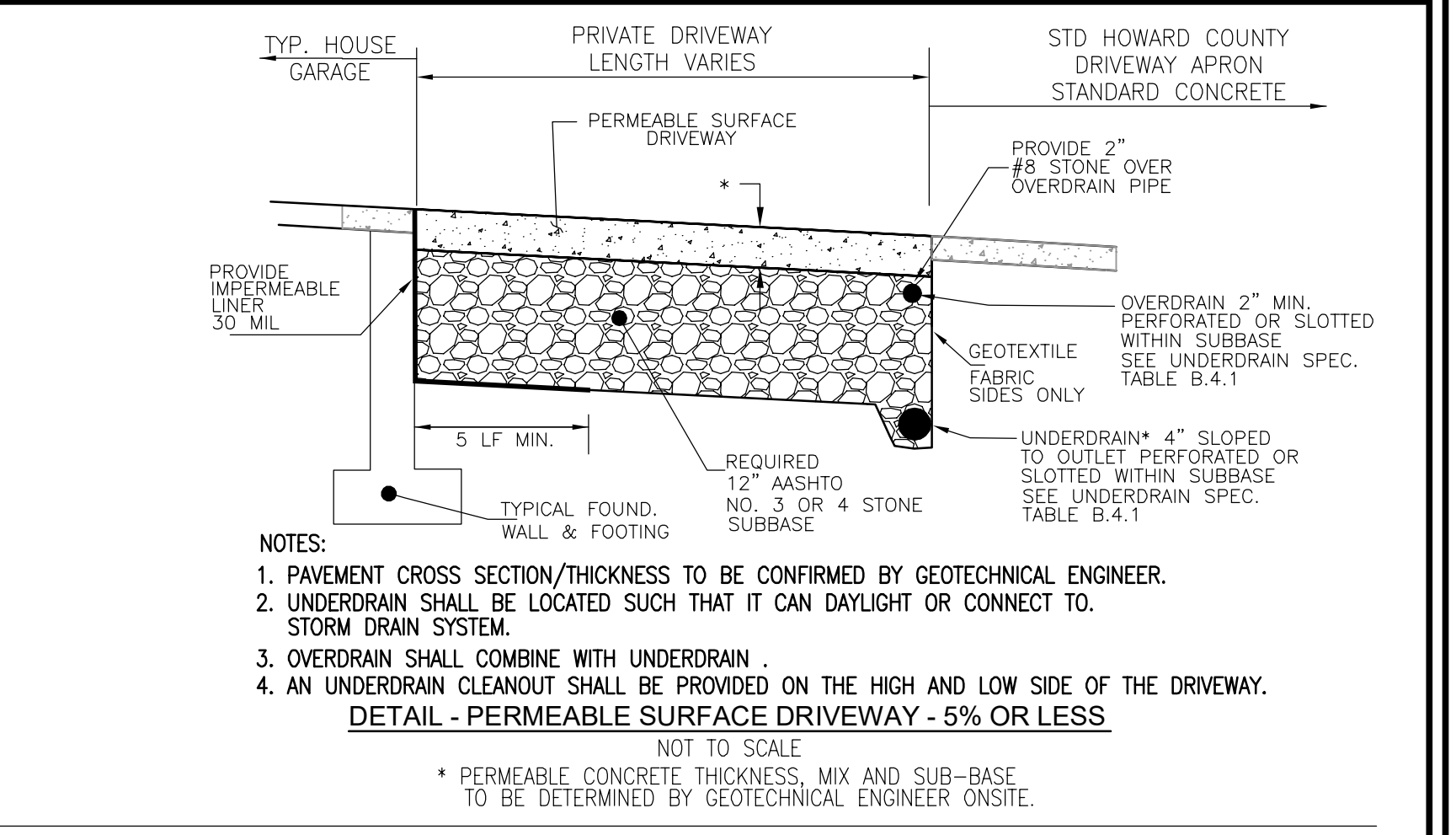
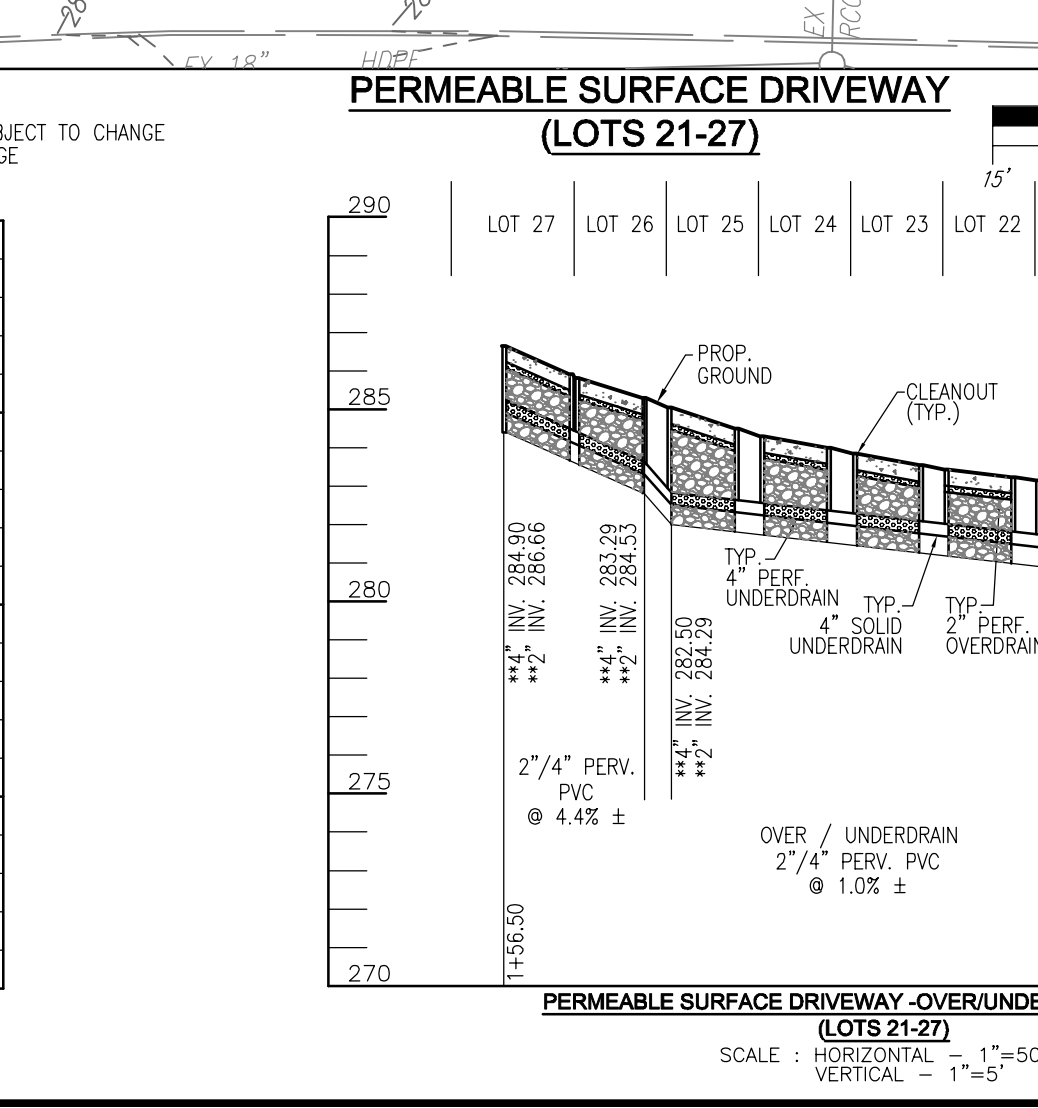
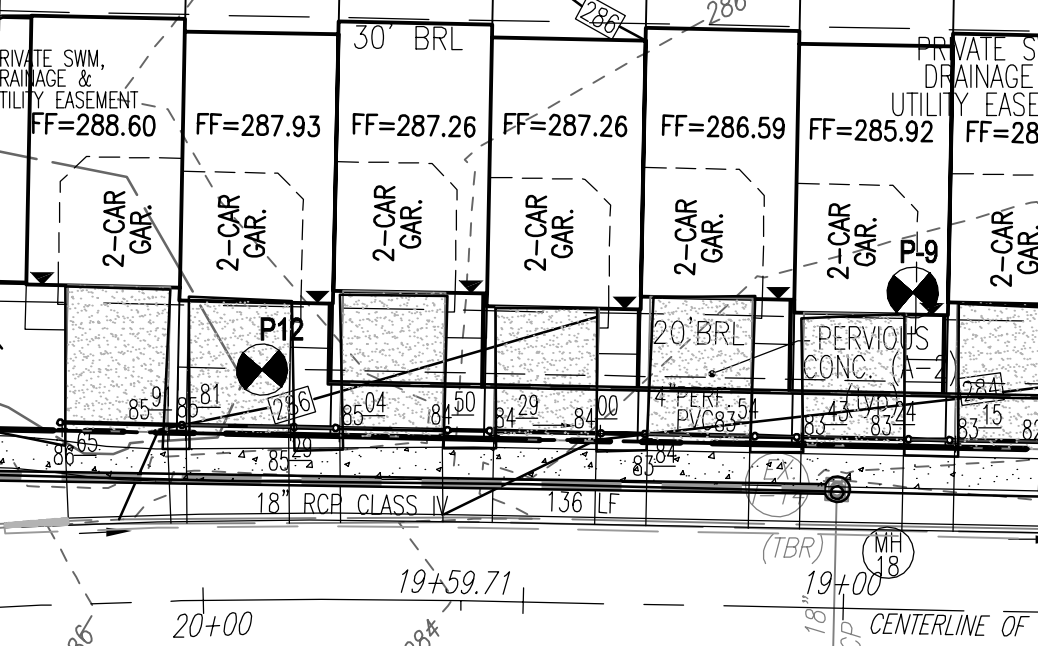
- THE INDIVIDUAL LOT OWNER SHALL PERIODICALLY SWEEP (OR VACUUM POROUS CONCRETE PAVEMENT) THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING OR COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
- THE INDIVIDUAL LOT OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE.
- THE INDIVIDUAL LOT OWNER SHALL USE DECIDERS IN MODERATION. DECIDERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
- THE INDIVIDUAL LOT OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE-INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.



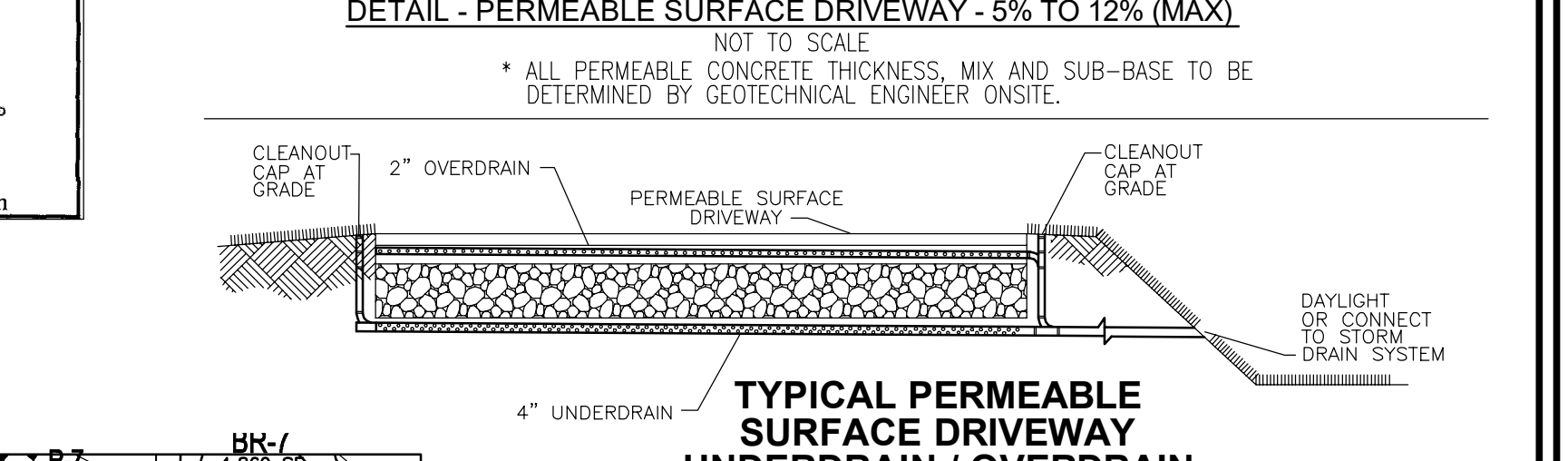
PERMEABLE SURFACE TYPICAL SECTION



PERMEABLE SURFACE DRIVEWAY (LOTS 21-27)



TYPICAL PERMEABLE SURFACE DRIVEWAY UNDERDRAIN / OVERDRAIN OUTLET DETAIL



- NOT TO SCALE
 1. PAVEMENT CROSS SECTION/THICKNESS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER.
 2. UNDERDRAIN SHALL BE LOCATED SUCH THAT IT CAN DAYLIGHT OR CONNECT TO STORM DRAIN SYSTEM.
 3. OVERDRAIN SHALL COMBINE WITH UNDERDRAIN.
 4. AN UNDERDRAIN CLEANOUT SHALL BE PROVIDED ON THE HIGH AND LOW SIDE OF THE DRIVEWAY.
 ABOVE EXAMPLE ASSUMES 20' DRIVEWAY (HOUSE TO RIGHT-OF-WAY / STANDARD DRIVEWAY APRON), 2% BOTTOM STONE.
DETAIL - PERMEABLE SURFACE DRIVEWAY - 5% TO 12% (MAX)

OWNER: BEECHWOOD MANOR, LLC
 DEVELOPER: TRINITY HOMES MARYLAND, LLC

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
ESD - STORMWATER MANAGEMENT
NOTES AND DETAILS

BEECHWOOD MANOR
 LOTS 1-31 AND OPEN SPACE LOTS 32-34
 A SUBDIVISION OF TAX MAP 50 - PARCEL 1

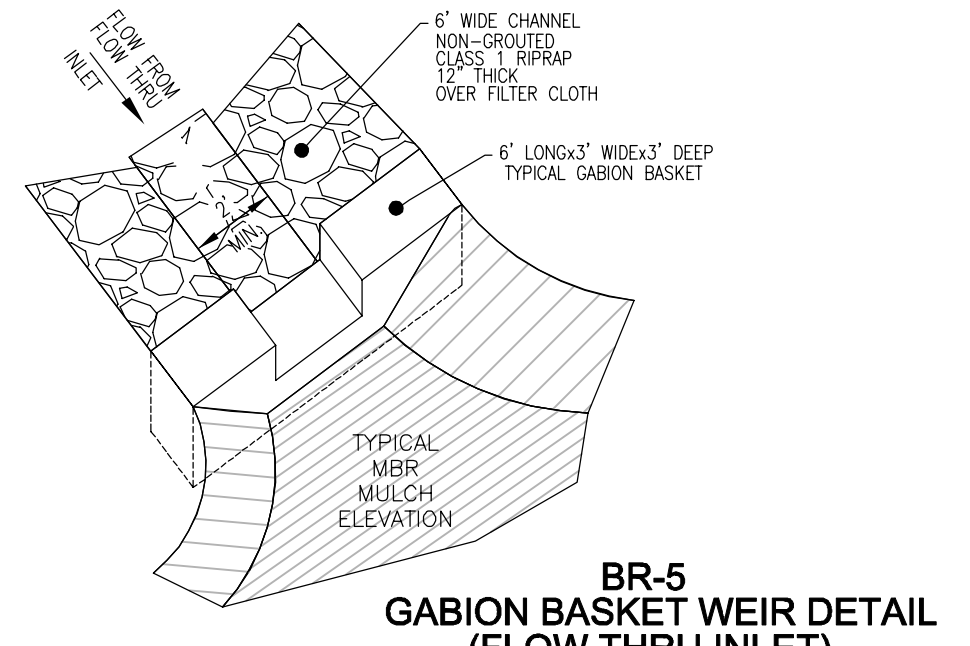
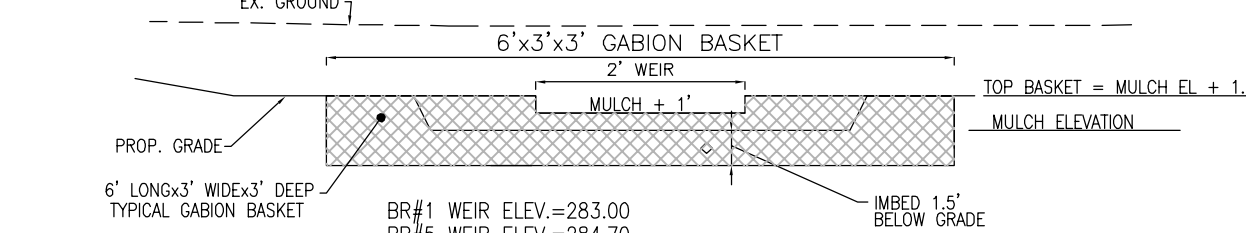
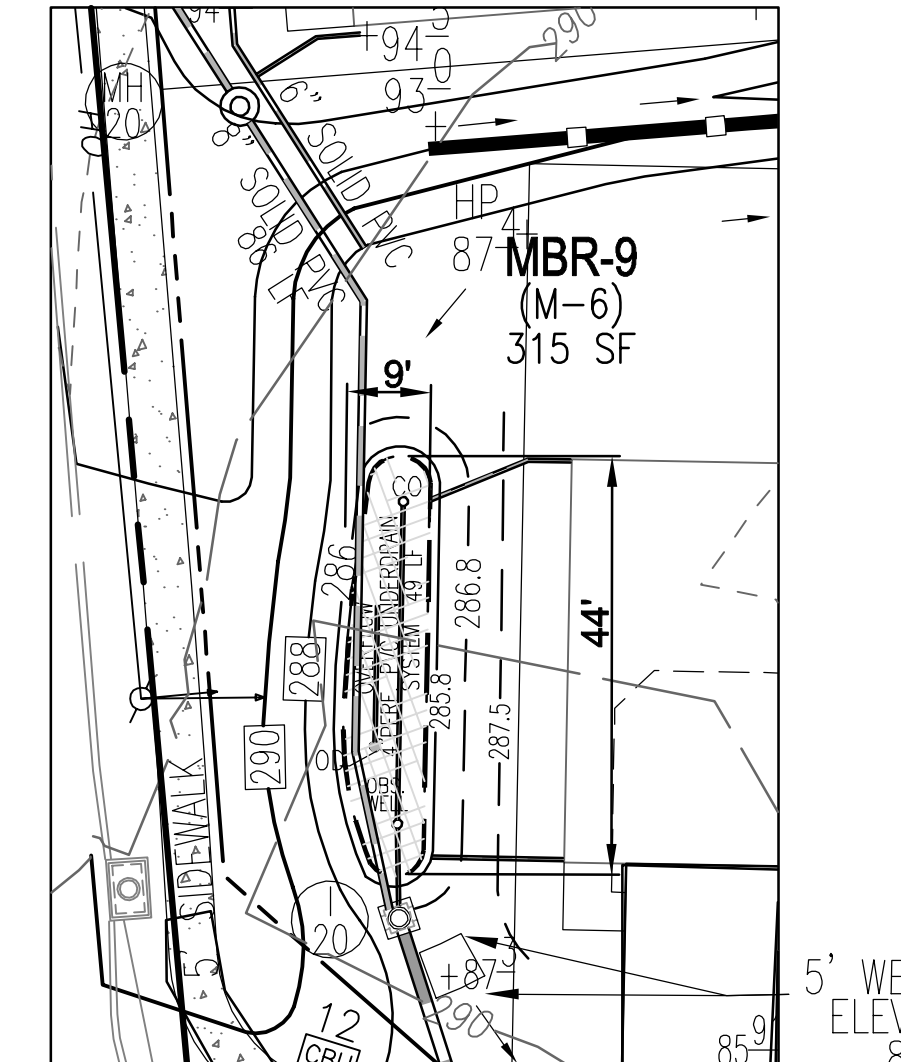
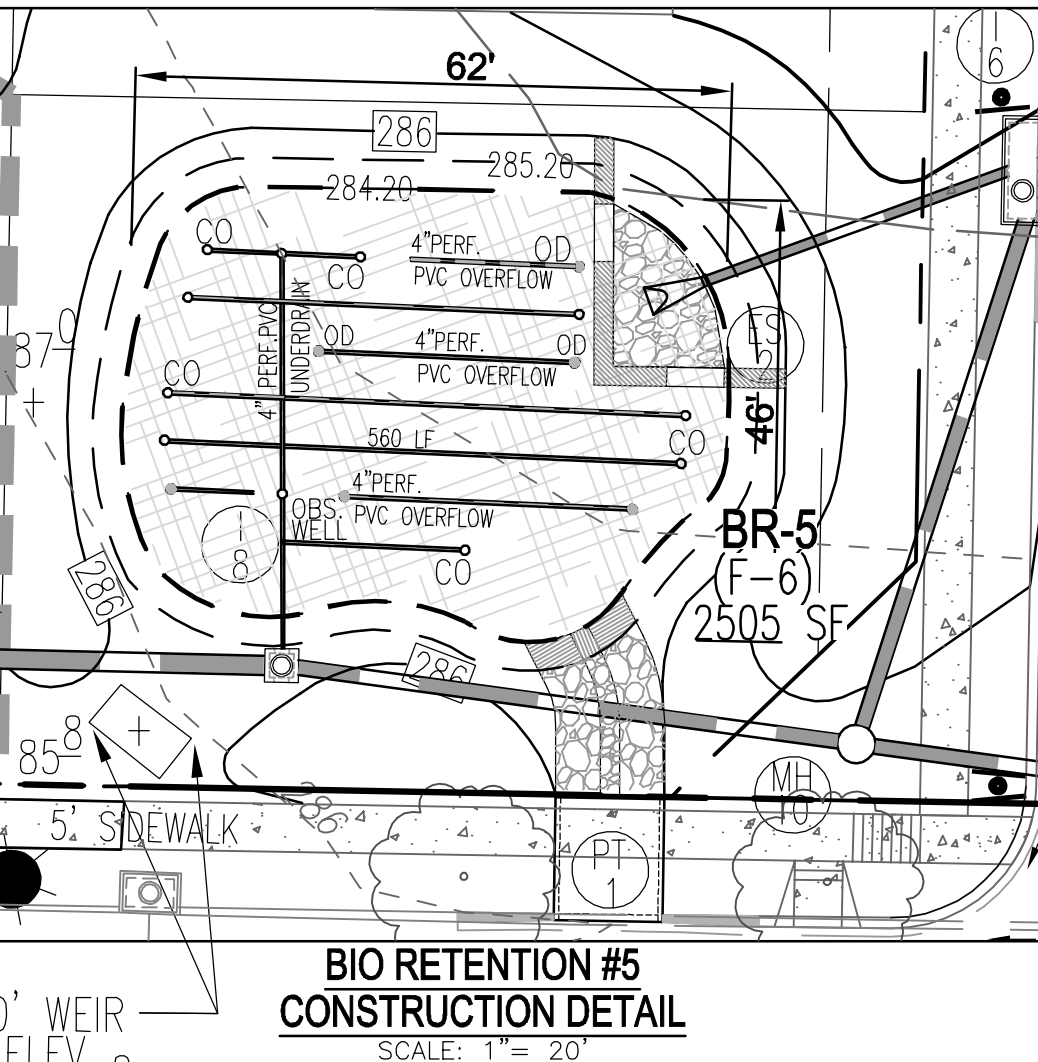
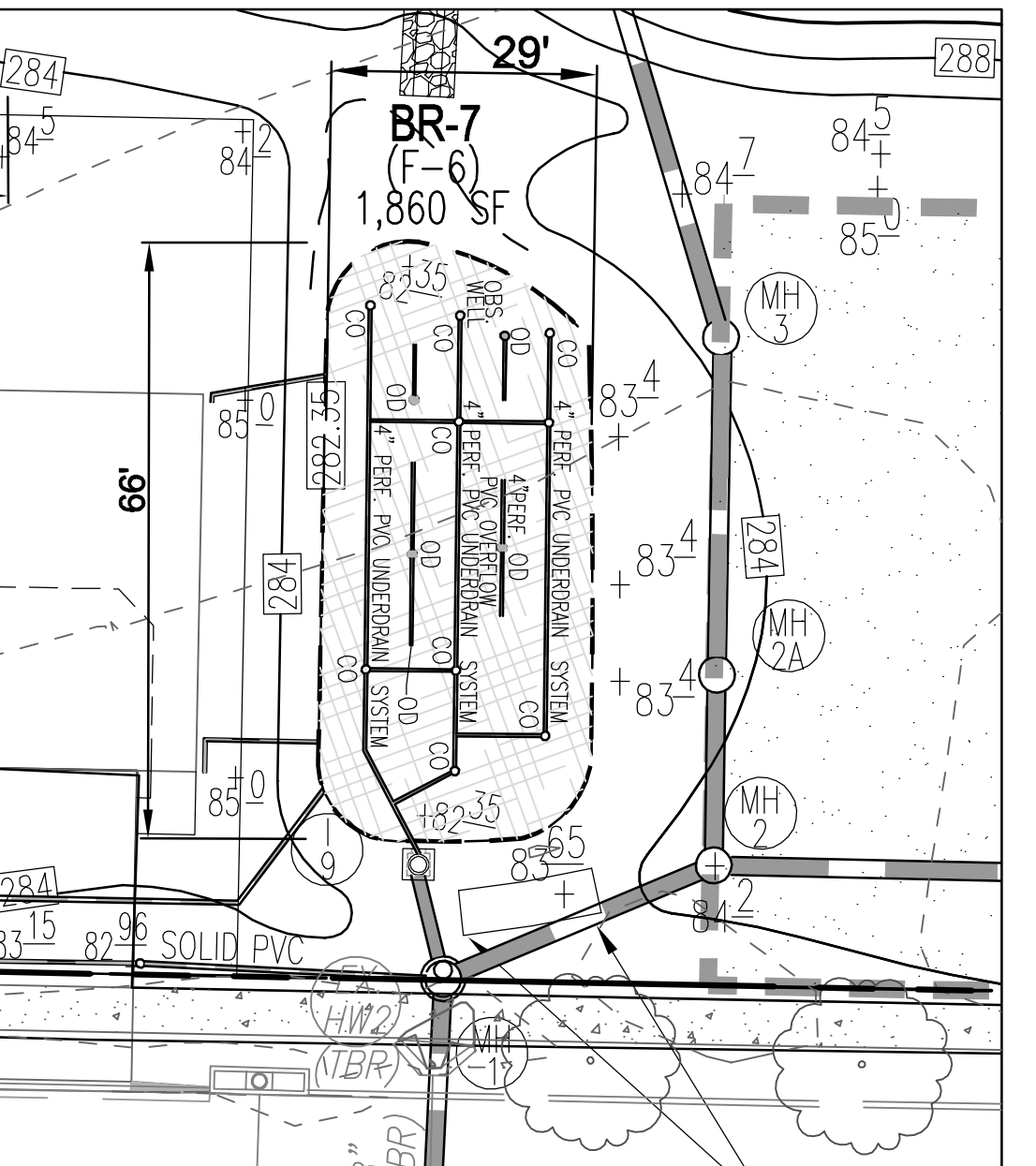
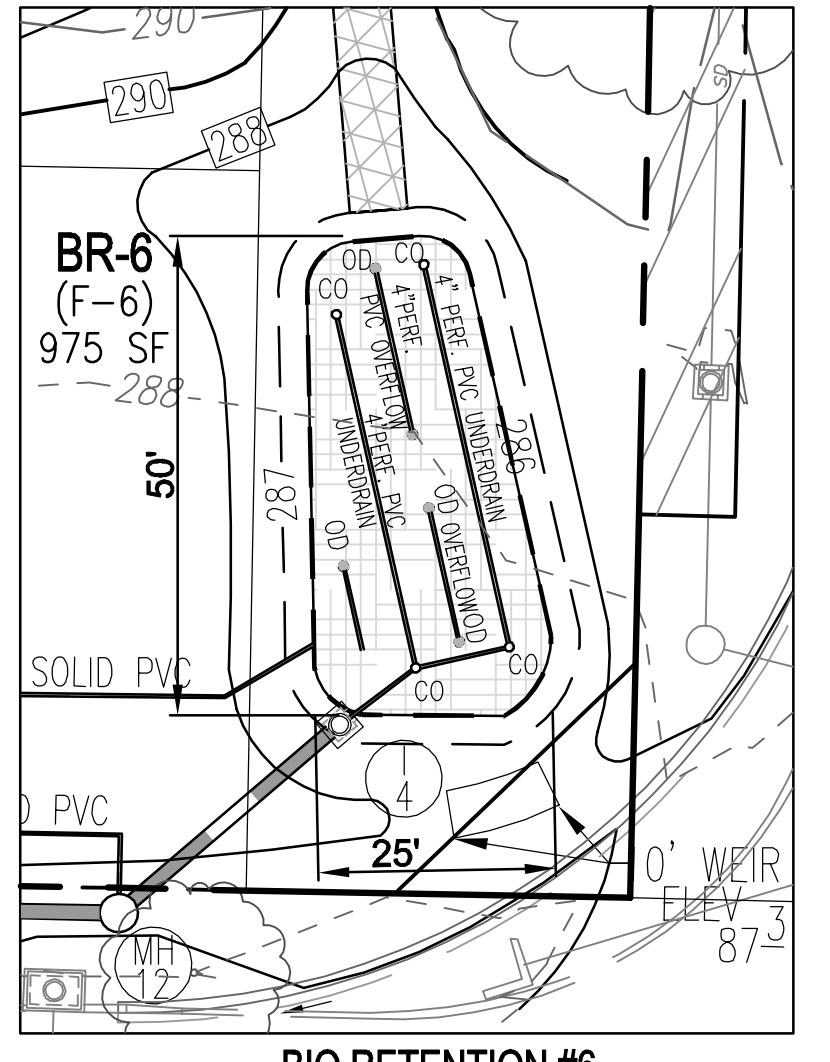
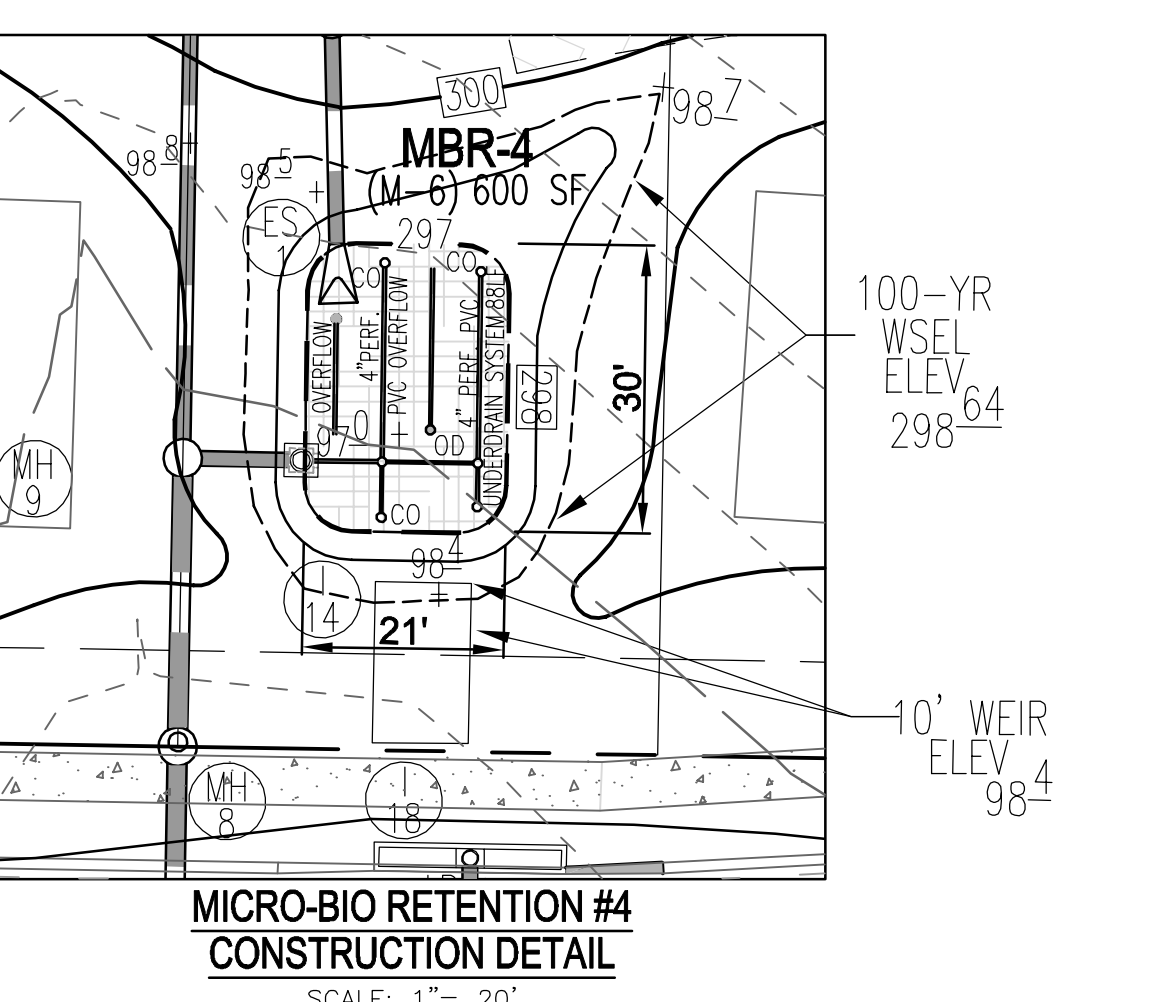
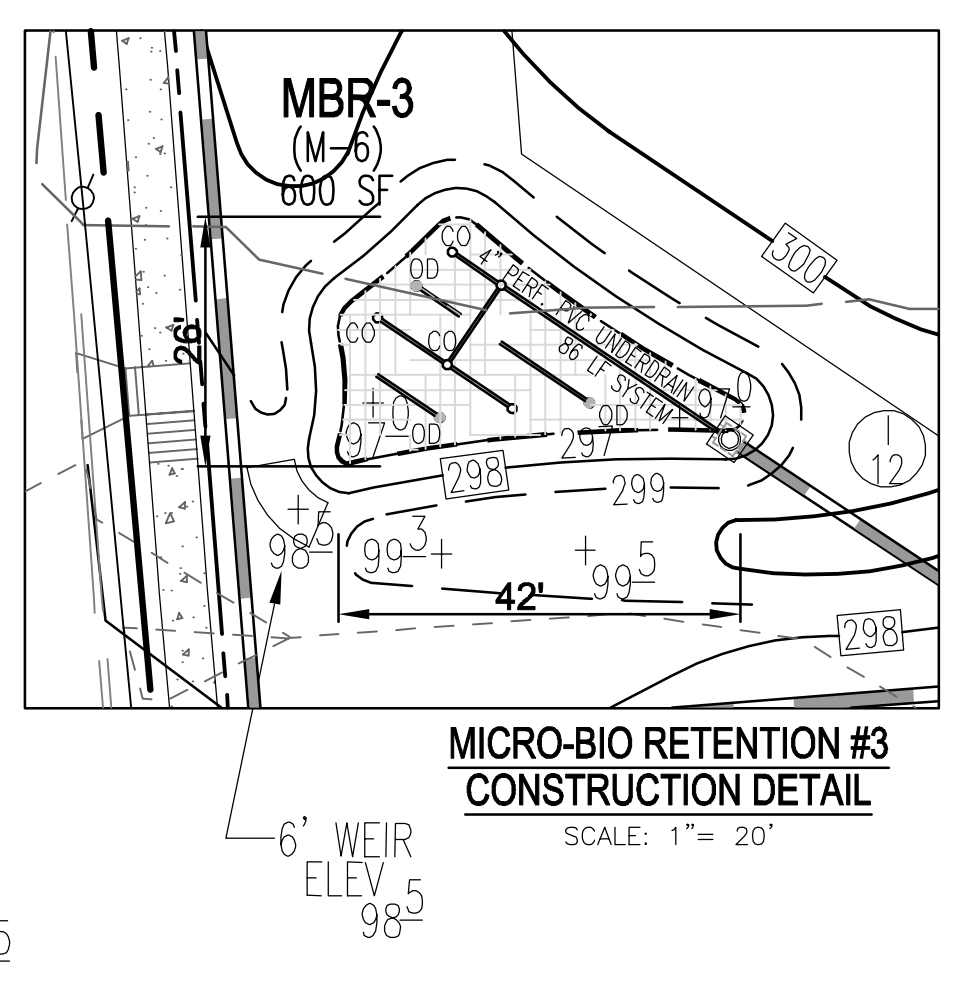
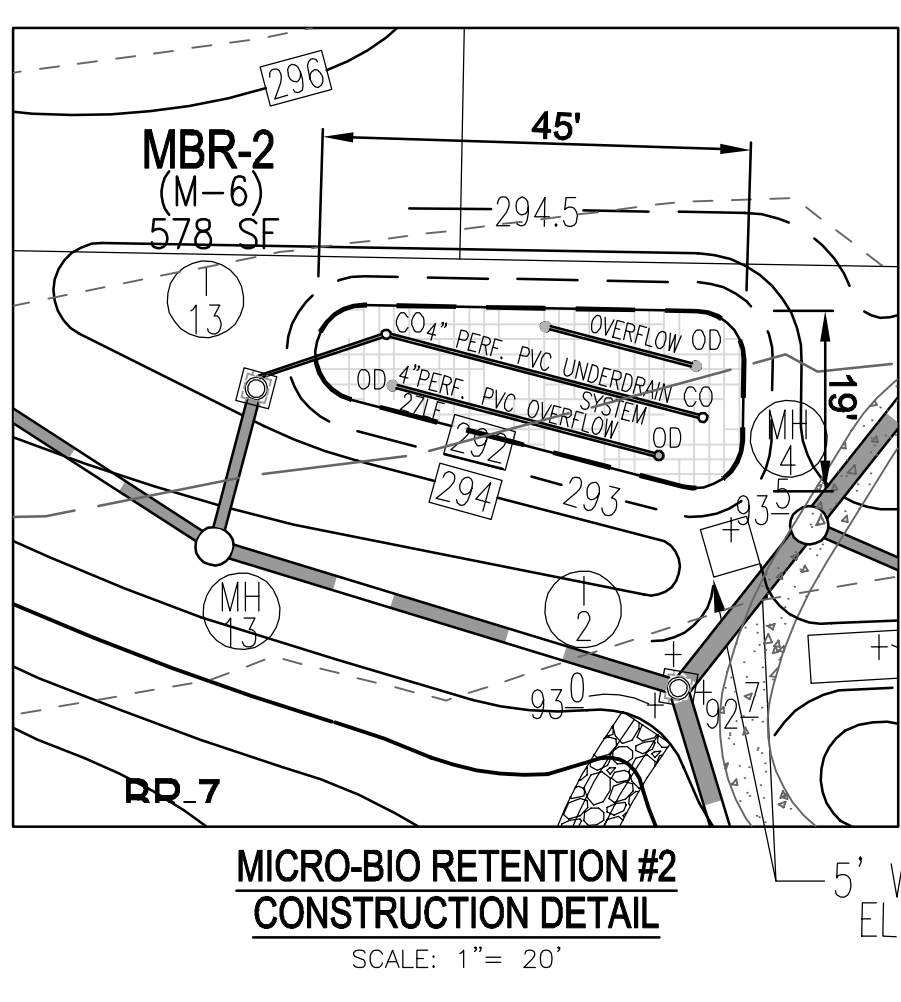
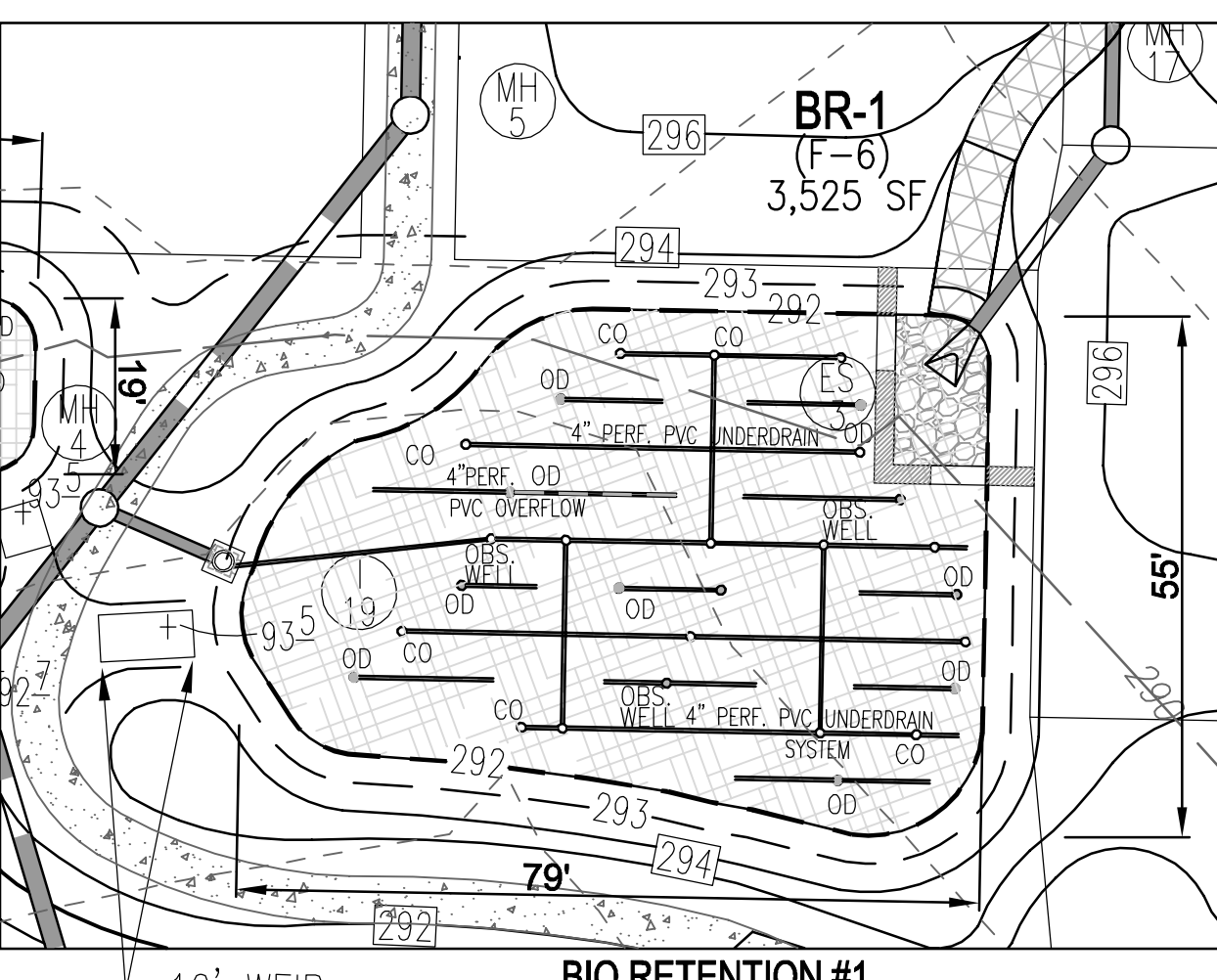
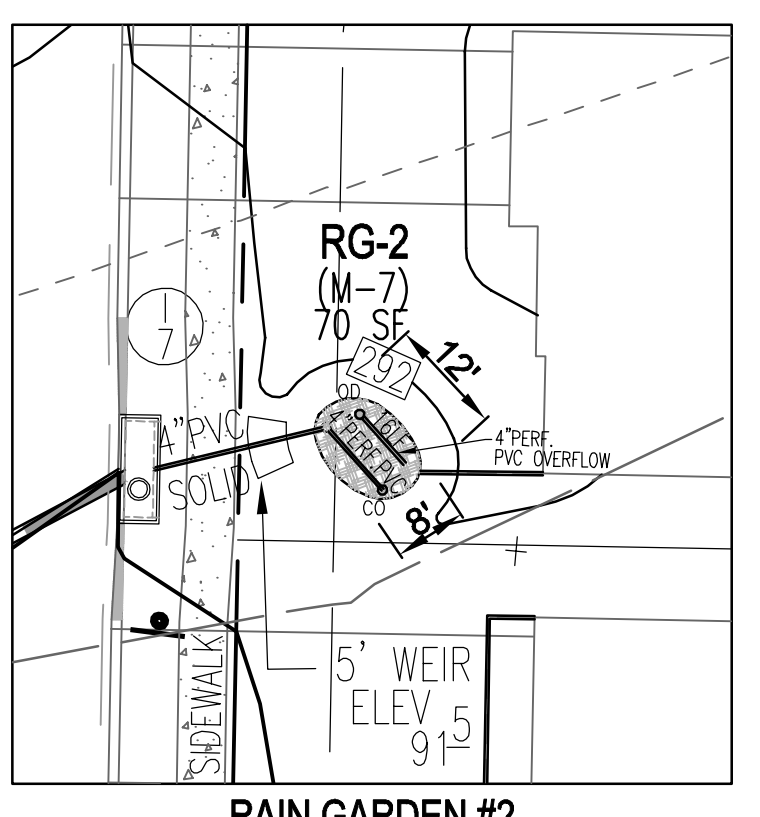
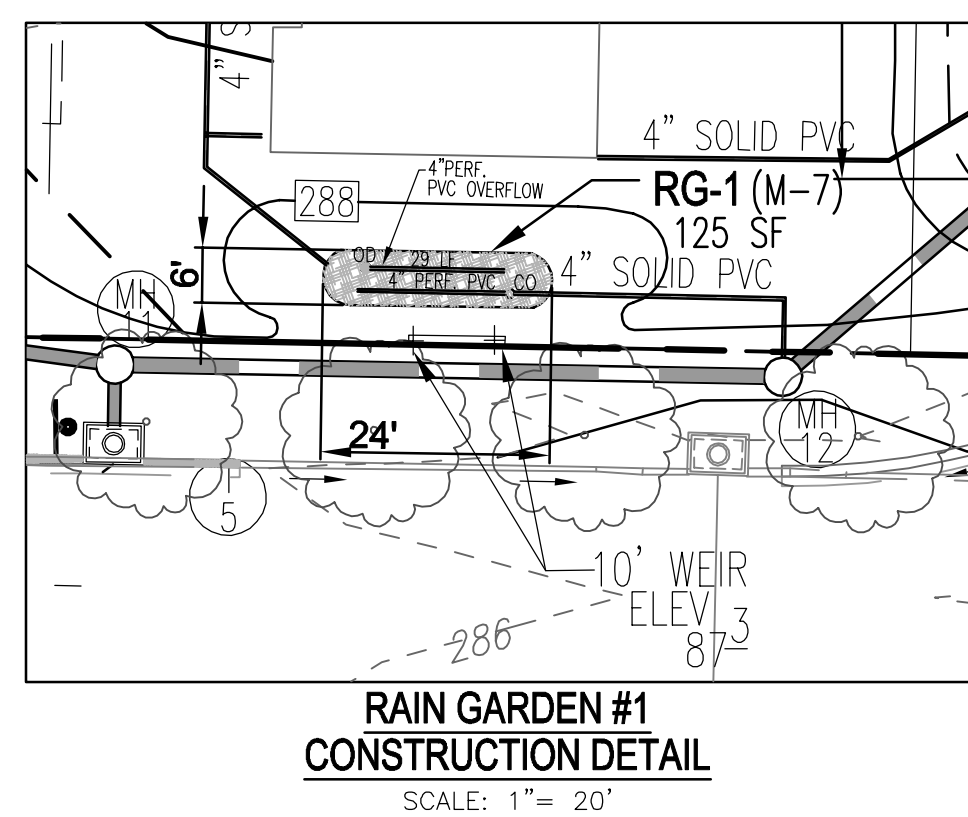
9111 RIVER HILL ROAD
 LAUREL, MD 20723

VOGEL ENGINEERING
TIMMONS GROUP

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: EDS
 DRAWN BY: JMR/KG
 CHECKED BY: RHV
 DATE: AUGUST 2023
 SCALE: AS SHOWN
 S.W. NO.: 17-26

16 SHEET OF 21



- NOTES:**
1. ALL WIRE USED IN GABION CONSTRUCTION SHALL BE GALVANIZED AND PLASTIC COATED.
 2. FILTER CLOTH SHALL BE PLACED WHEREVER GABIONS COME INTO CONTACT WITH SOIL.
 3. STONE FILL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE 4"-8" IN DIAMETER.
 4. CONSTRUCTION MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- GABION BASKETS SHALL BE INSTALLED IN THE MICRO-BIORETENTION FACILITY PRIOR TO THE INSTALLATION OF THE PLANTING MATERIALS SHOWN ON THIS SHEET.
- FIELD ADJUSTMENTS TO THE PLANTING LOCATIONS SHALL BE MADE. ALL PLANTING MATERIAL IS LOCATED DOWNSTREAM OF THE BASKET.

BIO RETENTION #6 CONSTRUCTION DETAIL
SCALE: 1" = 20'

BIO RETENTION #7 CONSTRUCTION DETAIL
SCALE: 1" = 20'

BIO RETENTION #5 CONSTRUCTION DETAIL
SCALE: 1" = 20'

MICRO-BIO RETENTION #9 CONSTRUCTION DETAIL
SCALE: 1" = 20'

BR-1 & BR-5 GABION BASKET WEIR DETAIL (PIPE OUTFALL FOREBAY)
SCALE: N.T.S.

BR-5 GABION BASKET WEIR DETAIL (FLOW THRU INLET)
SCALE: N.T.S.

OWNER
BEECHWOOD MANOR, 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

REINFORCED SIDEWALK SEE DETAIL, SHEET 3

NO.	ROAD NAME	STATION	OFFSET
1	RIVER HILL ROAD	-2+59	18.4' L
		-2+79	18.4' L
2	RIVER HILL ROAD	-0+43	18.4' R
	TWIN FAWN LANE	20+47	22.6' R
3	TWIN FAWN LANE	18+12.7	18.9' R
		18+55.6	18.9' R
4	BOLTON FARM LANE	0+51.4	19.10' L
		0+97.3	19.10' L
5	BOLTON FARM LANE	4+68.6	19.10' L
		5+01.1	20.64' L
6	BOLTON FARM LANE	4+00.8	19.10' R
		4+34.3	19.10' R

APPROVED: DEPARTMENT OF PUBLIC WORKS
Developed by: *[Signature]* 10/27/2023
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Developed by: *[Signature]* 10/26/2023
CHIEF, DEVELOPMENT ENGINEERING DIVISION

Developed by: *[Signature]* 10/27/2023
CHIEF, DIVISION OF LAND DEVELOPMENT

BIORETENTION / MICRO-BIORETENTION / RAINGARDEN FACILITY - DESIGN ELEVATION CHART

FACILITY #	FACILITY TYPE	WEIR ELEV	ESD		TOP		BOTTOM		INV PIPE (1)	INV STONE	SURFACE AREA SF	APPROX DIM	OWNER PRIVATE/PUBLIC	MAINTENANCE PRIVATE/PUBLIC/JOINT
			A	B	C	D	PEA GRAVEL E							
BR-1	M-6	293.50	293.00	292.00	291.75	289.75	289.42	288.67	287.67	3525	SEE PLAN	PRIVATE	PRIVATE HOA	
MBR-2	M-6	293.50	293.00	292.00	291.75	289.75	289.42	288.67	287.67	578	SEE PLAN	PRIVATE	PRIVATE HOA	
MBR-3	M-6	298.50	298.00	297.00	296.75	294.75	294.42	293.67	292.67	600	SEE PLAN	PRIVATE	PRIVATE HOA	
MBR-4	M-6	298.40	298.00	297.00	296.75	294.75	294.42	293.67	292.67	600	SEE PLAN	PRIVATE	PRIVATE HOA	
BR-5	M-6	285.80	285.20	284.20	283.95	282.45	282.12	281.54	280.54	2505	SEE PLAN	PRIVATE	PRIVATE HOA	
BR-6	M-6	287.30	287.00	286.00	285.75	284.25	283.92	283.17	282.17	975	SEE PLAN	PRIVATE	PRIVATE HOA	
BR-7	M-6	283.65	283.35	282.35	282.10	280.60	280.27	279.52	278.52	1860	SEE PLAN	PRIVATE	PRIVATE HOA	
MBR-9	M-6	287.30	286.80	285.80	285.55	284.05	283.72	283.14	282.14	320	SEE PLAN	PRIVATE	PRIVATE HOA	
RG-1	M-7	287.30	287.00	286.00	285.75	284.25	283.92	283.34	282.34	125	SEE PLAN	PRIVATE	PRIVATE ON-LOT	
RG-2	M-7	291.50	291.20	290.20	289.95	288.45	288.12	287.54	286.54	70	SEE PLAN	PRIVATE	PRIVATE ON-LOT	

(1) UNDERDRAIN PIPE AND OVERFLOW DISTRIBUTION PIPE

FINAL ROAD CONSTRUCTION PLANS
BIORETENTION AND MICRO-BIORETENTION CONSTRUCTION DETAILS
BEECHWOOD MANOR
LOTS 1-31 AND OPEN SPACE LOTS 32-34
A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L 20205 / F. 202
TAX MAP: 50 GRID: 1
6TH ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

9111 RIVER HILL ROAD
LAUREL, MD 20723

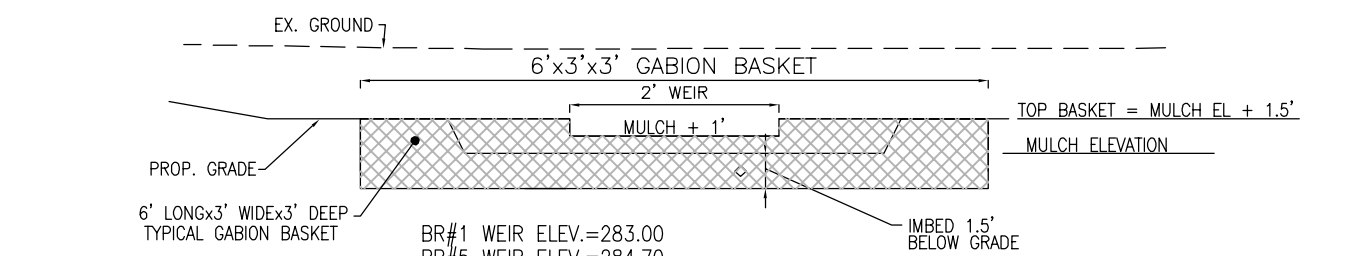
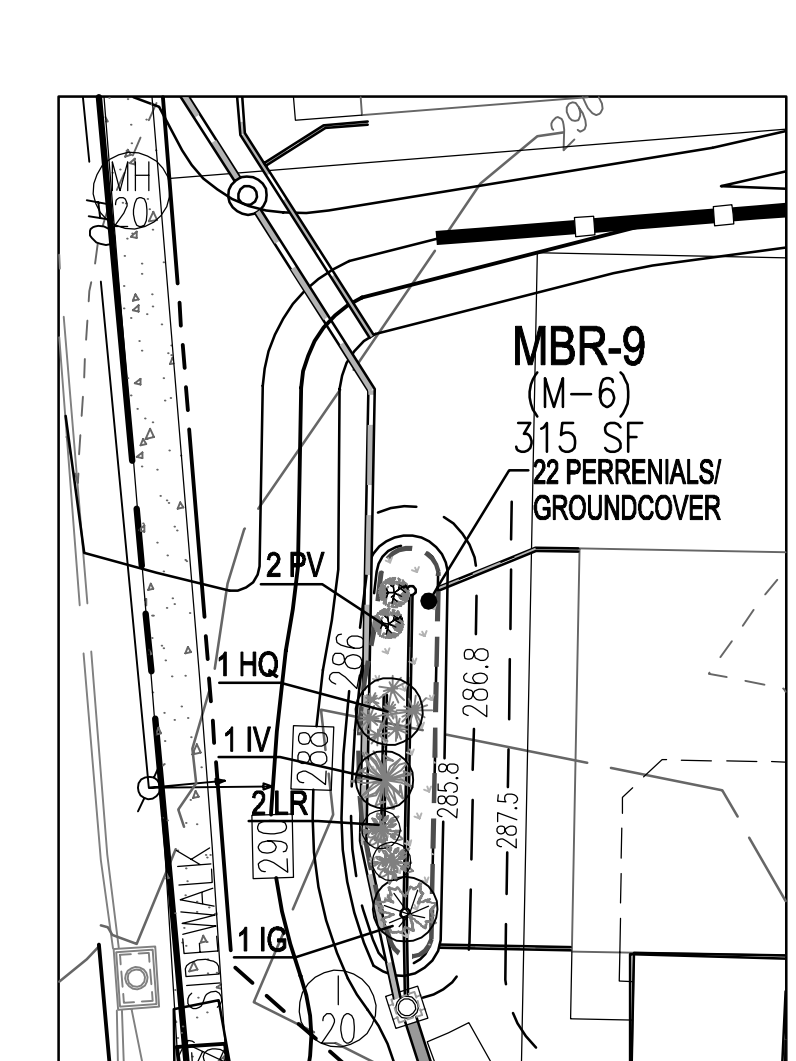
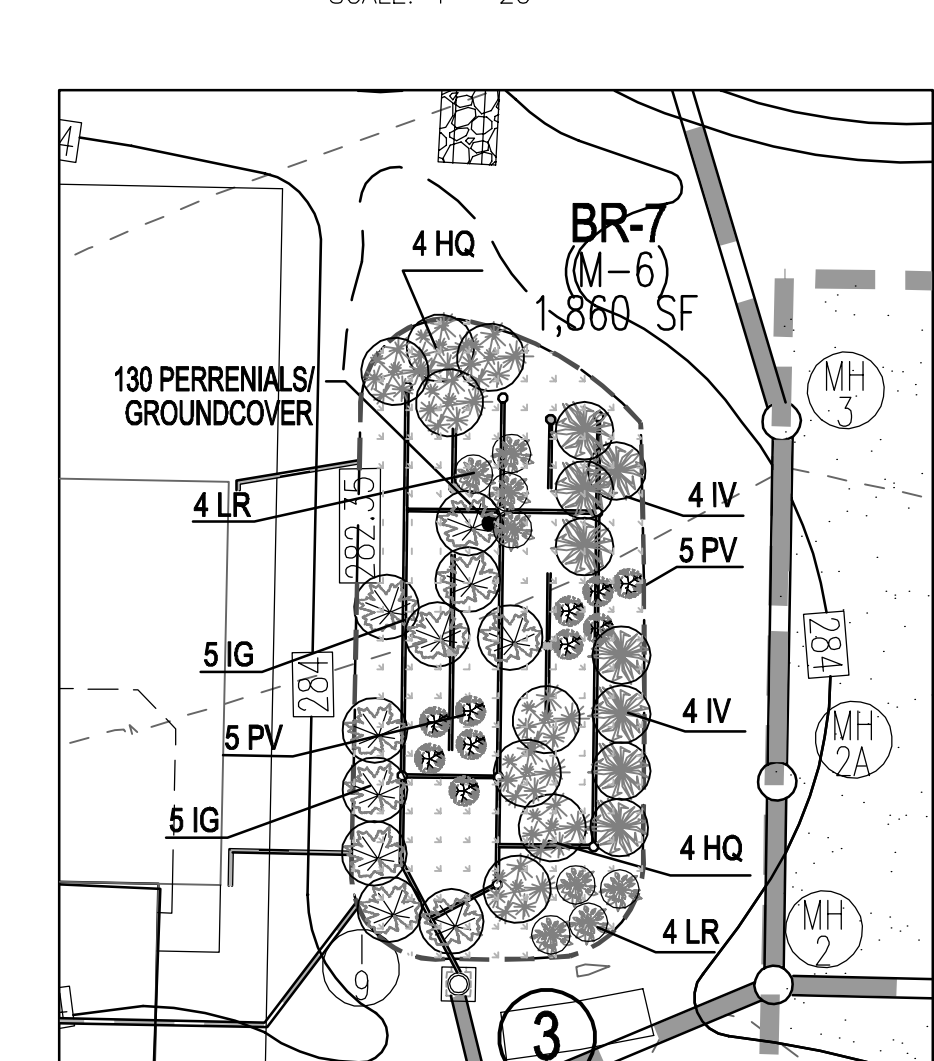
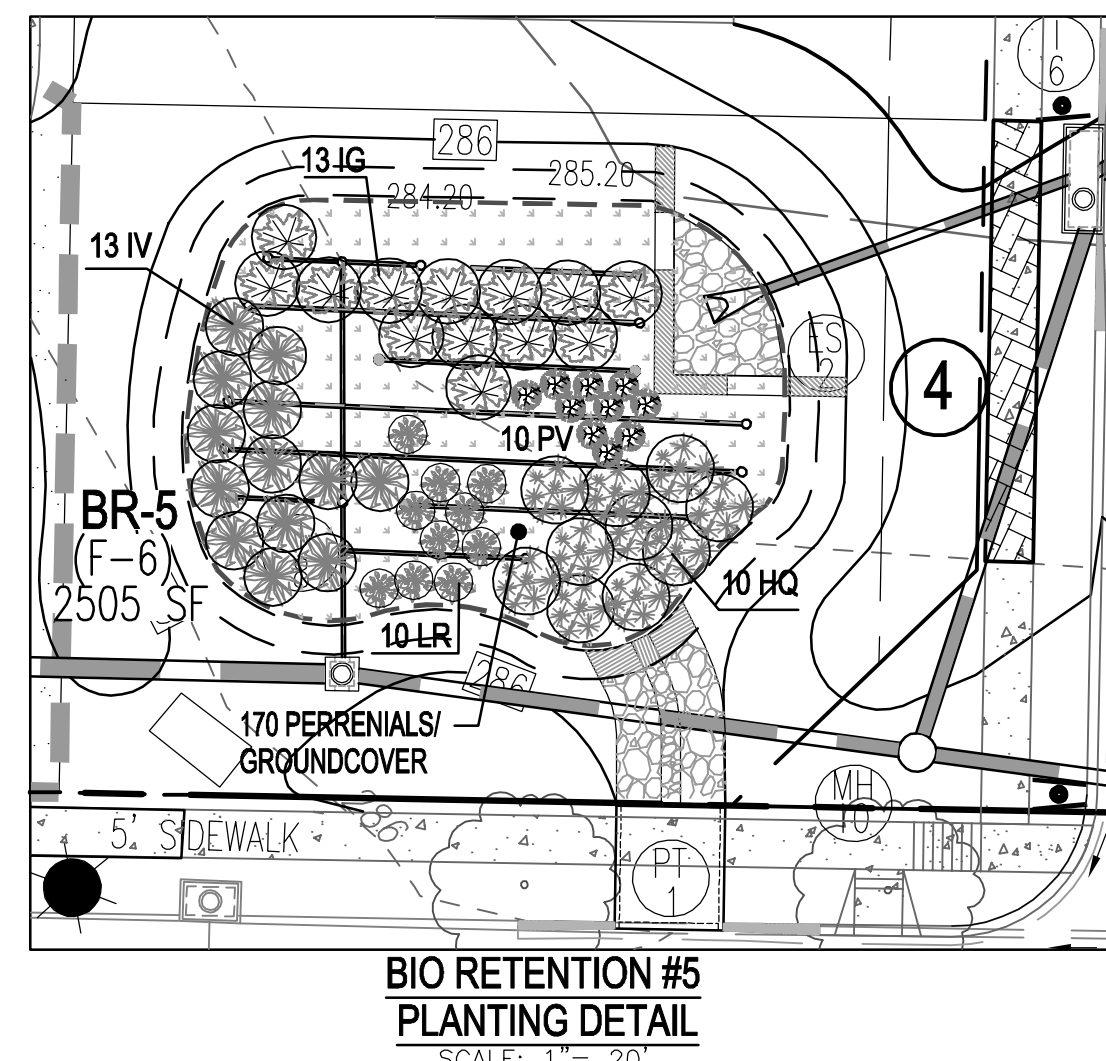
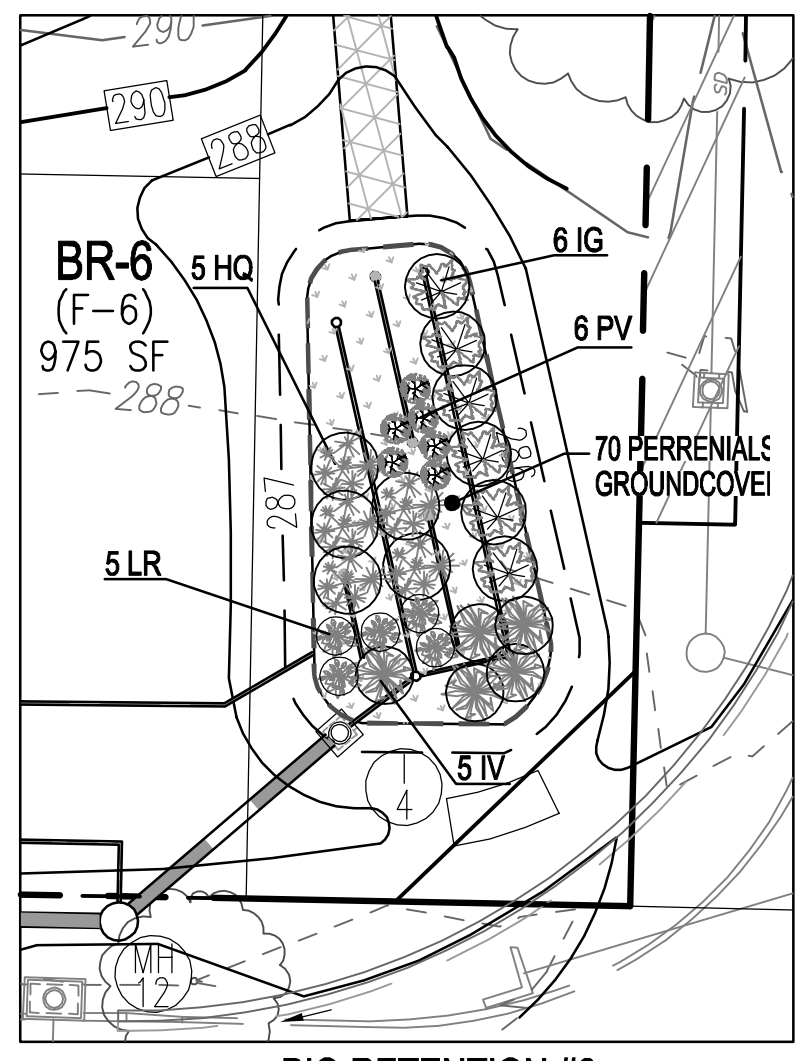
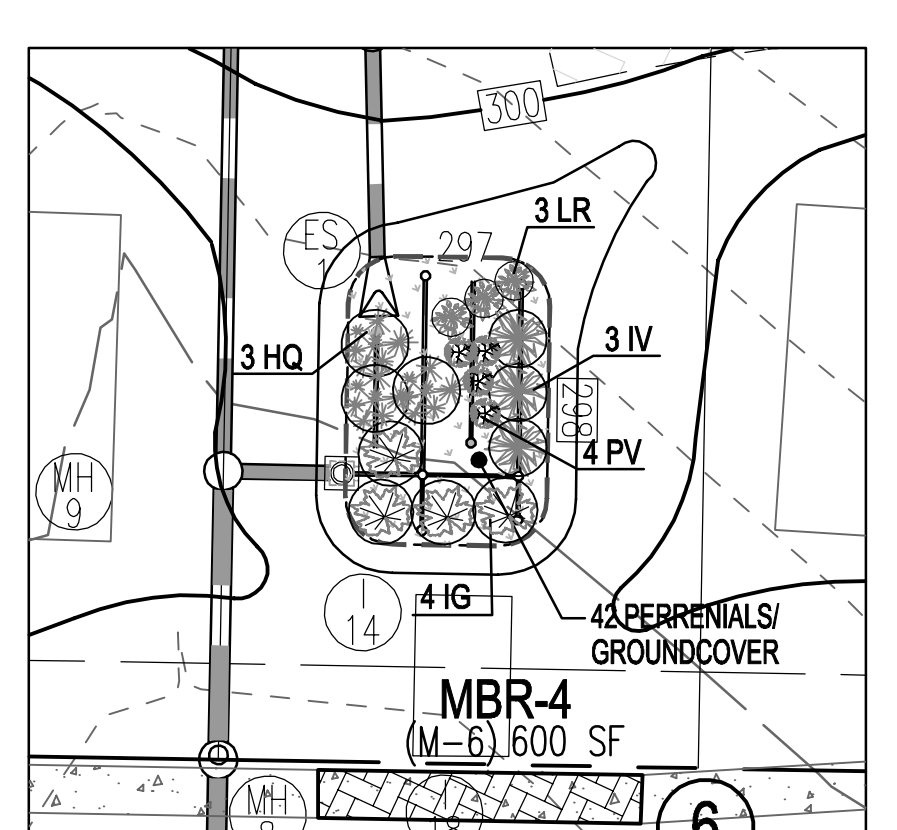
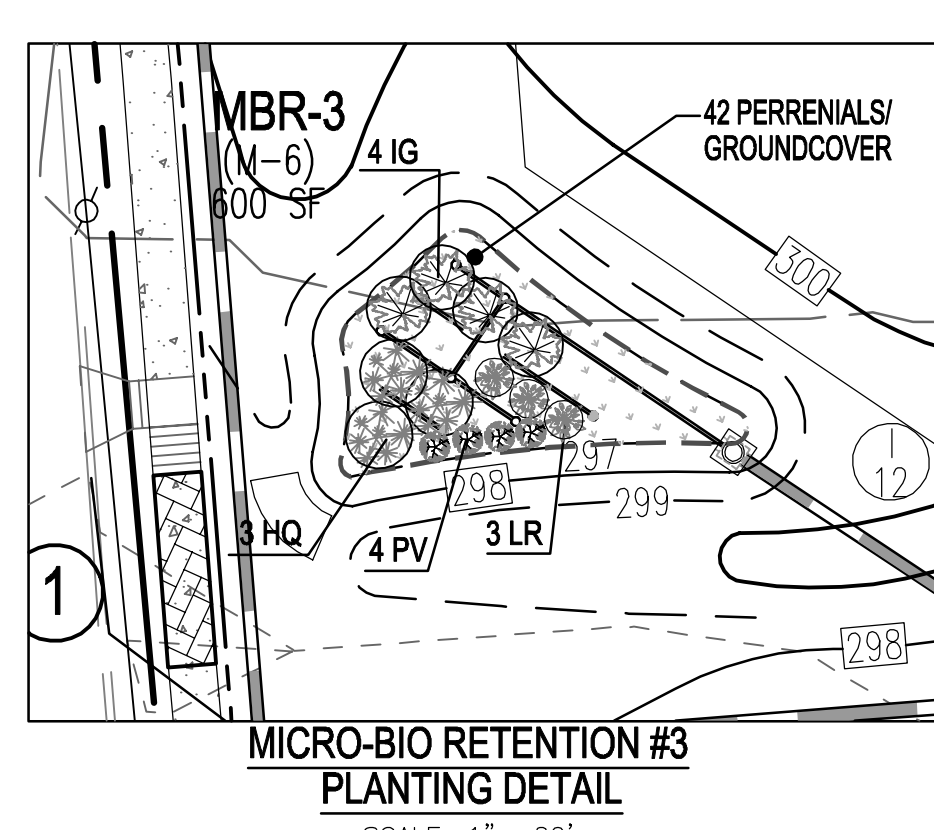
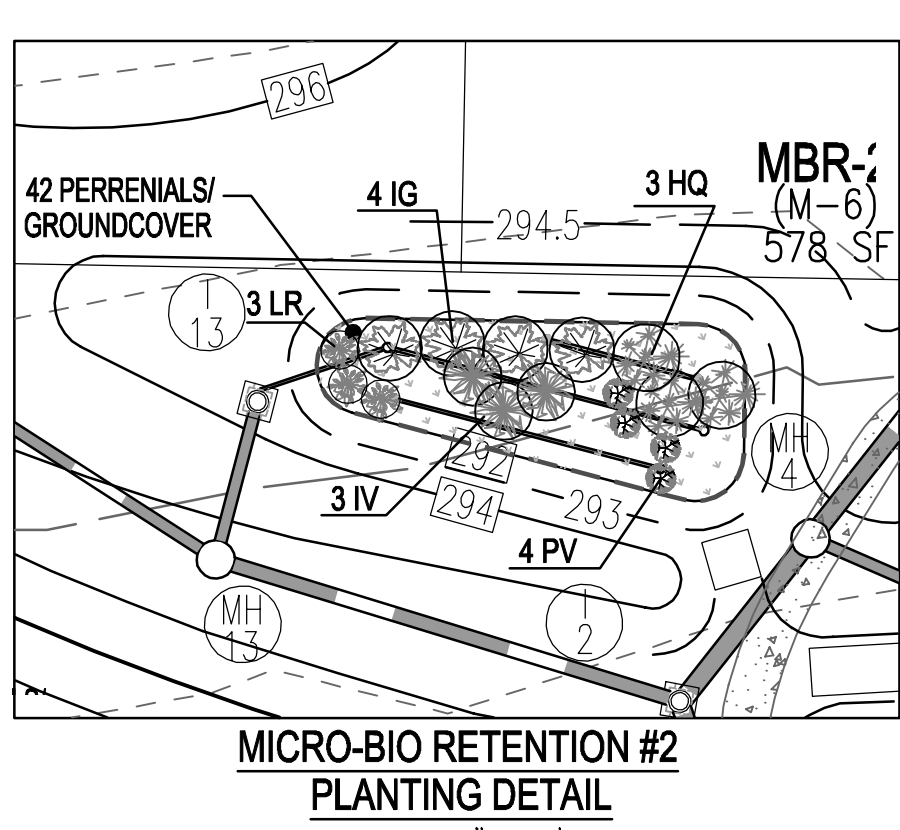
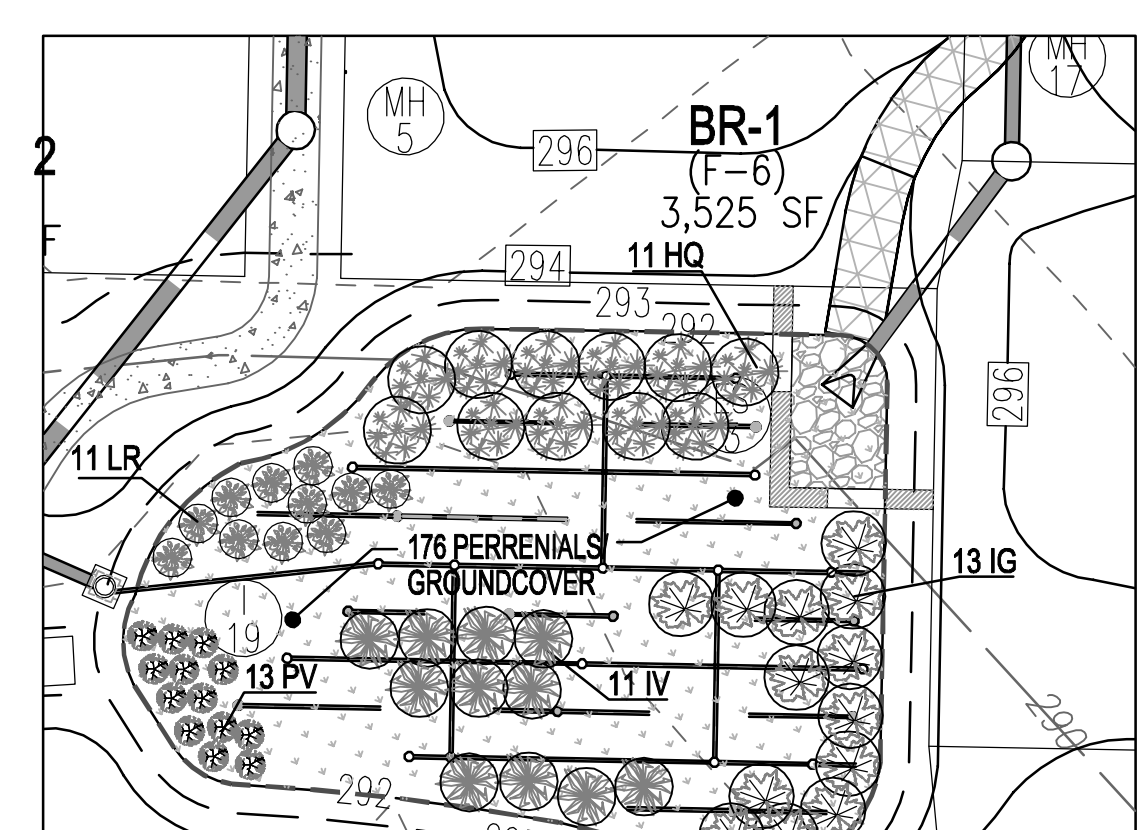
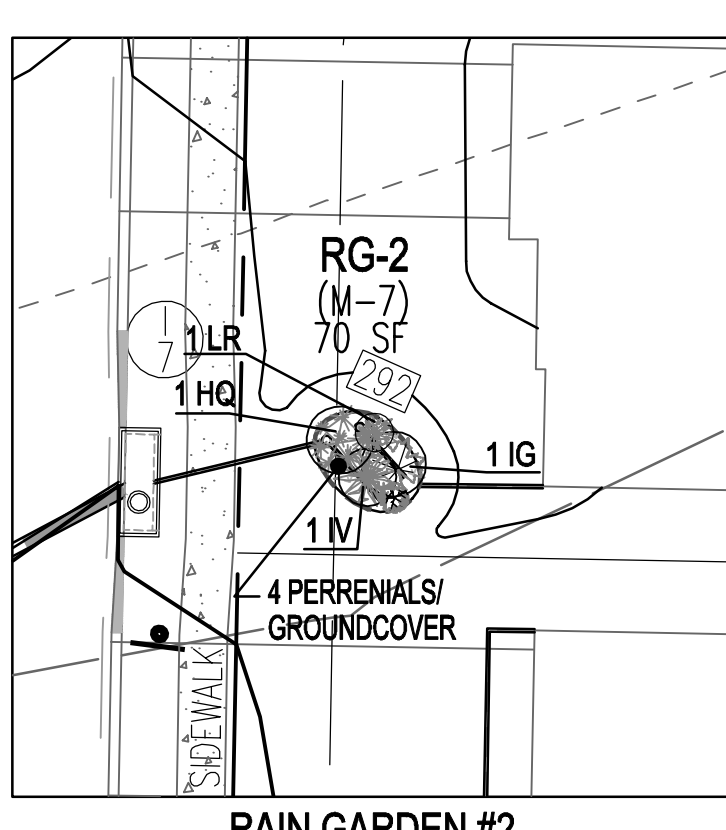
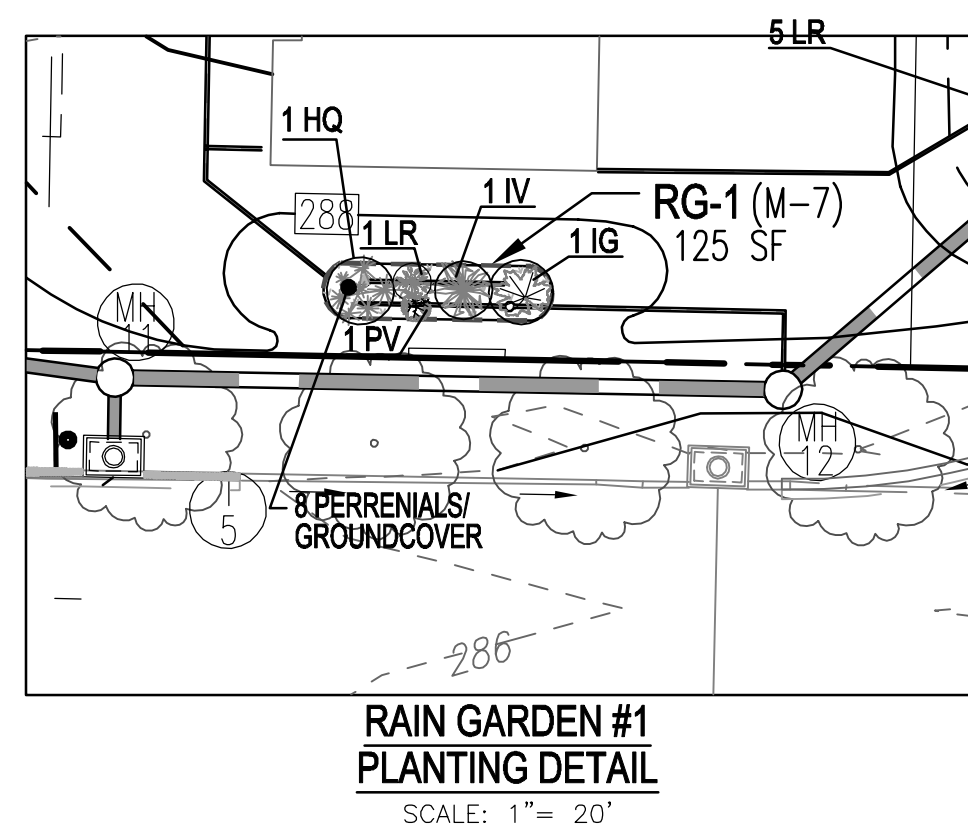
PARCEL: 001
ZONED: R-3C

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLCOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

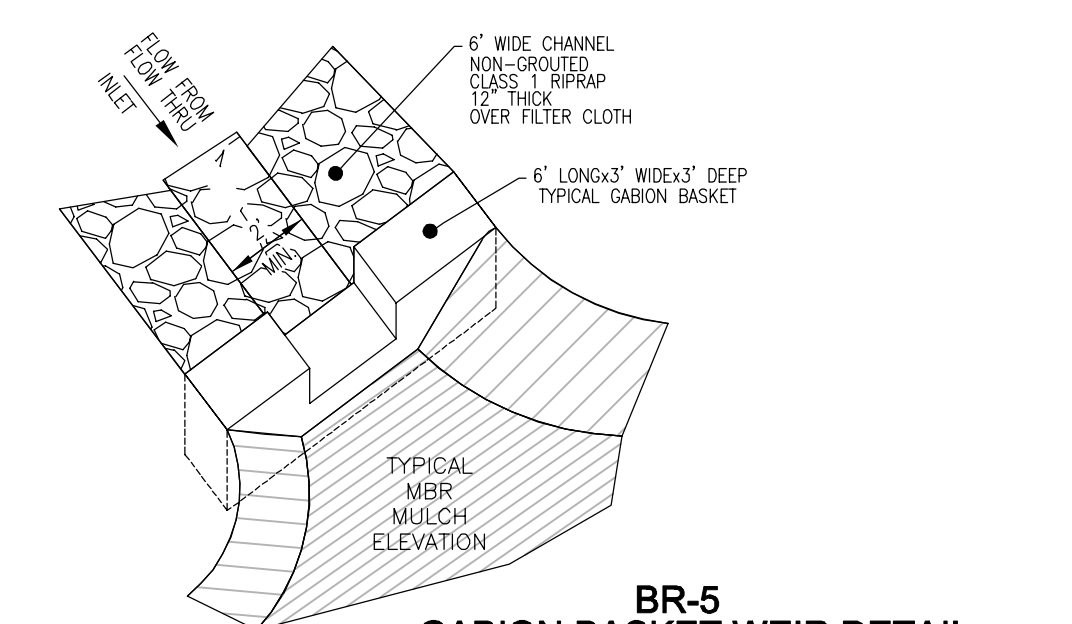
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183
EXPIRATION DATE: 09-27-2024

DESIGN BY: EDS
DRAWN BY: JMR/KG
CHECKED BY: RHY
DATE: AUGUST 2023
SCALE: AS SHOWN
W.O. NO.: 17-26

17 SHEET OF 21



NOTES:
 1. ALL WIRE USED IN GABION CONSTRUCTION SHALL BE GALVANIZED AND PLASTIC COATED.
 2. FILTER CLOTH SHALL BE PLACED WHEREVER GABIONS COME INTO CONTACT WITH SOIL.
 3. STONE FILL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE 4"-8" IN DIAMETER.
 4. CONSTRUCTION MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.



NOTES:
 GABION BASKETS SHALL BE INSTALLED IN THE MICRO-BIORETENTION FACILITY PRIOR TO THE INSTALLATION OF THE PLANTING MATERIALS SHOWN ON THIS SHEET.
 FIELD ADJUSTMENTS TO THE PLANTING LOCATIONS SHALL BE MADE. ALL PLANTING MATERIAL IS LOCATED DOWNSTREAM OF THE BASKET.

Appendix A. Landscaping Guidance for Stormwater BMPs.....Specific Landscaping Criteria

Table A.4 Commonly Used Species for Bioretention Areas

Trees	Shrubs	Herbaceous Species
Acer rubrum	Aesculus parviflora	Andropogon virginicus
Maple	Bottlebrush Buckeye	Broomrape
Betula nigra	Cypripedium occidentale	Eupatorium purpureum
River Birch	Bittersweet	Joe Pye Weed
Liquidambar styraciflua	Nemophila virginiana	Scirpus pungens
Flamingo Tree	Witch Hazel	Three Square Bellwort
Quercus virginiana	Vaccinium corymbosum	Iris versicolor
Fraxinus nigra	Highland Blueberry	Blue Flag
Nyssa sylvatica	Iris glabra	Labelia cardinalis
Black Gum	Salberry	Cardinal Flower
Diostyris virginiana	Iris verticillata	Panicum virgatum
Winterberry	Winterberry	Switchgrass
Platanus occidentalis	Viburnum dentatum	Dichanthium scoparium
Sycamore	Asterwood	Broom Panic Grass
Quercus palustris	Lindera benzoin	Rudbeckia lactinosa
Pin Oak	Spicebush	Tall Coneflower
Quercus phellos	Myrica pennsylvanica	Scirpus operinus
Willow Oak	Bayberry	Woolgrass
Celtis nigra	Vernonia noveboracensis	New York Ironweed
Black willow		

Note 1: For more options on plant selection for bioretention, consult Bioretention Manual (ETAB, 1995) or the Design of Stormwater Filtering Systems (Caylor and Schueler, 1997).

BIORETENTION PLANTING SCHEDULE (SHRUB/ORNAMENTAL GRASSES)			
LEGEND/KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE SPACING
IG	57	ILEX GLABRA "SHAMROCK" HICKBERRY HOLLY	1 GALLON 18" O.C.
IV	49	ITEA VIRGINICA VIRGINIA SWEETSPIRE	1 GALLON 18" O.C.
HQ	46	HYDRANGEA QUERCIFOLIA "RUBY SLIPPERS" OAKLEAF HYDRANGEA	1 GALLON 30" O.C.
LR	47	LEUCOTHEO RACEMOSA FETTERBUSH	1 GALLON 30" O.C.
PV	55	PANICUM VIRGATUM "PRAIRIE SKY" SWITCH GRASS	1 GALLON 36" O.C.
PERENNIALS/GROUNDCOVER PLANTING SCHEDULE			
LEGEND	QTY	BOTANICAL NAME/COMMON NAME	SIZE REMARKS
	35.3	BAPTISIA AUSTRALIS FALSE INDIGO	4" POT 12"-15" O.C. FOR SIDES AND BOTTOM OF MBR. MIX ALL VARIETIES IN A NATURALIZED RANDOM PATTERN THROUGHOUT. PLANT IN GROUPS OF NO LESS THAN 9 PLANTS PER CLUMP
	35.3	ACORUS GRAMINEUS "OGON" GOLDEN VARIEGATED SWEET FLAG	1 QT.

MICRO-BIORETENTION PLANTING REQUIREMENTS		PLANTINGS PROVIDED										PERENNIALS/GROUND COVER PROVIDED	
MBR #	LF	AREA	STEMS REQUIRED (0.0229)	STEMS PROVIDED	IG	IV	HQ	LR	PV	BA	AG	TOTAL	
RG #1	55	130	3	5	1	1	1	1	1	4	4	8	
RG #2	33	84	2	5	1	1	1	1	2	2	4		
BR #1	231	2,538	59	99	13	11	11	11	13	88	88	176	
MBR #2	110	618	15	17	4	3	3	3	4	21	21	42	
MBR #3	111	604	14	17	4	3	3	3	4	21	21	42	
MBR #4	93	609	14	17	4	3	3	3	4	21	21	42	
BR #5	184	2,438	56	96	13	13	10	10	10	85	85	170	
BR #6	132	1,023	24	27	6	5	5	5	6	35	35	70	
BR #7	154	1,860	43	44	10	8	8	8	10	65	65	130	
MBR #9	52	315	8	7	1	1	2	2	11	11	22		
TOTALS	894	7,914	184	198	57	49	46	47	55	353	353	706	

BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEM PER PLANTED ACRE (0.0229 STEMS PER SQUARE FOOT).

- TABLE A.4 IS TAKEN FROM THE "2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II - APPENDIX A."
- CONTRACTOR SHALL BE FAMILIAR WITH APPENDIX B.4.C. CONSTRUCTION SPECIFICATIONS AND TABLE B.4.1 MATERIAL SPECIFICATIONS IN ADDITION THE "2000 MARYLAND STORMWATER DESIGN MANUAL - VOLUME II - APPENDIX A OFFERS ADDITIONAL HELPFUL INFORMATION."
- NO TREES SHALL BE PLANTED WITHIN A MICRO-BIORETENTION FACILITY. USE ONLY SHRUB OR HERBACEOUS SPECIES.
- ABOVE TABLE A.4. IS FOR INFORMATIONAL PURPOSES ONLY. LANDSCAPE CONTRACTOR SHALL INSTALL PLANTINGS SPECIFIED OR USE APPROVED EQUAL SPECIES WHICH ARE TOLERANT TO FLUCTUATING WATER LEVELS.
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THIS FINAL PLAN.

APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 10/27/2023
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 10/26/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: [Signature] 10/27/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT

OWNER: BEECHWOOD MANOR, 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.	REVISION	DATE

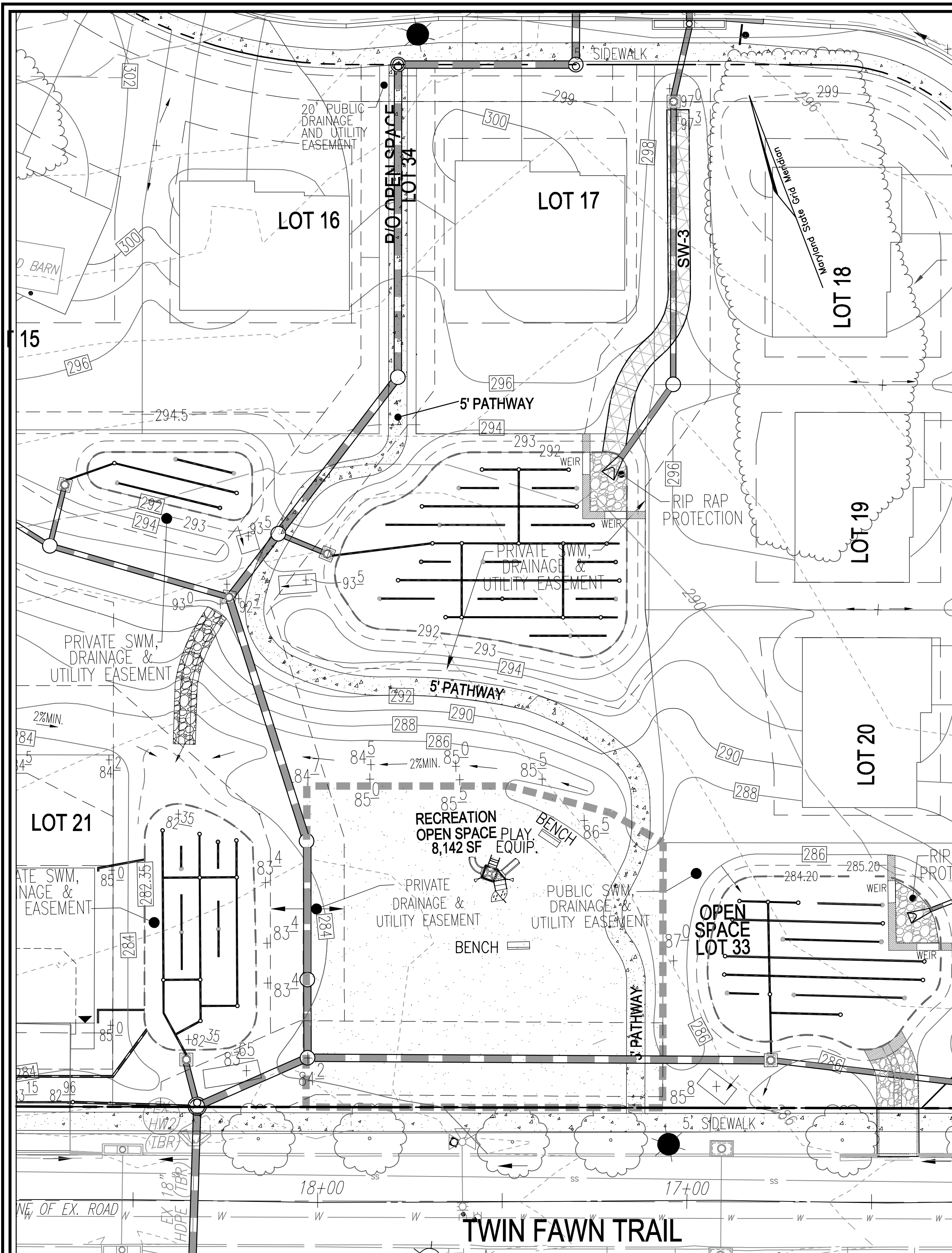
FINAL ROAD CONSTRUCTION PLANS
 BIORETENTION AND MICRO-BIORETENTION PLANTING DETAILS
 BEECHWOOD MANOR
 LOTS 1-31 AND OPEN SPACE LOTS 32-34
 A SUBDIVISION OF TAX MAP 50 - PARCEL 1
 L 20205 / F. 202
 TAX MAP: 50 GRD. 1
 6TH ELECTION DISTRICT
 DPZ REFERENCE: SEE SITE DATA
 9111 RIVER HILL ROAD
 LAUREL, MD 20723
 PARCEL: 001
 ZONED: R-3C
 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

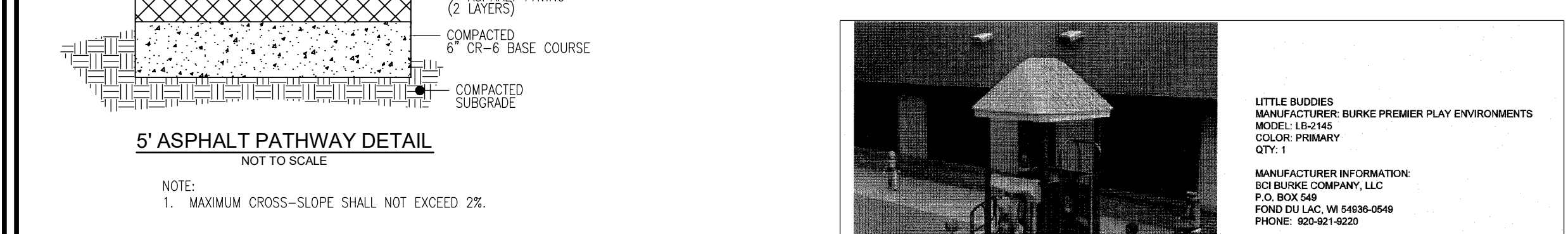
PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 16193 EXPIRATION DATE: 09-27-2024

DESIGN BY: EDS
 DRAWN BY: JMR/KG
 CHECKED BY: RHV
 DATE: AUGUST 2023
 SCALE: AS SHOWN
 W.O. NO.: 17-26

18 SHEET OF 21



AMMENITY AREA PLAN
SCALE: 1"=20"



5' ASPHALT PATHWAY DETAIL
NOT TO SCALE

NOTE:
1. MAXIMUM CROSS-SLOPE SHALL NOT EXCEED 2%.

APPROVED: DEPARTMENT OF PUBLIC WORKS
10/27/2023

CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
10/26/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF LAND DEVELOPMENT
10/27/2023

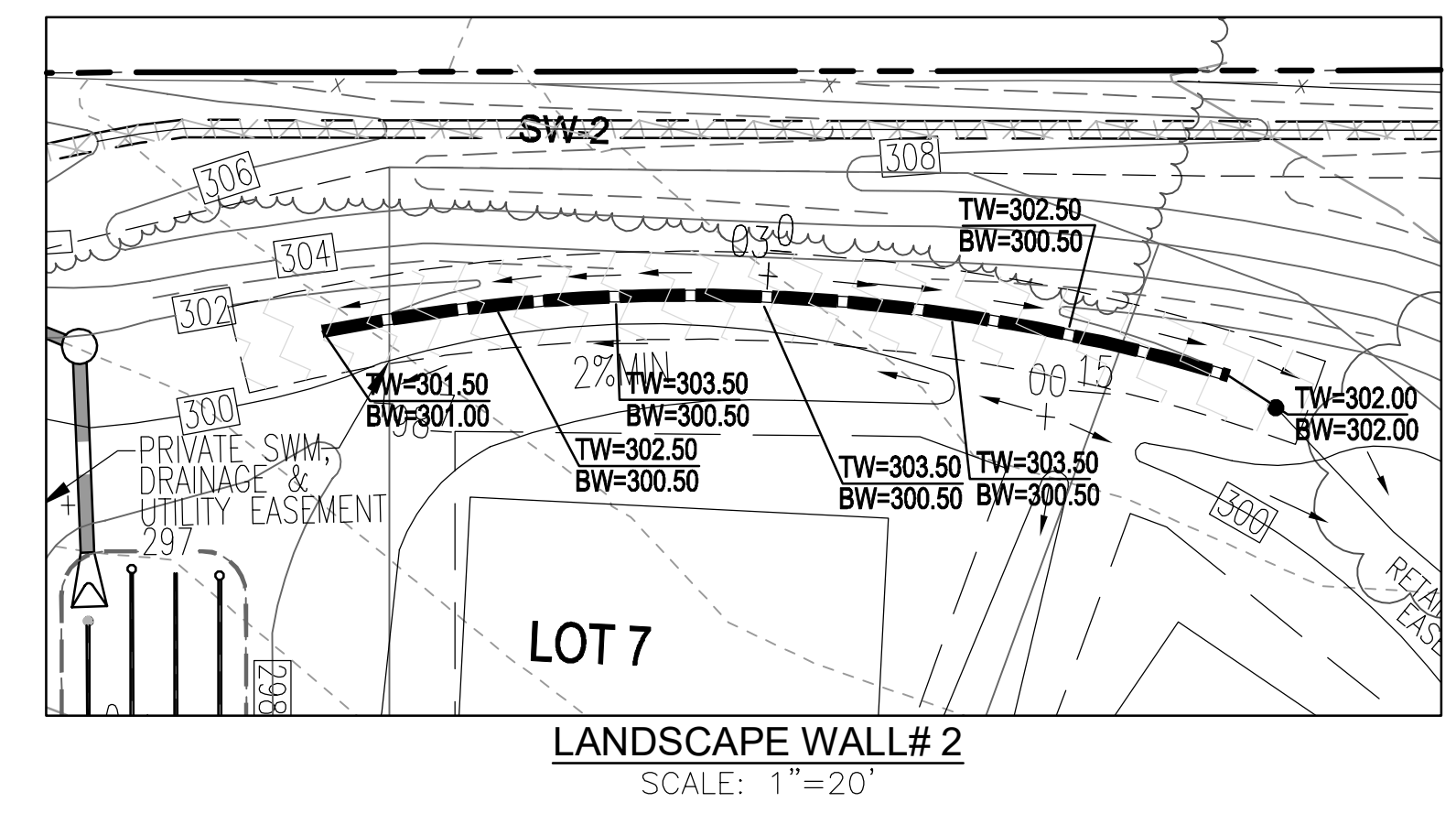
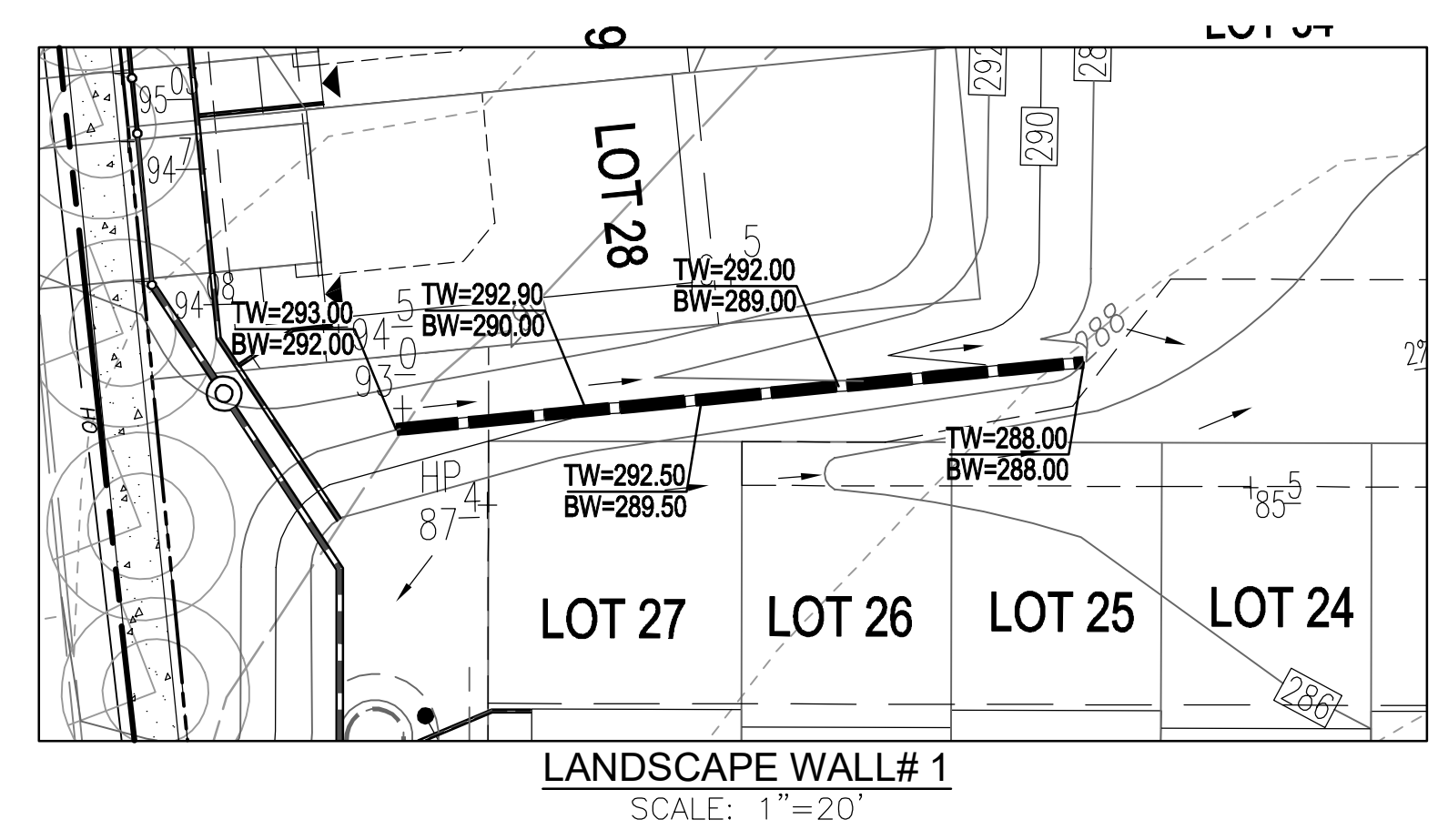
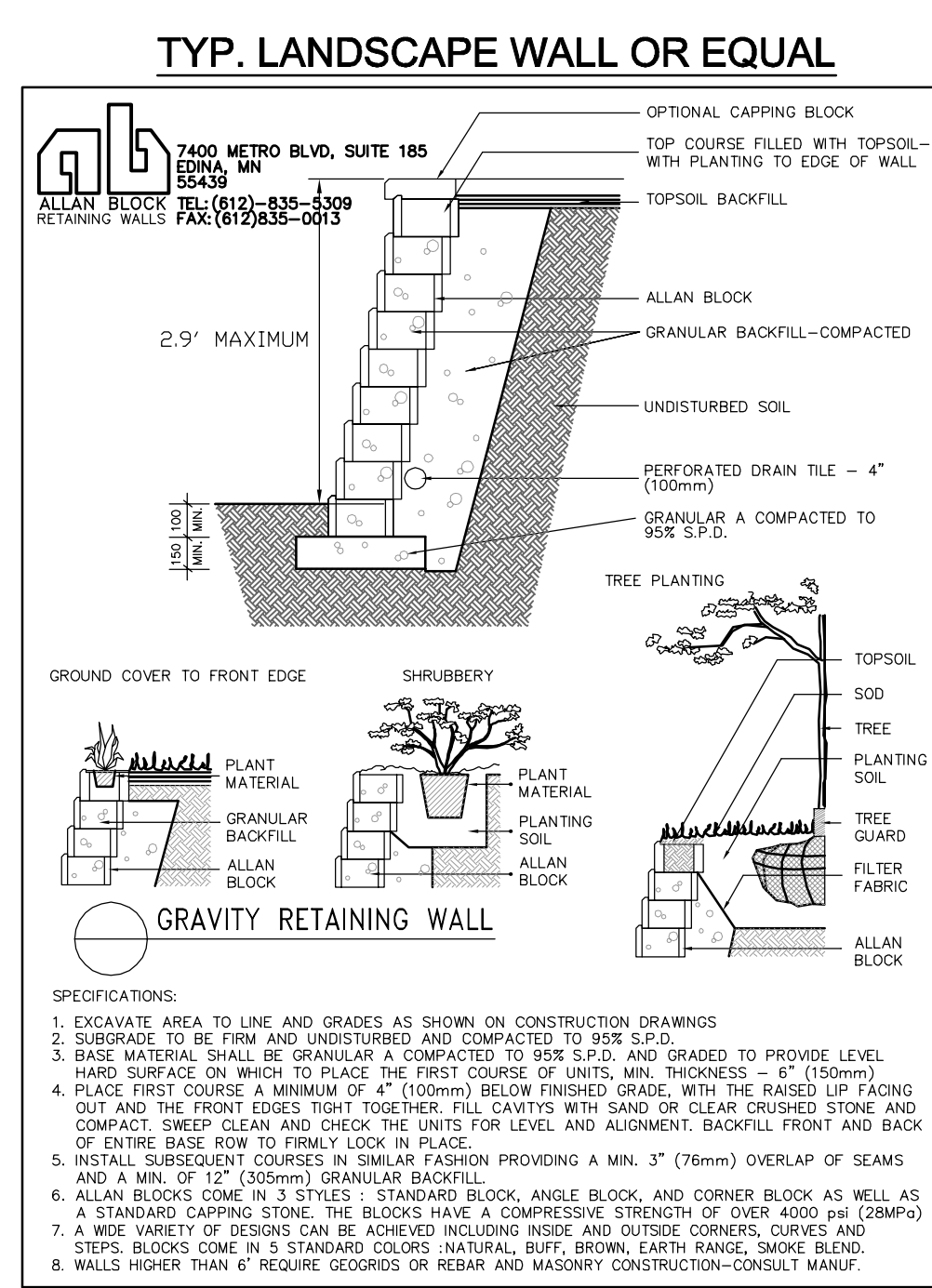
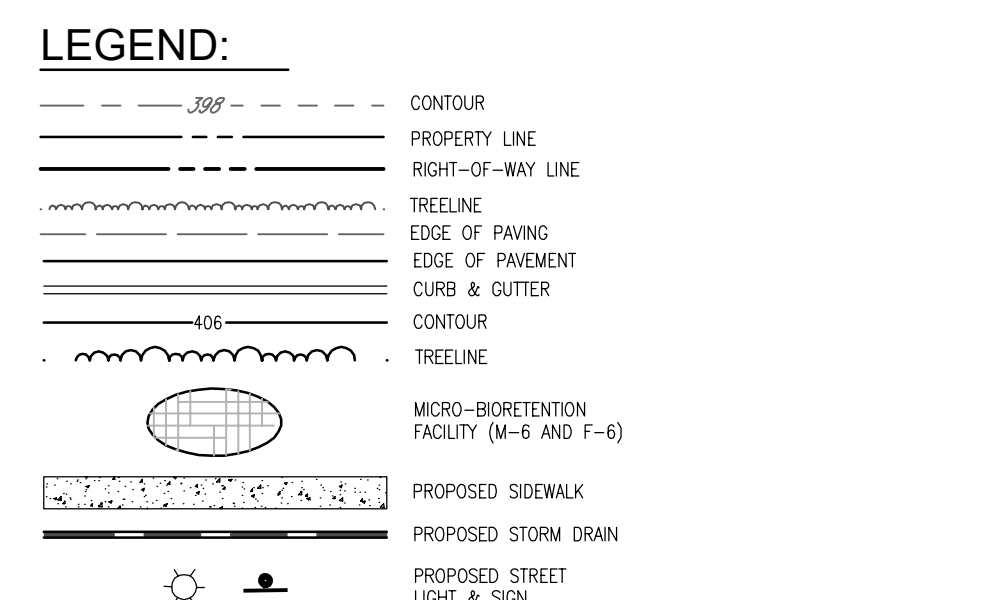
CHIEF, DIVISION OF LAND DEVELOPMENT

6 EARLY CHILDHOOD PLAY STRUCTURE OR EQUIVALENT
PICTORIAL

LITTLE ROOKIES MANUFACTURER: BURKE PRIMER PLAY ENVIRONMENTS
MODEL: LR-160
COLOR: PRIMARY
QTY: 1

MANUFACTURER INFORMATION:
605 BURKE COMPANY, LLC
P.O. BOX 549
FOND DU LAC, WI 54636-0549
PHONE: 920-921-4220

NOTES:
1. OR APPROVED EQUAL
2. SEE MATERIALS PLAN FOR FALL ZONES
3. INSTALL PER MANUFACTURER'S INSTRUCTIONS
4. ALL STRUCTURAL ITEMS SHALL BE DESIGNED BY A STRUCTURAL ENGINEER AND MODIFIED AS NECESSARY BASED ON A SITE SPECIFIC GEOTECHNICAL REPORT.



ANOVA

211 North Lindbergh Blvd.
St. Louis, MO 63104
800.231.1527 ext. 1394, 754.0826 fax
856.382.0000 www.anovafurniture.com

L1560—Rendezvous 6' Contour Bench

6' contour bench with steel slat seat, cast iron armrests and cast iron portable surface mount legs.

Material:
The 6' contour bench is constructed of 2" galvanized steel slat seat with a 20" wide dot pattern and cast iron armrests and legs. The benches 75.0" long and will support 200 lbs. per linear foot. The bench is designed to be portable for flexibility in placement or surface mounted using provided 4" diameter holes in steel to ground movement. Moving hardware not included.

Finish:
Steel slat seat is produced by the patented Fusion Advantage™ finish. The powder coating has an average thickness of .025" and is encapsulated with a highly UV-stable, high performance powder coating that won't fade, peel, crack, chip, or rub off. The finish has been tested to meet the requirements of ASTM E594 and is referred to be in compliance with California Title 24 Part 2, Section 2603.2.2.2. Finish resistant, powder coated armrests, legs and slats supports feature a slat of the seat/pusher process to prevent rattling. Finished components exceed the industry standard by 50% in testing by independent sources.

Color:
See website or sales representative for color choices.

Assembly:
Some assembly is required. Stainless steel assembly hardware is included.

Maintenance:
The product is virtually maintenance-free and requires only periodic cleaning with a sponge and a solution of mild detergent and water to remove surface dirt. Do not clean with solvent or petroleum base products.

Warranty:
20-year limited structural warranty with 5-year finish warranty from the date of purchase. See full details on multi-year warranties for components at www.anovafurniture.com/customer-service.

TYPICAL BENCH OR EQUAL
SCALE: N.T.S.

Unit Weight	Unit Shipping Wt. (LBS)	Unit Shipping Ht. (IN)	Unit Shipping Wt. (KG)	Unit Shipping Ht. (CM)	Max. Units Per Pallet	Pallet Size (IN)	Total No. Pkg.	Shipping Class
160 lbs.	N/A	28 in. (714 mm)	57.15 kg	714 mm	2	100 in. (2540 mm)	3	300

SHIPPING INFORMATION

Manufacturer: ANOVA
Made in USA

OWNER
BEECHWOOD MANOR, 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

FINAL ROAD CONSTRUCTION PLANS
AMENITY DETAILS

BEECHWOOD MANOR
LOTS 1-31 AND OPEN SPACE LOTS 32-34
A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L. 202025 / F. 202
TAX MAP: 50 GRID: 1
6TH ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

9111 RIVER HILL ROAD
LAUREL, MD 20723

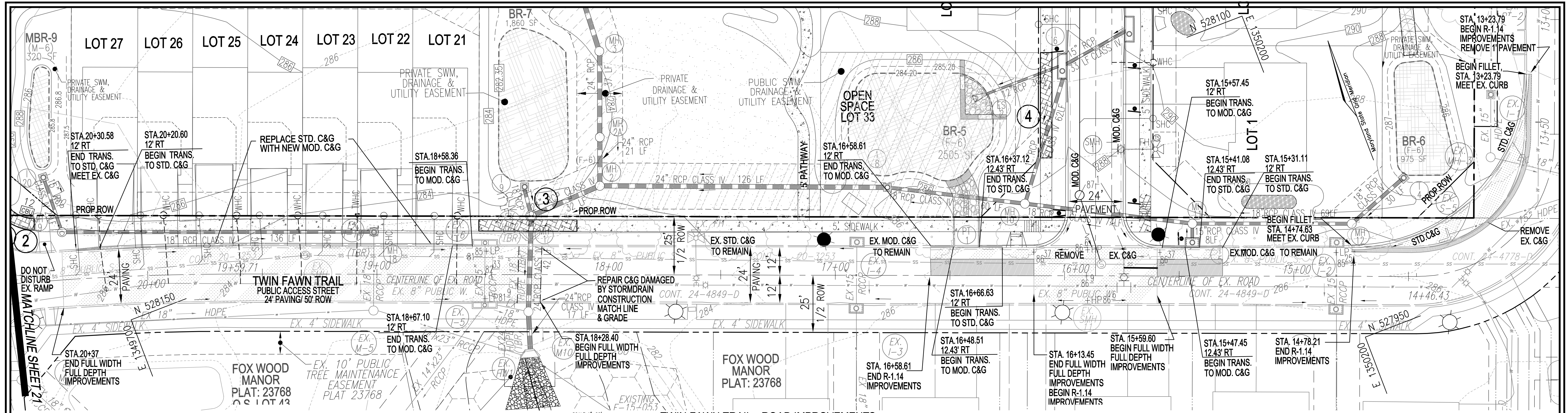
PARCEL: 001
ZONED: R-SC
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

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: EDS
DRAWN BY: JMR/KG
CHECKED BY: RHW
DATE: AUGUST 2023
SCALE: AS SHOWN
W.O. NO.: 17-26

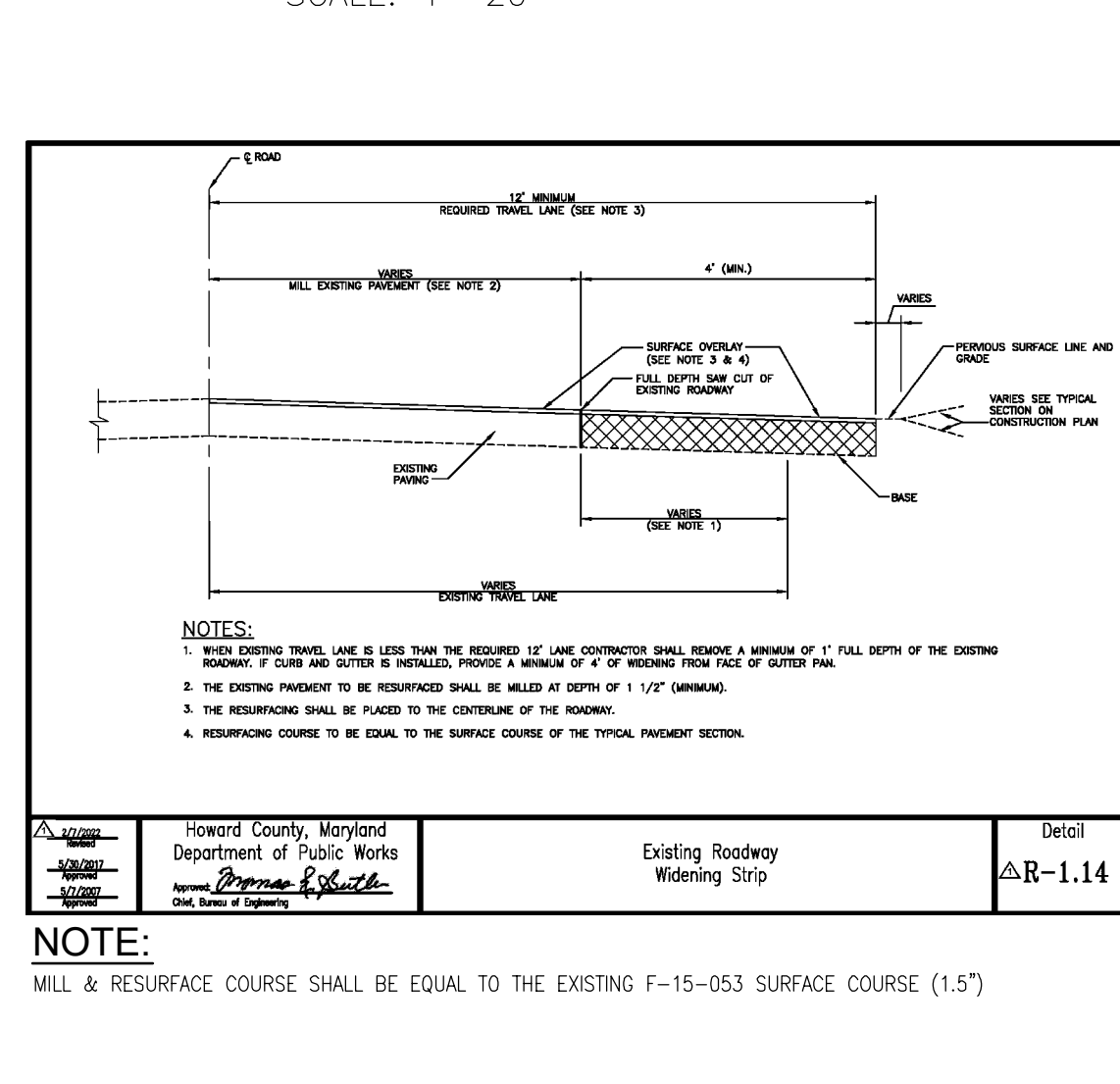
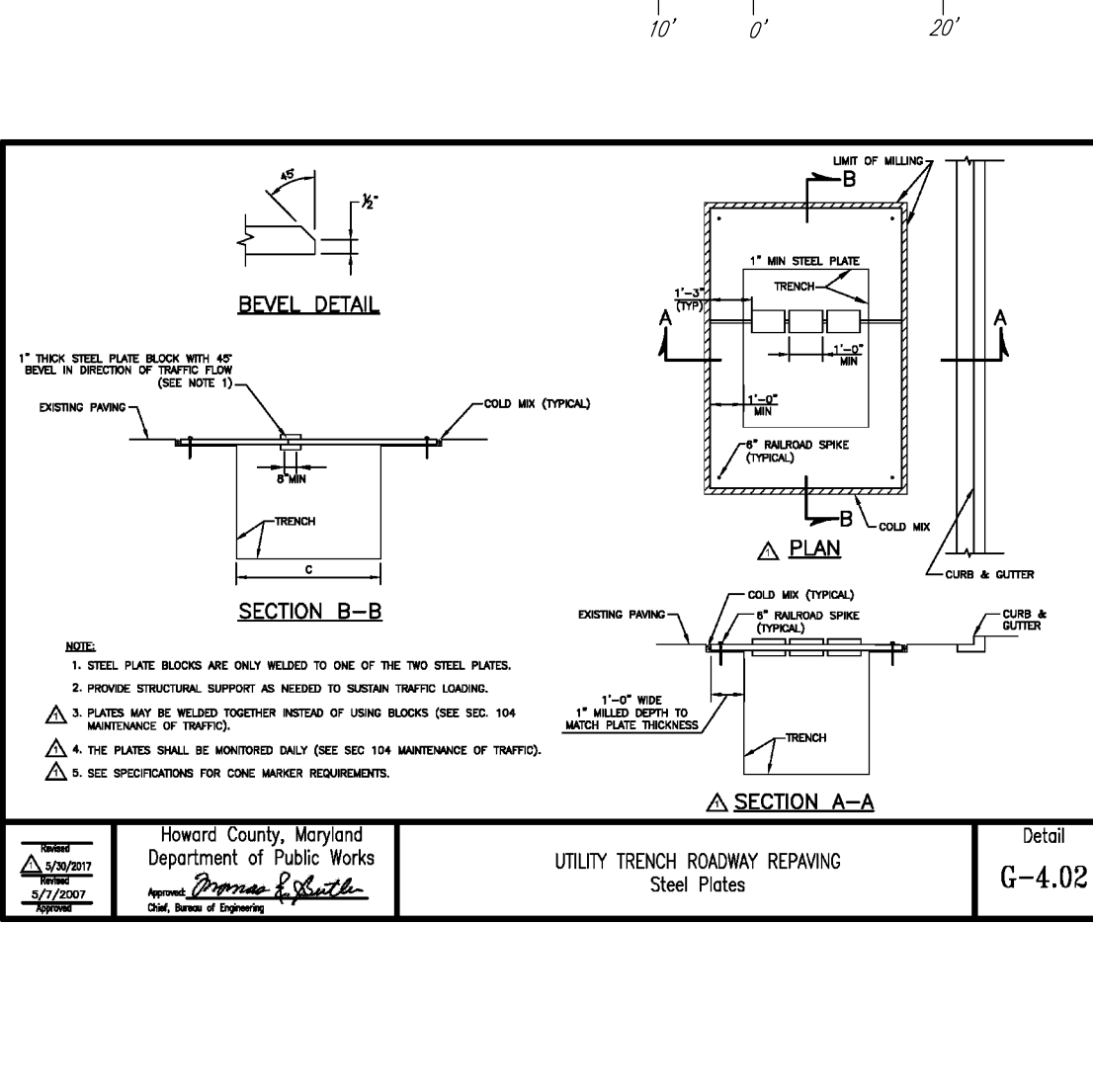
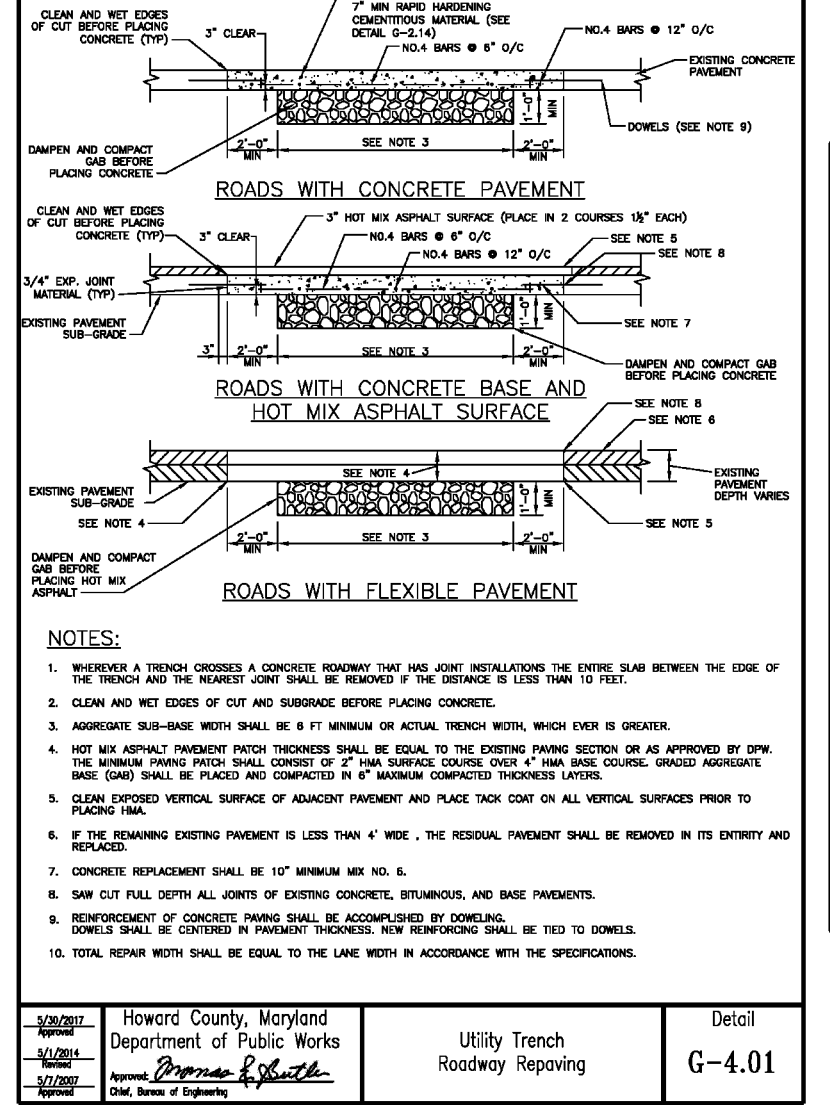
19 SHEET OF 21



TWIN FAWN TRAIL - ROAD IMPROVEMENTS
SCALE: 1"=20'

LEGEND

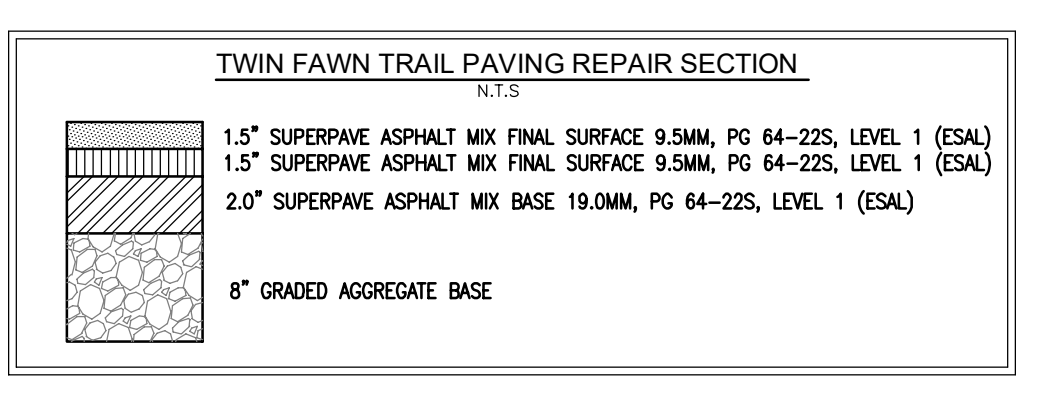
	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SPOT ELEVATION
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING STORM DRAIN LINE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	MICRO-PERFORATION/RAIN GARDEN
	PROPOSED SIDEWALK
	EXISTING TREE LINE
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN INLET
	REINFORCED SIDEWALK



PAVEMENT LEGEND

	FULL DEPTH PAVEMENT SECTION REQUIRED REFER TO TYPICAL SECTION
	GRINDING, REQ'D. 2" MILL, VARIABLE DEPTH WEDGE LEVEL AND RESURFACING REFER TO TYPICAL SECTION, WIDTH VARIES

NOTE:
MILL & RESURFACE COURSE SHALL BE EQUAL TO THE EXISTING F-15-053 SURFACE COURSE (1.5")



PAVEMENT CONSTRUCTION LOCATION

TYPE OF CONSTRUCTION	START STATION	FINISH STATION
FULL DEPTH PAVEMENT	STA. 13+23.79	STA. 14+78.21
FULL DEPTH PAVEMENT	STA. 15+31.11	STA. 16+58.61
FULL DEPTH PAVEMENT	STA. 18+28.40	STA. 20+30.58
MILL & OVERLAY	STA. 13+23.79	STA. 14+78.21
MILL & OVERLAY	STA. 15+31.11	STA. 15+59.60
MILL & OVERLAY	STA. 16+13.45	STA. 16+58.61

REFER TO PLAN LEGEND AND PLAN VIEW HATCH.

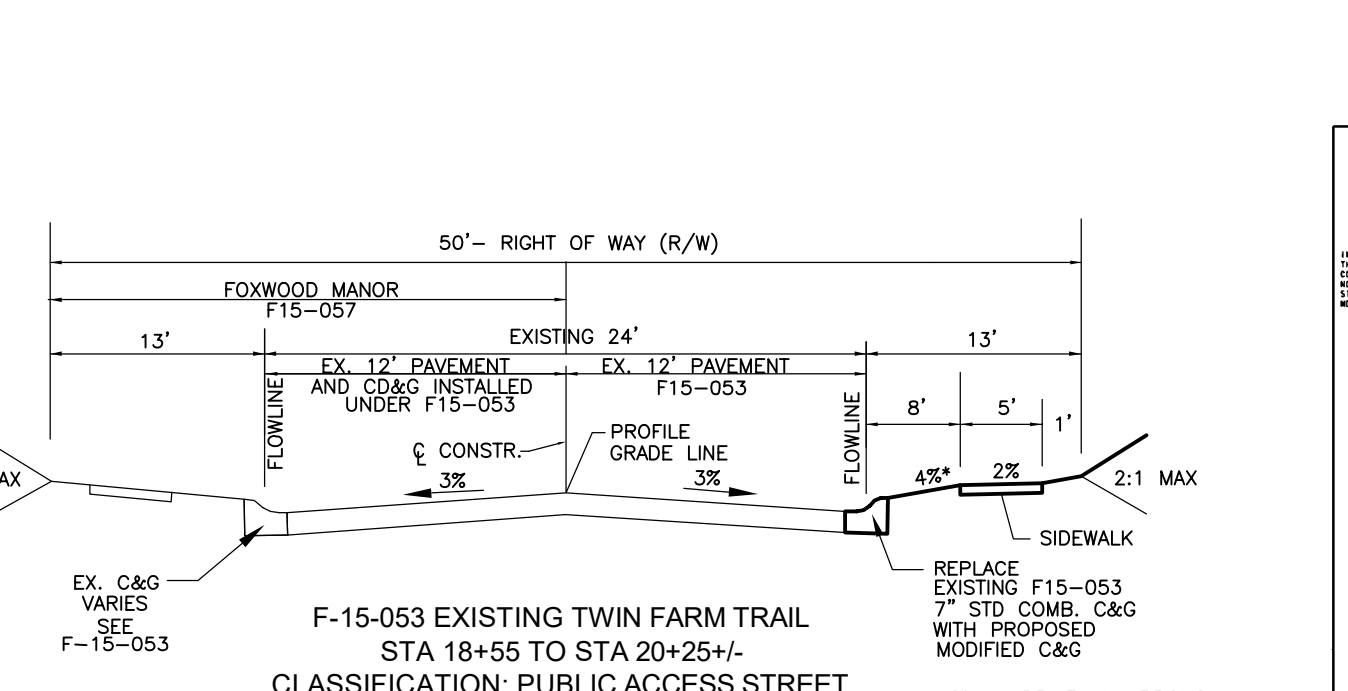
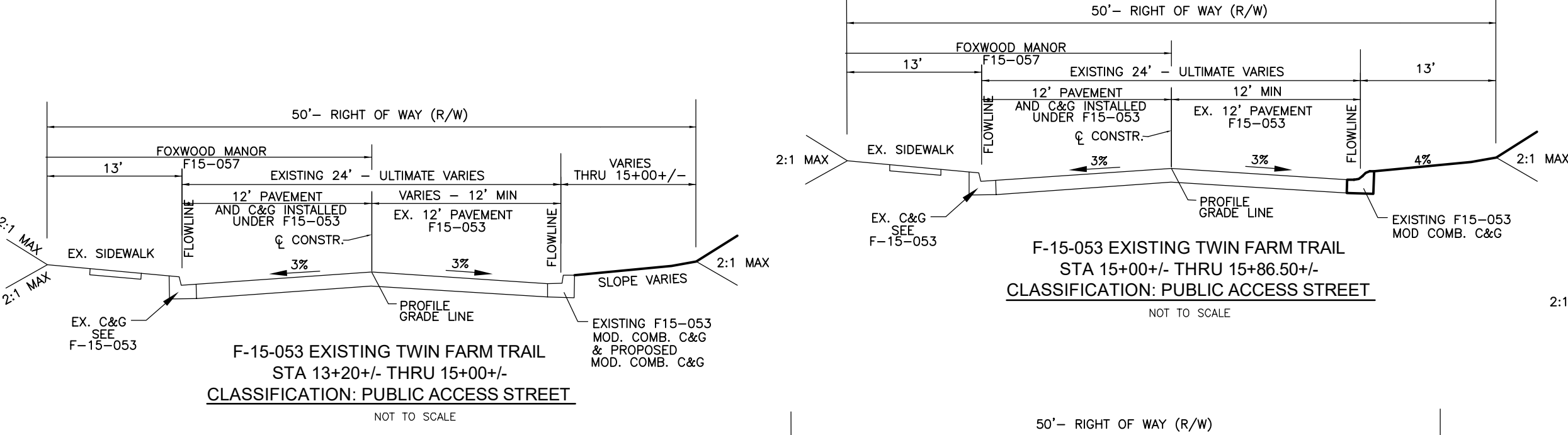
- NOTE:**
- ANY DAMAGE INCURRED TO THE EXISTING UTILITIES, DUE TO CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S/DEVELOPER'S EXPENSE.
 - ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

REINFORCED SIDEWALK LOCATION

NO.	ROAD NAME	STATION	OFFSET
2	RIVER HILL ROAD	-0+4.3	18.4' R
2	TWIN FAWN LANE	20+4.7	22.6' R
3	TWIN FAWN LANE	18+55.6	18.9' R
4	BOLTON FARM LANE	0+51.4	19.10' L
4	BOLTON FARM LANE	0+97.3	19.10' L

OWNER
BEECHWOOD MANOR, 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: DEPARTMENT OF PUBLIC WORKS
10/27/2023

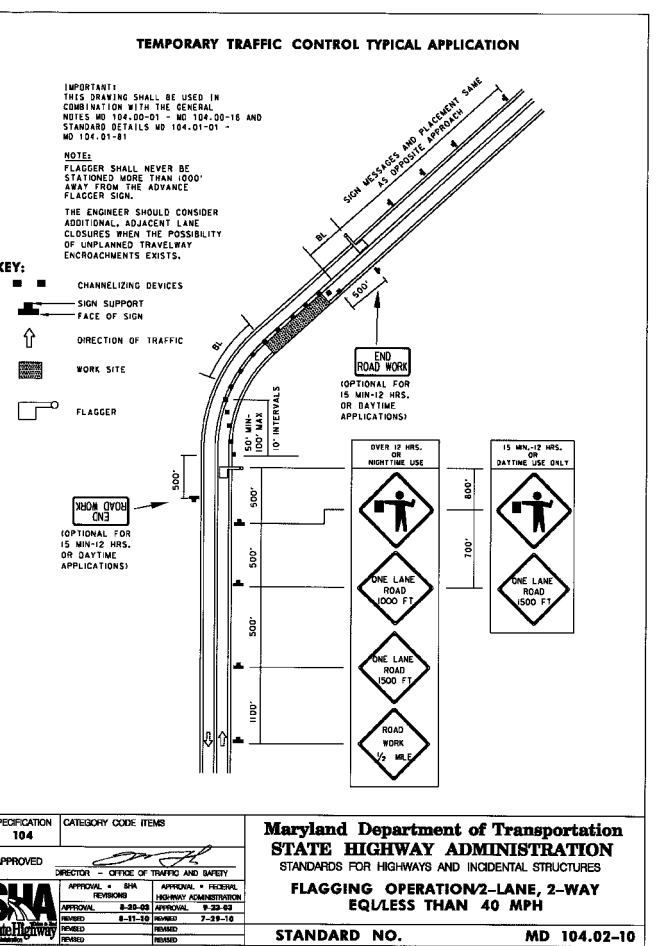
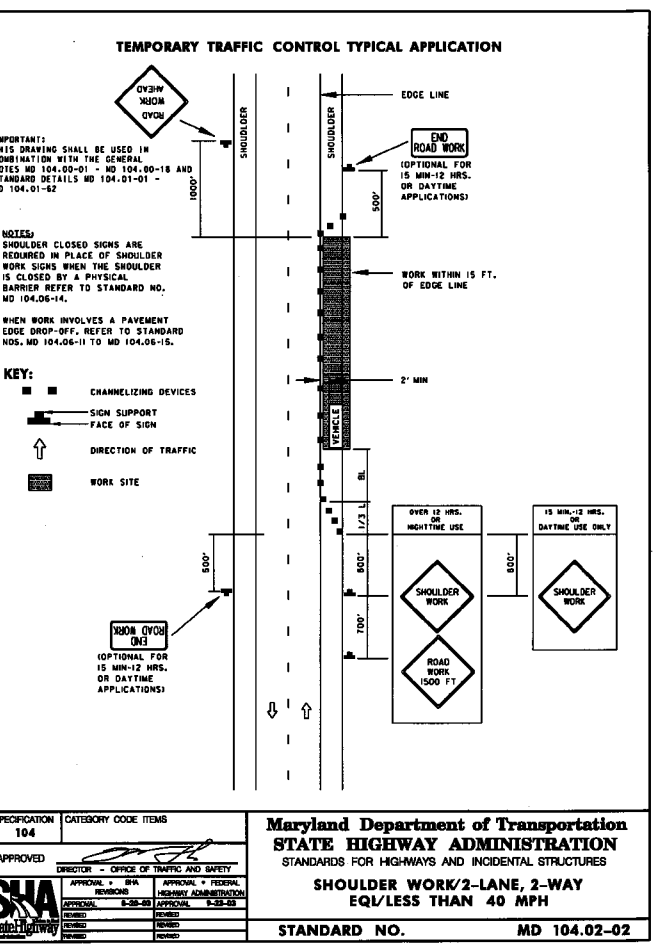
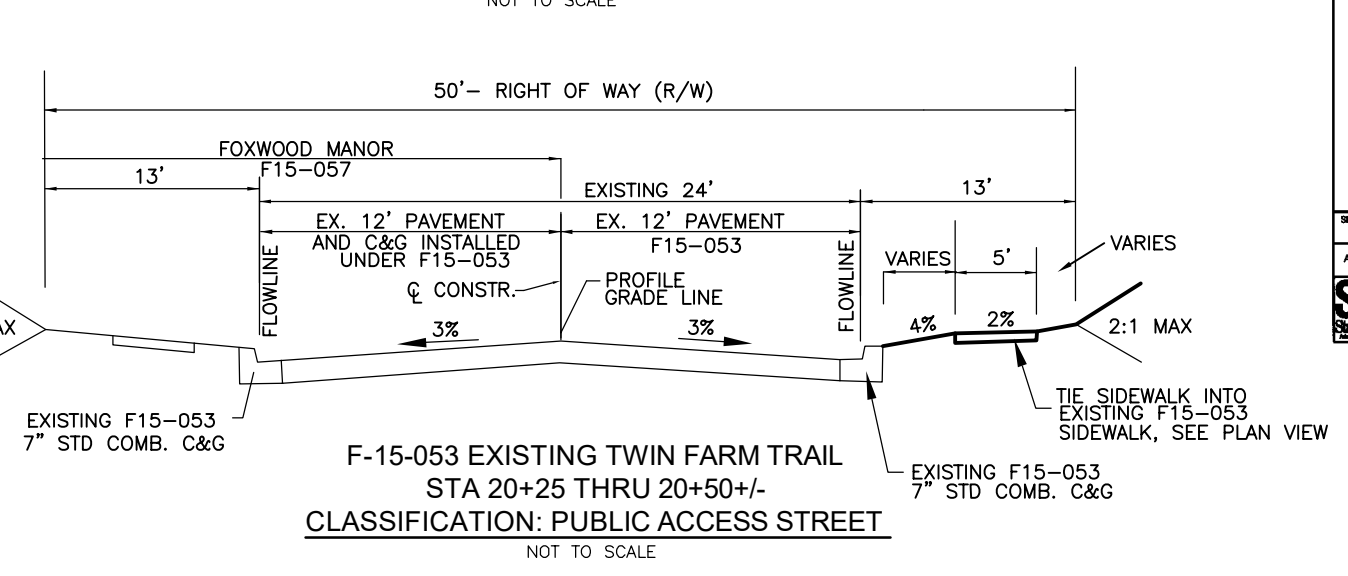
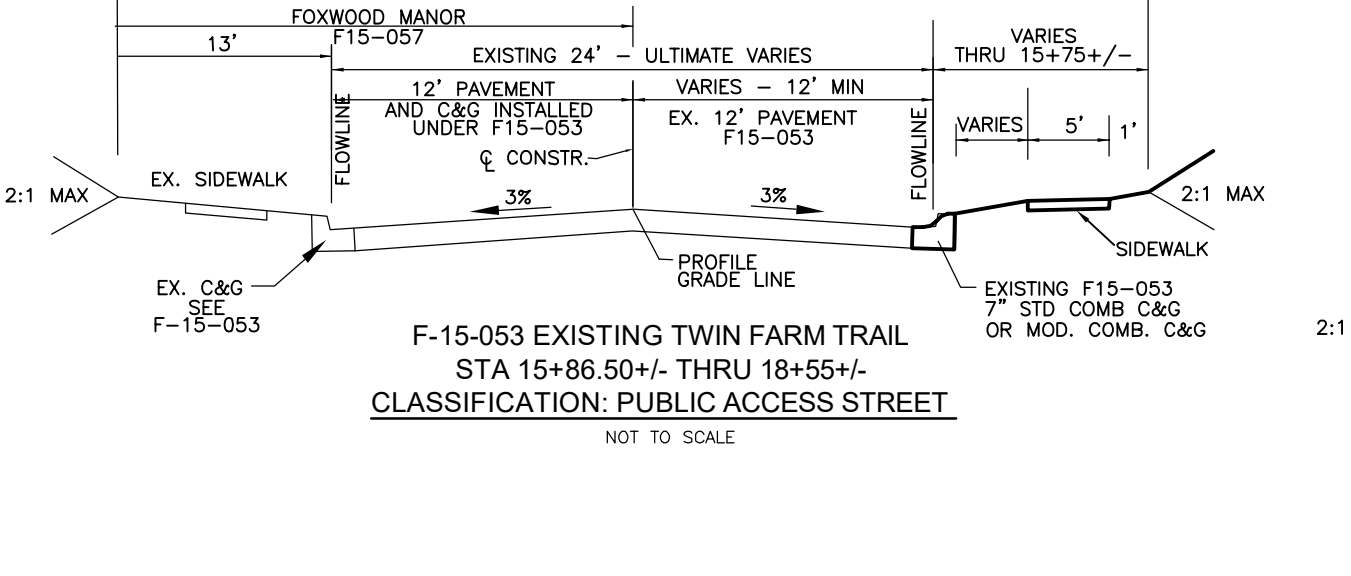
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
10/26/2023

CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: DIVISION OF LAND DEVELOPMENT
10/27/2023

CHIEF, DIVISION OF LAND DEVELOPMENT



TWIN FAWN TRAIL TYPICAL WORK ZONE TRAFFIC CONTROL DETAILS

ALL WORK WITHIN THE TWIN FAWN TRAIL PUBLIC RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE STANDARD MARYLAND STATE HIGHWAY ADMINISTRATION DETAILS: MD 104.02-02 & MD 104.02-10 OR AS DIRECTED BY THE HOWARD COUNTY - TRAFFIC ENGINEERING DIVISION.

FINAL ROAD CONSTRUCTION PLANS
TWIN FAWN TRAIL - ROAD IMPROVEMENTS

BEECHWOOD MANOR
LOTS 1-31 AND OPEN SPACE LOTS 33-34
A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L. 20225 / F. 202
TAX MAP: 50 GRID: 1
6TH ELECTION DISTRICT
DPZ REFERENCE: SEE SITE DATA

9111 RIVER HILL ROAD
LAUREL, MD 20723

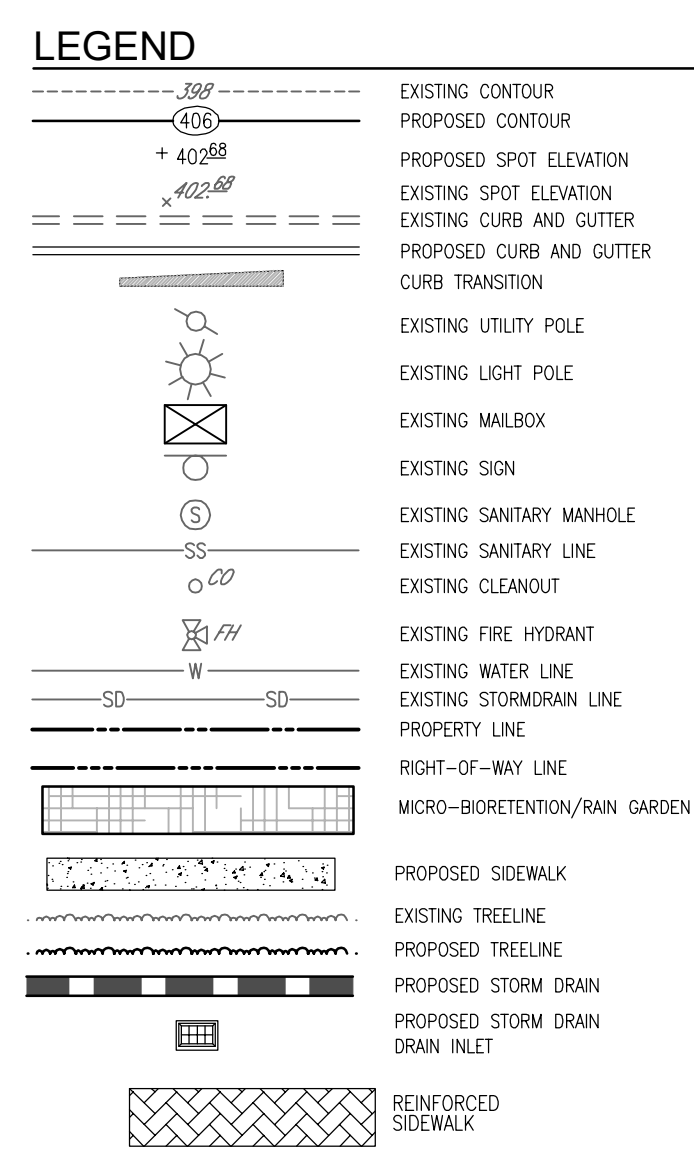
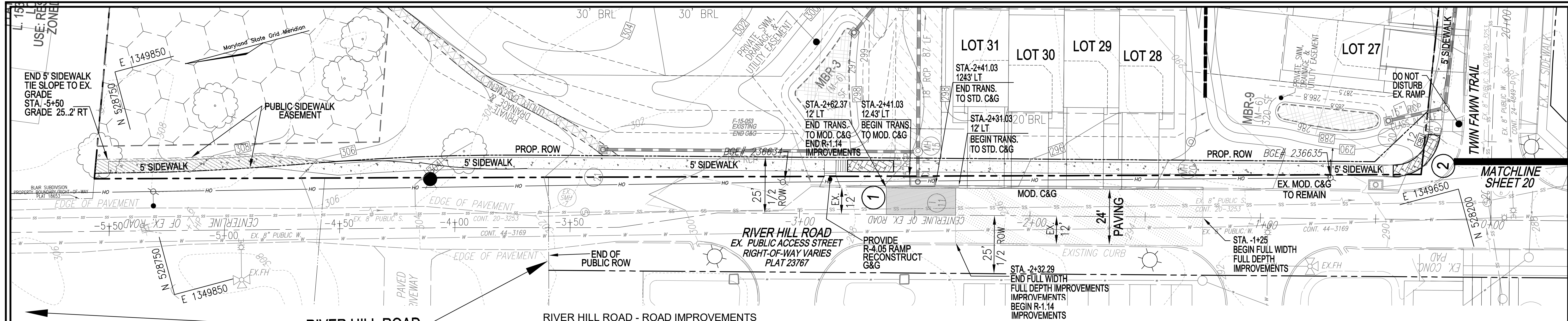
PARCEL: 001
ZONED: R-SC
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

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

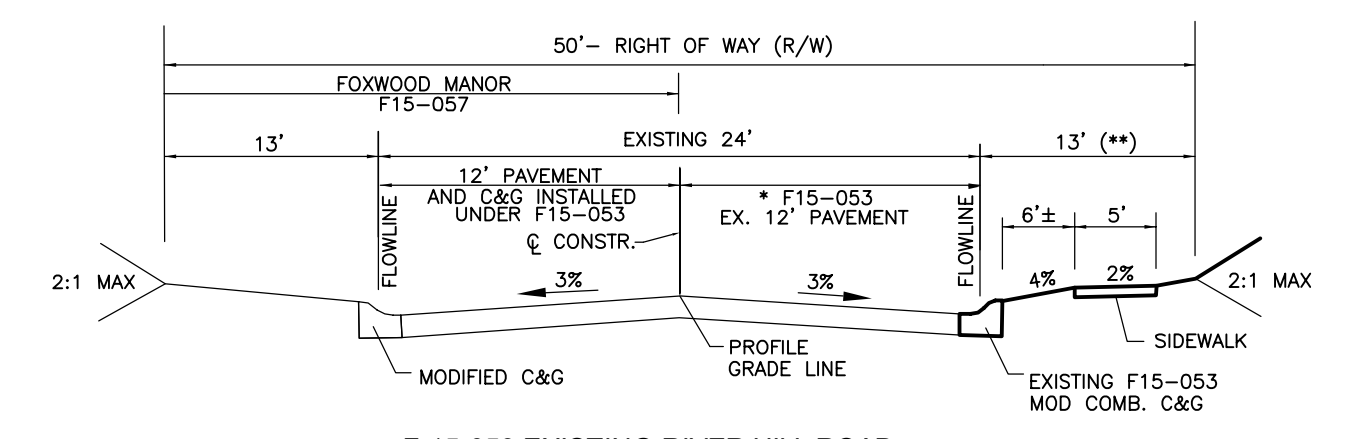
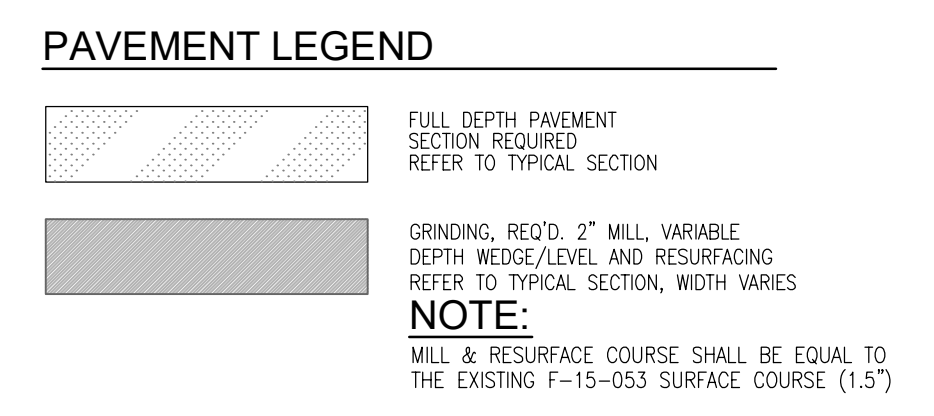
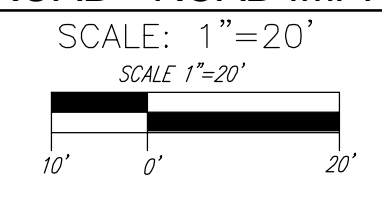
DESIGN BY: EDS.
DRAWN BY: JMR/KG
CHECKED BY: RHW.
DATE: AUGUST 2023.
SCALE: AS SHOWN.
W.O. NO.: 17-26.

20 SHEET OF 21

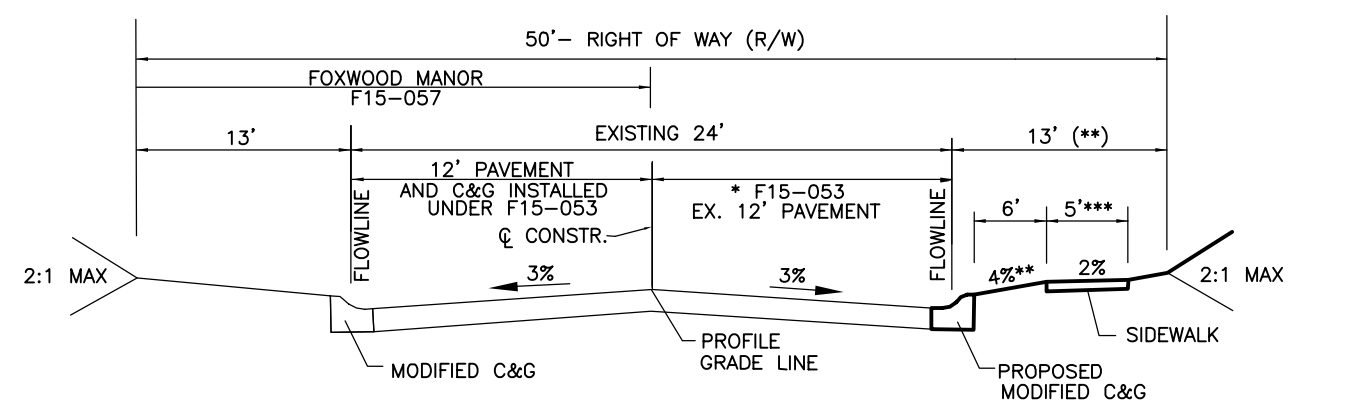


NOTE:

- ANY DAMAGE INCURRED TO THE EXISTING UTILITIES, DUE TO CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S/DEVELOPER'S EXPENSE.
- ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.



F-15-053 EXISTING RIVER HILL ROAD
STA. -0+24.40 THRU -1+30+/-
CLASSIFICATION: PUBLIC ACCESS STREET
NOT TO SCALE



F-15-053 IMPROVED RIVER HILL ROAD TO -3+32.89
STA. -1+30+ THRU -3+32.89
CLASSIFICATION: PUBLIC ACCESS STREET
NOT TO SCALE

TYPE OF CONSTRUCTION	START STATION	FINISH STATION
FULL DEPTH PAVEMENT	-1+25	-2+32.29
MILL & OVERLAY	-2+32.29	-2+62.37

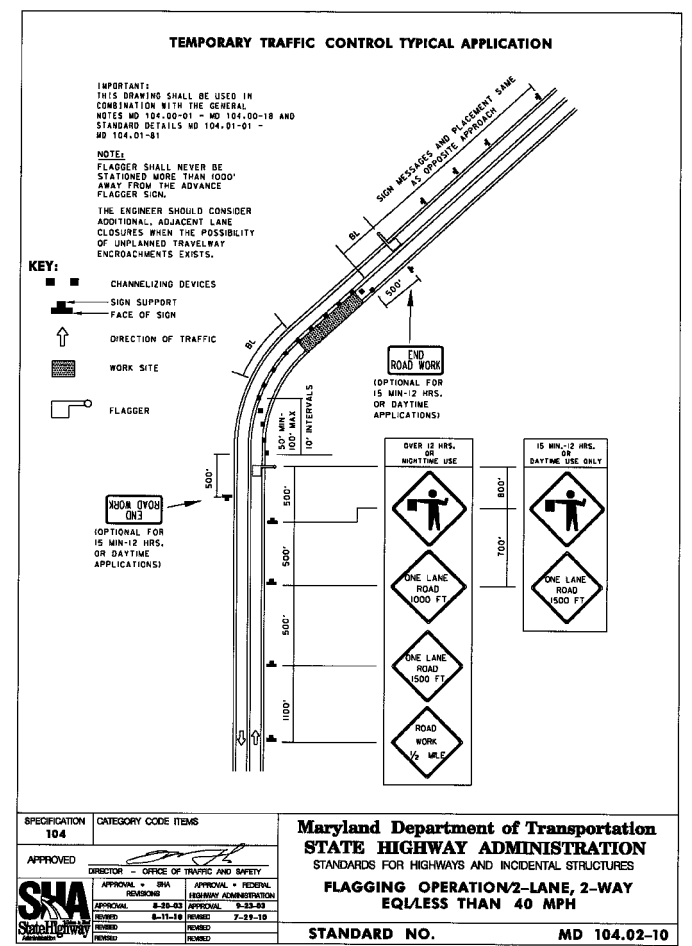
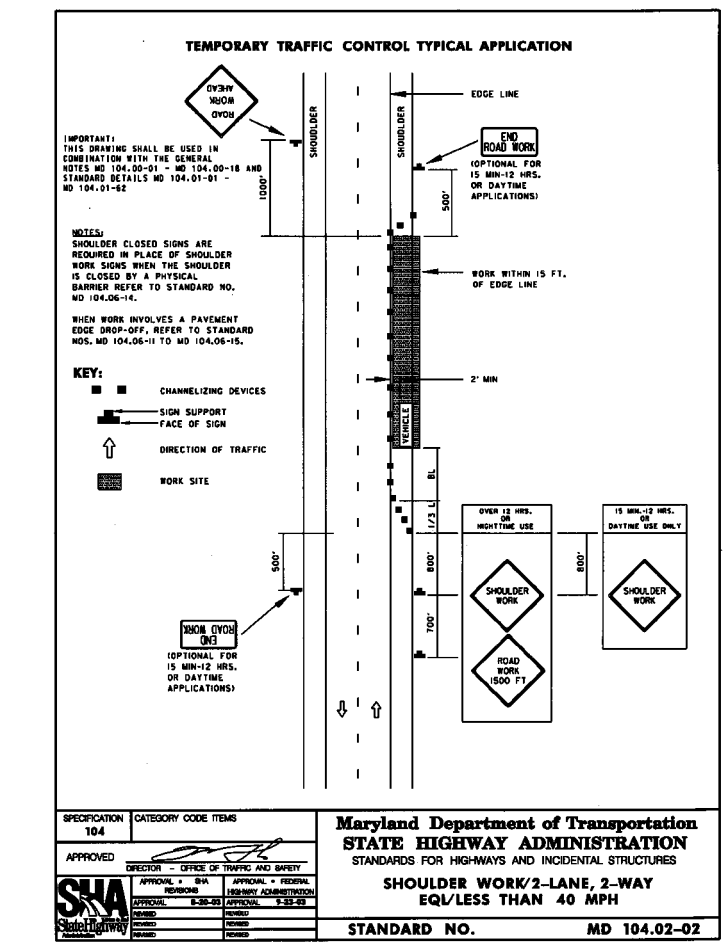
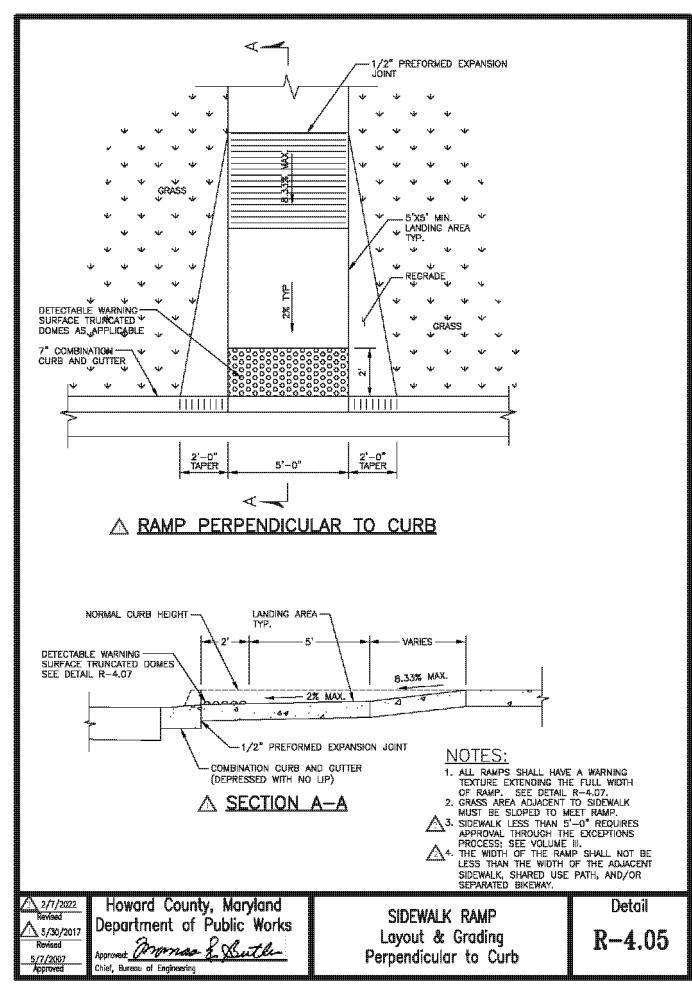
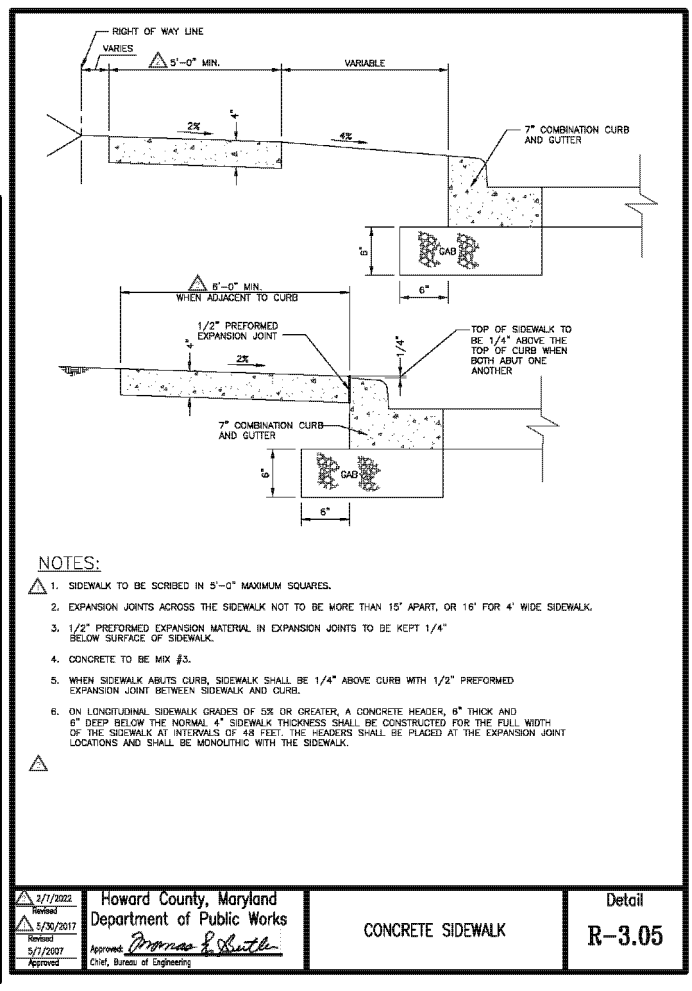
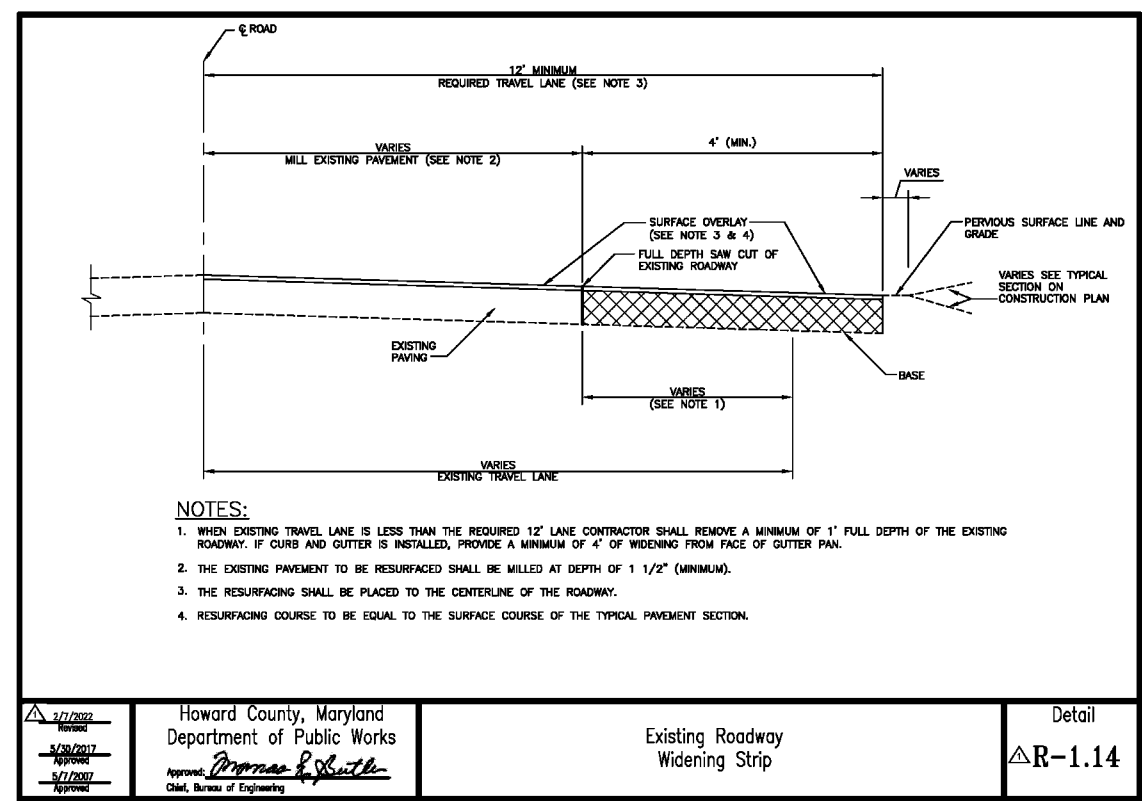
RIVER HILL ROAD PAVING (P-3) REPAIR SECTION - OR EQUAL	
NTS	
	1.5" SUPERPAVE ASPHALT MIX FINAL SURFACE 9.5MM, PG 64-22S, LEVEL 1 (ESAL)
	1.5" SUPERPAVE ASPHALT MIX INTERMEDIATE SURFACE 9.5MM, PG 64-22S, LEVEL 1 (ESAL)
	2.0" SUPERPAVE ASPHALT MIX BASE 19.0MM, PG 64-22S, LEVEL 1 (ESAL)
	10" GRADED AGGREGATE BASE (GAB)

NO.	ROAD NAME	STATION	OFFSET
1	RIVER HILL ROAD	-2+59	18.4' L
1	RIVER HILL ROAD	-2+79	18.4' L
2	RIVER HILL ROAD	-0+43	18.4' R
2	TWIN FAWN LANE	20+47	22.6' R

APPROVED: DEPARTMENT OF PUBLIC WORKS
 Disapproved by: *[Signature]* DATE: 10/27/2023
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Disapproved by: *[Signature]* DATE: 10/26/2023
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

Disapproved by: *[Signature]* DATE: 10/27/2023
 CHIEF, DIVISION OF LAND DEVELOPMENT



RIVER HILL ROAD TYPICAL WORK ZONE TRAFFIC CONTROL DETAILS

ALL WORK WITHIN THE RIVER HILL ROAD PUBLIC RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE STANDARD MARYLAND STATE HIGHWAY ADMINISTRATION DETAILS: MD 104.02-02 & MD 104.02-10 OR AS DIRECTED BY THE HOWARD COUNTY - TRAFFIC ENGINEERING DIVISION.

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLANS
RIVER HILL ROAD - ROAD IMPROVEMENTS

BEECHWOOD MANOR
 LOTS 1-31 AND OPEN SPACE LOTS 32-34
 A SUBDIVISION OF TAX MAP 50 - PARCEL 1

L. 20205 / F. 202
 TAX MAP: 50 GRID: 1
 6TH ELECTION DISTRICT
 DPZ REFERENCE: SEE SITE DATA

9111 RIVER HILL ROAD
 LAUREL, MD 20723

PARCEL: 001
 ZONED: R-SC
 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
 +
TIMMONS GROUP

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: EDS		PROFESSIONAL CERTIFICATE
DRAWN BY: JMR/KG		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: 09-27-2024.
CHECKED BY: RHW		DATE: AUGUST 2023
SCALE: AS SHOWN		W.O. NO.: 17-26

21 SHEET OF 21