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3	LINDEN GROVE - PROFILE & HERITAGE RIDGE - PLAN AND PROFILE
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# FINAL ROAD CONSTRUCTION, GRADING AND STORMWATER MANAGEMENT PLAN

# LINDEN GROVE

## PHASE ONE

### LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION

### PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

### ZONED: RC-DEO

### TAX MAP No. 8 GRID No. 7 PARCEL No. 5

LOT No.	STREET ADDRESS
LOT 1	15609 LINDEN GROVE
LOT 2	15609 LINDEN GROVE
LOT 3	15613 LINDEN GROVE
LOT 4	15617 LINDEN GROVE
LOT 5	15621 LINDEN GROVE
LOT 6	15625 LINDEN GROVE
LOT 7	15629 LINDEN GROVE
LOT 8	15633 LINDEN GROVE
LOT 9	15641 LINDEN GROVE
LOT 10	15645 LINDEN GROVE
LOT 11	15649 LINDEN GROVE
* LOT 12	1401 HERITAGE RIDGE OR 15636 LINDEN GROVE
LOT 13	1405 HERITAGE RIDGE
LOT 14	1409 HERITAGE RIDGE
LOT 15	1413 HERITAGE RIDGE
LOT 16	1417 HERITAGE RIDGE
LOT 17	1408 HERITAGE RIDGE
* LOT 18	1402 HERITAGE RIDGE OR 15628 LINDEN GROVE
LOT 19	15620 LINDEN GROVE
LOT 20	15616 LINDEN GROVE
LOT 21	15612 LINDEN GROVE
LOT 22	15608 LINDEN GROVE
LOT 23	15604 LINDEN GROVE
PARCEL 'A'	15700 LINDEN GROVE

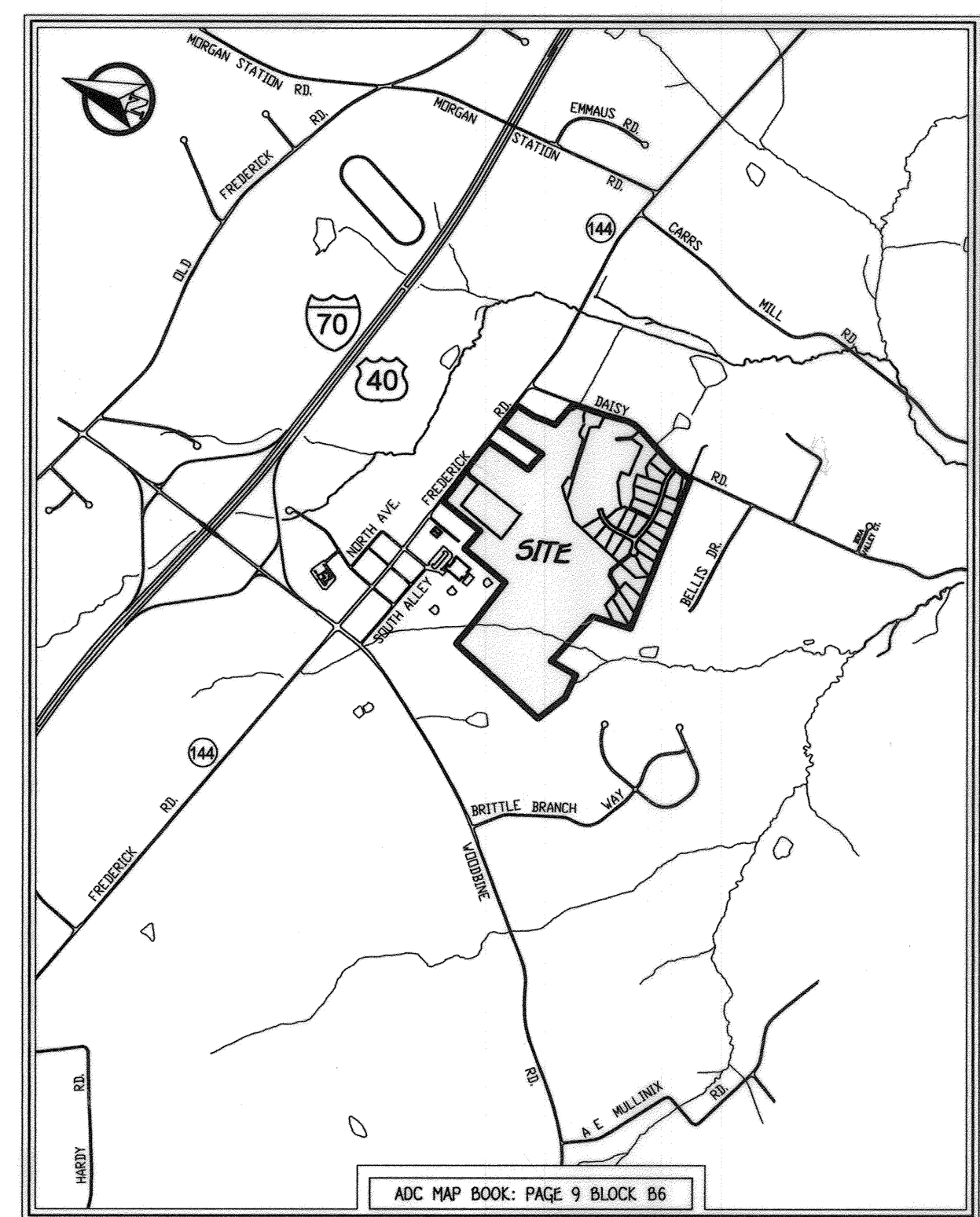
ROAD NAME	CLASSIFICATION	DESIGN SPEED	POSTED SPEED LIMIT	R/W WIDTH
LINDEN GROVE	PUBLIC ACCESS STREET	30 M.P.H.	25 M.P.H.	50'
HERITAGE RIDGE	PUBLIC ACCESS STREET	30 M.P.H.	25 M.P.H.	50'

LOT No.	MICRO BIO-RETENTION (M-6)	DRY WELL (DW-5)	ROOFTOP DISCONNECTION (N-1)	NON-ROOFTOP DISCONNECTION (N-2)
1	-	-	-	YES
2	-	-	-	YES
3	-	-	-	YES
4	-	-	-	YES
5	-	-	-	YES
6	-	-	-	YES
7	-	-	-	YES
8	-	-	-	YES
9	-	-	-	YES
10	-	-	-	YES
11	-	-	-	YES
12	-	-	-	YES
13	-	-	-	YES
14	-	-	-	YES
15	-	-	-	YES
16	-	-	-	YES
17	-	-	-	YES
18	-	-	-	YES
19	-	-	-	YES
20	-	-	-	YES
21	-	-	-	YES
22	-	-	-	YES
23	-	-	-	YES

ROAD NAME	CENTERLINE STA.	OFFSET	POSTED SIGN	SIGN CODE
LINDEN GROVE	0+43	21'L	STOP	R1-1
LINDEN GROVE	2+00	14'R	SPEED LIMIT 25	R2-1
HERITAGE RIDGE	0+32	18'L	STOP	R1-1
HERITAGE RIDGE	1+52	14'R	SPEED LIMIT 25	R2-1

NOTE: SEE SHEETS 2-4 FOR "NO PARKING" SIGN LOCATIONS ALONG LINDEN GROVE AND HERITAGE RIDGE. 20 TOTAL (R7-1) & 13 TOTAL (R7-1(1))

**AS-BUILT SURVEY NOTE:**  
THE INSTRUMENTS USED IN PERFORMANCE OF AS-BUILT SURVEY IS TO BE CALIBRATED TO TOTAL STATION & PRISM



VICINITY MAP  
SCALE: 1" = 2000'

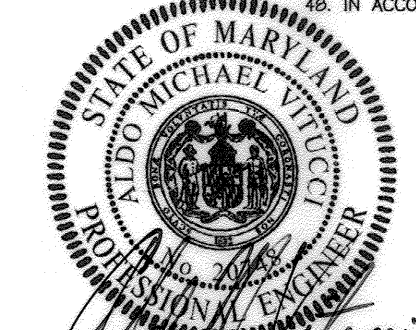
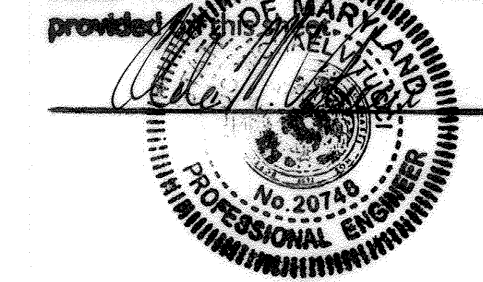
## 4th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

### DENSITY TABULATION

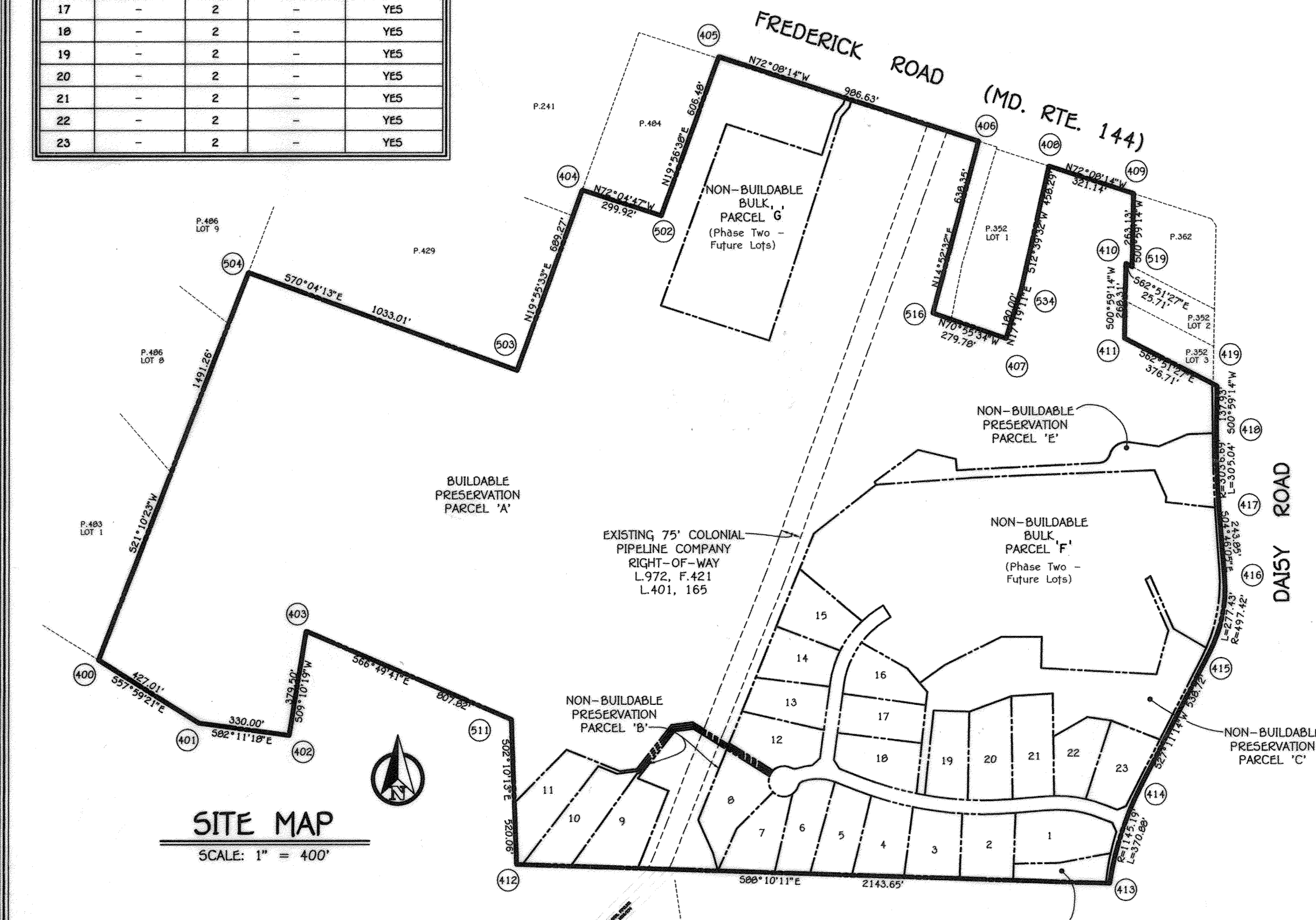
- TRACT AREA = 176.680 ACRES
- FLOODPLAIN AREA = 6.204 ACRES
- STEEP SLOPES AREA = 0.60 ACRES
- NET TRACT AREA = 169.876 ACRES (176.680 AC - 6.204 AC - 0.60 AC)
- DENSITY ALLOWED BY MATTER OF RIGHT: 176.680 ACRES X 1 DWELLING UNIT/4.25 ACRES = 41.57 or 41 SINGLE FAMILY DETACHED UNITS
- BONUS DENSITY ALLOWED PER SEC. 104.0.G.2 IS ONE (1) ADDITIONAL LOT PER 25 ACRES GROSS OF PRESERVATION PARCEL CREATED. PRESERVATION PARCEL 'A' = 113.832 AC. BONUS DENSITY ALLOWED = 113.832/25 = 4.55 OR FOUR (4) LOTS
- TOTAL NUMBER OF PROPOSED DWELLING UNITS = 45 UNITS (44 CLUSTER LOTS + 1 BUILDABLE PRESERVATION PARCEL)
- PHASE ONE SUPPORTING TABULATION:  
TOTAL AREA TO BE RECORDED = 176.680 AC.  
TOTAL No. OF PROPOSED UNITS = 24 (23 LOTS + 1 BUILDABLE PRESERVATION PARCEL 'A')  
TOTAL LAND USE REQUIRED TO SUPPORT 24 UNITS = 24 x 4.25 = 102.00 AC.  
TOTAL AREA OF PRESERVATION PARCELS 'A', 'B', 'C', 'D', 'E' = 119.928 AC.  
TOTAL AREA OF NON-BUILDABLE BULK PARCELS 'F' & 'G' (Future Lots) = 29.131 AC.

### AS-BUILT CERTIFICATION

Note: There is **NO** "AS-BUILT" information provided for this project.

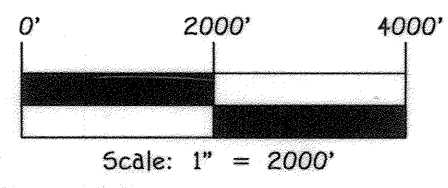


Michael P. E. No. 20748  
Date: 12/12/18  
"Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-19."



SITE MAP  
SCALE: 1" = 400'

FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 1872 BALDWIN NATIONAL PIKE  
ELICOTT CITY, MARYLAND 21042  
(410) 461-2899



OWNER:  
KIMBERLY/HERITAGE LLC  
3425 HIPSLEY MILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7900

DEVELOPER:  
HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7900

NO.	REVISIONS	DATE
C.E.	Revise All sheet numbers to 1 of 23	6/26/20

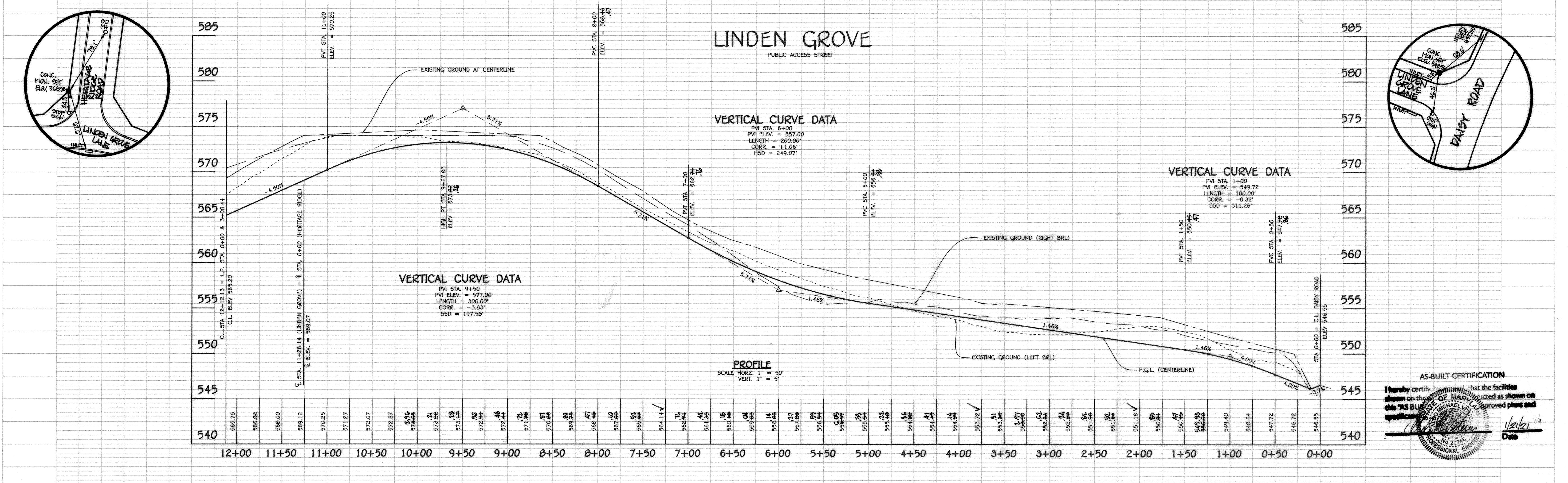
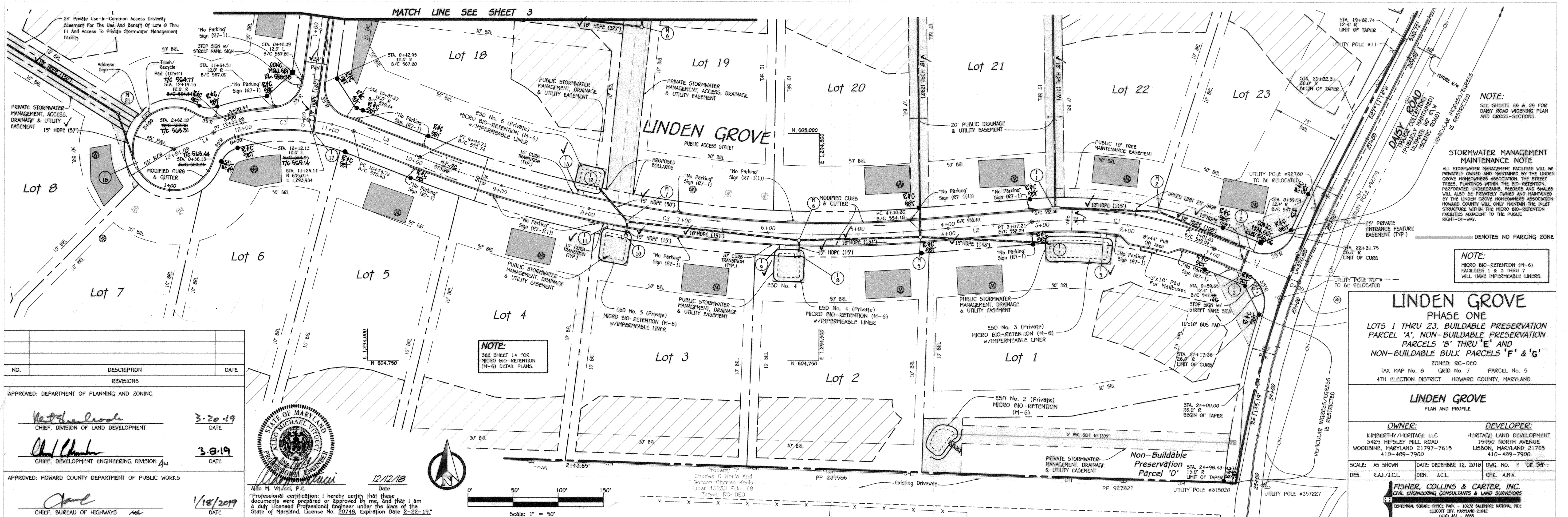
### GENERAL NOTES:

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING, CONSTRUCTION INSPECTION DIVISION AT (410) 313-1800 AT LEAST (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TRAFFIC CONTROL DEVICES:
  - THE R-1 (STOP) SIGN AND THE STREET SIGN (SIS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
  - THE TRAFFIC CONTROL DEVICES LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
  - ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD).
  - ALL SIGN POSTS USED FOR TRAFFIC CONTROL DEVICES INSTALLED IN THE CURB RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED "QUICK PUNCH" SQUARE TUBE POST (1 1/4 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (1 1/2 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM, HOWARD COUNTY HORIZONTAL AND VERTICAL CONTROL DATUM IS BASED ON HOWARD COUNTY GEODETIC CONTROL STATIONS:
  - CONTROL STATION NO. 08 DA N 606,934.16 E 1,095,703.02 ELEV. 954.636
  - CONTROL STATION NO. 08 GB N 603,764.82 E 1,095,703.02 ELEV. 970.207
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY HAYS GROUP DATED APRIL 19, 2016 AND WAS APPROVED UNDER SP-17-003.
- BACKGROUND INFORMATION:
  - SUBDIVISION NAME: LINDEN GROVE
  - TAX MAP NO.: 8
  - PARCEL NO.: 5
  - ZONING: RC-DEO
  - ELECTION DISTRICT: FOURTH
  - TOTAL TRACT AREA: 176.680 AC.
  - NET AREA = 169.876 AC.
  - AREA OF STEEP SLOPES 25% AND GREATER = 0.60 AC. (OUTSIDE FLOODPLAIN)
  - NO. OF BUILDABLE LOTS: 23 (PHASE ONE)
  - NO. OF NON-BUILDABLE PRESERVATION PARCELS: 4
  - NO. OF NON-BUILDABLE BULK PARCELS: 2
  - AREA OF BUILDABLE LOTS: 23,895 AC.
  - AREA OF NON-BUILDABLE PRESERVATION PARCELS: 111,371 AC.
  - AREA OF NON-BUILDABLE BULK PARCELS: 29,131 AC.
  - TOTAL AREA OF ROADWAY TO BE DEDICATED: 3,156 AC.
  - PREVIOUS FILE NO. HCR-17-019, SP-17-003
  - AREA OF FLOODPLAIN: 6,204 AC.
- NO CRETICES EXIST WITHIN THIS SUBDIVISION.
- ALL FILL AREAS WITHIN ROADWAYS AND UNDER STRUCTURES SHALL BE COMPACTED TO A MINIMUM OF 95% COMPACTION OF MASHO T-100.
- PROPERTY ZONED RC-DEO PER 10/6/13 COMPREHENSIVE ZONING PLAN.
- AS PER SECTION 104.0.G.4(f) OF THE ZONING REGULATIONS, ONLY ONE EASEMENT HOLDER IS REQUIRED FOR PRESERVATION PARCELS THAT ARE BEING CREATED SOLELY FOR OWN FACILITIES, DEEDED TO HOWARD COUNTY OR DEEDED TO THE HOA WITH THE EASEMENT HELD BY THE COUNTY.
  - BUILDABLE PRESERVATION PARCEL 'A' OWNED: PRIVATE HOMEOWNERS ASSOCIATION EASEMENT HOLDERS: HOWARD COUNTY, MD. USE: FOREST CONSERVATION, ENVIRONMENTAL, RECREATION, OPEN SPACE
  - NON-BUILDABLE PRESERVATION PARCEL 'B' OWNED: HOMEOWNERS ASSOCIATION EASEMENT HOLDERS: HOWARD COUNTY, MD. USE: COLONIAL PIPELINE EASEMENT, STORMWATER MANAGEMENT & ENVIRONMENTAL
  - NON-BUILDABLE PRESERVATION PARCEL 'C' OWNED: HOMEOWNERS ASSOCIATION EASEMENT HOLDERS: HOWARD COUNTY, MD. USE: STORMWATER MANAGEMENT & F.C.E.
  - NON-BUILDABLE PRESERVATION PARCEL 'D' OWNED: HOMEOWNERS ASSOCIATION EASEMENT HOLDERS: HOWARD COUNTY, MD. USE: STORMWATER MANAGEMENT
  - NON-BUILDABLE PRESERVATION PARCEL 'E' OWNED: HOMEOWNERS ASSOCIATION EASEMENT HOLDERS: HOWARD COUNTY, MD. USE: STORMWATER MANAGEMENT
- SOILS INFORMATION TAKEN FROM NRES WEB SOIL SURVEY.
- FOREST STAND & WETLAND DELINEATION REPORT WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. AND WAS APPROVED UNDER SP-17-003 ON SEPTEMBER 11, 2017.
- THOSE ARE STEEP SLOPES OF 25% OR GREATER ON 0.60 ACRES.
- A BARN WITH ACCESSORY STRUCTURES EXIST ON-SITE WITHIN PRESERVATION PARCEL 'A' AND ARE PLANNED TO REMAIN.
- SITE IS ADJACENT TO TWO SCENIC ROADS (DAISY ROAD & FREDERICK ROAD). A SCENIC ROADS REPORT HAS BEEN PROVIDED BY FISHER, COLLINS & CARTER, INC. DATED 10/24/16.
- PRIVATE RANGE OF ADDRESS SIGN ASSEMBLIES SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPER'S/OWNER'S EXPENSE FOR THE USE-IN-COMMON DRIVEWAY LOCATED AT THE CURB-TO-SAC OF LINDEN GROVE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-2552 FOR DETAILS AND COST ESTIMATES.
- FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT-OF-WAY LINE AND NOT TO THE PRESHOT LOT DRIVEWAY.
- ARTICLES OF INCORPORATION FOR THE LINDEN GROVE HOMEOWNERS ASSOCIATION, INC. WILL BE FILED WITH THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION PRIOR TO RECDICATION OF THE FINAL PLAT.
- ALL EXISTING WELL AND SEPTIC SYSTEMS WHICH ARE NOT UTILIZED IN THE LOT DESIGN WILL BE ABANDONED PRIOR TO RECDICATION OF THE FINAL PLAT.
- THIS AREA DESIGNATES A PRIVATE SEWERAGE AREA OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE AREAS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWERAGE AREA. RECDICATION OF A MOORED AREA SHALL NOT BE NECESSARY.
- THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
- ANY CHANGES TO THE PRIVATE SEWERAGE AREA SHALL REQUIRE A REVISED PERC CERTIFICATION PLAN.
- NO GRADING, REMOVAL OF VEGETATION OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STRIPES, OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
- THE 100 YEAR FLOODPLAIN DELINEATED ON THIS PLAN HAS BEEN DETERMINED TO BE "NOT CRITICAL" BASED ON A REPORT PREPARED BY FISHER, COLLINS AND CARTER, INC. ON JANUARY 6, 2017.
- A PRE-SUBMISSION MEETING WAS HELD FOR THIS PROJECT ON 2/23/17.
- THE FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS; HOWEVER, FOREST MANAGEMENT PRACTICES AS REQUIRED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
- THE FOREST CONSERVATION REQUIREMENTS WILL BE FULFILLED BY 4.3 AC. OF ON-SITE CREDITED RETENTION AND 12.27 AC. OF ON-SITE AFForestation. THERE IS NO SURETY FOR FOREST RETENTION. SURETY FOR ON-SITE PLANTING IS \$837,241.00, (12.27 ac. x 43,560 sq ft. x \$80.50).
- PERIMETER LANDSCAPING FOR THIS DEVELOPMENT SHALL BE IN ACCORDANCE WITH SECTION 16.124 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. FINANCIAL SURETY IN THE AMOUNT OF \$30,900.00 (PHASE ONE LANDSCAPING) FOR 96 SHADE TREES, 9 EVERGREEN TREES & 9 SHRUBS HAS BEEN PROVIDED AS PART OF THE DEVELOPER'S AGREEMENT. PHASE TWO LANDSCAPING WILL BE ADDRESSED WITH THE LANDSCAPE PLAN ASSOCIATED WITH THE PHASE TWO FINAL ROAD DRAWINGS. FUTURE PERMIT P-4 WILL BE PLANTED WITH EXTRA LANDSCAPING FOR ANY SCENIC ROAD SCREENING REQUIREMENTS WITH THE PHASE TWO FINAL ROAD DRAWINGS.
- FINANCIAL SURETY FOR THE REQUIRED 94 STREET TREES IN THE AMOUNT OF \$28,200.00 HAS BEEN PROVIDED WITH THE DEVELOPER'S AGREEMENT.
- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVES HAVE BEEN APPROVED.
- THE EXISTING TOPOGRAPHY INFORMATION SHOWN IS BASED ON HOWARD COUNTY AERIAL CONTOURS AND SUPPLEMENTED WITH A FIELD RUN TOPOGRAPHIC SURVEY PERFORMED ON OR ABOUT 7/21/16 BY FISHER, COLLINS & CARTER, INC.
- BOUNDARY INFORMATION IS BASED ON A SURVEY PERFORMED ON OR ABOUT 11/11/14 BY FISHER, COLLINS & CARTER, INC.
- THIS PROPERTY IS NOT LOCATED WITHIN THE METROPOLITAN DISTRICT. PRIVATE WELL AND SEPTIC WILL BE UTILIZED FOR THIS PROJECT.
- STORM WATER MANAGEMENT IS IN ACCORDANCE WITH THE H.D.E. STORM WATER DESIGN MANUAL, VOLUMES 1 & 2, REVISED 2009. STORMWATER MANAGEMENT IS PROVIDED BY THE USE OF (N-2) NON-ROOFTOP DISCONNECTION CREDIT, (M-5) DRYWELLS, 5 (M-6) MICRO BIO-RETENTION FACILITIES AND 4 (F-6) BIO-RETENTION FACILITIES TO MEET AND EXCEED THE REQUIRED ESD VOLUME.
- STORM WATER MANAGEMENT DEVICES LOCATED ON INDIVIDUAL LOTS WILL BE OWNED AND MAINTAINED BY THAT PARTICULAR LOT OWNER AND SUBJECT TO THE REQUIREMENTS OF A RECORDED DECLARATION OF COVENANT. SWM DEVICES LOCATED WITHIN THE PUBLIC R/W WILL BE PRIVATELY OWNED AND JOINTLY MAINTAINED, AND SWM DEVICES LOCATED ON PARCELS WILL BE OWNED AND MAINTAINED BY THE H.O.A., SWM FACILITIES SERVING PUBLIC ROADS, BUT LOCATED ON PRIVATE LOTS WILL BE PRIVATELY OWNED AND JOINTLY MAINTAINED.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- ALL WELLS SHALL BE DRILLED PRIOR TO FINAL PLAT RECDICATION. IT IS THE DEVELOPER'S RESPONSIBILITY TO SCHEDULE THE WELL DRILLING PRIOR TO FINAL PLAT SUBMISSION. IT WILL NOT BE CONSIDERED "CONCRETE DELAY" IF THE WELL DRILLING HELD UP HEALTH DEPARTMENT SIGNATURE OF THE RECORD PLAT.
- A GROUNDWATER APPROPRIATION PERMIT HAS BEEN OBTAINED FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT PRIOR TO HOWARD COUNTY HEALTH DEPARTMENT SIGNATURE OF THE FINAL PLAT. STATE WATER APPROPRIATION AND USE PERMIT NO. H0201702002(01).
- DEWEYWAY (S) SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING (MINIMUM) REQUIREMENTS:
  - WIDTH - 12 FEET (16 FEET SPACING MORE THAN ONE RESIDENCE)
  - SURFACE - 36 (6) INCHES OF COMPACTED GRAVEL OR BASE WITH TAR AND CHIP COATING
  - GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM OF 45 FOOT TURNING RADIUS
  - STRUCTURES (CULVERTS/PROCESSED) - CAPABLE OF SUPPORTING 25 GROSS TONS (HEAVY LOADING)
  - DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE
  - STRUCTURE CLEARANCES - MINIMUM 12 FEET
  - MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE
- THIS PLAN CANNOT BE USED FOR THE CONSTRUCTION OF HOUSES SINCE THE ACTUAL HOUSE TYPE AND THE REQUIRED SEDIMENT CONTROL HAS NOT BEEN ESTABLISHED.
- THIS SUBMISSION PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE 10-06-13 ZONING REGULATIONS PER COUNTY BILL NO. 32-20 DEVELOPMENT OR CONSTRUCTION ON THESE LOTS MUST COMPLY WITH SETBACKS AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF A BUILDING OR GRADING PERMIT APPLICATION.
- THE CONCRETE PADS FOR REFUSE AND RECYCLING COLLECTION LOCATED WITHIN THE USE-IN-COMMON DRIVEWAY EASEMENTS FOR LOTS 9-11 & 40-44 WILL BE MAINTAINED BY THE OWNERS OF THOSE LOTS PURSUANT TO THE DECLARATION OF RIGHT OF ACCESS AND MAINTENANCE OBLIGATION RECORDED AGAINST THE LAND RECORDS OF HOWARD COUNTY ALONG WITH THE RECORDING OF THIS PLAN.
- IN ACCORDANCE WITH SECTION 104.0.F OF THE ZONING REGULATIONS AT LEAST 10% OF THE DWELLINGS IN EACH RC DEVELOPMENT SHALL BE MODERATE INCOME HOUSING UNITS.

**LINDEN GROVE**  
PHASE ONE  
LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

TAX MAP No. 8 ZONED: RC-DEO  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 12, 2018  
SHEET 1 of 25

"AS-BUILT" F-18-092



CENTERLINE CURVE TABLE					
Curve #	Delta	Arc Length	Radius	Chord Bearing	Chord Length
C1	026.1798	205.58'	450.00'	N81° 39' 15"W	203.80'
C2	025.8949	564.94'	1250.00'	S81° 47' 41"E	560.14'
C3	043.3711	158.96'	210.00'	S89° 28' 02"W	155.20'
C4	049.2589	300.91'	350.00'	S32° 09' 52"W	291.72'

CENTERLINE LINE TABLE		
Line #	Length	Direction
L1	101.63'	S68° 33' 59"E
L2	123.58'	S85° 15' 29"W
L3	78.99'	S68° 50' 50"E
L4	47.41'	N67° 46' 54"E
L5	318.99'	S7° 32' 06"W
L6	202.93'	N56° 47' 38"E
L7	534.14'	S89° 59' 07"W

**STORMWATER MANAGEMENT MAINTENANCE NOTE**

ALL STORMWATER MANAGEMENT FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED BY THE LINDEN GROVE HOMEOWNERS ASSOCIATION. THE STREET TREES, PLANTINGS WITHIN THE 80'-RETENTION PERFORATED UNDERDRAINS, FEEDERS AND SMALES WILL ALSO BE PRIVATELY OWNED AND MAINTAINED BY THE LINDEN GROVE HOMEOWNERS ASSOCIATION. HOWARD COUNTY WILL ONLY MAINTAIN THE BILET STRUCTURE WITHIN THE 80'-RETENTION FACILITIES ADJACENT TO THE PUBLIC RIGHT-OF-WAY.

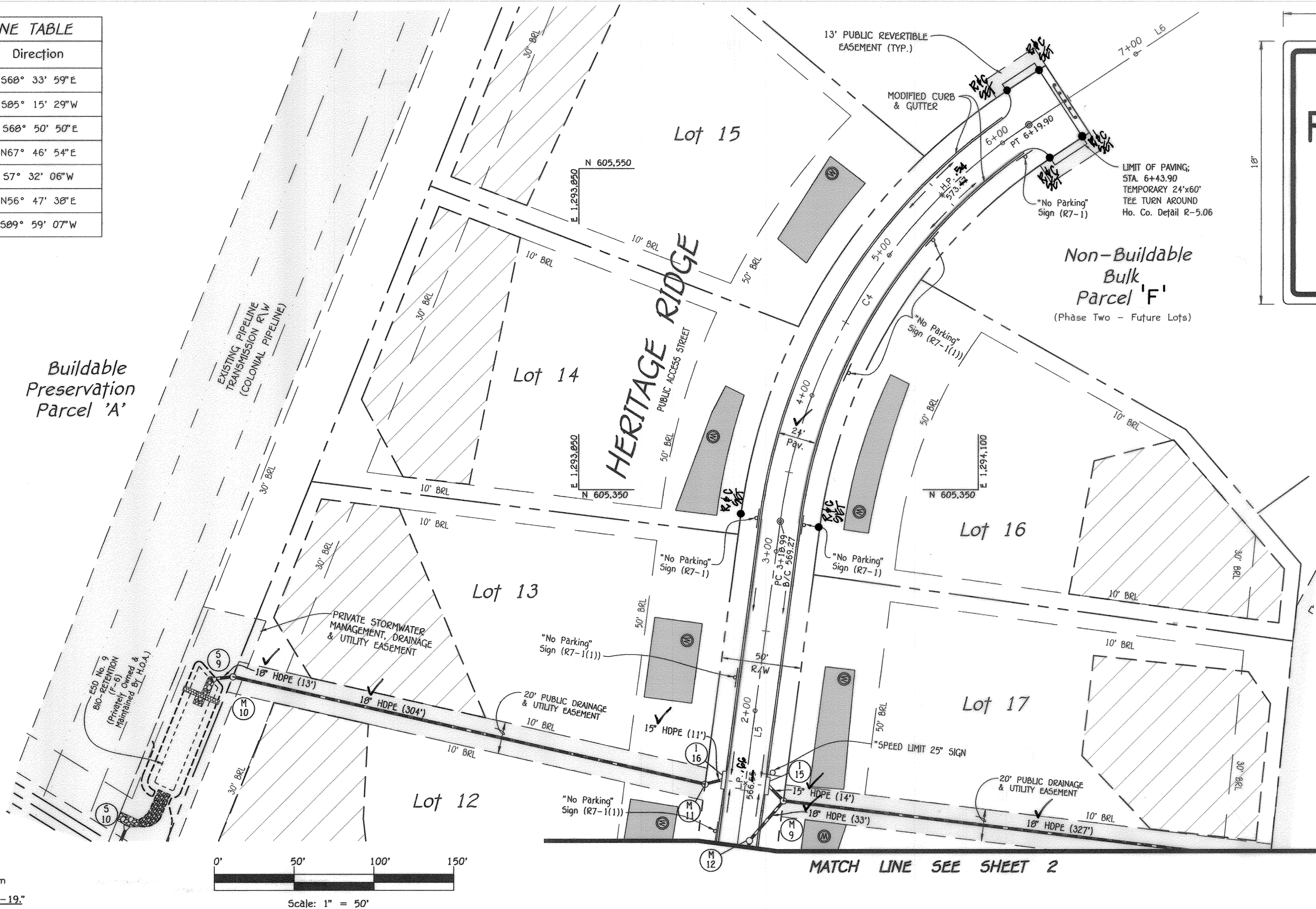
**AS-BUILT CERTIFICATION**

I hereby certify, by my signature, the facilities shown on this plan were installed as shown on the "AS-BUILT" specifications.

NO.	DESCRIPTION	DATE
	REVISIONS	
APPROVED: DEPARTMENT OF PLANNING AND ZONING		
	<i>Veronica DeWald</i>	3-20-19
	CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
	<i>Chad Plank</i>	3-8-19
	CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS		
	<i>David</i>	1/18/2019
	CHIEF, BUREAU OF HIGHWAYS	DATE



Aldo M. Vifucci, P.E.  
Date: 12/12/18  
Professional certification: 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. 20748, Expiration Date 2-22-19.



**LINDEN GROVE PHASE ONE**  
LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

ZONED: RC-DEO  
TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

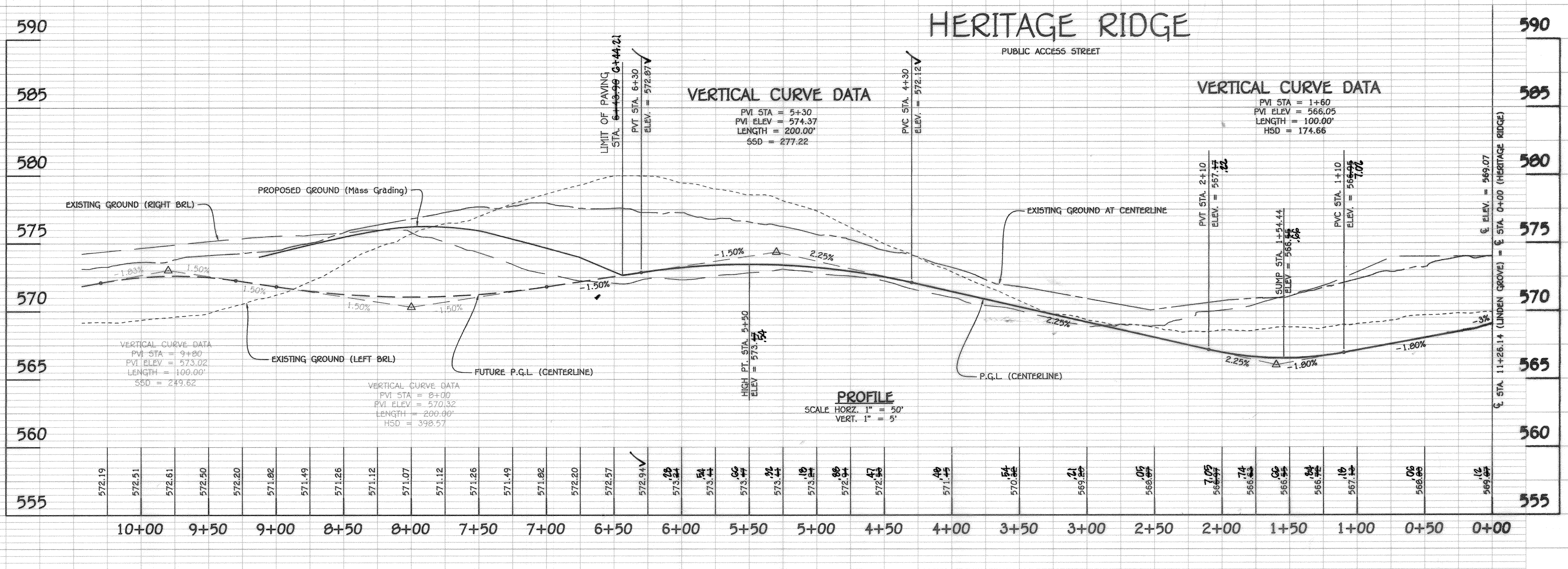
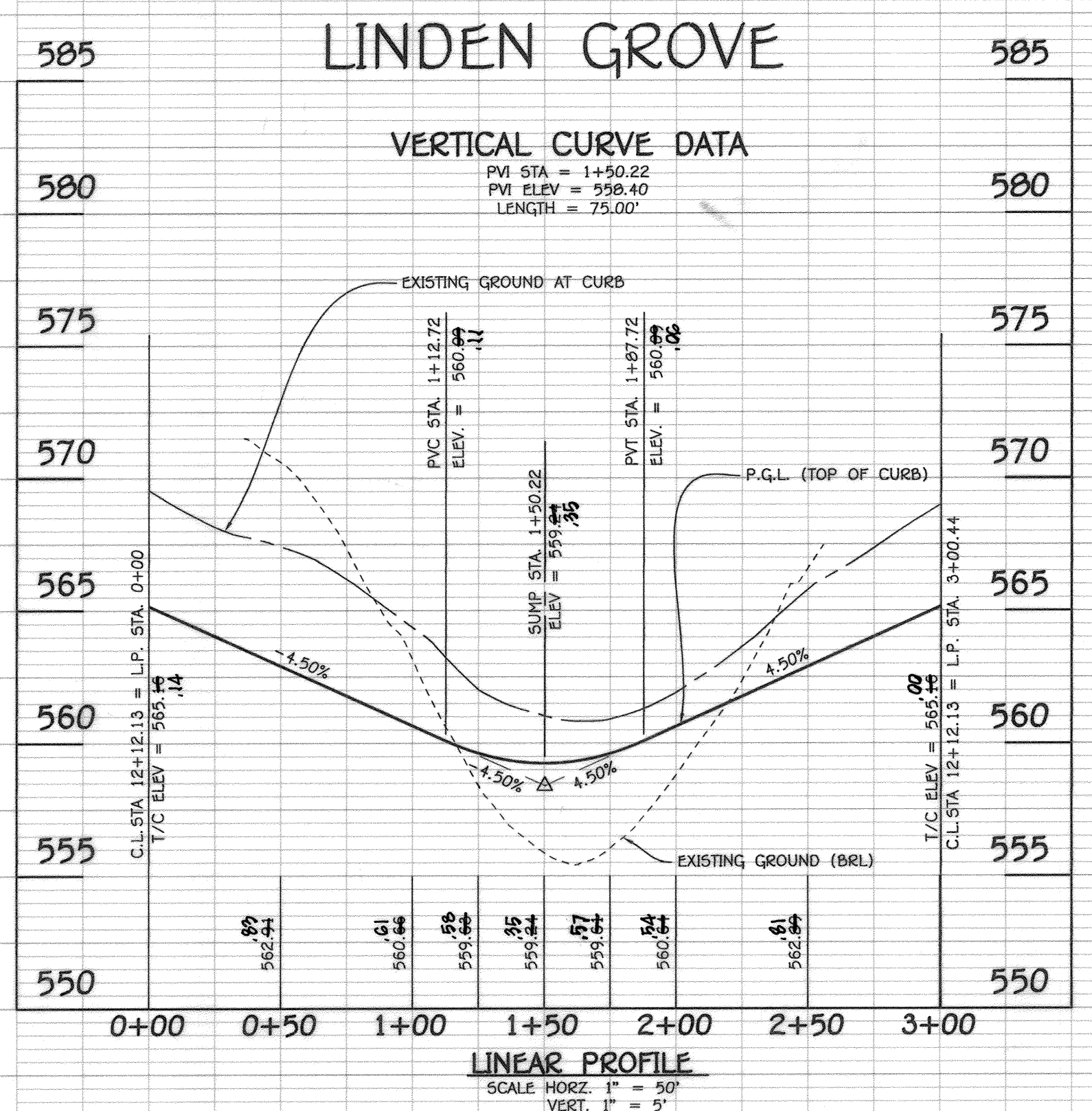
**HERITAGE RIDGE**  
PLAN AND PROFILE

**OWNER:** KIMBERLY/HERITAGE LLC  
3425 HIPSLEY MILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7900

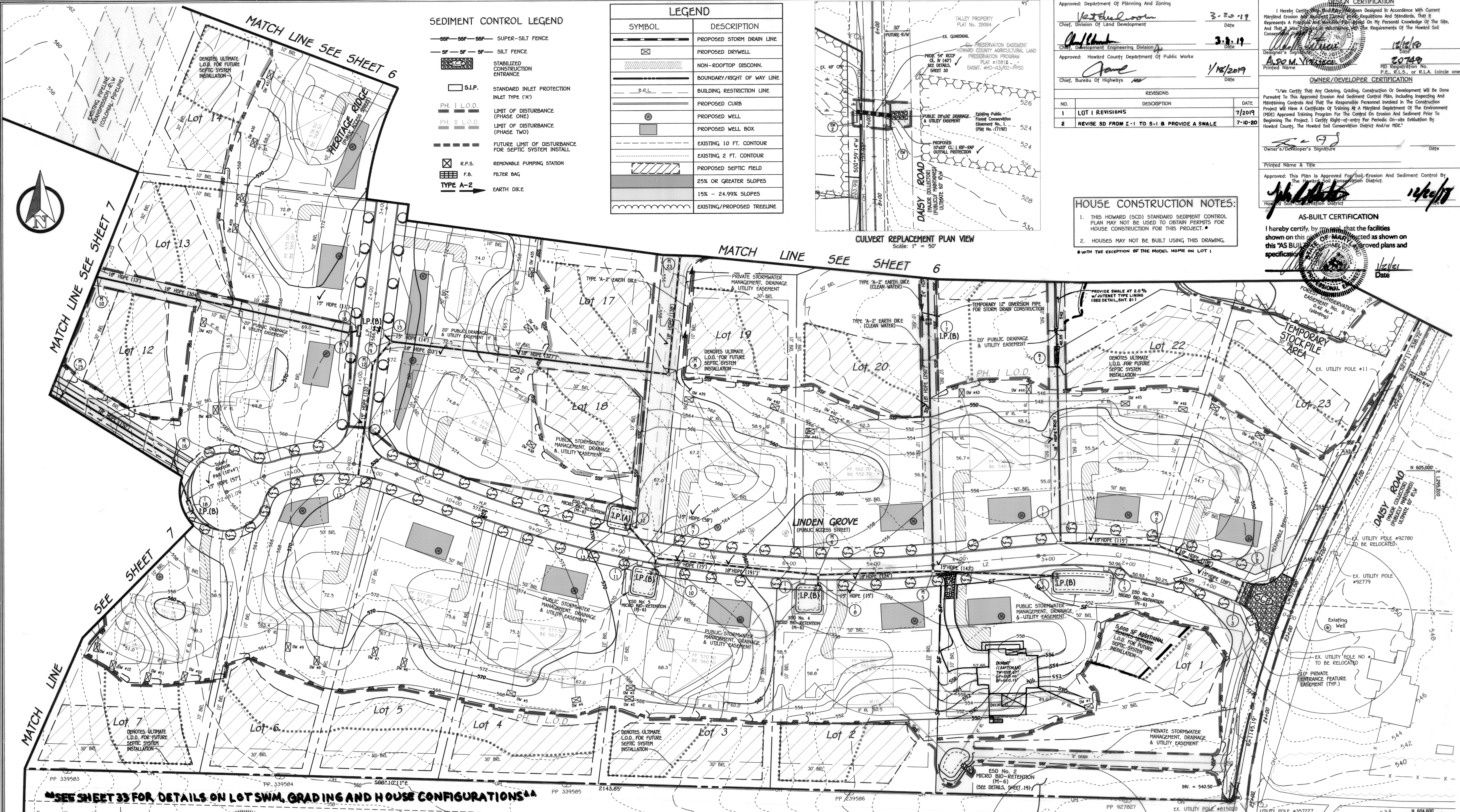
**DEVELOPER:** HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7900

SCALE: AS SHOWN DATE: DECEMBER 12, 2018 DWG. NO. 3 OF 35  
DES. R.A./J.C.L. DRN. J.C.L. CHK. A.M.V.

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SERVICE OFFICE PARK - 18272 BALTIMORE NATIONAL PIKE  
ELKLOFT CITY, MARYLAND 21086  
(410) 461-8895





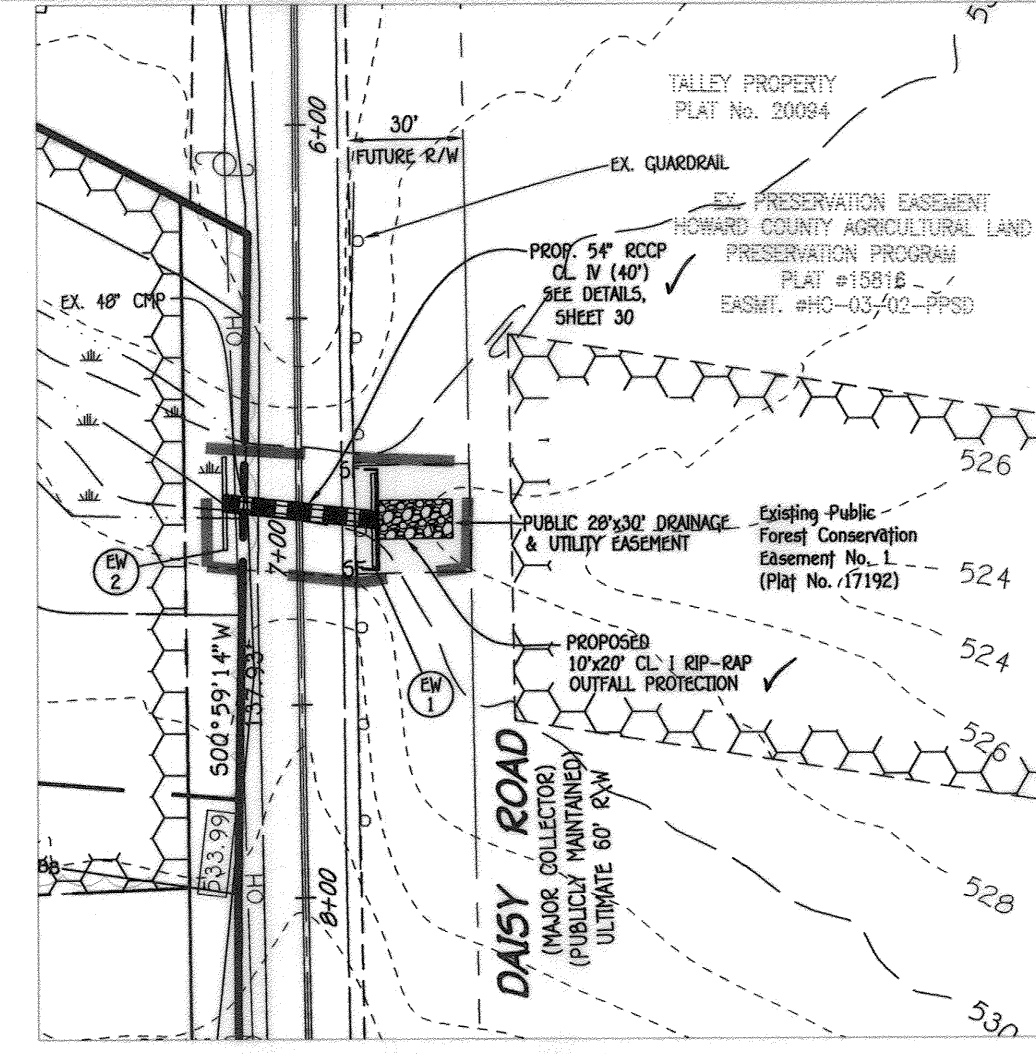


**SEDIMENT CONTROL LEGEND**

SSP - SSF - SSF	SUPER-SILT FENCE
SF - SF - SF	SILT FENCE
[Symbol]	STABILIZED CONSTRUCTION ENTRANCE
[Symbol]	STANDARD INLET PROTECTION INLET TYPE 'A'
PH I L.O.D.	LIMIT OF DISTURBANCE (PHASE ONE)
PH II L.O.D.	LIMIT OF DISTURBANCE (PHASE TWO)
[Symbol]	FUTURE LIMIT OF DISTURBANCE FOR SEPTIC SYSTEM INSTALL.
[Symbol]	REMOVABLE PUMPING STATION
[Symbol]	F.B. FILTER BAG
TYPE A-2	EARTH DIKE

**LEGEND**

[Symbol]	PROPOSED STORM DRAIN LINE
[Symbol]	PROPOSED DRYWELL
[Symbol]	NON-ROOFTOP DISCONN.
[Symbol]	BOUNDARY/RIGHT OF WAY LINE
[Symbol]	BUILDING RESTRICTION LINE
[Symbol]	PROPOSED CURB
[Symbol]	PROPOSED WELL
[Symbol]	PROPOSED WELL BOX
[Symbol]	EXISTING 10 FT. CONTOUR
[Symbol]	EXISTING 2 FT. CONTOUR
[Symbol]	PROPOSED SEPTIC FIELD
[Symbol]	25% OR GREATER SLOPES
[Symbol]	15% - 24.99% SLOPES
[Symbol]	EXISTING/PROPOSED TREELINE



Approved: Department of Planning and Zoning  
 Chief, Division of Land Development  
 Approved: Howard County Department of Public Works  
 Chief, Bureau of Highways

3-20-19  
 3-8-19  
 1/18/2019

**REVISIONS**

NO.	DESCRIPTION	DATE
1	LOT 1 REVISIONS	7/20/19
2	REVISE SD FROM I-1 TO S-1 & PROVIDE A SWALE	7-10-20

**HOUSE CONSTRUCTION NOTES:**

- THIS HOWARD (SCD) STANDARD SEDIMENT CONTROL PLAN MAY NOT BE USED TO OBTAIN PERMITS FOR HOUSE CONSTRUCTION FOR THIS PROJECT.
- HOUSES MAY NOT BE BUILT USING THIS DRAWING, & WITH THE EXCEPTION OF THE MODEL HOME ON LOT 1.

**DESIGN CERTIFICATION**

I hereby certify that this plan was designed in accordance with current Maryland erosion and sediment control 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.

Professional Engineer  
 ASO M. VITACCI, P.E.  
 License No. 20749  
 Date: 12/12/18

**OWNER/DEVELOPER CERTIFICATION**

I/we certify that any clearing, grading, construction or development will be done pursuant to this approved erosion and sediment control plan, including inspecting and maintaining controls and that the responsible personnel involved in the construction project will have a certificate of training at a Maryland Department of the Environment (MDE) approved training program for the control of erosion and sediment prior to beginning the project. I certify right-of-entry for periods: on-site evaluation by Howard County, the Howard Soil Conservation District and/or MDE.

Owner/Developer's Signature: [Signature]  
 Date: 12/12/18

**AS-BUILT CERTIFICATION**

I hereby certify that the facilities shown on this plan are as shown on this "AS-BUILT" plan, approved plans and specifications.

Date: 12/12/18

SEE SHEET 33 FOR DETAILS ON LOT SWM, GRADING AND HOUSE CONFIGURATIONS

**PROFESSIONAL CERTIFICATION**

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.

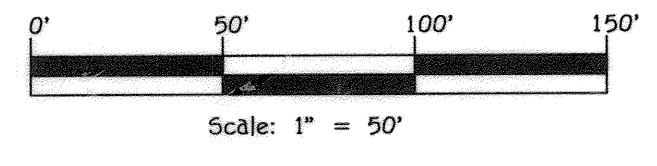
37668  
 7/13/2021  
 EXPIRATION DATE  
 CERTIFYING LOT 1 REV #1, 7/20/19 FOR ESE CONSULTANTS, INC.

**ROOFLEADER NOTE:**

A OVEFLOW OUTFALL (SURCHARGE) SHALL BE PROVIDED AT EACH DOWNSPOUT PRIOR TO CONNECTION TO THE UNDERGROUND ROOFLEADER. SEE DETAIL SHEET 20.

**CONTRACTOR NOTES:**

- CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FLOODPLAIN, STREAMS, WETLANDS & THEIR BUFFERS.
- SHOULD THE STOCKPILE EXCEED 15 FT. IN HEIGHT IT MUST BE BENCHED.

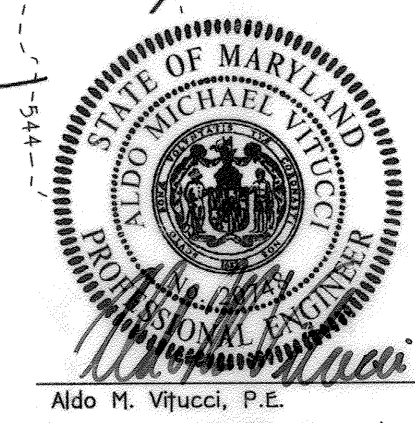


**ESE CONSULTANTS**  
 7164 Columbia Gateway Dr Suite 210 Columbia, MD 21046  
 T: 410-871-4105

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SOURCE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
 CLUETT CITY, MARYLAND 21042  
 (410) 461-2800

**OWNER:**  
 KIMBERTHY HERITAGE LLC  
 3429 HIPPLEY HILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900



Aldo M. Vitacci, P.E.  
 Date: 12/12/18  
 "Professional Certification: 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. 20749, Expiration Date 2-22-19."

**GRADING & SEDIMENT CONTROL PLAN**  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 5 OF 38



**SEDIMENT CONTROL LEGEND**

- SSF—SSF—SSF— SUPER-SILT FENCE
- SF—SF—SF— SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- S.I.P. STANDARD INLET PROTECTION INLET TYPE (A)
- PH I L.O.D. LIMIT OF DISTURBANCE (PHASE ONE)
- PH II L.O.D. LIMIT OF DISTURBANCE (PHASE TWO)
- FUTURE LIMIT OF DISTURBANCE FOR SEPTIC SYSTEM INSTALL
- R.P.S. REMOVABLE PUMPING STATION
- F.B. FILTER BAG
- TYPE A-2 EARTH DIKE

**ROOFLEADER NOTE:**  
 A OVERFLOW OUTFALL (SURCHARGE) SHALL BE PROVIDED AT EACH DOWNSPOUT PRIOR TO CONNECTION TO THE UNDERGROUND ROOFLEADER. SEE DETAIL SHEET 20.

**DESIGN CERTIFICATION**

I hereby certify that the plan shown is designed in accordance with current Maryland Erosion and Sediment Control Regulations and Standards. That I represent a Professional Engineering Firm Based on My Personal Knowledge of the Site. And that I was in direct and active collaboration with the Requirements of the Howard Soil Conservation District.

*[Signature]* 12/12/19  
 Date  
 20749  
 HD Registration No.  
 P.E., E.L.S., or R.L.A. (circle one)  
 Printed Name  
**OWNER/DEVELOPER CERTIFICATION**

"I/We Certify that Any Clearing, Grading, Construction or Development Will be Done Pursuant to This Approved Erosion and Sediment Control Plan, Including Inspecting and Maintaining Controls And That The Responsible Personnel Involved in the Construction Project Will Have A Certificate Of Training 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 Site-of-entry For Periodic On-site Evaluation By Howard County, The Howard Soil Conservation District And/or MDE."

*[Signature]*  
 Owner/Developer's Signature  
 Date

Approved: This Plan is Approved For Soil Erosion And Sediment Control by the Howard Soil Conservation District.

*[Signature]* 12/12/19  
 Date  
 Howard Soil Conservation District  
 Approved: Department Of Planning And Zoning  
*[Signature]* 3-10-19  
 Date  
 Chief, Division Of Land Development  
*[Signature]* 3-8-19  
 Date  
 Chief, Development Engineering Division  
 Approved: Howard County Department Of Public Works  
*[Signature]* 1/18/2019  
 Date  
 Chief, Bureau Of Highways

**REVISIONS**

NO.	DESCRIPTION	DATE
1	REVISE SD FROM 1-1 TO 1-1-B PROVIDE A SWALE	7-10-20

**CONTRACTOR NOTES:**

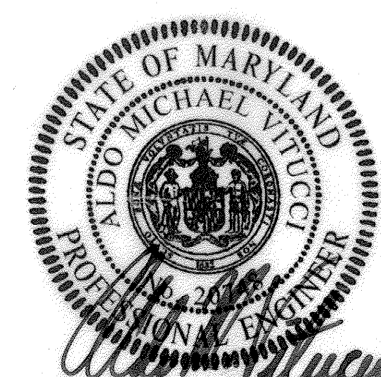
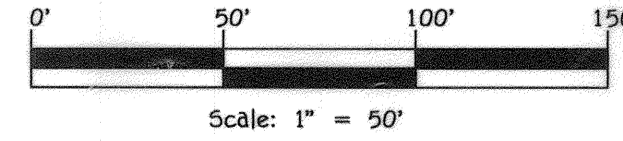
- CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FLOODPLAIN, STREAMS, WETLANDS & THEIR BUFFERS.
- SHOULD THE STOCKPILE EXCEED 15 FT. IN HEIGHT IT MUST BE BENCHED.

**HOUSE CONSTRUCTION NOTES:**

- THIS HOWARD (SCD) STANDARD SEDIMENT CONTROL PLAN MAY NOT BE USED TO OBTAIN PERMITS FOR HOUSE CONSTRUCTION FOR THIS PROJECT.
- HOUSES MAY NOT BE BUILT USING THIS DRAWING.

**OWNER:**  
 KIMBERLY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900



**AS-BUILT CERTIFICATION**

I hereby certify by my seal, that the facilities shown on this plan are constructed as shown on this "AS-BUILT" plan and specifications as approved plans and specifications.

*[Signature]*  
 Date  
 12/12/19

**GRADING & SEDIMENT CONTROL PLAN**  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2019  
 SHEET 6 OF 35

**CONTRACTOR NOTES:**

1. CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FLOODPLAIN, STREAMS, WETLANDS & THEIR BUFFERS.
2. SHOULD THE STOCKPILE EXCEED 15 FT. IN HEIGHT IT MUST BE BENCHED.

**HOUSE CONSTRUCTION NOTES:**

1. THIS HOWARD (SCD) STANDARD SEDIMENT CONTROL PLAN MAY NOT BE USED TO OBTAIN PERMITS FOR HOUSE CONSTRUCTION FOR THIS PROJECT.
2. HOUSES MAY NOT BE BUILT USING THIS DRAWING.

**ROOFLEADER NOTE:**

A OVERFLOW OUTFALL (SURCHARGE) SHALL BE PROVIDED AT EACH DOWNSPOUT PRIOR TO CONNECTION TO THE UNDERGROUND ROOFLEADER. SEE DETAIL SHEET 20.

**SEDIMENT CONTROL LEGEND**

- S—S—S— SUPER-SILT FENCE
- S—S—S— SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- S.I.P. STANDARD INLET PROTECTION INLET TYPE (A)
- PH I L.O.D. LIMIT OF DISTURBANCE (PHASE ONE)
- PH II L.O.D. LIMIT OF DISTURBANCE (PHASE TWO)
- FUTURE LIMIT OF DISTURBANCE FOR SEPTIC SYSTEM INSTALL
- R.P.S. REMOVABLE PUMPING STATION
- F.B. FILTER BAG
- TYPE A-2 EARTH DIKE

**LEGEND**

SYMBOL	DESCRIPTION
—S—S—S—	PROPOSED STORM DRAIN LINE
⊠	PROPOSED DRYWELL
	NON-ROOFTOP DISCONN.
---	BOUNDARY/RIGHT OF WAY LINE
B.R.L.	BUILDING RESTRICTION LINE
—C—C—C—	PROPOSED CURB
⊙	PROPOSED WELL
⊞	PROPOSED WELL BOX
---	EXISTING 10 FT. CONTOUR
---	EXISTING 2 FT. CONTOUR
	PROPOSED SEPTIC FIELD
	25% OR GREATER SLOPES
	15% - 24.99% SLOPES
---	EXISTING/PROPOSED TREELINE

**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 Best Management Practice Plan based on my personal knowledge of the site, and that it is designed in accordance with the requirements of the Howard Soil Conservation District.

12/16/19  
20749  
RD Registration No. P.E., R.L.S., or R.L.A. (circle one)  
ALDO M. VITACEK  
Professional Engineer

1/16/2019  
I/We certify that any clearing, grading, construction or development will be done pursuant to this approved erosion and sediment control plan, including inspecting and maintaining controls and that the responsible personnel involved in the construction project will have a certificate of training as 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.

Owner's/Developer's Signature: [Signature] Date: [Blank]

Printed Name & Title: [Blank]

Approved: This Plan is Approved For Soil Erosion and Sediment Control By [Signature] 12/20/18  
Howard Soil Conservation District

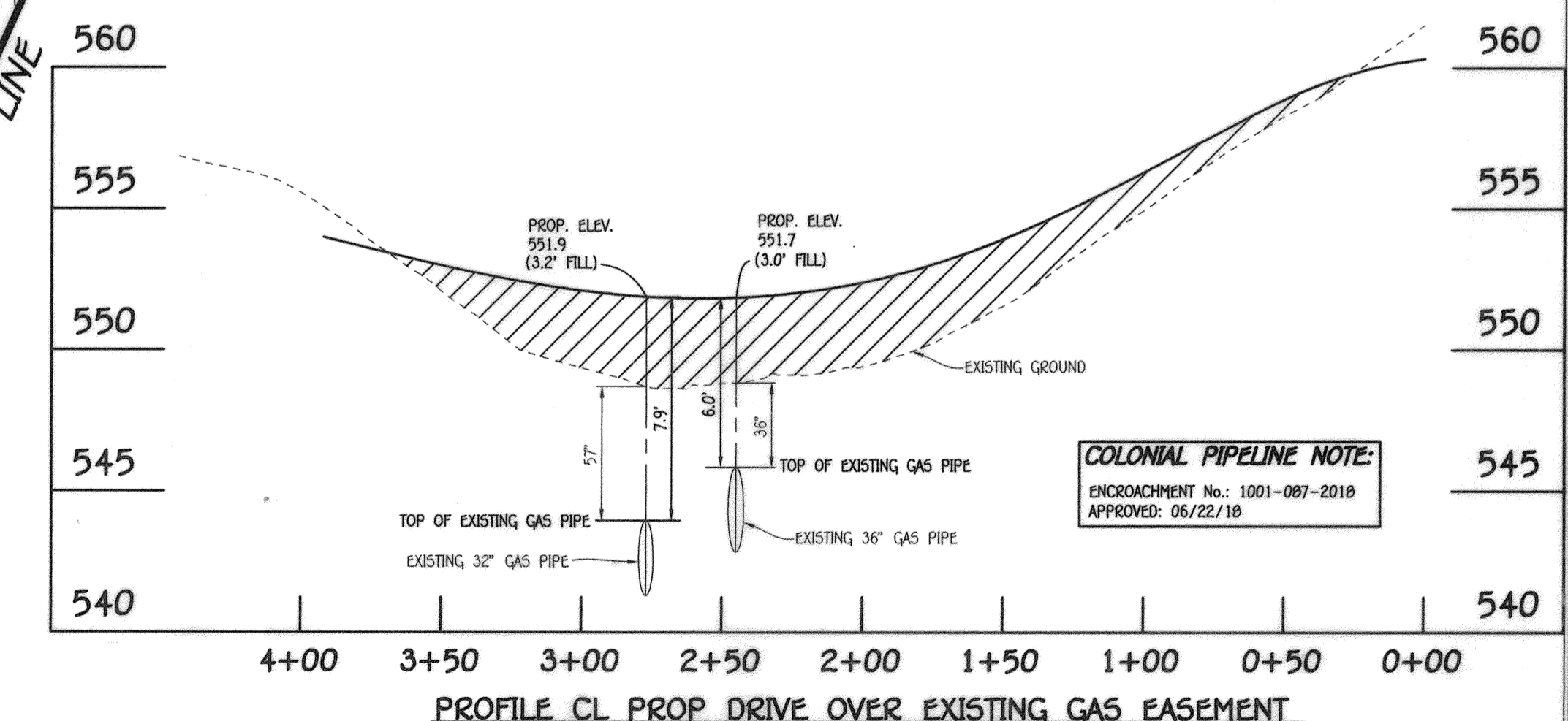
Approved: Department of Planning and Zoning [Signature] 3-20-19  
Chief, Division of Land Development

Approved: [Signature] 3-9-19  
Chief, Development Engineering Division

Approved: Howard County Department of Public Works [Signature] 1/18/2019  
Chief, Bureau of Highways

NO.	DESCRIPTION	DATE
1	ADD NOTE FOR LOT 9	7/21/20

	PIPE OUTLET SEDIMENT TRAP ST-1		STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II	
	TRAP NO. 1	TRAP NO. 2	TRAP NO. 3	TRAP NO. 4
DRAINAGE AREA - INITIAL	4.30 AC.	0.81 AC.	3.28 AC.	1.93 AC.
DRAINAGE AREA - INTERM	---	---	---	---
DRAINAGE AREA - FINAL	4.55 AC.	3.28 AC.	4.34 AC.	2.52 AC.
TOTAL STORAGE REQUIRED	16,380 CF	11,808 CF	15,624 CF	9,072 CF
TOTAL STORAGE PROVIDED	26,227 CF	21,819 CF	31,659 CF	13,440 CF
WET STORAGE REQUIRED	8,190 CF	5,904 CF	7,812 CF	4,536 CF
WET STORAGE PROVIDED	8,190 CF	5,904 CF	7,812 CF	4,536 CF
DRY STORAGE REQUIRED	16,380 CF	10,800 CF	9,583 CF	4,792 CF
DRY STORAGE PROVIDED	16,380 CF	10,800 CF	9,583 CF	4,792 CF
TRAP BOTTOM ELEVATION	548.00	536.50	---	---
TRAP BOTTOM DIMENSIONS	39'x11'	64'x6'	548.25	562.30
RISER CREST (DRY STORAGE) ELEVATION	551.40	537.99	---	---
TRAP BOTTOM ELEVATION	549.85	537.94	---	---
CLEANOUT ELEVATION	548.95	537.35	---	---
TOP OF EMBANKMENT ELEVATION	553.00	541.50	---	---
SIDE SLOPE	2:1	2:1	---	---
EMBANKMENT TOP WIDTH	6.0'	6.0'	---	---
PRINCIPAL SPILLWAY MATERIAL (BARREL, RISER, ANTI-SEEP COLLAR)	C.M.P.	C.M.P.	---	---
RISER DIAMETER	(8-2) 36"	(8-2) 21"	---	---
BARREL DIAMETER	27"	19"	---	---
TRASH RACK DIAMETER	54"	30"	---	---
TRASH RACK HEIGHT	25"	19"	---	---
ANTI-SEEP COLLAR DIMENSIONS	6.5'x6.5'	6.5'x6.5'	---	---
OUTLET PROTECTION - LENGTH	N/A	N/A	---	---
OUTLET PROTECTION - WIDTH	N/A	N/A	---	---
OUTLET PROTECTION - DEPTH	N/A	N/A	---	---

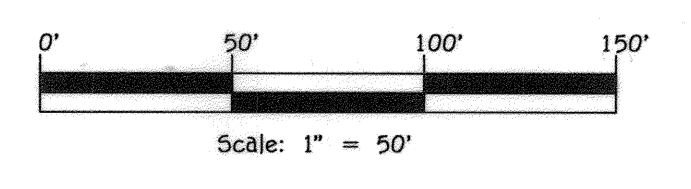


**AS-BUILT CERTIFICATION**

I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan and that the facilities were constructed in accordance with the approved plans and specifications.

[Signature]  
Date: [Blank]

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 10772 BALTIMORE NATIONAL PIKE  
ELICOTT CITY, MARYLAND 21042  
(410) 461-2899



**OWNER:**  
KIMBERLY HERITAGE LLC  
3425 HIPSLEY MILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7900

**DEVELOPER:**  
HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7900



12/12/18

Aldo M. Vitacek, P.E.  
Date: 12/12/18  
Professional Certification: 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. 20748, Expiration Date 2-22-19.

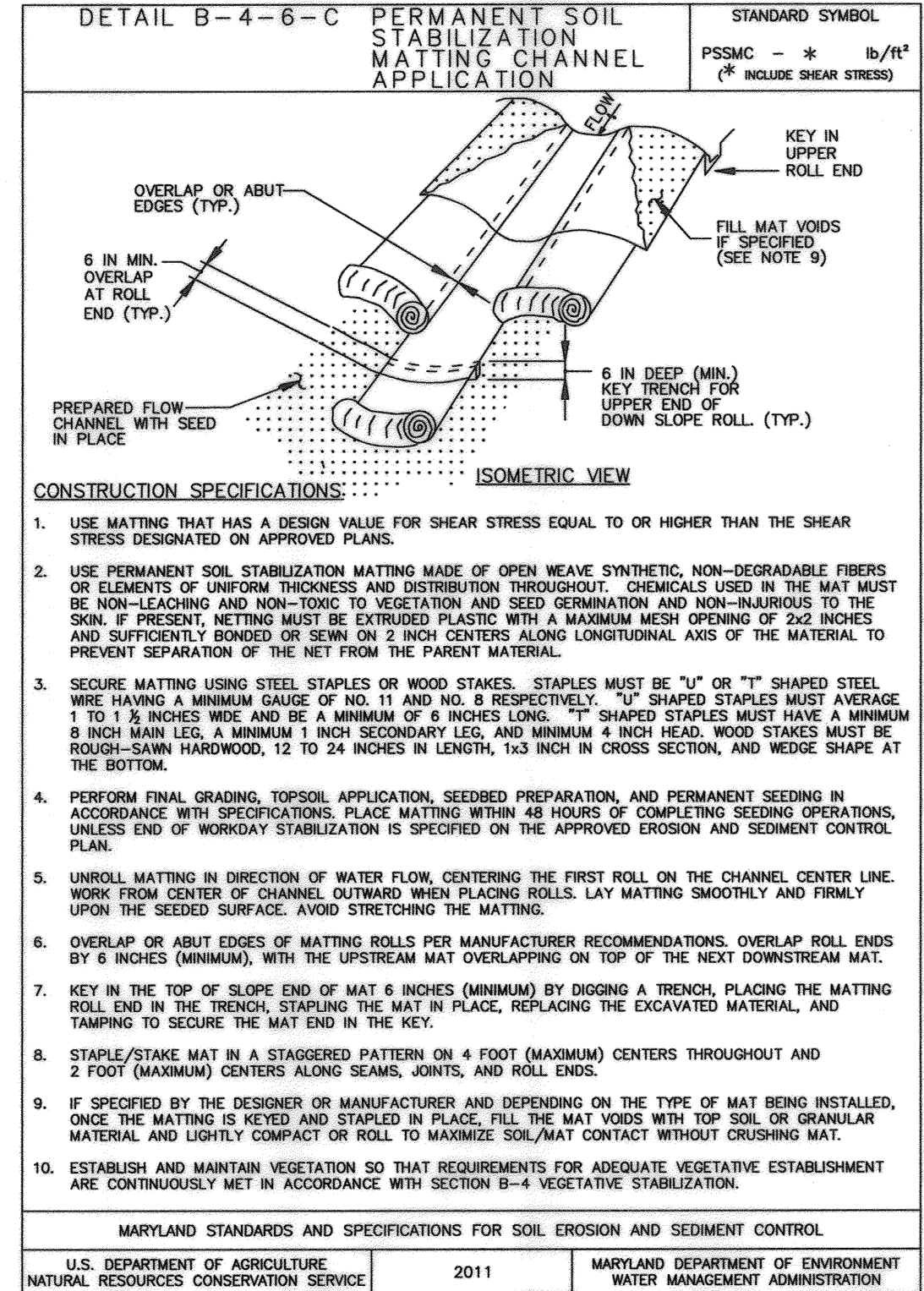
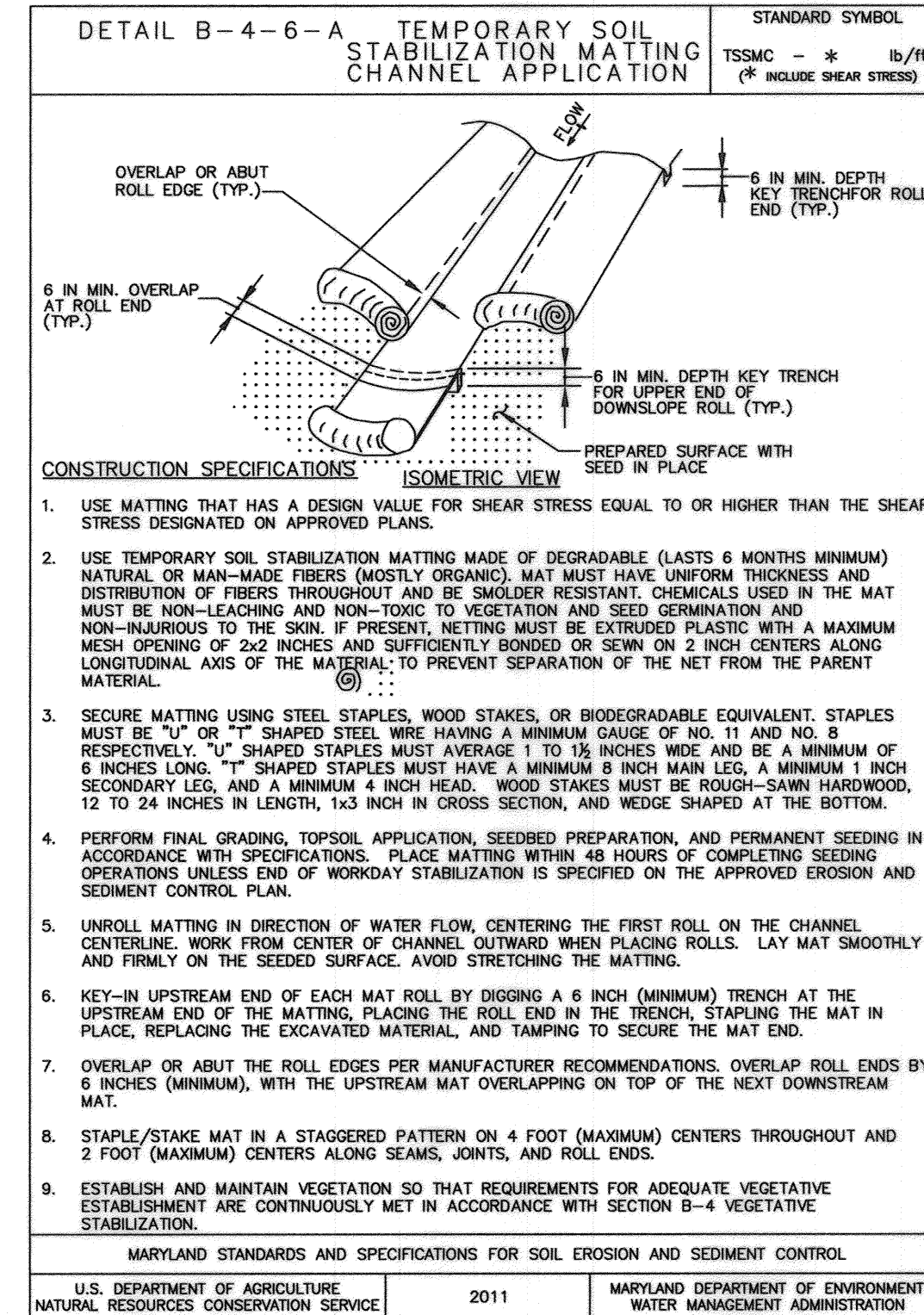
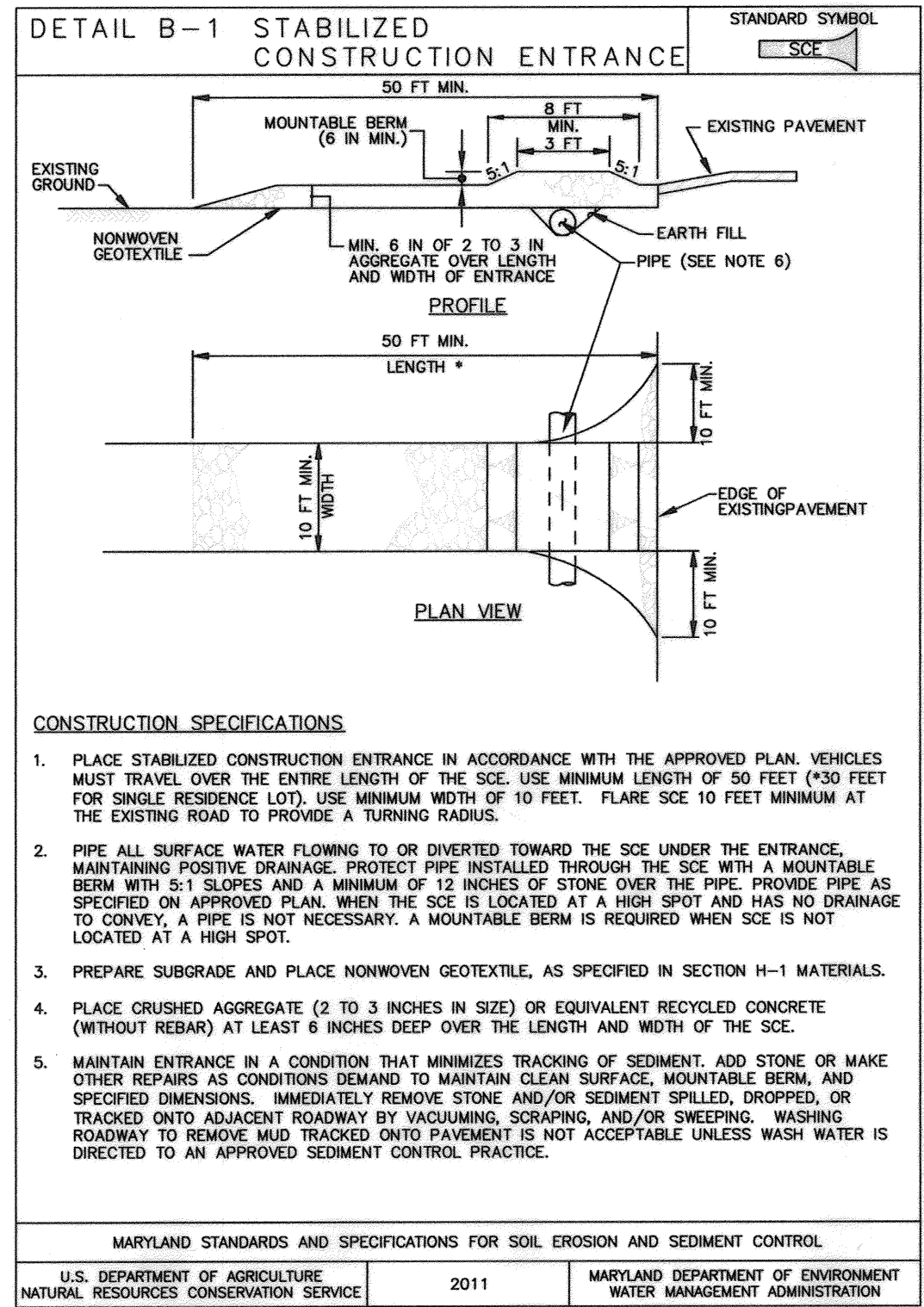
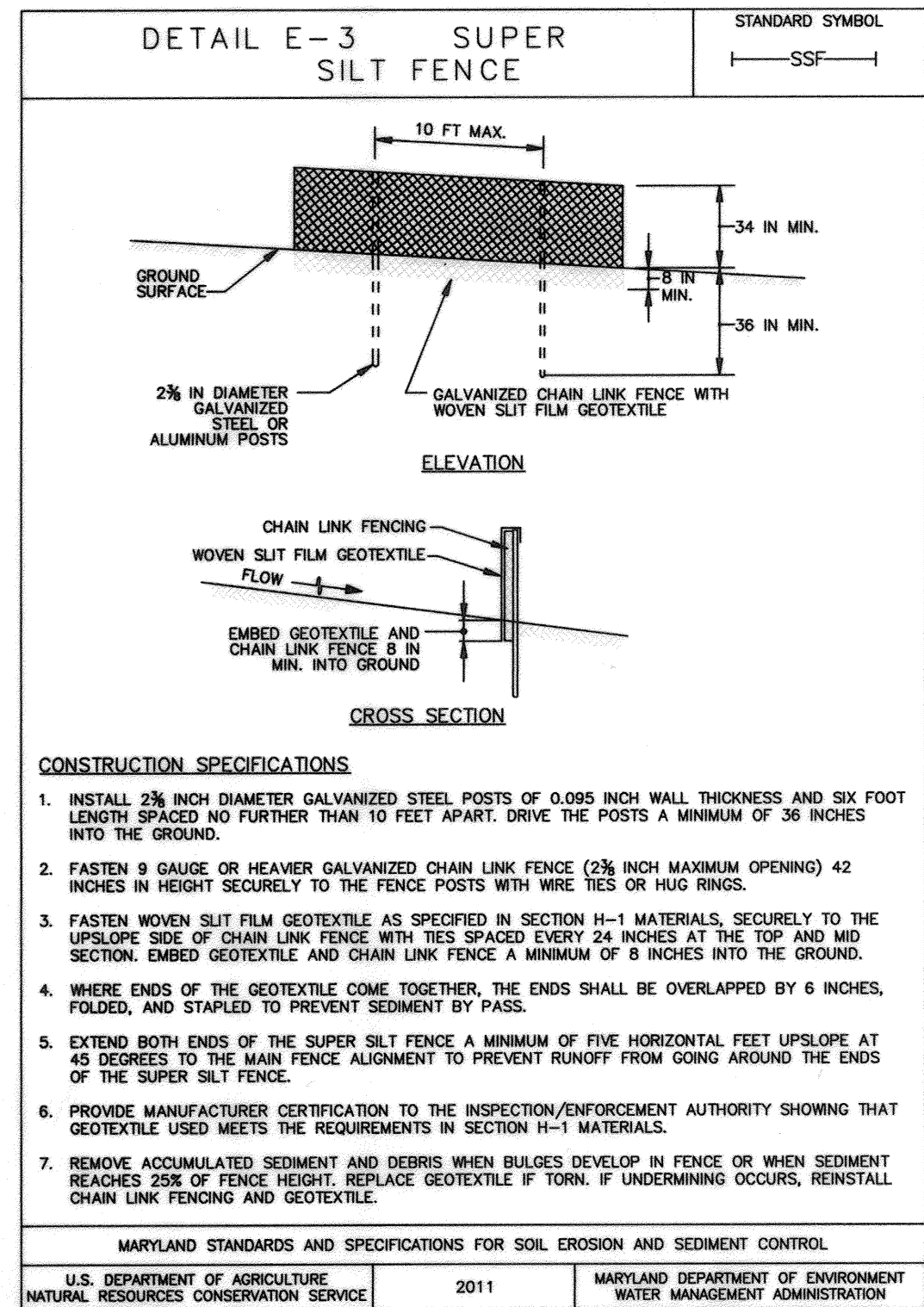
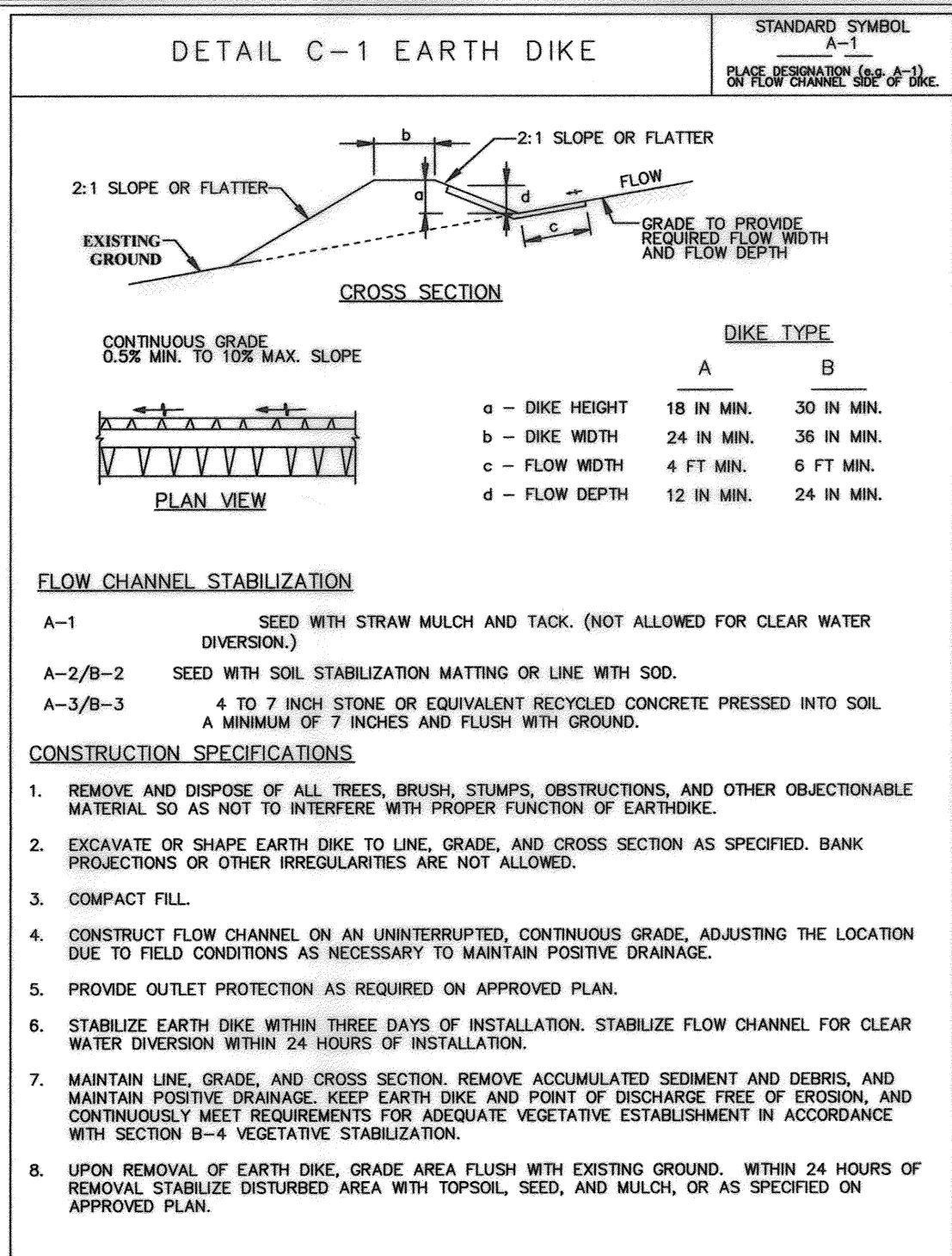
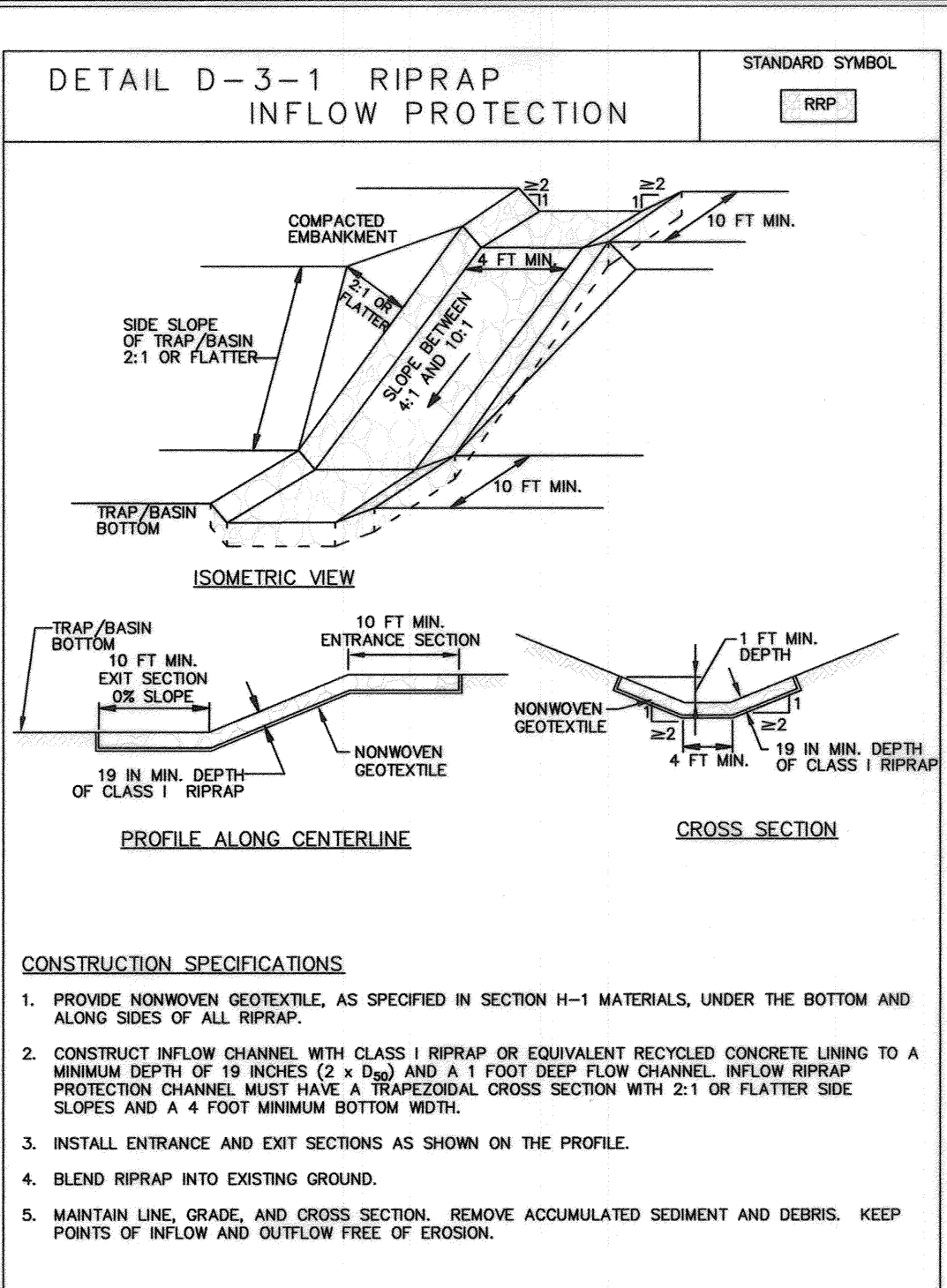
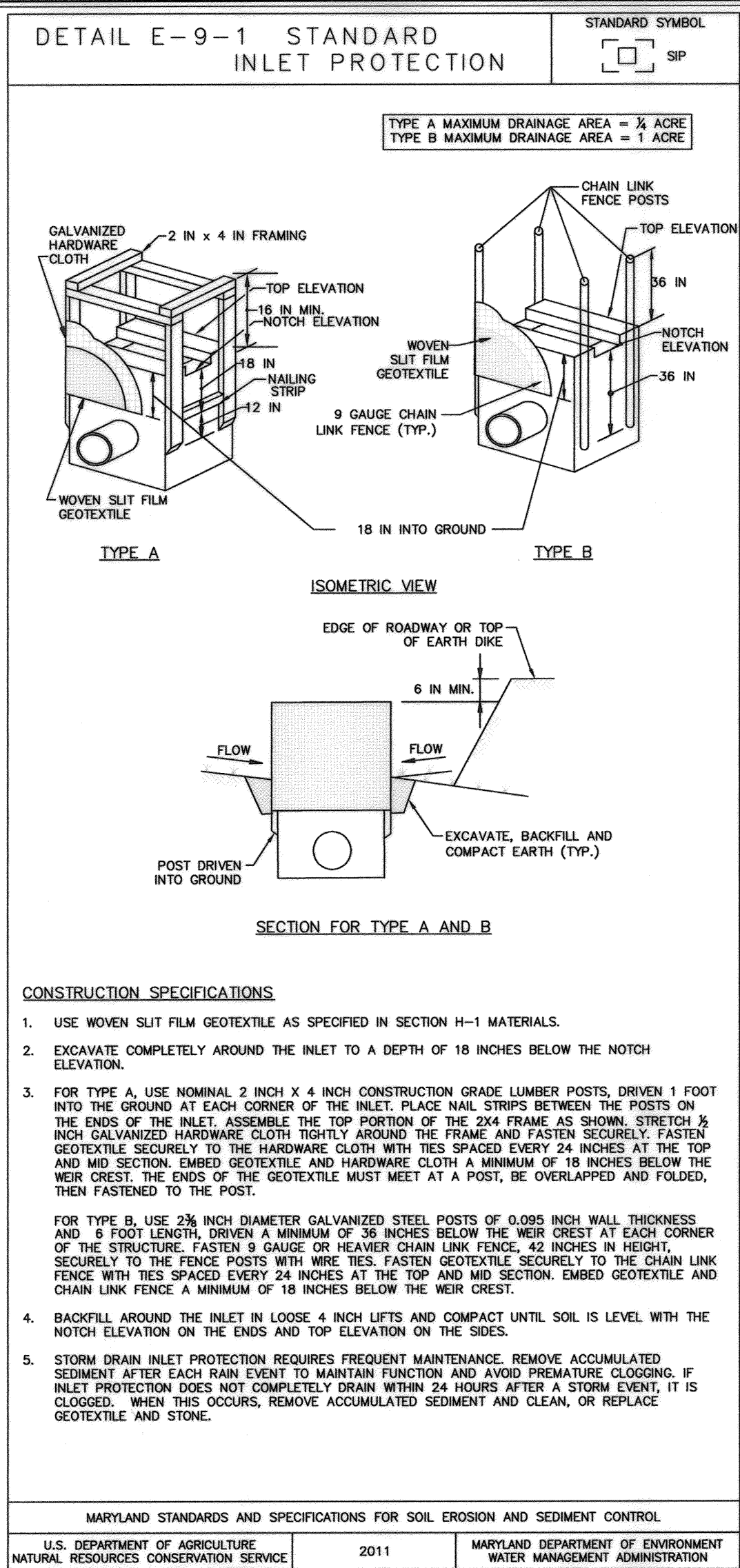
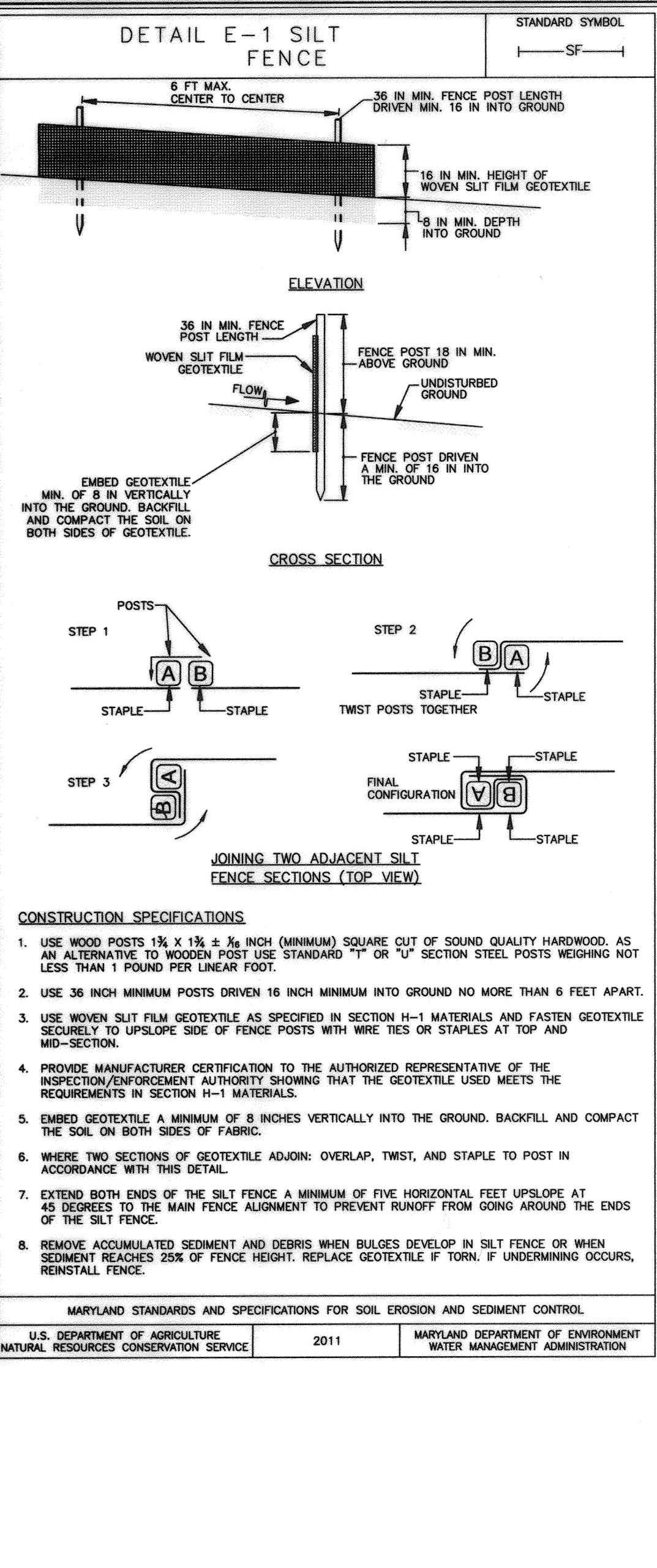
**REVISED FINAL ROAD CONSTRUCTION PLAN  
GRADING & SEDIMENT CONTROL PLAN  
LINDEN GROVE  
PHASE ONE**

LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E', AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 31, 2018  
SHEET 7 OF 35







**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 Professional Engineering Design Based On My Personal Knowledge Of The Site. And That I Am A Licensed Professional Engineer Under The Requirements Of The Howard Soil Conservation District.

12/12/18  
20748  
P.E., E.L.S., OR R.L.A. (circle one)  
**DESIGNER/DEVELOPER CERTIFICATION**

"I/We Certify That Any Clearing, Grading, Construction Or Development Will Be Done Pursuant To This Approved Erosion And Sediment Control Plan, Including Inspecting And Maintaining Controls And That The Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Training At A Maryland Department Of The Environment (MDE) Approved Training Program For The Control On Erosion And Sediment Prior To Beginning The Project. I/We Certify Right-of-Entry For Periodic On-site Evaluation By Howard County, The Howard Soil Conservation District And/or MDE."

12-12-18  
Owner/Developer's Signature: *T. Feaga*  
T. Feaga - Managing Member  
Printed Name & Title  
Approved: This Plan Is Approved For Soil Erosion And Sediment Control By  
Howard Soil Conservation District  
*J. Roberts* 12/20/18  
Date  
Approved: Department Of Planning And Zoning  
Howard County Department Of Public Works  
Chief, Division Of Land Development  
*J. Roberts* 3-20-19  
Date  
Chief, Development Engineering Division  
*J. Roberts* 3-8-19  
Date  
Approved: Howard County Department Of Public Works  
*J. Roberts* 1/18/2019  
Date  
Chief, Bureau Of Highways

REVISIONS		
NO.	DESCRIPTION	DATE

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 10772 BALTOUR NATIONAL PIKE  
ELDOTT CITY, HOWARD COUNTY, MARYLAND 21786  
(410) 461-2900

**OWNER:** KIMBERTHY/HERITAGE LLC  
3425 HIPSLEY HILL ROAD  
WOODBINE, MARYLAND 21797-7615  
TEL: 410-489-7900

**DEVELOPER:** HERITAGE LAND DEVELOPMENT  
17950 NORTH AVENUE  
LUSKIN, MARYLAND 21765  
TEL: 410-489-7900

**AS-BUILT CERTIFICATION**

Note: This plan was prepared by the Designer/Developer and is not to be used for AS-BUILT information.

Aldo M. Vitucci, P.E.  
Date: 12/12/18  
"Professional Certification: 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. 20748, Expiration Date 2-22-19."

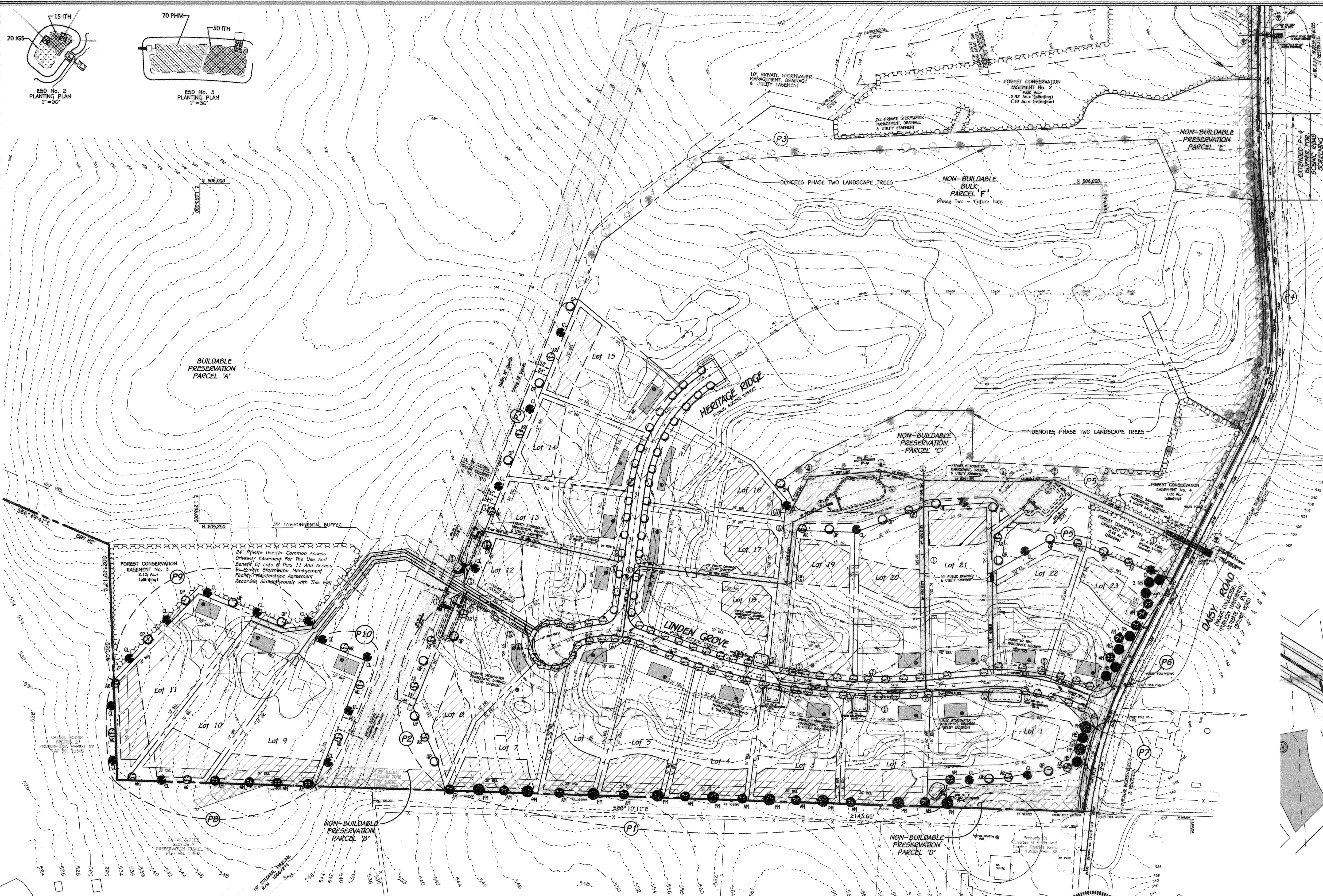
**SEDIMENT AND EROSION CONTROL NOTES & DETAILS**

**LINDEN GROVE**

PHASE ONE  
LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A'; NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

ZONED: RC-DEO  
TAX MAP NO. 8 GRID NO. 7 PARCEL NO. 5  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 12, 2018  
SHEET 9 OF 35

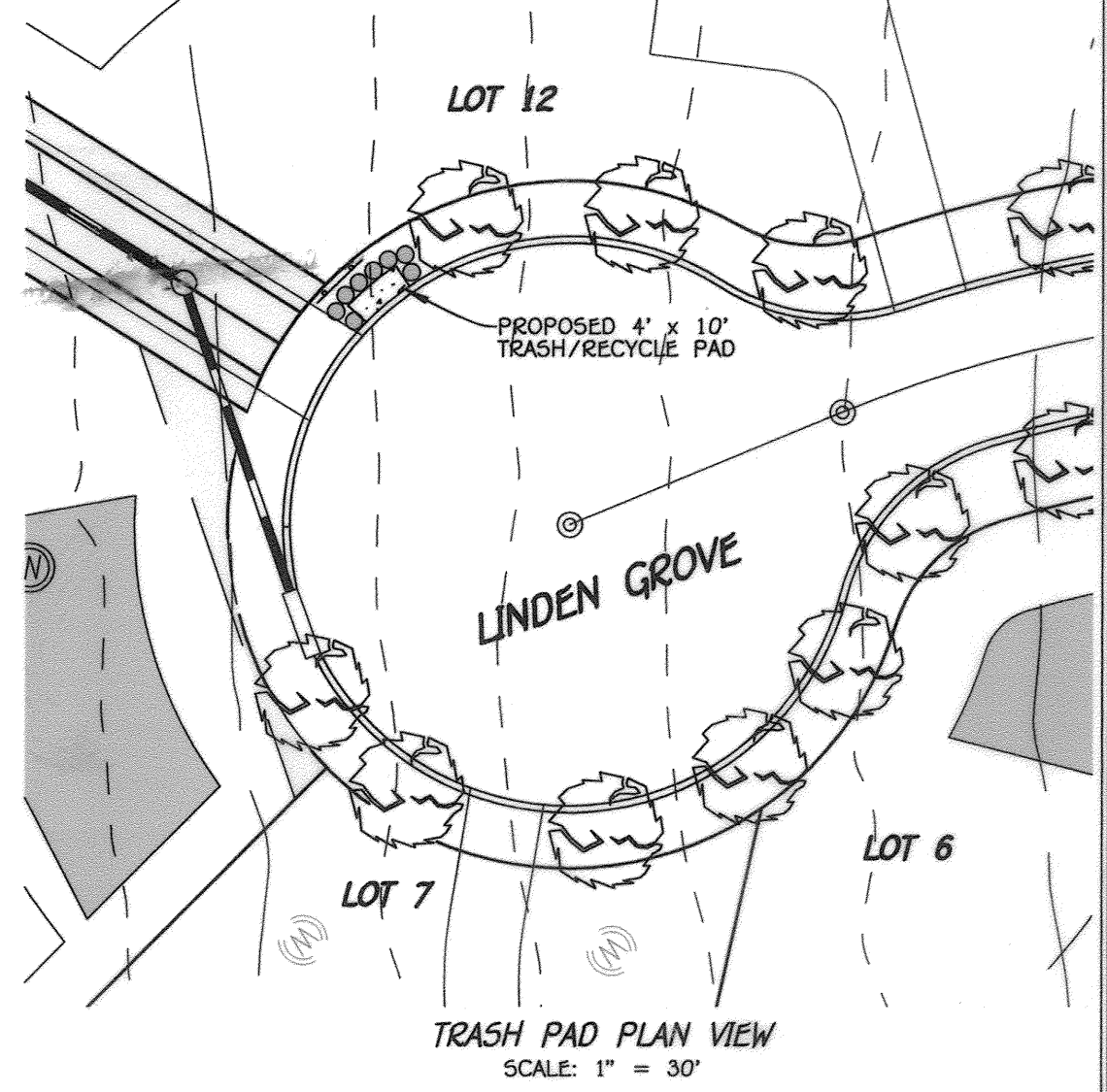
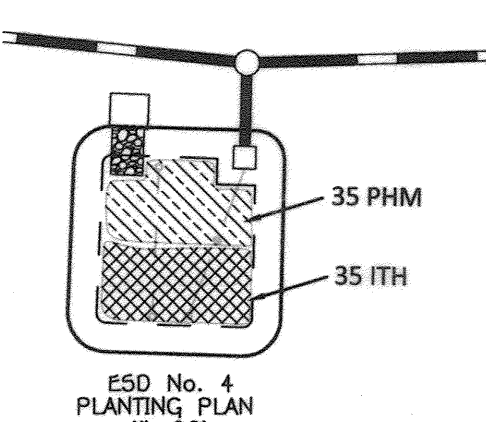
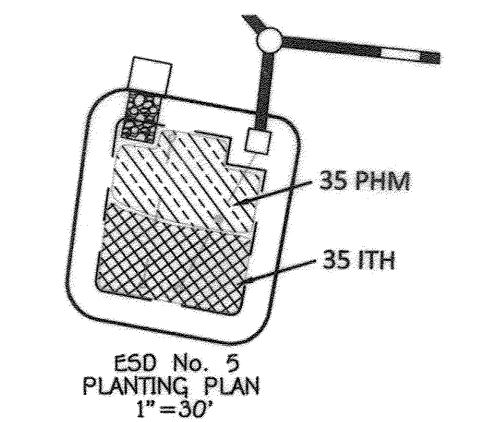
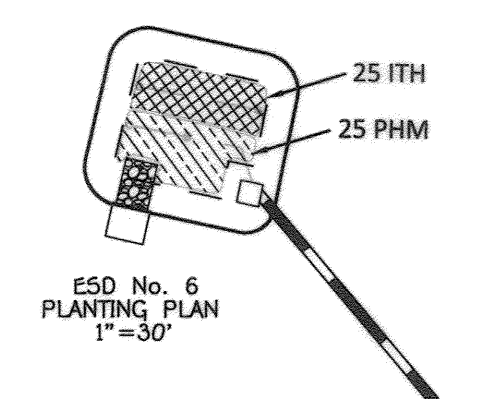
THIS IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-18-092



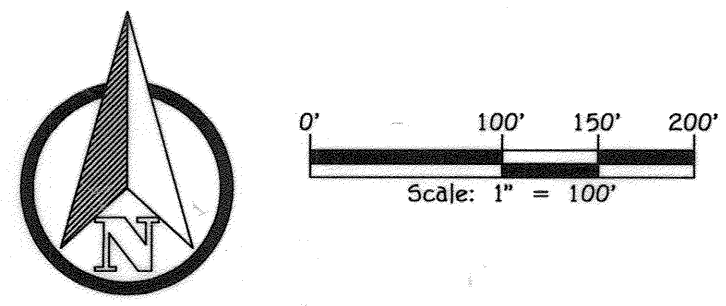
Approved: Department of Planning And Zoning  
 Chief, Division of Land Development  
 Approved: Howard County Department of Public Works  
 Chief, Bureau of Highways

3-2019  
 Date  
 3-8-19  
 Date  
 1/18/2019  
 Date

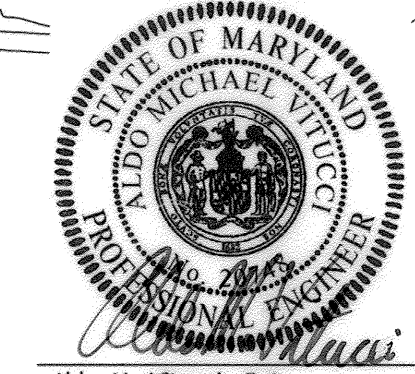
NO.	REVISIONS	DESCRIPTION	DATE
1	REVISE SD FROM I-1 TO S-1 & PROVIDE A SWALE		7-10-20



**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 LETTER OF LANDSCAPE INSTALLATION ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.



AS-BUILT INFORMATION  
 Note: There is no AS-BUILT information provided.



12/12/18  
 Date

**OWNER:**  
 KIMBERLY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LEBSON, MARYLAND 21765  
 410-489-7900

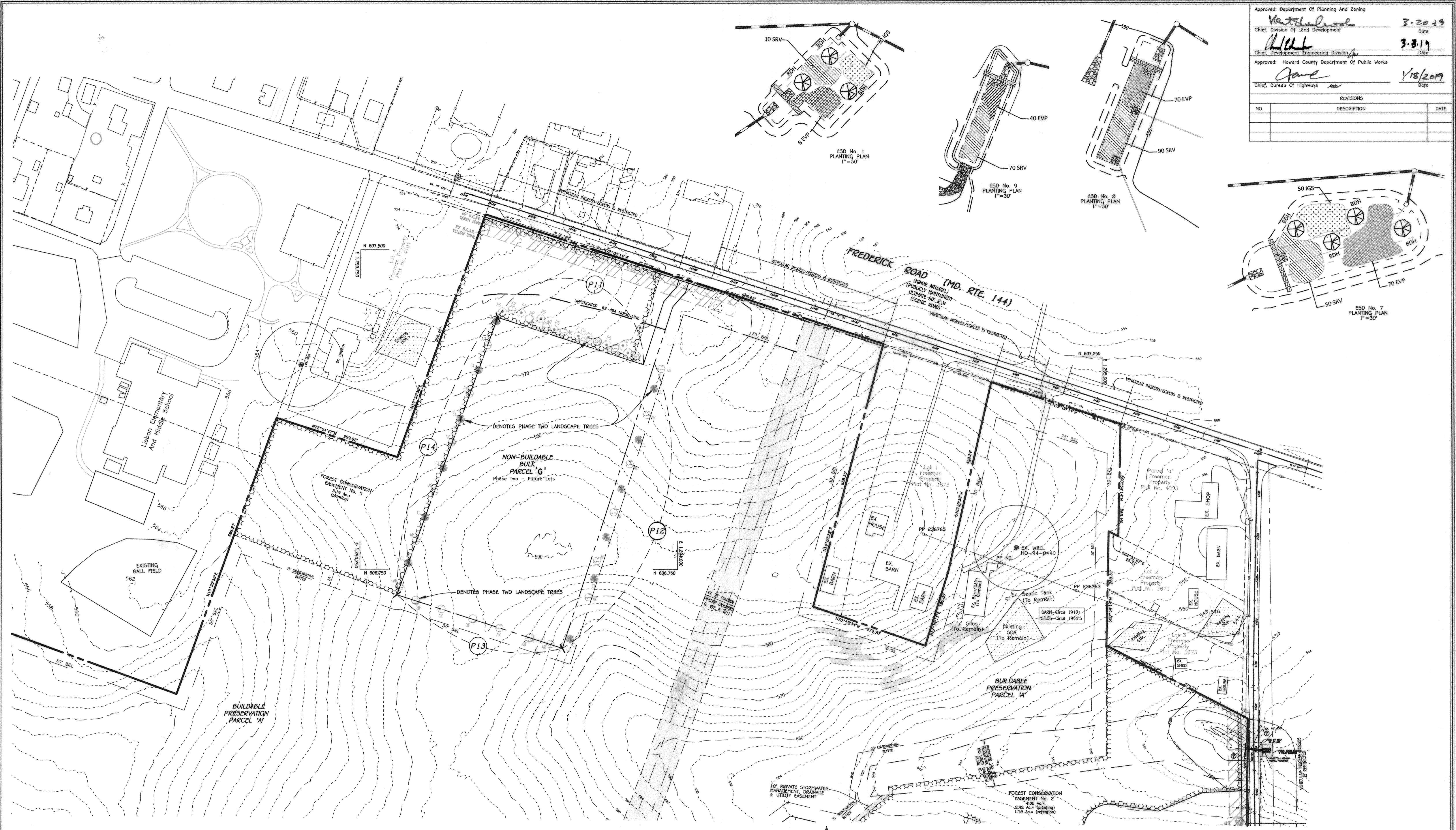
Aldo M. Vitucci, P.E.  
 "Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-19."

**LANDSCAPE PLAN**  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A'; NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 10 of 35

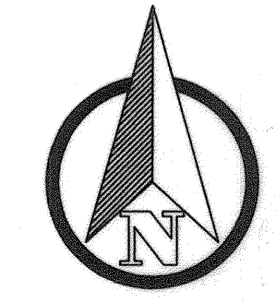
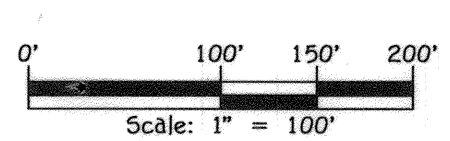
THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-18-092

Approved: Department of Planning And Zoning		
<i>V. J. L. L.</i>	<i>3-20-19</i>	Date
Chief, Division of Land Development		
<i>W. J. L.</i>	<i>3-8-19</i>	Date
Chief, Development Engineering Division		
Approved: Howard County Department of Public Works		
<i>J. L. L.</i>	<i>1/18/2019</i>	Date
Chief, Bureau of Highways		
REVISIONS		
NO.	DESCRIPTION	DATE



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**AS-BUILT CERTIFICATION**  
 Note: These are "AS-BUILT" information provided by the contractor.  
*[Signature]*  
 Date: *12/12/18*



Aldo M. Vitucci, P.E.  
 Date: *12/12/18*  
 "Professional Certification: 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. 22745, Expiration Date 2-22-19."

**OWNER:**  
 KIMBERLY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21785  
 410-489-7900

**LANDSCAPE PLAN**  
**LINDEN GROVE**  
**PHASE ONE**  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
 ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 11 OF 32

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SOURCE OFFICE PARK - 10772 BALTIMORE NATIONAL PIKE  
 ELICOTT CITY, MARYLAND 21042  
 (410) 461-5995

NAME: *[Signature]* DATE: \_\_\_\_\_

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-18-092

Approved: Department Of Planning And Zoning  
 Chief, Division Of Land Development  
 Chief, Development Engineering Division  
 Approved: Howard County Department Of Public Works  
 Chief, Bureau Of Highways

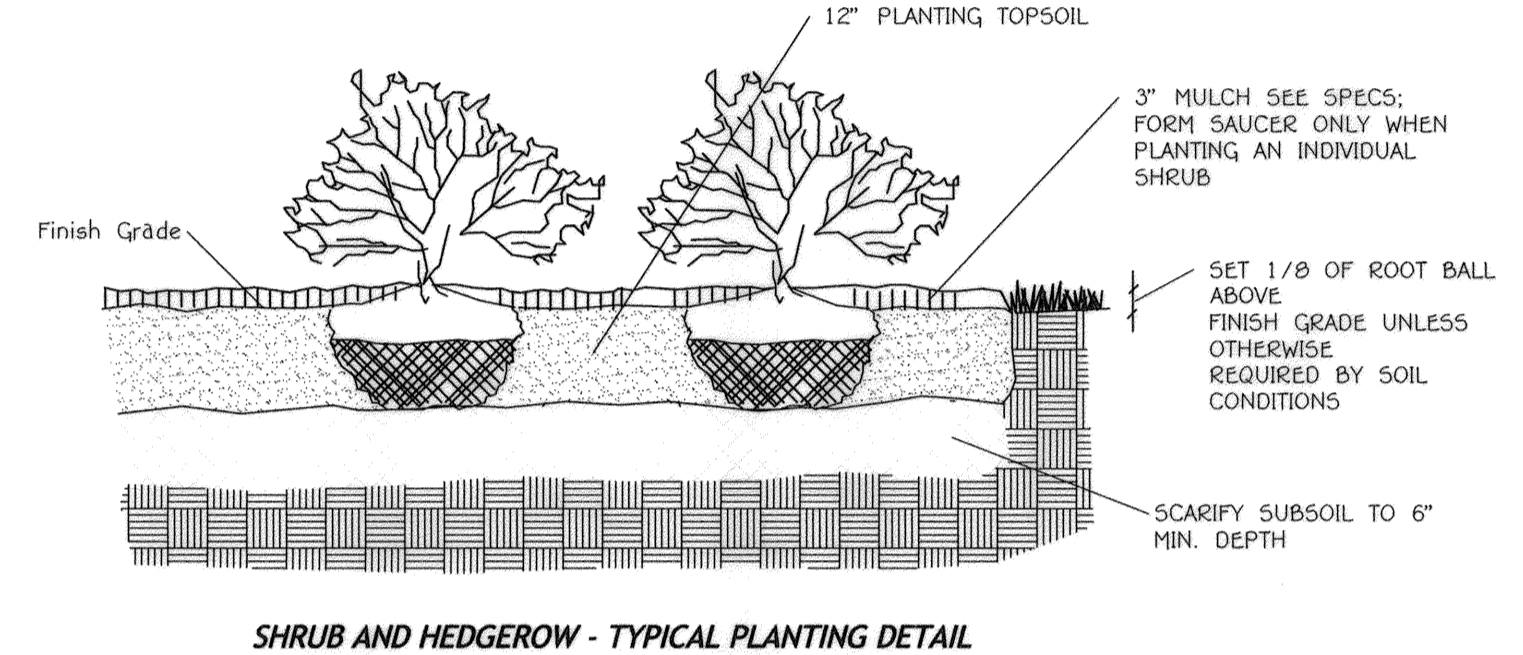
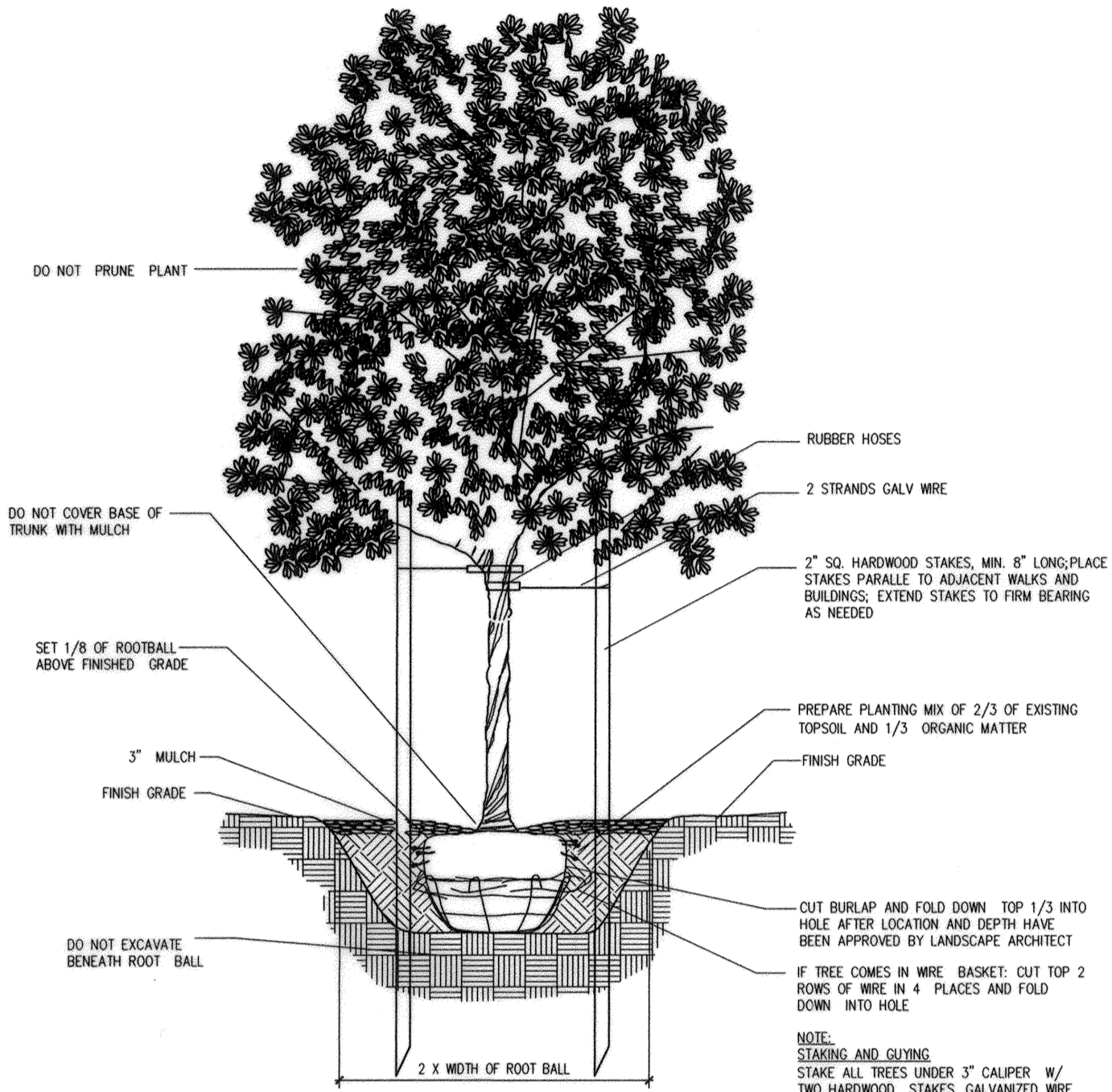
3-2019  
 3-8-19  
 1/18/2019

REVISIONS

NO.	DESCRIPTION	DATE

PHASE ONE TRASH/RECYCLE PAD LANDSCAPING	
LINEAR FEET OF PERIMETER	LOTS 9-11 PAD: 10 L.F.
NUMBER OF SHRUBS PROVIDED:	0

NOTES: 1. THE TRASH/RECYCLE PAD LANDSCAPING WILL BE MAINTAINED BY THE USERS OF THE PRIVATE USE-IN-COMMON MAINTENANCE AGREEMENT.  
 2. THE LANDSCAPING SHALL BE INSTALLED AROUND THE PERIMETER OF THE PAD EXCLUDING THE SIDE ADJACENT TO THE PUBLIC ROAD RIGHT-OF-WAY.



- PLANTING SPECIFICATIONS**
- CLEAR & GRUB ALL PLANTING AREAS AS INDICATED ON THE DRAWINGS.
  - PROVIDE PROTECTION FOR TREES, SHRUBS, AND PERENNIALS/GROUND COVERS THAT ARE TO BE PRESERVED.
  - CONTRACTOR SHALL VERIFY THE CORRECT LOCATION OF ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO INSTALLATION OF ANY PLANT MATERIALS.
  - ALL PLANTING SHALL BE DONE AS PER PLANTING DETAILS AND SPECIFICATIONS.
  - NO CHANGES SHALL BE MADE WITHOUT WRITTEN CONSENT OF THE OWNER OR LANDSCAPE ARCHITECT.
  - PRIOR TO CONSTRUCTION OF PLANTING BEDS, THE CONTRACTOR SHALL STAKE OUT PLANTING BED LINES IN THE FIELD FOR REVIEW BY THE LANDSCAPE ARCHITECT. LANDSCAPE ARCHITECT SHALL MAKE ADJUSTMENTS IN THE FIELD AS NECESSARY. ALL FINAL PLANTING BED LOCATIONS ARE TO BE APPROVED BY THE LANDSCAPE ARCHITECT. FOR LAYOUT REVIEW, CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT A MINIMUM OF THREE DAYS IN ADVANCE.
  - INSTALL ALL REQUIRED PLANTING AND LAWN SOILS AS PER DETAILS AND SPECIFICATIONS, AND ALL SHRUBS, GROUND COVERS, AND PERENNIALS SHALL BE PLANTED IN PLANTING BEDS PREPARED AS REQUIRED BY THE DETAILS AND SPECIFICATIONS.
  - MAINTAIN POSITIVE DRAINAGE OUT OF PLANTING BEDS AT A MINIMUM 2% SLOPE AND MAINTAIN POSITIVE DRAINAGE OF ALL LAWN AREAS, UNLESS OTHERWISE NOTED ON DRAWINGS. ALL GRADES, DIMENSIONS, AND EXISTING CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR ON SITE BEFORE CONSTRUCTION BEGINS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT OR OWNER.
  - ALL PLANT BEDS SHALL BE CONTAINED WITH A SPADED EDGE UNLESS OTHERWISE NOTED ON DRAWINGS.
  - IN THE EVENT OF A DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE DRAWINGS AND QUANTITIES SHOWN ON THE PLANT LIST, THE QUANTITIES ON THE DRAWINGS SHALL APPLY. REPORT DISCREPANCIES TO THE LANDSCAPE ARCHITECT FOR CLARIFICATION PRIOR TO BIDDING.
  - ALL PLANTS SHALL CONFORM TO THE SIZES GIVEN IN THE PLANT LIST AND SHALL BE NURSERY GROWN IN ACCORDANCE WITH THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION.
  - PLANTS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS. PRIOR TO PLANTING, THE CONTRACTOR SHALL STAKE OUT THE LOCATIONS OF ALL PLANTS IN THE FIELD FOR REVIEW BY THE LANDSCAPE ARCHITECT. LANDSCAPE ARCHITECT SHALL MAKE ADJUSTMENTS IN THE FIELD AS NECESSARY. ALL FINAL PLANT LOCATIONS ARE TO BE APPROVED BY THE LANDSCAPE ARCHITECT. FOR LAYOUT REVIEW, CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT A MINIMUM OF THREE DAYS IN ADVANCE.
  - ALL DISTURBED AREAS SHALL BE FINE GRADED AND SEEDED OR SODDED; SEE PLAN FOR LOCATIONS.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING AND MAINTAINING ALL PLANTS DURING THE WARRANTY PERIOD; REFER TO SPECIFICATIONS.

**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 LETTER OF LANDSCAPE INSTALLATION ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

NAME: [Signature] DATE: 12-18-18

PERIMETER	(PHASE ONE & TWO) SCHEDULE A PERIMETER LANDSCAPE EDGE													
	P-1 (PHASE ONE)	P-2 (PHASE ONE)	P-3 (PHASE ONE & TWO)	P-4 (PHASE TWO)	P-5 (PHASE ONE & TWO)	P-6 (PHASE ONE)	P-7 (PHASE ONE)	P-8 (PHASE ONE)	P-9 (PHASE ONE)	P-10 (PHASE ONE)	P-11 (PHASE TWO)	P-12 (PHASE TWO)	P-13 (PHASE TWO)	P-14 (PHASE TWO)
CATEGORY	Adjacent to Perimeter Properties	Adjacent to Preservation Parcel	Adjacent to Preservation Parcel	Adjacent to Roadway	Adjacent to Preservation Parcel	Adjacent to Roadway	Adjacent to Roadway	Adjacent to Perimeter Properties	Adjacent to Preservation Parcel	Adjacent to Preservation Parcel	Adjacent to Roadway	Adjacent to Preservation Parcel	Adjacent to Preservation Parcel	Adjacent to Preservation Parcel
LANDSCAPE TYPE	A	A	A	B	A	B	B	A	A	A	B	A	A	A
LINEAR FEET OR ROADWAY FRONTAGE/PERIMETER	1479.8'	468.9'	2406.2' (Total) 675' (Phase One)	700.6'	2350.4' (Total) 1149' (Phase One)	288.1'	79.6'	659.0'	537.4'	419.2'	355.9'	702.3'	386.4'	702.5'
CREDIT FOR EXISTING VEGETATION (YES, NO LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CREDIT FOR WALL FENCE OR BERM (YES, NO LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NUMBER OF PLANTS REQUIRED	25	0	* 11 (Phase One)	14	** 10 (Phase One)	5	2	11	9	7	7	12	6	12
SHADE TREES	-	-	-	10	-	7	2	-	-	-	9	-	-	-
EVERGREEN TREES	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SHRUBS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NUMBER OF PLANTS PROVIDED	25	0	* 11 (Phase One)	14	** 10 (Phase One)	5	2	11	9	7	7	12	6	12
SHADE TREES	-	-	-	10	-	7	2	-	-	-	9	-	-	-
EVERGREEN TREES	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SHRUBS	-	-	-	-	-	-	-	-	-	-	-	-	-	-

\* 29 TREES WILL BE PROVIDED IN PHASE TWO 40 (Total)  
 \*\* 21 TREES WILL BE PROVIDED IN PHASE TWO 39 (Total)

P-11 - DENOTES PHASE TWO REQUIRED PERIMETER

- NOTES:**
- "Should any tree designated for preservation for which landscaping credit is given, die prior to release of bonds, the developer will be required to replace the tree with the equivalent species or with a tree which will obtain the same height, spread and growth characteristics. The replacement tree must be a minimum of 2.5 inches in caliper and installed as required in the Howard County Landscape Manual."
  - "At the time of plant installation, all shrubs and trees listed and approved on the landscape plan, shall comply with the proper height requirement in accordance with the Howard County Landscape Manual. In addition, no substitutions or relocations of the required plantings may be made without prior review and approval from the Department of Planning and Zoning. Any deviation from the approved Landscape Plan may result in denial or delay in the release of landscape surety until such time as all required materials are planted and/or revisions are made to the applicable plans."
  - "The Owner, tenants and/or their agents shall be responsible for maintenance of the required perimeter landscaping including both plant materials and berms, fences and walls. All plant materials shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All the other required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced."
  - This Plan Has Been Prepared In Accordance With The Provisions Of Section 16.124 Of The Howard County Code And The Landscape Manual. Financial Surety For The Required 96 Shade, 9 Evergreen Trees & 0 Shrubs Has Been Posted As Part Of The Developer's Agreement In The Amount Of \$30,390.00.

STREET TREE SCHEDULE				
QTY. REQ'D.	QTY. PROV'D.	SIZE	BOTANICAL AND COMMON NAME	COMMENTS
ROW LENGTH = 1281' 2562'/40 = 64.05 64 TREES	64 TREES	2 1/2" - 3" CAL.	CLADRASTIS LUTEA YELLOWWOOD	40' APART ON PUBLIC R/W (LINDEN GROVE)
TOTAL ROW LENGTH = 1603' 3206'/40 = 80.15 80 TREES	30 TREES (Phase One) 50 TREES WILL BE PROVIDED IN PHASE TWO	2 1/2" - 3" CAL.	PRUNUS SARGENTII SARGENT CHERRY	40' APART ON PUBLIC R/W (HERITAGE RIDGE)

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

PHASE ONE PERIMETER PLANT LIST FOR SCHEDULE 'A' - PERIMETER LANDSCAPE EDGE TRASH/RECYCLE PAD LANDSCAPING			
SYMBOL	QTY.	BOTANICAL AND COMMON NAME	SIZE
AR	21	ACER RUBRUM 'OCTOBER GLORY' RED MAPLE	2 1/2" - 3" CAL.
QP	22	QUERCUS PALUSTRIS PIN OAK	2 1/2" - 3" CAL.
CL	23	CLADRASTIS LUTEA YELLOWWOOD	2 1/2" - 3" CAL.
AM	19	* ACER GINNALA AMUR MAPLE	2 1/2" - 3" CAL.
PM	11	* ACER GRISEUM PAPERBARK MAPLE	2 1/2" - 3" CAL.
NS	9	* LLEX 'NELLIE R. STEVENS' NELLIE R. STEVENS HOLLY	5' - 6' HT.
	8	AZALEA 'EXBURY' EXBURY AZALEA (red, pink, yellow, orange, white)	18" - 24" SPREAD

\* DENOTES APPROVED TREE TO BE PLANTED UNDER OR WITHIN 20' OF OVERHEAD LINES

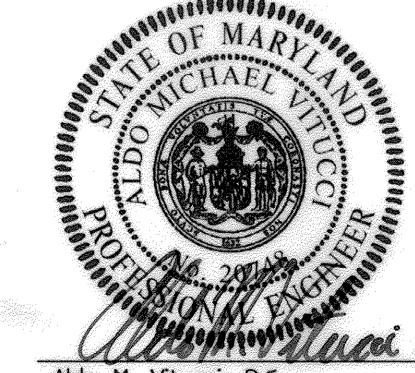
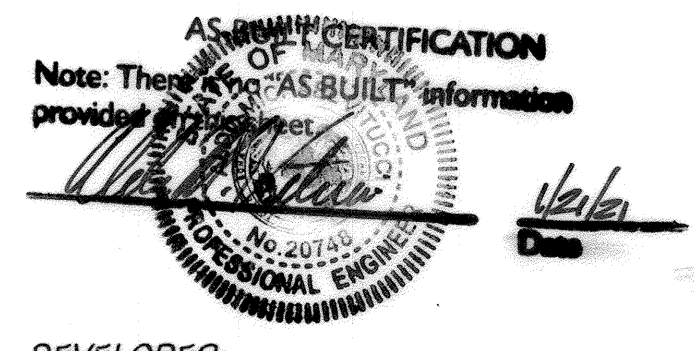
ESD PLANTS (PHASE ONE)					
100	IGS	Ilex glabra 'Shamrock' Inkberry	24"-30" Ht.	Cont.	40' o.c./Male Cultivar
210	EVP	Eupatorium dubium 'Little Joe' Dwarf Joe-Pye Weed	# 1	Cont.	24" O.C.
160	ITH	Red Virginia 'Little Henry' Dwarf Virginia Sweetpire	24"-30" Ht.	Cont.	36" O.C.
165	PHM	Panicum virgatum 'Heavy Metal' Heavy Metal Switchgrass	#1	Cont.	36" O.C.
240	SRV	Solidago rugosa Goldenrod	#1	Cont.	18" O.C.
7	BOH	Betula nigra River Birch	8'-10' Ht. min.	B & B	Multistem/4 cines min.

- PHASE TWO LANDSCAPING/SCENIC ROAD SCREENING NOTES:**
- PHASE TWO LANDSCAPING WILL BE ADDRESSED WITH THE LANDSCAPE PLAN ASSOCIATED WITH THE PHASE TWO FINAL ROAD DRAWINGS.
  - FUTURE PERIMETER P-4 WILL BE PLANTED WITH EXTRA LANDSCAPING (EXTENDED BUFFER) FOR SCENIC ROAD SCREENING REQUIREMENTS WITH THE PHASE TWO FINAL ROAD DRAWINGS.

FISHER, COLLINS & CARTER, INC.  
 CIVIL, ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTENNIAL SQUARE OFFICE PARK - 10572 BALTIMORE NATIONAL PIKE  
 GALESDIFF CITY, MARYLAND 21042  
 (410) 461-2895

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 3425 HIPSLY MILL ROAD  
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 410-489-7900

DEVELOPER:  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
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Aldo M. Vujack, P.E.  
 "Professional Certification: 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. 20748, Expiration Date 2-22-19."

LANDSCAPE NOTES & DETAILS  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
 ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 12 OF 35

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-18-092

**Infiltration and Filter System Construction Specifications**

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

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

**Design Constraints:**

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

**Bio-retention Soil Bed Characteristics**

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

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix (should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should be less than 25% by volume (Environmental Quality Resources (EQR), 1996; Engineering Technology Inc. and Biohabitats, Inc. (ETAB), 1993). Soils should fall within the SM, ML, SC classifications of the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.5"/hr) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 1" in diameter. Brush or seeds from noxious weeds (e.g., Johnson Grass, Mugwort, Nutcracker, and Canada Thistle) or other noxious weeds as specified under COMAR 15.08.01.05.1 should not be present in the soils. Placement of the planting soil should be in 12 to 18 lifts that are loosely compacted (tamped lightly with a backhoe bucket or traversed by dozer tracks). The specific characteristics are presented in Table A.3.

**Table A.3 Planting Soil Characteristics**

Parameter	Value
pH range	5.2 to 7.00
Organic matter	1.5 to 4.0% (by weight)
Magnesium	35 lbs. per acre, minimum
Phosphorus (phosphate - P2O5)	75 lbs. per acre, minimum
Potassium (potash - K2O)	85 lbs. per acre, minimum
Soluble salts	500 ppm
Clay	0 to 5%
Silt	30 to 55%
Sand	35 to 60%

**Mulch Layer**

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

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

**Planting Guidance**

Plant material selection should be based on the goal of simulating a terrestrial forested community of native species. Bioretention simulates an upland-species ecosystem. The community should be dominated by trees, but have a distinct community of understory trees, shrubs and herbaceous materials. By creating a diverse, dense plant cover, a bioretention facility will be able to treat stormwater runoff and withstand urban stresses from insects, disease, drought, temperature, wind, and exposure.

The proper selection and installation of plant materials is key to a successful system. There are essentially three zones within a bioretention facility (Figure A.5). The lowest elevation supports plant species adapted to standing and fluctuating water levels. The middle elevation supports plants that like drier soil conditions, but can still tolerate occasional inundation by water. The outer edge is the highest elevation and generally supports plants adapted to drier conditions. A sample of appropriate plant materials for bioretention facilities are included in Table A.4. The layout of plant material should be flexible, but should follow the general principals described in Table A.5. The objective is to have a system, which resembles a random, and natural plant layout, while maintaining optimal conditions for plant establishment and growth. For a more extensive bioretention plan, consult ETAB, 1993 or Clayton and Schueler, 1997.

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

1. Material Specifications

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

2. Filtering Media or Planting Soil

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

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

- Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
- Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).
- Clay Content - Media shall have a clay content of less than 5%.
- pH Range - Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

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

3. Compaction

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoses to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf 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 filling operation such as a chisel plow, ripper, or subsoiler. These filling operations are to restructure the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not fill deep enough to reduce the effects of compaction from heavy equipment.

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

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

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

4. Plant Material

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

5. Plant Installation

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

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

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

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

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

6. Underdrains

Underdrains should meet the following criteria:

- Pipe - Should be 47/8" diameter, slotted or perforated rigid plastic pipe (ASTM F 756, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations - If perforated pipe is used, perforations should be 3/8" diameter located 6" center with a minimum of four holes per row. Pipe shall be wrapped with a 1/4" (No. 4 or 4x4) galvanized hardware cloth.
- Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.

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

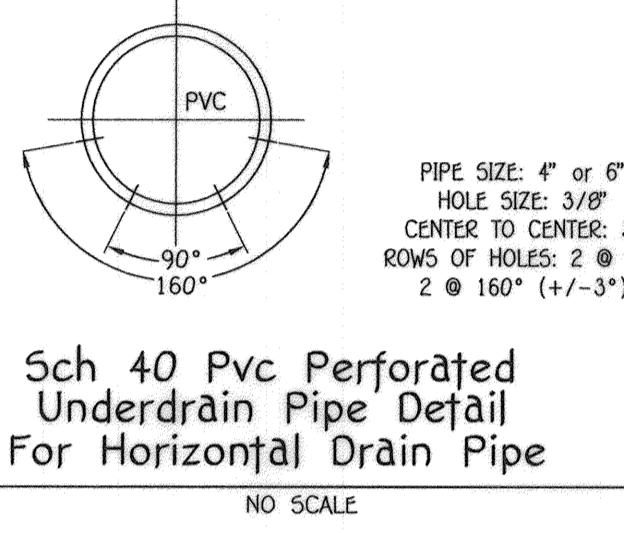
A rigid, non-perforated observation well must be provided (one per every 1,000 square feet) to provide a clean-out port and monitor performance of the filter.

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

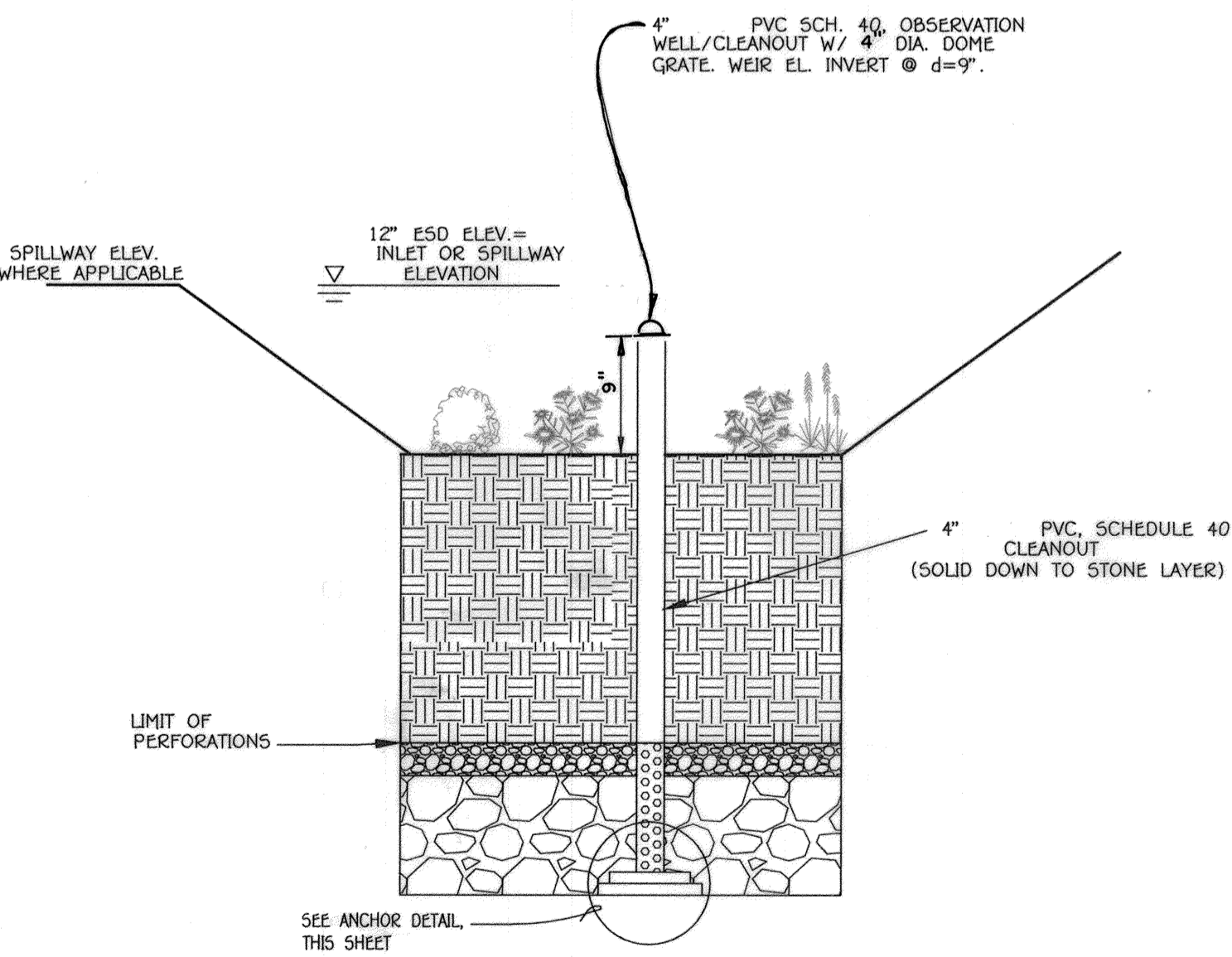
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1,000 square feet of surface area).

7. Miscellaneous

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



**UNDERDRAIN NOTE:**  
FOR ALL MICRO-BIO-RETENTION FACILITIES (M-6), THE UNDERDRAINS SHALL BE 4" PVC SCH. 40 AND FOR ALL BIO-RETENTION FACILITIES (F-6), THE UNDERDRAINS SHALL BE 4" PVC SCH. 40.



**Section @ Cleanout/Observation Well Location**

**OWNER:**  
KIMBERTHY/HERITAGE LLC  
3425 HIPSLEY MILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7400

**DEVELOPER:**  
HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7300

**Operation And Maintenance Schedule For Homeowners Association Owned & Maintained Bio-Retention Areas (M-6)**

- The owner shall maintain the plant material, mulch layer and soil layer annually, maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.
- The owner shall perform a plant in the spring and in the fall each year, during the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material, treat diseased trees and shrubs and replace all deficient stakes and wires.
- 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.
- The owner shall maintain all observation wells, clean-outs and perforated underdrains.
- Filter material must be replaced when water remains on the surface of the filter bed for more than 24 hours following a 1 or 2 year storm event or more than 48 hours following a 10 year storm event.

**NOTES:**  
UNDERDRAIN PIPE SHALL BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 756, TYPE PS 28 OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED 4" RIGID PIPE (e.g., PVC OR HDPE).

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

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

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

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

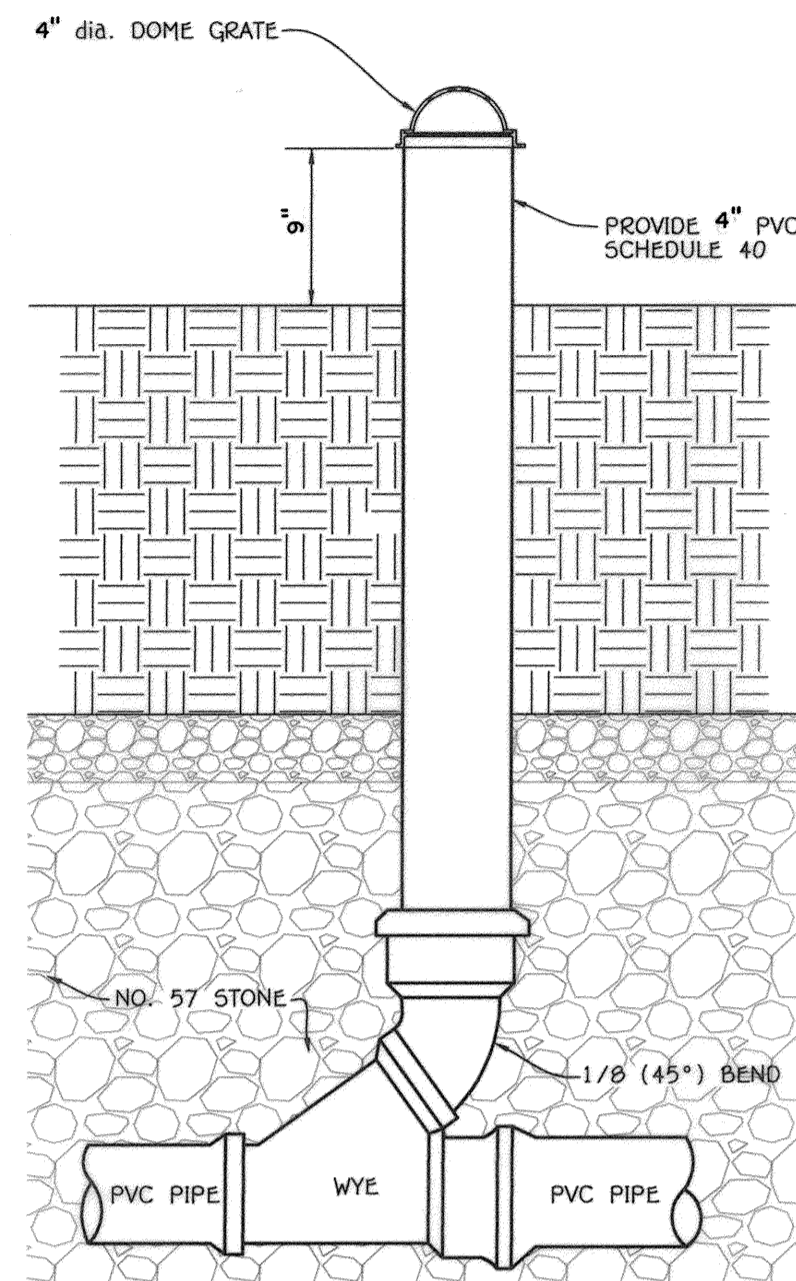
A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

Approved: Department Of Planning And Zoning  
Date: 3-20-19  
Chief, Division Of Land Development

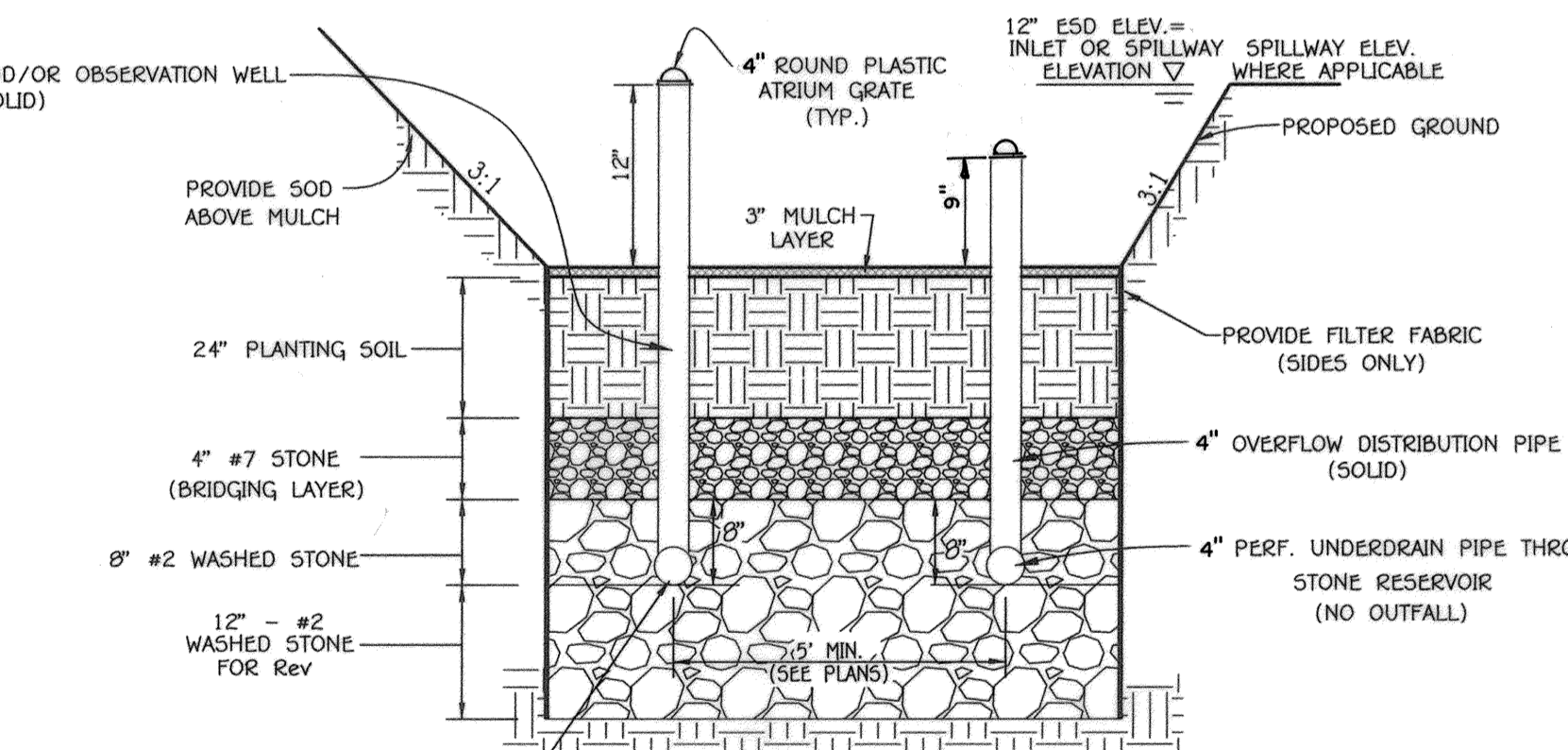
Approved: Howard County Department Of Public Works  
Date: 3-8-19  
Chief, Bureau Of Highways

Approved: 1/18/2019  
Date: \_\_\_\_\_

REVISIONS	
NO.	DESCRIPTION

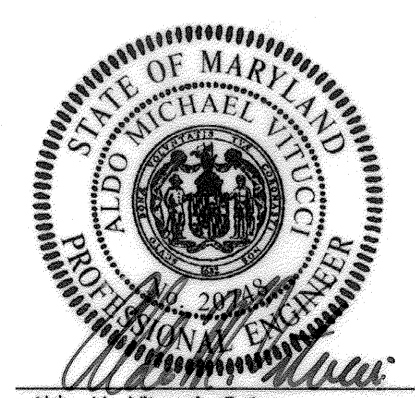
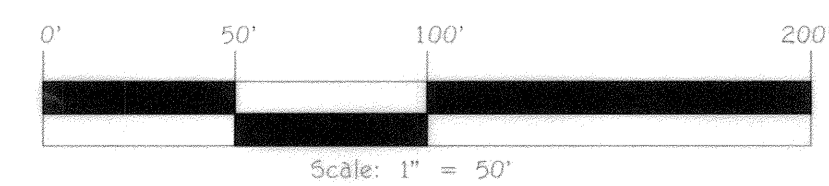


**Typical Clean-Out Detail**  
NO SCALE  
(FACILITY Nos. 1, 7, 8 & 9)



**Bio-Retention (F-6) Section With 4" Overflow Distribution Pipe**  
NO SCALE  
(FACILITY Nos. 1, 7, 8 & 9)

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE, PARK - 10772 BALTIMORE NATIONAL PARK  
ELICOTT CITY, MARYLAND 21042  
(410) 461-6995

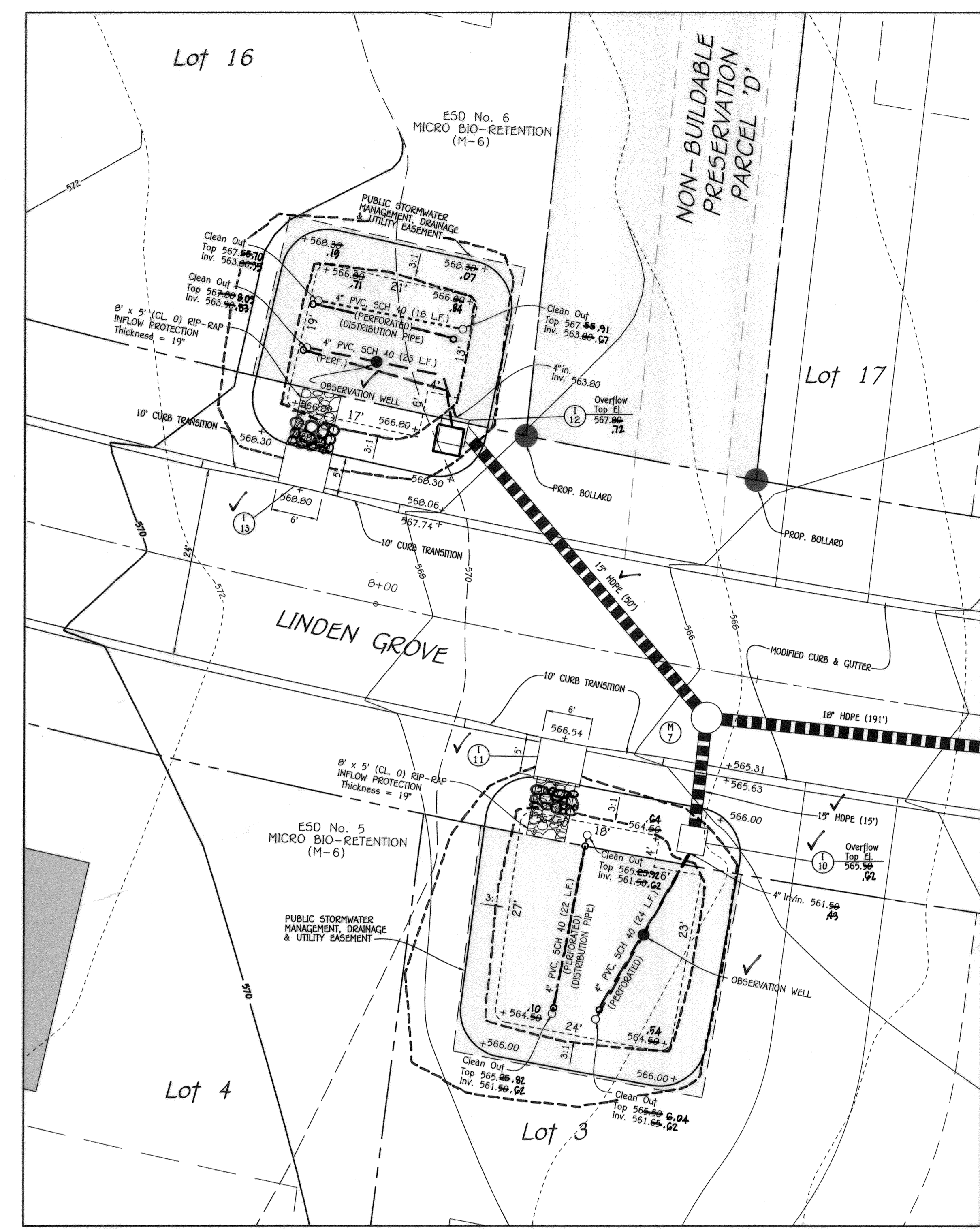


**AS-BUILT CERTIFICATION**  
Note: There is NO "AS-BUILT" information provided on this sheet.  
Date: 12/12/18

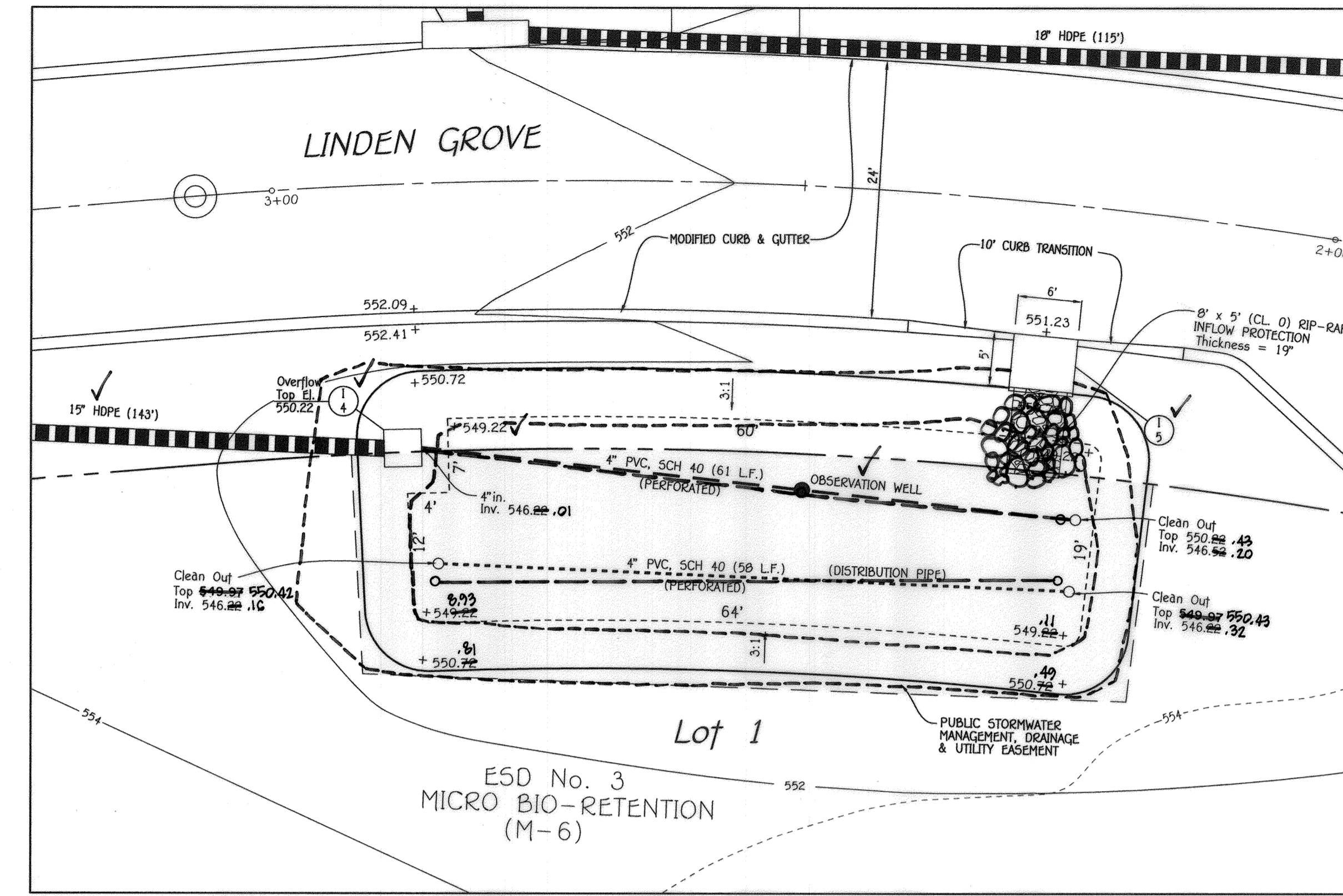
**Stormwater Management Notes And Details (Bio-Retention)**  
**LINDEN GROVE PHASE ONE**  
LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
ZONED: RC-DEO  
TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 12, 2018  
SHEET 13 of 35

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-18-092

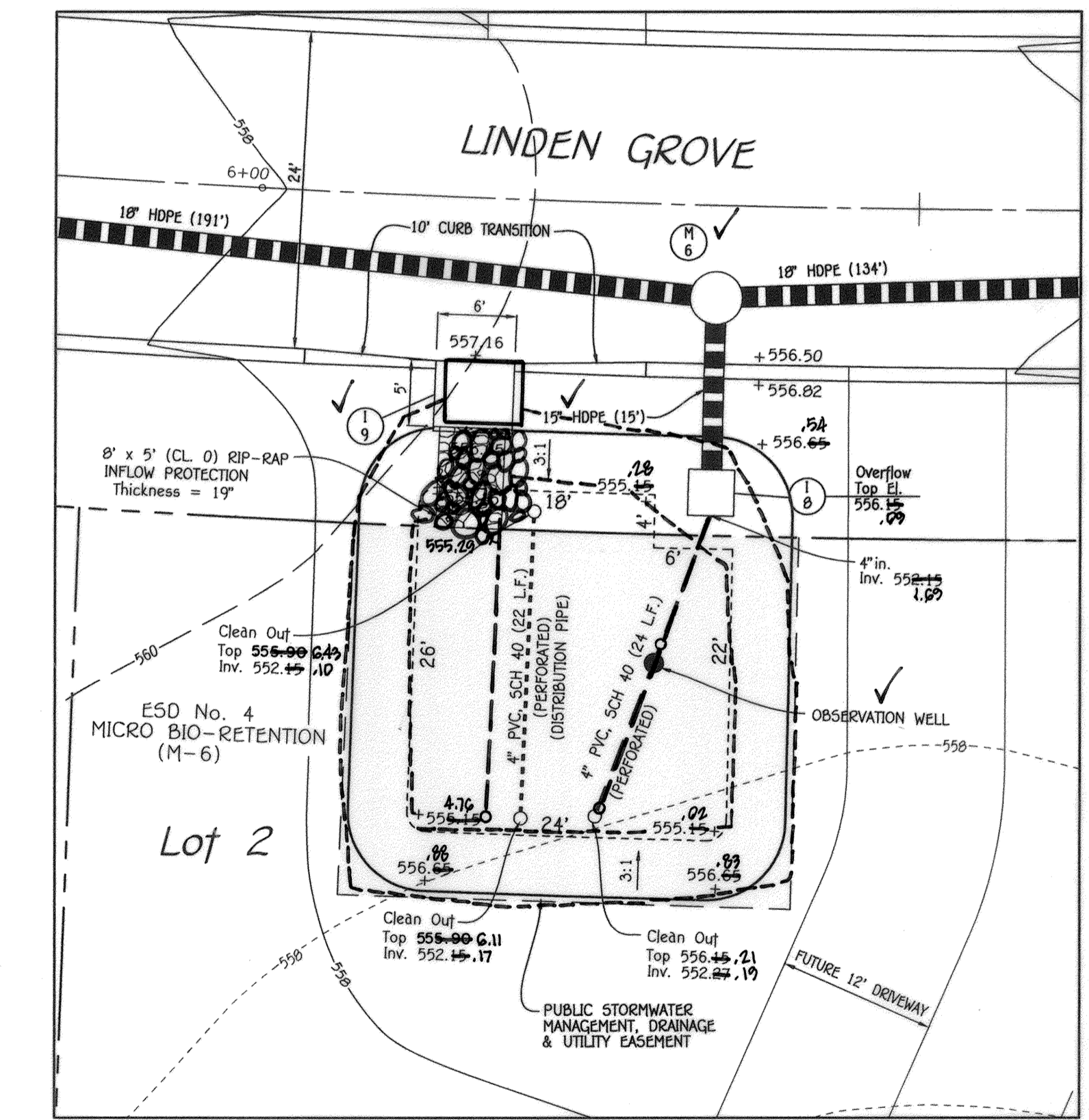
Approved: Department Of Planning And Zoning		
Chief, Division Of Land Development	<i>Vicki Johnson</i>	3-20-19
Chief, Development Engineering Division	<i>John Blund</i>	7-8-19
Approved: Howard County Department Of Public Works		
Chief, Bureau Of Highways	<i>Jane</i>	1/18/2019
REVISIONS		
NO.	DESCRIPTION	DATE



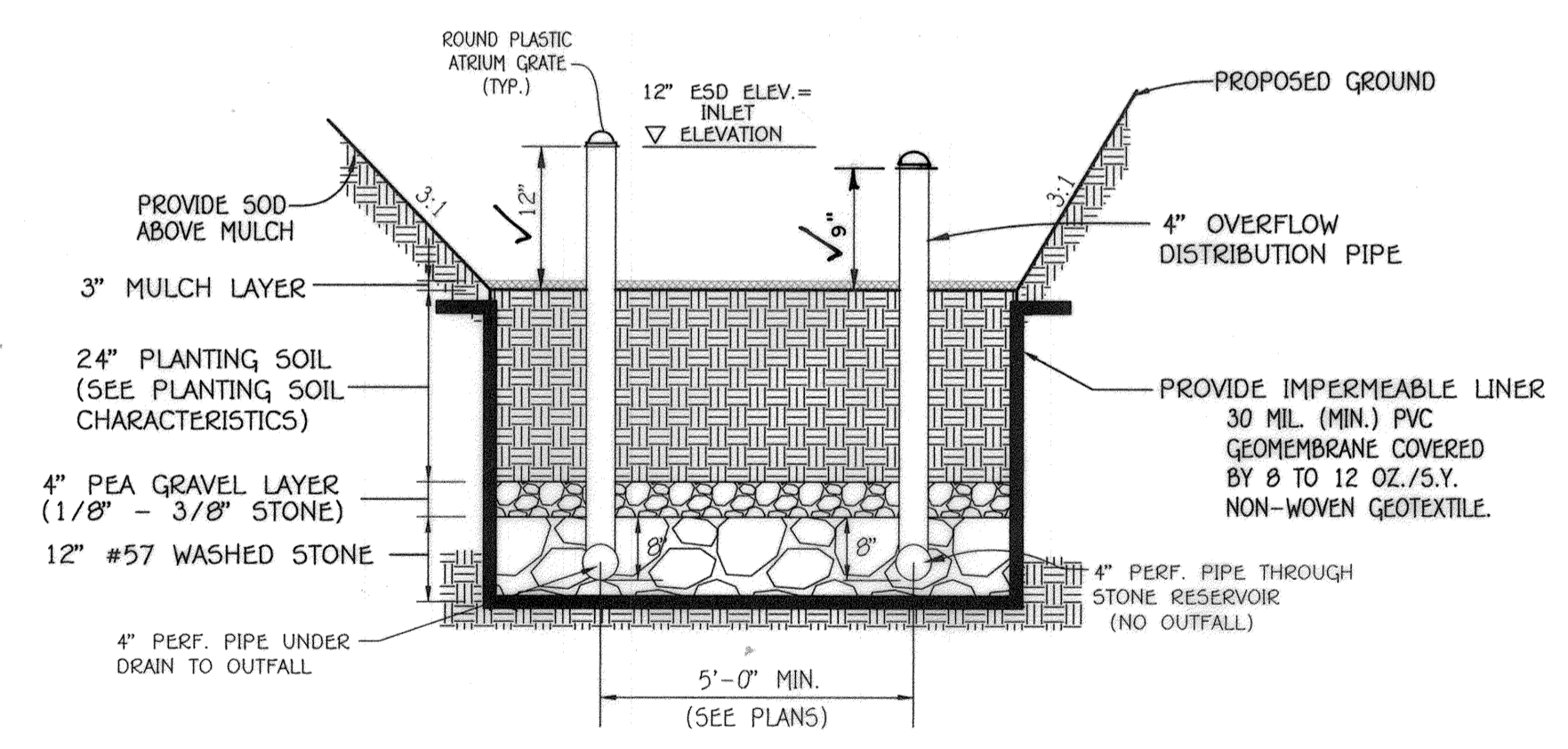
PROPOSED MICRO BIO-RETENTION (M-6)  
ESD Nos. 5 & 6 PLAN VIEW  
SCALE: 1" = 10'



PROPOSED MICRO BIO-RETENTION (M-6)  
ESD No. 3 PLAN VIEW  
SCALE: 1" = 10'

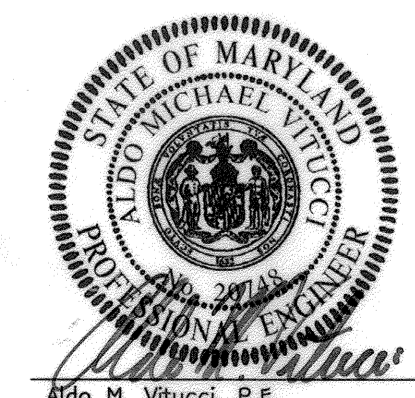
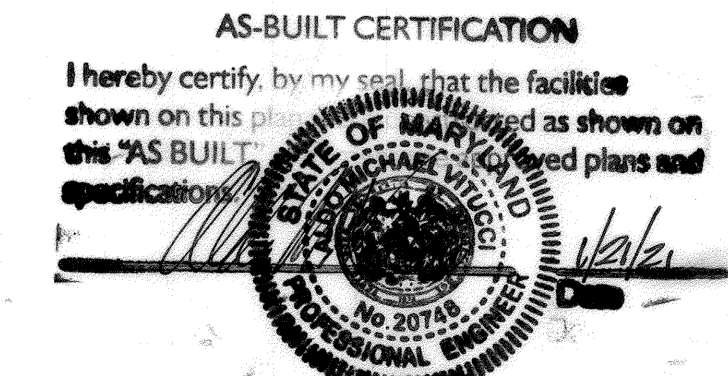


PROPOSED MICRO BIO-RETENTION (M-6)  
ESD No. 4 PLAN VIEW  
SCALE: 1" = 10'



(FACILITY Nos. 3, 4, 5 & 6)  
MICRO BIO-RETENTION SECTION  
WITH 4" OVERFLOW DISTRIBUTION PIPE  
NO SCALE

Stormwater Management  
Plan Views  
**LINDEN GROVE**  
PHASE ONE  
LOTS 1 THRU 23, BUILDABLE PRESERVATION  
PARCEL 'A', NON-BUILDABLE PRESERVATION  
PARCELS 'B' THRU 'E' AND  
NON-BUILDABLE BULK PARCELS 'F' & 'G'



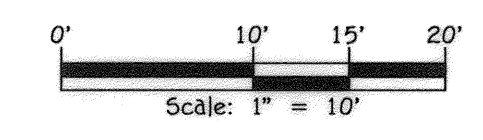
Ado M. Vitucci, P.E.  
Date: 12/12/18  
\*Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-19.\*

**OWNER:**  
KIMBERTH/HERITAGE LLC  
3425 HIPSLEY HILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7900

**DEVELOPER:**  
HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7900

TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 12, 2018  
SHEET 14 OF 35

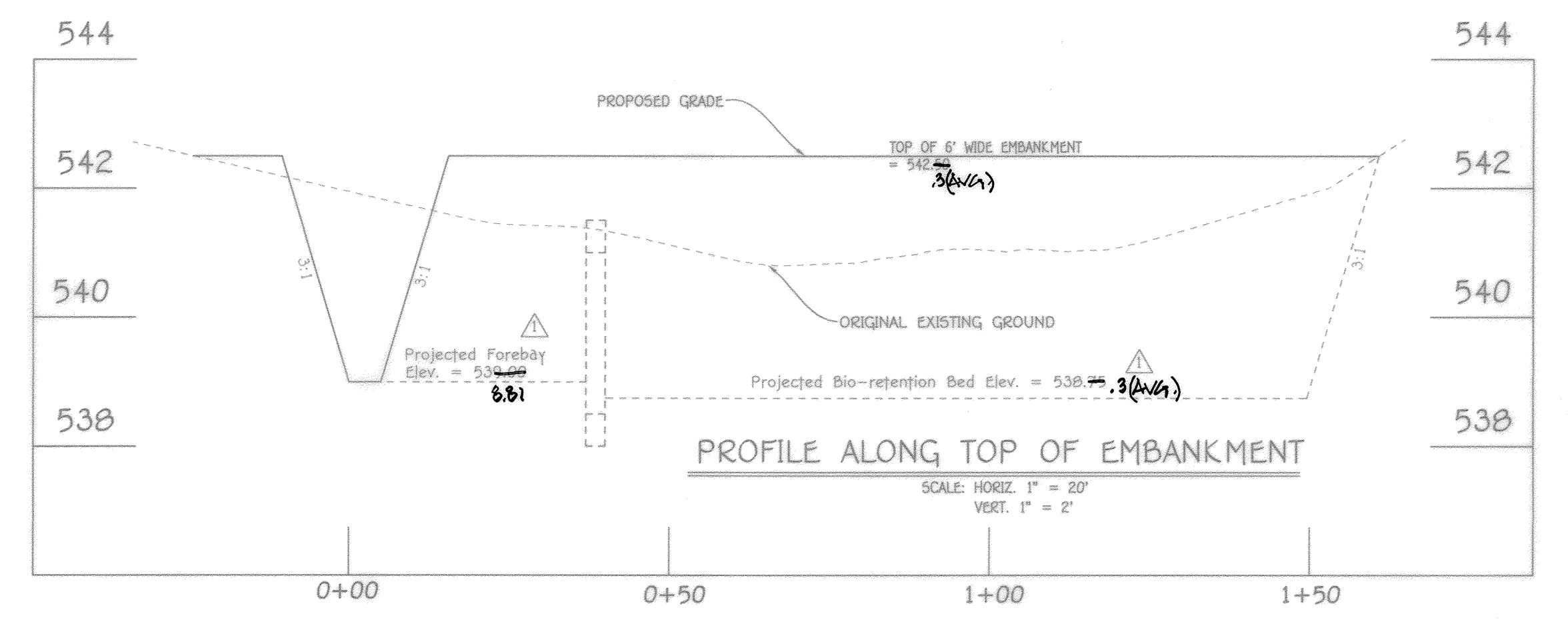
FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
ELLSWORTH CITY, MARYLAND 21042  
(410) 481-2295



Approved: Department Of Planning And Zoning  
 Chief, Division Of Land Development  
 Chief, Division Of Engineering Division  
 Approved: Howard County Department of Public Works  
 Chief, Bureau Of Highways  
 9/26/20  
 9/23/20  
 9/14/2020  
 7/10/20

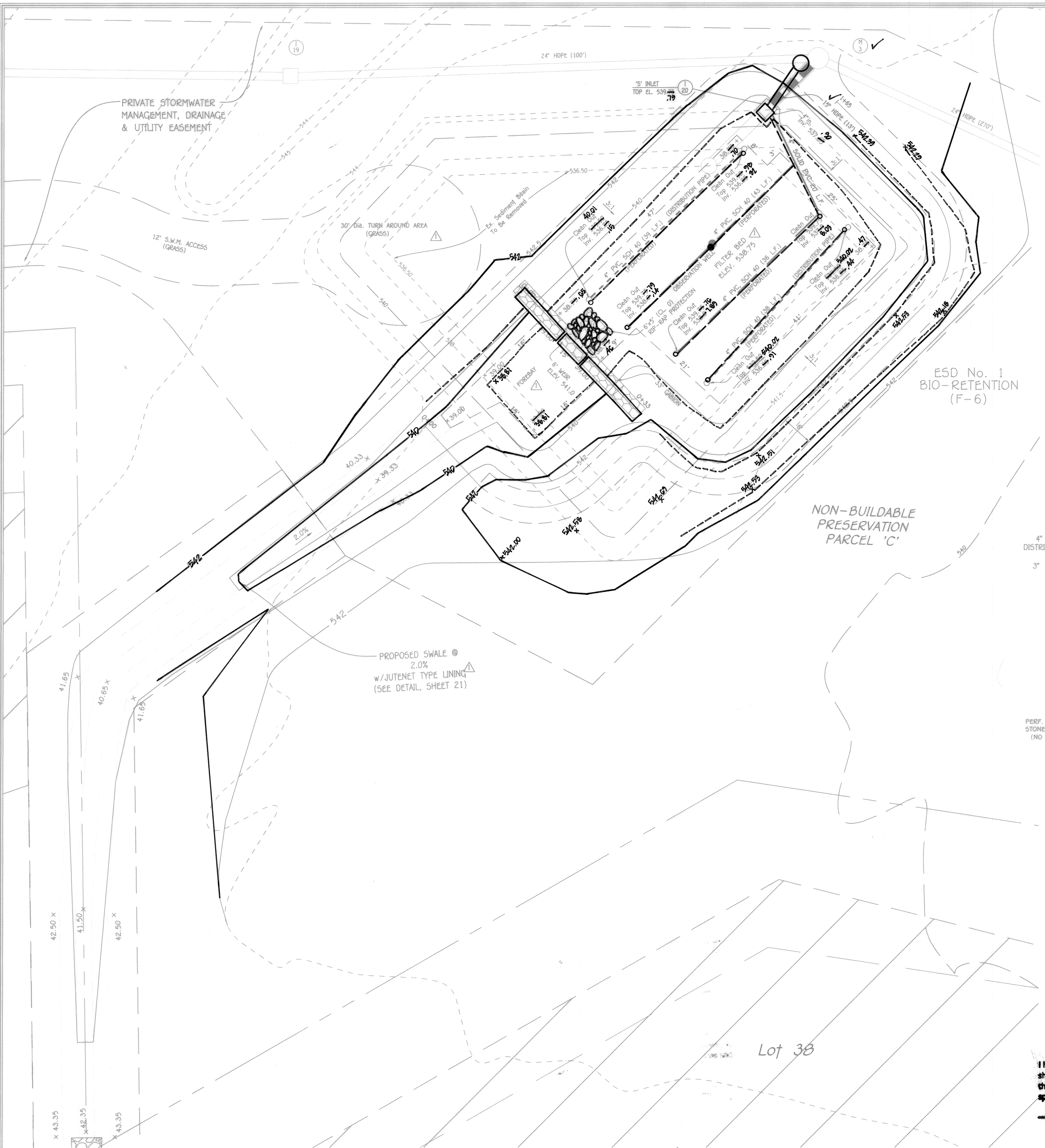
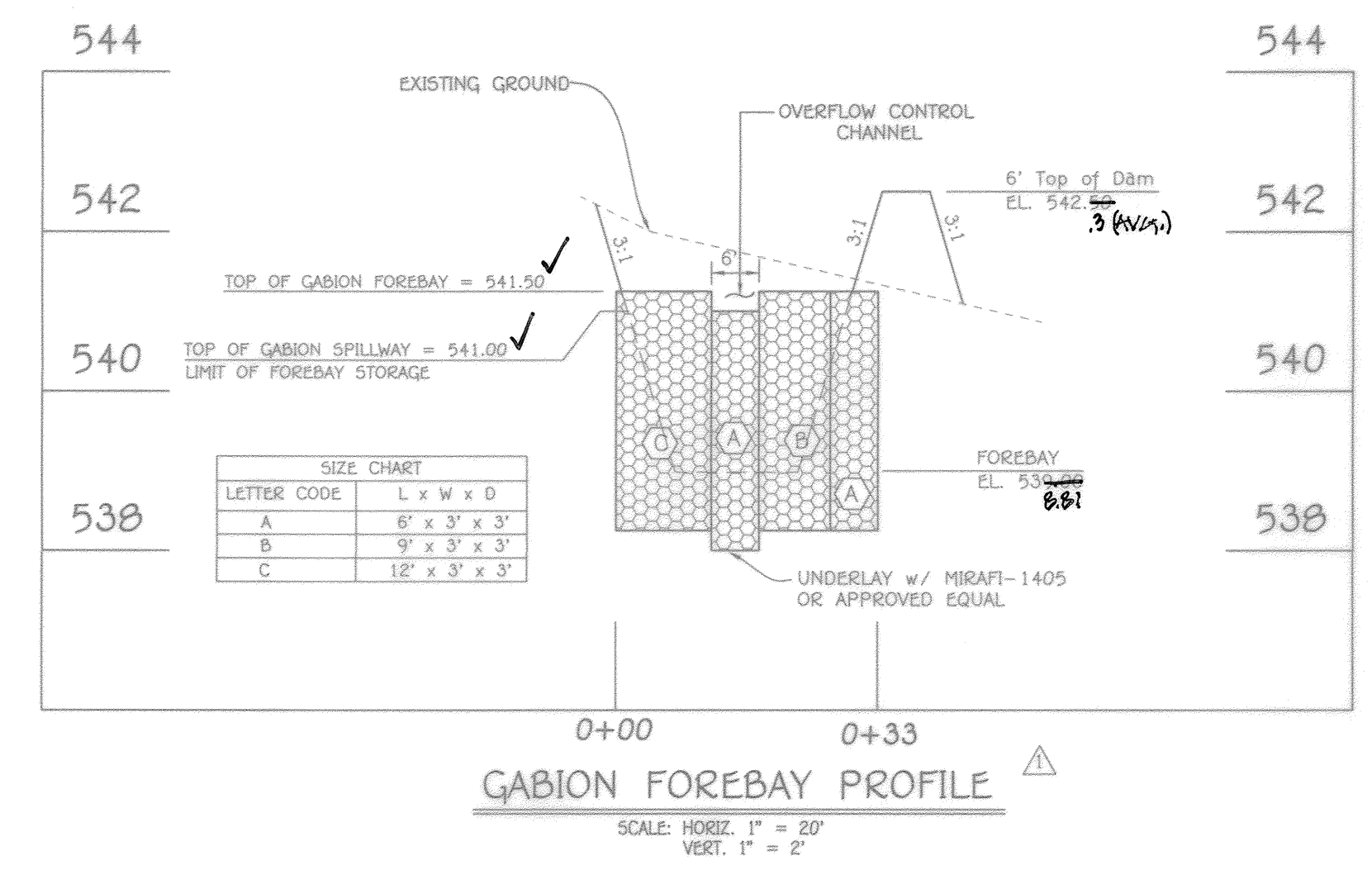
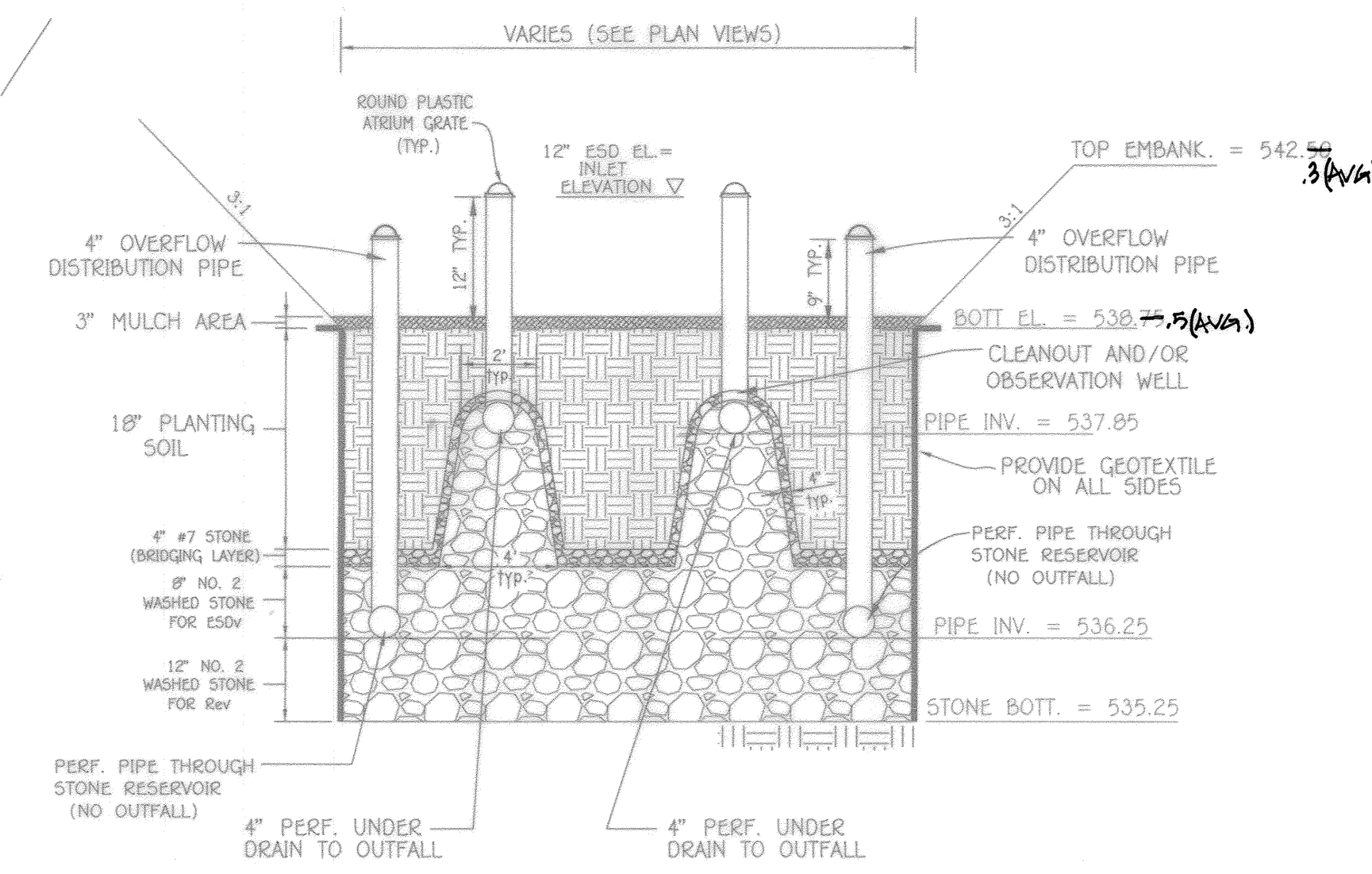
**STORMWATER MANAGEMENT LEGEND**

- - DENOTES TYPE 'S' INLET (MAIN OVERFLOW INLET)
- - DENOTES CLEANOUT
- - DENOTES OBSERVATION WELL
- - DENOTES 6" PVC, SCH 40 UNDERDRAIN (PERFORATED) (OUTFALLS TO STORM DRAIN)
- - - - DENOTES 6" PVC, SCH 40 DISTRIBUTION PIPE (PERFORATED) (OUTFALLS INTO STONE LAYER)



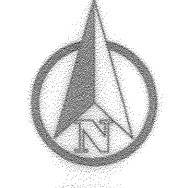
**STORMWATER MANAGEMENT MAINTENANCE NOTE**

THIS STORMWATER MANAGEMENT FACILITY WILL BE PRIVATELY OWNED & MAINTAINED BY THE LINDEN GROVE HOMEOWNERS ASSOCIATION.



**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SQUARE OFFICE PARK - 10727 BALDWIN NATIONAL PIKE  
 ELLETTT CITY, MARYLAND 21746  
 (410) 461-2895

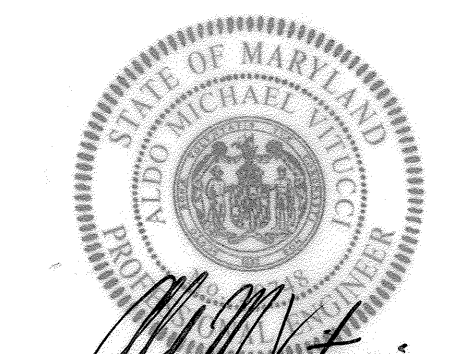
**PROPOSED BIO-RETENTION (F-6)**  
**ESD No. 1 PLAN VIEW**  
 SCALE: 1" = 10'



**OWNER:**  
 KIMBERLY/HERITAGE LLC  
 3425 HIPSLEY HILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 19950 NORTH AVENUE  
 LEBSON, MARYLAND 21765  
 410-489-7900

**AS-BUILT CERTIFICATION**  
 I hereby certify that the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan, approved plans and specifications.  
 [Signature]  
 Date

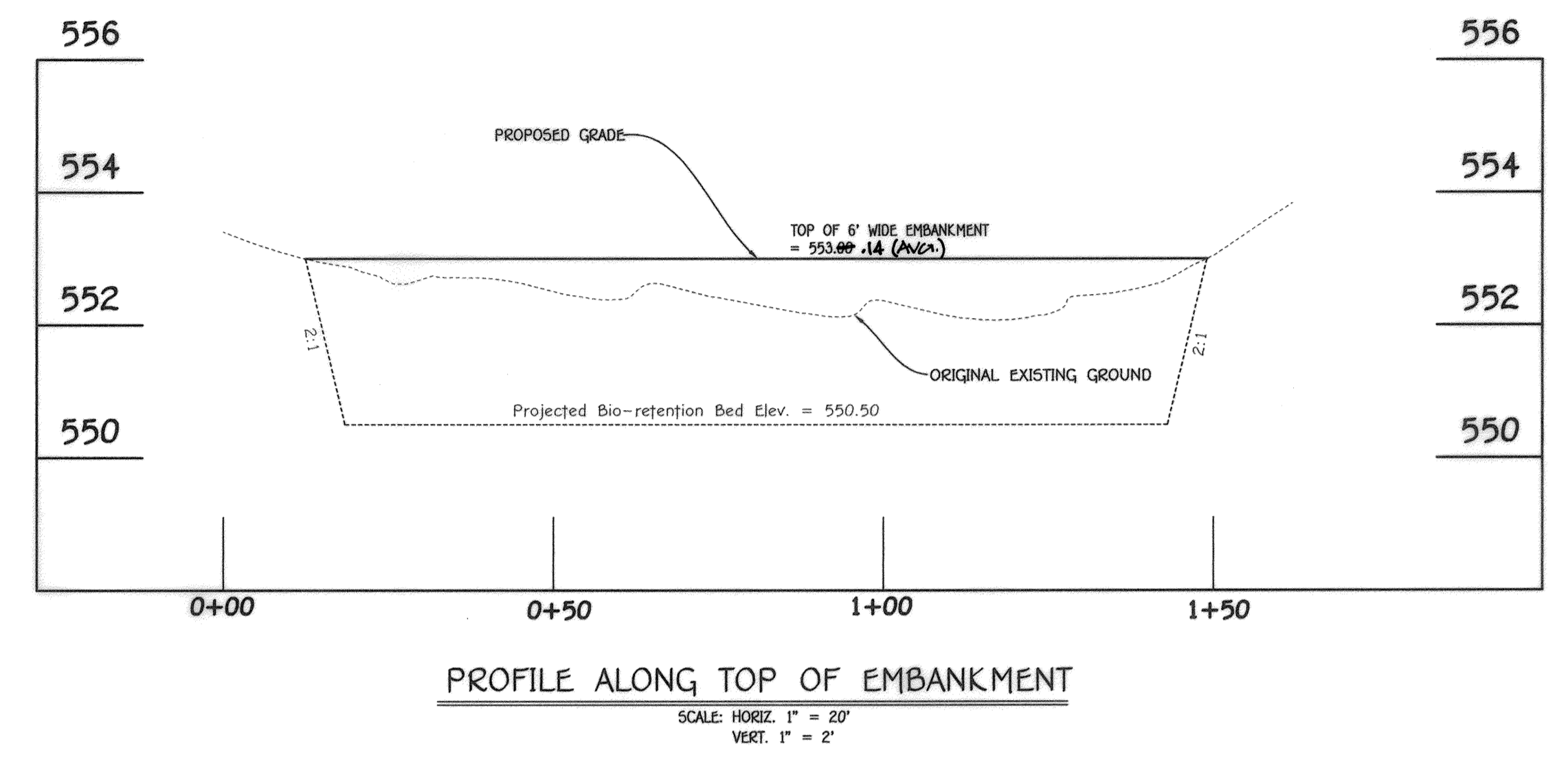
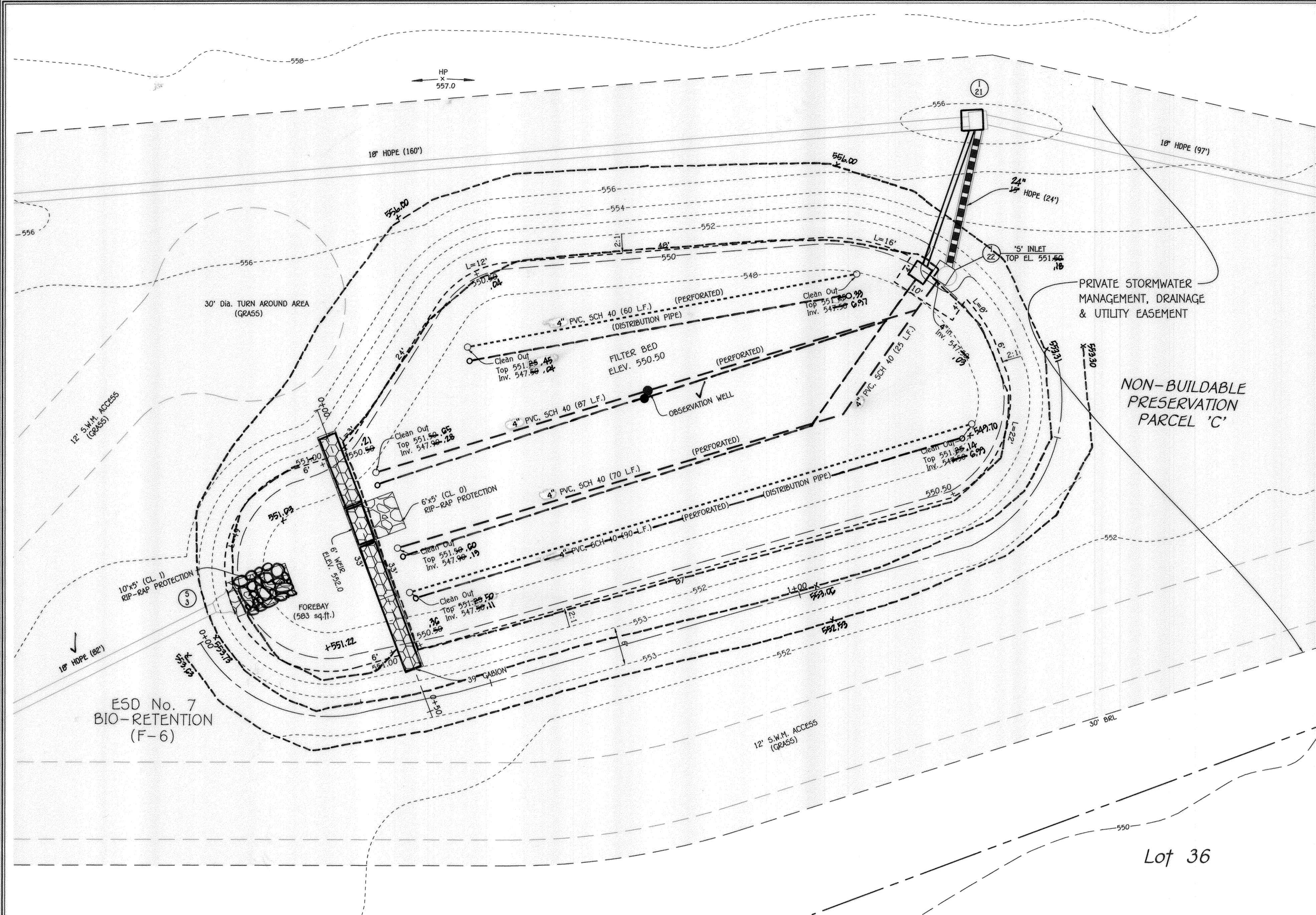


**Professional Certification:** I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-21.  
 [Signature]  
 Date

**Revised Stormwater Management Plan Views**  
**LINDEN GROVE PHASE ONE**  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
 ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: JULY 10, 2020  
 SHEET 15 OF 35

"AS-BUILT" F-1B-092

Approved: Department of Planning And Zoning		
<i>Kathleen</i>	3-20-19	Date
Chief, Division of Land Development		
<i>John</i>	3-8-19	Date
Chief, Development Engineering Division		
Approved: Howard County Department of Public Works		
<i>James</i>	1/18/2019	Date
Chief, Bureau of Highways		
REVISIONS		
NO.	DESCRIPTION	DATE

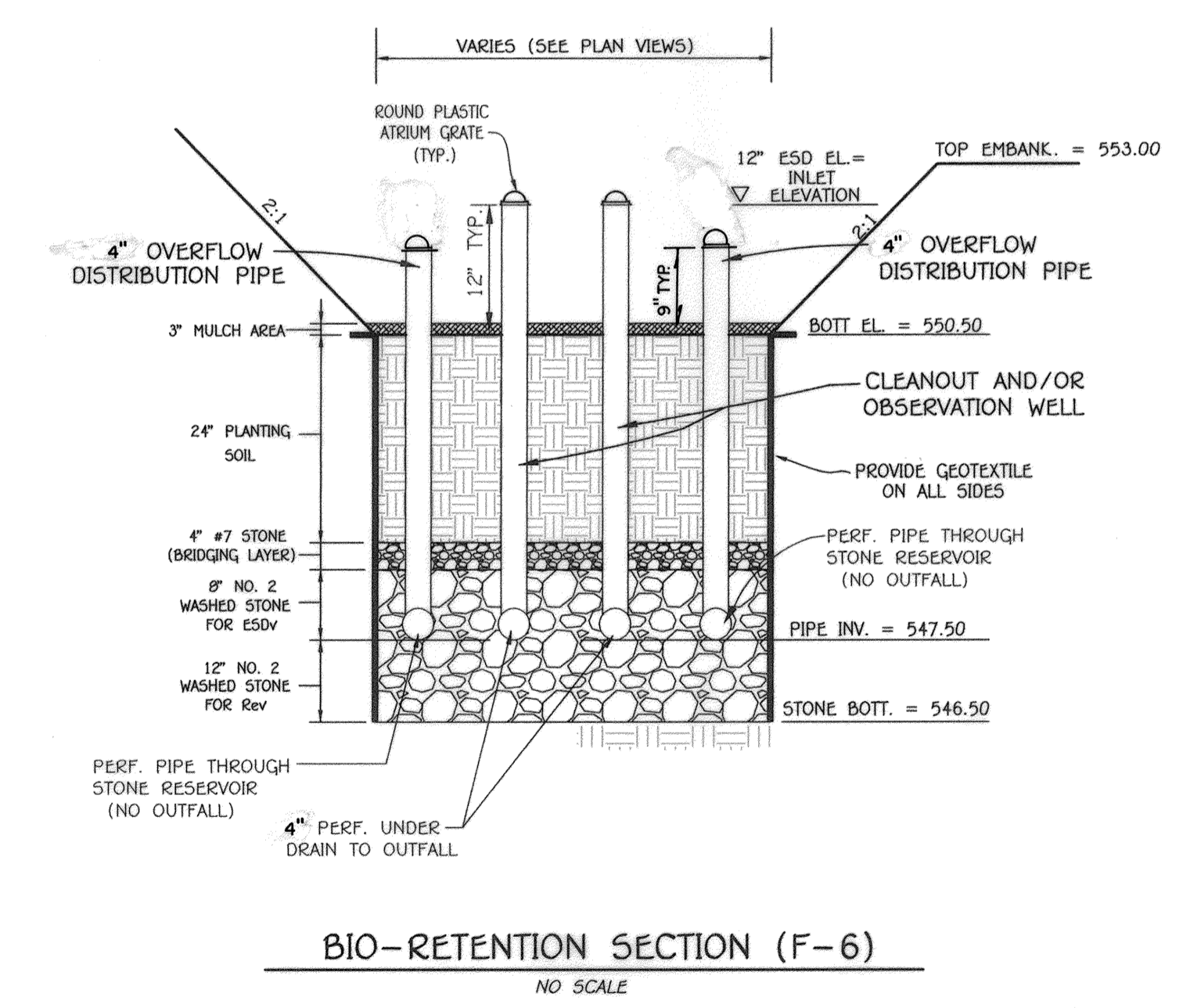
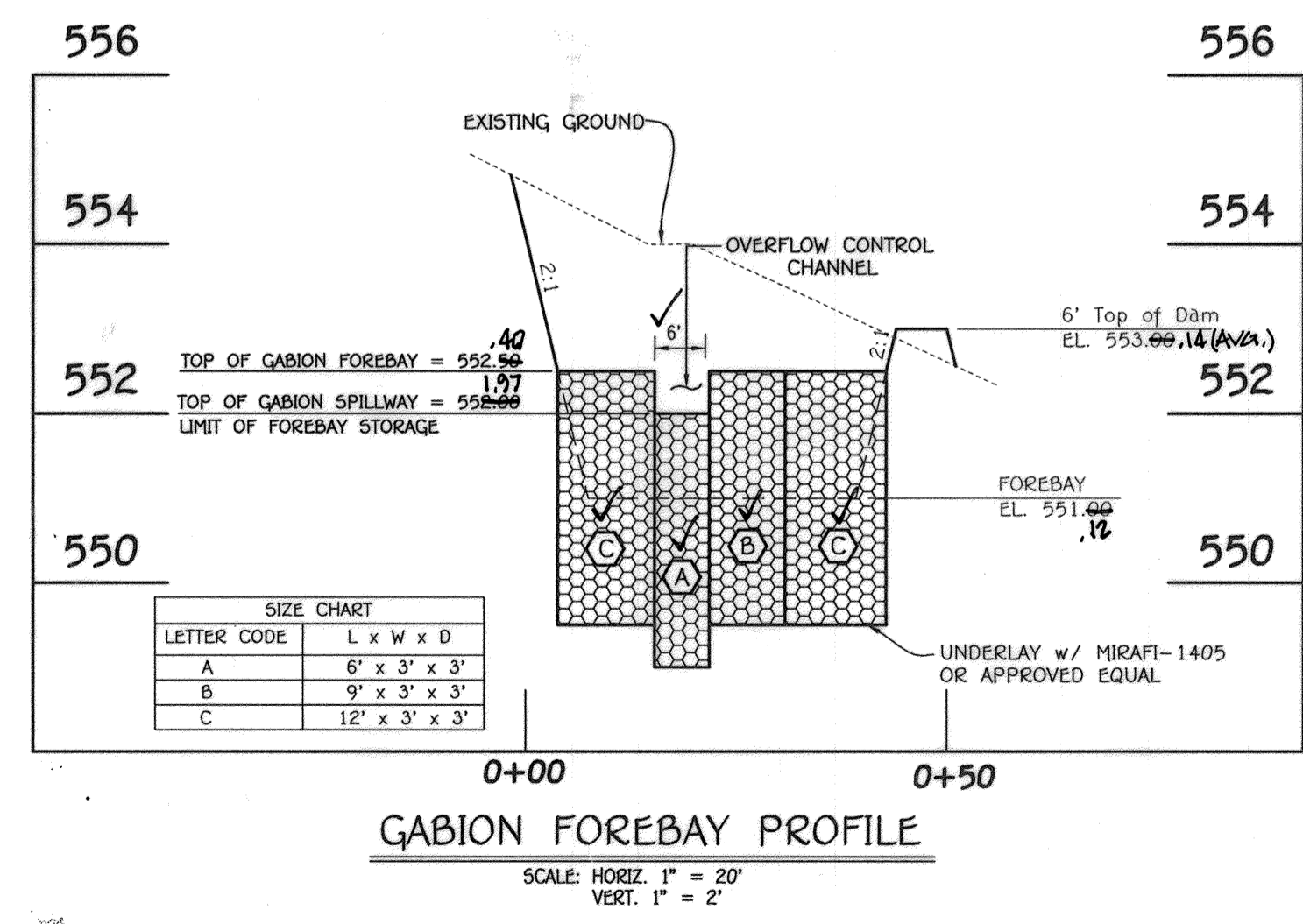


PROPOSED BIO-RETENTION (F-6)  
ESD No. 7 PLAN VIEW  
SCALE: 1" = 10'

- STORMWATER MANAGEMENT LEGEND**
- - DENOTES TYPE 'S' INLET (MAIN OVERFLOW INLET)
  - - DENOTES CLEANOUT
  - - DENOTES OBSERVATION WELL
  - - DENOTES 6" PVC SCH 40 UNDERDRAIN (PERFORATED) (OUTFALLS TO STORM DRAIN)
  - - DENOTES 6" PVC SCH 40 DISTRIBUTION PIPE (PERFORATED) (OUTFALLS INTO STONE LAYER)

**STORMWATER MANAGEMENT MAINTENANCE NOTE**

THIS STORMWATER MANAGEMENT FACILITY WILL BE PRIVATELY OWNED & MAINTAINED BY THE LINDEN GROVE HOMEOWNERS ASSOCIATION.



FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
ELLSWORTH CITY, MARYLAND 21040  
(410) 481-2895

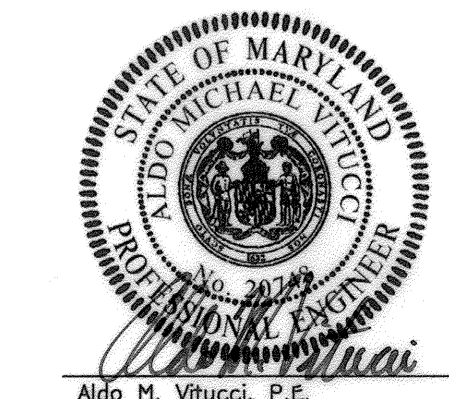
AS-BUILT CERTIFICATION

I hereby certify, by my signature, that the facilities shown on this plan were installed as shown on the "AS BUILT" approved plans and specifications.

*[Signature]*  
Date: 12/12/18

OWNER:  
KIMBERLY/HERITAGE LLC  
3425 HIPSLEY HILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7900

DEVELOPER:  
HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7900



12/12/18  
Date

Stormwater Management  
Plan Views  
**LINDEN GROVE**  
PHASE ONE  
LOTS 1 THRU 23, BUILDABLE PRESERVATION  
PARCEL 'A'; NON-BUILDABLE PRESERVATION  
PARCELS 'B' THRU 'E' AND  
NON-BUILDABLE BULK PARCELS 'F' & 'G'

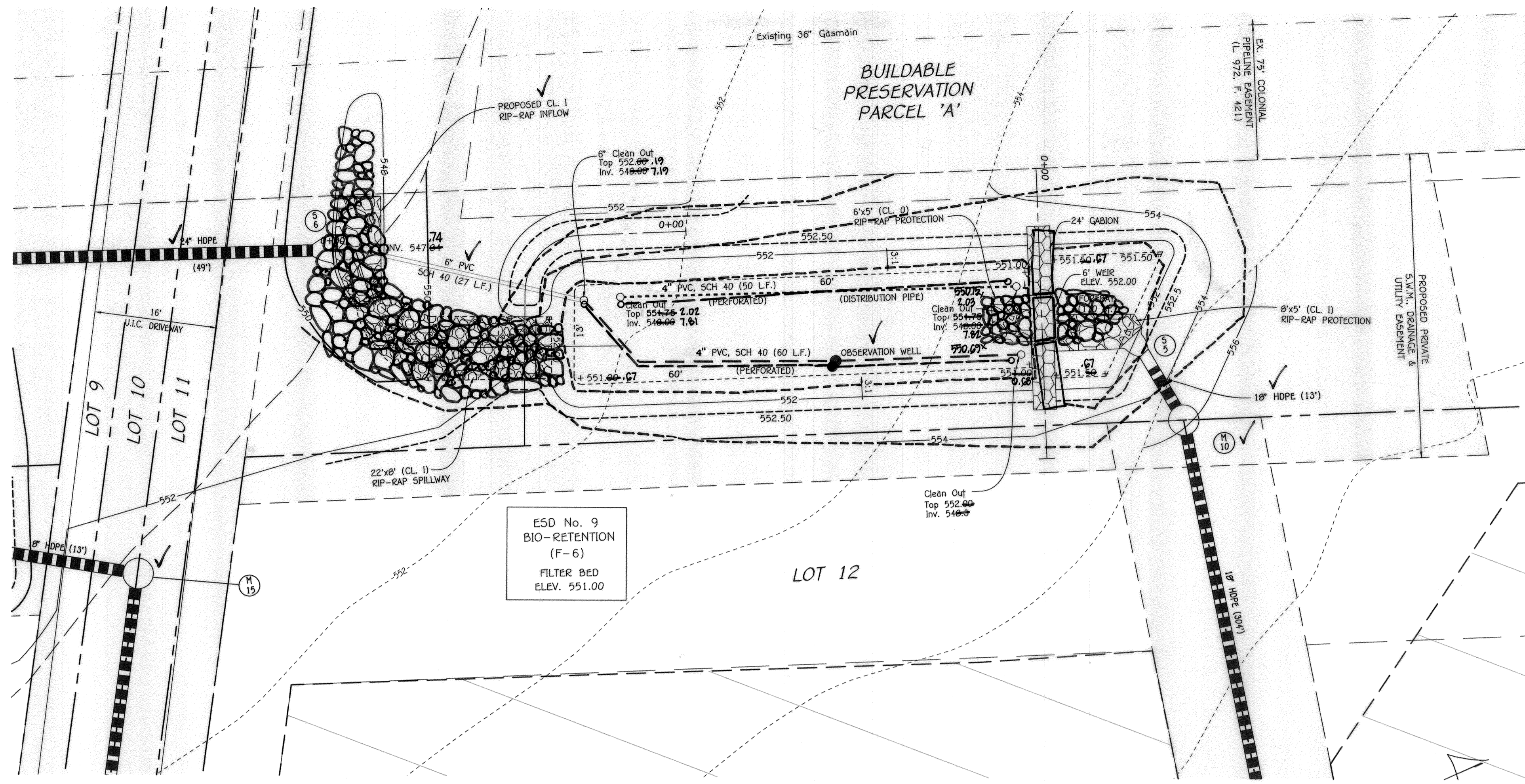
ZONED: RC-DEO  
GRID No. 7  
TAX MAP No. 8  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 12, 2018  
SHEET 16 OF 35



Approved: Department Of Planning And Zoning  
 Chief, Division Of Land Development  
 Chief, Development Engineering Division  
 Approved: Howard County Department Of Public Works  
 Chief, Bureau Of Highways

3-20-19  
 3-8-19  
 1/18/2019

REVISIONS		
NO.	DESCRIPTION	DATE

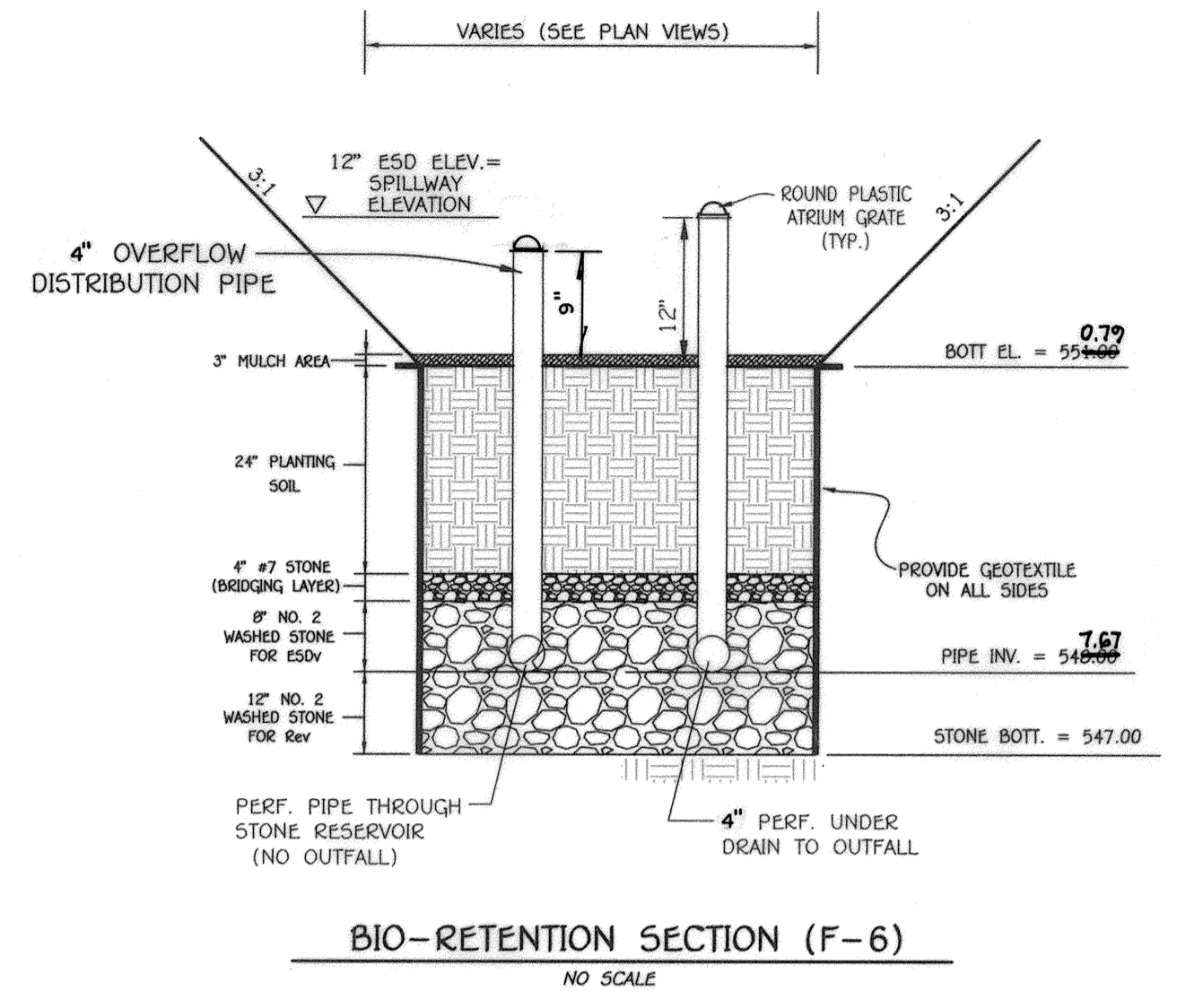


**STORMWATER MANAGEMENT LEGEND**

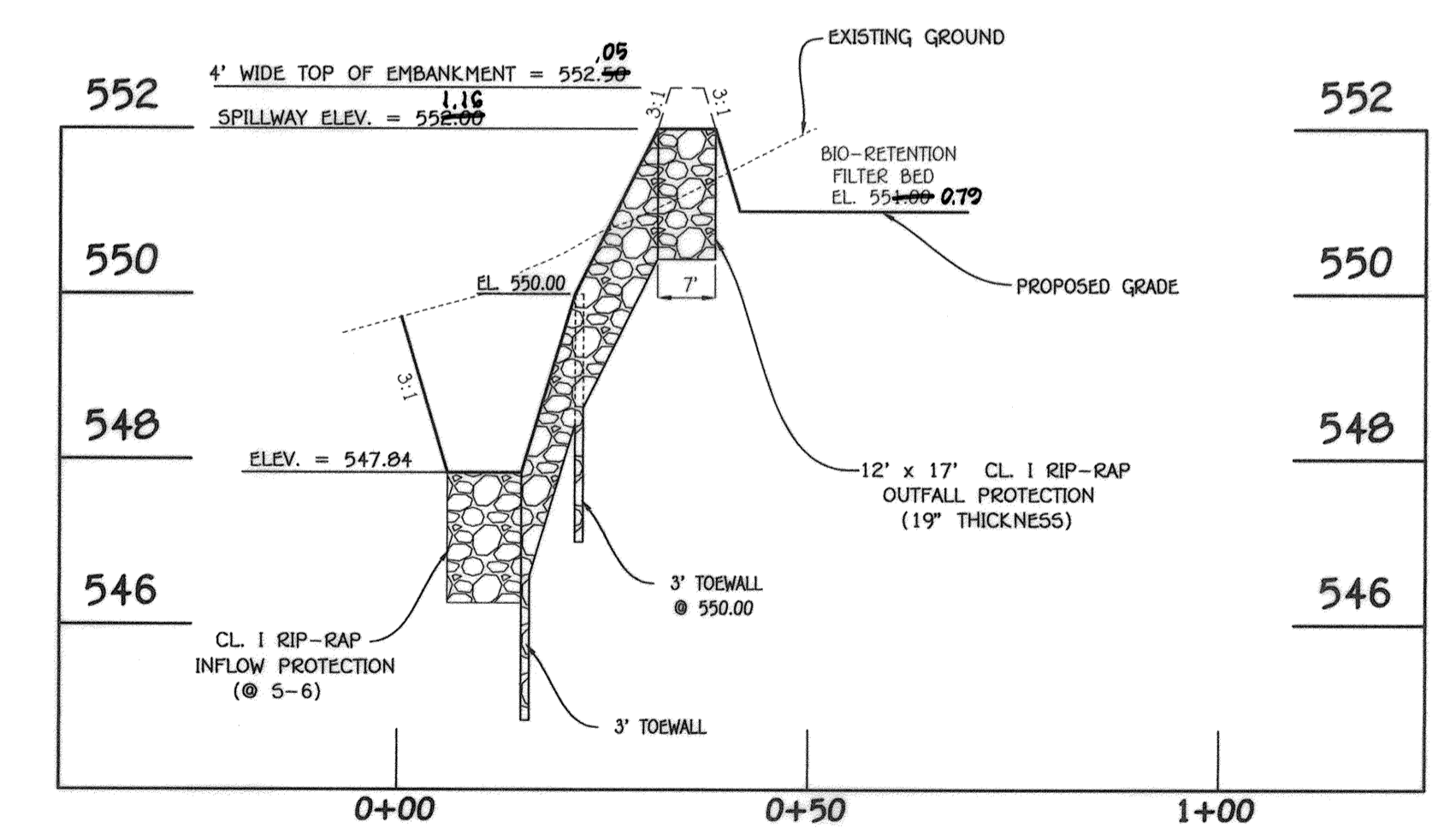
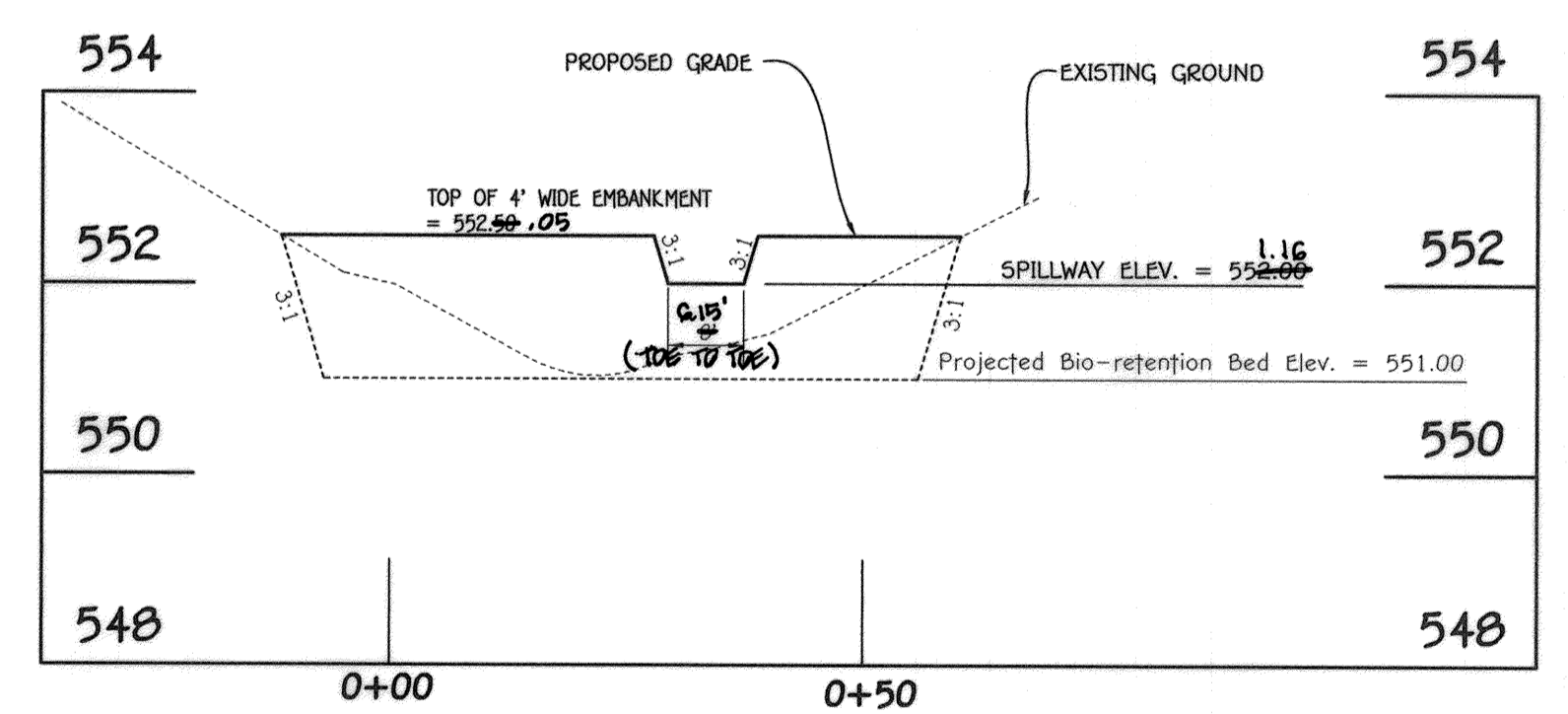
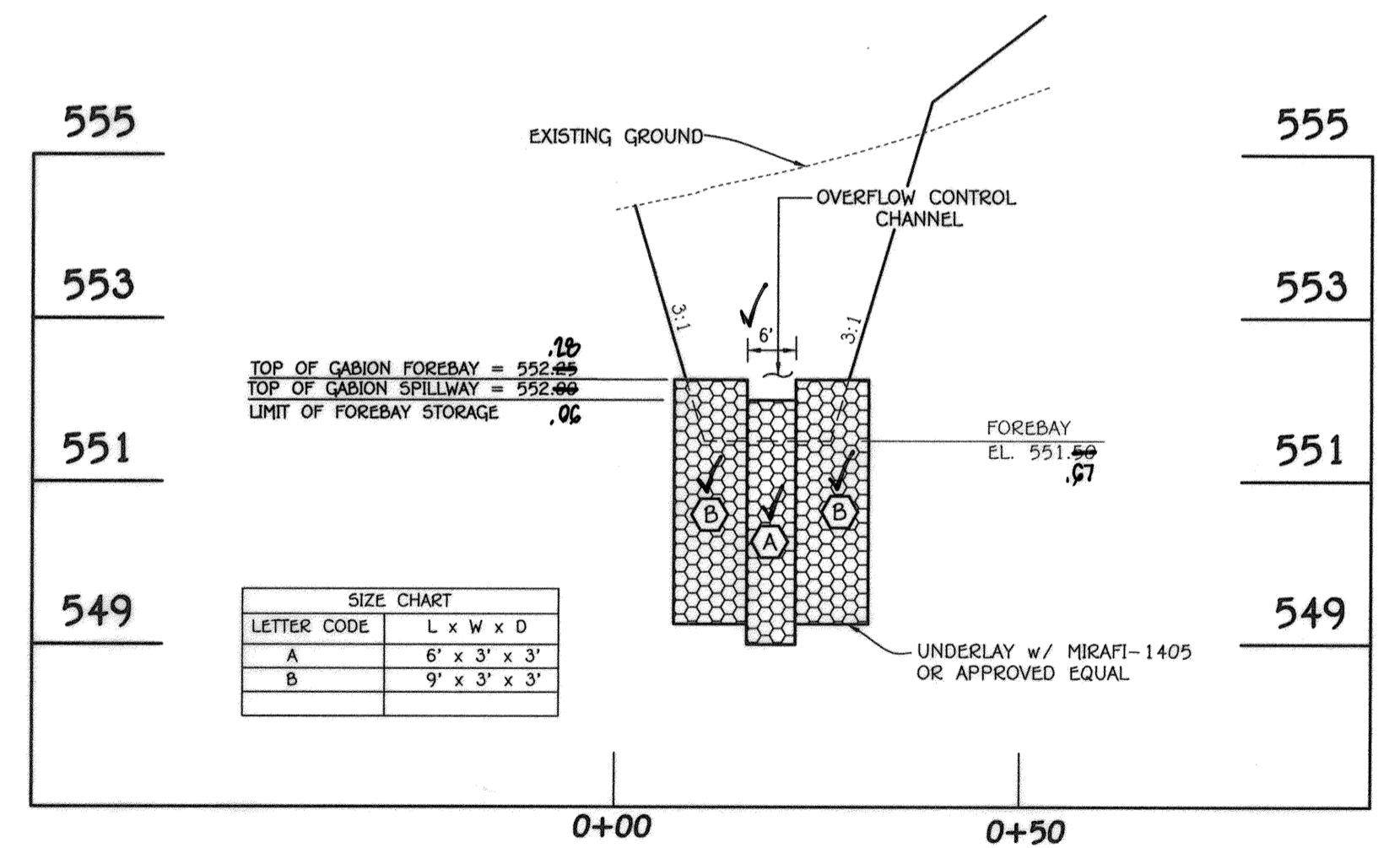
- - DENOTES CLEANOUT
- - DENOTES OBSERVATION WELL
- - - - - DENOTES 6" PVC, SCH 40 UNDERDRAN (PERFORATED) (OUTFALLS TO STORM DRAIN)
- - - - - DENOTES 6" PVC, SCH 40 DISTRIBUTION PIPE (PERFORATED) (OUTFALLS INTO STONE LAYER)

**STORMWATER MANAGEMENT MAINTENANCE NOTE**

THIS STORMWATER MANAGEMENT FACILITY WILL BE PRIVATELY OWNED & MAINTAINED BY THE LINDEN GROVE HOMEOWNERS ASSOCIATION.



**PROPOSED BIO-RETENTION (F-6) ESD No. 9 PLAN VIEW**  
 SCALE: 1" = 10'



**AS-BUILT CERTIFICATION**  
 I hereby certify, by my seal, that the facilities shown on this plan are constructed as shown on this "AS BUILT" plan. I have approved plans and specifications.

*[Signature]*  
 Date

**OWNER:**  
 KIMBERLY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 19950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900



Aldo M. Vitucci, P.E.  
 Date: 12/12/18  
 "Professional Certification: 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. 20748, Expiration Date 2-22-19."

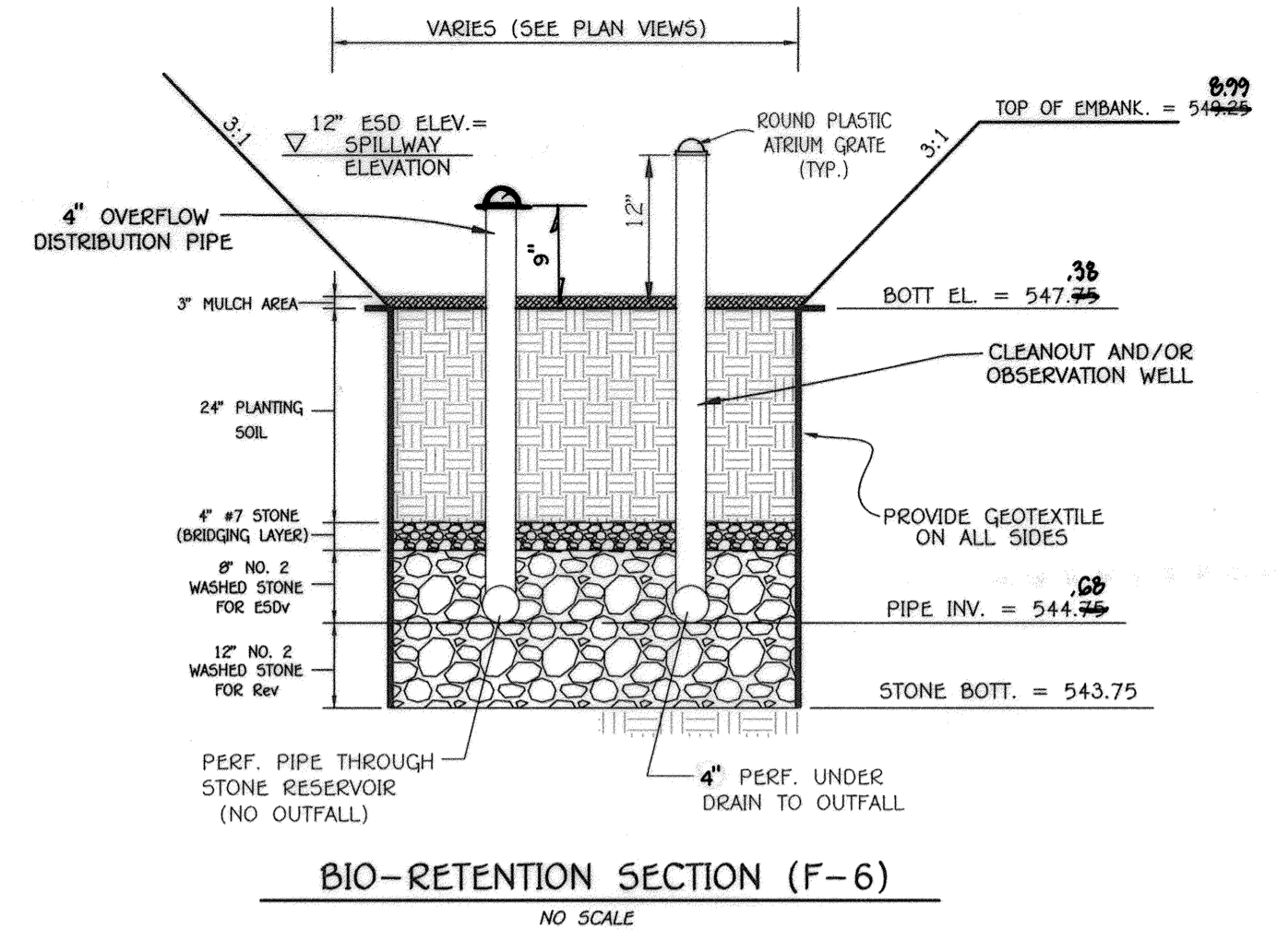
**Stormwater Management Plan Views**  
**LINDEN GROVE PHASE ONE**  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 17 OF 35

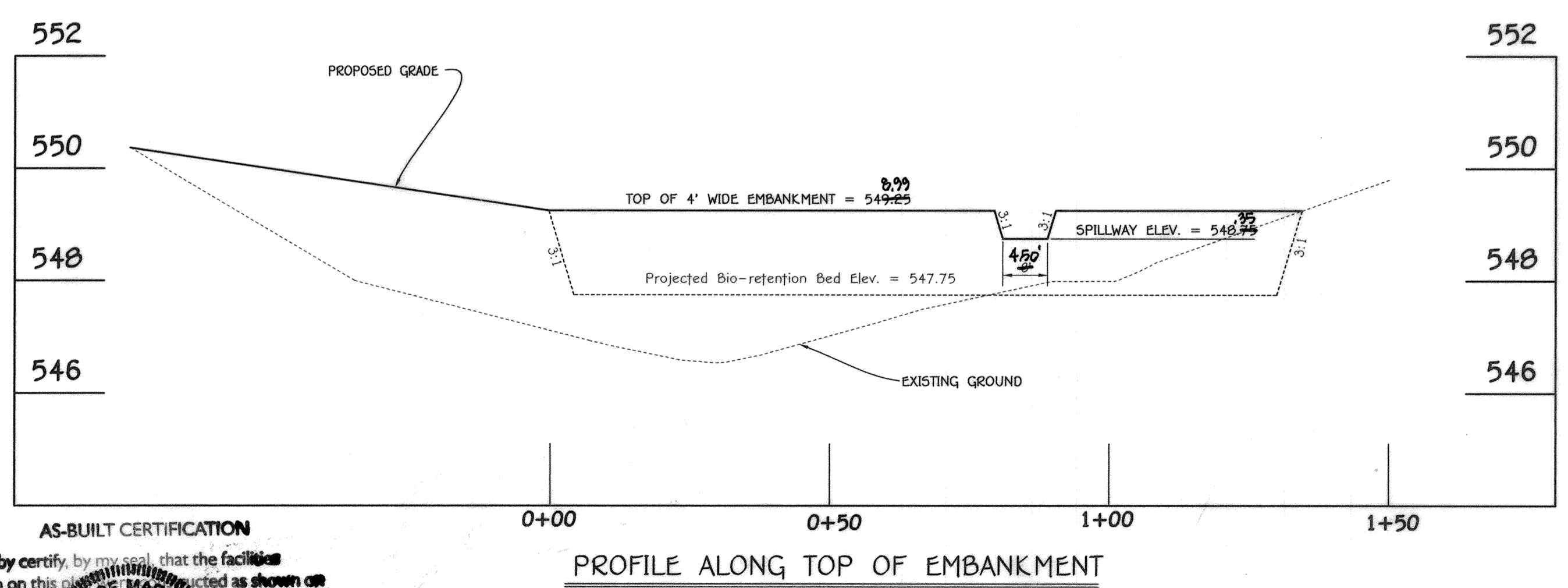
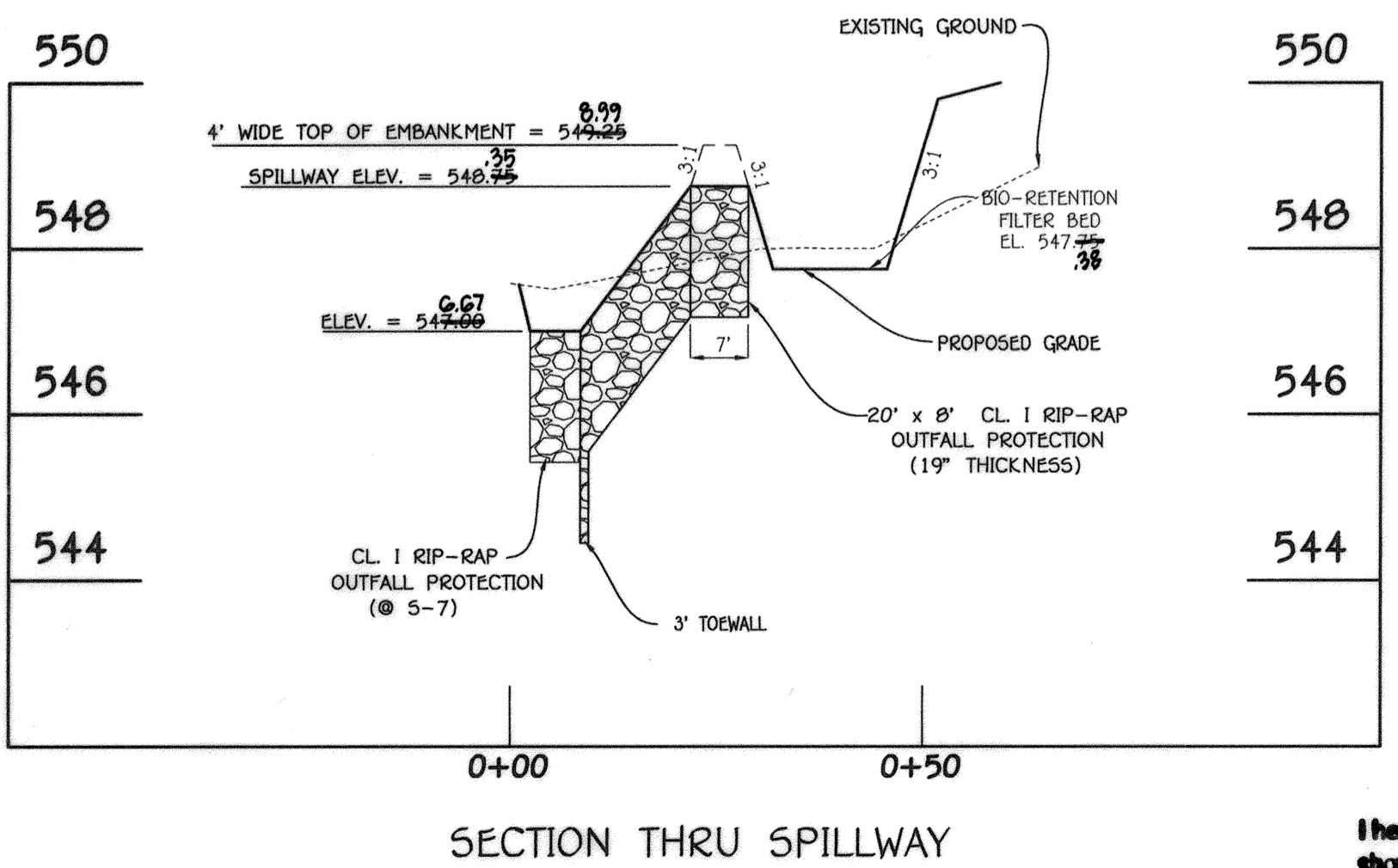
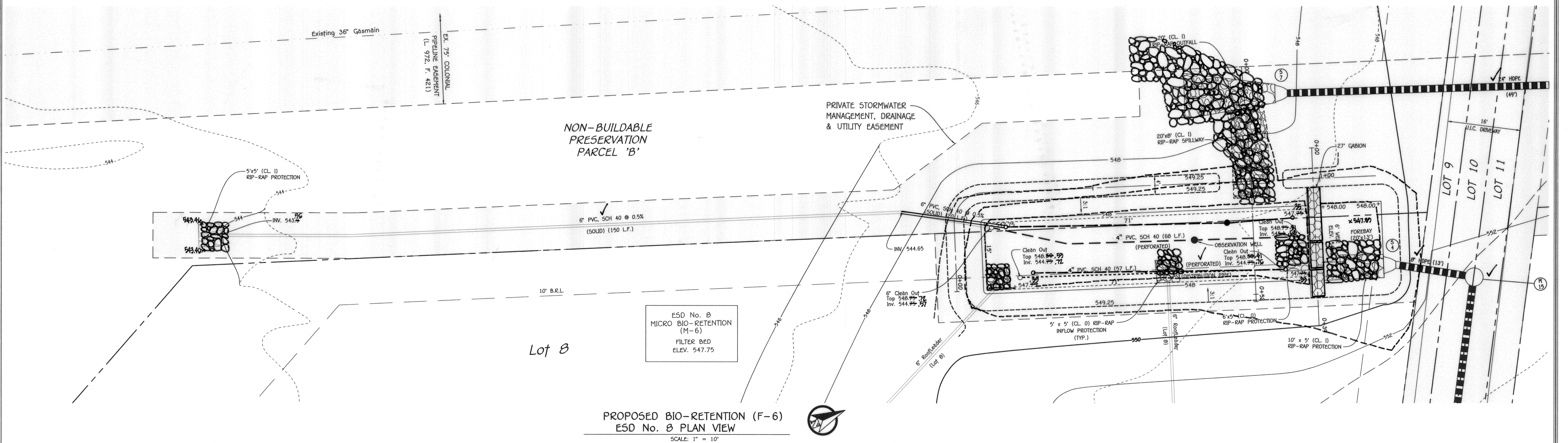
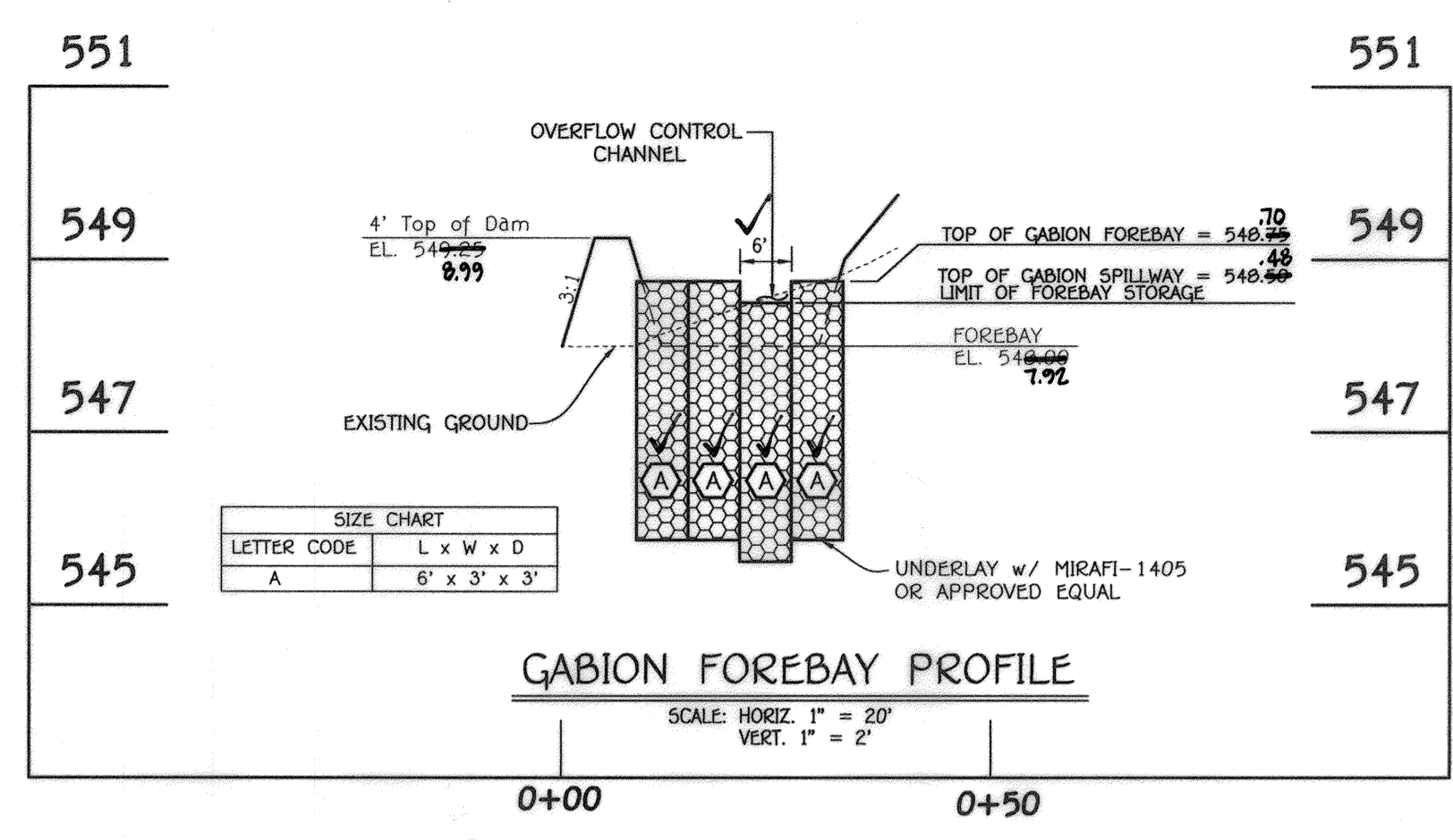
Approved: Department of Planning And Zoning  
 Chief, Division of Land Development  
 Chief, Development Engineering Division  
 Approved: Howard County Department of Public Works  
 Chief, Bureau Of Highways

3-20-19  
 3-8-19  
 1/18/2019

REVISIONS		
NO.	DESCRIPTION	DATE



**STORMWATER MANAGEMENT MAINTENANCE NOTE**  
 THIS STORMWATER MANAGEMENT FACILITY WILL BE PRIVATELY OWNED & MAINTAINED BY THE LINDEN GROVE HOMEOWNERS ASSOCIATION.



- STORMWATER MANAGEMENT LEGEND**
- - DENOTES CLEANOUT
  - - DENOTES OBSERVATION WELL
  - - DENOTES 6" PVC, SCH 40 UNDERDRAIN (PERFORATED) (OUTFALLS TO STORM DRAIN)
  - - - - DENOTES 6" PVC, SCH 40 DISTRIBUTION PIPE (PERFORATED) (OUTFALLS INTO STONE LAYER)

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
 ELIJAH CITY, MARYLAND 21042  
 (410) 461-2895

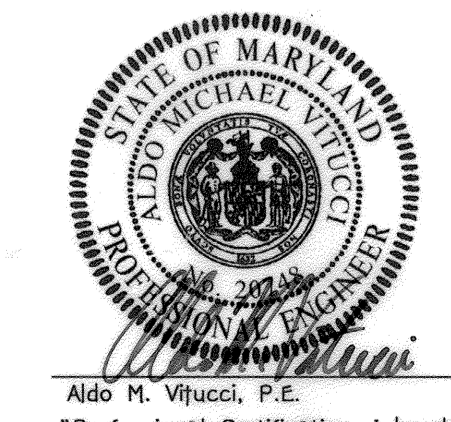
**AS-BUILT CERTIFICATION**  
 I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan and approved plans and specifications.

*[Signature]*  
 PROFESSIONAL ENGINEER  
 No. 20748

**PROFILE ALONG TOP OF EMBANKMENT**  
 SCALE: HORIZ. 1" = 20'  
 VERT. 1" = 2'

**OWNER:**  
 KIMBERTHY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900



12/12/18  
 Date

"Professional Certification: 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. 20748, Expiration Date 2-22-19."

**Stormwater Management Plan Views**  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 18 of 35

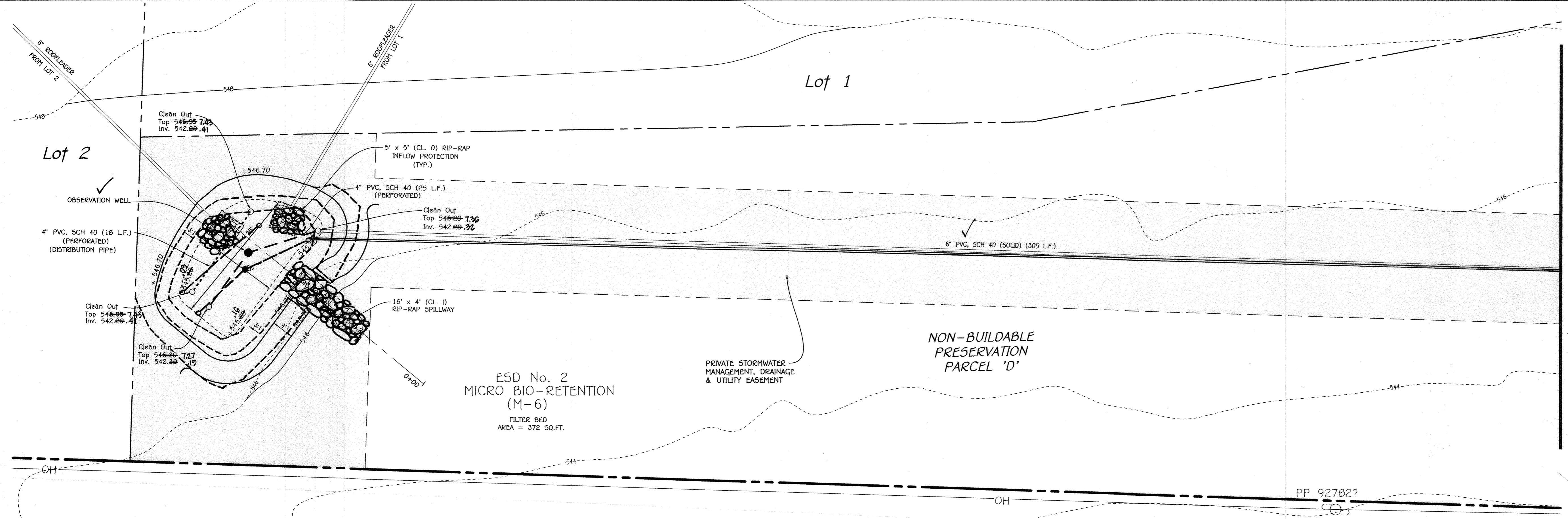
AS-BUILT F-18-092

Approved: Department Of Planning And Zoning  
 Chief, Division Of Land Development *Neil Leavelle* 3-20-19  
 Chief, Development Engineering Division *Shelby* 3-8-19  
 Approved: Howard County Department Of Public Works  
 Chief, Bureau Of Highways *James* 1/18/2019

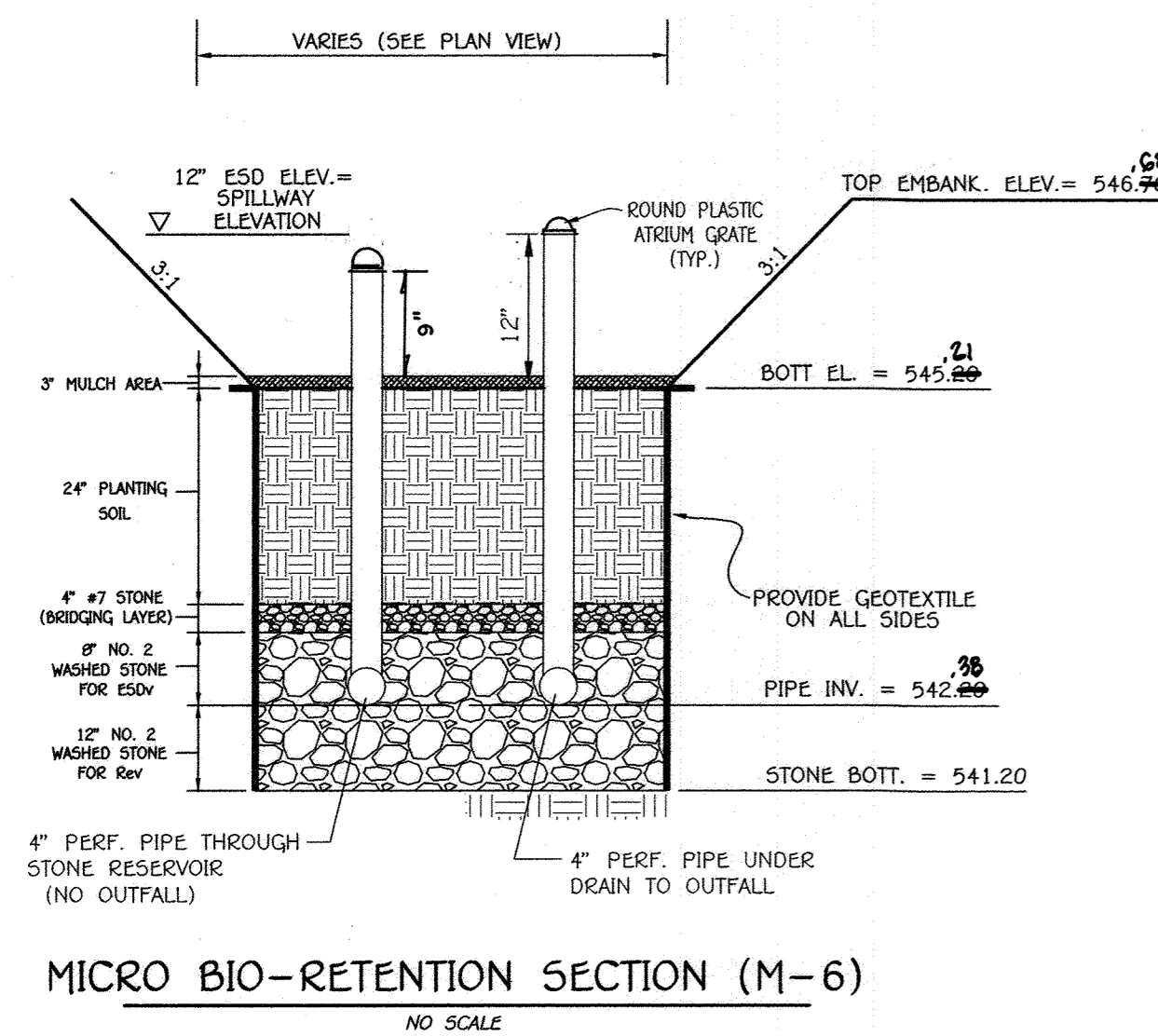
REVISIONS		
NO.	DESCRIPTION	DATE

**STORMWATER MANAGEMENT LEGEND**

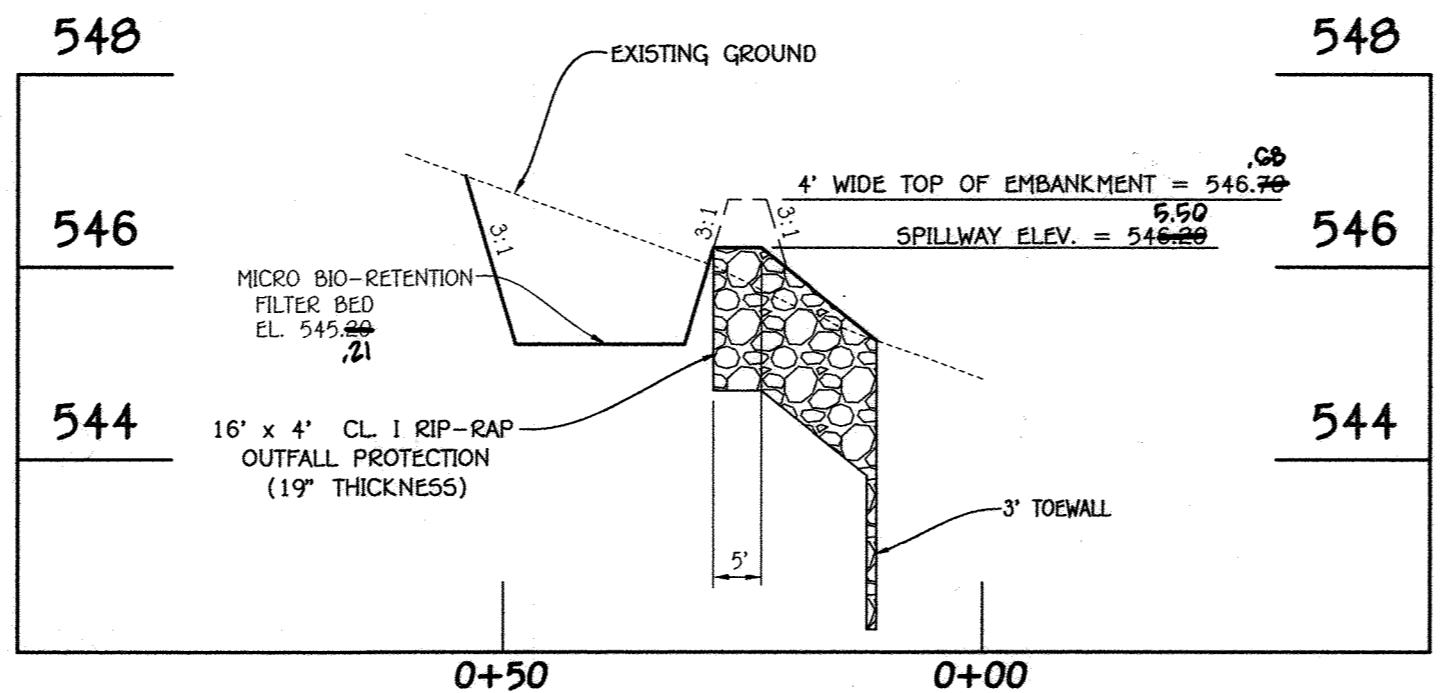
- - DENOTES CLEANOUT
- - DENOTES OBSERVATION WELL
- - - - - DENOTES 4" PVC, SCH 40 UNDERDRAIN (PERFORATED) (OUTFALLS TO STORM DRAIN)
- - - - - DENOTES 4" PVC, SCH 40 DISTRIBUTION PIPE (PERFORATED) (OUTFALLS INTO STONE LAYER)



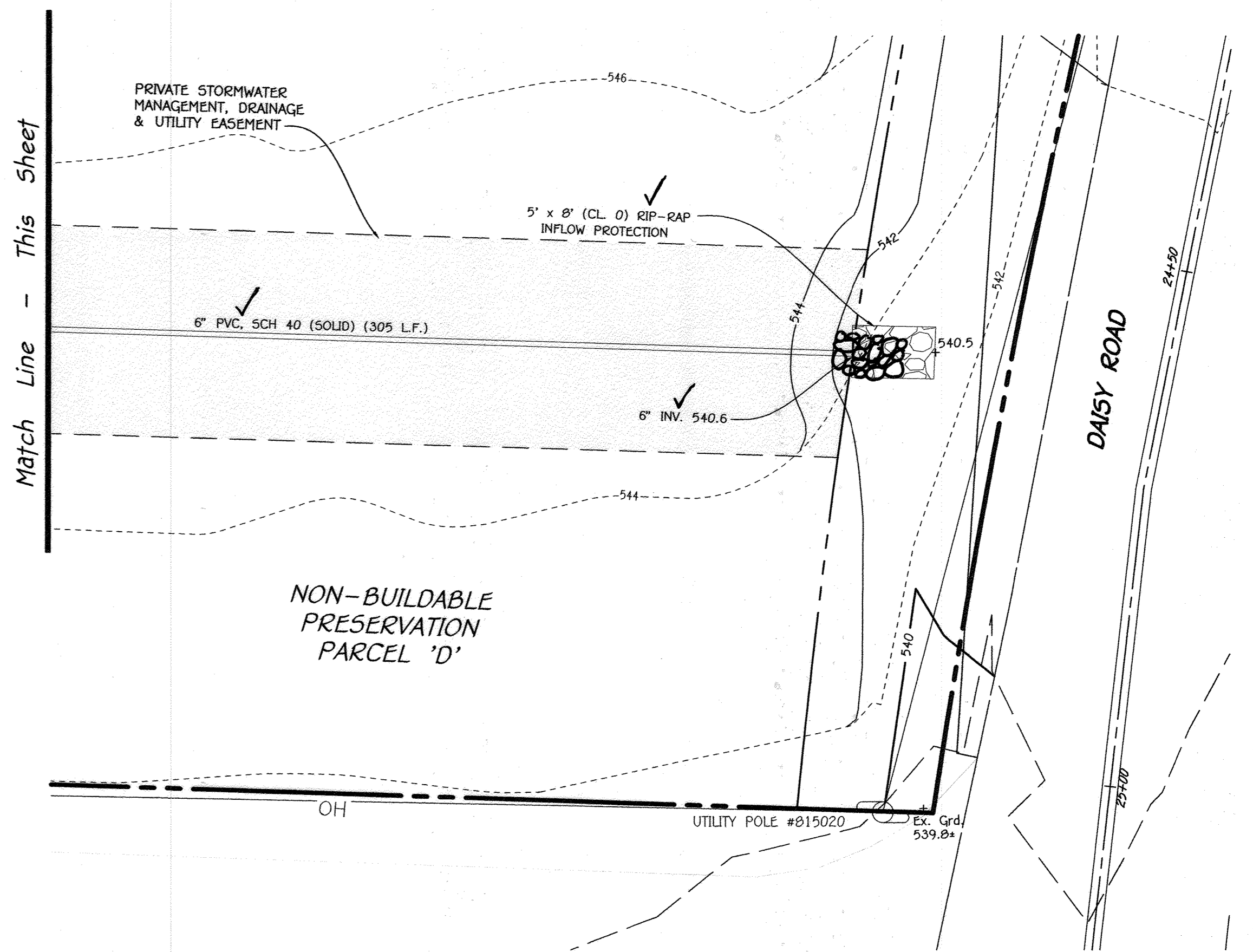
PROPOSED MICRO BIO-RETENTION (M-6)  
 ESD No. 2 PLAN VIEW  
 SCALE: 1" = 10'



MICRO BIO-RETENTION SECTION (M-6)  
 NO SCALE



ESD No. 2  
 SECTION THRU SPILLWAY  
 SCALE: HORIZ. 1" = 20'  
 VERT. 1" = 2'



**STORMWATER MANAGEMENT MAINTENANCE NOTE**  
 THIS STORMWATER MANAGEMENT FACILITY WILL BE PRIVATELY OWNED & MAINTAINED BY THE LINDEN GROVE HOMEOWNERS ASSOCIATION.

**AS-BUILT CERTIFICATION**  
 I hereby certify that the facilities shown on this plan were constructed as shown on the AS-BUILT drawings for the approved plans and specifications.

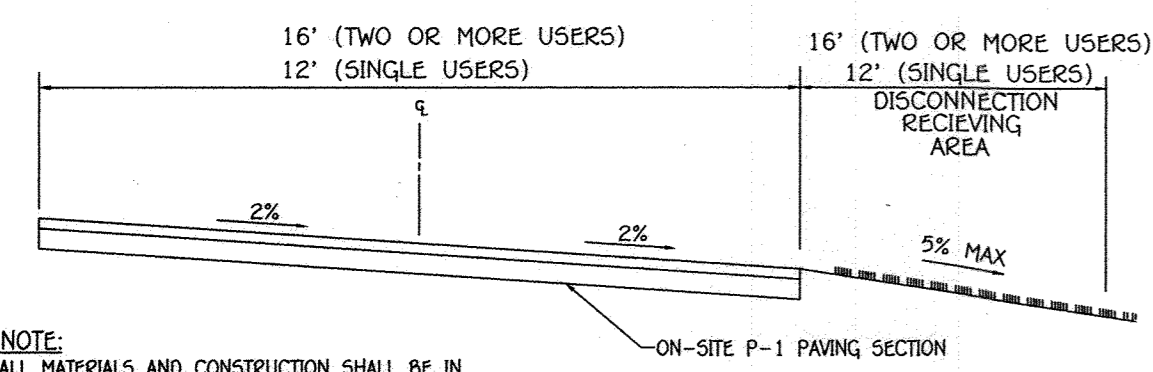
**OWNER:**  
 KIMBERLY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900



Aldo M. Virucci, P.E.  
 Date: 12/12/18  
 \*Professional Certification: 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. 20748, Expiration Date 2-22-19.\*

**Stormwater Management Plan Views**  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
 ZONED: RC-DCO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 19 OF 35

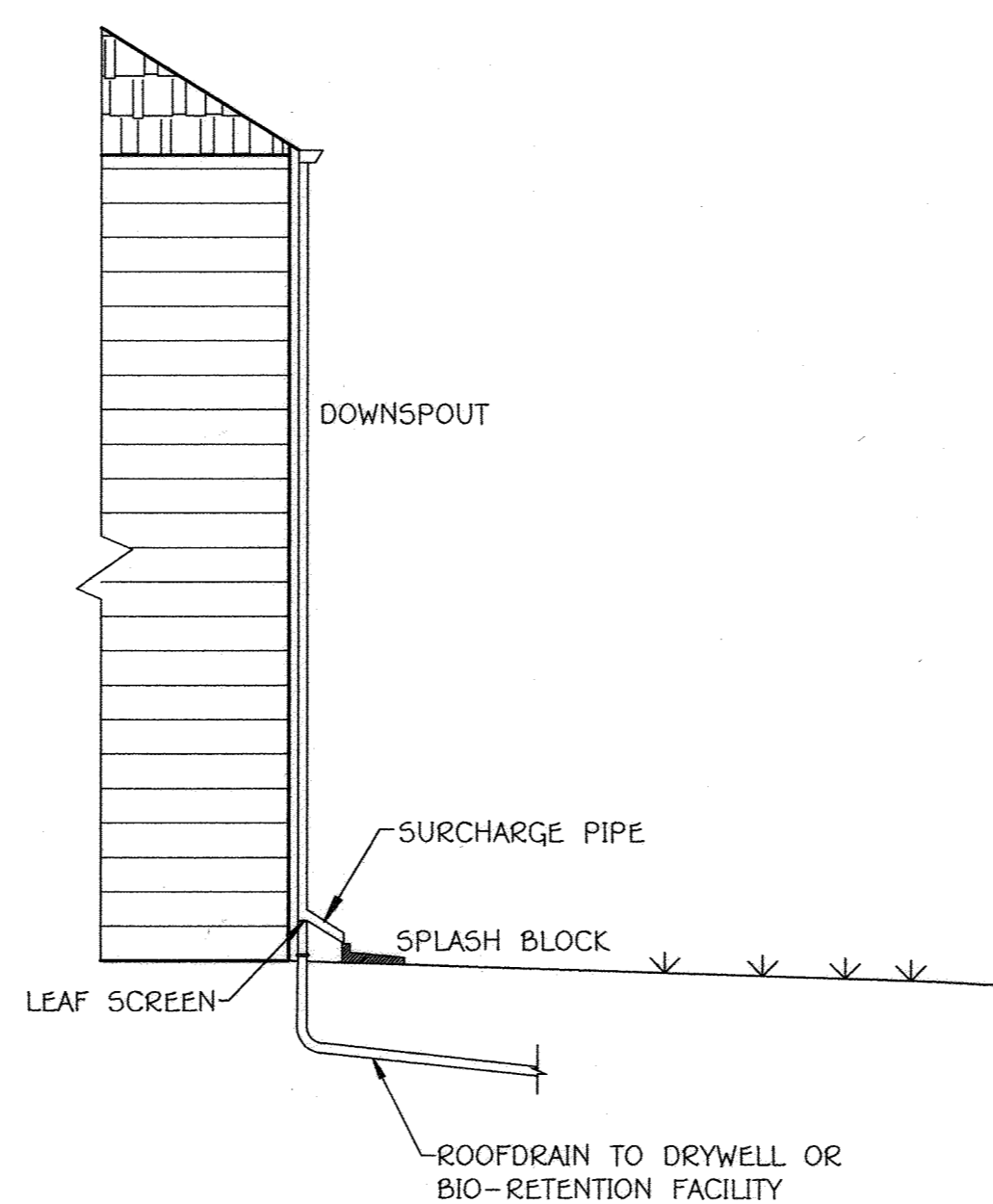


Typical Private Drive Cross Slope Section  
NO SCALE

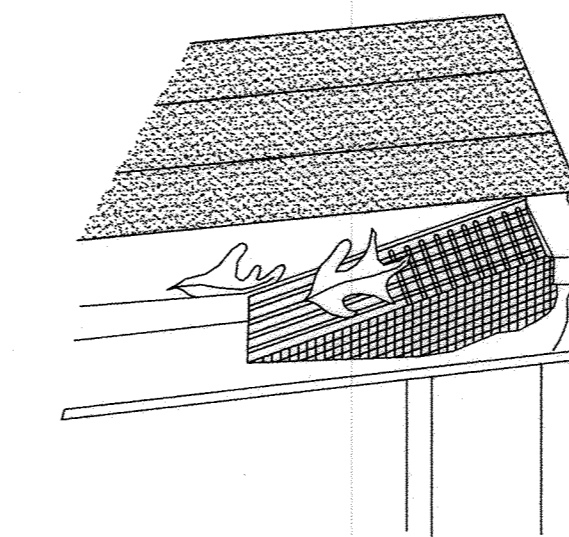
NOTE:  
ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL VOLUME IV, STANDARD SPECIFICATION AND DETAILS FOR CONSTRUCTION.

### Operation & Maintenance Schedule For Privately Owned And Maintained Disconnection Of Nonrooftop Runoff (N-2)

- Maintenance Of Areas Receiving Disconnection Runoff Is Generally No Different Than That Required For Other Lawn Or Landscaped Areas. The Areas Receiving Runoff Should Be Protected From Future Compaction Or Development Of Impervious Area. In Commercial Areas, Foot Traffic Should Be Discouraged As Well.

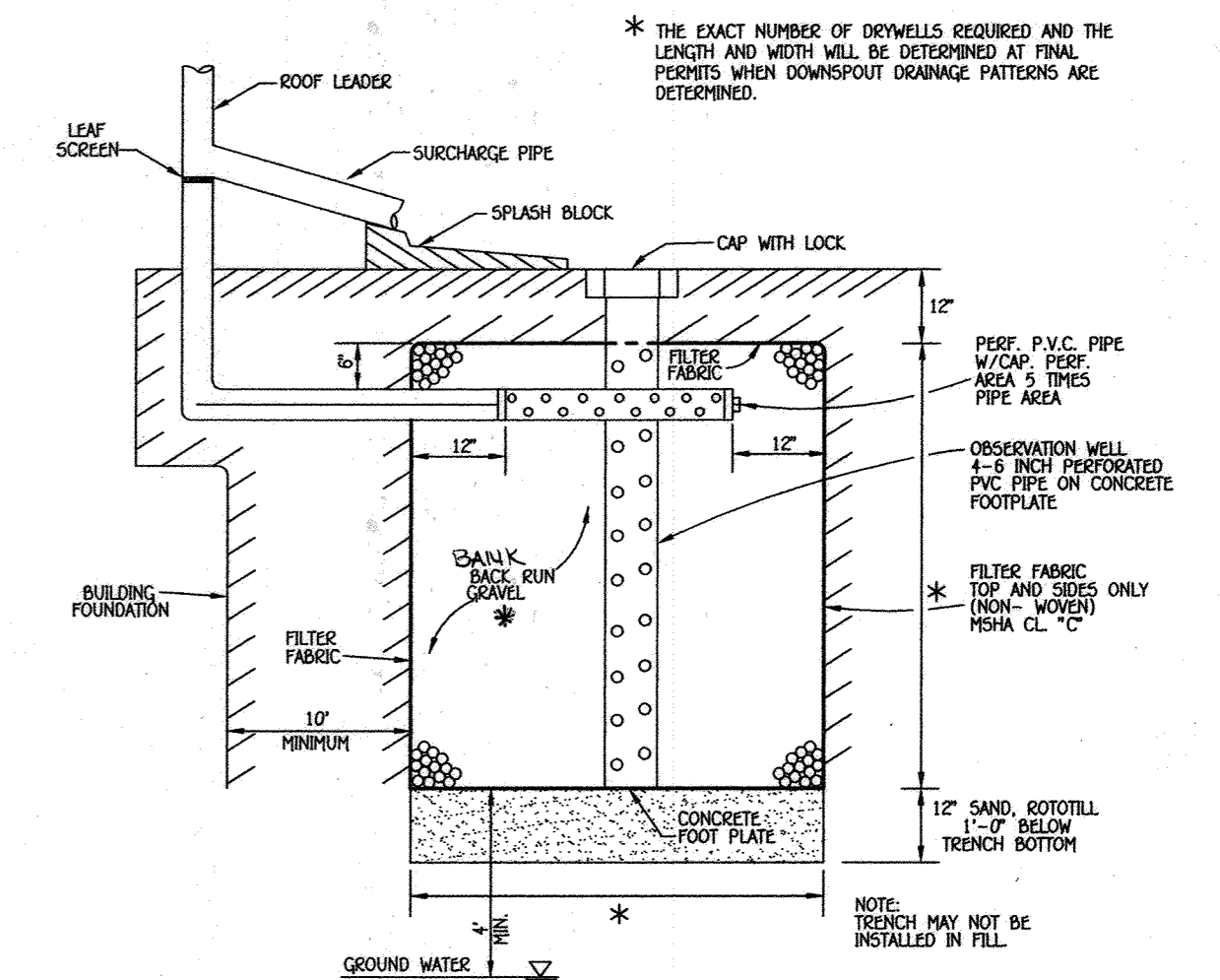


TYPICAL DOWNSPOUT FOR OUTFALL INTO DRYWELL OR BIO-RETENTION FACILITY  
NO SCALE



GUTTER DRAIN FILTER DETAIL  
NO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS	1/18/2019
CHIEF, BUREAU OF HIGHWAYS	DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING	3-20-19
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	3-28-19
DATE	
REVISIONS	
NO.	DATE DESCRIPTION

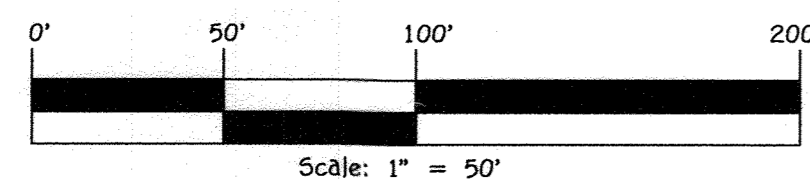


Typical Drywell Detail (M-5)  
NO SCALE

### OPERATION AND MAINTENANCE SCHEDULE FOR DRYWELLS (M-5)

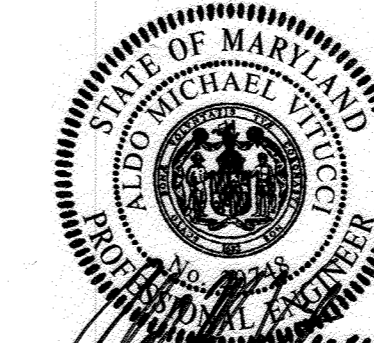
- THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS AND AFTER EVERY HEAVY STORM EVENT.
- THE OWNER SHALL RECORD THE WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
- THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
- WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN A SEVENTY-TWO (72) HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
- THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
- ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

FISHER, COLLINS & CARTER, INC.  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PKWY.  
ELLSWORTH CITY, MARYLAND 21042  
(410) 461-2899



OWNER:  
KIMBERTHY/HERITAGE LLC  
3425 HIPSLEY MILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7900

DEVELOPER:  
HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7900



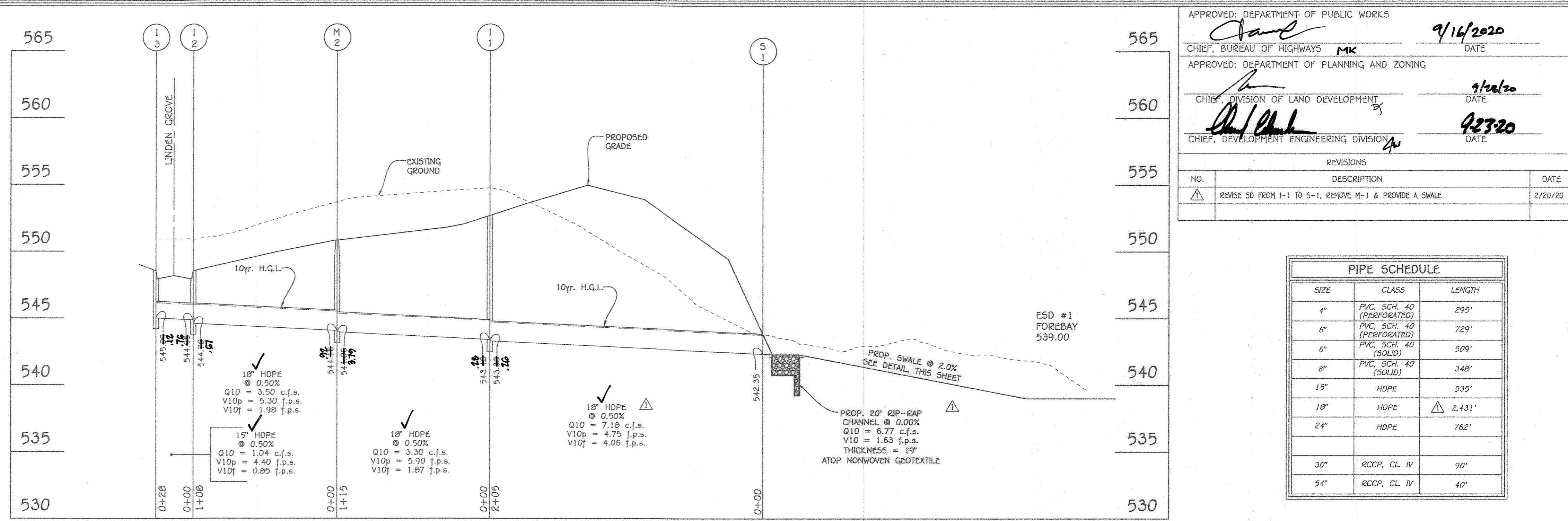
Aldo H. Vitello, P.E.  
Date: 12/12/18  
"Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-19."

PRIVATE STORMWATER MANAGEMENT NOTES AND DETAILS  
**LINDEN GROVE**  
PHASE ONE  
LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
ZONED: RC-DEO  
TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 12, 2018  
SHEET 20 of 35

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET

### STRUCTURE SCHEDULE

STRUCTURE NO.	TOP ELEVATION	IN/IN	IN/OUT	ROAD NAME	ROAD STA.	OFFSET	TYPE	REMARKS
I-1	552.66	543.22 (10")	543.22 (10")	LINDEN GROVE LANE	2+80.00	3.1	A-10	D - 4.03
I-2	548.00	544.22 (10")	544.22 (10")	LINDEN GROVE LANE	0+65.00	4.50	A-10	D - 4.03
I-3	548.00	545.22 (10")	545.22 (10")	LINDEN GROVE LANE	0+65.00	1.4	A-10	D - 4.03
I-4	550.00	546.00 (4")	545.47 (10")	LINDEN GROVE LANE	2+80.00	2.5	A-10	D - 4.22
I-5	551.00	546.00 (4")	545.47 (10")	LINDEN GROVE LANE	2+26.00	2.5	A-10	D - 4.22
I-6	552.00	546.00 (4")	545.47 (10")	LINDEN GROVE LANE	2+26.00	2.5	A-10	D - 4.22
I-7	554.00	547.00 (4")	546.00 (4")	LINDEN GROVE LANE	5+05.00	7.2	A-10	D - 4.10
I-8	556.00	548.00 (4")	547.00 (4")	LINDEN GROVE LANE	5+05.00	7.2	A-10	D - 4.22
I-9	557.00	548.00 (4")	547.00 (4")	LINDEN GROVE LANE	5+05.00	7.2	A-10	D - 4.22
I-10	565.00	561.00 (4")	560.00 (4")	LINDEN GROVE LANE	7+54.00	8.5	A-10	D - 4.22
I-11	567.00	563.00 (4")	562.00 (4")	LINDEN GROVE LANE	7+72.00	8.5	A-10	D - 4.22
I-12	567.00	563.00 (4")	562.00 (4")	LINDEN GROVE LANE	7+94.00	4.5	A-10	D - 4.22
I-13	569.00	565.00 (4")	564.00 (4")	LINDEN GROVE LANE	8+14.00	2.7	A-10	D - 4.22
I-14	555.00	548.00 (4")	547.00 (4")	LINDEN GROVE LANE	1+54.00	3.1	A-10	D - 4.03
I-15	556.00	549.00 (4")	548.00 (4")	LINDEN GROVE LANE	1+54.00	3.1	A-10	D - 4.03
I-16	556.00	549.00 (4")	548.00 (4")	LINDEN GROVE LANE	1+54.00	3.1	A-10	D - 4.03
I-17	556.00	549.00 (4")	548.00 (4")	LINDEN GROVE LANE	1+54.00	3.1	A-10	D - 4.03
I-18	559.00	555.00 (4")	554.00 (4")	LINDEN GROVE LANE	1+54.00	3.1	A-10	D - 4.03
I-19	551.00	546.00 (4")	545.00 (4")	LINDEN GROVE LANE	1+54.00	3.1	A-10	D - 4.10
I-20	550.00	545.00 (4")	544.00 (4")	LINDEN GROVE LANE	1+54.00	3.1	A-10	D - 4.22
I-21	555.00	551.00 (4")	550.00 (4")	LINDEN GROVE LANE	1+54.00	3.1	A-10	D - 4.10
I-22	551.00	547.00 (4")	546.00 (4")	LINDEN GROVE LANE	1+54.00	3.1	A-10	D - 4.22
I-23	556.00	552.00 (4")	551.00 (4")	LINDEN GROVE LANE	1+54.00	3.1	A-10	D - 4.10
M-2	550.00	544.00 (10")	543.00 (10")	LINDEN GROVE LANE	1+69.00	8.0	4" DIA. MANHOLE	G - 5.12
M-3	550.00	544.00 (10")	543.00 (10")	LINDEN GROVE LANE	1+69.00	8.0	4" DIA. MANHOLE	G - 5.13
M-4	550.00	544.00 (10")	543.00 (10")	LINDEN GROVE LANE	1+69.00	8.0	4" DIA. MANHOLE	G - 5.12
M-5	554.00	548.00 (10")	547.00 (10")	LINDEN GROVE LANE	4+33.00	6.9	4" DIA. MANHOLE	G - 5.13
M-6	556.00	550.00 (10")	549.00 (10")	LINDEN GROVE LANE	5+14.00	5.4	4" DIA. MANHOLE	G - 5.13
M-7	565.00	561.00 (10")	560.00 (10")	LINDEN GROVE LANE	7+54.00	8.5	4" DIA. MANHOLE	G - 5.13
M-8	566.00	562.00 (10")	561.00 (10")	LINDEN GROVE LANE	7+54.00	8.5	4" DIA. MANHOLE	G - 5.12
M-9	566.00	562.00 (10")	561.00 (10")	LINDEN GROVE LANE	7+54.00	8.5	4" DIA. MANHOLE	G - 5.13
M-10	566.00	562.00 (10")	561.00 (10")	LINDEN GROVE LANE	7+54.00	8.5	4" DIA. MANHOLE	G - 5.12
M-11	567.00	563.00 (10")	562.00 (10")	LINDEN GROVE LANE	7+54.00	8.5	4" DIA. MANHOLE	G - 5.12
M-12	566.00	562.00 (10")	561.00 (10")	LINDEN GROVE LANE	7+54.00	8.5	4" DIA. MANHOLE	G - 5.12
M-14	550.00	544.00 (10")	543.00 (10")	LINDEN GROVE LANE	1+69.00	8.0	4" DIA. MANHOLE	G - 5.12
M-15	552.00	546.00 (10")	545.00 (10")	LINDEN GROVE LANE	1+69.00	8.0	4" DIA. MANHOLE	G - 5.12
M-16	550.00	544.00 (10")	543.00 (10")	LINDEN GROVE LANE	1+69.00	8.0	4" DIA. MANHOLE	G - 5.12
S-1	542.35	542.35 (10")	542.35 (10")	LINDEN GROVE LANE	N 605,123.70	E 1,294,798.25	FLARED END SECTION	ADS OR EQUAL
S-2	542.35	542.35 (10")	542.35 (10")	LINDEN GROVE LANE	N 605,215.75	E 1,293,171.80	FLARED END SECTION	ADS OR EQUAL
S-3	550.22	550.22 (10")	550.22 (10")	LINDEN GROVE LANE	N 605,227.10	E 1,294,395.82	FLARED END SECTION	ADS OR EQUAL
S-4	548.10	548.10 (10")	548.10 (10")	LINDEN GROVE LANE	N 605,088.22	E 1,293,556.30	FLARED END SECTION	ADS OR EQUAL
S-5	551.22	551.22 (10")	551.22 (10")	LINDEN GROVE LANE	N 605,215.75	E 1,293,635.55	FLARED END SECTION	ADS OR EQUAL
S-6	547.12	547.12 (10")	547.12 (10")	LINDEN GROVE LANE	N 605,111.24	E 1,293,556.30	FLARED END SECTION	ADS OR EQUAL
S-7	547.12	547.12 (10")	547.12 (10")	LINDEN GROVE LANE	N 605,078.00	E 1,293,540.82	FLARED END SECTION	ADS OR EQUAL
EW-1	538.00	538.00 (54")	538.00 (54")	DANBY ROAD	7+00.00	0.3	TYPE 'C' ENDWALL	D - 5.21
EW-2	532.00	532.00 (54")	532.00 (54")	DANBY ROAD	6+00.00	5.1	TYPE 'C' ENDWALL	D - 5.21
EW-3	537.00	537.00 (3-30")	537.00 (3-30")	DANBY ROAD	18+00.00	4.2	TYPE 'C' ENDWALL	MODIFIED D - 5.21
EW-4	538.00	538.00 (13-30")	538.00 (13-30")	DANBY ROAD	18+00.00	0.3	TYPE 'C' ENDWALL	MODIFIED D - 5.21



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS MK  
 DATE 9/16/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE 9/22/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE 9/23/20

NO.	DESCRIPTION	DATE
1	REVISE SD FROM I-1 TO S-1, REMOVE M-1 & PROVIDE A SWALE	2/20/20

### PIPE SCHEDULE

SIZE	CLASS	LENGTH
4"	PVC SCH. 40 (PERFORATED)	295'
6"	PVC SCH. 40 (PERFORATED)	729'
6"	PVC SCH. 40 (SOLID)	509'
8"	PVC SCH. 40 (SOLID)	348'
15"	HDPE	535'
18"	HDPE	2,431'
24"	HDPE	762'
30"	RCCP, CL. IV	90'
54"	RCCP, CL. IV	40'

### DETAIL D-4-2 PLUNGE POOL

STANDARD SYMBOL (PP)

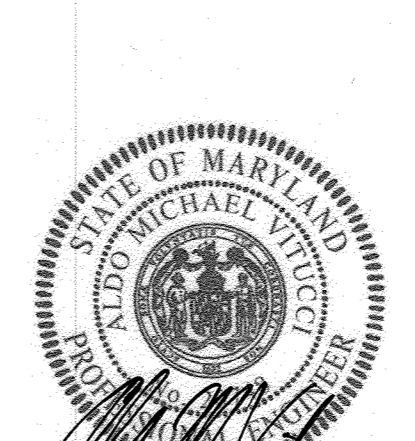
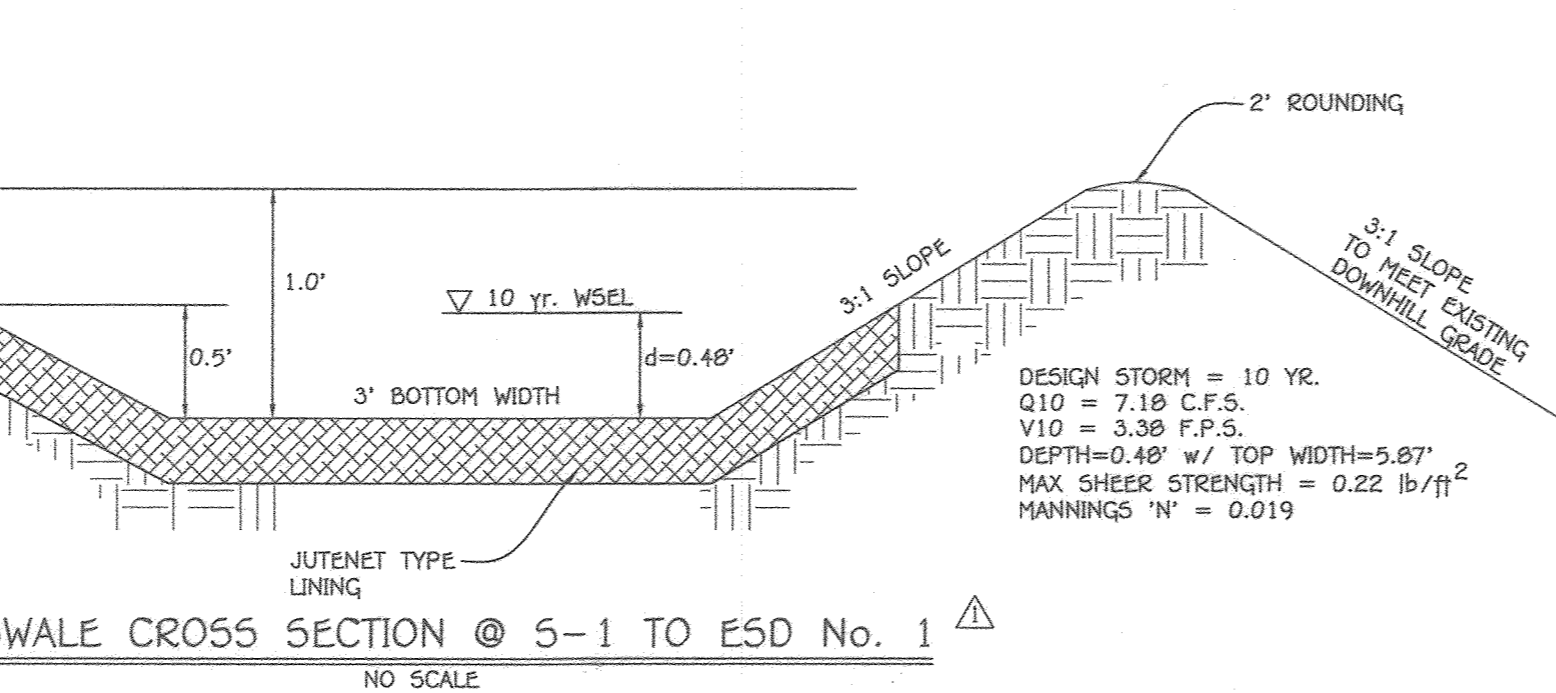
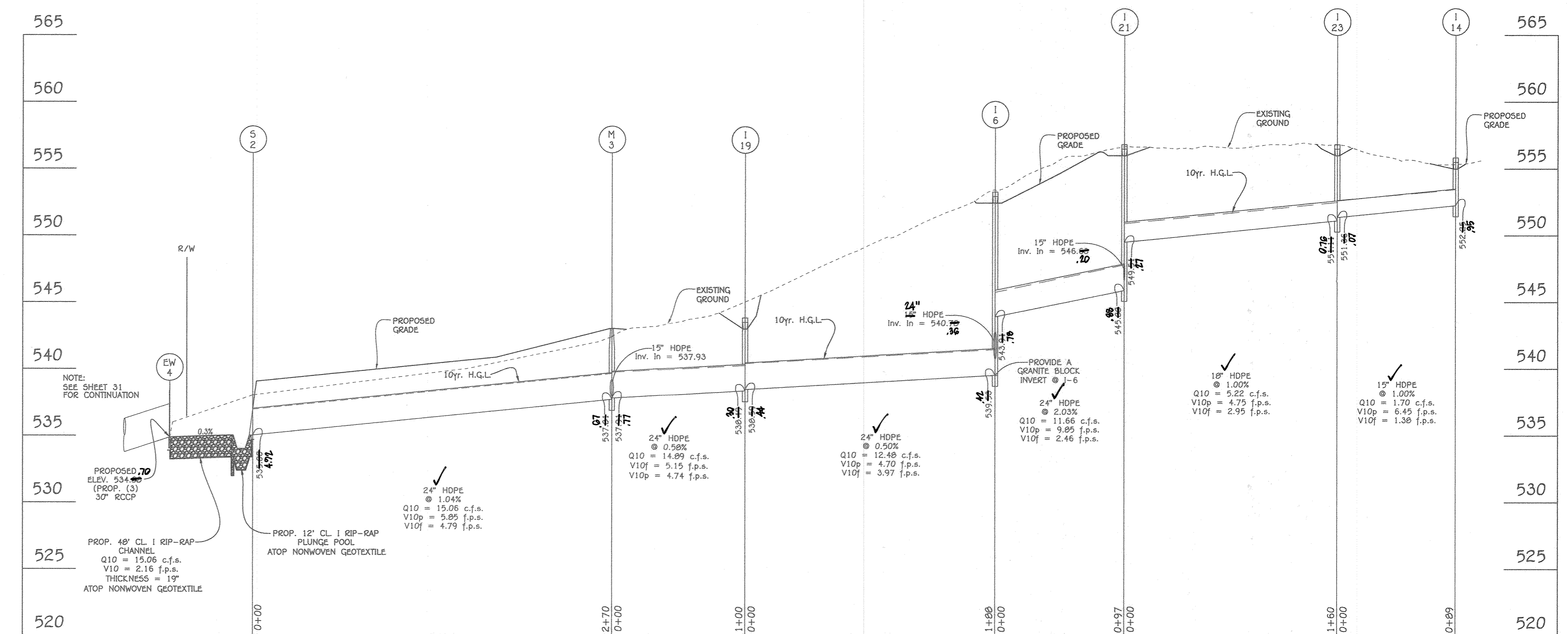
**CONSTRUCTION SPECIFICATIONS**

- USE SPECIFIED CLASS OF RIPRAP.
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCHING, CUTTING, OR TEARING REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE.
- PREPARE THE SUBGRADE FOR THE PLUNGE POOL TO THE REQUIRED LINES AND GRADES, COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
- EMBED THE GEOTEXTILE A MINIMUM OF 4 INCHES AND EXTEND THE GEOTEXTILE A MINIMUM OF 6 INCHES BEYOND THE EDGE OF THE SCOUR HOLE.
- STONE FOR THE PLUNGE POOL MAY BE PLACED BY EQUIPMENT, CONSTRUCT TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. DELIVER AND PLACE THE STONE FOR THE PLUNGE POOL IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE STONE FOR THE PLUNGE POOL IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
- AT THE PLUNGE POOL OUTLET, PLACE THE STONE SO THAT IT MEETS THE EXISTING GRADE.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**Nyloplast**  
 3130 VERONA AVE  
 BUFORD, GA 30618  
 PHN (770) 932-2443  
 FAX (770) 932-2480  
 www.nyloplast-us.com



**AS-BUILT CERTIFICATION**

I hereby certify that the facilities shown on this 'AS-BUILT' plan and specifications were constructed as shown on the approved plans and specifications.

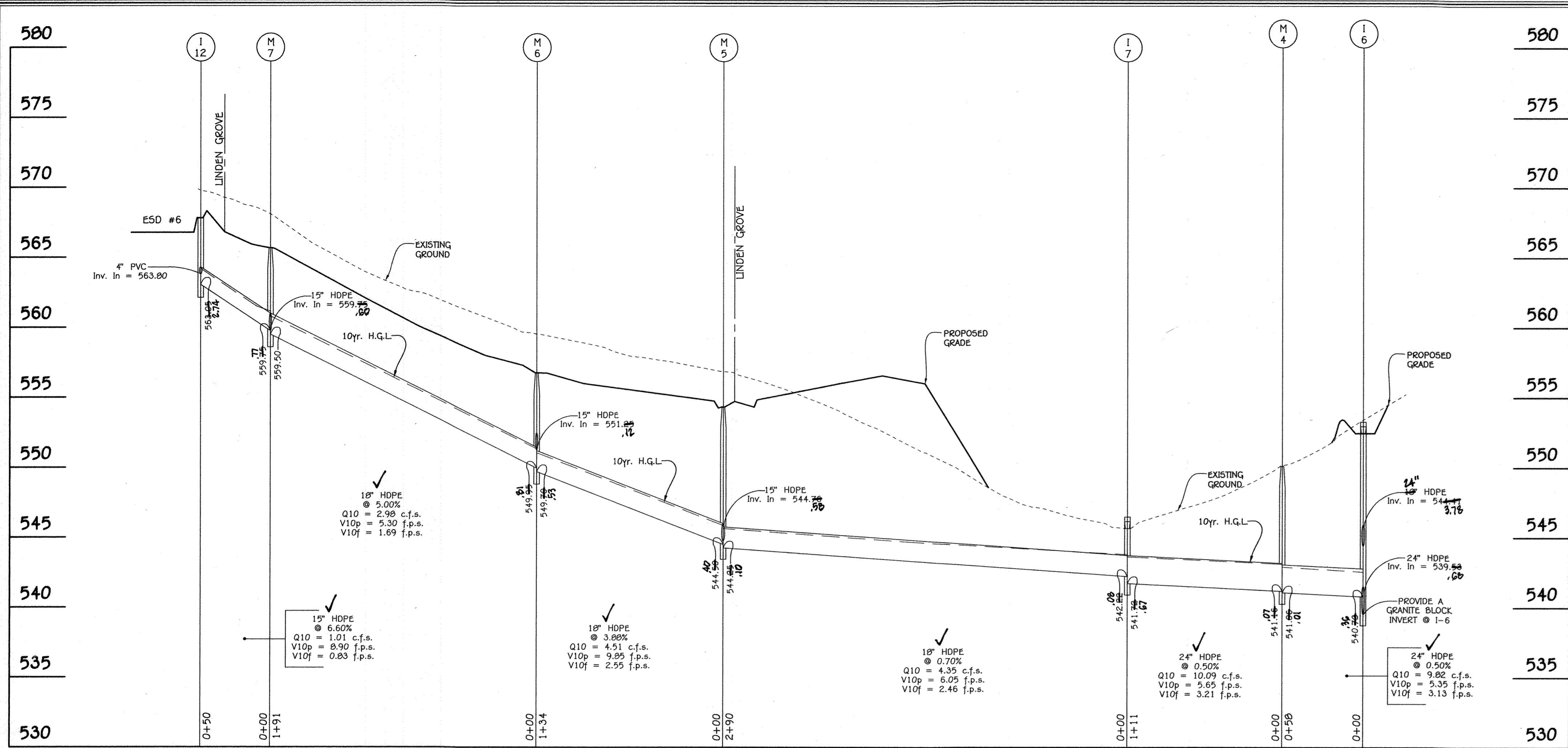
Date: 7/23/2020

### REVISED STORM DRAIN PROFILES LINDEN GROVE PHASE ONE

LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: FEBRUARY 20, 2020  
 SHEET 21 OF 35

"AS-BUILT" F-18-092



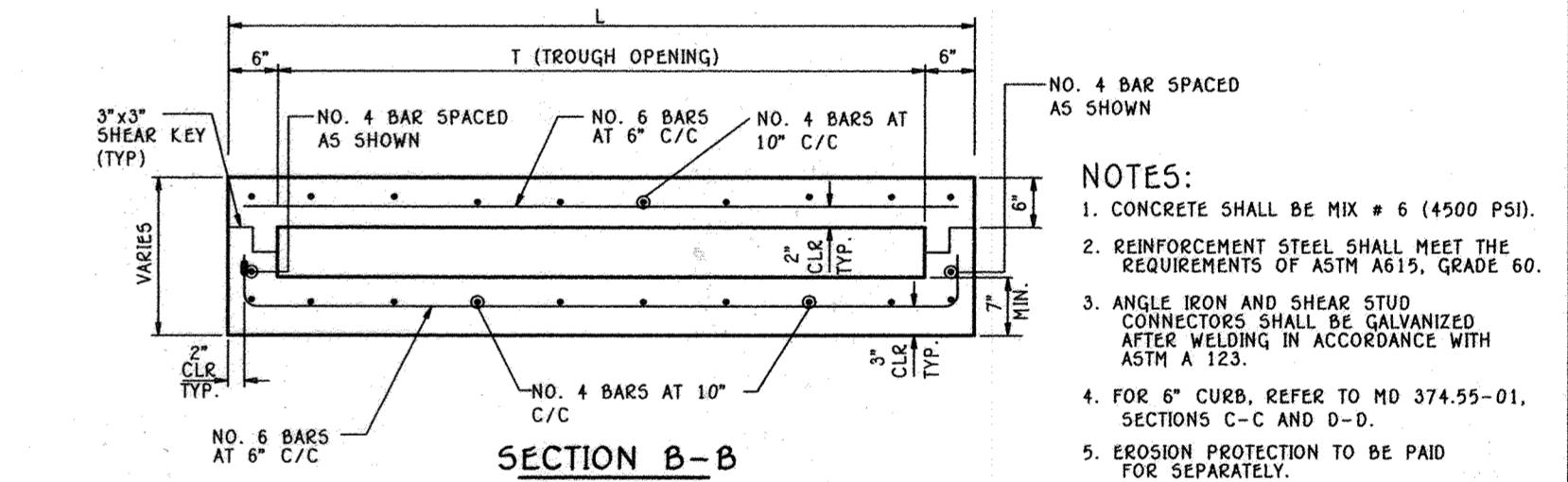
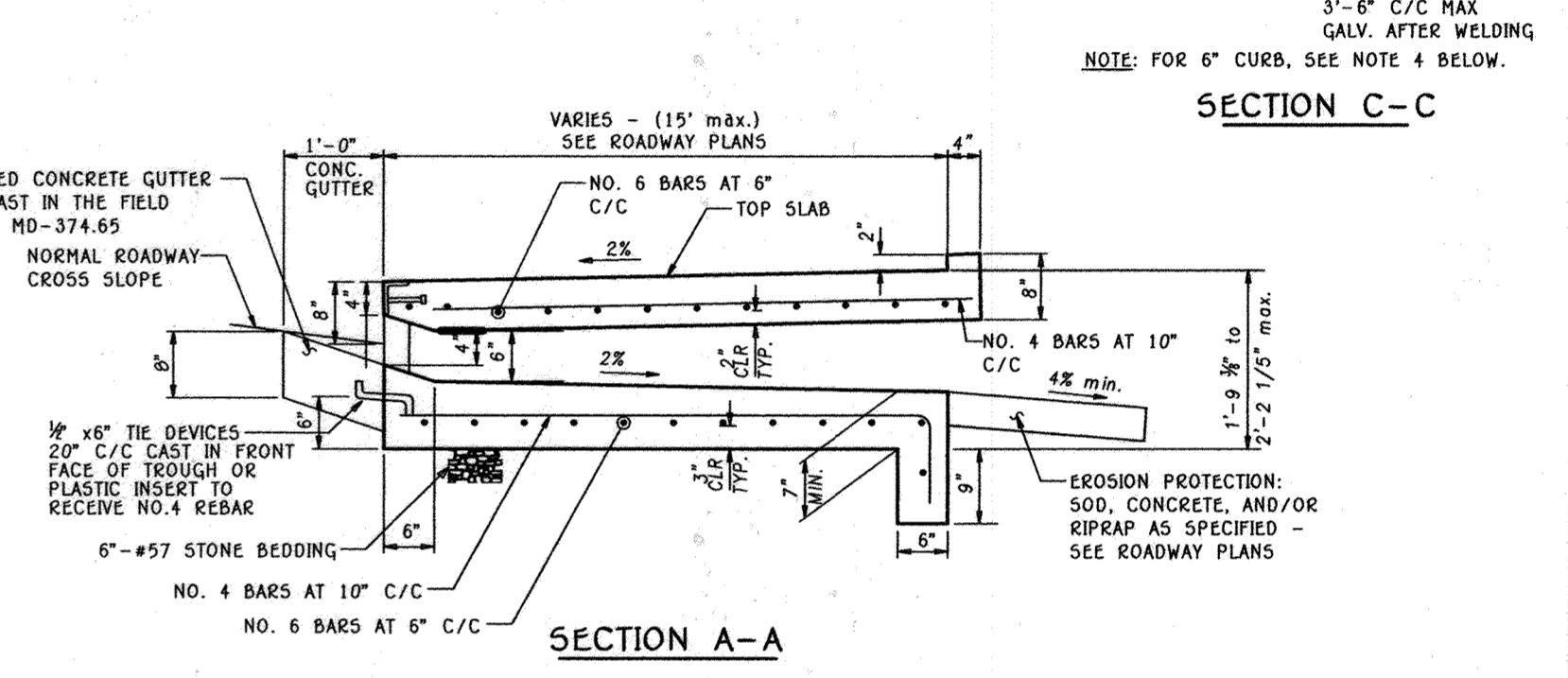
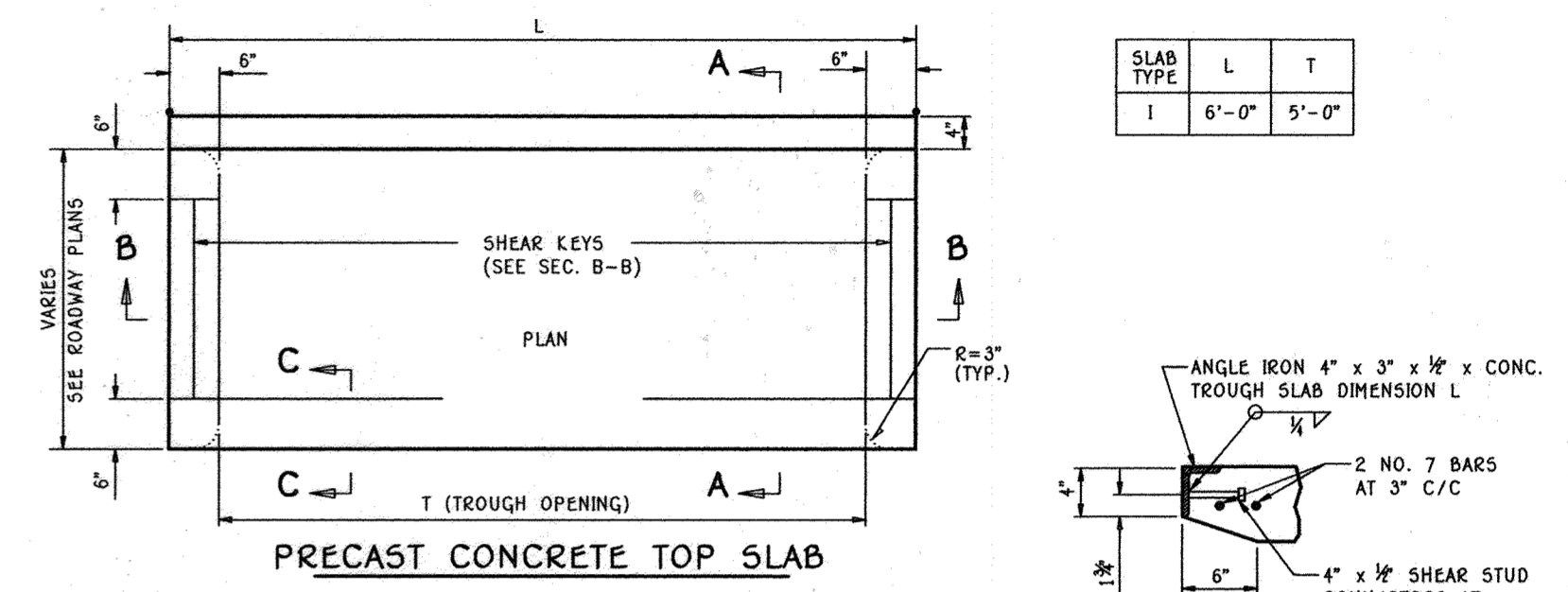
PROFILE  
SCALE HORZ. 1"=50'  
VERT. 1"=5'

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*Crane* 1/18/2019  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Nettelbladt* 3-20-19  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

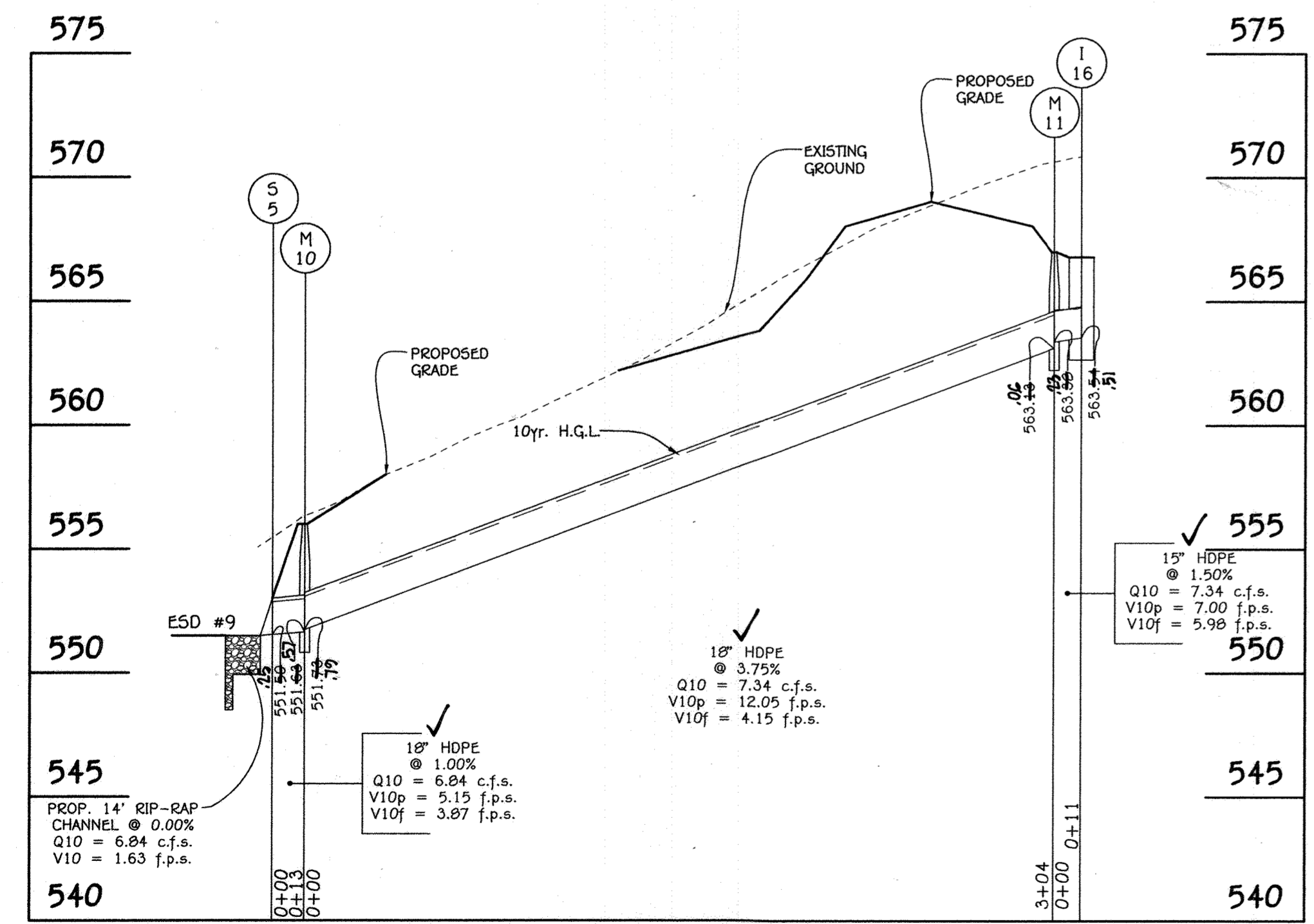
*Blanchard* 3-8-19  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

REVISIONS		
NO.	DESCRIPTION	DATE

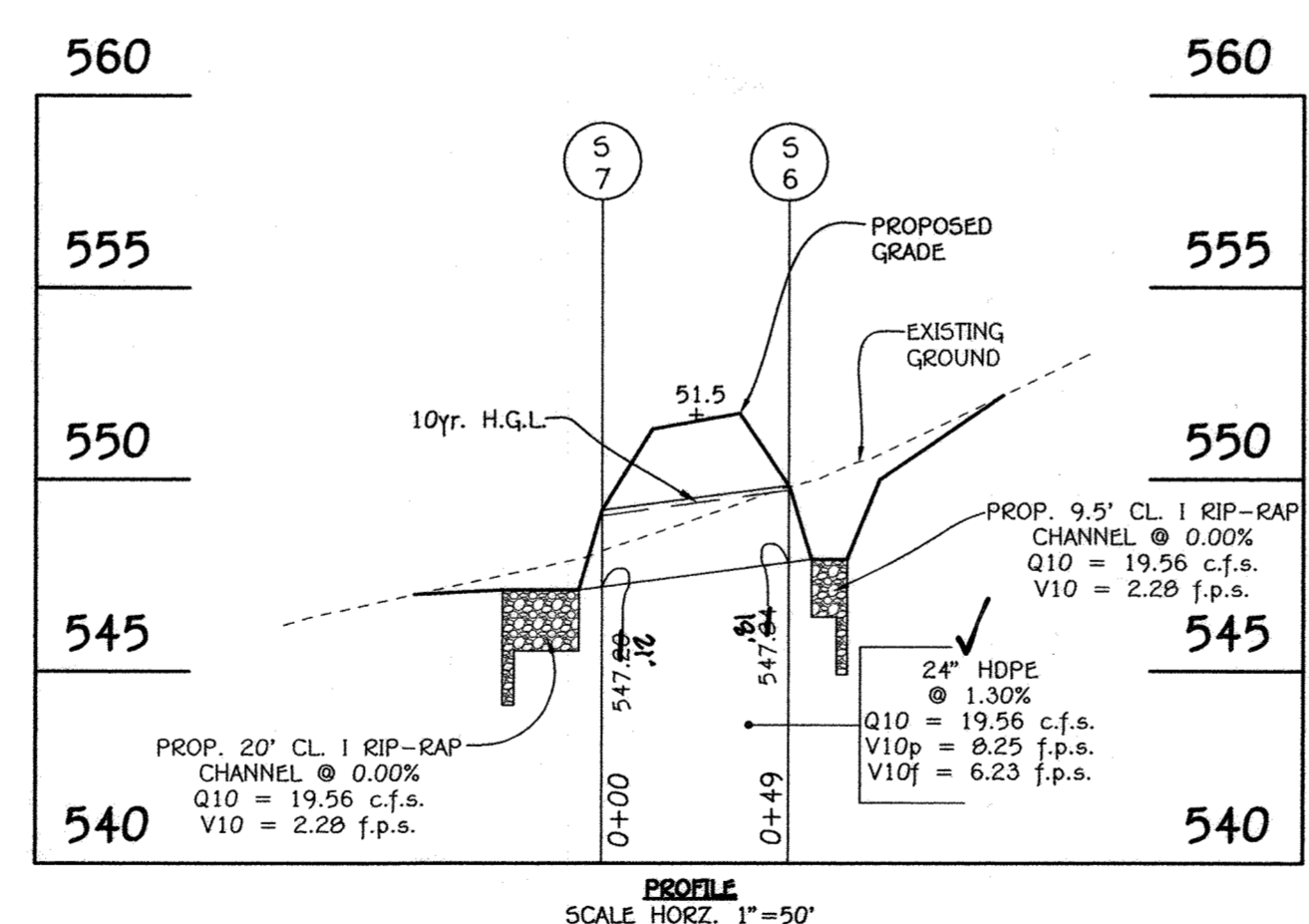


FLOW THRU INLET DETAIL  
(MD-374.6B)  
NO SCALE

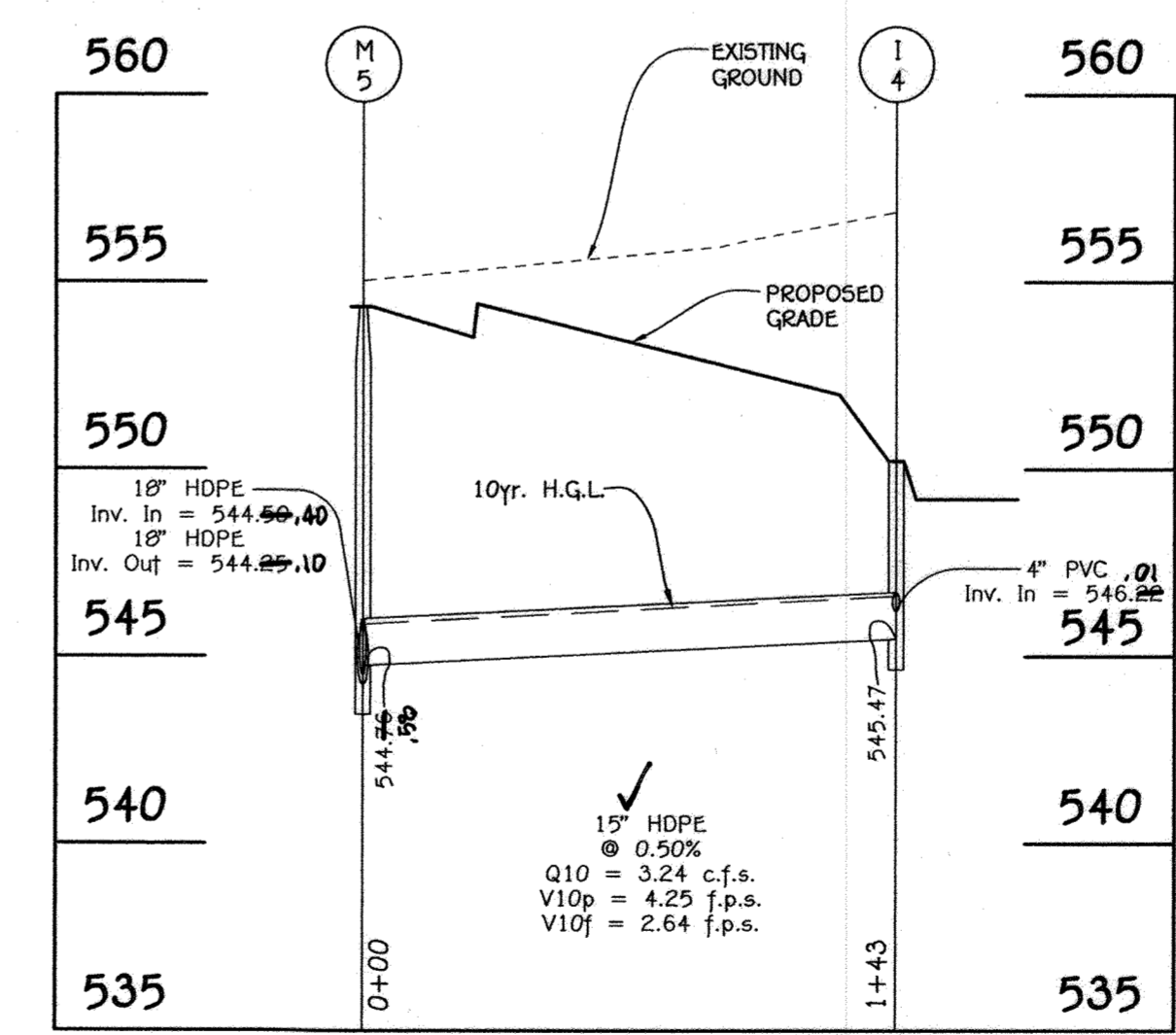
- NOTES:
- CONCRETE SHALL BE MIX # 6 (4500 PSI).
  - REINFORCEMENT STEEL SHALL MEET THE REQUIREMENTS OF ASTM A615, GRADE 60.
  - ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123.
  - FOR 6" CURB, REFER TO MD 374.55-01, SECTIONS C-C AND D-D.
  - EROSION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



PROFILE  
SCALE HORZ. 1"=50'  
VERT. 1"=5'



PROFILE  
SCALE HORZ. 1"=50'  
VERT. 1"=5'



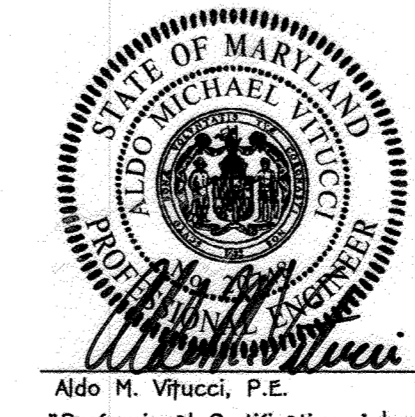
PROFILE  
SCALE HORZ. 1"=50'  
VERT. 1"=5'

**AS-BUILT CERTIFICATION**  
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this "AS BUILT" plan, approved plans and specifications.

*Michael V. Vitucci*  
Professional Engineer  
No. 20748  
Expiration Date 2-22-19

**OWNER:**  
KIMBERLY/HERITAGE, LLC  
3425 HIPSLEY MILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7900

**DEVELOPER:**  
HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7900



12/12/18  
Date

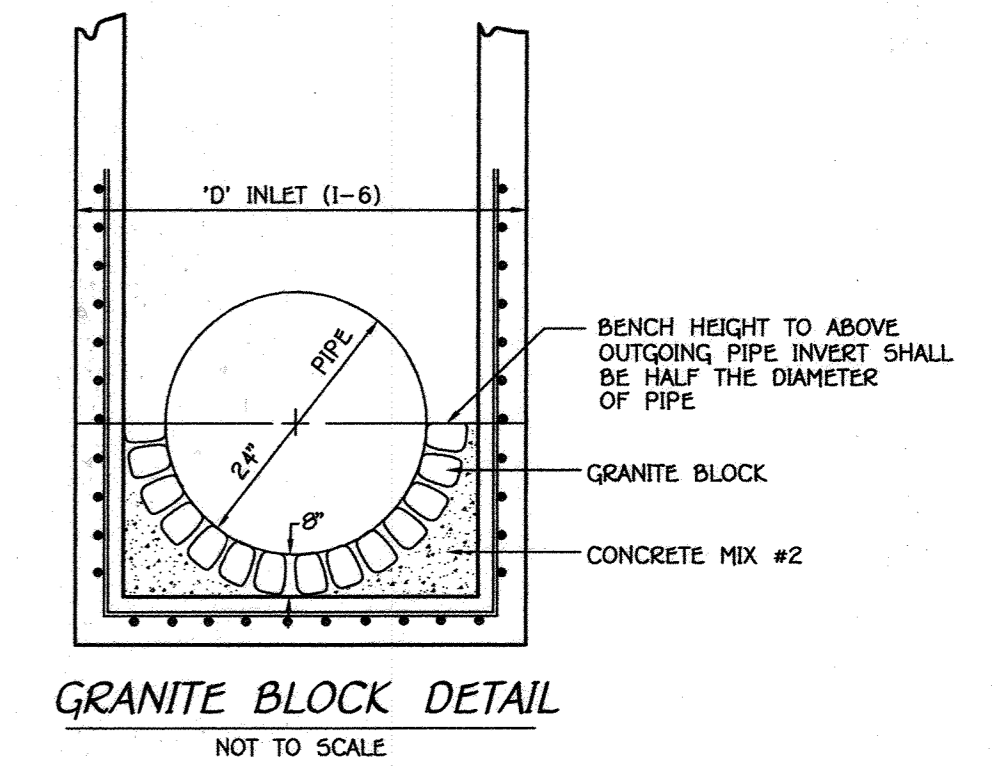
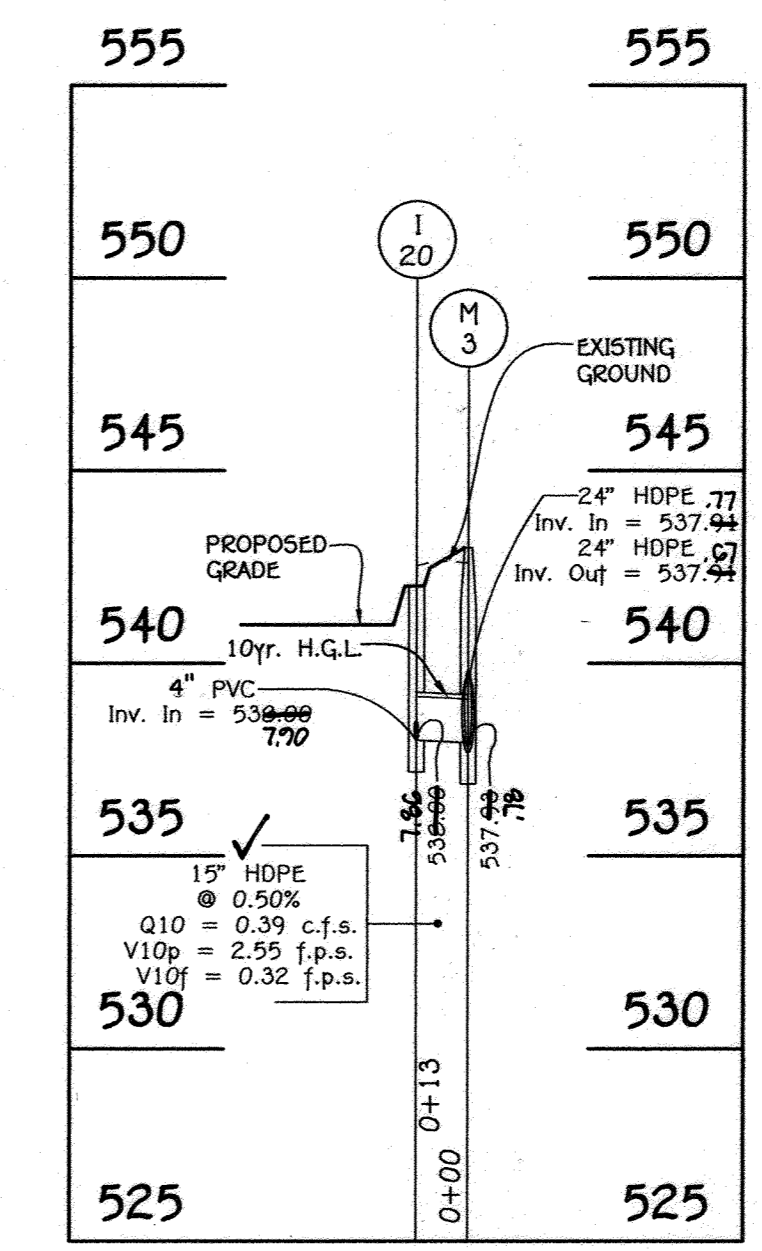
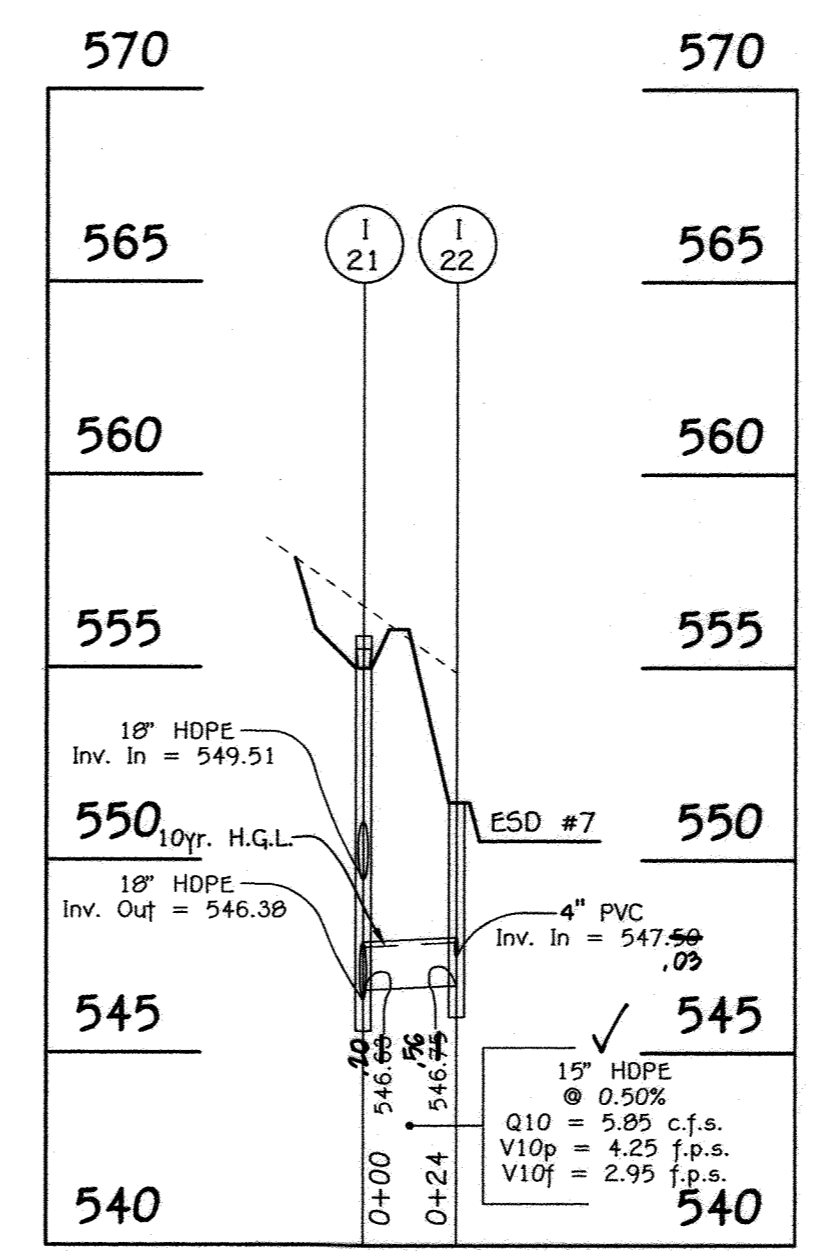
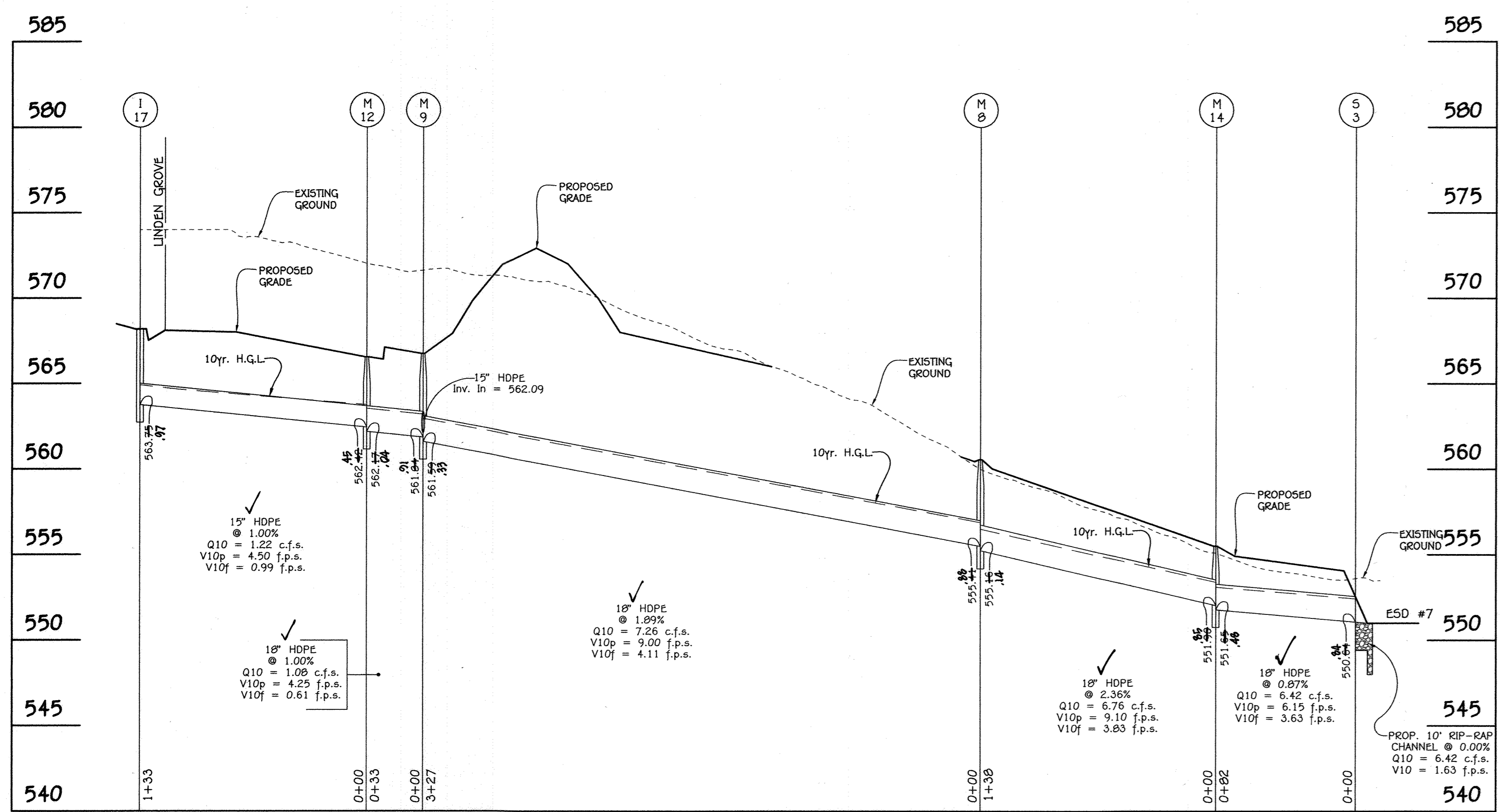
"Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-19."

**STORM DRAIN PROFILES  
LINDEN GROVE  
PHASE ONE**  
LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

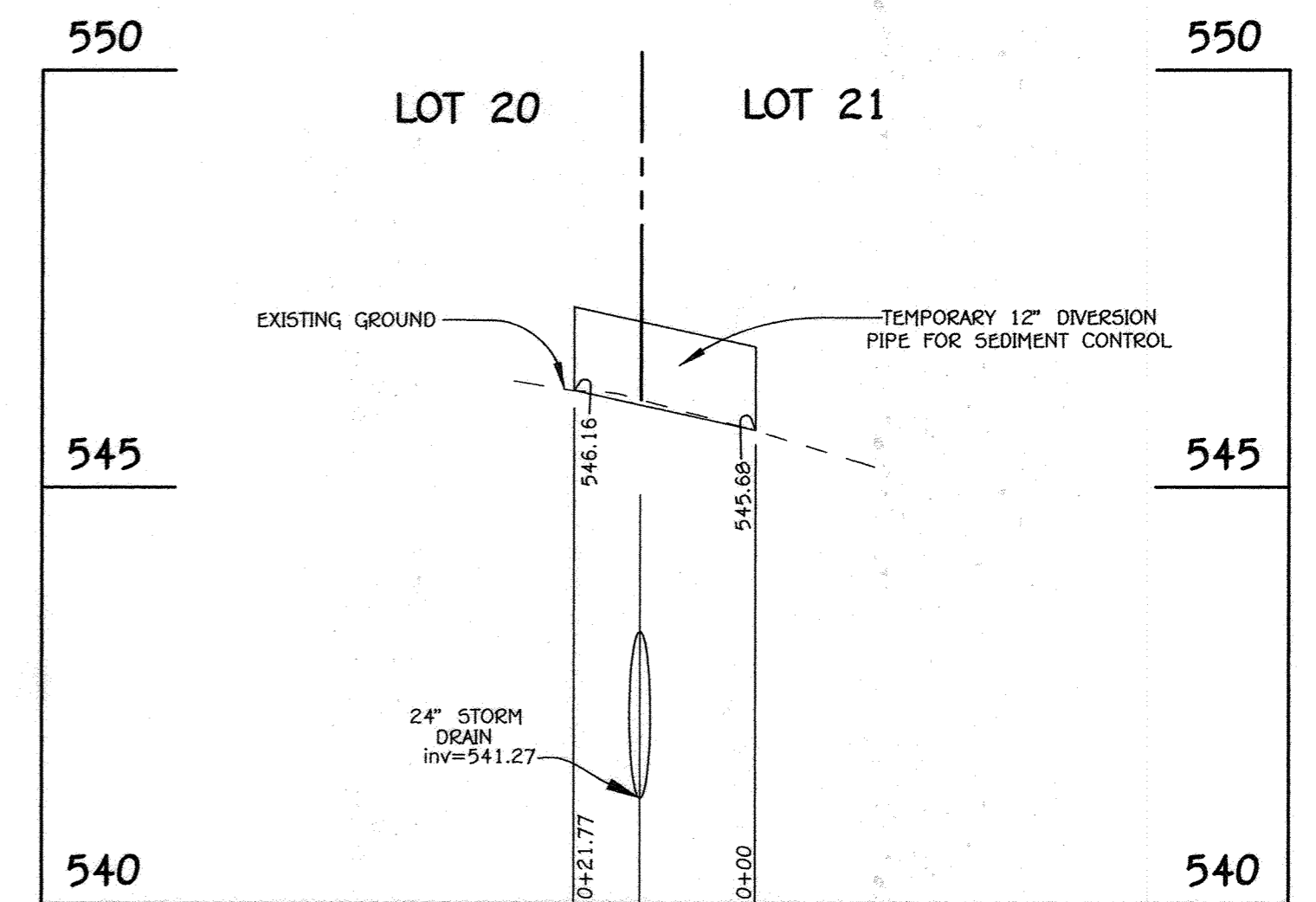
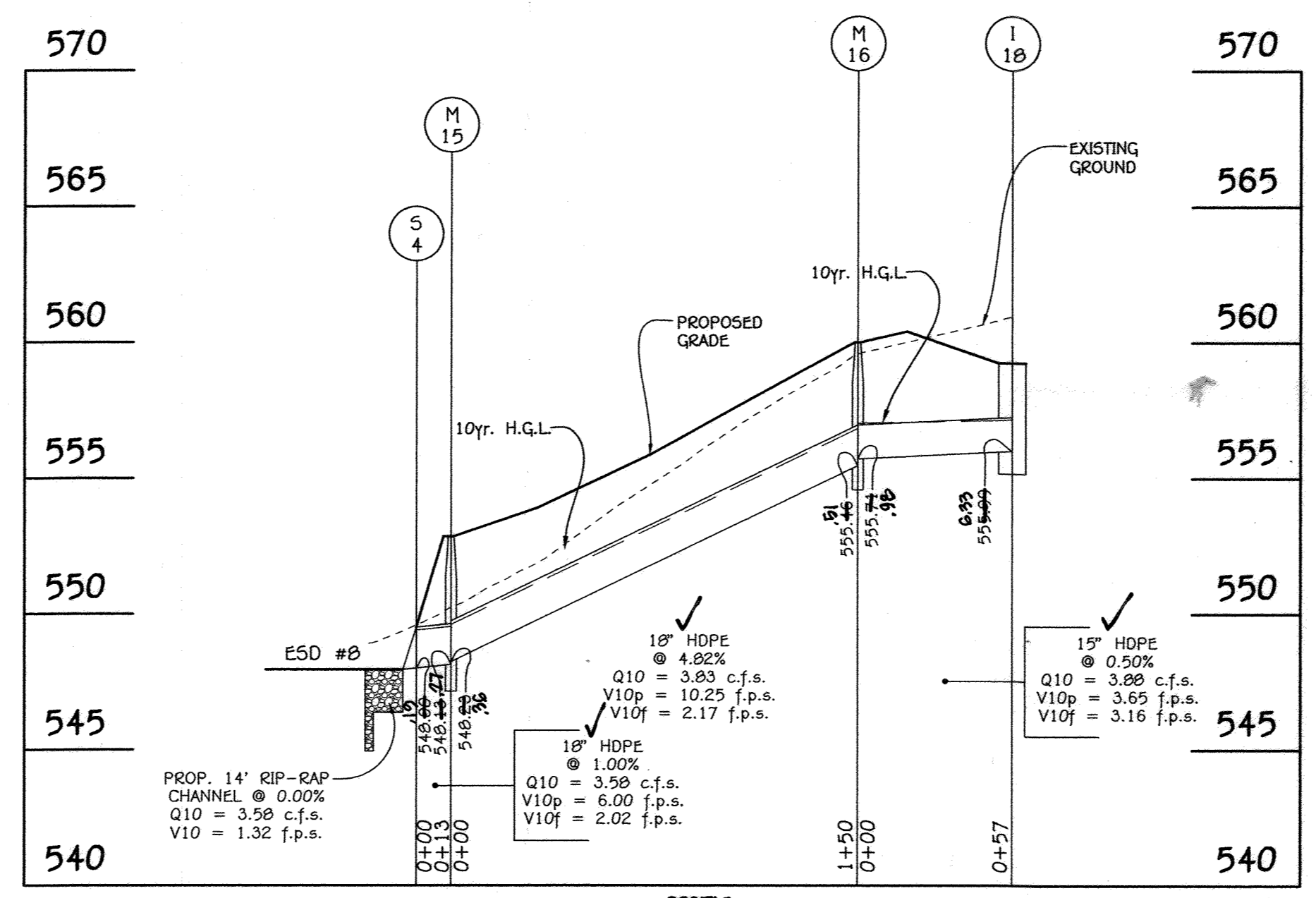
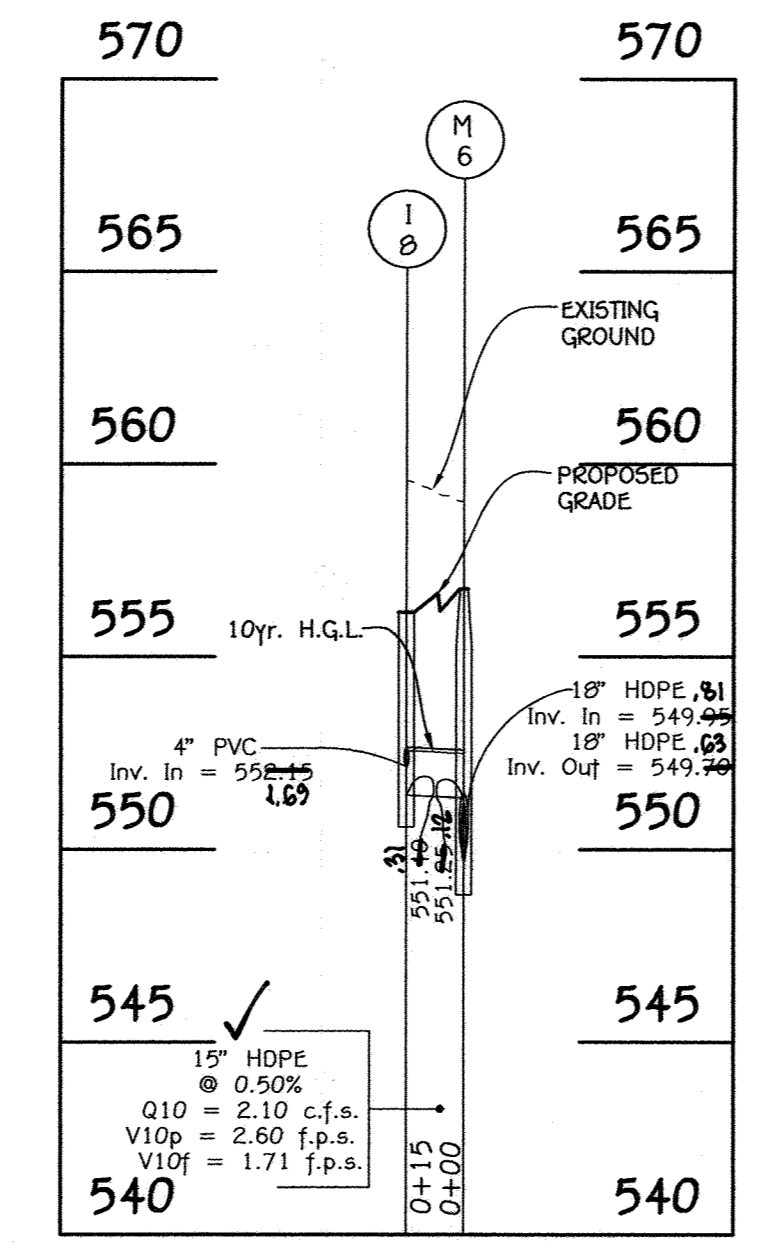
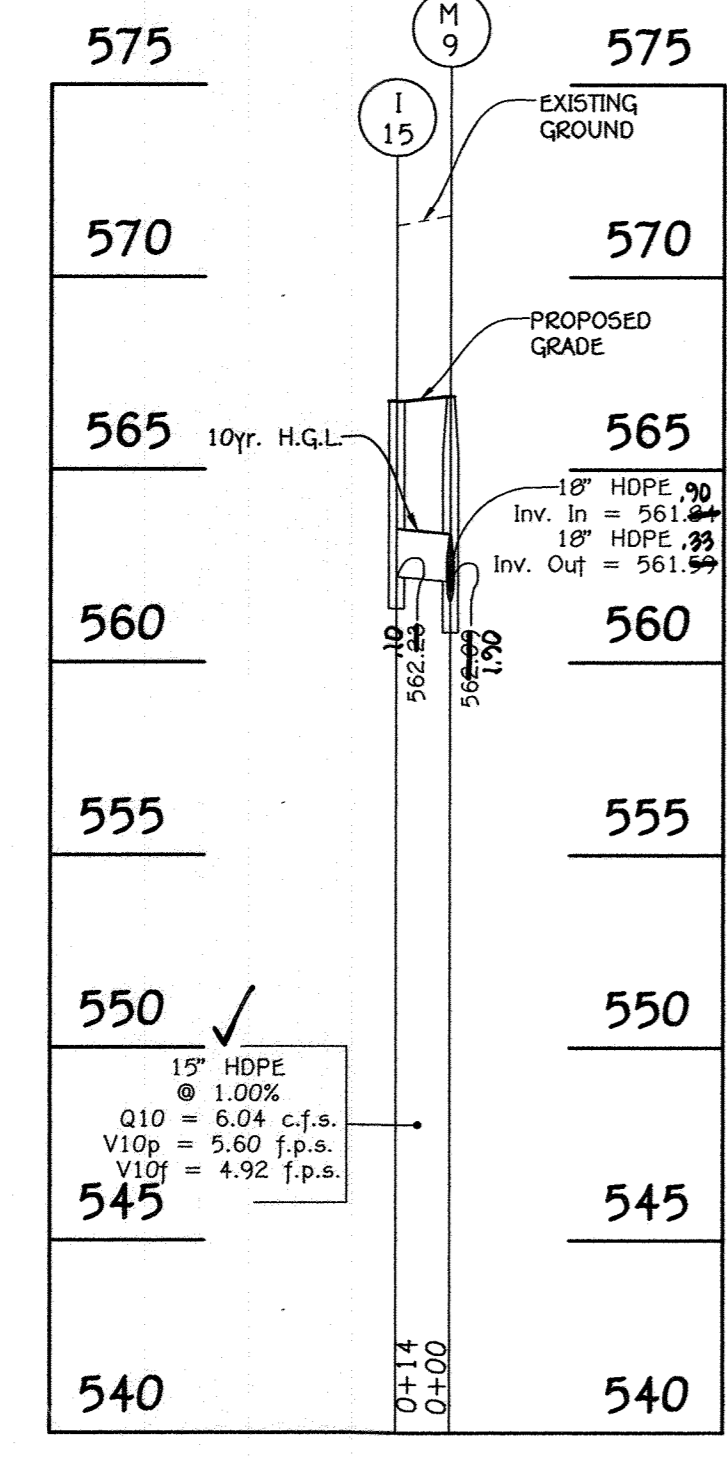
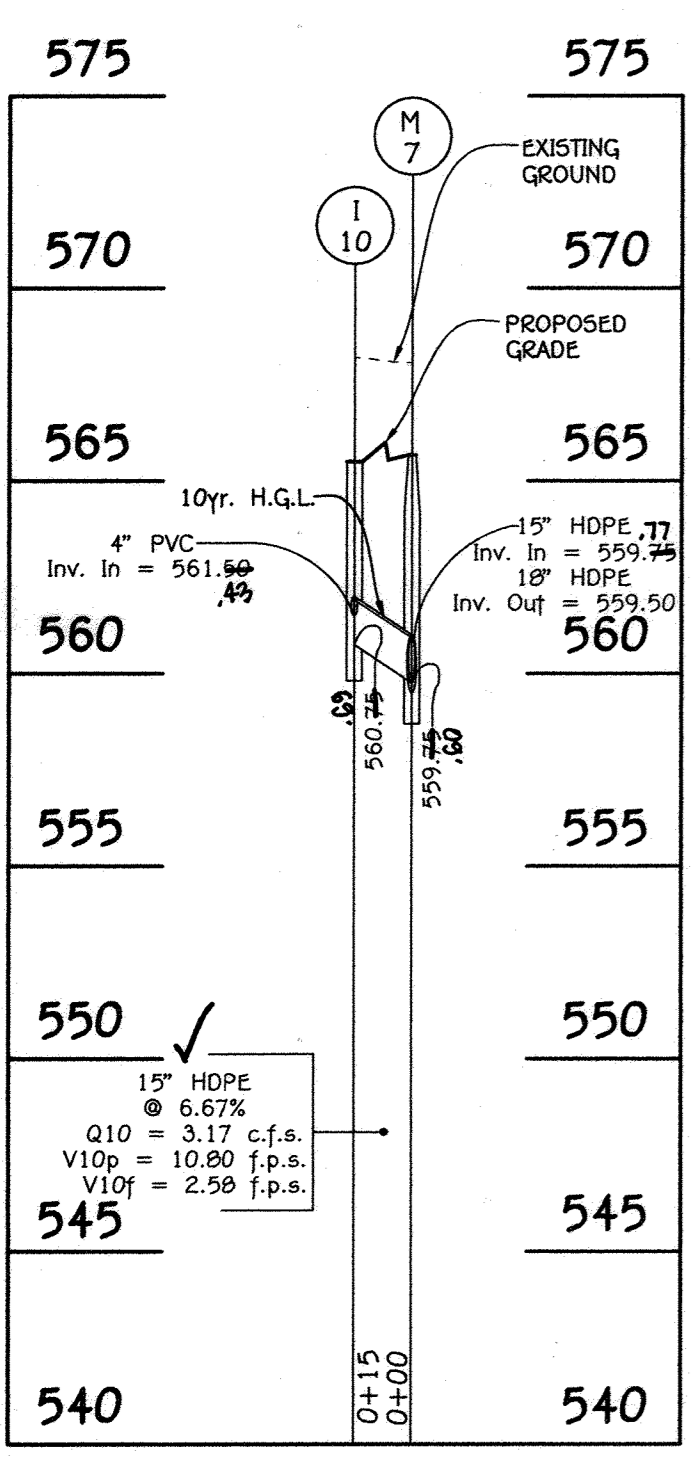
ZONED: RC-DEO  
TAX MAP No. B GRID No. 7 PARCEL No. 5  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 12, 2018  
SHEET 22 OF 35

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS Janice 1/18/2019 DATE  
 APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT Kat Stuchlik 3-20-19 DATE  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION Chris 3-8-19 DATE

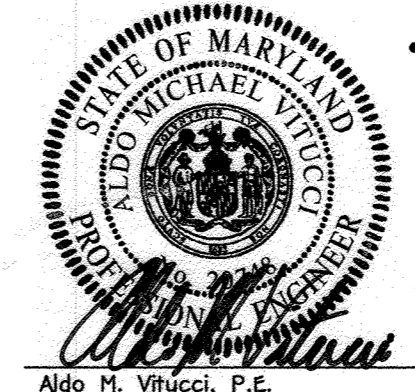
REVISIONS		
NO.	DESCRIPTION	DATE



PROFILE  
 SCALE HORZ. 1"=50'  
 VERT. 1"=5'



**AS-BUILT CERTIFICATION**  
 I hereby certify, by my hand, that the facilities shown on this plan were installed as shown on this AS-BUILT plan, as approved plans and specifications.



Aldo M. Vitucci, P.E. Date 12/12/18  
 "Professional Certification: 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. 20745, Expiration Date 2-22-19."

**STORM DRAIN PROFILES  
 LINDEN GROVE  
 PHASE ONE**  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
 ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 23 OF 35

APPROVED: DEPARTMENT OF PUBLIC WORKS	1/18/2019	
CHIEF, BUREAU OF HIGHWAYS	DATE	
APPROVED: DEPARTMENT OF PLANNING AND ZONING	3-20-19	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE	
APPROVED: CHIEF, DEVELOPMENT ENGINEERING DIVISION	3-8-19	
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE	
REVISIONS		
NO.	DATE	DESCRIPTION
1	12/12/18	Revise Ed From I-1 To 9-1 & Provide A Swale
7-10-10		

**FCE Planting Area # 4 - 1.02 acres**  
 Planting units required: 714 (357 whips)  
 Planting units provided: 714 (182 whips and 100 trees)

Qty	Species	Size	Spacing	Total FCA Units
50	Acer rubrum - Red maple	1" cal.	15' o.c.	50
50	Quercus alba - White oak	1" cal.	15' o.c.	50
100 Total 1" caliper trees (3.5 planting units per tree) = 350 Total FCA unit credit				
22	Acer Griseum - Paperbark maple	2-3" whip	11' o.c.	22
20	Acer Campyretes - Hedge maple	2-3" whip	11' o.c.	20
30	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.	30
25	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.	25
25	Prunus serotina - Black cherry	2-3" whip	11' o.c.	25
20	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.	20
20	Quercus alba - White oak	2-3" whip	11' o.c.	20
20	Viburnum prunifolium - Blackhaw	2-3" whip	11' o.c.	20
182 Total whip plantings (2 planting units per tree) = 364 Total FCA unit credit				
Total Unit Credit = (364 + 350) = 714				

1" CAL TREES = 200/ACRE (100 TREES/200 = 0.50 AC.)  
 WHIPS w/shelters = 350/ACRE = 350 x 0.52 AC = 182 WHIPS  
 3.5 Planting units = 1 - 1" Cal. Tree  
 2 Planting units = 1 Whip

\* GREEN ZONE APPROVED PLANTING  
 \*\* YELLOW ZONE APPROVED PLANTING

**SOILS LEGEND**

SOIL	NAME	CLASS
BvD	Brinklow channery loam, 15 to 25 percent slopes	B
GgA	Glenora loam, 0 to 3 percent slopes	B
GgB	Glenora loam, 3 to 8 percent slopes	B
GgC	Glenora loam, 8 to 15 percent slopes	B
GnA	Glenville silt loam, 0 to 3 percent slopes	C
GnB	Glenville silt loam, 3 to 8 percent slopes	C
GnB	Glenville-silt loam, 0 to 8 percent slopes	C
MAC	Manor loam, 0 to 15 percent slopes	B

**NOTES:**

- Hydric soils and/or contains hydric inclusions
- May contain hydric inclusions
- Generally only within 100-year floodplain areas

**Construction Period Protection Program**

**A. Forest Protection Techniques**  
 Soil Protection Area (SPSA) (See Note)  
 The soil protection bank, or called root zone, of a tree is that portion of the soil column where most of its roots are found. The majority of roots responsible for water and nutrient uptake are located just below the soil surface.  
 The length of disturbance (DSD) as depicted on this plan shows the proposed extent of construction activities. Eco-Science Professional, or another qualified professional designated by the developer, will locate the SPSA to ensure that the Critical Root Zone for the Forest Protection Area is determined in accordance with the Soil-Field Edge Determination Guidelines in Appendix B of the Forest Conservation Plan. A buffer of 10 feet shall be maintained between the SPSA and any proposed construction activity. A buffer of 10 feet shall be maintained between the SPSA and any proposed construction activity. A buffer of 10 feet shall be maintained between the SPSA and any proposed construction activity.

**B. Pre-Construction Meeting**  
 Upon initiation of site disturbance and installation of all number 3 pre-construction meeting will be held between the developer, contractor and appropriate agency representatives. The meeting will discuss the construction plan and the Forest Conservation Plan. The meeting will be held prior to the start of construction. The meeting will be held prior to the start of construction. The meeting will be held prior to the start of construction.

**C. Storage Facilities/Equipment Clearing**  
 All equipment storage, debris storage, equipment storage, and other materials shall be stored within the limits of the SPSA. The storage area shall be located within the limits of the SPSA. The storage area shall be located within the limits of the SPSA. The storage area shall be located within the limits of the SPSA.

**D. Sequence of Construction**  
 The following sequence represents the proposed schedule for construction of the proposed project. The construction start date for this project has not been determined. Initial project start date is indicated by the location of all necessary permits and approvals for the project. The items indicated in the Forest Conservation Plan will be installed upon commencement of the project.

**E. Construction Monitoring**  
 Eco-Science Professional, or another qualified professional designated by the developer, will monitor construction of the project to ensure that all activities are in compliance with the Forest Conservation Plan. The monitoring will include inspections to ensure that approved construction activities are being followed. The monitoring will include inspections to ensure that approved construction activities are being followed. The monitoring will include inspections to ensure that approved construction activities are being followed.

**F. Activities Permitted During Construction**  
 The Forest Conservation Plan will allow the following activities within forest resources during the construction phase of the project:  
 1. Routine maintenance (weeding, mowing, etc.)  
 2. These activities will not damage or negatively impact the forest resources on the property.

**G. Post-Construction Meeting**  
 Upon completion of construction, Eco-Science Professional, or another qualified professional designated by the developer, will meet with the developer to discuss the post-construction meeting. The meeting will discuss the post-construction meeting. The meeting will discuss the post-construction meeting. The meeting will discuss the post-construction meeting.

**Post-Construction Management Plan**  
 The post-construction management plan will address the maintenance of the Forest Conservation Plan. The developer will be responsible for implementation of the post-construction management plan.

**A. Signage**  
 Signage indicating the limits of the forest retention areas shall be installed.



**FCE Planting Area # 3 - 1.94 acres**  
 Planting units required: 1358 (679 whips)  
 Planting units provided: 1358 (679 whips)

Qty	Species	Size	Spacing	Total FCA Units
85	Acer rubrum - Red maple	2-3" whip	11' o.c.	85
84	Cercis canadensis - Red bud	2-3" whip	11' o.c.	84
80	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.	80
80	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.	80
80	Prunus serotina - Black cherry	2-3" whip	11' o.c.	80
90	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.	90
90	Quercus alba - White oak	2-3" whip	11' o.c.	90
90	Viburnum prunifolium - Blackhaw	2-3" whip	11' o.c.	90
679 Total whip plantings (2 planting units per tree) = 1358 Total FCA unit credit				
WHIPS w/shelters = 350/ACRE = 350 x 1.94 AC = 679 WHIPS				
2 Planting units = 1 Whip				

**FCE Planting Area # 6 - 0.42 acres**  
 Planting units required: 294 (147 whips)  
 Planting units provided: 294 (147 whips and 40 trees)

Qty	Species	Size	Spacing	Total FCA Units
20	Acer rubrum - Red maple	1" cal.	15' o.c.	20
20	Quercus alba - White oak	1" cal.	15' o.c.	20
40 Total 1" caliper trees (3.5 planting units per tree) = 140 Total FCA unit credit				
15	Acer Griseum - Paperbark maple	2-3" whip	11' o.c.	15
15	Acer Campyretes - Hedge maple	2-3" whip	11' o.c.	15
15	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.	15
15	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.	15
14	Prunus serotina - Black cherry	2-3" whip	11' o.c.	14
13	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.	13
77 Total whip plantings (2 planting units per tree) = 154 Total FCA unit credit				
Total Unit Credit = (154 + 140) = 294				

1" CAL TREES = 200/ACRE (100 TREES/200 = 0.50 AC.)  
 WHIPS w/shelters = 350/ACRE = 350 x 0.22 AC = 77 WHIPS  
 3.5 Planting units = 1 - 1" Cal. Tree  
 2 Planting units = 1 Whip

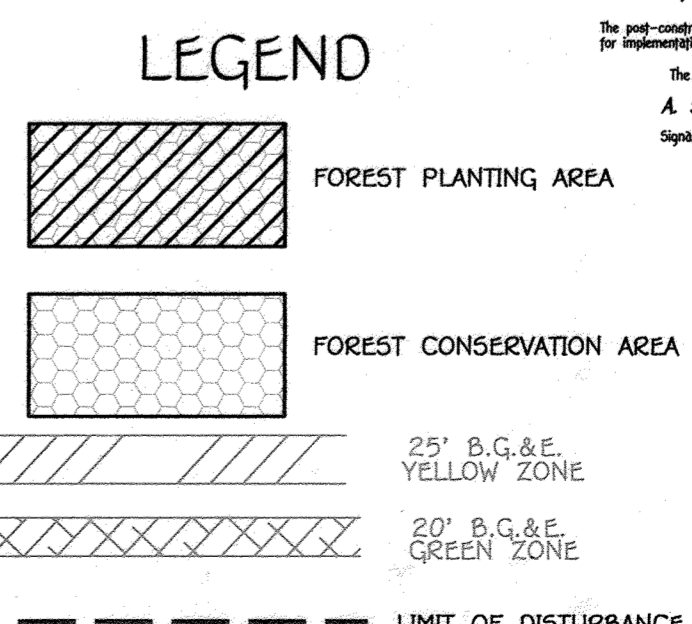
\* GREEN ZONE APPROVED PLANTING  
 \*\* YELLOW ZONE APPROVED PLANTING

**FOREST STAND ANALYSIS TABLE**

KEY	TYPE OF COMMUNITY	AREA	SOIL INFORMATION			EXISTING VEGETATION (Type and approx. %)	STAND CHARACTERISTICS		FOREST AREA IN SENSITIVE ENVIRONMENTS		
			SOIL TYPE	TYPICAL FOREST COVER	WOODLAND SUITABILITY INDEX		HABITAT VALUE	SIZE AVG. DIAM.		AGE	GENERAL CONDITIONS
A	Successional	1.1 Ac	GmB	Mixed Hardwoods	80-90	Good	Acer Saccharinum 25% Acer Rubrum 20% Morus Alba 15% Prunus Serotina 20%	6-14	30-40	Fair high invasive cover	1.16 ± buffers
B	Oak/Poplar	3.2 Ac	Brd Co	Oak/Poplar water tolerant Hardwoods	68-90	Good	Liriodendron Tulipifera 70% Acer Rubrum 10% Prunus Serotina 10% Quercus Alba 5% Nyssa Sylvatica 10%	8-20	40-60	Good	3.14 ± buffers and slopes

**AS-BUILT CERTIFICATION**  
 Note: There is no AS-BUILT information provided on this sheet.

*[Signature]*  
 Date: 12/12/18



**NOTE:**  
 SEE RECORD PLATS (F-18-092) FOR METES, BOUNDS, BEARINGS AND DISTANCE INFORMATION FOR THE PROPOSED FOREST CONSERVATION EASEMENTS.

**FOREST CONSERVATION PLAN  
 LINDEN GROVE  
 PHASE ONE**  
 LOTS 1 THRU 23, NON-BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 24 OF 35

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CONTINENTAL SQUARE OFFICE PARK - 10272 BALDWIN NATIONAL FLE  
 ELLOTT CITY, MARYLAND 21042  
 (410) 441-2899

**Eco-Science Professionals, Inc.**  
 CONSULTING ECOLOGISTS

MD DNR Qualified Professional  
 USACE Wetland Delineator  
 Certification # WDCP93DM06100448  
*[Signature]*  
 JOHN P. CANOLES

**OWNER:**  
 KIMBERTHY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900

Aldo M. Viscusi, P.E.  
 Date: 12/12/18  
 \*Professional Certification: 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. 20748, Expiration Date 2-22-19.

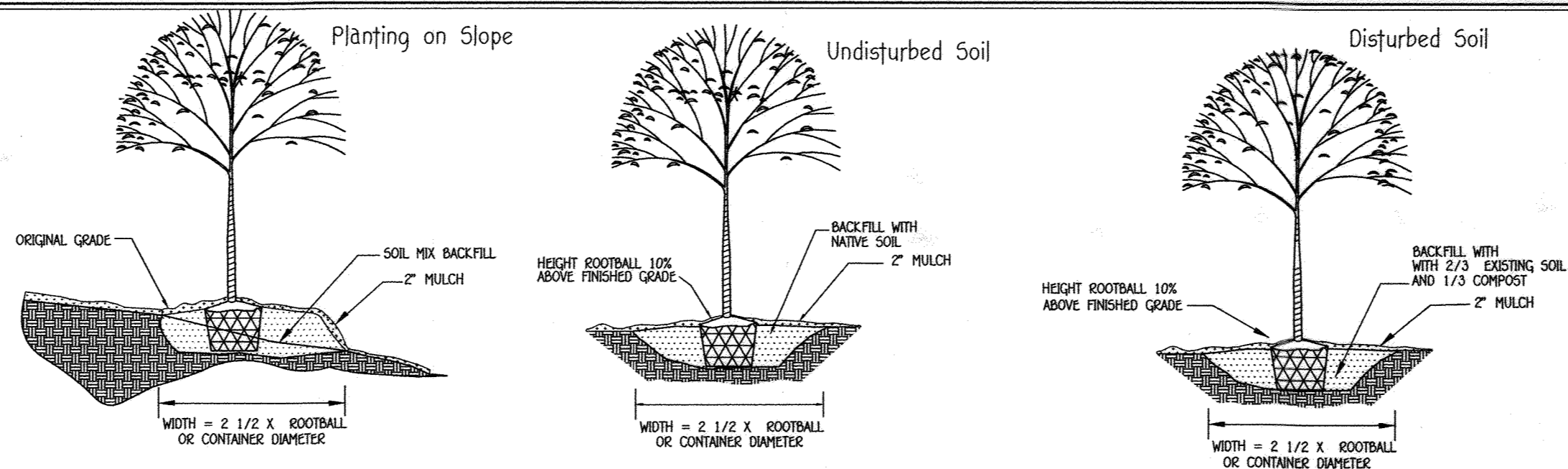


APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS *[Signature]* 1/18/2019 DATE  
 APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* 3-20-19 DATE  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 3-8-19 DATE

**PATTERN SPACING DIAGRAM**



\* - whip w/shelter 11' on center spacing  
 # - 1" caliper tree 15' on center spacing  
 Species shall be randomly interspersed, rows should be planting along contours



**Planting Notes:**

Planting units defined by the spacing requirements established in the FCA Manual. One plant unit is defined as 1 seedling or whip without shelter. The Manual states that 700 seedlings/whips without shelters are required per acre, or 350 whips w/shelters, or 200 1" caliper trees, or 100 2" caliper trees. By conversion it has been determined that a seedling or whip without shelter = 1 unit, whip with shelter = 2 units, 1" caliper tree = 3.5 units and 2" caliper tree = 7 units. The use of plant units simplifies the plant density calculations when mixing stock size.  
 \*\* - These species should not be planted within the wetland limits.  
 1" caliper trees should be staggered along the outer perimeter of the planting area to serve as demarcation of the boundary. The trees should be no closer than 15 foot spacing. Whip spacing to be placed on 11 foot centers, shelters will be required per Howard County policy.  
 Mulch/rose/heavy brush removal/control may be required prior to installation of planting.  
 All whips are required to be installed with tree shelters per Howard County FCA requirements.

**FCE Planting Area # 5 - 5.97 acres**

Planting units required: 4190 (2090 whips)  
 Planting units provided: 4190 (1740 whips and 200 trees)

Qty	Species	Size	Spacing	Total FCA Units
100	Acer rubrum - Red maple	1" cal.	15' o.c.	350
100	Quercus alba - White oak	1" cal.	15' o.c.	350
200	Total 1" caliper trees (3.5 planting units per tree) =			700 Total FCA unit credit
50	Acer crispum - Paperbark maple	2-3" whip	11' o.c.	175
50	Acer campestre - Hedge maple	2-3" whip	11' o.c.	175
200	Acer rubrum - Red maple	2-3" whip	11' o.c.	700
220	Cercis canadensis - Red bud	2-3" whip	11' o.c.	770
220	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.	770
200	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.	700
200	Prunus serotina - Black cherry	2-3" whip	11' o.c.	700
200	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.	700
200	Quercus alba - White oak	2-3" whip	11' o.c.	700
200	Viburnum prunifolium - Blackhaw	2-3" whip	11' o.c.	700
1740	Total whip plantings (2 planting units per tree) =			3480 Total FCA unit credit
	Total Unit Credit			(3480 + 700) = 4180

1" CAL TREES = 200/ACRE (200 TREES/200 = 1.00 AC.)  
 WHIPS w/shelters = 350/ACRE = 350 x 4.97 AC. = 1740 WHIPS  
 3.5 Planting units = 1 - 1" cal. tree  
 2 Planting units = 1 whip

\* - GREEN ZONE APPROVED PLANTING  
 \*\* - YELLOW ZONE APPROVED PLANTING

**FOREST CONSERVATION WORKSHEET**

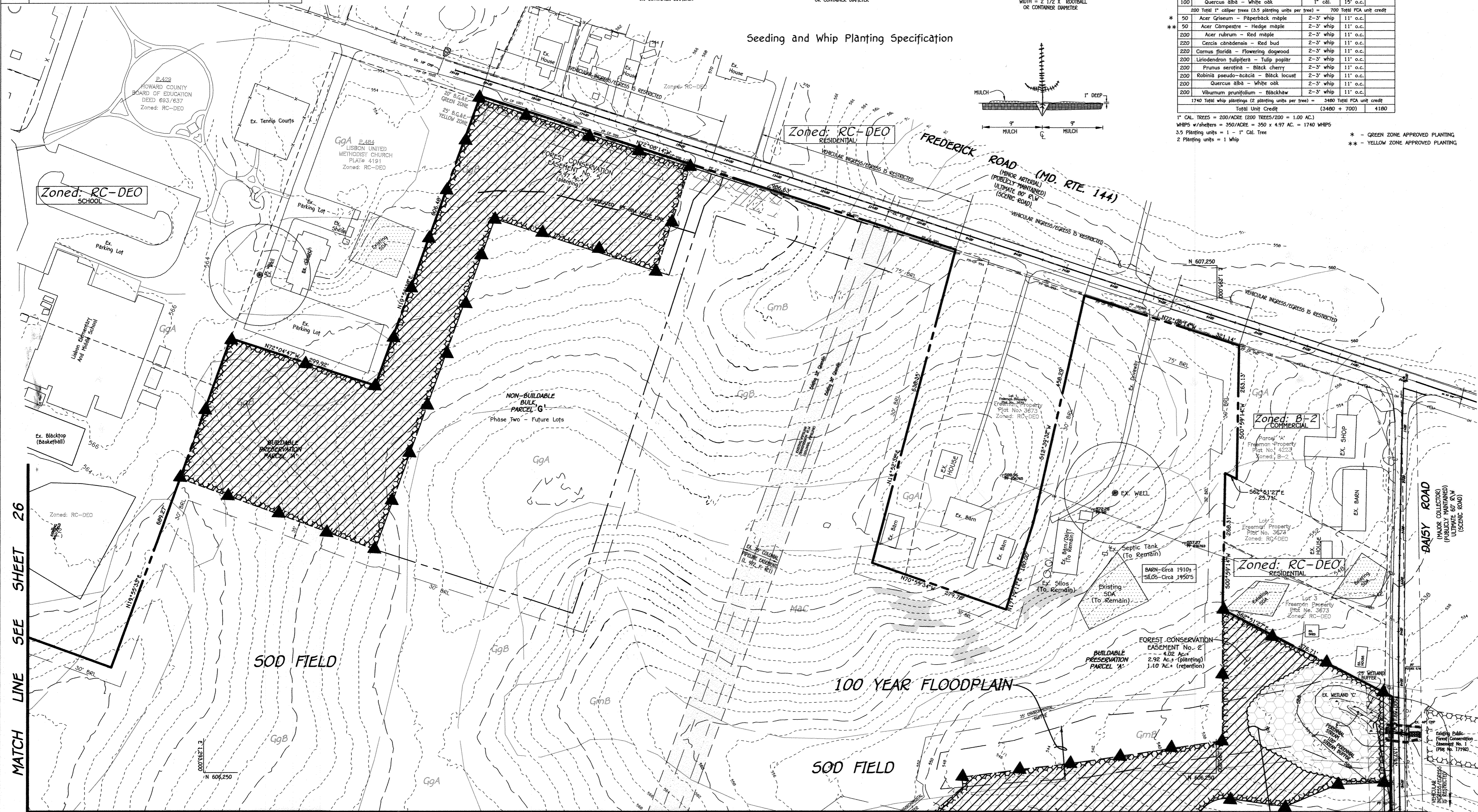
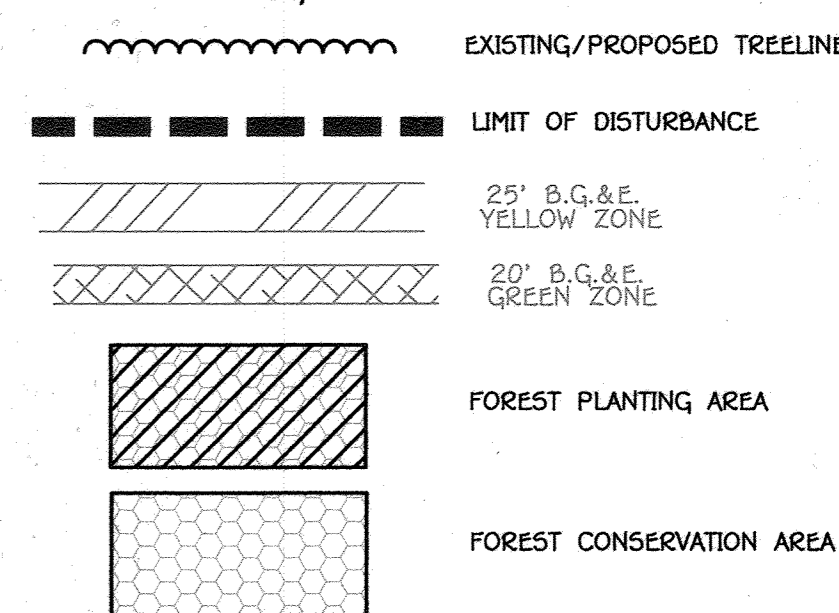
NET TRACT AREA	ACRES
A. TOTAL TRACT AREA	176.60
B. DEDUCTIONS: FLOODPLAIN AREA RESTRICTED BY LOCAL OR PROGRAM (FLOODPLAIN AREA)	6.20
C. NET TRACT AREA - NET TRACT AREA = TOTAL TRACT (A) - DEDUCTIONS (B)	170.40
C.1. PARSABLE AREA - (100.25 ac. outside floodplain)	100.25
LAND USE CATEGORY: MEDIUM DENSITY RESIDENTIAL	
D. AFFORESTATION THRESHOLD (NET TRACT AREA (C) x 20%)	34.08 ACRES REPAIRING
E. CONSERVATION THRESHOLD (NET TRACT AREA (C) x 25%)	42.60 ACRES REPAIRING
F. EXISTING FOREST COVER	
G. AREA OF FOREST ABOVE CONSERVATION THRESHOLD	4.30
H. IF THE EXISTING FOREST COVER (F) IS GREATER THAN THE CONSERVATION THRESHOLD (E), THEN G = F - E. OTHERWISE G = 0.	0
I. FOREST COVERING PRESETTLEMENT WITHOUT HITTING	
J. EXISTING FOREST COVER (F) - BREAK-EVEN POINT (H)	0
K. BREAK-EVEN POINT	4.30
L. BREAK-EVEN POINT (AMOUNT OF FOREST THAT MUST BE RETAINED SO THAT NO HITTING IS REQUIRED)	
M. IF THE TOTAL AREA OF FOREST TO BE RETAINED (K) IS GREATER THAN 0, THEN H = 0.2 x K. AREA OF FOREST ABOVE CONSERVATION THRESHOLD (G) + THE CONSERVATION THRESHOLD (E).	
N. IF THE AREA OF FOREST ABOVE CONSERVATION THRESHOLD (G) IS EQUAL TO 0, THEN H = EXISTING FOREST COVER (F)	
O. FOREST COVERING PRESETTLEMENT WITHOUT HITTING	
P. EXISTING FOREST COVER (F) - BREAK-EVEN POINT (H)	0
PROPOSED FOREST CLEARING	
Q. TOTAL AREA OF FOREST TO BE CLEARED (FOREST OUTSIDE EASEMENT DUE TO R/W DEDICATION)	0.06
R. TOTAL AREA OF FOREST TO BE RETAINED	4.30
S. EXISTING FOREST COVER (F) - FOREST TO BE CLEARED (Q)	4.24
T. PLANTING REQUIREMENTS	
U. IF THE TOTAL AREA OF FOREST TO BE RETAINED (R) IS AT OR ABOVE THE BREAK-EVEN POINT (H), NO PLANTING IS REQUIRED, AND NO FURTHER CALCULATIONS ARE NECESSARY (L = 0, H = 0, M = 0, P = 0, Q = 0, R = 0).	
V. OTHERWISE, CALCULATE THE PLANTING REQUIREMENTS AS FOLLOWS:	
W. REAFFORESTATION FOR CLEARING ABOVE THE CONSERVATION THRESHOLD	
X. (1) IF THE TOTAL AREA OF FOREST TO BE RETAINED (R) IS GREATER THAN THE CONSERVATION THRESHOLD (E), THEN L = THE AREA OF FOREST TO BE CLEARED (Q) x 0.25.	
Y. (2) IF THE FOREST TO BE RETAINED (R) IS LESS THAN OR EQUAL TO THE CONSERVATION THRESHOLD (E), THEN L = 0.	
Z. (3) IF EXISTING FOREST COVER (F) IS LESS THAN OR EQUAL TO THE CONSERVATION THRESHOLD (E), THEN H = 2.0 x FOREST TO BE CLEARED (Q)	
AA. REAFFORESTATION FOR CLEARING BELOW THE CONSERVATION THRESHOLD	
AB. (1) IF EXISTING FOREST COVER (F) IS GREATER THAN THE CONSERVATION THRESHOLD (E) AND THE FOREST TO BE RETAINED (R) IS LESS THAN OR EQUAL TO THE CONSERVATION THRESHOLD (E), THEN H = 2.0 x (CONSERVATION THRESHOLD (E) - FOREST TO BE RETAINED (R))	
AC. (2) IF EXISTING FOREST COVER (F) IS LESS THAN OR EQUAL TO THE CONSERVATION THRESHOLD (E), THEN H = 2.0 x FOREST TO BE CLEARED (Q)	
AD. REAFFORESTATION FOR CLEARING ABOVE THE CONSERVATION THRESHOLD	
AE. IF THE AREA OF FOREST TO BE RETAINED (R) IS GREATER THAN THE CONSERVATION THRESHOLD (E), THEN H = E - R. OTHERWISE H = 0	
AF. TOTAL REAFFORESTATION REQUIRED R = L + H - N	
AG. TOTAL AFFORESTATION REQUIRED	
AH. IF EXISTING FOREST COVER (F) IS LESS THAN THE AFFORESTATION THRESHOLD (E), THEN Q = AFFORESTATION THRESHOLD (E) - EXISTING FOREST COVER (F)	12.27
AI. TOTAL PLANTING REQUIREMENT R = P + Q	12.27

**FCE Planting Area # 2 - 2.92 acres**

Planting units required: 2044 (1022 whips)  
 Planting units provided: 2044 (200 trees & 672 whips)

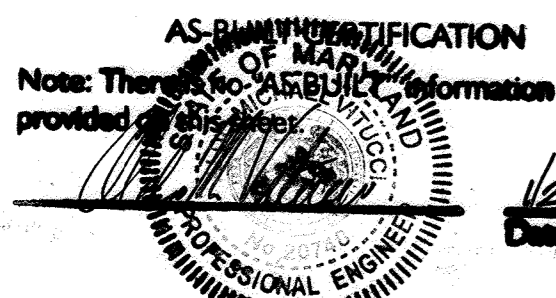
Qty	Species	Size	Spacing	Total FCA Units
100	Acer rubrum - Red maple	1" cal.	15' o.c.	350
100	Quercus alba - White oak	1" cal.	15' o.c.	350
200	Total 1" caliper trees (3.5 planting units per tree) =			700 Total FCA unit credit
80	Acer rubrum - Red maple	2-3" whip	11' o.c.	280
80	Cercis canadensis - Red bud	2-3" whip	11' o.c.	280
96	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.	336
96	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.	336
96	Prunus serotina - Black cherry	2-3" whip	11' o.c.	336
80	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.	280
80	Quercus alba - White oak	2-3" whip	11' o.c.	280
80	Viburnum prunifolium - Blackhaw	2-3" whip	11' o.c.	280
672	Total whip plantings (2 planting units per tree) =			1344 Total FCA unit credit
	Total Unit Credit			(1344 + 700) = 2044

**LEGEND**



MATCH LINE SEE SHEET 26

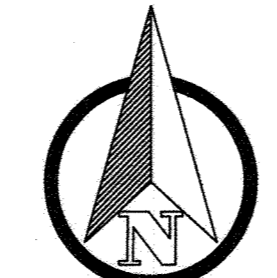
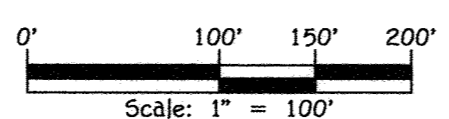
MATCH LINE SEE SHEET 24



**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 10222 MALTHOUSE NATIONAL PLACE  
 ELLETTT CITY, MARYLAND 21042  
 (410) 461-2885

**Eco-Science Professionals, Inc.**  
 CONSULTING ECOLOGISTS

MD DNE Qualified Professional  
 USACE Wetland Delimitator  
 Certification # WD0934006100448  
*[Signature]* 12/12/18  
 JOHN P. CANOLES



**NOTE:**  
 SEE RECORD PLATS (F-18-092) FOR METES, BOUNDS, BEARINGS AND DISTANCE INFORMATION FOR THE PROPOSED FOREST CONSERVATION EASEMENTS.



**APRO H. VITUCO, P.E.**  
 12/12/18  
 "Professional Certification: 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. 20748, Expiration Date 2-22-19."

**OWNER:**  
 KIMBERLY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900

**FOREST STAND A (1.1 AC.)**  
**WETLAND SYSTEM C**

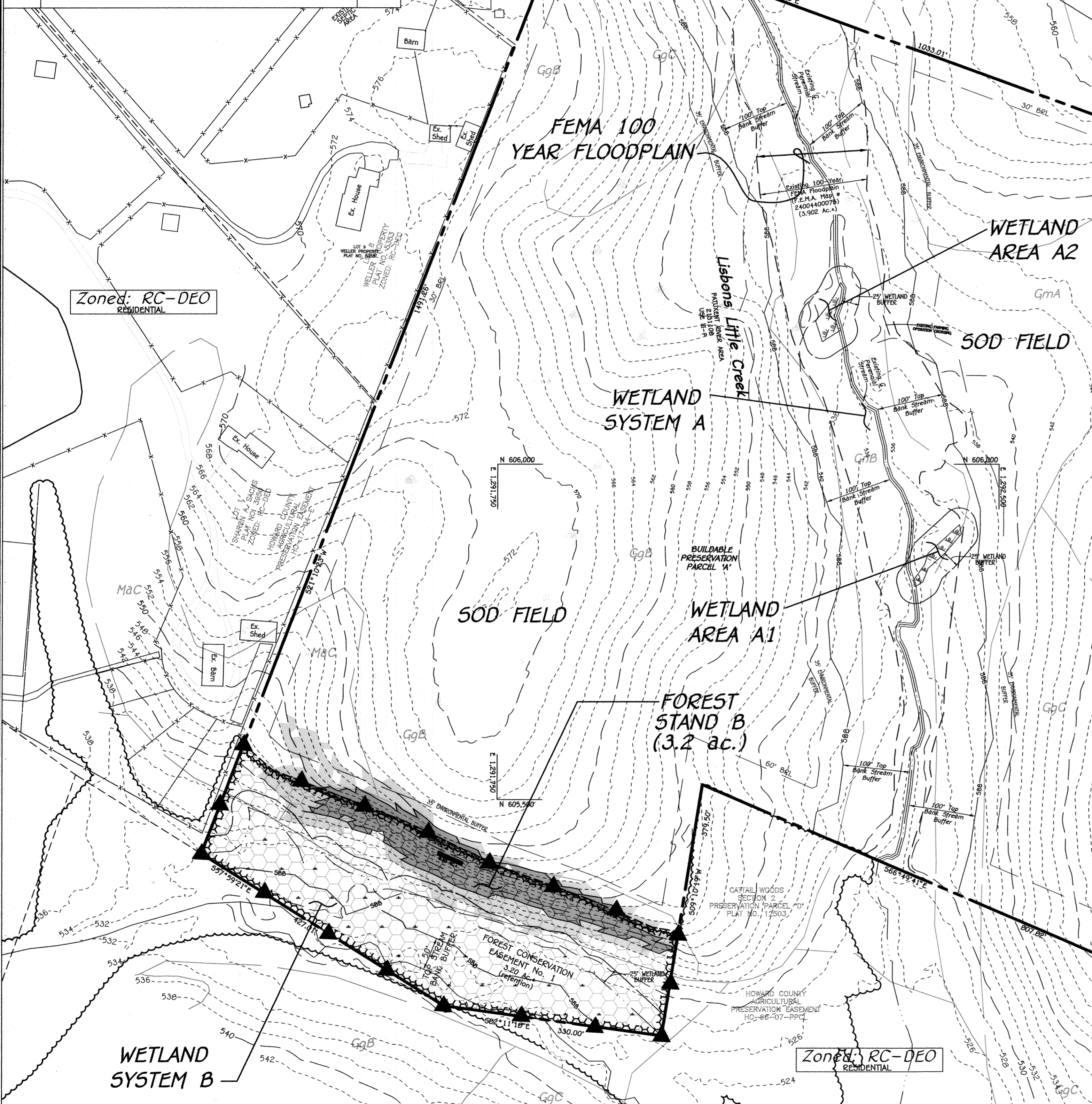
**FOREST CONSERVATION PLAN LINDEN GROVE PHASE ONE**  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
 ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 25 OF 35

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-18-092

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

1/18/2019 DATE  
 3-20-19 DATE  
 3-8-19 DATE

NO.	DATE	DESCRIPTION



**FOREST CONSERVATION EASEMENT**

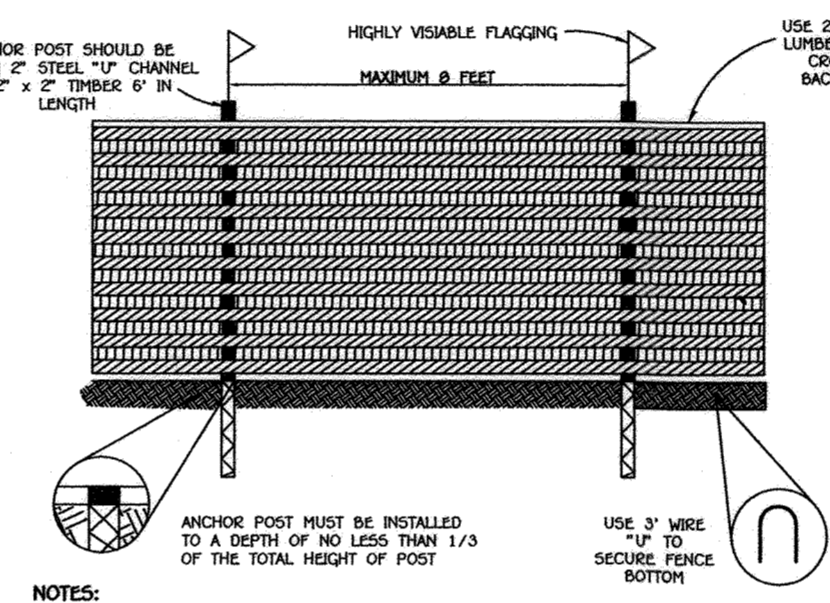
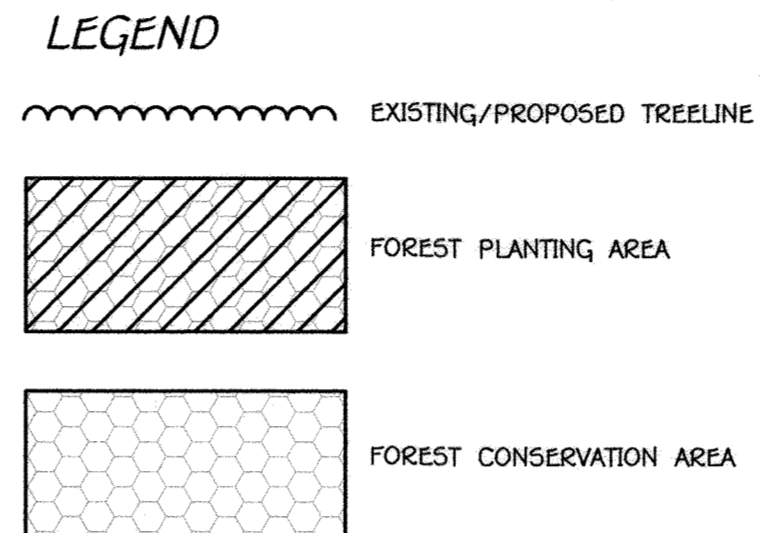
UNAUTHORIZED DISTURBANCE OF VEGETATION IS PROHIBITED. VIOLATORS SUBJECT TO PENALTIES UNDER THE HOWARD COUNTY FOREST CONSERVATION ACT OF 1991.

TREES FOR YOUR FUTURE

11" MINIMUM

15" MINIMUM

**ON-SITE SIGNAGE**  
 SIGNS SHALL BE IN PLACE FOR PERPETUITY



- NOTES:**
- FOREST PROTECTION DEVICE ONLY
  - RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
  - BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
  - ROOT DAMAGE SHOULD BE MONITORED.
  - PROTECTIVE SIGNAGE MAY ALSO BE USED.
  - DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

**BLAZE ORANGE PLASTIC MESH TREE PROTECTION DETAIL**  
 NOT TO SCALE

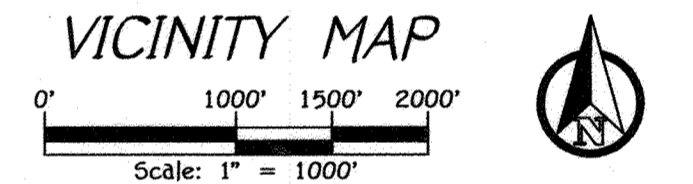
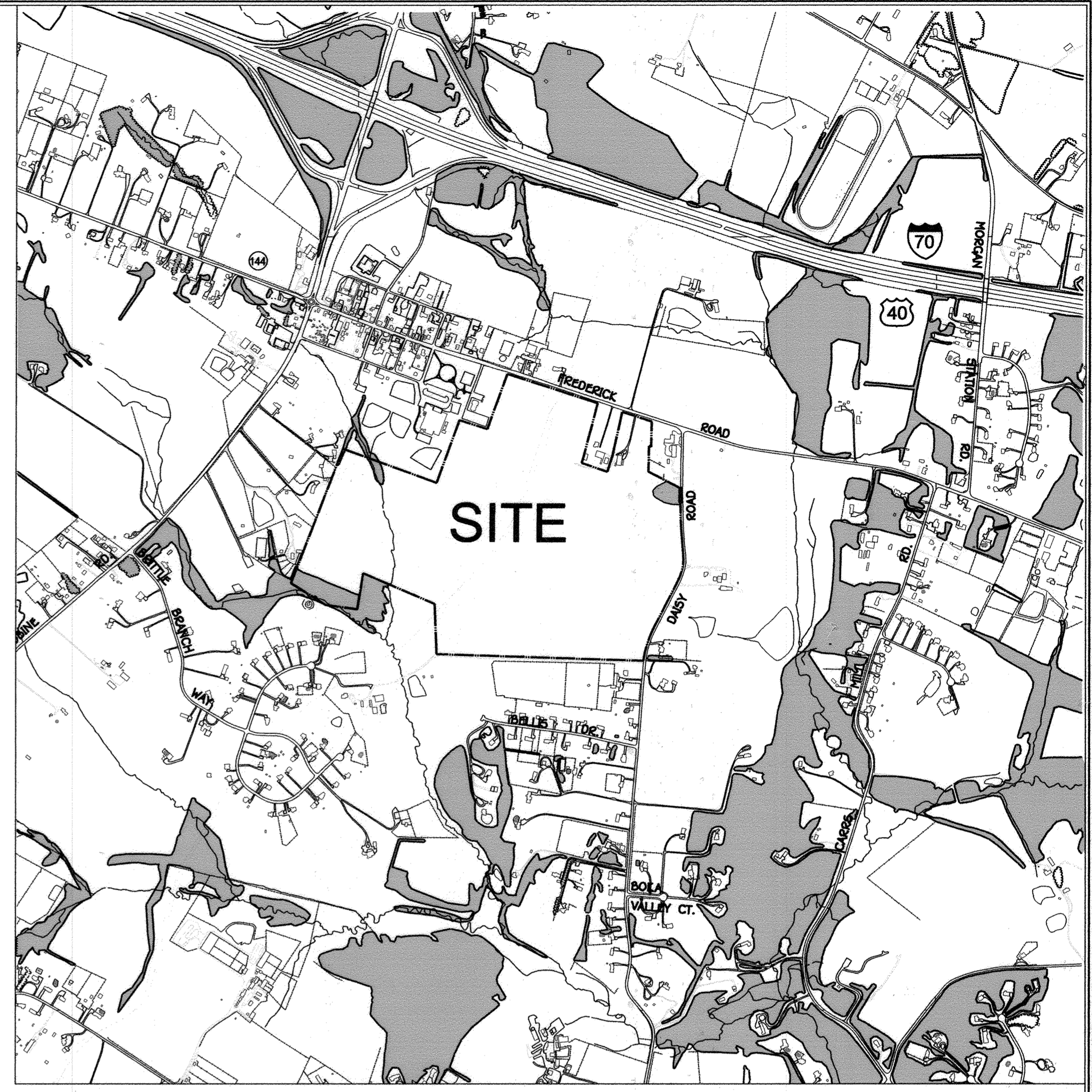
- NOTE:**
- THE FOLLOWING DEDUCTIONS ARE ALLOWED WITHIN THE CALCULATION OF THE FOREST CONSERVATION WORKSHEET:
- FLOODPLAIN = 6.20 Ac.
  - PARKABLE AREA = 88.25 Ac.
  - TOTAL DEDUCTIONS = 94.45 Ac.
  - NET TRACT AREA = 82.23 Ac.
  - FOREST RETENTION = 4.30 Ac.
  - FOREST CONSERVATION PLANTING = 12.27 Ac.

**SITE DATA**

- TOTAL AREA OF THIS SUBMISSION = 176.680 ac.
- PROPOSED ZONING DESIGNATION = RC-DEO
- PROPOSED USE: RESIDENTIAL SUBDIVISION (SINGLE FAMILY DETACHED)
- TOTAL AREA OF FLOODPLAIN: 6.204 Ac.
- TOTAL AREA OF SLOPES: 25% OF GREATER = 0.60 Ac. 15% - 24.99% = 1.94 Ac.
- NET TRACT AREA = 169.876 ac (TOTAL SITE AREA - FLOODPLAIN - STEEP SLOPES AREA)
- TOTAL AREA OF WETLANDS (INCLUDING BUFFER) = 1.57 Ac.
- TOTAL AREA OF STREAMS (INCLUDING BUFFER) = 7.84 Ac.
- TOTAL AREA OF EXISTING FOREST = 4.3 Ac.
- NO SPECIMEN TREES/CHAMPION TREES ARE PRESENT OUTSIDE OF THE EXISTING FOREST LIMITS. BECAUSE NO FOREST CLEARING IS PROPOSED, SPECIMEN TREE DATA WAS NOT COLLECTED.

**Wetland Data**

Wetland System	Cowardin Classification	Dominant Vegetation
A-1	LQD1A/C	reed canary grass and jewelweed
A-2	LQD1A/C	reed canary grass, false nettle, jewelweed and arrowwood.
B	PFD1A/C	Red Maple, Spicebush, Winterberry, arrowwood, skunk cabbage, false nettle and jewelweed.
C	PFD1A/C	Jewelweed and Silver Maple.



**NOTE:**  
 SEE RECORDED PLATS (F-18-092) FOR METES, BOUNDS, BEARINGS AND DISTANCE INFORMATION FOR THE PROPOSED FOREST CONSERVATION EASEMENTS.

**Forest Stand Delineation Narrative**

The subject property is located in the southwest corner of the intersection of Frederick and Daisy Roads in the Lisbon section of Howard County, Maryland. The property is shown on tax map # as parcel 5. The property encompasses 176.68 acres of land. The majority of the site is maintained as crop field. At the time of our visit the site fields were being used to grow soybeans and sod. An underground gas transmission line bisects the property. Forest resources on the property are limited. A small successional forest community, Stand A, is present in a swale located in the northern eastern corner of the site and a larger mature community, Stand B, is present along steep slopes and stream valley in the southwest corner of the property. Stand A is dominated by silver maple, red maple, mulberry and black cherry. The canopy trees are mixed age. The shrub layer includes a high percentage of invasive species including Japanese barberry and multiflora rose. Poison ivy, Japanese honeysuckle and Virginia creeper are also present in the area. This isolated patch of forest occupies approximately 1.1 acres of the site. This forest is associated with a wetland/stream system and associated buffers. Stand B is a tulip poplar dominated community that includes black cherry, red maple as common canopy associates. Black gum is present in the understorey. The shrub layer is heavily influenced by invasive species including barberry, multiflora rose, but also contains spicebush, arrowwood and blackhaw. The canopy trees are generally 10-20 inch diameter with scattered larger individuals. This community occurs along steep slopes and into a stream valley along the property boundary. In wetland and stream areas in the valley bottom red maple is the most common canopy species. This stand occupies approximately 3.2 acres onsite. This community does extend outside but is the overall forest patch is isolated within the agricultural and associated buffers.

As indicated, the site also contains wetland and stream resources. Three distinct resource areas were identified during our field review. All of these areas are within the Lisbon Little Creek/Cattail Creek watershed which is part of the Use III-P watershed of Cattail Creek. This system is part of the Brighton Dam/Patuxent system.

System A is the mainstem of Lisbon Little Creek. This stream cuts across the western end of the property. The perennial stream is deeply incised but does have some adjacent wetland development along seeps that have not been disturbed by past agricultural practices. Wetland Area A1 is dominated by reed canary grass. Though native, this species overwhelms riparian areas and wetlands, particularly areas disturbed by agriculture and other land uses. Jewelweed was also noted in the wetland. A stone foundation was present at the head of the system. This may suggest that a springhouse was once present in this area. Wetland Area A2 has developed within a depression behind a farm crossing of the stream. It appears that floodflows back up into this area causing extended inundation. Reed canary grass, false nettle, jewelweed and arrowwood are present in this portion of the system.

System B includes a stream and wetland complex in the southwestern corner of the site, associated with forest stand B. A broad wetland terrace is present along the base of the steep slopes. The wetlands occupy most of the streamside terrace. Red maple, spicewood, winterberry and arrowwood are common woody plants in the wetland. Skunk cabbage, false nettle, and jewelweed are common herbaceous species. This system was field flagged with flag line 1-37.

System C is a small headwater wetland seep located within forest stand A in the northeast corner of the site. A deeply incised stream channel has developed as the result of bed and headcut erosion caused by concentrated surface water flows through the area. The stream channel was flowing at the time of our field review. Though the weak flow would suggest that it could be intermittent in nature, we have defined it as a perennial stream for the purpose of this report. Additional monitoring may prove it to be intermittent. Adjacent wetland development is present around the stream head and terrace above the stream channel. In these areas jewelweed is common. Silver maple is also present along the streambanks. An upland drainageway extends uplope from the groundwater fed stream channel. This drainageway received substantial flows from the adjacent farm fields. A culvert passes the flows under Daisy Road.



Aldo M. Vitucci, P.E.  
 12/12/18 Date  
 "Professional Certification: I hereby certify that these documents were prepared or checked by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-19."

**FOREST CONSERVATION PLAN**  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

ZONED: RC-DEO  
 GRID No. 7  
 PARCEL No. 5  
 TAX MAP No. 8  
 4TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 28 of 35

AS-BUILT CERTIFICATION  
 Note: The AS-BUILT information provided is for informational purposes only.  
 FISHER, COLLINS & CARTER, INC.  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL FREE ELIJAH CITY, MARYLAND 21046  
 (410) 461-2895

Eco-Science Professionals, Inc.  
 CONSULTING ECOLOGISTS

MD DNR Qualified Professional USACE Wetland Delineator  
 Certification # WDCP93MD0610044B  
 John P. Canoles 12/14/18  
 JOHN P. CANOLES

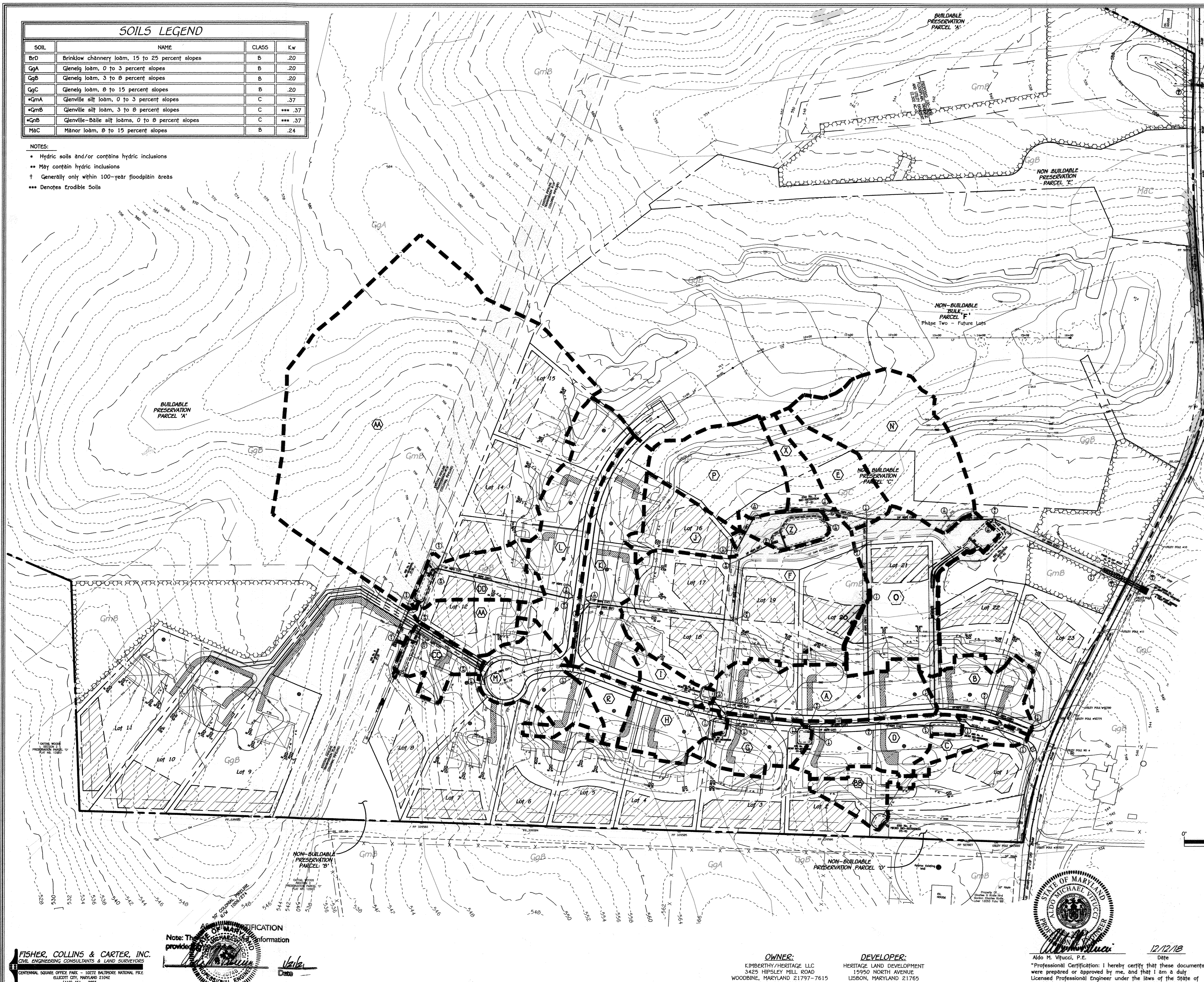
**OWNER:**  
 KIMBERTH/HERITAGE LLC  
 3425 HIPSLEY HILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900

SOILS LEGEND			
SOIL	NAME	CLASS	Kw
Brd	Brinklow channery loam, 15 to 25 percent slopes	B	.20
GgA	Glenelg loam, 0 to 3 percent slopes	B	.20
GgB	Glenelg loam, 3 to 8 percent slopes	B	.20
GgC	Glenelg loam, 8 to 15 percent slopes	B	.20
GmA	Glenville silt loam, 0 to 3 percent slopes	C	.37
GmB	Glenville silt loam, 3 to 8 percent slopes	C	***.37
GmC	Glenville-Baile silt loams, 0 to 8 percent slopes	C	***.37
Mac	Manor loam, 8 to 15 percent slopes	B	.24

NOTES:  
 \* Hydric soils and/or contains hydric inclusions  
 \*\* May contain hydric inclusions  
 † Generally only within 100-year floodplain areas  
 \*\*\* Denotes Erodible Soils

APPROVED: DEPARTMENT OF PUBLIC WORKS		
CHIEF, BUREAU OF HIGHWAYS	<i>Jane</i>	1/18/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING		
CHIEF, DIVISION OF LAND DEVELOPMENT	<i>Walter Shuler</i>	3-20-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION	<i>D. J. Smith</i>	3-8-19
REVISIONS		
NO.	DESCRIPTION	DATE
1	Revise to I-1 to 9-1, Provide a Swale for Revise Area O	7-10-20



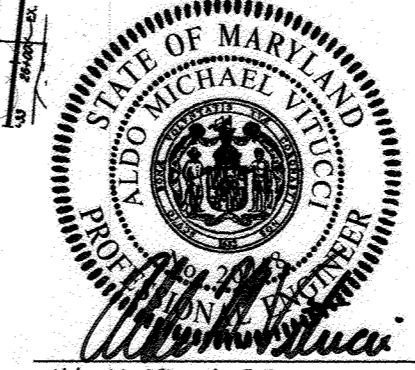
DRAINAGE AREA DATA						
STRUCTURE NO.	DRAINAGE AREA	AREA	ZONED	C FACTOR	TIME (Min.)	REMARKS
I-1	A	1.34 AC.	RC-DEO	0.41	5.00	D-4.03
I-2	B	0.68 AC.	RC-DEO	0.44	5.00	D-4.03
I-3	C	0.30 AC.	RC-DEO	0.41	5.00	D-4.03
I-4 & I-5	D	0.95 AC.	RC-DEO	0.39	5.00	D-4.22 & MD-374.6B
I-6	E	0.62 AC.	RC-DEO	0.25	5.00	D-4.10
I-7	F	3.32 AC.	RC-DEO	0.25	5.00	D-4.10
I-8 & I-9	G	0.59 AC.	RC-DEO	0.39	5.00	D-4.22 & MD-374.6B
I-10 & I-11	H	0.59 AC.	RC-DEO	0.30	5.00	D-4.22 & MD-374.6B
I-12 & I-13	I	0.26 AC.	RC-DEO	0.40	5.00	D-4.22 & MD-374.6B
I-14	J	0.61 AC.	RC-DEO	0.29	5.00	D-4.10
I-15	K	1.37 AC.	RC-DEO	0.42	5.00	D-4.03
I-16	L	1.41 AC.	RC-DEO	0.40	5.00	D-4.03
I-17	R	0.28 AC.	RC-DEO	0.45	5.00	D-4.03
I-18	M	0.92 AC.	RC-DEO	0.46	5.00	D-4.03
I-19	N	1.76 AC.	RC-DEO	0.25	5.00	D-4.10
I-20	O	1.88 AC.	RC-DEO	0.25	5.00	D-4.22
I-21	X	0.23 AC.	RC-DEO	0.32	5.00	D-4.10
I-22	Z	0.31 AC.	RC-DEO	0.25	5.00	D-4.22
I-23	P	1.50 AC.	RC-DEO	0.26	5.00	D-4.10
S-10	AA	9.91 AC.	RC-DEO	0.26	10.00	D-5.11
ESD #2	BB	0.38 AC.	RC-DEO	---	---	MICRO-RETENTION FACILITY

FISHER, COLLINS & CARTER, INC.  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SQUARE OFFICE PARK - 10722 BALTIMORE NATIONAL PIKE  
 BLUDDTOWN CITY, MARYLAND 21042  
 (410) 461-2295

Professional Engineer  
 Note: This information is provided for your information.  
 Date: 12/12/18

OWNER:  
 KIMBERLY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

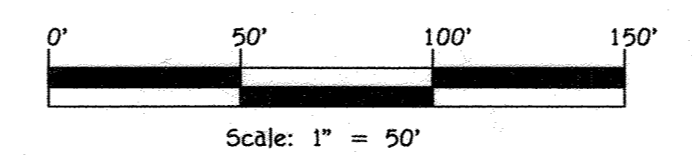
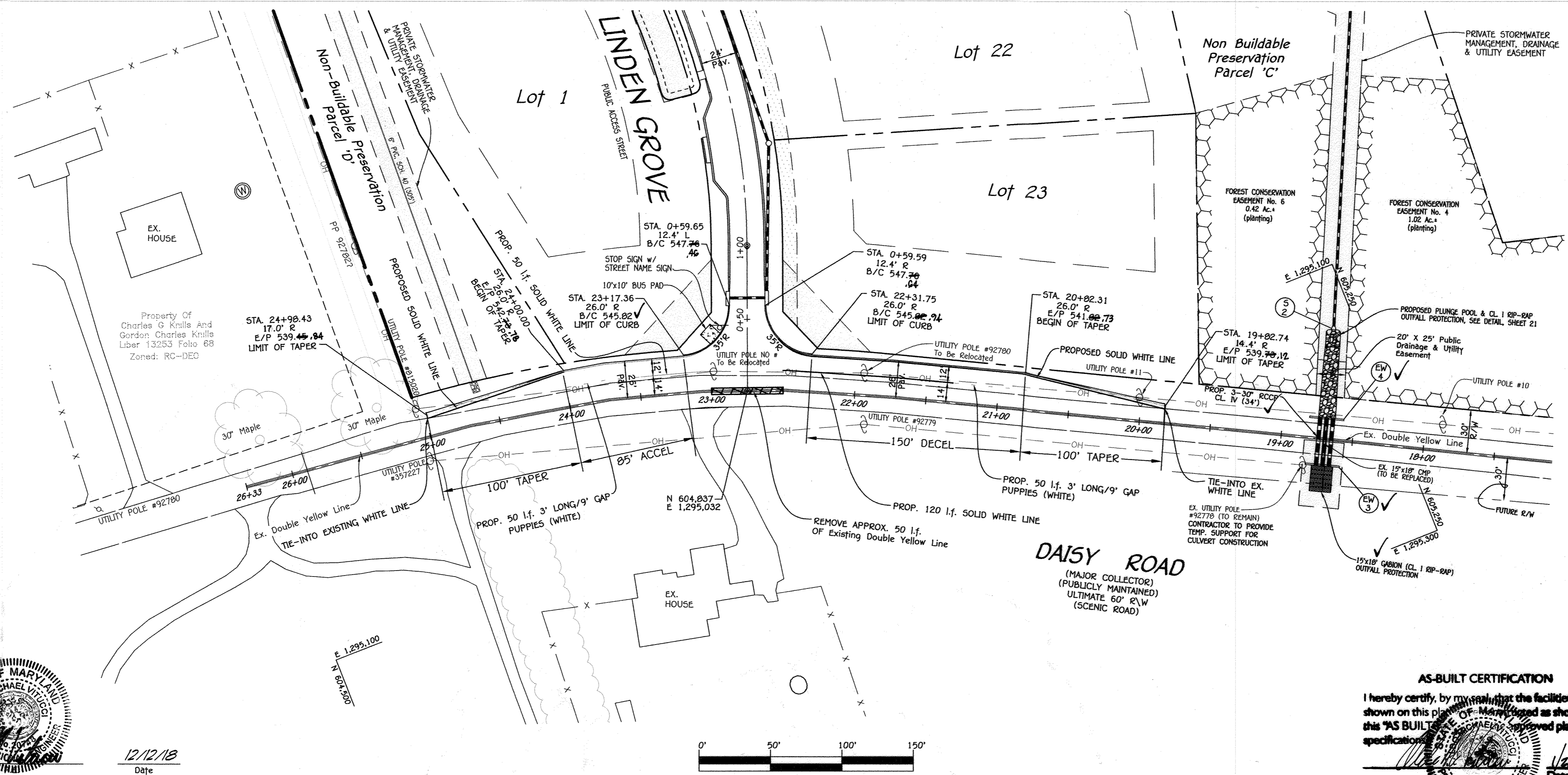
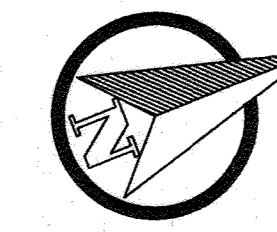
DEVELOPER:  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21785  
 410-489-7900



Aldo M. Vitucci, P.E.  
 Date: 12/12/18  
 Professional Certification: 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. 2027AB, Expiration Date 2-22-19.

STORM DRAIN  
 DRAINAGE AREA MAP  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
 ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 27 of 35

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-18-092



**AS-BUILT CERTIFICATION**  
 I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this "AS BUILT" plan and specifications.  
 Date: 1/15/2019

NO.	DESCRIPTION	DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Robert Halewood* 3-20-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Robert Halewood* 3-8-19  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*James* 1/15/2019  
 CHIEF, BUREAU OF HIGHWAYS DATE



12/12/18 Date  
 "Professional certification: 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. 20748, Expiration Date 2-22-19."

**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E', AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

ZONED: RC-DEO  
 TAX MAP No. B GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

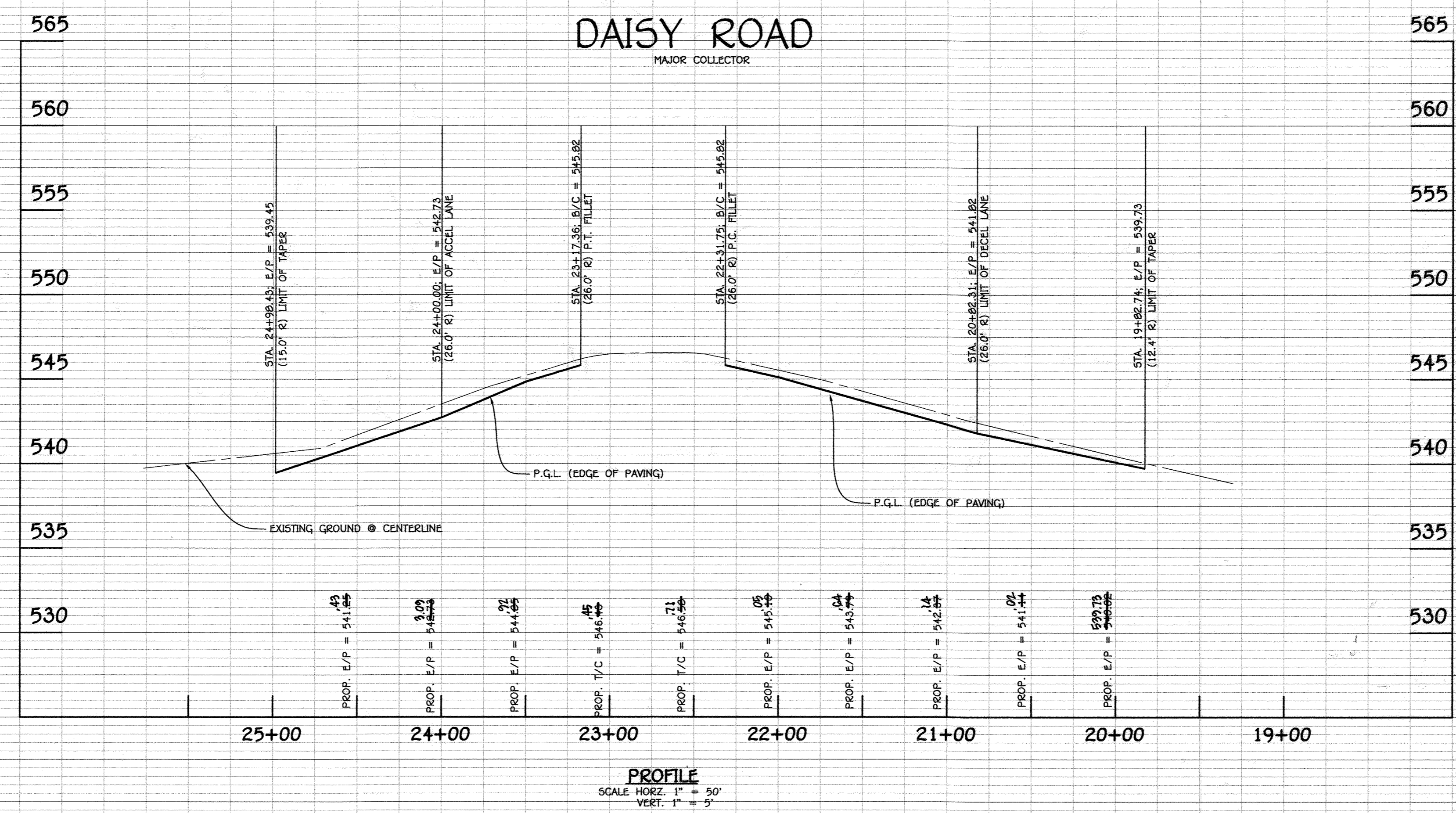
**DAISY ROAD WIDENING**  
 PLAN & PROFILE

**OWNER:** KIMBERLY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:** HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900

SCALE: AS SHOWN DATE: DECEMBER 12, 2018 DWG. NO. 28 OF 35  
 DES. R.A.I./J.C.L. DRN. J.C.L. CHK. A.M.V.

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 10775 BALTIMORE NATIONAL PIKE  
 ELLICOTT CITY, MARYLAND 21042  
 (410) 461-2899



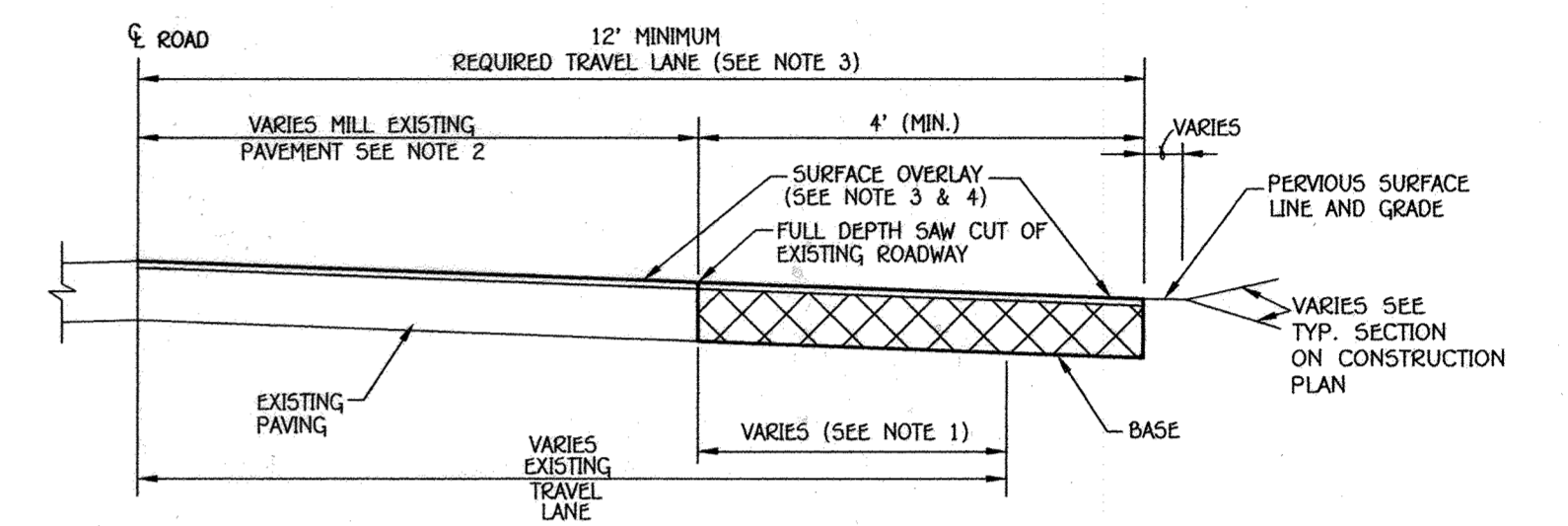
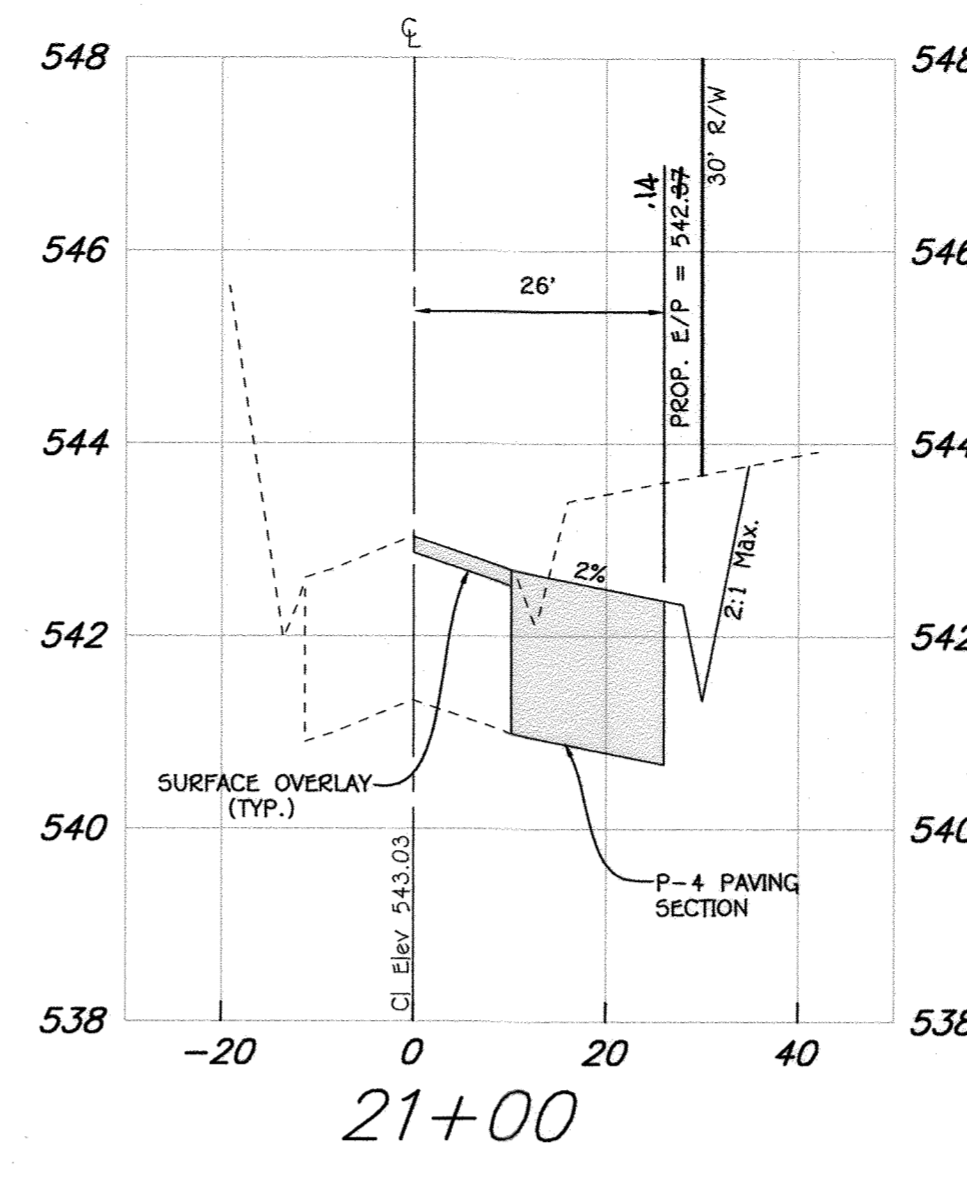
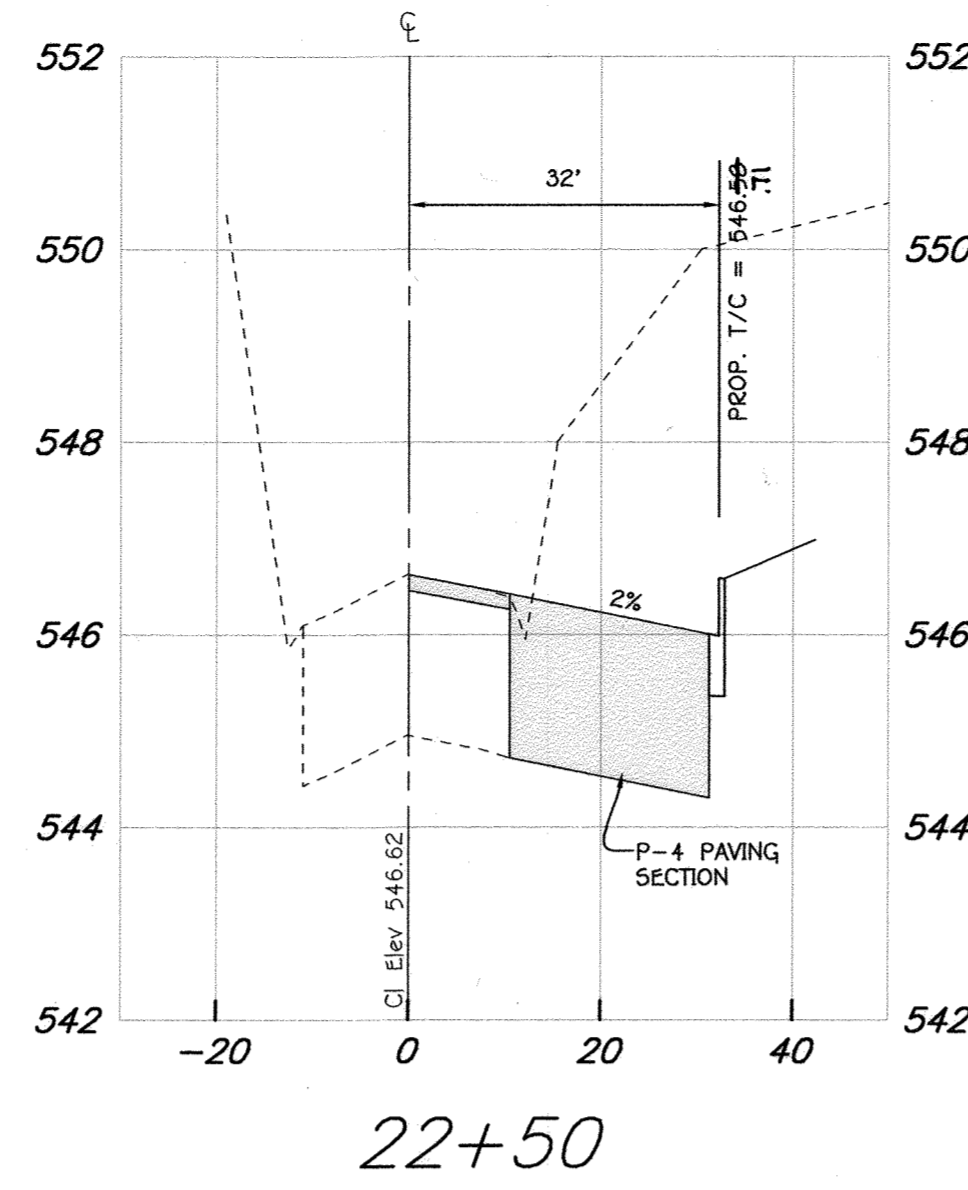
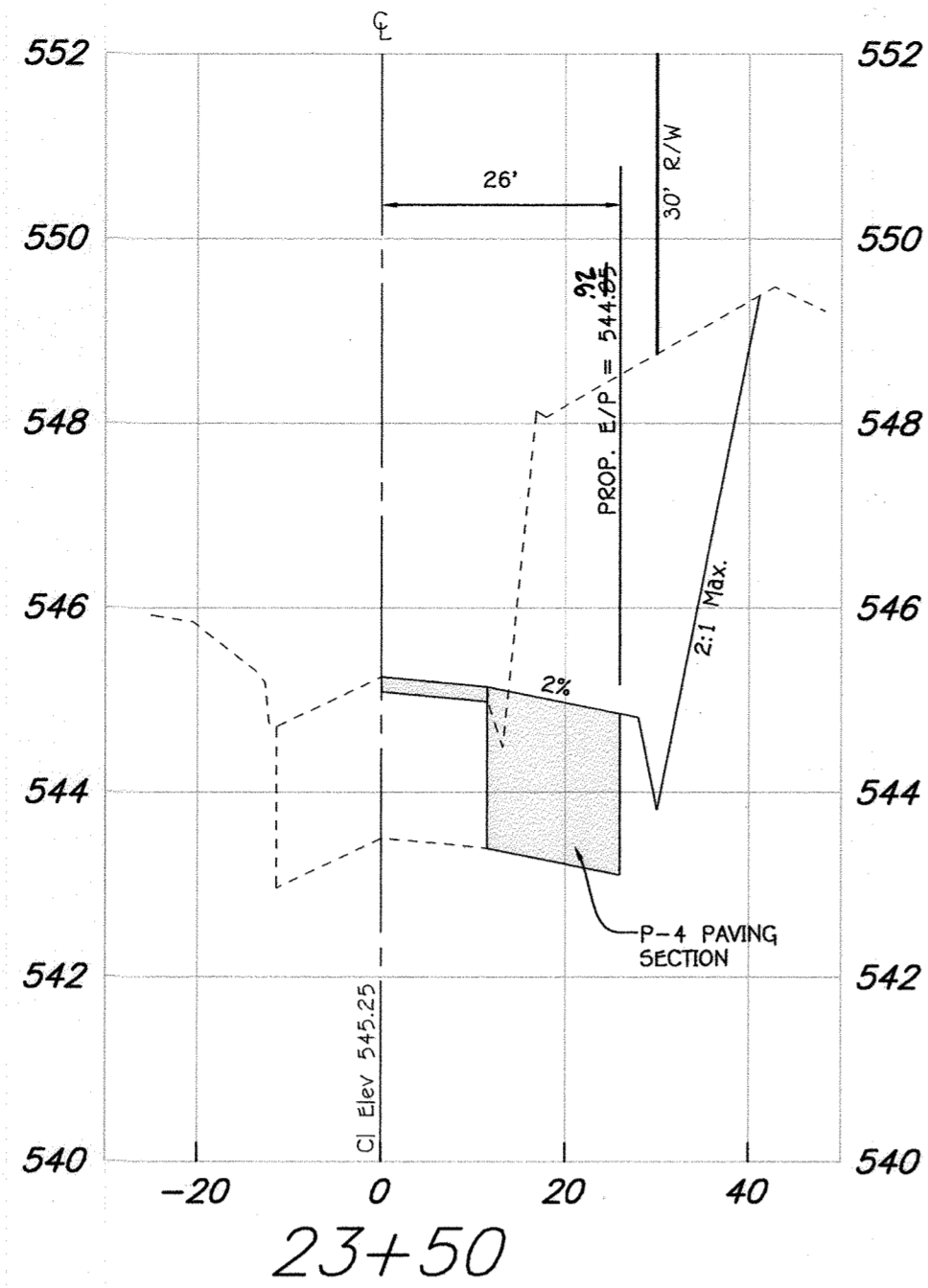
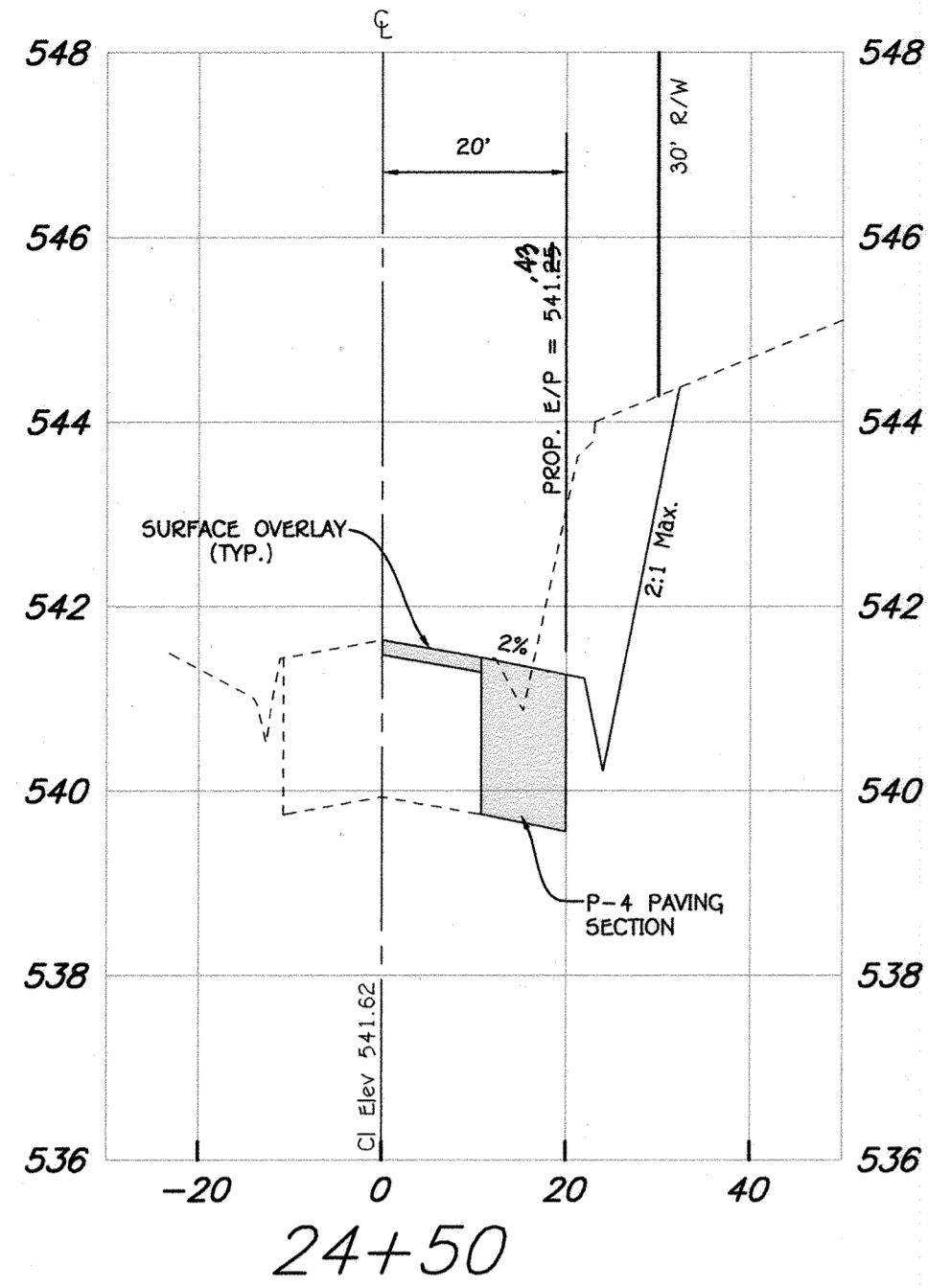
**PROFILE**  
 SCALE: HORIZ. 1" = 50'  
 VERT. 1" = 5'

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*James* 1/12/2019  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Kentley Owen* 3-20-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*John P. Smith* 3-8-19  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

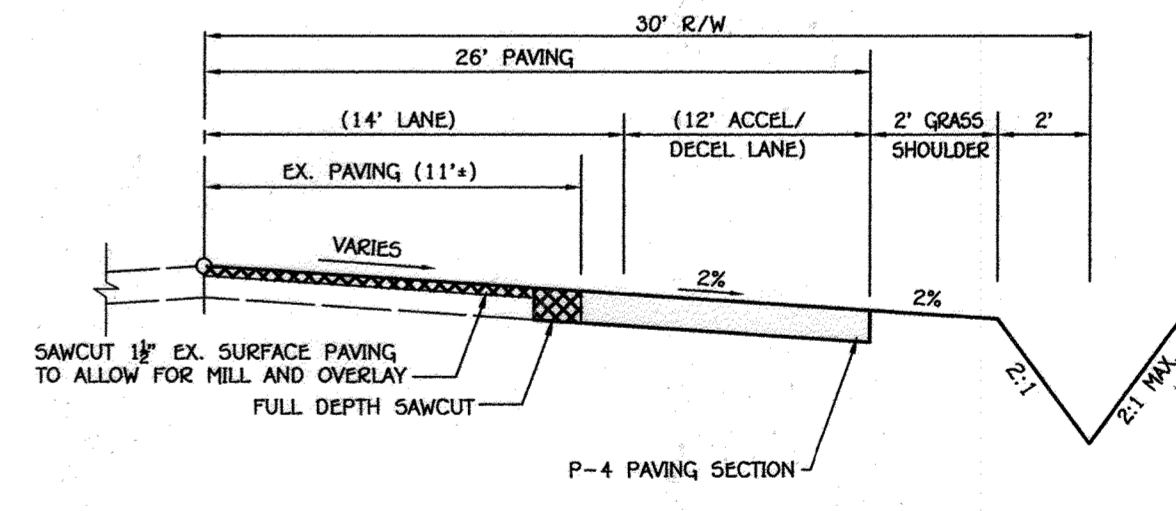
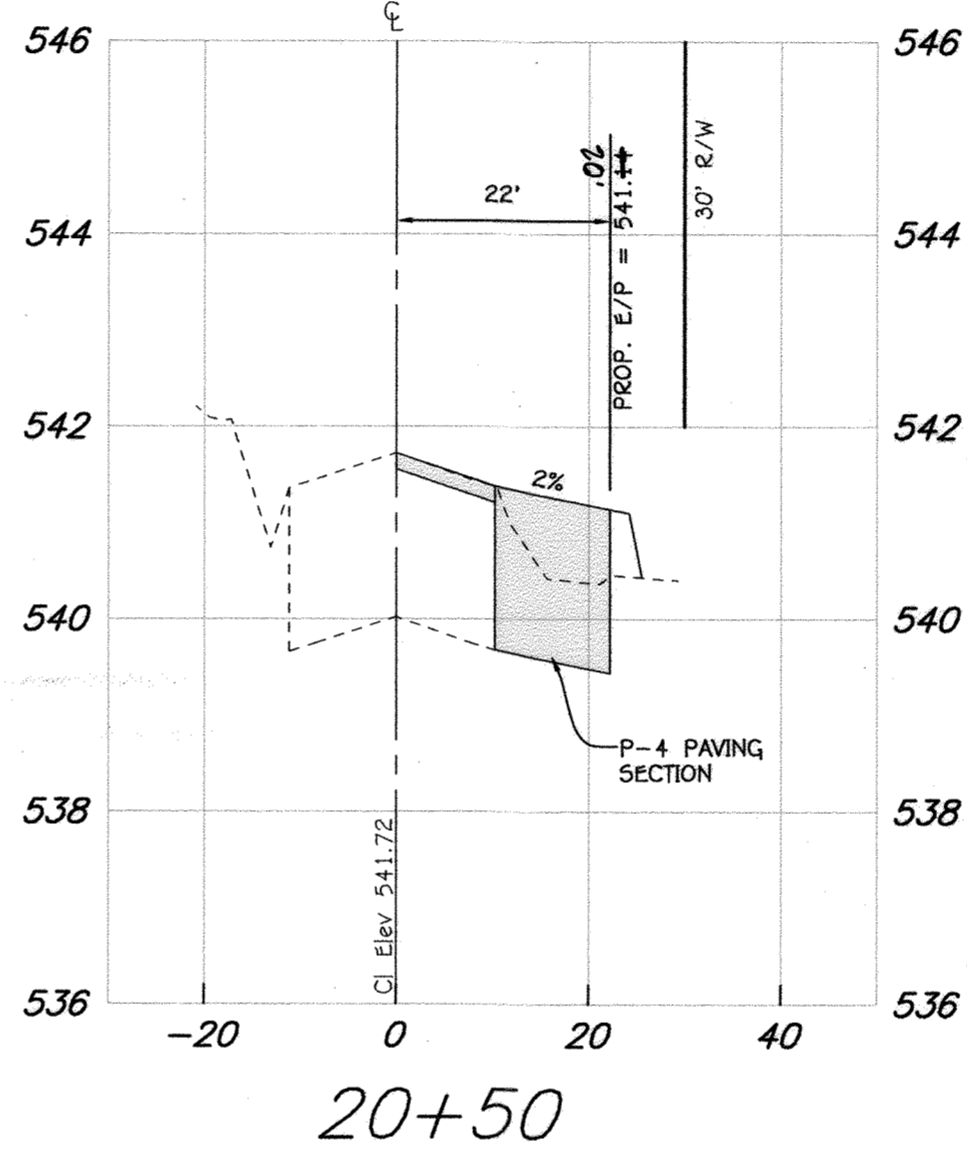
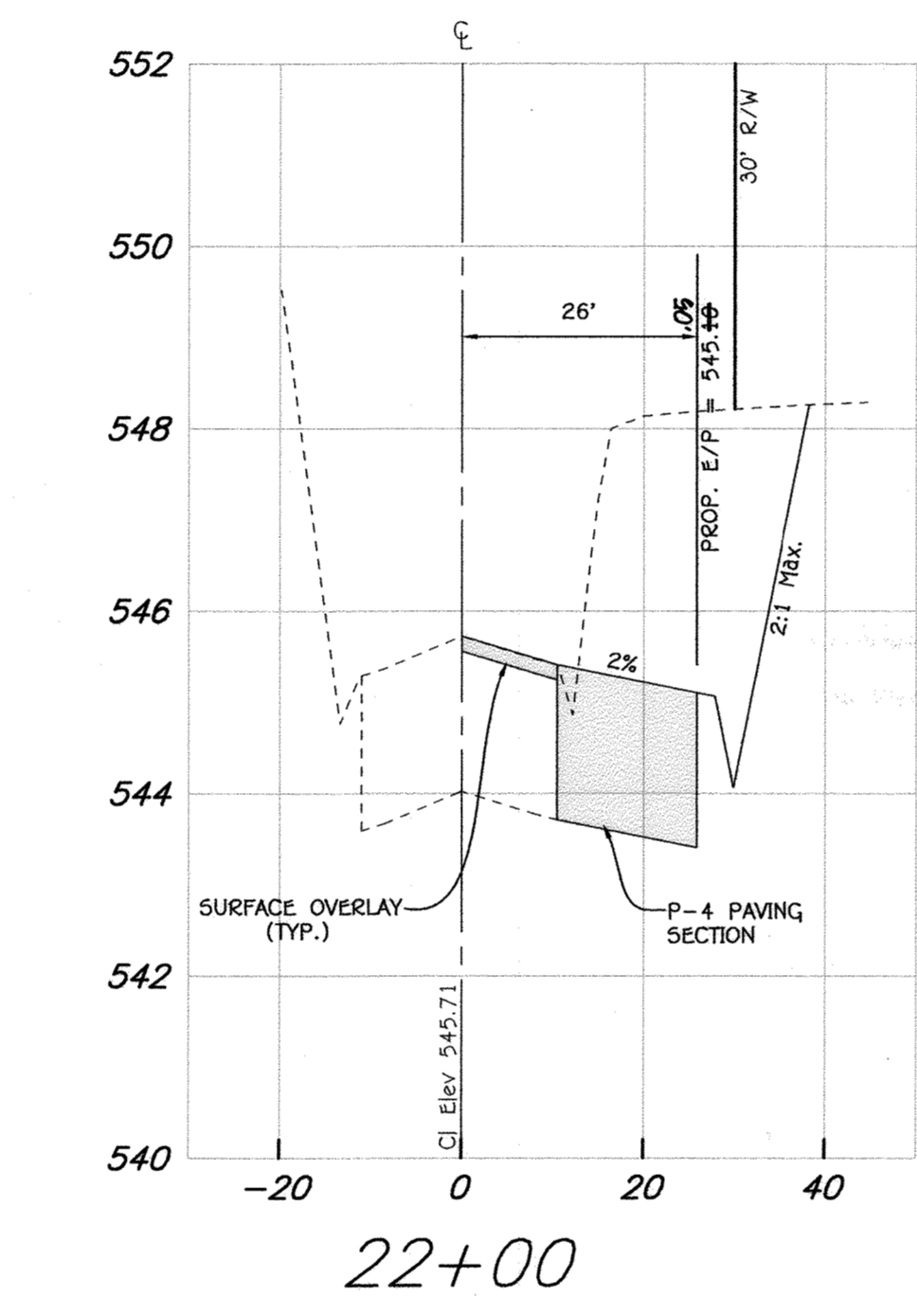
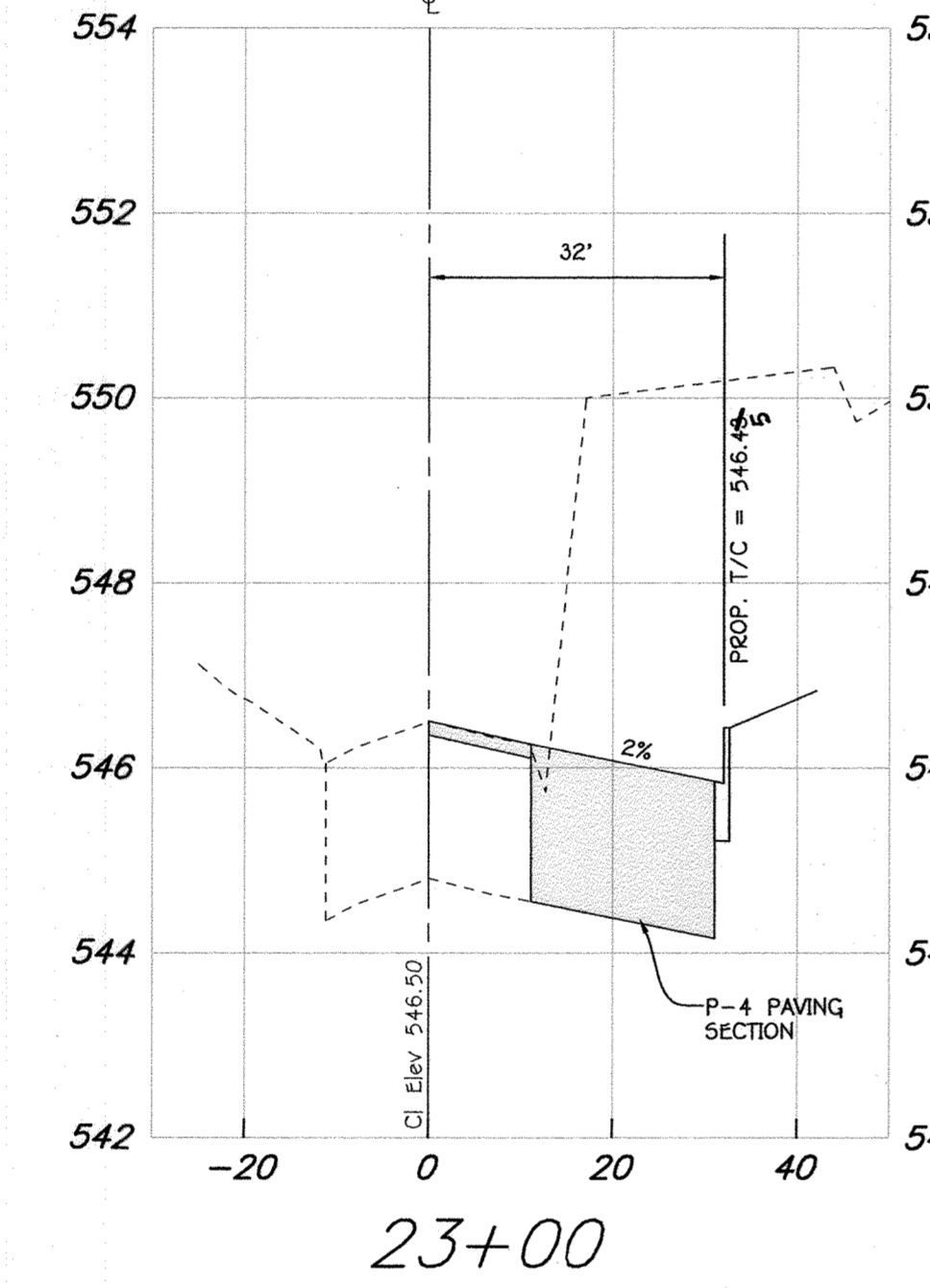
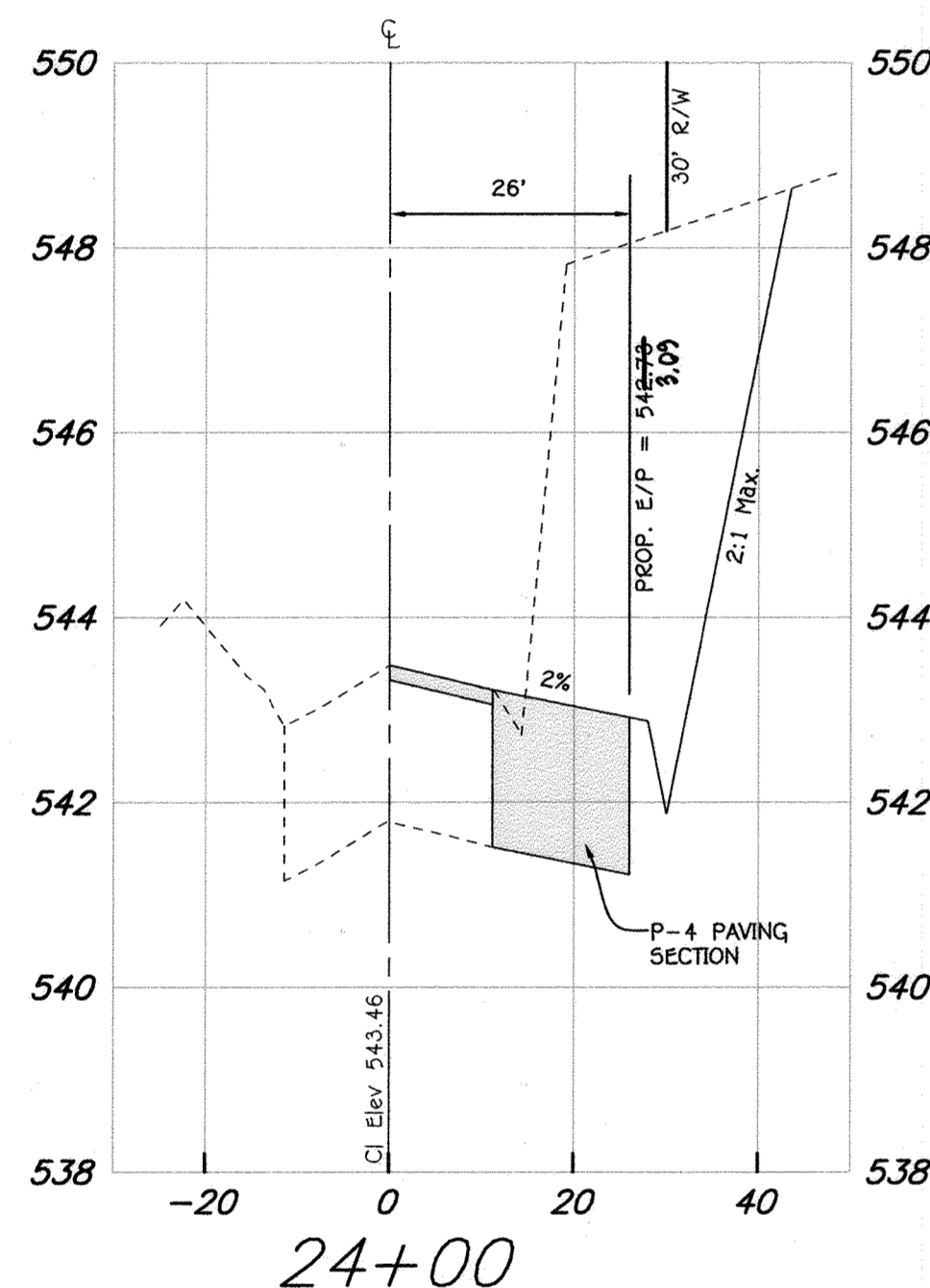
REVISIONS		
NO.	DESCRIPTION	DATE



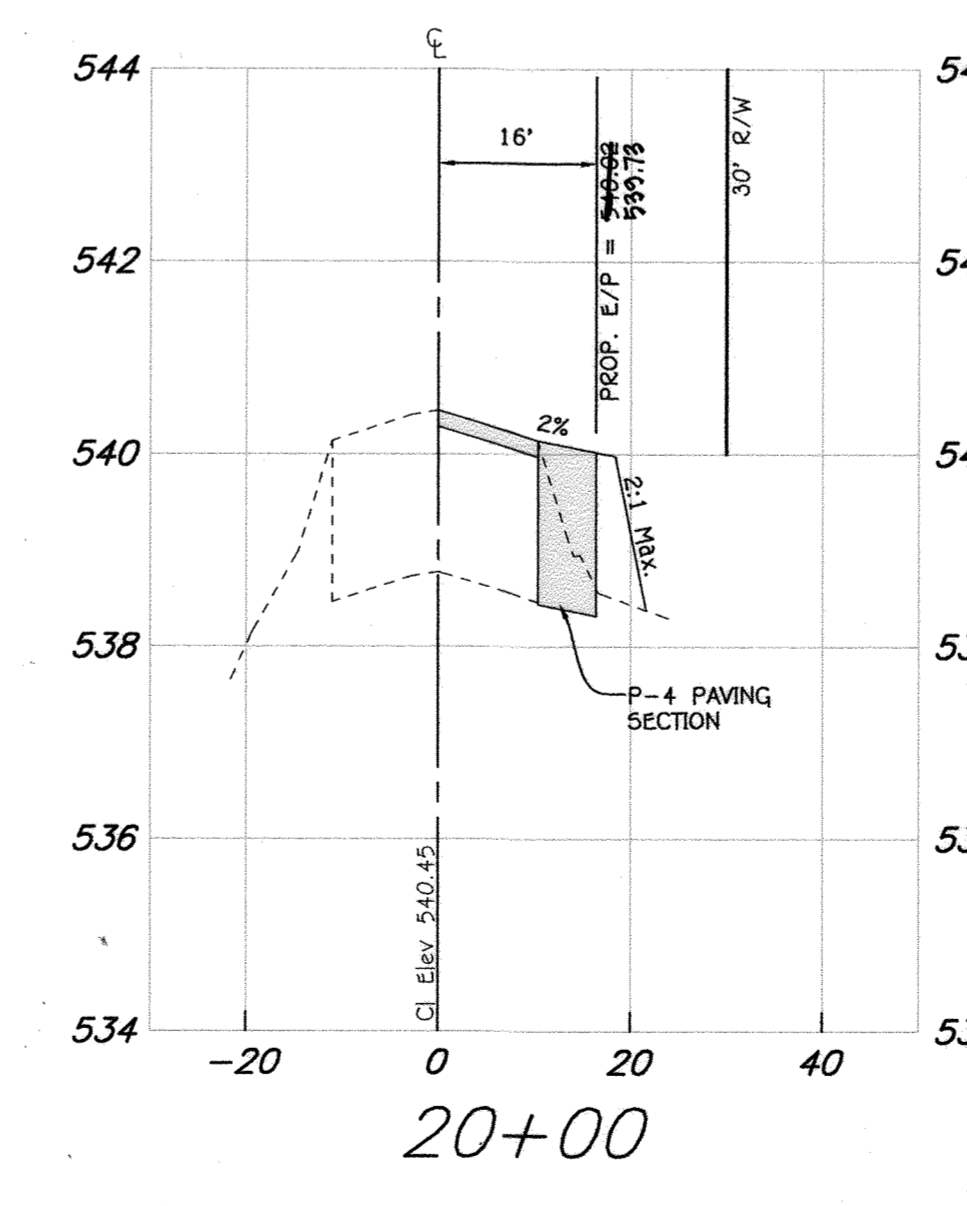
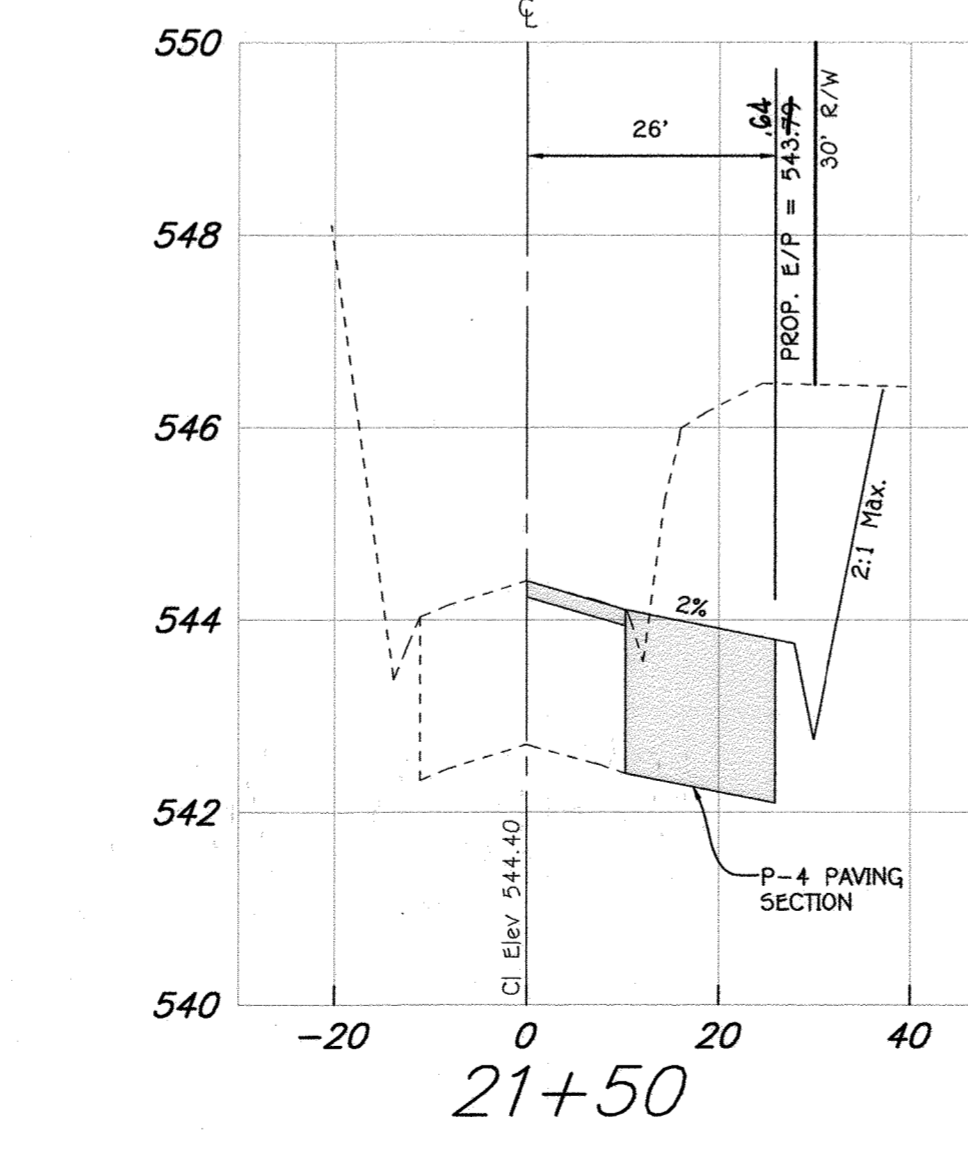
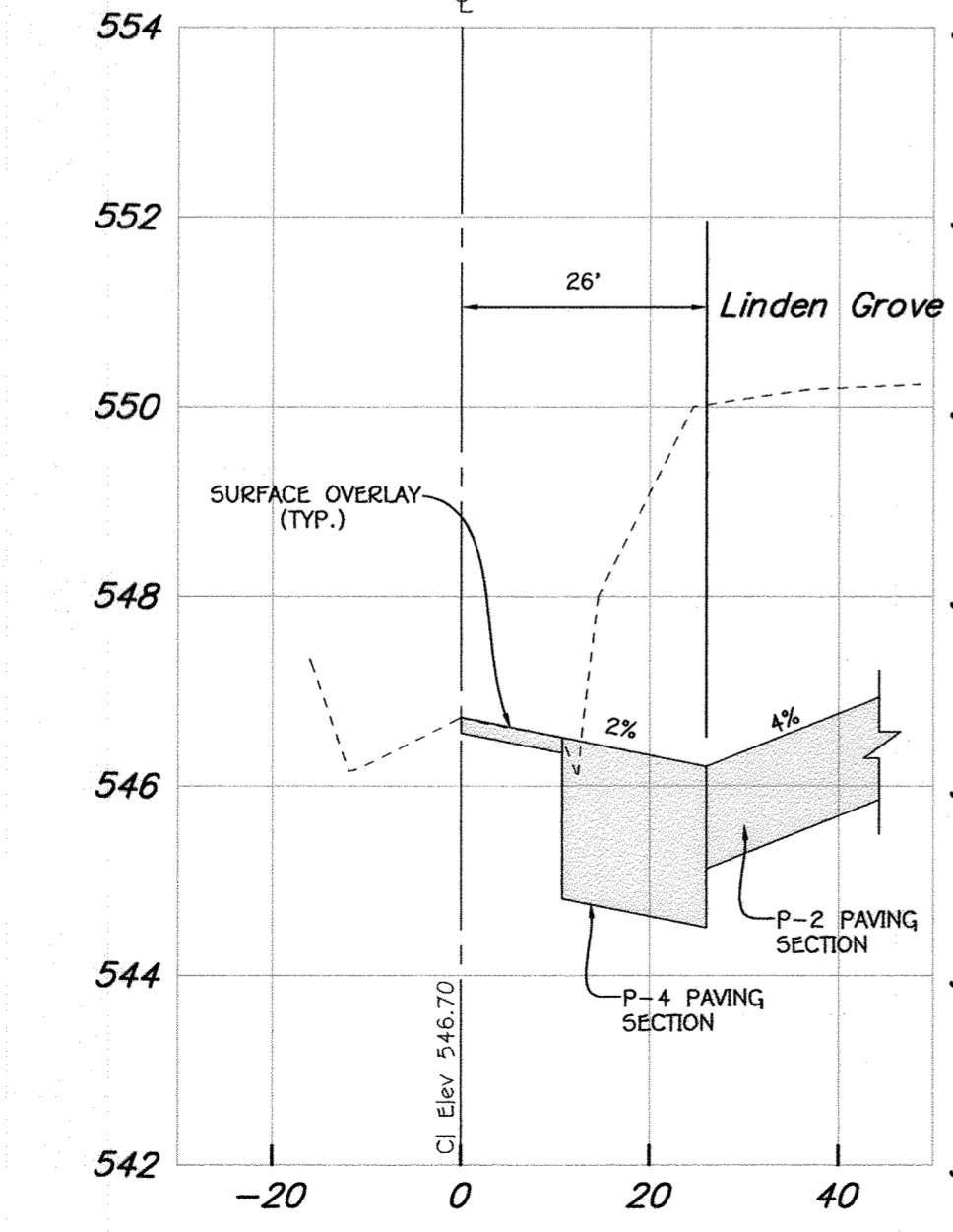
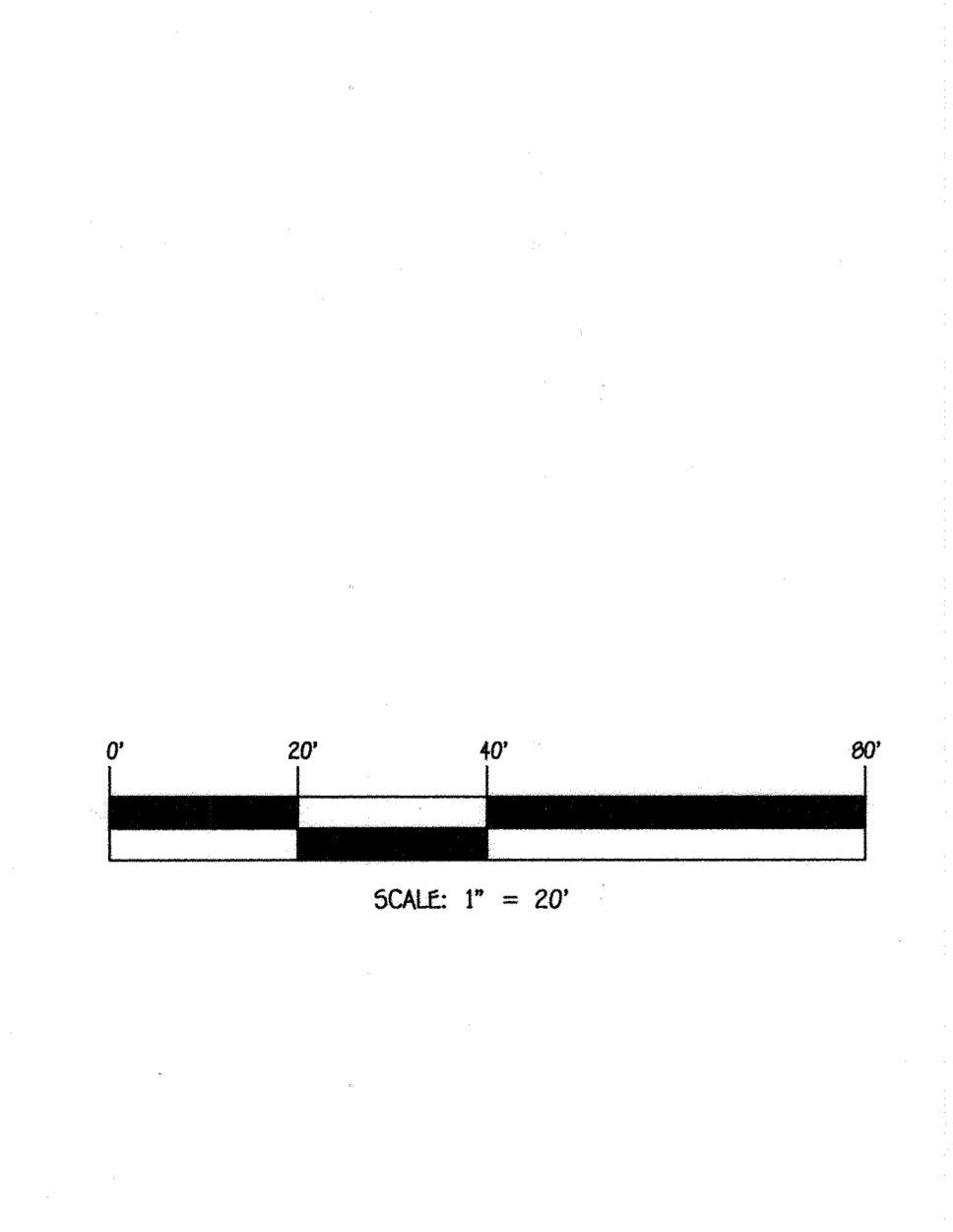
- NOTES:
- WHEN EXISTING TRAVEL LANE IS LESS THAN THE REQUIRED 12' LANE CONTRACTOR SHALL REMOVE A MINIMUM OF 1' FULL DEPTH OF THE EXISTING ROADWAY. IF CURB AND GUTTER IS INSTALLED, PROVIDE A MINIMUM OF 4' OF WIDENING FROM FACE OF GUTTER PAN.
  - THE EXISTING PAVEMENT TO BE RESURFACED SHALL BE MILLED AT DEPTH OF 1 1/2" (MINIMUM).
  - THE RESURFACING SHALL BE PLACED TO THE CENTERLINE OF THE ROADWAY.
  - RESURFACING COURSE TO BE EQUAL TO THE SURFACE COURSE OF THE TYPICAL PAVEMENT SECTION.

EXISTING ROADWAY WIDENING STRIP (R-1.0B)  
 NO SCALE

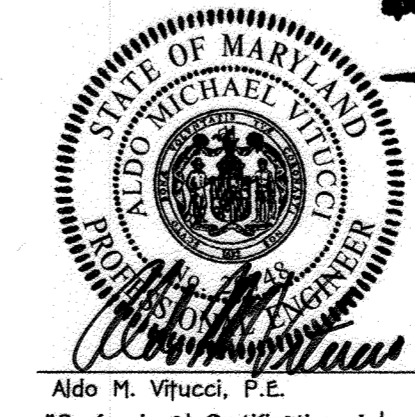
SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5			5 TO <7			7 TO <5			5 TO <7			≥7		
			PAVEMENT MATERIAL (INCHES)			MIN HMA WITH GAB			HMA WITH CONSTANT GAB			HMA WITH CONSTANT GAB			HMA WITH CONSTANT GAB		
P-4	MINOR COLLECTORS: NON-RESIDENTIAL MAJOR COLLECTORS	HMA SUPERPAVE FINAL SURFACE 12.5 MM PG 64-22, LEVEL 2 (LOW ESAL) HMA SUPERPAVE INTERMEDIATE SURFACE 12.5 MM PG 64-22, LEVEL 2 (LOW ESAL) HMA SUPERPAVE BASE 19.0 MM PG 64-22, LEVEL 2 (LOW ESAL) GRADED AGGREGATE BASE (GAB)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
			2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
			4.0	4.0	3.0	6.0	6.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
			13.0	7.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0



TYPICAL WIDENING SECTION  
 NO SCALE



AS-BUILT CERTIFICATION  
 I hereby certify that the facilities shown on this AS-BUILT drawing are as shown on the approved plans and specifications.  
*Michael V. Vitucci*  
 PROFESSIONAL ENGINEER  
 DATE: 12/12/18



DAISY ROAD WIDENING - CROSS SECTIONS  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION  
 PARCEL 'A', NON-BUILDABLE PRESERVATION  
 PARCELS 'B' THRU 'E' AND  
 NON-BUILDABLE BULK PARCELS 'F' & 'G'

TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 29 OF 35

FISHER, COLLINS & CARTER, INC.  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SOURCE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
 ELKROTT CITY, MARYLAND 21042  
 (410) 461-2095

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

OWNER:  
 KIMBERTHY/HERITAGE LLC  
 3425 HIPSLEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-499-7900

DEVELOPER:  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-499-7900

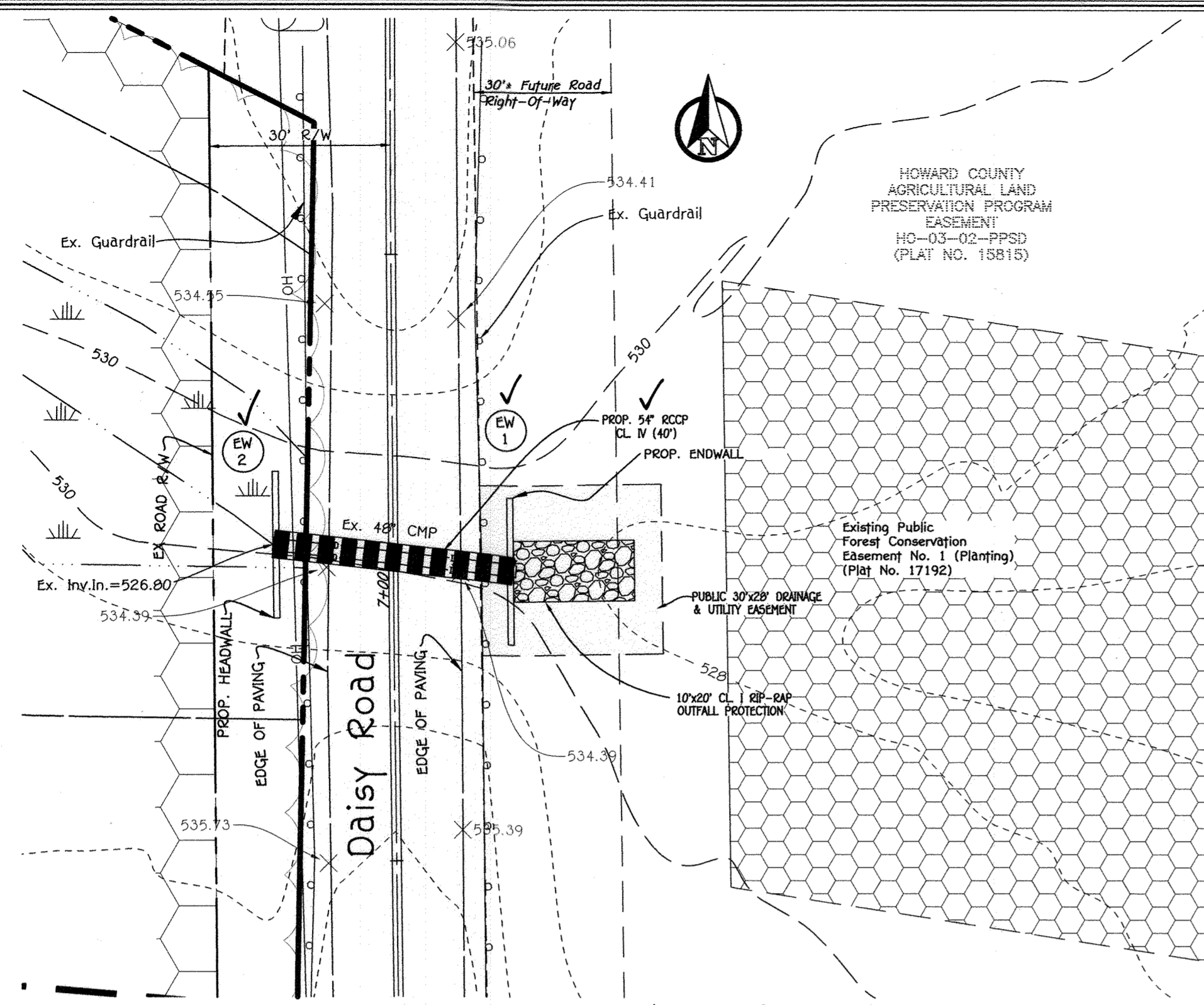
Aldo M. Vitucci, P.E.  
 12/12/18  
 "Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-19."

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS *[Signature]* 1/18/2019 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* 3-20-19 DATE

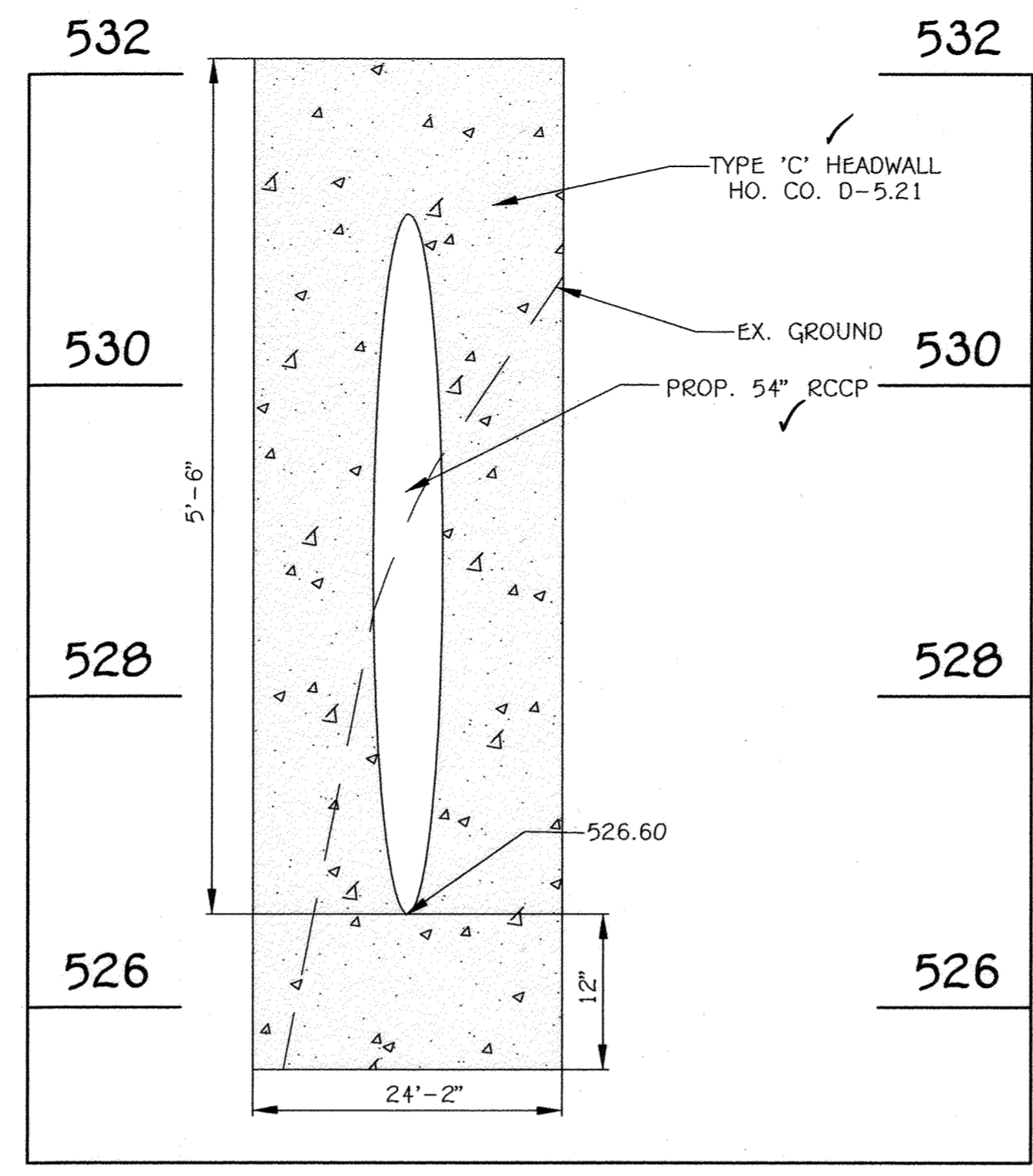
CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 3-8-19 DATE

REVISIONS		
NO.	DESCRIPTION	DATE

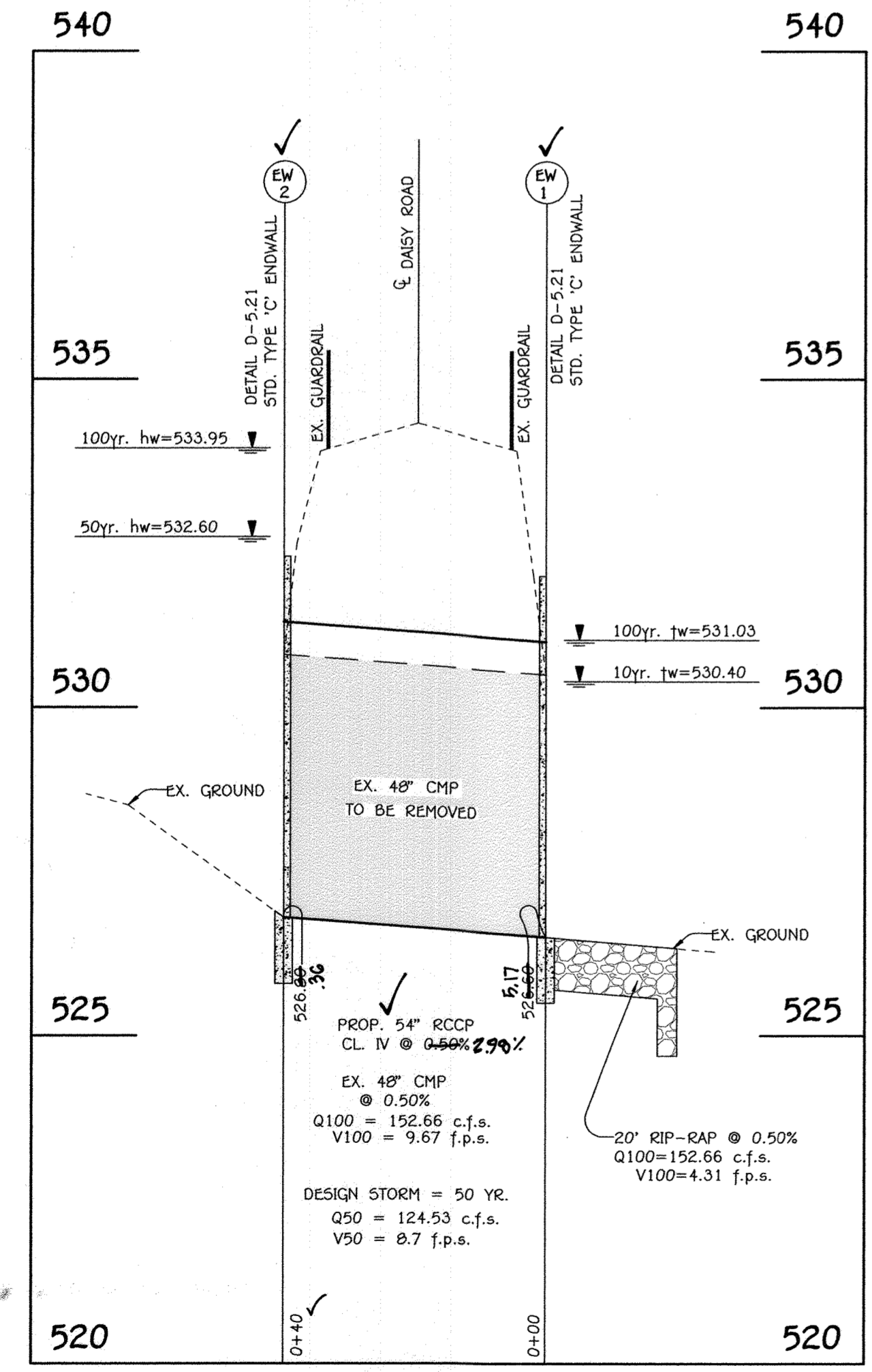


PLAN  
 SCALE: 1" = 20'

**\* GUARDRAIL NOTE**  
 ANY GUARDRAIL REMOVED FOR THE INSTALLATION OF THE CULVERT SHALL BE REPLACED.

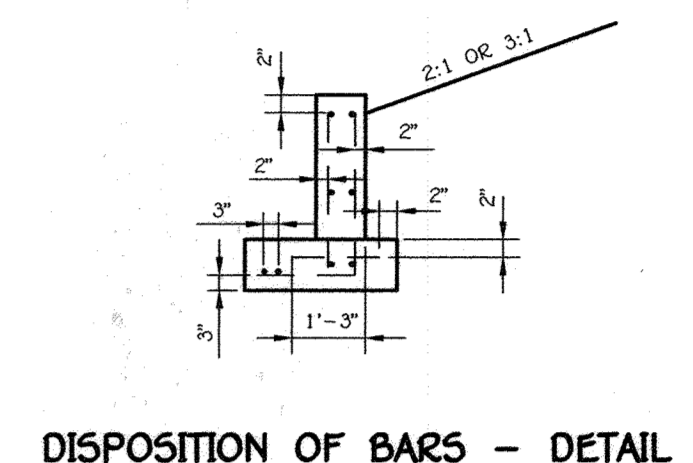
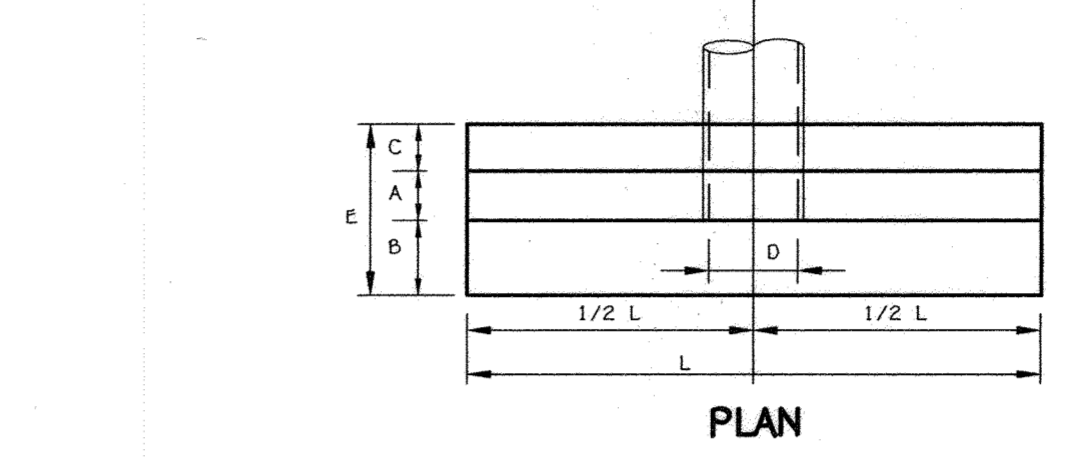
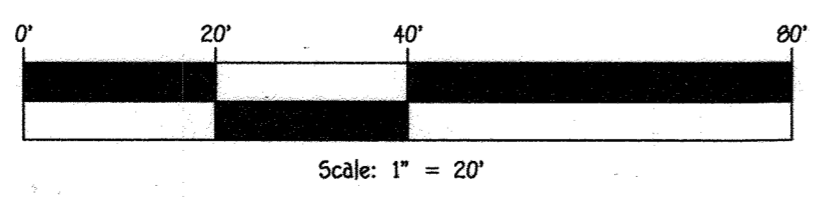


PROFILE HEADWALL 5-16 ✓  
 SCALE HORIZ. 1" = 1'  
 VERT. 1" = 10'

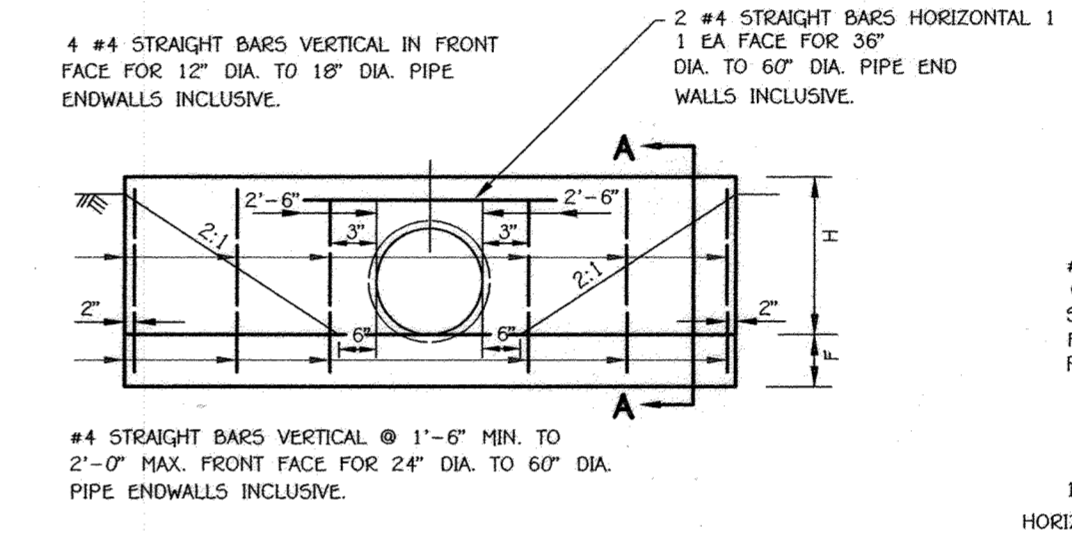


PROFILE  
 SCALE HORIZ. 1" = 20'  
 VERT. 1" = 2'

**TRAFFIC CONTROL NOTE (FOR BOTH CULVERTS)**  
 SEE DETAIL ON SHEET FOR TEMPORARY CLOSURE OF ONE LANE OR VARIATION FOR A STANDARD INSTALLATION OF NEW CULVERTS. CONTRACTOR SHALL NOTIFY HOWARD COUNTY DEPT OF HIGHWAYS FOR ANY ALTERNATIVE INSTALLATION METHODS.



REINFORCING: DEFORMED STEEL BARS (1/2" DIA.)  
 CHAMFER: ALL EXPOSED EDGES 1" x 1" OR AS DIRECTED.  
 CONC. SHALL BE S.M.A. A. MIX NO. 2.



'S' DISTANCES FROM INSIDE SURFACE OF PIPE TO VERTICAL BARS IN FRONT AND REAR FACE.  
 4" FOR 12" DIA. TO 18" DIA. PIPES INCL.  
 6" FOR 24" DIA. TO 36" DIA. PIPES INCL.  
 8" FOR 42" DIA. TO 60" DIA. PIPES INCL.

D IN.	AREA SQ. FT.	DIMENSIONS						VOLUME CONC. C.Y.	STEEL LBS.	
		A	B	C	E	F	H			
54"	15.90	12"	20"	12"	3'-8"	12"	5'-6"	24'-2"	7.61	275

✓ TYPE 'C' ENDWALL CIRCULAR PIPE  
 NO SCALE D-5.21

FISHER, COLLINS & CARTER, INC.  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
 ELLETTT CITY, MARYLAND 21042  
 (410) 481-2095

OWNER:  
 KIMBERTHY/HERITAGE LLC  
 3425 HIPSELEY MILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

DEVELOPER:  
 HERITAGE LAND DEVELOPMENT  
 19950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900

AS-BUILT CERTIFICATION

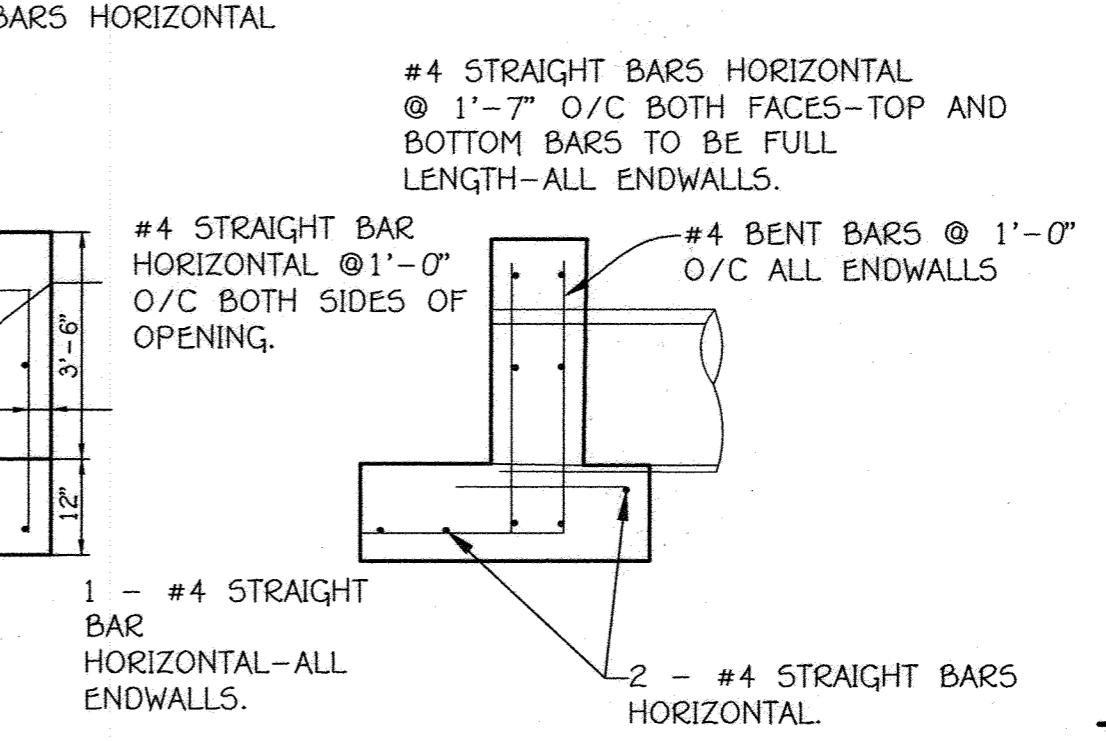
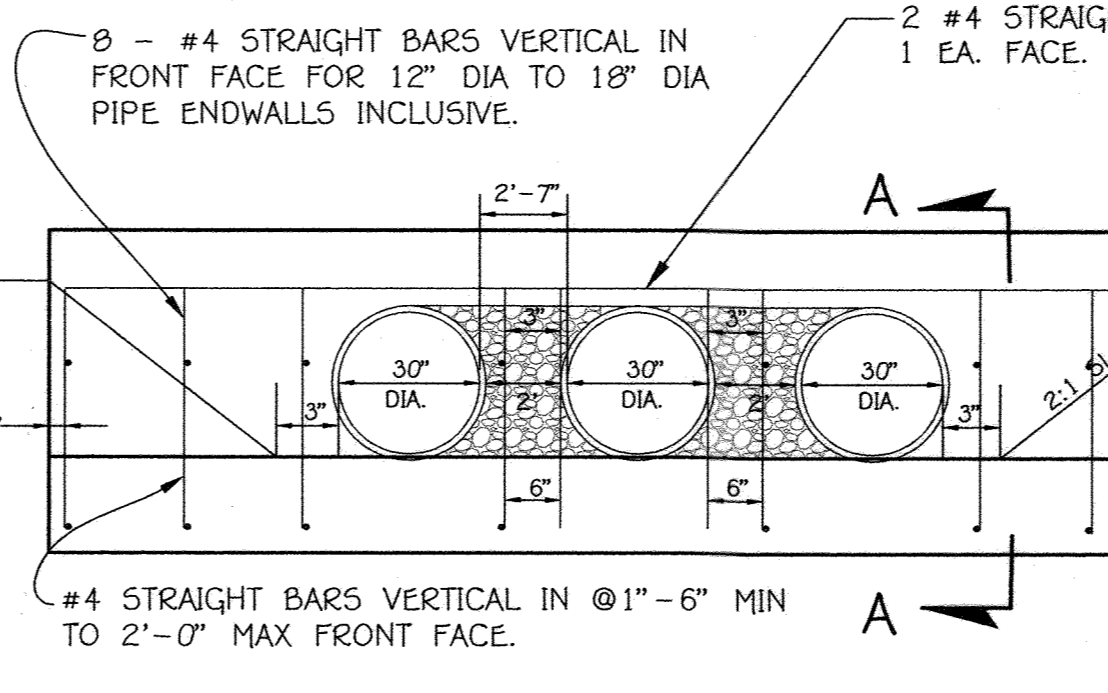
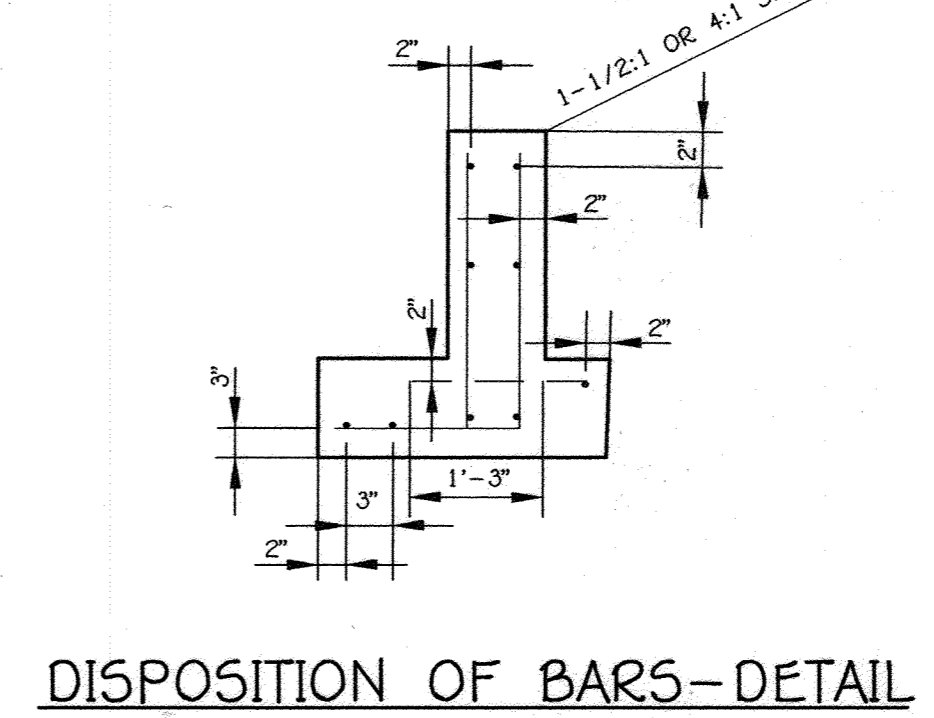
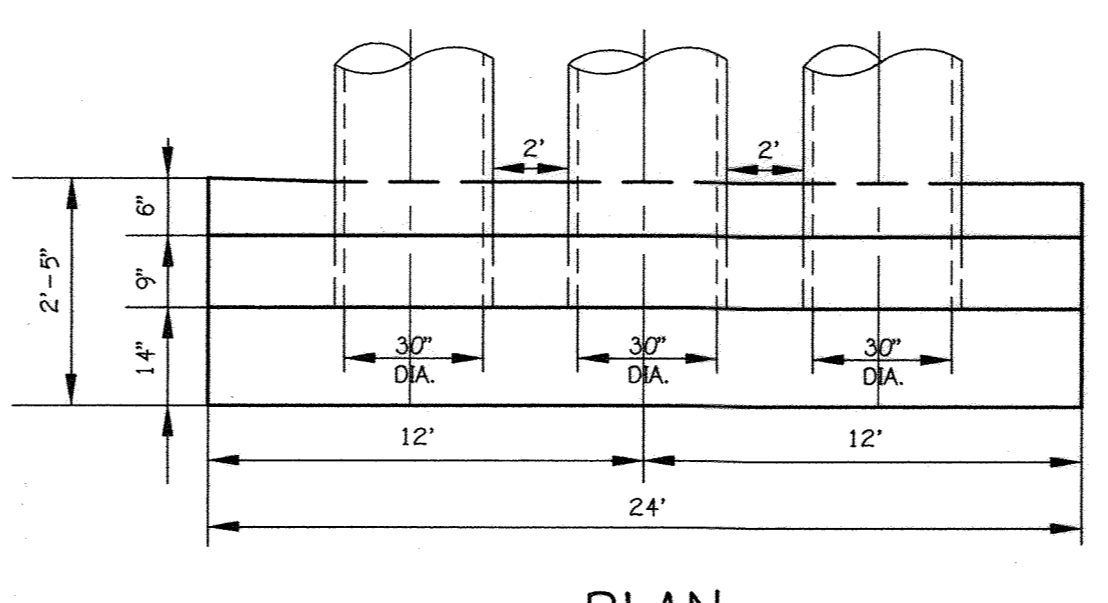
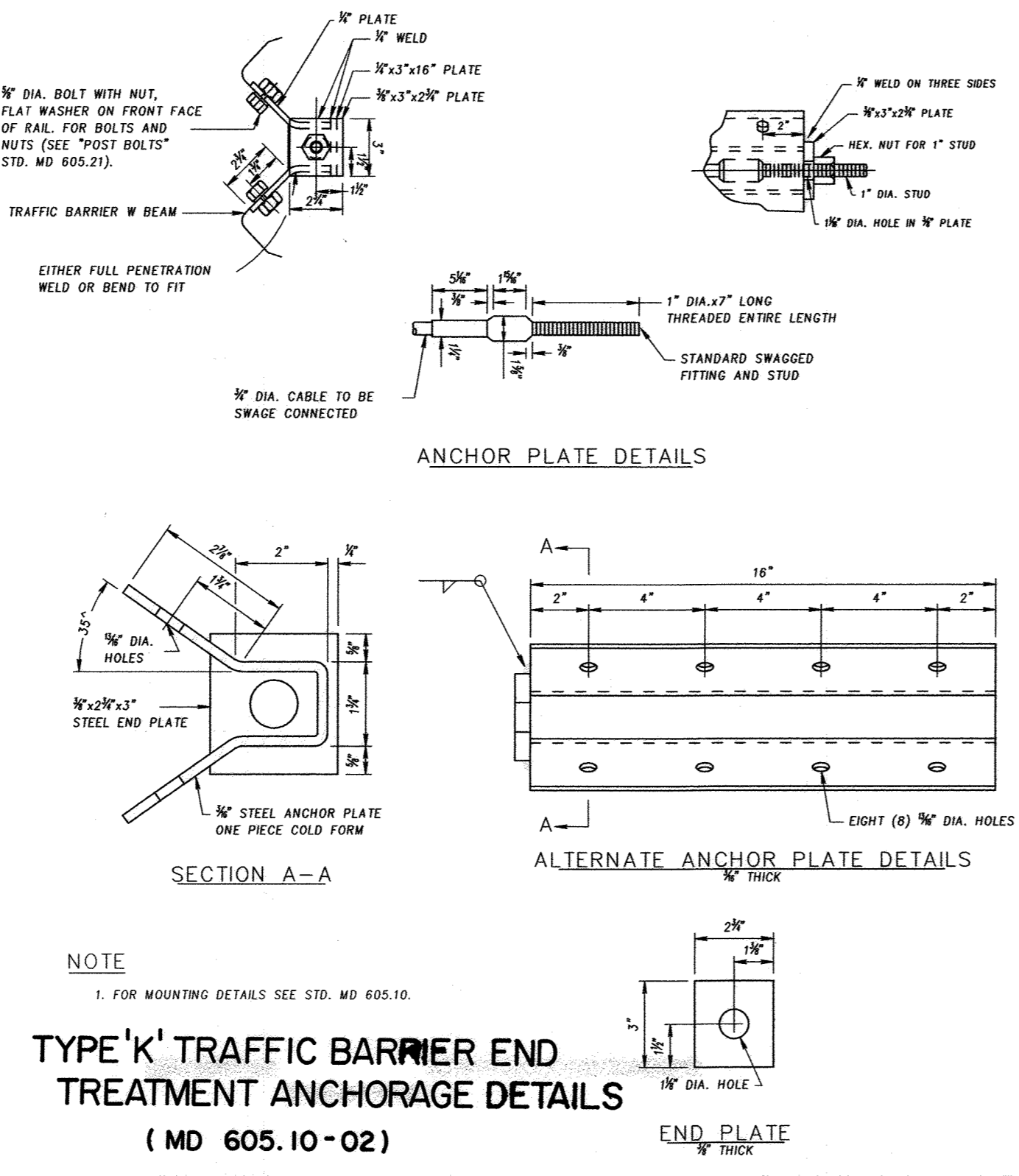
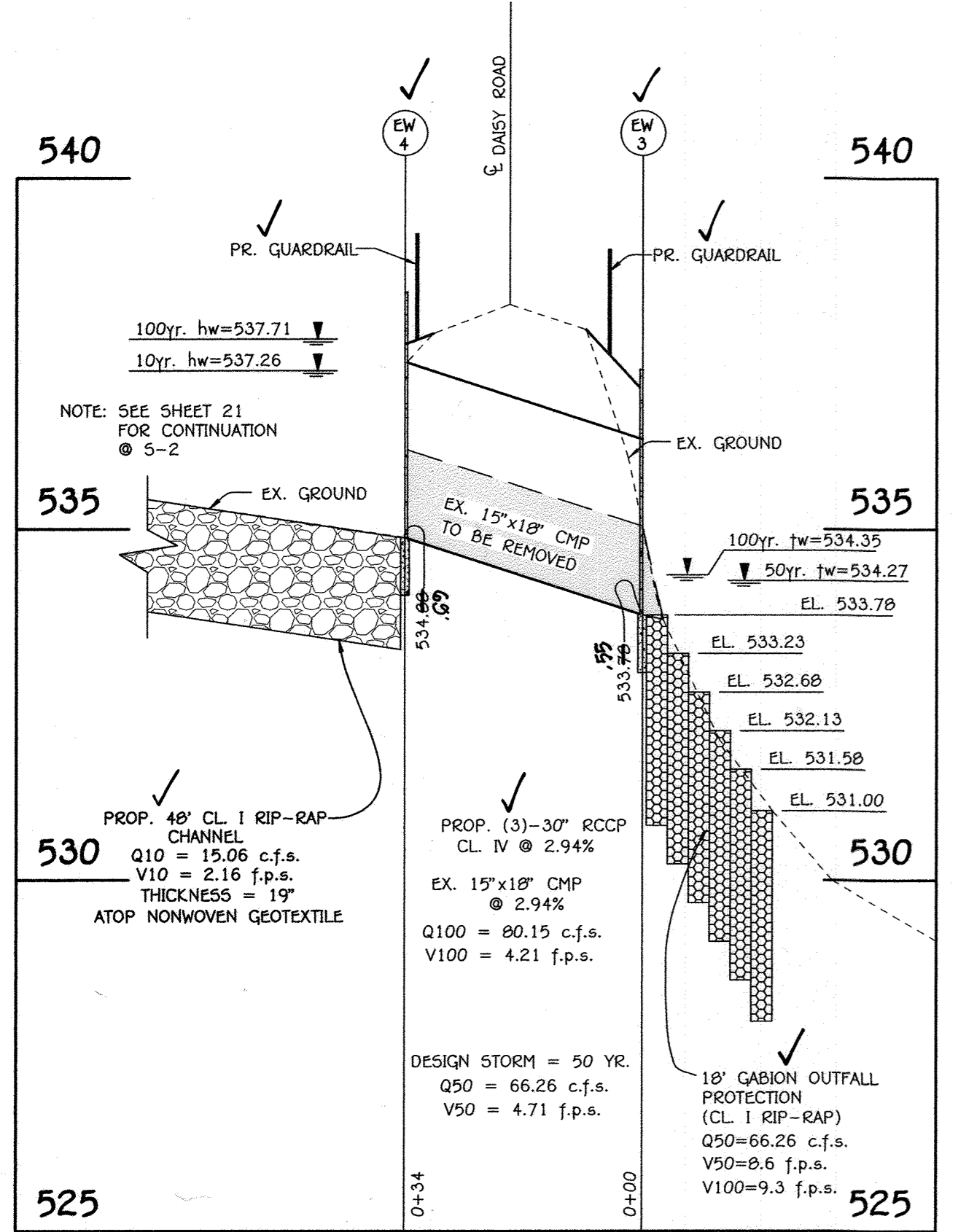
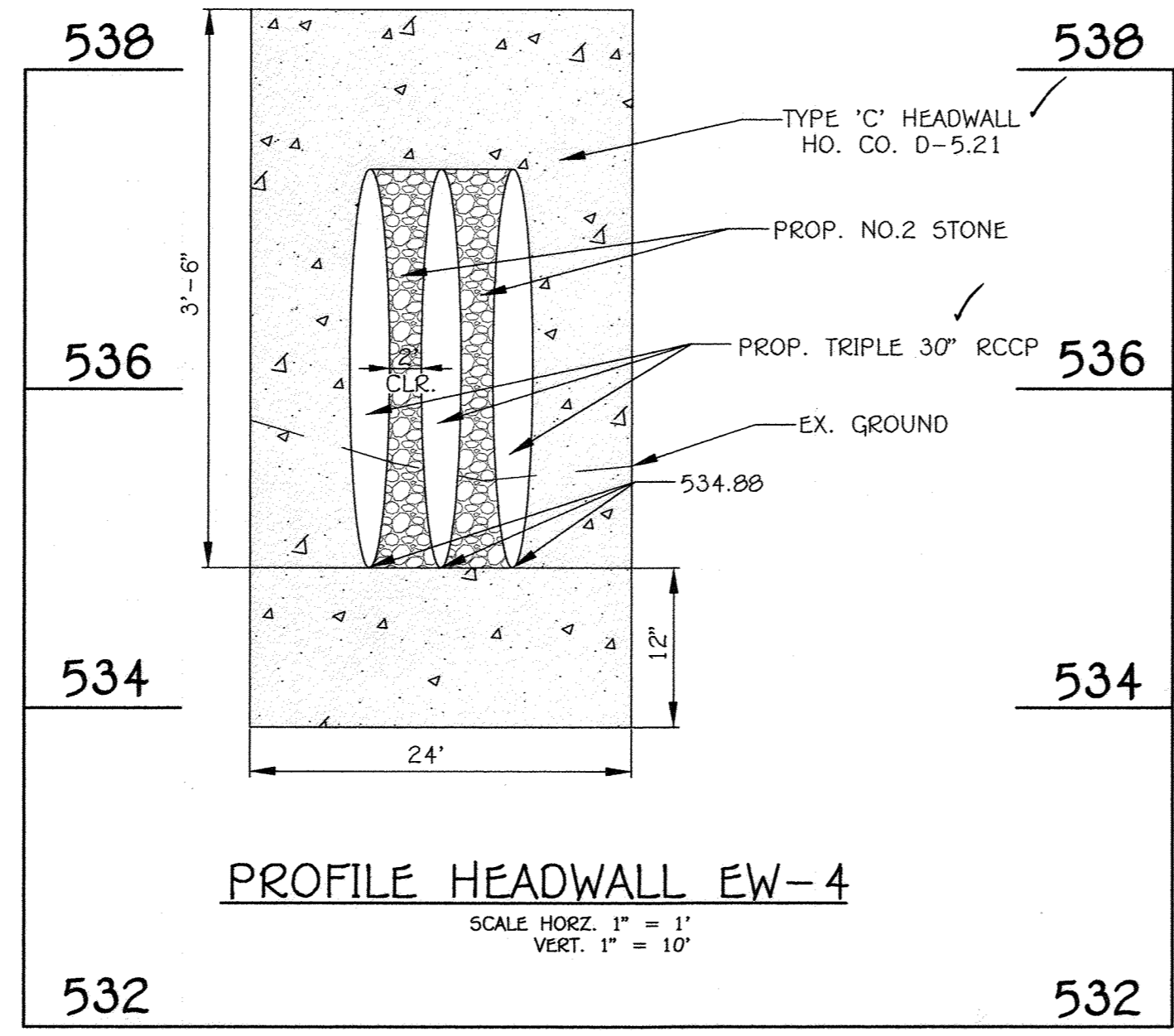
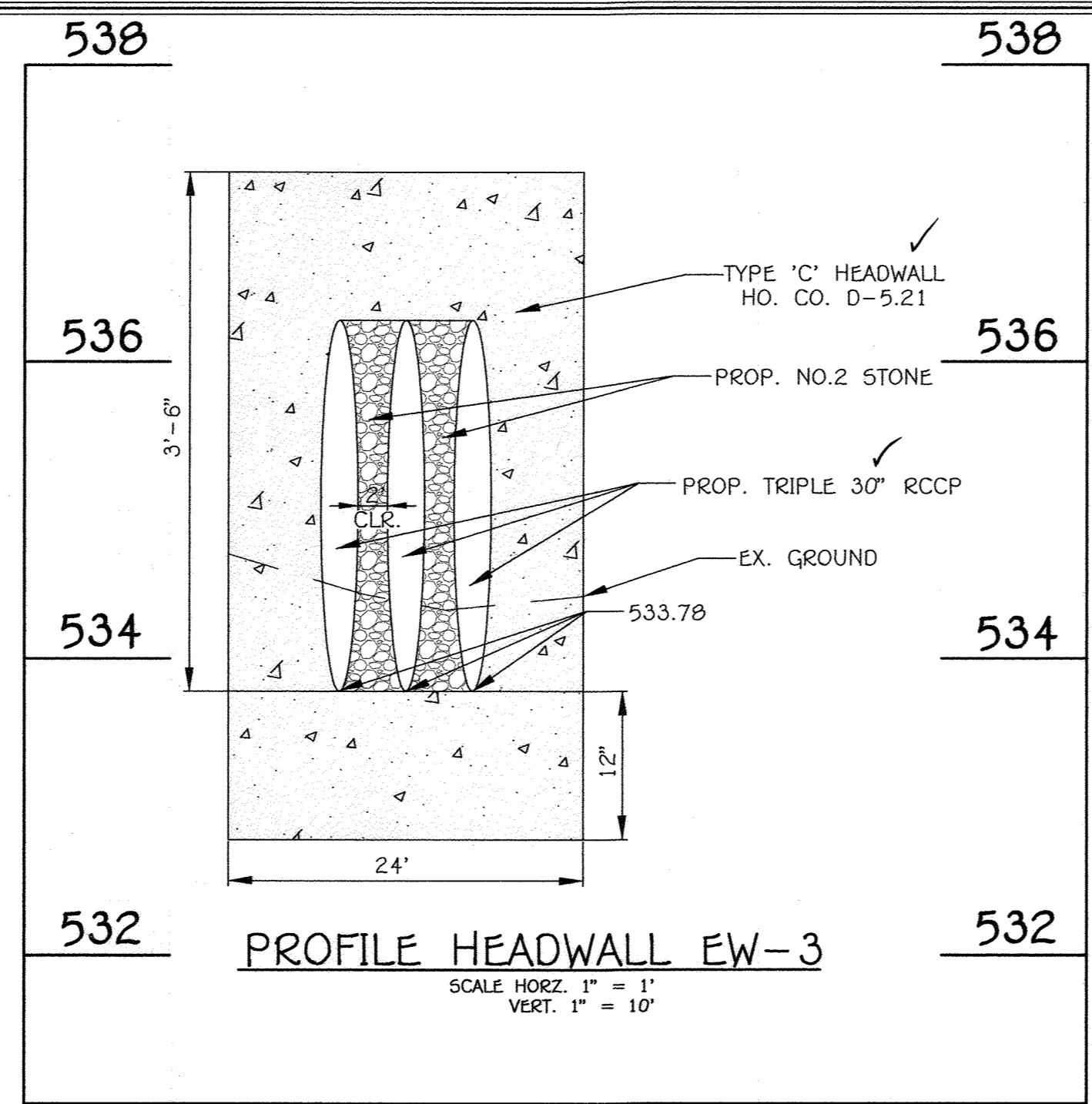
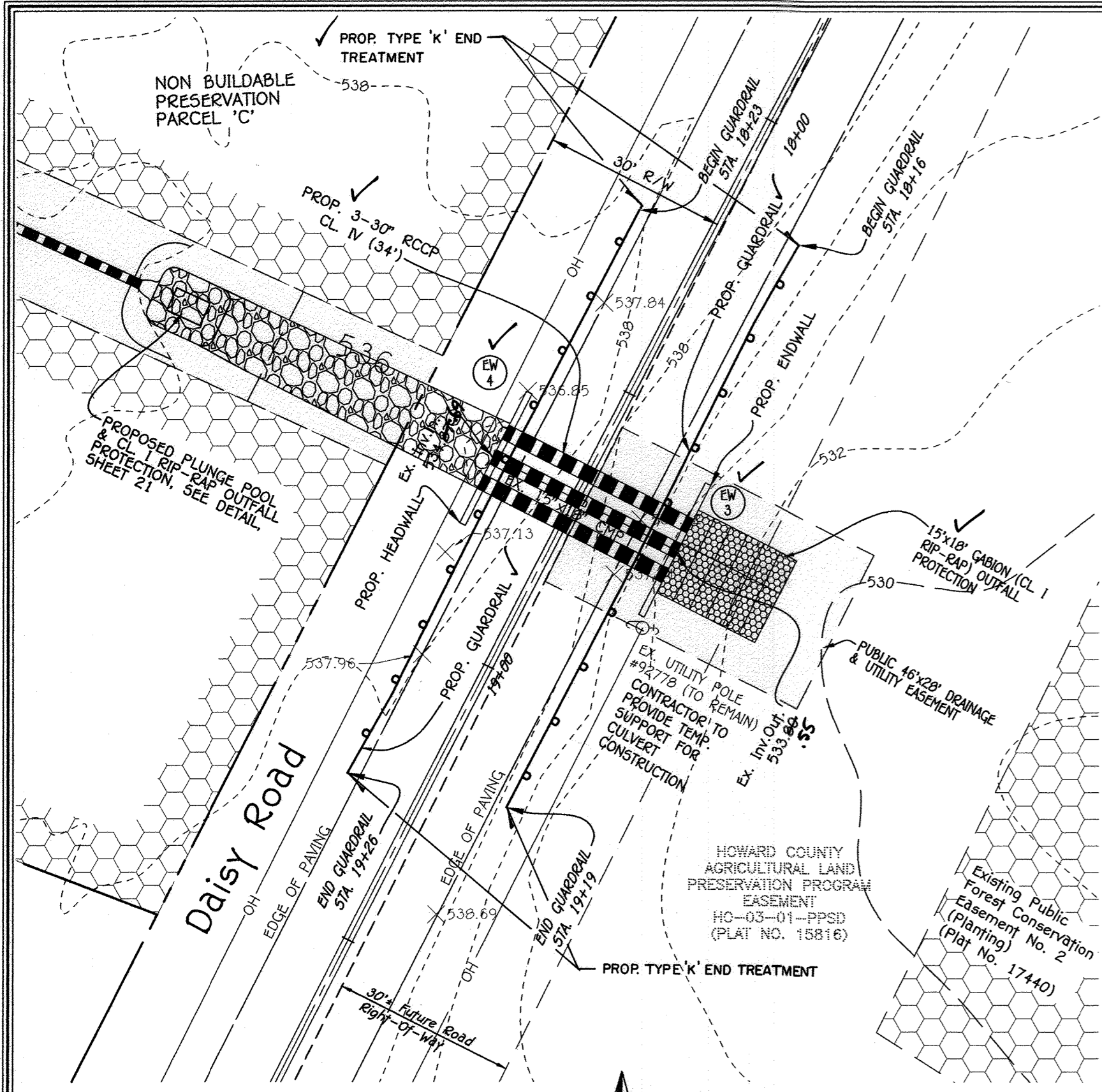
I hereby certify that the facilities shown on this AS-BUILT drawing are as shown on the approved plans and specifications.

*[Signature]*  
 Date: 12/17/18  
 AS-BUILT

CULVERT REPLACEMENT  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

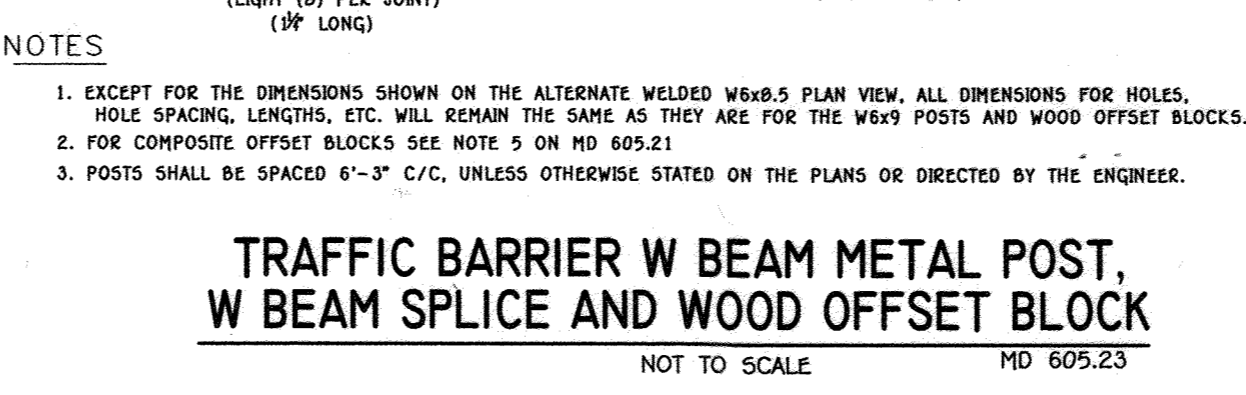
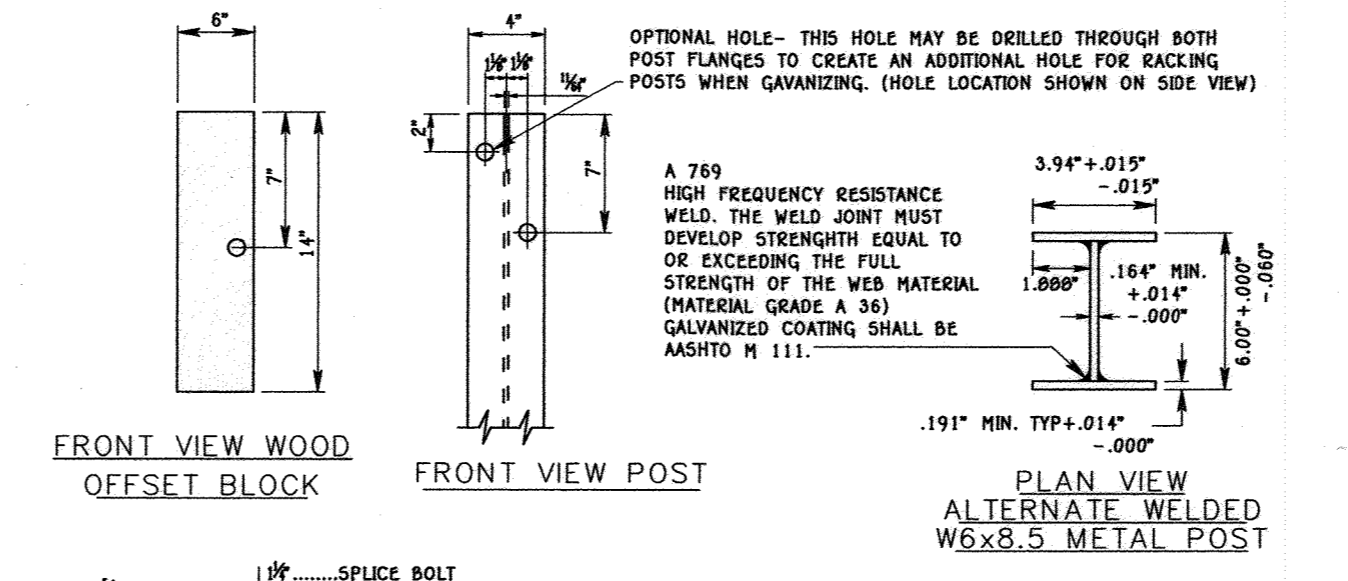
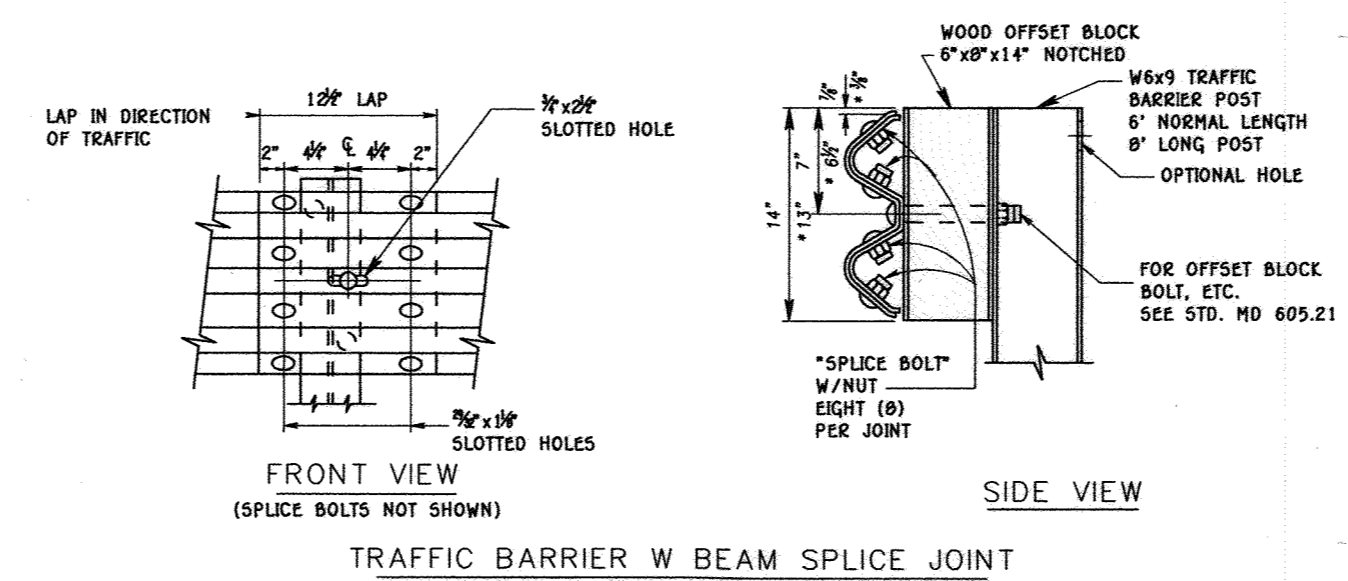
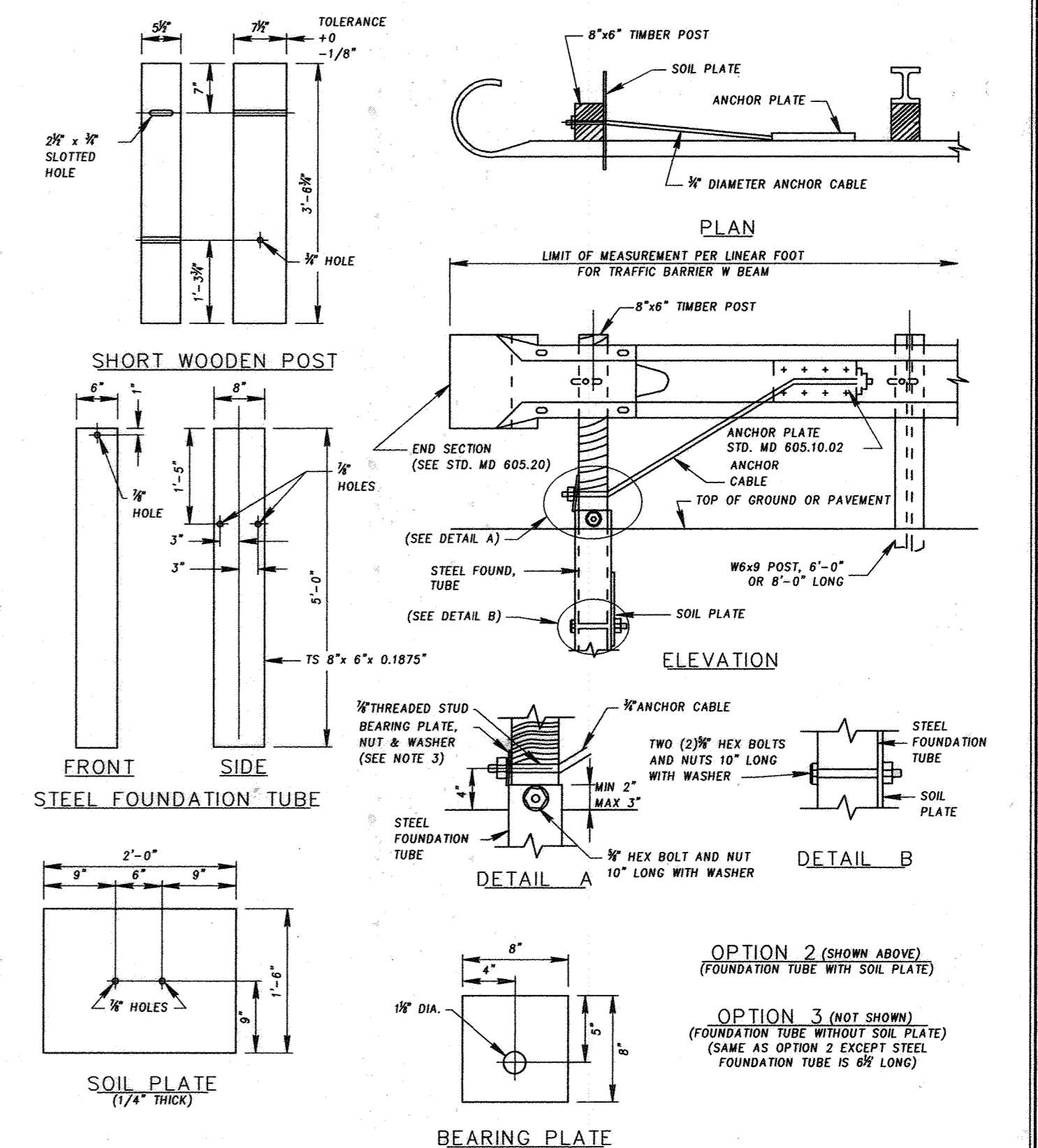
ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 30 of 35

"AS-BUILT" F-18-092



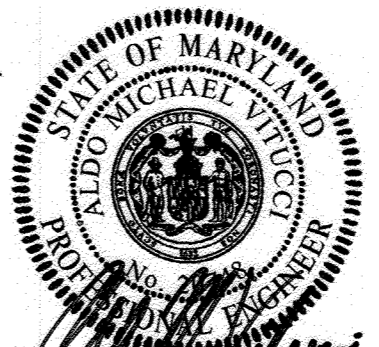
APPROVED: DEPARTMENT OF PUBLIC WORKS		
CHIEF, BUREAU OF HIGHWAYS	<i>[Signature]</i>	1/18/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING		
CHIEF, DIVISION OF LAND DEVELOPMENT	<i>[Signature]</i>	3-20-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION	<i>[Signature]</i>	3-8-19
REVISIONS		
NO.	DESCRIPTION	DATE

**TYPE 'K' TRAFFIC BARRIER END TREATMENT OPTION 2 & 3 ANCHORAGE (MD 605.10-01)**



**NOTES**

- EXCEPT FOR THE DIMENSIONS SHOWN ON THE ALTERNATE WELDED W6x8.5 PLAN VIEW, ALL DIMENSIONS FOR HOLES, HOLE SPACING, LENGTHS, ETC. WILL REMAIN THE SAME AS THEY ARE FOR THE W6x9 POSTS AND WOOD OFFSET BLOCKS.
- FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21
- POSTS SHALL BE SPACED 6'-3" C/C, UNLESS OTHERWISE STATED ON THE PLANS OR DIRECTED BY THE ENGINEER.



**AS-BUILT CERTIFICATION**

I hereby certify that the facilities shown on this plan are as shown on this AS-BUILT plan and as specified on the approved plans and specifications.

*[Signature]*  
Date: 12/2/18

**CULVERT REPLACEMENT & GUARDRAIL DETAILS LINDEN GROVE PHASE ONE**

LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

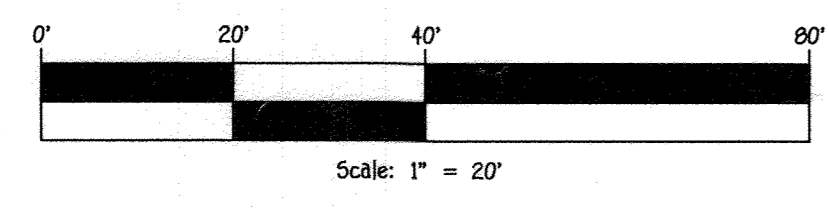
ZONED: RC-DEO  
TAX MAP No. B GRID No. 7 PARCEL No. 5  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 12, 2018  
SHEET 31 OF 35

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 10272 BATHURSTON NATIONAL FLEE  
ELLSWORTH CITY, MARYLAND 21042  
(410) 481-2095

**OWNER:** KIMBERLY/HERITAGE LLC  
3425 HIPPLEY MILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7900

**DEVELOPER:** HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7900

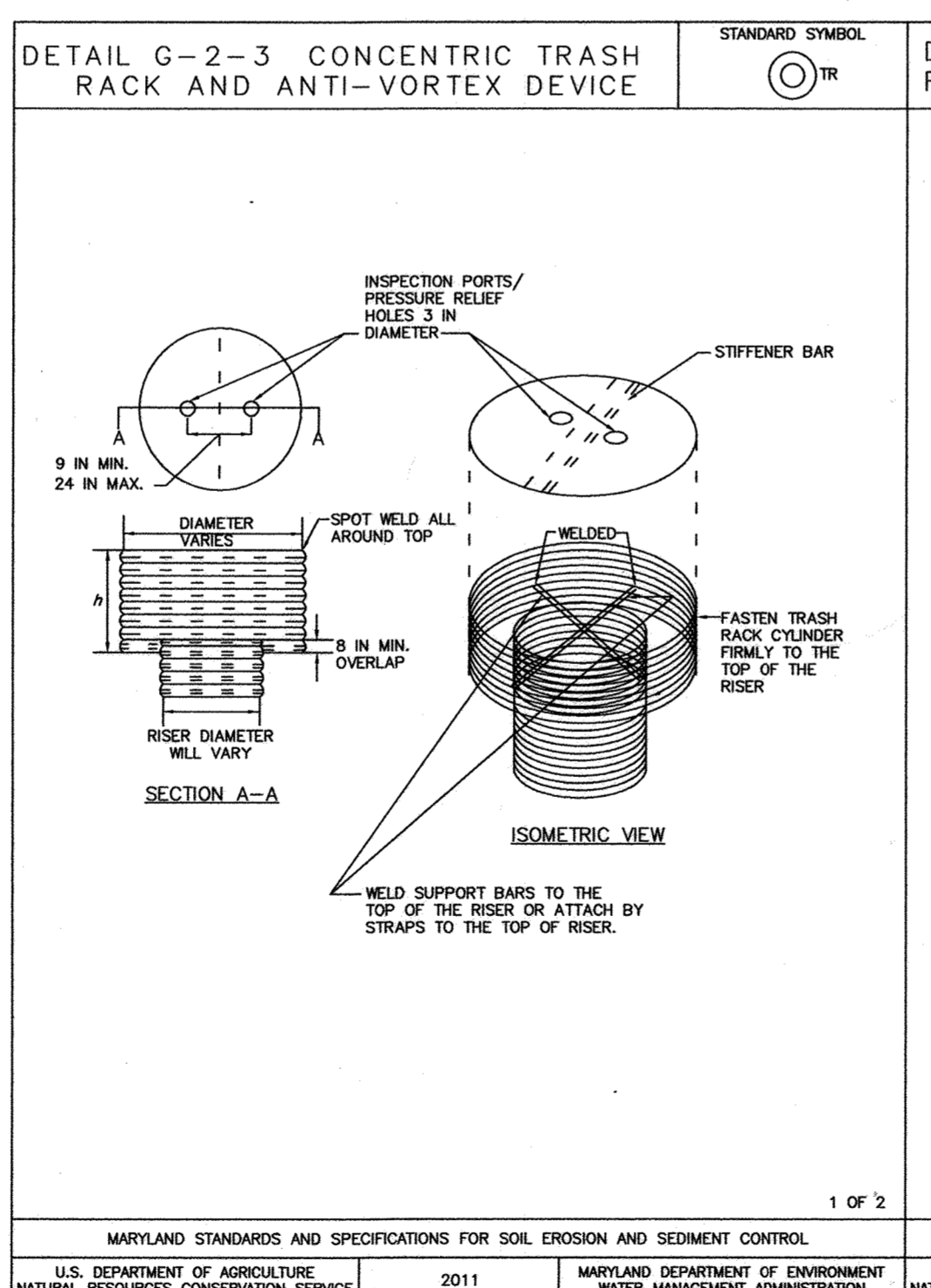
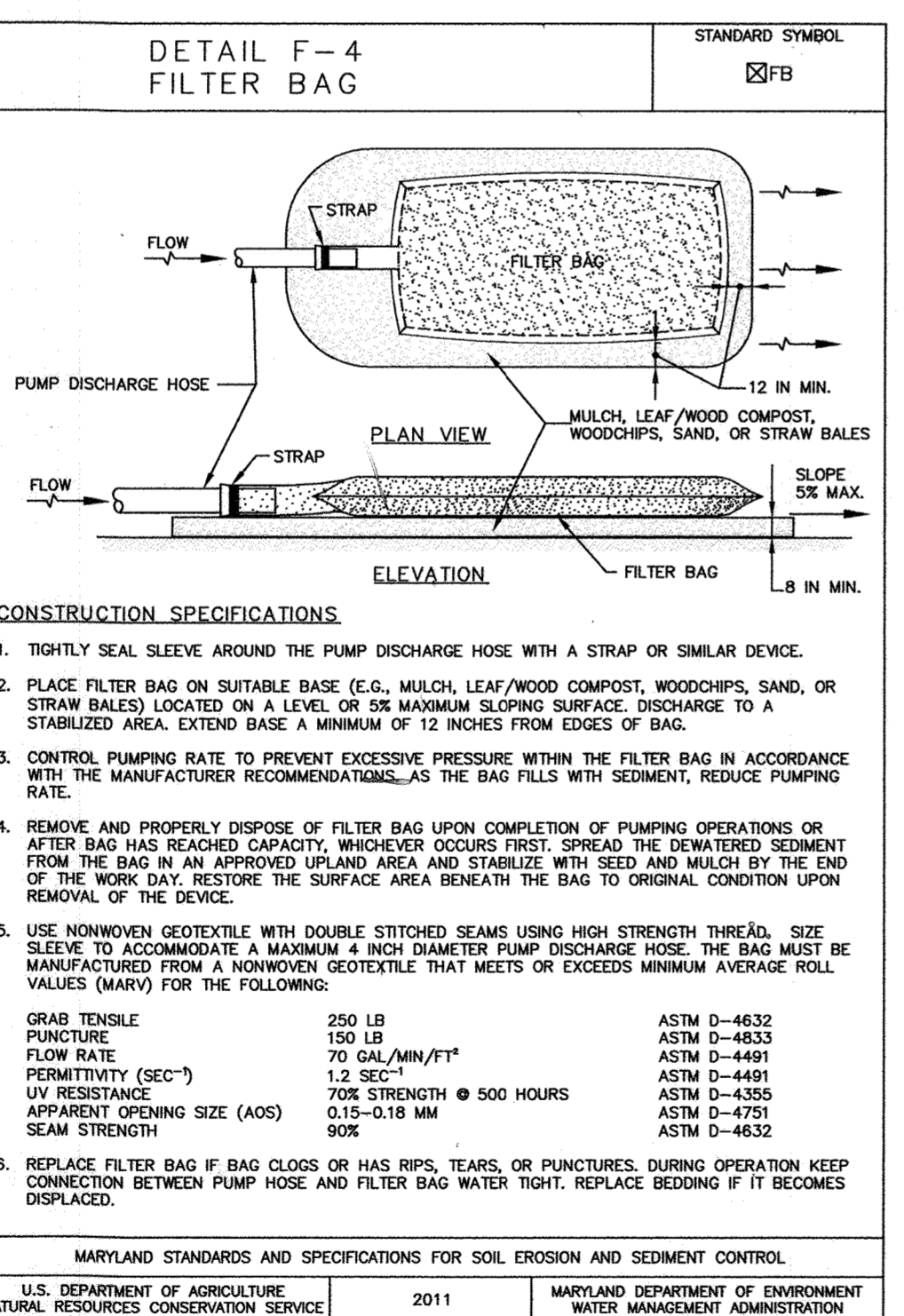
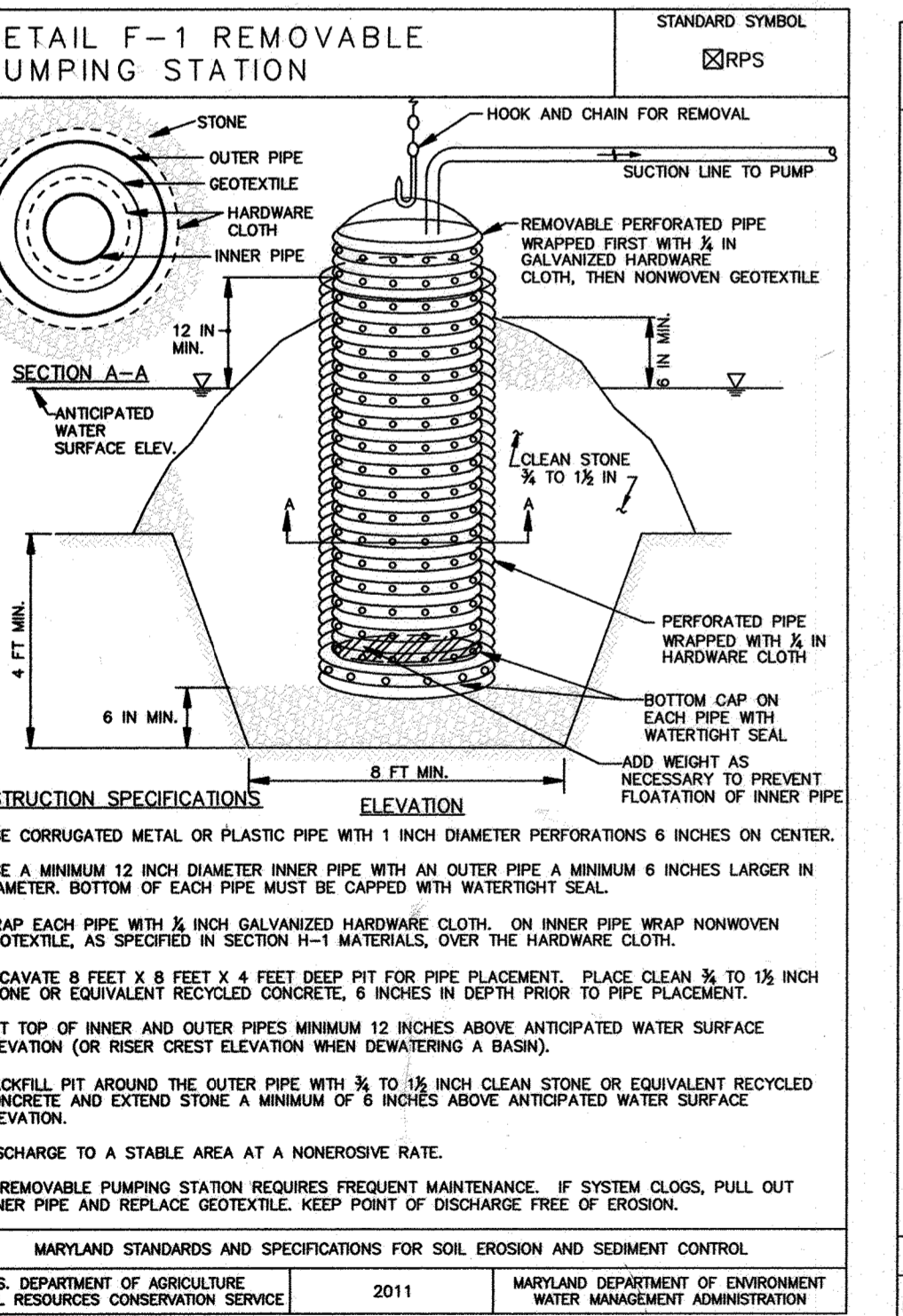
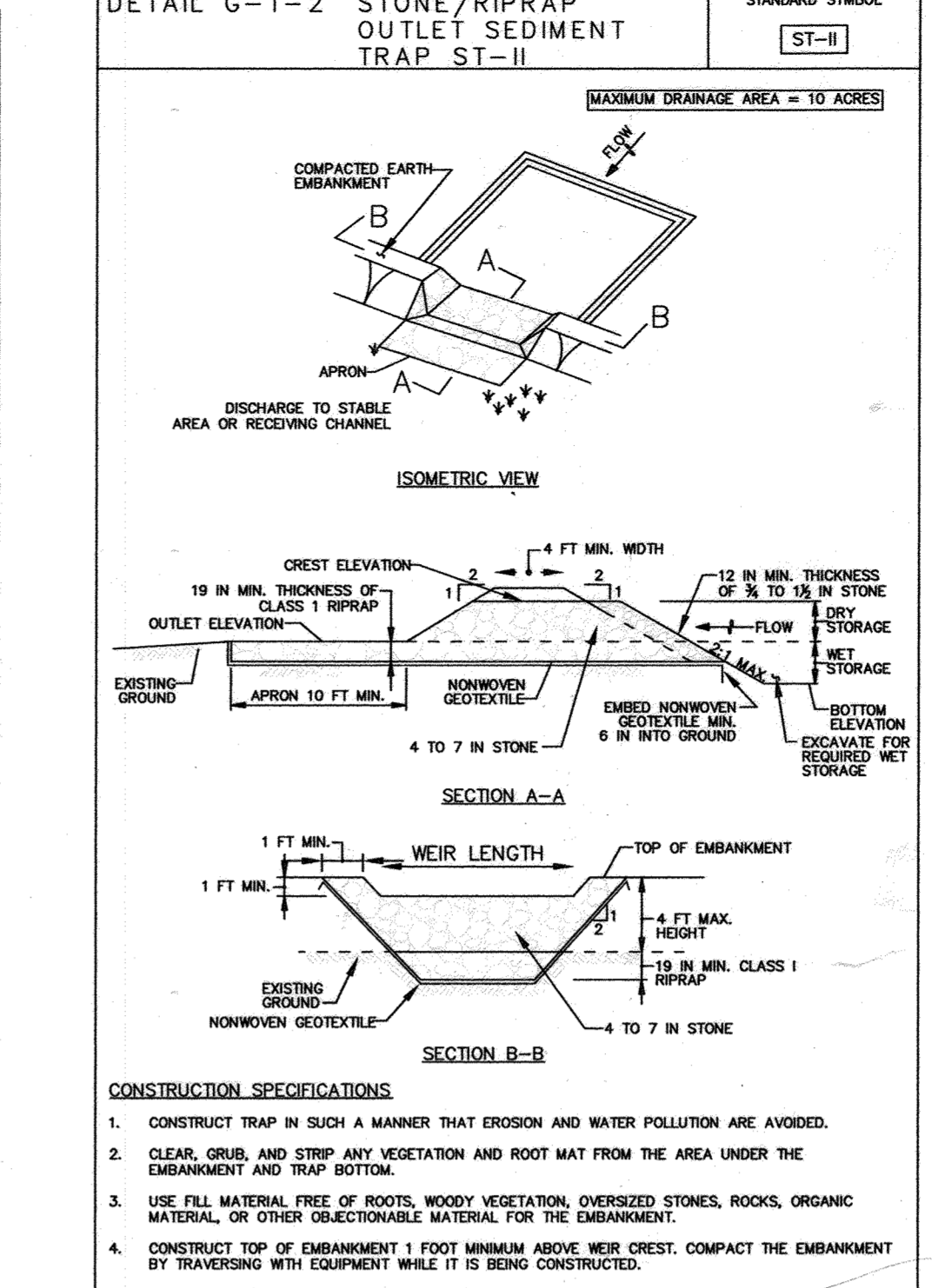
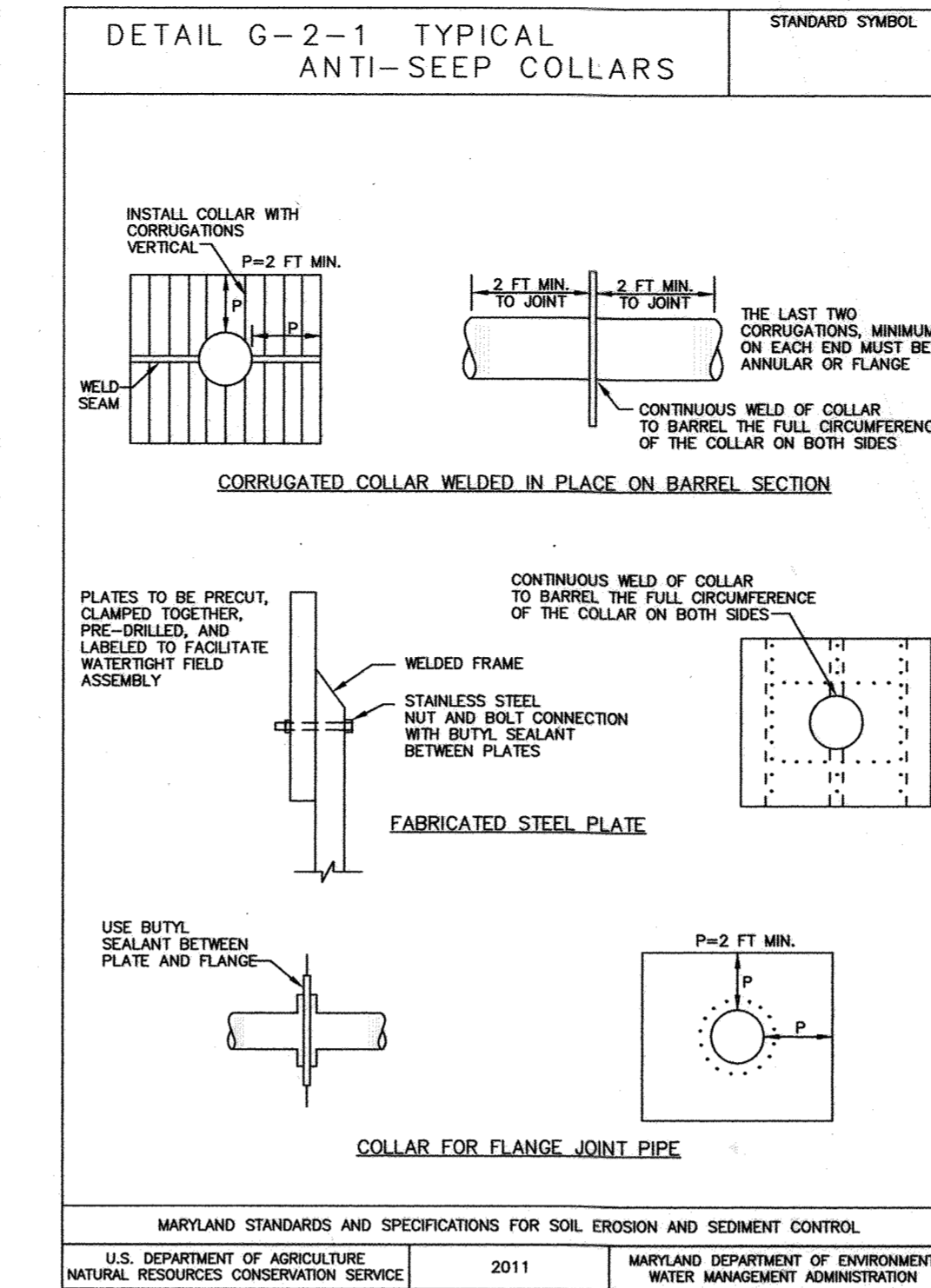
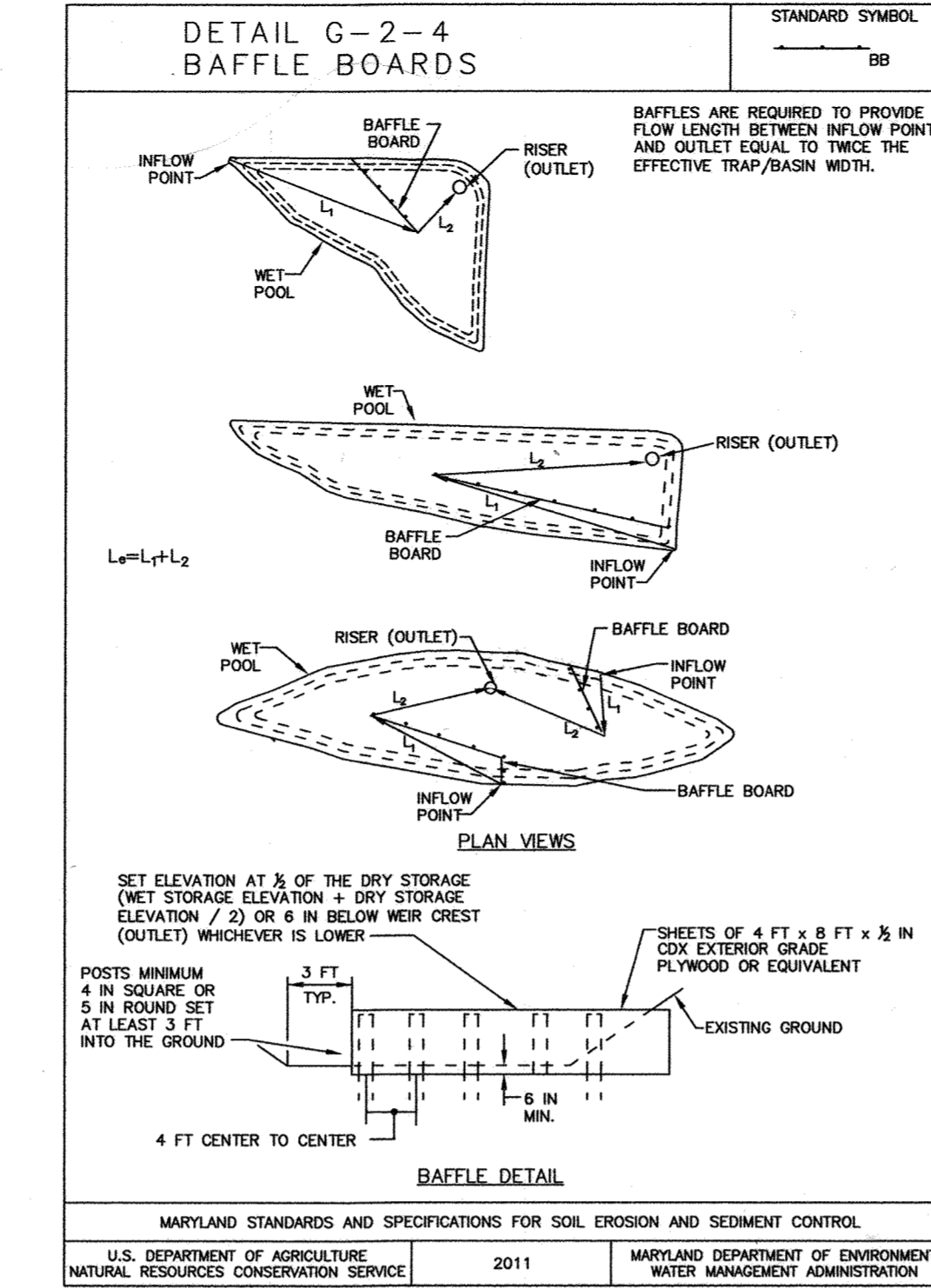
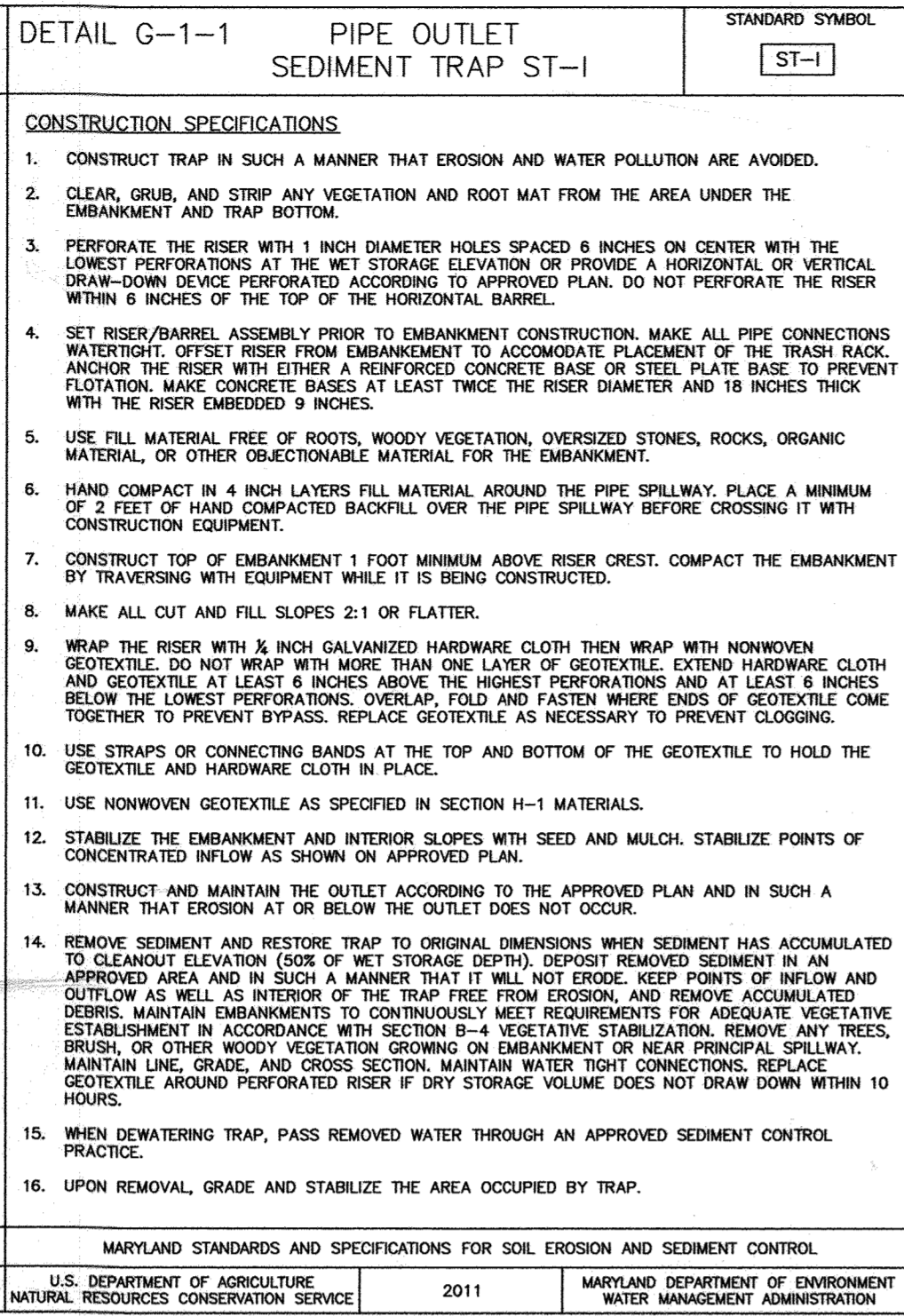
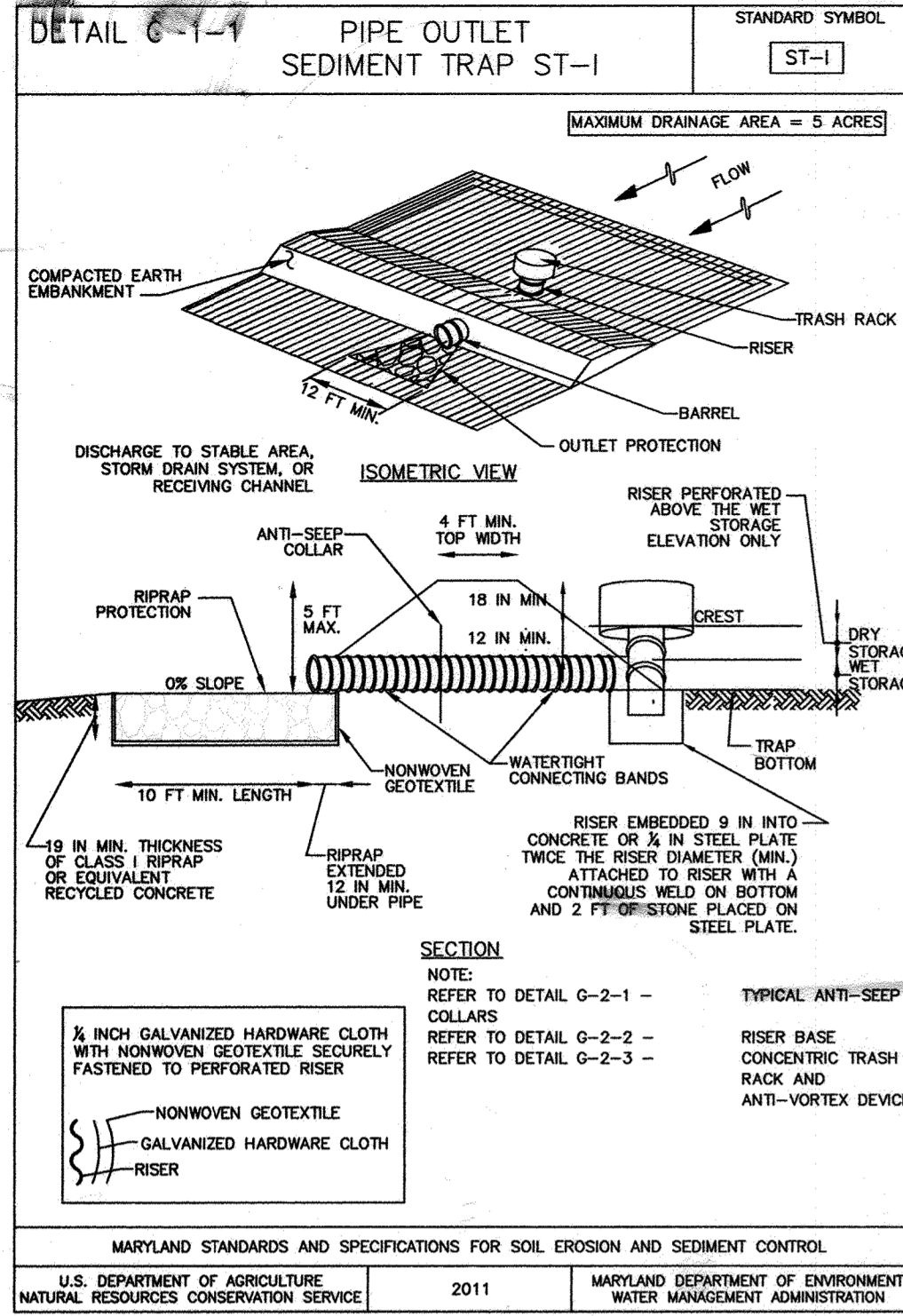
Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-19.



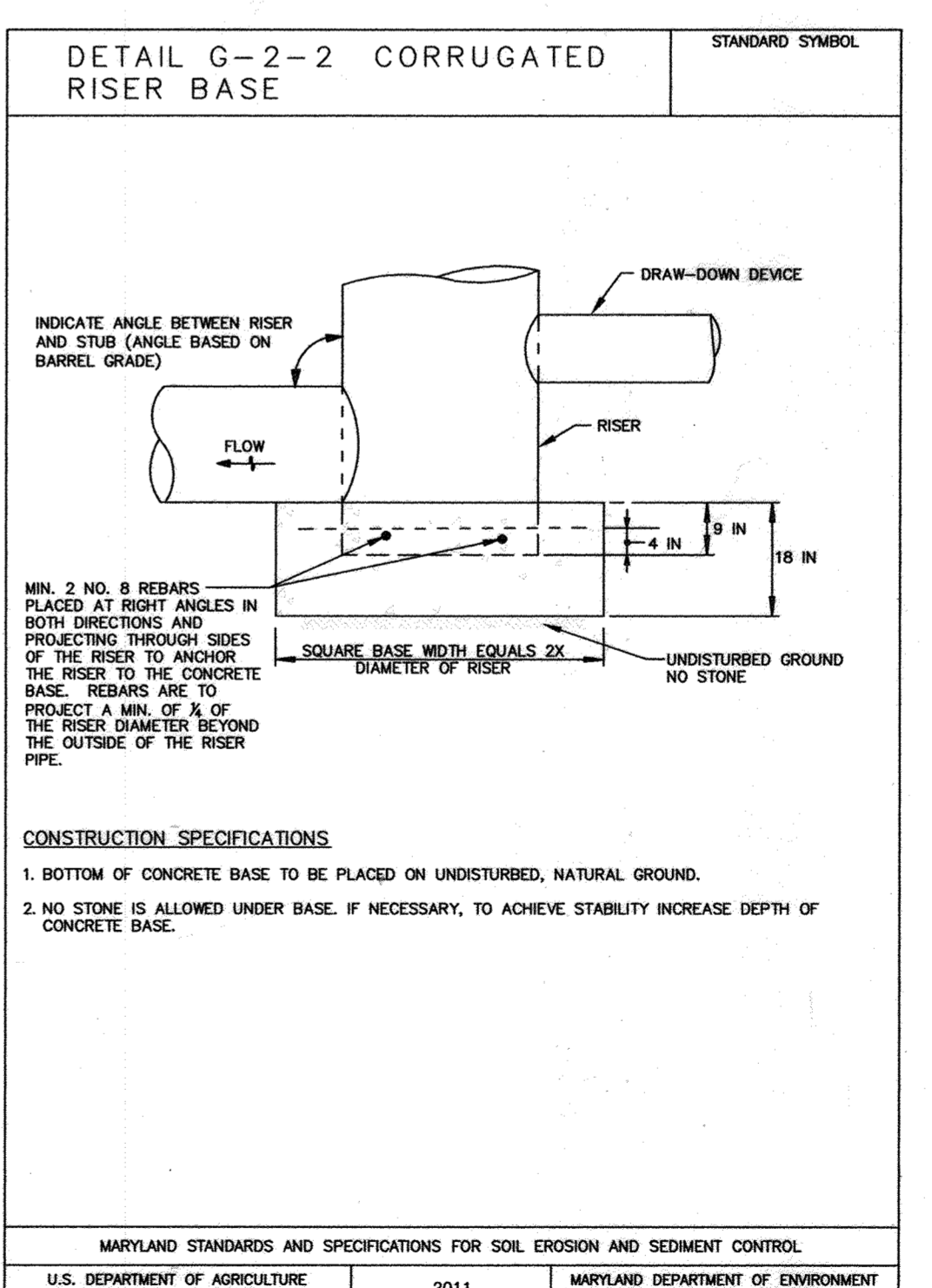
**TYPE 'K' TRAFFIC BARRIER END TREATMENT ANCHORAGE DETAILS (MD 605.10-02)**

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"AS-BUILT" F-18-092



TRASH RACK CYLINDER	MINIMUM TOP					
RISER DIAM. (IN)	DIAM. (IN)	THICKNESS (GAUGE)	MINIMUM SIZE SUPPORT BAR	THICKNESS (GAUGE)	STIFFENER	
12	18	16	14	#6 REBAR	16	N/A
15	21	16	15	#6 REBAR	16	N/A
18	27	16	16	#6 REBAR	16	N/A
21	30	16	19	#6 REBAR	16	N/A
24	36	16	21	#6 REBAR	14	N/A
27	42	16	21	#6 REBAR	14	N/A
36	54	14	25	#6 REBAR	12	N/A
42	60	14	27	#6 REBAR	12	N/A
48	72	12	29	1/2 IN PIPE OR 1/2 x 1/2 x 1/4 ANGLE	10	N/A
54	78	12	33	1/2 IN PIPE OR 1/2 x 1/2 x 1/4 ANGLE	10	N/A
60	90	12	37	1/2 IN PIPE OR 1/2 x 1/2 x 1/4 ANGLE	8	N/A
66	96	10	41	2 IN PIPE OR 2 x 2 x 1/4 ANGLE	8	2 x 2 x 1/4 ANGLE
72	102	10	44	2 IN PIPE OR 2 x 2 x 1/4 ANGLE	8	2 1/2 x 2 1/2 x 1/4 ANGLE
78	114	10	47	2 1/2 IN PIPE OR 2 x 2 x 1/4 ANGLE	8	2 1/2 x 2 1/2 x 1/4 ANGLE
84	120	10	50	2 1/2 IN PIPE OR 2 1/2 x 2 1/2 x 1/4 ANGLE	8	2 1/2 x 2 1/2 x 1/4 ANGLE



**DESIGN CERTIFICATION**

I hereby certify that the Plans and Specifications herein have been prepared in accordance with the laws, regulations and standards of the State of Maryland, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-19.

12/12/19  
Date

20748  
License No.

Alto M. Vitucci, P.E.  
Printed Name

**OWNER/DEVELOPER CERTIFICATION**

"I/We Certify that Any Clearing, Grading, Construction or Development Will be Done Pursuant to This Approved Erosion and Sediment Control Plan, Including Inspecting and Maintaining Controls And that the Responsible Personnel Involved in the Construction Project Will Have a Certificate of Training 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."

12-12-19  
Date

Owner's/Developer's Signature  
J. Feag - Managing Member

Printed Name & Title

Approved: This Plan is Approved for Soil Erosion and Sediment Control by  
John L. Klotz  
12/29/19  
Date

Howard Soil Conservation District

Approved: Department of Planning and Zoning  
Vicki S. Deane  
3-20-19  
Date

Chief, Division of Land Development

Approved: Department of Public Works  
David Edmund  
3-8-19  
Date

Chief, Bureau of Highways

1/15/2019  
Date

NO.	DESCRIPTION	DATE

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS

CENTRAL SQUARE OFFICE: PARK - 10272 BALTIMORE NATIONAL PIKE  
ELLCOTT CITY, MARYLAND 21104  
(410) 461-3299

**AS-BUILT VERIFICATION**

Note: There is no "AS-BUILT" information provided on this sheet.

12/12/19  
Date

Alto M. Vitucci, P.E.  
Professional Engineer

**OWNER:**  
KIMBERLY/HERITAGE LLC  
3425 HIPSLEY MILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7900

**DEVELOPER:**  
HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7900

**STATE OF MARYLAND**  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF LAND DEVELOPMENT

12/12/19  
Date

Alto M. Vitucci, P.E.

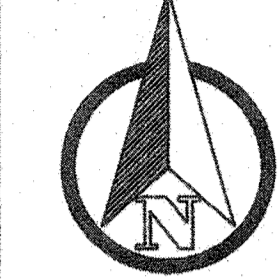
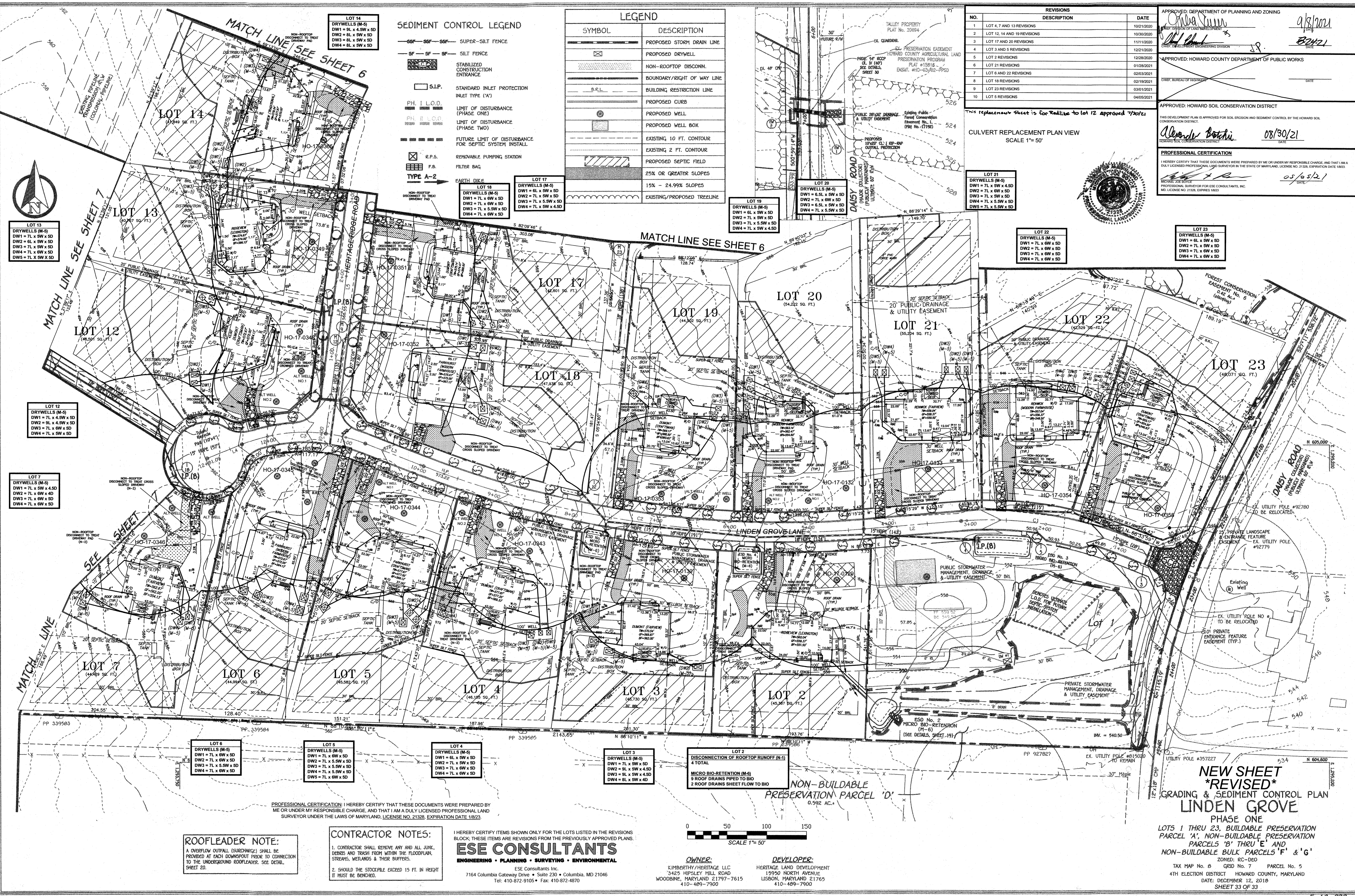
"Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-19."

**SEDIMENT TRAP DETAILS**  
**LINDEN GROVE**  
PHASE ONE  
LOTS 1 THRU 23, BUILDABLE PRESERVATION  
PARCEL 'A', NON-BUILDABLE PRESERVATION  
PARCELS 'B' THRU 'E' AND  
NON-BUILDABLE BULK PARCELS 'F' & 'G'

ZONED: RC-DEO  
TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 12, 2018  
SHEET 32 of 35

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET





LOT 13  
DRYWELLS (M-5)  
DW1 = 7L x 5W x 5D  
DW2 = 6L x 5W x 5D  
DW3 = 7L x 5W x 5D  
DW4 = 7L x 6W x 5D  
DW5 = 7L x 5W x 5D

LOT 12  
DRYWELLS (M-5)  
DW1 = 7L x 4.5W x 5D  
DW2 = 9L x 4.5W x 5D  
DW3 = 7L x 6W x 5D  
DW4 = 7L x 5W x 5D

LOT 7  
DRYWELLS (M-5)  
DW1 = 7L x 5W x 4.5D  
DW2 = 7L x 6W x 4D  
DW3 = 7L x 6W x 5D  
DW4 = 7L x 6W x 5D

LOT 6  
DRYWELLS (M-5)  
DW1 = 7L x 6W x 5D  
DW2 = 7L x 5.5W x 5D  
DW3 = 7L x 5.5W x 5D  
DW4 = 7L x 6W x 5D

LOT 5  
DRYWELLS (M-5)  
DW1 = 7L x 6W x 5D  
DW2 = 7L x 5.5W x 5D  
DW3 = 7L x 5.5W x 5D  
DW4 = 7L x 6W x 5D

LOT 4  
DRYWELLS (M-5)  
DW1 = 6L x 5W x 5D  
DW2 = 7L x 5W x 5D  
DW3 = 7L x 6W x 5D  
DW4 = 7L x 6W x 5D

LOT 3  
DRYWELLS (M-5)  
DW1 = 7L x 5W x 5D  
DW2 = 9L x 5W x 4.5D  
DW3 = 9L x 5W x 4.5D  
DW4 = 8L x 5W x 4D

LOT 2  
DISCONNECTION OF ROOFTOP RUNOFF (N-1)  
4 TOTAL  
MICRO BIO-RETENTION (M-6)  
9 ROOF DRAINS PIPED TO BIO  
2 ROOF DRAINS SHEET FLOW TO BIO

LOT 21  
DRYWELLS (M-5)  
DW1 = 6L x 5W x 4.5D  
DW2 = 7L x 6W x 5D  
DW3 = 7L x 6W x 5D  
DW4 = 7L x 5.5W x 5D

LOT 22  
DRYWELLS (M-5)  
DW1 = 7L x 6W x 5D  
DW2 = 7L x 6W x 5D  
DW3 = 7L x 6W x 5D  
DW4 = 7L x 6W x 5D

LOT 23  
DRYWELLS (M-5)  
DW1 = 6L x 5W x 5D  
DW2 = 7L x 5W x 5D  
DW3 = 7L x 6W x 5D  
DW4 = 7L x 6W x 5D

LOT 14  
DRYWELLS (M-5)  
DW1 = 8L x 4.5W x 5D  
DW2 = 8L x 5W x 5D  
DW3 = 8L x 5W x 5D  
DW4 = 8L x 5W x 5D

LOT 15  
DRYWELLS (M-5)  
DW1 = 6L x 5W x 5D  
DW2 = 7L x 5W x 5D  
DW3 = 7L x 5.5W x 5D  
DW4 = 7L x 6W x 5D

LOT 16  
DRYWELLS (M-5)  
DW1 = 6L x 5W x 5D  
DW2 = 7L x 5W x 5D  
DW3 = 7L x 5.5W x 5D  
DW4 = 7L x 6W x 5D

LOT 17  
DRYWELLS (M-5)  
DW1 = 6L x 5W x 5D  
DW2 = 7L x 5W x 5D  
DW3 = 7L x 5.5W x 5D  
DW4 = 7L x 5W x 4.5D

LOT 18  
DRYWELLS (M-5)  
DW1 = 6L x 5W x 5D  
DW2 = 7L x 6W x 5D  
DW3 = 7L x 5.5W x 5D  
DW4 = 7L x 6W x 5D

LOT 19  
DRYWELLS (M-5)  
DW1 = 6L x 5W x 5D  
DW2 = 7L x 5W x 5D  
DW3 = 7L x 5.5W x 5D  
DW4 = 7L x 5W x 4.5D

LOT 20  
DRYWELLS (M-5)  
DW1 = 6.5L x 5W x 5D  
DW2 = 7L x 6W x 5D  
DW3 = 6.5L x 6W x 5D  
DW4 = 7L x 5.5W x 5D

LOT 22  
DRYWELLS (M-5)  
DW1 = 7L x 6W x 5D  
DW2 = 7L x 6W x 5D  
DW3 = 7L x 6W x 5D  
DW4 = 7L x 6W x 5D

LOT 23  
DRYWELLS (M-5)  
DW1 = 6L x 5W x 5D  
DW2 = 7L x 5W x 5D  
DW3 = 7L x 6W x 5D  
DW4 = 7L x 6W x 5D

**SEDIMENT CONTROL LEGEND**

- SF — SF — SF — SUPER-SILT FENCE
- SF — SF — SF — SILT FENCE
- [Symbol] STABILIZED CONSTRUCTION ENTRANCE
- [Symbol] S.I.P. STANDARD INLET PROTECTION INLET TYPE 'A'
- [Symbol] PH. I L.O.D. LIMIT OF DISTURBANCE (PHASE ONE)
- [Symbol] PH. II L.O.D. LIMIT OF DISTURBANCE (PHASE TWO)
- [Symbol] FUTURE LIMIT OF DISTURBANCE FOR SEPTIC SYSTEM INSTALL.
- [Symbol] R.P.S. REMOVABLE PUMPING STATION
- [Symbol] F.B. FILTER BAG
- TYPE A-2

**LEGEND**

SYMBOL	DESCRIPTION
[Symbol]	PROPOSED STORM DRAIN LINE
[Symbol]	PROPOSED DRYWELL
[Symbol]	NON-ROOFTOP DISCONN.
[Symbol]	BOUNDARY/RIGHT OF WAY LINE
[Symbol]	BUILDING RESTRICTION LINE
[Symbol]	PROPOSED CURB
[Symbol]	PROPOSED WELL
[Symbol]	PROPOSED WELL BOX
[Symbol]	EXISTING 10 FT. CONTOUR
[Symbol]	EXISTING 2 FT. CONTOUR
[Symbol]	PROPOSED SEPTIC FIELD
[Symbol]	25% OR GREATER SLOPES
[Symbol]	15% - 24.99% SLOPES
[Symbol]	EXISTING/PROPOSED TREE LINE

**REVISIONS**

NO.	DESCRIPTION	DATE
1	LOT 4, 7 AND 13 REVISIONS	10/21/2020
2	LOT 12, 14 AND 19 REVISIONS	10/30/2020
3	LOT 17 AND 20 REVISIONS	11/11/2020
4	LOT 3 AND 5 REVISIONS	12/21/2020
5	LOT 2 REVISIONS	12/28/2020
6	LOT 21 REVISIONS	01/28/2021
7	LOT 6 AND 22 REVISIONS	02/03/2021
8	LOT 18 REVISIONS	02/19/2021
9	LOT 23 REVISIONS	03/01/2021
10	LOT 5 REVISIONS	04/05/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Chela Sun* 01/13/2021  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 APPROVED: HOWARD SOIL CONSERVATION DISTRICT  
 APPROVED: PROFESSIONAL ENGINEERING BOARD  
 APPROVED: PROFESSIONAL LAND SURVEYOR IN THE STATE OF MARYLAND  
 PROFESSIONAL CERTIFICATION  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF MARYLAND, LICENSE NO. 21328, EXPIRATION DATE 18/23.  
 05/05/21

CULVERT REPLACEMENT PLAN VIEW  
SCALE 1" = 50'



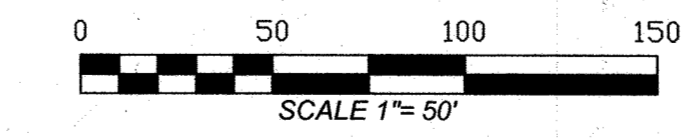
**ROOFLEADER NOTE:**  
 AN OVERFLOW OUTFALL (SURCHARGE) SHALL BE PROVIDED AT EACH DOWNSPOUT PRIOR TO CONNECTION TO THE UNDERGROUND ROOFLEADER. SEE DETAIL SHEET 20.

**CONTRACTOR NOTES:**  
 1. CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FLOODPLAIN, STREAMS, WETLANDS & THEIR BUFFERS.  
 2. SHOULD THE STOCKPILE EXCEED 15 FT. IN HEIGHT IT MUST BE BENCHED.

I HEREBY CERTIFY ITEMS SHOWN ONLY FOR THE LOTS LISTED IN THE REVISIONS BLOCK; THESE ITEMS ARE REVISIONS FROM THE PREVIOUSLY APPROVED PLANS.  
**ESE CONSULTANTS**  
 ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL  
 ESE Consultants Inc.  
 7164 Columbia Gateway Drive • Suite 230 • Columbia, MD 21046  
 Tel: 410-872-9105 • Fax: 410-872-4870

**OWNER:**  
 KIMBERLY/HERITAGE LLC  
 7425 HIPSLEY HILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 15950 NORTH AVENUE  
 LISSON, MARYLAND 21765  
 410-489-7900



**NEW SHEET \*REVISED\***  
**GRADING & SEDIMENT CONTROL PLAN**  
**LINDEN GROVE**  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
 ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 33 OF 33

**CONTRACTOR NOTES:**

1. CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FLOODPLAIN, STREAMS, WETLANDS & THEIR BUFFERS.
2. SHOULD THE STOCKPILE EXCEED 15 FT. IN HEIGHT IT MUST BE BENCHED.

**HOUSE CONSTRUCTION NOTES:**

1. THIS HOWARD (SCD) STANDARD SEDIMENT CONTROL PLAN MAY NOT BE USED TO OBTAIN PERMITS FOR HOUSE CONSTRUCTION FOR THIS PROJECT.
2. HOUSES MAY NOT BE BUILT USING THIS DRAWING.

**ROOFLEADER NOTE:**

A OVERFLOW OUTFALL (SURCHARGE) SHALL BE PROVIDED AT EACH DOWNSPOUT PRIOR TO CONNECTION TO THE UNDERGROUND ROOFLEADER. SEE DETAIL, SHEET 20.

**SEDIMENT CONTROL LEGEND**

- S-F---S-F---S-F--- SUPER-SILT FENCE
- S-F---S-F---S-F--- SILT FENCE
- [Symbol] STABILIZED CONSTRUCTION ENTRANCE
- [Symbol] S.I.P. STANDARD INLET PROTECTION INLET TYPE 'A'
- [Symbol] P.H. I.L.O.D. LIMIT OF DISTURBANCE (PHASE ONE)
- [Symbol] P.H. II L.O.D. LIMIT OF DISTURBANCE (PHASE TWO)
- [Symbol] FUTURE LIMIT OF DISTURBANCE FOR SEPTIC SYSTEM INSTALL
- [Symbol] R.P.S. REMOVABLE PUMPING STATION
- [Symbol] F.B. FILTER BAG
- TYPE A-2 EARTH DIKE

**LOT 11**  
DRYWELLS (M-5)  
DW1 = 7L x 6W x 5D  
DW2 = 7L x 6W x 5D  
DW3 = 7L x 6W x 5D  
DW4 = 7L x 6W x 5D  
DW5 = 6L x 5W x 5D

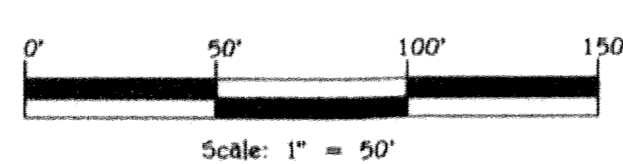
**LOT 10**  
DRYWELLS (M-5)  
DW1 = 6L x 5W x 5D  
DW2 = 6L x 4W x 5D  
DW3 = 7L x 6W x 5D  
DW4 = 6.5L x 5W x 5D

**LOT 9**  
DRYWELLS (M-5)  
DW1 = 7L x 6W x 5D  
DW2 = 6L x 4W x 4D  
DW3 = 6L x 5W x 5D  
DW4 = 7L x 5W x 5D

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF MARYLAND, LICENSE NO. 21328, EXPIRATION DATE 1/8/23.

I HEREBY CERTIFY ITEMS SHOWN ONLY FOR THE LOTS LISTED IN THE REVISIONS BLOCK; THESE ITEMS ARE REVISIONS FROM THE PREVIOUSLY APPROVED PLANS.

**ESE CONSULTANTS**  
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL  
ESE Consultants Inc.  
7164 Columbia Gateway Drive • Suite 230 • Columbia, MD 21046  
Tel: 410-872-9105 • Fax: 410-872-4870



**OWNER:**  
KIMBERLY HERITAGE LLC  
3425 HIPSLEY HILL ROAD  
WOODBINE, MARYLAND 21797-7615  
410-489-7900

**DEVELOPER:**  
HERITAGE LAND DEVELOPMENT  
15950 NORTH AVENUE  
LISBON, MARYLAND 21765  
410-489-7900

**LEGEND**

SYMBOL	DESCRIPTION
[Symbol]	PROPOSED STORM DRAIN LINE
[Symbol]	PROPOSED DRYWELL
[Symbol]	NON-ROOFTOP DISCONN.
[Symbol]	BOUNDARY/RIGHT OF WAY LINE
[Symbol]	BUILDING RESTRICTION LINE
[Symbol]	PROPOSED CURB
[Symbol]	PROPOSED WELL
[Symbol]	PROPOSED WELL BOX
[Symbol]	EXISTING 10 FT. CONTOUR
[Symbol]	EXISTING 2 FT. CONTOUR
[Symbol]	PROPOSED SEPTIC FIELD
[Symbol]	25% OR GREATER SLOPES
[Symbol]	15% - 24.99% SLOPES
[Symbol]	EXISTING/PROPOSED TREE LINE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

DATE: 3/24/21

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DATE: 03/17/21

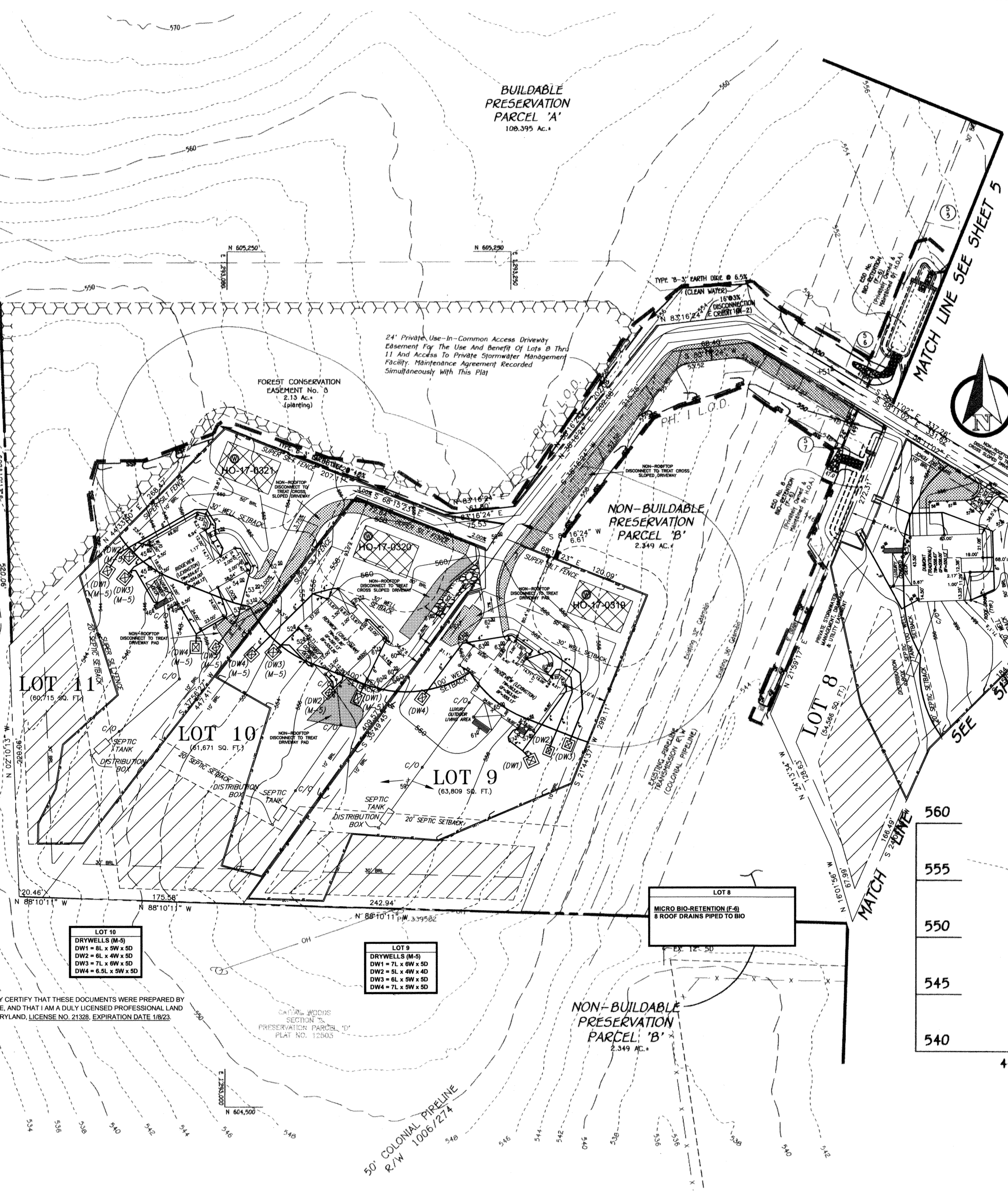
APPROVED: HOWARD SOIL CONSERVATION DISTRICT

DATE: 03/17/21

PROFESSIONAL CERTIFICATION

MICHAEL JOE BOYD  
PROFESSIONAL SURVEYOR FOR ESE CONSULTANTS, INC.  
MD LICENSE NO. 21328, EXPIRES 1/8/23

NO.	REVISIONS	DESCRIPTION	DATE
1	LOT 9 REVISIONS		07/20/2020
2	LOTS 10 AND 11 REVISIONS		12/10/2020
3	LOT 8 REVISIONS		02/03/2021

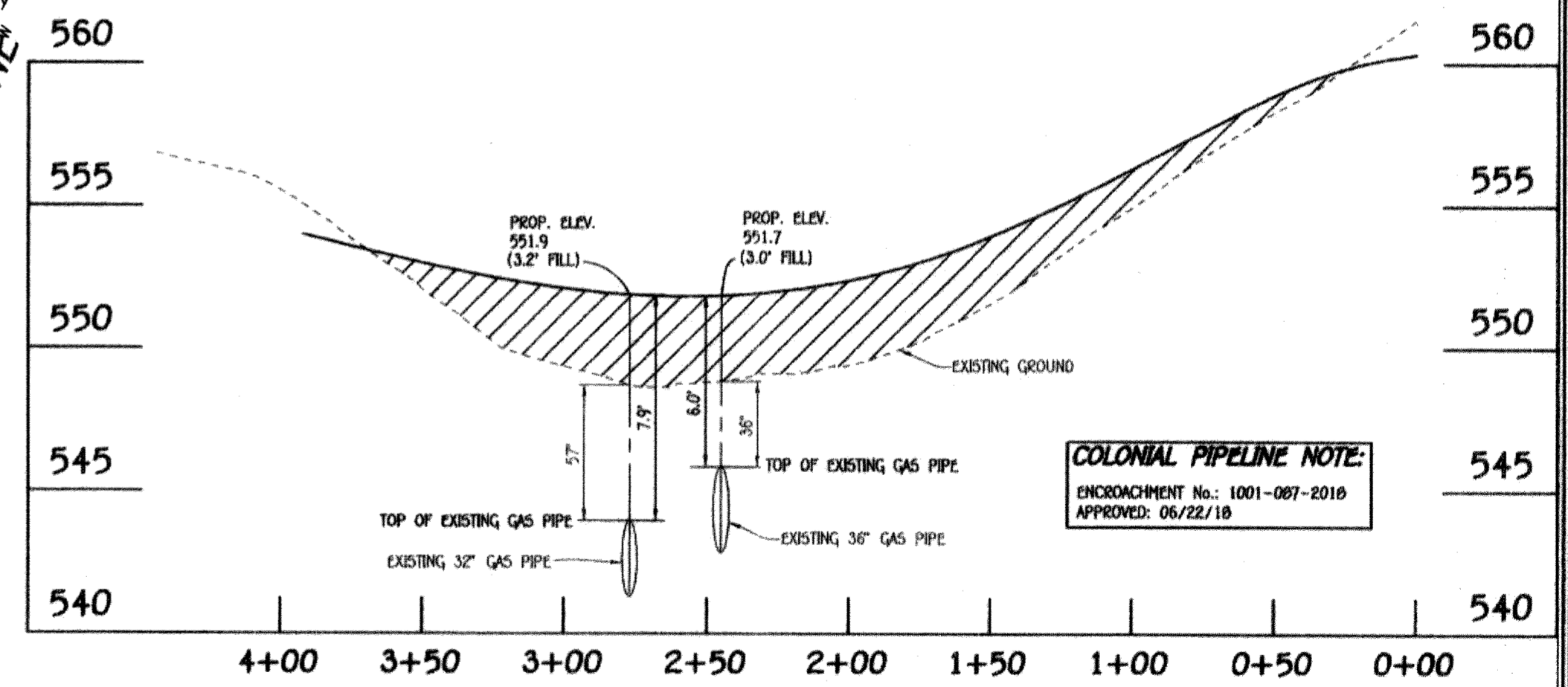


**PIPE OUTLET SEDIMENT TRAP ST-I**

	TRAP NO. 1	TRAP NO. 2
DRAINAGE AREA - INITIAL	4.30 AC.	0.81 AC.
DRAINAGE AREA - INTERIM	---	---
DRAINAGE AREA - FINAL	4.55 AC.	3.29 AC.
TOTAL STORAGE REQUIRED	18,360 CF	11,808 CF
TOTAL STORAGE PROVIDED	28,227 CF	21,819 CF
WET STORAGE REQUIRED	8,190 CF	5,904 CF
WET STORAGE PROVIDED	8,190 CF	5,904 CF
DRY STORAGE REQUIRED	10,170 CF	5,904 CF
DRY STORAGE PROVIDED	10,037 CF	10,915 CF
TRAP BOTTOM ELEVATION	548.00	536.50
TRAP BOTTOM DIMENSIONS	39'x115'	64'x63'
INLET CREST (DRY STORAGE) ELEVATION	551.40	537.99
OUTLET (WET STORAGE) ELEVATION	549.85	537.94
CLEANOUT ELEVATION	546.95	537.35
TOP OF EMBANKMENT ELEVATION	553.00	541.50
SIDE SLOPE	2:1	2:1
EMBANKMENT TOP WIDTH	6.0'	6.0'
PRINCIPAL SPILLWAY PAVING UNDER, REER, ANTI-SEEP COLLAR	C.M.P.	C.M.P.
BARREL DIAMETER	(R-1) 36"	(R-2) 21"
TRAP BACK DIAMETER	27"	12"
TRAP BACK HEIGHT	25"	19"
ANTI-SEEP COLLAR DIMENSIONS	6.5'x6.5'	6.5'x6.5'
OUTLET PROTECTION - LENGTH	N/A	N/A
OUTLET PROTECTION - WIDTH	N/A	N/A
OUTLET PROTECTION - DEPTH	N/A	N/A

**STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II**

	TRAP NO. 3	TRAP NO. 4
DRAINAGE AREA - INITIAL	3.29 AC.	1.93 AC.
DRAINAGE AREA - INTERIM	---	---
DRAINAGE AREA - FINAL	4.34 AC.	2.92
TOTAL STORAGE REQUIRED	15,824 CF	9,072 CF
TOTAL STORAGE PROVIDED	31,699 CF	13,460 CF
WET STORAGE REQUIRED	7,812 CF	4,536 CF
WET STORAGE PROVIDED	7,812 CF	4,536 CF
DRY STORAGE REQUIRED	8,012 CF	4,536 CF
DRY STORAGE PROVIDED	13,887 CF	8,924 CF
EXISTING GROUND ELEVATION AT OUTLET (WET STORAGE ELEVATION)	548.25	542.30
TRAP BOTTOM ELEVATION	548.00	542.00
TRAP BOTTOM DIMENSIONS	80' x 40'	70' x 35'
WEIR LENGTH	22'	20'
WEIR CREST (DRY STORAGE) ELEVATION	548.30	543.50
CLEANOUT ELEVATION	547.00	542.75
TOP OF EMBANKMENT ELEVATION	552.00	546.00
SIDE SLOPE	2:1	2:1
EMBANKMENT TOP WIDTH	6.0'	6.0'
OUTLET PROTECTION - LENGTH	18'	30'
OUTLET PROTECTION - DEPTH	19'	19'



**COLONIAL PIPELINE NOTE:**  
ENCROACHMENT No.: 1001-087-2016  
APPROVED: 05/22/18

PROFILE CL PROP DRIVE OVER EXISTING GAS EASEMENT

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

**NEW SHEET \*REVISED\***  
GRADING & SEDIMENT CONTROL PLAN  
**LINDEN GROVE**  
PHASE ONE  
LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'  
ZONED: RC-DEO  
TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
DATE: DECEMBER 12, 2018  
SHEET 34 OF 35



- LOT 15**  
 DRYWELLS (M-5)  
 DW1 = 7L x 5W x 5D  
 DW2 = 7L x 6W x 5D  
 DW3 = 7L x 6W x 5D  
 DW4 = 7L x 6W x 5D

- SEDIMENT CONTROL LEGEND**
- SF — SF — SF — SUPER-SILT FENCE
  - SF — SF — SF — SILT FENCE
  - STABILIZED CONSTRUCTION ENTRANCE
  - S.I.P. STANDARD INLET PROTECTION INLET TYPE (A)
  - PH. I L.O.D. LIMIT OF DISTURBANCE (PHASE ONE)
  - PH. II L.O.D. LIMIT OF DISTURBANCE (PHASE TWO)
  - — — — — FUTURE LIMIT OF DISTURBANCE FOR SEPTIC SYSTEM INSTALL
  - R.P.S. REMOVABLE PUMPING STATION
  - F.B. FILTER BAG
  - TYPE A-2 EARTH DIKE

- LOT 16**  
 DRYWELLS (M-5)  
 DW2 = 7L x 4.5W x 5D  
 DW3 = 7L x 4.5W x 5D

**ROOFLEADER NOTE:**  
 A OVERFLOW OUTFALL (SUCH AS) SHALL BE PROVIDED AT EACH DOWNPOIN POINT TO CONNECTION TO THE UNDERGROUND ROOFLEADER. SEE DETAIL SHEET 20.

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 4/23/21  
 DATE: 4.15.21

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE:

APPROVED: HOWARD SOIL CONSERVATION DISTRICT  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 Alexander Butcher 03/31/21

**PROFESSIONAL CERTIFICATION**  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF MARYLAND, LICENSE NO. 21326, EXPIRATION DATE 18/23.

NO.	REVISIONS DESCRIPTION	DATE
1	LOT 15 REVISIONS	12/18/2020
2	LOT 16 REVISIONS	02/05/2021

**CONTRACTOR NOTES:**

- CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FLOODPLAIN, STREAMS, WETLANDS & THOR BUFFERS.
- SHOULD THE STOCKPILE EXCEED 15 FT. IN HEIGHT IT MUST BE BENCHED.

**HOUSE CONSTRUCTION NOTES:**

- THIS HOWARD (SCD) STANDARD SEDIMENT CONTROL PLAN MAY NOT BE USED TO OBTAIN PERMITS FOR HOUSE CONSTRUCTION FOR THIS PROJECT.
- HOUSES MAY NOT BE BUILT USING THIS DRAWING.

**OWNER:**  
 KIMBERLY/HERITAGE LLC  
 3425 HIPSLEY HILL ROAD  
 WOODBINE, MARYLAND 21797-7615  
 410-489-7900

**DEVELOPER:**  
 HERITAGE LAND DEVELOPMENT  
 19950 NORTH AVENUE  
 LISBON, MARYLAND 21765  
 410-489-7900

I HEREBY CERTIFY ITEMS SHOWN ONLY FOR THE LOTS LISTED IN THE REVISIONS BLOCK; THESE ITEMS ARE REVISIONS FROM THE PREVIOUSLY APPROVED PLANS.

**ESE CONSULTANTS**  
 ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL

ESE Consultants Inc.  
 7164 Columbia Gateway Drive • Suite 230 • Columbia, MD 21046  
 Tel: 410-872-9105 • Fax: 410-872-4870

**NEW SHEET \*REVISED\***  
 GRADING & SEDIMENT CONTROL PLAN  
 LINDEN GROVE  
 PHASE ONE  
 LOTS 1 THRU 23, BUILDABLE PRESERVATION PARCEL 'A', NON-BUILDABLE PRESERVATION PARCELS 'B' THRU 'E' AND NON-BUILDABLE BULK PARCELS 'F' & 'G'

ZONED: RC-DEO  
 TAX MAP No. 8 GRID No. 7 PARCEL No. 5  
 4TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 DATE: DECEMBER 12, 2018  
 SHEET 35 OF 35