

GENERAL NOTES

- 1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE UNLESS ALTERNATIVE COMPLIANCE REQUESTS HAVE BEEN APPROVED.

OPEN SPACE TABULATION:

IN ACCORDANCE WITH SECTION 16.121(A)(2) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS THE OPEN SPACE REQUIREMENTS FOR THIS R-12 PROJECT IS 40% OF GROSS AREA (7,200 SF MIN LOT) (12.35 AC. GROSS AREA x 40% = 4.94 AC.).

FINAL ROAD CONSTRUCTION PLAN GREENWOOD VILLAGE - PHASE 1 LOTS 1-4, NON BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11

A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4 LOTS 2-4 (P.B. 3/51), 5R (L.16288 F.488), 8R (L.16288 F.502) AND 9 (P.B. 3/51) HOWARD COUNTY, MARYLAND

NOTES:

- 1. ALL WATER CONNECTIONS SHALL BE 1"-1 1/2" WITH 1" OUTSIDE METER SETTINGS, UNLESS OTHERWISE NOTED. REFER TO HOWARD COUNTY DETAILS W-3.28 OUTSIDE METER SETTINGS.

- 1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE UNLESS ALTERNATIVE COMPLIANCE REQUESTS HAVE BEEN APPROVED.

- 2. THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS: MISS UTILITY 1-800-257-7777

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

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

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

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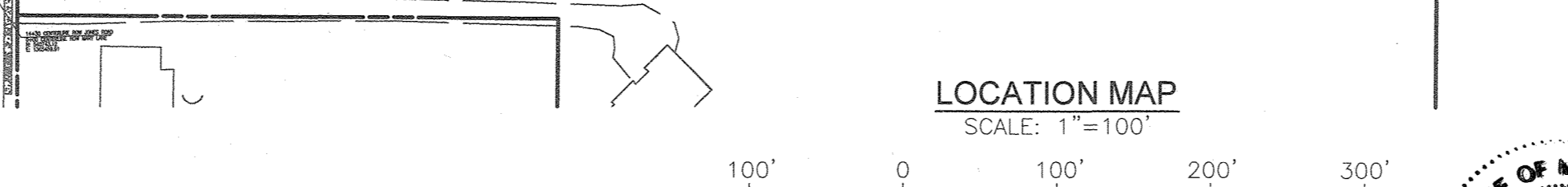
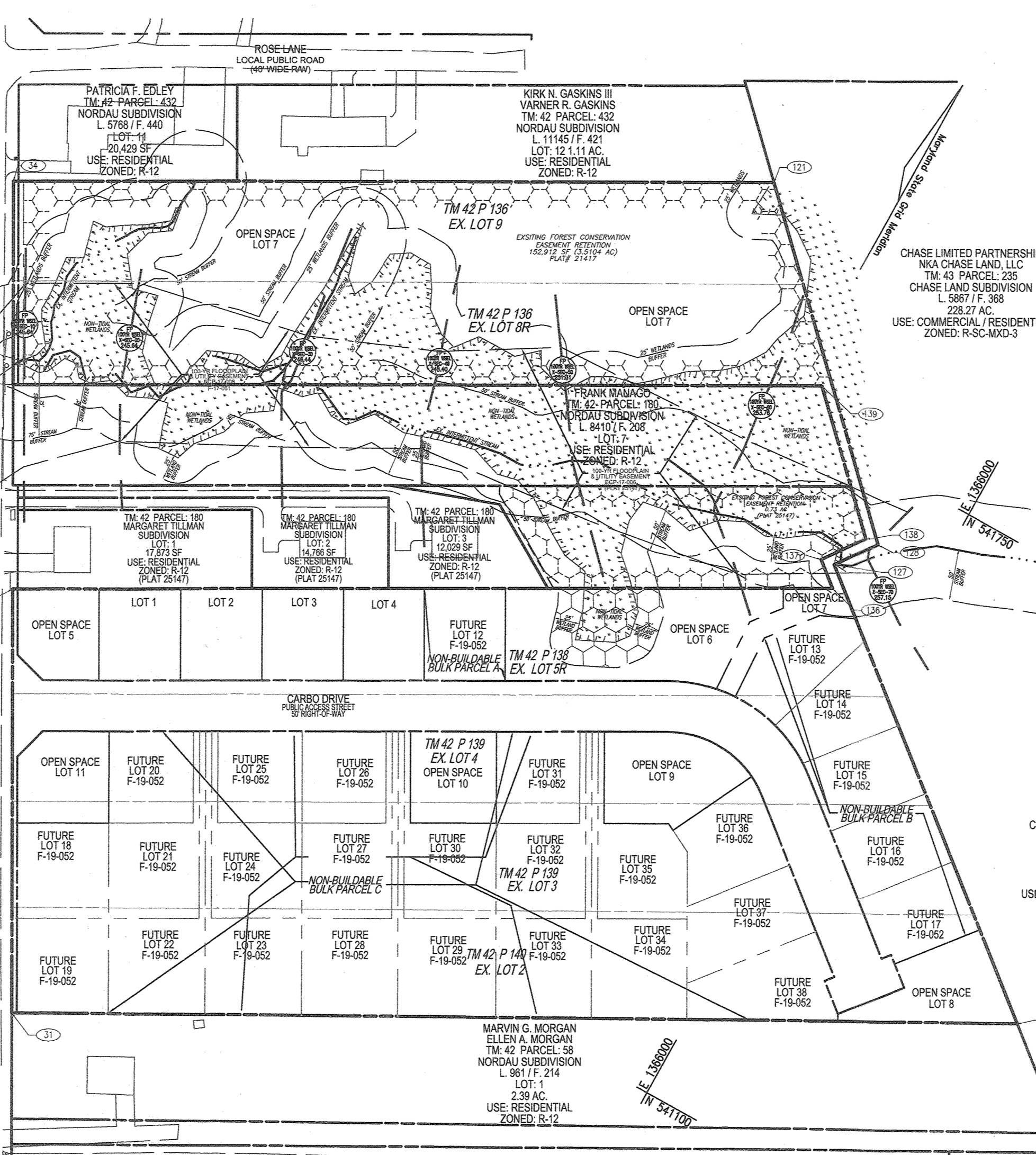
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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING



GENERAL NOTES CONTINUED

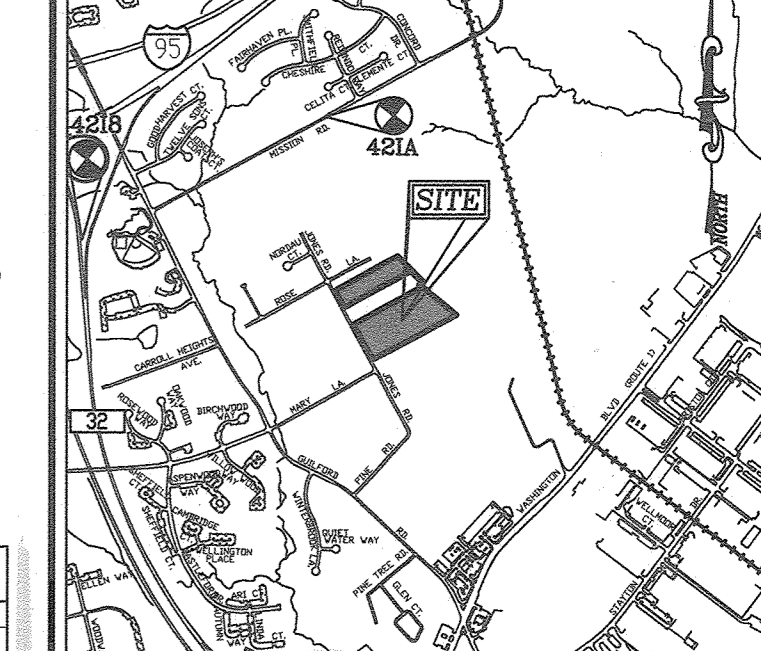
- 47. THE PROJECT COMPLES WITH SECTION 16.127 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, RESIDENTIAL INFILL DEVELOPMENT. SINCE THE BLOCK FACE CONSISTS OF VACANT LOTS, THE REQUIRED R-12 ZONING DISTRICT FROM YARD STRIPK HAS BEEN APPLIED (SECTION 16.127(D)(4)).

- 48. IF ANY WELL OR SEPTIC SYSTEMS ARE FOUND DURING ANY STAGE OF THE PROCESS THE HEALTH DEPARTMENT MUST BE NOTIFIED AND THE SYSTEMS MUST BE PROPERLY ABANDONED WITH DOCUMENTATION SENT TO THE HEALTH DEPARTMENT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

COORDINATE TABLE with columns for NO., NORTH, and EAST.

BENCHMARKS table with columns for BENCHMARK, ELEVATION, and LOCATION.



GREENWOOD VILLAGE APFO PHASING table with columns for PHASE NUMBER, ALLOCATION YEAR, TOTAL NO. OF ALLOCATIONS, TOTAL NO. OF CREDITS, and TOTALS.

(1) NO ALLOCATIONS REQUIRED, CREDIT FOR 4 EXISTING LOTS - P.B. 3/51

SHEET INDEX table with columns for DESCRIPTION and SHEET NO.

SITE DATA

SUBDIVISION NAME: NORDAU SUBDIVISION SECTION E-4 LOTS 2-4, 5R, 8R AND 9 DEED REFERENCE: PARCEL 138-140 (P.B. 3 F. 51)

ELECTION DISTRICT: 6TH LOCATION: JONES ROAD NORTH OF MARY LANE

EXISTING ZONING: R-12 GROSS AREA: 12.35 AC. AREA OF 100 YEAR FLOODPLAIN: 36,663.16 SF OR 0.84 AC.

Stormwater Management Information table with columns for Lot/Parcel Number, Facility Name & Number, Practice Type, and Inflow Maintains.

VICINITY MAP

SCALE: 1"=2000' ADC MAP COORDINATES: PAGE: 41 BLOCK: A2

LEGEND table with columns for symbol and description.

RECREATION OPEN SPACE TABULATION:

TOTAL RECREATION OPEN SPACE REQUIRED: R-12 - SINGLE FAMILY HOMES STD 200 SF/UNT X 31 UNITS = 6,200 SF

OWNER/DEVELOPER HOWARD COUNTY HOUSING COMMISSION 9770 PATIENTS WOODS DR SUITE 100 COLUMBIA, MD 21048

FINAL ROAD CONSTRUCTION PLAN COVER SHEET

GREENWOOD VILLAGE - PHASE 1 LOTS 1-4, NON BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11

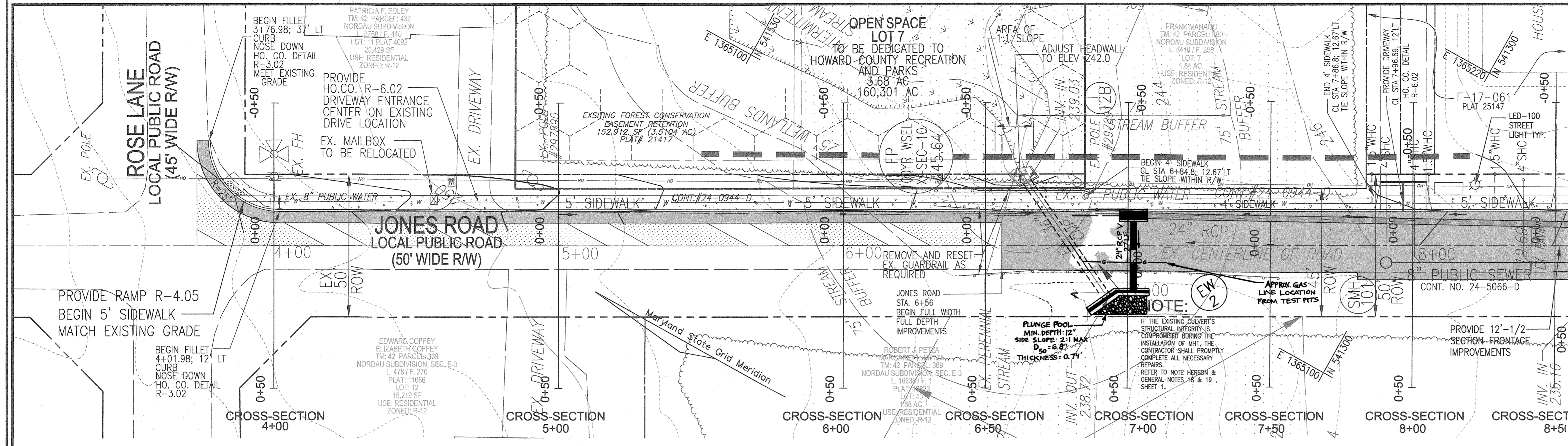
A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4 LOTS 2-4 (P.B. 3/51), 5R (L.16288 F.488), 8R (L.16288 F.502) AND 9 (P.B. 3/51)

VOGEL ENGINEERING

TIMMONS GROUP 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043

DESIGN BY: RHW DRAWN BY: VETO CHECKED BY: RHW DATE: MARCH 2020 SCALE: AS SHOWN W.O. NO.: 12-05 1 SHEET OF 23

AS-BUILT NOVEMBER 2023 F-19-051



JONES ROAD - ROAD IMPROVEMENTS
SCALE: 1"=20'

LEGEND:

[Symbol]	PROPERTY LINE
[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	ADJACENT PROPERTY LINE
[Symbol]	EXISTING PAVING
[Symbol]	EXISTING UTILITY POLE
[Symbol]	EXISTING SANITARY MANHOLE
[Symbol]	EXISTING SANITARY LINE
[Symbol]	EXISTING FIRE HYDRANT
[Symbol]	EXISTING WATER LINE
[Symbol]	EXISTING TREENE
[Symbol]	CENTERLINE OF EXISTING STREAM
[Symbol]	EXISTING SPECIMEN TREE
[Symbol]	EXISTING WETLANDS
[Symbol]	EXISTING WETLAND BUFFER
[Symbol]	PUBLIC 100-YEAR FLOOD PLAIN (PLAT# 25147)
[Symbol]	EXISTING FOREST CONSERVATION EASEMENT (RETENTION - PLAT# 21417)
[Symbol]	PRIVATE USE-IN-COMMON ACCESS EASEMENT
[Symbol]	PUBLIC SEWER, WATER & UTILITY EASEMENT
[Symbol]	PUBLIC WATER & UTILITY EASEMENT
[Symbol]	PRIVATE STORM DRAIN MANAGEMENT EASEMENT
[Symbol]	10' PUBLIC TREE MAINTENANCE EASEMENT
[Symbol]	STORMDRAIN
[Symbol]	PROPOSED TREENE
[Symbol]	CURB & GUTTER
[Symbol]	MISC-BURETENTION FACILITY (0+4)
[Symbol]	STREET LIGHT
[Symbol]	FULL DEPTH PAVEMENT SECTION REQUIRED REFER TO TYPICAL SECTION
[Symbol]	1.5" MILL & OVERLAY REFER TO TYPICAL SECTION
[Symbol]	MAILBOX

FOR CONTINUATION SEE SHEET 3



AS-BUILT CERTIFICATION FOR P2SWM
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
DATE: 3-18-24
P.E. # 16193

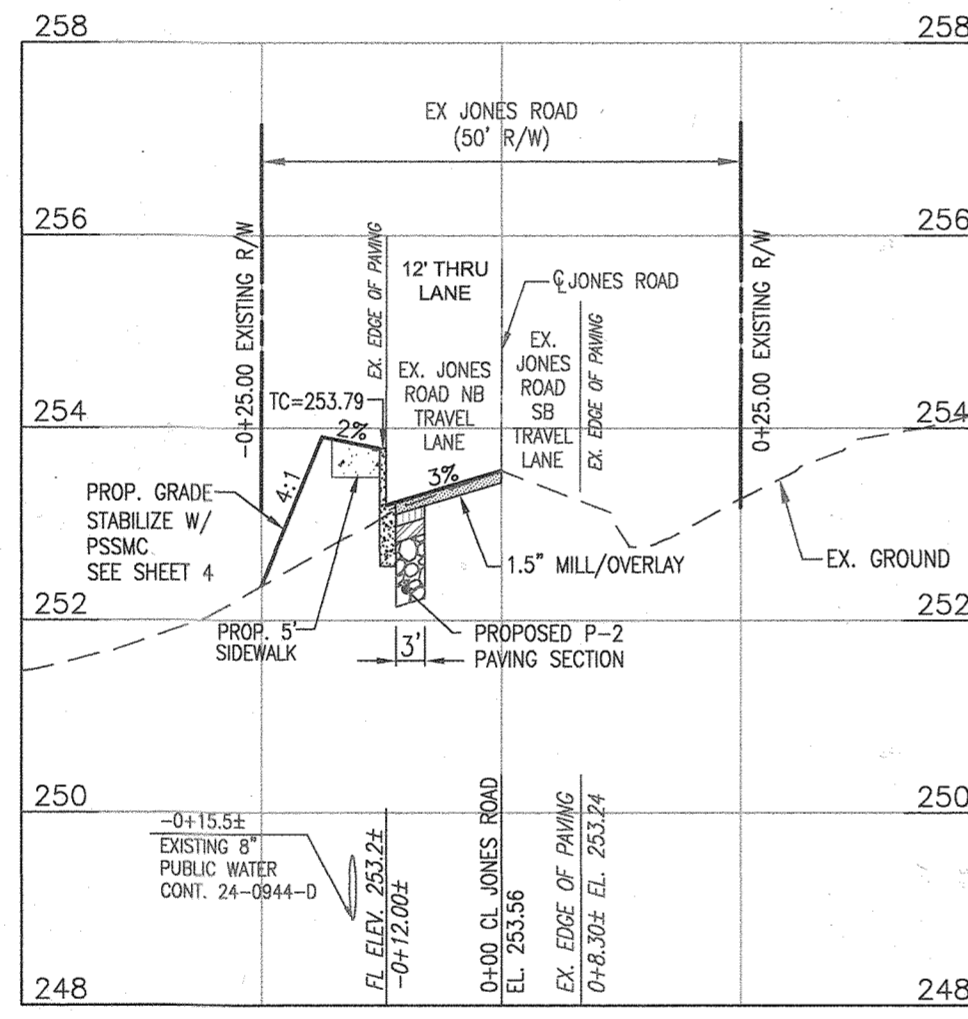
PAVEMENT CONSTRUCTION LOCATION

TYPE OF CONSTRUCTION	START STATION	FINISH STATION
FULL DEPTH PAVEMENT	3+73	8+63
MILL & OVERLAY	3+73	6+50

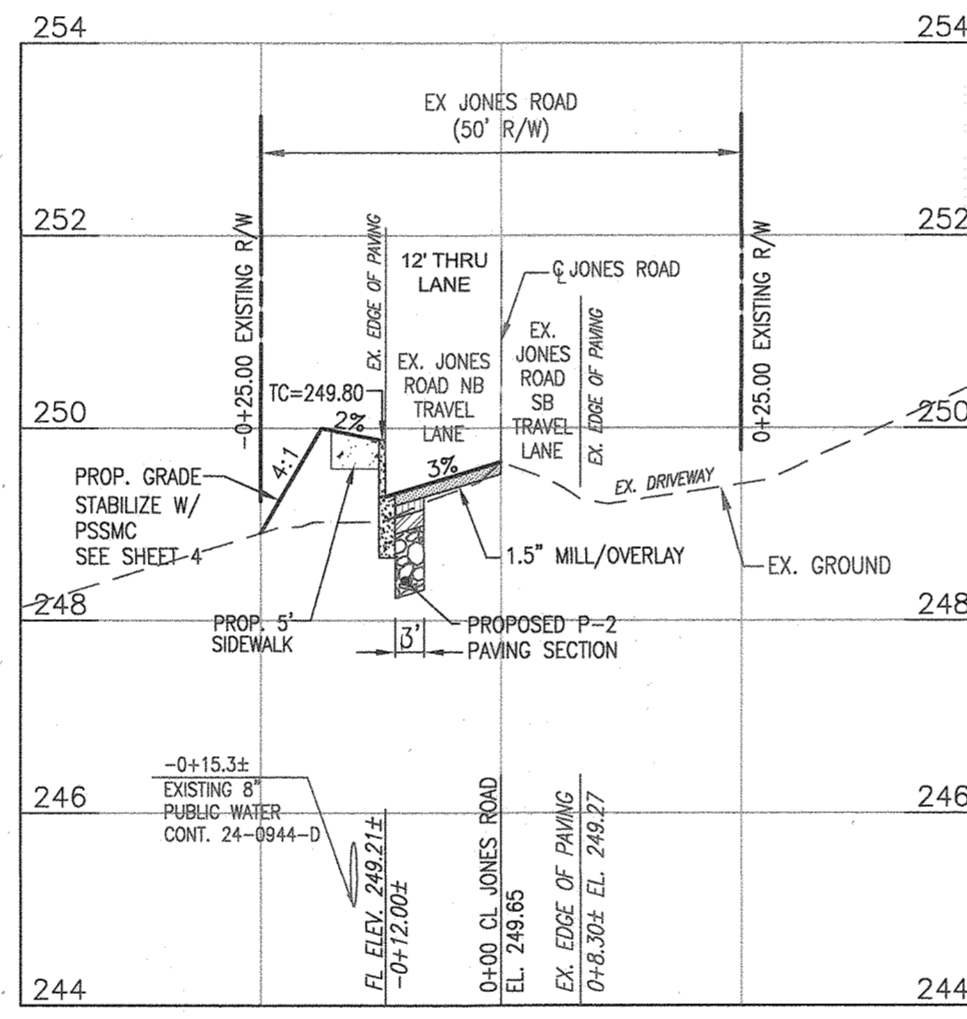
REFER TO PLAN LEGEND AND PLAN VIEW HATCH

STREET LIGHT LOCATIONS

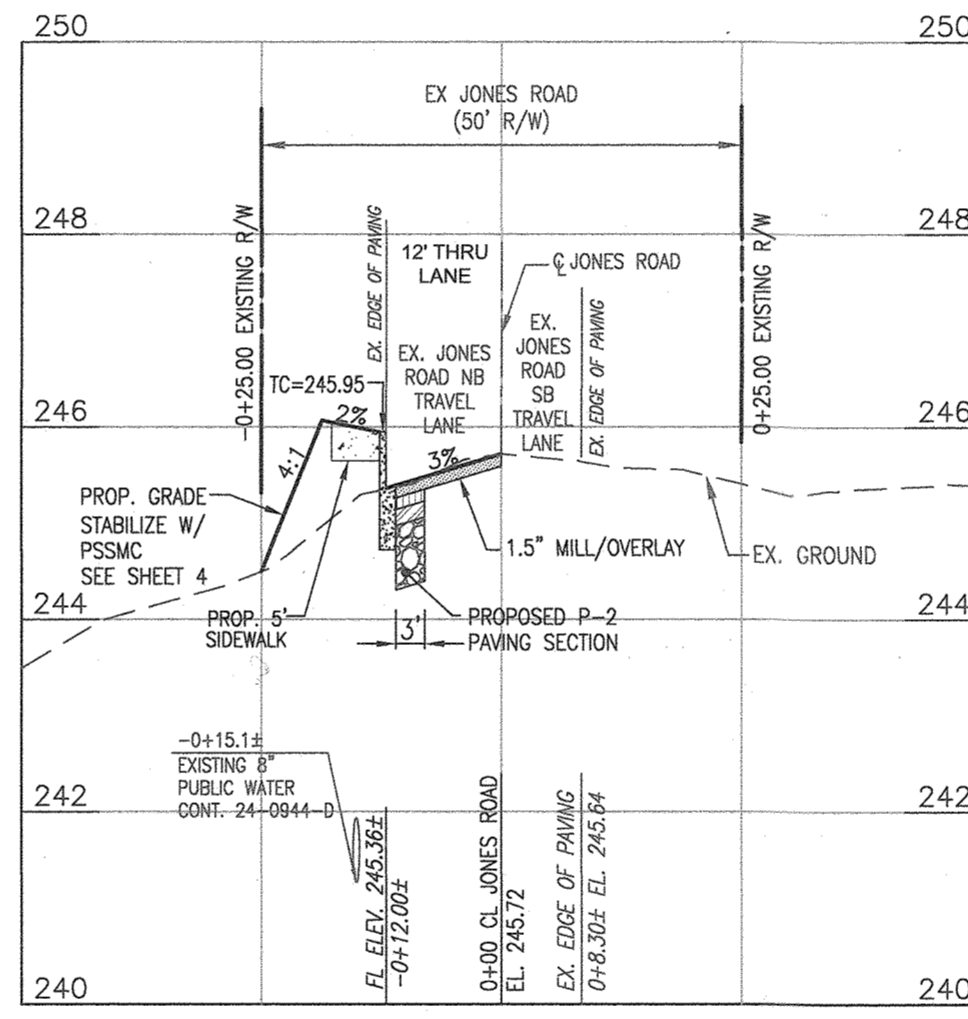
ROAD NAME	STATION	OFFSET	FIXTURE/POLE TYPE
JONES DRIVE	8+21.98	21.28' LEFT	LED-100 PREMIER COLONIAL POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE



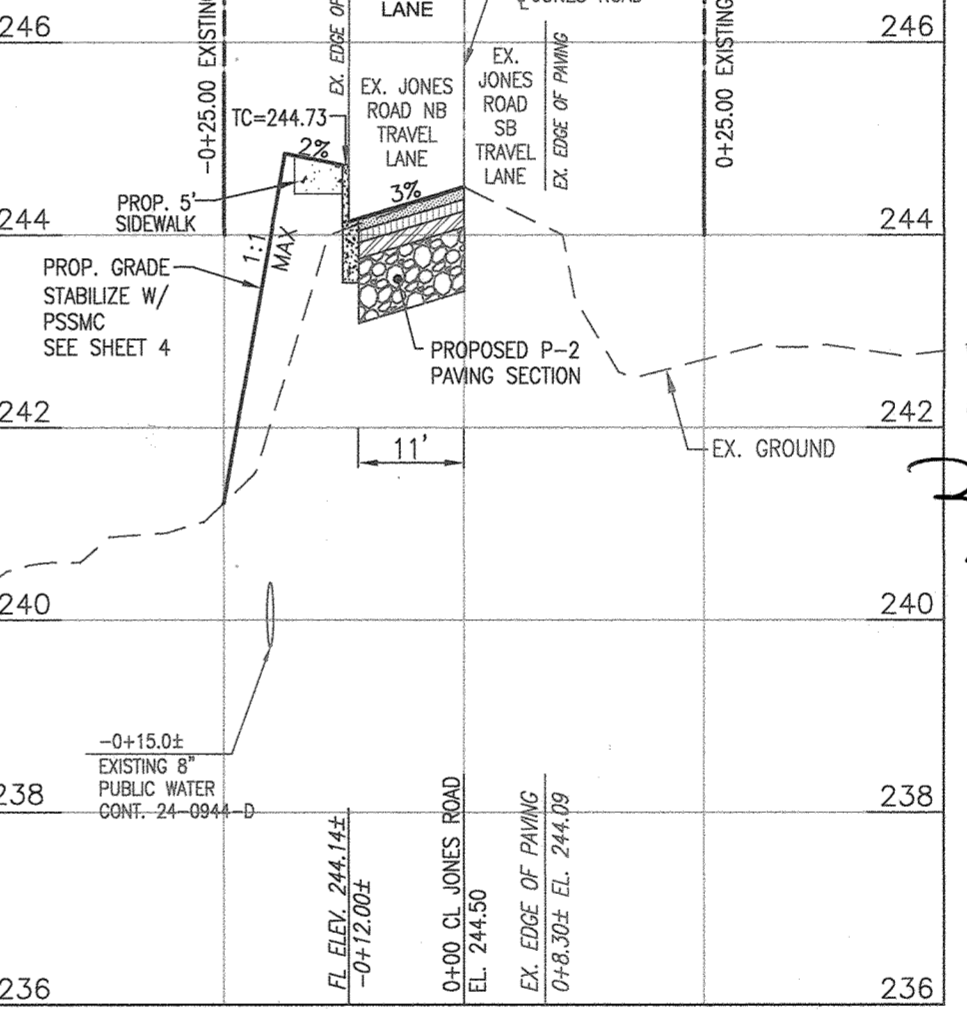
JONES ROAD STA. 4+00
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VERTICAL - 1"=2'



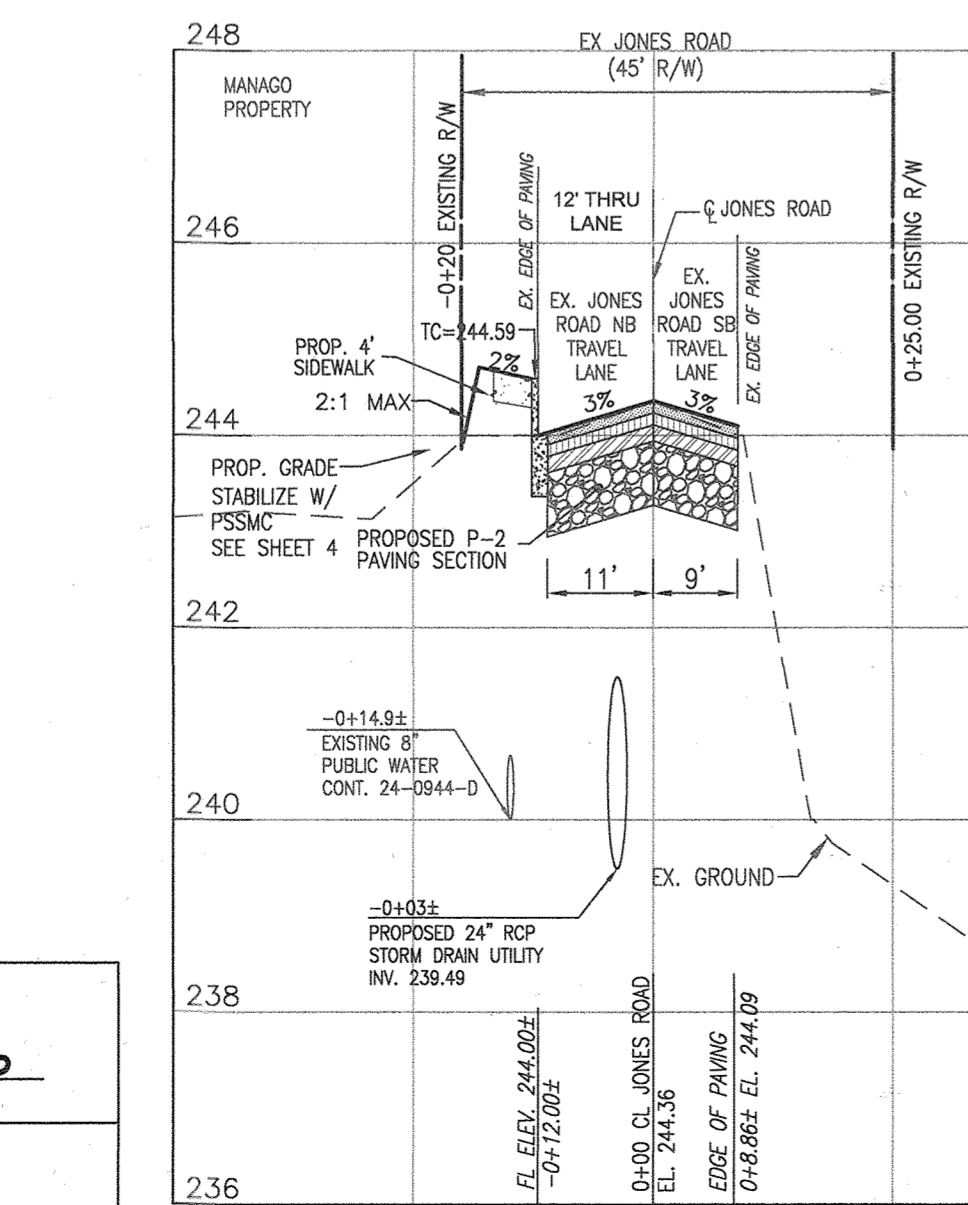
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VERTICAL - 1"=2'



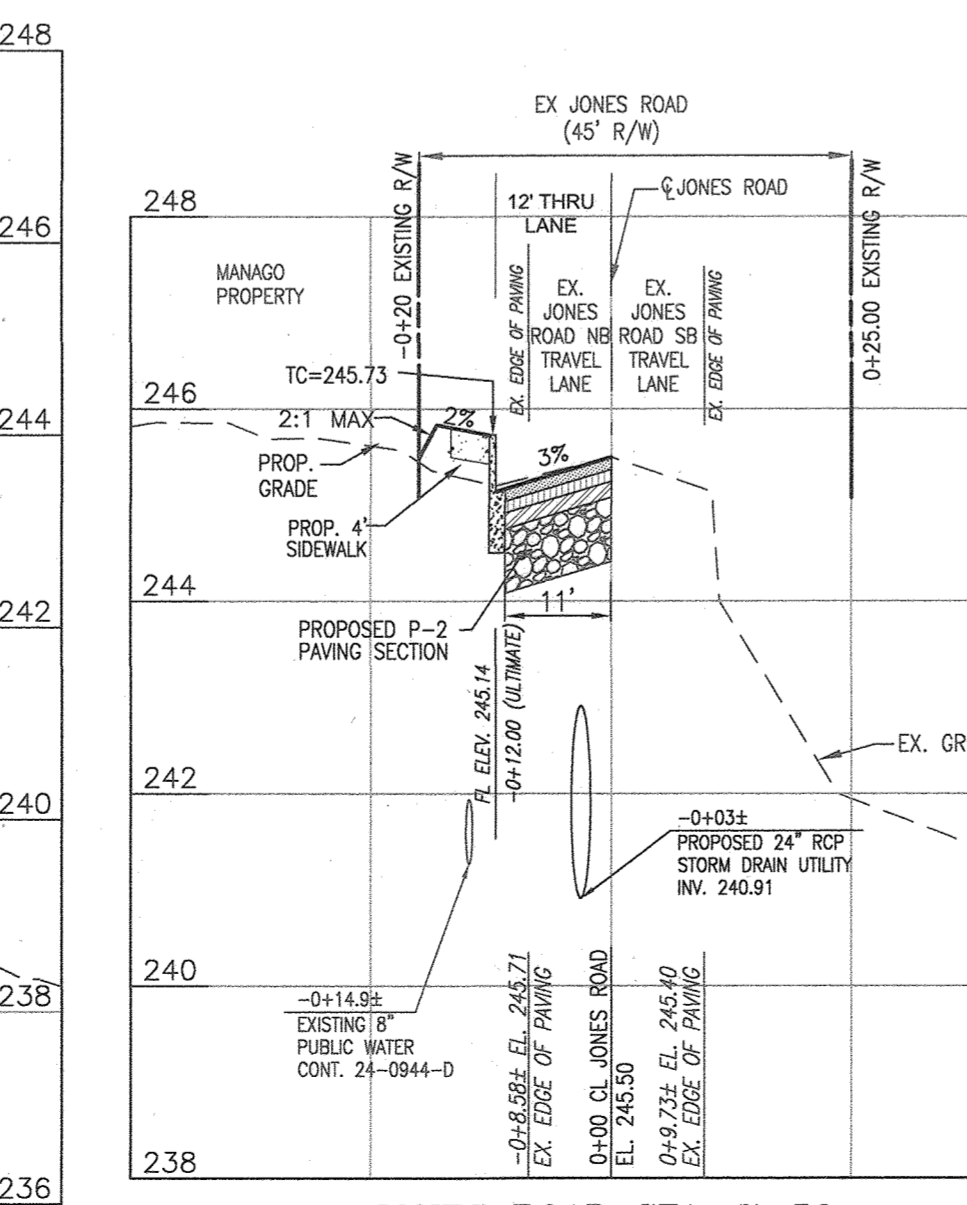
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VERTICAL - 1"=2'



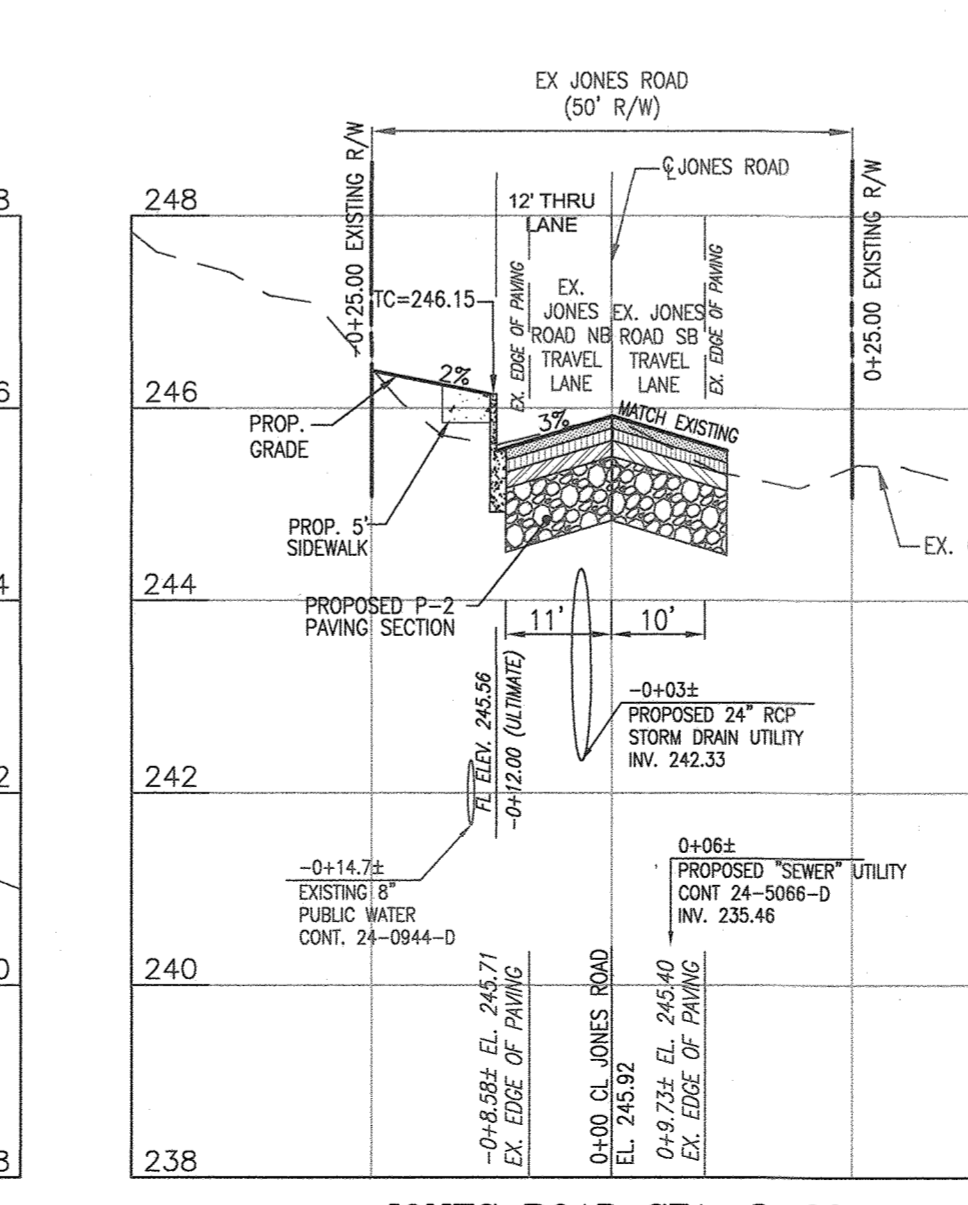
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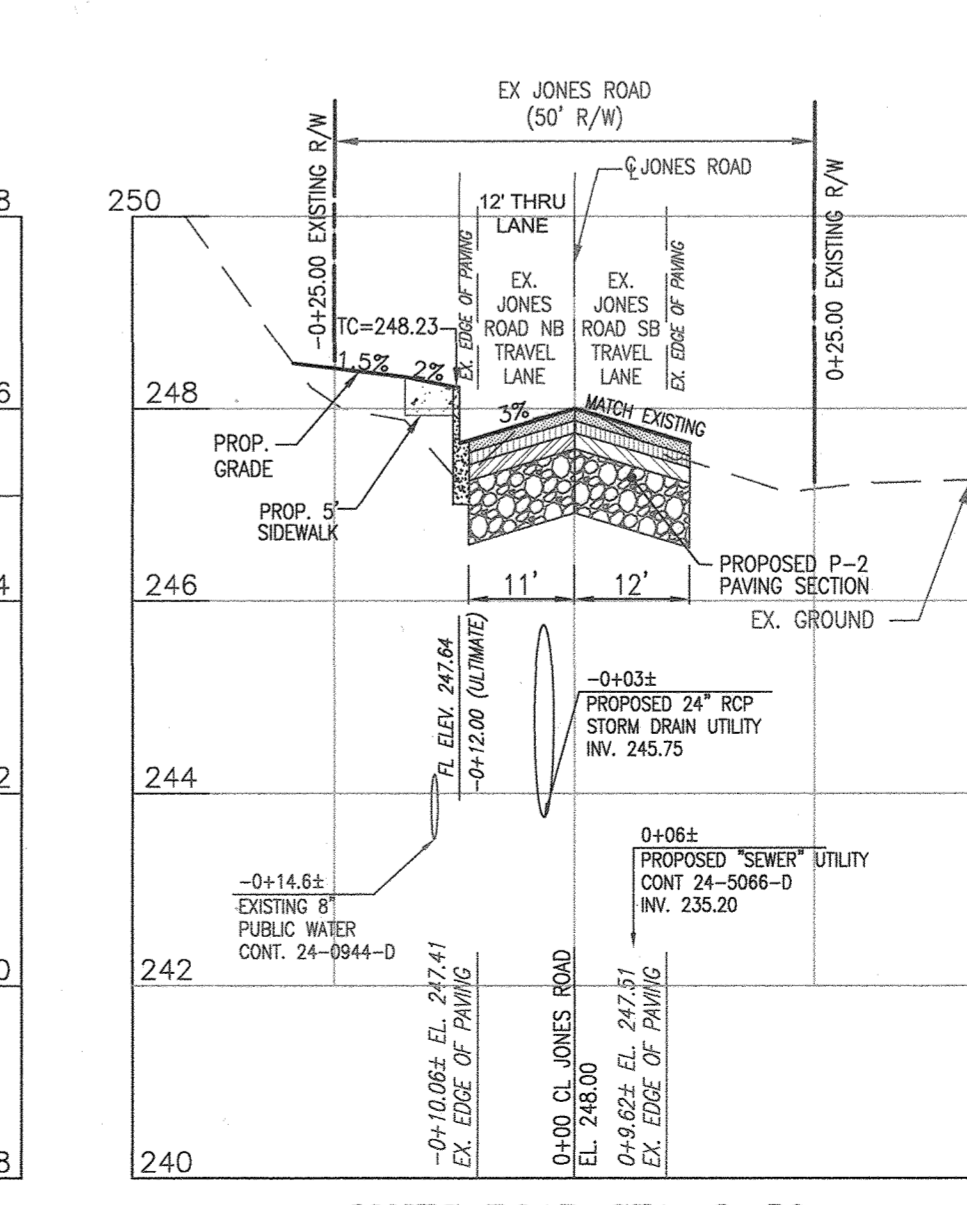
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SCALE: HORIZONTAL - 1"=20'
VERTICAL - 1"=2'



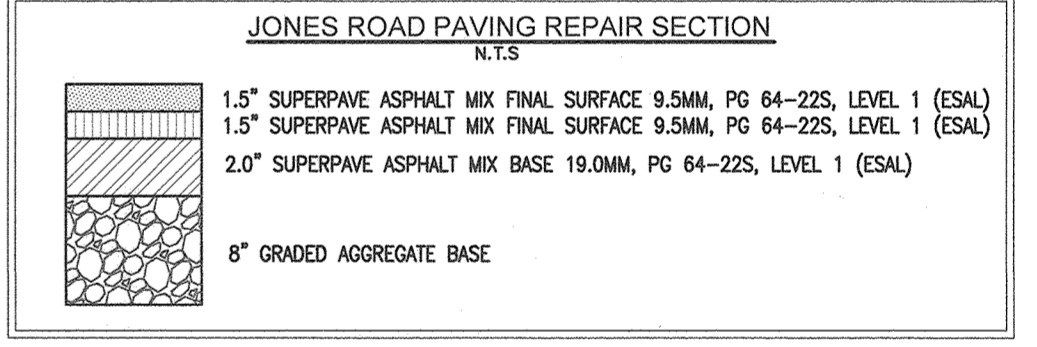
JONES ROAD STA. 7+50
SCALE: HORIZONTAL - 1"=20'
VERTICAL - 1"=2'



JONES ROAD STA. 8+00
SCALE: HORIZONTAL - 1"=20'
VERTICAL - 1"=2'



JONES ROAD STA. 8+50
SCALE: HORIZONTAL - 1"=20'
VERTICAL - 1"=2'



OWNER/DEVELOPER
HOWARD COUNTY HOUSING COMMISSION
9770 PATUXENT WOODS DR., SUITE 100
COLUMBIA, MD 21046
ATTN: PETER ENGEL
(410) 313-6316

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Shabana Khan 11/23/20
CHIEF, BUREAU OF HIGHWAYS
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chad Clark 12-2-20
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE

John Shaw 11/10/20
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE

NO.	REVISION	DATE
2	REVISE THE PLAN TO RECONFIGURE STORM DRAIN OUTFALL TO AVOID CONFLICT WITH A GAS MAIN	12-14-21

FINAL ROAD CONSTRUCTION PLAN
JONES ROAD - ROAD IMPROVEMENTS AND CROSS SECTIONS
GREENWOOD VILLAGE - PHASE 1
LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11
A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4 LOTS 2-4 (P.B. 3/51), 5R (L16288 F.488), 6R (L16288 F.502) AND 9 (P.B. 3/51)
TAX MAP: 42 GRID: 24 6TH ELECTION DISTRICT ZONED: R-12 PARCEL: 136 & 138-140 HOWARD COUNTY, MARYLAND

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

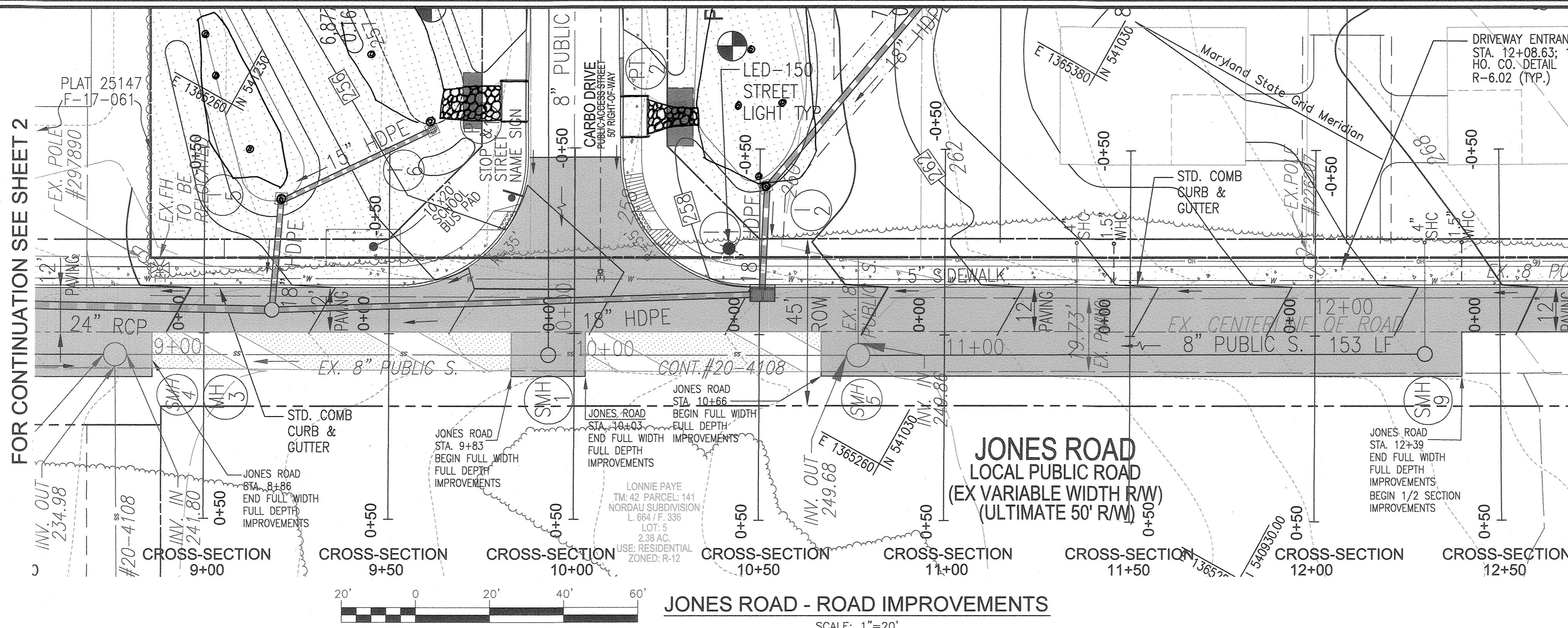
PROFESSIONAL CERTIFICATE
DESIGN BY: RHY
DRAWN BY: VETG
CHECKED BY: RHY
DATE: MARCH 2020
SCALE: AS SHOWN
W.O. NO.: 12-05

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

2 SHEET OF 23

AS-BUILT NOVEMBER 2023 F-19-051

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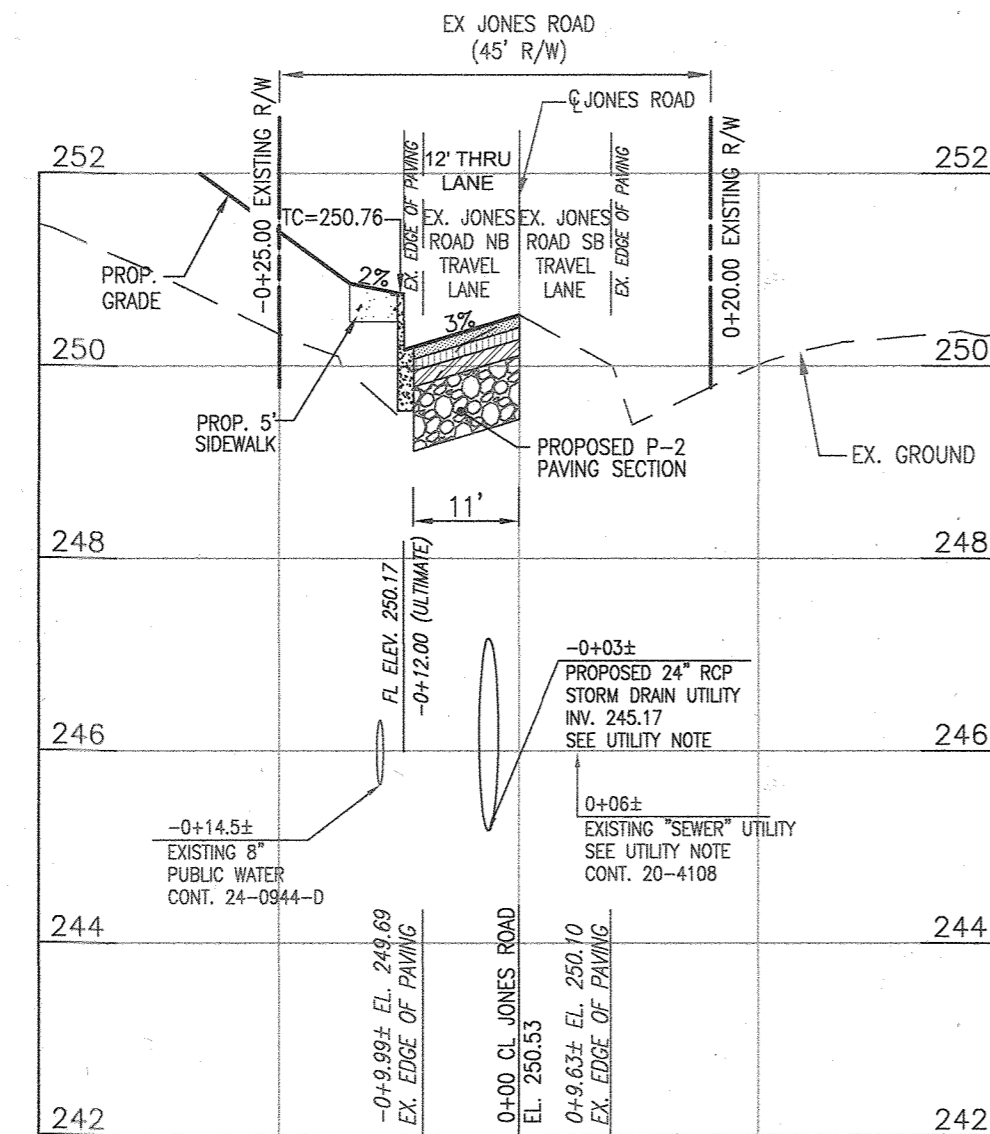


JONES ROAD - ROAD IMPROVEMENTS
 SCALE: 1"=20'

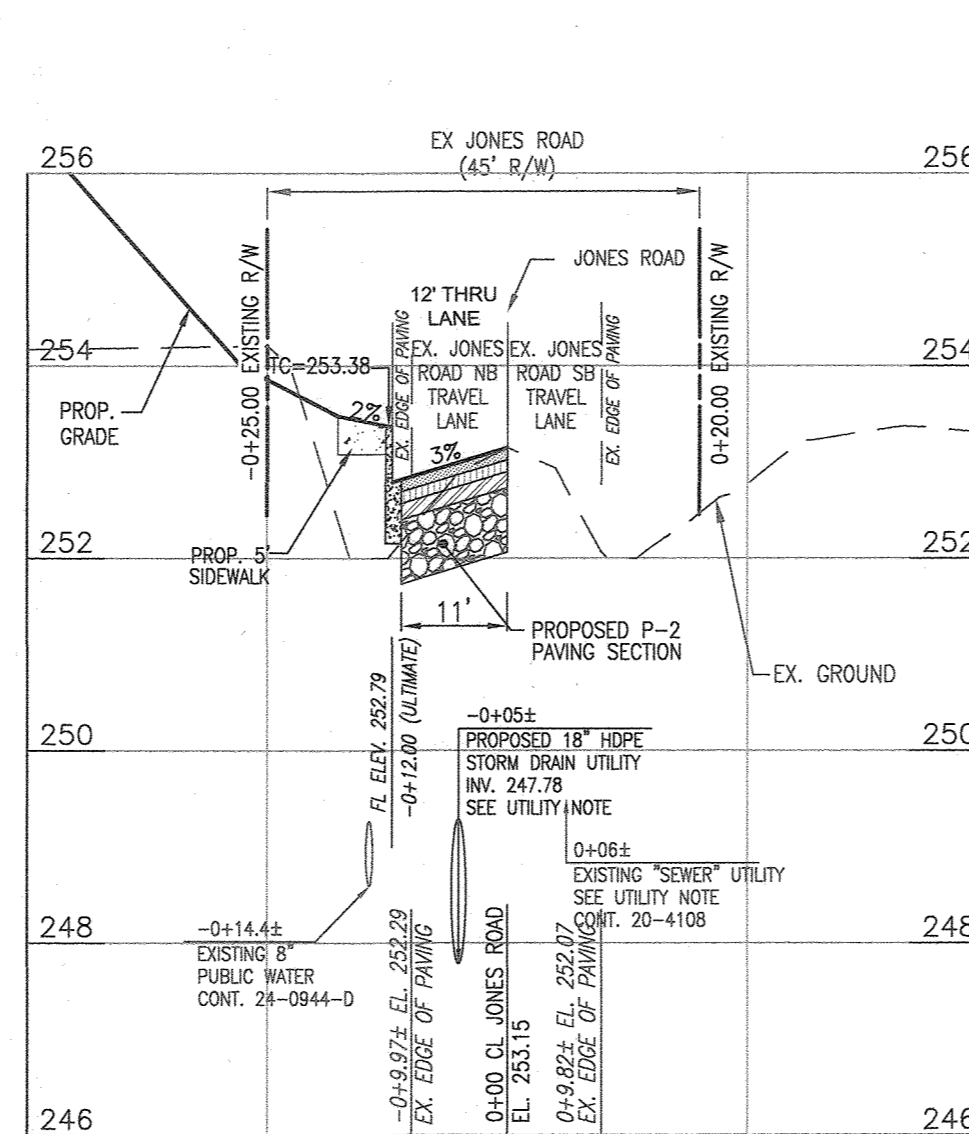
PAVEMENT CONSTRUCTION LOCATION		
TYPE OF CONSTRUCTION	START STATION	FINISH STATION
FULL DEPTH PAVEMENT	8+63	12+80

REFER TO PLAN LEGEND AND PLAN VIEW HATCH

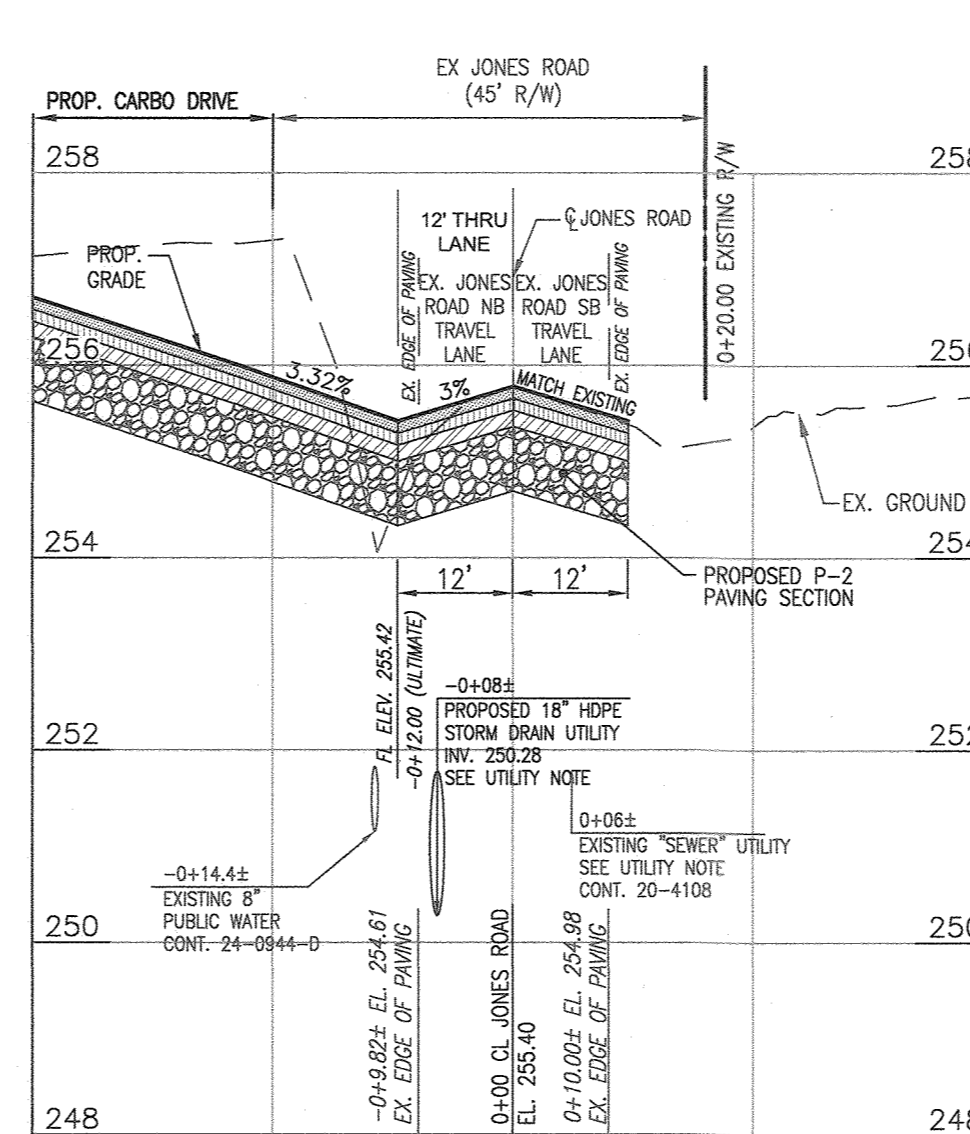
NOTE:
 STATIONS 9+00 TO 12+50 REFER TO GRADING PLAN SHEET 8



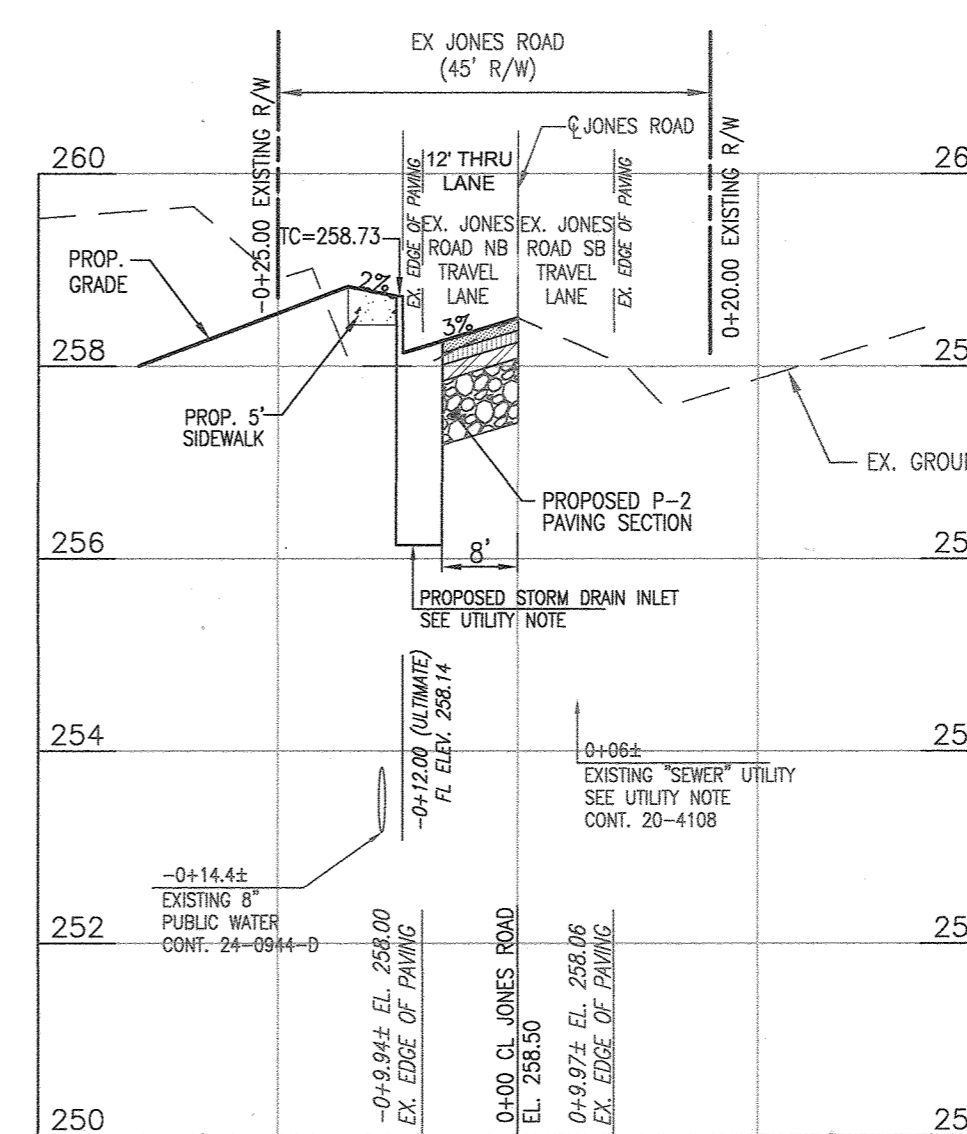
JONES ROAD STA. 9+00
 SCALE: HORIZONTAL - 1"=20'
 VERTICAL - 1"=2'



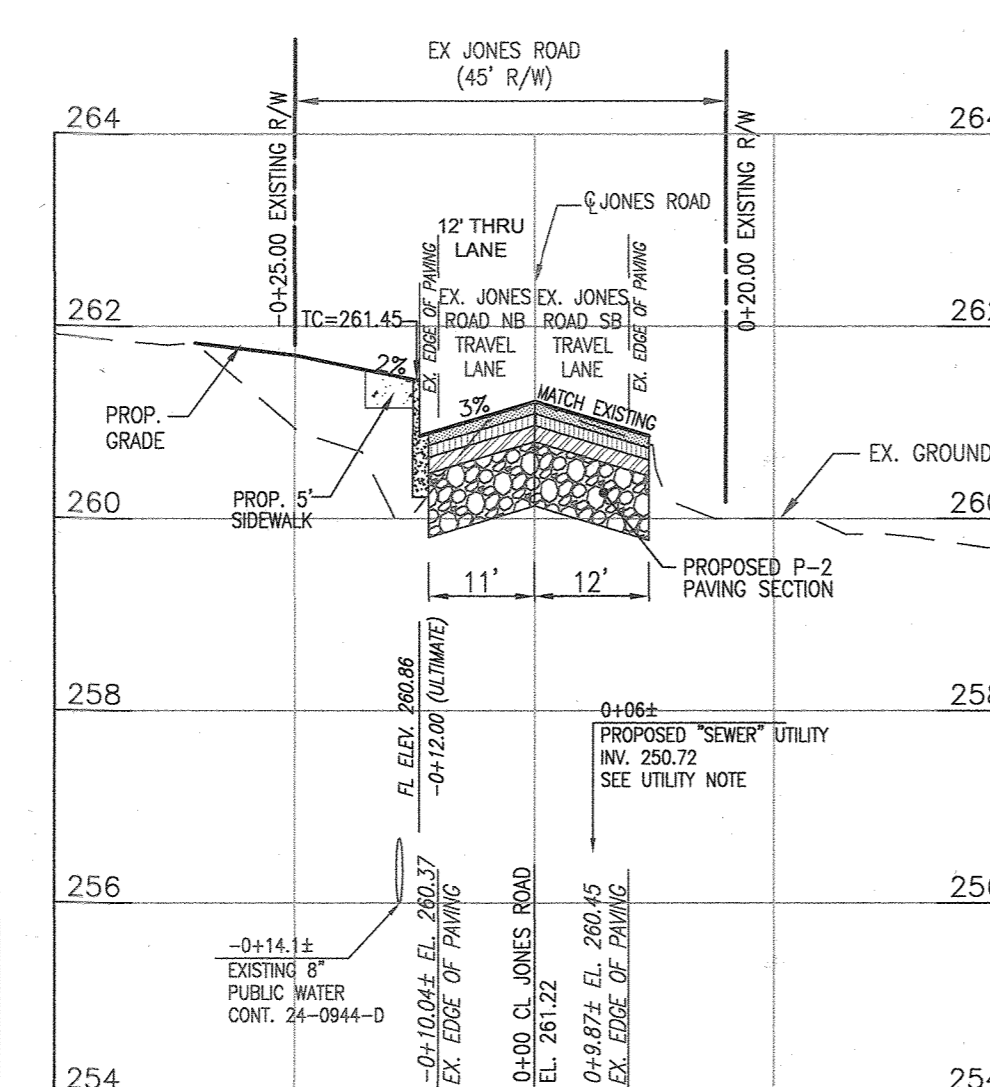
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 VERTICAL - 1"=2'



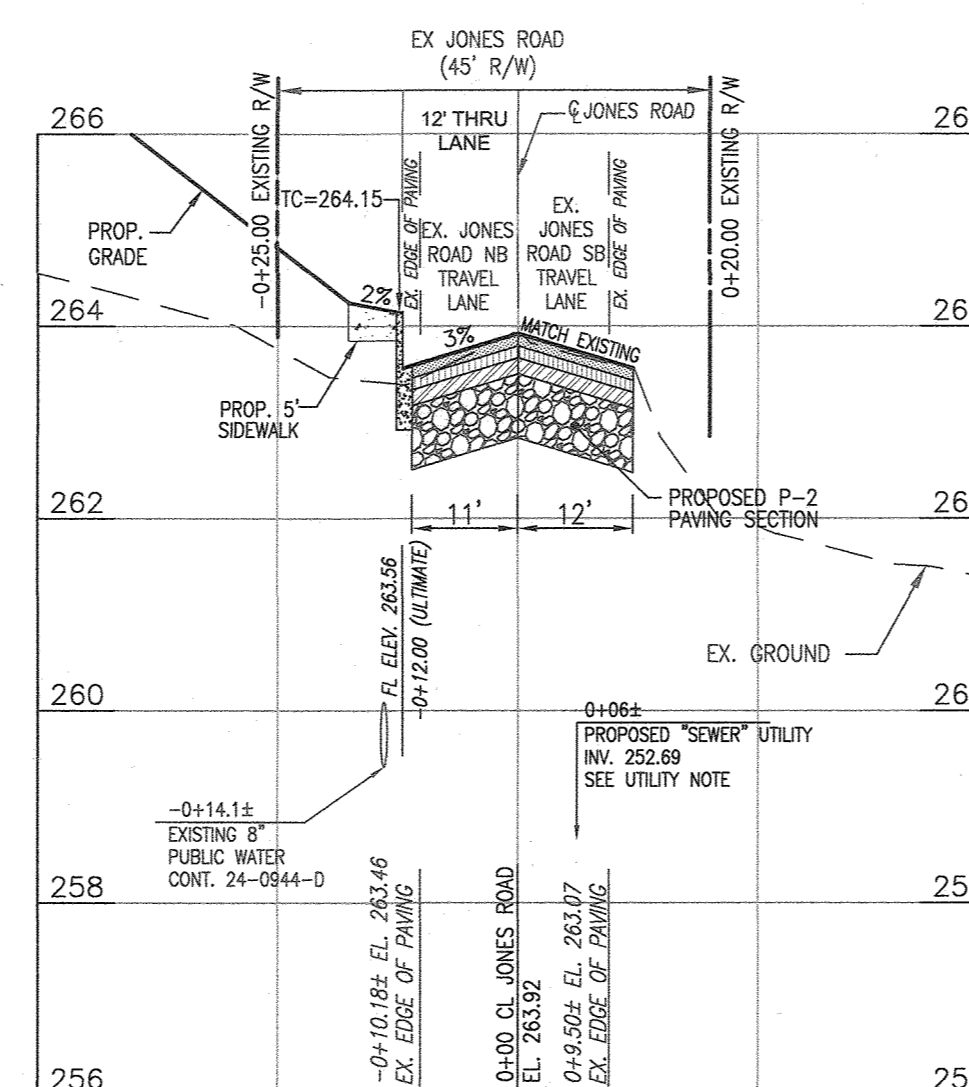
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 VERTICAL - 1"=2'



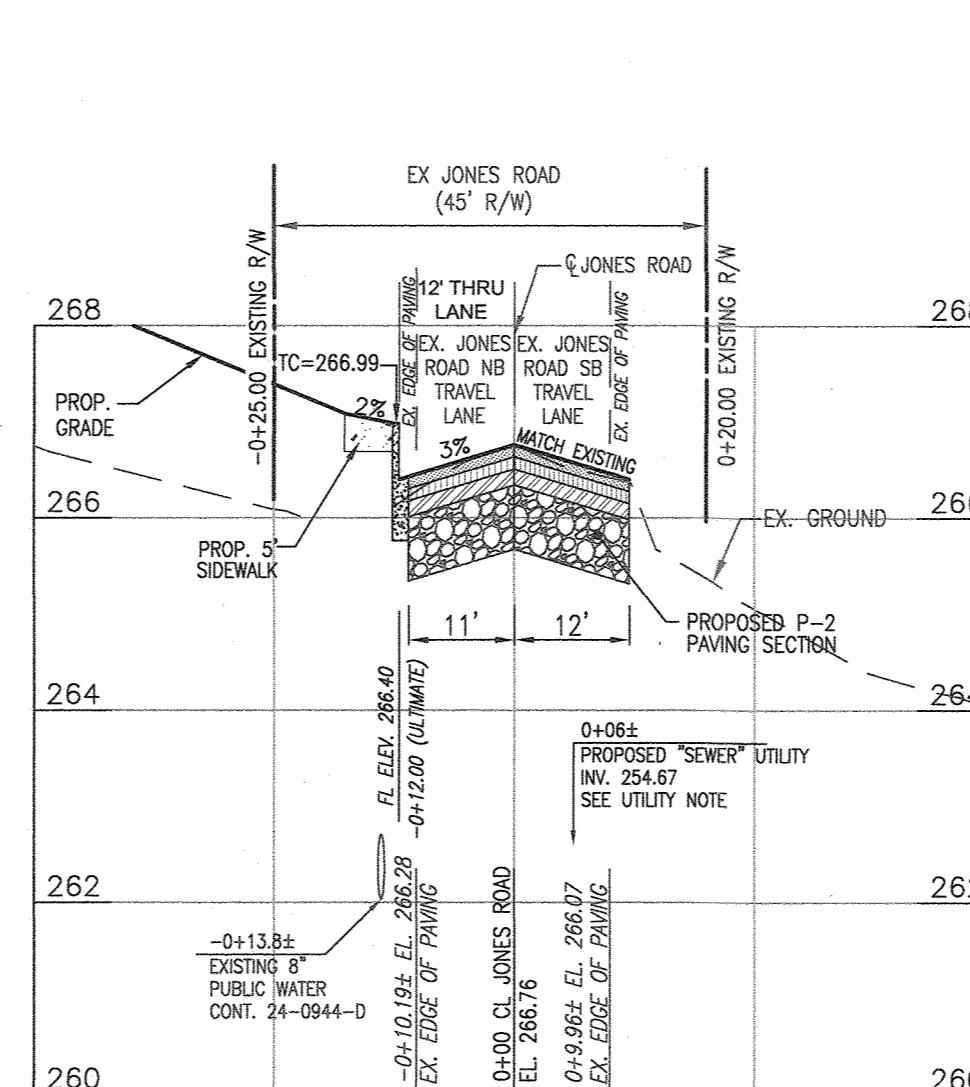
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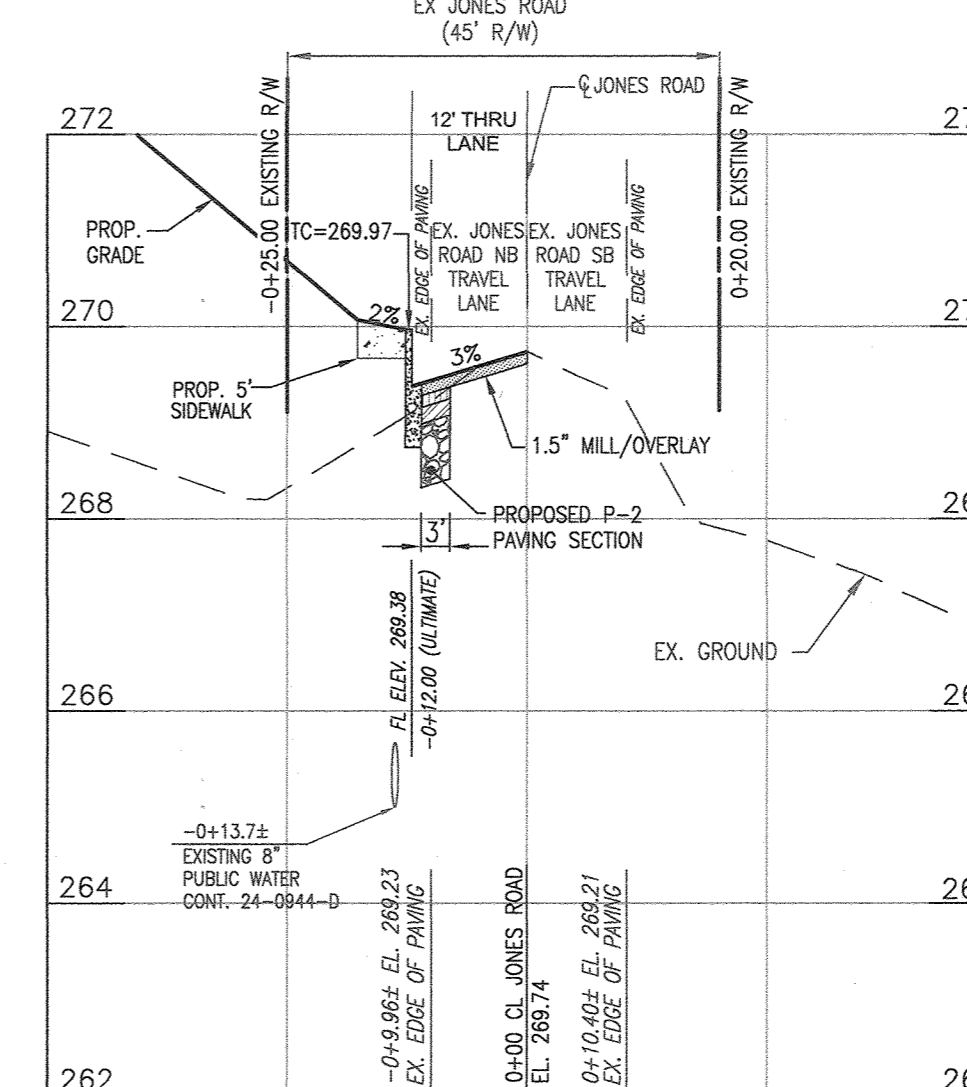
JONES ROAD STA. 11+00
 SCALE: HORIZONTAL - 1"=20'
 VERTICAL - 1"=2'



JONES ROAD STA. 11+50
 SCALE: HORIZONTAL - 1"=20'
 VERTICAL - 1"=2'



JONES ROAD STA. 12+00
 SCALE: HORIZONTAL - 1"=20'
 VERTICAL - 1"=2'



JONES ROAD STA. 12+50
 SCALE: HORIZONTAL - 1"=20'
 VERTICAL - 1"=2'

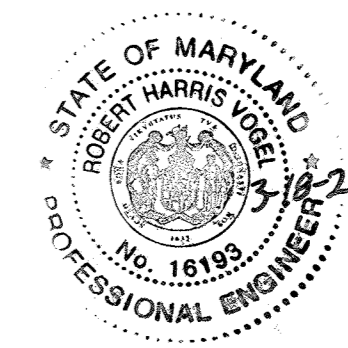
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 11/20/20
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12/2/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

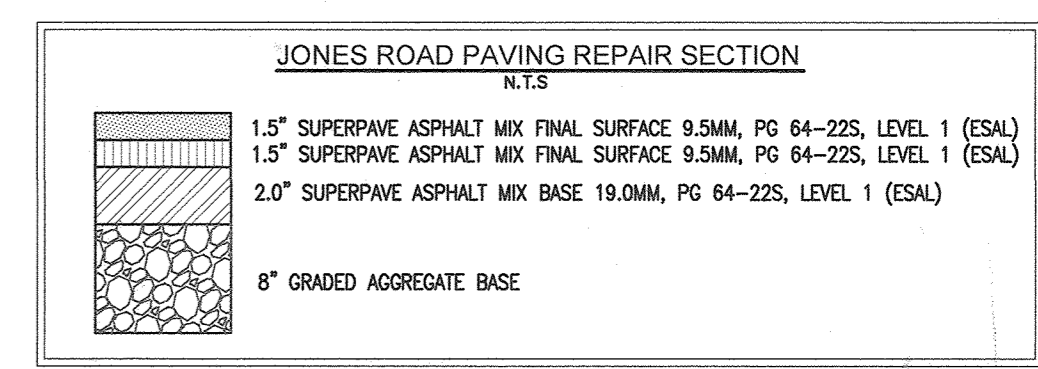
[Signature] 12/10/20
 CHIEF, DIVISION OF LAND DEVELOPMENT

LEGEND:

[Symbol]	PROPERTY LINE
[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	ADJACENT PROPERTY LINE
[Symbol]	EXISTING PAVING
[Symbol]	EXISTING UTILITY POLE
[Symbol]	EXISTING SANITARY MANHOLE
[Symbol]	EXISTING SANITARY LINE
[Symbol]	EXISTING FIRE HYDRANT
[Symbol]	EXISTING WATER LINE
[Symbol]	EXISTING TRENCH
[Symbol]	CENTERLINE OF EXISTING STREAM
[Symbol]	EXISTING SPECIMEN TREE
[Symbol]	EXISTING WETLANDS
[Symbol]	EXISTING WETLAND BUFFER
[Symbol]	PRIVATE USE-IN-COMMON ACCESS EASEMENT
[Symbol]	PUBLIC SEWER, WATER & UTILITY EASEMENT
[Symbol]	PUBLIC WATER & UTILITY EASEMENT
[Symbol]	PRIVATE STORM DRAIN AND STORM WATER MANAGEMENT EASEMENT
[Symbol]	10' PUBLIC TREE MAINTENANCE EASEMENT
[Symbol]	STORMDRAIN
[Symbol]	PROPOSED TRENCH CURB & GUTTER
[Symbol]	MICRO-BORATION FACILITY (4-6)
[Symbol]	STREET LIGHT
[Symbol]	FULL DEPTH PAVEMENT SECTION REFER TO TYPICAL SECTION
[Symbol]	GRINDING, REQ'D. 2" MILL, VARIABLE DEPTH WEDGE/LEVEL AND RESURFACING REFER TO TYPICAL SECTION



AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT LOGGING OF THE UNDERGROUND SSM FACILITY.
 [Signature] 16193 3-10-24
 P.E. # DATE



OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 9770 PATUXENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
 JONES ROAD - ROAD IMPROVEMENTS AND CROSS SECTIONS
GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11
 A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4 LOTS 2-4 (P.B. 3/51), SR (L16288 F.488), SR (L16288 F.502) AND 9 (P.B. 3/51)
 TAX MAP: 42 GRID: 24 PARCEL: 136 & 138-140
 6TH ELECTION DISTRICT ZONED: R-12 HOWARD COUNTY, MARYLAND

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

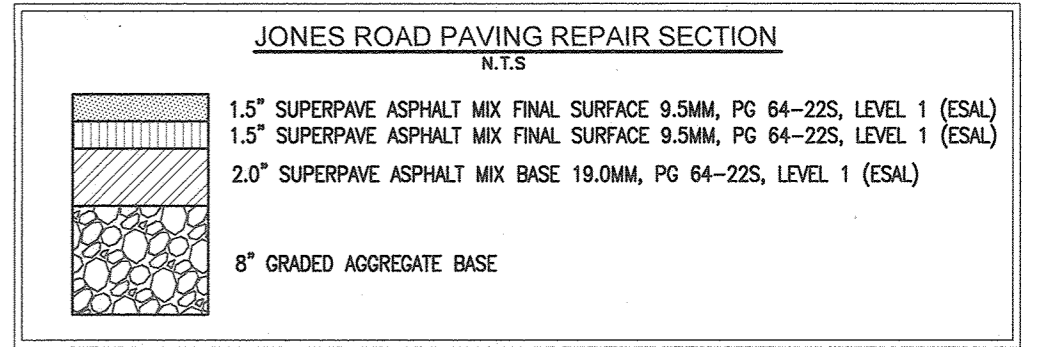
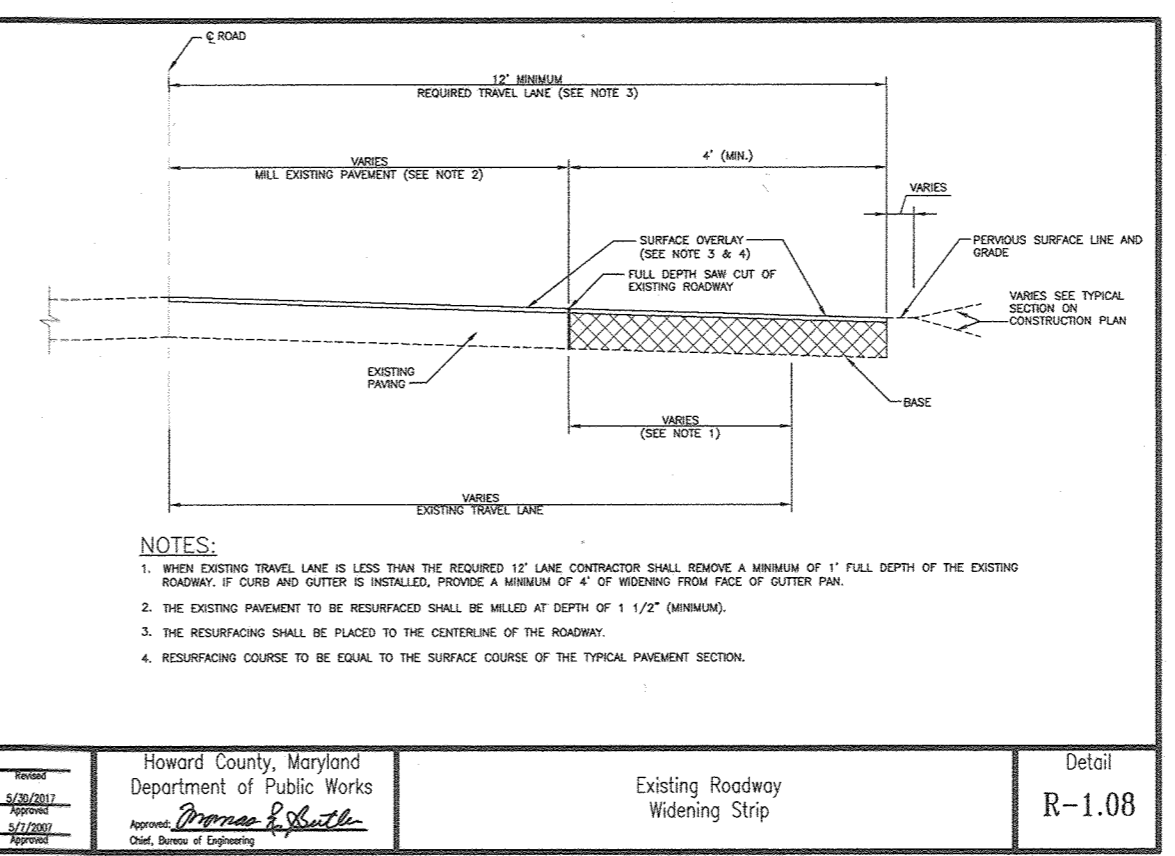
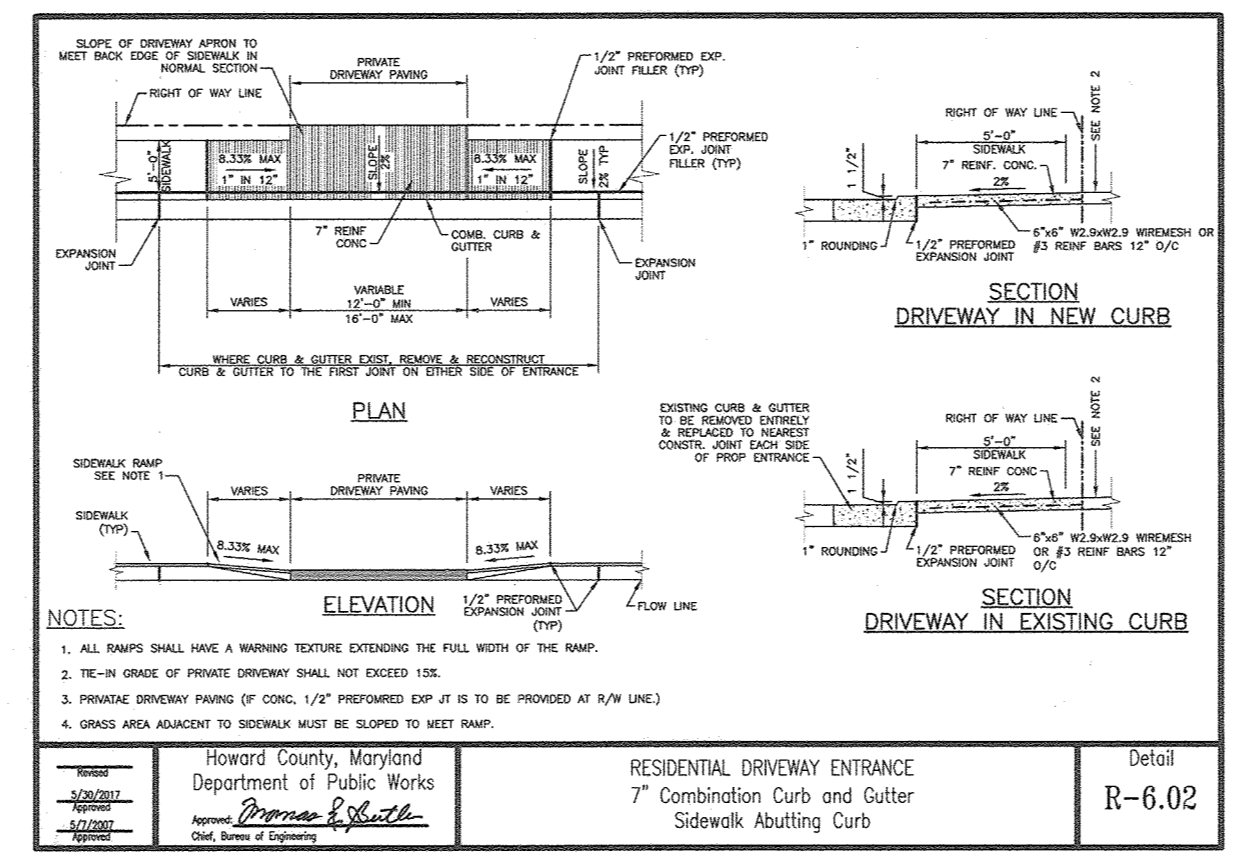
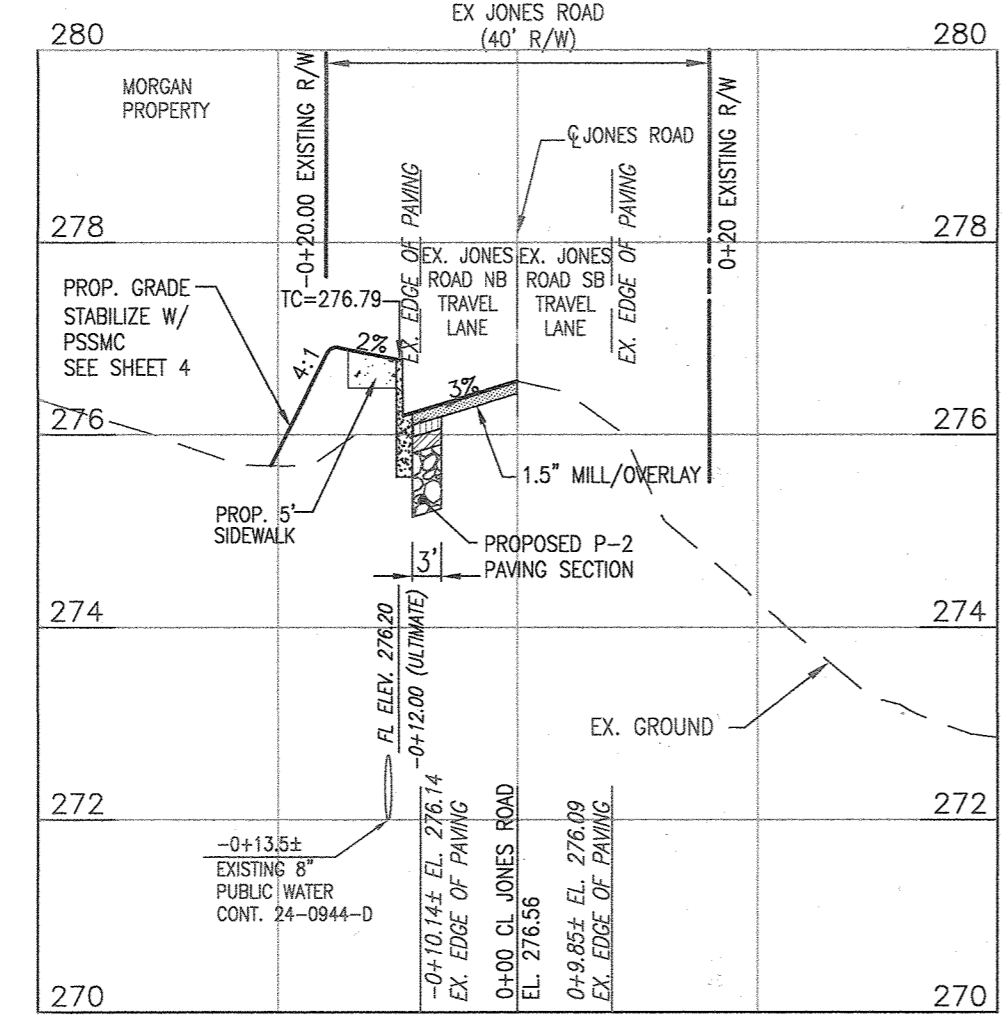
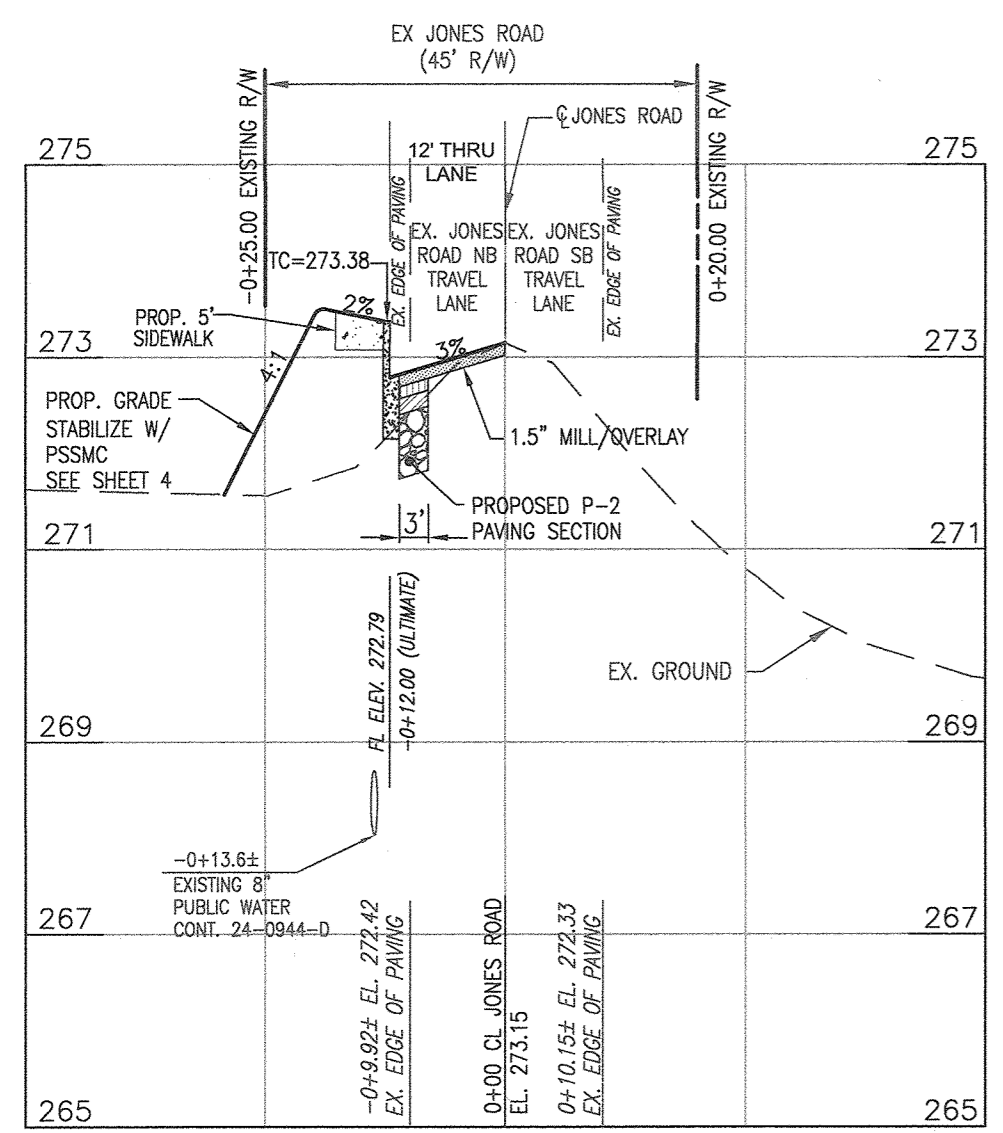
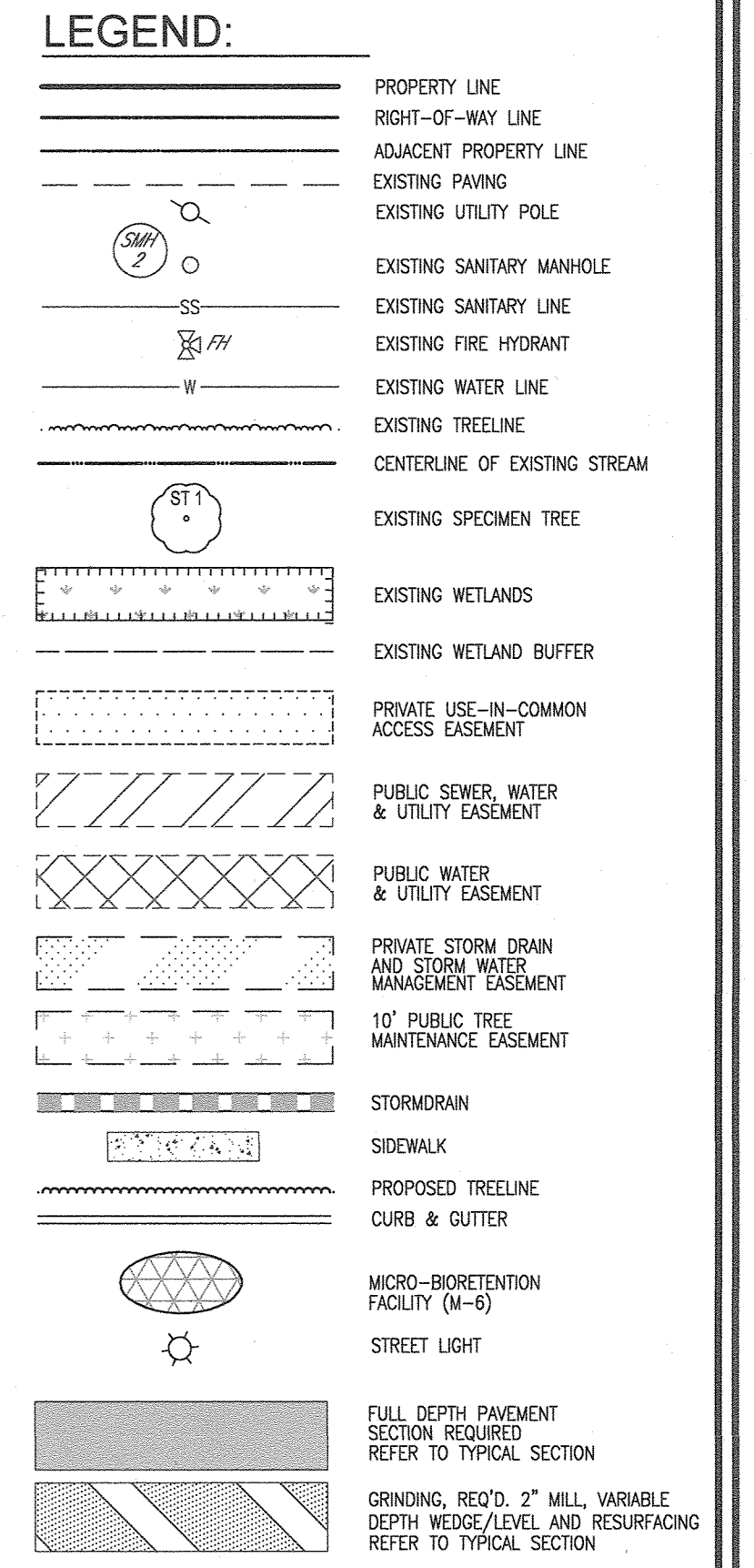
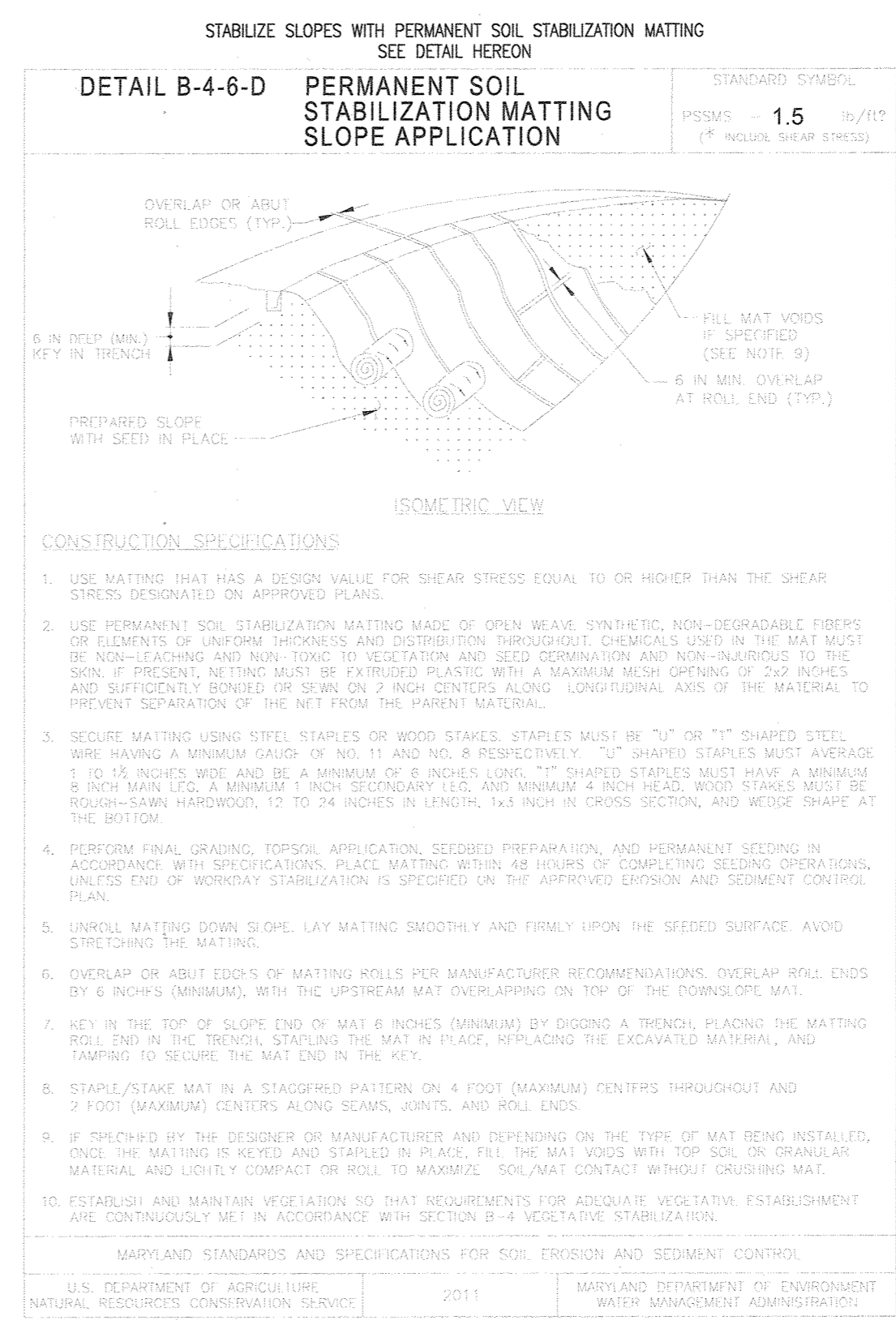
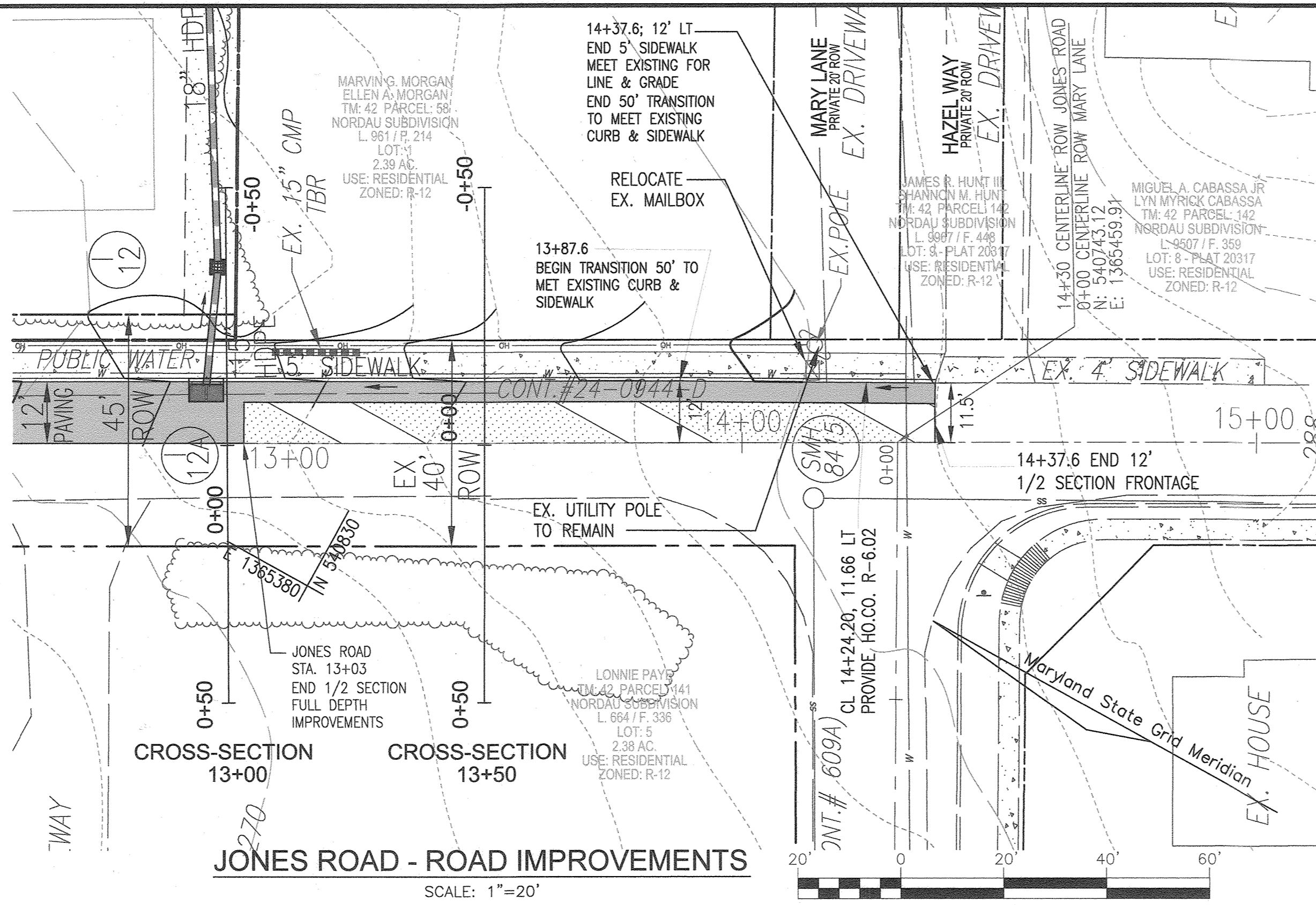
PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 16193 EXPIRATION DATE: 03-27-2028

DESIGN BY: RHV
 DRAWN BY: VETG
 CHECKED BY: RHV
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05

3 SHEET OF 23

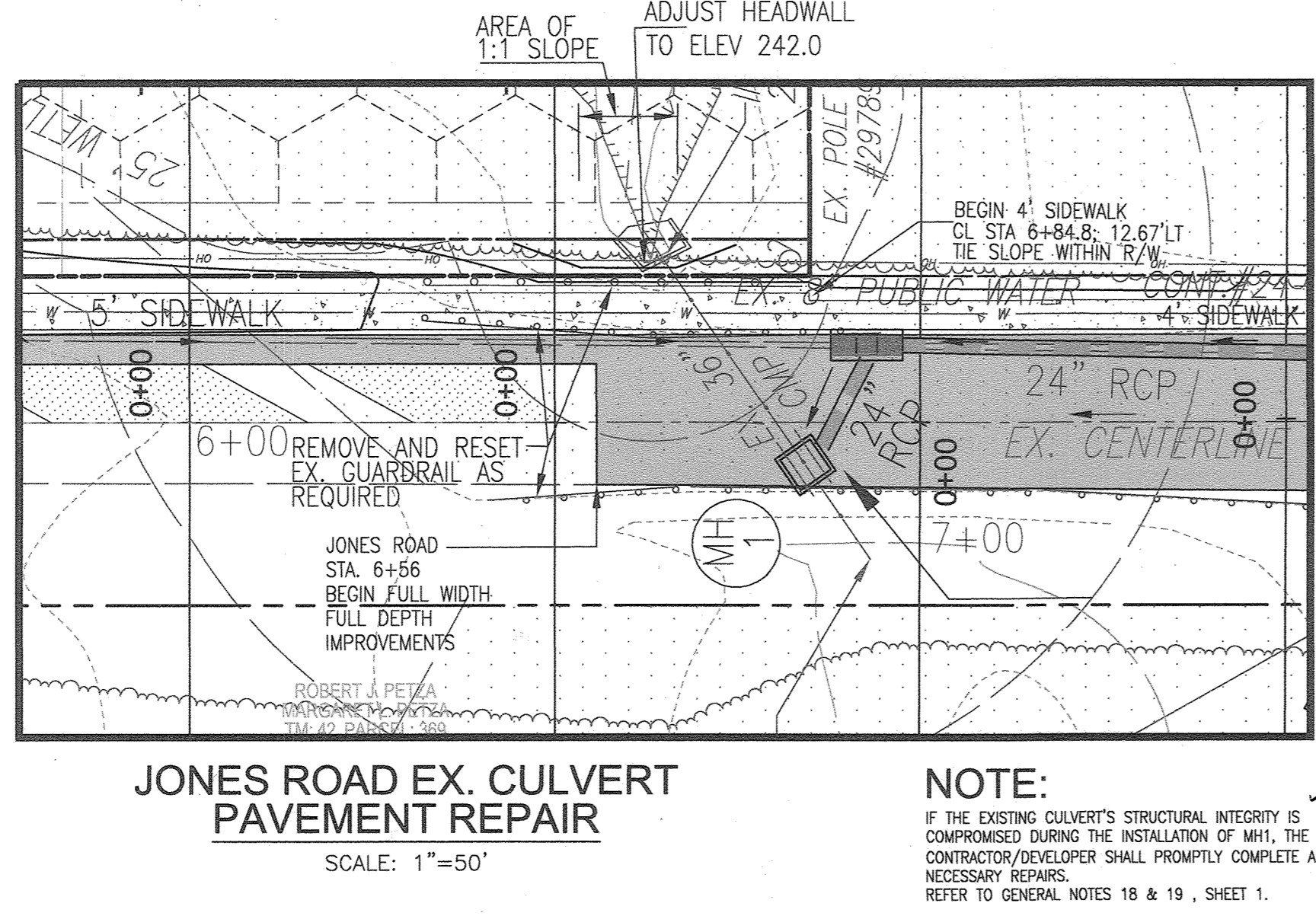
NOTES:
 1. ANY DAMAGE INCURRED TO THE EXISTING UTILITIES, DUE TO CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S/DEVELOPER'S EXPENSE.
 2. ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

FOR CONTINUATION SEE SHEET 3



PAVEMENT CONSTRUCTION LOCATION		
TYPE OF CONSTRUCTION	START STATION	FINISH STATION
FULL DEPTH PAVEMENT	12+80	14+38
MILL & OVERLAY	13+03	14+38

REFER TO PLAN LEGEND AND PLAN VIEW HATCH



NOTE:
 IF THE EXISTING CULVERT'S STRUCTURAL INTEGRITY IS COMPROMISED DURING THE INSTALLATION OF HWY, THE CONTRACTOR/DEVELOPER SHALL PROMPTLY COMPLETE ALL NECESSARY REPAIRS.
 REFER TO GENERAL NOTES 18 & 19, SHEET 1.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 11/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 12-2-20

APPROVED: DIVISION OF LAND DEVELOPMENT
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 12/10/20

NO AS-BUILT INFORMATION ON THIS SHEET

STATE OF MARYLAND
 ROBERT HARRIS VOGEL
 PROFESSIONAL ENGINEER
 NO. 16193
 3-18-24
 P.E. NAME: P.E. #

AS-BUILT CERTIFICATION FOR PSWM

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

OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 9770 PATUXENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

NO. _____ REVISION _____ DATE _____

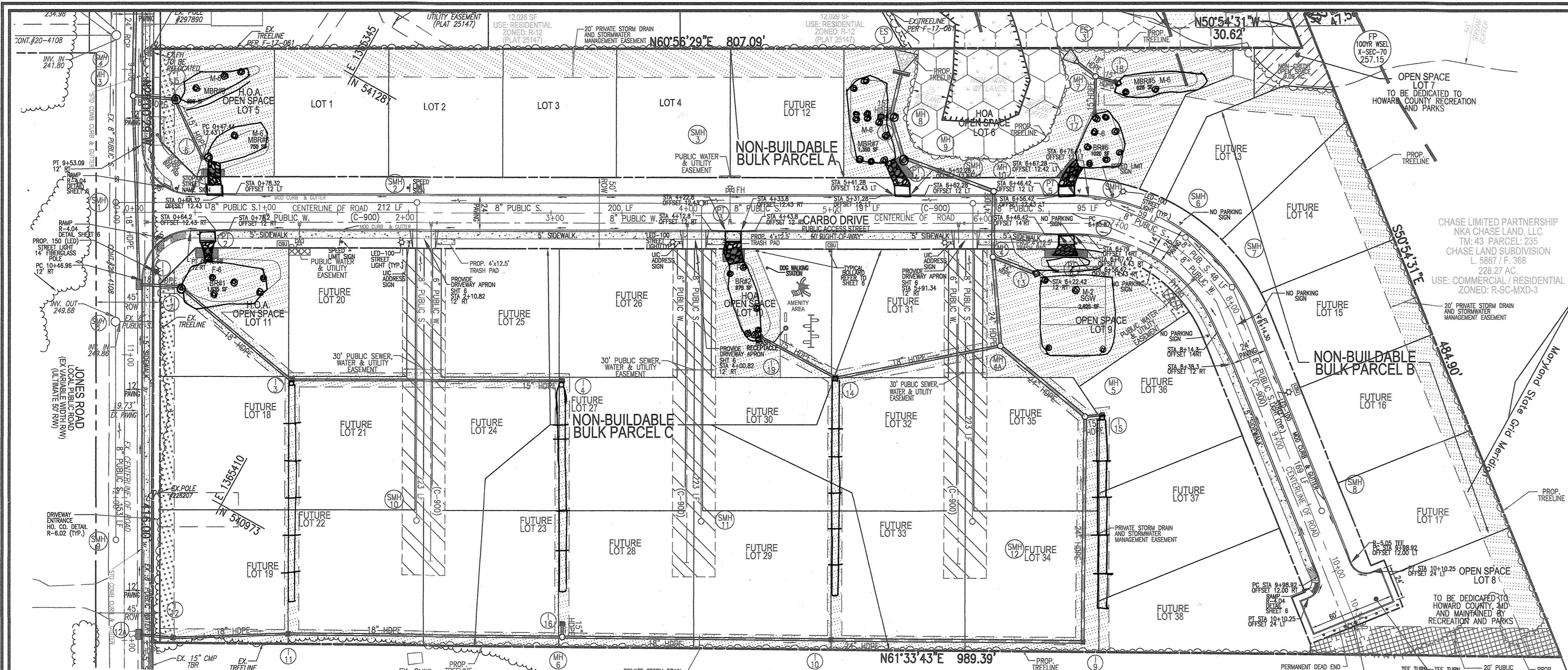
FINAL ROAD CONSTRUCTION PLAN
 JONES ROAD - ROAD IMPROVEMENTS,
 CROSS SECTIONS AND TRAFFIC CONTROL
GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON BUILDABLE BULK PARCELS A-C
 AND OPEN SPACE LOTS 5-11
 A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
 LOTS 2-4 (P.B. 5/1), 5R (L.16286 F.488), 6R (L.16286 F.302) AND 9 (P.B. 3/51)
 TAX MAP: 42 GRID: 24 PARCEL: 136 & 138-140
 8TH ELECTION DISTRICT ZONED: R-12 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
 TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410-461.7666 F: 410-461.8961 www.timmons.com

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-22-2023

DESIGN BY: RHV
 DRAWN BY: VETG
 CHECKED BY: RHV
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05

4 SHEET OF 23



CARBO DRIVE - PLAN
SCALE: 1"=50'

NOTES

- REFER TO SHEETS 13 AND 14 FOR STORMDRAIN PROFILES.
- REFER TO SHEET 13 FOR STORMDRAIN STRUCTURE SCHEDULE.
- FOR STREET TREE LOCATIONS, REFER TO SHEET 15.
- ALL STREET TREES AND/OR SIGN SHALL BE LOCATED 5' MIN. FROM PROPOSED DRAINAGE, UTILITY STRUCTURE.
- THERE SHALL BE A MINIMUM OF 20' BETWEEN STREET LIGHTS AND STREET TREES.
- IN THE DIRECTION FACING A TRAFFIC CONTROL SIGN:
 - THERE SHALL BE A MINIMUM OF 40' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL STOP SIGNS.
 - THERE SHALL BE A MINIMUM OF 35' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL SIGNS OTHER THAN A STOP SIGN.
- REFER TO SHEET 6 FOR SIDEWALK, CURB TRANSITION, PAVING SECTION, TYPICAL SECTION AND CURB DETAILS.
- ALL SIGN LOCATIONS ARE APPROXIMATE, HOWARD COUNTY TRAFFIC SHALL FIELD APPROVE OR MARK ALL SIGN LOCATIONS PRIOR TO ANY SIGNS BEING INSTALLED. CALL 410-313-5752.
- REFER TO SHEET 6 FOR PROPOSED CENTRAL MAIL DELIVERY BOX (CBU) LOCATIONS. FINAL LOCATIONS SHALL BE DIRECTED BY THE U.S. POSTAL SERVICE.
- HANDICAP RAMPS PER STANDARD R-4.01.

ROAD WIDTH TRANSITION NOTE

PAVEMENT WIDTH EXPANSION SHALL OCCUR BETWEEN CL RD STATIONS 6+22.42 - 8+38.3

-CL STA 6+22.42; 12' RT; BEGIN 12:1 TRANSITION FROM 24' TO 26'

EXPANDED ROAD WIDTH WILL OCCUR ON THE RIGHT/INSIDE OF CURVE

-CL STA 6+48.42; 14' RT END 12:1 TRANSITION TO 26'; BEGIN STANDARD R-3.02 TRANSITION TO PT6

-CL STA 6+56.42; 14.43' RT END R-3.02 TRANSITION AT PT6

-CL STA 6+67.42; 14.43' RT BEGIN R-3.02 TRANSITION TO 26'

-CL STA 6+79; 14' RT END TRANSITION TO 26'

-CL STA 8+14.3; 14' RT BEGIN 12:1 TRANSITION FROM 26' TO 24'

-CL STA 8+38.3; 12' RT END TRANSITION TO 24'

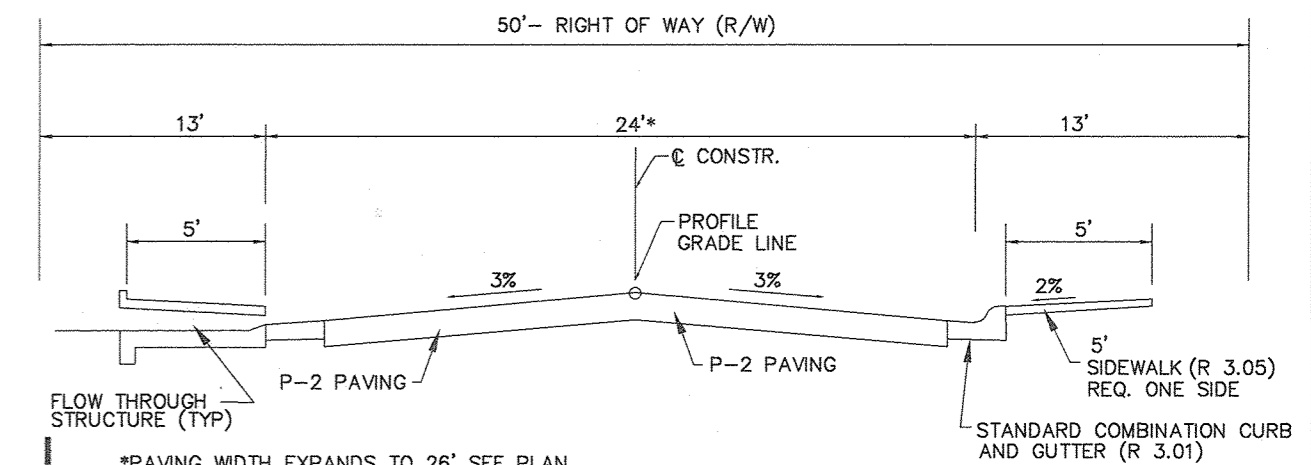
STREET LIGHT LOCATIONS

ROAD NAME	STATION	OFFSET	FIXTURE/POLE TYPE
JONES ROAD	10+41.58	23.21' LEFT	LED-150 PREMIER COLONIAL POST-TOP FIXTURE MOUNTED ON 4" X 4" BLACK FIBERGLASS POLE
CARBO DRIVE	1+95.09	21' RIGHT	LED-100 PREMIER COLONIAL POST-TOP FIXTURE MOUNTED ON 4" X 4" BLACK FIBERGLASS POLE
CARBO DRIVE	3+85.59	20.3' RIGHT	LED-100 PREMIER COLONIAL POST-TOP FIXTURE MOUNTED ON 4" X 4" BLACK FIBERGLASS POLE
CARBO DRIVE	5+76.67	20.6' RIGHT	LED-100 PREMIER COLONIAL POST-TOP FIXTURE MOUNTED ON 4" X 4" BLACK FIBERGLASS POLE
CARBO DRIVE	6+97.32	19.98' LEFT	LED-100 PREMIER COLONIAL POST-TOP FIXTURE MOUNTED ON 4" X 4" BLACK FIBERGLASS POLE
CARBO DRIVE	8+71.59	16.6' LEFT	LED-100 PREMIER COLONIAL POST-TOP FIXTURE MOUNTED ON 4" X 4" BLACK FIBERGLASS POLE
CARBO DRIVE	10+40.54	4.57' RIGHT	LED-100 PREMIER COLONIAL POST-TOP FIXTURE MOUNTED ON 4" X 4" BLACK FIBERGLASS POLE
JONES ROAD	8+21.98	21.28' LEFT	LED-100 PREMIER COLONIAL POST-TOP FIXTURE MOUNTED ON 4" X 4" BLACK FIBERGLASS POLE

CURVE TABLE

CURVE	ARC	RADIUS	TANGENT	DELTA	CHORD
6+48.87 - 8+14.30	148.44'	125.00' (1)	84.37'	68°02'16"	N84°55'39"W 139.87'
10+73.00 - 14+63.28	399.66'	390.00'	217.81'	63°47'17"	S82°48'09"E 369.85'

(1) REFER TO GENERAL NOTE 50, SHEET 1.



TYPICAL ROADWAY SECTION
CLASSIFICATION: PUBLIC ACCESS STREET
DESIGN SPEED: 35 MPH
SECTION NOT TO SCALE

TRAFFIC CONTROL SIGNAGE SCHEDULE

ROAD NAME	STATION	OFFSET	TYPE
CARBO DRIVE	0+36.64	16.9 LT	R1-1 STOP SIGN
CARBO DRIVE	0+36.64	16.9 LT	STREET NAME SIGN
CARBO DRIVE	1+52.96	20.7 RT	R2-1 SPEED LIMIT SIGN
CARBO DRIVE	1+99.46	17.28 LT	R2-1 SPEED LIMIT SIGN
CARBO DRIVE	2+00.32	20.7 RT	UIC ADDRESS SIGN
CARBO DRIVE	3+90.32	20.7 RT	UIC ADDRESS SIGN
CARBO DRIVE	5+80.84	20.7 RT	UIC ADDRESS SIGN
CARBO DRIVE	6+90.96	16.1 LT	R2-1 SPEED LIMIT SIGN
CARBO DRIVE	10+40.51	0.0	DEAD END SIGN
CARBO DRIVE	10+40.01	0.0	R7-1 "NO PARKING" SIGN
CARBO DRIVE	6+65.87	21.5' RT	R7-1 "NO PARKING" SIGN W/ RIGHT ARROW 'D'
CARBO DRIVE	8+14.30	21.5' RT	R7-1 "NO PARKING" SIGN W/ LEFT ARROW 'B'
CARBO DRIVE	7+37.29	21.5' RT	R7-1 "NO PARKING" SIGN W/ DOUBLE ARROW 'C'
CARBO DRIVE	6+70	16.1' LT	R7-1 "NO PARKING" SIGN W/ RIGHT ARROW 'B'
CARBO DRIVE	8+14.30	16.1' LT	R7-1 "NO PARKING" SIGN W/ LEFT ARROW 'D'
CARBO DRIVE	7+37.29	16.1' LT	R7-1 "NO PARKING" SIGN W/ DOUBLE ARROW 'C'

OWNER/DEVELOPER
HOWARD COUNTY HOUSING COMMISSION
9770 PATUXENT WOODS DR., SUITE 110
COLUMBIA, MD 21046
ATTN: PETER ENGEL
(410) 313-6316

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN

CARBO DRIVE PLAN AND PROFILE

GREENWOOD VILLAGE - PHASE 1

LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11
A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
LOTS 2-4 (P.B. 3/51), SR (L16288 F.488), SR (L16288 F.502) AND 5 (P.B. 3/51)

TAX MAP: 42 GRD. 24 PARCEL: 138 & 138-140
6TH ELECTION DISTRICT ZONED: R-12 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

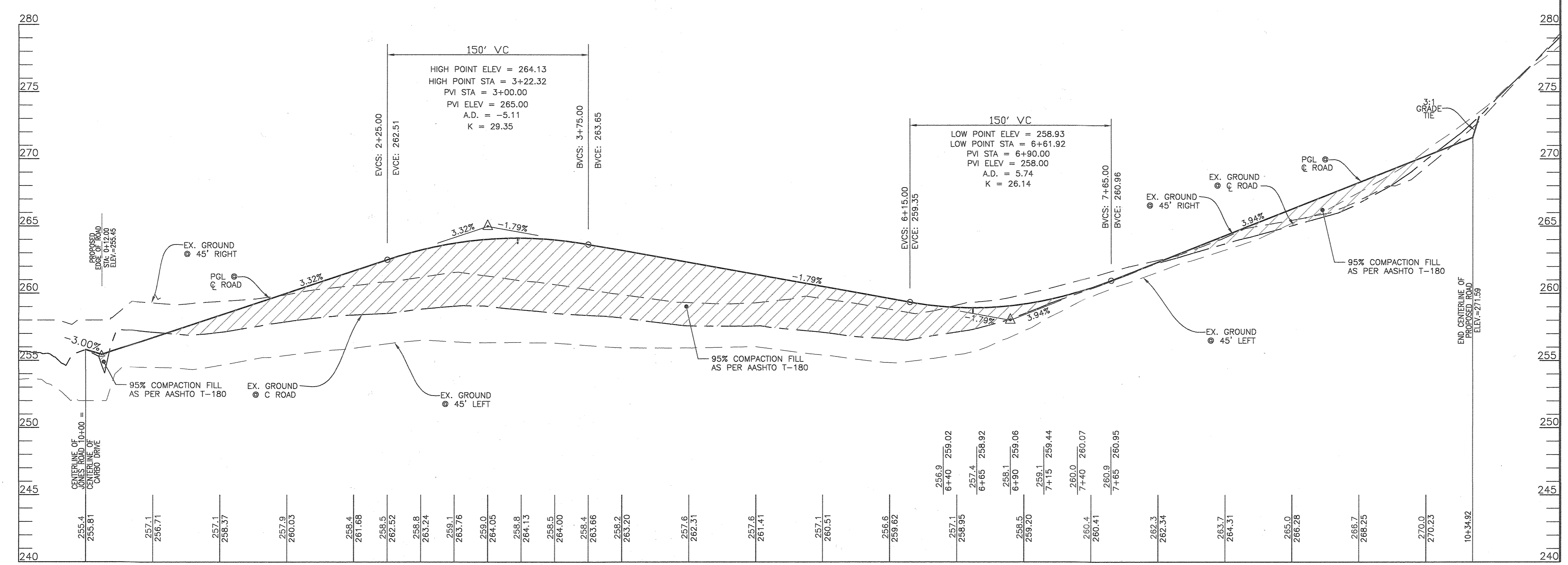
TIMMONS GROUP

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

PROFESSIONAL CERTIFICATE
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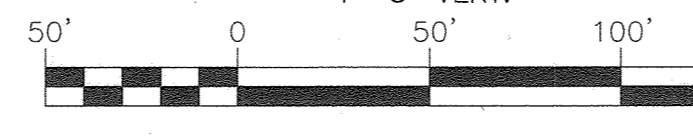
DESIGN BY: _____
DRAWN BY: _____
CHECKED BY: _____
DATE: MARCH 2020
SCALE: AS SHOWN
W.O. NO.: 12-05

5 SHEET OF 23



CARBO DRIVE - PROFILE

PUBLIC ACCESS STREET
50' R/W - 24' PAVEMENT
DESIGN SPEED: 30 MPH
SCALE: 1"=50' HORIZ.
1"=5' VERT.



LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING PAVING
- EXISTING UTILITY POLE
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- PUBLIC 100-YEAR FLOOD PLAIN (PLAT 25147)
- EXISTING FOREST CONSERVATION EASEMENT (RETENTION - PLAT 25147)
- PROP. FOREST CONSERVATION EASEMENT
- PUBLIC SEWER, WATER & UTILITY EASEMENT
- PUBLIC WATER & UTILITY EASEMENT
- PUBLIC DRAINAGE & UTILITY EASEMENT
- PRIVATE STORM DRAIN AND STORMWATER MANAGEMENT EASEMENT
- 10' PUBLIC TREE MAINTENANCE EASEMENT
- STORMDRAIN
- STORM DRAIN INLET
- SIDEWALK
- TREELINE
- CURB & GUTTER
- STREET LIGHT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
DATE: 11/28/20

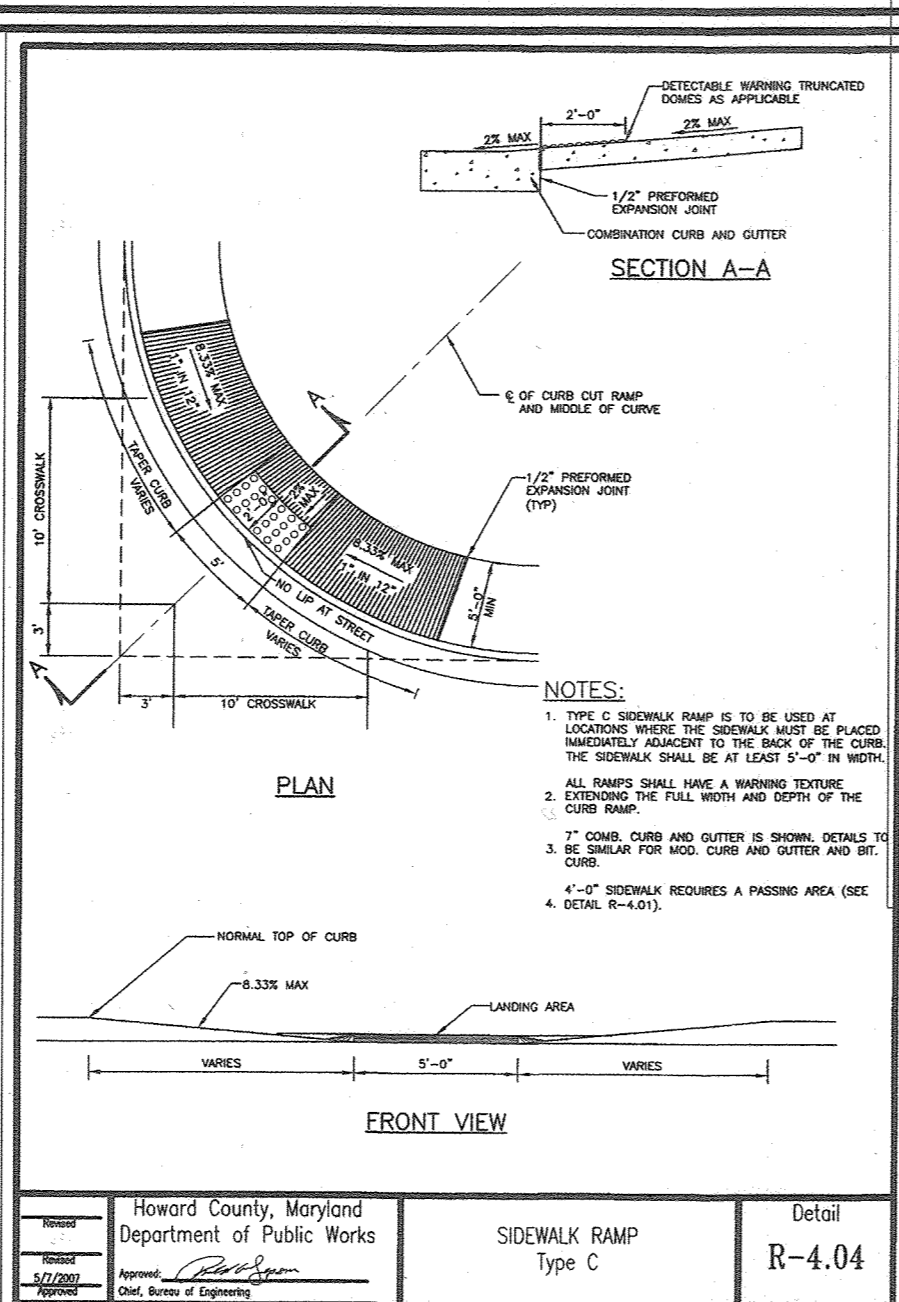
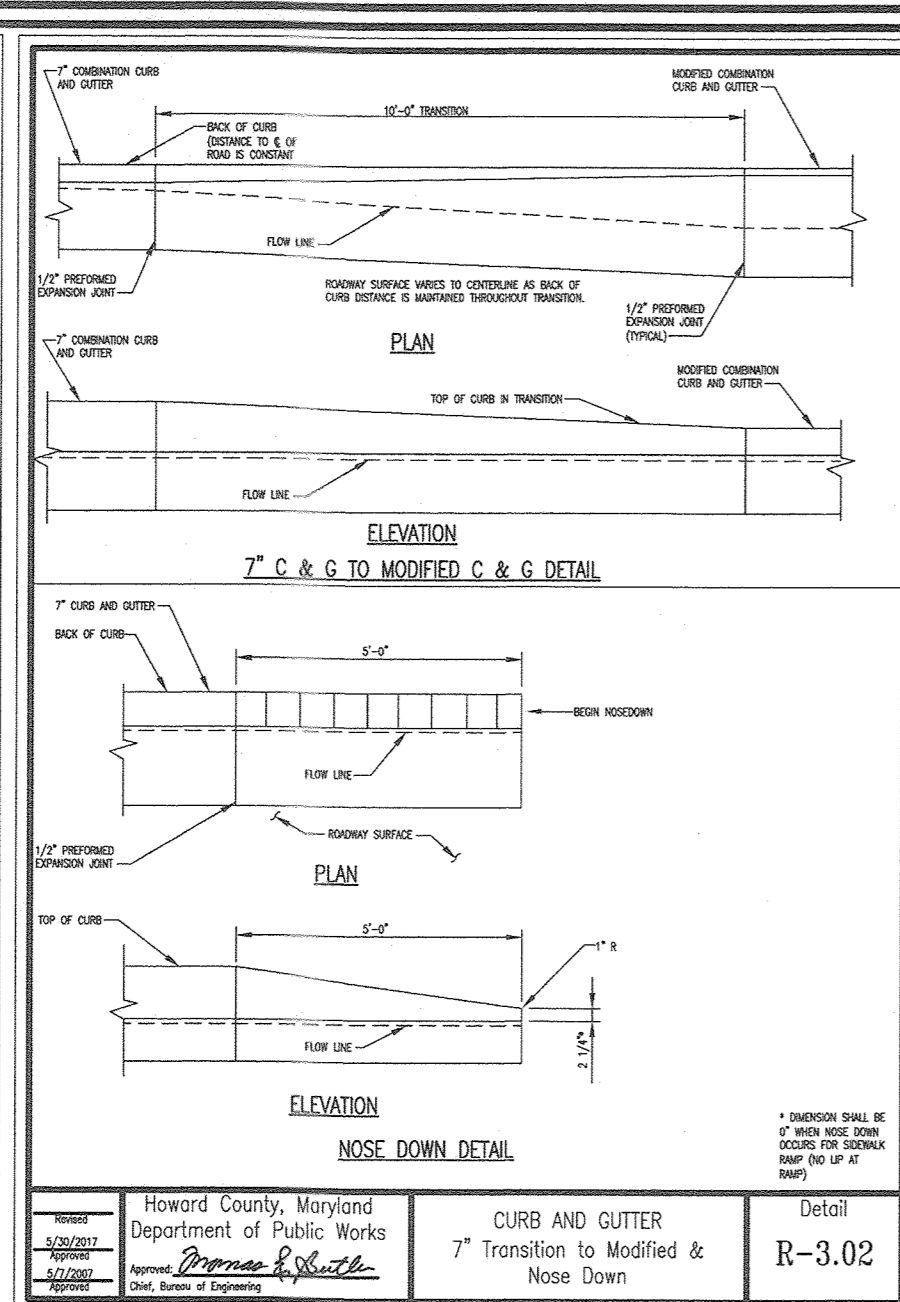
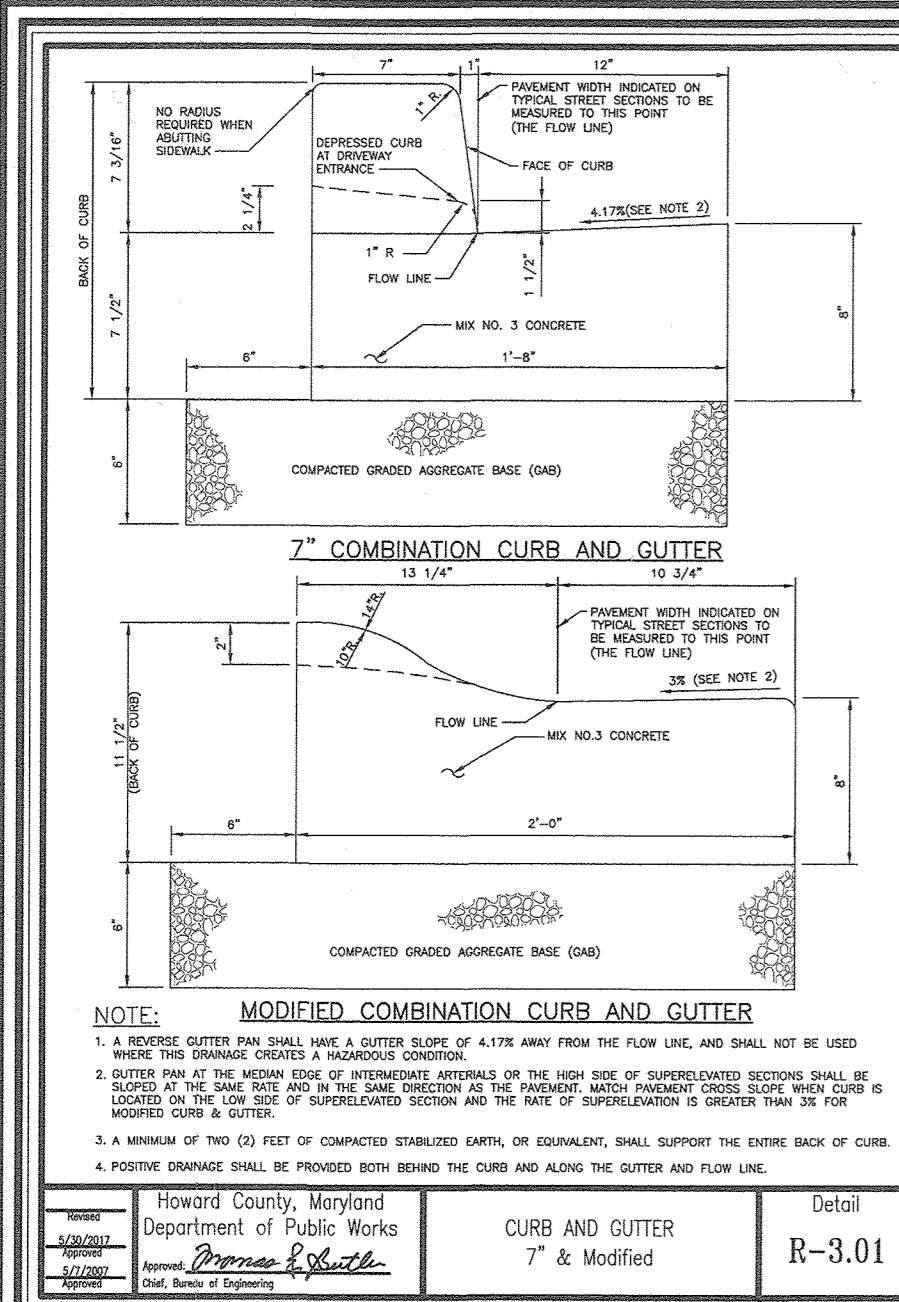
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 12-2-20

CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 12/10/20

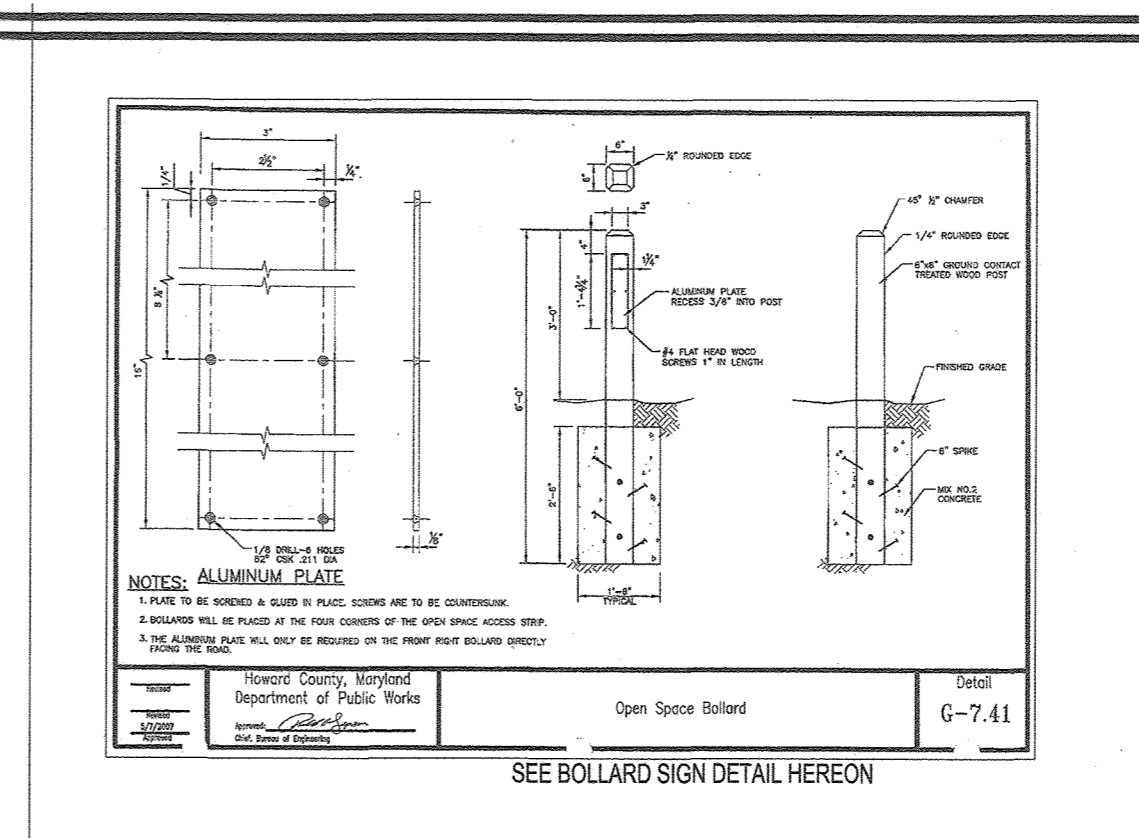
AS-BUILT CERTIFICATION FOR PSWM
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS.
I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS ADEQUATELY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND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

STATE OF MARYLAND
ROBERT HARRIS VOGEL
PROFESSIONAL ENGINEER
No. 16193
DATE: 16193 3-18-24

AS-BUILT NOVEMBER 2023



SECTION NUMBER	ROAD AND STREET CLASSIFICATION	PAVEMENT MATERIAL (INCHES)	NO. SUPERIMPOSED ASPHALT LAYERS WITH CONCRETE JOINT
P-1	RESIDENTIAL AND NON-RESIDENTIAL	4.5 IN. PG 64-226, LEVEL 1 (TOTAL)	1.0
P-2	RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 3 HOIST TRUCKS PER DAY	4.5 IN. PG 64-226, LEVEL 1 (TOTAL) 1.5 IN. PG 64-226, LEVEL 2 (TOTAL)	1.5
P-3	RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 3 HOIST TRUCKS PER DAY	4.5 IN. PG 64-226, LEVEL 1 (TOTAL) 1.5 IN. PG 64-226, LEVEL 2 (TOTAL)	1.5
P-4	RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 3 HOIST TRUCKS PER DAY	4.5 IN. PG 64-226, LEVEL 1 (TOTAL) 1.5 IN. PG 64-226, LEVEL 2 (TOTAL)	1.5



ANNOVA OR EQUAL

800-888-8888

1100 E. CINDY STREET, LOS ANGELES, CA 90008

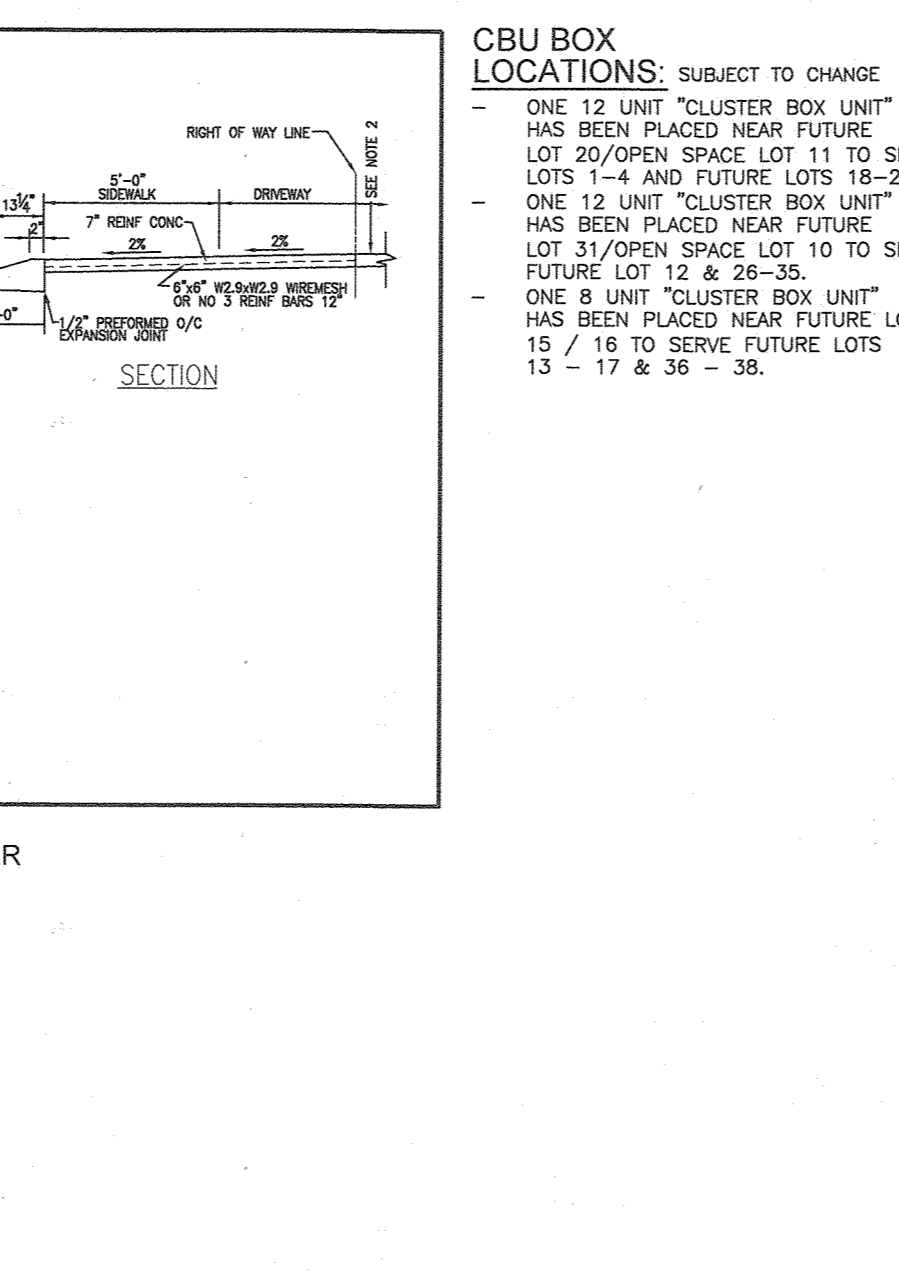
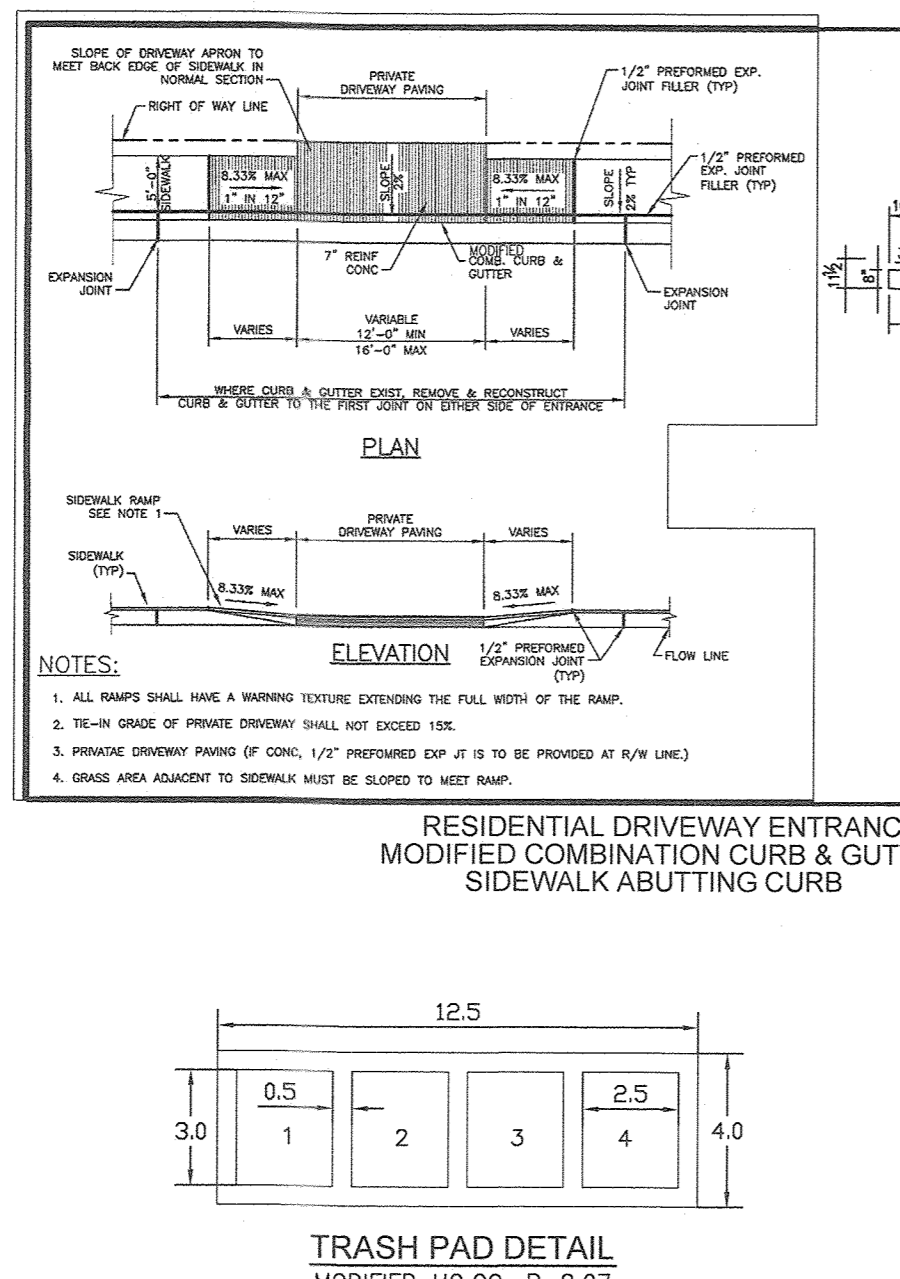
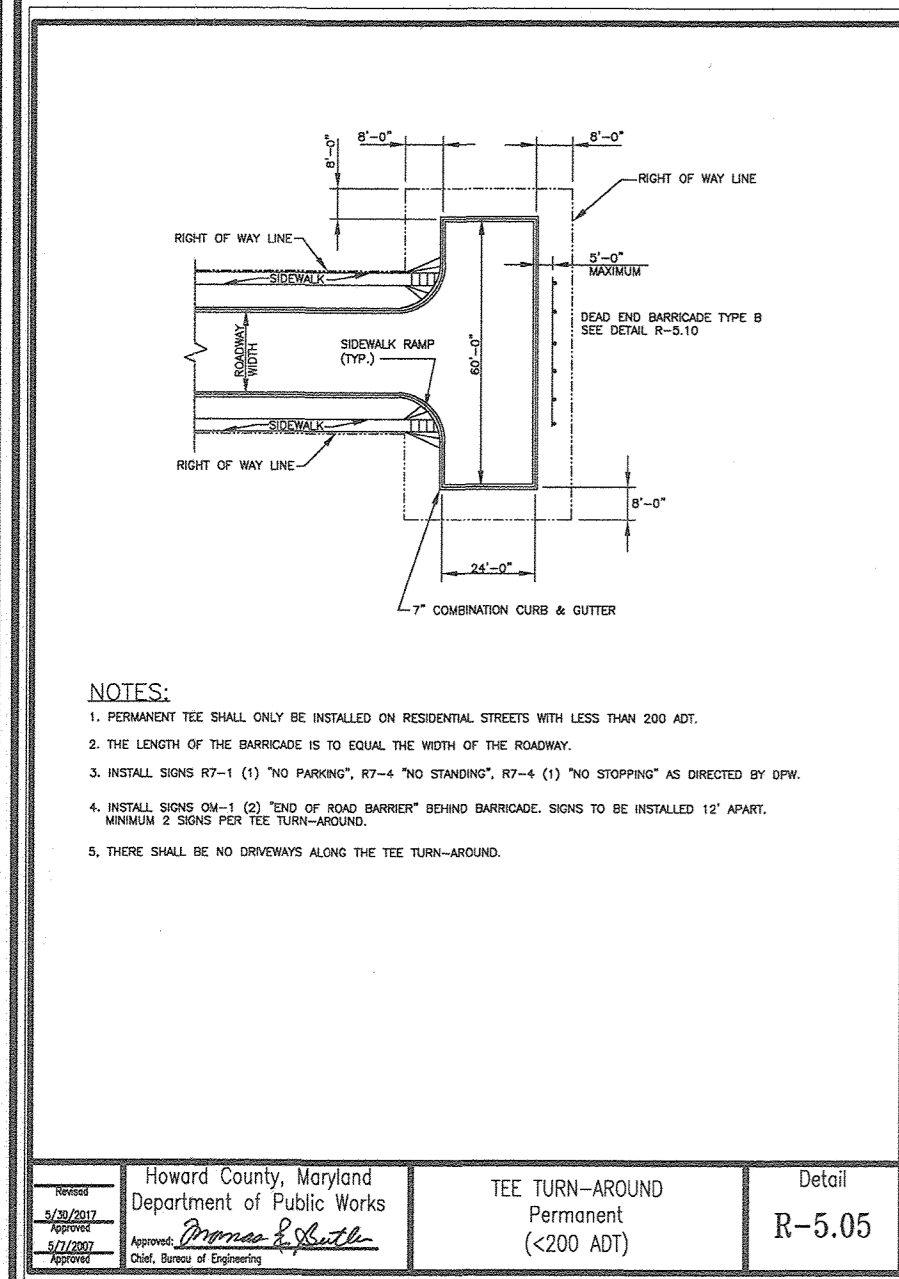
PHONE: (310) 514-6600

FAX: (310) 514-6601

EMAIL: info@annova.com

MANUFACTURER INFORMATION:
800 ENGINE COMPANY, LLC
P.O. BOX 549
PO BOX 146, WILSON, NC 27157
PHONE: 919-241-9229

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



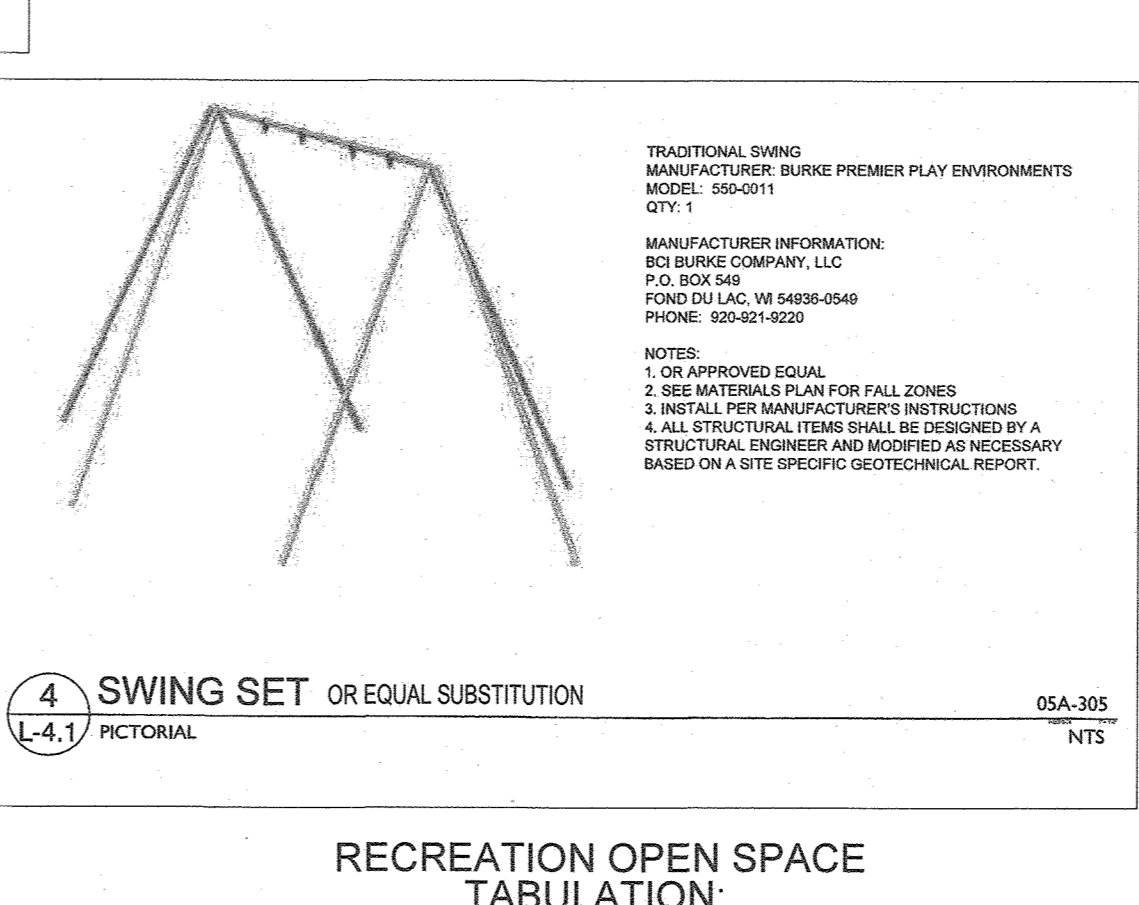
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1-800-848-2222

3216 TYPE II CBU

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

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PHONE: (310) 514-6600
FAX: (310) 514-6601
EMAIL: info@mailboxes.com



ANNOVA OR EQUAL

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1100 E. CINDY STREET, LOS ANGELES, CA 90008

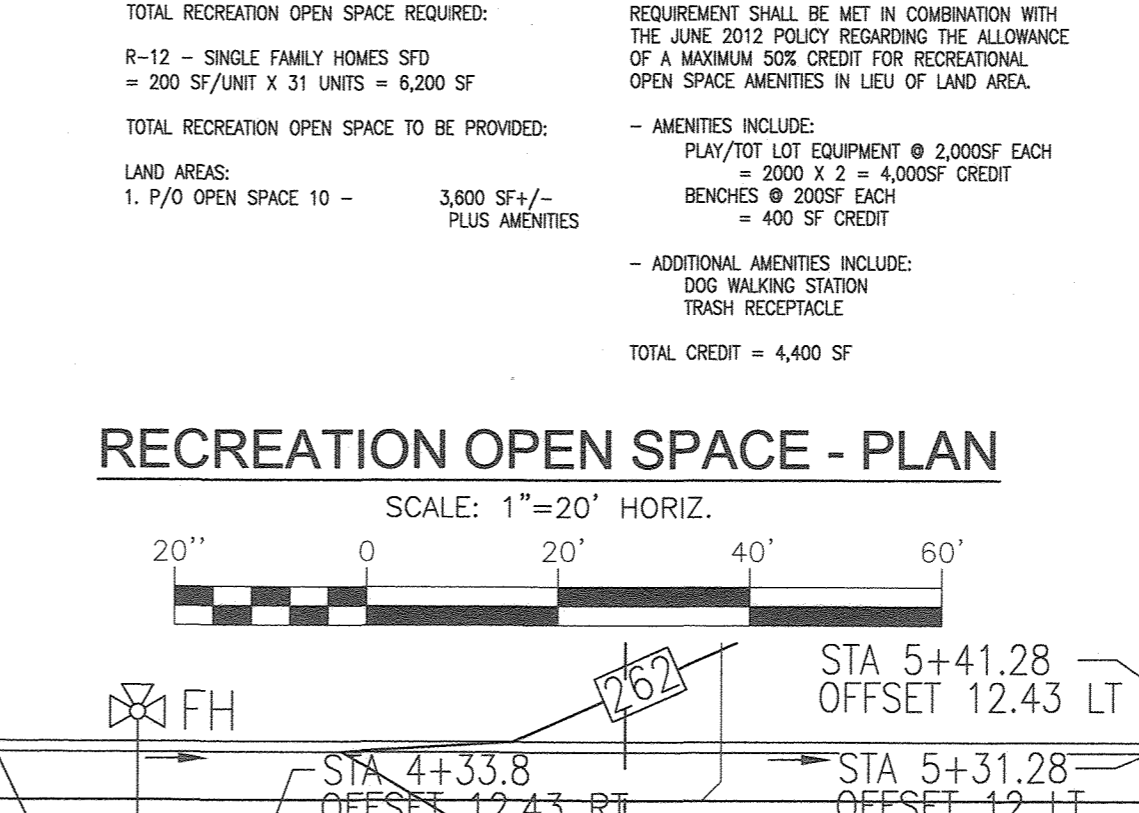
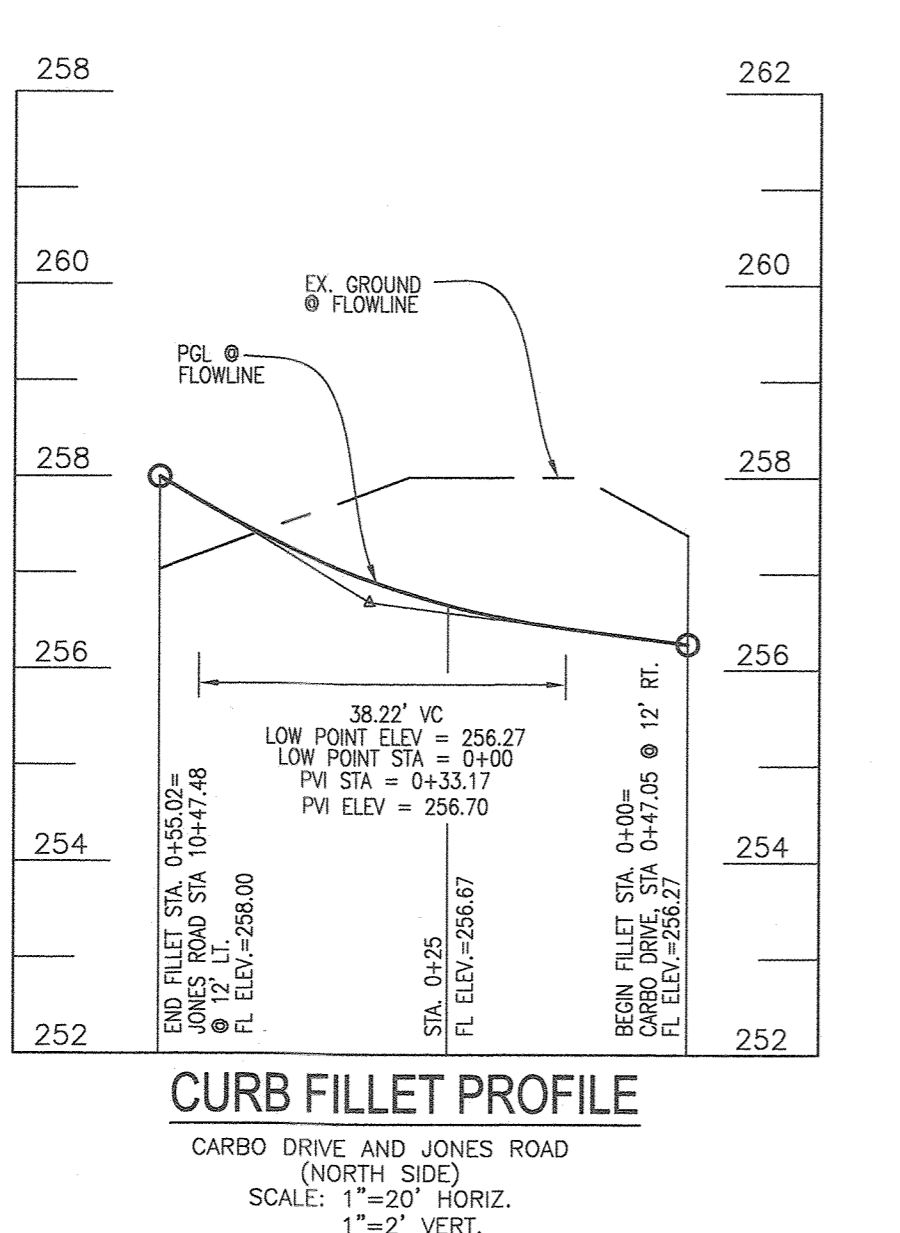
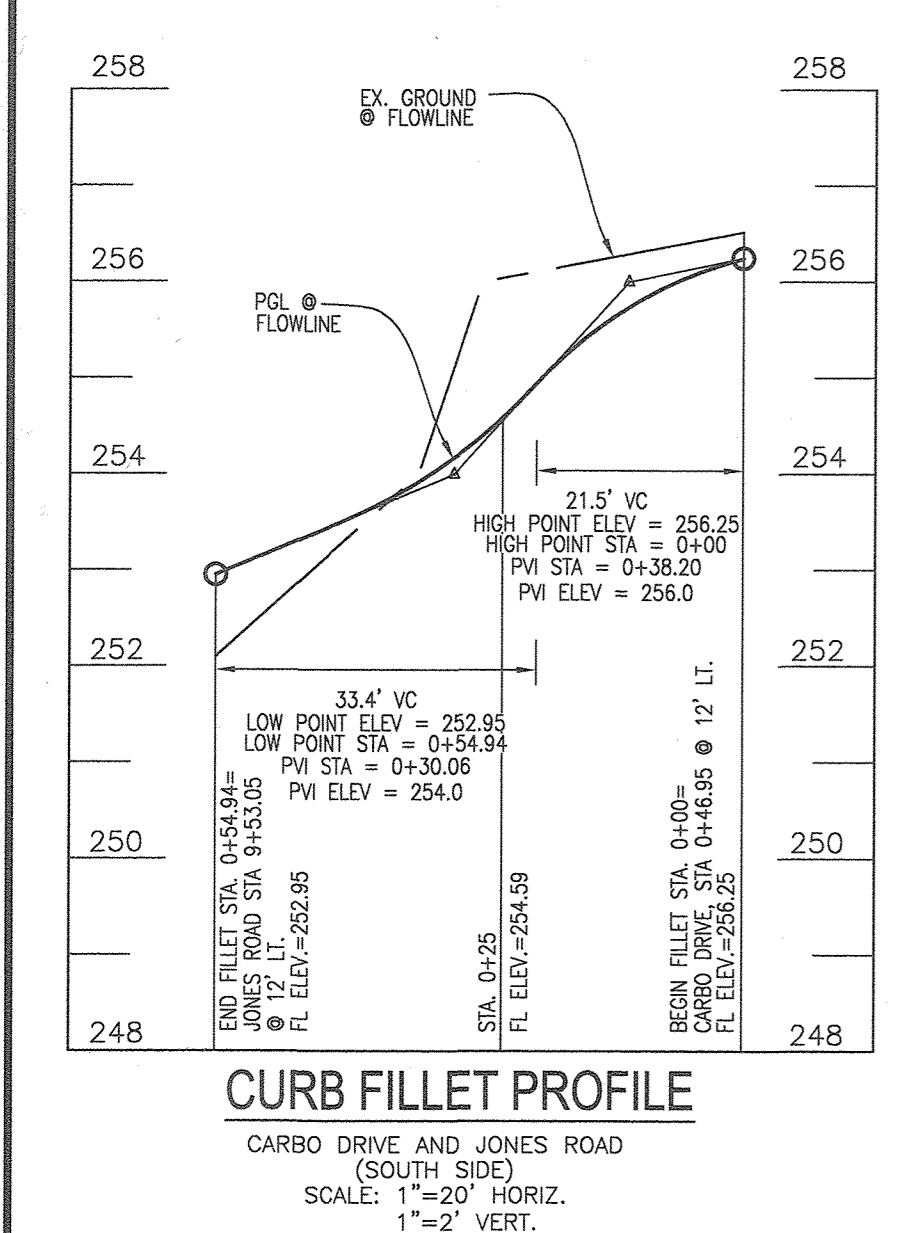
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RECREATION OPEN SPACE AMENITIES

RECREATION OPEN SPACE G-7.41 - 3" X 16" BOLLARD SIGN DETAIL OR EQUAL NOT TO SCALE

DOG WASTE STATION PRODUCT SPECS, OR EQUAL

DOG WASTE STATION

OWNER/DEVELOPER
HOWARD COUNTY HOUSING COMMISSION
9770 PATULENT WOODS DRIVE SUITE 1100
COLUMBIA, MD 21046
ATTN: PETER ENGEL
(410) 313-6316

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
DATE: 11/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 12-2-20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 12/16/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
DATE: 11/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 12-2-20

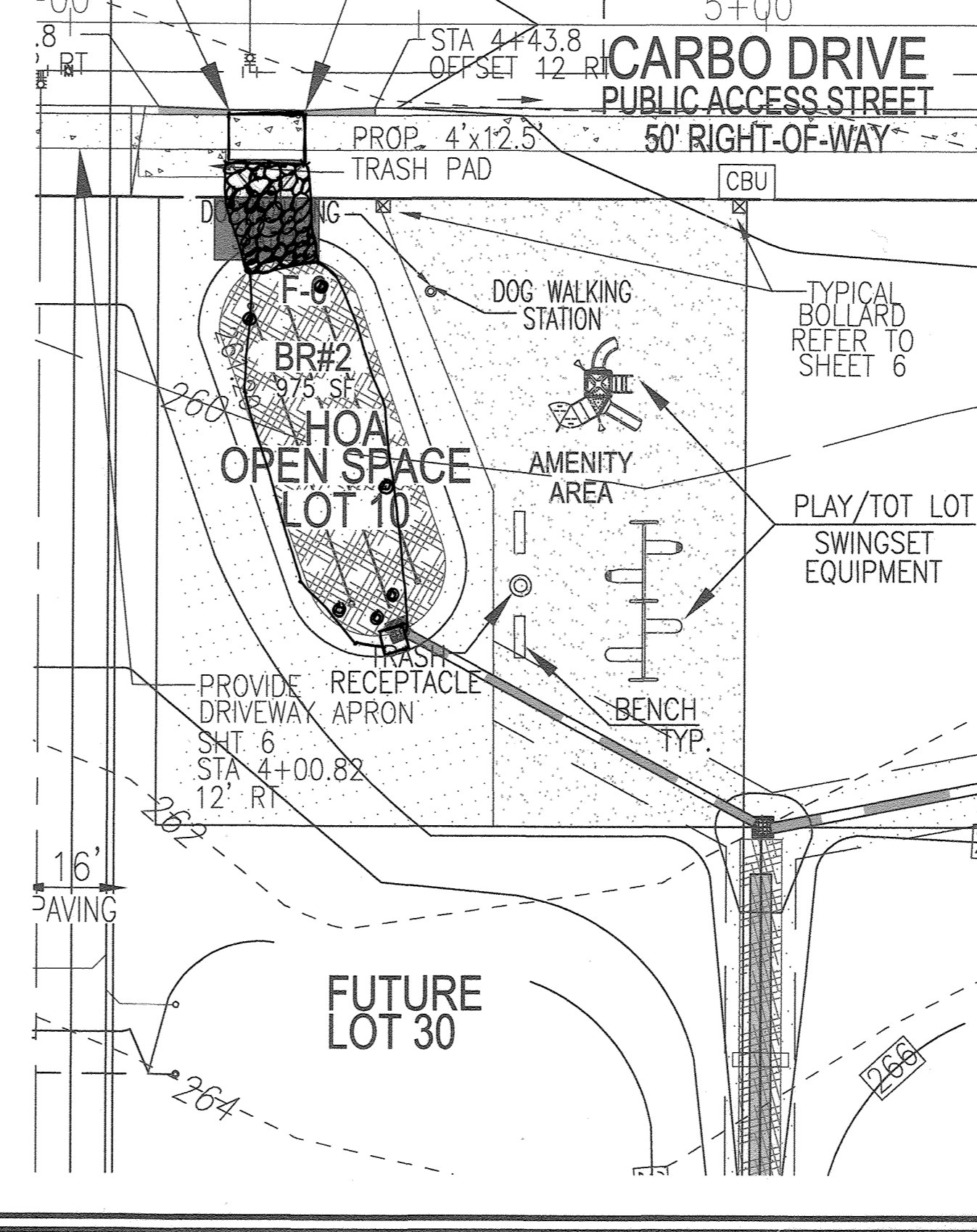
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 12/16/20

AS-BUILT CERTIFICATION FOR PSWM

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

STATE OF MARYLAND
ROBERT HARRIS VOGEL
No. 16193
REGISTERED PROFESSIONAL ENGINEER

DATE: 11/16/23
P.E. # 16193
DATE: 3-10-24



FINAL ROAD CONSTRUCTION PLAN

CARBO DRIVE

ROAD DETAILS AND RECREATION OPEN SPACE DETAILS

GREENWOOD VILLAGE - PHASE 1

LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11

A RE-SUBDIVISION OF THE "NORWOOD SUBDIVISION" - SECTION E-4 LOTS 2-4 (P.B. 3/51), 5R (L-16288 F.488), 6R (L-16288 F.502) AND 9 (P.B. 3/51)

TAX MAP: 42 GRID: 24 6TH ELECTION DISTRICT ZONED: R-12 PARCEL: 136 & 138-140 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

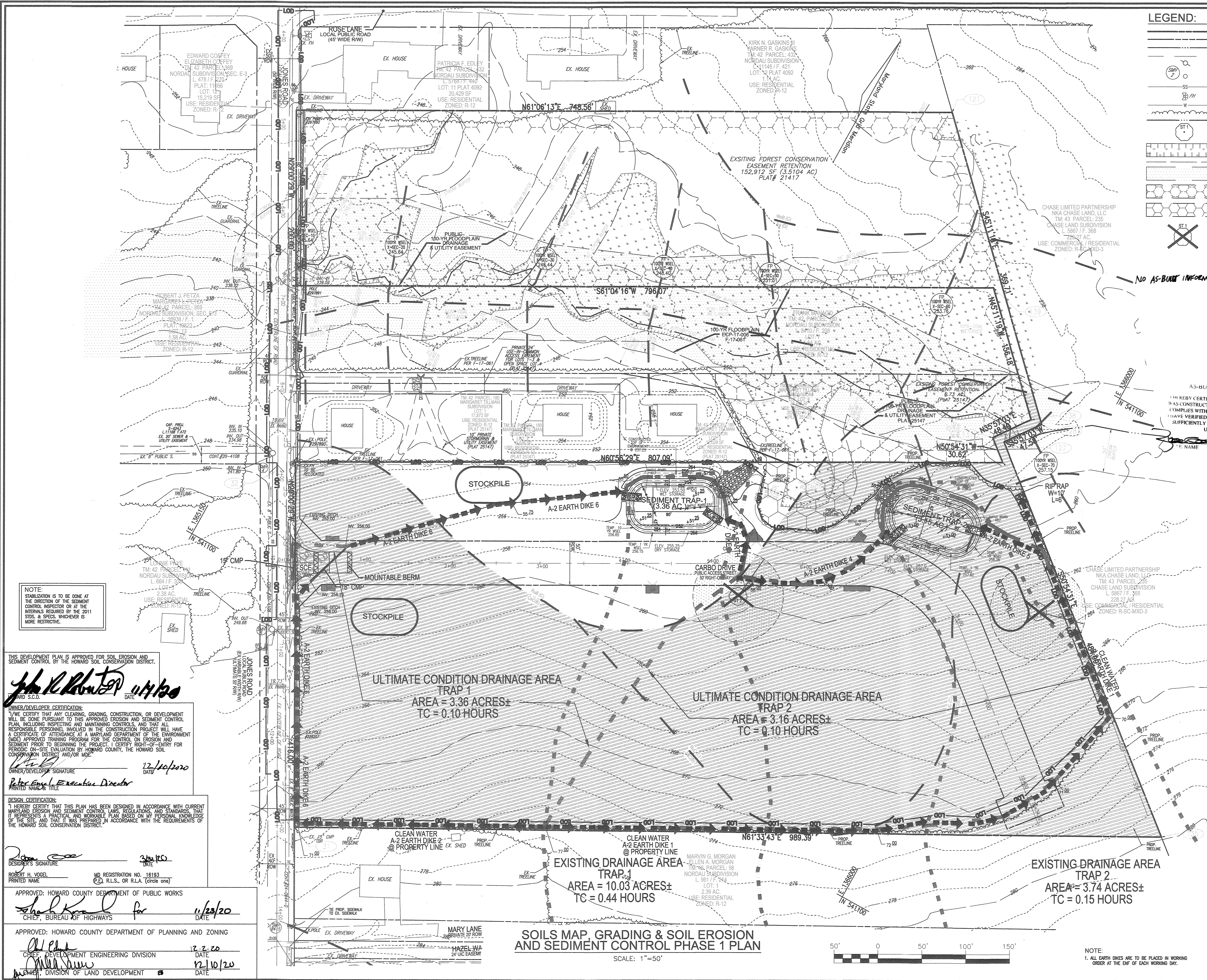
TIMMONS GROUP

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

DESIGN BY: RHV
DRAWN BY: VETG
CHECKED BY: RHV
DATE: MARCH 2020
SCALE: AS SHOWN
W.O. NO.: 12-05

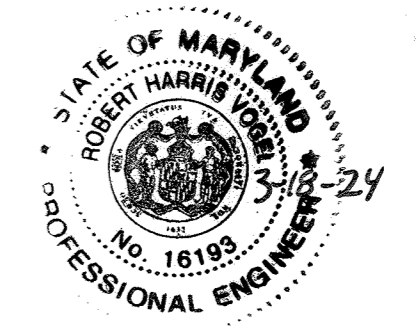
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. MY LICENSE NO. IS 16193 EXPIRATION DATE: 06-27-2020

6 SHEET OF 23



LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING PAVING
- EXISTING UTILITY POLE
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREELINE
- CENTERLINE OF EXISTING STREAM
- EXISTING SPECIMEN TREE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- PUBLIC 100-YEAR FLOOD PLAN PLAT #121
- EXISTING FOREST CONSERVATION EASEMENT (RETENTION - PLAT 21417, 25147)
- FOREST CONSERVATION EASEMENT (RETENTION)
- EXISTING SPECIMEN TREE TO BE REMOVED
- RUB (C) SOILS BOUNDARY
- Cc(B)
- TREELINE
- CURB & GUTTER
- SUPER SILT FENCE
- SILT FENCE
- LIMIT OF DISTURBANCE
- EARTH DIKE
- CLEANWATER DIVERSION DIKE
- STABILIZED CONSTRUCTION ENTRANCE
- EXISTING DRAINAGE DIVIDE
- PROPOSED DRAINAGE DIVIDE
- BAFFLE
- GARDEN PROTECTION
- REMOVABLE PUMP STATION
- NRCS/HSD/SCD HIGHLY ERODIBLE SOILS



NO AS-BUILT INFORMATION ON THIS SHEET

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

NOTE:
 SEDIMENT CONTROLS INTERRUPTED BY INSTALLATION OF UTILITY LINES ARE TO BE REPAIRED IMMEDIATELY.

NOTE:
 LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED. SEE STABILIZATION SPEC'S SHEET 9

AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
 R. NAME: 16193
 P.E.#: 3-18-24
 DATE

NOTE:
 FOR SOILS ONSITE THAT WOULD BE CONSIDERED HIGHLY ERODIBLE BY THE HOWARD SOIL CONSERVATION DISTRICT, MORE STRINGENT SEDIMENT AND STABILIZATION METHODS MAY BE EXPECTED AT SITE DEVELOPMENT STAGE.

SOILS LEGEND
 HOWARD COUNTY SOILS MAP #24

SYMBOL	NAME / DESCRIPTION	HYDRO GROUP	K FACTOR	15% SLOPE W/ PRODN PROHIBIT
CnC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	NO	0.43	YES
RuB	RUSSETT AND BELTSVILLE SOILS, 2 TO 5 PERCENT SLOPES	NO	0.43	NO
RuC	RUSSETT AND BELTSVILLE SOILS, 5 TO 10 PERCENT SLOPES	NO	0.43	YES
Wg	FALLSNOTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	YES	0.24	NO
C	WOODSTOWN SANDY LOAM, 2 TO 3 PERCENT SLOPES	YES	0.32	NO
Cd	CROOM AND EVERSBORO SOILS, 10 TO 15 PERCENT SLOPES	NO	0.37	YES
EBC	EVERSBORO LOAMY SAND, 2 TO 10 PERCENT SLOPES	NO	0.15	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
 K-FACTOR = $k = 0.04 \cdot D^2$ DEPTH
NOTE:
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

OWNER/DEVELOPER
 HOWARD COUNTY HOODS COMMISSION
 9770 PATUXENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

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

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 Signature: *John R. Roberts*
 DATE: 11/14/20

OWNER/DEVELOPER CERTIFICATION:
 I HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.
 Signature: *Robert Engel*
 DATE: 12/10/2020

DESIGNER CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 Signature: *Robert H. Vogel*
 DATE: 12/10/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Signature: *Robert H. Vogel*
 DATE: 11/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Signature: *Shah Khan*
 DATE: 11/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Signature: *Shah Khan*
 DATE: 11/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Signature: *Shah Khan*
 DATE: 11/23/20

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
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 DATE: 11/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Signature: *Shah Khan*
 DATE: 11/23/20

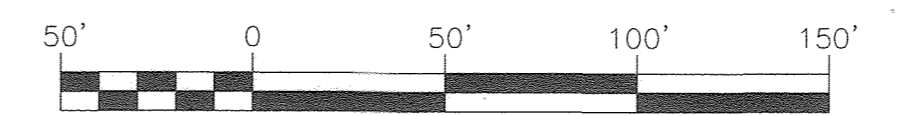
ULTIMATE CONDITION DRAINAGE AREA TRAP 1
 AREA = 3.36 ACRES±
 TC = 0.10 HOURS

ULTIMATE CONDITION DRAINAGE AREA TRAP 2
 AREA = 3.16 ACRES±
 TC = 0.10 HOURS

EXISTING DRAINAGE AREA TRAP 1
 AREA = 10.03 ACRES±
 TC = 0.44 HOURS

EXISTING DRAINAGE AREA TRAP 2
 AREA = 3.74 ACRES±
 TC = 0.15 HOURS

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



NOTE:
 1. ALL EARTH DIKES ARE TO BE PLACED IN WORKING ORDER AT THE END OF EACH WORKING DAY.

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
SOILS MAP, GRADING & SOIL EROSION AND SEDIMENT CONTROL PHASE 1 PLAN
GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11
 A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
 LOTS 2-4 (P.B. 3/51), 5R (L16288 F.488), 8R (L16288 F.502) AND 9 (P.B. 3/51)
 TAX MAP: 42 GRID: 24
 6TH ELECTION DISTRICT
 ZONED: R-12
 PARCEL: 136 & 138-140
 HOWARD COUNTY, MARYLAND

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

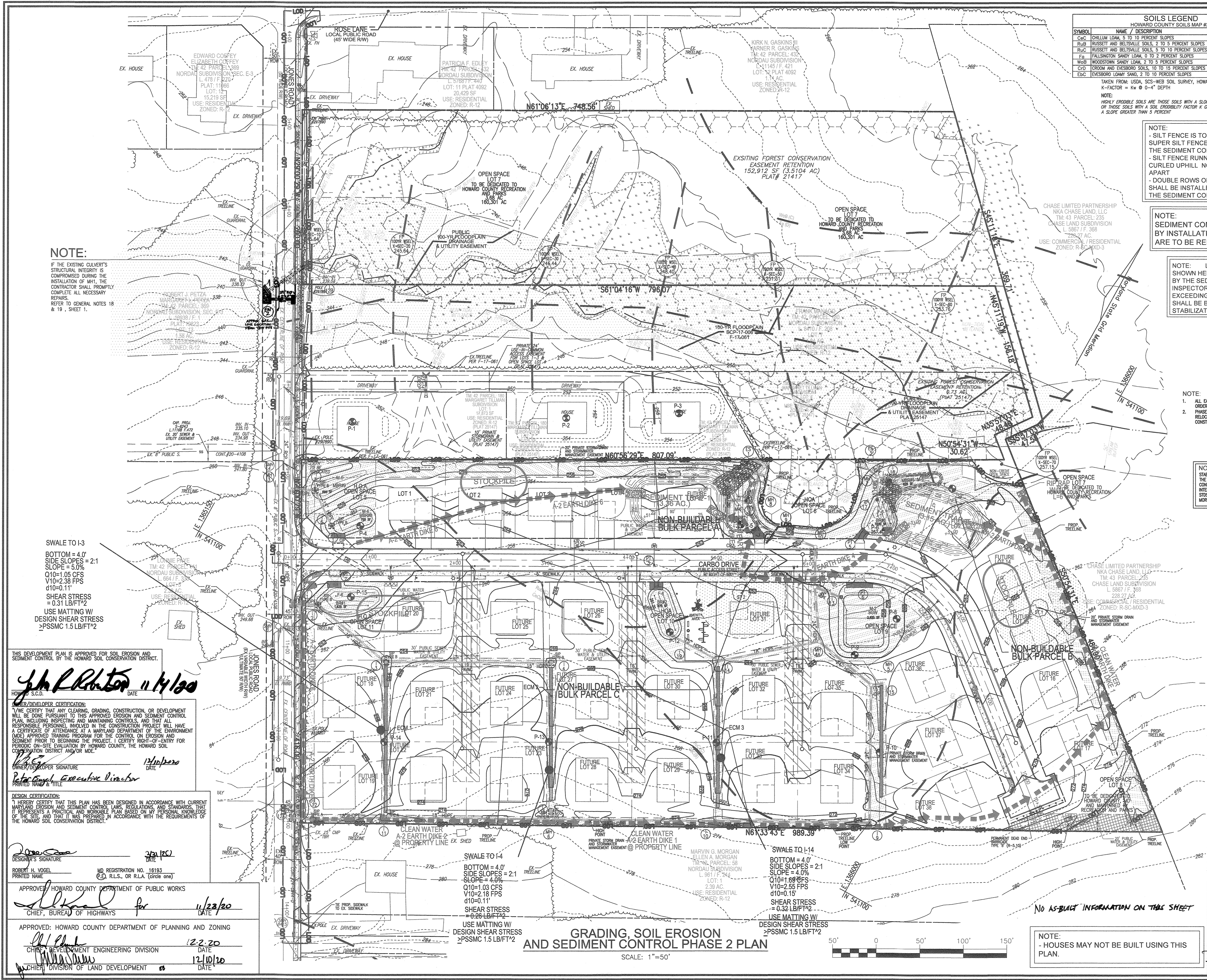
TIMMONS GROUP
 PROFESSIONAL CERTIFICATE

DESIGN BY: RHV
 DRAWN BY: VETG
 CHECKED BY: RHV
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05

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

7 SHEET OF 23

AS-BUILT NOVEMBER 2023 F-19-051



SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	HYDRO GROUP/K FACTOR	CRS. SLOPE TO BROWN
Cec	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	NO B 0.43	YES
RuB	RUSSETT AND BELLSVILLE SOILS, 2 TO 5 PERCENT SLOPES	NO C 0.43	NO
RuC	RUSSETT AND BELLSVILLE SOILS, 5 TO 10 PERCENT SLOPES	NO C 0.43	YES
T2	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	YES D 0.24	NO
WbB	WOODSTOWN SANDY LOAM, 2 TO 5 PERCENT SLOPES	YES C 0.32	NO
CrD	CROOM AND EVERBROOK SOILS, 10 TO 15 PERCENT SLOPES	NO C 0.37	YES
Ebc	EVERBROOK LOAMY SAND, 2 TO 10 PERCENT SLOPES	NO A 0.15	NO

LEGEND:	
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING PAVING
	EXISTING UTILITY POLE
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREELINE
	CENTERLINE OF EXISTING STREET
	EXISTING SPECIMEN TREE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	PUBLIC 100-YEAR FLOOD PLAIN PLATE 25147
	EXISTING FOREST CONSERVATION EASEMENT (RETENTION - PLATE 21417, 25147)
	FOREST CONSERVATION EASEMENT (RETENTION)
	PUBLIC SEWER, WATER & UTILITY EASEMENT
	PUBLIC WATER & UTILITY EASEMENT
	PRIVATE STORM DRAIN AND STORM WATER MANAGEMENT EASEMENT
	PUBLIC DRAINAGE & UTILITY EASEMENT
	10' PUBLIC TREE MAINTENANCE EASEMENT
	SOILS BOUNDARY
	STORM DRAIN
	SIDEWALK
	TREELINE
	CURBS & GUTTER
	SUPER SILT FENCE
	LIMIT OF DISTURBANCE
	CURBS INLET PROTECTION
	STANDARD INLET PROTECTION
	PHASE 1 EARTH DIKE / CLEANWATER DIVERSION DIKE
	TEMPORARY ASPHALT BERM
	STABILIZED CONSTRUCTION ENTRANCE
	ESD STORMWATER MANAGEMENT TEST PIT

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

NOTE:
 SEDIMENT CONTROLS INTERRUPTED BY INSTALLATION OF UTILITY LINES ARE TO BE REPAIRED IMMEDIATELY.

NOTE:
 LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED. SEE STABILIZATION SPEC. S SHEET 9

NOTE:
 1. ALL EARTH DIKES ARE TO BE PLACED IN WORKING ORDER AT THE END OF EACH WORKING DAY.
 2. PHASE 1 CONTROLS (GRASS) SHALL BE RELOCATED AS FOR THEIR CONTINUED USE AS CONSTRUCTION CONTINUES

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



AS-BUILT CERTIFICATION FOR PS/W
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
 P.E. NAME: **16193** P.E. NO.
 DATE: **3-18-24**

OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 9770 PATUXENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

NO.	REVISION	DATE
2	REVISE THE PLAN TO RECONFIGURE STORM DRAIN OUTFALL TO AVOID CONFLICT WITH A GAS MAIN	12-14-21

FINAL ROAD CONSTRUCTION PLAN
 GRADING & SOIL EROSION
 AND SEDIMENT CONTROL PHASE 2 PLAN
GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C
 AND OPEN SPACE LOTS 5-11
 A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
 LOTS 2-4 (P.B. 3/51), 5R (L.16288 F.488), 8R (L.16288 F.502) AND 9 (P.B. 3/51)
 TAX MAP: 42 GRID: 24 PARCEL: 136 & 138-140
 6TH ELECTION DISTRICT ZONED: R-12 HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV
 CHECKED BY: VETG
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. EXPIRATION DATE: 08-27-2020

8 SHEET OF 23

NOTE:
 IF THE EXISTING CULVERT'S STRUCTURAL INTEGRITY IS COMPROMISED DURING THE INSTALLATION OF MHI, THE CONTRACTOR SHALL PROMPTLY COMPLETE ALL NECESSARY REPAIRS. REFER TO GENERAL NOTES 18 & 19, SHEET 1.

SWALE TO I-3
 BOTTOM = 4.0'
 SIDE SLOPES = 2:1
 SLOPE = 5.0%
 Q10=1.05 CFS
 V10=2.38 FPS
 d10=0.11'
 SHEAR STRESS = 0.31 LB/FT²
 USE MATTING W/ DESIGN SHEAR STRESS >PSSMC 1.5 LB/FT²

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
John R. Rintoul 11/4/20
 HOWARD S.C.D. DATE

OWNER/DEVELOPER CERTIFICATION:
 I HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.
Peter Engel 12/16/20
 OWNER/DEVELOPER SIGNATURE DATE
 PRINTED NAME & TITLE

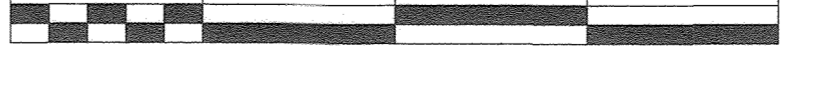
DESIGNER'S SIGNATURE
Robert H. Vogel 3/18/20
 MD REGISTRATION NO. 16193
 PRINTED NAME DATE
 (P.E. R.L.S., OR R.L.A. (circle one))

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Michael J. ... 11/23/20
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Cheryl ... 12-2-20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF LAND DEVELOPMENT
Cheryl ... 12/10/20
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

GRADING, SOIL EROSION AND SEDIMENT CONTROL PHASE 2 PLAN



NOTE:
 - HOUSES MAY NOT BE BUILT USING THIS PLAN.

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1850 AFTER THE FUTURE LUD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:

- BEFORE THE START OF EARTH DISTURBANCE.
- UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.
- BEFORE THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT.
- BEFORE THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.

OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. ANY RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.

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

3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.

4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE PERIOD SPECIFIED ABOVE. ALL DISTURBED AREAS WITHIN THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-3), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-5).

5. TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) WITH MULCH ALONE CAN BE APPLIED IN AREAS WITH >15" OF SOIL AND/ OR FILL STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BLENDED WITH STABLE OUTCROP, ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS. TEMPORARY STABILIZATION WITH MULCH AND PERMANENT SEEDING (SEC. B-4-3) SHALL REMAIN IN PLACE, AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CD.

AREA OF DISTURBANCE:	12.35 ACRES
AREA TO BE RESTORED OR PAVED:	9.11 ACRES
AREA TO BE VEGETATIVELY STABILIZED:	7.65 ACRES
TOTAL CUT:	150 CU. YDS. TOTAL
TOTAL FILL:	150 CU. YDS. TOTAL
OFFSITE WASTE/BORROW AREA LOCATION:	N/A

(1) REFER TO ITEM 11 BELOW

7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CD, THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY, AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:

- INSPECTION DATE
- INSPECTION TIME (ROUTINE, PRE-START EVENT, DURING RAIN EVENT)
- WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
- BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
- EVIDENCE OF SEDIMENT DISCHARGES
- IDENTIFICATION OF SEDIMENT CONTROLS
- IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
- IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
- COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
- PHOTOGRAPHS
- MONITORING/SAMPLING
- MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
- OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MD).

9. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PFT LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKING DAY.

10. ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MAJOR REVISIONS MAY ALLOWED BY THE CD PER THE USE OF HCD-APPROVED FIELD CHANGES.

11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE LUD. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM AREA OF 20 AC. PER GRADING UNIT) AT A TIME, WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CD. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE CD, NO MORE THAN 5 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

12. WASH WATER FROM ANY EQUIPMENT, VEHICLES, PUMPS, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.

13. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.

14. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE MAINTAINED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURED UPHILL BY 7" IN ELEVATION.

15. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUDES):

- USE III AND IP MARCH 1 - JUNE 15
- USE III AND IP MARCH 1 - APRIL 30
- USE IV MARCH 1 - MAY 31

16. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

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

[Signature]
OWNER/DEVELOPER SIGNATURE
PROJ. NO. 100

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

[Signature]
DESIGNER'S SIGNATURE

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES		LIME RATE
			SEEDING DATES	SEEDING DEPTHS	
1	COOL SEASON TALL FESCUE OR BLUEGRASS	1.0 LB / AC	MAR 1 TO MAY 15 AUG 15 TO OCT 15	1/4"-1/2" IN	2 TONS/AC (100 LB PER 1000 SF)
2	PERENNIAL RYEGRASS	1.0 LB / AC	MAR 1 TO MAY 15 AUG 15 TO OCT 15	1/4"-1/2" IN	2 TONS/AC (100 LB PER 1000 SF)

NOTES

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

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:

- 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1.
- 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] CHIEF, DIVISION OF LAND DEVELOPMENT

NO REGISTRATION NO. 16193
@ R.L.S., OR R.L.A. (circle one)

11/23/20
12-2-20
12/10/20

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION:
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE:
TO USE LONG-LEAF PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES:
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA:

A. SEED MIXTURES

1. GENERAL USE

a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE 8.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE 8.3) AND BASED ON THE SPECIFIC SOIL CONDITIONS OR PURPOSE FOUND ON TABLE 8.2. ENTER SELECTED MIXTURE(S), APPLICATION DATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.

b. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHOULDERLINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 362 - CRITICAL AREA PLANTING.

c. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.

d. FOR AREAS REQUIRING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3-1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.

2. TURFGRASSES

a. SELECT TURFGRASSES THAT MAY BE DESIRED INCLUDE: LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.

b. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SOIL CONDITIONS OR PURPOSE(S):

i. CENTRAL MARYLAND: CERTIFIED PERENNIAL PRAIRIEGRASS CULTIVARS

ii. SELECTION ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SOIL CONDITIONS OR PURPOSE(S):

iii. CENTRAL MARYLAND: CERTIFIED PERENNIAL PRAIRIEGRASS CULTIVARS

iv. SELECTION ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SOIL CONDITIONS OR PURPOSE(S):

v. CENTRAL MARYLAND: CERTIFIED PERENNIAL PRAIRIEGRASS CULTIVARS

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1. CENTRAL MARYLAND: CERTIFIED PERENNIAL PRAIRIEGRASS CULTIVARS

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xl. CENTRAL MARYLAND: CERTIFIED PERENNIAL PRAIRIEGRASS CULTIVARS

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

DEFINITION:
THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE:
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES:
WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA:

A. SOIL PREPARATION

1. TEMPORARY STABILIZATION

a. SEEDING PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWING OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENEED, IT MUST NOT BE ROLLED OR DRAGGED SOUTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIGIDS RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.

b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.

c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

2. PERMANENT STABILIZATION

a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:

- i. SOIL PH BETWEEN 6.0 AND 7.0
- ii. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM)
- iii. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRANDED MATERIAL GREATER THAN 10 PERCENT SILT PLUS CLAY TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE, AN EXCEPTION: IF LOVEGRASSES WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE
- iv. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT
- v. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION

b. APPLICATION OF AMENDMENTS OR FERTILIZER IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.

c. AMENDMENTS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARPED OR APPROVED TO A DEPTH OF 3 TO 5 INCHES.

d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.

e. APPLY SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDING.

f. PREPARATION TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRABLE.

g. SEEDING LOSSENESS MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

h. SEEDING LOSSENESS MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

3. SOIL AMENDMENTS

a. SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDING.

b. PREPARATION TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRABLE.

c. SEEDING LOSSENESS MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

d. SEEDING LOSSENESS MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

4. SEEDING

1. SPECIFICATIONS

a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE 8.4 REGARDING THE QUALITY OF SEED. SEEDS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.

b. SEEDS MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BENEDICUM GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEED, POISON IVY, HIBBLE, OR OTHERS AS SPECIFIED.

c. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

2. APPLICATION

a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DRIP OR BROADCAST SEEDING.

i. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE 8.1. PERMANENT SEEDING TABLE 8.2 OR SITE-SPECIFIC SEEDING RATES (WHICH ARE TO BE HIGHER THAN THOSE IN TABLE 8.1) MUST BE USED. SEEDING DEPTHS MUST BE AS SPECIFIED BY HYDROSEEDING. NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.

ii. SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.

iii. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

b. MULCHING

1. MULCH MATERIALS (IN ORDER OF PREFERENCE)

a. STRAW CONSISTS OF THOROUGHLY THRESHED WHEAT, LYE, OAT, OR BRILEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WOOD SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLTY, COKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STEEPLE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.

b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

c. WCWM IS TO BE DIED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORM SPREAD SLURRY.

d. THE WCM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.

e. WCWM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.

f. WCWM MATERIALS MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.

g. WCWM MATERIALS MUST BE APPLIED AT THE TIME OF SEEDING, APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE; TOTAL SOLUBLE NITROGEN, 2000 POUNDS PER ACRE; PHOSPHORUS, 200 POUNDS PER ACRE; POTASSIUM, 200 POUNDS PER ACRE.

h. USE OF SEED OR GROUND AGGREGATE LIME (UP TO 3 TONS PER ACRE) MAY BE APPLIED BY HYDROSEEDING. NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.

i. SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.

ii. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

iii. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

2. APPLICATION

a. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

b. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM DEPTH OF 2 TO 3 INCHES. APPLY MULCH TO ACHIEVE UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED, WHEN USING A MULCH ANCHORING TOOL. INCLUDE THE APPLICATION RATE TO 2.5 TONS PER ACRE.

c. WOOD CELLULOSE FIBER MULCH IS TO BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MOISTURE CONTENT OF 50 PERCENT. WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

3. ANCHORING

a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD.

i. A MULCH ANCHORING TOOL IS A TRACTOR DRIVEN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE TO A DEPTH OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.

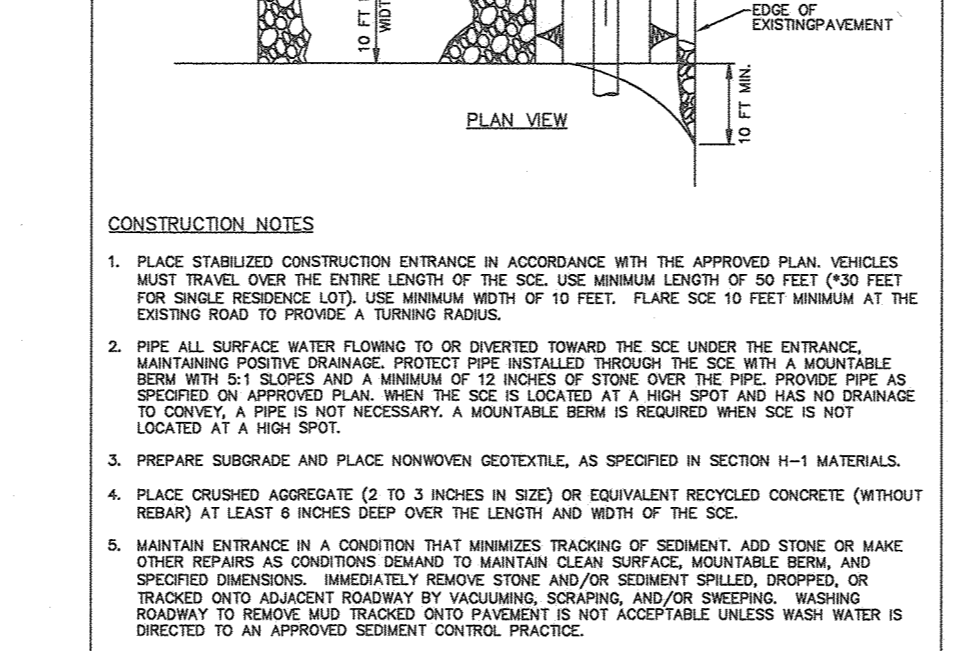
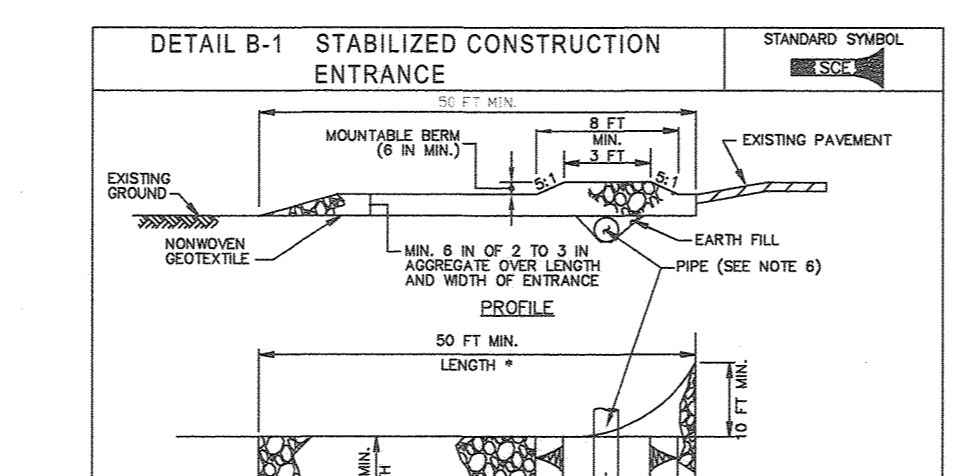
ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 PERCENT MOISTURE. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE CORNERS WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.

iii. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

4. TEMPORARY SEEDING SUMMARY

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES		SEEDING DEPTHS	LIME RATE
			SEEDING DATES	SEEDING DEPTHS		
1	COOL SEASON TALL FESCUE OR BLUEGRASS	40 LB / AC	MAR 1 TO MAY 15 AUG 1 TO OCT 15	1/2" IN	2 TONS/AC (100 LB PER 1000 SF)	
2	WARM SEASON FOLIATE RYEGRASS OR EQUAL	30 LB / AC	MAR 1 TO MAY 15 AUG 1 TO OCT 15	1/2" IN	2 TONS/AC (100 LB PER 1000 SF)	



U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION:
THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE:
TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES:
TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA:

A. SEEDING

1. SPECIFICATIONS

a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE 8.4 REGARDING THE QUALITY OF SEED. SEEDS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.

b. SEEDS MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BENEDICUM GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEED, POISON IVY, HIBBLE, OR OTHERS AS SPECIFIED.

c. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

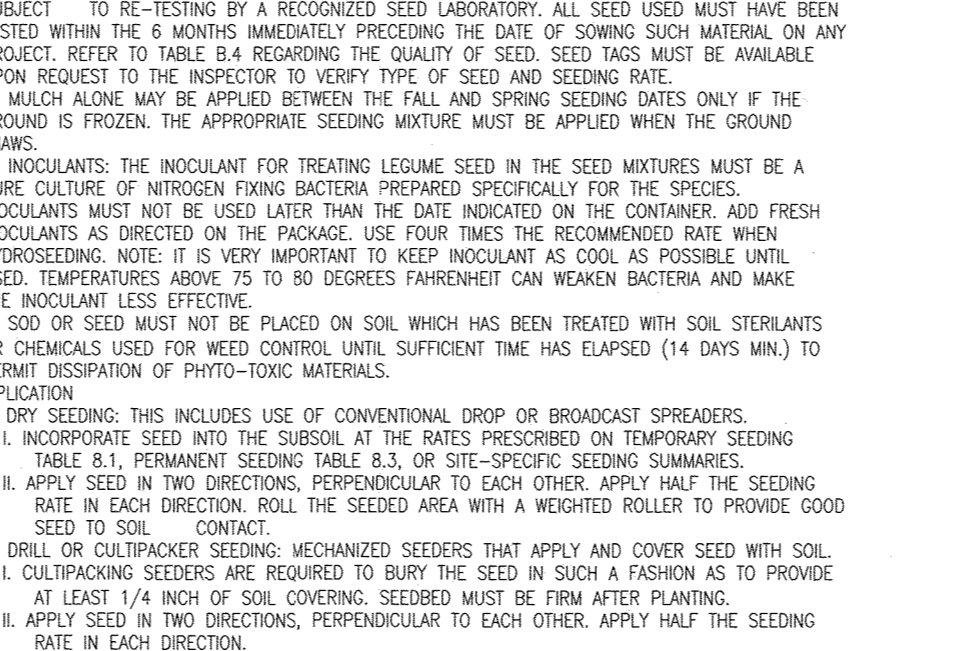
2. APPLICATION

a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DRIP OR BROADCAST SEEDING.

i. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE 8.1. PERMANENT SEEDING TABLE 8.2 OR SITE-SPECIFIC SEEDING RATES (WHICH ARE TO BE HIGHER THAN THOSE IN TABLE 8.1) MUST BE USED. SEEDING DEPTHS MUST BE AS SPECIFIED BY HYDROSEEDING. NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.

ii. SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.

iii. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.



iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

b. MULCHING

1. MULCH MATERIALS (IN ORDER OF PREFERENCE)

a. STRAW CONSISTS OF THOROUGHLY THRESHED WHEAT, LYE, OAT, OR BRILEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WOOD SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLTY, COKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STEEPLE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.

b. WOOD CELLULOSE FIBER MULCH (WCWM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

c. WCWM IS TO BE DIED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORM SPREAD SLURRY.

d. THE WCM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.

e. WCWM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.

f. WCWM MATERIALS MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.

g. WCWM MATERIALS MUST BE APPLIED AT THE TIME OF SEEDING, APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE; TOTAL SOLUBLE NITROGEN, 2000 POUNDS PER ACRE; PHOSPHORUS, 200 POUNDS PER ACRE; POTASSIUM, 200 POUNDS PER ACRE.

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iii. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

2. APPLICATION

a. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

b. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM DEPTH OF 2 TO 3 INCHES. APPLY MULCH TO ACHIEVE UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED, WHEN USING A MULCH ANCHORING TOOL. INCLUDE THE APPLICATION RATE TO 2.5 TONS PER ACRE.

c. WOOD CELLULOSE FIBER MULCH IS TO BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MOISTURE CONTENT OF 50 PERCENT. WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

3. ANCHORING

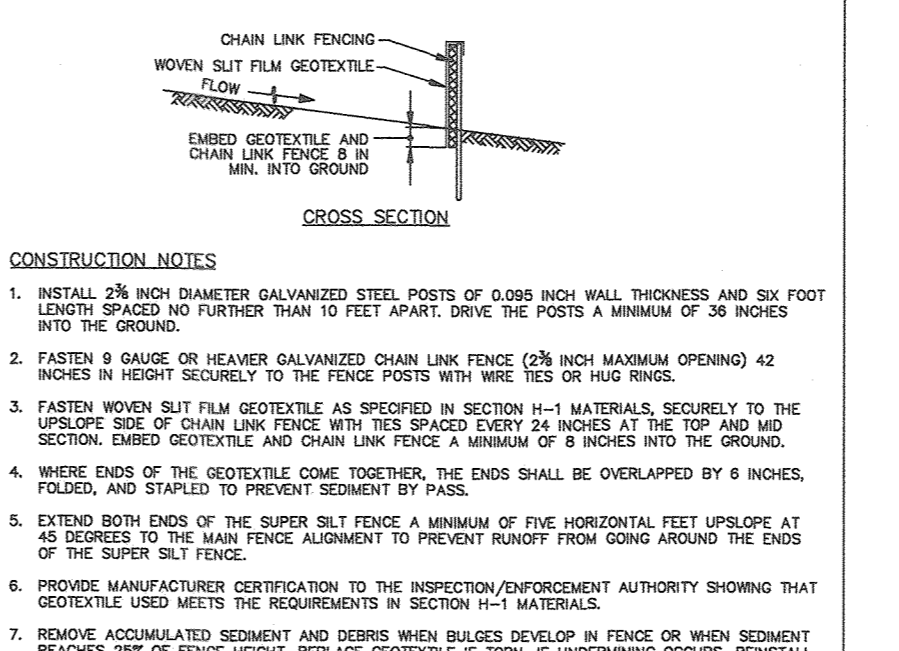
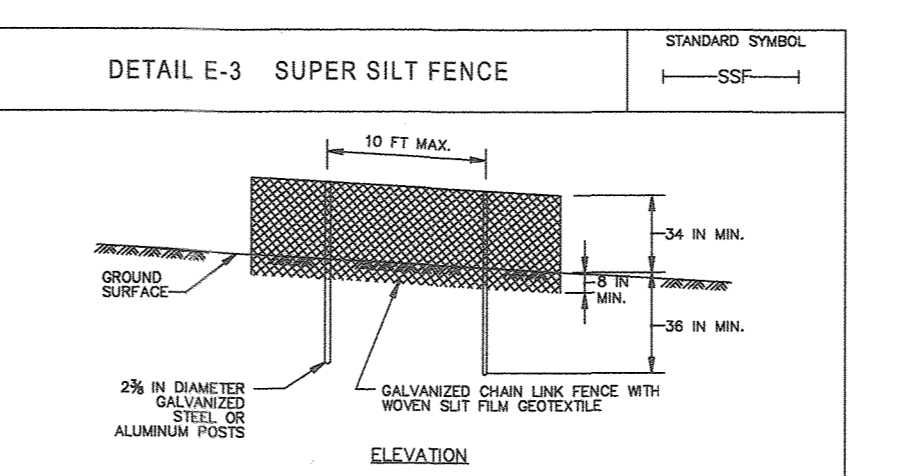
a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD.

i. A MULCH ANCHORING TOOL IS A TRACTOR DRIVEN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE TO A DEPTH OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.

ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 PERCENT MOISTURE. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE CORNERS WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.

iii. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

NO AS-BUILT INFORMATION ON THIS SHEET



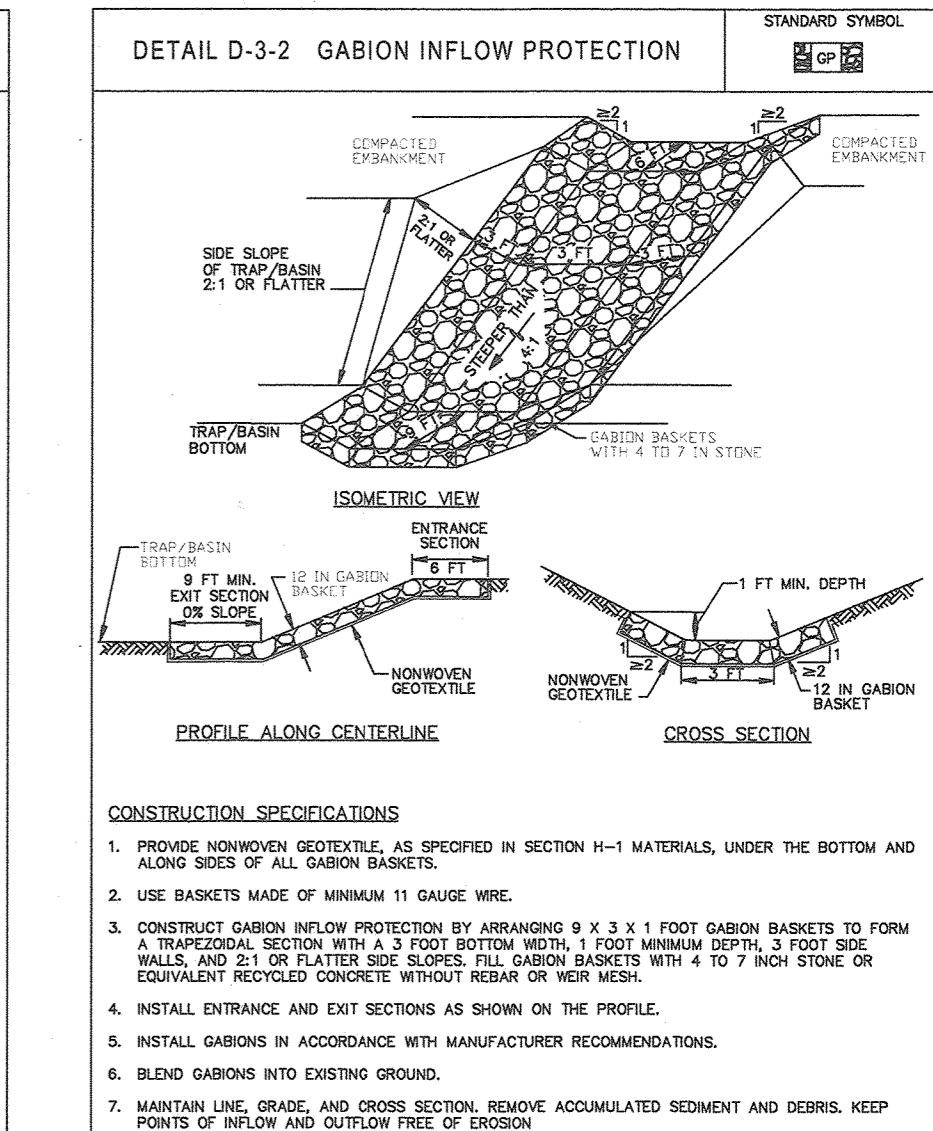
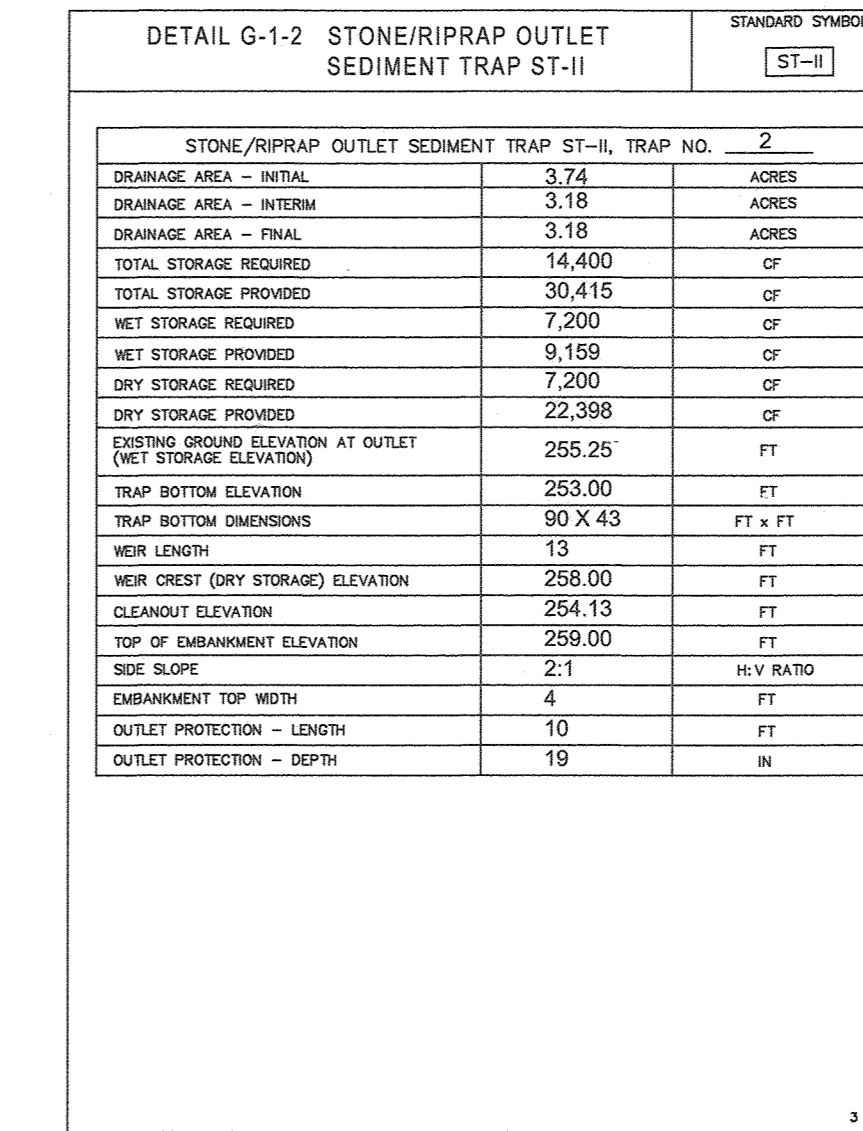
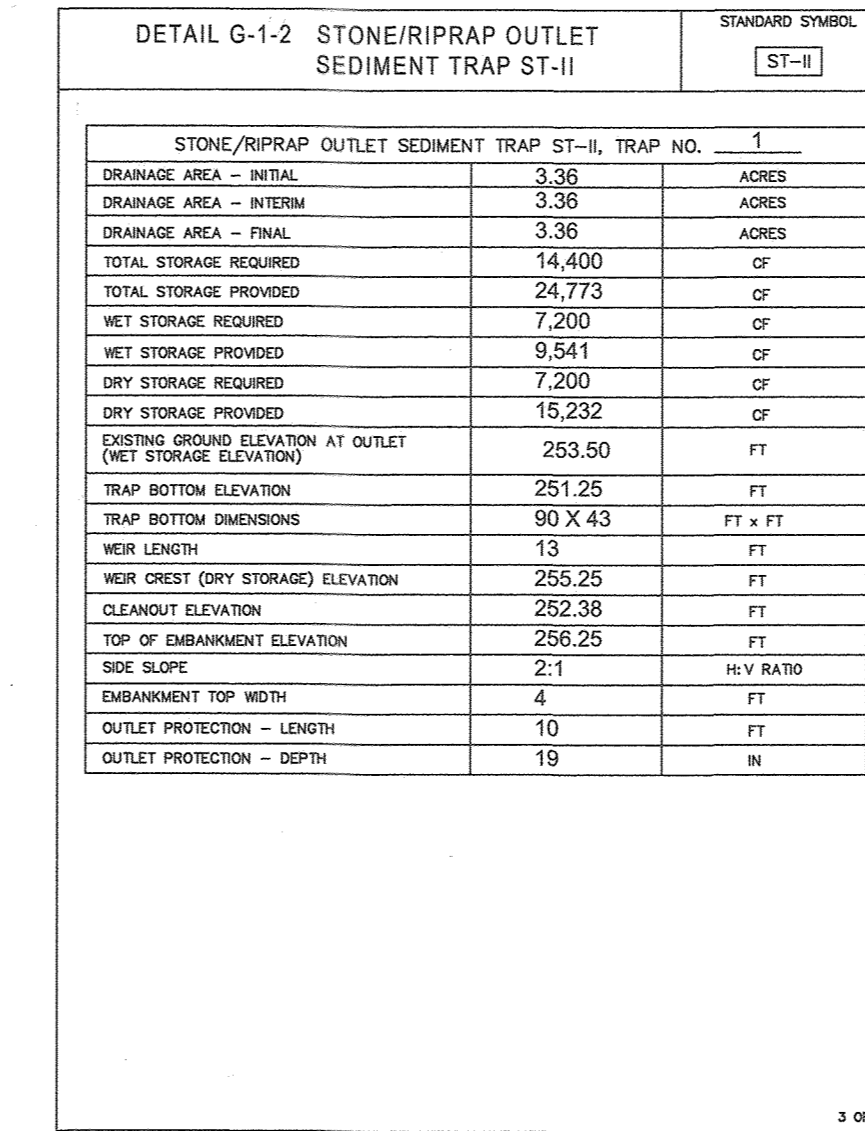
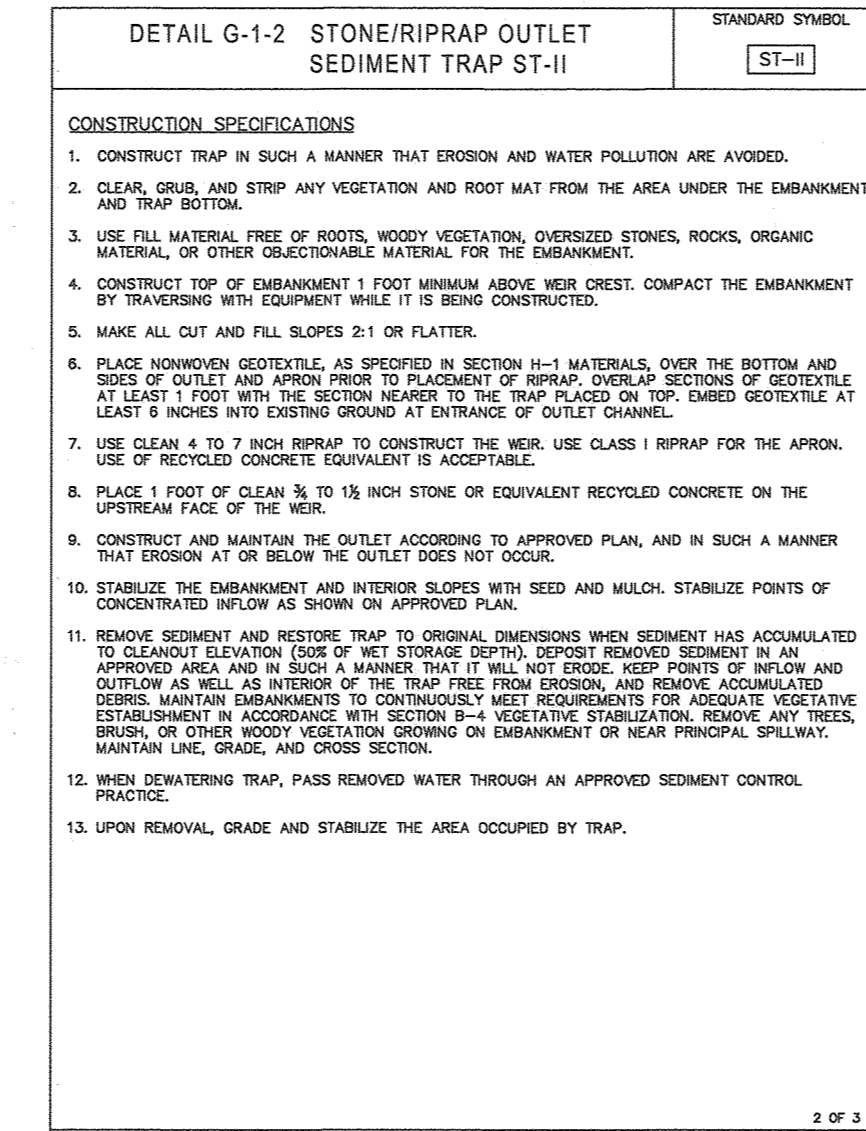
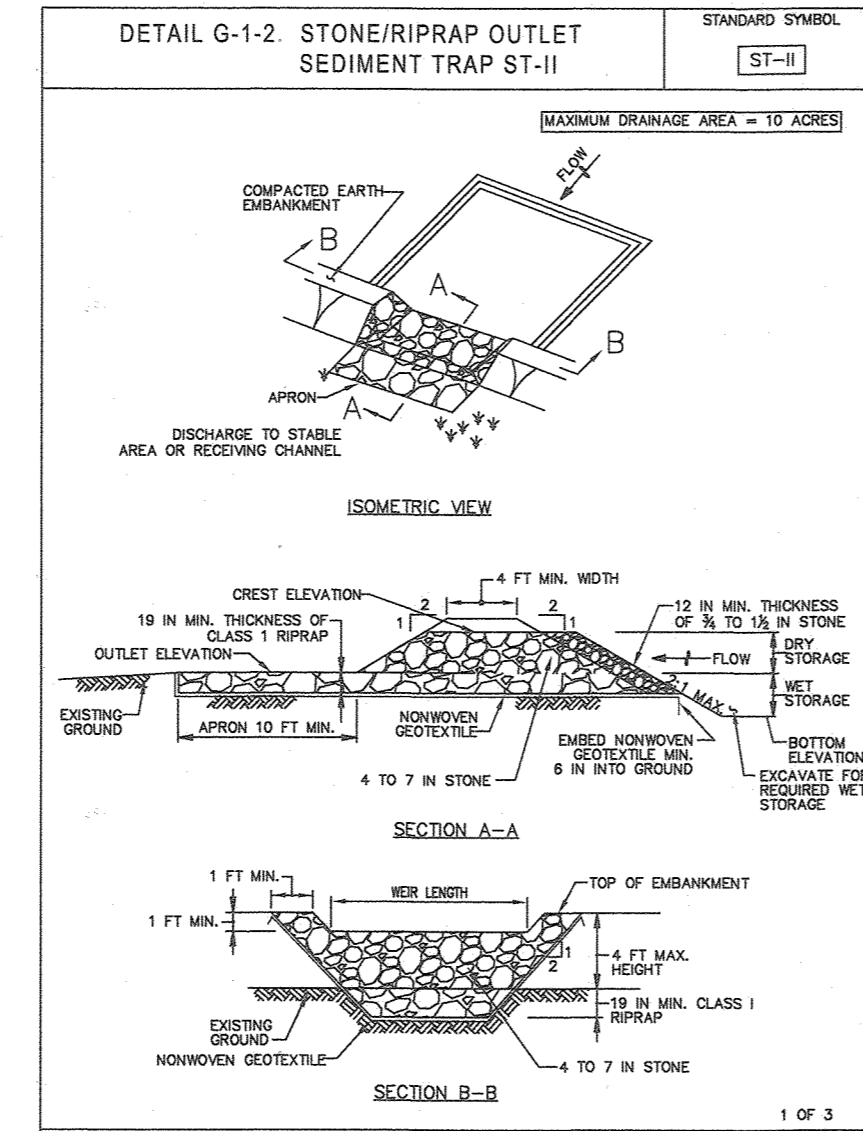
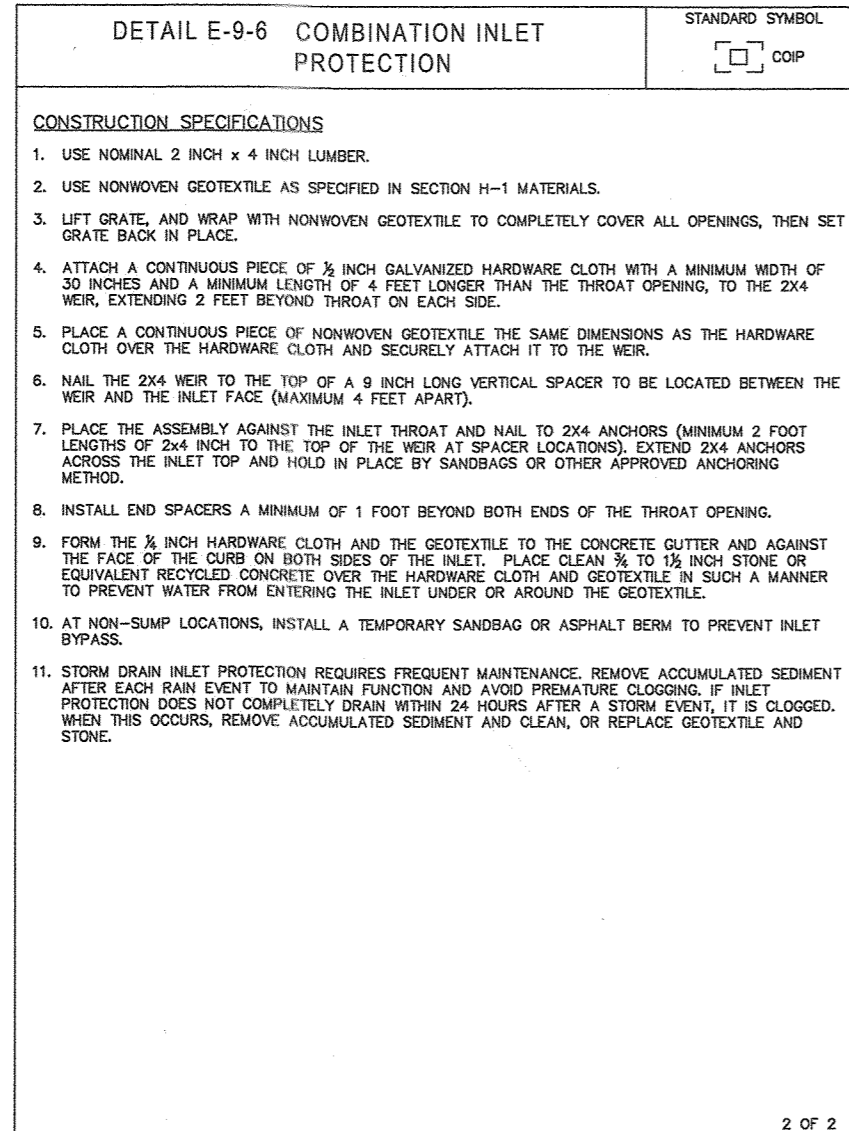
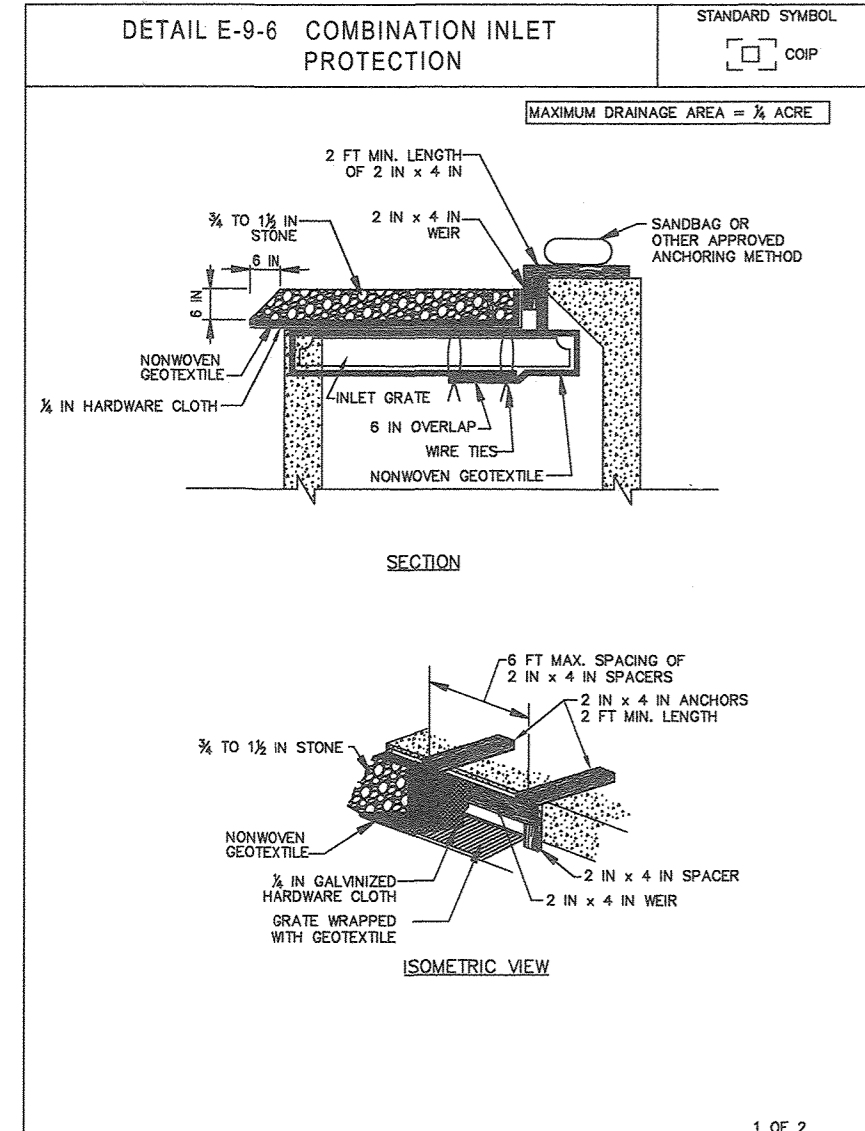
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION:
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE:
TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES:
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	1 OF 2
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	2011
MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION	

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	2 OF 2
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	2011
MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION	

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	1 OF 3
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	2011
MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION	

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	2 OF 3
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	2011
MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION	

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	3 OF 3
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	2011
MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION	

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	3 OF 3
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	2011
MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION	

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	1 OF 1
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	2011
MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION	

SEQUENCE OF CONSTRUCTION

SEQUENCE OF CONSTRUCTION CONTINUED

DEWATERING STRATEGY

1. OBTAIN GRADING PERMIT. - 1 DAY
2. DEVELOPER / CONTRACTOR SHALL REQUEST A PRE-CONSTRUCTION MEETING WITH THE APPROPRIATE ENFORCEMENT AUTHORITY PRIOR TO BEGINNING CONSTRUCTION - 1 DAY
3. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (410-313-1880) AT LEAST 24 HOURS BEFORE BEGINNING WORK. - 1 DAY
4. STAKEOUT LIMITS OF DISTURBANCE. - 3 DAYS
- PHASE 1 GRADING WORK - SHEET 7
 1. INSTALL STABILIZED CONSTRUCTION ENTRANCE (SCE), WHERE SHOWN HEREON WITH PIPE IN EXISTING JONES ROAD SECTION. REMOVE EXISTING CLEANWATER AND A PIPE UNDER THE SCE. AS SHOWN, TO CONVEY DIRTY WATER TOWARD TRAP 2. - 1 DAY
 2. COMPLETE CLEARING AND GRUBBING ON-SITE AREA FOR THE INSTALLATION OF PERIMETER CONTROLS ONLY. - 7 DAYS
 3. WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, COMPLETE THE CONSTRUCTION OF THE PROJECTS 2 SEDIMENT TRAPS PER THE DETAILS AND SPECIFICATIONS SHOWN HEREON AND INSTALL PERIMETER CONTROLS AT THE LIMIT OF DISTURBANCE, WHERE SHOWN OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. INSTALL SILT FENCE AT THE EDGE OF JONES ROAD PAVEMENT TO PROTECT CLEANWATER SEALE FROM JONES ROAD UTILITY WORK DISTURBANCE - 14 DAYS
 4. EARTH DIKES DIRECTING SITE DISTURBANCES TO THE TRAPS SHALL BE CONSTRUCTED AT THE SAME TIME AS THE SEDIMENT TRAPS. EARTH DIKES SHALL BE LINED AS INSTALLED HEREON. TEMPORARY MATING IS MADE WITH DEGRADABLE (6 MONTH), NATURAL OR MANMADE FIBERS OF UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND IS SMOULDER RESISTANT. - 3 DAYS
 5. STABILIZE THE DISTURBED AREAS FROM THE AFOREMENTIONED DISTURBANCES WITH TEMPORARY SEEDING MIXTURE AND STRAW MULCH. - 2 DAYS
 6. THE SEDIMENT TRAP SHALL BE REMOVED FROM THE SEDIMENT TRAP WHEN THE CLEANOUT ELEVATION HAS BEEN REACHED. - 1 DAY
 7. THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL DEVICES AFTER EACH RAINFALL AND ON A DAILY BASIS - 1 DAY
 8. THE SEDIMENT TRAP SHALL BE DEWATERED BY PUMPING. THE ACCUMULATED SEDIMENT SHALL BE PLACED UP GRADE FROM THE STRUCTURE IN SUCH A MANNER AS NOT TO INTERFERE WITH CONSTRUCTION OPERATIONS OR CAUSE EROSION DOWN GRADE FROM THE STRUCTURE. - 2 DAYS
 9. WITH TRAPS IN PLACE AND FUNCTIONING AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, COMPLETE THE REMAINING PROJECT CLEARING AND GRUBBING TO ALLOW FOR PROJECT MASS GRADING AS SHOWN ON SHEET 8. - 2 WEEKS
 10. COMPLETE JONES ROAD IMPROVEMENTS, TO INCLUDE SEWER EXTENSIONS AND STORM DRAIN INSTALLATION AS DETAILLED HEREON. ONLY THAT PORTION OF THE UTILITY INSTALLATION THAT CAN BE COMPLETED AND STABILIZED AT THE END OF EACH WORKING DAY SHALL BE DISTURBED. - 4 WEEKS

17. TRAPS SHALL REMAIN UNDISTURBED BY SEDIMENT CONTROL INSPECTOR AND SHALL BE BACKFILLED WITH PERMANENT SEDIMENT CONTROL AND/OR AS ULTIMATE GRADES ARE ESTABLISHED.
18. TRAPS SHALL BE REPLACED WITH SUPER SILT FENCE AT THE LIMITS OF DISTURBANCE AS SUPPORTING SLOPES ARE SET TO FINAL GRADE. WITH SLOPES AT GRADE, IMMEDIATELY STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - DAILY
19. ONCE GRADING OPERATIONS AND UTILITY DISTURBANCES ARE COMPLETE, STABILIZE DISTURBANCES WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - DAILY
20. WITH BYPASS STORM DRAIN COMPLETE (1-12 THRU ES-1) REMOVE CLEANWATER DIVERSION ALONG SOUTHERN OPERATIONS. COMPLETE SMALL GRADING, STABILIZE DISTURBANCE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH AND ALLOW FOR OFFSITE WATER TO ENTER PROJECTED INLETS 9-11. - 3 DAYS
21. PREPARE CARDS FOR ROAD RIGHT-OF-WAY FOR THE INSTALLATION OF ROADWAY CURB & GUTTER. - 10 DAYS
22. PREPARE JONES ROAD GRADES, REMOVING OPEN SECTION BYPASS DITCH, AND INSTALL 14-1 AND 1-12A. PREPARE FOR INSTALLATION OF CURB & GUTTER. - 3 DAYS
23. INSTALL ROAD SUBBASE AND BASE COURSE PAVING. PROVIDE INLET PROTECTION - 10 DAYS
24. AT THIS TIME, ALL GRAVITY SEWER AND WATER MAINS (CONTRACT XX-XXXX-0) SHOULD BE TESTED, APPROVED AND READY FOR SERVICE.
25. INSTALL DRY UTILITIES - 3 WEEKS
26. REMOVE GRADE AREAS FROM DRY UTILITY INSTALLATION AND TOPSOIL PER THE SPECIFICATIONS SHOWN HEREON AND STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - ONLY
27. WITH CONTRIBUTING AREA STABILIZED WITH A 2" STAND OF GRASS, CONSTRUCT ESD MICRO-BORTENTION FACILITIES WHICH RECEIVE ROAD RUNOFF OR RUNOFF FROM STABILIZED AREAS. IMMEDIATELY STABILIZE ANY CONTRIBUTING FACILITY SLOPES WITH SO2 AND SURROUND FACILITY WITH SILT FENCE - 2 DAYS EACH
28. BEGIN CONSTRUCTION OF INDIVIDUAL HOMES (REFER TO ASSOCIATED BUILDER SOP). PROTECT ANY INSTALLED ESD FACILITIES FROM REVERSE "JUMP" RUNOFF.
29. INSTALLATION OF PROJECTS SIDEWALKS. - 1 WEEK
30. COMPLETE ANY FINE GRADING REQUIRED FROM DISTURBANCES MADE BY SIDEWALK INSTALLATION. ADD TOPSOIL PER THE SPECIFICATIONS SHOWN HEREON AND STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - DAILY
31. UPON COMPLETION OF PROJECT HOME CONSTRUCTION AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, COMPLETE ANY REMAINING FINE GRADING IN ACCORDANCE WITH STORMWATER MANAGEMENT CRITERIA, ADD TOPSOIL PER THE SPECIFICATIONS SHOWN HEREON, AND STABILIZE DISTURBED AREAS WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - 1 WEEK
32. INSTALL PROJECT LANDSCAPING AND FOREST CONSERVATION REQUIREMENTS - 1 MONTH
33. AFTER PERMISSION HAS BEEN GIVEN BY SEDIMENT CONTROL INSPECTOR, REMOVE ANY REMAINING E/S CONTROLS AND STABILIZE THE DISTURBED AREAS FROM THE AFOREMENTIONED DISTURBANCES WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - 1 WEEK

Designers shall specify the preferred procedures for dewatering on plans. In particular, designers should identify procedures for dewatering sediment traps and basins prior to elimination of the last sediment control facility on the site or prior to conversion of sediment control facilities to stormwater management facilities. Recommended procedures shall be consistent with these standards. Atypical site conditions may require innovative dewatering designs. Dewatering measures not referenced in this standard may be used with the consent of the approval authority.

Designers shall specify on plans, and in sequences of construction included on plans, the practices for dewatering of traps and basins. Plan reviewers shall check to see that procedures for dewatering are included on plans. In all cases, water removed from excavated areas should be discharged such that it shall pass through a sediment control device prior to entering receiving waters. Sediment control devices include sediment traps and basins, in addition to the practices in this section.

Approved Practices for Dewatering of Excavated Areas

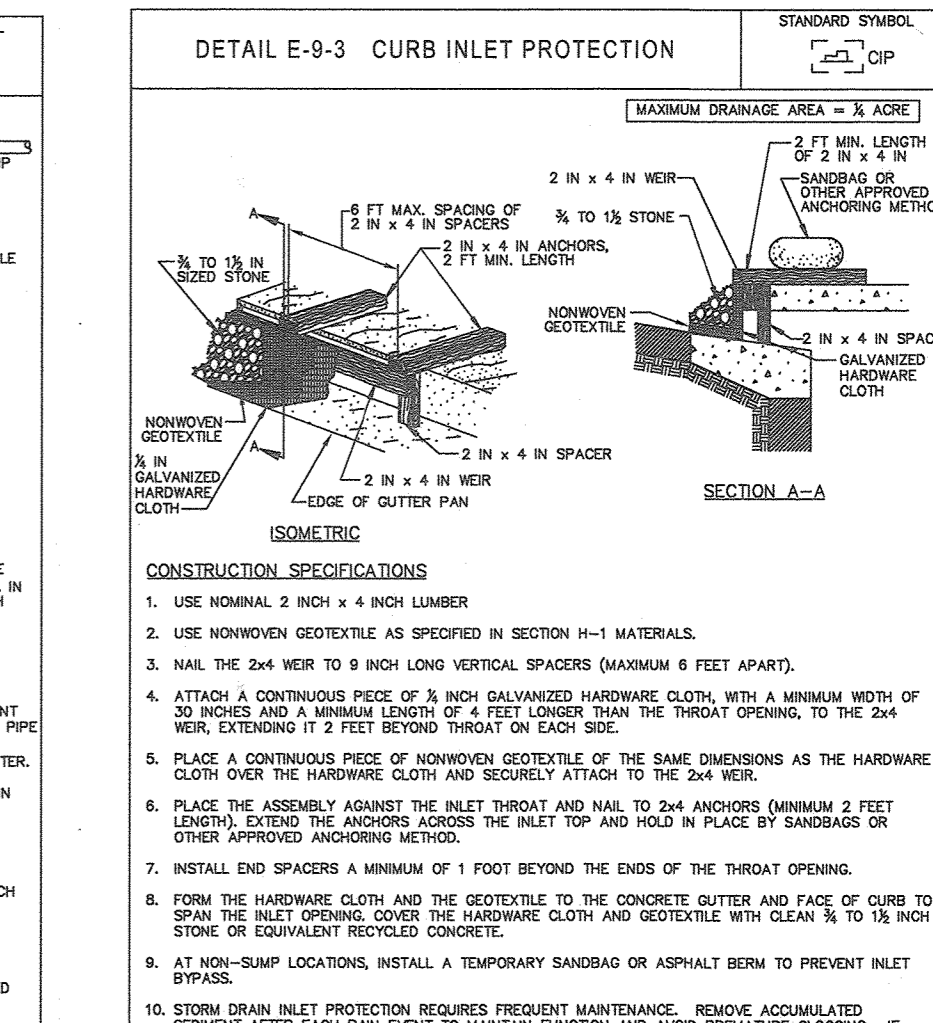
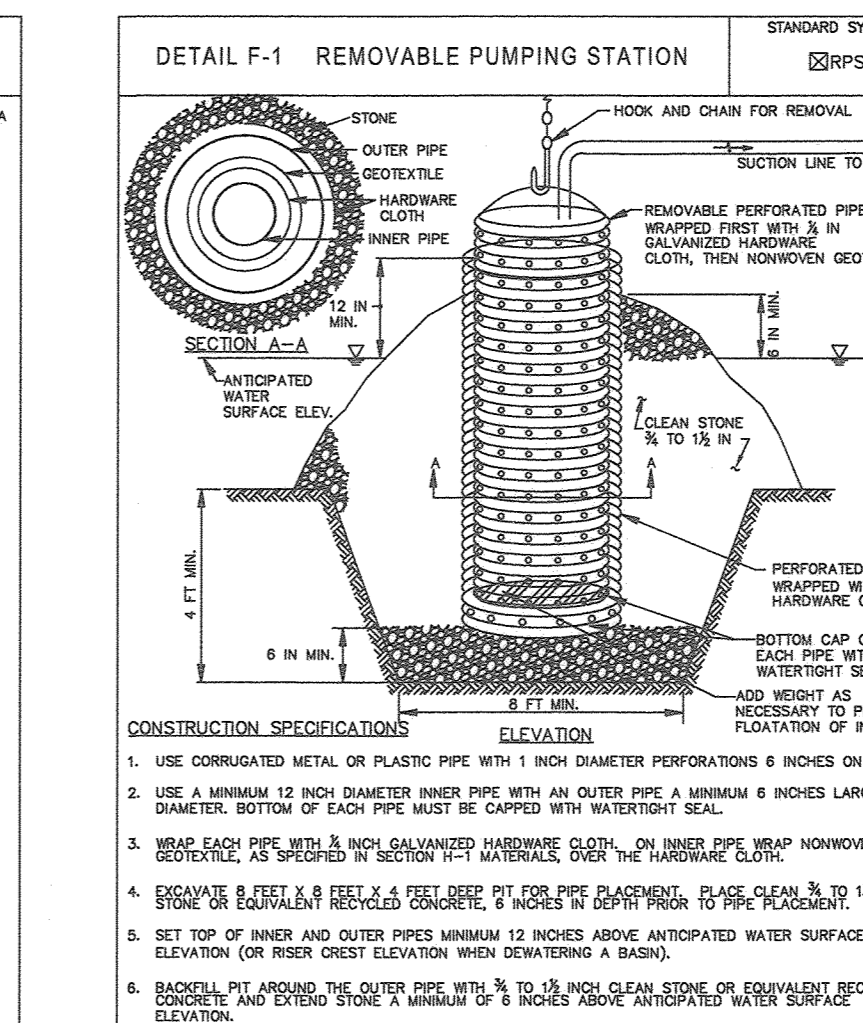
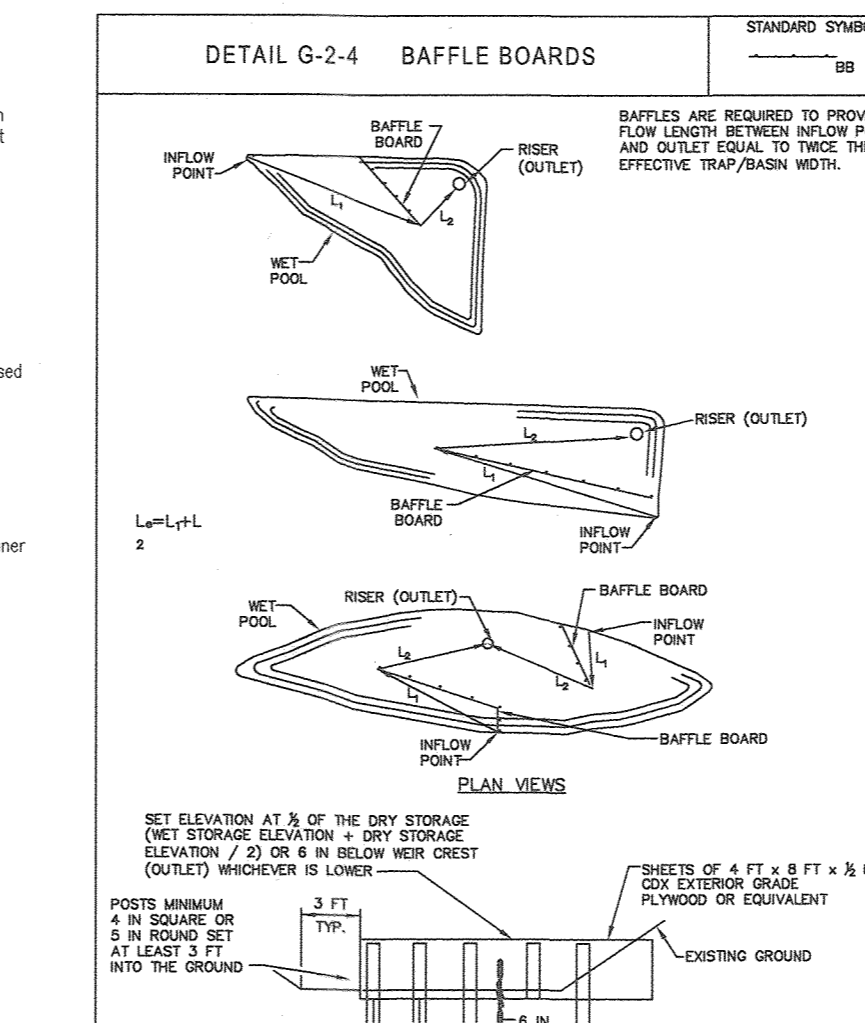
1. Pumping of water to an existing sediment basin or trap in which the entire volume of water from the area to be dewatered can be contained without discharging to receiving waters.
2. Pumping of water to an existing sediment basin or trap such that the entire volume of water from the area to be dewatered can be managed without extending the design outflow from the sediment control structure.
3. Removable Pumping Station - Standards and specifications for Removable Pumping Station are on Detail 20A.
4. Use of a Sump Pit: Standards and specifications for a sump pit are on Detail 20B.

Dewatering of Sediment Traps and Basins

Designers shall specify on plans, and in sequences of construction included on plans, the practices for dewatering of traps and basins. Plan reviewers shall check to see that procedures for dewatering are included on plans. In all cases, water removed from excavated areas should be discharged on that it passes through a sediment control device prior to entering receiving waters.

Approved Practices for Dewatering of Traps and Basins

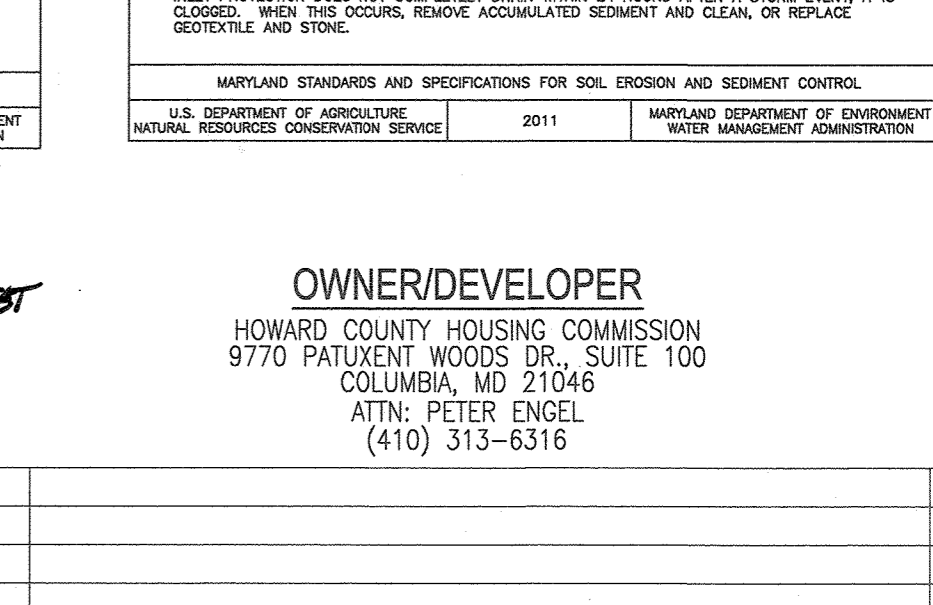
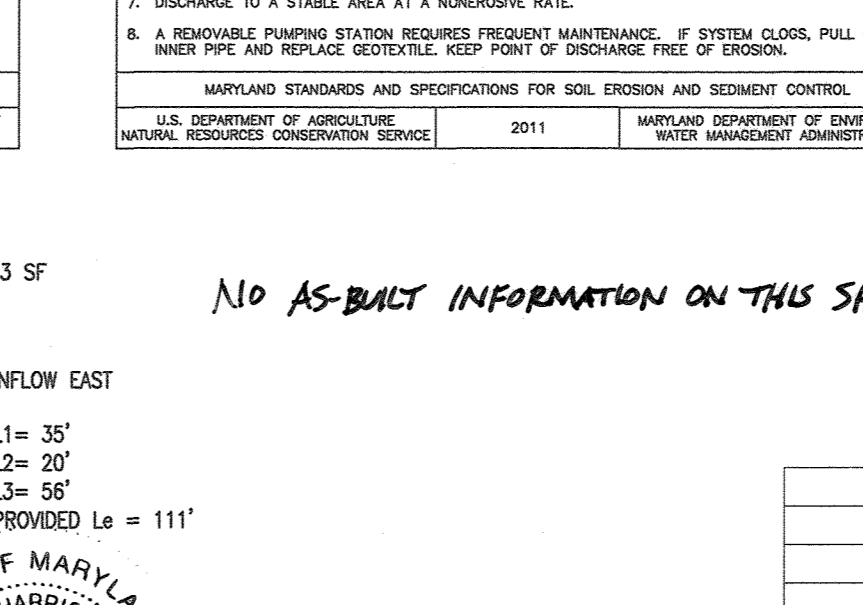
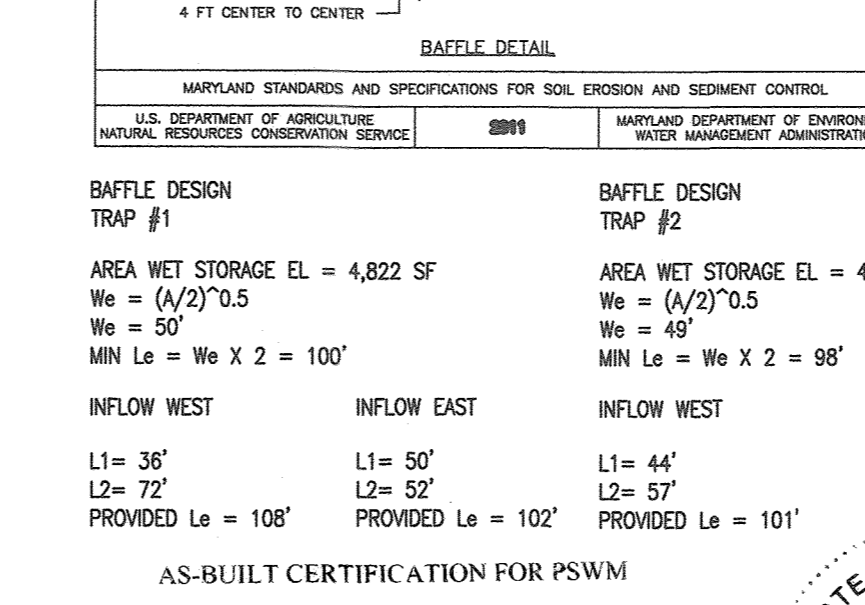
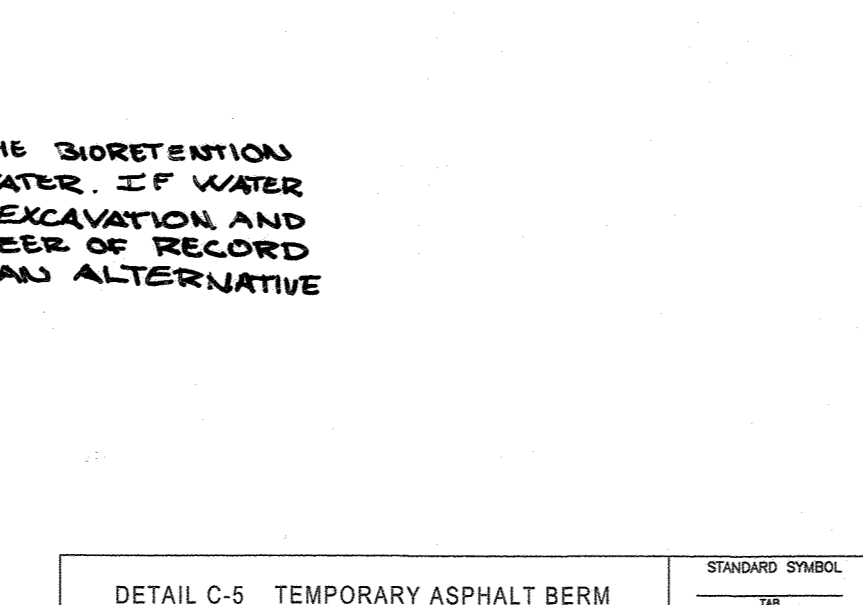
1. Removable pumping station.
2. Use of a Sump Pit.
3. Use of a floating suction hose to pump the cleaner water from the top of the pond. As the cleaner water is pumped the suction hose will lower and eventually encounter sediment laden water. When this happens the pumping operation will cease. Provisions shall be made to filter water.



11. WITH UTILITY WORK WITHIN THE JONES ROAD RIGHT-OF-WAY COMPLETE AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, PROCEED TO PHASE 2 WORK.
12. COMPLETE REMAINING PROJECT MASS GRADING REQUIRED TO BRING PROJECT SITE TO ROAD SUBGRADE AND COMPACTED FILLS FOR PREPARED HOME CONSTRUCTION. ADJUSTMENTS TO THE EARTH DIKES FEEDING TRAPS MAY BE REQUIRED TO PROVIDE POSITIVE FLOW TO THE TRAPS AS THE ULTIMATE GRADES ARE ESTABLISHED. IN SOME CASES, FILLS BELOW THE EARTH DIKES (LOTS 1-4) SHALL BE IMMEDIATELY STABILIZED WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - 1 MONTH
13. MAINTAIN POSITIVE FLOWS TOWARD TRAP #1 & #2. - DAILY
14. INSTALL ON-SITE UTILITIES (WATER, SEWER AND BYPASS STORM DRAIN SYSTEM 1-12 THRU UH4). 4 WEEKS
15. WITH WATER & SEWER INSTALLATION COMPLETE, INSTALL REMAINING STORM DRAIN SYSTEMS AND ADD ASPHALT BERM TO DIRECT CARVED DRINK TOWARD #1. ALL STORM DRAINS SHALL OUTFALL TOWARD A TRAP OR ONTO A RIPRAP APRON. - 1 MONTH
16. INSTALL SPECIFIED INLET PROTECTION. #14 & #15 SHALL FLOW DIRECTLY TO SEDIMENT TRAPS. INSTALL STORM DRAIN INLET PROTECTION AS SHOWN HEREON. - 1 WEEK

NOTE: ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION

*** THE CONTRACTOR TO OBSERVE EXCAVATION OF THE SHORTENTION FACILITIES FOR THE PRESENCE OF STANDING WATER. IF WATER IS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATION AND DOES NOT DRAIN IN 24-HOURS, THE ENGINEER OF RECORD WILL BE NOTIFIED IN ORDER TO GENERATE AN ALTERNATIVE ESD PRACTICE.**



OWNER/DEVELOPER CERTIFICATION:

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

Robert H. Vogel
 OWNER/DEVELOPER SIGNATURE
 PRINTED NAME: Robert H. Vogel
 DATE: 11/12/20

DESIGNER CERTIFICATION:

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

Robert H. Vogel
 DESIGNER SIGNATURE
 PRINTED NAME: Robert H. Vogel
 DATE: 11/12/20

APPROVED HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

John A. ...
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 11/22/20

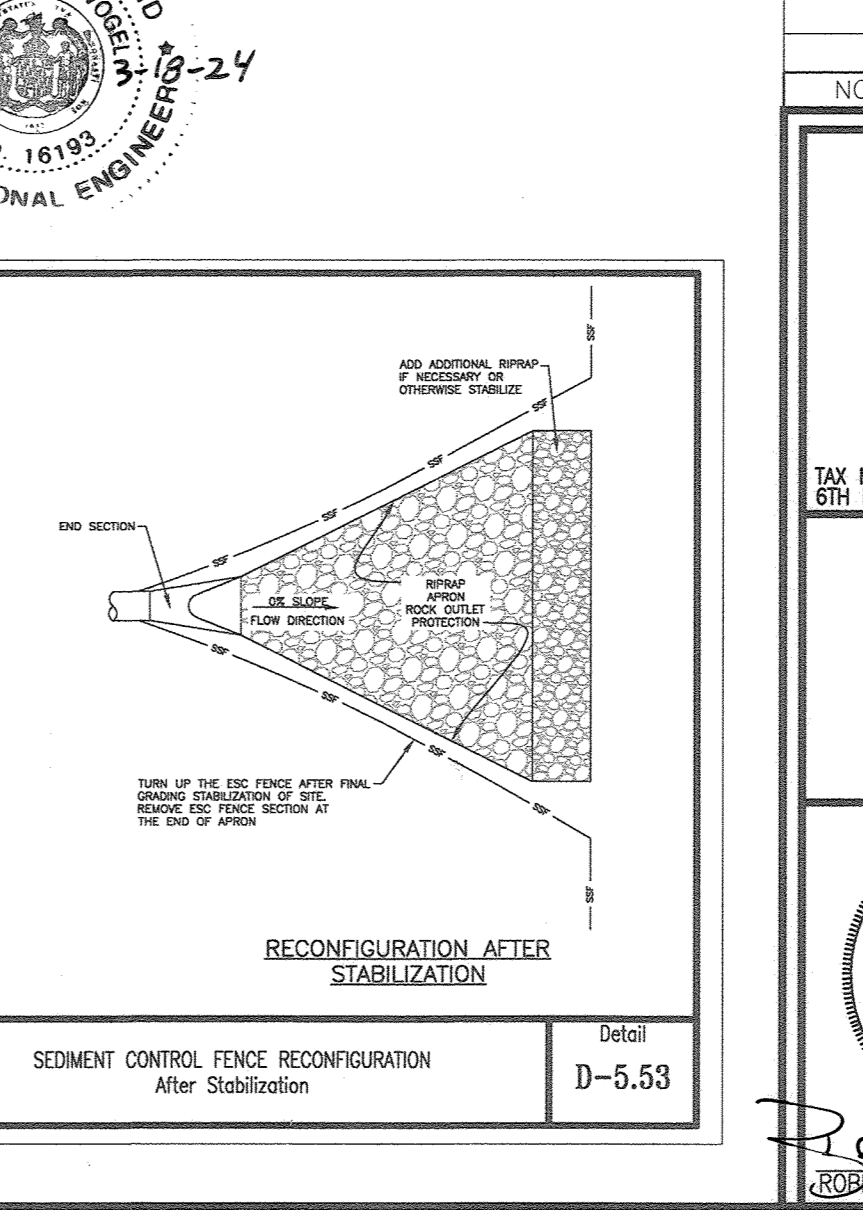
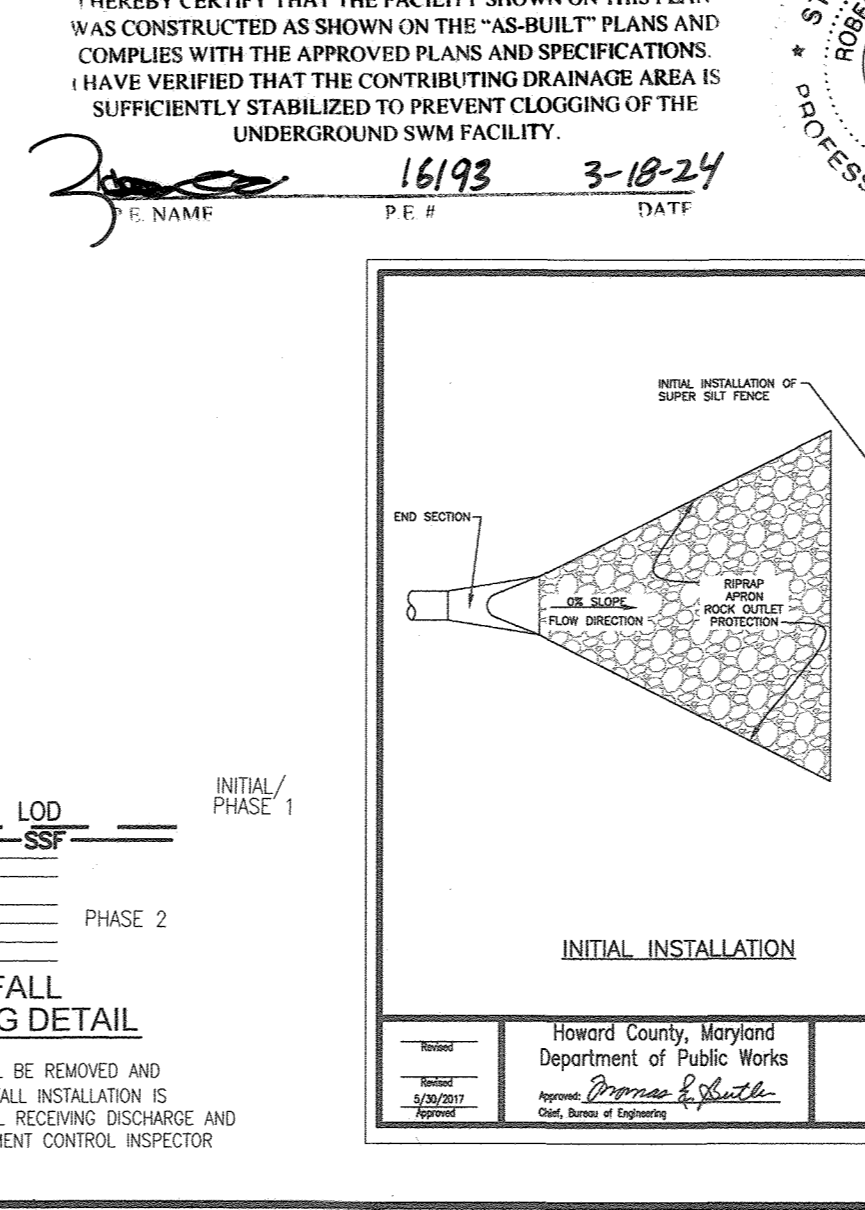
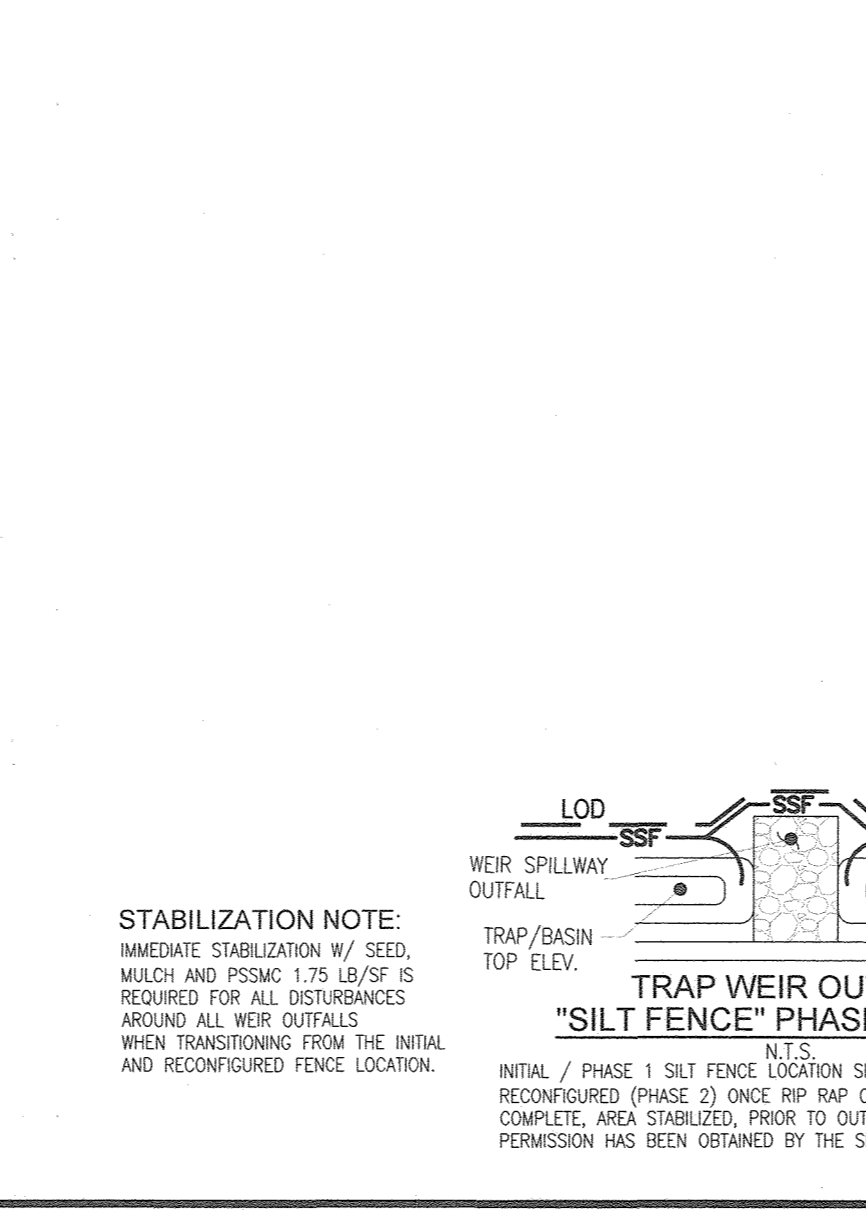
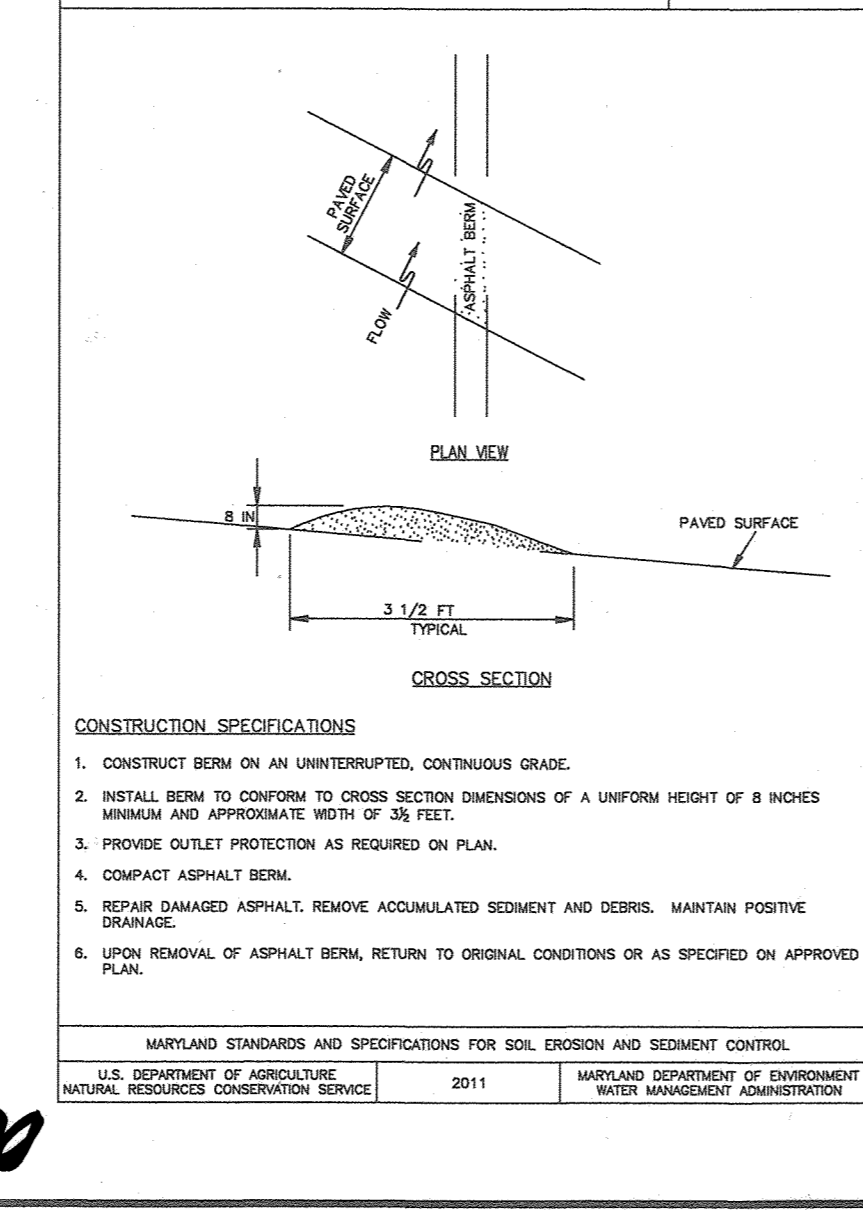
APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

John A. ...
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 12/20/20

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

John A. ...
 DATE: 11/14/20

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	1 OF 1
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE	2011
MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION	



OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 9770 PATUXENT Woods DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

FINAL ROAD CONSTRUCTION PLAN
GRADING, SOIL EROSION AND
SEDIMENT CONTROL PLAN - NOTES AND DETAILS
GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON BUILDABLE BULK PARCELS A-C
 AND OPEN SPACE LOTS 5-11
 A RE-SUBDIVISION OF THE "NORTDA SUBDIVISION" SECTION E-4
 LOTS 2-4 (P.B. 3/51), 5R (L-16288 F.469), 6R (L-16288 F.500) AND 6 (P.B. 3/51)

TAX MAP: 42 CRD: 24
 6TH ELECTION DISTRICT
 ZONED: R-12
 PARCELS: 136 & 138-140
 HOWARD COUNTY, MARYLAND

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

TIMMONS GROUP

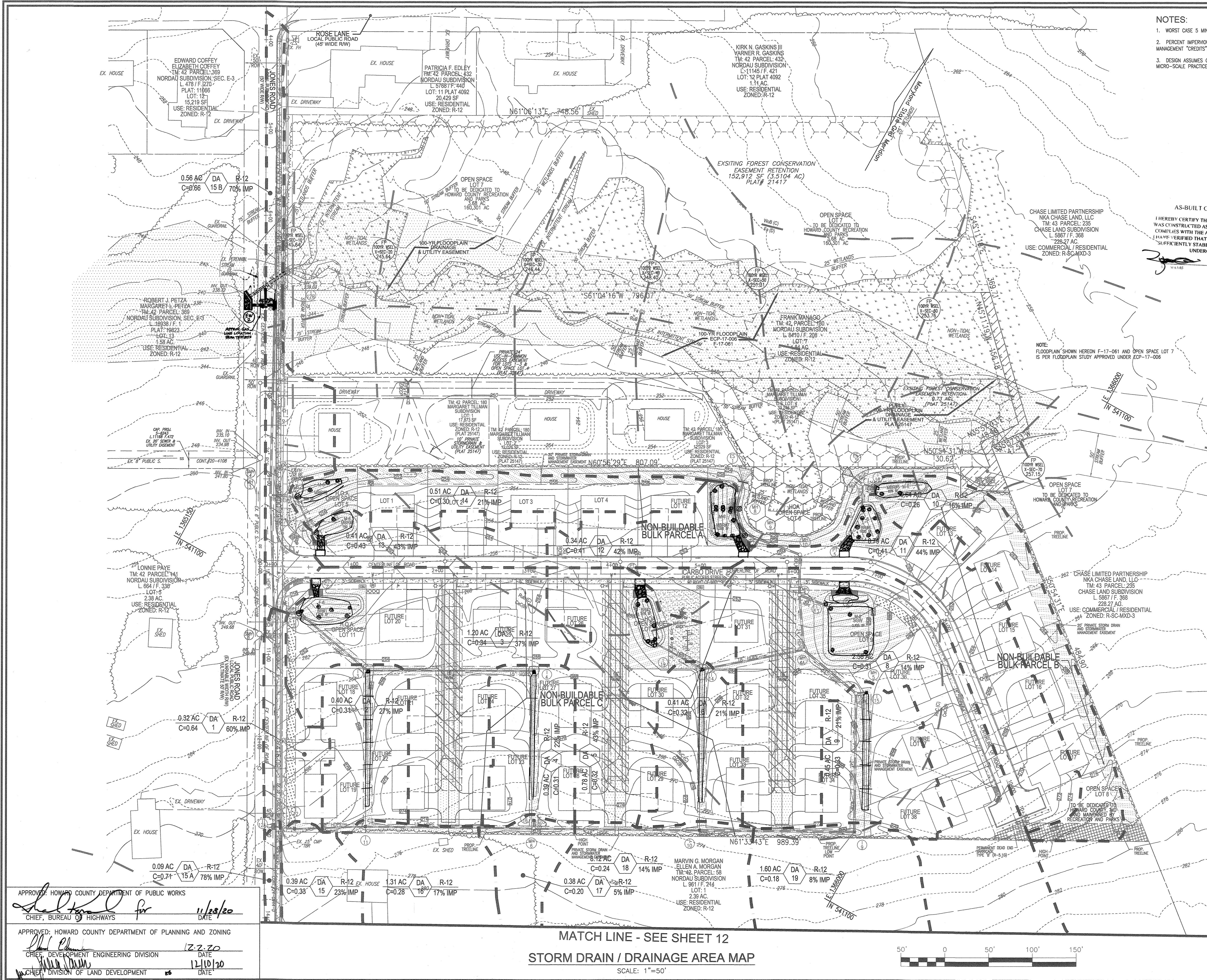
PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. MY LICENSE NUMBER IS 16193 AND MY EXPIRATION DATE IS 09-27-2020.

DESIGN BY: RHV
 DRAWN BY: VETG
 CHECKED BY: RHV
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05

10 SHEET OF 23

AS-BUILT NOVEMBER 2023



NOTES:

- WORST CASE 5 MIN. TO ASSUMED THROUGHOUT DESIGN.
- PERCENT IMPERVIOUS SHOWN, IGNORES STORMWATER MANAGEMENT "CREDITS"; I.E. ROOFTOP DISCONNECTS.
- DESIGN ASSUMES COMPLETE FAILURE OF PROPOSED MICRO-SCALE PRACTICES.

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING PAVING
- EXISTING UTILITY POLE
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TIE LINE
- CENTERLINE OF EXISTING STREAM
- EXISTING SPECIMEN TREE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- PUBLIC 100-YEAR FLOOD PLAIN PLAT # 25417
- EXISTING FOREST CONSERVATION EASEMENT (RETENTION PLATS 21417, 25147)
- FOREST CONSERVATION EASEMENT
- PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PUBLIC SEWER, WATER & UTILITY EASEMENT
- PUBLIC WATER & UTILITY EASEMENT
- PRIVATE STORM DRAIN AND STORM WATER MANAGEMENT EASEMENT
- PUBLIC DRAINAGE & UTILITY EASEMENT
- 10' PUBLIC TREE MAINTENANCE EASEMENT
- STORMDRAIN
- STORM DRAIN INLET
- SIDEWALK
- TREELINE
- CURB & GUTTER
- MICRO-BIORETENTION FACILITY (4-5)
- SOILS BOUNDARY
- DRAINAGE AREA DIVIDE
- STREET LIGHT
- DRAINAGE AREA INLET ZONING
- C FACTOR # % IMPERVIOUS

AS-BUILT CERTIFICATION FOR PSWM

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

16193 3-18-24
P.E. DATE

STATE OF MARYLAND
ROBERT HARRIS VOGEL
REGISTERED PROFESSIONAL ENGINEER
NO. 16193 3-18-24

NOTE: FLOODPLAIN SHOWN HEREON F-17-061 AND OPEN SPACE LOT 7 IS PER FLOODPLAIN STUDY APPROVED UNDER ECP-17-006

SOILS LEGEND
HOWARD COUNTY SOILS MAP #24

SYMBOL	NAME / DESCRIPTION	HYDRO GROUP	K FACTOR	<1% SLOPE
C&C	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	NO B	0.43	YES
RuB	RUSSETT AND BELTSVILLE SOILS, 2 TO 5 PERCENT SLOPES	NO C	0.43	NO
RuC	RUSSETT AND BELTSVILLE SOILS, 5 TO 10 PERCENT SLOPES	NO C	0.43	YES
Fo	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	YES D	0.24	NO
WbB	WOODSTOWN SANDY LOAM, 2 TO 5 PERCENT SLOPES	YES C	0.32	NO
CoD	CRONK AND EVERBROOK SOILS, 10 TO 15 PERCENT SLOPES	NO C	0.37	YES
EbC	EVERSBROOK LOAMY SAND, 2 TO 10 PERCENT SLOPES	NO A	0.15	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
K-FACTOR = $K_w \cdot 0.4^D$ DEPTH

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

OWNER/DEVELOPER
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COLUMBIA, MD 21046
ATTN: PETER ENGEL
(410) 313-6316

2	REVISE THE PLAN TO RECONFIGURE STORM DRAIN OUTFALL TO AVOID CONFLICT WITH A GAS MAIN	12-14-21
NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN DRAINAGE AREA MAP
GREENWOOD VILLAGE - PHASE 1
LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C
AND OPEN SPACE LOTS 5-11
A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
LOTS 2-4 (P.B. 3/51), SR (L16288 F.88), BR (L16288 F.502) AND 9 (P.B. 3/51)
TAX MAP: 42 GRID: 24 PARCEL: 136 & 138-140
5TH ELECTION DISTRICT ZONED: R-12 HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE

DESIGN BY: RHV
DRAWN BY: VETO
CHECKED BY: RHV
DATE: MARCH 2020
SCALE: AS SHOWN
W.O. NO.: 12-05W

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

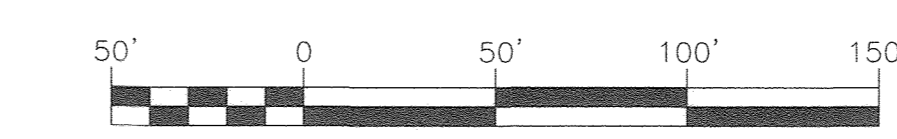
11 SHEET OF 23

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
11/28/20
DATE

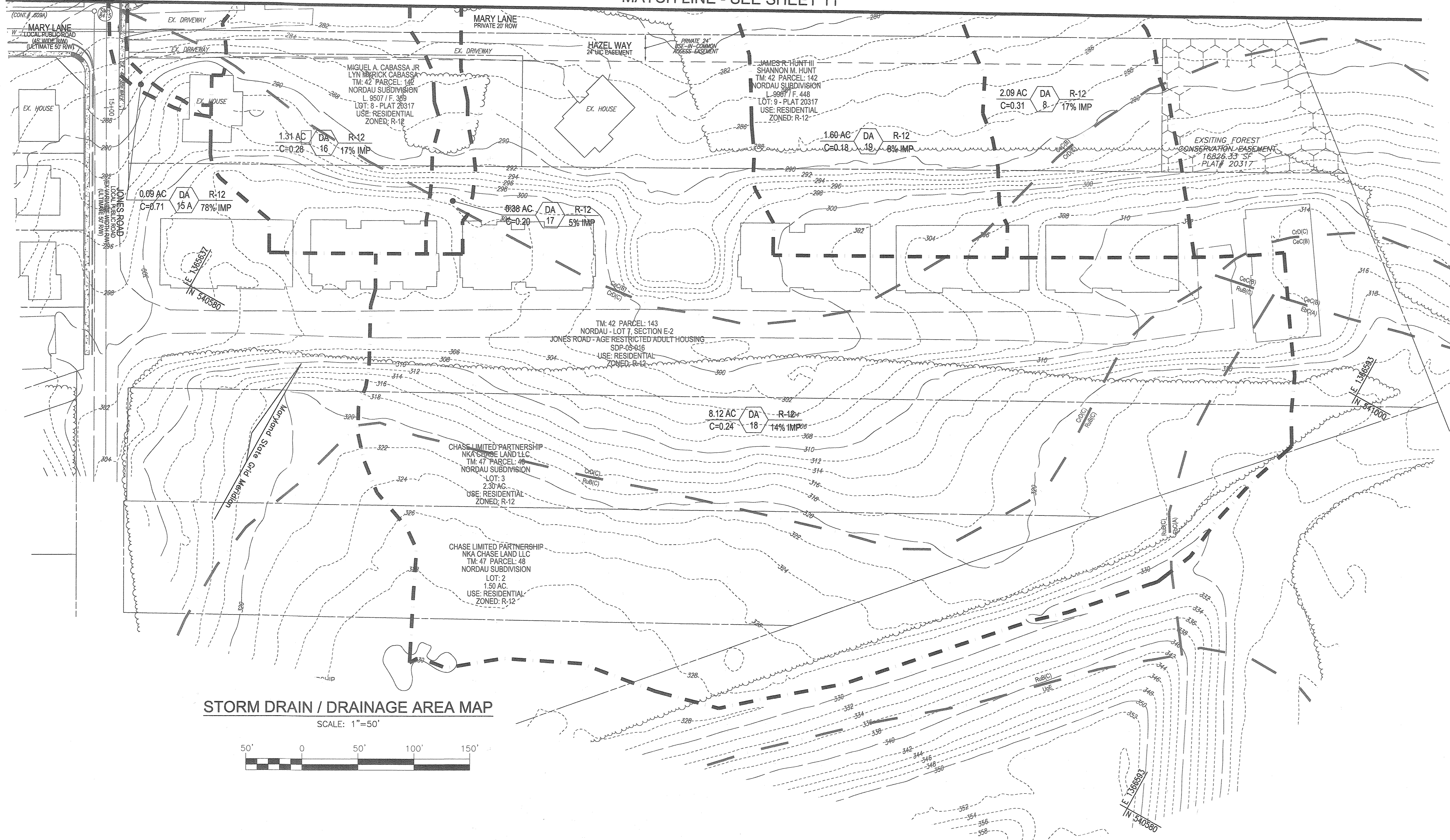
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
12-2-20
DATE

12/10/20
DATE

MATCH LINE - SEE SHEET 12
STORM DRAIN / DRAINAGE AREA MAP
SCALE: 1"=50'

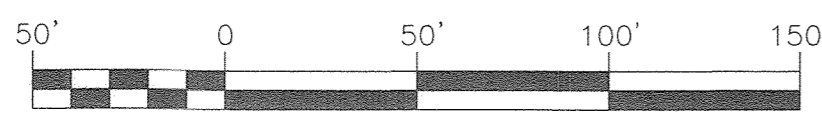


MATCH LINE - SEE SHEET 11



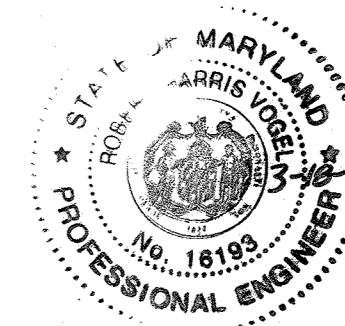
STORM DRAIN / DRAINAGE AREA MAP

SCALE: 1"=50'



LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING PAVING
	EXISTING UTILITY POLE
	EXISTING SANITARY MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREELINE
	CENTERLINE OF EXISTING STREAM
	SIDEWALK
	TREELINE
	CURB & GUTTER
	MICRO-BIoretention FACILITY (M-6)
	DRAINAGE AREA
	INLET #
	ZONING
	% IMPERVIOUS
	RuB (C)
	CeC(B)
	SOILS BOUNDARY
	DRAINAGE AREA DWIDE
	STREET LIGHT



AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS ADEQUATELY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
 R. R. VOGEL 16193 3-18-24
 P.E. DATE

OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 9770 PATUKENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

NO.	REVISION	DATE

SOILS LEGEND
 HOWARD COUNTY SOILS MAP #24

SYMBOL	NAME / DESCRIPTION	HYDRO GROUP	K FACTOR	<1% SLOPE	>1% SLOPE
CeC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	NO	B	0.43	YES
RuB	RUSSETT AND BELTSVILLE SOILS, 2 TO 5 PERCENT SLOPES	NO	C	0.43	NO
RuC	RUSSETT AND BELTSVILLE SOILS, 5 TO 10 PERCENT SLOPES	NO	C	0.43	YES
Fd	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	YES	D	0.24	NO
Wd8	WOODSTOWN SANDY LOAM, 2 TO 5 PERCENT SLOPES	YES	C	0.32	NO
Cd1	CROWN AND EVERBROOK SOILS, 10 TO 15 PERCENT SLOPES	NO	C	0.37	YES
Ebc	EVERSBORO LOAMY SAND, 2 TO 10 PERCENT SLOPES	NO	A	0.15	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
 K-FACTOR = $K_w @ 0-4" \text{ DEPTH}$
 NOTE:
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

 CHIEF, BUREAU OF HIGHWAYS DATE: 11/15/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 12-2-20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 12/10/20

NO AS-BUILT INFORMATION ON THIS SHEET

- NOTES:**
1. WORST CASE 5 MIN. TC ASSUMED THROUGHOUT DESIGN.
 2. PERCENT IMPERVIOUS SHOWN, IGNORES STORMWATER MANAGEMENT "CREDITS", I.E. ROOFTOP DISCONNECTS
 3. DESIGN ASSUMES COMPLETE FAILURE OF PROPOSED MICRO-SCALE PRACTICES

FINAL ROAD CONSTRUCTION PLAN
 STORM DRAIN DRAINAGE AREA MAP
GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11
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 TAX MAP: 42 GRID-24 PARCEL: 136 & 138-140
 6TH ELECTION DISTRICT ZONED: R-12 HOWARD COUNTY, MARYLAND

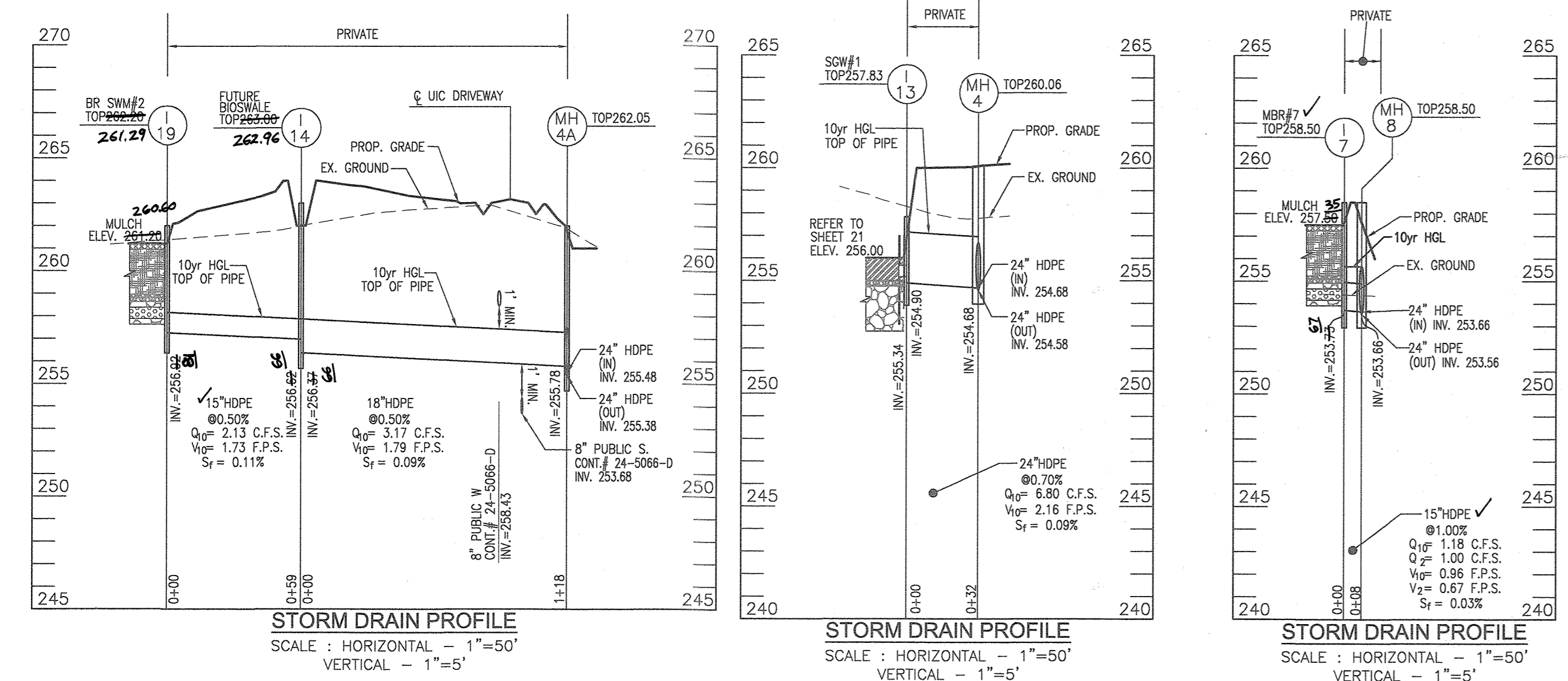
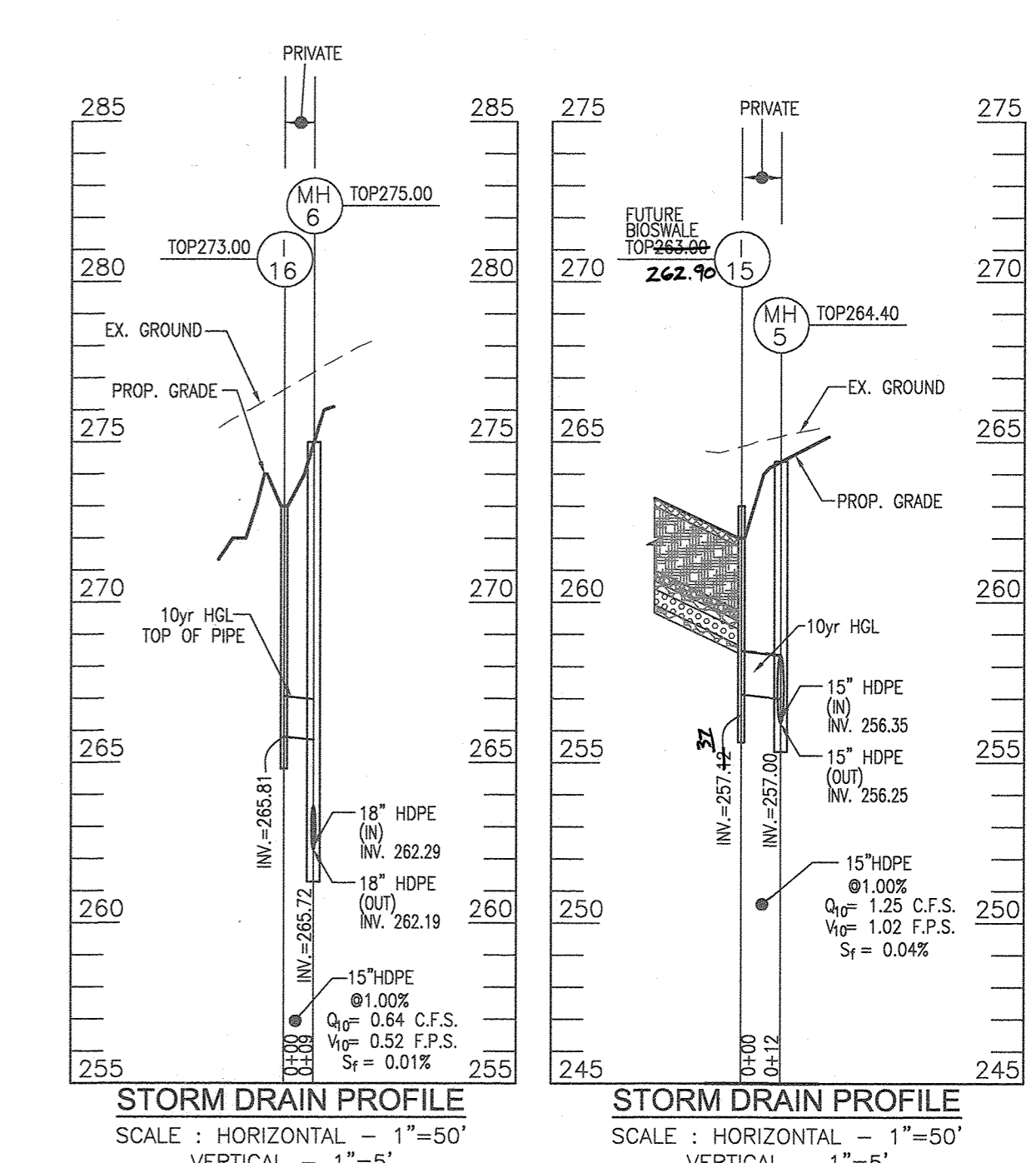
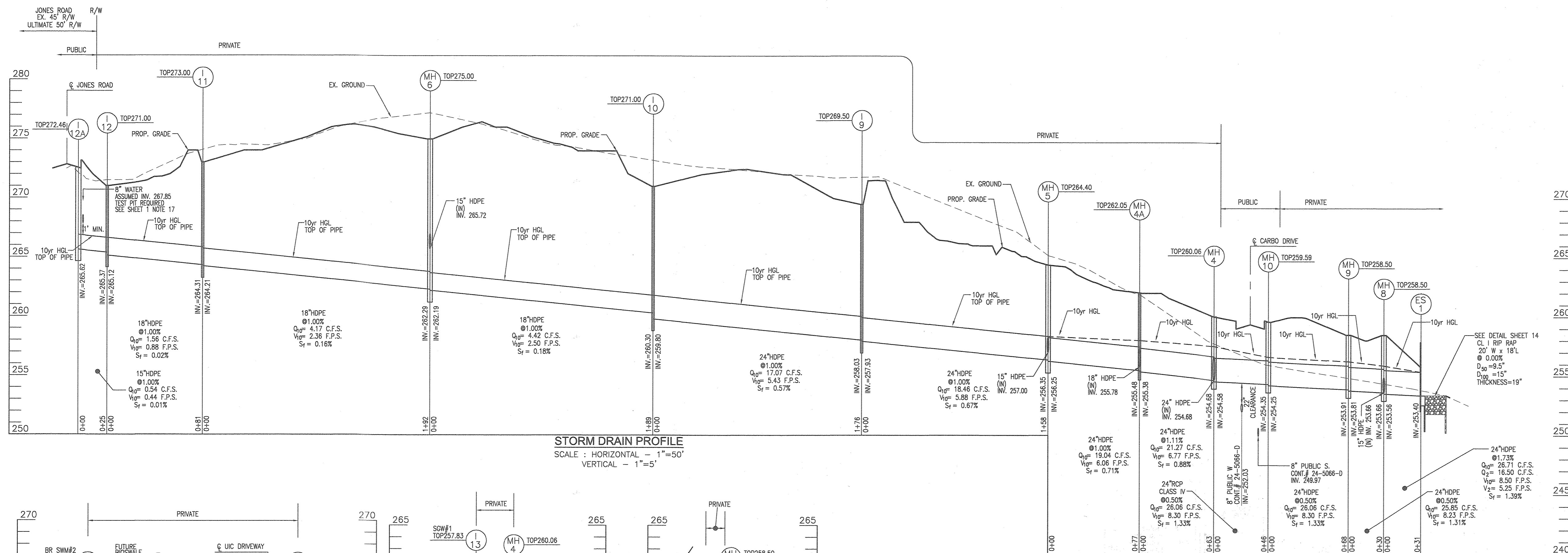
VOGEL ENGINEERING

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

PROFESSIONAL CERTIFICATE
 DESIGN BY: RHV
 DRAWN BY: VETO
 CHECKED BY: RHV
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05

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

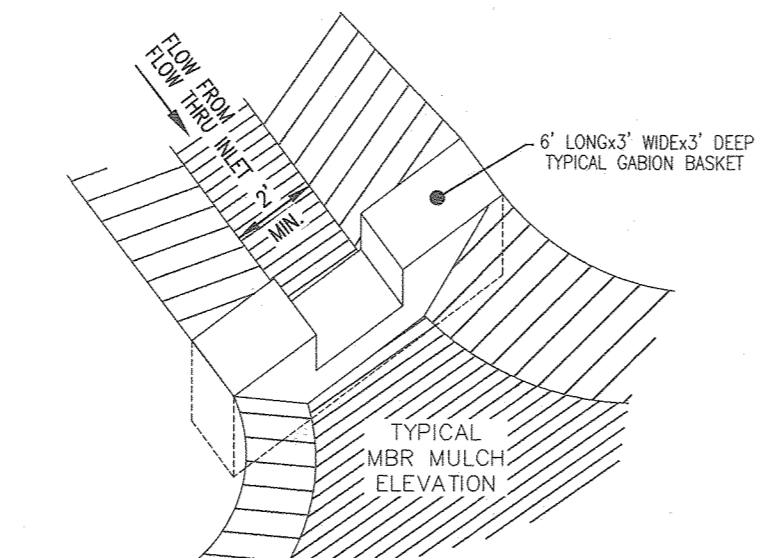
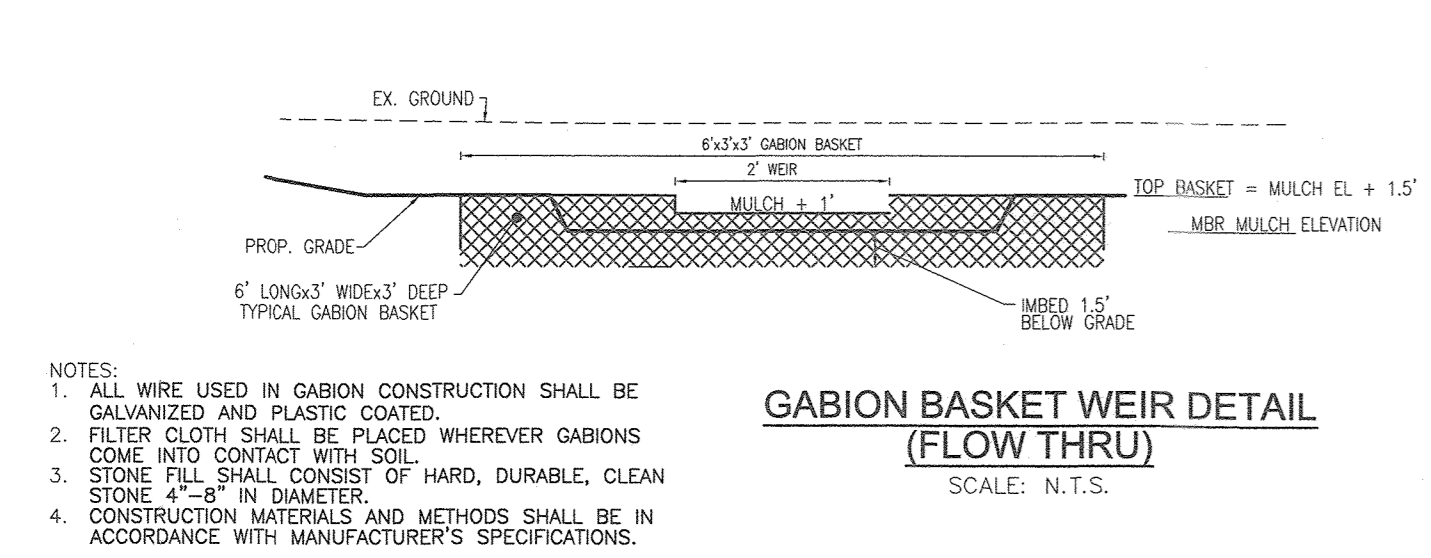
12 SHEET OF 23



STR #	TYPE	INV. IN	INV. OUT	TOP ELEV	DETAIL	LOCATION	PUBLIC/PRIVATE	REMARKS
I-1	DOUBLE WR INLET	252.09	251.99	258.00	D-4.31	N 541080.52 E 1365285.88	PUBLIC STRUCTURE	
I-2	YARD INLET	262.40	253.19	268.00	D-4.11	N 541093.19 E 1365310.30	PRIVATE STRUCTURE	
I-3	YARD INLET	255.98	255.98	262.00	D-4.12	N 541073.59 E 1365411.12	PRIVATE STRUCTURE	
I-4	YARD INLET	---	262.08	261.64	D-4.12	N 541185.40 E 1365577.13	PRIVATE STRUCTURE	
I-5	YARD INLET	244.00	243.61	252.00	D-4.11	N 541205.94 E 1365244.19	PRIVATE STRUCTURE	
I-6	YARD INLET	---	249.67	251.51	D-4.11	N 541179.37 E 1365280.30	PRIVATE STRUCTURE	
I-7	YARD INLET	---	253.78	258.50	D-4.11	N 541435.76 E 1365682.42	PRIVATE STRUCTURE	
I-8	YARD INLET	258.03	257.93	269.50	D-4.12	N 541182.49 E 1365685.83	PRIVATE STRUCTURE	
I-9	YARD INLET	280.30	259.80	271.00	D-4.12	N 541098.38 E 1365830.54	PRIVATE STRUCTURE	
I-10	YARD INLET	284.31	284.21	273.00	D-4.12	N 540916.69 E 1365495.04	PRIVATE STRUCTURE	
I-11	YARD INLET	285.37	285.12	271.00	D-4.12	N 540875.23 E 1365425.62	PRIVATE STRUCTURE	
I-12A	DOUBLE WR INLET	---	265.62	272.46	D-4.31	N 540886.17 E 1365404.66	PUBLIC STRUCTURE	
I-12B	TRIPLE WR INLET	239.00	238.70	244.09	MD 374.08	N 541395.08 E 1365415.71	PUBLIC STRUCTURE	
I-13	YARD INLET	---	254.90	257.83	D-4.10	N 541392.64 E 1365831.74	PRIVATE STRUCTURE	
I-14	YARD INLET	256.62	256.62	262.00	D-4.12	N 541280.55 E 1365743.99	PRIVATE STRUCTURE	
I-15	YARD INLET	---	257.12	263.00	D-4.12	N 541328.33 E 1365920.77	PRIVATE STRUCTURE	
I-16	YARD INLET	---	265.81	273.00	D-4.12	N 541018.47 E 1365659.76	PRIVATE STRUCTURE	
I-17	YARD INLET	---	264.19	258.59	D-4.11	N 541509.98 E 1365813.78	PRIVATE STRUCTURE	
I-18	YARD INLET	---	264.19	253.83	D-4.11	N 541536.95 E 1365815.88	PRIVATE STRUCTURE	
I-19	YARD INLET	---	256.62	262.24	D-4.11	N 541259.62 E 1365684.46	PRIVATE STRUCTURE	

STR #	TYPE	INV. IN	INV. OUT	TOP OR UPPER/LOWER	DETAIL	LOCATION	PUBLIC/PRIVATE	REMARKS
ES-01	TYPE 'C'	---	263.40	265.40	D-5.21	N 541469.56 E 1365680.75	(2) PRIVATE STRUCTURE	SEE DETAIL SHEET 14
ES-03	18" HDPE	---	253.75	255.25	HDPE	N 541535.64 E 1365786.30	(2) PRIVATE STRUCTURE	SEE DETAIL SHEET 14
EW-2	TYPE 'C'	---	238.72	241.47 / 242.72	SEE DETAIL	N 541376.91 E 1365089.59	PUBLIC	SEE DETAIL SHEET 14
MH-03	48" MANHOLE	243.67 / 244.56	243.57	251.35	G 5.12	N 541193.68 E 1365216.80	(1) PUBLIC STRUCTURE	
MH-04	48" MANHOLE	254.68 (2)	254.58	260.06	G 5.12	N 541387.83 E 1365799.73	(1) PRIVATE STRUCTURE	
MH-04A	48" MANHOLE	255.48 / 255.78	255.38	262.05	G 5.12	N 541335.83 E 1365834.63	(1) PRIVATE STRUCTURE	
MH-05	48" MANHOLE	257.00 / 256.35	256.25	264.40	G 5.12	N 541321.29 E 1365910.66	(1) PRIVATE STRUCTURE	
MH-06	48" MANHOLE	262.29 / 265.72	262.19	275.00	G 5.12	N 541008.36 E 1365664.25	(1) PRIVATE STRUCTURE	
MH-07	48" MANHOLE	254.05 (2)	253.80	258.50	G 5.12	N 541533.26 E 1365801.49	(1) PRIVATE STRUCTURE	
MH-08	48" MANHOLE	253.66 (2)	253.56	258.50	G 5.12	N 541439.37 E 1365669.24	(1) PRIVATE STRUCTURE	
MH-09	48" MANHOLE	253.91	253.81	258.50	G 5.12	N 541416.41 E 1365710.57	(1) PRIVATE STRUCTURE	
MH-10	48" MANHOLE	254.35	254.25	259.59	G 5.12	N 541428.34 E 1365777.87	(1) PUBLIC STRUCTURE	

STR #	TYPE	DEPTH REQUIREMENT	TOP/CL STCR	DETAIL	LOCATION	PUBLIC/PRIVATE	REMARKS
PT-1	FLOW THRU	11.9' DEPTH INLET TOP	257.45	D-4.35	0+62.82, 12.43' LT	PUBLIC	SLAB TYPE II - L=11', D=7.6"
PT-2	FLOW THRU	11.9' DEPTH INLET TOP	257.31	D-4.35	0+58.65, 12.43' RT	PUBLIC	SLAB TYPE II - L=11', D=7.5"
PT-3	FLOW THRU	11.9' DEPTH INLET TOP	263.00	D-4.35	4+28.32, 12.43' RT	PUBLIC	SLAB TYPE II - L=11', D=7.5"
PT-4	FLOW THRU	11.9' DEPTH INLET TOP	260.88	D-4.35	5+48.78, 12.43' LT	PUBLIC	SLAB TYPE II - L=11', D=7.5"
PT-5	FLOW THRU	11.9' DEPTH INLET TOP	239.24	D-4.35	6+81.92, 12.43' LT	PUBLIC	SLAB TYPE II - L=11', D=7.5"
PT-6	FLOW THRU	11.9' DEPTH INLET TOP	259.24	D-4.35	9+81.92, 12.43' RT	PUBLIC	SLAB TYPE II - L=11', D=7.5"



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 11/28/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 12/22/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 12/10/20

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

DATE: 12-18-24
 P.E. # 16193

SIZE	RESPONSIBILITY	CLASS	TOTAL LENGTH
15"	PUBLIC	HDPE	16
18"	PUBLIC	HDPE	167
24"	PUBLIC	HDPE	10
24"	PUBLIC	RCP IV	41
24"	PUBLIC	RCP V	243

SIZE	RESPONSIBILITY	CLASS	TOTAL LENGTH
16"	PRIVATE	HDPE	425
18"	PRIVATE	HDPE	672
24"	PRIVATE	HDPE	507
24"	PRIVATE	RCP IV	6

NO.	REVISION	DATE
2	REVISE THE PLAN TO RECONFIGURE STORM DRAIN OUTFALL TO AVOID CONFLICT WITH A GAS MAIN	12-14-21
1	REVISE THE PLAN TO RELOCATE STREET TREES AND ADJUST THE STORM DRAIN PROFILE	10-19-21

OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 9770 PATUXENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

FINAL ROAD CONSTRUCTION PLAN
 STORM DRAIN PROFILES
GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C
 AND OPEN SPACE LOTS 5-11
 A RE-SUBDIVISION OF THE "NOROUA SUBDIVISION" - SECTION E-4
 LOTS 2-4 (P.B. 3/51), 5R (L-16288 F.488), 8R (L-16288 F.502) AND 9 (P.B. 3/51)

TAX MAP: 42 GRID: 24
 6TH ELECTION DISTRICT

ZONED: R-12

PARCEL: 136 & 138-140
 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
 REGISTERED PROFESSIONAL ENGINEER
 STATE OF MARYLAND
 NO. 16193

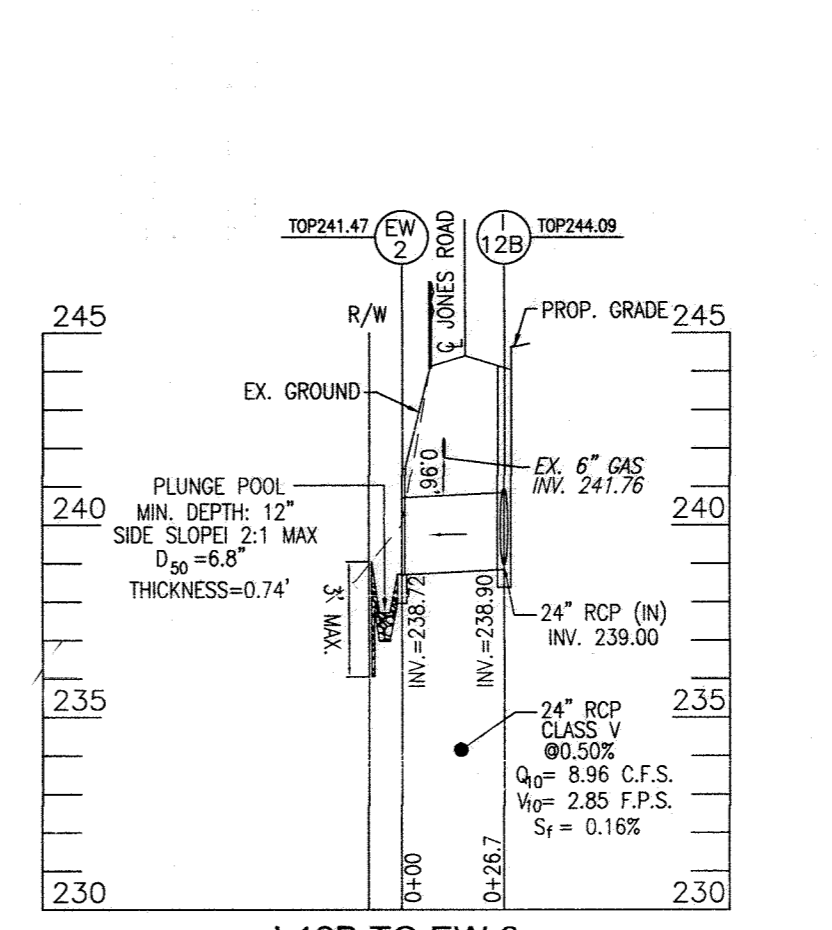
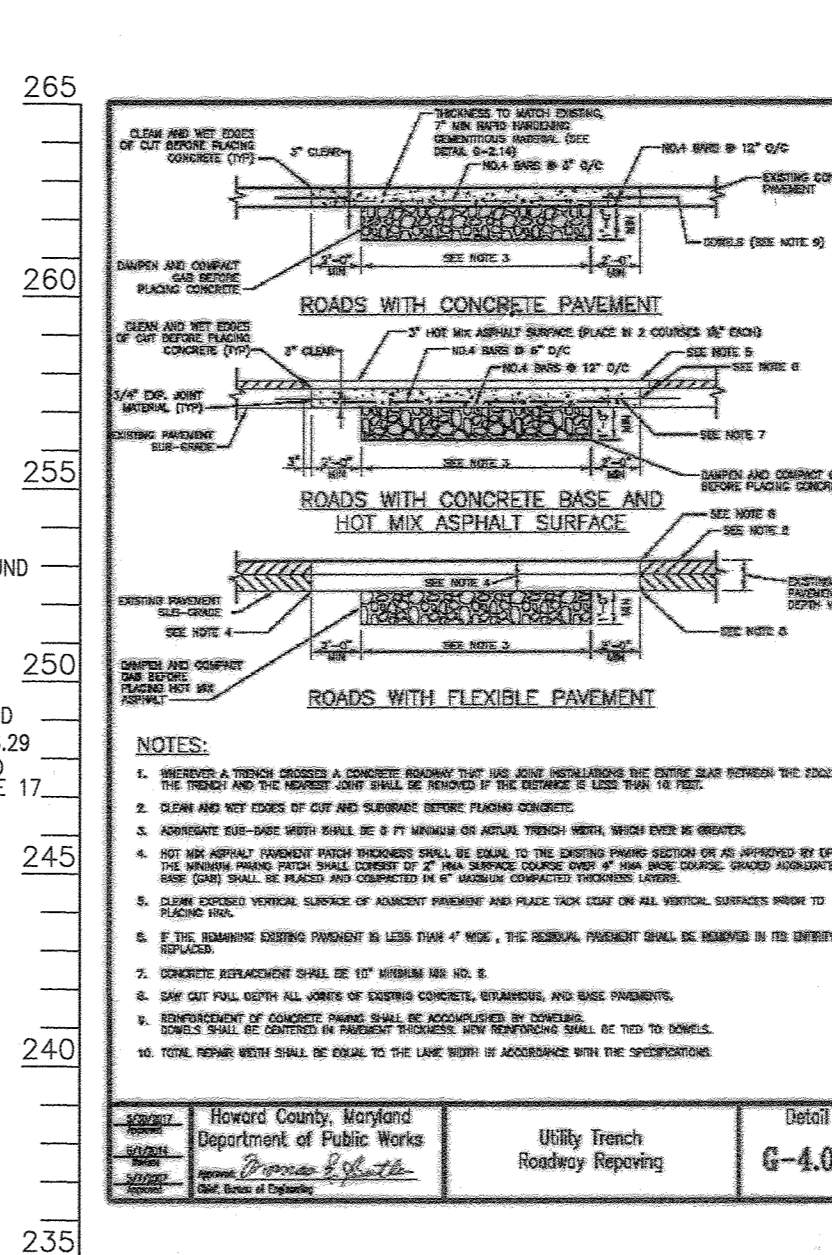
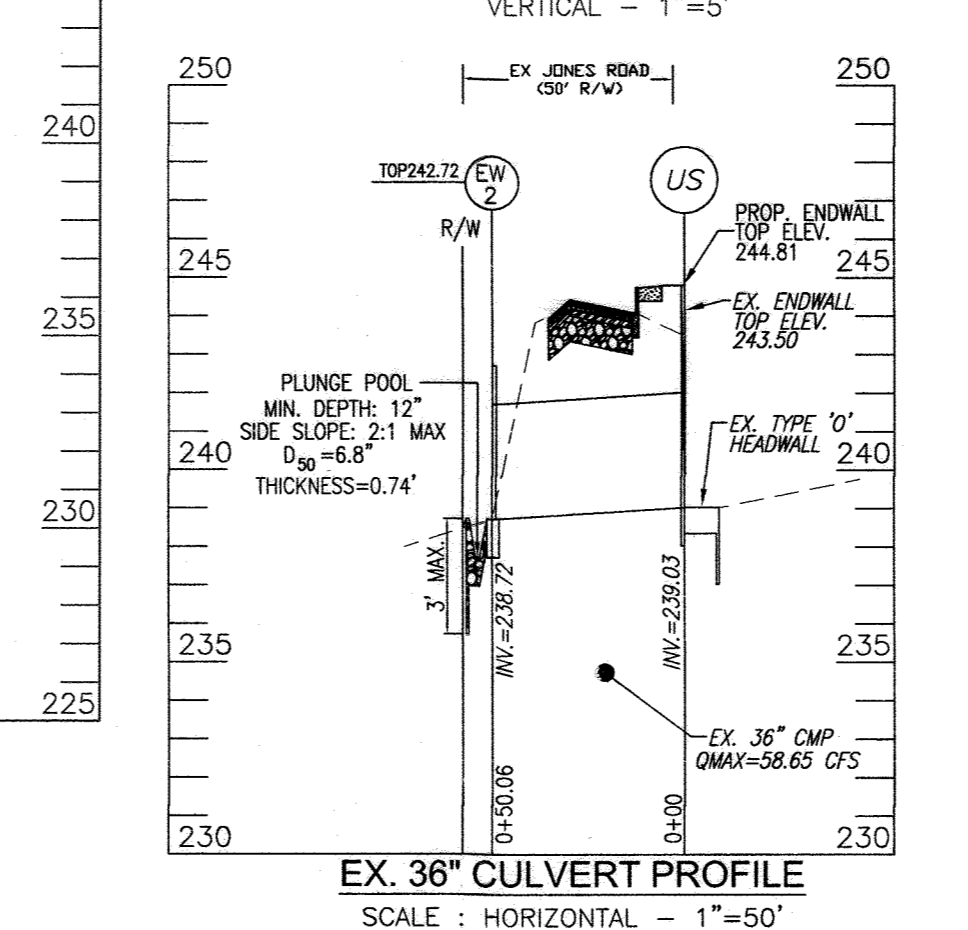
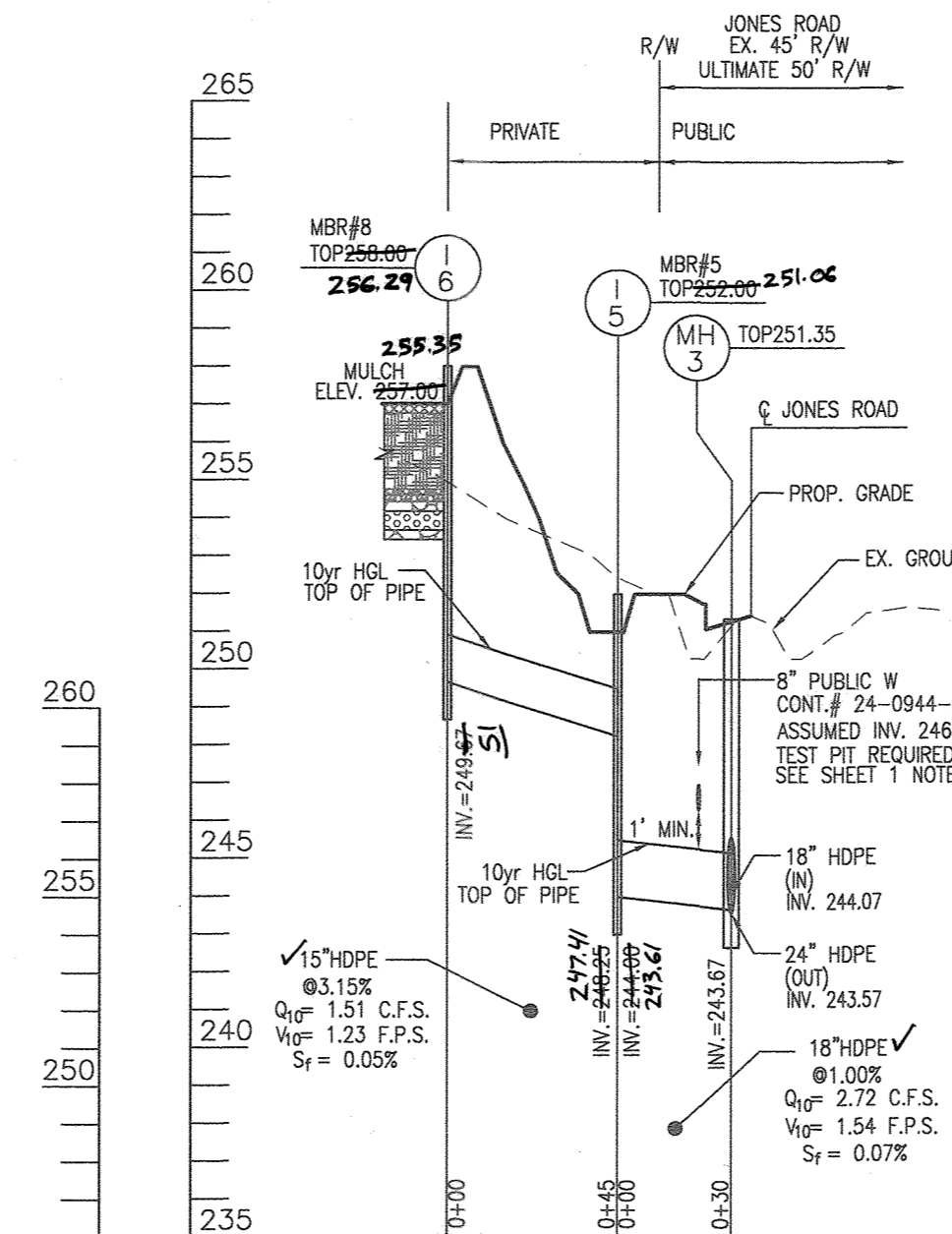
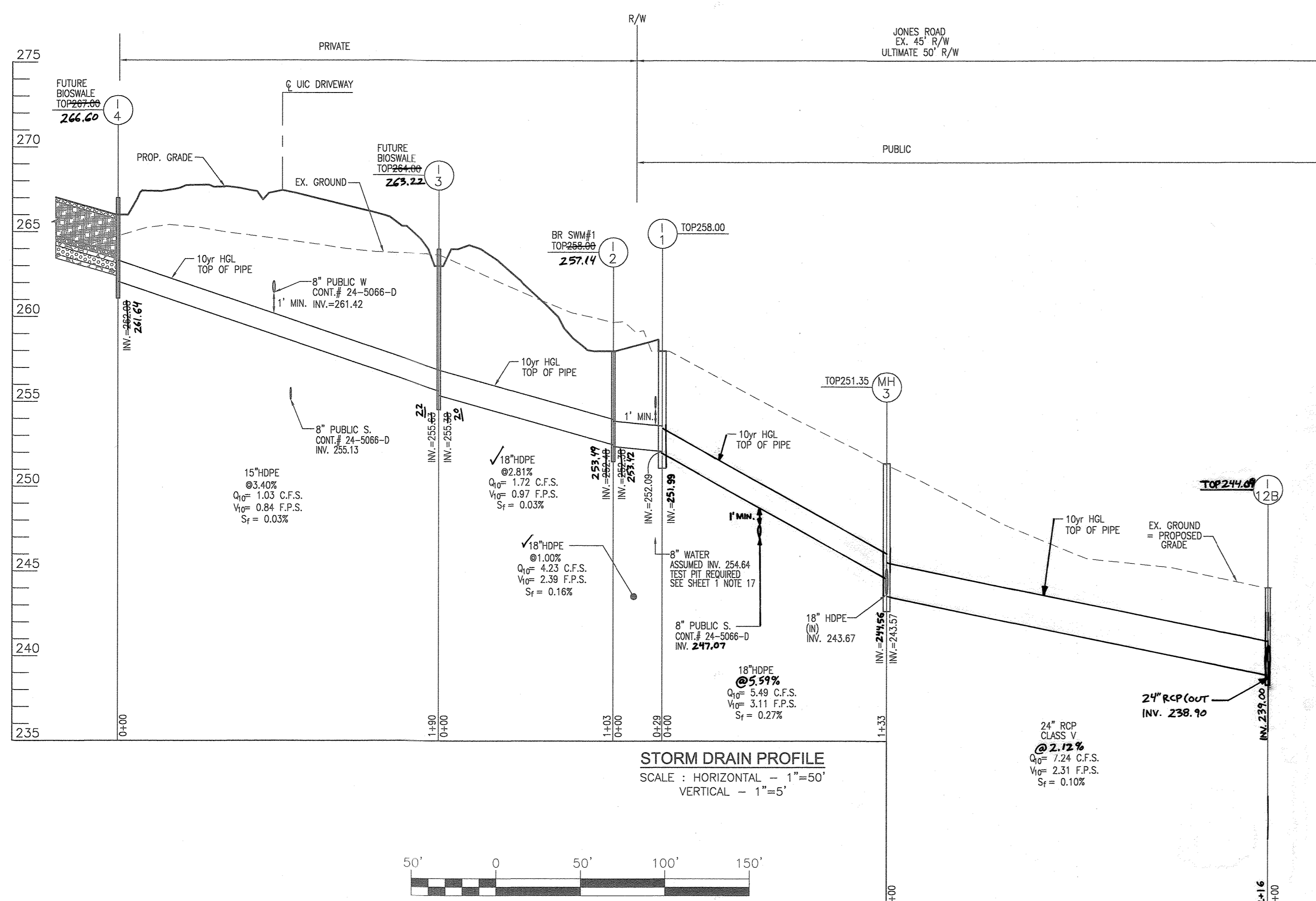
TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: RHV
 CHECKED BY: VETG
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05

PROFESSIONAL CERTIFICATE
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13 SHEET OF 23

AS-BUILT NOVEMBER 2023 F-19-051



DETAIL D-4-1-A ROCK OUTLET PROTECTION I

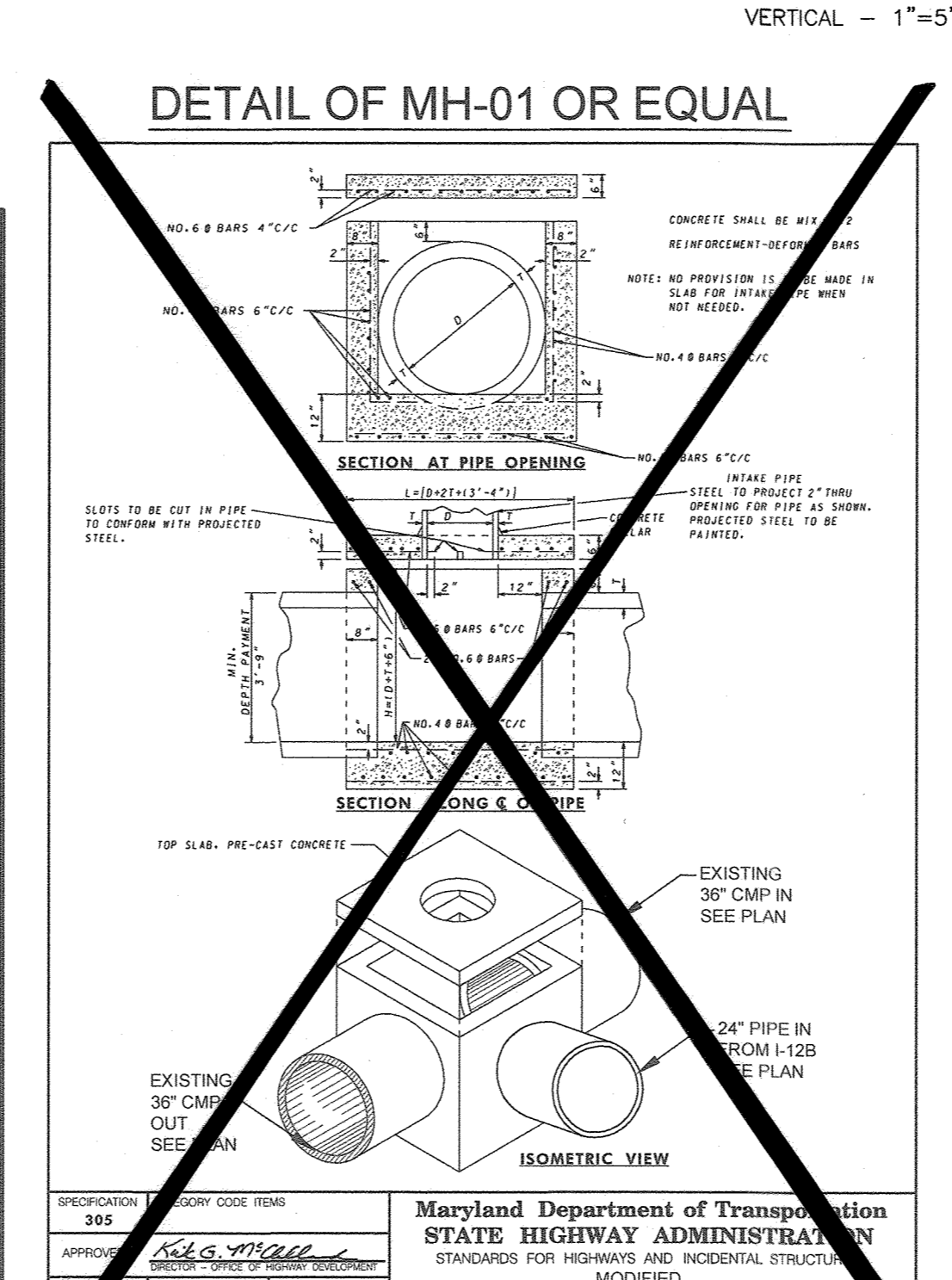
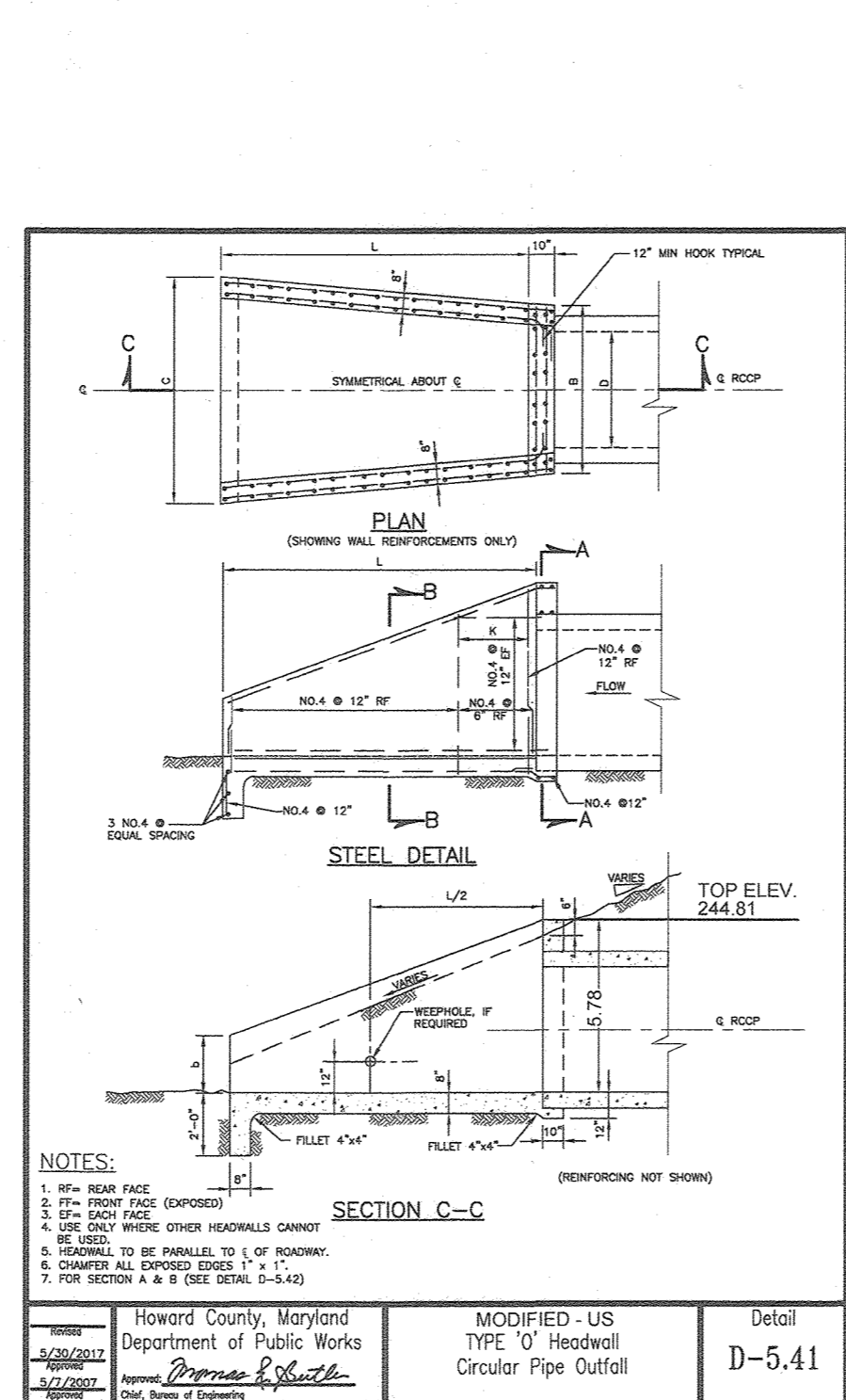
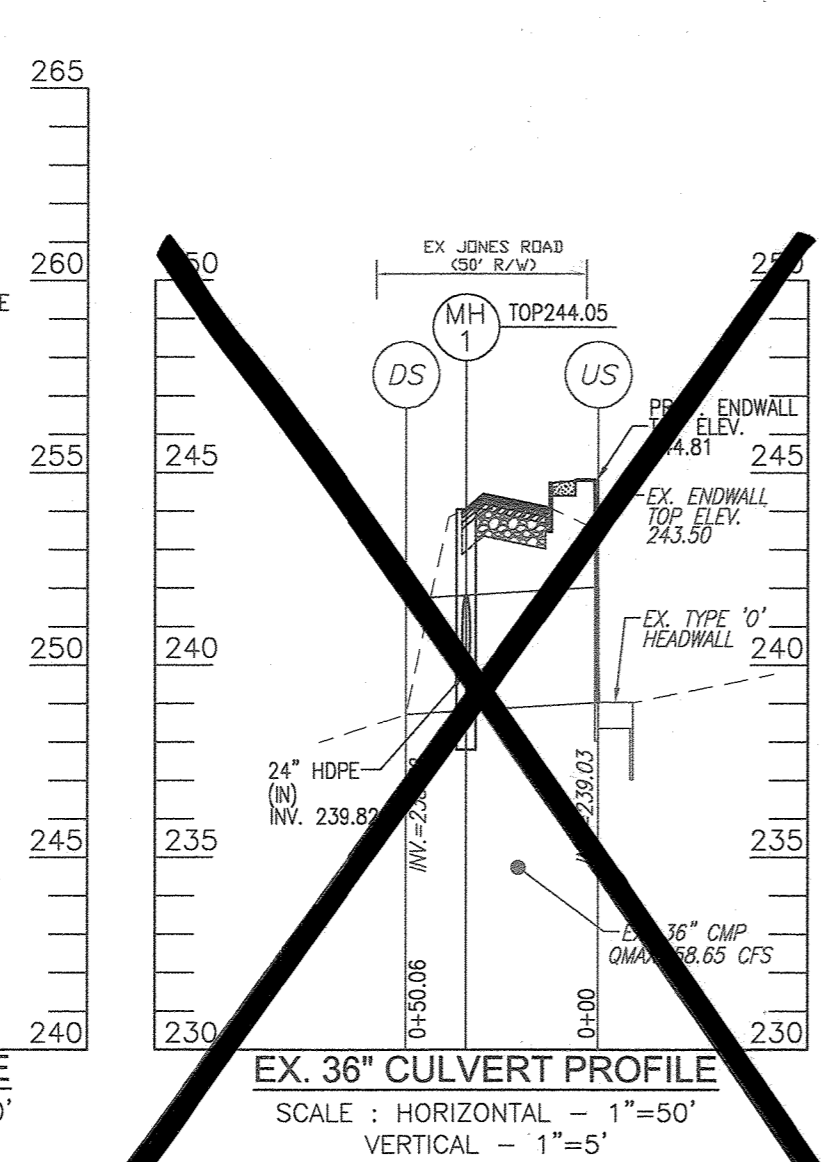
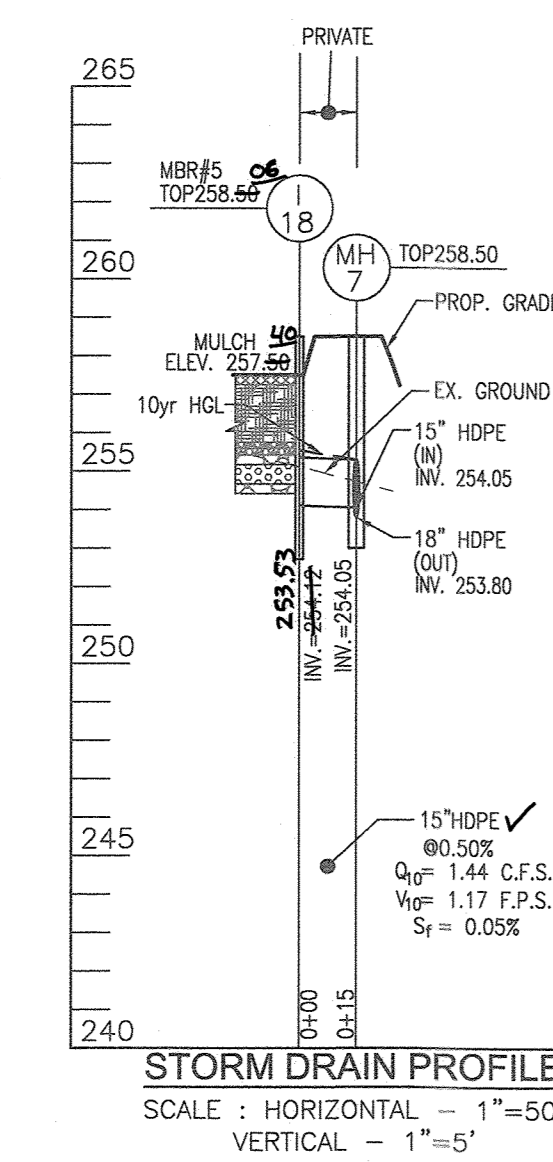
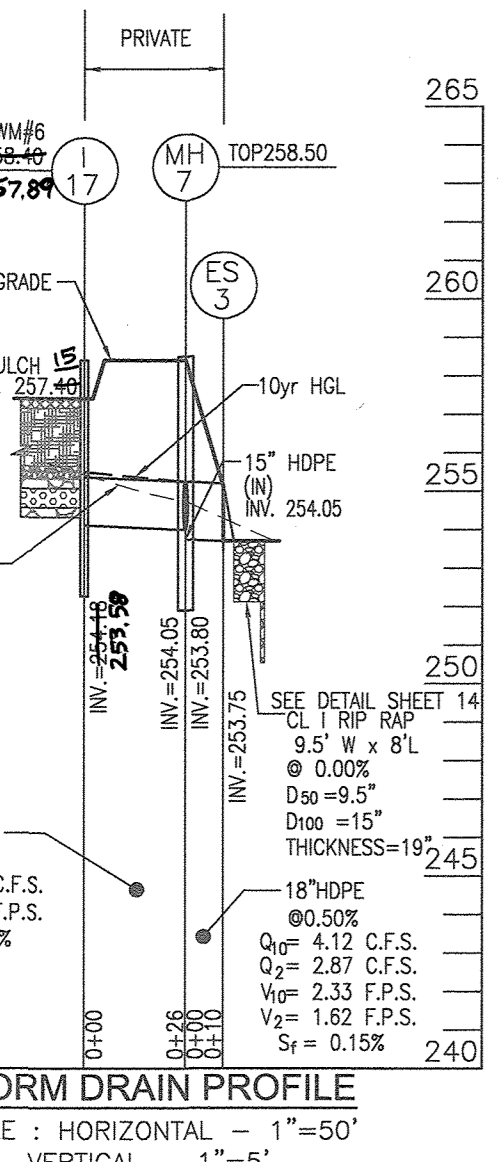
STANDARD SYMBOL: ROP1

CONSTRUCTION SPECIFICATIONS:

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, 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 TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (% TO 1/8 INCH STONE FOR 8 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF THE RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISJUNCTION OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET 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 RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH ONE SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF FROG. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISCLOSED 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 AND WATER MANAGEMENT ADMINISTRATION D.20



PART NO	PIPE SIZE	A	B (MAX)	H	L	W
1210-NP	12"	6.5"	10"	6.5"	25"	29"
1210-NP	300 mm	165 mm	254 mm	165 mm	835 mm	736 mm
1210-NP	18"	6.5"	10"	6.5"	25"	29"
1810-NP	18"	185 mm	254 mm	165 mm	835 mm	736 mm
2410-NP	24"	7.5"	10"	8.5"	35"	35"
2410-NP	600 mm	190 mm	380 mm	185 mm	812 mm	890 mm
3012-NP	30"	7.5"	10"	8.5"	36"	45"
3012-NP	80 mm	190 mm	450 mm	185 mm	900 mm	1140 mm
3612-NP	36"	10.5"	N/A	7.0"	55"	68"
3612-NP	900 mm	266 mm	N/A	178 mm	1345 mm	1725 mm

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 11/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 12-2-20

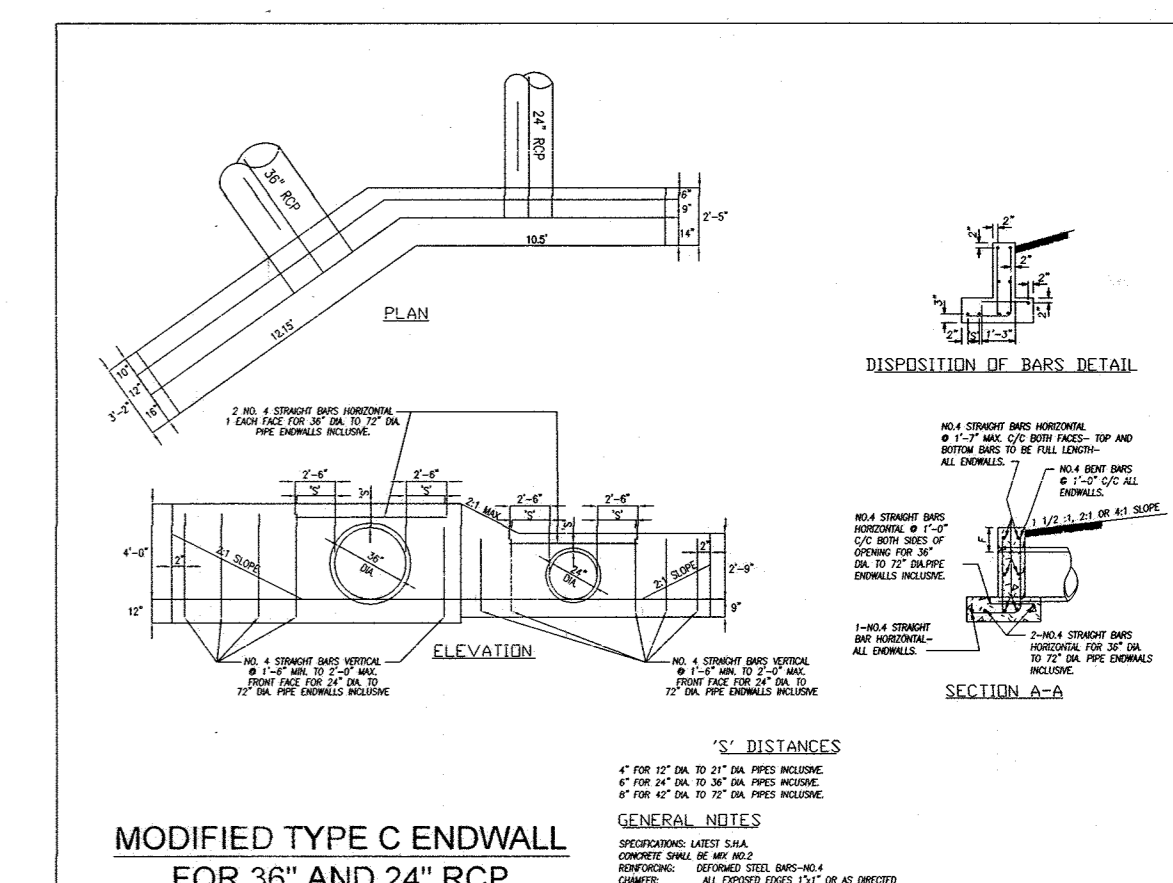
APPROVED: CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 12/16/20

HOWARD COUNTY, MARYLAND
 DEPARTMENT OF PUBLIC WORKS
 MODIFIED - US TYPE 'O' HEADWALL CIRCULAR PIPE OUTFALL
 Detail D-5.41

MARYLAND DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
 MODIFIED STANDARD JUNCTION BOX OR EQUAL
 MODIFIED STANDARD NO. MD 386.11

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

DATE: 11/19/23
 P.E. # 16193
 DATE: 3-18-24



OWNER/DEVELOPER
 HOWARD COUNTY HOUSING CORPORATION
 9770 PATUXENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

NO.	REVISION	DATE
2	REVISE THE PLAN TO RECONFIGURE STORM DRAIN OUTFALL TO AVOID CONTACT WITH A GAS MAIN	12-14-21
1	REVISE THE PLAN TO RELOCATE STREET TREES AND ADJUST THE STORM DRAIN PROFILE	10-19-21

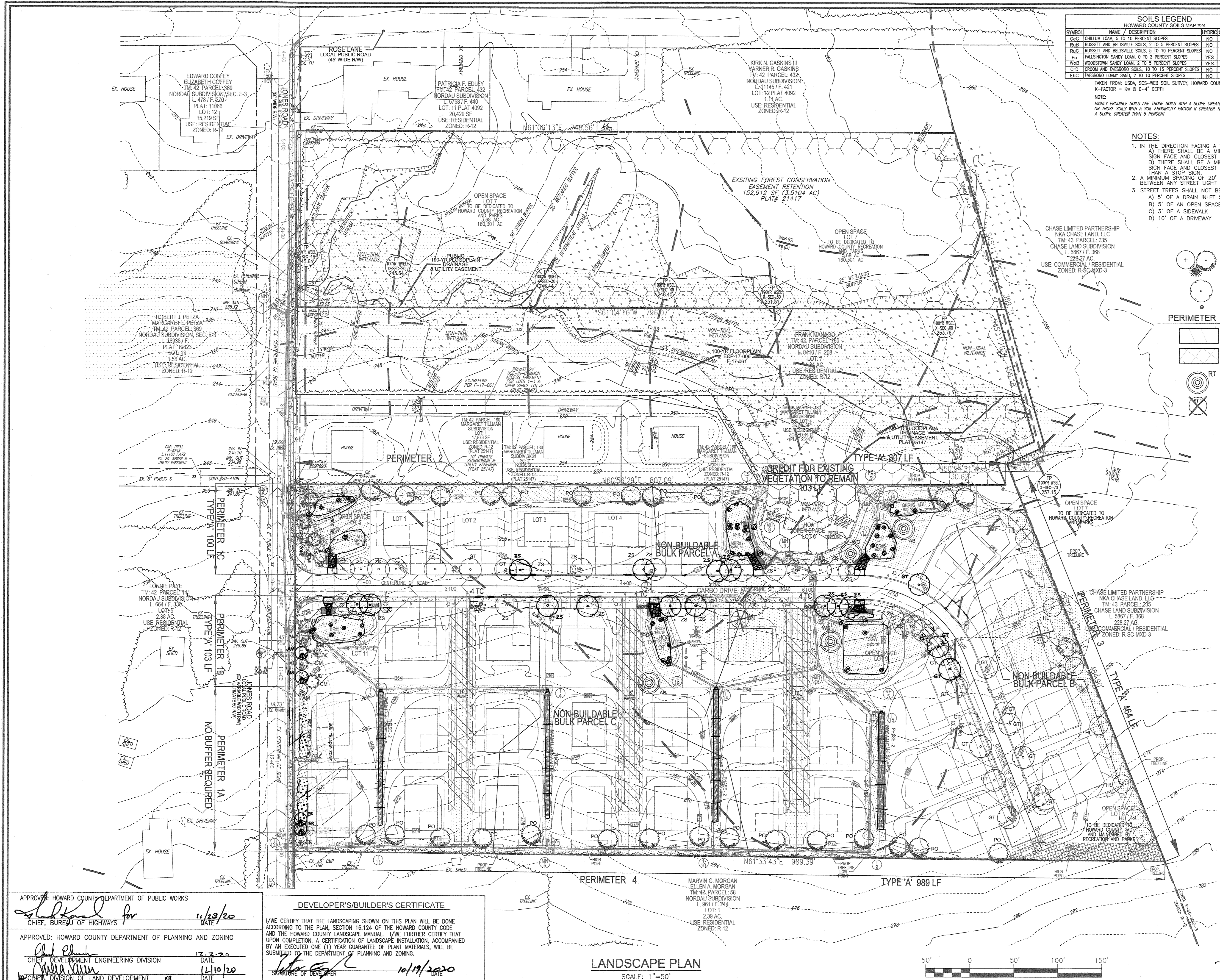
FINAL ROAD CONSTRUCTION PLAN
 STORM DRAIN PROFILES
GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11
 A RE-SUBDIVISION OF THE "NORVAU SUBDIVISION" - SECTION E-4
 LOTS 2-4 (P.B. 3/51), 5R (L.16288 F.488), 6R (L.16288 F.502) AND 9 (P.B. 3/51)

TAX MAP: 42 GRD-24
 6TH ELECTION DISTRICT
 ZONED: R-12
 PARCEL: 136 & 138-140
 HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV
 DRAWN BY: VETG
 CHECKED BY: RHV
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 09-27-2029



SOILS LEGEND
HOWARD COUNTY SOILS MAP #24

SYMBOL	NAME / DESCRIPTION	HYDRO GROUP	K FACTOR	SLOPE SLOPE
CdC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	NO	B	0.43
RuB	RUSSETT AND BELTSVILLE SOILS, 5 TO 10 PERCENT SLOPES	NO	C	0.43
Fs	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	YES	D	0.24
WgB	WOODSTOWN SANDY LOAM, 2 TO 5 PERCENT SLOPES	YES	C	0.32
CdC	CHILLUM LOAM, 10 TO 15 PERCENT SLOPES	NO	C	0.37
Ebc	EVESBORO LOAMY SAND, 2 TO 10 PERCENT SLOPES	NO	A	0.15

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
K-FACTOR = $K_w @ 0-4" \text{ DEPTH}$

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

LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING PAVING
	EXISTING UTILITY POLE
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREE LINE
	CENTERLINE OF EXISTING STREAM
	EXISTING SPECIMEN TREE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	PUBLIC 100-YEAR FLOOD PLAIN (PLAT 25147)
	EXISTING FOREST CONSERVATION EASEMENT (RETENTION - PLAT 21417, 25147)
	FOREST CONSERVATION EASEMENT
	PRIVATE USE-IN-COMMON ACCESS EASEMENT
	PUBLIC SEWER, WATER & UTILITY EASEMENT
	PUBLIC WATER & UTILITY EASEMENT
	PRIVATE STORM DRAIN AND STORM WATER MANAGEMENT EASEMENT
	PUBLIC DRAINAGE & UTILITY EASEMENT
	10' PUBLIC TREE MAINTENANCE EASEMENT
	STORM DRAIN
	SIDEWALK
	PROPOSED TREE LINE
	CURB & GUTTER
	MICRO-BORE-TENTATION FACILITY (M-6)
	STREET LIGHT
	SOILS BOUNDARY
	LIMIT OF DISTURBANCE

- NOTES:**
- IN THE DIRECTION FACING A TRAFFIC CONTROL SIGN:
 - THERE SHALL BE A MINIMUM OF 40' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL STOP SIGNS.
 - THERE SHALL BE A MINIMUM OF 35' BETWEEN THE SIGN FACE AND CLOSEST TREE FOR ALL SIGNS OTHER THAN A STOP SIGN.
 - A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
 - STREET TREES SHALL NOT BE PLANTED WITHIN:
 - 5' OF A DRAIN INLET STRUCTURE
 - 5' OF AN OPEN SPACE ACCESS STRIP
 - 3' OF A SIDEWALK
 - 10' OF A DRIVEWAY

AS-BUILT CERTIFICATION FOR PSWM

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

STATE OF MARYLAND
ROBERT HARRIS VOGEL
REGISTERED PROFESSIONAL ENGINEER
NO. 16193

DATE: 11/13/2023
P.E. # 16193
DATE: 3-10-24

- NOTES:**
- REFER TO SHEET 17 FOR LANDSCAPE SCHEDULE A, STREET TREE REQUIREMENTS AND LANDSCAPING NOTES AND DETAILS.

OWNER/DEVELOPER
HOWARD COUNTY HOUSING COMMISSION
9770 PATUXENT WOODS DR., SUITE 100
COLUMBIA, MD 21046
ATTN: PETER ENGEL
(410) 313-6316

NO.	REVISION	DATE
1	REVISE THE PLAN TO RELOCATE STREET TREES AND ADJUST THE STORM DRAIN PROFILE	10-19-21

FINAL ROAD CONSTRUCTION PLAN
LANDSCAPE PLAN
GREENWOOD VILLAGE - PHASE 1
LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11
A RE-SUBDIVISION OF THE NORDAU SUBDIVISION, SECTION E-4, LOTS 2-4 (P.B. 3/51), 5R (L16288 F.488), 8R (L16288 F.502) AND 9 (P.B. 3/51)

TAX MAP: 42 GRID: 24
6TH ELECTION DISTRICT

ZONED: R-12

PARCEL: 136 & 138-140
HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE

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

STATE OF MARYLAND
ROBERT HARRIS VOGEL
REGISTERED PROFESSIONAL ENGINEER
NO. 16193

DATE: 11/13/2023

DRAWN BY: RHV
CHECKED BY: RHV
DATE: MARCH 2020
SCALE: AS SHOWN
W.O. NO.: 12-05

15 SHEET OF 23

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
DATE: 11/28/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 12-2-20

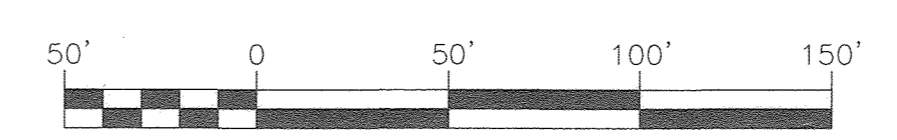
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 12/10/20

DEVELOPER'S/BUILDER'S CERTIFICATE

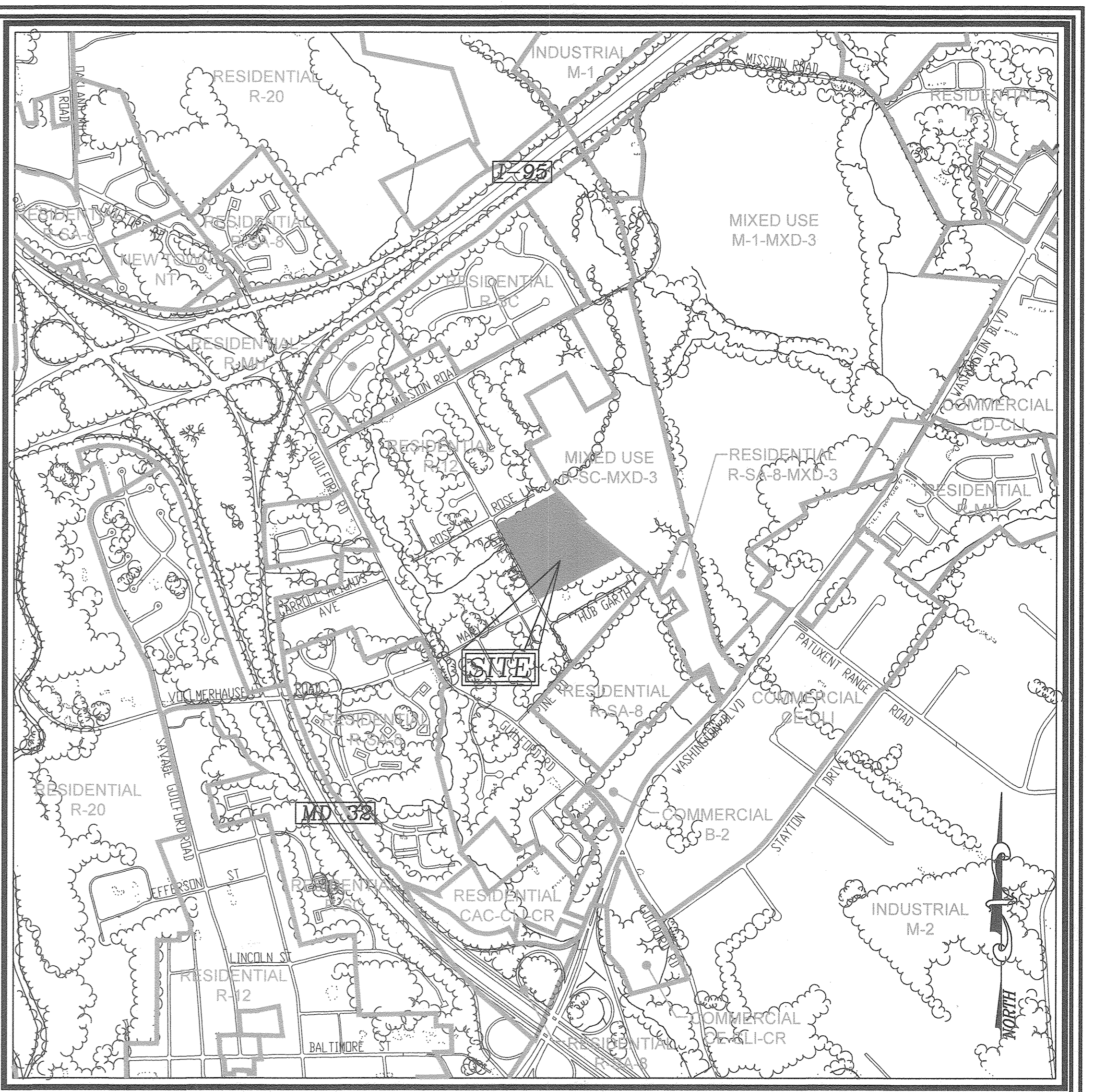
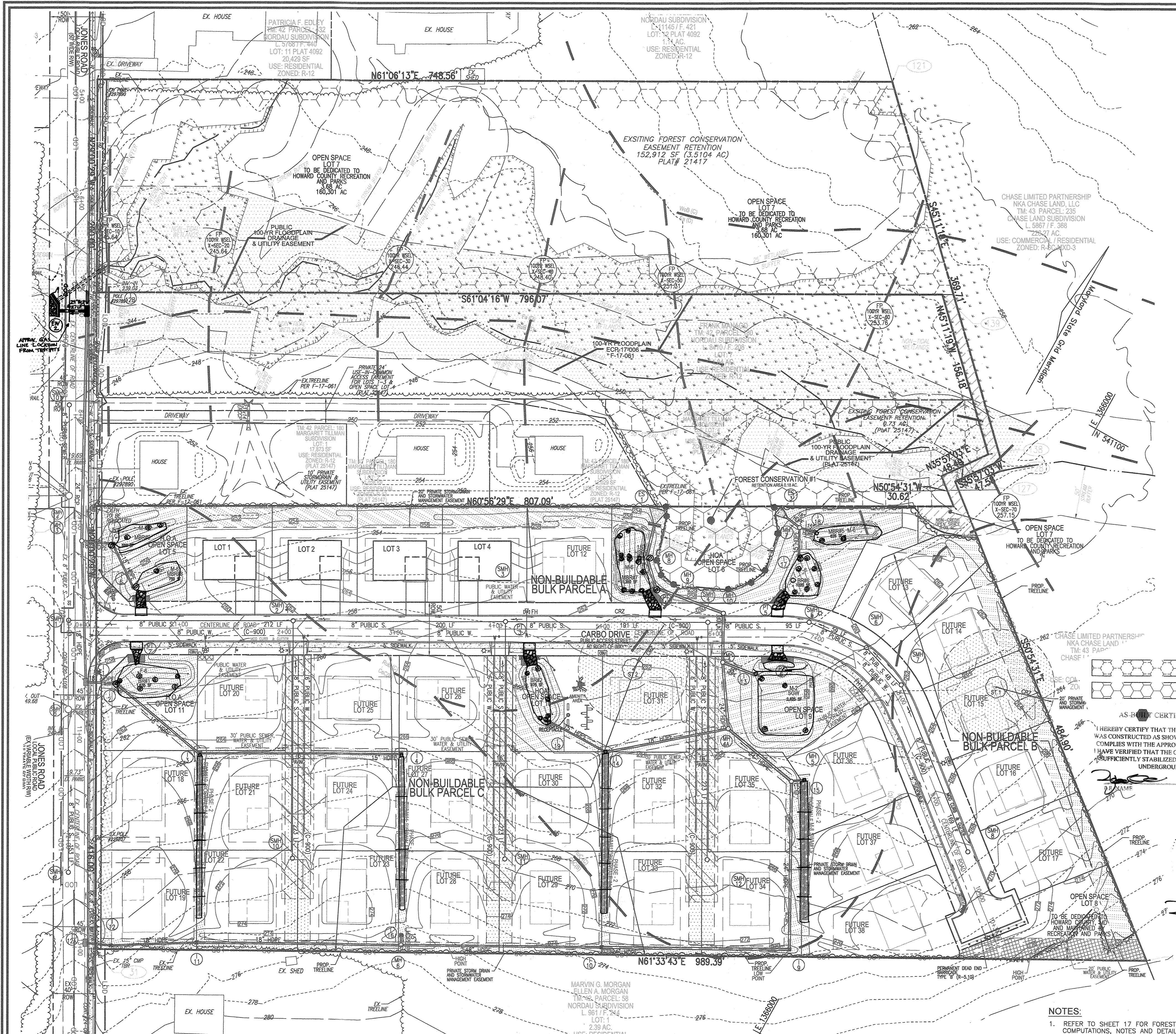
I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE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

DATE: 10/19/2020

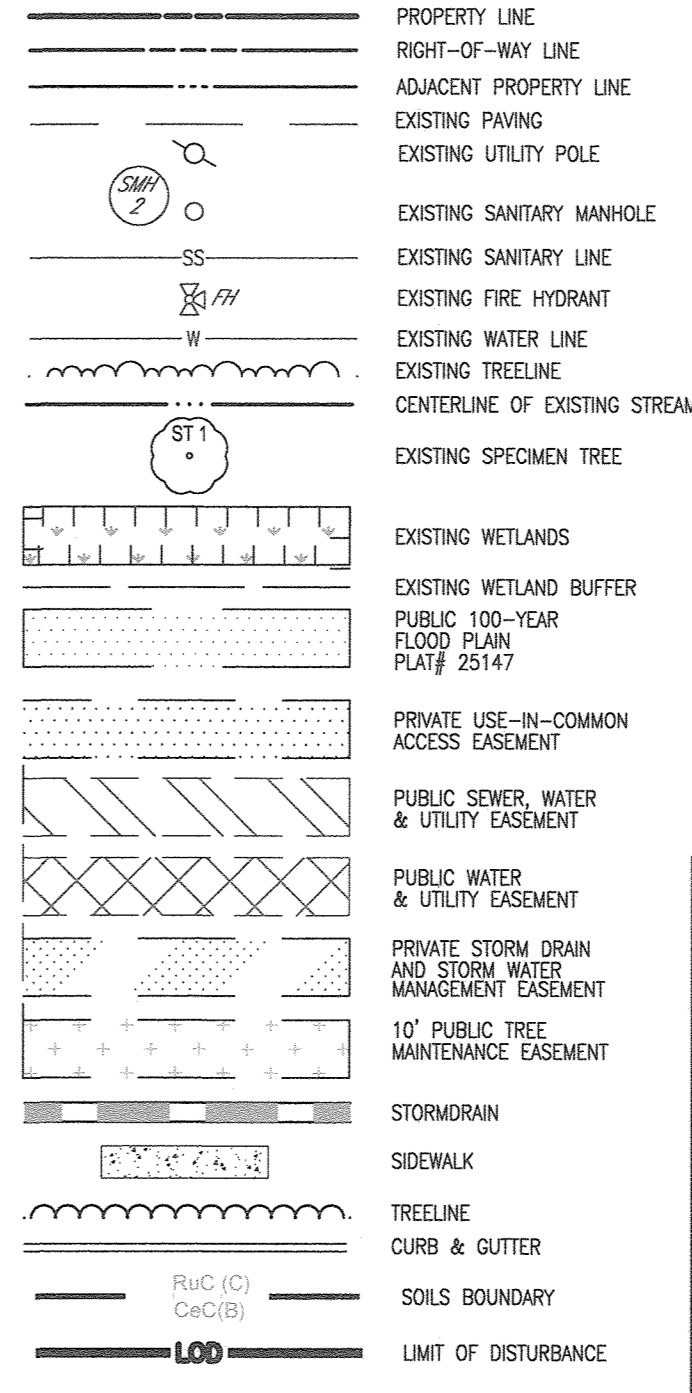
LANDSCAPE PLAN
SCALE: 1"=50'



AS-BUILT NOVEMBER 2023 F-19-051



LEGEND:

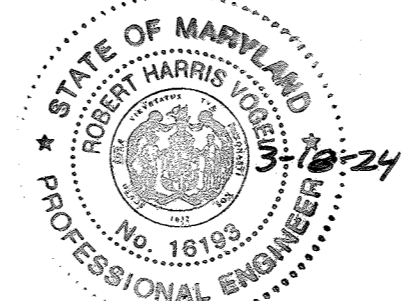


VICINITY MAP
SCALE: 1"=1,000'
ADC MAP COORDINATE: 41-A2

GENERAL NOTES

- WATERSHED NAME: LITTLE PATUXENT RIVER
WATERSHED NUMBER: 2131105
- A. GROSS SITE AREA (PROJECT SITE LOTS 2-4 & SR = 8.73): 8.73 AC.
 - +0.03 Connecting piece = L-16288 F.488 (WP-15-098) 8.76 AC. (PROJECT SITE)
 - +0.02 Connecting piece = L-16288 F.502 (WP-15-098) 8.78 AC.
 - + LOTS 8R & 9 = 3.57
 - NET SITE AREA (PROJECT SITE): 8.73 AC. (PROJECT SITE)
 - B. AREA OF 100-YR FLOODPLAIN: 0.84 AC. (PROJECT SITE)
 - C. AREA OF WETLANDS AND BUFFERS(ONSITE): 2.92 AC. (PROJECT SITE)
 - D. AREA OF STREAM AND BUFFERS(ONSITE): 1.37 AC. (PROJECT SITE)
 - E. AREA OF > 25% STEEP SLOPES: 0.00 AC.
 - F. EXISTING FOREST: 8.8 AC. (FSD)
 - G. ZONED: R-12 VACANT RESIDENTIAL
 - H. EXISTING USE: R-12 VACANT RESIDENTIAL
 - I. PROPOSED USE: R-12 VACANT RESIDENTIAL

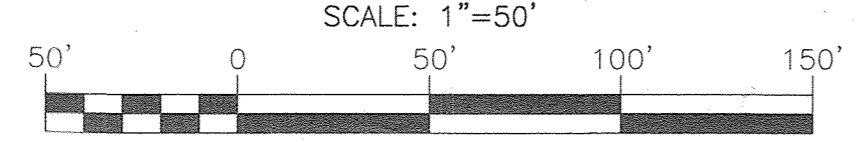
NO.	REVISION	DATE
2	REVISE THE PLAN TO RECONFIGURE STORM DRAIN OUTFALL TO AVOID CONFLICT WITH A GAS MAIN	12-14-21



NOTES:

- REFER TO SHEET 17 FOR FOREST CONSERVATION COMPUTATIONS, NOTES AND DETAILS.

FOREST CONSERVATION PLAN



Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
1430 GREENWOOD DRIVE, SUITE 100
COLUMBIA, MD 21046
TEL: 410-313-6316

ROBERT HARRIS
No. 18130
PROFESSIONAL ENGINEER

Forest Stand Data

Key	Community Type	Acres	Dominant Species	General Condition	Notes
F1	Mixed Oak	0.8	Quercus phellos, Quercus alba, Fagus grandifolia, Nyssa sylvatica	Good	8.8 acres, scattered trees, scattered forest

SPECIMEN TREE CHART

NO.	SIZE (DBH)	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 1	36.5"	34.75'	AMERICAN BEECH	GOOD CONDITION	TO BE REMOVED
ST 2	34.5"	31.75'	WHITE OAK	POOR CONDITION	TO BE REMOVED

SOILS LEGEND
HOWARD COUNTY SOILS MAP #24

SYMBOL	NAME / DESCRIPTION	HYDROLOGIC GROUP	K FACTOR	45% BUREAU OF SOILS
CuC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	NO	B 0.43	YES
RuB	RUSSETT AND BELTSVILLE SOILS, 2 TO 5 PERCENT SLOPES	NO	C 0.43	NO
RuC	RUSSETT AND BELTSVILLE SOILS, 5 TO 10 PERCENT SLOPES	NO	C 0.43	YES
Fa	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	YES	D 0.24	NO
WoB	WOODSTOWN SANDY LOAM, 2 TO 5 PERCENT SLOPES	NO	C 0.32	NO
CvD	CROOM AND EVERSON SOILS, 10 TO 15 PERCENT SLOPES	NO	C 0.37	YES
EdC	EVERSON LOAMY SAND, 2 TO 10 PERCENT SLOPES	NO	A 0.15	NO

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS
DATE: 11/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 12/2/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 12/10/20

OWNER/DEVELOPER
HOWARD COUNTY HOUSING COMMISSION
9770 PATUXENT WOODS DR., SUITE 100
COLUMBIA, MD 21046
ATTN: PETER ENGEL
(410) 313-6316

- NO RARE, THREATENED OR ENDANGERED SPECIES OR THEIR HABITAT WERE OBSERVED ON THE PROPERTY.
- SURROUNDING LAND USE IS HIGH DENSITY RESIDENTIAL DEVELOPMENT AND FOREST. THE ADJACENT PROPERTY IS CURRENTLY UNDEVELOPED BUT IS BEING PROPOSED FOR DEVELOPMENT.
- APPROXIMATELY 5.2 ACRES OF FOREST IS CURRENTLY PRESENT WITHIN 100 FEET OF THE SUBJECT PROPERTY. SOME OF THIS OFFSITE FOREST WILL BE IMPACTED BY DEVELOPMENT OF ADJACENT PROPERTY. THE SITE LIES WITHIN THE WATERSHED OF THE LITTLE PATUXENT RIVER (02-13-11). THE WETLANDS WILL REQUIRE A 25 FOOT BUFFER AND THE INTERMITTENT STREAM CHANNEL REQUIRES A 50 FOOT BUFFER.
- NO HISTORIC ELEMENTS OR CELEBRITIES ARE KNOWN TO OCCUR ON THIS PROPERTY.
- THERE IS A 100 YEAR FLOODPLAIN PRESENT ON THE PROPERTY.
- THERE ARE NO STEEP SLOPES PRESENT ON THE PROPERTY.

NOTE: THE DEVELOPER SHALL PLANT FOUR 2-1/2" MINIMUM CALIPER WHITE SHADE TREES IN ADDITION TO THE REQUIRED PERMETER LANDSCAPING TO MITIGATE THE REMOVAL OF THE TWO SPECIMEN TREES. PER WP-18-015 APPROVED ON AUGUST 30, 2017, THE ADDITIONAL TREES ON ALL FUTURE SUBSEQUENT PLANS WILL BE INCLUDED. THESE TREES WILL BE SPACED ALONG WITH THE REQUIRED PERMETER LANDSCAPING AS PART OF THE FINAL SUBDIVISION PLAN.

FINAL ROAD CONSTRUCTION PLAN
FOREST CONSERVATION PLAN
GREENWOOD VILLAGE - PHASE 1
LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C
AND OPEN SPACE LOTS 5-11
A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
LOTS 2-4 (P.B. 3/51), SR (L16228 F.488), BR (L16228 F.502) AND 9 (P.B. 3/51)

TAX MAP: 42 GRID: 24
6TH ELECTION DISTRICT

PARCEL: 136 & 138-140
HOWARD COUNTY, MARYLAND

ZONED: R-12

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

TIMMONS GROUP
161615
PROFESSIONAL ENGINEER

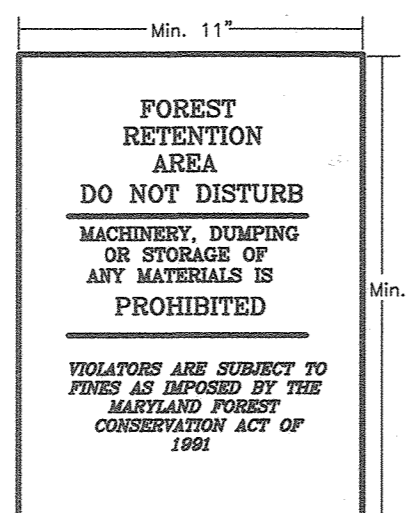
DESIGN BY: RHV
DRAWN BY: VETG
CHECKED BY: RHV
DATE: MARCH 2020
SCALE: AS SHOWN
W.O. NO.: 12-05

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
EXPIRATION DATE: 09-27-2026

16 SHEET OF 23

HOWARD COUNTY FOREST CONSERVATION WORKSHEET

ZONED R-12 NET TRACT AREA: A. TOTAL TRACT AREA 8.78 AC. B. AREA WITHIN 100 YEAR FLOODPLAIN 0.03 AC. C. AREA TO REMAIN IN AGRICULTURAL PRESERVATION 0.00 AC. D. NET TRACT AREA 8.75 AC. LAND USE CATEGORY: ARA MDR IDA HDR MPD CIA 0 0 0 1 0 0. AFFOREST THRESHOLD 15% x 8.75 = 1.31 AC. F. CONSERVATION THRESHOLD 20% x 8.75 = 1.75 AC. EXISTING FOREST COVER: G. EXISTING FOREST COVER (EXCLUDING FLOODPLAIN) = 8.75 AC. H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD = 7.44 AC. I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD = 7.00 AC. BREAK EVEN POINT: (2 X 1) + F = BREAK EVEN POINT (0 AC). J. FOREST RETENTION ABOVE THRESHOLD W/ NO MITIGATION = 3.15 AC. K. CLEARING PERMITTED WITHOUT MITIGATION = 5.60 AC. PROPOSED FOREST CLEARING: L. TOTAL AREA OF FOREST TO BE CLEARED = 8.57 AC. M. TOTAL AREA OF FOREST TO BE RETAINED = 0.18 AC. PLANTING REQUIREMENTS: N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD (L X 25) = 1.75 AC. P. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD = 3.14 AC. Q. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD (M-F) = 0.00 AC. R. TOTAL REFORESTATION REQUIRED (N+P-Q) = 4.89 AC. S. TOTAL AFFORESTATION REQUIRED = 0.00 AC. T. TOTAL PLANTING REQUIREMENT (REFORESTATION AND AFFORESTATION) = 4.89 AC.



- GENERAL NOTES: 1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF \$13,200 FOR THE REQUIRED LANDSCAPING SHALL BE POSTED WITH THE FINAL PLAN DEVELOPERS AGREEMENT. A. 40 SHADE TREES @ \$300 = \$12,000 B. 4 SHADE TREES / SPECIMEN TREE REPLACEMENT @ \$300 = \$1,200 2. PUBLIC STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY (\$ 18,900) SHALL BE COLLECTED WITH THE DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 63 STREET TREES. (52 LARGE AND 11 SMALL STREET TREES) -TRASH PAD PLANTINGS ARE PROVIDED FOR THIS PROJECTS USE-IN-COMMON DRIVEWAYS. FINANCIAL SURETY (\$ 360) SHALL BE COLLECTED WITH THE DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 12 SHRUBS. 3. IN A REPORT/TITLE "WETLAND DELINEATION & FOREST STAND DELINEATION REPORT" PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. DATED DECEMBER 16, 2018 MR. JOHN CAGLES IDENTIFIED THE ON-SITE FOREST, WETLANDS, AND STREAMS. -MR. CAGLES IDENTIFIED TWO (2) SPECIMEN TREES PER PROJECT PROPOSAL AND THIS PROJECT BEING SUBJECT TO WP-18-015 THE TREES SHALL BE REMOVED AND REPLACED WITH FOUR SHADE TREES. 4. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN. 5. SIGN LOCATION SYMBOL =

FOREST CONSERVATION AREA SIGNS

IF NOT INSTALLED, PROVIDE SIGNAGE AROUND THE NORDUM SUBDIVISION - SECTION E-4, LOTS 8 & 9 (PLAT 21417) FOREST BANK.

GENERAL NOTES:

- 1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF \$13,200 FOR THE REQUIRED LANDSCAPING SHALL BE POSTED WITH THE FINAL PLAN DEVELOPERS AGREEMENT. A. 40 SHADE TREES @ \$300 = \$12,000 B. 4 SHADE TREES / SPECIMEN TREE REPLACEMENT @ \$300 = \$1,200 2. PUBLIC STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY (\$ 18,900) SHALL BE COLLECTED WITH THE DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 63 STREET TREES. (52 LARGE AND 11 SMALL STREET TREES) -TRASH PAD PLANTINGS ARE PROVIDED FOR THIS PROJECTS USE-IN-COMMON DRIVEWAYS. FINANCIAL SURETY (\$ 360) SHALL BE COLLECTED WITH THE DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 12 SHRUBS. 3. IN A REPORT/TITLE "WETLAND DELINEATION & FOREST STAND DELINEATION REPORT" PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. DATED DECEMBER 16, 2018 MR. JOHN CAGLES IDENTIFIED THE ON-SITE FOREST, WETLANDS, AND STREAMS. -MR. CAGLES IDENTIFIED TWO (2) SPECIMEN TREES PER PROJECT PROPOSAL AND THIS PROJECT BEING SUBJECT TO WP-18-015 THE TREES SHALL BE REMOVED AND REPLACED WITH FOUR SHADE TREES. 4. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN. 5. SIGN LOCATION SYMBOL =

STREET TREE CALCULATIONS table with columns: STREET NAME, LINEAR FEET, NO. REQUIRED, NO. PROVIDED. Rows include CARBO DRIVE (2070/40, 52, 52) and JONES ROAD (330/30, 11, 11).

STREET TREE PLANTING SCHEDULE table with columns: SYM, KEY, QUAN., BOTANICAL NAME, SIZE, CAT. Rows include ZS (32 Zelkova serrata), GT (20 Gleditsia triacanthos), ER(1) (6 Eastern redbud), and AM(1) (5 Amur maple).

NOTE: WITH PERMISSION FROM HOWARD COUNTY, PLANTINGS SPECIFIED HEREON MAY BE SUBSTITUTED WITH APPROVED SPECIES LISTED IN APPENDIX B & C OF THE HOWARD COUNTY LANDSCAPE MANUAL. (1) BGE COMPLIANT

STREET TREE NOTES:

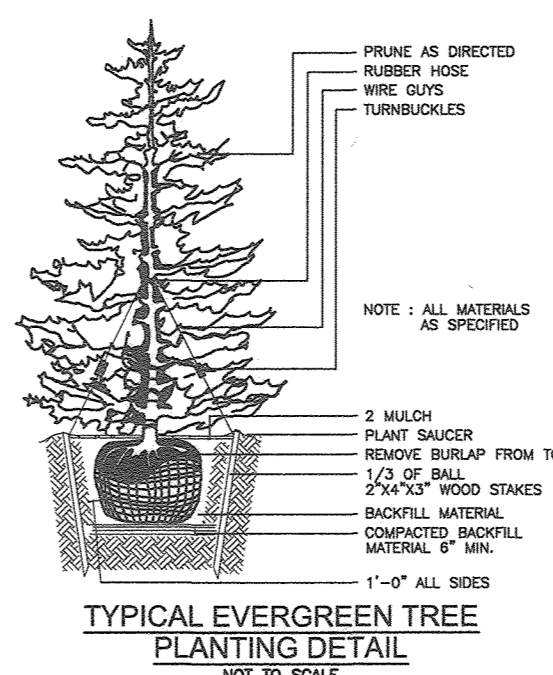
- 1. WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS 6 FEET OR GREATER, TREES SHALL BE LOCATED WITHIN THE RIGHT OF WAY AND SHALL BE CENTERED BETWEEN THE CURB AND THE SIDEWALK. 2. WHEN THE DISTANCE BETWEEN THE CURB AND THE SIDEWALK IS LESS THAN 6 FEET, AND WHERE TREES ARE PLANTED CLOSER THAN 3 FEET TO THE SIDEWALK, A BIOLOGIC ROOT INHIBITOR BARRIER OR PHYSICAL CONTAINER BARRIER SHALL BE REQUIRED. 3. WHEN THE DISTANCE BETWEEN THE CURB AND THE SIDEWALK IS LESS THAN 6 FEET, TREES MAY BE PLANTED 3 FEET FROM THE SIDEWALK IN THE DIRECTION AWAY FROM THE ROAD. A 10 FOOT WIDE TREE MAINTENANCE EASEMENT SHALL BE REQUIRED IF THE RIGHT OF WAY IS LIMITED. 4. TREES SHALL BE PLACED A MINIMUM OF 30 FEET FROM ALL SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB, AND BE LOCATED WITH CONSIDERATION OF UNDERGROUND UTILITIES AND STRUCTURES. STREET TREES MAY NOT BE PLANTED WITHIN 5 FEET OF A DRAIN INLET STRUCTURE, 5 FEET OF AN OPEN SPACE ACCESS STRIP, OR 10 FEET OF A DRIVEWAY.

TRASH PAD LANDSCAPING table with columns: SYMBOL, QTY., DESCRIPTION, SIZE, REMARKS. Row includes 12 Taxus cuspidata 'NANA' Dwarf Japanese Yew, 18"-24" spread, B & B.

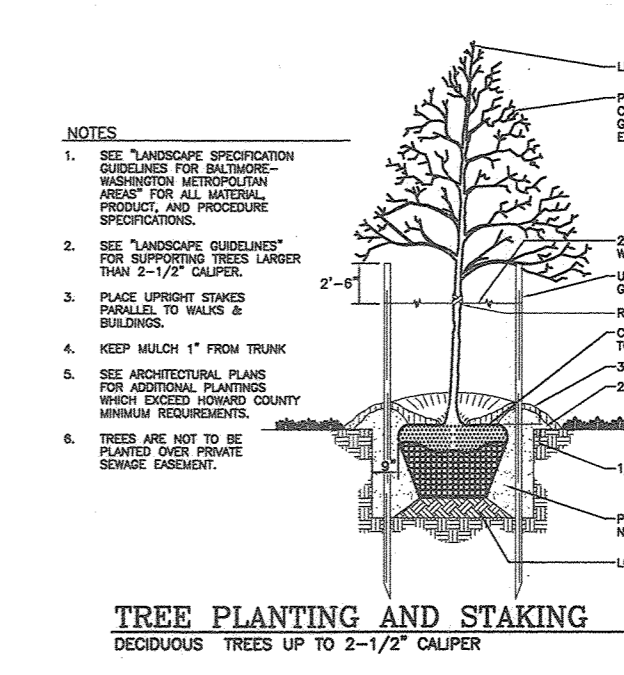
-THE TOTAL SURETY OF \$360 FOR THE SHRUBS SHALL BE POSTED WITH THIS PLAN. TRASH PAD REQUIRED AT CARBO DRIVE STATION 2+24.89 - 18.1' RT STATION 4+14.88 - 18.1' RT STATION 6+05.40 - 18.1' RT - MAX HEIGHT OF SHRUBS SHALL BE MAINTAINED TO A HEIGHT OF 18" TO ENSURE ADEQUATE SIGHT DISTANCE

LANDSCAPE NOTES

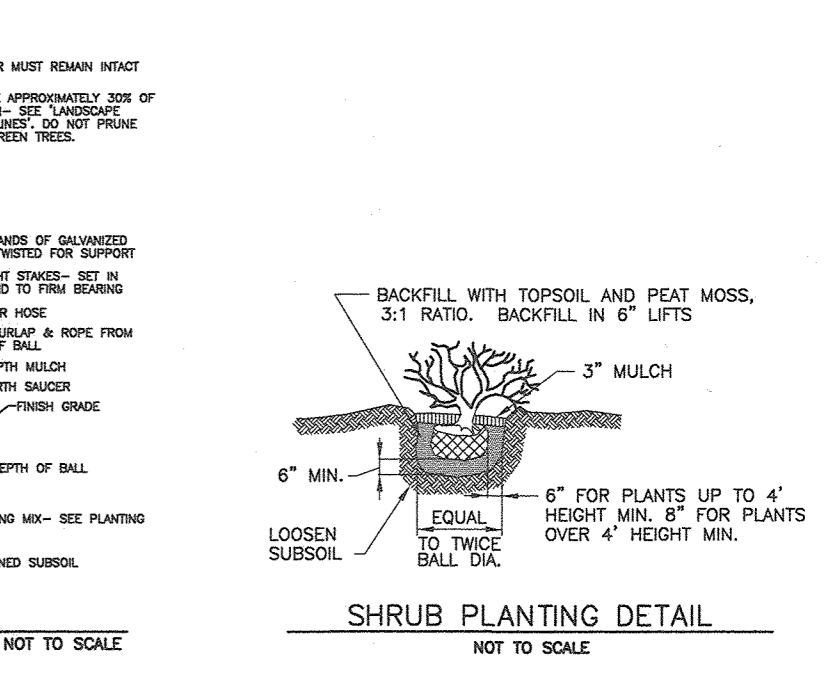
- 1. AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR 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. 2. THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BEMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED. 3. SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD, AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL. 4. PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN. 5. SURETY FOR THE PROPOSED LANDSCAPING SHALL BE BASED ON THE NUMBER OF PLANTINGS REQUIRED.



TYPICAL EVERGREEN TREE PLANTING DETAIL NOT TO SCALE



TREE PLANTING AND STAKING NOT TO SCALE



SHRUB PLANTING DETAIL NOT TO SCALE

SCHEDULE A PERIMETER LANDSCAPE EDGE table with columns: CATEGORY, ADJACENT TO PERIMETER AND ROADWAYS (1A, 1B, 1C, 2, 3, 4), TOTAL. Rows include PERIMETER/FRONTAGE DESIGNATION, LANDSCAPE TYPE, LINEAR FEET OF ROADWAY, FRONTAGE/PERIMETER, CREDIT FOR EXISTING VEGETATION, CREDIT FOR WALL, FENCE OR BERM, NUMBER OF PLANTS REQUIRED, SHADE TREES, EVERGREEN TREES, SHRUBS, CREDIT FOR EX. INDIVIDUAL TREES, NUMBER OF PLANTS PROVIDED, SHADE TREES, EVERGREEN TREES, OTHER TREES (2:1 SUBSTITUTION), SHRUBS (10:1 SUBSTITUTION).

PERIMETER LANDSCAPE SCHEDULE - REQUIRED PLANTING table with columns: SYM, KEY, QUAN., BOTANICAL NAME, SIZE, CAT. Rows include SHADE (HL 9 Gleditsia triacanthos, PD 27 Quercus palustris) and ORNAMENTAL (CM(1) 8 Lagerstromia indica).

NOTE: WITH PERMISSION FROM HOWARD COUNTY, PLANTINGS SPECIFIED HEREON MAY BE SUBSTITUTED WITH APPROVED SPECIES LISTED IN APPENDIX B & C OF THE HOWARD COUNTY LANDSCAPE MANUAL. (1) BGE COMPLIANT

LANDSCAPE SCHEDULE NOTE:

- 1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAM SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRD PLANTING SPECIFICATIONS. 2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING. 3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES. 4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

SEQUENCE OF CONSTRUCTION-FOREST CONSERVATION

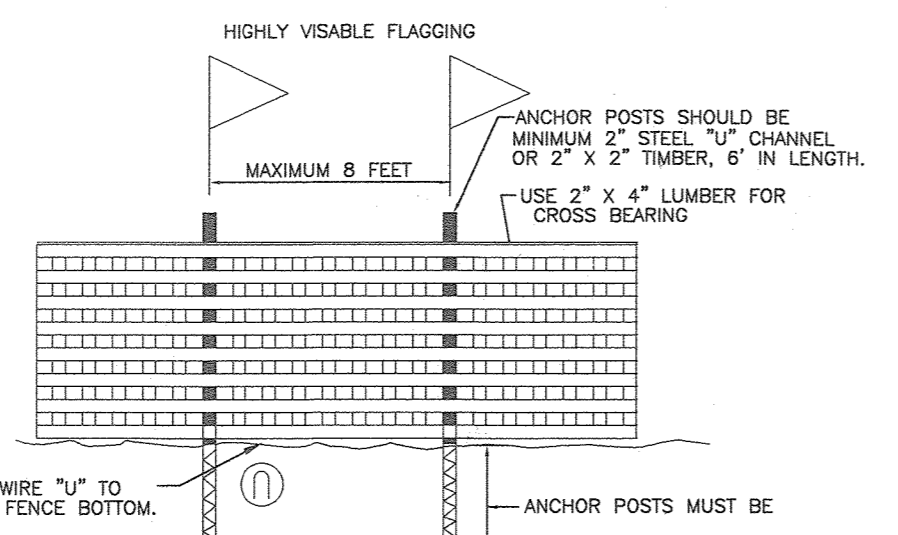
- 1. PRECONSTRUCTION MEETING /SITE WALK WITH CONTRACTORS AND OTHER RESPONSIBLE PARTIES TO DEFINE PROTECTION MEASURES TO BE UTILIZED AND TO POINT OUT PARTICULAR TREES TO BE SAVED. 2. STAKE OUT LIMITS OF DISTURBANCE AND TREE PROTECTION FENCING LOCATIONS. 3. INSTALL TREE PROTECTION FENCING TO BE INSPECTED BY THE PROJECT ENGINEER OR THE PROJECT ECOLOGIST AND HOWARD COUNTY. 4. PROCEED WITH TREE REMOVAL AND SITE IMPROVEMENTS AS PER APPROVED SEDIMENT CONTROL PLAN - TO BE INSPECTED BY HOWARD COUNTY. 5. TEMPORARY TREE PROTECTION DEVICES SHALL BE REMOVED AFTER ALL FINISHED GRADING AND UTILITY CONSTRUCTION HAS OCCURED AND WITH APPROVAL FROM HOWARD COUNTY.

FOREST RETENTION AREAS AND NOTES

- 1. THERE ARE WETLANDS OR WETLAND BUFFERS LOCATED ON-SITE. 2. NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THIS SITE. 3. FORESTED AREAS ADJACENT TO FLOODPLAINS AND STREAM BUFFERS ARE SUBSTANTIALLY RETAINED IN OPEN SPACE LOTS. 4. CHANGES IN GRADING AND RUNOFF WITHIN CONSTRUCTION/INSTALLATION AREAS WILL NOT ADVERSELY AFFECT THE SOILS WITHIN THE FOREST RETENTION AREA. SEDIMENT CONTROL MEASURES WILL REDIRECT CONCENTRATED FLOW RUNOFF TO STORMWATER MANAGEMENT FACILITIES, RETAIN SEDIMENT WITHIN THE CONSTRUCTION SITE, AND/OR REDIRECT CLEAN WATER AWAY FROM CONSTRUCTION AREAS. 5. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

CONSTRUCTION PERIOD PROTECTION AND MANAGEMENT NOTES FOR FOREST CONSERVATION

- PRE-CONSTRUCTION PHASE 1. FOR RETENTION AREAS, INSTALL BLAZE ORANGE FENCE AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS. 2. FENCING SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS. 3. A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNING TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION. CONSTRUCTION PHASE 1. NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA. 2. NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CANOPIES. 3. IN THE EVENT OF DROUGHT, THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED. POST-CONSTRUCTION PHASE 1. AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR. 2. FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN. 3. DO NOT REMOVE SIGNS.



BLAZE ORANGE PLASTIC MESH TYPICAL TREE PROTECTION FENCE DETAIL ANY SPECIMEN TREE DESIGNATED AS TO REMAIN AND LOCATED WITHIN THE LIMITS OF DISTURBANCE SHALL BE PROTECTED WITH BLAZE ORANGE TREE PROTECTION FENCING.

DPZ'S POLICIES GOVERNING THE PLACEMENT OF LANDSCAPING AND STREET TREES IN PROXIMITY TO BGE'S POWER LINES OR TRANSMISSION RIGHT-OF-WAY ARE BASED ON BGE'S PUBLISHED "PLANTING ZONE CONCEPT" WHICH STIPULATES THE MAXIMUM ALLOWABLE SIZE OF PLANT MATERIALS FOR THREE DEFINED ZONES. AS THE DISTANCE FROM BGE EQUIPMENT INCREASES, SO DOES THE SIZE OF THE ALLOWABLE PLANT MATERIALS. THESE THREE ZONES ARE DEFINED AS FOLLOWS: ZONE GREEN UP TO 20 FEET 25 FEET OF VEGETATION YELLOW BETWEEN 20 FEET AND 45 FEET 40 FEET RED BEYOND 45 FEET ABOVE 40 FEET

B & E NOTES:

- 1. BGE RESERVES THE RIGHT TO TRIM, TOP OR CUT DOWN ANY TREE IN PROXIMITY TO THE LINE THAT IN THE OPINION OF BGE SHALL BE DEEMED A HAZARD TO THE SAFE AND RELIABLE DELIVERY OF ELECTRICITY. 2. THE DEPARTMENT OF PLANNING AND ZONING MAY AUTHORIZE THE TRIMMING OR REMOVAL OF TREES OF VEGETATION IMMEDIATELY ADJACENT TO THE BGE R/W OR GASMAIN, IF BGE DETERMINES THE TREES ARE COMPROMISING THE SAFETY OF A TRANSMISSION LINE LOCATED WITHIN THEIR UTILITY R/W OR GASMAIN, IF BGE INTENDS TO TRIM OR REMOVE TREES WITHIN A FOREST CONSERVATION EASEMENT, A LETTER SPECIFYING THE LOCATION AND SCOPE OF WORK NEEDS TO BE SENT TO DPZ AT LEAST 30 DAYS IN ADVANCE OF UNDERTAKING THE WORK. DPZ UNDERTAKING CONSTRUCTION ENDORS NEED TO PROTECT TRANSMISSION LINES AND WILL NOT UNREASONABLE WITHHOLD PERMISSION. 3. CALL MISS UTILITY TO MARK UP THE LOCATION OF EXISTING GAS LINE BEFORE PLANTING STREET TREES ALONG JONES ROAD & PLANT STREET TREES TYPICAL FROM EXISTING GASLINE AS REQUIRED.

AS-BUILT CERTIFICATION FOR PSWM I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY. NAME: [Signature] PE.#: 16193 DATE: 3/18/24



OWNER/DEVELOPER HOWARD COUNTY HOUSING COMMISSION 9770 PATIENT WOODS DR., SUITE 100 COLUMBIA, MD 21046 ATTN: PETER ENGEL (410) 313-6316

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS [Signature] 11/23/20 DATE CHIEF, BUREAU OF HIGHWAYS APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING [Signature] 12-2-20 DATE CHIEF, DEVELOPMENT ENGINEERING DIVISION APPROVED: [Signature] 12/10/20 DATE CHIEF, DIVISION OF LAND DEVELOPMENT

DEVELOPER'S/BUILDER'S CERTIFICATE I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING. [Signature] 10/19/2020 DATE SIGNATURE OF DEVELOPER

SPECIMEN TREE CHART table with columns: NO., SIZE, CRZ, COMMON NAME, CONDITION, COMMENTS. Rows include American Beech and White Oak.

NOTE: THE DEVELOPER SHALL PLANT FOUR 2-1/2" MINIMUM CALIPER NATIVE SHADE TREES IN ADDITION TO THE REQUIRED PERIMETER LANDSCAPING TO MITIGATE THE REMOVAL OF THE TWO SPECIMEN TREES. PER WP-18-015 APPROVED ON AUGUST 30, 2017, THE ADDITIONAL TREES ON ALL FUTURE SUBSEQUENT PLANS WILL BE INCLUDED. THESE TREES WILL BE BONDED ALONG WITH THE REQUIRED PERIMETER LANDSCAPING AS PART OF THE FINAL SUBDIVISION PLAN.

SPECIMEN TREE - REPLACEMENT CALCULATIONS table with columns: NO. TO BE REMOVED, NO. REPLACEMENT REQUIRED, NO. PROVIDED. Row shows 2 to be removed, 4 replacement required, 4 provided, 2-1/2" CAL.

REFER TO WP-18-015 - 2-1/2" CALIPER NATIVE SHADE TREES REQUIRED SEE SHEET 1 GENERAL NOTE 44

SPECIMEN TREE REPLACEMENT - PLANTING SCHEDULE table with columns: SYM, KEY, QUAN., BOTANICAL NAME, SIZE, CAT. Rows include WO (2 Quercus bicolor) and AB (2 Acer rubrum).

NOTE: -REPLACEMENT TREES REQUIRED PER THE APPROVED REMOVAL OF 2 SPECIMEN TREES REFER TO WP-18-015. -THE TOTAL SURETY OF \$1,200 FOR THE SPECIMEN TREE REPLACEMENT SHALL BE POSTED WITH THIS PLAN.

FINAL ROAD CONSTRUCTION PLAN LANDSCAPE & FOREST CONSERVATION PLAN - NOTES AND DETAILS GREENWOOD VILLAGE - PHASE 1 LOTS 1-4, NON BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11 A RE-SUBDIVISION OF THE "NORDUM SUBDIVISION" - SECTION E-4 LOTS 2-4 (P.B. 3/5/11), 5R (L16288 F.488), 8R (L16288 F.502) AND 9 (P.B. 3/5/11) TAX MAP: 42 GRID: 24 6TH ELECTION DISTRICT ZONED: R-12 PARCEL: 136 & 138-140 HOWARD COUNTY, MARYLAND VOGEL ENGINEERING TIMMONS GROUP 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043 P: 410.461.7666 F: 410.461.8961 www.timmons.com PROFESSIONAL CERTIFICATE I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2020 DESIGN BY: RHY DRAWN BY: VETG CHECKED BY: RHY DATE: MARCH 2020 SCALE: AS SHOWN W.O. NO.: 12-05 17 SHEET OF 23



ONLOT STORMWATER MANAGEMENT PRACTICE CHART	
LOT #/ADDRESS	FACILITY TYPE
1 8701 CARBO DRIVE	PERMEABLE PAVEMENT (A-2), DRYWELL (M-5)
2 8705 CARBO DRIVE	PERMEABLE PAVEMENT (A-2)
3 8709 CARBO DRIVE	PERMEABLE PAVEMENT (A-2)
4 8713 CARBO DRIVE	PERMEABLE PAVEMENT (A-2)

*REFER TO DETAIL SHEET 19

LEGEND:

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING PAVING
	EXISTING UTILITY POLE
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	EXISTING TREELINE
	CENTERLINE OF EXISTING STREAM
	EXISTING SPECIMEN TREE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	PUBLIC 100-YEAR FLOOD PLAIN PLAT#25147
	EXISTING FOREST CONSERVATION EASEMENT (RETENTION - PLAT 21417, 25147)
	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
	PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
	PROP. PUBLIC WATER & UTILITY EASEMENT
	PUBLIC DRAINAGE & UTILITY EASEMENT
	PRIVATE STORM DRAIN & UTILITY EASEMENT
	PROPOSED STORM DRAIN
	PROPOSED SIDEWALK
	PROPOSED TREELINE
	PROPOSED CURB
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	PROPOSED MICRO-BIORETENTION FACILITY (M-6) OR BIOSWALE (M-8)
	DRAINAGE AREA DIVIDE
	PROPOSED DRY WELL (M-5)
	PERMEABLE PAVEMENT (A-2)
	DRAINAGE AREA
	STORMWATER MANAGEMENT TEST PIT

"LOT 1 DRY WELLS AND AN ALTERNATIVE SURFACE DRIVEWAY ARE PROPOSED TO MEET ESD STORMWATER REQUIREMENTS. A DECLARATION OF COVENANTS SHALL BE RECORDED FOR PROPERTY OWNER MAINTENANCE. FAILURE TO INSTALL OR MAINTAIN THESE FACILITIES MAY RESULT IN THE LOSS OF STORMWATER MANAGEMENT APPROVAL." A FUTURE SITE DEVELOPMENT PLAN WILL PROVIDE FURTHER DETAILS FOR CONSTRUCTION.

"LOTS 2 - 4 ALTERNATIVE SURFACE DRIVEWAYS ARE PROPOSED TO MEET A PORTION OF THE ESD STORMWATER REQUIREMENTS. A DECLARATION OF COVENANTS SHALL BE RECORDED FOR PROPERTY OWNER MAINTENANCE. FAILURE TO INSTALL OR MAINTAIN THESE FACILITIES MAY RESULT IN THE LOSS OF STORMWATER MANAGEMENT APPROVAL." A FUTURE SITE DEVELOPMENT PLAN WILL PROVIDE FURTHER DETAILS FOR CONSTRUCTION.

"FUTURE F-19-052 LOTS 14-29, 37 AND 38 HAVE DRY WELLS AND/OR ALTERNATIVE SURFACE DRIVEWAYS ARE PROPOSED TO MEET ESD STORMWATER REQUIREMENTS. A DECLARATION OF COVENANTS SHALL BE RECORDED FOR PROPERTY OWNER MAINTENANCE. FAILURE TO INSTALL OR MAINTAIN THESE FACILITIES MAY RESULT IN THE LOSS OF STORMWATER MANAGEMENT APPROVAL." A FUTURE SITE DEVELOPMENT PLAN WILL PROVIDE FURTHER DETAILS FOR CONSTRUCTION.

NOTE: REFER TO SHEET 22 FOR MICRO-BIORETENTION CONSTRUCTION / PLANTING DETAILING AS WELL AS AFB UNDERDRAIN / OVERFLOW PIPE NETWORK DETAILS.

NOTE: STORMWATER MANAGEMENT BIOSWALES ARE PROPOSED AT THE REAR OF FUTURE LOTS 18-22, 23 & 24, 29 & 30 AND 34 & 35. THESE FACILITIES SHALL BE CONSTRUCTED UNDER A FUTURE SITE DEVELOPMENT PLAN.

SOILS LEGEND
HOWARD COUNTY SOILS MAP #24

SYMBOL	NAME / DESCRIPTION	HYDROIC GROUP	FACTOR	CISE SCORE	PERCENT
Cec	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	NO	B	0.43	NO
RuB	RUSSETT AND BELTSVILLE SOILS, 2 TO 5 PERCENT SLOPES	NO	C	0.43	NO
RuC	RUSSETT AND BELTSVILLE SOILS, 5 TO 10 PERCENT SLOPES	NO	C	0.43	YES
Fs	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	YES	D	0.24	NO
Wcb	WOODSTOWN SANDY LOAM, 2 TO 5 PERCENT SLOPES	YES	C	0.32	NO
Crd	CROOM AND EVESBORO SOILS, 10 TO 15 PERCENT SLOPES	NO	C	0.37	YES
Ebc	EVESBORO LOAMY SAND, 2 TO 10 PERCENT SLOPES	NO	A	0.15	NO

NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL CROCODILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.
K-FACTOR = $K_w \theta^2$ 0'-4" DEPTH

OWNER/DEVELOPER
HOWARD COUNTY HOUSING COMMISSION
9770 PATUKENT WOODS DR., SUITE 100
COLUMBIA, MD 21046
ATTN: PETER ENGEL
(410) 313-6316

NO.	REVISION	DATE
2	REVISE THE PLAN TO RECONFIGURE STORM DRAIN OUTFALL TO AVOID CONFLICT WITH A GAS MAIN	12-14-21

FINAL ROAD CONSTRUCTION PLAN
ESDv STORMWATER MANAGEMENT
DRAINAGE AREA MAP
GREENWOOD VILLAGE - PHASE 1
LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C
AND OPEN SPACE LOTS 5-11
A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
LOTS 2-4 (P.B. 3/1), SR (L.16288 F.488), BR (L.16288 F.502) AND 9 (P.B. 3/1)

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

DESIGN BY: RHV	CHECKED BY: RHV	DATE: MARCH 2020	SCALE: AS SHOWN	W.O. NO.: 12-05
<p>PROFESSIONAL CERTIFICATE</p> <p>STATE OF MARYLAND ROBERT HARRIS VOGEL REGISTERED PROFESSIONAL ENGINEER No. 16193</p>				
<p>HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 09-27-2026</p>				
18 SHEET OF 23				

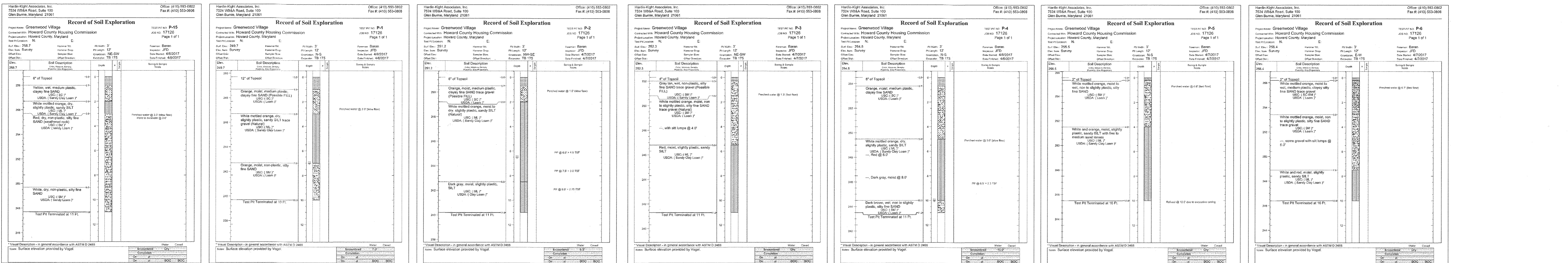
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature]
CHIEF, BUREAU OF HIGHWAYS
DATE: 11/23/20

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature]
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 12-2-20

[Signature]
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 12/10/20

ESDv SWM DAM
SCALE: 1"=50'

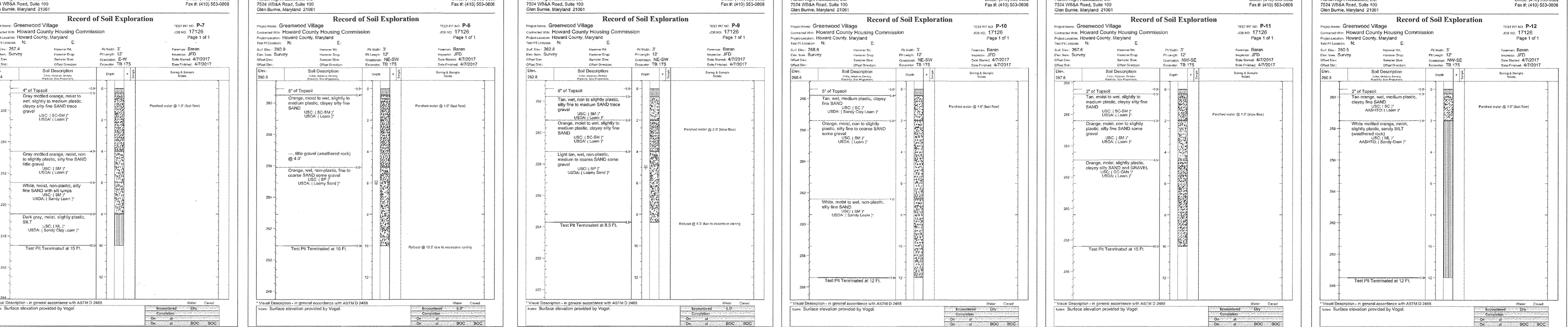
TEST PIT LOGS



ON-LOT DRYWELL - DESIGN ELEVATION CHART

SWM DA	DW LOT	DW LOCATION	NUMBER OF DW'S	PROP GRADE*	TOP STONE*	INV STONE*	SURFACE SIZE (1) FT X FT	STONE DEPTH FT	SAND DEPTH FT
A	"FUT" 18	R	1	269.35	268.35	263.35	7X7	5	1
B	"FUT" 19	R	1	265.50	264.50	260.50	5X10	4	1
C	"FUT" 21	R	1	270.70	269.70	265.70	5X10	4	1
D	"FUT" 23	R	1	272.25	271.25	267.25	5X10	4	1
E	"FUT" 26	F	1	264.00	263.00	258.00	7X7	5	1
F	"FUT" 27	F	1	267.30	266.30	261.30	7X7	5	1
G	"FUT" 28	F	1	271.00	270.00	265.00	7X7	5	1
H	"FUT" 29	F	1	271.00	270.00	265.00	7X7	5	1
I	"FUT" 30	F	1	269.30	268.30	263.30	5X10	4	1
J	"FUT" 31	R	1	261.00	260.00	256.00	5X10	4	1
K	"FUT" 32	R	1	264.00	263.00	259.00	5X10	4	1
L	"FUT" 33	R	1	266.40	265.40	261.40	5X10	4	1
M	"FUT" 34	R	1	268.30	267.30	263.30	5X10	4	1
N	"FUT" 35	R	1	262.00	261.00	257.00	5X10	4	1
O	"FUT" 36	R	1	264.00	263.00	259.00	5X10	4	1
P	"FUT" 37	R	1	266.40	265.40	261.40	5X10	4	1
Q	"FUT" 38	R	1	268.30	267.30	263.30	5X10	4	1
R	"FUT" 39	R	1	262.00	261.00	257.00	5X10	4	1
S	"FUT" 40	R	1	264.00	263.00	259.00	5X10	4	1
T	"FUT" 41	R	1	266.40	265.40	261.40	5X10	4	1
U	"FUT" 42	R	1	268.30	267.30	263.30	5X10	4	1
V	"FUT" 43	R	1	262.00	261.00	257.00	5X10	4	1
W	"FUT" 44	R	1	264.00	263.00	259.00	5X10	4	1
X	"FUT" 45	R	1	266.40	265.40	261.40	5X10	4	1
Y	"FUT" 46	R	1	268.30	267.30	263.30	5X10	4	1
Z	"FUT" 47	R	1	262.00	261.00	257.00	5X10	4	1

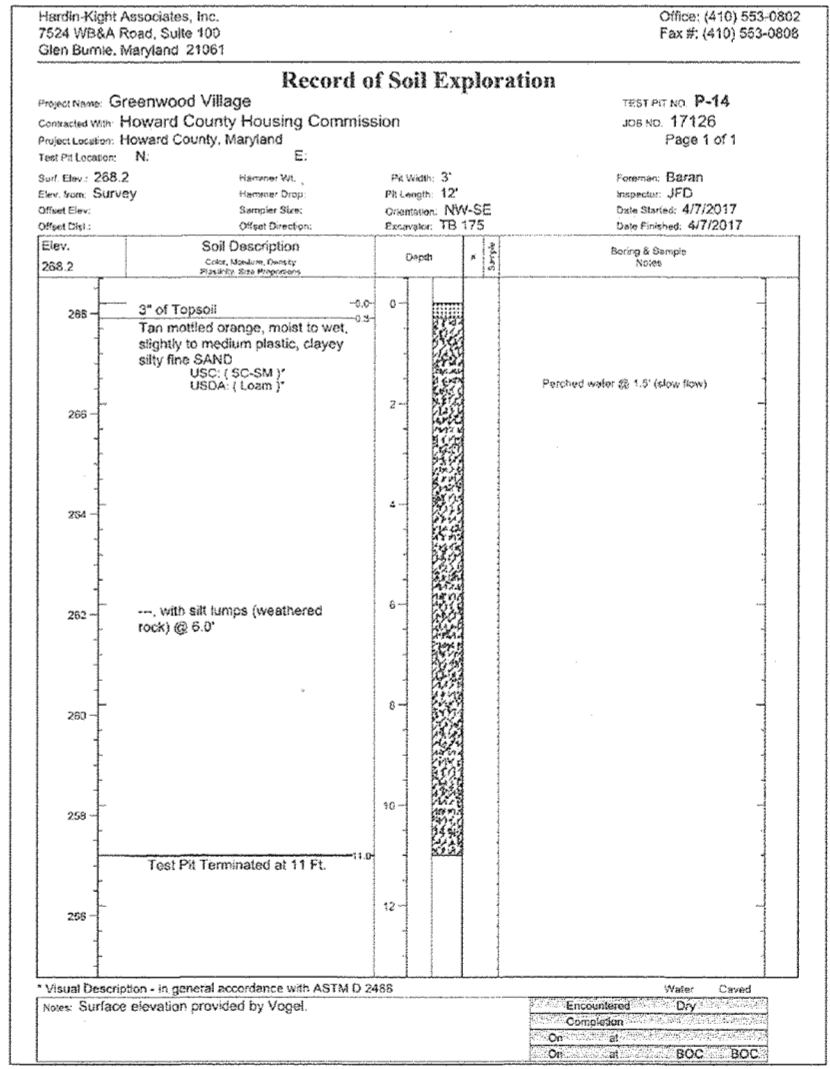
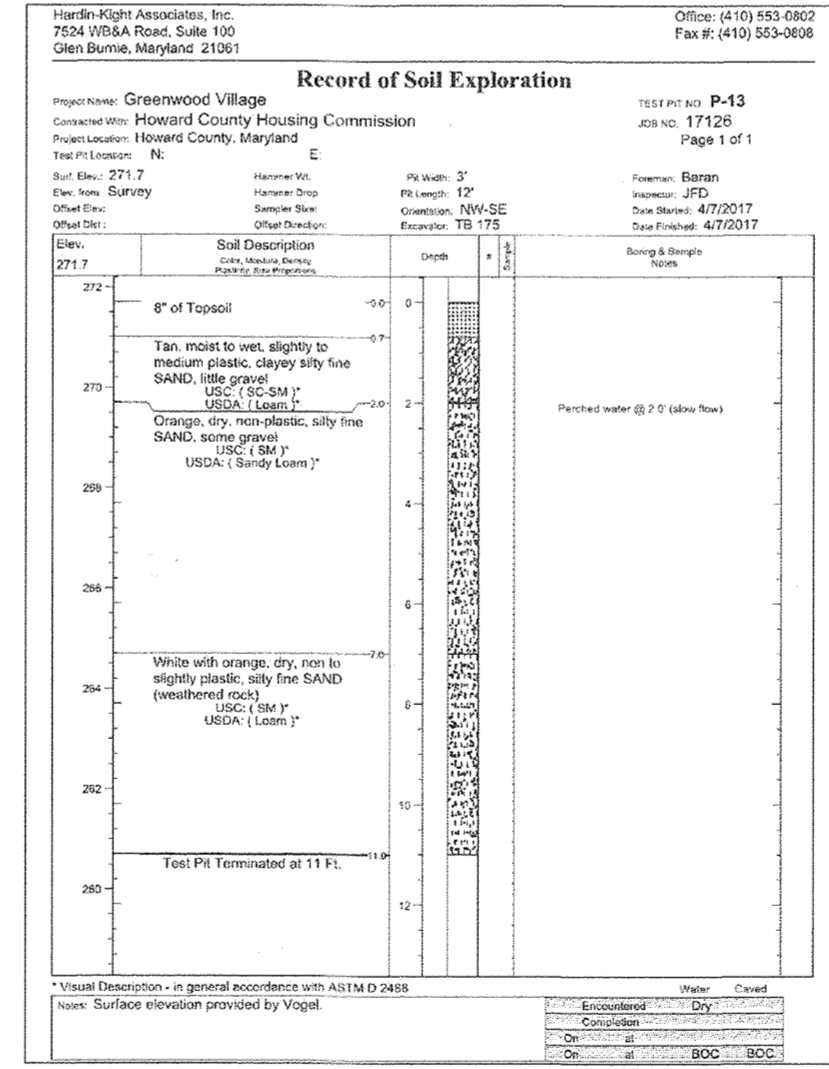
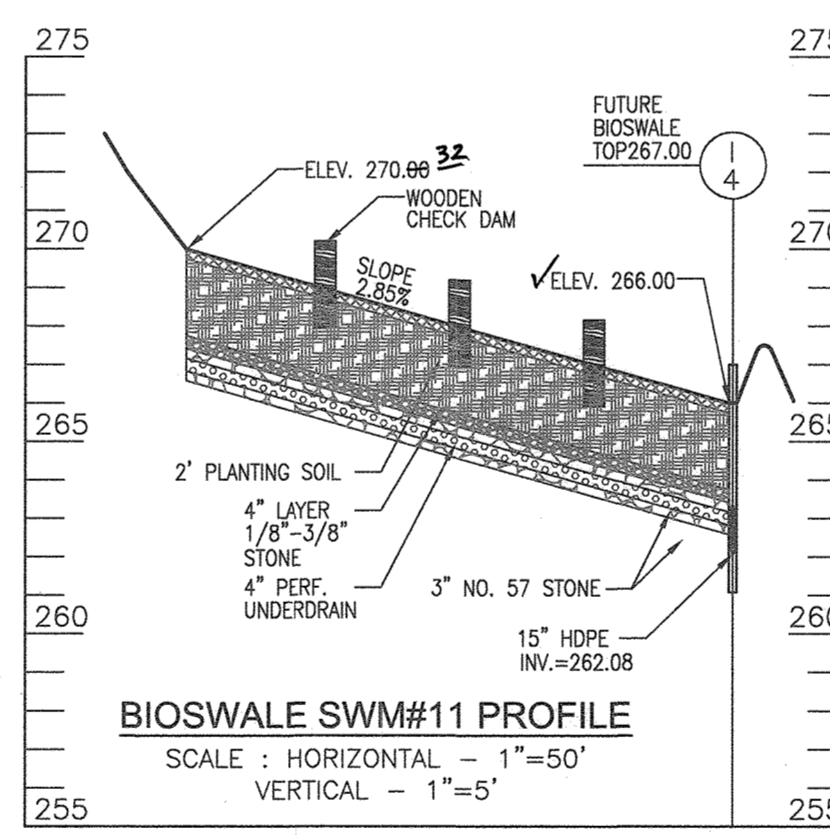
* DESIGN SHALL BE FINE TUNED UNDER FUTURE SITE DEVELOPMENT PLAN(S)
 F= FRONT OF LOT R= REAR OF LOT
 "FUT"= FUTURE LOT. REFER TO F-19-XXX
 (1) DRYWELL SIZE CAN BE ADJUSTED PER FIELD CONDITIONS, HOLDING DEPTH CONSISTENT AND ADJUSTING SQUARE FOOTAGE.



BIO-SWALE - DESIGN ELEVATION CHART

SWALE FACILITY	BIOSWALE DETAIL	LOW PT. ESD WSEL	MULCH	TOP PLANT SOIL	BOTTOM PLANT SOIL	BOTTOM PEA GRAVEL	INV PIPE (1)	INV STONE	WIDTH FT	LENGTH FT
10	1	264.00	B	260.75	260.42	259.84	259.59	5	150	95
11	1	267.00	B	263.75	263.42	262.84	262.59	5	144	95
12	1	269.00	B	265.75	265.42	264.84	264.59	6	150	95
13	1	263.00	B	259.75	259.42	258.84	258.59	7	130	95

(1) UNDERDRAIN PIPE AND OVERFLOW DISTRIBUTION PIPE



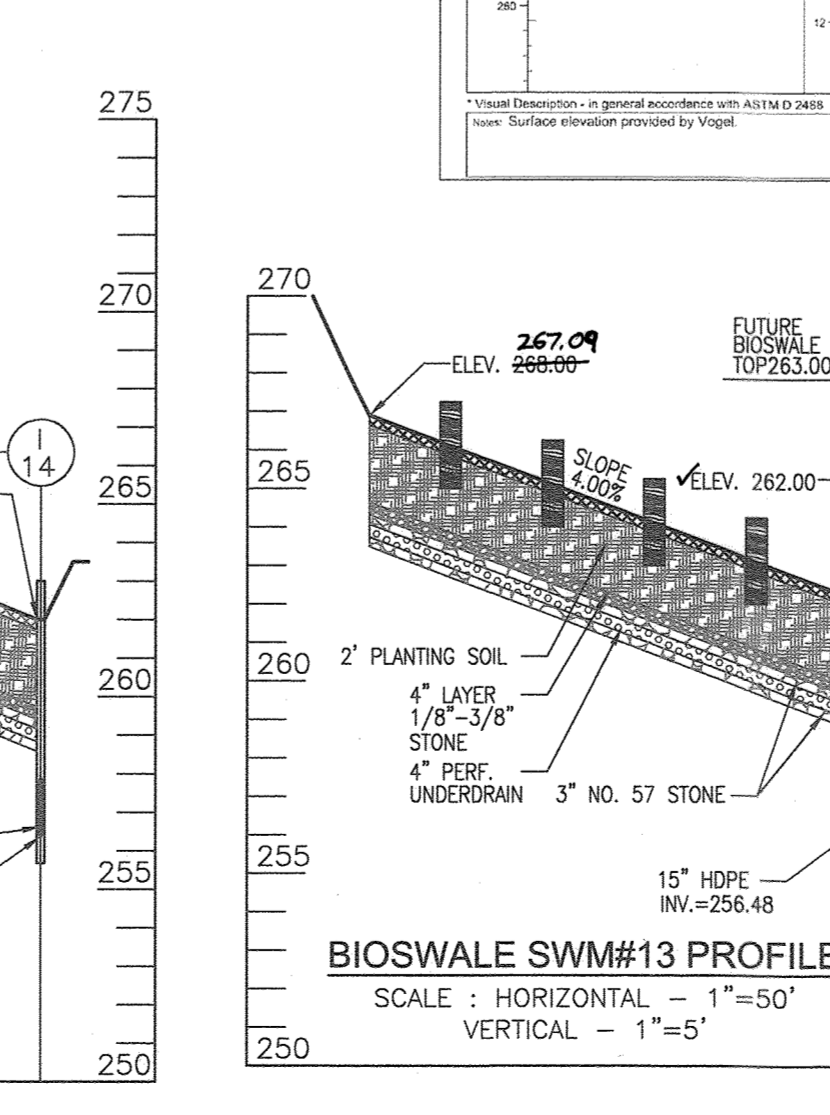
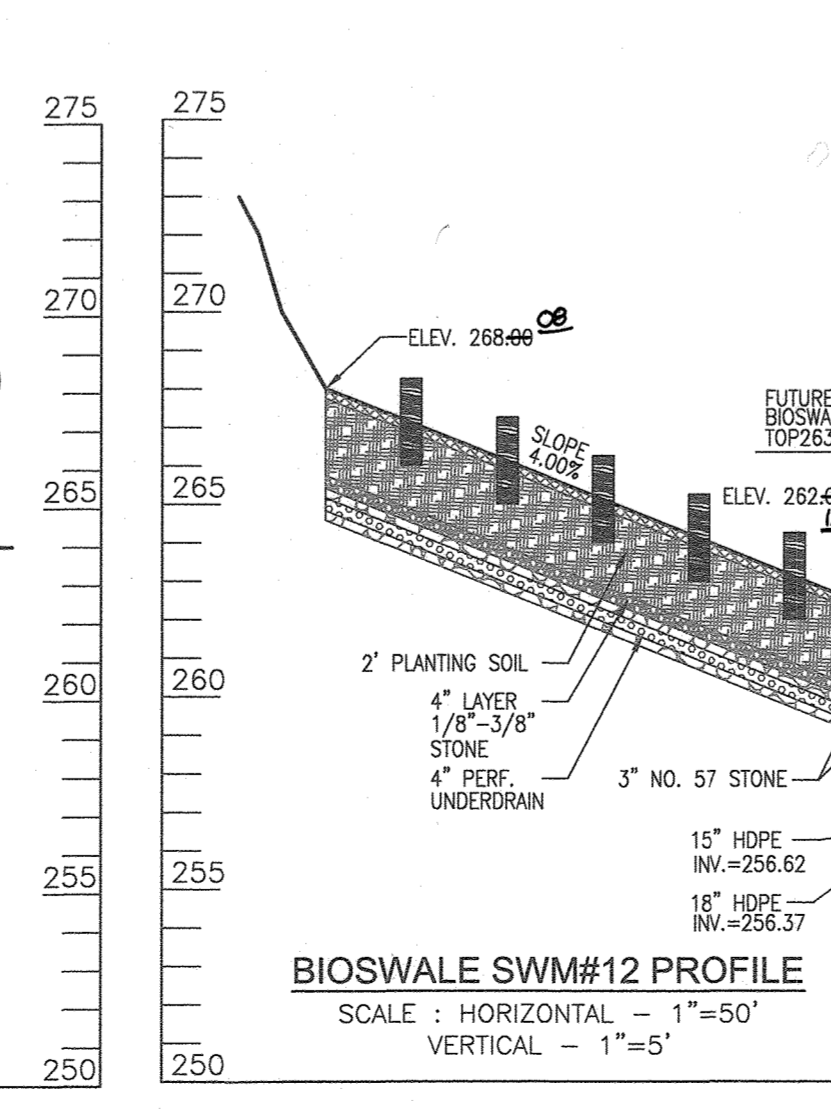
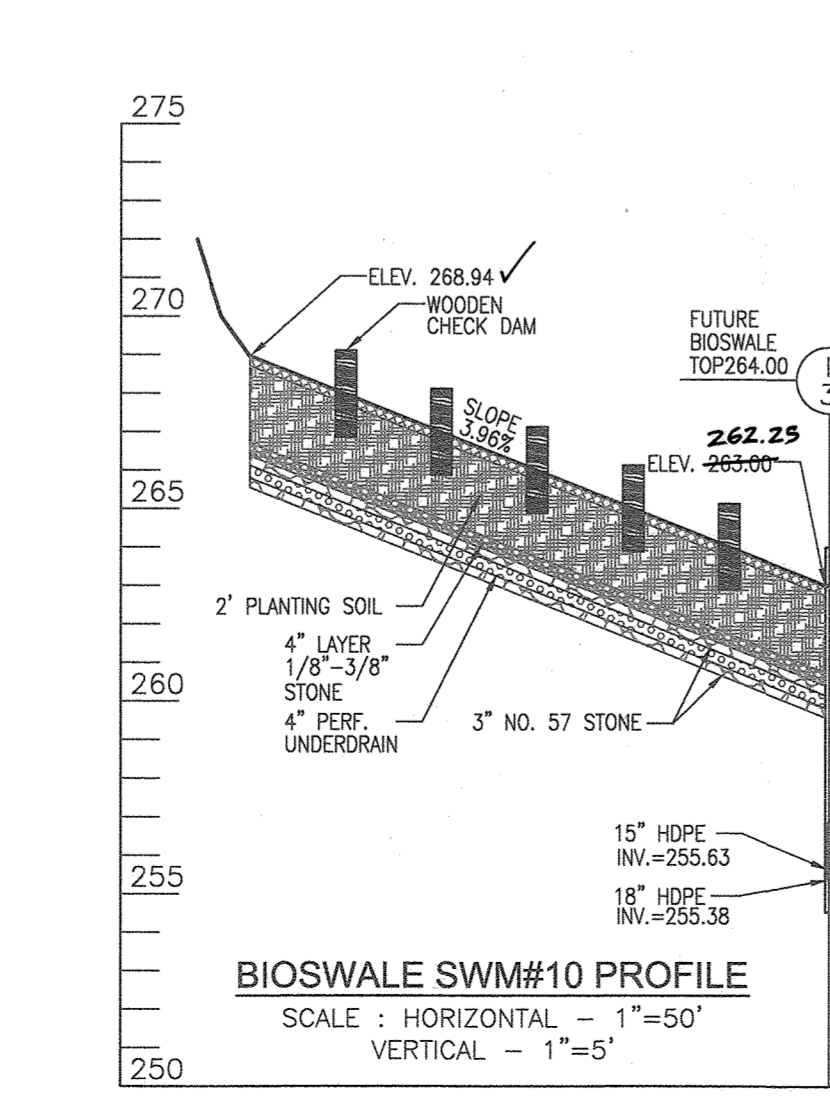
STATE OF MARYLAND
 ROBERT HARRIS VOGEL
 PROFESSIONAL ENGINEER
 No. 16193
 AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
 P.E. NAME: ROBERT HARRIS VOGEL 16193
 DATE: 3-18-24

OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 9770 PATUXENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

BIORETENTION / MICRO-BIORETENTION - DESIGN ELEVATION CHART

FACILITY #	FACILITY TYPE	ESD WSEL	TOP MULCH A	TOP PLANT SOIL B	BOTTOM PLANT SOIL C	BOTTOM PEA GRAVEL D	INV PIPE (1) E	INV STONE F	SURFACE AREA SF	APPROX DIM
1	F-6	258.00	257.46	256.75	254.75	254.42	253.67	252.67	1635	SEE PLAN
2	F-6	262.20	261.66	260.95	258.95	258.62	257.87	256.87	975	SEE PLAN
3	M-6	258.50	257.96	257.25	255.25	254.92	254.17	253.17	625	SEE PLAN
4	F-6	258.00	257.46	256.75	254.75	254.42	253.67	252.67	1000	SEE PLAN
7	M-6	258.50	257.96	257.25	255.25	254.92	254.17	253.17	1350	SEE PLAN
8	M-6	258.00	257.46	256.75	254.75	254.42	253.67	252.67	750	SEE PLAN
9	M-6	252.00	251.46	250.75	248.75	248.42	247.67	246.67	698	SEE PLAN

* 18" PLANTING SOIL
 (1) UNDERDRAIN PIPE AND OVERFLOW DISTRIBUTION PIPE



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 11/23/20
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12-2-20
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature] 12/10/20

NO. _____ REVISION _____ DATE _____

FINAL ROAD CONSTRUCTION PLAN
 ESD'S STORMWATER MANAGEMENT
 COMPUTATIONS, NOTES AND DETAILS AND TEST PIT LOGS
GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C
 AND OPEN SPACE LOTS 5-11
 A RE-SUBDIVISION OF THE "NORDAU" SUBDIVISION - SECTION E-4
 LOTS 2-4 (P.B. 3/1), SR (L.16288 F.488), BR (L.16288 F.502) AND 9 (P.B. 3/1)
 TAX MAP: 42 GRID, 24 PARCEL: 136 & 138-140
 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV
 DRAWN BY: VETO
 CHECKED BY: RHV
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05

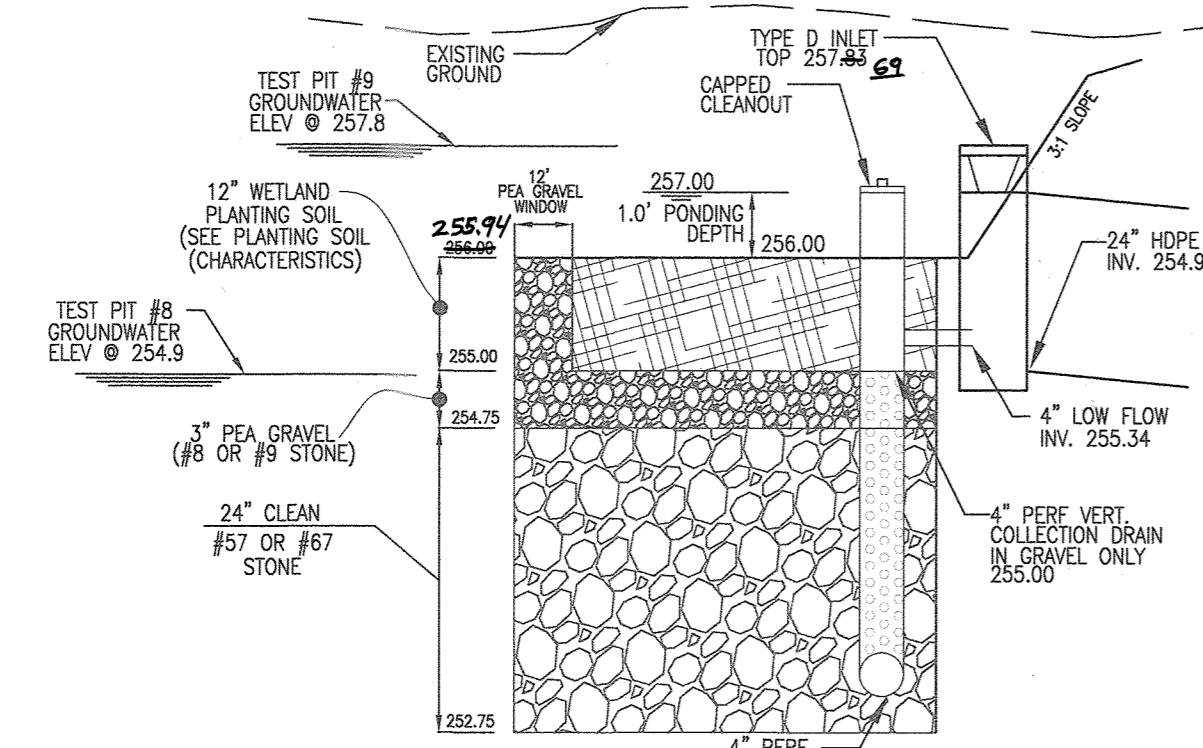
PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. MY LICENSE NUMBER IS 16193 AND MY EXPIRATION DATE IS 09-27-2020.
 [Signature] 3/18/2020
 ROBERT H. VOGEL, PE No. 16193

20 SHEET OF 23

WETLAND SOIL SPECIFICATIONS

THE SURFACE INFILTRATION RATES OF THE GRAVEL WETLAND SOIL SHOULD BE SIMILAR TO A LOW HYDRAULIC CONDUCTIVITY WETLAND SOIL (0.1-0.01 FT/DAY = 3.5 X 10⁻⁵ CM/SEC TO 3.5 X 10⁻⁶ CM/SEC). THIS SOIL CAN BE MANUFACTURED USING COMPOST, SAND, AND SOME FINE SOILS TO BLEND TO A HIGH % ORGANIC MATTER CONTENT SOIL (>15% ORGANIC MATTER). AVOID USING CLAY CONTENTS IN EXCESS OF 15% BECAUSE OF POTENTIAL MIGRATION OF FINES INTO SUBSURFACE GRAVEL LAYER. DO NOT USE GEOTEXTILES BETWEEN THE HORIZONTAL LAYERS OF THIS SYSTEM AS THEY WILL CLOG DUE TO FINES AND MAY RESTRICT ROOT GROWTH.

- IMPERVIOUS LINER:
- IF NATIVE A LOW HYDRAULIC CONDUCTIVITY NATIVE SOIL IS NOT PRESENT BELOW THE GRAVEL LAYER, A LOW PERMEABILITY LINER OR SOIL SHOULD BE USED TO:
 - MINIMIZE INFILTRATION
 - PRESERVE HORIZONTAL FLOW IN THE GRAVEL
 - MAINTAIN THE WETLAND PLANTS
 - IF GEOTECHNICAL TESTS CONFIRM THE NEED FOR A LINER, ACCEPTABLE OPTIONS INCLUDE:
 - (A) 8 TO 12 INCHES (15 - 30 CM) OF CLAY SOIL (MINIMUM 15% PASSING THE #200 SIEVE AND A MINIMUM PERMEABILITY OF 1 X 10⁻⁵ CM/SEC)
 - (B) A 30 ML HDPE LINER
 - (C) BENTONITE
 - (D) USE OF CHEMICAL ADDITIVES (SEE NRCS AGRICULTURAL HANDBOOK NO. 386, DATED 1961, OR ENGINEERING FIELD MANUAL)
 - (E) A DESIGN PREPARED BY A PROFESSIONAL ENGINEER



GRAVEL WETLAND TYPICAL SECTION - M-2
NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SUBMERGED GRAVEL WETLANDS (M-2)

- During the first year of operation, the Owner shall inspect the facility after every heavy storm and replace vegetation as needed.
- The Owner shall remove sediment accumulated in the pretreatment areas as necessary.
- Signs of uneven flow within the wetland may mean that the gravel or underlain is clogged. The gravel or underlain shall be removed, cleaned, and replaced, as needed.
- The Owner shall ensure a dense stand of wetland vegetation is maintained through the life of the facility and replace vegetation as needed.
- The Owner shall ensure the inlets and outlets to each gravel wetland cell are free from debris.
- The Owner shall repair erosion at inflow points and ensure flow splitters are functional to prevent storm water from bypassing the facility.

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

PLANTING SCHEDULE (SHRUB/ORNAMENTAL GRASSES)

LEGEND/KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
TS	15	SCIRPUS PUNGENS COMMON THREE-SQUARE	PLANT STOCK	CONT
DP	15	SAGITTARIA LATIFOLIA ARROWHEAD/DUCK POTATO	PLANT STOCK	9-12" SPACE
AA	15	PELTAENDRA VIRGINICA ARROW ARUM	PLANT STOCK	9-12" SPACE
PV	15	PANICUM VIRGATUM SWITCHGRASS	1 GAL.	-

BIORETENTION PERENNIALS/GROUNDCOVER PLANTING SCHEDULE

LEGEND	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	91	BAPTISIA AUSTRALIS FALSE INDIGO	4" POT	12"-15" O.C. FOR SIDES AND BOTTOM OF MBR. MIX ALL VARIETIES IN A NATURALIZED RANDOM PATTERN THROUGHOUT. PLANT IN GROUPS OF NO LESS THAN 9 PLANTS PER CLUMP
	91	ACORUS GRAMINEUS 'OGON' GOLDEN VARIEGATED SWEET FLAG	1 QT.	-

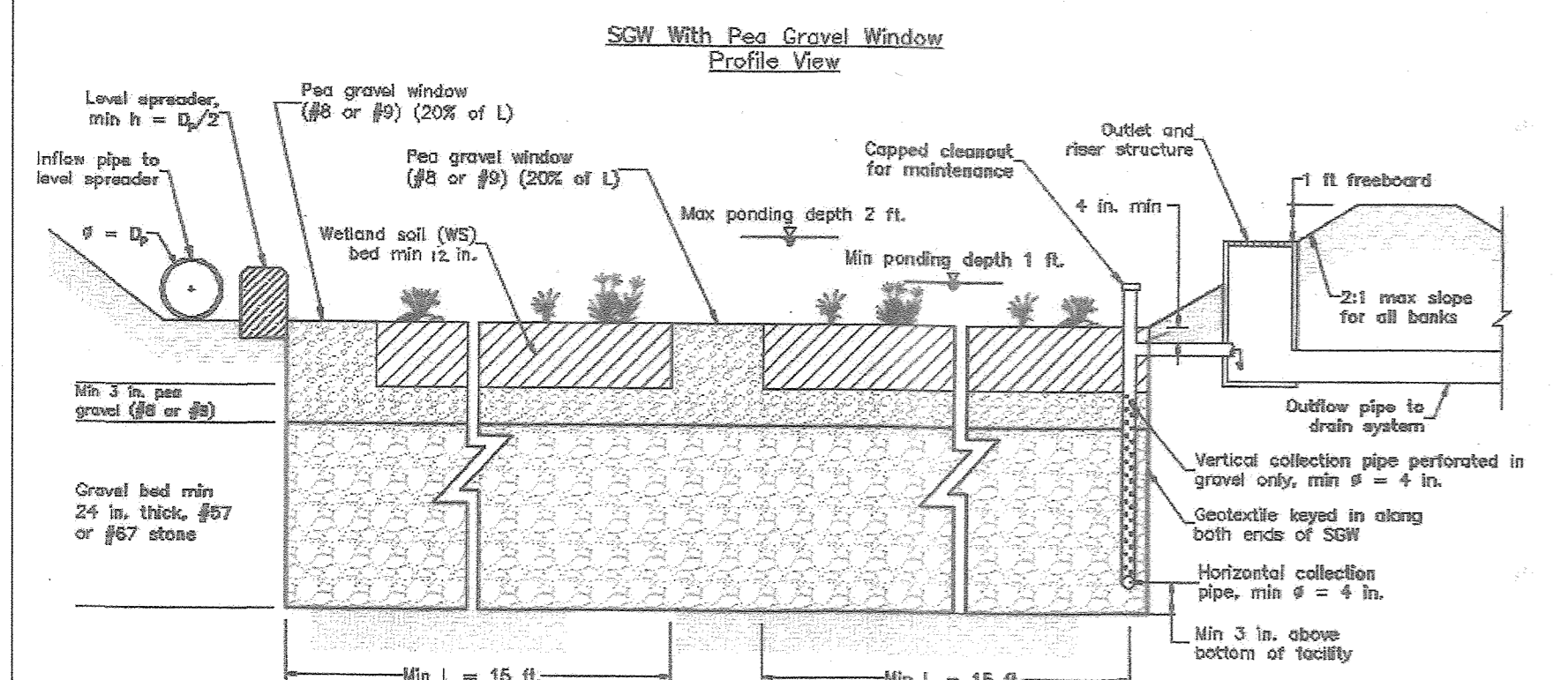
MBR #	AREA	STEMS		PERENNIALS/GROUND COVER							
		REQUIRED (0.0227)	PROVIDED	TS	DP	AA	PV	BA	AG	TOTAL	
GW	2625	60	60	15	15	15	15	15	91	91	182
TOTALS	2625	60	60	15	15	15	15	15	91	91	182

"GRAVEL WETLAND" PLANTING SCHEDULE NOTES:

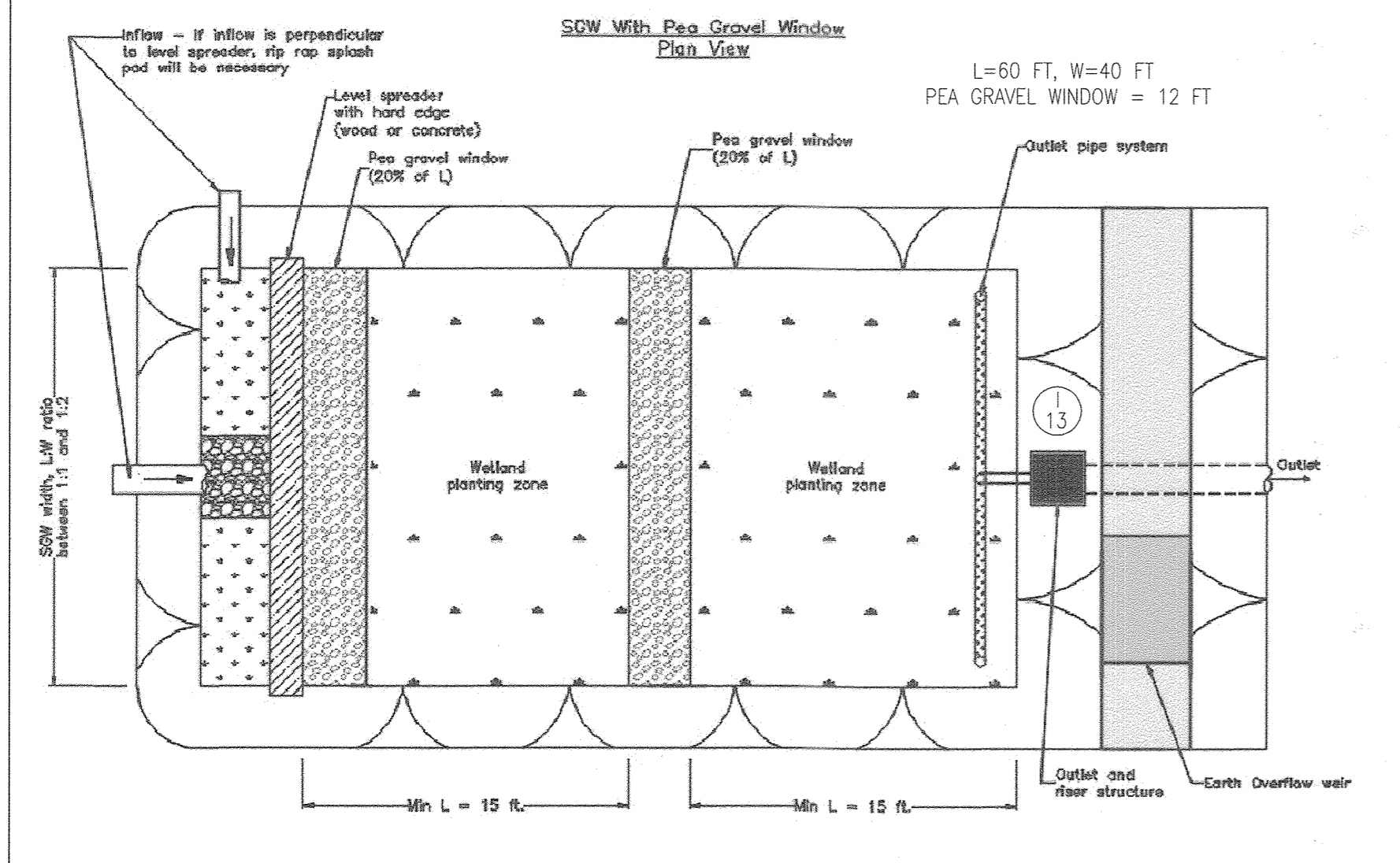
- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT ANM SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLANT DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
- MICROBRETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.0227 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDY SUMMARY.
- FILTER AREA SHALL BE 50% COVERED BY PLANTINGS AT FULL GROWTH

TYPICAL M-2 SUBMERGED GRAVEL WETLAND DETAILS

SCALE: N.T.S.



SGW with Pea Gravel Window Plan View



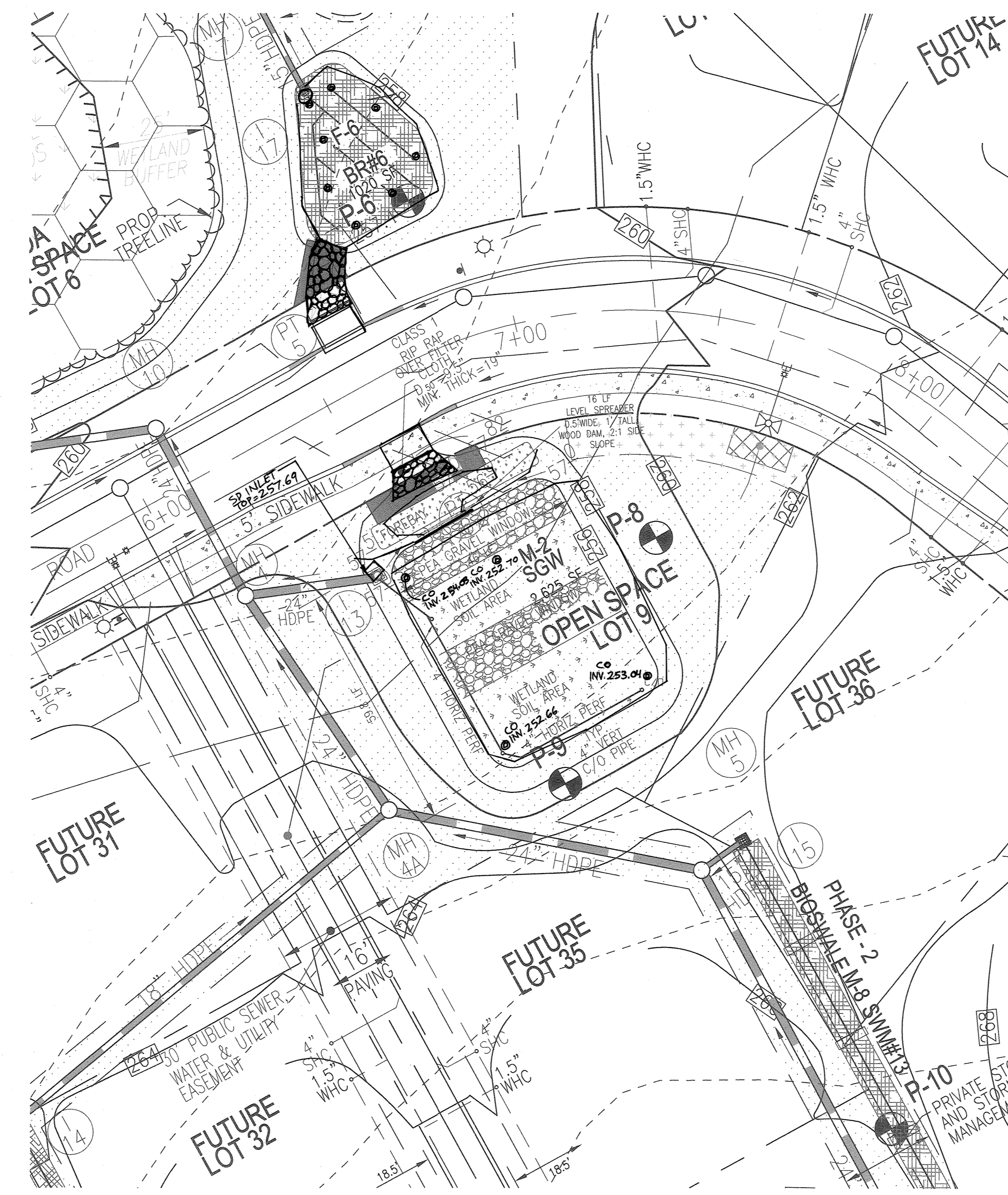
GRAVEL WETLAND FACILITY - DESIGN ELEVATION CHART

MBR FACILITY #	ESD WSEL	TOP PLANT SOIL A	BOTTOM PLANT SOIL B	BOTTOM PEAS GRAVEL E	INV PIPE F	INV STONE G	SURFACE AREA SF	APPROX DIM
1	257.00	256.00	255.00	254.75	253.00	252.75	2625	SEE PLAN

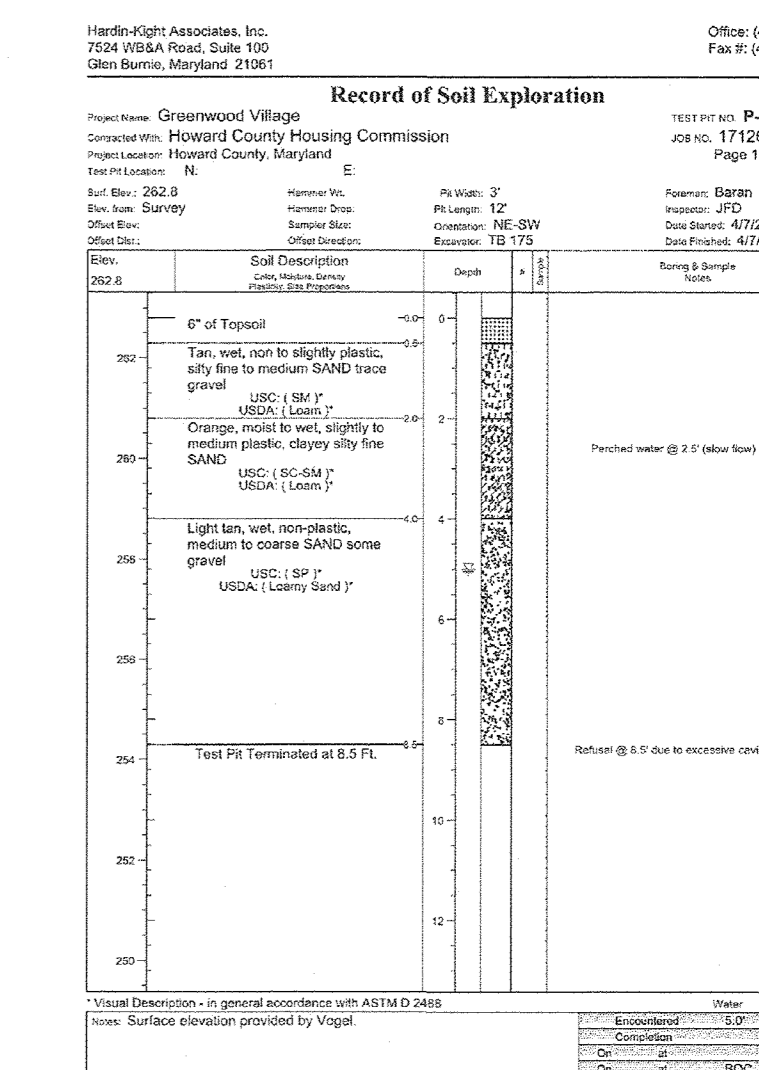
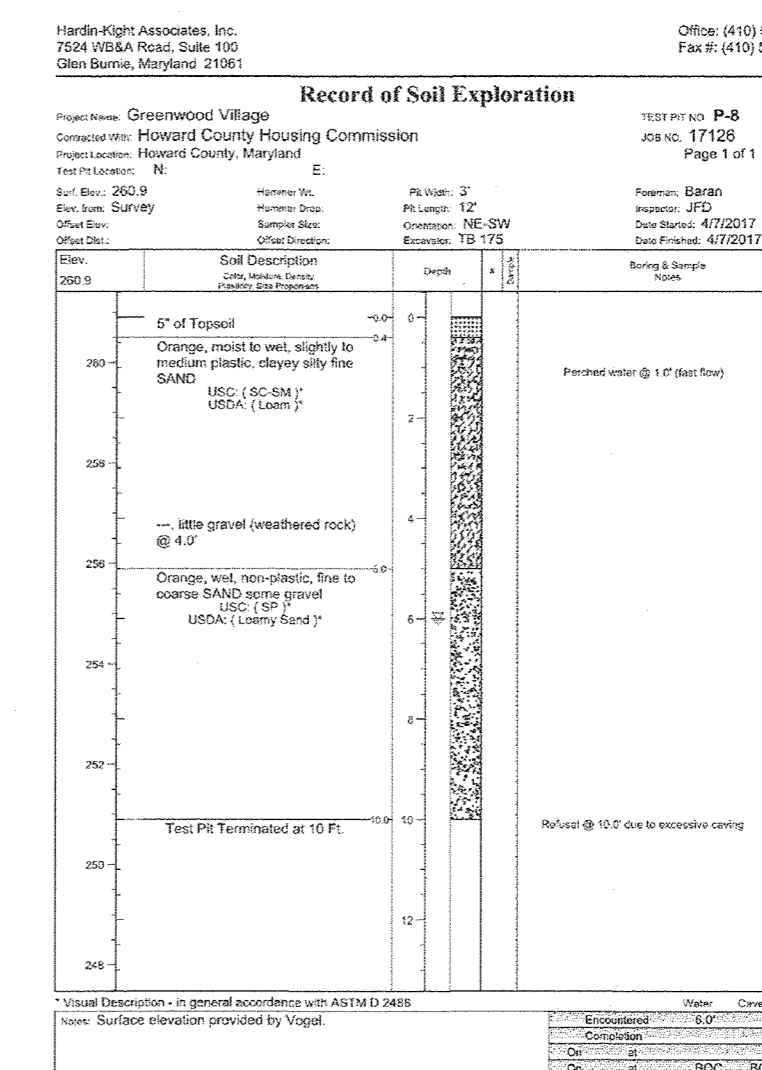
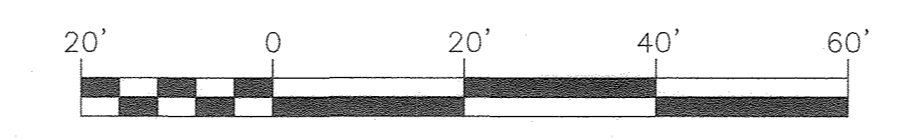
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] for 11/28/20
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12.2.20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 12/10/20
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE



M-2 SUBMERGED GRAVEL WETLAND PLAN VIEW
SCALE 1" = 20'



SUBMERGED GRAVEL WETLAND

TYPE: NON-MD 378
 HAZARD CLASS: A
 PROP. DRAINAGE AREA: 2.65 AC.
 GRAVEL WETLAND: 256.0
 TOP: 258.5± (GUTTER)
 EMERGENCY SPILLWAY: N/A

Q1 (DEV.): 5.5 CFS
 Q10 (DEV.): 11.1 CFS
 Q100 (DEV.): 16.1 CFS

Q1 (SWM): 3.3 CFS
 Q10 (SWM): 8.3 CFS
 Q100 (SWM): 12.6 CFS

1 YR SWM WSEL = 257.31
 10 YR SWM WSEL = 257.84
 100 YR SWM WSEL = 258.27

NOTES

1. 4" SUBDRAIN PIPE PERFORATE HORIZONTAL SECTIONS OF PIPE ONLY. SEE DETAIL FOR REQUIRED PERFORATED SECTION IN VERTICAL PIPE.
2. RISER SOLID PIPES SHALL BE CAPPED AT ELEV 257.00
3. REFER TO SHEET 19 TABLE B.4.1. FOR PIPE SPECIFICATIONS
4. WETLAND SOIL THE SURFACE INFILTRATION RATES OF THE GRAVEL WETLAND SOIL SHOULD BE SIMILAR TO A LOW HYDRAULIC CONDUCTIVITY WETLAND SOIL (0.1-0.01 FT/DAY = 3.5 X 10⁻⁵ CM/SEC TO 3.5 X 10⁻⁶ CM/SEC). THIS SOIL CAN BE MANUFACTURED USING COMPOST, SAND, AND SOME FINE SOILS TO BLEND TO A HIGH % ORGANIC MATTER CONTENT SOIL (>15% ORGANIC MATTER). AVOID USING CLAY CONTENTS IN EXCESS OF 15% BECAUSE OF POTENTIAL MIGRATION OF FINES INTO SUBSURFACE GRAVEL LAYER. DO NOT USE GEOTEXTILES BETWEEN THE HORIZONTAL LAYERS OF THIS SYSTEM AS THEY WILL CLOG DUE TO FINES AND MAY RESTRICT ROOT GROWTH. - WETLAND MULCH CAN BE SUBSTITUTED FOR WETLAND SOIL
5. PLANTINGS MAY BE SUBSTITUTED WITH NATIVE WETLAND PLANT STOCK OBTAINED FROM A LOCAL AQUATIC PLANT NURSERY.

STATE OF MARYLAND
 ROBERT HARRIS VOGEL
 PROFESSIONAL ENGINEER
 No. 16193
 3-18-24

AS BUILT CERTIFICATION FOR PFSW
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
 NAME: [Signature] 16193
 P.E. # 3-18-24
 DATE

OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 9770 PATRIENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
 GRAVEL WETLAND NOTES AND DETAILS

GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C
 AND OPEN SPACE LOTS 5-10
 A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
 LOTS 2-4 (P.B. 3/51), SR (L.16288 F.488), 8R (L.16288 F.502) AND 9 (P.B. 3/51)

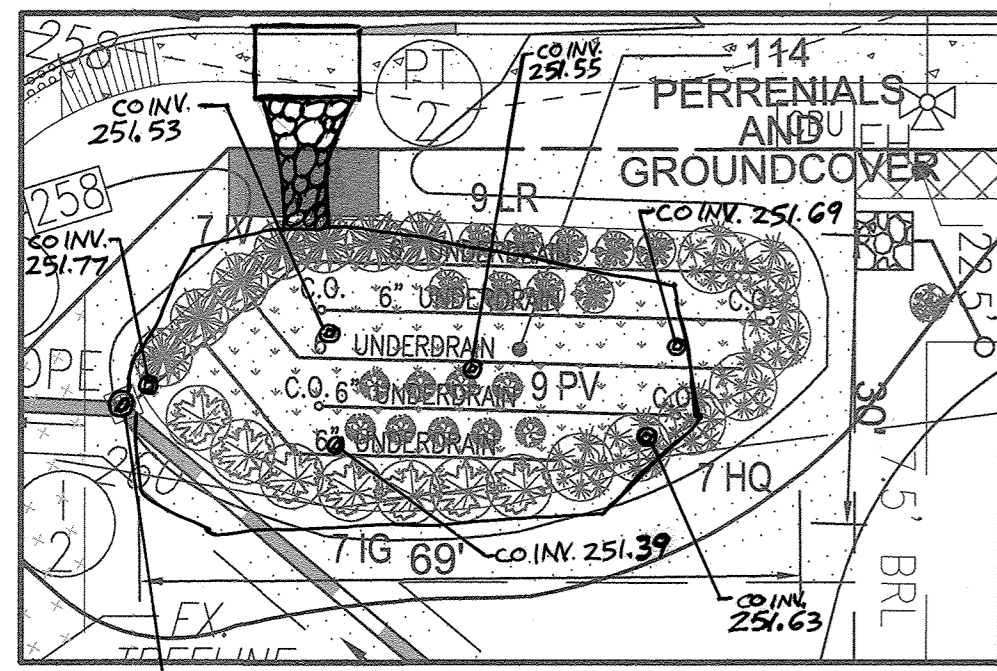
TAX MAP: 42 GRD. 24 6TH ELECTION DISTRICT
 ZONED: R-12
 PARCEL: 136 & 138-140 HOWARD COUNTY, MARYLAND

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

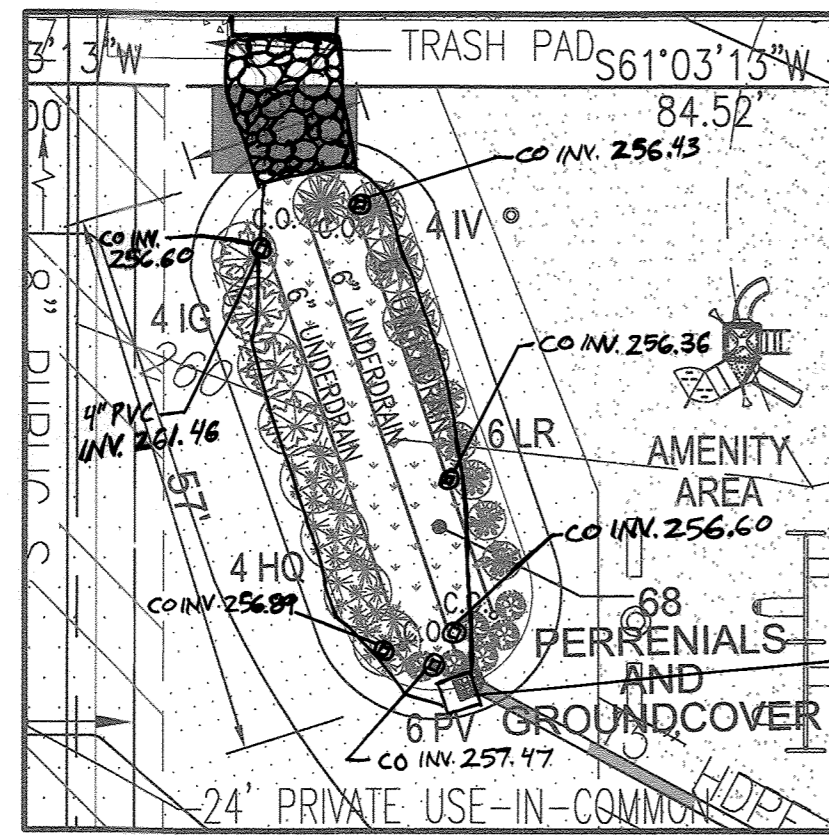
PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE 03-27-2026

DESIGN BY: RHV
 DRAWN BY: VETO
 CHECKED BY: RHV
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05

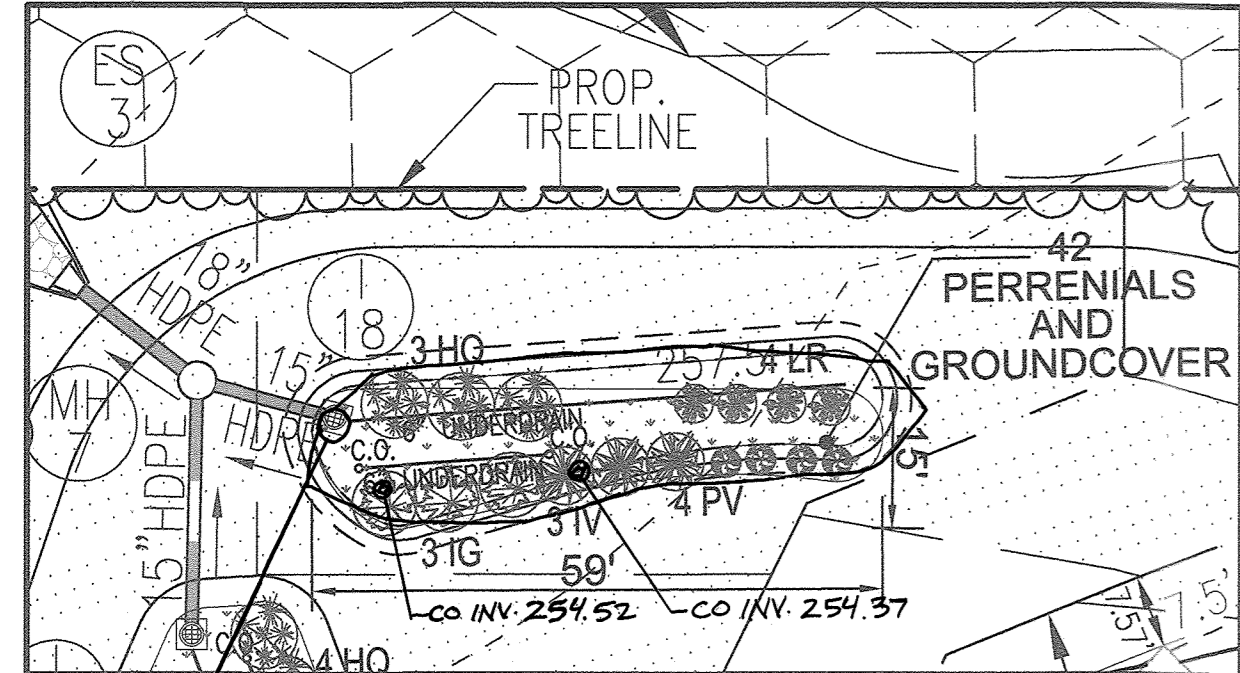
21 SHEET OF 23



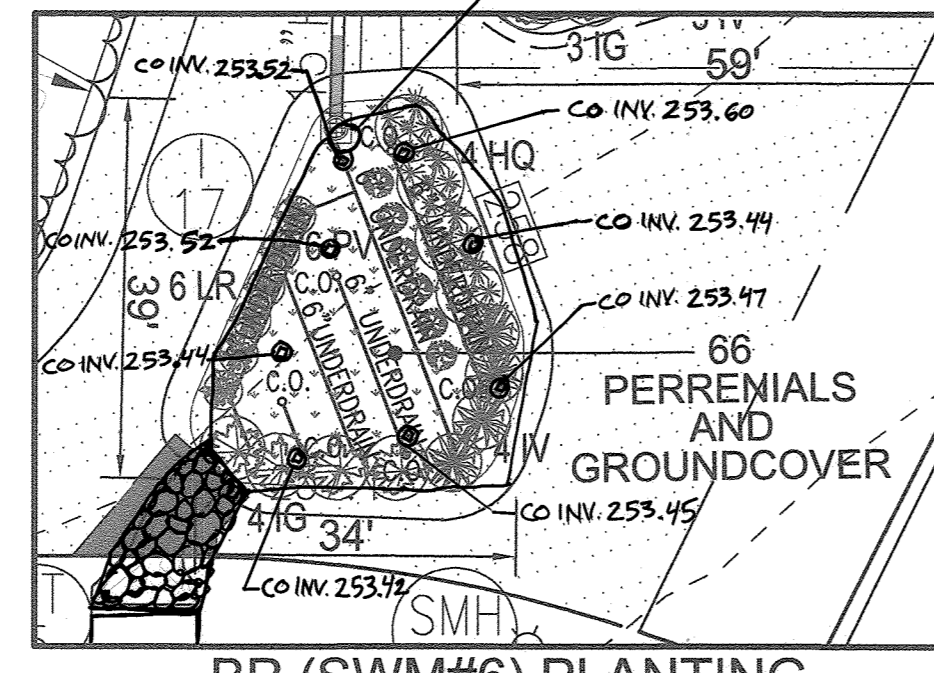
BR (SWM#1) PLANTING
 SD INLET TOP = 257.14
 SW 18" HDPE INV. 253.42
 SE 18" HDPE INV. 253.49
 NE 6" HDPE INV. 254.10
 SCALE: 1"=20'



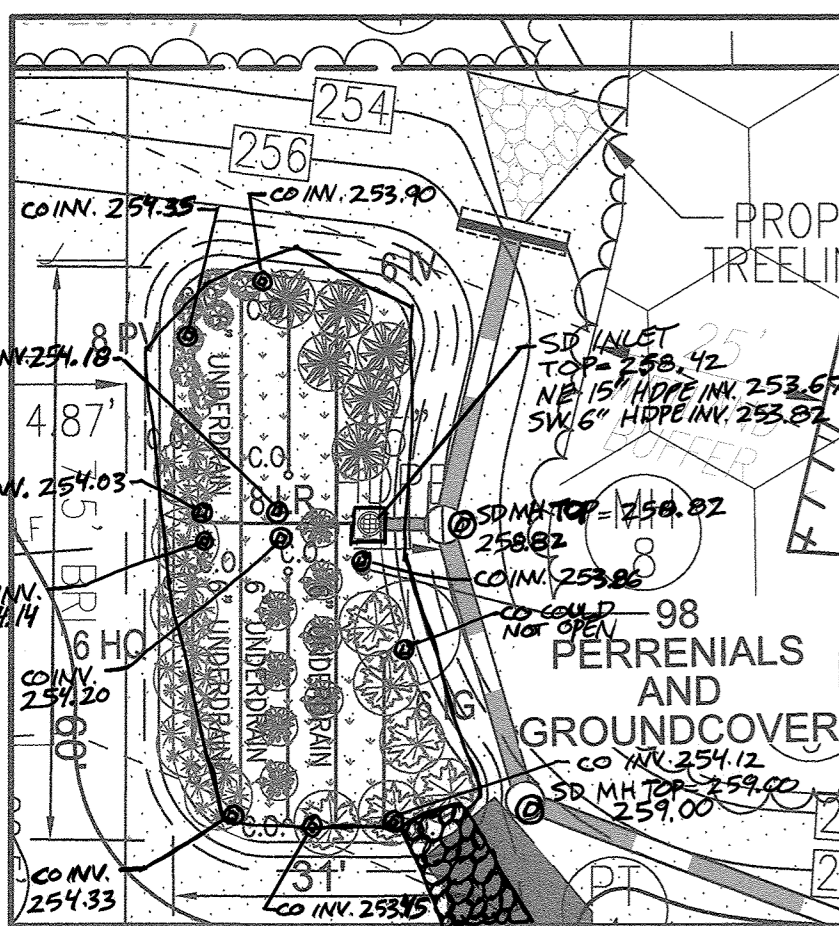
BR (SWM#2) PLANTING
 SD INLET TOP = 261.29
 NW 6" HDPE INV. 256.99
 SE 15" HDPE INV. 256.81
 SCALE: 1"=20'



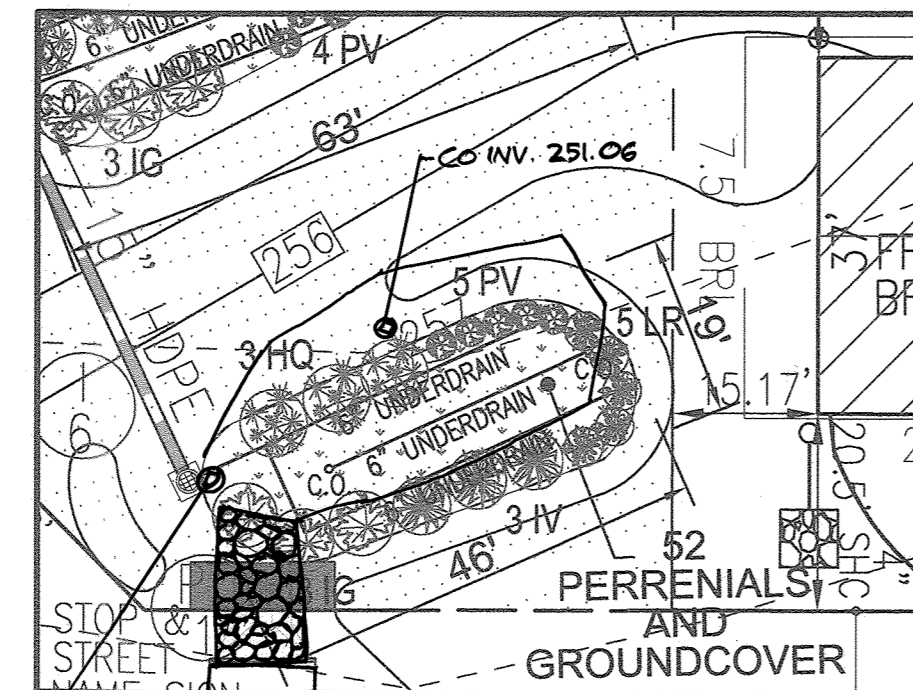
MBR (SWM#5) PLANTING
 SD INLET TOP = 258.06
 W 15" HDPE INV. 253.53
 E 6" HDPE INV. 254.16
 SCALE: 1"=20'



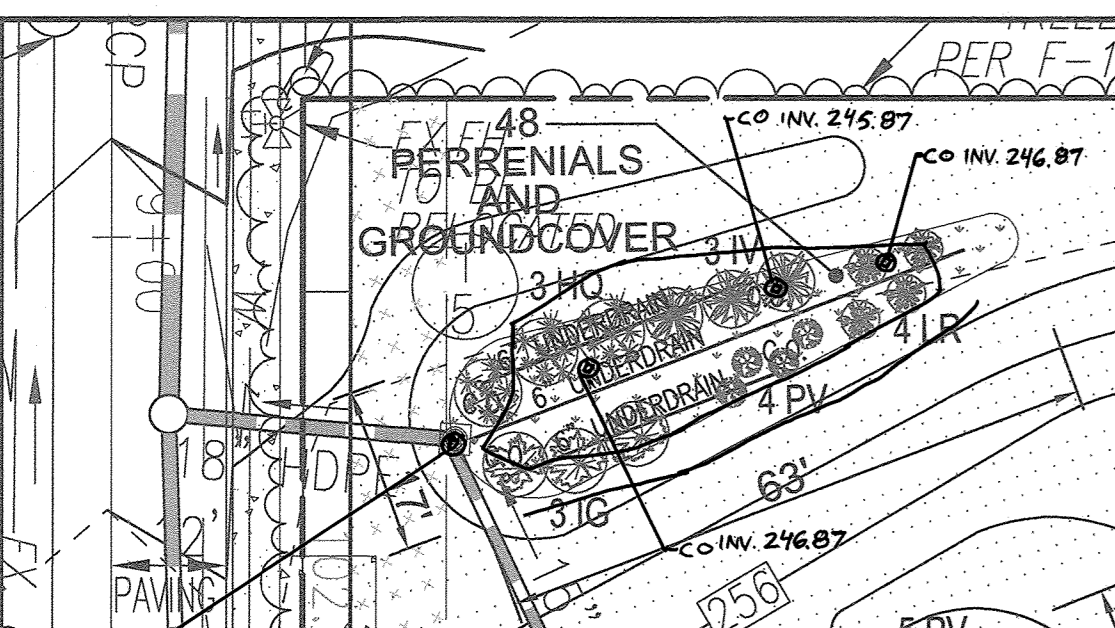
BR (SWM#6) PLANTING
 SD INLET TOP = 257.89
 N 15" HDPE INV. 253.50
 S 6" HDPE INV. 254.17
 SCALE: 1"=20'



MBR (SWM#7) PLANTING
 SD INLET TOP = 256.42
 NW 15" HDPE INV. 253.59
 SW 6" HDPE INV. 254.16
 SCALE: 1"=20'



MBR (SWM#8) PLANTING
 SD INLET TOP = 249.51
 NW 15" HDPE INV. 249.51
 NE 6" HDPE INV. 251.17
 SCALE: 1"=20'



MBR (SWM#9) PLANTING
 SD INLET TOP = 251.06
 SW 18" HDPE INV. 243.61
 SE 18" HDPE INV. 247.11
 NE 6" HDPE INV. 246.84
 SCALE: 1"=20'

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

Table A.4 Commonly Used Species for Bioretention Areas

Trees	Shrubs	Herbaceous Species
Acer rubrum	Asclepias purpuriflora	Andropogon virginicus
Rubus	Hortensia	Bouteloua
Betula nigra	Cephalanthus occidentalis	Eragrostis pectinacea
River Birch	Burnsambath	Joe Pye Weed
Juniperus virginiana	Hamamelis virginiana	Scirpus pungens
Eastern Red Cedar	Witch Hazel	Three Square Balm
Chionodoxa virginiana	Yucca corymbosa	Iris versicolor
Fringe-tree	Highland Blueberry	Blue Flag
Musa xanthum	Ilex glabra	Lotus cardinalis
Black Gum	Hamamelis	Cardinal Flower
Discopyrum virginicum	Ilex verticillata	Panicum virgatum
Parsonage	Waterberry	Switchgrass
Platanus occidentalis	Hibiscus dentatus	Dichanthium scoparium
Sycamore	Asterrosmum	Broom Panic Grass
Quercus alba	Lindera benzoin	Budleia lucida
Pin Oak	Sporobolus	Scirpus cespitosus
Quercus phellos	Alycia pennsylvanica	Woodruff
White Oak	Bayberry	Vernonia noveboracensis
Sassafras		New York Ironweed
Black willow		

Note 1: For more options on plant selection for bioretention, consult Bioretention Manual (ETAB, 1993) or the Design of Stormwater Filtration Systems (Clayton and Schueler, 1997).

BIORETENTION / MICRO-BIORETENTION PLANTING REQUIREMENTS	PLANTINGS PROVIDED										PERENNIALS/GROUND COVER PROVIDED		
	AREA	STEMS REQUIRED (0.0227)	STEMS PROVIDED	IG	IV	HQ	LR	PV	BA	AG	TOTAL		
BR #1	1635	38	39	7	7	7	9	9	57	57	114		
BR #2	978	23	24	4	4	4	6	6	34	34	68		
MBR #5	628	15	17	3	3	3	4	4	21	21	42		
BR #6	956	22	24	4	4	4	6	6	33	33	66		
MBR #7	1418	33	34	6	6	6	8	8	49	49	98		
MBR #8	750	18	19	3	3	3	5	5	26	26	52		
MBR #9	700	16	17	3	3	3	4	4	24	24	48		
TOTALS:	7065	165	174	30	30	30	42	42	244	244	488		

BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.0227 STEMS PER SQUARE FOOT).

"MICRO-BIORETENTION/RAINGARDEN" PLANTING SCHEDULE NOTES:

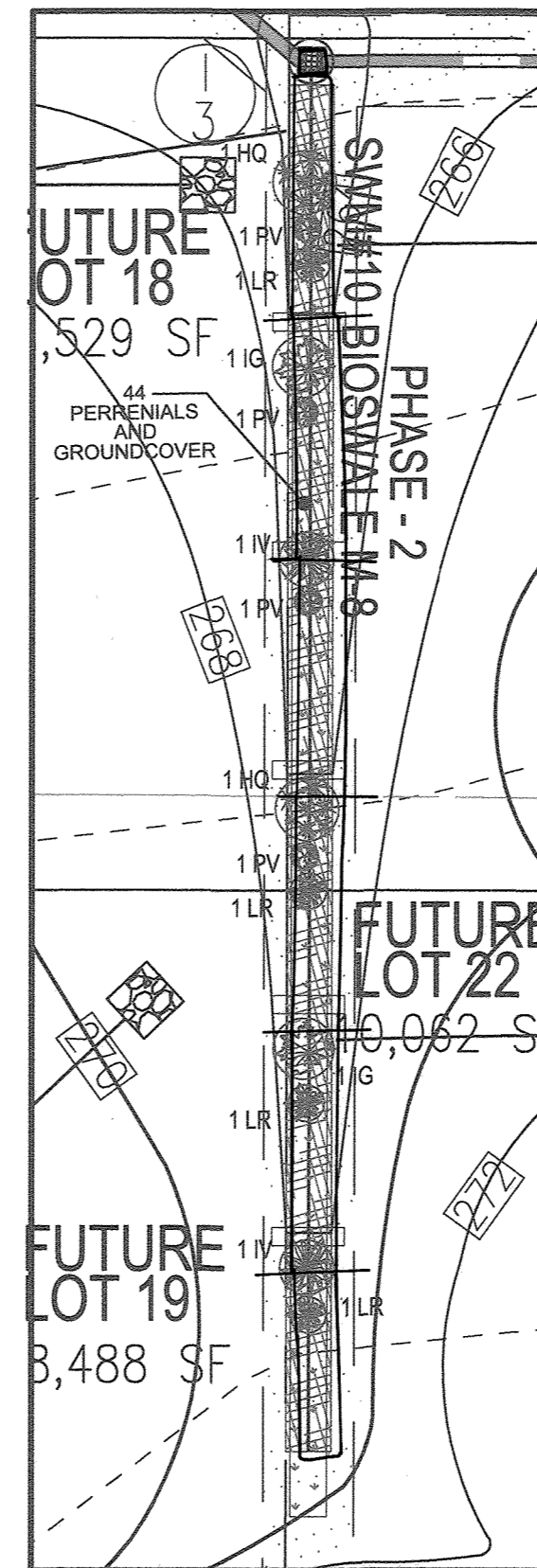
- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT ANY SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
- MICROBIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.0227 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDV SUMMARY. FILTER AREA SHALL BE 50% COVERED BY PLANTINGS AT FULL GROWTH.

LEGEND/KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
IG	30	ILEX GLABRA 'SHAMROCK' INKBERRY HOLLEY	1 GALLON	
IV	30	ITEA VIRGINICA 'HENRY'S GARNETT' VIRGINIA SWEETSPICE	1 GALLON	
HQ	30	HYDRANGEA QUERCIFOLIA OAKLEAF HYDRANGEA	1 GALLON	
LR	42	LEUCOETHA RACEMOSA FETTERBUSH	1 GAL.	
PV	42	PANICUM VIRGATUM SWITCHGRASS	1 GAL.	

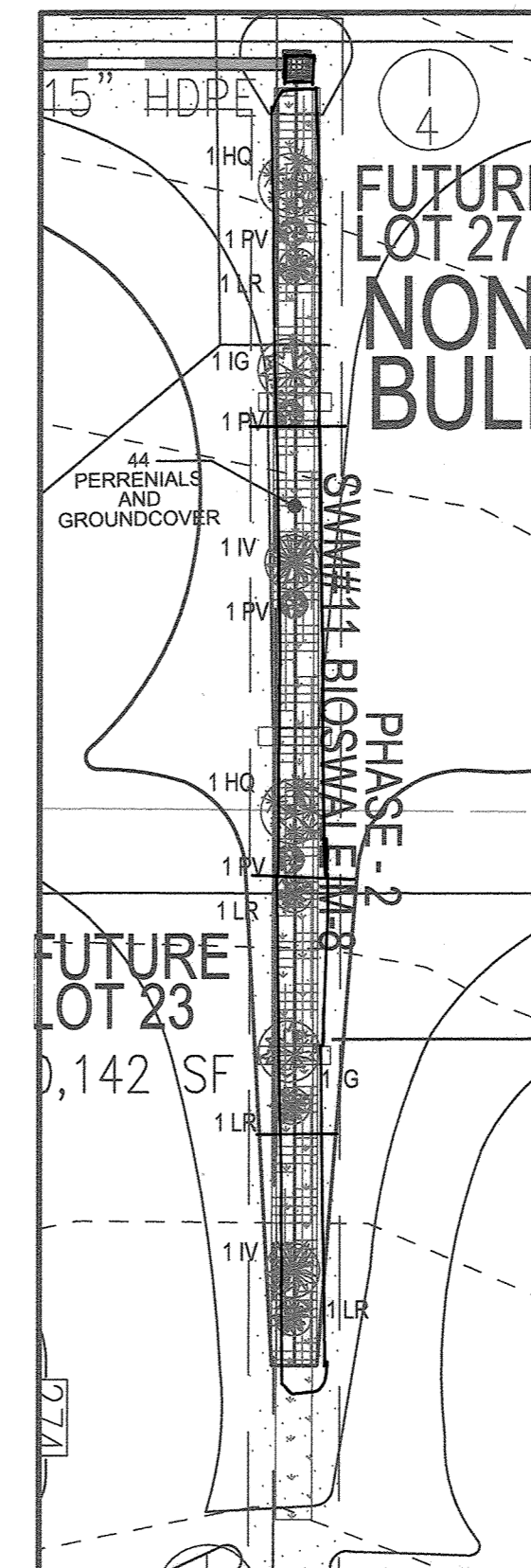
LEGEND	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	244	BAPTISIA AUSTRALIS FALSE INDIGO	4" POT	12"-15" O.C. FOR SIDES AND BOTTOM OF MBR. MIX ALL VARIETIES IN A NATURALIZED RANDOM PATTERN THROUGHOUT. PLANT IN GROUPS OF NO LESS THAN 9 PLANTS PER CLUMP.
	244	ACORUS GRAMINEUS 'OGON' GOLDEN VARIEGATED SWEET FLAG	1 QT.	

- TABLE A.4 IS TAKEN FROM THE "2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II - APPENDIX A"
- CONTRACTOR SHALL BE FAMILIAR WITH APPENDIX B.A.C. CONSTRUCTION SPECIFICATIONS AND TABLE B.A.1. MATERIAL SPECIFICATIONS. IN ADDITION THE "2000 MARYLAND STORMWATER DESIGN MANUAL - VOLUME II - APPENDIX A OFFERS ADDITIONAL HELPFUL INFORMATION."
- NO TREES SHALL BE PLANTED WITHIN A MICRO-BIORETENTION FACILITY. USE ONLY SHRUB OR HERBACEOUS SPECIES.
- ABOVE TABLE A.4 IS FOR INFORMATIONAL PURPOSES ONLY. LANDSCAPE CONTRACTOR SHALL INSTALL PLANTINGS SPECIFIED OR USE APPROVED EQUAL SPECIES WHICH ARE TOLERANT TO FLUCTUATING WATER LEVELS.
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THIS FINAL PLAN.

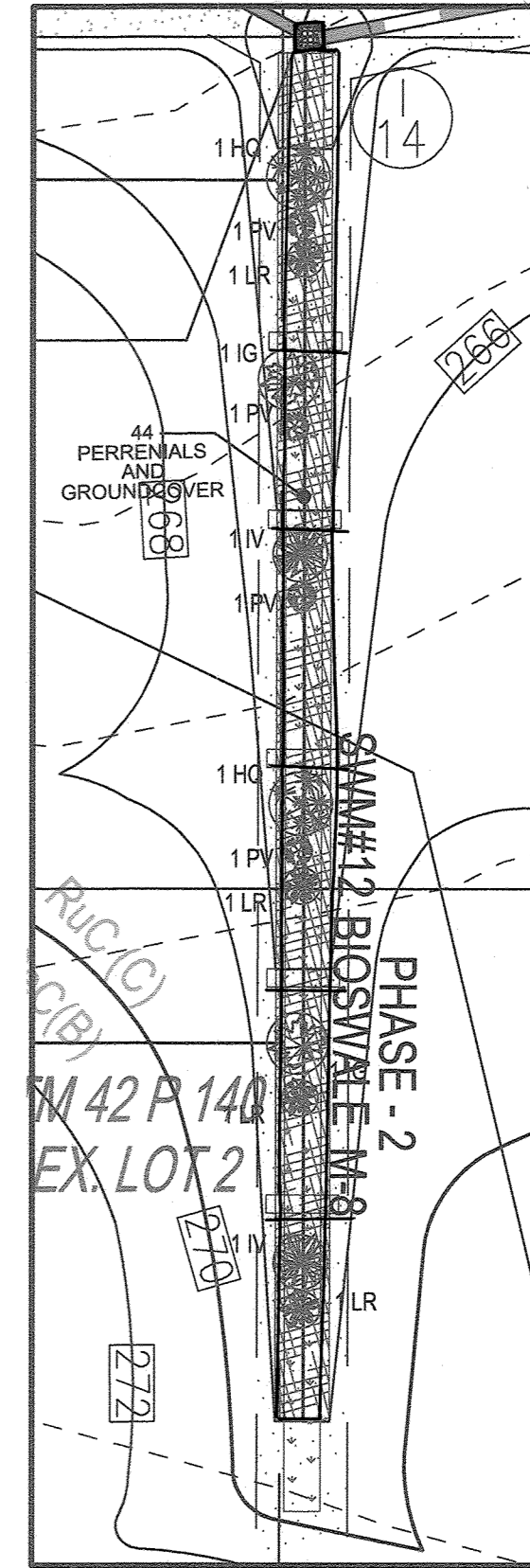
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] CHIEF, BUREAU OF HIGHWAYS 11/28/20
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] CHIEF, DEVELOPMENT ENGINEERING DIVISION 12-2-20
 [Signature] CHIEF, DIVISION OF LAND DEVELOPMENT 12/10/20



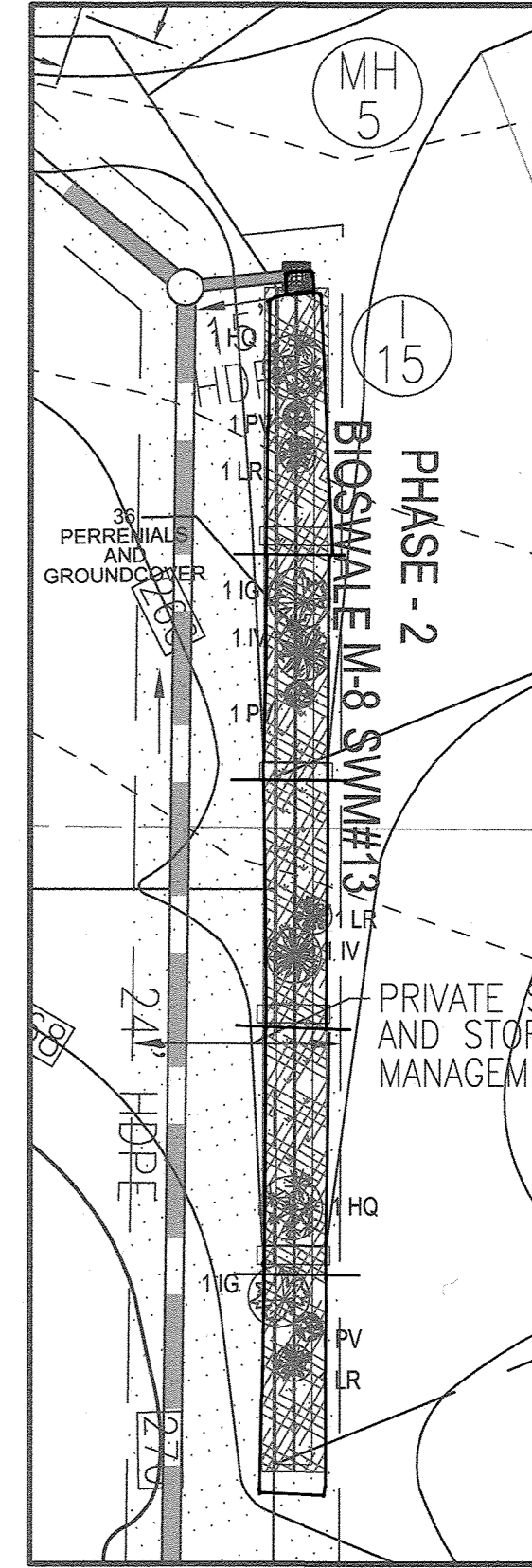
BIOSWALE 10 PLANTING
 SCALE: 1"=20'



BIOSWALE 11 PLANTING
 SCALE: 1"=20'



BIOSWALE 12 PLANTING
 SCALE: 1"=20'



BIOSWALE 13 PLANTING
 SCALE: 1"=20'

BIO-SWALE FACILITY PLANTING REQUIREMENTS					
SWALE FACILITY	MULCH FOOTPRINT	PLANTINGS REQUIRED	PLANTINGS OR EQUAL SUBSTITUTION		
			SWITCHGRASS	BLUE FLAG	IRIS VERSICOLOR
#	SF	TOTAL	NUMBER	SF	SF
10	629	14	144	72	72
11	629	14	16	8	8
12	640	15	146	73	73
13	517	12	118	59	59
TOTALS:	2415	55	424	212	212

BIOSWALE AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.0227 STEMS PER SQUARE FOOT).

BIO-SWALE PLANTING SCHEDULE		
BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
PANICUM VIRGATUM SWITCHGRASS	1 GALLON	CONT
IRIS VERSICOLOR BLUE FLAG	2" POT	1" O.C.
LIROPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1" O.C.

1. BIO SWALE AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.0227 STEMS PER SQ. FT).
 2. 50 SF MAJESTIC LILY TURF / BLUE FLAG = 1 PLANTING UNIT
 3. PLANTINGS SHALL BE AS DETAIL ABOVE OR WITH EQUAL SUBSTITUTION

NOTE:
 STORMWATER MANAGEMENT BIOSWALES ARE PROPOSED AT THE REAR OF FUTURE LOTS 18-22, 23 & 24, 29 & 30 AND 34 & 35. THESE FACILITIES SHALL BE CONSTRUCTED UNDER A FUTURE SITE DEVELOPMENT PLAN.

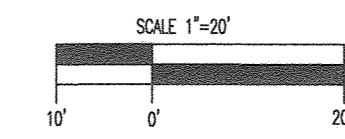
OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 9770 PATIENT WOODS DR., SUITE 110
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316

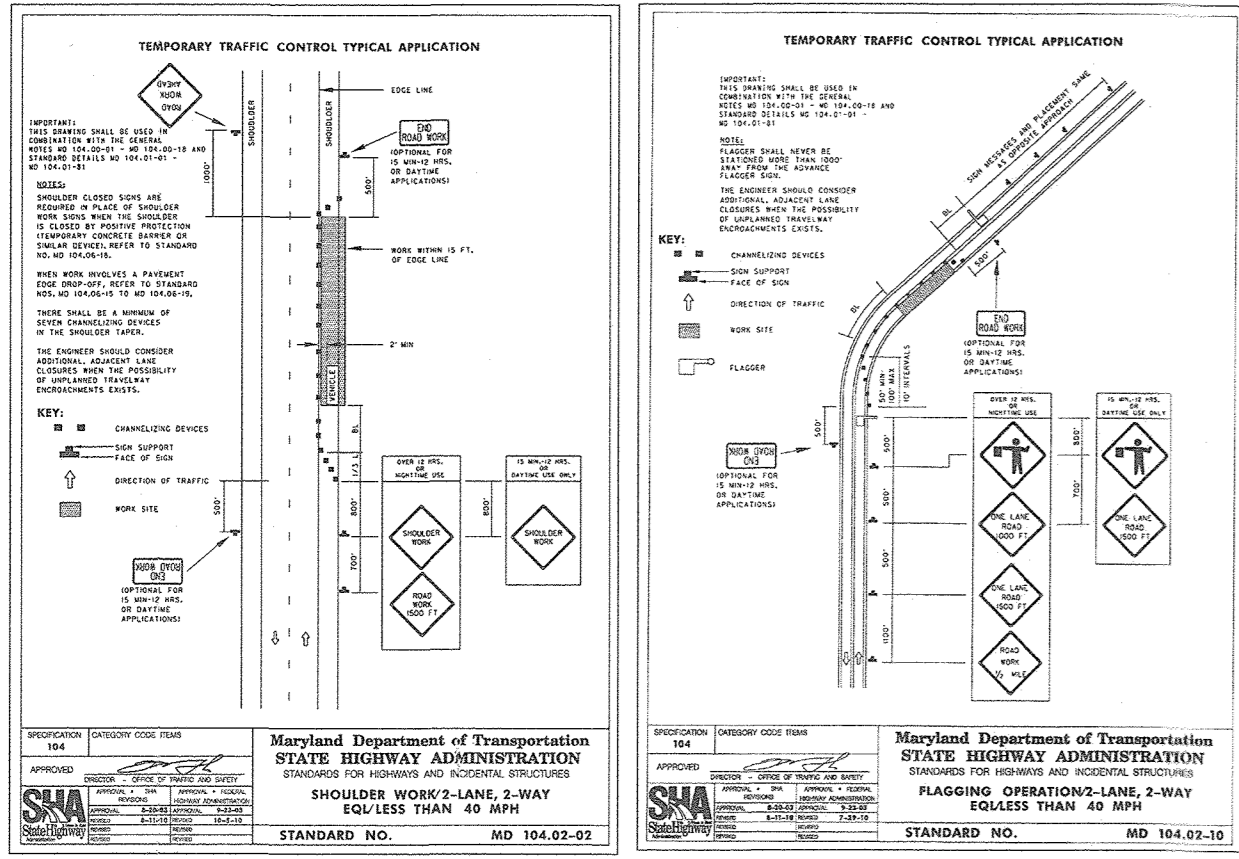
NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
 MICRO-BIORETENTION PLANTING
 NOTES & DETAILS
GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON BUILDABLE BULK PARCELS A-C
 AND OPEN SPACE LOTS 5-11
 A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
 LOTS 2-4 (P.B. 3/51), 5R (L.16288 F.488), 6R (L.16288 F.502) AND 9 (P.B. 3/51)
 TAX MAP: 42 GRID: 24
 6TH ELECTION DISTRICT ZONED: R-12 PARCEL: 136 & 138-140 HOWARD COUNTY, MARYLAND

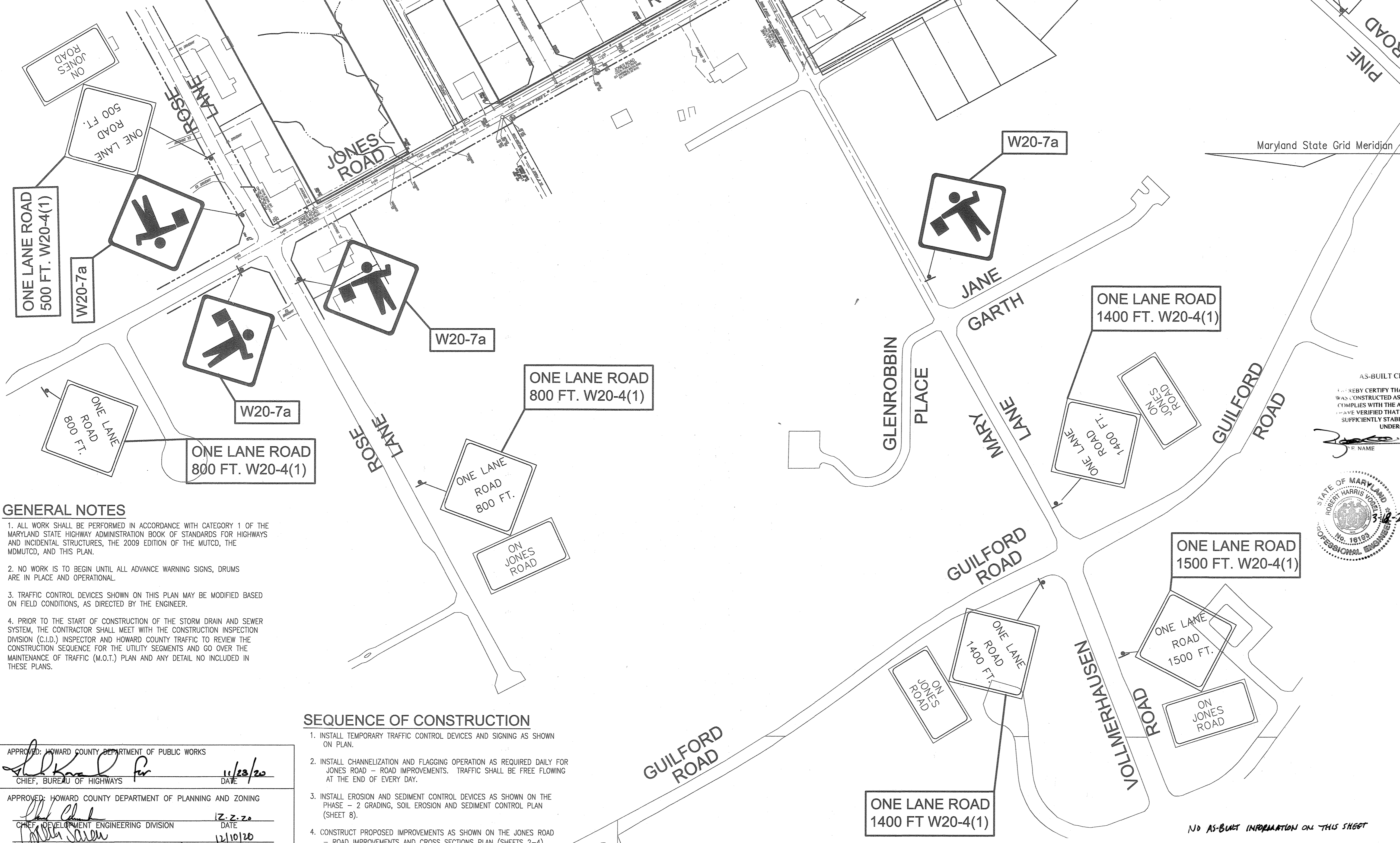
VOGEL ENGINEERING
 TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

PROFESSIONAL CERTIFICATE
 DESIGN BY: RHY
 DRAWN BY: VETG
 CHECKED BY: RHY
 DATE: MARCH 2020
 SCALE: AS SHOWN
 W.O. NO.: 12-05
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 08-27-2020
 22 SHEET OF 23





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



NOTE:
 A PRE-CONSTRUCTION MEETING WITH THE TRAFFIC DIVISION AND C.I.D. WILL BE REQUIRED.
 1. PRIOR TO THE START OF CONSTRUCTION ON JONES ROAD, THE CONTRACTOR SHALL MEET WITH THE CONSTRUCTION INSPECTION DIVISION (C.I.D.) INSPECTOR AND HOWARD COUNTY TRAFFIC TO REVIEW THE CONSTRUCTION SEQUENCE FOR THE ROAD IMPROVEMENTS AND GO OVER THE MAINTENANCE OF TRAFFIC (M.O.T.) PLAN AND ANY DETAILS NOT INCLUDED ON THESE PLANS

JONES ROAD - PLAN VIEW MAINTENANCE OF TRAFFIC PLAN
 SCALE: 1"=100'
 100' 0 100' 200' 300'

AS-BUILT CERTIFICATION FOR PSWM
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.
 NAME: [Signature] P.E.# 16193 DATE: 3-18-24
 OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 9770 PATUKENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-6316



GENERAL NOTES
 1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH CATEGORY 1 OF THE MARYLAND STATE HIGHWAY ADMINISTRATION BOOK OF STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES, THE 2009 EDITION OF THE MUTCD, THE MDMUTCD, AND THIS PLAN.
 2. NO WORK IS TO BEGIN UNTIL ALL ADVANCE WARNING SIGNS, DRUMS ARE IN PLACE AND OPERATIONAL.
 3. TRAFFIC CONTROL DEVICES SHOWN ON THIS PLAN MAY BE MODIFIED BASED ON FIELD CONDITIONS, AS DIRECTED BY THE ENGINEER.
 4. PRIOR TO THE START OF CONSTRUCTION OF THE STORM DRAIN AND SEWER SYSTEM, THE CONTRACTOR SHALL MEET WITH THE CONSTRUCTION INSPECTION DIVISION (C.I.D.) INSPECTOR AND HOWARD COUNTY TRAFFIC TO REVIEW THE CONSTRUCTION SEQUENCE FOR THE UTILITY SEGMENTS AND GO OVER THE MAINTENANCE OF TRAFFIC (M.O.T.) PLAN AND ANY DETAIL NO INCLUDED IN THESE PLANS.

- SEQUENCE OF CONSTRUCTION**
1. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AND SIGNING AS SHOWN ON PLAN.
 2. INSTALL CHANNELIZATION AND FLAGGING OPERATION AS REQUIRED DAILY FOR JONES ROAD - ROAD IMPROVEMENTS. TRAFFIC SHALL BE FREE FLOWING AT THE END OF EVERY DAY.
 3. INSTALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PHASE - 2 GRADING, SOIL EROSION AND SEDIMENT CONTROL PLAN (SHEET 8).
 4. CONSTRUCT PROPOSED IMPROVEMENTS AS SHOWN ON THE JONES ROAD - ROAD IMPROVEMENTS AND CROSS SECTIONS PLAN (SHEETS 2-4).

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 11/23/20
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12-2-20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 12/10/20
 CHIEF, DIVISION OF LAND DEVELOPMENT

NO.	REVISION	DATE
FINAL ROAD CONSTRUCTION PLAN MAINTENANCE OF TRAFFIC PLAN GREENWOOD VILLAGE - PHASE 1 LOTS 1-4, NON-BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11 A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4 LOTS 2-4 (P.B. 3/51), SR (L.16288 F.488), 8R (L.16288 F.502) AND 9 (P.B. 3/51) <small>TAX MAP: 42 GRID: 24 8TH ELECTION DISTRICT ZONED: R-12 PARCEL: 136 & 138-140 HOWARD COUNTY, MARYLAND</small>		
VOGEL ENGINEERING TIMMONS GROUP <small>3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043 P: 410.461.7666 F: 410.461.8961 www.timmons.com</small>		
DESIGN BY:	RHV	<small>PROFESSIONAL CERTIFICATE</small> I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A QUALIFIED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18193, EXPIRATION DATE: 09-27-2026
DRAWN BY:	VTG	
CHECKED BY:	RHV	
DATE:	MARCH 2020	
SCALE:	AS SHOWN	23 SHEET OF 23
W.O. NO.:	12-05	

NO AS-BUILT INFORMATION ON THIS SHEET