

LEGEND:

- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING STORM DRAIN
- EXISTING STORM DRAIN INLET
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING SPECIMEN TREE
- EXISTING STREET TREES (7-16)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- UNDERDRAIN / ROOF DRAIN
- EXISTING SIDEWALK
- EX. PRIVATE DRAINAGE & UTILITY EASEMENT PLAT 25013
- EX. PUBLIC 20" WATER & UTILITY EASEMENT PLAT 25013
- EX. 24" UIC DRIVEWAY EASEMENT PLAT 25013
- EX. PUBLIC 30" SEWER & UTILITY EASEMENT PLAT 25013

HOUSE BOX

FRONT ORIENTATION

WALKOUT AVAILABLE

REVERSE HOUSE FOOTPRINT

F-18-008 - ROOF DRAIN DESIGN

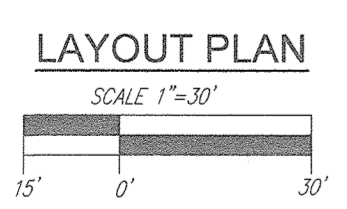
- LOT 2 - ROOF DRAINS COMBINE INTO ONE PIPE AND ENTERS 1-4
- EXISTING CLEANOUT
- LOT 3 & 4 - ROOF DRAINS COMBINE INTO ONE PIPE, AND CONNECT TO STORM DRAIN.
- LOT 5 & 6 - ROOF DRAINS COMBINE INTO ONE PIPE AND ENTER 1-5
- LOT 7 - ROOF DRAINS COMBINE INTO ONE PIPE AND DAYLIGHT IN FACILITY 13
- LOT 8-11 - ROOF DRAINS COMBINE INTO ONE PIPE (ON LOT) THEN COMBINE INTO ONE PIPE AT THE REAR LOT LINE AND DAYLIGHT IN FACILITY 13
- LOT 12-13 - ROOF DRAINS COMBINE INTO ONE PIPE (ON LOT) THEN COMBINE INTO ONE PIPE AT THE REAR LOT LINE AND ENTER 1-7

NOTE:

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

NOTES:

- GENERIC HOUSE BOXES ARE SHOWN IN ACCORDANCE WITH HOWARD COUNTY GUIDELINES AND DO NOT LIMIT MODEL TYPES AND OPTIONS THAT MAY FIT ON ANY INDIVIDUAL LOT.
- TYPICAL DRIVEWAY WIDTH SHOWN HEREON IS 16 FEET WIDE FOR THE PROPOSED 2 CAR GARAGE. WIDTH SUBJECT TO CHANGE WITH BUILDER RESITE.
- DRIVEWAYS: THE SHOWN DRIVEWAY LOCATION CANNOT CHANGE UNLESS NOTED ON THIS SDP. CONFIRMING THAT THE GRADING AND DRIVEWAY SLOPES WILL REMAIN THE SAME WHETHER THE DRIVEWAY IS ON THE RIGHT OR LEFT SIDE OF THE HOUSE. ONLY ONE DRIVEWAY ORIENTATION CAN BE SHOWN FOR CORNER LOTS.



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief Engineer 9-24-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Director 9-27-19
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Director 9-27-19
 DIRECTOR DATE

SITE DEVELOPMENT PLAN

LAYOUT PLAN

ELKRIDGE WOODS

LOTS 2-42
 SINGLE FAMILY DETACHED

TAX MAP 38 GRID 9
 1ST ELECTION DISTRICT

PARCELS 756, 340 - ZONED: R-12
 HOWARD COUNTY, MARYLAND

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

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

PROFESSIONAL CERTIFICATE

DESIGN BY: VTG
 DRAWN BY: VTG
 CHECKED BY: RHW
 DATE: JULY 2019
 SCALE: AS SHOWN
 W.O. NO.: 41446

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: 08-27-2028

2 SHEET OF 12

BUILDER
 RYAN HOMES
 9720 PATUENT WOODS DRIVE
 COLUMBIA, MD 21046
 410-379-5956

DEVELOPER
 ELM STREET DEVELOPMENT
 5074 DORSEY HALL DRIVE, SUITE 205
 ELLICOTT CITY, MD 21042
 410-720-3021

OWNER
 ESC ELKRIDGE WOODS LC
 5074 DORSEY HALL DRIVE, SUITE 205
 ELLICOTT CITY, MD 21042
 410-720-3021

PART OF
 OPEN SPACE LOT 44
 211,302 S.F. OR 4.851 AC.
 OWNER: HOMEOWNERS
 ASSOCIATION PLAT#25013

TM: 38 P.793
 O.S. LOT 17
 HOWARD COUNTY MARYLAND
 PLAT# 11318
 ZONED: R-12
 USE: EXEMPT

TM: 38 P.793
 LOT 5
 NARENDER & NISHA KHULLER
 PLAT# 11319
 ZONED: R-12
 USE: RESIDENTIAL

TM: 38 P.793
 LOT 6
 ROCCO J. BARBARA GIANNINI
 PLAT# 11319
 ZONED: R-12
 USE: RESIDENTIAL

TM: 38 P.262
 LOT 10
 BRADLEY K. MYERS
 PLAT# 14288
 ZONED: R-12
 USE: RESIDENTIAL

TM: 38 P.262
 LOT 9
 RODNEY A. & TAMMY L. LANG
 PLAT# 14288
 ZONED: R-12
 USE: RESIDENTIAL

TM: 38 P.262
 LOT 8
 LAWRENCE B. JR. & CARRIE DAWES
 PLAT# 14288
 ZONED: R-12
 USE: RESIDENTIAL

TM: 38 P.262
 LOT 7
 STEVEN G. & JANE JENKS
 PLAT# 14288
 ZONED: R-12
 USE: RESIDENTIAL

TM: 38 P.528
 LOT 21
 STEPHEN & VICTORIA HAR
 PLAT# 17287
 ZONED: R-12
 USE: RESIDENTIAL

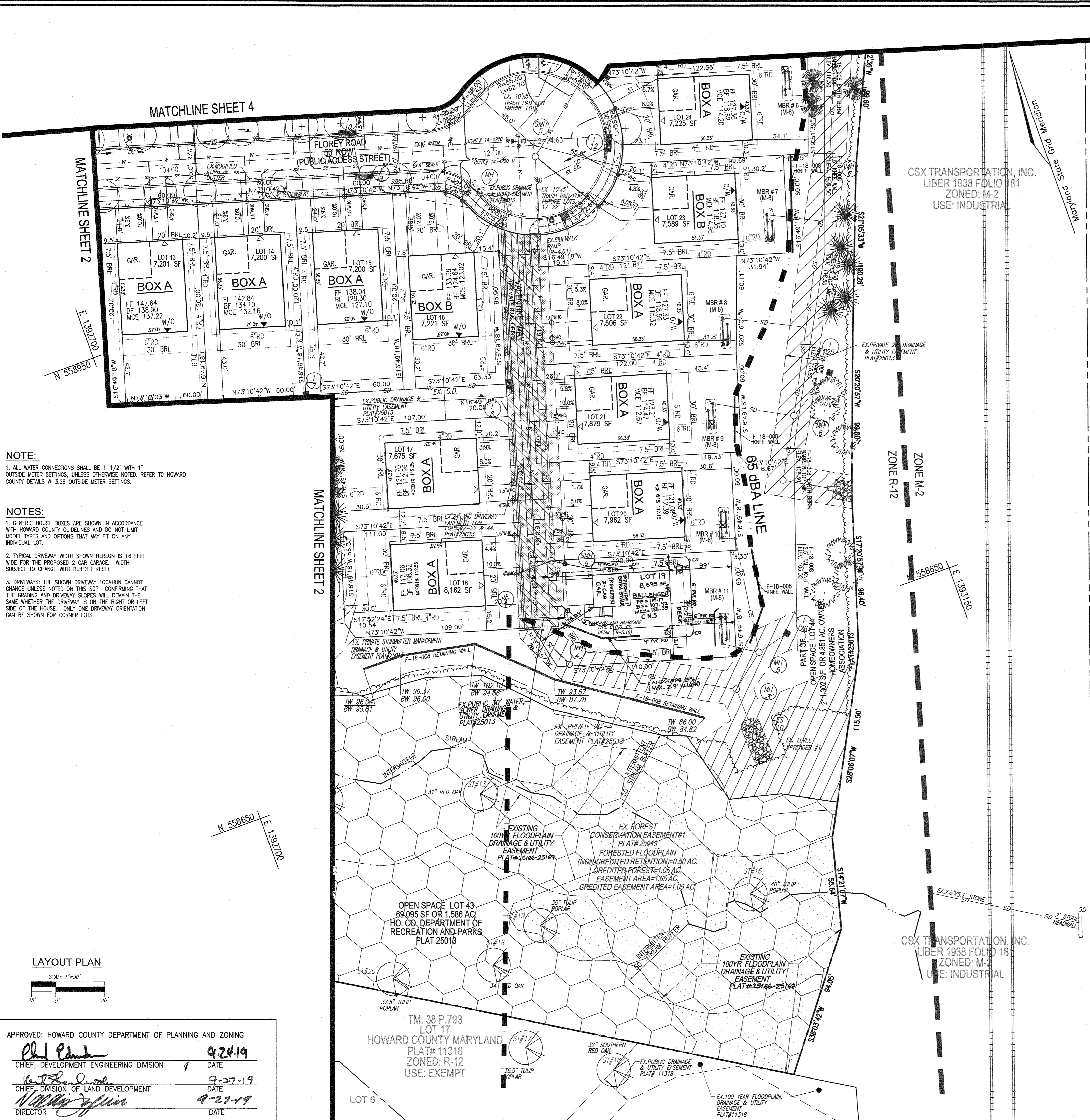
TM: 38 P.528
 O.S. LOT 20
 WHITTAIL WOODS II
 PLAT# 17287
 ZONED: R-12
 USE: EXEMPT

TM: 38 P.528
 LOT 19
 MATTHEW B. BURDEN
 GAO XIA TIE
 PLAT# 17287
 ZONED: R-12
 USE: RESIDENTIAL

TM: 38 P.528
 LOT 18
 ANTHONY STANFORD
 PLAT# 17287
 ZONED: R-12
 USE: RESIDENTIAL

TM: 38 P.528
 LOT 17
 PER & GANGEETHA STRUCK
 PLAT# 17287
 ZONED: R-12
 USE: RESIDENTIAL

TM: 38 P.528
 LOT 13
 APPROX. LOC UNDERGROUND
 ELECTRIC LINE PER PLAN REF. #1
 (NOT FIELD VERIFIED SEE NOTE)



F-18-008 - ROOF DRAIN DESIGN

- LOTS 12-13 ROOF DRAINS TO COMBINE INTO ONE PIPE (ON LOT) THEN COMBINE INTO ONE PIPE AT THE REAR LOT LINE AND ENTER 1-7
- LOT 14 & 15 ROOF DRAINS COMBINE INTO ONE PIPE AND ENTER 1-7
- LOT 16 ROOF DRAINS COMBINE INTO ONE PIPE ENTER STORM DRAIN PIPE BETWEEN 1-8 & 1-7
- LOT 17 & 18 ROOF DRAINS COMBINE INTO ONE PIPE AND DAYLIGHT IN FACILITY 12
- LOT 19 & 20 ROOF DRAINS COMBINE INTO ONE PIPE AND DAYLIGHT INTO OWN ON LOT MBR

NOTE:

THE 65 DBA NOISE CONTOUR LINE DRAWN ON THIS DEVELOPMENT PLAN IS ADVISORY AS REQUIRED BY THE HOWARD COUNTY DESIGN MANUAL, CHAPTER 5, REVISED FEBRUARY, 1992, AND CANNOT BE CONSIDERED TO EXACTLY LOCATE THE 65DBA NOISE EXPOSURE. THE 65DBA NOISE LINE WAS ESTABLISHED BY HOWARD COUNTY TO ALERT DEVELOPERS, BUILDERS AND FUTURE RESIDENTS THAT AREAS BEYOND THIS THRESHOLD MAY EXCEED GENERALLY ACCEPTED NOISE LEVELS ESTABLISHED BY THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.

AS REQUIRED WITH F-18-008, A NOISE STUDY HAS BEEN COMPLETED BY FORENSIC ENVIRONMENTAL CONSULTANTS (FORENCON) DATED 10/10/17. BASED ON THE STUDY RECOMMENDATION ON LOTS 21 & 23 HAS BEEN DESIGNED WITH 1.5' KNEE WALL. LOT 19 HAS BEEN DESIGNED WITH A 2.5' KNEE WALL AND LOT 24 HAS BEEN DESIGNED WITH A BERM ELEVATION OF 116.5' AS REQUIRED.

THE REQUIRED BERMING AND KNEE WALLS PER THE APPROVED STUDY AND AS SHOWN ON F-18-008 SHALL BE INSTALLED WITH THE F-18-008 WORK.

SWM NOTE:

SEE SHEETS 9-11 FOR MICRO-BIORETENTION DETAILS.

SEWER NOTES:

- PER CONTRACT 14-4965-D BASEMENT SEWER SERVICE TO LOTS 17-20 IS NOT AVAILABLE VIA GRAVITY (DESIGN MANUAL WAIVER APPROVED 10-19-2017).
- CONTRACT 14-4965-D, SHEET 1 NOTE 12 STATES: "A WAIVER REQUEST FROM THE HOWARD COUNTY DESIGN MANUAL VOL. II WATER AND SEWER SECTION 4.3.B.3.B AND 4.5.E FOR LOTS 17-20 (NO BASEMENT GRAVITY SERVICE) WAS SUBMITTED ON 7/13/17 TO HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS AND APPROVED ON 10/19/2017. IN ORDER TO PROVIDE GRAVITY SANITARY SERVICE TO THE BASEMENT OF THE IDENTIFIED LOTS, THE DEPTH OF THE DOWNSTREAM SEWER MAIN WOULD EXCEED THE 18' DEPTH THAT THE BUREAU OF UTILITIES PREFERS BY OVER 5' AT POINTS. THE DEEPER SERVICE WOULD RESULT IN DEEPER MANHOLES AND BURIED DEPTHS OF PIPE THAT WOULD LIKELY RESULT IN HIGHER MAINTENANCE COSTS FOR THE COUNTY. NO OTHER FEASIBLE GRAVITY SOLUTION IS AVAILABLE FOR THESE LOTS. THE FIRST FLOOR OF THE UNITS ON THESE LOTS WOULD BE SERVED BY GRAVITY SANITARY SEWER. SHOULD AN OWNER CHOOSE TO FINISH THE BASEMENT WITH A BATHROOM FACILITY, A FLUSH-UP SERVICE WILL BE REQUIRED. THE CONDITIONS OF THE APPROVED WAIVER IS TO LABEL EACH LOT C.N.S. TO DENOTE THAT THE CELLAR CANNOT BE SERVICED."
- BUILDERS PLUMBING CONTRACTOR SHALL INSTALL SHC TO LOTS 17-20 FROM EDGE OF BASEMENT TO THE HOUSE WHERE SHOWN HEREON @ 1.0% AS ALLOWED BY THE DESIGN MANUAL VOLUME II, CHAPTER 4, SECTION 4.5.D.

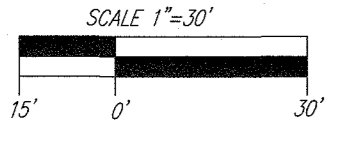
LEGEND:

- EXISTING CURB AND GUTTER
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- EXISTING SPECIMEN TREE
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- PROPERTY LINE
- RIGHT-OF-WAY LINE
- UNDERDRAN / ROOF DRAIN
- EXISTING SIDEWALK
- EX. PRIVATE DRAINAGE & UTILITY EASEMENT PLAT 25013
- EX. 24' UIC DRIVEWAY EASEMENT PLAT 25013
- EX. PUBLIC 30" WATER, SEWER, DRAINAGE & UTILITY EASEMENT PLAT 25013
- EX. PUBLIC DRAINAGE & UTILITY EASEMENT
- 65 DBA LINE (F-18-008)
- EX. 100 YEAR FLOODPLAIN
- HOUSE BOX
- REVERSE HOUSE FOOTPRINT

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

- NOTES:**
- GENERIC HOUSE BOXES ARE SHOWN IN ACCORDANCE WITH HOWARD COUNTY GUIDELINES AND DO NOT LIMIT MODEL TYPES AND OPTIONS THAT MAY FIT ON ANY INDIVIDUAL LOT
 - TYPICAL DRIVEWAY WIDTH SHOWN HEREON IS 16 FEET WIDE FOR THE PROPOSED 2 CAR GARAGE. WIDTH SUBJECT TO CHANGE WITH BUILDER RESIST.
 - DRIVEWAYS: THE SHOWN DRIVEWAY LOCATION CANNOT CHANGE UNLESS NOTED ON THIS SDP. CONFIRMING THAT THE GRADING AND DRIVEWAY SLOPES WILL REMAIN THE SAME WHETHER THE DRIVEWAY IS ON THE RIGHT OR LEFT SIDE OF THE HOUSE. ONLY ONE DRIVEWAY ORIENTATION CAN BE SHOWN FOR CORNER LOTS.

LAYOUT PLAN



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division: *Chad E. Smith* DATE: 9-24-19

Chief, Division of Land Development: *Walter D. Smith* DATE: 9-27-19

Director: *William J. Smith* DATE: 9-27-19

TM: 38 P.793
LOT 17
HOWARD COUNTY MARYLAND
PLAT# 11318
ZONED: R-12
USE: EXEMPT

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MD 21046
410-379-5956

DEVELOPER
ELM STREET DEVELOPMENT
5074 DORSEY HALL DRIVE, SUITE 205
ELLCOTT CITY, MD 21042
410-720-3021

OWNER
ESC ELK RIDGE WOODS LC
5074 DORSEY HALL DRIVE, SUITE 205
ELLCOTT CITY, MD 21042
410-720-3021

NO.	REVISION	DATE
2	REVISE HOUSE TYPE AND GRADING AND ADD A LANDSCAPE WALL ON LOT 19	7-10-20

SITE DEVELOPMENT PLAN
LAYOUT PLAN
ELK RIDGE WOODS
LOTS 2-42
SINGLE FAMILY DETACHED

TAX MAP 38 GRID 9
1ST ELECTION DISTRICT

PARCELS 756, 340 - ZONED: R-12
HOWARD COUNTY, MARYLAND

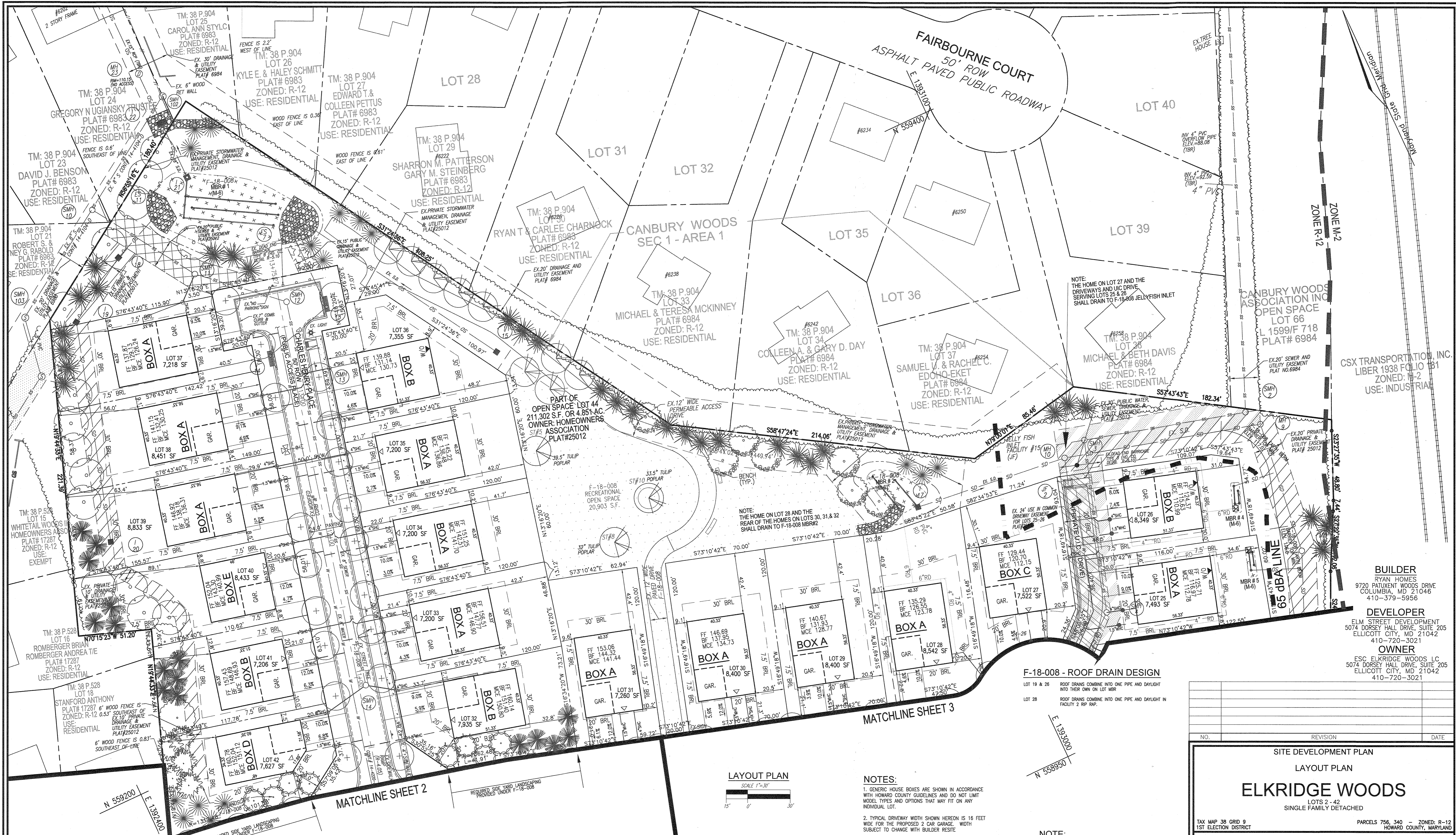
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
ELLCOTT CITY, MD 21043 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

DESIGN BY: VTC
DRAWN BY: VTC
CHECKED BY: RHY
DATE: JULY 2019
SCALE: AS SHOWN
W.O. NO.: 41446

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: 06-27-2020

3 SHEET OF 12



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

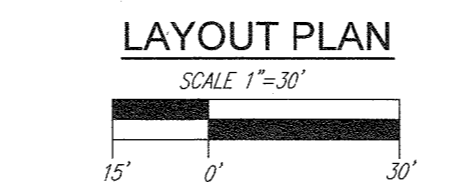
[Signature] 9-24-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 9-27-19
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 9-27-19
 DIRECTOR DATE

LEGEND:

	EXISTING CURB AND GUTTER		EXISTING UTILITY POLE		EXISTING TREELINE (FIELD LOCATED)
	EXISTING LIGHT POLE		EXISTING SIGN		EXISTING SPECIMEN TREE
	EXISTING SANITARY MANHOLE		EXISTING STREET TREES (F-04)		EXISTING FENCE
	EXISTING SANITARY LINE		EXISTING FENCE		RIGHT-OF-WAY LINE
	EXISTING CLEANOUT		UNDERDRAIN / ROOF DRAIN		EXISTING STORM DRAIN INLET
	EXISTING FIRE HYDRANT		F-18-008 RECREATION OPEN SPACE (PLAT# 25012)		65 dBA LINE (F-18-008)
	EXISTING WATER LINE		EX. PRIVATE DRAINAGE & UTILITY EASEMENT PLAT# 25012		EXISTING SIDEWALK
	EXISTING STORM DRAIN		EX. PUBLIC 20' WATER & UTILITY EASEMENT PLAT# 25012		EX. PUBLIC 30' WATER, SEWER, DRAINAGE & UTILITY EASEMENT PLAT# 25012
	EXISTING STORM DRAIN INLET		EX. PUBLIC DRAINAGE & UTILITY EASEMENT PLAT# 25012		HOUSE BOX



NOTES:

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NOTE:

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NOTE:

SEE SHEETS 9-11 FOR MICRO-BIOTENTION DETAILS.

F-18-008 - ROOF DRAIN DESIGN

LOT 19 & 28 ROOF DRAINS COMBINE INTO ONE PIPE AND DAYLIGHT INTO THE OWN ON LOT MBR

LOT 28 ROOF DRAINS COMBINE INTO ONE PIPE AND DAYLIGHT IN FACILITY 2, 8" DIA.

MATCHLINE SHEET 3

MATCHLINE SHEET 2

SITE DEVELOPMENT PLAN

LAYOUT PLAN

ELKRIDGE WOODS

LOTS 2-42
 SINGLE FAMILY DETACHED

TAX MAP 38 GRID 9
 1ST ELECTION DISTRICT

PARCELS 756, 340 - ZONED: R-12
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.

ENGINEERS • SURVEYORS • PLANNERS

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

PROFESSIONAL CERTIFICATE

DESIGN BY: _____ VTO

DRAWN BY: _____ VTO

CHECKED BY: _____ RHV

DATE: JULY 2019

SCALE: AS SHOWN

W.O. NO.: 41446

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

4 SHEET OF 12

BUILDER
 RYAN HOMES
 9720 PATUXENT WOODS DRIVE
 COLUMBIA, MD 21046
 410-379-5956

DEVELOPER
 ELM STREET DEVELOPMENT
 5074 DORSEY HALL DRIVE, SUITE 205
 ELLICOTT CITY, MD 21042
 410-720-3021

OWNER
 ESC ELKRIDGE WOODS LC
 5074 DORSEY HALL DRIVE, SUITE 205
 ELLICOTT CITY, MD 21042
 410-720-3021

CSX TRANSPORTATION, INC.
 LIBER 1938 FOLIO 181
 ZONED: I-2
 USE: INDUSTRIAL

CANBURY WOODS ASSOCIATION INC.
 OPEN SPACE
 LOT 66
 L 1599/F 718
 PLAT# 6984

NOTE:
 THE HOME ON LOT 27 AND THE DRIVEWAYS AND UIC DRIVE SERVING LOTS 25 & 26 SHALL DRAIN TO F-18-008 JELLYFISH INLET

NOTE:
 THE HOME ON LOT 28 AND THE REAR OF THE HOMES ON LOTS 30, 31 & 32 SHALL DRAIN TO F-18-008 MBR#2

PART OF OPEN SPACE LOT 44
 211,302 S.F. OR 4.851 AC.
 OWNER: HOMEOWNERS ASSOCIATION
 PLAT# 25012

MICHAEL & TERESA MCKINNEY
 LOT 33
 PLAT# 6984
 ZONED: R-12
 USE: RESIDENTIAL

COLEEN A. & GARY D. DAY
 LOT 34
 PLAT# 6984
 ZONED: R-12
 USE: RESIDENTIAL

SAMUEL W. & RACHEL C. EDWARDS
 LOT 37
 PLAT# 6984
 ZONED: R-12
 USE: RESIDENTIAL

MICHAEL & BETH DAVIS
 LOT 35
 PLAT# 6984
 ZONED: R-12
 USE: RESIDENTIAL

EX. 20' SEWER AND UTILITY EASEMENT PLAT NO. 6984

EX. 20' PRIVATE DRAINAGE & UTILITY EASEMENT PLAT# 25012

ZONE R-12
 ZONE M-2

NOTE:
IN ACCORDANCE WITH F-18-008 SEDIMENT BASIN #1 & SEDIMENT TRAP #1 SHALL REMAIN UNTIL UPSTREAM DRAINAGE AREAS ARE PERMANENTLY STABILIZED AND PERMISSION IS OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

MATCHLINE SHEET 7

MATCHLINE SHEET 6

LEGEND:

- EXISTING CONTOUR
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING STORM DRAIN
- EXISTING STORM DRAIN INLET
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING SPECIMEN TREE
- EXISTING STREET TREES (F-04-...)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING SIDEWALK
- EX. PRIVATE DRAINAGE & UTILITY EASEMENT PLAT 25013
- EX. PUBLIC 20" WATER & UTILITY EASEMENT PLAT 25013
- EX. 24" IUC DRIVEWAY EASEMENT PLAT 25013
- EX. PUBLIC 30" SEWER & UTILITY EASEMENT PLAT 25013
- M1B2 SOILS BOUNDARY
- M1B3 SUPER SILT FENCE
- SSF SILT FENCE
- SF LIMIT OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE
- EXISTING BORINGS (F-18-008)

SOIL EROSION & SEDIMENT CONTROL PLAN NOTES

- REFER TO SHEET 8 FOR SEQUENCE OF CONSTRUCTION AND STABILIZATION NOTES
- IF REQUIRED BY SEDIMENT CONTROL INSPECTOR, SUPER SILT FENCE SHALL REPLACE STANDARD SILT FENCE WHERE FENCING INTERCEPTS CONCENTRATED FLOWS.

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

NOTE: STOCKPILING WILL BE PERMITTED ON EACH LOT ONLY.

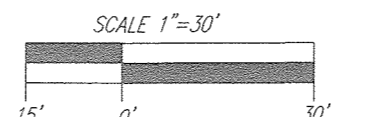
NOTE: EITHER PERMANENT OR TEMPORARY STABILIZATION IS TO BE APPLIED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR REGARDLESS OF DAYS/DATES IN THE STANDARD SEDIMENT CONTROL NOTES AND/OR SEEDING SPECIFICATIONS.

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

MAPPED SOILS TYPES

SYMBOL / NAME / DESCRIPTION	GROUP	K FACTOR	HIGHLY ERODIBLE SOILS
C10 CROWN AND ESCARPMENT SOILS TO 10 TO 15 PERCENT SLOPES	C	0.32	NO
R10C RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	C	0.28	NO
R10D RUSSETT FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES	C	0.28	NO
S10E URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	B	0.32	YES
U10D URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	B	0.43	YES

GRADING, SOIL EROSION AND SEDIMENT CONTROL PLAN



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad E. ... 9-24-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kevin ... 9-27-19
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

David ... 9-27-19
DIRECTOR 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 MDE.

Steven G. & Jane Jenks 9/15/19
OWNER/DEVELOPER SIGNATURE DATE

Steven G. Jenks - Land Development
PRINTED NAME & TITLE

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

Robert H. Vogel 9/19/19
DESIGNER'S SIGNATURE DATE

ROBERT H. VOGEL
PRINTED NAME

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

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

John R. ... 9/19/19
HOWARD S.C.D. DATE

GRADING NOTE:
YARD SWALES SHALL BE 2% MINIMUM

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MD 21046
410-379-5956

DEVELOPER
ELM STREET DEVELOPMENT
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
410-720-3021

OWNER
ESC ELKRIDGE WOODS LC
5074 DORSEY HALL DRIVE, SUITE 205
ELLICOTT CITY, MD 21042
410-720-3021

**SITE DEVELOPMENT PLAN
GRADING, SOIL EROSION AND
SEDIMENT CONTROL PLAN**

ELKRIDGE WOODS
LOTS 2 - 42
SINGLE FAMILY DETACHED

TAX MAP 38 GRID 9
1ST ELECTION DISTRICT

PARCELS 756, 340 - ZONED: R-12
HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL
ENGINEERS • SURVEYORS • PLANNERS**

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

PROFESSIONAL CERTIFICATE

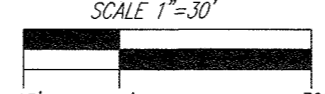
STATE OF MARYLAND
ROBERT H. VOGEL
16193
PROFESSIONAL ENGINEER

DESIGN BY: VTC
DRAWN BY: VTC
CHECKED BY: RHV
DATE: JULY 2019
SCALE: AS SHOWN
W.O. NO.: 41446

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

5 SHEET OF 12

GRADING, SOIL EROSION AND SEDIMENT CONTROL PLAN



- LEGEND:**
- EXISTING CONTOUR
 - EXISTING CURB AND GUTTER
 - EXISTING UTILITY POLE
 - EXISTING LIGHT POLE
 - EXISTING SIGN
 - EXISTING SANITARY MANHOLE
 - EXISTING SANITARY LINE
 - EXISTING CLEANOUT
 - EXISTING FIRE HYDRANT
 - EXISTING WATER LINE
 - EXISTING STORM DRAIN
 - EXISTING STORM DRAIN INLET
 - EXISTING TREE LINE (FIELD LOCATED)
 - EXISTING SPECIMEN TREE
 - EXISTING STREET TREES (F-04)
 - EXISTING FENCE
 - PROPERTY LINE
 - RIGHT-OF-WAY LINE
 - EXISTING SIDEWALK
 - EX. PRIVATE DRAINAGE & UTILITY EASEMENT PLAT 25013
 - EX. 24" UIC DRIVEWAY EASEMENT PLAT 25013
 - EX. PUBLIC 30" WATER, SEWER, DRAINAGE & UTILITY EASEMENT PLAT 25013
 - EX. PUBLIC DRAINAGE & UTILITY EASEMENT
 - 65 dBA LINE (F-18-008)
 - EX. 100 YEAR FLOODPLAIN PLAT
 - SOILS BOUNDARY
 - SUPER SILT FENCE
 - SILT FENCE
 - LIMIT OF DISTURBANCE
 - STABILIZED CONSTRUCTION ENTRANCE
 - EXISTING BORINGS (F-18-008)

MATCHLINE SHEET 5

MATCHLINE SHEET 7

MATCHLINE SHEET 5

MATCHLINE SHEET 5

GRADING NOTE:
YARD SWALES SHALL BE 2% MINIMUM

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

NOTE: STOCKPILING WILL BE PERMITTED ON EACH LOT ONLY.

SOIL EROSION & SEDIMENT CONTROL PLAN NOTES

- REFER TO SHEET 8 FOR SEQUENCE OF CONSTRUCTION
- REFER TO SHEETS 8 FOR STANDARD DETAILS AND STABILIZATION NOTES
- IF REQUIRED BY SEDIMENT CONTROL INSPECTOR, SUPER SILT FENCE SHALL REPLACE STANDARD SILT FENCE WHERE FENCING INTERCEPTS CONCENTRATED FLOWS.

NOTE: EITHER PERMANENT OR TEMPORARY STABILIZATION IS TO BE APPLIED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR REGARDLESS OF DAYS/DATES IN THE STANDARD SEDIMENT CONTROL NOTES AND/OR SEEDING SPECIFICATIONS.

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

MAPPED SOILS TYPES			
SYMBOL NAME / DESCRIPTION	GROUP	K FACTOR	HIGHLY ERODIBLE SOILS
C10 CROMM AND EVERSBROOK SOILS, 10 TO 15 PERCENT SLOPES	C	0.32	NO
RAC RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	C	0.28	NO
RSD RUSSETT FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES	C	0.28	NO
SFC URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	B	0.32	YES
UCD URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	C	0.43	YES

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 9-24-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 9-27-19
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 9-27-19
DIRECTOR 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 MDE.

[Signature] 9-18-19
OWNER/DEVELOPER SIGNATURE DATE

[Signature] 9/18/19
PRINTED NAME & TITLE

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

[Signature] 9/18/19
DESIGNER'S SIGNATURE DATE

ROBERT H. VOGEL
PRINTED NAME

MD REGISTRATION NO. 16193
R.L.S., OR R.L.A. (Circle one)

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

[Signature] 9/18/19
PROFESSIONAL CERTIFICATE

ROBERT H. VOGEL, PE No.16193

SWM NOTES:

- STORMWATER MANAGEMENT FOR LOTS 19-26 IS PROVIDED BY THE USE OF MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE MICRO-BIORETENTION (M-6). THE REMAINING STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF BIORETENTION FACILITIES, JELLYFISH FILTERS, AND MD-378 WET POND TO MEET MDE REQUIREMENTS UNDER F-18-008.
- FACILITIES TREATING ONLY AREAS FROM PRIVATE PROPERTY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNERS AND HOA. FACILITIES TREATING AREAS WITHIN PUBLIC ROW WILL BE PLACED IN EASEMENTS AND WILL BE MAINTAINED BY HOA. HOWARD COUNTY WILL MAINTAIN PIPES AND PROPERTY OWNERS/HOA WILL MAINTAIN FACILITY SURFACES.

STORMWATER MANAGEMENT PRACTICES	
LOT NO.	FACILITY TYPE & MDE NO.
19	MICRO-BIORETENTION (M-6)
20	MICRO-BIORETENTION (M-6)
21	MICRO-BIORETENTION (M-6)
22	MICRO-BIORETENTION (M-6)
23	MICRO-BIORETENTION (M-6)
24	MICRO-BIORETENTION (M-6)
25	MICRO-BIORETENTION (M-6)
26	MICRO-BIORETENTION (M-6)

- DECLARATION OF COVENANTS WERE RECORDED WITH F-18-008.
- ON-LOT MICRO-BIORETENTION FACILITIES SHALL BE CONSTRUCTED AS PART OF THIS PLAN.
- APPROVED F-18-008 CONSTRUCTION DETAILS ARE SHOWN HEREON.

SEWER NOTES:

- PER CONTRACT 14-4965-D BASEMENT SEWER SERVICE TO LOTS 17-20 IS NOT AVAILABLE VIA GRAVITY (DESIGN MANUAL WATER APPROVED 10-19-2017).
- CONTRACT 14-4965-D, SHEET 1 NOTE 12 STATES: "A WAMER REQUEST FROM THE HOWARD COUNTY DESIGN MANUAL VOL. II WATER AND SER SECTION 4.3.B.3.B AND 4.5.E FOR LOTS 17-20 (NO BASEMENT GRAVITY SERVICE) WAS SUBMITTED ON 7/13/17 TO HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS AND APPROVED ON 10/19/2017. IN ORDER TO PROVIDE GRAVITY SANITARY SERVICE TO THE BASEMENT OF THE IDENTIFIED LOTS, THE DEPTH OF THE DOWNSTREAM SEWER MAIN WOULD EXCEED THE 18' DEPTH THAT THE BUREAU OF UTILITIES PREFERS BY OVER 5' AT POINTS. THE DEEPER SERVICE WOULD RESULT IN DEEPER MANHOLES AND BURIED DEPTHS OF PIPE THAT WOULD LIKELY RESULT IN HIGHER MAINTENANCE COSTS FOR THE COUNTY. NO OTHER FEASIBLE GRAVITY SOLUTION IS AVAILABLE FOR THESE LOTS. THE FIRST FLOOR OF THE UNITS ON THESE LOTS WOULD BE SERVICED BY GRABBY SANITARY SEWER. SHOULD AN OWNER CHOOSE TO FINISH THE BASEMENT WITH A BATHROOM FACILITY, A FLUSH-UP SERVICE WILL BE REQUIRED. THE CONDITIONS OF THE APPROVED WAMER IS TO LABEL EACH LOT C.N.S. TO DENOTE THAT THE CELLAR CANNOT BE SERVICED."
- BUILDERS PLUMBING CONTRACTOR SHALL INSTALL SHC TO LOTS 17-20 FROM EDGE OF BASEMENT TO THE HOUSE WHERE SHOWN HEREON @ 1.0% AS ALLOWED BY THE DESIGN MANUAL VOLUME II, CHAPTER 4, SECTION 4.5.D.

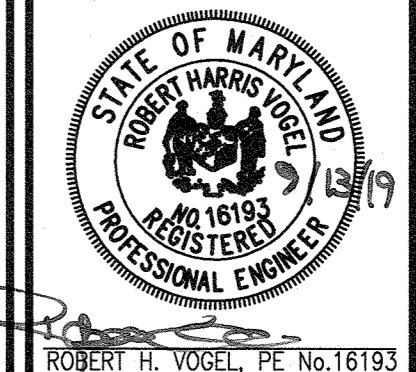
NOTE:
IN ACCORDANCE WITH F-18-008 SEDIMENT BASIN #1 & SEDIMENT TRAP #1 SHALL REMAIN UNTIL UPSTREAM DRAINAGE AREAS ARE PERMANENTLY STABILIZED AND PERMISSION IS OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

NO.	REVISION	DATE
2	REVISE HOUSE TYPE AND GRADING AND ADD LANDSCAPE WALL ON LOT 19	7-10-20

SITE DEVELOPMENT PLAN
GRADING, SOIL EROSION AND SEDIMENT CONTROL PLAN
ELKRIDGE WOODS
LOTS 2-42
SINGLE FAMILY DETACHED

TAX MAP 38 GRID 9 PARCELS 756, 340 - ZONED: R-12
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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



DESIGN BY: VTC
DRAWN BY: VTC
CHECKED BY: RLV
DATE: JULY 2019
SCALE: AS SHOWN
W.O. NO.: 41446

6 SHEET OF 12

NOTE:
THE 65 DBA NOISE CONTOUR LINE DRAWN ON THIS DEVELOPMENT PLAN IS ADVISORY AS REQUIRED BY THE HOWARD COUNTY DESIGN MANUAL, CHAPTER 5, REVISED FEBRUARY, 1992, AND CANNOT BE CONSIDERED TO EXACTLY LOCATE THE 65DBA NOISE EXPOSURE. THE 65DBA NOISE LINE WAS ESTABLISHED BY HOWARD COUNTY TO ALERT DEVELOPERS, BUILDERS AND FUTURE RESIDENTS THAT AREAS BEYOND THIS THRESHOLD MAY EXCEED GENERALLY ACCEPTED NOISE LEVELS ESTABLISHED BY THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.

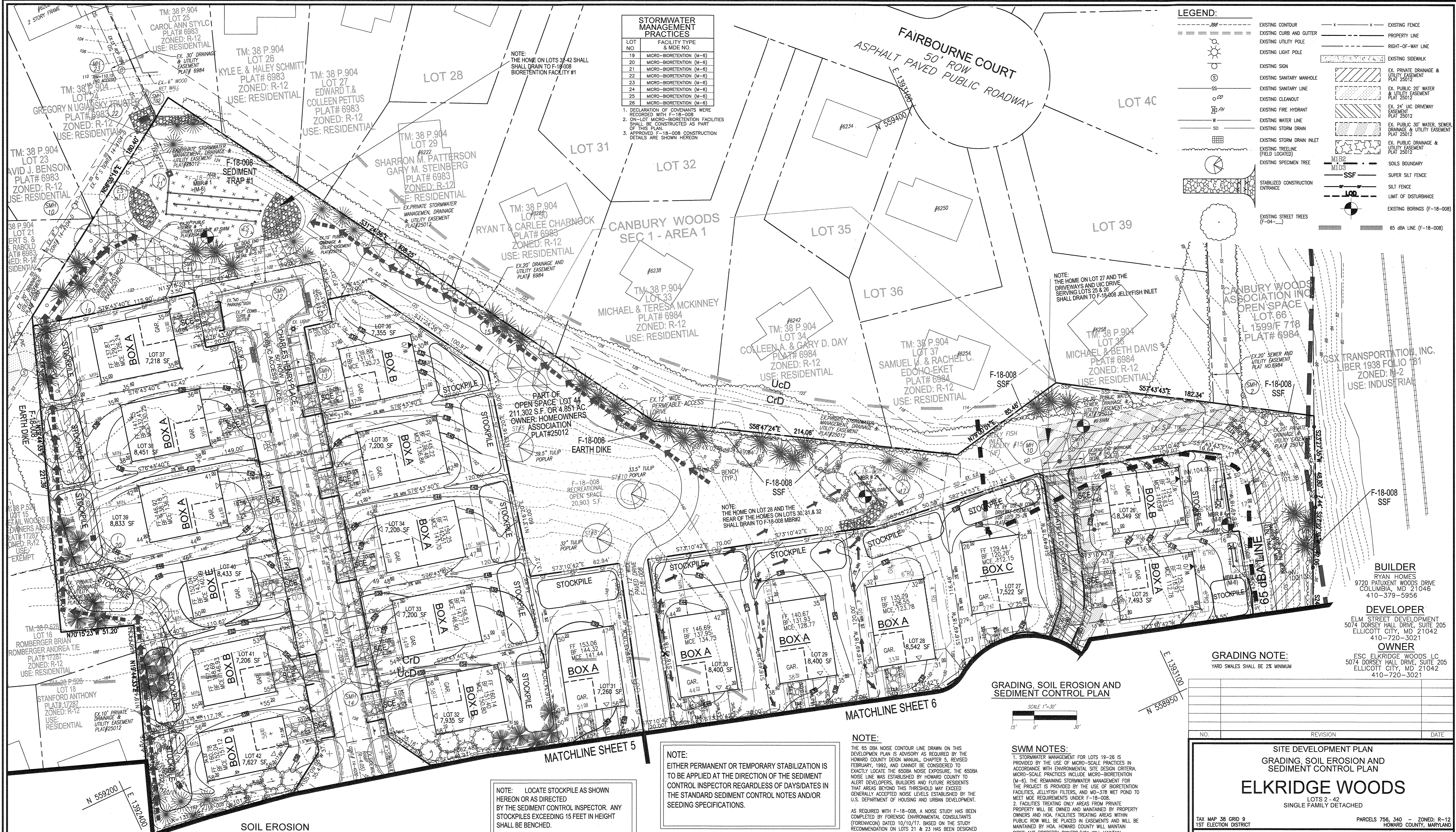
AS REQUIRED WITH F-18-008, A NOISE STUDY HAS BEEN COMPLETED BY FORENSIC ENVIRONMENTAL CONSULTANTS (FOREMCON) DATED 10/10/17. BASED ON THE STUDY RECOMMENDATION ON LOTS 21 & 23 HAS BEEN DESIGNED WITH 1.5' KNEE WALL. LOT 19 HAS BEEN DESIGNED WITH A 2.5' KNEE WALL AND LOT 24 HAS BEEN DESIGNED WITH A BERM ELEVATION OF 116.5' AS REQUIRED.

THE REQUIRED BERMING AND KNEE WALLS PER THE APPROVED STUDY AND AS SHOWN ON F-18-008 SHALL BE INSTALLED WITH THE F-18-008 WORK.

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MD 21046
410-379-5956

DEVELOPER
ELM STREET DEVELOPMENT
5074 DORSEY HALL DRIVE, SUITE 205
ELICOTT CITY, MD 21042
410-720-3021

OWNER
ESC ELKRIDGE WOODS LC
5074 DORSEY HALL DRIVE, SUITE 205
ELICOTT CITY, MD 21042
410-720-3021



STORMWATER MANAGEMENT PRACTICES

LOT NO.	FACILITY TYPE & MDE NO.
19	MICRO-BIORETENTION (M-6)
20	MICRO-BIORETENTION (M-6)
21	MICRO-BIORETENTION (M-6)
22	MICRO-BIORETENTION (M-6)
23	MICRO-BIORETENTION (M-6)
24	MICRO-BIORETENTION (M-6)
25	MICRO-BIORETENTION (M-6)
26	MICRO-BIORETENTION (M-6)

- DECLARATION OF COVENANTS WERE RECORDED WITH F-18-008.
- ON-LOT MICRO-BIORETENTION FACILITIES SHALL BE CONSTRUCTED AS PART OF THIS PLAN.
- APPROVED F-18-008 CONSTRUCTION DETAILS ARE SHOWN HEREON.

LEGEND:

	EXISTING CONTOUR		EXISTING FENCE
	EXISTING CURB AND GUTTER		PROPERTY LINE
	EXISTING UTILITY POLE		RIGHT-OF-WAY LINE
	EXISTING LIGHT POLE		EXISTING SIDEWALK
	EXISTING SIGN		EX. PRIVATE DRAINAGE & UTILITY EASEMENT PLAT 25012
	EXISTING SANITARY MANHOLE		EX. PUBLIC 20' WATER & UTILITY EASEMENT PLAT 25012
	EXISTING SANITARY LINE		EX. 24' UC DRIVEWAY EASEMENT PLAT 25012
	EXISTING CLEANOUT		EX. PUBLIC 30' WATER, SEWER, DRAINAGE & UTILITY EASEMENT PLAT 25012
	EXISTING FIRE HYDRANT		EX. PUBLIC DRAINAGE & UTILITY EASEMENT PLAT 25012
	EXISTING WATER LINE		EX. PUBLIC DRAINAGE & UTILITY EASEMENT PLAT 25012
	EXISTING STORM DRAIN		SOILS BOUNDARY
	EXISTING STORM DRAIN INLET		SUPER SILT FENCE
	EXISTING TREELINE (FIELD LOCATED)		SILT FENCE
	EXISTING SPECIMEN TREE		LIMIT OF DISTURBANCE
	STABILIZED CONSTRUCTION ENTRANCE		EXISTING STREET TREES (F-04)
	M1B2		65 dBA LINE (F-18-008)
	M1D3		
	SSF		
	L1D		

SOIL EROSION & SEDIMENT CONTROL PLAN NOTES

- REFER TO SHEET 8 FOR SEQUENCE OF CONSTRUCTION.
- REFER TO SHEETS 8 FOR STANDARD DETAILS AND STABILIZATION NOTES.
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NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. ANY STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

NOTE: STOCKPILING WILL BE PERMITTED ON EACH LOT ONLY.

NOTE: EITHER PERMANENT OR TEMPORARY STABILIZATION IS TO BE APPLIED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR REGARDLESS OF DAYS/DATES IN THE STANDARD SEDIMENT CONTROL NOTES AND/OR SEEDING SPECIFICATIONS.

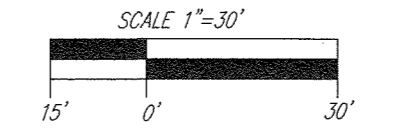
NOTE: SUPER SILT FENCE MAY BE REPLACED WITH STANDARD SILT FENCE WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR. SILT FENCE SHALL BE CURLED UPHILL. NO MORE THAN 35 FEET APART. DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

NOTE: THE 65 dBA NOISE CONTOUR LINE DRAWN ON THIS DEVELOPMENT PLAN IS ADVISORY AS REQUIRED BY THE HOWARD COUNTY DECOM MANUAL, CHAPTER 5, REVISED FEBRUARY, 1992, AND CANNOT BE CONSIDERED TO EXACTLY LOCATE THE 65dBA NOISE EXPOSURE. THE 65dBA NOISE LINE WAS ESTABLISHED BY HOWARD COUNTY TO ALERT DEVELOPERS, BUILDERS AND FUTURE RESIDENTS THAT AREAS BEYOND THIS THRESHOLD MAY EXCEED GENERALLY ACCEPTED NOISE LEVELS ESTABLISHED BY THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.

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THE REQUIRED BERMING AND KNEE WALLS PER THE APPROVED STUDY AND AS SHOWN ON F-18-008 SHALL BE INSTALLED WITH THE F-18-008 WORK.

GRADING, SOIL EROSION AND SEDIMENT CONTROL PLAN



SWM NOTES:

- STORMWATER MANAGEMENT FOR LOTS 19-26 IS PROVIDED BY THE USE OF MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE MICRO-BIORETENTION (M-6). THE REMAINING STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF BIORETENTION FACILITIES, JELLYFISH FILTERS, AND M0-378 WET POND TO MEET MDE REQUIREMENTS UNDER F-18-008.
- FACILITIES TREATING ONLY AREAS FROM PRIVATE PROPERTY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNERS AND HOA. FACILITIES TREATING AREAS WITHIN PUBLIC ROW WILL BE PLACED IN EASEMENTS WILL MAINTAIN BY HOA. HOWARD COUNTY WILL MAINTAIN PIPES AND PROPERTY OWNERS/HOA WILL MAINTAIN FACILITY SURFACES.

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MAPPED SOILS TYPES

SYMBOL NAME / DESCRIPTION	GROUP	K FACTOR	HIGHLY ERODIBLE SOILS
CdD CROM AND EVERSOBRO SOILS, 10 TO 15 PERCENT SLOPES	C	0.32	NO
RnC RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES	C	0.28	NO
RdD ROSETT FINE SANDY LOAM, 10 TO 15 PERCENT SLOPES	C	0.28	NO
SrE URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	B	0.32	YES
UcD URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	C	0.43	YES

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 9/24/19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 9/27/19
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 9/27/19
DIRECTOR 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 (DOR) APPROVED TRAINING PROGRAM IN THE CONTROL OF SOIL 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 HOA.

OWNER/DEVELOPER SIGNATURE: *[Signature]* DATE: 9/25/19

DESIGN CERTIFICATION:

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

DESIGNER'S SIGNATURE: *[Signature]* DATE: 9/24/19

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

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

[Signature] 9/18/19
HOWARD S.C.D. DATE

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MD 21046
410-379-5956

DEVELOPER
ELM STREET DEVELOPMENT
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410-720-3021

OWNER
ESS ELKRIDGE WOODS LC
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410-720-3021

GRADING NOTE:
YARD SWALES SHALL BE 2% MINIMUM

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN
GRADING, SOIL EROSION AND SEDIMENT CONTROL PLAN

ELKRIDGE WOODS
LOTS 2-42
SINGLE FAMILY DETACHED

TAX MAP 38 GRID 9
1ST ELECTION DISTRICT

PARCELS 756, 340 - ZONED: R-12
HOWARD COUNTY, MARYLAND

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

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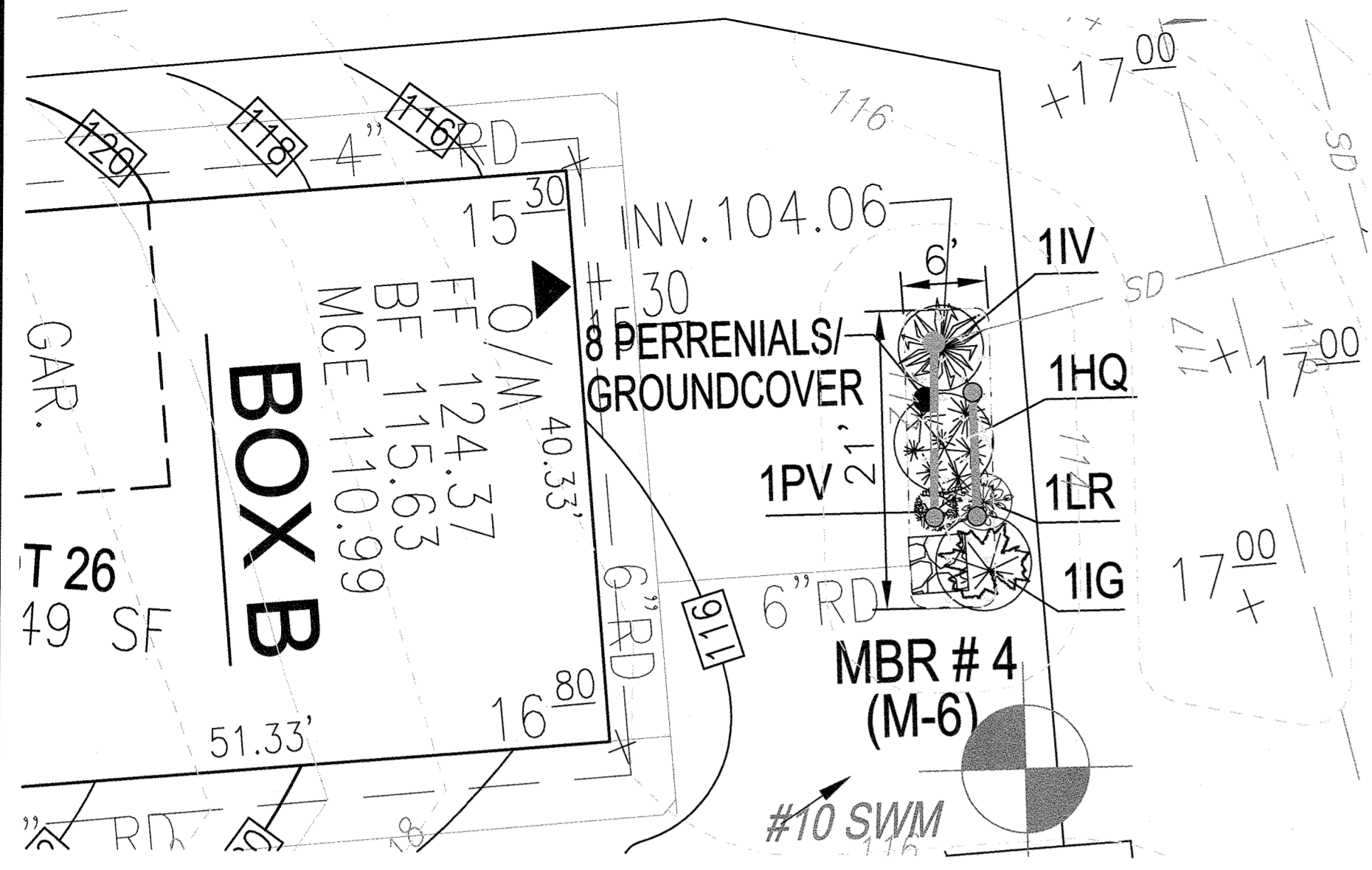
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DESIGN BY: VTC
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DATE: JULY 2019
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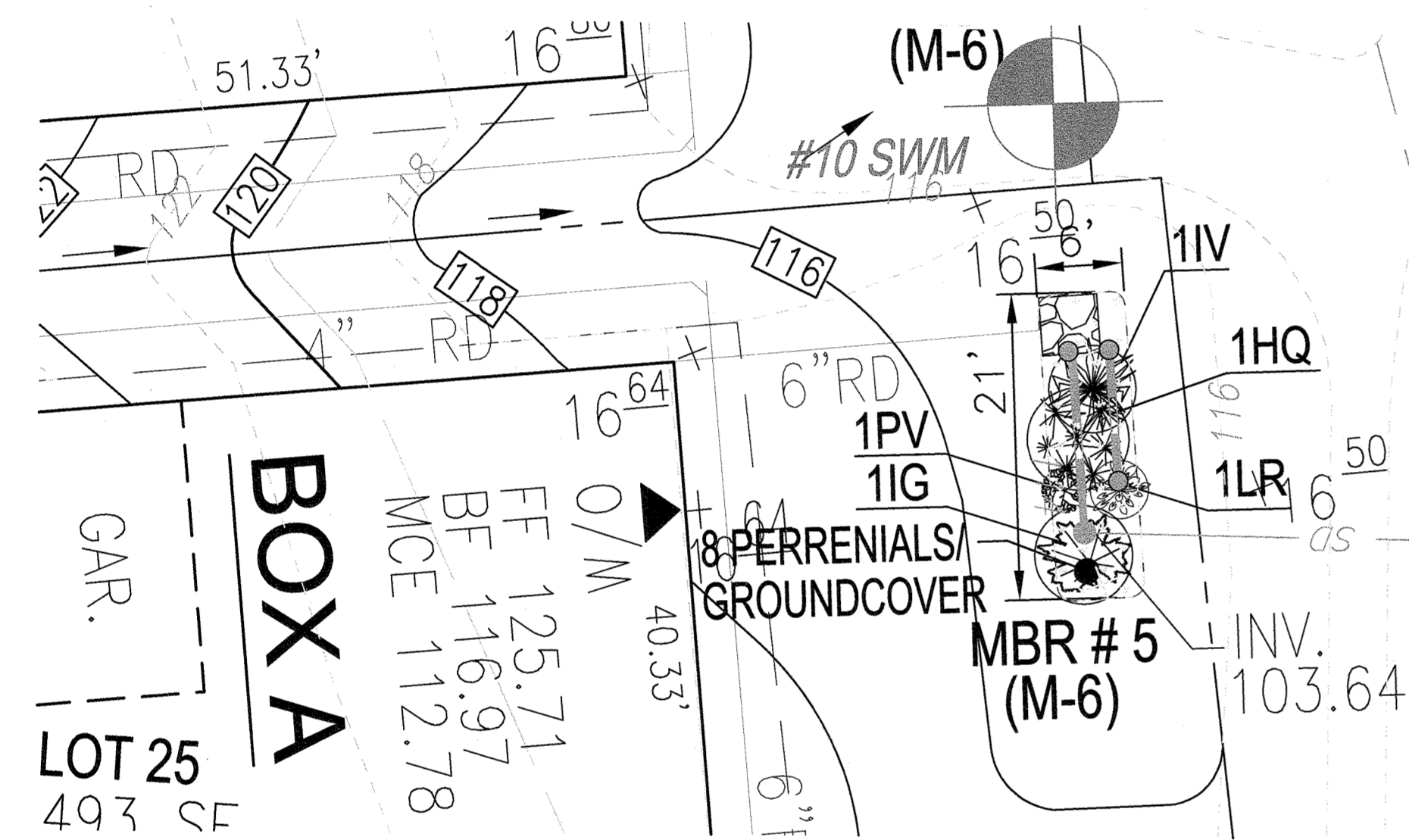
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7 SHEET OF 12

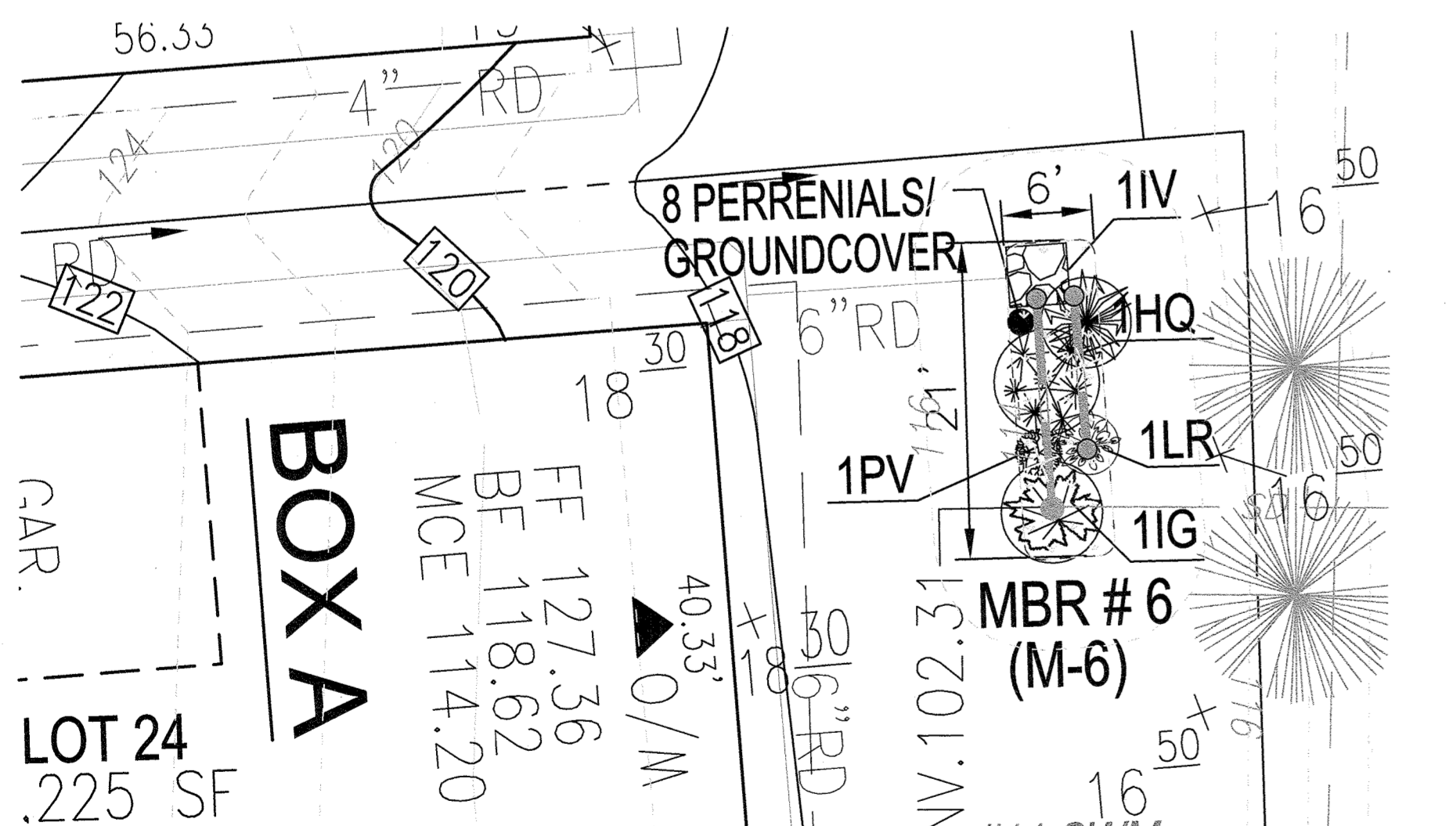
ROBERT H. VOGEL, PE No.16193



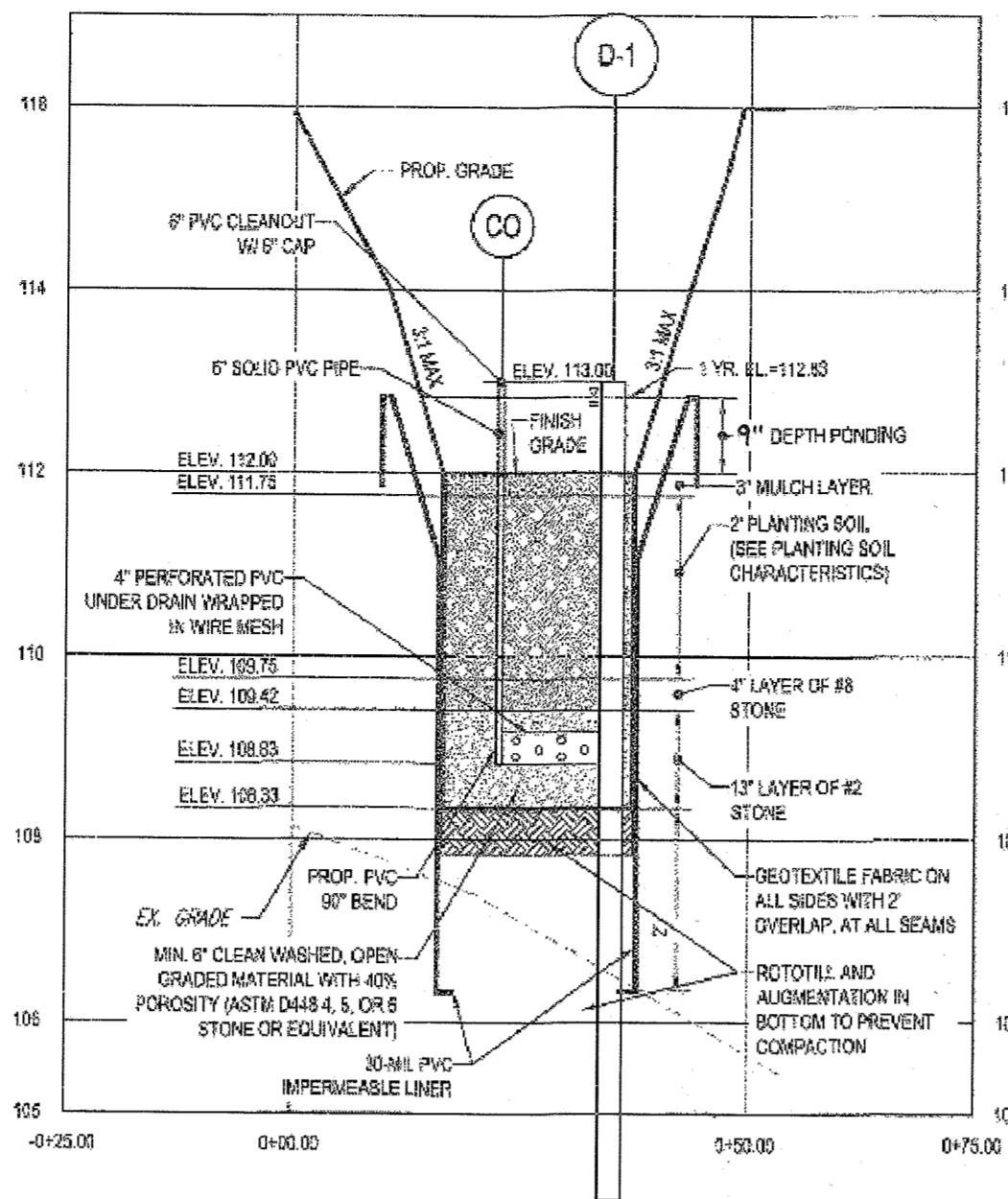
MICRO-BIORETENTION (M-6) FACILITY #4 PLAN VIEW
SCALE: 1"=10'



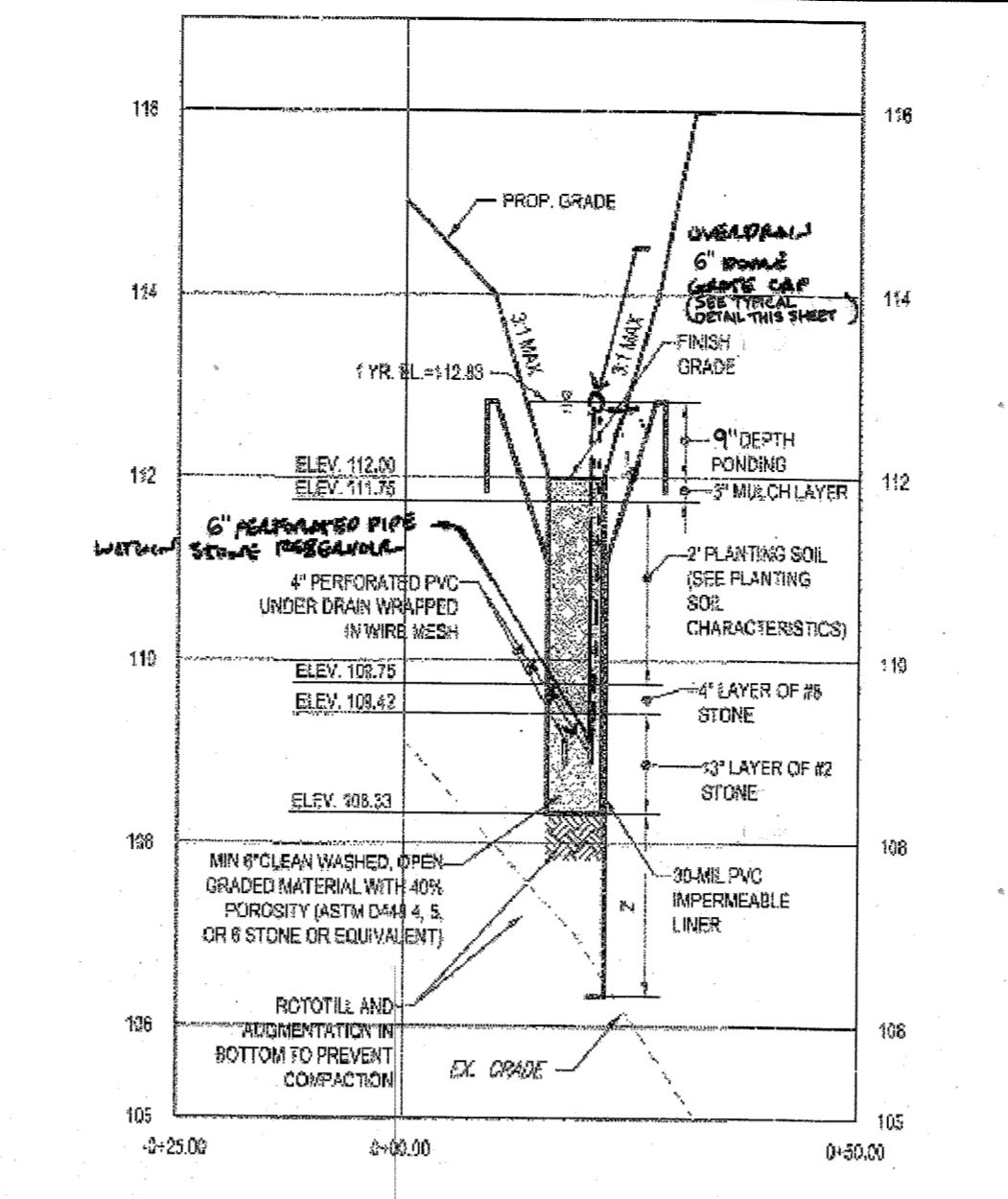
MICRO-BIORETENTION (M-6) FACILITY #5 PLAN VIEW
SCALE: 1"=10'



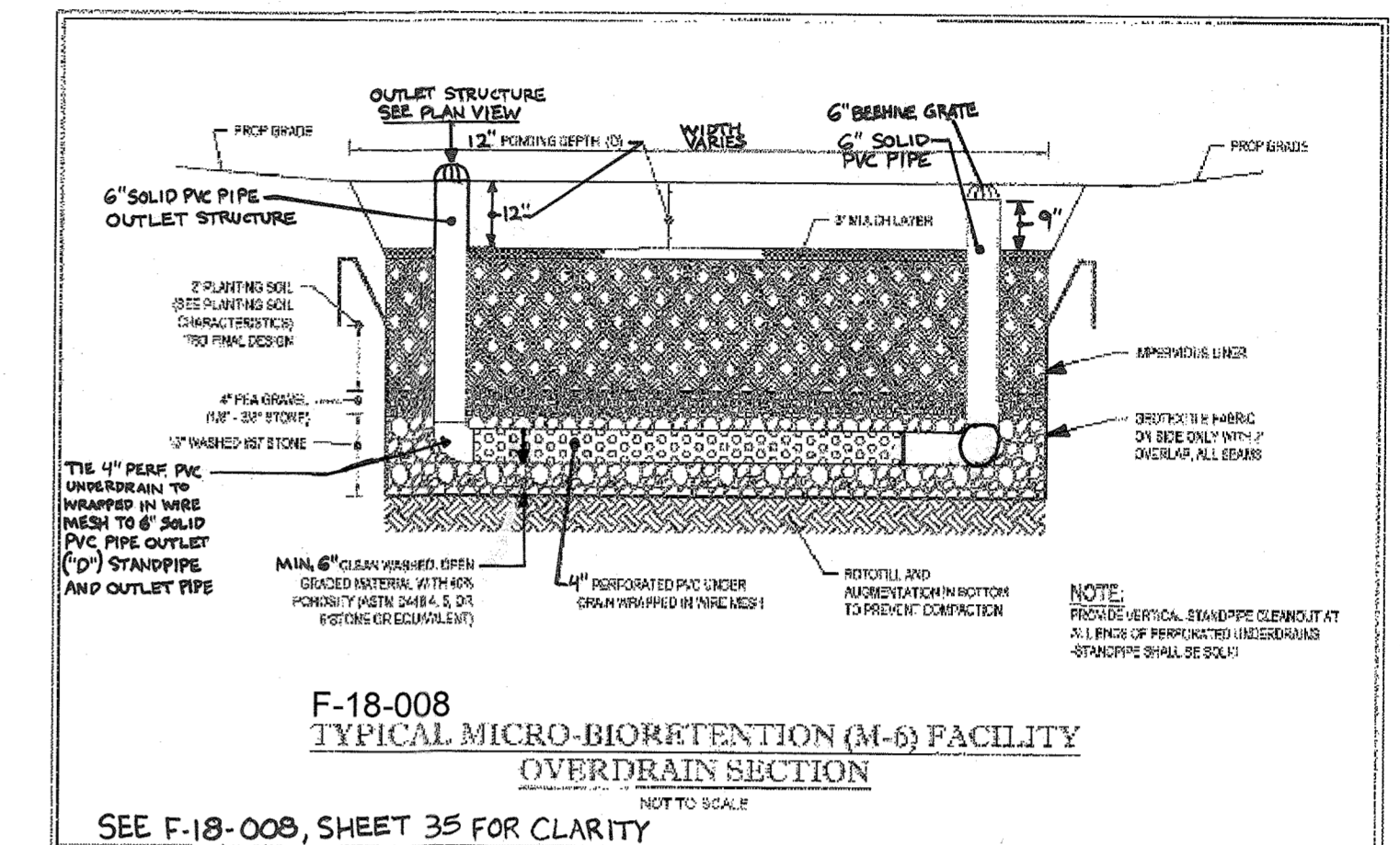
MICRO-BIORETENTION (M-6) FACILITY #6 PLAN VIEW
SCALE: 1"=10'



F-18-008
MICRO-BIORETENTION FACILITY (M-6) #4 - SECTION A-A
SCALE: 1"=2' HORIZONTAL
1"=0' VERTICAL

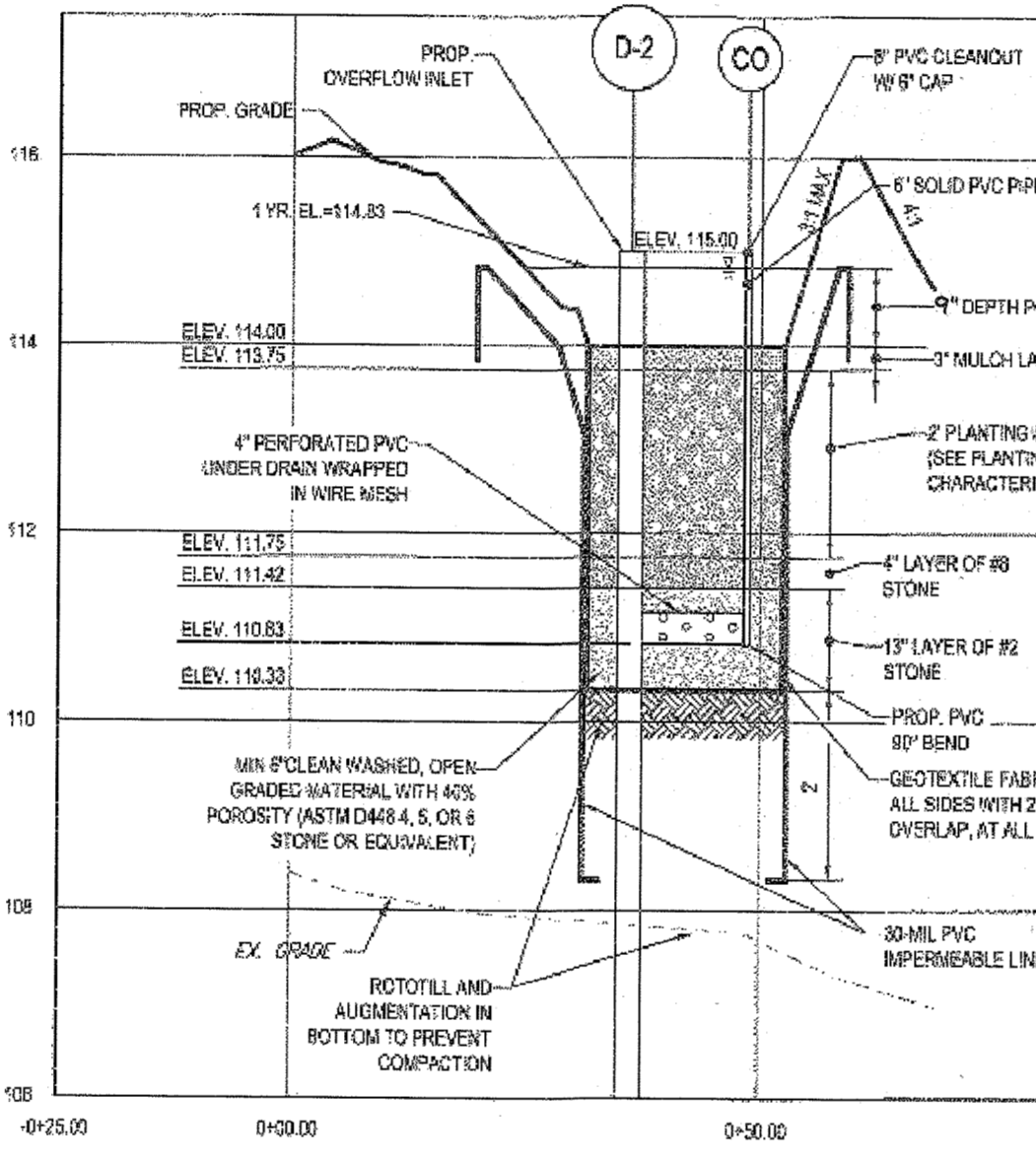


F-18-008
MICRO-BIORETENTION FACILITY (M-6) #4 - SECTION B-B
SCALE: 1"=2' HORIZONTAL
1"=0' VERTICAL

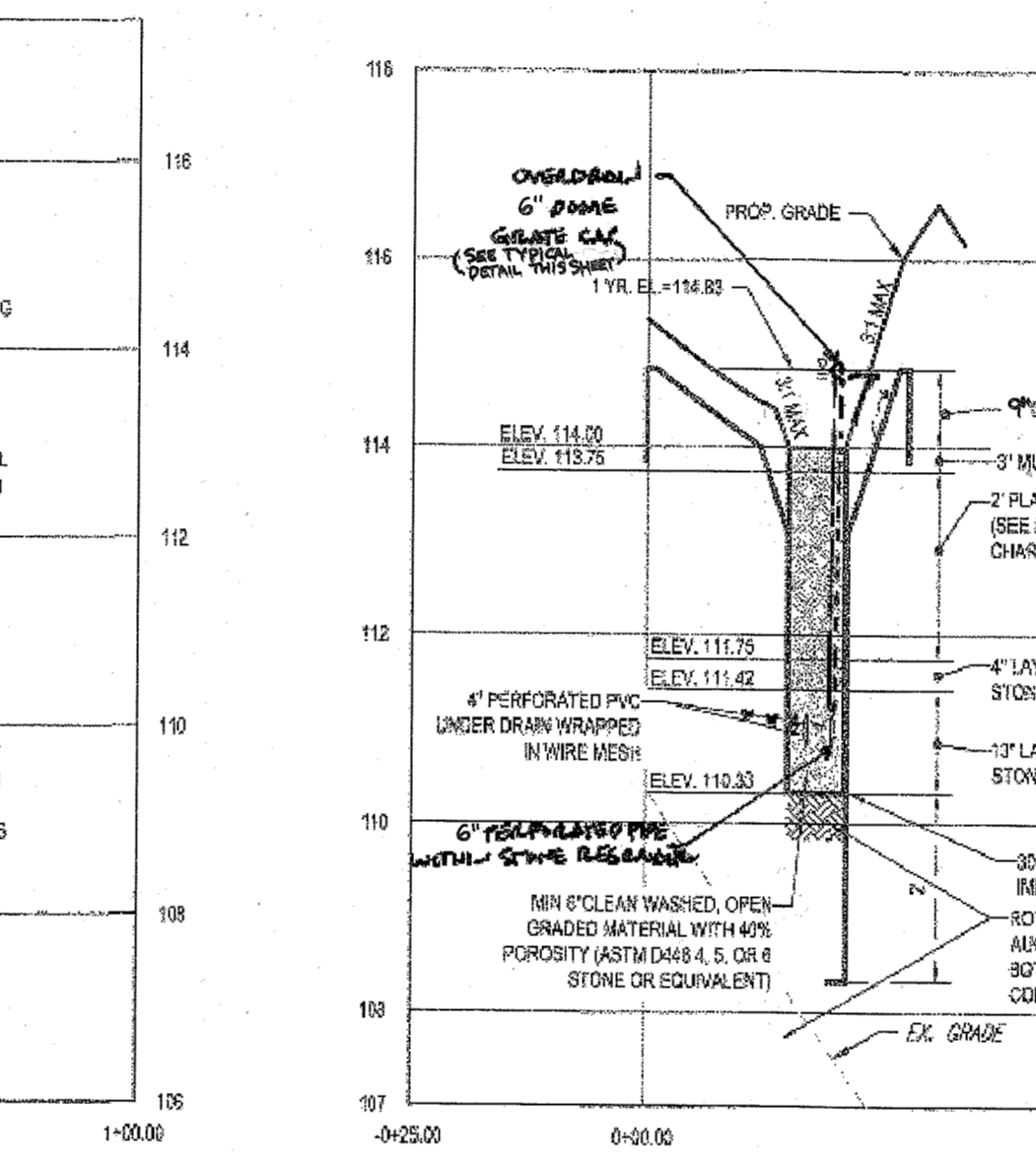


F-18-008
TYPICAL MICRO-BIORETENTION (M-6) FACILITY
OVERDRAIN SECTION
NOTE: GEOTEXTILE FABRIC SHOULD BE PLACED OVER ALL LAYERS OF PERFORATED UNDERDRAIN AND OUTLET PIPE.

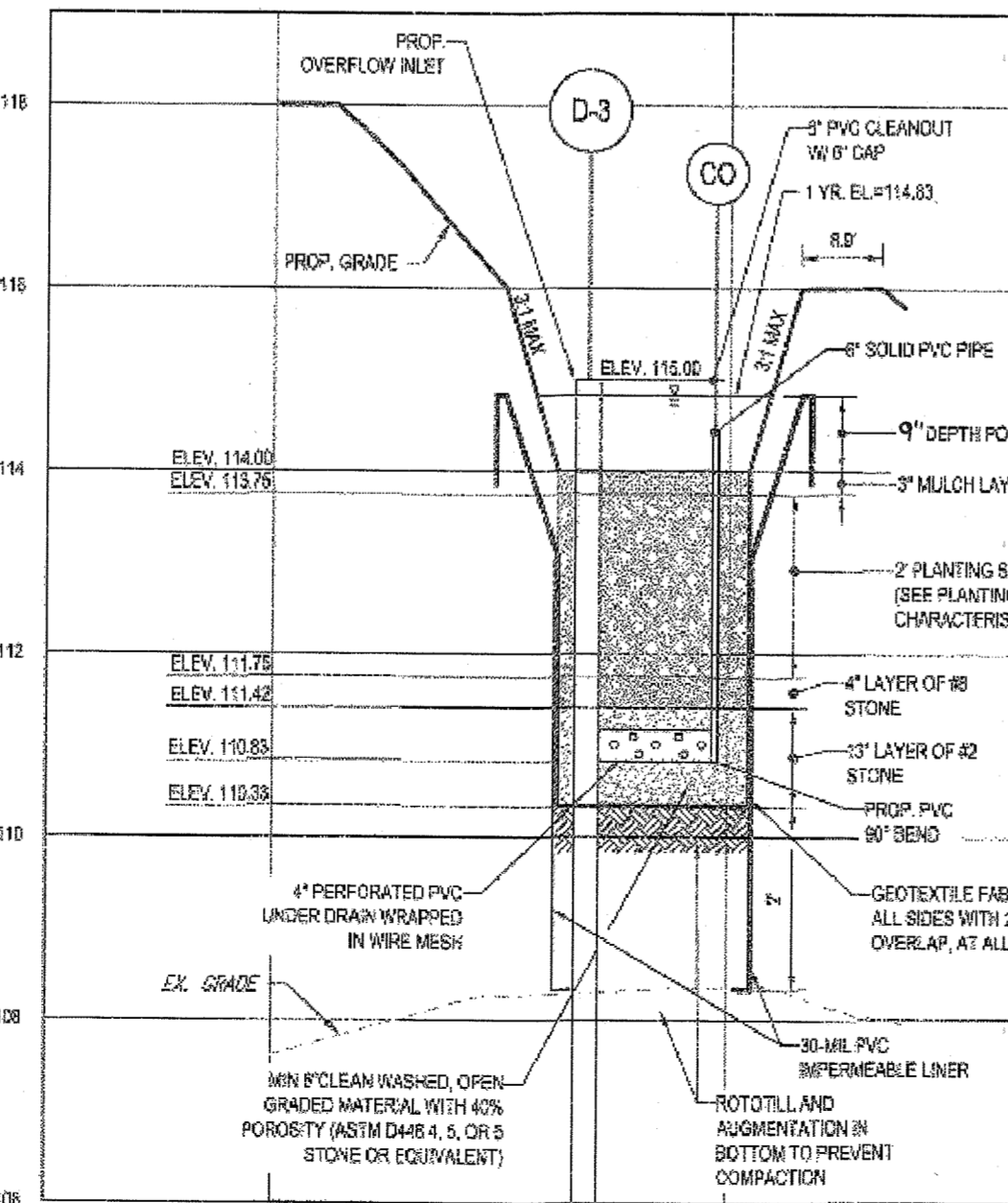
Material	Specification	Notes
Plantings	See Appendix A, Table A.1	Plantings are site-specific.
Perforated PVC Underdrain	4" x 4" x 1/2" (ASTM D2448)	Perforations are site-specific.
6" Solid PVC Pipe	6" x 1/2" (ASTM D2448)	Perforations are site-specific.
30-MIL PVC Impermeable Liner	30-MIL PVC (ASTM D2448)	Perforations are site-specific.
Geotextile Fabric	See Appendix A, Table A.2	Perforations are site-specific.
Planting Soil	See Appendix A, Table A.3	Perforations are site-specific.
Mulch	See Appendix A, Table A.4	Perforations are site-specific.
Stone	See Appendix A, Table A.5	Perforations are site-specific.
Concrete	See Appendix A, Table A.6	Perforations are site-specific.
Gravel	See Appendix A, Table A.7	Perforations are site-specific.
Soil	See Appendix A, Table A.8	Perforations are site-specific.



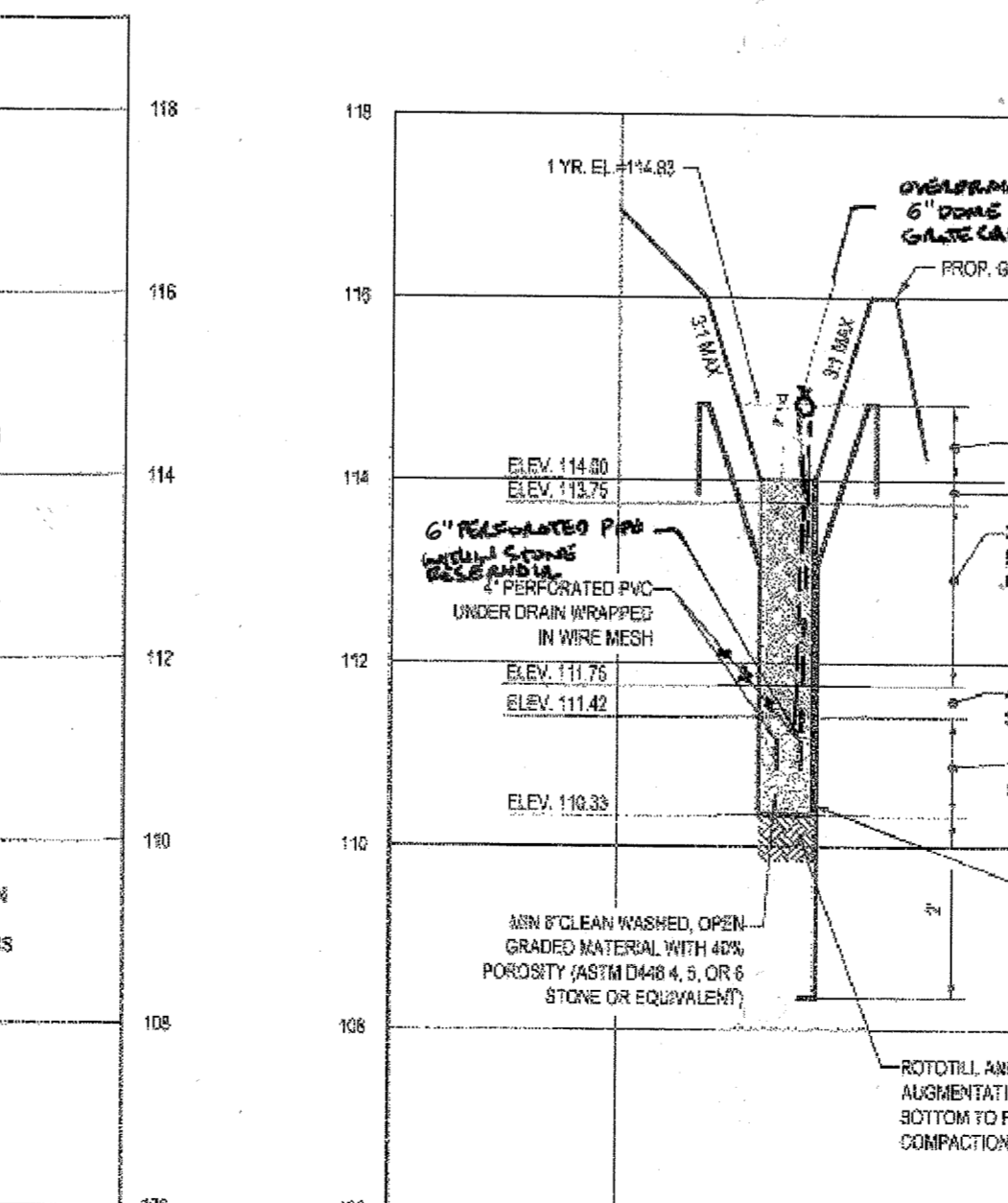
F-18-008
MICRO-BIORETENTION FACILITY (M-6) #5 - SECTION A-A
SCALE: 1"=2' HORIZONTAL
1"=0' VERTICAL



F-18-008
MICRO-BIORETENTION FACILITY (M-6) #5 - SECTION B-B
SCALE: 1"=2' HORIZONTAL
1"=0' VERTICAL



F-18-008
MICRO-BIORETENTION FACILITY (M-6) #6 - SECTION A-A
SCALE: 1"=2' HORIZONTAL
1"=0' VERTICAL



F-18-008
MICRO-BIORETENTION FACILITY (M-6) #6 - SECTION B-B
SCALE: 1"=2' HORIZONTAL
1"=0' VERTICAL

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division: 9.24.19
 Chief, Division of Land Development: 9.27.19
 Director: 9.27.19

BUILDER
 RYAN HOMES
 9720 PATUXENT WOODS DRIVE
 COLUMBIA, MD 21046
 410-379-5956

DEVELOPER
 ELM STREET DEVELOPMENT
 5074 DORSEY HALL DRIVE, SUITE 205
 ELLICOTT CITY, MD 21042
 410-720-3021

OWNER
 ESC ELKRIDGE WOODS LC
 5074 DORSEY HALL DRIVE, SUITE 205
 ELLICOTT CITY, MD 21042
 410-720-3021

NO. _____ REVISION _____ DATE _____

SITE DEVELOPMENT PLAN
 STORMWATER MANAGEMENT
 NOTES AND DETAILS
ELKRIDGE WOODS
 LOTS 2 - 42
 SINGLE FAMILY DETACHED

TAX MAP 38 GRID 9
 1ST ELECTION DISTRICT

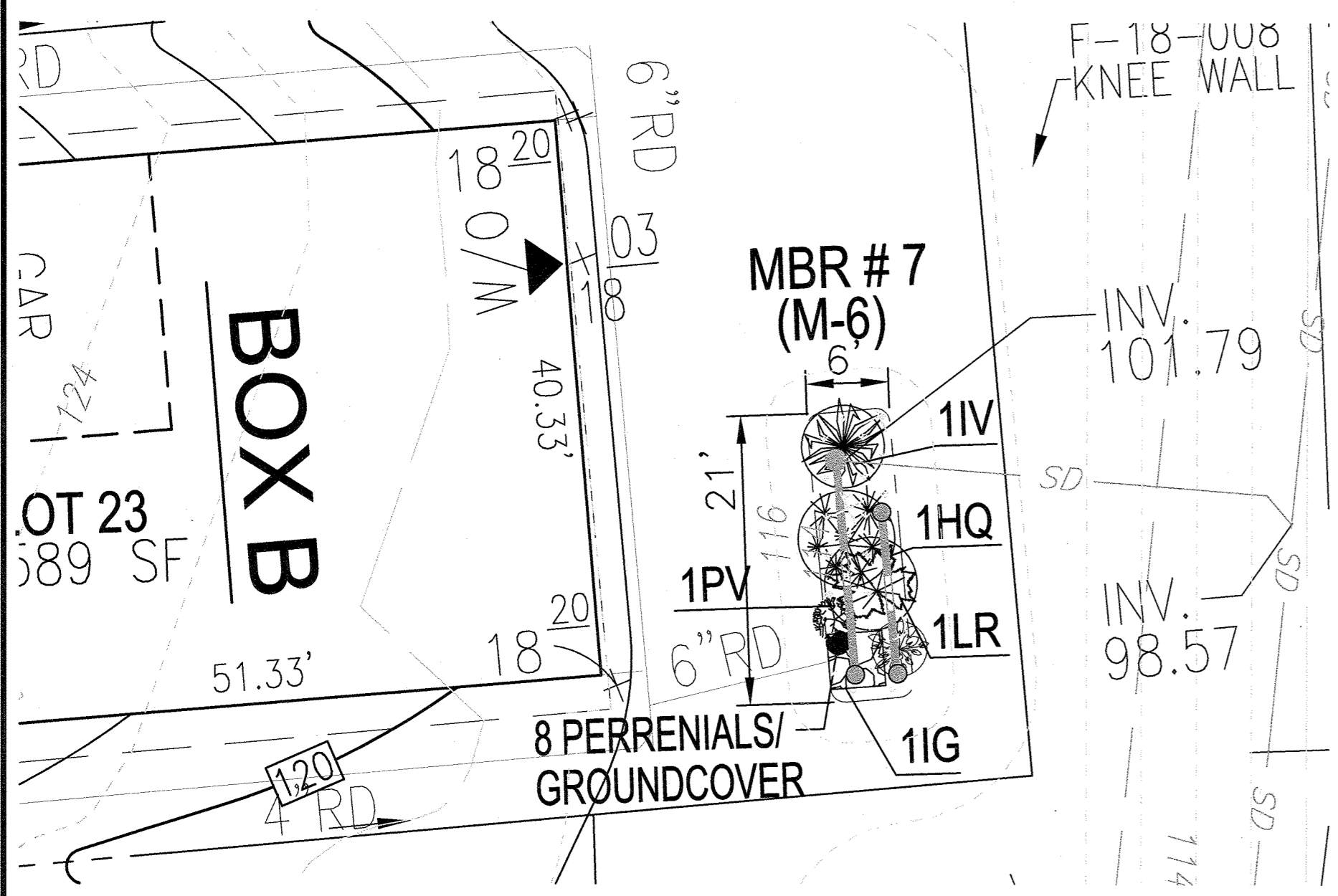
PARCELS 756, 340 - ZONED: R-12
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 2300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

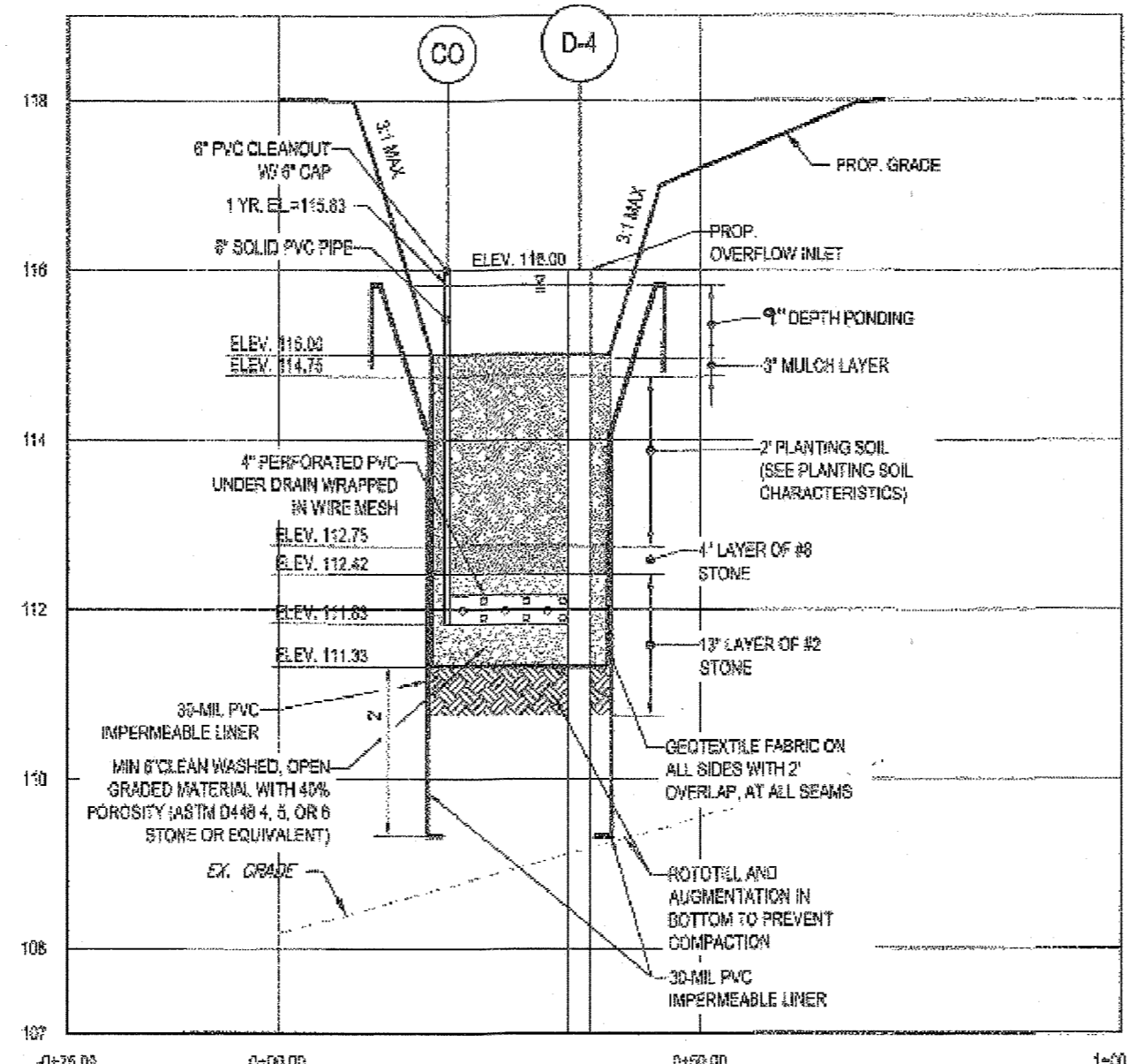
PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 08-27-2020.

DESIGN BY: VTG
 DRAWN BY: VTG
 CHECKED BY: RHW
 DATE: JULY 2019
 SCALE: AS SHOWN
 W.O. NO.: 41446

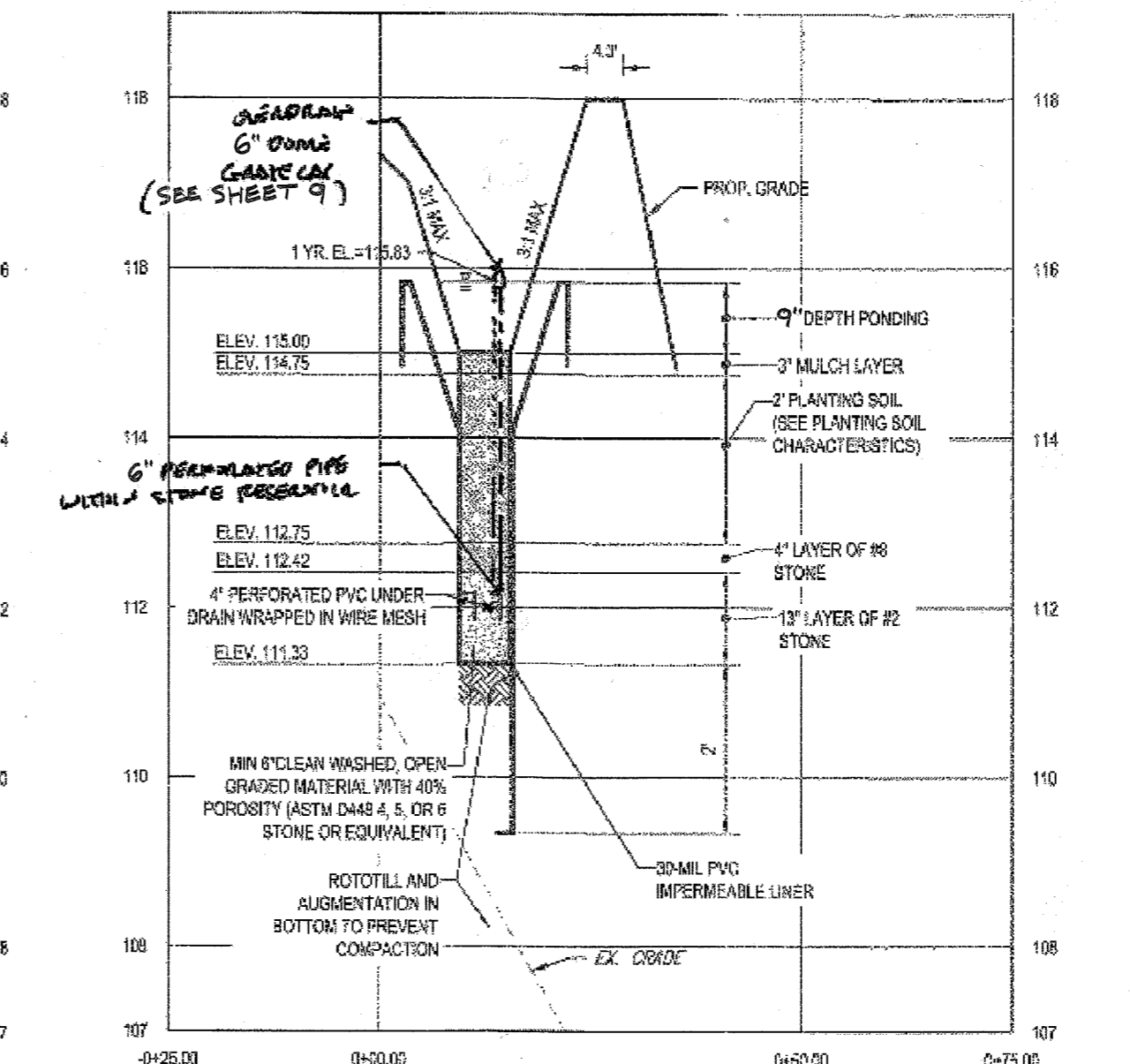
9 SHEET OF 12



MICRO-BIORETENTION (M-6) FACILITY #7 PLAN VIEW
SCALE: 1"=10'



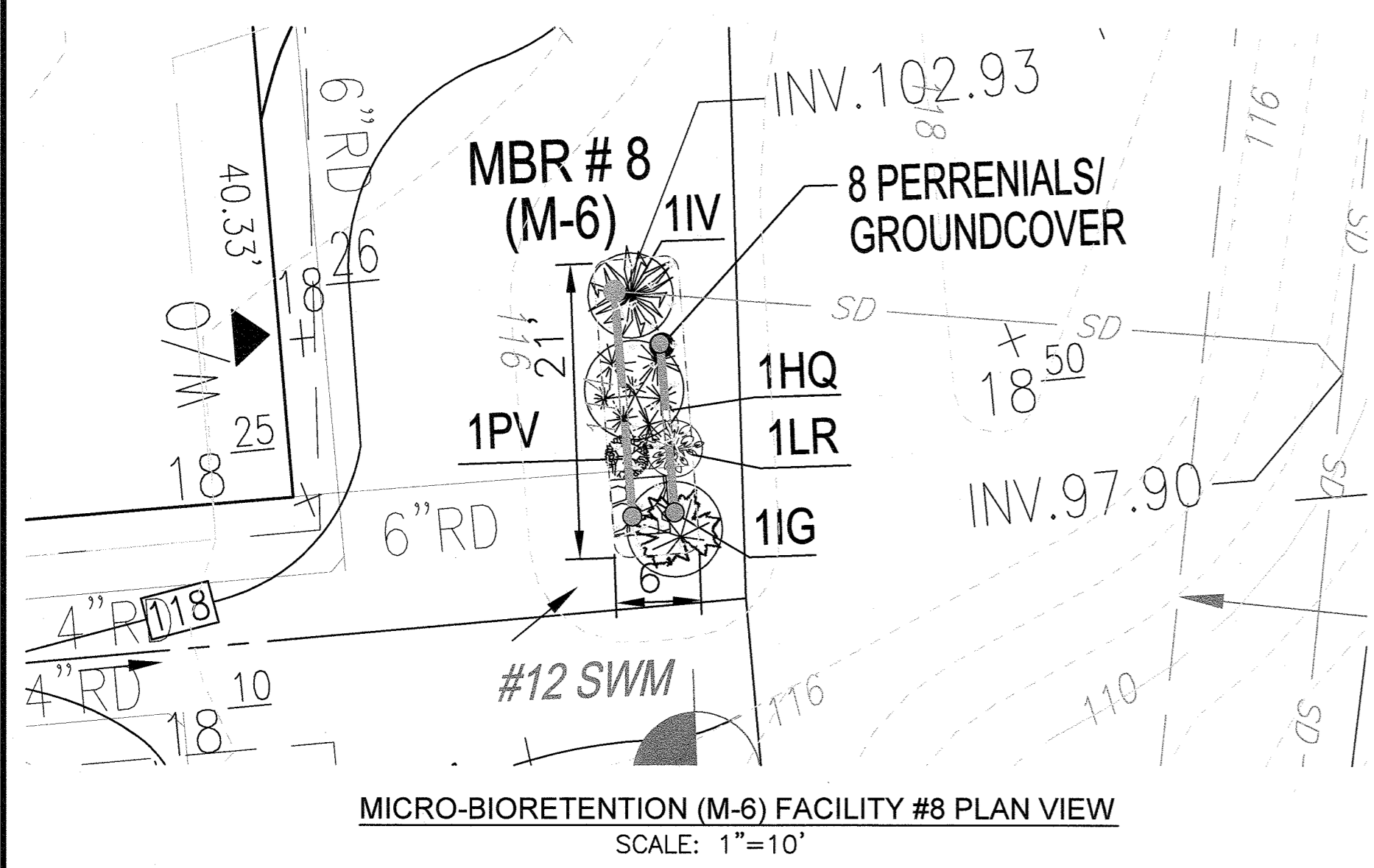
F-18-008
MICRO-BIORETENTION FACILITY (M-6) #7 - SECTION A - A
SCALE: 1/2"=2' HORIZONTAL, 1"=0' VERTICAL



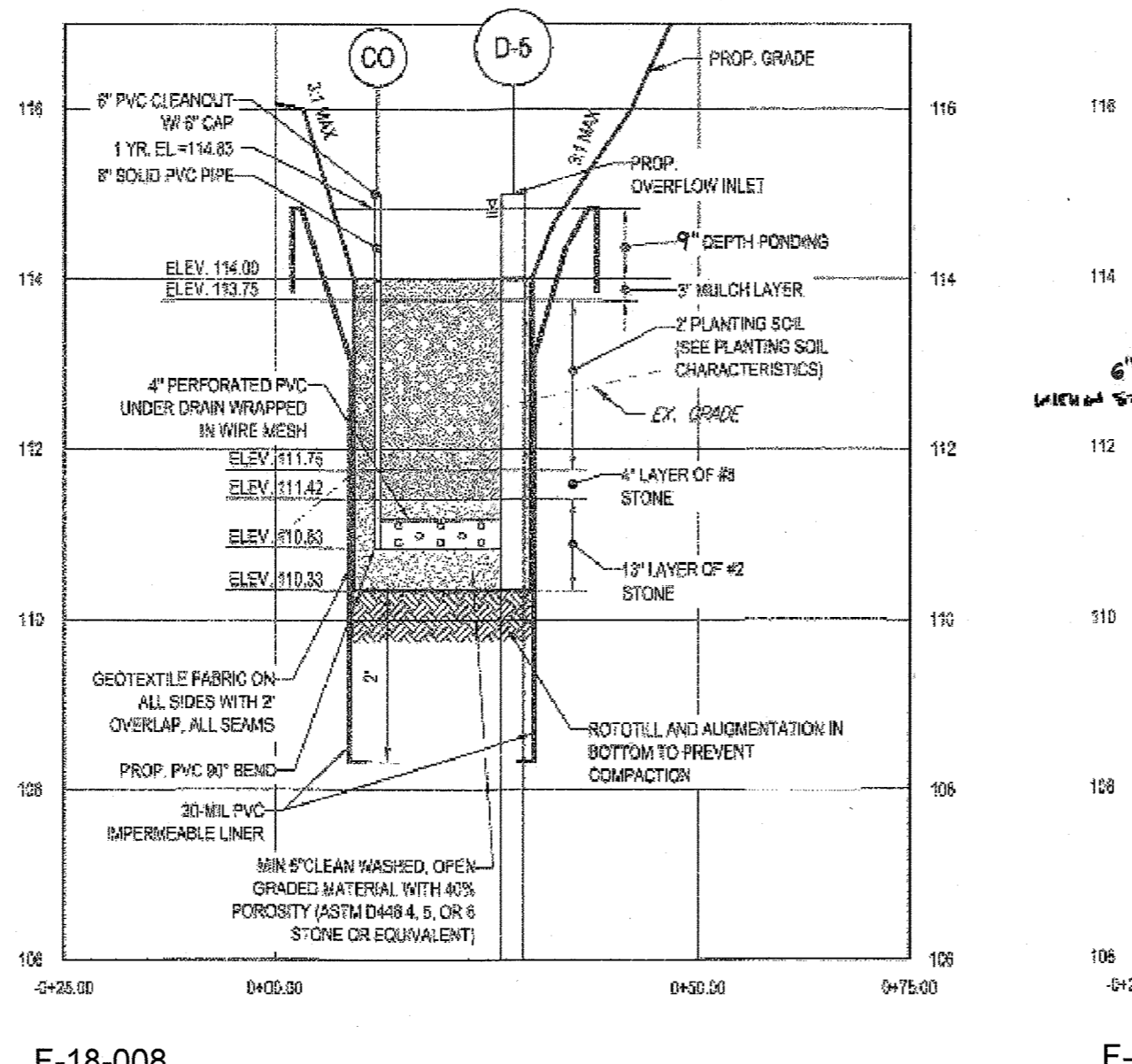
F-18-008
MICRO-BIORETENTION FACILITY (M-6) #7 - SECTION B - B
SCALE: 1/2"=2' HORIZONTAL, 1"=0' VERTICAL

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

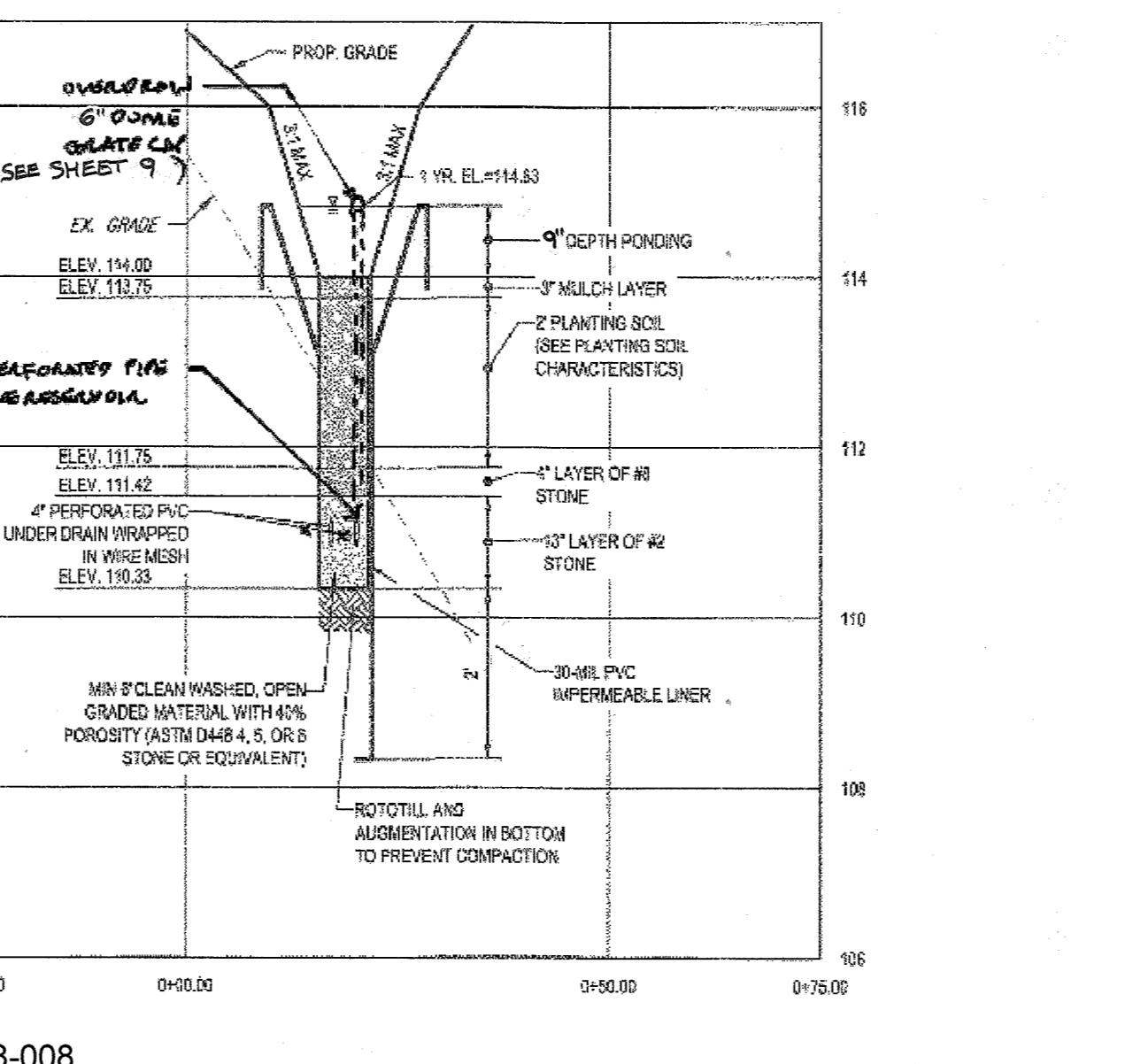
- MATERIAL SPECIFICATIONS**
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
- FILTERING MEDIA OR PLANTING SOIL**
THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMPACTION 15.01.01.05.
THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
 - SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION).
 - ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (LARK 1402) OR SANDY LOAM (LARK), COARSE SAND (LARK), AND COMPOST (40%).
 - CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
 - PH RANGE SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.
 THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.
- COMPACTION**
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TYPES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.
COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION ZONE. SUBSTITUTE MATERIALS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.
ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.
WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.
WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SOIL. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.
- PLANT MATERIAL**
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.
- PLANT INSTALLATION**
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INNER AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.
ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.
GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.
- TOPSOIL SPECIFICATIONS** PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS, DEERFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.
- UNDERDRAINS**
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
 - PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F756, TYPE PS 28, OR ASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PVC (E.G., PVC OF HDPE).
 - PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/2" (NO. 4 OR 6) GAUGED HARDWARE CLOTH.
 - GRAVEL - THE GRAVEL LAYER (NO. 57 STONE, PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAN.
 - THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
 - A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
 - A 4" LAYER OF #2 GRAVEL (1/2" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAN TO PREVENT MIGRATION OF FINES IN TO THE UNDERDRAN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".
 THIS MAIN COLLECTOR PIPE FOR UNDERDRAN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).
- MISCELLANEOUS**
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.



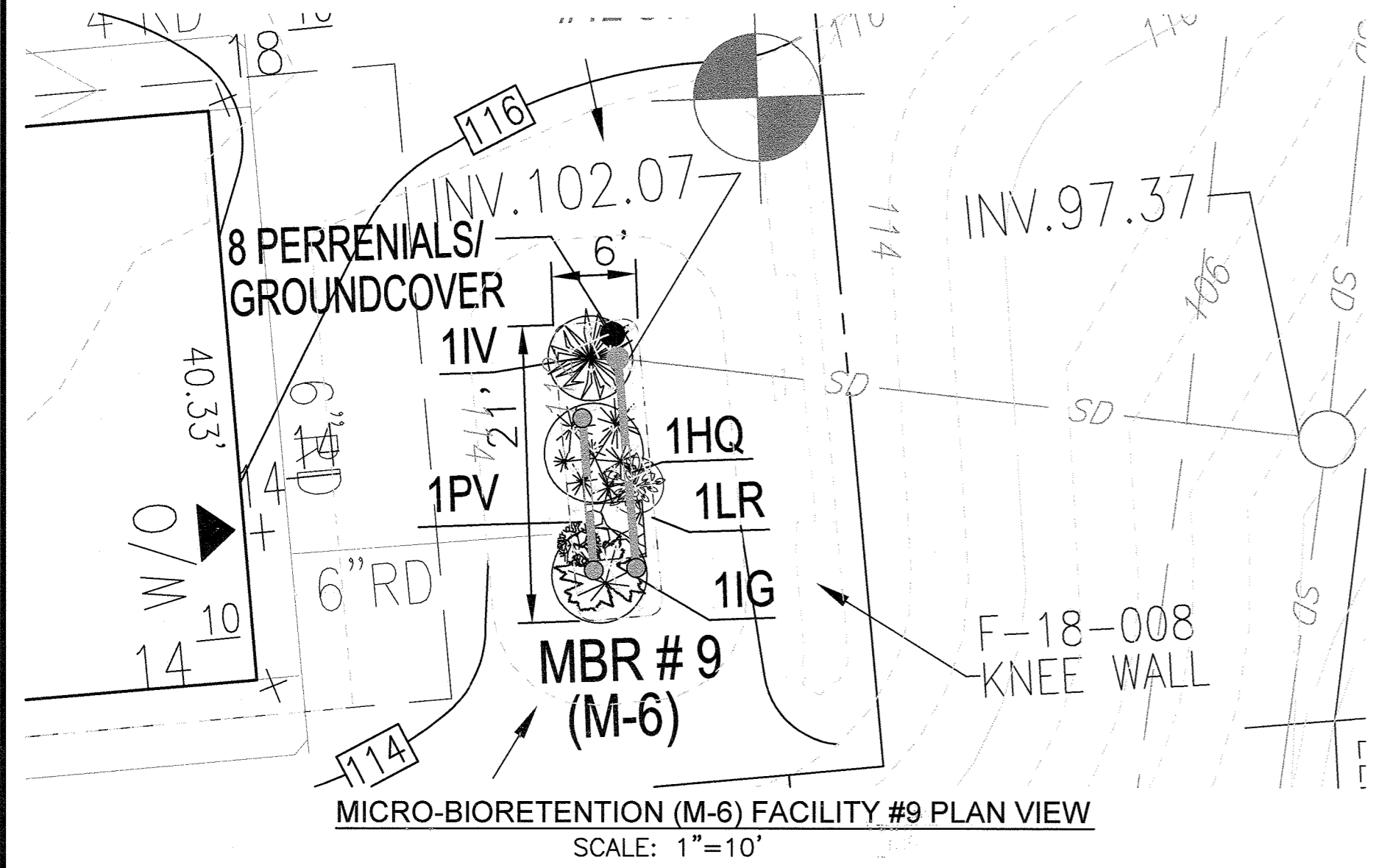
MICRO-BIORETENTION (M-6) FACILITY #8 PLAN VIEW
SCALE: 1"=10'



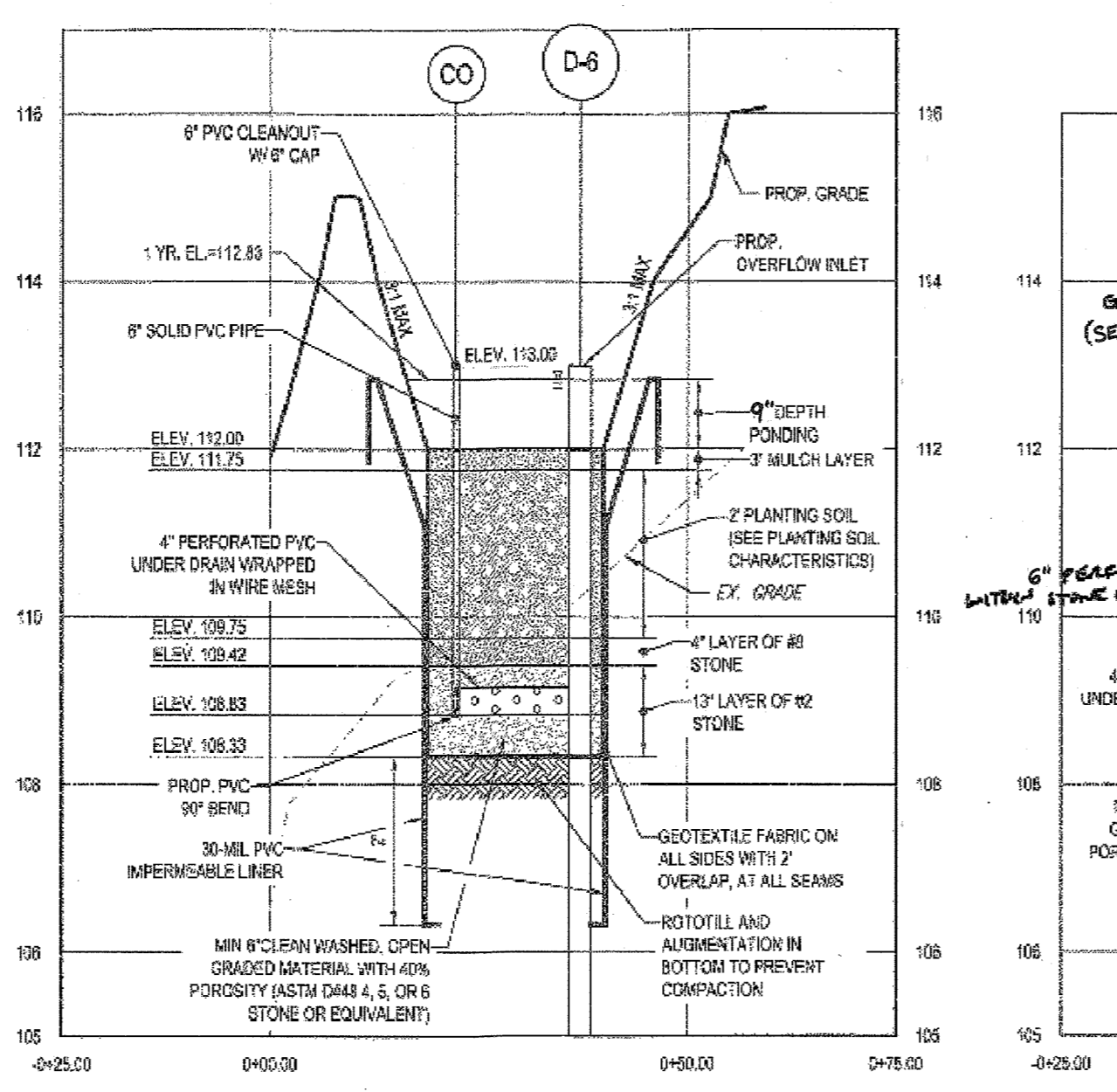
F-18-008
MICRO-BIORETENTION FACILITY (M-6) #8 - SECTION A - A
SCALE: 1/2"=2' HORIZONTAL, 1"=0' VERTICAL



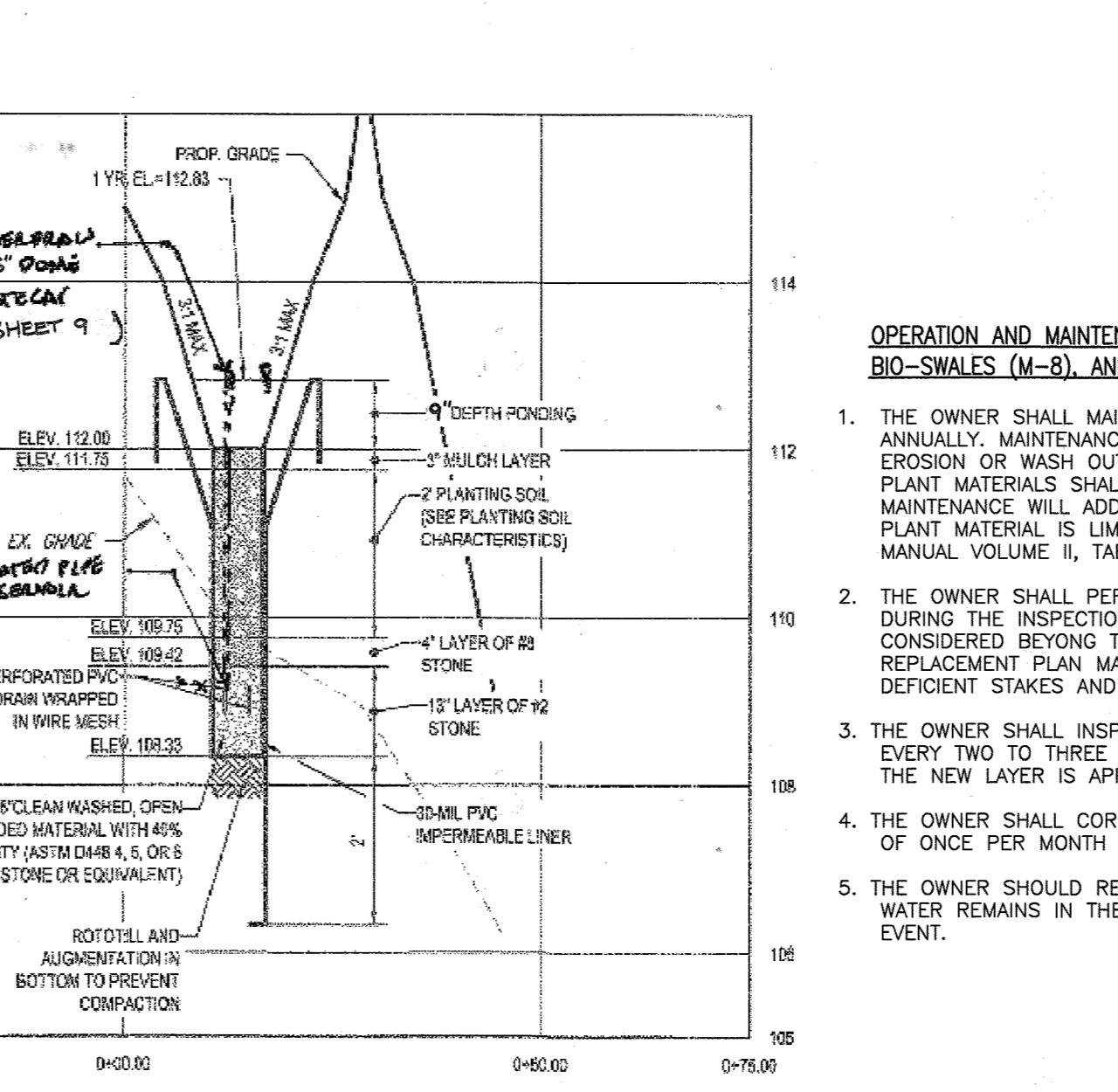
F-18-008
MICRO-BIORETENTION FACILITY (M-6) #8 - SECTION B - B
SCALE: 1/2"=2' HORIZONTAL, 1"=0' VERTICAL



MICRO-BIORETENTION (M-6) FACILITY #9 PLAN VIEW
SCALE: 1"=10'



F-18-008
MICRO-BIORETENTION FACILITY (M-6) #9 - SECTION A - A
SCALE: 1/2"=2' HORIZONTAL, 1"=0' VERTICAL



F-18-008
MICRO-BIORETENTION FACILITY (M-6) #9 - SECTION B - B
SCALE: 1/2"=2' HORIZONTAL, 1"=0' VERTICAL

- OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6), BIO-SWALES (M-8), AND BIOTENTION (F-6).**
- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIALS SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION. AN MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
 - THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS AND REPLACE DEFICIENT STAKES AND WIRES.
 - THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
 - THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.
 - THE OWNER SHOULD REMOVE AND REPLACE THE TOP FEW INCHES OF FILTER MEDIA IF WATER REMAINS IN THE FACILITY FOR LONGER THAN 24 HOURS FOLLOWING A STORM EVENT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 9-24-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 9-27-19
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 9-27-19
DIRECTOR DATE

BUILDER
RYAN HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MD 21046
410-379-5956

DEVELOPER
ELM STREET DEVELOPMENT
5074 DORSEY HALL DRIVE, SUITE 205
ELLCOTT CITY, MD 21042
410-720-3021

OWNER
ESC ELK RIDGE WOODS L.C.
5074 DORSEY HALL DRIVE, SUITE 205
ELLCOTT CITY, MD 21042
410-720-3021

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT
NOTES AND DETAILS
ELK RIDGE WOODS
LOTS 2-42
SINGLE FAMILY DETACHED

TAX MAP 38 GRID 9
1ST ELECTION DISTRICT

PARCELS 756, 340 - ZONED: R-12
HOWARD COUNTY, MARYLAND

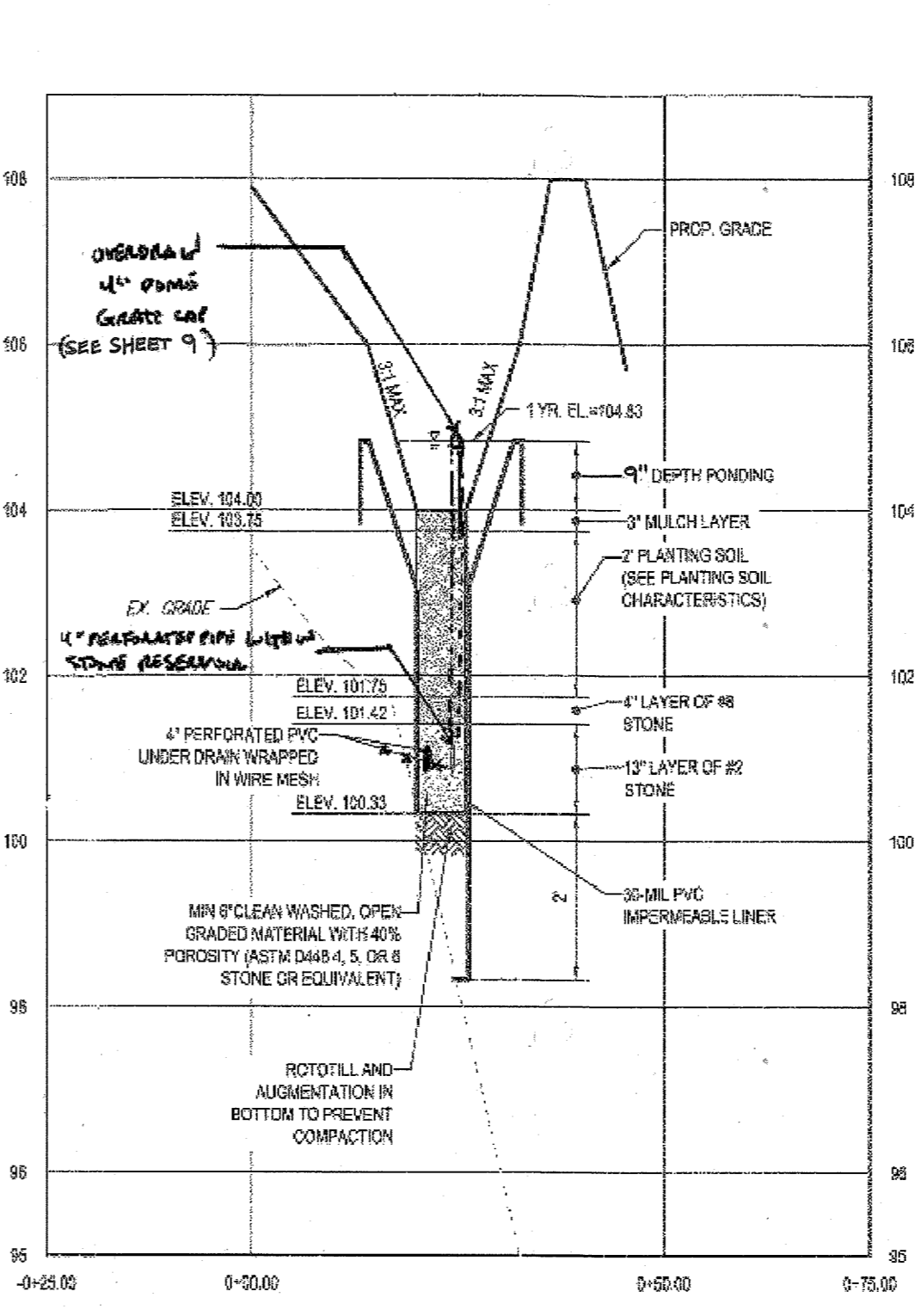
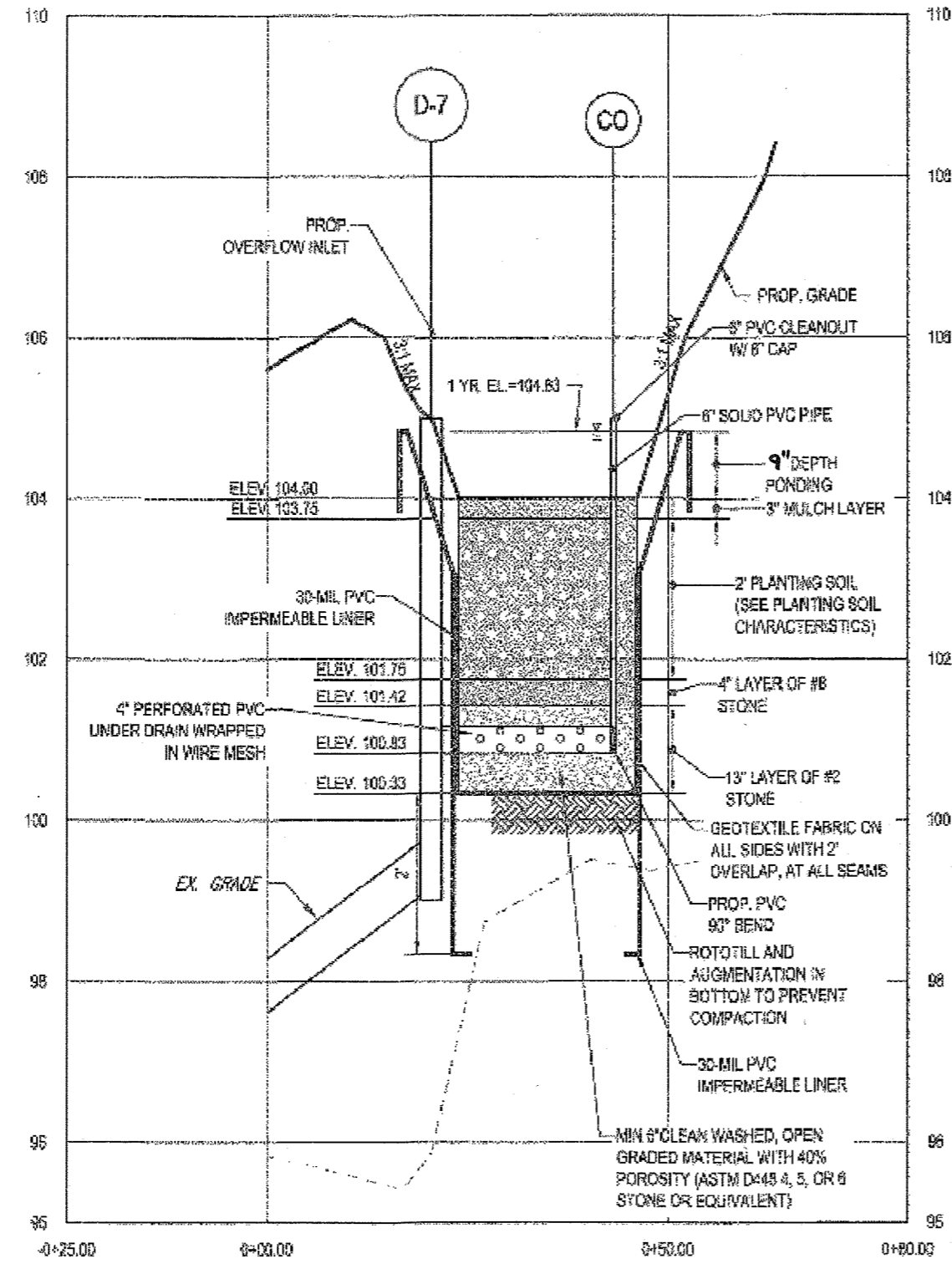
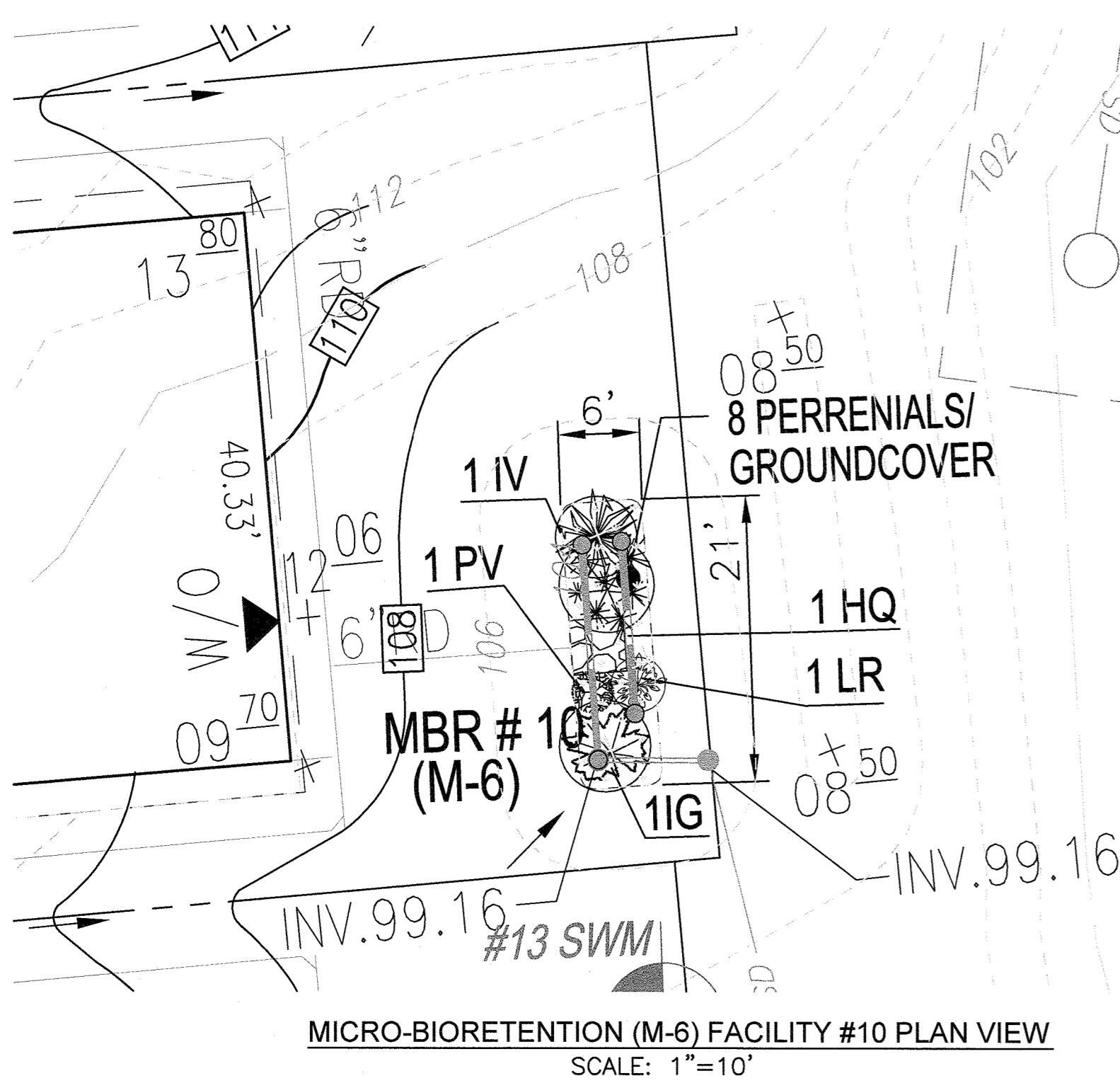
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
ELLCOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: VTC
DRAWN BY: VTC
CHECKED BY: RHV
DATE: JULY 2019
SCALE: AS SHOWN
W.O. NO.: 41446

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: 09-27-2020

ROBERT H. VOGEL, PE No.16193

10 SHEET OF 12



HILLIS - GARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: 5920 Florey Road, Elkridge, MD 21042

Soil Elevation: 107.25, Hammer Drop: 30, Rock Core Diameter: 3.25, Date Started: 11/17/16

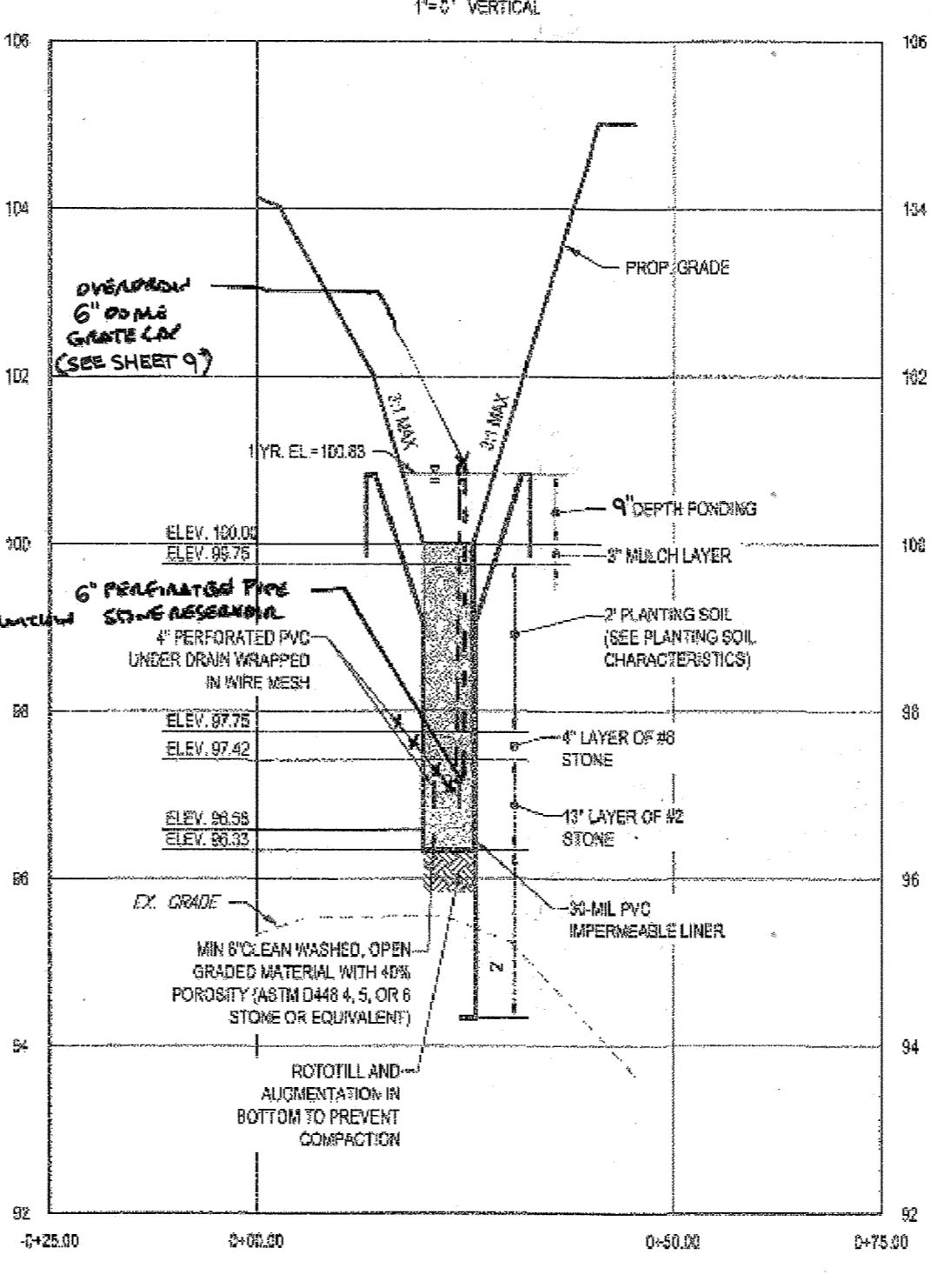
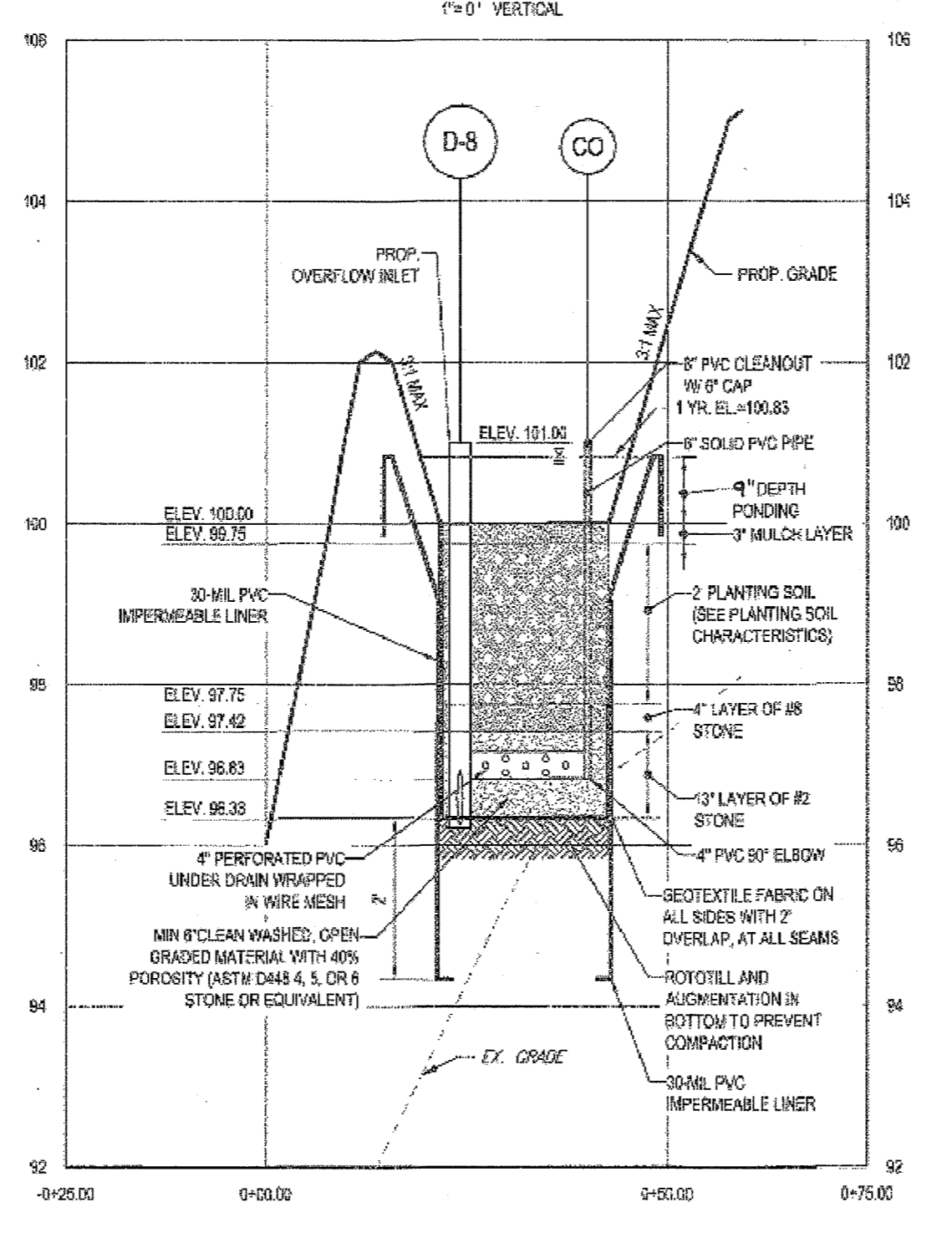
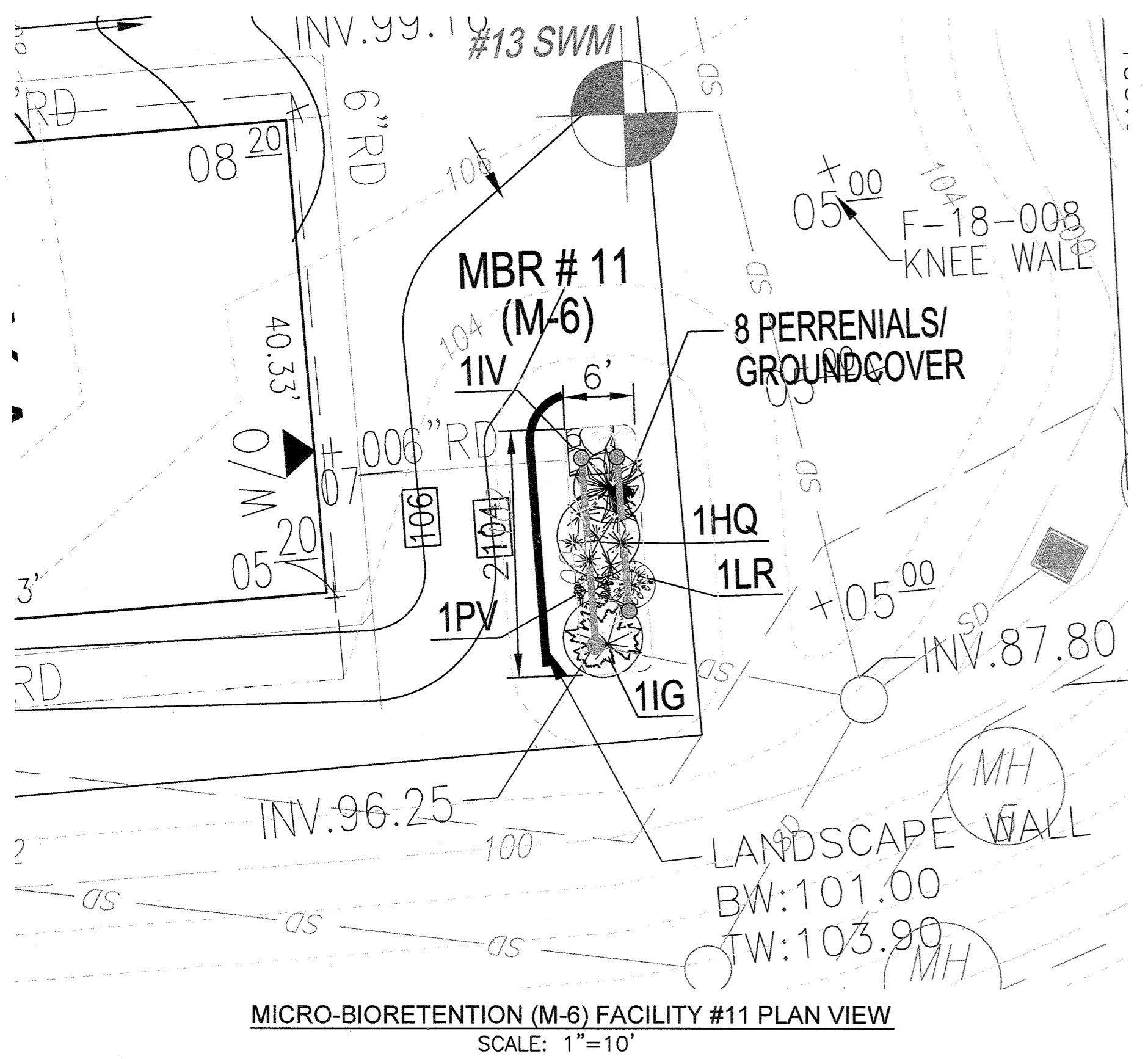
Elevation/Depth	SOIL SAMPLE COLLECTION	Description	Boring and Sampling Notes	Rec.	N/A	SPT Blows	SPT Blows/Foot
0	D	Topsoil - 4.0'		15'		1-3	10
15	D	Groundwater was not encountered while drilling		15'		6-18-20	38
18	D	Groundwater was not encountered while drilling		15'		12-18-19	37
18	D	Bottom of boring at 6.0'		15'		19-20-24	44

HILLIS - GARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: 5920 Florey Road, Elkridge, MD 21042

Soil Elevation: 107.74, Hammer Drop: 30, Rock Core Diameter: 3.25, Date Started: 11/17/16

Elevation/Depth	SOIL SAMPLE COLLECTION	Description	Boring and Sampling Notes	Rec.	N/A	SPT Blows	SPT Blows/Foot
0	D	Topsoil - 4.0'		15'		2-6-7	13
15	D	Groundwater was not encountered while drilling		15'		4-7-9	16
15	D	Groundwater was not encountered while drilling		15'		6-7-8	15



HILLIS - GARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: 5920 Florey Road, Elkridge, MD 21042

Soil Elevation: 110.1, Hammer Drop: 30, Rock Core Diameter: 3.25, Date Started: 11/16/16

Elevation/Depth	SOIL SAMPLE COLLECTION	Description	Boring and Sampling Notes	Rec.	N/A	SPT Blows	SPT Blows/Foot
0	D	Topsoil - 4.0'		15'		7-11-12	23
15	D	Groundwater was not encountered while drilling		15'		6-13-23	36
15	D	Groundwater was not encountered while drilling		15'		7-10-18	28
15	D	Groundwater was not encountered while drilling		15'		4-7-9	16
15	D	Bottom of boring at 11.0'		15'		6-10-13	23

HILLIS - GARNES ENGINEERING ASSOCIATES, INC. RECORD OF SOIL EXPLORATION

Project Name: 5920 Florey Road, Elkridge, MD 21042

Soil Elevation: 98.38, Hammer Drop: 30, Rock Core Diameter: 3.25, Date Started: 11/16/16

Elevation/Depth	SOIL SAMPLE COLLECTION	Description	Boring and Sampling Notes	Rec.	N/A	SPT Blows	SPT Blows/Foot
0	D	Topsoil - 4.0'		15'		3-6-8	14
15	D	Groundwater was not encountered while drilling		15'		7-10-14	24
15	D	Groundwater was not encountered while drilling		15'		9-12-10	25
15	D	Bottom of boring at 9.0'		15'		7-12-14	26

F-18-008 SOIL BORINGS

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

NOTE: ONLOT (LOTS 19-26) MICROBIORETENTION FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE F-18-008 DESIGN AND DETAILS BY BOHLER ENGINEERING (PHONE: 410-821-7900) AS SHOWN HEREON.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 9-27-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 9-27-19
CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 9-27-19
DIRECTOR

MICRO-BIORETENTION PLANTING REQUIREMENTS

MBR-RG #	LF	AREA	STEMS REQUIRED (0.0229)	STEMS PROVIDED	IG	IV	HQ	LR	PV	BA	AG	TOTAL
MBR-4	52	125	3	5	1	1	1	1	1	4	4	8
MBR-5	52	125	3	5	1	1	1	1	1	4	4	8
MBR-6	52	125	3	5	1	1	1	1	1	4	4	8
MBR-7	52	125	3	5	1	1	1	1	1	4	4	8
MBR-8	52	125	3	5	1	1	1	1	1	4	4	8
MBR-9	52	125	3	5	1	1	1	1	1	4	4	8
MBR-10	52	125	3	5	1	1	1	1	1	4	4	8
MBR-11	52	125	3	5	1	1	1	1	1	4	4	8
TOTALS:	416	1000	24	40	8	8	8	8	8	32	32	64

PLANTINGS PROVIDED

IG	IV	HQ	LR	PV	BA	AG	TOTAL
1	1	1	1	1	4	4	8

PERENNIALS/GROUND COVER PROVIDED

IG	IV	HQ	LR	PV	BA	AG	TOTAL
8	8	8	8	8	32	32	64

MICRO-BIORETENTION PLANTING SCHEDULE

KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
IG	8	ILEX GLABRA "SHAMROCK" INKBERRY HOLLEY	1 GALLON	18" O.C.
IV	8	IRIS SIBERICA "BENNERUP BLUE" BENNERUP BLUE SIBERIAN	1 GALLON	18" O.C.
HQ	8	HEMEROCALLIS X "PRAIRIE BLUE EYES" PRAIRIE BLUE EYES DAYLILY	1 GALLON	30" O.C.
LR	8	LIRIOPE MUSCARI "BIG BLUE" BIG BLUE LILYTURF	4" HT	18" O.C.
PV	8	CORNUS SERICEA "FLAVIRAMEA" YELLOW TWIGGED DOGWOOD	18-21" HT	18" O.C.

PERENNIALS/GROUND COVER PLANTING SCHEDULE

LEGEND	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	32	BAPTISIA AUSTRALIS (BA) FALSE INDIGO	4" POT	12"-15" O.C. FOR SIDES AND BOTTOM OF MBR. MIX ALL VARIETIES IN A NATURALIZED RANDOM PATTERN THROUGHOUT.
	32	ACORUS GRAMINEUS "OGON" (AG) GOLDEN VARIEGATED SWEET FLAG	1 QT.	

Table A.4 Commonly Used Species for Bioretention Areas

Trees	Shrubs	Herbaceous Species
American Sycamore	Arctostaphylos	Andropogon virginicus
Red Maple	Bottlebrush Buckeye	Broomsedge
Bald Cypress	Cephalanthus occidentalis	Eupatorium purpurascens
Black Birch	Bottlebrush	Joe Pye Weed
Japanese Virginiana	Hamamelis virginiana	Scirpus pungens
Eastern Red Cedar	Witch Hazel	Three Square Beltrich
Chionodoxa virginiana	Vaccinium corymbosum	Iris versicolor
Fraxinus pennsylvanica	Highbush Blueberry	Blue Flag
Nyssa sylvatica	Iris glabra	Lobelia cardinalis
Black Gum	Iskberry	Candle Flower
Diostyris virginiana	Iris versicolor	Panicle Hyacinth
Peristemon	Waterberry	Swainsonia
Platanus occidentalis	Viburnum dentatum	Dichostemum sparganium
Sycamore	Arrowwood	Broom Panic Grass
Quercus prinus	Lindera benzoin	Budleja lindleryana
Pine Oak	Spicebush	Tall Coneflower
Quercus phellos	Myrica pensylvanica	Scirpus capillaris
White Oak	Bayberry	Woodgrass
Slack willow	Veronica noveboracensis	New York Inwood

Note 1: For more options on plant selection for bioretention, consult Bioretention Manual (ETAB, 1999) or the Design of Stormwater Filtration Systems (Kraybill and Schuster, 1997).

SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT
NOTES, DETAILS & BORINGS

ELKRIDGE WOODS

LOTS 2-42
SINGLE FAMILY DETACHED

TAX MAP 38 GRID 9
1ST ELECTION DISTRICT

PARCELS 756, 340 - ZONED: R-12
HOWARD COUNTY, MARYLAND

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

BUILDER
RYAN HOMES
9720 PATENTWOOD DRIVE
COLUMBIA, MD 21046
410-379-5956

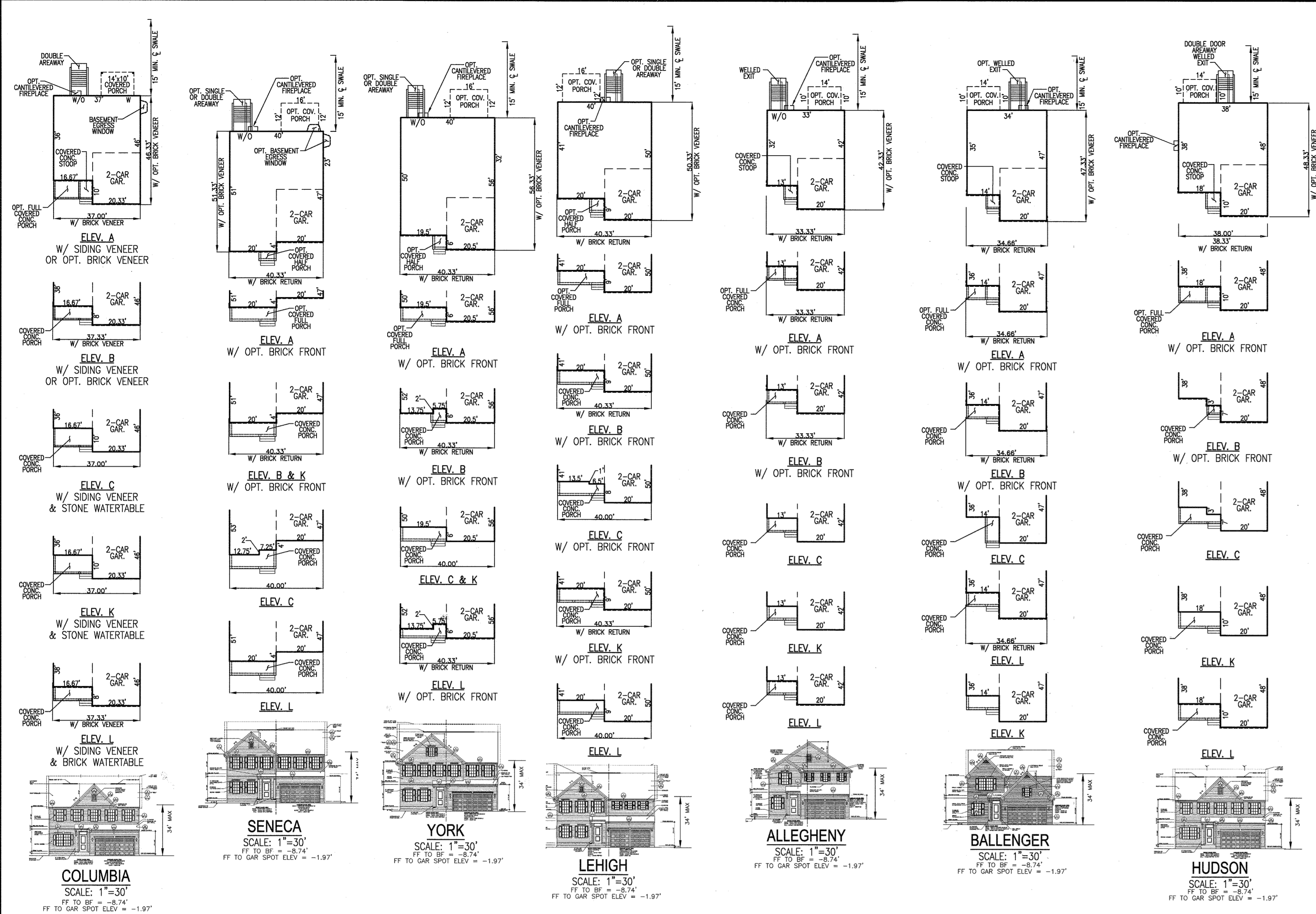
DEVELOPER
ELM STREET DEVELOPMENT
5074 DORSEY HALL DRIVE, SUITE 205
ELLCOTT CITY, MD 21042
410-720-3021

OWNER
ESC ELKRIDGE WOODS LC
5074 DORSEY HALL DRIVE, SUITE 205
ELLCOTT CITY, MD 21042
410-720-3021

DESIGN BY: VTC
DRAWN BY: VTC
CHECKED BY: RHV
DATE: JULY 2019
SCALE: AS SHOWN
W.O. NO.: 41446

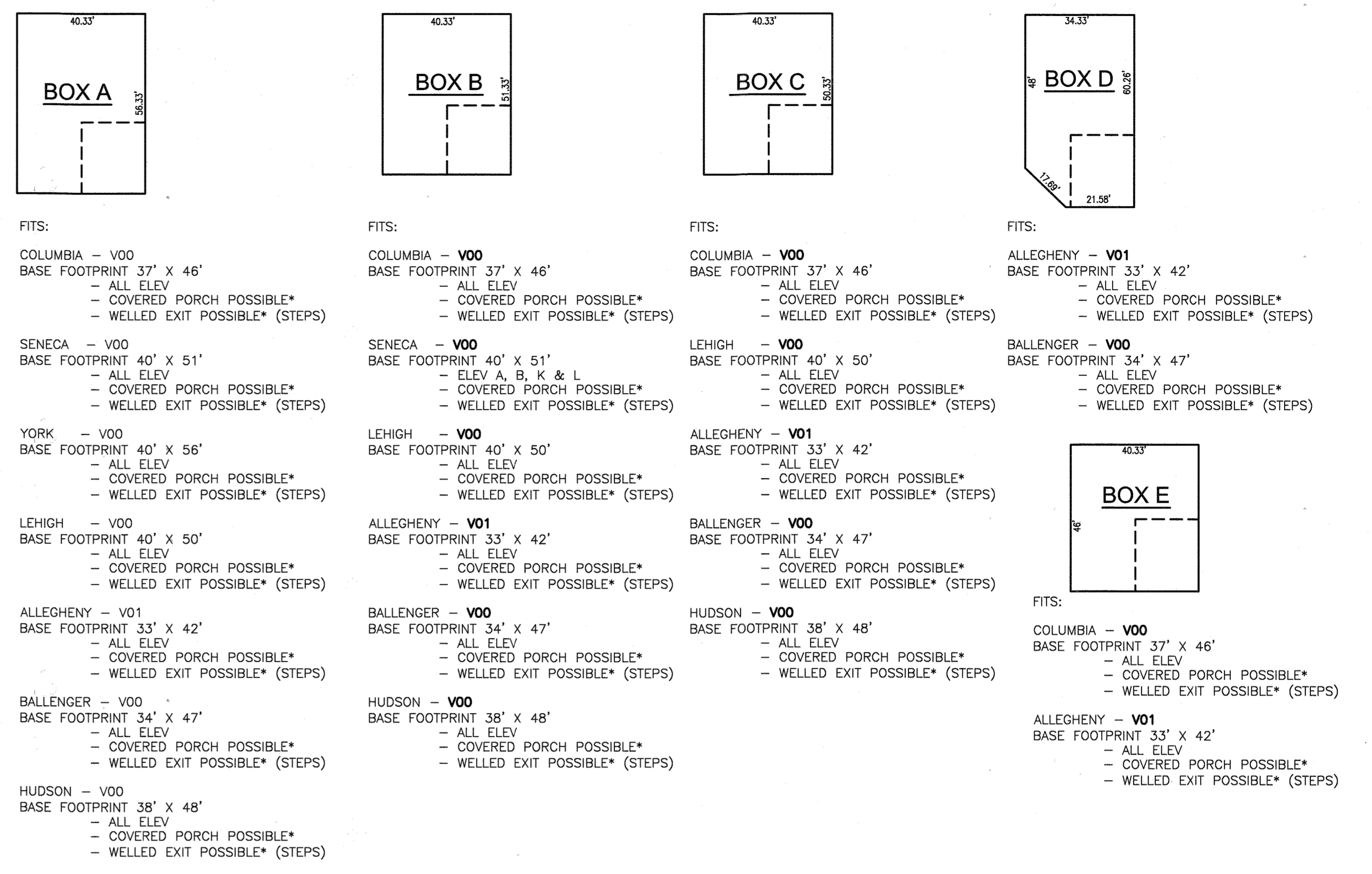
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 16193
EXPIRATION DATE: 09-27-2020

11 SHEET OF 12



NOTE:
 GENERIC HOUSE BOXES ARE SHOWN IN ACCORDANCE WITH HOWARD COUNTY GUIDELINES AND DO NOT LIMIT MODEL TYPES AND OPTIONS THAT MAY FIT ON ANY INDIVIDUAL LOT.

GENERIC HOUSE BOX OPTIONS:
 THE GENERIC HOUSE BOXES DO NOT NEED TO SHOW AVAILABLE OPTIONS (CHIMNEYS, BAY WINDOWS, EAVES, DECKS, PORCHES, ETC.) THAT ARE PERMITTED TO ENCRACH INTO THE SIDE OR REAR YEAR BRL'S PROVIDED THE SETBACK ENCROACHMENTS COMPLY WITH THE REQUIREMENTS OF SECTION 128.0 OF THE ZONING REGULATIONS.

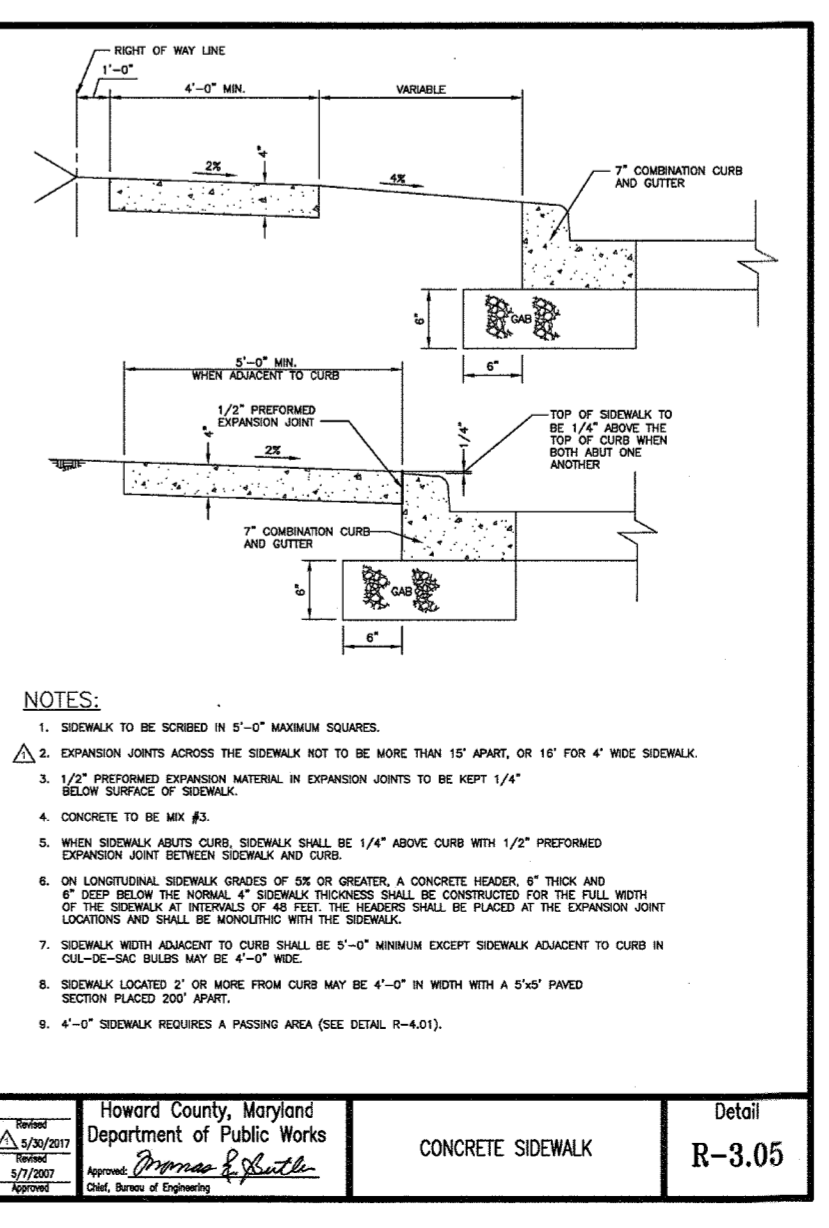
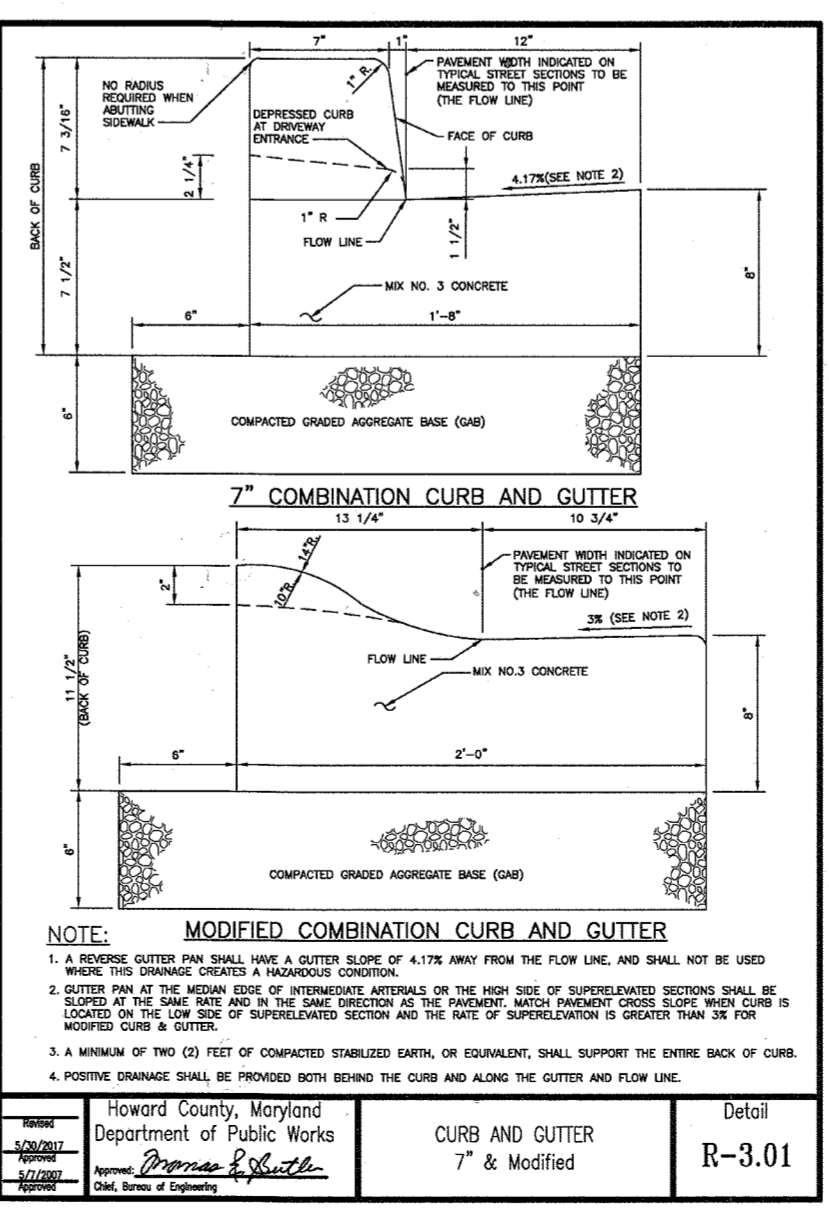
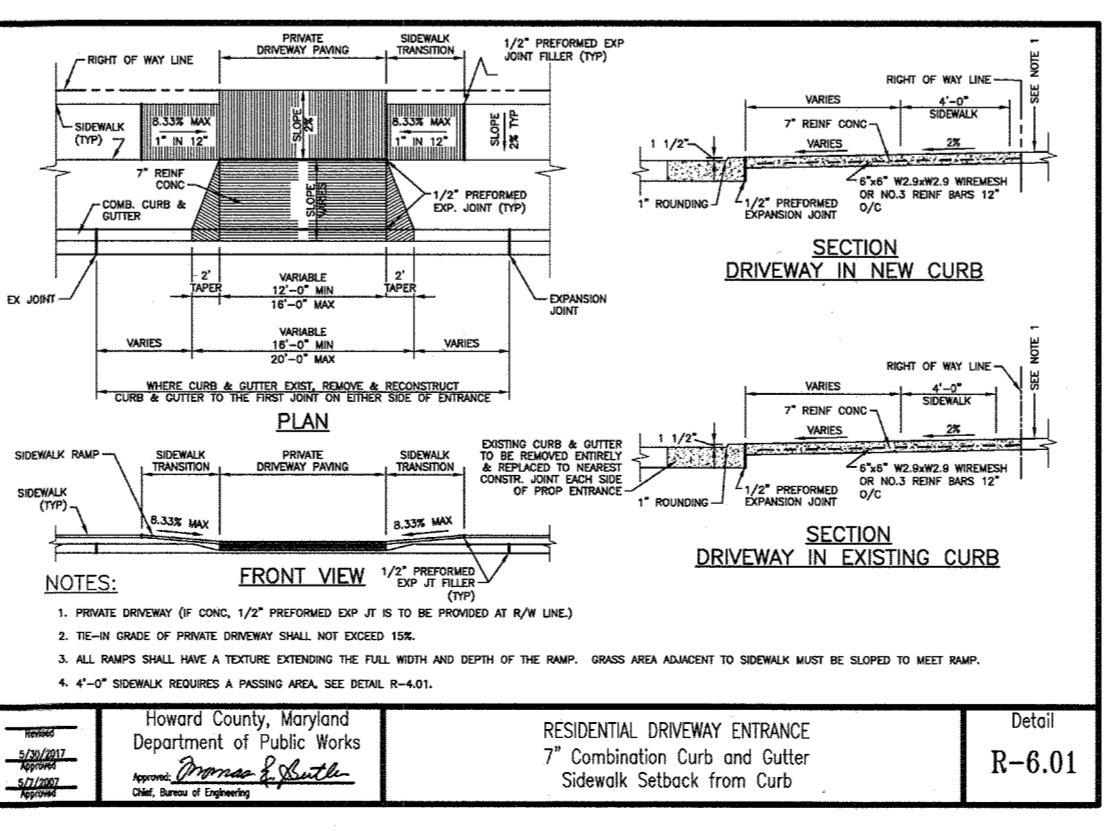
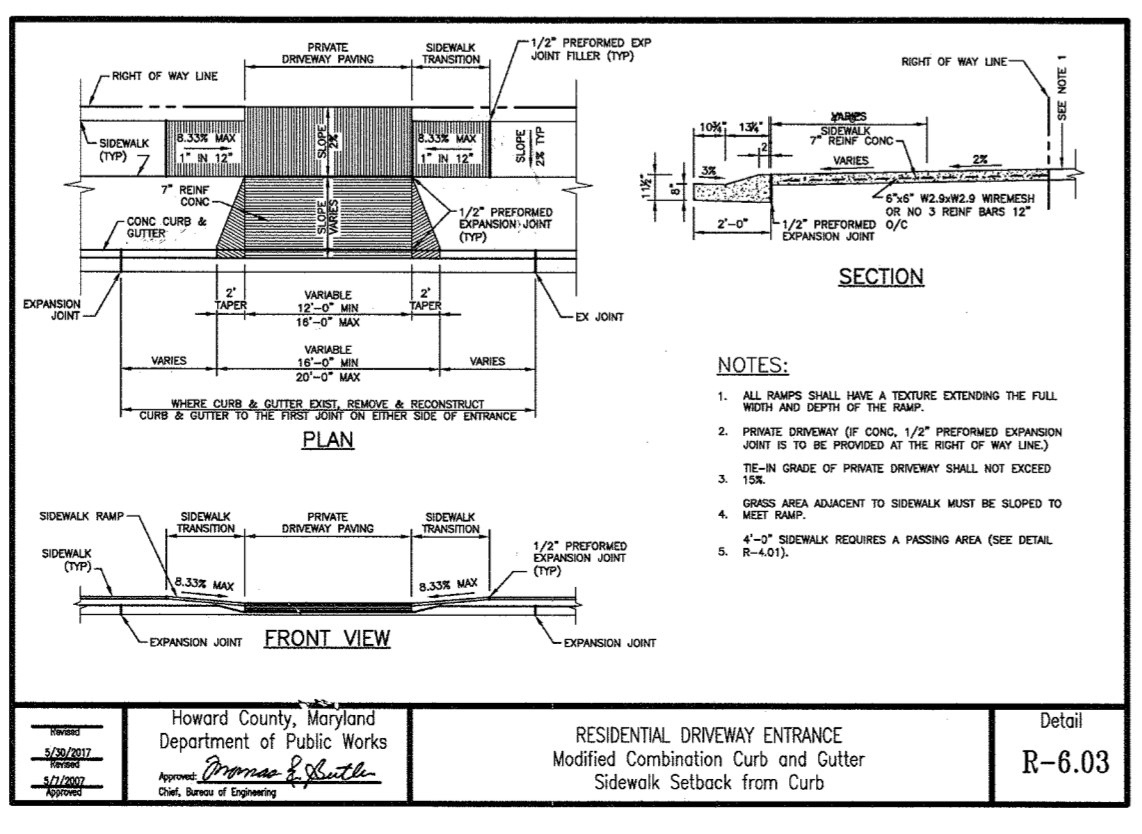
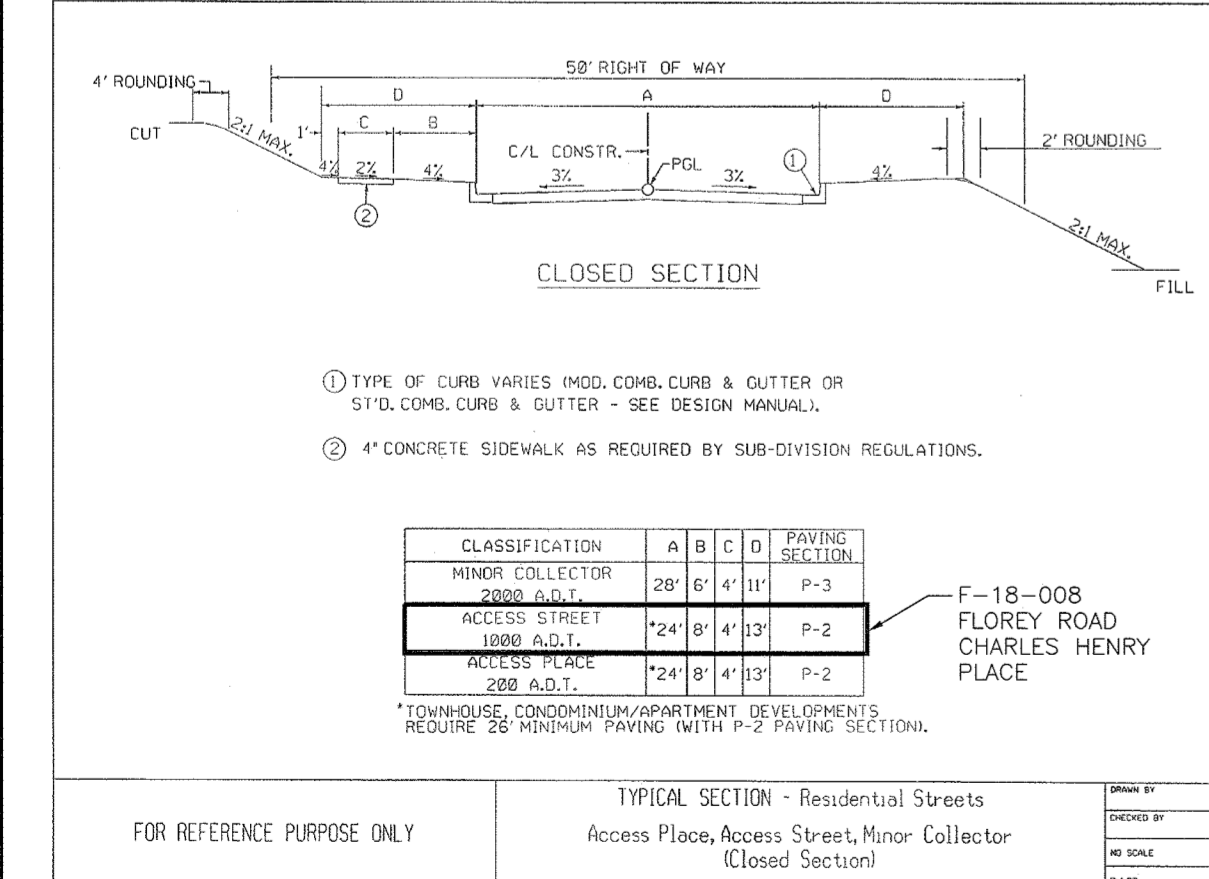
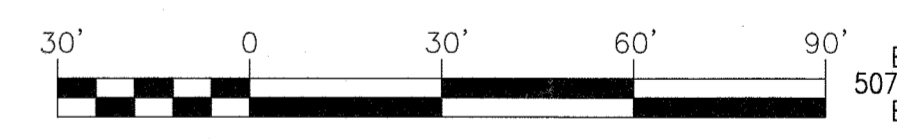


'R' REVERSE HOUSE FOOTPRINT

* A COVERED PORCH OR WELLED EXIT OPTION MAY BE POSSIBLE. THESE ITEMS DO NOT HAVE TO FIT IN A GENERIC HOUSE BOX, BUT ARE SUBJECT TO SECTION 128.0 OF THE ZONING REGULATIONS. EACH LOT WILL HAVE TO BE STUDIED INDEPENDENTLY FOR FITMENT OF THESE ITEMS.
 REFERENCE: SECTION 128.0.A.1.d AND SECTION 128.0.A.1.e OF THE SUPPLEMENTARY ZONING DISTRICT REGULATIONS.

NOTES:

- ADDITIONAL HOUSE TYPES AND OPTIONS MAY FIT ON ANY GIVEN LOT.
- THE STAKING OF FOUNDATIONS PRIOR TO CONSTRUCTION TO ENSURE COMPLIANCE WITH REGULATORY BUILDING RESTRICTION LINES IS RECOMMENDED.
- A MINIMUM OF 10 FEET SHALL BE PROVIDED BETWEEN THE CHOSEN HOME MODEL AND AN ON-LOT DRYWELL.
- MODEL ELEVATION SHALL NOT EXCEED 34' MAX HEIGHT AS ALLOWED BY R-12 ZONE.
- IN ACCORDANCE WITH SECTION 128.0.A OF THE HOWARD COUNTY ZONING REGULATIONS:
 - MAX ENCROACHMENT INTO SETBACK FOR CORNICES, EAVES AND CANTILEVERED BUILDING FEATURES WHICH DO NOT CONTAIN ANY FLOOR AREA OR EXTENSION OF INTERIOR LIVING SPACE IS: 3 FEET INTO ANY SETBACK.
 - MAX ENCROACHMENT INTO SETBACK FOR BAY WINDOWS, WINDOW WELLS, ORNELS, VESTIBULES, BALCONIES AND CHIMNEYS IS: 4 FEET INTO ANY SETBACK OR A REQUIRED DISTANCE BETWEEN BUILDINGS, PROVIDED THE FEATURE HAS A MAXIMUM WIDTH OF 16 FEET AS MEASURED HORIZONTALLY ALONG THE WALL FROM WHICH THE FEATURE EXTENDS.
 - MAX ENCROACHMENT INTO SETBACK FOR EXTERIOR STAIRWAYS OR RAMPS, ABOVE OR BELOW GROUND LEVEL, EXCLUDING THOSE ATTACHED TO A PORCH OR DECK (SEE E) IS: 10 FEET INTO A FRONT SETBACK OR A SETBACK FROM A PROJECT BOUNDARY OR DIFFERENT ZONING DISTRICT; 16 FEET INTO A REAR SETBACK; 4 FEET INTO A SIDE SETBACK OR A REQUIRED DISTANCE BETWEEN BUILDINGS.
 - MAX ENCROACHMENT INTO SETBACK FOR OPEN OR ENCLOSED PORCHES AND DECKS, AND THE STAIRWAYS OR RAMPS ATTACHED THERETO IS: 10 FEET INTO A FRONT OR REAR SETBACK, A SETBACK FROM A PROJECT BOUNDARY, A SETBACK FROM A DIFFERENT ZONING DISTRICT, OR A REQUIRED DISTANCE BETWEEN BUILDINGS.



NO.	REVISION	DATE

SITE DEVELOPMENT PLAN
HOUSE TYPES & HOUSE BOX MATRIX

ELKRIDGE WOODS
 LOTS 2-42
 SINGLE FAMILY DETACHED

TAX MAP 38 CRD 9
 1ST ELECTION DISTRICT

PARCELS 756, 340 - ZONED: R-12
 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
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 3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666
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DESIGN BY: VTG
 DRAWN BY: VTG
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 DATE: JULY 2019
 SCALE: AS SHOWN
 W.O. NO.: 41446

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. 16153
 EXPIRATION DATE 08-27-2020

12 OF 12

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 9-27-19

[Signature]
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 9-27-19

DIRECTOR