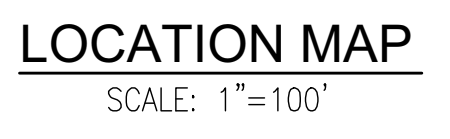
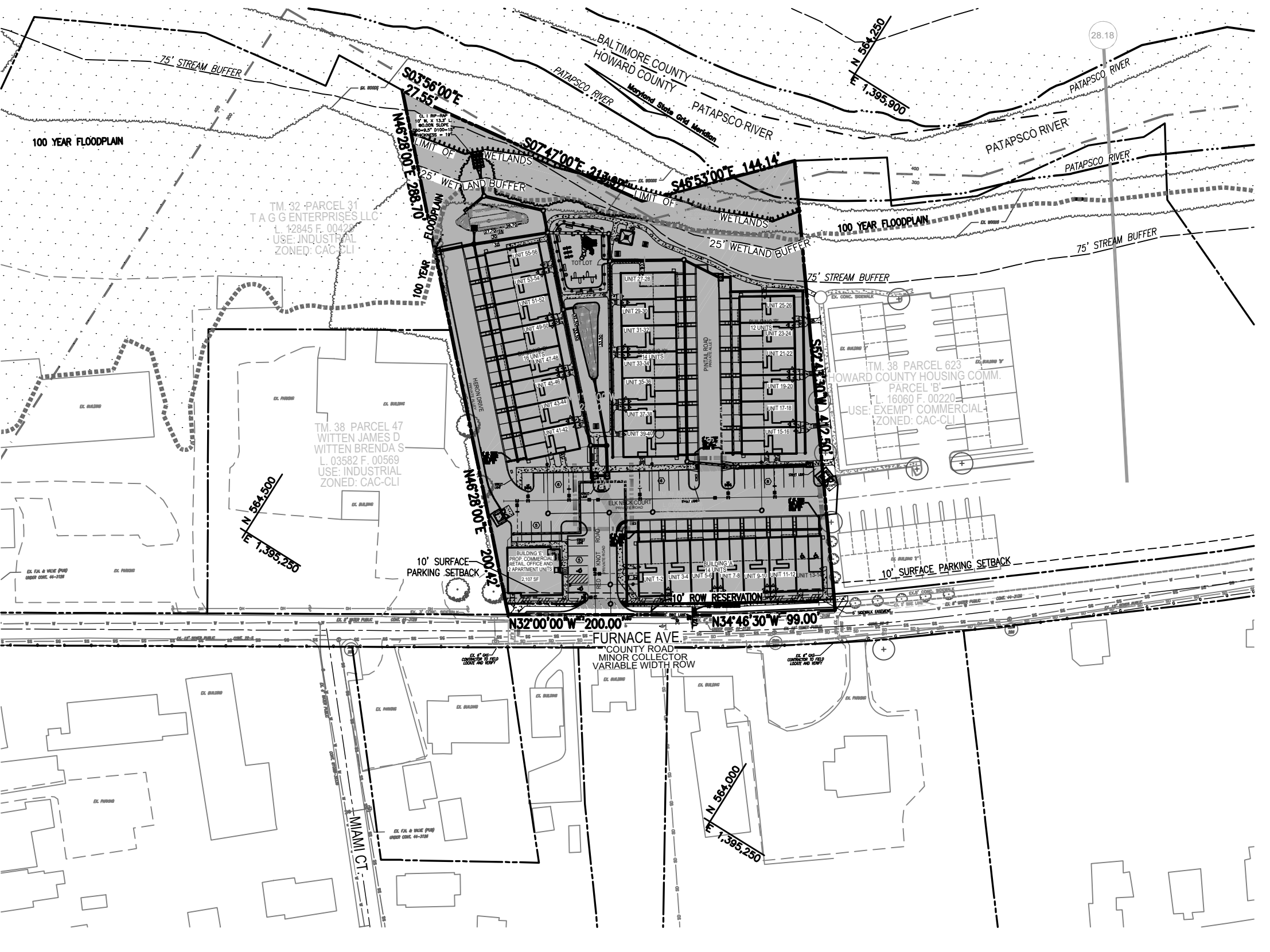


GENERAL NOTES

- 1. PROJECT BACKGROUND: SUBDIVISION NAME: T&M MAP 38 GRID 04... SECTION/AREA: LOT/PARCEL... ZONING: CAC-CL2... ZB/BA REFERENCE: N/A... ELECTION DISTRICT: 151... TOTAL (GROSS) TRACT AREA: 3.0654 ACRES... AREA OF R/W TRANSFER: 0.0687 AC... SECTION/AREA: N/A... NUMBER OF PROPOSED UNITS: N/A... NET AREA OF PROJECT: 2.5217 ACRES (3.0654 SITE-0.475 ENV.-0.0687 ROW=2.5217 AC.)... AREA OF PROPOSED R/W: 0.2678 AC... OPEN SPACE REQ: N/A... GREEN AREA PROVIDED: 0.96 ACRES... PUBLIC WATER & SEWER: ECP-18-005, F-15-042, 14-5079-D... DPZ REF: S

COORDINATE TABLE
100 564257.25 1395312.30
101 564593.37 1395667.64
102 564565.89 1395669.46
103 564353.82 1395697.98
104 564255.08 1395802.98
105 564005.97 1395474.19
106 564087.41 1395477.92
107 564200.57 1395477.77
108 564394.98 1395457.90
109 564491.04 1395167.49

SITE DEVELOPMENT PLAN
RIVER WATCH II
5635-5659 FURNACE AVENUE
PARCEL 782



RIVER WATCH II - DENSITY TABULATION
TOTAL SUBDIVISION AREA (GROSS AREA): 3.0654 ACRES
FLOODPLAIN: 0.3844 ACRES
STEEP SLOPES (>20.00 S.F.): 0.00 ACRES
NET AREA: 2.6809 AC.
UNITS PERMITTED (27 AC.): 58 APARTMENTS

SITE ANALYSIS DATA CHART

- A. TOTAL PROJECT AREA / GROSS TRACT AREA: 133,528 S.F. OR 3.0654 AC. +/- PARCEL 1: 91,567 S.F. OR 2.1021 AC. +/- PARCEL 2: 41,961 S.F. OR 0.9633 AC. +/- NON-BUILDABLE ENVIRONMENTAL AREAS: 16,747 S.F. OR 0.3844 AC. - NET TRACT AREA
B. AREA OF PLAN SUBMISSION: 124,533 S.F. OR 2.86 AC. +/- (INCLUDES OFFSITE DISTURBANCES)
C. LIMIT OF DISTURBED AREA/DEVELOPMENT AREA: 124,533 S.F. OR 2.86 AC. +/- (INCLUDES OFFSITE DISTURBANCES)
D. PRESENT ZONING DESIGNATION: CAC-CL2
E. PROPOSED USES FOR SITE AND STRUCTURES: APARTMENT RESIDENTIAL/COMMERCIAL/AMENITY
F. TOTAL NUMBER OF UNITS ALLOWED: 65 (25 UNITS/UNIT +/- 2,612.22 AC.)
G. TOTAL NUMBER OF UNITS PROPOSED: 58 RESIDENTIAL / 1 OTHER
H. TOTAL NUMBER OF PARKING SPACES REQUIRED: 147 (SEE PARKING TABULATION THIS SHEET)
I. TOTAL NUMBER OF PARKING SPACES PROVIDED: 144 (SEE SHARED PARKING ADJUSTMENT TABULATION THIS SHEET)
J. AMENITY OPEN SPACE AREA: 2,688 AC. x 0.10 = 0.2688 AC. x 0.25 AC. \*USE 0.27 AC.
AMENITY AREA PLUS CREDITS PROVIDED: 33,399 S.F. OR 0.77 AC.
K. TOTAL SITE OPEN SPACE REQUIRED: (10% GROSS TRACT AREA) = 133,528 S.F. x 0.10 = 13,352.8 S.F. = 0.3065 AC. +/- TOTAL SITE OPEN SPACE PROVIDED: 49,229 S.F. OR 1.1072 AC. +/-
L. TOTAL BUILDING COVERAGE WITHIN THE DEVELOPMENT AREA: 35,770 S.F. (0.82 AC. OR 28.72%)
M. AREA OF WETLANDS AND BUFFERS: WETLAND-ONSITE: 6,591 S.F. OR 0.15 AC. WETLAND-WITHIN LDD: 0.00 S.F. OR 0.00 AC. BUFFER-ONSITE: 15,410 S.F. OR 0.35 AC. \*INCLUDES WETLAND BUFFER-WITHIN LDD: 3,550 S.F. OR 0.0815 AC. ON-SITE: 12,779 S.F. OR 0.2934 AC. WITHIN THE LDD: 4,959 S.F. OR 0.0978 AC.
N. STREAMS AND THEIR BUFFERS:
O. AREA OF FLOODPLAIN: WETLAND-ONSITE: 16,747 S.F. OR 0.3844 AC. WITHIN THE LDD: 1,943 S.F. OR 0.446 AC.
P. AREA OF FOREST: 0.03 AC. (REFER TO FSD WORKSHEET)
Q. AREA OF MODERATE SLOPES (15% -24.99%) > 20,000 S.F. CONTIGUOUS: 0 S.F. OR 0.00 AC.
R. AREA OF STEEP SLOPES (25% & GREATER) > 20,000 S.F. CONTIGUOUS: 0 S.F. OR 0.00 AC.
S. ERODIBLE SOILS: 15,819 S.F. (0.32 AC.)
T. TAX MAP 38, BLOCK 4, PARCEL 782
U. 1ST ELECTION DISTRICT
V. DPZ FILE REFERENCES: CONTR.1 #W108B-30335, CONTR. #22-S, CONTR. #44-3126, ECP-18-005
W. DEED PLAT REFERENCES: L.07200/F.00336, L.07200/F.00376, L.06662/F.00378
X. LOCATION: EAST SIDE OF FURNACE AVENUE, SOUTH OF MIAMI COURT
Y. PUBLIC ACCESS ROAD: FURNACE AVENUE
Z. INTERIOR ROADS: PRIVATE ROADS
AA. PAVING WITHIN THE DEVELOPMENT AREA: 49,530 SF (1.13 AC. OR 39.76%)
BB. TOTAL PROPOSED IMPERVIOUS WITHIN DEVELOPMENT AREA: 85,300 S.F. (1.96 AC. OR 68.53%)
CC. GREEN OPEN AREA: ON-SITE: 45,234 F. (1.04 AC. OR 34.67%) WITHIN THE DEVELOPMENT AREA: 39,233 S.F. (0.901 AC. OR 31.49%)
DD. MAXIMUM BUILDING HEIGHT: 40'
EE. MINIMUM BUILDING HEIGHT: 25'
FF. MIHU UNITS REQUIRED: 15% OF 58 UNITS = 9 UNITS
GG. COMMERCIAL SPACE REQUIRED: 70 S.F./UNIT x (0.85 x 58 UNITS) = 3,451 S.F.
1ST FLOOR COMMERCIAL OFFICE SPACE: 2,012 S.F.
2ND FLOOR COMMERCIAL OFFICE SPACE: 1,827 S.F.
TOTAL COMMERCIAL OFFICE SPACE: 3,839 S.F.

AMENITY AREA TABULATION:

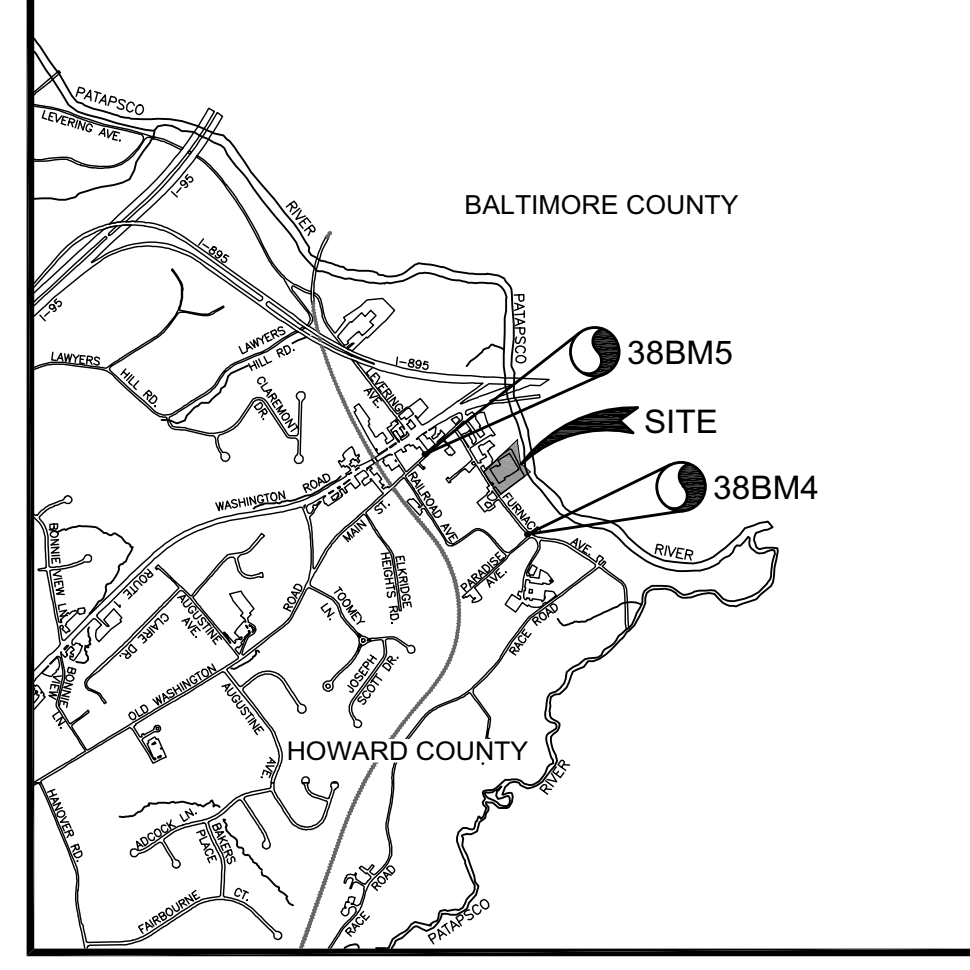
SECTION 127.5.E.1.b AMENITY AREAS: CAC DEVELOPMENTS SHALL INCLUDE AN AMENITY AREA OR ROULE. NO AMENITY AREA SHALL BE SMALLER THAN 0.25 ACRES. THE AMENITY AREA SHALL INCLUDE SEATING AND TREES PROPORTIONAL TO THE SIZE OF THE AMENITY AREA. AMENITY AREAS SHALL BE CONNECTED BY PEDESTRIAN AND BICYCLE IMPROVEMENTS THAT LINK WITH EXISTING AND FUTURE CONNECTIONS TO SURROUNDING DEVELOPMENTS. IN ACCORDANCE WITH 16.121(B) OF THE CODE, ALL OR A PORTION OF THE OPEN SPACE AREA SHALL BE DEDICATED AND DEEDED WITHOUT CHARGE TO HOWARD COUNTY FOR RECREATION OR FOR PUBLIC USE, INCLUDING BUT NOT LIMITED TO COMMUNITY CENTERS AND LIBRARIES ALONG ROUTE 1. FOR CAC DEVELOPMENTS LESS THAN 20 ACRES, PROVIDE 10% OF THE NET ACREAGE AS OPEN SPACE WHICH MUST BE DESIGNATED AS AN AMENITY AREA OPEN TO THE PUBLIC. AMENITY OPEN SPACE AREA REQUIRED = 10% X NET AREA = 10% X 116,781 S.F. = 11,678 S.F. = 0.2688 AC. \*USE 0.27 AC.

6638 FURNACE CONSERVATION SHEETSHEET Version 1.0

Table with columns: NET TRACT AREA, LAND USE CATEGORY, and various metrics like Total Area, Area of Forest, etc.

BENCHMARKS
HOWARD COUNTY BENCHMARK 38BM4
N 563,602.10 E 1,395,768.99 ELEV.: 30.82'
HOWARD COUNTY BENCHMARK 38BM5
N 564,447.00 E 1,394,694.00 ELEV.: 42.368'

ADDRESS CHART
UNIT NO. STREET ADDRESS
BUILDING A 5649 FURNACE AVENUE
1 5635-A FURNACE AVENUE
2 5635-B FURNACE AVENUE
3 5637-A FURNACE AVENUE
4 5637-B FURNACE AVENUE
5 5639-A FURNACE AVENUE
6 5639-B FURNACE AVENUE
7 5641-A FURNACE AVENUE
8 5641-B FURNACE AVENUE
9 5643-A FURNACE AVENUE
10 5643-B FURNACE AVENUE
11 5645-A FURNACE AVENUE
12 5645-B FURNACE AVENUE
13 5647-A FURNACE AVENUE
14 5647-B FURNACE AVENUE
BUILDING B 5514 PINTAL ROAD
15 5502-A PINTAL ROAD
16 5502-B PINTAL ROAD
17 5504-A PINTAL ROAD
18 5504-B PINTAL ROAD
19 5506-A PINTAL ROAD
20 5506-B PINTAL ROAD
21 5508-A PINTAL ROAD
22 5508-B PINTAL ROAD
23 5510-A PINTAL ROAD
24 5510-B PINTAL ROAD
25 5512-A PINTAL ROAD
26 5512-B PINTAL ROAD
BUILDING C 5515 PINTAL ROAD
27 5513-A PINTAL ROAD
28 5513-B PINTAL ROAD
29 5511-A PINTAL ROAD
30 5511-B PINTAL ROAD
31 5509-A PINTAL ROAD
32 5509-B PINTAL ROAD
33 5507-A PINTAL ROAD
34 5507-B PINTAL ROAD
35 5505-A PINTAL ROAD
36 5505-B PINTAL ROAD
37 5503-A PINTAL ROAD
38 5503-B PINTAL ROAD
39 5501-A PINTAL ROAD
40 5501-B PINTAL ROAD
BUILDING D 5418 HERON DRIVE
41 5402-A HERON DRIVE
42 5402-B HERON DRIVE
43 5404-A HERON DRIVE
44 5404-B HERON DRIVE
45 5406-A HERON DRIVE
46 5406-B HERON DRIVE
47 5408-A HERON DRIVE
48 5408-B HERON DRIVE
49 5410-A HERON DRIVE
50 5410-B HERON DRIVE
51 5412-A HERON DRIVE
52 5412-B HERON DRIVE
53 5414-A HERON DRIVE
54 5414-B HERON DRIVE
55 5416-A HERON DRIVE
56 5416-B HERON DRIVE
BUILDING E 5631 FURNACE AVENUE
57 5631-A FURNACE AVENUE
58 5631-B FURNACE AVENUE



LEGEND

- EXISTING CURB AND GUTTER
EXISTING UTILITY POLE
EXISTING OVERHEAD UTILITIES
EXISTING SANITARY MANHOLE
EXISTING SANITARY LINE
EXISTING VALVE
EXISTING FIRE HYDRANT
EXISTING WATER LINE
EXISTING GAS LINE
BALTIMORE COUNTY
HOWARD COUNTY
PROPERTY LINE
RIGHT-OF-WAY LINE
EXISTING TREELINE
SITE AREA
100 YEAR FLOODPLAIN

SHEET INDEX

Table with columns: COVER SHEET, DESCRIPTION, SHEET NO.
COVER SHEET 1 OF 11
EXISTING CONDITIONS - DEMOLITION PLAN AND INITIAL GRADING, EROSION AND SEDIMENT CONTROL PLAN AND DRAINAGE MAP 2 OF 11
SITE LAYOUT PLAN AND PRIVATE SEWER PROFILES 3 OF 11
PROPOSED CONDITIONS - INTERMEDIATE AND FINAL GRADING, EROSION AND SEDIMENT CONTROL PLAN AND DRAINAGE MAP 4 OF 11
LANDSCAPE PLAN AND DETAILS 5 OF 11
GRADING, EROSION AND SEDIMENT CONTROL NOTES AND DETAILS 6 OF 11
STORM DRAIN DRAINAGE AREA MAP 6 OF 11
PRIVATE STORM DRAIN PROFILES 7 OF 11
STORMWATER MANAGEMENT DRAINAGE AREA MAP 8 OF 11
SITE AND STORMWATER NOTES AND DETAILS 9 OF 11
LANDSCAPE PLAN AND DETAILS 10 OF 11
BUILDING DETAILS AND ELEVATIONS 11 OF 11

OWNER: VBH LLC
9113 BRAE BROOKE DRIVE
LANHAM, MD 20706
DEVELOPER: J. KIRBY DEVELOPMENT, LLC
C/O JEFF KIRBY, PRESIDENT
5760 B FURNACE AVENUE
ELK RIDGE, MD 21075
(410) 788-0027

\*SHARED PARKING TABULATION
USE SPACES: MORNING, MID-DAY, AFTERNOON, EVENING, DAYTIME, WEEKEND, NIGHT
OFFICE: 80% 100% 100% 100% 1.0 1.3 0.5 0.5 0.5
RESIDENTIAL: 80% 60% 60% 100% 100% 100% 100%

PARKING TABULATION:
RESIDENTIAL PARKING: TOTAL NUMBER OF DWELLING UNITS PROPOSED: 58
OFF-STREET PARKING SPACES REQUIRED: 2 SPACES PER 58 UNITS = 116 SPACES
PARKING SPACES PROVIDED: 147 SPACES
MULTI-FAMILY (58 UNITS IN BUILDING A-0)
1 SPACE ON DRIVEWAY = 56 SPACES (FOR 56 UNITS)
112 SPACES
MULTI-FAMILY (ABOVE RETAIL)
2 SPACES/UNIT (FOR 2 UNITS) = 4 SPACES
(LOCATED IN COMMON PARKING AREA)
TOTAL RESIDENTIAL PARKING SPACES PROVIDED: = 116 SPACES OFF-STREET

PERMIT INFORMATION CHART
SUBDIVISION NAME: RIVER WATCH II
SDP-19-027
SECTION/AREA: N/A
LOT/ PARCELS: LOTS 1 AND 2 / PARCEL 782
PLAT REF #: L.07200/F.00336
BLOCK NO: 04
ZONE: CAC-CL2
TAX MAP: 38
ELECT DIST: 1
CENSUS TR: 60562
WATER: 44-3126-D / W-108B-30335
SEWER: 22-S

SWM PRACTICE CHART PARCEL 782 (HOA)
ESD PRACTICES BY LOT
LOT # ESD PRACTICE ADDRESS

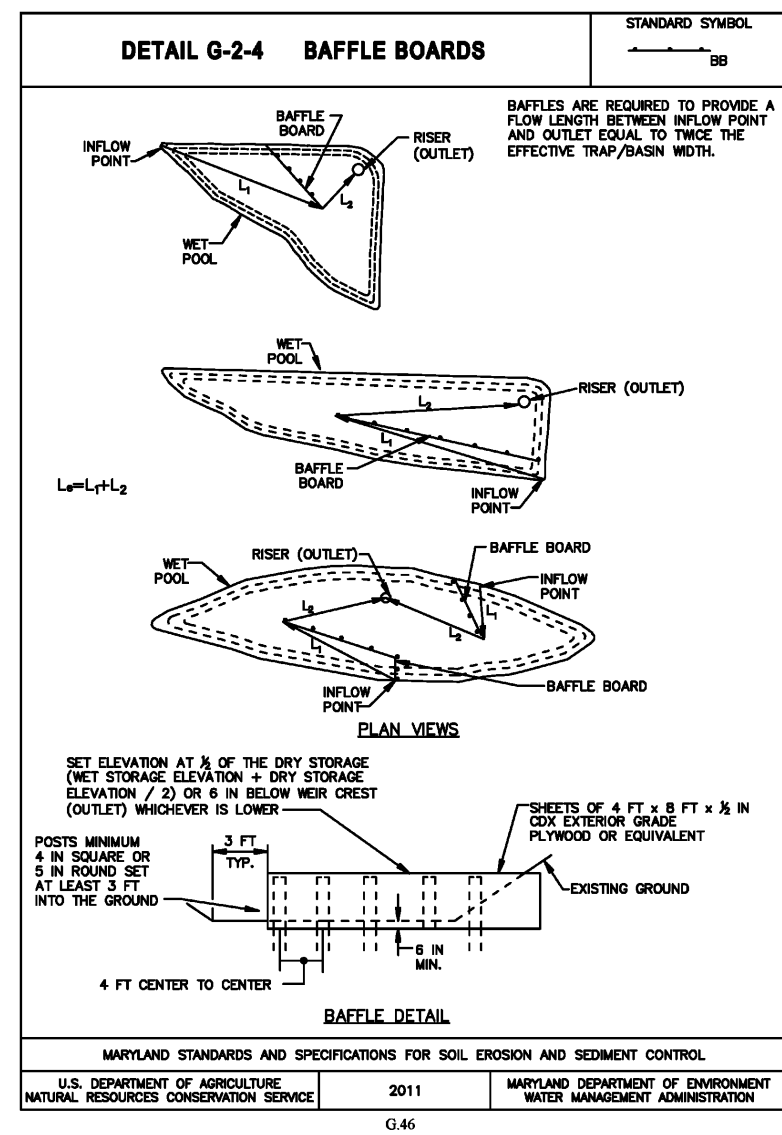
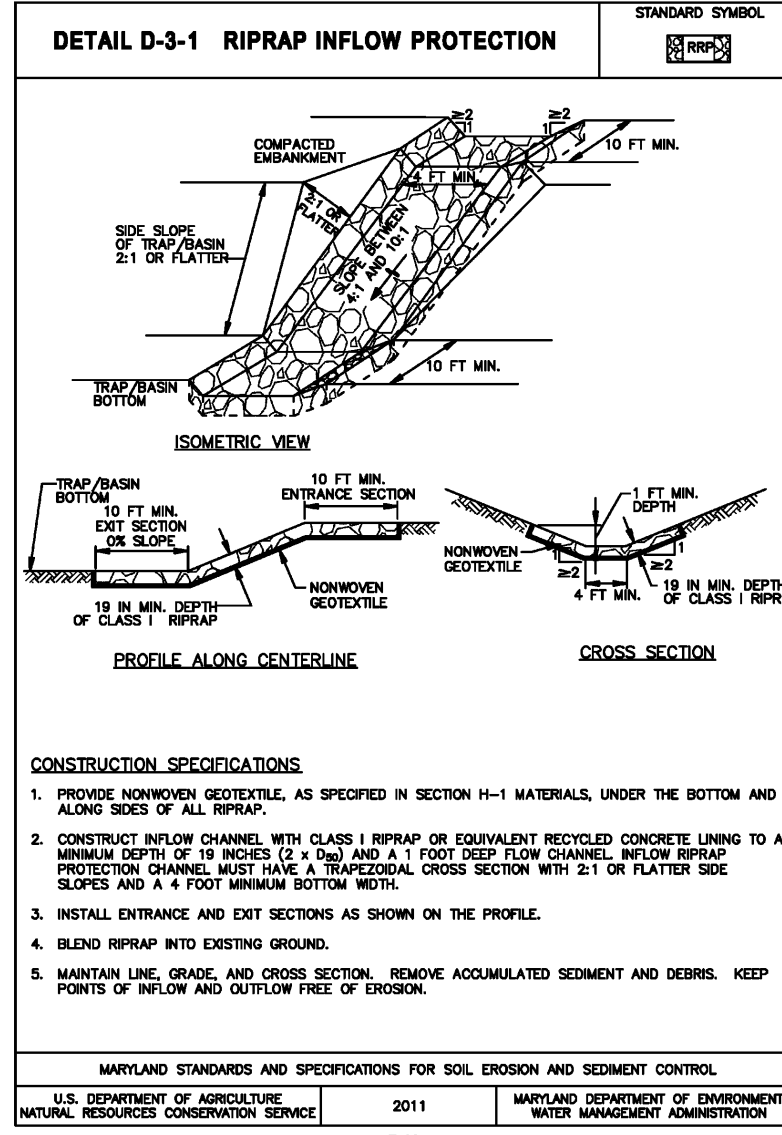
MODERATE INCOME HOUSING UNITS (MIHU) ALLOCATION EXEMPTIONS TRACKING
TOTAL NUMBER OF LOTS/UNITS PROPOSED: 58
NUMBER OF MIHU PROVIDED ON-SITE: 9
NUMBER OF MIHU PROVIDED OFF-SITE: 9
NUMBER OF APFO ALLOCATIONS REQUIRED: 49
MIHU FEES (IN-LEU): 0

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

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

SITE DEVELOPMENT PLAN COVER SHEET
RIVER WATCH II
5635-5659 FURNACE AVENUE
TAX MAP 38 GRID 04
1ST ELECTION DISTRICT
ZONED: CAC-CL2
HOWARD COUNTY, MARYLAND

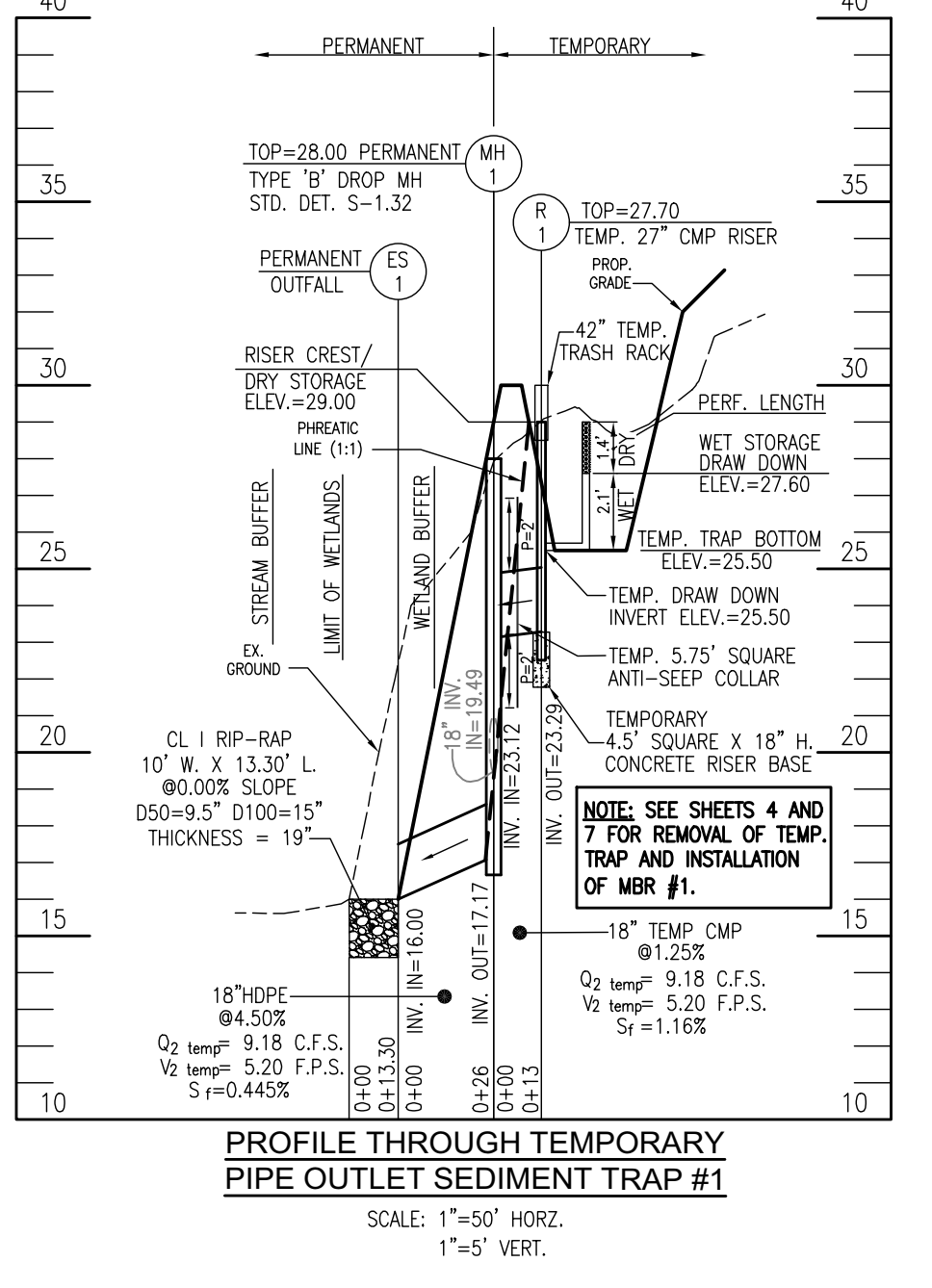
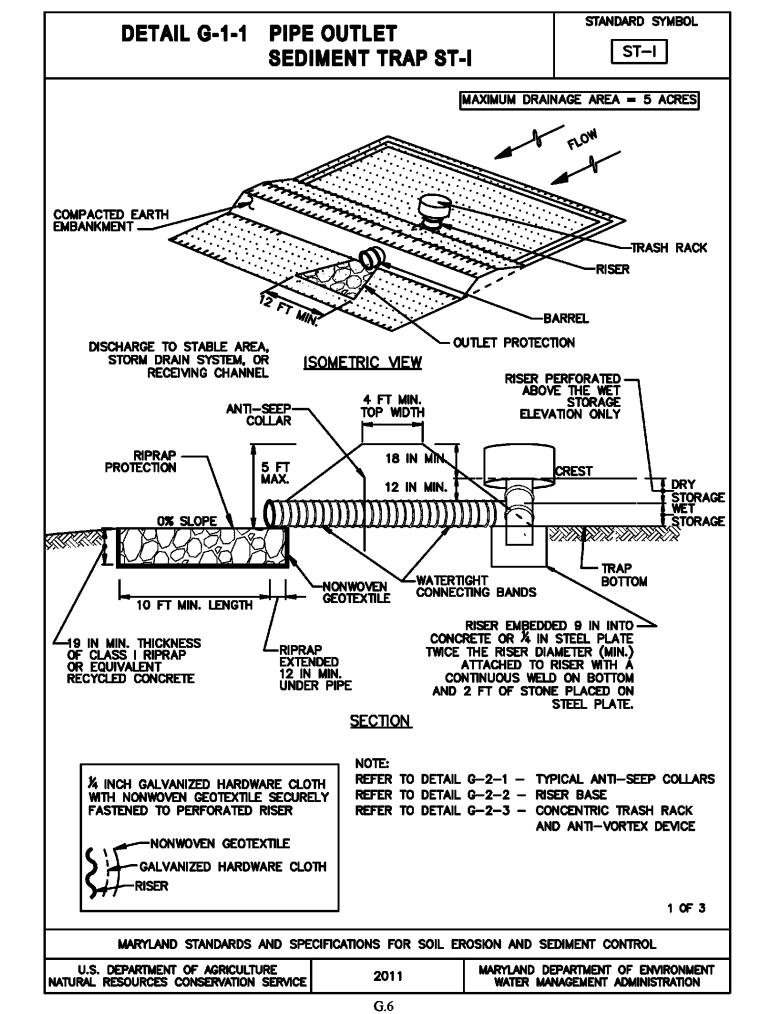
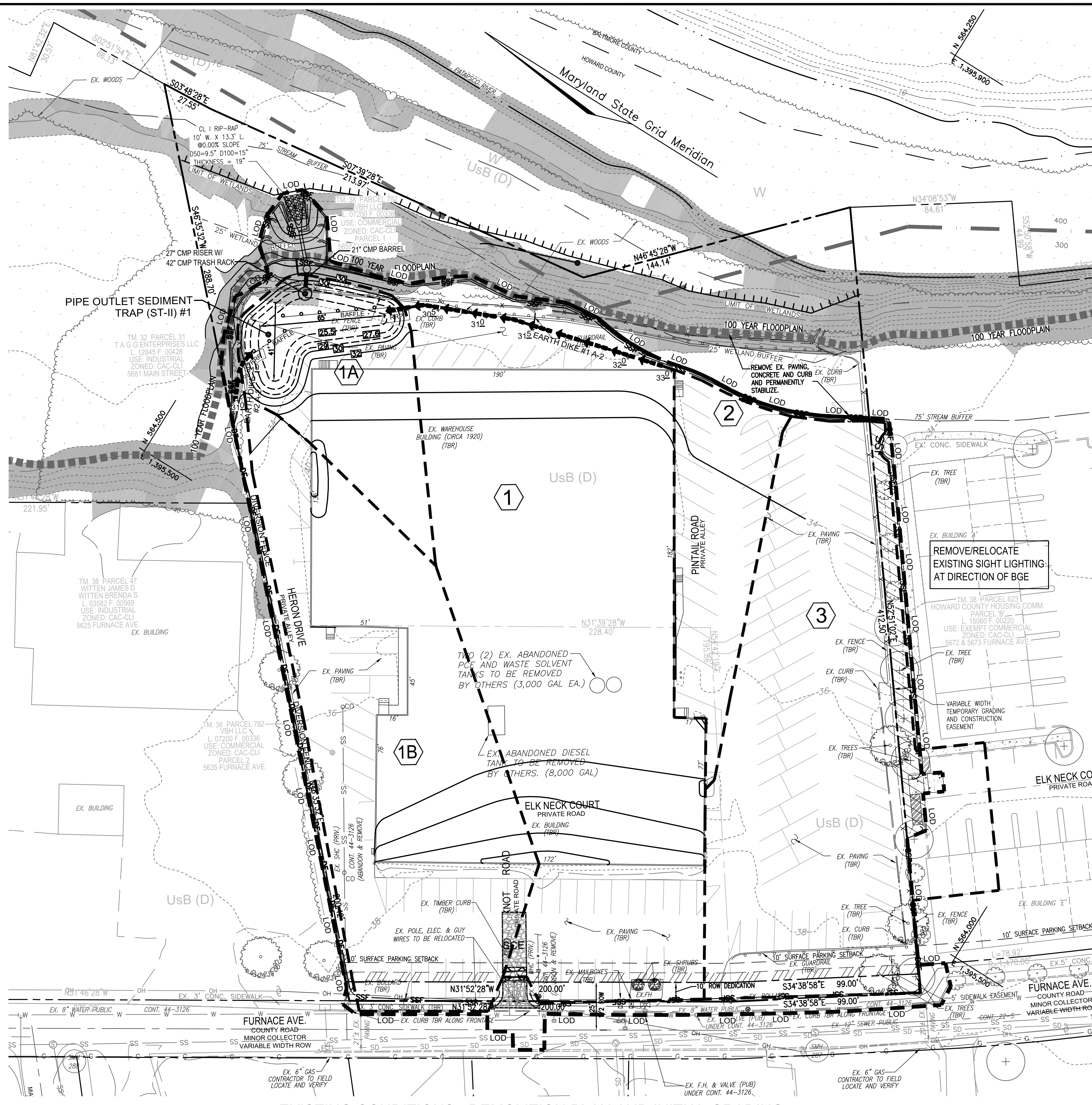
Robert H. Vogel Engineering, Inc.
Engineers • Surveyors • Planners
3300 N. Ridge Road, Suite 110
Ellicott City, MD 21043
Tel: 410.461.7666
Fax: 410.461.8961
PROFESSIONAL CERTIFICATE
DESIGN BY: GAH
DRAWN BY: LAG
CHECKED BY: RHV
DATE: JUNE 2019
SCALE: AS SHOWN
W.O. NO.: 17-00
1 SHEET OF 11



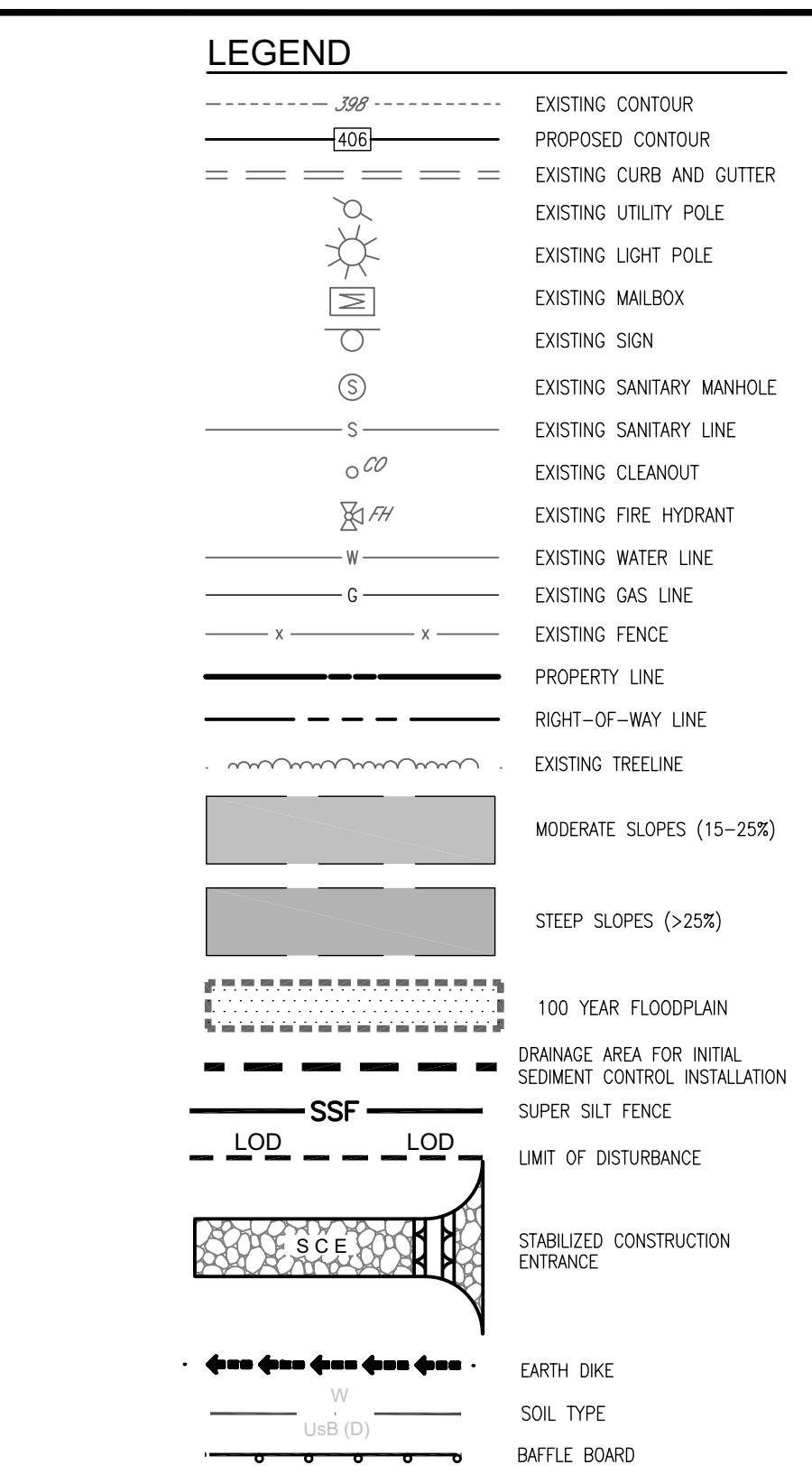
Earth Dike 1	Units
Drainage Area	1.05 Acres
2-year Peak Flow (WinTR-55)	3.9 cfs
Density of water	62.4 lb/ft³
Water surface slope	0.016134 ft/ft
Cross-slope	6.465 H:1V
Hydraulic Radius	0.282 ft
Shear Stress	0.283911 lb/ft²
Velocity	2.701 ft/s
Depth	0.593 ft
Dike Type	A-2

Div. Fence / Earth Dike 2	Units
Drainage Area	0.50 Acres
2-year Peak Flow (WinTR-55)	1.86 cfs
Density of water	62.4 lb/ft³
Water surface slope	0.048757 ft/ft
Cross-slope	9.765 H:1V
Hydraulic Radius	0.155 ft
Shear Stress	0.471575 lb/ft²
Velocity	3.151 ft/s
Depth	0.406 ft
Dike Type	A-2

Note: Hydraulic radius, depth, & velocity calculated using triangular channels on Hydraulic Toolbox.



PIPE OUTLET SEDIMENT TRAP ST-I, TRAP NO. 1	
Drainage Area - Initial	1.71 ACRES
Drainage Area - Final	1.55 ACRES
Total Storage Provided	6156 CF
Total Storage Required	6513 CF
Wet Storage Provided	3078 CF
Wet Storage Required	3311 CF
Dry Storage Provided	3078 CF
Dry Storage Required	3203 CF
Trap Bottom Elevation	25.50 FT
Trap Bottom Dimensions	41 x 64 FT X FT
Wet Storage Elevation	27.60 FT
Riser Crest (Dry Storage) Elevation	29.00 FT
Cleanout Elevation	26.55 FT
Top of Embankment Elevation	30.00 FT
Side Slope	3:1 H:V RATIO
Embankment Top Width	4 FT
Spillway Material	HOPE
Spillway (Barrel) Diameter	18 IN
Riser Material	CONCRETE
Riser Dimensions (Inside)	2'-7" x 2'-7" SQUARE
Trash Rack Diameter / Height	42 / 18 IN
Anti-seep Collar Dimensions	5.75 x 5.75 FT
Outlet Protection - Length	26 FT
Outlet Protection - Width	10 FT
Outlet Protection - Depth	19 IN



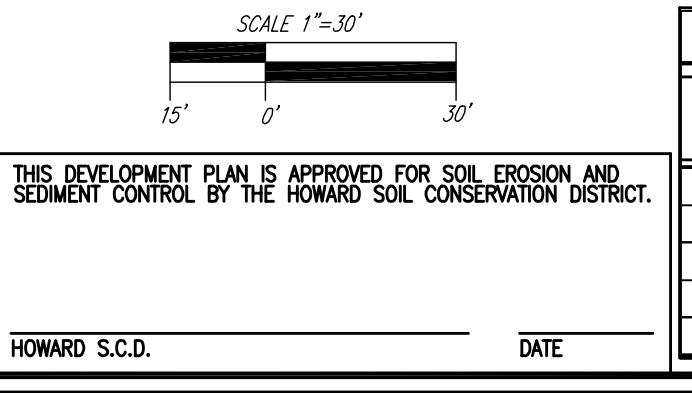
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
 DIRECTOR DATE

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 CONSERVATION DISTRICT AND/OR MDE.

OWNER/DEVELOPER SIGNATURE DATE  
 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.

DESIGNER'S SIGNATURE DATE  
 ROBERT H. VOGEL MD REGISTRATION NO. 16193  
 PRINTED NAME R.L.S. OR R.L.A. (circle one)  
 HOWARD S.C.D. DATE



SEDIMENT CONTROL - INITIAL CONDITION				
AREA NO.	AREA (AC.)	PRACTICE TYPE	DETAIL NO.	REMARKS
1	1.71	STONE/RIP-RAP OUTLET SEDIMENT TRAP ST-II	G-1-2	INCLUDES SUBAREAS 1A & 1B
1A	0.20	EARTH DIKE (TYPE A-2)	C-1	
1B	0.60	DIVERSION FENCE / EARTH DIKE (TYPE A-2)	C-1	
2	0.33	SUPER SILT FENCE	E-3	
3	0.72	SUPER SILT FENCE	E-3	

NOTE: CONNECTIONS BETWEEN ALL HDPE PIPE AND CONCRETE STRUCTURES TO UTILIZE ADS 12"-24" HDPE WATER-TIGHT MD BOOT ADAPTER, STD-204F. SEE WATER TIGHT CONNECTION DETAIL, SHEET # 6.

PROFESSIONAL CERTIFICATE  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A duly LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 16193 EXPIRES DATE: 09-27-2026

DESIGN BY: GAH  
 DRAWN BY: LAG  
 CHECKED BY: RHV  
 DATE: JUNE 2019  
 SCALE: AS SHOWN  
 W.O. NO.: 17-00

2 SHEET OF 11

ROBERT H. VOGEL, PE No.16193



**SITE LAYOUT PLAN**  
SCALE: 1"=30'

PRIVATE MANHOLE LOCATION CHART	MANHOLE NO.	NORTHING	EASTING	TOP ELEV.
1	564,192.07	1,395,385.70	38.39	
2	564,227.76	1,395,440.92	37.49	
3	564,274.75	1,395,410.54	37.85	
4	564,194.42	1,395,462.46	37.85	
5	564,110.55	1,395,516.67	37.85	

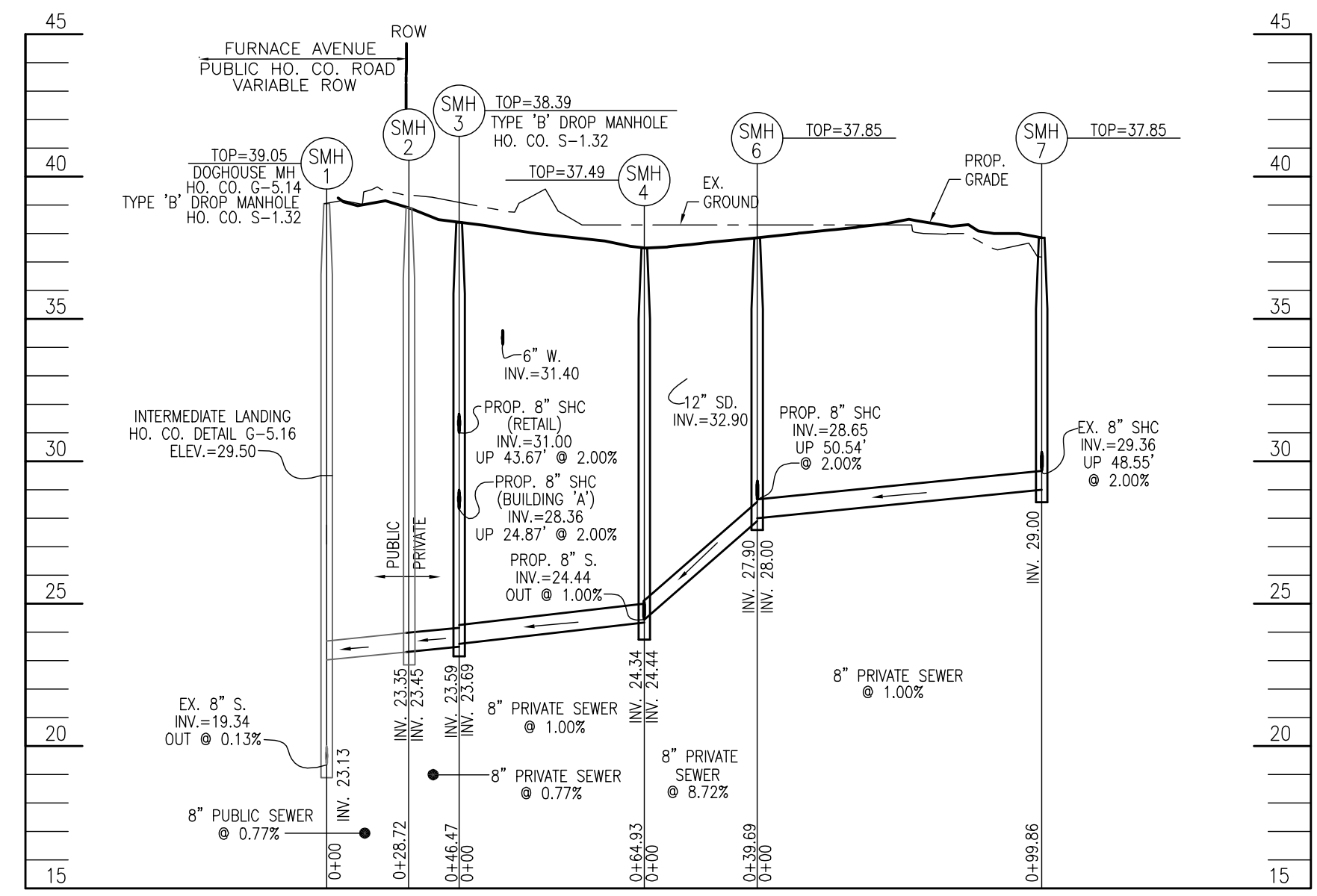
SEWER HOUSE CONNECTION AS-BUILT LOCATION TABLE	BUILDING	STREET ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
A	5649 FURNACE AVENUE			
B	5514 PINTAIL ROAD			
C	5515 PINTAIL ROAD			
D	5418 HERON DRIVE			
E	5631 FURNACE AVENUE			

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

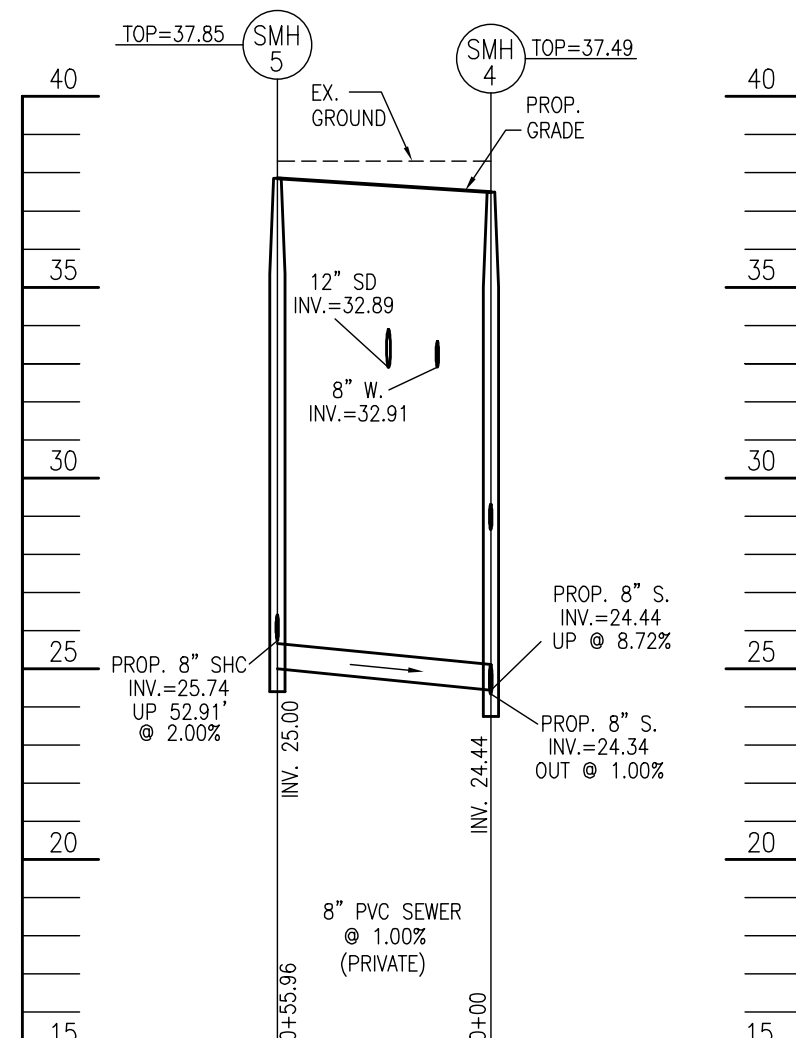
CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_

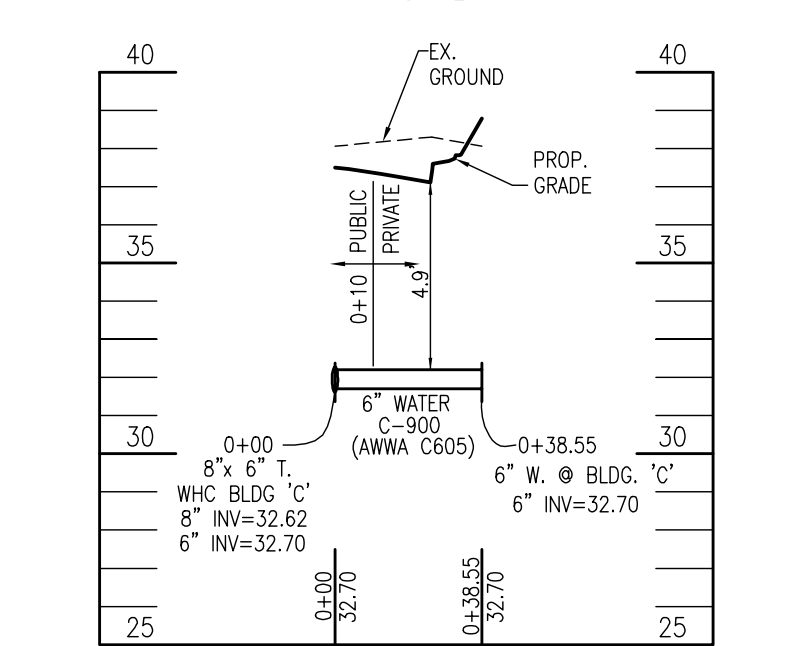
DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_



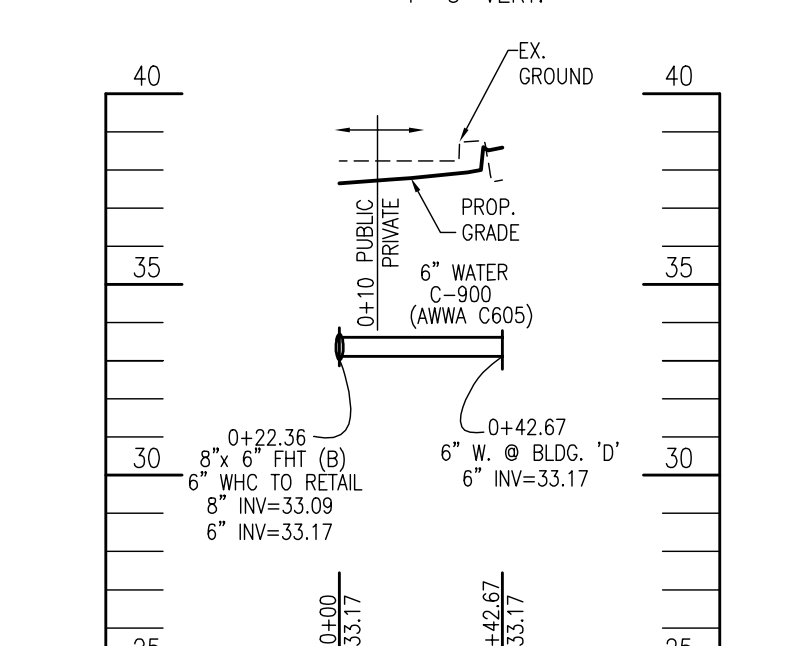
**PRIVATE SEWER PROFILE (PVC)**  
SCALE: 1"=50' HORIZ.  
1"=5' VERT.



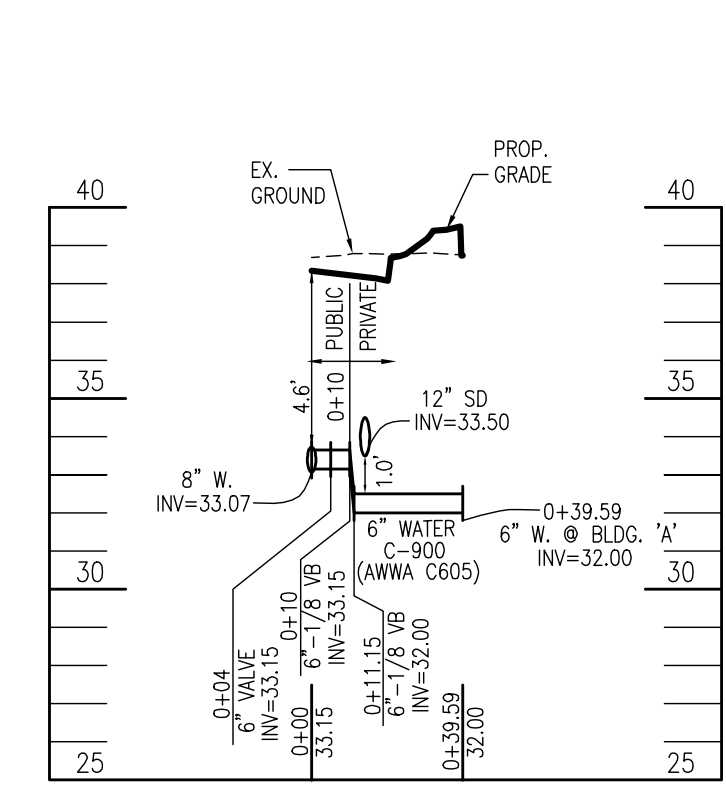
**WHC BLDG 'A' PROFILE**  
SCALE: 1"=50' HORIZ.  
1"=5' VERT.



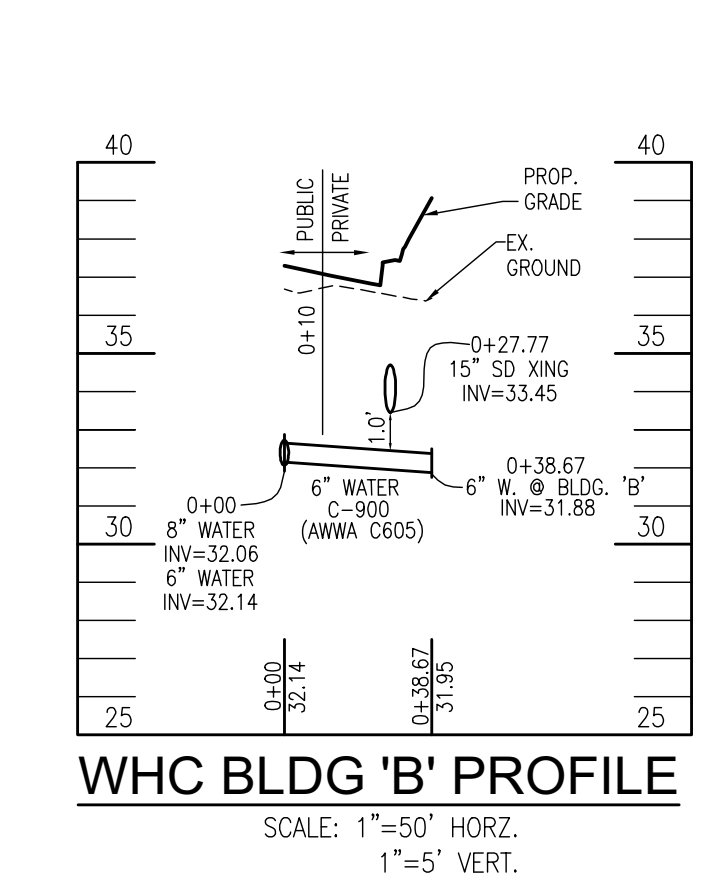
**WHC BLDG 'B' PROFILE**  
SCALE: 1"=50' HORIZ.  
1"=5' VERT.



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



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



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

**LEGEND**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED STORM DRAIN
- PROPOSED MANHOLE
- PROPOSED DIVERSION MANHOLE
- PROPOSED CLEANOUT
- PROPOSED WATER VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED SIDEWALK
- EASEMENT
- SPOT ELEVATION
- LIGHT POLE - HOLOPHANE "ESPLANADE" 150 WATT LED FULL CUTOFF LUMINAIRE, BLACK FINISH ON A 12" BLACK FIBERGLASS POLE (TYP.)
- LIGHT POLE - HOLOPHANE "ARLINGTON" 150 WATT LED FULL CUTOFF LUMINAIRE, BLACK FINISH ON A 12" BLACK FIBERGLASS POLE (TYP.)

PRIVATE STREET LIGHT LOCATION CHART	
NORTHING	EASTING
564,249.43	1,395,398.84
564,318.38	1,395,421.58
564,251.03	1,395,455.27
564,175.27	1,395,503.27
564,088.53	1,395,575.96
564,110.63	1,395,636.47
564,358.29	1,395,668.53

PRIVATE WATER AND SEWER QUANTITIES	
ITEMS	QUANTITIES
<b>WATER</b>	
6" WATER - C900 (AWWA C905) CL DR-14	154 LF
6" 1/8" VB	2 EA
6" 1/32 HB	1 EA
6" CAP AND BUTTRISS	5 EA
<b>SEWER</b>	
8" SEWER DP (CL-52)	279 LF
TYPE 'B' DROP CONNECTION	1 EA
PRECAST MANHOLES	5 EA

**OWNER**  
VBH LLC  
9113 BRAE BROOKE DRIVE  
LANHAM, MD 20706

**DEVELOPER**  
J. KIRBY DEVELOPMENT, LLC  
C/O JEFF KIRBY, PRESIDENT  
5760 B FURNACE AVENUE  
ELK RIDGE, MD 21075  
(410) 788-0027

NO.	REVISION	DATE
2	PERMIT SET	2/13/19
1	HUD REV 1	1/18/19

**SITE DEVELOPMENT PLAN**  
**SITE LAYOUT PLAN AND**  
**PRIVATE SEWER PROFILES**

**RIVER WATCH II**  
5635-5659 FURNACE AVENUE

TAX MAP 38 GRID 04  
1ST ELECTION DISTRICT

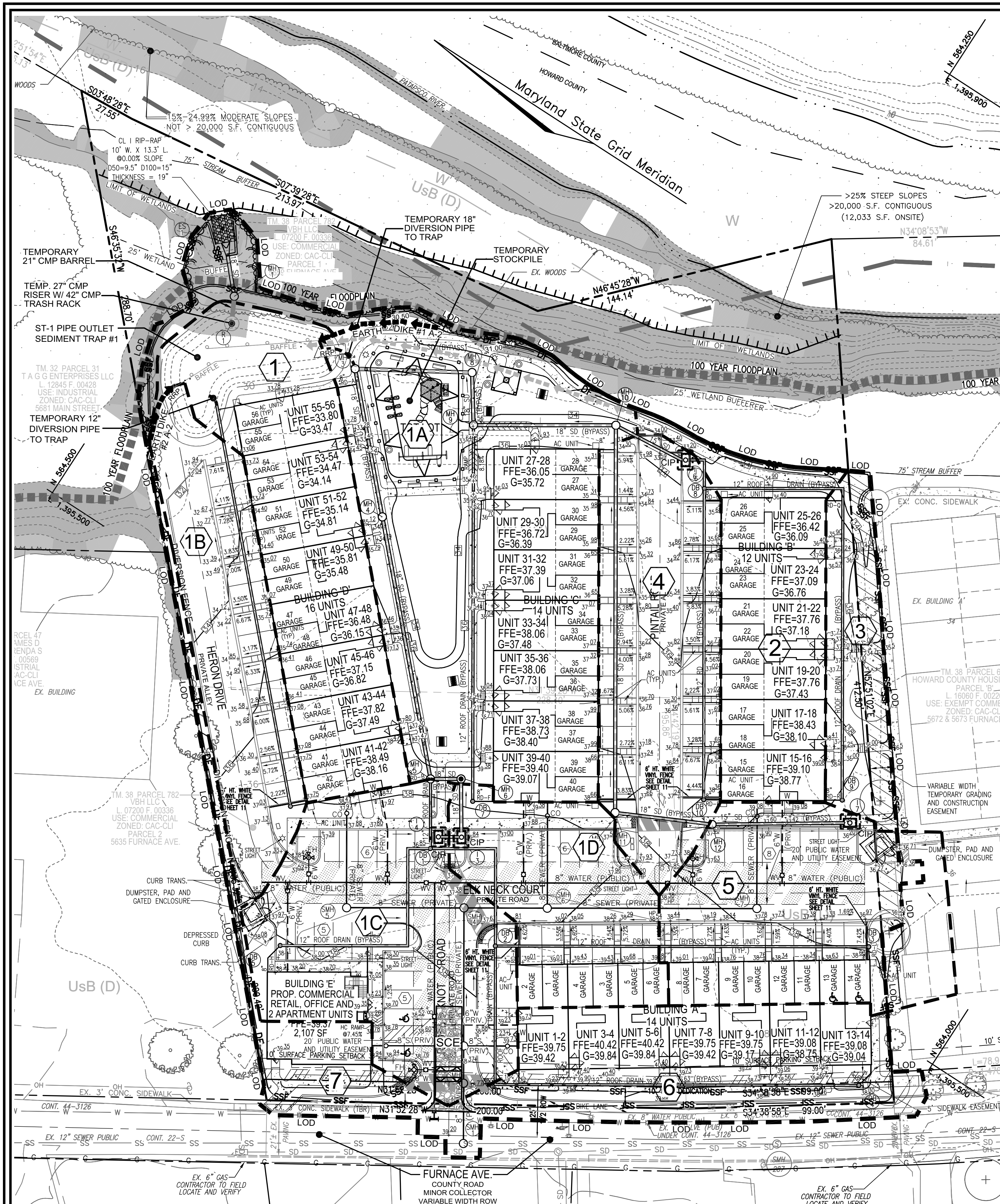
ZONED: CAC-CL1  
HOWARD COUNTY, MARYLAND

**Robert H. Vogel Engineering, Inc.**  
Engineers • Surveyors • Planners  
3300 N. Ridge Road, Suite 110  
Ellicott City, MD 21043  
Tel: 410.461.7666  
Fax: 410.461.8961

DESIGN BY: GAH  
DRAWN BY: LAG  
CHECKED BY: RHV  
DATE: JUNE 2019  
SCALE: AS SHOWN  
W.O. NO.: 17-00

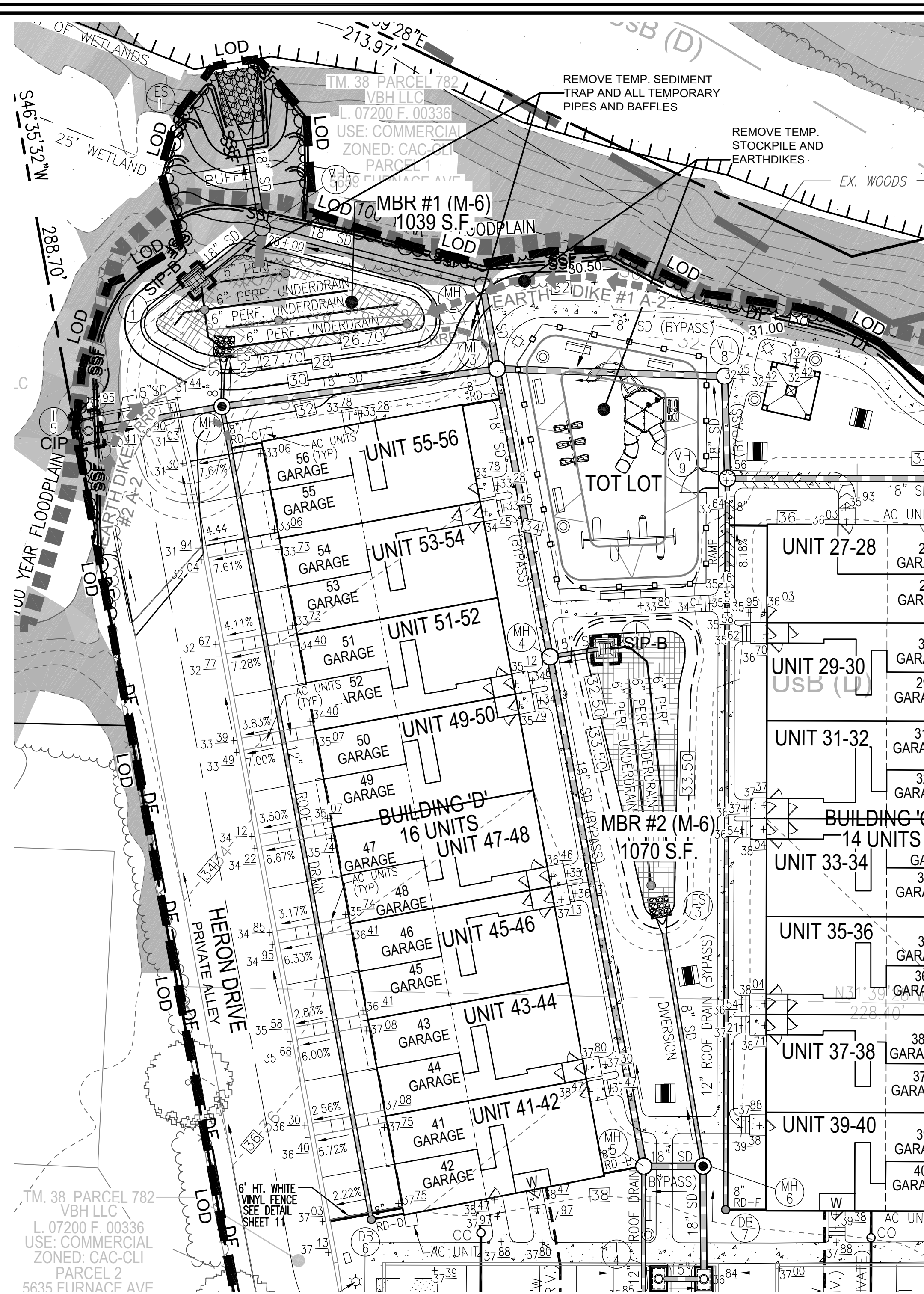
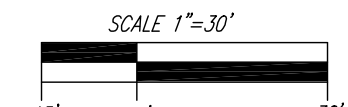
PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A duly Licensed PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. MY EXPIRES ON 09-27-2026

3 SHEET OF 11



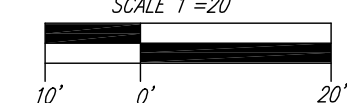
INTERMEDIATE GRADING, EROSION AND SEDIMENT CONTROL PLAN AND DRAINAGE MAP

SCALE: 1"=30'



FINAL GRADING PLAN FOR TRAP BACKFILL AND MBR CONSTRUCTION

SCALE: 1"=20'



**LEGEND**

	EXISTING CONTOUR
	PROPOSED CONTOUR
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	EXISTING TREE LINE
	PROPOSED TREE LINE
	EXISTING SOILS
	20' PUBLIC WATER AND UTILITY EASEMENT
	LIMIT OF DISTURBANCE
	MICRO-BIORETENTION (M-6)
	PROPOSED SIDEWALK
	PROPOSED STORM DRAIN
	STABILIZED CONSTRUCTION ENTRANCE
	EXISTING SUPER SILT FENCE
	100 YEAR FLOODPLAIN
	STANDARD INLET PROTECTION
	CURB INLET PROTECTION
	EARTH DIKE
	SILT FENCE
	SUPER SILT FENCE
	DIVERSION FENCE
	RIP-RAP INFLOW PROTECTION
	SEDIMENT BASIN BAFFLES

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

**OWNER**  
 VBH LLC  
 9113 BRAE BROOKE DRIVE  
 LANHAM, MD 20706

**DEVELOPER**  
 J. KIRBY DEVELOPMENT, LLC  
 C/O JEFF KIRBY, PRESIDENT  
 5760 B FURNACE AVENUE  
 ELKRIEGE, MD 21075  
 (410) 788-0027

2	PERMIT SET	2/13/19
1	HUD REV 1	1/18/19
NO.	REVISION	DATE

**DRAINAGE AREAS FOR SEDIMENT CONTROL - INTERMEDIATE CONDITION**

AREA NO.	AREA (AC.)	PRACTICE TYPE	DETAIL NO.	REMARKS
1	1.55	STONE/RIP-RAP OUTLET SEDIMENT TRAP ST-1	G-1-2	INCLUDES SUBAREAS 1A-1D
1A	0.55	DIVERSION FENCE / EARTH DIKE (TYPE A-2)	C-9 / C-1	
1B	0.22	DIVERSION FENCE / EARTH DIKE (TYPE A-2)	C-9 / C-1	
1C	0.32	CURB INLET PROTECTION	E-9-3	
1D	0.18	CURB INLET PROTECTION	E-9-3	
2	0.20	SUPER SILT FENCE	E-3	
3	0.10	SUPER SILT FENCE	E-3	
4	0.26	CURB INLET PROTECTION	E-9-3	
5	0.27	CURB INLET PROTECTION	E-9-3	
6	0.20	SUPER SILT FENCE	E-3	
7	0.05	SUPER SILT FENCE	E-3	

**SEDIMENT CONTROL - FINAL CONDITION**

AREA NO.	AREA (AC.)	PRACTICE TYPE	DETAIL NO.	REMARKS
1	0.43	STANDARD INLET PROTECTION	E-9-1	TYPE B
2	0.59	STANDARD INLET PROTECTION	E-9-1	TYPE B

**MAPPED SOILS TYPES - CLARKSVILLE NW / NE MAP #16 / 17**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	HYDRIC	HYDRIC INCLUSIONS	PRIME FARMLAND	<15% SLOPE W/ DRUSH POTENTIAL
USB	URBAN LAND-SASSAFRAS-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	D	37	NO	NO	NO	NO
W	WATER	-	-	NO	NO	NO	NO

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR DATE

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

OWNER/DEVELOPER SIGNATURE DATE

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 I WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

DESIGNER'S SIGNATURE DATE

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

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

HOWARD S.C.D. DATE

**SITE DEVELOPMENT PLAN**  
 PROPOSED CONDITIONS - INTERMEDIATE AND FINAL GRADING, EROSION AND SEDIMENT CONTROL PLAN AND DRAINAGE MAP

**RIVER WATCH II**  
 5635-5659 FURNACE AVENUE

TAX MAP 38 GRID 04 1ST ELECTION DISTRICT ZONED: CAC-CLU HOWARD COUNTY, MARYLAND PARCEL 782

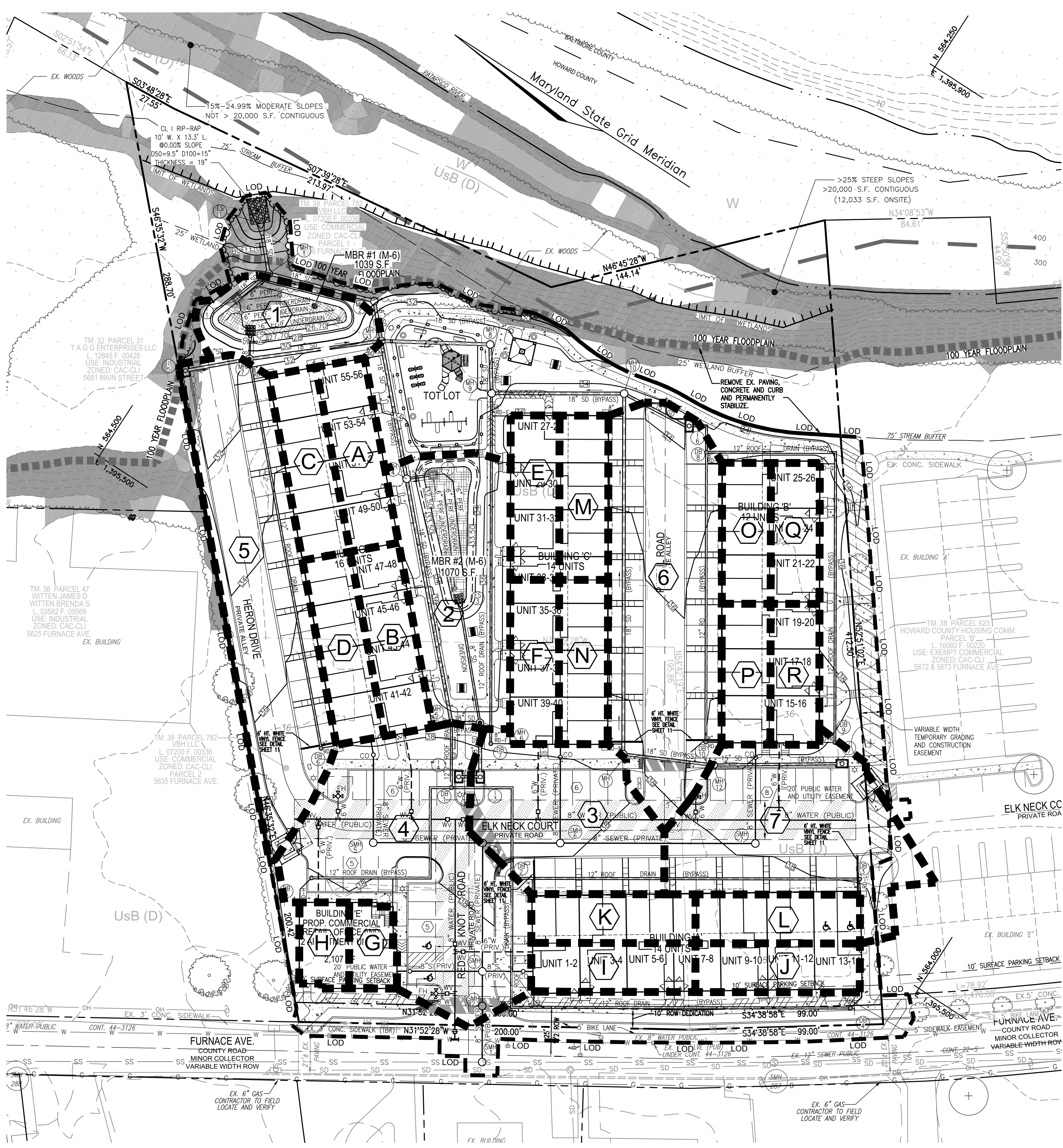
**Robert H. Vogel Engineering, Inc.**  
 Engineers - Surveyors - Planners  
 3300 N. Ridge Road, Suite 310 Ellicott City, MD 21043 Tel: 410.481.7699 Fax: 410.481.8889

DESIGN BY: GAH  
 DRAWN BY: LAG  
 CHECKED BY: RHV  
 DATE: JUNE 2019  
 SCALE: AS SHOWN  
 W.O. NO.: 17-00

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 JURISDICTION OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 09-27-2020

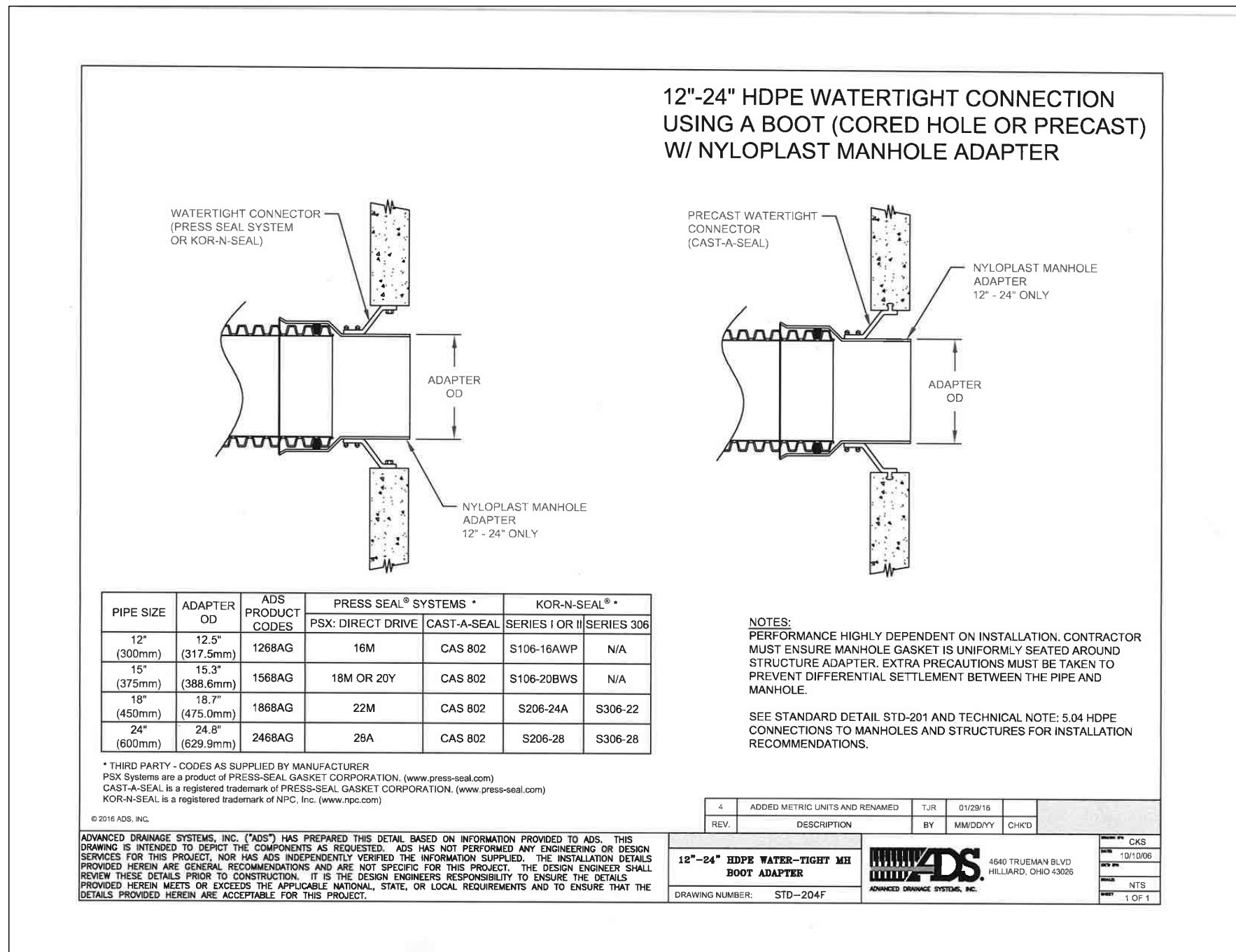
4 SHEET OF 11





**LEGEND**

	EXISTING CONTOUR		15' EASEMENT FOR INGRESS/EGRESS AND UTILITIES
	PROPOSED CONTOUR		LIMIT OF DISTURBANCE
	EXISTING CURB AND GUTTER		MICRO-BIORETENTION (M-6)
	PROPOSED CURB AND GUTTER		PROPOSED SIDEWALK
	EXISTING UTILITY POLE		SD DRAINAGE DIVIDE
	EXISTING LIGHT POLE		DRAINAGE AREA DESIGNATION
	EXISTING MAILBOX		100 YEAR FLOODPLAIN
	EXISTING SIGN		
	EXISTING SANITARY MANHOLE		
	EXISTING SANITARY LINE		
	EXISTING CLEANOUT		
	EXISTING FIRE HYDRANT		
	EXISTING WATER LINE		
	EXISTING FENCE		
	PROPERTY LINE		
	RIGHT-OF-WAY LINE		
	EXISTING TREELINE		
	PROPOSED TREELINE		



**WATER TIGHT CONNECTION DETAIL FOR HDPE PIPE AND CONCRETE STRUCTURES**

**OWNER**  
 VBH LLC  
 9113 BRAE BROOKE DRIVE  
 LANHAM, MD 20706

**DEVELOPER**  
 J. KIRBY DEVELOPMENT, LLC  
 C/O JEFF KIRBY, PRESIDENT  
 5760 B FURNACE AVENUE  
 ELK RIDGE, MD 21075  
 (410) 788-0027

**DRAINAGE AREAS FOR STORM DRAINAGE**

AREA NO.	AREA (AC.)	C FACTOR	IMPERVIOUS %
1	0.08	0.2636	3.74
2	0.17	0.3839	22.83
3	0.15	0.7744	84.83
4	0.27	0.7379	79.02
5	0.24	0.7532	81.46
6	0.26	0.7956	88.18
7	0.20	0.7582	82.25
RD-A	0.06	0.8700	100.00
RD-B	0.06	0.8700	100.00
RD-C	0.05	0.8700	100.00
RD-D	0.05	0.8700	100.00
RD-E	0.05	0.8700	100.00
RD-F	0.05	0.8700	100.00
RD-G	0.02	0.8700	100.00
RD-H	0.03	0.8700	100.00
RD-I	0.05	0.8700	100.00
RD-J	0.05	0.8700	100.00
RD-K	0.05	0.8700	100.00
RD-L	0.05	0.8700	100.00
RD-M	0.05	0.8700	100.00
RD-N	0.05	0.8700	100.00
RD-O	0.04	0.8700	100.00
RD-P	0.04	0.8700	100.00
RD-Q	0.04	0.8700	100.00
RD-R	0.04	0.8700	100.00

NO.	DESCRIPTION	DATE
2	PERMIT SET	2/13/19
1	HUD REV 1	1/18/19
	REVISION	DATE

**SITE DEVELOPMENT PLAN  
 STORM DRAIN  
 DRAINAGE AREA MAP**

**RIVER WATCH II**  
 5635-5659 FURNACE AVENUE

TAX MAP 38 GRID 04  
 1ST ELECTION DISTRICT

ZONED: CAC-CLI

PARCEL 782  
 HOWARD COUNTY, MARYLAND

**Robert H. Vogel Engineering, Inc.**  
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 3300 N. Ridge Road, Suite 110  
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DESIGN BY: GAH  
 DRAWN BY: LAC  
 CHECKED BY: RHV  
 DATE: JUNE 2019  
 SCALE: AS SHOWN  
 W.O. NO.: 17-00

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. MY LICENSE NO. 16163 EXPIRES ON 09-27-2020.

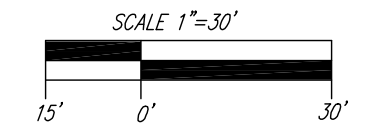
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

\_\_\_\_\_  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE

\_\_\_\_\_  
 CHIEF, DIVISION OF LAND DEVELOPMENT      DATE

\_\_\_\_\_  
 DIRECTOR      DATE

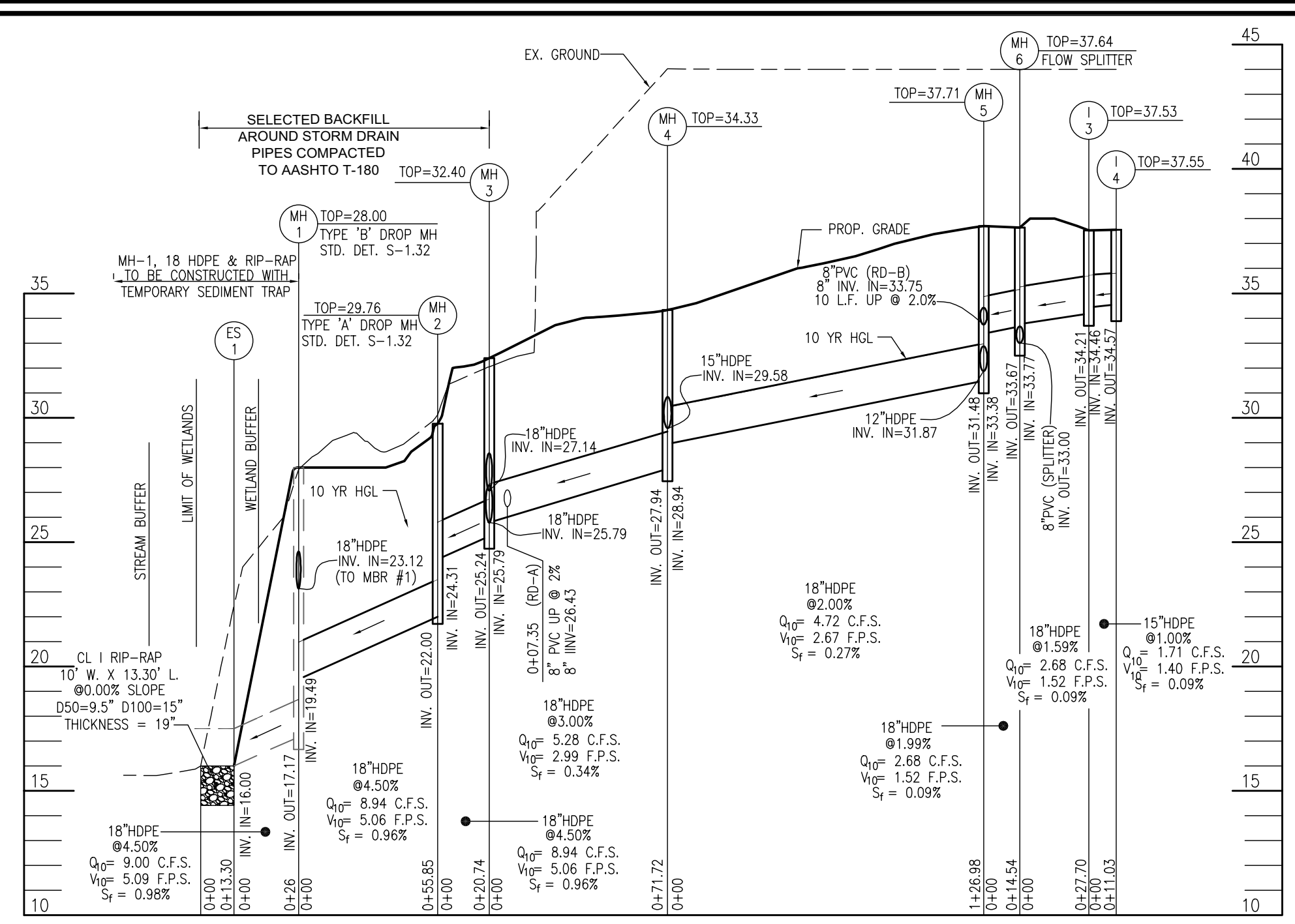
**DRAINAGE AREA MAP FOR STORM DRAIN**  
 SCALE: 1"=30'



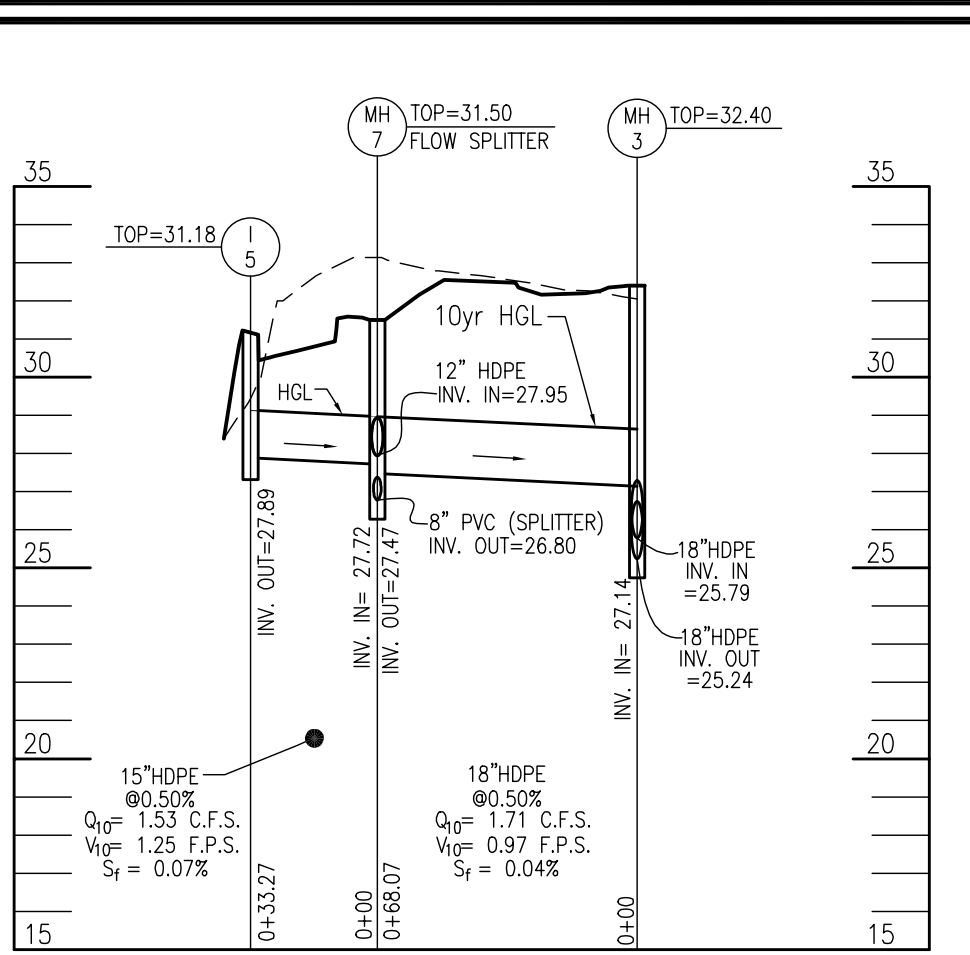
**MAPPED SOILS TYPES - CLARKSVILLE NW / NE MAP #16 / 17**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	HYDROIC	HYDROIC INCLUSIONS	PRIME FARMLAND	<15% SLOPE W/ EROSION POTENTIAL
UsB	URBAN LAND-SASSAFRAS-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	D	.37	NO	NO	NO	NO
W	WATER	-	-	NO	NO	NO	NO

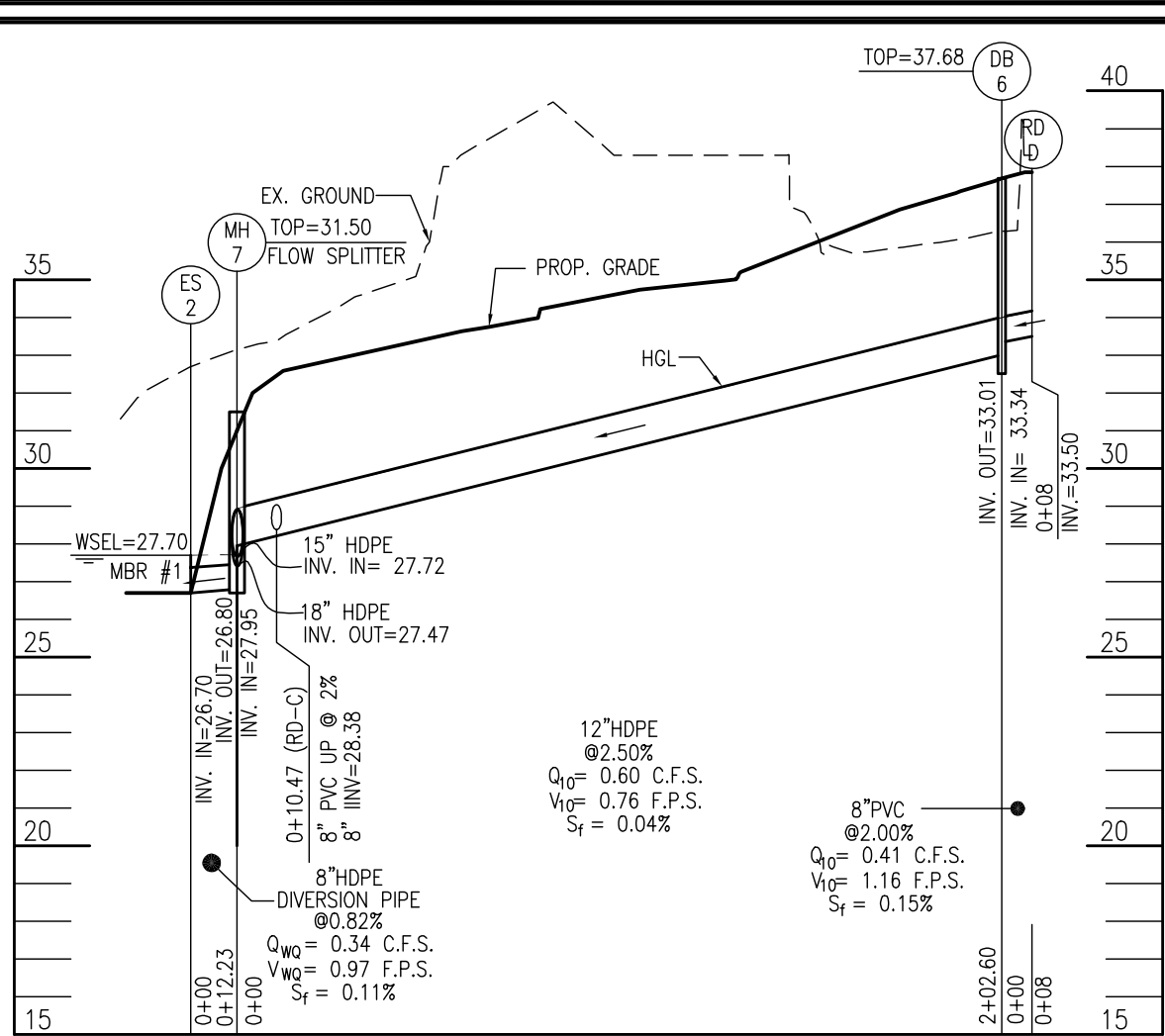
**NOTE:**  
 TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY  
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT



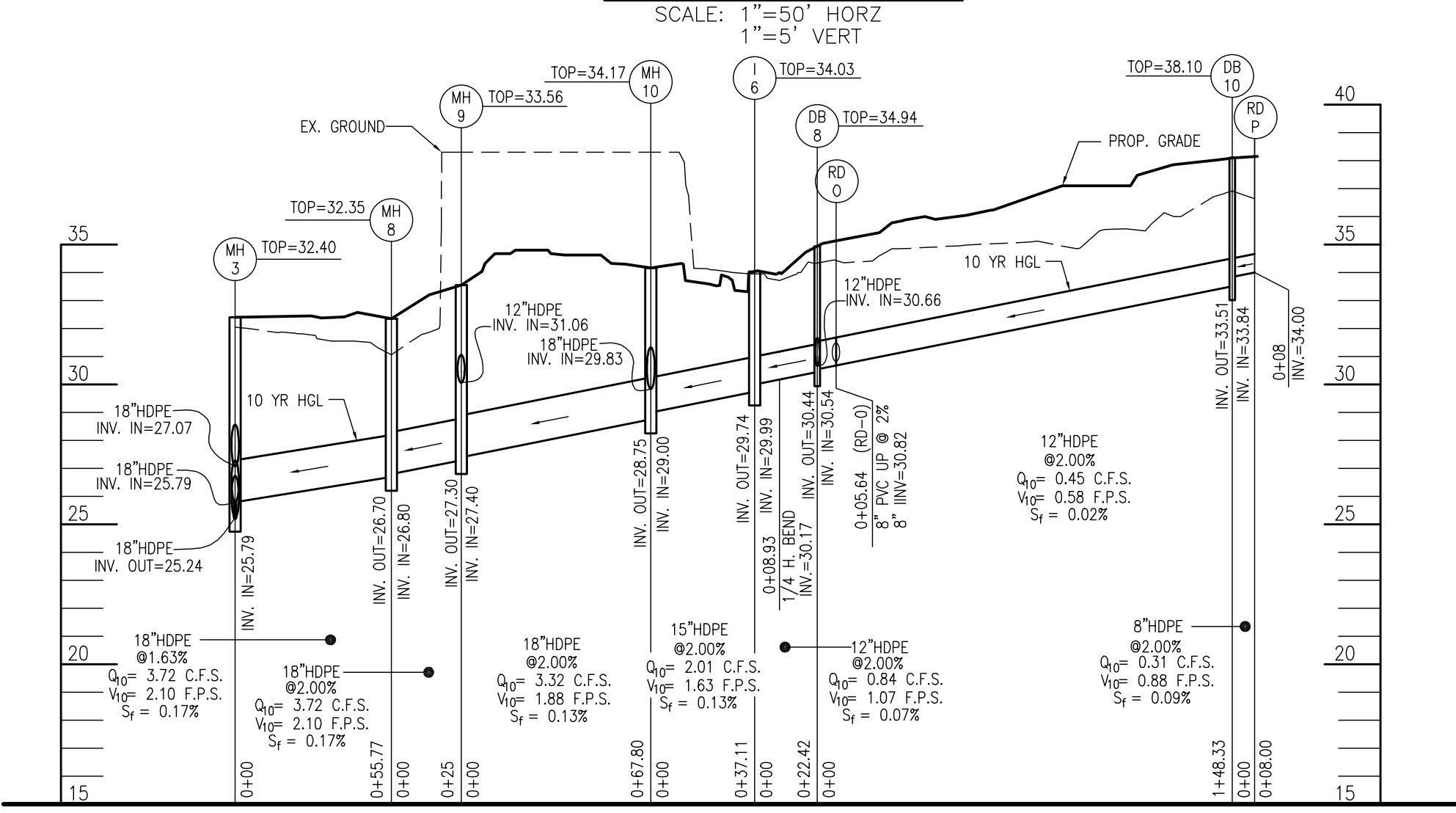
**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
1"=5' VERT



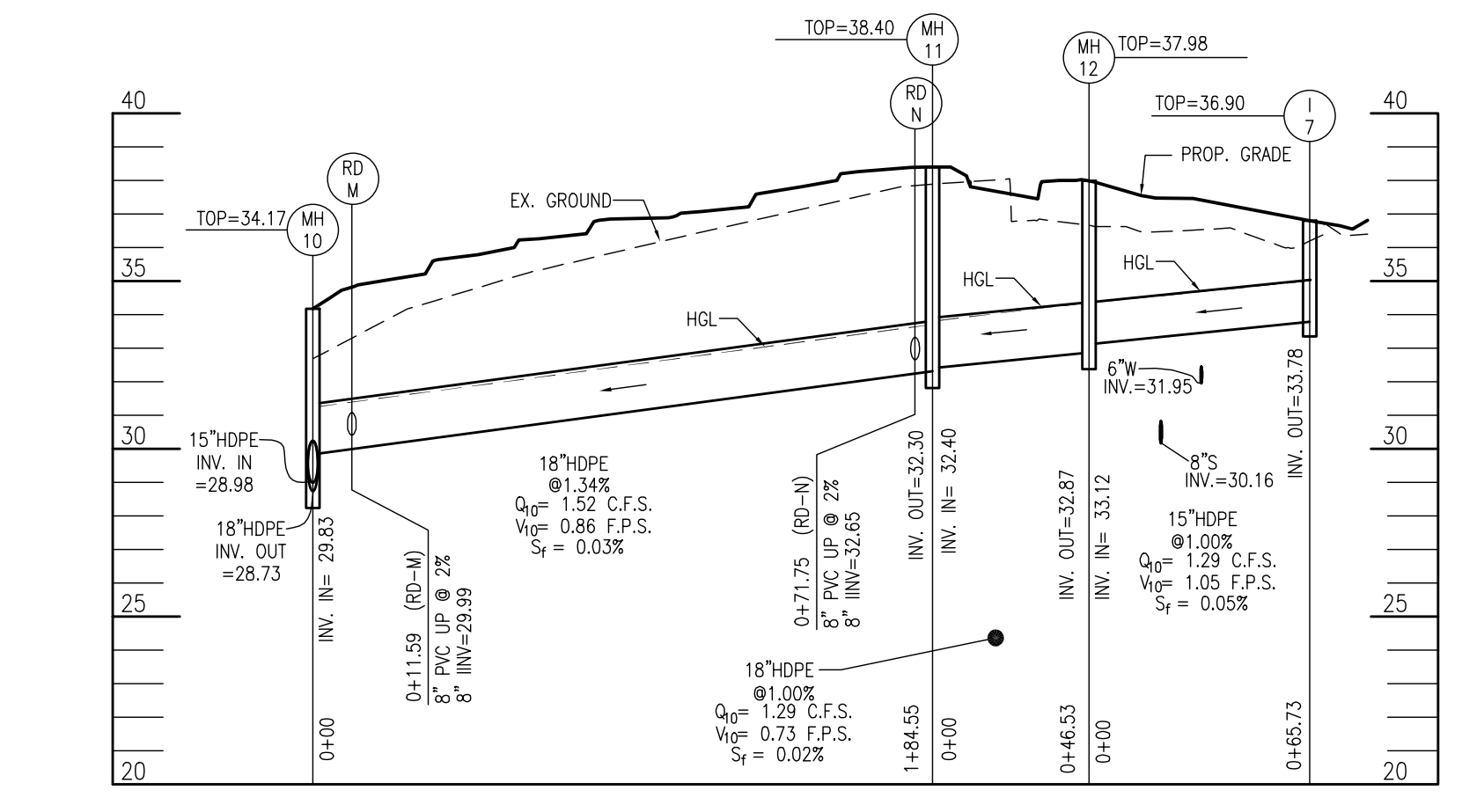
**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
1"=5' VERT



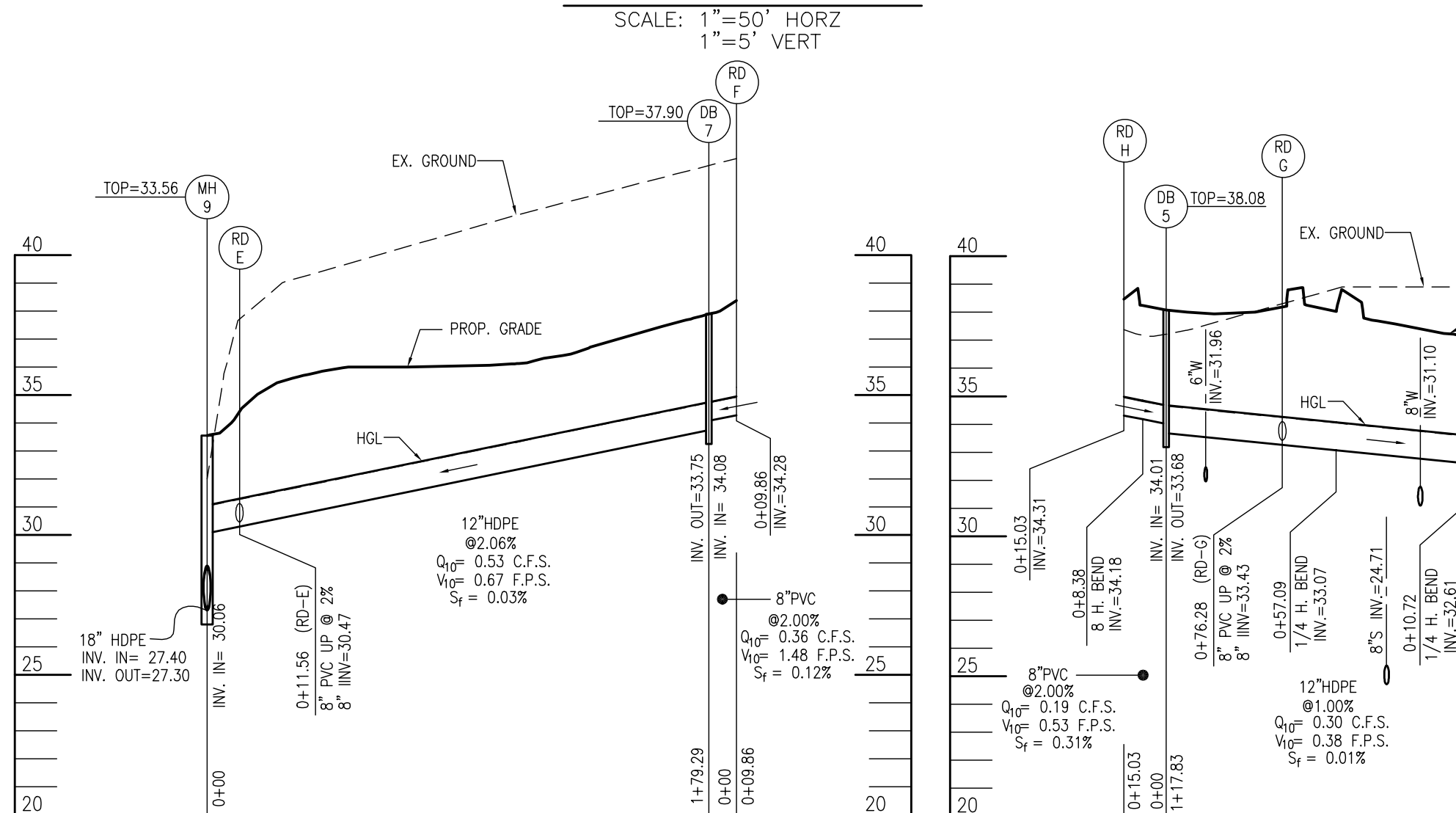
**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
1"=5' VERT



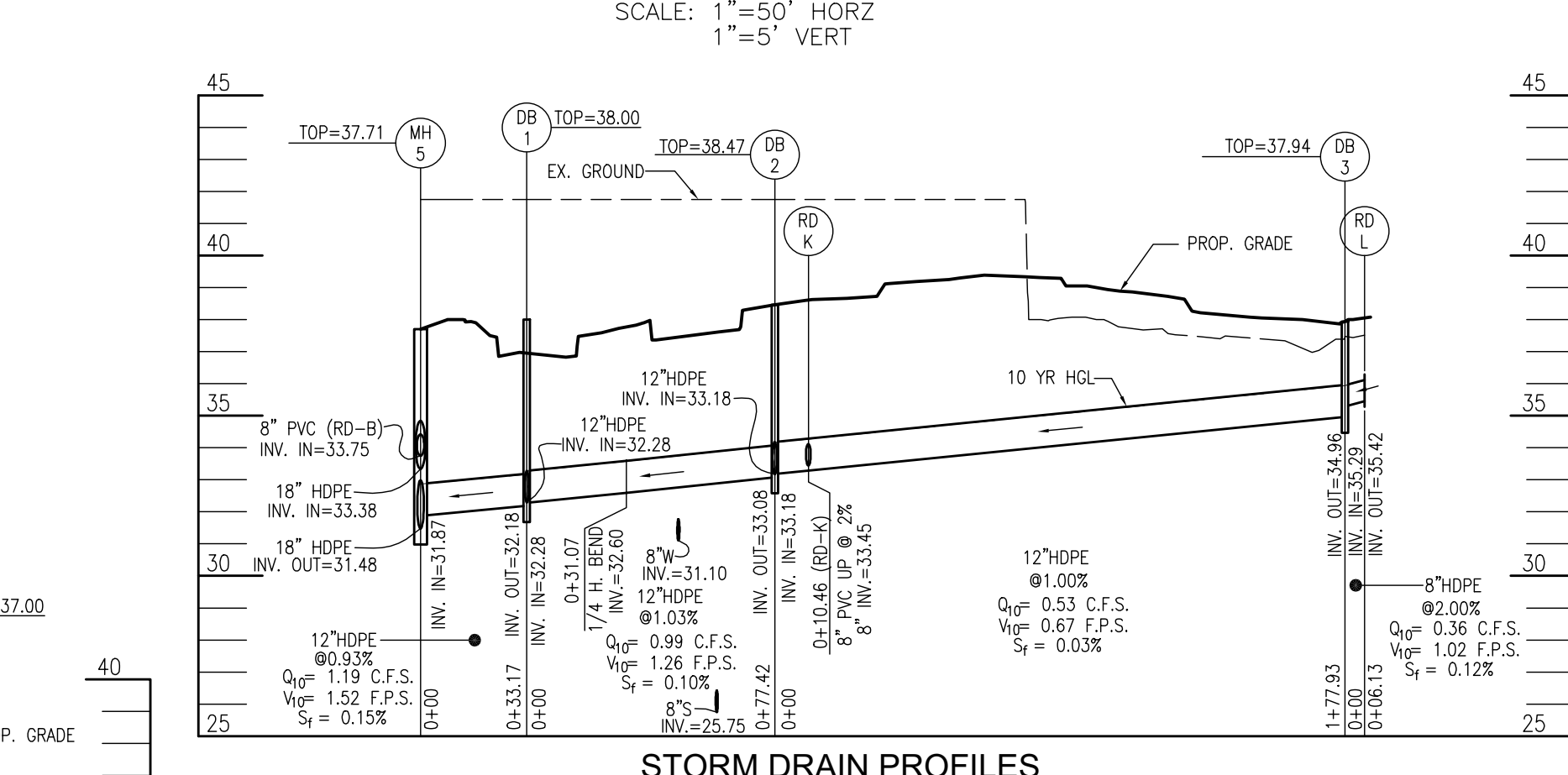
**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
1"=5' VERT



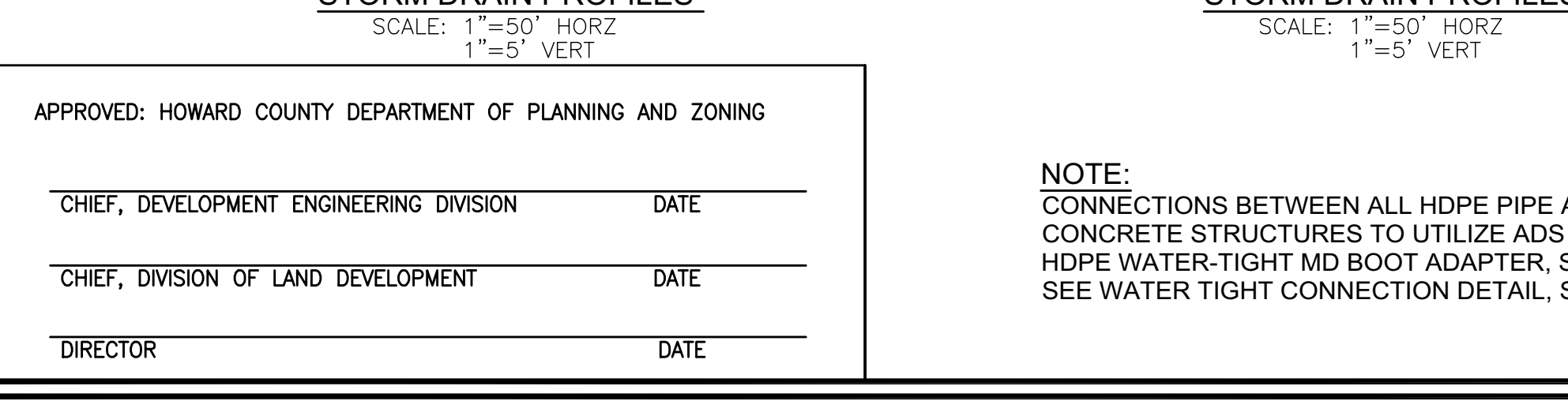
**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
1"=5' VERT



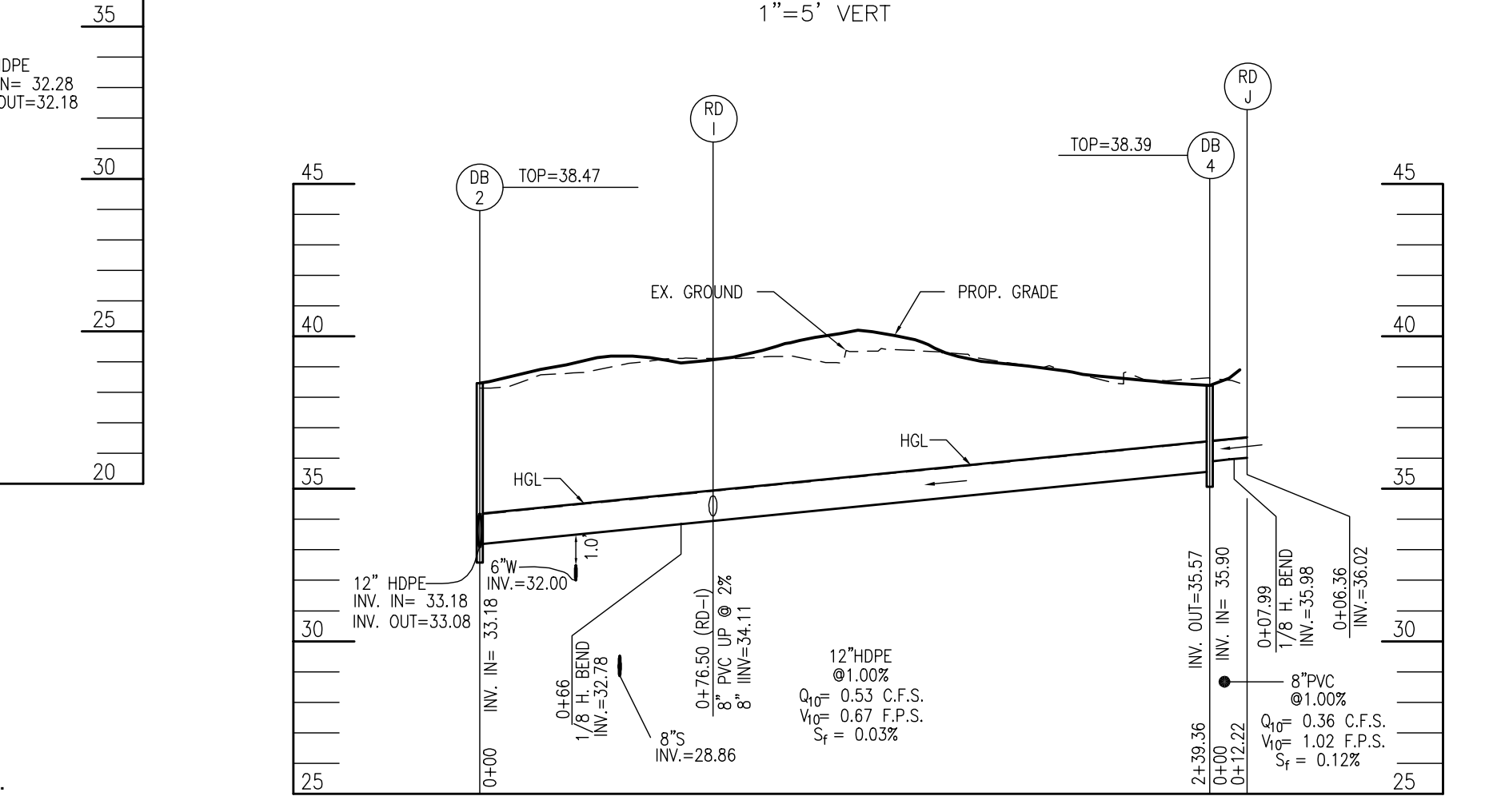
**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
1"=5' VERT



**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
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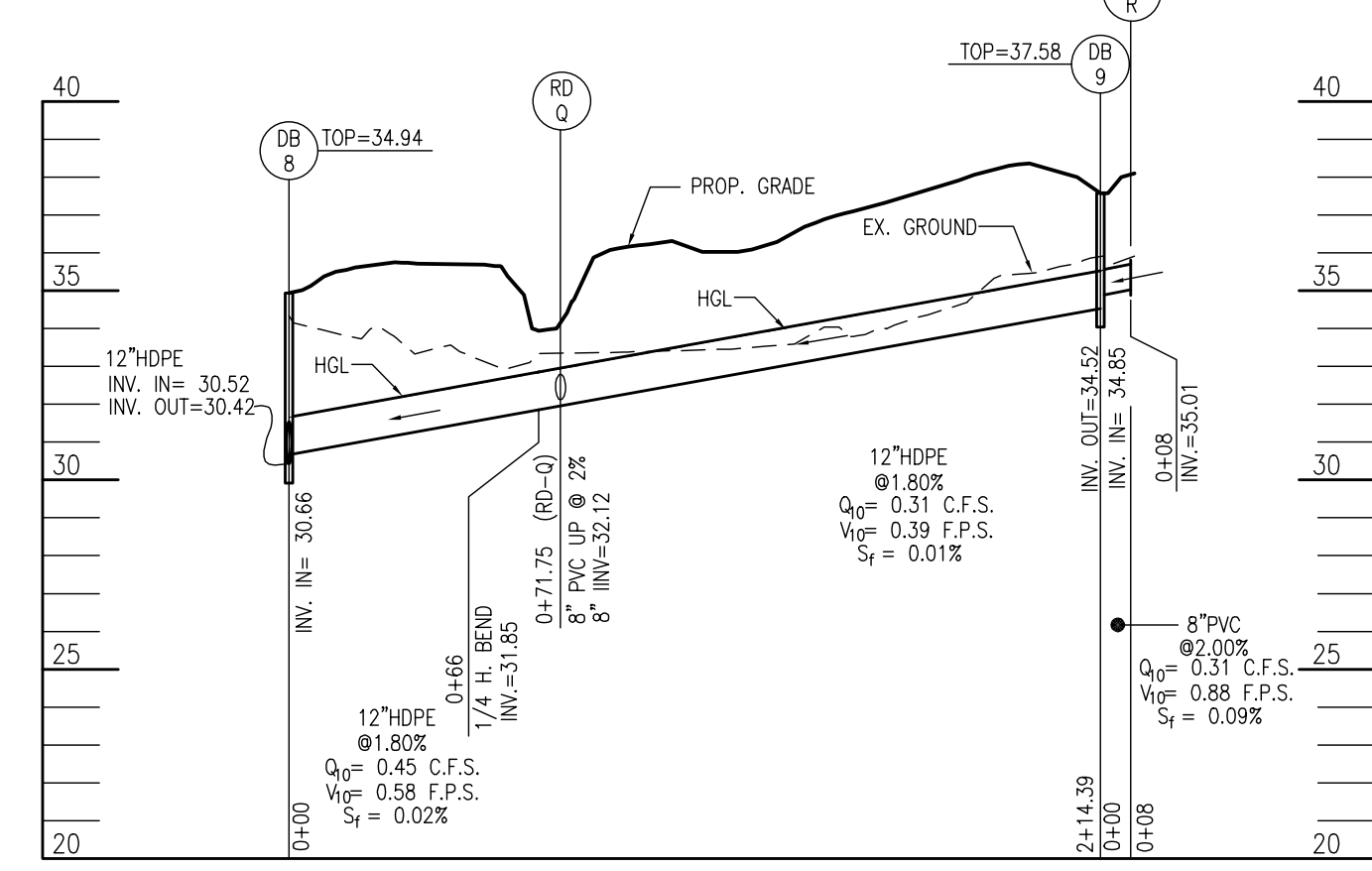
**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
1"=5' VERT



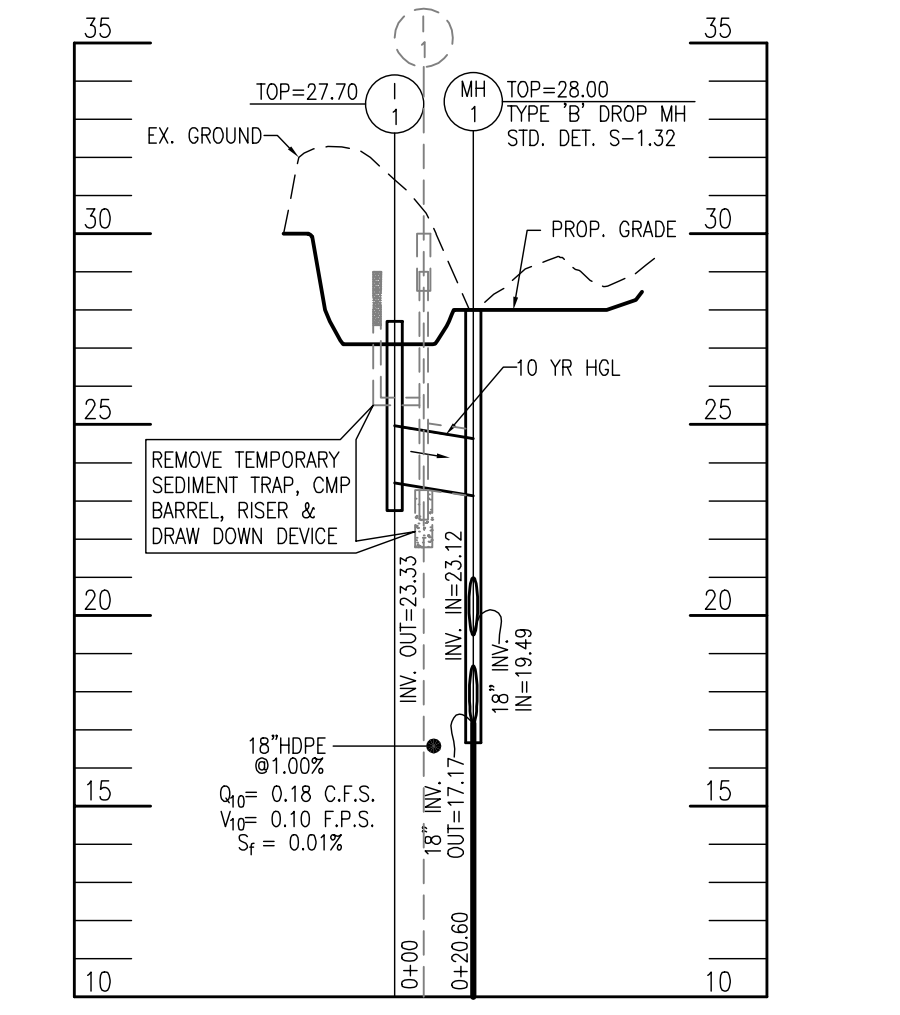
**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
1"=5' VERT

STRUCTURE SCHEDULE										
STR #	TYPE	INV. IN	INV. OUT	TOP ELEV	DETAIL	LOCATION	REMARKS			
I-1	S-INLET	-	23.33	27.70	D-4.24	N 564484.65 E 1365606.12	(1)			
I-2	S-INLET	-	29.80	33.50	D-4.24	N 564351.52 E 1365585.04	(1)			
I-3	A-5	34.31	34.21	37.53	D-4.02	N 564247.13 E 1365468.54	(1)			
I-4	A-5	-	34.42	37.55	D-4.02	N 564256.46 E 1365462.64	(1)			
I-5	A-5	-	27.89	31.18	D-4.02	N 564486.87 E 1365560.78	(1)			
I-6	A-5	29.99	29.74	34.03	D-4.02	N 564255.41 E 1365677.44	(1)			
I-7	A-5	-	33.78	36.90	D-4.02	N 564495.59 E 1365675.00	(1)			
ES-01	18" HDPE	-	16.00	17.50	HDPE	N 564405.75 E 1365644.96	(2)			
ES-02	8" HDPE	26.70	27.37	HDPE	N 564469.01 E 1365644.13	(2)				
ES-03	8" HDPE	32.50	33.17	HDPE	N 564304.18 E 1365637.35	(2)				
MH-1	48" TYPE 'B' DROP MANHOLE	23.12/19.49	17.17	28.00	S 1.32	N 564478.28 E 1365625.71	(1)			
MH-2	48" TYPE 'A' DRAIN MANHOLE	24.31	24.21	29.76	G 5.12	N 564425.27 E 1365643.31	(1)			
MH-3	48" MANHOLE	27.07/25.79/25.79	25.24	32.40	G 5.12	N 564411.16 E 1365628.11	(1)			
MH-4	48" MANHOLE	29.58/28.94	27.94	34.33	G 5.12	N 564361.87 E 1365676.02	(1)			
MH-5	48" MANHOLE	31.87/33.38/33.75	31.48	37.71	G 5.12	N 564274.59 E 1365483.78	(1)			
MH-6	48" MANHOLE	33.77	33.00/33.67	37.64	G 5.12	N 564262.37 E 1365491.67	(1)			
MH-7	48" MANHOLE	27.95/27.72	26.80/27.47	31.50	G 5.12	N 564462.71 E 1365633.65	(1)			
MH-8	48" MANHOLE	26.80	26.70	32.35	G 5.12	N 564363.43 E 1365656.96	(1)			
MH-9	48" MANHOLE	31.06/27.40	27.30	33.56	G 5.12	N 564349.22 E 1365636.39	(1)			
MH-10	48" MANHOLE	29.83/29.00	28.75	34.17	G 5.12	N 564252.28 E 1365673.19	(1)			
MH-11	48" MANHOLE	32.40	32.30	38.40	G 5.12	N 564192.10 E 1365618.19	(1)			
MH-12	48" MANHOLE	33.12	32.87	37.88	G 5.12	N 564150.32 E 1365638.67	(1)			
DB-1	24" NYLOPLAST DRAINAGE BASIN	32.28/32.50	32.18	37.00	2824G	N 564256.59 E 1365455.92	(1) ADVANCED DRAINAGE SYSTEMS			
DB-2	24" NYLOPLAST DRAINAGE BASIN	33.18 (2)	33.08	38.47	2824G	N 564205.33 E 1365433.86	(1) ADVANCED DRAINAGE SYSTEMS			
DB-3	24" NYLOPLAST DRAINAGE BASIN	35.29	34.96	37.94	2824G	N 564055.90 E 1365630.44	(1) ADVANCED DRAINAGE SYSTEMS			
DB-4	24" NYLOPLAST DRAINAGE BASIN	35.90	35.57	38.39	2824G	N 564293.91 E 1365472.53	(1) ADVANCED DRAINAGE SYSTEMS			
DB-5	24" NYLOPLAST DRAINAGE BASIN	34.01	33.68	38.08	2824G	N 564221.41 E 1365678.23	(1) ADVANCED DRAINAGE SYSTEMS			
DB-6	24" NYLOPLAST DRAINAGE BASIN	33.34	33.01	37.68	2824G	N 564233.46 E 1365643.49	(1) ADVANCED DRAINAGE SYSTEMS			
DB-7	24" NYLOPLAST DRAINAGE BASIN	34.08	33.75	37.90	2824G	N 564251.95 E 1365485.78	(1) ADVANCED DRAINAGE SYSTEMS			
DB-8	24" NYLOPLAST DRAINAGE BASIN	30.52/30.66	30.42	34.94	2824G	N 564240.59 E 1365670.96	(1) ADVANCED DRAINAGE SYSTEMS			
DB-9	24" NYLOPLAST DRAINAGE BASIN	34.85	34.52	37.58	2824G	N 564104.09 E 1365681.81	(1) ADVANCED DRAINAGE SYSTEMS			
DB-10	24" NYLOPLAST DRAINAGE BASIN	33.84	33.51	38.10	2824G	N 564159.53 E 1365645.53	(1) ADVANCED DRAINAGE SYSTEMS			

PIPE SCHEDULE				
SIZE	PUBLIC/PRIVATE	CLASS	PRIVATE LENGTH	TOTAL LENGTH
6"	PRIVATE	PERF. PVC	264	264
8"	PRIVATE	PVC	168	168
8"	PRIVATE	HDPE	75	75
12"	PRIVATE	HDPE	1413	1413
15"	PRIVATE	HDPE	161	161
18"	PRIVATE	HDPE	812	812
21"	PRIVATE	CMP	13	13



**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
1"=5' VERT



**STORM DRAIN PROFILES**  
SCALE: 1"=50' HORIZ  
1"=5' VERT

**OWNER**  
VSH LLC  
9113 BRAE BROOKE DRIVE  
LANHAM, MD 20706

**DEVELOPER**  
J. KIRBY DEVELOPMENT, LLC  
C/O JEFF KIRBY, PRESIDENT  
5760 E FURNACE AVENUE  
ELK RIDGE, MD 21075  
(410) 788-0027

NO.	REVISION	DATE
2	PERMIT SET	2/13/19
1	HUD REV 1	1/18/19

**SITE DEVELOPMENT PLAN**  
**PRIVATE STORM DRAIN PROFILES**

**RIVER WATCH II**  
5635-5659 FURNACE AVENUE

TAX MAP 38 GRID 04  
1ST ELECTION DISTRICT

ZONED: CAC-CLI  
HOWARD COUNTY, MARYLAND

PARCEL 782

**Robert H. Vogel**  
**Engineering, Inc.**  
Engineers • Surveyors • Planners  
3300 N. Ridge Road, Suite 110  
Ellicott City, MD 21043  
Tel: 410.461.7666  
Fax: 410.461.8961

**PROFESSIONAL CERTIFICATE**

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. 17193, EXPIRATION DATE: 09-27-2020

DESIGN BY: GAH  
DRAWN BY: LAG  
CHECKED BY: RHV  
DATE: JUNE 2019  
SCALE: AS SHOWN  
W.O. NO.: 17-00

7 SHEET OF 11

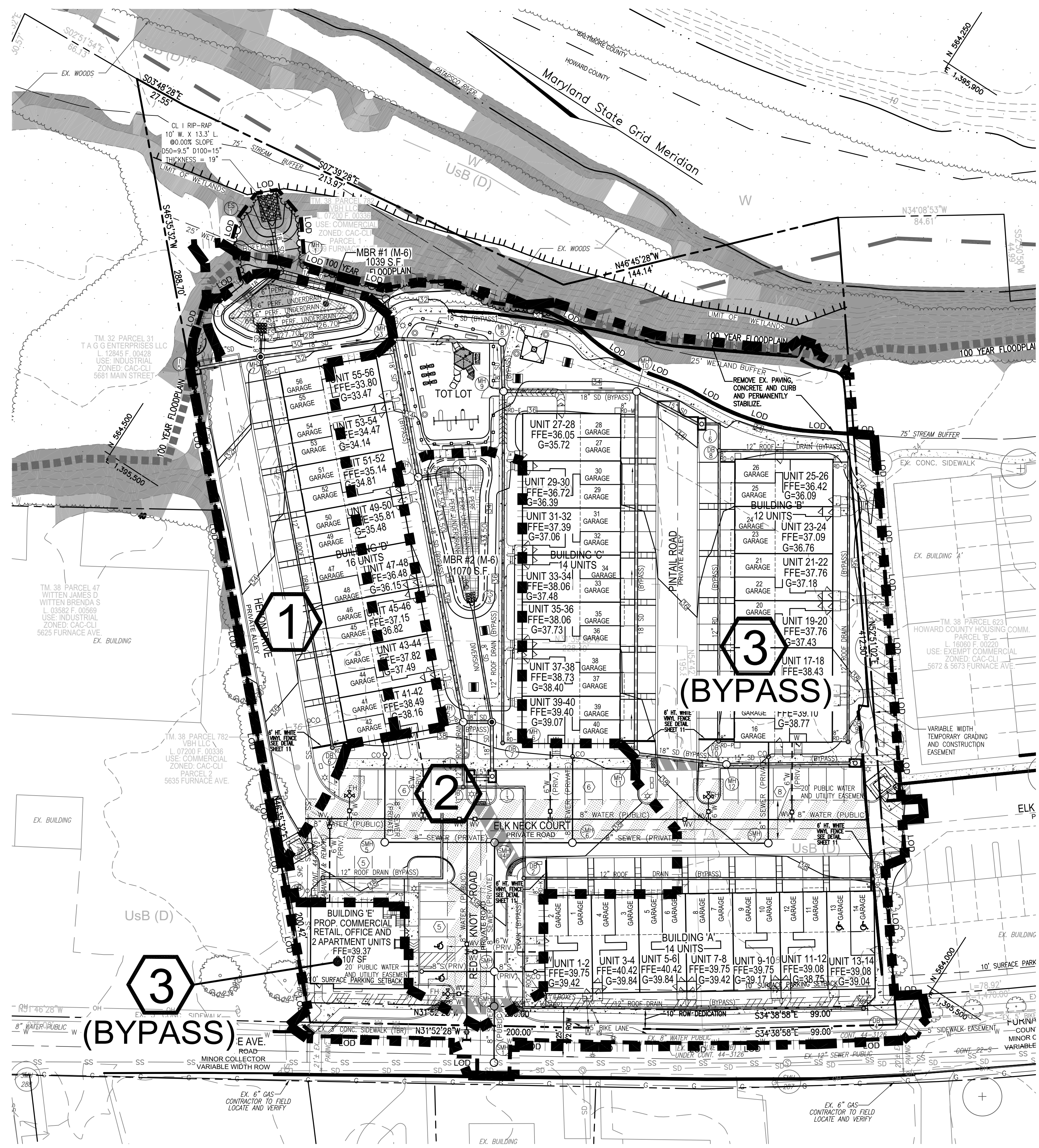
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION \_\_\_\_\_ DATE \_\_\_\_\_

CHIEF, DIVISION OF LAND DEVELOPMENT \_\_\_\_\_ DATE \_\_\_\_\_

DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

**NOTE:**  
CONNECTIONS BETWEEN ALL HDPE PIPE AND CONCRETE STRUCTURES TO UTILIZE ADS 12"-24" HDPE WATER-TIGHT MD BOOT ADAPTER, STD-204F. SEE WATER TIGHT CONNECTION DETAIL, SHEET 6.



**LEGEND**

	EXISTING CONTOUR		EXISTING SOILS
	PROPOSED CONTOUR		15' EASEMENT FOR INGRESS/EGRESS AND UTILITIES
	PROPOSED CURB AND GUTTER		LIMIT OF DISTURBANCE
	EXISTING UTILITY POLE		MICRO-BIORETENTION (M-B)
	EXISTING LIGHT POLE		PROPOSED SIDEWALK
	EXISTING MAILBOX		ESDv DRAINAGE DIVIDE
	EXISTING SIGN		DRAINAGE AREA DESIGNATION
	EXISTING SANITARY MANHOLE		MODERATE SLOPES 15%-24.99%
	EXISTING SANITARY LINE		STEEP SLOPES 25% OR GREATER
	EXISTING CLEANOUT		HIGHLY ERODIBLE SOILS
	EXISTING FIRE HYDRANT		100 YEAR FLOODPLAIN
	EXISTING WATER LINE		
	EXISTING FENCE		
	PROPERTY LINE		
	RIGHT-OF-WAY LINE		
	EXISTING TREELINE		
	PROPOSED TREELINE		

**RIVER WATCH II - ESDv COMPUTATIONS**

SITE DEVELOPABLE AREA:	2.85 AC
TARGET Pe:	1.00 IN
SITE IMPERVIOUS:	68.50 PERCENT
SITE Rv:	0.6665
SITE ESDv:	2,398 CF -/ (Required storage volume = 1" over 100% of the remainder of 50% existing impervious area - proposed impervious reduction)

3300 N. Ridge Road, Suite 110, Ellicott City, MD 21043  
 Des: GAH  
 Chk: RHV  
 Date: 3/15/2019

DA #	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.00" VOLUME	VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	Rev REQUIRED	Rev PROVIDED	CF	SF	REMARKS
1	71.16	0.6905	18628	0.43	1072	2787	1072	1385	13256	0.3043	0.1233	346	0			MICROSCALE MICRO-BIO RETENTION 1385 1039 SF MBR @ 1.0 PONDING 0 1039 Rev Recharge: 0.00 x 0.4 (Recharge volume required = 25% of total volume provided)
2	63.73	0.6236	25614	0.59	1331	3461	1331	1427	16324	0.3747	0.2133	357	749			MICROSCALE MICRO-BIO RETENTION 1427 1070 SF MBR @ 1.0 PONDING 749 1070 Rev Recharge: 1.75 x 0.4 (Recharge volume required = 25% of total volume provided)
<b>TOTALS</b>	<b>66.86</b>	<b>0.6517</b>	<b>44242</b>	<b>1.02</b>	<b>2403</b>	<b>6247</b>	<b>2403</b>	<b>2812</b>	<b>29580</b>	<b>0.6791</b>	<b>0.3366</b>	<b>703</b>	<b>749</b>			

DA	% IMPERV	Rv	DA	ESDv REQ	MINIMUM VOLUME	MAXIMUM VOLUME	VOLUME PROVIDED*	AREA SF	PERV AREA	IMP AREA
1	71.16	0.69	0.43	1072	1072	2787	1385	18628	5372	13256
2	63.73	0.62	0.59	1331	1331	3461	1427	25614	9290	16324
<b>TOTAL ESDv BY SUBAREA</b>				<b>2403</b>	<b>6247</b>	<b>2812</b>	<b>2812</b>	<b>44242</b>	<b>14662</b>	<b>29580</b>

**ENVIRONMENTAL SITE DESIGN PRACTICE**

DRAINAGE AREA #	AREA TREATED	FACILITY NUMBER	PERMEABLE PAVEMENT	ADD UNDER PERM. PAVE	SURFACE STORAGE	FOCAL TRENCH	R TANKS	GRAVEL TRENCH	GREEN ROOF	MICRO BIO RETENTION	ADD UNDER MICRO BIO	Recharge Volume (Rev)	ESDv VOLUME
1	18628	MBR #1	0	0	0	0	0	0	0	1385	0	0	1385
2	25614	MBR #2	0	0	0	0	0	0	0	1427	0	749	1427
<b>SUBTOTAL 1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2812</b>	<b>0</b>	<b>749</b>	<b>2812</b>
<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2812</b>	<b>0</b>	<b>749</b>	<b>2812</b>

ESDv REQUIRED (CF): 2398      TOTAL ESDv PROVIDED (CF): 2812  
 TOTAL Rev PROVIDED (CF): 749

**MICRO-BIORETENTION DATA CHART**

MBR Facility	Ponding Depth (ft.)	Grate Elevation (Elev. A)	Top of Mulch (Elev. B)	Bottom of Mulch (Elev. C)	Bottom of Plant Mix (Elev. D)	Bottom of Pea Gravel (Elev. E)	Depth of Stone (ft.) ESDv	Bottom of Stone (ESDv) (Elev. F)	Invert of Underdrain (Inv. Elev. H)	Depth of Stone (ft.) Rev	Bottom of Stone (Rev) (Elev. G)	Surface Area (S.F.)	Approx. Dimensions (at midpoint)
1	1.00	27.70	28.70	26.45	24.45	24.12	1.00	23.12	23.37	0.00	23.12	1052	25' x 65'
2	1.00	33.50	32.50	32.25	30.25	29.82	1.00	28.82	28.17	1.75	27.17	1070	15' x 70'

**OWNER**  
 VBH LLC  
 9113 BRAE BROOKE DRIVE  
 LANHAM, MD 20706

**DEVELOPER**  
 J. KIRBY DEVELOPMENT, LLC  
 C/O JEFF KIRBY, PRESIDENT  
 5760 B FURNACE AVENUE  
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2	PERMIT SET	2/13/19
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**SITE DEVELOPMENT PLAN  
 STORMWATER MANAGEMENT  
 DRAINAGE AREA MAP**

**RIVER WATCH II  
 5635-5659 FURNACE AVENUE**

TAX MAP 38 GRID 04      PARCEL 782  
 1ST ELECTION DISTRICT      ZONED: CAC-CLU      HOWARD COUNTY, MARYLAND

**Robert H. Vogel Engineering, Inc.**  
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**PROFESSIONAL CERTIFICATE**

DESIGN BY: GAH  
 DRAWN BY: LAG  
 CHECKED BY: RHV  
 DATE: JUNE 2019  
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 W.O. NO.: 17-00

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. 16198, EXPIRATION DATE: 09-27-2020

8 SHEET OF 11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE

CHIEF, DIVISION OF LAND DEVELOPMENT      DATE

DIRECTOR      DATE

**DRAINAGE AREA MAP FOR SWM**  
 SCALE: 1"=30'

**MAPPED SOILS TYPES - CLARKSVILLE NW / NE MAP #16 / 17**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	HYDRIC	HYDRIC INCLUSIONS	PRIME FARMLAND POTENTIAL	<15% SLOPE W/ PROSOM POTENTIAL
UsB	URBAN LAND-SASSAFRAS-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	D	.37	NO	NO	NO	NO
W	WATER	-	-	NO	NO	NO	NO

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

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY



**APPENDIX B.4.C CONSTRUCTION NOTES FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION**

**1. MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

**2. FILTERING MEDIA OR PLANTING SOIL**  
THE SOIL SHALL BE UNIFORM MIXTURE 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 PROVIDE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:  
• SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION).  
• ORGANIC CONTENT - MINIMUM WEIGHT (ASTM D 2971) IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).  
• PH RANGE - SHOULD BE BETWEEN 5.5 TO 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 TEXTURE 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.

**3. COMPACTION**  
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL WHEN POSSIBLE. USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL IF PRACTICES ARE EXCAVATED USING LOADERS. THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT OR LIGHT EQUIPMENT WITH TURF TIRE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL FLOW RIPPER OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT 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 FLOODED WATER BEFORE PREPARING (ROTOTILLING) BASE. WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

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

**5. PLANT INSTALLATION**  
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. MULCH MUST BE WELL AERATED (6 TO 12 MONTHS) FOR ACCENTRATING. PLANT ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STAKING DURING THE ENTIRE PLANTING PROCESS. THE PLANTING AREA SHOULD BE COVERED AFTER INSTALLATION. TREES SHALL BE BRANCHED 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 LEGUMES. SEED SHOULD BE GRILLED INTO THE GRASS SEEDS. AT LEAST ONE INCH GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS, OR AT A MINIMUM, PREVENTS ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

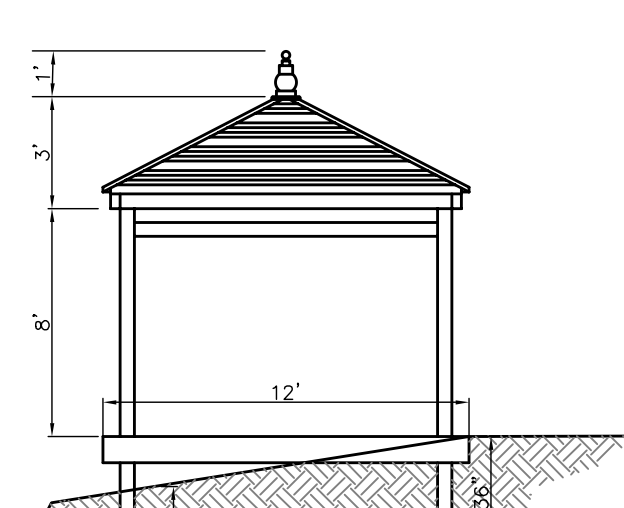
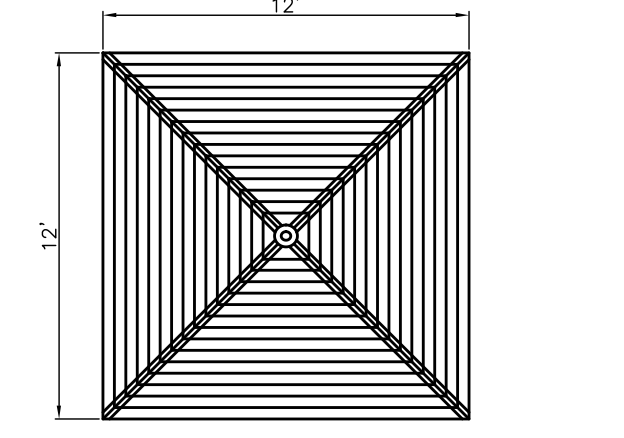
**6. UNDERDRAINS**  
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:  
• PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 758, TYPE PS 28, OR ASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OR HDPE).  
• PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4x4) GALVANIZED HARDWARE CLOTH.  
• GRAVEL - THE GRAVEL LAYER (NO. 57 STONE, PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.  
• THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.  
• A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.  
• A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

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

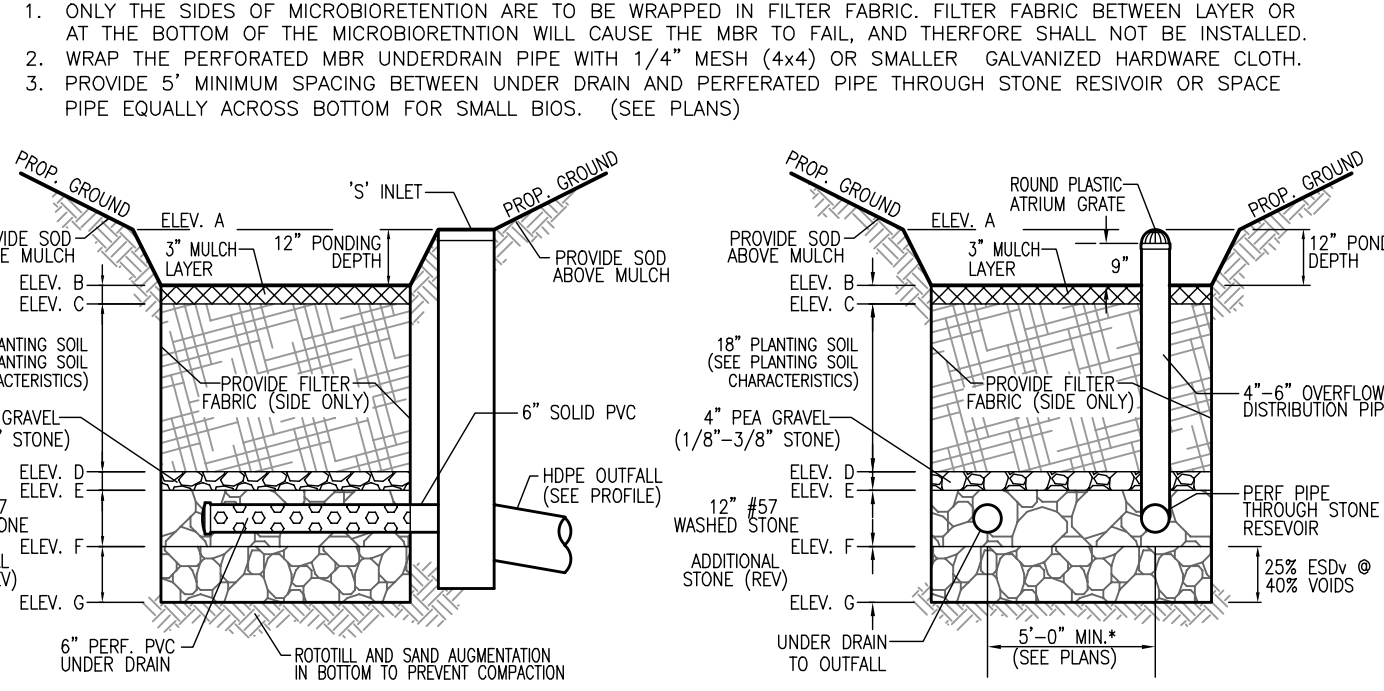
**7. MISCELLANEOUS**  
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

**TABLE B.4.1 MATERIALS FOR MICRO-BIORETENTION, RAIN GARDEN & LANDSCAPE INFILTRATION**

Material	Specification	Size	Notes
Planting soil	see Appendix A, Table A.4	n/a	plantings are site-specific
Filtering soil (2" to 4" deep)	loamy sand (60-65%) and compost (35-40%) sandy loam (30%), coarse sand (30%), and compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2971)	n/a	
Mulch	shredded hardwood	n/a	aged 6 months, minimums no pine or wood chips
Pea gravel/diaphragm	con. gravel ASTM-D448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curbs/drain	concretal stone: washed cobble	stone: 2" to 5"	
Costealite	AAASHTO M-43	n/a	PE Type I nonwoven
Gravel (underdrains and infiltration basins)	NO. 57 OR NO. 6	AGGREGATE (ASTM D 2971)	
Underdrain piping	F 758, Type PS 28 or ASHTO M-278	4" to 6" diameter PVC or SDR35	slotted or perforated pipe, 3/8" per" (6" on center, 4 holes per row, minimum of 3" of gravel over pipe, not necessary) underdrain pipe shall be wrapped with 1/4" galvanized hardware cloth
Placed in place concrete (if required)	MSHA No. 31, F-3500 psi (28 days, normal weight, minimum compressive strength to meet ASTM-A615-60)	n/a	28 day strength and slump test, all concrete design (cast-in-place concrete) must be approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 308.8R9; vertical loading (16 in or H-20); allowable horizontal loading based on soil capacity; and analysis of potential cracking.
Sand	AAASHTO M-6 or ASTM-C-33	60/2 to 0/4"	Sand substitutions such as Duquesne and Graystone (AAASHTO) #10 are not acceptable. No calcination or other chemical substitutions are acceptable. No "rock dust" can be used for sand.



**MICROBIORETENTION NOTES:**



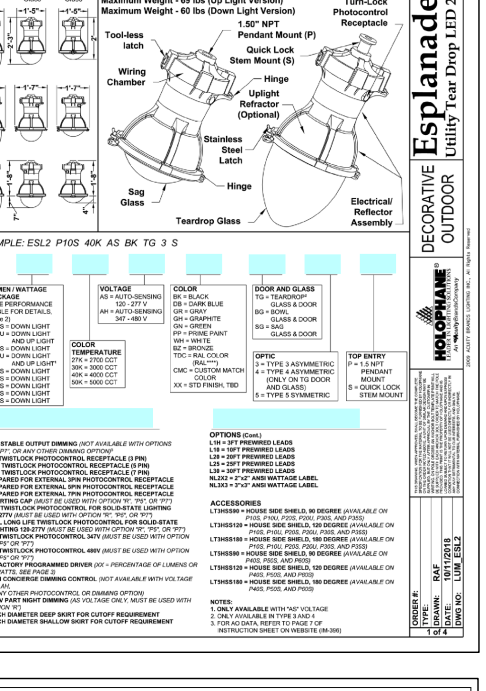
**MICRO-BIORETENTION (UNDERDRAIN) NOT TO SCALE**      **MICRO-BIORETENTION (OVERFLOW) NOT TO SCALE**

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

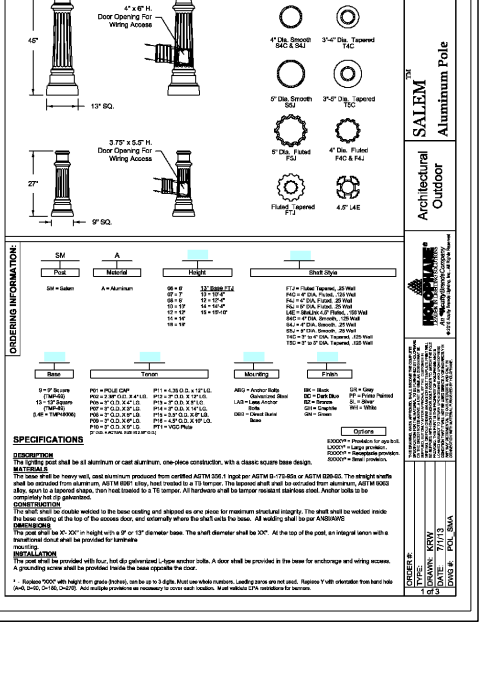
1. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A.4-1 AND 2.
2. THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL. TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
3. 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.
4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.



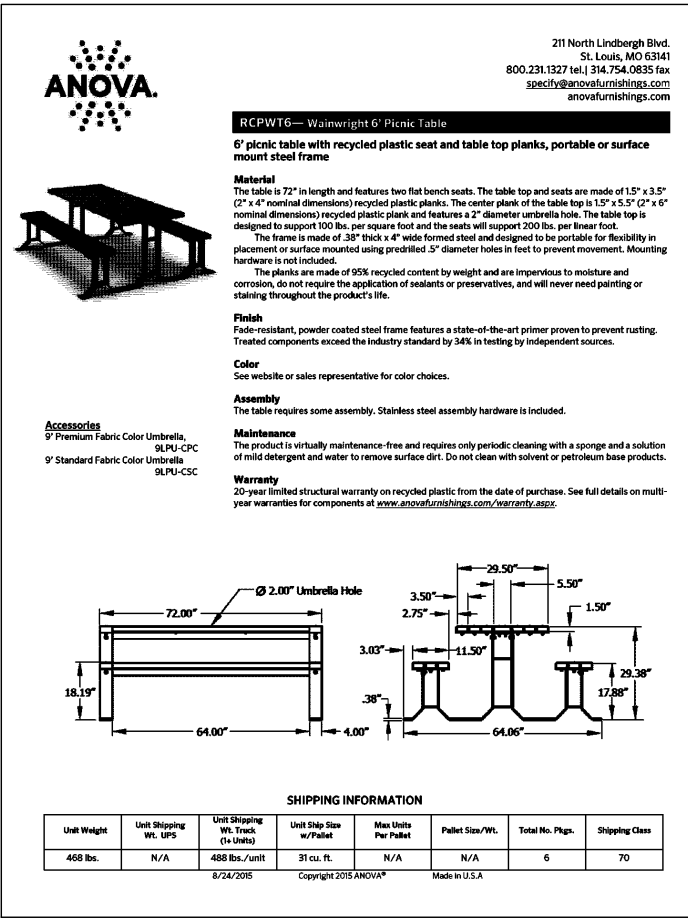
**TYPICAL EVERGREEN TREE PLANTING DETAIL NOT TO SCALE**



**SHRUB PLANTING DETAIL NOT TO SCALE**



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



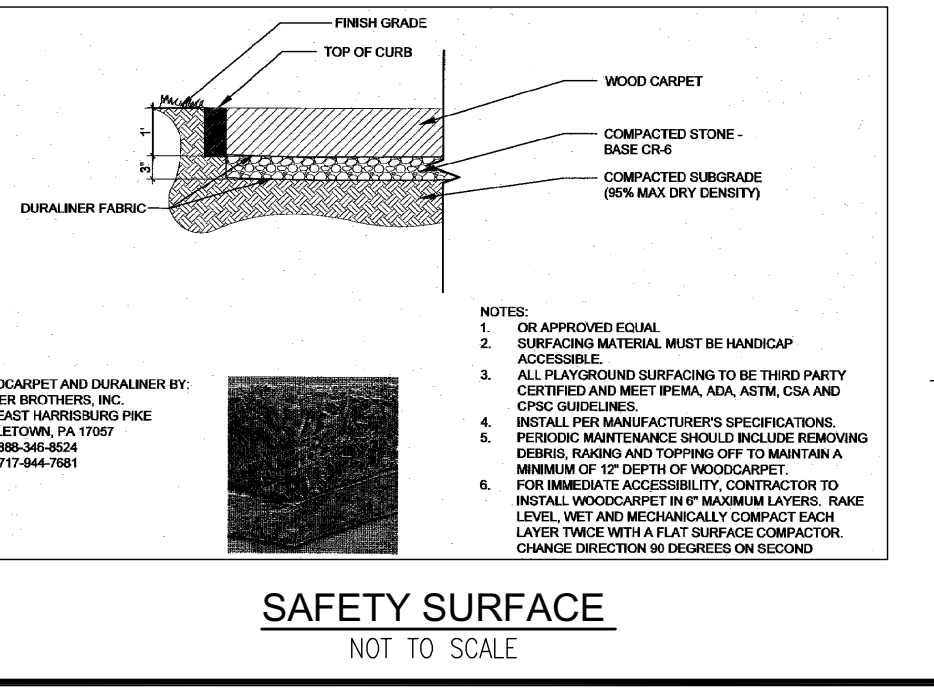
**2 SEAT SEE-SAW NOT TO SCALE**  
MANUFACTURER: BCI BURKE CO.  
PRODUCT ID: 570-0774

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

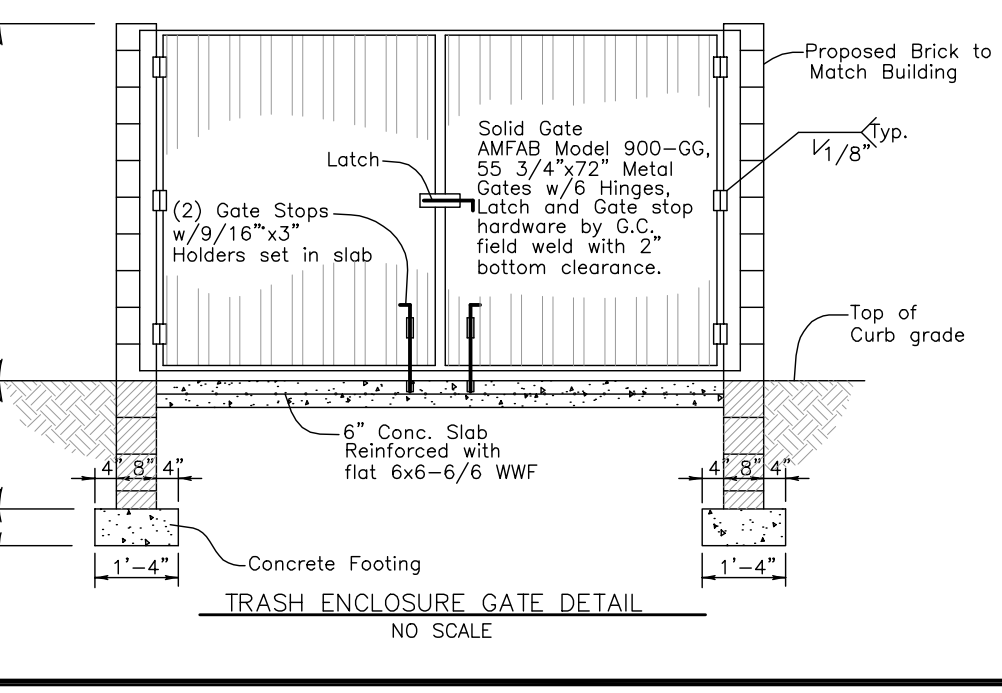
CHIEF, DEVELOPMENT ENGINEERING DIVISION      DATE

CHIEF, DIVISION OF LAND DEVELOPMENT      DATE

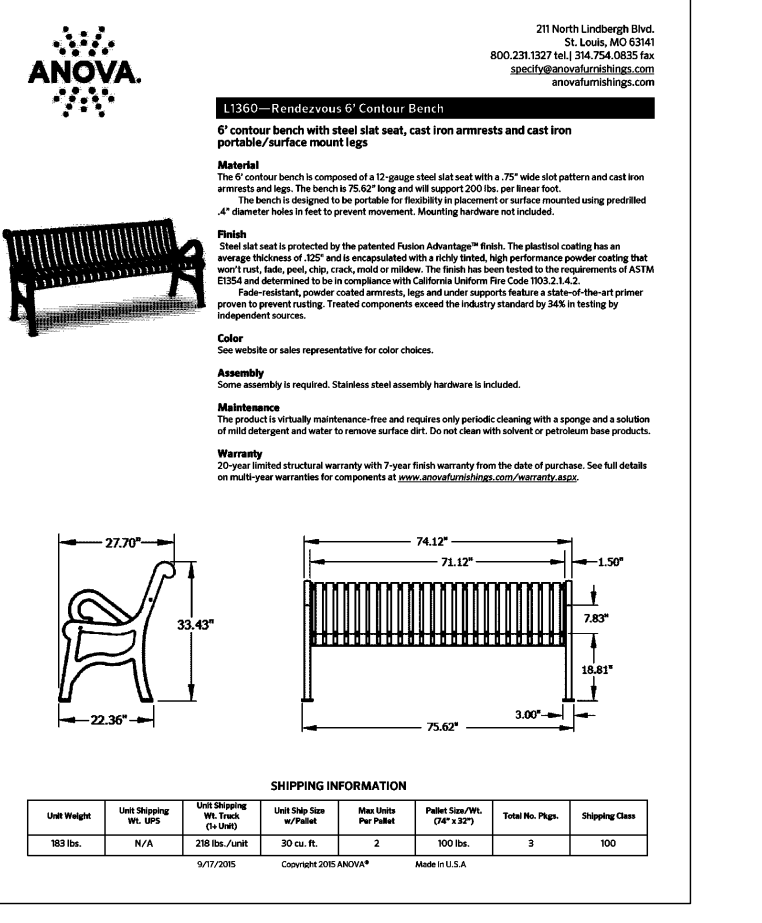
DIRECTOR      DATE



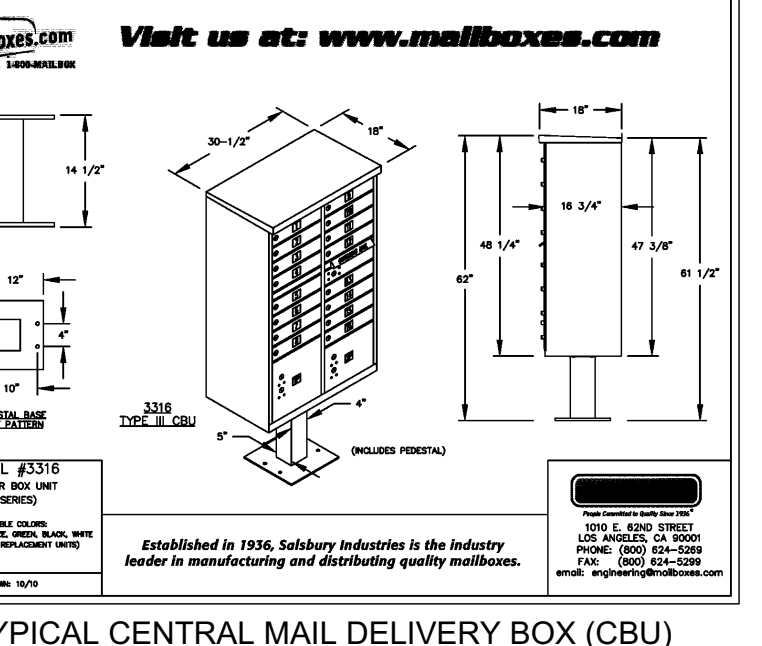
**SAFETY SURFACE NOT TO SCALE**



**TRASH ENCLOSURE GATE DETAIL NOT TO SCALE**

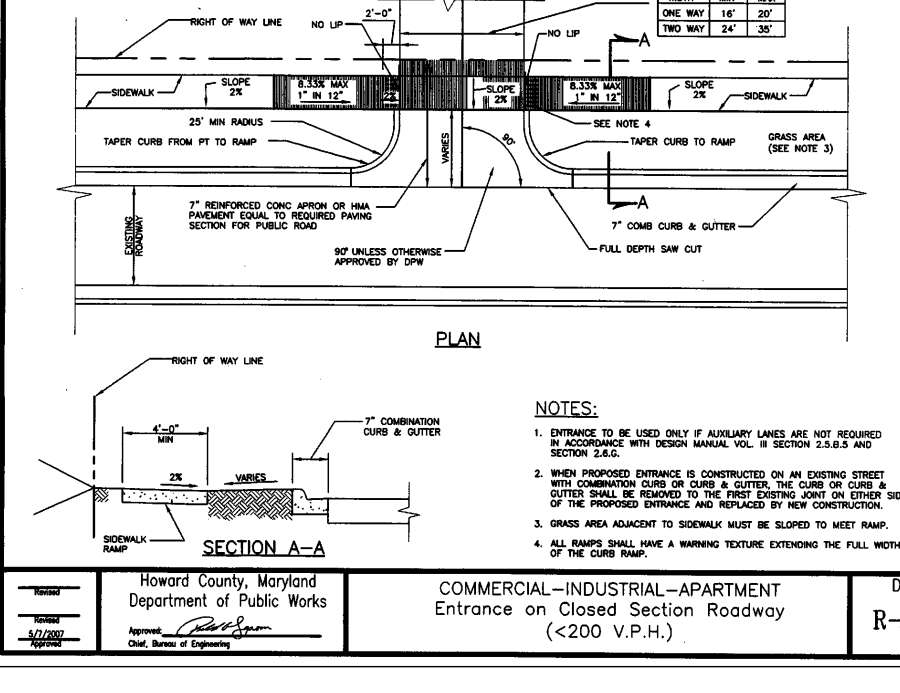


**SCHOOL AGE CHILD PLAY STRUCTURE NOT TO SCALE**

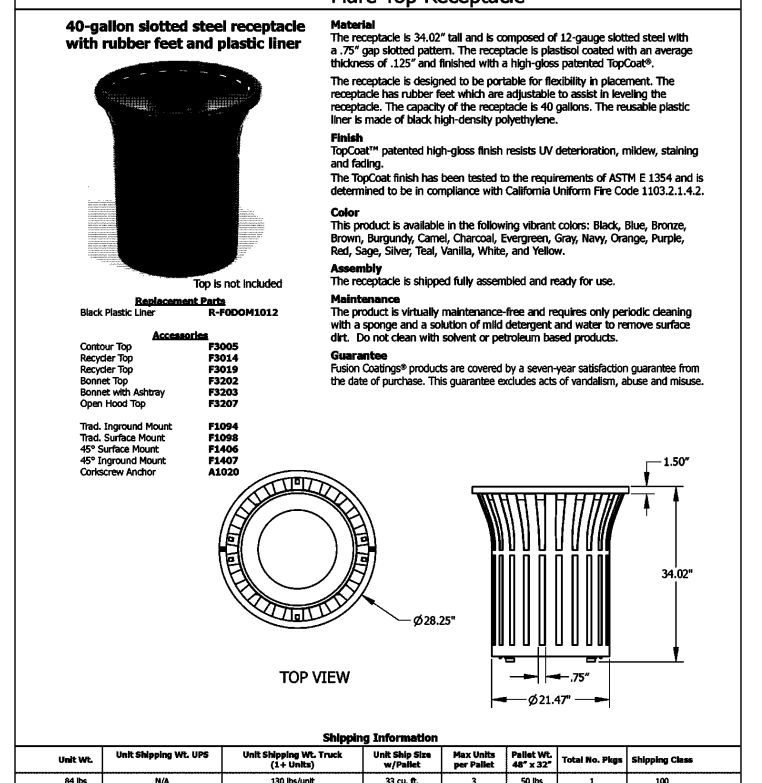


**TYPICAL CENTRAL MAIL DELIVERY BOX (CBU) OR APPROVED EQUAL**

SALSBUURY INDUSTRIES MANUFACTURES CBU'S THAT ARE OFFICIALLY LICENSED BY THE U.S.P.S. SALSBUURY 3300 SERIES CLUSTER BOX UNITS ARE MANUFACTURED TO U.S.P.S. "T" SPECIFICATIONS. THEY ARE AN OFFICIALLY LICENSED PRODUCT OF THE U.S. POSTAL SERVICE FOR CENTRALIZED MAIL DELIVERY. LICENSE NUMBER 10D50G-08-B-0026



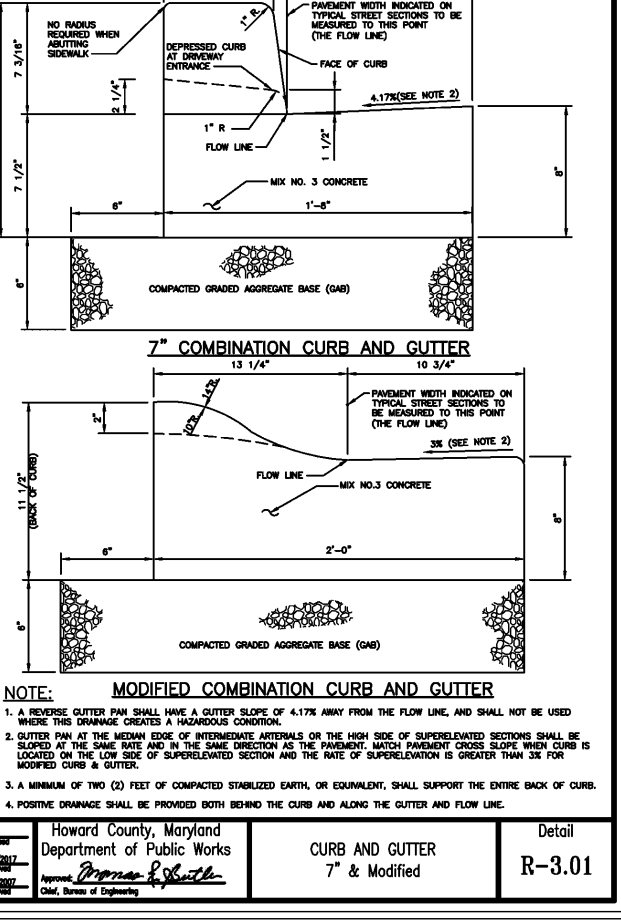
**COMMERCIAL-INDUSTRIAL-APARTMENT Entrance on Closed Section Roadway (C200 V.P.H.)**



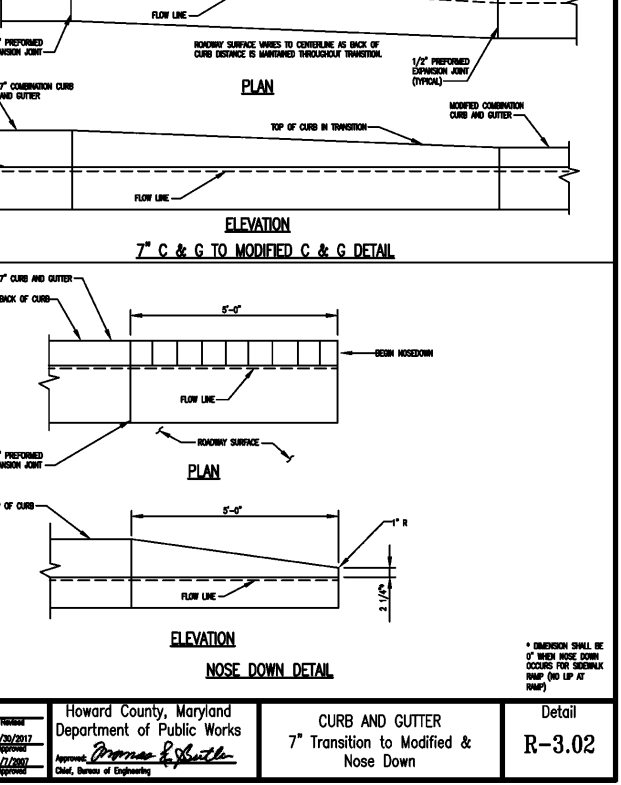
**40-gallon steel receptacle with rubber feet and plastic liner**



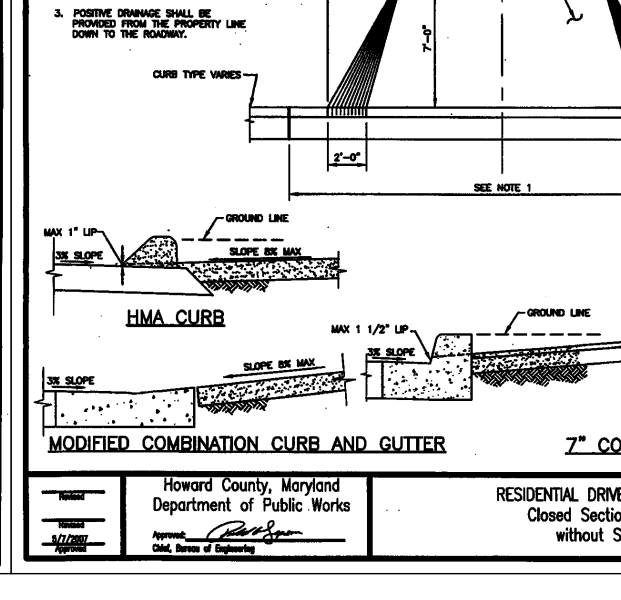
**SCHOOL AGE CHILD PLAY STRUCTURE NOT TO SCALE**



**7' COMBINATION CURB AND GUTTER**



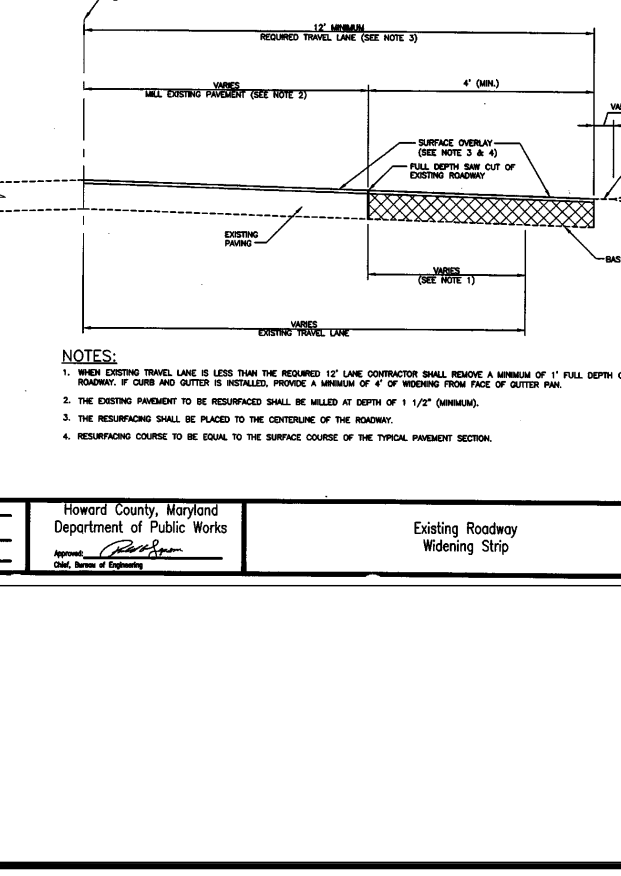
**MODIFIED COMBINATION CURB AND GUTTER**



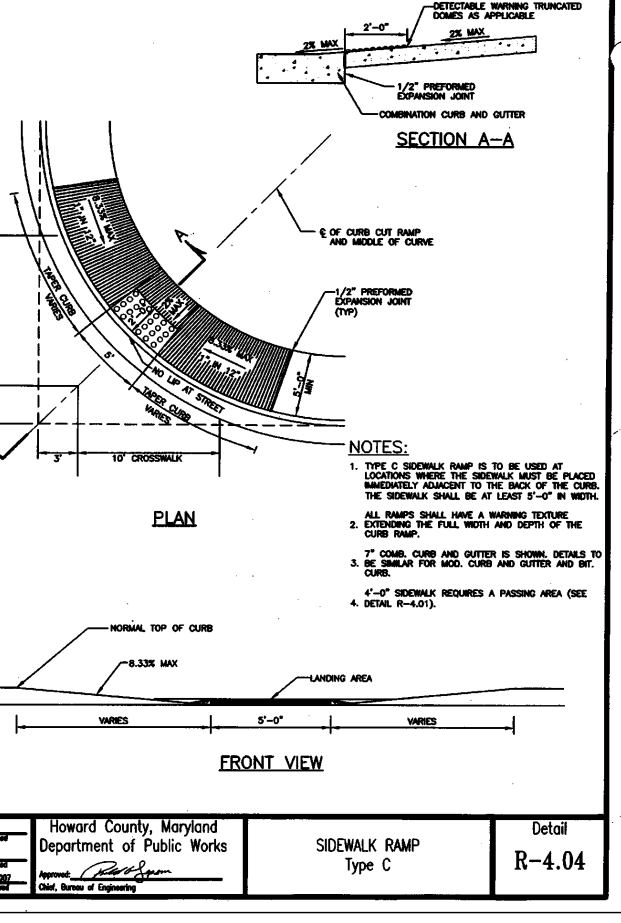
**RESIDENTIAL DRIVEWAY ENTRANCE Closed Section Roadway without Sidewalk**

**FRINGE SECTION P-1 to P-4**

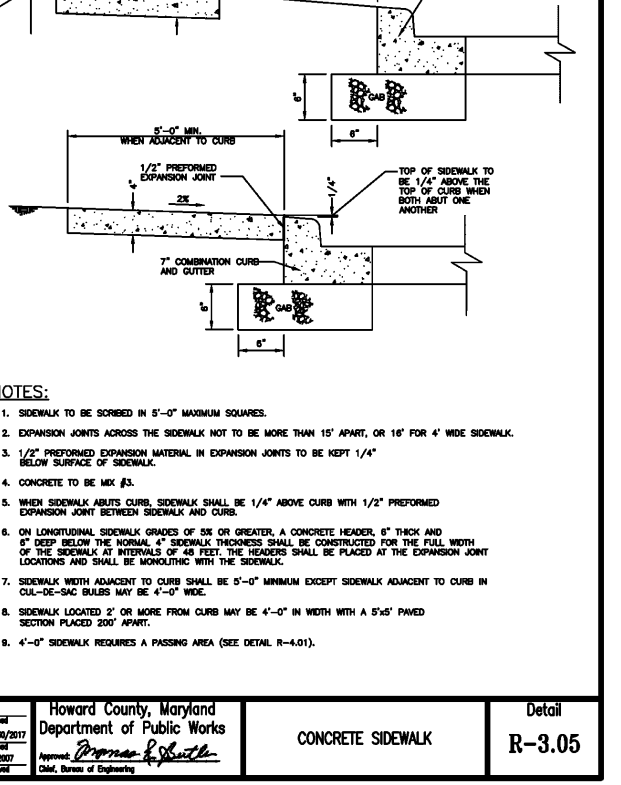
Item	Description	Quantity	Unit
P-1	...	...	...
P-2	...	...	...
P-3	...	...	...
P-4	...	...	...



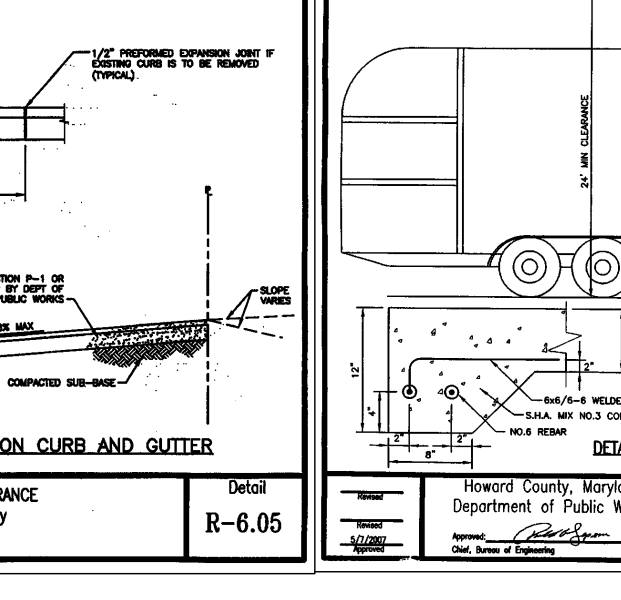
**EXISTING ROADWAY**



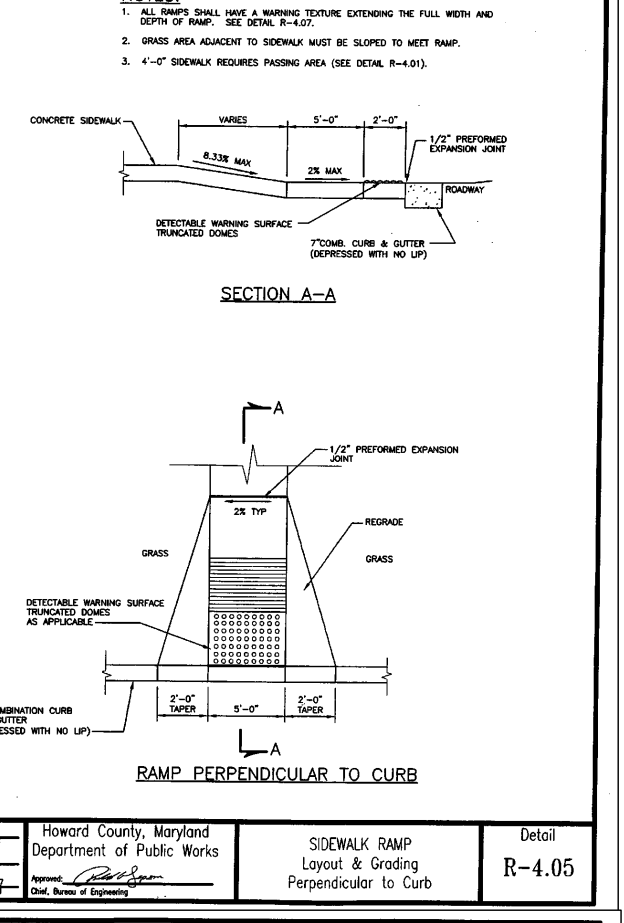
**SIDEWALK RAMP Type C**



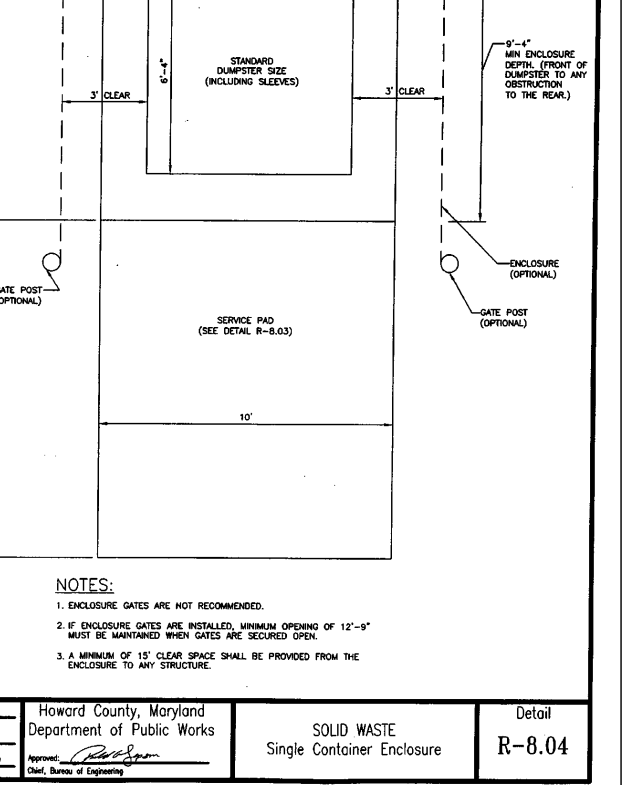
**CONCRETE SIDEWALK**



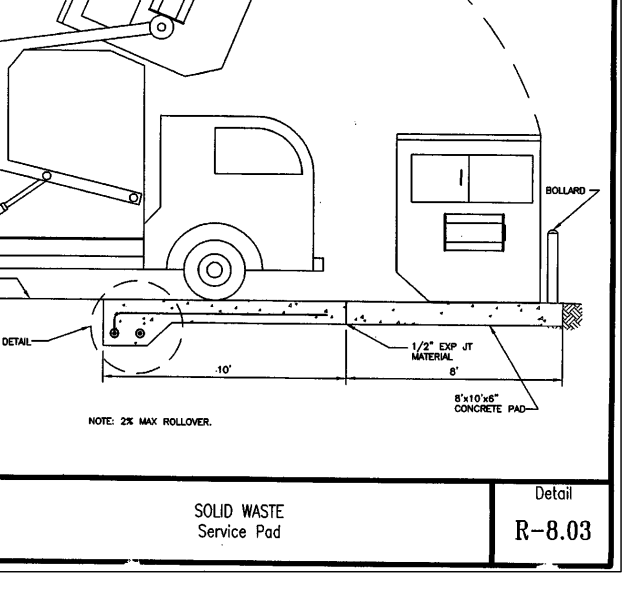
**SOLID WASTE Service Pad**



**RAMP PERPENDICULAR TO CURB**



**SIDEWALK RAMP Light & Grading Perpendicular to Curb**



**SOLID WASTE Single Enclosure**

**OWNER**  
VBH LLC  
9113 BRAE BROOKE DRIVE  
LANHAM, MD 20706

**DEVELOPER**  
J. KIRBY DEVELOPMENT, LLC  
C/O JEFF KIRBY, PRESIDENT  
5760 B FURNACE AVENUE  
ELK RIDGE, MD 21075  
(410) 788-0027

NO.	PERMIT SET	DATE
2	PERMIT SET	2/13/19
1	HUD REV 1	1/18/19

**SITE DEVELOPMENT PLAN**  
**SITE AND STORMWATER NOTES AND DETAILS**  
**RIVER WATCH II**  
5635-5659 FURNACE AVENUE

TAX MAP 38 GRID 04  
1ST ELECTION DISTRICT

ZONED: CAC-CL1      HOWARD COUNTY, MARYLAND

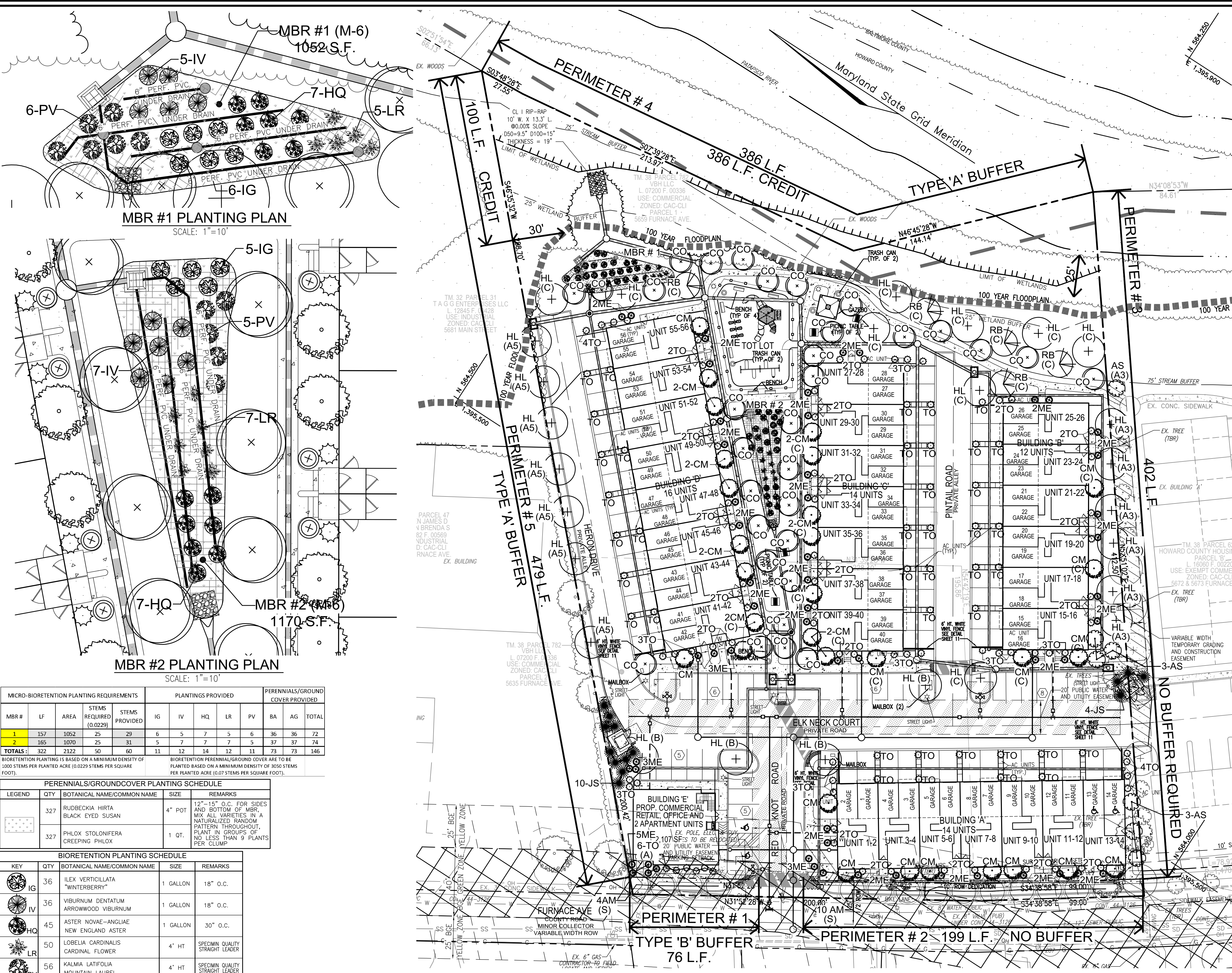
PARCEL 782

**Robert H. Vogel Engineering, Inc.**  
Engineers • Surveyors • Planners  
3300 N. Ridge Road, Suite 110  
Ellicott City, MD 21034      Tel: 410 481 7866 Fax: 410 481 8987

**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

DESIGN BY: GAH  
DRAWN BY: LAG  
CHECKED BY: RHV  
DATE: JUNE 2019  
SCALE: AS SHOWN  
W.O. NO.: 17-00

9 SHEET OF 11



### LEGEND

[Symbol]	EXISTING CONTOUR	[Symbol]	EXISTING SOILS
[Symbol]	PROPOSED CONTOUR	[Symbol]	15' EASEMENT FOR INGRESS/EGRESS AND UTILITIES
[Symbol]	EXISTING CURB AND GUTTER	[Symbol]	LIMIT OF DISTURBANCE
[Symbol]	PROPOSED CURB AND GUTTER	[Symbol]	MICRO-BIORETENTION (M-6)
[Symbol]	EXISTING LIGHT POLE	[Symbol]	PROPOSED SIDEWALK
[Symbol]	EXISTING LIGHT POLE	[Symbol]	PROPOSED SHRUBS
[Symbol]	EXISTING MAILBOX	[Symbol]	PROPOSED SHADE TREES
[Symbol]	EXISTING SIGN	[Symbol]	PROPOSED EVERGREEN TREES
[Symbol]	EXISTING SANITARY MANHOLE	[Symbol]	PERIMETER DESIGNATION / TYPE
[Symbol]	EXISTING SANITARY LINE		
[Symbol]	EXISTING CLEANOUT		
[Symbol]	EXISTING FIRE HYDRANT		
[Symbol]	EXISTING WATER LINE		
[Symbol]	EXISTING FENCE		
[Symbol]	PROPERTY LINE		
[Symbol]	RIGHT-OF-WAY LINE		
[Symbol]	EXISTING TREENE		
[Symbol]	PROPOSED TREENE		

### SCHEDULE 'A' PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO PERIMETER AND ROADWAYS	1	2	3	4	5	TOTAL
PERIMETER/FRONTAGE DESIGNATION	B	76	199	N/A	A	A	1542
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER				402	386	479	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	No	No	No	*Yes	*Yes		486
CREDIT FOR WALL FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	No	No	No	No	No		
NUMBER OF PLANTS REQUIRED							
SHADE TREES	2	(1)	(1)			7	15
EVERGREEN TREES	-	-	(1)	-	-	-	1
SHRUBS	-	-	(2)	-	-	-	2
NUMBER OF PLANTS PROVIDED							
SHADE TREES	-	-	(2)	-	-	-	2
EVERGREEN TREES	6(1)	-	-	-	-	-	6
EX SHADE TREES	-	-	-	(2)	-	-	2
OTHER TREES (2:1 SUBSTITUTION)	-	-	-	-	-	-	-
SHRUBS (10:1 SUBSTITUTION)	-	-	-	-	-	-	-

- ### GENERAL NOTES:
- PUBLIC STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 18.24(A)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL UNDER THIS PLAN. THE 15' FINANCIAL PLAN ASSOCIATED WITH THIS PROJECT'S FINANCIAL SURETY IN THE AMOUNT OF \$2,100 SHALL BE POSTED AS PART OF THE SITE DEVELOPMENT PLAN DEVELOPER'S AGREEMENT FOR THE REQUIRED 7 STREET TREES. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY AND THE LANDSCAPE MANUAL. FINANCIAL SURETY IN THE AMOUNT OF (\$12,150) SHALL BE POSTED AS PART OF THE SITE DEVELOPMENT PLAN DEVELOPER'S AGREEMENT FOR THE REQUIRED 39 SHADE TREES (\$11,700).
  - ORNAMENTAL TREES (\$150) AND 2 EVERGREENS (\$300), THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING. PLANT MATERIALS, BERMS, FENCES AND WALLS ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD CONDITION AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH ALL REGULATIONS. ALL REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
  - AT THE TIME OF INSTALLATION, ALL SHRUBS AND OTHER PLANTINGS LISTED HEREIN SHALL BE APPROVED FOR THIS SITE SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTION OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL BY 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 APPLICABLE PLANS AND CERTIFICATES.
  - PER FOREST STAND DELINEATION PLAN PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, DATED AUGUST 9, 2017, THE PROPOSED DEVELOPMENT OF THE SITE IS REQUIRED TO COMPLY WITH THE FOREST STAND DELINEATION PLAN. HOWEVER, BECAUSE THE SITE WAS PREVIOUSLY DEVELOPED FOR COMMERCIAL USE AND OCCURS WITHIN A DETERMINED TRACT AREA OF THE PROPERTY AS SHOWN ON THE NET FLOODPLAIN CAN BE DEDUCTED FROM THE GROSS SITE AREA TO DETERMINE THE TRACT AREA OF THE PROPERTY AS SHOWN ON THE NET FLOODPLAIN IS ONLY 0.1 ACRES AND THIS ACREAGE SHALL BE USED TO GENERATE A CONSERVATION PLAN REQUIREMENT. WETLANDS AND STREAMS SHOWN ON-SITE ARE BASED ON ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, DATED AUGUST 9, 2017. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, SAWING AND STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAMS OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN, EXCEPT AS REQUIRED FOR NECESSARY STORM DRAIN OUTFALL.
  - THE SUBJECT PROPERTY IS ZONED "CAC" IN ACCORDANCE WITH THE 10/16/13 ZONING REGULATIONS AND THE SUBDIVISION REGULATIONS AND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 76-2003.
  - EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC. DATED DECEMBER 19, 2017.
  - THE REMOVAL OF TREES 30" OR GREATER DBH IS PROHIBITED WITHOUT COUNTY APPROVAL.

- ### B.G. & E. NOTES:
- BGE RESERVES THE RIGHT TO TRIM, TOP OR CUT DOWN ANY TREE IN PROXIMITY TO THE LINE THAT IN THE OPINION OF BGE SHALL BE DEEMED A HAZARD TO THE SAFETY AND RELIABLE DELIVERY OF ELECTRICITY.
  - THE DEPARTMENT OF PLANNING AND ZONING MAY AUTHORIZE THE TRIMMING OR REMOVAL OF TREES OR VEGETATION IMMEDIATELY ADJACENT TO THE BGE R/W OR EASEMENT IF BGE DETERMINES THE TREES ARE COMPROMISING THE SAFETY OF A TRANSMISSION LINE LOCATED WITHIN THEIR UTILITY R/W OR EASEMENT. IF BGE INTENDS TO TRIM OR REMOVE TREES WITHIN A FOREST CONSERVATION EASEMENT, A LETTER SPECIFYING THE LOCATION AND SCOPE OF WORK NEEDS TO BE SENT TO DPZ AT LEAST 30 DAYS IN ADVANCE OF UNDERTAKING THE WORK. DPZ UNDERSTANDS CONSULTATION ENERGY'S NEED TO PROTECT ITS TRANSMISSION LINES AND IS NOT UNDERSERVING WITHOUT HANDOVER ROAD & PLANT STREET TREES 10' AWAY FROM EXISTING GASLINE AS REQUIRED.
  - CALL MISS UTILITY TO MARK UP THE LOCATION OF EXISTING GAS LINE BEFORE ANY TREE REMOVAL AS REQUIRED.

### LANDSCAPE SCHEDULE - REQUIRED PLANTING

SYMB.	KEY	SCHED. 'A' QUANTITY	SCHED. 'B' QUANTITY	SCHED. 'C' QUANTITY	STREET TREE QUANTITY	ADDITIONAL PLANTINGS	TOTAL QUANTITY	BOTANICAL NAME	SIZE	CAT
[Symbol]	RB	-	-	5	-	-	5	BETULA NIGRA "DURAHAT" DURAHAT RIVER BIRCH	2.5" CAL.	B & B
[Symbol]	HL	13	4	8	-	1	25	OLEDTIA TRICANTHOS INERMIS "SHADEMASTER" SHADEMASTER HONEYLOCUST	2.5" CAL.	B & B
[Symbol]	AM	-	-	-	14	-	14	ACER GINNALA AMUR MAPLE	8"-10" HGT.	B & B
[Symbol]	AS	1	-	-	-	6	7	AMELANCHIER GRANDIFLORA "AUTUMN BRILLIANCE" AUTUMN BRILLIANCE SERVICEBERRY	8"-10" HGT.	B & B
[Symbol]	CO	-	-	-	-	32	32	QUERCUS PALUSTRIS "GREEN PILLAR" GREEN PILLAR COLUMBIA OAK	2.5" CAL.	B & B
[Symbol]	CM	-	14	-	-	16	14	LACERSTROEMIA INDICA "NATCHEZ" NATCHEZ CREPE MYRTLE (WHITE)	8"-10" HGT.	B & B
[Symbol]	JS	-	-	-	14	14	14	JUNIPERUS CHINENSIS "SPARTAN" CHINESE JUNIPER "SPARTAN"	6"-8" HGT.	B & B
[Symbol]	TO	6	-	-	-	109	115	THILIA OCCIDENTALIS "EMERALD" EMERALD GREEN ARBORVITAE	1 GAL.	B & B
[Symbol]	ME	-	-	-	-	51	51	ELAENODONMUS KALITSCHOVICUS "MANHATTAN" MANHATTAN ELAENODONMUS	1 GAL.	B & B

### LANDSCAPE SCHEDULE - PARKING LOT INTERNAL LANDSCAPING

NUMBER OF SURFACE PARKING SPACES	NUMBER OF TREES REQUIRED (1:10 SPACES)	NUMBER OF TREES PROVIDED	OTHER TREES (2:1 SUBSTITUTION)
36	4	4	0

### LANDSCAPE SCHEDULE 'C'

NUMBER OF DWELLING UNITS	NUMBER OF SHADE TREES REQUIRED (1:1 DU SFA/ 1:3 DU APT)	NUMBER OF TREES PROVIDED	OTHER TREES (2:1 SUBSTITUTION)	NUMBER OF SHRUBS PROVIDED (SHRUBS 10:1 SUBSTITUTION)
58 APT	20	13	14	-

### STREET TREE SCHEDULE (FURNACE AVENUE)

PERIMETER/FRONTAGE DESIGNATION	1	2	TOTAL
LINEAR FEET OF ROADWAY	76	199	275
TREES REQUIRED @ 1 TREE/40 LF	2	5	7
TREES PROVIDED (OTHER 2:1)	4	10	14

**OWNER**  
VBH LLC  
9113 BRAE BROOKE DRIVE  
LANHAM, MD 20706

**DEVELOPER**  
J. KIRBY DEVELOPMENT, LLC  
C/O JEFF KIRBY, PRESIDENT  
5760 B FURNACE AVENUE  
ELK RIDGE, MD 21075  
(410) 788-0027

NO.	PERMIT SET	DATE
2	PERMIT SET	2/13/19
1	HUD REV 1	1/18/19
	REVISION	DATE

**SITE DEVELOPMENT PLAN**  
**LANDSCAPE PLAN AND DETAILS**

**RIVER WATCH II**  
5635-5659 FURNACE AVENUE

TAX MAP 38 GRID 04  
1ST ELECTION DISTRICT

ZONED: CAC-CLU  
HOWARD COUNTY, MARYLAND

PARCEL 782

**Robert H. Vogel Engineering, Inc.**  
Engineers · Surveyors · Planners  
3300 N Ridge Road, Suite 110  
Elkridge, MD 21027  
Tel: 410.461.7889  
Fax: 410.461.8991

**PROFESSIONAL CERTIFICATE**

DESIGN BY: GAH  
DRAWN BY: LAC  
CHECKED BY: RHV  
DATE: JUNE 2019  
SCALE: AS SHOWN  
W.O. NO.: 17-00

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

10 SHEET OF 11

### MICRO-BIORETENTION PLANTING REQUIREMENTS

MBR #	LF	AREA	STEMS REQUIRED (10:0229)	STEMS PROVIDED	IG	IV	HQ	LR	PV	BA	AG	TOTAL
1	157	1052	25	29	6	5	7	5	6	36	36	72
2	165	1070	25	31	5	7	7	7	5	37	37	74
<b>TOTALS:</b>	<b>322</b>	<b>2122</b>	<b>50</b>	<b>60</b>	<b>11</b>	<b>12</b>	<b>14</b>	<b>12</b>	<b>11</b>	<b>73</b>	<b>73</b>	<b>146</b>

### PERENNIALS/GROUND COVER PLANTING SCHEDULE

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
327	RUDEBECKIA HIRTA BLACK EYED SUSAN	4" POT	12"-18" 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
327	PHLOX STOLONIFERA CREEPING PHLOX	1 QT.	

### BIORETENTION PLANTING SCHEDULE

KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
IG	36	ILEX VERTICILLATA "WINTERBERRY"	1 GALLON	18" O.C.
IV	36	VIBURNUM DENTATUM ARROWWOOD	1 GALLON	18" O.C.
HQ	45	ASTER NOVAE-ANGIAE NEW ENGLAND ASTER	1 GALLON	30" O.C.
LR	50	LOBELIA CARDINALIS CARDINAL FLOWER	4" HT	SPECIM QUALITY STRAIGHT LEAFER
PV	56	KALMIA LATIFOLIA MOUNTAIN LAUREL	4" HT	SPECIM QUALITY STRAIGHT LEAFER

APPROVED BY PLANNING BOARD OF HOWARD COUNTY

DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR DATE

**DEVELOPER'S/BUILDER'S CERTIFICATE**

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

SIGNATURE OF DEVELOPER DATE

**LANDSCAPE NOTES**

- 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.
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN.
- SURETY FOR THE PROPOSED LANDSCAPING SHALL BE BASED ON THE NUMBER OF PLANTINGS REQUIRED.

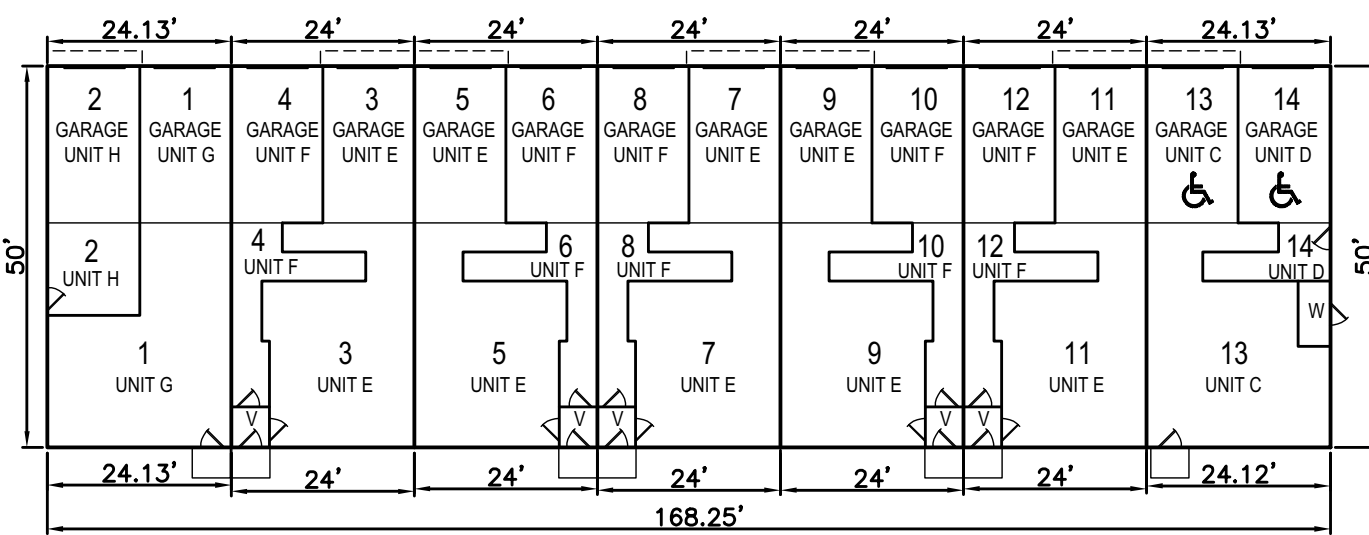
**LANDSCAPE / MBR PLANTING SCHEDULE NOTES:**

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAS 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 OFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
- SEE THIS SHEET FOR TYPICAL PLANTING SPECIFICATIONS AND DETAILS.
- TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.

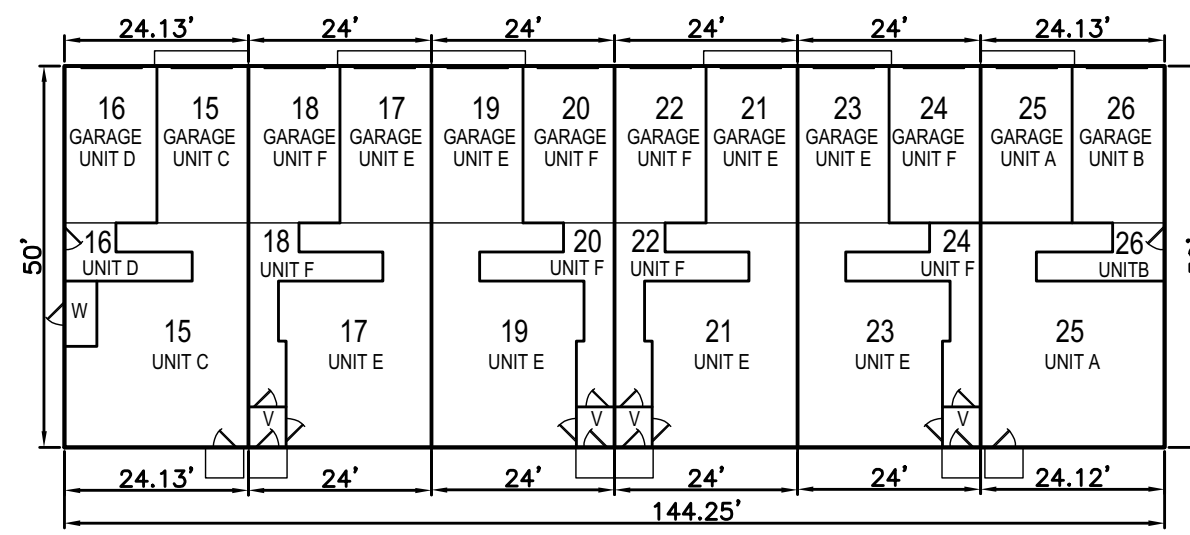
DPZ'S POLICIES GOVERNING THE PLACEMENT OF LANDSCAPING AND STREET TREES IN PROXIMITY TO BGE'S POWER LINES OR TRANSMISSION RIGHT-OF-WAY ARE BASED ON BGE'S PUBLISHED "PLANTING ZONE CONCEPT" WHICH STIPULATES THE MAXIMUM ALLOWABLE SIZE OF PLANT MATERIALS FOR THREE DEFINED ZONES. AS THE DISTANCE FROM BGE EQUIPMENT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

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

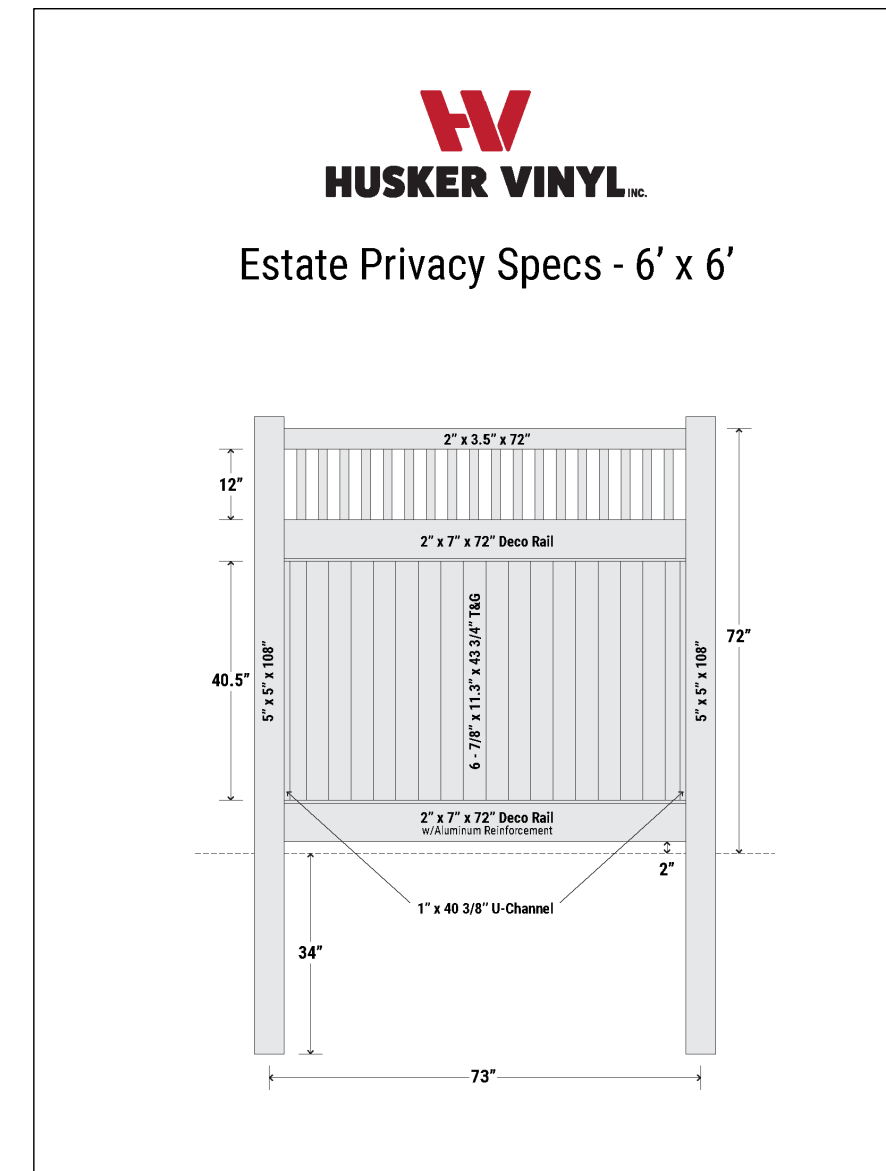
**LANDSCAPE PLAN**  
SCALE: 1"=30'



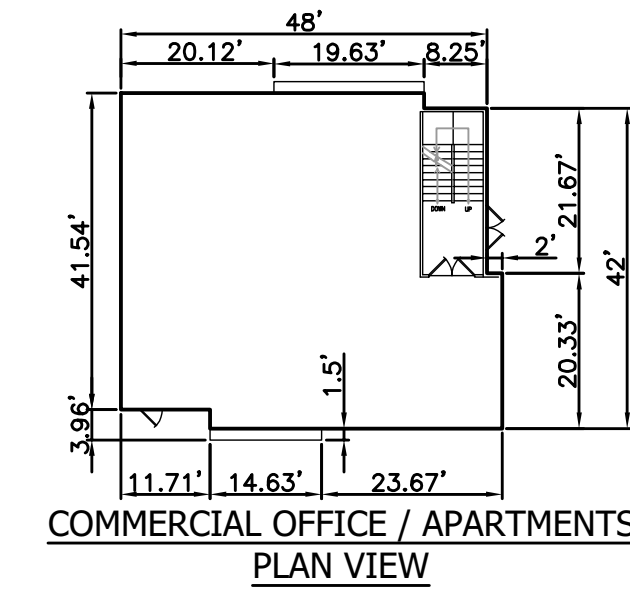
BUILDING 'A' - PLAN VIEW



BUILDING 'B' - PLAN VIEW



6' VINYL FENCE DETAIL  
N.T.S.



COMMERCIAL OFFICE / APARTMENTS  
PLAN VIEW



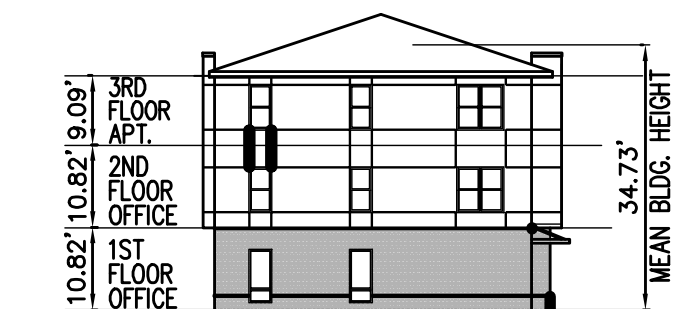
BUILDING 'A' - FRONT ELEVATION



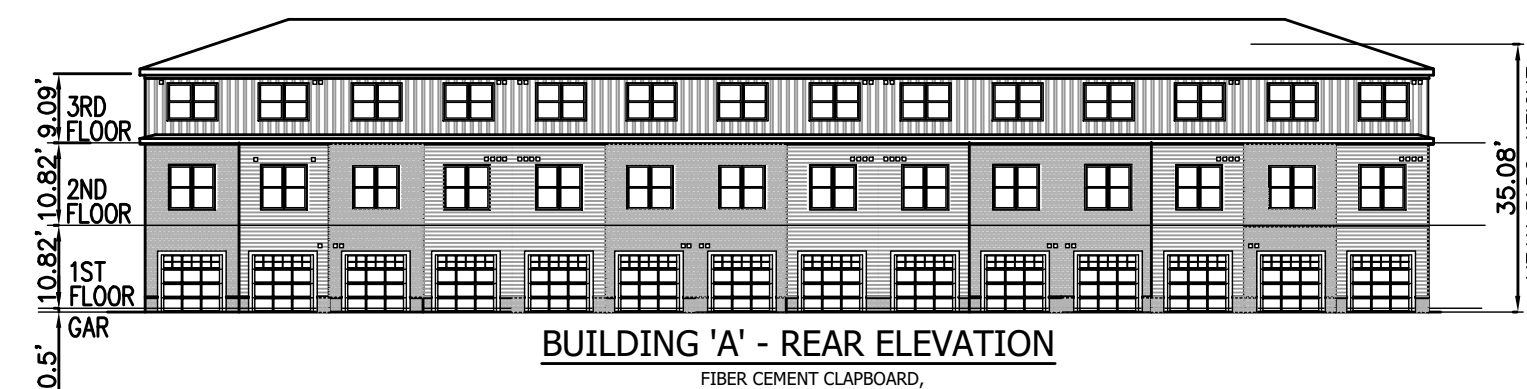
BUILDING 'B' - FRONT ELEVATION



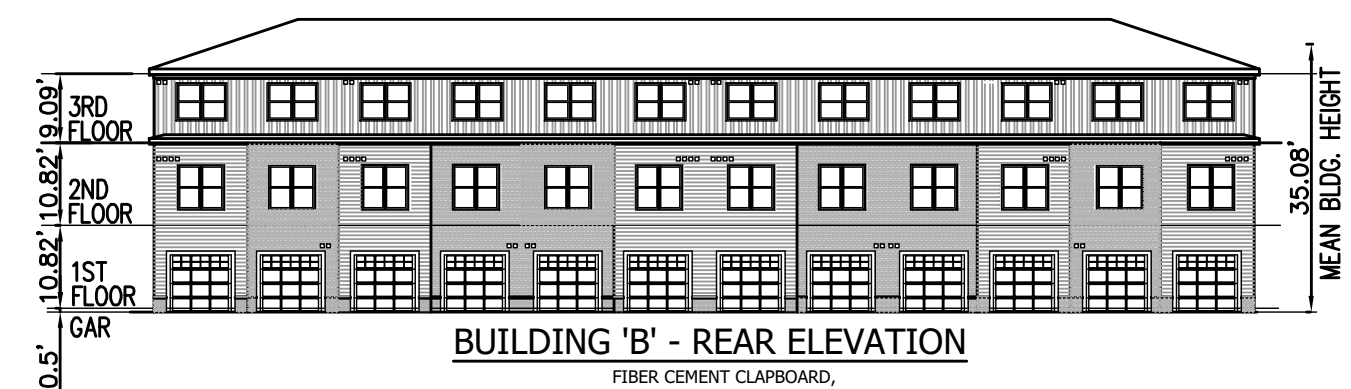
COMMERCIAL OFFICE / APARTMENTS  
FRONT ELEVATION



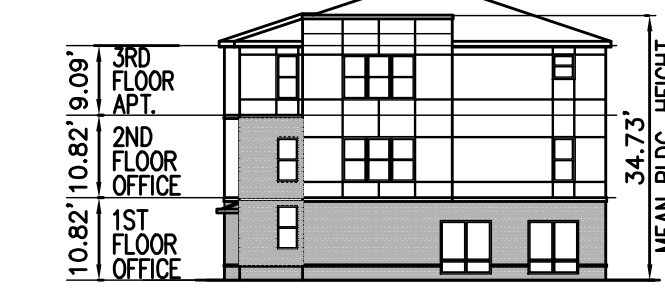
COMMERCIAL OFFICE / APARTMENTS  
FRONT ELEVATION



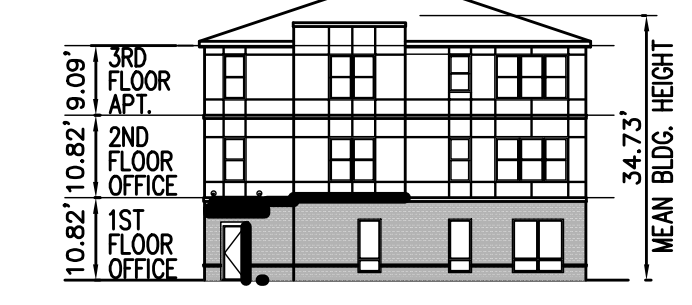
BUILDING 'A' - REAR ELEVATION



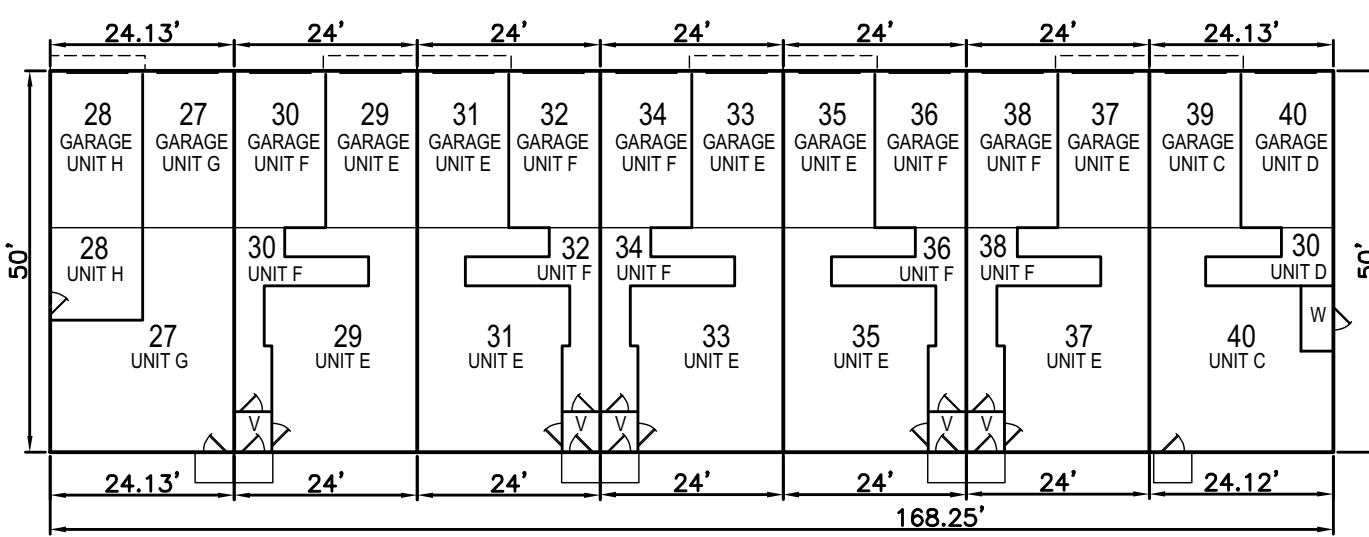
BUILDING 'B' - REAR ELEVATION



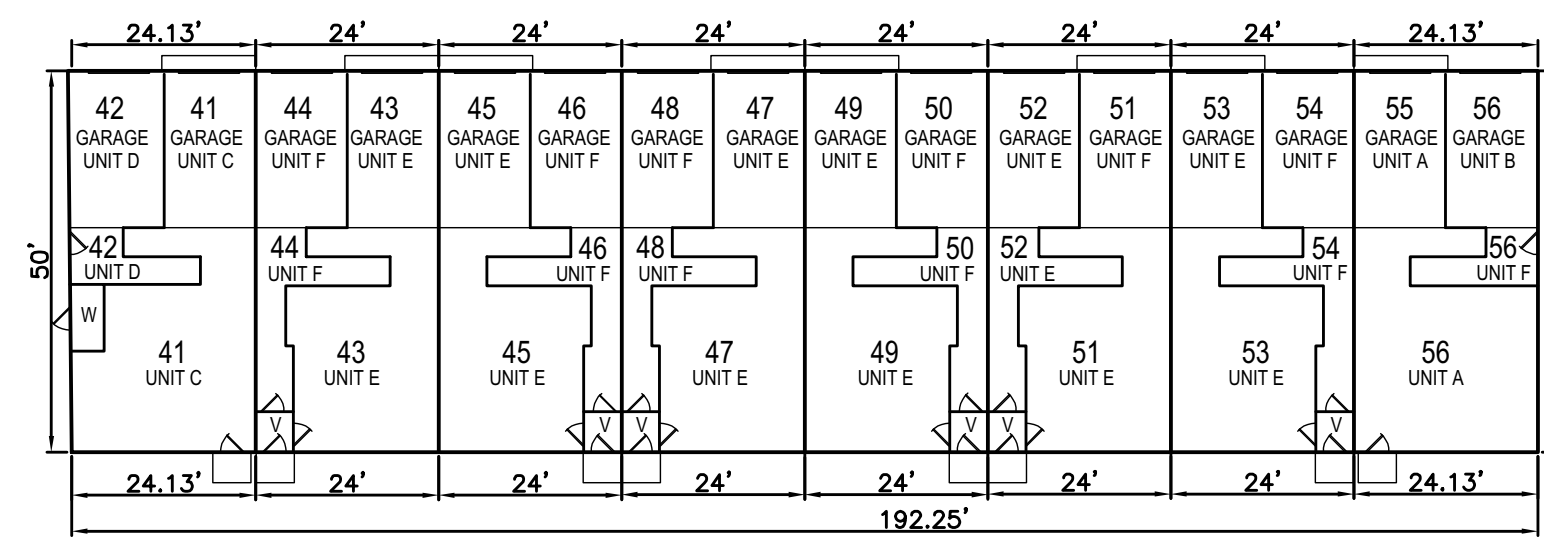
COMMERCIAL OFFICE / APARTMENTS  
REAR ELEVATION



COMMERCIAL OFFICE / APARTMENTS  
REAR ELEVATION



BUILDING 'C' - PLAN VIEW



BUILDING 'D' - PLAN VIEW



BUILDING 'C' - FRONT ELEVATION



BUILDING 'D' - FRONT ELEVATION



UNIT 'A' AND 'B' - SIDE ELEVATION



BUILDING 'C' - REAR ELEVATION



BUILDING 'D' - REAR ELEVATION



UNIT 'C' AND 'D' - SIDE ELEVATION

OWNER  
VBH LLC  
9113 BRAE BROOKE DRIVE  
LANHAM, MD 20706

DEVELOPER  
J. KIRBY DEVELOPMENT, LLC  
C/O JEFF KIRBY, PRESIDENT  
5760 B FURNACE AVENUE  
ELKRIE, MD 21075  
(410) 788-0027

NO.	DESCRIPTION	DATE
2	PERMIT SET	2/13/19
1	HUD REV 1	1/18/19
	REVISION	DATE

SITE DEVELOPMENT PLAN  
BUILDING DETAILS AND ELEVATIONS

RIVER WATCH II  
5635-5659 FURNACE AVENUE

TAX MAP 38 GRID 04 1ST ELECTION DISTRICT ZONED: CAC-CLU PARCEL 782 HOWARD COUNTY, MARYLAND

**Robert H. Vogel**  
Engineering, Inc.  
Engineers • Surveyors • Planners  
3300 N. Ridge Road, Suite 110  
Ellicott City, MD 21043  
Tel: 410.461.7666  
Fax: 410.461.8981



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: 06-27-2020.  
DESIGN BY: GAH.  
DRAWN BY: LAG.  
CHECKED BY: RHV.  
DATE: JUNE 2019  
SCALE: AS SHOWN  
W.O. NO.: 17-00

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

BUILDING ELEVATIONS  
N.T.S.