

LOT NUMBER	ADDRESS	STORMWATER MANAGEMENT PRACTICES														
		GREEN ROOFS	PERMEABLE PAVEMENTS	REINFORCED TURF	DISCONNECTION OF ROOFTOP RUNOFF	DISCONNECTION OF NON-ROOFTOP RUNOFF	SHELFLOW TO CONSERVATION AREAS	RAINWATER HARVESTING	SUBMERGED GRASS WETLANDS	LANDSCAPE INFILTRATION	INFILTRATION BERMS	DRY WELLS	MICRO-BIORETENTION	RAIN GARDENS	SWALES	DRAINAGE FILTERS
1	1811 ALLNUTT LANE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2	1811 ALLNUTT LANE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
3	1811 ALLNUTT LANE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
4	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
7	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
8	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
9	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
10	1811 ALLNUTT LANE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
11	1811 ALLNUTT LANE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
12	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
13	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
14	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
15	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
16	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
17	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
18	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
19	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
20	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
22	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
23	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
24	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
25	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
26	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
27	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
28	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
29	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
30	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
31	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
32	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
33	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
34	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
35	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
36	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
37	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
38	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
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40	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
41	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
42	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
43	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
44	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
45	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
46	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
47	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
48	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
49	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
50	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
51	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
52	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
53	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
54	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
55	1821 NOBLE WAY	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

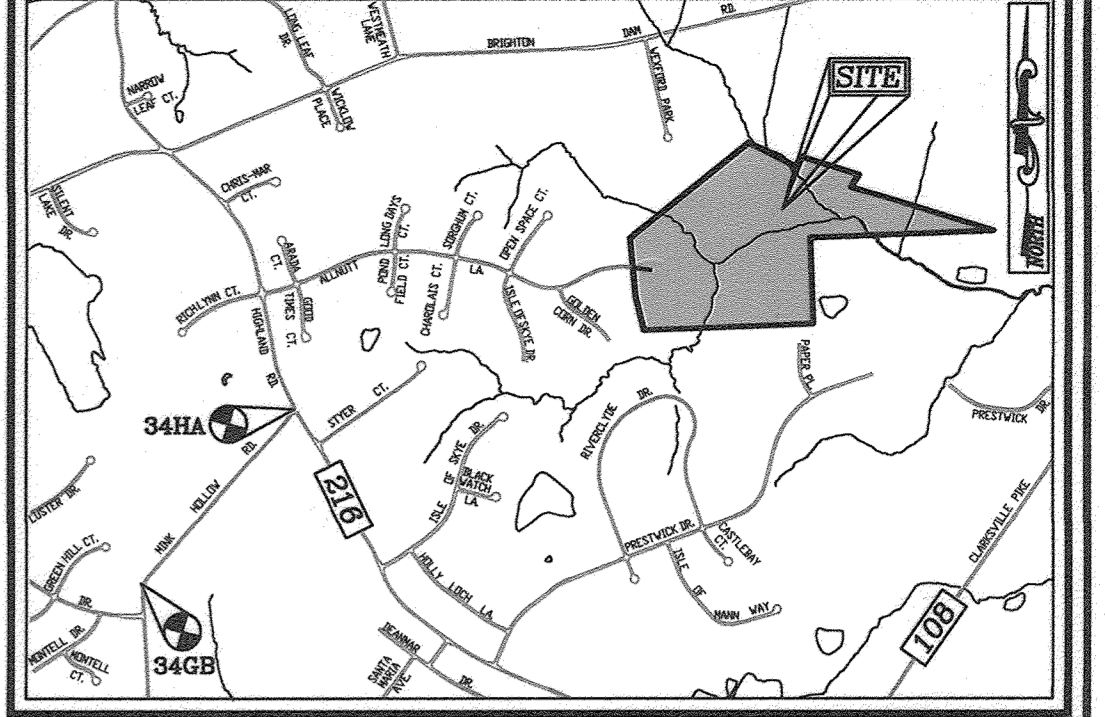
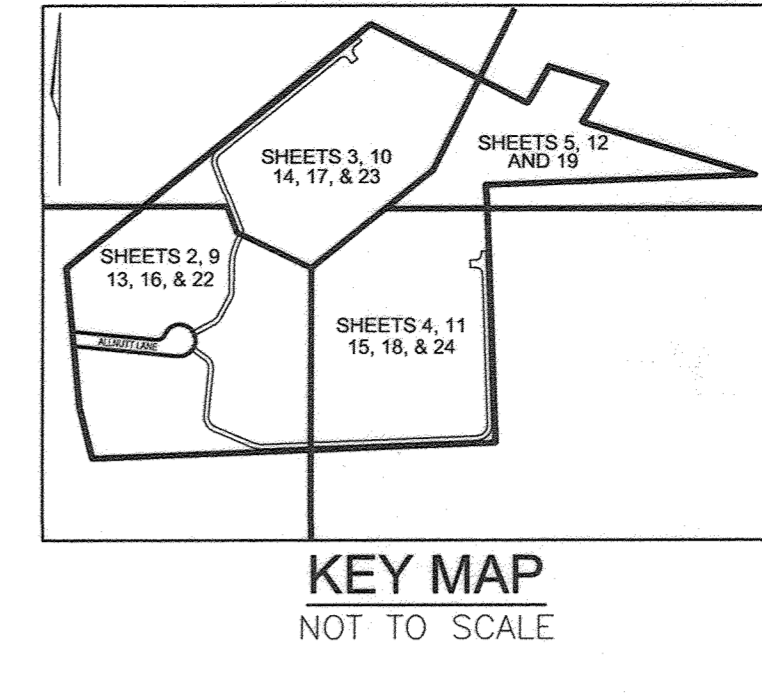
# FINAL ROAD CONSTRUCTION PLAN

## THE ESTATES AT RIVER HILL

### LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'

#### A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

13550 ALLNUTT LANE  
HIGHLAND, MD 20777



**LEGEND:**

[Symbol]	PROPERTY LINE
[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	ADJACENT PROPERTY LINE
[Symbol]	EXISTING EDGE OF PAVING
[Symbol]	EXISTING STREAM BUFFER
[Symbol]	EXISTING STREAM
[Symbol]	EXISTING WETLANDS
[Symbol]	EXISTING WETLAND BUFFER
[Symbol]	EX. PUBLIC 100-YEAR FLOOD PLAIN
[Symbol]	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
[Symbol]	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
[Symbol]	EX. 25' EASEMENT FOR INGRESS AND EGRESS TO LOT 12 AND LOT 1 GREEN PROP. (PRIVATE) (PLAT 7671)
[Symbol]	EX. 24' WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
[Symbol]	EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
[Symbol]	EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 4622)
[Symbol]	PROP. PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
[Symbol]	PROP. 35' PRIVATE MONUMENT EASEMENT

**SITE DATA**

LOCATION: TAX MAP 34, BLOCK 23  
PARCEL: 389  
5TH ELECTION DISTRICT  
PRESENT ZONING: RR-DEO  
GROSS AREA OF PROJECT: 42.60 AC.  
AREA OF RIGHT-OF-WAY DEDICATION: 0.59 AC.  
PROPOSED USE OF SITE: RESIDENTIAL (SFD)  
NUMBER OF RESIDENTIAL LOTS PROPOSED: 16 LOTS  
AREA OF RESIDENTIAL LOTS PROPOSED: 20.83 AC.  
AREA OF STREAM/BUFFER: 12.75 AC.  
AREA OF WETLANDS/BUFFER: 9.22 AC.  
AREA OF MODERATE SLOPES (15% - 24.99%): 0.00 AC.  
AREA OF STEEP SLOPES (25% OR GREATER): 0.00 AC.  
AREA OF FLOOD PLAIN: 7.50 AC.  
NET PROJECT AREA: 35.10 AC.  
AREA OF EXISTING FOREST COVER: 12.60 AC.  
AREA OF DISTURBANCE: 6.96 AC.  
AREA MANAGED BY ESOV (THIS PLAN): 6.96 AC.  
IMPERVIOUS AREA: 1.85 AC.  
GREEN AREA: 4.73 AC.  
DPR REFERENCES: ECP-16-064, WP-17-034, WP-17-128  
SP-17-007

**COORDINATE TABLE**

NO.	NORTH	EAST
214	558328.06	132420.01
215	558033.30	132468.79
216	558178.52	132471.93
1011	558109.27	132493.26
1014	557968.86	132492.36
1015	55795.15	132452.04
1009	55795.35	132451.72
1007	55690.38	132453.30
1004	55695.64	132353.64
1000	55690.80	132311.42
1010	557467.58	132307.68

**SHEET INDEX ADDITIONS**

ONLOT GRADING, EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 1-3, 10 & 11	31 OF 33
ONLOT GRADING, EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 12-15 & BUILDABLE PRESERVATION PARCEL 'A'	32 OF 33
ONLOT GRADING, EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 4-9	33 OF 33

ALEXANDER E. ADAMS  
BETTY'S ADAMS  
TM 34 PARCEL 43  
L 14369 / F 464  
114.60 AC.  
USE: AGRICULTURAL  
ZONED: RR-DEO  
HOWARD COUNTY AGRICULTURAL  
LAND PRESERVATION PROGRAM  
EASEMENT HO-91-04-E

14	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOTS 8 AND 9	6-22-22
NO.	REVISION	DATE

**BENCHMARKS**  
SCALE: 1"=200'  
ADC MAP: PAGE: 31 / GRID: B2, B3, & C2

HOWARD COUNTY BENCHMARK 34GB (CONC. MON.)  
N 553966.73 E 1317752.53 ELEV. 505.18  
LOCATION: MINK HOLLOW RD. 0.45 MI. SW OF HIGHLAND RD.  
HOWARD COUNTY BENCHMARK 34HA (CONC. MON.)  
N 555780.15 E 1319355.57 ELEV. 535.23  
LOCATION: CORNER OF HIGHLAND RD. & MINK HOLLOW RD.

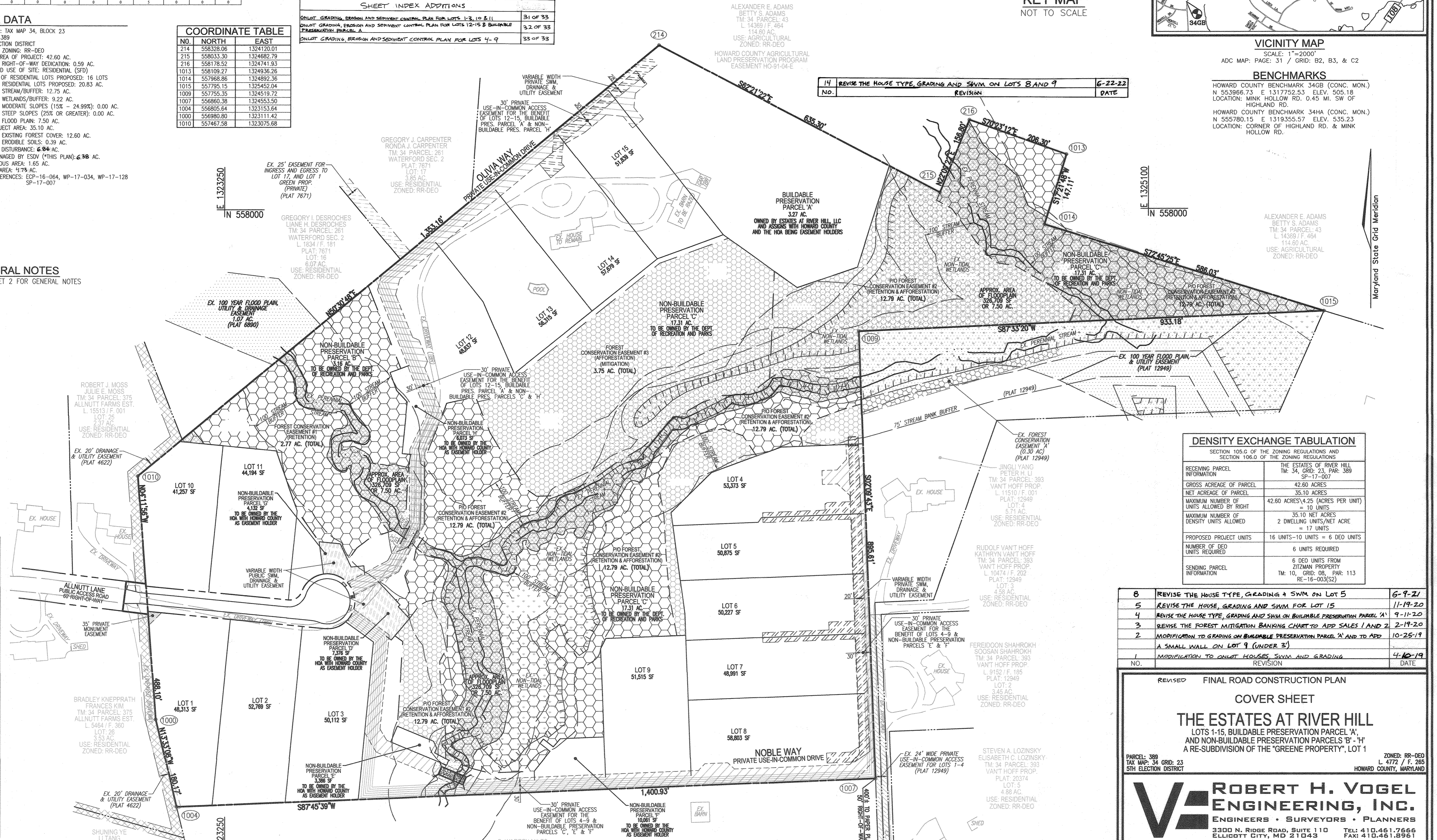
ALEXANDER E. ADAMS  
BETTY'S ADAMS  
TM 34 PARCEL 43  
L 14369 / F 464  
114.60 AC.  
USE: AGRICULTURAL  
ZONED: RR-DEO

**LOT AREA TABULATION**

LOT	GROSS AREA	PIPESTEM AREA	NET AREA
1	48,313 SF	N/A	48,313 SF
2	52,769 SF	N/A	52,769 SF
3	50,112 SF	N/A	50,112 SF
4	53,373 SF	7,788 SF	45,585 SF
5	50,875 SF	7,256 SF	43,619 SF
6	50,227 SF	6,725 SF	43,502 SF
7	48,991 SF	6,193 SF	42,798 SF
8	58,803 SF	4,131 SF	54,672 SF
9	51,515 SF	3,430 SF	48,085 SF
10	41,257 SF	N/A	41,257 SF
11	44,194 SF	N/A	44,194 SF
12	48,837 SF	2,055 SF	46,782 SF
13	56,315 SF	4,012 SF	52,303 SF
14	57,679 SF	4,773 SF	52,906 SF
15	51,839 SF	5,574 SF	46,265 SF
B.P.P. 'A'	3.27 AC.	0.15 AC.	3.12 AC.

**SHEET INDEX**

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**DENSITY EXCHANGE TABULATION**

SECTION 105.G OF THE ZONING REGULATIONS AND SECTION 106.G OF THE ZONING REGULATIONS

RECEIVING PARCEL INFORMATION	SENDING PARCEL INFORMATION
RECEIVING PARCEL INFORMATION	RECEIVING PARCEL INFORMATION
NET ACREAGE OF PARCEL	NET ACREAGE OF PARCEL
GROSS ACREAGE OF PARCEL	GROSS ACREAGE OF PARCEL
MAXIMUM NUMBER OF UNITS ALLOWED BY RIGHT	MAXIMUM NUMBER OF UNITS ALLOWED BY RIGHT
MAXIMUM NUMBER OF DWELLING UNITS/NET ACRE	MAXIMUM NUMBER OF DWELLING UNITS/NET ACRE
PROPOSED PROJECT UNITS	PROPOSED PROJECT UNITS
NUMBER OF DEO UNITS REQUIRED	NUMBER OF DEO UNITS REQUIRED
SENDING PARCEL INFORMATION	SENDING PARCEL INFORMATION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 12-3-18

APPROVED: COUNTY HEALTH OFFICER  
HOWARD COUNTY HEALTH DEPARTMENT  
DATE: 1-10-19

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS  
DATE: \_\_\_\_\_

**PARKING TABULATION:**  
TOTAL NUMBER OF DWELLING UNITS PROPOSED: 16  
PARKING SPACES REQUIRED:  
OFF-STREET PARKING AND OVERFLOW/GUEST PARKING SPACES  
2.0 SPACES PER UNIT = 32 SPACES  
PARKING SPACES PROVIDED:  
SFD = 2 GARAGE/2 DRIVEWAY  
2 SPACES ON GARAGE = 32 SPACES (FOR 16 UNITS)  
2 SPACES ON DRIVEWAY = 32 SPACES (FOR 16 UNITS)  
-TOTAL REQUIRED = 32 SPACES  
-TOTAL PROVIDED = 64 SPACES

**COVER SHEET**  
SCALE: 1"=100'

13	REVISE THE PLAN TO ADD AN EXTRA DRIVEWAY TO LOT 7 AND MODIFY THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESD PRACTICES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
NO.	REVISION	DATE

**OWNER**  
ESTATES AT RIVER HILL, LLC  
MICHAEL PFALL, MEMBER  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21043  
(410) 480-0023

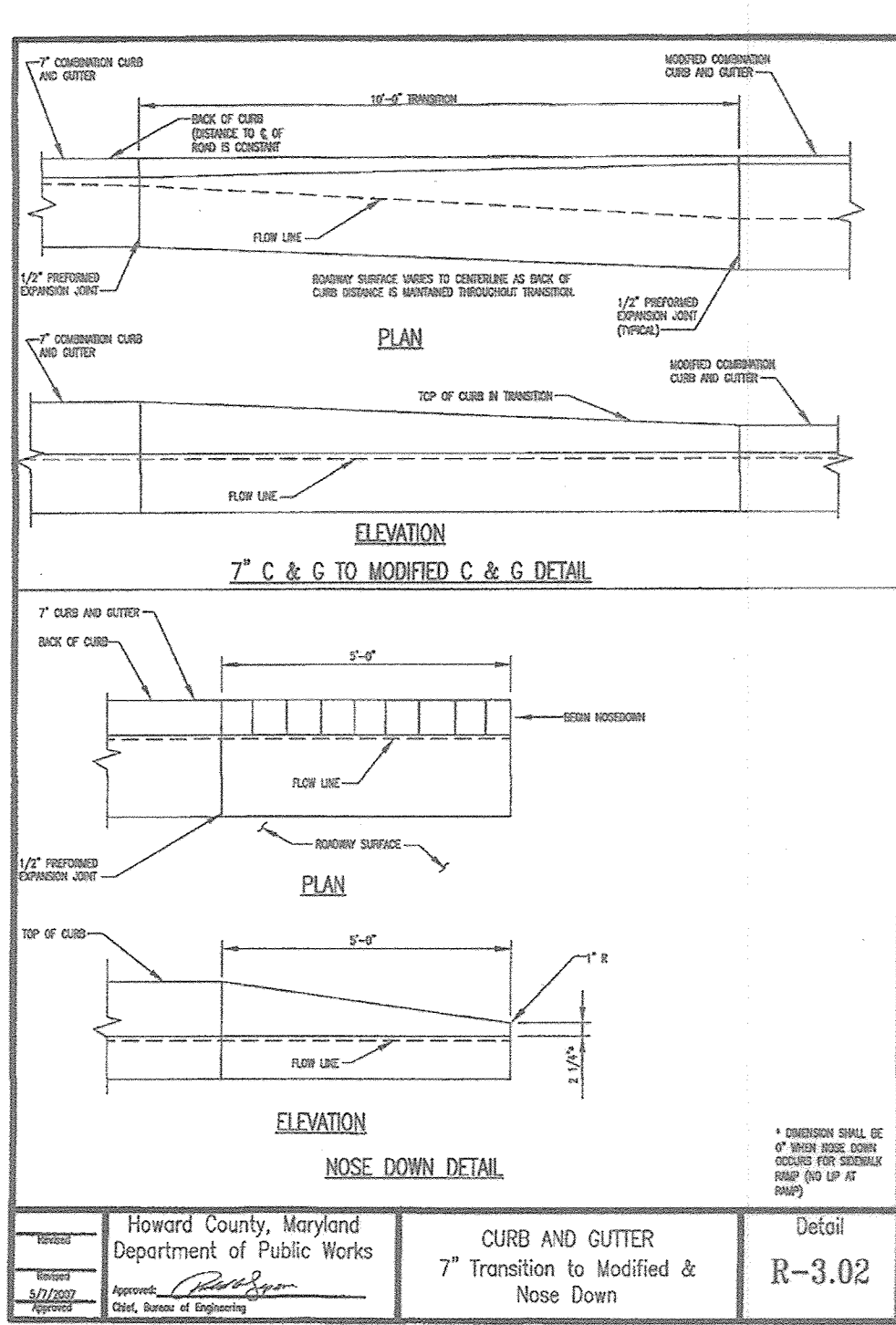
**DEVELOPER**  
TRINITY HOMES MARY LAND, LLC  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21043  
(410) 480-0023

**GENERAL NOTES**

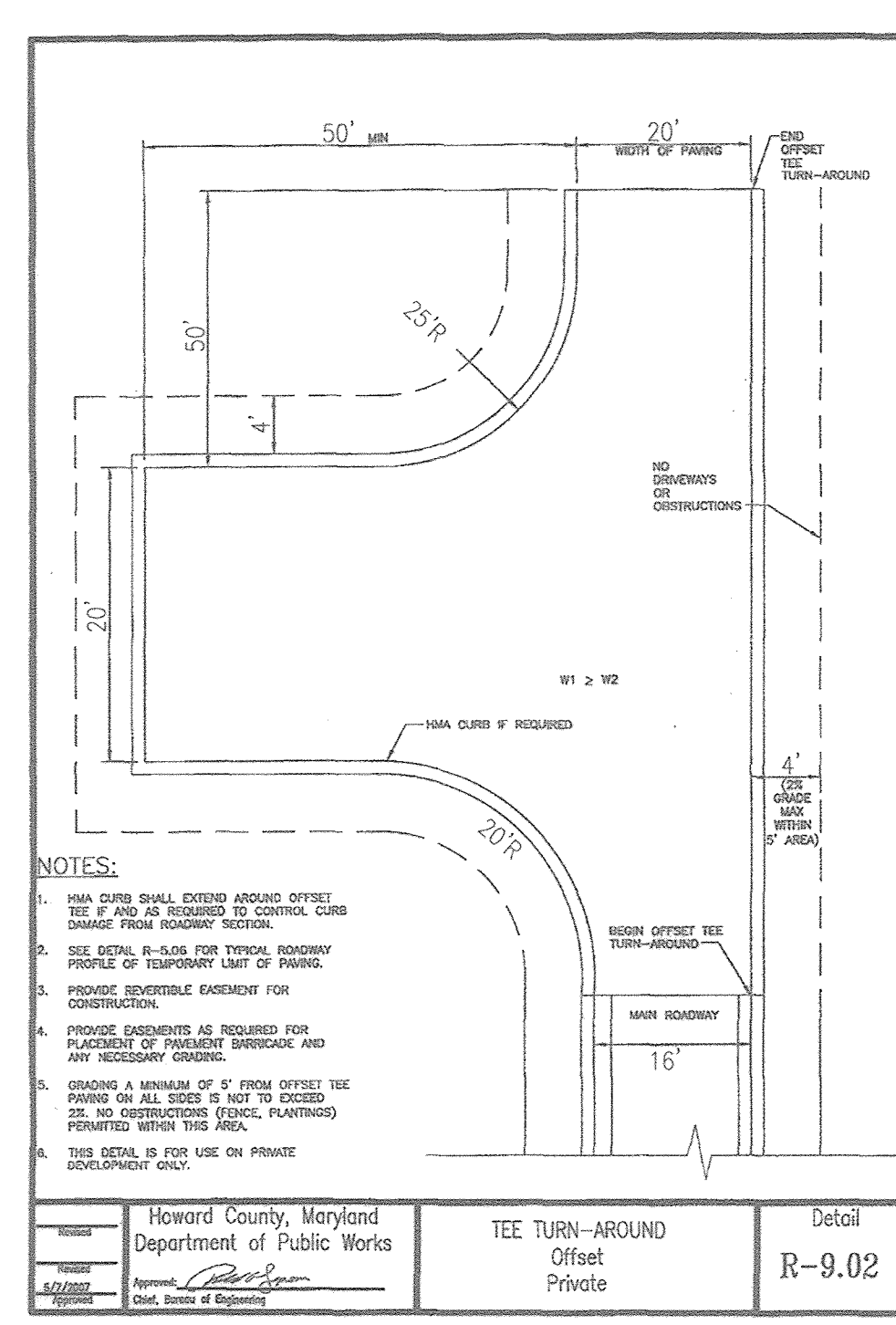
- THE PROJECT BOUNDARY IS BASED ON A FIELD RUN BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JULY 2016.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM HOWARD COUNTY GIS AND SUPPLEMENTED WITH FIELD RUN SURVEYS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH AND MAY OF 2016.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM, HOWARD COUNTY MONUMENT NOS. 34HA AND 34GB WERE USED FOR THIS PROJECT.
- THE SUBJECT PROPERTY IS ZONED "RR-DEO" IN ACCORDANCE WITH THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- THIS SITE IS NOT LOCATED IN A HISTORIC DISTRICT OR IN THE METROPOLITAN DISTRICT.
- THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- AN ENVIRONMENTAL CONCEPT PLAN (ECP-16-064) WAS APPROVED ON DECEMBER 21, 2016.
- A PRE-SUBMISSION COMMUNITY MEETING WAS HELD ON MARCH 29, 2016 AT 6:00 PM AT THE BOARD ROOM AT CLARET HALL. A SECOND COMMUNITY MEETING WAS HELD ON FEBRUARY 21, 2017, AT THE SAME TIME AND LOCATION AS THE FIRST.
- THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS, UNLESS ALTERNATIVE COMPLIANCE REQUESTS HAVE BEEN APPROVED.
- A TOTAL OF 16 RESIDENTIAL LOTS (INCLUDING THE BUILDABLE PRESERVATION PARCEL) AND 7 NON-BUILDABLE PRESERVATION PARCELS ARE PROPOSED UNDER THIS PLAN.
- THE PROPOSED UNITS SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
- ALLUITT LANE IS CLASSIFIED AS A PUBLIC ACCESS ROAD. NO IMPROVEMENTS TO THE EXISTING ROAD ARE PROPOSED. THE PROPOSED EXTENSION OF ALLUITT LANE SHALL CONFORM WITH GUIDELINES WITHIN THE DESIGN MANUAL.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
  - WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE).
  - SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING. (1"-1.5" MIN.)
  - GEOMETRY - MAX. 15% GRADE, MAX. 10% GRADE CHANGE AND MIN. OF 45-FOOT TURNING RADII.
  - STRUCTURES (GARAGES) - CAPABLE OF SUPPORTING 25 CROSSTONS (425 LOADS).
  - CHANNEL ELEMENTS - SAFELY PASSING 100-YEAR FLOOD NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
- STRUCTURE CLEARANCES - MINIMUM 12 FEET.
- MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE.
- AN APPD TRAFFIC STUDY WAS PREPARED BY THE TRAFFIC GROUP AND APPROVED SEPTEMBER 21, 2017.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL - VOLUME 3, CHAPTER 2 - SECTION 2.9.B. AND THE HOWARD COUNTY ZONING REGULATIONS SECTION 13.8.0.2.2, PARAGRAPHS 3 AND 4, 2.0 SPACES PER UNIT, OFF STREET PARKING TO INCLUDE GARAGE SPACES, DRIVEWAY, PARKING PADS AND COURTS, GARAGES COUNT AS TWO SPACES. SEE PARKING TABULATION ON SHEET 1.
- STREET LIGHTING IS NOT REQUIRED FOR THIS SITE IN ACCORDANCE WITH SECTION 16.13.5 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- ALL LOTS/RESIDENTIAL UNITS IN THIS SUBDIVISION ARE SUBJECT TO THE MIRA FEE-IN-LIEU REQUIREMENT THAT IS TO BE CALCULATED AND PAID TO THE DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS AT THE TIME OF BUILDING PERMIT ISSUANCE BY THE PERMIT APPLICANT.
- IN ACCORDANCE WITH SECTION 16.121(A)(2) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, OPEN SPACE IS NOT REQUIRED FOR PROJECTS ZONED RR-DEO.
- IN ACCORDANCE WITH SECTIONS 105.0.6 AND 106.0 OF THE ZONING REGULATIONS, THIS PROJECT IS BEING DEVELOPED UTILIZING THE CLUSTER SUBDIVISION REGULATIONS AND DENSITY EXCHANGE OPTION. THIS SUBDIVISION REQUIRES 6 DWELLING UNITS FROM AN ELIGIBLE SENSING PARCEL.
- FLAG AND PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY.
- LOTS 4-9, 12-15, BUILDABLE PRESERVATION PARCEL "A", AND NON-BUILDABLE PRESERVATION PARCELS "C", "E", "F", AND "H" WILL UTILIZE A USE-IN-COMMON DRIVEWAY. A USE-IN-COMMON MAINTENANCE AGREEMENT FOR THE SHARED DRIVEWAYS SHALL BE RECORDED SIMULTANEOUSLY WITH THE FINAL PLAN.
- A PRIVATE TRUCKWAY SHALL BE FABRICATED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DRIVEWAY ACCESS POINT ONTO ALLUITT LANE AT THE DEVELOPERS/OWNERS EXPENSE, CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.
- LOCATION OF EXISTING WELL AND SEPTIC SYSTEM FEATURES ON GRENE PROPERTY, LOT 1, TAKEN FROM RECORDS AND FIELD SURVEYS.
- THE WELL AND SEPTIC SYSTEM DISTRIBUTION BOX AND TRENCHES SERVING THE EXISTING HOUSE MUST BE PROPERLY ABANDONED, WITH DOCUMENTATION SUBMITTED TO THE HEALTH DEPARTMENT, PRIOR TO HEALTH DEPARTMENT SIGNATURE OF THE FINAL RECORD PLAN.
- THIS PROPERTY IS LOCATED IN GROWTH TIER III, PER SB-236. MAJOR SUBDIVISIONS OF 5 LOTS OR MORE ARE PERMITTED UTILIZING ON-SITE SEPTIC SYSTEMS, COMMUNITY SEPTIC SYSTEMS, AND A SANITARY FACILITY IN HOWARD COUNTY SUBJECT TO PLANNING BOARD REVIEW AND APPROVAL RECOMMENDATION.
- WATER AND SEWER SERVICE TO BE PROVIDED BY PRIVATE WELLS AND SEPTIC SYSTEMS.
- NO HAZARDOUS, THREATENED OR ENDANGERED SPECIES OR THEIR HABITATS WERE OBSERVED ON THE PROPERTY.
- THERE IS APPROXIMATELY 7.50 ACRES OF 100-YEAR FLOODPLAIN LOCATED WITHIN THE LIMITS OF THIS SITE.
- APPROXIMATE FLOODPLAIN DELINEATION GENERATED FROM PRELIMINARY HEC-RAS ANALYSIS, PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED NOVEMBER 13, 2016, AND REVISED MAY 31, 2017, FLOODPLAIN STUDY ADDENDUM PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED APRIL 03, 2019 AND UPDATED JULY 20, 2018.
- WETLANDS SHOWN ON-SITE ARE BASED ON A FIELD INVESTIGATION PERFORMED BY JOHN CANOLES OF ECO-SCIENCE PROFESSIONALS, INC. DATED JUNE 10, 2016. THERE WILL BE LIMITED DISTURBANCES TO THE PERENNIAL STREAM SYSTEM, STREAM BUFFERS, WETLANDS OR WETLAND BUFFERS.
- A FOREST STAND DELINEATION AND ENVIRONMENTAL RESOURCES ASSESSMENT WAS PERFORMED BY JOHN CANOLES OF ECO-SCIENCE PROFESSIONALS, INC. DATED JUNE 10, 2016. UPDATED JANUARY 18, 2017.
- NO GRADING, REMOVAL OF TREES, PARKING OR NEW STRUCTURES SHALL BE PERMITTED WITHIN THE WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN, UNLESS WATERS APPROVAL IS GRANTED.
- WETLANDS AND THEIR BUFFERS WILL NOT BE IMPACTED BY THE CONSTRUCTION OF THE SITE.
- AN ALTERNATIVE COMPLIANCE PETITION (WP-17-034) WAS FILED FOR A STREAM AND STREAM BUFFER DISTURBANCE. A SEPARATE ALTERNATIVE COMPLIANCE PETITION (WP-17-128) WAS FILED FOR THE REMOVAL OF SPECIMEN TREES.
- FOREST CONSERVATION REQUIREMENTS AS SET FORTH IN SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL, NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT. HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
- THE FOREST CONSERVATION OBLIGATION TO BE FULFILLED BY THE PLACEMENT OF 7.44 ACRES OF CREDITED RETENTION INTO CONSERVATION EASEMENTS AND BY THE PLACEMENT OF 3.80 ACRES INTO AN AFFORESTATION EASEMENT. 3.75 ACRES OF ADDITIONAL AFFORESTATION HAVE BEEN PROVIDED FOR THE PURPOSE OF A FOREST BANK.
  - PROVIDE THE SUBDIVISIONS AFFORESTATION SURETY BASED ON A TOTAL OF 3.80 ACRES (OR 163,520 SF).
  - THE AFFORESTATION SURETY IS BASED ON \$0.50 PER SF. THEREFORE, THE SUBDIVISION FOREST CONSERVATION SURETY AMOUNT IS \$82,764.00.
  - THE SURETY FOR THE FOREST MITIGATION BANK IS BASED ON A TOTAL OF 3.75 ACRES (OR 163,350 SF) OF AFFORESTATION. THE AFFORESTATION SURETY IS BASED ON \$0.50 PER SF. THEREFORE, THE SURETY FOR THE MITIGATION BANK IS \$82,764.00.
- THE SUBDIVISION'S AFFORESTATION REQUIREMENT AND THE FOREST MITIGATION BANK WILL HAVE SEPARATE FOREST CONSERVATION AGREEMENTS.
- THERE IS NO SURETY REQUIRED FOR FOREST RETENTION.
- FINANCIAL SURETY FOR THE REQUIRED AFFORESTATION AND FOREST MITIGATION BANK SHALL BE POSTED WITH THE FINAL PLAN DEVELOPER'S AGREEMENT.
- PERMETER LANDSCAPING AND TRASH PAD SCREENING FOR THIS DEVELOPMENT SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE LANDSCAPE MANUAL.
- LANDSCAPING IS PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF \$25,200.00 FOR THE REQUIRED 84 SHADE TREES SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT.
- A SURETY IN THE AMOUNT OF \$8,000.00 FOR THE 19 PUBLIC STREET TREES AND THE 10 SHRUBS FOR THE TWO TRASH PADS WILL BE SATISFIED UNDER THE DEED COST ESTIMATE.
- CERTIFIED TEST PITS HAVE BEEN PROVIDED TO VERIFY THAT GROUNDWATER AND ROCK ARE NOT PRESENT AT RAIN GARDEN AND MICRO-BIOTRETENTION LOCATIONS. INFORMATION REGARDING THE FINDINGS IS LOCATED IN THE SWM REPORT.
- STORM WATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY ENVIRONMENTAL SITE DESIGN UTILIZING MICRO-BIOTRETENTION FACILITIES (M-6), A BIO-SWALE (M-8), ROOFTOP DISCONNECTS (N-1), NON-ROOFTOP DISCONNECTS (N-2), SHELFLOW TO BUFFER (N-3), AND DRY WELLS (M-5). ALL FEATURES SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION OR THE PRIVATE LOT OWNER, WITH THE EXCEPTION OF MBR-1A AND MBR-1B, WHICH ARE TO BE OWNED BY THE HOMEOWNERS ASSOCIATION AND JOINTLY MAINTAINED BY HOWARD COUNTY AND THE HOMEOWNERS ASSOCIATION. REFERENCE 2010 MDE STORMWATER DESIGN MANUAL, CHAPTER 3.
- THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE ZONING REGULATIONS EFFECTIVE OCTOBER 6, 2013.
- PER SECTION 105.0.6.1, NON-BUILDABLE PRESERVATION PARCELS "B" AND "C" WILL BE DEDICATED TO THE HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS. BUILDABLE PRESERVATION PARCEL "A" IS OWNED BY ESTATES AT RIVER HILL, LLC AND ASSIANS, WITH HOWARD COUNTY AND THE HOA BEING EASEMENT HOLDERS. NON-BUILDABLE PRESERVATION PARCELS D, E, F, G AND H ARE TO BE OWNED BY THE HOA WITH HOWARD COUNTY AS THE EASEMENT HOLDER.
- PROTECTIVE DEVICES THAT DETER HEAVY EQUIPMENT MUST BE INSTALLED AROUND WELLS PRIOR TO COMMENCEMENT OF GRADING OPERATIONS, TO ENHANCE VISIBILITY OF THE WELLS LOCATIONS, PLASTIC GRADING FENCING SHOULD BE INCLUDED.
- ANY CHANGES TO A PRIVATE SEWAGE DISPOSAL AREA SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
- ALL WELLS AND SEPTIC SYSTEMS LOCATED WITHIN 100' OF THE PROPERTY BOUNDARIES AND 200' DOWN GRADIENT OF ANY WELLS AND/OR SEPTIC SYSTEMS HAVE BEEN SHOWN.
- THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND DEPARTMENT OF ENVIRONMENT.
- TRAFFIC CONTROL DEVICES:
  - THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
  - ALL TRAFFIC CONTROL DEVICES, AND THEIR LOCATIONS, SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUMUTCD).
  - ALL SIGN POSTS USED FOR TRAFFIC CONTROL, SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED "QUICK PUNCH", SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

**GENERAL NOTES (CONT'D)**

- A PROPOSED 16' WIDE BRIDGE SHALL BE CONSTRUCTED ACROSS THE STREAM FOR THE PURPOSE OF PROVIDING ACCESS TO FUTURE LOTS 4-9.
- A PERCOLATION CERTIFICATION PLAN WAS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH 05, 2016 AND SIGNED BY THE HEALTH OFFICER ON FEB 16, 2016. ALL SEWAGE DISPOSAL AREAS SHOWN HEREON MATCH THE SIGNED PERCOLATION CERTIFICATION PLAN.
- IN ACCORDANCE WITH SB-236, THIS SUBDIVISION WAS APPROVED BY THE HOWARD COUNTY PLANNING BOARD AS A PUBLIC HEARING ON DECEMBER 14, 2017 AND THE DECISION AND ORDER WAS SIGNED BY THE PLANNING BOARD ON JANUARY 25, 2018. **PA P-0-C-434**.
- THE ARTICLES OF INCORPORATION FOR THE HOMEOWNERS ASSOCIATION WERE FILED WITH THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION ON 08/23/2018, FILING NO. 1000362011495944.
- THE PURPOSE OF NON-BUILDABLE BULK PARCELS "B" AND "C" IS TO ISOLATE AND PROTECT EXISTING ENVIRONMENTAL FEATURES LOCATED ON THE SUBJECT PROPERTY. NON-BUILDABLE BULK PARCELS "D" WERE CREATED FOR THE PURPOSE OF STORMWATER MANAGEMENT.
- AN ALTERNATIVE COMPLIANCE PETITION TO SECTION 16.1206(7), FILED AS WP-17-128, TO REMOVE TO SPECIFICALLY WAS APPROVED ON FEBRUARY 02, 2016. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
  - THE REMOVAL OF THE TEN (10) SPECIMEN TREES WILL REQUIRE MITIGATION WITH THE PLANTING OF 21 REPLACEMENT TREES (20 TOTAL) WITH A MINIMUM 3" CALIPER NATIVE PLANT SPECIES AS PART OF THIS SUBDIVISION'S LANDSCAPE PLAN SURETY FOR THE 20 TREES WILL BE INCORPORATED INTO THE LANDSCAPE SURETY WITH THE FINAL PLAN.
  - PROVIDE A NOTE ON ALL SUBDIVISION PLANS REGARDING THIS ALTERNATIVE COMPLIANCE PETITION APPROVAL. THIS NOTE SHALL INCLUDE THE REGULATION SECTIONS PETITIONED, THE DATE OF THE ALTERNATIVE COMPLIANCE APPROVAL, AND THE CONDITIONS OF THE APPROVAL.
- REFERENCE DESIGN MANUAL W/AVR, APPROVED MAY 22, 2017, TO WAVE SECTION 2.6.B WHICH REQUIRES THE CONSTRUCTION OF A PUBLIC ROADWAY WHERE SHARED ACCESS DRIVEWAYS CROSS A 100-YEAR FLOODPLAIN. THIS APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
  - BOTH DRAINAGE STRUCTURES SHALL MEET COUNTY STANDARDS AND SHALL PASS THE 100-YEAR STORM WITH A FREEDRAIN OF 1'-FOOT BETWEEN THE 100-YEAR WESEL AND THE LOWEST CHORD OF THE BRIDGE OR THE OUTSIDE EDGE OF THE PAVEMENT.
  - THE IMPACTS TO STREAM BANKS, CHANNELS, AND ASSOCIATED VEGETATION SHALL BE LIMITED. THE PLANS SHALL NOT BE APPROVED UNLESS SUFFICIENT EFFORTS ARE MADE.
  - SPECIFY WHO WILL BE RESPONSIBLE FOR THE MAINTENANCE OF THE BRIDGE ON THE SITE PLANS.
  - A DETAILED O&M FOR THE BRIDGE MUST BE PROVIDED ON THE PLANS.
- AN ALTERNATIVE COMPLIANCE PETITION TO SECTION 16.115(1)(2), "PROHIBITIONS ON USE OF FLOODPLAIN LAND," SECTION 16.116(1)(2), "STREAMS AND WETLANDS," AND SECTION 16.120(1)(6)(i), "LENGTH OF PIPESTEM LOT," FILED AS WP-17-034, WAS APPROVED ON JANUARY 19, 2018. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
  - COMPLIANCE WITH ALL SRC AGENCY COMMENTS GENERATED WITH THE REVIEW OF THE SUBMITTED ENVIRONMENTAL CONCEPT PLAN (ECP-16-064).
  - APPLICATION FOR ALL PERMITS AS MAY BE REQUIRED BY THE MARYLAND DEPARTMENT OF ENVIRONMENT FOR THE DISTURBANCE TO THE FLOODPLAIN AND STREAM CROSSING FOR CONSTRUCTION OF A NEW BRIDGE STRUCTURE AND DRIVEWAY AND UPDATES TO THE EXISTING DRIVEWAY AND STREAM CROSSING.
  - ALL GRADING AND WORK WITHIN THE STREAM, STREAM BUFFER, FLOODPLAIN AREAS, AND WETLAND BUFFER AREAS SHALL BE MINIMIZED TO THE EXTENT REQUIRED TO CONSTRUCT THE PROPOSED HOUSE AND SHARED DRIVEWAY. ANY DISTURBANCES TO THE STREAM AND BUFFERS MUST BE STABILIZED AND RESTORED.
  - COMPLIANCE WITH ALL ATTACHED COMMENTS FROM THE DEVELOPMENT ENGINEERING DIVISION DATED 10/26/2016.
  - INCLUDE THE ALTERNATIVE COMPLIANCE REQUEST NUMBER, DESCRIPTION, AND DECISION ON ALL ASSOCIATED AND FUTURE PLANS.
- A TOTAL OF 0.50 ACRES OF LAND SHALL BE DEDICATED TO HOWARD COUNTY, MD FOR THE PURPOSE OF EXTENDING ALLUITT LANE (A PUBLIC ROAD).
- THERE IS AN EXISTING DWELLING LOCATED ON LOT 14 TO REMAIN. NO NEW BUILDINGS, EXTENSIONS, OR ADDITIONS TO THE EXISTING DWELLING ARE TO BE CONSTRUCTED AT A DISTANCE LESS THAN THE ZONING REGULATION REQUIREMENTS. THE EXISTING BARN AND GARAGE SHALL BE RAZED PRIOR TO THE RECORDED OF THE PLAN.
- THE TWO PROPOSED USE-IN-COMMON DRIVEWAYS WILL INCLUDE PULL OVER AREAS DESIGNED TO ALLOW VEHICLES TO PASS ON-COMING VEHICLES.
- PER SECTION 16.120(1)(3) OF THE REGULATIONS, DP2 HAS DECIDED THAT DIRECT PUBLIC ROAD FRONTAGE FOR NON-BUILDABLE PRESERVATION PARCELS C, D, E, F AND H IS NOT REQUIRED. THIS DECISION WAS MADE DUE TO DESIGN CONSTRAINTS, THE FACT THAT THE PARCELS ARE ONLY FOR SWM FACILITIES, AND BECAUSE THE PARCELS WILL HAVE ADEQUATE PUBLIC ROAD ACCESS VIA THE USE-IN-COMMON DRIVEWAYS FOR ANY REQUIRED MAINTENANCE OF THE SWM FACILITIES.
- FOR ANY PROPOSED PUBLIC ROADWAY, LESS THAN 26' WIDE, DPW-Traffic MAY RESTRICT PARKING ALONG ONE SIDE OF THE ROADWAY TO ALLOW FIRE AND EMERGENCY RESPONSE VEHICLES TO SAFELY MANUEVER THROUGH THIS ROADWAY.

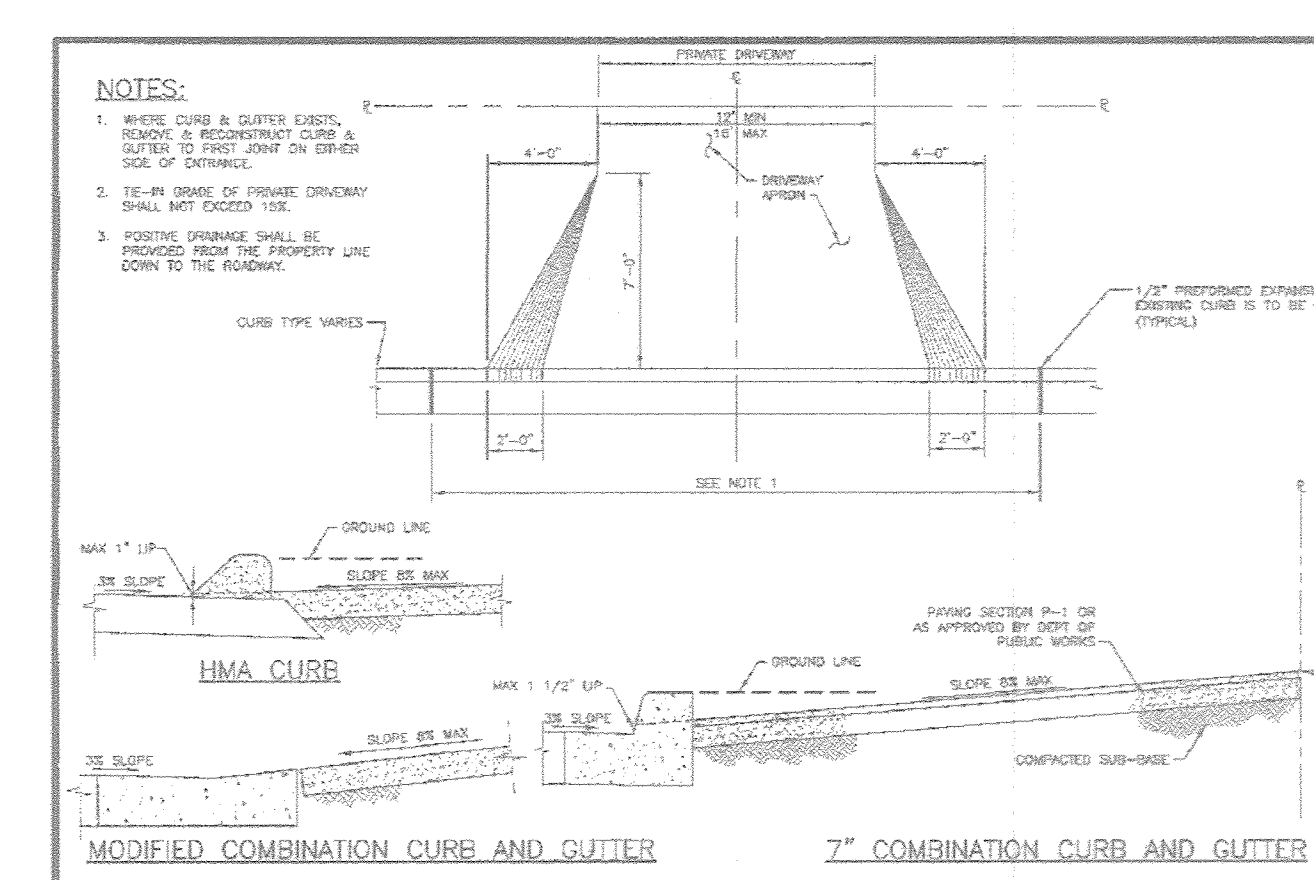


HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Name: <i>[Signature]</i> Title: Dist. Secy of Eng'g	<b>CURB AND GUTTER</b> 7" Transition to Modified & Nose Down	Detail <b>R-3.02</b>
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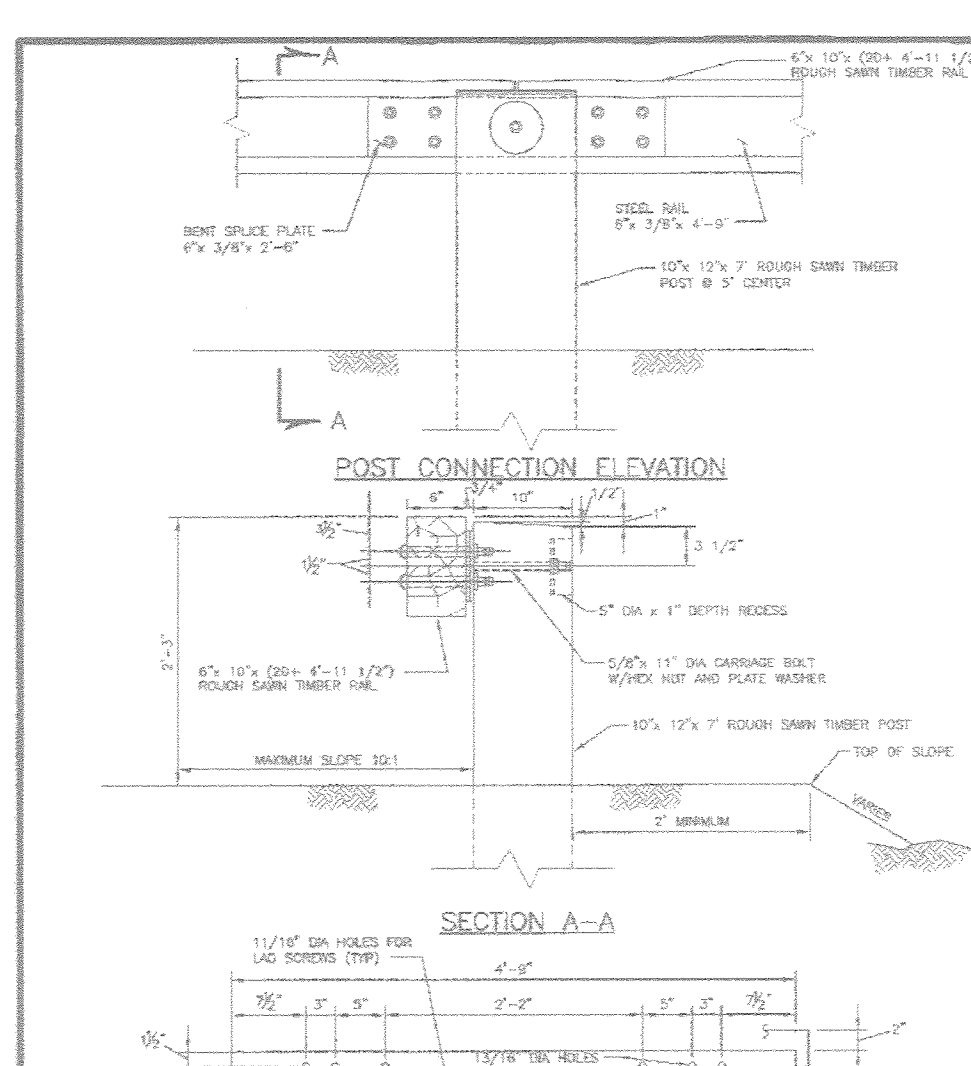


HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Name: <i>[Signature]</i> Title: Dist. Secy of Eng'g	<b>TEE TURN-AROUND Offset Private</b>	Detail <b>R-9.02</b>
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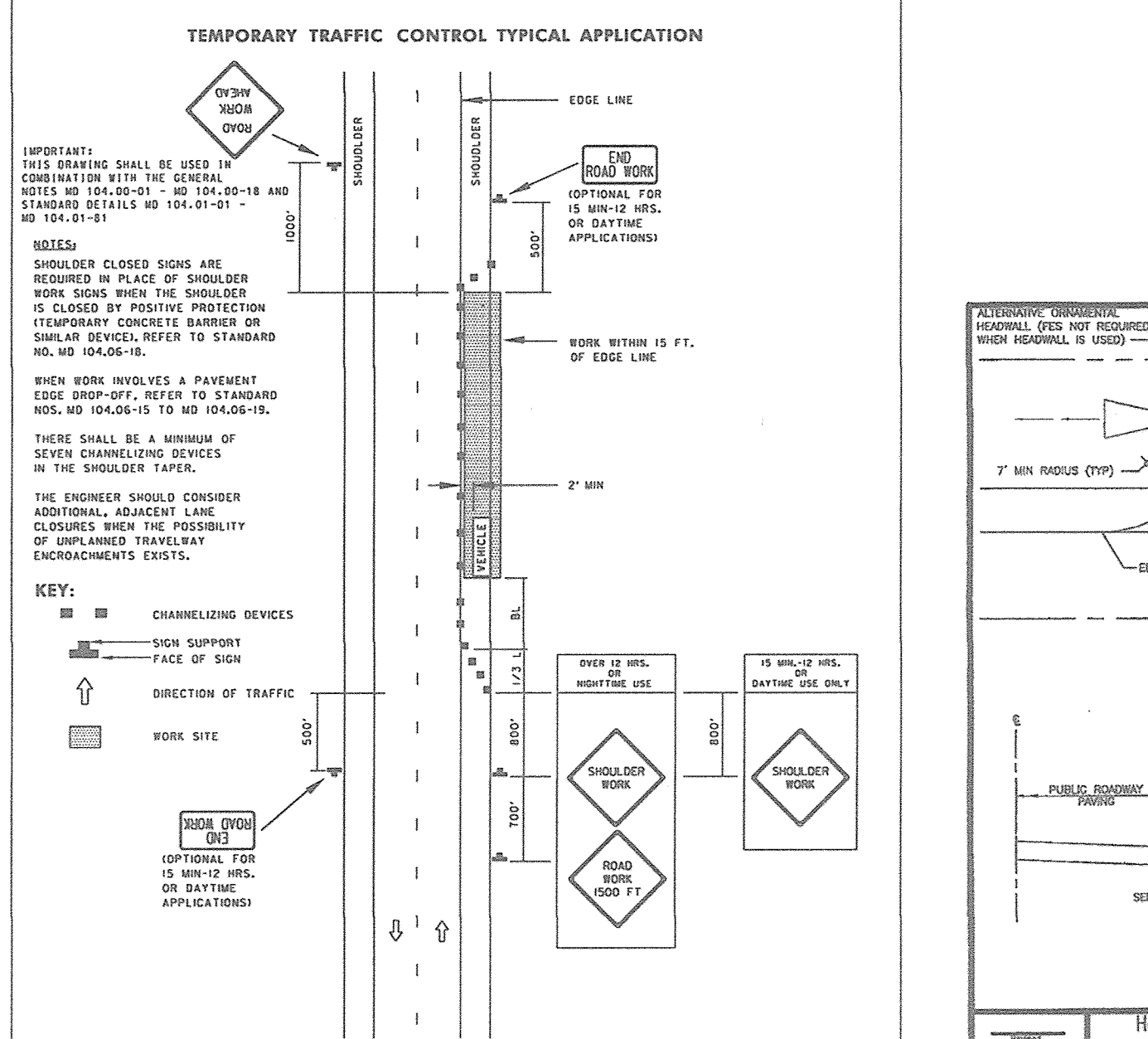
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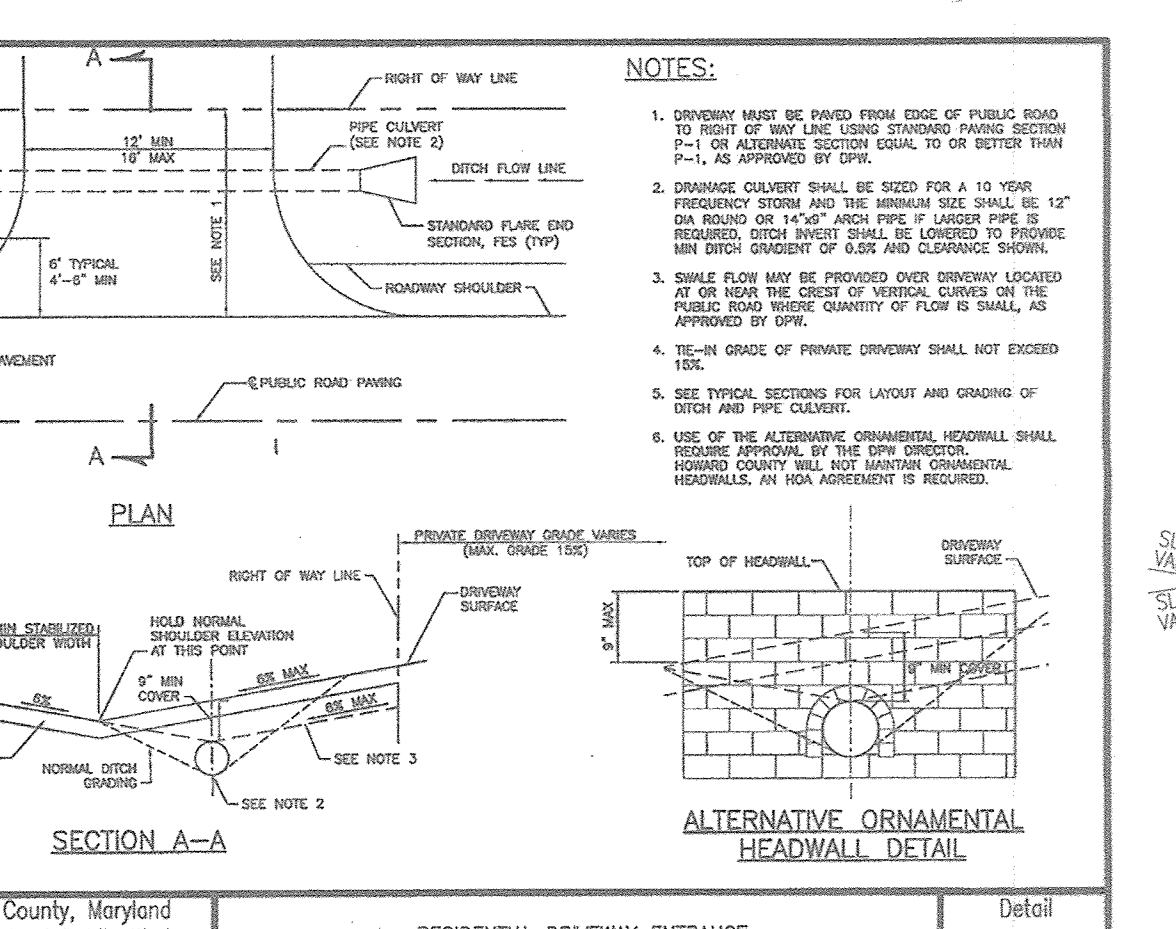
HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Name: <i>[Signature]</i> Title: Dist. Secy of Eng'g	<b>RESIDENTIAL DRIVEWAY ENTRANCE</b> Closed Section Roadway without Sidewalk	Detail <b>R-6.05</b>
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HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Name: <i>[Signature]</i> Title: Dist. Secy of Eng'g	<b>DEAD END BARRICADE</b> Type B	Detail <b>R-5.10</b>
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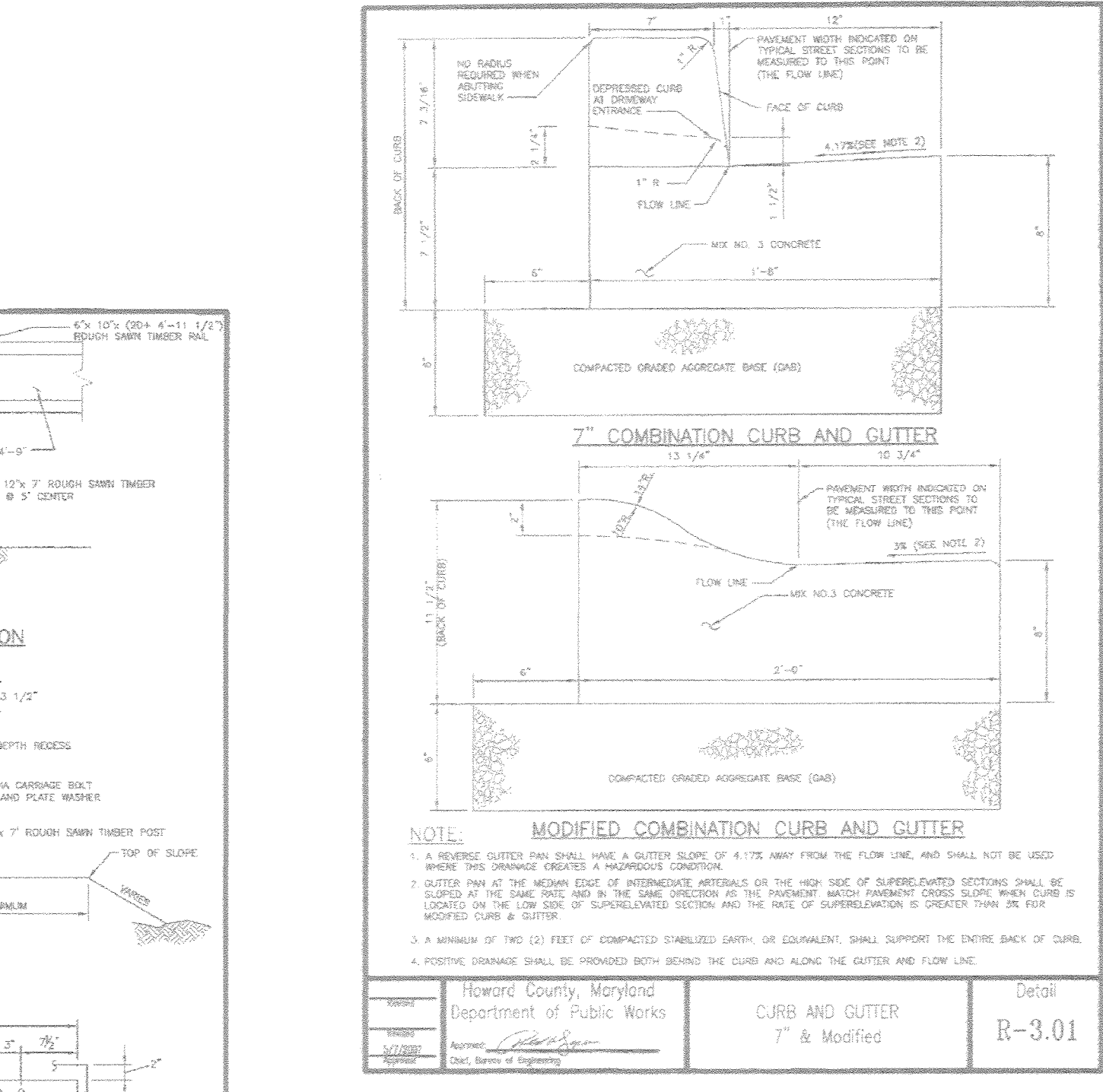
HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Name: <i>[Signature]</i> Title: Dist. Secy of Eng'g	<b>RESIDENTIAL DRIVEWAY ENTRANCE</b> Open Section Roadway	Detail <b>R-6.06</b>
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HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Name: <i>[Signature]</i> Title: Dist. Secy of Eng'g	<b>RESIDENTIAL DRIVEWAY ENTRANCE</b> Open Section Roadway	Detail <b>R-6.06</b>
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SECTION NUMBER	ROAD AND STREET CLASSIFICATION	PROPOSED MATERIAL (INCHES)	3 TO 4 TO 5 TO 6 TO 7		3 TO 4 TO 5 TO 6 TO 7		
			MIN. MIN. MIN. MIN.	MIN. MIN. MIN. MIN.			
P-1	PRIVATE DRIVEWAY, RESIDENTIAL AND NON-RESIDENTIAL, DRIVEWAY 2' REARWARDS PER DAY	HMA SUPERFINE FINE SURFACE 9.5 MM PG 64-26, LEVEL 1 (ES&L)	1.5	1.5	1.5	1.5	1.5
		HMA SUPERFINE INTERMEDIATE SURFACE (H&I) 9.5 MM PG 64-26, LEVEL 1 (ES&L)	0.5	0.5	0.5	0.5	0.5
P-2	PRIVATE DRIVEWAY, RESIDENTIAL AND NON-RESIDENTIAL, WITH NO MORE THAN 10' TO REARWARDS PER DAY	HMA SUPERFINE FINE SURFACE 9.5 MM PG 64-26, LEVEL 1 (ES&L)	1.5	1.5	1.5	1.5	1.5
		HMA SUPERFINE INTERMEDIATE SURFACE (H&I) 9.5 MM PG 64-26, LEVEL 1 (ES&L)	0.5	0.5	0.5	0.5	0.5
P-3	LOCAL DRIVEWAY, RESIDENTIAL AND NON-RESIDENTIAL, WITH NO MORE THAN 10' TO REARWARDS PER DAY	HMA SUPERFINE FINE SURFACE 9.5 MM PG 64-26, LEVEL 1 (ES&L)	1.5	1.5	1.5	1.5	1.5
		HMA SUPERFINE INTERMEDIATE SURFACE (H&I) 9.5 MM PG 64-26, LEVEL 1 (ES&L)	0.5	0.5	0.5	0.5	0.5
P-4	MAJOR COLLECTORS	HMA SUPERFINE FINE SURFACE 9.5 MM PG 64-26, LEVEL 1 (ES&L)	2.0	2.0	2.0	2.0	2.0
		HMA SUPERFINE INTERMEDIATE SURFACE (H&I) 9.5 MM PG 64-26, LEVEL 1 (ES&L)	1.0	1.0	1.0	1.0	1.0

HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Name: <i>[Signature]</i> Title: Dist. Secy of Eng'g	<b>PAVING SECTIONS</b> P-1 to P-4	Detail <b>R-2.01</b>
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HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS Name: <i>[Signature]</i> Title: Dist. Secy of Eng'g	<b>CURB AND GUTTER</b> 7" & Modified	Detail <b>R-3.01</b>
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OWNER ESTATES AT RIVER HILL, LLC MICHAEL PEHAL MEMBER 3675 PARK AVE. SUITE 301 ELLICOTT CITY, MD 21043 (410) 480-0023	DEVELOPER TRINITY HOMES MARY LAND, LLC 3675 PARK AVE. SUITE 301 ELLICOTT CITY, MD 21043 (410) 480-0023
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REVISION: MODIFICATION TO ONLOT HOUSES SWM AND GRADING 4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN

**GENERAL NOTES AND SITE DETAILS**

**THE ESTATES AT RIVER HILL**

LOTS 1-15, BUILDABLE PRESERVATION PARCEL "A", AND NON-BUILDABLE PRESERVATION PARCELS "B" - "H" A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

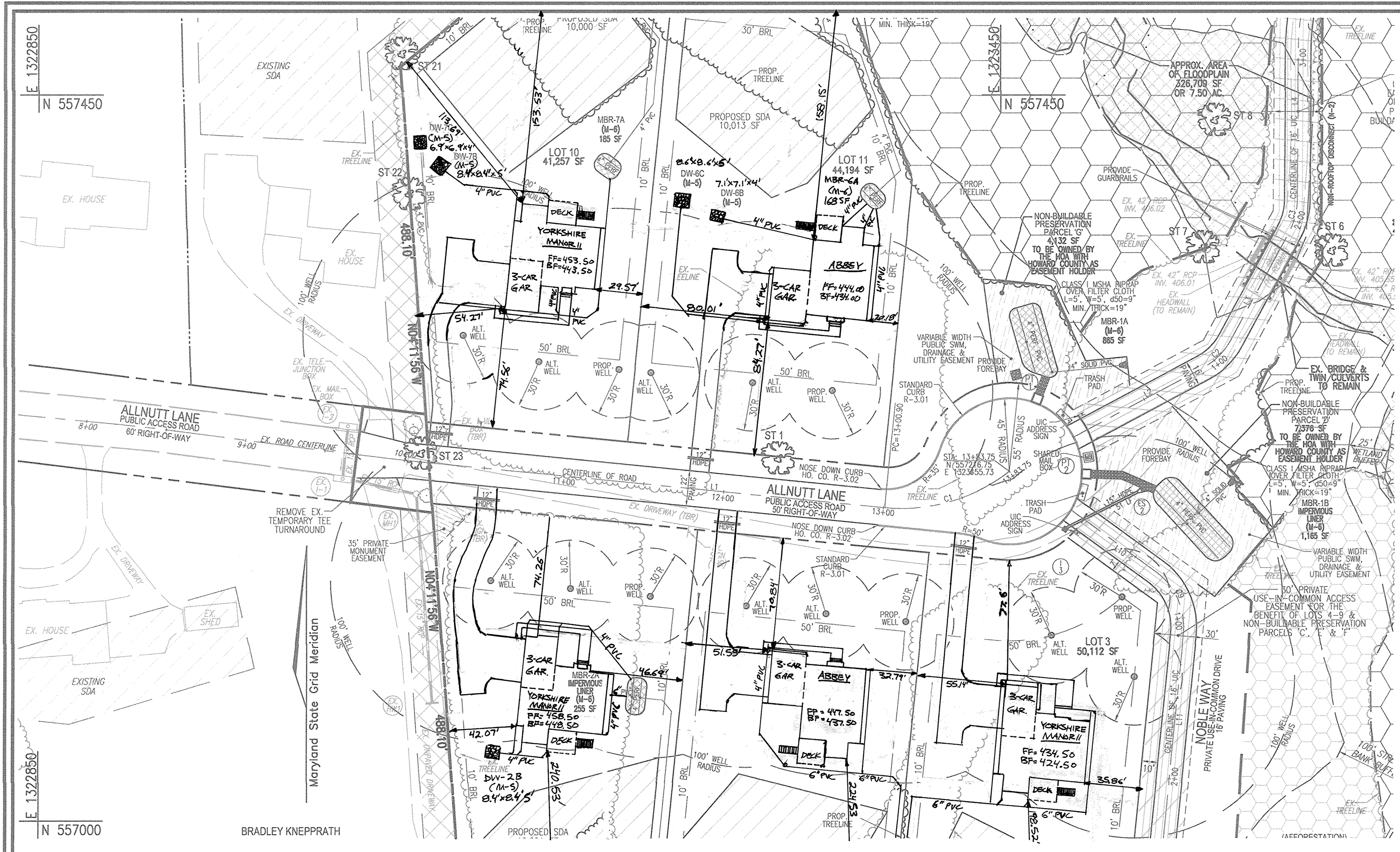
PARCEL: 389 TAX MAP: 34 GRID: 23 5TH ELECTION DISTRICT ZONED: RR-DEO L 4772 F. 285 HOWARD COUNTY, MARYLAND

**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

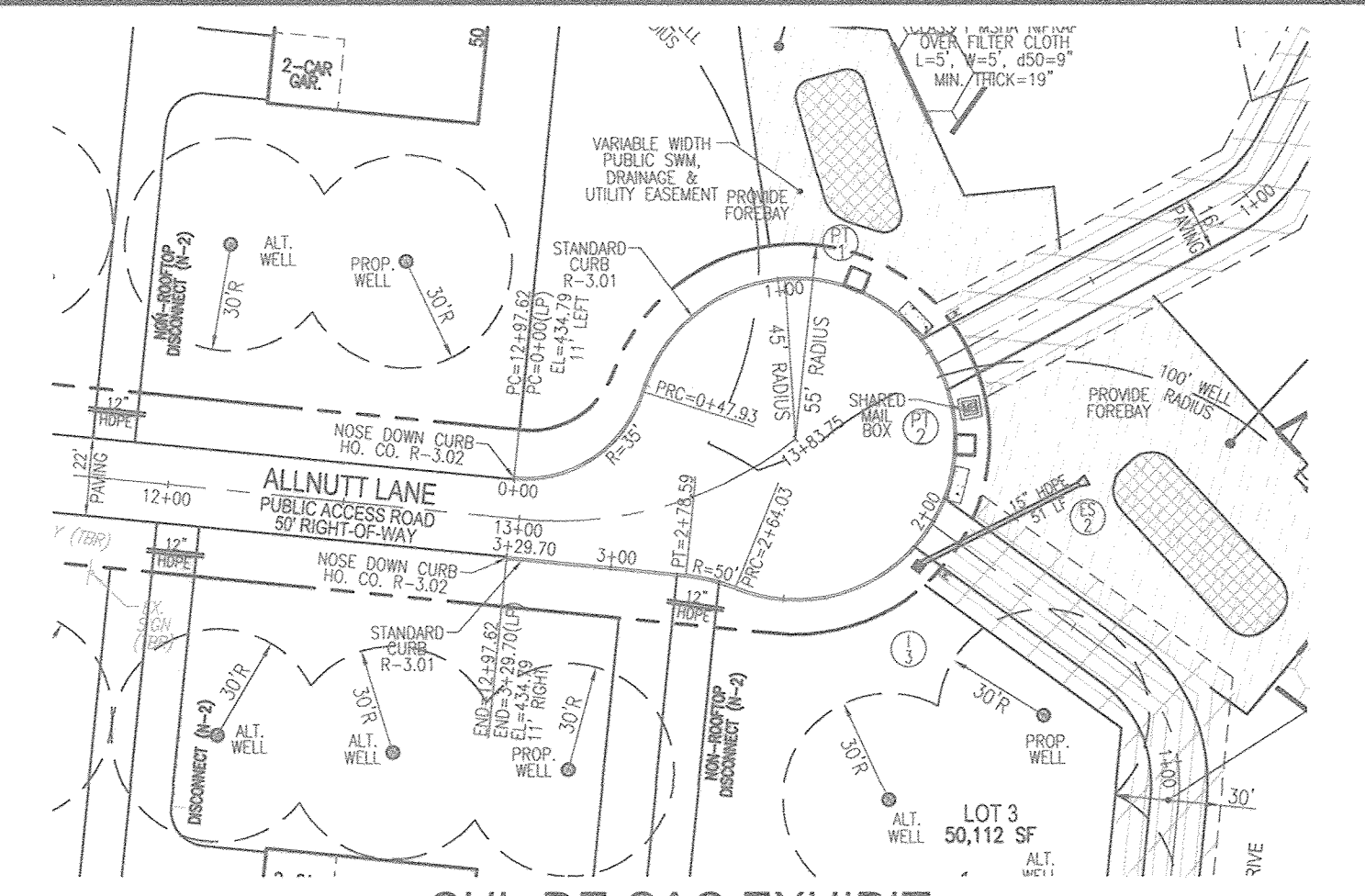
DESIGN BY: RHV  
 DRAWN BY: JMR  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

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. 141818 EXPIRATION DATE: 09-27-2020

2 SHEET OF 33



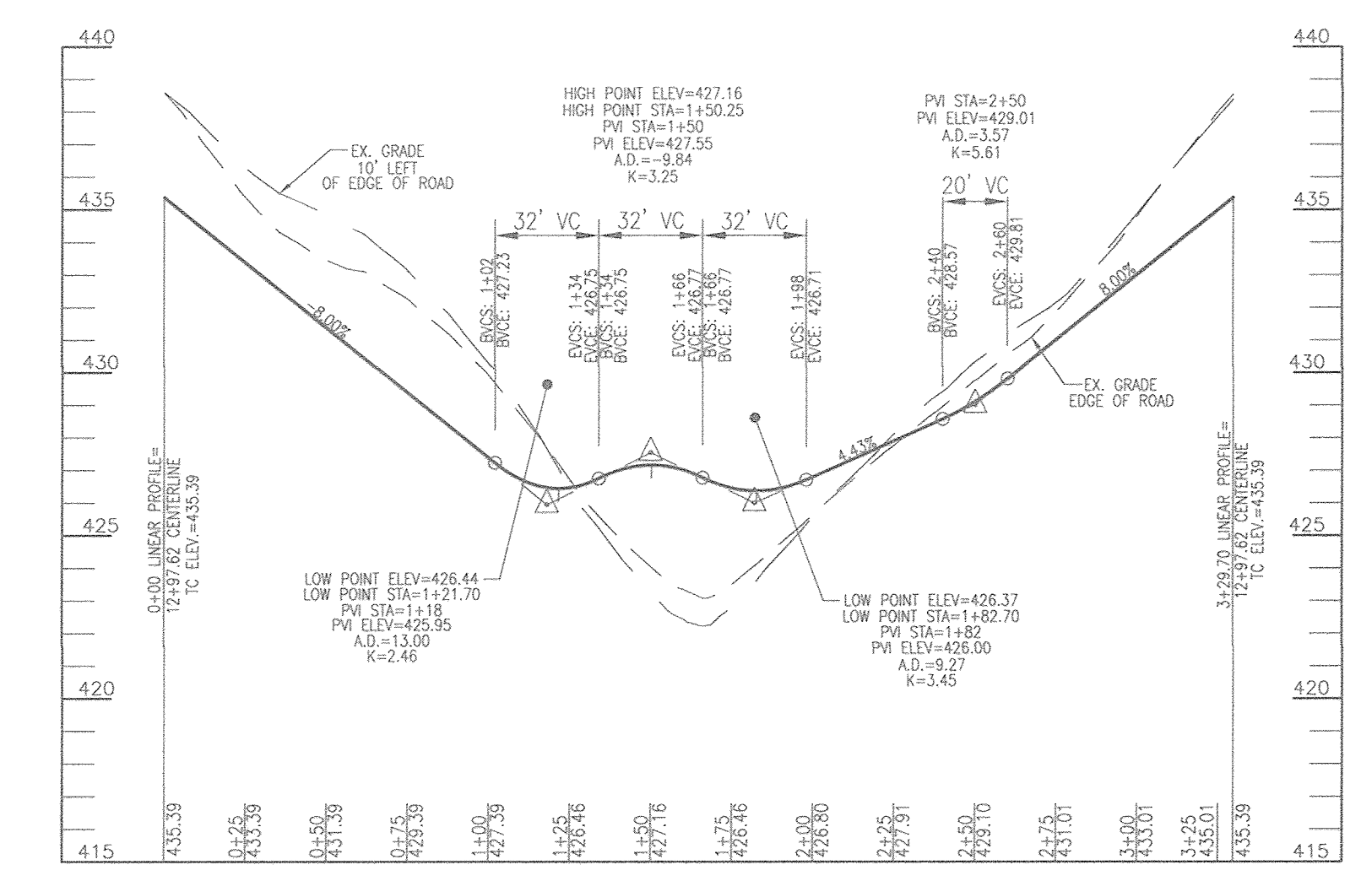
- LEGEND:**
- PROPERTY LINE
  - RIGHT-OF-WAY LINE
  - ADJACENT PROPERTY LINE
  - EXISTING EDGE OF PAVING
  - EXISTING STREAM BUFFER
  - EXISTING STREAM
  - EXISTING TREETRINE
  - PROPOSED TREETRINE
  - EXISTING WETLANDS
  - EXISTING WETLAND BUFFER
  - EXISTING SPECIMEN TREES
  - EXISTING WOOD FENCE
  - EXISTING METAL FENCE
  - EX. PUBLIC 100-YEAR FLOOD PLAN
  - EX. 20" DRAINAGE & UTILITY EASEMENT (PLAT 12948)
  - PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
  - PROP. PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
  - PROP. 35' PRIVATE MONUMENT EASEMENT
  - PROP. SEWAGE DISPOSAL AREA
  - PROP. WELL AREA



**CUL-DE-SAC EXHIBIT**  
SCALE: 1"=50'

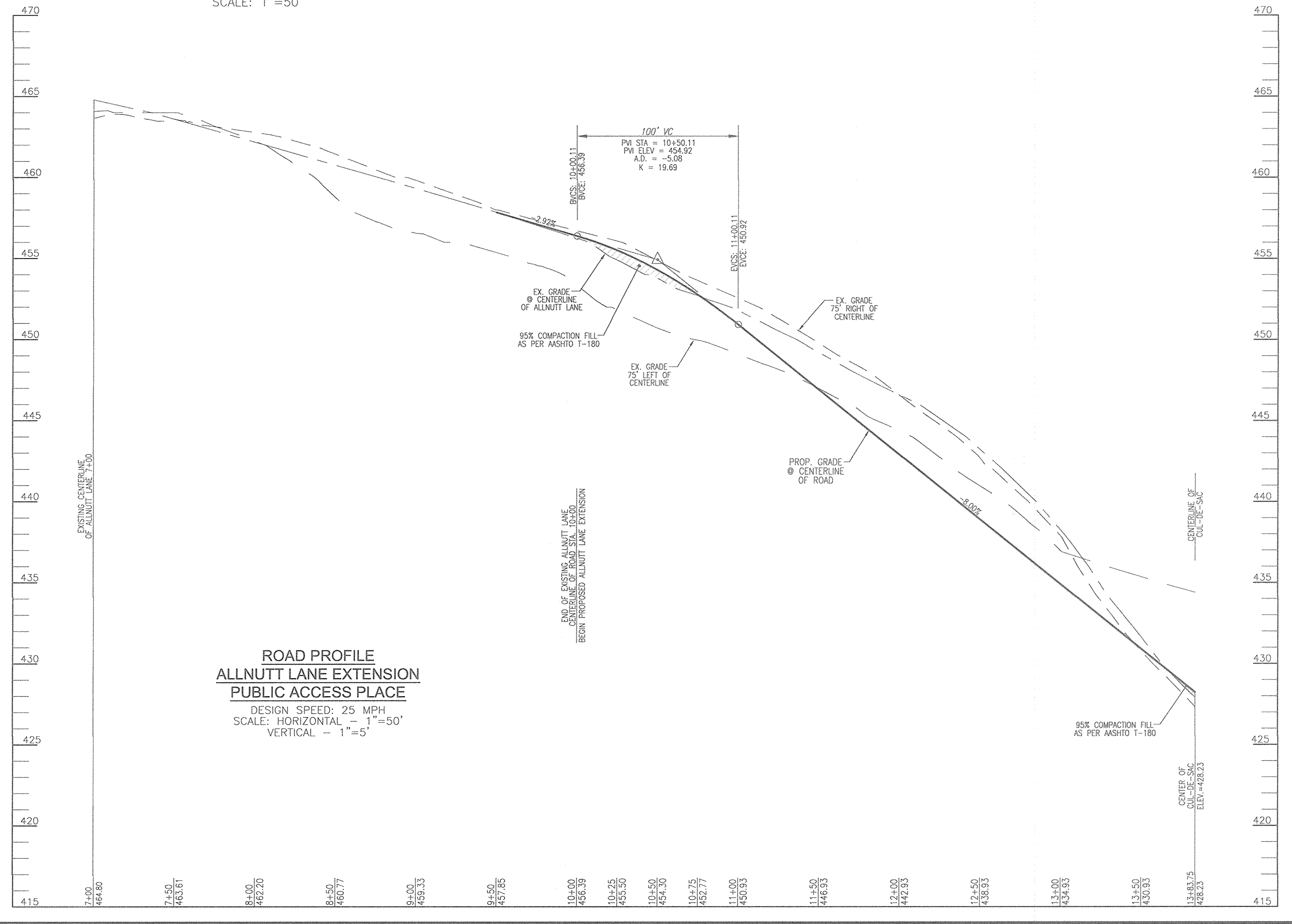
**NOTE:**  
OLINA WAY AND NOBLE WAY SHALL UTILIZE HOWARD COUNTY DRIVEWAY DETAIL R-6.05. SEE DETAIL LOCATED ON SHEET 2

**NOTE:**  
MBR-1A AND MBR-1B ARE LOCATED IN A PUBLIC SWM EASEMENT. FACILITIES ARE TO BE PRIVATELY OWNED BY THE HOMEOWNERS ASSOCIATION AND JOINTLY MAINTAINED BY THE HOMEOWNERS ASSOCIATION AND HOWARD COUNTY.



**LINEAR PROFILE**  
**ALLNUTT LANE**  
**PUBLIC ACCESS PLACE**  
DESIGN SPEED: 25 MPH  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

**ALLNUTT LANE EXTENSION**  
SCALE: 1"=50'



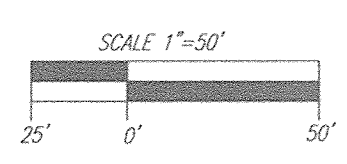
**ROAD PROFILE**  
**ALLNUTT LANE EXTENSION**  
**PUBLIC ACCESS PLACE**  
DESIGN SPEED: 25 MPH  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

**ALLNUTT LANE LINE TABLE**

LINE	BEARING	DISTANCE
L1	S84°24'03"E	300.90'

**ALLNUTT LANE CURVE TABLE**

CURVE	RADIUS	LENGTH	DELTA	TAN	CHORD
C-1	108.00'	82.85'	43°33'01"	43.54'	N73°49'27"E 80.87'



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12-2-18

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 1-10-19

NO.	REVISION	DATE
1	MODIFICATION TO ONSET HOUSES SWM AND GRADING	4-10-19

**REVISED FINAL ROAD CONSTRUCTION PLAN**  
**PUBLIC ROAD PLAN, PROFILES AND DETAILS**  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'  
 A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

PARCEL: 369  
 ZONED: RR-050  
 TAX MAP: 34 GRID: 23  
 L 4772 / E 285  
 5TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 3300 N. RIDGE ROAD, SUITE 110  
 ELLICOTT CITY, MD 21104-3  
 TEL: 410.461.7666  
 FAX: 410.461.8961

**PROFESSIONAL CERTIFICATE**

DESIGN BY: RHY  
 DRAWN BY: JMR  
 CHECKED BY: RHY  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

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

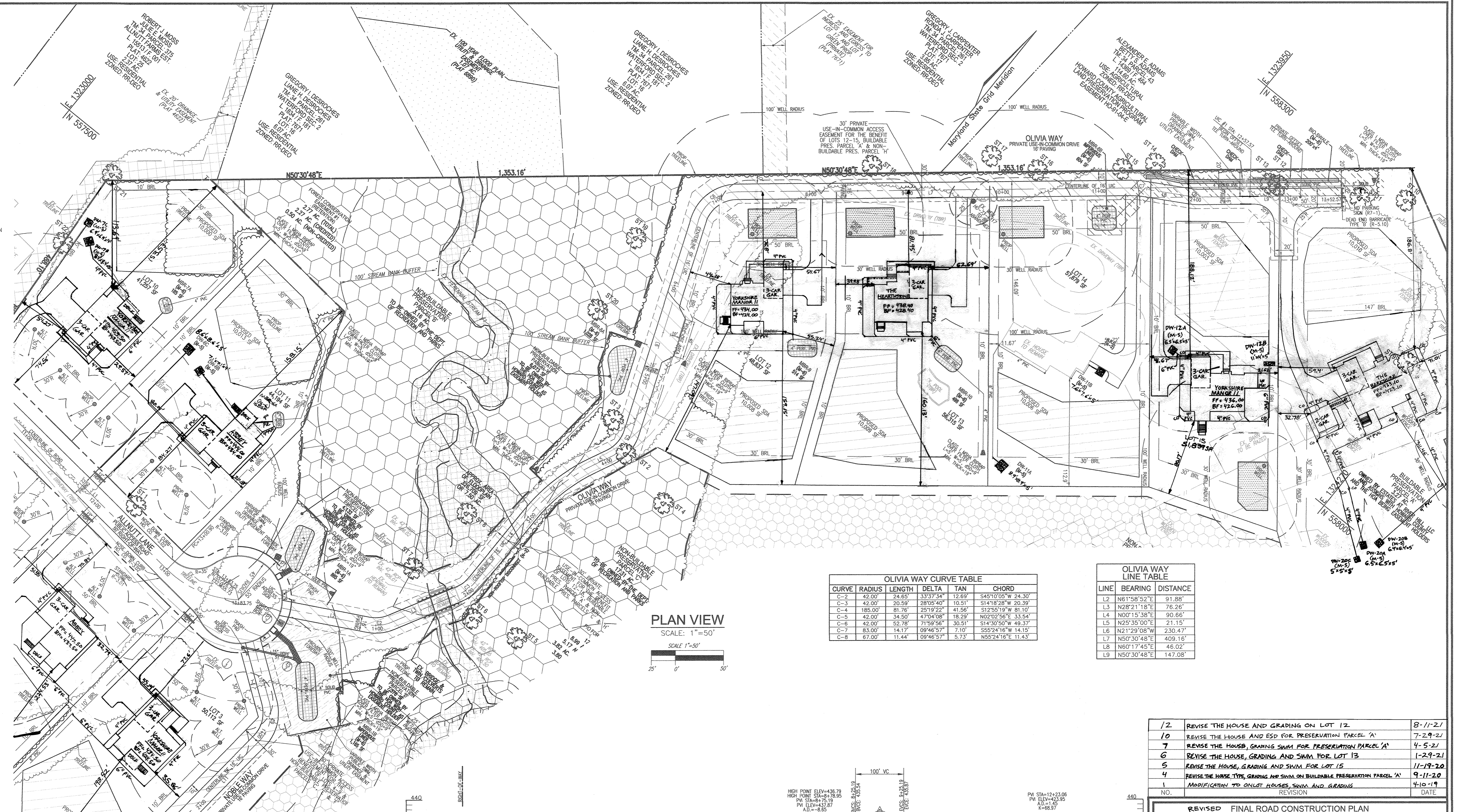
3 SHEET OF 33

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAU, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

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

**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAIN
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SWIM, DRAINAGE & UTILITY EASEMENT
- PROP. 35' PRIVATE MONUMENT EASEMENT
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA



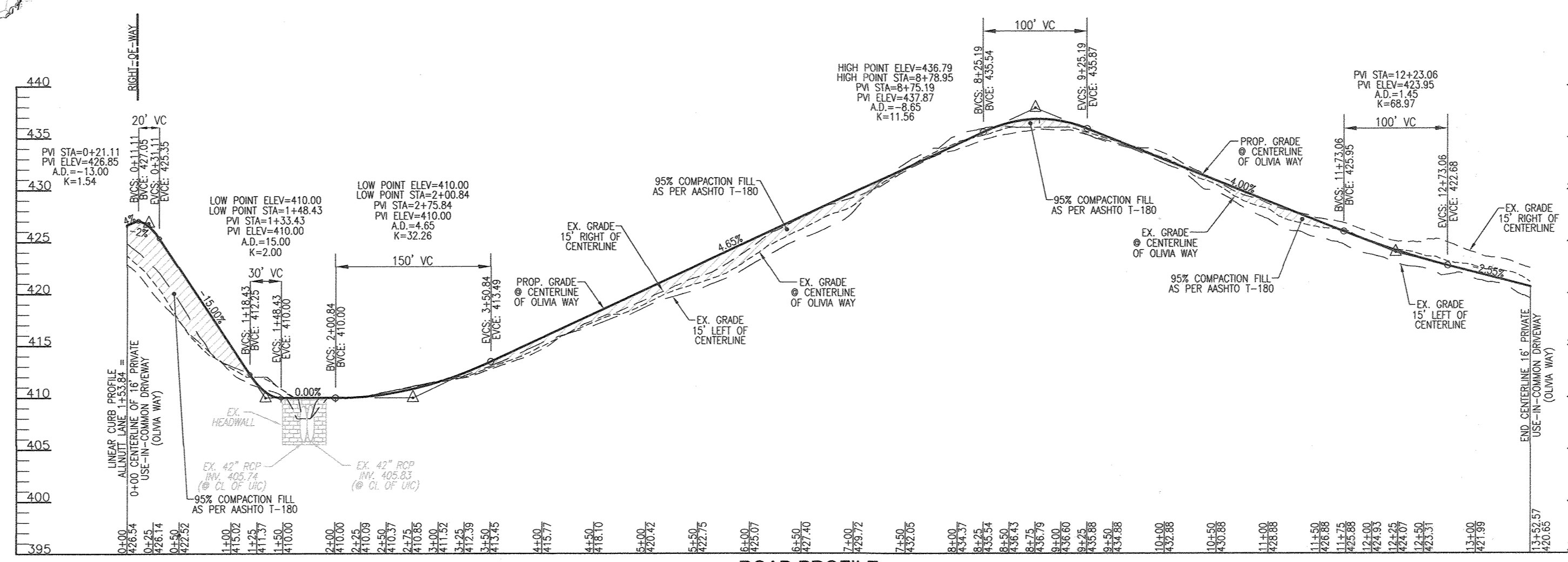
**PLAN VIEW**  
SCALE: 1"=50'

**OLIVIA WAY CURVE TABLE**

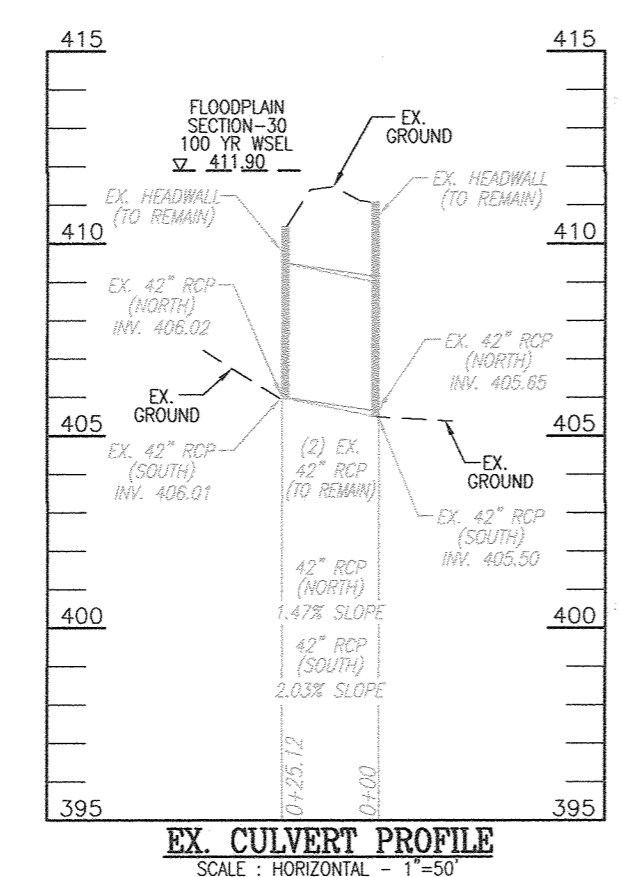
CURVE	RADIUS	LENGTH	DELTA	TAN	CHORD
C-2	42.00'	24.85'	33°37'34"	12.89'	S45°10'05" W 24.30'
C-3	42.00'	20.59'	28°05'40"	10.51'	S14°18'28" W 20.39'
C-4	185.00'	81.76'	25°19'22"	41.56'	S12°35'19" W 81.10'
C-5	42.00'	34.50'	42°04'08"	18.29'	N02°02'56" E 33.54'
C-6	42.00'	52.78'	71°59'56"	30.51'	S14°30'50" W 49.37'
C-7	83.00'	14.17'	09°46'57"	7.10'	S55°24'16" W 14.15'
C-8	87.00'	11.44'	09°46'57"	5.73'	N55°24'16" E 11.43'

**OLIVIA WAY LINE TABLE**

LINE	BEARING	DISTANCE
L2	N61°58'52" E	91.88'
L3	N28°21'18" E	76.26'
L4	N00°15'38" E	90.66'
L5	N25°35'00" E	21.15'
L6	N21°29'08" W	230.47'
L7	N50°30'48" E	409.16'
L8	N60°17'45" E	46.02'
L9	N50°30'48" E	147.08'



**ROAD PROFILE**  
OLIVIA WAY (PRIVATE USE-IN-COMMON)  
SCALE: HORIZONTAL - 1"=100'  
VERTICAL - 1"=10'



**EX. CULVERT PROFILE**  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

NO.	REVISION	DATE
1/2	REVISE THE HOUSE AND GRADING ON LOT 12.	8-11-21
10	REVISE THE HOUSE AND BSD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING SWIM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWIM FOR LOT 13	1-29-21
5	REVISE THE HOUSE, GRADING AND SWIM FOR LOT 15	11-19-20
4	REVISE THE HOUSE TYPE, GRADING AND SWIM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
1	MODIFICATION TO ONLOT HOUSES, SWIM, AND GRADING	4-10-19
N/A	REVISION	

**REVISED FINAL ROAD CONSTRUCTION PLAN**  
**OLIVIA WAY (PRIVATE USE-IN-COMMON)**  
**PROFILE AND DETAILS**  
**THE ESTATES AT RIVER HILL**  
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'  
A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL 389 TAX MAP 34 GRID: 23 ZONED: RR-BSD  
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
3900 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666  
ELLCOTT CITY, MD 21043 FAX: 410.461.8961

**PROFESSIONAL CERTIFICATE**  
STATE OF MARYLAND  
ROBERT H. VOGEL  
REGISTERED PROFESSIONAL ENGINEER  
DESIGN BY: RHV  
DRAWN BY: JMR  
CHECKED BY: JMR  
DATE: NOVEMBER 2018  
SCALE: AS SHOWN  
W.O. NO.: 15-39  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2020

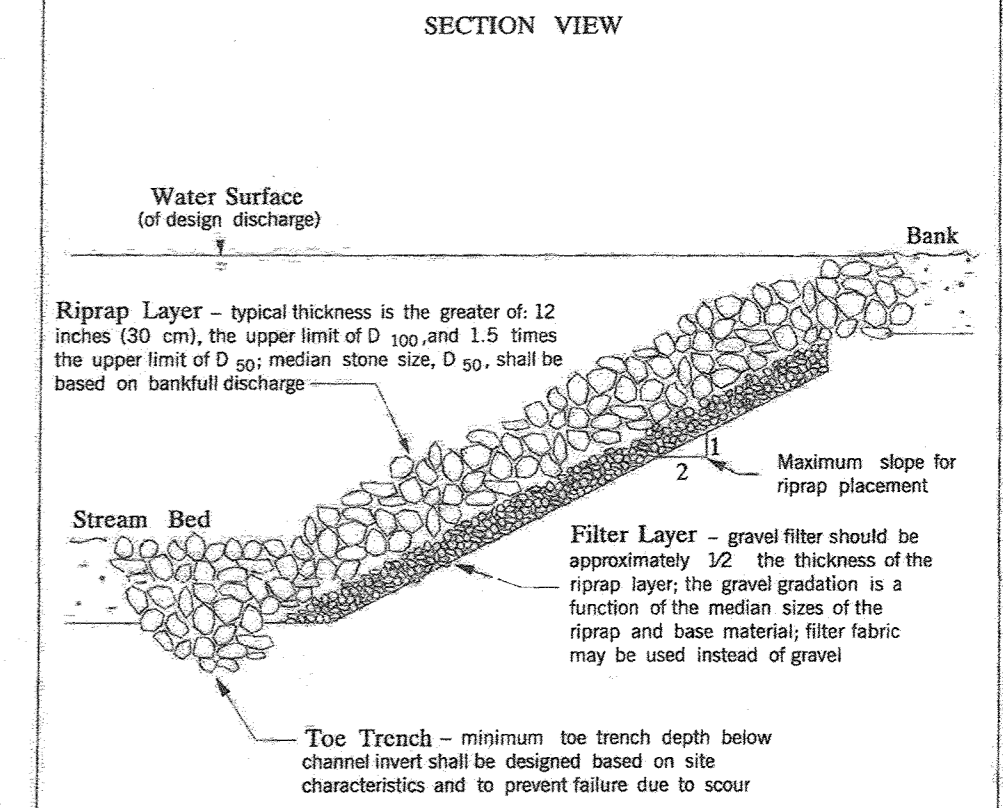
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
CHIEF, BUREAU OF HIGHWAYS  
11/27/2018  
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
12-2-18  
DATE

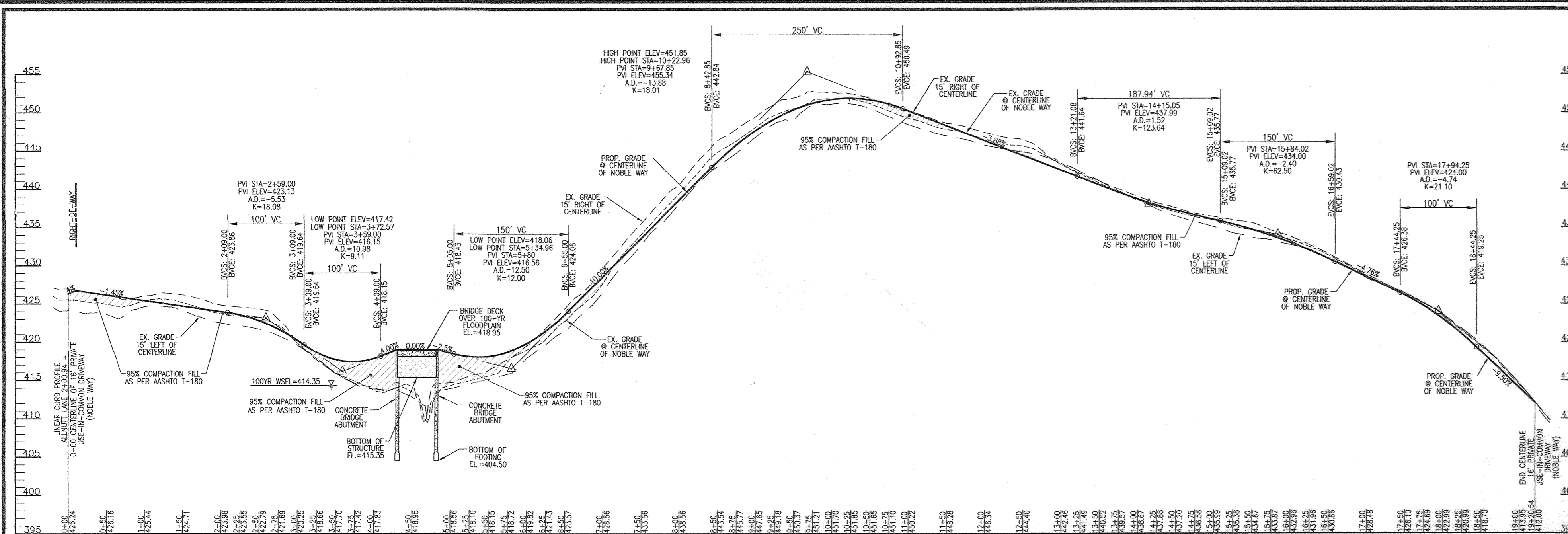
CHIEF, DIVISION OF LAND DEVELOPMENT  
1-10-19  
DATE

**OWNER**  
ESTATES AT RIVER HILL, LLC  
MICHAEL PFALL, MEMBER  
3675 PARK AVE., SUITE 301  
ELLCOTT CITY, MD 21043  
(410) 480-0023

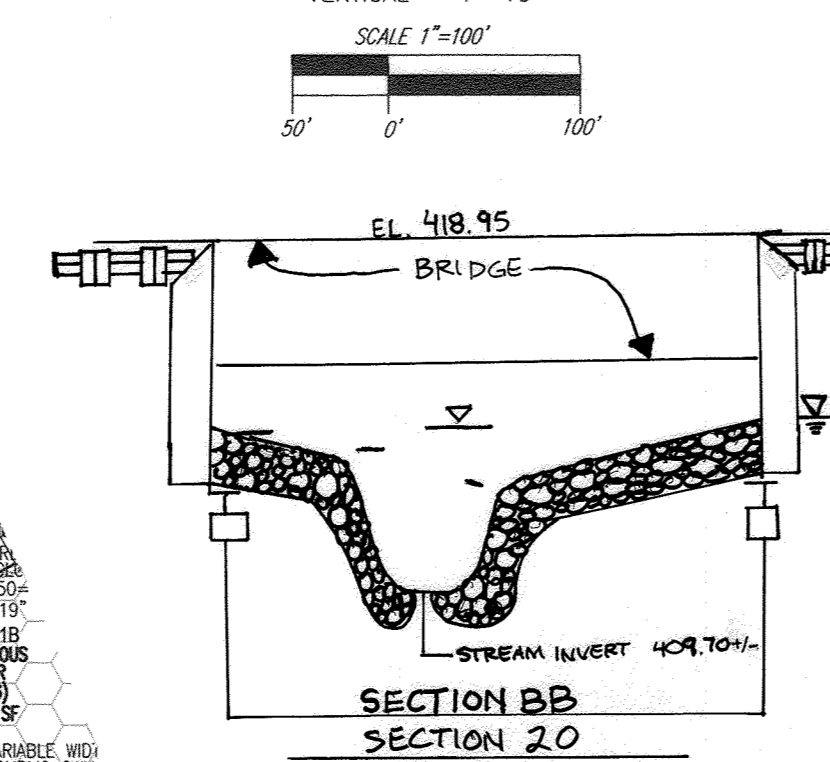
**DEVELOPER**  
TRINITY HOMES MARYLAND, LLC  
3675 PARK AVE., SUITE 301  
ELLCOTT CITY, MD 21043  
(410) 480-0023



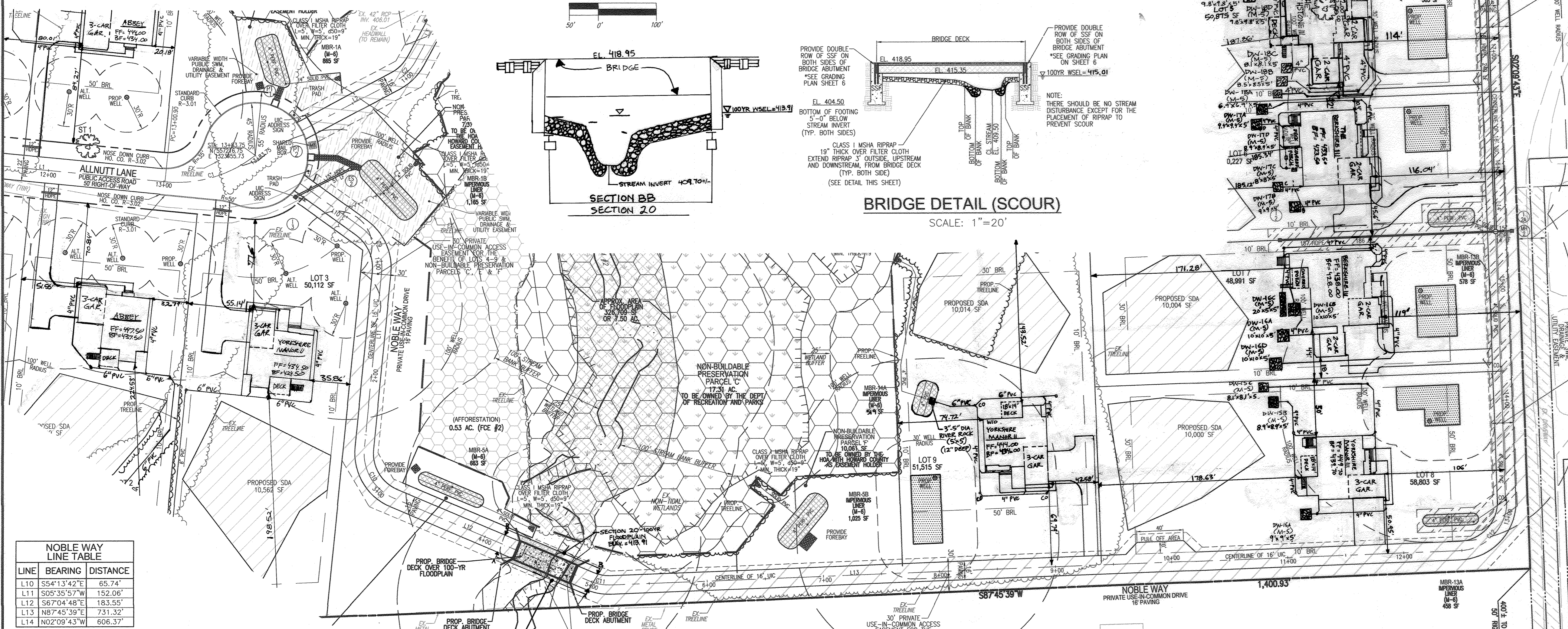
STATE OF MARYLAND  
DEPARTMENT OF THE ENVIRONMENT  
WATER MANAGEMENT ADMINISTRATION  
REVISION NOVEMBER 2009  
PAGE 21 - 4



ROAD PROFILE  
NOBLE WAY (PRIVATE 16' USE-IN-COMMON)  
SCALE: HORIZONTAL - 1"=100'  
VERTICAL - 1"=10'



BRIDGE DETAIL (SCOUR)  
SCALE: 1"=20'

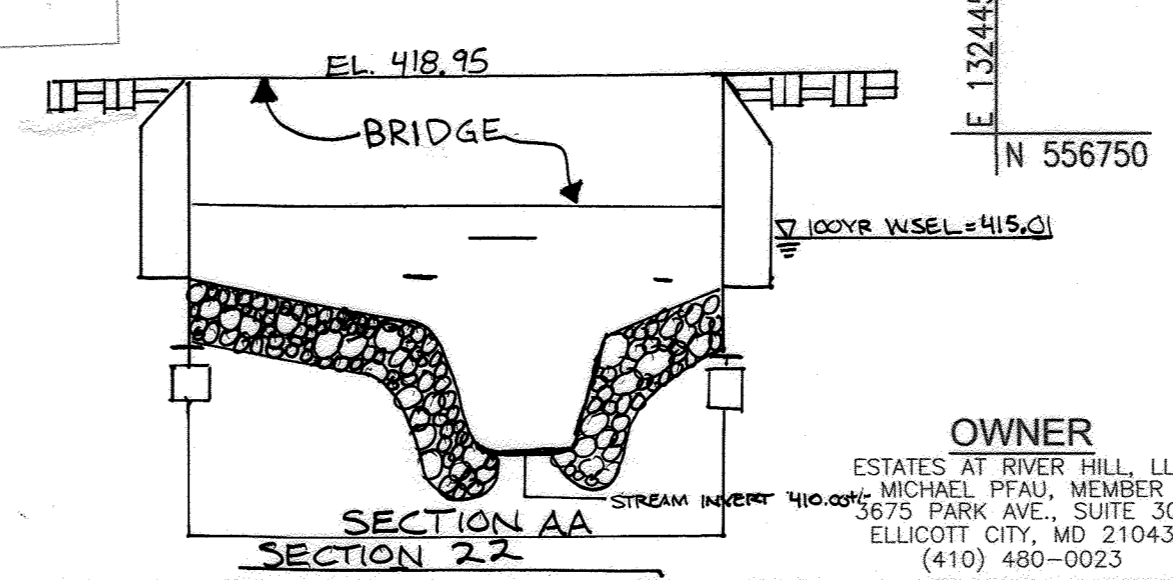


NOBLE WAY LINE TABLE

LINE	BEARING	DISTANCE
L10	S54°13'42"E	65.74'
L11	S05°35'57"W	152.06'
L12	S67°04'48"E	183.55'
L13	N87°45'39"E	731.32'
L14	N02°09'43"W	606.37'

NOBLE WAY CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TAN	CHORD
C-9	42.00'	43.88'	59°49'39"	24.16'	\$2418.52'E 41.89'
C-10	42.00'	53.28'	72°40'45"	30.90'	\$3044.25'E 49.78'
C-11	42.00'	18.44'	25°09'33"	9.37'	\$79.39'35"E 18.29'
C-12	42.00'	65.92'	89°55'22"	41.94'	\$4247.58'E 59.36'



PLAN VIEW  
SCALE: 1"=50'

REVISIONS

NO.	REVISION	DATE
14	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOTS 8 AND 9	6-22-22
13	REVISE THE PLAN TO ADD AN EXTRA DEWELL TO LOT 7 AND MOVE THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, SWM FRANKS AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE GRADING SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3)	10-25-19
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
- EX. 24' WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
- EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA

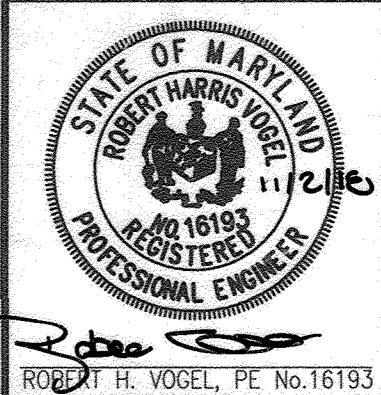
JINGLI YANG  
PETER H. L.  
TIM 34 PARCEL 36  
L. 11510/F. 001  
PLAT 12949  
LOT 4  
5.71 AC.  
USE: RESIDENTIAL ZONED, RR-DEO

REVISIONS

NO.	REVISION	DATE
13	REVISE THE PLAN TO ADD AN EXTRA DEWELL TO LOT 7 AND MOVE THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, SWM FRANKS AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE GRADING SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3)	10-25-19
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN  
NOBLE WAY (PRIVATE USE-IN-COMMON)  
PROFILE AND DETAILS  
THE ESTATES AT RIVER HILL  
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H'  
A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
3300 N. RIDGE ROAD, SUITE 110  
ELLICOTT CITY, MD 21045  
TEL: 410.461.7666  
FAX: 410.461.8961



DESIGN BY: RHY  
DRAWN BY: JMR  
CHECKED BY: RHY  
DATE: NOVEMBER 2018  
SCALE: AS SHOWN  
W.O. NO.: 15-39

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 09-27-2026.

5 SHEET OF 33

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
11/27/2018  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
12-2-18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

1-10-19  
CHIEF, DIVISION OF LAND DEVELOPMENT

G. WARREN MILES  
MARIE I. MILES  
TIM 34 PARCEL 252  
L. 1285 / F. 393  
11.00 AC.  
USE: AGRICULTURAL ZONED, RR-DEO

**SWMF NO. 3**

NON-BUILDABLE PRESERVATION PARCEL 'D'  
12,310 SF  
TO BE OWNED BY HOA

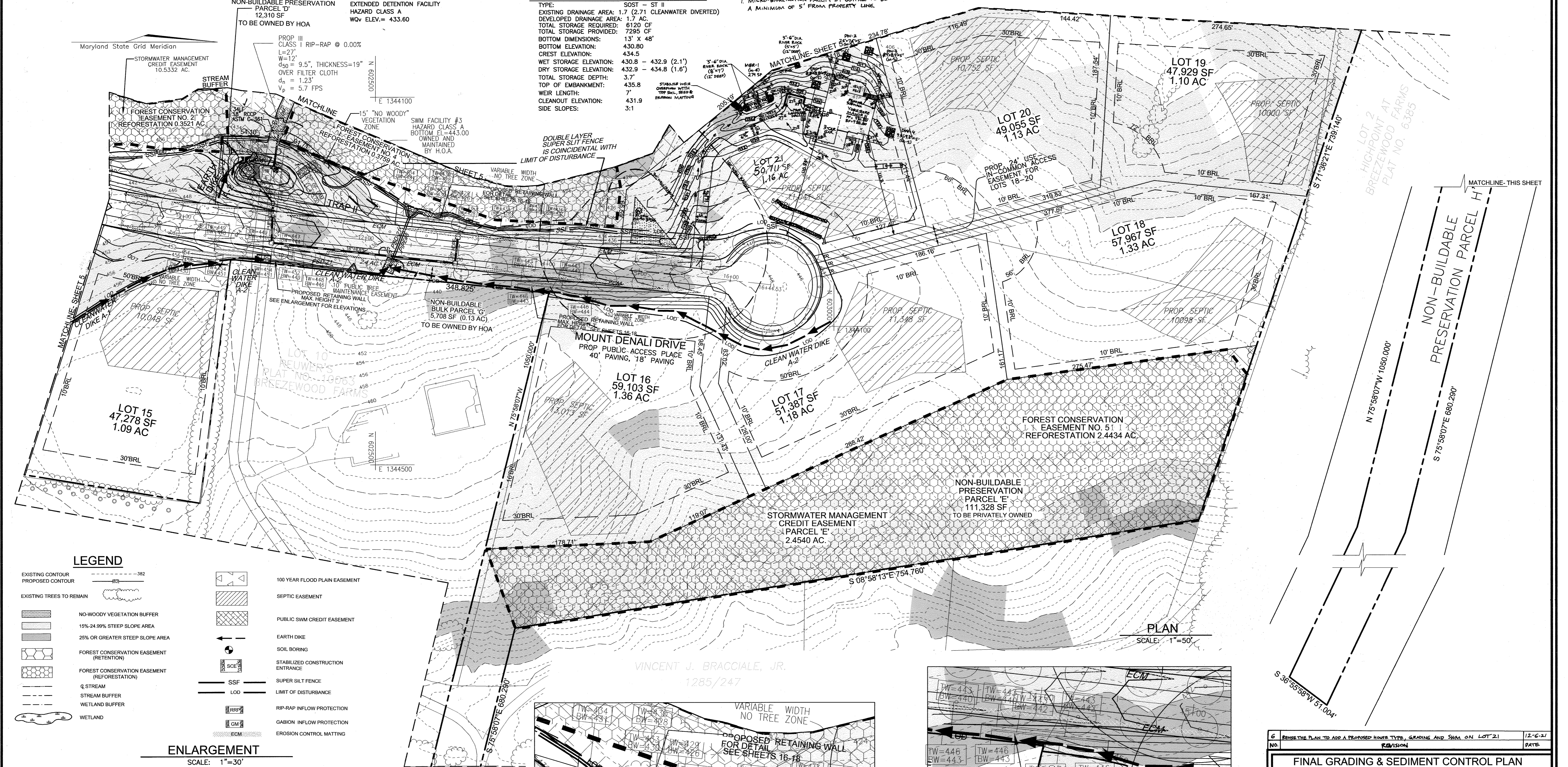
PROP III CLASS I RIP-RAP @ 0.00%  
L=27'  
W=12'  
d<sub>50</sub> = 9.5", THICKNESS=19"  
OVER FILTER CLOTH  
d<sub>n</sub> = 1.23"  
V<sub>p</sub> = 5.7 FPS

EXTENDED DETENTION FACILITY  
HAZARD CLASS A  
WQV ELEV.= 433.60

**TEMP. SEDIMENT TRAP 3**

TYPE: SOST - ST II  
EXISTING DRAINAGE AREA: 1.7 (2.71 CLEANWATER DIVERTED)  
DEVELOPED DRAINAGE AREA: 1.7 AC  
TOTAL STORAGE REQUIRED: 6120 CF  
TOTAL STORAGE PROVIDED: 7295 CF  
BOTTOM DIMENSIONS: 13' x 48'  
BOTTOM ELEVATION: 430.80  
CREST ELEVATION: 434.5  
WET STORAGE ELEVATION: 430.8 - 432.9 (2.1')  
DRY STORAGE ELEVATION: 432.9 - 434.8 (1.6')  
TOTAL STORAGE DEPTH: 3.7'  
TOP OF EMBANKMENT: 435.8  
WEIR LENGTH: 7'  
CLEANOUT ELEVATION: 431.9  
SIDE SLOPES: 3:1

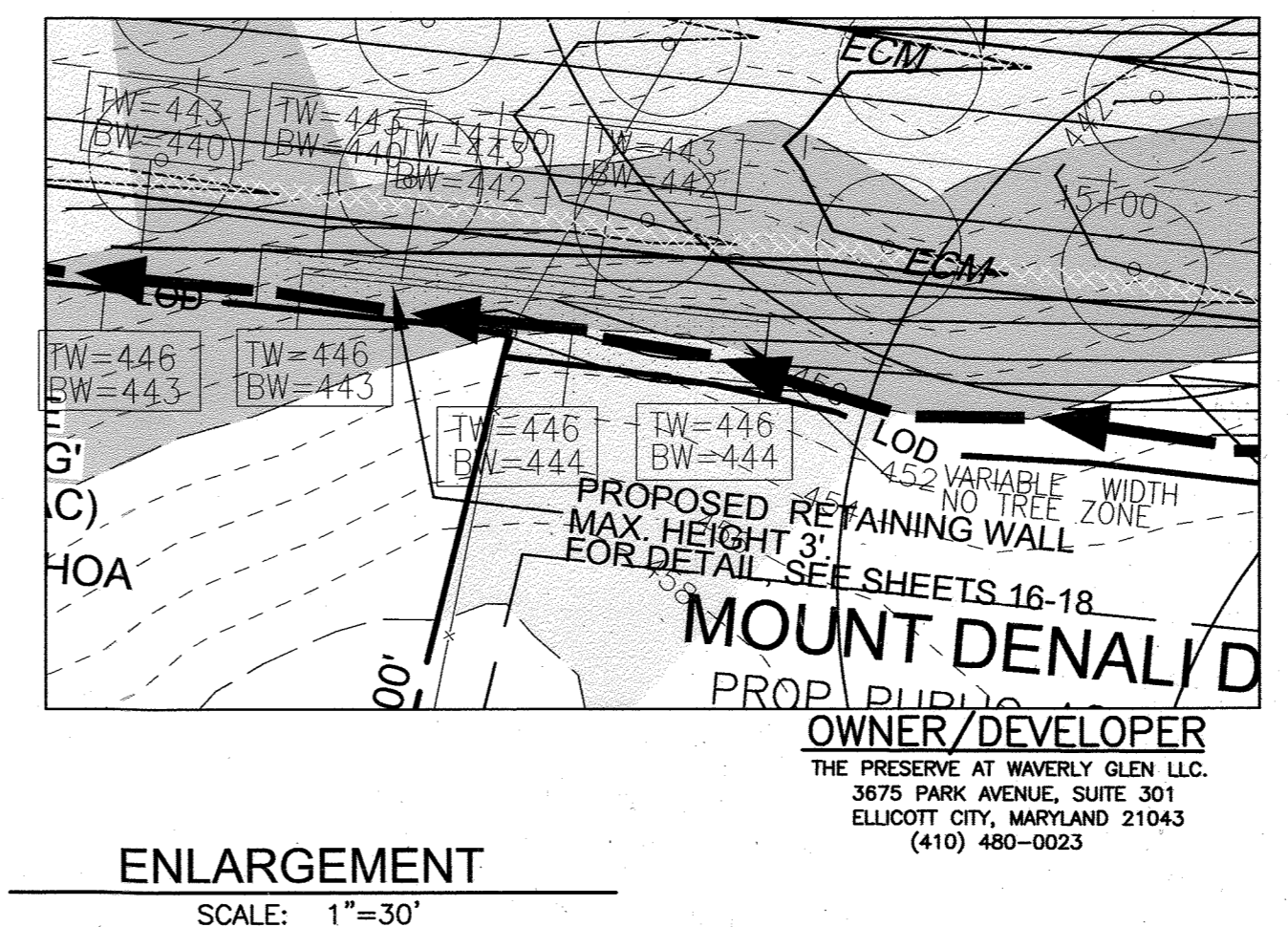
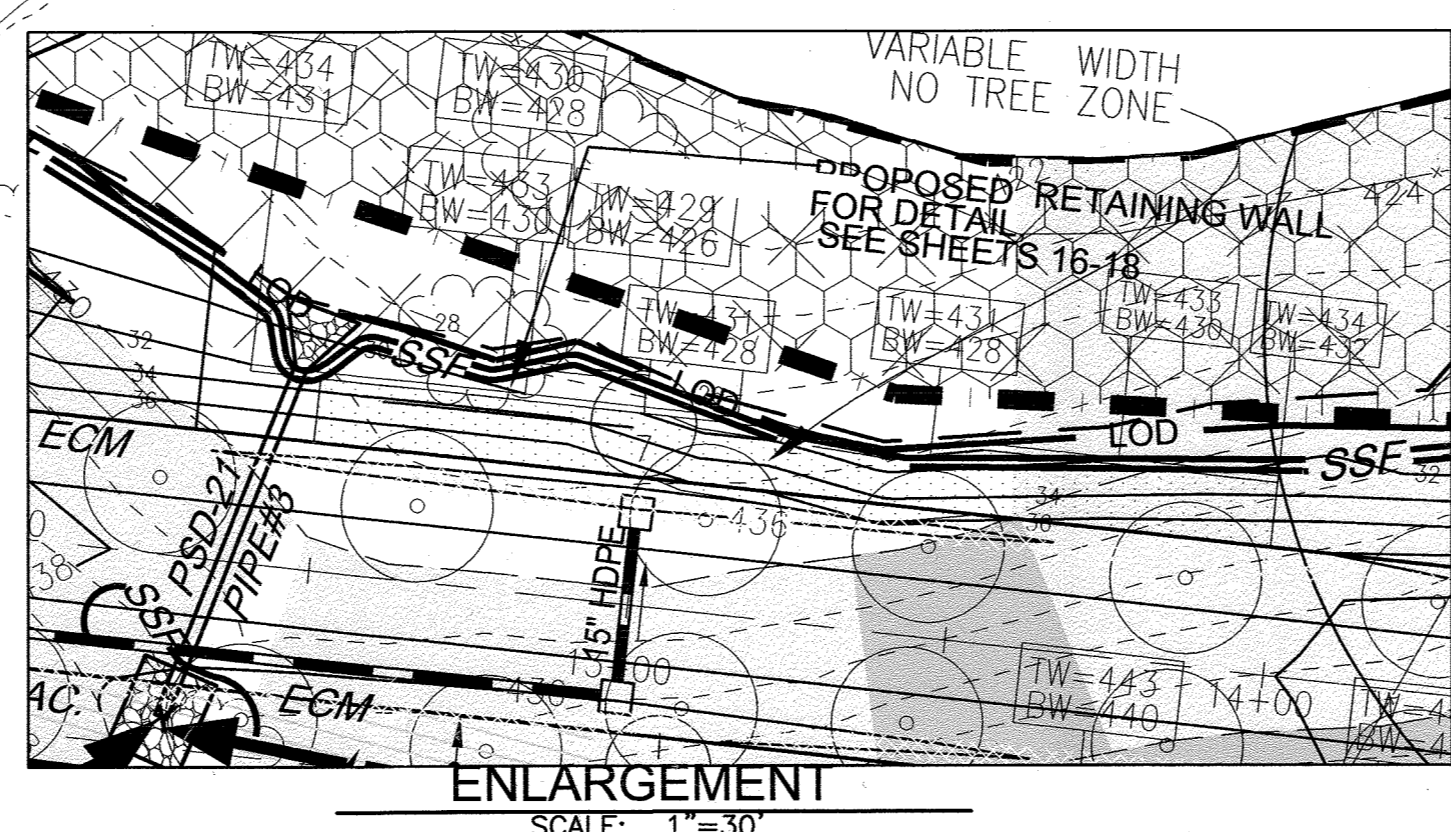
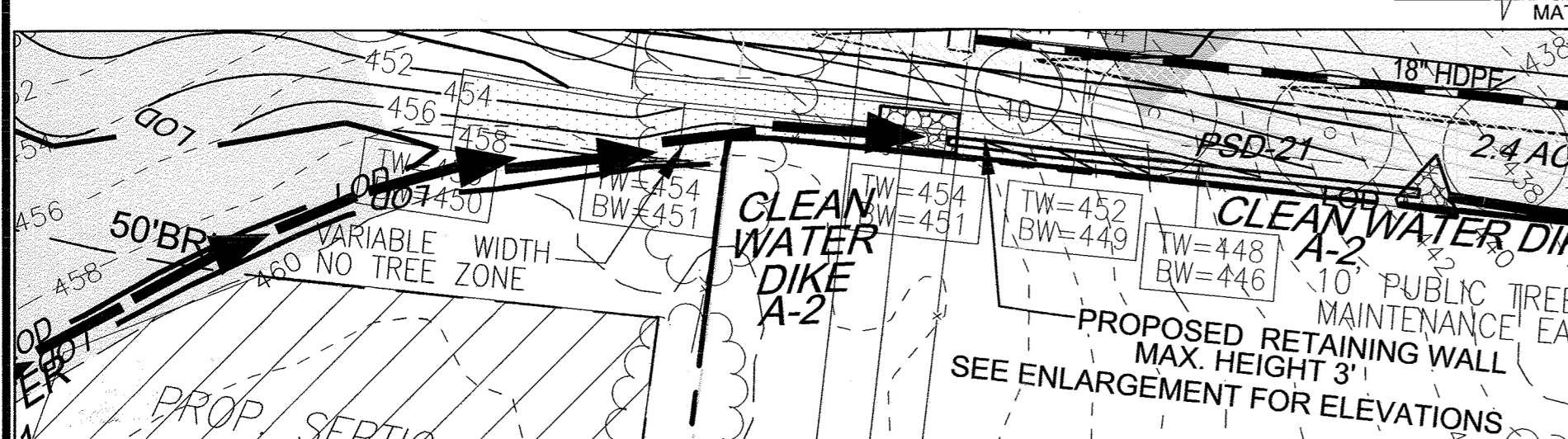
\*NOTE:  
1. MICRO-BIORETENTION FACILITY #1 OUTFALL TO BE A MINIMUM OF 5' FROM PROPERTY LINE.



**LEGEND**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING TREES TO REMAIN
- NO-WOODY VEGETATION BUFFER
- 15% 24.99% STEEP SLOPE AREA
- 25% OR GREATER STEEP SLOPE AREA
- FOREST CONSERVATION EASEMENT (RETENTION)
- FOREST CONSERVATION EASEMENT (REFORESTATION)
- Q STREAM
- STREAM BUFFER
- WETLAND BUFFER
- WETLAND
- 100 YEAR FLOOD PLAIN EASEMENT
- SEPTIC EASEMENT
- PUBLIC SWM CREDIT EASEMENT
- EARTH DIKE
- SOIL BORING
- STABILIZED CONSTRUCTION ENTRANCE
- SSF SUPER SILT FENCE
- LOD LIMIT OF DISTURBANCE
- RIP-RIP INFLOW PROTECTION
- GABION INFLOW PROTECTION
- ECM EROSION CONTROL MATTING

**ENLARGEMENT**  
SCALE: 1"=30'



**PLAN**  
SCALE: 1"=50'

APPROVED: DEPARTMENT OF PUBLIC WORKS  
CHIEF, DIVISION OF HIGHWAYS  
DATE: 9/7/04  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 9/13/04

ENGINEER'S CERTIFICATE  
"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."  
SIGNATURE OF ENGINEER: ROBERT H. VOGEL  
DATE: 9/14/04

DEVELOPER'S CERTIFICATE  
"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."  
SIGNATURE OF DEVELOPER: MICHAEL PLAN (MEMBER)  
DATE: 9/14/04

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  
SIGNATURE: Jim Meyer / us  
DATE: 9/9/04  
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
SIGNATURE: [Signature]  
DATE: 9/9/04  
HOWARD SOIL CONSERVATION DISTRICT

"AS-BUILT" CERTIFICATION  
"I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS."  
SIGNATURE OF ENGINEER: ROBERT H. VOGEL  
DATE: 9/27/04  
CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE SITE INSPECTION AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

6 REVISION THE PLAN TO ADD A PROPOSED HOUS TYPE, GRADING AND SWM ON LOT 21  
NO. REVISION DATE

**FINAL GRADING & SEDIMENT CONTROL PLAN**  
THE PRESERVE AT WAVERLY GLEN  
LOTS 1-21, PRESERVATION PARCELS A-F AND G  
NON-BUILDABLE BULK PARCEL G/H  
A RESUBDIVISION OF LOTS 1 & 2 AND PARCEL A OF SHADOW SHADE PLAT NO. 13808 AND LOT 1 OF HIGHPOINT AT BREEZEWOOD FARMS PLAT NO. 6385  
REF. S-02-03, P-03-02, F-99-25, F-86-13  
TAX MAP #10 BLOCK 23  
ELECTION DISTRICT  
PARCELS '304' & '102'  
HOWARD COUNTY, MARYLAND

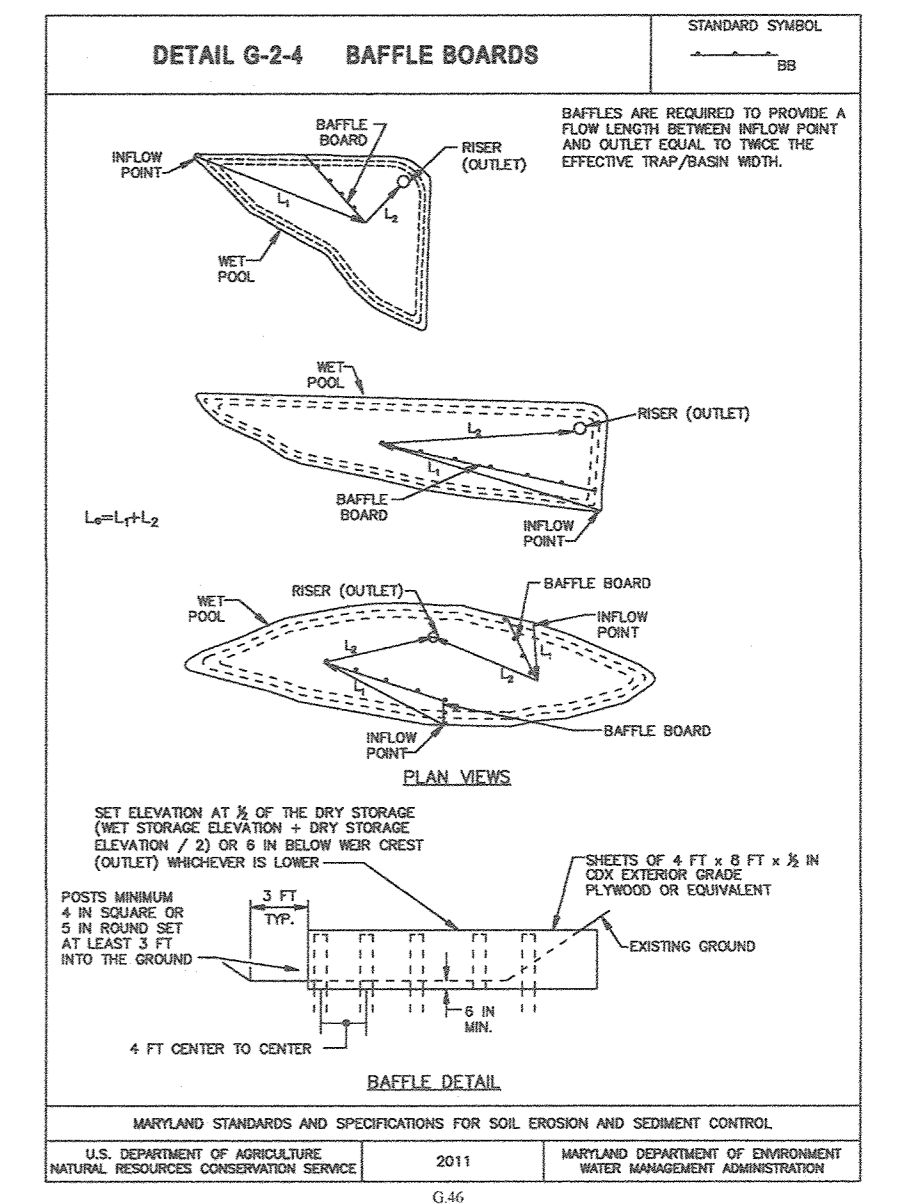
**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS - SURVEYORS  
8407 MAIN STREET  
ELLCOTT CITY, MARYLAND 21043  
TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: RJUCO  
DRAWN BY: RJ  
CHECKED BY: RHV  
DATE: JULY 2004  
SCALE: AS SHOWN  
W.O. NO.: 2017139.00

6 SHEET OF 22

**LEGEND:**

[Symbol]	PROPERTY LINE
[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	ADJACENT PROPERTY LINE
[Symbol]	EXISTING EDGE OF PAVING
[Symbol]	EXISTING STREAM BUFFER
[Symbol]	EXISTING STREAM
[Symbol]	EXISTING TREETRINE
[Symbol]	PROPOSED TREETRINE
[Symbol]	EXISTING WETLANDS
[Symbol]	EXISTING WETLAND BUFFER
[Symbol]	EXISTING SPECIMEN TREES
[Symbol]	EXISTING WOOD FENCE
[Symbol]	EXISTING METAL FENCE
[Symbol]	EX. PUBLIC 100-YEAR FLOOD PLAIN
[Symbol]	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
[Symbol]	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
[Symbol]	EX. 25' EASEMENT FOR INGRESS AND EGRESS TO LOT 17 AND LOT 1 GREEN PROP. (PRIVATE) (PLAT 7671)
[Symbol]	EXISTING 10' CONTOUR
[Symbol]	EXISTING 2' CONTOUR
[Symbol]	SOILS
[Symbol]	PROPOSED 10' CONTOUR
[Symbol]	PROPOSED 2' CONTOUR
[Symbol]	EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
[Symbol]	EXISTING MODERATE SLOPES (15% TO 19.95% SLOPES)
[Symbol]	PROP. SEWAGE DISPOSAL AREA
[Symbol]	PROP. WELL AREA

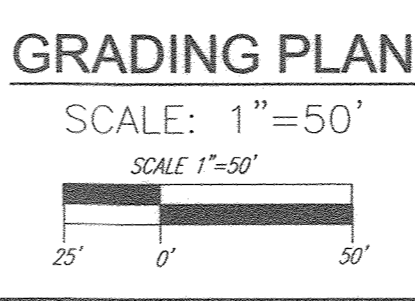


NOTE: NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.

**MGOS NO. 2**

DRAINAGE AREA - INITIAL	0.85	ACRES
DRAINAGE AREA - FINAL	0.85	ACRES
TOTAL STORAGE REQUIRED	1530	CF
TOTAL STORAGE PROVIDED	1641	CF
BOTTOM ELEVATION	418.00	FT
BOTTOM DIMENSIONS	8.5'x51'	FT x FT
WEIR CREST STORAGE ELEVATION	420.25	FT
TOP OF EMBANKMENT ELEVATION	421.00	FT
SIDE SLOPE	2:1	H:V RATIO
EMBANKMENT TOP WIDTH	3	FT

NOTE: SEE SHEET 8 FOR DETAIL.



**OWNER**  
ESTATES AT RIVER HILL, LLC  
MICHAEL PFUJ, MEMBER  
3675 PARK AVE., SUITE 301  
ELLCOTT CITY, MD 21043  
(410) 480-0023

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

12	REVISE THE HOUSE AND GRADING ON LOT 12	8-11-21
10	REVISE THE HOUSE AND ESD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM ON LOT 13	1-29-21
5	REVISE THE HOUSE, GRADING AND SWM ON LOT 15	11-19-20
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19
NO.	REVISION	DATE

**REVISED FINAL ROAD CONSTRUCTION PLAN  
SOILS MAP, GRADING, EROSION AND  
SEDIMENT CONTROL PLAN AND DRAINAGE MAP  
THE ESTATES AT RIVER HILL**  
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'  
A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

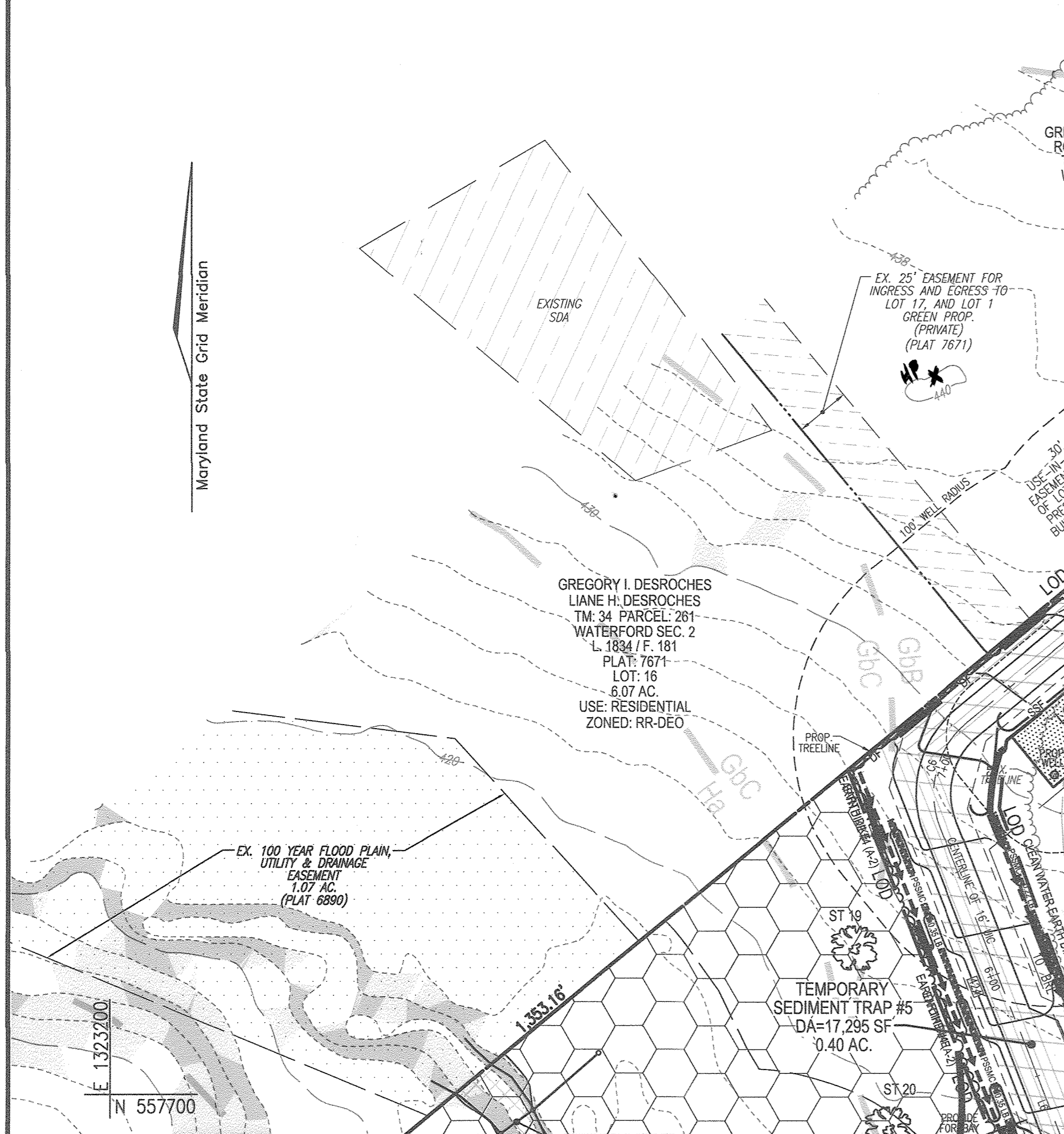
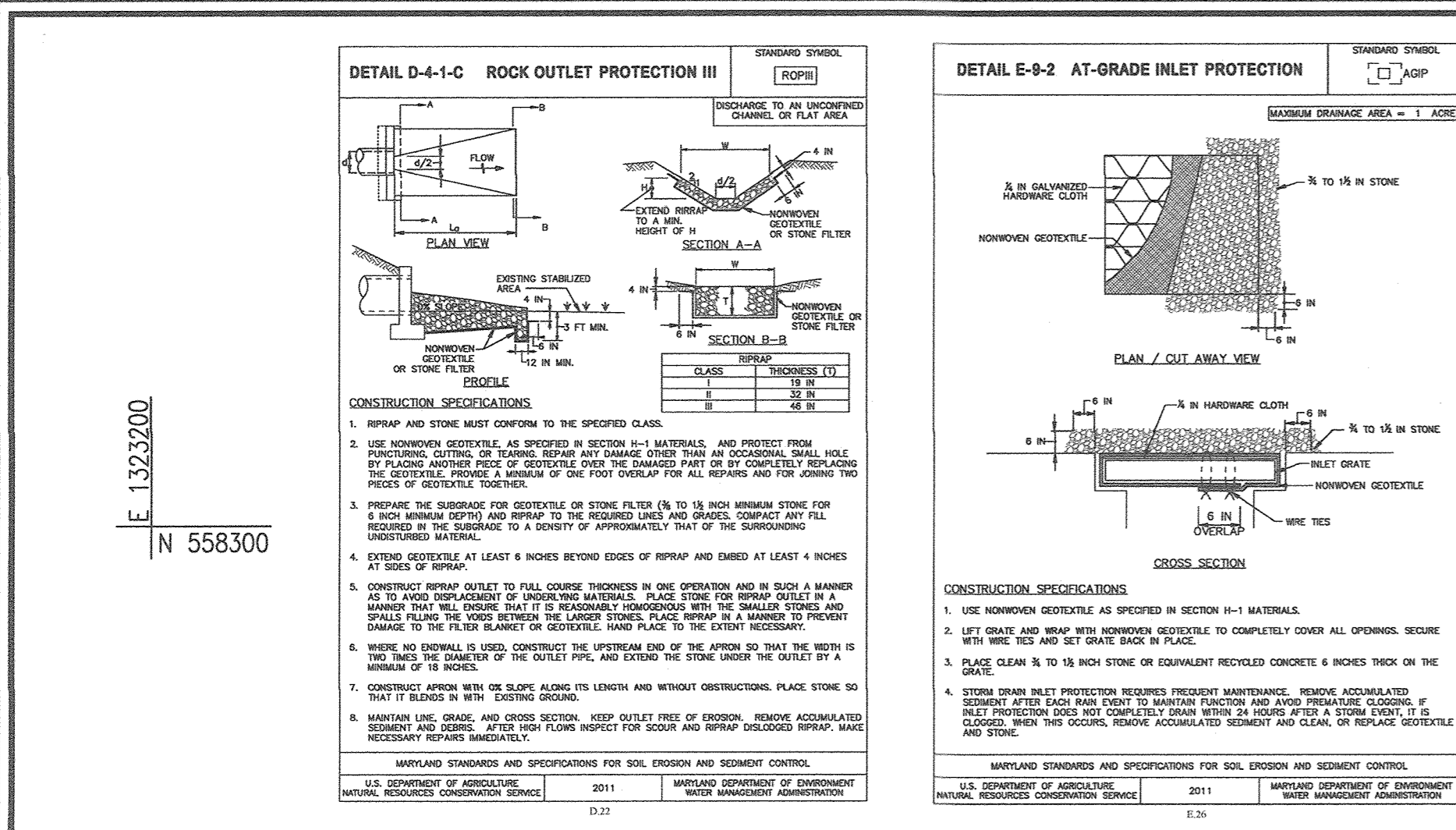
PARCEL: 389 ZONED: RR-DEO  
TAX MAP: 34 GRID: 23 14772 / F. 263  
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERS • SURVEYORS • PLANNERS**  
3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666  
ELLCOTT 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 FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. MY LICENSE NUMBER IS 16193. EXPIRATION DATE: 09-27-2026

DESIGN BY: RHY  
DRAWN BY: JMR  
CHECKED BY: RHY  
DATE: NOVEMBER 2018  
SCALE: AS SHOWN  
W.O. NO.: 15-39

7 SHEET OF 33



**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Ba	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HARBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	A	.32	NO
Gb	GLAUSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
Gc	GLAUSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
Gm	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Hs	HARBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

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: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS

THIS AREA DESIGNATES A PRIVATE SEWAGE AREA OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE AREAS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE AREA. RECORDED OF A MODIFIED SEWAGE AREA SHALL NOT BE NECESSARY.

**APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS**  
[Signature] 11/27/2018  
CHIEF, BUREAU OF HIGHWAYS

**APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING**  
[Signature] 12-2-18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

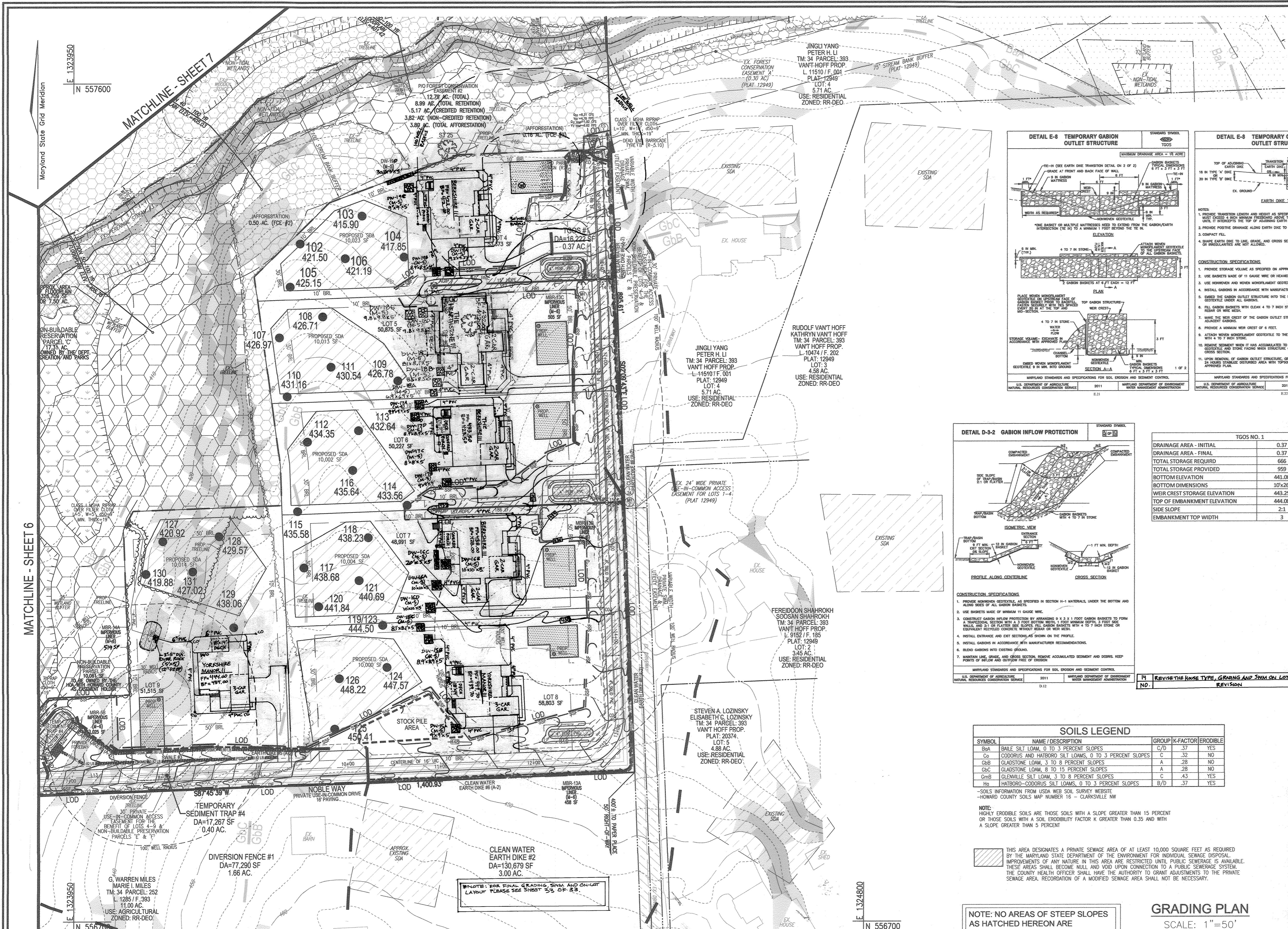
**APPROVED: DIVISION OF LAND DEVELOPMENT**  
[Signature] 1-10-19  
CHIEF, DIVISION OF LAND DEVELOPMENT

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

**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.

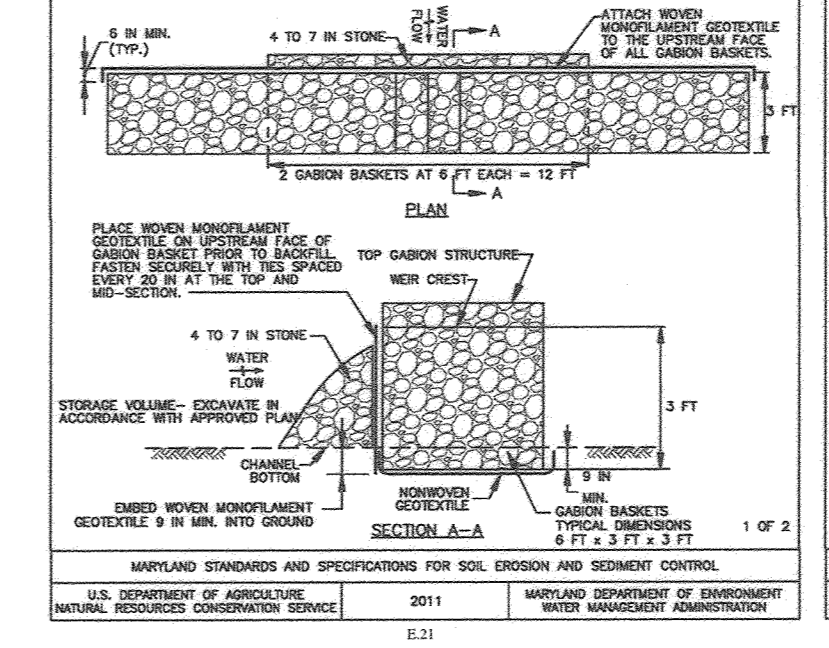
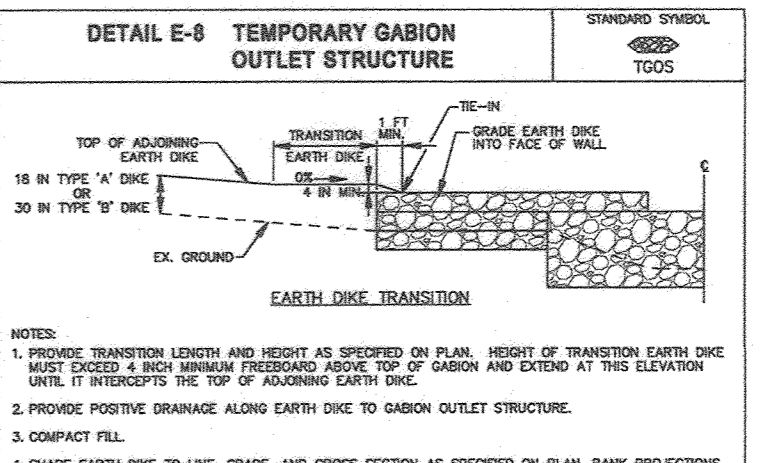
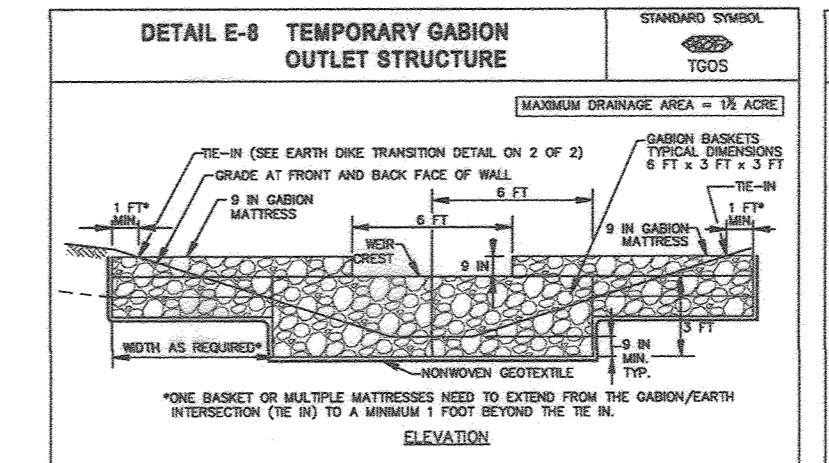
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

**OWNER/DEVELOPER SIGNATURE:** [Signature] 11/21/18  
ROBERT H. VOGEL  
PRINTED NAME  
MD REGISTRATION NO. 16193  
R.H.S., OR R.L.A. (circle one)



**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. VARIABLE WIDTH PRIVATE SWIM, DRAINAGE & UTILITY EASEMENT
- EX. 24' WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
- EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 19.99% SLOPES)
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA



**TABLE 1: TGS NO. 1**

Drainage Area - Initial	0.37	Acres
Drainage Area - Final	0.37	Acres
Total Storage Required	666	CF
Total Storage Provided	959	CF
Bottom Elevation	443.00	FT
Bottom Dimensions	10x26'	FT x FT
Weir Crest Storage Elevation	443.25	FT
Top of Embankment Elevation	444.00	FT
Side Slope	2:1	H:V Ratio
Embankment Top Width	3	FT

**TABLE 2: STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II**

Trap No.	4	
Drainage Area - Initial	0.40	Acres
Drainage Area - Interim	0.40	Acres
Drainage Area - Final	0.40	Acres
Total Storage Required	1,440	CF
Total Storage Provided	1,770	CF
Wet Storage Required	720	CF
Wet Storage Provided	905	CF
Dry Storage Required	720	CF
Dry Storage Provided	866	CF
Existing Ground Elevation at Outlet (Wet Storage Elevation)	419.50	FT
Trap Bottom Elevation	418.00	FT
Trap Bottom Dimensions	14'x32'	FT x FT
Weir Length	4'	FT
Weir Crest (Dry Storage) Elevation	420.50	FT
Cleanout Elevation	417.75	FT
Top of Embankment Elevation	421.50	FT
Side Slope	2:1	H:V Ratio
Embankment Top Width	4'	FT
Outlet Protection - Length	14'	FT
Outlet Protection - Depth	19"	IN

**TABLE 3: SOILS LEGEND**

SYMBOL	NAME/DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
BaA	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	37	YES
Cc	CODRUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	32	NO
QaB	CLAUSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	43	YES
Hs	HATBORO-CODRUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	37	YES

**TABLE 4: REVISIONS**

NO.	REVISION	DATE
13	REVISE THE HOUSE TYPE, GRADING AND SWIM ON LOTS 8 AND 9	6-22-23
11	REVISE THE HOUSE TYPE, GRADING AND SWIM ON LOTS 8 AND 9	6-25-21
9	REVISE THE HOUSE TYPE, GRADING AND SWIM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE, GRADING AND SWIM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL SWIM ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ONLOT HOUSES SWIM AND GRADING	4-10-19

**GRADING PLAN**  
SCALE: 1"=50'

NOTE: NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 J. J. [Signature]  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature]  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12-2-18

APPROVED: [Signature]  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 1-10-19

**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 PERMITS ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND MARYLAND DEPARTMENT OF THE ENVIRONMENT.

Michael P. [Signature]  
 OWNER/DEVELOPER SIGNATURE  
 DATE: 11/6/18

**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 FAITHFUL AND ACCURATE 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 [Signature]  
 DESIGNER'S SIGNATURE  
 DATE: 11/21/18

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

John L. [Signature]  
 HOWARD S.C.D. MEMBER  
 DATE: 11/14/18

APPROVED: FOR PRIVATE WATER AND PRIVATE SEWERAGE SYSTEMS  
 [Signature]  
 COUNTY HEALTH OFFICER  
 DATE: N/A

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER**  
 TRINITY HOMES MARYLAND, LLC  
 3875 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

PROFESSIONAL CERTIFICATE  
 DESIGN BY: RHV  
 DRAWN BY: JMR  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

**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

STATE OF MARYLAND PROFESSIONAL ENGINEER  
 16163

PARCEL: 389  
 TAX MAP: 34 GRID: 23  
 L. 4772 / F. 265  
 3TH ELECTION DISTRICT

8 OF 33



**THE ESTATES AT RIVER HILL**  
Runoff Coefficient Justification

Inlet #	Soil Group	Description	Area acres	Table 3.01 "C"	CA
INLET 1	C	O.S. Grass (Steep)	1.05	0.24	0.2520
	C	Impervious Area	0.22	0.86	0.1892
			1.27		0.4412
C= 0.35 % Imp= 11					
INLET 1A	C	O.S. Grass (Steep)	0.05	0.24	0.0120
	C	Impervious Area	0.00	0.86	0.0000
			0.05	0.24	0.0120
C= 0.24 % Imp= 0					
INLET 2	C	O.S. Grass (Steep)	1.00	0.24	0.2400
	C	Impervious Area	0.17	0.86	0.1462
			1.17		0.3862
C= 0.33 % Imp= 9					
INLET 2A	C	O.S. Grass (Steep)	1.94	0.24	0.4656
	C	Impervious Area	0.11	0.86	0.0946
			2.05		0.5602
C= 0.27 % Imp= 3					
INLET 3	C	O.S. Grass (Steep)	0.50	0.24	0.1200
	C	Impervious Area	0.20	0.86	0.1720
			0.70		0.2820
C= 0.42 % Imp= 19					
PT-1	C	O.S. Grass (Steep)	0.00	0.24	0.0000
	C	Impervious Area	0.09	0.86	0.0774
			0.09		0.0774
C= 0.86 % Imp= 100					
PT-2	C	O.S. Grass (Steep)	0.00	0.24	0.0000
	C	Impervious Area	0.09	0.86	0.0774
			0.09		0.0774
C= 0.86 % Imp= 100					

**THE ESTATES AT RIVER HILL**  
Runoff Coefficient Justification

Inlet #	Soil Group	Description	Area acres	Table 3.01 "C"	CA
CLUVERT LOT 1	C	O.S. Grass (Steep)	0.03	0.24	0.0072
	C	Impervious Area	0.01	0.86	0.0086
			0.04		0.0158
C= 0.40 % Imp= 16					
CLUVERT LOT 2	C	O.S. Grass (Steep)	0.25	0.24	0.0600
	C	Impervious Area	0.11	0.86	0.0946
			0.36		0.1546
C= 0.43 % Imp= 20					
CLUVERT LOT 3	C	O.S. Grass (Steep)	0.47	0.24	0.1128
	C	Impervious Area	0.19	0.86	0.1634
			0.66		0.2762
C= 0.42 % Imp= 19					
CLUVERT LOT 10	C	O.S. Grass (Steep)	0.005	0.24	0.0012
	C	Impervious Area	0.005	0.86	0.0040
			0.010		0.0052
C= 0.54 % Imp= 31					
CLUVERT LOT 11	C	O.S. Grass (Steep)	0.07	0.24	0.0168
	C	Impervious Area	0.05	0.86	0.0430
			0.12		0.0598
C= 0.50 % Imp= 27					

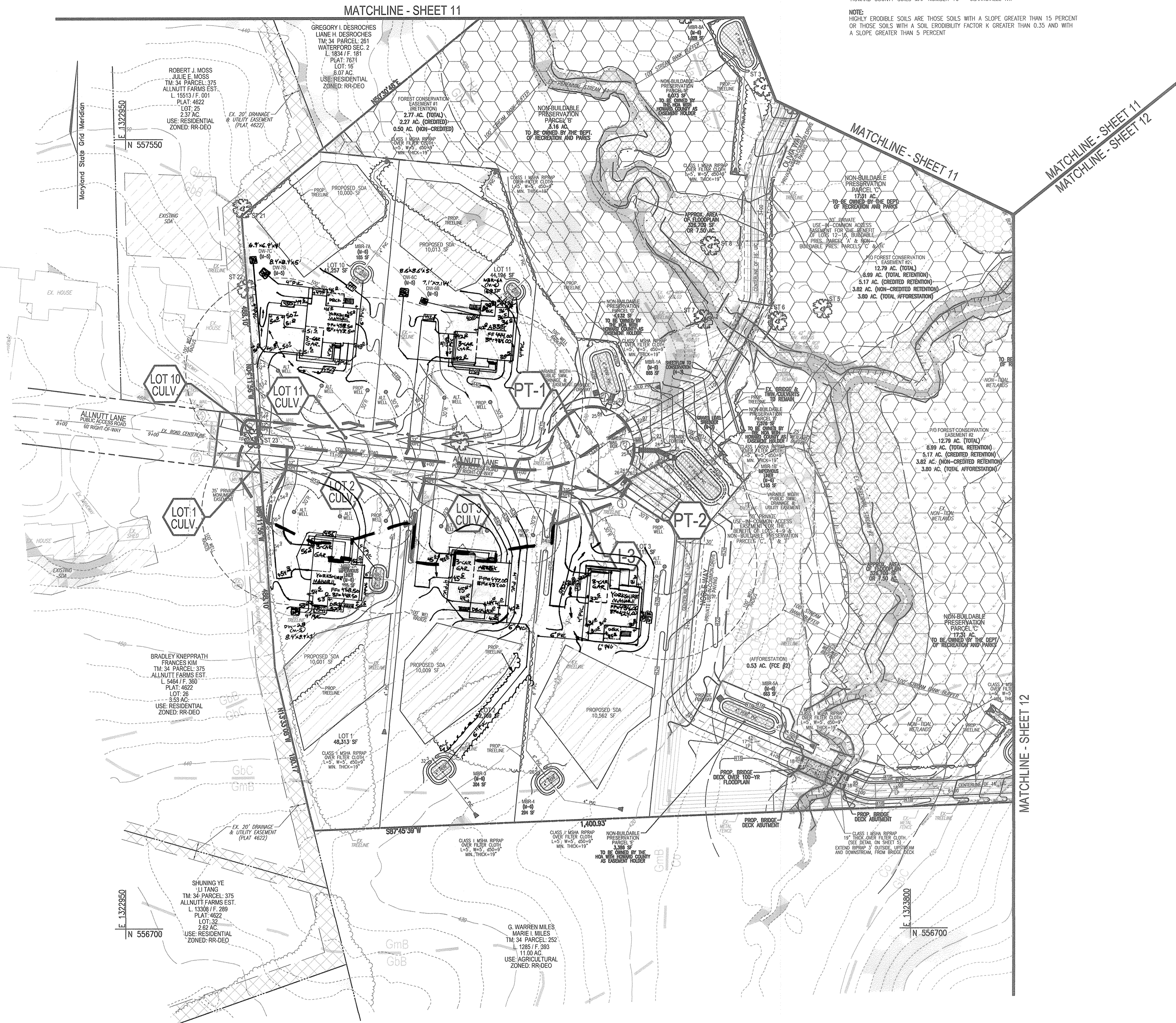
**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
BaA	BALE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Cs	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GmB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GmC	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ho	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

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  
-SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE  
-HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE, VA

**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAWING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAIN
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
- PROP. 35' PRIVATE MONUMENT EASEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 19.99% SLOPES)
- DRAINAGE AREA DIVIDE
- PROPOSED MICRO-BIORETENTION FACILITY (M-6)
- PROPOSED DRY WELL (M-5)
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12-2-18

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 1-10-19

**SD DRAINAGE AREA MAP**  
 SCALE: 1"=60'  
 SCALE 1"=60'

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER**  
 TRINITY HOMES MARYLAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

NO.	REVISION	DATE
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-17

REVISED FINAL ROAD CONSTRUCTION PLAN  
 STORM DRAIN DRAINAGE AREA MAP  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'  
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389  
 TAX MAP: 34 GRID: 23  
 5TH ELECTION DISTRICT

ZONED: RR-DEO  
 L. 4772 / F. 265  
 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**

STATE OF MARYLAND  
 ROBERT H. VOGEL, PE No. 16193  
 REGISTERED PROFESSIONAL ENGINEER

DESIGN BY: RHV  
 DRAWN BY: JMR  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

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

10 SHEET OF 33

**LEGEND:**

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING EDGE OF PAVING
	EXISTING STREAM BUFFER
	EXISTING STREAM
	EXISTING TREELINE
	PROPOSED TREELINE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	EXISTING SPECIMEN TREES
	EXISTING WOOD FENCE
	EXISTING METAL FENCE
	EX. PUBLIC 100-YEAR FLOOD PLAIN
	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
	EX. 25' EASEMENT FOR INGRESS AND EGRESS TO LOT 17, AND LOT 1 GREEN PROP. (PRIVATE) (PLAT 7671)
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
	EXISTING MODERATE SLOPES (15% TO 19.99% SLOPES)
	DRAINAGE AREA DIVIDE
	PROPOSED MICRO-BIORETENTION FACILITY (M-B)
	PROPOSED DRY WELL (M-S)
	PROP. SEWAGE DISPOSAL AREA
	PROP. WELL AREA

E 1323200  
N 558200

Maryland State Grid Meridian

E 1323200  
N 557700



MATCHLINE - SHEET 10

MATCHLINE - SHEET 12

MATCHLINE - SHEET 10

MATCHLINE - SHEET 12

**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Bla	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
Gcb	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
Gc	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
Gmb	CLEAVELAND SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ha	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE  
HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE NW

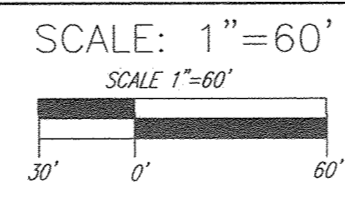
NOTE:  
HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 [Signature] 11/27/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 12.2.18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 1-10-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

**SD DRAINAGE AREA MAP**



12	REVISE THE HOUSE AND GRADING ON LOT 12	8-11-21
10	REVISE THE HOUSE AND BSD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM FOR LOT 13	1-29-21
5	REVISE THE HOUSE, GRADING AND SWM FOR LOT 15	11-19-20
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL 'A' AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19
NO.	REVISION	DATE

REVISED FINAL ROAD CONSTRUCTION PLAN  
 STORM DRAIN DRAINAGE AREA MAP  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO  
 TAX MAP: '34 GRID: 23 L: 4772 / F: 285  
 5TH ELECTION DISTRICT 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

DESIGN BY: RHY  
 DRAWN BY: JMR  
 CHECKED BY: RHY  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

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: 09-27-2028

11 SHEET OF 33

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFALL, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER**  
 TRINITY HOMES MARYLAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023



**LEGEND:**

[Symbol]	PROPERTY LINE
[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	ADJACENT PROPERTY LINE
[Symbol]	EXISTING EDGE OF PAVING
[Symbol]	EXISTING STREAM BUFFER
[Symbol]	EXISTING STREAM
[Symbol]	EXISTING TREETRINE
[Symbol]	PROPOSED TREETRINE
[Symbol]	EXISTING WETLANDS
[Symbol]	EXISTING WETLAND BUFFER
[Symbol]	EXISTING SPECIMEN TREES
[Symbol]	EXISTING WOOD FENCE
[Symbol]	EXISTING METAL FENCE
[Symbol]	EX. PUBLIC 100-YEAR FLOOD PLAN
[Symbol]	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
[Symbol]	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
[Symbol]	EX. 24' WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
[Symbol]	EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
[Symbol]	EXISTING 10' CONTOUR
[Symbol]	EXISTING 2' CONTOUR
[Symbol]	SOILS
[Symbol]	PROPOSED 10' CONTOUR
[Symbol]	PROPOSED 2' CONTOUR
[Symbol]	EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
[Symbol]	EXISTING MODERATE SLOPES (15% TO 19.9% SLOPES)
[Symbol]	DRAINAGE AREA DIVIDE
[Symbol]	PROPOSED MICRO-BIORETENTION FACILITY (M-5)
[Symbol]	PROPOSED DRY WELL (M-5)
[Symbol]	PROP. SEWAGE DISPOSAL AREA
[Symbol]	PROP. WELL AREA

11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESP FRANCES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO APP A	10-25-19
1	SMALL WALL ON LOT 9 (UNDER 3')	
1	MODIFICATION TO ONSET HOUSES SWM AND GRADING	4-10-19
NO.	REVISION	DATE

REVISED FINAL ROAD CONSTRUCTION PLAN  
**STORM DRAIN DRAINAGE AREA MAP**  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 388 ZONED: RR-DEO  
 TAX MAP: 34 GRID: 23 L 4772 / F. 285  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
B5A	BALE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Cc	COODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GbC	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Hg	HATBORO-COODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE - HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE NW

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

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFALZ, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER**  
 TRINITY HOMES MARYLAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**ROBERT H. VOGEL ENGINEERING & SURVEYORS, INC.**  
 3300 N. RIDGE ROAD, SUITE 110 TELL: 410.461.7666  
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE  
 DESIGN BY: RHV  
 DRAWN BY: JMR  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

12 SHEET OF 33

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS 11/27/2018  
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 12-2-18  
 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 1-10-19  
 DATE

**SD DRAINAGE AREA MAP**  
 SCALE: 1" = 60'  
 SCALE 1"=60'



**LEGEND:**

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING EDGE OF PAVING
	EXISTING STREAM BUFFER
	EXISTING STREAM
	EXISTING TREETRINE
	PROPOSED TREETRINE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	EXISTING SPECIMEN TREES
	EXISTING WOOD FENCE
	EXISTING METAL FENCE
	EX. PUBLIC 100-YEAR FLOOD PLAN
	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
	EX. 24' WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
	EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	EXISTING STEEP SLOPES (20% SLOPES OR GREATER)
	EXISTING MODERATE SLOPES (15% TO 19.99% SLOPES)
	DRAINAGE AREA DIVIDE
	PROPOSED MICRO-BIORETENTION FACILITY (M-6)
	PROPOSED DRY WELL (M-5)
	PROP. SEWAGE DISPOSAL AREA
	PROP. WELL AREA

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 11/27/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 12-2-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 1-10-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

**SD DRAINAGE AREA MAP**  
 SCALE: 1"=60'  
 SCALE 1"=60'

**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Ba	BALE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GbB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GbC	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Hu	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

-SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE  
 -HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE NW

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

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAU, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

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

14	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOTS 8 AND 9	6-22-23
13	REVISE THE PLAN TO ADD AN EXTRA DRYWELL TO LOT 7 AND MODIFY THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESP PRACTICES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ONSET HOUSES SWM AND GRADING	4-10-19
NO.	REVISION	DATE

REVISED FINAL ROAD CONSTRUCTION PLAN  
**STORM DRAIN DRAINAGE AREA MAP**  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO  
 TAX MAP: 34 GRID: 23 L. 4772 / F. 285  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERS, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 3300 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: 09-27-2026

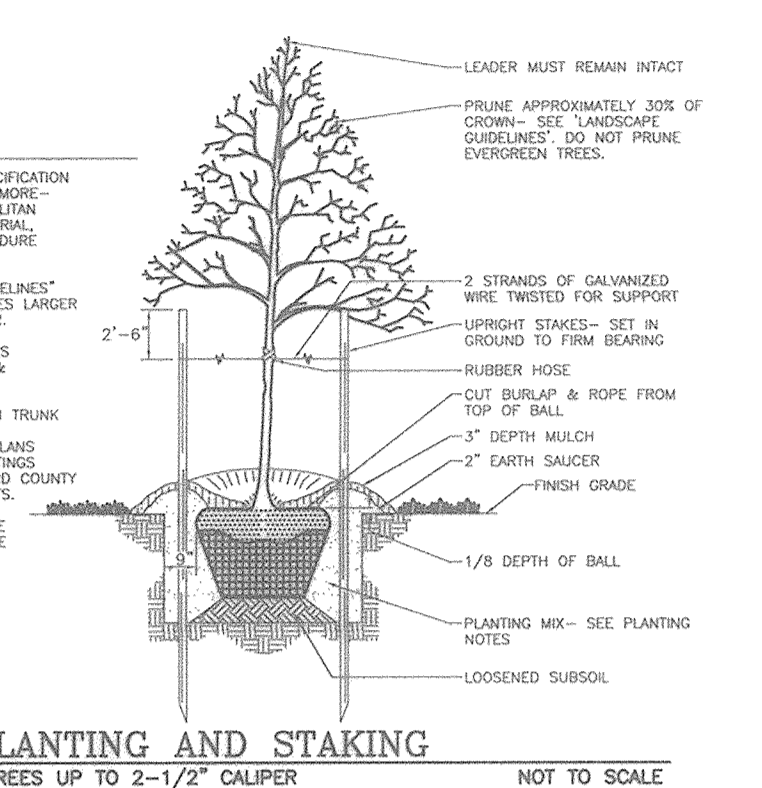
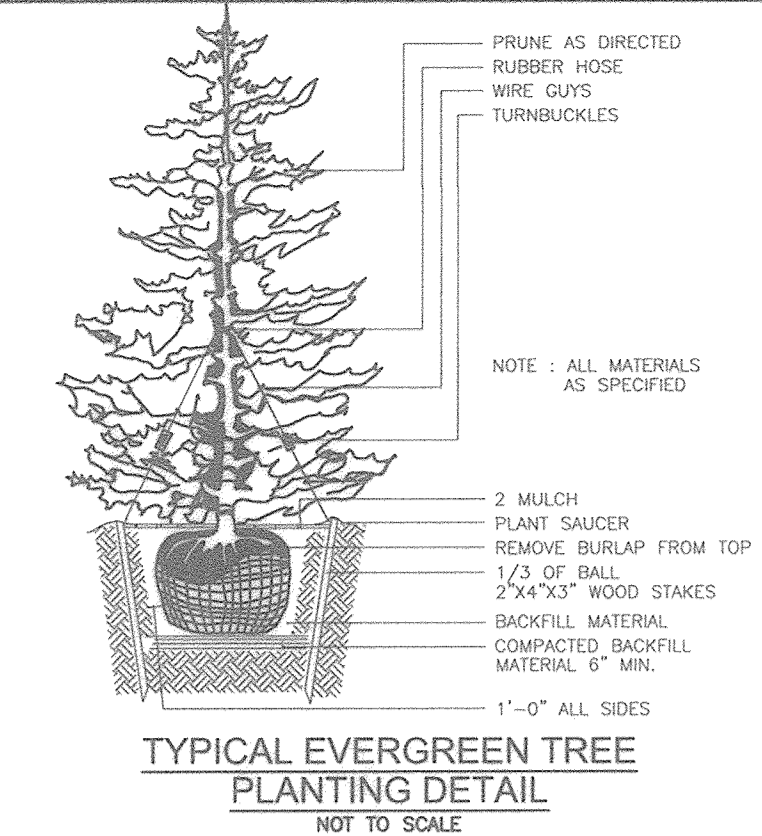
DESIGN BY: RHY  
 DRAWN BY: JMR  
 CHECKED BY: RHY  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

12 SHEET OF 33

MATCHLINE - SHEET 15



MATCHLINE - SHEET 16



**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREETRINE
- PROPOSED TREETRINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
- PROP. 35' PRIVATE MONUMENT EASEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA

**SHRUB PLANTING DETAIL**  
NOT TO SCALE

BACKFILL WITH TOPSOIL AND PEAT MOSS, 3:1 RATIO. BACKFILL IN 6" LIFTS

3" MULCH

6" MIN. EQUAL TO TWICE BALL DIA.

6" FOR PLANTS UP TO 4' HEIGHT MIN. 8" FOR PLANTS OVER 4' HEIGHT MIN.

**NOTES:**

- SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREA" FOR MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
- SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
- PLACE UPRIGHT STAKES PARALLEL TO TRUNK & BRANCHES.
- KEEP MULCH 1" FROM TRUNK.
- SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTING (MINIMUM EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS).
- TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.

NO.	SIZE (IN. DBH/FEET HEIGHT)	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 1	30"	45'	TULIP POPLAR	GOOD CONDITION	TO BE REMOVED
ST 3	35"	52.5'	BLACK OAK	POOR CROWN AND SHAPE	TO BE REMOVED
ST 5	32"	48'	TULIP POPLAR	TRIPLE STEMMED	TO REMAIN
ST 6	57"	85.5'	RED OAK	GOOD, SPLITS TO THREE STEMS ABOVE BH	TO REMAIN
ST 7	44.5"	66.75'	TULIP POPLAR	FAIR, SOME DIEBACK NOTED	TO REMAIN
ST 8	62.5"	93.75'	TULIP POPLAR	FAIR, CROWN DIEBACK, TWO STEMS ABOVE BH	TO REMAIN
ST 21	44"	66'	RED OAK	POOR, SEVERE DIEBACK	TO REMAIN
ST 22	38"	57'	RED OAK	POOR, NOTABLE DIEBACK	TO REMAIN
ST 23	33.5"	50.25'	TULIP POPLAR	POOR, TRUNK ROT	TO BE REMOVED

**NOTE:**  
BECAUSE THE PROPOSED LANDSCAPING WILL BE PLACED DIRECTLY ON THE PROPERTIES OF INDIVIDUAL LOT OWNERS, THE DEVELOPER OF THIS SUBDIVISION SHALL NOT "PASS" THE LANDSCAPING OBLIGATION ON TO A FUTURE HOME BUILDER OR TO FUTURE, INDIVIDUAL LOT BUYERS/OWNERS. THIS CAN CREATE AN UNIQUE HARDSHIP TO THE LOT BUILDER OR THE INDIVIDUAL HOMEOWNER IN TERMS OF ENFORCEMENT SHOULD THE TREES NOT BE PLANTED OR DO NOT PASS INSPECTION. THE DEVELOPER SHOULD BE RESPONSIBLE FOR PLANTING THE TREES AND MAINTENANCE OF SUCH UNTIL ALL OF THE PLANTED TREES PASS LANDSCAPING INSPECTION.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 DATE: 11/27/2018  
 CHIEF, BUREAU OF HIGHWAYS

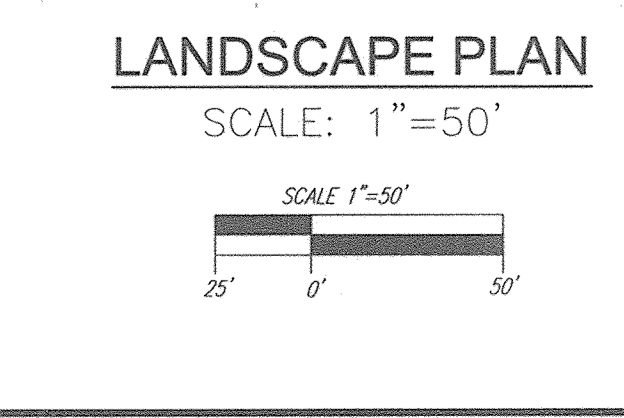
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 DATE: 12-2-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 DATE: 1-10-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT

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

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

SIGNATURE OF DEVELOPER: *Michael Pfaul*  
 DATE: 1/15/19



**SPECIMEN TREE MITIGATION:**  
 PROPOSED LANDSCAPE TREES WITH THE DESIGNATION OF "CF" ARE PROVIDED AS PART OF THE 2:1 MITIGATION REQUIRED FOR THE REMOVAL OF TEN SPECIMEN TREES.

**OWNER:**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAUL, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

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

NO.	REVISION	DATE
1	ADDITION TO OWNER HOUSES SWAN AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN  
**LANDSCAPE PLAN**  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'  
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389  
 EX. MAP: 54 GRID: 23  
 5TH ELECTION DISTRICT

**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. 15193 EXPIRATION DATE: 09-27-2028

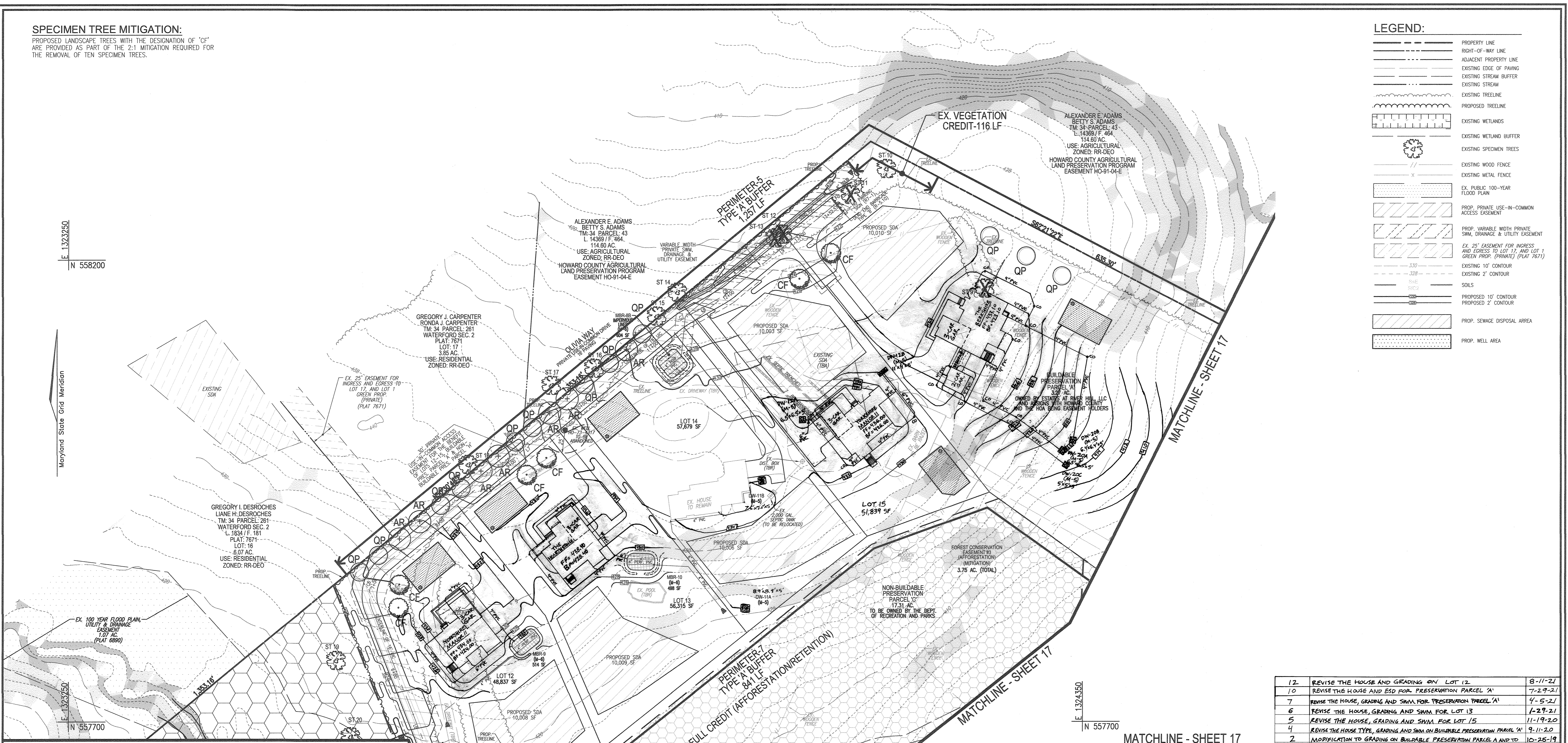
DESIGN BY: RHY  
 DRAWN BY: JMR  
 CHECKED BY: RHY  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

14 SHEET OF 33

**SPECIMEN TREE MITIGATION:**  
 PROPOSED LANDSCAPE TREES WITH THE DESIGNATION OF 'CF' ARE PROVIDED AS PART OF THE 2:1 MITIGATION REQUIRED FOR THE REMOVAL OF TEN SPECIMEN TREES.

**LEGEND:**

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING EDGE OF PAVING
	EXISTING STREAM BUFFER
	EXISTING STREAM
	EXISTING TREELINE
	PROPOSED TREELINE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	EXISTING SPECIMEN TREES
	EXISTING WOOD FENCE
	EXISTING METAL FENCE
	EX. PUBLIC 100-YEAR FLOOD PLAN
	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
	EX. 25' EASEMENT FOR INGRESS AND EGRESS TO LOT 11 AND LOT 1 GREEN PROP. (PRIVATE) (PLAT 7671)
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	PROP. SEWAGE DISPOSAL ARREA
	PROP. WELL AREA



MATCHLINE - SHEET 14

MATCHLINE - SHEET 17  
 MATCHLINE - SHEET 16

**SPECIMEN TREE CHART**

NO.	SIZE (DBH)	CPZ (FEET BANDS)	COMMON NAME	CONDITION	COMMENTS
ST 2	30.5"	45.75'	TULIP POPLAR	FAIR, SOME DIEBACK NOTED	TO BE REMOVED
ST 4	33"	49.5'	BLACK OAK	POOR, DIEBACK NOTED	TO REMAIN
ST 9	30"	45'	WHITE PINE	GOOD CONDITION	TO BE REMOVED
ST 10	31"	46.5'	TULIP POPLAR	GOOD CONDITION	TO REMAIN
ST 11	42"	63'	WHITE OAK	GOOD CONDITION	TO BE REMOVED
ST 12	39.5"	59.25'	WHITE OAK	GOOD CONDITION	TO BE REMOVED
ST 13	30"	45'	TULIP POPLAR	FAIR, LIMITED CROWN	TO BE REMOVED
ST 14	58.5"	87.75'	TULIP POPLAR	POOR, TRUNK ROT	TO REMAIN
ST 15	33.5"	50.25'	TULIP POPLAR	LIMITED CROWN	TO REMAIN
ST 16	31"	46.5'	SILVER MAPLE	FAIR, LEANING	TO REMAIN
ST 17	47"	70.5'	WHITE OAK	GOOD CONDITION	TO REMAIN
ST 18	34.5"	51.75'	TULIP POPLAR	GOOD CONDITION	TO REMAIN
ST 19	45"	67.5'	BLACK OAK	FAIR, LIMB DIEBACK	TO REMAIN
ST 20	37.5"	56.25'	BLACK OAK	POOR, SEVERE DIEBACK	TO REMAIN

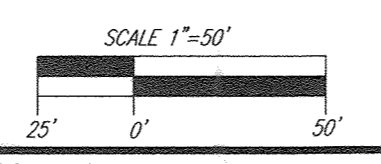
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS *James* 11/27/2018 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *Chel* 12-2-18 DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT *Kat* 1-10-19 DATE

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

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 18.124 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 *Michael* 11/5/18 DATE



**LANDSCAPE PLAN**  
 SCALE: 1"=50'

NO.	REVISION	DATE
12	REVISE THE HOUSE AND GRADING ON LOT 12	8-11-21
10	REVISE THE HOUSE AND ESD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM FOR LOT 13	1-29-21
5	REVISE THE HOUSE, GRADING AND SWM FOR LOT 15	11-19-20
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL 'A' AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ONLOT HOUSES, SWIM AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN  
**LANDSCAPE PLAN**  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO  
 TAX MAP: 34 GRID: 23 L: 472 / F: 285  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERS, INC.**  
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 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHV  
 DRAWN BY: JMR  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

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

15 SHEET OF 33

E 1324350  
 N 557700

E 1324350  
 N 558200

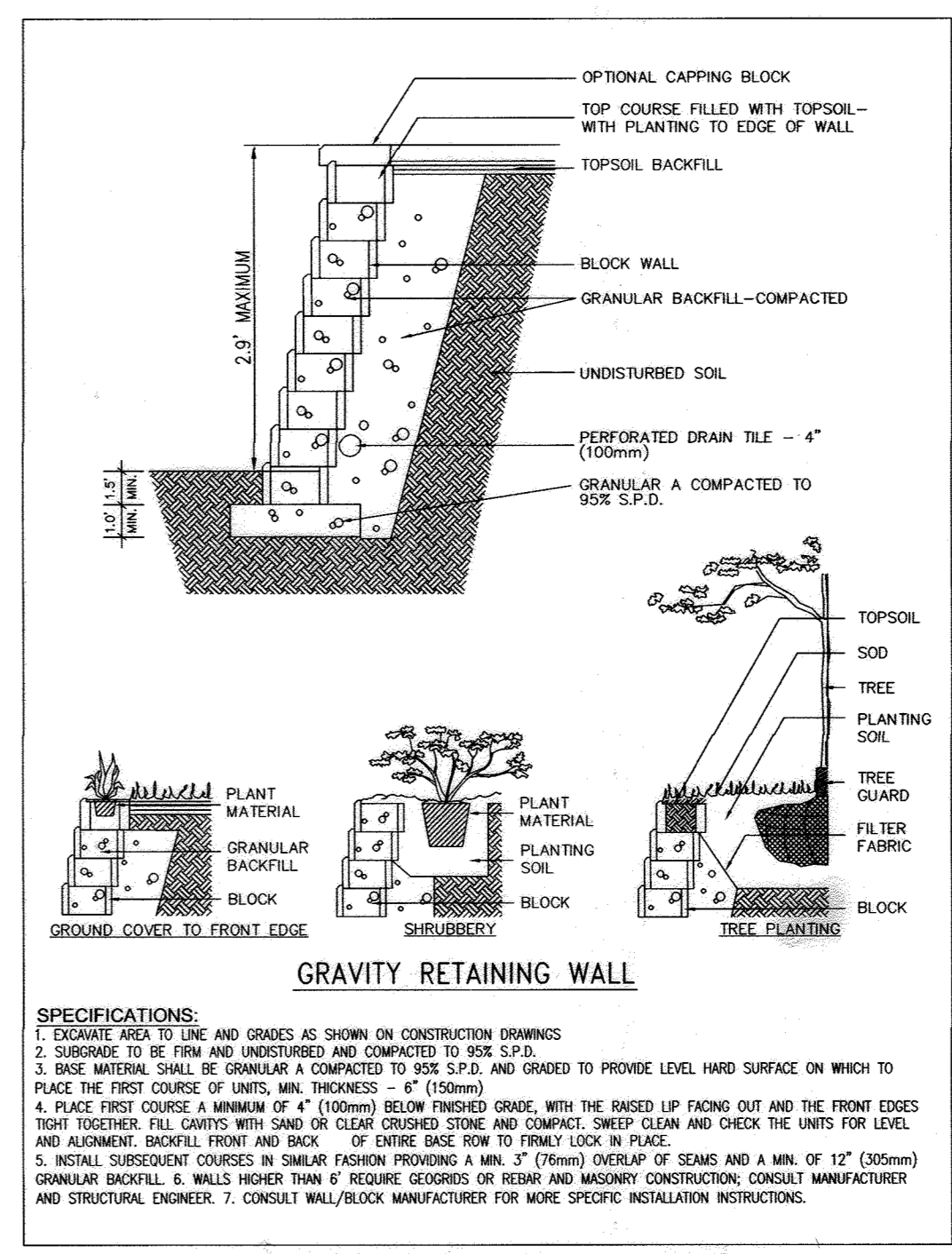
Maryland State Grid Meridian



MATCHLINE - SHEET 17

**LEGEND:**

[Symbol]	PROPERTY LINE
[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	ADJACENT PROPERTY LINE
[Symbol]	EXISTING EDGE OF PAVING
[Symbol]	EXISTING STREAM BUFFER
[Symbol]	EXISTING STREAM
[Symbol]	EXISTING TREELINE
[Symbol]	PROPOSED TREELINE
[Symbol]	EXISTING WETLANDS
[Symbol]	EXISTING WETLAND BUFFER
[Symbol]	EXISTING SPECIMEN TREES
[Symbol]	EXISTING WOOD FENCE
[Symbol]	EXISTING METAL FENCE
[Symbol]	EX. PUBLIC 100-YEAR FLOOD PLAIN
[Symbol]	PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
[Symbol]	PROP. VARIABLE WIDTH PRIVATE SWM, DRAINAGE & UTILITY EASEMENT
[Symbol]	EX. 24' WIDE PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR LOTS 1-4 (PLAT 12949)
[Symbol]	EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
[Symbol]	EXISTING 10' CONTOUR
[Symbol]	EXISTING 2' CONTOUR
[Symbol]	PROPOSED 10' CONTOUR
[Symbol]	PROPOSED 2' CONTOUR
[Symbol]	PROP. SEWAGE DISPOSAL AREA
[Symbol]	PROP. WELL AREA



MATCHLINE - SHEET 14

E. 1323950  
N 557600

E. 1323950  
N 557600

E. 1324950  
N 556700

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Joe*  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Michael*  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 1-10-19

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

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*Michael*  
 SIGNATURE OF DEVELOPER  
 DATE: 11/5/18

**LANDSCAPE PLAN**  
 SCALE: 1"=50'  
 SCALE 1"=50'

**SPECIMEN TREE CHART**

NO.	SIZE (DBH)	CRZ (FEET)	COMMON NAME	CONDITION	COMMENTS
ST 24	37"	55.5'	TULIP POPLAR	MAJOR TRUNK WOUND	TO BE REMOVED
ST 25	34.5"	51.75'	TULIP POPLAR	POOR, TRUNK CAVITY	TO REMAIN

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAU, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

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

11	REMOVE THE PLAN TO SHOW NEW HOUSE TYPE, ESD PRACTICES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWIM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE GRADING AND SWIM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ON LOT HOUSES, SWIM AND GRADING	4-10-19
NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN  
 LANDSCAPE PLAN  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389  
 TAX MAP: 34 GRID: 23  
 5TH ELECTION DISTRICT

ZONED: RR-DEO  
 L. 4772 / F. 285  
 HOWARD COUNTY, MARYLAND

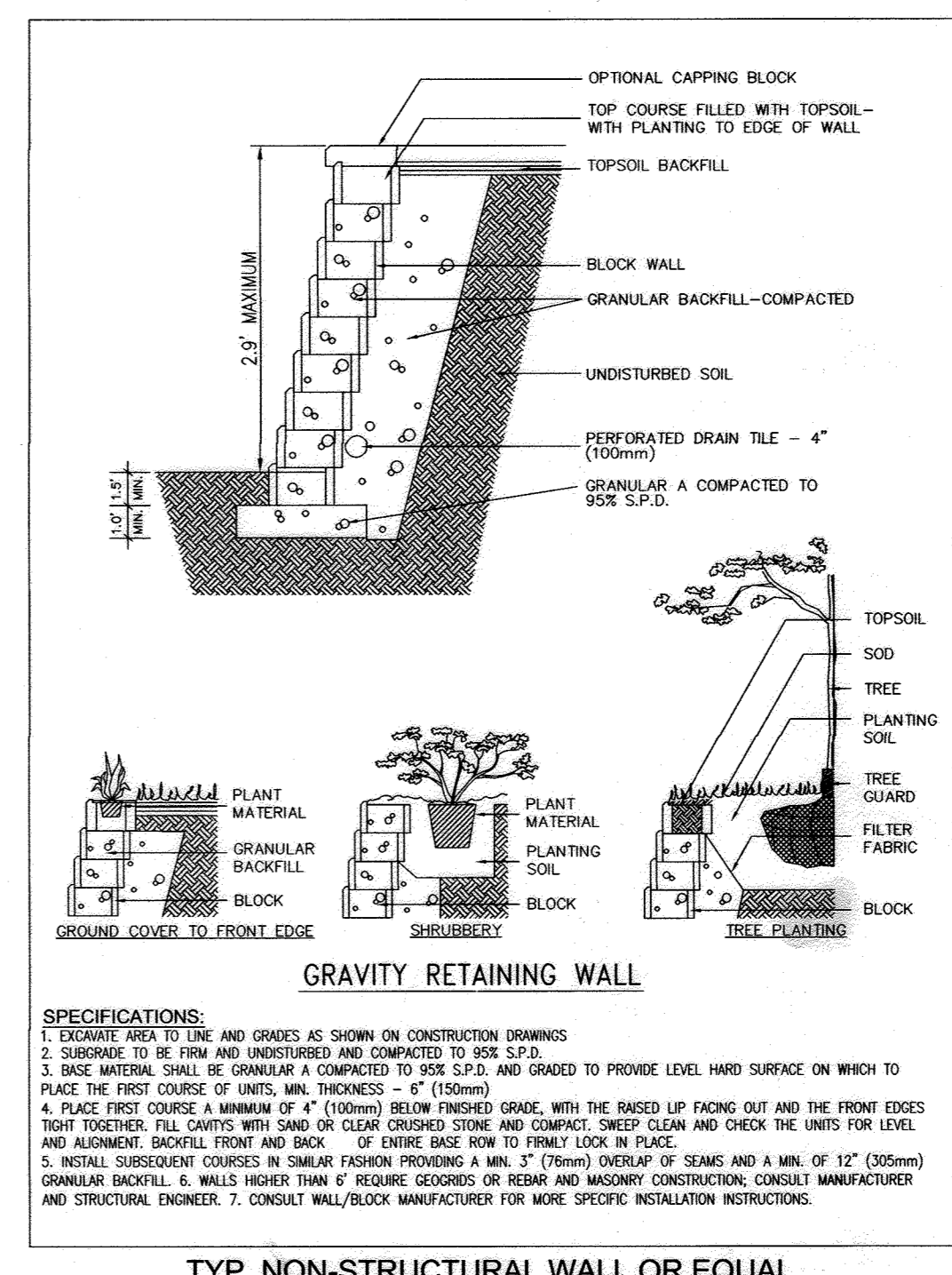
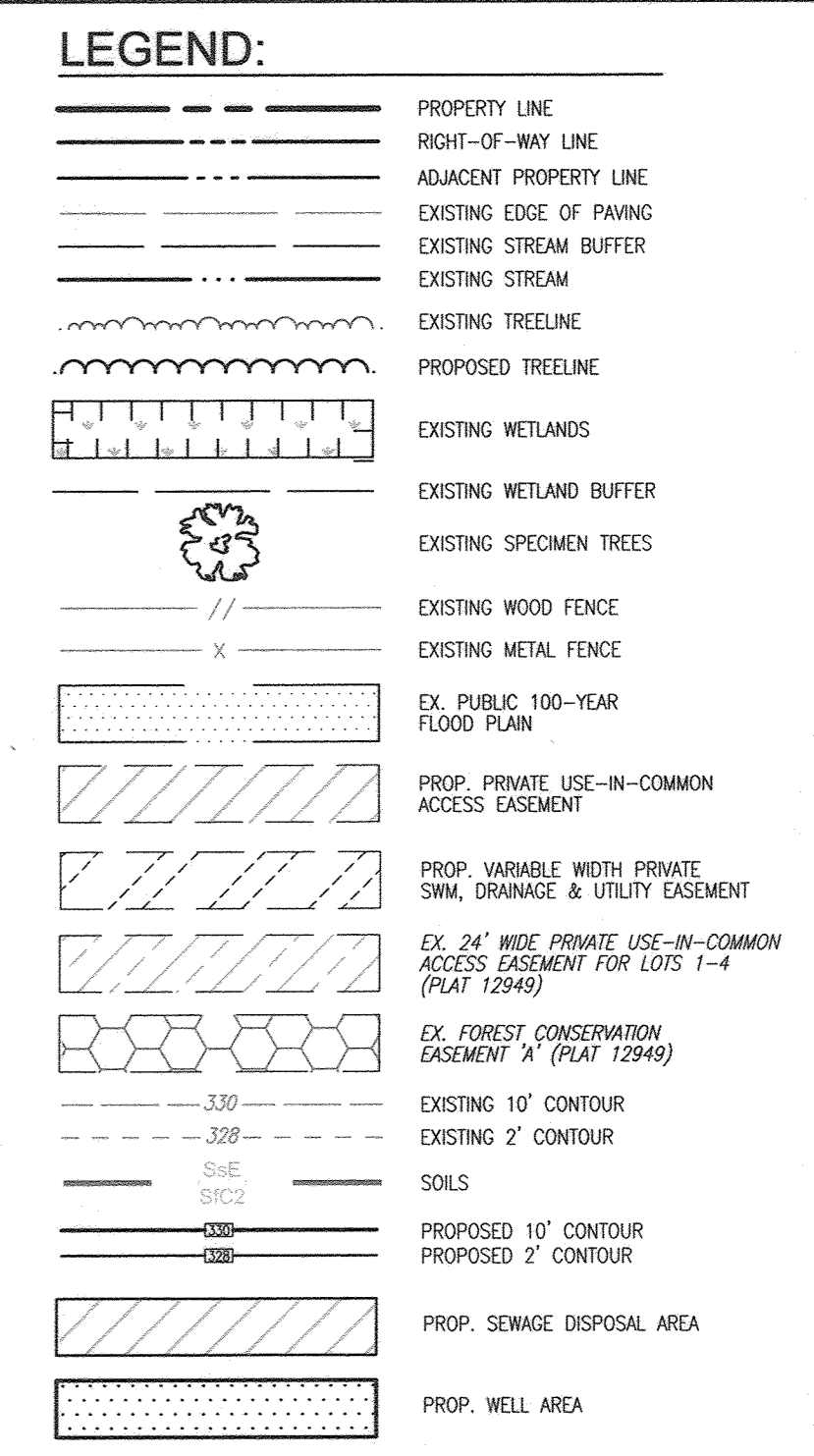
**ROBERT H. VOGEL ENGINEERS, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 3300 N. RIDGE ROAD, SUITE 110  
 ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666  
 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

DESIGN BY: RHV  
 DRAWN BY: JMR  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

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

16 SHEET OF 33



14	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOTS 8 AND 9	6-22-22
13	REVISE THE PLAN TO ADD AN EXTRA DRY WALL TO LOT 7 AND MODIFY THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESD PRACTICES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE GRADING AND SWM ON LOT 5	6-9-21
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1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19
NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN  
LANDSCAPE PLAN  
**THE ESTATES AT RIVER HILL**  
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'  
A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389  
TAX MAP: 34 GRID: 23  
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16 SHEET OF 33

**SPECIMEN TREE MITIGATION:**  
PROPOSED LANDSCAPE TREES WITH THE DESIGNATION OF 'CF' ARE PROVIDED AS PART OF THE 2:1 MITIGATION REQUIRED FOR THE REMOVAL OF TEN SPECIMEN TREES.

**SPECIMEN TREE CHART**

NO.	SIZE (IN. DBH/FEET HEIGHT)	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 24	37" / 55.5'		TULIP POPLAR	MAJOR TRUNK WOUND	TO BE REMOVED
ST 25	34.5" / 51.75'		TULIP POPLAR	POOR, TRUNK CAVITY	TO REMAIN

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
11/27/2018  
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
12-2-18  
DATE

1-10-19  
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.

11/5/18  
DATE

**LANDSCAPE PLAN**  
SCALE: 1" = 50'

**OWNER**  
ESTATES AT RIVER HILL, LLC  
MICHAEL PFANZ, MEMBER  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21043  
(410) 480-0023

**DEVELOPER**  
TRINITY HOMES MARY LAND, LLC  
2675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21043  
(410) 480-0023



**GENERAL NOTES:**

- LANDSCAPING IS PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF \$25,000.00 FOR THE REQUIRED 84 SHADE TREES SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT.
- A SURETY IN THE AMOUNT OF \$6,000.00 FOR THE 19 PUBLIC STREET TREES AND THE 10 SHRUBS FOR THE TWO TRASH PADS WILL BE SATISFIED UNDER THE DED COST ESTIMATE.

**LANDSCAPE NOTES**

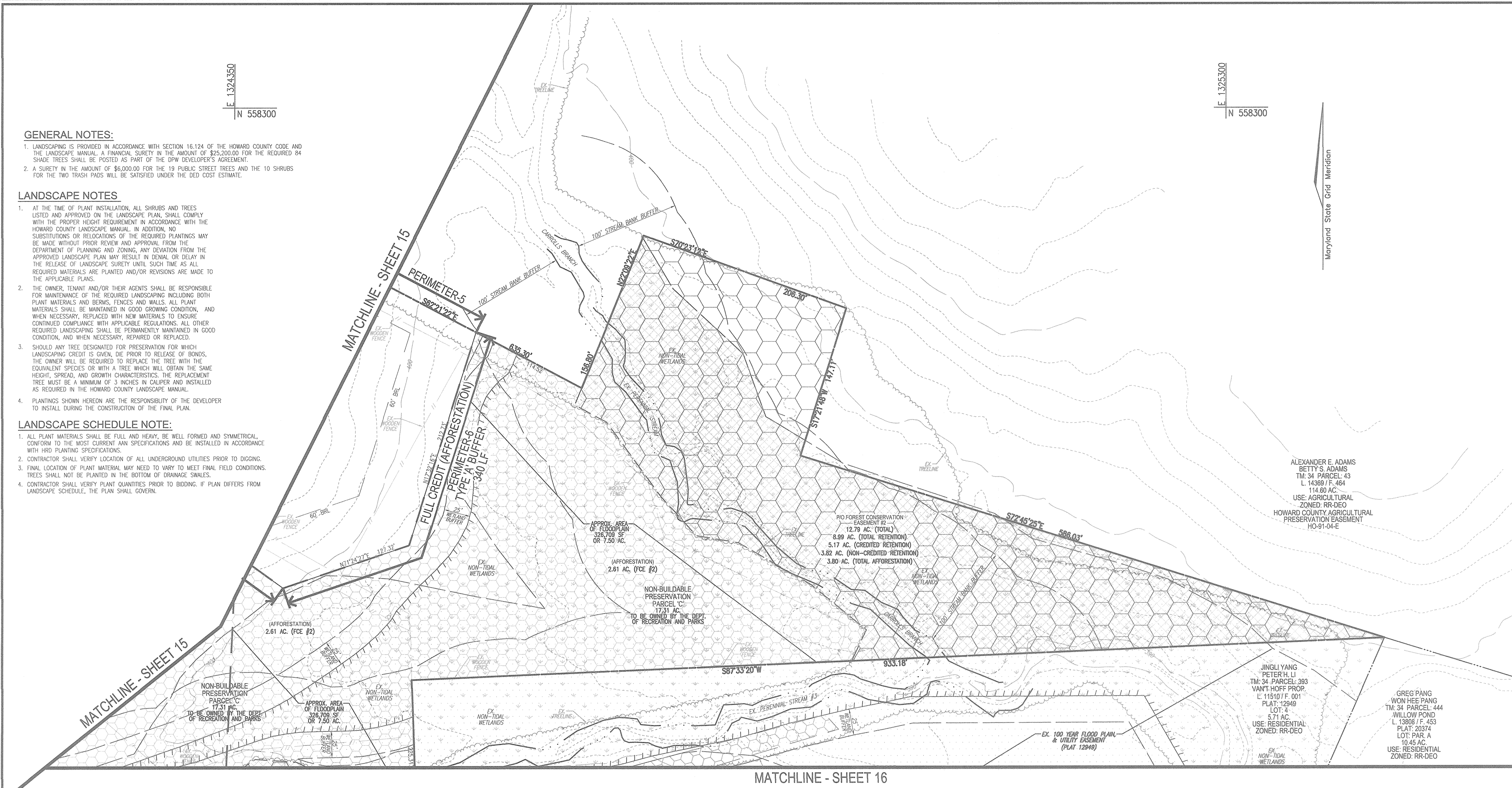
- AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.
- THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
- 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.

**LANDSCAPE SCHEDULE NOTE:**

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

**LEGEND:**

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING EDGE OF PAVING
	EXISTING STREAM BUFFER
	EXISTING STREAM
	EXISTING TREELINE
	PROPOSED TREELINE
	EXISTING WETLANDS
	EXISTING WETLAND BUFFER
	EXISTING SPECIMEN TREES
	EXISTING WOOD FENCE
	EX. PUBLIC 100-YEAR FLOOD PLAN
	EX. FOREST CONSERVATION EASEMENT 'A' (PLAT 12949)
	EXISTING 350' CONTOUR
	EXISTING 328' CONTOUR
	SOILS



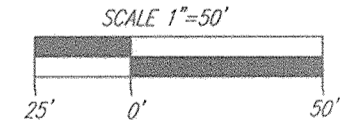
ALEXANDER E. ADAMS  
BETTY S. ADAMS  
TM: 34 PARCEL: 43  
L. 14389 / F. 464  
114.80 AC.  
USE: AGRICULTURAL  
ZONED: RR-DEO  
HOWARD COUNTY AGRICULTURAL  
PRESERVATION EASEMENT  
HO-81-04-E

JINGLI YANG  
PETER H. LI  
TM: 34 PARCEL: 393  
VANT HOFF PROP.  
L. 11510 / F. 001  
PLAT: 12949  
LOT: 4  
5.71 AC.  
USE: RESIDENTIAL  
ZONED: RR-DEO

GREG PANG  
WON HEE PANG  
TM: 34 PARCEL: 444  
WILLOW POND  
L. 13988 / F. 453  
PLAT: 20374  
LOT: PAR. A  
10.45 AC.  
USE: RESIDENTIAL  
ZONED: RR-DEO

MATCHLINE - SHEET 16

**LANDSCAPE PLAN**  
SCALE: 1"=50'



**LANDSCAPING PLANT LIST**

SYMBOL	KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
+	AR	27	ACER RUBRUM "RED SUNSET" RED SUNSET RED MAPLE	2 1/2"-3" CAL.	A
○	QP	36	QUERCUS PHELLOS WILLOW OAK	2 1/2"-3" CAL.	
●	CF	20	CORNUS FLORIDA WHITE FLOWERING DOGWOOD	8'-10' HGT.	
⊙	AF	19	ACER RUBRUM "AUTUMN FLAME" AUTUMN FLAME RED MAPLE	2 1/2"-3" CAL.	A

A. BE ADVISED THAT THESE SPECIES SHOULD NOT BE PLANTED ALONG PROJECT PERIMETERS ADJACENT TO HORSE PASTURES BECAUSE THE WILTED LEAVES, FLOWERS OR NEEDLES MAY BE TOXIC TO HORSES AND OTHER LIVESTOCK.

**SCHEDULE A: PERIMETER LANDSCAPE EDGE**

CATEGORY	ADJACENT TO PERIMETER PROPERTIES AND ROADWAYS									SPECIMEN TREE MITIGATION	TOTAL
	1	2	3	4	5	6	7	8	9		
PERIMETER/FRONTAGE DESIGNATION	1	N/A	N/A	4	5	6	7	8	9		
LANDSCAPE TYPE											
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	830'	287'	402'	1,147'	1,257'	340'	841'	1,210'	1,114'		
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	YES* 366'	-	-	YES 207'	YES 116'	YES 340'	YES 841'	NO	YES 1,034'		
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	-	-	NO	NO	NO	NO	NO	NO		
NUMBER OF PLANTS REQUIRED (LF REMAINING)	464'	-	-	940'	1,141'	0	0	1,210'	80'		
SHADE TREES	1:60	8 (7*)	-	1:60	16	1:60	1:60	1:60	20	1	20
EVERGREEN TREES	-	-	-	-	-	-	-	-	-	-	-
SHRUBS	-	-	-	-	-	-	-	-	-	-	-
NUMBER OF PLANTS PROVIDED	7*	-	-	16	19	0	0	20	1	20	83*
EVERGREEN TREES	-	-	-	-	-	-	-	-	-	-	-
OTHER TREES (2:1 SUBSTITUTION)	-	-	-	-	-	-	-	-	-	-	-
SHRUBS (10:1 SUBSTITUTION)	-	-	-	-	-	-	-	-	-	-	-
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED											

**NOTE:**  
\*CREDIT IS ALSO BEING TAKEN FOR SPECIMEN TREE #22.

**TRASH PAD LANDSCAPING**

SYMBOL	QTY.	DESCRIPTION	SIZE	REMARKS
⊙	10	DWARF JAPANESE YEW	3"-4" HT	B & B

**STREET TREE CALCULATIONS**

STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
ALLNUTT LANE EXT.	768/40	19	19

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS *[Signature]* 11/27/2018 DATE  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 12-2-18 DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* 1-10-19 DATE

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

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*[Signature]* 1/15/19 DATE  
 SIGNATURE OF DEVELOPER

NO.	MODIFICATION TO ONLOT HOUSES, SWIM AND GRADING	4-10-19
	REVISION	DATE

REVISED FINAL ROAD CONSTRUCTION PLAN  
**LANDSCAPE PLAN**  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
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 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND L. 4772 / F. 285

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DESIGN BY: RHV  
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17 SHEET OF 33

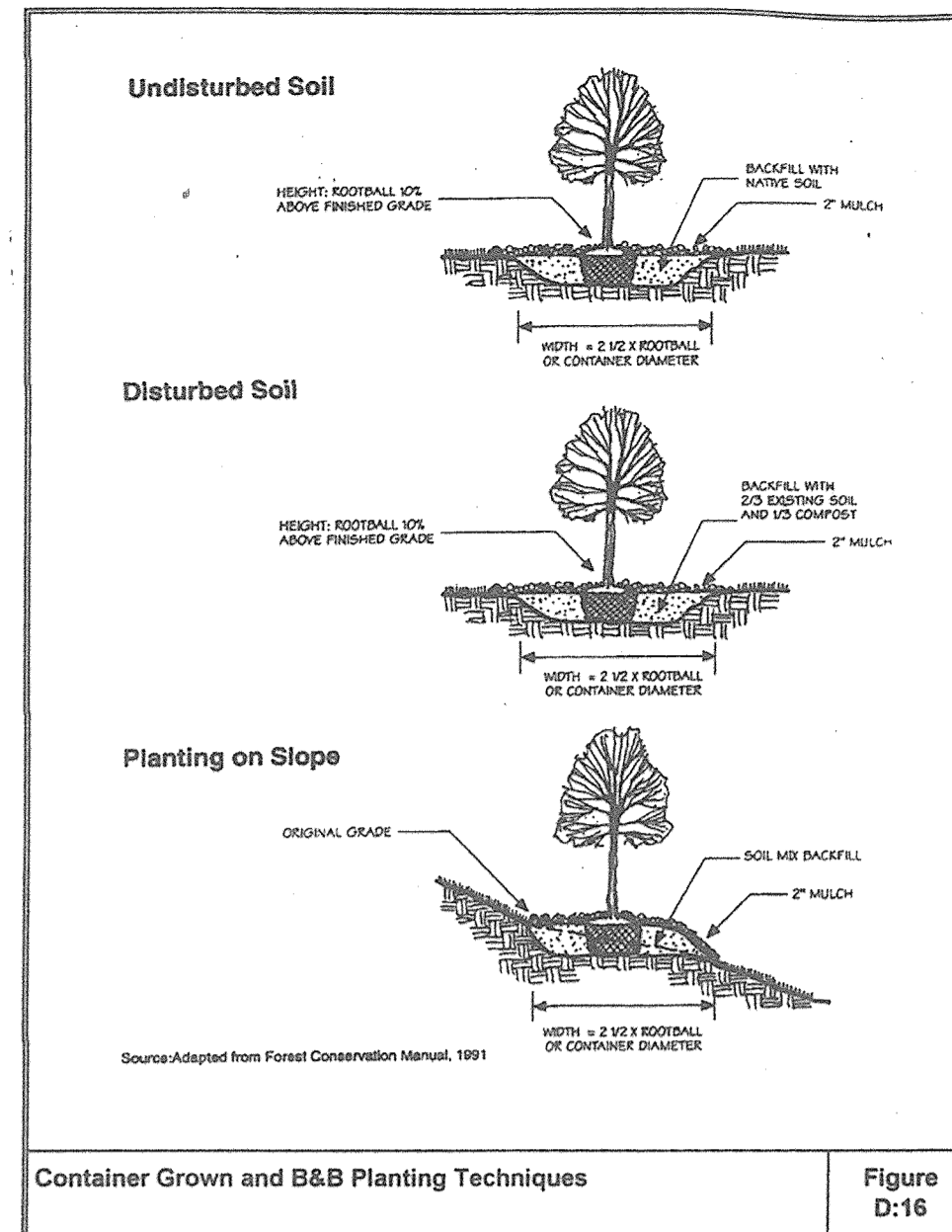


**REFORESTATION AREA MONITORING NOTES**

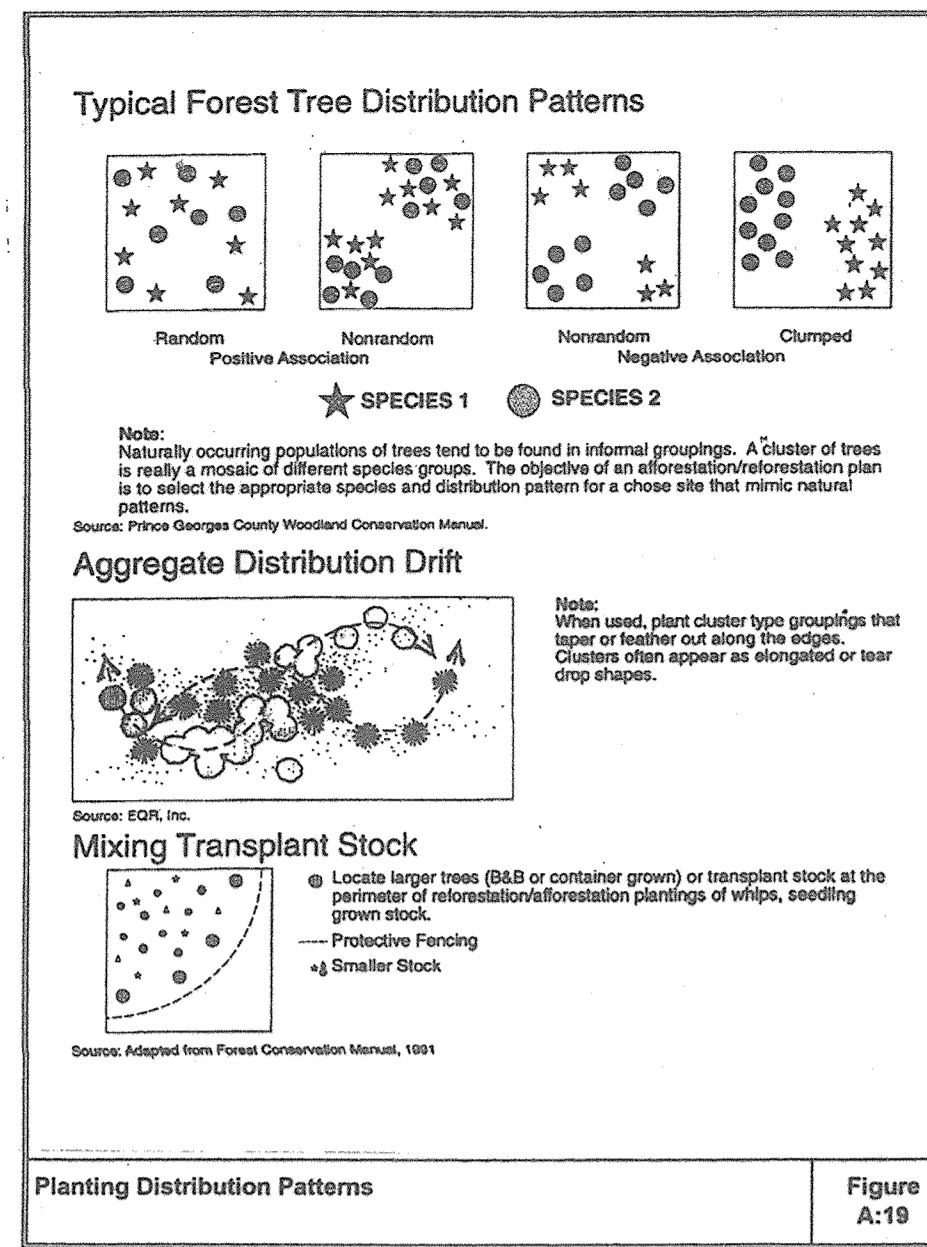
- MONTHLY VISITS DURING THE FIRST GROWING SEASON ARE TO ASSESS THE SUCCESS OF THE PLANTINGS AND TO DETERMINE IF SUPPLEMENTAL WATERING, PEST CONTROL OR OTHER ACTIONS ARE NECESSARY. EARLY SPRING VISITS WILL DOCUMENT WINTER KILL AND AUTUMN VISITS WILL DOCUMENT SUMMER KILL.
- THE MINIMUM SURVIVAL RATE SHALL BE 75% OF THE TOTAL NUMBER OF TREES PLANTED PER ACRE AT THE END OF THE TWO YEAR MAINTENANCE PERIOD. WILD TREE SEEDLINGS FROM NATURAL REGENERATION ON THE PLANTING SITE MAY BE COUNTED UP TO 50% TOWARD THE TOTAL SURVIVAL NUMBER IF THE ARE HEALTHY NATIVE SPECIES AT LEAST 12 INCHES TALL.
- SURVIVAL WILL BE DETERMINED BY A STRATIFIED RANDOM SAMPLING OF THE PLANTINGS. THE SPECIES COMPOSITION OF THE SAMPLE POPULATION SHOULD BE PROPORTIONATE TO THE AMOUNT OF EACH SPECIES IN THE ENTIRE PLANTING TO BE SAMPLED.
- EFFECTIVE MONITORING WILL ASSESS PLANT SURVIVABILITY DURING THE FIRST GROWING SEASON AND MAKE RECOMMENDATIONS FOR REFORESTATION PLANTINGS IF REQUIRED AT THAT TIME.

**REFORESTATION PLANTING NOTES**

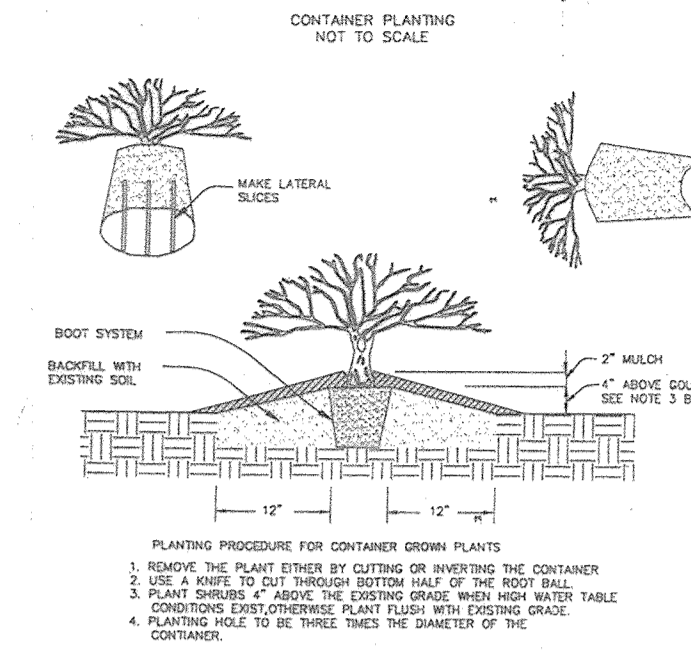
- AFFORESTATION AREAS MAY BE PLANTED AS SOON AS REASONABLE TO DO SO. LATE WINTER-EARLY SPRING PLANTINGS ARE PREFERRED. EARLIEST PLANTING DATES WILL VARY FROM YEAR TO YEAR BUT PLANTING MAY GENERALLY BEGIN AS SOON AS THE GROUND IS NO LONGER FROZEN. ALTERNATE PLANTING DATES MAY BE CONSIDERED AS CONDITION WARRANTS.
- SOIL AMENDMENTS AND FERTILIZATION RECOMMENDATIONS WILL BE MADE BASED UPON THE RESULTS OF SOIL ANALYSIS FOR NITROGEN, PHOSPHORUS, POTASSIUM, ORGANIC MATTER CONTENT AND pH. IF REQUIRED, FERTILIZER WILL BE PROVIDED USING A SLOW RELEASE, SOLUBLE 16-8-16 ANALYSIS DESIGNED TO LAST 5-8 YEARS CONTAINED IN POLYETHYLENE PERFORATED BAGS SUCH AS MANUFACTURED BY ADCO WORKS, P.O. BOX 310 HOLLIS, N.Y. 11423 OR APPROVED EQUAL.
- PLANT MATERIALS WILL BE PLANTED IN ACCORDANCE WITH THE PLANTING DETAILS AND PLANT SCHEDULE.
- PLANT MATERIAL SHALL BE NURSERY GROWN AND INSPECTED PRIOR TO PLANTING. PLANTS NOT CONFORMING TO THE AMERICAN STANDARD FOR NURSERY STOCK SPECIFICATIONS FOR SIZE, FORM, VIGOR, OR ROOTS, OR DUE TO TRUNK WOUNDS, BREAKAGE, DESICCATION, INSECT OR DISEASE MUST BE REPLACED.
- PLANTING STOCK MUST BE PROTECTED FROM DESICCATION AT ALL TIMES PRIOR TO PLANTING. MATERIALS HELD FOR PLANTING SHALL BE MOISTENED AND PLACED IN COOL SHADED AREAS UNTIL READY FOR PLACEMENT.
- NEWLY PLANTED TREES MAY REQUIRE WATERING AT LEAST ONCE PER WEEK DURING THE FIRST GROWING SEASON DEPENDING ON RAINFALL IN ORDER TO GET ESTABLISHED. THE INITIAL PLANTING OPERATION SHOULD ALLOW FOR WATERING DURING INSTALLATION TO COMPLETELY SOAK BACKFILL MATERIAL.
- MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE DIAGRAM PROVIDED AND SHALL CONSIST OF COMPOSTED, SHREDDED HARDWOOD BARK MULCH, FREE OF WOOD ALCOHOL.
- ALL NURSERY STOCK TO BE SPRAYED WITH DEER REPELLENT CONTAINING BITREX, SUCH AS REPELLEX. ALL NURSERY STOCK TO BE GROWN WITH DEER REPELLENT TABLETS IN GROWING MEDIUM, SUCH AS REPELLEX TABLETS.



Container Grown and B&B Planting Techniques Figure D:16



Planting Distribution Patterns Figure A:19



Size	Number Required per Acre	Approximate Spacing feet on center	Survivability Requirement At the end of the second growing season	
Container Grown 5, 7 Gallon or 1" Caliper B & B	200	15 x 15	75%	170

Notes:

- These stocking and survival requirements are the minimum numbers estimated to meet the definition of forest from bare land.
- In certain circumstances, any combination of the above mentioned stocking options, dry seeding, tree shelters, transplants, and/or natural regeneration may be appropriate strategies to fulfill the requirements of an approved FCD. They will be evaluated on a case-by-case basis by the approving authority.
- Spacing does not imply that trees or shrubs must be planted in a grid pattern.

Site Stocking Figure A:18

AFFORESTATION PLANTING SCHEDULE FOREST CONSERVATION EASEMENTS 7.55 ACRES				
EASEMENT #2: 3.80 AC. (AFFORESTATION) @ 200 TREES/AC. = 760 TREES				
QTY.	BOTANICAL NAME	SIZE	SPACING	
152	BETULA NIGRA RIVER BIRCH	1" CAL.	15' x 15'	
152	PLATANUS OCCIDENTALIS AMERICAN SYCAMORE	1" CAL.	15' x 15'	
152	NYSSA SYLVATICA BLACK GUM	1" CAL.	15' x 15'	
152	QUERCUS RUBRA RED OAK	1" CAL.	15' x 15'	
152	TAXODIUM DISTICHUM COMMON BALD CYPRESS	1" CAL.	15' x 15'	
EASEMENT #3: 3.75 AC. (AFFORESTATION) @ 200 TREES/AC. = 750 TREES				
QTY.	BOTANICAL NAME	SIZE	SPACING	
150	BETULA NIGRA RIVER BIRCH	1" CAL.	15' x 15'	
150	PLATANUS OCCIDENTALIS AMERICAN SYCAMORE	1" CAL.	15' x 15'	
150	NYSSA SYLVATICA BLACK GUM	1" CAL.	15' x 15'	
150	QUERCUS RUBRA RED OAK	1" CAL.	15' x 15'	
150	TAXODIUM DISTICHUM COMMON BALD CYPRESS	1" CAL.	15' x 15'	

(MITIGATION)

**AFFORESTATION PROVIDED**

7.55 ACRES  
1" CALIPER TREES  
1,510 TREES @ 200 TREES PER ACRE OR EQUAL

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 \_\_\_\_\_ 11-27-2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 \_\_\_\_\_ 12-2-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

\_\_\_\_\_ 1-10-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAU, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER**  
 TRINITY HOMES MARYLAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

1 MODIFICATION TO ANNOT HOUSES, SWIM AND GRADING		440-19
NO.	REVISION	DATE

REVISED FINAL ROAD CONSTRUCTION PLAN  
 FOREST CONSERVATION PLAN  
 NOTES AND DETAILS  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'  
 A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

PARCEL: 389 ZONED: RR-DED  
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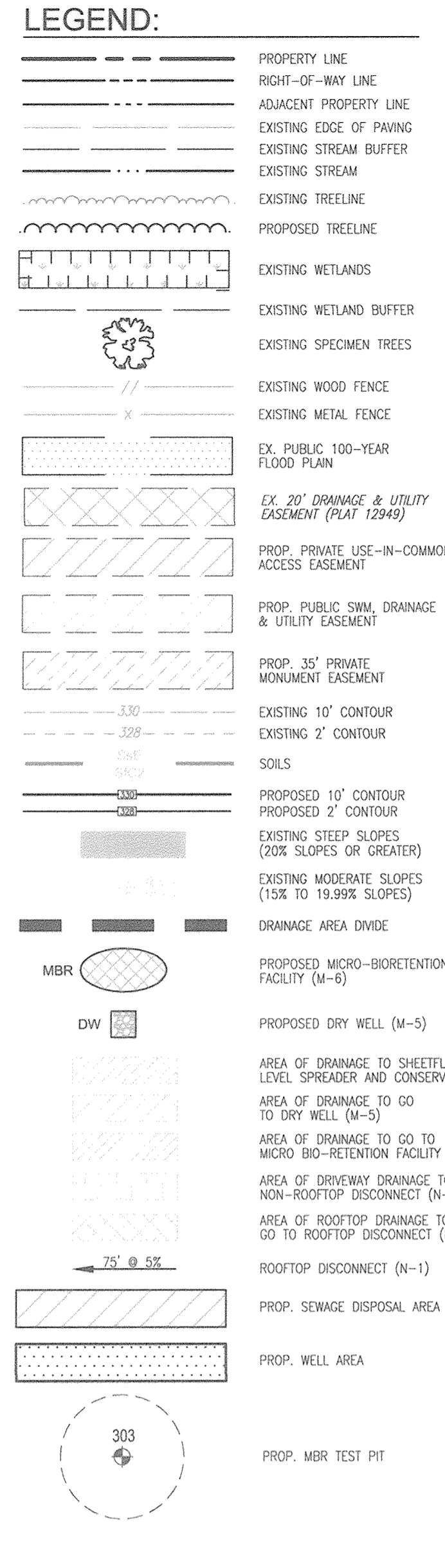
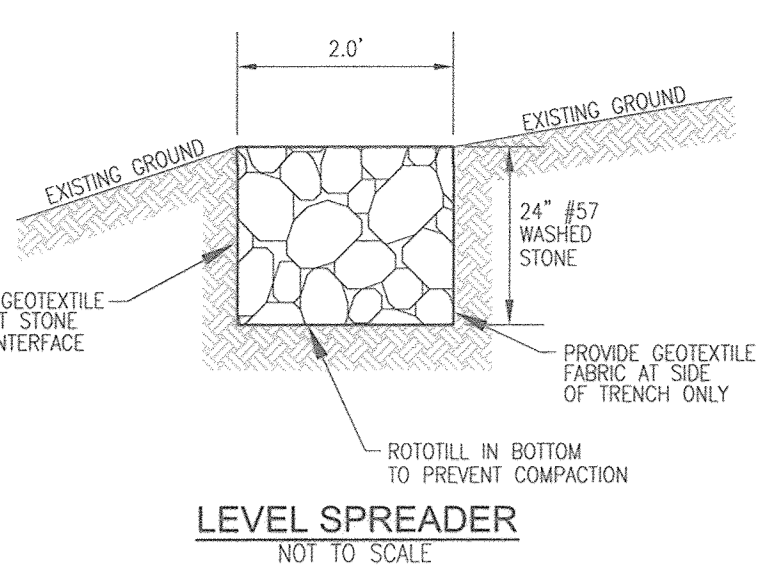
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20 SHEET OF 33  
 ROBERT H. VOGEL, PE No.16193

MATCHLINE - SHEET 22

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Ba	BALE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Ca	COODORUS AND HAYBRO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
Ga	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
Gc	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
Gm	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ha	HAYBRO-COODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES



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

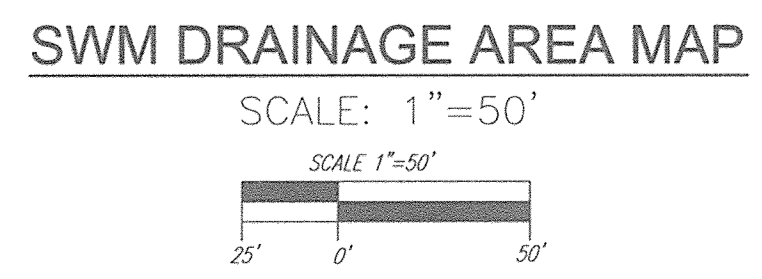
- MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
- FILTERING MEDIA OR PLANTING SOIL**  
THE SOIL SHALL BE A UNIFORM MIX. FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR COMPACTED 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 BERMOUDA 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 (LOAM 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 (LOOK TO 40% OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
  - CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
  - PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.
- COMPACTION**  
THIS 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 MARCH 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 EVALUATED 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 REFRACTURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTTITILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.  
ROTTITILL 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 (ROTTITILLING) BASE.  
WHEN BACKFILLING THE TPOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTTITILL THE SAND/TPOIL 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. LIGHT EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.
- PLANT MATERIAL**  
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.
- PLANT INSTALLATION**  
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SUBSURROUNDING 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. SHREDDED 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 THE 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 PLOUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.  
THE TOPSOIL SPECIFICATIONS PROVIDED ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFERS, OR AT A MINIMUM, IMPEDS THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTTITILL 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 758, TYPE PS 28, OR ASHITO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (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 1/4" (NO. 4 OR 4A) GALVANIZED HARDWARE CLOTH.
  - GRAVEL - THE GRAVEL OVER AND UNDER THE PREFERRED PIPE 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 IN TO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".
- MISCELLANEOUS**  
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

TEST PIT	SURFACE ELEVATION	BORING DEPTH	CONDITION
300	448.84	11'	NO ROCK OR WATER PRESENT
301	431.87	10'	WATER PRESENT AT 421.87
302	429.69	9'	NO ROCK OR WATER PRESENT
303	420.57	9'	WATER PRESENT AT 411.57
309	441.73	12'	NO ROCK OR WATER PRESENT
310	428.00	12'	NO ROCK OR WATER PRESENT
311	418.42	9'	ROCK PRESENT AT 412.42

**OPERATION AND MAINTENANCE SCHEDULE FOR JOINTLY MAINTAINED MICROBIORETENTION AREAS (M-6), MBR-1A & MBR-1B)**

- HOMEOWNERS ASSOCIATION RESPONSIBLE FOR MAINTAINING PASS THROUGH INLETS PT-1 AND PT-2 AND ALL IRBPAP FOREBAYS ASSOCIATED WITH MBR-1A AND MBR-1B.
- HOMEOWNERS ASSOCIATION RESPONSIBLE FOR MAINTENANCE OF ALL UNDER DRAIN PIPES, CATCH BASINS AND OVERFLOW RIRPAP.
- HOMEOWNERS ASSOCIATION RESPONSIBLE FOR ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOL. II, TABLE A.1 AND 2.
- SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT. TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES. (HGA)
- MULCH SHALL BE INSPECTED EACH SPRING REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS. (HGA)
- SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS. (HGA)

**NOTE:**  
MBR-1A AND MBR-1B ARE LOCATED IN A PUBLIC SWM EASEMENT. FACILITIES ARE TO BE PRIVATELY OWNED BY THE HOMEOWNERS ASSOCIATION AND JOINTLY MAINTAINED BY THE HOMEOWNERS ASSOCIATION AND HOWARD COUNTY.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12-2-18

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 1-10-19

REVISIONS

NO.	REVISION	DATE
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN  
 STORMWATER MANAGEMENT DRAINAGE  
 AREA MAP, NOTES, AND DETAILS  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B'- 'H'  
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389  
 TAX MAP: 34 GRID: 23  
 5TH ELECTION DISTRICT

OWNER  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAU, MEMBER  
 3875 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

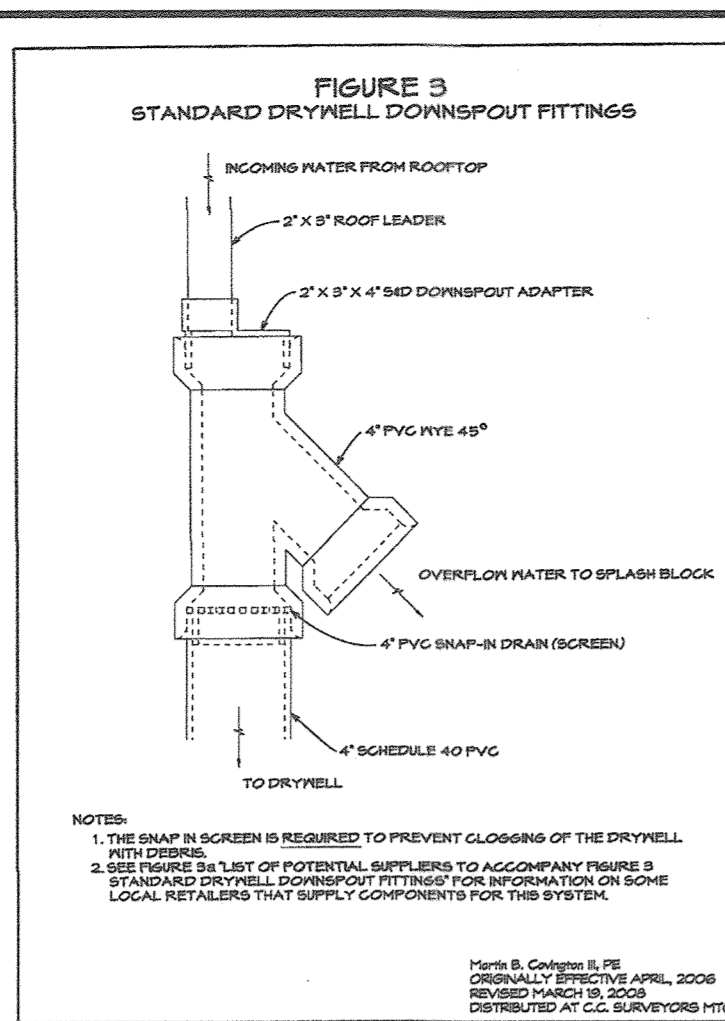
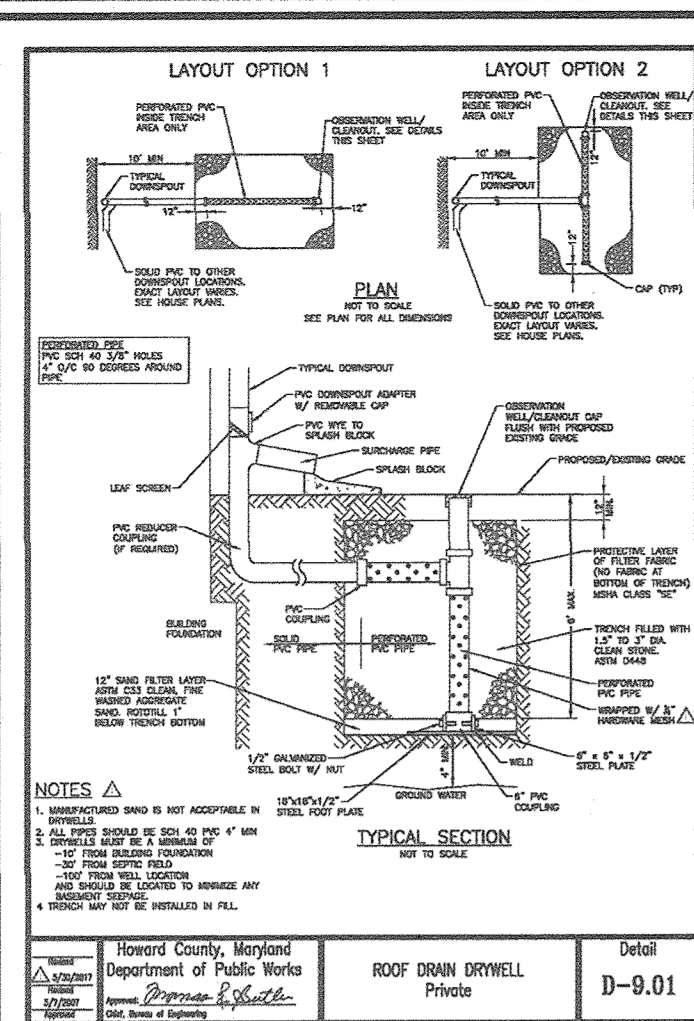
DEVELOPER  
 TRINITY HOMES MARY LAND, LLC  
 3875 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

ROBERT H. VOGEL, PE No. 16193

DESIGN BY: RHV  
 DRAWN BY: JMR  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

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

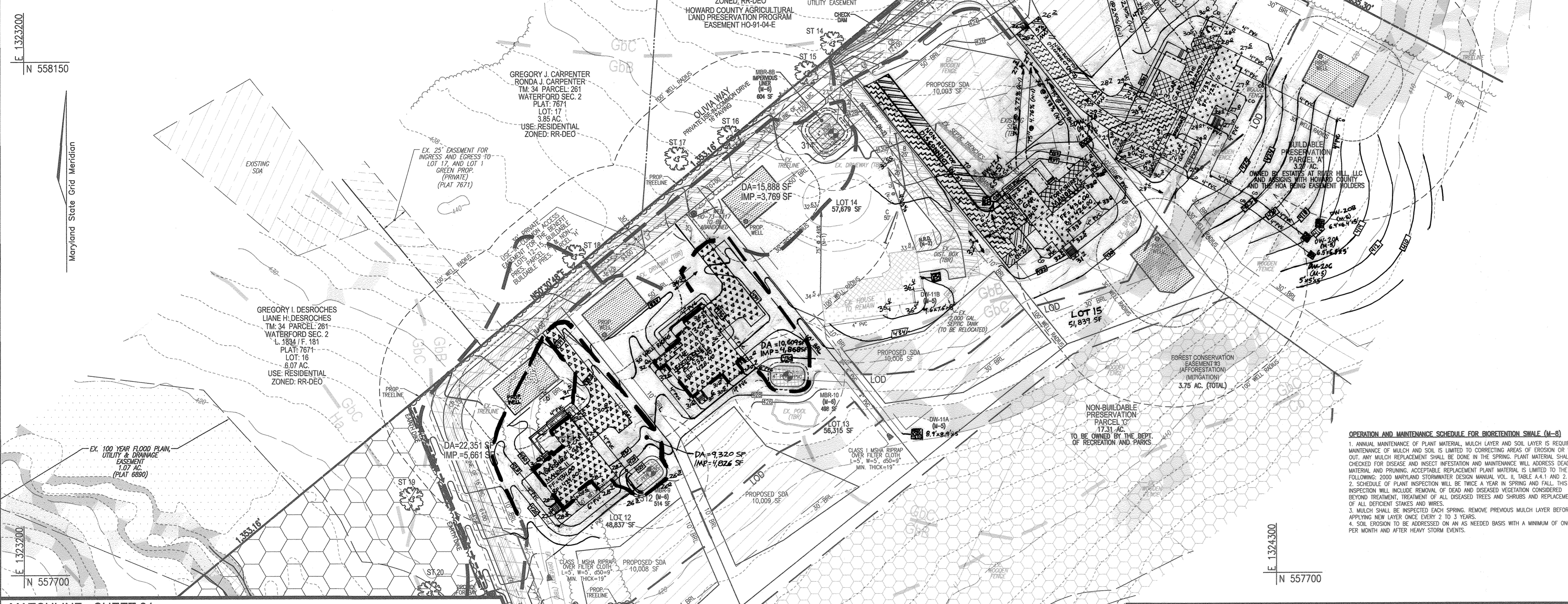
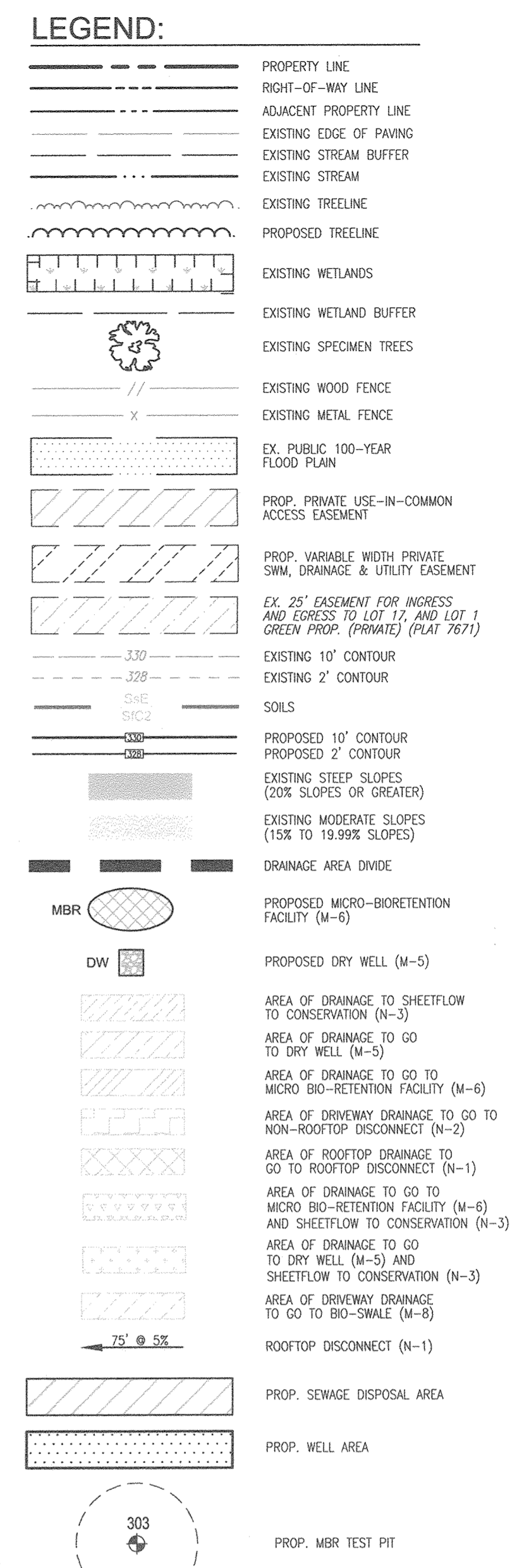
21 SHEET OF 33



**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER INFILTRATION TRENCHES (I-1) AND DRY WELLS (M-5)**

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

THE ESTATES AT RIVER HILL			
STORMWATER TEST PITS			
TEST PIT	SURFACE ELEVATION	BORING DEPTH	CONDITION
312	427.40	10'	NO ROCK OR WATER PRESENT
313	427.29	10'	NO ROCK OR WATER PRESENT
314	429.13	10'	NO ROCK OR WATER PRESENT



**OPERATION AND MAINTENANCE SCHEDULE FOR BIOTENTION SWALE (M-8)**

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOL. II, TABLE A.4.1 AND 2.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING, REMOVE EXCESS MULCH BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONE PER MONTH AND AFTER HEAVY STORM EVENTS.

NO.	REVISION	DATE
12	REVISE THE HOUSE AND GRADING ON LOT 12	8-11-21
10	REVISE THE HOUSE AND ESP FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM FOR LOT 13	1-29-21
5	REVISE THE HOUSE, GRADING AND SWM FOR LOT 15	11-19-20
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL 'A' AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO SHORT HOUSE, SWM AND GRADING	4-10-19

MATCHLINE - SHEET 21

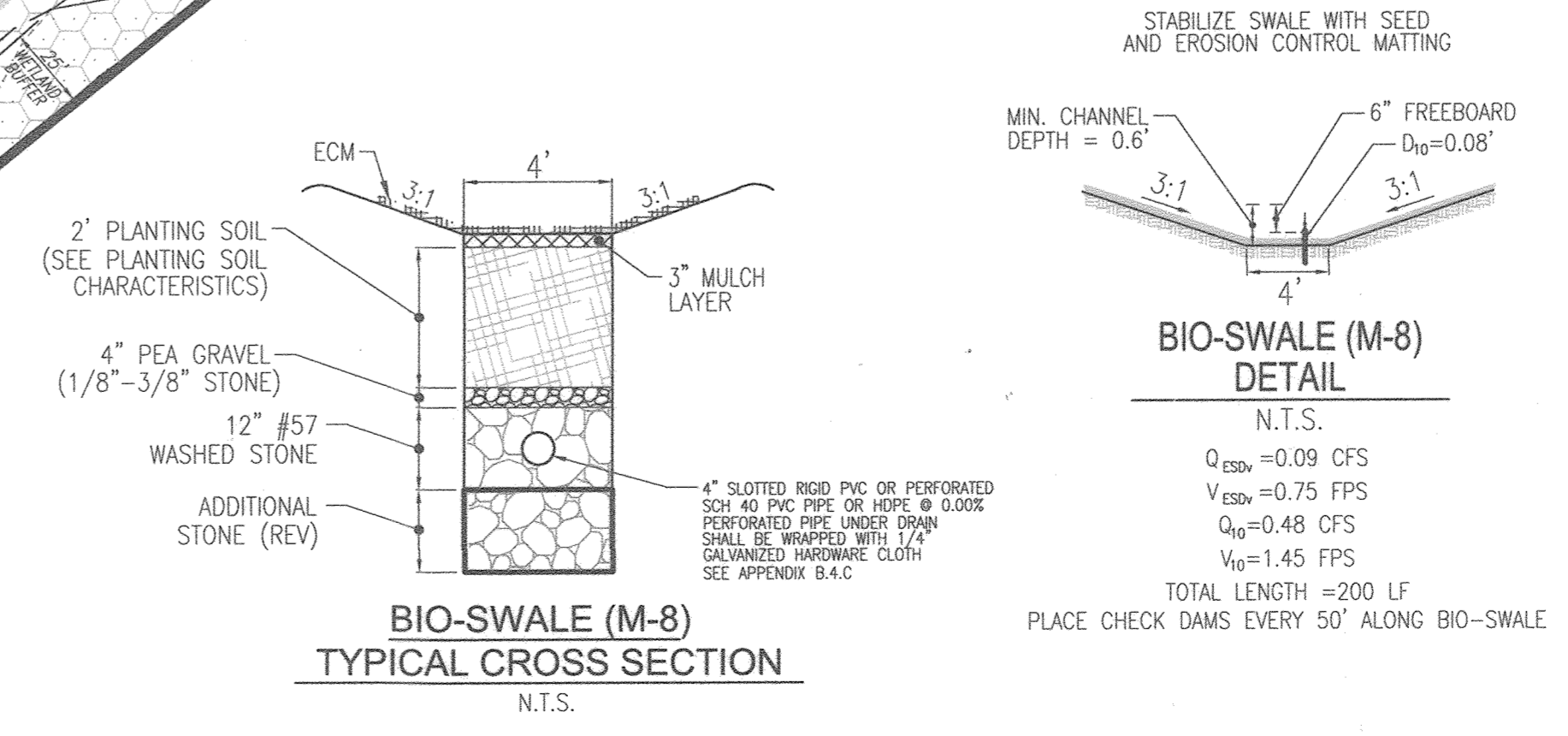
MATCHLINE - SHEET 23

**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1) AND DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)**

1. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA IN COMMERCIAL AREAS. FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SHEETFLOW TO CONSERVATION AREA (N-3)**

1. CONSERVATION AREAS SHALL REMAIN UNDISTURBED AND UNMANAGED OTHER THAN ROUTINE DEBRIS REMOVAL AND REPAIRING AREAS OF CONCENTRATED FLOW. INVASIVE AND NOXIOUS PLANT REMOVAL AND BI-ANNUAL MOWING FOR MEADOW AREAS MAY BE NEEDED. SIGNS DELINEATING THE LIMITS OF THE CONSERVATION AREA SHOULD BE MAINTAINED AND SUPPLEMENTAL PLANTINGS PERFORMED AS NEEDED.



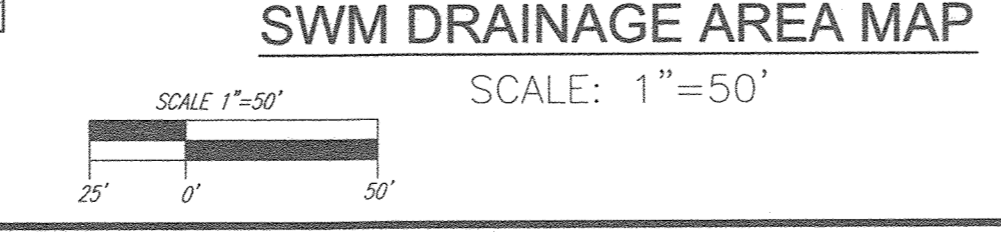
SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
DR	BALE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
CD	CODORUS AND HAIBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GSB	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GCB	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GNB	CLENNILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
HN	HAIBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12.2.18

DATE: 1-10-19



REVISED FINAL ROAD CONSTRUCTION PLAN  
 STORMWATER MANAGEMENT DRAINAGE  
 AREA MAP, NOTES, AND DETAILS  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B', 'H'  
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389  
 TAX MAP: 54 GRID: 23  
 SITE ELECTION DISTRICT

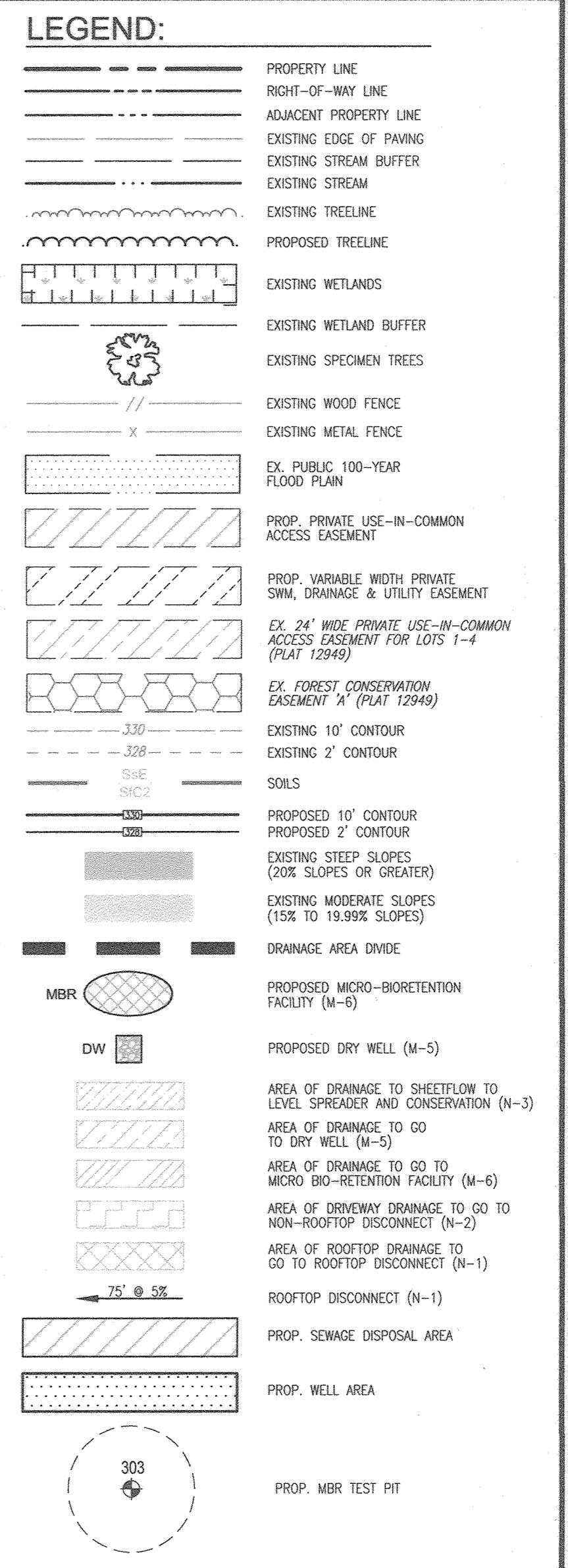
ZONED: RR-DEO  
 L. 4772 / F. 268  
 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERS & SURVEYORS - PLANNERS**  
 3300 N. RIDGE ROAD, SUITE 110  
 ELLICOTT CITY, MD 21143  
 TEL: 410.461.7666  
 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE  
 DESIGN BY: RHV  
 DRAWN BY: JMR  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

STATE OF MARYLAND PROFESSIONAL ENGINEER  
 ROBERT H. VOGEL, PE No. 16193

22 SHEET OF 33



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

**Table B.4.1 Materials Specifications for Micro-Bioretentation, Rain Gardens & Landscape Infiltration.**

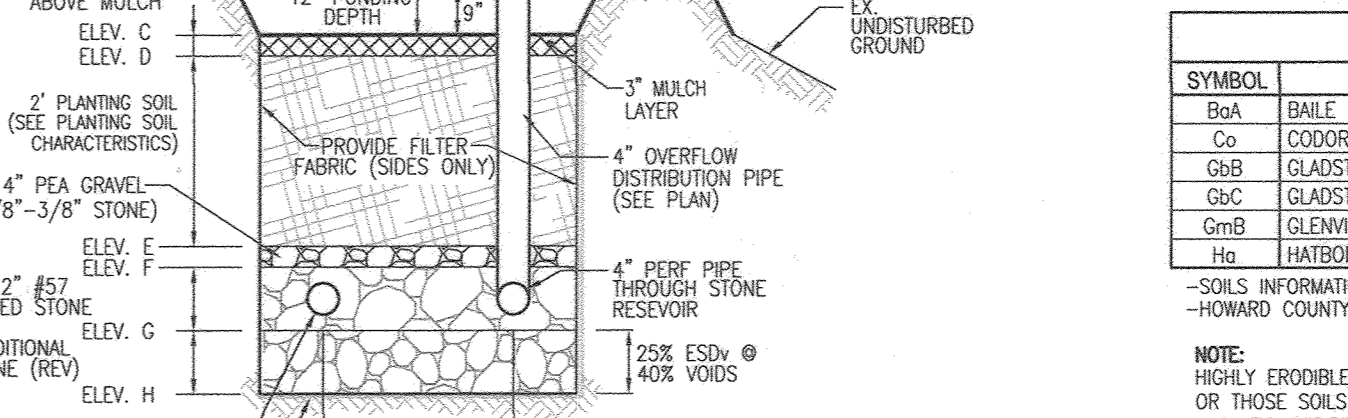
Material	Specification	Size	Notes
Planting soil (2' to 4' deep)	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	n/a	aged 6 months, minimums no pine or wood chips
Mesh	Double-banded pea gravel ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	enamel stone: washed cobble	stone: 2" to 5"	
Geotextile	enamel stone	n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 (AGGREGATE 1/2" to 3/4")	PE Type 1 nonwoven
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Shotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 2" of gravel over pipe; not necessary underdrain pipe. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
Formed in place concrete (if required)	MESA Min No. 3, F, - 2500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM-A615-60	n/a	in-situ testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 308.6R9; vertical loading (H-10 or H-20); allowable horizontal loading (based on soil stresses); and analysis of potential cracking
Sand	AASHTO M-6 or ASTM-C-33	0.075" to 0.084"	Sand substitution such as Diatom and Craystone (AASHTO #10) are not acceptable. No calcium carbonated or dolomitic sand substitution are acceptable. No "rock dust" can be used for sand.

**MICRO-BIORETENTION FACILITY ELEVATIONS (M-6) (SEE SITE LAYOUT ON SHEET 21)**

LOT #	FACILITY	A	B	C	D	E	F	G	H	WELL	UNDERDRAIN	OUTFALL	FACILITY
NBPP	MBR-1A	426.30	426.00	425.00	424.75	422.75	422.42	421.42	420.59	426.00	421.75	421.50	865 SF
NBPP	MBR-1B	421.30	421.00	420.00	419.75	417.75	417.42	416.42	415.59	421.00	416.75	415.90	1,163 SF
LOT 1	MBR-2A	450.30	450.00	449.00	448.75	446.75	446.42	445.42	444.59	450.00	445.75	437.00	255 SF
LOT 2	MBR-3	432.30	432.00	431.00	430.75	428.75	428.42	427.42	426.59	432.00	427.75	427.00	304 SF
LOT 3	MBR-4	426.30	426.00	425.00	424.75	422.75	422.42	421.42	420.59	426.00	421.75	421.00	294 SF
NBPP	MBR-5A	418.30	418.00	417.00	416.75	414.75	414.42	413.42	412.59	418.00	413.75	413.00	663 SF
LOT 11	MBR-6A	434.30	434.00	433.00	432.75	430.75	430.42	429.42	428.59	434.00	429.75	423.00	168 SF
LOT 10	MBR-7A	442.30	442.00	441.00	440.75	438.75	438.42	437.42	436.59	442.00	437.75	432.00	185 SF
NBPP	MBR-8A	418.30	418.00	417.00	416.75	414.75	414.42	413.42	412.59	418.00	413.75	413.00	1,028 SF

**MICRO-BIORETENTION FACILITY ELEVATIONS (M-6) (SEE SITE LAYOUT ON SHEET 22)**

LOT #	FACILITY	A	B	C	D	E	F	G	H	WELL	UNDERDRAIN	OUTFALL	FACILITY
LOT 14	MBR-9B	427.80	427.50	426.50	426.25	424.25	423.92	422.92	422.09	427.50	423.25	418.75	504 SF
LOT 12	MBR-9	428.30	428.00	427.00	426.75	424.75	424.42	423.42	422.59	428.00	423.75	423.00	514 SF
LOT 13	MBR-10	429.30	429.00	428.00	427.75	425.75	425.42	424.42	423.59	429.00	424.75	424.00	488 SF



**THE ESTATES AT RIVER HILL**

STORMWATER TEST PITS

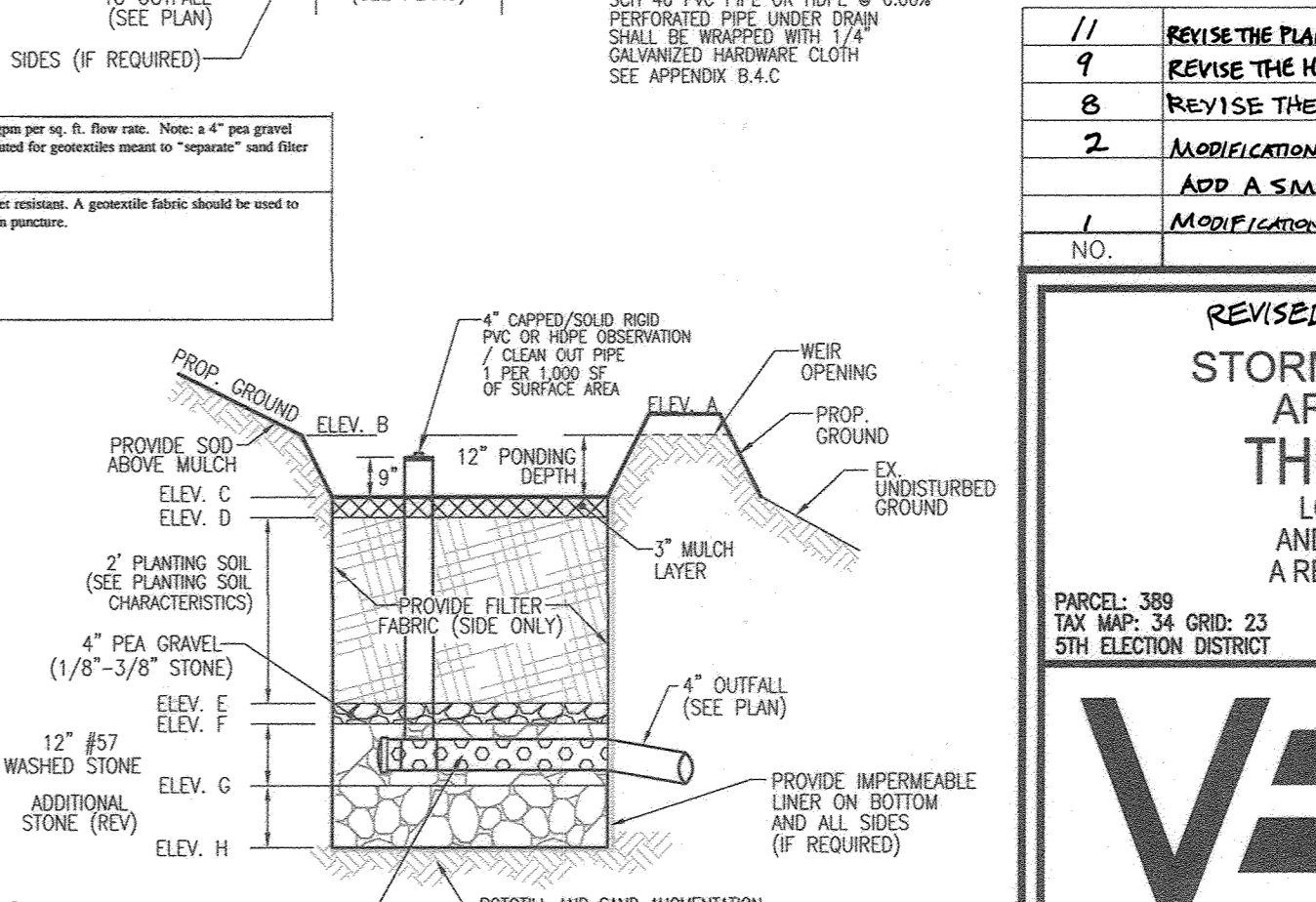
TEST PIT	SURFACE ELEVATION	BORING DEPTH	CONDITION
304	422.48	10'	NO ROCK OR WATER PRESENT
305	423.25	7'	NO ROCK OR WATER PRESENT
306	444.41	11'	NO ROCK OR WATER PRESENT
307	432.27	10'	NO ROCK OR WATER PRESENT
308	423.29	10'	NO ROCK OR WATER PRESENT

**OPERATION AND MAINTENANCE SCHEDULE FOR (M-6) MICROBIORETENTION AREAS**

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOL. 1, TABLE A-1 AND 2. 2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT SHRUBS AND TREES. 3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS. 4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

**IMPERMEABLE LINER SPECIFICATIONS**

geotextile fabric (if required)	ASTM-D-4893 (structure strength - 125 lb.) ASTM-D-4892 (tensile strength - 300 lb.)	6.0mm thick equivalent opening size of #80 sieve	Min. minimum 132 gms per sq. ft. flow rate. Note: #4 wax coated filter may be substituted for geotextiles used to cross the floor from concrete.
impermeable floor (if required)	ASTM-D-4893 (thickness) ASTM-D-4892 (tensile strength - 1,100 lb., elongation 200%) ASTM-D-4891 Clear membrane - 150 lb./in. ASTM-D-471 (cover substrate: +8 to -28 mm)	30 mil thickness	1. Line to be ultraviolet resistant. A geotextile fabric should be used to cross the floor from concrete.



**MICRO-BIORETENTION FACILITY ELEVATIONS (M-6) (SEE SITE LAYOUT THIS SHEET)**

LOT #	FACILITY	A	B	C	D	E	F	G	H	WELL	UNDERDRAIN	OUTFALL	FACILITY
NBPP	MBR-9B	427.80	427.50	426.50	426.25	424.25	423.92	422.92	422.09	427.50	423.25	418.75	504 SF
LOT 12	MBR-9	428.30	428.00	427.00	426.75	424.75	424.42	423.42	422.59	428.00	423.75	423.00	514 SF
LOT 13	MBR-10	429.30	429.00	428.00	427.75	425.75	425.42	424.42	423.59	429.00	424.75	424.00	488 SF

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 DATE: 11/27/2018  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 DATE: 12.2.18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF LAND DEVELOPMENT  
 DATE: 1-10-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT

**SWM DRAINAGE AREA MAP**

SCALE: 1"=50'

SCALE: 1"=20'

**REVISED FINAL ROAD CONSTRUCTION PLAN**

**STORMWATER MANAGEMENT DRAINAGE AREA MAP, NOTES, AND DETAILS**

**THE ESTATES AT RIVER HILL**

LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B', 'H' A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

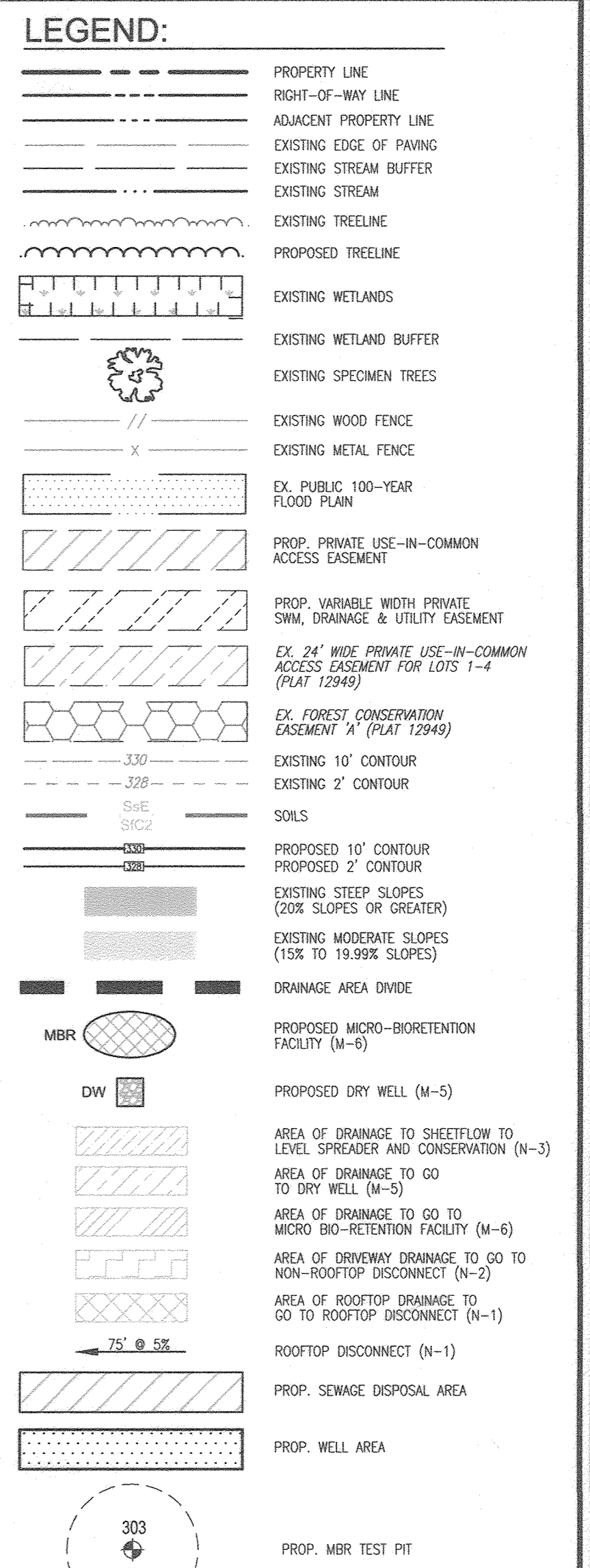
PARCEL: 389 TAX MAP: 23 5TH ELECTION DISTRICT ZONED: RR-DEO L 4772 / F. 285 HOWARD COUNTY, MARYLAND

**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

DESIGN BY: RHV  
 DRAWN BY: JMR  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

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

23 OF 33



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

**Table B.4.1 Materials Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltration**

Material	Specification	Size	Notes
Planting soil [2" to 4" deep]	loamy sand (60-65%) & compost (35-40%) or sandy loam (30%), coarse sand (20%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam, clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		aged 6 months, minimums, no pine or wood chips
Mulch	sterilized hardwood	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Post gravel diaphragm	poly geom. ASTM-D-448		
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 3"	
Geotextile	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE	PE Type 1 nonwovens
Gravel (underdrains and infiltration berms)			
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe, 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipe; not necessary end-to-end pipe. Perforated pipe shall be wrapped with 1/4" galvanized hardware cloth.
Paired in place concrete (if required)	MSEA Mix No. 3, F <sub>c</sub> = 3500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM-A-615-40	n/a	on-site testing of poured-in-place concrete required; 28-day strength and slump tests; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 308.3R/89; vertical loading 8' (4' or 16.80) allowable horizontal loading (based on soil pressure), and analysis of potential cracking.
Sand	AASHTO M-6 or ASTM-C-33	0.075" to 0.04"	Standard substitution such as Dilsen and Grayson (AASHTO #10) are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

**THE ESTATES AT RIVER HILL**

**STORMWATER TEST PITS**

TEST PIT	SURFACE ELEVATION	BORING DEPTH	CONDITION
304	422.48	10'	NO ROCK OR WATER PRESENT
305	423.25	7'	NO ROCK OR WATER PRESENT
306	444.41	11'	NO ROCK OR WATER PRESENT
307	432.27	10'	NO ROCK OR WATER PRESENT
308	423.29	10'	NO ROCK OR WATER PRESENT

**OPERATION AND MAINTENANCE SCHEDULE FOR (M-6) MICROBIORETENTION AREAS**

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LEVEL IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOL. 1, TABLE A.4.1 AND 2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEFORE TREATMENT. TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.

2. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.

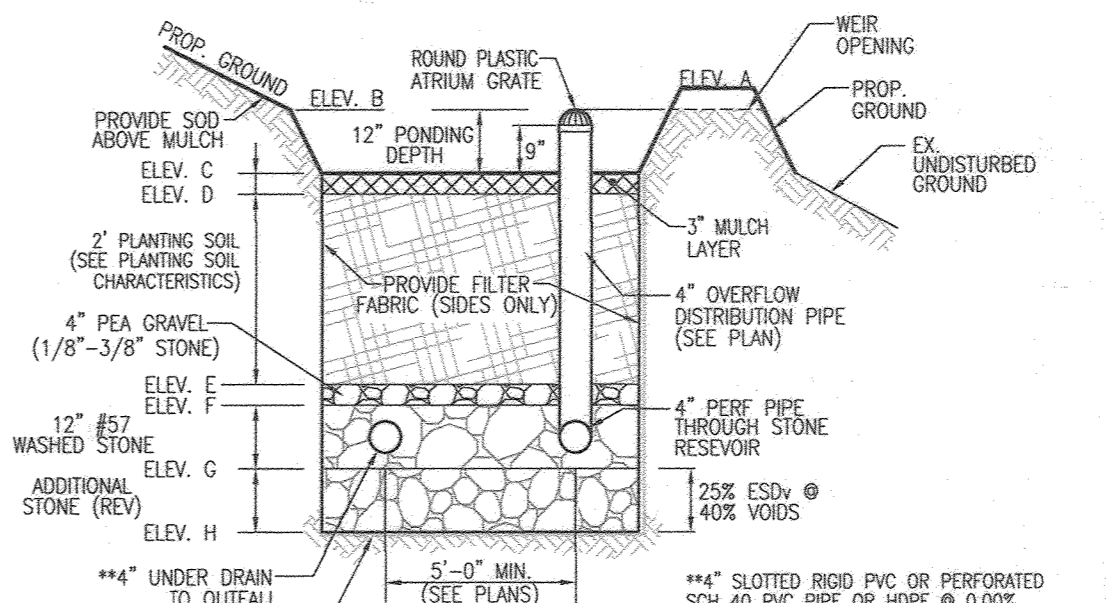
3. A SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

**MICRO-BIORETENTION FACILITY ELEVATIONS (M-6) (SEE SITE LAYOUT ON SHEET 21)**

LOT #	FACILITY	A	B	C	D	E	F	G	H	NEW ELEV.	UNDERDRAIN INV.	OUTFALL INV.	FACILITY SIZE
NBPP	MBR-1A	426.30	426.00	425.00	424.75	422.75	422.42	421.42	420.59	426.00	421.75	421.50	865 SF
NBPP	MBR-1B	421.30	421.00	420.00	419.75	417.75	417.42	416.42	415.59	421.00	416.75	415.50	1,165 SF
LOT 1	MBR-2A*	450.30	450.00	449.00	448.75	446.75	446.42	445.42	444.59	450.00	445.75	437.00	255 SF
LOT 2	MBR-3	432.30	432.00	431.00	430.75	428.75	428.42	427.42	426.59	432.00	427.75	427.00	304 SF
LOT 3	MBR-4	426.30	426.00	425.00	424.75	422.75	422.42	421.42	420.59	426.00	421.75	421.00	294 SF
NBPP	MBR-5A	418.30	418.00	417.00	416.75	414.75	414.42	413.42	412.59	418.00	413.75	413.00	663 SF
LOT 11	MBR-6A	434.30	434.00	433.00	432.75	430.75	430.42	429.42	428.59	434.00	429.75	423.00	168 SF
LOT 10	MBR-7A	442.30	442.00	441.00	440.75	438.75	438.42	437.42	436.59	442.00	437.75	432.00	185 SF
NBPP	MBR-8A	418.30	418.00	417.00	416.75	414.75	414.42	413.42	412.59	418.00	413.75	413.00	1,028 SF

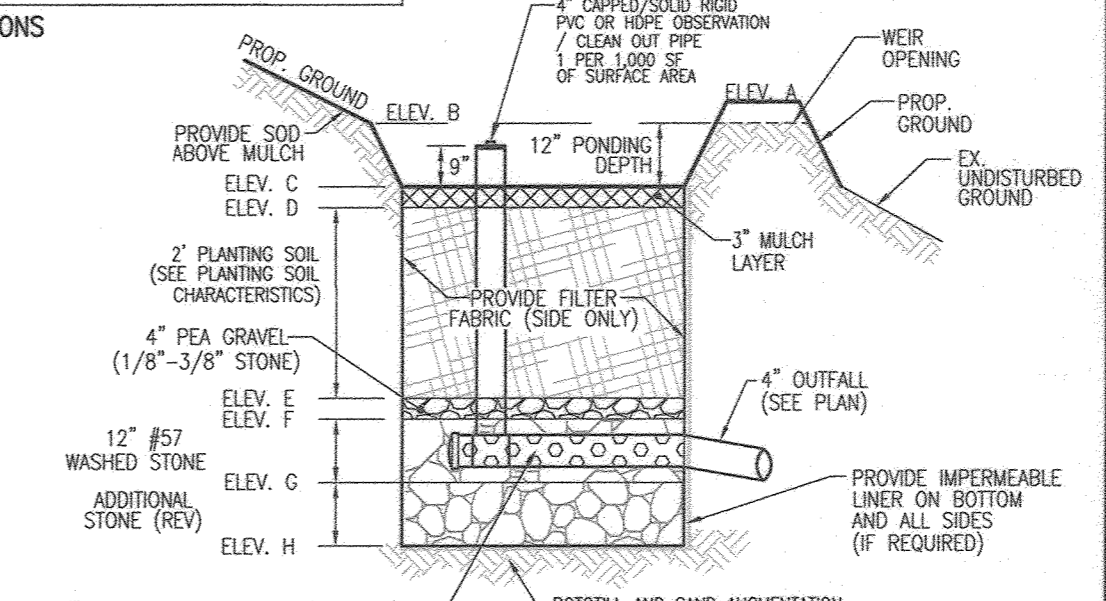
**MICRO-BIORETENTION FACILITY ELEVATIONS (M-6) (SEE SITE LAYOUT ON SHEET 22)**

LOT #	FACILITY	A	B	C	D	E	F	G	H	NEW ELEV.	UNDERDRAIN INV.	OUTFALL INV.	FACILITY SIZE
LOT 14	MBR-8B*	427.80	427.50	426.50	426.25	424.25	423.92	422.92	422.09	427.50	423.25	418.75	804 SF
LOT 12	MBR-9	426.30	426.00	425.00	424.75	422.75	422.42	421.42	420.59	426.00	421.75	421.00	514 SF
LOT 13	MBR-10	429.30	429.00	428.00	427.75	425.75	425.42	424.42	423.59	429.00	424.75	421.00	498 SF



**IMPERMEABLE LINER SPECIFICATIONS**

Material	Specification	Notes
geotextile fabric (if required)	ASTM-D-4813 (Synthetic strength: 125 lb.) ASTM-D-4812 (Frost Strength: 300 lb.)	8" deep aggregate covering size of #10 sieve
impermeable liner (if required)	ASTM-D-4813 (Synthetic strength: 1,100 lb., elongation 20%) ASTM-D-4814 (Frost resistance: 150 lb./sq. ft.) ASTM-D-471 (seam adhesion: 8 to 25 mm)	20 mil thickness Liner to be ultraviolet resistant. A geotextile fabric should be used to protect the liner from punctures.



**SOILS LEGEND**

SYMBOL	NAME/DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Bga	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HATORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
Gbc	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
Gcb	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
Gnc	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ho	HATORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

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

13	REVISE THE PLAN TO ADD AN EXTRA DRYWELL TO LOT 7 AND MODIFY THE HOUSE MODEL	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESD PRACTICES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ONLET HOUSE, SWM AND GRADING	4-10-19
NO.	REVISION	DATE

**REVISED FINAL ROAD CONSTRUCTION PLAN**

**STORMWATER MANAGEMENT DRAINAGE AREA MAP, NOTES, AND DETAILS**

**THE ESTATES AT RIVER HILL**

LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

PARCEL: 389  
TAX MAP: 34 QUAD: 23  
ELLICOTT CITY, MD 21104-3103  
5TH ELECTION DISTRICT

ZONED: RR-DEO  
L 4772 / F. 285  
HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
3300 N. RIDGE ROAD, SUITE 110  
ELLICOTT CITY, MD 21104-3103  
TEL: 410.461.7666  
FAX: 410.461.8961

DESIGN BY: RHY  
DRAWN BY: JMR  
CHECKED BY: RHY  
DATE: NOVEMBER 2018  
SCALE: AS SHOWN  
W.O. NO.: 15-39

PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 03-31-2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
11/27/2018  
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
12-2-18  
DATE

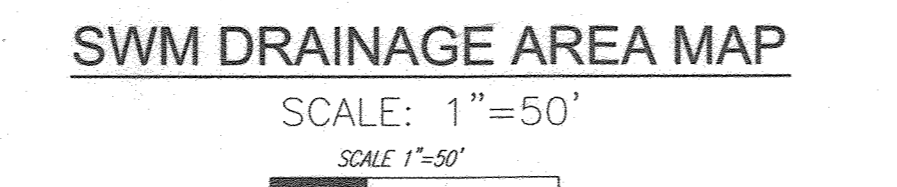
1-10-19  
DATE

**MICROBIORETENTION NOTES:**

1. ONLY THE SIDES OF MICROBIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICROBIORETENTION WILL CAUSE THE MBR TO FAIL AND THEREFORE SHALL NOT BE INSTALLED.

2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.

3. PROVIDE 5" MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PFC THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BAYS. (SEE PLANS)



**MICRO-BIORETENTION FACILITY ELEVATIONS (M-6) (SEE SITE LAYOUT THIS SHEET)**

LOT #	FACILITY	A	B	C	D	E	F	G	H	NEW ELEV.	UNDERDRAIN INV.	OUTFALL INV.	FACILITY SIZE
NBPP	MBR-5B*	422.30	422.00	421.00	420.75	418.75	418.42	417.42	416.59	422.00	417.75	417.00	1,025 SF
LOT 8	MBR-13A*	444.30	444.00	443.00	442.75	440.75	440.42	439.42	438.59	444.00	439.75	431.94	458 SF
LOT 6	MBR-13B*	434.30	434.00	433.00	432.75	430.75	430.42	429.42	428.59	434.00	429.75	426.65	578 SF
LOT 4	MBR-13C*	424.30	424.00	423.00	422.75	420.75	420.42	419.42	418.59	424.00	419.75	419.84	505 SF
LOT 9	MBR-14A*	424.30	424.00	423.00	422.75	420.75	420.42	419.42	418.59	424.00	419.75	416.00	498 SF

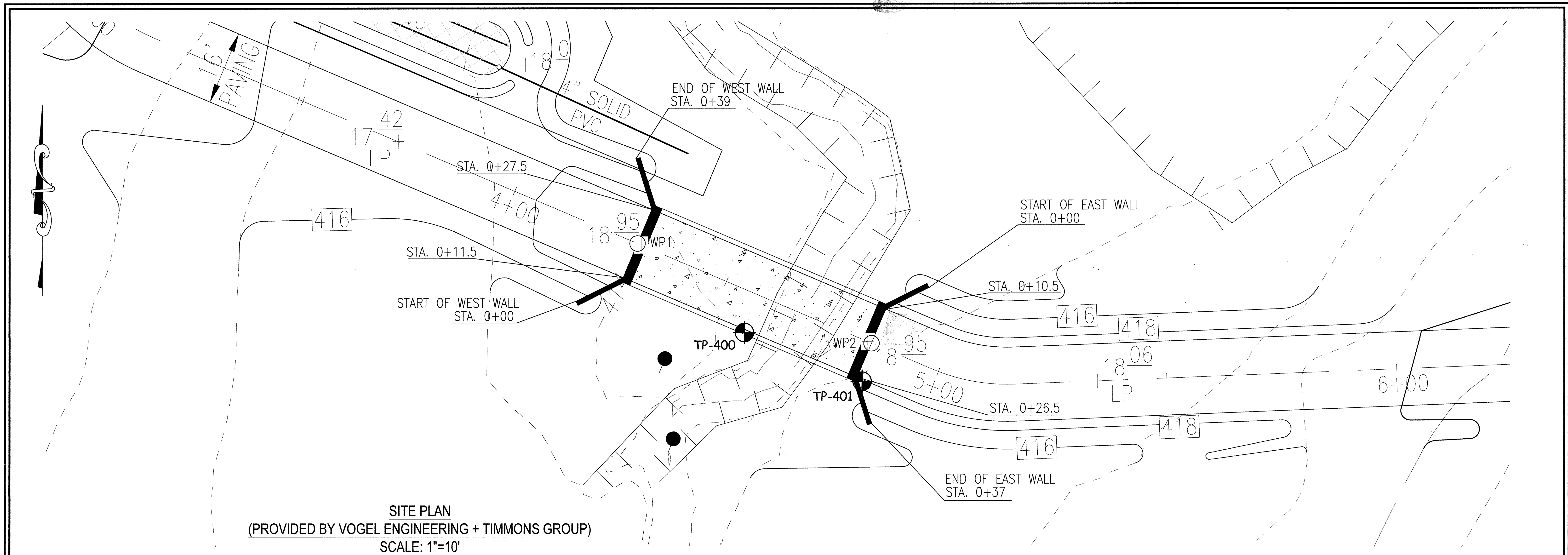
\*PROVIDE AN IMPERVIOUS LINER WITH THIS FACILITY.

**MICRO-BIORETENTION**

W/ WEIR OUTFALL  
NOT TO SCALE

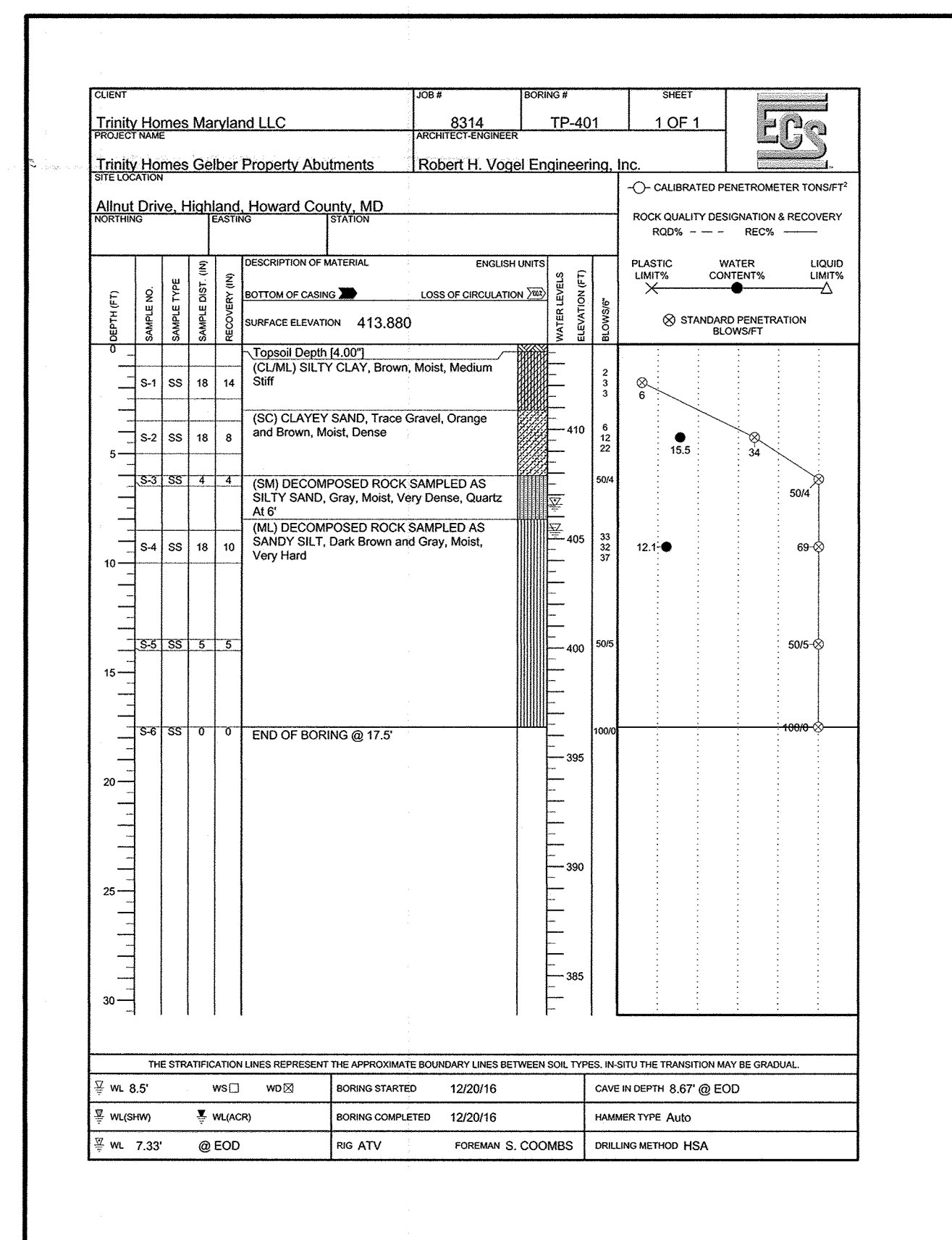
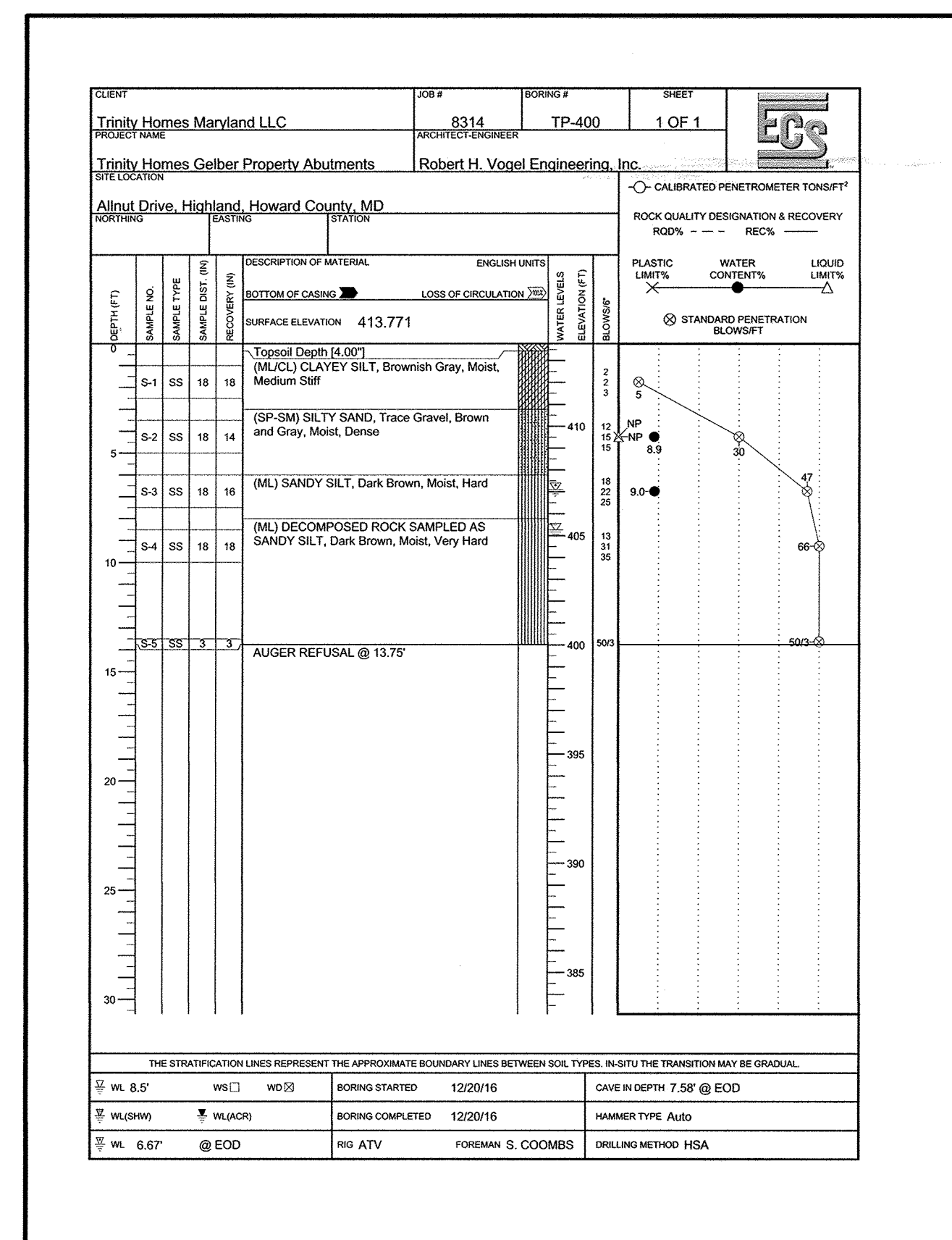
**OWNER**  
ESTATES AT RIVER HILL, LLC  
MICHAEL P. P. MEMBER  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21104-3103  
(410) 480-0023

**DEVELOPER**  
TRINITY HOMES MARYLAND, LLC  
3675 PARK AVE., SUITE 301  
ELLICOTT CITY, MD 21104-3103  
(410) 480-0023



**SITE PLAN**  
 (PROVIDED BY VOGEL ENGINEERING + TIMMONS GROUP)  
 SCALE: 1"=10'

WORKING POINTS SCHEDULE			
POINT NO.	ROAD STA	NORTHING	EASTING
WP1	4+29.00	556877.79	1323680.17
WP2	4+84.21	556856.29	1323731.02



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12.2.18  
  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 1-10-19  
 DIRECTOR

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAU, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

**DEVELOPER**  
 TRINITY HOMES MARYLAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

REVISED FINAL ROAD CONSTRUCTION PLAN  
**VEHICULAR BRIDGE - GENERAL PLAN**  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A'  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H'  
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO  
 TAX MAP: 34 GRID: 23 L. 4772 / F. 285  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

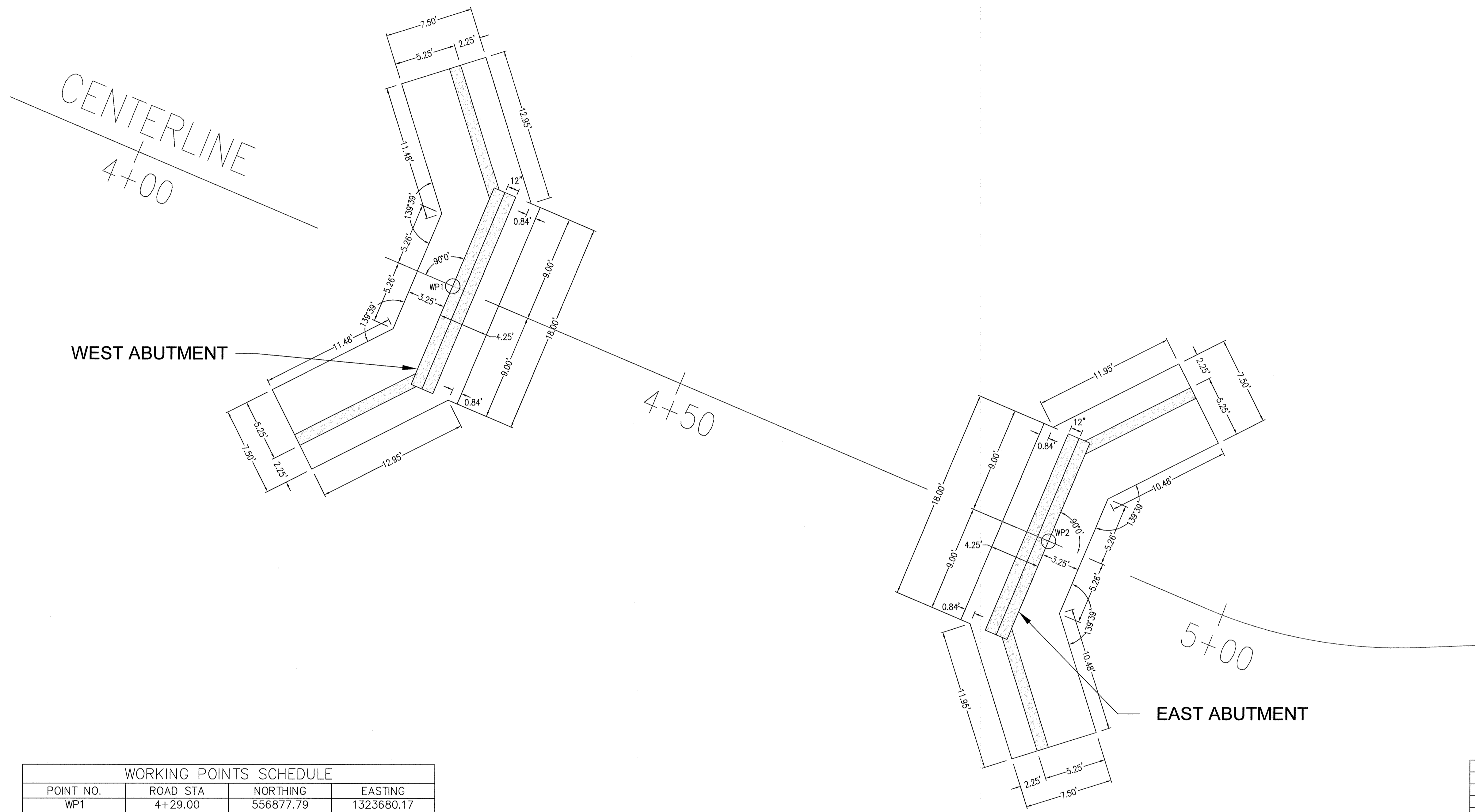
**ECS**  
 1340 CHARWOOD ROAD  
 SUITE B  
 HANOVER, MARYLAND 21076  
 PHONE: (410) 859-4300  
 FAX: (410) 859-4324

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. 29553, EXPIRATION DATE: 12-31-2019

DESIGN BY: DMA  
 DRAWN BY: DMA  
 CHECKED BY: HMA  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 8314

25 SHEET OF 33



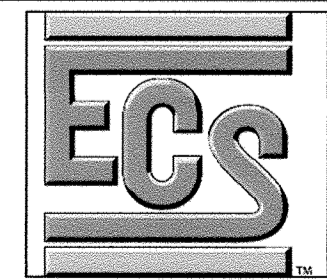


WORKING POINTS SCHEDULE			
POINT NO.	ROAD STA	NORTHING	EASTING
WP1	4+29.00	556877.79	1323680.17
WP2	4+84.21	556856.29	1323731.02

GEOMETRIC FOOTING LAYOUT  
SCALE: 1"=5'

NO.	REVISION	DATE
1	MODIFICATION TO ONLET HOUSES, SWMS AND GRADING	4-10-19

**REVISED** FINAL ROAD CONSTRUCTION PLAN  
**VEHICULAR BRIDGE - GEOMETRIC LAYOUT**  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'  
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1  
 PARCEL 389 ZONED: RR-OEO  
 TAX MAP: 34 GRID: 23 L. 4772 / F. 265  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

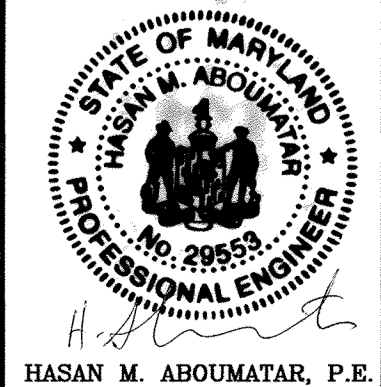


1340 CHARWOOD ROAD  
 SUITE B  
 HANOVER, MARYLAND 21076  
 PHONE: (410) 858-4300  
 FAX: (410) 858-4324

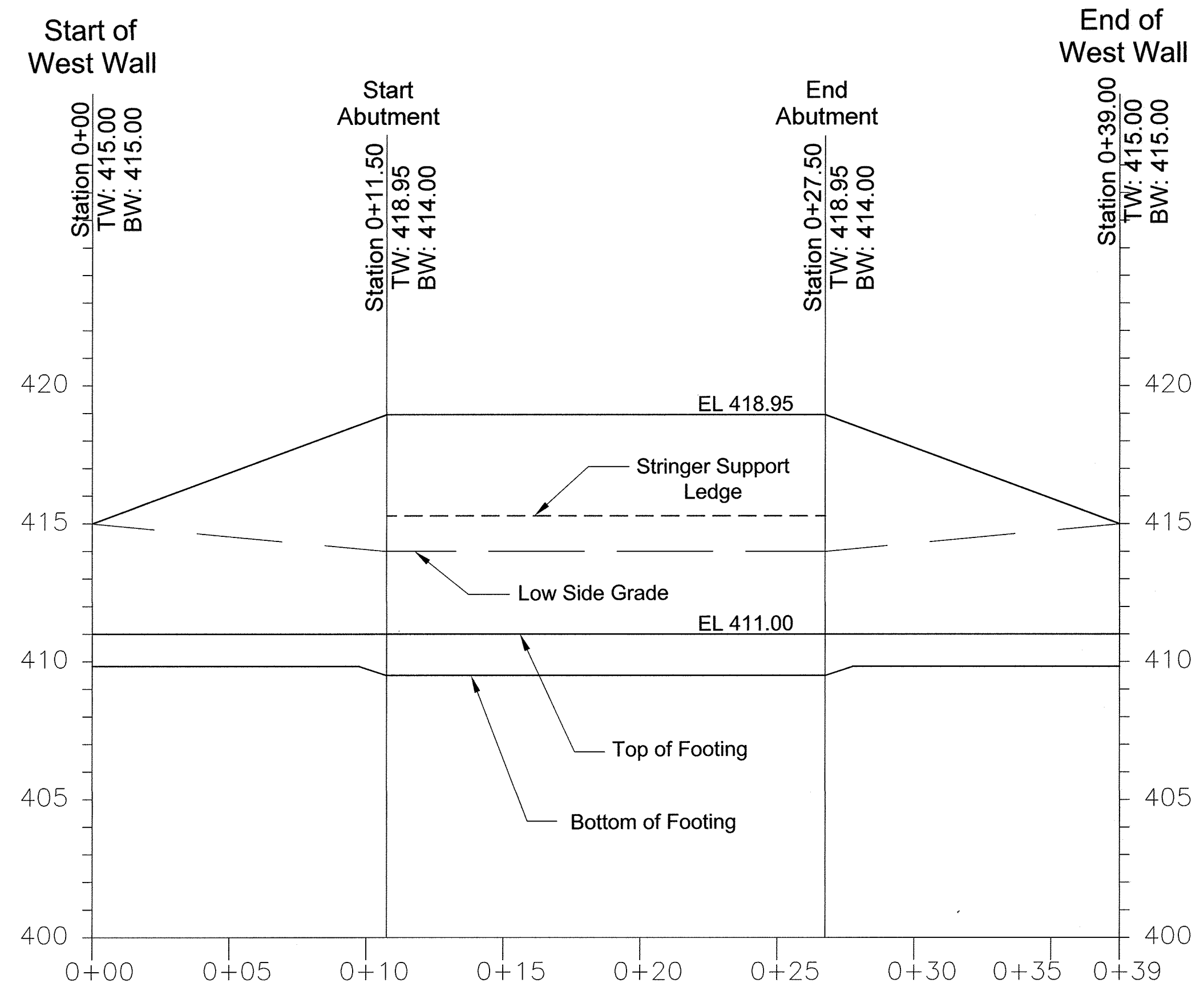
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 12.2.18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
 1-10-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
 DIRECTOR DATE

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAL, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

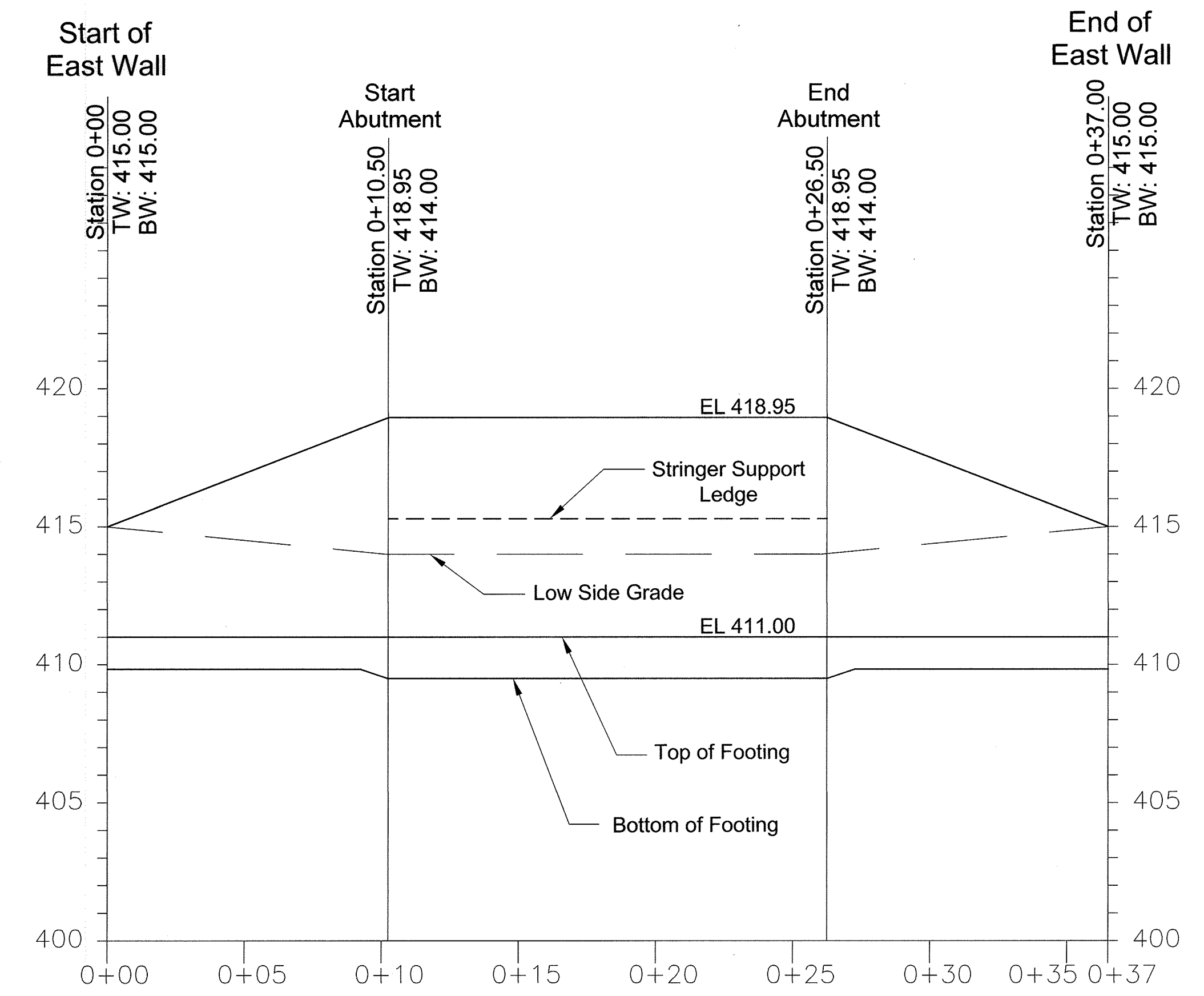
**DEVELOPER**  
 TRINITY HOMES MARYLAND, LLC  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023



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. 29553  
 EXPIRATION DATE: 12-31-2019  
 DESIGN BY: DMA  
 DRAWN BY: DMA  
 CHECKED BY: HMA  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 8314  
 26 SHEET OF 33



WEST WALL PROFILE  
SCALE: 1"=4'



EAST WALL PROFILE  
SCALE: 1"=4'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 12-2-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
 [Signature] 1-10-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
 [Signature] [Signature] [Signature]  
 DIRECTOR DATE

OWNER  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFALL, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

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

NO. MODIFICATION TO BRIDGE HEIGHT, SPAN AND GRADING		4-10-19
REVISION		DATE

**REVISED** FINAL ROAD CONSTRUCTION PLAN  
**VEHICULAR BRIDGE - PROFILES**  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A'  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'  
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

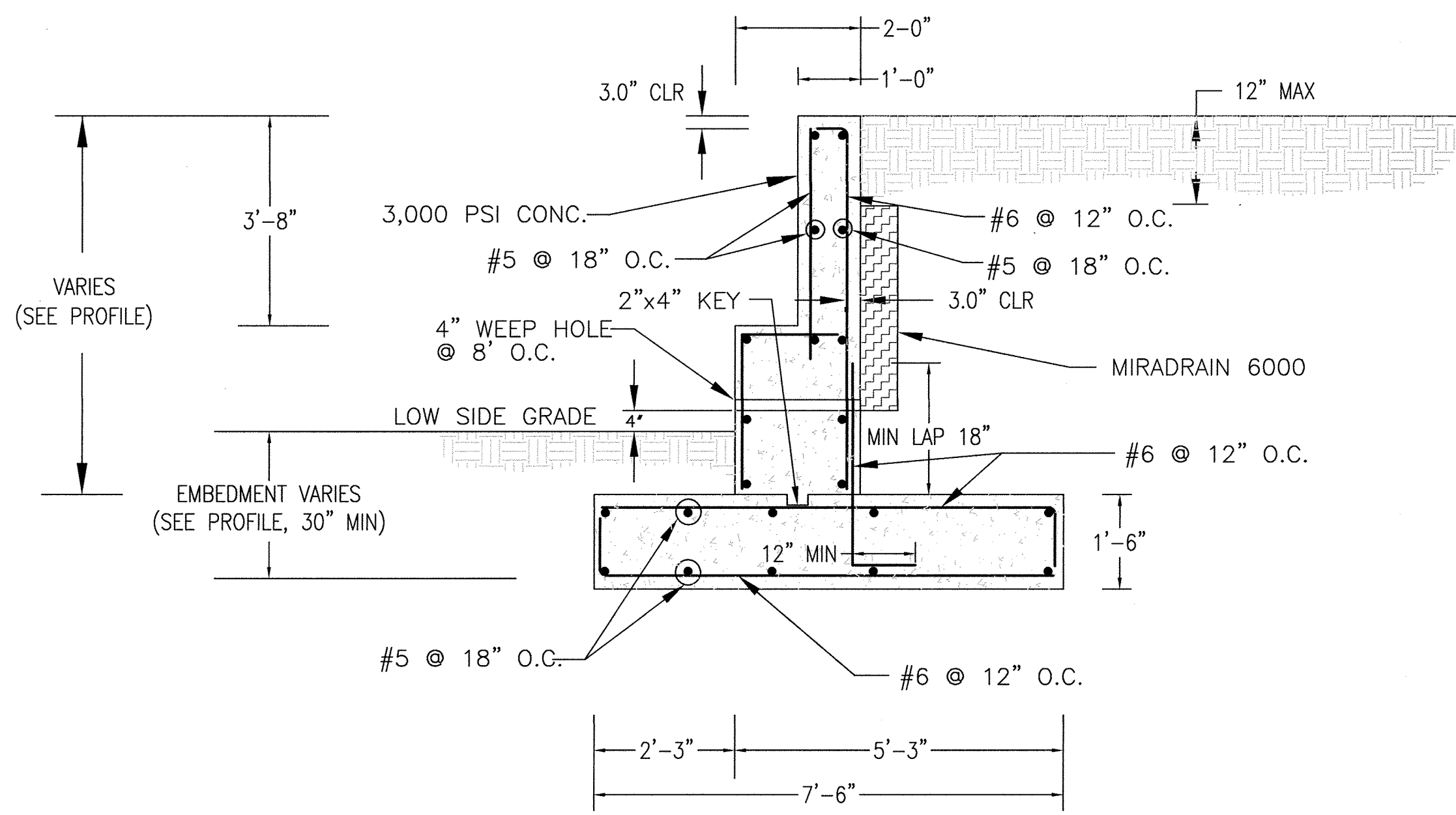
PARCEL: 389 ZONED: RR-DEO  
 TAX MAP: 34 GRID: 23 L 4772 / F. 265  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ECS** 1340 CHARWOOD ROAD  
 SUITE B  
 HANOVER, MARYLAND 21076  
 PHONE: (410) 859-4300  
 FAX: (410) 859-4324

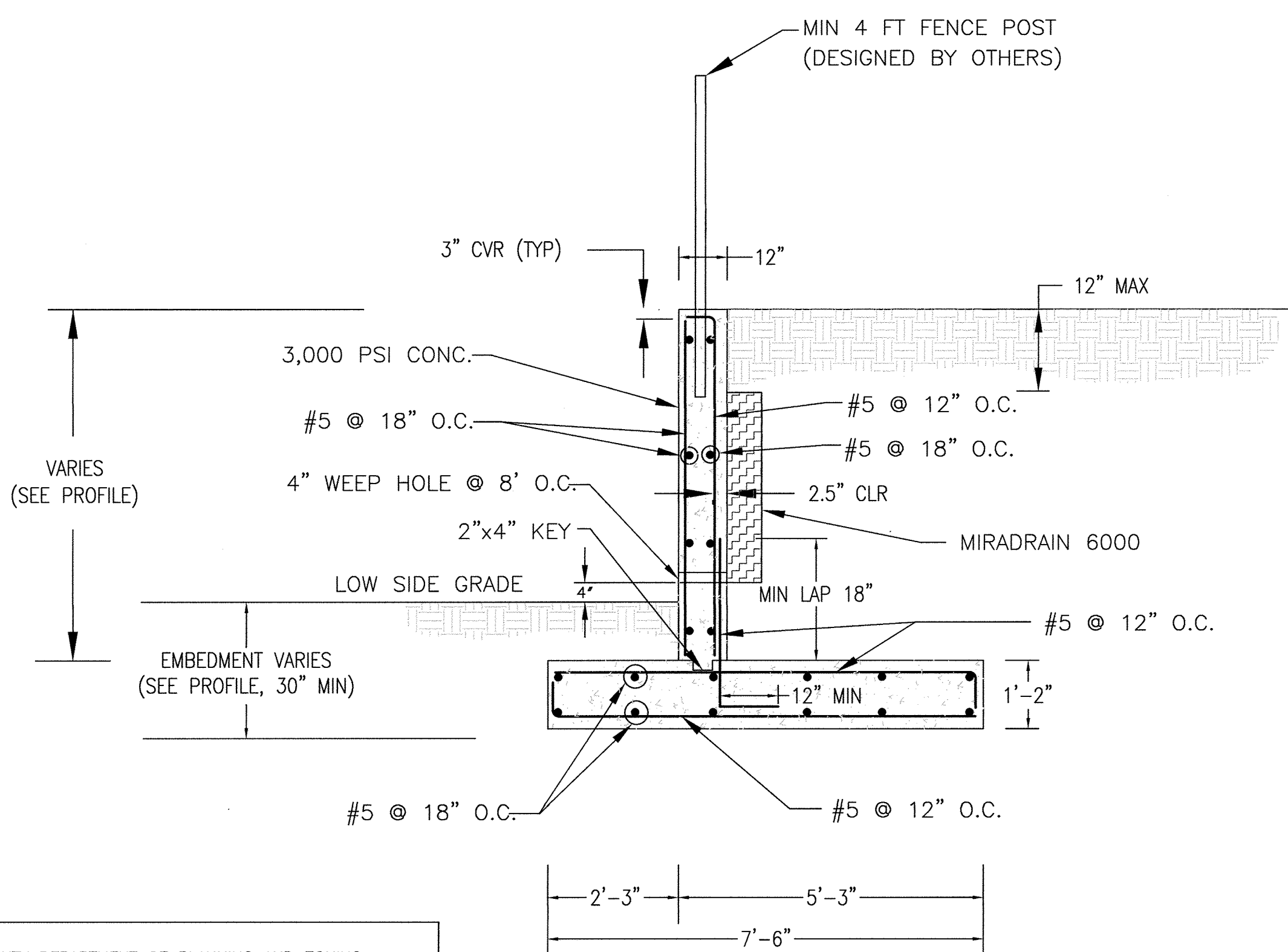
PROFESSIONAL CERTIFICATE  
 I HEREBY CERTIFY THAT THESE DOCUMENTS  
 WERE PREPARED OR APPROVED BY ME, AND  
 THAT I AM A FULLY LICENSED PROFESSIONAL  
 ENGINEER UNDER THE LAWS OF THE STATE  
 OF MARYLAND, LICENSE NO. 29553  
 EXPIRATION DATE: 12-31-2019

DESIGN BY: DMA  
 DRAWN BY: DMA  
 CHECKED BY: HMA  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 8314

27 OF 33 SHEET



**TYPICAL ABUTMENT DETAIL  
(NOT TO SCALE)**



**TYPICAL WINGWALL DETAIL  
(NOT TO SCALE)**

**Abutment and Wing Wall Specifications and Guidelines**

**Part 1: General**

**1.01 Description**

- A. Abutment and wing walls must be constructed under the supervision of a Maryland Registered Professional Engineer.
- B. Work includes preparation of foundation soils, furnishing all materials, and installing all materials to the lines and grades shown on the construction drawings.

**1.02 Codes and Standards**

- A. International Building Code - 2015, International Code Council, Inc.
- B. ACI Manual of Concrete Practice - Parts 1 Through 5 - 2001
- C. Manual of Standard Practice - Concrete Steel Reinforcing Institute
- D. American Society for Testing and Materials

**1.03 Damage, Storage, and Handling**

- A. The Contractor shall check the materials upon delivery to assure that the proper materials have been received.
- B. The Contractor shall properly handle and store the materials to prevent damage to the materials. Damaged materials shall not be incorporated into the wall.

**1.04 Quality Assurance**

- A. The Owner shall engage a qualified testing agency to provide observation and testing services as described below.
- B. Concrete Placement
  1. The agency shall inspect the formwork and reinforcing steel placement for compliance with the contract documents. Reinforcing steel should be inspected for correct size, quantity, and spacing.
  2. Fresh concrete shall be sampled in accordance with ASTM C 172, and tested for slump, air entrainment, and temperature.
  3. Test cylinders shall be molded in accordance with ASTM C 31. Four test cylinders shall be molded for each day's pour, or for every 50 cubic yards of concrete placed, whichever is greater.
- C. Fill Placement
  1. All soil fills shall be tested in accordance with ASTM D 2922.
  2. A minimum of one compaction test per lift should be made per 2,500 square feet of fill lift area, but not fewer than two tests per lift should be made.
  3. The elevations and locations of the field density tests should be clearly identified at the time of fill placement and compaction.

**Part 2: Materials**

**2.01 Concrete**

- A. Concrete shall conform to Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials.
- B. Concrete shall have a minimum 28-day compressive strength of 3,000 psi.
- C. Concrete shall have a slump range of 2 to 5 inches and shall be air entrained to  $\frac{5}{8}$  (+/- 1%) by volume.
- D. Concrete shall have a minimum density of 145 pcf and a maximum water-to-cement ratio of 0.45.

**2.02 Steel Reinforcement**

- A. Steel reinforcing shall conform to ASTM A-615, Grade 60.
- B. Submit shop drawings at least 15 business days before date reviewed submittals will be needed. Shop drawings shall bear the contractor's stamp of approval which shall constitute that he has verified all field measurements, construction criteria, materials, and similar data, and has checked each drawing for completeness, coordination, and compliance with contract documents.

**2.03 Soil Backfill**

- A. Material should consist of soil classified as SM or more granular, in accordance with ASTM D 2487.
- B. Material should have no particles larger than 2.5 inches and shall contain no more than 30 percent, by weight, passing the U.S. No. 200 sieve.
- C. Materials should have a Liquid Limit less than 40, and a Plasticity Index less than 20.
- D. Material should have a minimum friction angle of 30 degrees.
- E. The Contractor should submit samples of the proposed backfill soils to the Geotechnical Engineer of Record for approval prior to their use.

**2.04 Drainage Board**

- A. Drainage board used behind the walls shall consist of Miradrain 6000.

**Part 3: Construction**

**3.01 General**

- A. All existing underground utilities shall be properly marked, and relocated if necessary, prior to construction.
- B. All proposed underground utilities or structures in the general wall area shall be completely installed prior to the construction of the wall.
- C. Protect all existing and/or new structures from damage by construction equipment. Immediately repair any damage that may occur.

**3.02 Foundation**

- A. The wall foundation shall be excavated to the grades and lines as shown on the construction drawings. Contractor should take care not to disturb foundation soils beyond the lines and grades shown.
- B. The foundation shall be poured against undisturbed soils.
- C. The foundation shall bear at the minimum embedment depths indicated, as measured from the final grade at the front of the wall.
- D. If unsuitable soils are encountered at design foundation levels, the unsuitable soils shall be removed and the over-excavated areas shall be replaced with compacted structural fill.

**3.03 Steel Reinforcement**

- A. All steel reinforcing shall have a minimum clear cover of 3 inches unless otherwise noted on the contract documents.
- B. Where applicable, splices for reinforcing steel shall be made by contact tension lap splices.
- C. Welding and field-bending of reinforcing steel is not permitted.
- D. Furnish all accessories, chairs, space bars, supports, etc. necessary to secure reinforcing.

**3.04 Cast-in-Place Concrete**

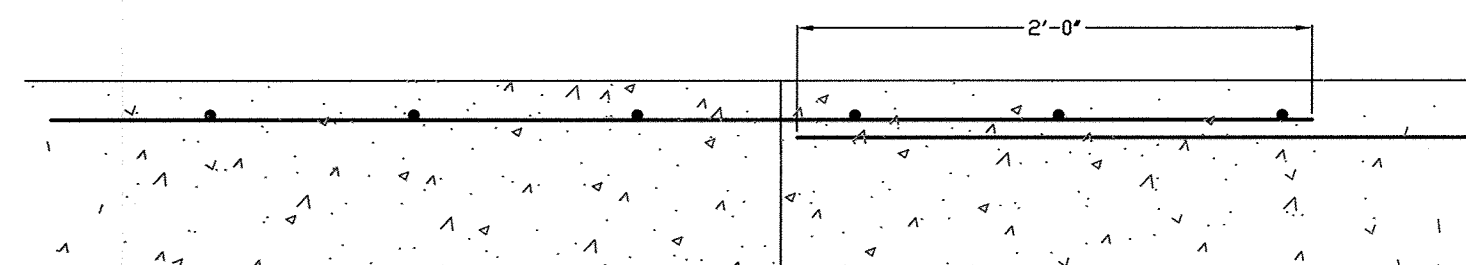
- A. Footing Concrete
  1. The vertical faces of the footing and key excavation may be used as forms for placement of foundation concrete.
  2. Foundation concrete, or protective mud mats, should be placed the same day that the foundation subgrade is approved.
  3. Provide concrete protection against freezing during placement and for 5 days thereafter.
- B. Wall Concrete
  1. Furnish and erect concrete forms to the lines and grades shown on the construction drawings.
  2. Make steps in concrete pours using vertical bulkheads.
  3. All reinforcing shall be continuous through joints and bulkheads.
  4. Chamfer exposed concrete corners  $\frac{3}{4}$ " by  $\frac{3}{4}$ " minimum.
  5. Provide 4" diameter weep holes every 8 feet along the bottom of the wall and at wall ends. The weep holes should be formed in place prior to concrete placement by using PVC pipe. Weep hole locations must not interfere with steel reinforcing, and shall be no greater than 4 inches above final grade at the front of the wall.
  6. Where a fence is required, it is recommended that the fence posts be installed during wall concrete placement. The fence posts shall have a minimum of 24 inches of embedment into the wall, and be located along the center of the wall. Alternatively, provide 4 inch diameter by 24 inch deep post holes at the designated fence post locations along the centerline of the wall. The post holes should be formed in place prior to concrete placement by using PVC pipe.

**3.05 Backfilling**

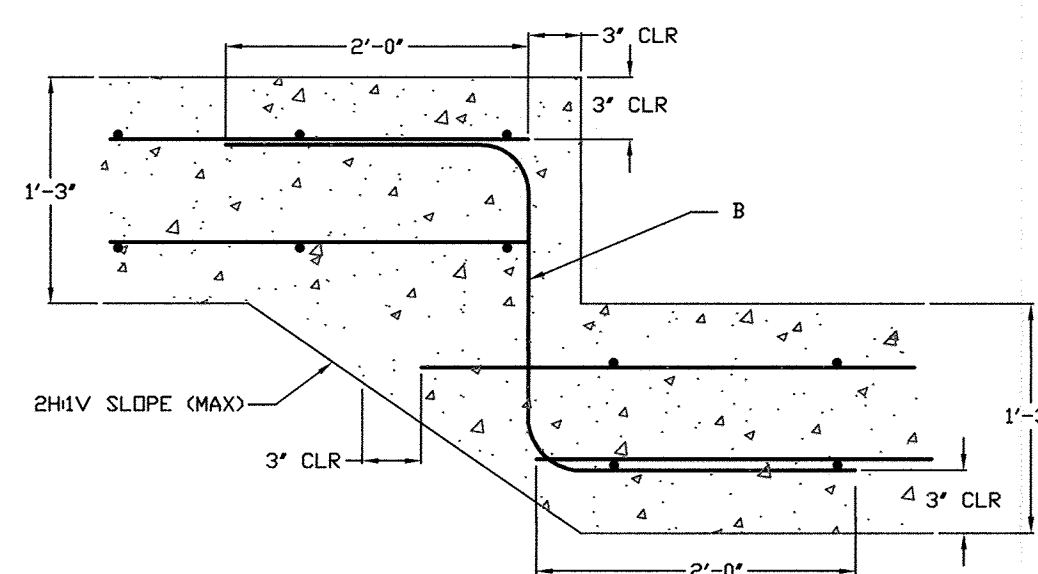
- A. All soil backfill shall conform to the material requirements of section 2.03.
- B. Backfill shall be moisture conditioned to within 2 percentage points of the optimum moisture content, as determined in accordance with ASTM D-698.
- C. Backfill shall be placed in loose lifts, not exceeding 8 inches in thickness, and then compacted to at least 95 percent of the maximum dry density, as determined in accordance with ASTM D-698.
- D. Backfilling shall not occur against the wall until the wall concrete has attained at least 75 percent of the 28-day design strength, and no earlier than 3 days after placement.
- E. Where feasible, maintain equal grades on each side of the wall during backfilling to prevent overturning and lateral movements. When the grade differential at the wall exceeds 12 inches, only hand-operated compaction equipment shall be allowed.
- F. Drainage boards shall be placed against the wall, extending from the weep hole up within 12 inches of final grade at the top of the wall.

**3.06 Finish**

- A. Final grades at the wall shall be established by the Contractor in the field.
- B. Final grades shall be stabilized and seeded per the approved civil plans unless noted otherwise on the site grading plans.
- C. Install a 4 ft fence at the top of the wall. If fence posts are installed subsequent to wall construction, the fence posts shall be grouted into the PVC post holes using 3,000 psi non-shrink grout.



**CONSTRUCTION JOINT  
NTS**



**FOOTING STEP  
NTS**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

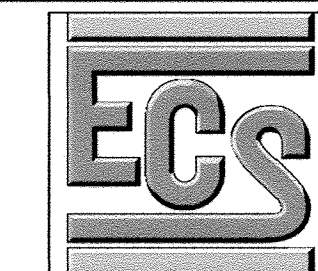
*Chad E. ...* 12-2-18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
*Kate ...* 1-10-19  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DIRECTOR *N/A*

**OWNER**  
ESTATES AT RIVER HILL, LLC  
MICHAEL PFAU, MEMBER  
3675 PARK AVE., SUITE 301  
ELLCOTT CITY, MD 21043  
(410) 480-0023

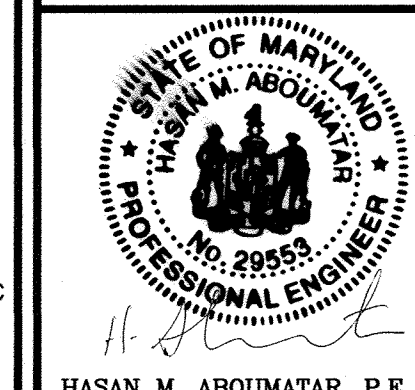
**DEVELOPER**  
TRINITY HOMES MARYLAND, LLC  
3675 PARK AVE., SUITE 301  
ELLCOTT CITY, MD 21043  
(410) 480-0023

NO.	MODIFICATIONS TO ONLY HOUSES, SWAN AND GRADING	REVISION	DATE
1			4-16-19

**REVISED FINAL ROAD CONSTRUCTION PLAN**  
**VEHICULAR BRIDGE - SECTIONS & DETAILS**  
**THE ESTATES AT RIVER HILL**  
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H'  
A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1  
PARCEL 389 ZONED: RR-DEO  
TAX MAP: 34 GRID: 23 L. 4772 / F. 265  
SWM ELECTION DISTRICT HOWARD COUNTY, MARYLAND

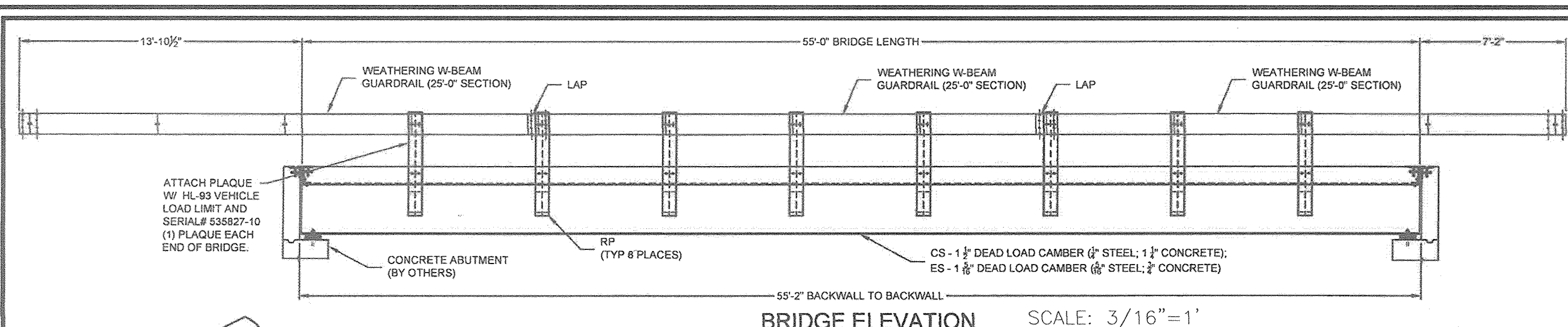


1340 CHARWOOD ROAD  
SUITE B  
HANOVER, MARYLAND 21076  
PHONE: (410) 859-4300  
FAX: (410) 859-4324



**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. 29555  
EXPIRATION DATE: 12-31-2019  
DESIGN BY: DMA  
DRAWN BY: DMA  
CHECKED BY: HMA  
DATE: NOVEMBER 2018  
SCALE: AS SHOWN  
W.O. NO.: 8314

28 OF 33



BRIDGE ELEVATION SCALE: 3/16"=1'



GUARDRAIL SPLICE LAP DETAIL NOT TO SCALE

CONTRACTOR/OWNER NOTE: WEAR GUARDRAILS EXTEND TO THE ENDS OF THE BRIDGE, RAIL POSTS, END TERMINATIONS, AND/OR TRANSITIONS BY OTHERS, NOT CONTECH.

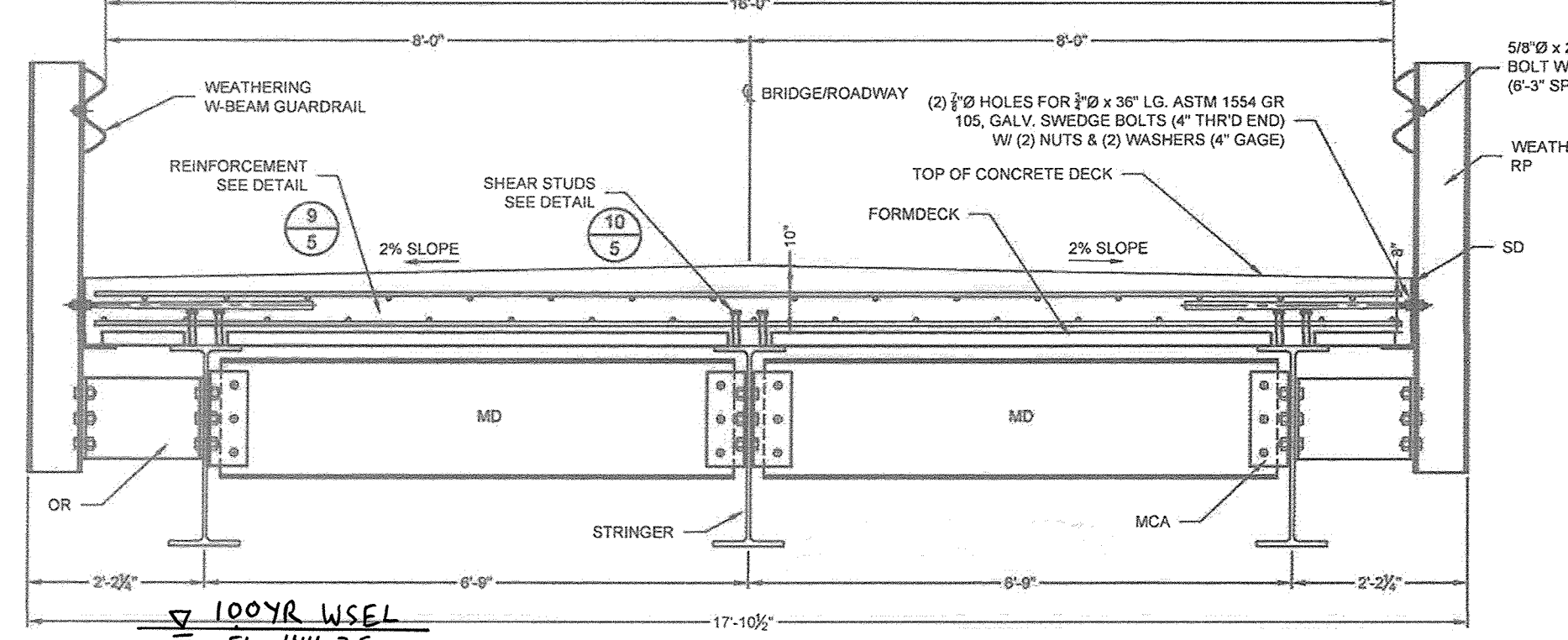
CONTRACTOR/OWNER NOTE: INSTALL WEAR GUARDRAILS AFTER INSTALLATION OF CONCRETE DECK IF POSSIBLE.

CONTRACTOR NOTE: STRUCTURE WILL BE DELIVERED WITH SHEAR STUDS, OUTRIGGERS, AND CLIP ANGLES INSTALLED. FIELD ASSEMBLY OF THE W-BEAM, RAIL POSTS, SWEDGE BOLTS, DIAPHRAGMS, END DAMS, SIDE DAMS, FORMDECK, CLOSURE ANGLES IS REQUIRED.

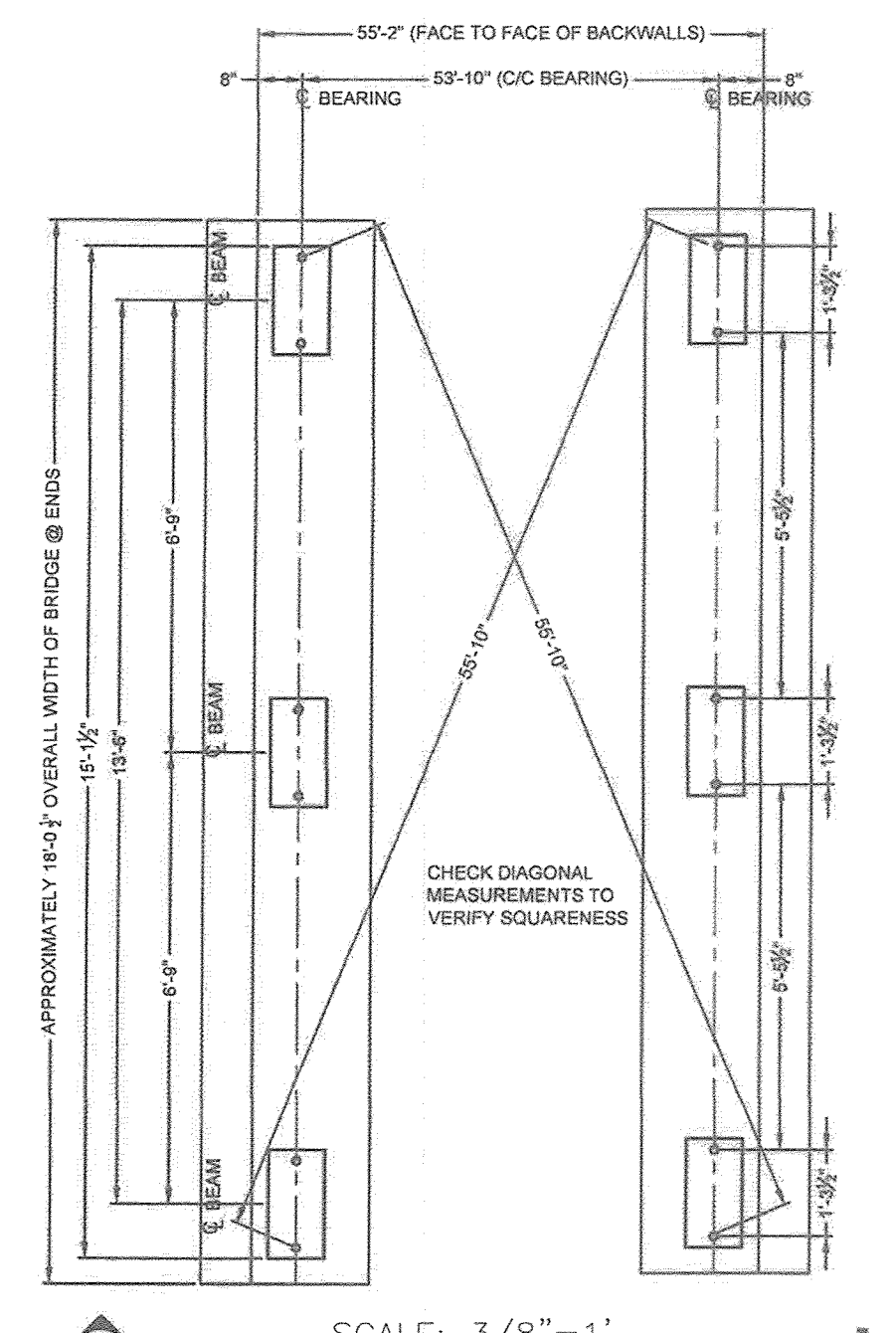
SCHEDULE OF MEMBERS

STRINGERS - ES, CS	W 30 x 108
END DIAPHRAGM - ED	W 18 x 35
MAIN DIAPHRAGM - MD	W 18 x 35
AUX DIAPHRAGM - AD	C 12 x 20.7
OUTRIGGER - OR	W 18 x 50
RAIL POST - RP	W 8 x 31
SIDE DAM - SD	BPLT 10 1/2 x 5 x 3/8
END DAM PLATE - EDP	PLT 10 x 1/2
END DAM ANGLE - EDA	L 4 x 4 x 1/2
END DAM COVER PLATE - EDCP	PLT 9 x 1/2
CLIP ANGLE - MCA, ACA	L 6 x 4 x 3/8

SHOP NOTE: APPLY ZINC PRIMER TO INSIDE FACE OF RAIL POST THAT WILL BE IN CONTACT WITH SIDE DAM & OUTRIGGER.



TYPICAL BRIDGE SECTION SCALE: 1/2"=1'

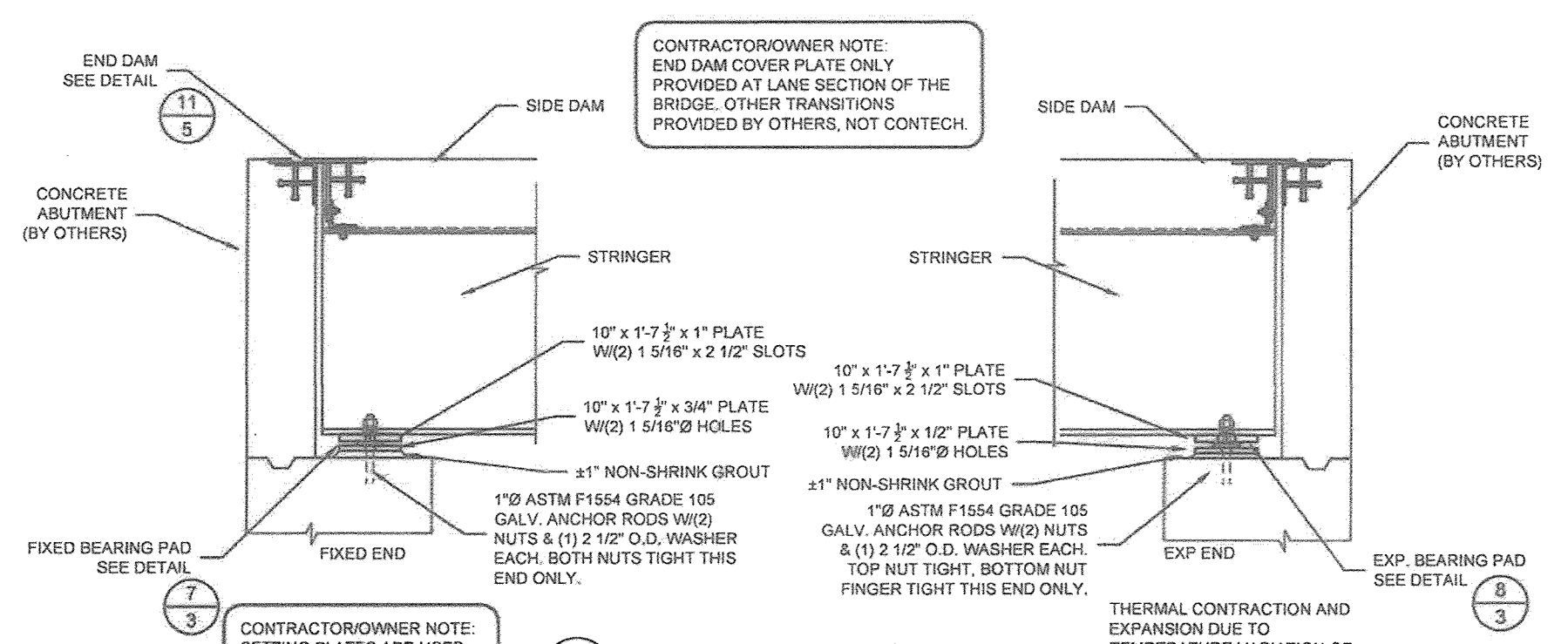


ABUTMENT PLAN SCALE: 3/8"=1'

CONTRACTOR/OWNER NOTE: VERIFY THAT THE MINIMUM CLEARANCE AT THE ABUTMENT SEAT EXCEEDS THE OVERALL BRIDGE WIDTH.

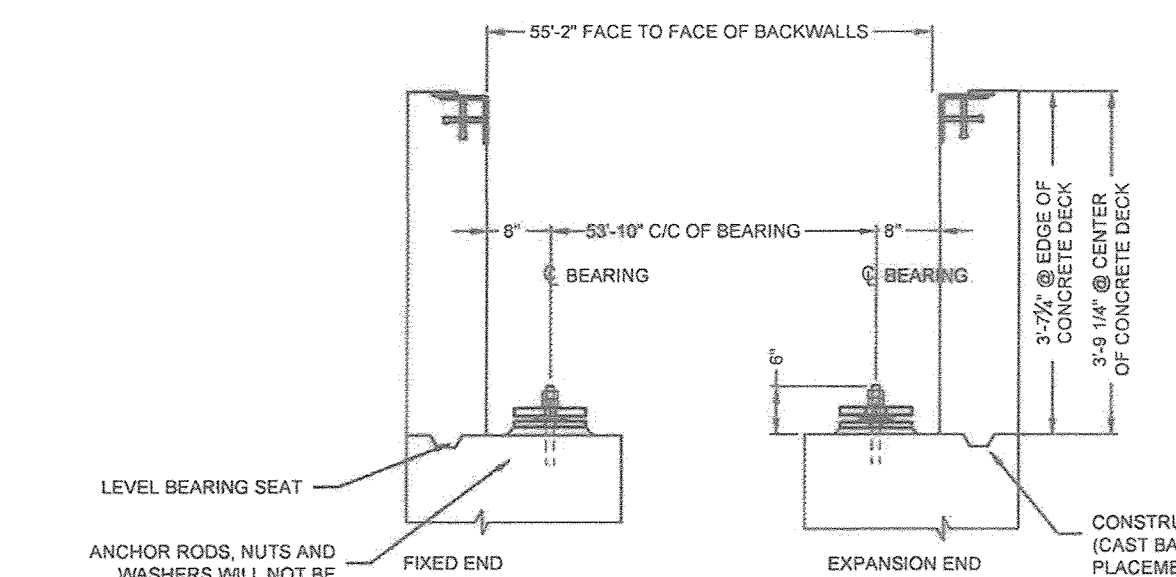
COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED

BRIDGE REACTIONS	FIXED END			EXPANSION END		
	VERT (KIPS)	HORIZ (KIPS)	LONG (KIPS)	VERT (KIPS)	HORIZ (KIPS)	LONG (KIPS)
DEAD LOAD	82.7		82.7			
VEHICLE LOAD (NO IMPACT)	77.4		77.4			
VEHICLE LOAD (W IMPACT)	97.1		97.1			
WIND LOAD		8.3			8.3	
THERMAL LOAD			12.4			12.4



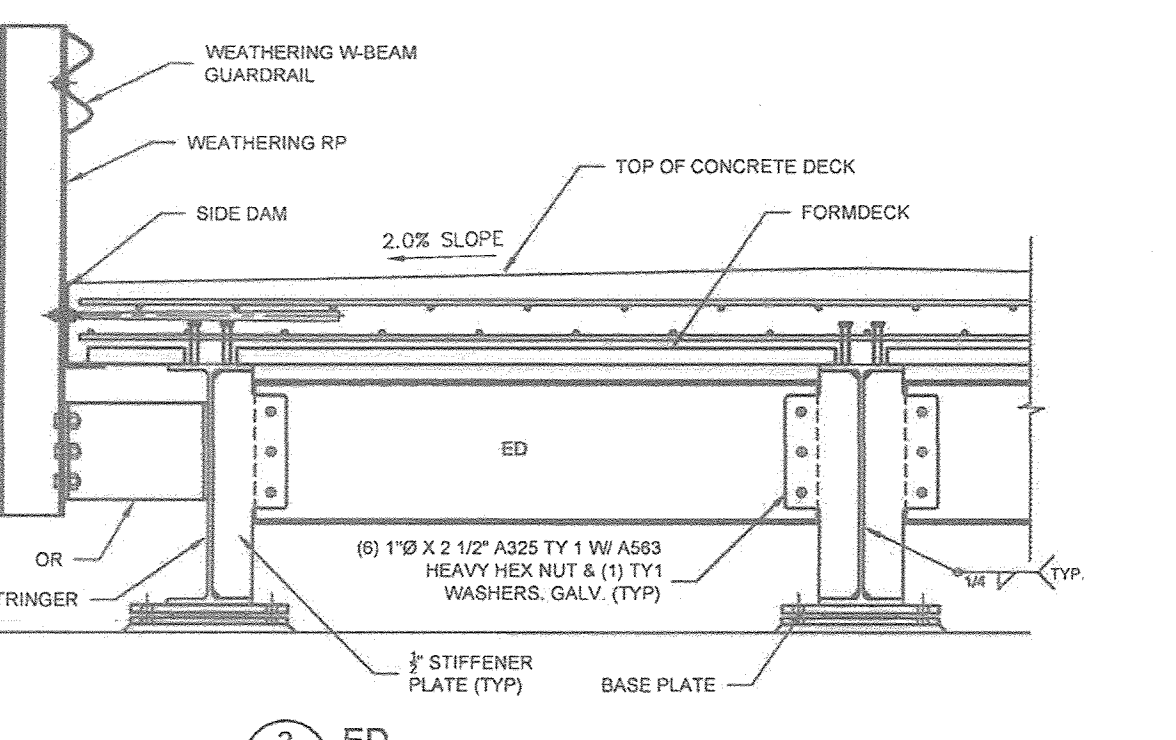
BEARING ELEVATION VIEW SCALE: 1/2"=1'

CONTRACTOR/OWNER NOTE: SETTING PLATES ARE USED FOR THE PURPOSE OF IMMOBILIZING THE BEARING PADS.

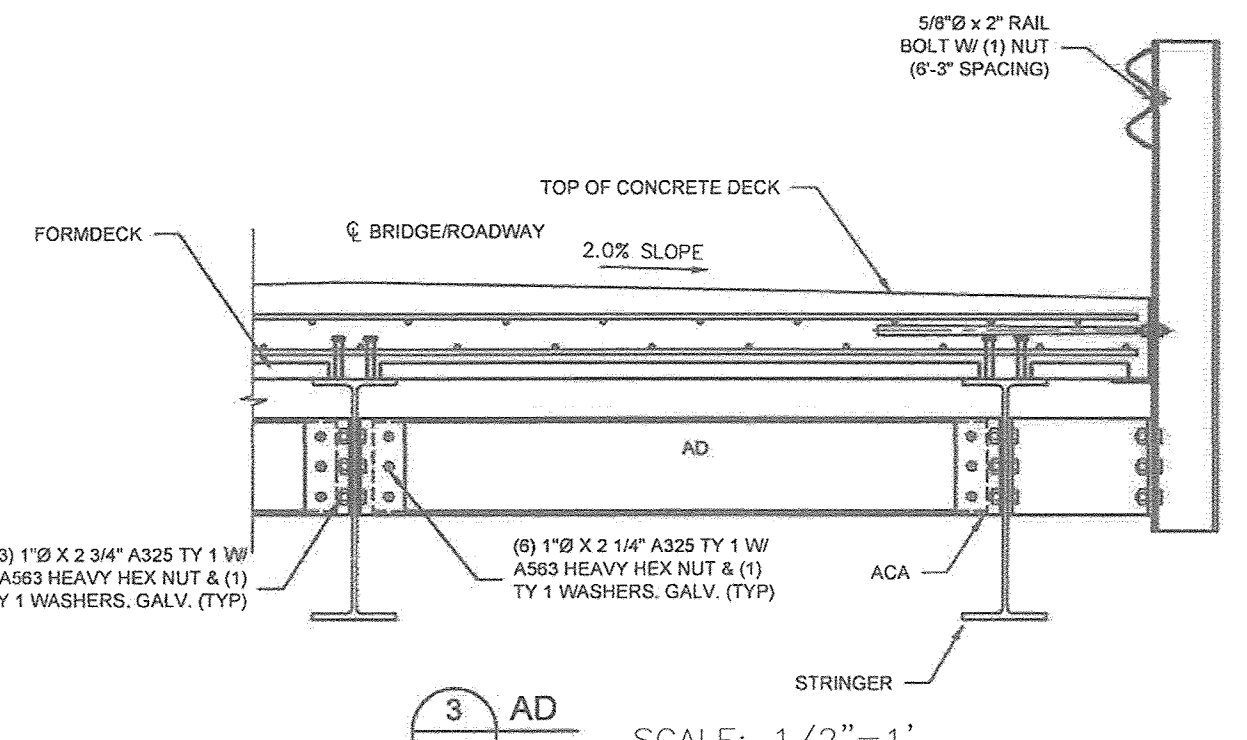


ABUTMENT ELEVATION SCALE: 1/2"=1'

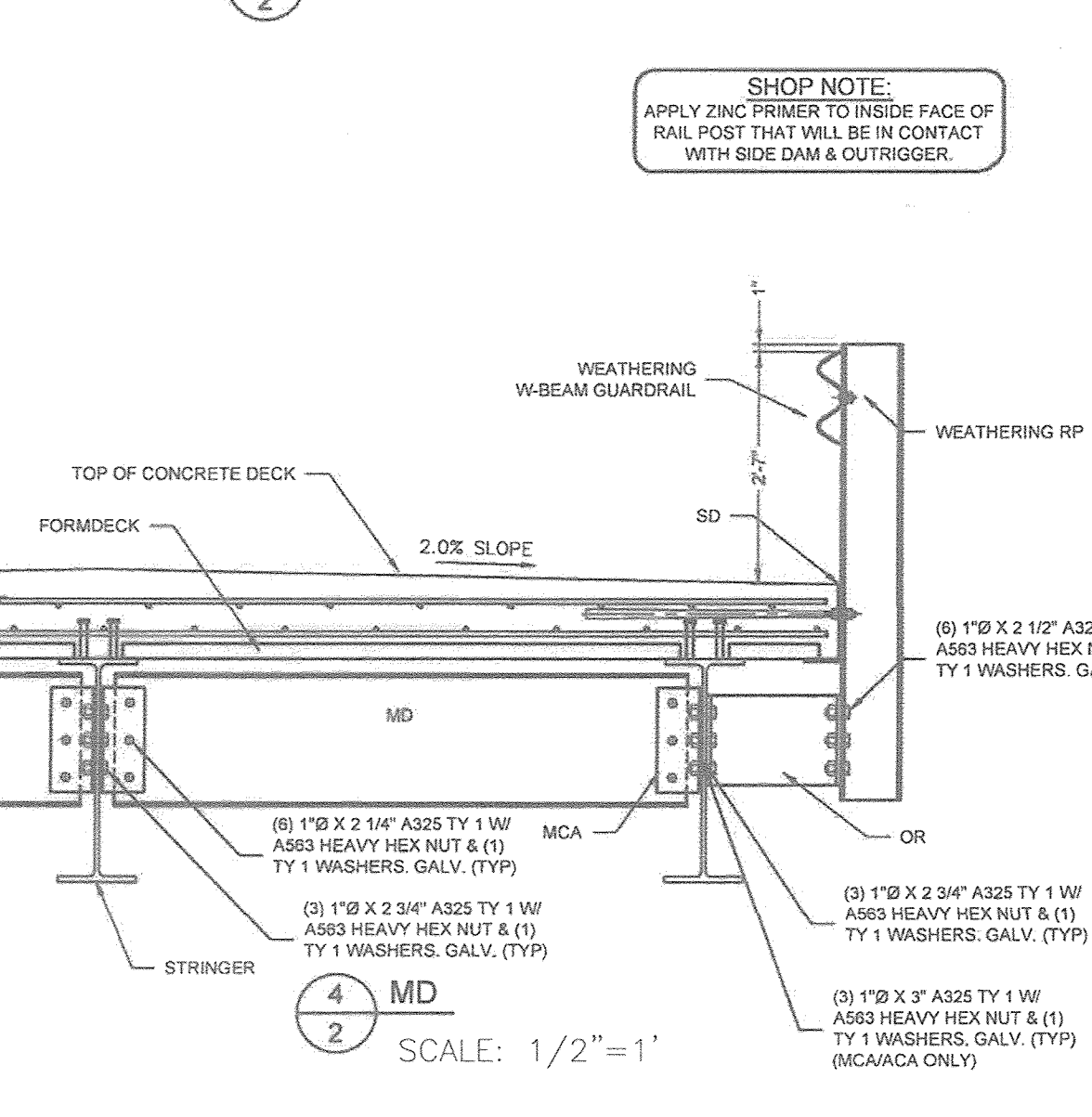
CONTRACTOR/OWNER NOTE: SHIM PLATES BY OTHERS, NOT CONTECH.



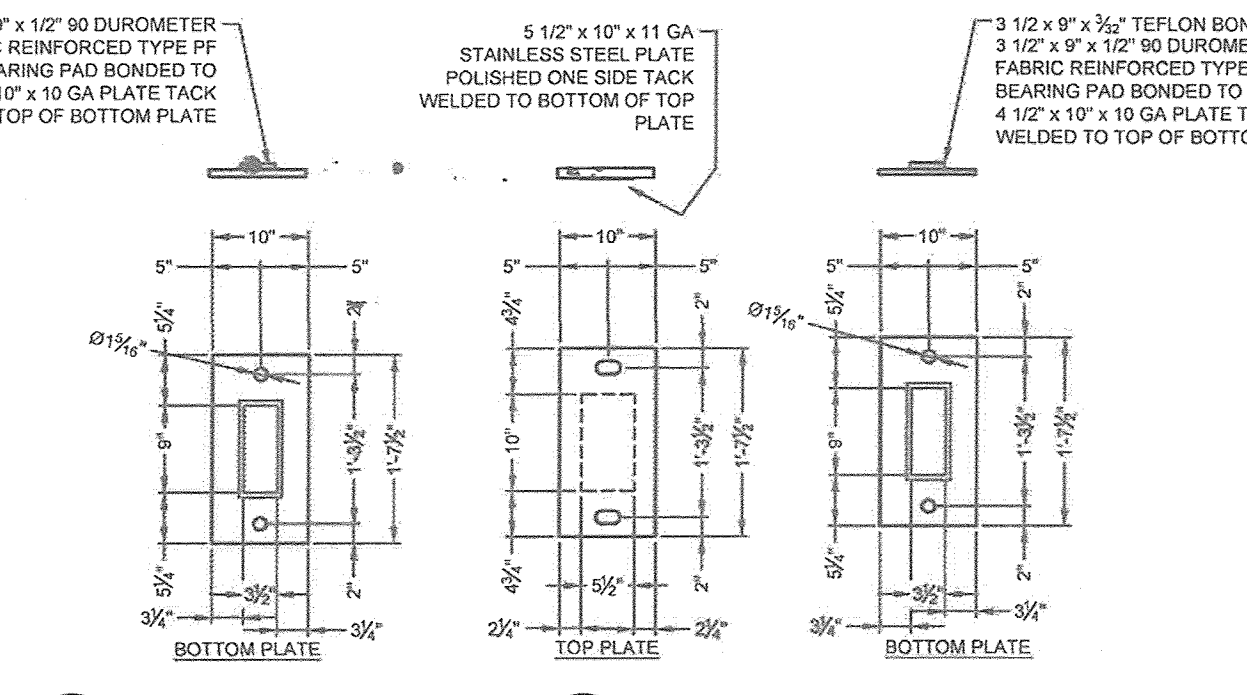
ED SCALE: 1/2"=1'



AD SCALE: 1/2"=1'

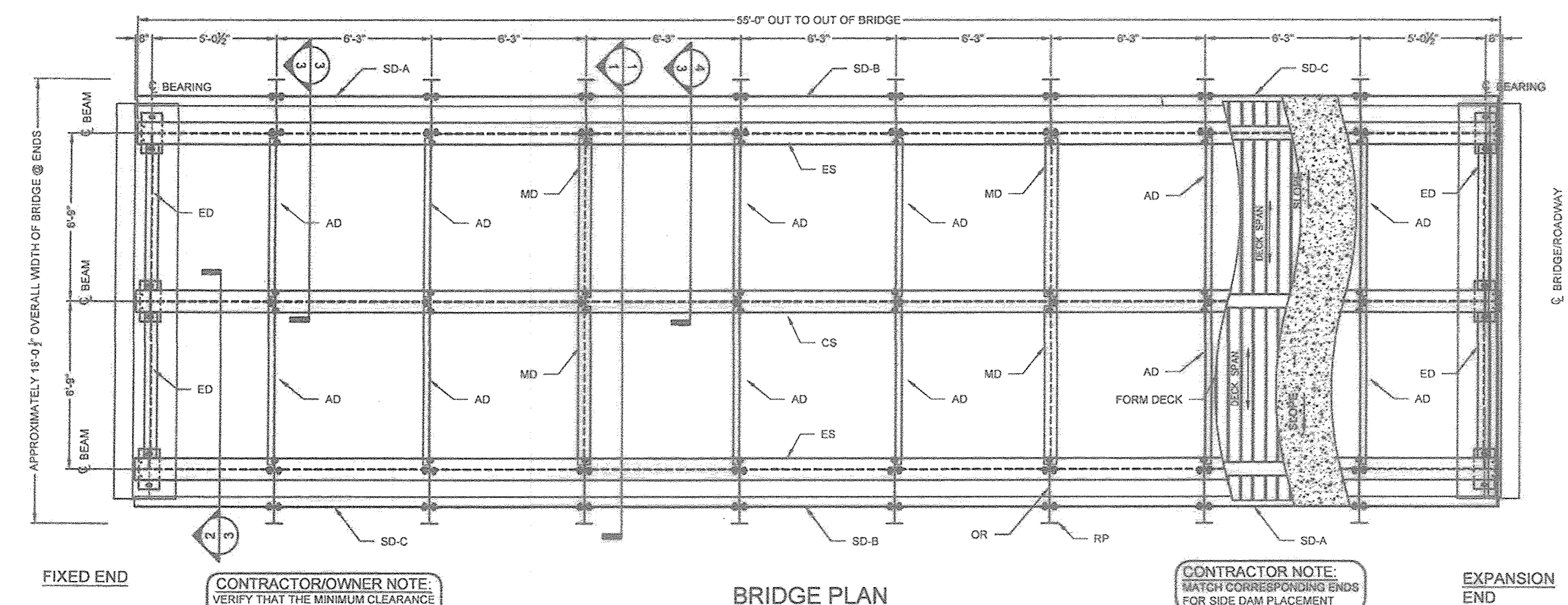


MD SCALE: 1/2"=1'



FIXED BEARING PAD (3 REQUIRED) NOT TO SCALE

EXP. BEARING PAD (3 REQUIRED) NOT TO SCALE



BRIDGE PLAN SCALE: 3/16"=1'

GENERAL NOTES

- ALL DESIGN STRESSES ARE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 7th EDITION, USING "LRFD BRIDGE DESIGN SPECIFICATIONS".
- BRIDGE MEMBERS ARE FABRICATED FROM HIGH STRENGTH, LOW ALLOY, ENHANCED ATMOSPHERIC CORROSION RESISTANT ASTM A572M, ASTM A588, ASTM A588M OR ASTM A582 STRUCTURAL STEEL SHAPES AND PLATES. ALL STRUCTURAL STEEL TO BE Fy=50,000 PSI.
- WELDING TO CONFORM WITH THE AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODE. ANSIAWS D14.5 IS BRIDGE WELDING CODE FOR STRUCTURAL MEMBERS, LATEST REVISION. WELDING TO BE PERFORMED BY EXPERIENCED WELDERS QUALIFIED IN ACCORDANCE WITH AWS PROCEDURES. WELDING ELECTRODES TO BE AWS E7018 SERIES. WELD PROCESS TO BE FCAW OR GMAW. STRUCTURAL WELDS TO BE A MINIMUM OF 1/4" FLEET UNLESS SHOWN OTHERWISE. MINIMUM WELD SIZES DOES NOT APPLY TO SEAL WELDS.
- ALL CONNECTION BOLTS SHALL BE 1" DIA., A325-SC TYPE 1 WITH A563 OR D11 HEAVY HEX NUTS AND F438 TYPE 1 WASHERS UNLESS NOTED. FIELD CONNECTIONS SHALL BE MADE USING THE "TURN-OF-NUT" TIGHTENING METHOD IN ACCORDANCE WITH AISC.
- ANCHOR BOLTS TO BE GALVANIZED ASTM F1554 GRADE 105 WITH A563 NUTS AND F438 WASHERS.
- SETTING PLATES SHALL BE PLACED ON SHIMS (IF OTHERS). THE PREFORMED BEARING PADS AND THE BRIDGE SHALL THEN BE PLACED RESPECTIVELY ON THE SETTING PLATES. GROUTING SHOULD BE PERFORMED AFTER THE BRIDGE HAS BEEN PLACED TO ALLOW FOR FINAL VERTICAL ADJUSTMENT.
- LENGTH OF ANCHOR BOLTS AND FOUNDATION DETAILS ARE FOR GENERAL ARRANGEMENT PURPOSES ONLY. ACTUAL FOUNDATION AND SUBSTRUCTURE DESIGN, APPROACH RAILING, GROUNDING AND CLEARANCES, FLOOD PLAN, ROADWAY, AND WATERWAY ARE THE RESPONSIBILITY OF OTHERS.
- CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI. REINFORCING SHALL CONFORM TO ASTM A615 GRADE 60. EPOXY COATING OF REINFORCING IS RECOMMENDED. ALL REBAR DEVELOPMENT LENGTHS AND LAP SPLICES SHALL BE DETAILED AND FURNISHED IN ACCORDANCE WITH "CRS" REINFORCEMENT ANCHORAGE LAP

- SPLICES AND CONNECTIONS, LATEST EDITION. REBAR SUPPLIED BY OTHERS.
- THE FINISHED CONCRETE DECK SHALL BE GIVEN A SKID RESISTANT TEXTURE BY EITHER BURLAP OR CARPET DRAGGING, BROOMING, TIRING, OR A COMBINATION OF THESE METHODS AS APPROVED BY THE OWNER AND AS SPECIFIED BY AASHTO. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE BRIDGE COMPONENTS FROM CONCRETE BRACKLER AND REQUIRED CLEANING OF THE STRUCTURE RESULTING FROM SPLICES.
- THE BRIDGE SHALL BE FORMED WITH NEW MILLIENNIUM 200 GALVANIZED 2" x 36", 18 GA. COMPOSITE FLOOR DECK.
- THE FLOOR DECK SHALL BE ATTACHED USING POWDER ACTIVATED PINS INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS OR BY ARC SPOT FURDLE WELDS WITH A MINIMUM VISIBLE DIAMETER OF 9/16 INCHES. SPACING OF FASTENERS SHALL NOT EXCEED 24 INCHES.
- SHEAR STUDS SHALL BE MADE FROM COLD DRAWN BAR STOCK CONFORMING TO ASTM SPECIFICATION A575. ANCHORS SHALL HAVE A MINIMUM TENSILE STRENGTH OF 65 KSI AND SHALL BE SHOP INSTALLED WITH AUTOMATIC STUD WELDING EQUIPMENT IN ACCORDANCE WITH AISC D1.1. SHEAR STUDS SHALL BE 3/8" DIAMETER BY 8" LONG. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FALL PROTECTION IN ACCORDANCE WITH OSHA REGULATIONS AS THEY RELATE TO EXPOSED SURFACES OF STEEL. SHALL BE CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACE PREPARATION SPECIFICATIONS NO. 7 BRUSH-OFF BLAST CLEANING. SSPC-SP1 LATEST EDITION.
- FINISHING: ALL BRIDGE STEEL EXCEPT RAILPOSTS
- ANY FLAT SURFACES WHICH SHALL BE IN CONTACT WITH OTHER FLAT SURFACES AFTER FABRICATION SHALL BE CLEANED, REMOVING ANY GRAISE, OIL OR OTHER FOREIGN MATTER, PRIOR TO WELDING. WELDING IF OVER 16 SQUARE INCHES OF AREA
- AFTER WELDING BRIDGE, BRUSH BLAST ONLY TO REMOVE ANY EXCESS WELD RESIDUE, MILL SCALE AND STRENGTHING.
- BRIDGE SHALL BE IMMERSED IN AN ACID BATH TO REMOVE SURFACE RUST AND MILL SCALE TO PROVIDE A CHEMICALLY CLEAN METALLIC SURFACE AND THEN HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION.

DESIGN CRITERIA

- BRIDGE TYPE - STEEL STRINGER
- FLOOR DECK - NORMAL WEIGHT CONCRETE (150 PCF)
- FUTURE RESURFACING ALLOWANCE - 20" PFF
- HL-90 AASHTO LIVE LOADING WITH IMPACT (1 LANE)
- MSA A011 - 15'
- 300 PLF WIND LOADING
- RAL IMPACT LOAD OF 13.5 KIPS IN ACCORDANCE WITH AASHTO

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 Jans  
 CHIEF, BUREAU OF HIGHWAYS 11/27/2018 DATE  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 Chief, Development Engineering Division  
 12.2.18 DATE  
 Chief, Division of Land Development  
 1-10-19 DATE

NO.	REVISION	DATE
1	MODIFICATION TO OILY HOUSES, SWIM AND GRADING	4-10-19

FINAL ROAD CONSTRUCTION PLAN  
 BRIDGE DESIGN NOTES AND DETAILS  
 THE ESTATES AT RIVER HILL  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H'  
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 388  
 TAX MAP: 34 GRID: 23  
 5TH ELECTION DISTRICT

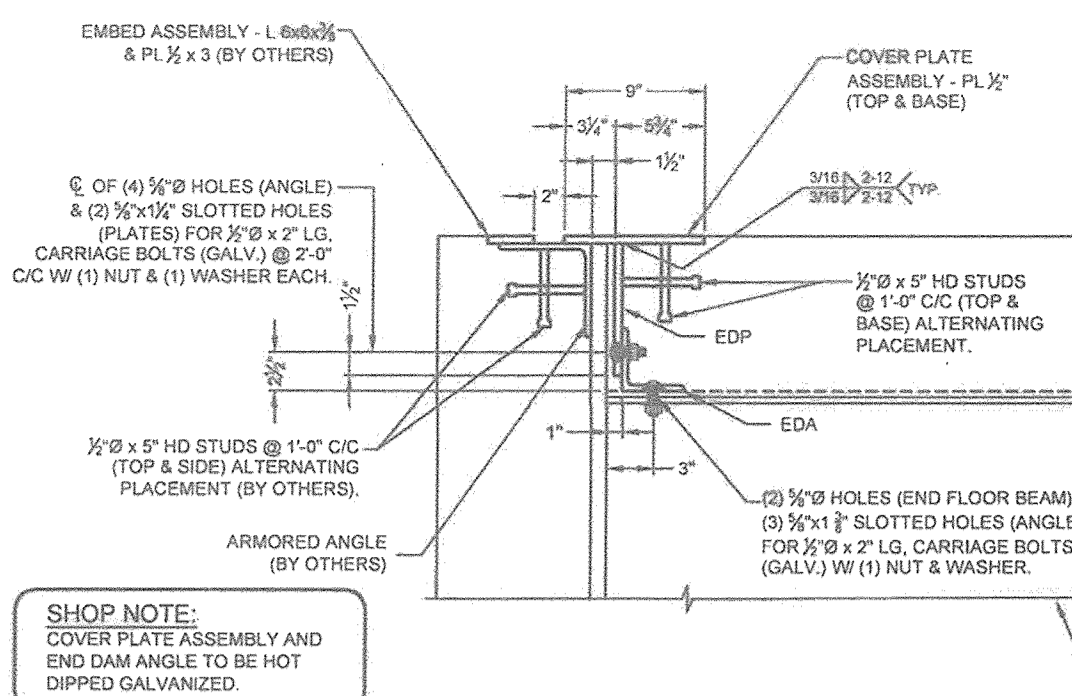
ZONED: RR-EO  
 L 4772 / F. 285  
 HOWARD COUNTY, MARYLAND

CONTECH ENGINEERED SOLUTIONS LLC  
 www.contechES.com  
 4311 Shaw Highway 29 North, Mechanicsville, VA 23061  
 800-538-0297 800-853-7800 301-485-7877 FAX

DESIGN BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 DATE: SEPTEMBER 2018  
 W.O. NO.: AS SHOWN 15-39

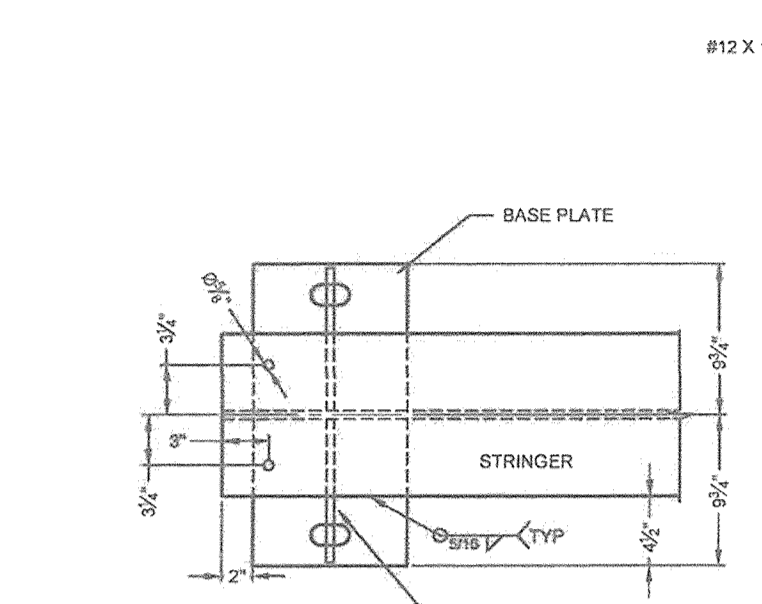
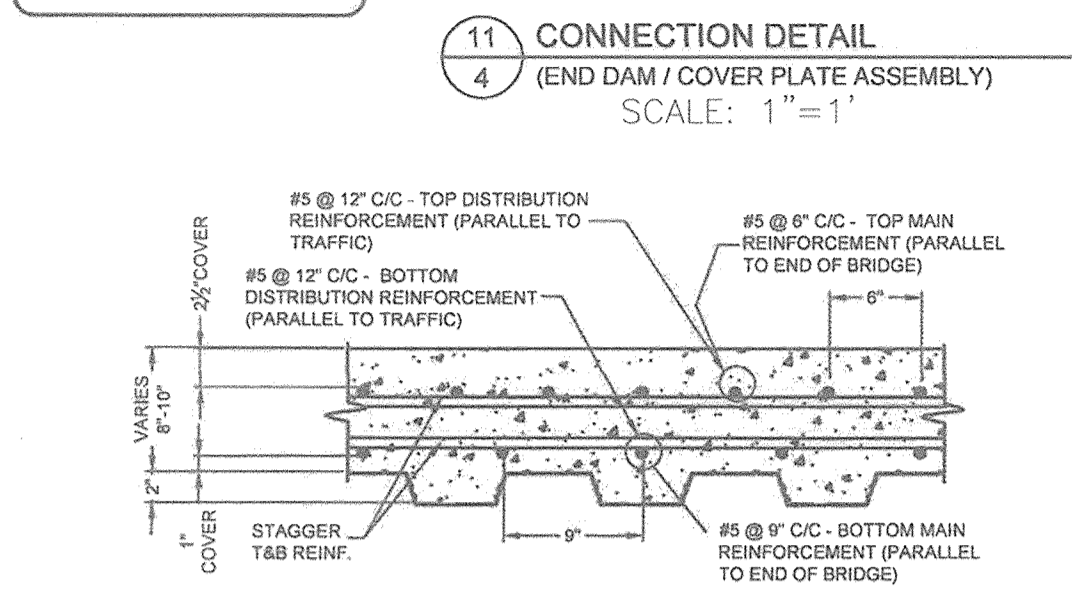
PROFESSIONAL CERTIFICATE  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26989 EXPIRATION DATE: 04-30-2019

29 SHEET OF 33

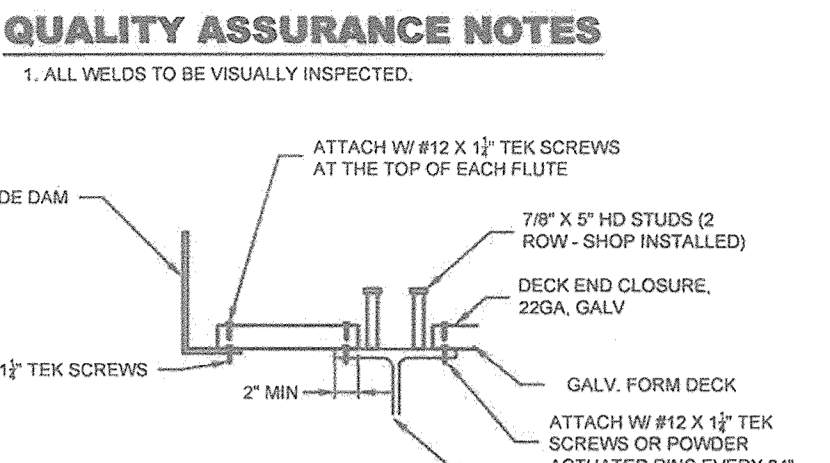


**GALVANIZING NOTE:**  
**COVER PLATE ASSEMBLY AND END DAM ANGLE ONLY:** HOT DIPPED GALVANIZED PER THE FOLLOWING:  
 A. ANY FLAT SURFACES WHICH SHALL BE IN CONTACT WITH OTHER FLAT SURFACES AFTER FABRICATION SHALL BE CLEANED, REMOVING ANY GREASE, OIL OR OTHER FOREIGN MATTER, PRIOR TO WELDING (VENT IF OVER 16 SQUARE INCHES IN AREA).  
 B. AFTER WELDING, BRUSH BLAST ONLY TO REMOVE ANY EXCESS WELD RESIDUE AND STENCILING.  
 C. MATERIAL SHALL BE IMMERSED IN AN ACID BATH TO REMOVE SURFACE RUST AND MILL SCALE TO PROVIDE A CHEMICALLY CLEAN METALLIC SURFACE AND THEN HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION.

**SHOP NOTE:**  
 APPLY ZINC RICH PRIMER TO THE TOP OF THE END OF THE STRINGER THAT WILL BE IN CONTACT WITH END DAM ANGLE.

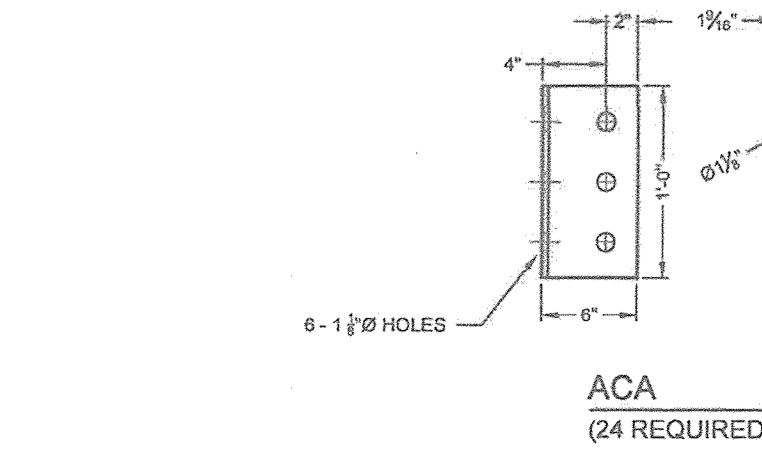
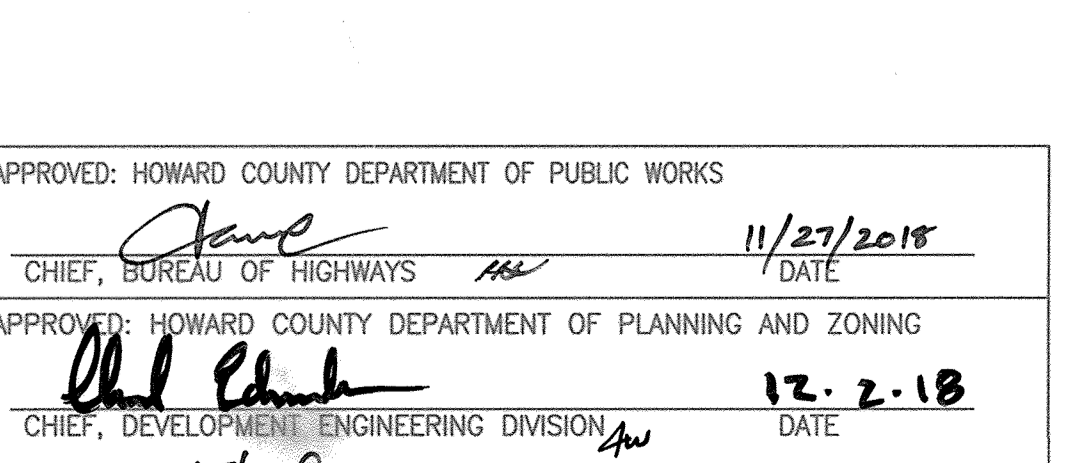
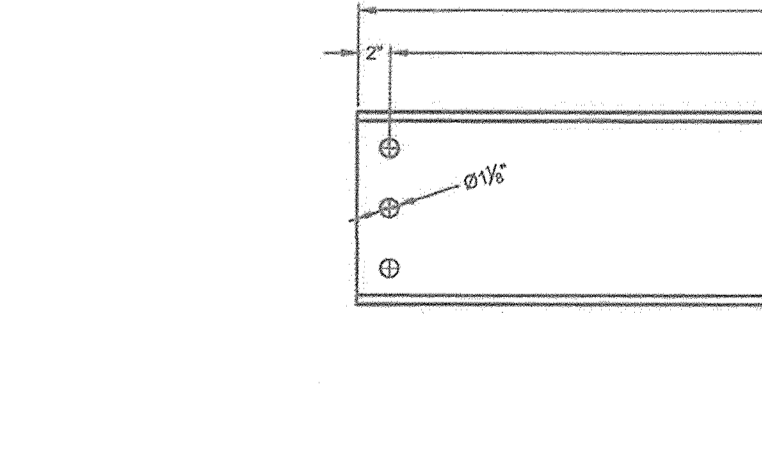
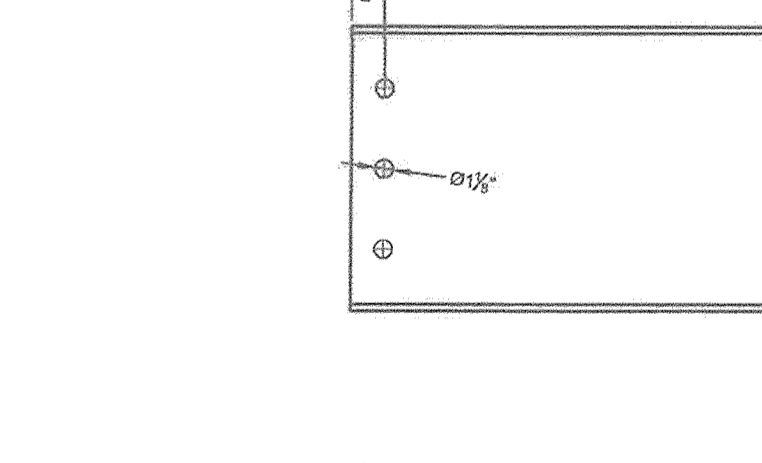
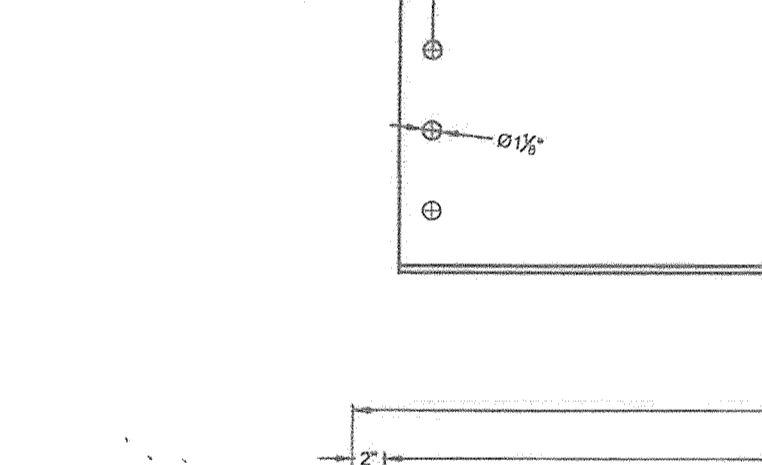
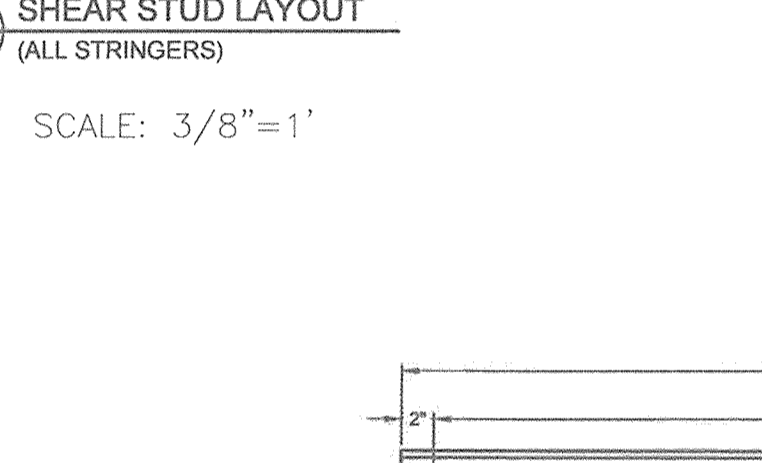
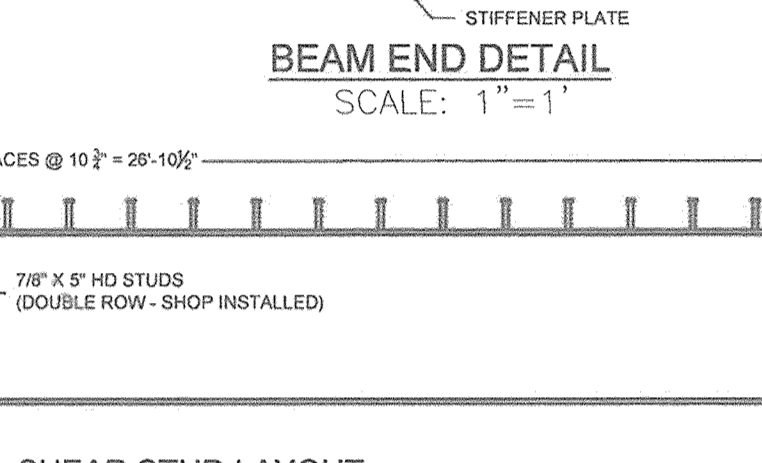
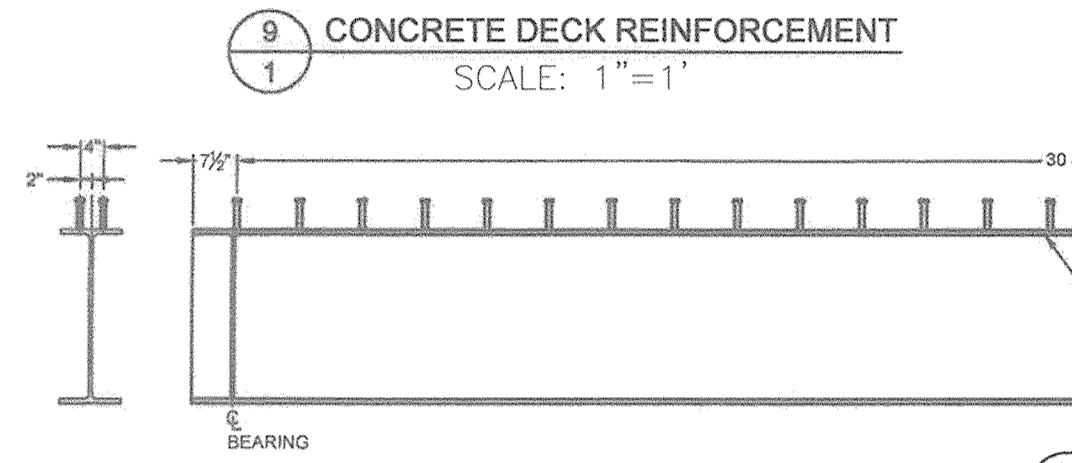
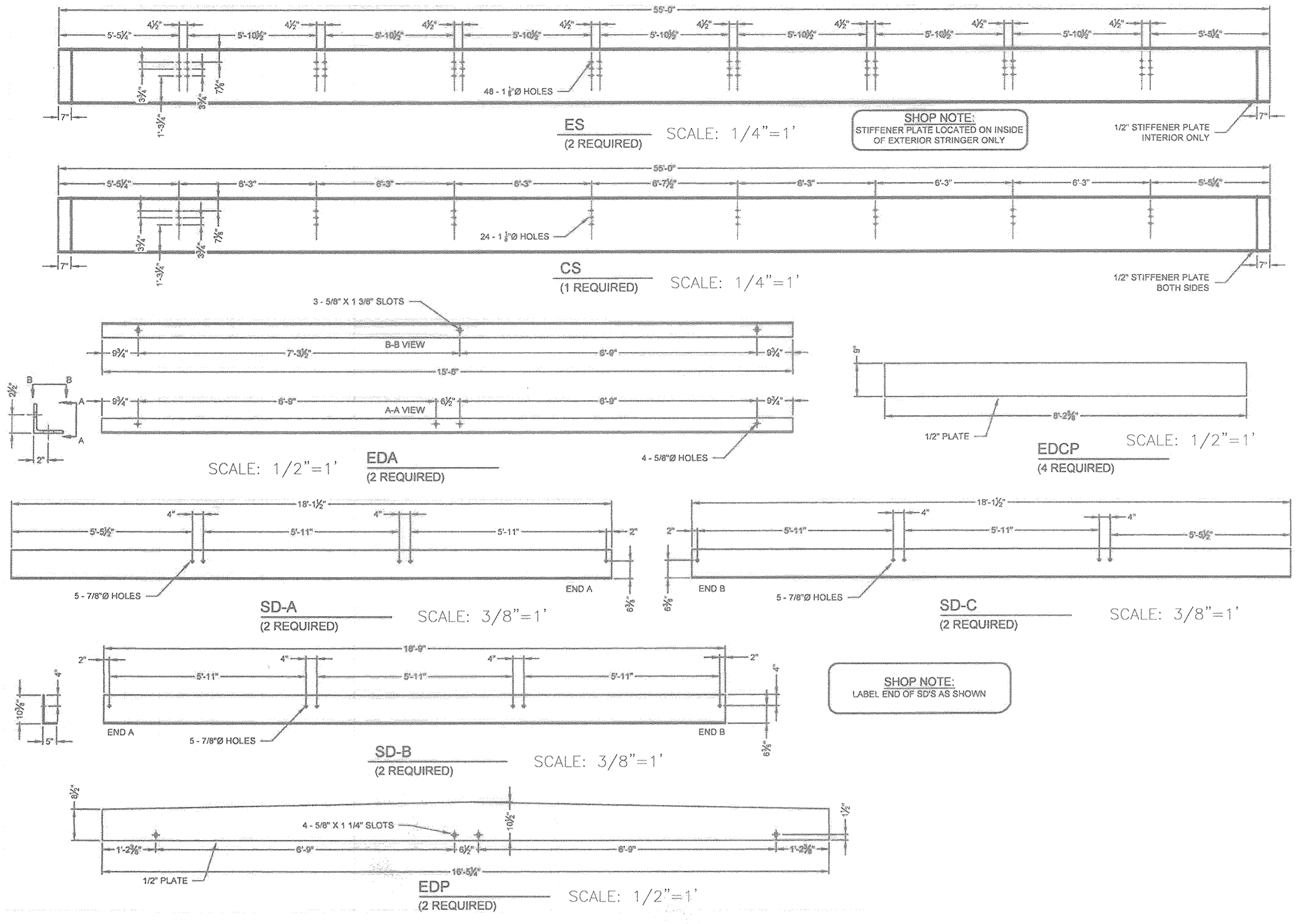


**FORM DECK INSTALLATION**  
 1. USE CARE TO AVOID DAMAGING THE INSTALLED FORM DECK FROM STACKING MATERIALS, DROPPING EQUIPMENT, OR HEAVY CONSTRUCTION TRAFFIC.  
 2. UNLESS OTHERWISE NOTED, ALL FORM DECK IS TO BE ATTACHED TO THE STRINGERS WITH #12 X 1 1/2\"/>



**QUALITY ASSURANCE NOTES**  
 1. ALL WELDS TO BE VISUALLY INSPECTED.

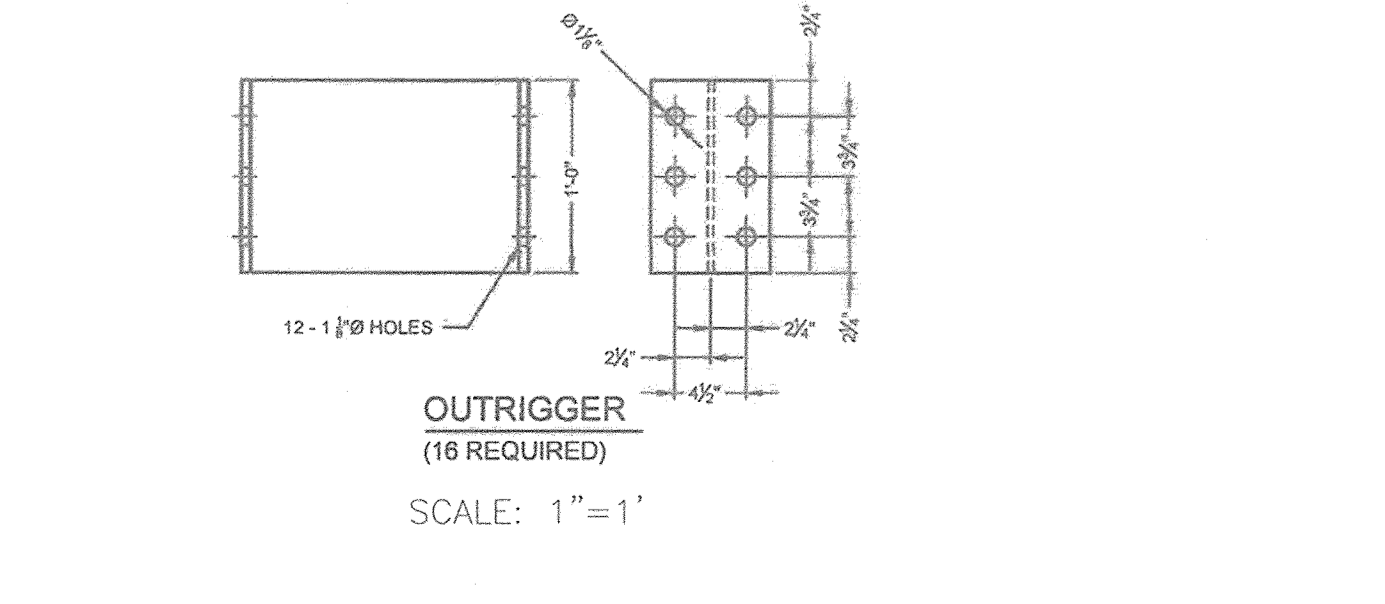
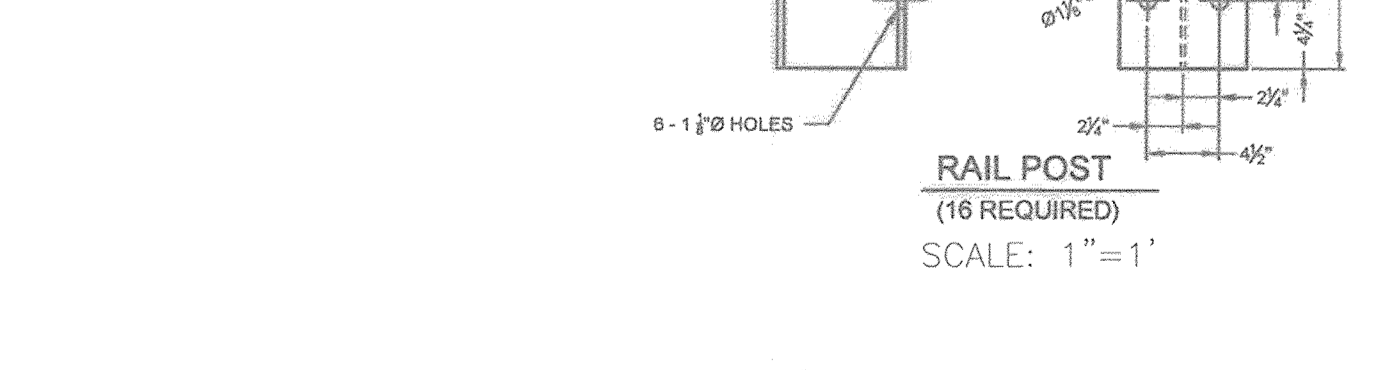
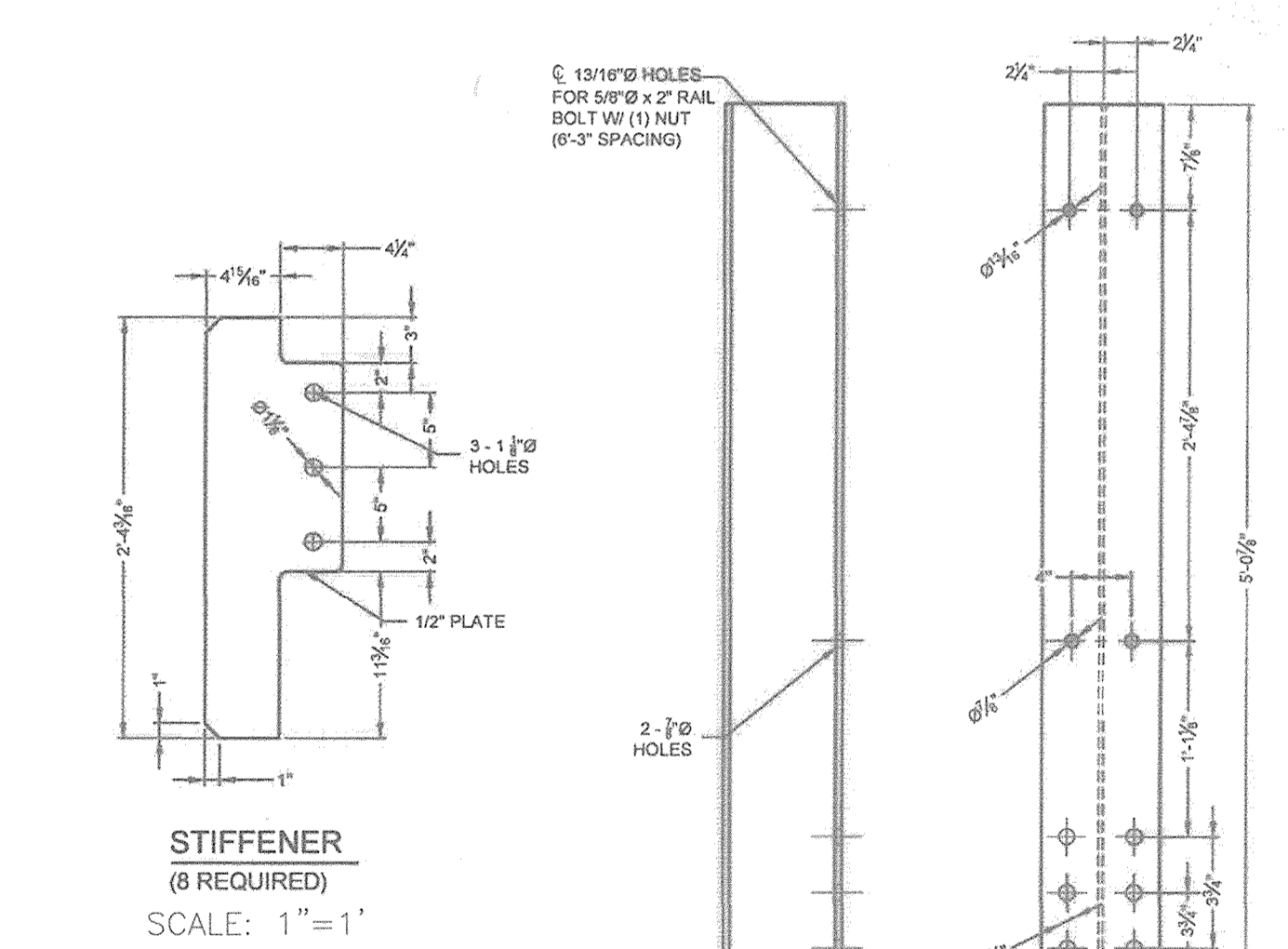
**SHOP NOTE:**  
 STIFFENER PLATE LOCATED ON INSIDE OF EXTERIOR STRINGER ONLY.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 11/27/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12-2-18

CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 1-10-19



NO. 1		MODIFICATION TO ONLOT HOUSES, SWM, AND GRADING	4-10-19
REVISION		DATE	

**FINAL ROAD CONSTRUCTION PLAN**  
**BRIDGE DESIGN NOTES AND DETAILS**  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B' - 'H' A RE-SUBDIVISION OF THE 'GREENE PROPERTY', LOT 1

PARCEL: 369  
 TAX MAP: 34 GRID: 23  
 5TH ELECTION DISTRICT

ZONED: RR-DEO  
 4.472 / F. 265  
 HOWARD COUNTY, MARYLAND

**CONTECH**  
 ENGINEERED SOLUTIONS LLC  
 www.contechES.com  
 4311 State Highway 28 North, Alexandria, VA 22304  
 800-328-2200 570-420-7800 570-420-7897 FAX

**CONTINENTAL**  
 BRIDGE

**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. 26699 EXPIRATION DATE: 04-30-2019

DESIGN BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 DATE: SEPTEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

30 SHEET OF 33

C:\Projects\2018\201809\20180927\CONTECH\ES\B1807012527.dwg

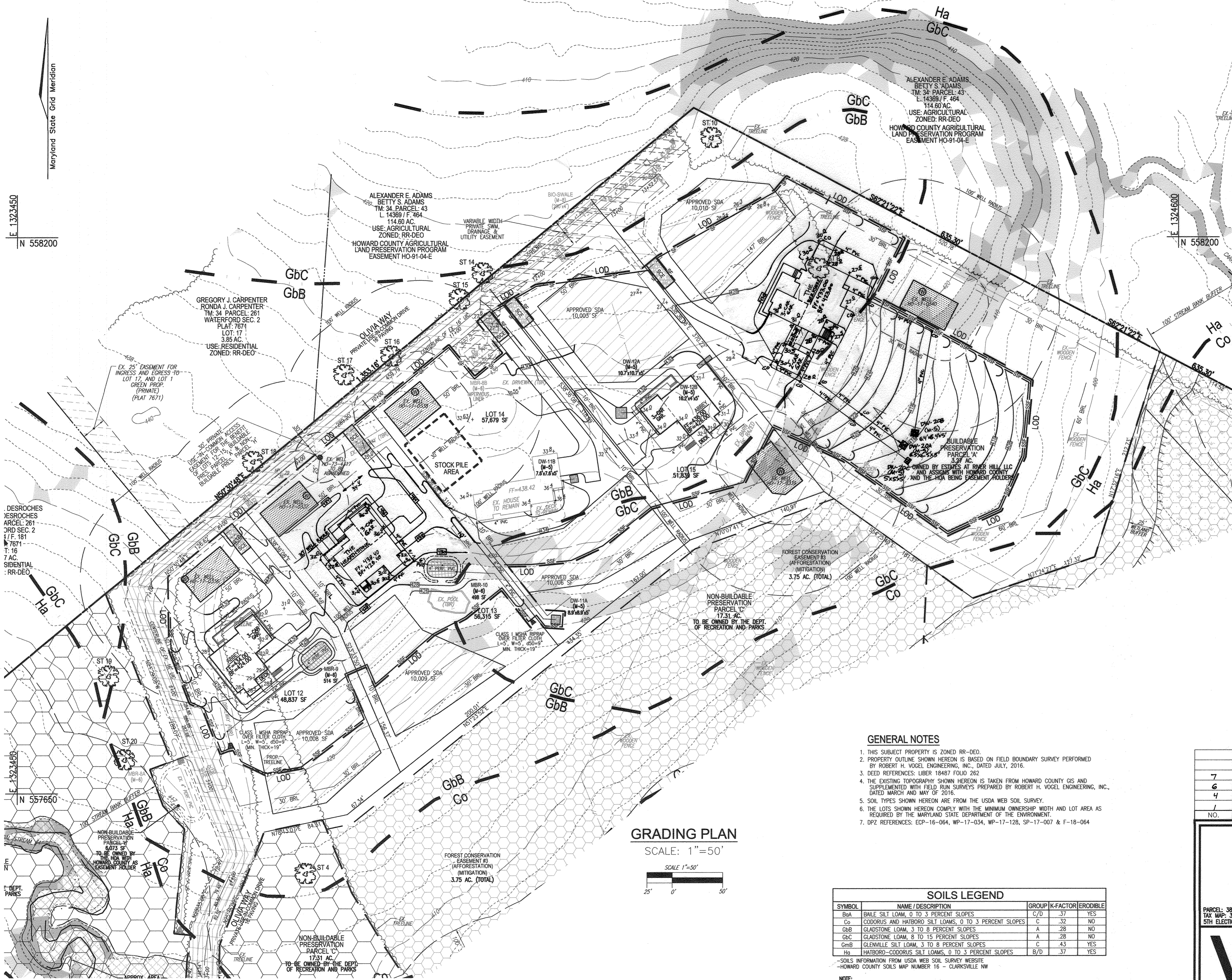
**WARNING!**  
INSTALL HIGHLY VISIBLE AND PROTECTIVE DEVICES AROUND WELLS PRIOR TO COMMENCEMENT OF GRADING OPERATIONS. MAINTAIN PROTECTIVE DEVICES THROUGHOUT DURATION OF CONSTRUCTION ACTIVITIES

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

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

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

**NOTE:** NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.



**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAVING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12948)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SWM, DRAINAGE & UTILITY EASEMENT
- PROP. 35' PRIVATE MONUMENT EASEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING STEEP SLOPES (25% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 24.99% SLOPES)
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA
- LIMIT OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE
- SSP
- SSP
- SSP
- SSP

**SPECIMEN TREE CHART**

NO.	SIZE (IN. DBH)	CRZ (FEET RADIUS)	COMMON NAME	CONDITION	COMMENTS
ST 9	30"	45'	WHITE PINE	GOOD CONDITION	TO BE REMOVED

- GENERAL NOTES**
- THIS SUBJECT PROPERTY IS ZONED RR-DEO.
  - PROPERTY OUTLINE SHOWN HEREON IS BASED ON FIELD BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JULY, 2016.
  - DEED REFERENCES: LIBER 18487 FOLIO 262
  - THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM HOWARD COUNTY GIS AND SUPPLEMENTED WITH FIELD RUN SURVEYS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH AND MAY OF 2016.
  - SOIL TYPES SHOWN HEREON ARE FROM THE USDA WEB SOIL SURVEY.
  - THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
  - DPZ REFERENCES: ECP-16-064, WP-17-034, WP-17-128, SP-17-007 & F-18-064

**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
BaA	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GbB	GLAUSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GbC	GLAUSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ha	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

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

**GRADING PLAN**  
SCALE: 1"=50'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*James* 6/3/2019  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Michael Pfaul* 6-10-19  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Ketzel* 6-11-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT 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 RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND MDE.

*Michael Pfaul* 4/24/19  
 OWNER/DEVELOPER SIGNATURE DATE

*Michael Pfaul, member*  
 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* 5-8-19  
 DESIGNER'S SIGNATURE DATE

ROBERT H. VOGEL  
 PRINTED NAME  
 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.

*John R. Roberts* 5/29/19  
 HOWARD S.C.D. DATE

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAUL, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

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

NO.	REVISION	DATE
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM FOR LOT 13	1-29-21
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
1	ADDITION TO ONLY HOUSES SWM AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN  
 ON-LOT GRADING, EROSION AND SEDIMENT CONTROL PLAN  
 FOR LOTS 12-15 & BUILDABLE PRESERVATION PARCEL A  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H'  
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 388 ZONED: RR-DEO  
 TAX MAP: 34 GRID: 23 L 4772 / F. 265  
 5TH ELECTION DISTRICT 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: RHV  
 DRAWN BY: JMR  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A QUALIFIED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18193, EXPIRATION DATE: 09-27-2020

32 SHEET OF 33

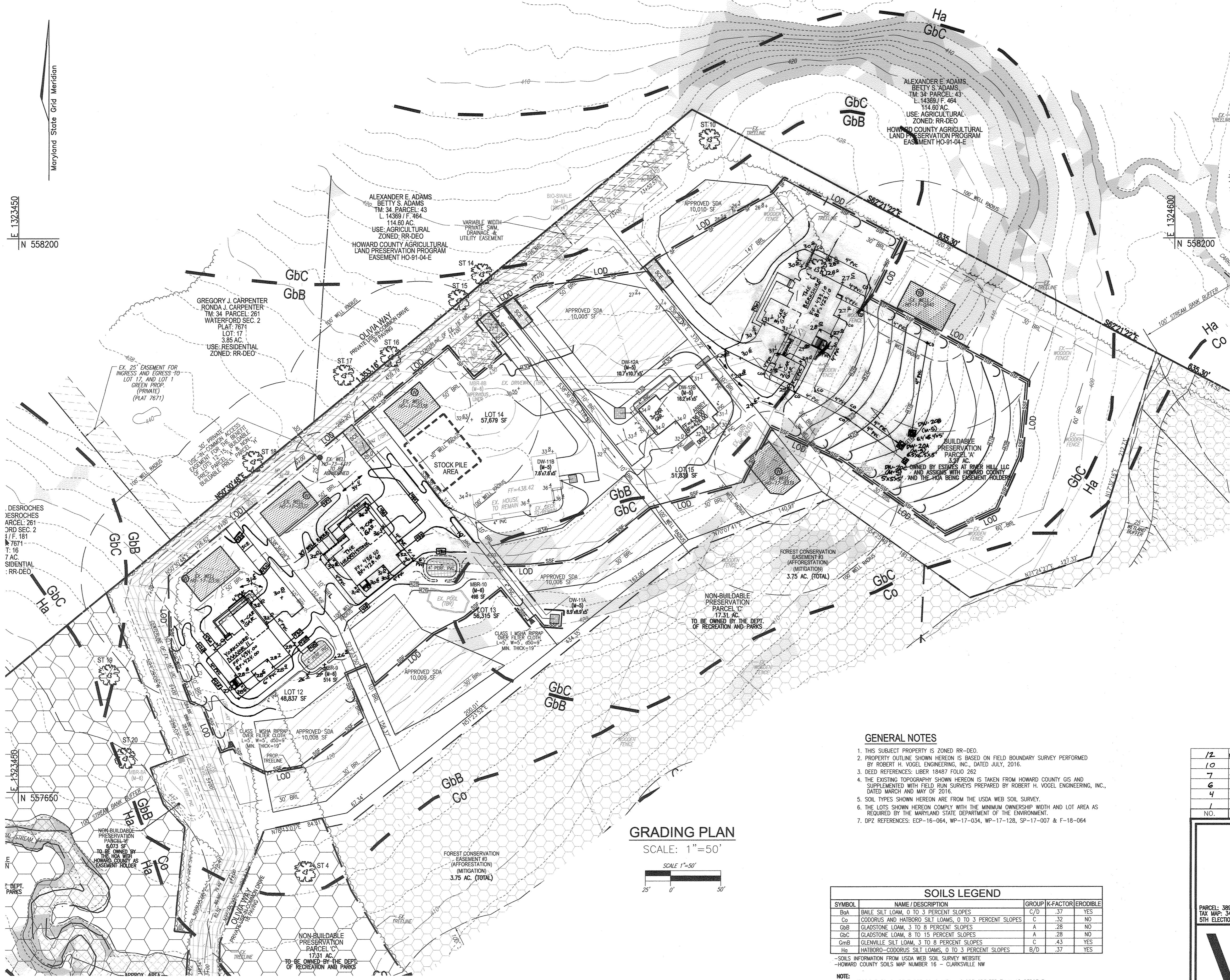
**WARNING!**  
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**NOTE:** LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

**NOTE:**  
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- SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART  
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**NOTE:**  
STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDS. & SPECS. WHICHEVER IS MORE RESTRICTIVE.

**NOTE:** NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.



**LEGEND:**

- PROPERTY LINE
- - - RIGHT-OF-WAY LINE
- - - ADJACENT PROPERTY LINE
- - - EXISTING EDGE OF PAVING
- - - EXISTING STREAM BUFFER
- - - EXISTING STREAM
- - - EXISTING TREETRINE
- - - PROPOSED TREETRINE
- - - EXISTING WETLANDS
- - - EXISTING WETLAND BUFFER
- - - EXISTING SPECIMEN TREES
- - - EXISTING WOOD FENCE
- - - EXISTING METAL FENCE
- - - EX. PUBLIC 100-YEAR FLOOD PLAN
- - - EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- - - PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- - - PROP. PUBLIC SIM. DRAINAGE & UTILITY EASEMENT
- - - PROP. 35' PRIVATE MONUMENT EASEMENT
- - - EXISTING 10' CONTOUR
- - - EXISTING 2' CONTOUR
- - - SOILS
- - - PROPOSED 10' CONTOUR
- - - PROPOSED 2' CONTOUR
- - - EXISTING STEEP SLOPES (25% SLOPES OR GREATER)
- - - EXISTING MODERATE SLOPES (15% TO 24.99% SLOPES)
- - - PROP. SEWAGE DISPOSAL AREA
- - - PROP. WELL AREA
- - - LIMIT OF DISTURBANCE
- - - STABILIZED CONSTRUCTION ENTRANCE
- - - SUPER SILT FENCE
- - - SILT FENCE

**SPECIMEN TREE CHART**

NO.	SIZE (IN. DBH/FEET RADII)	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 9	30"	45'	WHITE PINE	GOOD CONDITION	TO BE REMOVED

- GENERAL NOTES**
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  - DPZ REFERENCES: ECP-16-064, WP-17-034, WP-17-128, SP-17-007 & F-18-064

**GRADING PLAN**  
SCALE: 1"=50'

**SOILS LEGEND**

SYMBOL	NAME/DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
Ba	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	COODORUS AND HARBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GbB	GLAUSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GbC	GLAUSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ha	HARBORO-COODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*James* 6/3/2019  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Michael Pfaul* 6-10-19  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE

*Kate Schwalbe* 6-11-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 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 ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

*Michael Pfaul* 6/24/19  
 OWNER/DEVELOPER SIGNATURE  
 DATE

*Michael Pfaul, member*  
 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* 5-8-19  
 DESIGNER'S SIGNATURE  
 DATE

ROBERT H. VOGEL  
 PRINTED NAME  
 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.

*John Robert* 5/24/19  
 HOWARD S.C.D. DATE

**OWNER**  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAUL, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

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

NO.	REVISION	DATE
12	REVISE THE HOUSE AND GRADING ON LOT 1	8-11-21
10	REVISE THE HOUSE AND ESD FOR PRESERVATION PARCEL 'A'	7-29-21
7	REVISE THE HOUSE, GRADING AND SWM FOR PRESERVATION PARCEL 'A'	4-5-21
6	REVISE THE HOUSE, GRADING AND SWM FOR LOT 13	1-29-21
4	REVISE THE HOUSE TYPE, GRADING AND SWM ON BUILDABLE PRESERVATION PARCEL 'A'	9-11-20
1	MODIFICATION TO ONLOT HOUSES SWM AND GRADING	4-10-19
NO.	REVISION	DATE

REVISED FINAL ROAD CONSTRUCTION PLAN  
 ON-LOT GRADING, EROSION AND SEDIMENT CONTROL PLAN  
 FOR LOTS 12-15 & BUILDABLE PRESERVATION PARCEL A  
**THE ESTATES AT RIVER HILL**  
 LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A',  
 AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H'  
 A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO  
 TAX MAP: 34 GRID: 23 L 4772 / F. 285  
 5TH ELECTION DISTRICT 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: RHV  
 CHECKED BY: JMR  
 DRAWN BY: RHV  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

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

32 SHEET OF 33

**WARNING!**  
INSTALL HIGHLY VISIBLE AND PROTECTIVE DEVICES AROUND WELLS PRIOR TO COMMENCEMENT OF GRADING OPERATIONS. MAINTAIN PROTECTIVE DEVICES THROUGHOUT DURATION OF CONSTRUCTION ACTIVITIES

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

**NOTE:**  
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- SILT FENCE SHALL BE CURLED UP HILL NO MORE THAN 35 FEET APART  
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

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

**NOTE:** NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.

NO.	SIZE (IN DBH)	CRZ (FEET RADIUS)	COMMON NAME	CONDITION	COMMENTS
ST 24	37"	55.5'	TULIP POPLAR	MAJOR TRUNK WOUND	TO BE REMOVED

- GENERAL NOTES**
- THIS SUBJECT PROPERTY IS ZONED RR-DEO.
  - PROPERTY OUTLINE SHOWN HEREON IS BASED ON FIELD BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JULY, 2016.
  - DEED REFERENCES: LIBER 18487 FOLD 262
  - THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM HOWARD COUNTY GIS AND SUPPLEMENTED WITH FIELD RUN SURVEYS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH AND MAY OF 2016.
  - SOIL TYPES SHOWN HEREON ARE FROM THE USDA WEB SOIL SURVEY.
  - THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
  - DPZ REFERENCES: ECP-16-064, WP-17-034, WP-17-128, SP-17-007 & F-18-064

SYMBOL	NAME/DESCRIPTION	GROUP	K-FACTOR	ERODIBLE
BsA	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	.37	YES
Co	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	.32	NO
GbB	GLASSSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	.28	NO
GbC	GLASSSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	.28	NO
GmB	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	C	.43	YES
Ha	HATBORO-CODORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	B/D	.37	YES

SOILS INFORMATION FROM USDA WEB SOIL SURVEY WEBSITE  
HOWARD COUNTY SOILS MAP NUMBER 16 - CLARKSVILLE NW

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 6/3/2019  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 6-10-19  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 6-11-19  
CHIEF, DIVISION OF LAND DEVELOPMENT 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 RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

*[Signature]* 4/24/19  
OWNER/DEVELOPER SIGNATURE DATE  
Michael P. Fan, member  
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]* 5-8-19  
DESIGNER'S SIGNATURE DATE  
ROBERT H. VOGEL  
PRINTED NAME  
NO. 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]* 5/24/19  
HOWARD S.C.D. DATE

**GRADING PLAN**  
SCALE: 1"=50'

**OWNER**  
ESTATES AT RIVER HILL, LLC  
MICHAEL PFALLU, MEMBER  
3675 PARK AVE., SUITE 301  
ELLCOTT CITY, MD 21043  
(410) 480-0023

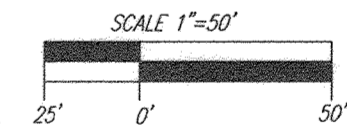
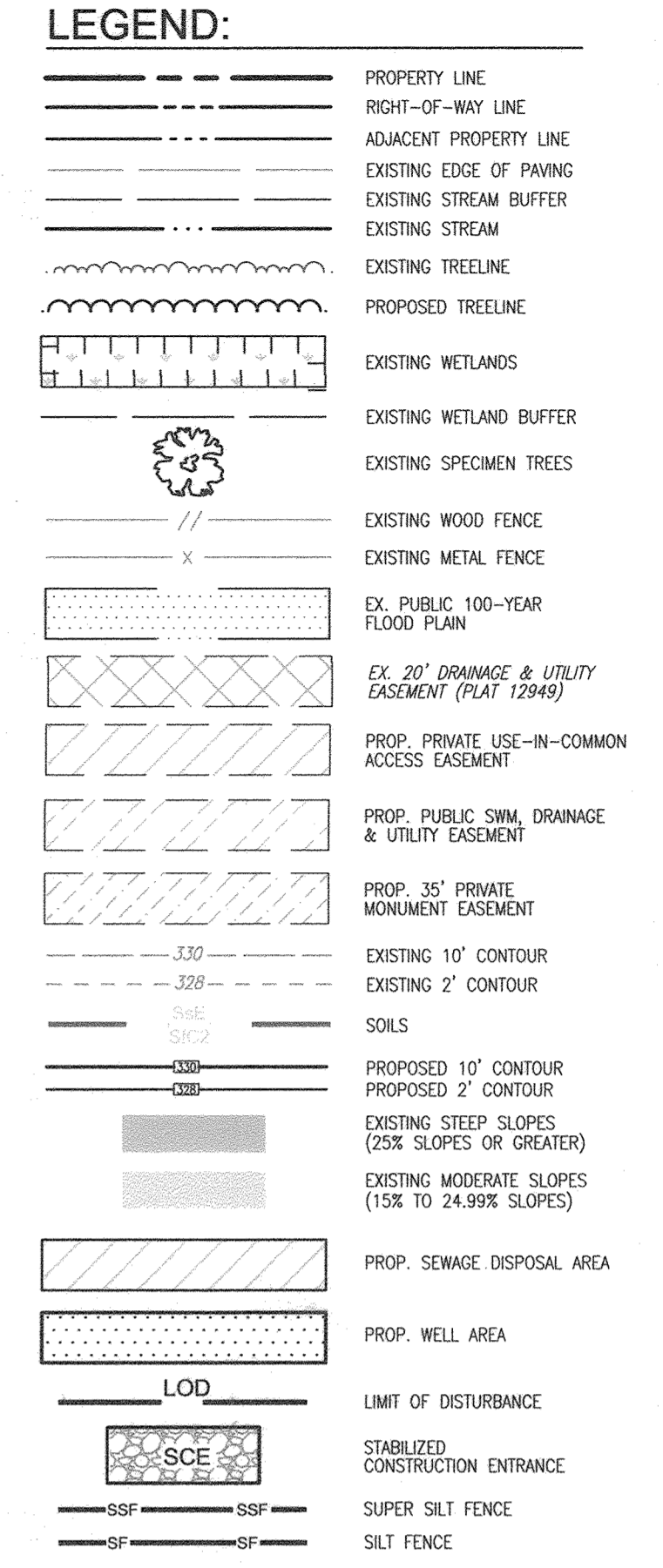
**DEVELOPER**  
TRINITY HOMES MARYLAND, LLC  
3675 PARK AVE., SUITE 301  
ELLCOTT CITY, MD 21043  
(410) 480-0023

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]*  
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHY  
DRAWN BY: JMR  
CHECKED BY: RHY  
DATE: NOVEMBER 2018  
SCALE: AS SHOWN  
W.D. NO.: 15-39

33 SHEET OF 33



NO.	REVISION	DATE
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESP GRADING AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3')	10-25-19
1	MODIFICATION TO ONLOT HOUSES, SWM AND GRADING	4-10-19

REVISED FINAL ROAD CONSTRUCTION PLAN  
ON-LOT GRADING, EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 4-9  
**THE ESTATES AT RIVER HILL**  
LOTS 1-15, BUILDABLE PRESERVATION PARCEL 'A', AND NON-BUILDABLE PRESERVATION PARCELS 'B'-'H' A RE-SUBDIVISION OF THE "GREENE PROPERTY", LOT 1

PARCEL: 389 ZONED: RR-DEO  
TAX MAP: 34 GRID: 23 L 4772 / F. 285  
5TH ELECTION DISTRICT 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



**WARNING!**  
INSTALL HIGHLY VISIBLE AND PROTECTIVE DEVICES AROUND WELLS PRIOR TO COMMENCEMENT OF GRADING OPERATIONS. MAINTAIN PROTECTIVE DEVICES THROUGHOUT DURATION OF CONSTRUCTION ACTIVITIES

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

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

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

**NOTE:** NO AREAS OF STEEP SLOPES AS HATCHED HEREON ARE REGULATED PER SECTION 16.116 OF THE HOWARD COUNTY SUB. REG'S.

NO.	SIZE (IN. DBH/FEET DBH)	CRZ	COMMON NAME	CONDITION	COMMENTS
ST 24	37"	55.5'	TULIP POPLAR	MAJOR TRUNK WOUND	TO BE REMOVED

- GENERAL NOTES**
- THIS SUBJECT PROPERTY IS ZONED RR-DEO.
  - PROPERTY OUTLINE SHOWN HEREON IS BASED ON FIELD BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JULY, 2016.
  - DEED REFERENCES: LIBER 18487 FOLIO 262
  - THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM HOWARD COUNTY GIS AND SUPPLEMENTED WITH FIELD RUN SURVEYS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH AND MAY OF 2016.
  - SOIL TYPES SHOWN HEREON ARE FROM THE USDA WEB SOIL SURVEY.
  - THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
  - CRZ REFERENCES: EOP-16-064, WP-17-034, WP-17-128, SP-17-007 & F-18-064

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Jac* 6/3/2019  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*M. J. ...* 6-10-19  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE

*Michael P. Fau...* 6-11-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 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 THAT ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

*Michael P. Fau...* 4/24/19  
 OWNER/DEVELOPER SIGNATURE  
 DATE

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* 5-8-19  
 DESIGNER'S SIGNATURE  
 DATE

ROBERT H. VOGEL  
 PRINTED NAME  
 NO. 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 K. ...* 5/24/19  
 HOWARD S.C.D.  
 DATE

**GRADING PLAN**  
 SCALE: 1"=50'

OWNER  
 ESTATES AT RIVER HILL, LLC  
 MICHAEL PFAU, MEMBER  
 3675 PARK AVE., SUITE 301  
 ELLICOTT CITY, MD 21043  
 (410) 480-0023

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

PROFESSIONAL CERTIFICATE

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

DESIGN BY: RHY  
 DRAWN BY: JMR  
 CHECKED BY: RHY  
 DATE: NOVEMBER 2018  
 SCALE: AS SHOWN  
 W.O. NO.: 15-39

33 SHEET OF 33

REVISED FINAL ROAD CONSTRUCTION PLAN  
 ON-LOT GRADING, EROSION AND SEDIMENT CONTROL PLAN FOR LOTS 4-9

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PARCEL: 389 ZONED: RR-DEO  
 TAX MAP: 34 GRID: 23 L 4772 / F. 285  
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 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

NO.	REVISION	DATE
13	REVISE THE PLAN TO ADD AN EXTRA DECK WELL TO LOT 7 AND MODIFY THE HOUSE MAPS	11-22-21
11	REVISE THE PLAN TO SHOW NEW HOUSE TYPE, ESP PRACTICES AND GRADING ON LOT 4	8-11-21
9	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 6	6-25-21
8	REVISE THE HOUSE TYPE, GRADING AND SWM ON LOT 5	6-9-21
2	MODIFICATION TO GRADING ON BUILDABLE PRESERVATION PARCEL A AND TO ADD A SMALL WALL ON LOT 9 (UNDER 3)	10-25-19
1	MODIFICATION TO ONLOT HOUSES, SWM AND GRADING	4-10-19



**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING EDGE OF PAWING
- EXISTING STREAM BUFFER
- EXISTING STREAM
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING SPECIMEN TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EX. PUBLIC 100-YEAR FLOOD PLAN
- EX. 20' DRAINAGE & UTILITY EASEMENT (PLAT 12949)
- PROP. PRIVATE USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SWM DRAINAGE & UTILITY EASEMENT
- PROP. 35' PRIVATE MONUMENT EASEMENT
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- EXISTING STEEP SLOPES (25% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 24.99% SLOPES)
- PROP. SEWAGE DISPOSAL AREA
- PROP. WELL AREA
- LOD LIMIT OF DISTURBANCE
- SCE STABILIZED CONSTRUCTION ENTRANCE
- SSF SUPER SILT FENCE
- SF SILT FENCE

