APPROVED: DEPARTMENT OF PUBLIC WORKS

Devicos

OF HIGHWAYS 🖊 🗸

CHIEF, DEVELOPMENT ENGINEERING DIVISION \$50

CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

ALL WORK IN THE NONTIDAL WETLANDS, WETLAND BUFFERS SHALL BE COMPLETED PER THE BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS. SEE SHEET

REQUEST. 2) THE ASSUMED 85TH PERCENTILE SPEED IS IN LINE WITH THE ACTUAL STUDY MADE BY THE ENGINEER AT THE NEXT INTERSECTION 3 MINIMUM CURVE RADIUS HAS REEN REDUCED WITHIN RESIDENTIAL AREA PROVIDING SPEED CONTROL WITHIN THIS PORTION OF THE SURDIVISION

IT IS NOTED THAT ALL RADII WITHIN THE SUBDIVISION MEETS THE HOWARD COUNTY FIRE DEPARTMENT REQUIREMENTS. THE REQUESTED WAIVER TO

6.25.14

1-410-954-628

1-800-393-355

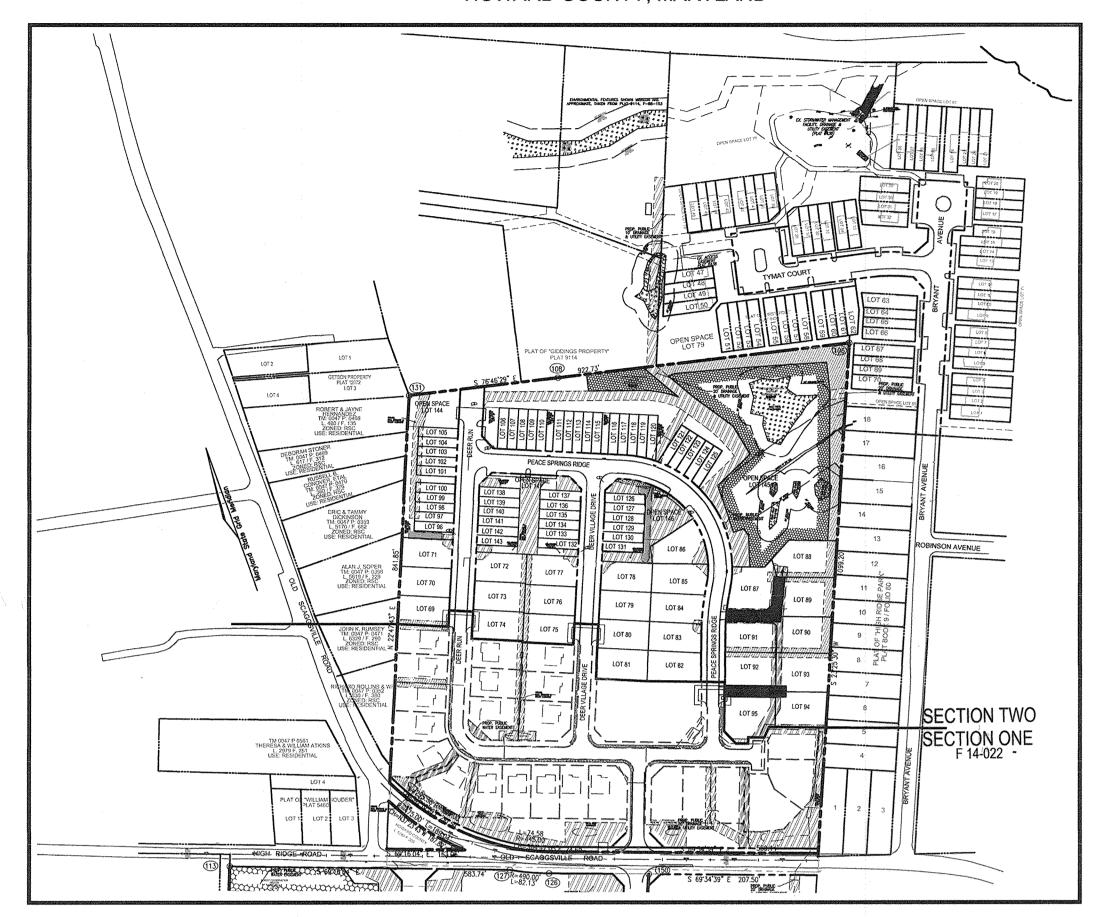
410-313-2366

410-850-4620

410-531-5533

FINAL ROAD CONSTRUCTION PLAN HIGH RIDGE MEADOWS - SEC. 2

SFD LOTS 69 - 95, SFA LOTS 96 - 143 AND OPEN SPACE LOTS 144 - 147 OLD SCAGGSVILLE ROAD PARCELS 363 & 542 HOWARD COUNTY, MARYLAND



LOCATION MAP

SHEET INDEX DESCRIPTION SHEET NO. 1 OF 20 COVER SHEET ROAD PROFILE AND PLAN DETAILS - DEER RUN 2 OF 20 DEER VILLAGE DRIVE ROAD PROFILE AND PLAN DETAILS - PEACE SPRINGS RIDGE 3 OF 20 DILS MAP & PHASE 1 GRADING, SOIL EROSION AND SEDIMENT 4 OF 20 DILS MAP & PHASE 2 GRADING, SOIL EROSION AND SEDIMENT 5 OF 20 6 OF 20 GRADING. SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS GRADING, SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS 7 OF 20 SEDIMENT BASIN #5 - NOTES & DETAILS 8 OF 20 FIRST RIDGE - STORMWATER FACILITY RECONSTRUCTION PLAN 9 OF 20 FIRST RIDGE - STORMWATER FACILITY RECONSTRUCTION DETAILS 10 OF 20 STORM DRAIN DRAINAGE AREA MAP 11 OF 20 STORM DRAIN PROFILES 12 OF 20 STORM DRAIN PROFILES 13 OF 20 LANDSCAPE PLAN 14 OF 20 15 OF 20 LANDSCAPE PLAN - NOTES AND DETAILS ESDV - DRAINAGE AREA MAP NORTH AREA 16 OF 20 17 OF 20 STORMWATER MANAGEMENT NOTES AND DETAILS 18 OF 20 STORMWATER MANAGEMENT NOTES AND DETAILS MICRO-BIORETENTION - PLANTING DETAILS 19 OF 20 TRAFFIC SIGNAGE & STREET LIGHT LOCATION PLAN 20 OF 20

BENCHMARKS

HOWARD COUNTY BENCHMARK 47H2 (CONC. MON.)

N 529706.4221 E 1355445.3364 ELEV. 256.068

HOWARD COUNTY BENCHMARK 47GC (CONC. MON.)

N 528939.7281 E 1354223.5536 ELEV. 226.272

OF SOUTHWEST INLET CORNÉR

AS-BUILT CERTIFICATION I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. 16193 7-18-19

RECREATION OPEN SPACE TABULATION:

TOTAL RECREATION OPEN SPACE REQUIRED FOR DEER SPRINGS SECTION ONE F14-022 AND SECTION TWO F14-023 = 43,500SF TOWNHOMES SFA = 400 SF/UNIT X 48 UNITS = 19,200 SF SINGLE FAMILY HOMES SFD = 300 SF/UNIT X 81 UNITS = 24,300 SF

- SECTION ONE F14-022 = 54 SFD \times 300 SF = 16,200 SF REQUIRED - SECTION TWO F14-023 = 27 SFD X 300 SF = 8.100 SF REQUIRED = 48 SFD X 400 SF = 19.200 SF REQUIRED

TOTAL RECREATION OPEN SPACE PROVIDED FOR DEER SPRINGS 43,500 SF*. RECREATION OPEN SPACE - SECTION ONE F14-022 = 25,742 SF PROVIDE OPÉN SPACE LOT 6 34 080 SE PROVIDE TOTAL = 59,822 SF PROVIDED

* AMENITIES INCLUDE THE PROPOSED 1.420 LF OF 8' PATHWAY CONNECTION (1.420'X8'=11.360SF) WHERE 3SF OF RECREATION AREA = 1 SF OF PAVED PATH = 34,080 SF OF AMENITY CREDIT PROVIDED. THE PATHWAY IS PROVIDED THROUGH THE FOREST CONSERVATION AREA ON OPEN SPACE HOWARD COUNTY OPEN SPACE LOT 57 FROM TWIN FAWN TRAIL TOWARD ADJOINING HIGH RIDGE PARK (MOSTLY ALONG THE SEWER ALIGNMENT)

RECREATION OPEN SPACE - SECTION TWO F14-023 = N/A REQUIREMENT MET UNDER SECTION ONE F14-022

REMOVED TREE OR AT LEAST ON THE PORTION OF THE PROPERTY BOUNDARY SHARED BY PARCEL 396

GENERAL NOTES (CON'T)

48. THIS PROJECT IS SUBJECT TO WP-13-080. ON MARCH 27, 2013: THE PLANNING DIRECTOR APPROVED THE REQUEST, TO WAIVE SECTION 16.116(A) FOR DISTURBANCE TO STREAM, STREAM BUFFERS, WETLANDS AND WETLAND BUFFERS ON THE NORTHEAST PORTION OF THE PROJECT FOR A STORM DRAINAGE PIPE, AND SECTION 16.1205(A)(7) TO REMOVE UP TO 3 SPECIMEN TREES THE PLANNING DIRECTOR DENIED YOUR REQUEST TO WAIVE SECTION 16.120(B)(6)(V)(C) TO ALLOW PIPESTEM LOTS ON MU]TIPLE SIDES OF A FRONTAGE LOT IN THE SAME SUBDIVISION. APPROVAL OF THE WAIVER TO SECTION 16.116(A) AND SECTION 16.1205(A)(7) IS SUBJECT TO THE FOLLOWING CONDITIONS: 1. ENVIRONMENTAL DISTURBANCE MUST BE LIMITED TO THE AREAS INDICATED ON THE WAIVER PETITION PLAN EXHIBIT, ANY EXPANSION OF THE DISTURBED AREA MAY REQUIRE ADDITIONAL WAIVER APPROVAL IF DETERMINED SIGNIFICANT. 2 PRIOR TO INITIATING ANY CONSTRUCTION ACTIVITIES THAT RESULT IN THE APPROVED ENVIRONMENTAL DISTURBANCES, ALL APPROVALS FROM MDE, APPLICABLE SRC AGENCIES AND PERMISSIONS FROM ADJOINLNG/AFFECTED PROPERTY OWNERS MUST BE OBTAINED AND DOCUMENTED. COPIES OF DOCUMENTATION MUST BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING PRIOR TO THE FINAL PLAN APPROVAL (OR PRIOR TO SITE DEVELOPMENT PLAN APPROVAL, AT THE DISCRETION OF DPZ). S. PRIOR TO REMOVAL OF THE TWO OAK SPECIMEN TREES, PLEASE REVIEW THE PROPOSED DESIGN AFTERNATIVES RECOMMENDED BY THE DIVISION OF LAND DEVELOPMENT IN THE REVISED SUBMISSION COMMENTS DATED MARCH 28, 2013. INCORPORATE DESIGN RECOMMENDATIONS OR PROVIDE AMPLE JUSTIFICATION TO THE DEPARTMENT OF PLANNING AND ZONING IF NOT FEASIBLE (LOSS OF LOT YIELD ALONE WILL NOT BE CONSIDERED AMPLE JUSTIFICATION) 4. REMOVAL OF EACH SPECIMEN TREE WILL REQUIRE MITIGATION WITH THE PLANTING OF TWO NEW NATIVE SHADE TREES (FOR UP TO 6 NEW SHADE TREES) WITH A MINIMUM 2-1/2" CALIPER TRUNK- SURETY OF THESE SHADE TREES SHALL BE INCORPORATED INTO THE LANDSCAPE SURETY WITH THE FINAL ROAD CONSTRUCTION DRAWINGS. 5. PRIOR TO REMOVING THE SILVER MAPLE SPECIMEN TREE ON THE NORTH PARCEL, THE DEVELOPER SHALL FIRST ATTEMPT DESIGN ALTERNATIVES THAT WOULD ALLOW PRESERVATION OF THE TREE. IF REMOVED, THE TWO TREES PLANTED FOR MITIGATION SHOULD BE PLACED WITHIN THE PROXIMITY OF THE

DENIAL OF THE WAIVE TO SECTION 16.120(B)(6)(V)(C) WAS BASED ON THE FOLLOWING REASONS:

1. EXTRAORDINARY CIRCUMSTANCES OR DESIGN CONSTRAINTS RESULTING IN SIGNIFICANT HARDSHIP WERE NOT INDICATED IN THE WAIVER JUSTIFICATION. 2. DESIGN ALTERNATIVES EXIST THAT WOULD PREVENT THE LOT BEING SURROUNDED ON FOUR SIDES BY PAVED DRIVE LANES. PLEASE SEE DLD COMMENTS DATED MARCH 28, 2013. 3. THE DESIGN PROPOSAL APPEARS GEARED TO ENSURING AN OPTIMAL LOT YIELD. THE DEVELOPER HAS THE OPTION OF INCORPORATING ADDITIONAL TOWNHOME LOTS TO OBTAIN DESIRED LOT YIELD IN THE PROPOSED SUBDIVISION DESIGN. 4. THE WAIVER, IF APPROVED WOULD' NULLIFY THE INTENT AND PURPOSE OF THE REGULATIONS, WHICH IS TO ACHIEVE A WELL THOUGHT-OUT DESIGN THAT PROVIDES ORDERLY SUBDIVISION LAYOUT AND AVOIDS ORIENTATION AND PRIVACY PROBLEMS FOR NEW HOUSES ON PIPESTEM AND FRONTAGE LOTS. AS PROPOSED, LOT 74 WOULD HAVE LIMITED USABILITY AND PRIVACY, DLD RECOMMENDS A SUBDIVISION REDESIGN TO REMOVE AND RELOCATE LOTS 72, 73, AND 74 ELSEWHERE IN THE DEVELOPMENT. IN LAYING OUT THE SUBDIVISION DESIGN, THE DEVELOPER SHOULD GIVE MORE CONSIDERATION THE ARRANGEMENT OF LOTS SO THAT PROPOSED HOUSES WILL NOT LOOK INTO NEIGHBORING REAR YARDS OF THE FRONT LOTS. EACH NEW LOT IN THE SUBDIVISION SHOULD INCORPORATE GOOD LOT DESIGN AND PLANNED AS TO THE SIZE, SHAPE AND ORIENTATION TO . AVOID UNDESIRABLE VIEWS FROM ADJOINING LOTS. WAIVERS SHALL NOT BE USED TO ACHIEVE MAXIMUM LOT YIELD AT THE EXPENSE OF GOOD SUBDIVISION DESIGN.

ON JUNE 3, 2013, A REQUEST FOR RECONSIDERATION WAS SUBMITTED WHICH AMENDED THE REQUESTED SPECIMEN TREES TO BE REMOVED. TO SPECIMEN TREES # 3 AND #4 PREVIOUSLY APPROVED TO BE REMOVED AND IN CONJUNCTION WITH THE REVISED LAYOUT, ARE NOW PROPOSED TO REMAIN. AS A RESULT OF THE REVISED LAYOUT, SPECIMEN TREE # 15 AND 16 (35"/ 37" TWIN TRUNK SOUTHERN RED OAK IN FAIR CONDITION) IS PROPOSED TO BE REMOVED.

PARKING TABULATION:

TOTAL NUMBER OF SFA DWELLING UNITS PROPOSED: 48 OFF-STREET PARKING SPACES REQUIRED: 2 SPACES PER UNIT = 96 SPACES PARKING SPACES PROVIDED:

SFA = 1 GARAGE/1 DRIVEWAY (SEE NOTE 37)1 SPACE IN GARÁGE = 48 SPACÈS (FOR 48 ÚNITS) 1 SPACE ON DRIVEWAY = 48 SPACES (FOR 48 UNITS) TOTAL PARKING SPACES PROVIDED: = 96 SPACES OFF-STREET ON-STREET PARKING REQUIRED:

OVERFLOW / GUEST PARKING SPACES REQUIRED 0.3 SPACES PER SFA UNIT X 48 = 14.4 = 15 SPACES REQUIRED TOTAL OVERFLOW PARKING SPACES PROVIDED: = 23 SPACES ON-STREET OVERFLOW ON-STREET PARKING WILL BE PUBLIC AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION. A SPECIAL AGREEMENT ADDRESSING CARS BACKING UP ONTO A PUBLIC ROAD HAS BEEN FINALIZED UNDER THIS FINAL

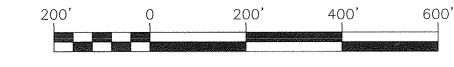
TOTAL NUMBER OF SFD DWELLING UNITS PROPOSED: 27 OFF-STREET PARKING SPACES REQUIRED: 2 SPACES PER UNIT = 54 SPACES SFD = 1 GARAGE/1 DRIVEWAY1 SPACE IN GARAGE = 27 SPACES (FOR 27 UNITS) 2 SPACES ON DRIVEWAY = 54 SPACES (FOR 27 UNITS)

TOTAL PARKING SPACES PROVIDED: = 81 SPACES OFF-STREET OVERFLOW / GUEST PARKING SPACES REQUIRED: 0.5 SPACES PER SFD UNIT X 27 = 13.5 = 14 SPACES REQUIRED TOTAL OVERFLOW PARKING SPACES PROVIDED: = 27 SPACES (DRIVEWAY)

FINAL SECTION GROSS FLOODPLAIN STEEP NET UNITS SLOPES AREA ALLOWED	UNITS	OPEN SPACE REQ.	OPEN	·
	PROP.	REQ.	OPEN SPACE PROV.	
F14-022 SEC. 1 36.94 0.00 0.34 36.60 146	54 SFD	9.24 ACRES	9.92 ACRES	
F14-023 SEC. 2 12.99* 0.00 0.00 36.60 ACRES ACRES ACRES	27 SFD 48 SFA	0.00 ACRES	4.65 ACRES	

** F14-022 - NON-BUILDABLE BULK PARCEL "B" RESUBDIVIDED UNDER F14-023 INTO 27 SFD / 48 SFA

NO AS-BUILT INFORMATION ON THIS SHEET



LOCATION: ALL SAINTS ROAD, 240'+/- SOUTH OF NORTH LAUREL ROAD 2.89 FEET FROM STORM DRAIN INLET; 1' EAST OF CURB, 0.6 BELOW SURFACE LOCATION: MEDIAN ISLAND 29 FEET WEST OF ALL SAINTS RD / RT 216 INTERSECTION; 1.4 FEET WEST **VICINITY MAP**

SCALE: 1"=2,000' ADC MAP COORDINATE: 5169 B1/5169 B2

SITE DATA

ELECTION DISTRICT: 6TH LOCATION: OLD SCAGGSVILLE ROAD WEST OF BRYANT AVENUE

EXISTING ZONING: GROSS AREA:

12.99 AC.+/-RESUB OF NON-BUILDABLE BULK PARCEL B

AREA OF 100 YEAR FLOODPLAIN: AREA OF STEEP SLOPES: 0.34 AC (F14-022) AREA OF WETLANDS & BUFFERS: 1.61 AC. (F14-022) NET AREA (GROSS-STEEP SLOPES & FLOODPLAIN): 12.99 AC.

4 LOTS PER NET ACRE (4X36.60):

NUMBER OF PROPOSED RESIDENTIAL LOTS: F14-022 - SECTION 1 54 SFD F14-023 - SECTION 2 27 SFD / 48 SFA AREA OF PROPOSED RESIDENTIAL LOTS (SFD) AREA OF PROPOSED RESIDENTIAL LOTS (SFA):

AREA OF PROPOSED RESIDENTIAL LOTS (TOTÁL): 6.45 AC AREA OF ROAD RIGHT OF WAY (ON-SITE): OPEN SPACE REQUIRED: 25% OF GROSS AREA = 9.24 AC TOTAL DEER SPRINGS (F14-022 & F14-023) $36.94 \times 25\% = 9.24 \text{ AC}$

SEC TWO AREA OF OPEN SPACE PROPOSED: 4.65 AC+/TOTAL OPEN SPACE PROVIDED (F14-022, F14-023): 14.57 AC+/-TOTAL RECREATION OPEN SPACE REQUIRED FOR SEC TWO = 17,758 SF ** SEE TABULATION

TOWNHOMES SFA = 400 SF/UNIT X 48 UNITS = 19,200 SF SINGLE FAMILY HOMES SFD = 300 SF/UNIT X 27 UNITS = 8,100 SF LIMIT OF DISTURBANCE EXISTING USE OF SITE: PROPOSED USE OF SITE:

SINGLE FAMILY ATTACHED PROPOSED WATER SYSTEM PUBLIC PROPOSED SEWER SYSTEM

PUBLIC MINIMUM LOT AREA: 6,000 SF - SFD MAXIMUM SFA LOT COVERAGE FOR STRUCTURES: 60%

KATHY MIESSE, PERSONAL REPRESENTATIVE, ESTATE OF ARTHUR P. KRAESKI 9222 OLD SCAGGSVILLE ROAD LAUREL, MD 20723-1730

LAND DESIGN & DEVELOPMENT, INC. 5300 DORSEY HALL DRIVE, STE 102 ELLICOTT CITY, MARYLAND 21042-7819 ATTN: MR. DONALD R. REUWER 443-367-0422

SINGLE FAMILY DETACHED

ATTN: MR. DONALD R. REUWER 443-367-0422 REVISION DATE FINAL ROAD CONSTRUCTION PLAN

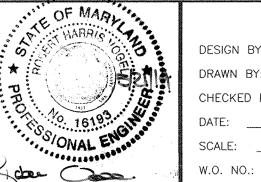
COVER SHEET HIGH RIDGE MEADOWS - SECTION 2 LOTS 69 - 143 AND OPEN SPACE LOTS 144 - 147

A RESUBDIVISION OF

DEER SPRINGS - SECTION ONE, NON-BUILDABLE BULK PARCEL "B" TAX MAP: 50 GRID: 1

DPZ REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080, SP 13-007, F 14-022 ROBERT H. VOGEL

ngineering, Inc. ENGINEERS . SURVEYORS . PLANNERS 8407 MAIN STREET 8407 MAIN STREET TEL: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961



ROBERT H. VOGEL, PE No.161

DESIGN BY: RHV / EDS DRAWN BY: CHECKED BY: SCALE:

I HEREBY CERTIFY THAT THESE DOCUMEN WERE PREPARED OR APPROVED BY ME, AN THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STAT OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2014 AS SHOWN

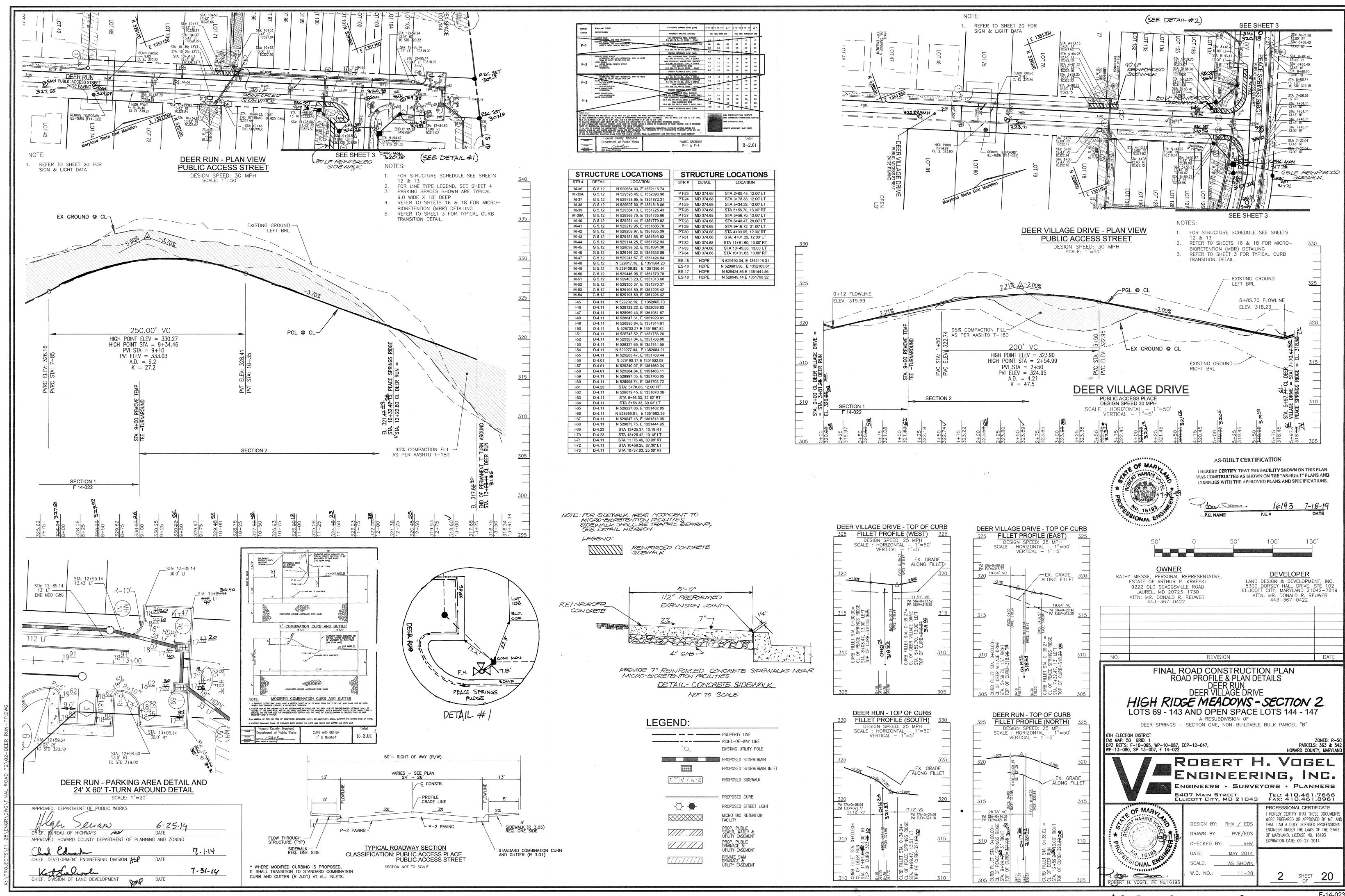
SHEET

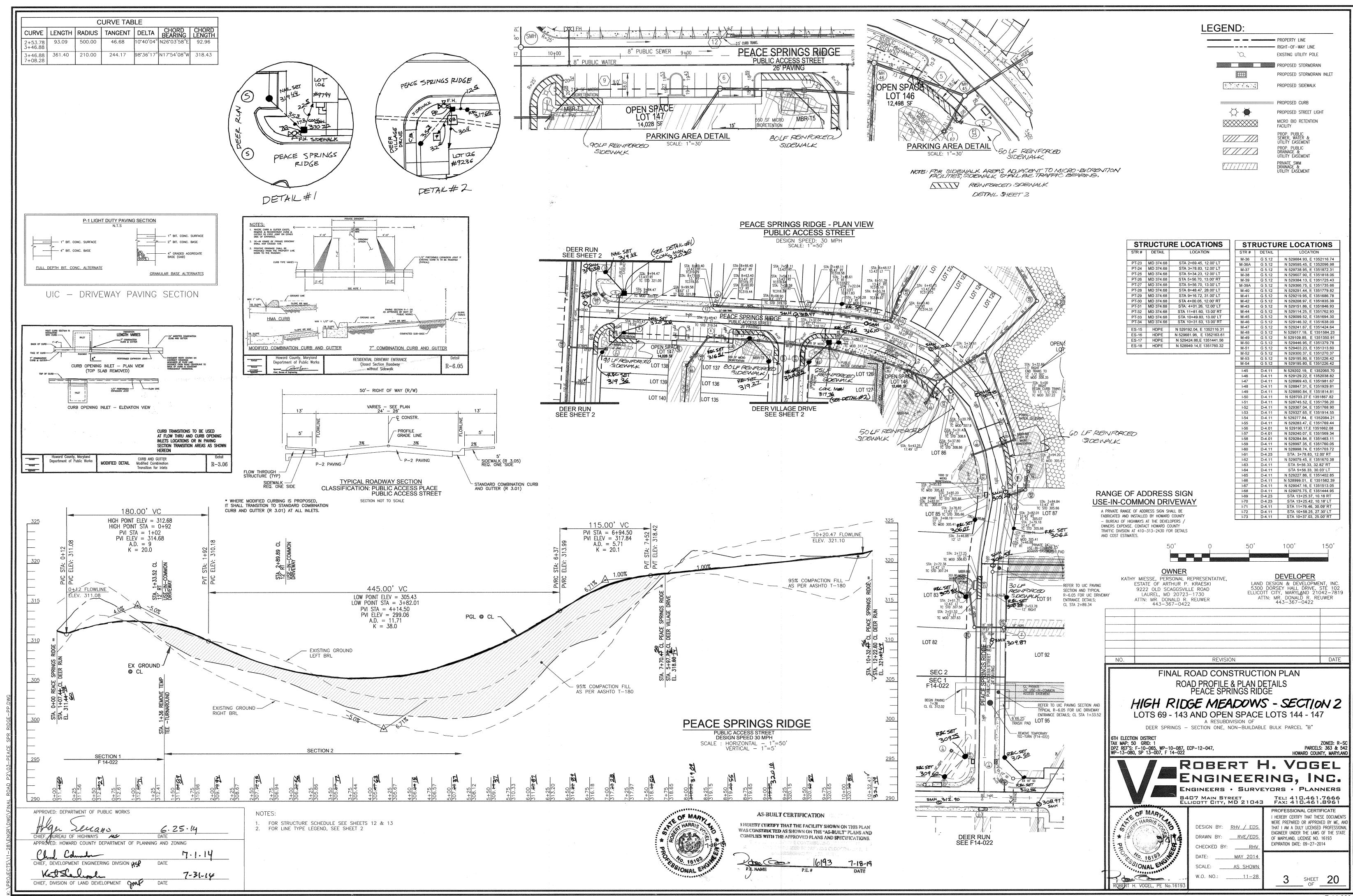
PROFESSIONAL CERTIFICATE

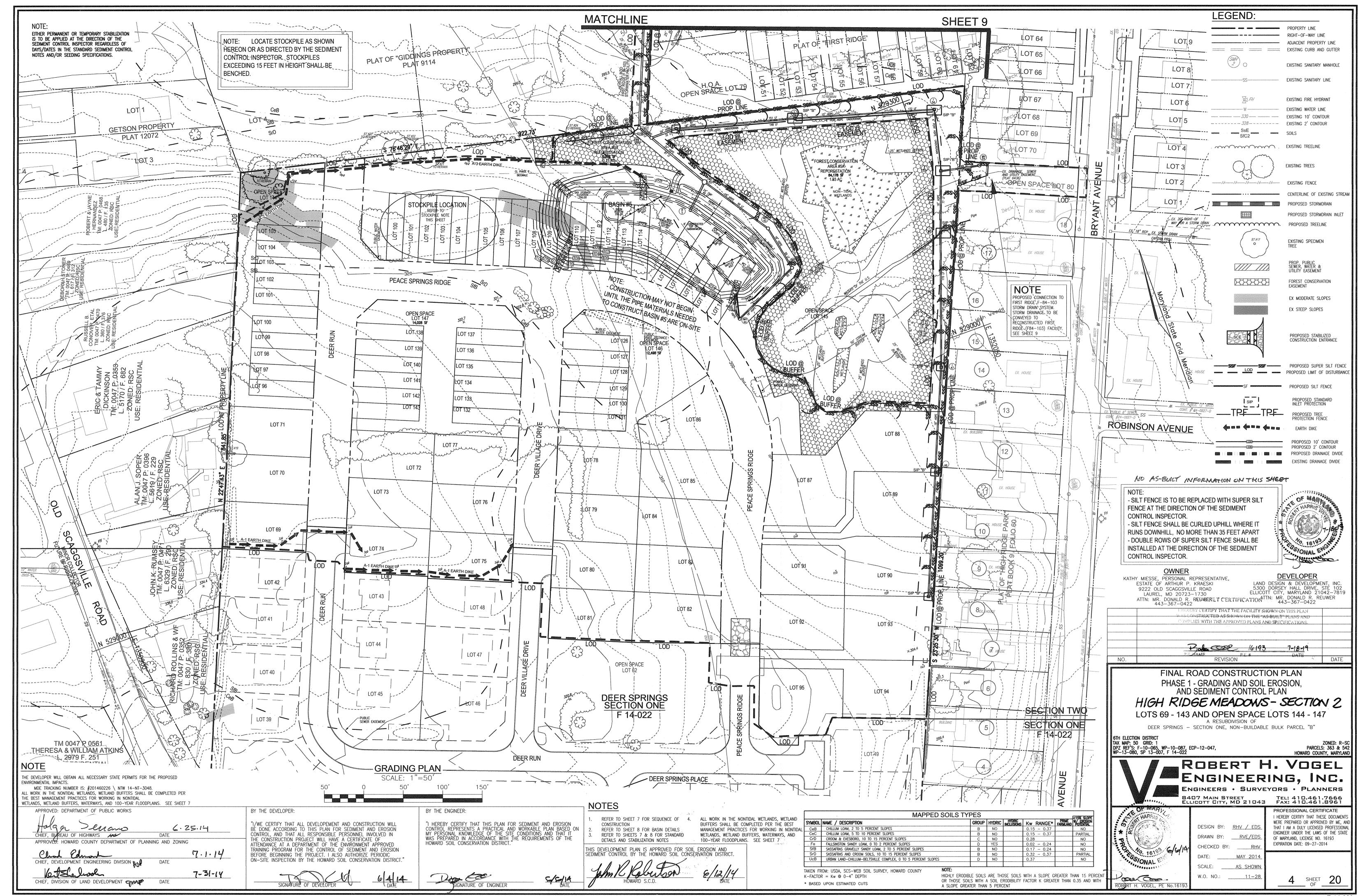
PARCELS: 363 & 542

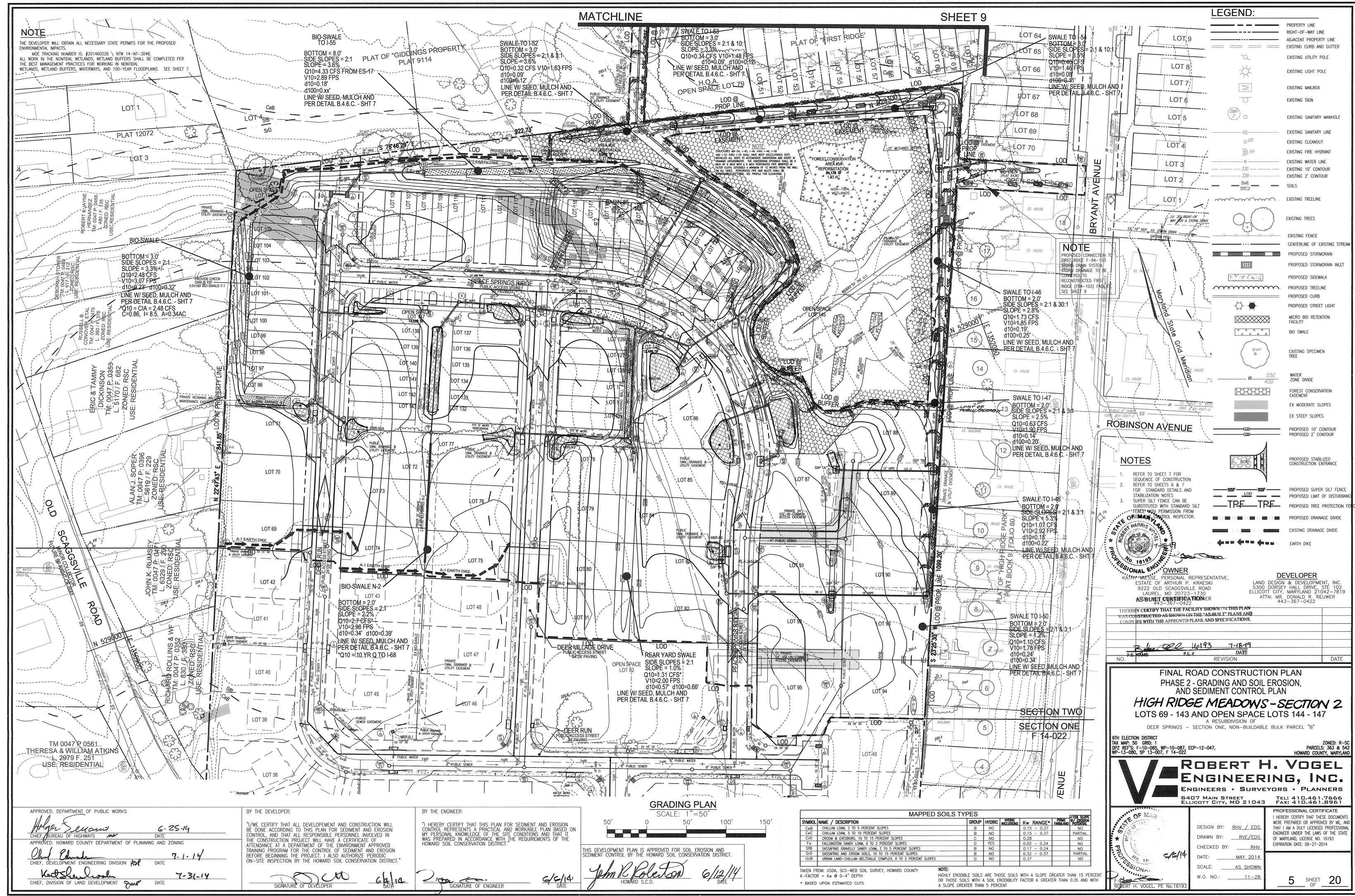
HOWARD COUNTY, MARYLAN

AS-BUILT - DECEMBER 2018









HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1855). ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", AND REVISIONS THERETO. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL RE COMPLETED WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES. DIKES. PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. TOTAL AREA OF SITE AREA DISTURBED ACRES AREA TO BE ROOFED OR PAVED AREA TO BE VEGETATIVELY STABILIZED ACRES OFFSITE WASTE/BORROW AREA LOCATION HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE

ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION

TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 ACRES PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED ATA GIVEN TIME.

ESTIMATE ONLY; CONTRACTOR SHALL VERIFY QUANTITIES TO HIS OWN SATISFACTION. TO BE DETERMINED BY CONTRACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, WITH AN APPROVED AND ACTIVE GRADING PERMIT

B-4-4 STANDARDS AND SPECIFICATIONS TEMPORARY STABILIZATION

DEFINITION

TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS <u>PURPOSE</u>

MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS. CONDITIONS WHERE PRACTICE APPLIES

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED. CRITERIA

1 SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE 8.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3). AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES. SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE 8.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT 2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY SOIL TESTS ARE NOT REQUIRED. 3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND

TEMPORARY SEEDING SUMMARY

	HARDINESS Z SEED MIXTUR	ONE (FROM FIGURE E (FROM TABLE B.	B.3): Z01 1):	NE 6b	FERTILIZER RATE	LIME RATE
NO	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	(10-20-20)	
1	COOL SEASON ANNUAL RYEGRASS OR EQUAL	40 LB / AC	MAR 1 TO MAY 15 AUG 1 TO OCT 15	1/2 IN.	436 LB/AC (10 LB PER 1000 SF)	2 TONS/AC (90 LB PER 1000 SF)
2	WARM SEASON FOXTAIL MILLET OR EQUAL	30 LB / AC	MAY 16 TO JUL 31	1/2 IN.		

BY THE DEVELOPER:

/WE CERTIFY THAT ALL DEVELOPEMENT AND CONSTRUCTION WIL CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN IE 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

BY THE ENGINEER:

CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

Low One SIGNATURE OF ENGINEER

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND

SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

APPROVED: DEPARTMENT OF PUBLIC WORKS Illans 6.25.14 BUREAU OF HIGHWAYS HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION

CHIEF, DIVISION OF LAND DEVELOPMENT

7.1.14

7-31-14

B-4-5 STANDARDS AND SPECIFICATIONS PERMANENT STABILIZATION

TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

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

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

A. SEED MIXTURES GENERAL USE

U. YDS.*

A SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TARLE 8.3. FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE 8.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE 8.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN. B. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING. C. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY. D. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3-1/2 POUNDS PER 1000 SQUARE FEFT (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT

SEEDING SUMMARY, TURFGRASS MIXTURES A. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE B. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE ENTER SELECTED MIXTURE(S) APPLICATION RATES AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED

ON THE PLAN. I. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE, RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET, CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.

II. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/ CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT. III. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES; CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUFGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.

IV. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES; CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 11/2 TO 3 POUNDS PER 1000 SQUARE FEET.

SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND" CHOOSE CERTIFIED MATERIAL CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC

C. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES

- WESTEM MD: MARCH 15 TO JUNE 1. AUGUST ITO OCTOBER 1 (HARDINESS ZONES: SB. 6A) - CENTRAL MD: MARCH 1 TO MAY 15. AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B) SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)

TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1½ INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

A. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR. B. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH, PLUS OR MINUS 1/4 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TOM OR UNEVEN ENDS WILL NOT BE ACCEPTABLE C. STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION D. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL. . SOD MUST BE HARVESTÉD, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.

A. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD. B LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SURSEDIJENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS C. WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE). WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT

A. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING. B. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN C. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

PERMANENT SEEDING SUMMARY

	ONE (FROM FIGURE E (FROM TABLE B.:			FERTILIZER RATE (10-20-20)		LIME RATE	
SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P ₂ 0 ₅	к ₂ 0	
COOL SEASON TALL FESCUE & KENTUCKY BLUEGRASS OR EQUAL	T.F. 60 LB / AC K.B. 40 LB / AC	MAR 1 TO MAY 15 AUG 15 TO OCT 15	1/4-1/2 IN.	(1 LB PER	(2 LB PER	(2 LB PER	2 TONS/AC (90 LB PER 1000 SF)

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

DEFINITION

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

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

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

CRITERIA A. SOIL PREPARATION

1 TEMPORARY STABILIZATION A. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. B. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS

C. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING PERMANENT STABILIZATION A. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE: I. SOIL PH BETWEEN 6.0 AND 7.0.

II. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM) III. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD À MODERATE AMOUNT OF MOISTURE. AN EXCÉPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD IV. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT. V. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.

APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO D. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY

THE RESULTS OF A SOIL TEST. E. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

I. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANEN' VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCEM HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION. 2 TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS TH STANDARDS AS SET FORTH IN THESE SPECIFICATIONS, TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE

REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA 3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE: A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH

TO SUPPORT PLANTS OR FLIRNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT . THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH. D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND 5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING A. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 11/2 INCHES IN DIAMETER. B. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS C. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED

AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL. 6 TOPSOIL APPLICATION A. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING B. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE, ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.

C. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR

MUDDY CONDITION. WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT

MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS I. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES. 2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND

WARRANTY OF THE PRODUCER. 3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE. 4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED "AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. 5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

DETAIL B-1 STABILIZED CONSTRUCTION SCE **ENTRANCE** -EARTH FILE - MIN. 6 IN OF 2 TO 3 IN AGGREGATE OVER LENGTH AND WIDTH OF ENTRANCE -PIPE (SEE NOTE 6) PROFILE PLAN VIEW CONSTRUCTION SPECIFICATIONS PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS. . PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE, PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT NECESSARY. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS. REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE. MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL FROSION AND SEDIMENT CONTROL

B-4-3 STANDARDS AND SPECIFICATIONS SEEDING AND MULCHING

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

TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION. CONDITIONS WHERE PRACTICE APPLIES

TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE **CRITERIA**

1.SPECIFICATIONS

A. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT — TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE. B. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND

. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEFDING, NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE D. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

2 APPLICATION A DRY SEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS I. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE 8.1, PERMANENT SEEDING TABLE 8.3, OR SITE-SPECIFIC SEEDING SUMMARIES. II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD

SEED TO SOIL CONTACT. B. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL. I. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING. II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.

C. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND I. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P205 (PHOSPHOROUS), 200 POUNDS PER ACRE; K20 (POTASSIUM), 200 POUNDS PER ACRE II. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING III. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.

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

I. MULCH MATERIALS (IN ORDER OF PREFERENCE)

A. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, LYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED. B. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE I. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.

II. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS. III. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED. FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS. IV. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE V. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

A. APPLY MUICH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING B. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING

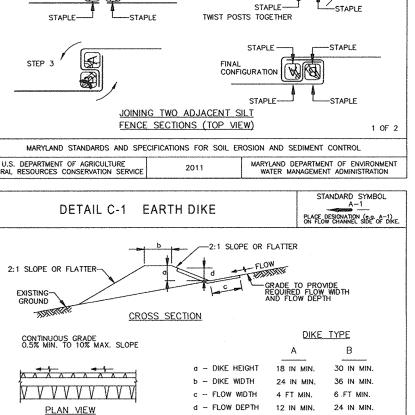
MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE. C. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

A. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS

BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY

I. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS. BU' IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY, IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR. II. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER. IIL SYNTHETIC BINDERS SUCH AS ACRYLIC DER (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II. TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IV. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET

PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:



DETAIL E-1 SILT FENCE

ELEVATION

CROSS SECTION

FENCE POST 18 IN MIN. -- ABOVE GROUND

STANDARD SYMBOL

-----SF-----

MIN. OF 8 IN VERTICALLY
INTO THE GROUND. BACKFILL
AND COMPACT THE SOIL ON
BOTH SIDES OF GEOTEXTILE.

SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.) A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD. A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND. CONSTRUCTION SPECIFICATIONS

REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.

COMPACT FILL. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.

PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.

MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MARYLAND DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL DETAIL D-4-1-C ROCK OUTLET PROTECTION III ROPIII FLOW -PLAN VIEW SECTION B-B L12 IN MIN. THICKNESS (T) **PROFILE** CONSTRUCTION SPECIFICATIONS RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS. 2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (% TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL

DETAIL E-1 SILT FENCE

USE WOOD POSTS $1\frac{1}{4}$ X $1\frac{1}{4}$ \pm $\frac{1}{16}$ inch (minimum) square cut of sound quality hardwood. As all ternative to wooden post use standard "t" or "u" section steel posts weighing not less than 1 pound per linear foot.

USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART

USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND $\frac{1}{2}$

EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.

EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.

REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H $^-$ 1 MATERIALS.

. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.

CONSTRUCTION SPECIFICATIONS

⊢---SF-----I

REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP. . CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A M AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IS MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN AMANNER TO PR DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.

WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.

8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLODGED RIPRAP. MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

DETAIL E-3 SUPER SILT FENCE TATIATIATIA A GROUND SURFACE— GALVANIZED CHAIN LINK FENCE WITH WOVEN SLIT FILM GEOTEXTILE ELEVATION CHAIN LINK FENCING -WOVEN SLIT FILM GEOTEXTILE -CROSS SECTION CONSTRUCTION SPECIFICATIONS

. INSTALL 2% INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART, DRIVE THE POSTS A MINIMUM OF 36 INCHES 2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2% INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.

3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND. . WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.

EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION $H\!-\!1$ MATERIALS.

REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

DETAIL C-9 DIVERSION FENCE AXIMUM DRAINAGE AREA = 2 ACRES 10 FT MAX. ELEVATION UV RESISTANT IMPERMEABLE SHEETING ON BOTH SIDES OF FENCE 34 IN MIN. SECTION CONSTRUCTION SPECIFICATIONS . USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2% INCH MAXIMUM OPENING). LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.

3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.

EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.

WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL 2011

DEVELOPER

AND DESIGN & DEVELOPMENT

OWNER

KATHY MIESSE, PERSONAL REPRESENTATIVE,

ESTATE OF ARTHUR P KRAESKI

9222 OLD SCAGGSVILLE ROAD

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL

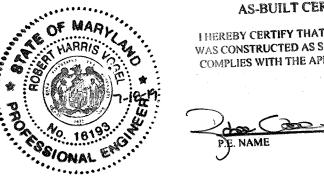
<u>PURPOSE</u> TO PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

CONDITIONS WHERE PRACTICE APPLIES STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL. AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT

AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION. IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING.

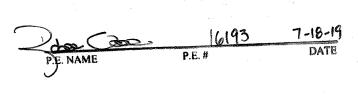
THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE STABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST RE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF FROSION IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FFFT FOR 2-1 SLOPES 30 FFFT FOR 3:1 SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.



NO AS-BULT INFORMATION ON THIS SHEET

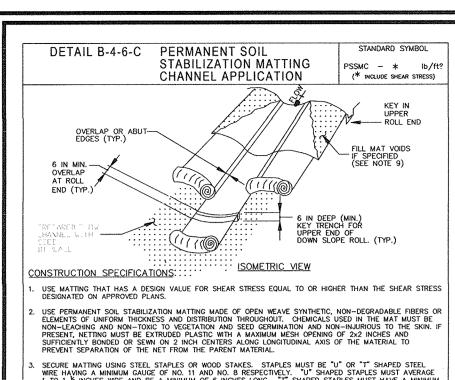
AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS.



5300 DORSEY HALL DRIVE, STE 102 ELLICOTT CITY, MARYLAND 21042-7819 LAUREL, MD 20723-1730 ATTN: MR. DONALD R. REUWER 443-367-0422 ATTN: MR. DONALD R. REUWER 443-367-0422 DATE REVISION FINAL ROAD CONSTRUCTION PLAN GRADING AND SOIL EROSION, AND SEDIMENT CONTROL PLAN - DETAILS HIGH RIDGE MEADOWS - SECTION 2 LOTS 69 - 143 AND OPEN SPACE LOTS 144 - 147 A RESUBDIVISION OF DEER SPRINGS - SECTION ONE, NON-BUILDABLE BULK PARCEL "B" 6TH ELECTION DISTRICT TAX MAP: 50 GRID: 1 DPZ REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080, SP 13-007, F 14-022 PARCELS: 363 & 542 HOWARD COUNTY, MARYLAND ROBERT H. VOGEL ENGINEERING, INC. ENGINEERS . SURVEYORS . PLANNERS 8407 MAIN STREET TEL: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961 3407 MAIN STREET PROFESSIONAL CERTIFICATE OF MAR I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND DESIGN BY: RHV / EDS THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE DRAWN BY: OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2014 CHECKED BY: MAY 201 SCALE: AS SHOWN W.O. NO.: 11-28 6 SHEET 20

AS-BUILT-DECEMBER 2018



- SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 ½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING. . STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- . IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.

MARYLAND STANDARDS	AND SPECI	FICATIONS FOR	SOIL ER	DSION AND SE	DIMENT CONT	ROL	
U.S. DEPARTMENT OF AGRICULT IATURAL RESOURCES CONSERVATION		2011			PARTMENT OF NAGEMENT ADI		
DETAIL B-4-6-D	PERM	ANENT SO	OIL		STANDA	RD SYMB	OL
		LIZATION		ING	PSSMS -	*	lb/ft?
	SLOPE	APPLIC/	ALION		(* INCLUDE	SHEAR ST	RESS)
OVERLAP OR ABUT ROLL EDGES (TYP.)					FILL MAT		

ISOMETRIC VIEW CONSTRUCTION SPECIFICATIONS USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.

USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SED GERMINATION AND NON-INJURIOUS TO THE SKIN, IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWIN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL

MRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE

TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE

- 6 IN MIN. OVERLAP

-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN

- UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
- . OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM). WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

I/WE CERTIFY THAT ALL DEVELOPEMENT AND CONSTRUCTION WIL E DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION

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 ALSO AUTHORIZE PERIODIC ON—SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN

BY THE DEVELOPER:

BY THE ENGINEER:

100c. Com

SIGNATURE OF ENGINEER

APPROVED: DEPARTMENT OF PUBLIC WORKS

HIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND

SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Slucino

2011 DETAIL E-9-1 STANDARD INLET PROTECTION CONSTRUCTION SPECIFICATIONS . USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN, STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 2NCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE VEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, FOR TYPE B, USE 2% INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE WITH THE WEIR CETTOR. ENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING, IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE. MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

DETAIL E-9-1 STANDARD INLET PROTECTION

TOP ELEVATION

-16 IN MIN. -NOTCH ELEVATION

9 GAUGE CHAIN -

ISOMETRIC VIEW

SECTION FOR TYPE A AND B

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

18 IN INTO GROUND -

EDGE OF ROADWAY OR TOP-

6 IN MIN.

TYPE B

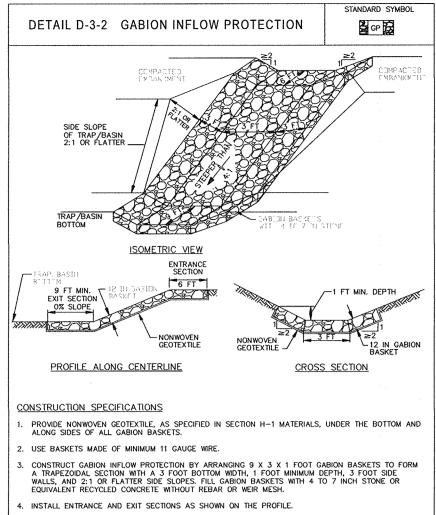
COMPACT EARTH (TYP.)

- NAILING STRIP

-2 IN x 4 IN FRAMING

TYPE A

-TOP ELEVATION



5. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS

MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

2011

6. BLEND GABIONS INTO EXISTING GROUND

STANDARD SYMBO DETAIL E-9-3 CURB INLET PROTECTION MAXIMUM DRAINAGE AREA = 1/4 ACRE --- 2 FT MIN. LENGTH OF 2 IN x 4 IN 2 IN x 4 IN WEIR-6 FT MAX. SPACING OF 74 TO 11/2 STONE 7 2 IN x 4 IN ANCHORS, 2 FT MIN. LENGTH 2 IN x 4 IN SPACE ∠ 2 IN × 4 IN WEIR SECTION A-A LEDGE OF GUTTER PAN ISOMETRIC CONSTRUCTION SPECIFICATIONS USE NOMINAL 2 INCH x 4 INCH LUMBER 2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. 3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART). 4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE. 5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN $\frac{1}{4}$ TO $\frac{1}{2}$ INCH STONE OR EQUIVALENT RECYCLED CONCRETE. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET 10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL

PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. 4) PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN 5) REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT

LOSS OF NONTIDAL WETLANDS. NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100 YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL 6) RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.

ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE. BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.

8) AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED 9) TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE

CLASSIFICATION OF THE STREAM USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PELIOD MARCH 1 THROUGH JUNE 15. INCLUSIVE, DURING ANY YEAR. USE III WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR. USE IV WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH MAY 31, INCLUSIVE, DURING ANY YEAR. 10) STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE

WASHING OF DEBRIS INTO THE WATERWAY. CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO

IMPOUND WATER.

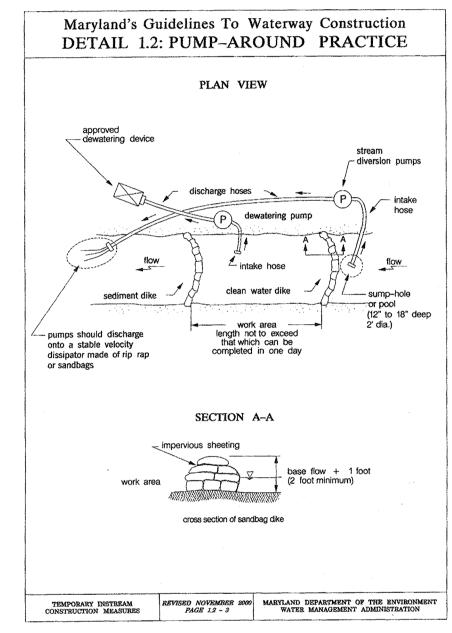
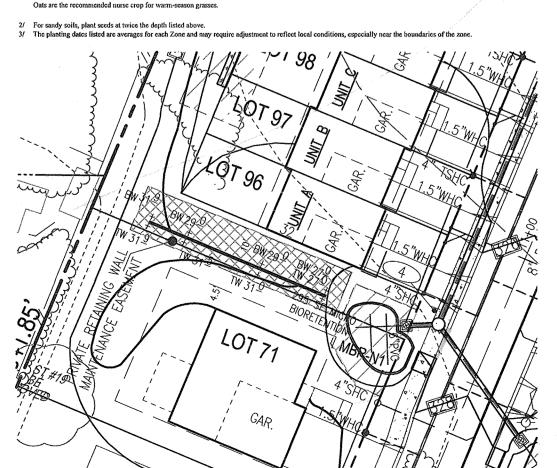


Table B.1: Temporary Seeding for Site Stabilization

Diena Guardan	Seeding Rate 1/		Seeding Depth 2					
Plant Species	lb/ac lb/1000 ft ²		(inches)	5b and 6a	6b	7a and 7b		
Cool-Scason Grasses	ALCO EL	atta (Altono)				ardinerii e		
Annual Rycgrass (Lolium perenne ssp. multiflorum)	40	1.0	0.5	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Au 15 to Nov 30		
Barley (Hordeum vulgare)	96	2.2	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Au 15 to Nov 30		
Oats (Avena sativa)	72	1.7	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Au 15 to Nov 30		
Wheat (Triticum aestivum)	120	2.8	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Au 15 to Nov 30		
Cereal Rye (Secale cereale)	112	2.8	1.0	Mar 15 to May 31; Aug 1 to Oct 31	Mar 1 to May 15; Aug 1 to Nov 15	Feb 15 to Apr 30; Au 15 to Dec 15		
Warm-Season Grasses	4000							
Foxtail Millet (Setaria italica)	30	0.7	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May I to Aug 14		
Pearl Millet (Pennisetum glaucum)	20	0.5	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May I to Aug 14		

1/ Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as

eding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temporary seedings.



SCALE 1" = 30'

GRAVITY RETAINING WALL #1



BERREST CESTRY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS.

SEQUENCE OF CONSTRUCTION

OBTAIN GRADING PERMIT. - 1 DAY DEVELOPER / CONTRACTOR SHALL REQUEST A PRE-CONSTRUCTION MEETING WITH THE APPROPRIATE ENFORCEMENT AUTHORITY PRIOR TO BEGINNING CONSTRUCTION. (1 DAY) 3. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (410-313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK. (1 DAY) 4. STAKEOUT LIMITS OF DISTURBANCE. - 3 DAYS

PHASE 1 - "FIRST RIDGE POND" RECONSTRUCTION (SHEETS 9 & 10)

410-313-6159

PHASE 1 - ONSITE PHASE 1 WORK

1. AFTER STAKING THE LOD AND CENTER LINE OF EMBANKMENT AND PRIOR TO STARTING CONSTRUCTION ON THIS POND, CONTACT HOWARD COUNTY, MARSHALL DAVIDSON AT

CLEAR AND GRUB FOR THE THE INSTALLATION OF PERIMETER CONTROLS COMMON TO THE RECONSTRUCTION OF THE "FIRST RIDGE POND" (1 DAY) INSTALL STABILIZED CONSTRUCTION ENTRANCE, AS SHOWN HEREON. ACCESS SHALL

BE FROM TYMAT COURT - 1 DAY 4. INSTALL SILT FENCE (SF), SUPER SILT FENCE (SSF) AND ANY OTHER E/S CONTROLS AT THE LIMIT OF DISTURBANCE, WHERE SHOWN OR AS DIRECTED BY SEDIMENT CONTROL INSPECTOR. – 3 DAYS

5. COMPLETE ANY REMAINING CLEARING & GRUBING AREA COMMON TO THE "FIRST RIDGE POND" RECONSTRUCTION AND STORM DRAIN SYSTEM ES-16 TOWARD ONSITE MH40 ACROSS THE OFFSITE GIDDING'S PROPERTY. STORM DRAIN SHALL BE INSTALLED IN ACCORDANCE WITH THE BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100 YEAR FLOODPLAINS AS SHOWN HEREON - (5 DAYS)

6. RECONSTRUCT "FIRST RIDGE POND" PER DETAILS AND SPECIFICATIONS SHOWN ON SHEET 9. EXCAVATED MATERIALS SHALL BE STOCKPILED OR USED AS FILL MATERIAL PER THE OVERALL SITE GRADING PROPOSAL (PHASE 2). INSTALLATION OF THE SAND FILTER AND ASSOCIATED UNDER DRAIN PIPE NETWORK SHALL BE COMPLETED AT THE END OF PHASE 2 TO AVOID FILTER CLOGGING AND ADDITIONAL MAINTENANCE. - 2 WEEKS REVISE EXISTING STORM DRAIN OUTFALL FROM BRYANT AVENUE STORM DRAIN SYSTEM

TO DIRECT FLOW TO "NEW" POND FOREBAY OVER PROPOSED GABION. - 2 DAYS UPON COMPLETION OF "FIRST RIDGE POND" RECONSTRUCTION, STABILIZE THE DISTURBED AREAS FROM THE AFOREMENTIONED DISTURBANCES WITH PERMANENT

SEEDING MIXTURE AND STRAW MULCH - 1 DAY 9. WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, PROCEED TO REMAINING WORK ASSOCIATED WITH PHASE 1

"FIRST RIDGE POND" IS A CONVERTED STORMWATER FACILITY. IT IS NOT INTENDED TO BE UTILIZED TO PROVIDE SEDIMENT CONTROL FOR THE REMAINING PHASE 1 AND PHASE 2 WORK

1. CLEAR AND GRUB ONSITE AREA FOR THE INSTALLATION OF PERIMETER CONTROLS

INSTALL STABILIZED CONSTRUCTION ENTRANCE, WHERE SHOWN HEREON. - 1 DAY INSTALL SILT FENCE (SF), SUPER SILT FENCE (SSF) AND OTHER E/S CONTROLS AT

THE LIMIT OF DISTURBANCE, WHERE SHOWN OR AS DIRECTED BY SEDIMENT

CONTROL INSPECTOR. - 3 DAYS 4. WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR. COMPLETE THE CONSTRUCTION OF THE REMAINING PORTION OF THE STORM DRAIN SYSTEM ES-16 THROUGH MH40 ACROSS THE OFFSITE GIDDING'S PROPERTY AND ONTO MH40 ONSITE. ONLY THAT PORTION OF STORM DRAIN WHICH CAN BE COMPLETED ON A DAILY BASIS SHALL BE EXCAVATED. ALL INLETS FEEDING THIS PORTION OF STORM DRAIN SHALL BE PROTECTED WITH INLET PROTECTION. BACKFILL AND STABILIZE THE

DISTURBANCES AT THE END OF EACH WORKING DAY. - (2 WEEKS)

PROPOSED WORK IMPACTING THE WETLAND, WETLAND BUFFER AND ASSOCIATED STREAM PER MDE NON-TIDAL WETLAND NUMBER: 14-NG-3048, TRACKING NUMBER 201460226 SHALL BE COMPLETED IN ACCORDANCE WITH MDE DETAILS AND SPECIFICATIONS SHOWN

5. "FIRST RIDGE POND" RECONSTRUCTION AND STORM DRAIN SYSTEM ES-16 THROUGH MH40 SHALL BE IN PLACE AND ALL PIPE MATERIALS FOR THE CONSTRUCTION OF BASIN #5 (SHEETS 4 & 8) SHALL BE ONSITE PRIOR TO THE CONSTRUCTION OF

BASIN #5. 6. WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, CONSTRUCT SEDIMENT BASIN #5 (SHEETS 4 & 8) PER THE DETAILS AND SPECIFICATIONS SHOWN HEREON. BASIN RISER (B5) AND BARREL SHALL OUTFALL INTO MH40. EXCAVATED MATERIAL SHALL BE STOCKPILED OR USED AS FILL MATERIAL PER THE OVERALL SITE GRADING PROPOSAL (PHASE 2). BASIN CONSTRUCTION SHALL BE COMPLETED PRIOR TO CONSTRUCTION OF

EARTH DIKES CONVEYING WATER TO THE BASIN. CONSTRUCT EARTH DIKES DIRECTING SITE DISTURBANCES TO THE BASIN SHALL BE CONSTRUCTED AT THIS TIME AS THE SEDIMENT BASIN. EARTH DIKES SHALL BE LINED AS DETAILED HEREON. TEMPORARY MATTING IS MADE WITH DEGRADEABLE (6 MONTH), NATURAL OR MANMADE FIBERS OF UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND IS SMOLDER RESISTANT.

STABILIZE THE DISTURBED AREAS FROM THE AFOREMENTIONED DISTURBANCES WITH TEMPORARY SEEDING MIXTURE AND STRAW MUICH - 1 DAY

THE SEDIMENT SHALL BE REMOVED FROM THE SEDIMENT BASIN WHEN THE CLEANOU ELEVATION HAS BEEN REACHED. - 2 DAYS 10. THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON THE

SEDIMENT AND EROSION CONTROLS SHOWN HEREON AFTER EACH RAINFALL AND ON A DAILY BASIS - 1 DAY 11. THE SEDIMENT BASIN SHALL BE DEWATERED BY PUMPING. THE ACCUMULATED SEDIMENT FROM THE TRAPS SHALL BE PLACED UP GRADE FROM THE STRUCTURE IN SUCH A MANNER AS NOT TO INTERFERE WITH CONSTRUCTION OPERATIONS OR

CAUSE EROSION DOWN GRADE FROM THE STRUCTURE. - 2 DAYS 12. WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, PROCEED TO PHASE 2

CLEAR & GRUB REMAINING SITE WITHIN THE LIMITS OF PHASE 1 DISTURBANCE COMPLETE SITE MASS GRADING AS SHOWN HEREON, BRINGING SITE TO ROAD

SUBGRADE ELEVATIONS AND COMPACTED FILLS FOR PROPOSED HOME CONSTRUCTION. 3 WEEKS - WITH PEACE SPRINGS RIDGE TO SUBGRADE AND WITH PERMISSION OF SEDIMENT CONTROL INSPECTOR, EXPAND LOD TO ALLOW FOR STORM DRAIN TO CONVEY WATER TO THE BASIN THROUGH TEMPORARY PIPE DIVERSIONS (SEEE I-56/MH41 AND MH44) AND FILLS TO BE ACCOMPLISHED IN THE LOT 87-95 AREA OF THE

WITH MASS GRADING COMPLETE, STABILIZE THOSE AREAS WITH PERMANENT

SEEDING MIXTURE AND STRAW MULCH OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. - 2 DAYS INSTALL REMAINING STORM DRAIN SYSTEMS AND INLET PROTECTION AS WORK PROGRESSES). STORM DRAIN SHALL BE INSTALLED IN ACCORDANCE WITH THE BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100 YEAR FLOODPLAINS AS SHOWN

HEREON - 1 MONTH INSTALL WATER MAIN & SEWER EXTENSIONS. ALLOW FOR CONTINUED CONVEYANCE OF SEDIMENT LADEN WATER TO THE BASIN. - 1 MONTH

BASIN SHALL REMAIN AS DIRECTED BY SEDIMENT CONTROL INSPECTOR AND SHALL BE BACKFILLED ONLY WITH PERMISSION OF SEDIMENT CONTROL INSPECTOR AS SITE IS STABILIZED AND FILL SLOPES / PHASE 2 GRADING OPERATIONS ARE COMPLETED. FILL SLOPE AT REAR OF LOTS 100 - 119 SHALL BE STABILIZED WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH AND PERMANENT SOIL STABILIZATION MATTING - SLOPE APPLICATION (PSSMS-2.0) - (2 WEEKS) .

WITH PHASE 2 GRADING COMPLETE, IMMEDIATELY STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - DAILY

INSTALL CURB & GUTTER, BASE COURSE PAVEMENT AND SIDEWALKS 2 WEFKS

9. INSTALL INLET PROTECTION FOR AREAS DRAINING TO STORMWATER FEATURES. - 2 DAYS WITH CONTRIBUTING AREA STABILIZED, CONSTRUCT BIO-SWALES TO RECEIVE

ROAD RUNOFF FROM DEER RUN. THE BIOSWALE SHALL NOT RECEIVE "DIRTY" WATER FROM DEER RUN. - 5 DAYS

IMMEDIATELY STABILIZE PERMANENT SEEDING MIXTURE AND STRAW MULCH

FINE GRADE SITE NEAR CURBING AND SIDEWALK AND STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. OBTAIN PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR TO PROCEED. - 2 DAYS

13. COMPLETE INSTALLATION OF ANY REMAINING SIDEWALK AND STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - 5 DAYS 14. WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, COMPLETE ANY REMAINING FINE GRADING IN ACCORDANCE WITH STORMWATER MANAGEMENT CRITERIA, ADD TOPSOIL PER THE SPECIFICATIONS SHOWN HEREON, AND STABILIZE

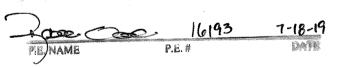
DISTURBED AREAS WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH 1 WFFK WITH THE COMPLETION OF ITEM 15, CONSTRUCT THE MICRO-BIORETENTION FACILITIES AS SHOWN AND DETAILED HEREON — 1 WEEK

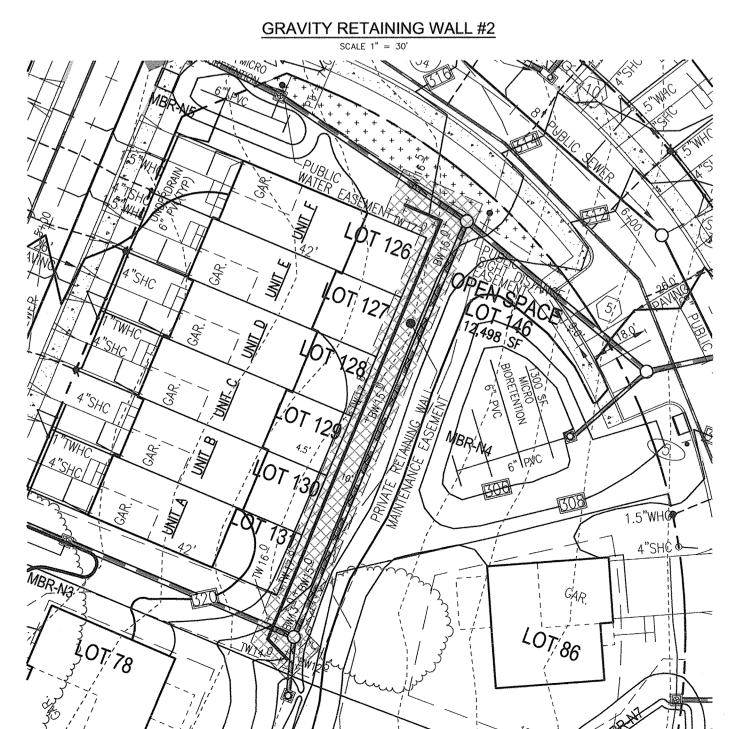
INSTALL LANDSCAPING - 5 DAYS 17. COMPLETE CONSTRUCTION OF SAND FILTER AREA ASSOCIATED WITH THE "FIRST RIDGE" FACILITY RECONSTRUCTION PER DETAILS AND SPECIFICATIONS SHOWN ON

SHEET 9 - 1 WEEK AFTER PERMISSION HAS BEEN GIVEN BY SEDIMENT CONTROL INSPECTOR, REMOVE ANY REMAINING E/S CONTROLS AND STABILIZE THE DISTURBED AREAS FROM THE AFOREMENTIONED DISTURBANCES WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH - 1 WEEK

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

THE NEED FOR INTERIOR CONTROLS MAY BE ELIMINATED IF F14-022 AND THIS SECTION TWO PLAN ARE UNDER CONSTRUCTION SIMULTANEOUSLY





<u>DEVELOPER</u> KATHY MIESSE, PERSONAL REPRESENTATIVE, ESTATE OF ARTHUR P. KRAESKI LAND DESIGN & DEVELOPMENT, 5300 DORSEY HALL DRIVE, STE 102 ELLICOTT CITY, MARYLAND 21042-7819 9222 OLD SCAGGSVILLE ROAD LAUREL, MD 20723-1730 ATTN: MR. DONALD R. REUWER 443-367-0422 ATTN: MR. DONALD R. REUWER 443-367-0422 NO. REVISION FINAL ROAD CONSTRUCTION PLAN GRADING AND SOIL EROSION, AND SEDIMENT CONTROL PLAN - DETAILS

NO AS-BULT INFORMATION ON THIS SHEET

HIGH RIDGE MEADOWS-SECTION 2

LOTS 69 - 143 AND OPEN SPACE LOTS 144 - 147

DEER SPRINGS - SECTION ONE, NON-BUILDABLE BULK PARCEL "B" 6TH ELECTION DISTRICT TAX MAP: 50 GRID: 1 DPZ REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080, SP 13-007, F 14-022 PARCELS: 363 & 542

HOWARD COUNTY, MARYLAND ROBERT H. VOGEL ENGINEERING, INC. Engineers • Surveyors • Planners 8407 MAIN STREET TEL: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961 I HEREBY CERTIFY THAT THESE DOCUMENTS

CHECKED BY: DATE: SCALE: W.O. NO.: 11-28

DESIGN BY: RHV / EDS MAY 2014 ____AS_SHOWN

EXPIRATION DATE: 09-27-2014

WERE PREPARED OR APPROVED BY ME, AND

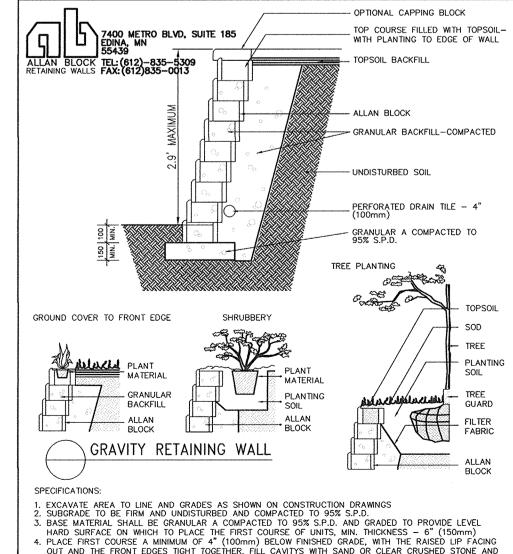
THAT I AM A DULY LICENSED PROFESSIONAL

ENGINEER UNDER THE LAWS OF THE STATE

OF MARYLAND, LICENSE NO. 16193

AS-BUILT-DECEMBER 2018

7.1.14 7-31-14 CHIEF, DIVISION OF LAND DEVELOPMENT COM DATE

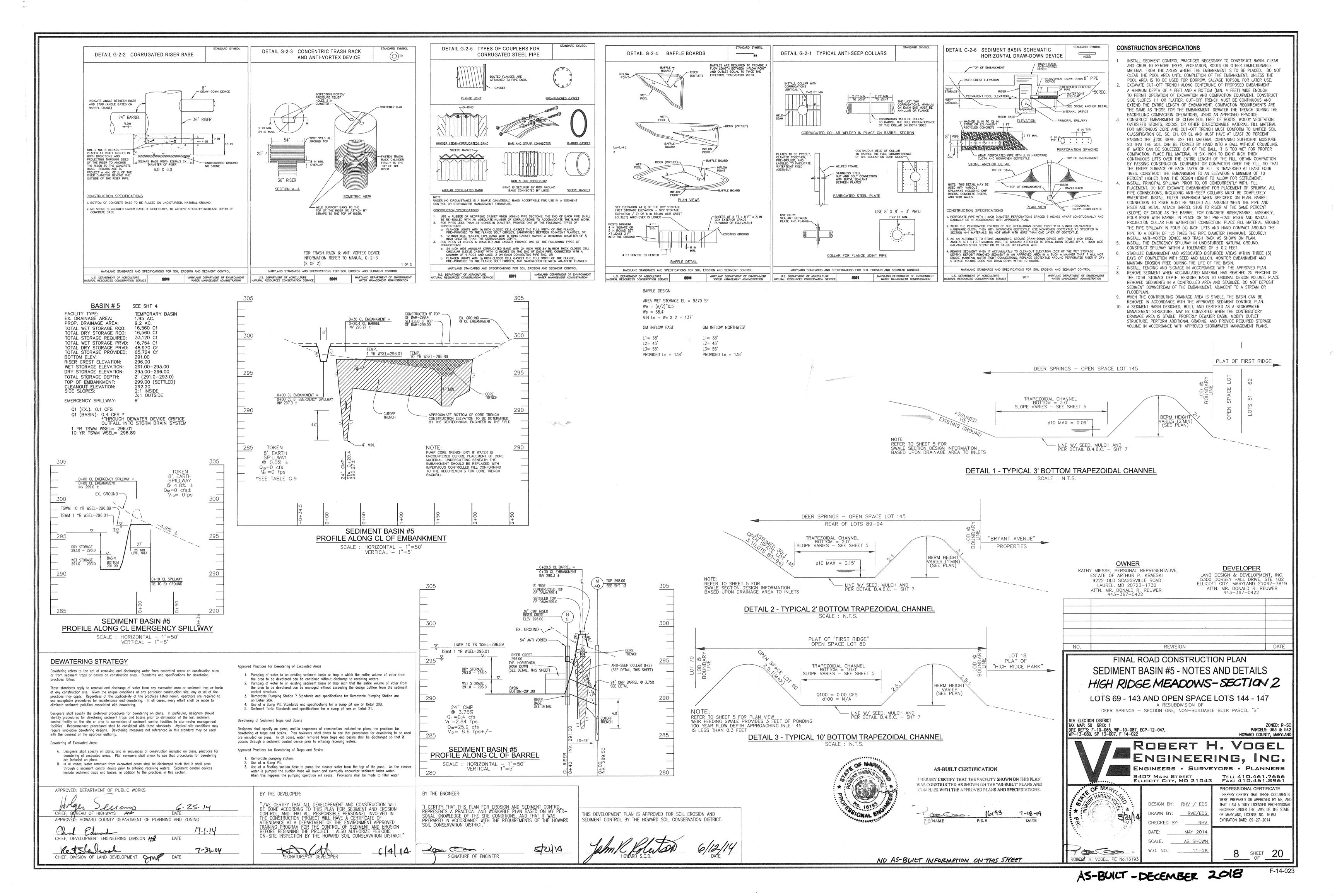


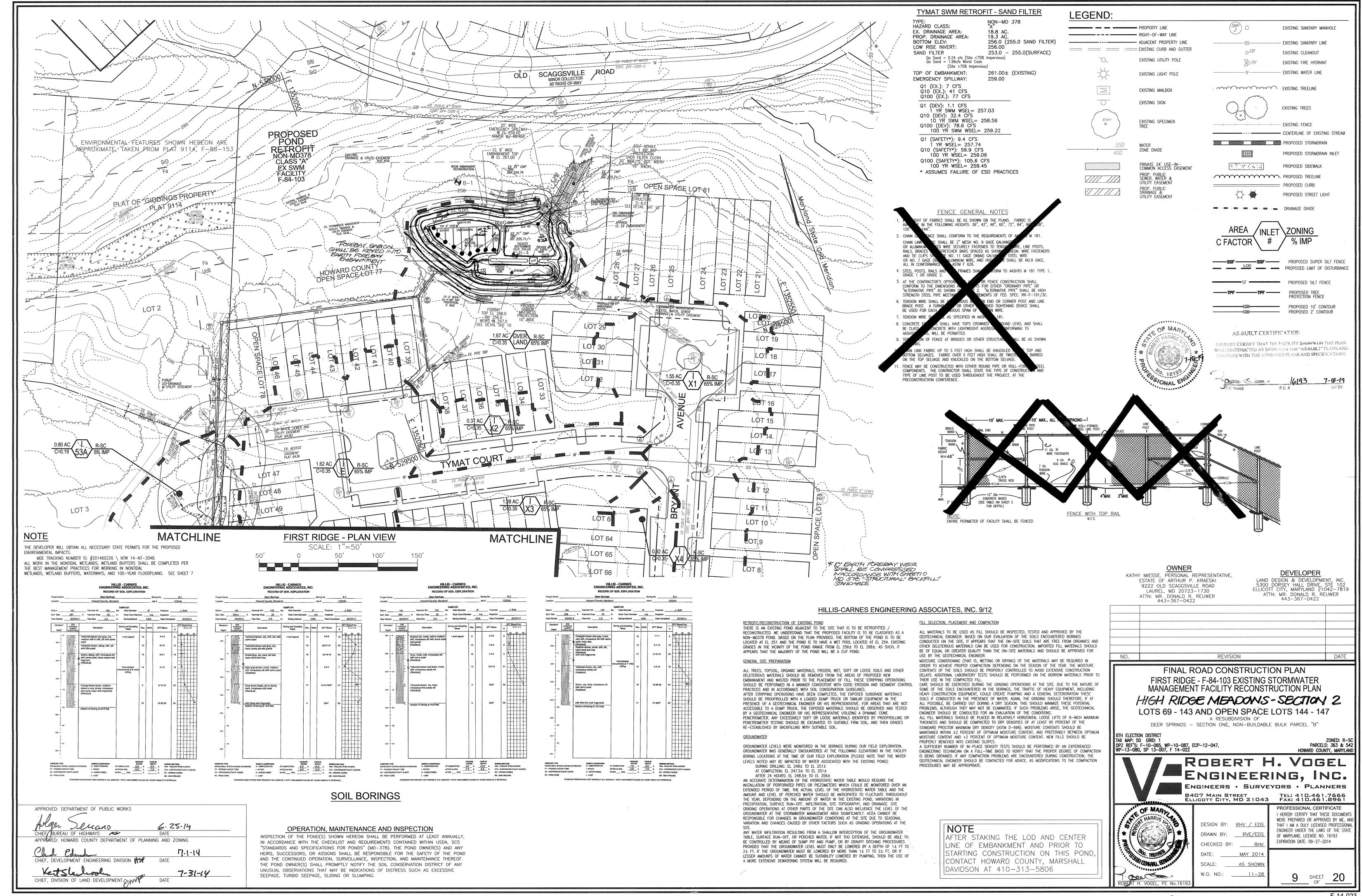
4. PLACE FIRST COURSE A MINIMUM OF 4" (100mm) BELOW FINISHED GRADE, WITH THE RAISED LIP FACING OUT AND THE FRONT EDGES TIGHT TOGETHER. FILL CAVITYS WITH SAND OR CLEAR CRUSHED STONE AND COMPACT. SWEEP CLEAN AND CHECK THE UNITS FOR LEVEL AND ALIGNMENT. BACKFILL FRONT AND BACK OF ENTIRE BASE ROW TO FIRMLY LOCK IN PLACE.
INSTALL SUBSEQUENT COURSES IN SIMILAR FASHION PROVIDING A MIN. 3" (76mm) OVERLAP OF SEAMS AND A MIN. OF 12" (305mm) GRANULAR BACKFILL. A WIND A WIND OF THE STANDARD BACKFILLS.

A ALLAN BLOCKS COME IN 3 STYLES: STANDARD BLOCK, ANGLE BLOCK, AND CORNER BLOCK AS WELL AS

A STANDARD CAPPING STONE. THE BLOCKS HAVE A COMPRESSIVE STRENGTH OF OVER 4000 psi (28MPa).

A WIDE VARIETY OF DESIGNS CAN BE ACHIEVED INCLUDING INSIDE AND OUTSIDE CORNERS, CURVES AND STEPS BLOCKS COME IN 5 STANDARD COLORS :NATURAL, BUFF, BROWN, EARTH RANGE, SMOKE BLEND B. WALLS HIGHER THAN 6' REQUIRE GEOGRIDS OR REBAR AND MASONRY CONSTRUCTION—CONSULT MANUF. TYP. GRAVITY WALL OR EQUAL





MARYLAND 378 STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS

CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Material — The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement — Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction — The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within $+\-2\%$ of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench — The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Embankment Core — The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be
4. Backfilling shall conform to "Structure Backfill." placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm—cm. Material shall be placed such that minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill (flowable fill)zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

All pipes shall be circular in cross section.

DEWATERING STRATEGY

eliminate sediment pollution associated with dewatering.

CHIEF, DIVISION OF LAND DEVELOPMENT

Dewatering of Excavated Areas

are included on plans.

Corrugated Metal Pipe — All of the following criteria shall apply for corrugated metal pipe:

Dewatering refers to the act of removing and discharging water from excavated areas on construction sites

These standards apply to removal and discharge of water from any excavated area or sediment trap or basin

at any construction site. Given the unique conditions at any particular construction site, any or all of the

use acceptable procedures for maintenance and dewatering. In all cases, every effort shall be made to

Designers shall specify the preferred procedures for dewatering on plans. In particular, designers should

control facility on the site or prior to conversion of sediment control facilities to stormwater management

facilities. Recommended procedures shall be consistent with these standards. Atypical site conditions may

require innovative dewatering designs. Dewatering measures not referenced in this standard may be used

A. Designers shall specify on plans, and in sequences of construction included on plans, practices for

dewatering of excavated areas. Plan reviewers shall check to see that procedures for dewatering

dentify procedures for dewatering sediment traps and basins prior to elimination of the last sediment

practices may apply. Regardless of the applicability of the practices listed herein, operators are required to

or from sediment traps or basins on construction sites. Standards and specifications for dewatering

. Materials — (Polymer Coated steel pipe)— Steel pipes with polymeric coating shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

Materials — (Aluminum Coated Steel Pipe) — This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials — (Aluminum Pipe) — This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling, bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

3. Connections — All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti—seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket; Pre- Punched to the flange bolt circle sandwich between sdjacent flanges; a 12 inch wide standard lap type band with 12 inch wide by 3/8 inch thickclosedcell circularneoprene gasket; and a 12-inch wide hugger type band with o—ring—gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8'inch closed cell gaskets the full width of the flange is also acceptable.

Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

. Bedding — The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

Backfilling shall conform to "Structure Backfill."

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:

Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

1. Materials — Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets—and shall equal or exceed ASTM C-361.

Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

3. Laying pipe — Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.

4. Backfilling shall conform to "Structure Backfill."

5. Other details (anti-seep collars, valves, etc.) shall be shown on the drawings.

Plastic Pipe — The following criteria shall apply for plastic pipe:

1. Materials — PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4"-10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.

2. Joints and connections to anti-seep collars shall be completely watertight.

3. Bedding — The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Drainage Diaphragms — When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Standard Specifications for Construction Materials, Section 311 Geotexile shall be placed under all riprap and shall meet requirements of Maryland Department of Transportation,

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration

State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water sumps from which the water shall be pumped.

Stabilization All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Erosion and Sediment Control

1. Pumping of water to an existing sediment basin or trap in which the entire volume of water from

2. Pumping of water to an existing sediment basin or trap such that the entire volume of water from

3. Removable Pumping Station ? Standards and specifications for Removable Pumping Station are

Designers shall specify on plans, and in sequences of construction included on plans, the practices for

dewatering of traps and basins. Plan reviewers shall check to see that procedures for dewatering to be used

are included on plans. In all cases, water removed from traps and basins shall be discharged so that it

the area to be dewatered can be managed without exceeding the design outflow from the sediment

the area to be dewatered can be contained without discharge to receiving waters.

4. Use of a Sump Pit: Standards and specifications for a sump pit are on Detail 20B.

5. Sediment Tank: Standards and specifications for a sump pit are on Detail 21

passes through a sediment control device prior to entering receiving waters.

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

3 LBS/FT2 WELDED INSIDE ANGLES, TOF AND BOTH SIDES. #3,0 GRATING

Use of a Sump Pit. B. In all cases, water removed from excavated areas shall be discharged such that it shall pass Use of a floating suction hose to pump the cleaner water from the top of the pond. As the cleaner through a sediment control device prior to entering receiving waters. Sediment control devices include sediment traps and basins, in addition to the practices in this section. water is pumped the suction hose will lower and eventually encounter sediment laden water. When this happens the pumping operation will cease. Provisions shall be made to filter water APPROVED: DEPARTMENT OF PUBLIC WORKS "I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILI BE DÓNE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBL PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT HIGHWAYS PPROVED 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 7.1.14 PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

7-31-14

Approved Practices for Dewatering of Excavated Areas

control structure.

Dewatering of Sediment Traps and Basins

Removable pumping station

Approved Practices for Dewatering of Traps and Basins

STAGE 1 - 6" LOW FLOW EXPANDED METAL TRASH RACK (NTS)

SZILLA

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION,

FROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND

WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE

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

CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE

POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL

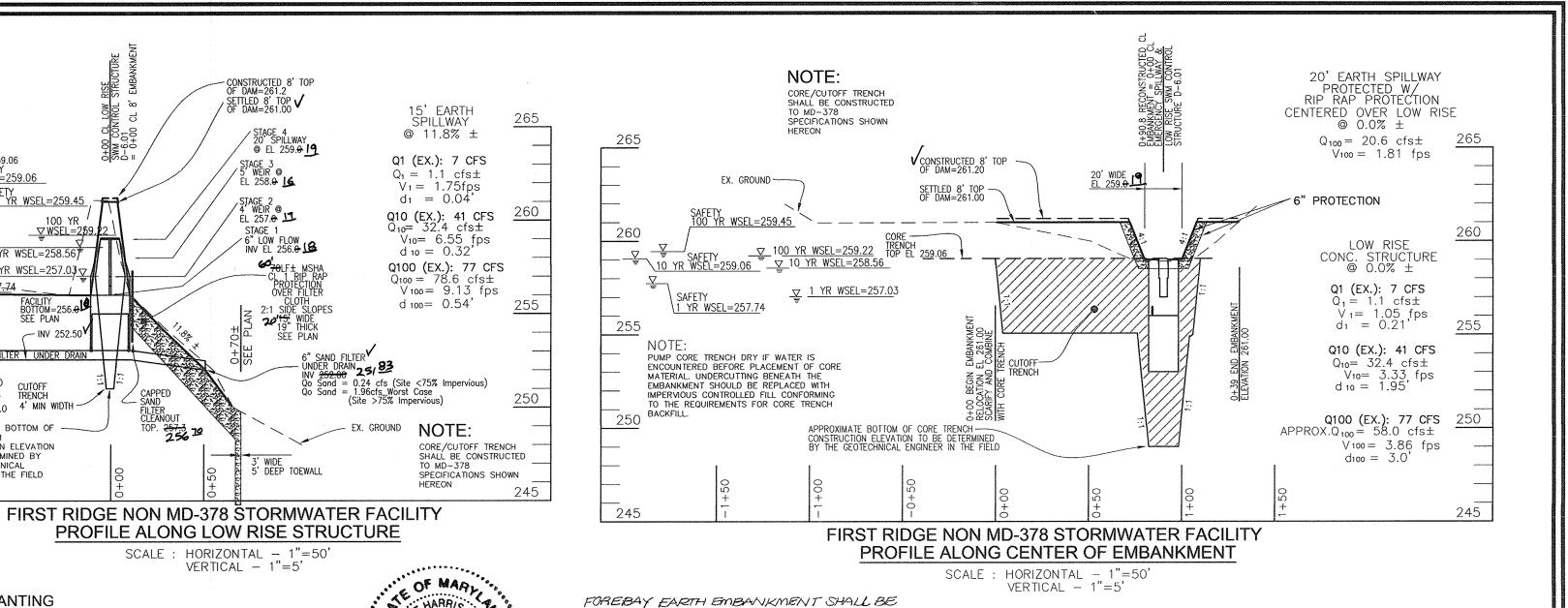
POND WITHIN 30 DAYS OF COMPLETION."

SIGNATURE OF ENGINEER

Jane Com

SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE

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



V 15' (15'x3'x3' GABION BASKETS)

1. ALL WIRE USED IN GABION CONSTRUCTION SHALL BE

2. FILTER CLOTH SHALL BE PLACED WHEREVER GABIONS

3. STONE FILL SHALL CONSIST OF HARD, DURABLE, CLEAN

4. CONSTRUCTION MATERIALS AND METHODS SHALL BE IN

ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS

FOREBAY GABION BASKET WEIR DETAIL

GALVANIZED AND PLASTIC COATED.

COME INTO CONTACT WITH SOIL

STONE 4"-8" IN DIAMETER.

- PROP. GRADE

5. FOREBAY GABION SHALL BE KEYED INTO EARTH EMBANKMENT.

COMPACTED IN ACCORDANCE WITH SHEET IC MO 378 "STANDARD BACKFILL" STANDARDS.

PROP. GRADE

SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

TRASH RACK

NO.4 @ 12" C/C

___ NO.4 @ 18" C/C

Department of Public Works

KEY ENDS OF EARTH

ONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND

EMBAHKMENT

AS-BUILT CERTIFICATION

ELEV 256.0

2558

OPERATION, MAINTENANCE AND INSPECTION

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY

STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND AN

AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF.

THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY

UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE

L 259.019

V4' WEIR

SECTION B-B

STAGE 1 - STAGE 3 - DETAIL

SCALE: HORIZONTAL - 1" = 2"

1. ALL EXPOSED EDGES TO HAVE 3/4" x 3/4" CHAMPER OR AS DIRECTED

WEIR CONTROL SECTION SHALL BE SIZED FOR APPROPRIATE CONTROL OF DISCHARGE RATES (WEIR SHOWN IS FOR ILLUSTRATION PURPOSES ONLY.)

S. MAXIMUM WALL HEIGHT IS 3', HIGHER WALLS REQUIRE SPECIAL DESIGN.

2. CONCRETE SHALL BE SHA MIX NO. 3 (1c = 3500 PSI @ 28 DAYS).

3. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.

4. QUANTITIES IN TABLE FOR ESTIMATING ONLY.

HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND

IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS

ELEV 257.0

SAND FILTER - PLANTING

APPROXIMATE BOTTOM OF

CONSTRUCTION ELEVATION

TO BE DETERMINED BY

ENGINEER IN THE FIELD

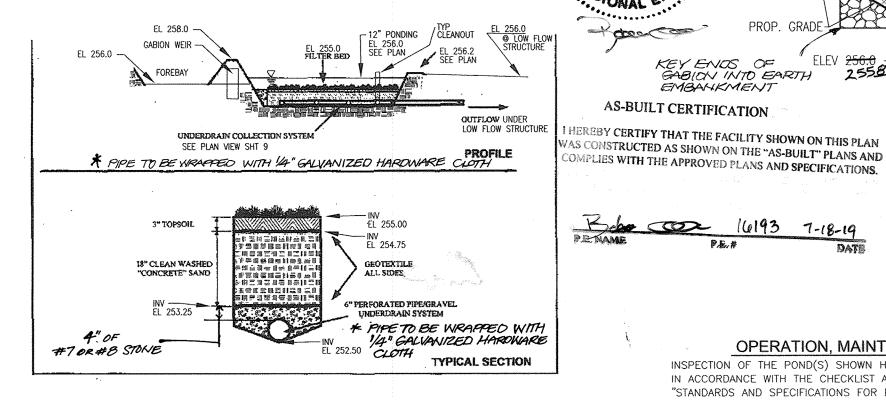
THE GEOTECHNICAL

10 YR WSEL=259.06

SAFETY 100 YR WSEL=259.45

10 YR WSEL=258.56

SAND FILTER PLANTINGS SHALL CONSIST OF A MIXTURE: REED CANARY GRASS - PHALARIS ARUNDINACEA SWITCHGRASS - PANICUM VIRGATUM CREEPING BENTGRASS - AGROSTIS PALUSTRIS OR EQUAL COMBINATION OF COOL / WARM SEASON GRASSES TOLERANT OF FREQUENT INUNDATION



FIRST RIDGE NON MD-378 STORMWATER FACILITY TYPICAL SAND FILTER DETAILS SCALE: HORIZONTAL - N.T.S.

Table B.3.1 Material Specifications for Sand Filters

149000-1 6401	Openication a cost income	1 0100	1 1 10000
sand	clean AASHTO-M-6 or ASTM-C- 33 concrete sand	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
peat .	ash content: < 15% pH range: 5.2 to 4.9 loose bulk density 0.12 to 0.15 g/cc	п/а	The material must be reed-sedge hemic peat, shredded, uncompacted, uniform, and clean.
leaf compost		n/a	
underdrain gravel	AASHTO-M-43	0.375" to 0.75"	
geotextile fabric (if required)	ASTM-D-4833 (puncture strength - 125 lb.) ASTM-D-4632 (Tensile Strength - 300 lb.)	0.08" thick equivalent opening size of #80 sieve	Must maintain 125 gpm per sq. ft. flow rate. Note: a 4" pea gravel layer may be substituted for geotextiles meant to "separate" sand filter layers.
impermeable liner (if required)	ASTM-D-4833 (thickness) ASTM-D-412 (tensile strength 1,100 lb., elongation 200%) ASTM-D-624 (Tear resistance - 150 lb./im) ASTM-D-471 (water adsorption: +8 to -2% mass)	30 mil thickness	Liner to be ultraviolet resistant. A geotextile fabric should be used to protect the liner from puncture.
underdrain piping	F 758, Type PS 28 or AASHTO-M- 278	4" - 6" rigid schedule 40 PVC or SDR35	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes
concrete (cast-in-place)	MSHA Standards and Specs. Section 902, Mix No. 3, f' = 3500 psi, normal weight, air-entrained; re-inforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or process) not using previously approved State or local standards requires design drawings scaled and approved by a professional structural engineer licensed in the State of Maryland
concrete (pre-cast)	per pre-cast manufacturer	n/a	SEE ABOVE NOTE
non-rebar steel	ASTM A-36	n/a	structural steel to be hot-dipped galvanized ASTM-A-123



B.3.A Sand Filter Specification Material Specifications for Sand Filter

The allowable materials for sand filter construction are detailed in Table B.3.1

Sand Filter Testing Specifications

Underground sand filters, facilities within sensitive groundwater aquifers, and filters designed to serve urban hot spots are to be tested for water tightness prior to placement of filter media. Entrances and exits should be plugged and the system completely filled with water to demonstrate water tightness. Water tightness means no leakage for a period of 8 hours. All overflow weirs, multiple orifices and flow distribution slots are to be field-tested to verify

adequate distribution of flows. 3. Sand Filter Construction Specification

Provide sufficient maintenance access (i.e., 12-foot-wide road with legally recorded easement). Vegetated access slopes are to be a maximum of 10%; gravel slopes to 15%; paved slopes to 25% Absolutely no runoff is to enter the filter until all contributing drainage areas have been stabilized Surface of filter bed is to be level

All underground sand filters should be clearly delineated with signs so that they may be located

Surface sand filters may be planted with appropriate grasses; see Appendix A. "Pocket" sand filters (and residential bioretention facilities treating areas larger than an acre) shall be sized with a stone "window" that covers approximately 10% of the filter area. This "window shall be filled pea gravel (3/4 inch stone).

NO.4 0 12" * VALUES SHOWN ARE APPROXIMATE FOR THE MAXIMUM SIZE OF THE STRUCTURE. LOW FLOW --/ SECTION 'B-B' FRONT ELEVATION SECTION A-A SECTION C-C

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT FACILITY

PROP. GRADE

SEE NOTE FIVE

STORMWATER MANAGEMENT FACILITY

ROUTINE MAINTENANCE (HOA) 1. FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMIN IT IS FUNCTIONING PROPERLY. . TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM F TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS 3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED. 4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE (HOWARD COUNTY) 1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE LOW RISE STRUCTURE, SAND FILTER & PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.

2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERES WITH THE FUNCTION OF THE RISER WHEN DEEMED NECESSARY FOR AFSTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

KATHY MIESSE, PERSONAL REPRESENTATIVE. ESTATE OF ARTHUR P. KRAESKI 9222 OLD SCAGGSVILLE ROAD LAUREL, MD 20723-1730 ATTN: MR. DONALD R. REUWER 443-367-0422

DEVELOPER LAND DESIGN & DEVELOPMENT, 5300 DORSEY HALL DRIVE, STE 102 ELLICOTT CITY, MARYLAND 21042-7819 ATTN: MR. DONALD R. REUWER 443-367-0422

FIRST RIDGE NON MD-378 STORMWATER FACILITY

STAGE

EL 256.018

FINAL ROAD CONSTRUCTION PLAN FIRST RIDGE - F-84-103 EXISTING STORMWATER MANAGEMENT FACILITY RECONSTRUCTION DETAILS HIGH RIDGE MEADOWS-SECTION 2

BIOSWALE FACILITY'S REVISE SAND FILTER DETAIL

REVISE UNDER DRAIN DETAIL FOR MICRO-BIORETENTION AND 3/30/15

LOTS 69 - 143 AND OPEN SPACE LOTS 144 - 147 DEER SPRINGS - SECTION ONE, NON-BUILDABLE BULK PARCEL "B"

DPZ REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080, SP 13-007, F 14-022

TAX MAP: 50 GRID: 1

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

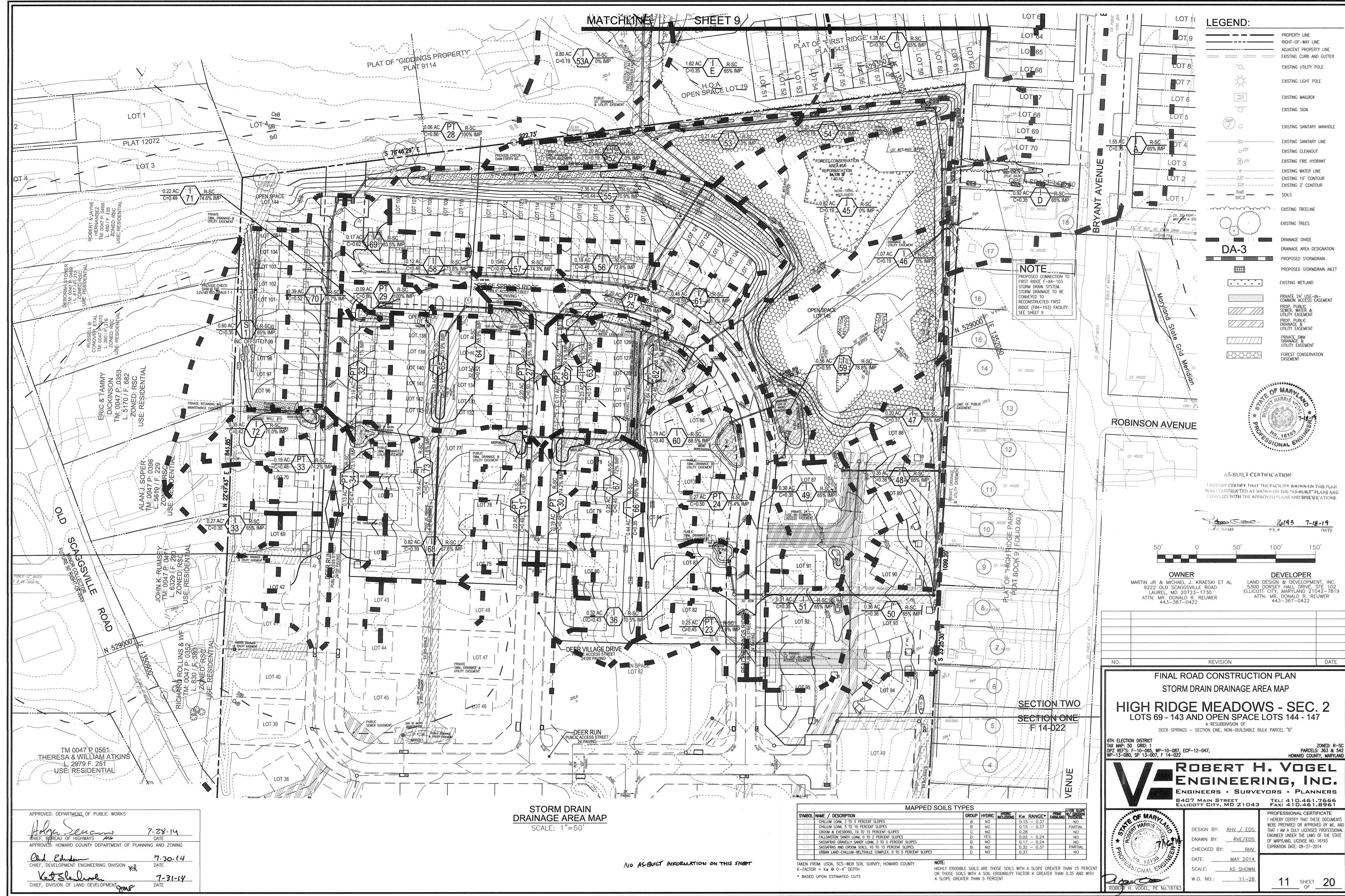
PARCELS: 363 & 542

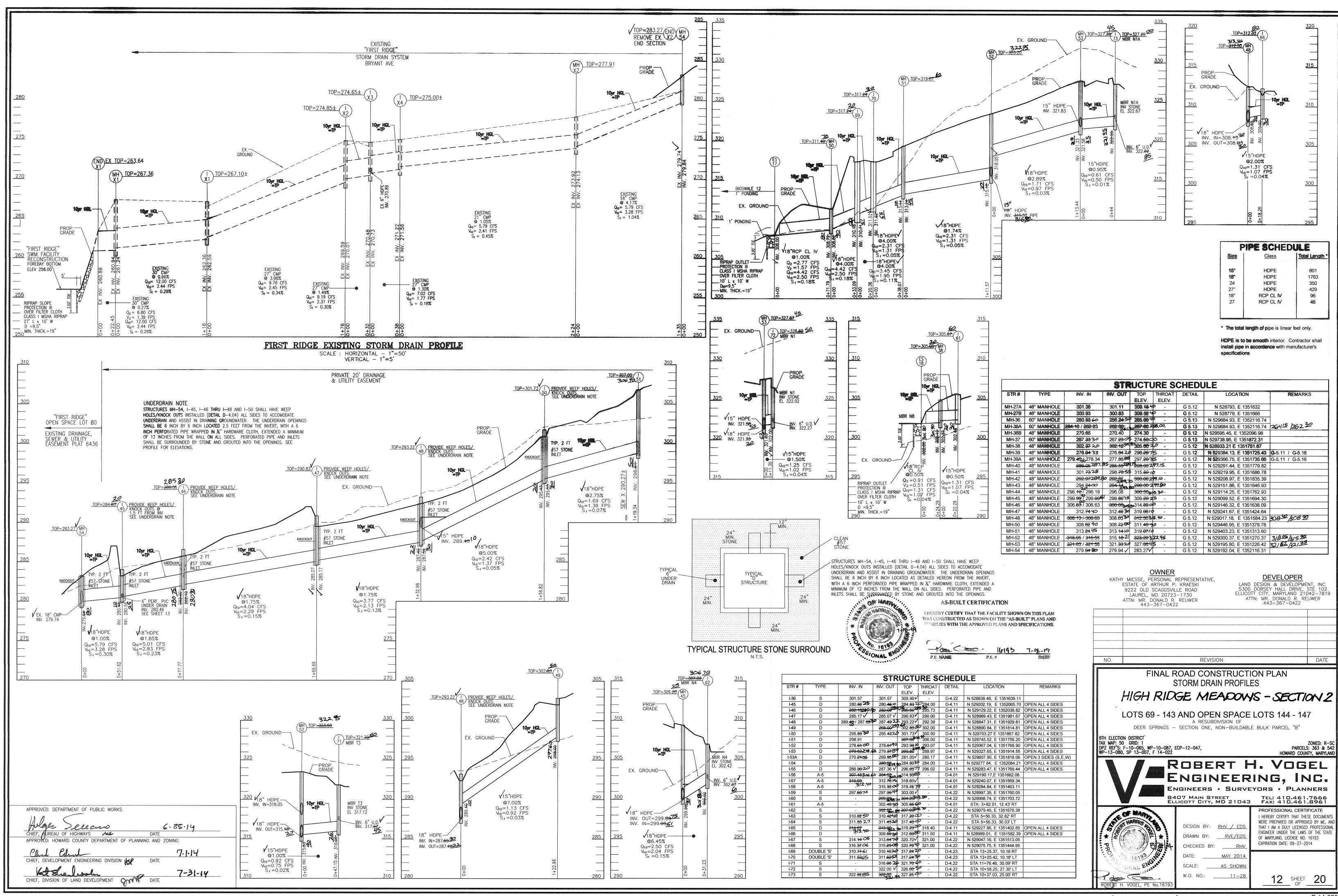
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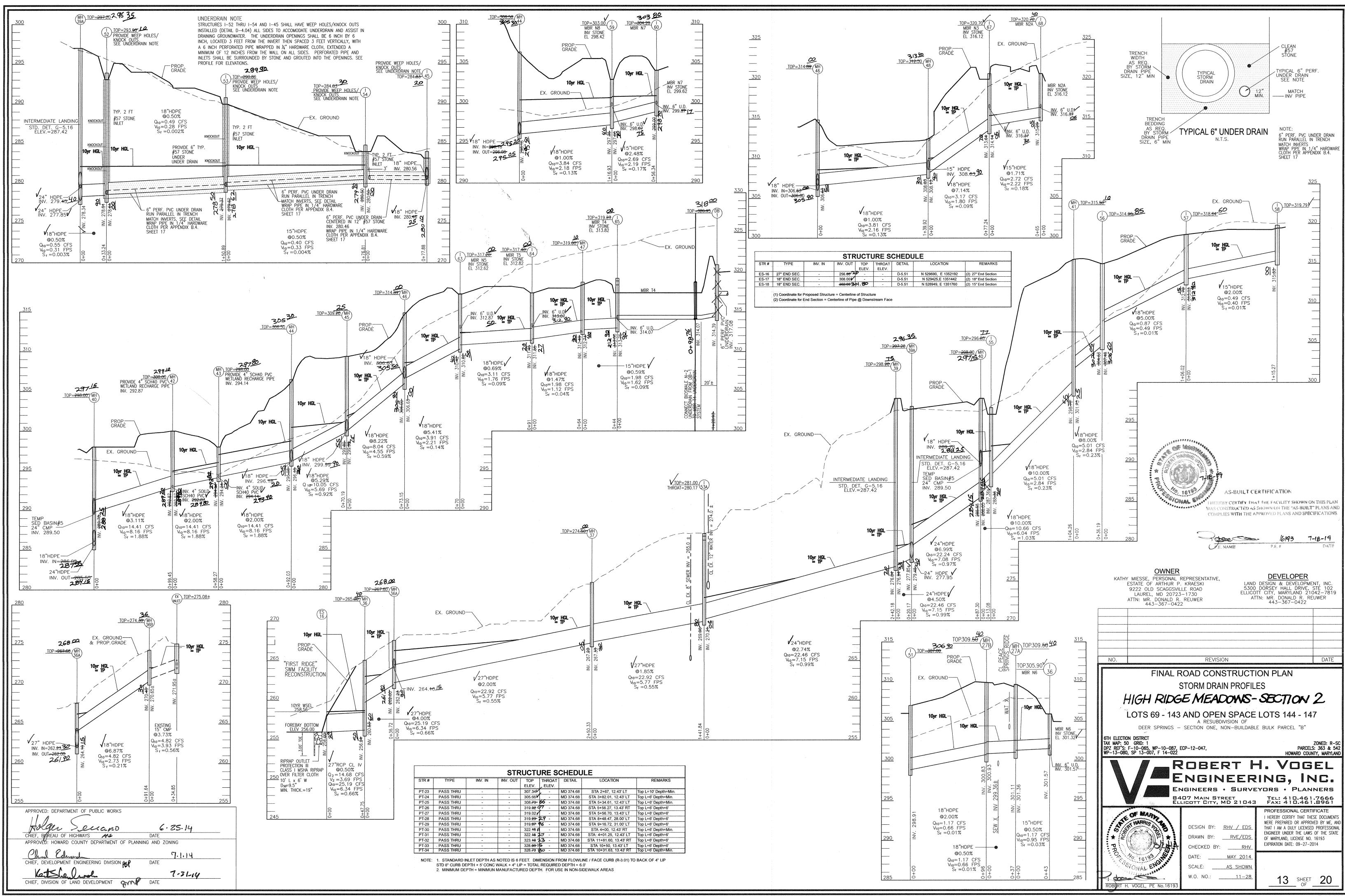
AS-BUILT-DECEMBER 2018

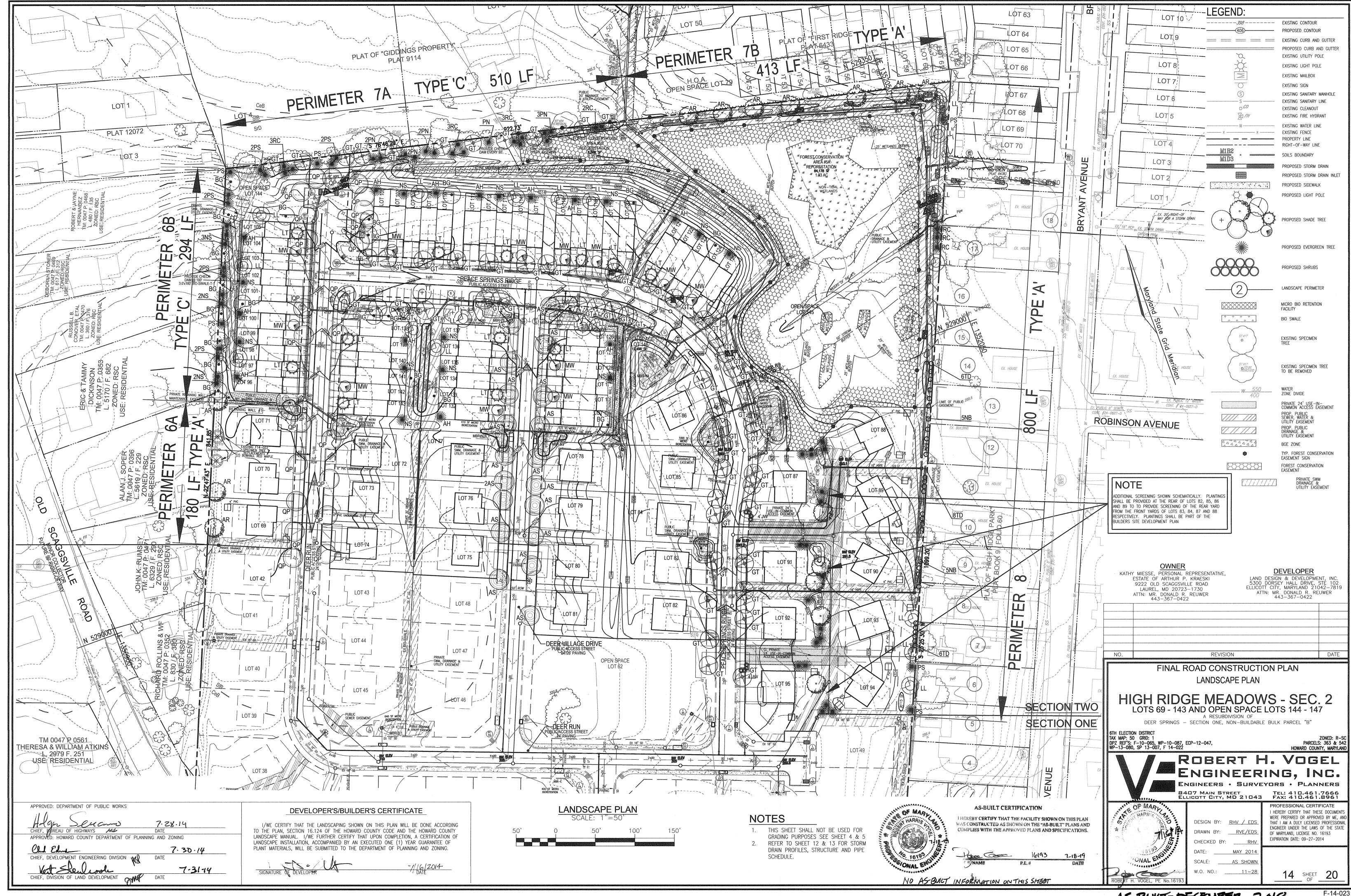
8407 MAIN STREET TEL: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961 3407 MAIN STREET OF MARI I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND DESIGN BY: RHV / EDS THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2014 SCALE: AS SHOWN D-6.01 W.O. NO.: 11-28 10 SHEET 20 OBART H.

SWM Control Structure



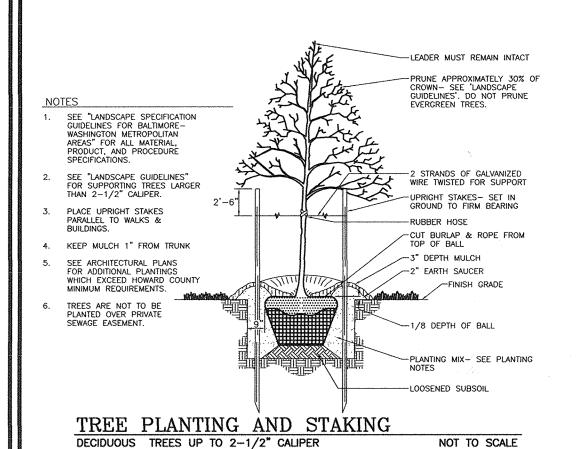


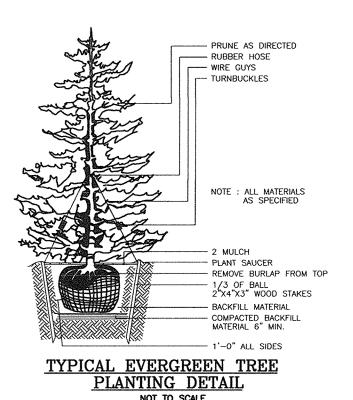


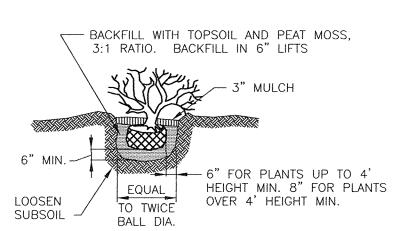


GENERAL NOTES

- NO CLEARING OF EXISTING VEGETATION IS PERMITTED WITHIN THE LANDSCAPE EDGE FOR WHICH CREDIT IS BEING TAKEN; HOWEVER, LANDSCAPE MAINTENANCE IS AUTHORIZED."
- THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, PLANT MATERIALS, BERMS, FENCES AND WALLS. AL! PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
- AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAYBE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATES.
- SHOULD ANY TREE DESIGNATED FOR PRESERVATION, FOR WHICH CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER / DEVELOPER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST MEET THE MINIMUM SIZE REQUIREMENT AND MUST BE INSTALLED AS REQUIRED IN THE LANDSCAPE
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBLITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN.







SHRUB PLANTING DETAIL NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS

Ketshline

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

7.1.14

7-31-14

Chile Chile

CHIEF, DIVISION OF LAND DEVELOPMENT CONTROL

LANDSCAPE SCHEDULE 'C'	
NUMBER OF DWELLING UNITS (48 SFA)	48
NUMBER OF TREES REQUIRED (1:DU SFA)	48
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTION)	24 48

SYM	KEY	QUAN.	BOTANICAL NAME	SIZE	CA	٩T
	SHA	ADE				
0	LL	12	TILIA CORDATA 'GREENSPIRE' LITTLELEAF LINDEN	2 1/2"-3" CAL.	В	& I
•	BG	12	NYSSA SYLVATICA BLACK GUM	2 1/2"-3" CAL.	В	&c
**	EVE	RGRI	EENS			
	AH	12	ILEX OPACA AMERICAN HOLLY (BGE COMPLIANT)	5-6' HT.	В	& E
	NS	12	ILEX 'NELLIE R. STEVENS' NELLIE R. STEVENS HOLLY (BGE COMPLIANT)	5'-6' HT.	В	& 1
	SMA	ALL			accessor de desamento	
	MW	12	CARPINUS CAROLINIANA MUSCLEWOOD (BGE COMPLIANT)		В	& E
0	LT.	12	LAGERSTROEMIA TUSCARORA TUSCARORA CRAPE MYRTLE (BGE COMPLIANT)	4'-6' HT. (MAX. HEIGHT=25')	В	& E

CATEGORY	ADJACENT TO ROADWAYS AND PERIMETER PROPERTIES					
PERIMETER/FRONTAGE DESIGNATION	6-A	6-B	7-A	7-B	8	
LANDSCAPE TYPE	A	С	С	Α	Α	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	180	294	510	413	800	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	NO	YES	NO	NO	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	1:60 3	1:40 8 1:20 15	1:40 13** 1:20 26	1:60 7 - -	1:60 14 - -	4
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES	3 -	8 15	11 26	7 -	8* 6	3 4
OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) DESCRIBE PLANT SUBSTITUTION CREDITS	-	-	- 2 SPEC.	- -	30	3 2 SI
BELOW IF NEEDED)			TREES			TR

** TAKE CREDIT FOR EXISTING SPECIMEN TREES (#20 & #22).

THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY FOR THE PERIMETER LANDSCAPING IN THE AMOUNT OF \$20,490.00 FOR THE REQUIRED 45 SHADE TREES (\$13,500), 41 EVERGREENS (\$6,150), 8 TRASH PAD SCREENING SHRUBS (\$240) and 2 PARKING ISLAND SHADE TREES (\$600) SHALL BE POSTED WITH THE DEVELOPERS AGREEMENT FOR THIS PLAN.

LANDSCAPE SCHEDULE NOTE:

1. 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. 2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING. 3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES. 4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

SYM	KEY	QUAN.	BOTANICAL NAME	SIZE	CAT
	SHA	NDE			*************************************
0	AR	10	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2 1/2"-3" CAL.	B &
\odot	BG	8	NYSSA SYLVATICA BLACK GUM	2 1/2"-3" CAL.	В &с
Θ	GT	11	GLEDITSIA TRIACANTHOS INERMIS 'IMPERIAL' /IMPERIAL THRONLESS HONEY LOCUST	2 1/2"-3" CAL.	B &c
(D)	LL	8	TILIA CORDATA 'GREENSPIRE' LITTLELEAF LINDEN	2 1/2"-3" CAL.	B &
**	EVE	RGRI			
	PS	16	PINUS STROBUS EASTERN WHITE PINE	8' HT.	B & I
	NS	7	ILEX 'NELLIE R. STEVENS' NELLIE R. STEVENS HOLLY (BGE COMPLIANT)	5'-6' HT.	В &
	RC	14	JUNIPERUS VIRGINANA EASTERN RED CEDAR (BGE COMPLIANT)	5-6' HT.	B &
	PN	10	PINUS NIGRA AUSTRIAN PINE	8' HT.	B & 1

0	SHF	RUBS			•
·	NB	10	MYRICA PENNSYLVANICA NORTHERN BAYBERRY	2'-2 1/2' HT.	B & B
	TD	20	TAXUS MEDIA HICKSII.: HICKSII YEW	2 1/2'-3' HT.	В & В

STREET TREE CALCULATIONS									
STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED						
DEER RUN 460LF	920/40	23	23						
DEER VILLAGE DRIVE 378LF	756/40	19	19						
PEACE SPRINGS RIDGE 932LF	1864/40	47	47						
	TOTAL	89	89						

SECTION TWO WILL PROVIDE THE REMAINING STREET TREE REQUIREMENT (89) OF 256 TREES TOTAL

PUBLIC STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY (\$ 26,700) SHALL BE POSTED AS PART OF THIS FINAL PLAN DEVELOPER'S AGREEMENT FOR THE REQUIRED 89 STREET TREES.

		STREET TREE PLANTING SO	CHEDULE	
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
AS	19	ACER SACCHARUM GREEN MOUNTAIN SUGAR MAPLE	2 1/2"-3" CAL.	B & B
QP	23	QUERCUS PHELLOS WILLOW OAK	2 1/2"-3" CAL.	B & B
GT	4.7	GLEDITSIA TRIACANTHOS INERMIS 'IMPERIAL' /IMPERIAL THRONLESS HONEY LOCUST	2 1/2"-3" CAL.	B & B
-				

- A MINIMUM SPACING OF 20' SHALL BE MAINAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

	ŀ	A.O.F	TRASH PAD LAN	NDSCAPIN	G
S	YM.	QTY.	DESCRIPTION	SIZE	REMARKS
	DWARF JAPANESE YEW TAXUS CUSPIDATA NANA		18"-24" SP	B&B	

SEE PEACE SPRINGS RIDGE 2 USE IN-COMMON DRIVES, 2 HOMES EACH = 4 PLANTINGS EACH SURETY = 8 X \$30 = \$240.00

SCHEDULE B PARKING LOT INTERNAL LANDSCAPI	NG
NUMBER OF PARKING SPACES	23
NUMBER OF TREES REQUIRED = 1/10 SPACES	2
NUMBER OF TREES PROVIDED	
SHADE TREES	2
OTHER TREES (2:1 SUBSTITUTION)	_

	PARKING LOT - LANDSCAPE SCHEDULE							
SYM	KEY	QUAN.	BOTANICAL NAME	SIZE	CAT			
SHADE								
+	П	2	TILIA TOMENTOSA SILVER LINDEN	2 1/2"-3" CAL.	В & Е			

DEVELOPER

LAND DESIGN & DEVELOPMENT, INC. 5300 DORSEY HALL DRIVE, STE 102 ELLICOTT CITY, MARYLAND 21042-7819

ATTN: MR. DONALD R. REUWER 443-367-0422

SURETY = 2 X 300 = \$600.00

KATHY MIESSE, PERSONAL REPRESENTATIVE,

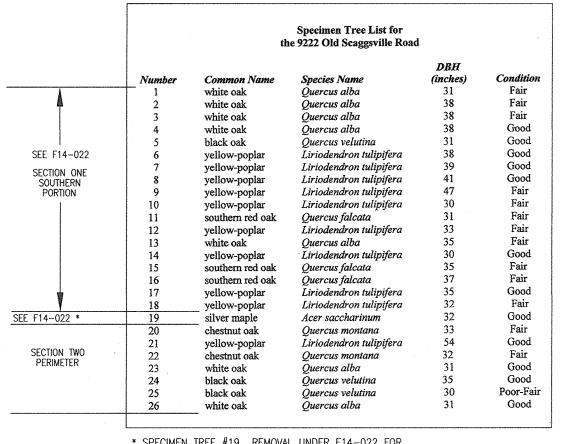
ESTATE OF ARTHUR P. KRAESKI

9222 OLD SCAGGSVILLE ROAD

LAUREL, MD 20723-1730

ATTN: MR. DONALD R. REUWER 443-367-0422





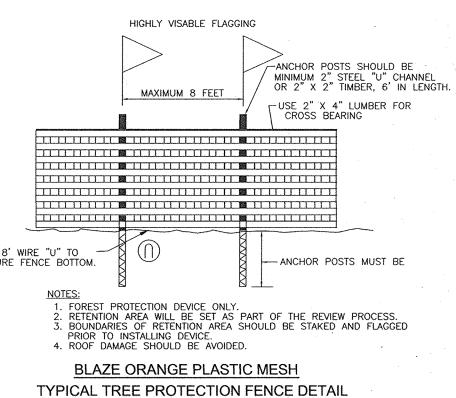
* SPECIMEN TREE #19 REMOVAL UNDER F14-022 FOR REQUIRED PROPOSED GRADES / CUT SLOPE

NO AS-BUILT INFORMATION ON THIS SHEET

FINAL ROAD CONSTRUCTION PLAN LANDSCAPE PLAN NOTES & DETAILS HIGH RIDGE MEADOWS- SECTION 2 LOTS 69 - 143 AND OPEN SPACE LOTS 144 - 147 DEER SPRINGS - SECTION ONE, NON-BUILDABLE BULK PARCEL "B" ZONED: R-SC PARCELS: 363 & 542 HOWARD COUNTY, MARYLAND ROBERT H. VOGEL ENGINEERING, INC. ENGINEERS · SURVEYORS · PLANNERS 8407 Main Street Tel: 410.461.7666 Ellicott City, MD 21043 Fax: 410.461.8961 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND DESIGN BY: RHV / EDS THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE DRAWN BY: RVE/EDS OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2014 CHECKED BY: SCALE: W.O. NO.: 11-28 ROBERT H. VOGEL, PE No.16193 15 SHEET 20

REVISION

DEVELOPER'S/BUILDER'S CERTIFICATE	USE 8' WIR SECURE FE
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 SATE A 14	





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

I. MATERIAL SPECIFICATIONS

THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

2. FILTERING MEDIA OR PLANTING SOIL THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.

* SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION). * ORGANIC CONTEN — MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%—65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).

* CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%. * PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED,

THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED. 3. COMPACTION

THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

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 LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILITRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE. COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

WATER BEFORE PREPARING (ROTOTILLING) BASE. WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED

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

5. PLANT INSTALLATION

COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH, 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 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 GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED

FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS. THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL.

ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

* PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28, OR AASHTO-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 4x4) GALVANIZED HARDWARE CLOTH.

* GRAVEL — THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN. * THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
* A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,0000 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

THIS MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA) 7. MISCELLANEOUS

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

OPERATION AND MAINTENANCE SCHEDULE FOR M-6, M-7 AND M-8 AREAS

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.

SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND

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

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

FILTER MATERIAL MUST BE REPLACED WHEN WATER REMAINS ON THE SURFACE OF THE FILTER BED FOR MORE THAN 24 HOURS FOLLOWING A 1- OR 2-YEAR STORM EVENT OR MORE THAN 48 HOURS FOLLOWING A 10-YEAR STORM EVENT."

B.4.B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF

NOTE: UNDERDRAIN AND CHECK DAMS OF BIOSWALE SHALL BE PUBLICALLY MAINTAINED.

THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR TYPICAL APPLICATIONS AND ARE NOT EXCLUSIVE OR LIMITING. THE DESIGNER IS RESPONSIBLE FOR DEVELOPING SPECIFICATIONS FOR INDIVIDUAL PROJECTS AND SPECIFIC CONDITIONS.

1. PERVIOUS CONCRETE SPECIFICATIONS DESIGN THICKNESS - PERVIOUS CONCRETE APPLICATIONS SHALL BE DESIGNED SO THAT THE THICKNESS OF THE CONCRETE SLAB SHALL SUPPORT THE TRAFFIC

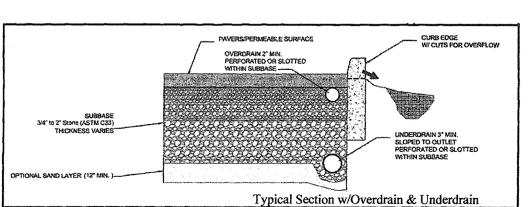
AND VEHICLE TYPES THAT WILL BE CARRIED. APPLICATIONS MAY BE DESIGNED USING EITHER STANDARD PAVEMENT PROCEDURES (E.G., AASHTO, ACI 325.9R, ACI 330R) OR USING STRUCTURAL VALUES DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES. MIX & INSTALLATION - TRADITIONAL PORTLAND CEMENTS (ASTM C 150, C 1157) MAY BE USED IN PERVIOUS CONCRETE APPLICATIONS. PHOSPHORUS ADMIXTURES MAY ALSO BE USED. MATERIALS SHOULD BE TESTED (E.G., TRIAL BATCHING) PRIOR TO CONSTRUCTION SO THAT CRITICAL PROPERTIES (E.G., SETTLING TIME, RATE OF STRENGTH DEVELOPMENT, POROSITY, PERMEABILITY) CAN BE DETERMINED. AGGREGATE - PERVIOUS CONCRETE CONTAINS A LIMITED FINE AGGREGATE CONTENT. COMMONLY USED GRADATIONS INCLUDE ASTM C 33 NO. 67 (3/4 IN. TO NO. 4), NO. 8 (3/8 IN. TO NO.16) AND NO. 89 (3/8 IN. TO NO.50) SIEVES. SINGLE-SIZED AGGREGATE (UP TO 1 INCH) MAY ALSO BE USED. WATER CONTENT - WATER-TO-CEMENT RATIOS BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADMIXTURES. WATER QUALITY SHOULD MEET ACI 30A. AS A GENERAL RULE, POTABLE WATER SHOULD BE USED ALTHOUGH RECYCLED CONCRETE PRODUCTION WATER MEETING ASTM C 94 OR

ADMIXTURES - CHEMICAL ADMIXTURES (E.G., RETARDERS OR HYDRATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADMIXTURES SHOULD MEET ASTM C 494 (CHEMICAL ADMIXTURES) AND ASTM C 260 (AIR ENTRAINING ADMIXTURES) AND CLOSELY FOLLOW MANUFACTURER'S

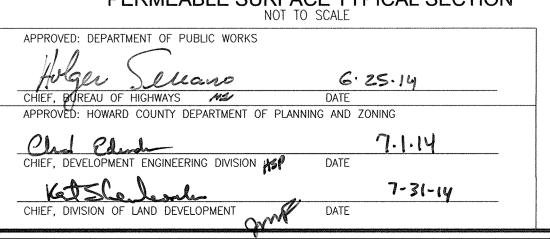
BASE COURSE - THE BASE COURSE SHALL BE AASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (n=0.30). 2. PERMEABLE INTERLOCKING CONCRETE PAVEMENTS (PICP)

PAVER BLOCKS - BLOCKS SHOULD BE EITHER 3? IN. OR 4 IN. THICK, AND MEET ASTM C 936 OR CSA A231.2 REQUIREMENTS. APPLICATIONS SHOULD HAVE 20% OR MORE (40% PREFERRED) OF THE SURFACE AREA OPEN. INSTALLATION SHOULD FOLLOW MANUFACTURER'S INSTRUCTIONS, EXCEPT THAT INFILL AND BASE COURSE MATERIALS AND DIMENSIONS SPECIFIED IN THIS APPENDIX SHALL BE FOLLOWED. INFILL MATERIALS AND LEVELING COURSE - OPENINGS SHALL BE FILLED WITH ASTM C-33 GRADED SAND OR SANDY LOAM. PICP BLOCKS SHALL BE PLACED ON A ONE-INCH THICK LEVELING COURSE OF ASTM C-33 SAND. BASE COURSE - THE BASE COURSE SHALL BE AASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (n=0.30).

3. REINFORCED TURF REINFORCED GRASS PAVEMENT (RGP) - WHETHER USED WITH GRASS OR GRAVEL, THE RGP THICKNESS SHALL BE AT LEAST 1-3/4" THICK WITH A LOAD CAPACITY CAPABLE OF SUPPORTING THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED.



PERMEABLE SURFACE TYPICAL SECTION



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

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil SEE 0&M NOTE 5 [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)	and the Committee Section of the Committee Section (Committee Section Committee Sect	
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
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 pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f' _c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site 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 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

DISCONNECTION OF ROOFTOP RUNOFF

CONSTRUCTION CRITERIA:

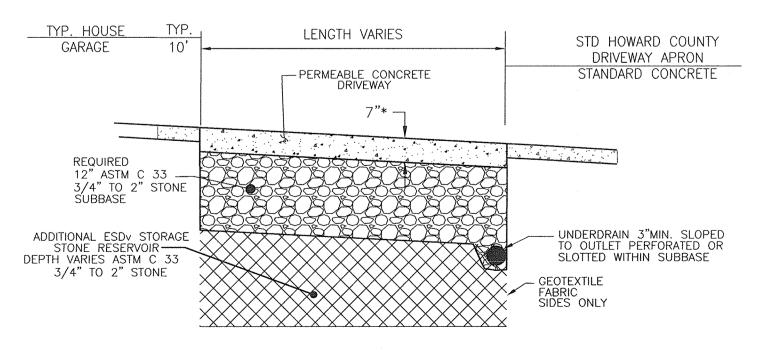
THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING THE CONSTRUCTION OF PROJECTS WITH PLANNED ROOFTOP DISCONNECTIONS:

- EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN VEGETATED AREAS RECEIVING DISCONNECTED RUNOFF
- SITE DISTURBANCE: CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFE TO MINIMIZE DISTURBANCE AND COMPACTION, SHOULD AREAS RECEIVING DISCONNECTED RUNOFF BECOME COMPACTED, SCARIFYING THE SURFACE OR ROTOTILLING THE SOIL TO A DEPTH OF FOUR TO SIX INCHES SHALL BE PERFORMED TO ENSURE PERMEABILITY. ADDITIONALLY, AMENDMENTS MAY BE NEEDED FOR TIGHT, CLAYEY SOILS.

A FINAL INSPECTION SHALL BE CONDUCTED BEFORE USE AND OCCUPANCY APPROVAL TO ENSURE THAT SIZING FOR TREATMENT AREAS HAVE BEEN MET AND PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

MAINTENANCE CRITERIA:

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 (E.G., BY PLANTING TREES OR SHRUBS ALONG THE PERIMETER). IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.



- 1. PAVEMENT CROSS SECTION TO BE CONFIRMED BY GEOTECHNICAL ENGINEER 2. UNDERDRAIN SHALL BE LOCATED SUCH THAT IT CAN DAYLIGHT TO THE CURB,
- INTO A BIO-RETENTION FACILITY OR TO THE REAR OF THE LOT 3. OVERDRAIN SHALL COMBINE WITH UNDERDRAIN OR DAYLIGHT AS DETAILED

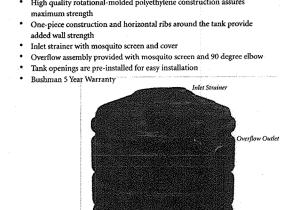
DETAIL - PERMEABLE CONCRETE DRIVEWAY - 5% OR LESS

FOR UNDERDRAIN, SEE NOTE 2.

NOT TO SCALE *ALL PERMEABLE CONCRETE THICKNESS, MIX AND SUB-BASE TO BE DETERMINED BY GEOTECHNICAL ENGINEER ONSITE.

he new BRTT205 Round tank from Bushman is designed for above groun installation against a wall, on the ground or on a stand at virtually any deired location on your property. This tank has a 205 U.S. gallon (775 liters) color fading. The BRTT205 can be ordered as a basic tank or with additional pack Features & Benefits

Water capacity of four 50 gallon rain barrels High quality rotational-molded polyethylene construction assur-One-piece construction and horizontal ribs around the tank provide added wall strength Inlet strainer with mosquito screen and cover Overflow assembly provided with mosquito screen and 90 degree elbow



Ordering Information EASY STEPS TO ORDER Bushman Tank Configuration 105 - 205 U.S. Gallons (170 Imperial Gallons, 775 Liters C0 - Black Mocha Brown Brick Red P2 – Premier System, Package 2 Example: BRTT205C3P2 - BRTT 205 tank, 205 U.S. Gallons capacity, Forest Green, Premier Package

Width: 2' 8" (0.85m Apex Height: 4'7" (1.44m)

3USHMAN[®]

Tel. 800.387.8332 Fax. 905.565.8282 Eushman is a trademark of Channell Commercial Comporation.

Americas: Bushman, USA 26040 Ynez Road, P.O. Box 893051 Temecula, CA 92589-3051 Tel. 866.920.TANK (8265) Fax. 951.296.6123 ASTM C33. Printed in USA CHO9-109 SM TA

BUSHMAN BRTT205 (205 GALLON) RAIN HARVESTING SYSTEM OR EQUIVALENT RAIN BARREL DETAIL

NOT TO SCALE

HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED RAINWATER HARVESTING (M-1)

- A. THE OWNER SHALL EMPTY BARRELS ON A MONTHLY BASIS AND CLEAN BARREL WITH A HOSE.
- THE OWNER SHALL VERIFY INTEGRITY OF LEAF SCREENS, GUTTERS, DOWNSPOUTS, SPIGOTS, AND MOSQUITO SCREENS, AND CLEAN AND REMOVE ANY DEBRIS.
- C. THE OWNER SHALL REPLACE DAMAGED COMPONENTS AS NEEDED.
- THE OWNER SHALL ALLOW THE BARREL TO DRAIN BY BOTTOM SPIGOT DURING THE WINTER SEASON.

TYPICAL RAIN BARREL DESIGN = 27.41 CUFT 7.48 GAL/CUFT

- 500 SF X (X") = 27.41 CUFT
- 12 (27.41 CUFT)
- THEREFORE A 205 GALLON BARREL CAPTURES PF OF 0.66" FROM A 500 SF SECTION OF PROPOSED ROOFTOP THE REMAINING PORTION OF THE 500 SF SECTION OF ROOFTOP IS P = 0.34". THIS CAN BE ACHIEVED BY A 40' DISCONNECTION OF ROOFTOP RUNOFF

5'-0" 1/2" PERFORMED PERMEABLE **EXPANSION JOINT-**CONCRETE NOTE: TOP OF SIDEWALK TO BE 1/4" ABOVE THE TOP OF CURB 2% 3/4" TO 2" STONE

DETAIL - PERMEABLE CONCRETE WALK

- 2" PERFORATED OR SLOTTED OVERDRAIN

CONNECT TO CURB OPENING PASS THRU STRUCTURES

SIDEWALK TO BE SCRIBED IN 5'-O" MAXIMUM SQUARES. LEADWALKS PER BUILDER SPECIFICATION 3' TYP. EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 15' APART. 1/2" PREFORMED EXPANSION MATERIAL IN EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK. WHEN SIDEWALK ABUTS CURB, SIDEWALK SHALL BE 1/4' ABOVE CURB WITH 1/2" PREFORMED EXPANSION JOINT BETWEEN

5. ON LONGITUDINAL SIDEWALK GRADES OF 5 OR GREATER. A CONCRETE HEADER. 6 THICK AND 6" DEEP BELOW THE NORMAL 4" SIDEWALK THICKNESS SHALL BE CONSTRUCTED FOR THE FULL WIDTH OF THE SIDEWALK AT INTERVALS OF 48 FEET. THE HEADERS SHALL BE PLACED AT THE EXPANSION JOINT LOCATIONS AND SHALL BE MONOLITHIC WITH THE SIDEWALK. \ 6. SIDEWALK WIDTH ADJACENT TO CURB SHALL BE 5 MINIMUM EXCEPT SIDEWALK ADJACENT TO CURB IN CUL-DE-SAC BULBS

MAY BE 4'-0 WIDE. 7. CEMENT SHALL BE PER AASHTO M85 AIR ENTRAINING - TYPE II PORTLAND TYPE, GRAY COLOR. MIX AND DELIVER CONCRETE IN ACCORDANCE WITH ASTM C94/C94M, OPT:ON C WITH THE FOLLOWING CRITERIA: TENSILE STRENGTH: 500 PSI AT 28 DAYS, COMPRESSIVE STRENGTH: 3000 PSI AT 28 DAYS, UNIT WEIGHT: 130 POUNDS/CF. STOEN SHALL BE NO. 8 COARSE AGGREGATE PER

8. CONCRETE MIX SHALL BE DESIGNED BY GEO TECHNICAL CONSULTANT. 9. BASE BELOW THE CURB SHALL CONSIST OF GRADED AGGREGATE BASE(GAB).

ASTM C33 12" DEPTH .

SIDEWALK AND CURB.



OWNER

AS-BUILT CERTIFICATION

THEREBY CENTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLES WITH THE APPROVED PLANS AND SPECIFICATIONS.



DEVELOPER

LAND DESIGN & DEVELOPMENT, INC. 5300 DORSEY HALL DRIVE, STE 102 ELLICOTT CITY, MARYLAND 21042-7819

ATTN: MR. DONALD R. REUWER 443-367-0422

PERMEABLE PAVEMENTS

CONSTRUCTION CRITERIA:

DISTRIBUTION SYSTEMS:

THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH PERMEABLE PAVEMENT

EROSION AND SEDIMENT CONTROL: FINAL GRADING FOR INSTALLATION SHOULD NOT TAKE PLACE UNTIL THE SURROUNDING SITE IS STABILIZED. IF THIS CANNOT BE ACCOMPLISHED, RUNOFF FROM DISTURBED AREAS SHALL BE DIVERTED AROUND PROPOSED PAVEMENT LOCATIONS.

SOIL COMPACTION: SUB SOILS SHALL NOT BE COMPACTED. CONSTRUCTION SHOULD BE PERFORMED WITH LIGHTWEIGHT, WIDE TRACKED EQUIPMENT TO MINIMIZE COMPACTION. EXCAVATED MATERIALS SHOULD BE PLACED IN A CONTAINED AREA.

OVERDRAIN, UNDERDRAIN, AND DISTRIBUTION PIPES SHALL BE CHECKED

LIPSTREAM ENDS OF PIPES SHOULD BE CAPPED PRIOR TO INSTALLATION, ALL UNDERDRAIN OR DISTRIBUTION PIPES USED SHOULD BE INSTALLED FLAT ALONG THE BED BOTTOM. SUBBASE INSTALLATION: SUBBASE AGGREGATE SHALL BE CLEAN AND FREE OF FINES. THE SUBBASE

TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS (SEE APPENDIX B. 4). THE

SHALL BE PLACED IN LIFTS AND LIGHTLY ROLLED ACCORDING TO THE SPECIFICATIONS (SEE APPENDIX B.4).

REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:

DURING EXCAVATION TO SUB GRADE DURING PLACEMENT AND BACKFILL OF ANY DRAINAGE OR DISTRIBUTION SYSTEM(S). DURING PLACEMENT OF THE CRUSHED STONE SUBBASE MATERIAL. DURING PLACEMENT OF THE SURFACE MATERIAL

MAINTENANCE CRITERIA:

THE FOLLOWING PROCEDURES SHOULD BE CONSIDERED ESSENTIAL FOR MAINTAINING PERMEABLE PAVEMENT SYSTEMS:

UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

- PAVEMENTS SHOULD BE USED ONLY WHERE REGULAR MAINTENANCE CAN BE PERFORMED. MAINTENANCE AGREEMENTS SHOULD CLEARLY SPECIFY HOW TO CONDUCT ROUTINE TASKS TO ENSURE LONG-TERM
- PAVEMENT SURFACES SHOULD BE SWEPT AND VACUUMED TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY, SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING SYSTEMS AND COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
- DRAINAGE PIPES, INLETS, STONE EDGE DRAINS, AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE SHOULD BE CLEANED OUT AT REGULAR INTERVALS.
- TRUCKS AND OTHER HEAVY VEHICLES CAN GRIND DIRT AND GRIT INTO THE POROUS SURFACES, LEADING TO CLOGGING AND PREMATURE FAILURE. THESE VEHICLES SHOULD BE PREVENTED FROM TRACKING AND SPILLING MATERIAL ONTO THE PAVEMENT.
- DEICERS SHOULD BE USED IN MODERATION. WHEN USED, DEICERS SHOULD BE NON-TOXIC AND ORGANIC AND CAN BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT. SNOW PLOWING SHOULD BE DONE CAREFULLY WITH BLADES SET ONE-INCH HIGHER THAN NORMAL. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

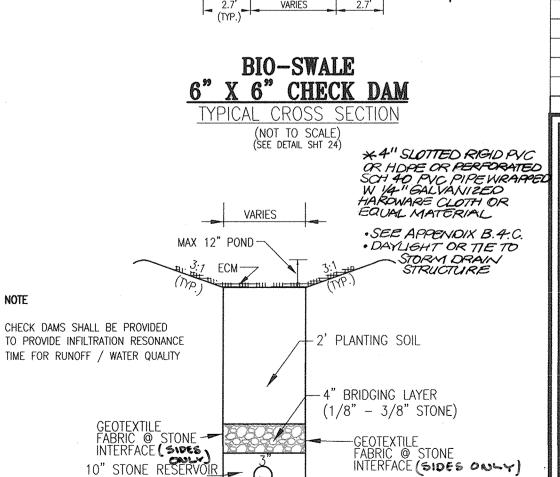
HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)

- THE OWNER SHALL PERIODICALLY SWEEP (OR VACUUM POROUS CONCRETE PAVEMENT) THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY, SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING OR COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
- THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE
- THE OWNER SHALL USE DEICERS IN MODERATION, DEICERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
- THE OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE-INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

BIO-SWALE PLANTING PLANTINGS SHALL CONSIST OF A MIXTURE REED CANARY GRASS - PHALARIS ARUNDINACAS SNITCH GRASS - PANICUM VIRGATUM MAJESTIC LILY TURF -LIRIOPE MUSCARI 'MAJESTIC' OR EQUAL COMBINATION OF COOL/WARM SEASON GRASSES TOLERANT OF FEQUENT INUNDATION WOODEN 8" X 8" OR WOODEN 6" X 6" TREATED TIMBER AWPA STANDARD C6 KEYED 36" INTO CHANNEL BANKS / BOTH SIDES KATHY MIESSE, PERSONAL REPRESENTATIVE, ESTATE OF ARTHUR P. KRAESKI 9222 OLD SCAGGSVILLE ROAD LAUREL, MD 20723-1730 ATTN: MR. DONALD R. REUWER 443-367-0422

4" PERFORATE

WRAP W/ HARDWARE



(NOT TO SCALE)

NOTE: FINAL ELEVATIONS ARE TO BE PROVIDED AT SITE PLAN.

(NO 57 STONE)

NO AS-BUILT INFORMATION ON THIS SHEET

STORMWATER MANAGEMENT NOTES AND DETAILS HIGH RIDGE MEADOWS-SECTION 2 LOTS 69 - 143 AND OPEN SPACE LOTS 144 - 147 6TH ELECTION DISTRICT TAX MAP: 50 GRID: 1 DPZ REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080, SP 13-007, F 14-022 FABRIC @ STONE INTERFACE (SIDES ONLY)

OF MAR door

DESIGN BY: RHV / ED DRAWN BY: CHECKED BY: DATE: MAY 201 SCALE: AS SHOW W.O. NO.: 11-2

REVISE UNDERDRAIN DETAIL MICRO-BIORETENTION AND 3/30/15

BIOSWALE FACILITY; REVISE SAND FILTER DETAIL

FINAL ROAD CONSTRUCTION PLAN

A RESUBDIVISION OF

DEER SPRINGS - SECTION ONE, NON-BUILDABLE BULK PARCEL "B"

ROBERT H. VOGEL

ENGINEERING, INC.

ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET TEL: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

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: 09-27-2014 SHEET OF -

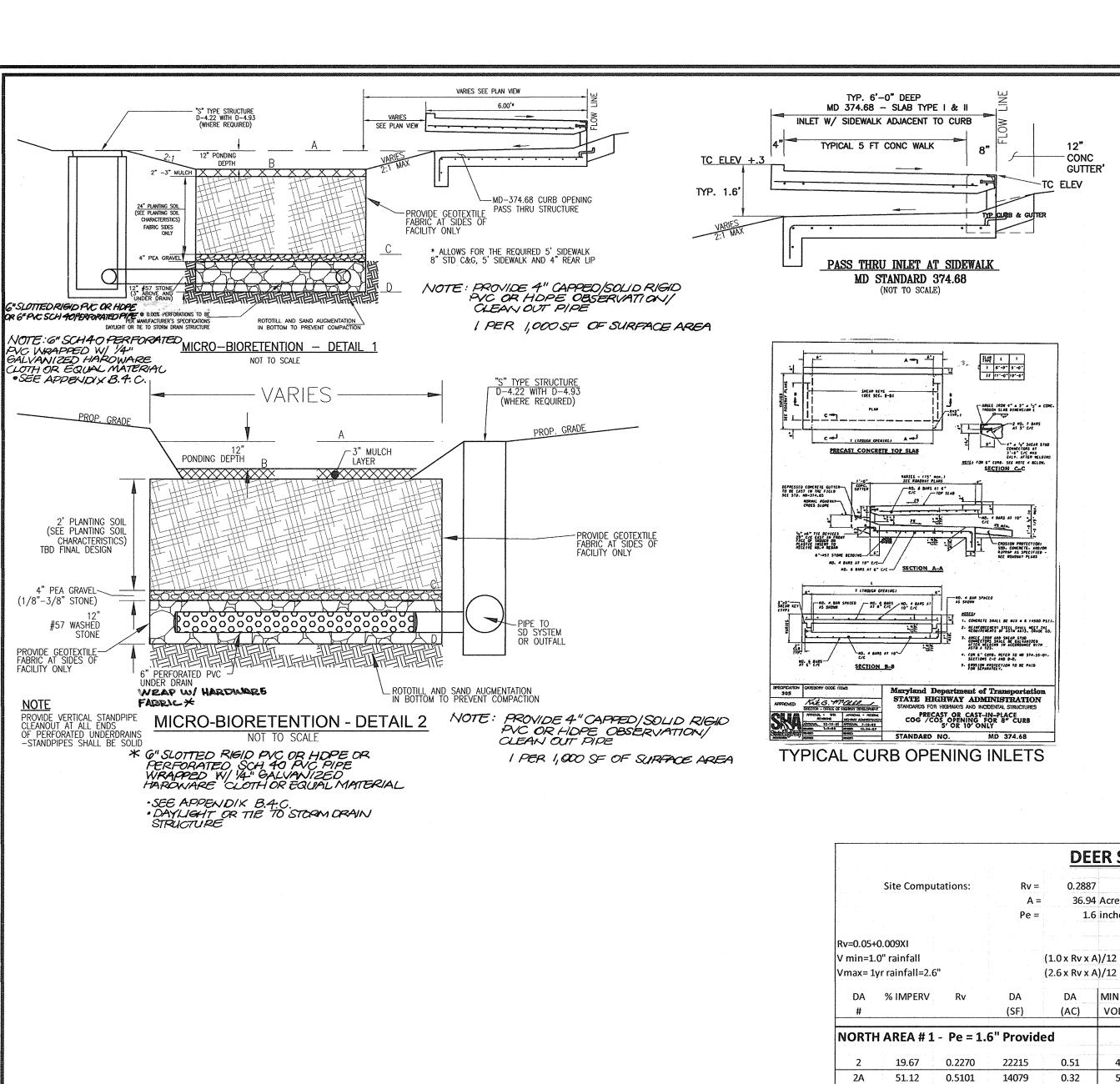
PROFESSIONAL CERTIFICATE

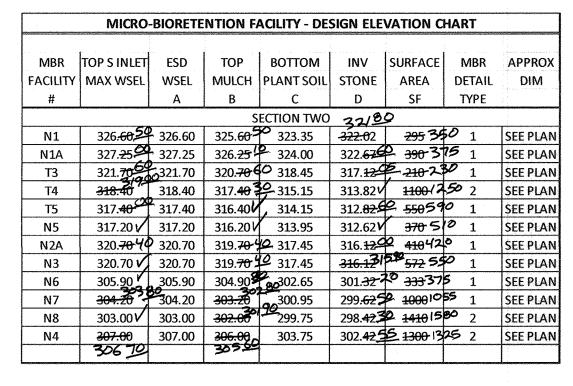
I HEREBY CERTIFY THAT THESE DOCUMENTS

AS-BUILT-DECEMBER 2018

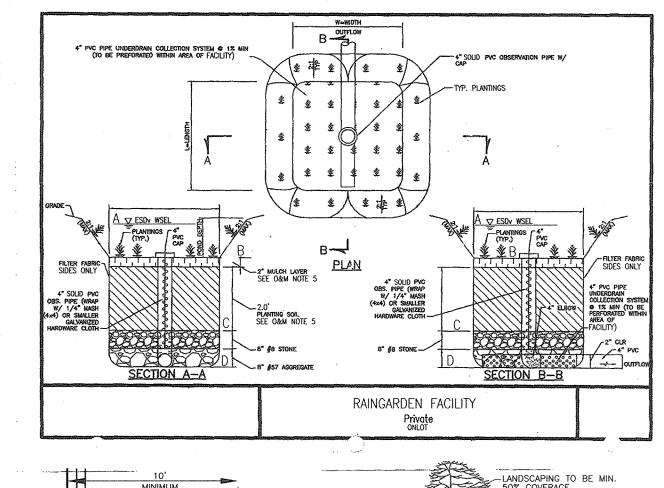
PARCELS: 363 & 542

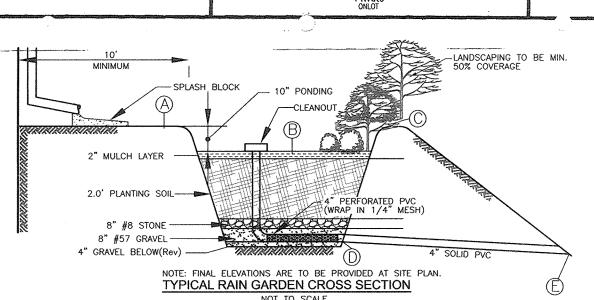
HOWARD COUNTY, MARYLANI





REFER TO SHEET 19 FOR PLANTING NOTES, DETAIL AND SCHEDULES





LAYOUT OPTION

_TYPICAL DOWNSPOUT

PERFORATED PIPE PVC SCH 40 3/8" HOLES 4" 0/C 90 DEGREES AROUND

CLEANOUT. SEE

PLAN VIEW
NOT TO SORIE
SEE PLAN FOR ALL DIMENSIONS

SPLASH BLOCK

GROUND WATER 6" PAC COUPLING

Roof Drain

HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR

B. PONDING STANDING WATER OR ALGAL GROWTH ON THE TOP OF

A MAJOR STORM OR MORE THAN SIX INCHES OF SEDIMENT HAS ACCUMULATED, THE GRAVEL MEDIA SHOULD BE EXCAVATED AND

A DRYWELL MAY INDICATE FAILURE DUE TO SEDIMENTATION IN THE GRAVEL MEDIA. IF WATER PONDS FOR MORE THAN 48 HOURS AFTER

THE OWNER SHALL INSPECT & CLEAN ANNUALLY, INCLUDING

PRIVATELY OWNED AND MAINTAINED DRYWELL (M-5)

PIPES GUTTERS DOWNSPOUTS AND FILTERS.

_ PVC DOWNSPOUT ADAPTER W/ REMOVABLE CAP

NOTES

I. MANUFACTURED SAND IS NOT ACCEPTABLE IN
ORWELLS.

ORWELLS.

I. MANUFACTURED SAND IS NOT ACCEPTABLE IN
ORWELLS.

I. MANUFACTURED SAND IS NOT ACCEPTABLE IN
ORWELLS MUST BE A MENIAUM OF

TO FROM BUILDING FOUNDATION

-TO FROM SEPTIC FIELD

-TO FROM WELL LOCATION

NOT TO SCALE

NOT TO SCALE

SEARAGE.

eapage. . Mainimum number of perforations shall be 5 times ppe area. . Trench may not be installed in fill.

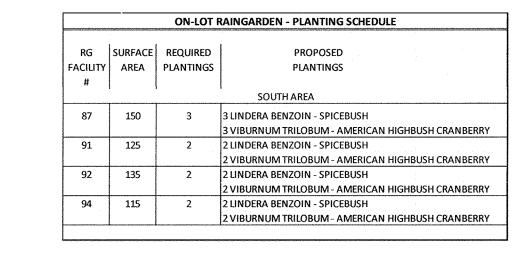
Howard County, Maryland Department of Public Works

LAYOUT OPTION 2

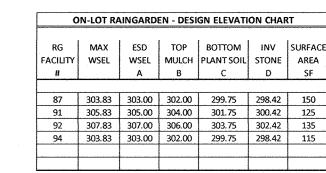
OBSERVATION WELL / CLEANOUT CA SELF FLUSH WITH PROPOSED EXISTING GRADE

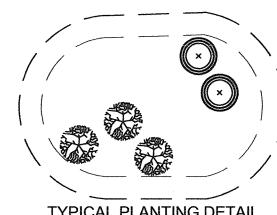
D-9.01

PERFORATED PVC INSIDE TRENCH AREA ONLY ----



1. RG # REFERS TO PROPOSED LOT NUMBER FOR LOCATION 2. TYP. 100 SF X 75% X .0229 STEMS PER SQUARE FOOT = 2 PLANTS





TYPICAL PLANTING DETAIL FOR RAINGARDENS

	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
(3)	9	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
@	9	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT

TYP. 100 SF X 75% X .0229 STEMS PER SQUARE FOOT = 2 PLANTS FILTER AREA SHALL BE 50% COVERED BY PLANTINGS AT FULL GROWTH

OPERATION AND MAINTENANCE SCHEDULE FOR RAIN GARDEN AREAS

- 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 DEFICIENT STAKES AND WIRES.
- 3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO

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



AS-BUILT CERTIFICATION	
THEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLAI COMPLIES WIFFI THE APPROVED PLANS AND SPECIFICA	NS AND

KATHY MIESSE, PERSONAL REPRESENTATIVE, ESTATE OF ARTHUR P. KRAESKI 9222 OLD SCAGGSVILLE ROAD

LAUREL, MD 20723-1730

ATTN: MR. DONALD R. REUWER 443-367-0422

<u>DEVELOPER</u> LAND DESIGN & DEVELOPMENT, INC. 5300 DORSEY HALL DRIVE, STE 102 ELLICOTT CITY, MARYLAND 21042-7819 ATTN: MR. DONALD R. REUWER 443-367-0422

REVISE UNDER DRAIN DETAIL FOR MICRO BIORETENTION AND BIOSWALE FACILITY; REVISE SAND FILTER DETAIL

FINAL ROAD CONSTRUCTION PLAN STORMWATER MANAGEMENT - NOTES & DETAILS HIGH RIDGE MEADOWS - SECTION 2

LOTS 69 - 143 AND OPEN SPACE LOTS 144 - 147 DEER SPRINGS - SECTION ONE, NON-BUILDABLE BULK PARCEL "B"



6TH ELECTION DISTRICT

ROBERT H. VOGEL ENGINEERING, INC. Engineers • Surveyors • Planners 8407 MAIN STREET TEL: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

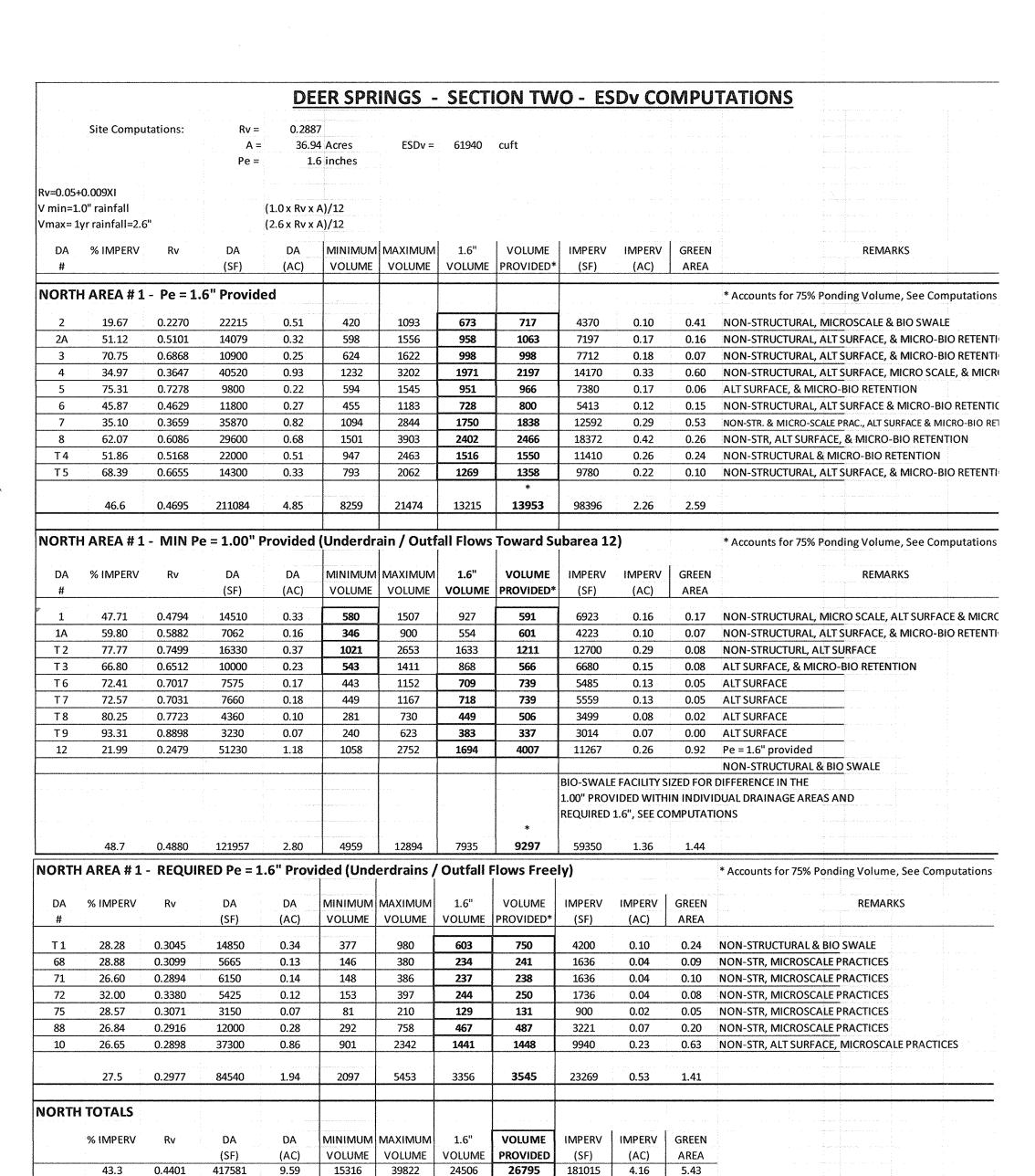
Bridge		
STATE STATES	DESIGN BY:	RHV / EDS
	DRAWN BY:	RVE/EDS
STATE STATE OF	CHECKED BY:	RHV
TOTAL STREET	DATE:	MAY 2014
	SCALE:	·AS SHOWN
		44 00

I HEREBY CERTIFY THAT THESE DOCUMENT WERE PREPARED OR APPROVED BY ME, A THAT I AM A DULY LICENSED PROFESSIONA ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2014

ON-LOT DRYWELL - DESIGN ELEVATION CHART NUMBER PROP TOP INV SURFACE STONE FT X FT FT 1 | 331.00 | 330.00 | 326.00 | 6.0X6.0 | F14-022 69 R 1 | 333.00 | 332.00 | 328.00 | 6.0X6.0 | 4 LOT 68 74 F 1 | 329.50 | 328.50 | 324.50 | 8.0X8.0 | 4 F14-022 1 | 293.00 | 292.00 | 287.00 | 8.0X8.0 | 10 1 | 295.00 | 294.00 | 289.00 | 8.0X8.0 | 5 1 | 295.00 | 294.00 | 289.00 | 8.0X8.0 | 1 | 298.00 | 297.00 | 292.00 | 8.0X8.0 | 1 | 298.50 | 297.50 | 292.50 | 8.0X8.0 | 5 1 | 302.50 | 301.50 | 296.50 8.0X8.0 1 | 302.00 | 301.00 | 296.00 | 8.0X8.0 | 5 1 | 304.00 | 303.00 | 298.00 | 8.0X8.0 | 5 1 | 304.50 | 303.50 | 300.50 | 8.0X8.0 | 3 1 | 308.20 | 307.20 | 304.20 | 8.0X8.0 | 3 95 R 1 | 309.00 | 308.00 | 304.00 | 8.5X8.5 | 4 95 R 1 309.90 308.90 304.90 8.0X8.0 4

R= REAR OF LOT F= FRONT OF LOT

Boring SWM-1 SWM-1A		Deer Springs HCEA Project No. 12324A					Deer Springs HCEA Project No. 12324A				
SWM-1		Table 1. Auger Probe Summary					Та	ble 1. Auger	Probe Summ	ary	
SWM-1	Surface		Depth		pletion		Surface	Boring			npletion
	Elevation 304	Proposed 14	Drilled 14	Water (ft) Dry	Cave-In (ft) 8.0	Boring SWM-37	Elevation 332	Proposed 18	Drilled 18	Water (ft) Dry	Cave-In (fi
	309	15	15	Dry	8.0	SWM-38	330.5	18.5	18.5	Dry	17.3
SWM-2	304	16	16	Dry	8.5	SWM-39	333	16	16	Dry	15.0
SWM-3	302	17	17	Dry	8.4	SWM-40	337.4	13.5	/ 13 /	Dry	12.0
SWM-4	304	19	19	Dry		SWM-41	330	15	15	Dry	9.5
SWM-5	296	11	11	Dry	5.3	SWM-42	324	16 17	16	Dry	8.0
SWM-6 SWM-7	282 276	5 11.5	5 11.5	Dry Dry	2.6 7.0	SWM-43 SWM-44	330 324	17 15	17 15	Dry Dry	13.0 10.0
SWM-8	272	11.5	11.5	Dry	7.0	SWM-45	308	11	11	Dry	6.0
SWM-9	273	13	14	Dry	8.0	SWM-46	306	14	14	Dry	6.0
WM-10	277	11	11	Dry	7.3	SWM-48	296	18	18	5.0	7.0
WM-10.5	288	5	5	Dry	2.5	SWM-49	294	16	16	Dry	10.0
WM-11	292	13	13	Dry	7.0	SWM-50	324	18	18	Dry	13.0
WM-12	308.5	23.5	24.5	Dry	13.3	SWM-51	318	12	13	Dry	8.2
SWM-13	310	21	21	Dry	13.6	SWM-52	306	13	13	Dry	9.0
SWM-14 SWM-15	298 298	18 13	18 13	Dry Drv	11.3 9.0	SWM-53 SWM-54	322 301	14 14	14 14	Dry Dry	10.3 8.0
SWM-16	290	16	16	Dry	12.0	SWM-55	320	14	14	Dry	11.5
WM-17	302	9	/5.5/9/	Dry	4.4	SWM-56	314	14	14	Dry	7.0
WM-18	303	15	15	Dry	10.0	SWM-57	301.5	11.5	11.5	Dry	7.0
SWM-19	304	9	9	Dry	4.8	SWM-57A	296.5	9.5	9.5	Dry	6.0
WM-20	312	13	13	Dry	7.8	SWM-57B	303.4	12.9	12.9	Dry	8.3
WM-21	313	13	13	Dry	8.0	SWM-58	308	12	12	Dry	8.6
WM-22 WM-23	306 301	12.5	12.5	Dry	10.0	SWM-59	308 303	12	12	Dry	8.5
WM-24	289.5	14 11	14 11	Dry Dry	10.0 6.8	SWM-60 SWM-61	297	15 14	15 14	Dry Dry	11.6 10.8
WM-25	290.5	16.5	16.5	Dry	11,0	SWM-62	300	6	6	Dry	3.3
WM-26	296.5	16.5	16.5	Dry	12.5	SWM-63	298	10	10	6.8	7.3
WM-27	297	12	13	Dry	7.0	SWM-64	293.5	14.5	14.5	Dry	10.5
WM-28	307	14	14	Dry	9.0	SWM-65	291	13	13	Dry	8.8
WM-29	. 308	13	13	Dry	6.0	SWM-66		20	20	Dry	11.3
WM-30	312	13	13	Dry	12.5	* 5					
WM-31 WM-32	314 317.5	12	12	Dry	8.7	* - Probe refu	sed at 5.5 ft.	Offset 5 ft and	daugered to p	proposed dep	th.
WM-33	317.5	12.5 17.5	12 17.5	Dry Dry	8.3 13.0	7777	- Auger Refi	ısal encounte	red at denth c	hallower the	n proposed
WM-34	326	16	16	Dry	11.0		,go: / tolt		. oo at aspiri s	wanosset nigi	, highosea
WM-35	321	15	15	Dry	11.3						
WM-36	330	18	18	Dry	12.0						
		CT.		VATED	N// N// N	GEMEN	T TEC	ТОІТГ	ΛΤΛ		
		31	OINIVIV	VAILIY	7 1017/1/1/1/	CLIVILIA	1 110	1 1 11 L	MIA		
APPROVED:	DEPARTME	NT OF PUBL	IC WORKS								
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APPROVED:	HOWARD C	OUNIT DEPA	ARIMENI OF	PLANNING .	AND ZONING						
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CHIEF, DEV	ELOPMENT	ENGINEERING	DIVISION A	SP D	ATE	,					
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_Ket	لمهاج	AND DEVELOR		MP D	ATE	-31-14					

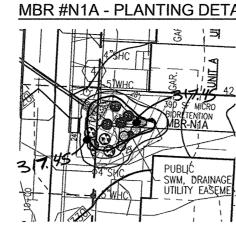


ZONED: R-SO PARCELS: 363 & 542 HOWARD COUNTY, MARYLAND



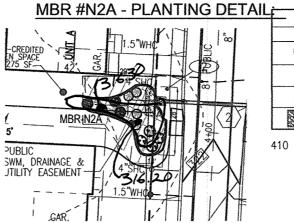
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
(C)	4	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
⊗	4	ILEX GLABRA INKBERRY	3 GALLON	CONT
@	4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT

295 SF X 75% X .0229 STEMS PER SQUARE FOOT = 6 PLANTS REQIUIRED

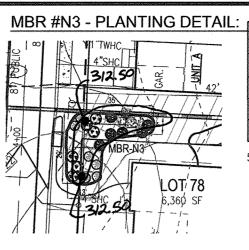


AIL: _[MICRO-BIORETENTION #N1A PLANTING SCHE	DULE	
ſ		QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
- [(3)	4	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
Ī	(3)	4	ILEX GLABRA INKBERRY	3 GALLON	CONT
	8	4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
I		50 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

	INKDERKT			
4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT	
50 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.	MBRIN2A
γх.	0229 STEMS PER SQUARE FOOT = 7 PLANTS REQIUIR 7 PROVIDED	RED		PUBLIC SWM, DRAINAGE & JTILITY EASEMENT 4"SHIT



	MICRO-BIORETENTION #N2A PLANTING SCHEDULE								
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS					
(9	4	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT					
⊗	4	ILEX GLABRA INKBERRY	3 GALLON	CONT					
2	4	spicebush Lindera benzoin	3 GALLON	CONT					
3,15	50 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.					
SF X 75	5% X .	0229 STEMS PER SQUARE FOOT = 7 PLANTS REQIUIF 7 PROVIDED	RED						



MICRO-BIORETENTION #N3 PLANTING SCHEDULE						
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS		
0	6	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT		
(€)	6	ILEX GLABRA INKBERRY	3 GALLON	CONT		
3	6	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT		
303	50 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.		

570 SF X 75% X .0229 STEMS PER SQUARE FOOT = 10 PLANIS REQUIRED 10 PROVIDED

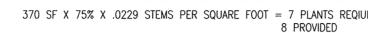
MBR #N4 - PLANTING DETAIL:			
WEICHT LEATHING BETTALE.	-		MICRO-BIORETENT
NEW MARKACE XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		QTY	BOTANICAL NAME/CO
LOT 146	©	12	VIBURNUM TRILOBUM AMERICAN HIGHBUSH
	⊗	12	ILEX GLABRA INKBERRY
	8	12	SPICEBUSH LINDERA BENZOIN
	***	250 SF	LIRIOPE MUSCARI 'MA MAJESTIC LILY TURF
	1300 SF X 7	5% X	.0229 STEMS PER SQ
302.80			

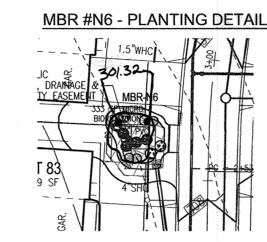
		MICRO-BIORETENTION #N4 PLANTING SCHEI	DULE	
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
(12	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
③	12	ILEX GLABRA INKBERRY	3 GALLON	CONT
8	12	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
200	250 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

8	12	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
***	250 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.
1300 SF X	75% X	.0229 STEMS PER SQUARE FOOT = 23 PLANTS REQU 23 PROVIDED	JIRED	

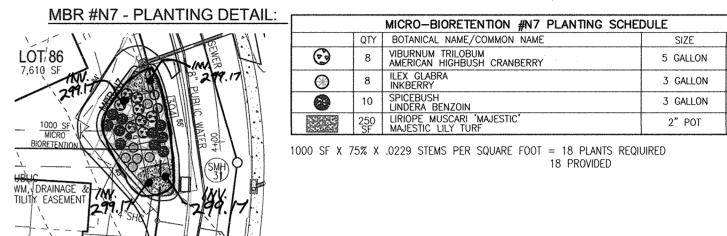


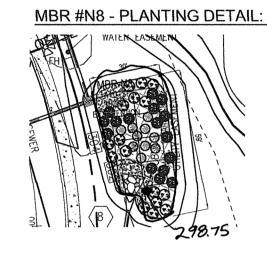
MICRO-BIORETENTION #N5 PLANTING SCHEDULE								
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS				
(2)	4	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT				
⊗	4	ILEX GLABRA INKBERRY	3 GALLON	CONT				
8	4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT				
× 5	100 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.				



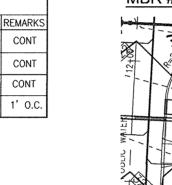


	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
(3)	4	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
(3)	4	ILEX GLABRA INKBERRY	3 GALLON	CONT
8	4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT

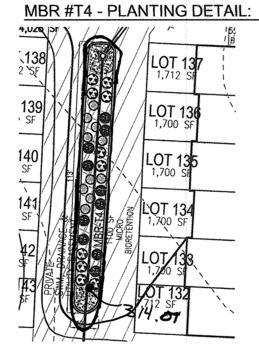




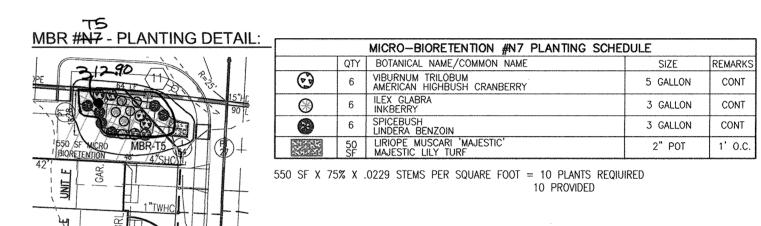
<u>L:</u>			MICRO-BIORETENTION #N8 PLANTING SCHE	DULE	
		QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARK
	©	16	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
	⊗	10	ILEX GLABRA INKBERRY	3 GALLON	CONT
	8	16	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
	1	250 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' 0.C



NG DETAIL:					
NO DETAIL.			MICRO-BIORETENTION #T3 PLANTING SCHEI	DULE	
PUBLIC WATER '		QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	©	2	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
(2)	⊛	2	ILEX GLABRA INKBERRY	3 GALLON	CONT
ENTION	8	4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
NON-CREDITED					
7 7 2.262-SF	210 SF X 75	5% X .	0229 STEMS PER SQUARE FOOT = 4 PLANTS REQIUIR 4 PROVIDED	RED	

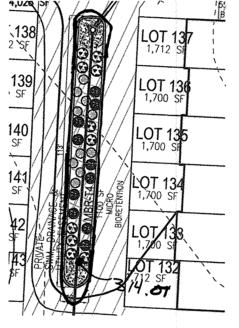


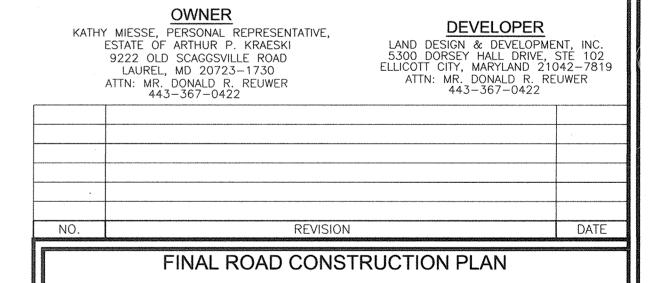
		MICRO-BIORETENTION #T4 PLANTING SCHE	DULE	
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
©	10	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
⊛	10	ilex glabra inkberry	3 GALLON	CONT
8	10	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
7. S.	200 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.



"MICRO-BIORETENTION" PLANTING SCHEDULE NOTES:

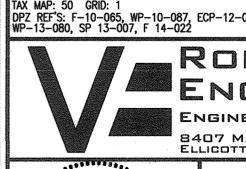
- 1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS
- FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN. MICROBIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF
- 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDV SUMMARY. 6. FILTER AREA SHALL BE 50% COVERED BY PLANTINGS AT FULL GROWTH



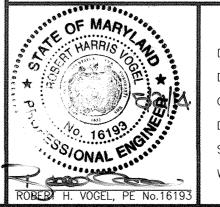


MICRO-BIORETENTION - PLANTING DETAILS





ROBERT H. VOGEL ENGINEERING, INC. ENGINEERS . SURVEYORS . PLANNERS 8407 MAIN STREET TEL: 410.461.7666 ELLICOTT CITY, MD 21043 FAX: 410.461.8961



DESIGN BY:	RHV / EDS	
DRAWN BY:	RVE/EDS	
CHECKED BY:	RHV_	OLGO:
DATE:	MAY 2014	
SCALE:	AS SHOWN	

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: 09-27-2014

