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

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE UNLESS WAIVERS HAVE BEEN APPROVED.
2. THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:

MISS UTILITY	1-800-257-7777
VERIZON TELEPHONE COMPANY:	1-410-954-6281
HOWARD COUNTY BUREAU OF UTILITIES:	410-313-2366
AT&T CABLE LOCATION DIVISION:	1-800-393-3553
B.G.&E. CO. CONTRACTOR SERVICES:	410-850-4620
B.G.&E. CO. UNDERGROUND DAMAGE CONTROL:	410-787-4620
STATE HIGHWAY ADMINISTRATION:	410-531-5533

3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
4. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
5. THE SUBJECT PROPERTY IS ZONED R-SC. PER SECTION 100.0.G.3 OF THE ZONING REGULATIONS, AS THE INITIAL PRELIMINARY EQUIVALENT SKETCH PLAN WAS APPROVED PRIOR TO 10-6-13, THIS PLAN WAS PREPARED IN ACCORDANCE WITH 02/02/04 COMPREHENSIVE ZONING PLAN AND THE COMP. LITE ZONING REGULATIONS EFFECTIVE ON COMPREHENSIVE ZONING PLAN AND THE COMP. LITE ZONING REGULATIONS EFFECTIVE ON 7/28/06. THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/7/2007 PER COUNCIL BILL 75-2003.
6. PROPERTY OUTLINE SHOWN HEREON IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED FEBRUARY 2012.
7. TOPOGRAPHY SHOWN HEREON IS OBTAINED FROM AERIAL PHOTOGRAMETRY COMPILED BY POTOMAC AERIAL SURVEYS INC. JANUARY 12, 2012.
8. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 47H2 AND 47GC WERE USED FOR THIS PROJECT.
9. THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. DEVELOPMENT OR CONSTRUCTION OF THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION, OR BUILDING AND GRADING PERMITS.
10. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES LOCATED ON THIS PROPERTY.
11. THE ARE NO EXISTING HOMES ON THESE PARCELS.
12. OLD SCAGGSVILLE ROAD IS CLASSIFIED AS A MINOR COLLECTOR.
13. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT. REFER TO SECTION ONE CONTRACT 24-4778-D WATER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 1-W. SEWER FOR THIS PROJECT IS TO BE PUBLIC EXTENSIONS OF CONTRACT NO. 30-S AND CONTRACT NO. 30-3253.
14. EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS, TOPOGRAPHIC SURVEY, PUBLIC WATER AND AND SEWER EXTENSION PLANS, AND AS-BUILT DRAWINGS. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE.
15. ANY DAMAGE INCURRED TO THE EXISTING UTILITIES, DUE TO CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
16. ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
17. THE PROPOSED UNITS SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
18. SOIL TYPES SHOWN HEREON ARE IN ACCORDANCE WITH THE WEB SOIL SURVEY - HOWARD COUNTY, MARYLAND.
19. THE OFFICIAL PRE-SUBMISSION COMMUNITY MEETING WAS HELD FOR THIS PROJECT ON FEBRUARY 28, 2012 AT SAINT VINCENT PALOTTI HIGH SCHOOL. ON APRIL 12, 2012 A SECOND, NON-OFFICIAL, MEETING WAS HELD AT THE LAUREL COMMUNITY CENTER.
20. NO FLOODPLAINS EXIST ONSITE.
21. STEEP SLOPES ARE LOCATED AND SHOWN HEREON.
22. WETLANDS AND STREAMS SHOWN HEREON ARE BASED ON DELINEATION BY MCCARTHY & ASSOCIATES, INC., DECEMBER 2011. THE REPORT WAS AMENDED OCTOBER 2012.
23. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN.
   - THE PROPOSED SUBDIVISION (SECTION ONE) AND RELATED CONSTRUCTION WILL NOT IMPACT ENVIRONMENTAL FEATURES OR BUFFERS.
24. A FOREST STAND DELINEATION PLAN WAS PREPARED BY MCCARTHY & ASSOCIATES, INC., APRIL 2012 AND AMENDED OCTOBER 2012.
25. A TRAFFIC STUDY FOR THIS PROJECT PREPARED BY THE TRAFFIC GROUP, INC., DATED AUGUST 2012, WAS APPROVED 3/2013.
26. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT. NOISE WALL MITIGATION CURRENTLY EXISTS ALONG INTERSTAE 95.
27. A GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY HILLIS CARNES ENGINEERING ASSOCIATES, INC., DATED AUGUST 2012.
28. AN ENVIRONMENTAL CONCEPT PLAN (ECP12-047) WAS APPROVED ON OCTOBER 1, 2012.
29. A PRELIMINARY EQUIVALENT SKETCH PLAN (SP13-007) WAS APPROVED ON JULY 3, 2013.
30. STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF ALTERNATIVE SURFACES, NON STRUCTURAL PRACTICES & MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. NON STRUCTURAL PRACTICES INCLUDE ROOFTOP DISCONNECTIONS. MICRO-SCALEPRACTICES INCLUDE MICRO-BIORETENTION, BIO SWALES, DRYWELLS, RAIN BARRELS AND RAIN GARDENS. ALTERNATIVE SURFACES INCLUDE PERMEABLE SURFACES. TYPICALLY ALTERNATIVE SURFACE, NON STRUCTURAL AND MICRO-SCALE FACILITIES ONLOT WILL BE PRIVATELY OWNED AND MAINTAINED. MICRO-SCALE FACILITIES MANAGING ROAD RUNOFF SHALL BE DESIGNATED AS PRIVATELY OWNED AND JOINTLY MAINTAINED FACILITIES (H.O.A. AND HOWARD COUNTY); HOWARD COUNTY WILL MAINTAIN OUTLET STRUCTURES AND PIPES WHILE THE H.O.A. SHALL MAINTAIN MULCH, WEEDING, PLANTINGS, PERFORATED UNDERDRAINS, FEEDER PIPES, AND ROUTINE SOIL REPLACEMENT.
31. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY IN THE AMOUNT OF $ 20,490 FOR THE REQUIRED LANDSCAPING WILL BE POSTED AS PART OF THE FINAL PLAN DEVELOPER'S AGREEMENT FOR THE 45 REQUIRED SHADE ($13,500), 41 EVERGREEN TREES ($6,150), 8 TRASH PAD SCREENING SHRUBS ($240) 2 PARKING ISLAND SHADE TREES ($600). PER NOTE 48, THE REQUIRED REPLACEMENT TREES FOR THE REMOVAL OF THE SPECIMEN TREES WERE PROVIDED WITH F14-022.
32. 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 IN THE AMOUNT OF $ 26,700 SHALL BE PROVIDED FOR THE 89 REQUIRED STREET TREES AS PART OF THE FINAL PLAN DEVELOPER'S AGREEMENT
33. A FOREST CONSERVATION PLAN PREPARED BY ROBERT H. VOGEL ENGINEERING, INC. WAS SUBMITTED AND APPROVED UNDER F 14-022.
34. - FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED UNDER F14-022 TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY FOREST CONSERVATION MANUAL FOR BOTH SECTIONS OF DEER SPRINGS (F14-022 AND F14-023). NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
35. IN ACCORDANCE WITH SECTION 16.121(A)(2) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS THE OPEN SPACE REQUIREMENTS FOR THIS RSC PROJECT IS 25% OF GROSS AREA (36.9420 AC. GROSS AREA X 25% = 9.24 AC.). REFER TO TABULATION HEREON. OPEN SPACE LOTS 144 - 147 TO BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
36. RECREATIONAL OPEN SPACE REQUIREMENTS FOR THIS PROJECT WERE MET UNDER F14-022. REFER TO TABULATION HEREON.
37. - IN ACCORDANCE WITH DESIGN MANUAL-VOLUME 3, CHAPTER 2 - SECTION 2.9.B. PARKING IS REQUIRED AT TWO (2) SPACES PER UNIT OFF STREET PARKING TO INCLUDE GARAGE SPACE, DRIVEWAY, PARKING PAD AND COURTS. GARAGES COUNT AS A FULL SPACE.
38. ALL DRIVEWAY ENTRANCES SHALL UTILIZE HOWARD COUNTY STANDARD DETAIL NO. R-6.06.
39. LOTS 88 - 90 AND 93 & 94 WILL UTILIZE USE-IN-COMMON DRIVEWAYS. THE USE-IN-COMMON MAINTENANCE AGREEMENT WILL BE RECORDED SIMULTANEOUSLY WITH THE FINAL PLAT.
40. DRIVEWAY(S) SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS
    a) WIDTH- 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE).
    b) SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CLIP COATING.
    c) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% CHANGE AND MINIMUM OF 45-FOOT DEPTH TURNING RADIUS.
    d) STRUCTURES (CULVERT/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING).
    e) DRAINAGE ELEMENTS-CAPABLE OF SAFELY PASSING 100-YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
    f) STRUCTURE CLEARANCES-MINIMUM 12 FEET.
    g) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
41. FOR FLAG OR PIPE STEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE TO BE PROVIDED AT THE JUNCTION OF FLAG OR PIPE STEM AND THE ROAD R/W AND NOT ONTO THE FLAG OR PIPE STEM DRIVEWAY. TRASH AND RECYCLING COLLECTION WILL BE WITHIN 5' OF THE EDGE OF THE COUNTY ROADWAY.
42. THE REQUIRED TRASH PAD FOR THE USE-IN-COMMON DRIVEWAYS SERVING LOTS 88-90 AND 93-94 SHALL BE LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY AS SHOWN HEREON. THE TRASH PAD AND ASSOCIATED LANDSCAPING ARE TO BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION.
43. A PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY FOR THE USE-IN-COMMON DRIVEWAYS ALONG PEACE SPRINGS RIDGE SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY - BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.
44. TRAFFIC CONTROL DEVICES:
    A. THE R1-1(STOP) SIGNS AND STREET NAME SIGN (SNS) ASSEMBLIES FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETE.
    B. THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
    C. ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE 'MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES' (MDMUTCD).
    D. ALL SIGN POST USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, ("QUICK PUNCH") SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE - 3' LONG). THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON THE TOP OF EACH POST.
45. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
46. THIS PROJECT IS SUBJECT TO A DESIGN MANUAL WAIVER. ON DECEMBER 4, 2013, THE CHIEF OF THE DEVELOPMENT ENGINEERING DIVISION APPROVED THE REQUEST TO WAIVE THE REQUIREMENTS OF SECTION 2.5 AND APPENDIX A OF DESIGN MANUAL VOLUME III; WHICH REQUIRES AN 85TH PERCENTILE SPEED STUDY AND PUBLIC ROADWAY SECTION DESIGN. THE DIVISION APPROVED THE REQUEST 1. BASED ON CONDITIONS MADE IN THE 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 BEEN REDUCED WITHIN RESIDENTIAL AREA PROVIDING SPEED CONTROL WITHIN THIS PORTION OF THE SUBDIVISION. IT IS NOTED THAT ALL RADII WITHIN THE SUBDIVISION MEETS THE HOWARD COUNTY FIRE DEPARTMENT REQUIREMENTS. THE REQUESTED WAIVER TO DESIGN MANUAL VOLUME 4, DETAIL R1.02 HAS BEEN DEFERRED UNTIL THE SUBMISSION OF THIS FINAL PLAN.
47. THE DEVELOPER WILL OBTAIN ALL NECESSARY STATE PERMITS FOR THE PROPOSED ENVIRONMENTAL IMPACTS.
    AI NUMBER: 142850
    MDE TRACKING NUMBER: #201460226
    NONTIDAL WETLAND AND WATERWAYS APPLICATION NUMBER: 14-NT-3048 / 14-NT-3048.

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 7

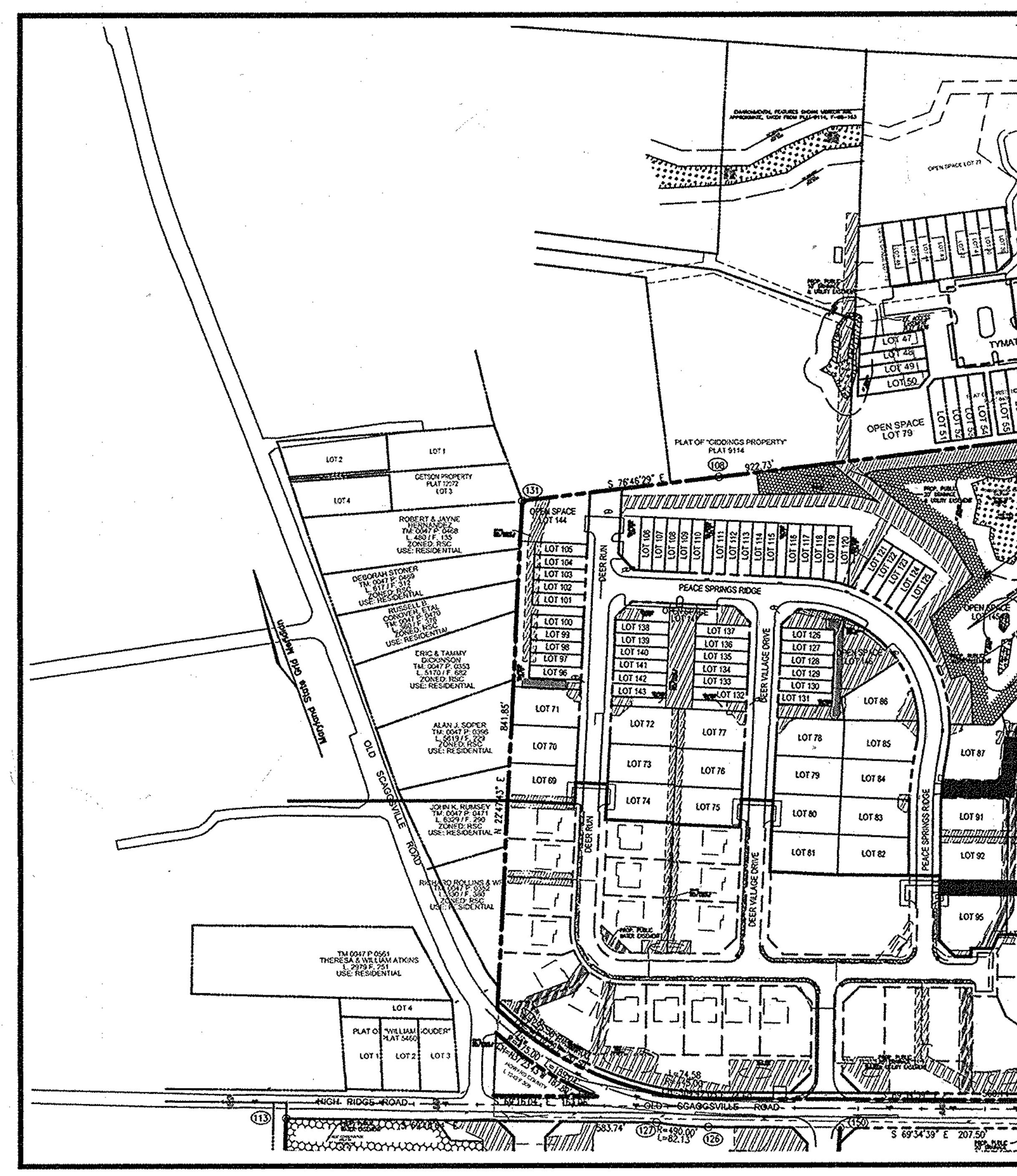
APPROVED: DEPARTMENT OF PUBLIC WORKS

Holger Serrano 6.25.14
CHIEF, BUREAU OF HIGHWAYS HS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad Edmondson 7.1.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION HSP DATE

Kent Sheubrooks 7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE



LOCATION MAP
SCALE: 1"=200'

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 X 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 PROVIDED
OPEN SPACE LOT 61
34,080 SF PROVIDED
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

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

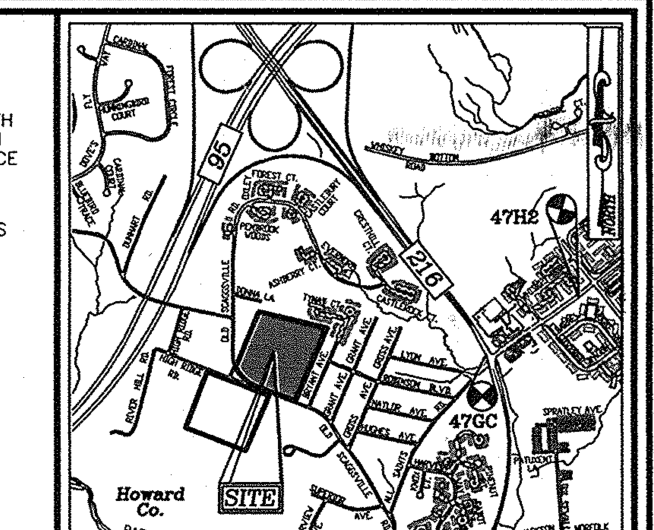
    DENIAL OF THE WAIVE TO SECTION 16.120(B)(6)(V)(C) WAS BASED ON THE FOLLOWING REASONS:
    1. EXTRAORDINARY CIRCUMSTANCES OR DESIGN CONSTRAINTS RESULTING IN SIGNIFICANT HARDSHIP WERE NOT INDICATED IN THE WAIVER JUSTIFICATION.
    2. DESIGN ALTERNATIVES EXIST THAT WOULD PREVENT THE LOT BEING SURROUNDED 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 TO 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.

BENCHMARKS

HOWARD COUNTY BENCHMARK 47H2 (CONC. MON.)
N 529706.4221 E 1355445.3364 ELEV. 256.068
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

HOWARD COUNTY BENCHMARK 47GC (CONC. MON.)
N 528939.7281 E 1354223.5536 ELEV. 226.272
LOCATION: MEDIAN ISLAND 29 FEET WEST OF ALL SAINTS RD / RT 216 INTERSECTION; 1.4 FEET WEST OF SOUTHWEST INLET CORNER



VICINITY MAP
SCALE: 1"=2,000'
ADC MAP COORDINATE: 5169 B1/5169 B2
5169 C1/5169 C2

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SITE DATA

DEED REFERENCE: PARCEL 363: L 619 / F 519
PARCEL 542: L 619 / F 519
ELECTION DISTRICT: 6TH
LOCATION: OLD SCAGGSVILLE ROAD, WEST OF BRYANT AVENUE
EXISTING ZONING: R-SC
GROSS AREA:
SECTION TWO: 12.99 AC.+/-
RESUB OF NON-BUILDABLE BULK PARCEL B
AREA OF 100 YEAR FLOODPLAIN: N/A
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.

BASE DENSITY:
4 LOTS PER NET ACRE (4X36.60): 146 LOTS
NUMBER OF PROPOSED RESIDENTIAL LOTS: 129 LOTS
F14-022 - SECTION 1 54 SFD
F14-023 - SECTION 2 27 SFD / 48 SFA
AREA OF PROPOSED RESIDENTIAL LOTS (SFD): 4.58 AC
AREA OF PROPOSED RESIDENTIAL LOTS (SFA): 1.87 AC
AREA OF PROPOSED RESIDENTIAL LOTS (TOTAL): 6.45 AC
AREA OF ROAD RIGHT OF WAY (ON-SITE): 1.89 AC

OPEN SPACE REQUIRED: 25% OF GROSS AREA = 9.24 AC TOTAL
DEER SPRINGS (F14-022 & F14-023) 36.94 X 25% = 9.24 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: 12.8 AC
EXISTING USE OF SITE: AG
PROPOSED USE OF SITE: SINGLE FAMILY DETACHED 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%
TYP. 20 * 42 = 840 ON MIN LOT SIZE OF 1,700 SF = 49%
TYP. 20 * 32 = 640 ON MIN LOT SIZE OF 1,640 SF = 39%

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 GARAGE = 48 SPACES (FOR 48 UNITS)
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 PLAN SUBMISSION.

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

DEER SPRING - DENSITY TABULATION

FINAL PLAN #	SECTION	GROSS AREA	FLOODPLAIN	STEEP SLOPES	NET AREA	UNITS ALLOWED	UNITS PROP.	OPEN SPACE REQ.	OPEN SPACE PROV.	
F14-022	SEC. 1	36.94 ACRES	0.00 ACRES	0.34 ACRES	36.60 ACRES	146	54 SFD **	9.24 ACRES	9.92 ACRES	
F14-023	SEC. 2	12.99* ACRES	0.00 ACRES	0.00 ACRES	36.60 ACRES		27 SFD 48 SFA	0.00 ACRES	4.65 ACRES	
TOTAL	-	-	0.00 ACRES	0.34 ACRES	36.60 ACRES	146	81 SFD 48 SFA	9.24 ACRES	14.57 ACRES	

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

200' 0 200' 400' 600'

OWNER

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

NO.	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"

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

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

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

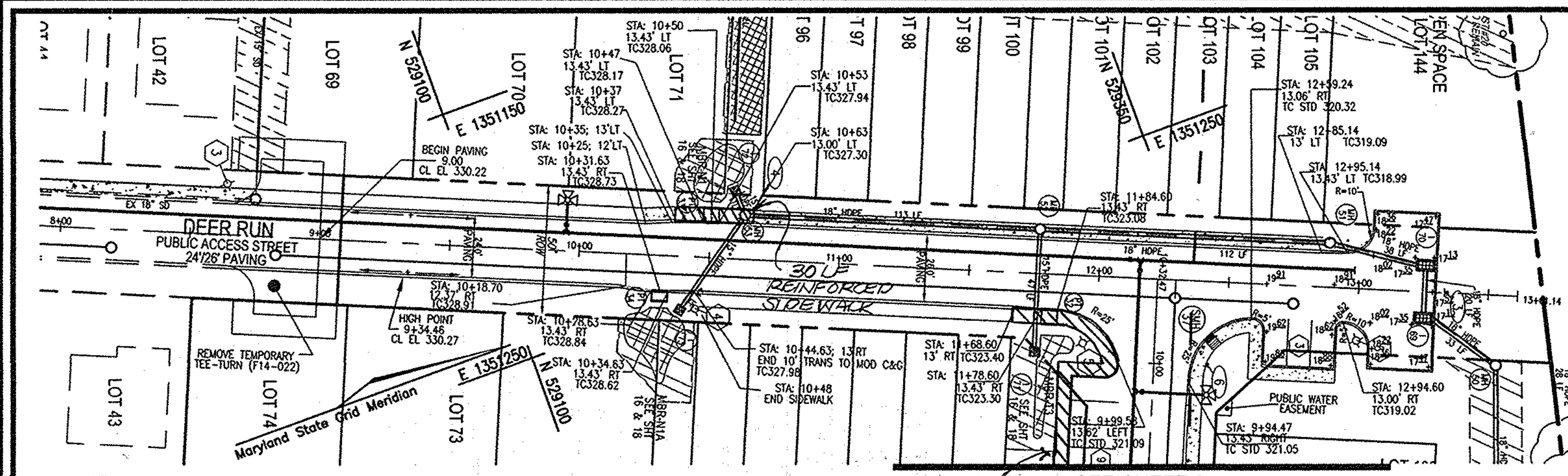
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2014

DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11-28

F-14-023

K:\PROJECTS\11-28\ENGR\DWG\FINAL ROAD P2\01-COVER.DWG

K:\Projects\11-28\ENGR\dwg\FINAL ROAD P2\01 COVER.dwg, 5/19/2014 8:53:02 AM



NOTE:

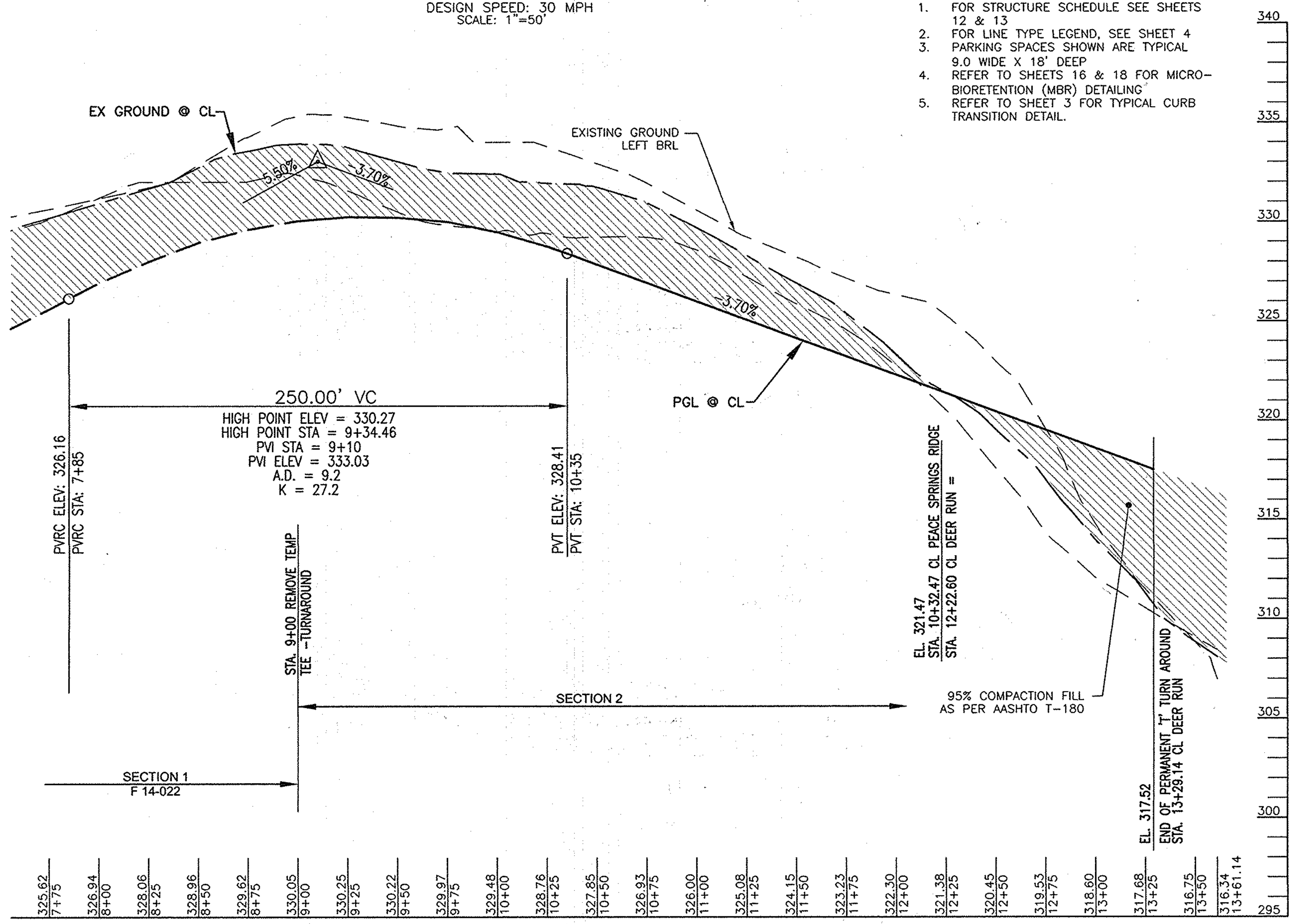
1. REFER TO SHEET 20 FOR SIGN & LIGHT DATA

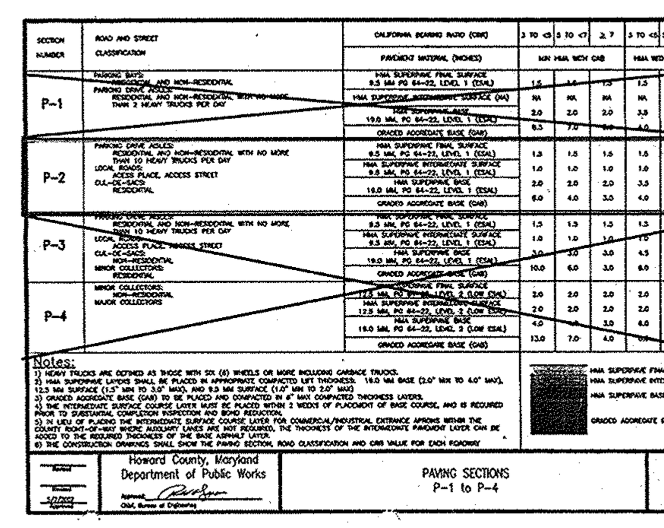
DEER RUN - PLAN VIEW
PUBLIC ACCESS STREET

DESIGN SPEED: 30 MPH
SCALE: 1"=50'

NOTES:

1. FOR STRUCTURE SCHEDULE SEE SHEETS 12 & 13
2. FOR LINE TYPE LEGEND, SEE SHEET 4
3. PARKING SPACES SHOWN ARE TYPICAL 9.0 WIDE X 18' DEEP
4. REFER TO SHEETS 16 & 18 FOR MICRO-BIORETENTION (MBR) DETAILING
5. REFER TO SHEET 3 FOR TYPICAL CURB TRANSITION DETAIL.



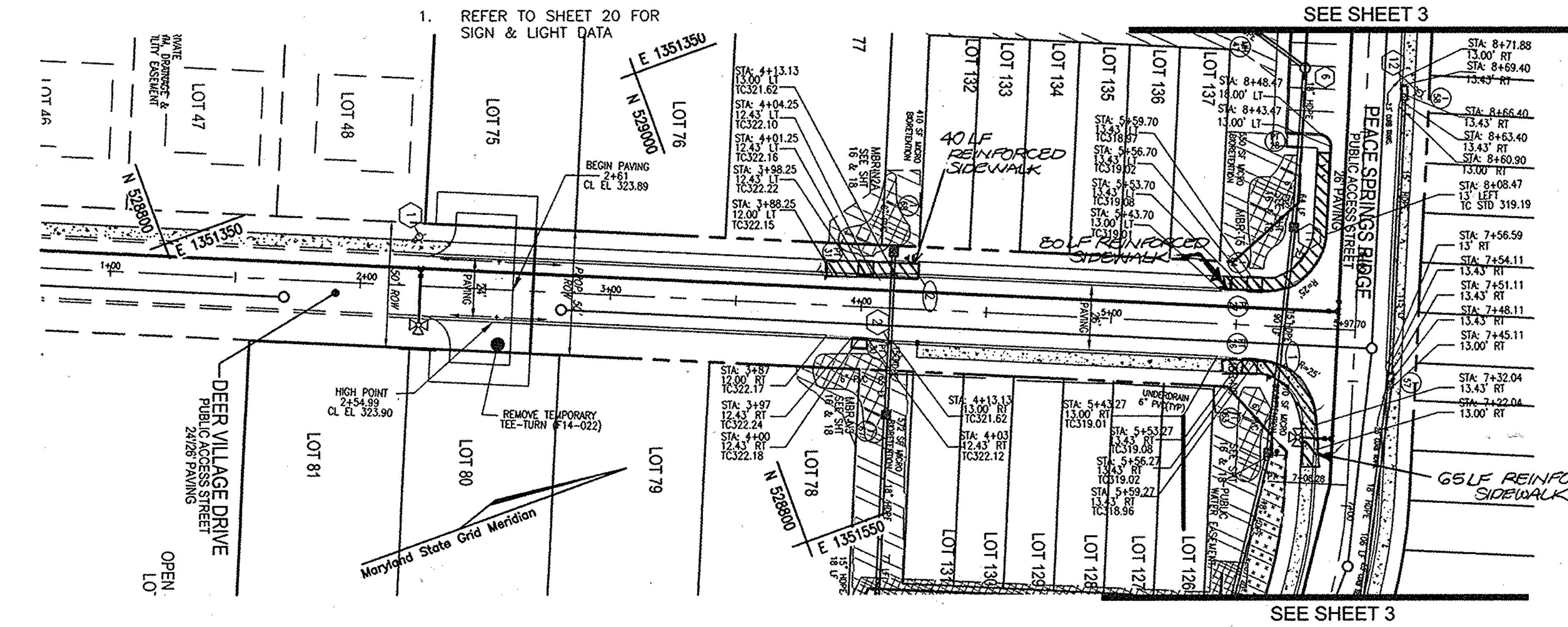


STRUCTURE LOCATIONS		
STR #	DETAIL	LOCATION
M-36	G 5.12	N 529684.93, E 1352116.74
M-36A	G 5.12	N 529595.45, E 1352096.98
M-37	G 5.12	N 529738.95, E 1351872.31
M-38	G 5.12	N 529607.90, E 1351818.06
M-39	G 5.12	N 529384.13, E 1351725.43
M-39A	G 5.12	N 529366.75, E 1351735.66
M-40	G 5.12	N 529291.44, E 1351779.82
M-41	G 5.12	N 529219.95, E 1351686.78
M-42	G 5.12	N 529208.97, E 1351835.39
M-43	G 5.12	N 529151.86, E 1351846.93
M-44	G 5.12	N 529114.25, E 1351762.93
M-45	G 5.12	N 529099.52, E 1351694.30
M-46	G 5.12	N 529146.32, E 1351638.09
M-47	G 5.12	N 529241.67, E 1351424.64
M-48	G 5.12	N 529017.18, E 1351584.23
M-49	G 5.12	N 529109.85, E 1351350.91
M-50	G 5.12	N 529446.95, E 1351379.78
M-51	G 5.12	N 529403.23, E 1351313.60
M-52	G 5.12	N 529300.37, E 1351270.37
M-53	G 5.12	N 529195.80, E 1351226.42
M-54	G 5.12	N 529195.80, E 1351226.42
I-45	D-4.11	N 529202.19, E 1352065.70
I-46	D-4.11	N 529129.22, E 1352038.82
I-47	D-4.11	N 528969.43, E 1351981.67
I-48	D-4.11	N 528847.31, E 1351929.81
I-49	D-4.11	N 528890.84, E 1351814.81
I-50	D-4.11	N 528703.27 E 1351867.82
I-51	D-4.11	N 528745.52, E 1351756.20
I-52	D-4.11	N 529367.04, E 1351768.90
I-53	D-4.11	N 529327.65, E 1351914.55
I-54	D-4.11	N 529277.84, E 1352084.21
I-55	D-4.11	N 529283.47, E 1351769.44
I-56	D-4.01	N 529190.17,E 1351662.08
I-57	D-4.01	N 529240.07, E 1351569.34
I-58	D-4.01	N 529284.84, E 1351463.11
I-59	D-4.11	N 528997.35, E 1351760.05
I-60	D-4.11	N 528998.74, E 1351703.72
I-61	D-4.23	STA: 3+78.83, 12.00' RT
I-62	D-4.11	N 529079.45, E 1351670.38
I-63	D-4.11	STA 5+56.33, 32.82' RT
I-64	D-4.11	STA 5+56.33, 30.03' LT
I-65	D-4.11	N 529227.86, E 1351402.85
I-66	D-4.11	N 528999.01, E 1351582.39
I-67	D-4.11	N 529047.16, E 1351513.05
I-68	D-4.11	N 529075.75, E 1351444.95
I-69	D-4.23	STA 13+25.37, 10.18' RT
I-70	D-4.23	STA 13+25.42, 10.18' LT
I-71	D-4.11	STA 11+76.46, 30.09' RT
I-72	D-4.11	STA 10+58.25, 27.30' LT
I-73	D-4.11	STA 10+37.03, 25.00' RT

STRUCTURE LOCATIONS		
STR #	DETAIL	LOCATION
PT-23	MD 374.68	STA 2+69.45, 12.00' LT
PT-24	MD 374.68	STA 3+78.83, 12.00' LT
PT-25	MD 374.68	STA 5+34.23, 12.00' LT
PT-26	MD 374.68	STA 5+56.70, 13.00' RT
PT-27	MD 374.68	STA 5+56.70, 13.00' LT
PT-28	MD 374.68	STA 8+48.47, 28.00' LT
PT-29	MD 374.68	STA 9+16.72, 31.00' LT
PT-30	MD 374.68	STA 4+00.05, 12.00' RT
PT-31	MD 374.68	STA: 4+01.26, 12.00' LT
PT-32	MD 374.68	STA 11+81.60, 13.00' RT
PT-33	MD 374.68	STA 10+49.83, 13.00' LT
PT-34	MD 374.68	STA 10+31.63, 13.00' RT
ES-15	HDPE	N 529192.04, E 1352116.31
ES-16	HDPE	N 529681.96, E 1352163.61
ES-17	HDPE	N 529424.86,E 1351441.56
ES-18	HDPE	N 528949.14,E 1351760.32

NOTE:

1. REFER TO SHEET 20 FOR SIGN & LIGHT DATA

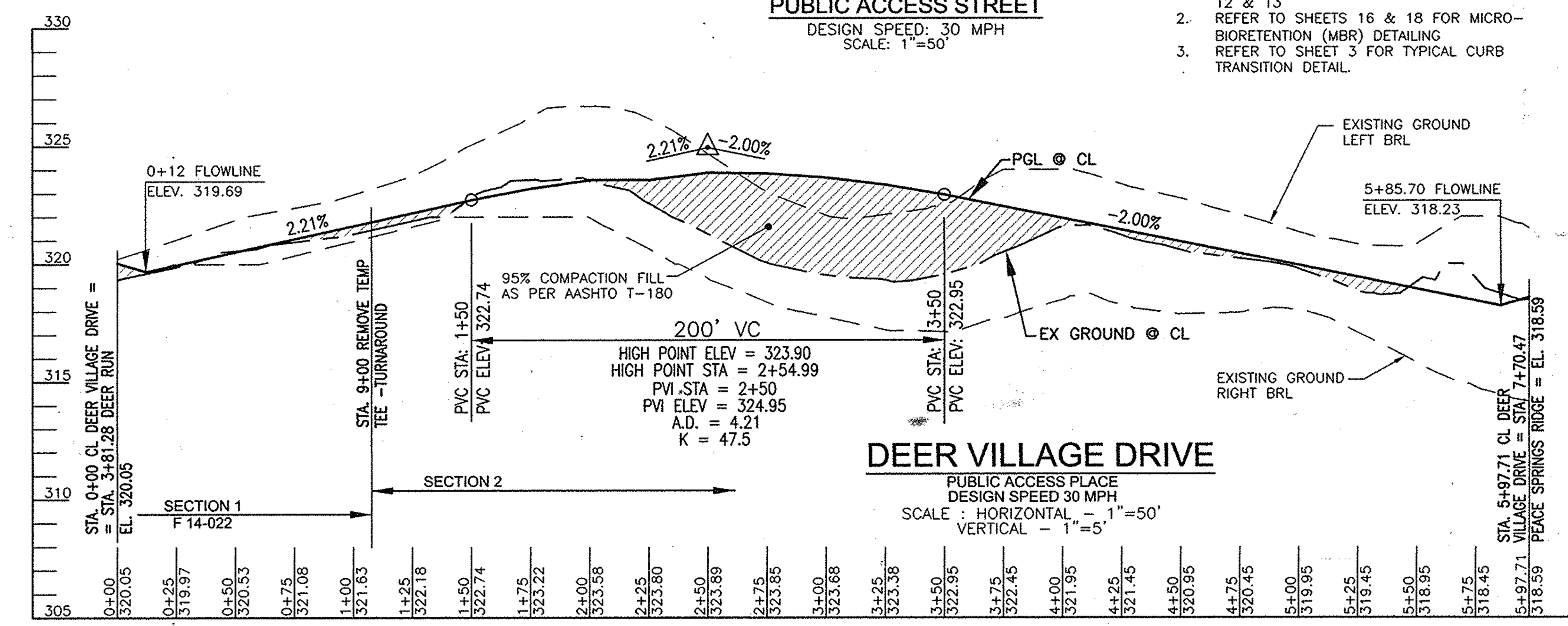


DEER VILLAGE DRIVE - PLAN VIEW
PUBLIC ACCESS STREET

DESIGN SPEED: 30 MPH
SCALE: 1"=50'

NOTES:

1. FOR STRUCTURE SCHEDULE SEE SHEETS 12 & 13
2. REFER TO SHEETS 16 & 18 FOR MICRO-BIORETENTION (MBR) DETAILING
3. REFER TO SHEET 3 FOR TYPICAL CURB TRANSITION DETAIL.



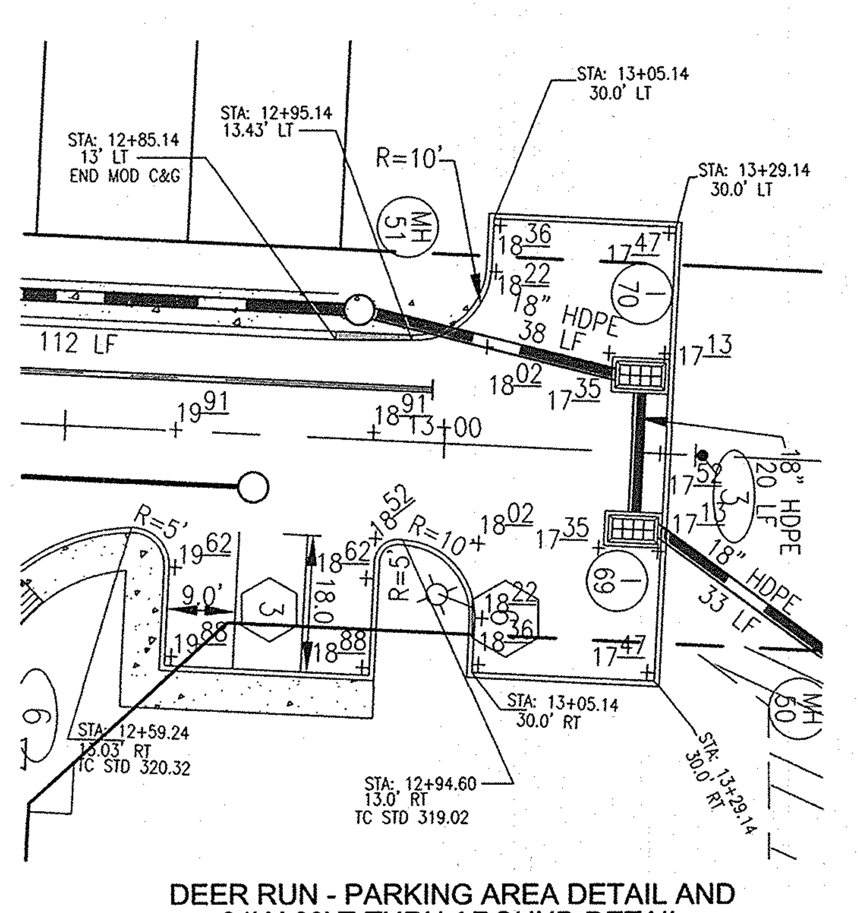
DEER VILLAGE DRIVE

PUBLIC ACCESS PLACE
DESIGN SPEED 30 MPH
SCALE : HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

NOTE: FOR SIDEWALK AREAS ADJACENT TO MICRO-BIORETENTION FACILITIES, SIDEWALK SHALL BE TRAFFIC BEARING, SEE DETAIL HEREON:

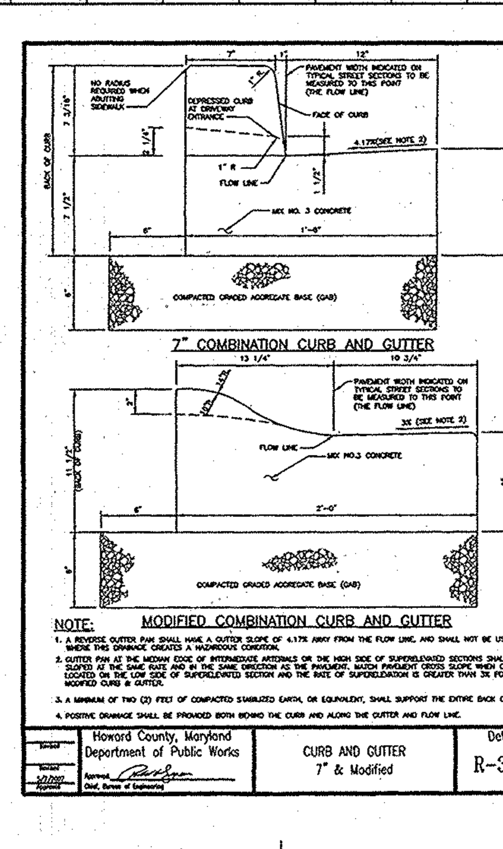
LEGEND:

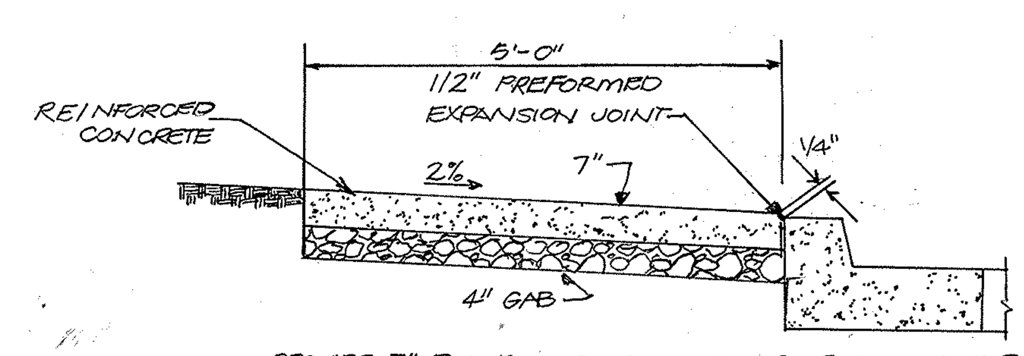
REINFORCED CONCRETE SIDEWALK



DEER RUN - PARKING AREA DETAIL AND
24' X 60' T-TURN AROUND DETAIL

SCALE: 1"=20'

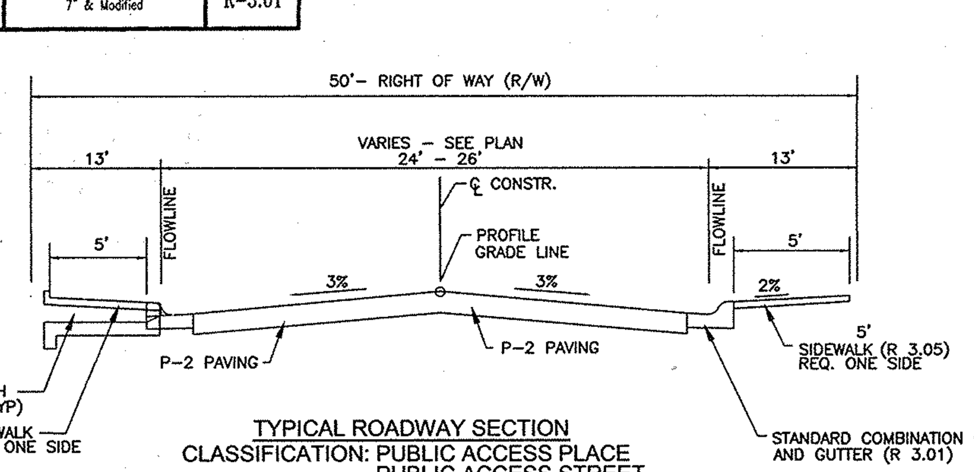




PROVIDE 7" REINFORCED CONCRETE SIDEWALKS NEAR MICRO-BIORETENTION FACILITIES

DETAIL- CONCRETE SIDEWALK

NOT TO SCALE



TYPICAL ROADWAY SECTION
CLASSIFICATION: PUBLIC ACCESS PLACE
PUBLIC ACCESS STREET

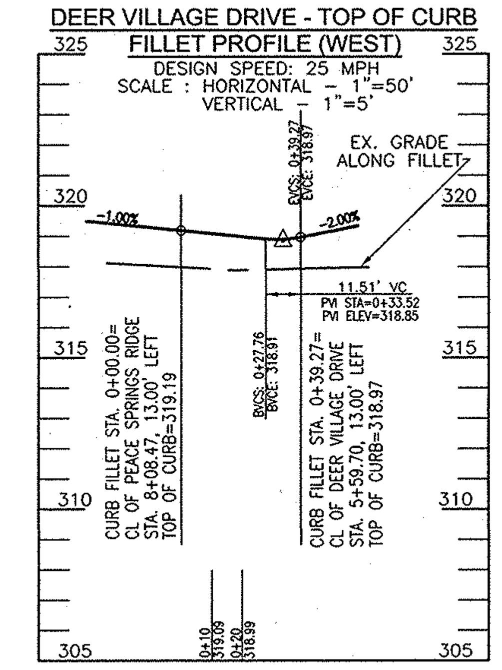
SECTION NOT TO SCALE

* WHERE MODIFIED CURBING IS PROPOSED, IT SHALL TRANSITION TO STANDARD COMBINATION CURB AND GUTTER (R 3.01) AT ALL INLETS.

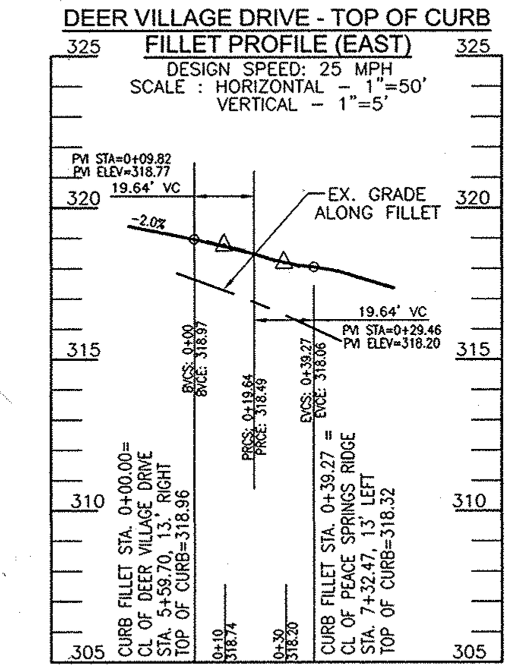
LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING UTILITY POLE
- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED CURB
- PROPOSED STREET LIGHT
- MICRO BIO RETENTION FACILITY
- PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
- PROP. PUBLIC DRAINAGE & UTILITY EASEMENT
- PRIVATE SWM DRAINAGE & UTILITY EASEMENT

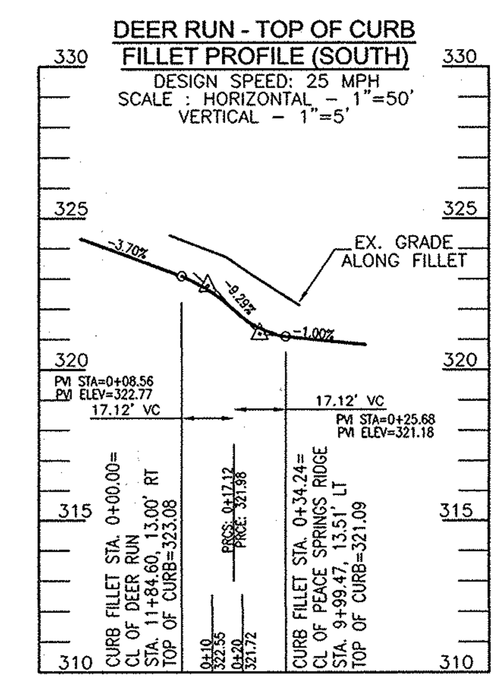
DEER VILLAGE DRIVE - TOP OF CURB FILLET PROFILE (WEST)



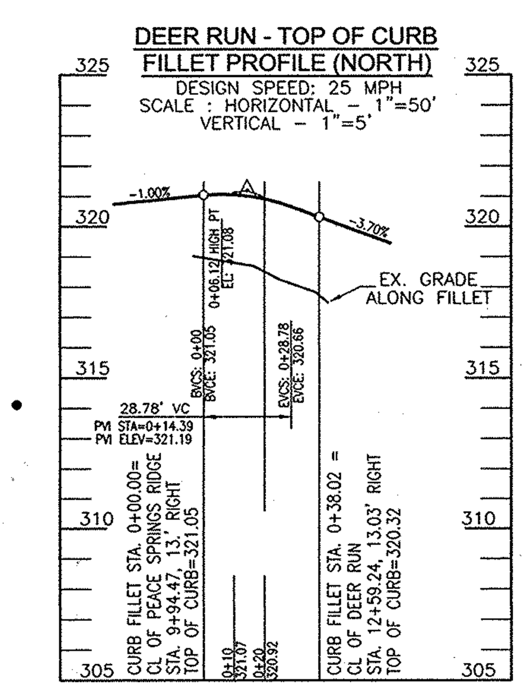
DEER VILLAGE DRIVE - TOP OF CURB FILLET PROFILE (EAST)



DEER RUN - TOP OF CURB FILLET PROFILE (SOUTH)



DEER RUN - TOP OF CURB FILLET PROFILE (NORTH)



50' 0 50' 100' 150'

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

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
ROAD PROFILE & PLAN DETAILS
DEER RUN
DEER VILLAGE DRIVE
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

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

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

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11-28

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

APPROVED: DEPARTMENT OF PUBLIC WORKS

6.25.14	
CHIEF, BUREAU OF HIGHWAYS	DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

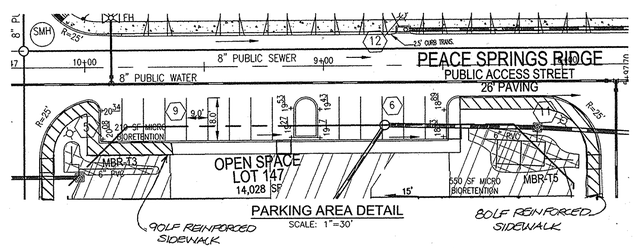
7.1.14	
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
7-31-14	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE

F-14-023

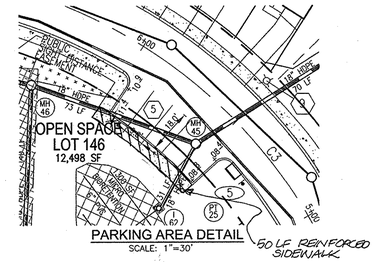
K:\PROJECTS\11-28\ENGR\DWG\FINAL ROAD P2\02-DEER RUN-PP.DWG

K:\Projects\11-28\ENGR\dwg\FINAL ROAD P2\02 DEER RUN DEER VIL PP.dwg, 5/19/2014 8:54:37 AM

CURVE TABLE						
CURVE	LENGTH	RADIUS	TANGENT	DELTA	CHORD BEARING	CHORD LENGTH
2+53.78 3+46.88	93.09	500.00	46.68	10°40'04"	N26°03'58"E	92.96
3+46.88 7+08.28	361.40	210.00	244.17	98°36'17"	N17°54'08"W	318.43



PARKING AREA DETAIL
SCALE: 1"=30'



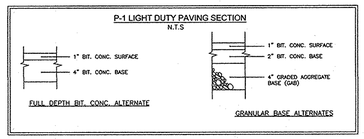
PARKING AREA DETAIL
SCALE: 1"=30'

NOTE: FOR SIDEWALK AREAS ADJACENT TO MICRO-BIORENTION FACILITIES, SIDEWALK SHALL BE TRAFFIC BEARING.

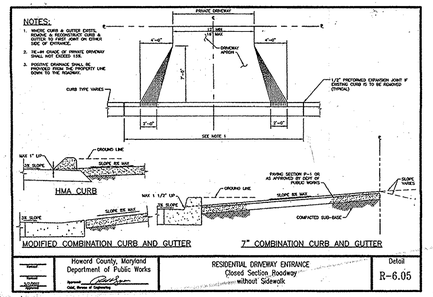
REINFORCED SIDEWALK
DETAIL SHEET 2

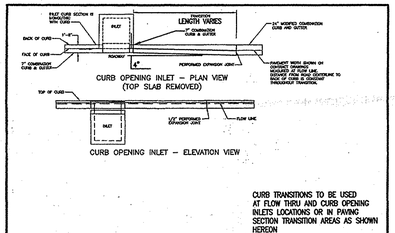
LEGEND:

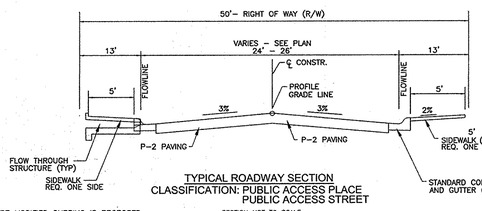
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING UTILITY POLE
- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED CURB
- PROPOSED STREET LIGHT
- MICRO BIO RETENTION FACILITY
- PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
- PROP. PUBLIC DRAINAGE & UTILITY EASEMENT
- PRIVATE SWM DRAINAGE & UTILITY EASEMENT



UIC – DRIVEWAY PAVING SECTION

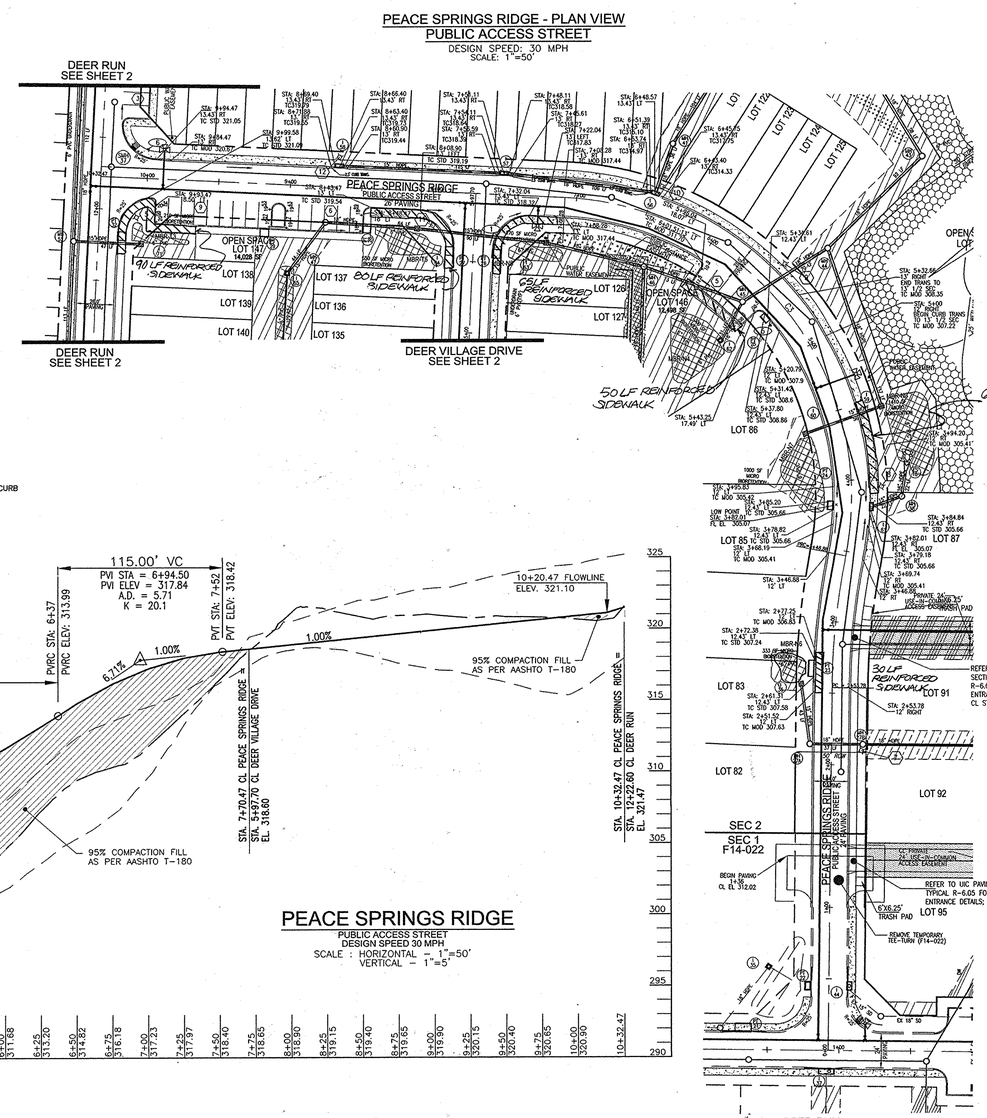


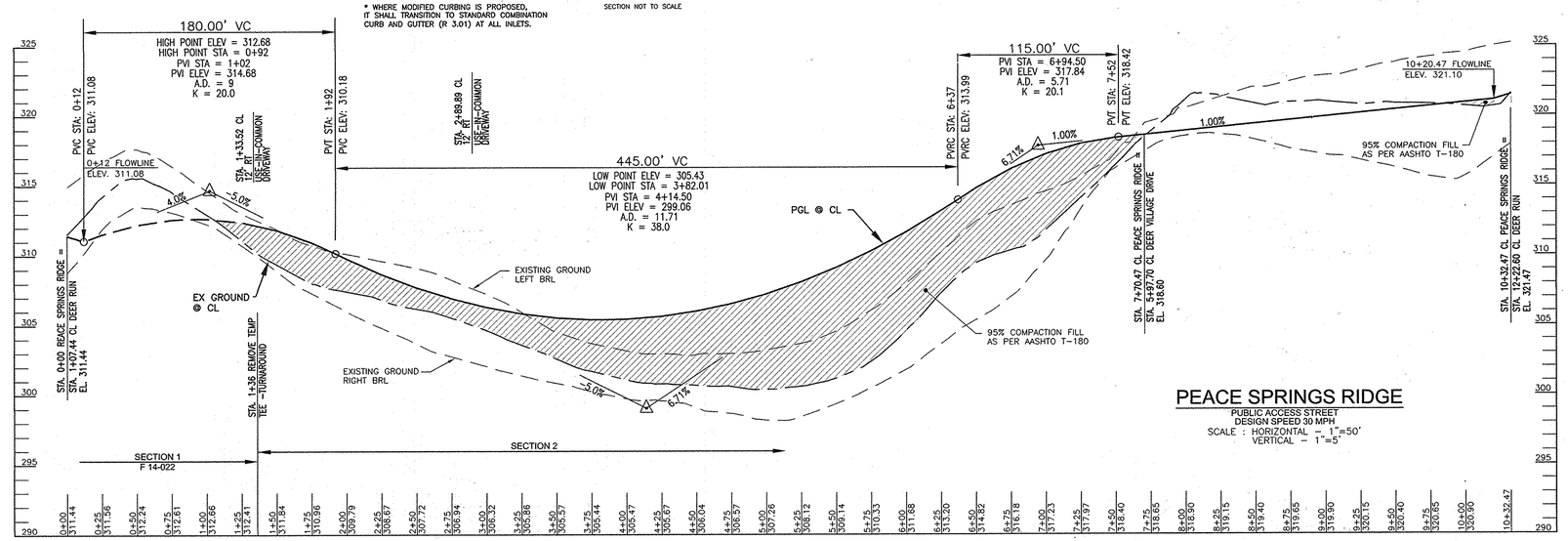




TYPICAL ROADWAY SECTION
CLASSIFICATION: PUBLIC ACCESS PLACE
PUBLIC ACCESS STREET
SECTION NOT TO SCALE

* WHERE MODIFIED CURBING IS PROPOSED, IT SHALL TRANSITION TO STANDARD COMBINATION CURB AND GUTTER (R 3.01) AT ALL INLETS.





PEACE SPRINGS RIDGE

PUBLIC ACCESS STREET
DESIGN SPEED 30 MPH
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

STRUCTURE LOCATIONS		
STR #	DETAIL	LOCATION
PT-23	MD 374.68	STA 2+69.45, 12.00' LT
PT-24	MD 374.68	STA 3+78.83, 12.00' LT
PT-25	MD 374.68	STA 5+34.23, 12.00' LT
PT-26	MD 374.68	STA 5+56.70, 13.00' RT
PT-27	MD 374.68	STA 5+56.70, 13.00' LT
PT-28	MD 374.68	STA 9+48.47, 28.00' LT
PT-29	MD 374.68	STA 9+16.72, 31.00' LT
PT-30	MD 374.68	STA 4+00.05, 12.00' RT
PT-31	MD 374.68	STA: 4+01.26, 12.00' LT
PT-32	MD 374.68	STA 11+81.60, 13.00' RT
PT-33	MD 374.68	STA 10+49.83, 13.00' LT
PT-34	MD 374.68	STA 10+31.63, 13.00' RT
ES-15	HDPE	N 529192.04, E 1352116.31
ES-16	HDPE	N 529681.96, E 1352163.61
ES-17	HDPE	N 529424.86,E 1351441.56
ES-18	HDPE	N 528949.14,E 1351760.32

STRUCTURE LOCATIONS		
STR #	DETAIL	LOCATION
M-36	G 5.12	N 529684.80, E 1352116.74
M-36A	G 5.12	N 529595.45, E 1352096.98
M-37	G 5.12	N 529738.95, E 1351872.31
M-38	G 5.12	N 529607.90, E 1351818.06
M-39	G 5.12	N 529384.13, E 1351725.43
M-39A	G 5.12	N 529366.75, E 1351735.66
M-40	G 5.12	N 529291.44, E 1351779.82
M-41	G 5.12	N 529219.95, E 1351686.78
M-42	G 5.12	N 529208.97, E 1351835.39
M-43	G 5.12	N 529151.86, E 1351846.93
M-44	G 5.12	N 529114.25, E 1351762.93
M-45	G 5.12	N 529099.52, E 1351694.30
M-46	G 5.12	N 529146.32, E 1351638.09
M-47	G 5.12	N 529241.67, E 1351424.64
M-48	G 5.12	N 529017.18, E 1351584.23
M-49	G 5.12	N 529109.85, E 1351350.91
M-50	G 5.12	N 529446.65, E 1351379.78
M-51	G 5.12	N 529403.23, E 1351313.00
M-52	G 5.12	N 529360.37, E 1351270.37
M-53	G 5.12	N 529195.80, E 1351226.42
M-54	G 5.12	N 529185.80, E 1351226.42
I-45	D-4.11	N 529202.19, E 1352065.70
I-46	D-4.11	N 529129.22, E 1352035.82
I-47	D-4.11	N 528969.43, E 1351991.67
I-48	D-4.11	N 528847.31, E 1351929.81
I-49	D-4.11	N 528690.84, E 1351814.81
I-50	D-4.11	N 528703.27 E 1351867.82
I-51	D-4.11	N 528745.52, E 1351756.20
I-52	D-4.11	N 529367.04, E 1351766.90
I-53	D-4.11	N 529327.65, E 1351914.55
I-54	D-4.11	N 529277.84, E 1352084.21
I-55	D-4.11	N 529283.47, E 1351769.44
I-56	D-4.01	N 529190.17,E 1351662.09
I-57	D-4.01	N 529240.07, E 1351569.34
I-58	D-4.01	N 529284.84, E 1351463.11
I-59	D-4.11	N 528997.35, E 1351760.05
I-60	D-4.11	N 528998.74, E 1351703.72
I-61	D-4.23	STA: 3+76.83, 12.00' RT
I-62	D-4.11	N 529079.45, E 1351670.38
I-63	D-4.11	STA 5+56.33, 32.82' RT
I-64	D-4.11	STA 5+56.33, 30.03' LT
I-65	D-4.11	N 529227.86, E 1351402.85
I-66	D-4.11	N 528999.01, E 1351582.39
I-67	D-4.11	N 529047.16, E 1351513.05
I-68	D-4.11	N 529075.75, E 1351444.95
I-69	D-4.23	STA 13+25.37, 10.18 RT
I-70	D-4.23	STA 13+25.42, 10.18' LT
I-71	D-4.11	STA 11+76.46, 30.09' RT
I-72	D-4.11	STA 10+58.25, 27.30' LT
I-73	D-4.11	STA 10+37.03, 25.00' RT

RANGE OF ADDRESS SIGN USE-IN-COMMON DRIVEWAY

A PRIVATE RANGE OF ADDRESS SIGN SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY – BUREAU OF HIGHWAYS AT THE DEVELOPERS / OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-2430 FOR DETAILS AND COST ESTIMATES.

50' 0 50' 100' 150'

OWNER

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

NO.	REVISION	DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

Holger Serrano 6.25.14
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad Edmondson 7.1.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kent Sheubrooks 7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

NOTES:

1. FOR STRUCTURE SCHEDULE SEE SHEETS 12 & 13
2. FOR LINE TYPE LEGEND, SEE SHEET 2

FINAL ROAD CONSTRUCTION PLAN
ROAD PROFILE & PLAN DETAILS
PEACE SPRINGS RIDGE

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

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

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

STATE OF MARYLAND ROBERT HARRIS VOGEL NO. 16193 PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11-28

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

F-14-023

K:\PROJECTS\11-28\ENGR\DWG\FINAL ROAD P2\03-PEACE SPR RIDGE-PP.DWG

K:\Projects\11-28\ENGR\Dwg\FINAL ROAD P2\03-PEACE SPR RIDGE PP.dwg, 5/15/2014 6:26:20 AM

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

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

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

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

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

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
PHASE 1 - GRADING AND SOIL EROSION, AND SEDIMENT CONTROL PLAN

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

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

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER 6/6/14
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV / EDS
DRAWN BY:	RVE/EDS
CHECKED BY:	RHV
DATE:	MAY 2014
SCALE:	AS SHOWN
W.O. NO.:	11-28

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

SHEET 4 OF 20

NOTE
THE DEVELOPER WILL OBTAIN ALL NECESSARY STATE PERMITS FOR THE PROPOSED ENVIRONMENTAL IMPACTS.
MDE TRACKING NUMBER IS: #201460226 \ NTW 14-NT-3048.
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 7

GRADING PLAN
SCALE: 1"=50'
50' 0 50' 100' 150'

APPROVED: DEPARTMENT OF PUBLIC WORKS
Holga Serrano 6.25.14
CHIEF, BUREAU OF HIGHWAYS DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chad Edmondson 7.1.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Kent Sheubrooks 7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

BY THE DEVELOPER:
"I/WE CERTIFY THAT ALL DEVELOPEMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."
SIGNATURE OF DEVELOPER 6/4/14 DATE

BY THE ENGINEER:
"I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION 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."
SIGNATURE OF ENGINEER 6/6/14 DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
John R. Robertson 6/12/14
HOWARD S.C.D. DATE

NOTES

1. REFER TO SHEET 7 FOR SEQUENCE OF CONSTRUCTION
2. REFER TO SHEET 8 FOR BASIN DETAILS
3. REFER TO SHEETS 7 & 8 FOR STANDARD DETAILS AND STABILIZATION NOTES
4. 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 7

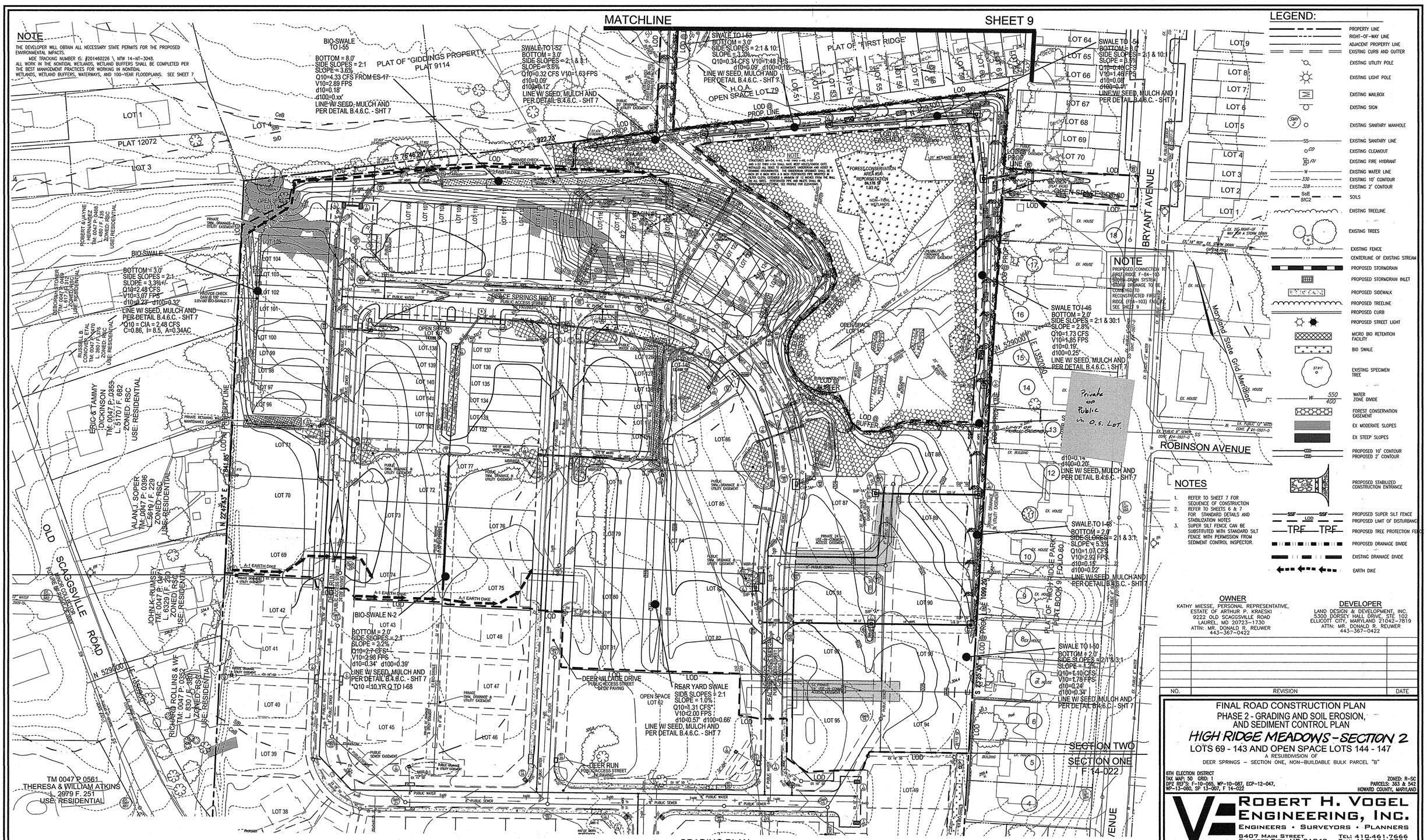
MAPPED SOILS TYPES

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	HYDRIC INCLUSIONS	Kw RANGE*	PRIME FARMLAND	K TO SLOPE GREATER THAN 15 PERCENT	K TO EROSION FACTOR
CeB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	B	NO		0.15 - 0.37		NO	
CrC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	B	NO		0.15 - 0.37		PARTIAL	
CrD	CROOM & EVESBORO, 10 TO 15 PERCENT SLOPES	C	NO		0.28		NO	
Fa	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D	YES		0.02 - 0.24		NO	
SrB	SASSAFRAS GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	B	NO		0.17 - 0.24		NO	
SrD	SASSAFRAS AND CROOM SOILS, 10 TO 15 PERCENT SLOPES	B	NO		0.32 - 0.37		PARTIAL	
UcB	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	D	NO		0.37		NO	

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
K-FACTOR = Kw @ 0-4" DEPTH
* BASED UPON ESTIMATED CUTS

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

F-14-023



NOTE

THE DEVELOPER WILL OBTAIN ALL NECESSARY STATE PERMITS FOR THE PROPOSED ENVIRONMENTAL IMPACTS.
MDE TRACKING NUMBER IS: #201460226 \ NTW 14-NT-3048.
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 7

NOTES

1. REFER TO SHEET 7 FOR SEQUENCE OF CONSTRUCTION
2. REFER TO SHEETS 6 & 7 FOR STANDARD DETAILS AND STABILIZATION NOTES
3. SUPER SILT FENCE CAN BE SUBSTITUTED WITH STANDARD SILT FENCE WITH PERMISSION FROM SEDIMENT CONTROL INSPECTOR.

OWNER

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

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
PHASE 2 - GRADING AND SOIL EROSION, AND SEDIMENT CONTROL PLAN
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-10-066, WP-10-087, ECP-12-047, WP-13-080, SP 13-007, F 14-022
ZONED: R-SC
PARCELS: 363 & 542
HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11-28

STATE OF MARYLAND ROBERT H. VOGEL No. 16193 PROFESSIONAL ENGINEER — 6/6/14
ROBERT H. VOGEL, PE No.16193

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

SHEET 5 OF 20

F-14-023

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 6-25-14
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7-1-14
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7-31-14

BY THE DEVELOPER:
"I/WE CERTIFY THAT ALL DEVELOPEMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."
SIGNATURE OF DEVELOPER — DATE 6/6/14

BY THE ENGINEER:
"I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION 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."
SIGNATURE OF ENGINEER — DATE 6/6/14

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
HOWARD S.C.D. — DATE 6/12/14

GRADING PLAN
SCALE: 1"=50'
50' 0 50' 100' 150'

MAPPED SOILS TYPES

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	HYDRIC INCLUSIONS	Kw RANGE*	PRIME FARMLAND	FOR SLOPE W/ EROSION POTENTIAL
CeB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	B	NO		0.15 - 0.37		NO
CeC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	B	NO		0.15 - 0.37		PARTIAL
CrD	CROOM & EVESBORO, 10 TO 15 PERCENT SLOPES	C	NO		0.28		NO
Fa	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D	YES		0.02 - 0.24		NO
SrB	SASSAFRAS GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	B	NO		0.17 - 0.24		NO
SrD	SASSAFRAS AND CROOM SOILS, 10 TO 15 PERCENT SLOPES	B	NO		0.32 - 0.37		PARTIAL
UcB	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	D	NO		0.37		NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
K-FACTOR = Kw @ 0-4" DEPTH
* BASED UPON ESTIMATED CUTS

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

HOWARD SOIL CONSERVATION DISTRICT
STANDARD SEDIMENT CONTROL NOTES

1. 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).
2. 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.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE 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 PROJECT SITE.
4. 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.
6. 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.
7. SITE ANALYSIS:

TOTAL AREA OF SITE	13.04	ACRES
AREA DISTURBED	12.8	ACRES
AREA TO BE ROOFED OR PAVED	4.2	ACRES
AREA TO BE VEGETATIVELY STABILIZED	8.6	ACRES
TOTAL CUT	34,250	CU. YDS.*
TOTAL FILL	34,250	CU. YDS.*
OFFSITE WASTE/BORROW AREA LOCATION	**	

8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. 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 AGENCY IS MADE.
11. 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.
12. 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 FOR TEMPORARY STABILIZATION

DEFINITION

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

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION 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 ON THE PLAN.
2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
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 MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): ZONE 6b
SEED MIXTURE (FROM TABLE B.1):

NO	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-20-20)	LIME RATE
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:

"I/WE CERTIFY THAT ALL DEVELOPEMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

[signature] 6/4/14
SIGNATURE OF DEVELOPER — DATE

BY THE ENGINEER:

"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."

[signature] 5/21/14
SIGNATURE OF ENGINEER — DATE

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

John R Robertson 6/12/14
HOWARD S.C.D. — DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

Holger Serrano 6.25.14
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad Edmondson 7.1.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

Kent Sheubrooks 7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION

TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE

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.

CRITERIA

A. SEED MIXTURES
I. GENERAL USE
A. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE 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 FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
2. 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 BLUEGRASS 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: 1½ TO 3 POUNDS PER 1000 SQUARE FEET.

NOTES:
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 LINE

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)

D. 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 1¼ INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
E. 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.

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

1. GENERAL SPECIFICATIONS
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 ¼ 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.
E. SOD MUST BE HARVESTED, 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.

2. SOD 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 SUBSEQUENT 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 UNDERLYING SOIL SURFACE.
D. 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 HOURS.

3. SOD MAINTENANCE
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 ADEQUATE MOISTURE CONTENT.
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

HARDINESS ZONE (FROM FIGURE B.3): ZONE 6b
SEED MIXTURE (FROM TABLE B.3): 9

NO	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-20-20) N	P_2O_5	K_2O	LIME RATE
1	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.	45 LB/AC (1 LB PER 1000 SF)	90 LB/AC (2 LB PER 1000 SF)	90 LB/AC (2 LB PER 1000 SF)	2 TONS/AC (90 LB PER 1000 SF)

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

DEFINITION

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

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES

WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA

A. SOIL PREPARATION

1. TEMPORARY STABILIZATION
A. 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 OR OTHER SUITABLE MEANS.
2. PERMANENT STABILIZATION
A. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
I. SOIL PH BETWEEN 6.0 AND 7.0.
II. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
III. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
IV. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
V. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
B. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
C. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.
D. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
E. 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.

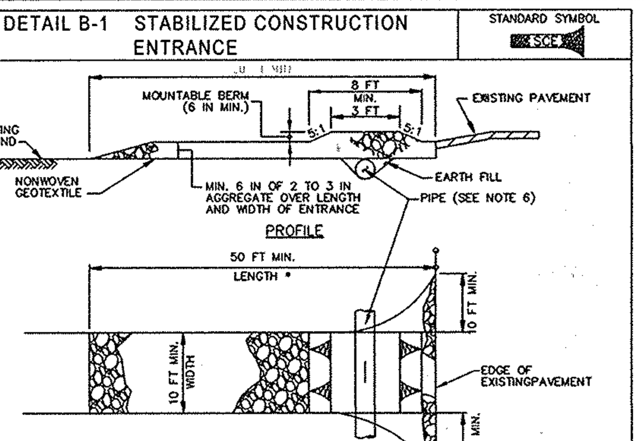
B. TOPSOILING

1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT 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 THE 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-NRCS.
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 FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
C. 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 DESIGN.
5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
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 1½ 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 AS SPECIFIED.
C. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
6. TOPSOIL APPLICATION
A. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
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 ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

1. 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.
2. 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 LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. 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 EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION

THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

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

CRITERIA

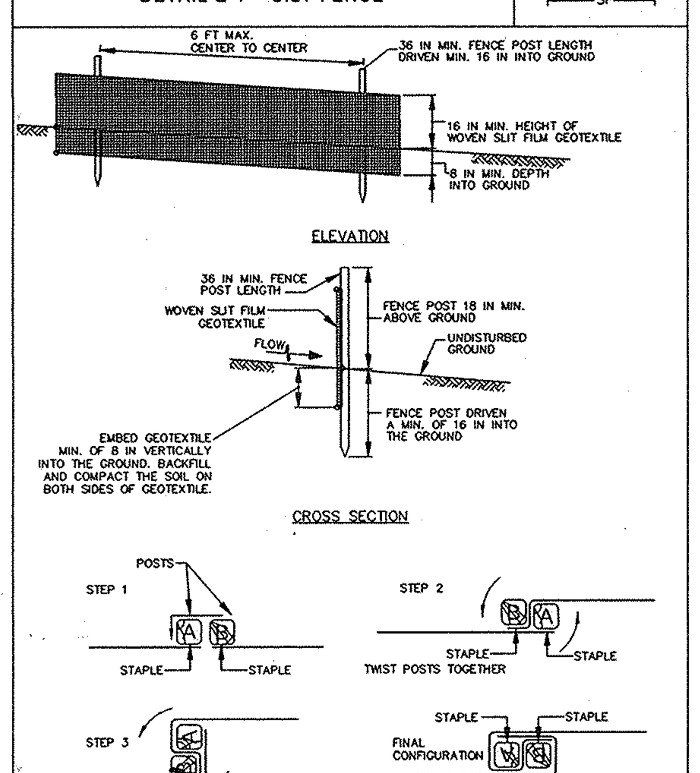
A. SEEDING
1.SPECIFICATIONS
A. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE 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 THAWS.
C. 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 HYDROSEEDING. 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 THE INOCULANT LESS EFFECTIVE.
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 SEEDING: 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 FERTILIZER).
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.

B. MULCHING
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 PHYTO-TOXIC.
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.

2. APPLICATION
A. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
B. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM 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 A 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.
3. ANCHORING
A. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
I. A MULCH ANCHORING TOOL IS A TRACTOR 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, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
II. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
III. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (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 IS STRICTLY PROHIBITED.
IV. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

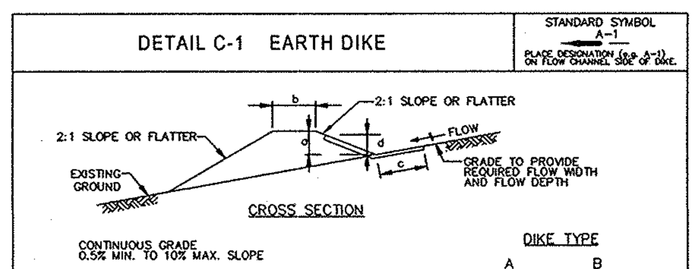


MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL: A-1 (PLACE DESIGNATION (e.g. A-1) ON FLOW CHANNEL SIDE OF DIKE.)



DIKE TYPE	A	B
a - DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b - DIKE WIDTH	24 IN MIN.	36 IN MIN.
c - FLOW WIDTH	4 FT MIN.	6 FT MIN.
d - FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

A-1	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

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. 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.
8. 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

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

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

PURPOSE

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.

CRITERIA

1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
2. 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.
3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
4. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
5. 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.
6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
7. 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.
8. 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.

MAINTENANCE

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± ⅟₁₆ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. 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 MID-SECTION.
4. 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.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. 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.
8. 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.

2 OF 2

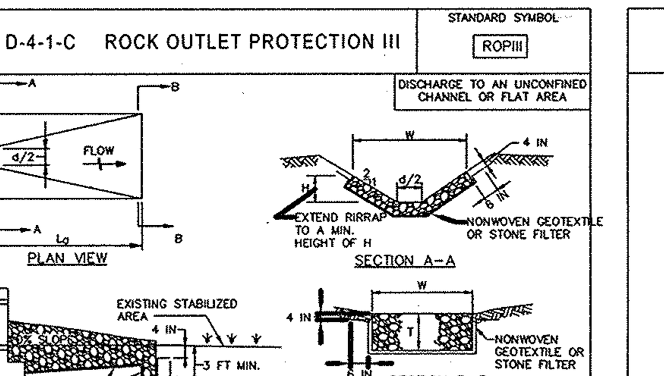
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL D-4-1-C ROCK OUTLET PROTECTION III

STANDARD SYMBOL: ROPIII

DISCHARGE TO AN UNCONFINED CHANNEL OR FLAT AREA



RIPRAP CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

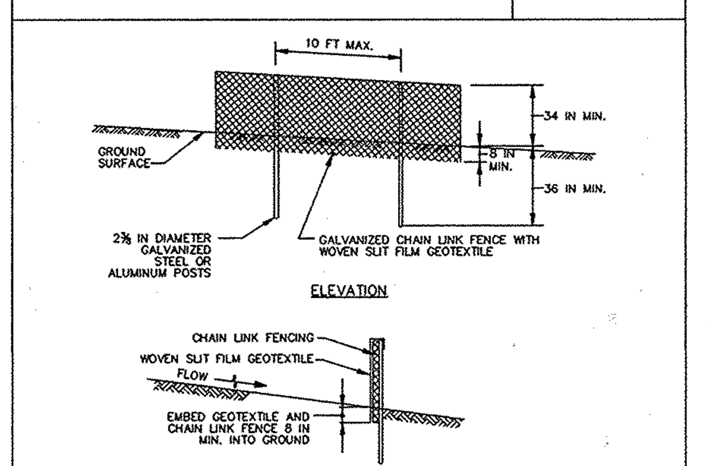
1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 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. MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ 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 INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ 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.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. 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.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. 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.

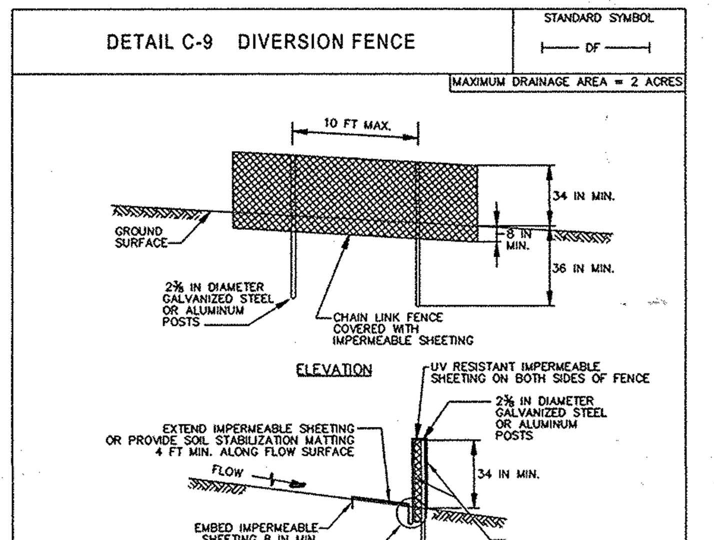
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL: DF

MAXIMUM DRAINAGE AREA = 2 ACRES



CONSTRUCTION SPECIFICATIONS

1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).
2. USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT 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.
4. 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.
5. 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.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. 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

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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

NO.	REVISION	DATE

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

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

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

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

ROBERT H. VOGEL, PE No.16193

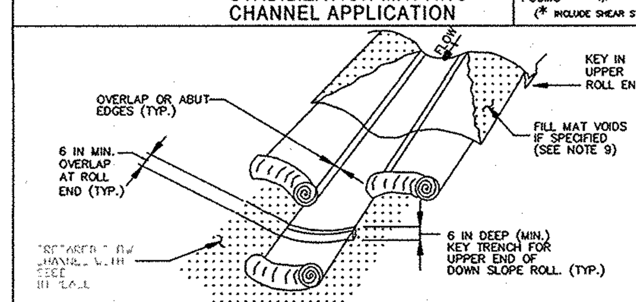
DESIGN BY:	RHV / EDS
DRAWN BY:	RVE/EDS
CHECKED BY:	RHV
DATE:	MAY 2014
SCALE:	AS SHOWN
W.O. NO.:	11-28

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

F-14-023

DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: PSSMC – * lb/ft² (* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. 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 SEED 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 SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. 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 THE BOTTOM.
4. 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.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. 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 NEXT DOWNSTREAM MAT.
7. 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.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. 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.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

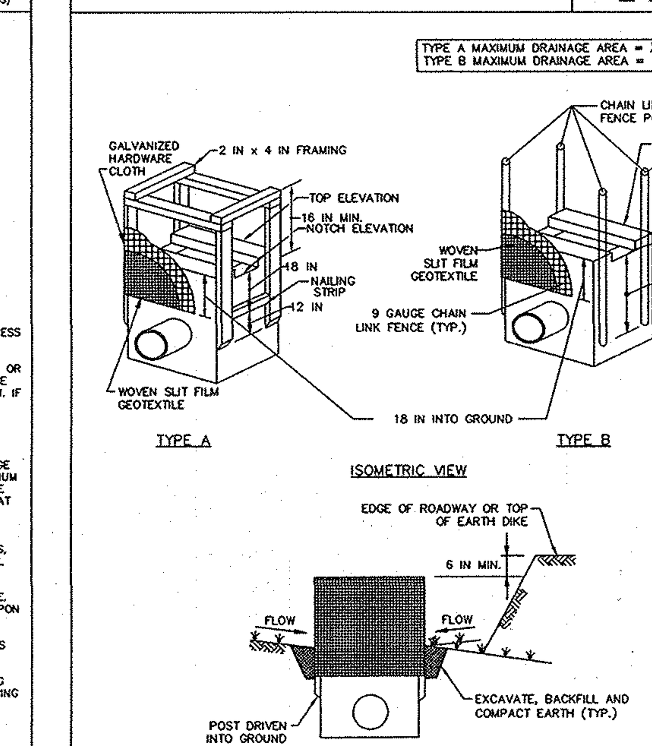
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



SECTION FOR TYPE A AND B

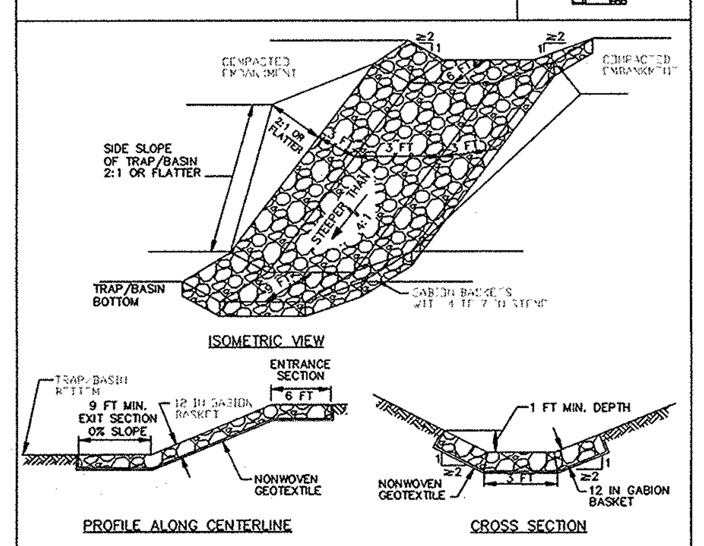
1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL D-3-2 GABION INFLOW PROTECTION

STANDARD SYMBOL: GP



CONSTRUCTION SPECIFICATIONS

1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL GABION BASKETS.
2. USE BASKETS MADE OF MINIMUM 11 GAUGE WIRE.
3. CONSTRUCT GABION INFLOW PROTECTION BY ARRANGING 9 X 3 X 1 FOOT GABION BASKETS TO FORM A TRAPEZOIDAL SECTION WITH A 3 FOOT BOTTOM WIDTH, 1 FOOT MINIMUM DEPTH, 3 FOOT SIDE WALLS, AND 2:1 OR FLATTER SIDE SLOPES. FILL GABION BASKETS WITH 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WEIR MESH.
4. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
5. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
6. BLEND GABIONS INTO EXISTING GROUND.
7. 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

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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

1) NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
2) 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.
3) 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.
7) 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 AREAS.
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.
11) 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.

SEQUENCE OF CONSTRUCTION

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

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

1. AFTER STAKING THE LOD AND CENTER LINE OF EMBANKMENT AND PRIOR TO STARTING CONSTRUCTION ON THIS POND, CONTACT HOWARD COUNTY, MARSHALL DAVIDSON AT 410-313-6159
2. CLEAR AND GRUB FOR THE THE INSTALLATION OF PERIMETER CONTROLS COMMON TO THE RECONSTRUCTION OF THE "FIRST RIDGE POND" (1 DAY)
3. 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
7. REVISE EXISTING STORM DRAIN OUTFALL FROM BRYANT AVENUE STORM DRAIN SYSTEM TO DIRECT FLOW TO "NEW" POND FOREBAY OVER PROPOSED GABION. – 2 DAYS
8. 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

PHASE 1 – ONSITE PHASE 1 WORK

1. CLEAR AND GRUB ONSITE AREA FOR THE INSTALLATION OF PERIMETER CONTROLS (1 DAY)
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE, WHERE SHOWN HEREON. – 1 DAY
3. 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 HEREON.

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.
7. 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.
8. STABILIZE THE DISTURBED AREAS FROM THE AFOREMENTIONED DISTURBANCES WITH TEMPORARY SEEDING MIXTURE AND STRAW MULCH – 1 DAY
9. THE SEDIMENT SHALL BE REMOVED FROM THE SEDIMENT BASIN WHEN THE CLEANOUT 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.

PHASE 2

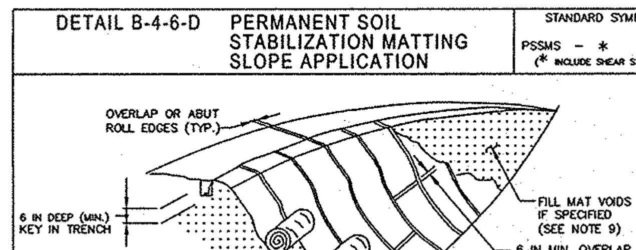
1. CLEAR & GRUB REMAINING SITE WITHIN THE LIMITS OF PHASE 1 DISTURBANCE. – 5 DAYS
2. COMPLETE SITE MASS GRADING AS SHOWN HEREON, BRINGING SITE TO ROAD SUBGRADE ELEVATIONS AND COMPACTED FILLS FOR PROPOSED HOME CONSTRUCTION. 3 WEEKS
   – WITH PEACE SPRINGS RIDGE TO SUBGRADE AND WITH PERMISSION OF SEDIMENT 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 SITE
3. WITH MASS GRADING COMPLETE, STABILIZE THOSE AREAS WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. – 2 DAYS
4. 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
5. INSTALL WATER MAIN & SEWER EXTENSIONS. ALLOW FOR CONTINUED CONVEYANCE OF SEDIMENT LADEN WATER TO THE BASIN. – 1 MONTH
6. 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) .
7. WITH PHASE 2 GRADING COMPLETE, IMMEDIATELY STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. – DAILY
8. INSTALL CURB & GUTTER, BASE COURSE PAVEMENT AND SIDEWALKS – 2 WEEKS
9. INSTALL INLET PROTECTION FOR AREAS DRAINING TO STORMWATER FEATURES. – 2 DAYS
10. 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
11. IMMEDIATELY STABILIZE PERMANENT SEEDING MIXTURE AND STRAW MULCH – 1 DAY
12. 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 WEEK
15. WITH THE COMPLETION OF ITEM 15, CONSTRUCT THE MICRO-BIORETENTION FACILITIES AS SHOWN AND DETAILED HEREON – 1 WEEK
16. 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
18. 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

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

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: PSSMS – * lb/ft² (* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. 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 SEED 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 SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. 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 1½ 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 THE BOTTOM.
4. 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.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. 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.
7. 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.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. 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.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. 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 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ 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 A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. 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.
5. 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.

2 OF 2

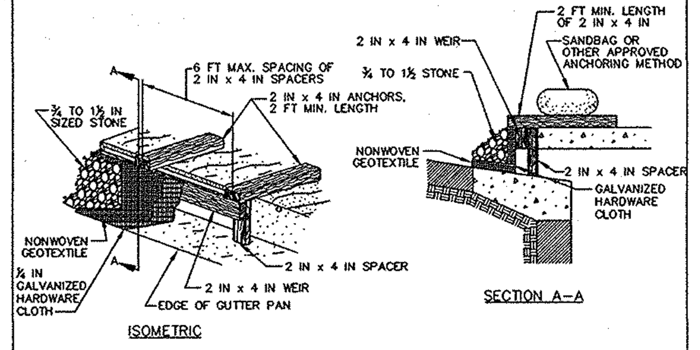
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



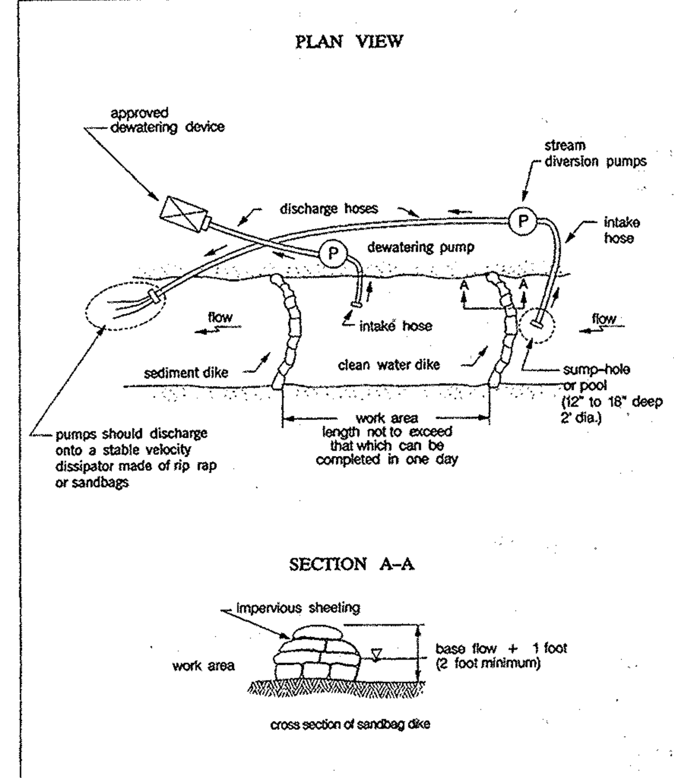
CONSTRUCTION SPECIFICATIONS

1. 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.
6. 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.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. 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 ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
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 GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP-AROUND PRACTICE



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.2 - 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate 1/ lb/ac	Seeding Rate 1/ lb/1000 ft²	Seeding Depth 2/ (inches)	Recommended Seeding Dates by Plant Hardiness Zone 3/ 5b and 6a	6b	7a and 7b
Cool-Season Grasses						
Annual Ryegrass (*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; Aug 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; Aug 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; Aug 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; Aug 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; Aug 15 to Dec 15
Warm-Season Grasses						
Foxtail Millet (*Setaria italica*)	30	0.7	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14
Pearl Millet (*Pennisetum glaucum*)	20	0.5	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14

NOTES:
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 tested. Adjustments are usually not needed for the cool-season grasses.

Seeding 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. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

2/ For sandy soils, plant seeds at twice the depth listed above.
3/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPEMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF DEVELOPER — 6/4/14

BY THE ENGINEER:

"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."

SIGNATURE OF ENGINEER — 6/6/14

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

HOWARD S.C.D. — DATE 6/12/14

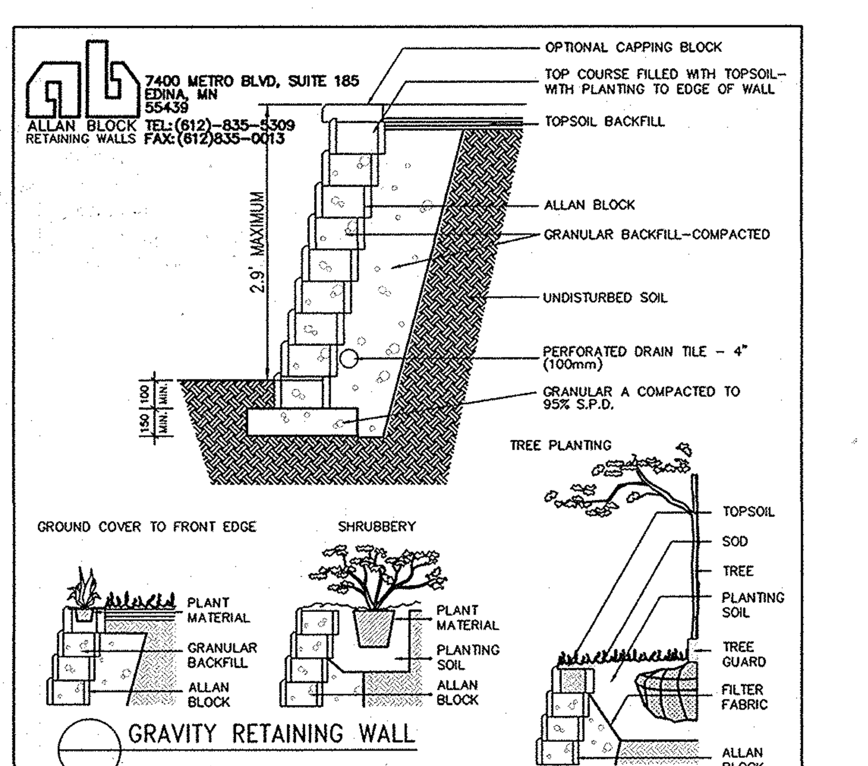
APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6.25.14

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7.1.14

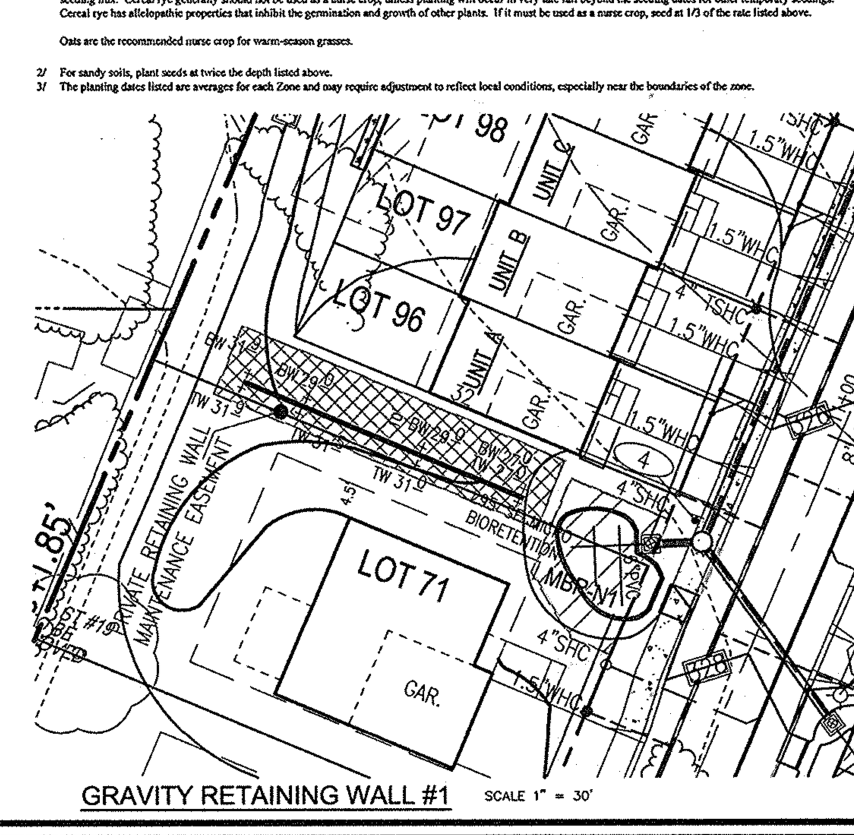
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7-31-14



SPECIFICATIONS:

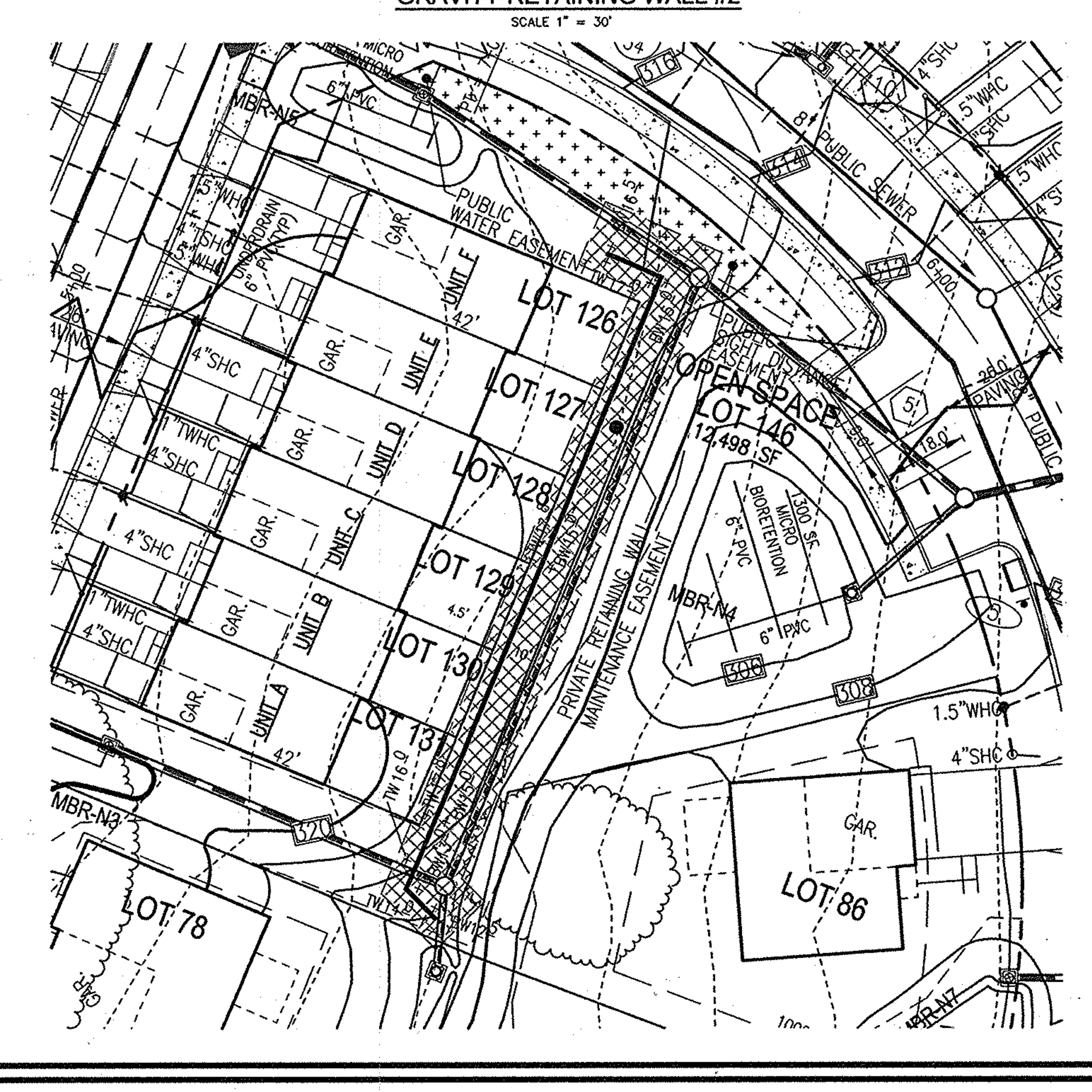
1. EXCAVATE AREA TO LINE AND GRADES AS SHOWN ON CONSTRUCTION DRAWINGS
2. SUBGRADE TO BE FIRM AND UNDISTURBED AND COMPACTED TO 95% S.P.D.
3. BASE MATERIAL SHALL BE GRANULAR A COMPACTED TO 95% S.P.D. AND GRADED TO PROVIDE LEVEL HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS, MIN. THICKNESS – 6" (150mm)
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.
5. INSTALL SUBSEQUENT COURSES IN SIMILAR FASHION PROVIDING A MIN. 3" (76mm) OVERLAP OF SEAMS AND A MIN. OF 12" (305mm) GRANULAR BACKFILL.
6. 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)
7. 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.
8. WALLS HIGHER THAN 6' REQUIRE GEOGRIDS OR REBAR AND MASONRY CONSTRUCTION–CONSULT MANUF.

TYP. GRAVITY WALL OR EQUAL



GRAVITY RETAINING WALL #1 SCALE 1" = 30'

GRAVITY RETAINING WALL #2
SCALE 1" = 30'



OWNER

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

NO.	REVISION	DATE

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

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

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

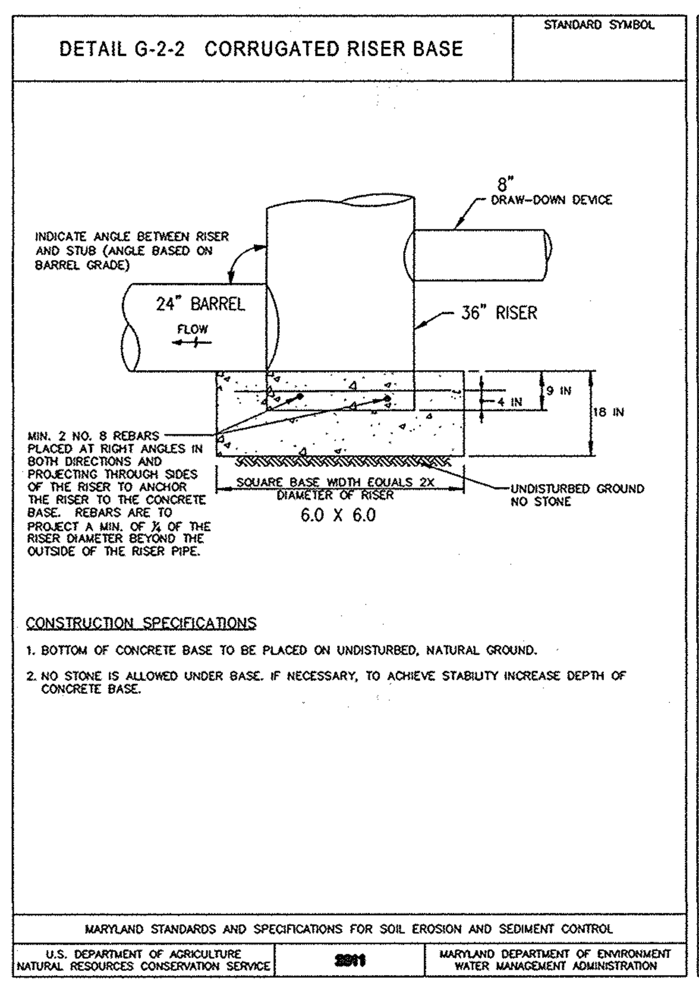
STATE OF MARYLAND PROFESSIONAL ENGINEER No. 16193 — 6/6/14

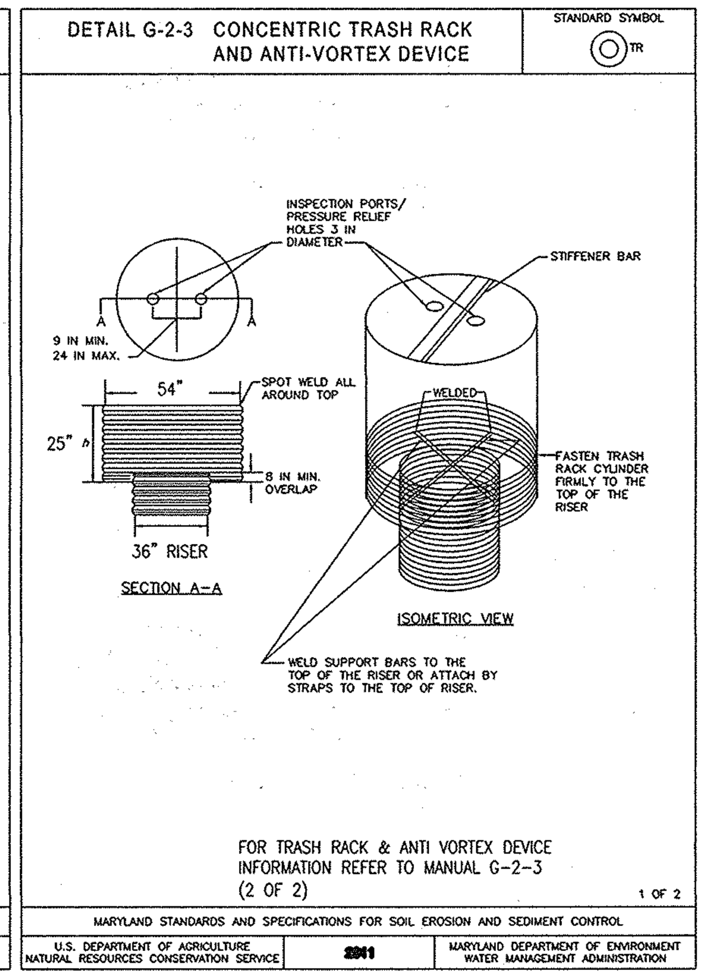
ROBERT H. VOGEL, PE No.16193

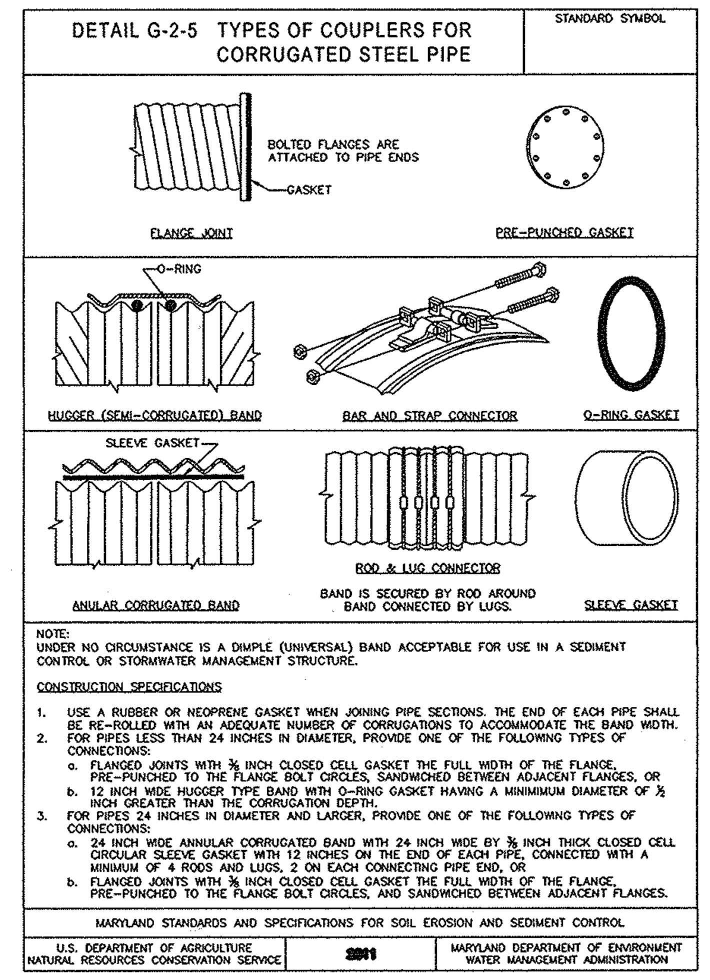
DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11-28

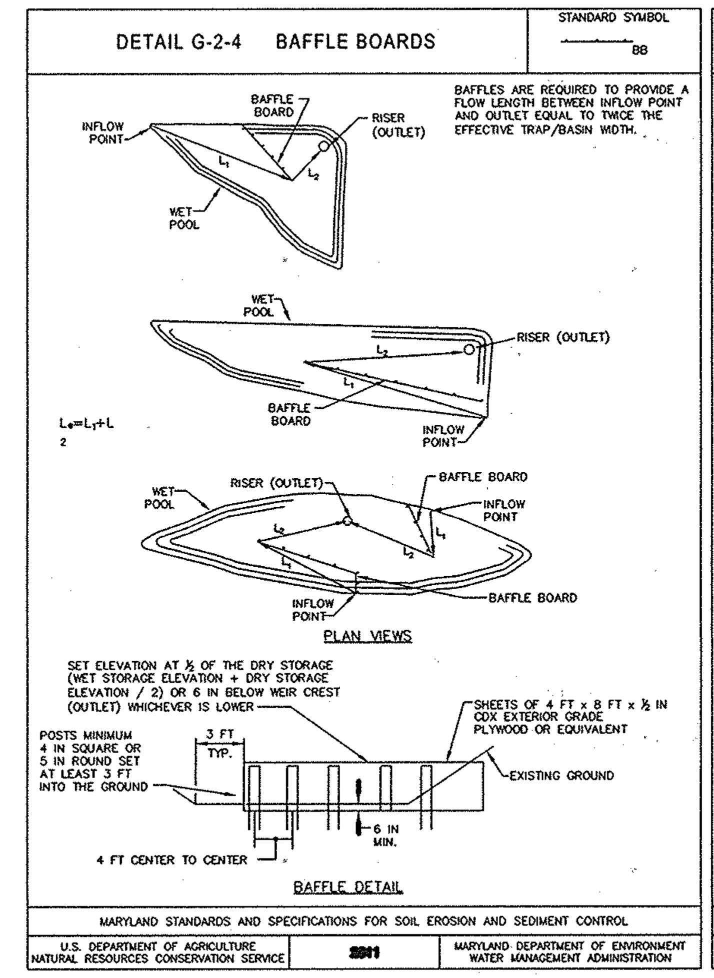
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2014

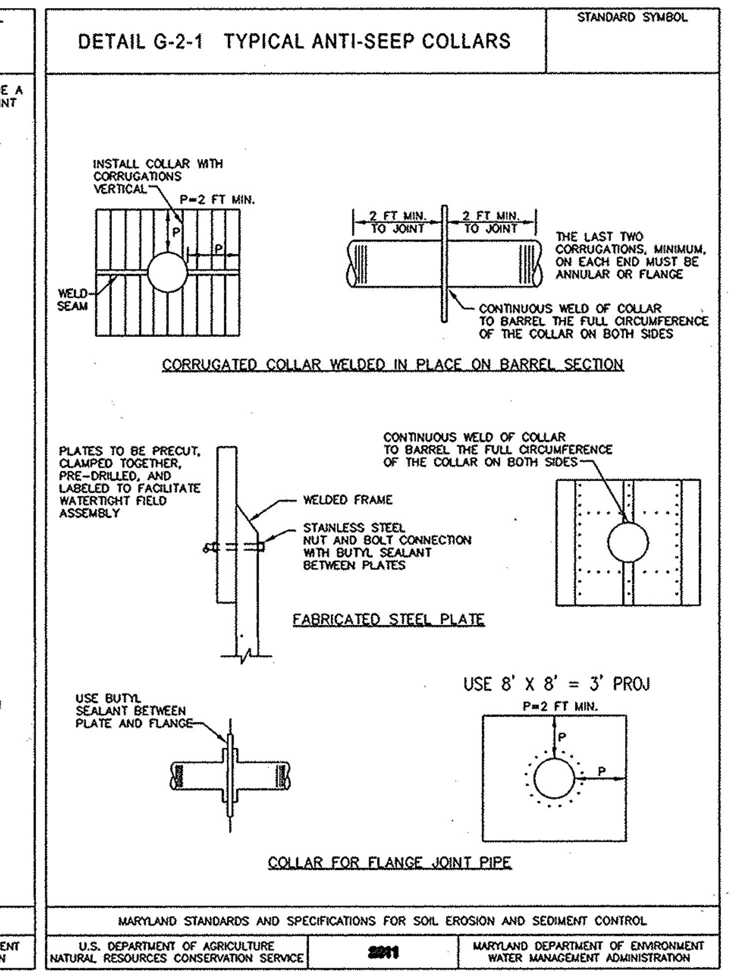
K:\Projects\11-28\ENGR\dwg\FINAL ROAD P2\06 07 SEDCON_NOTES.dwg, 6/3/2014 9:33:48 AM

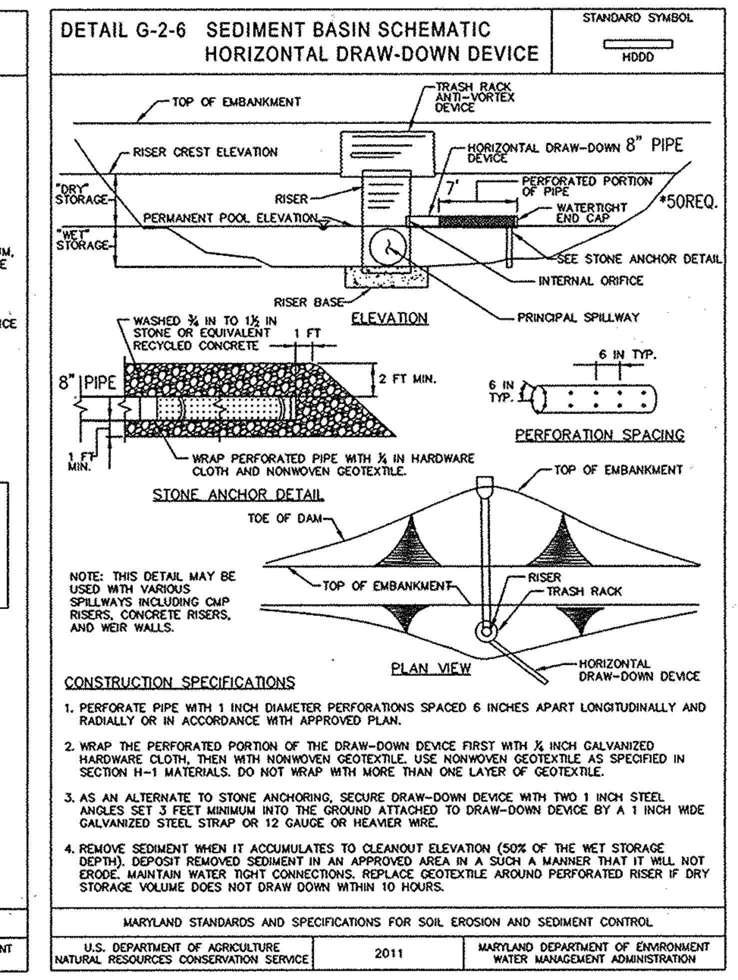












CONSTRUCTION SPECIFICATIONS

1. INSTALL SEDIMENT CONTROL PRACTICES NECESSARY TO CONSTRUCT BASIN. CLEAR AND GRUB TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL FROM THE AREAS WHERE THE EMBANKMENT IS TO BE PLACED. DO NOT CLEAR THE POOL AREA UNTIL COMPLETION OF THE EMBANKMENT; UNLESS THE POOL AREA IS TO BE USED FOR BORROW. SALVAGE TOPSOIL FOR LATER USE.
2. EXCAVATE CUT-OFF TRENCH ALONG CENTERLINE OF PROPOSED EMBANKMENT A MINIMUM DEPTH OF 4 FEET AND A BOTTOM (MIN. 4 FEET) WIDE ENOUGH TO PERMIT OPERATION OF EXCAVATION AND COMPACTION EQUIPMENT. CONSTRUCT SIDE SLOPES 1:1 OR FLATTER. CUT-OFF TRENCH MUST BE CONTINUOUS AND EXTEND THE ENTIRE LENGTH OF EMBANKMENT. COMPACTION REQUIREMENTS ARE THE SAME AS THOSE FOR THE EMBANKMENT. DEWATER THE TRENCH DURING THE BACKFILLING COMPACTION OPERATIONS, USING AN APPROVED PRACTICE.
3. CONSTRUCT EMBANKMENT OF CLEAN SOIL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, OR OTHER OBJECTIONABLE MATERIAL. FILL MATERIAL FOR IMPERVIOUS CORE AND CUT-OFF TRENCH MUST CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30 PERCENT PASSING THE #200 SIEVE. USE FILL MATERIAL CONTAINING SUFFICIENT MOISTURE SO THAT THE SOIL CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTION. PLACE FILL MATERIAL IN SIX-INCH TO EIGHT INCH THICK CONTINUOUS LIFTS OVER THE ENTIRE LENGTH OF THE FILL. OBTAIN COMPACTION BY PASSING CONSTRUCTION EQUIPMENT OR COMPACTOR OVER THE FILL, SO THAT THE ENTIRE SURFACE OF EACH LAYER OF FILL IS TRAVERSED AT LEAST FOUR TIMES. CONSTRUCT THE EMBANKMENT TO AN ELEVATION A MINIMUM OF 10 PERCENT HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT.
4. INSTALL PRINCIPAL SPILLWAY PRIOR TO, OR CONCURRENTLY WITH, FILL PLACEMENT. DO NOT EXCAVATE EMBANKMENT FOR PLACEMENT OF SPILLWAY. ALL PIPE CONNECTIONS, INCLUDING ANTI-SEEP COLLARS MUST BE COMPLETELY WATERTIGHT. INSTALL FILTER DIAPHRAGM WHEN SPECIFIED ON PLAN. BARREL CONNECTION TO RISER MUST BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ATTACH BARREL STUB TO RISER AT THE SAME PERCENT (SLOPE) OF GRADE AS THE BARREL. FOR CONCRETE RISER/BARREL ASSEMBLY, POUR RISER WITH BARREL IN PLACE OR SET PRE-CAST RISER AND INSTALL PROJECTION COLLAR FOR WATERTIGHT CONNECTION. PLACE FILL MATERIAL AROUND THE PIPE SPILLWAY IN FOUR (4) INCH LIFTS AND HAND COMPACT AROUND THE PIPE TO A DEPTH OF 1.5 TIMES THE PIPE DIAMETER (MINIMUM). SECURELY INSTALL ANTI-VORTEX DEVICE AND TRASH RACK AS SHOWN ON PLAN.
5. INSTALL THE EMERGENCY SPILLWAY IN UNDISTURBED NATURAL GROUND. CONSTRUCT SPILLWAY WITHIN A TOLERANCE OF ± 0.2 FEET.
6. STABILIZE EMBANKMENT AND ASSOCIATED DISTURBED AREAS WITHIN THREE (3) DAYS OF COMPLETION WITH SEED AND MULCH. MONITOR EMBANKMENT AND MAINTAIN EROSION FREE DURING THE LIFE OF THE BASIN.
7. INSTALL FENCING AND SIGNAGE IN ACCORDANCE WITH THE APPROVED PLAN.
8. REMOVE SEDIMENT WHEN ACCUMULATED MATERIAL HAS REACHED 25 PERCENT OF THE TOTAL STORAGE DEPTH. RESTORE BASIN TO ORIGINAL DESIGN VOLUME. PLACE REMOVED SEDIMENTS IN A CONTROLLED AREA AND STABILIZE. DO NOT DEPOSIT SEDIMENT DOWNSTREAM OF THE EMBANKMENT, ADJACENT TO A STREAM OR FLOODPLAIN.
9. WHEN THE CONTRIBUTING DRAINAGE AREA IS STABLE, THE BASIN CAN BE REMOVED IN ACCORDANCE WITH THE APPROVED SEDIMENT CONTROL PLAN.
10. A SEDIMENT BASIN DESIGNED, BUILT, AND CERTIFIED AS A STORMWATER MANAGEMENT STRUCTURE, MAY BE CONVERTED WHEN THE CONTRIBUTORY DRAINAGE AREA IS STABLE. PROPERLY DEWATER BASIN, MODIFY OUTLET STRUCTURE, PERFORM ADDITIONAL GRADING, AND PROVIDE REQUIRED STORAGE VOLUME IN ACCORDANCE WITH APPROVED STORMWATER MANAGEMENT PLANS.

BASIN # 5

SEE SHT 4

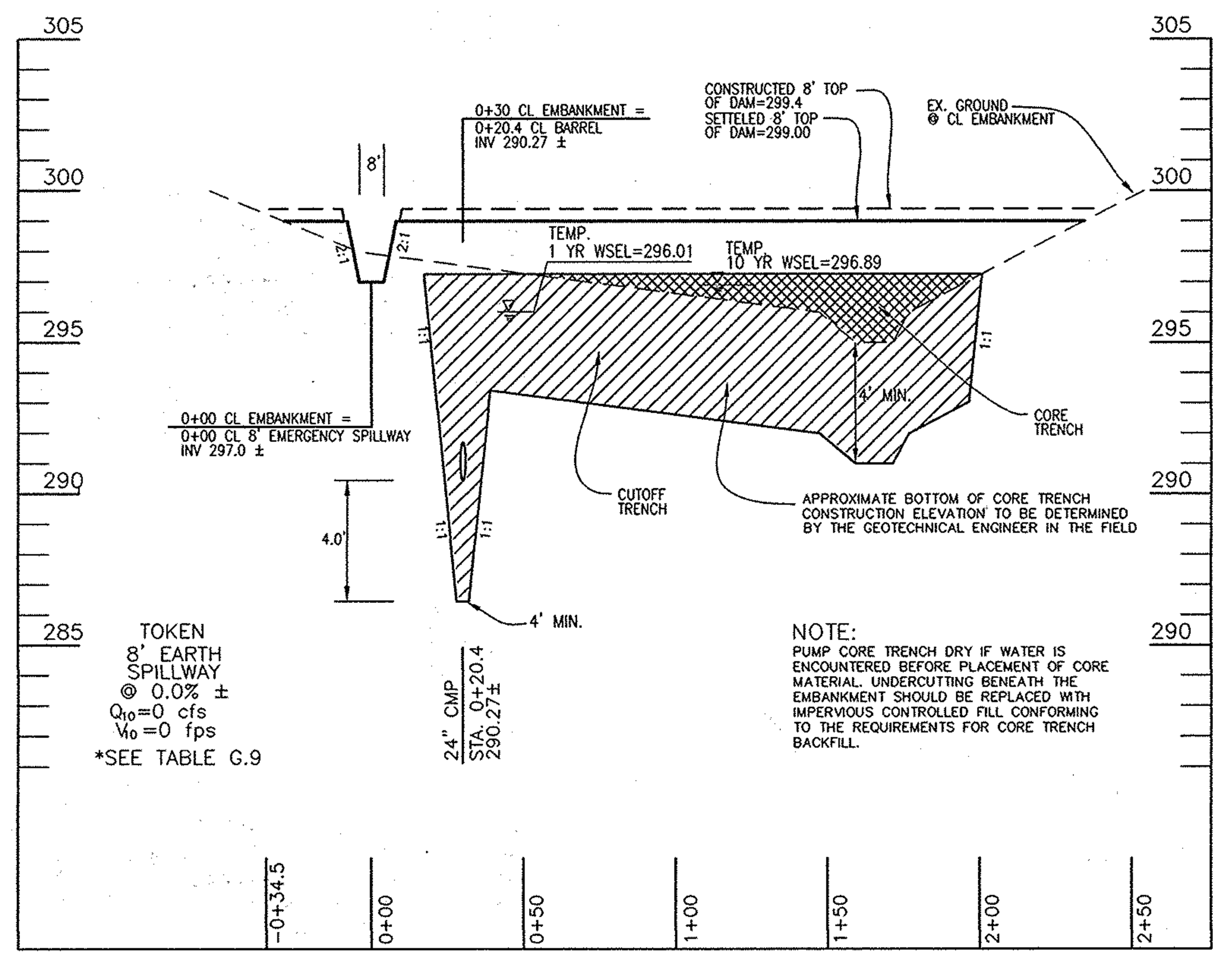
FACILITY TYPE:	TEMPORARY BASIN
EX. DRAINAGE AREA:	1.95 AC.
PROP. DRAINAGE AREA:	9.2 AC.
TOTAL WET STORAGE RQD:	16,560 Cf
TOTAL DRY STORAGE RQD:	16,560 Cf
TOTAL STORAGE REQUIRED:	33,120 Cf
TOTAL WET STORAGE PRVD:	16,754 Cf
TOTAL DRY STORAGE PRVD:	48,970 Cf
TOTAL STORAGE PROVIDED:	65,724 Cf
BOTTOM ELEV:	291.00
RISER CREST ELEVATION:	296.00
WET STORAGE ELEVATION:	291.00–293.00
DRY STORAGE ELEVATION:	293.00–296.00
TOTAL STORAGE DEPTH:	2' (291.0–293.0)
TOP OF EMBANKMENT:	299.00 (SETTLED)
CLEANOUT ELEVATION:	292.20
SIDE SLOPES:	2:1 INSIDE 3:1 OUTSIDE
EMERGENCY SPILLWAY:	8'

Q1 (EX.): 0.1 CFS
Q1 (BASIN): 0.4 CFS *
*THROUGH DEWATER DEVICE ORIFICE OUTFALL INTO STORM DRAIN SYSTEM
1 YR TSWM WSEL= 296.01
10 YR TSWM WSEL= 296.89

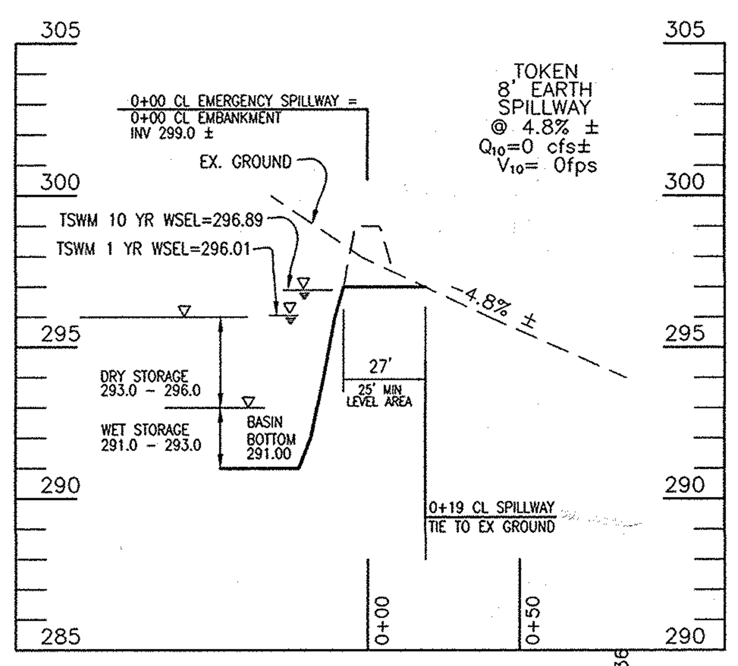
BAFFLE DESIGN

AREA WET STORAGE EL = 9370 SF
We = (A/2)^0.5
We = 68.4'
MIN Le = We X 2 = 137'

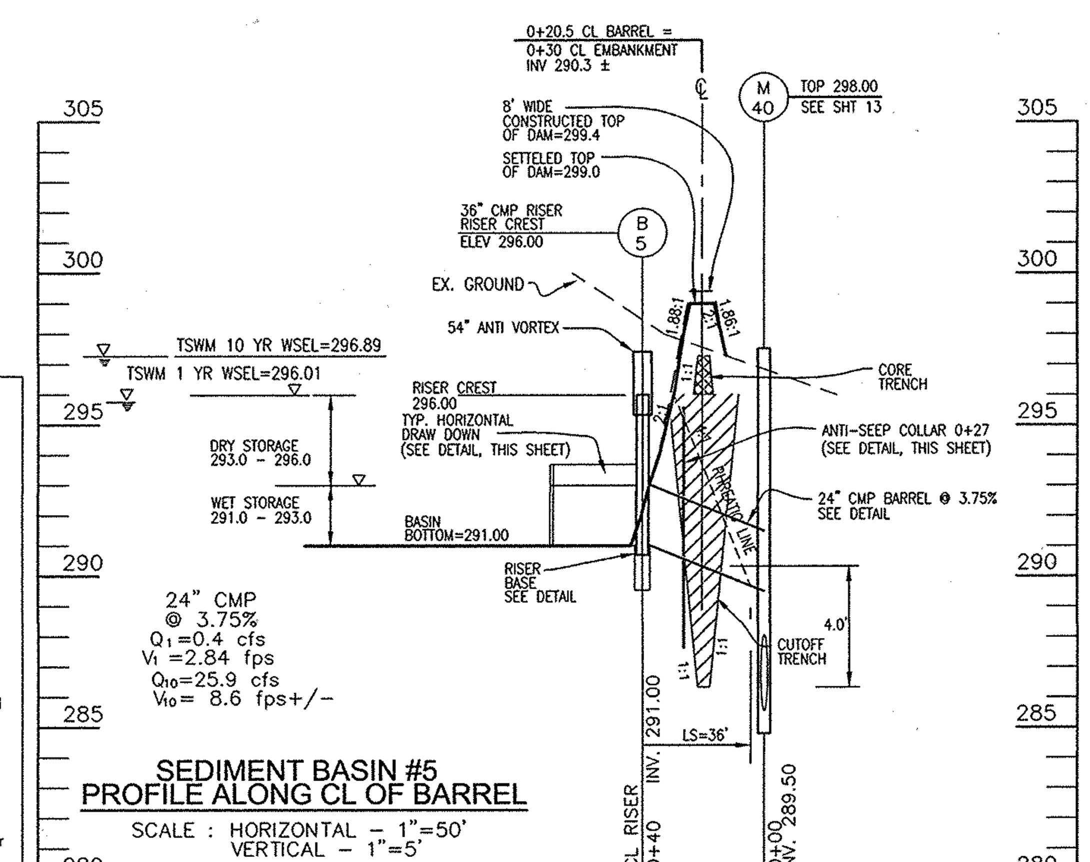
GM INFLOW EAST	GM INFLOW NORTHWEST
L1= 38'	L1= 38'
L2= 45'	L2= 45'
L3= 55'	L3= 55'
PROVIDED Le = 138'	PROVIDED Le = 138'



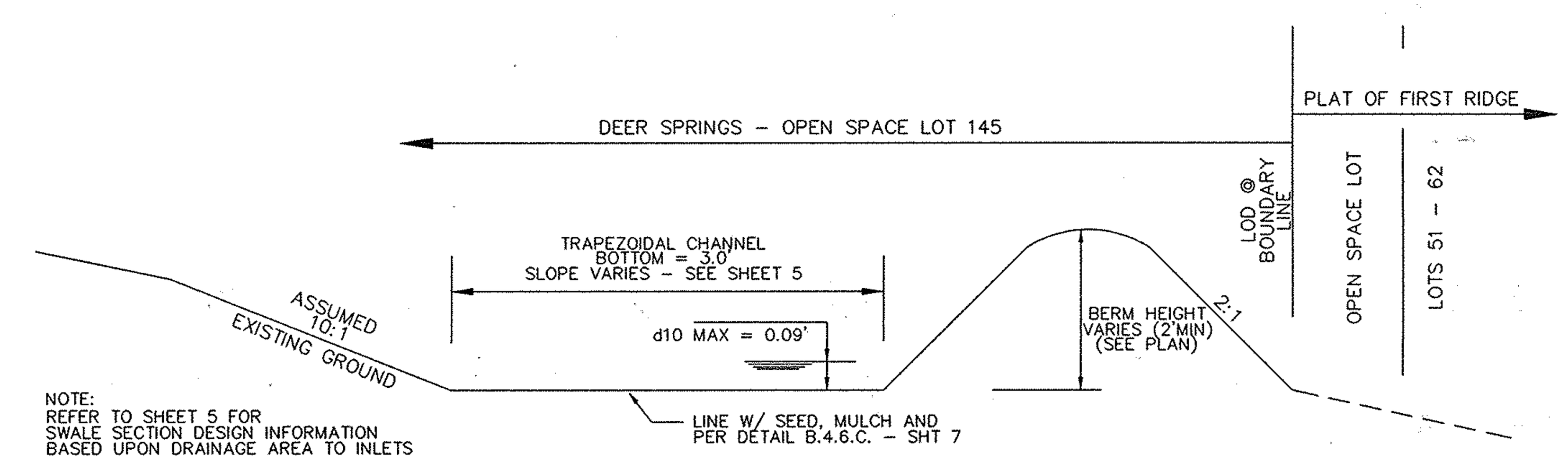
SEDIMENT BASIN #5
PROFILE ALONG CL OF EMBANKMENT
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



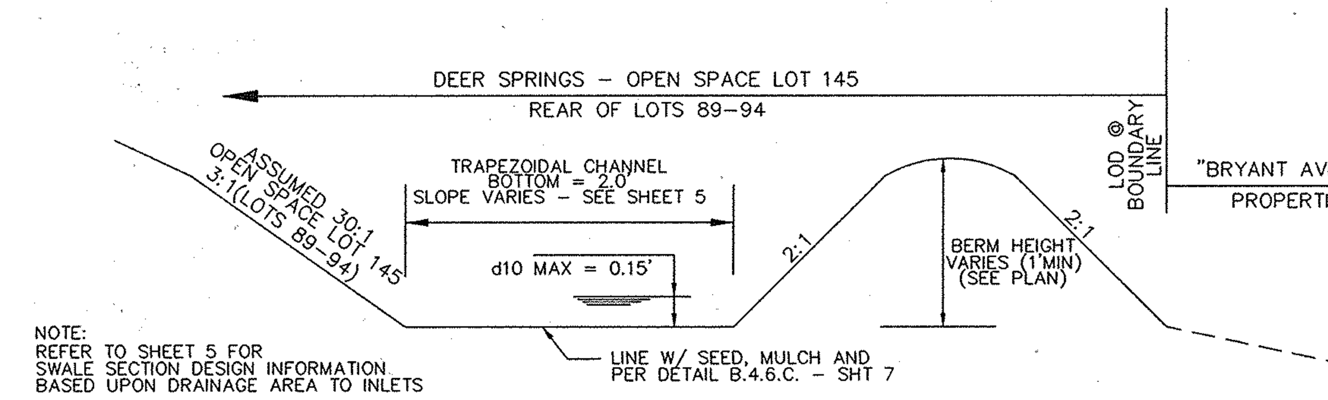
SEDIMENT BASIN #5
PROFILE ALONG CL EMERGENCY SPILLWAY
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



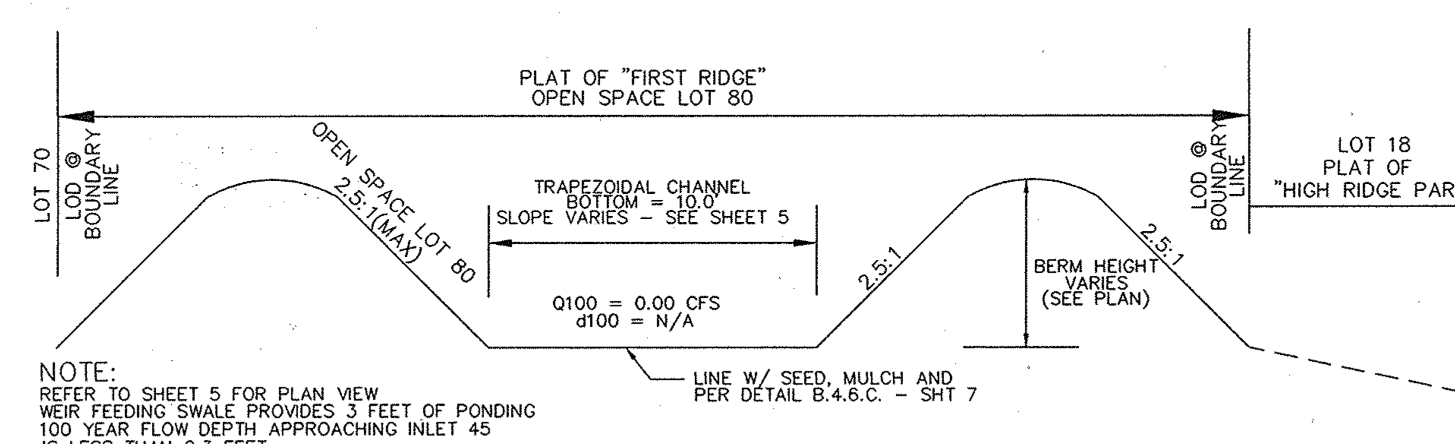
SEDIMENT BASIN #5
PROFILE ALONG CL OF BARREL
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



DETAIL 1 - TYPICAL 3' BOTTOM TRAPEZOIDAL CHANNEL
SCALE : N.T.S.



DETAIL 2 - TYPICAL 2' BOTTOM TRAPEZOIDAL CHANNEL
SCALE : N.T.S.



DETAIL 3 - TYPICAL 10' BOTTOM TRAPEZOIDAL CHANNEL
SCALE : N.T.S.

DEWATERING STRATEGY

Dewatering refers to the act of removing and discharging water from excavated areas on construction sites or from sediment traps or basins on construction sites. Standards and specifications for dewatering practices follow:

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 practices may apply. Regardless of the applicability of the practices listed herein, operators are required to use acceptable procedures for maintenance and dewatering. In all cases, every effort shall be made to eliminate sediment pollution associated with dewatering.

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

Dewatering of Excavated Areas

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 are included on plans.
B. In all cases, water removed from excavated areas shall be discharged such that it shall pass through a sediment control device prior to entering receiving waters. Sediment control devices include sediment traps and basins, in addition to the practices in this section.

Approved Practices for Dewatering of Excavated Areas

1. Pumping of water to an existing sediment basin or trap in which the entire volume of water from the area to be dewatered can be contained without discharge to receiving waters.
2. Pumping of water to an existing sediment basin or trap such that the entire volume of water from the area to be dewatered can be managed without exceeding the design outflow from the sediment control structure.
3. Removable Pumping Station ? Standards and specifications for Removable Pumping Station are on Detail 20A.
4. Use of a Sump Pit: Standards and specifications for a sump pit are on Detail 20B.
5. Sediment Tank: Standards and specifications for a sump pit are on Detail 21.

Dewatering of Sediment Traps and Basins

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

Approved Practices for Dewatering of Traps and Basins

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

APPROVED: DEPARTMENT OF PUBLIC WORKS
Holger Serrano 6.25.14
CHIEF, BUREAU OF HIGHWAYS HS DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chad Edmondson 7.1.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION HS DATE
Kent Sheubrooks 7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT JMP DATE

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPEMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

[signature] 6/4/14
SIGNATURE OF DEVELOPER

BY THE ENGINEER:

"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."

[signature] 5/21/14
SIGNATURE OF ENGINEER

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

John R. Robertson 6/12/14
HOWARD S.C.D. DATE

OWNER
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, INC.
5300 DORSEY HALL DRIVE, STE 102
ELLICOTT CITY, MARYLAND 21042–7819
ATTN: MR. DONALD R. REUWER
443–367–0422

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
SEDIMENT BASIN #5 - NOTES AND 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
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TEL: 410.461.7666
FAX: 410.461.8961

STATE OF MARYLAND ROBERT HARRIS VOGEL PROFESSIONAL ENGINEER 5/21/14
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11–28

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

F-14-023

FIRST RIDGE - PLAN VIEW

SCALE: 1"=50'

NOTE

THE DEVELOPER WILL OBTAIN ALL NECESSARY STATE PERMITS FOR THE PROPOSED ENVIRONMENTAL IMPACTS.

MDE TRACKING NUMBER IS: #201460226 \ NTW 14-NT-3048.

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 7

TYMAT SWM RETROFIT - SAND FILTER

TYPE:	NON-MD 378
HAZARD CLASS:	"A"
EX. DRAINAGE AREA:	18.8 AC.
PROP. DRAINAGE AREA:	19.3 AC.
BOTTOM ELEV:	256.0 (255.0 SAND FILTER)
LOW RISE INVERT:	256.00
SAND FILTER	253.0 - 255.0(SURFACE)
Qo Sand = 0.24 cfs (Site <75% Impervious)	
Qo Sand = 1.96cfs Worst Case (Site >75% Impervious)	
TOP OF EMBANKMENT:	261.00± (EXISTING)
EMERGENCY SPILLWAY:	259.00

Q1 (EX.): 7 CFS
Q10 (EX.): 41 CFS
Q100 (EX.): 77 CFS

Q1 (DEV): 1.1 CFS
1 YR SWM WSEL= 257.03
Q10 (DEV): 32.4 CFS
10 YR SWM WSEL= 258.56
Q100 (DEV): 78.6 CFS
100 YR SWM WSEL= 259.22

Q1 (SAFETY*): 9.4 CFS
1 YR WSEL= 257.74
Q10 (SAFETY*): 59.9 CFS
100 YR WSEL= 259.06
Q100 (SAFETY*): 105.6 CFS
100 YR WSEL= 259.45

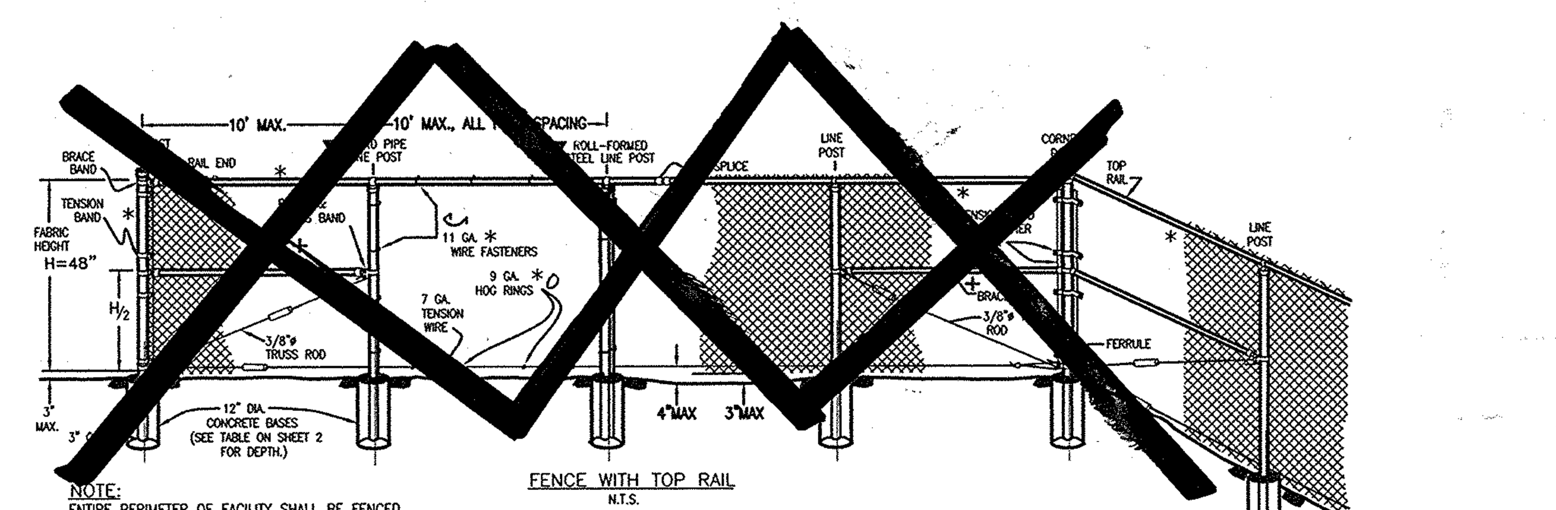
* ASSUMES FAILURE OF ESD PRACTICES

LEGEND:

Symbol	Description
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
ST#17	EXISTING SPECIMEN TREE
550 / 400	WATER ZONE DIVIDE
	PRIVATE 24' USE-IN-COMMON ACCESS EASEMENT
	PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
	PROP. PUBLIC DRAINAGE & UTILITY EASEMENT
SMH 2	EXISTING SANITARY MANHOLE
SS	EXISTING SANITARY LINE
CO	EXISTING CLEANOUT
FH	EXISTING FIRE HYDRANT
W	EXISTING WATER LINE
	EXISTING TREELINE
	EXISTING TREES
	EXISTING FENCE
	CENTERLINE OF EXISTING STREAM
	PROPOSED STORMDRAIN
	PROPOSED STORMDRAIN INLET
	PROPOSED SIDEWALK
	PROPOSED TREELINE
	PROPOSED CURB
	PROPOSED STREET LIGHT
	DRAINAGE DIVIDE
AREA / C FACTOR — INLET # — ZONING / % IMP	
SSF / LOD	PROPOSED SUPER SILT FENCE / PROPOSED LIMIT OF DISTURBANCE
SF	PROPOSED SILT FENCE
TPF	PROPOSED TREE PROTECTION FENCE
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR

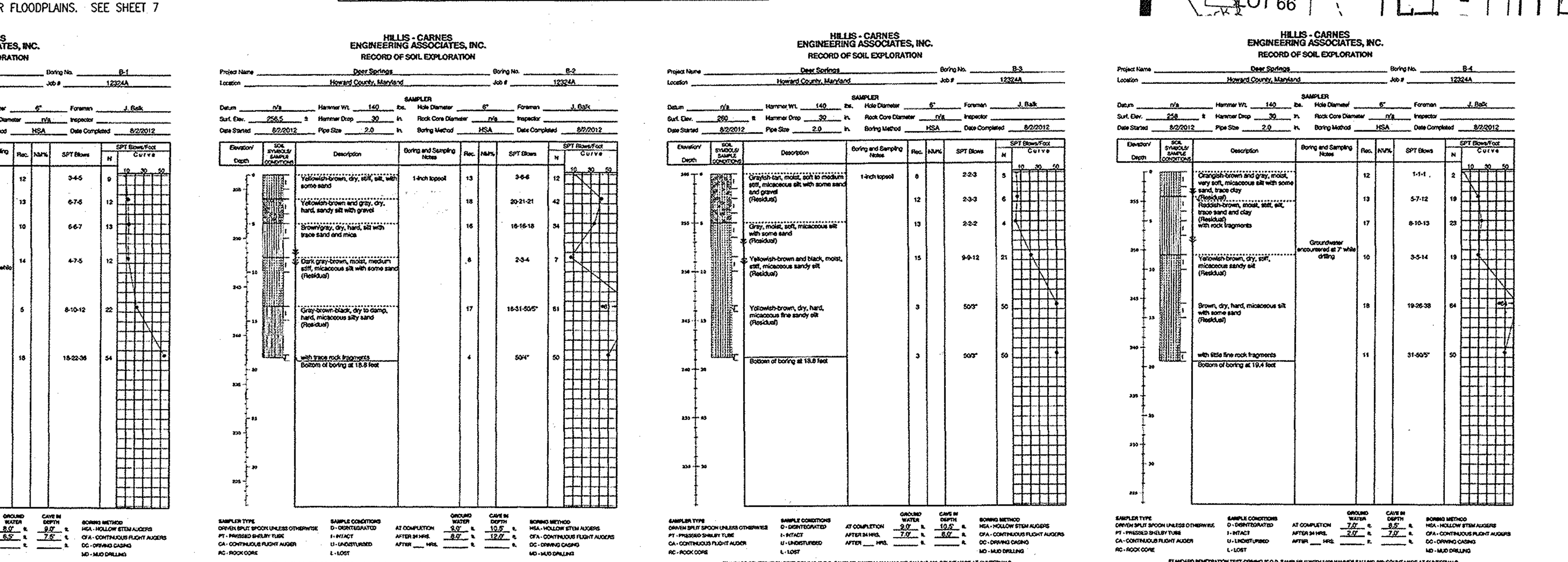
FENCE GENERAL NOTES

1. (HEIGHT OF FABRIC) SHALL BE AS SHOWN ON THE PLANS. FABRIC IS AVAILABLE IN THE FOLLOWING HEIGHTS: 36", 42", 48", 60", 72", 84", 96", 108", 120", 144".
2. CHAIN LINK FENCE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 181.
3. CHAIN LINK FABRIC SHALL BE 2" MESH NO. 9 GAGE GALVANIZED OR ALUMINUM COATED WIRE SECURELY FASTENED TO TENSION WIRE, LINE POSTS, RAILS, BRACES, STRETCHER BARS SPACED AS SHOWN HEREON. WIRE FASTENERS AND TIE CLIPS SHALL BE NO. 11 GAGE (W&M) GALVANIZED STEEL WIRE OR NO. 7 GAGE (B&S) ALUMINUM WIRE, AND HOG RINGS SHALL BE NO.9 GAGE, ALL IN CONFORMANCE WITH ASTM F 626.
4. STEEL POSTS, RAILS AND FRAMES SHALL CONFORM TO AASHTO M 181 TYPE 1, GRADE 1 OR GRADE 2.
5. AT THE CONTRACTOR'S OPTION, POSTS FOR FENCE CONSTRUCTION SHALL CONFORM TO THE DIMENSIONS AND WEIGHTS FOR EITHER "ORDINARY PIPE" OR "ALTERNATIVE PIPE" AS SHOWN ON SHEET 2. "ALTERNATIVE PIPE" SHALL BE HIGH STRENGTH STEEL PIPE MEETING REQUIREMENTS OF FED. SPEC. RR-F-191/3C.
6. TENSION WIRE SHALL BE CONTINUOUS BETWEEN END OR CORNER POST AND LINE BRACE POST. A TURNBUCKLE OR OTHER APPROVED TIGHTENING DEVICE SHALL BE USED FOR EACH CONTINUOUS SPAN OF TENSION WIRE.
7. TENSION WIRE SHALL BE AS SPECIFIED IN AASHTO M 181.
8. CONCRETE FOOTINGS SHALL HAVE TOPS CROWNED ABOVE GROUND LEVEL AND SHALL BE CLASS B CONCRETE WITH LIGHTWEIGHT AGGREGATE CONFORMING TO AASHTO M 195, WILL BE PERMITTED.
9. TERMINATION OF FENCE AT BRIDGES OR OTHER STRUCTURES SHALL BE AS SHOWN ON PLANS.
10. CHAIN LINK FABRIC UP TO 5 FEET HIGH SHALL BE KNUCKLED AT THE TOP AND BOTTOM SELVAGES. FABRIC OVER 5 FEET HIGH SHALL BE TWISTED AND BARBED ON THE TOP SELVAGE AND KNUCKLED ON THE BOTTOM SELVAGE.
11. FENCE MAY BE CONSTRUCTED WITH EITHER ROUND PIPE OR ROLL-FORMED STEEL COMPONENTS. THE CONTRACTOR SHALL STATE THE TYPE OF CONSTRUCTION AND TYPE OF LINE POST TO BE USED THROUGHOUT THE PROJECT, AT THE PRECONSTRUCTION CONFERENCE.



FENCE WITH TOP RAIL
N.T.S.

NOTE:
ENTIRE PERIMETER OF FACILITY SHALL BE FENCED



SOIL BORINGS

HILLIS-CARNES ENGINEERING ASSOCIATES, INC. 9/12

RETROFIT/RECONSTRUCTION OF EXISTING POND

THERE IS AN EXISTING POND ADJACENT TO THE SITE THAT IS TO BE RETROFITTED / RECONSTRUCTED. WE UNDERSTAND THAT THE PROPOSED FACILITY IS TO BE CLASSIFIED AS A NON-MD378 POND. BASED ON THE PLAN PROVIDED, THE BOTTOM OF THE POND IS TO BE LOCATED AT EL 251 AND THE POND IS TO HAVE A WET POOL LOCATED AT EL 254. EXISTING GRADES IN THE VICINITY OF THE POND RANGE FROM EL 256± TO EL 268±. AS SUCH, IT APPEARS THAT THE MAJORITY OF THE POND WILL BE A CUT POND.

GENERAL SITE PREPARATION

ALL TREES, TOPSOIL, ORGANIC MATERIALS, FROZEN, WET, SOFT OR LOOSE SOILS AND OTHER DELETERIOUS MATERIALS SHOULD BE REMOVED FROM THE AREAS OF PROPOSED NEW EMBANKMENT AND WASTED PRIOR TO THE PLACEMENT OF FILL. THESE STRIPPING OPERATIONS SHOULD BE PERFORMED IN A MANNER CONSISTENT WITH GOOD EROSION AND SEDIMENT CONTROL PRACTICES AND IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES.
AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROOFROLLED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. FOR AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK, THE EXPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROOFROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE-ESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.

GROUNDWATER

GROUNDWATER LEVELS WERE MONITORED IN THE BORINGS DURING OUR FIELD EXPLORATION. GROUNDWATER WAS GENERALLY ENCOUNTERED AT THE FOLLOWING ELEVATIONS IN THE FACILITY BORING LOCATIONS AT THE TIME OF OUR FIELD EXPLORATION (PLEASE NOTE THAT THE WATER LEVELS NOTED MAY BE IMPACTED BY WATER ASSOCIATED WITH THE EXISTING POND):
DURING DRILLING: EL 248± TO EL 251±
AT COMPLETION: EL 247.5± TO EL 251±
AFTER 24 HOURS: EL 248.5± TO EL 256±
AN ACCURATE DETERMINATION OF THE HYDROSTATIC WATER TABLE WOULD REQUIRE THE INSTALLATION OF PERFORATED PIPES OR PIEZOMETERS WHICH COULD BE MONITORED OVER AN EXTENDED PERIOD OF TIME. THE ACTUAL LEVEL OF THE HYDROSTATIC WATER TABLE AND THE AMOUNT AND LEVEL OF PERCHED WATER SHOULD BE ANTICIPATED TO FLUCTUATE THROUGHOUT THE YEAR, DEPENDING ON THE AMOUNT OF WATER IN THE EXISTING POND, VARIATIONS IN PRECIPITATION, SURFACE RUN-OFF, INFILTRATION, SITE TOPOGRAPHY, AND DRAINAGE. SITE GRADING OPERATIONS AT OTHER PARTS OF THE SITE CAN ALSO INFLUENCE THE LEVEL OF THE GROUNDWATER AT THE STORMWATER MANAGEMENT AREA SIGNIFICANTLY. HCEA CANNOT BE RESPONSIBLE FOR CHANGES IN GROUNDWATER CONDITIONS AT THE SITE DUE TO SEASONAL VARIATION AND CHANGES CAUSED BY OTHER FACTORS SUCH AS GRADING OPERATIONS AT THE SITE.
ANY WATER INFILTRATION RESULTING FROM A SHALLOW INTERCEPTION OF THE GROUNDWATER TABLE, SURFACE RUN-OFF, OR PERCHED WATER, IF NOT TOO EXTENSIVE, SHOULD BE ABLE TO BE CONTROLLED BY MEANS OF SUMP PIT AND PUMP, OR BY GRAVITY DITCHING PROCEDURES PROVIDED THAT THE GROUNDWATER LEVEL MUST ONLY BE LOWERED BY A DEPTH OF 1± FT TO 2± FT. IF THE GROUNDWATER MUST BE LOWERED BY MORE THAN 1± FT TO 2± FT, OR IF LESSER AMOUNTS OF WATER CANNOT BE SUITABILITY LOWERED BY PUMPING, THEN THE USE OF A MORE EXTENSIVE DEWATERING SYSTEM WILL BE REQUIRED.

FILL SELECTION, PLACEMENT AND COMPACTION

ALL MATERIALS TO BE USED AS FILL SHOULD BE INSPECTED, TESTED AND APPROVED BY THE GEOTECHNICAL ENGINEER. BASED ON OUR EVALUATION OF THE SOILS ENCOUNTERED BORINGS CONDUCTED ON THE SITE, IT APPEARS THAT THE ON-SITE SOILS THAT ARE FREE FROM ORGANICS AND OTHER DELETERIOUS MATERIALS CAN BE USED FOR CONSTRUCTION. IMPORTED FILL MATERIALS SHOULD BE OF EQUAL OR GREATER QUALITY THAN THE ON-SITE MATERIALS AND SHOULD BE APPROVED FOR USE BY THE GEOTECHNICAL ENGINEER.
MOISTURE CONDITIONING (THAT IS, WETTING OR DRYING) OF THE MATERIALS MAY BE REQUIRED IN ORDER TO ACHIEVE PROPER COMPACTION DEPENDING ON THE SEASON OF THE YEAR. THE MOISTURE CONTENTS OF THE SOILS SHOULD BE PROPERLY CONTROLLED TO AVOID EXTENSIVE CONSTRUCTION DELAYS. ADDITIONAL LABORATORY TESTS SHOULD BE PERFORMED ON THE BORROW MATERIALS PRIOR TO THEIR USE IN THE COMPACTED FILL.
CARE SHOULD BE EXERCISED DURING THE GRADING OPERATIONS AT THE SITE. DUE TO THE NATURE OF SOME OF THE SOILS ENCOUNTERED IN THE BORINGS, THE TRAFFIC OF HEAVY EQUIPMENT, INCLUDING HEAVY CONSTRUCTION EQUIPMENT, COULD CREATE PUMPING AND A GENERAL DETERIORATION THESE SOILS IF CONDUCTED IN THE PRESENCE OF WATER. AGAIN, THE GRADING SHOULD THEREFORE, IF AT ALL POSSIBLE, BE CARRIED OUT DURING A DRY SEASON. THIS SHOULD MINIMIZE THESE POTENTIAL PROBLEMS, ALTHOUGH THEY MAY NOT BE ELIMINATED. IF SUCH PROBLEMS ARISE, THE GEOTECHNICAL ENGINEER SHOULD BE CONSULTED FOR AN EVALUATION OF THE CONDITIONS.
ALL FILL MATERIALS SHOULD BE PLACED IN RELATIVELY HORIZONTAL LOOSE LIFTS OF 8-INCH MAXIMUM THICKNESS AND SHOULD BE COMPACTED TO DRY DENSITIES OF AT LEAST 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). MOISTURE CONTENTS SHOULD BE MAINTAINED WITHIN ±2 PERCENT OF OPTIMUM MOISTURE CONTENT, AND PREFERABLY BETWEEN OPTIMUM MOISTURE CONTENT AND +2 PERCENT OF OPTIMUM MOISTURE CONTENT. NEW FILLS SHOULD BE PROPERLY BENCHED INTO EXISTING SLOPES.
A SUFFICIENT NUMBER OF IN-PLACE DENSITY TESTS SHOULD BE PERFORMED BY AN EXPERIENCED ENGINEERING TECHNICIAN ON A FULL-TIME BASIS TO VERIFY THAT THE PROPER DEGREE OF COMPACTION IS BEING OBTAINED. IF ANY COMPACTION PROBLEMS ARE ENCOUNTERED DURING CONSTRUCTION, THE GEOTECHNICAL ENGINEER SHOULD BE CONTACTED FOR ADVICE, AS MODIFICATIONS TO THE COMPACTION PROCEDURES MAY BE APPROPRIATE.

OPERATION, MAINTENANCE AND INSPECTION

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND 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 SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

APPROVED: DEPARTMENT OF PUBLIC WORKS

Holger Serrano	6.25.14
CHIEF, BUREAU OF HIGHWAYS	DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad Edmondson	7.1.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
Kent Sheubrooks	7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE

NOTE

AFTER STAKING THE LOD AND CENTER LINE OF EMBANKMENT AND PRIOR TO STARTING CONSTRUCTION ON THIS POND, CONTACT HOWARD COUNTY, MARSHALL DAVIDSON AT 410-313-5806

OWNER

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

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN

FIRST RIDGE - F-84-103 EXISTING STORMWATER MANAGEMENT FACILITY RECONSTRUCTION PLAN

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

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

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

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

ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV / EDS
DRAWN BY:	RVE/EDS
CHECKED BY:	RHV
DATE:	MAY 2014
SCALE:	AS SHOWN
W.O. NO.:	11-28

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

F-14-023

K:\Projects\11-28\ENGR\dwg\FINAL ROAD P2\09 FIRST RIDGE PLAN.dwg, 6/3/2014 9:35:01 AM

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.

Site Preparation

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 embankment.

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.

Earth Fill

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 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.

Pipe Conduits

All pipes shall be circular in cross section.

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

1. 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.

4. 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. Backfilling shall conform to "Structure Backfill."
6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe – All of the following criteria shall apply for reinforced concrete pipe:
1. Materials – Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
2. 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.

4. Backfilling shall conform to "Structure Backfill."

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

Rock Riprap
Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction Materials, Section 311.

Geotexile shall be placed under all riprap and shall meet requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

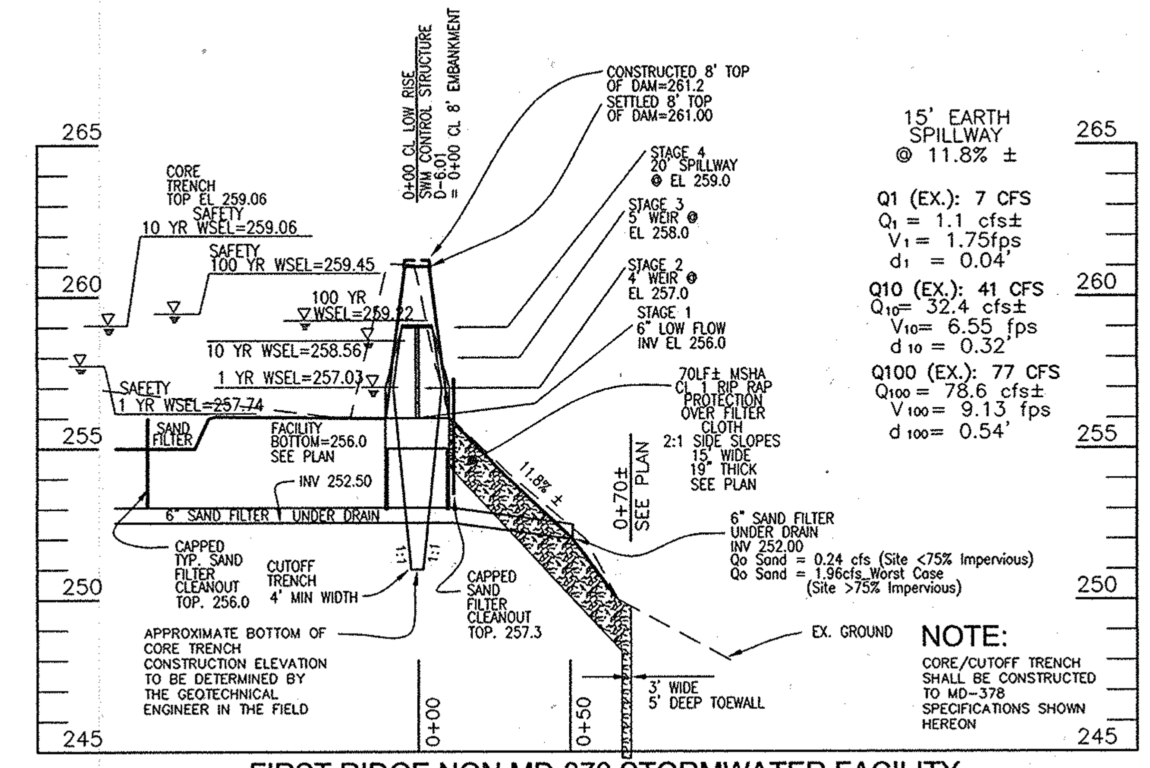
Care of Water during Construction

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.

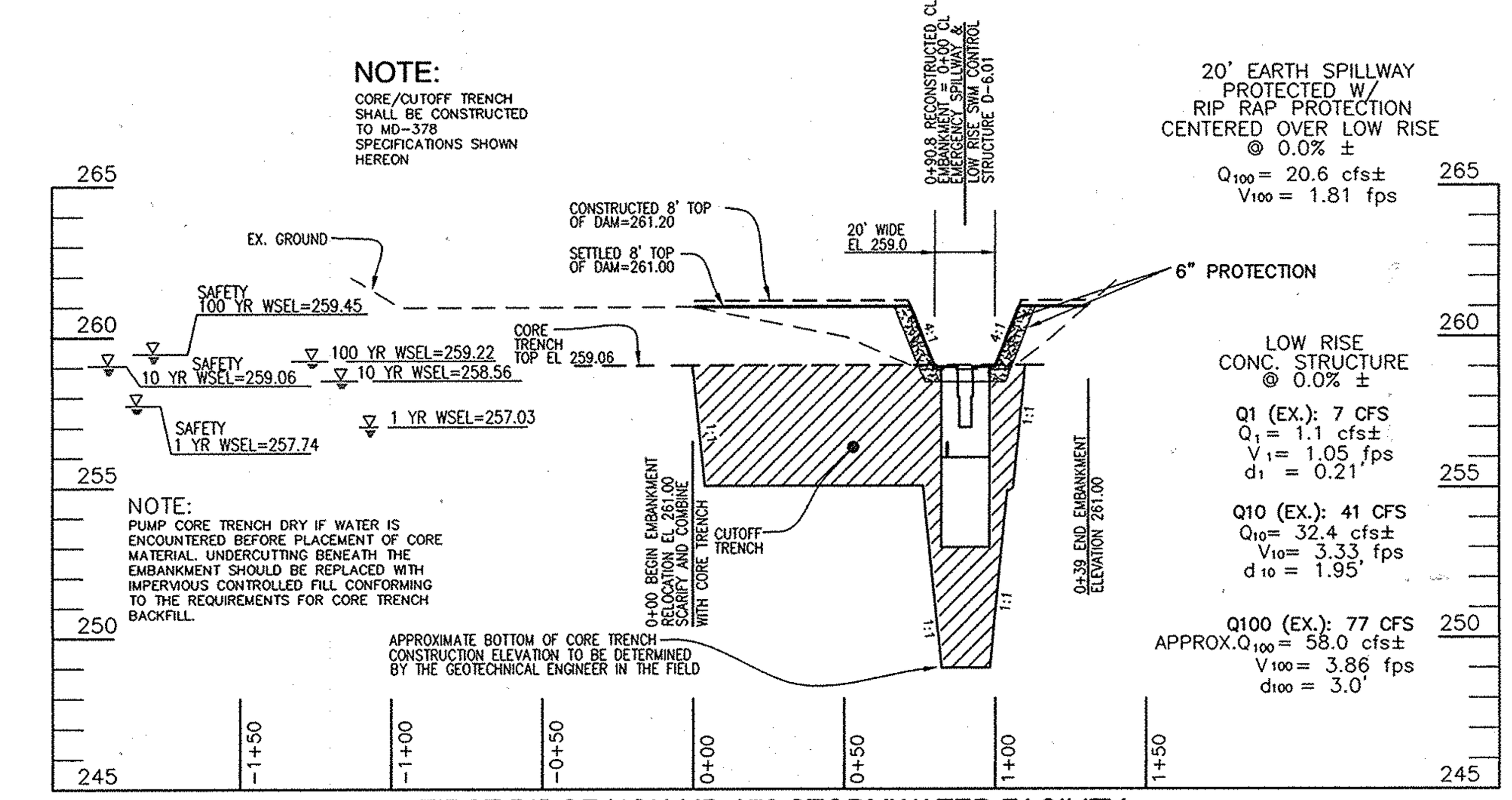
Stabilization
All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation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

Erosion and Sediment Control

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.

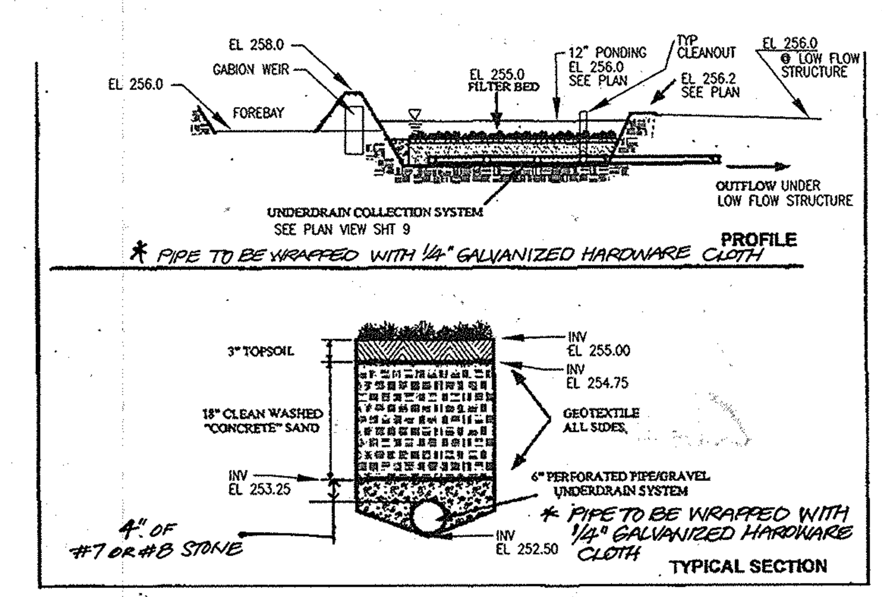


FIRST RIDGE NON MD-378 STORMWATER FACILITY
PROFILE ALONG LOW RISE STRUCTURE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



FIRST RIDGE NON MD-378 STORMWATER FACILITY
PROFILE ALONG CENTER OF EMBANKMENT
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

SAND FILTER - PLANTING
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

Material	Specification/Test Method	Size	Notes
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	n/a	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./in) 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'_c = 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 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
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

Appendix B.3. Construction Specifications for Sand Filters, Bioretention and Open Channels

B.3.A Sand Filter Specifications

1. Material Specifications for Sand Filters

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

2. 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 Specifications

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%.

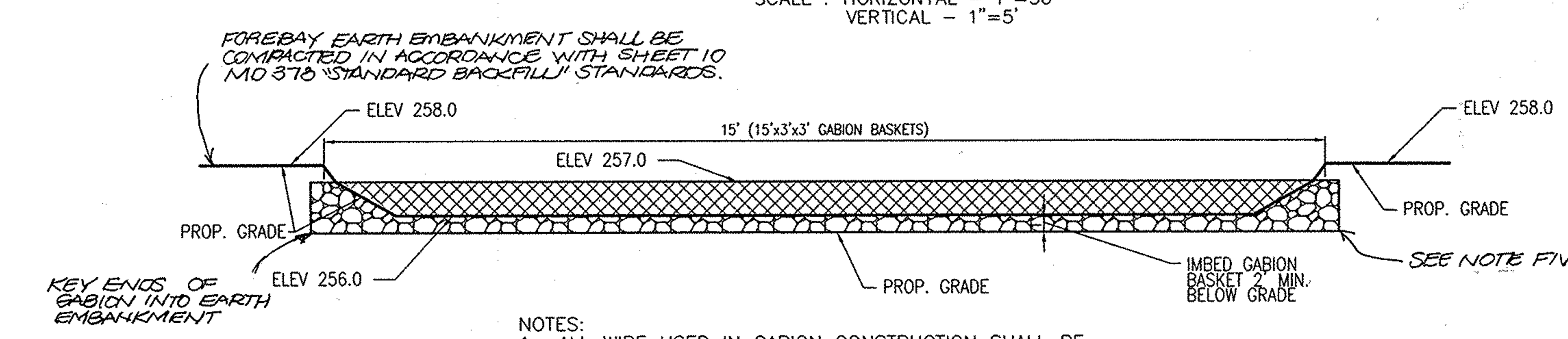
Absolutely no runoff is to enter the filter until all contributing drainage areas have been stabilized.

Surface of filter bed is to be level.

All underground sand filters should be clearly delineated with signs so that they may be located when maintenance is due.

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).



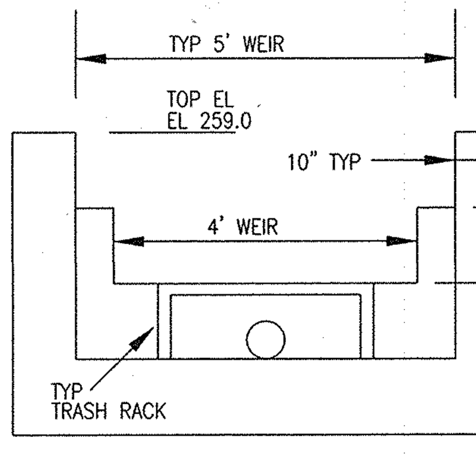
NOTES:
1. ALL WIRE USED IN GABION CONSTRUCTION SHALL BE GALVANIZED AND PLASTIC COATED.
2. FILTER CLOTH SHALL BE PLACED WHEREVER GABIONS COME INTO CONTACT WITH SOIL.
3. STONE FILL SHALL CONSIST OF HARD, DURABLE, CLEAN STONE 4"–8" IN DIAMETER.
4. CONSTRUCTION MATERIALS AND METHODS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. *FOREBAY GABION SHALL BE KEYED INTO EARTH EMBANKMENT.*

FOREBAY GABION BASKET WEIR DETAIL
SCALE: N.T.S.

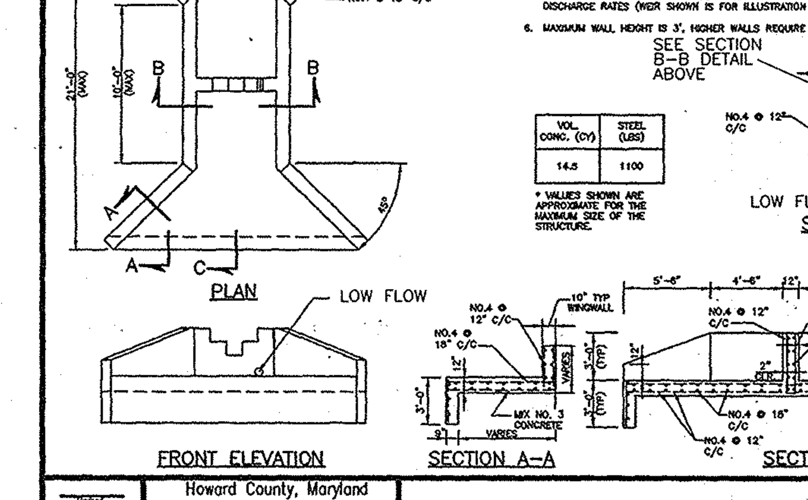
OPERATION, MAINTENANCE AND INSPECTION
INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND 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 SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

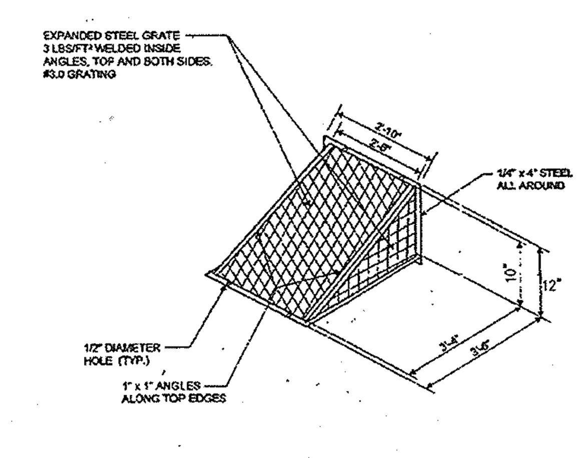
OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT FACILITY

STORMWATER MANAGEMENT FACILITY
ROUTINE MAINTENANCE (HOA)
1. FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IT IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.
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 AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.



SECTION B-B
FIRST RIDGE NON MD-378 STORMWATER FACILITY
STAGE 1 - STAGE 3 - DETAIL
SCALE : HORIZONTAL – 1" = 2'





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

DEWATERING STRATEGY

Dewatering refers to the act of removing and discharging water from excavated areas on construction sites or from sediment traps or basins on construction sites. Standards and specifications for dewatering practices follow:

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 practices may apply. Regardless of the applicability of the practices listed herein, operators are required to use acceptable procedures for maintenance and dewatering. In all cases, every effort shall be made to eliminate sediment pollution associated with dewatering.

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

Dewatering of Excavated Areas

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 are included on plans.
B. In all cases, water removed from excavated areas shall be discharged such that it shall pass through a sediment control device prior to entering receiving waters. Sediment control devices include sediment traps and basins, in addition to the practices in this section.

Approved Practices for Dewatering of Excavated Areas

1. Pumping of water to an existing sediment basin or trap in which the entire volume of water from the area to be dewatered can be contained without discharge to receiving waters.
2. Pumping of water to an existing sediment basin or trap such that the entire volume of water from the area to be dewatered can be managed without exceeding the design outflow from the sediment control structure.
3. Removable Pumping Station ? Standards and specifications for Removable Pumping Station are on Detail 20A.
4. Use of a Sump Pit: Standards and specifications for a sump pit are on Detail 20B.
5. Sediment Tank: Standards and specifications for a sump pit are on Detail 21.

Dewatering of Sediment Traps and Basins

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

Approved Practices for Dewatering of Traps and Basins

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

APPROVED: DEPARTMENT OF PUBLIC WORKS
Holger Serrano 6.25.14
CHIEF, BUREAU OF HIGHWAYS DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chad Edmondson 7.1.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Kent Sheubrooks 7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

BY THE DEVELOPER:
"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
SIGNATURE OF DEVELOPER 6/4/14 DATE

BY THE ENGINEER:
"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
SIGNATURE OF ENGINEER 5/21/14 DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
John R Robertson 6/12/14
HOWARD S.C.D. DATE

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

NO.	REVISION	DATE
1	REVISE UNDER DRAIN DETAIL FOR MICRO-BIORETENTION AND BIOSWALE FACILITY; REVISE SAND FILTER DETAIL	3/30/15

FINAL ROAD CONSTRUCTION PLAN
FIRST RIDGE - F-84-103 EXISTING STORMWATER MANAGEMENT FACILITY RECONSTRUCTION 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
ZONED: R-SC
PARCELS: 363 & 542
HOWARD COUNTY, MARYLAND

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

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

DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11-28

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

F-14-023

STORM DRAIN DRAINAGE AREA MAP
SCALE: 1"=50'

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- SS — EXISTING SANITARY LINE
- CO — EXISTING CLEANOUT
- FH — EXISTING FIRE HYDRANT
- W — EXISTING WATER LINE
- 330 — EXISTING 10' CONTOUR
- 328 — EXISTING 2' CONTOUR
- SoE / SkC2 — SOILS
- EXISTING TREELINE
- EXISTING TREES
- DRAINAGE DIVIDE
- DA-3 — DRAINAGE AREA DESIGNATION
- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- EXISTING WETLAND
- PRIVATE 24' USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
- PROP. PUBLIC DRAINAGE & UTILITY EASEMENT
- PRIVATE SWM DRAINAGE & UTILITY EASEMENT
- FOREST CONSERVATION EASEMENT

50' 0 50' 100' 150'

OWNER
MARTIN JR & MICHAEL J. KRAESKI ET AL
9222 OLD SCAGGSVILLE ROAD
LAUREL, MD 20723-1730
ATTN: MR. DONALD R. REUWER
443-367-0422

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

NO.	REVISION	DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS	DATE 7-28-14

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 7-30-14
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 7-31-14

MAPPED SOILS TYPES

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	HYDRIC INCLUSIONS	Kw RANGE*	PRIME FARMLAND	CESS SLOPE W/ DRAIN POTENTIAL
CHC2	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	B	NO		0.15 - 0.37		NO
CHC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	B	NO		0.15 - 0.37		PARTIAL
CRD2	CROOM & EVESBORO, 10 TO 15 PERCENT SLOPES	C	NO		0.28		NO
FaB	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D	YES		0.02 - 0.24		NO
SfB	SASSAFRAS GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	B	NO		0.17 - 0.24		NO
SfD	SASSAFRAS AND CROOM SOILS, 10 TO 15 PERCENT SLOPES	B	NO		0.32 - 0.37		PARTIAL
UrB	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	D	NO		0.37		NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
K-FACTOR = Kw @ 0-4" DEPTH
* BASED UPON ESTIMATED CUTS

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

FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN DRAINAGE AREA MAP

HIGH RIDGE MEADOWS - SEC. 2

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

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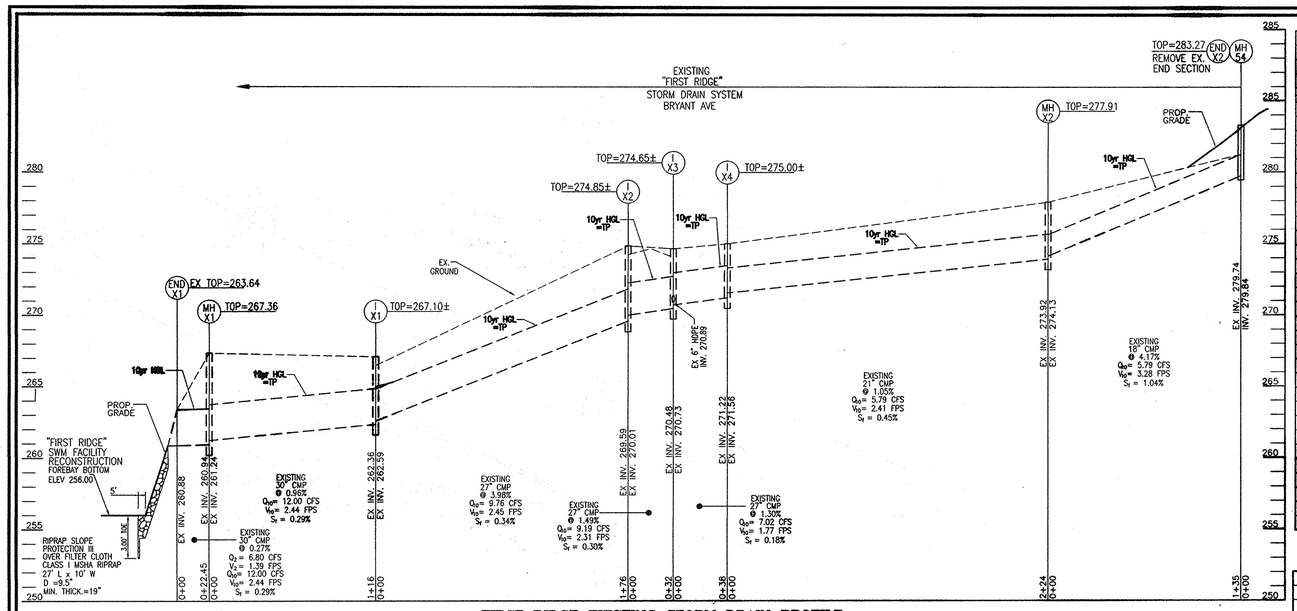
FAX: 410.461.8961

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER 7/16/14
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV / EDS
DRAWN BY:	RVE/EDS
CHECKED BY:	RHV
DATE:	MAY 2014
SCALE:	AS SHOWN
W.O. NO.:	11-28

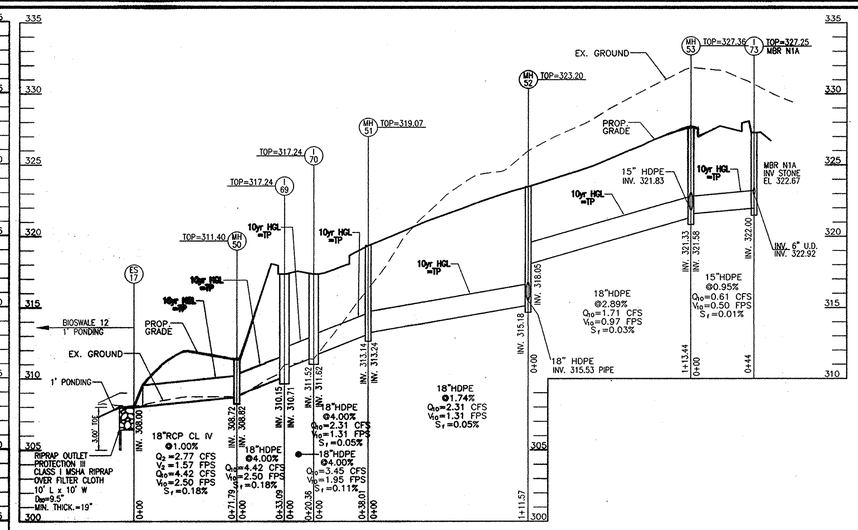
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193
EXPIRATION DATE: 09-27-2014

K:\Projects\11-28\ENG\Rough\FINAL ROAD P2\11-28 DAM.dwg, 7/15/2014 11:07:42 AM



FIRST RIDGE EXISTING STORM DRAIN PROFILE

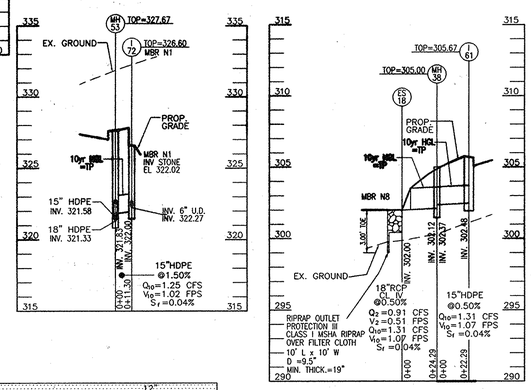
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

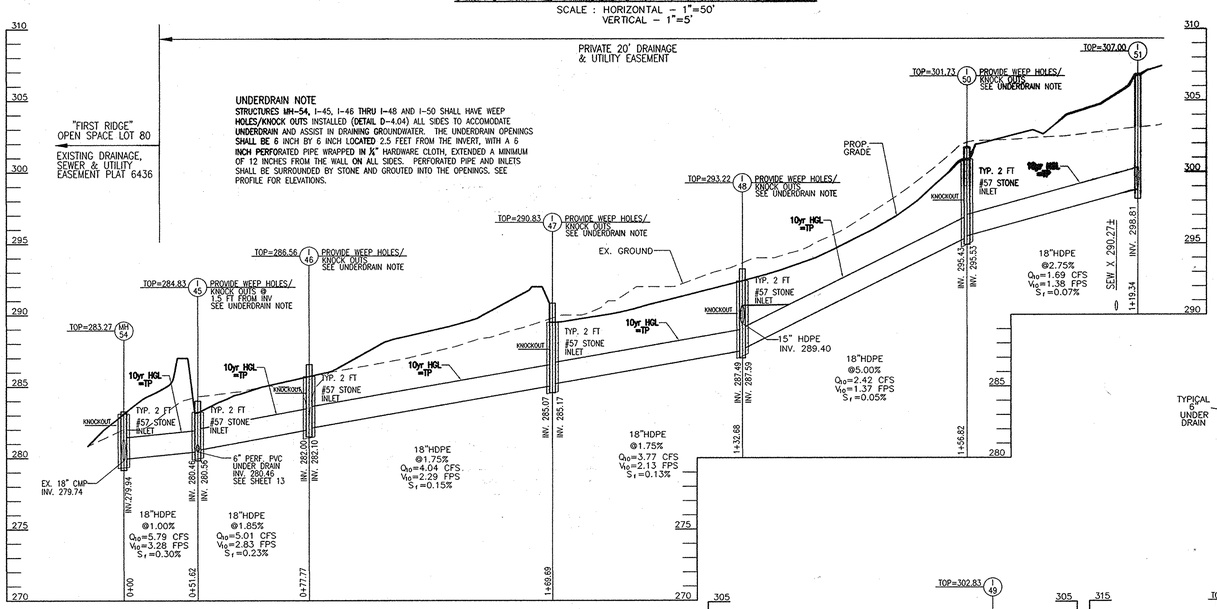


PIPE SCHEDULE		
Size	Class	Total Length *
15"	HDPE	801
18"	HDPE	1763
24	HDPE	350
27"	HDPE	429
18"	RCP CL IV	96
27	RCP CL IV	48

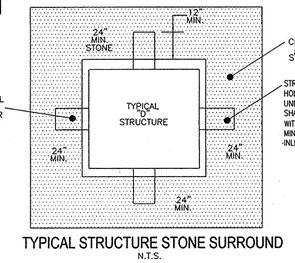
* The total length of pipe is linear feet only.

HDPE is to be smooth interior. Contractor shall install pipe in accordance with manufacturer's specifications





UNDERDRAIN NOTE
STRUCTURES MH-54, I-45, I-46 THRU I-48 AND I-50 SHALL HAVE WEEP HOLES/KNOCK OUTS INSTALLED (DETAIL D-4.04) ALL SIDES TO ACCOMODATE UNDERDRAIN AND ASSIST IN DRAINING GROUNDWATER. THE UNDERDRAIN OPENINGS SHALL BE 6 INCH BY 6 INCH LOCATED 2.5 FEET FROM THE INVERT, WITH A 6 INCH PERFORATED PIPE WRAPPED IN ¼" HARDWARE CLOTH, EXTENDED A MINIMUM OF 12 INCHES FROM THE WALL ON ALL SIDES. PERFORATED PIPE AND INLETS SHALL BE SURROUNDED BY STONE AND GROUTED INTO THE OPENINGS. SEE PROFILE FOR ELEVATIONS.



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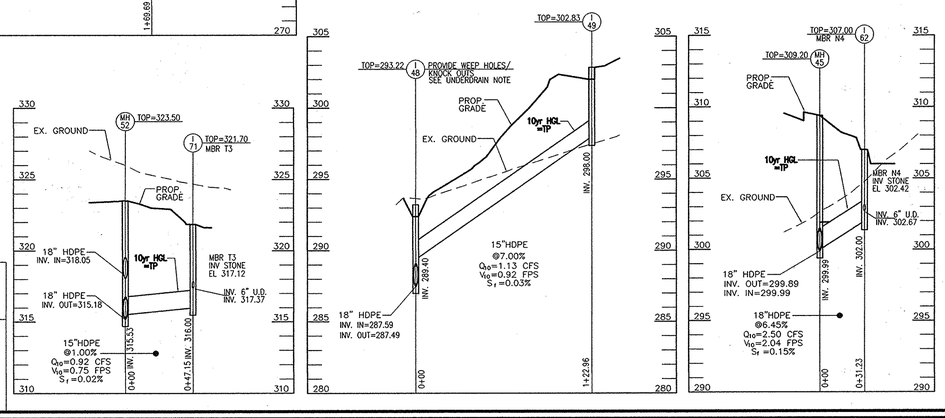
TYPICAL STRUCTURE STONE SURROUND
N.T.S.

STRUCTURE SCHEDULE

STR #	TYPE	INV. IN	INV. OUT	TOP ELEV.	THROAT ELEV.	DETAIL	LOCATION	REMARKS
MH-27A	48" MANHOLE	301.36	301.11	309.15	-	G 5.12	N 528793, E 1351632	
MH-27B	48" MANHOLE	300.93	300.83	309.32	-	G 5.12	N 528779, E 1351666	
MH-36	60" MANHOLE	260.53	256.24	266.00	-	G 5.13	N 529684.93, E 1352116.74	
MH-36A	60" MANHOLE	264.10 / 262.23	262.00	267.60	-	G 5.13	N 529684.93, E 1352116.74	
MH-36B	48" MANHOLE	270.65	270.40	274.30	-	G 5.12	N 529595.45, E 1352096.98	
MH-37	60" MANHOLE	267.33	267.23	274.50	-	G 5.13	N 529738.95, E 1351872.31	
MH-38	48" MANHOLE	302.37	302.12	305.00	-	G 5.12	N 528933.21 E 1351751.67	
MH-39	48" MANHOLE	278.94	276.84	298.20	-	G 5.12	N 529384.13, E 1351725.43	G-5.11 / G-5.16
MH-39A	48" MANHOLE	279.45 / 278.34	277.85	297.20	-	G 5.12	N 529386.75, E 1351735.66	G-5.11 / G-5.16
MH-40	48" MANHOLE	286.05	285.55	298.00	-	G 5.12	N 529291.44, E 1351779.82	
MH-41	48" MANHOLE	301.73	298.78	315.50	-	G 5.12	N 529219.95, E 1351686.78	
MH-42	48" MANHOLE	292.97	292.87	300.00	-	G 5.12	N 529208.97, E 1351835.39	
MH-43	48" MANHOLE	294.24	294.14	298.00	-	G 5.12	N 529151.86, E 1351846.93	
MH-44	48" MANHOLE	296.18 / 296.18	296.08	306.50	-	G 5.12	N 529114.25, E 1351762.93	
MH-45	48" MANHOLE	299.99 / 299.99	299.89	309.20	-	G 5.12	N 529099.52, E 1351694.30	
MH-46	48" MANHOLE	306.63 / 306.63	306.00	314.89	-	G 5.12	N 529146.32, E 1351638.09	
MH-47	48" MANHOLE	312.74	312.49	319.00	-	G 5.12	N 529241.67, E 1351424.64	
MH-48	48" MANHOLE	308.13 / 308.63	308.03	312.50	-	G 5.12	N 529017.18, E 1351584.23	
MH-50	48" MANHOLE	308.82	308.72	311.40	-	G 5.12	N 529446.95, E 1351379.78	
MH-51	48" MANHOLE	313.24	313.14	319.07	-	G 5.12	N 529403.23, E 1351313.60	
MH-52	48" MANHOLE	318.05 / 315.53	315.18	323.20	-	G 5.12	N 529300.37, E 1351270.37	
MH-53	48" MANHOLE	321.83 / 321.58	321.33	327.36	-	G 5.12	N 529195.80, E 1351226.42	
MH-54	48" MANHOLE	279.94	279.94	283.27	-	G 5.12	N 529192.04, E 1352116.31	

STRUCTURE SCHEDULE

STR #	TYPE	INV. IN	INV. OUT	TOP ELEV.	THROAT ELEV.	DETAIL	LOCATION	REMARKS
I-36	S	301.57	301.57	305.90	-	D-4.22	N 528838.48, E 1351639.11	
I-45	D	280.56	280.46	284.83	284.00	D-4.11	N 529202.19, E 1352065.70	OPEN ALL 4 SIDES
I-46	D	282.10	282.00	286.56	285.73	D-4.11	N 529129.22, E 1352038.82	OPEN ALL 4 SIDES
I-47	D	285.17	285.07	290.83	290.00	D-4.11	N 528969.43, E 1351981.67	OPEN ALL 4 SIDES
I-48	D	289.40 / 287.59	287.49	293.22	292.39	D-4.11	N 528847.31, E 1351929.81	OPEN ALL 4 SIDES
I-49	D	-	298.00	302.83	302.00	D-4.11	N 528890.84, E 1351814.81	OPEN ALL 4 SIDES
I-50	D	295.53	295.43	301.73	300.90	D-4.11	N 528703.27 E 1351867.82	OPEN ALL 4 SIDES
I-51	D	298.91	307.00	306.00	D-4.11	N 528745.52, E 1351756.20	OPEN ALL 4 SIDES	
I-52	D	278.61	278.51	293.90	293.07	D-4.11	N 529367.04, E 1351768.90	OPEN ALL 4 SIDES
I-53	D	279.62	279.37	290.80	289.97	D-4.11	N 529327.65, E 1351914.55	OPEN ALL 4 SIDES
I-53A	D	270.21	269.96	281.00	280.17	D-4.11	N 529607.90, E 1351618.06	OPEN 3 SIDES (S,E,W)
I-54	D	-	280.50	284.83	284.00	D-4.11	N 529277.84, E 1352084.21	OPEN ALL 4 SIDES
I-55	D	288.36	287.36	296.85	296.02	D-4.11	N 529263.47, E 1351769.44	OPEN ALL 4 SIDES
I-56	A-5	307.48	304.63	314.93	-	D-4.01	N 529190.17,E 1351662.08	
I-57	A-5	313.03	312.78	318.60	-	D-4.01	N 529240.07, E 1351569.34	
I-58	A-6	-	315.33	319.75	-	D-4.01	N 529284.84, E 1351463.11	
I-59	S	297.60	297.35	303.00	-	D-4.22	N 528997.35, E 1351760.05	
I-60	S	-	299.00	304.20	-	D-4.22	N 528998.74, E 1351703.72	
I-61	A-5	-	302.48	305.66	-	D-4.01	STA: 3+82.01, 12.43' RT	
I-62	S	-	302.00	307.00	-	D-4.22	N 529079.45, E 1351670.38	
I-63	S	310.92	310.42	317.20	-	D-4.22	STA 5+56.33, 32.82' RT	
I-64	S	311.55	311.45	317.40	-	D-4.22	STA 5+56.33, 30.03' LT	
I-65	D	314.07	313.00	319.23	318.40	D-4.11	N 529227.86, E 1351402.85	OPEN ALL 4 SIDES
I-66	D	-	309.00	312.33	311.50	D-4.11	N 528999.01, E 1351582.39	OPEN ALL 4 SIDES
I-67	S	314.14	313.64	320.70	321.00	D-4.22	N 529047.16, E 1351513.05	
I-68	S	316.37	315.25	320.70	321.00	D-4.22	N 529075.75, E 1351444.95	
I-69	DOUBLE 'S'	310.71	310.15	317.24	-	D-4.23	STA 13+25.37, 10.18 RT	
I-70	DOUBLE 'S'	311.52	311.62	317.24	-	D-4.23	STA 13+25.42, 10.18' LT	
I-71	S	-	316.00	321.70	-	D-4.22	STA 11+76.46, 30.09' RT	
I-72	S	-	322.00	326.60	-	D-4.22	STA 10+58.25, 27.30' LT	
I-73	S	322.92	322.00	327.25	-	D-4.22	STA 10+37.03, 25.00' RT	



APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 6.25.14
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 7.1.14
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 7-31-14

OWNER
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, INC.
5300 DORSEY HALL DRIVE, STE 102
ELLICOTT CITY, MARYLAND 21042–7819
ATTN: MR. DONALD R. REUWER
443–367–0422

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN PROFILES

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

ZONED: R–SC
PARCELS: 363 & 542
HOWARD COUNTY, MARYLAND

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

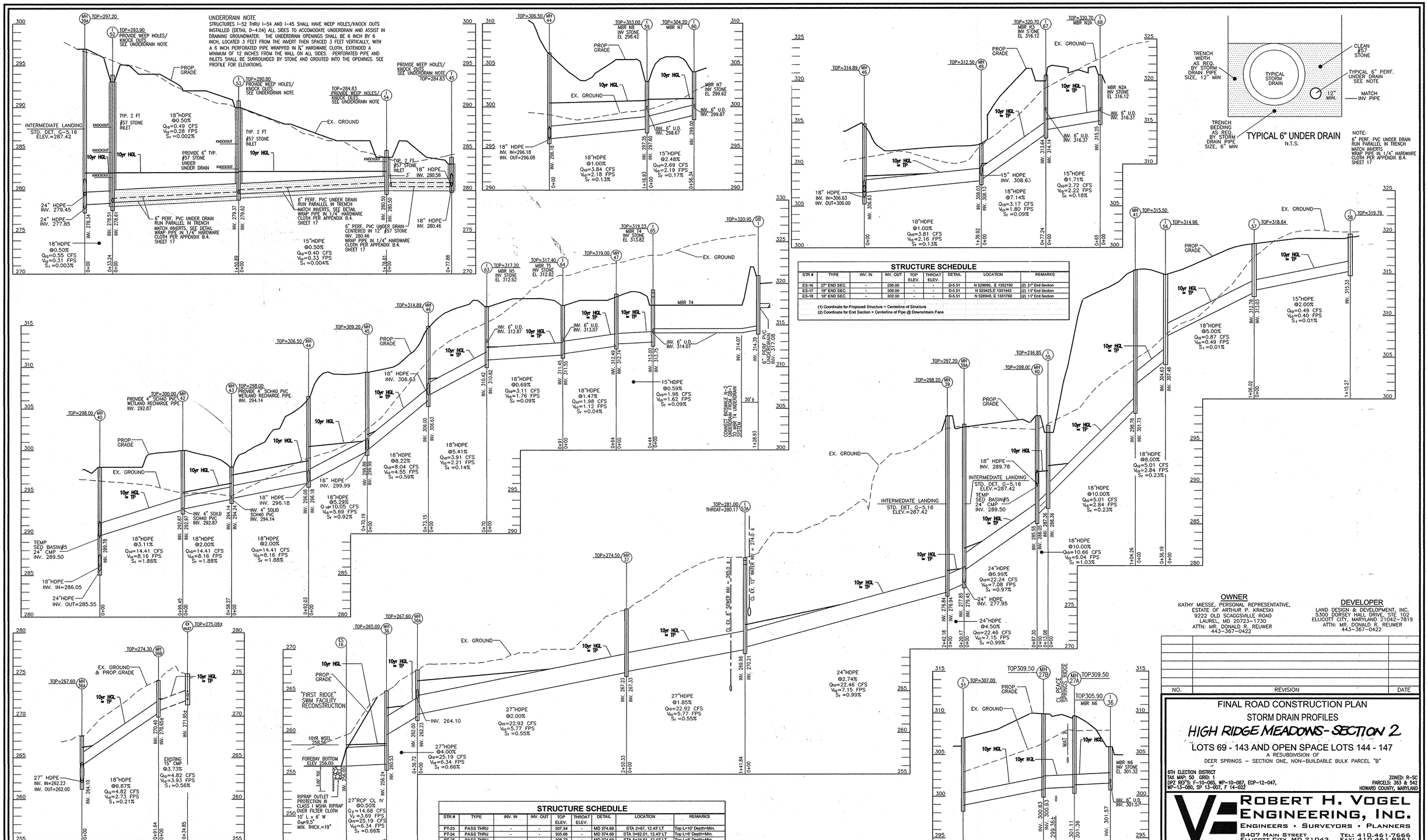
STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER
ROBERT H. VOGEL, P.E. No.16193

DESIGN BY:	RHV / EDS
DRAWN BY:	RVE/EDS
CHECKED BY:	RHV
DATE:	MAY 2014
SCALE:	AS SHOWN
W.O. NO.:	11–28

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

SHEET 12 OF 20

F-14-023


UNDERDRAIN NOTE
STRUCTURES I-52 THRU I-54 AND I-45 SHALL HAVE WEEP HOLES/KNOCK OUTS INSTALLED (DETAIL D-4.04) ALL SIDES TO ACCOMODATE UNDERDRAIN AND ASSIST IN DRAINING GROUNDWATER. THE UNDERDRAIN OPENINGS SHALL BE 6 INCH BY 6 INCH, LOCATED 3 FEET FROM THE INVERT THEN SPACED 3 FEET VERTICALLY, WITH A 6 INCH PERFORATED PIPE WRAPPED IN ¼" HARDWARE CLOTH, EXTENDED A MINIMUM OF 12 INCHES FROM THE WALL ON ALL SIDES. PERFORATED PIPE AND INLETS SHALL BE SURROUNDED BY STONE AND GROUTED INTO THE OPENINGS. SEE PROFILE FOR ELEVATIONS.
TYPICAL 6" UNDER DRAIN
N.T.S.
NOTE:
6" PERF. PVC UNDER DRAIN RUN PARALLEL IN TRENCH MATCH INVERTS WRAP PIPE IN 1/4" HARDWARE CLOTH PER APPENDIX B.4. SHEET 17
STRUCTURE SCHEDULE
(1) Coordinate for Proposed Structure = Centerline of Structure
(2) Coordinate for End Section = Centerline of Pipe @ Downstream Face
STRUCTURE SCHEDULE
NOTE: 1. STANDARD INLET DEPTH AS NOTED IS 6 FEET. DIMENSION FROM FLOWLINE / FACE CURB (R-3.01) TO BACK OF 4" LIP
STD 6" CURB DEPTH + 5" CONC WALK + 4" LIP = TOTAL REQUIRED DEPTH = 6.0'
2. MINIMUM DEPTH = MINIMUM MANUFACTURED DEPTH. FOR USE IN NON-SIDEWALK AREAS
APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS DATE 6.25.14
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 7.1.14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE 7.31.14
OWNER
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9222 OLD SCAGGSVILLE ROAD
LAUREL, MD 20723-1730
ATTN: MR. DONALD R. REUWER
443-367-0422
DEVELOPER
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5300 DORSEY HALL DRIVE, STE 102
ELLICOTT CITY, MARYLAND 21042-7819
ATTN: MR. DONALD R. REUWER
443-367-0422
NO. REVISION DATE
FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN PROFILES
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
SDP 92 REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080, SP 13-007, F 14-022
ZONED: R-SC
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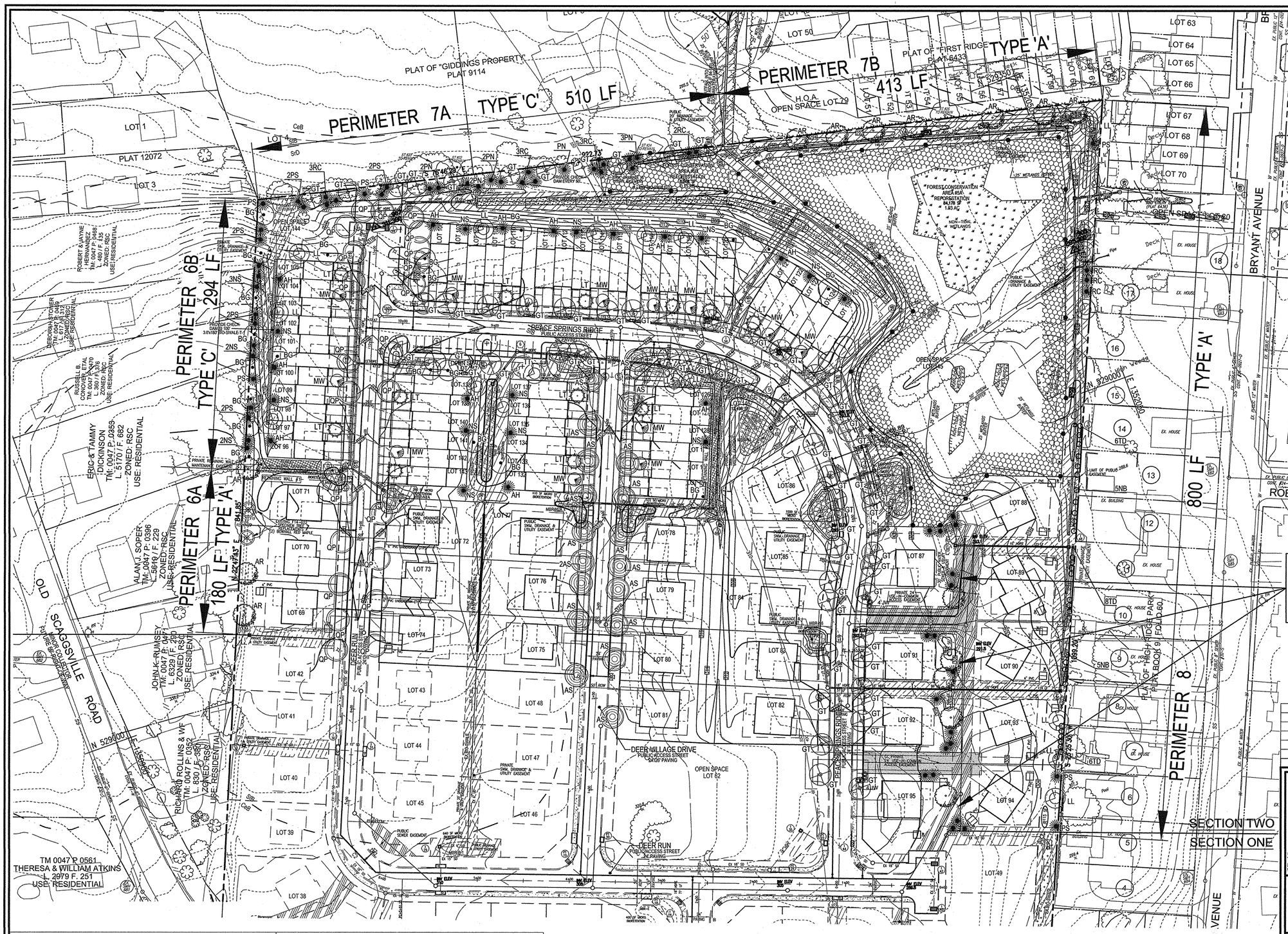
STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193
DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11-28
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193
EXPIRATION DATE: 09-27-2014
13 SHEET OF 20
F-14-023



LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED LIGHT POLE
- PROPOSED SHADE TREE
- PROPOSED EVERGREEN TREE
- PROPOSED SHRUBS
- LANDSCAPE PERIMETER
- MICRO BIO RETENTION FACILITY
- BIO SWALE
- EXISTING SPECIMEN TREE
- EXISTING SPECIMEN TREE TO BE REMOVED
- WATER ZONE DIVIDE
- PRIVATE 24' USE-IN-COMMON ACCESS EASEMENT
- PROP. PUBLIC SEWER, WATER & UTILITY EASEMENT
- PROP. PUBLIC DRAINAGE & UTILITY EASEMENT
- BGE ZONE
- TYP. FOREST CONSERVATION EASEMENT SIGN
- FOREST CONSERVATION EASEMENT
- PRIVATE SWM DRAINAGE & UTILITY EASEMENT

NOTE

ADDITIONAL SCREENING SHOWN SCHEMATICALLY. PLANTINGS SHALL BE PROVIDED AT THE REAR OF LOTS 82, 85, 86 AND 89 TO TO PROVIDE SCREENING OF THE REAR YARD FROM THE FRONT YARDS OF LOTS 83, 84, 87 AND 88 RESPECTIVELY. PLANTINGS SHALL BE PART OF THE BUILDERS SITE DEVELOPMENT PLAN

OWNER
KATHY MIESSE, PERSONAL REPRESENTATIVE,
ESTATE OF ARTHUR P. KRAESKI
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ELLICOTT CITY, MARYLAND 21042-7819
ATTN: MR. DONALD R. REUWER
443-367-0422

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
LANDSCAPE PLAN

HIGH RIDGE MEADOWS - SEC. 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-13-060, SP 13-007, F 14-022
ZONED: R-SC
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DESIGN BY:	RHV / EDS
DRAWN BY:	RVE/EDS
CHECKED BY:	RHV
DATE:	MAY 2014
SCALE:	AS SHOWN
W.O. NO.:	11-28

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EXPIRATION DATE: 09-27-2014

SHEET 14 OF 20

APPROVED: DEPARTMENT OF PUBLIC WORKS
Holger Serrano 7-28-14
CHIEF, BUREAU OF HIGHWAYS DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chad Edison 7-30-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Kent Sheubrooks 7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DEVELOPER'S/BUILDER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER DATE 7/16/2014

LANDSCAPE PLAN

SCALE: 1"=50'

50' 0 50' 100' 150'

NOTES

1. THIS SHEET SHALL NOT BE USED FOR GRADING PURPOSES SEE SHEET 4 & 5
2. REFER TO SHEET 12 & 13 FOR STORM DRAIN PROFILES, STRUCTURE AND PIPE SCHEDULE.

F-14-023

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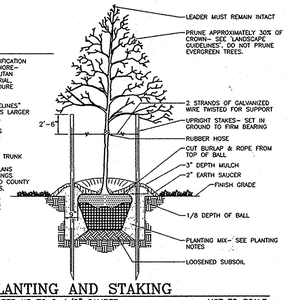
GENERAL NOTES

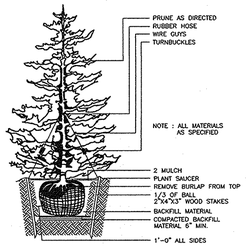
1. NO CLEARING OF EXISTING VEGETATION IS PERMITTED WITHIN THE LANDSCAPE EDGE FOR WHICH CREDIT IS BEING TAKEN; HOWEVER, LANDSCAPE MAINTENANCE IS AUTHORIZED."
2. THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, PLANT MATERIALS, BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD 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.
3. 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.
4. 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 MANUAL.
5. PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCITON OF THE FINAL PLAN.

NOTES

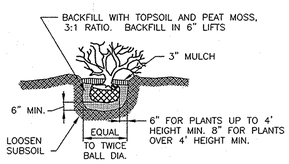
1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, INSTALLATION AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK
5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.



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



TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE



SHRUB PLANTING DETAIL
NOT TO SCALE

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

SCHEDULE "C" - REQUIRED PLANTING					
SYM	KEY	QUAN.	BOTANICAL NAME	SIZE	CAT
	SHADE				
	LL	12	TILIA CORDATA 'GREENSPIRE' LITTLELEAF LINDEN	2 1/2"-3" CAL.	B & B
	BG	12	NYSSA SYLVATICA BLACK GUM	2 1/2"-3" CAL.	B & B
	EVERGREENS				
	AH	12	ILEX OPACA AMERICAN HOLLY (BGE COMPLIANT)	5-6' HT.	B & B
	NS	12	ILEX 'NELLIE R. STEVENS' NELLIE R. STEVENS HOLLY (BGE COMPLIANT)	5'-6' HT.	B & B
	SMALL				
	MW	12	CARPINUS CAROLINIANA MUSCLEWOOD (BGE COMPLIANT)		B & B
	LT	12	LAGERSTROEMIA TUSCARORA TUSCARORA CRAPE MYRTLE (BGE COMPLIANT)	4'-6' HT. (MAX. HEIGHT=25')	B & B

SCHEDULE A PERIMETER LANDSCAPE EDGE						
CATEGORY	ADJACENT TO ROADWAYS AND PERIMETER PROPERTIES					TOTAL
PERIMETER/FRONTAGE DESIGNATION LANDSCAPE TYPE	6-A A	6-B C	7-A C	7-B A	8 A	
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 - -	45 41 -
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	3 - - - -	8 15 - - -	11 26 - - 2 SPEC. TREES	7 - - - -	8* 6 3 30 -	37 47 - 30 2 SPEC. TREES

* SHADE TREES ARE TO BE SUBSTITUTED AT 2:1 AS REQUIRED
** 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.

PERIMETER LANDSCAPE SCHEDULE - REQUIRED PLANTING					
SYM	KEY	QUAN.	BOTANICAL NAME	SIZE	CAT
	SHADE				
	AR	10	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2 1/2"-3" CAL.	B & B
	BG	8	NYSSA SYLVATICA BLACK GUM	2 1/2"-3" CAL.	B & B
	GT	11	GLEDITSIA TRIACANTHOS INERMIS 'IMPERIAL' /IMPERIAL THRONLESS HONEY LOCUST	2 1/2"-3" CAL.	B & B
	LL	8	TILIA CORDATA 'GREENSPIRE' LITTLELEAF LINDEN	2 1/2"-3" CAL.	B & B
	EVERGREENS				
	PS	16	PINUS STROBUS EASTERN WHITE PINE	8' HT.	B & B
	NS	7	ILEX 'NELLIE R. STEVENS' NELLIE R. STEVENS HOLLY (BGE COMPLIANT)	5'-6' HT.	B & B
	RC	14	JUNIPERUS VIRGINANA EASTERN RED CEDAR (BGE COMPLIANT)	5-6' HT.	B & B
	PN	10	PINUS NIGRA AUSTRIAN PINE	8' HT.	B & B
O	SHRUBS				
	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.	B & B

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 SCHEDULE				
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	47	GLEDITSIA TRIACANTHOS INERMIS 'IMPERIAL' /IMPERIAL THRONLESS HONEY LOCUST	2 1/2"-3" CAL.	B & B

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

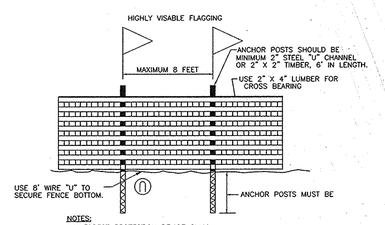
H.O.A. - TRASH PAD LANDSCAPING				
SYM.	QTY.	DESCRIPTION	SIZE	REMARKS
JW	8	DWARF JAPANESE YEW TAXUS CUSPIDATA NANA	18"-24" SP	B&B

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 LANDSCAPING	
NUMBER OF PARKING SPACES	23
NUMBER OF TREES REQUIRED = 1/10 SPACES	2
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTION)	 2 -

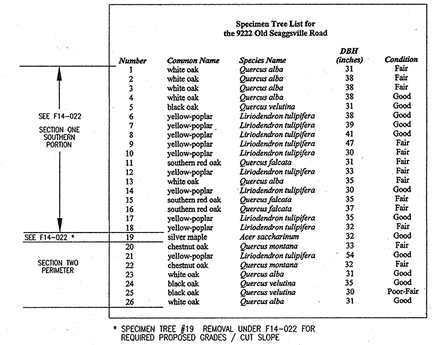
PARKING LOT - LANDSCAPE SCHEDULE					
SYM	KEY	QUAN.	BOTANICAL NAME	SIZE	CAT
	SHADE				
	TT	2	TILIA TOMENTOSA SILVER LINDEN	2 1/2"-3" CAL.	B & B

SURETY = 2 X 300 = $600.00



NOTES:
1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOF DAMAGE SHOULD BE AVOIDED.

BLAZE ORANGE PLASTIC MESH
TYPICAL TREE PROTECTION FENCE DETAIL



Specimen Tree List for the 9222 Old Scaggsville Road

	Number	Common Name	Species Name	DBH (inches)	Condition
SEE F14-022 SECTION ONE SOUTHERN PORTION	1	white oak	*Quercus alba*	31	Fair
	2	white oak	*Quercus alba*	38	Fair
	3	white oak	*Quercus alba*	38	Fair
	4	white oak	*Quercus alba*	38	Good
	5	black oak	*Quercus velutina*	31	Good
	6	yellow-poplar	*Liriodendron tulipifera*	38	Good
	7	yellow-poplar	*Liriodendron tulipifera*	39	Good
	8	yellow-poplar	*Liriodendron tulipifera*	41	Good
	9	yellow-poplar	*Liriodendron tulipifera*	47	Fair
	10	yellow-poplar	*Liriodendron tulipifera*	30	Fair
	11	southern red oak	*Quercus falcata*	31	Fair
	12	yellow-poplar	*Liriodendron tulipifera*	33	Fair
	13	white oak	*Quercus alba*	35	Fair
	14	yellow-poplar	*Liriodendron tulipifera*	30	Good
	15	southern red oak	*Quercus falcata*	35	Fair
	16	southern red oak	*Quercus falcata*	37	Fair
	17	yellow-poplar	*Liriodendron tulipifera*	35	Good
	18	yellow-poplar	*Liriodendron tulipifera*	32	Fair
SEE F14-022 *	19	silver maple	*Acer saccharinum*	32	Good
SECTION TWO PERIMETER	20	chestnut oak	*Quercus montana*	33	Fair
	21	yellow-poplar	*Liriodendron tulipifera*	54	Good
	22	chestnut oak	*Quercus montana*	32	Fair
	23	white oak	*Quercus alba*	31	Good
	24	black oak	*Quercus velutina*	35	Good
	25	black oak	*Quercus velutina*	30	Poor-Fair
	26	white oak	*Quercus alba*	31	Good

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

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

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN

LANDSCAPE PLAN
NOTES & 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

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

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

STATE OF MARYLAND ROBERT HARRIS VOGEL NO. 16193 PROFESSIONAL ENGINEER 6/4/14
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11-28

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

SHEET 15 OF 20

APPROVED: DEPARTMENT OF PUBLIC WORKS
Holger Schaum 6.25.14
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chad Edmondson 7.1.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Kent Sheubrooks 7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DEVELOPER'S/BUILDER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER DATE 6/4/14

F-14-023

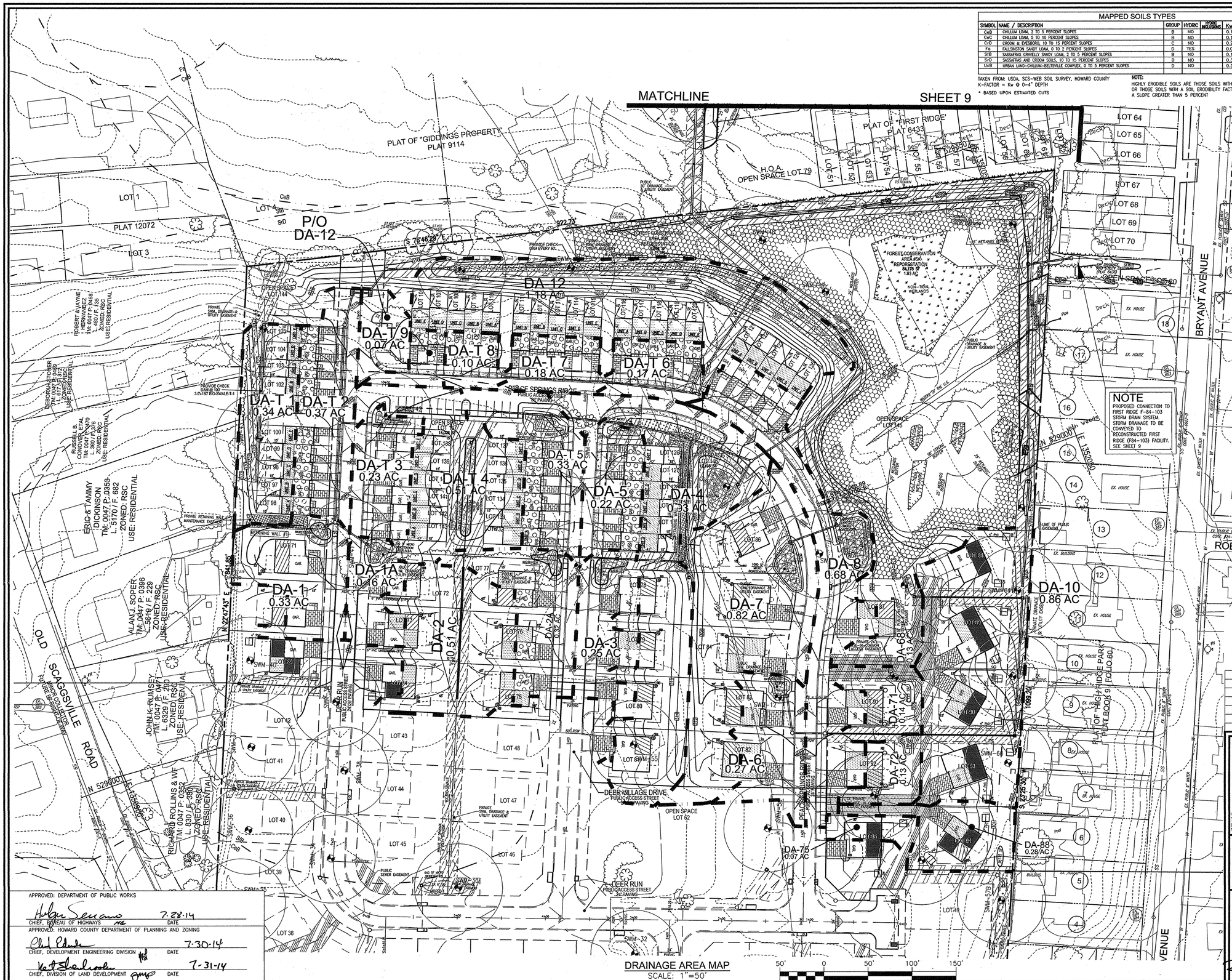
MAPPED SOILS TYPES						
SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	MINOR INCLUSIONS	Kw RANGE*	PRIME FARMLAND	STEEP SLOPE W/ ERODIBLE POTENTIAL
CeB	CHILLUM LOAM, 2 TO 5 PERCENT SLOPES	B	NO		0.15 – 0.37		NO
CeC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	B	NO		0.15 – 0.37		PARTIAL
CrD	CROOM & EVESBORO, 10 TO 15 PERCENT SLOPES	C	NO		0.28		NO
Fa	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D	YES		0.02 – 0.24		NO
SrB	SASSAFRAS GRAVELLY SANDY LOAM, 2 TO 5 PERCENT SLOPES	B	NO		0.17 – 0.24		NO
SrD	SASSAFRAS AND CROOM SOILS, 10 TO 15 PERCENT SLOPES	B	NO		0.32 – 0.37		PARTIAL
UcB	URBAN LAND–CHILLUM–BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	D	NO		0.37		NO

TAKEN FROM: USDA, SCS–WEB SOIL SURVEY, HOWARD COUNTY
K–FACTOR = Kw @ 0–4" DEPTH
* BASED UPON ESTIMATED CUTS

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

LEGEND:

- PROPERTY LINE
- RIGHT–OF–WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- SS — EXISTING SANITARY LINE
- CO — EXISTING CLEANOUT
- FH — EXISTING FIRE HYDRANT
- W — EXISTING WATER LINE
- 330 — EXISTING 10' CONTOUR
- 328 — EXISTING 2' CONTOUR
- SoE / SrC2 — SOILS
- EXISTING TREELINE
- EXISTING TREES
- DRAINAGE DIVIDE
- DA-3 — DRAINAGE AREA DESIGNATION
- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- 15' — NON–STRUCTURAL ROOFTOP DISCONNECTIONS
- ROOFTOP DISCONNECTS TO DRYWELL
- MICRO–SCALE PRACTICE BIO–SWALE
- NON–STRUCTURAL PROP. PERMEABLE SURFACE ROAD / DRIVEWAY ROOFTOP TO PERMEABLE SURFACE SUBBASE
- MICRO–SCALE PRACTICE MICRO BIORETENTION / BIORETENTION
- RB — 200 GAL RAIN BARREL
- DW — PROPOSED DRYWELL
- EXISTING WETLAND
- NON–STRUCTURAL PROP. PERMEABLE DRIVEWAY W/ ROOFTOP TO PERMEABLE SURFACE SUBBASE
- ROOFTOP DISCONNECTS FLOW PATH
- ROOFTOP DISCONNECTS RAIN BARREL



DRAINAGE AREA MAP
SCALE: 1"=50'

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

NO.	REVISION	DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7.28.14
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7-30-14
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7-31-14

FINAL ROAD CONSTRUCTION PLAN

ESDv - DRAINAGE AREA MAP - NORTH AREA 1

HIGH RIDGE MEADOWS - SEC. 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
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STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE. No.16193

DESIGN BY:	RHV / EDS
DRAWN BY:	RVE/EDS
CHECKED BY:	RHV
DATE:	MAY 2014
SCALE:	AS SHOWN
W.O. NO.:	11–28

PROFESSIONAL CERTIFICATE
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EXPIRATION DATE: 09–27–2014

SHEET 16 OF 20

F-14-023

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

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

2. FILTERING MEDIA OR PLANTING SOIL
THE SOIL SHALL BE 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.
THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
* 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 OR DECREASE PH.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

3. COMPACTION
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING 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 INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.
COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO 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.
ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.
WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.
WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION 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 ON THE OUTSIDE OF THE TREE BALL.
GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.
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 IN TO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

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

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

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

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING.
2. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DEFICIENT STAKES AND WIRES.
3. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.
5. 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."

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

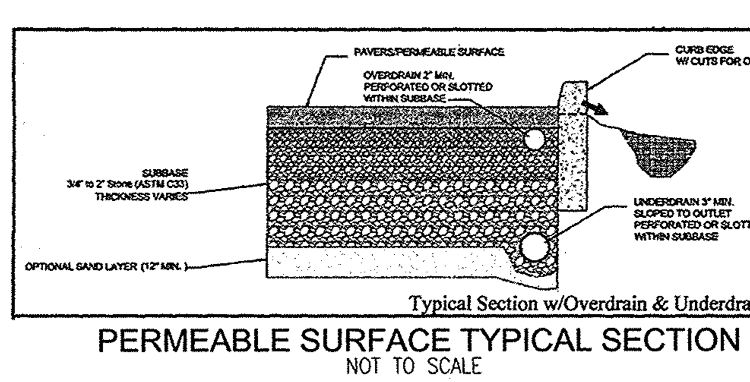
B.4.B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF

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 AASHTO M 157 MAY ALSO BE USED.
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 RECOMMENDATIONS.
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
NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS	
Holger Serrano	6·25·14
CHIEF, BUREAU OF HIGHWAYS	DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	
Chad Edmondson	7·1·14
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
Kent Sheubrooks	7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE

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

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

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil SEE O&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)		
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 ¼-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.

N-1. DISCONNECTION OF ROOFTOP RUNOFF

CONSTRUCTION CRITERIA:

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

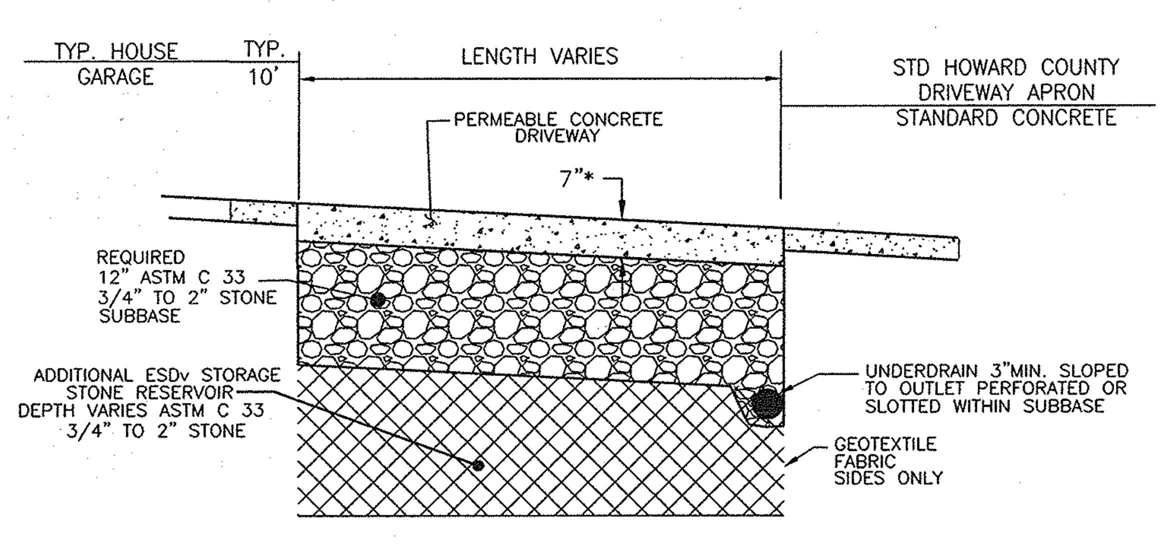
- EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN VEGETATED AREAS RECEIVING DISCONNECTED RUNOFF
- SITE DISTURBANCE: CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFF TO MINIMIZE DISTURBANCE AND COMPACTION. 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.

INSPECTION:

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:

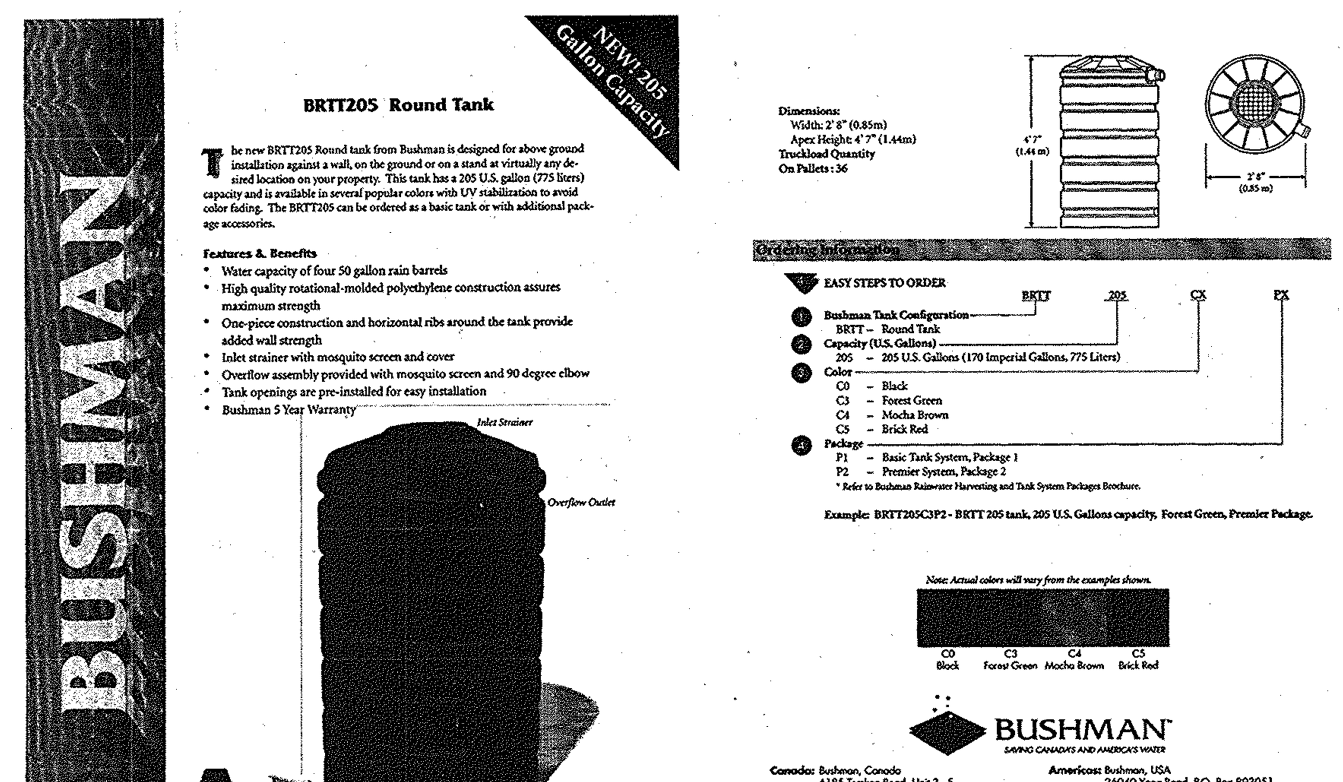
MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION (E.G., BY PLANTING TREES OR SHRUBS ALONG THE PERIMETER). IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.



NOTE:
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 FOR UNDERDRAIN, SEE NOTE 2.

DETAIL - PERMEABLE CONCRETE DRIVEWAY - 5% OR LESS
NOT TO SCALE

*ALL PERMEABLE CONCRETE THICKNESS, MIX AND SUB-BASE TO BE DETERMINED BY GEOTECHNICAL ENGINEER ONSITE.



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.
B. 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.
D. THE OWNER SHALL ALLOW THE BARREL TO DRAIN BY BOTTOM SPIGOT DURING THE WINTER SEASON.

TYPICAL RAIN BARREL DESIGN

$\frac{205\ GAL}{7.48\ GAL/CUFT} = 27.41$ CUFT

$\frac{500\ SF \times (X")}{12} = 27.41$ CUFT

$\frac{12\ (27.41\ CUFT)}{500\ SF} = 0.66"$

THEREFORE A 205 GALLON BARREL CAPTURES P_E 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 LENGTH.

A-2. PERMEABLE PAVEMENTS

CONSTRUCTION CRITERIA:

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.
- DISTRIBUTION SYSTEMS: OVERDRAIN, UNDERDRAIN, AND DISTRIBUTION PIPES SHALL BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS (SEE APPENDIX B. 4). THE UPSTREAM 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 SHALL BE PLACED IN LIFTS AND LIGHTLY ROLLED ACCORDING TO THE SPECIFICATIONS (SEE APPENDIX B.4).

INSPECTION:

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.
- UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

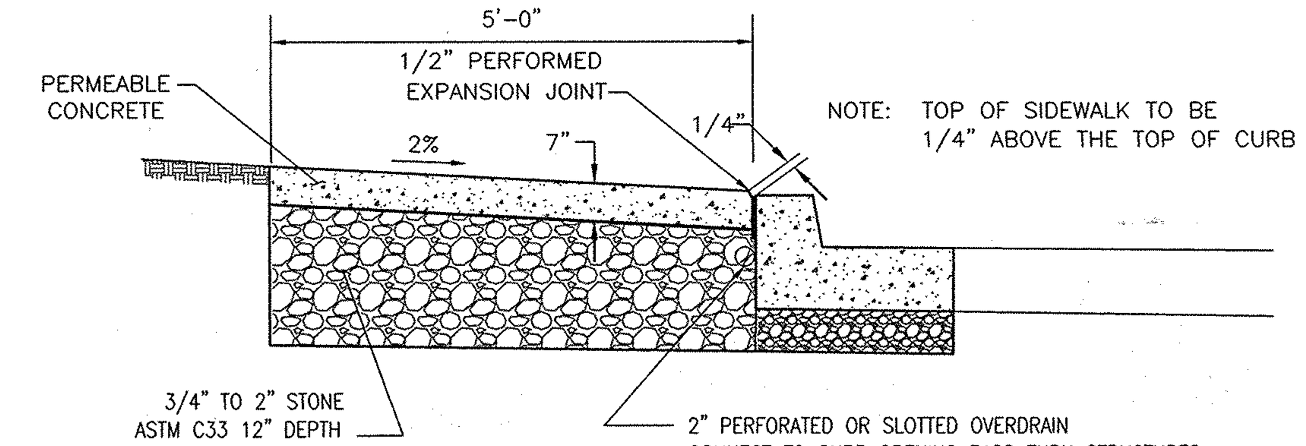
MAINTENANCE CRITERIA:

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

- 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 PERFORMANCE.
- 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)

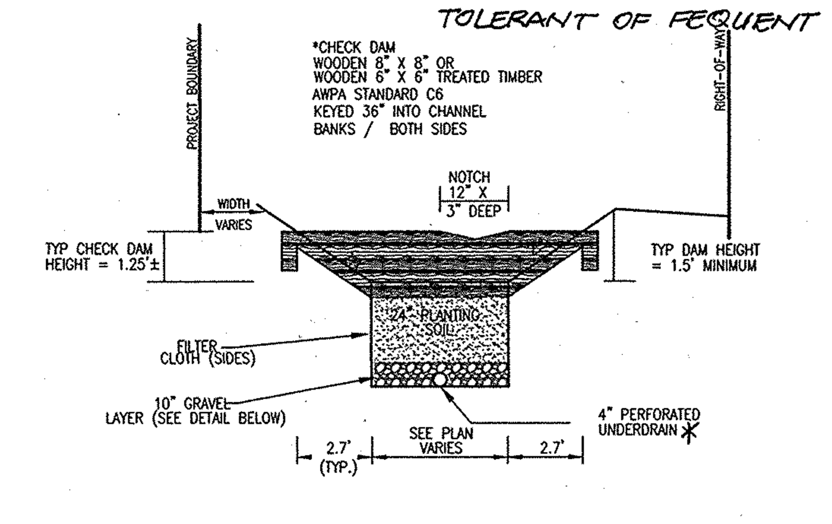
A. THE OWNER SHALL PERIODICALLY SWEEP (OR VACUUM POROUS CONCRETE PAVEMENT) THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING OR COMPRESSED AIR UNITS SHOULD NOT BE USED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



DETAIL - PERMEABLE CONCRETE WALK
NOT TO SCALE

NOTES
1. SIDEWALK TO BE SCRIBED IN 5'-0" MAXIMUM SQUARES. LEADWALKS PER BUILDER SPECIFICATION 3' TYP.
2. EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 15' APART.
3. 1/2" PREFORMED EXPANSION MATERIAL IN EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK.
4. WHEN SIDEWALK ABUTS CURB, SIDEWALK SHALL BE 1/4' ABOVE CURB WITH 1/2" PREFORMED EXPANSION JOINT BETWEEN SIDEWALK AND CURB.
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 ASTM C33.
8. CONCRETE MIX SHALL BE DESIGNED BY GEO TECHNICAL CONSULTANT.
9. BASE BELOW THE CURB SHALL CONSIST OF GRADED AGGREGATE BASE(GAB).

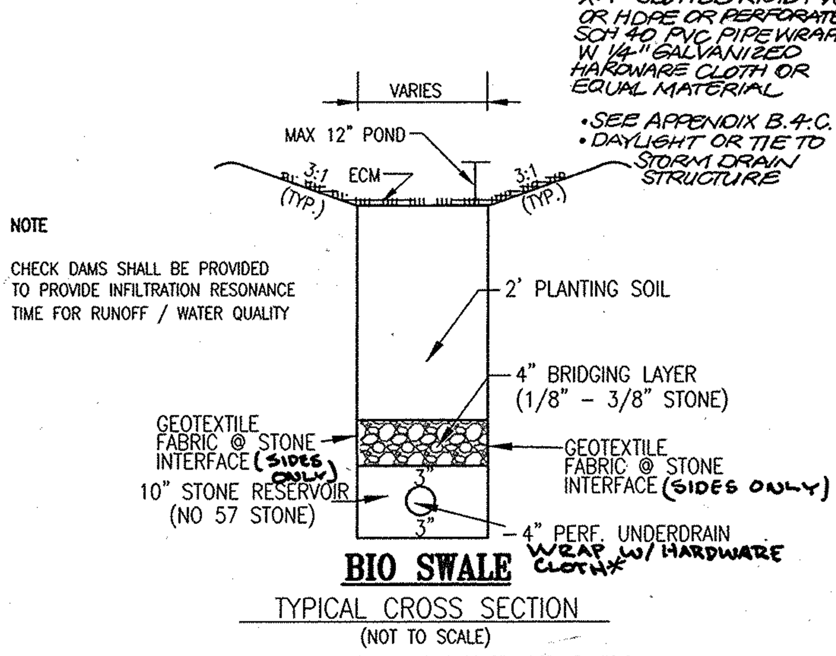
BIO-SWALE PLANTING
PLANTINGS SHALL CONSIST OF A MIXTURE:
REED CANARY GRASS - PHALARIS ARUNDINACAS
SWITCH GRASS - PANICUM VIRGATUM
MAJESTIC LILY TURF - LIRIOPE MUSCARI 'MAJESTIC'
OR EQUAL COMBINATION OF COOL/WARM SEASON GRASSES TOLERANT OF FEQUENT INUNDATION



BIO-SWALE 6" X 6" CHECK DAM
TYPICAL CROSS SECTION
(NOT TO SCALE)
(SEE DETAIL SHT 24)

NOTE
CHECK DAMS SHALL BE PROVIDED TO PROVIDE INFILTRATION RESONANCE TIME FOR RUNOFF / WATER QUALITY

**4" SLOTTED RIGID PVC OR HDPE OR PERFORATED SCH 40 PVC PIPE WRAPPED W/ 1/4" GALVANIZED HARDWARE CLOTH OR EQUAL MATERIAL*
• SEE APPENDIX B.4.C.
• DAYLIGHT OR TIE TO STORM DRAIN STRUCTURE



BIO SWALE
TYPICAL CROSS SECTION
(NOT TO SCALE)

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

20' 0 20' 40' 60'

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

NO.	REVISION	DATE
1	REVISE UNDERDRAIN DETAIL MICRO-BIORETENTION AND BIOSWALE FACILITY; REVISE SAND FILTER DETAIL	3/30/15

FINAL ROAD CONSTRUCTION PLAN
STORMWATER MANAGEMENT NOTES AND 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"

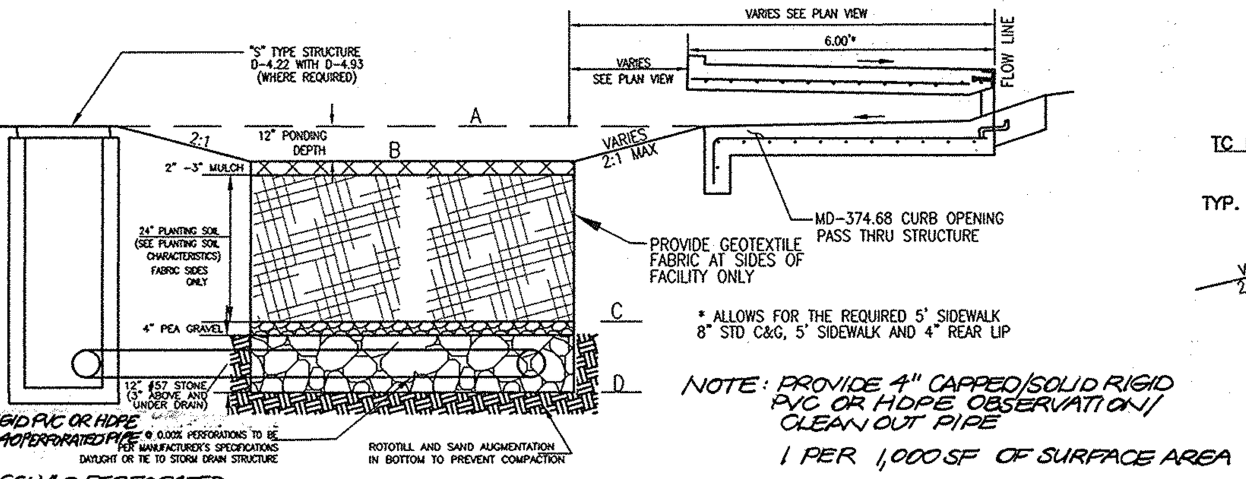
6TH ELECTION DISTRICT
TAX MAP: 50 GRID: 1
DPZ REF'S: F-10-065, WP-10-087, ECP-12-047, WP-13-080, SP 13-007, F 14-022
ZONED: R-SC
PARCELS: 363 & 542
HOWARD COUNTY, MARYLAND

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

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

DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11-28

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

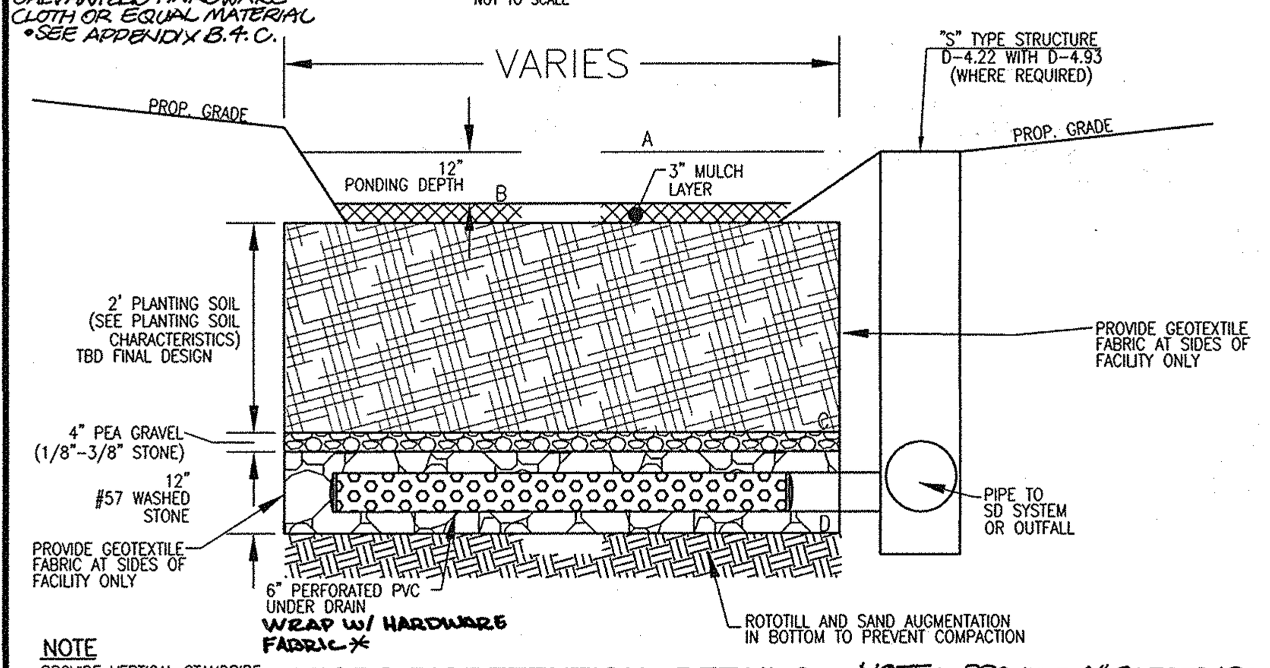


NOTE: PROVIDE 4" CAPPED/SOLID RIGID PVC OR HDPE OBSERVATION/ CLEAN OUT PIPE

1 PER 1,000 SF OF SURFACE AREA

NOTE: 6" SCH 40 PERFORATED PVC WRAPPED W/ 1/4" GALVANIZED HARDWARE CLOTH OR EQUAL MATERIAL
•SEE APPENDIX B.4.C.

MICRO-BIORETENTION – DETAIL 1
NOT TO SCALE



NOTE
PROVIDE VERTICAL STANDPIPE CLEANOUT AT ALL ENDS OF PERFORATED UNDERDRAINS –STANDPIPES SHALL BE SOLID

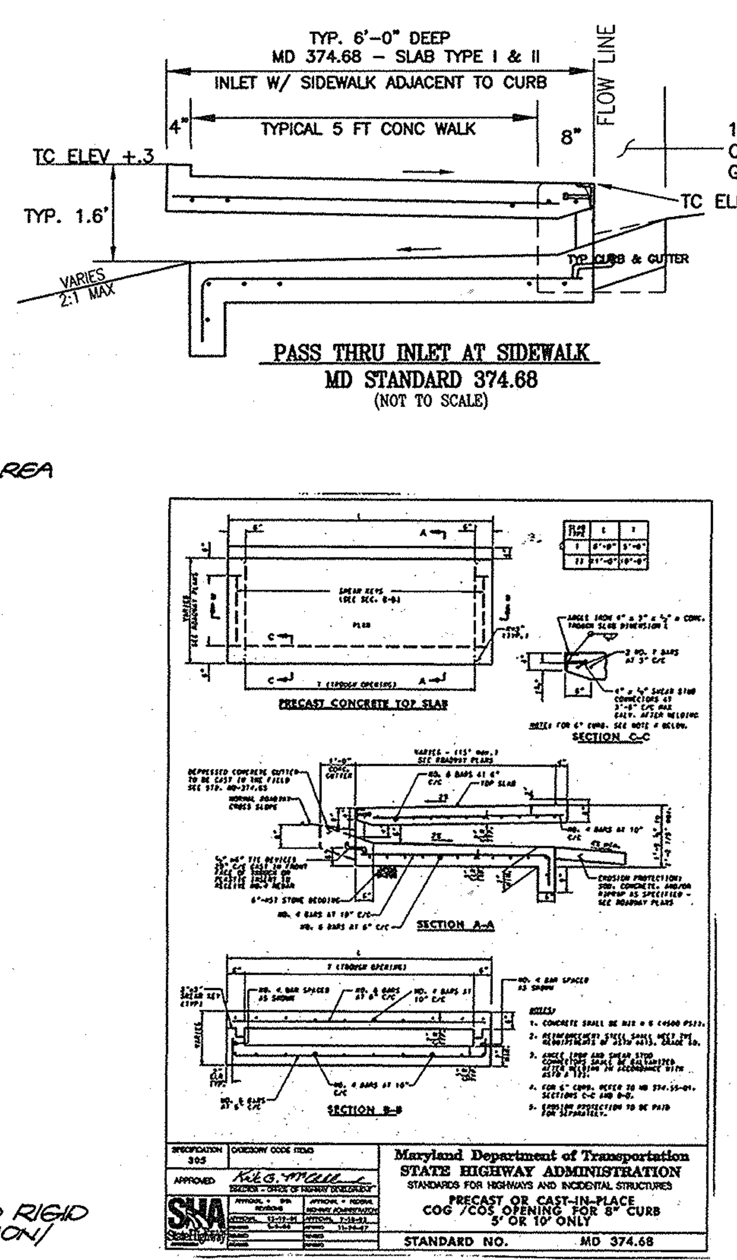
MICRO-BIORETENTION - DETAIL 2
NOT TO SCALE

NOTE: PROVIDE 4" CAPPED/SOLID RIGID PVC OR HDPE OBSERVATION/ CLEAN OUT PIPE

1 PER 1,000 SF OF SURFACE AREA

* 6" SLOTTED RIGID PVC OR HDPE OR PERFORATED SCH 40 PVC PIPE WRAPPED W/ 1/4" GALVANIZED HARDWARE CLOTH OR EQUAL MATERIAL

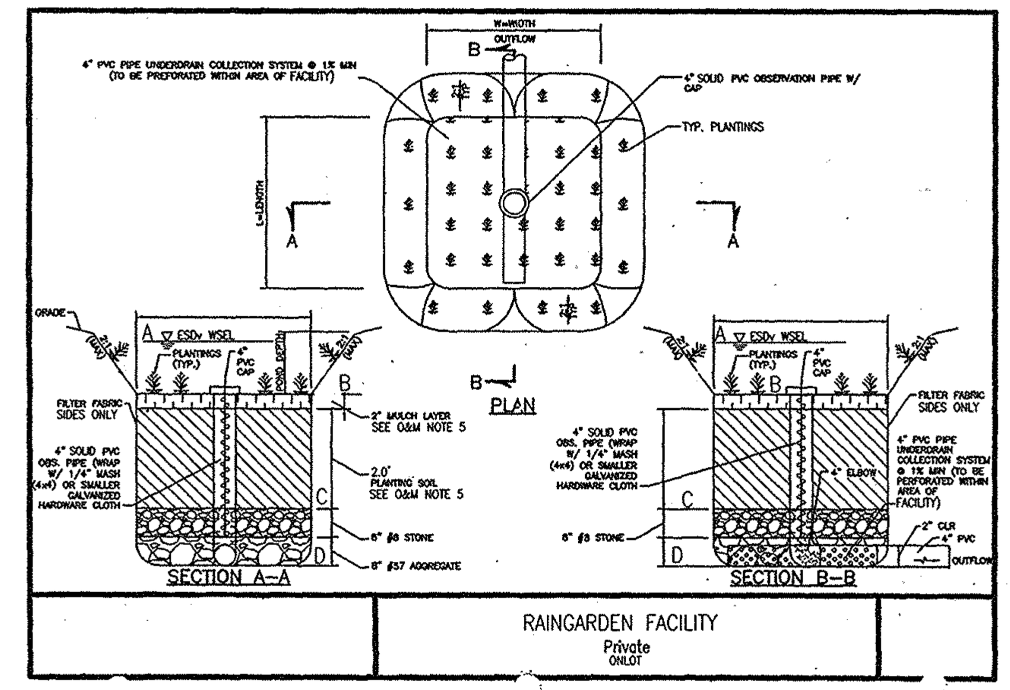
•SEE APPENDIX B.4.C.
•DAYLIGHT OR TIE TO STORM DRAIN STRUCTURE

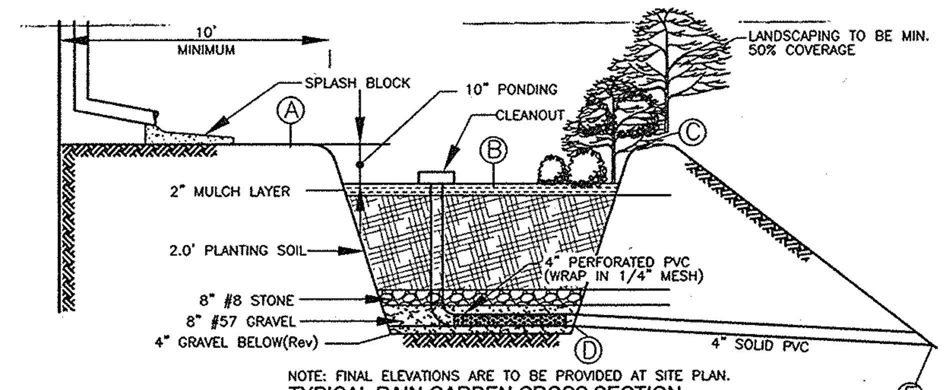


TYPICAL CURB OPENING INLETS

MICRO-BIORETENTION FACILITY - DESIGN ELEVATION CHART								
MBR FACILITY #	TOP S INLET MAX WSEL	ESD WSEL A	TOP MULCH B	BOTTOM PLANT SOIL C	INV STONE D	SURFACE AREA SF	MBR DETAIL TYPE	APPROX DIM
SECTION TWO								
N1	326.60	326.60	325.60	323.35	322.02	295	1	SEE PLAN
N1A	327.25	327.25	326.25	324.00	322.67	390	1	SEE PLAN
T3	321.70	321.70	320.70	318.45	317.12	210	1	SEE PLAN
T4	318.40	318.40	317.40	315.15	313.82	1100	2	SEE PLAN
T5	317.40	317.40	316.40	314.15	312.82	550	1	SEE PLAN
N5	317.20	317.20	316.20	313.95	312.62	370	1	SEE PLAN
N2A	320.70	320.70	319.70	317.45	316.12	410	1	SEE PLAN
N3	320.70	320.70	319.70	317.45	316.12	572	1	SEE PLAN
N6	305.90	305.90	304.90	302.65	301.32	333	1	SEE PLAN
N7	304.20	304.20	303.20	300.95	299.62	1000	1	SEE PLAN
N8	303.00	303.00	302.00	299.75	298.42	1410	2	SEE PLAN
N4	307.00	307.00	306.00	303.75	302.42	1300	2	SEE PLAN

REFER TO SHEET 19 FOR PLANTING NOTES, DETAIL AND SCHEDULES



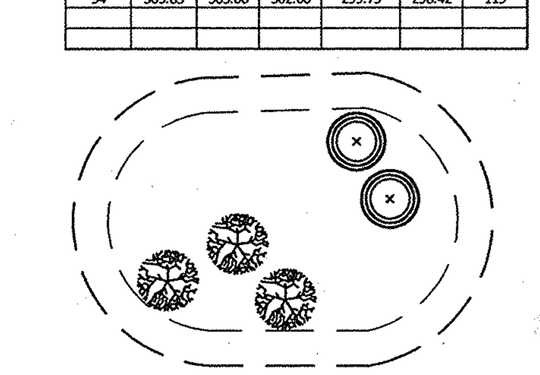


NOTE: FINAL ELEVATIONS ARE TO BE PROVIDED AT SITE PLAN.
TYPICAL RAIN GARDEN CROSS SECTION
NOT TO SCALE

ON-LOT RAINGARDEN - PLANTING SCHEDULE			
RG FACILITY #	SURFACE AREA	REQUIRED PLANTINGS	PROPOSED PLANTINGS
SOUTH AREA			
87	150	3	3 LINDERA BENZOIN - SPICEBUSH
			3 VIBURNUM TRILOBUM - AMERICAN HIGHBUSH CRANBERRY
91	125	2	2 LINDERA BENZOIN - SPICEBUSH
			2 VIBURNUM TRILOBUM - AMERICAN HIGHBUSH CRANBERRY
92	135	2	2 LINDERA BENZOIN - SPICEBUSH
			2 VIBURNUM TRILOBUM - AMERICAN HIGHBUSH CRANBERRY
94	115	2	2 LINDERA BENZOIN - SPICEBUSH
			2 VIBURNUM TRILOBUM - AMERICAN HIGHBUSH CRANBERRY

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

ON-LOT RAINGARDEN - DESIGN ELEVATION CHART						
RG FACILITY #	MAX WSEL	ESD WSEL A	TOP MULCH B	BOTTOM PLANT SOIL C	INV STONE D	SURFACE AREA SF
87	303.83	303.00	302.00	299.75	298.42	150
91	305.83	305.00	304.00	301.75	300.42	125
92	307.83	307.00	306.00	303.75	302.42	135
94	303.83	303.00	302.00	299.75	298.42	115



TYPICAL PLANTING DETAIL FOR RAINGARDENS
NTS

ONLOT RAINGARDEN PLANTING SCHEDULE				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
⊙	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

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

DEER SPRINGS - SECTION TWO - ESDv COMPUTATIONS

Site Computations: Rv = 0.2887
A = 36.94 Acres ESDv = 61940 cuft
Pe = 1.6 inches

Rv=0.05+0.009XI
V min=1.0" rainfall (1.0 x Rv x A)/12
Vmax= 1yr rainfall=2.6" (2.6 x Rv x A)/12

NORTH AREA # 1 - Pe = 1.6" Provided — * Accounts for 75% Ponding Volume, See Computations

DA #	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.6" VOLUME	VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
2	19.67	0.2270	22215	0.51	420	1093	673	717	4370	0.10	0.41	NON-STRUCTURAL, MICROSCALE & BIO SWALE
2A	51.12	0.5101	14079	0.32	598	1556	958	1063	7197	0.17	0.16	NON-STRUCTURAL, ALT SURFACE, & MICRO-BIO RETENTI
3	70.75	0.6868	10900	0.25	624	1622	998	998	7712	0.18	0.07	NON-STRUCTURAL, ALT SURFACE, & MICRO-BIO RETENTI
4	34.97	0.3647	40520	0.93	1232	3202	1971	2197	14170	0.33	0.60	NON-STRUCTURAL, ALT SURFACE, MICRO SCALE, & MICR
5	75.31	0.7278	9800	0.22	594	1545	951	966	7380	0.17	0.06	ALT SURFACE, & MICRO-BIO RETENTION
6	45.87	0.4629	11800	0.27	455	1183	728	800	5413	0.12	0.15	NON-STRUCTURAL, ALT SURFACE & MICRO-BIO RETENTIC
7	35.10	0.3659	35870	0.82	1094	2844	1750	1838	12592	0.29	0.53	NON-STR. & MICRO-SCALE PRAC., ALT SURFACE & MICRO-BIO RET
8	62.07	0.6086	29600	0.68	1501	3903	2402	2466	18372	0.42	0.26	NON-STR, ALT SURFACE, & MICRO-BIO RETENTION
T4	51.86	0.5168	22000	0.51	947	2463	1516	1550	11410	0.26	0.24	NON-STRUCTURAL & MICRO-BIO RETENTION
T5	68.39	0.6655	14300	0.33	793	2062	1269	1358	9780	0.22	0.10	NON-STRUCTURAL, ALT SURFACE, & MICRO-BIO RETENTI
								*				
	46.6	0.4695	211084	4.85	8259	21474	13215	13953	98396	2.26	2.59	

NORTH AREA # 1 - MIN Pe = 1.00" Provided (Underdrain / Outfall Flows Toward Subarea 12) — * Accounts for 75% Ponding Volume, See Computations

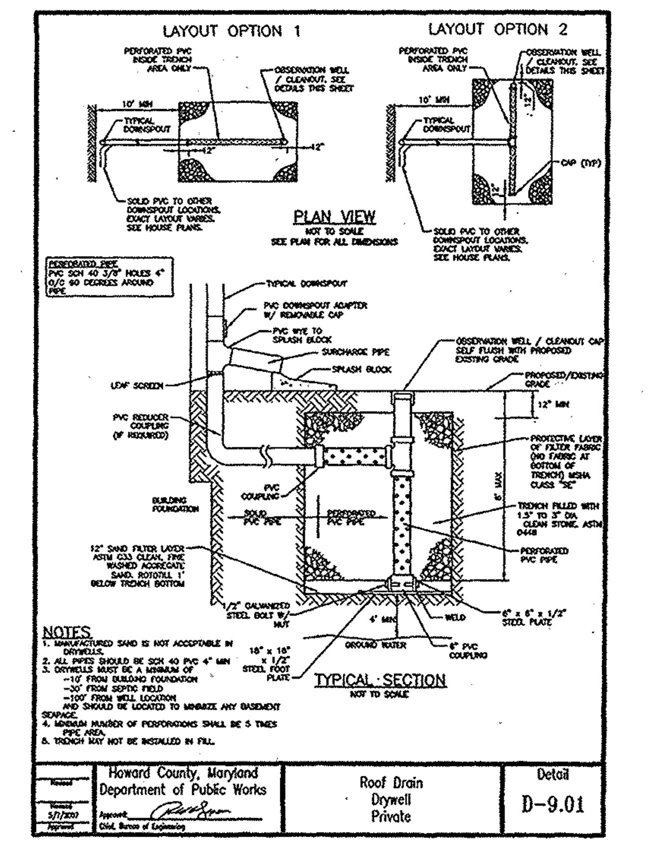
DA #	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.6" VOLUME	VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
1	47.71	0.4794	14510	0.33	580	1507	927	591	6923	0.16	0.17	NON-STRUCTURAL, MICRO SCALE, ALT SURFACE & MICRC
1A	59.80	0.5882	7062	0.16	346	900	554	601	4223	0.10	0.07	NON-STRUCTURAL, ALT SURFACE, & MICRO-BIO RETENTI
T2	77.77	0.7499	16330	0.37	1021	2653	1633	1211	12700	0.29	0.08	NON-STRUCTURL, ALT SURFACE
T3	66.80	0.6512	10000	0.23	543	1411	868	566	6680	0.15	0.08	ALT SURFACE, & MICRO-BIO RETENTION
T6	72.41	0.7017	7575	0.17	443	1152	709	739	5485	0.13	0.05	ALT SURFACE
T7	72.57	0.7031	7660	0.18	449	1167	718	739	5559	0.13	0.05	ALT SURFACE
T8	80.25	0.7723	4360	0.10	281	730	449	506	3499	0.08	0.02	ALT SURFACE
T9	93.31	0.8898	3230	0.07	240	623	383	337	3014	0.07	0.00	ALT SURFACE
12	21.99	0.2479	51230	1.18	1058	2752	1694	4007	11267	0.26	0.92	Pe = 1.6" provided
												NON-STRUCTURAL & BIO SWALE
									BIO-SWALE FACILITY SIZED FOR DIFFERENCE IN THE 1.00" PROVIDED WITHIN INDIVIDUAL DRAINAGE AREAS AND REQUIRED 1.6", SEE COMPUTATIONS			
								*				
	48.7	0.4880	121957	2.80	4959	12894	7935	9297	59350	1.36	1.44	

NORTH AREA # 1 - REQUIRED Pe = 1.6" Provided (Underdrains / Outfall Flows Freely) — * Accounts for 75% Ponding Volume, See Computations

DA #	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.6" VOLUME	VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
T1	28.28	0.3045	14850	0.34	377	980	603	750	4200	0.10	0.24	NON-STRUCTURAL & BIO SWALE
68	28.88	0.3099	5665	0.13	146	380	234	241	1636	0.04	0.09	NON-STR, MICROSCALE PRACTICES
71	26.60	0.2894	6150	0.14	148	386	237	238	1636	0.04	0.10	NON-STR, MICROSCALE PRACTICES
72	32.00	0.3380	5425	0.12	153	397	244	250	1736	0.04	0.08	NON-STR, MICROSCALE PRACTICES
75	28.57	0.3071	3150	0.07	81	210	129	131	900	0.02	0.05	NON-STR, MICROSCALE PRACTICES
88	26.84	0.2916	12000	0.28	292	758	467	487	3221	0.07	0.20	NON-STR, MICROSCALE PRACTICES
10	26.65	0.2898	37300	0.86	901	2342	1441	1448	9940	0.23	0.63	NON-STR, ALT SURFACE, MICROSCALE PRACTICES
	27.5	0.2977	84540	1.94	2097	5453	3356	3545	23269	0.53	1.41	

NORTH TOTALS

% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.6" VOLUME	VOLUME PROVIDED	IMPERV (SF)	IMPERV (AC)	GREEN AREA
43.3	0.4401	417581	9.59	15316	39822	24506	26795	181015	4.16	5.43



HOWARD COUNTY – OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DRYWELL (M-5)

A. THE OWNER SHALL INSPECT & CLEAN ANNUALLY, INCLUDING PIPES GUTTERS DOWNSPOUTS AND FILTERS.

B. PONDING STANDING WATER OR ALGAL GROWTH ON THE TOP OF A DRYWELL MAY INDICATE FAILURE DUE TO SEDIMENTATION IN THE GRAVEL MEDIA. IF WATER PONDS FOR MORE THAN 48 HOURS AFTER A MAJOR STORM OR MORE THAN SIX INCHES OF SEDIMENT HAS ACCUMULATED, THE GRAVEL MEDIA SHOULD BE EXCAVATED AND REPLACED.

ON-LOT DRYWELL - DESIGN ELEVATION CHART							
SWM DA	DW LOT #	NUMBER OF DW'S	PROP GRADE OVER	TOP STONE	INV STONE	SURFACE SIZE FT X FT	STONE DEPTH FT
LOT 63	69 F	1	331.00	330.00	326.00	6.0X6.0	4
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							
10	88 R	1	293.00	292.00	287.00	8.0X8.0	5
	88 R	1	295.00	294.00	289.00	8.0X8.0	5
	89 R	1	295.00	294.00	289.00	8.0X8.0	5
	89 R	1	298.00	297.00	292.00	8.0X8.0	5
	90 R	1	298.50	297.50	292.50	8.0X8.0	5
	90 R	1	302.50	301.50	296.50	8.0X8.0	5
	93 R	1	302.00	301.00	296.00	8.0X8.0	5
	93 R	1	304.00	303.00	298.00	8.0X8.0	5
G3	94 F	1	304.50	303.50	300.50	8.0X8.0	3
	94 R	1	308.20	307.20	304.20	8.0X8.0	3
"75"	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

Deer Springs
HCEA Project No. 12324A

Table 1. Auger Probe Summary

Boring	Surface Elevation	Boring Depth Proposed	Boring Depth Drilled	At Completion Water (ft)	At Completion Cave-In (ft)
SWM-1	304	14	14	Dry	8.0
SWM-1A	309	15	15	Dry	8.0
SWM-2	304	16	16	Dry	8.5
SWM-3	302	17	17	Dry	8.4
SWM-4	304	19	19	Dry	—
SWM-5	296	11	11	Dry	5.3
SWM-6	282	5	5	Dry	2.6
SWM-7	276	11.5	11.5	Dry	7.0
SWM-8	272	11.5	11.5	Dry	7.0
SWM-9	273	13	14	Dry	8.0
SWM-10	277	11	11	Dry	7.3
SWM-10.5	288	5	5	Dry	2.5
SWM-11	292	13	13	Dry	7.0
SWM-12	308.5	23.5	24.5	Dry	13.3
SWM-13	310	21	21	Dry	13.6
SWM-14	298	18	18	Dry	11.3
SWM-15	298	13	13	Dry	9.0
SWM-16	292	16	16	Dry	12.0
SWM-17	302	9	5.5/9	Dry	4.4
SWM-18	303	15	15	Dry	10.0
SWM-19	304	9	9	Dry	4.8
SWM-20	312	13	13	Dry	7.8
SWM-21	313	13	13	Dry	8.0
SWM-22	306	12.5	12.5	Dry	10.0
SWM-23	301	14	14	Dry	10.0
SWM-24	289.5	11	11	Dry	6.8
SWM-25	290.5	16.5	16.5	Dry	11.0
SWM-26	296.5	16.5	16.5	Dry	12.5
SWM-27	297	12	13	Dry	7.0
SWM-28	307	14	14	Dry	9.0
SWM-29	308	13	13	Dry	6.0
SWM-30	312	13	13	Dry	12.5
SWM-31	314	12	12	Dry	8.7
SWM-32	317.5	12.5	12	Dry	8.3
SWM-33	323	17.5	17.5	Dry	13.0
SWM-34	326	16	16	Dry	11.0
SWM-35	321	15	15	Dry	11.3
SWM-36	330	18	18	Dry	12.0

Deer Springs
HCEA Project No. 12324A

Table 1. Auger Probe Summary

Boring	Surface Elevation	Boring Depth Proposed	Boring Depth Drilled	At Completion Water (ft)	At Completion Cave-In (ft)
SWM-37	332	18	18	Dry	17.2
SWM-38	330.5	18.5	18.5	Dry	17.3
SWM-39	333	16	16	Dry	15.0
SWM-40	337.4	13.5	13	Dry	12.0
SWM-41	330	15	15	Dry	9.5
SWM-42	324	16	16	Dry	8.0
SWM-43	330	17	17	Dry	13.0
SWM-44	324	15	15	Dry	10.0
SWM-45	308	11	11	Dry	6.0
SWM-46	306	14	14	Dry	6.0
SWM-48	296	18	18	5.0	7.0
SWM-49	294	16	16	Dry	10.0
SWM-50	324	18	18	Dry	13.0
SWM-51	318	12	13	Dry	8.2
SWM-52	306	13	13	Dry	9.0
SWM-53	322	14	14	Dry	10.3
SWM-54	301	14	14	Dry	8.0
SWM-55	320	14	14	Dry	11.5
SWM-56	314	14	14	Dry	7.0
SWM-57	301.5	11.5	11.5	Dry	7.0
SWM-57A	296.5	9.5	9.5	Dry	6.0
SWM-57B	303.4	12.9	12.9	Dry	8.3
SWM-58	308	12	12	Dry	8.6
SWM-59	308	12	12	Dry	8.5
SWM-60	303	15	15	Dry	11.6
SWM-61	297	14	14	Dry	10.8
SWM-62	300	6	6	Dry	3.3
SWM-63	298	10	10	6.8	7.3
SWM-64	293.5	14.5	14.5	Dry	10.5
SWM-65	291	13	13	Dry	8.8
SWM-66	—	20	20	Dry	11.3

* - Probe refused at 5.5 ft. Offset 5 ft and augered to proposed depth.

▨ - Auger Refusal encountered at depth shallower than proposed

STORMWATER MANAGEMENT TEST PIT DATA

APPROVED: DEPARTMENT OF PUBLIC WORKS
Holger Serrano 6.25.14
CHIEF, BUREAU OF HIGHWAYS DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chad Edmondson 7.1.14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Kent Sheubrooks 7-31-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

OWNER
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, INC.
5300 DORSEY HALL DRIVE, STE 102
ELLICOTT CITY, MARYLAND 21042–7819
ATTN: MR. DONALD R. REUWER
443–367–0422

NO.	REVISION	DATE
1	REVISE UNDERDRAIN DETAIL FOR MICRO BIORETENTION AND BIOSWALE FACILITY; REVISE SAND FILTER DETAIL	3/30/15

FINAL ROAD CONSTRUCTION PLAN
STORMWATER MANAGEMENT - NOTES & 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
ZONED: R-SC
PARCELS: 363 & 542
HOWARD COUNTY, MARYLAND

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

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

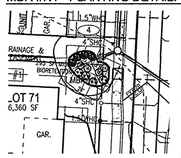
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV / EDS
DRAWN BY: RVE/EDS
CHECKED BY: RHV
DATE: MAY 2014
SCALE: AS SHOWN
W.O. NO.: 11-28

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

F-14-023

MBR #N1 - PLANTING DETAIL:



MICRO-BIORETENTION #N1 PLANTING SCHEDULE				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
CB	4	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
IG	4	ILEX GLABRA INKBERRY	3 GALLON	CONT
SB	4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT

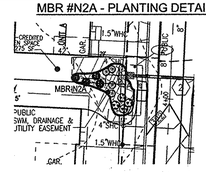
295 SF X 75% X .0229 STEMS PER SQUARE FOOT = 6 PLANTS REQUIRED
6 PROVIDED

MBR #N1A - PLANTING DETAIL:

MICRO-BIORETENTION #N1A PLANTING SCHEDULE				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
CB	4	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
IG	4	ILEX GLABRA INKBERRY	3 GALLON	CONT
SB	4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
	50 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

390 SF X 75% X .0229 STEMS PER SQUARE FOOT = 7 PLANTS REQUIRED
7 PROVIDED

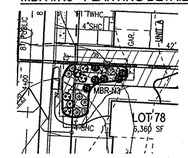
MBR #N2A - PLANTING DETAIL:



MICRO-BIORETENTION #N2A PLANTING SCHEDULE				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
CB	4	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
IG	4	ILEX GLABRA INKBERRY	3 GALLON	CONT
SB	4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
	50 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

410 SF X 75% X .0229 STEMS PER SQUARE FOOT = 7 PLANTS REQUIRED
7 PROVIDED

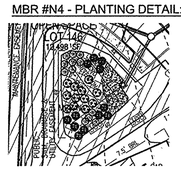
MBR #N3 - PLANTING DETAIL:



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

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

MBR #N4 - PLANTING DETAIL:



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

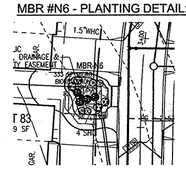
1300 SF X 75% X .0229 STEMS PER SQUARE FOOT = 23 PLANTS REQUIRED
23 PROVIDED

MBR #N5 - PLANTING DETAIL:

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

370 SF X 75% X .0229 STEMS PER SQUARE FOOT = 7 PLANTS REQUIRED
8 PROVIDED

MBR #N6 - PLANTING DETAIL:



MICRO-BIORETENTION #N6 PLANTING SCHEDULE				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
CB	4	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
IG	4	ILEX GLABRA INKBERRY	3 GALLON	CONT
SB	4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT

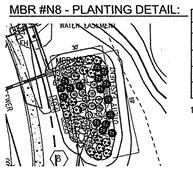
333 SF X 75% X .0229 STEMS PER SQUARE FOOT = 6 PLANTS REQUIRED
6 PROVIDED

MBR #N7 - PLANTING DETAIL:

MICRO-BIORETENTION #N7 PLANTING SCHEDULE				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
CB	8	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
IG	8	ILEX GLABRA INKBERRY	3 GALLON	CONT
SB	10	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
	250 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

1000 SF X 75% X .0229 STEMS PER SQUARE FOOT = 18 PLANTS REQUIRED
18 PROVIDED

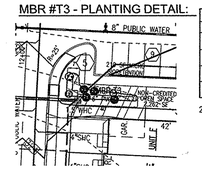
MBR #N8 - PLANTING DETAIL:



MICRO-BIORETENTION #N8 PLANTING SCHEDULE				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
CB	16	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
IG	10	ILEX GLABRA INKBERRY	3 GALLON	CONT
SB	16	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
	250 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

1490 SF X 75% X .0229 STEMS PER SQUARE FOOT = 26 PLANTS REQUIRED
26 PROVIDED

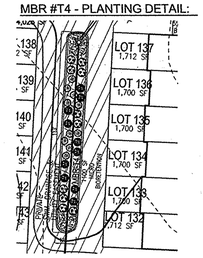
MBR #T3 - PLANTING DETAIL:



MICRO-BIORETENTION #T3 PLANTING SCHEDULE				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
CB	2	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
IG	2	ILEX GLABRA INKBERRY	3 GALLON	CONT
SB	4	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT

210 SF X 75% X .0229 STEMS PER SQUARE FOOT = 4 PLANTS REQUIRED
4 PROVIDED

MBR #T4 - PLANTING DETAIL:



MICRO-BIORETENTION #T4 PLANTING SCHEDULE				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
CB	10	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
IG	10	ILEX GLABRA INKBERRY	3 GALLON	CONT
SB	10	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
	250 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

1100 SF X 75% X .0229 STEMS PER SQUARE FOOT = 19 PLANTS REQUIRED
19 PROVIDED

MBR #N7 - PLANTING DETAIL:

MICRO-BIORETENTION #N7 PLANTING SCHEDULE				
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
CB	6	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
IG	6	ILEX GLABRA INKBERRY	3 GALLON	CONT
SB	6	SPICEBUSH LINDERA BENZOIN	3 GALLON	CONT
	50 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1' O.C.

550 SF X 75% X .0229 STEMS PER SQUARE FOOT = 10 PLANTS REQUIRED
10 PROVIDED

"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.
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.
5. 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

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

NO.	REVISION	DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6.25.14

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7.1.14

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7-31-14

40' 0 40' 80' 120'

FINAL ROAD CONSTRUCTION PLAN

MICRO-BIORETENTION - PLANTING 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

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

ROBERT H. VOGEL ENGINEERING, INC.
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FAX: 410.461.8961

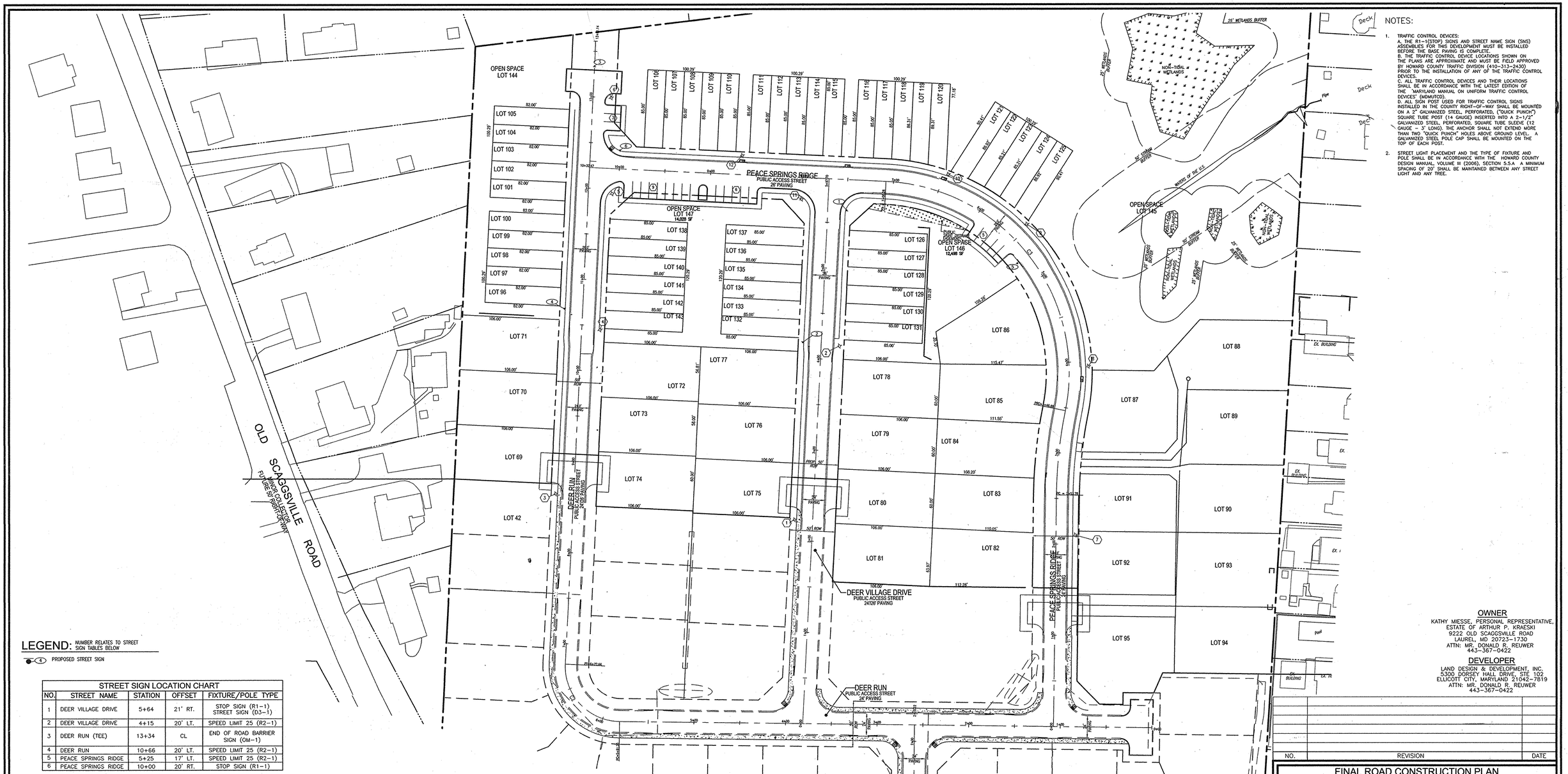
STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER

ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV / EDS.
DRAWN BY: RVE/EDS.
CHECKED BY: RHV.
DATE: MAY 2014.
SCALE: AS SHOWN.
W.O. NO.: 11-28.

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

F-14-023



NOTES:

1. TRAFFIC CONTROL DEVICES:
   A. THE R1-1(STOP) SIGNS AND STREET NAME SIGN (SNS) ASSEMBLIES FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETE.
   B. THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
   C. ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MDMUTCD).
   D. ALL SIGN POST USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, ("QUICK PUNCH") SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE - 3' LONG). THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON THE TOP OF EACH POST.
2. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

LEGEND: NUMBER RELATES TO STREET SIGN TABLES BELOW

(4) PROPOSED STREET SIGN

STREET SIGN LOCATION CHART				
NO.	STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
1	DEER VILLAGE DRIVE	5+64	21' RT.	STOP SIGN (R1-1) STREET SIGN (D3-1)
2	DEER VILLAGE DRIVE	4+15	20' LT.	SPEED LIMIT 25 (R2-1)
3	DEER RUN (TEE)	13+34	CL	END OF ROAD BARRIER SIGN (OM-1)
4	DEER RUN	10+66	20' LT.	SPEED LIMIT 25 (R2-1)
5	PEACE SPRINGS RIDGE	5+25	17' LT.	SPEED LIMIT 25 (R2-1)
6	PEACE SPRINGS RIDGE	10+00	20' RT.	STOP SIGN (R1-1)

LAYOUT PLAN

SCALE: 1"=50'

50' 0 50' 100' 150'

LEGEND: NUMBER RELATES TO LIGHT TABLE BELOW

(6) PROPOSED STREET LIGHT 100 WAT HPS VAPOR PREMIER POST TOP

STREET LIGHT LOCATION CHART				
NO.	STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
1	DEER VILLAGE DRIVE (1)	2+22	20' LT.	100 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
2	DEER VILLAGE DRIVE	5+63	20' LT.	
3	DEER RUN (1)	8+63	20' LT	
4	DEER RUN	10+45	20' RT	
5	DEER RUN	11+95	26' RT	
6	DEER RUN	13+00	20' RT.	
7	PEACE SPRINGS RIDGE	2+10	21' RT.	
8	PEACE SPRINGS RIDGE	3+95	21' RT	
9	PEACE SPRINGS RIDGE	5+53	21' RT	
10	PEACE SPRINGS RIDGE	6+46	21' RT	
11	PEACE SPRINGS RIDGE	7+99	24' LT.	
12	PEACE SPRINGS RIDGE	8+66.4	21' LT.	

(1) EXISTING LIGHT PER F14-022

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6.25.14

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CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7.1.14

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NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
SECTION TWO - TRAFFIC SIGNAGE & STREET LIGHT LOCATION PLAN
HIGH RIDGE MEADOWS - SECTION 2
LOTS 69 - 143 AND OPEN SPACE LOTS 144 - 147

6TH ELECTION DISTRICT
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SHEET 20 OF 20

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