GENERAL NOTES

AND THE COMP LITE ZONING AMENDMENTS EFFECTIVE 7-28-06.

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF

2. SUBJECT PROPERTY ZONED R-SC PER THE 2-2-04 COMPREHENSIVE ZONING PLAN

3. THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE ZONING REGULATIONS EFFECTIVE APRIL 13,

4. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NO. 50BA AND 0015 WERE USED FOR THIS PROJECT

5. PROJECT BOUNDARY IS BASED ON FIELD RUN BOUNDARY SURVEY BY BENCHMARK ENGINEERING, INC. DATED AUGUST 30, 2012.

6. TOPOGRAPHY SHOWN IS BASED ON FIELD-RUN SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC. IN FEBRUARY, 2012.

7. EXISTING UTILITIES SHOWN ARE BASED ON FIELD LOCATIONS, HOWARD COUNTY GIS AND CONTRACT DRAWINGS.

8. THE WETLAND DELINEATION AND FOREST STAND DELINEATION WAS PREPARED BY ECO-SCIENCE PROFESSIONALS IN APRIL, 2012.

9. THE GEOTECHNICAL REPORT WAS PREPARED BY GEOLAB GEOTECHNICAL LABORATORIES, INC. IN SEPTEMBER, 2012.

10. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAM, THEIR REQUIRED BUFFERS, 100YR FLOODPLAIN OR FOREST CONSERVATION EASEMENTS EXCEPT THAT WHICH IS ASSOCIATED WITH THE CONNECTION OF WASHINGTON AVENUE WITH HILL STREET AS THIS DISTURBANCE WAS DEEMED AS NECESSARY BY THE DEPARTMENT OF PLANNING AND ZONING ON 5-31-2012.

11. THE 100-YEAR FLOODPLAIN SHOWN IS BASED ON THE FLOOD STUDY PERFORMED UNDER SDP-08-018, NORTH LAUREL COMMUNITY CENTER AND RECORDED AS PLAT #20481-86. NO IMPROVEMENTS ARE PROPOSED WITHIN 300 FT OF THE FLOODPLAIN

12. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERIES OR HISTORIC STRUCTURES LOCATED ON THIS SITE.

13. THERE ARE NO STEEP SLOPES (25% OR GREATER) ON THIS SITE.

14. WATER AND SEWER IS PUBLIC. THE CONTRACT NUMBER IS 24-4774-D. THIS SITE IS WITHIN THE METROPOLITAN DISTRICT.

15. THE NOISE STUDY FOR THIS PROJECT WAS PREPARED BY MARS GROUP, INC. DATED DECEMBER, 2012 AND APPROVED SP-13-006.

16. A TRAFFIC STUDY IS NOT REQUIRED FOR THIS PROJECT PER SECTION 16.1107(b)(1)(iii) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND PER SECTION 4.7.6.4 OF DESIGN MANUAL VOLUME III, AS THESE LOTS WERE PREVIOUSLY RECORDED AND NO NEW ADDITIONAL LOTS ARE BEING PROPOSED.

17. STORMWATER MANAGEMENT ENVIRONMENTAL SITE DESIGN (ESD) HAS BEEN PROVIDED TO THE MAXIMUM EXTENT PRACTICAL (MEP) VIA THREE M-6 MICRO-BIORETENTION PRACTICES AND ONE F-6 BIO-RETENTION FACILITY. THE PRACTICES ARE PRIVATELY OWNED AND MAINTAINED

18. WP-13-009, TO WAIVE SECTION 16.120(c)(4) TO ALLOW SINGLE FAMILY ATTACHED LOTS WHICH FRONT ON A COMMONLY OWNED AREA CONTAINING PARKING OR A PRIVATE ROAD IN EXCESS OF 200 FEET TO NOT HAVE PUBLIC ROAD FRONTAGE AND TO SECTION 16.121(a)(4)(i) TO NOT REQUIRE RECREATIONAL OPEN SPACE WAS APPROVED ON AUGUST 14, 2012 WITH THE FOLLOWING CONDITIONS:

A. THE DEVELOPER SHALL BE RESPONSIBLE FOR MAINTENANCE OF SAFE VEHICULAR ACCESS TO ALL RESIDENTIAL UNITS. THIS SHALL INCLUDE BUT IS NOT LIMITED TO MAINTENANCE OF THE PRIVATE ROAD PROVIDING ACCESS TO THE RESIDENTIAL UNITS,

B. THE DEVELOPER SHALL PROVIDE PRIVATE TRASH REMOVAL FOR THE RESIDENTS ON THE PRIVATE ROAD.

C. THE PROPOSED SINGLE FAMILY UNIT MUST BE PROPERLY SCREENED FROM THE NEIGHBORING PROPERTY AND COMPLIANCE WITH THE LANDSCAPE MANUAL.

D. ON ALL FUTURE PLANS AND SITE DEVELOPMENT PLANS, THIS NOTE MUST

19. THIS PROJECT IS EXEMPT FROM THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1202(b)(1)(vii) AS IT IS A RESUBDIVISION THAT DOES NOT CREATE ANY ADDITIONAL LOTS. THE FOREST CONSERVATION EASEMENT PROVIDED SHALL ESTABLISH A MITIGATION BANK.

20. PUBLIC TRASH COLLECTION SHALL BE MADE AVAILABLE FOR THE RESIDENTS OF MAGGIES WAY. A DAMAGE CLAIM WAIVER SHALL BE PROVIDED AND ATTACHED TO THE HOMEOWNERS ASSOCIATION DOCUMENTS.

21. THE RECREATIONAL OPEN SPACE REQUIREMENT FOR THIS PROJECT WAS WAIVED UNDER WP-13-009. THIS WAIVER WAS GRANTED BECAUSE OF THE SITE'S CLOSE PROXIMITY TO THE NORTH LAUREL COMMUNITY CENTER.

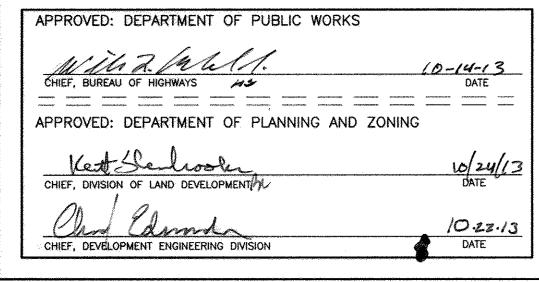
22. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410)-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.

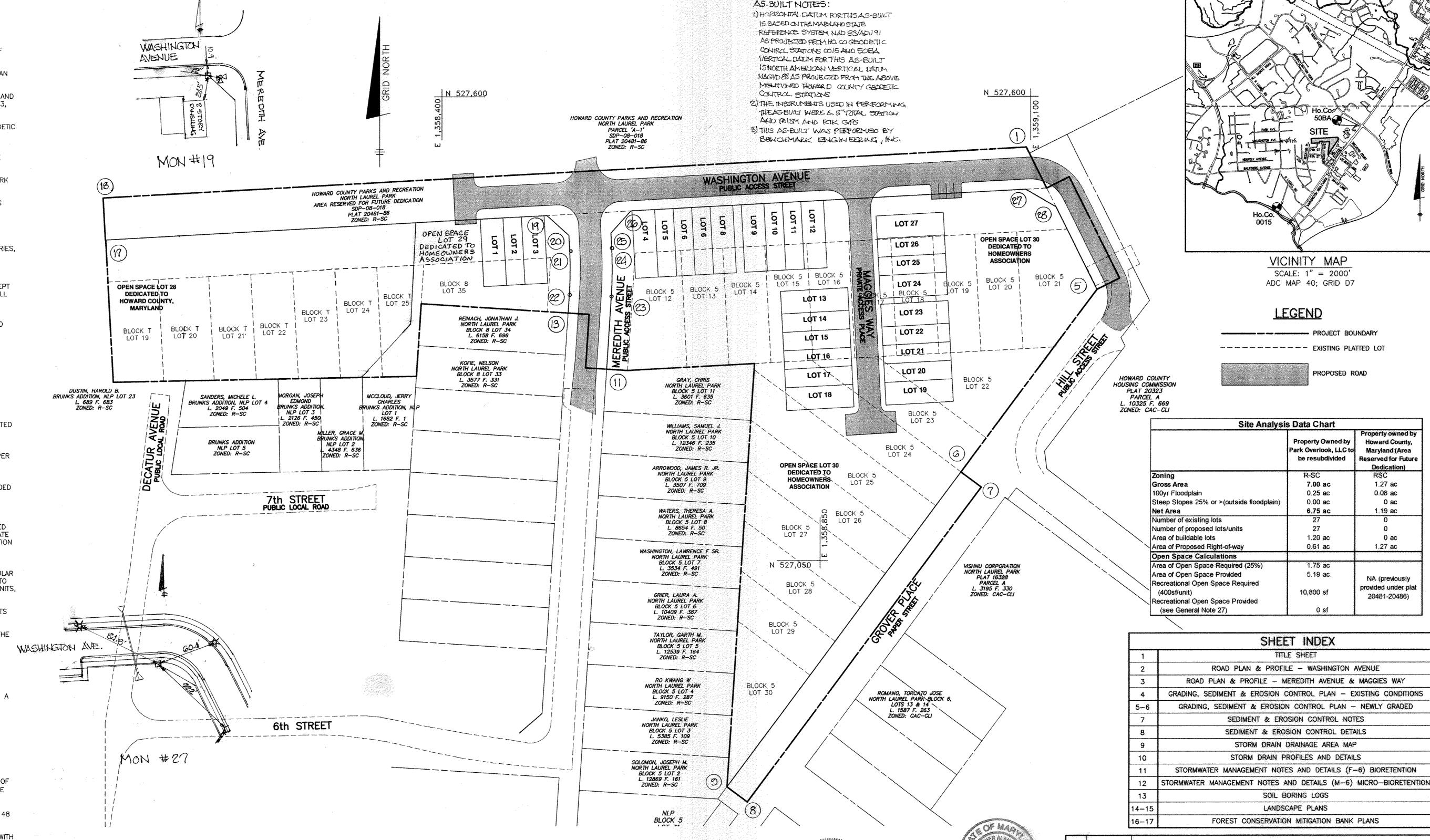
23. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

24. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.

25. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1193) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)." MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT

26. A PRIVATE ROAD STREET NAME SIGN ASSEMBLY SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPER/OWNERS EXPENSE FOR MAGGIES WAY. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.





27. TRAFFIC CONTROL DEVICES:

A. THE R1-1 'STOP' SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED. 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 POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED ('QUICK PUNCH'), SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO 'QUICK PUNCH' HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

1. 在1961年1967年1968年1968年1968年1968年1

Crank Now in the

1 inch = 60 ftAS-BUILT GERTIFICATION I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E.

Professional Certification. I hereby certify that these Excurrents were prepared or approved by me, and that Taxa a duly licensed professional engineer under the laws Gi for State of Maryland.

ESD PRACTICE SUMMARY TABLE ESDv= 9925 cf Pe= 1.2 inches 0.33 inches DA to practice | Imp Area to Af (st) ESDv (cf) Rev (cf) Practice practice (sf) Required | Provided | 75% ESDv? |Required Provid Provided 2% DA? Required (M-6) Micro-Bioretention 16,495 11,158 330 740 PASS 1087 888 PASS PASS 19,520 5.797 PASS 619 703 (M-6) Micro-Bioretention 390 546 (M-6) Micro-Bioretention #3 18,287 12.209 366 1000 PASS 1190 1181 PASS 1875 (F-6) Bioretention Facility 114,776 49,167 2296 3750 PASS 4999 4158 PASS TOTAL = 7895 6929 PASS 864 1875

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(B) \$ CO & CO CO CO CO SE WEST A WEST CONTROL OF FINE.

The 7,895 cf of required ESDv is based on drainage area to each individual practice. ESDv of 9,925 cf is based on total overall site area SWM has been provided for at least 75% of the 7,895 cf ESDv SWM Environmental Site Design to the Maximum Extent Practical has been provided.

1 5-5-2014 REVISE COMMON LOT LINE OF OPEN SPACE LOTS 28 6 29 NO. DATE FOR REVISION Professional Certification. I hereby certify that these document were prepared or approved by me, and that I am a duly license

BENCHMARK

ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS

CHART NAD 83 ENGINEERING, INC. R/W PTHO DESCRIPTION ELEVATION REBAR & CAP 235,69" 8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043 REBAR & CAP 226.77" 75 THOMAS JOHNSON DRIVE A SUITE E AFREDERICK, MARYLAND 21702 301-710-5686 REBAR & CAP 214.58 REBAR & CAP 212.32" WWW.BEI-CIVILENGINEERING.COM rebar & cap 204.31 REBAR & CAP 206,50 OWNER: 226.97 REBAR 8 CAP PARK OVERLOOK, LLC 226,62 MAGNAL 9695 NORFOLK AVENUE LAUREL, MARLAND 20723 18896 REBAR & CAP REBAR & CAP

RIGHT OF WAY ELEVATION

CONC MON

CONC MON

REBAR & COAP

REBAR & CAP 239.35

REBOR & COP 232.26'

235.76

410-792-2565 HOWARD COUNTY, MARYLAND 234.85 3430 COURTHOUSE DRIVE ELLICOTT CITY, MARYLAND 21043 235.08 410-313-6139 REBAR & CAP 234.37" 231.36 REPAR & CAP DEVELOPER: REPAR & CAP 231.42' REPOR & CAP 234.31" PARK OVERLOOK, LLC REBUR & CAP 23504" 9695 NORFOLK AVENUE

DESIGN: DBT

LAUREL, MARLAND 20723 410-792-2565

DRAWN: DBT

PARK OVERLOOK LOTS 1 thru 27 & OPEN SPACE LOTS 28-30 AND FOREST MITIGATION BANK RESUBDIVISION OF NORTH LAUREL PARK BLOCK 5, LOTS 12-30, BLOCK 7 LOTS 19-25 AND BLOCK 8, LOT 35 RECORDED AS PB 61 F 470 AND P/O AREA RESERVED FOR FUTURE DEDICATION AS RECORDED ON PLAT 20483

License No. 28559, Expiration Date: 07-22-2015

TAX MAP: 50 GRID: 4 PARCEL: p/o 414 & 426 ZONED: R-SC ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAN TITLE SHEET DATE: SEPTEMBER, 2013 BEI PROJECT NO: 2439 AS SHOWN 1 OF 17

AS-BUILT

0015

VICINITY MAP

SCALE: 1" = 2000'

ADC MAP 40; GRID D7

------PROJECT BOUNDARY

Park Overlook, LLC to

be resubdivided

7.00 ac

0.25 ac

0.00 ac

6.75 ac

1.20 ac

0.61 ac

5.19 ac.

10,800 sf

SHEET INDEX

TITLE SHEET

ROAD PLAN & PROFILE - WASHINGTON AVENUE

ROAD PLAN & PROFILE - MEREDITH AVENUE & MAGGIES WAY

GRADING. SEDIMENT & EROSION CONTROL PLAN - NEWLY GRADED

SEDIMENT & EROSION CONTROL NOTES

SEDIMENT & EROSION CONTROL DETAILS

STORM DRAIN DRAINAGE AREA MAP

STORM DRAIN PROFILES AND DETAILS

STORMWATER MANAGEMENT NOTES AND DETAILS (F-6) BIORETENTION

SOIL BORING LOGS

LANDSCAPE PLANS

FOREST CONSERVATION MITIGATION BANK PLANS

27

PROPOSED ROAD

Howard County

Maryland (Area

Reserved for Future

Dedication)

1.27 ac

0.08 ac

1.19 ac

1.27 ac

NA (previously

provided under pla

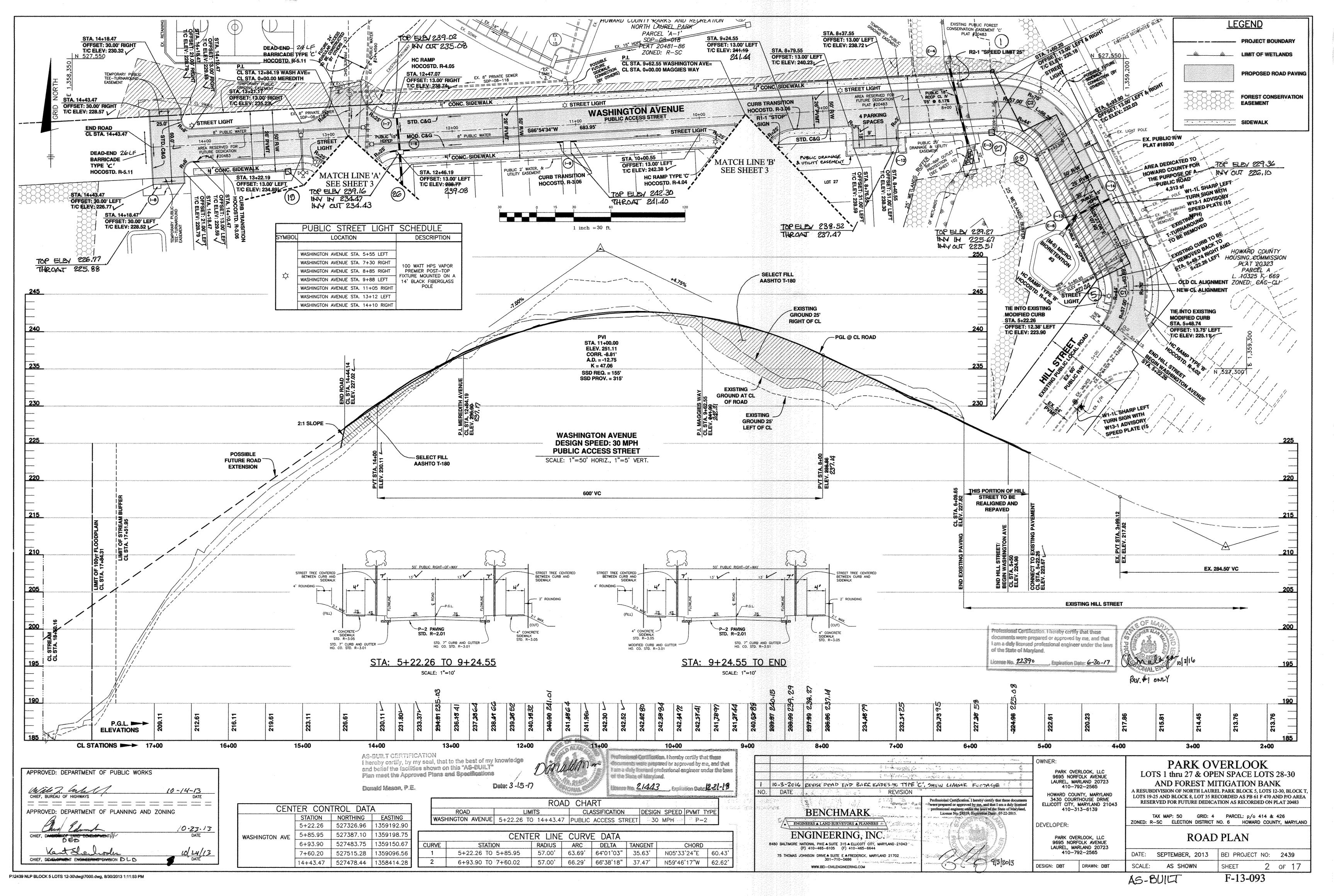
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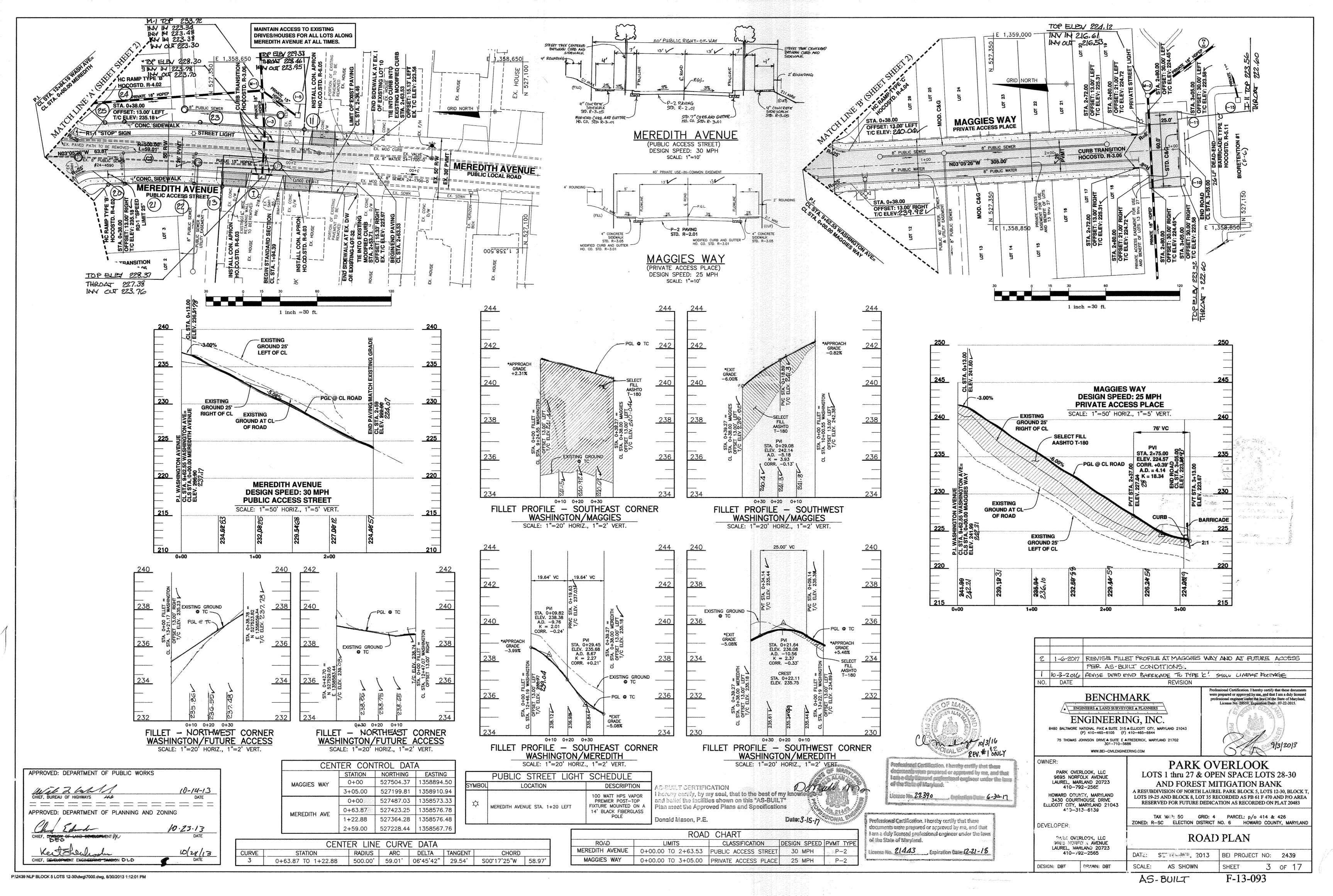
LEGEND

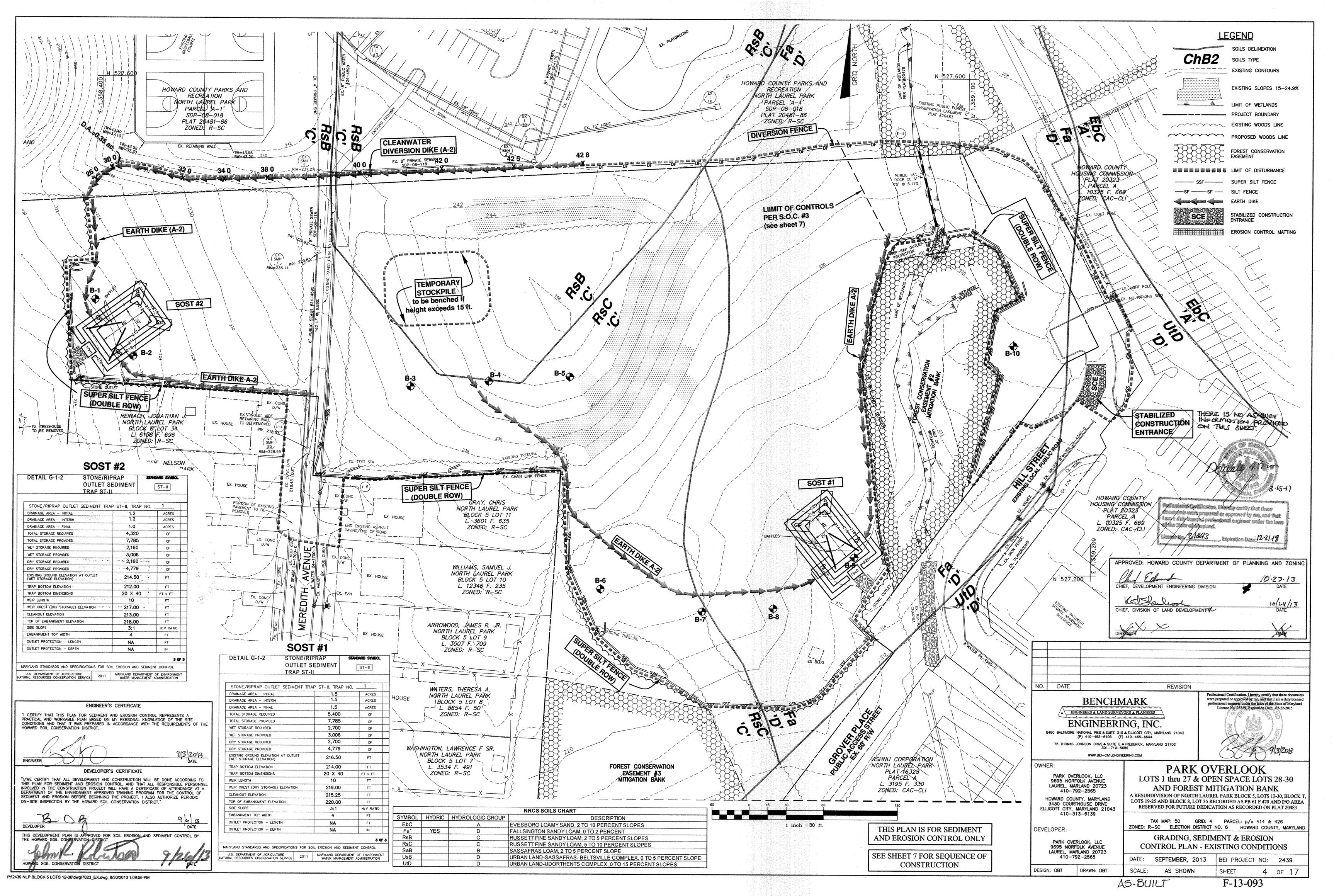
----- EXISTING PLATTED LOT

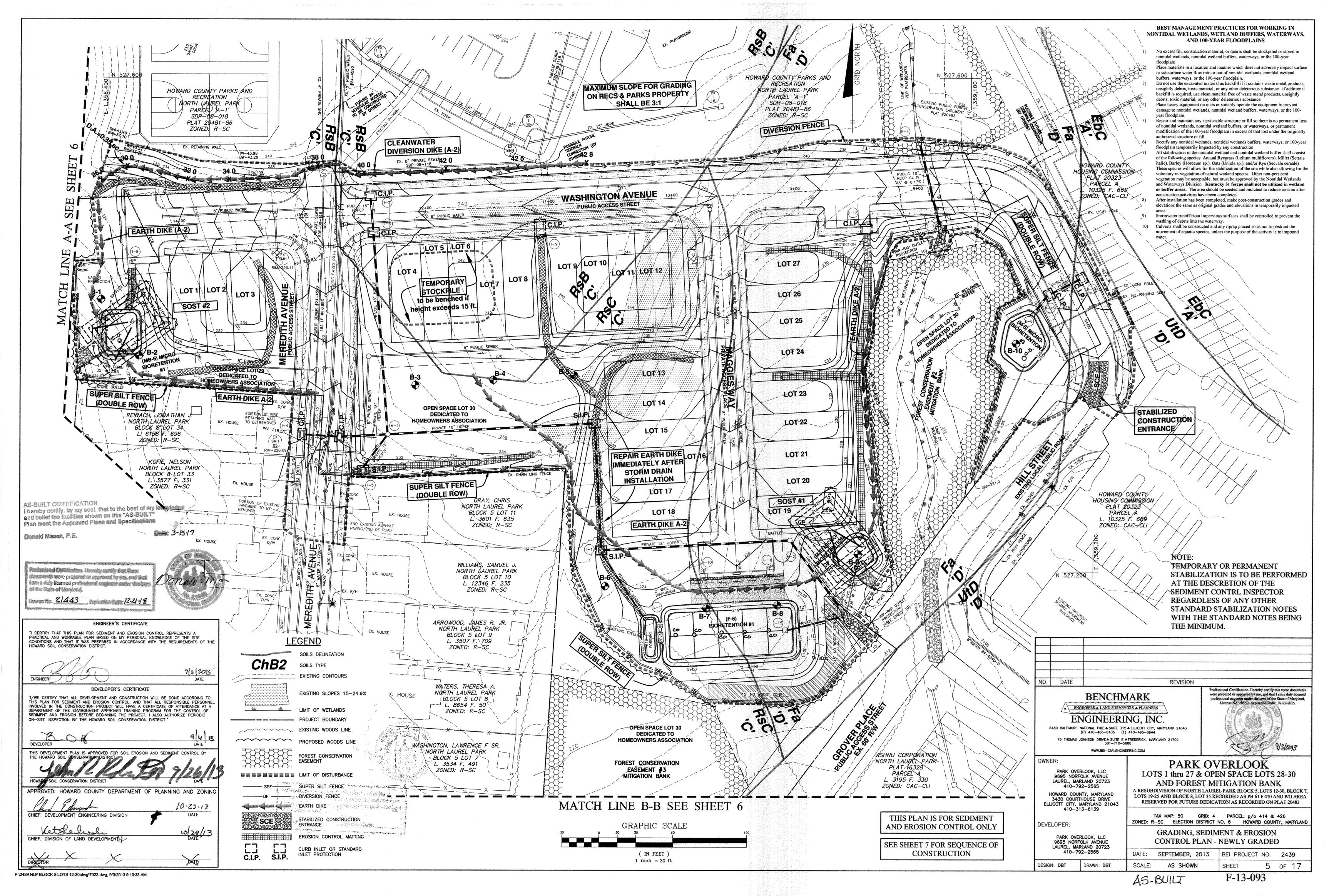
Site Analysis Data Chart

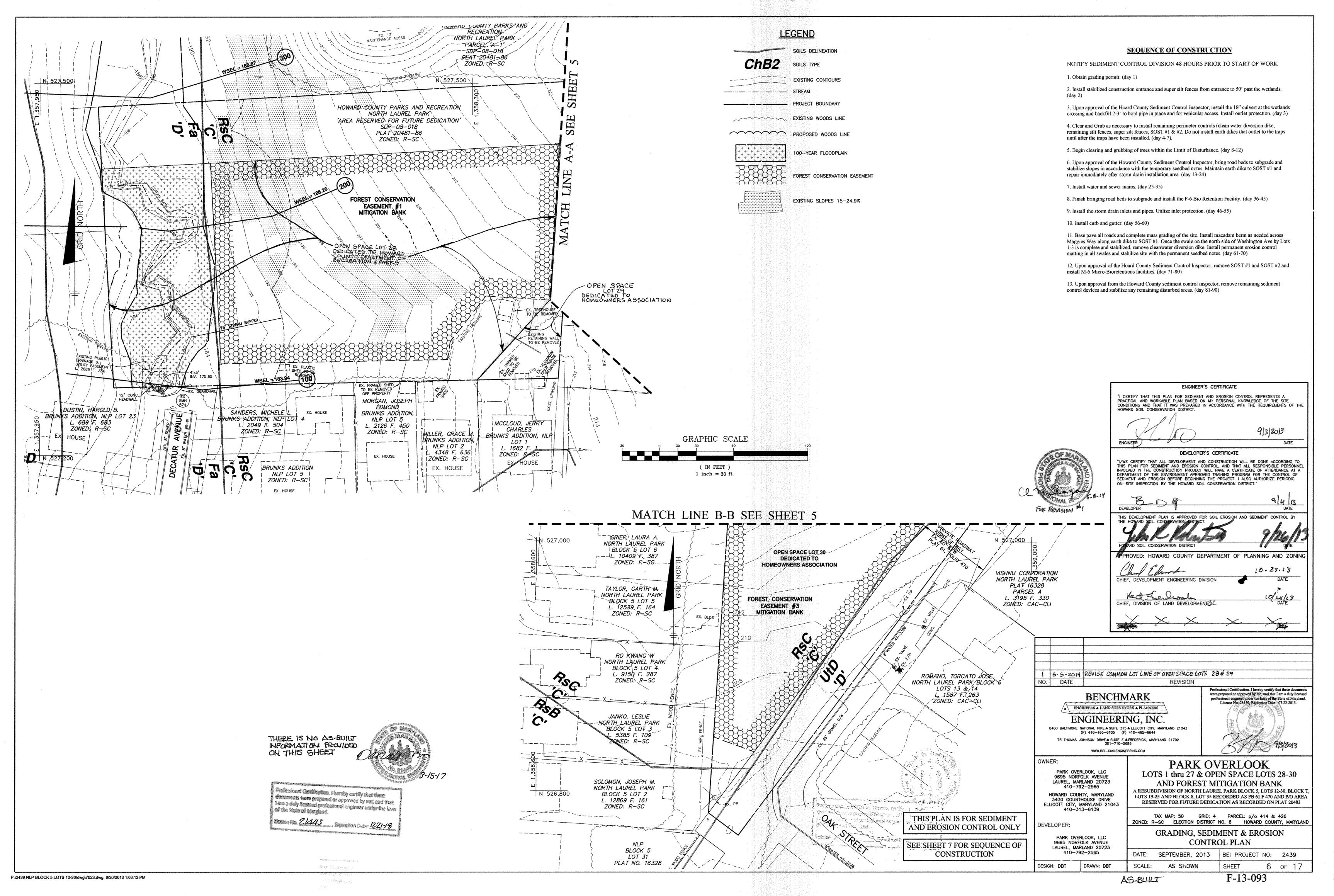
F-13-093











B-4 STANDARDS AND SPECIFICATIONS

VEGETATIVE STABILIZATION Using vegetation as cover to protect exposed soil from erosion

To promote the establishment of vegetation on exposed soil. Conditions Where Practice Applies On all disturbed areas not stabilized by other methods. This specification is divided into sections on

stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary and permanent stabilization

Effects on Water Quality and Quantity Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall,

reducing sediment loads and runoff to downstream areas. Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and

runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation increase organic matter content and improve the water holding capacity of the soil and subsequent plant

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances within the root zone. Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching,

Adequate Vegetative Establishment Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the

planting season. Adequate vegetative stabilization requires 95 percent groundcover. 2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for time, fertilizer, seedbed preparation, and seeding.

3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates 4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS

INCREMENTAL STABILIZATION Definition Establishment of vegetative cover on cut and fill slopes.

To provide timely vegetative cover on cut and fill slopes as work progresses

Conditions Where Practice Applies Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

A. Incremental Stabilization - Cut Slopes 1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses. Construction sequence example (Refer to Figure B.1):

a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation. b. Perform Phase 1 excavation, prepare seedbed, and stabilize. c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as

d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization B. Incremental Stabilization - Fill Slopes

1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses

2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans. 3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.

4. Construction sequence example (Refer to Figure B.2): a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.

b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner. Place Phase 1 fill, prepare seedbed, and stabilize.

d. Place Phase 2 fill, prepare seedbed, and stabilize. e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization Figure B.

P:\2439 NLP BLOCK 5 LOTS 12-30\dwg\7023.dwg, 8/30/2013 1:04:40 PM

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

Conditions Where Practice Applies

The process of preparing the soils to sustain adequate vegetative stabilization. To provide a suitable soil medium for vegetative growth.

Where vegetative stabilization is to be established Criteria

Soil Preparation Temporary Stabilization

 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.

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. 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: 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

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

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 concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil

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. Topsoiling is limited to areas having 2:1 or flatter slopes where:

unnecessary on newly disturbed areas.

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. The original soil to be vegetated contains material toxic to plant growth. The soil is so acidic that treatment with limestone is not feasible.

Areas having slopes steeper than 2:1 require special consideration and design. 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 11/2 inches in diameter.

b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others 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. Topsoil Application a. Erosion and sediment control practices must be maintained when applying topsoil.

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. 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. Soil Amendments (Fertilizer and Lime Specifications) 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. 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. 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. 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

PERMANENT STABILIZATION

To stabilize disturbed soils with permanent vegetation.

Purpose Conditions Where Practice Applies Exposed soils where ground cover is needed for 6 months or more.

General Use

a Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.

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 Field Office Guild, Section 342 - Critical Area Planting. 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 testing agency. 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 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown

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 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

directed on the package. Use four times the recommended rate when hydroseeding.

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 B.1, Permanent Seeding Table B.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

B-4-3 STANDARDS AND SPECIFICATIONS

SEEDING AND MULCHING

Definition

Conditions Where Practice Applies

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

any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be

tested within the 6 months immediately preceding the date of sowing such material on

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

The application of seed and mulch to establish vegetative cover

1. Specifications

To protect disturbed soils from erosion during and at the end of construction

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

ii. Apply seed in two directions, perpendicular to each other. Apply half the

seeding rate in each direction. c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and

i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorous), 200 pounds per acre; K2O (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

iii. Mix seed and fertilizer on site and seed immediately and without interruption. iv. When hydroseeding do not incorporate seed into the soil.

1. Mulch Materials (in order of preference)

a. Straw consisting of thoroughly threshed wheat, rye, 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

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.

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.

B-4-5 STANDARDS AND SPECIFICATIONS

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

A. Seed Mixtures

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

c For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil d For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000

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:

1 1/2 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 Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 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 1 1/2 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 not 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 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 % inch, plus or minus % inch, at the time of

cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and 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

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

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the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless

B-4-4 STANDARDS AND SPECIFICATIONS

TEMPORARY STABLIZATION

To stabilize disturbed soils with vegetation for up to 6 months

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.

. Select one or more of the species or seed mixtures listed in Table B.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 B.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.

B-4-8 STANDARDS AND SPECIFICATIONS

STOCKPILE AREA

Definition A mound or pile of soil protected by appropriately designed erosion and sediment control measures. 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

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. Runoff from the stockpile area must drain to a suitable sediment control practice.

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

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.

H-5 STANDARDS AND SPECIFICATIONS

DUST CONTROL Controlling the suspension of dust particles from construction activities.

To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including

health and traffic hazards. Conditions Where Practice Applies Areas subject to dust blowing and movement where on and off-site damage is likely without treatment Specifications Mulches: See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3

Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing. Vegetative Cover: See Section B-4-4 Temporary Stabilization. Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and

similar plows are examples of equipment that may produce the desired effect. Irrigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must not be irrigated to the point that runoff occurs. Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar

material can be used to control air currents and soil blowing. Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan review authority.

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

3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMÉTER 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

5. 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.

6. SITE ANALYSIS: 8.28 ACRES TOTAL AREA OF SITE: 4.90 ACRES AREA DISTURBED: 1.25 ACRES AREA TO BE ROOFED OR PAVED: AREA TO BE VEGETATIVELY STABILIZED: 3.65 ACRES 8,950 cy 11,285 CY TOTAL FILL: N/A

GERMINATION AND ESTABLISHMENT OF GRASSES.

OFFISTE WASTE/BORROW LOCATION:

7. ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE. 8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE

HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. 9. 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 10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY,

WHICHEVER IS SHORTER.

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

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 AT A GIVEN TIME.

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ENGINEER'S CERTIFICATE "I 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. 9/3/2013 **DEVELOPER'S CERTIFICATE** "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND FROSION CONTROL AND THAT ALL RESPONSIBLE PERSONNE 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." QuI 15 DEVELOPER DATE THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING 10.23.13

DATE REVISION Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly license **BENCHMARK**

CHIEF, DEVELOPMENT ENGINEERING DIVISION

CHIEF, DIVISION OF LAND DEVELOPMENT

ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS ENGINEERING, INC 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 75 THOMAS JOHNSON DRIVE A SUITE E AFREDERICK, MARYLAND 21702 301-710-5686

WWW.BEI-CMILENGINEERING.COM

professional engineer under the laws of the State of Marylanc License No. 28559, Expiration Date: 07-22-2015. PARK OVERLOOK

410-792-2565 HOWARD COUNTY, MARYLAND 3430 COURTHOUSE DRIVE ELLICOTT CITY, MARYLAND 21043 410-313-6139 **DEVELOPER:**

> PARK OVERLOOK, LLC 9695 NORFOLK AVENUE LAUREL MARLAND 20723 410-792-2565

> > DRAWN: DBT

SCALE:

PARK OVERLOOK, LLC

9695 NORFOLK AVENUE

LAUREL, MARLAND 20723

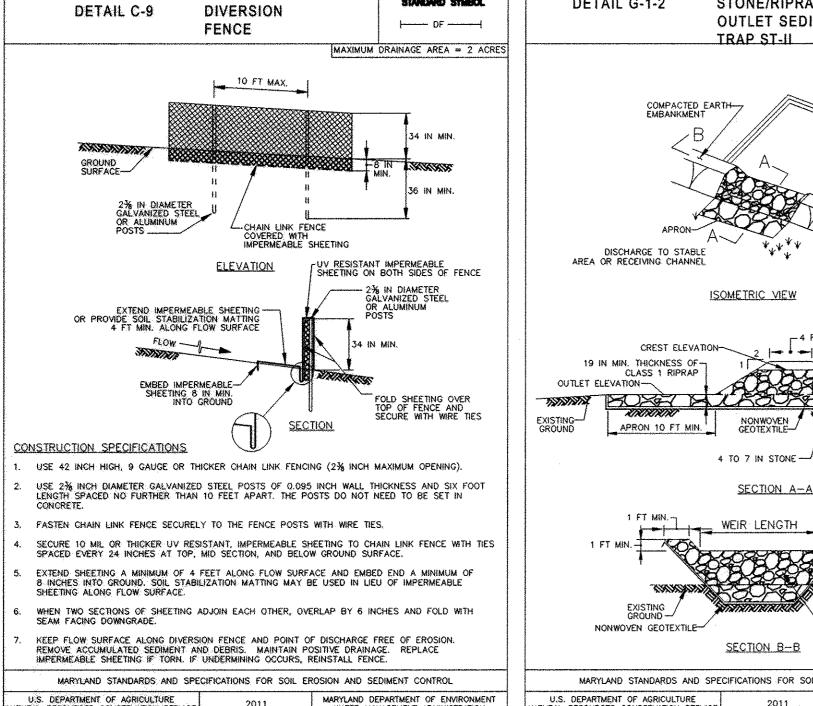
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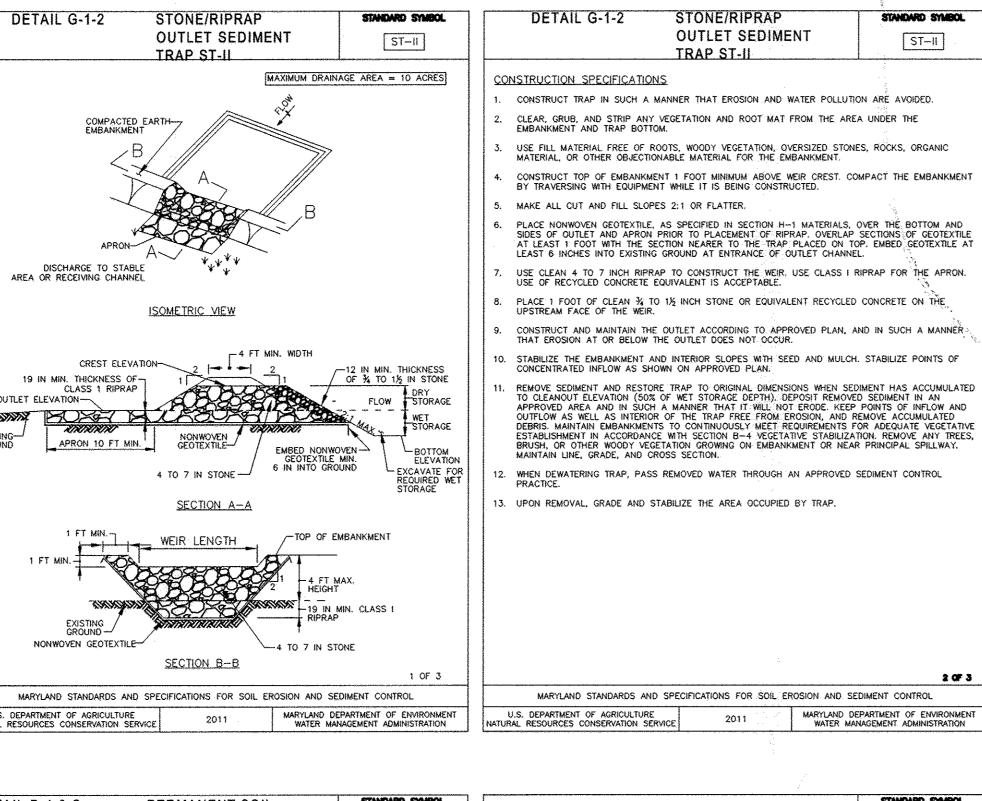
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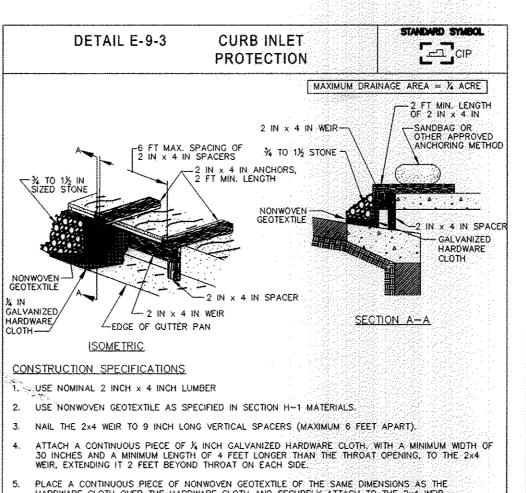
LOTS 1 thru 27 & OPEN SPACE LOTS 28-30 AND FOREST MITIGATION BANK A RESUBDIVISION OF NORTH LAUREL PARK BLOCK 5, LOTS 12-30, BLOCK T LOTS 19-25 AND BLOCK 8, LOT 35 RECORDED AS PB 61 F 470 AND P/O AREA RESERVED FOR FUTURE DEDICATION AS RECORDED ON PLAT 20483

TAX MAP: 50 GRID: 4 PARCEL: p/o 414 & 426 ZONED: R-SC ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND SEDIMENT AND EROSION CONTROL NOTES DATE: SEPTEMBER, 2013 BEI PROJECT NO: 2439

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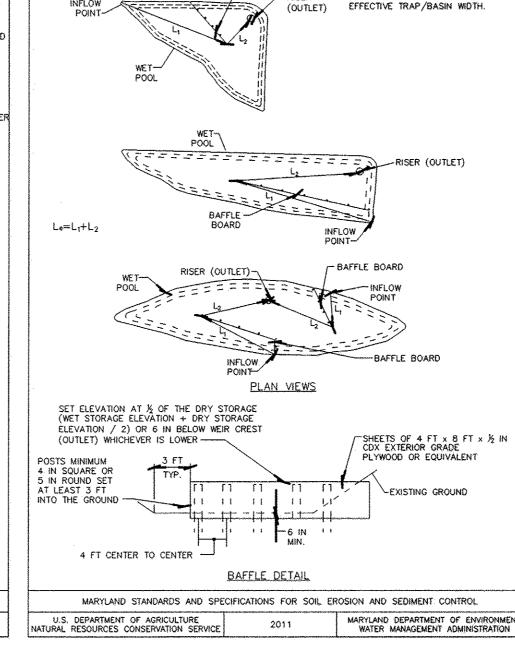






- PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
- PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEE LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
- INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
- 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 1/4 TO 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
- AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET
- 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 LOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	
U.S. DEPARTMENT OF AGRICULTURE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT NATURAL RESOURCES CONSERVATION SERVICE 2011 WATER MANAGEMENT ADMINISTRATION	



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FLOW LENGTH BETWEEN INFLOW POINT AND OUTLET EQUAL TO TWICE THE

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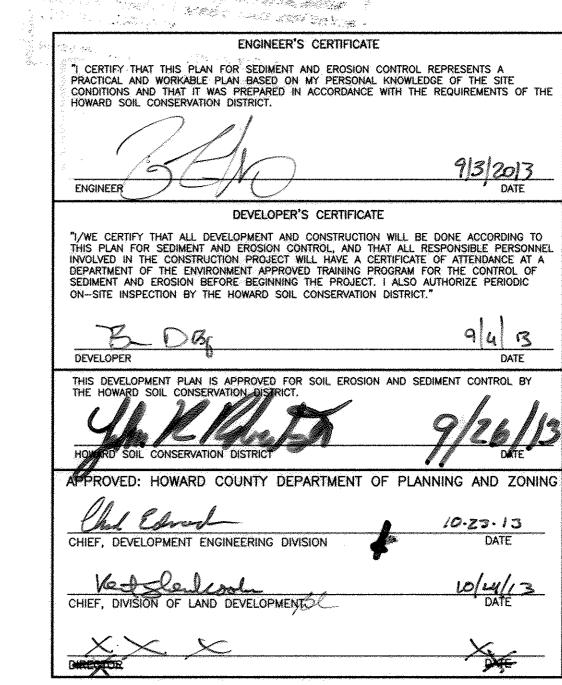
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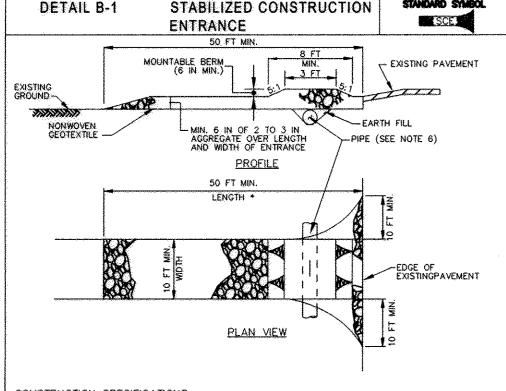
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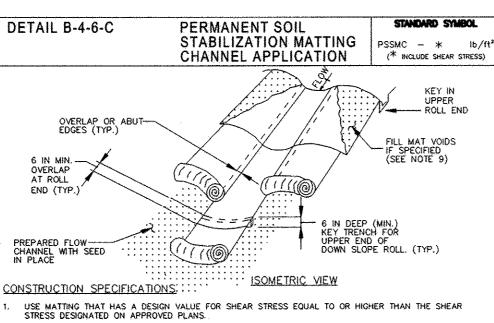


CONSTRUCTION SPECIFICATIONS

PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE, PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE, PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN, WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRET (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
- MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTRO

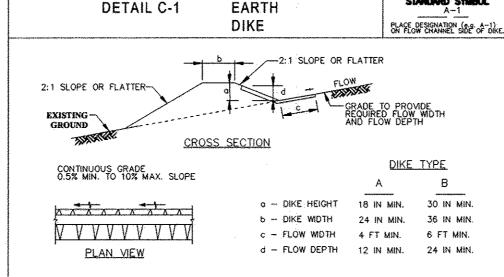


USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN, IF PRESENT, NETTING 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. 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.

PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS, PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.

- UNROLL MATTING 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.
- OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL END BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- 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. ESTABLISH AND MAINTAIN VECETATION 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 CONTRO MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



FLOW CHANNEL STABILIZATION

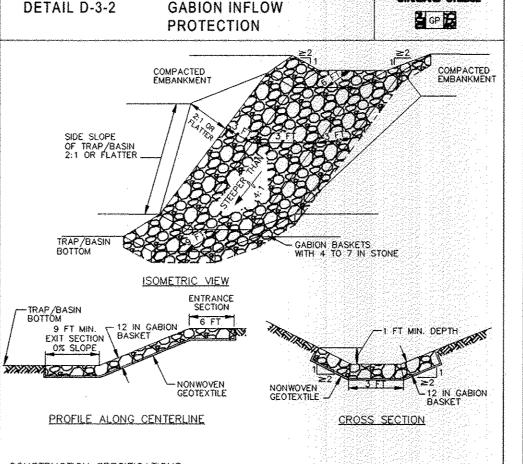
SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.) SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.

4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND. CONSTRUCTION SPECIFICATIONS REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.

EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.

- CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
- UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

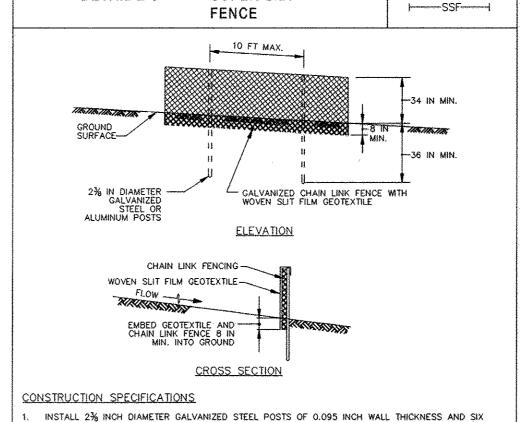
U,S. DEPARTMENT OF AGRICULTURE URAL RESOURCES CONSERVATION SERVICE MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



CONSTRUCTION SPECIFICATIONS

- PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION $H\!-\!1$ MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL GABION BASKETS.
- USE BASKETS MADE OF MINIMUM 11 GAUGE WIRE CONSTRUCT CABION 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.
- INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
- INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. BLEND GABIONS INTO EXISTING GROUND
- 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

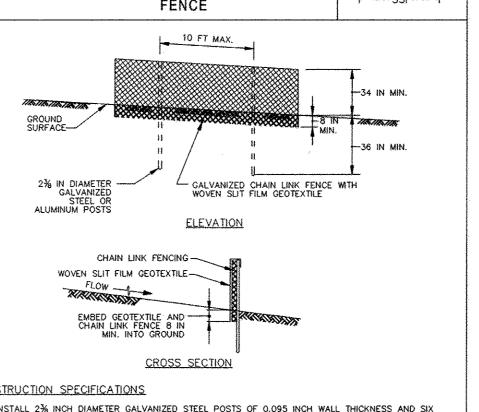


SUPER SILT

INSTALL 2% INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL



- FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2% INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS. PARK OVERLOOK, LLC 9695 NORFOLK AVENUE LAUREL, MARLAND 20723
- EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

DATE **REVISION** were prepared or approved by me, and that I am a duly license BENCHMARK professional engineer under the laws of the State of Maryland License No. 28559, Expiration Date: 07-22-2015. ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 75 THOMAS JOHNSON DRIVE A SUITE E A FREDERICK, MARYLAND 21702 301-710-5686 WWW.BEI-CIVILENGINEERING.COM

PARK OVERLOOK LOTS 1 thru 27 & OPEN SPACE LOTS 28-30 AND FOREST MITIGATION BANK

HOWARD COUNTY, MARYLAND 3430 COURTHOUSE DRIVE ELLICOTT CITY, MARYLAND 21043 410-313-6139 DEVELOPER: PARK OVERLOOK, LLC

9695 NORFOLK AVENUE LAUREL, MARLAND 20723

410-79?-2565

DESIGN: DBT

DRAWN: DBT

410-792-2565

A RESUBDIVISION OF NORTH LAUREL PARK BLOCK 5, LOTS 12-30, BLOCK T LOTS 19-25 AND BLOCK 8, LOT 35 RECORDED AS PB 61 F 470 AND P/O AREA RESERVED FOR FUTURE DEDICATION AS RECORDED ON PLAT 20483

TAX MAP: 50 GRID: 4 PARCEL: p/o 414 & 426 ZONED: R-SC ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

SEDIMENT AND EROSION CONTROL DETAILS BEI PROJECT NO: 2439 DATE: SEPTEMBER, 2013

> AS SHOWN SHEET

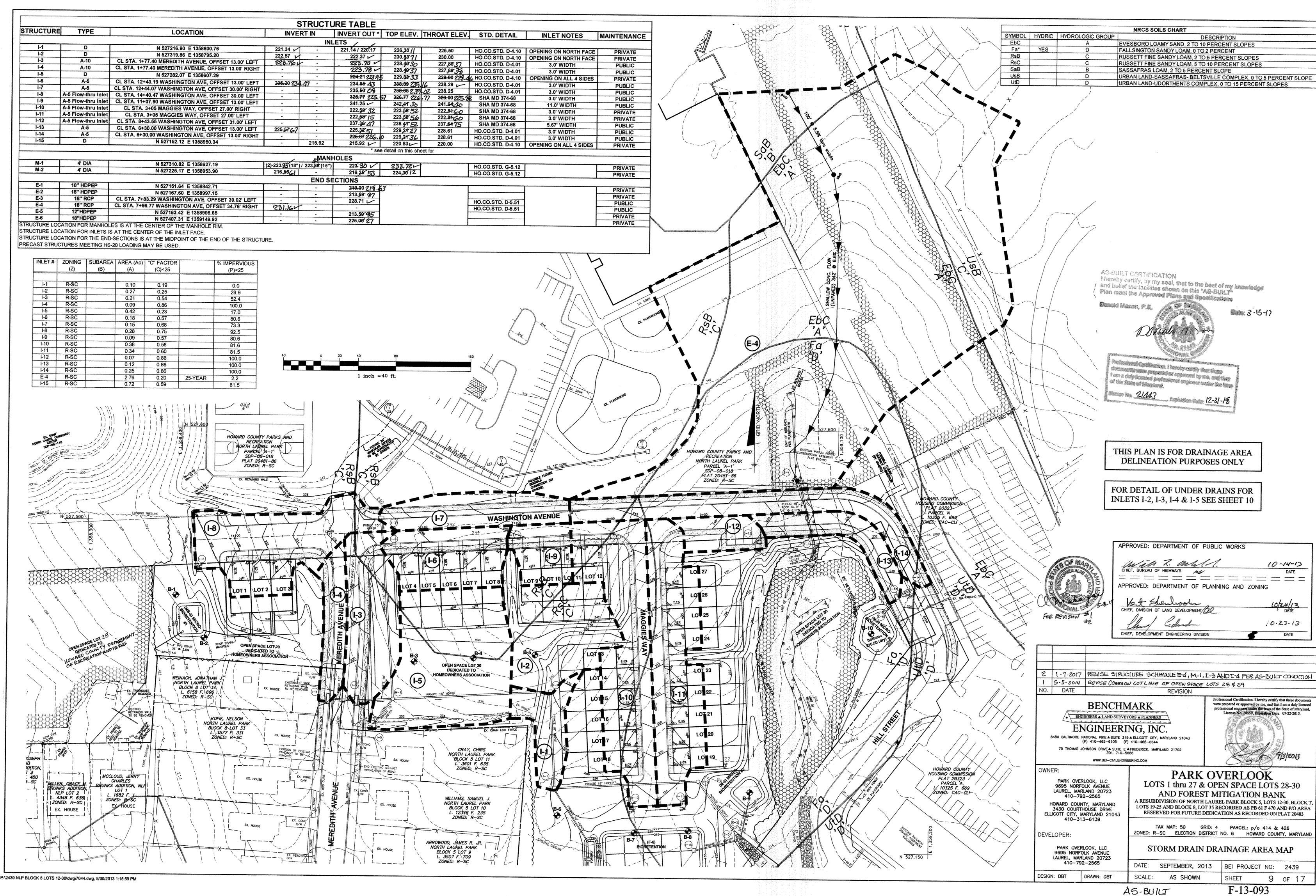
8 of 17

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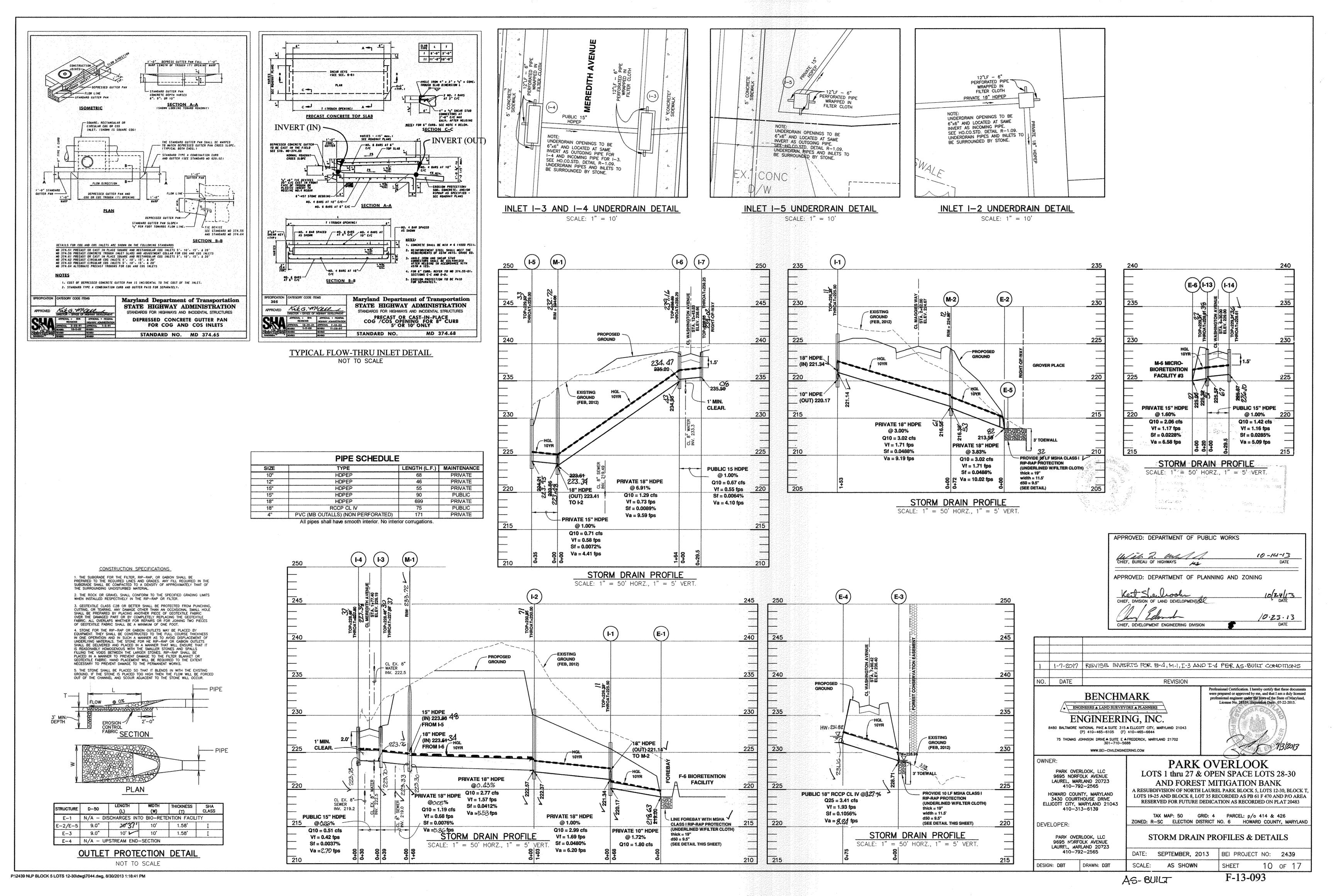
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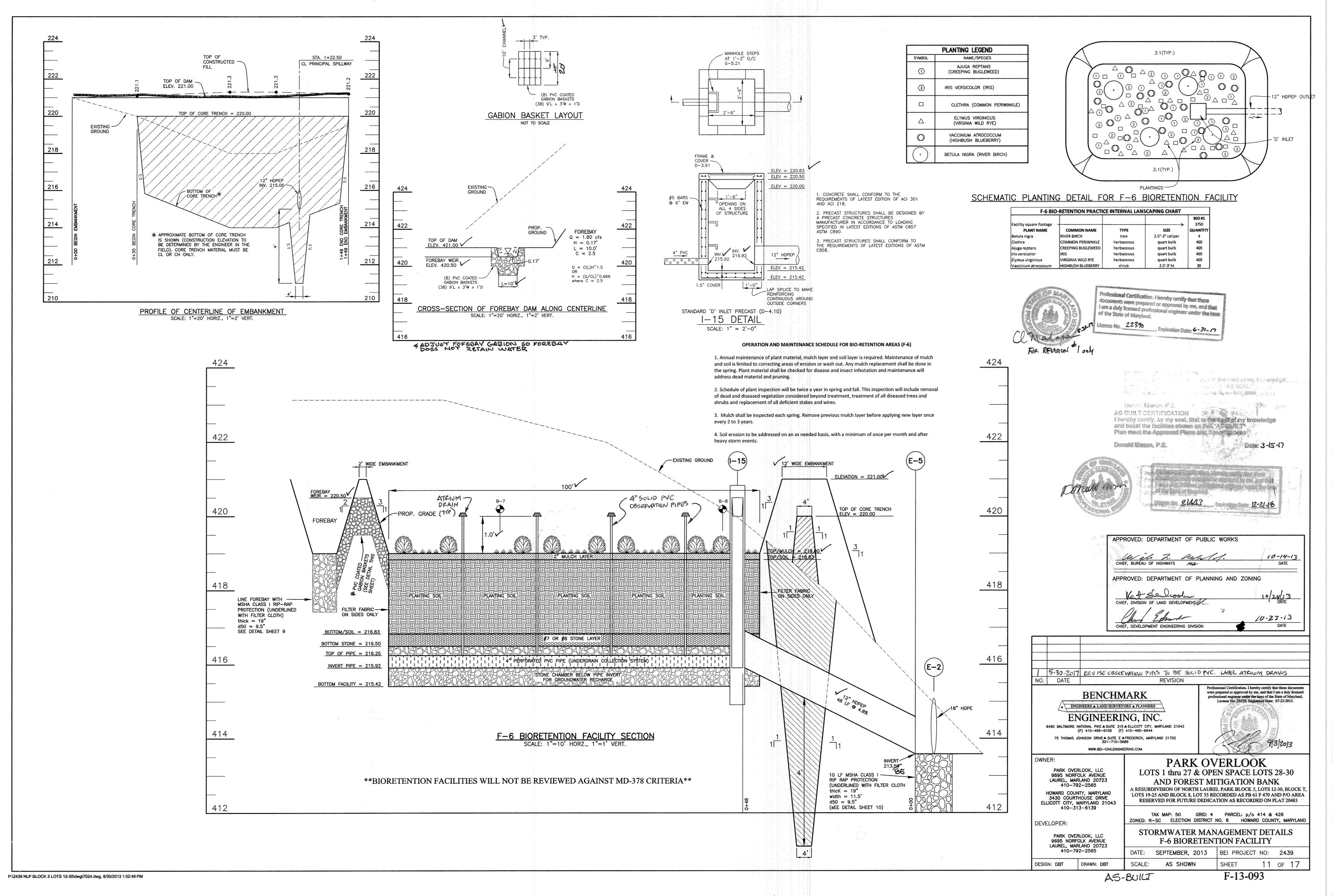
SCALE:

F-13-093



F-13-093





CONSTRUCTION SPECIFICATIONS

B.4.C Specifications for Micro-Bioretention. Rain Gardens, Landscape Infiltration & Infiltration Berms

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 microbioretention 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 Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (60%-65%) and compost (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 into 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 a 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

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a 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 bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to

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.,
- Perforations If perforated pipe is used, perforations should be %" 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
- 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 (\%" to \%" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter
- bed when bed thickness exceeds 24". The 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

P:\2439 NLP BLOCK 5 LOTS 12-30\dwg\7024.dwg, 8/30/2013 1:50:55 PM

These practices may not be constructed until all contributing drainage area has been stabilized

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

Materials.	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [2' to 4' deep]	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
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	omamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/s	PB Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/2-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; Fe = 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 Disbass and Graystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand
	I ·		1

(M-6) MICRO-BIORETENTION DESIGN TABLES

	M-6 Micr	o-Bioretentio	n #1		
	·	Dimensions			
Elev.	Description	Elevation	Length 25' +/-		
1	top of embankment	220.00 🗸	Length 30' +/-		
2	top of mulch	219.00	Total SF 740		
3	top of soil	218.83	Outlet Pipe		
4	top of stone layer	216.83	Size (inches) 4		
5	top of stone chamber	216.50	Length (feet) 35		
6 outlet pipe invert 215		215.92	Slope (%) 5.5		
7	bottom of stone chamber	215.67	daylight invert 214.00		

	:	Dimensions			
Elev.	Description	Elevation	Length	22' +/-	
1	top of embankment	220.00	Length	23' +/-	
2	top of mulch	219.00	Total SF	546	
3	top of soil	218.83	Outlet P	ipe	
4	top of stone layer	216.83	Size (inches)	4	
5	top of stone chamber	216.50	Length (feet)	35	
6	outlet pipe invert	215.92	Slope (%)	6.7	
7	bottom of stone chamber	215.67	daylight invert	213.59	

M-6 Micro-Bioretention #3									
	:	Dimensions							
Elev.	Description	Elevation	Length	31' +/-					
1	top of embankment	226.00	Length	33' +/-					
2	top of mulch	225.00	Total SF	1000					
3	top of soil	224.83	Outlet P	ipe					
4	top of stone layer	222.83	Size (inches)	4					
5	top of stone chamber	222.50	Length (feet)	100					
6	outlet pipe invert	221.92	Slope (%)	1.0					
7	bottom of stone chamber	221.67	daylight invert	221.00					

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

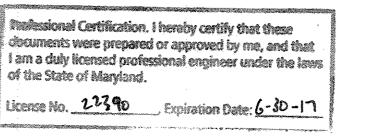
- Annual maintenance of plant material, mulch layer and soil layer is required. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland Stormwater Design Manual Volume II,
- Schedule of plant inspection will be twice a year in spring and fall. This inspection will include removal of dead and diseased vegetation considered beyond treatment, treatment of all diseased trees and shrubs and replacement of all deficient stakes and wires.
- Mulch shall be inspected each spring. Remove previous mulch layer before applying new layer once every 2 to 3 years.
- 4. Soil erosion to be addressed on an as needed basis, with a minimum of once per month and after heavy storm events.

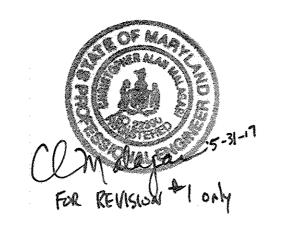
UNDERDRAIN, OVERFLOW AND OUTFALL NOTES

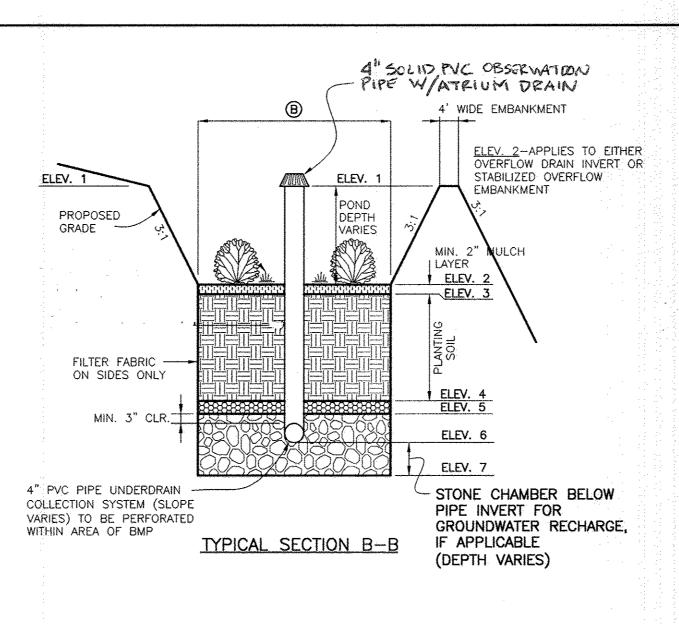
1. THE LAST CLEAN-OUT LOCATION WITHIN EACH MICRO-BIORETENTION FACILITY SHALL BE FILLED WITH A NON-CLOGGING SURFACE DRAIN (EXAMPLE: 4" ABS ROOF DRAIN W/CAST ALUMINUM DOME) AT THE POND SURFACE ELEVATION INDICATED IN THE CORRESPONDING TABLE

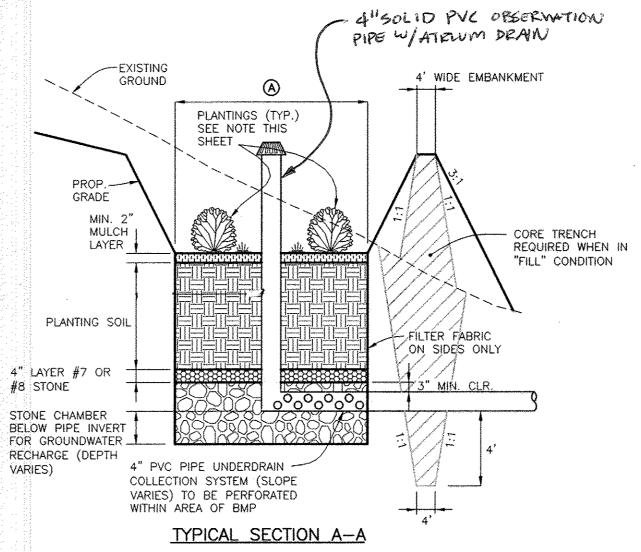
2. THE PVC WITHIN THE FACILITY SHALL BE PERFORATED.

3. THE UNDER-DRAIN AND PIPE TO OUTFALL SHALL BE INSTALLED TO A MINIMUM DEPTH OF 2' BELOW FINISHED GRADE AND SHALL MAINTAIN A MINIMUM 1% SLOPE AND MAINTAIN A MINIMUM OF 1' OF SEPARATION AT ALL CROSSINGS.









SHEET FLOW (INFLOW) 3:1(TYP.) 4" PVC PIPE UNDERDRAIN COLLECTION SYSTEM 4" SOLID RUC. (TO BE PERFORATED OBSERVATION WITHIN AREA OF BMP) PIPE UTFALL PLAN VIEW

AS-OUTLY CERTIFICATION

I hereby certify, by my seel, that to the best of my knowledge

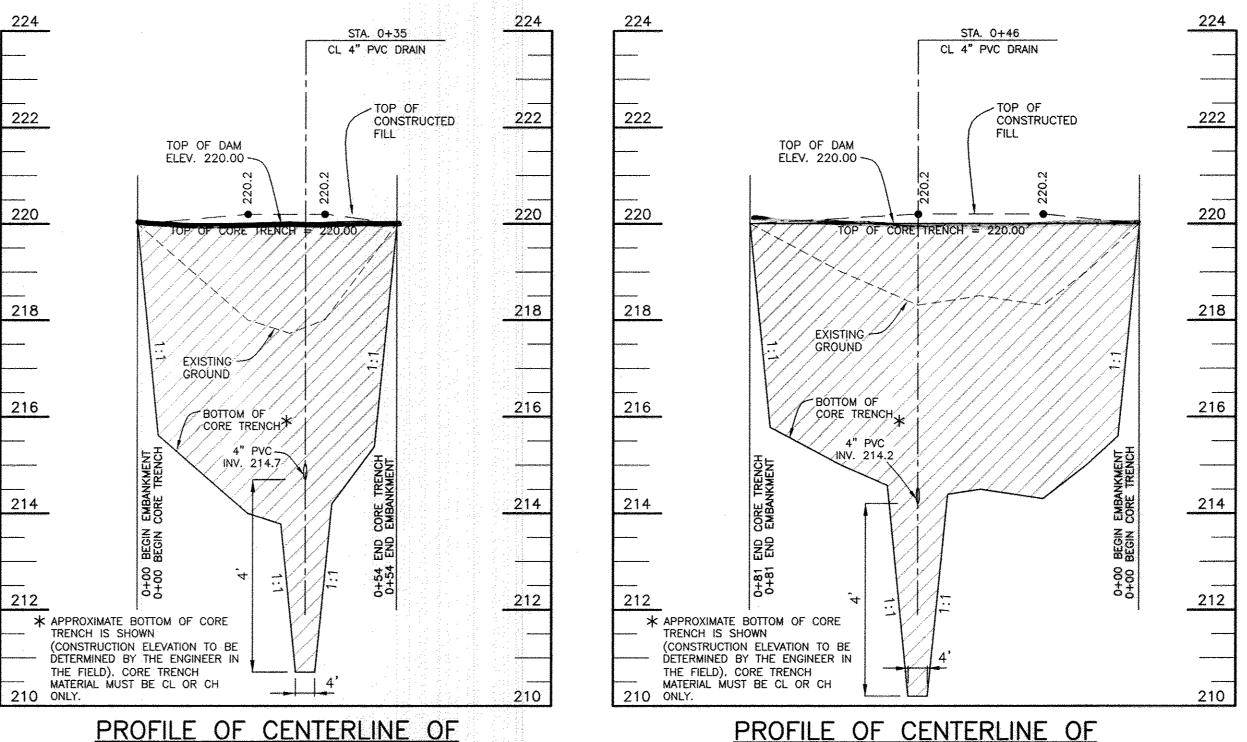
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and ballef the facilities chown on this "AS-DUILT"

Plan med the Approved Plans and Openingations

TYPICAL (M-6) MICRO-BIORETENTION DETAILS

NOT TO SCALE



PROFILE OF CENTERLINE OF EMBANKMENT - MB#2 SCALE: 1"=20' HORIZ., 1"=2' VERT.

4" PVC PIPE UNDERDRAIN

COLLECTION SYSTEM

(TO BE PERFORATED

4" SOLID PVC

OBSERVATION PIPE

WITHIN AREA OF BMP)

21443 12-21-18 APPROVED: DEPARTMENT OF PUBLIC WORKS CHIEF, BUREAU OF HIGHWAYS 10-14-13 APPROVED: DEPARTMENT OF PLANNING AND ZONING Vest Zladende 10/24/13 CHIEF, DIVISION OF LAND DEVELOPMENT 10.23-13 CHIEF, DEVELOPMENT ENGINEERING DIVISION

3:1(TYP.) PLANTING LEGEND SYMBOL AJUGA REPTANS 1 (CREEPING BUGLEWEED) \triangle 2 IRIS VERSICOLOR (IRIS) CLETHRA (COMMON PERIWINKLE) ELYMUS VIRGINICUS (VIRGINIA WILD RYE) VACCINIUM ATROCOCCUM (HIGHBUSH BLUEBERRY) BETULA NIGRA (RIVER BIRCH) 3:1(TYP.)

EMBANKMENT - MB#1

SCALE: 1"=20' HORIZ., 1"=2' VERT.

SCHEMATIC PLANTING DETAIL FOR M-6 MICRO-BIORETENTIONS

				MB#1	MB #2	MB #3	
Facility square footage			>	740	546	1000	× 60.5
PLANT NAME	COMMON NAME	TYPE	SIZE	QUANTITY	QUANTITY	QUANTITY	
Betula nigra	RIVER BIRCH	tree	2.5"-3" caliper	1,000	1	1	o the trace of the control of the co
Clethra	COMMON PERIWNKLE	herbaceous	quart bulb.	93	_≘ - 68 ⇒	125	
Ajuga reptans	CREEPING BUGLEWEED	herbaceous	quart bulb	· ** 93 (c)	: 68	125	
Iris versicolor	IRIS	herbaceous	quart bulb	93	68	125	200
Elymus virginicus	VIRGINIA WILD RYE	herbaceous	quart bulb	93	⁻² 68	125	- 3
Vaccinium atrococcum	HIGHBUSH BLUEBERRY	shrub	2.5'-3' ht	. 8	6 🚉	10	- 3

PLANTINGS -

5-30-2017 PEVISE OBSERVATION PIPE TO BE SOUD PUC. LABEL ATFIOM DEALUS. DATE REVISION BENCHMARK ● ENGINEERS A LAND SURVEYORS A PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644

75 THOMAS JOHNSON DRIVE A SUITE E AFREDERICK, MARYLAND 21702 301-710-5686

WWW.BEI-CMILENGINEERING.COM

Professional Certification. I hereby certify that these document 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. 28559, Expiration Date: 07-22-2015.

OWNER: PARK OVERLOOK, LLC 9695 NORFOLK AVENUE LAUREL, MARLAND 20723 410-792-2565 HOWARD COUNTY, MARYLAND 3430 COURTHOUSE DRIVE ELLICOTT CITY, MARYLAND 21043

PARK OVERLOOK, LLC

9695 NORFOLK AVENUE LAUREL, MARLAND 20723 410-792-2565

DRAWN: DBT

DESIGN: DBT

LOTS 1 thru 27 & OPEN SPACE LOTS 28-30 AND FOREST MITIGATION BANK A RESUBDIVISION OF NORTH LAUREL PARK BLOCK 5, LOTS 12-30, BLOCK T LOTS 19-25 AND BLOCK 8, LOT 35 RECORDED AS PB 61 F 470 AND P/O AREA RESERVED FOR FUTURE DEDICATION AS RECORDED ON PLAT 20483 410-313-6139 **DEVELOPER:**

TAX MAP: 50 GRID: 4 PARCEL: p/o 414 & 426 ZONED: R-SC ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND STORMWATER MANAGEMENT DETAILS M-6 MICRO-BIORETENTION PRACTICES DATE: SEPTEMBER, 2013 BEI PROJECT NO: 2439 SCALE: 12 of 17

PARK OVERLOOK

AS SHOWN SHEET F-13-093

BORING LOG	GEOLAB, INC.	BORING LOG	GEOLAB, INC.	BORING LOG	GEOLAB, INC. Date: 9/19/2012	BORING LOG	GEOLAB, INC.	BORING LOG	GEOLAB, INC.
Client: Cornerstone Homes Project: Park Overlook. Boding No. B-1 (1 of 1) Total Type of Boding: Test Pit/ Hand-auger Started: 9/10/2012 Complete Elevation Depth DESCRIPTION OF MATERIALS (cleasaffication) 220	*Sample Blows Sample Depth (Feet) Moisture Content Boring dry during excavation/drilling and at completion. Standpipe set at a depth of 3.0 feet	Type of Boring: Test Pit/ Hand-auger Started: 9/10/2012 Completed: 9/10/	Project No. 112-100 Occation: See Boring Location Plan 2012 Dritter: B. McGrain Sample Depth (Feet) Boring dry during excavation/drilling and at completion.	Client Cornerstone Homes Project Park Overlook Bening No.: B-3 Type of Boring: Test Pit/ Hand-auger DESCRIPTION OF MATERIALS (classification) 238 237.5 O.5 Light brown silty fine SAND with little gravel, moist to wet (SM) Brown fine to medium SAND with little gravel, moist to wet (SM) Auger Refusal	of 6.4 feet.	Client: Cornerstone Homes Project: Park Overlook Boring No.: B-4 (1 of 1) Total Dispth 18 Elev. 243.0 Type of Boring: Test Pit/Hand Auger Started: 09/10/2012 Completed: 09 Project: Park Overlook Boring No.: B-4 (1 of 1) Total Dispth 18 Elev. 243.0 Type of Boring: Test Pit/Hand Auger Started: 09/10/2012 Completed: 09 Project: Oscillation of BATERIALS (classification) 243 0.0 Forest litter with root (organic) matter and organic Soil Tan silty fine to medium SAND with trace gravel, moist (SM) 238 5.0 123 Tan clayey fine to coarse SAND with some to little gravel, moist (SC) Light orange to tan silty CLAY with little fine to medium sand, moist (CL)	Project No. 112-100 Location: See Boring Location Plan		Project No. 112-100 Location: See Boring Location Plan Location: See Boring Location Plan Depth Sample Sample Set Content (Feet) Boring dry during excavation/drilling and at completion.
*Number of blows required for a 140 lb hammer dropping 30" to drive 2" 0. three 6" increments. The sum of the last two increments of penetration i		*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" three 6" ingraments. The sum of the last two ingraments of penetration is termed the sum of the last two ingraments of penetration is termed to the sum of the last two ingraments of penetration is termed to the sum of the last two ingraments of penetration is termed to the sum of the last two ingraments.		*Number of blows required for a 140 lb hammer dropping 30" to drive 2 three 6" increments. The sum of the last two increments of penetration		End of Boring End of Boring *Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.37 three 6" increments. The sum of the last two increments of penetration is texmed		*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D. three 6" increments. The sum of the last two increments of ponetration is.	
Project: Park Overtook Boring No. 8-6	drilling and at completion.	Type of Boring: Test Pit/ Hand-auger Started: 9/11/2012 Completed: 9/11/ Flevation Depth DESCRIPTION OF MATERIALS 'Sample	Sample (Feet) Moisture Content (Feet) Boring dry during excavation/drilling and at completion. Standpipe installed at a depth of 4.3 feet.	Cleart Cornerstone Homes Project: Park Overlook Bening No: B-8 (1 of 1) Death 12 Elev 221.0 Type of Boring: Test Pit/ Hand-auger Started: 9/11/2012 Elevation Depth DESCRIPTION OF MATERIALS (classification) 221 0.0 Forest litter with root (organic) matter and organic soil. Light brown silty fine to medium SAND with itre coarse sand and gravel, moist (SM, Loam) 217.5 3.5 Reddish brown silty fine SAND with little grave moist (SM, Sandy Loam) Red silty CLAY with little fine to medium sand, moist (CL, Silty Clay Loam) **Number of blows required for a 140 1b hammer dropping 30" to derive 2 three 6" incresents. The sum of the last two incresents of penetrations.	Location: See Boring Location Plan	Report No: Client: Cornerstone Homes Project: Park Overlook Bering No: B-9 (1 of 1) Doll 12 Enev 219.5 Type of Boning: Test Pit/ Hand-auger Started: 9/11/2012 Completed: 9/1 Elevation Depth DESCRIPTION OF MATERIALS Sample Blove 219-0.5 235.5 0.0 Forest litter with root (organic) matter and organic orarse sand and gravel, moist (SM) Light brown silty fine to medium SAND with traces orarse sand and gravel, moist (SM) 223.5 6.0 Light gray and red silty CLAY with little fine to medium sand, moist (CL) End of Boring *Number of blove required for a 140 lb basear dropping 30" to drive 2" 0.5. 1.17 three 6" incresents. The sus of the last two incresents of panetration is termed	Sample Depth (Feet) Boring dry during excavation/drilling and at completion.		
APPROVED: DEPARTMENT OF PUBLIC WORKS CHIEF, BUREAU OF HIGHWAYS APPROVED: DEPARTMENT OF PLANNING AND ZON CHIEF, DIVISION OF LAND DEVELOPMENT CHIEF, DEVELOPMENT ENGINEERING DIVISION P:2439 NLP BLOCK 5 LOTS 12-30/dwg/7033.dwg, 8/30/2013 1:36:46 PM						THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET	OWN 3-15-17 DEV	PARK OVERLOOK, LLC 9695 NORFOLK AVENUE LAUREL, MARLAND 20723 410-792-2565 HOWARD COUNTY, MARYLAND 3430 COURTHOUSE DRIVE LICOTT CITY, MARYLAND 21043 410-313-6139 TAX MAP: 50 ZONED: R-SC ELECTIO	Professional Certification. I hereby certify that these documer prepared or approved by me, and that I am a duly lice professional engineer aunder the laws of the State of Mary License No. 28559. Expiration Date: 07-22-2015. 2K OVERLOOK 7 & OPEN SPACE LOTS 28-30 REST MITIGATION BANK DETH LAUREL PARK BLOCK 5, LOTS 12-30, BLOCK 8, LOT 35 RECORDED AS PB 61 F 470 AND P/O AND URE DEDICATION AS RECORDED ON PLAT 2048. GRID: 4 PARCEL: p/o 414 & 426 IN DISTRICT NO. 6 HOWARD COUNTY, MARY! DIL BORING LOGS 1, 2013 BEI PROJECT NO: 2439

