GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF STANDARDS AND SPECIFICATIONS. ALL WORK AND MATERIALS SHALL COMPLY WITH M.S.H.A. STANDARDS. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- ANY EXCAVATION WORK.
 THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:

 MISS UTILITY
 VERIZON:
 BUREAU OF UTILITIES:
 410-313-4900
 ATRIA.
- B.G.&E. (CONSTRUCTION SERVICES):
 B.G.&E. (EMERGENCY):
 STATE HIGHWAY ADMINISTRATION:
 COLONIAL PIPELINE CO.:

- COLONIAL PIPELINE CO.:

 410-795-1390

 4. SITE ANALYSIS:

 TOTAL SITE AREA: 2.97 AC.
 TOTAL PROJECT DEVELOPMENT AREA: 2.97 AC.
 PRESENT ZONING: M-2

 USE OF STRUCTURE: COMMERCIAL CONTRACTOR OFFICE & STORAGE YARD

 EXISTING BUILDING COVERAGE: 13,850 1/2 OR 10.7%

 PAVED PARKING LOT/AREA ON SITE: 2.90 AC.
 AREA OF PROPOSED LANDSCAPE / GRASSED AREAS: 28,150 SF OR 22%

 LIMIT OF DISTURBED AREA: 0.60 AC

 CUT: 500 CY

 FILL: 500 CY

 FILL: 500 CY

 FILL: 500 CY

 SUBDIVISION: AMERICAN PAVING FABRICS
 SECTION/AREA: N/A

 SITE AREA: 2.97 AC.
 DEED REFERENCES: L.4724, F. 102
 DPZ REFERENCES: L.4724, F. 102
 DPZ REFERENCES: SDP-88-70, ECP-12-037, BA 12-019V.

 6. 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.

 7. ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

 EXISTING UTILITIES LOCATED FROM HOWERD COUNTY CIS, TOPOGRAPHIC SURVEY AND AS-BUILT DRAWINGS, CONTRACTOR SHALL LO
- EXISTING UTILITIES LOCATED FROM HOWARD COUNTY GIS, TOPOGRAPHIC SURVEY 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.

 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
- A. THE R 1-1 (STOP) SIGNS AND THE STREET NAME SIGN (SNS) ASSEMBLIES FOR THIS DEVELOPMENT MUST BE INSTALLED
- B. THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-3123-5752) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
- HOWARD COUNTY TRAFFIC DIVISION (410-3123-5752) 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" (MIMUTCD).

 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, SQUARE TUBE POST (14 GAUGE) INSERTED IN TO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

 10. STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA AND APPROVED UNDER ECP-12-037. MICRO-SCALE PRACTICES INCLUDE MICRO-BIORETENTION, BIO SWALES, LEVEL SPREADER / GRAVEL TRENCH, DRY WELLS AND RAIN BARRELS. THESE FACILITIES

 WILL BE PRIVATELY OWNED AND MAINTAINED.
- 11. SOIL COMPACTION SPECIFICATIONS, REQUIREMENTS, METHODS AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER. GEOTECHNICAL ENGINEER TO CONFIRM ACCEPTABILITY OF PROPOSED PAVING SECTION, BASED ON SOIL TEST PRIOR TO CONSTRUCTION.

 12. THE COORDINATES SHOWN HEREON ARE BASED UPON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE SYSTEM. HOWARD COUNTY MONUMENT NOS. 43CB AND 43CC WERE USED FOR THIS PROJECT:

 13. THE PROPERTY LINES SHOWN HEREON IS BASED ON A BOUNDARY VERIFICATION SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC. DATED DECEMBER 27, 2011.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS FROM A FIELD RUN TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC.; PERFORMED ON DECEMBER 14, 2011. OFFSITE TOPOGRAPHY FROM HOWARD COUNTY GIS. . THERE ARE NO WETLANDS OR STREAMS ON THIS SITE.
- 17. TEST PITS COMPLETED BY ROBERT H. VOGEL ENGINEERING, INC. DATED JUNE 2012.
- 18. THE GEOTECHNICAL ENGINEER TO CONFIRM PAVING SECTION & PERMEABLE SURFACE THICKNESS PRIOR TO CONSTRUCTION.
 ALL PAVING TO BE MINIMUM P-2 PAVING, UNLESS OTHERWISE NOTED.

 19. ALL CURB AND GUTTER TO BE HOWARD COUNTY STANDARD DETAIL 3.01 REVERSE GUTTER PAN, UNLESS OTHERWISE NOTED. 20. ALL ELEVATIONS ARE TO FLOWLINE/BOTTOM OF CURB UNLESS OTHERWISE NOTED.
- 21. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
 22. CONTRACTOR RESPONSIBLE FOR CONSTRUCTING ALL HANDICAP RAMPS AND HANDICAP ACCESS IN ACCORDANCE WITH CURRENT
- 23. THIS SITE IS CURRENTLY SERVED BY PUBLIC WATER VIA CONTRACT NO. 44-1490
 THIS SITE IS CURRENTLY SERVED BY PUBLIC SEWER VIA CONTRACT NO. 10-1907
- 24. THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.

PARKING TABULATION

TOTAL SPACES REQUIRED:

TOTAL SPACES PROVIDED:

GENERAL OFFICE

AMERICAN PAVING FABRICS, INC. OFFICE; EQUIPMENT STORAGE, REPAIR

3.3 SPACE / 1000 SF (2,375 SF) 8 SPACES

1.0 SPACE PER EMPLOYEE (12) 12 SPACES

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

- 26. THE SUBJECT PROPERTY IS ZONED M-2 PER THE 02/02/2004 COMPREHENSIVE ZONING PLAN AND THE COMP LITE ZONING REGULATION AMENDMENTS EFFECTIVE ON 07/28/06.

 27. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- 28. ALL REINFORCED CONCRETE FOR STORM DRAIN STRUCTURES SHALL HAVE A MINIMUM OF 28 DAYS STRENGTH OF 3500 P.S.I.
 29. NO STEEP SLOPES OVER 20,000 SF CONTIGUOUS ARE LOCATED ONSITE. 30. ALL BUILDINGS TO HAVE ROOF LEADERS WHICH EMPTY AND FLOW AS DIRECTED HEREON

- 30. ALL BUILDINGS TO HAVE ROOF LEADERS WHICH EMPTY AND FLOW AS DIRECTED HEREON.

 31. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE, AND THE LANDSCAPE MANUAL. REFER TO SHEET 9

 32. ANY EXISTING STREET TREES DAMAGED OR DESTROYED DURING CONSTRUCTION WILL BE REPLACED BY THE CONTRACTOR.

 33. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$8,700 FOR THE REQUIRED 27 SHADE TREES, 4 EVERGREEN TREES.

 34. FOREST STAND DELINEATION PLAN HAS BEEN PREPARED BY ECO—SCIENCE PROFESSIONALS, INC; DATED FEBRUARY 2012.

 35. IN ACCORDANCE WITH SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION, THE TOTAL FOREST CONSERVATION OBLIGATION OF 0.44 ACRES (19,167 x 0.75 = \$14,375.00) WILL BE FULFILLED BY PAYMENT OF A FEE—IN—LIEU.
- 7. THIS PROJECT IS SUBJECT TO COMPLIANCE WITH THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMEN REGULATIONS. DEVELOPMENT OR CONSTRUCTION ON THIS PROPERTY MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS. IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION OR BUILDING/GRADING PERMIT APPLICATIONS.

 EXISTING OF COMMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION OR BUILDING/ 6. THERE ARE NO SPECIMEN OR CHAMPION TREES WITHIN THE LOD.
- 38. EXISTING O'CONNER DRIVE IS CLASSIFIED AS A LOCAL ROAD. NO SPEED LIMIT IS POSTED 39. THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- LETTER IF APPLICABLE.
- 41. ALL EXTERIOR LIGHTING TO COMPLY WITH THE REQUIREMENTS FOUND IN ZONING SECTION 134 OF THE HOWARD COUNTY ZONING REGULATIONS. 42. THE SITE CURRENTLY HAS SITE LIGHTING, REFER TO SHEET 2 FOR PLAN VIEW LOCATIONS AND SHEET 7 FOR DETAILS
- 43. THIS SITE PLAN SHALL ADDRESS ALL CIVIL CITATIONS LISTED HEREON 44. THE CURRENT OWNER UTILIZES A PRIVATE MOBILE "ROLL OFF" TYPE WASTE CONTAINER, NO DUMPSTER, DUMPSTER PAD
- & ENCLOSURE IS PROPOSED 45. NO NEW STRUCTURES ARE PROPOSED UNDER THIS SITE DEVELOPMENT PLAN.
- 46. THIS PROJECT IS SUBJECT TO CASE NO. BA 12-019V (JANUARY 7, 2013). IN THE DECISION AND ORDER DATED FEBRUARY 6, 2013 FOR THE AFOREMENTIONED CASE, THE HEARING EXAMINER (MR. LEFAIVRE) ORDERED; THAT THE PETITION OF AMERICAN PAVING FABRICS, INC. FOR VARIANCES TO REDUCE THE 50-FOOT STRUCTURE AND USE SETBACK FROM A PUBLIC STREET RIGHT-OF-WAY TO 6.9 FEET FOR AN EXISTING BUILDING AND ZERO ("O") FEET FOR EXISTING PARKING IN AN M-2 (MANUFACTURING: HEAVY) ZONING DISTRICT, IS DENIED."

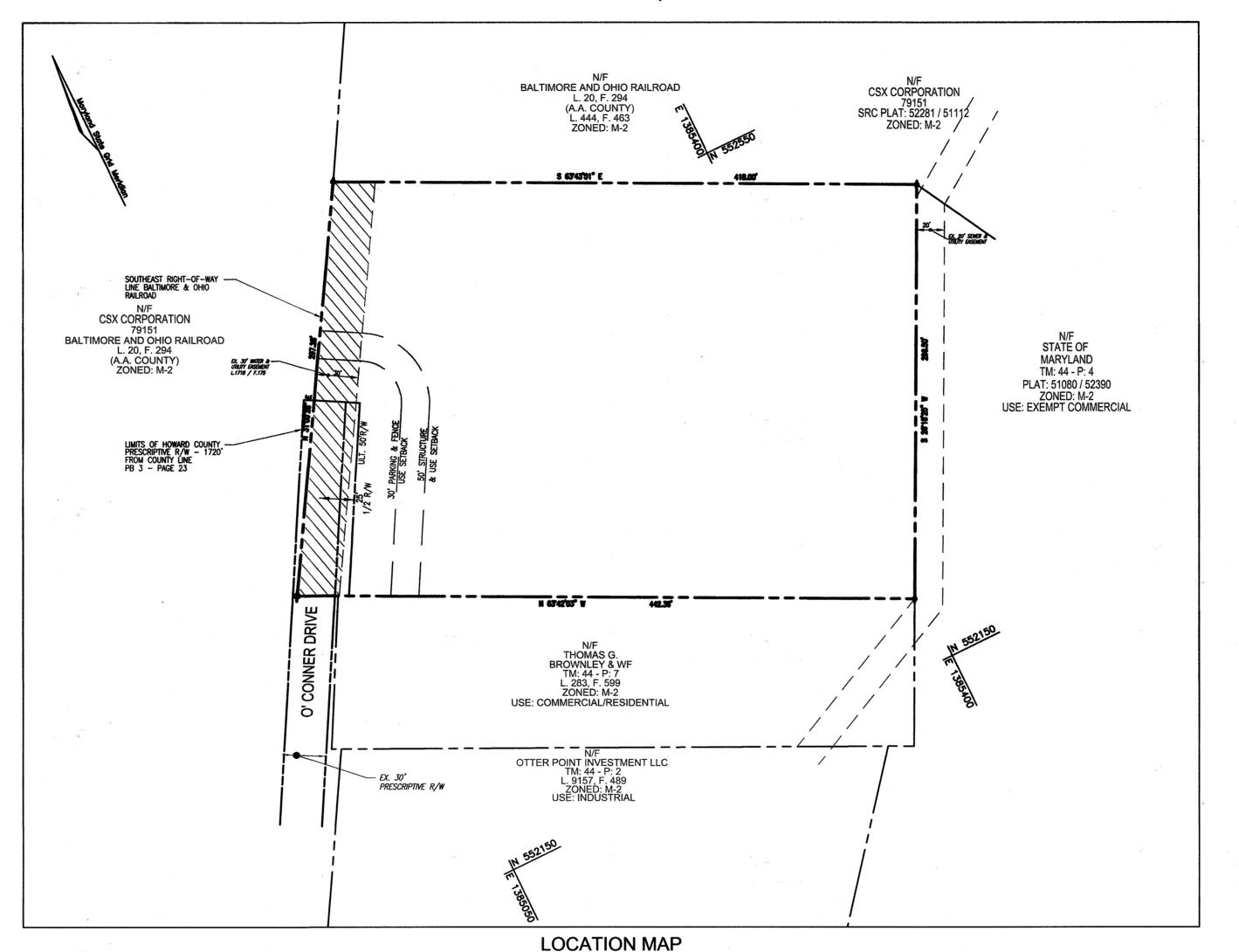
THE EXISTING STRUCTURE LOCATED WITHIN THE SETBACK WAS REMOVED ON 9/20/13.

23 SPACES (INCLUDING 2 HANDICAP)

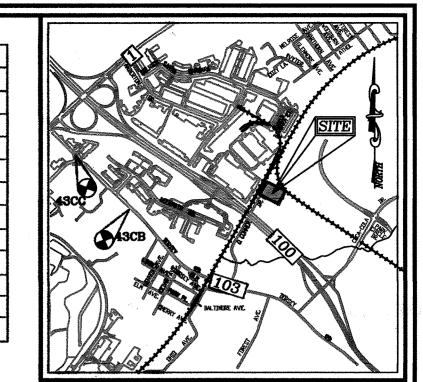
SITE DEVELOPMENT PLAN

AMERICAN PAVING FABRICS

6910 O CONNER DRIVE L. 4724 / F. 102 1 ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND



SHEET INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 10
EXISTING CONDITIONS	2 OF 10
LAYOUT PLAN	3 OF 10
GRADING, SOIL EROSION & SEDIMENT CONTROL PLAN	4 OF 10
SOIL EROSION & SEDIMENT CONTROL PLAN NOTES & DETAILS	5 OF 10
STORM DRAIN DRAINAGE AREA MAP; AND SOILS MAP	6 OF 10
UTILITY PROFILES AND SITE DETAILS	7 OF 10
STORMWATER MANAGEMENT - NOTES & DETAILS	8 OF 10
LANDSCAPE PLAN	9 OF 10
BIORETENTION PLANTING PLAN AND LANDSCAPING - NOTES AND DETAILS	10 OF 10



VICINITY MAP SCALE: 1"=2000'

ADC MAP COORDINATE: 5055/B1

BENCHMARKS

HOWARD COUNTY BENCHMARK 43CB N 552084.2453 E 1382282.4118 ELEV. 144.401 HOWARD COUNTY BENCHMARK 43CC

N 553201.4676 E 1381152.8123 ELEV. 163.666

ADDRESS CHART									
LOT/PARCEL#	LOT/PARCEL# STREET ADDRESS								
1	691	6910 O'CONNER DRIVE							
PERMIT INFORMATION CHART									
SUBDIVISION NAME S			TION/ A	REA		LOT/	/ PAF	RCEL	
AMERICAN PAVING – PARCEL			ARCEL	1					
IBER/FOLIO [BLOCK	NO	ZONE	TAX	MAP	ELECT	DIST.	CENSUS	TR.
4727/102	1		M-2	4	4	1ST	-	6012.0	2

OWNER/DEVELOPER AMERICAN PAVING FABRICS, INC 6910 O CONNER DRIVE HANOVER, MD 21076-1038

PHONE: (410) 796-5493 REVISE LAYOUT TO REFLECT AS-BUILT CONDITIONS 8-16-21 12-22-14 RELOCATE STORAGE BUILDING

SITE DEVELOPMENT PLAN

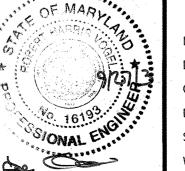
COVER SHEET

AMERICAN PAVING FABRICS L. 4724 / F. 102

1ST ELECTION DISTRICT TAX MAP: 44 GRID: 1 DPZ REF'S: SDP 88-70, ECP 12-037

ROBERT H. VOGEL Engineering, Inc.

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



DESIGN BY: W.O. NO.:

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

SHEET 10

SDP-12-079

HOWARD COUNTY, MARYLAN

SITE	LAIAA	VOIC	DATA	CHADT	

- TOTAL PROJECT AREA: AREA OF PLAN SUBMISSION: LIMIT OF DISTURBED AREA: PRESENT ZONING DESIGNATION:
- PROPOSED USES FOR SITE AND STRUCTURES: FLOOR SPACE ON EACH LEVEL TOTAL NUMBER OF UNITS ALLOWED: TOTAL NUMBER OF UNITS PROPOSED
- MAXIMUM # OF EMPLOYEES: NUMBER OF PARKING SPACES REQUIRED: - 1 SPACES PER EMPLOYEE
- NUMBER OF PARKING SPACES PROVIDED: OPEN SPACE ON-SITE:
- BUILDING COVERAGE: DPZ FILE REFERENCES:
- AREA OF WETLANDS: - AREA OF FLOODPLAIN: - AREA OF FOREST: - AREA OF STEEP SLOPES:

THE CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES ONSITE AND MAINTAIN UNINTERRUPTED SERVICE.

	SOILS LI				
SYMBOL	NAME / DE	SCRIPTION	GROUP	Kw	HYDRIC/NOT HYDRIC
Fa	Fa FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES			0.02	HYDRIC
RuB	RUSSETT AND BELTSVILLE SANDY SILT LOAM, 3	С	0.24	NOT HYDRIC	
	BASED ON WEB SOIL SURVEY - HOW		0.24	NOT HYDRIC	

THIS PLAN BEGINS THE PERMIT PROCESS IN AN EFFORT TO COMPLY WITH THE REQUIREMENTS OF HOWARD COUNTY DEPARTMENT OF INSPECTIONS LICENSING & PERMITS (DILP) CIVIL CITATION

1Z33132184: FAILURE TO OBTAIN REQUIRED PERMITS AND INSPECTIONS FOR CONSTRUCTION

2Z33131674: NOT OBTAIN THE REQUIRED PERMITS AND INSPECTIONS ACCORDING TO IBC

6Z33129872: INSTALLED PLUMBING WITHOUT PERMITS OR INSPECTIONS INCLUDED BUT NOT

LIMITED TO BATHROOMS AND SANITARY SEWER

SITE ANALYSIS DATA CHART

- 3.3 / 1000 SF OFFICE
- AREA OF RECREATION OPEN SPACE:
- ANY OTHER INFORMATION - ERODIBLE SOILS (>0.35): - EXISTING IMPERVIOUS AREA: - PROPOSED IMPERVIOUS AREA: PROPOSED GREEN AREA:
- Q. FLOOR AREA RATIO (FAR)

10.7%-13,850 SF+ SDP 88-70, ECP 12-037 CITATION #'S 1Z33132184, 2Z33131674, 6Z33129872 2.9 AC.± (EXISTING GRAVEL AREAS ASSUMED IMPERVIOUS) 2.38 AC. (EXISTING GRAVEL AREAS ASSUMED IMPERVIOUS) 0 S.F. OR 0.00 AC. 0 S.F. OR 0.00 AC. 0 S.F. OR 0.00 AC.

COMMERCIAL CONTRACTOR OFFICE, STORAGE YARD & EQUIPMENT

OFFICE 1ST APPROX 1,300SF 2ND APPROX 1,075SF

127,500 S.F. OR 2.927 AC.

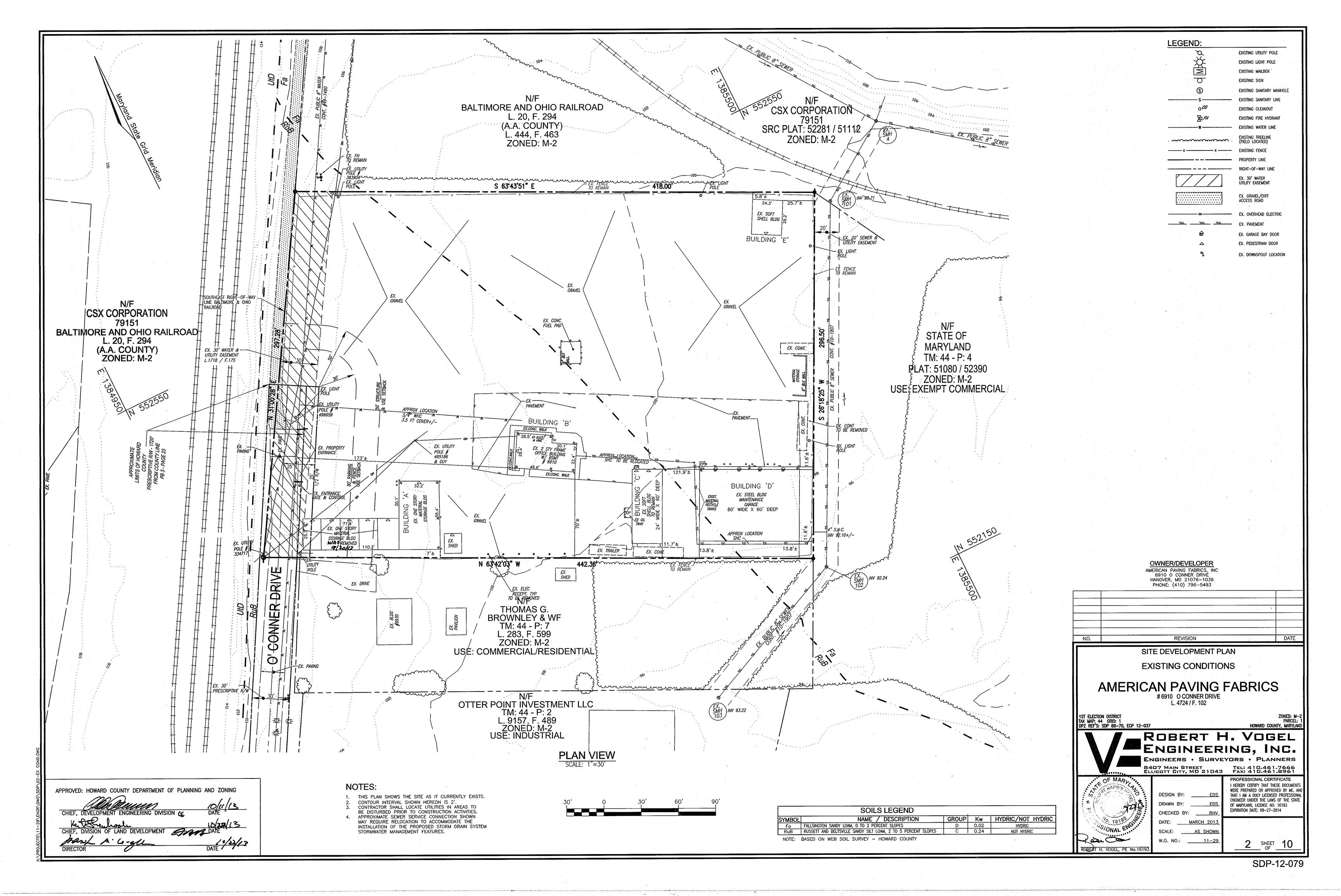
127,500 S.F. OR 2.927 AC.

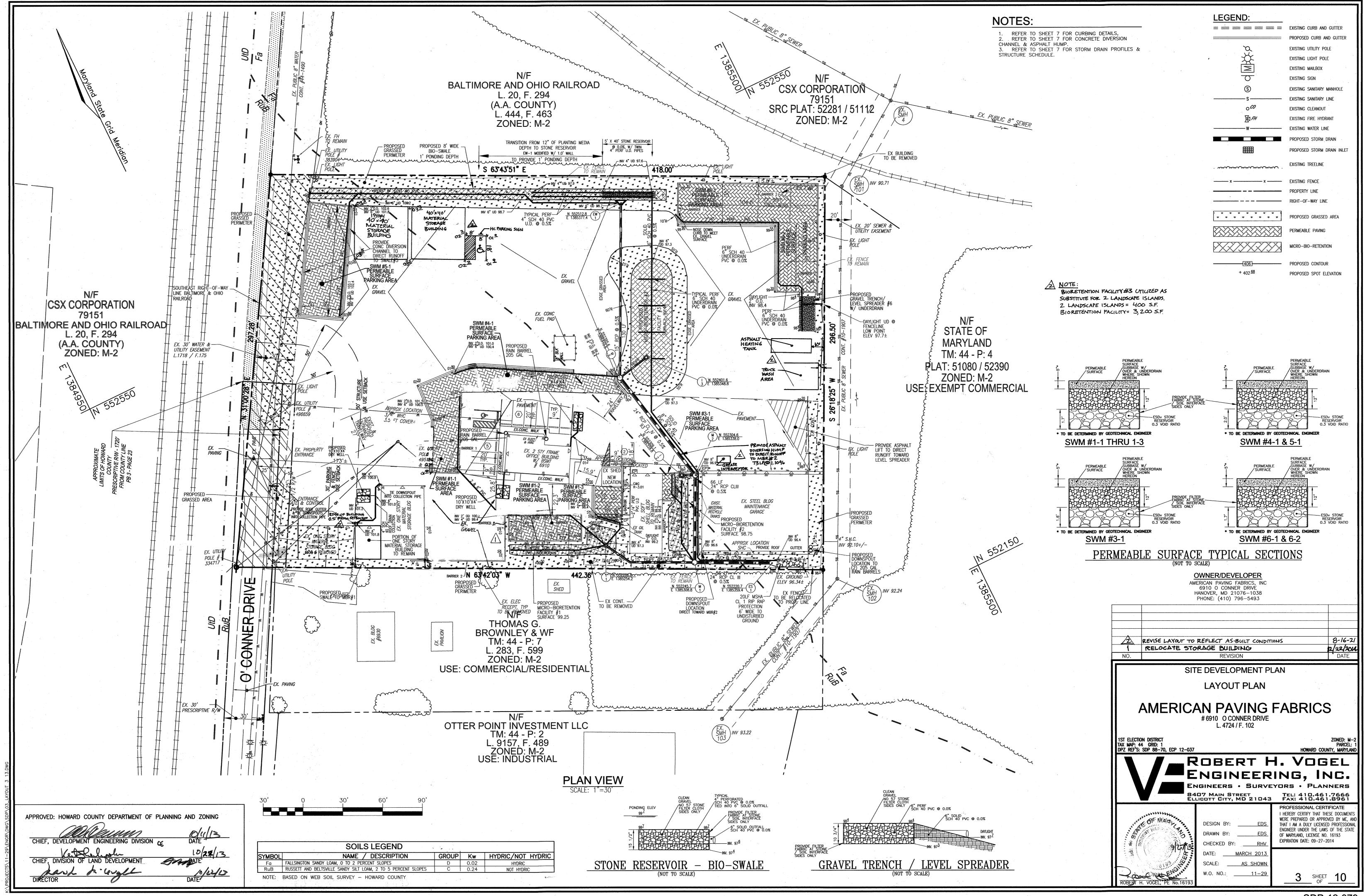
N/A (10-12 ONSITE PER DAY)

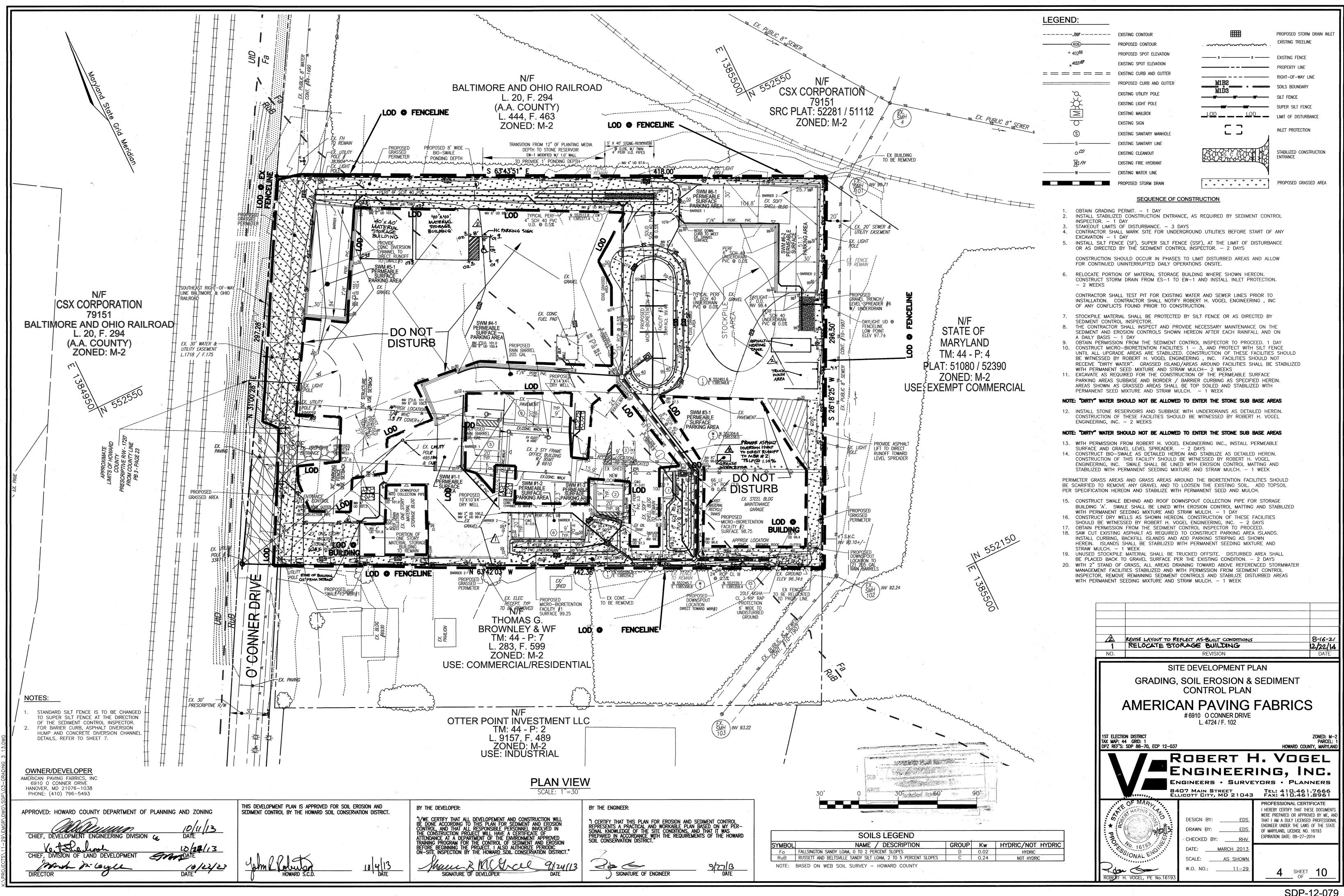
0 S.F. OR 0.00 AC.

= 8 SPACES (2375SF/1000 X 3.3 =7.84) = 20 TOTAL SPACES REQUIRED

23 DEFINED (INCLUDES 2 HANDICAPPED)







HOWARD SOIL CONSERVATION DISTRICT <u>STANDARD SEDIMENT CONTROL NOTE:</u> A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT START OF ANY CONSTRUCTION, (313-1855). ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", AND REVISIONS THERETO. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL 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 ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. TOTAL AREA OF SITE area disturbed AREA TO BE ROOFED OR PAVED rea to be vegetatively stabilized TOTAL FILL OFFSITE WASTE/BORROW AREA LOCATION ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF TI INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY, 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 PROCFED TO A SURSEQUENT 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 EXISTING ROOFTOP, PAVEMENT OR GRAVEL SURFACE CONSIDERED IMPERVIOUS PROPSED GRAVEL AREAS PARKING ISLANDS LANDSCAPED PERIMETERS & "GREEN" ESTIMATE ONLY; CONTRACTOR SHALL VERIFY QUANTITIES TO HIS OWN SATISFACTION. TO BE DETERMINED BY CONTACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, WITH AN APPROVED AND ACTIVE GRADING PERMIT B-4-4 STANDARDS AND SPECIFICATIONS TEMPORARY STABILIZATION DEFINITION TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS. 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. <u>Criteria</u> ON THE PLAN. MAINTAIN UNTIL THE NEXT SEEDING SEASON. HARDINESS ZONE (FROM FIGURE 8.3): ZONE 6b SEED MIXTURE (FROM TABLE B.1): NO SPECIES RATE (LB/AC) DATES COOL SEASON ANNUAL RYEGRASS OR EQUAL 40 LB / AC AUG 1 TO MAY 16 TO 1/2 IN. FOXTAIL MILLET OR EQUAL 30 LB / AC 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." Man B McSie)9/24/13 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 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. SEE SIGNATURE ADJ. TO TITLE BLOCK APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE DEFINITION EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE. 1,800 CU. YDS.* 500 CU. YDS.* FEUZER RATE LIME RATE SEEDING SEEDING (10-20-20) 436 LB/AC 2 TONS/AC 1/2 IN. (10 LB PER (90 LB PER 1000 SF) 1000 SF

1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE 8.1 SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER). FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3). AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, 1. GENERAL SPECIFICATIONS 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 MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR. 2 FOR SITES HAVING SOIL TESTS PERFORMED. LISE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY, SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY TOP GROWTH AND THATCH. BROKEN PADS AND TOM OR UNEVEN ENDS WILL NOT BE 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.1.8 AND GRASP ON THE UPPER 10 PERCENT OF THE SECTION. D. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT TEMPORARY SEEDING SUMMARY (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL. SOIL SCIENTIST PRIOR TO ITS INSTALLATION.

10/11/13

W/17/13

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 SUPPAGE 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 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 SOO 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

O SPECIES APPLICATION RATE (LB/AC) DATES DEEDING DEPTHS N P ₂ O ₅ K ₂ O COOL SEASON TALL FESCUE & KENTUCKY BUJEGRASS OR EQUAL K.B. 40 LB / AC OCT 15 AUG 15 TO OCT 15 SEEDING DEPTHS N P ₂ O ₅ K ₂ O 45 LB/AC 90 LB/AC 90 LB/AC (2 LB PER (90 LB PE		HARDINESS ZONE (FROM FIGURE B.S): ZONE 60 RATE			FELIZER RATE (10-20-20))	LIME RATE		
# KENTUCKY MAY 15 1/4-1/2 IN. (1 LB PER (2 LB PER (2 LB PER (90 LB BUEGRASS) 1000 SF)	0	SPECIES				N	P ₂ 0 ₅	к ₂ 0	
		TALL FESCUE & KENTUCKY BLUEGRASS		MAY 15 AUG 15 TO	1/4-1/2 IN.	(1 LB PER	(2 LB PER	(2 LB PER	(90 LB PER
									·

B-4-5 STANDARDS AND SPECIFICATIONS

TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION. TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND

PERMANENT STABILIZATION

COVER ON DISTURBED SOILS. TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. CONDITIONS WHERE PRACTICE APPLIES CONDITIONS WHERE PRACTICE APPLIES

A. SEED MIXTURES

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), 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. 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 I. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT 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. 1. 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 KENTICKY BUIFGRASS 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 fescu 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.

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

C. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES

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

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% 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.

A CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE B. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH, PLUS OR MINUS 14 INCH. AT THE TIME OF CUTTING, MEASUREMENT FOR THICKNESS MUST EXCLUDE 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 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

HARDINESS ZONE (FROM FIGURE B.3): ZONE 6b SEED MIXTURE (FROM TABLE B.3): 9								LIME RATE
0	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P ₂ 0 ₅	к ₂ 0	
	COOL SEASON TALL FESCUE & KENTUCKY BLUEGRASS OR EQUAL	T.F. 60 LB / AC K.B. 40 LB / AC	MAR 1 TO MAY 15 AUG 15 TO OCT 15	1/4-1/2 IN.	(1 LB PER	(2 LB PER	90 LB/AC (2 LB PER 1000 SF)	(90 LB PER

R-4-2 STANDARDS AND SPECIFICATIONS

SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS

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

WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

A. SOIL PREPARATION

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.

APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.

; incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking OR OTHER SUITABLE MEANS. A. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE.

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 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 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

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.

5 INCHES.

I, 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

. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE: A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH. B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FLIRNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT

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 . TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING A. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED

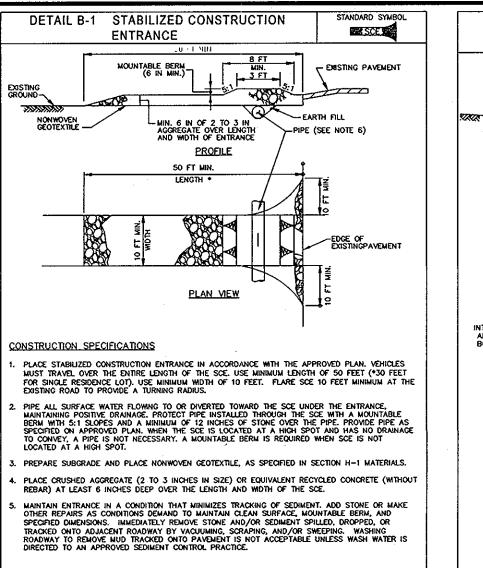
BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS. STONES. SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH OR OTHER MATERIALS LARGER THAN 1% INCHES IN DIAMETER. B. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS C. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL

AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL. 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.



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

2011

B-4-3 STANDARDS AND SPECIFICATIONS SEEDING AND MULCHING

THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

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

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

1.SPECIFICATION

RATE IN EACH DIRECTION.

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

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 STERIL 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

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 POLINDS 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.

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.

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

PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

B. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE I, WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY. II. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS. III. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS. IV. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE V. WOFM 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

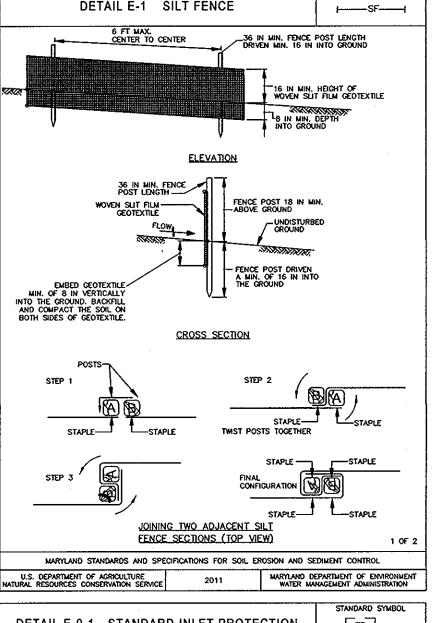
2. APPLICATION A. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING. B. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE:

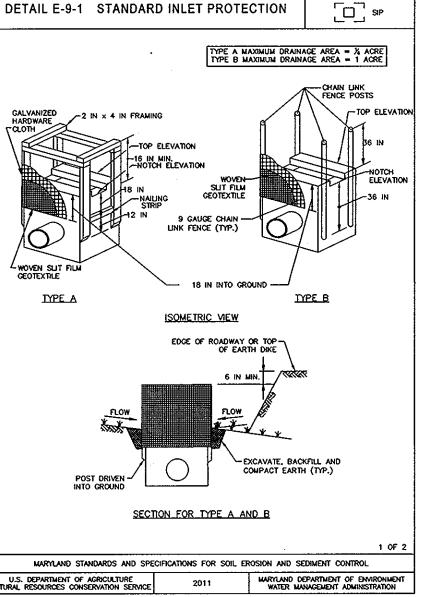
C. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER. ANCHORING A. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS

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

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 APPRÒVED 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 BINDER V. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET

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





H-5 STANDARDS AND SPECIFICATIONS FOR 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 Conditions Where Practice Applies reas subject to dust blowing and movement where on and off-site damage is likely without treatment. 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

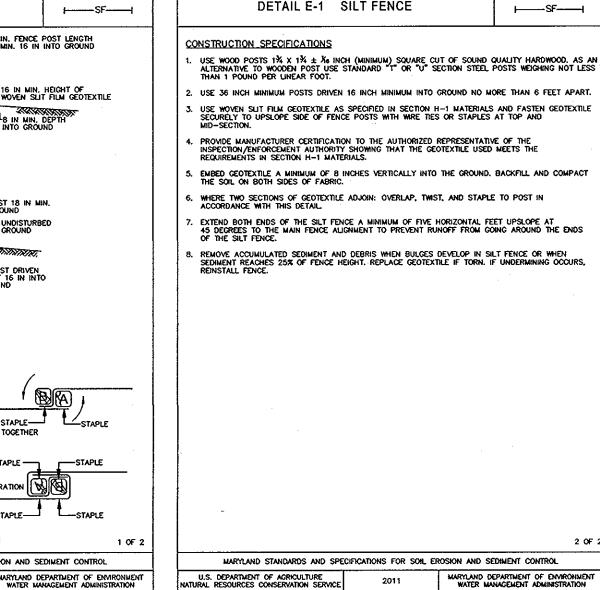
Vegetative Cover: See Section B-4-4 Temporary Stabilization.

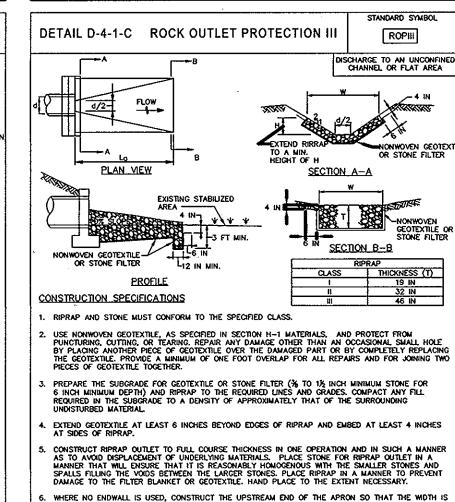
Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect. Imigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must

ot 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.

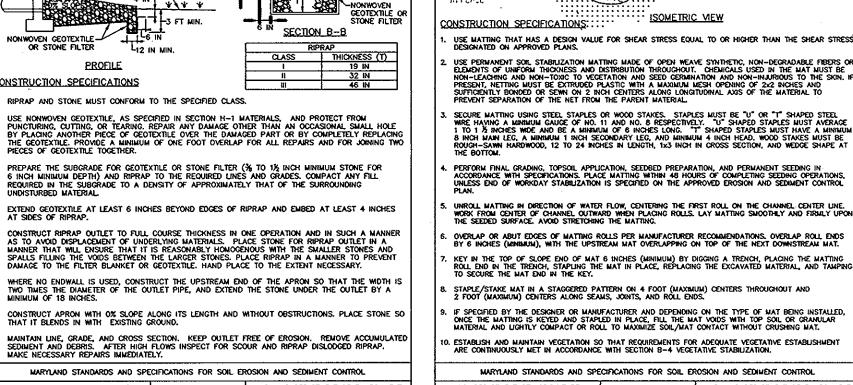
Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan

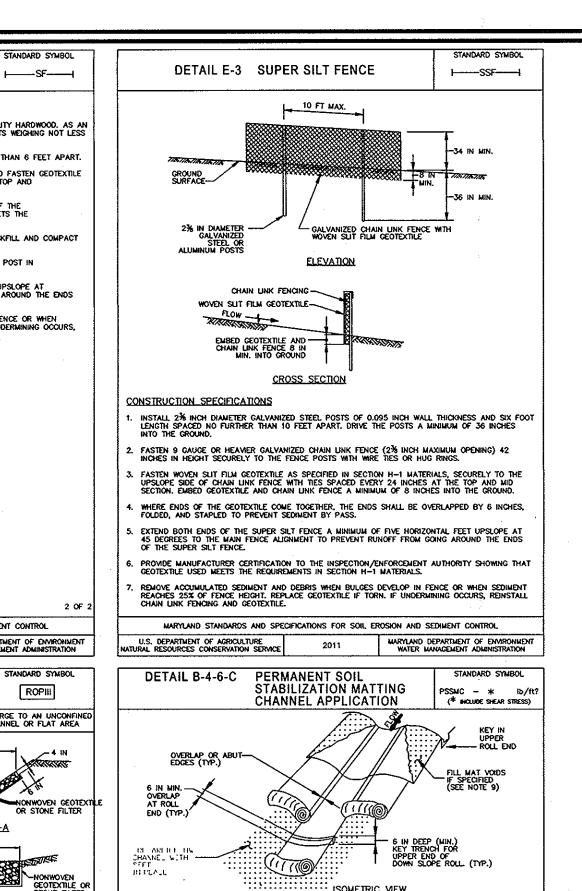
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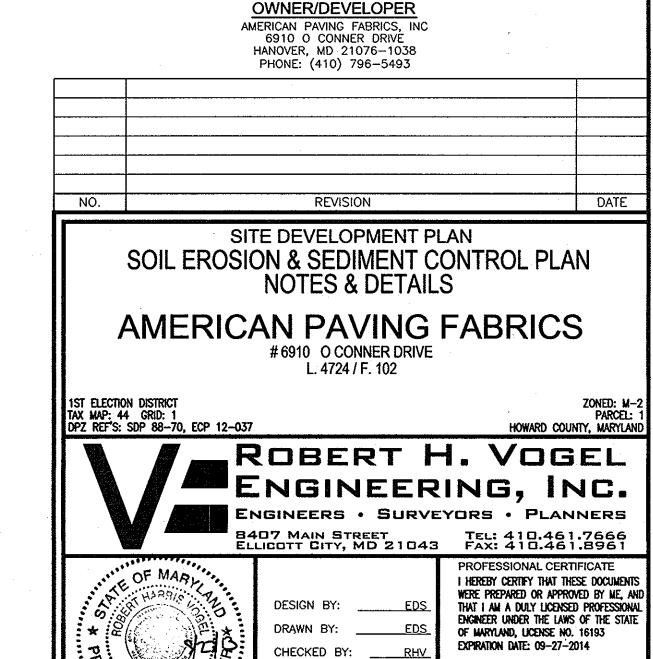




2011







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ROBERT H. VOGEL, PE No.1619

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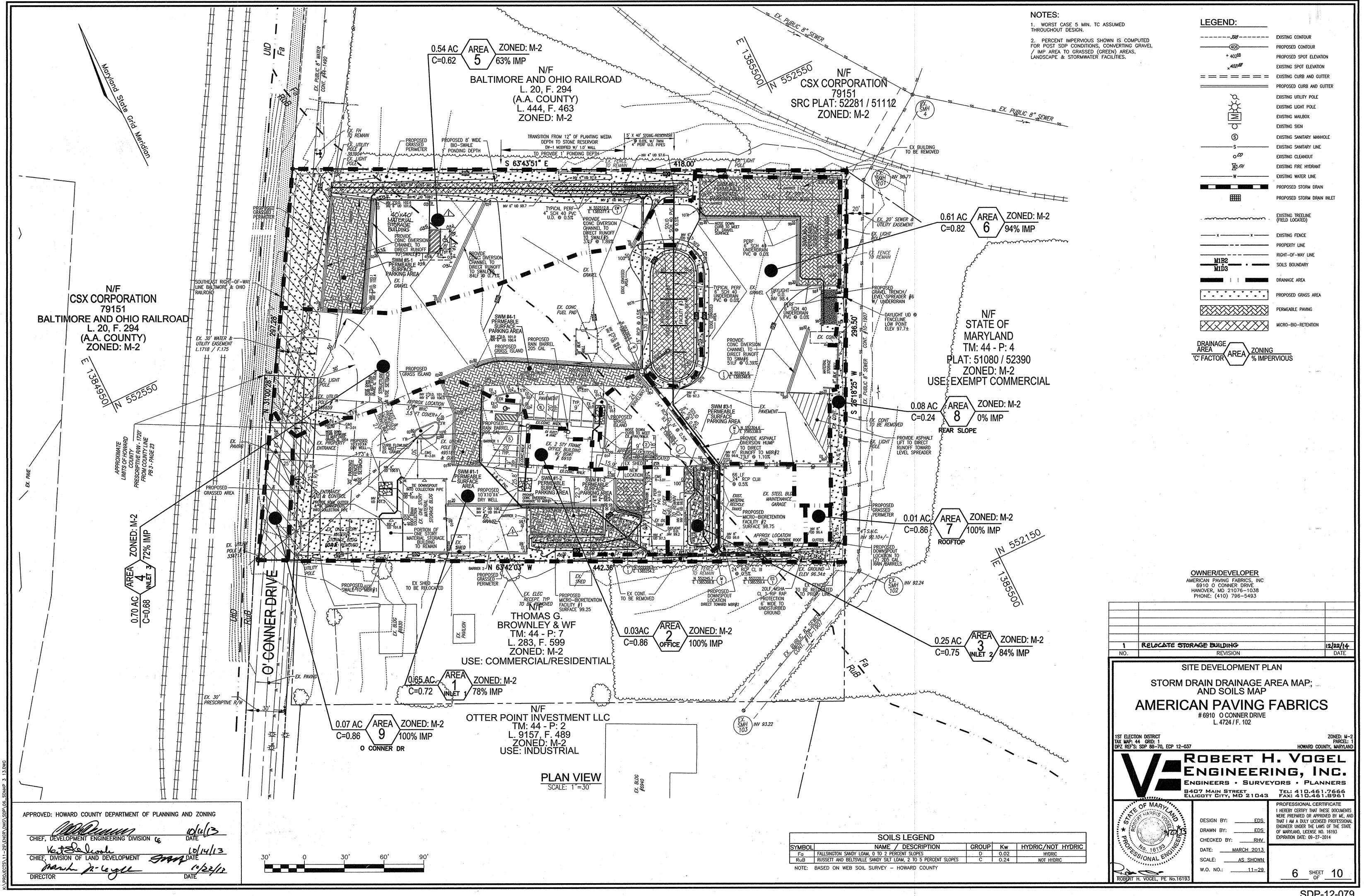
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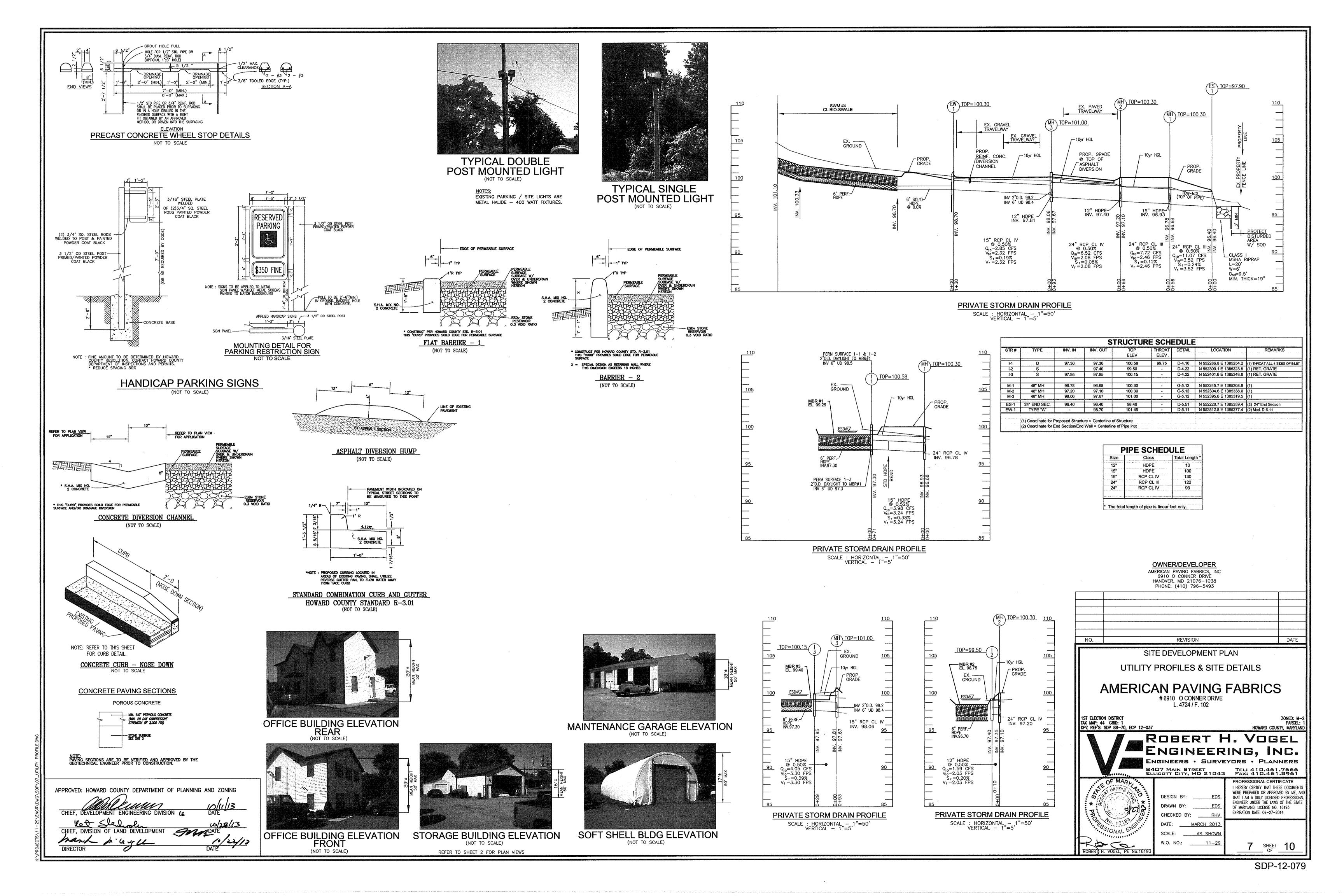
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

2011 MARYLAND DEPARTMENT OF ENVIRONMEN
WATER MANAGEMENT ADMINISTRATION

SDP-12-079







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.

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 ALLEVATED 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

WHEN BACKFILLING THE TOPSULE OVER THE SAND LATER, FIRST PLACE ST TO 4 INCHES OF TOPSULE OVER THE SAND, THEN ROTOTILE THE SAND/TOPSULE OVER THE SAND/TOPSULE OVER THE SAND/TOPSULE THE SAND/TOPSULE

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 MERIFAL 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.

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:

7. MISCELLANEOUS

* 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).

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

OPERATION AND MAINTENANCE SCHEDULE FOR MICROBIORETENTION BIO—SWALE AREAS

1. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN

MANUAL VOLUME II, TABLE A.4.1 AND 2.

2. THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS AND REPLACE OF ALL DEFICIENT STAKES AND WIRES.

3. THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.

4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

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

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [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 1/4-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f' _e = 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 Marylan - 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 san substitutions are acceptable. No "rock dust" can be used for san

	SOILS LEGEND			
SYMBOL	NAME / DESCRIPTION	GROUP	Kw	HYDRIC/NOT HYDRIC
Fa	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D	0.02	HYDRIC
RuB	RUSSETT AND BELTSVILLE SANDY SILT LOAM, 2 TO 5 PERCENT SLOPES	С	0.24	NOT HYDRIC
NOTE:	BASED ON WER SOIL SURVEY - HOWARD COUNTY		"	

NOTE: BASED ON WEB SOIL SURVEY - HOWARD COUNTY

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

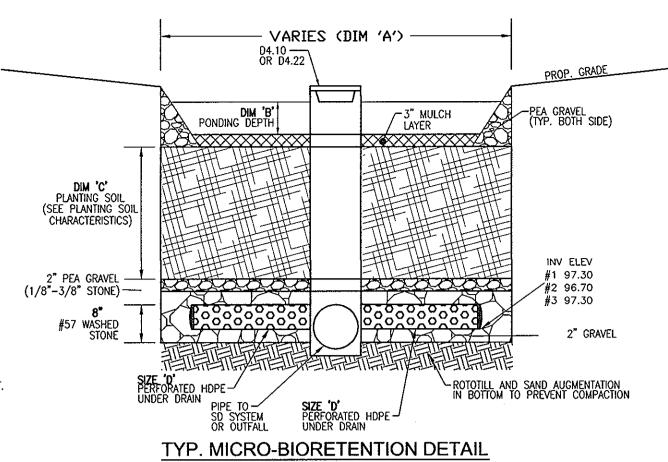
CHIEF, DEVELOPMENT ENGINEERING DIVISION & DATE

CHIEF, DIVISION OF LAND DEVELOPMENT

DIRECTOR

DATE

DATE



VARIES

A A A A A A A A A

** PAVEMENT CROSS SECTION & REINFORCEMENT TO BE CONFIRMED BY GEOTECHNICAL ENGINEER

UNDERDRAIN SHALL BE LOCATED SUCH THAT IT CAN DAYLIGHT OR JOIN MICROPRACTICE UNDERDRAIN SYSTEM & BE CONVEYED TO THE STABILIZED OUTFALL.

DETAIL - PERMEABLE CONCRETE PARKING PAD

NOT TO SCALE

** ALL PERMEABLE CONCRETE THICKNESS, MIX AND SUB-BASE

TO BE DETERMINED BY GEOTECHNICAL ENGINEER ONSITE.

Typical Section w/Overdrain & Underdrain

OVERDRAIN 2" MIN. PERFORATED OR SLOTTED

PERMEABLE SURFACE TYPICAL SECTION

THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR TYPICAL APPLICATIONS AND ARE NOT EXCLUSIVE OR LIMITING. THE DESIGNER IS

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.

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.

GGREGATE – PERVIOUS CONCRETE CONTAINS A LIMITED FINE AGGREGATE CONTENT. COMMONLY USED GRADATIONS INCLUDE ASTM C 33 NO. 67 (3/4 IN. TO NO. 4).

WATER CONTENT - WATER-TO-CEMENT RATIOS BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADMIXTURES. WATER QUALITY

PAYER 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

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

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

SITE AREA:

SITE Rv:

0.7562

0.9486

0.8916

84.00 0.8060

SITE ESDv:

28314

1252

0.54

26670

0.7322 128212.8 2.94

10890 0.25

72.86 0.7057 30492 0.70 1793 4662 3407

0.61

TARGET Pe:

SITE IMPERVIOUS: 78.86 PERCENT

(1.0x0.95xA)/12

(2.6x0.95xA)/12

0.65

0.76

15353 CF +/-

1784

4639

SHOULD MEET ACT 30A. AS A GENERAL RULE, POTABLE WATER SHOULD BE USED ALTHOUGH RECYCLED CONCRETE PRODUCTION WATER MEETING ASTM C 94 OR

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

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

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).

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

RESPONSIBLE FOR DEVELOPING SPECIFICATIONS FOR INDIVIDUAL PROJECTS AND SPECIFIC CONDITIONS.

2. PERMEABLE INTERLOCKING CONCRETE PAVEMENTS (PICP)

ONE-INCH THICK LEVELING COURSE OF ASTM C-33 SAND.

MATERIALS AND DIMENSIONS SPECIFIED IN THIS APPENDIX SHALL BE FOLLOWED.

CAPABLE OF SUPPORTING THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED.

Rv=0.05+0.009XI

PROJECT

TOTALS

V min=1.0" rainfall

Vmax= 1yr rainfall=2.6"

PERFORATED OR SLOTTED

UNDERDRAIN 6"MIN. SLOPED —TO OUTLET PERFORATED OR

AMERICAN PAVING FABRICS - ESDv COMPUTATIONS 3/2013

DA MINIMUM MAXIMUM 1.9" VOLUME IMPERV IMPERV GREEN

VOLUME | VOLUME | PROVIDED* | (SF) | (AC)

2550

23522 0.54 1209 3143 2297 4855 14810 0.34 0.20 ALT SURFACE, MICROSCALE PRAC. BIO SWALE

0.0500 3670 0.08 15 40 29 0 0 0.00 0.08 UNCAPTURED / BELOW OUTFALL & INFIL BERM

7823 20339 14863 **15539** 97179

AREA (MICROBIO RETENTION, BIOSWALE AND PERIMETER GREEN AREAS) REDUCING IMPERVIOUS AREA TO AT OR NEAR 79%.

BIORETENTION FACILITIES, BIO-SWALE, PERMEABLE SURFACE PARKING AREAS AND ROOFTOP RUNOFF DRY WELLS.

STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET FOR 1.9" THROUGH THE USE OF MICRO-

NO ADDITIONAL IMPERVIOUS AREA IS PROPOSED BY THIS PLAN. PORTIONS OF THE EXISTING "IMPERVIOUS AREA" SHALL BE COVERTED TO GREEN

0.6974 2850 0.07 166 431 315 **0** 2050 0.05 0.02 EXIST. O'CONNER DRIVE AREA / AREA UNCHANGED

3390

WITHIN SUBBASE

PERMEABLE CONCRETE OR EQUAL SURFACE

REQUIRED SUB BASE

3/4" TO 2" STONE

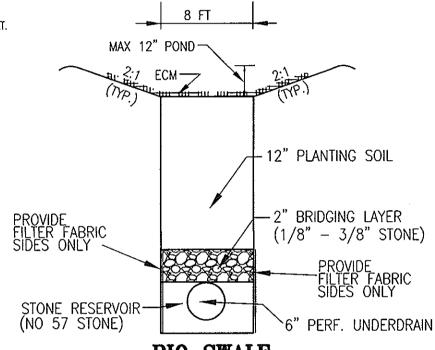
ADDITIONAL ESDV STORAGE STONE RESERVOIR

3/4" TO 2" STONE

DEPTH VARIES ASTM C 33

12" ASTM C 33

STORMWATER MANAGEMENT ESD FACILITY DATA CHART							
SWMF NO.	SWMF SIZE 'A' (AREA)	DIM 'B' PONDING	DIM 'C' PLANTING	DIM 'D' UNDERDRAIN SIZE			
1	SEE SHEET 10	0.5' PONDING	1.0' PLANTING MEDIA	6" PERF. HDPE			
2	SEE SHEET 10	0.75' PONDING	1.1' PLANTING MEDIA	6" PERF. HDPE			
3	SEE SHEET 10	0.75' PONDING	1.2' PLANTING MEDIA	6" PERF. HDPE			



BIO SWALE

SEE PROFILE SHEET 7 FOR TRANSITIONS

A-2. PERMEABLE PAVEMENTS

CONSTRUCTION CRITERIA:

(NOT TO SCALE)

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

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).

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

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.

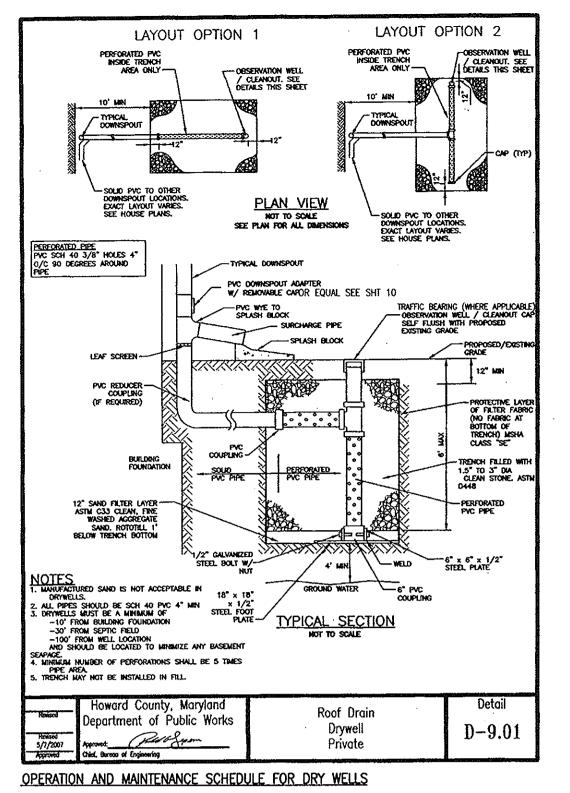
DRAINAGE PIPES, INLETS, STONE EDGE DRAINS, AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE SHOULD BE CLEANED OUT AT REGULAR INTERVALS.

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
- 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.



1. THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A

QUARTERLY BASIS AND AFTER EVERY HEAVY STORM EVENT.

* ACCOUNTS FOR PROPOSED PONDING DEPTH

450 * 900 SF MICRO BIO @ BROWNLEY PROP LINE

714 STONE UNDER PERM SURFACE PARKING @ 1.7'

551 STONE UNDER PERM SURFACE PARKING @ 1.7'

265 STONE UNDER PERM SURFACE PARKING @ 1.7'

90 MICROSCALE PRAC, DRYWELL 10 X 10

224 PERM SURFACE PARKING @ .16

173 PERM SURFACE PARKING @ .16

83 PERM SURFACE PARKING @ .16

90 MICROSCALE PRAC. DRYWELL 10 X 10 103 MICROSCALE PRAC. DRYWELL 7 X 14

55 205 GAL RAIN BARREL FRONT COR. OFFICE

50 * 1000 SF MICRO BIO BETWEEN BUILDINGS

2078 * 3200 SF MICRO BIO

2900 * 2180 SF BIOSWALE

40 GRAVEL STORAGE @ EW-1

29 PERM SURFACE PARKING PAD @ .16 183

88 STONE UNDER PERM SURFACE PARKING @ 1.6'
27 205 GAL RAIN BARREL RT CORS. GARAGE

347 PERM SURFACE PARKING PAD @ .16 2170
1302 STONE UNDER PERM SURFACE PARKING @ 2.0'

403 PERM SURFACE PARKING PAD @ .16 2520

501 PERM SURFACE PARKING PAD @ .16 3132 1597 STONE UNDER PERM SURFACE PARKING @ 1.7'

245 PERM SURFACE PARKING PAD @ .16 1533

782 STONE UNDER PERM SURFACE PARKING @ 1.7

55 205 GAL RAIN-BARREL REAR COR. GARAGE

84 GRAVEL TRENCH / LEVEL SPREADER

1512 STONE UNDER PERM SURFACE PARKING @ 2.0'

22216 0.51 0.14 ALT SURFACE, MICROSCALE MICRO-BIO RETENTION #1

248 1250 0.03 0.00 MICROSCALE PRAC. (DRY WELLS & RAIN BARREL)

9148 0.21 0.04 ALT SURFACE & MICRO-BIO RETENTION #2

2. THE OWNER SHALL RECORD THE WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.

3. THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.

4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN A SEVENTY-TWO (72) HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.

5. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.

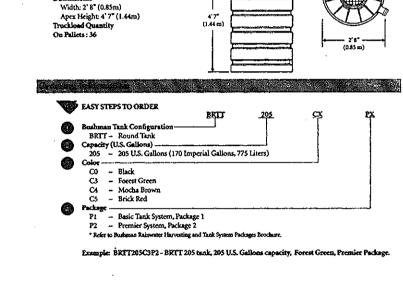
6. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

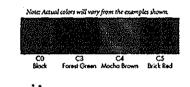
TYPICAL RAIN BARREL DESIGN

 $\frac{205 \text{ GAL}}{7.48 \text{ GAL/CUFT}} = 27.41 \text{ CUFT}$ $\frac{500 \text{ SF x (x")}}{12} = 27.41 \text{ CUFT}$ $\frac{12 (27.41 \text{ CUFT})}{12} = 0.66"$

THEREFORE A 205 GALLON BARREL CAPTURES
PE OF 0.66" FROM A 500 SF SECTION
OF PROPOSED ROOFTOP

be new BRTT205 Round tank from Bushman is designed for above ground instillation against a wall, on the ground or on a stand at virtually any description and in swillable in several popular colors with UV stabilization to avoid color fading. The BRTT205 can be ordered as a basic tank or with additional package accessories. Features & Benefits Water capacity of four 50 gallon rain barrels High quality rotational-molded polyethyleme construction assures maximum strength One-piece construction and horizontal ribs around the tank provide added wall strength Inlet strainer with mosquito screen and cover Overflow assembly provided with mosquito screen and 90 degree elbow Tank openings are pre-installed for easy installation Bushman 5 Year Warranty Inlet Strainer Overflow Oxidet Overflow Oxidet







6185 Tombon Road, Unit 3 - 5
Mississayo, Ontorio LST IX3
Tal. 800.387.8332 F 50x. 905.565.8282
www.bushmanconada.com

Tolerand Commercial Corporation

BUSHMAN BRTT205 (205 GALLON)

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

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 A

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.

THE OWNER SHALL REPLACE DAMAGED COMPONENTS AS NEEDE THE OWNER SHALL ALLOW THE BARREL TO DRAIN BY BOTTOM SPIGOT DURING THE WINTER SEASON.

OWNER/DEVELOPER

AMERICAN PAVING FABRICS, INC
6910 O CONNER DRIVE
HANOVER, MD 21076-1038
PHONE: (410) 796-5493

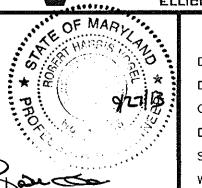
	PHONE: (410) 796-5493					
NO.	REVISION	DATE				
	CITE DEVELOPMENT DUAN	22 D 22 D 100 D				
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ST	SITE DEVELOPMENT PLAN ORMWATER MANAGEMENT - NOTES & DETA	NLS				
ST		AILS				
	ORMWATER MANAGEMENT - NOTES & DETA					

ROBERT H. VOGEL

ENGINEERS • SURVEYORS • PLANNERS

B407 MAIN STREET
ELLIGOTT CITY, MD 21043

FAX: 410.461.8961



ROBERT H. VOGEL, PE No.1619

ST ELECTION DISTRICT

DESIGN BY: EDS THE EN OF CHECKED BY: RHV

DATE: MARCH 2013

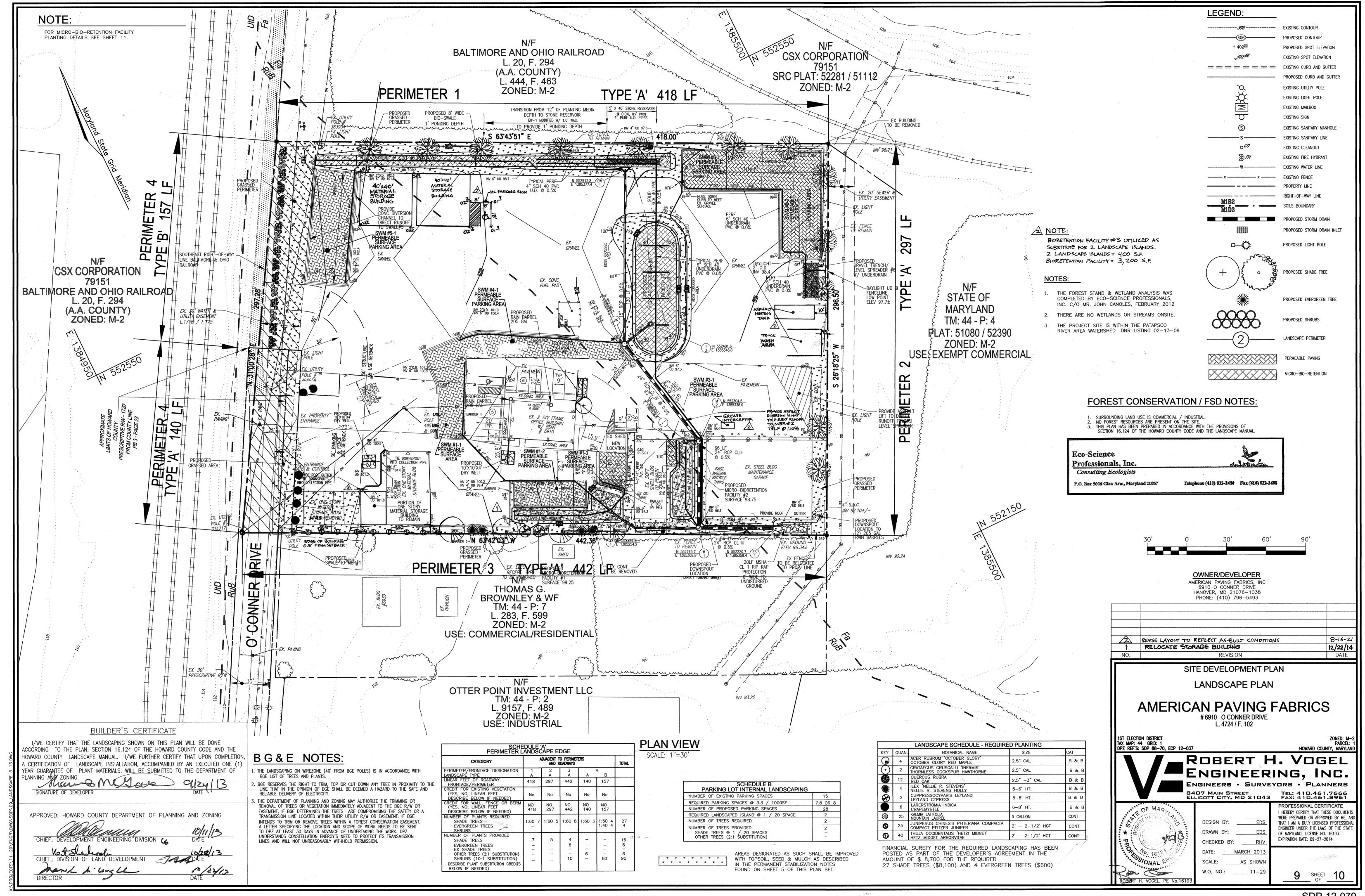
SCALE: AS SHOWN

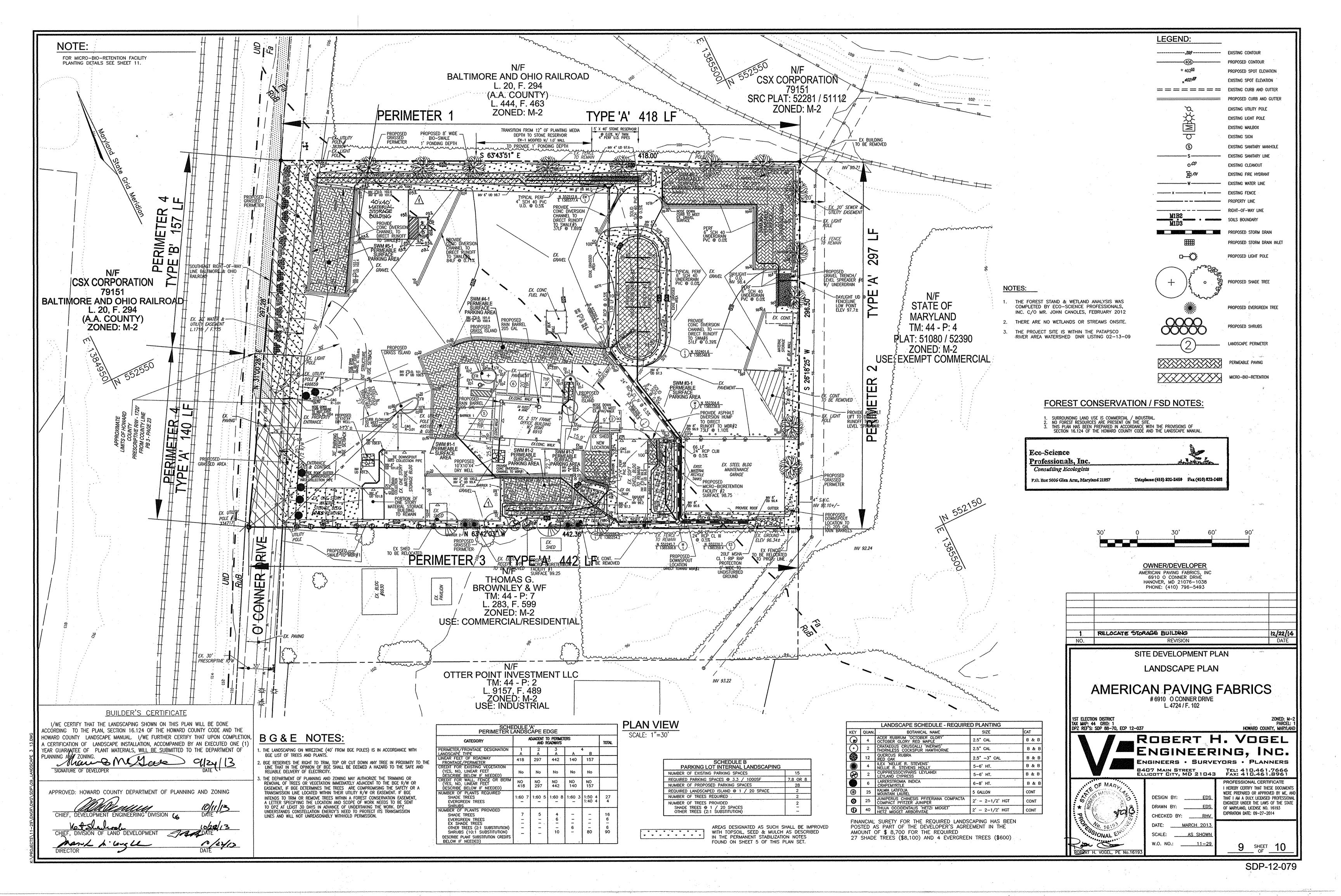
W.O. NO.: 11-29

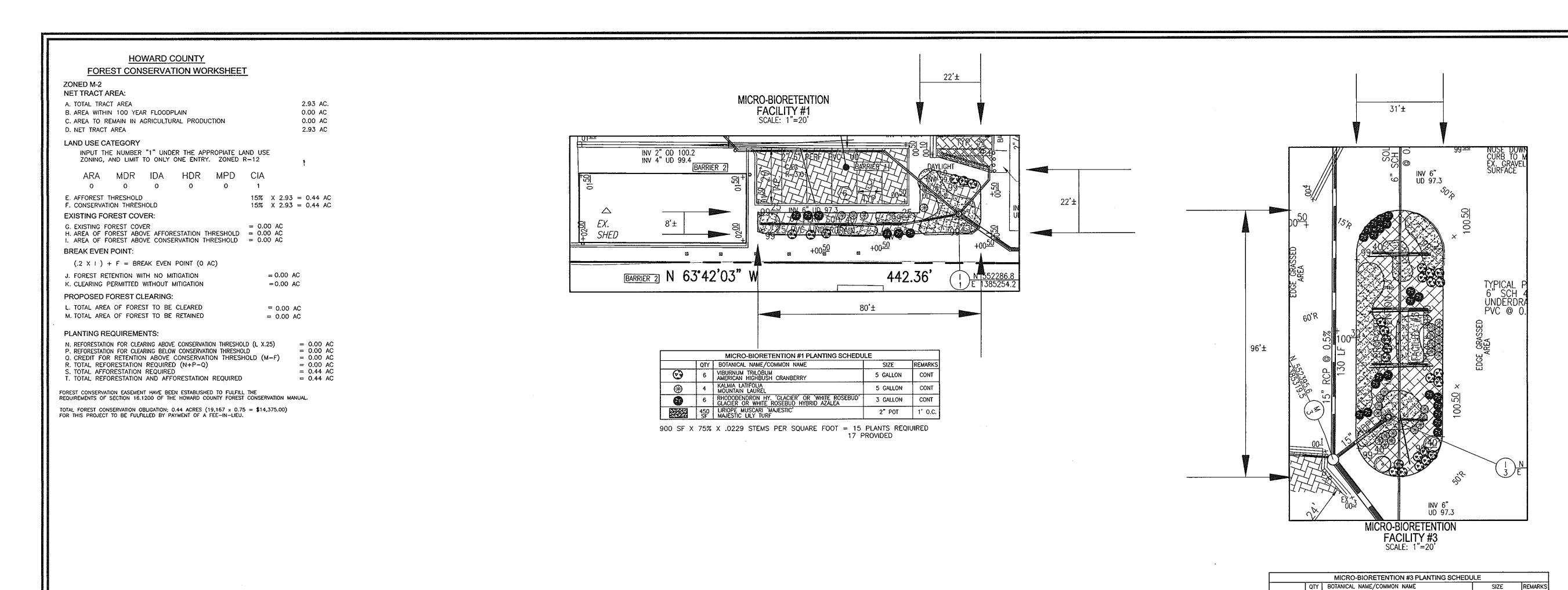
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS
WERE PREPARED OR APPROVED BY ME, AND
THAT I AM A DULY LICENSED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE STATE
OF MARYLAND, LICENSE NO. 16193
EXPIRATION DATE: 09-27-2014

SDP-12-079

SHEET 10









- 1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. THE REQUIRED INTERNAL AND PERIMETER LANDSCAPING WILL BE BONDED PER THIS SUBMISSION.
- 2. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$8,700 FOR THE REQUIRED 27 SHADE TREES, 4 EVERGREEN TREES.
- 3. THE OWNER AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR - BACKFILL WITH TOPSOIL AND PEAT MOSS, 3:1 RATIO. BACKFILL IN 6" LIFTS
 - MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH LAND MATERIALS AND BERMS, FENCES & WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION AND WHEN NECESSARY, REPAIRED OR REPLACED. 4. AT THE TIME OF INSTALLMENT, ALL PLANTINGS HEREWITH LISTED
 - & APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPING MANUAL, IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTING MANUAL AND TOWN OF THE PROPERTY OF O PRIOR REVIEW & APPROVAL FROM THE DEPARTMENT OF PLANNING & ZONING. ANY DEVIATION FROM THIS APPROVAL 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.

SHRUB PLANTING DETAIL NOT TO SCALE

SUBSOIL

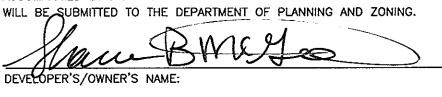
6" FOR PLANTS UP TO 4'

OVER 4' HEIGHT MIN.

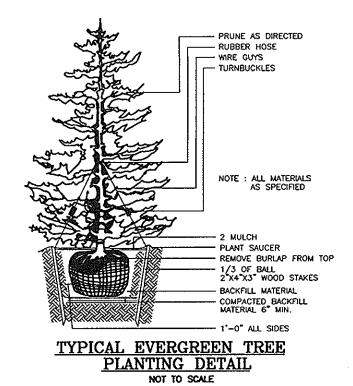
HEIGHT MIN. 8" FOR PLANTS

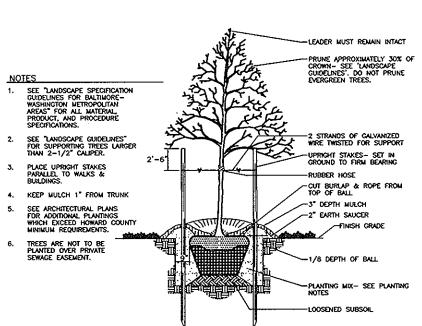
DEVELOPER'S/OWNER'S LANDSCAPE CERTIFICATE

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



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

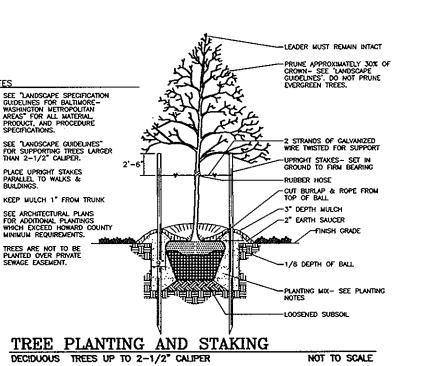




LANDSCAPE SCHEDULE NOTE:

ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRD PLANTING SPECIFICATIONS.
CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DISCUSS.

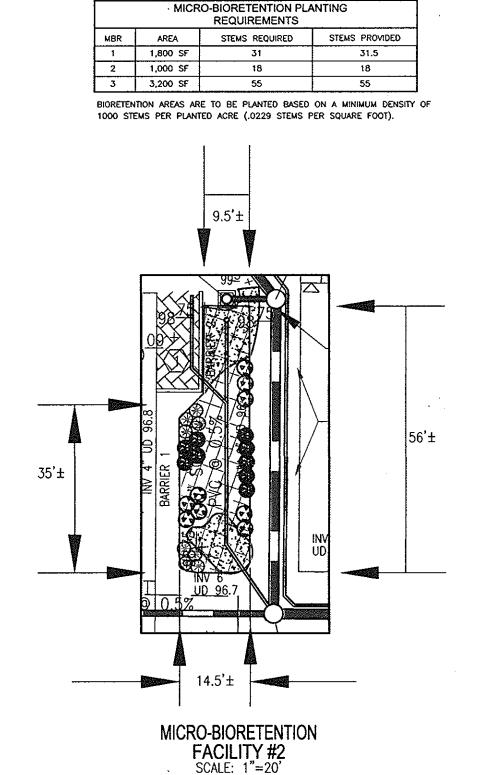
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES. 4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROMLANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.



"BIORETENTION" PLANTING SCHEDULE NOTES: 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. SEE SHEET FOR TYPICAL PLANTING SPECIFICATIONS AND

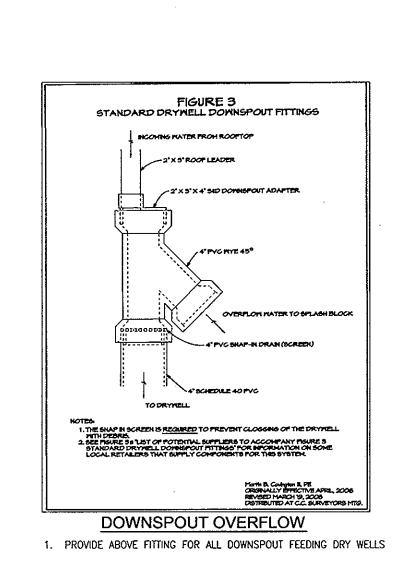
6. BIORETENTION/ MICROBIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDV SUMMARY.



		MICRO-BIORETENTION #2 PLANTING SCHEDU	ILE	
	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
©	9	VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY	5 GALLON	CONT
⊛	8	KALMIA LATIFOLIA MOUNTAIN LAUREL	5 GALLON	CONT
@	9	RHODODENDRON HY. 'GLACIER' OR 'WHITE ROSEBUD' GLACIER OR WHITE ROSEBUD HYBRID AZALEA	3 GALLON	CONT
\$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55 \$2.55	250 SF	LIRIOPE MUSCARI 'MAJESTIC' MAJESTIC LILY TURF	2" POT	1° 0.¢.

1,000 SF X 75% X .0229 STEMS PER SQUARE FOOT = 18 PLANTS REQIUIRED 18 PROVIDED

OWNER/DEVELOPER AMERICAN PAVING FABRICS, INC 6910 O CONNER DRIVÉ HANOVER, MD 21076-1038 PHONE: (410) 796-5493



O 22 VIBURNUM TRILOBUM AMERICAN HIGHBUSH CRANBERRY

22 RHODODENDRON HY. 'GLACIER' OR 'WHITE ROSEBUD'
GLACIER OR WHITE ROSEBUD HYBRID AZALEA

1000 LIRIOPE MUSCARI 'MAJESTIC'
MAJESTIC LILY TURF

3,200 SF X 75% X .0229 STEMS PER SQUARE FOOT = 55 PLANTS REQIUIRED

22 KALMIA LATIFOLIA MOUNTAIN LAUREL

1/2"-2" CAL B & B

CONT

5 GALLON

5 GALLON

3 GALLON

