GENERAL NOTES

1.) THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS

2.) THE SUBJECT PROPERTY IS ZONED R-20 PER THE 2-2-2004 COMPREHENSIZE ZONING PLAN AND THE "COMP LITE" ZONING AMENDMENTS EFFECTIVE 7-28-2006.

3.) COORDINATES BASED ON NAD '83, MARYLAND COORDINATE SYSTEM AS PROJECTED BY

HOWARD COUNTY GEODETIC CONTROL STATIONS 24FB AND 2413. 4.) TRACT BOUNDARY IS BASED ON A FIELD RUN MONUMENTED BOUNDARY SURVEY PERFORMED BY DEMARIO DESIGN CONSULTANTS IN JUNE, 2009. AND VERIFIED BY BENCHAMRK ENGINEERING,

5.) THE EXISTING TOPOGRAPHY SHOWN WAS FIELD RUN BY DEMARIO DESIGN CONSULTANTS, INC. IN JULY, 2009.

6.) THE EXISTING UTILITIES SHOWN HEREON ARE BASED ON FIELD SURVEYS BY DEMARIO DESIGN CÓNSULTANTS, INC AND BY RECORD DRAWINGS. IT IS THE CONTRACTORS RESPONSIBILITY FOR VERIFYING THESE UTILITIES IN THE FIELD AT TIME OF CONSTRUCTION.

7.) THE TRAFFIC STUDY WAS PREPARED BY TRAFFIC CONCEPTS, INC. DATED JANUARY 22, 2010

AND WAS APPROVED UNDER SP-10-003 ON NOVEMBER 10, 2010. 8.) THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT

9.) WATER IS PUBLIC. THE CONTRACT NUMBER IS 14-4670-D.

10.) SEWER IS PUBLIC. THE CONTRACT NUMBER IS 14-4670-D.

11.) THIS SUBDIVISION IS SUBJECT TO SECTION 18.122B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND/OR SEWER SERVICE HAS BEEN GRANTED UNDER THE TERMS AND PROVISIONS THEREOF, EFFECTIVE 8-15-2012 ON WHICH DATE DEVELOPER AGREEMENT 14-4670-D WAS FILED AND ACCEPTED.

12.) THERE ARE NO WETLANDS, STREAMS, THEIR BUFFERS, OR 100-YEAR FLOODPLAIN LOCATED ON THIS SITE. STEEP SLOPES 25% OR GREATER ARE LOCATED ON OPEN SPACE LOT 7.

13.) TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERY LOCATIONS OR HISTORIC SITES/FEATURES LOCATED ON THESE LOTS.

14.) STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH THE STORMWATER MANAGEMENT ACT OF 207. ENVIRONMENTAL SITE DESIGN (ESD) HAS BEEN IMPLEMENTED TO THE MAXIMUM EXTENT PRACTICAL (MEP) BY THE USE OF (N-2) NON-ROOFTOP DISCONNECTION CREDIT, (M-3) LANDSCAPE FILTRATION AND (M-6) MICRO-BIORETENTION PRACTICES. ALL ESD PRACTICE'S SHALL BE PRIVATELY OWNED AND MAINTAINED.

15.) THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING IN THE AMOUNT OF \$3,450 WAS PAID AS PART OF THE DPW DEVELOPERS AGREEMENT FOR F-12-091.

16.) A DESIGN MANUAL WAIVER FOR RELEASE FROM THE PROVISION OF PUBLIC SIDEWALKS AND A SPEED STUDY FOR THE SITE ACCESS ON HUNT AVENUE WAS APPROVED ON JUNE 21, 2010 BY A LETTER RECEIVED FROM CHARLES D. DAMMERS, CHIEF, DEVELOPMENT ENGINEERING

17.) DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:

a) WIDTH - 12' (16' SERVING MORE THAN ONE RESIDENCE). b) SURFACE - 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-

c) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM 45' TURNING RADIUS. d) STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS

(H25 LOADING). e) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.

f) STRUCTURE CLEARANCES - MINIMUM 12 FEET. g) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.

18.) WAIVER PETITION (WP-11-155) WAS APPROVED ON APRIL 26, 2011 GRANTING A REQUEST TO DEFER THE OPEN SPACE REQUIREMENTS FOR LOT 1 AND FOREST CONSERVATION OBLIGATION REQUIREMENTS FOR NON-BUILDABLE BULK PARCEL 'B' UNTIL THE RESUBDIVISION OF NON-BUILDABLE BULK PARCEL 'B'.

19.) THE FOREST CONSERVATION OBLIGATION FOR THIS SITE IS MET BY THE RETENTION OF 0.83 ACRES OF NET TRACT AREA FOREST AND THE PLANTING OF 0.29 ACRES OF FOREST WITHIN THE FOREST CONSERVATION EASEMENT LOCATED ON OPEN SPACE LOT 7. FINANCIAL SURETY IN THE AMOUNT OF \$6,317.00 FOR THE ON-SITE PLANTING WAS POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT FOR F-12-091. THERE WAS NO SURETY REQUIRED FOR THE ON-SITE RETENTION.

20.) 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 ANY WORK.

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

22.) ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPÉCIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF

23.) IN ACCORDANCE OF SECTION 128 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACKS. PORCHES OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK.

24.) ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.

25.) THE STAKING OF FOUNDATIONS PRIOR TO CONSTRUCTION TO ENSURE COMPLIANCE WITH REGULATORY BUILDING RESTRICTION LINES IS RECOMMENDED.

26.) THIS DEVELOPMENT IS DESIGNED TO BE IN ACCORDANCE WITH SECTION 16.127 RESIDENTIAL INFILL DEVELOPMENT, OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. THE DEVELOPER OF THIS PROJECT SHALL CREATE COMPATIBILITY WITH THE EXISTING NEIGHBORHOOD THROUGH THE USE OF ENHANCED PERIMETER LANDSCAPING, BERMS, FENCES, SIMILAR HOUSING UNIT TYPES AND THE DIRECTIONAL ORIENTATION OF THE PROPOSED HOUSES.

DRÍVEWAY TO SERVE LOTS 2-5 & PEDESTRIAN AND VEHICULAR ACCESS EASEMENT FOR OPEN SPACE LOTS 6 AND 7 WAS RECORDED IN THE LAND RECORDS OF HOWARD COUNTY SPACE LOTS 6 AND 7 WAS RECURDED IN THE LAND INCOMES OF THE PLAT.# 22192 on 12-20-12 Liber 14545 / Folio 056 28.) HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS SHALL NOT PARTICIPATE IN

THE MAINTENANCE OF THE USE-IN-COMMON DRIVEWAY WHICH PROVIDES ACCESS TO DR&P OPEN SPACE LOT 7.

27.) A SHARED DRIVEWAY ACCESS AND MAINTENANCE OBLIGATION AGREEMENT FOR THE 16'

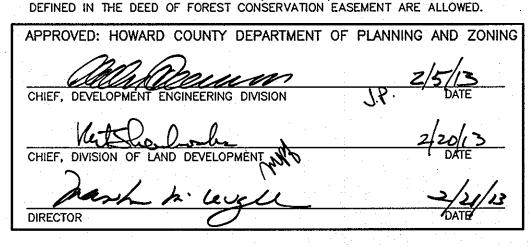
29.) FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT OF WAY LINE AND NOT THE FLAG OR PIPESTEM LOT DRIVEWAY.

30.) A PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY FOR THE FLAG LOT DRIVEWAY IN THE CUL-DE-SAC SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE WHERE NEEDED. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES. 31.) FOR DRIVEWAY ENTRANCE DETAIL REFER TO HOWARD COUNTY DESIGN MANUAL, VOLUME IV,

32.) A DESIGN MANUAL WAIVER REQUEST TO ALLOW THE USE OF PRIVATE ON-SITE PUMPS AND LOW PRESSURE SEWER TO CONVEY SEWAGE FROM THE FOUR PROPOSED LOTS OF THIS SUBDIVISION TO THE EXISTING SEWER IN HUNT AVENUE WAS APPROVED ON MAY 7, 2012.

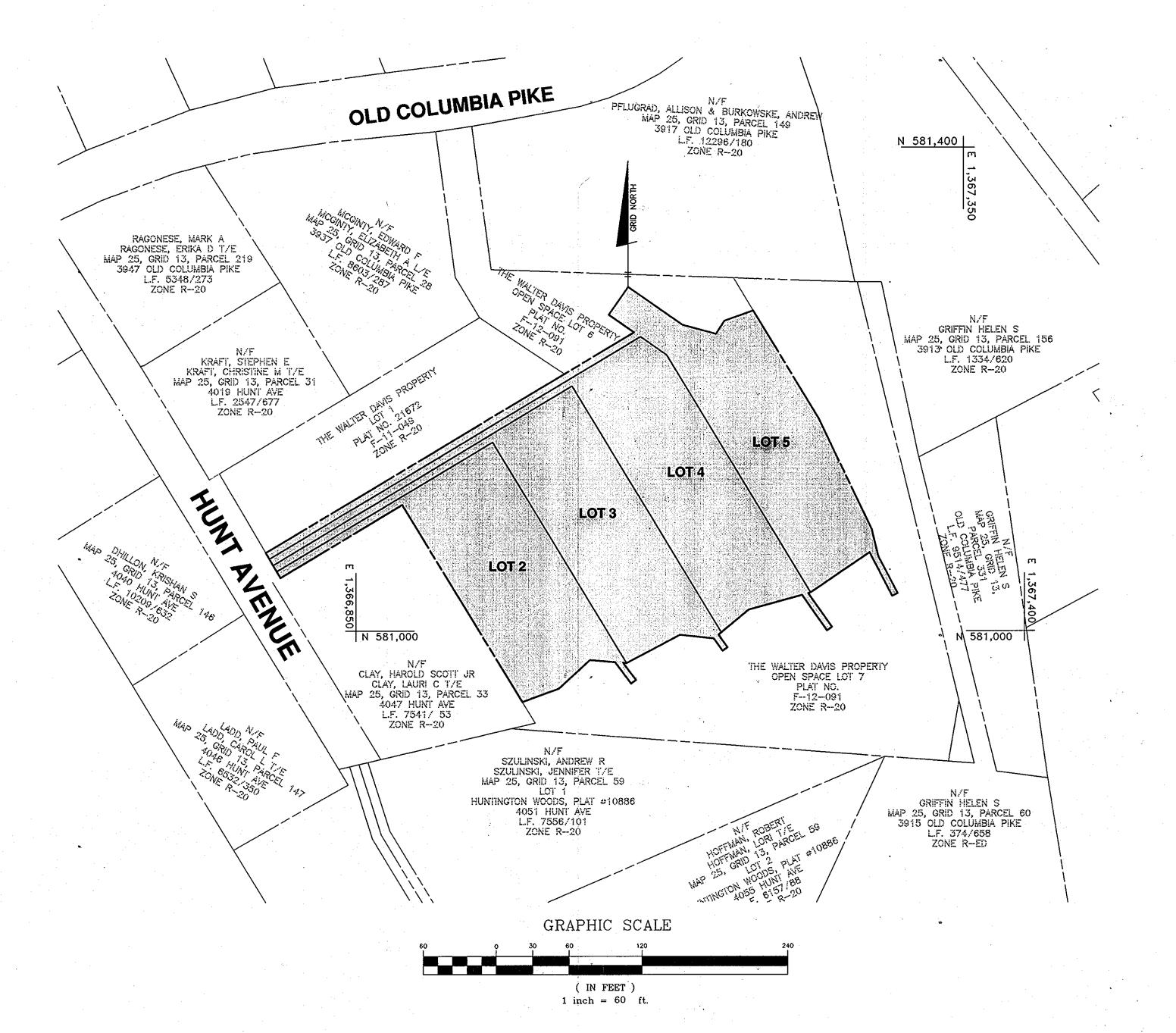
33.) ON 9-4-2012, THE ARTICLES OF INCORPORATION FOR THE HUNTER'S LANDING HOMEOWNERS ASSOCIATION WAS FILED AND ACCEPTED BY THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION, FILING #1000-3620-0378-7480.

THE HOMEOWNER'S ASSOCIATION DECLARATION OF CONVENANTS, CONDITIONS AND RESTRICTIONS WERE RECORDED IN THE LAND RECORDS OF HOWARD COUNTY, MARYLAND SIMULTANEOUSLY WITH THE RECORDATION OF PLAT #22192-22193. Liber 14545 / Folio 048 34.) THE FOREST CONSERVATION EASEMENT ON OPEN SPACE LOT 7 HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION ACT. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT; HOWEVER, FOREST MANAGEMENT PRACTICES AS



RESIDENTIAL SITE DEVELOPMENT PLAN THE WALTER DAVIS PROPERTY

LOTS 2 thru 5



Pe=	1.6	inches	Qe=	0.51	inches	ESDv=	3581	cf			
Practice		DA to protice	A to practice Imp Area to		Af			ESDv	REv		
		DA to practice	practice	Required	Provided	2% DA?	Required	Provided	75% ESDv?	Required Provid	
M-3) Landscape Filtration	#1	4,670	1,250	93	94	PASS	68	85	PASS		0
M-3) Landscape Filtration	#2	4,800	1,250	96	96 -	PASS	68	86	PASS]	0
M-3) Landscape Filtration	#3	4,670	1,250	93	94	PASS	68	85	PASS		0
M-3) Landscape Filtration	#4	3,776	852	76	77 -	PASS	48	69	PASS	-	0
(M-6) Micro-Bioretention	#1	11,000	4,300	220	500	PASS	589	650	PASS	5	600
(M-6) Micro-Bioretention	#2	6,059	3,260	121	300	PASS	432	450	PASS	511	0
(M-6) Micro-Bioretention	#3	8,112	2,500	162	250	PASS	354	375	PASS] ",	0
(M-6) Micro-Bioretention	#4	8,295	2,500	166	210	PASS	355	357	PASS		0
(M-6) Micro-Bioretention	#5	8,295	2,500	166	210	PASS	355	357	PASS]	0
(M-6) Micro-Bioretention	#6	10,325	2,500	207	210	PASS	369	· 357	PASS	1	0
				TOTAL (not include	ling disconne	ection) =	2706	2871		511	600
Practice		Contrib Length	Imp Length	Discon Length	Imp Ratio	Perv Ratio	Pe Tr	eated			4 1
(N-2) Non-Rooftop Disc.	#1	12	20	20	>1:1	>1:1	1.0 ir	nches			
(N-2) Non-Rooftop Disc.	#2	11	20	20	>1:1	>1:1	1.0 ir	nches			
(N-2) Non-Rooftop Disc.	#3	11	20	20	>1:1	>1:1	1.0 ir	nches	·		

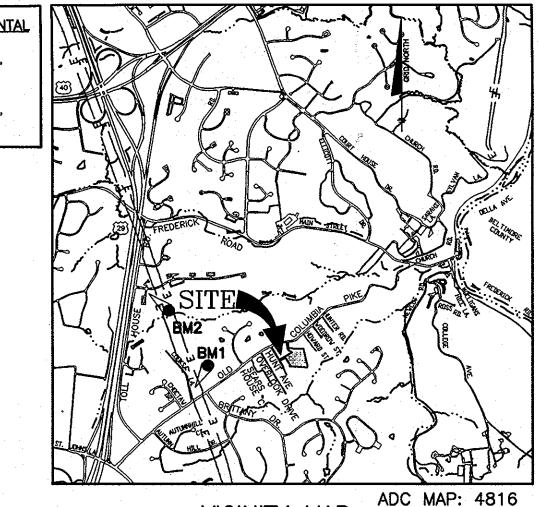
	SHEET INDEX
SHEET	TITLE
1.	TITLE SHEET
2	SITE DEVELOPMENT & GRADING PLAN
3	GRADING, SEDIMENT & EROSION CONTROL PLAN
4	SEDIMENT & EROSION CONTROL NOTES AND DETAILS
5	STORMWATER MANAGEMENT DETAILS

	ADDRES	SS CHART
LOT	STR	EET ADDRESS
2	4039	HUNT AVENUE
3	4035	HUNT AVENUE
4	4031	. HUNT AVENUE
5	4027	HUNT AVENUE

F	PERMIT	INFOR	MATION	CHART	
SUBDIVISION NAME:			SECTION/	AREA:	LOT/PARCEL #
THE WAL	TER DA	VIS	N	Α	LOTS 2-5
PLAT No. OR L/F	GRID No.	ZONE	TAX MAP NO	ELECTION DISTRICT	CENSUS TRACT
22192-22193	13	R-20	25	2	6028.00

BENCHMARKS NAD'83 HORIZONTAL N 582652.1506' E 1364255.9193' ELEVATION: 422.498'

HO. CO. #2413 N 580648.9394' E 1364974.4661' **ELEVATION: 403.699'**



LEGEND

PROJECT BOUNDARY

SITE ANALYSIS DATA CHART

	· ·
1.) TOTAL PROJECT AREA	3.36 AC.
2.) AREA OF PLAN SUBMISSION	1.87 AC.
3.) LIMIT OF DISTURBED AREA	1.93 AC.
4.) PRESENT ZONING:	R-20
5.) PROPOSED USE OF SITE:	RESIDENTIAL SFD HOMES
6.) TOTAL NUMBER OF UNITS ALLOWED AS SHOWN ON FINAL PLAT(S)	4
7.) TOTAL NUMBER OF UNITS PROPOSED	
8.) NUMBER OF PARKING SPACES REQUIRED BY HO. CO. ZONING REGS AND/OR FDP CRITERIA	
9.) NUMBER OF PARKING SPACES PROVIDED ONSITE (INCLUDES HANDICAPPED SPACES)	16 (2 IN EACH GARAGE) (2 IN EACH DRIVEWAY)
10.) OPEN SPACE ON-SITE PERCENTAGE OF GROSS	PROVIDED UNDER F-12-091
11.) AREA OF RECREATIONAL OPEN SPACE REQUIRED	
12.) APPLICABLE DPZ FILE REFERENCES:	ECP-10-011, SP-10-003, F-11-049 WP-11-155, SDP-12-021, F-12-09
13.) BUILDING COVERAGE OF SITE	N/A N/A
14.) FLOOR SPACE ON EACH LEVEL OF BLDG PER USE	N/A
15) MAYIMLIM NUMBER OF EMPLOYEES	

	Vanada	BENCHMARK	"		by me, and that I am a du	ily licens Marylan
NO.	DATE		REVISION	;		
				· · · · · · · · · · · · · · · · · · ·		

/ ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS

TENANTS ON SITE PER USE ____

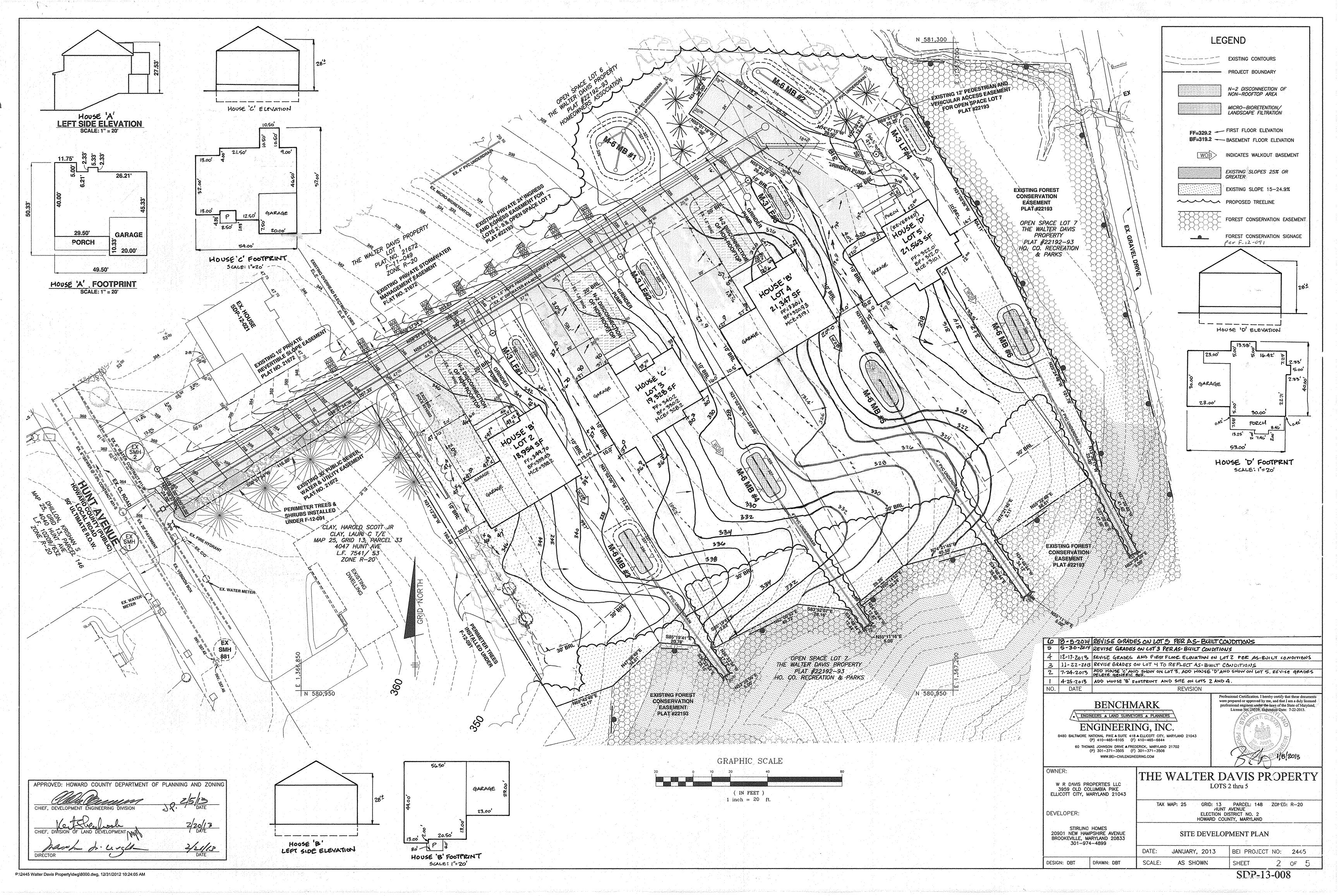
(P) 410-465-6105 (F) 410-465-6644 60 THOMAS JOHNSON DRIVE ▲ FREDERICK, MARYLAND 21702 (P) 301-371-3505 (F) 301-371-3506 WWW.BEI-CIVILENGINEERING.COM

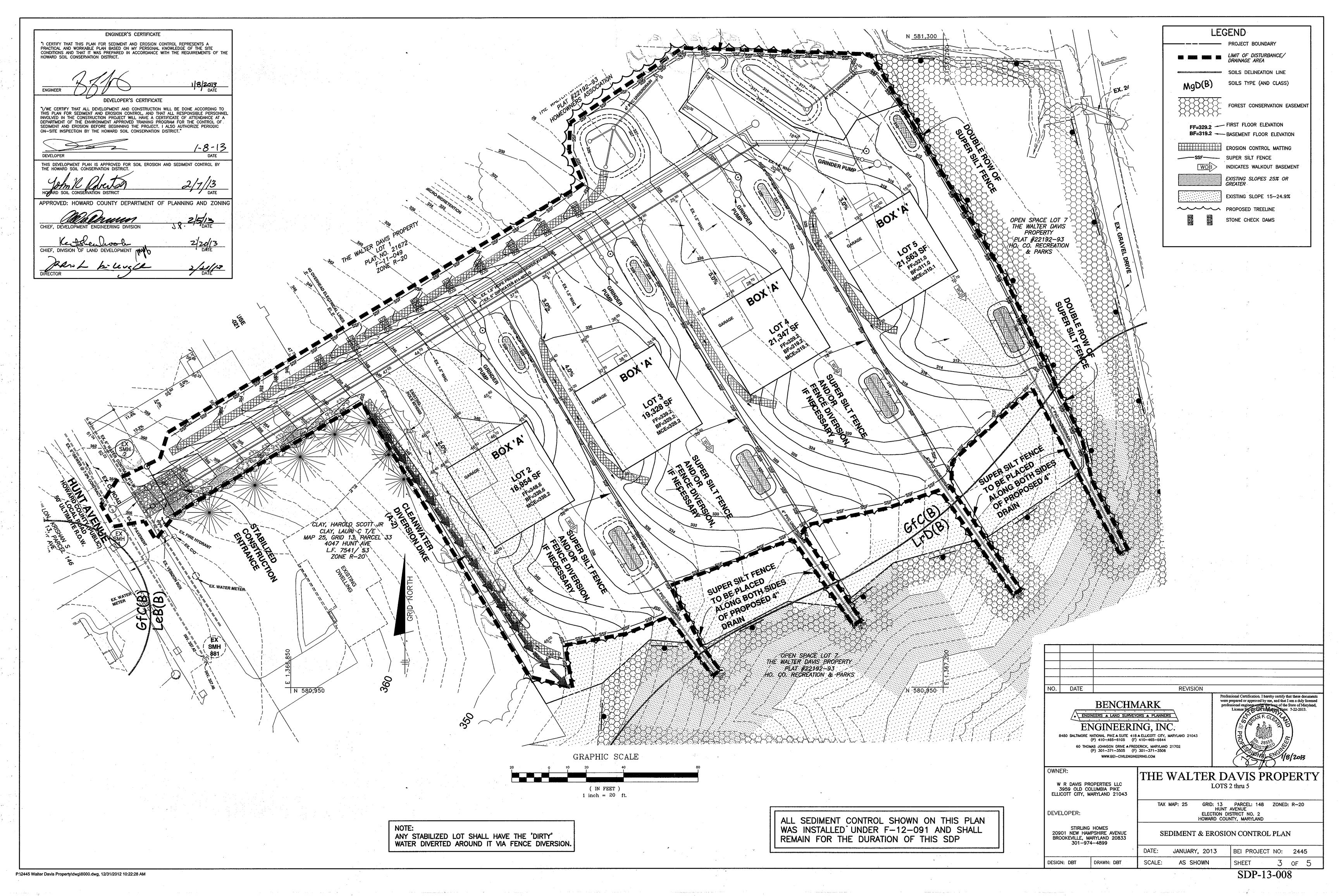
W R DAVIS PROPERTIES LLC

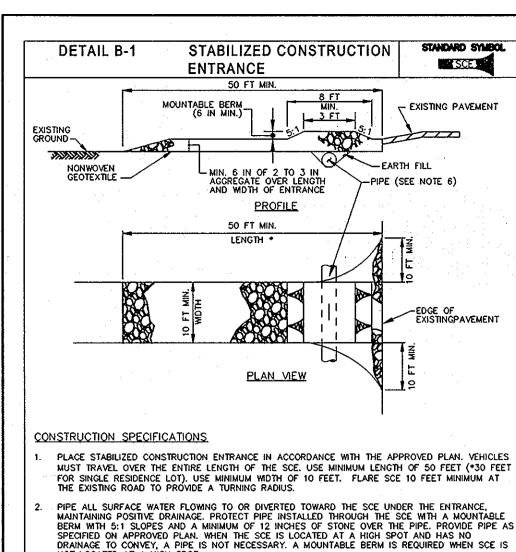
THE WALTER DAVIS PROPERTY LOTS 2 thru 5 SINGLE FAMILY DETACHED L: 148 ZONED: R-20

3959 OLD COLUMBIA PIKE ELLICOTT CITY, MARYLAND 21043	SINGLE FAMILY DETACHED	
- BUILDER:	TAX MAP: 25 GRID: 13 PARCEL: 148 ZONED: R-20 HUNT AVENUE ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND	
STIRLING HOMES 20901 NEW HAMPSHIRE AVENUE BROOKEVILLE, MARYLAND 20833 301-974-4899	TITLE SHEET	
	DATE: JANUARY, 2013 BEI PROJECT NO: 2445	,
DESIGN: DBT DRAWN: DBT	SCALE: AS SHOWN SHEET 1 OF	5

or 5 SDP-13-008







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 CONCRETE

(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 I

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL U.S. DEPARTMENT OF AGRICULTURE TURAL RESOURCES CONSERVATION SERVICE

SUPER SILT

10 FT MAX.

ELEVATION

CROSS SECTION

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

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.

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.

45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

CHAIN UNK FENCING -

WOVEN SLIT FILM GEOTEXTILE-

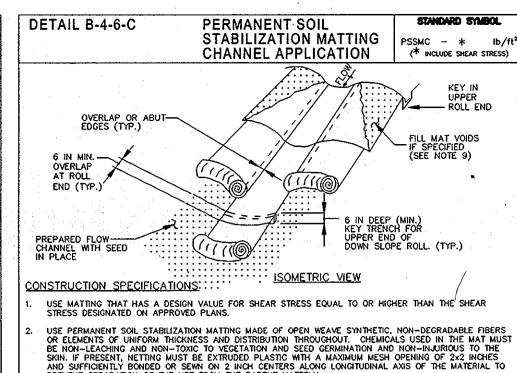
GALVANIZED CHAIN LINK FENCE WITH WOVEN SLIT FILM GEOTEXTILE

FENCE

DETAIL E-3

CONSTRUCTION SPECIFICATIONS

U.S. DEPARTMENT OF AGRICULTURE ATURAL RESOURCES CONSERVATION SERVICE



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 WRE 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 4 FINCH HEAD. WOOD STAKES 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

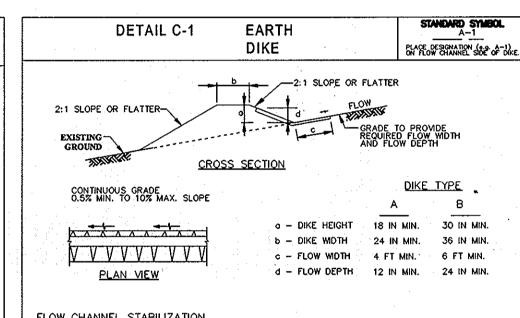
PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS, PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN

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 ENDS 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 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. 10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT DUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION

MARYLAND STANDARDS AND SPEC	MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL					S FOR SOIL ER	OSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE TURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION		U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	, ,	2011	MARYLAND DEPARTMENT OF ENVIR WATER MANAGEMENT ADMINISTR



FLOW CHANNEL STABILIZATION

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

A-2/B-2 A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO 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.

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

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE
ATURAL RESOURCES CONSERVATION SERVICE

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

TOPSOIL SPECIFICATIONS

Topsoil salvaged from the existing site may be used provided that it meets that 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—SCS in cooperation with Maryland Agricultural Experimental Station.

II. Topsoil Specifications — Soil to be used as topsoil must meet the following: Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting texture subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1-1/2" in diameter.

ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nutsedge, poison ivy, thistle, or others as specified.

iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

III. For sites having disturbed areas under 5 acres:

Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization — Section I — Vegetative Stabilization Methods and Materials.

N. For sites having disturbed areas over 5 acres:

 On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following: pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.

b. Organic content or topsoil shall be not less than 1.5 percent by weight.

c. Topsoil having soluble salt content greater than 500 parts per million shall

d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials. Note: 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

Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization — Section I — Vegetative Stabilization Methods and Materials.

Topsoil Application

When topsoiling, maintain needed erosion and sediment control practices such as diversions, grade stabilization structures, earth dikes, slope silt fence and sediment traps and basins.

ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit $4^{\prime\prime}$ — $8^{\prime\prime}$ higher in elevation. iii. Topsoil shall be uniformly distributed in a 4" — 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall 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 shall be corrected in order to prevent the formation of depressions or

iv. Topsoil shall not be placed while 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.

VI. Alternative for Permanent Seeding — Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified

Composted Sludge Material for use as a soil conditioner for sites having distributed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:

Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.

Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.

Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.

iv. Composted sludge shall be amended with a potassium fertilizer applied at the rate References: Guidelines Specifications, Soil Preparation and Sodding. MD-VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes, Revised 1973.

30.0 DUST CONTROL

DIVERSION

10 FT MAX.

ELEVATION

USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2% INCH MAXIMUM OPENING).

FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.

USE 2% INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN

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

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

WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.

KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION.

STONE CHECK

CHANNEL PROFILE

CROSS SECTION

PREPARE SWALES IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS DESCRIBED IN SECTION C-2, STANDARDS AND SPECIFICATIONS FOR TEMPORARY SWALE, OR AS SPECIFIED ON PLAN.

PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND SIDES OF THE DAM PRIOR TO PLACEMENT OF STONE. CONSTRUCT THE CHECK DAM WITH WASHED 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) WITH SIDE SLOPES OF 2:1

OR FLATTER AND A MINIMUM TOP WIDTH OF 12 INCHES. PLACE THE STONE SO THAT IT COMPLETEL'

SET THE HEIGHT FOR THE WEIR CREST EQUAL TO ONE-HALF THE DEPTH OF THE CHANNEL OR DITCH.

REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF OF THE HEIGHT OF THE WEIR CREST.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

COVERS THE WOTH OF THE CHANNEL AND CHANNEL BANKS, FORM THE WEIR SO THAT TOP OF THE OUTLET CREST IS APPROXIMATELY 6 INCHES LOWER THAN THE OUTER EDGES. LINE THE UPSTREAM

FACE OF THE DAM WITH A 1 FOOT THICK LAYER OF WASHED AGGREGATE (% TO 1% INCH).

REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

DAM

GEOTEXTILE 6 IN

L4 TO 7 IN STONE

CONSTRUCTION SPECIFICATIONS

CHAIN LINK FENCE COVERED WITH IMPERMEABLE SHEETING

SECTION

FENCE

DF —

MAXIMUM DRAINAGE AREA = 2 ACRES

OV RESISTANT IMPERMEABLE SHEETING ON BOTH SIDES OF FENCE

MARYLAND DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION

GEOTEXTILE 6 IN

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

-4 TO 7 IN STONE (TYP.)

DETAIL C-9

GROUND SURFACE—

CONSTRUCTION SPECIFICATIONS

DETAIL D-2

FT MAX.

APRON—/ (TYP.)

Controlling dust blowing and movement on construction sites and roads.

To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site lamage, health hazards, and improve traffic safety. Conditions Where Practice Applies This practice is applicable to areas subject to dust blowing and movement where on and off-site

Temporary Methods

1. Mulches - See standards for vegetative stabilization with mulches only. Mulch should

2. Vegetative Cover - See standards for temporary vegetative cover. 3. Tillage — To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel—type plows spaced about 12" apart, spring—toothed harrows, and similiar plows are examples of equipment which may produce the desired effect.

Irrigation — This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.

Barriers — Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similiar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.

6. Calcium Chloride -- Apply at rates that will keep surface moist. May need retreatment. Permanent Methods

1. Permanent Vegetation - See standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if

2. Topsoiling - Covering with less erosive soil materials. See standards for topsoiling 3. Stone - Cover surface with crushed stone or coarse gravel.

Agriculture Handbook 346. Wind Erosion Forces in the United States and Their Use 2. Agriculture Information Bulletin 354. How to Control Wind Erosion, USDA-ARS.

B-4-4 STANDARDS AND SPECIFICATIONS

<u>FOR</u>

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,

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

For sites having soil tests performed, use and show the recommended rates by the testing agency

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-4-5 STANDARDS AND SPECIFICATIONS

PERMANENT STABILIZATION

To stabilize disturbed soils with permanent vegetation

Exposed soils where ground cover is needed for 6 months or more

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils Conditions Where Practice Applies

Seed Mixtures

General Use

Select one or more of the species or mixtures listed in Table 8.3 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

Additional planting specifications for exceptional sites such as shorelines, stream banks, o dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guild, Section 342 - Critical Area Planting.

soil testing agency.

Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance

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

i. Kentucky Bluegrass: Full sun Mixture: For use in areas that receive intensive 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 nanagement, Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three

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,

Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square fee Select turfgrass varieties from those listed in the most current University of Maryland

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)

Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b) Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 ½

inches in diameter. The resulting seedbed must be in such condition that future mowing of

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ 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.

Class of turfgrass must be Maryland State Certified. Sod labels must be made available to the

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

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

Sod Installation

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

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

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.

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

b. After the first week, sod watering is required as necessary to maintain adequate moisture

B-4-3 STANDARDS AND SPECIFICATIONS

SEEDING AND MULCHING

The application of seed and mulch to establish vegetative cover

<u>Purpose</u> To protect disturbed soils from erosion during and at the end of construction.

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

A. Seeding

a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.

b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws

c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indication on the container. Add fresh inoculants as direct 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

d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of

Application a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.

. 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. 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

Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least ¼ inch of soil covering. Seedbed must be firm after planting.

ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer) 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 b

hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding. iii. Mix seed and fertilizer on site and seed immediately and without interruption

iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching

1. Mulch Materials (in order of preference

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 sterile straw mulch in areas where one species of grass is desired.

b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.

i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry. ii. WCFM, including dye, must contain no germination or growth inhibiting factors.

iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover 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

WCFM must conform to the following physical requirements: fiver 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.

 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

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.

Perform mulch anchoring immediately following application of much to minimize loss by wind or water. This may be done by one of the following methods (Listed by preference), depending

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, 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

iv. Lightweight plastic netting may be stapled over mulch according to manufacture recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000

1. NO STOCKPILING IS ALLOWED ON THESE LOTS.

SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF WORK

 Obtain grading permit. (day 1) 2. Install stabilized construction entrance, clean water diversion dike, and super silt fences. (day 2-4)

Grade the swale along the western edge of the use-in-common drive and install stone check dams. (day

4. Install water and sewer mains and grinder pumps. (day 6-15) 5. Base pave the use-in-common driveway. Once complete, install Micro-Bioretention practices #1 and #2. Do not plant at this time. (day 16-25)

6. As each house is sold, excavate for foundation, construct house, backfill and construct driveway. (day

7. As the contributing drainage area for each lot is stabilized, construct the on-lot micro-bioretention facility and landscape filtration. If necessary, install super silt fence between lots. (day 101-110) 8. Final grade the lot and stabilize in accordance with the permanent seedbed notes. Once the proposed

9. Install perimeter trees. (day 114)

10. Upon approval from the Howard County sediment control inspector, remove sediment control devices including the stone check dams (add permanent erosion control matting) and stabilize any remaining disturbed areas. (day 115)

SEDIMENT CONTROL NOTES

A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1850).

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 SPECIFICATION FOR SOIL EROSION AND SEDIMENT

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.

ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDINGS (SEC. 51) SOD (SEC. 54). TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY TABILIZATION 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.

7. SITE ANALYSIS:

TOTAL CUT

TOTAL FILL

OFFSITE WASTE AREA LOCATION

HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

1.9 TOTAL AREA OF SITE AREA DISTURBED 0.5 AREA TO BE ROOFED OR PAVED 1.4 AREA TO BE VEGETATIVELY STABILIZED 2,500 ___2,500_

N/A

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

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

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,

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. -8-2013 ENGINEER DEVELOPER'S CERTIFICATE "I/WE CERTIFY THAT ALL DEVELOPMENT 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. ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT." 1-8-13 DEVELOPER THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. DATE APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DATE REVISION Professional Certification. I hereby certify that these documen **BENCHMARK** were prepared or approved by me, and that I am a duly license professional engineer under the laws of the State of Maryland,

ENGINEERS A LAND SURVEYORS A PLANNERS ENGINEERING, INC

(P) 410-465-6105 (F) 410-465-6644 60 THOMAS JOHNSON BRIVE A FREDERICK, MARYLAND 21702 (P) 301-371-3505 (F) 301-371-3506 WWW.BEI-CIVILENGINEERING.COM



THE WALTER DAVIS PROPERT W R DAVIS PROPERTIES LLC LOTS 2 thru 5 3959 OLD COLUMBIA PIKE ELLICOTT CITY, MARYLAND 21043 GRID: 13 PARCEL: 148

DEVELOPER: STIRLING HOMES 20901 NEW HAMPSHIRE AVENUE BROOKEVILLE, MARYLAND 20833 301-974-4899

DESIGN: DBT

NOTES AND DETAILS JANUARY, 2013 BEI PROJECT NO: 2445 DRAWN: DBT SCALE: of 5

HUNT AVENUE

ELECTION DISTRICT NO. 2

HOWARD COUNTY, MARYLAND

SEDIMENT AND EROSION CONTROL

SDP-13-008

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For sites having disturbed areas over 5 acres, use and show the rates recommended by the

For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ 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.

Seeding Summary. The summary is to be placed on the plan 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

Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture iii Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought grone areas

Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per v. 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

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.

Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

Sod: to provide quick cover on disturbed areas (2:1 grade or flatter).

b. Sod must be machine cut at a uniform soil thickness of ¼ inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads

d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet)

a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate

order to prevent voids which would cause air drying of the roots.

c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be remove by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless

swale on the high side of Lot 2 has been constructed, remove the cleanwater diversion dike and install erosion control matting. (day 111-113)

CONSTRUCTION SPECIFICATIONS

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

Site Preparation

Earth Fill

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

All trees shall be cleared and grubbed within 15 feet of the toe of the embankment. Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the around surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be

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

embankment and other designated areas.

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

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment

construction supervised by a geotechnical engineer.

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

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

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

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

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

Structure Backfill

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

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

Pipe Conduits

All pipes shall be circular in cross section

Corrugated Metal Pipe - all of the following criteria shall apply for corrugated metal pipe: . Materials - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall bave a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

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

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

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

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

lack

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

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

4. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support. 5. Backfilling shall conform to "Structure Backfill".

6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings. Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets

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

3. Laying pipe - Bell and spigot pipe shall be places with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material.

After the joints are sealed for the entire line, the bedding shall be placed so that all space: under the pipe are filled. Care shall be exercised to prevent any deviation form the original

4. Backfilling shall conform to "Structure Backfill".

flange is also acceptable

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

<u>Plastic Pipe</u> - The following criteria shall apply for plastic pipe:

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

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

Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support. 4. Backfilling shall conform to "Structure Backfill".

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings. Drainage Diaphragms - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414,

Rock riprop shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311 Geotextile shall be placed under all riprop and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water during Construction

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

draining the water sumps from which the water shall be pumped.

6" GRAVEL

TYPICAL LANDSCAPE FILTRATION DETAILS

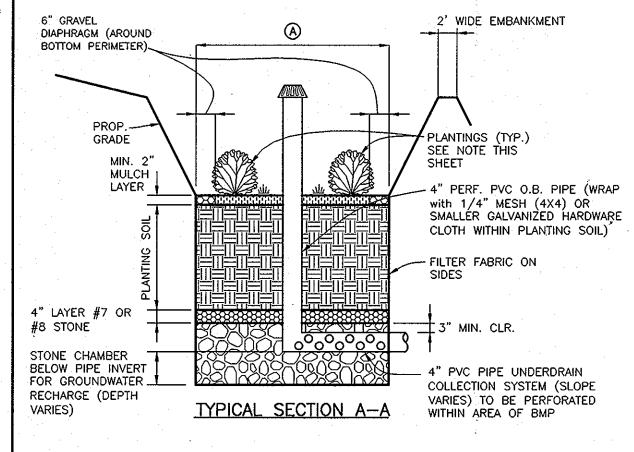
DIAPHRAGM (AROUND

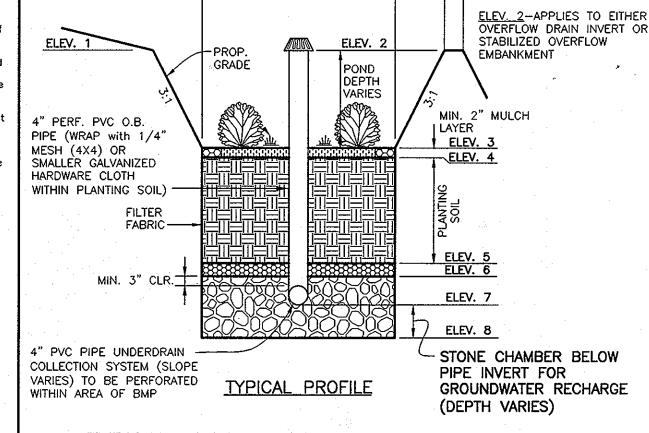
BOTTOM PERIMETER

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

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

" GRAVEL SHEET FLOW DIAPHRAGM (INFLOW) (AROUND BOTTOM PERIMETER) 3:1(TYP.) · 4" PVC PIPE UNDERDRAIN COLLECTION SYSTEM (TO BE PERFORATED $\mathbb{O} \mathbb{O}$ WITHIN AREA OF BMP) \triangle OUTFALL 4" PERF. PVC O.B. PIPE (WRAP w/FILTER PLANTING SOIL) 3:1(TYP.) PLANTINGS (TYP.) ____ SEE NOTE THIS PLAN VIEW SHEET





TYPICAL MICRO-BIORETENTION DETAILS

(M-6) MICRO-BIORETENTION DESIGN TABLES

#1		#2		#	3		#4			#5		#6	
ELEV. 1	327.00	ELEV. 1	317.00	ELEV. 1	337.00		ELEV. 1	328.00		ELEV. 1	318.00	ELEV. 1	310.00
ELEV. 2	327.00	ELEV. 2	317.00	ELEV. 2	337.00		ELEV. 2	328.00		ELEV. 2	318.00	ELEV. 2	310.00
ELEV. 3	326.00	ELEV. 3	316.00	ELEV. 3	336.00		ELEV. 3	327.00		ELEV. 3	317.00	ELEV. 3	309.00
ELEV. 4	325.83	ELEV. 4	315.83	ELEV. 4	335.83		ELEV. 4	326.83		ELEV. 4	316.83	ELEV. 4	308.83
ELEV. 5	323.83	ELEV. 5	313.33	ELEV. 5	333.33		ELEV. 5	323.83		ELEV. 5	313.83	ELEV. 5	305.83
ELEV. 6	323.50	ELEV. 6	313.00	ELEV. 6	333.00		ELEV. 6	323.50		ELEV. 6	313.50	ELEV. 6	305.50
ELEV. 7	322.92	ELEV. 7	312.42	ELEV. 7	332.42		ELEV. 7	322.92		ELEV. 7	312.92	ELEV. 7	304.92
ELEV. 8	319.92	ELEV. 8	312.42	ELEV. 8	332.42		ELEV. 8	322.92		ELEV. 8	312.92	ELEV. 8	304.92
DIMENS	SIONS	DIMENS	SIONS	DIME	DIMENSIONS		DIMENSIONS			DIMENS	SIONS	DIMENS	SIONS
'A'	varies	'A'	40'±	'A'	25'±		,Y,	25'±		'A'	25'±	'A'	25'±
'B'	varies	'B'	8'±	,B,	8,∓		'B'	8 ' ±		'B'	8'±	'B'	8 ' ±
TOTAL SF	500	TOTAL SF	300	TOTAL SE	250		TOTAL SF	210	T	OTAL SF	210	TOTAL SF	210
OUTFALL	PIPE	OUTFALI	PIPE	OUTFA	LL PIPE		OUTFALL	PIPE		OUTFALI	PIPE	OUTFALL	PIPÉ
SIZE	4"	SIZE	4"	SIZE	4"		SIZE	4"		SIZE	4"	SIZE	4"
LENGTH	35'	LENGTH	35'	LENGTH	72'		LENGTH	87'		LENGTH	122'	LENGTH	122'
SLOPE	2.6%	SLOPE	1.2%	SLOPE	3.4%		SLOPE	1.0%		SLOPE	1.6%	SLOPE	1.6%

MATERIALS	AND SPECIFIC	ATIONS FO	OR (M-6) MICRO-BIORETENTION
MATERIAL	SPECIFICATION	SIZE	NOTES:
PLANTINGS (IF REQUIRED)	SEE APPENDIX A; TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2.0' TO 4.0' DEEP)	LOAMY SAND (60-65%) & COMPOST (35-40%) OR LOAMY SAND (30%) COARSE SAND (30%) & COMPOST (35-40%)	N/A	USDA SOIL TYPES: LOAMY SAND, SANDY LOAM; CLAY CONTENT <5%
ORGANIC CONTENT	MIN. 10% BY DRY WEIGHT (ASTM D2974)	N/A	-
MULCH	SHREDDED HARDWOOD	N/A	AGED 6 MONTHS, MINIMUM
PEA GRAVEL DIAPHRAGM	PEA GRAVEL: ASTM D-448	#8 OR #9 (1/8" TO 3/8")	
GEOTEXTILE		N/A	PE TYPE 1 - NONWOVEN
GRAVEL (UNDERDRAINS & BERMS)	AASHTO M-43	#57 OR #6 AGGREGATE (3/8" TO 3/4")	#8 STONE
UNDERDRAIN PIPING	F758, TYPE PS28 OR AASHTO M-278	4" TO 6" RIGID SCH.40 PVC OR SDR35	SLOTTED OR PERFORATED: 3/8" PERFS. © 6" O/C, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES, NOT NECESSARY UNDERNEATH PIPES. PERFORATED PIPE SHALL BE WRAPPED WITH 1/4" GALVANIZED HARDWIRE CLOTH
POURED-IN-PLACE CONC. (IF REQUIRED)	MSHA MIX NO.3; f'c=3500psi ூ 28 DAYS, NORMAL WEIGHT, AIR ENTRAINED; REINFORCING TO MEET ASTM 615-60	N/A	ON-SITE TESTING OF POURED-IN-PLACE CONC. REQUIRED; 28 DAY STRENGTH TEST AND SLUMP TEST: ALL CONC. DESIGN (CAST -IN-PLACE OF 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 of H-20) ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND (1.0' DEEP)	AASHTO M-6 OR ASTM C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND

	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)
1.	Annual maintenance of plant material, mulch layer and soil layer is required. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant

should be discouraged as well.

Table A.4.1 and 2.

after heavy storm events.

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.

material is limited to the following: 2000 Maryland Stormwater Design Manual Volume

OPERATION AND MAINTENANCE SCHEDULE FOR

PRIVATELY OWNED AND MAINTAINED

DISCONNECTION OF ROOFTOP RUNOFF (N-1).

DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

Maintenance of areas receiving disconnected runoff is generally no different than that

required for other lawn or landscaped areas. The areas receiving runoff should be protected

from future compaction or development of impervious area. In commercial areas, foot traffic

UNDERDRAIN, OVERFLOW AND OUTFALL NOTES

1. THE LAST CLEAN-OUT LOCATION WITHIN EACH MICRO-BIORETENTION

3. THE UNDER-DRAIN AND PIPE TO OUTFALL SHALL BE INSTALLED TO

MAINTAIN A MINIMUM 1% SLOPE AND MAINTAIN A MINIMUM OF 1' OF

FACILITY SHALL BE FITTED 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.

SEPARATION AT ALL CROSSINGS.

A MINIMUM DEPTH OF 2' BELOW FINISHED GRADE AND SHALL

- Mulch shall be inspected each spring. Remove previous mulch layer before applying new layer once every 2 to 3 years.
- Soil erosion to be addressed on an as needed basis, with a minimum of once per month and

	MICRO BIO-RETEN	TION INTE	RNAL LAI	VSCAPING	CHART	• ,	
		MB #1	MB#1 MB#2		MB #4	MB #5	MB #6
Facility square footage	 	500	300	250	210	210	210
PLANT NAME	COMMON NAME	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTII
Betula nigra	RIVER BIRCH	1	- 1	1	1	1	1
Clethra	COMMON PERIWNKLE	5	3	3	3	3	. 3
Ajuga reptans	CREEPING BUGLEWEED	15	9	8	7	7	7
 lris versicolor	IRIS	15	9	8	7	7	7;
Elymus virginicus	VIRGINIA WILD RYE	5	3	3.	3	3	3
Vaccinium atrococcum	HIGHBUSH BULIERERRY	5	2	. a	2	2] 2

LANDSCAPE FILTRATION INTERNAL LANSCAPING CHART

COMMON NAME

COMMON PERIWNKLE

CREEPING BUGLEWEED

VIRGINIA WILD RYE

HIGHBUSH BLUEBERRY

RIVER BIRCH

94

96

QUANTITY QUANTITY

94

QUANTITY

77

QUANTIT

Facility square footage

Betula nigra

Ajuga reptans Iris versicolor

Elymus virginicus

Vaccinium atrococcum

Clethra

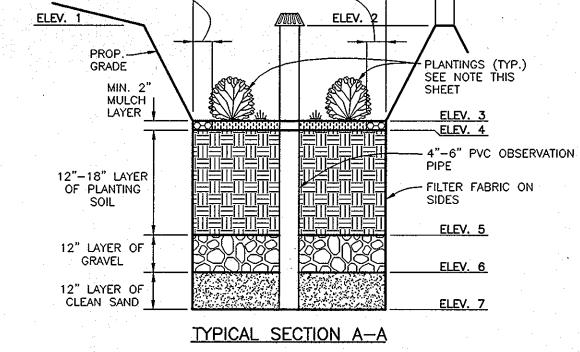
PLANT NAME

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING Modelman CHIEF, DEVELOPMENT ENGINEERING DIVISION 2/20/13 DATE 2/21/12

(AROUND BOTTOM PERIMETER) 3:1(TYP.) OBSERVATION PIPE

-6" GRAVEL

DIAPHRAGM



2' WIDE EMBANKMENT

(M-3) LANDSCAPE FILTRATION DESIGN TABLES

#1					#4					
ELEV. 1	339.00		ELEV. 1	329.00	ELEV. 1	321.00		ELEV. 1	311.00	
ELEV. 2	339.00		ELEV. 2	329.00	ELEV. 2	321.00		ELEV. 2	311.00	
ELEV. 3	338.00		ELEV. 3	328.00	ELEV. 3	320.00		ELEV. 3	310.00	
ELEV. 4	337.83		ELEV. 4	327.83	ELEV. 4	319.83		ELEV. 4	309.83	
ELEV. 5	337.00		ELEV. 5	327.00	ELEV. 5	319.00		ELEV. 5	309.00	
ELEV. 6	336.00		ELEV. 6	326.00	ELEV. 6	318.00		ELEV. 6	308.00	
ELEV. 7	335.00		ELEV. 7	325.00	ELEV. 7	₂ 317.00 [*]		ELEV. 7	307.00	
DIMENSIONS			DIMENSIONS		DIMENSIONS			DIMENSIONS		
'A'	20'±		, 'A'	20'±	'A'	20'±		'A'	20'±	
' B'	4'±		'B'	4'±	'B'	4'±		' B'	4'±	
TOTAL SF	94		TOTAL SF	96	TOTAL SF	94		TOTAL SF	. 77	
		'					•			

2' WIDE EMBANKMENT

		PLANTING LEGEND
	SYMBOL	NAME
	1	AJUGA REPTANS (CREEPING BUGLEWEED)
. *	2	IRIS VERSICOLOR (IRIS)
		CLETHRA (COMMON PERIWINKLE)
	Δ	ELYMUS VIRGINICUS (VIRGINIA WILD RYE)
	0	VACCINIUM ATROCOCCUM (HIGHBUSH BLUEBERRY)
•		

BETULA NIGRA (RIVER BIRCH)

3				–		
		DIRECTOR		•	DATE	
		,		æ	<u> </u>	
				,		
		7				
. N	O. DATE	RE	EVISION			
	• EN	BENCHMARK GINEERS & LAND SURVEYORS & PLANNERS NGINEERING, INC.		Professional Certification. I be were prepared or approved by professional engineer under the License No. 2855) Ed.	reby certify that these documen me, and that I am a duly license thews of the State of Maryland plating Date: 7-22-2013.	

ENOMINEE MINO, MIC. 8480 BALTIMORE NATIONAL PIKE & SUITE 418 & ELLICOTT CITY, MARYLAND 21043 (P) 410~465~6105 (F) 410~465~664

60 THOMAS JOHNSON DRIVE A FREDERICK, MARYLAND 21702 (P) 301-371-3505 (F) 301-371-3506 WWW.8EI-CIMLENGINEERING.COM

OWNER: THE WALTER DAVIS PROPERTY W R DAVIS PROPERTIES LLC LOTS 2 thru 5 3959 OLD COLUMBIA PIKE ELLICOTT CITY, MARYLAND 21043 GRID: 13 PARCEL: 148 ZONED: R-20 HUNT AVENUE

BUILDER: ELECTION DISTRICT NO. 2 HOWARD COUNTY, MARYLAND STIRLING HOMES STORMWATER MANAGEMENT DETAIL 20901 NEW HAMPSHIRE AVENUE BROOKEVILLE, MARYLAND 20833

SHEET 301-974-4899 JANUARY, 2013 BEI PROJECT NO: 2445 DESIGN: DBT DRAWN: DBT SCALE: AS SHOWN SHEET 5 of 5

SDP-13-008

P:\2445 Watter Davis Property\dwg\8000.dwg, 12/31/2012 10:21:42 AM

PLAN VIEW

PLANTINGS (TYP.)

SEE NOTE THIS

SHEET