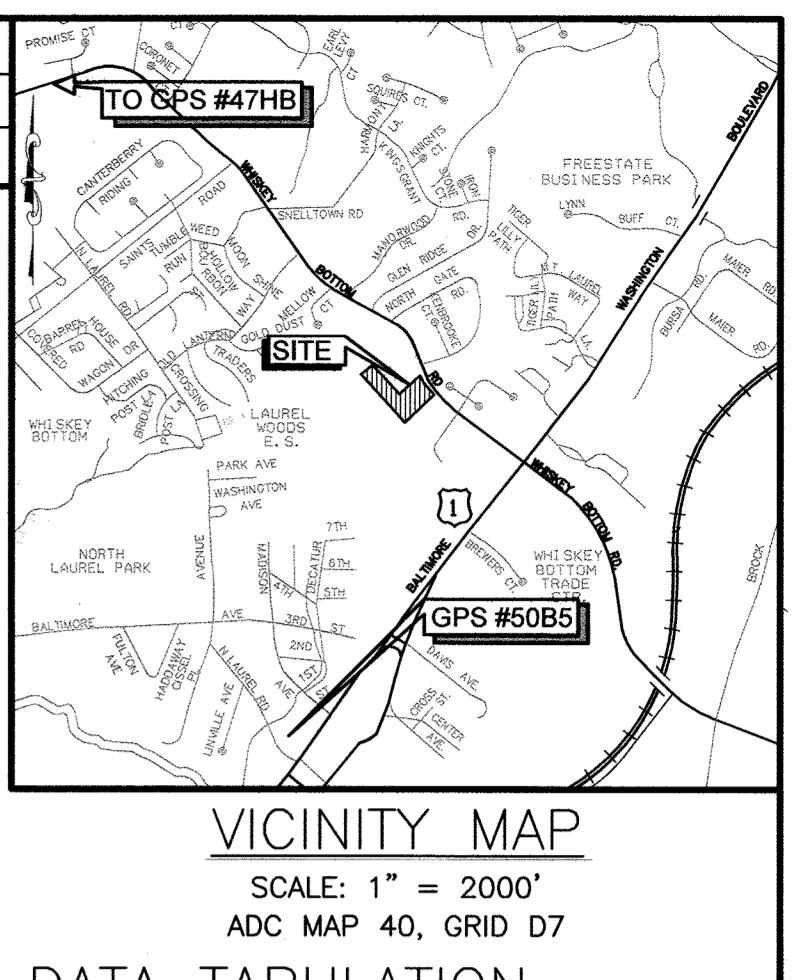
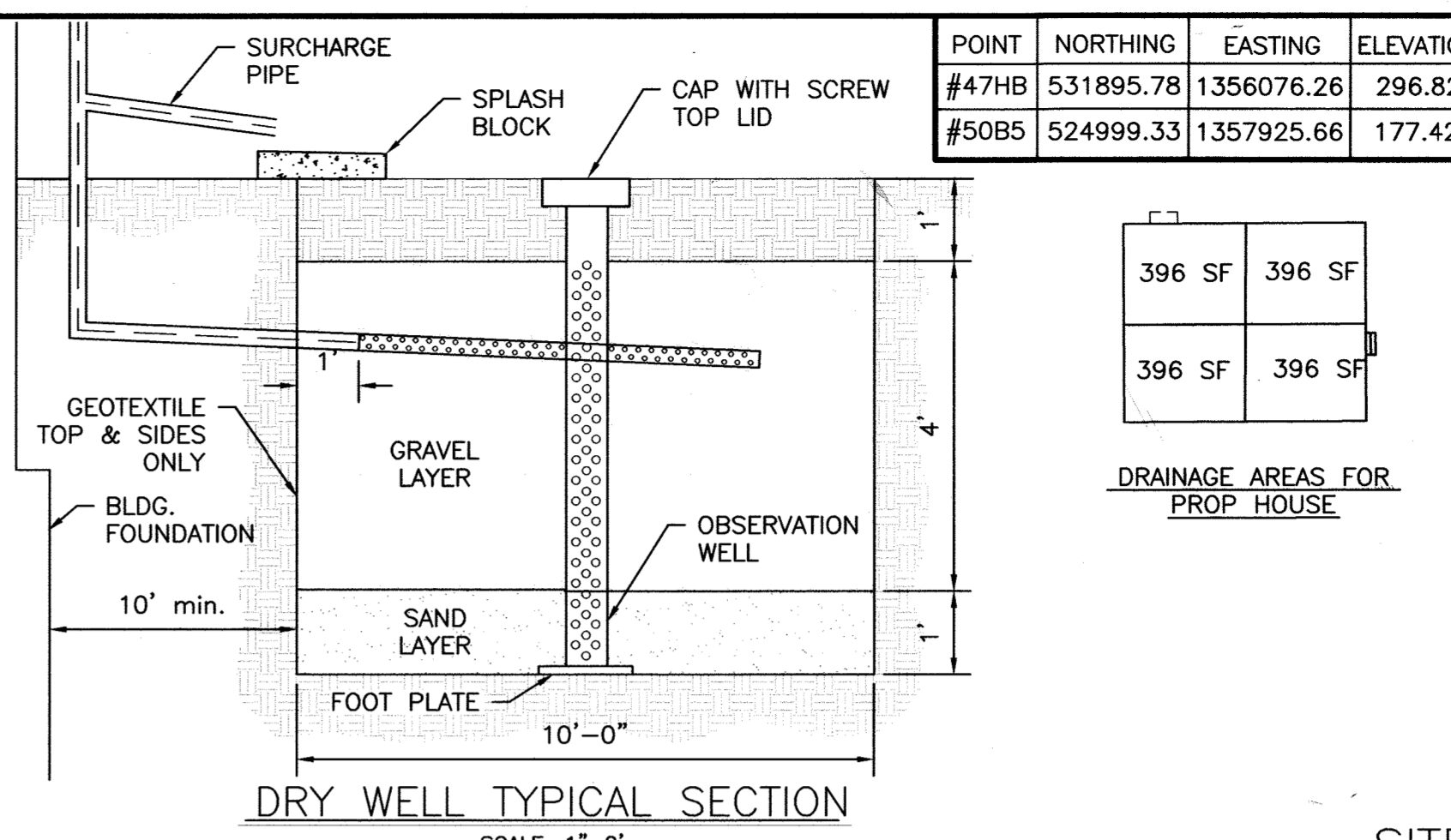


SHEET INDEX		
SHEET	DESCRIPTION	No.
C1	SITE PLAN, LANDSCAPE PLAN, NOTES AND DETAILS	1
C2	SEDIMENT & EROSION CONTROL NOTES AND DETAILS	2

SOILS TABLE		
SYMBOL	DESCRIPTION	HYDROLOGIC SOILS GROUP
UsB	URBAN LAND-SASSAFRAS-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	D
RsC	URBAN LAND-WOODSTOWN-SASSAFRAS COMPLEX, 5 TO 10 PERCENT SLOPES	C

STORMWATER MANAGEMENT SUMMARY TABLE						
AREA OF DISTURBANCE (AC.)	IMP. AREA (AC.)	PE		ESD VOLUME (CF)		BMP
		REQUIRED	PROVIDED	REQUIRED	PROVIDED	
0.54	0.20	1.60	1.80	1,274	1,280	(M-5) DRYWELLS



**GENERAL NOTES**

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE SUBJECT PROPERTY IS ZONED R-SC PER THE 10-06-13 COMPREHENSIVE ZONING PLAN.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM A FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY KCI TECHNOLOGIES INC. DATED JUNE, 2013.
- EXISTING OFFSITE TOPOGRAPHY SHOWN HEREON IS BASED ON HOWARD COUNTY GIS.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 47HB AND 50B5 WERE USED FOR THIS PROJECT.
- WATER IS PUBLIC, CONTRACT NUMBER 24-4892-D.
- STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH THE 2007 MDE DESIGN MANUAL AND HOWARD COUNTY REQUIREMENTS. TREATMENT IS PROVIDED USING ENVIRONMENTAL SITE DESIGN METHODS, INCLUDING DRY WELLS AND NON-ROOFTOP DISCONNECTION.
- EXISTING UTILITIES ARE BASED ON FIELD LOCATIONS AND RECORD DRAWINGS.
- NO WETLANDS, STREAMS, FLOODPLAINS, FOREST CONSERVATION EASEMENTS, STEEP SLOPES, OR ENVIRONMENTAL BUFFERS ARE LOCATED ON THIS SITE.
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- TO THE BEST OF OUR KNOWLEDGE THERE ARE NO CEMETERIES LOCATED ON THIS SITE.
- A NOISE STUDY IS NOT REQUIRED FOR THIS DEVELOPMENT.
- ARTICLES OF INCORPORATION FOR THE BUTTERFIELD GROVE HOMEOWNERS' ASSOCIATION WAS FILED WITH THE MARYLAND STATE DEPARTMENT OF ASSESSMENT AND TAXATION ON 05/06/2015. RECEIPT NO. 4466098.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- WETLAND DELINEATION WAS PERFORMED BY KCI TECHNOLOGIES, INC. AND DOCUMENTED IN A LETTER OF FINDINGS DATED AUGUST 2013.
- A SIMPLIFIED FOREST STAND DELINEATION AND FOREST CONSERVATION PLAN WERE PREPARED BY KCI TECHNOLOGIES, INC. IN AUGUST 2013 AND APPROVED UNDER THE PHASE 1 PLANS.
- 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 ALONG THE PIPESTEM LOT DRIVEWAY.
- THE EXISTING PROPERTY IS KNOWN AS THE JOSEPH TRAVERS HOUSE, HOWARD COUNTY ID# HO-801. THE PROPOSED PLAN HAS BEEN APPROVED BY THE HOWARD COUNTY HISTORIC DISTRICT COMMISSION ON MARCH 6, 2014.
- THE REFUSE AND RECYCLING COLLECTION PAD LOCATED WITHIN THE USE-IN-COMMON DRIVEWAY EASEMENT WILL BE MAINTAINED BY THE OWNERS OF LOTS 1-3 & 7, 9.311 & 9.315 BUTTERFIELD GROVE LANE AND NOT ALONG THE PIPESTEM LOT DRIVEWAY.
- THE LAND RECORDS OF HOWARD COUNTY ALONG WITH THE RECORDING OF THE PLATS 24224 AND 24225.
- WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE. THE SEWER WILL BE CONNECTING TO CONTRACT 24-4734-D LOCATED ON THE ADJACENT PROPERTY.
- PUBLIC WATER AND SEWAGE ALLOCATION WILL BE GRANTED AT THE TIME OF ISSUANCE OF THE BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME.
- NO IMPROVEMENTS SHALL BE PERMITTED TO BE CONSTRUCTED OR PLACED WITHIN THE PUBLIC WATER, SEWER, AND UTILITY EASEMENTS THAT WILL IMPEDER OR HINDER ACCESS TO THE PUBLIC WATER AND SEWER MAINS, IMPROVEMENTS SUCH AS AIR CONDITIONING UNITS, DECKS, FENCING, FOUNDATION PLANTS, SHALL NOT BE PLACED WITHIN THE PUBLIC WATER AND SEWER EASEMENTS.
- A PRIVATE RANGE OF ADDRESS SIGN ASSEMBLY SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-2430 FOR DETAILS AND COST ESTIMATE.
- ALL TRASH AND RECYCLABLES COLLECTION WILL BE AT WHISKEY BOTTOM ROAD, WITHIN 5' OF THE PUBLIC RIGHT OF WAY.
- ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED (QUICK PUNCH TYPE), SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO (2) "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY DWELLINGS TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
  - WIDTH - 12' (16' SERVING MORE THAN ONE RESIDENCE)
  - SURFACE - 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MIN.)
  - GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM 45' TURNING RADIUS
  - STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS 25' LOADING.
  - DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
- STRUCTURE CLEARANCES - MINIMUM 12 FEET
- MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
- THIS PLAN IS IN COMPLIANCE WITH THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL 45-2003 AND THE ZONING REGULATIONS PER COUNCIL BILL 32-2013. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS MUST COMPLY WITH THE SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION, OR BUILDING/GRADING PERMIT.
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL BY PROVIDING 1 ORNAMENTAL TREE, 4 EVERGREEN TREES, AND 60 FEET OF FENCING FOR SCREEN LANDSCAPING PER THE HISTORIC DISTRICT COMMISSION. FINANCIAL SURETY IN THE AMOUNT OF \$1,350,000 WILL BE POSTED WITH THE LOT 7 GRADING PERMIT APPLICATION. THE LANDSCAPING FOR LOT 8 WILL BE POSTED UNDER THE LOT 8 GRADING PERMIT (SDP 18-028). THE ORNAMENTAL FENCE AND LANDSCAPING WITHIN ACCESS EASEMENT TO BE MAINTAINED BY THE DEVELOPER.
- ON LOT STORMWATER FACILITIES ARE SUBJECT TO DECLARATIONS OF COVENANTS, WHICH HAVE BEEN RECORDED IN THE HOWARD COUNTY LAND RECORDS AT THE TIME OF THE PLAT RECORDED. ALL ASSOCIATED DECLARATIONS OF COVENANTS SHALL BE AMENDED, AS NEEDED, BASED ON ANY FUTURE ROAD IMPROVEMENTS WERE PROVIDED UNDER THE PHASE 1 FINAL CONSTRUCTION PLANS (F-14-085).
- THE ROAD DEDICATION AND FRONTAGE IMPROVEMENTS WERE PROVIDED UNDER THE PHASE 1 FINAL CONSTRUCTION PLANS (F-14-085).
- A COMMUNITY INPUT MEETING WAS HELD ON DECEMBER 3, 2015 IN AT THE NORTH LAUREL COMMUNITY CENTER.
- THE PLAN WAS PRESENTED TO THE HISTORIC DISTRICT COMMISSION IN FEBRUARY 2014. IT WAS SUGGESTED WE KEEP THE ARCHITECTURE OF THE PROPOSED BUILDINGS CLOSE TO THE EXISTING HOUSE. ALSO, LANDSCAPE SCREENING IS REQUIRED BETWEEN THE EXISTING HOUSE AND THE PROPOSED LOTS.
- \$5,000.00 WAS PAID AS THE APFO ROAD INTERSECTION FEE-IN-LIEU FOR THIS PROJECT UNDER F-14-085.
- IN ACCORDANCE WITH SECTION 128.0.A.1 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS OR EXTERIOR STAIRWAYS NOT MORE THAN 15 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.
- THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.120 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS; HOWEVER, FOREST MANAGEMENT PROGRAMS AS DEFINED IN THE FOREST CONSERVATION EASEMENT ARE ALLOWED. THE FOREST CONSERVATION OBLIGATION OF 0.47 ACRES HAS BEEN FULFILLED BY THE RETENTION/PLANTING OF 0.47 ACRES. THE TOTAL FINANCIAL SURETY OBLIGATION OF \$10,237,000 HAS BEEN PROVIDED UNDER F-14-085.

STORMWATER MANAGEMENT PRACTICES					
LOT NO.	ADDRESS	DISCONNECTION OF ROOFTOP RUNOFF (N-1)	DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)	DRY-WELLS (M-5)	MICRO-BIORETENTION (M-6)
1,2,3,&7	9303, 9307, 9311, & 9315 BUTTERFIELD GROVE LANE	NO, 0	NO, 0	YES, 8 (2 DRY-WELLS FOR EACH LOT)	NO, 0

LOTS 1,2,3&7 DRYWELL CHART						
DRYWELL NO.	AREA OF ROOF PER DOWNSPOUT	VOLUME REQUIRED	VOLUME PROVIDED	AREA OF TREATMENT	DRYWELL DIMENSIONS	STONE DEPTH
1	396 SQ. FT.	158 CF	160 CF	100%	10'x10'x6"	4.0'
2	396 SQ. FT.	158 CF	160 CF	100%	10'x10'x6"	4.0'
3	396 SQ. FT.	158 CF	160 CF	100%	10'x10'x6"	4.0'
4	396 SQ. FT.	158 CF	160 CF	100%	10'x10'x6"	4.0'
5	396 SQ. FT.	158 CF	160 CF	100%	10'x10'x6"	4.0'
6	396 SQ. FT.	158 CF	160 CF	100%	10'x10'x6"	4.0'
7	396 SQ. FT.	158 CF	160 CF	100%	10'x10'x6"	4.0'
8	396 SQ. FT.	158 CF	160 CF	100%	10'x10'x6"	4.0'

**DEVELOPER'S/BUILDER'S LANDSCAPING CERTIFICATION**

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

*Michael Collins* DEVELOPER *6/28/18* DATE

**MISS UTILITY**

CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF CHAPTER 36A OF THE MONTGOMERY COUNTY CODE.

**OPERATION AND MAINTENANCE SCHEDULE FOR DRY WELLS**

- THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS AND AFTER EVERY HEAVY STORM EVENT.
- 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.
- THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
- 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.
- THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
- 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.

**OPERATION AND MAINTENANCE SCHEDULE FOR NONROOFTOP DISCONNECT**

- MAINTENANCE OF AREAS RECEIVING DISCONNECTION 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 SHOULD BE DISCOURAGED AS WELL.

**LEGEND**

---	PROPERTY LINE	○	MANHOLE
---	ADJOINING PROPERTY LINE	○	LIGHT POLE
---	EXISTING BUILDING LINE	○	FIRE HYDRANT
---	EXISTING CONTOUR	○	BUSH
---	EXISTING TREELINE	○	CANIFEROUS TREE
---	EXISTING EDGE OF PAVEMENT	○	DECIDUOUS TREE
---	LOT LINE	○	EDGE OF WOODS
---	BUILDING SETBACK LINE	○	FENCE
---	PROPOSED FULL DEPTH ASPHALT	○	EXISTING SEWER
---	PROPOSED IMPERVIOUS AREA	○	EXISTING WATER
---	FOREST CONSERVATION EASEMENT	○	EXISTING GAS
---	LOD	○	EXISTING OVERHEAD WIRE
---	LIMIT OF DISTURBANCE	○	PROPOSED SEWER
---	SSF	○	PROPOSED WATER
---	SUPER SILT FENCE	○	
---	30' PUBLIC SEWER, WATER, & UTILITY EASEMENT	○	
---	PRIVATE ACCESS & UTILITY EASEMENT	○	

**ADDRESS CHART**

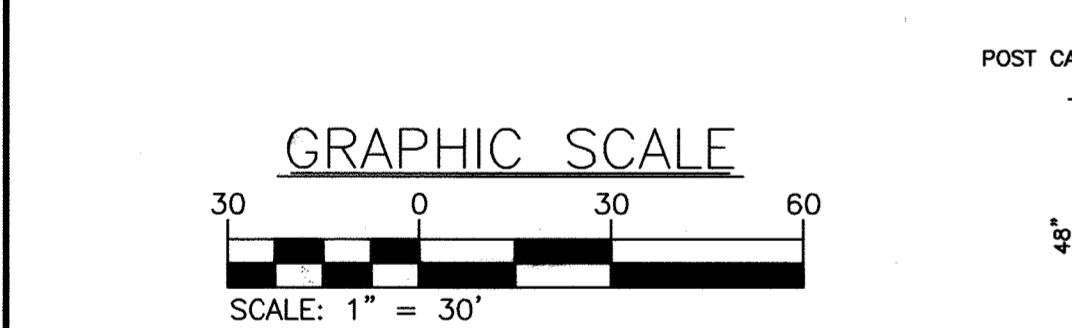
LOT #	STREET ADDRESS
1	9303 BUTTERFIELD GROVE LANE
2	9307 BUTTERFIELD GROVE LANE
3	9311 BUTTERFIELD GROVE LANE
7	9315 BUTTERFIELD GROVE LANE

**REVISIONS**

NO.	DATE	BY

OWNER/DEVELOPER: BUTTERFIELD GROVE PHASE 1, LOTS 1,2,3, PHASE 2, LOT 7  
 LEGEND BUILDERS INC.  
 P.O. BOX 511  
 BURTONSVILLE, MD 20866  
 301-490-3651  
 TAX MAP: 47 GRID: 22 PARCEL: 191  
 ZONED: R-SC  
 ELECTION DISTRICT NO. 6 - HOWARD COUNTY MARYLAND

DESIGN DATE: 6/28/18  
 DRAWN SCALE: 1"=30'  
 SHEET NO. 1 OF 2  
 KCI PROJECT NO. 271703391  
 SHEET NO. C-1



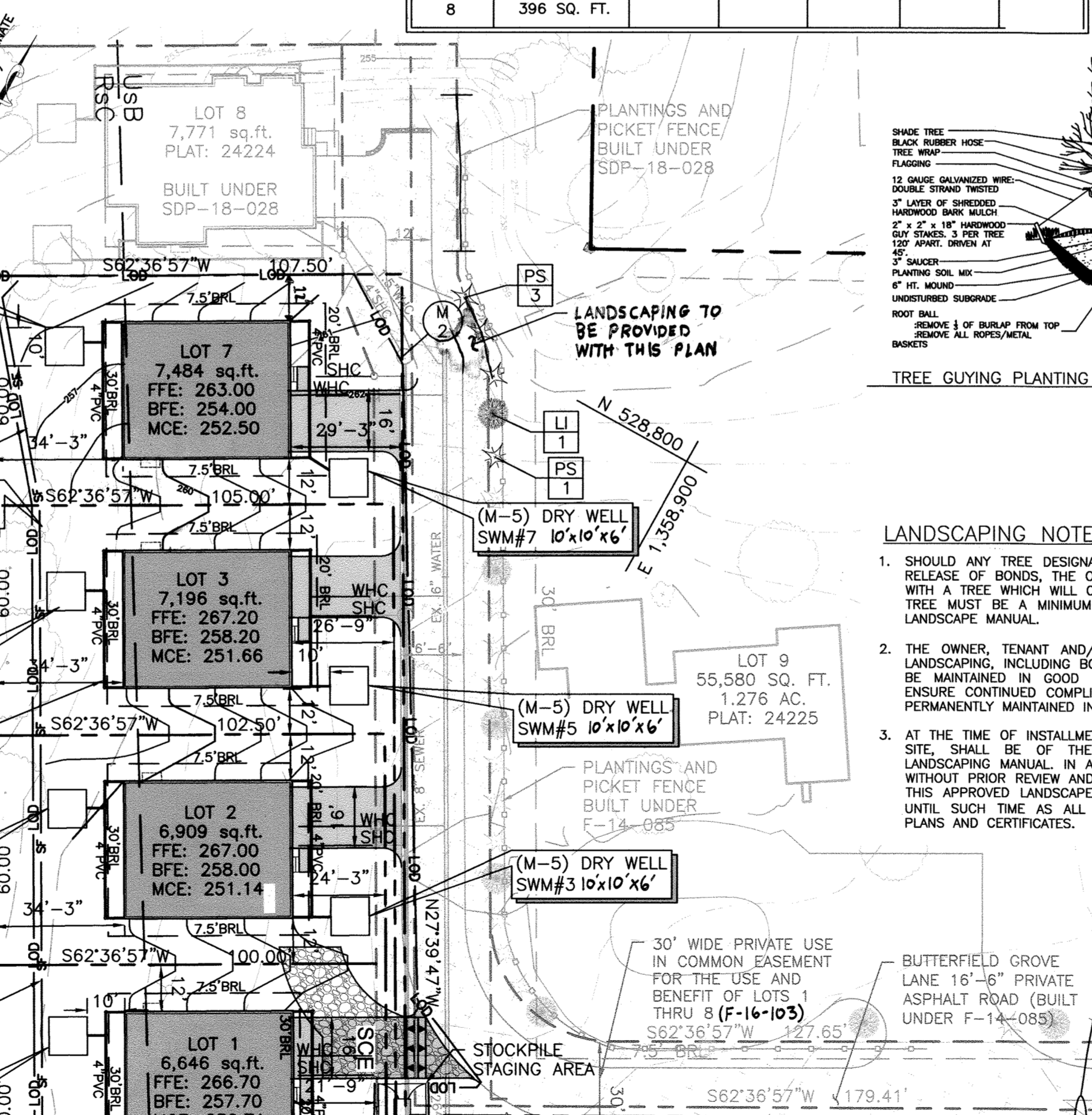
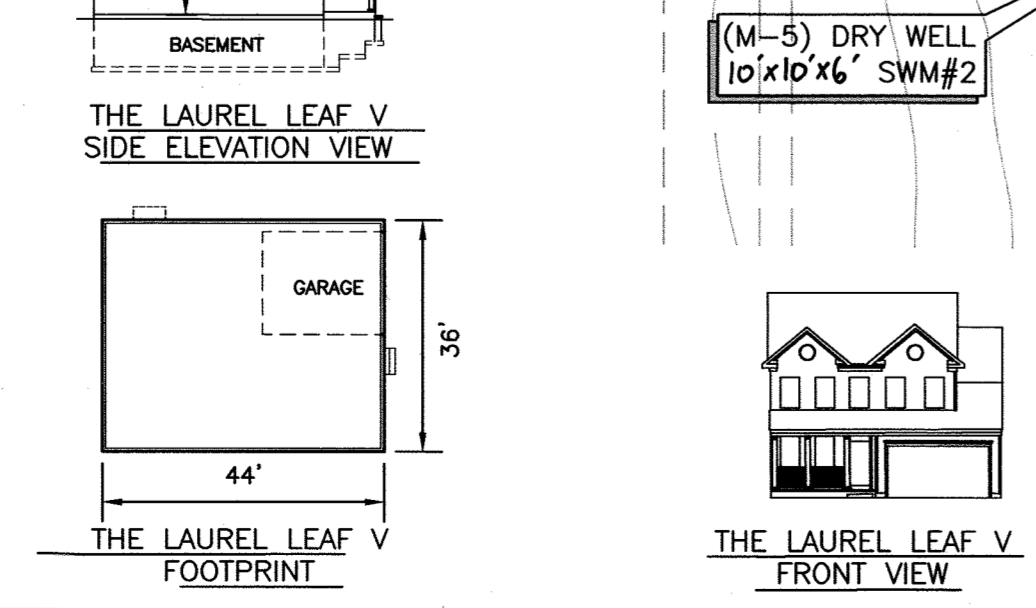
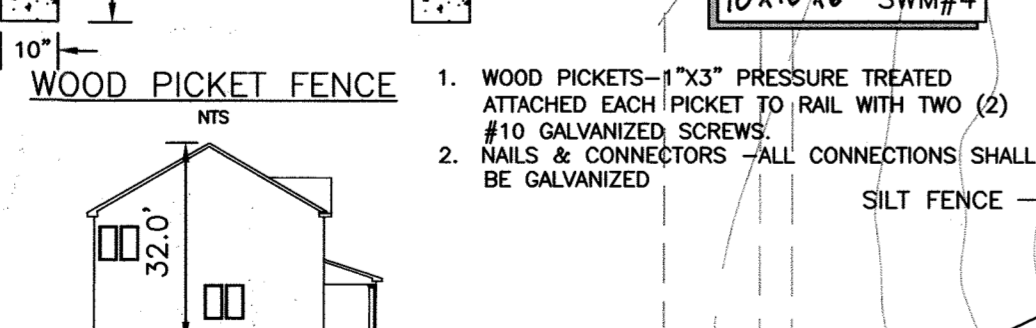
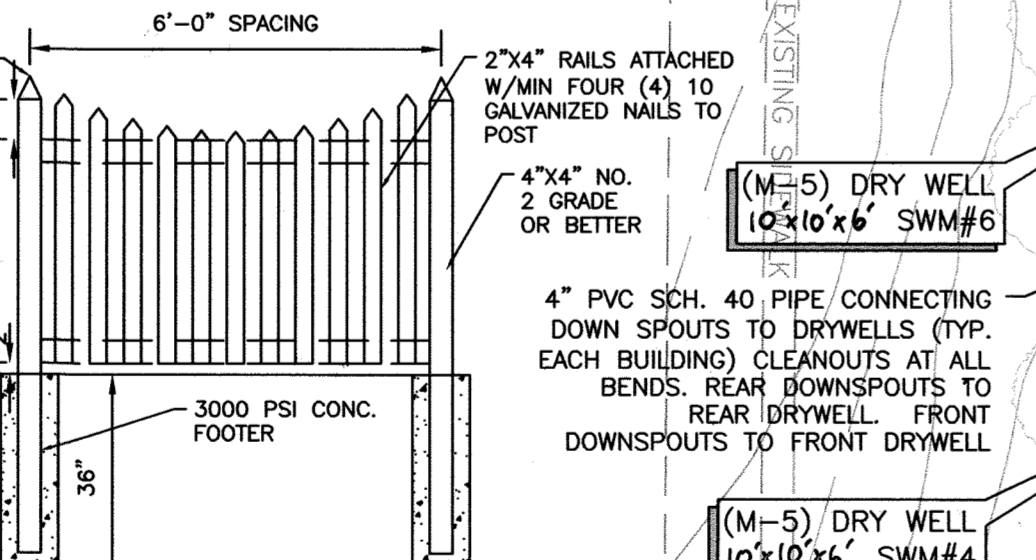
REVIEWED BY HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS  
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*John C. Roper* 7/10/18 DATE  
 HOWARD SOIL CONSERVATION DISTRICT

DEVELOPER'S CERTIFICATE  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT 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.  
*Michael Collins* 6/28/18 DATE  
 DEVELOPER

ENGINEER'S CERTIFICATE  
 I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*Valerie J. Jaffe* 7-28-18 DATE  
 ENGINEER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Vanessa S. Sandoval* 7/25/18 DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*Valerie J. Jaffe* 7/25/18 DATE  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



PLANTING SCHEDULE					
SYMBOL	KEY	QUANTITY	NAME	SIZE	COND. COMMENTS
PS	4	4	PINUS STROBUS "EASTERN WHITE PINE"	6'-8" HGT.	B&B SHEAR TO GROUND
LI	1	1	LAGERSTROEMIA INDICA "CRAPE MYRTLE"	6'-8" HGT.	B&B

PERMIT INFORMATION CHART					
SUBMISSION NAME:	SECTION/AREA:	LOT/PARCEL NO.:	GRID #:	ZONING:	TAX MAP:
BUTTERFIELD GROVE	PHASE 1&2	1,2,3 & 7	22	R-SC	47
PLAT # 24225	GRID # 22	LOT # 1,2,3 & 7		ELEC. DISTRICT 6	
WATER CODE:	SEWER CODE:	CENSUS:			

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2019

**STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS**

**PURPOSE**  
TO USE LOW-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.  
**CONDITIONS WHERE PRACTICE APPLIES**  
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

**CRITERIA**

- SOIL PREPARATION
  - TEMPORARY STABILIZATION
    - SEED 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 LOOSESED, 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.
  - PERMANENT STABILIZATION
    - A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
      - SOIL PH BETWEEN 6.0 AND 7.0.
      - SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
      - 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) WILL BE ACCEPTABLE.
      - SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
      - SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
    - APPLICATION OF AMENDMENTS OF SOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
    - GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSESED TO A DEPTH OF 3 TO 5 INCHES.
    - APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
    - 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 TRACK 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 SURFACE 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 FRABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.
- TOPSOILING
  - TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
  - TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
  - TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
    - THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
    - THE MATERIAL IS SO SHAWY THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
    - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
    - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
  - AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
  - TOPSOIL SPECIFICATIONS: SOIL TO BE USED MUST MEET THE FOLLOWING CRITERIA:
    - TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY SILT LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE 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 1/4 INCHES IN DIAMETER.
    - TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERBERIS GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEED, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
  - TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
- SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
  - SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
  - FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MAKURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE 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.
  - LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 90 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.
  - LIME AND LIME MUST BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
  - WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

**STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION**

**PURPOSE**  
TO USE LOW-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.  
**CONDITIONS WHERE PRACTICE APPLIES**  
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

**CRITERIA**

- MIXTURES
  - GENERAL USE
    - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDNESS 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 PLANS.
    - ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SLOPES, 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 - SPECIAL AREA PLANTING.
  - FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
  - FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 1/2 POUNDS PER 1000 SQUARE FEET (50 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
  - FOR AREAS RECEIVING HIGH MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 1/2 POUNDS PER 1000 SQUARE FEET (50 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
  - AREAS WHERE TURFGRASSES 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 SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
- TURFGRASSES
  - KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL, MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
  - KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 2 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.
  - TALL FESCUE/STRICTLY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MAINTENANCE IN FULL SUN TO MEDIUM SHADE. RECOMMENDED CERTIFIED TALL FESCUE CULTIVARS SEEDING RATE: 1.00 PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
  - KENTUCKY BLUEGRASS/TALL 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 TO 30 TO 40 PERCENT AND CERTIFIED TALL FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1 1/2 TO 3 POUNDS PER 1000 SQUARE FEET. NOTES:
    - SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT EDITION OF MARYLAND PUBLICATION, AGRONOMY MANUAL #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 ASSURING PROTECTION AGAINST A PURE GENETIC LINE.
    - IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES:
      - WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDNESS ZONE: 6B, 6A)
      - CENTRAL MD: MARCH 15 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: 6B)
      - SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: 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 1/2 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
- IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (X 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 LAKE IN THE PLANTING ZONE, IN ABNORMALLY DRY OR HOT SEASONS.

HARDNESS ZONE (FROM FIGURE B.3):		6B		FERTILIZER RATE (10-20-20)		LIME RATE	
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P2O5	K2O
4	DEERTONGUE	15	3/1-5/15	0.5"	45LB/AC (11LB/1000SF)	90LB/AC (21LB/1000SF)	90LB/AC (21LB/1000SF)
	CREeping Brome FESCUE	20	5/16-6/15	0.5"			
	VIRGINIA WILD RYE	5					
6	TALL FESCUE	40	3/1-5/15	0.5"	45LB/AC (11LB/1000SF)	90LB/AC (21LB/1000SF)	2 TONS/AC (90LB/1000SF)
	PERENNIAL RYEGRASS	25	8/1-10/15	0.5"			
9	TALL FESCUE	60	3/1-5/15	0.5"	40	8/1-10/15	0.5"
	KENTUCKY BLUEGRASS	40	8/1-10/15	0.5"			

**PERMANENT SEEDING TABLE**

SOIL TO BE COVERED QUICK ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

**GENERAL SPECIFICATIONS**

- CLASS OF TURFGRASS SOIL MUST BE MARYLAND STATE CERTIFIED. SOIL LABELS MUST BE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
- SOIL MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 1/4 INCH PLUS OR MINUS 1/8 INCH. AT THE TIME OF CUTTING, MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROUND AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
- STANDARD SIZE SECTIONS OF SOIL MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
- SOIL MUST NOT BE HARVESTED OR TRANSPORTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
- SOIL MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOIL NOT TRANSPORTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
- DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOIL.
- LAY THE FIRST ROW OF SOIL IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER JOINTS JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOIL 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.
- WHEN POSITIONING SOIL LAY SOILS WITH LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERED JOINTS. ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOIL TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT BETWEEN SOIL ROOTS AND THE UNDERLYING SOIL SURFACE.
- WATER THE SOIL IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOIL PAD AND SOIL SURFACE BEHIND THE SOIL ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PACE OF SOIL WITH EIGHT HOURS.
- SOIL MAINTENANCE
  - IN THE ABSENCE OF ADEQUATE RAINFALL, WATER ONLY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOST SOIL TO A DEPTH OF 4 INCHES WATER SOIL DURING THE DAY TO PREVENT WILTING.
  - AFTER THE FIRST WEEK, SOIL WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
  - DO NOT MOW UNTIL THE SOIL IS FIRMLY ROOTED. NO MORE THAN 1/4 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.

ALL NUMERIC VALUES EXCEPT APPARENT OPENING SIZE (AOS) REPRESENT MINIMUM AVERAGE ROLL VALUES (MARV). MARV IS CALCULATED AS THE TYPICAL RADIUS TWO STANDARD DEVIATIONS. MD IS MACHINE DIRECTION. CD IS CROSS DIRECTION. CO IS CROSS ORIENTATION. VALUES FOR AOS REPRESENT THE AVERAGE MAXIMUM OPENING.

GEOTEXTILES MUST BE EVALUATED BY THE NATIONAL TRANSPORTATION PRODUCT EVALUATION PROGRAM (NTEPE) AND CONFORM TO THE VALUES IN TABLE H.1.

THE GEOTEXTILE MUST BE INERT TO COMMONLY ENCOUNTERED CHEMICALS AND HYDROCARBONS AND MUST BE ROT AND MILDWEAR RESISTANT. THE GEOTEXTILE MUST BE MANUFACTURED FROM FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS COMPOSED OF POLYETHYLENE OR POLYESTERS, AND FORMED INTO A STABLE NETWORK SO THE FILAMENTS OR YARNS RETAIN THEIR DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING SELVAGES.

WHEN MORE THAN ONE SECTION OF GEOTEXTILE IS NECESSARY, OVERLAP THE SECTIONS BY AT LEAST ONE FOOT. THE GEOTEXTILE MUST BE PULLED TAUT OVER THE APPLIED SURFACE. EQUIPMENT MUST NOT RUN OVER THE GEOTEXTILE WHEN PLACING RIPRAP ON GEOTEXTILE. DO NOT EXCEED A ONE FOOT DROP HEIGHT.

**TABLE H.2: STONE SIZE**

TYPE	SIZE RANGE	D <sub>90</sub>	D <sub>100</sub>	AASHTO	MIDSIZE WEIGHT
NUMBER 5	3/8 TO 1-1/2 INCH	1/2 IN	1-1/2 IN	M-43	N/A
NUMBER 1	2 TO 3 INCH	2-1/2 IN	3 IN	M-43	N/A
CLASS I	4 TO 7 INCH	5-1/2 IN	7 IN	N/A	N/A
CLASS II	N/A	9-1/2 IN	15 IN	N/A	40 LB
CLASS III	N/A	16 IN	24 IN	N/A	200 LB
CLASS III	N/A	23 IN	34 IN	N/A	600 LB

1 THIS CLASSIFICATION IS TO BE USED ON THE UPSTREAM FACE OF STONE OUTLETS AND CHECK DAMS.  
2 THIS CLASSIFICATION IS TO BE USED FOR GABIONS.  
3 OPTIMUM GRADATION IS 50 PERCENT OF THE STONE BEING ABOVE AND 50 PERCENT BELOW THE MIDSIZE.

STONE MUST BE COMPOSED OF A WELL GRADED MIXTURE OF STONE SIZED SO THAT FIFTY (50) PERCENT OF THE PIECES BY WEIGHT ARE LARGER THAN THE SIZE DESIGNATED BY USING THE CHARTS. A WELL GRADED MIXTURE IS DEFINED AS MIXTURE COMPOSED PRIMARILY OF LARGER STONE SIZES BUT WITH A SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE SMALLER Voids BETWEEN THE STONES. THE MAXIMUM PERCENTAGE OF FINER MATERIAL THAN ANY SIZE MUST NOT EXCEED THE PERCENTAGE OF FINER MATERIAL FROM TABLE H.2. THE D<sub>50</sub> REFERS TO THE MEDIAN DIAMETER OF THE STONE. THIS IS THE SIZE FOR WHICH 50 PERCENT, BY WEIGHT, WILL BE SMALLER AND 50 PERCENT WILL BE LARGER.

NOTE: RECYCLED CONCRETE EQUIPMENT MAY BE SUBSTITUTED FOR ALL STONE CLASSIFICATIONS FOR TEMPORARY CONTROL. MEASURES ONLY. CONCRETE BROKEN INTO THE SIZES MEETING THE APPROPRIATE CLASSIFICATION, CONTAINING NO STEEL REINFORCEMENT, AND HAVING A MINIMUM DENSITY OF 150 POUNDS PER CUBIC FOOT MAY BE USED AS AN EQUIVALENT.

**STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION**

**PURPOSE**  
TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL.

**CONDITIONS WHERE PRACTICE APPLIES**  
ON ALL DISTURBED AREAS NOT STABILIZED BY OTHER METHODS. THIS SPECIFICATION IS DIVIDED INTO SECTIONS ON INCREMENTAL STABILIZATION; SOIL PREPARATION, SOIL AMENDMENTS AND TOPSOILING; SEEDING AND MULCHING; TEMPORARY STABILIZATION; AND PERMANENT STABILIZATION.

**EFFECTS ON WATER QUALITY AND QUALITY**

STABILIZATION PRACTICES ARE USED TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL. WHEN SOIL IS STABILIZED WITH VEGETATION, THE SOIL IS LESS LIKELY TO ERODE AND MORE LIKELY TO ALLOW INFILTRATION OF RAINFALL, THEREBY REDUCING SEDIMENT LOADS AND RUNOFF TO DOWNSTREAM AREAS. PLANTING VEGETATION IN DISTURBED AREAS WILL HAVE AN EFFECT ON THE WATER BUDGET, ESPECIALLY ON VOLUMES AND RATES OF RUNOFF, INFILTRATION, EVAPORATION, TRANSPIRATION, PERCOLATION, AND GROUNDWATER RECHARGE. OVER TIME, VEGETATION WILL INCREASE ORGANIC MATTER CONTENT AND IMPROVE THE WATER HOLDING CAPACITY OF THE SOIL AND SUBSEQUENT PLANT GROWTH. VEGETATION WILL HELP REDUCE THE MOVEMENT OF SEDIMENT, NUTRIENTS, AND OTHER CHEMICALS CARRIED BY RUNOFF TO RECEIVING WATERS. PLANTS WILL ALSO HELP PROTECT GROUNDWATER SUPPLIES BY ALTERNATING THOSE SUBSTANCES PRESENT WITHIN THE ROOT ZONE. SEDIMENT CONTROL PRACTICES MUST BE IN PLACE DURING GRADING, SEEDBED PREPARATION, SEEDING, MULCHING, AND VEGETATIVE ESTABLISHMENT.

**ADEQUATE VEGETATIVE ESTABLISHMENT**

INSPECT SEEDED AREAS FOR VEGETATIVE ESTABLISHMENT AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.

- ADEQUATE VEGETATIVE ESTABLISHMENT REQUIRES 95 PERCENT GROUND COVER.
- IF AN AREA HAS LESS THAN 40 PERCENT GROUND COVER, RESEEDING FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, AND SEEDING PREPARATION, AND SEEDING.
- IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUND COVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED.
- MAINTENANCE FERTILIZERS RATES FOR PERMANENT SEEDING ARE SHOWN IN TABLE B.6.

**STANDARD SEDIMENT CONTROL NOTES**

- A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING SITES:
  - PRIOR TO THE START OF EARTH DISTURBANCE.
  - PRIOR TO COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.
  - PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT.
  - PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3:1 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAY AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-3), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-5). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15 OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHING WITH STABLE OUTLET. ALL CONCENTRATED FLOW WITH STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE, AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CID.
- SITE ANALYSIS:
  - TOTAL AREA OF SITE: 0.85 ACRES
  - AREA DISTURBED: 0.54 ACRES
  - AREA TO BE REVEGETATED OR PAVED: 0.20 ACRES
  - AREA TO BE VEGETATIVELY STABILIZED: 0.34 ACRES
  - TOTAL CUT: 1720 CU. YDS.
  - TOTAL FILL: 1200 CU. YDS.
  - OFFSITE WASTE/BORROW AREA LOCATION: 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 CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY, AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:
  - INSPECTION DATE
  - INSPECTION TYPE (ROUTINE, PRE-SEASON EVENT, DURING RAIN EVENT)
  - NAME AND TITLE OF INSPECTOR
  - WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
  - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
  - EVIDENCE OF SEDIMENT DISCHARGES
  - IDENTIFICATION OF PLAN DEFICIENCIES
  - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
  - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
  - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
  - PHOTOGRAPHS
  - MONITORING/SAMPLING
  - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
  - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
- ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
- DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACHIEVE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE HSCD, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
- WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
- TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION UNTIL FINAL GRADE.
- ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON THE-CONTOUR, AND BE IMBRICATED AT 25 MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPWARD BY 2 IN ELEVATION.
- STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
  - USE I AND II MARCH 1 - JUNE 15
  - USE III AND IV OCTOBER 1 - APRIL 30
  - USE IV MARCH 1 - MAY 31
- A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

**CONSTRUCTION SPECIFICATIONS**

CONTRACTOR TO NOTIFY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, FIVE (5) DAYS PRIOR TO CONTRACTOR'S ANTICIPATED DATE TO BEGIN CONSTRUCTION.

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES GREATER THAN 3:1, AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE.

- NOTIFY MISS UTILITY AT LEAST 48 HOURS IN ADVANCE OF WORK ON SITE.
- CLEAR FLOW AND INSTALL SEDIMENT CONTROL MEASURES (E. SILT FENCE, TREE PROTECTION FENCE, STONE CONSTRUCTION ENTRANCE). NOTIFY INSPECTOR UPON COMPLETION OF SEDIMENT CONTROL MEASURES INSTALLATION. STANDARD FENCING IS TO REPLACE SUPER SILT FENCING AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- UPON INSTALLATION OF THE SEDIMENT AND EROSION CONTROL DEVICES, CONTRACTOR SHALL BEGIN CLEARING AND GRADING:
  - 7 DAYS
  - 14 DAYS
- CONTRACTOR TO BEGIN TO ROUGH GRADE THE SITE. EXCAVATE FOR AND INSTALL WATER, SEWER, AND STORM DRAINS AS SHOWN ON THE PLAN.
- CONTRACTOR TO FINE GRADE FOR AND INSTALL PROPOSED BUILDINGS, DRIVE, AND OTHER SITE FEATURES SHOWN ON THE PLAN.
- ONCE CONSTRUCTED, AND DRAINAGE AREAS STABILIZED, CONTRACTOR TO EXCAVATE & INSTALL DRY-WELL FACILITIES AND LANDSCAPING. PERMANENTLY STABILIZE ALL DISTURBED AREAS.
- EROSION AND SEDIMENT CONTROL PRACTICES AND SITE IN GENERAL MUST BE INSPECTED WEEKLY AND AFTER EACH RAINFALL EVENT, BY THE CONTRACTOR, OR OTHER RESPONSIBLE PERSON, AND ANY NEEDED MAINTENANCE PERFORMED IMMEDIATELY. ON-GOING
- ONCE 95% GRASS COVER IS ATTAINED, REMOVE SEDIMENT CONTROLS.
- SEDIMENT AND EROSION CONTROLS CANNOT BE REMOVED UNTIL THE SITE HAS ADEQUATE STABILIZATION. ONCE VEGETATION HAS BEEN ESTABLISHED, THE SITE SHALL HAVE 95% GROUND COVER TO BE CONSIDERED ADEQUATELY STABILIZED AND THE SEDIMENT CONTROL INSPECTOR HAVE APPROVED SUCH REMOVAL. ALL AREAS WHERE SEDIMENT AND EROSION CONTROL DEVICES HAVE BEEN REMOVED SHALL BE STABILIZED IMMEDIATELY WITH SEED AND MULCH.

**CONSTRUCTION OF CONSTRUCTION ENTRANCE**

DETAIL E-3 SUPER SILT FENCE

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

CONSTRUCTION SPECIFICATIONS

- INSTALL 2 1/2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
- FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 1/2 INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
- FASTEN WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACING EVERY 24 INCHES AT THE TOP AND BOTTOM 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 SEPARATION BY PASS.
- EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
- PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERDRAINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

**CONSTRUCTION OF SILT FENCE**

DETAIL E-1 SILT FENCE

CONSTRUCTION SPECIFICATIONS

- USE WOOD POSTS 1 1/2 X 1 1/2 X 1/4 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD, AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "V" SECTION STEEL POSTS. WEDGING NOT LESS THAN 1 POUND PER LINEAR FOOT.
- USE 36 INCH MINIMUM POSTS DRIVEN 18 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
- USE WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
- PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- EMBOD GEOTEXTILE A MINIMUM OF 6 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF GEOTEXTILE.
- WHERE TWO SECTIONS OF GEOTEXTILE ADJACENT OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
- EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERDRAINING OCCURS, REINSTALL FENCE.

**CONSTRUCTION OF SILT FENCE (TOP VIEW)**

JOINING TWO ADJACENT SILT FENCE SECTIONS

CONSTRUCTION SPECIFICATIONS

- POSTS
- STAPLE
- FINAL CONFIGURATION

CONTRACTOR TO NOTIFY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, FIVE (5) DAYS PRIOR TO CONTRACTOR'S ANTICIPATED DATE TO BEGIN CONSTRUCTION.

**CONSTRUCTION OF SILT FENCE (TOP VIEW)**

JOINING TWO ADJACENT SILT FENCE SECTIONS

CONSTRUCTION SPECIFICATIONS

- POSTS
- STAPLE
- FINAL CONFIGURATION

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