

VILLAGE OF LONG REACH, SECTION I, AREA I LOTS F-1 THROUGH F-137

GENERAL NOTES

- 1. THE SUBJECT PROPERTY IS ZONED "NT-ATTACHED" PER THE
- 2/2/04 COMPREHENSIVE ZONING PLAN AND PER FDP-77-A-1. THE DEPARTMENT OF PLANNING AND ZONING HAS DETERMINED THAT THE DISTURBANCE WITHIN THE FLOODPLAIN, STREAM AND WETLANDS IS ESSENTIAL IN ORDER TO CONSTRUCT THIS PROJECT, IN ACCORDANCE WITH SECTIONS 16.115(c) AND 16.116(c) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- 3. THIS PLAN IS PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- 4. THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON
- REFERENCE NUMBER OF OTHER APPROVED PLANS: FDP-77-A-1 SDP 74-39 AND F-74-30.
- 6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY AND MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- 7. 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 ANY **EXCAVATION WORK BEING DONE.**
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 5 DAYS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- 9. THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. BENCHMARKS SHOWN HEREON WERE PROVIDED BY HOWARD COUNTY SURVEY DIVISION.
- 10. WATER IS PUBLIC.
- 12. STORMWATER MANAGEMENT IS NOT REQUIRED FOR THIS SITE, AS THE PROPOSED GABION RETAINING WALL AND ANCHOR-LOC REVETMENT WILL NOT CHANGE THE EXISTING SITE HYDROLOGY.
- 13. EXISTING UTILITIES ARE BASED ON AVAILABLE RECORD DRAWINGS AND
- 14. WETLANDS ON THE PROJECT SITE ARE CONTAINED WITHIN THE STREAM BANKS, AS PER A SITE WALK WITH AN MDE REPRESENTATIVE.
- 15. TOPOGRAPHIC SURVEY FOR THE PROJECT SITE WAS PERFORMED BY CRESS ASSOCIATES IN NOVEMBER 2005
- 16. A JOINT PERMIT APPLICATION HAS BEEN SUBMITTED TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR THIS PROJECT. TRACKING NO. 200666863/06-NT-3355.
- 17. NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- THE INFORMATION SHOWN ON THESE PLANS IS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND DANIEL CONSULTANTS INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION.
- 19. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER. THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
- 20. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY. REFER TO THE SITE PLAN FOR EXISTING UTILITY LOCATIONS.
- 21. EXISTING GROUND AND/OR VEGETATION DISTURBED BY THE PROPOSED WORK SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITION OR BETTER BY CONCLUSION OF THE PROJECT.
- 22. THE PROPOSED PROJECT IS LOCATED IN THE WOODCREEK DEVELOPMENT LOCATED ON PHELPS LUCK DRIVE, BETWEEN WILD LILAC AND
- 23. A GRADING PERMIT FOR THE PROPOSED STREAM RESTORATION PROJECT SHALL BE APPLIED FOR WITHIN 1 YEAR FROM THE DED APPROVAL FOR THIS RED—LINE REVISION REQUEST.
- 24. THE SUBJECT PROJECT IS EXEMPT FROM THE FOREST CONSERVATION REQUIREMENT IN ACCORDANCE WITH SECTION 16.1202(b)(1)(iv) OF THE HOWARD COUNTY CODE FOR A PROPERTY LOCATED IN THE "NEW TOWN" ZONING DISTRICT.

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT

CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

WOODCREEK STREAM MAINTENANCE PLAN HOWARD COUNTY, MARYLAND

SPECIAL NOTES

- MARYLAND DEPARTMENT OF THE ENVIRONMENT REGULATIONS REQUIRE THAT NO STOCKPILE OF ANY MATERIAL IS ALLOWED IN THE 100-YEAR
- 2. IN-STREAM WORK IS PROHIBITED FROM MARCH 1ST TO JUNE 15TH, INCLUSIVE. STREAM CLASSIFICATION: USE I-P.

13.640 AC. TOTAL SITE AREA: 0.285 AC. DISTURBED AREA: **CURRENT ZONING:** APARTMENT LAND USE STABILIZE EXISTING BANK/ CHANNEL EROSION. OPEN SPACE ON SITE:

DEVELOPER'S CERTIFICATION

SIGNATURE OF DEVELOPER PAUL GERULATIS

ENGINEER'S CERTIFICATION

SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. "

SIGNATURE OF ENGINEER RICHARD SOBBOTT

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Phelps Luck Dr.

VICINITY MAP

SCALE: 1'' = 400'

ADD COVER SHEET TO SDP NO. 74-39 FOR STREAM MAINTENANCE

PERI	MIT INFO	RMATI	ON C	HART
UBDIVISION NAME VILLAGE OF	LONG REACH	SECTION/ART	A AREA 1	1-137/"F"
IT NO. or L/F		GRID NO.	ZONING	TAX MAP NO.
P.B.26/F0	LIO 45	23	SFA	30
ELECT. DISTR.	CENSUS TRACT			
6th 6066.05				

COVER SHEET

COLUMBIA - VILLAGE OF LONG REACH

SECTION 1 — AREA 1

6TH ELECTION DISTRICT

LOTS F-1 TO F-137

HOWARD COUNTY, MD

A RESUBDIVISION OF PARCEL "F"

SHEET 1 OF 15 JAN. 2009 RLS SDP 74-39C

FILE NAME: H:\PROJECTS\Civif\08-215-01 WoodCreek\S1_COVER.dwg LAYOUT NAME: COVER SHEET PLOTTED: Monday, January 12, 2009 - 2:09pm

CONSULTING ENGINEERS AND PLANNERS

8950 Rt. 108 E., Suite 229, Columbia, MD 21045

Phone: 410-995-0090 Fax: 410-992-7038

06-11-001

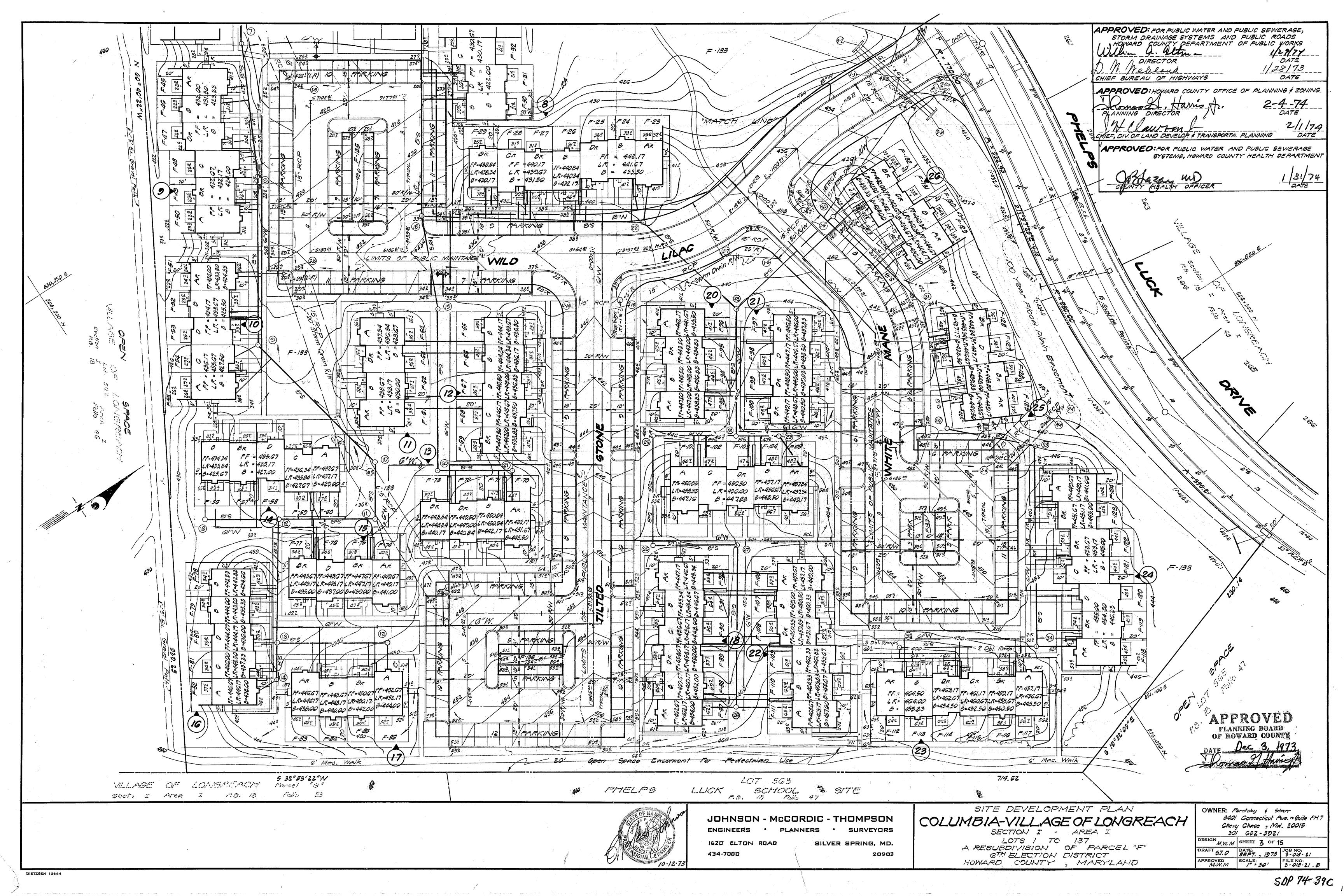
WOODCREEK H.O.A.

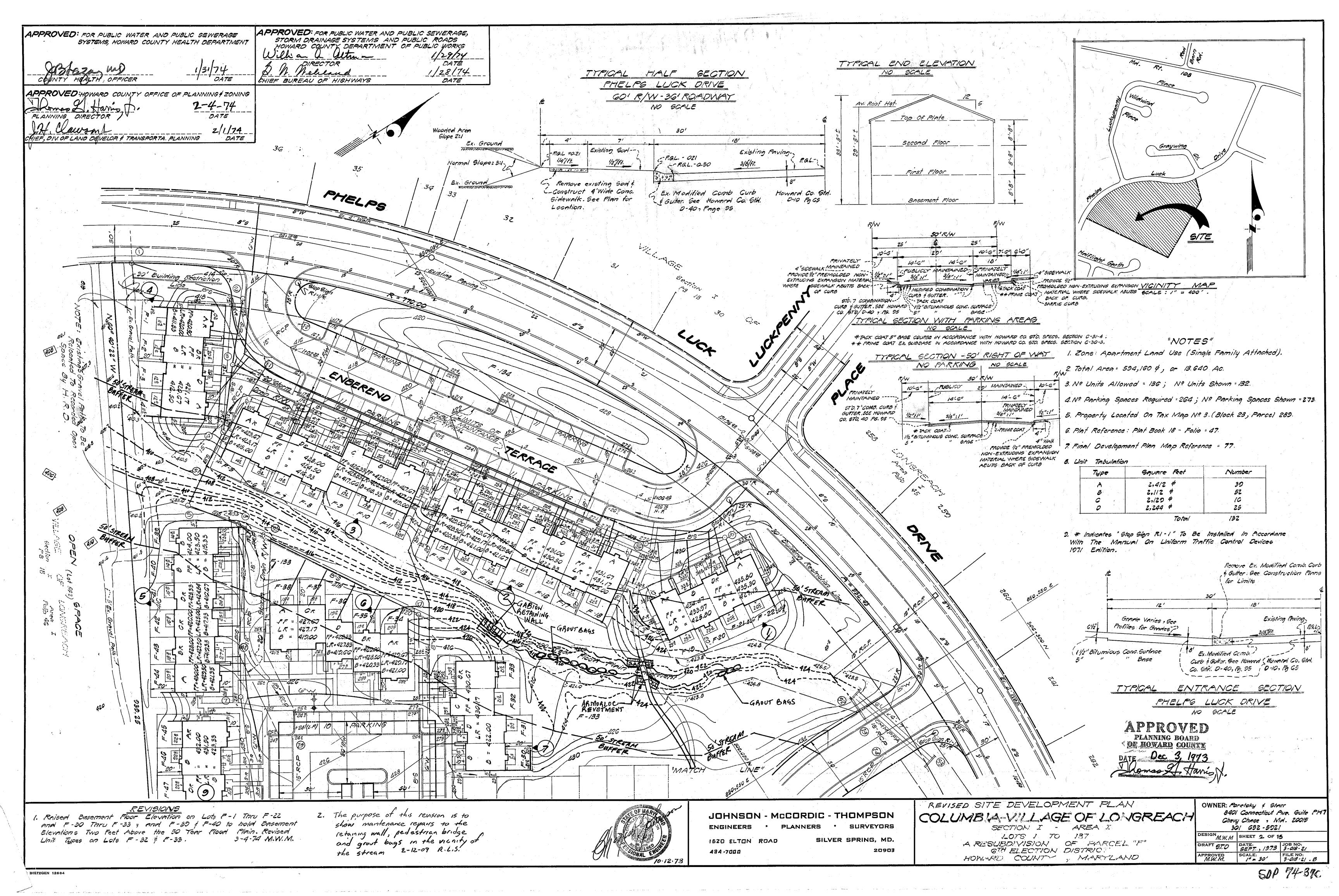
USDA - NATURAL RESOURCES CONSERVATION SERVICE

DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

manch prevole





20.0 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

<u>Definition</u>

Using vegetation as cover for barren soil to protect it from forces that cause erosion

Vegetative Stabilization specifications 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, and improving wildlife habitat and visual resources.

Conditions Where Practice Applies

This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration (up to one year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are seeding are some statement of the plants of the plants of the plants and for Permanent Seeding of lawns damp out and fill shows and other group at final grade former. Permanent Seeding of lawns, dams, cut and fill slopes and other areas at final grade, former stockpile and staging areas, etc.

Effects on Water Quality and Quantity

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. Vegetation, over time, 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 assimilating

Sediment control devices must remain in place during grading, seedbed preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

SECTION I - VEGETATIVE METHODS AND MATERIALS

A. Site Preparation

- Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
- ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
- iii. Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. 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 over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses
- ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable State fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer.
- iii. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fine may be substituted which will pass through a #100 mesh sieve and 98-100% will pass through a #20 mesh sieve.
- iv. Incorporate lime and fertilizer into the top 3-5° of soil by disking or other suitable means.

C. Seedbed Preparation

i. Temporary Seeding

- a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disk harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
- c. Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

- a. Minimum soil conditions required for permanent vegetative establishment:
- Soil pH shall be between 6.0 and 7.0.
 Soluble salts shall be less than 500 parts per million (ppm).
 The soil shall contain less than 40% clay but enough fine grained material (30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or serecia lespedeza is to be planted, then a sandy soil (30% silt plus clay) would be acceptable.
 Soil shall contain 1.5% minimum organic matter by weight.
 Soil must contain sufficient pore space to permit adequate root penetration.
 If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil
- b. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from
- c. Apply soil amendments as per soil test or as included on the plans.
- d. Mix soil amendments into the top 3 5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1 3" of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

D. Seed Specifications

- i. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re—testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.
- Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.
- ii. Inoculant The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen—fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on 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—80 °F can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding

- Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.
- a. If fertilizer is being applied at the time of seeding, the application rate amounts will not exceed the following: nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen; P205 (phosphorous): 200ibs/ac.; K20 (potassium): 200 lbs/ac.
- b. Lime Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
- Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without
- ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
- a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 25 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.
- b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.
- iii. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
 - a. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4
 inch of soil covering. Seedbed must be firm after planting.
 - Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

- F. Mulch Specifications (In order of preference)
- i. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.
- ii. Wood Cellulose Fiber Mulch (WCFM)
 - WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous
- b. WCFM shall 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.
- WCFM, including dye, shall contain no germination or growth inhibiting factors.
- d. WCFM materials shall 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 shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
- WCFM material shall contain no elements or compounds at concentration levels that will be
- f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum.
- Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

G. Mulching Seeded Areas— Mulch shall be applied to all seeded areas immediately after seeding

- i. If grading is completed outside for the seeding season, mulch alone should be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
- ii. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.
- iii. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.
- H. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:
- i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large greas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
- ii. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
- iii. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. The remainder of area should appear uniform after binder application. Synthetic binders—such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tack AR, or other approved equal may be used at rates recommended by the
- iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer s recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet
- i. Incremental Stabilization Cut Slopes
- i. All cut slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 15.
- ii. Construction sequence (Refer to Figure 4 below):
 - a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
 - b. Perform phase 1 excavation, dress, and stabilize
 - c. Perform phase 2 excavation, dress, and stabilize. Overseed phase 1 areas as necessary
 - d. Perform final phase excavation, dress, and stabilize. Overseed previously seeded areas as

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

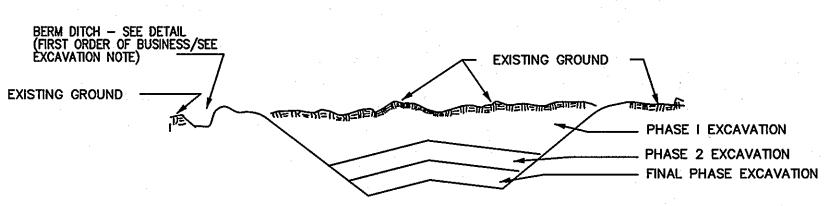
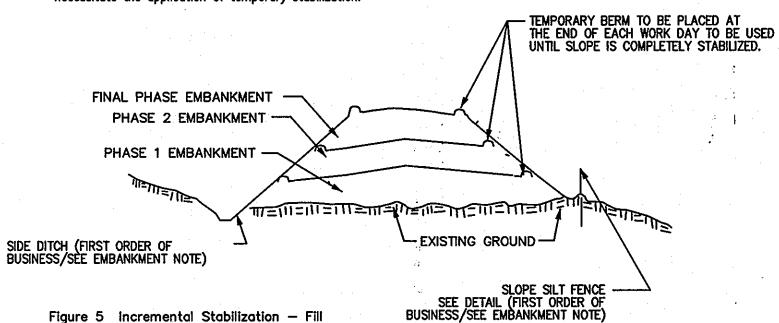


Figure 4 Incremental Stabilization - Cut

- J. Incremental Stabilization of Embankments Fill Slopes
- i. Embankments shall be constructed in lifts as prescribed on the plans.
- ii. Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches 15' or when the grading operation ceases as prescribed in the plans.
- iii. At the end of each day, temporary berms and pipe slope drains should be constructed along the top edge of the embankment to intercept surface runoff and convey it down the slope in a non-erosive manner to a sediment trapping device.
- iv. Construction Sequence: Refer to Figure 5 (below).
- a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct Slope Silt Fence on low side of fill as shown in Figure 5, unless other methods shown on the plans address this area.
- b. Place phase 1 embankment, dress, and stabilize.
- c. Place phase 2 embankment, dress, and stabilize.
- d. Place final phase embankment, dress, and stabilize. Overseed previously seeded areas as

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



Section II - Temporary Seeding

Vegetation — annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

- A. Seed Mixtures Temporary Seeding
- i. Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) 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 plans and completed, then Table 26 must be
- ii. For sites having soils tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soils tests are

Section III - Permanent Seeding

Seeding grass and legumes to establish ground cover for a minimum period of one year on disturbed areas generally receiving low maintenance.

- A. Seed Mixtures Permanent Seeding
- i. Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Permanent Seeding Summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting pecifications for exceptional sites such as shorelines, streambanks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA—SCS Technical Field Office Guide, Section 342 — Critical Area Planting. For special lawn maintenance areas, see Sections IV Sod and Turfgrass.
- ii. For sites having disturbed area over 5 acres, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written in
- iii. For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 1/2lbs/ 1000 sq. ft. (150 lbs / ac), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

Section IV — Sod: To provide quick cover on disturbed areas (2:1 grade or flatter)

- A. General Specifications
- i. Class of turfgrass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman and inspector.
- ii. Sod shall be machine cut at a uniform soil thickness of 7, plus or minus 4, at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the suppliers width and length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pads and torn or uneven ends will not be
- iii. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the
- iv. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival
- v. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its
- i. During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.
- ii. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted light in order to prevent voids which would cause air drying of the roots.
- iii. Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.
- iv. Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping and irrigating for any piece of sod shall be completed within eight hours.
- i. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4". Watering
- should be done during the heat of the day to prevent wilting ii. After the first week, sod watering is required as necessary to maintain adequate moisture
- iii. The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2" and 3" unless otherwise specified.

Section IV - Turfgrass Establishment

Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance. Areas to receive seed shall be tilled by disking or other approved methods to a depth of 2 to 4 inches, leveled and raked to prepare a proper seedbed. Stones and debris over 1–1/2 inches in diameter shall be removed. The resulting seedbed shall be in such condition that future mowing of grasses will pose no difficulty.

Note: 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, provide a reliable means of consumer protection and assure a pure genetic line.

- A. Turfgrass Mixtures
- i. Kentucky Bluegrass Full sun mixture For use in areas that receive intensive management. Irrigation required in the areas of Central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds/1000 square feet. A minimum of three bluegrass cultivars should be chosen ranging from a minimum of 10% to a maximum of 35% of the mixture by weight.
- ii. Kentucky Bluegrass/Perennial Rye Full sun mixture For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture/1000 square feet. A minimum of three Kentucky Bluegrass Cultivars must be chosen, with each cultivar ranging from 10% to 35% of the mixture by weight.
- iii. Tall Fescue/Kentucky Bluegrass Full sun mixture For use in drought—prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: certified Tall Fescue Cultivars 95 100%; certified Kentucky Bluegrass Cultivars 0 5%. Seeding rate: 5 to 8 pounds/1000 square feet. One or more cultivars may be blended.
- iv. Kentucky Bluegrass/Fine Fescue Shade Mixture For use in areas with shade in bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: certified Kentucky Bluegrass Cultivars 30 40% and certified Fine Fescue 60 70%. Seeding rate: 1.5 to 3.0 pounds/1000 square feet. A minimum of three Kentucky Bluegrass Cultivars must be chosen, with each cultivar ranging from a minimum of 10% to a maximum of 35% of the

Note: Turfgrass varieties should be selected from those listed in the most current University of Maryland Publication, Agronomy Mimeo #77, Turfgrass Cultivar Recommendations for

- B. Ideal Times of Seeding
- Western Maryland: March 15 to June 1 and August 1 to October 1 (Hardiness Zones 5b, 6a) Central Maryland: March, 1 to May 15 and August 15 to October 15 (Hardiness Zones — 6b) Southern Maryland and Eastern Shore: March 1 to May 15 and August 15 to October 15 (Hardiness Zones — 7a, 7b)

- C. Irrigation If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2"-1" every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season in abnormally dry or hot seasons
- D. Repairs and Maintenance
- inspect all seeded areas for failures and make necessary repairs, replacements, and reseedings within the planting season.
- i. Once the vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.
- ii. If the stand provides less than 40% ground coverage, re—establish following original lime, fertilizer, seedbed preparation and seeding recommendations.
- iii. If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing
- iv. Maintenance fertilizer rates for permanent seedings are shown in Table 24. For lawns and other medium to high maintenance turfgrass areas, refer to the University of Maryland publication, Lawn Care in Maryland, Bulletin No. 171.

TEMPORARY SEEDING SUMMARY

	Seed Mixture (Fi	Fertilizer Rate	Lime			
No.	Species	Application Rate(lb/ac)	Seeding Dates	Seeding Depths	(10-10-10)	Rate
1	RYE PLUS FOXTAIL MILLET	150	3/1-4/30 5/1-8/14 8/15-11/15	1"	600 lb/oc (15 lb/ 1000 sf)	2 tons/ac (100 lb/ 1000 sf)
2	ANNUAL RYEGRASS	50	3/1-4/30 8/15-11/1	1/4° 10 1/2°		
3	WEEPING LOVEGRASS	4	5/1-8/14	1/4" TO 1/2"		

PERMANENT SEEDING SUMMARY

	Seed Mixture (For Hardiness Zone 6b) (From Table 25)					Fertilizer Rate (10-20-20)		
No.	Species	Applic. Rate	ee Seeding Dates	Seeding Depthe	N	P205	K20	Rate
↔MIX 1	TALL FESCUE (75%) CANADA BLUEGRASS (10%) KENTUCKY BLUEGRASS(10%) REDTOP (5%)	150 LB/AC	3/1-5/15 8/15-10/15	1/4° TO 1/2°				
MIX 7	TALL FESCUE (83%) WEEPING LOVEGRASS (2%) PLUS SERECIA (2%) LESPEDEZA (15%)	110 LB/AC 3 LB/AC 20 LB/AC	3/1-5/15 5/16~8/14 8/15-10/15	1/4° 10 1/2°	90 lb/oc (2.0 lb/ 1000 sf)	Ib/ (4.0 lb/	175 lb/oc (4.0 lb/ 1000 sf)	2 tons/ac (100 lb/ 1000 sf)
••MiX 8	REED CANARYGRASS (75%) REDTOP (6%) PLUS BIROSFOOT TREEFOIL (19%)	40 1B/AC 3 LB/AC 10 LB/AC	3/1-5/15 8/15-10/15	1/4" TO 1/2"				

FOR TH PERIOD 5/16 TO 8/14 ADD WEEPING LOVEGRASS (2 Ibe/ACRE TO THE PERIMENANT SEEDING MIXTURE

DEVELOPER'S CERTIFICATION

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4 de SIGNATURE OF DEVELOPER

DISTRICT. "

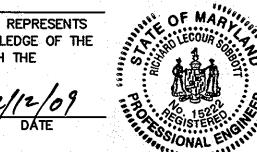
PAUL GERULATIS

ENGINEER'S CERTIFICATION

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE

REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. SIGNATURE OF ENGINEER
THARD L. SORPOT

MD NO. 15222



APPROVED: DEPARTMENT OF PLANNING AND ZONING 22009 1/05

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS - NATURAL RESOURCES CONSERVATION SERVICE THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

EROSION AND SEDIMENT CONTROL NOTES



CONSULTING ENGINEERS AND PLANNERS 8950 Rt. 108 E., Suite 229, Columbia, MD 21045 Phone: 410-995-0090 Fax: 410-992-7038

LOTS F-1 TO F-137

FILE NAME: H:\PROJECTS\Civi\08-215-01 WoodCreek\S10_ES-NOTES.dwg LAYOUT NAME: STORMWATER MANAGEMENT AND EROSION & SEDIMENT CONTROL DETAILS PLOTTED: Monday, January 12, 2009 - 2:54pm

A RESUBDIVISION OF PARCEL

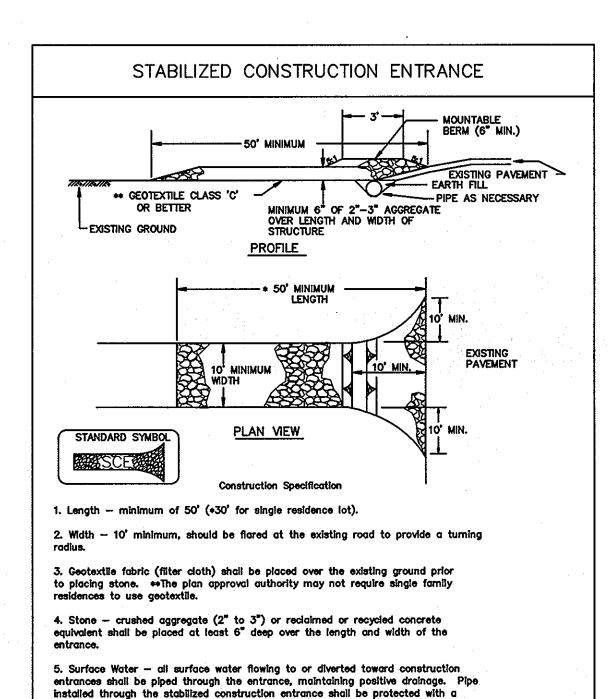
COLUMBIA - VILLAGE OF LONG REACH

6TH ELECTION DISTRICT HOWARD COUNTY, MD

WOODCREEK H.O.A SHEET 15 OF 15 06-11-001 JAN. 2009 PPROVED: RLS

SEDIMENT CONTROL NOTES

ADDITIONAL SHEET FOR EROSION AND



mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has

to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized

according to the amount of runoff to be conveyed. A 6" minimum will be required

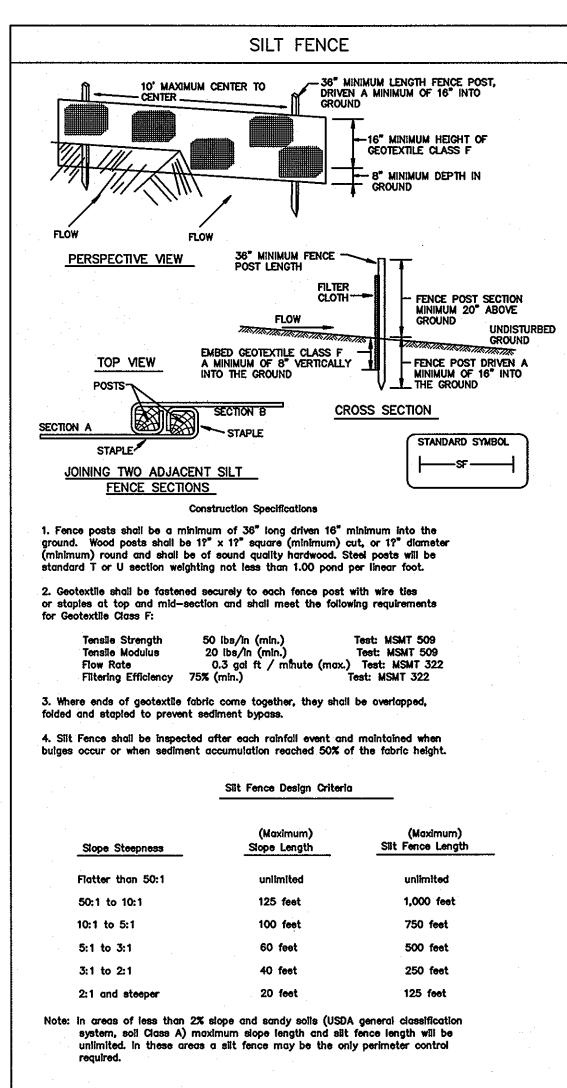
6. Location — A stabilized construction entrance shall be located at every point

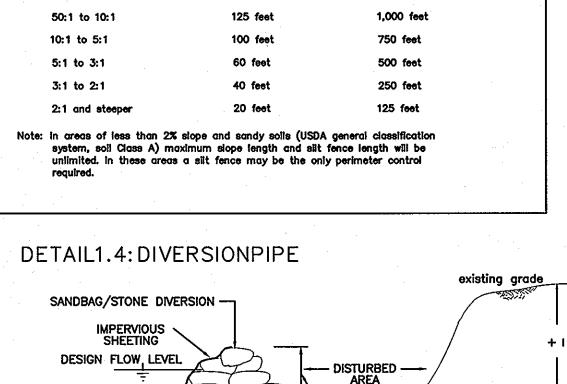
where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance

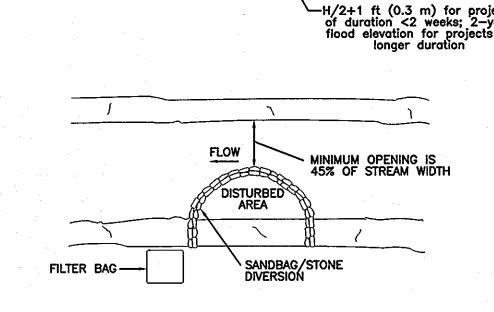
REVIEWED FOR HOWARD SCD AND MEETS TECHN

THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT

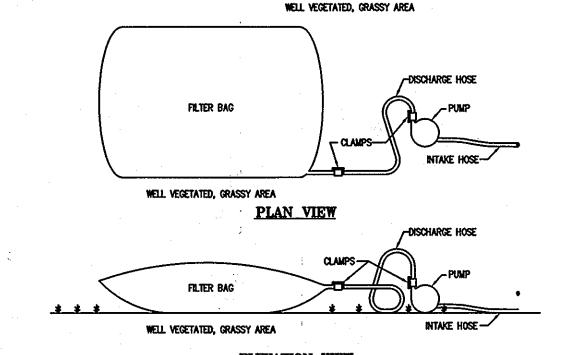
HOWARD SOIL CONSERVATION DISTRICT.







DIVERSION PIPE DETAILS



GENERAL NOTES

ELEVATION VIEW

- 1. FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE WITH A MINIMUM SURFACE AREA OF 225 ft PER SIDE.
- 2. ALL STRUCTURAL SEAMS SHALL BE SEWN WITH A DOUBLE STITCH USING A DOUBLE NEEDLE MACHINE WITH HIGH STRENGTH THREAD. SEAM STRENGTH SHALL WITHSTAND 100 LB/IN USING ASTM D-4884 TEST METHOD.
- 3. FILTER BAG SHALL HAVE A NOZZLE L'ARGE ENOUGH TO ACCOMMODATE A 4º DIAMETER PUMP DISCHARGE HOSE.
- NOZZIE SHALL BE SEALED TIGHTLY AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE TO PREVENT UNFILTERED WATER FROM ESCAPING. 5. FILTER BAG SHALL BE PLACED ON A LEVEL OR GENTLY SLOPING (5% MAXIMUM) VEGETATED AREA.
- Filter Bag shall be place upon a base of straw bales or 3° of clean stone to promote dewatering through bottom surface of the filter bag.
- PUMPING RATE SHALL BE CONTROLLED TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG. AS THE BAG BECOMES FILLED WITH SEDIMENT THE PUMPING RATE SHALL BE REDUCED.
- THE FILTER BAG SHALL BE REMOVED AND DISPOSED OF AFTER IT IS FILLED WITH SEDIMENT AND HAS DEWATERED. THE DEWATERED SEDIMENT FROM THE BAG SHALL BE SPREAD IN AN UPLAND AREA AND STABILIZED WITHIN 24 HOURS.
- THE GEOTEXTILE FABRIC SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS WITH THE PROPERTIES DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:

EXCHT	10oz/yd	ASTM D-377
RAD TENSILE	210 lbs	ASTM D-463
UNCTURE	150 lbs	ASTM D-488
LOW RATE	70 gai/min/ft	ASTM D-449
ERMITIVITY (sec's)	1.3	ASTM D-499
IV RESISTANCE	70%	ASTM D-439
APPARENT OPENING	40-80	ASTM D-475
SIZE (ADS)	4	

PUMPED WATER FILTER BAG DETAIL

STANDARD SEDIMENT CONTROL NOTES

- 1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410) 313-1855.
- 2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
- 3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTUBANCE, PERMANENT OR OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMETN 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 PERIMETERIN 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 SEEDING (SEC. 51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- 6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

- 7. SITE ANALYSIS: TOTAL AREA OF SITE 13.640 ACRES AREA DISTURBED 0.285 ACRES AREA TO BE ROOFED OR PAVED 0 ACRES AREA TO BE VEGETATIVELY STABILIZED 0.270 ACRES 15 CU. YDS. TOTAL CUT TOTAL FILL O CU. YDS. OFFSITE WASTE/BORROW AREA LOCATION: N/A
- 8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ONT HE SAME DAY OF DISTURBANCE.
- 9. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- 10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF THE 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 SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.

DEVELOPER'S CERTIFICATION

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

SIGNATURE OF DEVELOPER

PAUL GERULATIS

ENGINEER'S CERTIFICATION

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SIGNATURE OF ENGINEER RICHARD L. SOBBOTT, P.E.

MD NO. 15222

COLUMBIA - VILLAGE OF LONG REACH

A RESUBDIVISION OF PARCEL "F"



EROSION AND SEDIMENT CONTROL NOTES AND DETAILS



CONSULTING ENGINEERS AND PLANNERS

8950 Rt. 108 E., Suite 229, Columbia, MD 21045

Phone: 410-995-0090 Fax: 410-992-7038

SECTION 1 - AREA 1

LOTS F-1 TO F-137

SHEET 14 OF 15 JAN. 2009 06-11-001 RLS

WOODCREEK H.O.A.

1. ADDITIONAL SHEET FOR EROSION AND

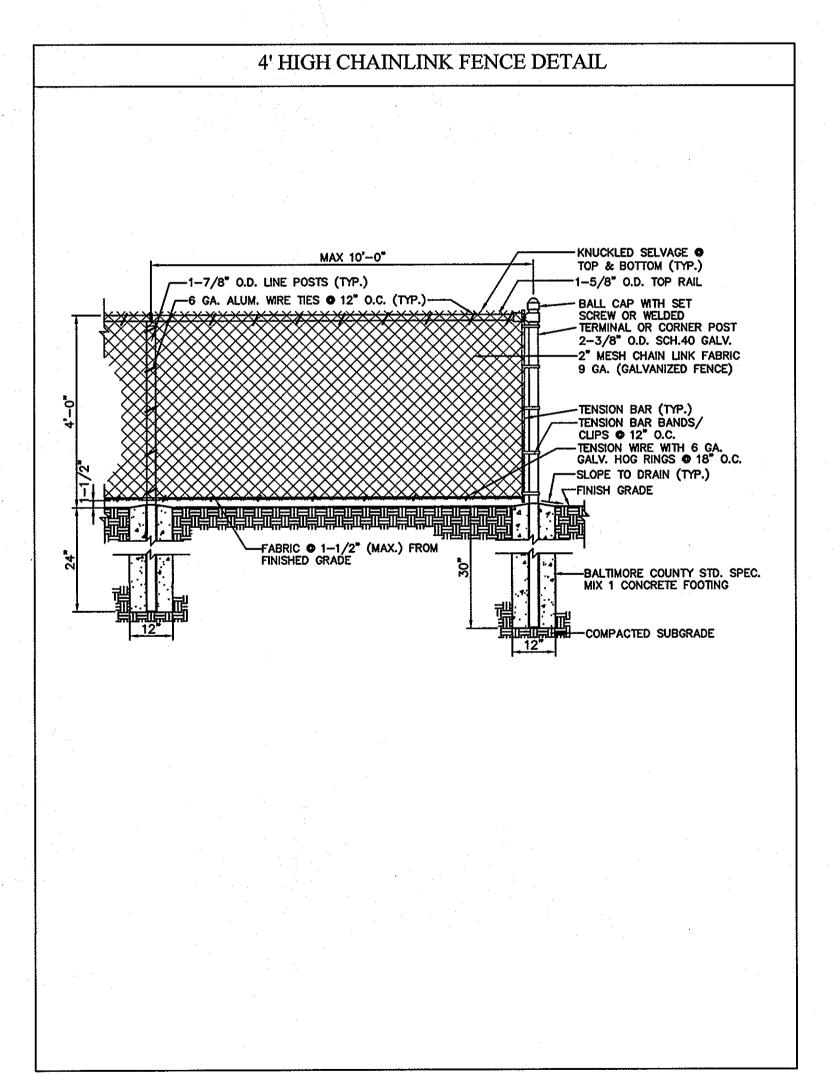
SEDIMENT CONTROL NOTES & DETAILS

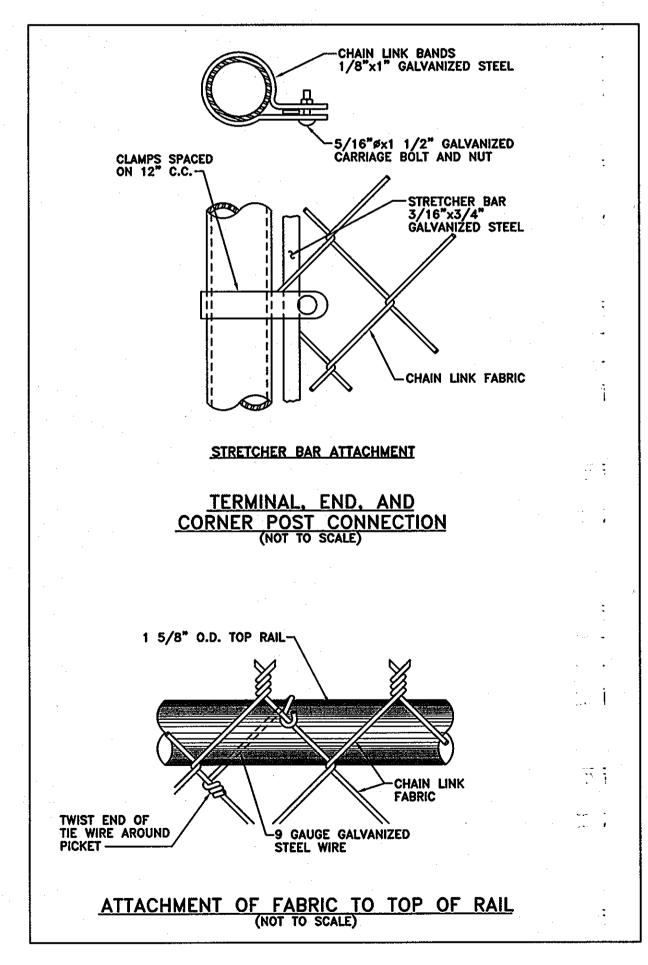
6TH ELECTION DISTRICT HOWARD COUNTY, MD

APPROVED: DEPARTMENT OF PLANNING AND ZONING

FILE NAME: H:\PROJECTS\Civi\08-215-01 WoodCreek\S9_ES-DETAILS.dwg LAYOUT NAME: Layout PLOTTED: Monday, January 12, 2009 - 2:53pm

440 440 435 430 425 420 420 415 415 413.5 405 400 0+20 1+20 1+40 1+60 1+80 2+00 0+00 0+60 0+80 1+00 0+40





PIPE DIVERSION PROFILE SCALE: HORIZ. 1" = 10"VERT. 1" = 5'

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SIGNATURE OF ENGINEER RICHARD L. SOBBOTT, P.E. MD NO. 15222

HOWARD COUNTY, MD

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

APPROVED: DEPARTMENT OF PLANNING AND ZONING

EROSION & SEDIMENT CONTROL PROFILE

6TH ELECTION DISTRICT

SECTION 1 - AREA 1

LOTS F-1 TO F-137

SHEET 13 OF 15 06-11-001 JAN. 2009 RLS AS SHOWN

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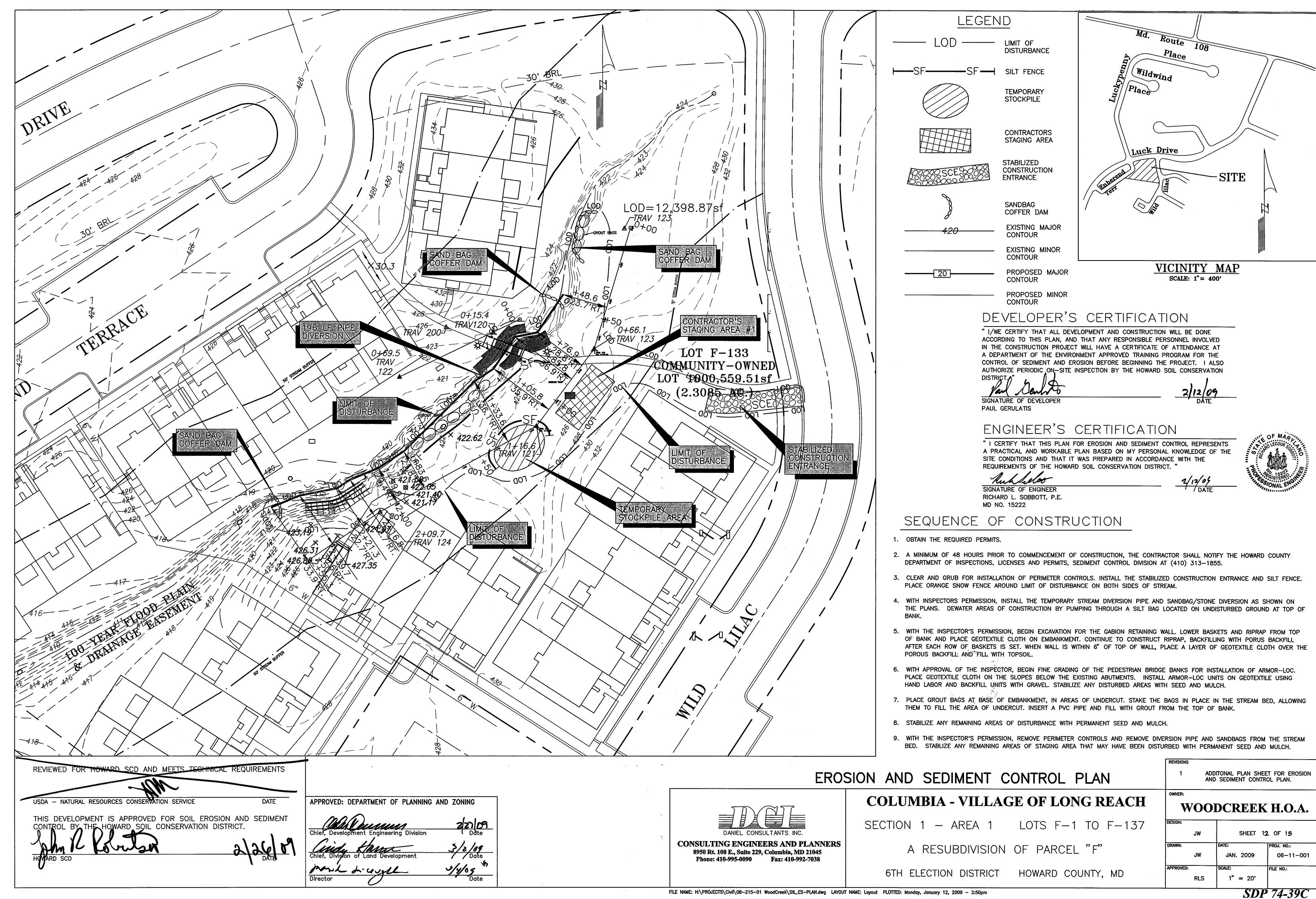
SDP 74-39C

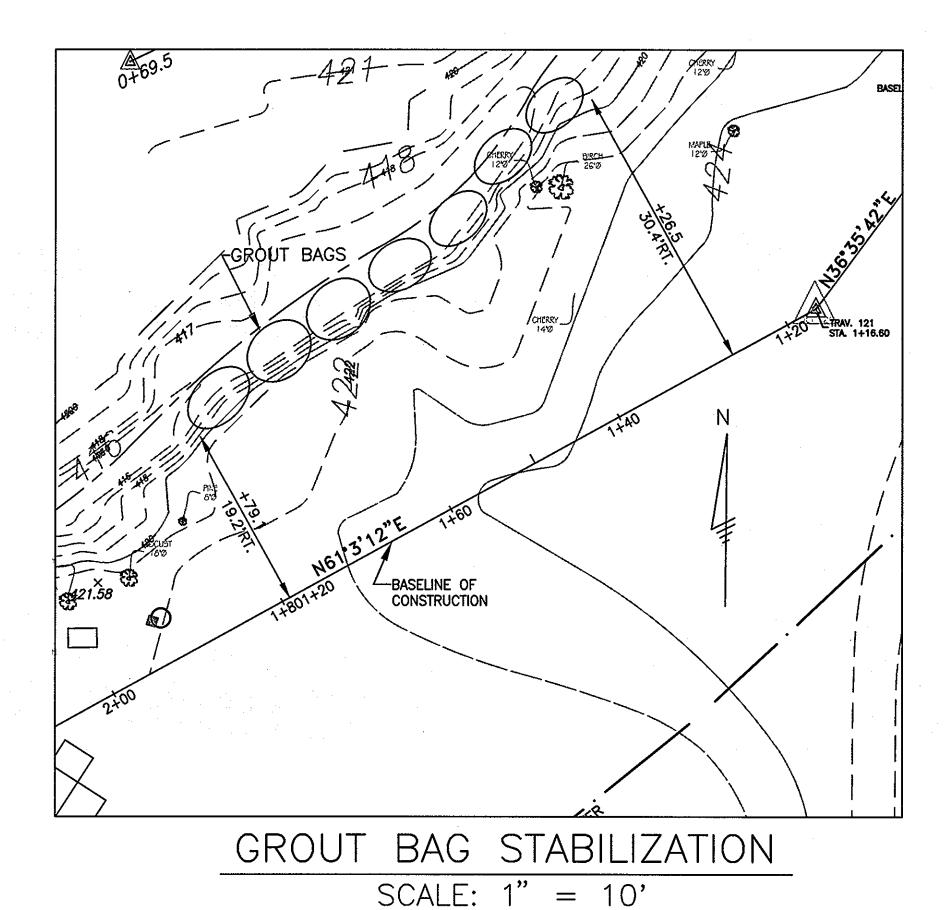
USDA - NATURAL RESOURCES CONSERVATION SERVICE

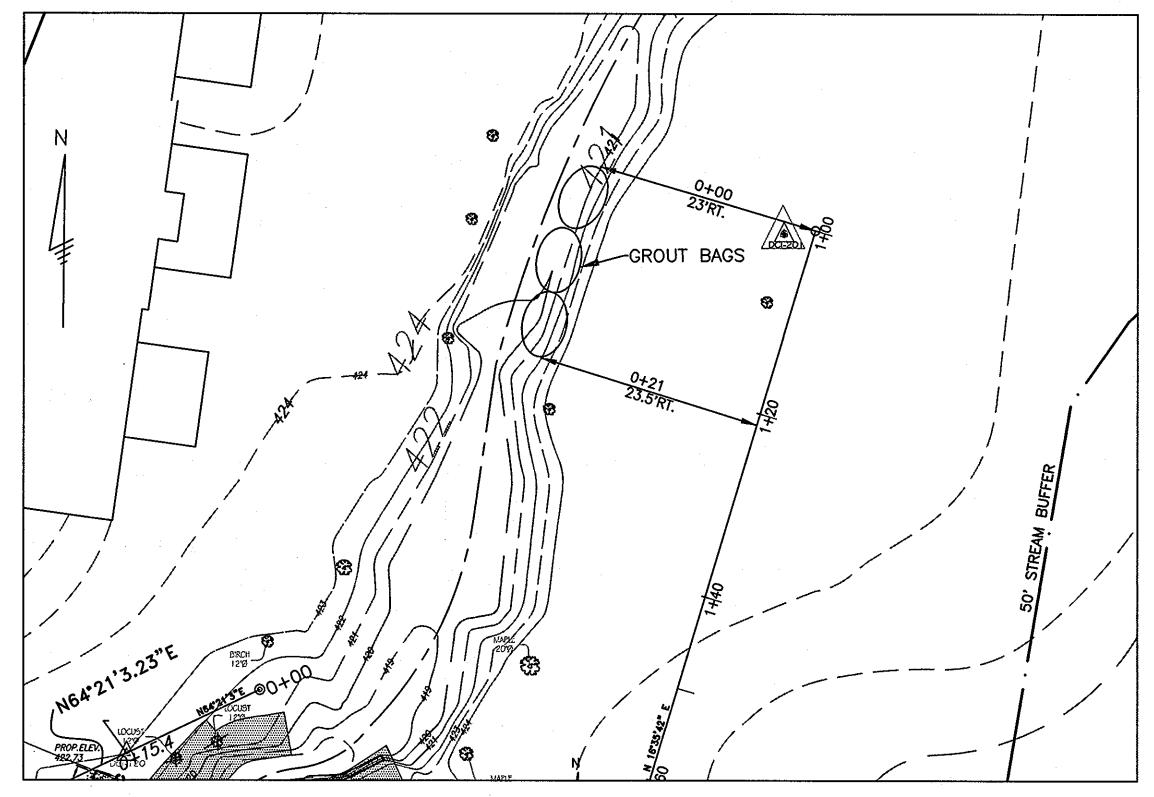
COLUMBIA - VILLAGE OF LONG REACH

ADDITIONAL SHEET FOR STREAM DIVERSION PIPE PROFILE, SEQUENCE OF CONSTRUCTION AND SEDIMENT CONTROL NOTES. WOODCREEK H.O.A.

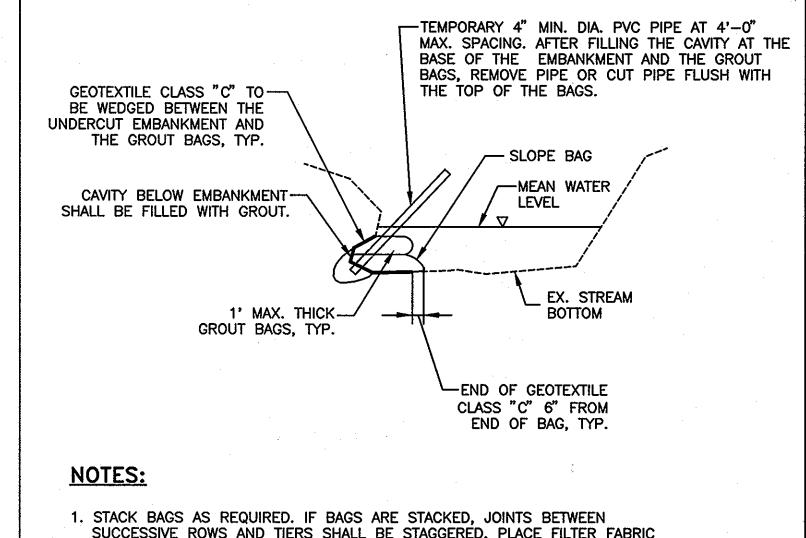
A RESUBDIVISION OF PARCEL "F"







GROUT BAG STABILIZATION SCALE: 1" = 10



- SUCCESSIVE ROWS AND TIERS SHALL BE STAGGERED. PLACE FILTER FABRIC UNDER ALL GROUT BAGS INCLUDING A SINGLE LAYER OF BAGS.
- 2. PLACE FILTER FABRIC UNDER ALL GROUT BAGS, INCLUDING A SINGLE LAYER OF BAGS. 3. IF POSSIBLE, BAGS SHOULD BE PLACED SO THAT THE TOP OF THE BAG IS
- AT OR BELOW THE STREAM BOTTOM. 4. DO NOT TIE BAGS TOGETHER WITH REINFORCING STEEL OR BY ANY OTHER MEANS. THIS WILL ALLOW THE BAGS TO SETTLE TO A STATE OF EQUILIBRIUM INDIVIDUALLY.
- 5. ALL GROUT BAGS SHOULD BE NO LARGER THAN 3' WIDE, 1' THICK AND 4' LONG, MAX...
- 6. MAKE SURE NO GAPS FORM BETWEEN THE BAGS AND THE FACE OF THE SCOURED BANK
- 7. DO NOT OVERFILL THE BAGS OR ALLOW GROUT TO BE POURED BETWEEN THE SEAMS OF TWO BAGS.

GROUT BAG INSTALLATION DETAIL

NOT TO SCALE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENT

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

DATE

USDA - NATURAL RESOURCES CONSERVATION SERVICE

all Demun f, Division of Land Development

GENERAL GROUT BAG INSTALLATION NOTES:

- 1. DEPENDING ON THE DEPTH OF UNDERMINING, PLACE ONE GROUT BAG OR STACK SEVERAL LAYERS OF GROUT BAGS ALONG THE FACE OF THE UNDERMINED EMBANKMENT. IF BAGS ARE STACKED, BAGS IN SUCCESSIVE ROWS AND TIERS SHALL BE STAGGERED.
- 2. ONCE THE VENT/FILL PIPES HAVE BEEN INSTALLED AND THE BAGS ARE FILLED, PUMP GROUT INTO THE UNDERMINED AREA UNTIL THE MATERIAL APPEARS IN THE TOP OF ADJACENT VENT PIPES. CUT OR REMOVE THE VENT/FILL PIPES FLUSH WITH THE TOP OF THE BAGS AFTER THE PUMPING OPERATION IS COMPLETE.
- 3. ADEQUATE VENTING OF THE WATER TO BE DISPLACED IN THE UNDERMINED AREA IS IMPORTANT. THE WATER MUST BE ABLE TO ESCAPE WHEN IT IS DISPLACED BY THE GROUT PUMPED INTO THE CAVITY. 4' MAXIMUM SPACING OF THE VENT/FILL PIPES IS RECOMMENDED.
- 4. IT IS IMPORTANT TO KEEP THE NOZZLE BURIED IN THE GROUT DURING THE PUMPING. THIS IS TO REDUCE THE AMOUNT OF MIXING OF THE GROUT AND THE WATER TO BE DISPLACED.
- 5. IF POSSIBLE, CLEAN OUT UNSTABLE MATERIAL ALONG THE BOTTOM OF THE UNDERMINED AREA PRIOR TO FILLING WITH GROUT.

DEVELOPER'S CERTIFICATION

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SIGNATURE OF DEVELOPER

PAUL GERULATIS

ENGINEER'S CERTIFICATION

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Thebal Sole SIGNATURE OF ENGINEER RICHARD L. SOBBOTT, P.E.

MD NO. 15222

2/2/09 DATE

GROUT BAG PLAN

COLUMBIA - VILLAGE OF LONG REACH

SECTION 1 - AREA 1 LOTS F-1 TO F-137

A RESUBDIVISION OF PARCEL "F"

6TH ELECTION DISTRICT HOWARD COUNTY, MD WOODCREEK H.O.A. SHEET 11 OF 15

JAN. 2009 06-11-001 RLS AS SHOWN

ADDITIONAL DETAIL SHEET FOR THE

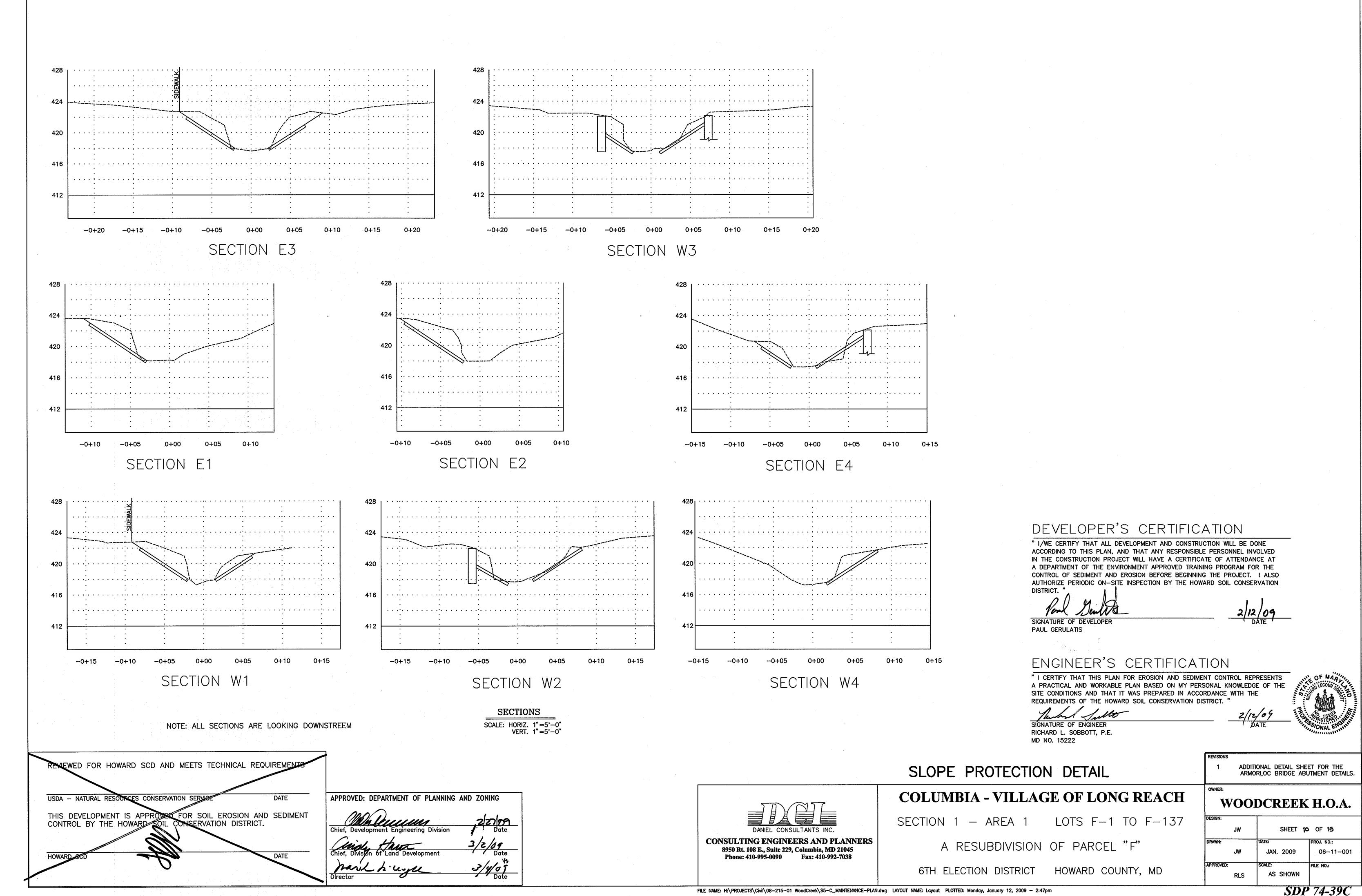
BRIDGE ABUTMENT STABILIZATION

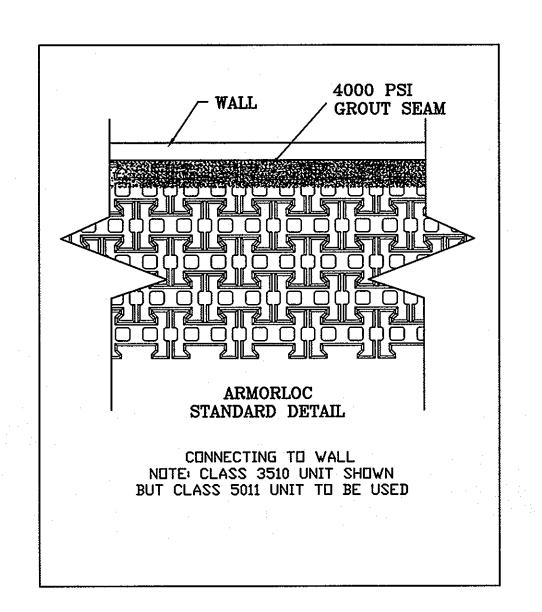
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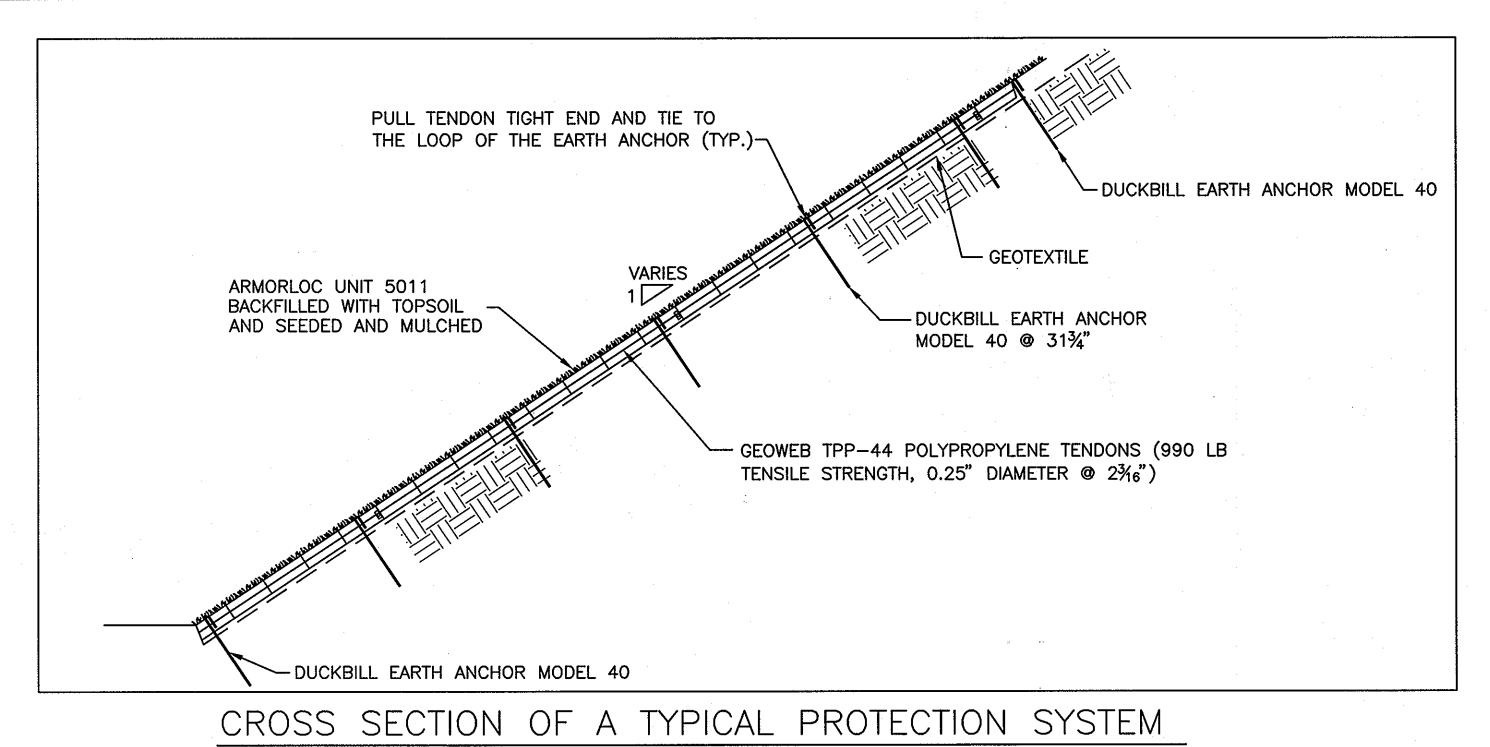
CONSULTING ENGINEERS AND PLANNERS

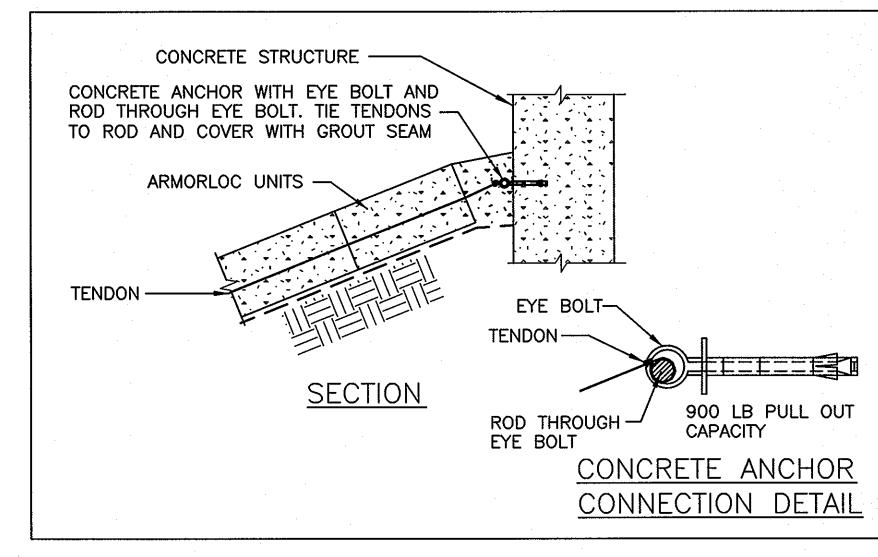
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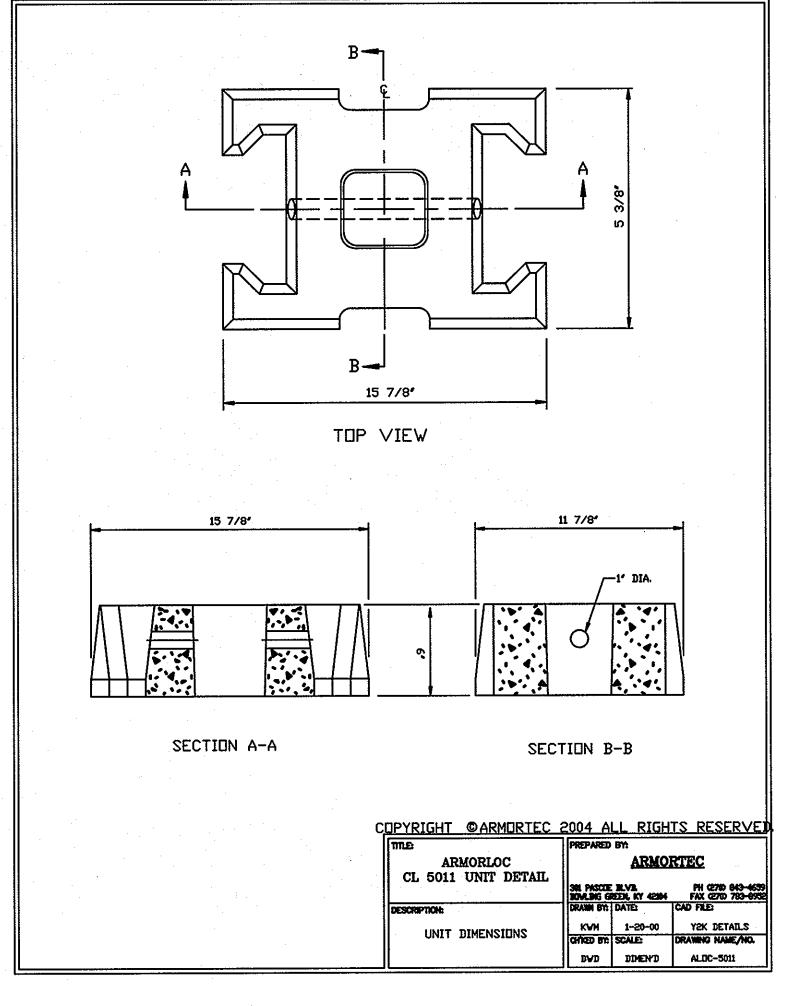


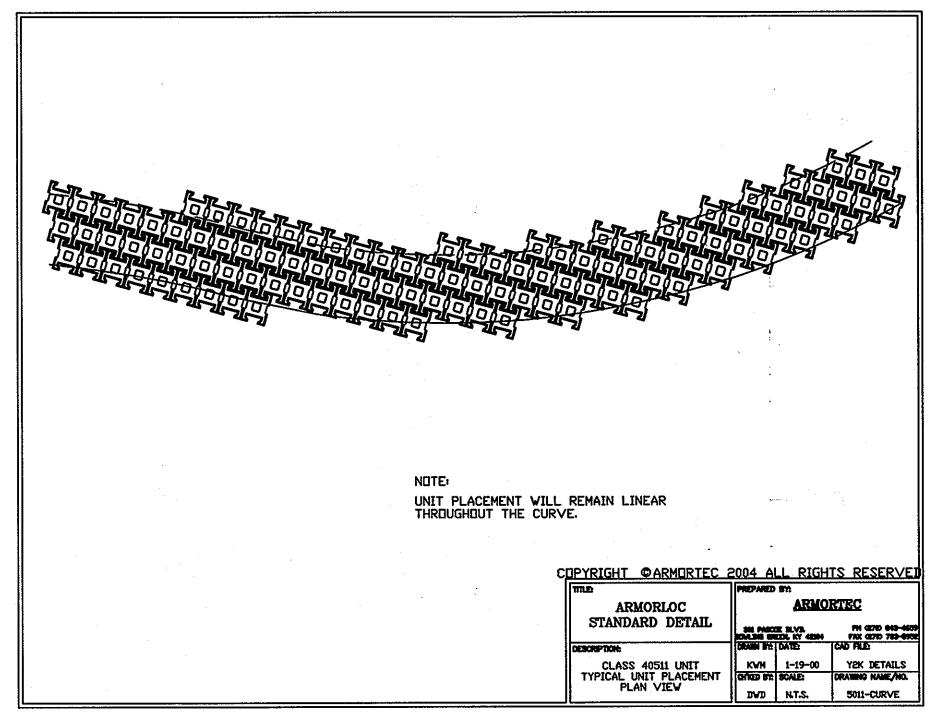






TYPICAL CONNECTION TO EXISTING STRUCTURE

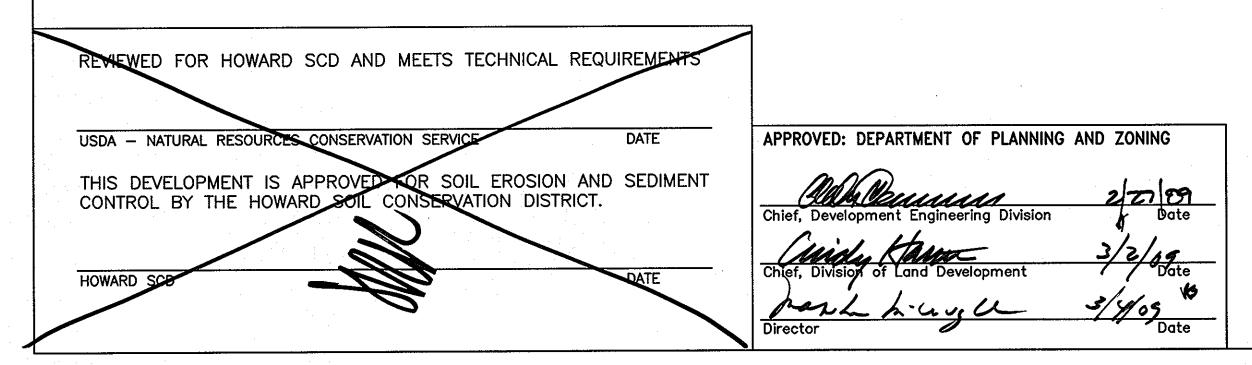






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ENGINEER'S CERTIFICATION



SLOPE PROTECTION SECTION & DETAILS

6TH ELECTION DISTRICT

CONSULTING ENGINEERS AND PLANNERS 8950 Rt. 108 E., Suite 229, Columbia, MD 21045 Phone: 410-995-0090 Fax: 410-992-7038

COLUMBIA - VILLAGE OF LONG REACH

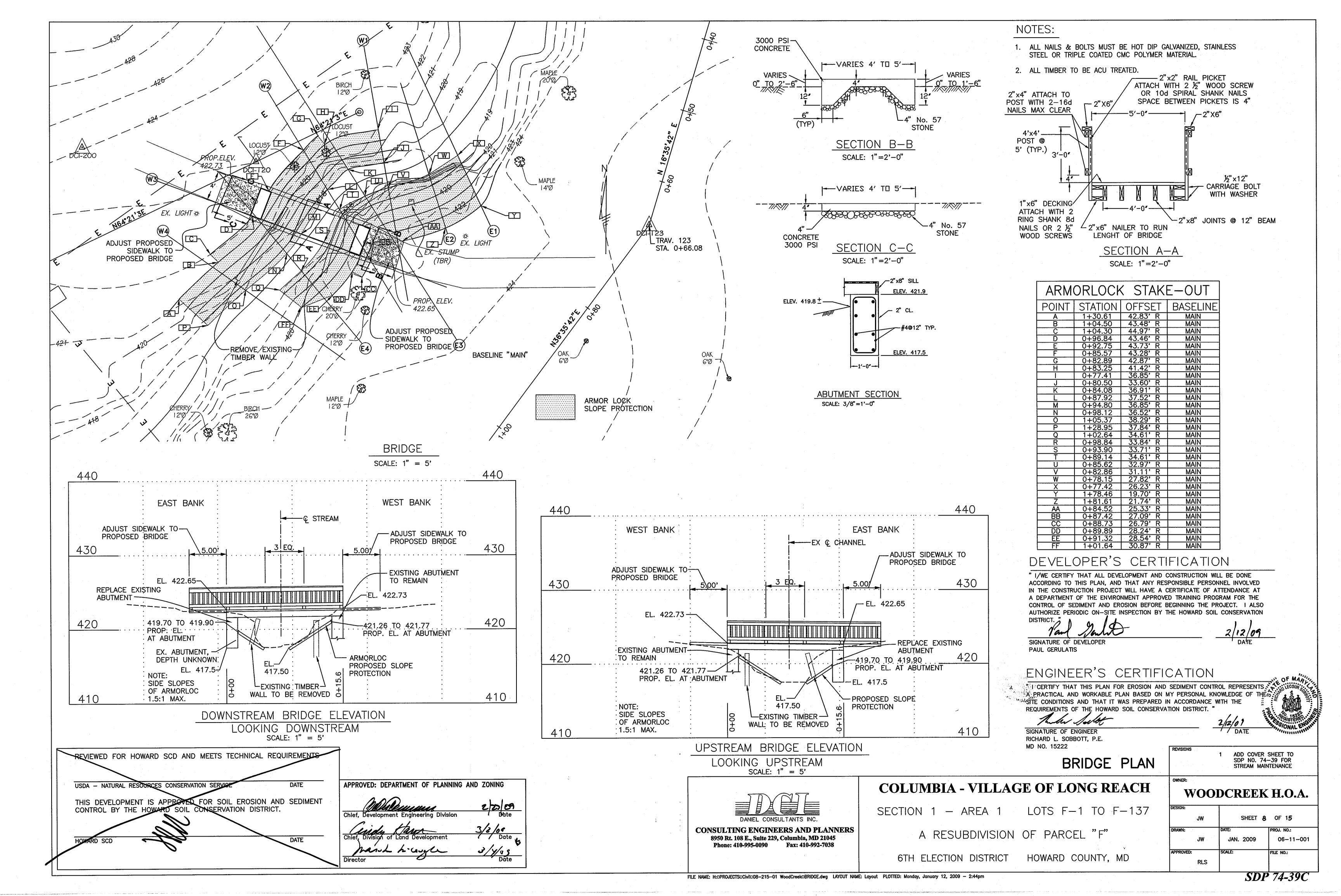
SECTION 1 - AREA 1 LOTS F-1 TO F-137

HOWARD COUNTY, MD

A RESUBDIVISION OF PARCEL "F"

ADDITIONAL SHEET FOR ARMORLOC BRIDGE ABUTMENT STABILIZATION DETAILS AND SECTIONS **WOODCREEK H.O.A.**

SHEET 9 OF 15 06-11-001 AS SHOWN



CONSTRUCTION NOTES FOR MACCAFERRI PVC COATED GABION STRUCTURES

1. PRODUCT DESCRIPTION

1.1. PVC GABIONS ARE BASKETS MANUFACTURED FROM 8X10 DOUBLE TWISTED HEXAGONAL WOVEN STEEL WIRE MESH, HEAVILY GALVANIZED THEN PVC COATED, AS PER ASTM A975-97 (FIGS. 1 - 4). GABIONS ARE FILLED WITH STONES AT THE PROJECT SITE TO FORM FLEXIBLE, PERMEABLE, MONOLITHIC STRUCTURES SUCH AS RETAINING WALLS, CHANNEL LININGS, AND WEIRS FOR EROSION CONTROL PROJECTS. THE STEEL WIRE USED IN THE MANUFACTURE OF THE GABION IS HEAVILY GALVANIZED SOFT TEMPER STEEL. THE STANDARD SPECIFICATIONS FOR MESH-WIRE ARE SHOWN IN TABLE 2. THE GABION IS DIVIDED INTO CELLS BY DIAPHRAGMS POSITIONED AT APPROXIMATELY 3 ft (0.9m) CENTERS (FIG. 2). TO REINFORCE THE STRUCTURE, ALL MESH PANEL EDGES ARE SELVEDGED WITH A WIRE HAVING A GREATER DIAMETER (TABLE 3). DIMENSIONS AND SIZES OF PVC COATED GABIONS ARE SHOWN IN TABLE 1. GABIONS SHALL BE MANUFACTURED AND SHIPPED WITH ALL COMPONENTS MECHANICALLY CONNECTED AT THE PRODUCTION FACILITY.

2. MATERIALS

- 2.1. BACKFILL MATERIAL SPECIFIED BELOW SHALL BE FREE DRAINING. BACKFILL MATERIALS SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE, AND SHALL MEET THE PHYSICAL PROPERTIES REQUIREMENTS DEFINED IN SECTION 7.1, AND SHALL BE CLEAN, FREE DRAINING CRUSHED STONE.
- COBBLES MATERIAL SHALL BE A CLEAN CRUSHED STONE OR GRANULAR FILL MEETING THE FOLLOWING **GRADATION PER ASTM D 422:**

Table 0 Rock Sizing for Gabions

Sieve Size	Percent Passing
8"	100%
4"	0 to 5%

GABION WALL UNITS SHALL BE GALVANIZED THEN PVC COATED 8x10 HEXAGONAL DOUBLE TWIST WIRE MESH TYPE AS PER ASTM A975-97.

	Table 1 Size	es for Gabior	าร	Table 2	Standa	rd Galvar	nized Mesh Wire
L=Length ft (m)	W=Width ft (m)	H=Height ft (m	# of Cells	Mesh Type	"D" in (mm	Toleranc	Wire Dia. in (mm)
6 (1.8)	3 (0.9)	3 (0.9)	29	8x10/ Galvanized + PVC	3.25 (83)	±10%	0.106 (2.70) 0.146 (3.70)
9 (2.7)	3 (0.9)	3 (0.9)	0				
12 (3.6)	3 (0.9)	3 (0.9)	0	Tak	ole 3 Sta	ndard Wi	re Diameters
4.5 (1.4)	3 (0.9)	1.5 (0.45)	4		Lacing Wire	Mesh Wire	Selvedge Wire / Preformed Stiffeners
6 (1.8)	3 (0.9)	1.5 (0.45)	1	Wire Diameter	0.087	0.106	0.134 (3.4)
12 (3.6)	3 (0.9)	1.5 (0.45)	0	Int. Ø in (mm)	(2.20)	(2.70)	
6 (1.8)	3 (0.9)	1 (0.3)	0	Wire Tolerance (±) ø in (mm)	0.004 (0.10)	0.004 (0.10)	0.004 (0.10)
9 (2.7)	3 (0.9)	1 (0.3)	0	Min. Zinc Qty. oz/ft² (g/m²)	0.70 (214)	0.80 (244)	0.85 (259)
12 (3.6)	3 (0.9)	1 (0.3)	0	Wire + PVC	0.127	0.146	0.174 (4.4)
4.5 (1.4)	3 (0.9)	3 (0.9)	9	Ext. Ø in (mm)	(3.20)	(3.70)	0.17 (4.4)

- WIRE -- ALL TESTS ON WIRE MUST BE PERFORMED PRIOR TO MANUFACTURING THE MESH. ALL WIRE SHALL COMPLY WITH ASTM A975-97. WIRE USED FOR THE MANUFACTURE OF GABIONS AND THE LACING WIRE, SHALL HAVE A MAXIMUM TENSILE STRENGTH OF 75,000 psi (515 MPa) AS PER ASTM A641/A641M-03, SOFT TEMPER STEEL.
- WOVEN WIRE MESH TYPE 8X10 -- THE MESH AND WIRE CHARACTERISTICS SHALL BE IN ACCORDANCE WITH ASTM A975-97 TABLE 1, MESH TYPE 8X10. THE NOMINAL MESH OPENING D = 3.25 in. (83 mm) (FIG. 11a & 11b). THE MINIMUM MESH PROPERTIES FOR STRENGTH AND FLEXIBILITY SHALL BE IN ACCORDANCE WITH THE FOLLOWING: MESH TENSILE STRENGTH SHALL BE 3500 lb/ft (51.1 kN/m) MINIMUM WHEN TESTED IN ACCORDANCE WITH ASTM A975-97 SECTION 13.1.1. PUNCH TEST RESISTANCE SHALL BE A MINIMUM OF 6000 lb (26.7 kN) WHEN TESTED IN COMPLIANCE WITH ASTM A975-97 SECTION 13.1.4. CONNECTION TO SELVEDGES SHALL BE 1400 lb/ft (20.4 kN/m) WHEN TESTED IN ACCORDANCE WITH ASTM A975-97.

3. FOUNDATION PREPARATION

3.1. THE FOUNDATION ON WHICH THE GABIONS ARE TO BE PLACED SHALL BE LEVEL, AND GRADED TO THE ELEVATIONS AS SHOWN ON THE PROJECT CONSTRUCTION DRAWINGS. THE FOUNDATION FOR GABIONS SHALL BE LEVEL, SMOOTH, AND FREE OF SURFACE IRREGULARITIES, LOOSE MATERIAL, AND VEGETATION, IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. APPROPRIATE MEASURES SHALL BE TAKEN FOR FILTERING AND DRAINAGE OF THE FOUNDATION, AS PER THE PROJECT SPECIFICATIONS (FILTER CLOTH, DRAIN WORKS) ETC.). GEOTEXTILES REQUIRED TO BE INSTALLED BEHIND GABION STRUCTURES SHALL COMPLY WITH THE REQUIREMENTS FOR SUBSURFACE DRAINAGE APPLICATIONS.

4. CONSTRUCTION

HOWARD SCD_

ASSEMBLY -- OPEN AND UNFOLD EACH GABION ON A FLAT, HARD SURFACE AND REMOVE ANY SHIPPING FOLDS IF NECESSARY, THIS CAN BE DONE BY PLACING THE FOLD OVER A 2" X 4" BOARD AND WALKING ALONG THE SIDES, LIFT UP THE SIDES, ENDS AND DIAPHRAGMS INTO A VERTICAL POSITION TO FORM AN OPEN BOX SHAPE (FIG. 3). CONNECT THE EDGES OF THE GABION AND DIAPHRAGMS BY USING EITHER LACING WIRE OR RING FASTENERS (FIG. 5a & 5b) THE USE OF PLIERS TO AID ASSEMBLY AND TYING OF THE UNITS USING THE LACING WIRE SUPPLIED WITH THE GABIONS IS NORMALLY RECOMMENDED.

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENT

THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT

CONSERVATION DISTRICT.

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CONTROL BY THE HOWARD SO

- FASTENING PROCEDURE -- WHEN USING LACING WIRE, CUT OFF A PIECE OF WIRE APPROXIMATELY 1.5 TIMES THE LENGTH OF THE EDGE TO BE TIED. LONGER EDGES SHALL BE JOINED BY SEVERAL LENGTHS OF WIRE. TIE WIRES SHALL BE SECURED AROUND THE SELVEDGE WIRE OR HEAVIER EDGE WIRE, WHERE PRESENT, BY LOOPING AND TWISTING THE LACING WIRE AROUND ITSELF. PROCEED TYING WITH ALTERNATE DOUBLE AND SINGLE LOOPS. DOUBLE LOOPS SHALL BE MADE AT INTERVALS NOT GREATER THAN 6 in. (150 mm). PULL BASKETS TIGHTLY TOGETHER DURING THE TYING OPERATION. THE OTHER END OF THE TIE WIRE SHALL BE SECURED BY AGAIN LOOPING AND TWISTING THE WIRE AROUND ITSELF. WHEN STEEL RING FASTENERS ARE USED. THE USE OF EITHER A MECHANICAL OR A PNEUMATIC FASTENING TOOL IS REQUIRED. SPACING OF THE RINGS SHALL BE IN ACCORDANCE WITH ASTM A975-97, TABLE 2 Minimum Strength Requirements of Mesh and Connections, IN ANY CASE, RING FASTENERS SPACING SHALL NOT EXCEED 6 in. (150 mm). RINGS SHALL BE INSTALLED AT THE END AND CENTER DIAPHRAGMS AND ALONG ALL EDGES. CARE SHALL BE TAKEN TO ENSURE THE STEEL RING FASTENER IS COMPLETELY CLOSED AFTER INSTALLATION.
- INSTALLATION AND FILLING -- GABIONS SHALL BE CONNECTED TOGETHER AND ALIGNED BEFORE FILLING THE BASKETS WITH ROCK. ROCKS FOR GABIONS MAY BE PRODUCED BY ANY SUITABLE QUARRYING METHOD, AND BY THE USE OF ANY DEVICE THAT YIELDS THE REQUIRED SIZES WITHIN THE GRADATION LIMITS CHOSEN. ROCKS SHALL BE HARD, ANGULAR TO ROUND, DURABLE AND OF SUCH QUALITY THAT THEY SHALL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING DURING THE LIFE OF THE STRUCTURE. GABION ROCKS SHALL RANGE BETWEEN 4-8 in. (100-200 mm). THE RANGE IN SIZES MAY ALLOW FOR A VARIATION OF 5% OVERSIZE AND/OR 5% UNDERSIZE ROCK, PROVIDED IT IS NOT PLACED ON THE GABION'S EXPOSED SURFACE. IN ALL CASES, THE OVERSIZE ROCK SHALL NOT BE LARGER THAN 10 in. (250 mm), AND THE UNDERSIZE ROCK SHALL NOT BE SMALLER THAN 2 in. (50 mm). DURING THE FILLING OPERATION SOME MANUAL STONE PLACEMENT IS REQUIRED TO MINIMIZE VOIDS. THE EXPOSED FACES OF VERTICAL STRUCTURES MAY BE CAREFULLY HAND PLACED TO GIVE A NEAT. FLAT. AND COMPACT APPEARANCE. THE CELLS SHALL BE FILLED IN STAGES SO THAT LOCAL DEFORMATION MAY BE AVOIDED. THAT IS, AT NO TIME, SHALL ANY CELL BE FILLED TO A DEPTH EXCEEDING 1 ft (300 mm) HIGHER THAN THE ADJOINING CELL (FIG. 14a - 14c). STIFFENERS OR CROSSTIES SHALL BE INSTALLED AS INDICATED (FIGS. 12a & 12b, 13a & 13b), FIXED AT 1/3 AND 2/3 OF THE HEIGHT FOR 3 ft OR 1m GABIONS AS THE CELL IS BEING FILLED. IN 1.5 ft (500 mm) HIGH UNITS STIFFENERS MAY BE FIXED AT THE HALF HEIGHT LEVEL. IF REQUIRED, PREFORMED CORNER STIFFENERS ARE INSTALLED AT 45° TO THE FACE/SIDE OF THE UNIT, EXTENDING AN EQUAL DISTANCE ALONG EACH SIDE BEING BRACED (APPROXIMATELY 1 ft [300 mml). WHEN MORE THAN ONE LAYER OF GABIONS IS REQUIRED. IN ORDER FOR THE INDIVIDUAL UNITS TO BECOME INCORPORATED INTO ONE CONTINUOUS STRUCTURE, THE NEXT LAYER OF GABIONS MUST BE CONNECTED TO THE LAYER UNDERNEATH AFTER THIS LAYER HAS BEEN SECURELY CLOSED (FIG. 15).
- CLOSING -- TO ALLOW FOR SETTLEMENT, LEVEL OFF THE FILL 1-1.5 in. (25-40 mm) ABOVE THE TOP OF THE MESH. FOLD THE LID DOWN AND PULL THE EDGES OF THE PANELS TO BE CONNECTED USING AN APPROPRIATE TOOL SUCH AS A LID CLOSER (FIG. 9). THE LIDS SHALL BE TIGHTLY LACED ALONG ALL EDGES, ENDS AND DIAPHRAGMS IN THE SAME MANNER AS DESCRIBED FOR ASSEMBLING UNITS (FIGS. 6a & 6b, 10a & 10b). ADJACENT LIDS MAY BE SECURELY ATTACHED SIMULTANEOUSLY. ALL END WIRES SHALLTHEN BE TURNED IN TO AVOID PROTRUSIONS.
- TESTING METHODS -- TESTING METHODS AND FREQUENCY, AND VERIFICATION OF MATERIAL SPECIFICATIONS AND COMPACTION SHALL BE THE RESPONSIBILITY OF THE OWNER'S GEOTECHNICAL ENGINEER, UNDER THE DIRECTION OF THE OWNER. THE SHEAR STRENGTH TESTING OF REINFORCED BACKFILL SHALL BE REQUIRED FOR EVERY 1000 CUBIC YARDS PLACED OR IF THE NATURE OF BACKFILL SOIL VISUALLY CHANGES

5. TECHINICAL REQUIREMENTS

- THE CONTRACTOR SHALL HAVE AN APPROVED SET OF CONSTRUCTION DRAWINGS AND CONTRACT SPECIFICATIONS ON-SITE AT ALL TIMES DURING CONSTRUCTION OF THE GABION WALL STRUCTURE.
- GABION SHALL BE PLACED AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE PROJECT DRAWING SHEETS
- TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GABION WALL. A MINIMUM FILL THICKNESS OF 6 in. (150mm) IS REQUIRED FOR OPERATION OF TRACKED VEHICLES OVER THE GABION WALL. TURNING OF TRACKED VEHICLES SHALL BE KEPT TO A MINIMUM TO PREVENT. DISPLACING THE FILL AND / OR THE GABION WALL.

6. DRAINAGE

- THE BACKFILL SURFACE SHALL BE GRADED AWAY FROM THE WALL FACE A MINIMUM OF 2 PERCENT SLOPE AND A TEMPORARY SOIL BERM SHALL BE CONSTRUCTED NEAR THE WALL CREST TO PREVENT SURFACE AND WATER RUNOFF FROM OVERTOPPING THE WALL. GRADING SHALL BE PERFORMED AT THE END OF EACH WORK DAY.
- AT THE END OF EACH WORK DAY, BACKFILL SURFACE SHALL BE COMPACTED WITH A SMOOTH WHEEL ROLLER TO MINIMIZE PONDING OF WATER AND SATURATION OF THE BACKFILL
- 6.3. THE ENGINEERING, DESIGN ANALYSIS, DETAILING AND MITIGATION OF BOTH SURFACE DRAINAGE AND SEEPAGE OF GROUNDWATER SHALL BE THE RESPONSIBILITY OF THE OWNER OR THE OWNER'S REPRESENTATIVE.
- PERMANENT SURFACE WATER DIVERSION AND / OR COLLECTION SHALL BE AS REQUIRED AND PROVIDED BY THE OWNER OR OWNER'S REPRESENTATIVE.

7. DESIGN PARAMETERS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

7.1. DESIGN OF THE GABION WALL STRUCTURE IS BASED ON THE FOLLOWING ASSUMED SOIL PARAMETERS:

Table 4 Assumed Soil Parameters

	Table 4 Assumed Con Latameters							
		EFFECTIVE FRICTION ANGLE	EFFECTIVE COHESION	MOIST UNIT WEIGHT				
-	BACKFILL SOIL	30 DEGREES	0 psf	120 pcf				
	RETAINED SOIL	30 DEGREES	0 psf	120 pcf				
	FOUNDATION SOIL	30 DEGREES	0 psf	120 pcf				

7.2. MINIMUM REQUIRED FACTOR OF SAFETY (FS):

WALL CHECKS

Table 5 Minimum Safety Factors - Wall Checks

SLIDING	1.5
INTERNAL STABILITY	1.5
OVERTURNING	2.0
BEARING CAPACITY	2.0

EXTERNAL STABILITY

Table 6 Minimum Safety Factors - External Stability

GLOBAL STABILITY	1.3	

- 7.3. TRAFFIC SURCHAR
- GROUND WATER TABLE -- GROUNDWATER / PHREATIC SURFACES NOT CONSIDERED IN WALL DESIGN. WATER SURFACE ASSUMED TO BE SUFFICIENTLY BELOW BOTTOM OF WALL AS NOT TO INFLUENCE INTERNAL AND EXTERNAL STABILITY.
- 7.5. SEISMIC LOAD!

= NONE

= 250 psf

8. SPECIAL PROVISIONS

- 8.1. THE DESIGN PRESENTED HERE IN IS BASED ON SOIL PARAMETERS, FOUNDATION CONDITIONS, GROUNDWATER CONDITION, AND LOADING STATED IN SECTION 7.0 AND SHALL BE VERIFIED BY THE OWNER OR OWNER'S REPRESENTATIVE.
- WALL ELEVATION VIEWS AND LOCATIONS AND GEOMETRY OF EXISTING STRUCTURES AND GRADE ABOVE AND BELOW THE WALLS MUST BE VERIFIED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
- MACCAFERRI, INC. ASSUMES NO LIABILITY FOR INTERPRETATION OR VERIFICATION OF SUBSURFACE CONDITIONS, SUITABILITY OF SOIL DESIGN PARAMETERS AND INTERPRETATION OF SUBSURFACE GROUNDWATER CONDITIONS.
- THE OWNER OR OWNER'S REPRESENTATIVE IS RESPONSIBLE FOR REVIEWING AND VERIFYING THAT THE ACTUAL SITE CONDITIONS ARE AS DESCRIBED IN SECTION 7.0 PRIOR TO AND DURING CONSTRUCTION. THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE ON-SITE TO ASSURE THE PROVISIONS IN THE CONSTRUCTION NOTES ARE FOLLOWED.
- IF ANY ROCK FORMATIONS AND / OR GROUNDWATER ARE ENCOUNTERED DURING CONSTRUCTION OF THIS WALL, IMMEDIATELY CONTACT THE OWNER OR OWNER'S REPRESENTATIVE.
- 8.6. ANY REVISIONS TO DESIGN PARAMETERS STATED IN SECTION 7.0 OR STRUCTURE GEOMETRY SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

DEVELOPER'S CERTIFICATION

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

SIGNATURE OF DEVELOPER PAUL GERULATIS

ENGINEER'S CERTIFICATION

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. "

SIGNATURE OF ENGINEER RICHARD L. SOBBOTT, P.E. MD NO. 15222

GABION CONSTRUCTION NOTES

COLUMBIA - VILLAGE OF LONG REACH

SECTION 1 - AREA 1 10TS F-1 TO F-137

A RESUBDIVISION OF PARCEL "F"

6TH ELECTION DISTRICT HOWARD COUNTY, MD **WOODCREEK H.O.A.** SHEET 7 OF 15 06-11-001 JAN. 2009 RLS

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FILE NAME: H:DPROJECTSDCivilD08-215-01 WoodCreekDETAILS.dwg LAYOUT NAME: GABION-NOTES PLOTTED: Monday, January 12, 2009 - 2:34pm

SDP 74-39C

ADD COVER SHEET TO SDP NO. 74-39 FOR STREAM MAINTENANCE

