

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Using vegetation as cover for barren soil to protect it from forces that cause erosion. Vegetative stabilization is 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 run-off to downstream areas, and improving wildlife resources.

DEFINITION
 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, Permanent Seeding, and Temporary Seeding for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary Soil Stockpiles, construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dams, cut and fill slopes and other areas at final grade, former stockpiles 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 and nutrients carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone. Sediment control devices must remain in place during grading, seeded preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. Site Preparation
 i. 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 areas over 5 acres.

B. Soil Amendments
 i. 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 at the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis.
 ii. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Nitrogen 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 and federal laws and shall bear the name of the manufacturer and manufacturer of the product.
 iii. Lime 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 fineness that at least 50% will pass through a #20 mesh sieve and 90-100% will pass through a #20 sieve.

C. Seeded Preparation
 i. Temporary Seeding
 a. Seeded preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment such as disc harrows or chisel plows or rippers and construction equipment. After the soil is loosened it should not be rolled or dragged smooth, but left in the rougher condition. Sloped areas (greater than 3%) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
 b. Apply fertilizer and lime as prescribed on the plans.
 ii. Permanent Seeding
 a. Minimum soil conditions required for permanent vegetative establishment:
 1. Soil pH shall be between 6.0 and 7.0.
 2. Soil shall contain less than 500 parts per million (ppm) of total phosphorus.
 3. The soil shall contain less than 40% clay, but not more than 10% silt and 50% sand.
 4. Soil shall contain 1.5% minimum organic matter by weight.
 5. Soil must contain sufficient pore space to permit adequate root penetration.
 6. If these conditions cannot be met by soil, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
 b. Areas previously graded in conformance 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 seeds to the soil. Areas not previously graded shall be scarified to a depth of 3-5" to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
 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 discing or other suitable means. Lawn areas should be marked with a spray paint or other suitable means. Final grading and shaping is not necessary for permanent seeding. Final grading and shaping is not necessary for permanent seeding.

D. Seed Specifications
 i. All seed must meet the requirements of the Maryland 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 use.
 ii. Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.
 iii. Incidental bacteria, fungi, and viruses shall not be present in seed. Incidental bacteria shall not be used later than the date indicated on the container. All seed must be stored in a cool, dry place. Use for times the seed is stored at temperatures above 75°F. can weaken bacteria and make the inoculant less effective.
 iv. Incidental weed seeds shall not be present in seed.

E. Methods of Seeding
 i. Hydroseeding - Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer, broadcast or drop seeding).
 a. If fertilizer is being applied at the time of seeding, the application rates amounts will not be reported on the seed tag. The total amount of fertilizer to be applied is 200 lbs/acre (200 lbs/acre 200 lbs/acre 200 lbs/acre).
 b. Lime - use only ground agricultural limestone. Use 1 to 2 tons per acre may be applied by hydroseeding. Normally, not more than 2 tons are applied by hydroseeding at any one time.
 c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
 ii. Dry Seeding - Includes use of conventional drop or broadcast spreaders.
 a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the plans.
 b. Where the seed is to be applied to a slope, the seed shall be applied to the slope and shall then be rolled with a weighted roller to provide good seed to soil contact.
 c. Apply half the seeding rate in each direction.
 iii. Drill or Cultivator Seeding - Includes use of drill and cultivator.
 a. Cultivating seeders are required to bury the seed in such a fashion as to provide at least 1/4" of soil covering. Seeding must be firm after planting.
 b. Where practical, seed should be applied in two directions perpendicular to each other.

F. Mulch Specifications (in order of preference)
 i. Straw shall consist of thoroughly threshed wheat, rice or soft straw, reasonable bright in color, and shall be as specified in the Maryland Seed Law.
 ii. Wood cellulose fiber mulch (WCFM) shall be:
 a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical form.
 b. WCFM shall be dried green or contain a green dye in the package that will provide to degrade the color to facilitate visual inspection of the uniform spread slurry.
 c. WCFM including dye shall contain no germination or growth inhibiting factors.
 d. WCFM 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 batter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil until the growth of the grass seedlings.
 e. WCFM material shall contain no elements or compounds at concentration levels that will be harmful to the environment.
 f. WCFM must conform to the following physical requirements: fiber length to be between 1/2" and 3/4"; maximum dry weight of 100 lbs per 100 gallons; ash content of 1% maximum and water holding capacity of 90% minimum.
 iii. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.
 iv. If grading is required outside of the seeding season, mulch 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.

G. Seeding Rates
 i. 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" which applied shall achieve a uniform depth of 1/4" of soil covering. Seeding must be firm after planting.
 ii. Wood cellulose fiber mulch shall be mixed with water and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.
 iii. Securing Straw Mulch (Muck Anchoring) - Muck 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:
 a. Muck anchoring tool is a tractor drawn implement designed to punch and anchor muck into the soil surface.
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 iv. Application of liquid binders shall be heavier at the edges where wind catches muck, such as in gullies and valleys, and lighter in the center of the area. Synthetic binders, such as Acrylic ULR (Urethane), DCA-70 (Polyurethane) or Terra Tax (Epoxy) may be used at rates recommended by the manufacturer to anchor muck.
 v. Lightweight plastic mulch may be stapled over the muck according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

H. Seeding Rates
 i. A minimum of 40 hours notice must be given to the HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSING AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (SDP-0220).
 ii. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
 iii. FOLLOWING INITIAL SOIL DISTURBANCE OR DE-DISTURBANCE, PERMIT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN 30 CALENDAR DAYS FOR ALL PERMITTED AREAS.
 iv. PERMITS FOR ALL PERMITTED AREAS SHALL BE COMPLETED WITHIN 14 DAYS AS TO ALL OTHER DISTURBED AREAS.
 v. ALL DISTURBED AREAS MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 21, CHAPTER 15 OF THE MARYLAND STATE COMPACTION MANUAL, SLOPE DRAINAGE.
 vi. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMITS AND TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER CELEBRATION AND ESTABLISHMENT OF GRASSES.
 vii. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PROVISION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

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PERMANENT SEEDING NOTES
 ALL DISTURBED AREAS SHALL BE STABILIZED AS FOLLOWS:
 SEEDING PREPARATION:
 LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING.
 SOIL AMENDMENTS:
 APPLY TWO TONS PER ACRE DOLOMITIC LIMESTONE (92 LB/1,000 SQ FT) AND 500 LBS PER ACRE 0-20-20 FERTILIZER (14 LB/1,000 SQ FT) BEFORE SEEDING (MAY OR MAY NOT UPPER THREE INCHES OF SOIL - A TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LB/1,000 SQ FT) AND 500 LBS PER ACRE (15 LB/1,000 SQ FT) OF 10-20-20 FERTILIZER.

TEMPORARY SEEDING NOTES
 OPEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING IF NOT PREVIOUSLY LOOSENED.
 SOIL AMENDMENTS:
 APPLY 500 LBS PER ACRE 10-10-10 FERTILIZER (14 LB/1,000 SQ FT).
 SEEDING:
 FOR THE PERIODS MARCH 1 THROUGH APRIL 30, AND AUGUST 15 THROUGH OCTOBER 15, SEED WITH 100 LBS PER ACRE (2.3 LB/1,000 SQ FT) OF KENTUCKY 31 TALL FESCUE FOR THE PERIOD MAY 1 THROUGH JULY 31, SEED WITH 60 LBS/ACRE (1.4 LB/1,000 SQ FT) KENTUCKY 31 TALL FESCUE AND 2 LB/ACRE (0.05 LB/1,000 SQ FT) OF WEEDING LOVEGRASS. DURING THE PERIOD OF OCTOBER 15 THROUGH FEBRUARY 29, PROJECT SITE BY OPTION (1) - TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING OPTION (2) - USE 500 LBS/ACRE (11 LB/1,000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS ON SLOPES 6% OR GREATER USE 340 GALLONS PER ACRE (9 GAL/1,000 SQ FT) FOR ANCHORING.
 MULCHING:
 APPLY 1 TO 2 TONS PER ACRE (70 TO 90 LB/1,000 SQ FT) OF UNMULCHED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHORING TOOL OR 230 GALLONS PER ACRE (5.7 GAL/1,000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS ON SLOPES 6% FEET OR HIGHER USE 340 GALLONS PER ACRE (9 GAL/1,000 SQ FT) FOR ANCHORING.
 MAINTENANCE:
 INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.
 * FOR PUBLIC PONDS SUBSTITUTE CHEMUNG CROWNWEED AT 15 LB/ACRE AND KENTUCKY 31 TALL FESCUE AT 40 LB/ACRE AS THE SEEDING REQUIREMENT. OPTIMUM SEEDING DATE FOR THIS MIXTURE IS MARCH 1 TO APRIL 30.

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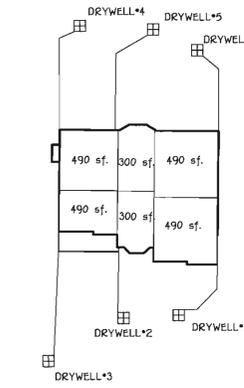
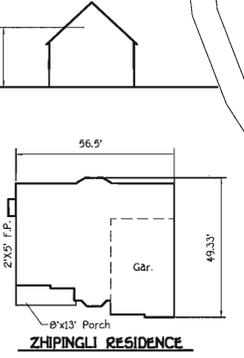
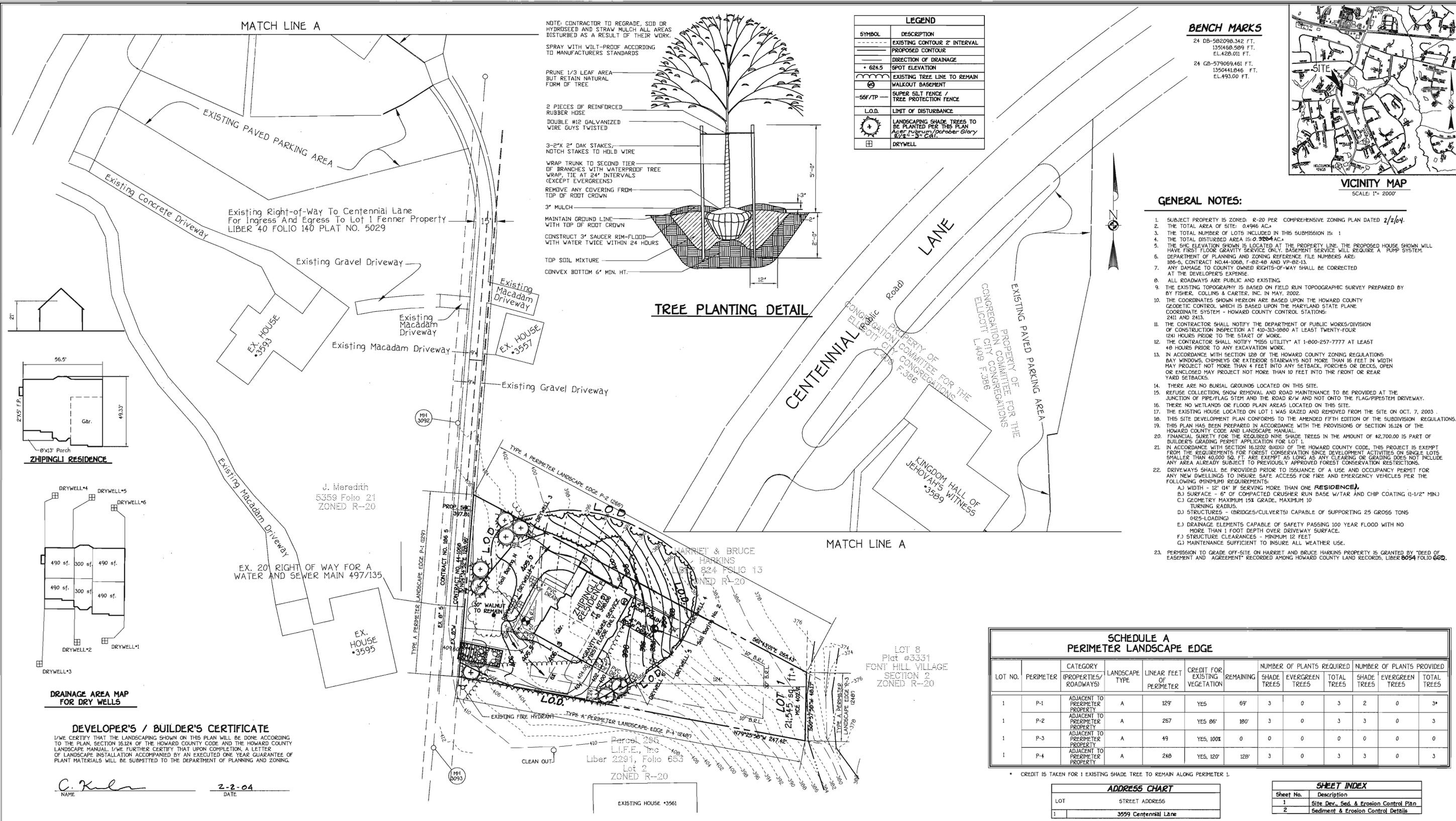
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DEVELOPER'S / BUILDER'S CERTIFICATE
 I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION,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

C. Kuhn
 NAME DATE 2-2-04

ENGINEER'S CERTIFICATE
 I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.

John R. Robertson
 Signature of Engineer DATE 2-10-04

DEVELOPER'S CERTIFICATE
 I/WE certify that all development and construction will be done according to this plan for sediment and erosion control, and that all responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of the Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District.

C. Kuhn
 Signature of Developer DATE 2-2-04

Reviewed for HOWARD SCD and meets Technical Requirements.

John M. Myers 2-10-04
 Director - Natural Resources Conservation Services

John R. Robertson 2-10-04
 Director - HOWARD SOIL CONSERVATION DISTRICT

OWNER
 DR. ZHIPINGLI
 812 Jamieson Road
 Lutherville, Md. 21093
 410-823-6015

BUILDER
 C. KNUDSEN DEVELOPMENT LLC
 8425 Baltimore National Pike
 Ellicott City, Md. 21043
 410-463-2222

SCHEDULE A PERIMETER LANDSCAPE EDGE

LOT NO.	PERIMETER	CATEGORY (PROPERTIES/ROADWAYS)	LANDSCAPE TYPE	LINEAR FEET OF PERIMETER	CREDIT FOR EXISTING VEGETATION	REMAINING	NUMBER OF PLANTS REQUIRED			NUMBER OF PLANTS PROVIDED		
							SHADE TREES	EVERGREEN TREES	TOTAL TREES	SHADE TREES	EVERGREEN TREES	TOTAL TREES
1	P-1	ADJACENT TO PERIMETER PROPERTY	A	129'	YES	69'	3	0	3	2	0	3*
1	P-2	ADJACENT TO PERIMETER PROPERTY	A	257'	YES 86'	180'	3	0	3	3	0	3
1	P-3	ADJACENT TO PERIMETER PROPERTY	A	49'	YES, 100%	0	0	0	0	0	0	0
1	P-4	ADJACENT TO PERIMETER PROPERTY	A	248'	YES, 120'	128'	3	0	3	3	0	3

* CREDIT IS TAKEN FOR 1 EXISTING SHADE TREE TO REMAIN ALONG PERIMETER 1.

ADDRESS CHART

LOT	STREET ADDRESS
1	3599 Centennial Lane

SHEET INDEX

Sheet No.	Description
1	Site Dev., Sed. & Erosion Control Plan
2	Sediment & Erosion Control Details

DESIGN BY: B.A.L.
 DRAWN BY: T.P.F.
 CHECKED BY: B.A.L.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 18272 BOLDRE MATERIAL PRZ
 ELICOTT CITY, MARYLAND 21042
 (410) 461-2222

11-2-04 Rev. grd. lot 1 to show Ex. Conditions

DATE	DESCRIPTION	REVISION BLOCK



APPROVED: DEPARTMENT OF PLANNING AND ZONING

David A. ... 2/13/04
 Director - Department of Planning and Zoning

... 2/13/04
 Chief, Department of Land Development

... 2/11/04
 Chief, Development Engineering Division

SUBDIVISION: FENNER PROPERTY SECTION/AREA: N/A LOT NO.: 1

PLAT NO.: 5029 BLOCK NO.: 7 ZONE: R-20 TAX/ZONE: 24 ELEC. DIST.: SECOND CENSUS TR.: 5023.01

WATER CODE: F-12 SEWER CODE: 5081700

SITE DEVELOPMENT and LANDSCAPE PLAN

FENNER PROPERTY LOT 1

SINGLE FAMILY DETACHED DWELLING
 TAX MAP No.: 24 PARCEL No.: 295
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: 1"=30' DATE: February, 2004

SHEET 1 OF 2

SOP-04-041