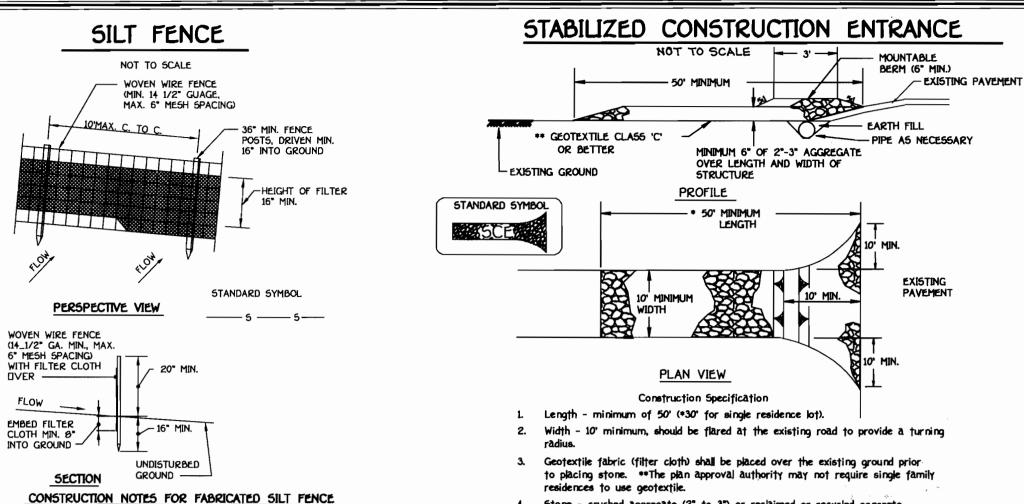
SDP 01-79

K:\Drawings 3\30610 Michael Property\Site Development Plans\306



EARTH DIKE

POSTS: STEEL EITHER T OR U

FENCE: WOVEN WIRE, 14. GA.

FILTER CLOTH: FILTER X, MIRAFI

PREFABRICATED UNIT: GEOFAB,

TYPE OR 2" HARDWOOD

6" MAX. MESH OPENING

100X, STABILINKA TI4 ON

ENVIROFENCE, OR APPROVED

OR APPROVED FOUAL

NOT TO SCALE STABILIZATION AS REQUIRED. ON STEEP SLOPES EXCAVATE TO PROVIDE REQUIRED FLOW WIDTH CROSS SECTION a-DIKE HEIGHT b-DIKE WIDTH c-FLOW WIDTH

POSITIVE DRAINAGE-GRADE SUFFICIENT TO DRAIN

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY

2. FILTER CLOTH TO BE FASTENED SECURELY TO

24" AT TOP AND MID SECTION.

SIX INCHES AND FOLDED.

IN THE SILT FENCE.

WOVEN WIRE FENCE WITH TIES SPACED EVERY

3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN

EACH OTHER THEY SHALL BE OVERLAPPED BY

4. MAINTENANCE SHALL BE PERFORMED AS NEEDED

AND MATERIAL REMOVED WHEN "BULGES" DEVELOP

TO FENCE POSTS WITH WIRE TIES OF STAPLES.

STANDARD SYMBOL **├** -/ - -CONSTRUCTION SPECIFICATIONS

1. ALL DIKES SHALL BE COMPACTED BY EARTH-MOVING EQUIPMENT.
2. ALL DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER IF DESIRED TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
4. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A 4. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED SAFE OUTLET.

5. EARTH DIKES SHALL HAVE AN OUTLET THAT FUNCTIONS WITH A MINIMUM OF EROSION. RUNOFF SHALL BE CONVEYED TO A SEDIMENT BASIN WHERE EITHER THE DIKE CHANNEL OR THE DRAINAGE AREA ABOVE THE DIKE ARE NOT ADEQUATELY STABILIZED.

6. STABILIZATION SHALL BE: (A) IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR SEED AND STRANGEMENT OF STRANGEMENT.

SPECIFICATIONS FOR SEED AND STRAW MULCH OR STRAW MULCH IF NOT IN SEEDING SEASON, (B) FLOW CHANNEL AS PER THE CHART

GRADE TREATMENT SEED AND STRAW MULCH SEED AND STRAW MULCH SEED AND STRAW MULCH SEED USING JUTE, OR SEED WITH JUTE, OR SOD; LINED RIP-RAP 4"-8" LINED RIP-RAP 4"-0"

A. STONE TO BE 2 INCH STONE, OR RECYCLED CONCRETE EQUIVALENT, IN A LAYER AT LEAST 3 INCHES IN THICKNESS AND BE PRESSED INTO THE SOIL WITH B. RIP-RAP TO BE 4-8 INCHES IN A LAYER AT LEAST 8 INCHES THICKNESS AND

C. APPROVED EQUIVALENTS CAN BE SUBSTITUTED FOR ANY OF THE ABOVE MATERIALS. 7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

PERMANENT SEEDING NOTES

ALL DISTURBED AREAS SHALL BE STABILIZED AS FOLLOWS: SEEDBED 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 LB5/1,000 SQ.FT.) AND 600 LB6. PER ACRE 0-20-20 FERTILIZER 4 LBS./1,000 SQ.FT.) BEFORE SEEDING HARROW OR DISC. INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER 1,000 SQ.FT.) OF 10-20-20 FERTILIZER.

FOR THE PERIODS MARCH 1 THROUGH APRIL 30, AND AUGUST I THROUGH OCTOBER 15, SEED WITH 100 LBS. PER ACRE (2.3 LBS./1,000 SQ.FT.) OF KENTUCKY 31 TALL FESCUE, FOR THE PERIOD MAY 1 THROUGH JULY 31, SEED WITH 60 LBS/ACRE (1.4 L85./1,000 SQ.FT.) KENTUCKY 31 TALL FESCUE AND 2 L85. PER ACRE (0.05 L85./1,000 SQ.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THROUGH FEBRUARY 20. 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 SOO; OPTION (3) - SEED WITH 100 LBS./ACRE KENTUCKY 31 TALL FESCUE AND MULCH ITH TWO TONS/ACRE WELL ANCHORED STRAW. ALL SLOPES SHOULD

MULCHING:

APPLY 1 TO 2 TONS PER ACRE (10 TO 90 LBS./1,000 SQ.FT.)

OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING.

ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING 200 GALLONS PER ACRE (5 GAL./1,000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT ACRES. ON SLOPES Ø FEET OR HIGHER USE 340 GALLONS PER ACRE (0 GAL./1,000 SQ.FT.) FOR ANCHORING.

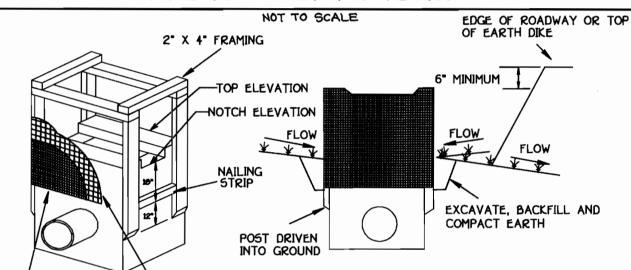
MAINTENANCE:
INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS,
REPLACEMENTS AND RESEEDINGS. FOR PUBLIC PONDS SUBSTITUTE CHEMUNG CROWNVETCH AT 15 LBS./ACRE AND KENTUCKY 31 TALL FESCUE AT 40 LBS/ACRE AS THE SEEDING REQUIRMENT. OPTIMUM SEEDING DATE FOR THIS MIXTURE IS MARCH 1 TO APRIL 30.

. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the

5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a 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.

i. 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

STANDARD INLET PROTECTION



GEOTEXTILE CLASS E MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications 1. Excavate completely around the inlet to a depth of 18" below the notch elevation

wire mesh

2. Drive the 2" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet. Place nail strips between the posts on the ends of the inlet. Assemble the top portion of the 2" x 4" frame using the overlap joint shown on Detail 23A. The top of the frame (weir) must be 6" below adjacent roadways where flooding and safety issues may arise.

3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The ends must meet and overlap at a

4. Stretch the Geotextile Class E tightly over the wire mesh with the geotixtile extending from the top of the frame to 10" below the inlet notch elevation. Fasten the geotextile firmly to the frame. The ends of the geotextile must meet at a post, be overlapped and folded, then fastened down.

5. Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation on the ends and top elevation on the sides.

6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike should be at least 6" higher than the top of the frame. 7. The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY

APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./ 1,000 5Q.FT.)

FOR THE PERIODS MARCH 1 THROUGH APRIL 30, AND AUGUST 15 THROUGH NOVEMBER 15, SEED WITH I BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS./ACRE OF WEEPING LOVEGRASS (.07 LBS./ 1,000 SQ.FT. FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL anchored straw mulch and seed as soon as possible in the

APPLY 1 TO 2 TONS PER ACRE (70 TO 90 LBS./1,000 5Q.FT.)
OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING.
ANCHORING TOOL OR 210 GALLONS PER ACRE (5 GAL.1,000 5Q.FT.)
OF EMULSIFIED ASPHALT ON FLAT ACRES ON SLOPES 0 FEET OR
HIGHER, USE 340 GALLONS PER ACRE (6 GAL./1,000 5Q.FT.) FOR

REFER TO THE 1988 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NO

SEDIMENT CONTROL NOTES

1) A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LISCENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1655).

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-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER, SLOPES AND ALL SLOPES STEEPER THAN 3:1, b) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

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

5) 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.

5) ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MANTANED IN OBERATIVE COMPANY LINES TO BE MANDANED IN OBERATIVE COMPANY LINES TO BE MANTANED IN OBERATIVE COMPANY LINES TO BE MANTANED IN OBERATIVE COMPANY LINES TO BE MANTANED IN OBERATIVE COMPANY LINES TO BE MANDANED TO BE ADD ARE

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: ANALYSIS:

TOTAL AREA OF SITE

AREA DISTURBED

AREA TO BE ROOFED OR PAVED

AREA TO BE VEGETATIVELY STABILIZED

TOTAL CUT

TOTAL CUT OFFSITE WASTE/BORROW AREA LOCATION 3,750 CU.YDS.

6) ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE

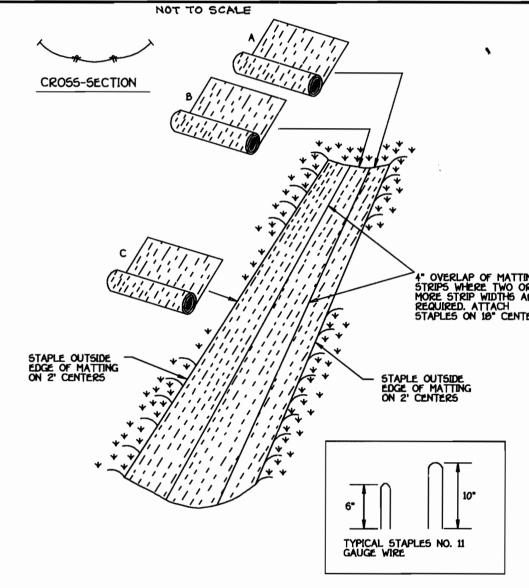
ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

9) ADDITIONAL SEDIMENT CONTROLS 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 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.

11) TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGHTS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

EROSION CONTROL MATTING



Construction Specifications

Key-in the matting by placing the top ends of the matting in a narrow trench, 6" in depth. Backfill the trench and tamp firmly to conform to the channel cross-section. Secure with a row of staples about 4" down slope from the trench. Spacing between staples is 6".

between staples.

2. Staple the 4" overlap in the channel center using an 10" spacing

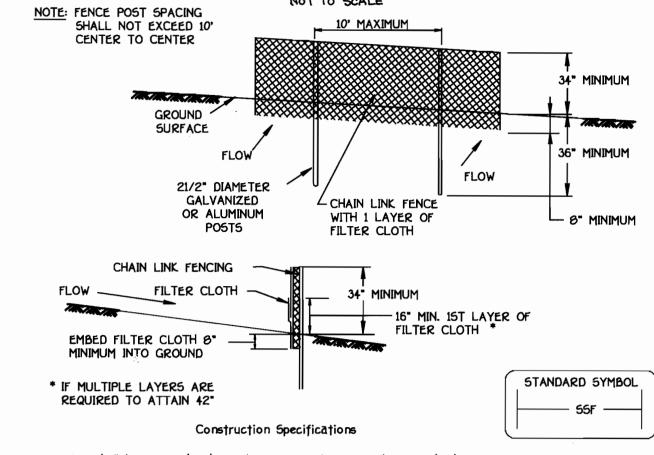
Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil.

4. Staples shall be placed 2' apart with 4 rows for each strip, 2 outer rows, and 2 alternating rows down the center.

Where one roll of matting ends and another begins, the end of the top strip shall overlap the upper end of the lower strip by 4", shiplap fashion. Reinforce the overlap with a double row of staples spaced 6" apart in a staggered pattern on either side.

6. The discharge end of the matting liner should be similarly secured with 2 double rows of staples. Note: If flow will enter from the edge of the matting then the area

SUPER SILT FENCE



1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be embedded a minimum of 8" into the ground.

5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for

Tensile Strength Tensile Modulus Flow Rate

Filtering Efficiency 75% (min.)

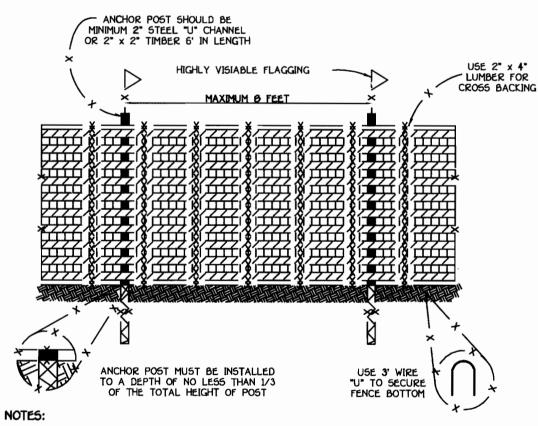
Geotextile Class F:

50 lbs/in (min.) 20 lbs/in (min.)

Test: M5MT 509 Test: MSMT 509 0.3 gal/ft /minute (max.) Test: MSMT 322 Test: MSMT 322

TREE PROTECTION DETAIL

BLAZE ORANGE PLASTIC MESH



FOREST PROTECTION DEVICE ONLY. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE. ROOT DAMAGE SHOULD BE AVOIDED. PROTECTIVE SIGNAGE MAY ALSO BE USED. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION

WATER CODE

D04

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

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 run-off to downstream areas, and improving wildlife habitat and visual resources.

CONDITIONS WHERE PRACTICE APPLIES 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 Oup to one year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary Soil Stockpiles, cleared areas being left idle between construction phases, earth dikes, etc. and for Permanent Seeding are 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 those substances present within the root zone. 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 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS Install erosion and sediment control structures (either temporary or permanent) such as diversions,

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

i. 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 fineness that at least 50% will pass through a 100 mesh sieve and 90-100% will pass through a 20 mesh sieve. Incorporate time and fertilizer into the top 3-5" of soil by disking or other suitable means.

iv. Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
Seedbed Preparation

Temporary Seeding
Seedbed 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 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.
b. Apply fertilizer and lime as prescribed on the plans.
c. In corporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
ii. Permanent Seeding
a. Minimum soil conditions required for permanent vegetative establishment:
1. Soil pt shall be between 6.0 and 7.0.
2. Soluble salts shall be less than 500 parts per million (ppm).

Soli pri anali de detween 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 030% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or serecia lespectezas is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable.

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. 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 to the surface area and to create horizontal erosion check slots to prevent topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from

sliding down a slope.

Apply soil amendments as per soil test or as included on the plans.

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 and 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-D) 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

D. Seed Specifications

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.

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

i. Hydroseeding: Apply seed uniformly with hydroseeder (skurry includes seed and fertilizer), broadcast or drop seeded, or a cultipacker seeder.

a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogens maximum of 100 bs. per acre total of soluble nitrogens. P205 (phosphorous): 200 bs/ac; K20 (potassium): 200 bs/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.

c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.

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 of Tables 265 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.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

Mulch Specifications (In order of preference)

i. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonable 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)

a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.

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. 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 seedings. WCFM material shall contain no elements or compounds at concentration levels that will be phytol-toxic.

will be phytol-toxic.

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 6.5, 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 of the seeding season, mulch along shall 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

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:

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 areas, but is limited to flatter slopes where equipment can operate safety. If used on sloping land, this practice should be used on the contour if possible.

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.

Application of limit binders about the maximum of fiber of limit binders and the mixture of limit binders about the 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 crest of banks. The remainder of area should be appear uniform after binder application. Synthetic binders - such as Acrylic DLR (Agro-Tack), DCA-70 Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.

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 long.

FISHER, COLLINS & CARTER, INC. DATE DESCRIPTION
REVISION BLOCK

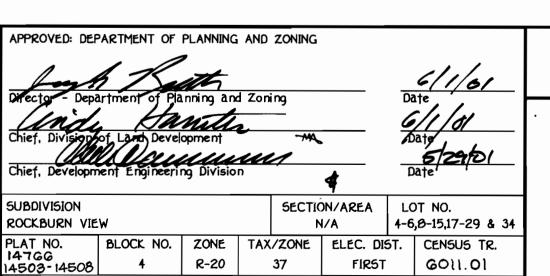
ENGINEER'S CERTIFICATE certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District." Signature of Engineer (print name below signature) 5-10-01

Date 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." Signature of Developer (brint name below signature)

Reviewed for HOWARDSCD and meets Technical Requirements

OWNER/DEVELOPER CORNERSTONE HOLDINGS, .L.C.C. ATTN: MR. BRIAN BOY 9691 NORFOLK AVENUE LAUREL, MARYLAND 20723



SEWER CODE

2153800

SITE DEVELOPMENT PLAN

ROCKBURN VIEW

LOTS 4-6, 8-15, 17-29 AND 34

PARCEL No.: 563 AND PART OF PARCEL 669 HOWARD COUNTY, MARYAND FIRST ELECTION DISTRICT

> SCALE: NOT TO SCALE DATE: AUGUST 1, 2000 SHEET 6 OF 7

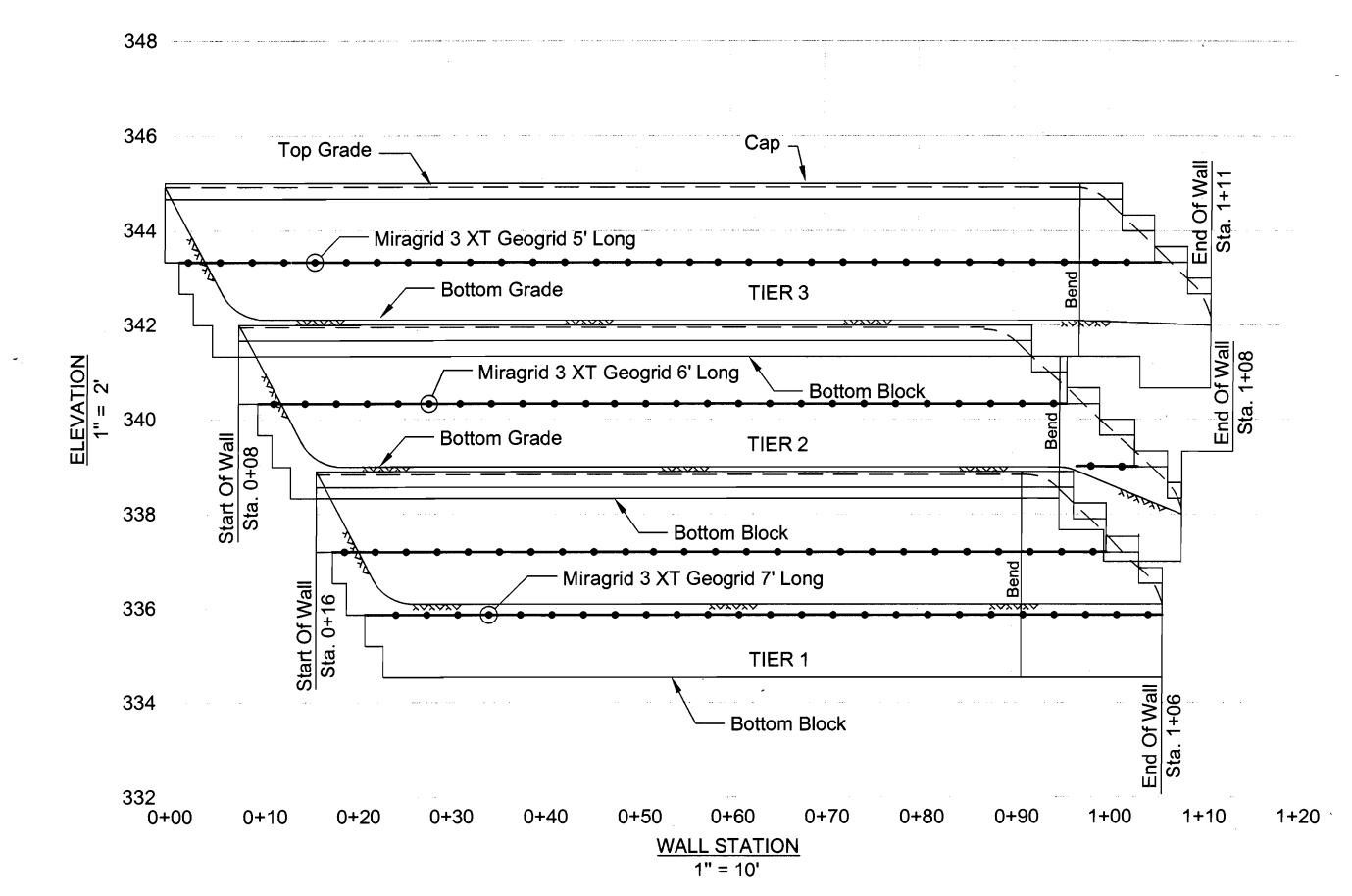
G:\LIBRARY\SDP\SINGLE LOT SDP BASE

IVIL ENGINEERING CONSULTANTS & LAND SURVEYORS

STANDARD SYMBOL

SIP

Secretary Limits or Secretary Limits of Secret



WALL ELEVATION

SPECIFICATIONS KEYSTONE MODULAR CONCRETE BLOCK RETAINING WALL

PART 1:GENERAL

1.01 Description
A. Work shall consist of furnishing and construction of a KEYSTONE Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on

B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.

C. Work includes furnishing and installing geogrid soil

C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

1.02 Delivery, Storage and Handling

A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.
B. Contractor shall protect all materials from damage due to

job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

PART 2: PRODUCTS

Face color - concrete gray - standard manufacturers' color may be specified by the Owner.

Face finish - sculptured rock face in angular tri-planer configuration. Other face finishes will be allowed with written approval of Owner.

Bond configuration - running with bonds nominally located at midpoint of vertically adjacent units, in both straight and curved alignments.

Exposed surfaces of units shall be free of chips, cracks

or other imperfections when viewed from a distance of 10 feet under diffused lighting.

B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications

for Segmental Retaining Wall Units.

C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:

Compressive strength = 3000 psi minimum;

Absorption = 8 % maximum

Dimensional tolerances = ± 1/8" from nominal unit dimensions not including rough split unit dimensions, ±1/16" unit height - top and bottom planes;

Unit size - As specified on plan.

D. Modular concrete units shall conform to the following constructability requirements: Vertical setback = 1/8"± per course (near vertical) or 1"+ per course per the design; Alignment and grid positioning mechanism - fiberglass pins, two per unit minimum; Maximum gap between erected units shall be - 1/2 inch.

2.02 Shear Connectors
 A. Shear connectors shall be 1/2 inch diameter thermoset isopthalic polyester resin-protruded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units.

between vertically and honzontally adjacent units.

Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F.

B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning

2.03 Base Leveling Pad MaterialA. Material shall consist of a compacted #57 crushed stone

No. 200

and backfilling.

2.04 Unit Drainage Fill A. Unit drainage fill shall consist of #57crushed stone

base as shown on the construction drawings.

B. One cubic foot, minimum, of drainage fill shall be used for each square foot of wall face. Drainage fill shall be placed within cores of, between, and behind units to meet this requirement.

2.05 Reinforced Backfill A. Reinforced backfill shall be type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

n:
Sieve Size Percent Passing
2 inch 100-75
3/4 inch 100-75
No. 40 0-60

D-4318.

B. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the reinforced soil mass.

Plasticity Index (PI) <15 and Liquid Limit <40 per ASTM

2.06 Geogrid Soil Reinforcement
 A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil: reinforcement

ROCKBURN VIEW

applications and shall be manufactured from high tenacity polyester yam, or HDPE material.

2.07 Drainage Pipe
A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

PART 3: EXECUTION

3.01 Excavation

A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill

3.02 Base Leveling Pad

A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit.
 B. Leveling pad shall be prepared to insure full contact to the

base surface of the concrete units.

3.03 Modular Unit Excavation
 A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in

full contact with the base and properly seated.

B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.

C. Install shear/connecting devices per manufacturer's recommendations.
D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill.
E. Maximum stacked vertical height of wall units, prior to unit

drainage fill and backfill placement and compaction, shall

not exceed manufacturers recommendations. 3.04 Structural Geogrid Installation

A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.B. Geogrid reinforcement shall be placed at the strengths,

backfill placement on the geogrid.

lengths, and elevations shown on the construction design drawings or as directed by the Engineer.

C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to

D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced

connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted. 3.05 Reinforced Backfill Placement A. Reinforced backfill shall be placed, spread, and

compacted in such a manner that minimizes the

development of slack in the geogrid and installation damage.

B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required

density as required.

C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each

compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.

D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete

E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks

turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.

F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.

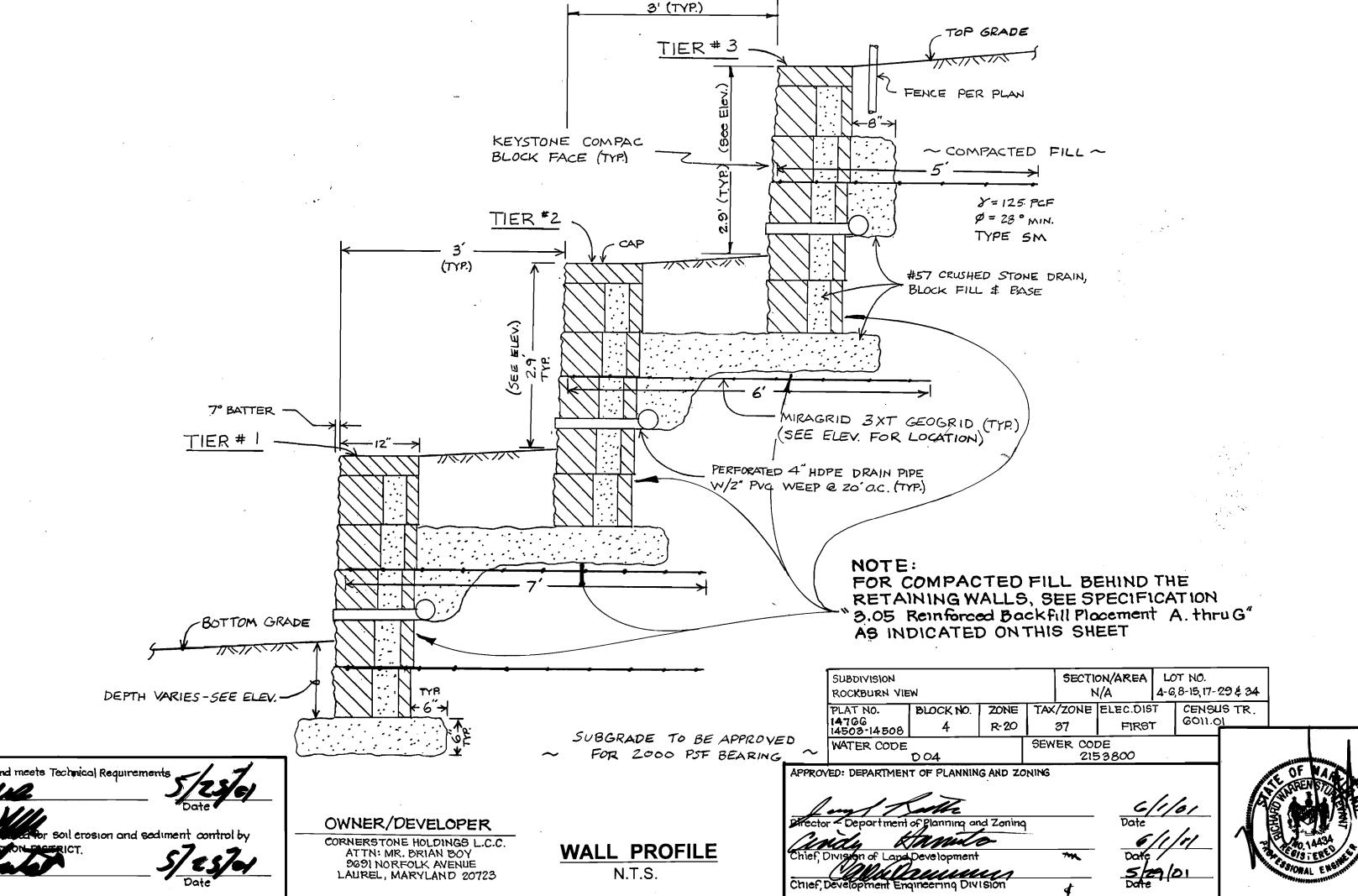
G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

3.06 Cap Installation A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

3.07 Field Quality Control

A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.

B. As a minimum, quality assurance testing should include foundation soil inspection, soil bearing and backfill testing, venification of design parameters, and observation of construction for general compliance with design drawings and specifications.



RETAINING WALL CONSTRUCTION DETAIL

JOB NUMBER: 00 188-A

SCALE: AS SHOWN

DRAWN BY: AM

APPROVED BY: RMH

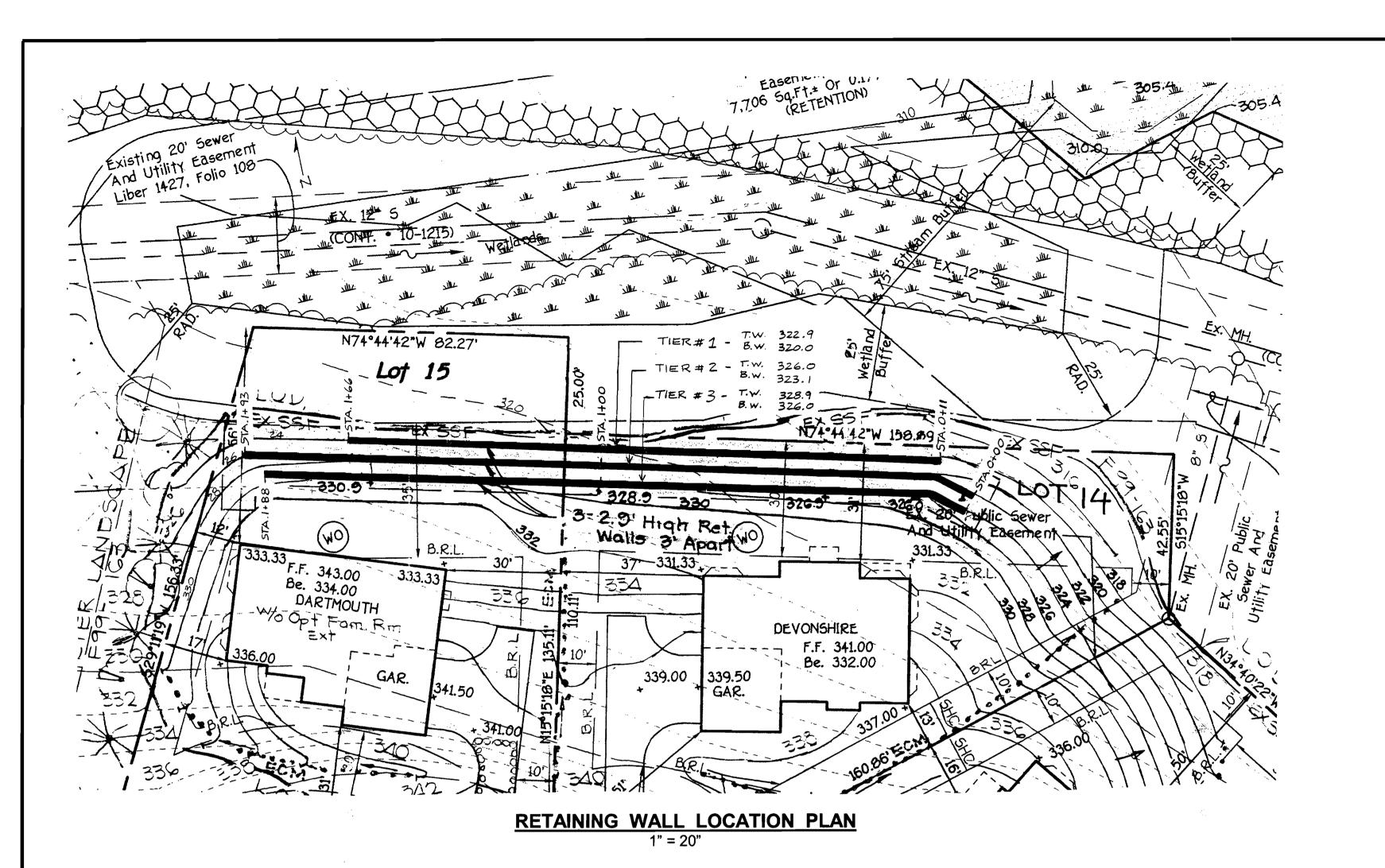
REVISED DATE:

REVISED DATE:

HOWARD COUNTY, MARYLAND

SDP 01-79

AUGUST. 2000



Bottom Grade 328 Top Grade (Typ.) - Bottom Block TIER 2 Block 320 318 Bottom Block Miragrid 3XT Geogrid 7' Long (Typ.) **Bottom Grade** <u>WALL STATION</u> 1" = 20'

WALL ELEVATION

HILLIS-CARNES ENGINEERING ASSOCIATES, INC.

12011 Guilford Road - Suite 106 (410) 880-4788

JOB NUMBER: 00188-A

SCALE: AS SHOWN

DATE: 8/1/01

Annapolis Junction, Maryland Fax: (410)880-4098 PAGE 8/1/01

- 3' high fence Top Tier Ret. Wall TYPICAL FENCEDETAIL

OWNER /DEVELOPER

CORNERSTONE HOLDINGS L.C.C. ATTN.: MR. BRIAN BOY 9691 NORFOLK AVENUE LAUREL, MARYLAND, 20723

DESIGNED BY: RWS

DRAWN BY:

REVISED DATE:

SUBDIVISION ROCKBURN VIEW BLOCK NO. ZONE TAX/ZONE ELEC. DIST CENSUS TR. 6011.01 WATER CODE 2153800

SPECIFICATIONS

PART 1:GENERAL

1.01 Description

KEYSTONE MODULAR CONCRETE BLOCK RETAINING WALL

A. Work shall consist of furnishing and construction of a

B. Work includes preparing foundation soil, furnishing and

lines and grades shown on the construction drawings.

C. Work includes furnishing and installing geogrid soil

A. Contractor shall check all materials upon delivery to

B. Contractor shall protect all materials from damage due to

A. Modular concrete units shall conform to the following

Face color - concrete gray - standard manufacturers'

Face finish - sculptured rock face in angular tn-planer

Bond configuration - running with bonds nominally located

at midpoint of vertically adjacent units, in both straight and

Exposed surfaces of units shall be free of chips, cracks

or other imperfections when viewed from a distance of 10

requirements of ASTM C1372 - Standard Specifications

structural and geometric requirements measured in

Dimensional tolerances = \pm 1/8" from nominal unit

dimensions not including rough split unit dimensions,

B. Modular concrete materials shall conform to the

C. Modular concrete units shall conform to the following

configuration. Other face finishes will be allowed

designated on the construction drawings.

1.02 Delivery, Storage and Handling

incorporated into the work.

architectural requirements:

with written approval of Owner.

feet under diffused lighting.

Absorption = 8 % maximum

Unit size - As specified on plan.

for Segmental Retaining Wall Units.

accordance with appropriate references:

Compressive strength = 3000 psi minimum;

±1/16" unit height - top and bottom planes;

curved alignments.

2.01 Modular Concrete Retaining Wall Units

color may be specified by the Owner.

has been received.

PART 2: PRODUCTS

KEYSTONE Retaining Wall System in accordance with

these specifications and in reasonably close conformity

with the lines, grades, design, and dimensions shown on

installing leveling pad, unit drainage fill and backfill to the

reinforcement of the type, size, location, and lengths

assure that the proper type, grade, color, and certification

job site conditions and in accordance with manufacturer's

recommendations. Damaged materials shall not be

LOT NO. 4-6, 8-15, 17-29 & 34

Chief, Division of Land Development 🛶 MU Causeum Di

PROVED: DEPARTMENT OF PLANNING AND ZONING

11/16/01 Date

NOVEMBER, 2001 SHEET 8 of 8

APPROVED BY: RMH

ROCKBURN VIEW SITE DEVELOPMENT PLAN HOWARD COUNTY, MARYLAND

D. Modular concrete units shall conform to the following

Vertical setback = 1/8"± per course (near vertical) or 1"+

Alignment and grid positioning mechanism - fiberglass

Maximum gap between erected units shall be - 1/2 inch.

A. Shear connectors shall be 1/2 inch diameter thermoset

B. Shear connectors shall be capable of holding the geogrid

isopthalic polyester resin-protruded fiberglass

reinforcement rods or equivalent to provide connection

between vertically and honzontally adjacent units.

in the proper design position during grid pre-tensioning

within cores of between, and behind units to meet this

Percent Passing

100-75

Plasticity Index (PI) <15 and Liquid Limit <40 per ASTM

requirements can be met. Unsuitable soils for backfill

(high plastic clays or organic soils) shall not be used in the

manufactured specifically for soil reinforcement

B. Material can be site excavated soils where the above

A. Geosynthetic reinforcement shall consist of geogrids

constructability requirements:

per course per the design;

pins, two per unit minimum;

degrees F to + 100 degrees F.

2.03 Base Leveling Pad Material

and backfilling.

requirement.

D-4318.

2.05 Reinforced Eackfill

2 inch

3/4 inch

No. 40

No. 200

2.06 Geogrid Soil Reinforcement

2.07 Drainage Pipe A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

polyester yam, or HDPE material.

PART 3: EXECUTION

3.01 Excavation A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10

3.02 Base Leveling Pad

A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6"

in front and behind the modular wall unit. A. Material shall consist of a compacted #57 crushed stone B. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units. base as shown on the construction drawings.

3.03 Modular Unit Excavation 2.04 Unit Drainage Fill A. Unit drainage fill shall consist of #57crushed stone A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall B. One cubic foot, minimum, of drainage fill shall be used for each square foot of wall face. Drainage fill shall be placed be checked in all directions and insure that all units are in

between adjacent units. Layout of comers and curves shall be in accordance with manufacturer's

full contact with the base and properly seated.

B. Place the front of units side-by-side. Do not leave gaps

A. Reinforced backfill shall be type SM, be free of debris and recommendations. meet the following gradation tested in accordance with C. Install shear/connecting devices per manufacturer's ASTM D-422 and meet other properties shown on the recommendations

D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall

not exceed manufacturers recommendations.

3.04 Structural Geogrid Installation

A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.

B. Geogrid reinforcement shall be placed at the strengths,

lengths, and elevations shown on the construction design drawings or as directed by the Engineer. C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the

next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.

D. Geogrid reinforcements shall be continuous throughout applications and shall be manufactured from high tenacity

their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

3.05 Reinforced Backfill Placement

A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geograd and installation

B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used.

- Lift thickness shall be decreased to achieve the required density as required. C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The
- moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.
- D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete
- E. Tracked construction equipment shall not be operated directly upon the geognd reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
- Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.
- G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

3.06 Cap Installation

A. Cap units shall be glued to underlying units with an allweather adhesive recommended by the manufacturer.

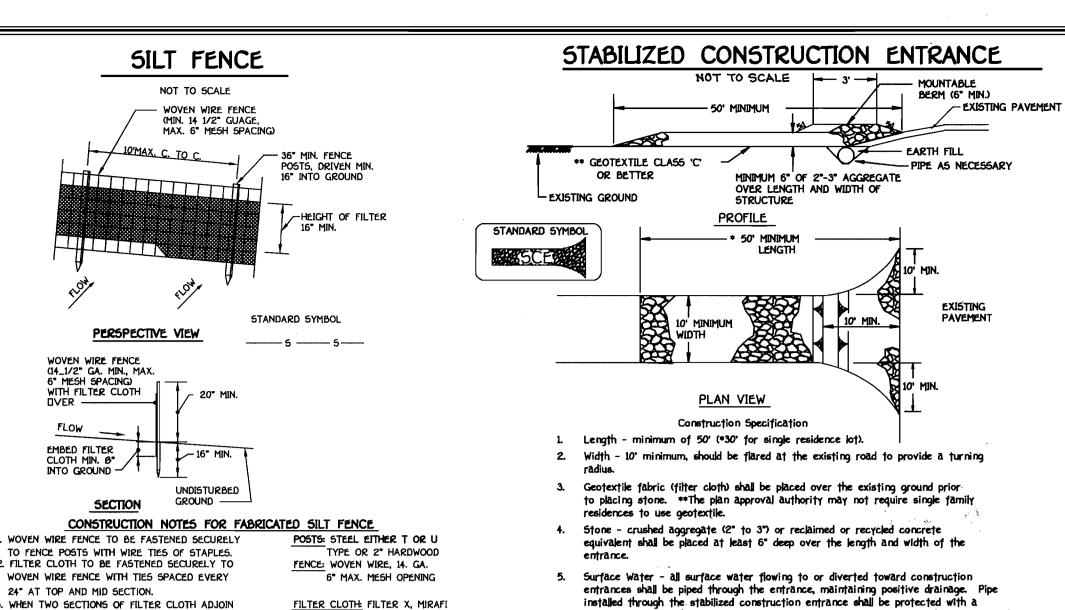
3.07 Field Quality Control A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality

assurance and testing services during construction. 3. As a minimum, quality assurance testing should include foundation soil inspection, soil bearing and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.

TOP GRADE FENCE PER PLAN KEYSTONE COMPAC ~ COMPACTED FILL ~ BLOCK FACE (TYP.) MIRAGRID 3xt 8=125 PCF Geogrid (Typ.) Ø = 28.0 MIN. TYPE SM (TYP. ALL TIERS) (TYP. EACHTIER) #57 CRUSHED STONE DRAIN BLOCK FILL & BASE (TYP. ALL TIERS) - MIRAGRID 3XT GEOGRID (TYP.) (SEE ELEV. FOR LOCATION) 7° BATTER PERFORATED 4" HDPE DRAIN PIPE N/2" PVC WEEP @ ZO'O.C. (TYP. ALL TIERS) FOR COMPACTED FILL REQUIRMENTS BEHIND THE TIERED RET. WALLS SEE SECTION 3.05 A THRUG ON THE ABOVE SPECIFICATION -BOTTOM GRADE MIRA GRID 3xt Googrid (Typ.) DEPTH VARIES - SEE ELEV. SUBGRADE TO BE APPROVED FOR 2000 PSF BEARING ~

TYPICAL WALL SECTION N.T.S.

SDP 01-79



100X, STABILINKA T14 ON

ENVIROFENCE, OR APPROVED

OR APPROVED EQUAL

PREFABRICATED UNIT: GEOFAB,

STABILIZATION AS REQUIRED

(5 ac. or less) (5-10 ac.

STANDARD SYMBOL

GALLONS PER ACRE (5 GAL./1,000 5Q.FT.) OF EMULSIFIED ASPHALT ON FLAT ACRES. ON SLOPES 0 FEET OR HIGHER USE 340 GALLONS PER ACRE (0 GAL./1,000 5Q.FT.) FOR ANCHORING

MAINTENANCE:
INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS,

REPLACEMENTS AND RESEEDINGS.

ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2055
G:\LIBRARY\SDP\SINGLE LOT SDP BASE

SEED USING JUTE, OR EXCELSIOR; SOD; 2° STONE

ON STEEP SLOPES EXCAVATE TO PROVIDE

STANDARD INLET PROTECTION

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

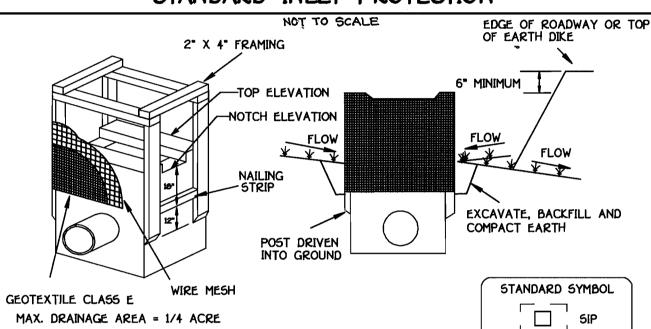
mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe ha

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

where construction traffic enters or leaves a construction site. Vehicles leaving

the site must travel over the entire length of the stabilized construction entrance.



Construction Specifications

1. Excavate completely around the inlet to a depth of 18" below the notch elevation. 2. Drive the 2" x 4" construction grade lumber posts 1' into the ground at each corner of the inlet. Place nail strips between the posts on the ends of the inlet. Assemble the top portion of the 2" x 4" frame using the overlap joint shown on Detail 23A. The top of the frame (weir) must be 6" below adjacent roadways where flooding and safety issues may arise.

3. Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The ends must meet and overlap at a

4. Stretch the Geotextile Class E tightly over the wire mesh with the geotixtile extending from the top of the frame to 18" below the inlet notch elevation. Fasten the geotextile firmly to the frame. The ends of the geotextile must meet at a post, be overlapped and folded, then fastened down.

5. Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation on the ends and top elevation on the sides.

6. If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike should be at least 6" higher than the top of the frame. 7. The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY

(600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./

FOR THE PERIODS MARCH 1 THROUGH APRIL 30, AND AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 1 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS./ACRE OF WEEPING LOVEGRASS (.07 LBS./ 1,000 SQ.FT. FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE

APPLY 1 TO 2 TONS PER ACRE (70 TO 90 LB5./L000 5Q.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHORING TOOL OR 210 GALLONS PER ACRE (5 GAL.1,000 SQ.FT.) of emulsified asphalt on flat acres on slopes & feet or HIGHER, USE 340 GALLONS PER ACRE (Ø GAL./1,000 SQ.FT.) FOR ANCHORING.

REFER TO THE 1988 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT

SEDIMENT CONTROL NOTES

1) A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LISCENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1955).

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-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1, b) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

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

5) 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 SEDING (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

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
AREA DISTURBED
AREA TO BE ROOFED OR PAVED
AREA TO BE VEGETATIVELY STABILIZED
TOTAL CUT

3,750 CULYDS.

3,750 CU.YD5. CU.YD5. OFFSITE WASTE/BORROW AREA LOCATION ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

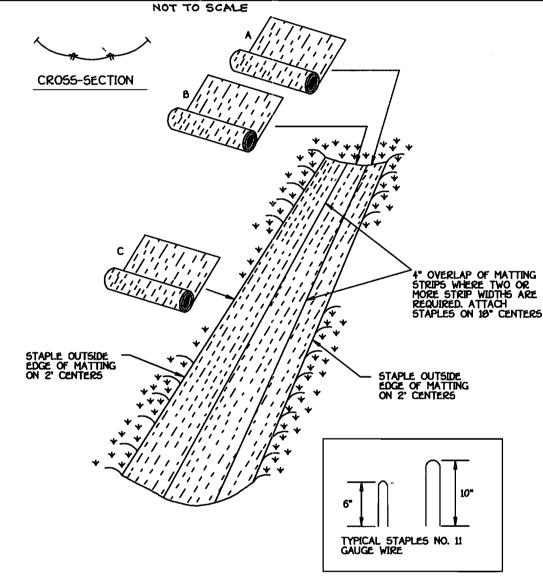
9) ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED

9) ADDITIONAL SEDIMENT CONTROLS 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 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.

11) TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGHTS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

EROSION CONTROL MATTING



Key-in the matting by placing the top ends of the matting in a narrow trench, 6" in depth. Backfill the trench and tamp firmly to conform to the channel cross-section. Secure with a row of staples about 4" down slope from the trench. Spacing between staples is 6".

2. Staple the 4" overlap in the channel center using an 10" spacing

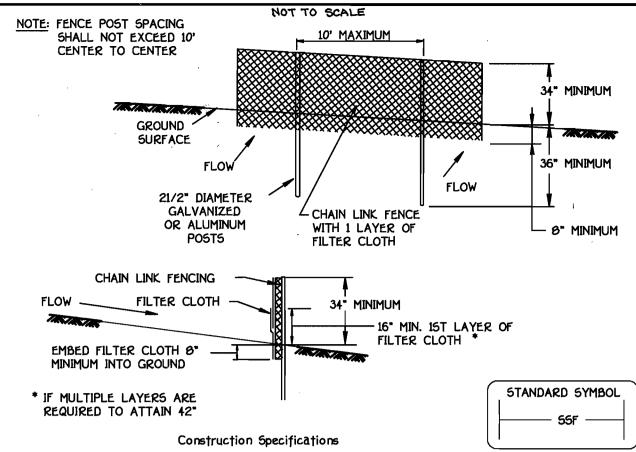
Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil.

Staples shall be placed 2' apart with 4 rows for each strip. 2 outer rows, and 2 atternating rows down the center.

Where one roll of matting ends and another begins, the end of the top strip shall overlap the upper end of the lower strip by 4", shiplap fashion. Reinforce the overlap with a double row of staples spaced 6" apart in a staggered pattern on either side.

6. The discharge end of the matting liner should be similarly secured with 2 double rows of staples. Note: If flow will enter from the edge of the matting then the area effected by the flow must be keyed-in.

SUPER SILT FENCE



1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be embedded a minimum of 8" into the ground.

5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

6. Maintenance shall be performed as needed and silt buildups removed when "bulaes" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

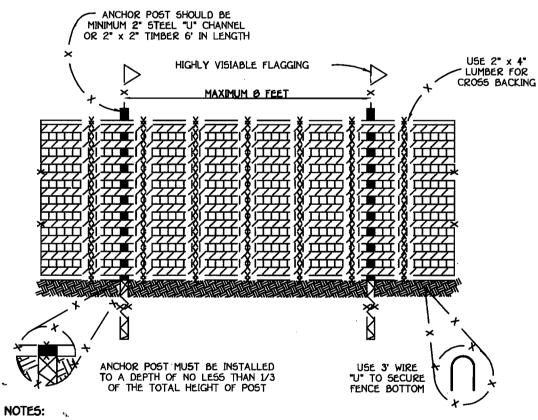
75% (min.)

Tensile Strength Tensile Modulus Flow Rate Filtering Efficiency 50 lbs/in (min.) 20 |bs/in (min.) 0.3 gal/ft /minute (max.) Test: MSMT 322

Test: MSMT 509 Test: MSMT 509 Test: MSMT 322

TREE PROTECTION DETAIL

BLAZE ORANGE PLASTIC MESH



FOREST PROTECTION DEVICE ONLY. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE. ROOT DAMAGE SHOULD BE AVOIDED. PROTECTIVE SIGNAGE MAY ALSO BE USED. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

D04

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

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 run-off to downstream areas, and improving wildlife habitat and visual resources.

run-off 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 O(up to one year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary 50il Stockpiles, cleared areas being left idle between construction phases, earth dikes, etc. and for Permanent Seeding are 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 those substances present within the root zone. 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 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

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.

5oil Amendments (Fertilizer and Lime Specifications)

i. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas 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

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 fineness that at least 50% will pass through a *100 mesh sieve and 90-100% will pass through a *20 mesh sieve. Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

iv. Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
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 disc 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.
b. Apply fertilizer and lime as prescribed on the plans.
c. In corporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
ii. Permanent Seeding
a. Minimum soil conditions required for permanent decadation.

In corporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

manent Seeding

Minimum soil conditiops required for permanent vegetative establishment:

1. Soil ph shall be between 6.0 and 7.0.

2. Soluble salts shall be less than 500 parts per million (ppm).

3. The soil shall contain less than 40% clay, but enough fine grained material 0.30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or serecia lespedezas is to be planted, then a sandy soil (<30% silt plus clay) would be acceptable.

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 soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.

Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise lossened to a depth of 3-5" to permit bonding of the topsoil to the surface area and to create horizontal evosion check slots to prevent topsoil to the surface area and to create horizontal evosion check slots to prevent topsoil to the surface area and to create horizontal evosion check slots to prevent topsoil to the surface area and to create horizontal evosion check slots to prevent topsoil to the surface area. the surface area and to create horizontal erosion check slots to prevent topsoil from

sliding down a slope.

Apply soil amendments as per soil test or as included on the plans.

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 and 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.

Seed Specifications 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.

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.

Methods of Seeding

i. Hydroseeding: Apply seed uniformly with hydroseeder (skurry includes seed and fertilizer), broadcast or drop seeded, or a cultipacker seeder.

a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogen; maximum of 100 bs. per acre total of soluble nitrogen; P205 (phosphorous): 200 bs/ac; K20 (potassium): 200 bs/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.

c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.

c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.

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 265 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.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

Mulch Specifications (In order of preference)

b. 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, received and shall be free of noxious weed seeds as specified in the Markand Seed Law.

ii. Wood Cellulose Fiber Mulch (WCFM)

a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.

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 sturry.

c. 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 sturry.

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.

e. WCFM material shall contain no elements or compounds at concentration levels that will be phytol-toxic.

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.

ii. If grading is completed outside of the seeding season mulch along shall be applied as prescribed in this section and malimained until the seeding season returns and seeding can be performed in accordance with these specifications.

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 comfain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.

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 crosion hazard:

application to minimize loss by wind or water. This may be done by one of the following methods (lipreference), 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 areas, 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.

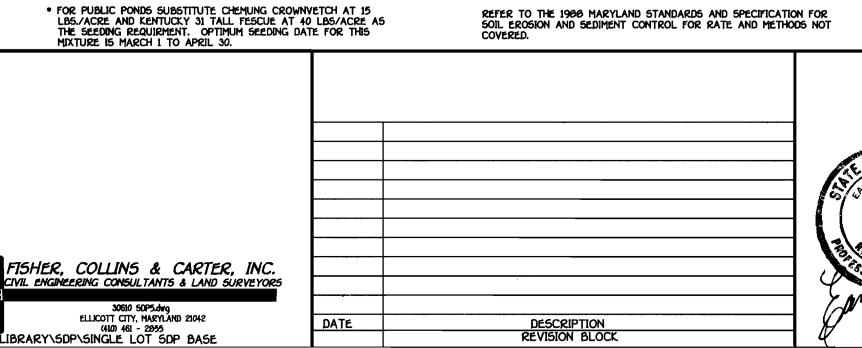
iii. Application of liquid binders should be beavier at the edges where wind catches mulch such as

of water.

11. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and crest of banks. The remainder of area should be appear uniform after binder application. Synthetic binders – such as Acrylic DLR (Agro-Tack), DCA-70 Petroset, Terra Tax

I. Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.

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 long.

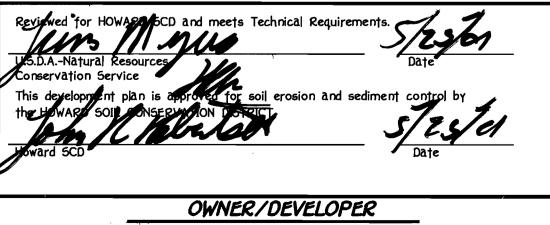


engineer's certificate certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

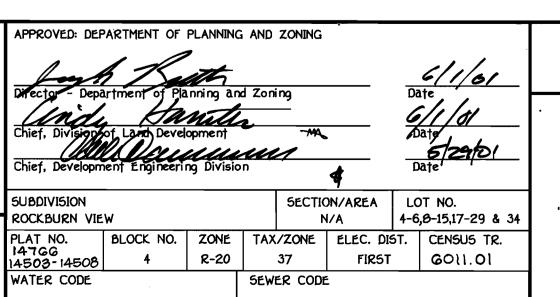
Signature of Engineer (print name below signature) 5-10-01

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. [als authorize periodic on-site inspection by the Howard Soil Conservation District." り

Signature of Developer (print name below signature)



CORNERSTONE HOLDINGS, .L.C.C. ATTN: MR. BRIAN BOY 9691 NORFOLK AVENUE LAUREL, MARYLAND 20723



2153800

SITE DEVELOPMENT PLAN

ROCKBURN VIEW

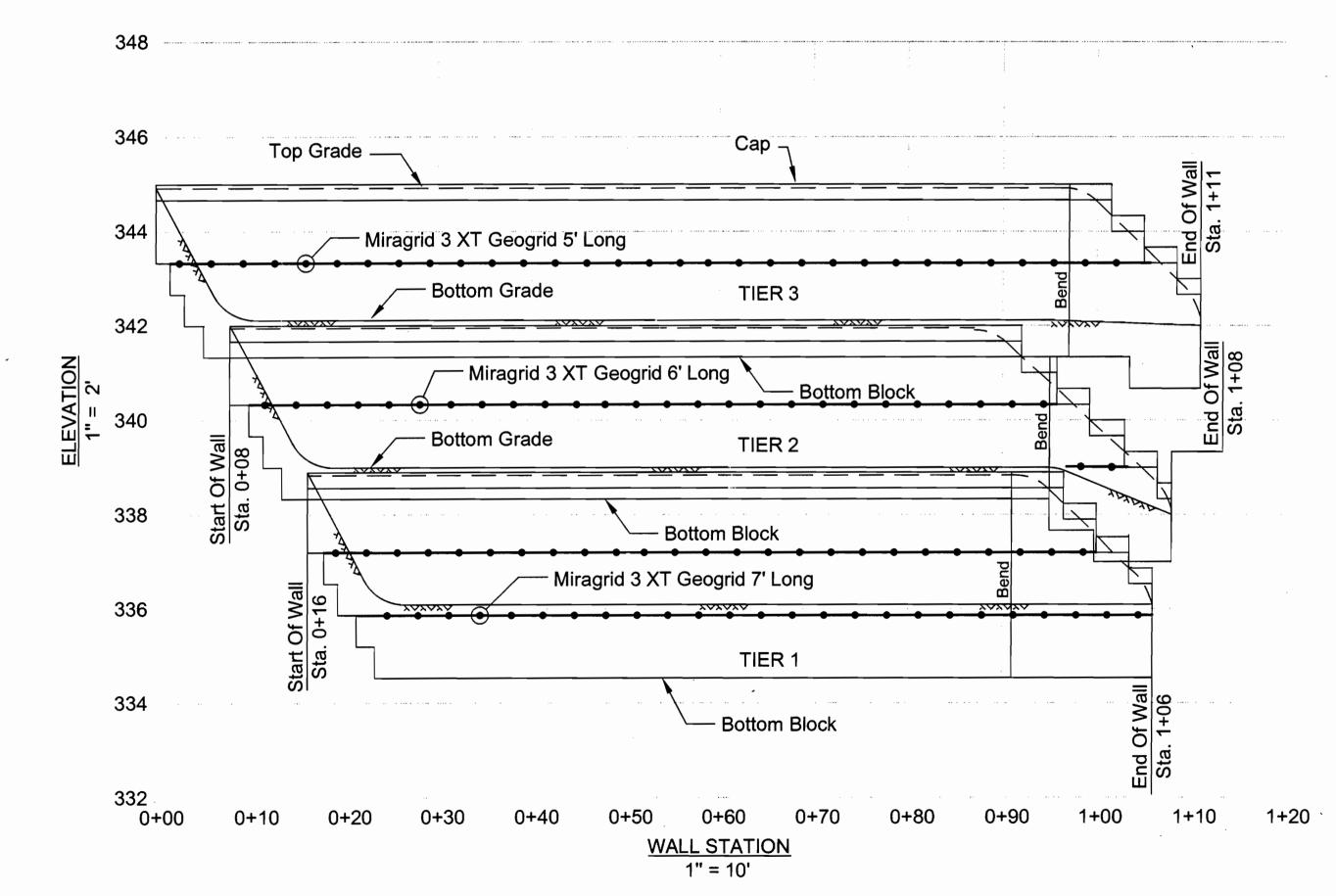
LOTS 4-6, 8-15, 17-29 AND 34

PARCEL No.: 563 AND PART OF PARCEL 669 FIRST ELECTION DISTRICT HOWARD COUNTY, MARYAND

> SCALE: NOT TO SCALE DATE: AUGUST 1, 2000 SHEET 6 OF 8

Lights or 77 Control BUFFED CONTROL

1" = 30'



WALL ELEVATION

SPECIFICATIONS

KEYSTONE MODULAR CONCRETE BLOCK RETAINING WALL

PART 1:GENERAL

- 1.01 Description
 A. Work shall consist of furnishing and construction of a KEYSTONE Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on
- the plans.

 B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.
- C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

1.02 Delivery, Storage and Handling

- A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.
- B. Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

PART 2: PRODUCTS

- 2.01 Modular Concrete Retaining Wall Units
 A. Modular concrete units shall conform to the following architectural requirements:
 Face color concrete gray standard manufacturers' color may be specified by the Owner.
- Face finish sculptured rock face in angular tri-planer configuration. Other face finishes will be allowed with written approval of Owner.

 Bond configuration running with bonds nominally located at midpoint of vertically adjacent units, in both straight and curved alignments.
- Exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.

 B. Modular concrete materials shall conform to the
- requirements of ASTM C1372 Standard Specifications for Segmental Retaining Wall Units.

 C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:

Compressive strength = 3000 psi minimum;

Absorption = 8 % maximum

Dimensional tolerances = ± 1/8" from nominal unit dimensions not including rough split unit dimensions, ±1/16" unit height - top and bottom planes;

Unit size - As specified on plan.

D. Modular concrete units shall conform to the following constructability requirements: Vertical setback = 1/8"± per course (near vertical) or 1"+ per course per the design; Alignment and grid positioning mechanism - fiberglass pins, two per unit minimum:

- pins, two per unit minimum;
 Maximum gap between erected units shall be 1/2 inch.

 2.02 Shear Connectors
 A. Shear connectors shall be 1/2 inch diameter thermoset
- isopthalic polyester resin-protruded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F.
- B. Shear connectors shall be capable of holding the geogrid in the proper design position during gnd pre-tensioning and backfilling.

2.03 Base Leveling Pad Material A. Material shall consist of a compacted #57 crushed stone

2.04 Unit Drainage Fill A. Unit drainage fill shall consist of #57crushed stone B. One cubic foot, minimum, of drainage fill shall be used for each square foot of wall face. Drainage fill shall be placed within cores of, between, and behind units to meet this

base as shown on the construction drawings.

each square foot of wall face. Drainage fill shall be placed within cores of, between, and behind units to meet this requirement.

2.05 Reinforced Backfill

A. Reinforced backfill shall be type SM, be free of debris and meet the following gradation tested in accordance with

- meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

 Sieve Size Percent Passing 2 inch 100-75
- 3/4 inch 100-75
 No. 40 0-60
 No. 200 0-35

 Plasticity Index (PI) <15 and Liquid Limit <40 per ASTM
- B. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the

2.06 Geogrid Soil Reinforcement A. Geosynthetic reinforcement shall consist of ge

 A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement

- applications and shall be manufactured from high tenacity polyester yarn, or HDPE material.
- 2.07 Drainage Pipe
 A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

PART 3: EXECUTION

3.01 Excavation
A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill

3.02 Base Leveling Pad A. Leveling pad material shall be placed to the lines and

A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit. B. Leveling pad shall be prepared to insure full contact to the

base surface of the concrete units. 3.03 Modular Unit Excavation

- A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.
- B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.
- Install shear/connecting devices per manufacturer's recommendations.

 Place and compact desirance fill within and behind wall.
- Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill.
 Maximum stacked vertical height of wall units, pnor to unit drainage fill and backfill placement and compaction, shall not exceed manufacturers recommendations.

3.04 Structural Geogrid InstallationA. Geogrid shall be oriented with the highest strength axis

- perpendicular to the wall alignment. **B.** Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.
- C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.

- D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.
- 3.05 Reinforced Backfill Placement
 A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation
- damage.

 B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required
- density as required.

 C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each
- layer and shall be + 3% to 3% of optimum.

 D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete
- unit.

 E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks
- from displacing the fill and damaging the geogrid.

 F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden
- braking and sharp turning shall be avoided.

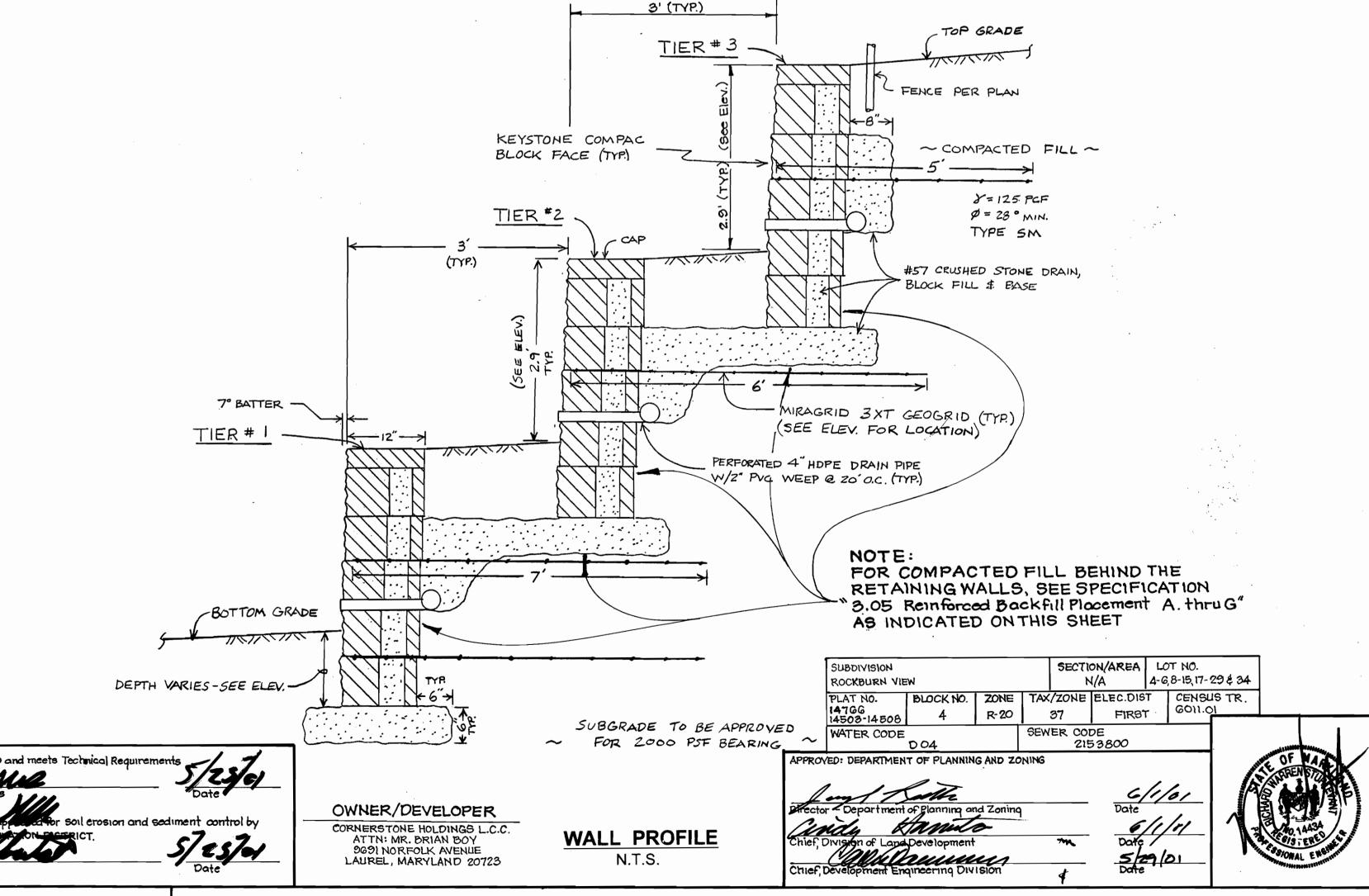
 G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

3.06 Cap Installation

A. Cap units shall be glued to underlying units with an allweather adhesive recommended by the manufacturer.

3.07 Field Quality Control

- A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.
- B. As a minimum, quality assurance testing should include foundation soil inspection, soil bearing and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.



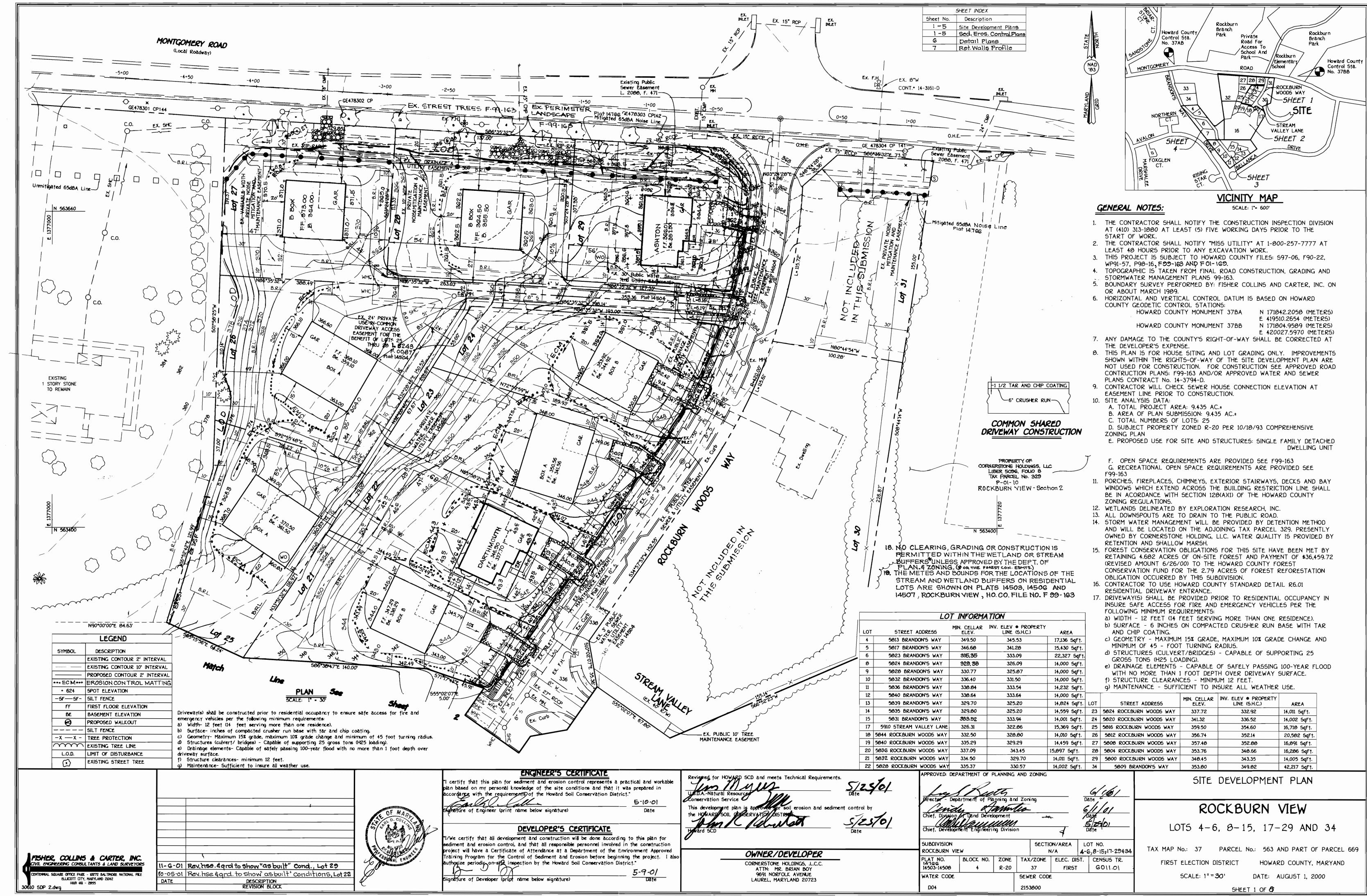
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RETAINING WALL CONSTRUCTION DETAIL

ROCKBURN VIEW HOWARD COUNTY,

HOWARD COUNTY, MARYLAND

AUGUST. 2000 SHEET 7 OF 8



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