

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES A minimum of 48 hours notice must be given to the Howard County Department

of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction, (313-1855). 2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current

SEDIMENT CONTROL", and revisions thereto. Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within: a) 7 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater that 3:1, b) 14 days as to all other disturbed or graded areas on the project site.

"MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND

4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol. 1, Chapter 7, 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

temporary seeding, and mulching. Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses. 6. All sediment control structures are to remain in place and are to be maintained in

SOIL EROSION AND SEDIMENT CONTROL (Section G) for permanent seeding, sod,

operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.

Analysis:		
Total Area of Site	0.28	Acres
Area Disturbed	0.18	Acres ±
Area to be roofed or paved	0.07	Acres ±
Area to be vegetatively stabilized	O.11	Acres ±
Total Cut	350	Cu. Yde
Total Fill	350	Cu. Yd
Offsite waste area location	N/A	_

8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

Additional sediment control must be provided, if deemed necessary by the 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.

approval by the inspection agency is made. Trenches for the construction of utilities is limited to three pipe lengths or that which can be back filled and stabilized within one working day, whichever is shorter.

Other building or grading inspection approvals may not be authorized until this initial

HOWARD SOIL CONSERVATION DISTRICT PERMANENT SEEDING NOTES Apply to graded or cleared areas not subject to immediate further disturbance where a

permanent long-lived vegetative cover is needed. SEEDBED PREPARATION: Loosen upper three inches of soil by raking, disking, or other

acceptable means before seeding, if not previously loosened.

SOIL AMENDMENTS: In lieu of soil test recommendations, use one of the following schedules: 1) PREFERRED -- Apply 2 tons per acres dolomitic limestone (92 lbs/1000sq. ft.) and 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.)

before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs per acre 30-0-0 ureaform fertilizer (9 lbs/1000sq. ft.) 2) ACCEPTABLE -- Apply 2 tons per acres dolomitic limestone (92 lbs/1000sq. ft.) and 1000 lbs per acre 10-10-10 fertilizer (23 lbs/1000 sq. ft.)

before seeding. Harrow or disk into upper three inches of soil.

SEEDING -- For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs per acre (1.4 lbs/1000sq. ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs per acre (1.4 lbs/1000sq. ft.) of Kentucky 31 Tall Fescue and 2 lbs. per acre (.05 lbs/1000sq. ft.) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) - 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring. Option (2) - Use sod. Option (3) - Seed with 60 lbs. per acre Kentucky 31 Tall Fescue and mulch 2 tons / acre well anchored straw.

MULCHING -- Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000sq. ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000sq. ft.) for anchoring.

MAINTENANCE -- Inspect all seeding areas and make needed repairs, replacements and

HOWARD SOIL CONSERVATION DISTRICT TEMPORARY SEEDING NOTES

SEEDBED PREPARATION: -- Loosen upper three inches of soil by raking, disking, or other acceptable means before seeding, if not previously loosened.

SOIL AMENDMENTS: -- Apply 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000sq. ft.).

SEEDING -- For periods March 1 thru April 30, and from August 15 thru October 15 seed with 2-12 bushels per acre of annual rye (3.2 lbs/1000sq. ft.). For the period May 1 thru August 14, seed with 3 lbs. per acre of weeping lovegrass (.07 lbs/1000sq. 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 spring, or use sod.

MULCHING -- Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000sq. ft.) of unrotted weed free small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000sq. ft.) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000sq. ft.) for anchoring.

Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.

		1	
SCHEI PERIMETER LA	DULE A NDSCAPE	EDGE	
Category	Adjacent to Perimeter Properties		
Perimeter	P-1	P-2	P-3
Landscape Type	Α	А	A
Linear Feet of Roadway Frontage / Perimeter	112 L.F.	169 L.F.	154 L.F.
Credit for Existing Vegetation* (Yes, No, Linear Feet)	NO	Yes 75 L.F.	Yes 25 L.F.
Credit For Wall, Fence or Berm (Yes, No, Linear Feet)	NO	Yes 45 L.F.	Yes 60 L.F.
Number of Plants Required Shade Trees	112/60=2	49/60=1	154/60=3
Number of Plants Provided Shade Trees	2	ſ	3

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth. b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require

special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall

c. The original soil to be vegetated contains material toxic to plant growth. d. The soil is so acidic that treatment with limestone is not feasible.

have the appropriate stabilization shown on the plans.

Construction and Material Specifications

I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimental Station.

II. Topsoil Specifications - Soil to be used as topsoil must meet the following:

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

li. Topsoll must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.

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

III. For sites having disturbed areas under 5 acres:

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

IV. For sites having disturbed areas over 5 acres

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

6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher. b. Organic content of topsoil shall be not less than 1.5 percent by weight

c. Topsoil having soluble salt content greater than 500 parts per million shall not be used. d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

ii. Place topsoil (if required) and apply soil amendments as specified in 20.0 Yegetative Stabilization --Section I - Veaetative Stabilization Methods and Materials.

V. Topsoil Application

i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins. ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained,

albeit 4" - 8" higher in elevation. iii. Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or

iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

composted sludge and amendments may be applied as specified below:

shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements: a. Composted sludge shall be supplied by, or originate from, a person or persons that are

permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06. b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a Ph of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements

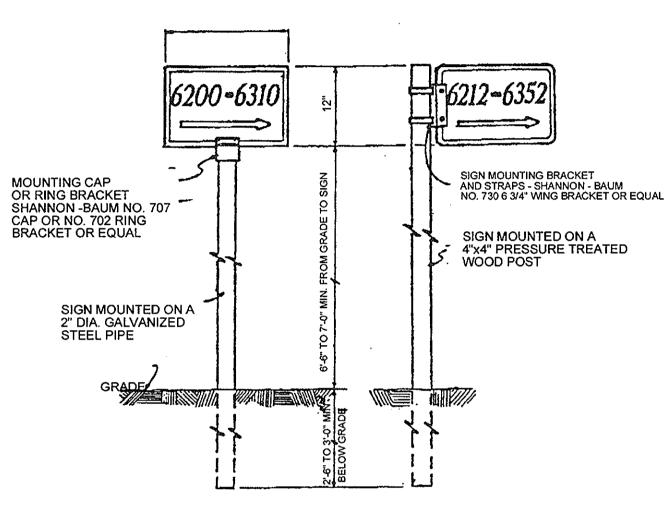
c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet,

ii. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb./1,000 equare feet, and 1/3 the normal lime application rate.

References: Guideline Specifications, Soil Preparation and Sodding. MD-VA, Pub.#1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.

BLAZE ORANGE PLASTIC MESH HIGHLY VISIBLE FLAGG '8 MUMIXAM 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 Root damage should be avoided.
Protective signage may also be used.
Device should be maintained throughout construction. CODLAND CONSERVATION MANUAL EXHIBIT K - 8 PRINCE GEORGES COUNTY, MD

TREE PROTECTION FENCE



SIGN OPTION NUMBER 1 AND NUMBER 2

SIGN DESIGN AND INSTALLATION DETAIL No SCALE No SCALE

SIGN SPECIFICATIONS

1. The sign size shall be 12" x 18".

2. The sign material shall be .080 gauge thickness anodized aluminum.

3. The sign shall have a green background with 3" high white reflective numbers and arrow with a white reflective

4. Where a private road name is in use or part of a private Homeowner's Articles of Incorporation agreement the sign size will be enlarged to accommodate the necessary lettering but remain proportional to the above design limits.

5. The sign will be installed within the common driveway easement area as noted on the final plat.

6. Address number identification signs are to be provided under the tenants of the Homeowner's Association Incorporation or a Property Management Company for installation and maintenance in accordance with the Department of Planning and Zoning Address Numbering System and per Section 3.503(a) of the Howard County Code - Public Signs. Maintenance/repair and replacement of the address number directional signs will be the responsibility of the Homeowner's Association or a Property Management Company.

7. Compliance regarding the installation of the new address number directional signs will be enforced by the Department of Inspections, Licenses and Permits at the time of final approval for issuance of the Use and Occupancy

LANDSCAPE NOTES:

- 1. This plan has been prepared in accordance with the provisions of Section 16.124 of the Howard County Code and Howard County Landscape Manual.
- 2. The Owner/Developer is responsible for planting of all material required to meet the standards
- established by the Howard County Landscape Manual. 3. Financial Surety for the required landscaping will be posted with the builder's grading permit in the amount

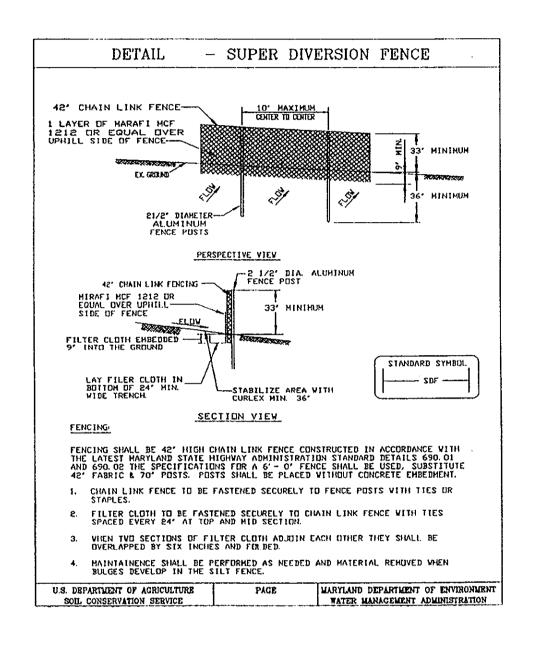
All other required landscaping shall be permanently maintained in good condition, and when necessary,

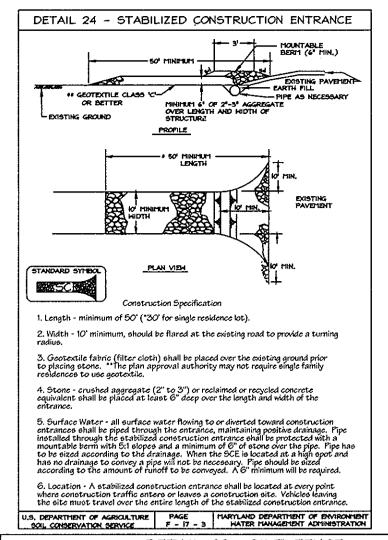
of \$1800.00 for 6 shade trees. 4. The Owner, Tenant and/or their agents shall be responsible for maintenance of the required landscaping, plant materials, berms, fences and walls. All plant materials shal be maintained in good growing condition,

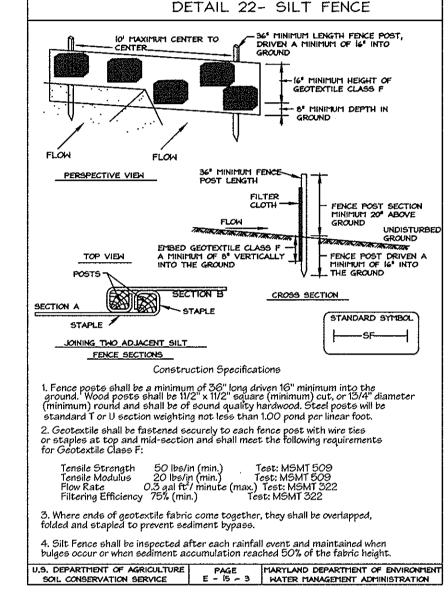
and when necessary, replaced with new materials to ensure continued compliance with applicable regulations.

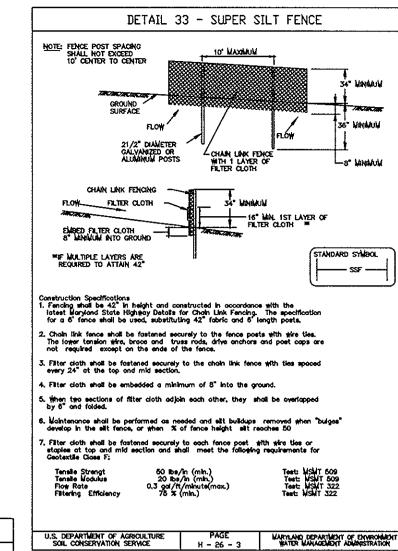
- 5. All plant materials shall conform to the American Associated Nurserymen's publication, American
- 6. At the time of installment, all shrubs and other plantings herewith listed and approved for this site shall be of the proper height requirements in accordance with the Howard County Landscape Manual. In addition, no substitutions or relocation of required plantings may be made without prior review and approval from the Department of Planning and Zoning. Any deviation from this approved Landscape Plan may result in denial or delay in the release of landscape surety until such time as all required materials are planted and/or revisions are made to applicable plans and certificates.

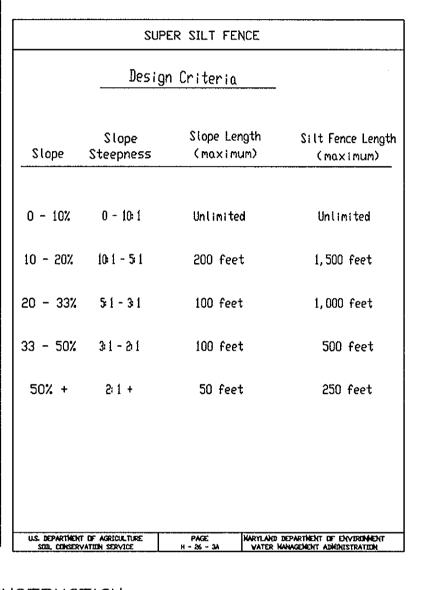
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SYMB.	QUANTITY	COMMON NAME	SCIENTIFIC NAME	SIZE	REMARKS
+	6	Red Maple October Glory'	Acer rubrum	2 1/2"-3" Cal.	B # B



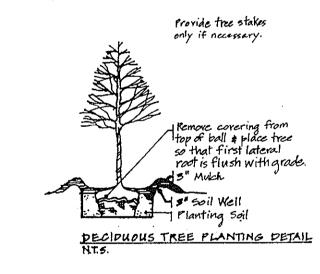








TREE PLANTING DETAILS



Date



SEQUENCE OF CONSTRUCTION:

1. Obtain Grading Permit 2. Notify the Howard County Dept. of Inspections, Licenses and Permits at least 24 hours prior to starting work. 3. Construct Stabilized Construction Entrance.

4. Install Super Silt Fence and Super Diversion Fence as shown hereon. 5. Clear \$ grub site to subgrade.

6. Begin excavation for house foundation and begin house construction. Install water and sewer house connections.

7. The Contractor shall inspect and provide necessary maintenance on the sediment and erosion control structures shown hereon after each rainfall and on a daily basis.

8. Remove sediment from roadways and dress Stabilized Construction Entrance as required.

9. Fine grade and stabilize with permanent seeding mixture and straw mulch. Install individual driveway and house walk.

10. With permission from the Sediment Control Inspector, remove all sediment and erosion control measures and stabilize any remaining disturbed areas with permanent seeding mixture and straw mulch.

Total Time:

OWNER/DEVELOPER:

81 Days

1 Day

1 Day

1 Day

3 Days

5 Days

60 Days

Maintenance

Daily

5 Days

APPROVED: HOWARD COUNTY	DEPARTMENT	

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS.

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



ENGINEER'S CERTIFICATE NORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS REPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRIC

IAWE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRA

FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR UTHORIZED AGENTS, AS ARE DEEMED NECESSARY

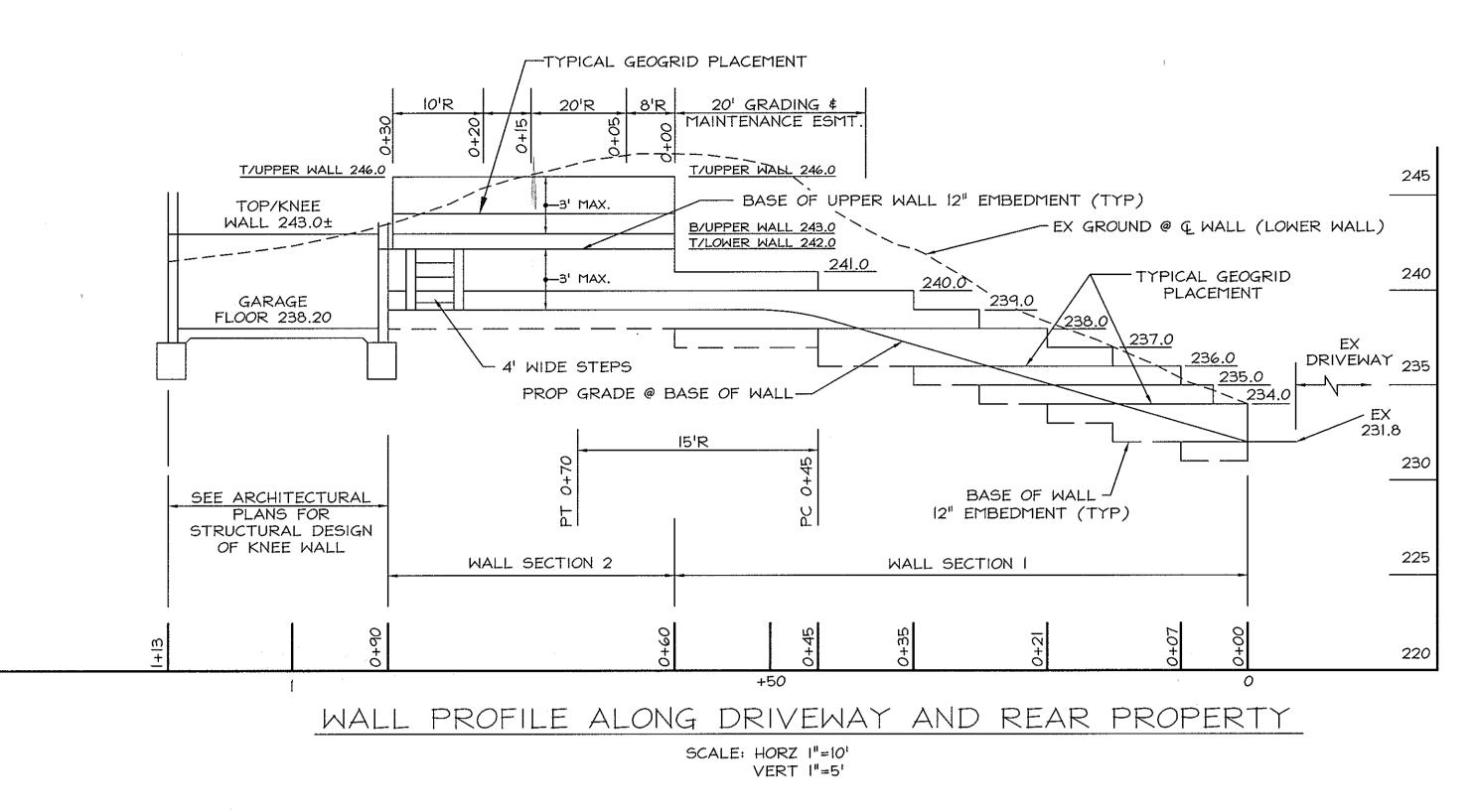




DEVELOPER'S / BUILDER'S CERTIFICATION certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Subdivision and Land Development Regulations and the Landscape Manual. I further certify that upon completion, a letter of notice, accompanied by an executed one year guarantee of plant materials, and a copy of this plan will be submitted REVISIONS Description

LDE, INC. 9250 Rumsey Road, Suite 106, Columbia, MD. 21045 (410) 715-1070 (301) 596-3424 (410) 715-9540 (Fax) SEDIMENT CONTROL AND LANDSCAPE DETAILS AS SHOWN PROPERTY OF THEODORE \$ GLENNA GREEN 3 OF 4 #8531 MAIN STREET, ELLICOTT CITY GRID N/A TAX MAP 25B 2nd ELECTION DISTRICT, HOWARD COUNTY MD

06-028 Previous Submittals: HDC-06-62, WP07-98 THEODORE N. GREEN, Jr. and GLENNA Z. GREEN 3710 Pinelea Road Pikesville, Maryland 2/208 4/0-9/7-6363 3DP-07-97



---- SEE CIVIL PLAN FOR GRAD

RETAINING WALL GENERAL NOTES

1. Retaining walls shall only be constructed under the observation of a Registered Professional Engineer and a (NICET, WACEL or equivalent) certified soils technician. 2. The required bearing pressure beneath the footing of the wall shall be verified in the field by a certified soils technician. Testing documentation shall be provided to the Howard County Inspector prior to the start of construction. The required test procedure shall be the Dynamic Cone Penetrometer Test ASTM SP-399.

3. The suitability of fill material shall be confirmed by the onsite soils technician. Each eight (8) inch lift shall be compacted to a minimum of 95% Standard Procter Density and the testing report shall be made available to the Howard County Inspector upon completion of construction.

4. For "CRITICAL" walls, one soil boring shall be required every 100' along the entire length of the wall. Copies of all boring reports shall be provided to the Howard County Inspector prior to the start of construction. 5. If no surcharge loads are considered add a note to the cross section details stating, "THIS WALL NOT DESIGNED FOR SURCHARGE

KEYSTONE Concrete Modular Retaining Wall Specifications 2.07 Bockfill Part I: General

1.01 Description
A. Work includes furnishing and installing concrete modular block retaining wall units to the lines and grades shown

on the construction drawings and as specified herein. B. Work includes preparing foundation soils, furnishing and installing leveling pad, unit fill and backfill to the lines and arades shown on the construction drawings.

. Work includes furnishing and installing all related materials required for construction of the retaining wall as shown on the construction drawings. 1.02 Related work A. Section 02200 - Earthwork.

B. Section 02246 - Geogrid soil reinforcing, 1.03 Reference standards A. ASTM C-90 Load Bearing Concrete Masonry Units. B. ASTM C-140 Sampling and Testing Concrete Masonry

C. ASTM D-448 Sizes of Aggregate for Road and Bridge Construction.

D. ASTM D-698 Laboratory Compaction Characteristics using Standard Effort. 1.04 Delivery, storage and handling A. Contractor shall check the materials upon delivery to

assure the proper materials have been received. B. Contractor shall prevent excessive mud, wet cement. epoxy, and similar materials (which may affix themselves) from coming in contact with the materials. C. Contractor shall protect the materials from damage. Damaged materials shall not be incorporated into the retaining wall structure.

B. Manufacturer's specifications (latest edition) for proposed materials, methods of installation and list of materials proposed for use.

C. Design information establishing the stability of the proposed structure(s).

A. Samples of all materials used in the work of this section.

A. Owner will be responsible for soil testing and inspection quality control during earthwork operations.

Part 2: Products

2.01 Definitions A. Modular Concrete Units - a KEYSTONE COMPAC modular facing unit, machine made from Portland cement, water and mineral aggregates.

B. Structural Geogrid - a structural geogrid formed by a regular network of integrally connected tensile elements surrounding soil, rock or earth and function primarily as reinforcement.

C. Unit Fill - drainage aggregate which is placed within and immediately behind the modular concrete units. D. Reinforced Backfill - Compacted soil which is within the reinforced soil volume as shown on the plans. 2.02 Concrete units A. Modular wall units shall be KEYSTONE COMPAC Retaining

Wall Units as manufactured in accordance with ASTM C-90 and ASTM C-140. B. Concrete wall units shall have a minimum 28-day compressive strength of 3,000 psi. Standard weight concrete shall have a maximum moisture absorption of

C. Dimensional tolerances shall be in accordance with ASTM C-90 except those measured to the split face which varies. Standard and Compact units shall have a minimum of one square foot face area each. Mini units shall have a minimum one half square foot area each.

D. Keystone modular units shall provide an in-place weight of 114 pcf. including the unit fill which is contained within the nominal dimension of the unit. E. Units shall have angled sides capable of concave and

convex alignment curves with a minimum radius of 3.5

feet (where applicable, for straight walls, use non-angled straight side cap units). 2.03 Fiberglass connecting pins A. Connecting pins shall be 1/2" in diameter thermoset isopthalicpolyester resin-pultruded fiberglass reinforcement

rods supplied by the unit manufacturer. 2.04 KEYSTONE KAPSEAL construction adhesive A. Material shall confirm to ASTM 2339 and be supplied by the KEYSTONE unit supplier.

2.05 Base leveling and pad material A. Material shall consist of compacted crushed stone or unreinforced concrete as shown on the construction

grave!" shall not be used.

drawings. "Pea grave!" shall not be used. A. Fill for units shall be free draining crushed stone or gravel, 1/2" to 3/4", with no more than 5% passing the No. 50 sieve and conforming to ASTM D-448. Gradation of the fill shall be approved by the Engineer. "Pea

A. Material may be site excavated soils when approved by the Engineer or otherwise specified in the construction drawings. Unsuitable soils for backfill (high plastic clays or organic material) shall not be used in the backfill or in the reinforced soil mass. B. Where borrow or imported fill is required, the contractor

A. Contractor shall excavate to the lines and grades shown

not to disturb embankment and foundation materials

A. Foundation soils shall be excavated as required for levelina

B. Foundation soil shall be approved by the Engineer to

C. Unsuitable soils shall be removed and replaced with

D. Over excavated areas shall be backfilled with approved

A. Leveling pad materials shall be placed upon an approved

B. Aggregate material shall be compacted to provide a

foundation as shown on the construction drawings to a

dense, level surface on which to place the first course of modular units. Compaction shall be 95% of Standard

Proctor Density as determined in accordance with ASTM

D-698. For crushed rock, material shall be densely

compacted as determined by visual observation.

C. Leveling pad shall be prepared and leveled to ensure

complete contact of retaining wall unit with base.

shall be unreinforced and a minimum of 3" thick.

B. Ensure that all units are in complete contact with base

alignment. Alignment may be done by means of a string

around the modular units with unit fill material. Tamp or

course. Ensure that each course is completely unit filled

required per unit. Pull each unit forward, away from the

fill zone, locking against the pins in the previous course and backfill as the course is completed. Repeat the

backfilling required. Compaction of all solls shall be to

structure fill shall be a low permeability soil to minimize

H. As appropriate where the wall changes elevation, units can

be stepped with grade or turned into the embankment

on compacted leveling pad in area of convex return end.

units below. Pull forward to setback position. Backfill

B. As required, provide permanent mechanical connection to wall units with KEYSTONE Kapseal construction adhesive.

and compact to finished grade with low permeability soil.

Apply adhesive to top surface of unit below and place cap

3.05 Cap installation
A. Place KEYSTONE Cap units over projecting pins from

A. Follow requirements of Section 02246, Geogrid soil

A. Work includes furnishing and installing geogrid

designated on the construction drawings.

B. Work includes furnishing and installing all related

reinforcement and backfill to the lines and grades

materials required for construction of the geogrid

A. Section 02276: KEYSTONE Concrete Modular Retaining

A. See specific geogrid manufacturer's reference standard

reinforced soil retaining wall as shown on the construction

surface water run off from directly entering the unit fill

with a convex return end. Provide appropriate buried units

D. Install fiberglass connecting pine and fill all voids in and

rod unit fill to ensure all voids are completely filled.

E. Sweep excess material from top of units and install next

backfilled and compacted prior to proceeding to next

into adjoining course a minimum of !". Two pins are

F. Place each subsequent course ensuring that pins protrude

G. Follow wall erection and unit fill closely with any other

95% of Standard Proctor Density as determined in

accordance with ASTM D-698. The top 8" of the

A. The first course of modular concrete units shall be

C. Units are placed side by side for full length wall

carefully placed on the base leveling pad.

line or offset from a base line.

procedure to extent of wall height.

or reinforced soil zone.

unit into position.

Geogrid Soil Reinforcement

3.06 Geogrid installation

1.03 Reference standards

1.04 Delivery, storage and handling

Part I: General

D. Contractor may use a reduced depth of gravel or crushed

stone in conjunction with a concrete topping. Concrete

pad dimensions shown on the construction drawings or as

confirm that the actual foundation soils meet or exceed

on the construction drawings. Contractor shall be careful

Engineer for approval.

beyond lines shown.

acceptable material.

3.04 Unit installation

and properly seated.

directed by the Engineer.

assumed design conditions.

compacted backfill material.

minimum thickness of 6".

3.02 Foundation soil preparation

Part 3: Execution

shall submit samples and material specifications to the

D. Rolled geogrid material may be laid flat or stood on end 1.05 Submittals A. Samples of all materials used in the work of this section B. Manufacturer's specifications (latest edition) for proposed

C. Contractor shall prevent excessive mud, wet cement,

themselves) from coming in contact with the geogrid

materials, method of installation and list of materials

epoxy and similar materials (which may affix

B. Geogrids shall be stored at temperatures above -20

1.06 Quality assurance A. Contractor will be responsible for soil testing and quality

control during earthwork operations,

Part 2: Products

degrees Farenheit,

A. Geogrid products high-density polyethylene or polypropylene expanded sheet or polyester woven fiber materials, specifically fabricated for use as soil

B. Structural Geogrid - a structural geogrid formed by a regular network of integrally connected tensile elements with aperatures of sufficient size to allow interlocking

primarily as reinforcement. C. Modular Concrete Units - a KEYSTONE segmental concrete facing unit, machine made from Portland cement, water and mineral aggregate.

with surrounding soils, rock or earth and function

D. Unit Fill - drainage aggregate which is placed within and E. Reinforced backfill - Compacted soil which is within the reinforced soil mass as shown on the plans, 2.02 Geogrid

A. Geogrid shall be the type shown on the construction drawings having the property requirements described within the manufacturers specifications and required by

2.03 Acceptable manufacturers A. A manufacturers product shall be approved by the

Part 3: Execution

3.01 Excavation A. Contractor shall excavate to the lines and arades shown on the construction drawings. Contractor shall be careful not to disturb embankment and foundation materials beyond the lines shown.

3.02 Foundation soil preparation A. Foundation soils shall be excavated as required for leveling pad dimensions shown on the construction drawings, or a directed by the Engineer. B. Foundation soil shall be approved by the Engineer to confirm that the actual foundation soil conditions meet o

exceed assumed design conditions. Unsuitable soil shall be

removed and replaced with acceptable material compacted

to 95% Standard Proctor Density as defined by ASTM C. Over excavated areas shall be backfilled with approved compacted backfill materials. D. Foundation soil shall be proof rolled prior to geogrid

3.03 Wall erection A. Wall erection shall be in accordance with Section 02276:

KEYSTONE Concrete Modular Retaining Wall. 3.04 Geogrid installation A. Geogrid shall be laid at the proper elevations and oriented as shown on the construction drawings or as directed by the Engineer.

B. Correct orientation (roll direction) or the geogrid shall be verified by the contractor. C. The geogrid soil reinforcement shall be connected to the modular wall units by placing the geogrid over the fiberglass pins and laying the grid back to the fill side.

D. The geogrid shall be pulled tout (50lbs/ft +/-) to eliminate loose folds and pretension the reinforcement. Stake or secure back edge of geogrid prior to and during backfill and compaction.

E. Follow manufacturer's guidelines relative to overlap requirements of unlaxial and blaxial geogrids. 3.05 Fill placement

A. Soils to be used as backfill soils must be approved by the geotechnical engineer and meet the following assumed soil parameters: Internal friction Angle of 28 Degrees or greater, Unit Weight of 120 PCF or greater, and a Unified Soils Classification of ML, SM, SW, SP,

B. Backfill shall be placed in 8" loose lifts and compacted to 95% of Standard Proctor Density as determined in accordance with ASTM D-698. The in-place moisture content shall not exceed optimum moisture content by more than 2% as determined in accordance with ASTM D-698 and be no lower than 2% below optimum moisture

C. Backfill shall be placed, spread and compacted in such a monner that minimizes the development of slack or loss f pretension of the geogrid.

D. Only hand operated compaction equipment shall be allowed within 3' of the back of the modular concrete wall units. E. Backfill shall be placed from the wall back towards the

embankment to ensure that the geogrid remains taut

A. Contractor shall check the geogrid upon delivery to assure the proper material has been received - SUNROOM SEE CAPITAL PROJECT D-119 EX STONE WALL - EX GROUND TO BE REMOVED 230 100 YR EL. 230.2 _TRAVEL! WAY --EX STONE WALL RECONSTRUCT EX WALL TO TOP EL. 230.2 220 SIDE SLOPE @ CULVERT @ CULVERT ENTRANCE ENTRANCE ACP 210 200 SECTION THRU PROJECT SITE

SCALE: H 1"=20'

V 1"=10"

LOADS".

- AASHTO # 57 STONE ---- SEE CIVIL PLAN FOR GRADES BEHIND WALL WRAPPED IN MIRAFI 1401 TYPICAL LOCATION OF GEOGRID 4' PVC PIPE WITH WEEPS AT 40" O.C. + 4' PVC PIPE WITH WEEPS AT 40' O.C. WEEPS AT 40 O.C. WALL HEIGHT: 3" MAXIMUM COMPAC UNIT - 1".SETBACK REQUIRED BEARING PRESSURE = 3000 PSF WALL SECTION 2 WALL HEIGHT: TIQ! MAXIMUM & COMPAC UNIT - 1" SETBACK REQUIRED BEARING PRESSURE = 3000 PSF SCALE: NONE

LEVELING PAD DETAIL

NOTE: This wall not designed for surcharge loads

BASE LEVELING PAD NOTES:

1. THE LEVELING PAD IS TO BE CONSTRUCTED OF CRUSHED STONE.

3. SUBGRADE SOIL IS TO BE NATURAL GROWN OR CONTROLLED FILL HITH A HIMMUNI ALLOWANGE BEARING CAPACITY OF 3000 /rs

WALL SECTION 1

SCALE: NONE

THE BASE FOUNDATION IS TO BE APPROVED MINI CAT VILLE BY THE SITE GEOTECONICAL BY THE SITE GEOTECONICAL BY THE SITE GEOTECONICAL BY THE SITE GEOTECONICAL GROUND SECONIC OF SECONICAL GROUND SECONICAL SECONICAL GROUND SECONICAL SECONICAL GROUND SECONICAL SECONICAL GROUND SECONICAL

PAD ISOMETRIC VIEW

NOTE: This wall not designed for surcharge loads.

COMPAC, ELEVATION

COMPAC PLAN

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL NGERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS. WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. YOWE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE 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 INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR UITHORIZED AGENTS AS ARE DEEMED NECE

(410) 715-1070 (301) 596-3424 (410) 715-9540 (Fax) RETAINING WALL NOTES, DETAILS AND SECTION THRU PROJECT SITE AS SHOWN REVISIONS PROPERTY OF THEODORE \$ GLENNA GREEN Description Date 4 OF 4 #8531 MAIN STREET, ELLICOTT CITY TAX MAP 25B GRID N/A PARCEL 159 2nd ELECTION DISTRICT, HOWARD COUNTY MD 06-028 Previous Submittals: HDC-06-62, WP07-98 THEODORE N. GREEN, Jr. and GLENNA Z. GREEN 3710 Pinelea Road 9/2007 Pikesville, Maryland 21208 410-917-6363 3DP-07-97

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