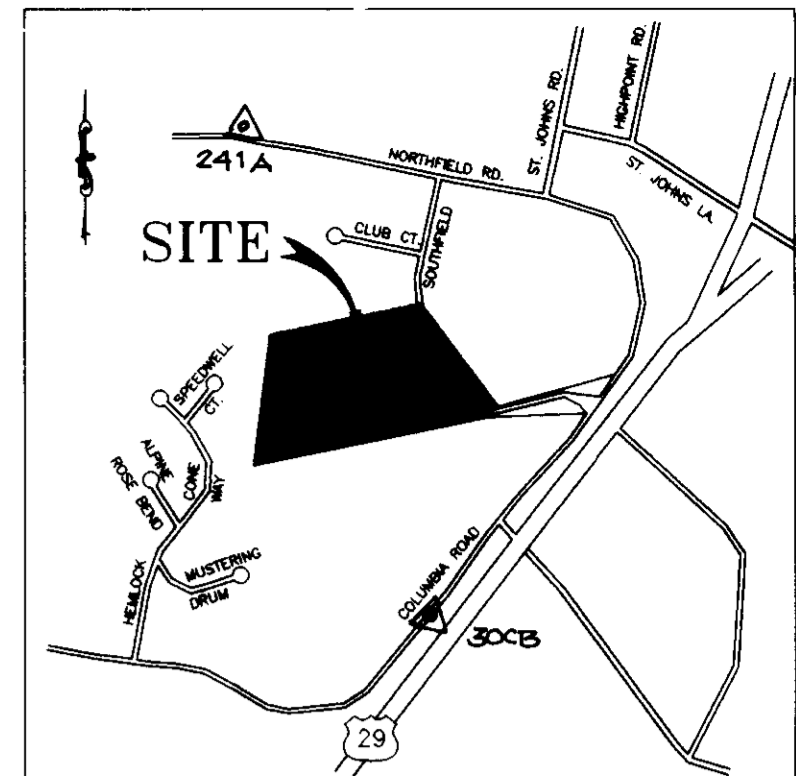
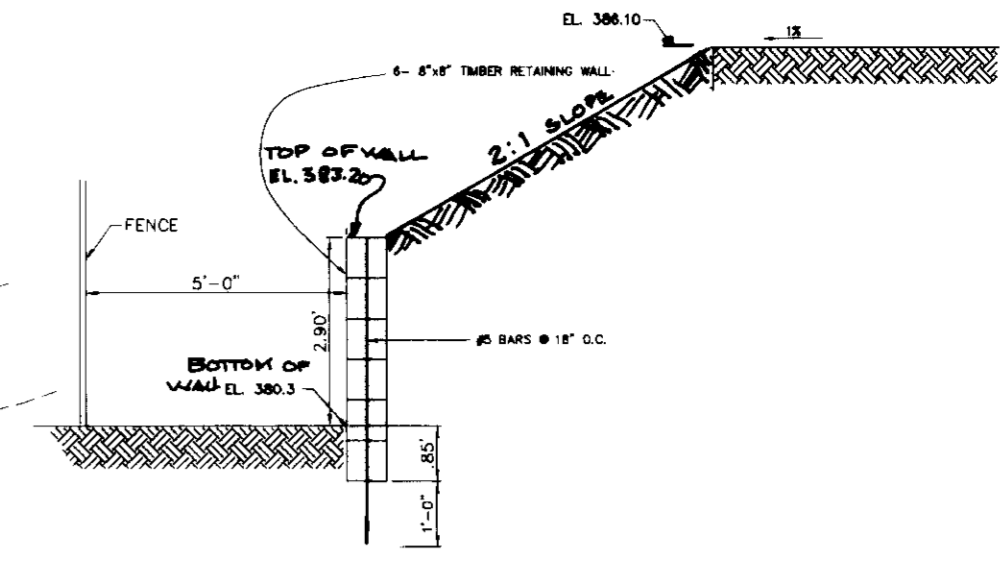


MATCH LINE A - A



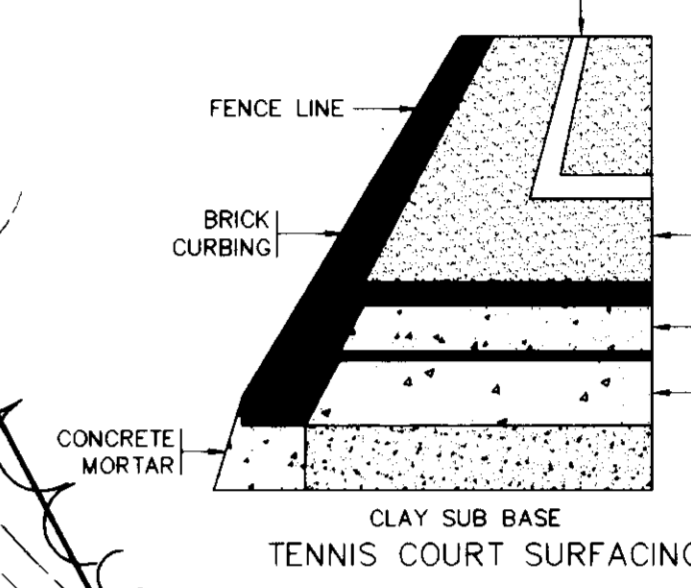
VICINITY MAP  
SCALE 1" = 1000'



RETAINING WALL DETAIL  
NOT TO SCALE

PLANT SCHEDULE					
SYMBOL	LOCATION	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE
⊙	PERIMETER	PINUS STRUBUS	WHITE PINE	53	6'-8" HT.

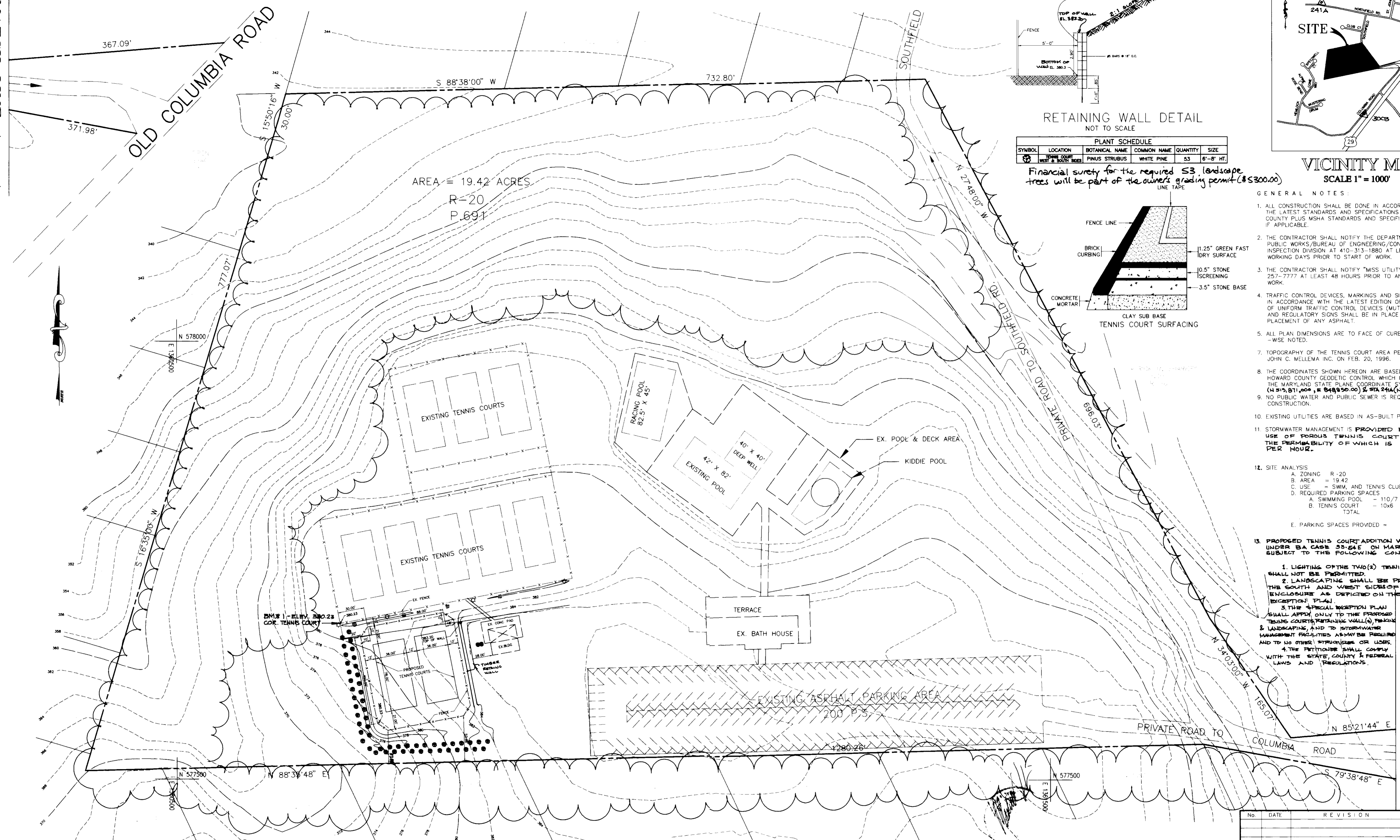
Financial surety for the required S3 (landscape trees) will be part of the owner's grading permit (\$8300.00)



TENNIS COURT SURFACING

- GENERAL NOTES:
- ALL CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
  - THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE(5) WORKING DAYS PRIOR TO START OF WORK.
  - THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
  - TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
  - ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
  - TOPOGRAPHY OF THE TENNIS COURT AREA PERFORMED BY JOHN C. WELLS INC. ON FEB. 20, 1996.
  - THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM STA. 300B (N 515,811.000, E 849,050.000) & STA 241A (N 516,555.000, E 849,050.000).
  - NO PUBLIC WATER AND PUBLIC SEWER IS REQUIRED FOR THIS CONSTRUCTION.
  - EXISTING UTILITIES ARE BASED IN AS-BUILT PLANS.
  - STORMWATER MANAGEMENT IS PROVIDED BY THE USE OF PERVIOUS TENNIS COURT SURFACE THE PERMEABILITY OF WHICH IS 1.8" TO 2.9" PER HOUR.
  - SITE ANALYSIS:
    - A. ZONING R-20
    - B. AREA = 19.42
    - C. USE = SWM, AND TENNIS CLUB
    - D. REQUIRED PARKING SPACES:
      - A. SWIMMING POOL = 110/7 = 15
      - B. TENNIS COURT = 10x6 = 60
      - TOTAL = 75
    - E. PARKING SPACES PROVIDED = 200

- PROPOSED TENNIS COURT ADDITION WAS APPROVED UNDER BA CASE 93-64E ON MARCH 18, 1996 SUBJECT TO THE FOLLOWING CONDITIONS:
  - LIGHTING OF THE TWO(2) TENNIS COURTS SHALL NOT BE PERMITTED.
  - LANDSCAPING SHALL BE PROVIDED ON THE SOUTH AND WEST SIDES OF THE COURT ENCLOSURE AS DEPICTED ON THE SPECIAL EXCEPTION PLAN.
  - THIS SPECIAL EXCEPTION PLAN SHALL APPLY ONLY TO THE PROPOSED TENNIS COURTS, RETAINING WALL(S), FENCING & LANDSCAPING, AND TO STORMWATER MANAGEMENT FACILITIES AS MAY BE REQUIRED AND TO NO OTHER STRUCTURE OR USES.
  - THE PERMITTING SHALL COMPLY WITH THE STATE, COUNTY & FEDERAL LAWS AND REGULATIONS.



AREA = 19.42 ACRES  
R-20  
P.691

PLAN  
SCALE 1" = 50'

LEGEND:  
EX. GRADE  
PROP. GRADE

INDEX	
SHEET NO.	TITLE
1	SITE DEVELOPMENT PLAN
2	SEDIMENT CONTROL PLAN
3	SEDIMENT CONTROL NOTES & DETAILS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 4/10/96  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 4/19/96  
 CITY DIVISION AND DEVELOPMENT AND RESEARCH  
 [Signature] 4/22/96  
 DIRECTOR

**Loria Engineering Inc.**  
 CONSULTING ENGINEERS  
 8307 MAIN ST., HISTORIC ELLICOTT CITY, MD.  
 410-485-0400

No.	DATE	REVISION	BY

ADDRESS CHART			
PARCEL NUMBER	STREET ADDRESS	SECTION/AREA/LOT/PARCEL	
	4310 OLD COLUMBIA ROAD	24	G91
SUBDIVISION NAME		TAX MAP	SECTION/AREA/LOT/PARCEL
FOREST HILL SWIM CLUB INC.		24	G91
ZONING	28/3A-REF.	ELECTION DIST.	SITE AREA
R-20	735C		19.42 ACRES
FINAL PLAN APPROVAL DATE	WATER CODE	UPZ REFERENCE NUMBER	SEWER CODE
	F-08		5751600

DESIGNED BY:	SITE DEVELOPMENT PLAN		SCALE:
MLL	PROPOSED TENNIS COURTS		1" = 50'
DRAWN BY:	ADDITION		DRWG. No.
DTA			1 OF 3
CHECKED BY:	OWNER/DEVELOPER: FOREST HILL SWIM CLUB, INC.		JOB No.
MLL	P.O. BOX 285		
DATE:	ELLICOTT CITY, MARYLAND		FILE No.
2-28-96			

SDP.96.99

MATCH LINE A - A

MATCH LINE A - A

**DEVELOPER'S CERTIFICATE**

"I 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 a certificate of attendance at a department of natural resources approved training program for the control of sediment and erosion before beginning the project."

*J. Chapman*  
DEVELOPER'S SIGNATURE HNS/C 2/29/96  
DATE

---

**ENGINEER'S CERTIFICATE**

"I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with an "AS-BUILT" plan of the pond within 30 days of completion."

*John R. Reuter*  
ENGINEER'S SIGNATURE HNS/C 2/29/96  
DATE

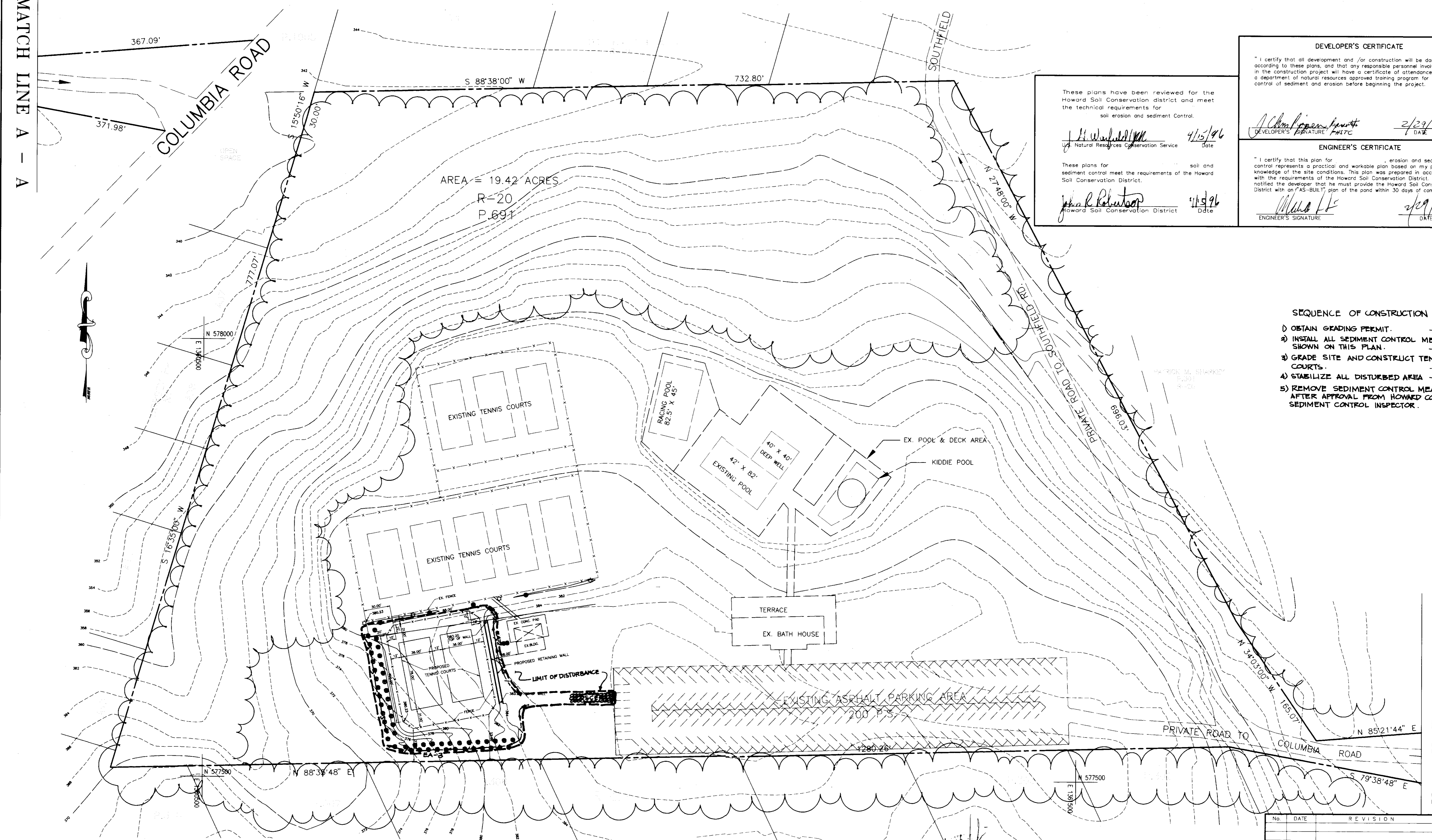
These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for soil erosion and sediment control.

*J. Chapman*  
Natural Resources Conservation Service 4/15/96  
DATE

These plans for soil and sediment control meet the requirements of the Howard Soil Conservation District.

*John R. Reuter*  
Howard Soil Conservation District 4/15/96  
DATE

- SEQUENCE OF CONSTRUCTION**
- 1) OBTAIN GRADING PERMIT. - 1 WEEK
  - 2) INSTALL ALL SEDIMENT CONTROL MEASURE SHOWN ON THIS PLAN. - 1 WEEK
  - 3) GRADE SITE AND CONSTRUCT TENNIS COURTS. - 6 WEEKS
  - 4) STABILIZE ALL DISTURBED AREA - 1 WEEK
  - 5) REMOVE SEDIMENT CONTROL MEASURE AFTER APPROVAL FROM HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. 2 DAYS



**PLAN**  
SCALE 1" = 50'

- LEGEND:**
- EX. GRADE
  - SILT FENCE
  - EARTH DIKE
  - LIMIT OF DISTURBANCE
  - STABILIZED CONSTRUCTION ENTRANCE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 DATE: 4/15/96  
 CHIEF DEVELOPMENT ENGINEERING DIVISION  
*Gina Swannami*  
 DATE: 4/15/96  
 CHIEF DIVISION AND LAND DEVELOPMENT AND RESEARCH  
*John R. Reuter*  
 DATE: 4/23/96

No.	DATE	REVISION	BY

ADDRESS CHART			
PARCEL NUMBER	STREET ADDRESS	4310 OLD COLUMBIA RD	
SUBDIVISION NAME	TAX MAP	SECTION/AREA	LOT/PARCEL
FOREST HILL SWM CLUB INC.	24	24	691
ZONING	ZB/BA REF.	ELECTION DIST.	SITE AREA
R-20	735C	2nd	19.42 ACRES
WATER CODE	DPZ REF. N.B.	SEWER CODE	
F-08		5751000	

SEDIMENT CONTROL PLAN		SCALE
DESIGNED BY:	MLL	1" = 50'
DRAWN BY:	DTA	DRWG No
CHECKED BY:	MLL	2 OF 3
DATE:	2-28-96	JOB No.
OWNER/DEVELOPER:	FOREST HILL SWM CLUB, INC.	FILE No.
	P.O. BOX 285	
	ELLICOTT CITY, MARYLAND	

**Orion Engineering Inc.**  
 CONSULTING ENGINEERS  
 8307 MAIN ST., HISTORIC ELLICOTT CITY, MD.  
 410-485-0400

**I. SEDIMENT CONTROL NOTES:**

**PERMANENT SEEDING NOTES**

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seeded Preparation: Loosen upper three inches of soil by raking, grading or other acceptable means before seeding, unless previously loosened.

Soil Amendments: In lieu of soil test recommendations, use

- 1) Preferred - apply 2 tons per acre dolomitic limestone (92 lbs/1000 square feet) and 500 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft) before seeding; or apply 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 50 lbs/acre Kentucky 31 tall fescue and mulch with 2 tons/acre well-anchored straw.

- 2) Acceptable - apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq ft) and 1000 lbs per acre 10-10-10 fertilizer (28 lbs/1000 sq ft) before seeding; or apply 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 50 lbs/acre Kentucky 31 tall fescue and mulch with 2 tons/acre well-anchored straw.

Seeding - For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs per acre (14 lbs/1000 sq ft) of Kentucky 31 tall fescue for the period May 1 thru July 31, seed with 50 lbs Kentucky 31 tall fescue per acre and 2 lbs per acre (05 lbs/1000 sq ft) of seeding clovergrass 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 50 lbs/acre Kentucky 31 tall fescue and mulch with 2 tons/acre well-anchored straw.

Mulching - Apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of untreated small grain straw immediately after seeding; anchor mulch immediately after application using mulch anchoring tool or 218 options per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas; on slopes 6 feet or higher, use 400 options per acre (8 gal/1000 sq ft) for anchoring.

Maintenance - Inspect all seeded areas and make needed repairs, replacements and reseedings temporary seeding notes as ft) for the period November 15 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.

**TEMPORARY SEEDING NOTES**

Apply to graded or cleared areas likely to be redistributed where a short-term vegetative cover is needed.

Seeded Preparation: Loosen upper three inches of soil by raking, grading, or other acceptable means before seeding, unless previously loosened.

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

Seeding: For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2 1/2 bushel per acre of annual ryegrass (3.2 lbs/1000 sq ft) for the period May 1 thru August 14, seed with 3 lbs per acre of seeding clovergrass (07 lbs/1000 sq ft).

Mulching: Apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of untreated small grain straw immediately after seeding; anchor mulch immediately after application using mulch anchoring tool or 218 gal per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas; on slopes 6 ft or higher, use 400 gal per acre (8 gal/1000 sq ft) for anchoring; refer to the 1983 Maryland Standard and Specifications for Erosion and Sediment Control for rate and methods not covered.

**STANDARD AND SPECIFICATION FOR VEGETATIVE STABILIZATION WITH SOD**

1. Class of turfgrass sod shall be Maryland or Virginia state certified, or Maryland or Virginia state approved sod.

2. Sod shall be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch, at the time of cutting; measurement for thickness shall exclude top growth and thatch.

3. Standard size sections of sod shall be strong enough to support their own weight, and retain their size and shape, when suspended vertically with a firm grasp on the upper 10 percent of the section.

4. Individual pieces of sod shall be cut to the suppliers width and length, maximum allowable deviation from standard widths and lengths shall be 5 percent; broken pads and torn or uneven ends will not be acceptable.

5. Sod shall not be harvested or transported when moisture content (excessively dry or wet) may adversely affect its survival.

6. Sod shall be harvested, delivered and installed within a period of 36 hours, not transported within this period shall be inspected and approved prior to its installation.

**SITE PREPARATION**

Fertilizer and lime application rates shall be determined by soil tests. Under unusual circumstances where there is insufficient time for a complete soil test, fertilizer and lime materials may be applied in amounts shown under b, below.

- a. Prior to Sodding, the surface shall be cleared of all trash, debris, and of all roots, brush, wire, grade stakes, and other objects that would interfere with planting, fertilizing or maintenance operations.

- b. Where the soil is acid or composed of heavy clays, ground limestone shall be spread at the rate of 2 tons/acre or 100 pounds per 1,000 square feet, in all soils 1,000 pounds per acre or 25 pounds per 1,000 square feet of 10-10-10 fertilizer or equivalent shall be uniformly applied and mixed into the top 3 inches of soil with the required lime.

- c. All areas receiving sod shall be uniformly lime graded, hard-packed earth shall be scarified prior to placement of sod.

**STANDARD SEDIMENT CONTROL NOTES:**

- 1) A minimum of 48 hours notice must be given to the Howard County Office of Inspection and Permits prior to the start of any construction. (313-1855)

- 2) All vegetative and structural practices are to be installed in accordance with the provisions of this plan and are to be in accordance with the 1983 Maryland Standards and Specifications for Soil Erosion and Sediment Control.

- 3) Following initial soil disturbance or redistribution, 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 than 3:1; b) 14 days on 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 1983 Maryland standards and specifications for soil erosion and sediment control for permanent seedings (sec. 51) and (sec. 54), temporary seeding (sec. 50) and mulching (sec. 52); temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.

- 6) All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.

- 7) Site analysis:
 

total area of site	19.42 acres
total disturbed area to be reseeded or paved	0.30 acres
area to be vegetatively stabilized	2.88 acres
total cut	2.00 cu yds
total fill	2.00 cu yds
offsite waste/borrow area location	n.a.

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

- 9) Additional sediment controls must be provided, if deemed necessary by the Howard County DPW 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.

**General Notes**

- 1) Refer to 1983 Maryland Standards and Specifications for soil erosion and sediment control for standard details and detailed specifications of each practice specified herein.
- 2) With the approval of the sediment control inspector, minor field adjustments can and will be made to insure the control of any sediment changes in sediment control practices. Prior approval of the sediment control inspector and the county soil conservation district.
- 3) At the end of each working day, all sediment control practices will be inspected and left in operational condition.
- 4) Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within: a) seven calendar days to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3:1; b) 14 days on all other disturbed or graded areas on the project site.

- 5) Any change to the grading proposed on this plan requires re-submission to county soil conservation district for approval.
- 6) Dust control will be provided for all disturbed areas - refer to 1983 Maryland Standards and Specifications for dust control, section 62.01 and 62.02 for acceptable methods and specifications for dust control.
- 7) Any variation from the sequence of operations stated on this plan requires the approval of the sediment control inspector and the county soil conservation district prior to the initiation of the change.

- 8) Excess cut or borrow material shall go to or come from, respectively, a site with an approved sediment control plan.
- 9) The following item may be used as applicable:
  - a. All dikes shall be compacted by earth-moving equipment.
  - b. All dikes shall have positive drainage to an outlet.
  - c. Top width may be wider and side slopes may be flatter if desired to facilitate crossing by construction traffic.
  - d. Field location should be adjusted as needed to utilize a stabilized safe outlet.
  - e. Earth dikes shall have an outlet that functions with a minimum of erosion; runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin where either the dike channel or the drainage area above the dike are not adequately stabilized.
  - f. Stabilization shall be: (a) in accordance with stabilization specifications for seed and straw mulch if not in seeding season, (b) flow channel as per the chart below.

- 10) Refer to Maryland's guidelines to waterworks construction by the Water Resources Administration (WRA), dated January, 1986, for standard details and detailed specifications of each practice specified herein for waterway construction.

11. GENERAL NOTES FOR PONDS:
  - a. Area under the borrow area, embankment, and structural works shall be cleared, grubbed and the top soil stripped to remove all trees, vegetation, rocks or other objectionable material. Concrete banks and sharp breaks shall be sloped to no steeper than 1:1.
  - b. Areas covered by the pond or reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable materials unless otherwise designated on the plans. Trees, brush, and stump shall be cut approximately level with the ground surface.
  - c. All cleared and grubbed material shall be disposed of outside the limits of the dam and reservoir as directed by the owner or his authorized representative. When specified, a sufficient quality of top soil will be stockpiled in a suitable location for use on the embankment and other designated areas.

12. EARTH FILL:
  - a. Material: The fill material shall be taken from approved designated borrow areas or areas. It shall be free of roots, stumps, wood, rubbish, over-size stones, frozen or other objectionable materials. The embankment shall be constructed to an elevation which provides for anticipated settlement to the design elevation. The fill height all along the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.
  - b. Placement: Area on which fill is to be placed shall be scarified prior to placement of the fill. Fill materials shall be placed in 8-inch maximum thickness (before compaction) layers which are to be continuous over the entire length of the fill. The most porous material shall be placed in the downstream portion of the embankment.
  - c. Compaction: The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tire track of all equipment or compaction shall be achieved by vibration of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction can be obtained with the equipment used.
  - d. Cut-off trench: Where specified, a cut-off trench shall be excavated along or parallel to the center-line of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation. With the minimum width being four feet, the depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment rollers or hand tampers to ensure maximum density and a minimum permeability.

13. STRUCTURE BACKFILL:
  - a. Backfill adjacent to pipes or structures shall be of the type and quality conforming to the specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to completely fill spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.
  - b. PIPE CONDUITS:
    - a. Corrugated metal pipe: Materials - (steel pipe) - This pipe and its appearance shall be galvanized and fully bituminous coated and shall conform to the requirements of AASHTO Specification M-190 type A with water tight coupling bands. Any bituminous coating damaged at otherwise removed shall be placed with cold applied bituminous coating compound. Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.1 inch (10 mil) on both sides of the pipe. The following coatings or an approved equal may be used: Nealon, Plast-Cote, Blac-Klad, and Beth-Cu-Loy. Coated corrugated steel pipe shall meet the requirements of AASHTO M-245 and M-246.
    - b. Materials - (Aluminum Coated Steel Pipe) - This pipe and its appearance shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer, hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.
    - c. Coupling band, anti-seep collars, end sections etc., must be composed of the same material as the pipe. Metals must be insulated from dissimilar metals with use of rubber or plastic insulating material at least 24 mils in thickness.
    - d. Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such manner as to be completely watertight. Dimple bands are not considered to be watertight.

14. REINFORCED CONCRETE PIPE:
  - a. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gasket and shall equal or exceed ASTM Designation C-361. An approved equivalent is AWWA specification C-302.
  - b. Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and rising up the sides of the pipe to a depth of at least 10% of its outside diameter with a minimum thickness of 3 inches, or as shown on the drawings.
  - c. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 2 feet from the riser.
  - d. Backfilling shall conform to "Structure Backfill".
  - e. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

15. POLYVINYL CHLORIDE (PVC) PIPE:
  - a. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241.
  - b. Joints and connections to anti-seep collars shall be completely watertight.
  - c. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

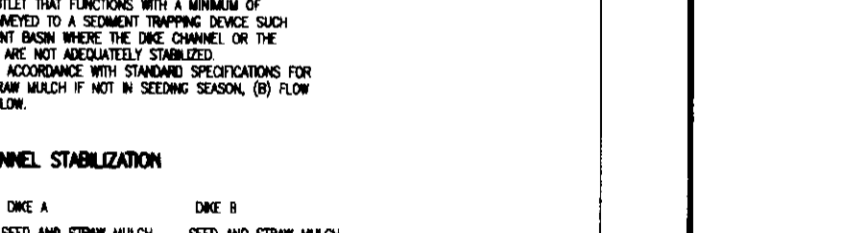
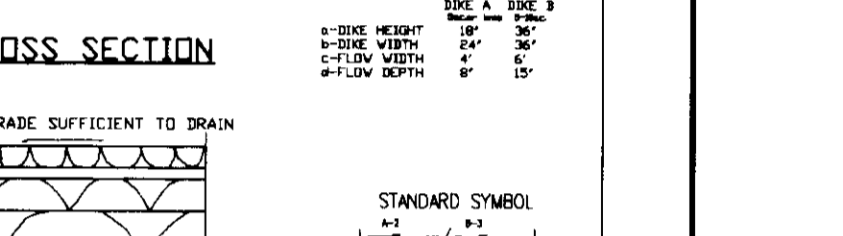
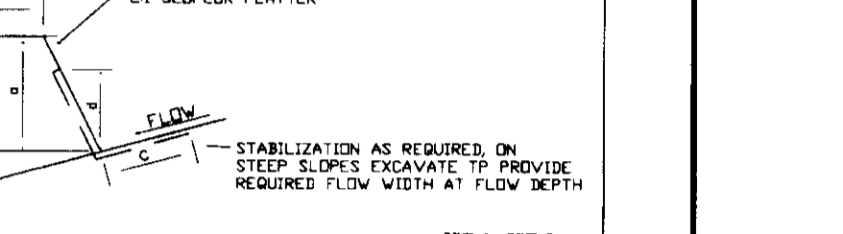
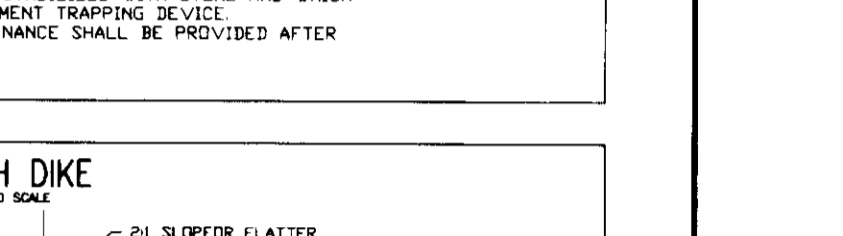
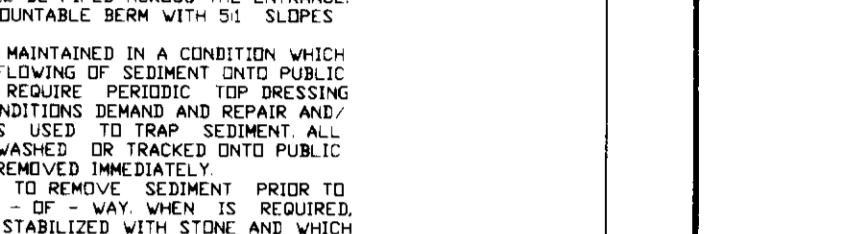
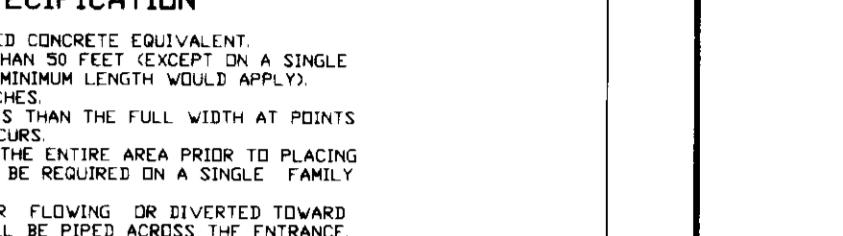
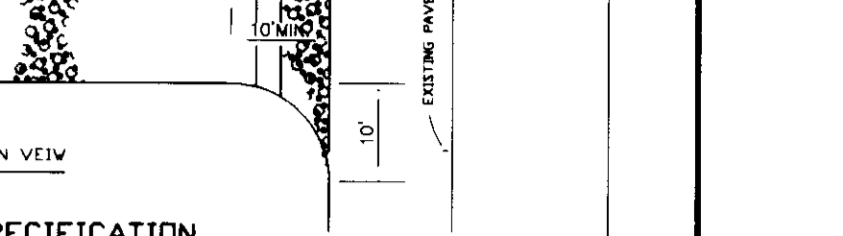
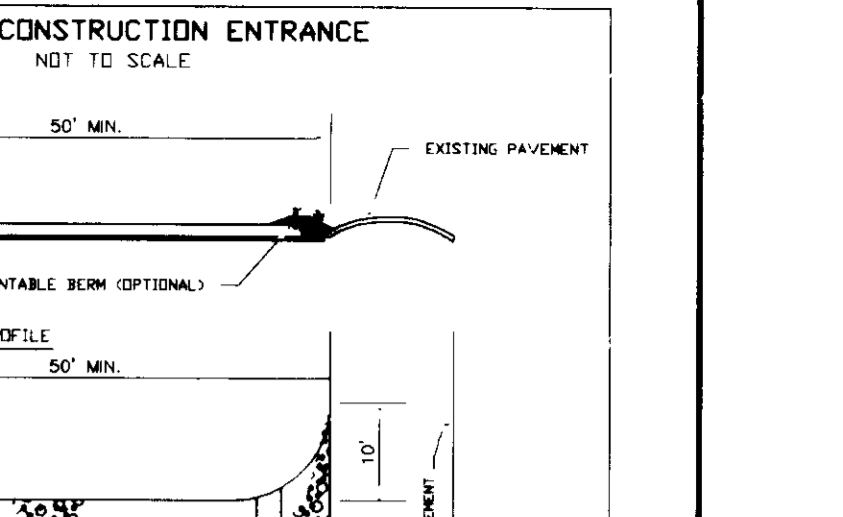
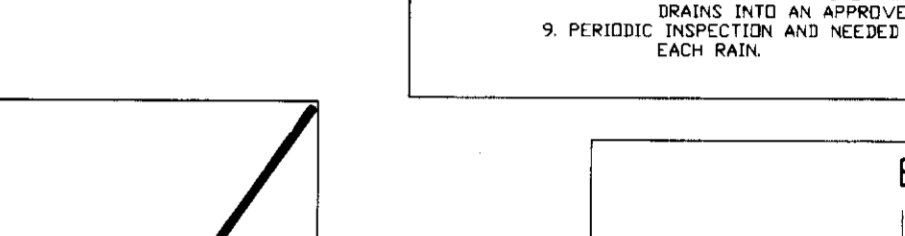
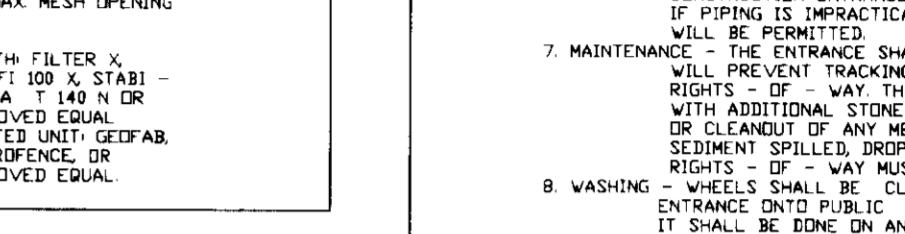
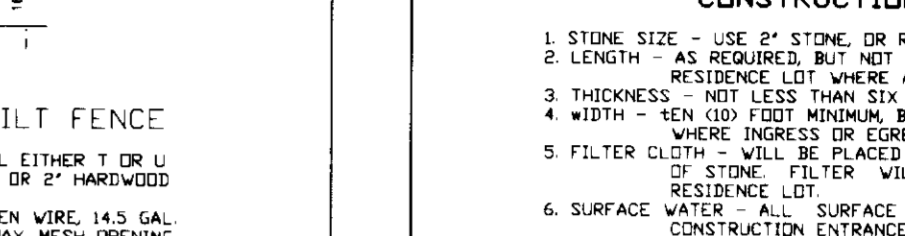
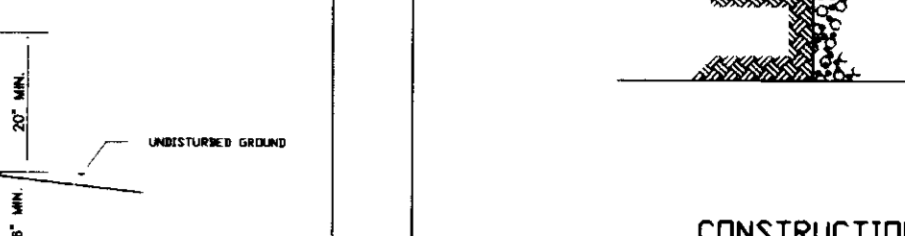
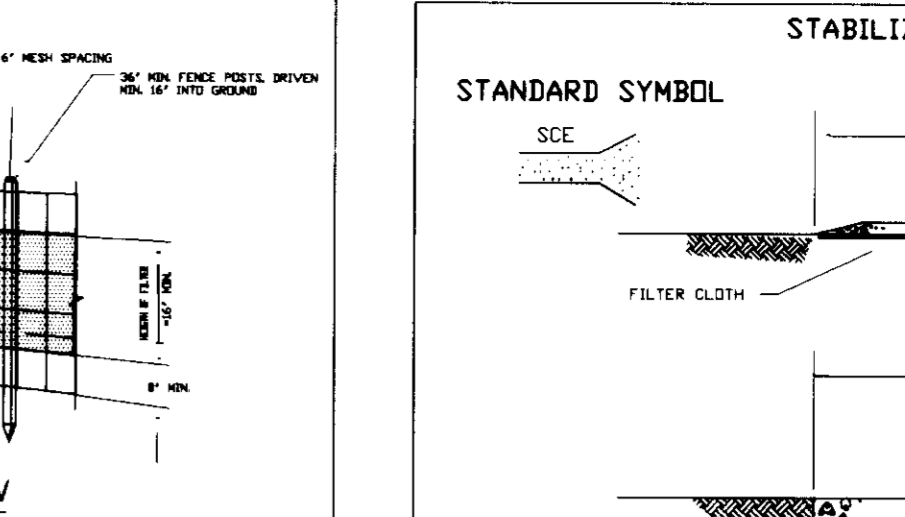
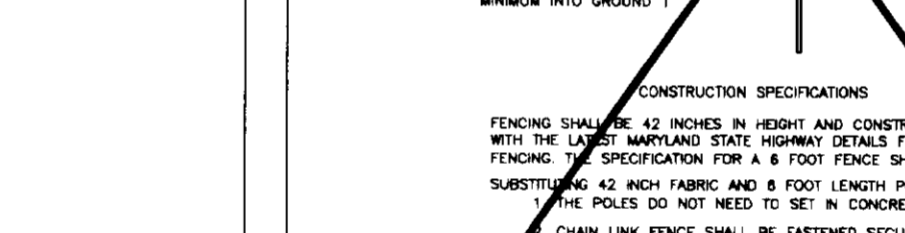
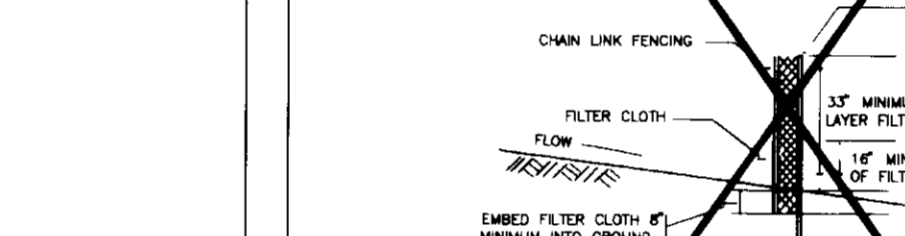
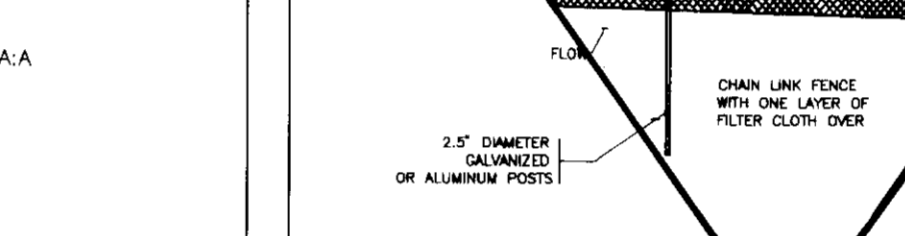
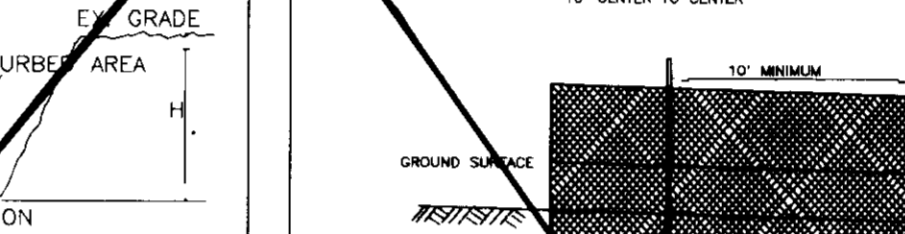
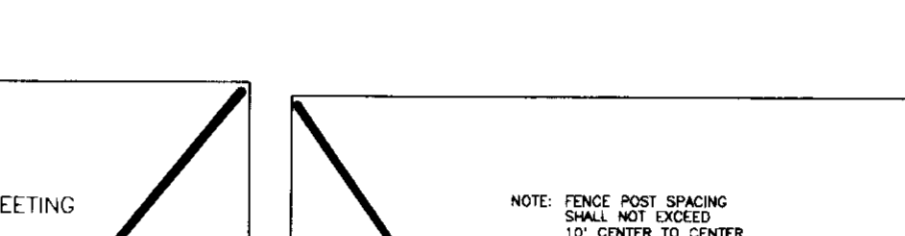
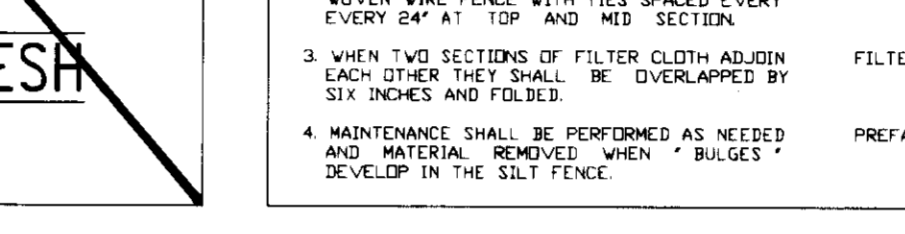
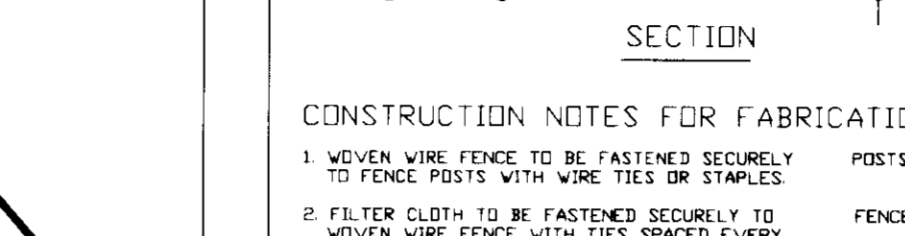
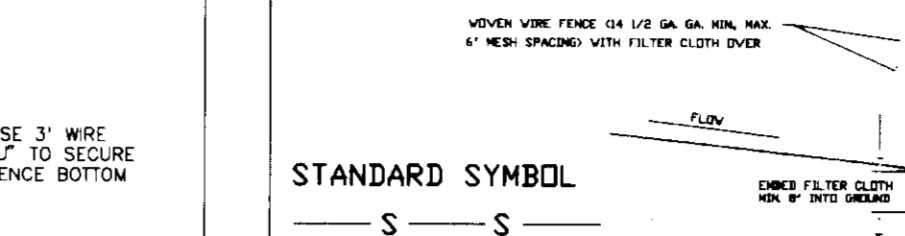
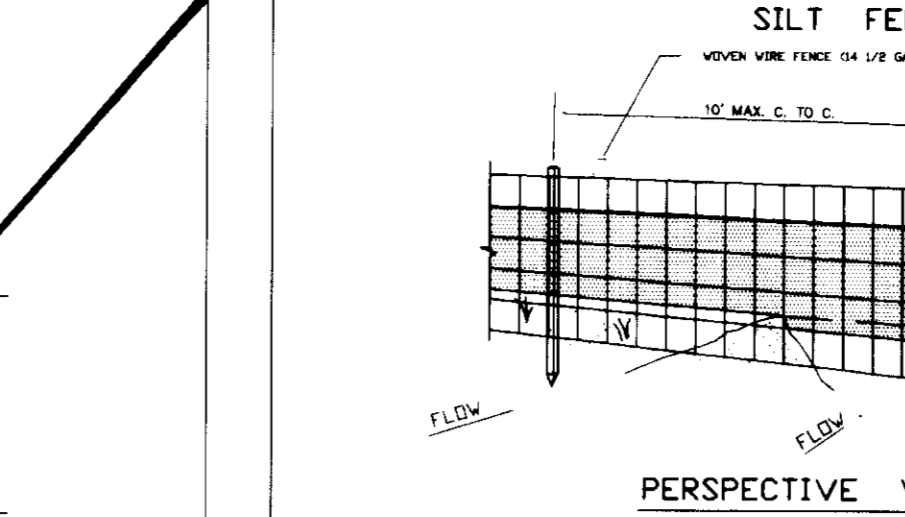
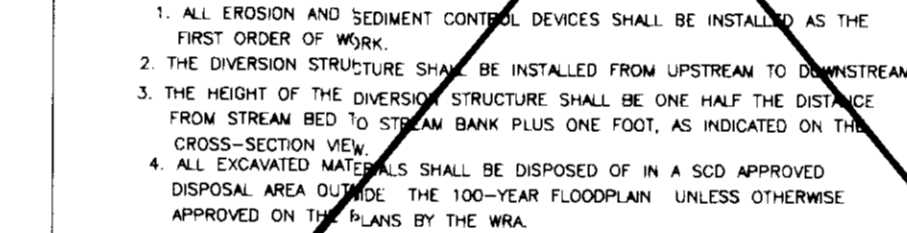
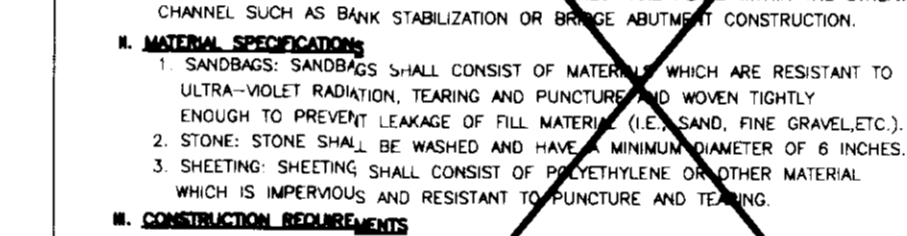
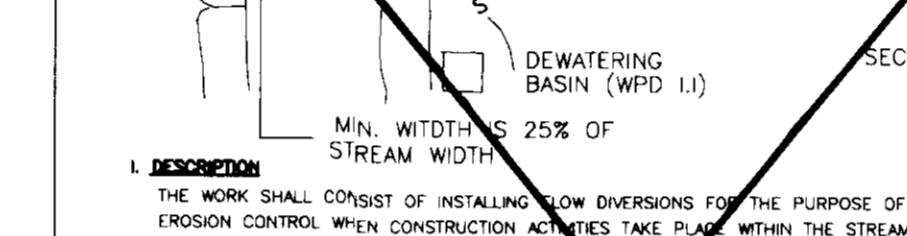
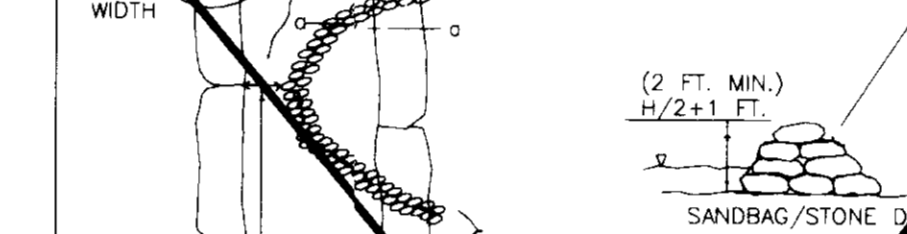
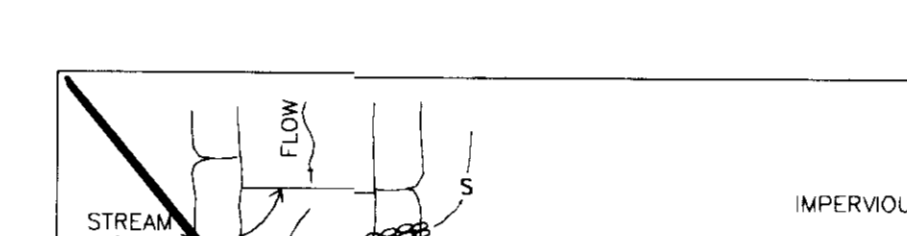
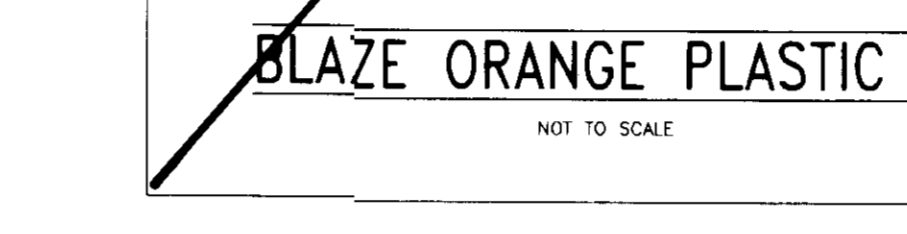
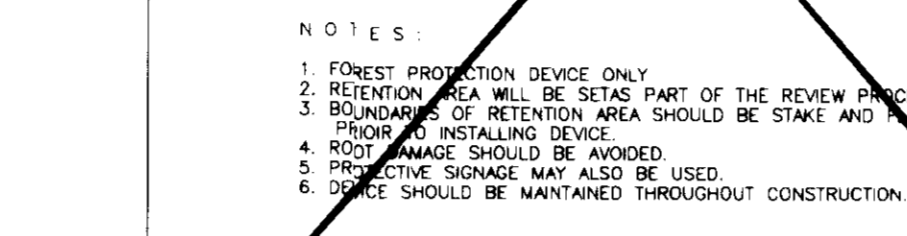
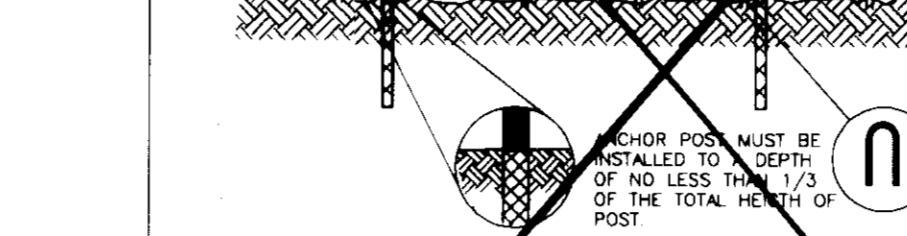
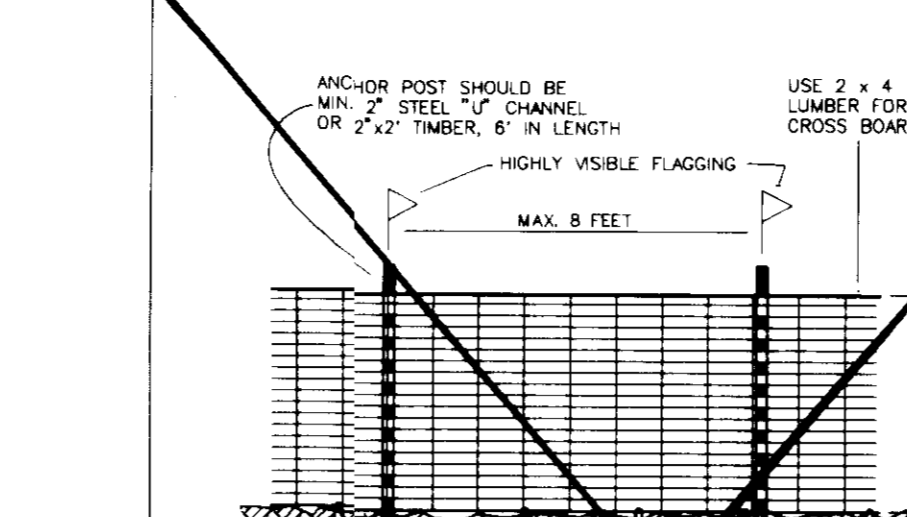
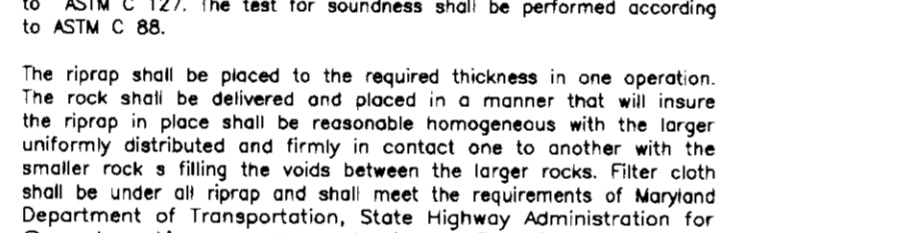
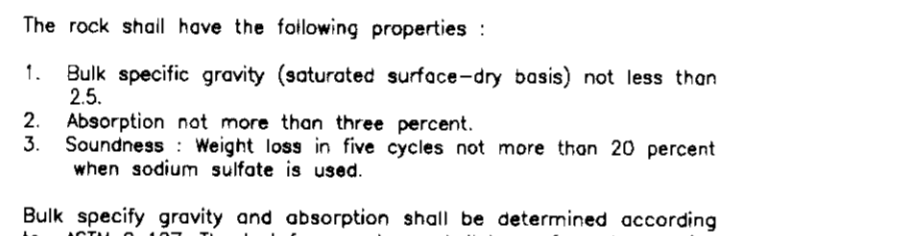
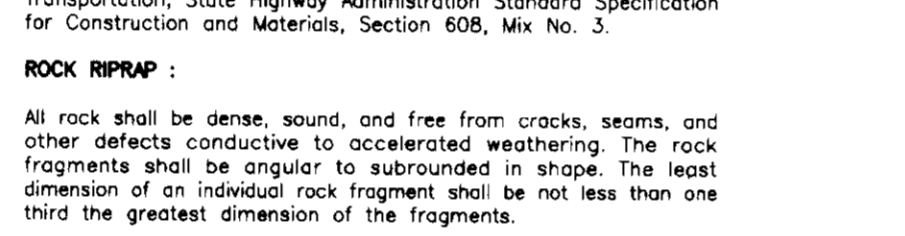
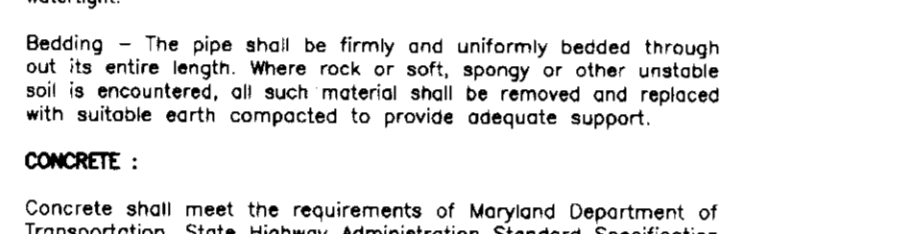
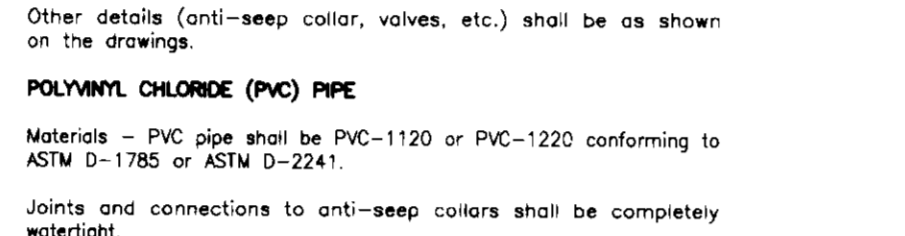
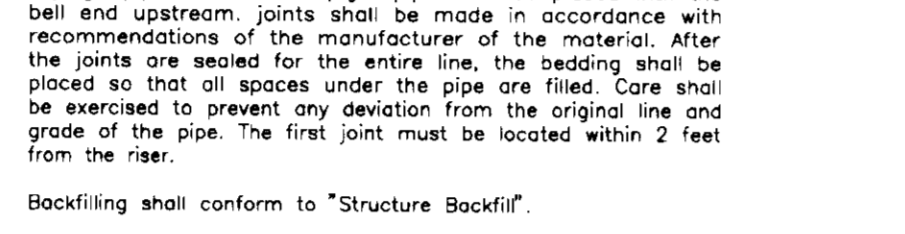
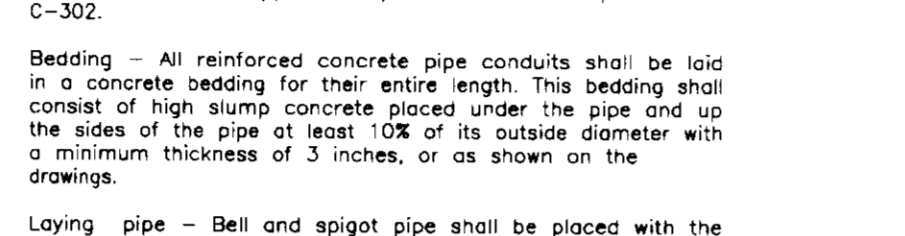
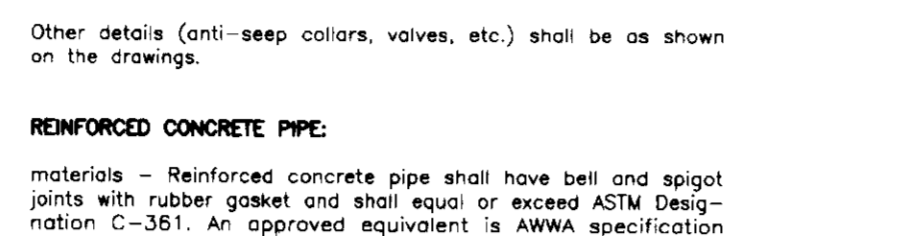
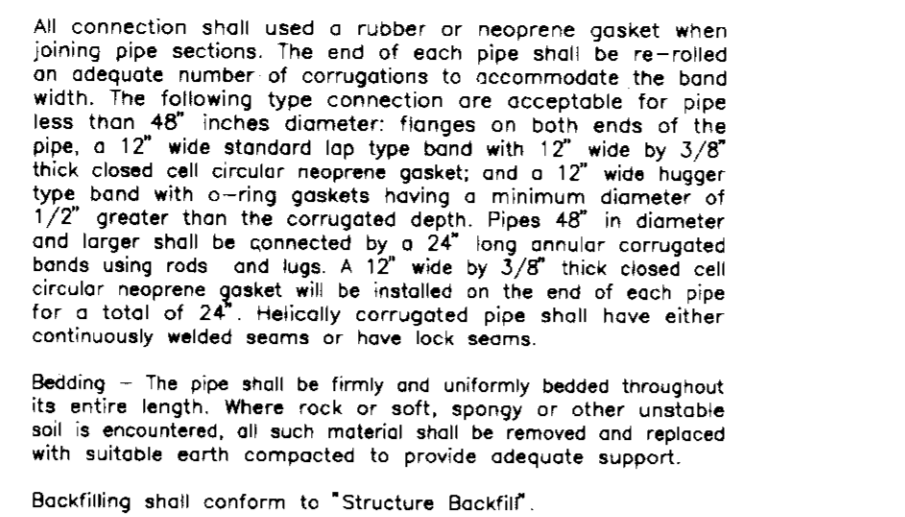
16. CONCRETE:
  - a. Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standards Specification for Construction and Materials, Section 608, Mix No. 3.
  - b. ROCK RIPRAP:
    - a. All rock shall be dense, sound, and free from cracks, seams, and other defects conducive to accelerated weathering. The rock fragments shall be angular to subangular in shape. The least dimension of an individual rock fragment shall be not less than one third the greatest dimension of the fragments.
    - b. The rock shall have the following properties:
      - a. Bulk specific gravity (saturated surface-dry basis) not less than 2.5.
      - b. Absorption not more than three percent.
      - c. Soundness: Weight loss in five cycles not more than 20 percent when sodium sulfate is used.
    - c. Bulk specific gravity and absorption shall be determined according to ASTM C 127. The test for soundness shall be performed according to ASTM C 66.

17. SANDBAG/STONE DIVERSION:
  - a. The riprap shall be placed to the required thickness in one operation. The rock shall be delivered and placed in a manner that will insure the riprap in place shall be reasonably homogeneous with the larger aggregate distributed and firmly in contact one to another with the uniformity of the concrete. The riprap shall be placed in a layer of riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration for Construction and Materials, section 919.12.

18. CARE OF WATER DURING CONSTRUCTION:
  - a. All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied, operated, and maintained of necessary pumping and other equipment required for removal of water from the various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required by the Engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom of required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the location being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water to sumps from which the water shall be pumped.

19. STABILIZATION:
  - a. All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Maryland Soil Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

20. EROSION AND SEDIMENT CONTROL:
  - a. Construction operation will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.



CONSTRUCTION NOTES FOR FABRICATION SILT FENCE

1. MOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO MOVEN WIRE FENCE WITH TIES SPACED EVERY EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ALONG EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN BULGES DEVELOP IN THE SILT FENCE.

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE #2 STONE OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - AS REQUIRED, BUT NOT LESS THAN 50 FEET EXCEPT ON A SINGLE RESIDENCE WHERE A MINIMUM LENGTH WOULD APPLY.
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - SIX (6) FOOT MINIMUM, BUT LESS THAN THE FULL WIDTH AT POINTS WHERE INCHES OR DEEPER OCCURS.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE. FILTER WILL NOT BE REQUIRED ON A SINGLE FAMILY RESIDENCE LOT.
6. SURFACE WATER, WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE OF THE STRUCTURE. A MOUNTABLE BEAM WITH 50' SLIPERS WILL BE PERMITTED.
7. MAINTENANCE - ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/ OR CLEANUP OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY WHEN IT IS REQUIRED, IT SHALL BE CLEANED BY AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. INSPECTION AND NECESSARY MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

CONSTRUCTION SPECIFICATIONS

1. ALL DIKES SHALL BE COMPACTED BY EARTH-MOVING EQUIPMENT. ALL DIKES SHALL BE PROTECTED BY AN APPROVED SEDIMENT CONTROL MEASURE. THE TOP OF THE DIKE SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY WHEN IT IS REQUIRED. IT SHALL BE CLEANED BY AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. INSPECTION AND NECESSARY MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

CONSTRUCTION SPECIFICATIONS

1. SANDBAGS: SANDBAGS SHALL CONSIST OF MATERIAL WHICH IS RESISTANT TO ULTRA-VIOLET RADIATION, TEARING AND PUNCTURING WHEN TIGHTLY COMPRESSED TO PREVENT LEAKAGE OF FILL MATERIAL (SEE GRAVEL/CLC).
2. STONE: STONE SHALL BE WASHED AND HAVE A MINIMUM DIAMETER OF 6 INCHES.
3. SHEETING: SHEETING SHALL CONSIST OF IMPERVIOUS OR OTHER MATERIAL WHICH IS IMPERVIOUS AND RESISTANT TO PUNCTURE AND TEAR.

CONSTRUCTION SPECIFICATIONS

1. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS THE FIRST ORDER OF WORK.
2. THE DIVERSION STRUCTURE SHALL BE INSTALLED FROM UPSTREAM TO DOWNSTREAM.
3. THE HEIGHT OF THE DIVERSION STRUCTURE SHALL BE ONE HALF THE DISTANCE FROM STREAM BED TO STREAM BANK PLUS ONE FOOT, AS INDICATED ON THE CROSS-SECTION VIEW.
4. ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF IN A SOO APPROVED DISPOSAL AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE APPROVED ON THE PLANS BY THE WRA.
5. ALL DEWATERING PARTS OF THE CONSTRUCTION AREA SHALL BE PUMPED TO A DEWATERING BASIN PRIOR TO RE-ENTERING THE STREAM.
6. SHEETING SHALL BE OVERLAPPED SUCH THAT THE UPSTREAM PORTION COVERS THE DOWNSTREAM PORTION WITH AT LEAST AN 18-INCH OVERLAP.
7. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED IN ACCORDANCE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL.

CONSTRUCTION SPECIFICATIONS

1. STONE TO BE 2 INCH STONE OR RECYCLED CONCRETE EQUIVALENT, IN QUANTITY AT LEAST 3 TIMES THE VOLUME OF THE FILL TO BE PLACED THEREON. STONE SHALL BE PLACED IN A LAYER 18 INCHES OR MORE AND MUST BE MOVED BY A TRACKING DEVICE.
2. APPROVED EQUIPMENT CAN BE SUBSTITUTED FOR ANY OF THE ABOVE MATERIALS. PROTECTIVE INSPECTION AND NECESSARY MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

CONSTRUCTION SPECIFICATIONS

1. FENCING SHALL BE 42 INCHES IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY DESIGN MANUAL.
2. THE FENCING SHALL BE FASTENED TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
3. CHAIN LINK FENCE SHALL BE FASTENED TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
4. FILTER CLOTH SHALL BE FASTENED TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ALONG EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
6. MAINTENANCE SHALL BE PERFORM

**I. SEDIMENT CONTROL NOTES:**

**PERMANENT SEEDING NOTES**

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seeding Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, unless previously loosened.

Soil Amendments: In lieu of soil test recommendations, use

- 1) Preferred - apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq ft) and 800 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft) before seeding; or apply 2 tons per acre 30-0-0 ureaform fertilizer (9lbs/1000 sq ft).
- 2) Acceptable - apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq ft) and 1000 lbs per acre 10-10-10 fertilizer (23 lbs/1000 sq ft) before seeding; or apply 2 tons per acre well-anchored straw mulch and seed as soon as possible in the spring, option (3) use seed with 60 lbs/acre Kentucky 31 tall fescue and mulch with 2 tons/acre well-anchored straw.

Seeding - For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs per acre (1.4 lbs/1000 sq ft) of Kentucky 31 tall fescue for the period May 1 thru July 31, seed with 60 lbs Kentucky 31 tall fescue per acre and 2 lbs per acre (0.05 lbs/1000 sq 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 seed with 60 lbs/acre Kentucky 31 tall fescue and mulch with 2 tons/acre well-anchored straw.

Mulching - apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrattled small grain straw immediately after seeding, anchor mulch immediately after application using mulch anchoring tool or 218 gal per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas, on slopes 8 feet or higher, use 348 gal per acre (34 gal/1000 sq ft) for contouring.

Maintenance - inspect all seeded areas and make needed repairs, replacements and reseeding treatments notes as follows, 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.

**TEMPORARY SEEDING NOTES**

Apply to graded or cleared areas likely to be redistributed where a short-term vegetative cover is needed.

Seeding Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, unless previously loosened.

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

Seeding: For periods March 1 thru April 30 and from August 15 thru November 15, seed with 1 1/2 bushel per acre of annual ryegrass (3.2 lbs/1000 sq ft) for the period May 1 thru August 14, seed with 3 lbs per acre of weeping lovegrass (0.075 lbs/1000 sq ft).

Mulching: apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrattled small grain straw immediately after seeding, anchor mulch immediately after application using mulch anchoring tool or 218 gal per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas, on slopes 8 feet or higher, use 348 gal per acre (34 gal/1000 sq ft) for contouring, refer to the 1983 Maryland Standards and Specifications for Soil Erosion and Sediment Control for rate and methods not covered.

**STANDARD AND SPECIFICATION FOR VEGETATIVE STABILIZATION WITH SOD**

1. Class of turfgrass sod shall be Maryland or Virginia state certified, or Maryland or Virginia state approved sod.
2. Sod shall be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch, at the time of cutting, measurement for thickness shall exclude top growth and thatch.
3. Standard size sections of sod shall be strong enough to support their own weight, and retain their size and shape when suspended vertically with a firm grasp on the top edge of the section.
4. Individual pieces of sod shall be cut to the suppliers width and length, maximum allowable deviation from standard widths and lengths shall be 5 percent, broken pads and torn or uneven ends will not be acceptable.
5. Sod shall not be harvested or transplanted when moisture content excessively dry or wet) may adversely affect its survival.
6. Sod shall be harvested, delivered and installed within a period of 30 days, and not transported within this period shall be inspected and approved prior to its installation.

**SITE PREPARATION**

Fertilizer and lime application rates shall be determined by soil tests. Under unusual circumstances where there is insufficient time for a complete soil test, fertilizer and lime materials may be applied in amounts shown under b, below.

- Prior to sodding, the surface shall be cleared of all trash, debris, and of all roots, brush, wire, grade stakes, and other objects that would interfere with planting, fertilizing or maintenance operations.
- Where the soil is acid or composed of heavy clays, ground limestone shall be spread at the rate of 2 tons/acre or 100 pounds per 1,000 square feet, in all soils 1,000 pounds per acre or 25 pounds per 1,000 square feet of 10-0-10 fertilizer or equivalent shall be uniformly applied and mixed into the top 3 inches of soil with the required lime.
- All areas receiving sod shall be uniformly fine graded, hard-packed earth shall be scarified prior to placement of sod.

**STANDARD SEDIMENT CONTROL NOTES:**

- 1) A minimum of 48 hours notice must be given to the Howard County Office of Inspection and Permits 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 1983 Maryland Standards and Specifications for Soil Erosion and Sediment Control.
- 3) Following initial soil disturbance or redistribution, 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 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 1983 Maryland standards and specifications for soil erosion and sediment control for permanent seedings (sec. 51) and sod (sec. 54), temporary seeding (sec. 50) and mulching (sec. 52), temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- 6) All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- 7) Site analysis:
 

total area of site	19.42 acres
area disturbed	2.30 acres
area to be roofed or paved	0.30 acres
area to be vegetatively stabilized	7.82 acres
total cut	2,000 cu. yds
total fill	2,000 cu. yds
offsite waste/borrow area location	n.a.
- 8) Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- 9) Additional sediment controls must be provided, if deemed necessary by the Howard County DPW 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 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.

**General Notes**

- 1) Refer to 1983 Maryland Standards and Specifications for soil erosion and sediment control for standard details and detailed specifications of each practice specified herein.
- 2) With the approval of the sediment control inspector, minor field adjustments can and will be made to insure the control of any sediment changes in sediment control practices require prior approval of the sediment control inspector and the county soil conservation district.
- 3) At the end of each working day, all sediment control practices will be inspected and left in operational condition.
- 4) Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within: a) seven calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
- 5) Any change to the grading proposed on this plan requires re-submission to county soil conservation district for approval.
- 6) Dust control will be provided for all disturbed areas, refer to 1983 Maryland Standards and Specifications for soil erosion and sediment control, pp 62.01 and 62.02 for acceptable methods and specifications for dust control.
- 7) Any variation from the sequence of operations stated on this plan requires the approval of the sediment control inspector and the county soil conservation district prior to the initiation of the change.
- 8) Excess cut or borrow material shall go to or come from, respectively, a site with an approved sediment control plan.
- 9) Refer to Maryland's guidelines to waterworks construction by the Water Resources Administration (WRA), dated January, 1985 for standard details and detailed specifications of each practice specified herein for waterway construction.

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.
4. Field location should be adjusted as needed to utilize a stabilized soil outlet.
5. Earth dikes shall have an outlet that functions with a minimum of erosion, runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin where 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 straw mulch or straw mulch if not in seeding season, (b) flow channel as per the chart below.

**GENERAL NOTES FOR PONDS:**

**SITE PREPARATION:**

Area under the borrow areas, embankment, and structural works shall be cleared, grubbed and the top soil stripped to remove all trees, vegetation, roots or other objectionable material. Channel banks and sharp berms shall be sloped to no steeper than 1:1.

Areas covered by the pond or reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable materials unless otherwise designated on the plans. Trees, brush, and stump shall be cut approximately level with the ground surface.

**EMERGENCY FILL**

The fill material shall be taken from approved designated borrow areas or areas free of roots, stumps, wood, rubbish, or other objectionable materials. The embankment shall be constructed to an elevation which provides for anticipated settlement to the design elevation. The fill height all along the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.

Placement: Area on which fill is to be placed shall be scarified prior to placement of the fill. Fill materials shall be placed in 8-inch maximum thickness (before compaction) layers which are to be continuous over the entire length of the trench shall be governed by the equipment used for placement. The fill height all along the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.

**COMPACTION**

The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be covered by not less than one tread track of the equipment or compaction shall be achieved by aluminum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction can be obtained with the equipment used.

**OUT-OFF TRENCH**

Where specified, a cut-off trench shall be excavated along or parallel to the center line of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment rollers or hand tampers to assure maximum density and a minimum permeability.

**STRUCTURE BACKFILL**

Backfill adjacent to pipes or structures shall be of the type and quality conforming to the specifications for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

**PIPE CONDUITS**

Corrugated metal pipe Materials - (steel pipe) - This pipe and its appurtenances shall be galvanized and bituminous coated and shall conform to the requirements of AASHTO Specification M-190 type A with water tight coupling bands. Any bituminous coating damaged or otherwise removed shall be placed with cold applied bituminous coating compound. Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.1 mil (10 mic) on both sides of the pipe. The following coatings or an approved equal may be used: Nexon, Plast-Cote, Black-Klad, and Beth-Cu-Loy. Coated corrugated steel pipe shall meet the requirements of AASHTO M-245 and M-246.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with water tight coupling bands or flanges. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with water tight coupling bands or flanges. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 6 and 8.

Coupling bands, anti-seep collars, and sections etc., must be composed of the same material as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

Connections - All connections with pipes must be completely watertight. The connection to the barrel connection to the liner shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connection shall used a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the band width. The following type connection are acceptable for pipes less than 48" inches diameter: flanges on both ends of the pipe, a 12" wide standard top type band with 1/2" wide by 3/8" thick closed cell circular neoprene gasket and a 12" wide hugger type band with o-ring gaskets having a minimum diameter of 1/2" greater than the corrugated depth. Pipes 48" in diameter and larger shall be connected by a 24" long annular corrugated bands using rods and lugs. A 12" wide by 3/8" thick closed cell circular neoprene gasket will be installed on the end of each pipe for a total of 24". Heavily corrugated pipe shall have either continuously welded seams or have lock locks.

Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support. Backfilling shall conform to "Structure Backfill".

Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

**REINFORCED CONCRETE PIPE**

Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gasket and shall equal or exceed ASTM specification C-361. An approved equivalent is AWWA specification C-302.

Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and packed against the sides of the pipe at least 10% of its outside diameter with a minimum thickness of 3 inches, or as shown on the drawings.

Laying pipe - Bell and spigot pipe shall be placed with the bell and upstream. Joints shall be made with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be packed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 2 feet from the riser.

Backfilling shall conform to "Structure Backfill".

Other details (anti-seep collar, valves, etc.) shall be as shown on the drawings.

**POLYVINYL CHLORIDE (PVC) PIPE**

Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241.

Joints and connections to anti-seep collars shall be completely watertight.

Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

Concrete: Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specification for Construction and Materials, Section 608, Mix No. 3.

**ROCK RIPRAP**

All rock shall be dense, sound, and free from cracks, seams, and other defects conducive to accelerated weathering. The rock fragments shall be angular to subangular in shape. The least dimension of individual rock fragments shall be not less than one third the greatest dimension of the fragments.

The rock shall have the following properties:

1. Bulk specific gravity (saturated surface-dry basis) not less than 2.5.
2. Absorption not more than three percent.
3. Soundness: weight loss in five cycles not more than 20 percent when sodium sulfate is used.

Bulk specific gravity and absorption shall be determined according to ASTM C 87. The test for soundness shall be performed according to ASTM C 88.

The riprap shall be placed to the required thickness in one operation. The rock shall be delivered and placed in a manner that will insure the riprap in place shall be reasonably homogeneous with the larger uniformly distributed and firmly in contact with it to another with the smaller rock filling the voids between the larger rocks. Filter cloth shall be under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration for Construction and Materials, Section 919.12.

**CARE OF WATER DURING CONSTRUCTION:**

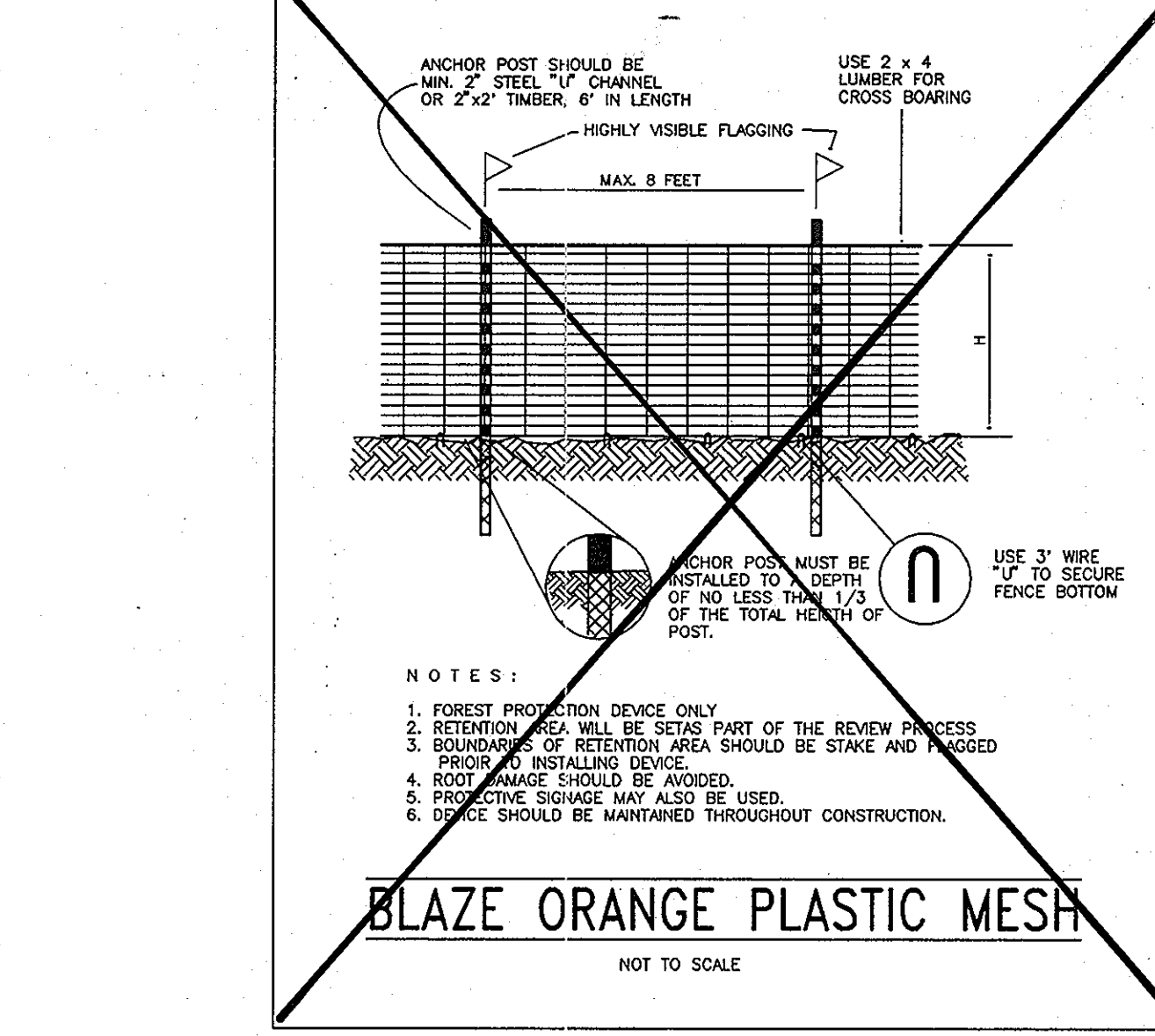
All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from the various parts of the work and for maintaining the flow of water to the spillway or outlet works and so on not interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom of required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the location being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water to pumps from which the water shall be pumped.

**STABILIZATION:**

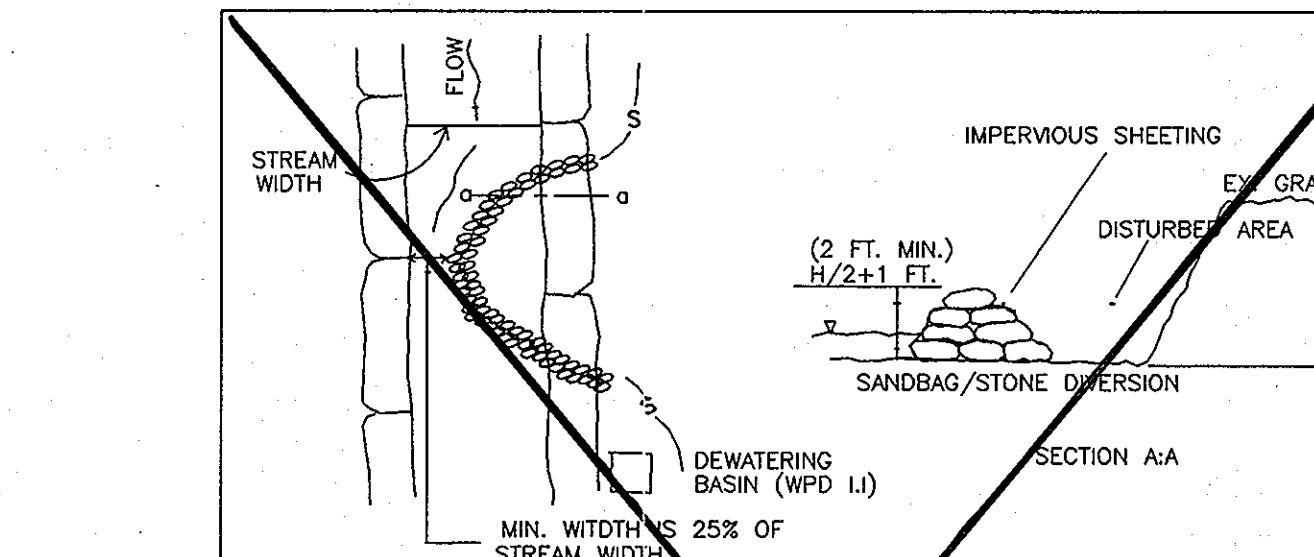
All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, soil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Maryland Soil Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

**EROSION AND SEDIMENT CONTROL:**

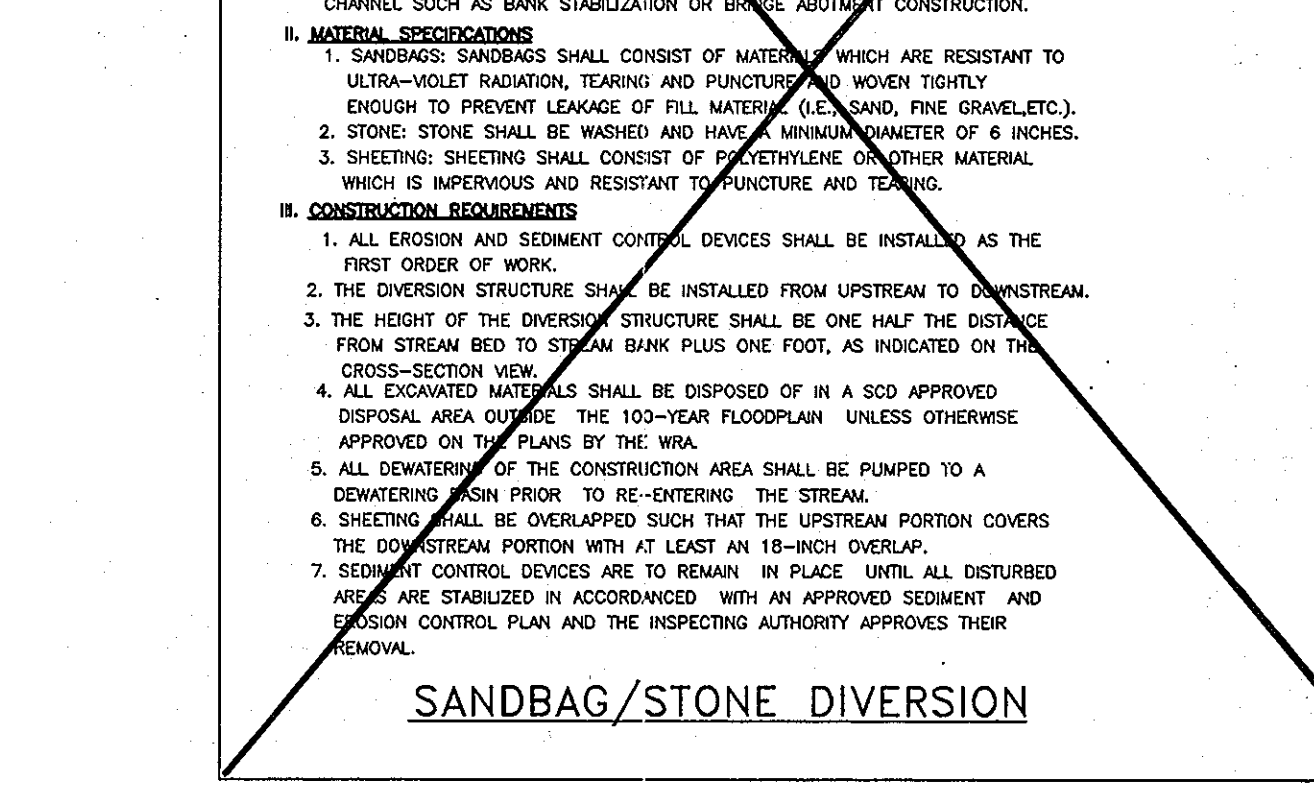
Construction operation will be carried out in such a manner that erosion will be controlled and water air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.



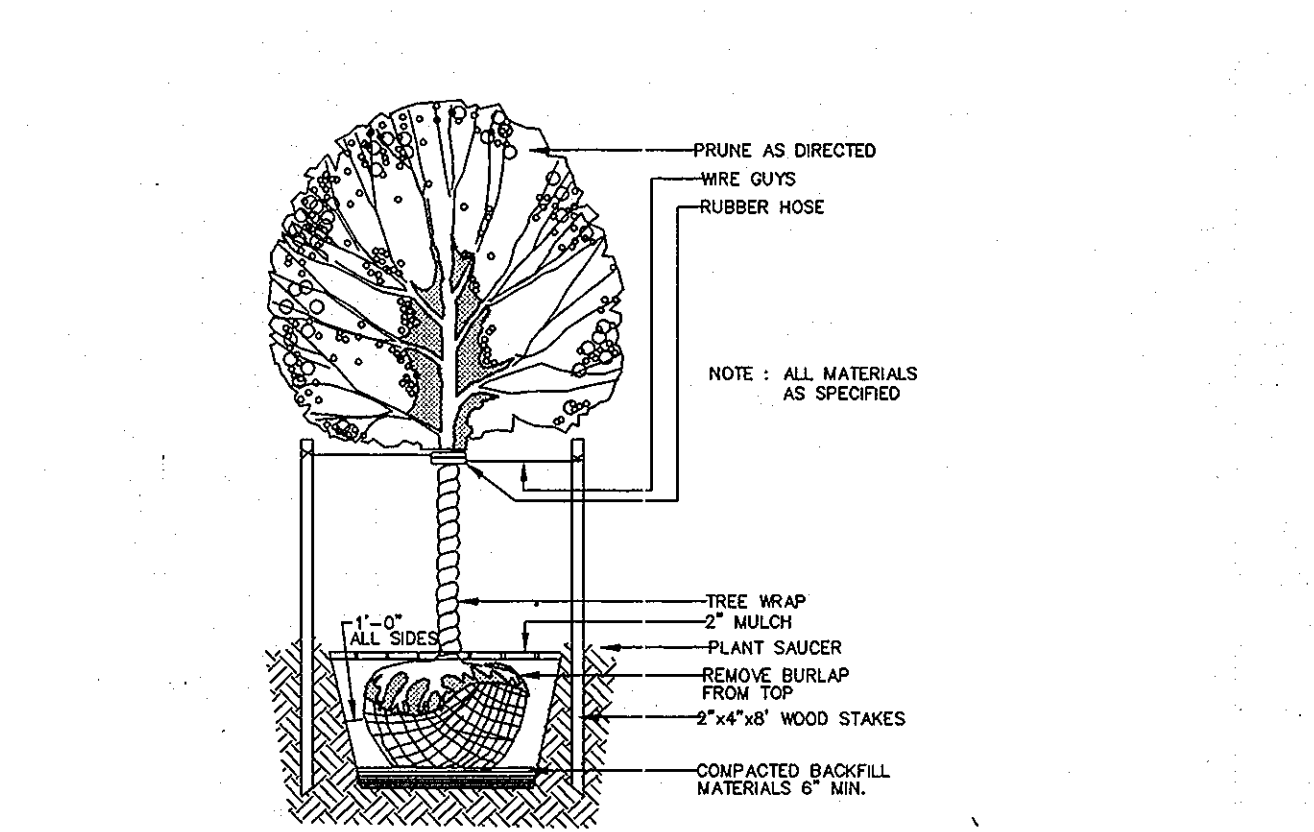
**BLAZE ORANGE PLASTIC MESH**  
NOT TO SCALE



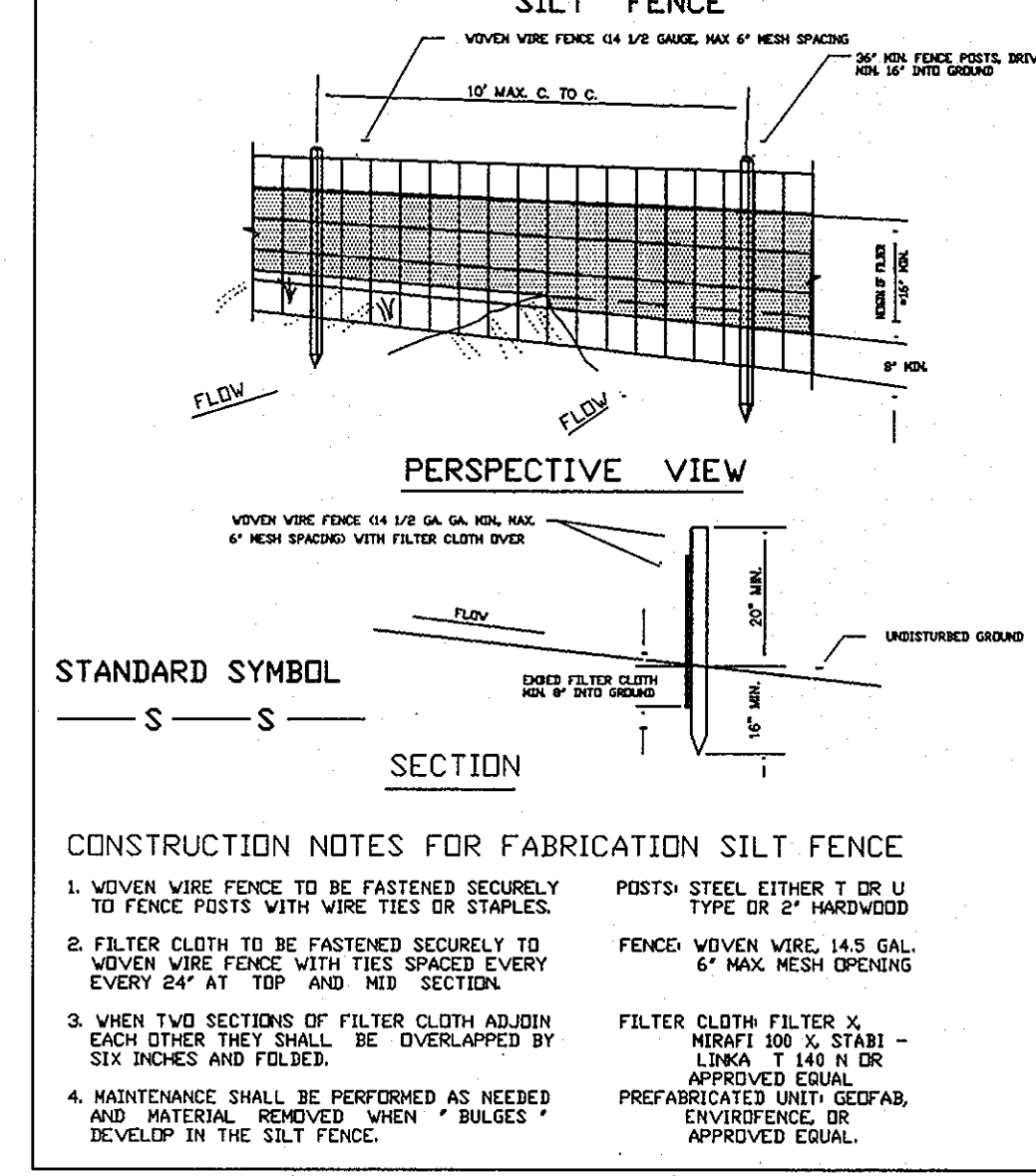
**SANDBAG/STONE DIVERSION**



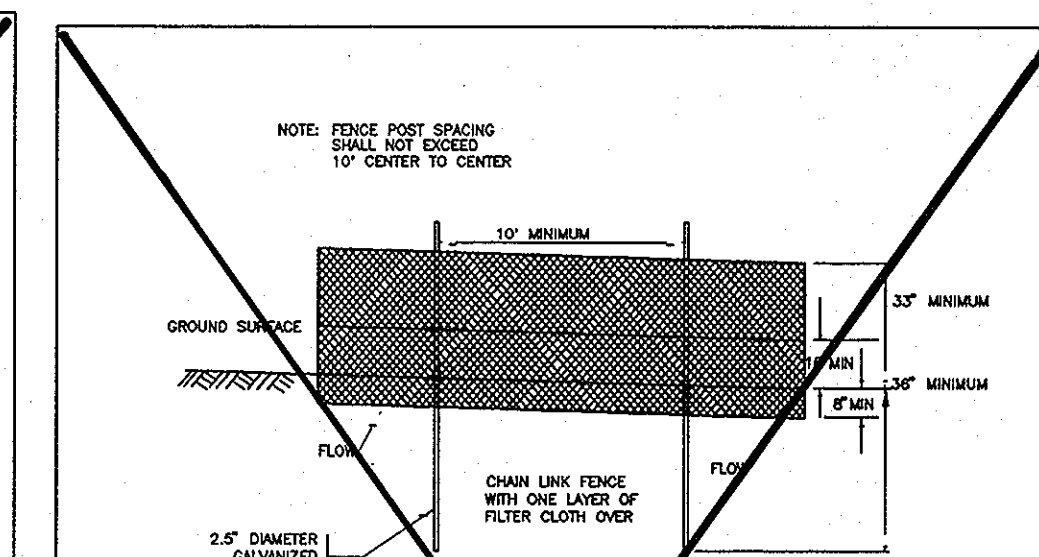
**SUPER SILT FENCE DETAIL**



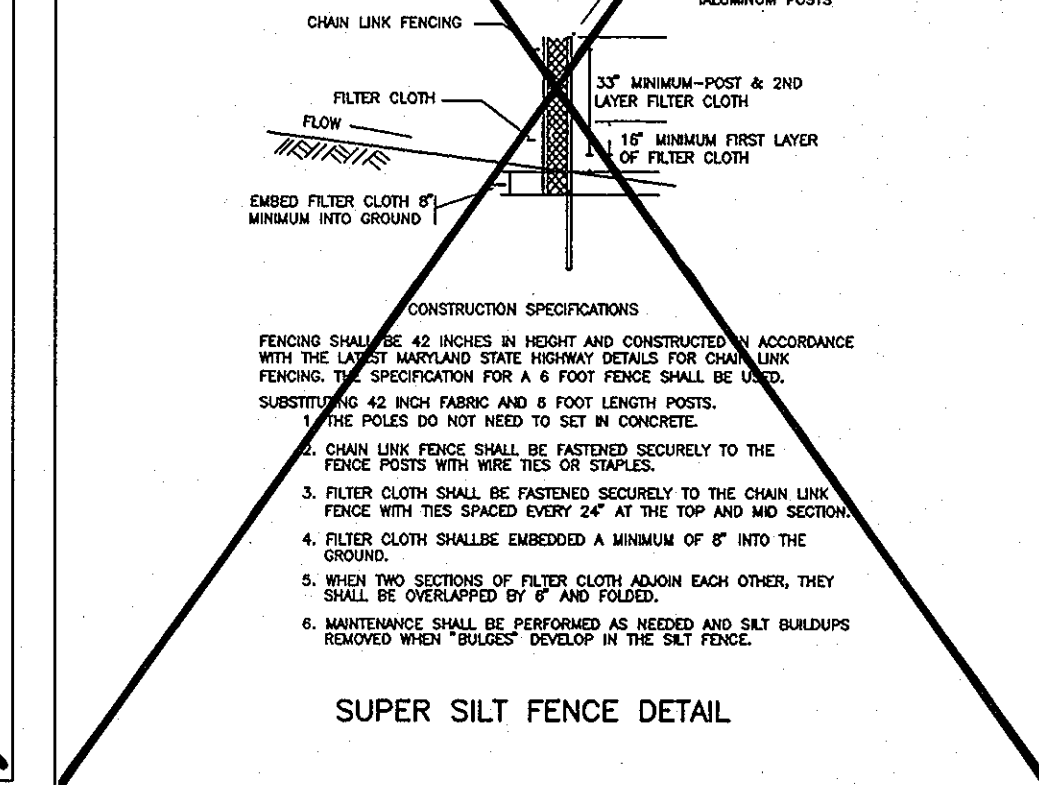
**TYPICAL EVERGREEN TREE PLANTING DETAIL**  
NOT TO SCALE



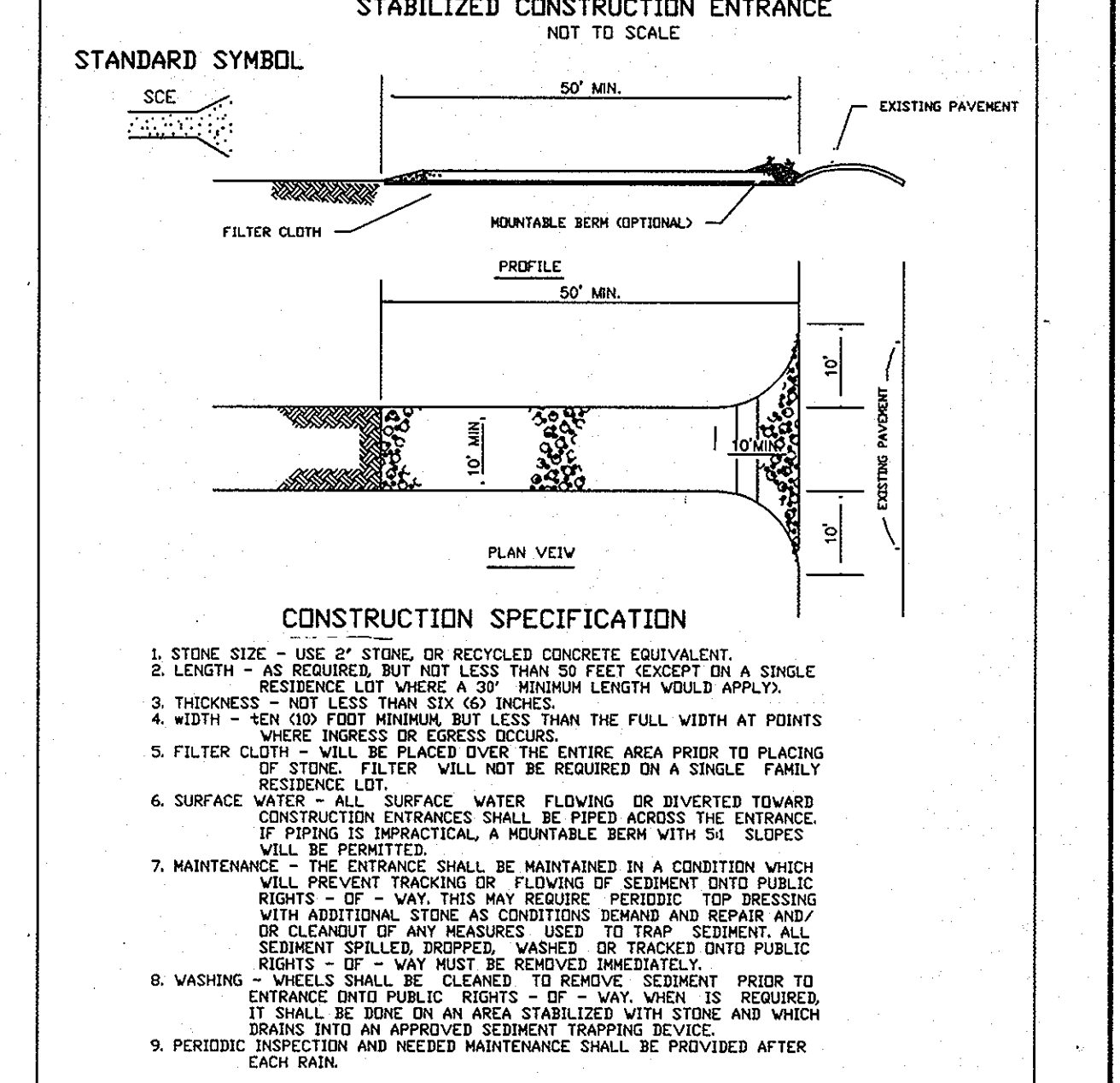
**CONSTRUCTION NOTES FOR FABRICATION SILT FENCE**



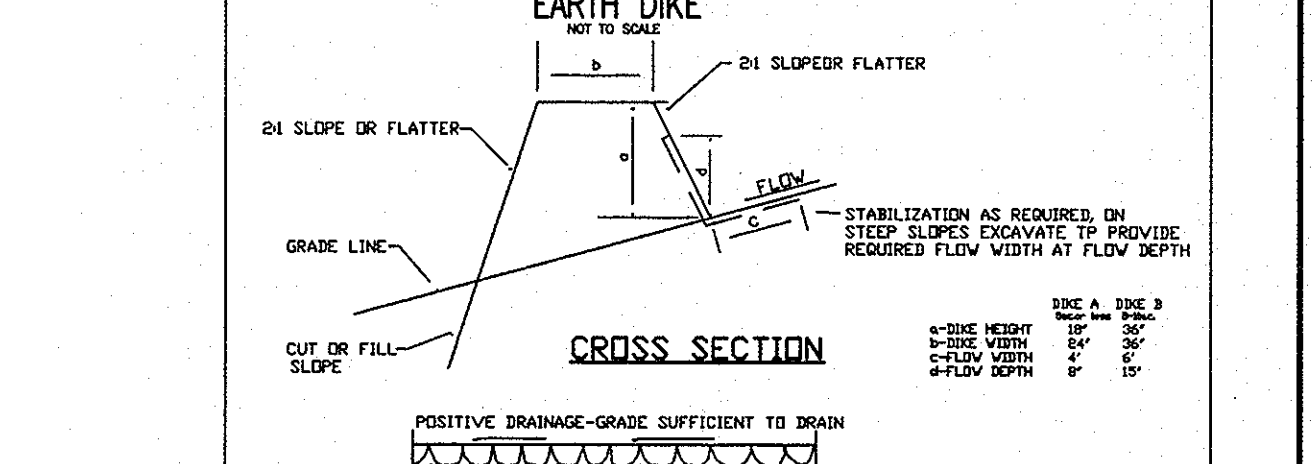
**EARTH DIKE**



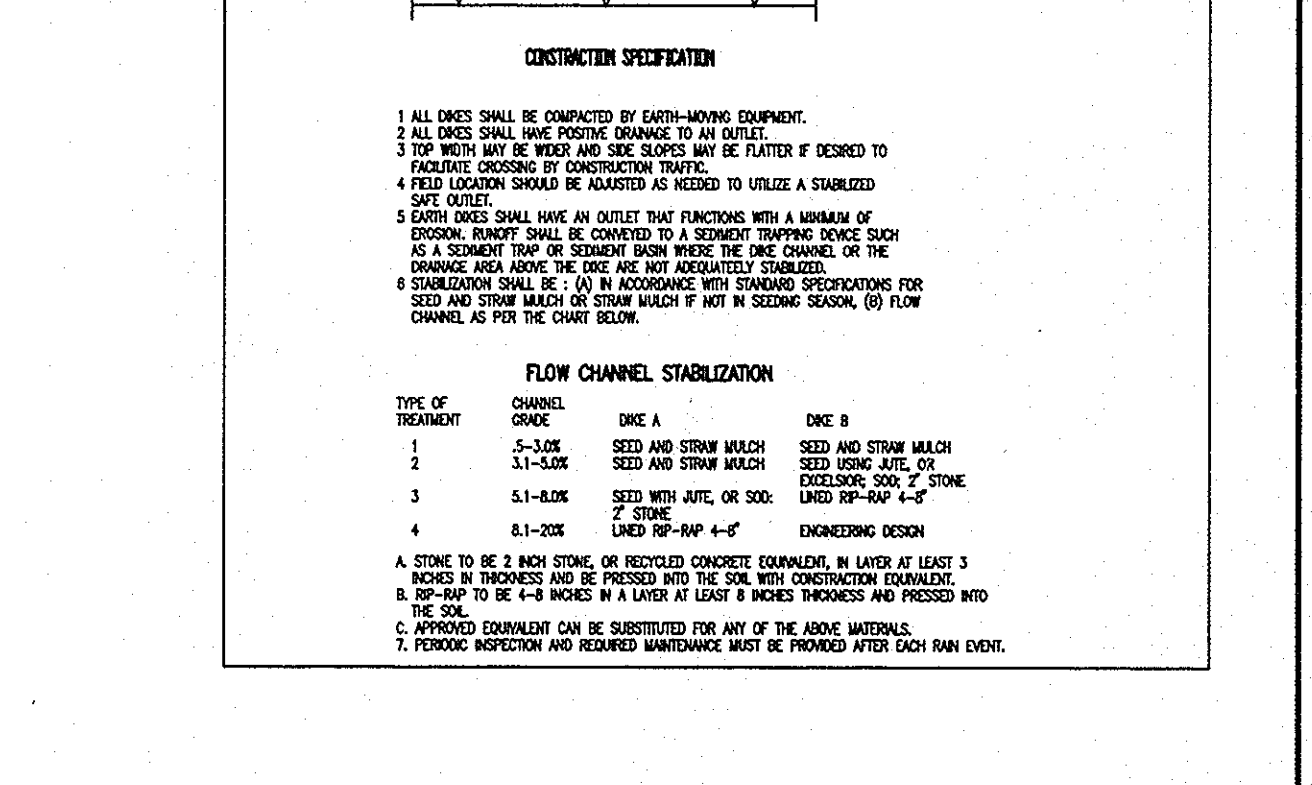
**FLOW CHANNEL STABILIZATION**



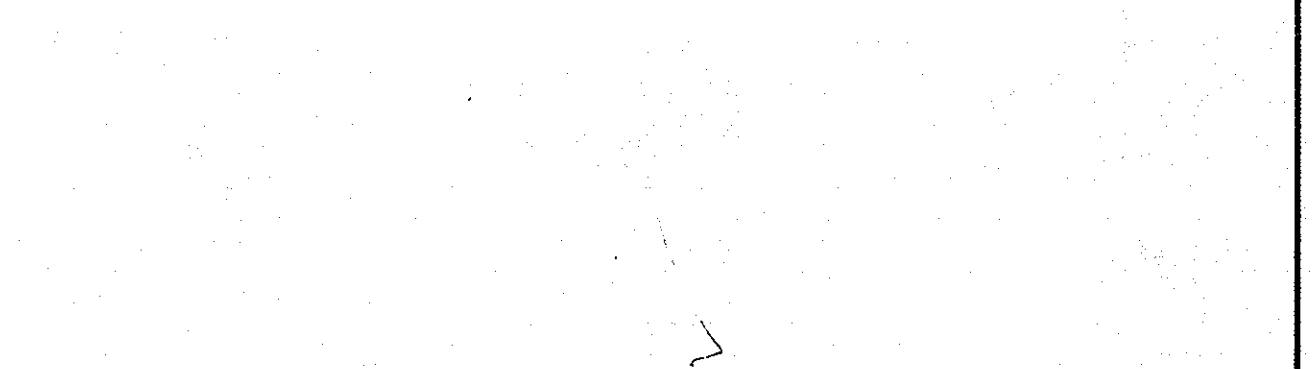
**STABILIZED CONSTRUCTION ENTRANCE**  
NOT TO SCALE



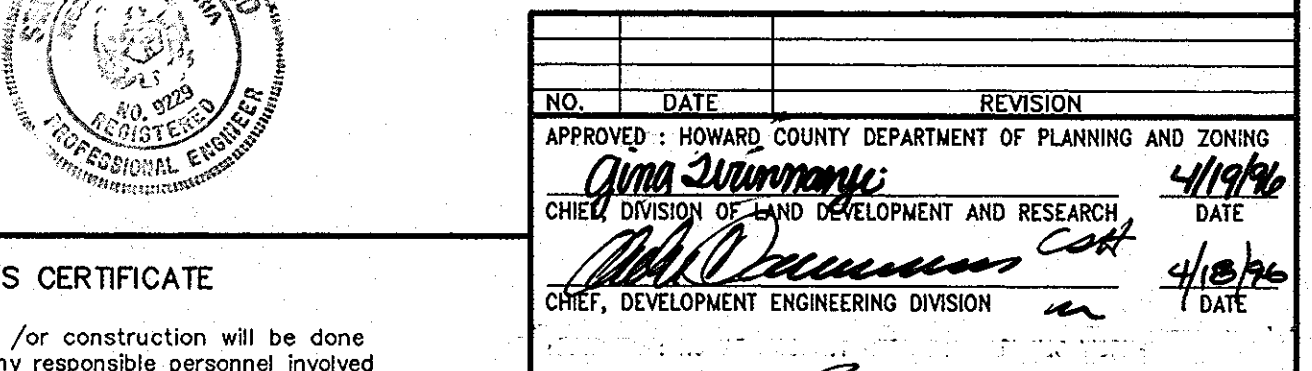
**CROSS SECTION**



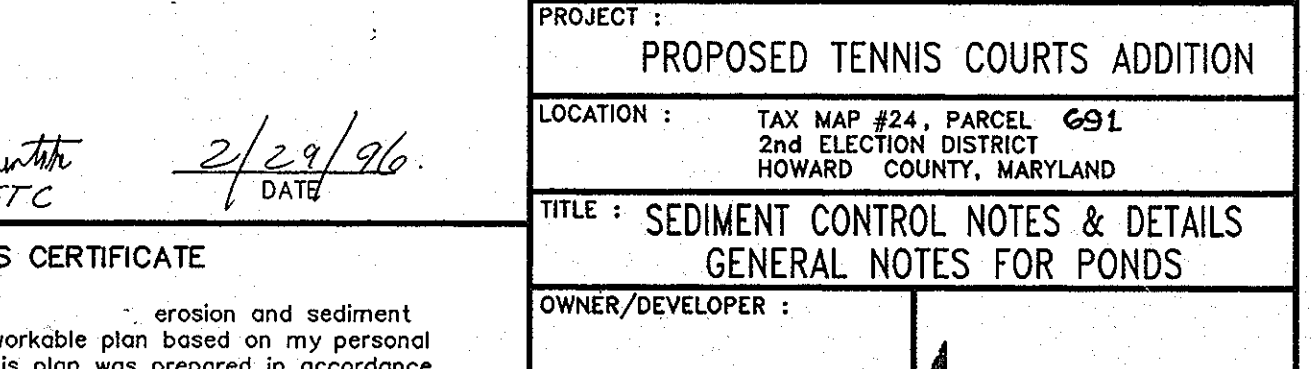
**FLOW CHANNEL STABILIZATION**



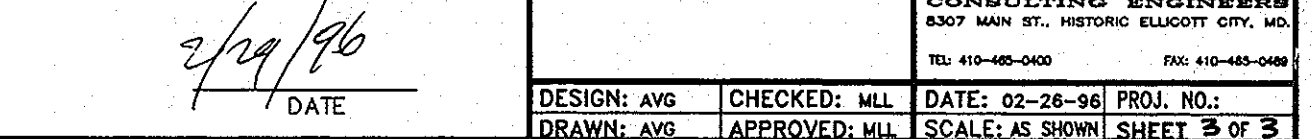
**FLOW CHANNEL STABILIZATION**



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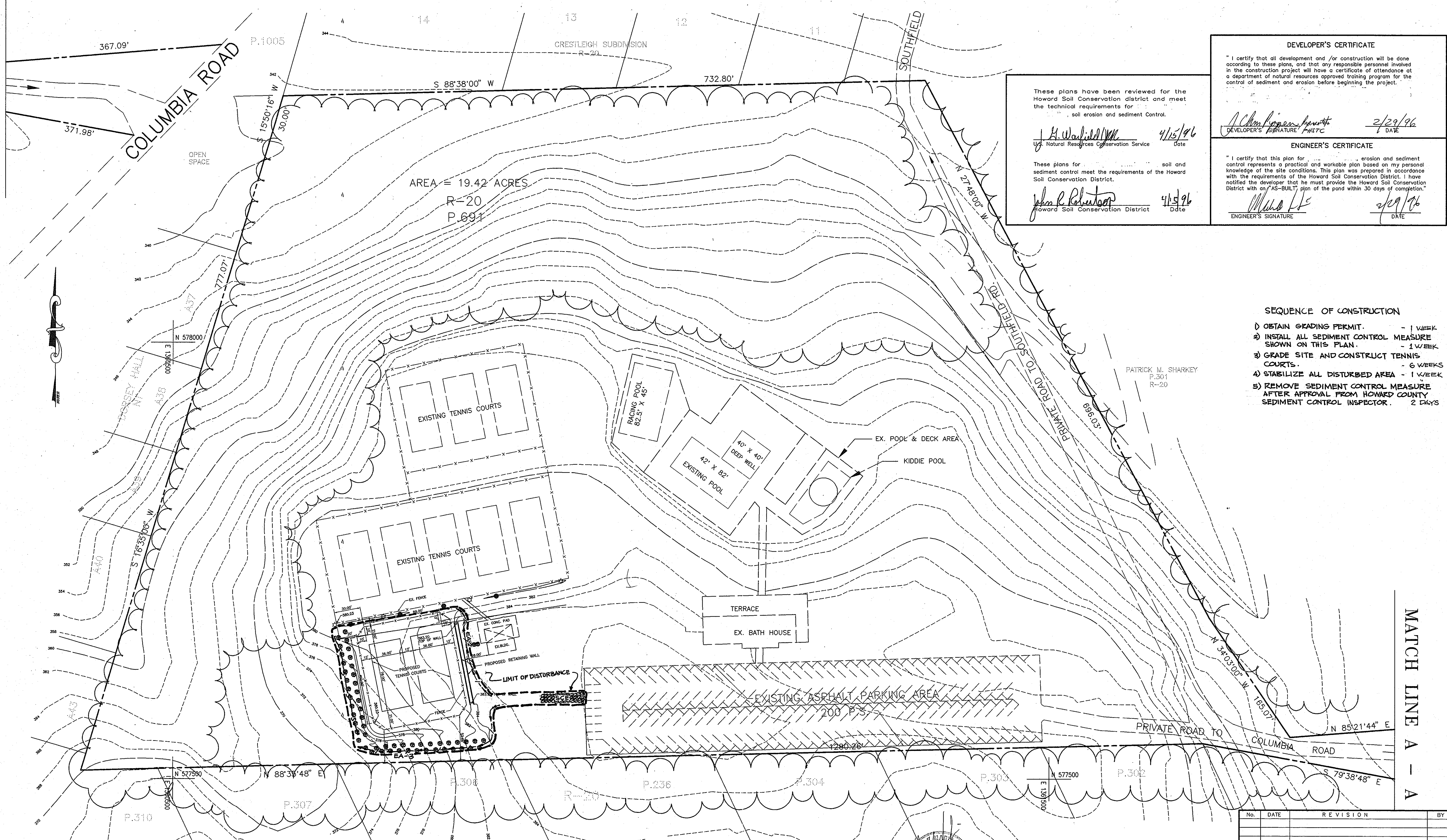
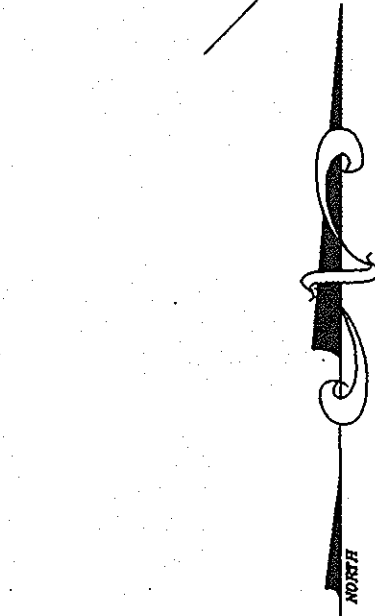
**DEVELOPER'S CERTIFICATE**  
I certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a certificate of attendance at a department of natural resources approved training program for the control of sediment and erosion before beginning the project.

**ENGINEER'S CERTIFICATE**  
I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that the most provide the Howard Soil Conservation District with an "AS-BUILT" plan of the pond within 30 days of completion.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
DATE: 4/19/96  
CHIEF DIVISION OF LAND DEVELOPMENT AND RESEARCH  
DATE: 4/19/96  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 4/22/96

PROJECT: PROPOSED TENNIS COURTS ADDITION  
LOCATION: TAX MAP #24, PARCEL 691  
2ND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
TITLE: SEDIMENT CONTROL NOTES & DETAILS  
GENERAL NOTES FOR PONDS  
OWNER/DEVELOPER: Forest Hill Swim Club, Inc.  
P.O. BOX 238  
ELLICOTT CITY, MD. 21029  
Virginia Engineering Inc.  
10000  
8207 MAN ST., HISTORIC ELLICOTT CITY, MD  
TEL: 410-485-0400  
FAX: 410-485-0400  
DESIGN: AVG CHECKED: MLL DATE: 02-26-96 PROJ. NO.:  
DRAWN: AVG APPROVED: MLL SCALE: AS SHOWN SHEET 3 OF 3

MATCH LINE A - A



AREA = 19.42 ACRES  
R-20  
P-691

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for soil erosion and sediment control.

*H. Woodfield* 4/15/96  
U.S. Natural Resources Conservation Service Date

These plans for soil and sediment control meet the requirements of the Howard Soil Conservation District.

*John R. Roberts* 4/15/96  
Howard Soil Conservation District Date

**DEVELOPER'S CERTIFICATE**

"I 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 a certificate of attendance at a department of natural resources approved training program for the control of sediment and erosion before beginning the project."

*J. Chmura* 2/29/96  
DEVELOPER'S SIGNATURE DATE

**ENGINEER'S CERTIFICATE**

"I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions. This plan was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he must provide the Howard Soil Conservation District with an AS-BUILT plan of the pond within 30 days of completion."

*M. H. H.* 2/29/96  
ENGINEER'S SIGNATURE DATE

- SEQUENCE OF CONSTRUCTION**
- 1) OBTAIN GRADING PERMIT. - 1 WEEK
  - 2) INSTALL ALL SEDIMENT CONTROL MEASURE SHOWN ON THIS PLAN. - 1 WEEK
  - 3) GRADE SITE AND CONSTRUCT TENNIS COURTS. - 6 WEEKS
  - 4) STABILIZE ALL DISTURBED AREA - 1 WEEK
  - 5) REMOVE SEDIMENT CONTROL MEASURE AFTER APPROVAL FROM HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. 2 DAYS

PATRICK M. SHARKEY  
P.301  
R-20

MATCH LINE A - A

- LEGEND:**
- EX. GRADE
  - SILT FENCE
  - EARTH DIKE
  - LIMIT OF DISTURBANCE
  - STABILIZED CONSTRUCTION ENTRANCE

**PLAN**  
SCALE 1" = 50'



APPROVED: DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 4/15/96  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 4/17/96  
CHIEF DIVISION AND LAND DEVELOPMENT AND RESEARCH DATE

*[Signature]* 4/23/96  
DIRECTOR DATE

No.	DATE	REVISION	BY

ADDRESS CHART			
PARCEL NUMBER	STREET ADDRESS		
	4310 OLD COLUMBIA RD		
SUBDIVISION NAME	TAX MAP	SECTION/AREA	LOT/PARCEL
FOREST HILL SWIM CLUB INC.	24		691
ZONING	ZB/BA REF.	ELECTION DIST.	SITE AREA
R-20	735C	2nd	19.42 ACRES
FINAL PLAN APPROVAL DATE:	WATER CODE	DPZ REF. NO.	SEWER CODE
	F-08		5751600

DESIGNED BY:		SCALE	
MLL		1" = 50'	
DRAWN BY:		DRWG No.	
DTA		2 OF 3	
CHECKED BY:		JOB No.	
MLL			
OWNER/DEVELOPER:		FILE No.	

**Virginia Engineering Inc.**  
CONSULTING ENGINEERS  
8307 MAIN ST., HISTORIC ELLICOTT CITY, MD.  
410-465-0400

