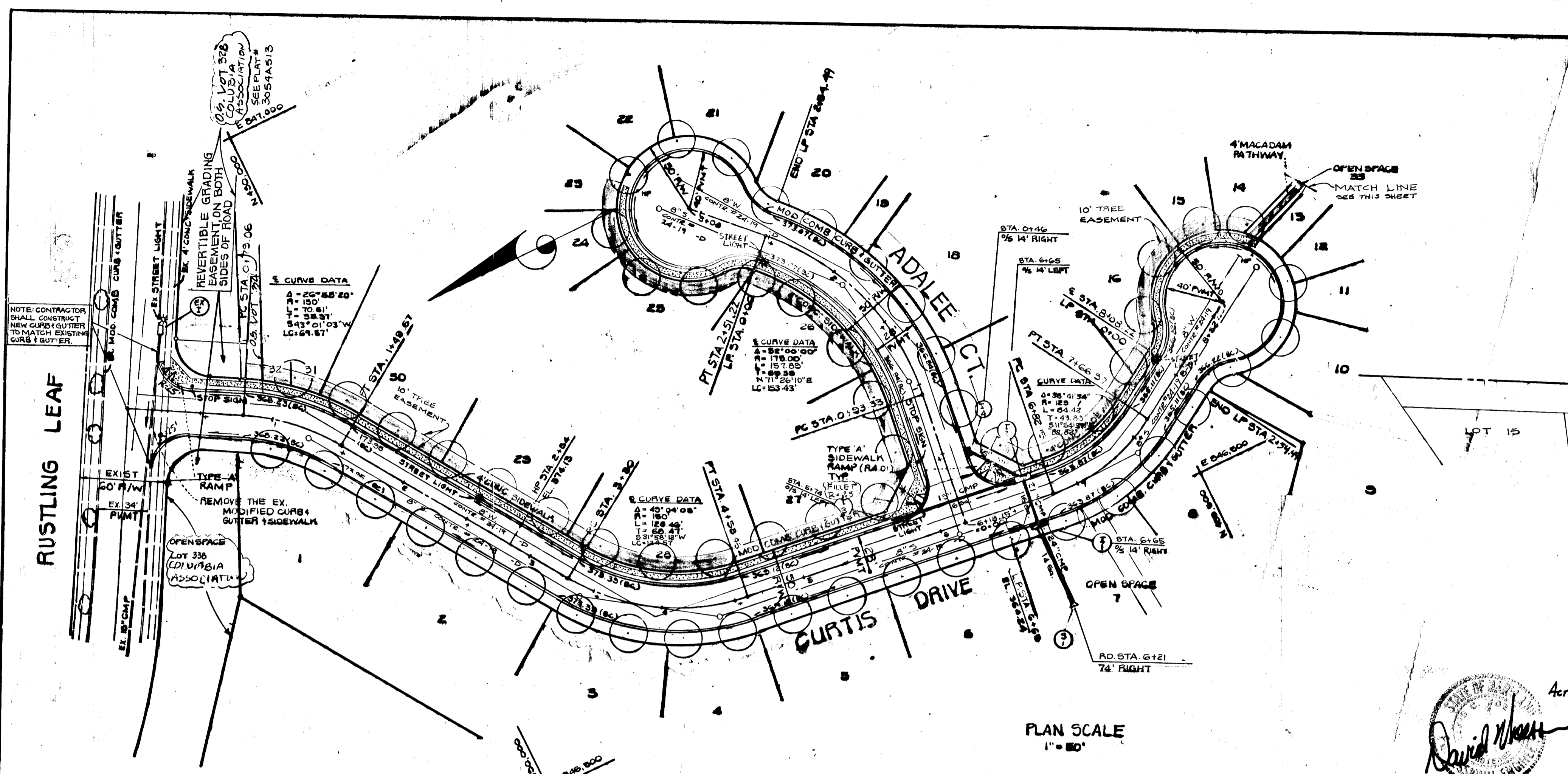
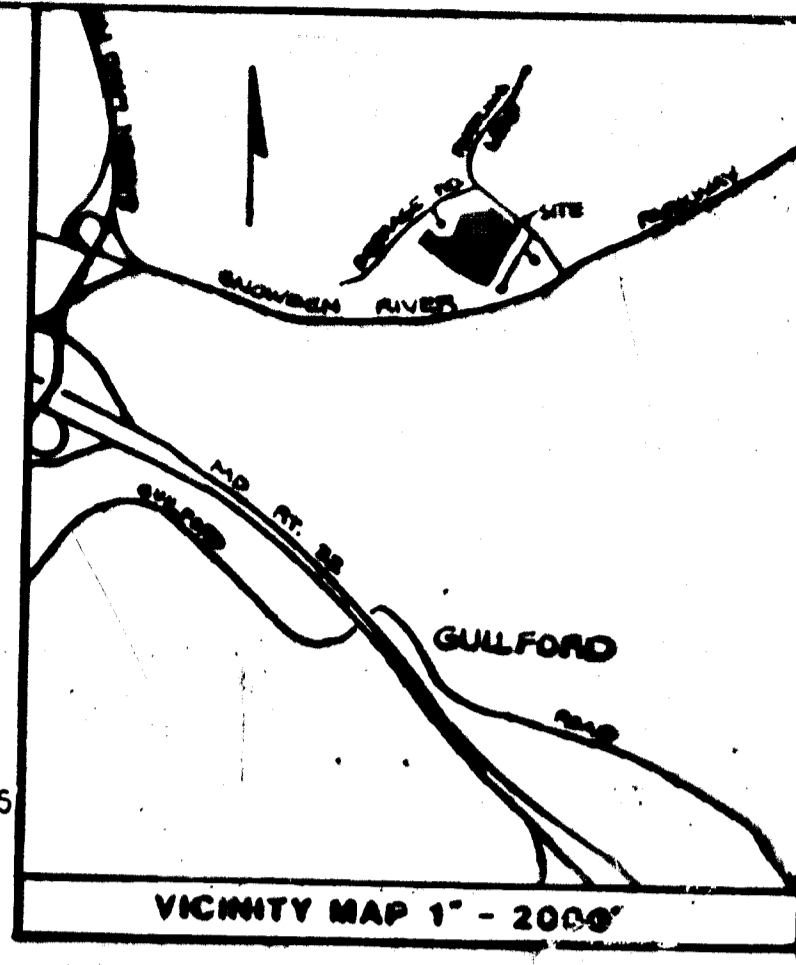


PLAN	DATE
NO.	
BY	
REVISIONS	
1. SURVEYED	
2. PLOTTED	
3. CHECKED	
4. INK	
5. BY	
6. DATE	



- GENERAL NOTES**
- All work shall be done in accordance with Howard County Standards, Specifications and Details for Construction.
 - All utility companies shall be notified 24 hours in advance.
 - All inlets shall be Howard County Standard unless otherwise shown, all "A" inlets shall be depressed.
 - Storm drain trenches within road right-of-ways shall be backfilled and compacted in accordance with Howard County Road Codes.
 - Any damage to public right of ways or pavement surfaces shall be repaired at the contractor's expense.
 - Contractor to notify Howard County Department of Inspection at least 3 days before starting work, telephone 792-1272.
 - All traffic control devices shall be installed in compliance with the manual of uniform traffic control devices, PER 1984.
 - CARE & MAINTENANCE OF TREES WILL BE BY THE DEVELOPER FOR ONE YEAR AFTER STREET IS COMPLETED.
 - REFERENCE WP 91-180, S-89-46, P-89-69, F-90-20, F-92-68, WP-90-28



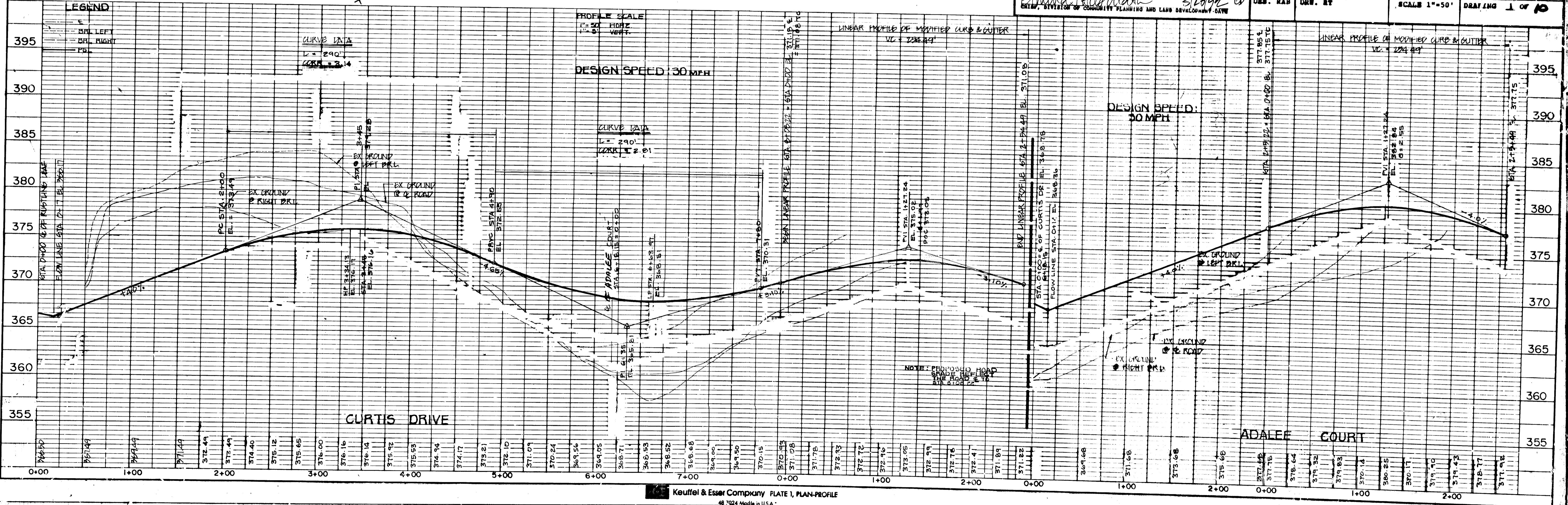
BENCHMARK
 CONC. MOUN.
 STATION: 2341002
 EL. EV. 369.68
 SOUTHSIDE OF CARVESTONE ROAD, BETWEEN D&E POLES NO. 23 AND 23E

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] DATE: 3/1/92

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
[Signature] DATE: 3/1/92

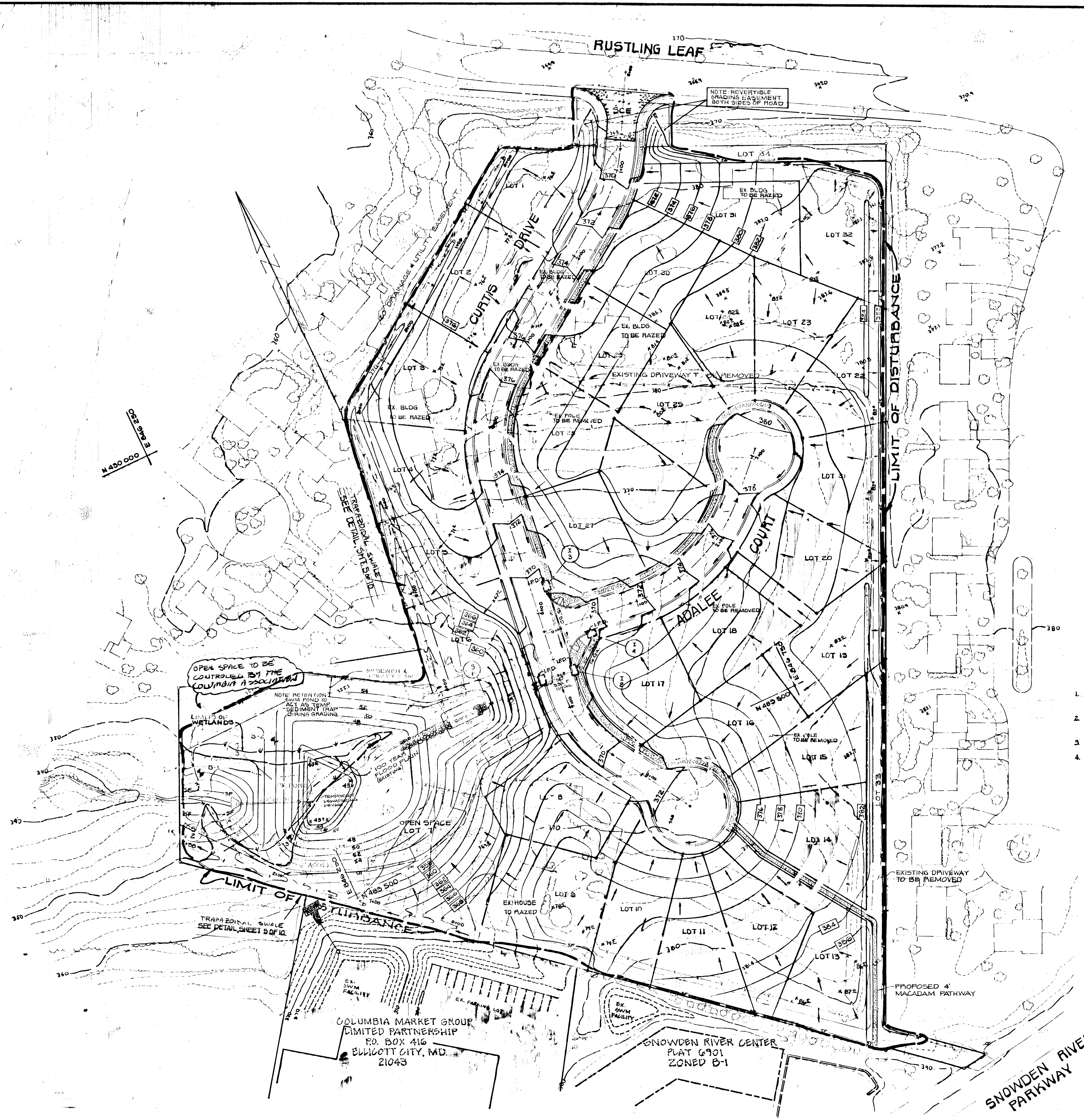
AMERICAN ENGINEERING, INC. 871 A MAIN STREET LAUREL, MARYLAND 20707 301-953-1221 301-880-3039	
PROJECT NAME 'OAKTREE'	OWNER MR. JOHN PUFFENBERGER MR. & MRS. BATHGATE 9316 SNOWDEN RIVER PKWY COLUMBIA, MD 21046
LOCATION Lots 1 - 34	TITLE ROAD CONSTRUCTION F-92-68 DRAWING W-92-28 S 89-46 P 89-69 W-90-28
DATE 05-01-89 PROJECT PJ8802	DEVELOPER RICHARD POBYLSKI 3127 ESPY CT. LAUREL, MD 21114
DES. RAB DRW. BY	SCALE 1" = 50' DRAWING 1 OF 10

PROFILE	DATE
NO.	
BY	
REVISIONS	
1. SURVEYED	
2. PLOTTED	
3. CHECKED	
4. INK	
5. BY	
6. DATE	



1639

F-92-68



- SEQUENCE OF CONSTRUCTION
1. OBTAIN GRADING PERMIT
 2. CONSTRUCT STABILIZED CONSTRUCTED ENTRANCE AS SHOWN ON PLAN.
 3. INSTALL ALL SEDIMENT CONTROL DEVICES, INCLUDING SILT FENCE AND SEDIMENT TRAP (BY USING THE SWM POND WITH DEWATERING DEVICE AS TRAP).
 4. CONSTRUCT STORM DRAIN SYSTEM AS SHOWN ON PLAN AND INLET PROTECTION DEVICES.
 5. GRADE ROADS, CONSTRUCT PAVING, INSTALL HOWARD COUNTY MODIFIED STABILIZED SHOULDERS WITH PERMANENT SEED AND MULCH. STABILIZED CONSTRUCTION ENTRANCE MAY BE REMOVED WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR TO FACILITATE PAVING ACTIVITIES.
 6. ALL SEDIMENT SHALL BE REMOVED FROM SEDIMENT TRAP WHEN THE CLEAROUT ELEVATION HAS BEEN REACHED.
 7. INSPECT ALL SEDIMENT CONTROL DEVICES DAILY AND AFTER EACH RAINFALL. REPAIR AS NECESSARY.
 8. GRADE THE SITE AS PER PLAN.
 9. STABILIZE ALL DISTURBED AREAS WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH.
 10. AFTER PERMISSION HAS BEEN GIVEN BY THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL SEDIMENT CONTROL FEATURES AND EXCAVATE REMAINDER OF SWM POND.
 11. ALL DISTURBED AREAS DUE TO REMOVAL OF SEDIMENT CONTROL MEASURES SHALL BE GRADED AND STABILIZED WITH PERMANENT SEEDING MIXTURE.

SEDIMENT TRAP DATA

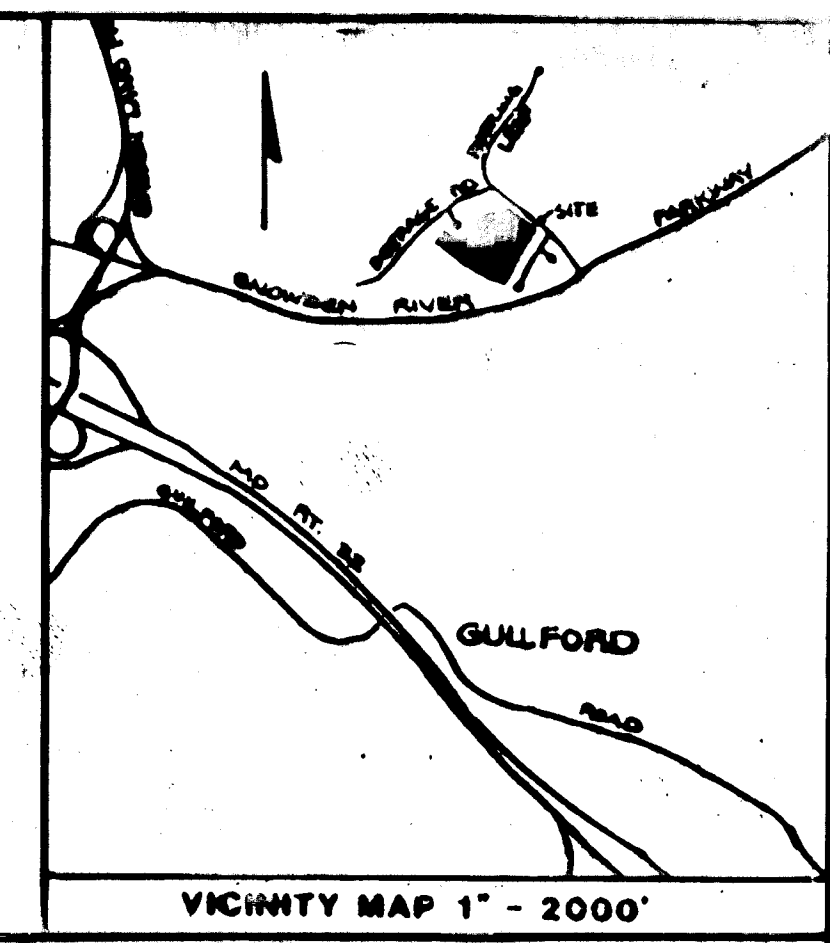
DRAINAGE AREA	: 10.30 AC.
STORAGE REQUIRED	: 18,540.00 CU.FT.
STORAGE PROVIDED	: 51,944.00 CU.FT.
CREST ELEV.	: 350.00 FT.
BOTTOM ELEV.	: 346.00 FT.
CLEAN OUT ELEV.	: 348.00 FT.
DEPTH	: 4.00 FT.

* USING THE PROPOSED RETENTION SWM POND AS TEMP. TRAP DURING GRADING.

NOTE:
EXCESS WATER TO BE REMOVED BY PUMPING DURING CONSTRUCTION OF CORE TRENCH.

INSTALLATION OF TEMPORARY SEDIMENT TRAP

1. CONSTRUCT THE CORE TRENCH UNDER THE EMBANKMENT USING ONLY THOSE MATERIALS SPECIFIED.
2. GRADE POND TO REQUIRED ELEVATIONS PER SEDIMENT TRAP DATA.
3. INSTALL SWM STRUCTURES AND DEWATERING DEVICE.
4. UPON COMPLETION OF STABILIZATION AND WITH THE PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE DEWATERING DEVICE AND EXCAVATE POND TO ELEVATION 343.00.



By the Engineer:

"I certify that this plan for pond construction, 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."

David Weiss 1/25/92
Signature of Engineer Date
Print name below signature

By the Developer:

"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. I will provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion."

Richard Kobylski 2/15/92
Signature of Developer Date
Print name below signature

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

John M. Benjamin 2/24/92
Soil Conservation Service Date

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

Robert W. Ziehm 2/24/92
Howard Soil Conservation District Date

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Charles DeMunnich 3/2/92
CHIEF, LAND DEVELOPMENT DIVISION DATE

John M. Benjamin 3/5/92
CHIEF, BUREAU OF HIGHWAYS DATE

Richard W. Ziehm 3-4-92
CHIEF, BUREAU OF ENGINEERING DATE

APPROVED : HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Anna M. Holcomb 3/23/92
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT-DATE

AMERICAN ENGINEERING, INC.
671 A MAIN STREET LAUREL, MARYLAND 20707
301-953-1221 301-880-3039

PROJECT NAME
"OAKTREE"
Lots 1 - 34

OWNER,
MR. JOHN PUFFENBERGER
MR. & MRS. BATHGATE
9316 SNOWDEN RIVER P.WY.
COLUMBIA, MARYLAND 21046

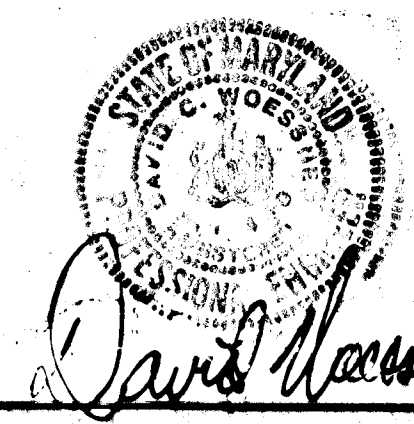
DEVELOPER
RICHARD KOBYLSKI
2127 ESPEY CT.
LAUREL, MD 21114

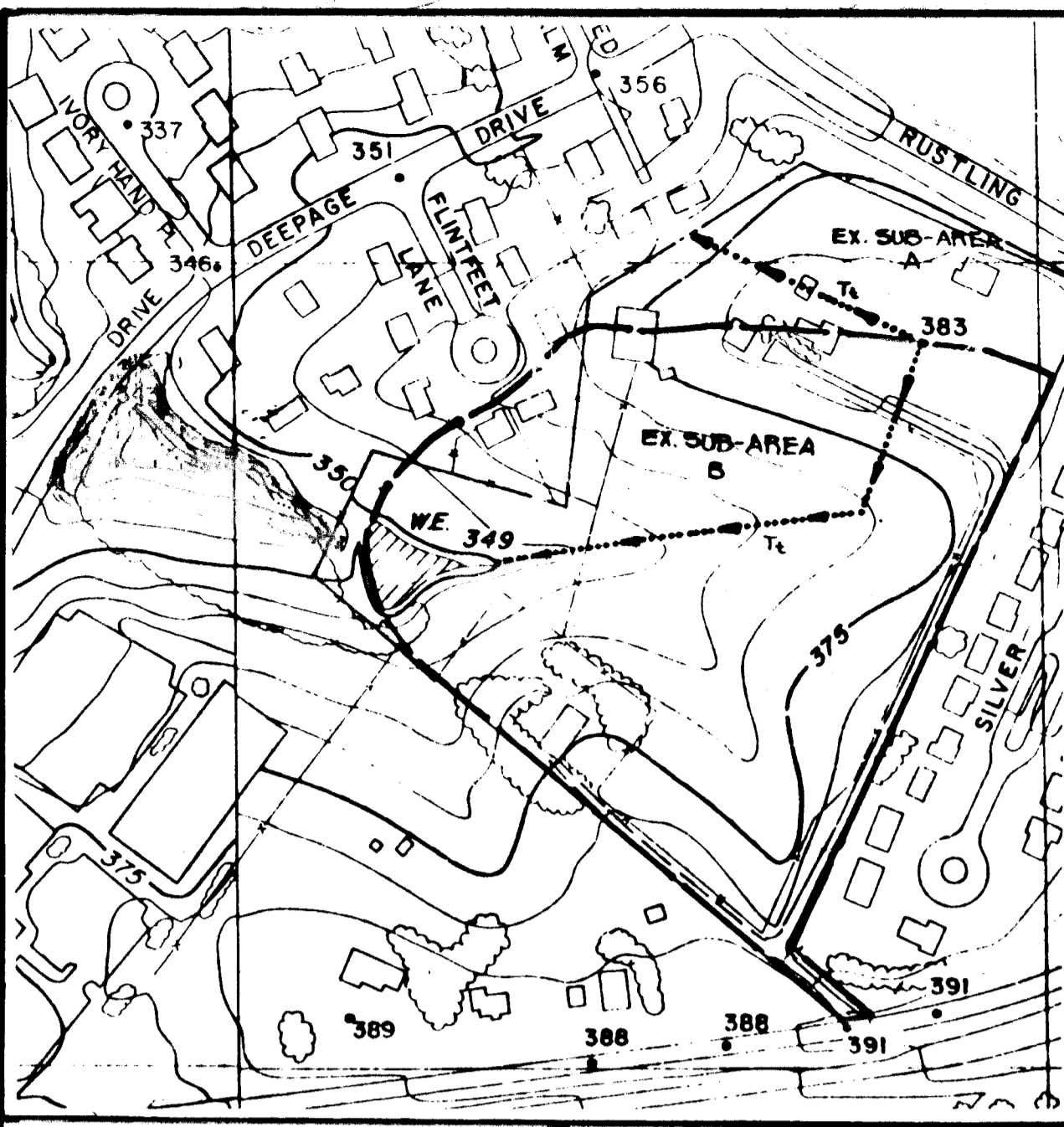
LOCATION
TM # 42 Par. 4 and 262
6 th Elect. Dist. H.Co. MD.

TITLE
GRADING & SEDIMENT CONTROL SHEET F-92-68
S 89-46 P 89-69 P-9020

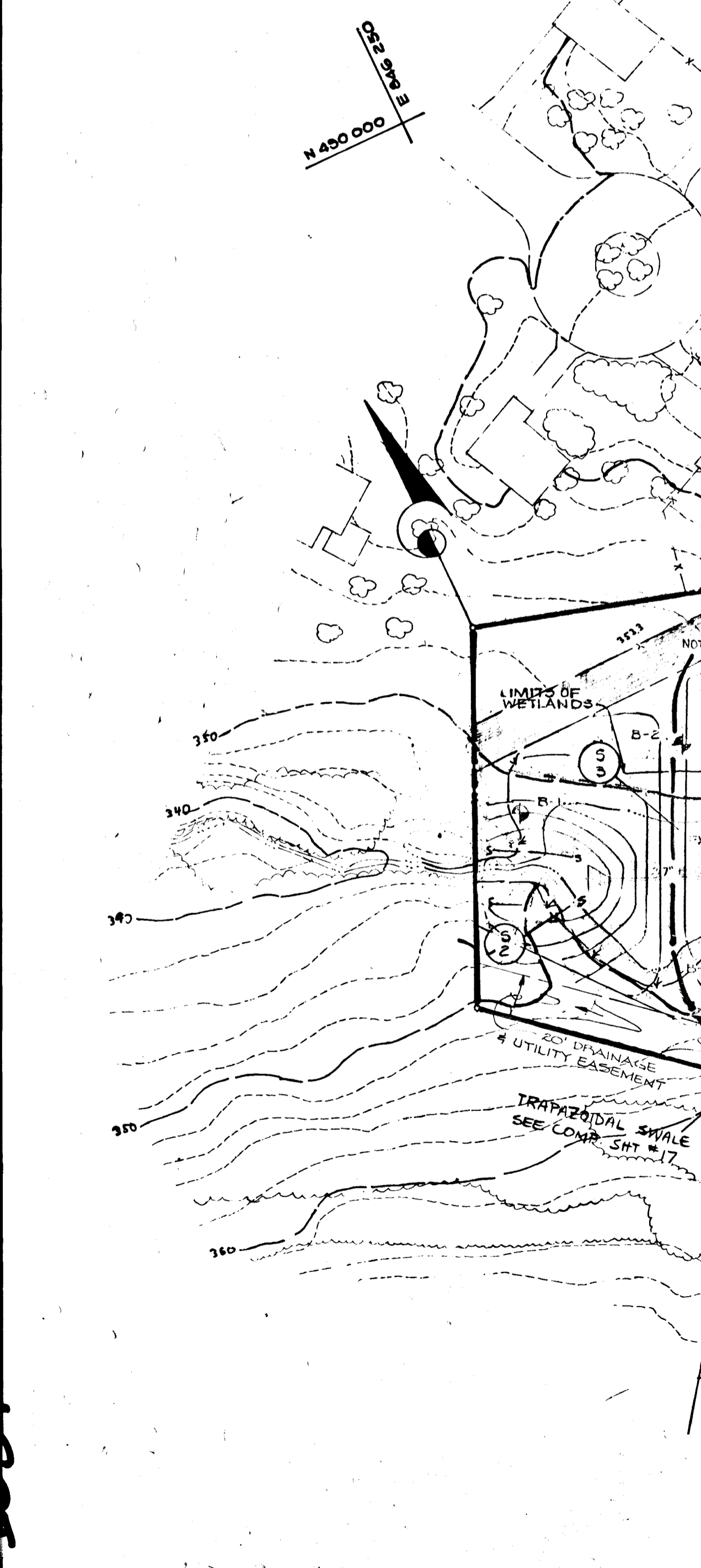
DATE 05-01-89 PROJECT PS8802

DWS. RAB DRW. RT SCALE 1"=50' DRAWING 2 OF 10





PRE-DEVELOPMENT DRAINAGE AREA MAP
SCALE: 1" = 200'



NOTE: SUB-AREA A DRAINS OFFSITE. SUB-AREA B DRAINS TO EXISTING POND.

NOTE: REVERTIBLE GRADING EASEMENT BOTH SIDES OF ROAD

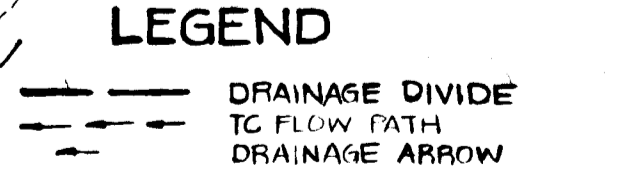
NOTE: SWALE HAS BEEN LOCATED BY A FIELD SURVEY. NO OFFSITE DRAINAGE.

COLUMBIA MARKET GROUP LIMITED PARTNERSHIP
80 BOX 416
ELLIOTT CITY, MD 21043

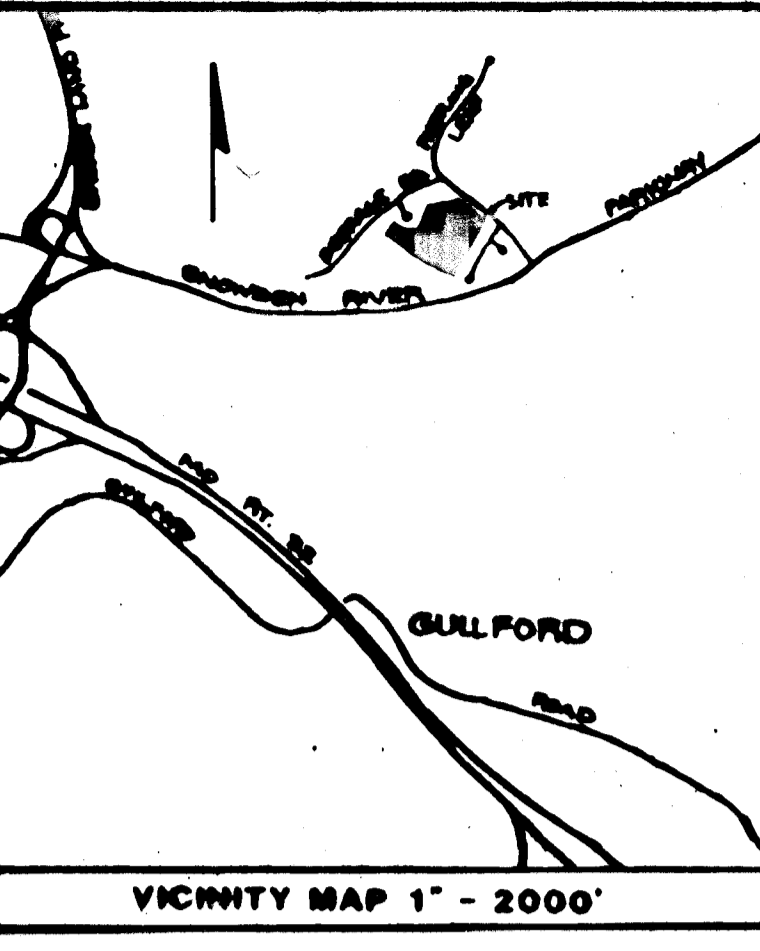
SNOWDEN RIVER CENTER
FLAT 6701
ZONED B-1

STORMWATER MANAGEMENT CONSTRUCTION SPECIFICATIONS

- 1. GENERAL**
Unless otherwise noted, all materials and construction shall conform to these plans and specifications, and to the following:
"Standard Specifications and Details for Construction" of the Maryland County, Maryland Department of Public Works, 1986 and as amended.
"Standard Specifications for Construction and Materials" of the Maryland State Highway Administration, 1987 and as amended.
"Standard Specifications for Pavement" of the Soil Conservation Service of Maryland, 1976, and 1981 and as amended.
- 2. SITE PREPARATION**
Areas designated for borrow areas, embankment and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and steep banks shall be sloped to no steeper than 1:1.
Areas to be covered by the pond or reservoir will be cleared of all trees, brush, logs, stumps, rocks and other objectionable material unless otherwise designated on these plans. Trees, brush and stumps shall be cut approximately level with the ground surface.
All stumps and grubbed material shall be disposed of outside and below the limits of the embankment or reservoir as directed by the Engineer or the representative when specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.
- 3. EARTHWORK AND EARTH FILL**
3.1 Material
The earth fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, over-size stones, broken or other objectionable material. The embankment shall be constructed to an elevation which provides for anticipated settlement to the design elevation. The fill height at along the length of the embankment shall be no less than 10% percent above the design elevation (including frost) unless otherwise shown on the plans. All fill material shall meet the requirements of the Unified Soil Classification C, or M, unless otherwise noted.
3.2 Placement
Areas on which earth fill is to be placed shall be scarified prior to placement of fill. The material shall be placed in lifts (8) inches maximum thickness (unless otherwise specified) which are to be compacted over the entire width of the fill. The most porous borrow material shall be placed in the downstream portions of the embankment.
3.3 Compaction
The movement of the building and spreading equipment over the fill shall be controlled so that the surface of each lift shall be traversed a minimum of four (4) complete passes at a forward, rubber-tired or wheeled roller. All material shall be compacted to a minimum of 95% relative compaction (RC) as determined by a ball without crumpling. If water can be squeezed out of the ball, it is too wet to compact properly. Each layer of fill shall be compacted as necessary to obtain ninety five (95) percent of ASTM D 1557-99 and is to be certified by the Geotechnical Engineer.
3.4 Cut-off Trench
Where specified, a Cut-off Trench shall be excavated along or parallel to the centerline of the embankment as shown on these plans. The bottom width of the trench shall be as shown on the drawings, with the maximum width being four (4) feet. The depth shall be as shown on the drawings and shall be at least four (4) feet below existing grade. The side slopes of the trench shall be 1:1. Before the borrow material for the Cut-off Trench shall be compacted with equipment or rollers to assure maximum density and maximum permeability consistent as defined above to ninety five (95) percent of ASTM D 1557-99 density. All Cut-off Trench backfill material shall meet the requirements of Unified Soil Classification No. CL, ML or PL.
3.5 Structural Backfill
Backfill material to be placed adjacent to structures shall be of the type and quality conforming to that specified for the retaining fill material. The backfill shall be placed in successive lifts not to exceed four (4) inches in thickness and compacted by hand tampers or other compaction equipment. The material needs to be completely all around and adjacent to the pipe. At no time during the backfilling operation shall drums equipment be allowed to operate closer than four (4) feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be drawn over any part of a concrete structure or pipe unless there is a compacted fill of ten (10) feet (24) inches or greater over the structure pipe.
- 4. PIPE CONDUITS**
4.1 Corrugated Metal Pipe
Materials - The pipe and its appurtenances shall be galvanized and fully fluorescent coated and shall conform to all of the requirements of ASTM Specification M-190 pipe A with interlock coupling bands. Any aluminum coating, oil, grease or otherwise removal shall be removed. Only approved fluorescent coating compound.
Connections - All connections with pipes must be completely watertight. The drain pipe or 1/2" x 7/8" connection to the pipe must be welded all around. Interlock coupling bands shall be used at all joints. All joints shall be connected to the pipe in such a manner as to be completely watertight. Flexible bands are not considered watertight.
Bedding - The pipe shall be firm and uniformly bedded throughout its entire length. There shall be no voids, air or other material and it shall be supported. All material shall be removed and replaced with suitable earth to provide adequate support.
Laying Pipe - The pipe shall be placed with inside circumferential laps pointing upstream and with the longitudinal laps at the side.
4.2 Reinforced Concrete Pipe
Materials - Reinforced concrete pipe conduits shall have a rubber gasket joint and shall meet or exceed ASTM Specification C-361. An approved equivalent is allowed. Specification C-301.
Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high strength concrete bedding under the pipe and the sides of the pipe at least ten (10) percent of its outside diameter with a maximum thickness of three (3) inches as shown on the drawings.
Laying Pipe - Bed and spring pipe shall be placed with the bed and upstream joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire length, the bedding shall be placed in that of spaces under the pipe or sheet. Care shall be exercised to prevent any deviation from the original low and grade of the pipe.
4.3 Backfilling and Other Details
Backfilling shall conform to Structural Backfill as shown above. Other details (anti-seep covers, valves, etc.) shall be as shown on the drawings.
- 5. STRUCTURES**
Concrete structures shall meet minimum requirements set forth in the Maryland State Highway Administration "Standards and Specifications for Construction" 1987, Materials, 1987, as amended, including:
5.1 Concrete
Section 918 (Portland Cement Concrete Mixtures) M. No. 3
5.2 Reinforcement
Section 610 (Reinforcement for Concrete Structures)
Section 911 (Reinforcing Steel, Wire Rope and Wire Fabric)
In addition, reinforcing steel shall meet ASTM Specification A615, Grade 60. Steel angles, anchor bars and appurtenances shall be ASTM A36.



- 6. STABILIZATION**
All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, roadway, spoil and borrow areas, and areas shall be stabilized in accordance with the specifications shown hereon and with the 1985 Maryland Standards and Specifications for Soil Erosion and Sediment Control as amended immediately after finishing grading. All 2:1 slopes shall be seeded. Unless otherwise noted, all other designated areas shall be stabilized with permanent seeding.
Further:
10-10-10 @ 1.5 lbs./1000 sq. ft.
Seed @ 0.5 lbs./1000 sq. ft.
Cover @ 1.5 lbs./1000 sq. ft.
Slope @ 2 lbs./1000 sq. ft.
Slopes @ 4 lbs./1000 sq. ft.
Fall trees @ 5 lbs./1000 sq. ft.
- 7. EROSION AND SEDIMENT CONTROL**
Construction operations will be carried out in such a manner that erosion will be controlled and water and/or pollution minimized as shown on these plans and as set forth in the 1983 Standards and Specifications for Soil Erosion and Sediment Control of the Soil Conservation Service of Maryland. Howard County Soil Conservation District, as amended.
- 8. FILTER FABRIC**
Where specified, MESH #1475 or equivalent shall be used.
- 9. GABIONS**
Gabions shall be class IV. Pilelet wire shall be PVC coated.



By the Engineer:
"I certify that this plan for pond construction, 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."
David Mann 1/30/91
Signature of Engineer Date
Print name below signature

By the Developer:
"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. I will provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion."
Robert Zielh 2/14/92
Signature of Developer Date
Print name below signature

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.
John W. Hester 2/29/92
U.S. Soil Conservation Service Date
These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.
Robert Zielh 2/24/92
Howard Soil Conservation District Date

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William J. Hester 3/3/92 DATE
CHIEF, LAND DEVELOPMENT DIVISION
John M. Taylor 3/5/92 DATE
CHIEF, BUREAU OF HIGHWAYS
William J. Hester 3-4-92 DATE
CHIEF, BUREAU OF ENGINEERING

APPROVED : HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Anna J. Hester 3/23/92 DATE
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT-DATE

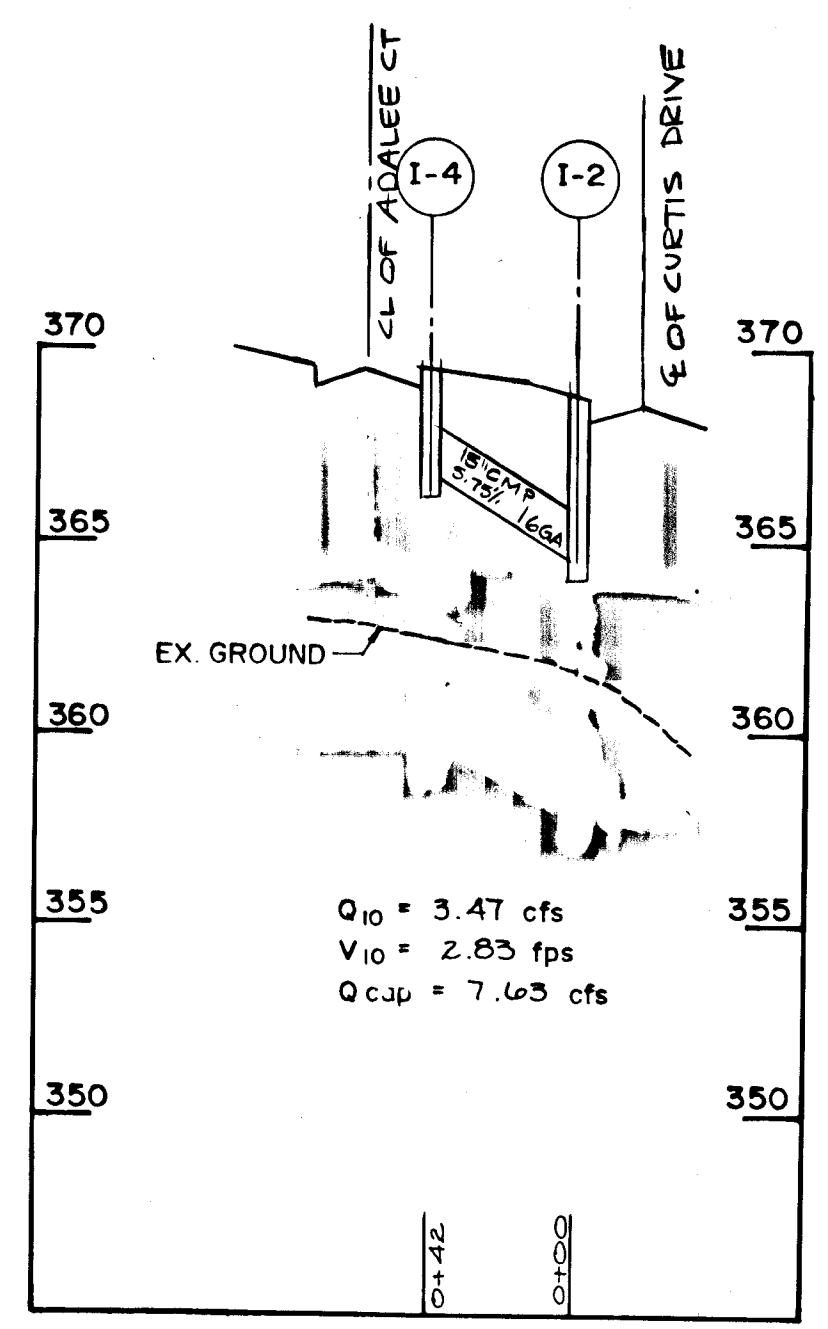
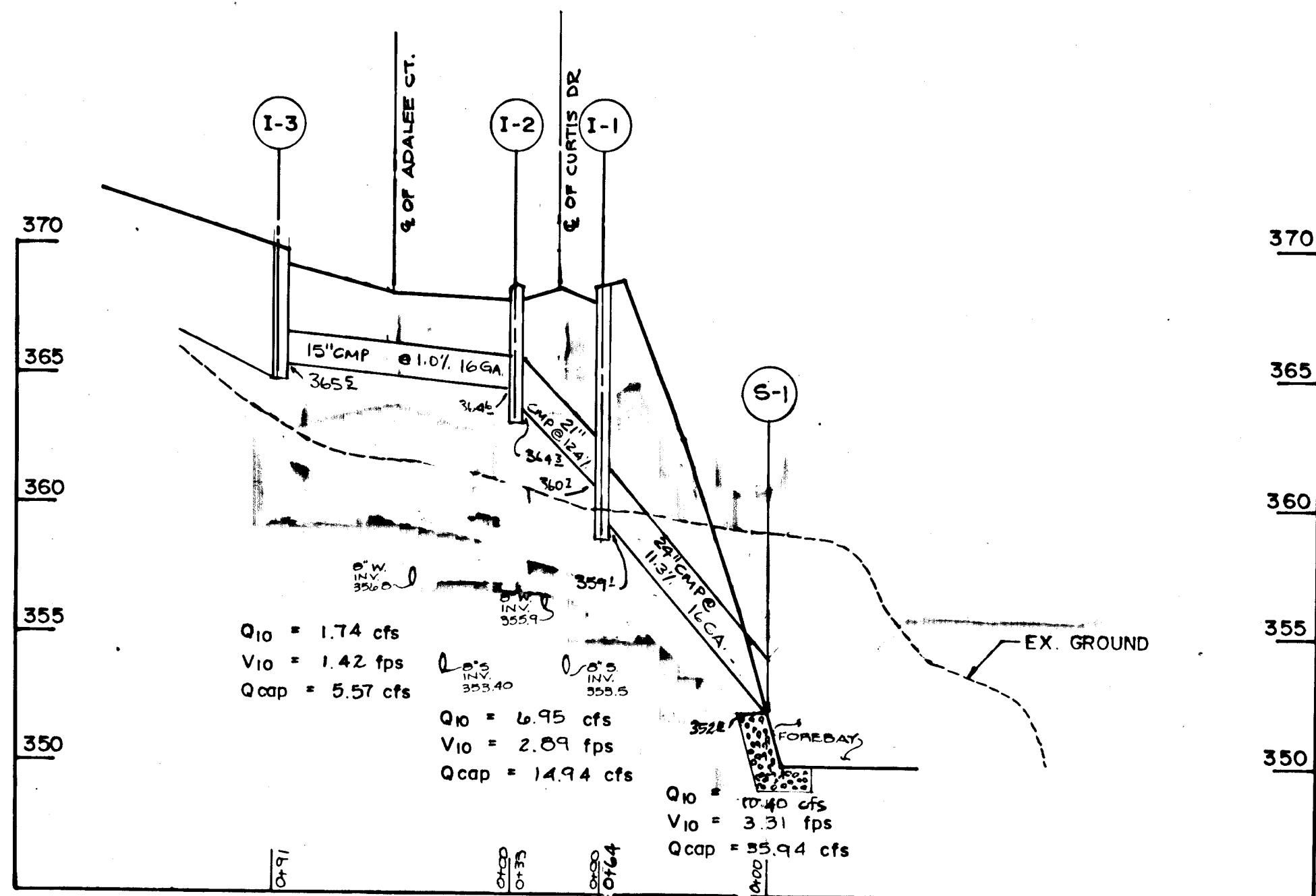
AMERICAN ENGINEERING, INC.
671 A MAIN STREET LAUREL, MARYLAND 20707
301-953-1221 301-880-3039

OWNER MR. JOHN PUFFENBERGER MR. & MRS. BATHGATE 9316 SNOWDEN RIVER Pkwy COLUMBIA, MARYLAND 21046	PROJECT NAME "OAKTREE" Lots 1 - 34
DEVELOPER RICHARD KOBYSKI 2127 ESPY CT LAUREL, MD 21144	LOCATION TM # 42 Par. 4 and 262 6 th Elect. Dist. H.Co. MD.
DES. RAB DRW. RT	TITLE DRAINAGE AREA MAP S 89-46 P 89-69 DATE 05-01-89 PROJECT PS8802 SCALE 1"=50' DRAWING 3 OF 10

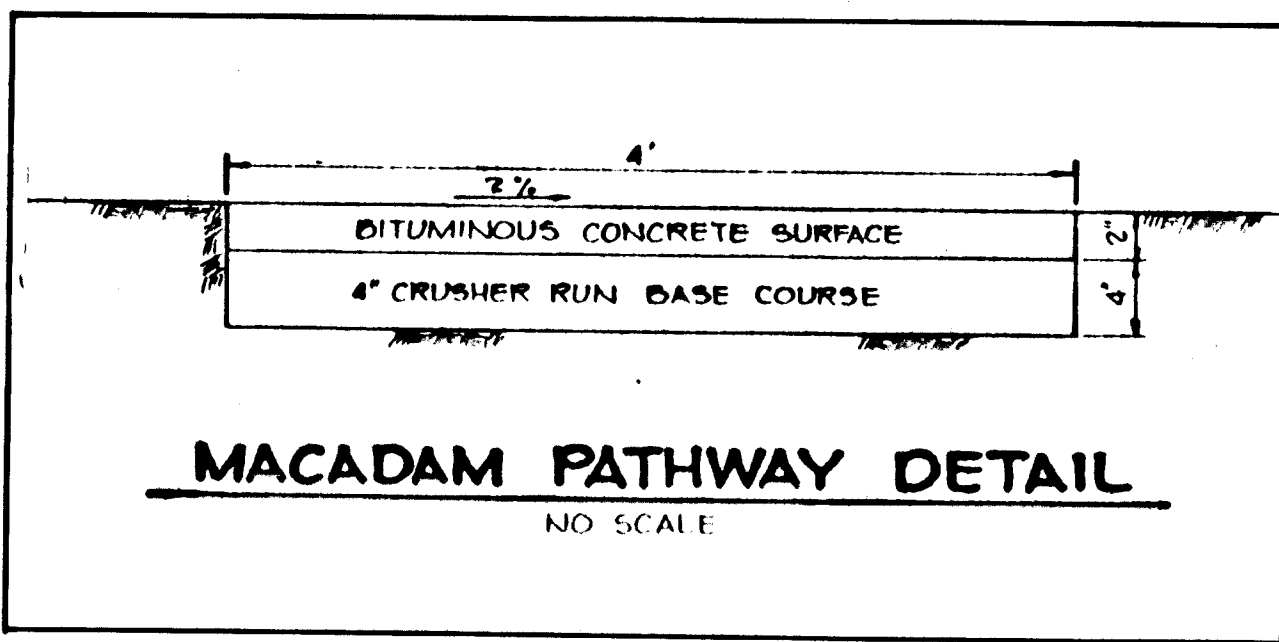
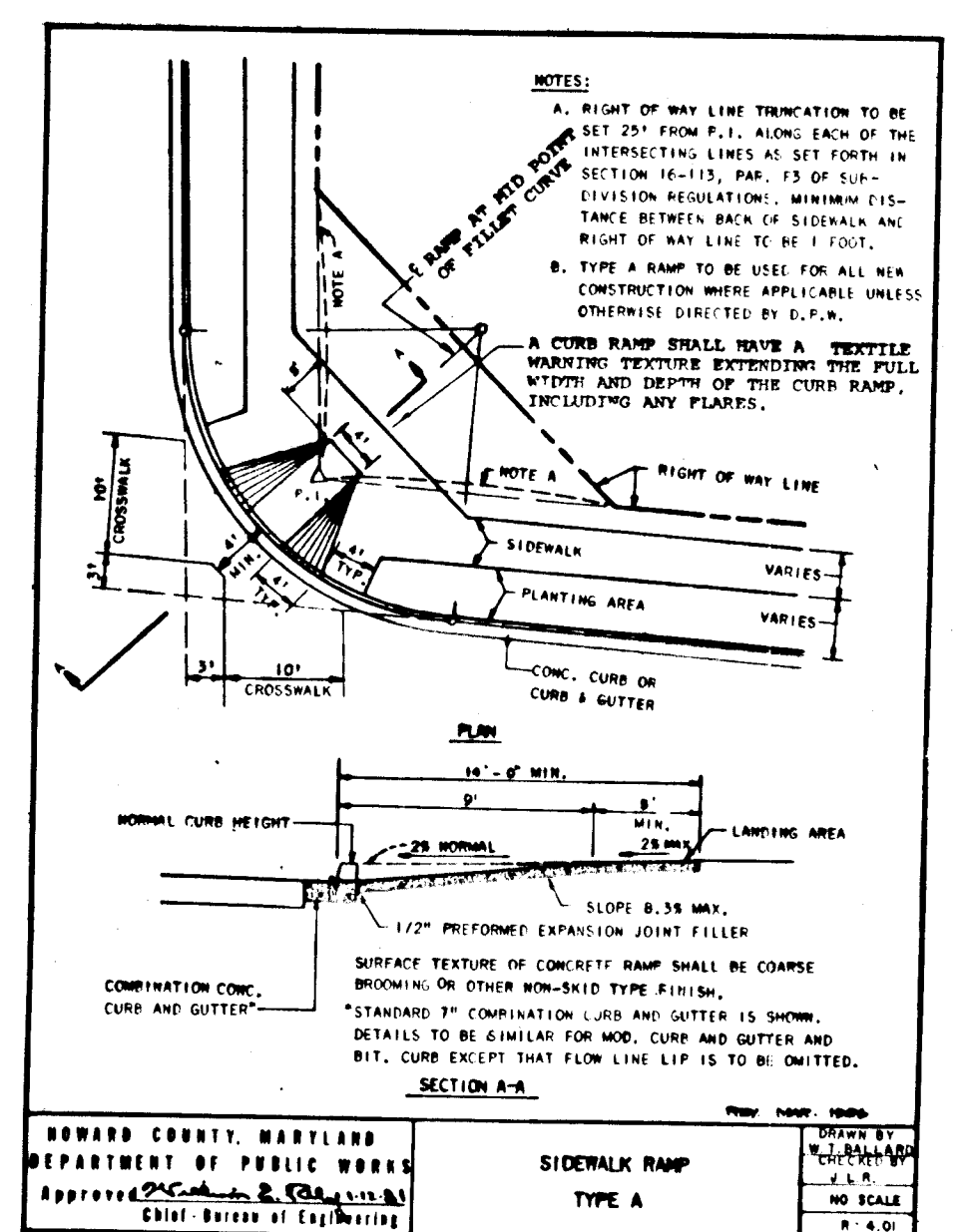
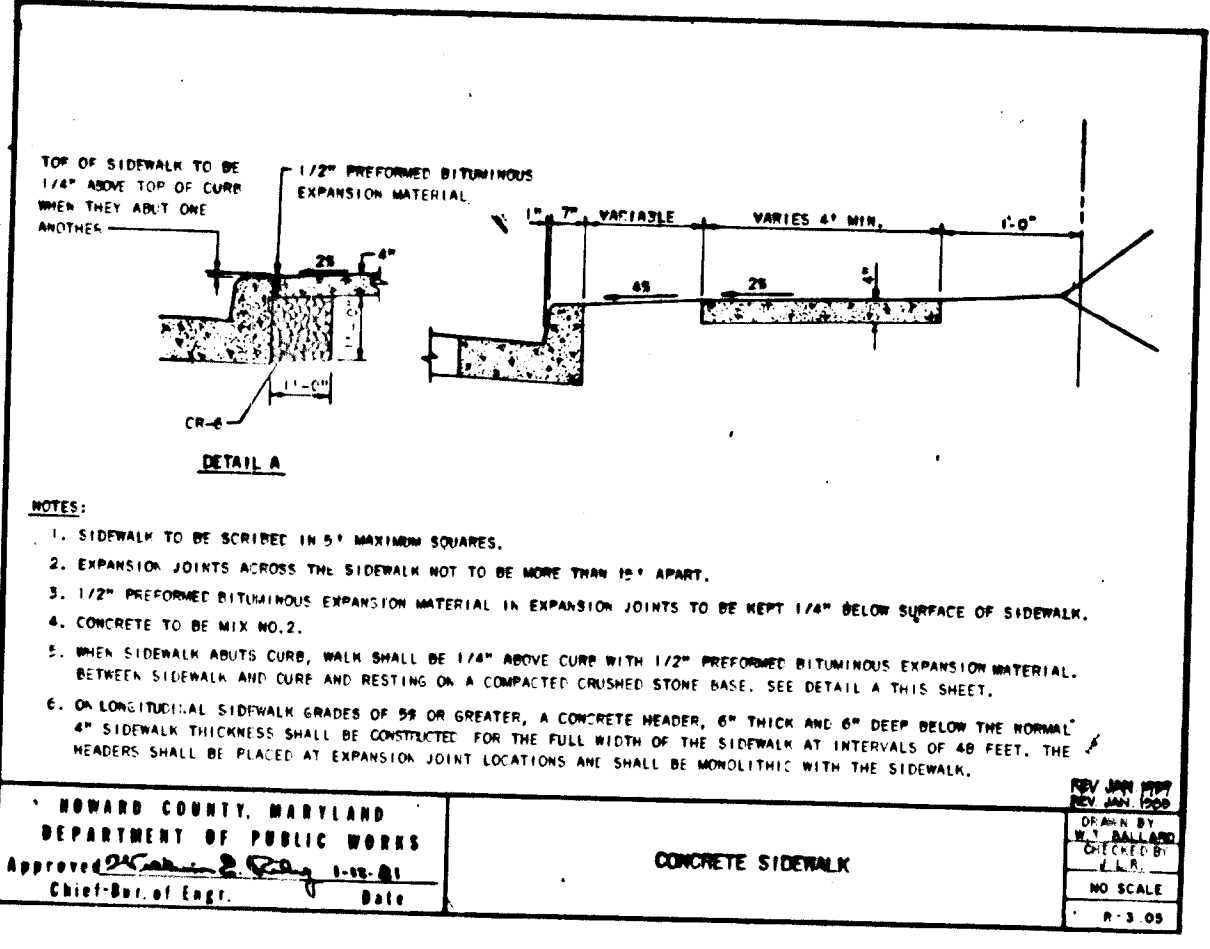


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F-92-68

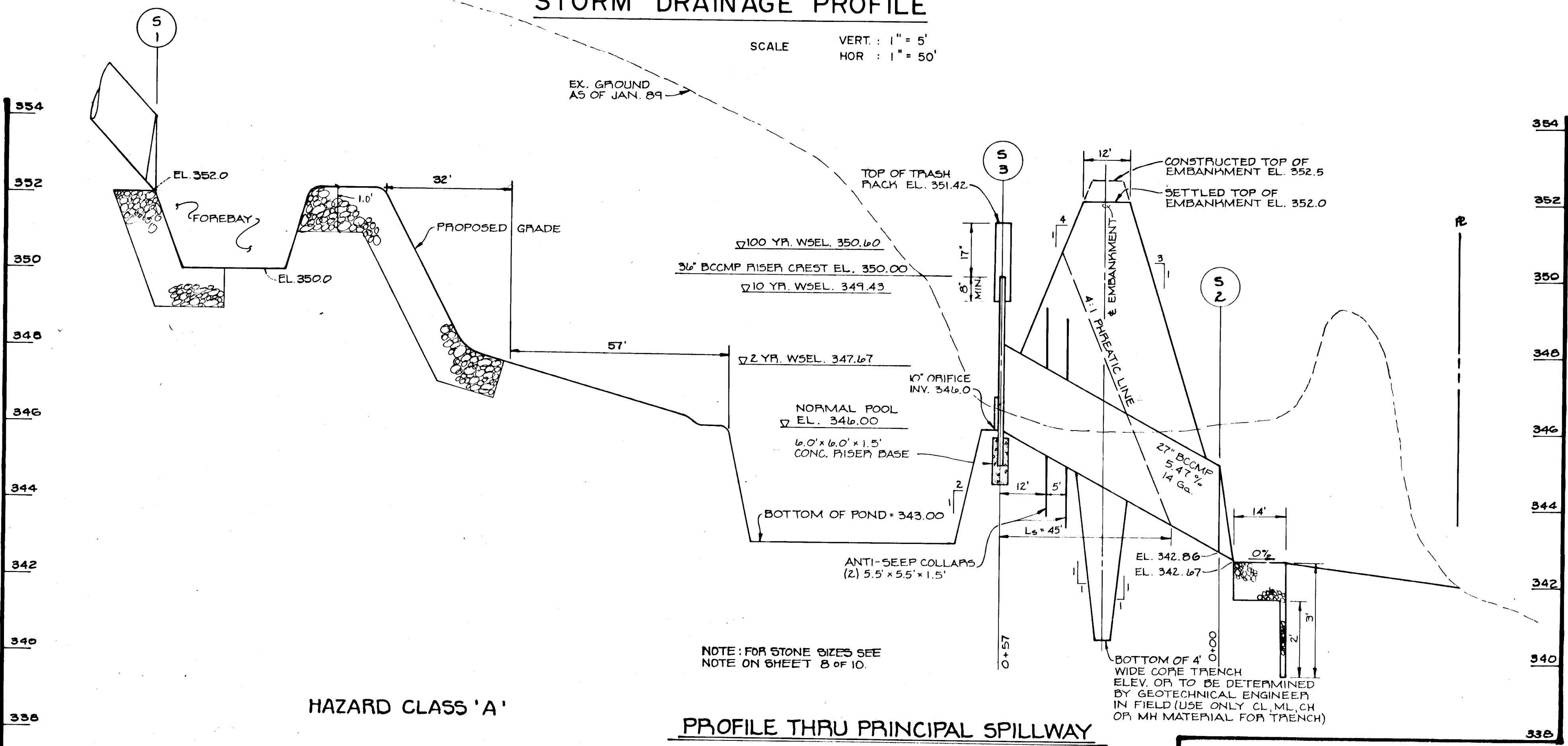


NOTE:
STORM DRAIN BEDDING SHALL BE PER
HOWARD COUNTY STANDARD DETAIL G-2.01.



STORM DRAINAGE PROFILE

SCALE VERT: 1" = 5'
HOR: 1" = 50'



HAZARD CLASS 'A'

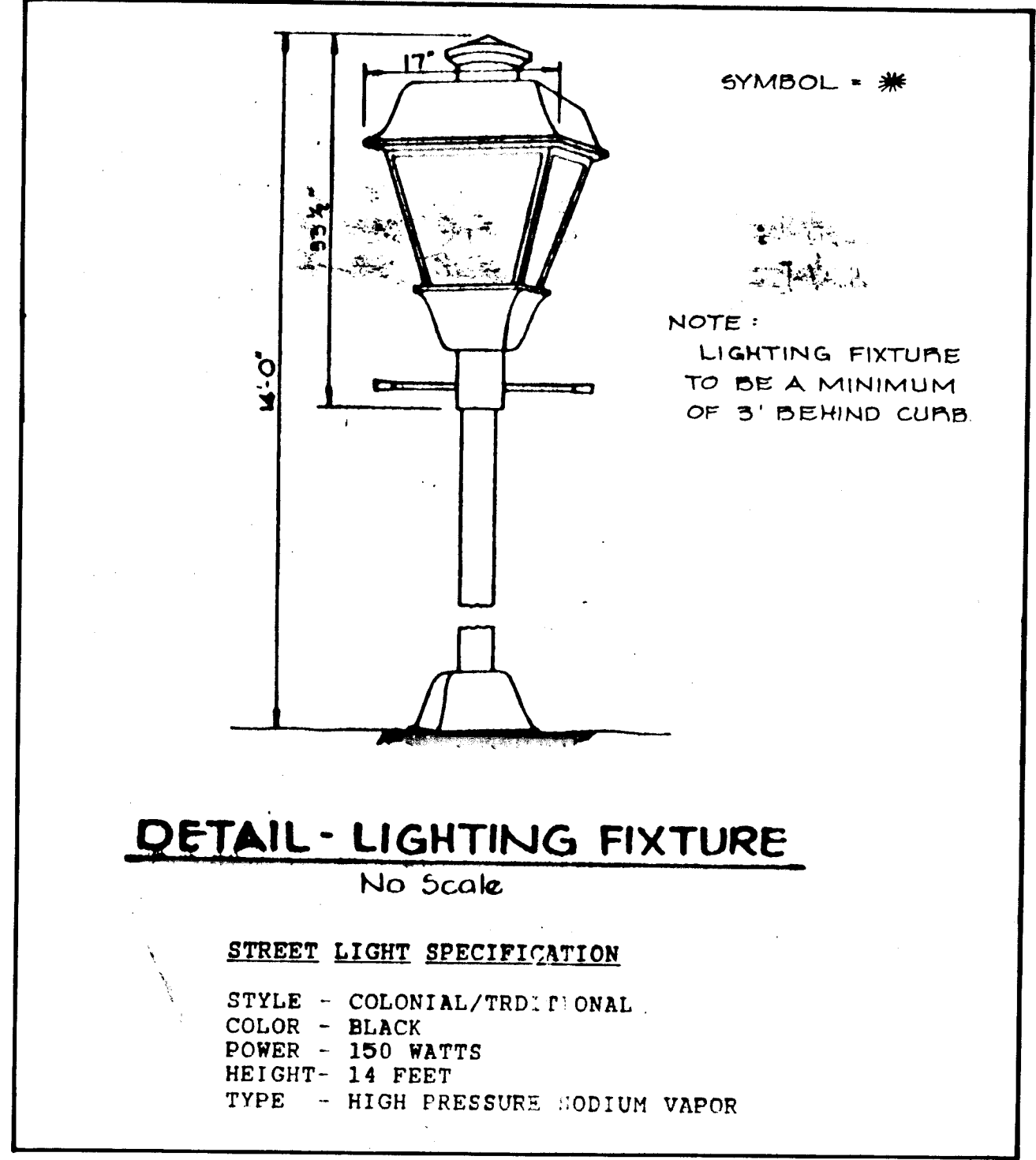
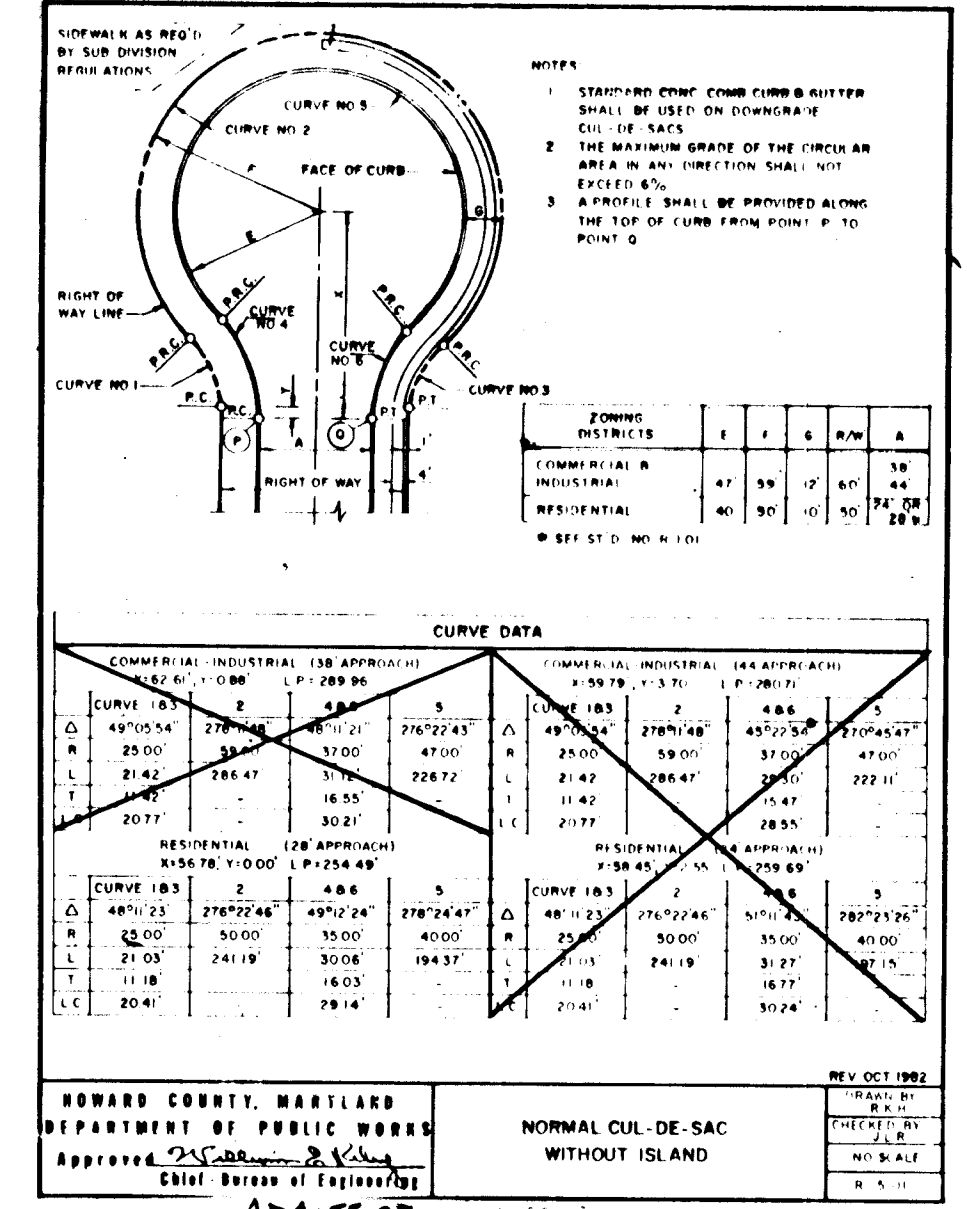
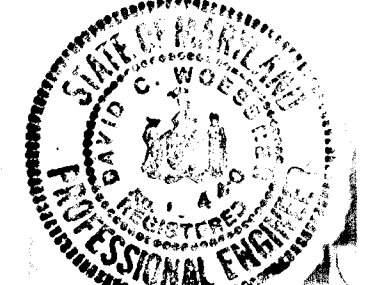
PROFILE THRU PRINCIPAL SPILLWAY

SCALE: 1" = 20' HORIZ.
1" = 2' VERT.

NOTE:
SEE SHEET 3 OF 10 FOR
POND CONSTRUCTION NOTES.

ENGINEER'S CERTIFICATE
I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, 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.
David Wasson 1/4/92
David Wasson

DEVELOPER'S CERTIFICATE
I HEREBY 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. I WILL PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.
David Wasson 2/1/92
Signature of Developer

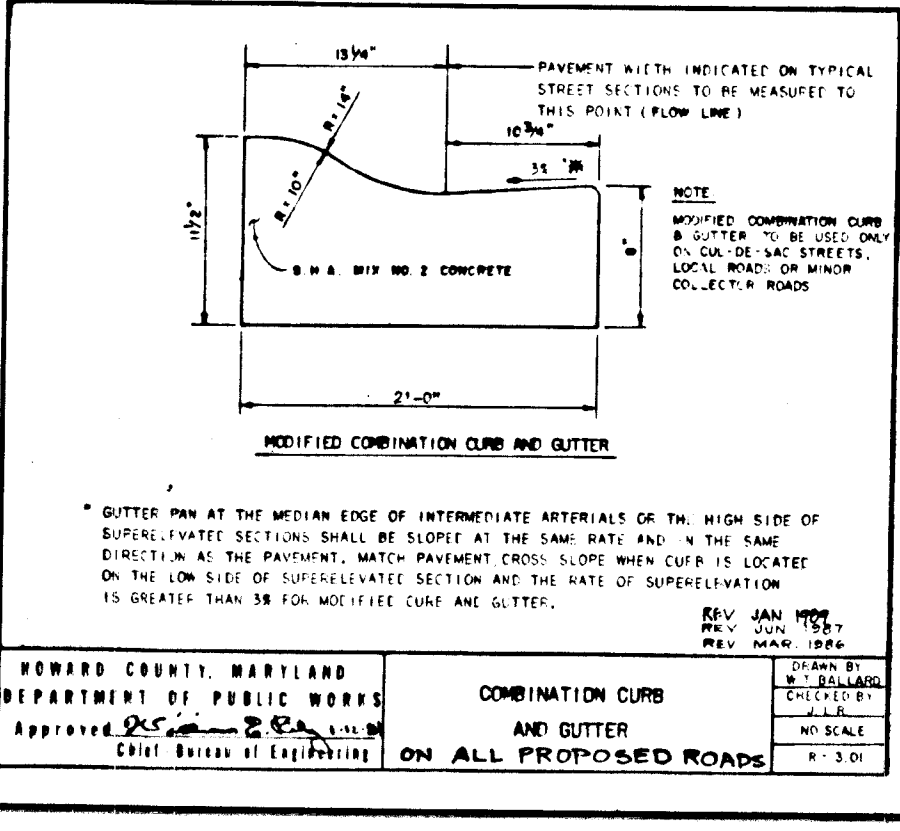
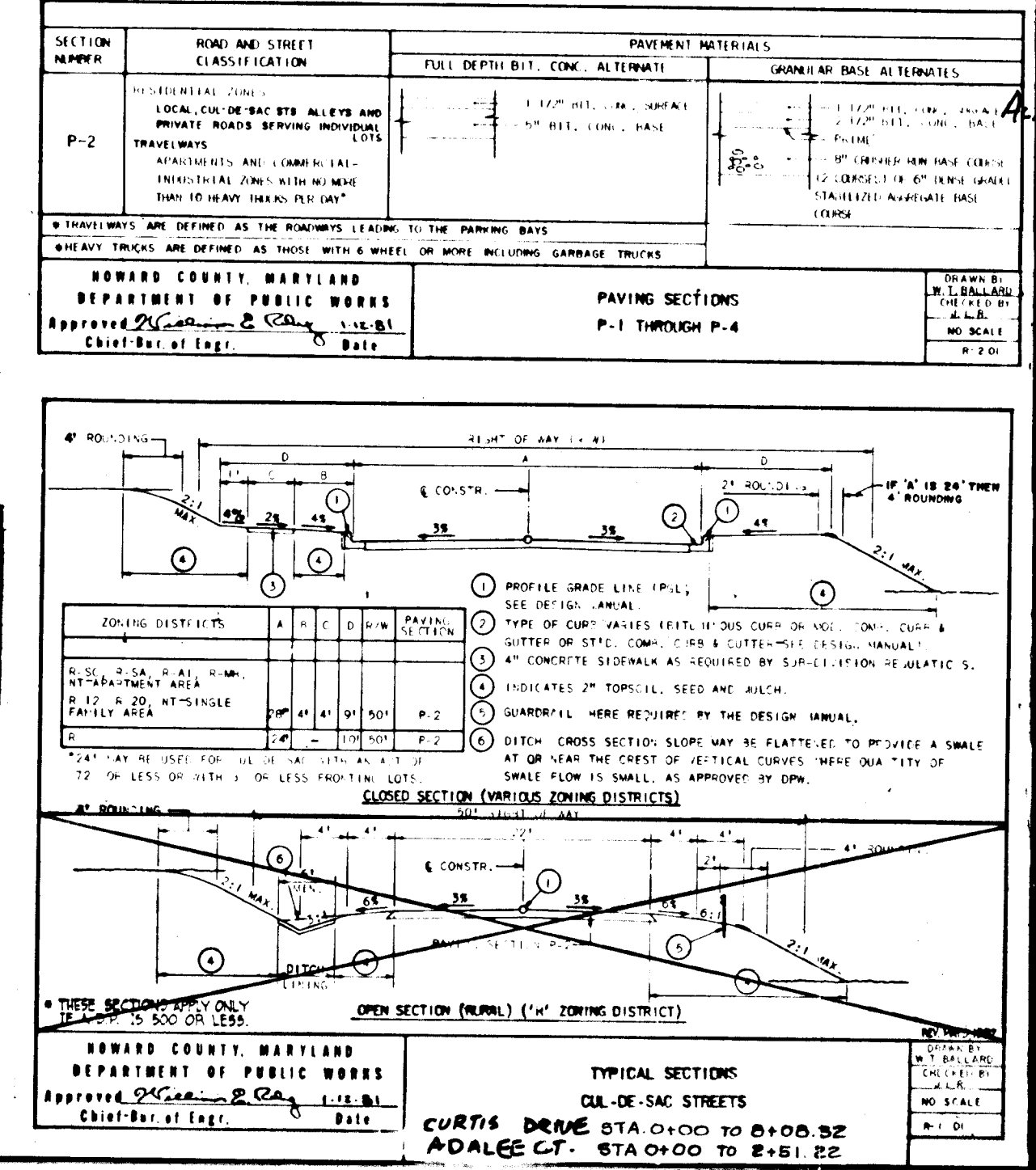


APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, LAND DEVELOPMENT DIVISION
John M. Pennington 2/6/92
CHIEF, BUREAU OF HIGHWAYS
John M. Pennington 3/5/92
CHIEF, BUREAU OF ENGINEERING
John M. Pennington 3-4-92

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Thomas J. Klemm 3/23/92
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT

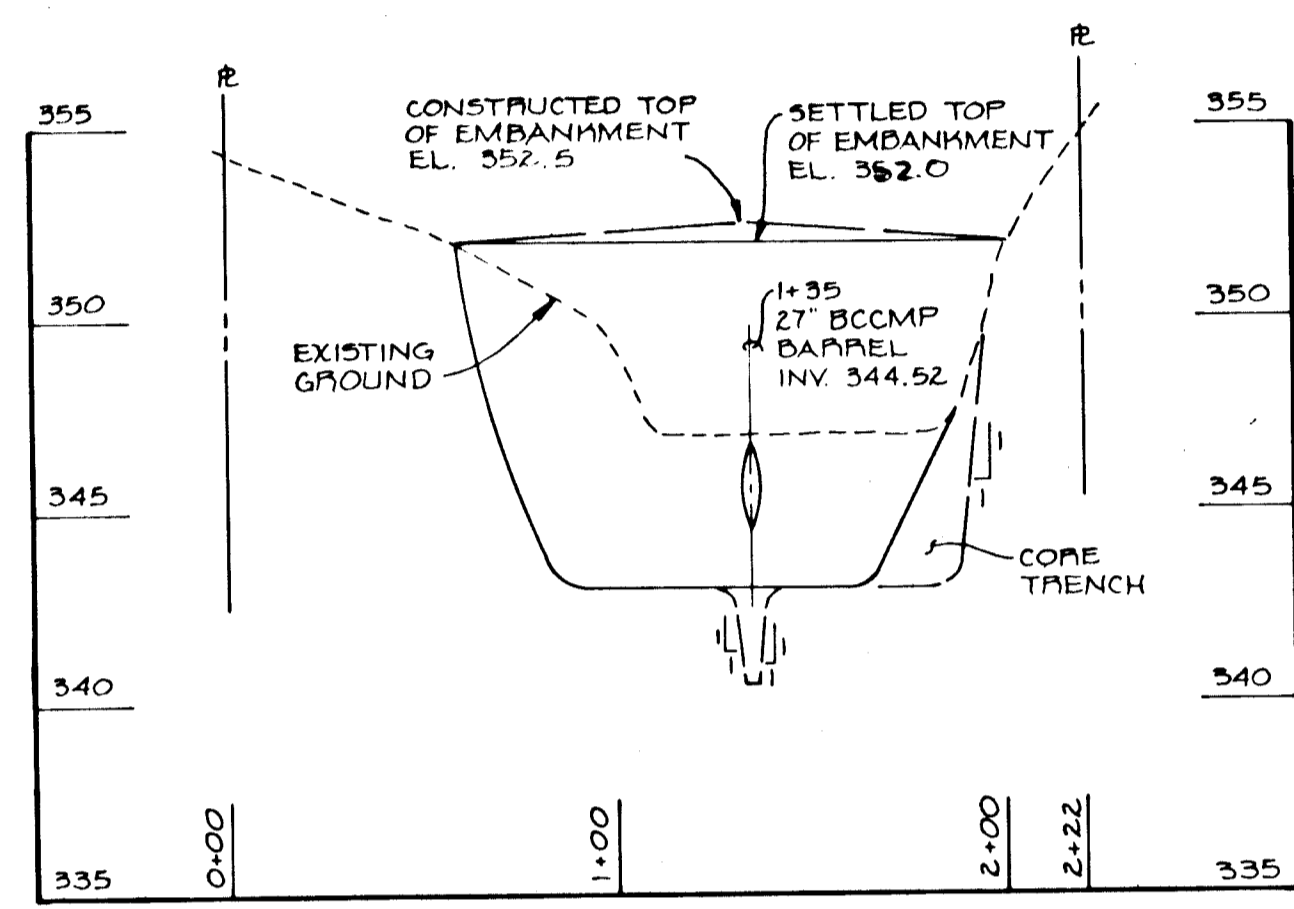
AMERICAN ENGINEERING, INC.
671 A MAIN STREET LAUREL, MARYLAND 20707
301-953-1221 301-880-3039

PROJECT NAME
'OAKTREE'
LOCATION
Lots 1 - 34
TITLE
STORM DRAINS
5 89-46 P 89-69
DATE
05-01-89
SCALE
AS NOTED
DRAWING
4 OF 10



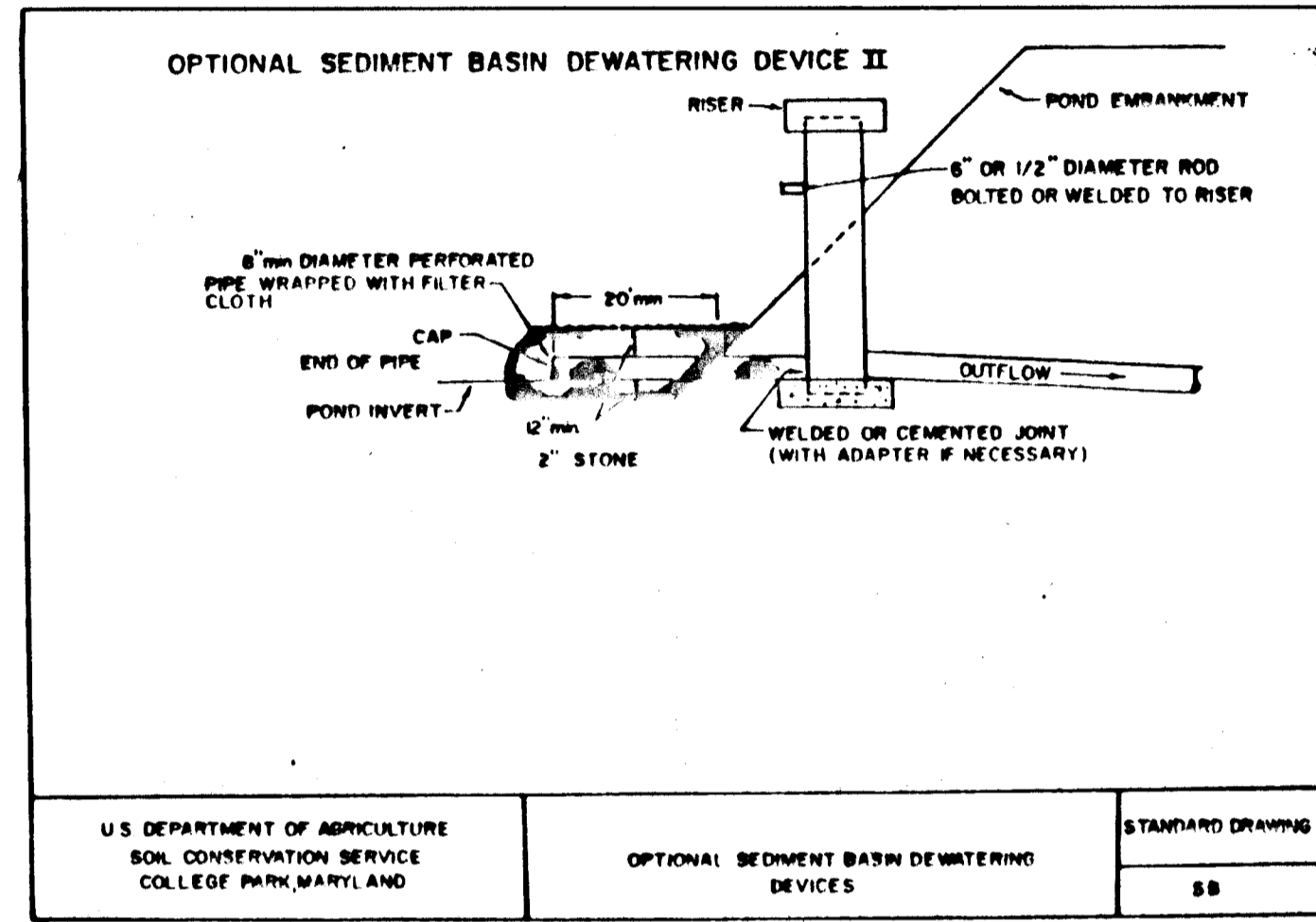
DRAINAGE STRUCTURE SCHEDULE

NO.	TYPE	INV. IN	INV. OUT	TOP ELEV.	REMARKS
I-1	A-10	360.70	359.10	368.41	HO. CO. STD. DETAIL SD-4.02
I-2	A-10	364.60	364.30	368.41	HO. CO. STD. DETAIL SD-4.02
I-3	A-5	-----	368.50	369.56 UPPER 369.46 LOWER	HO. CO. STD. DETAIL SD-4.01
I-4	A-5	-----	366.50	369.58 UPPER 369.38 LOWER	HO. CO. STD. DETAIL SD-4.01
S-1	METAL END SEC.	352.39	352.0		HO. CO. STD. DETAIL SD-5.61
S-2	METAL END SEC.	342.66	342.67		HO. CO. STD. DETAIL SD-5.61
S-3	25 INCH RISER	350.00			

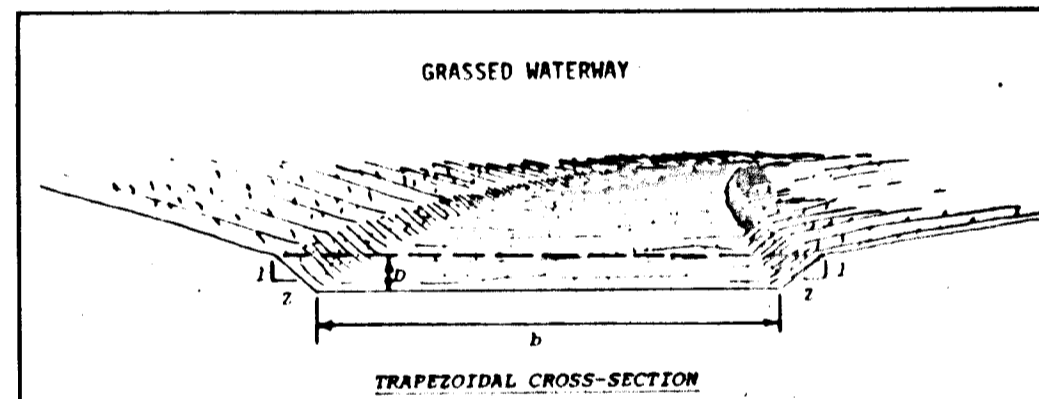


PROFILE ALONG TOP OF DAM

SCALE: 1" = 50' HORIZ
1" = 5' VERT.

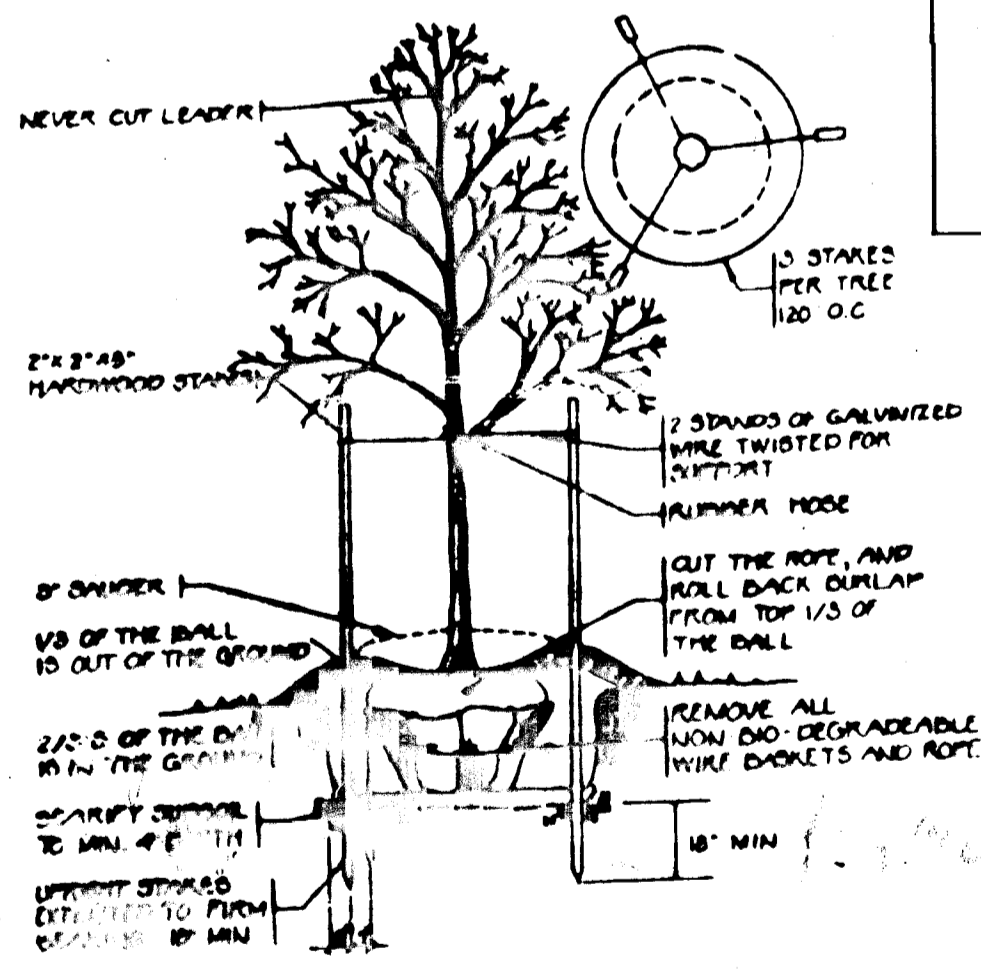


OPTIONAL SEDIMENT BASIN DEWATERING DEVICES



STA.	B	D	Z
0+00 TO 4+00	2	0.47	5
4+00 TO 5+95	2	0.37	5
0+00 TO 2+00	4	0.36	4

- Construction Specifications
- All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the waterway.
 - The waterway shall be excavated or shaped to line, grade, and cross section as required to meet the criteria specified herein, and be free of bank projections or other irregularities which will impede normal flow.
 - Fills shall be compacted as needed to prevent unequal settlement that would cause damage to the complete waterway.
 - All earth removed and not needed in construction shall be spread or disposed of so that it will not interfere with the functioning of the waterway.
 - Stabilization shall be done according to the appropriate Standard and Specifications for Vegetative Practices.
 - For design velocities of less than 3.5 ft. per sec., seeding and mulching may be used for the establishment of the vegetation. It is recommended that, when conditions permit, temporary diversions or other means should be used to prevent water from entering the waterway during the establishment of the vegetation.
 - For design velocities of more than 3.5 ft. per sec., the waterway shall be stabilized with sod, with seeding protected by jute or excelsior matting or with seeding and mulching including temporary diversion of the water until the vegetation is established.
- C. Structural - Vegetative Protection
(1) Subsurface drain for base flow shall be constructed as shown on the Standard Drawing and as specified in the Standard and Specifications for Subsurface Drain.

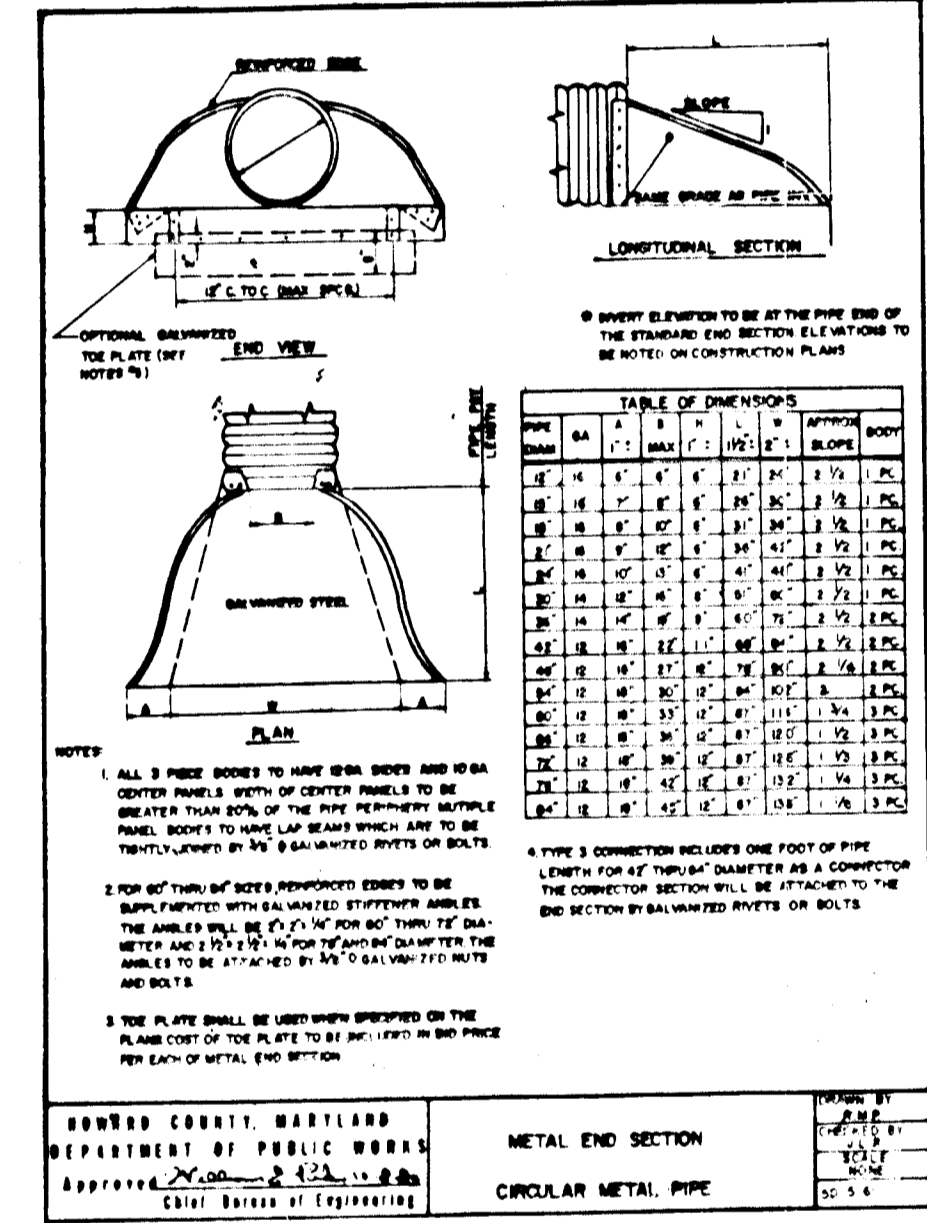
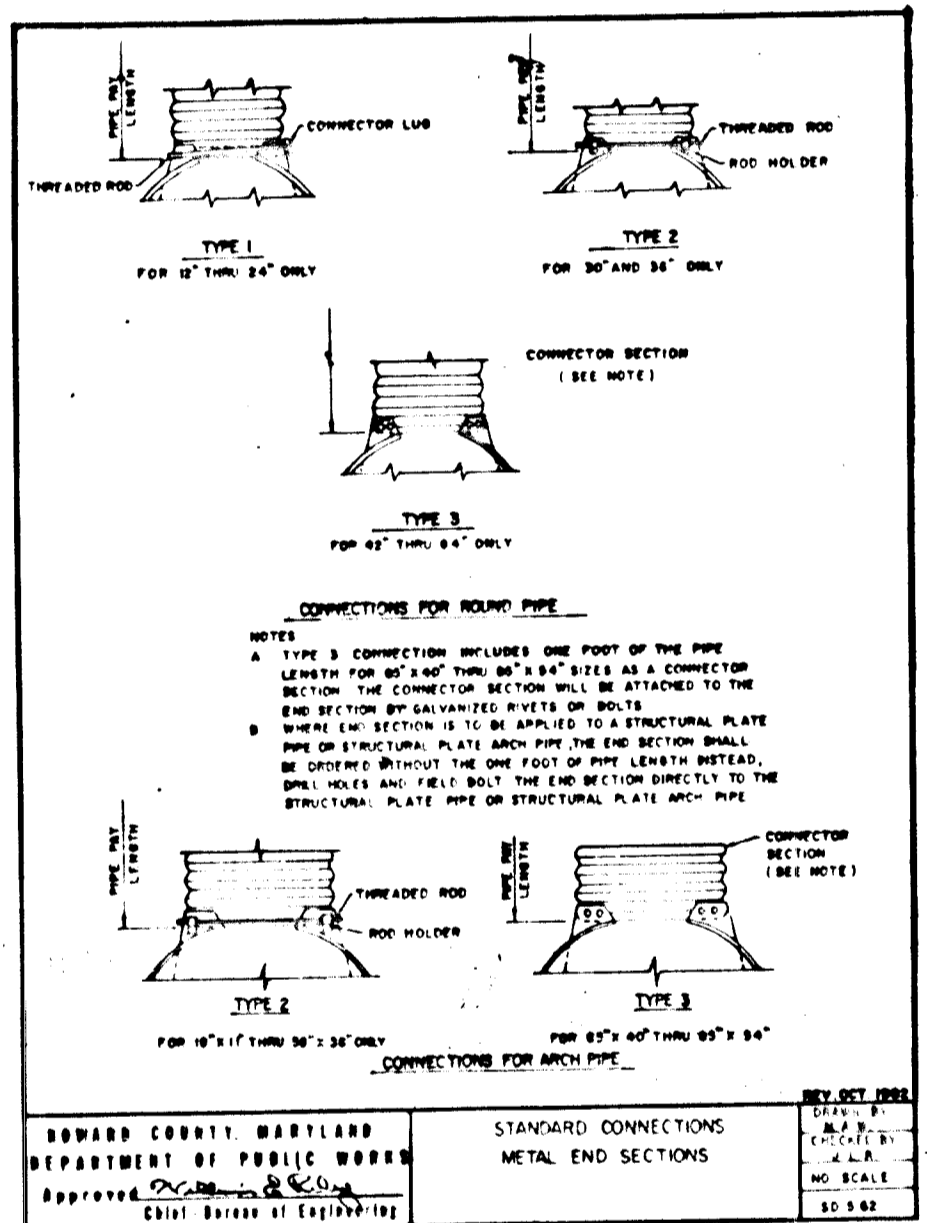
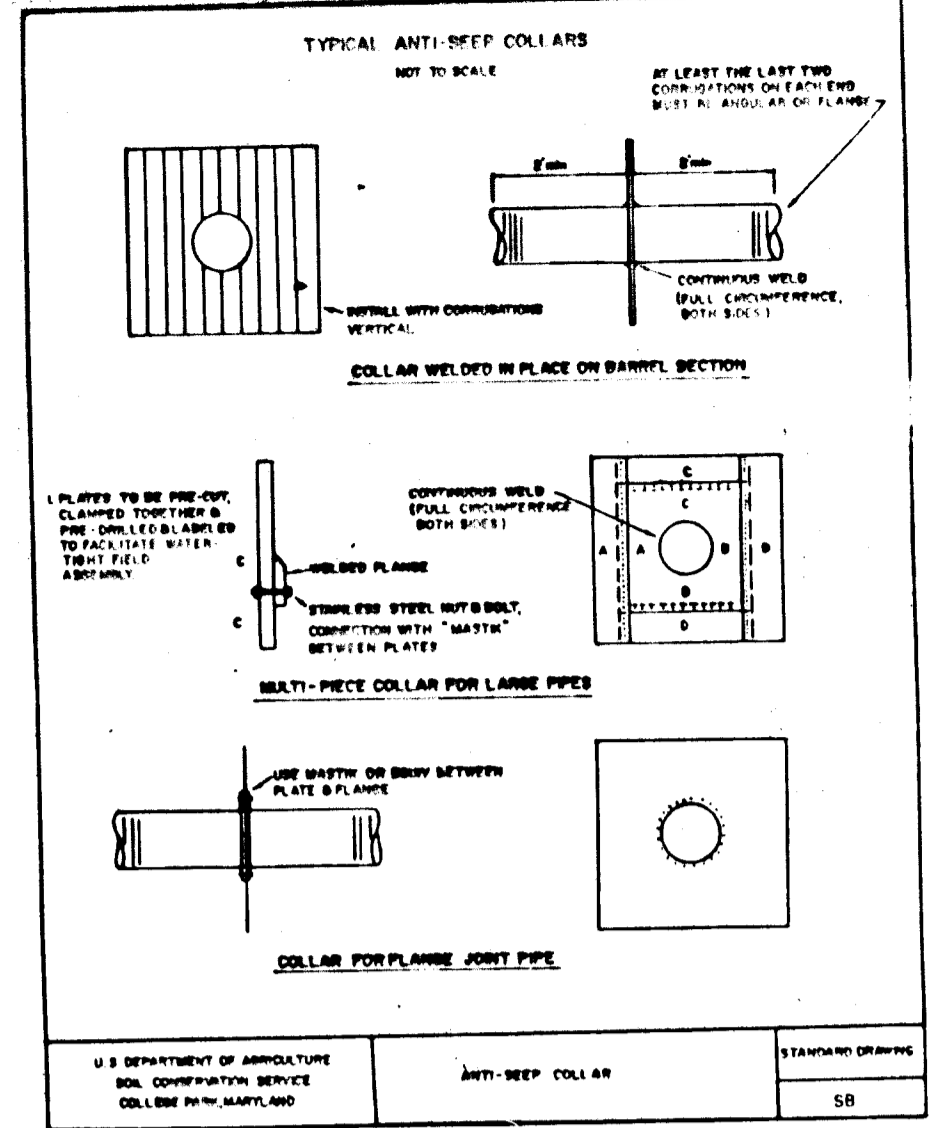
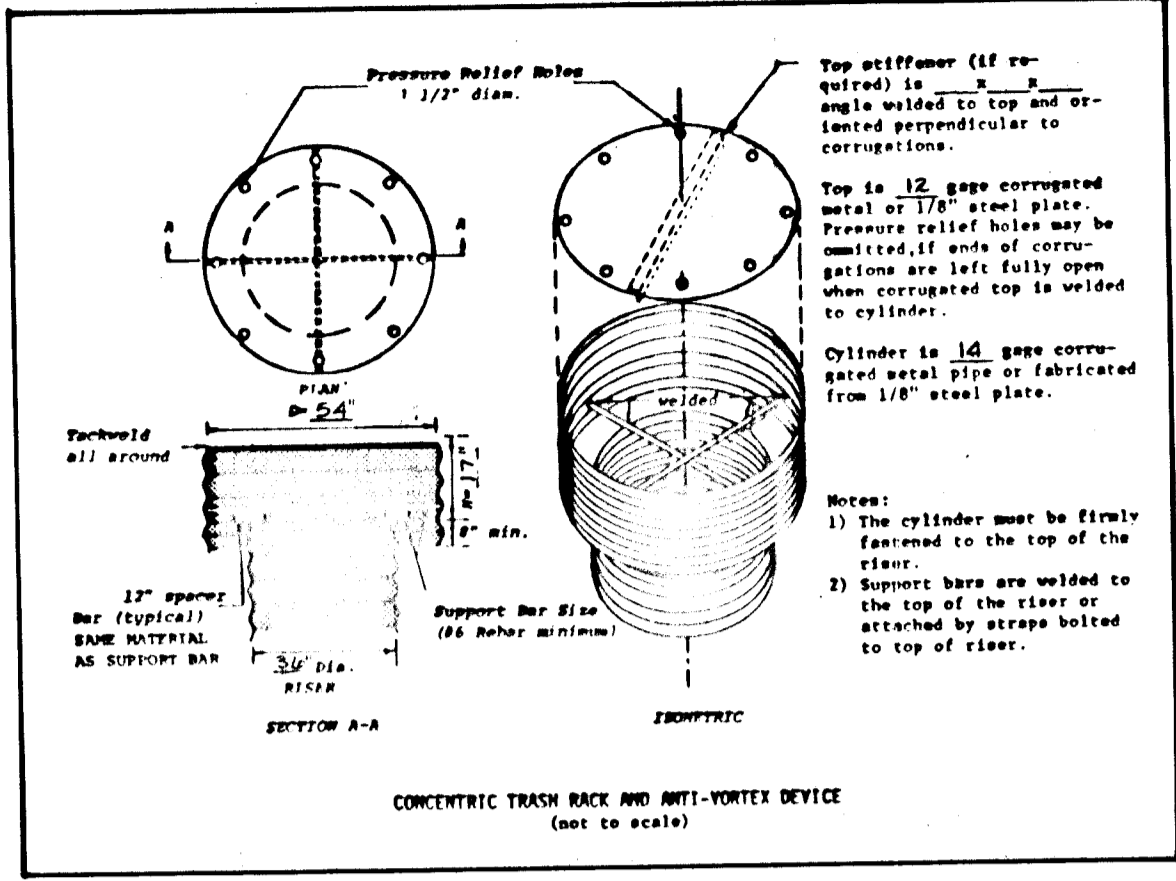
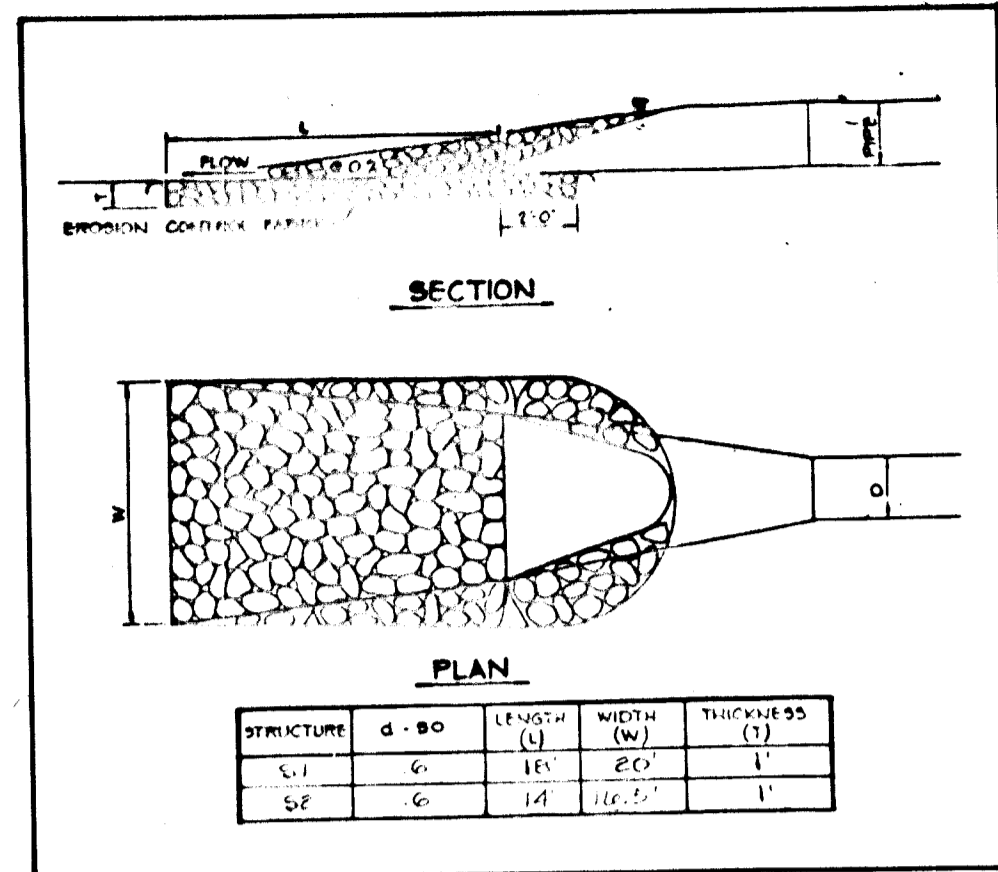


TREE PLANTING DETAIL

SYMBOL	QUANTITY	NAME	REMARKS
(Circle symbol)	60	ALL STREET TREES VARIETIES TO BE TAKEN FROM THE APPROVED DECIDUOUS SHADE TREE LIST	2 1/2 Min Cal Full Head

DEVELOPER'S CERTIFICATE
I HEREBY 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. I WILL PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

ENGINEER'S CERTIFICATE
I CERTIFY THIS PLAN FOR POND CONSTRUCTION, 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.

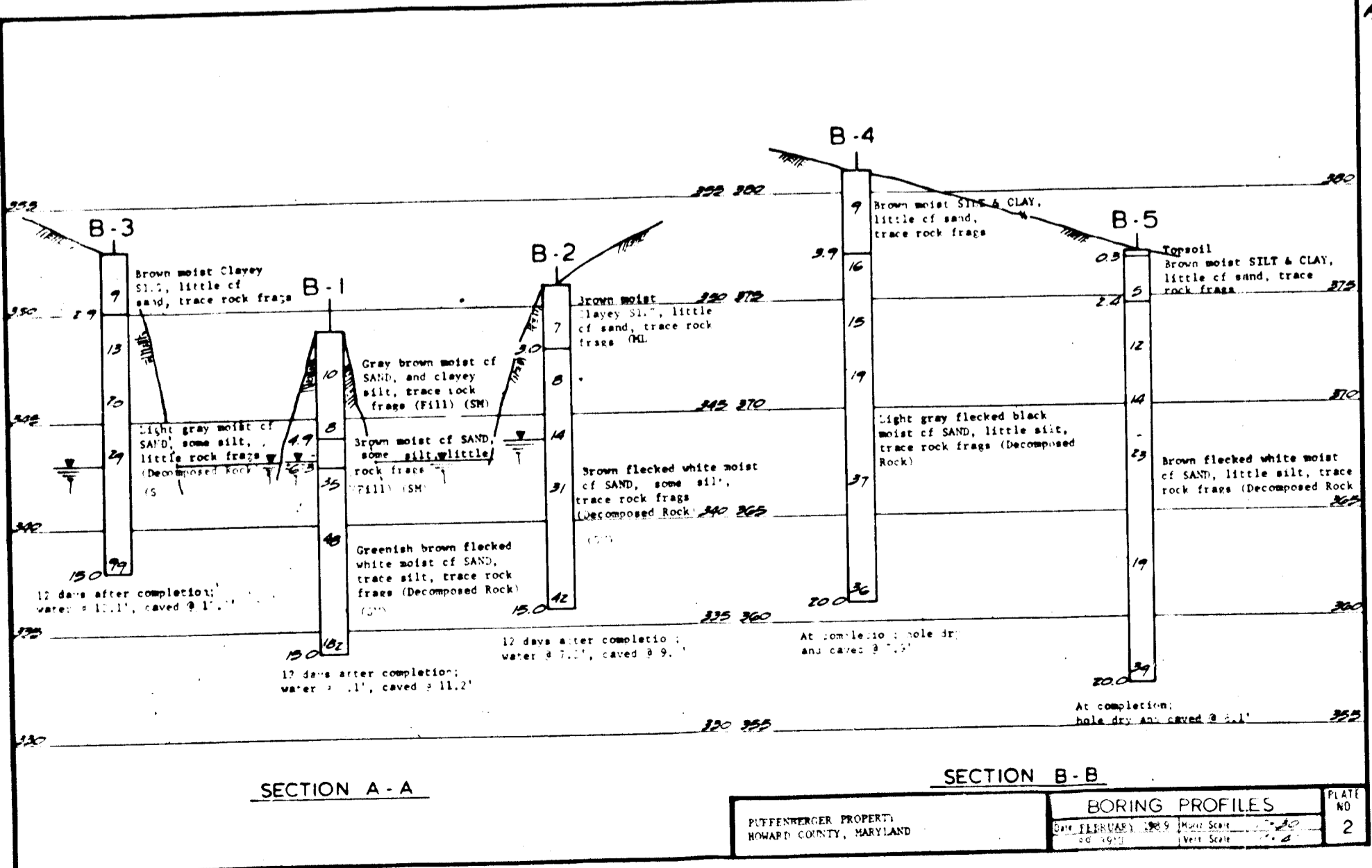


APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 CHIEF, LAND DEVELOPMENT DIVISION
 CHIEF, BUREAU OF HIGHWAYS
 CHIEF, BUREAU OF ENGINEERING

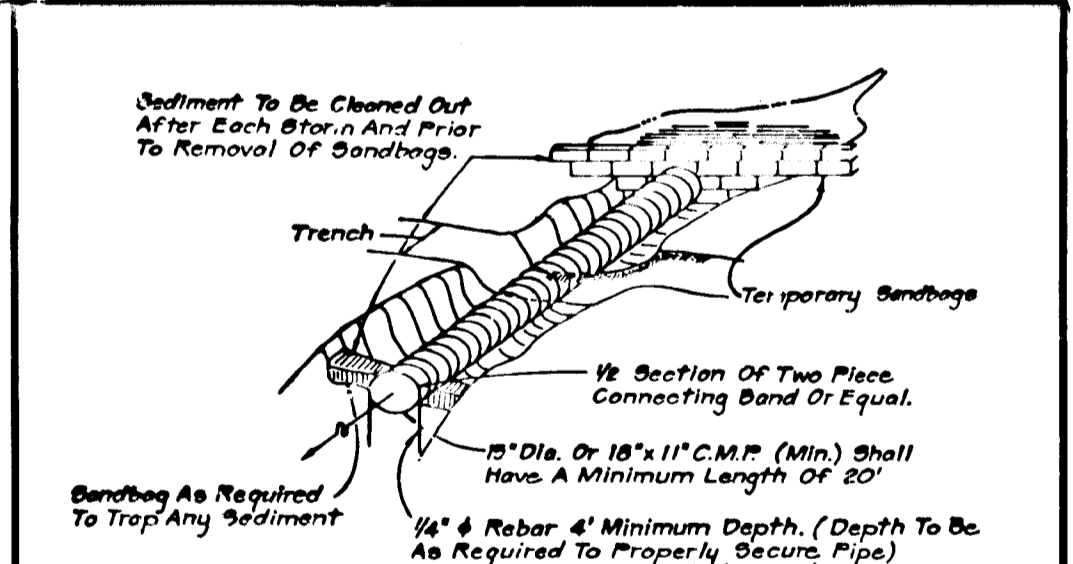
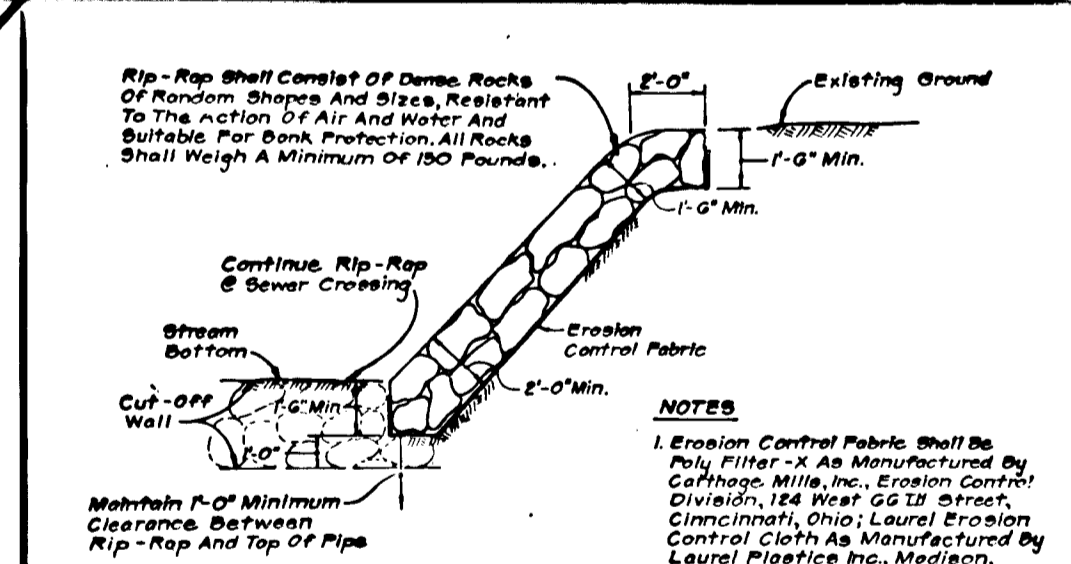
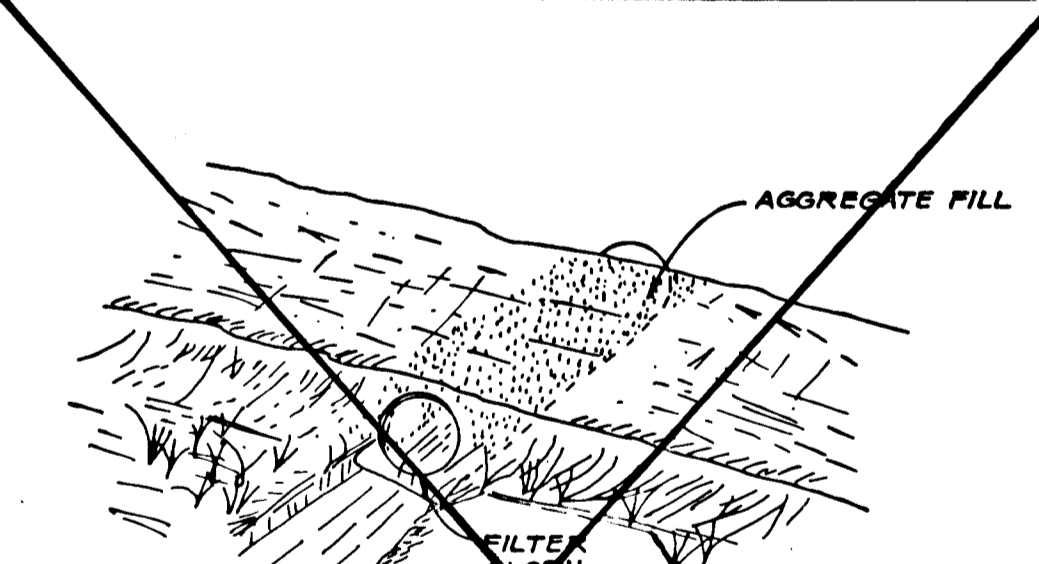
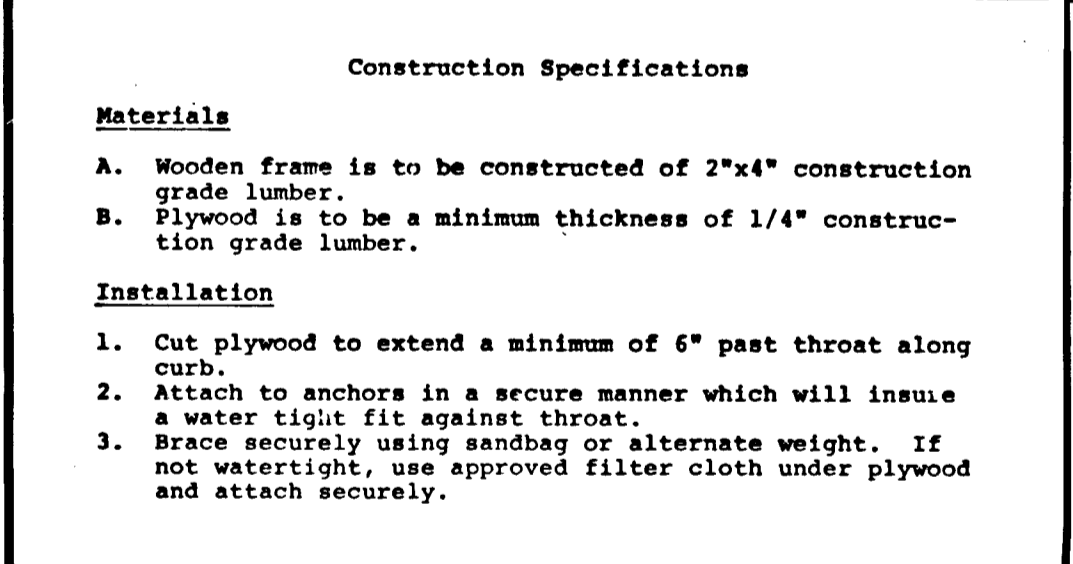
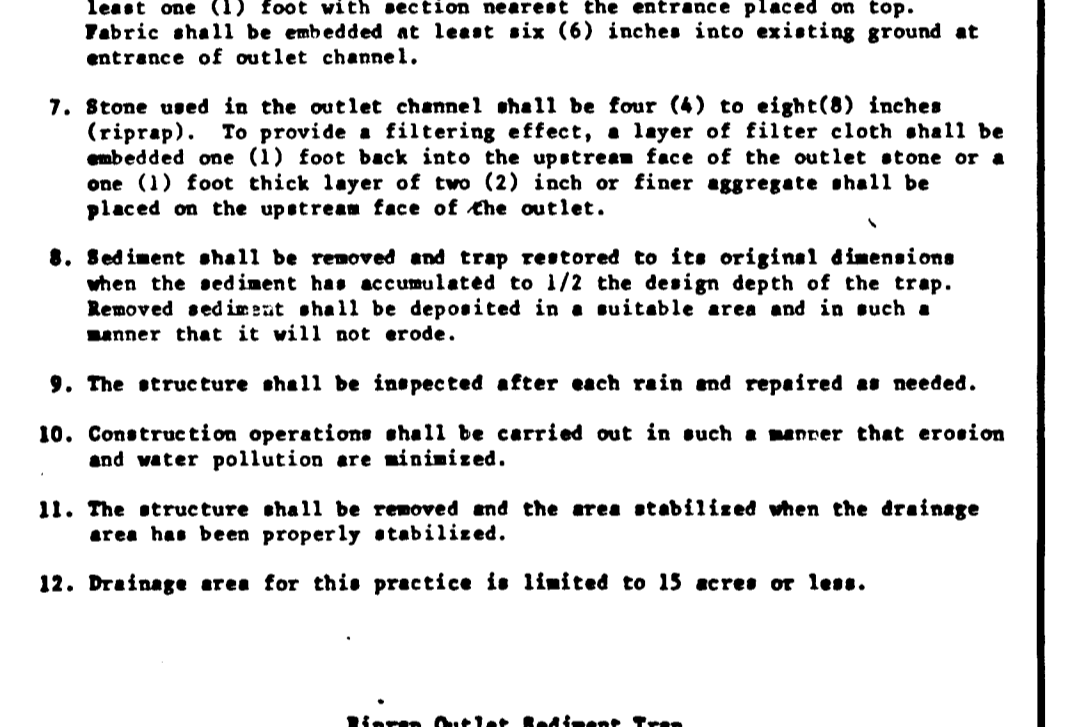
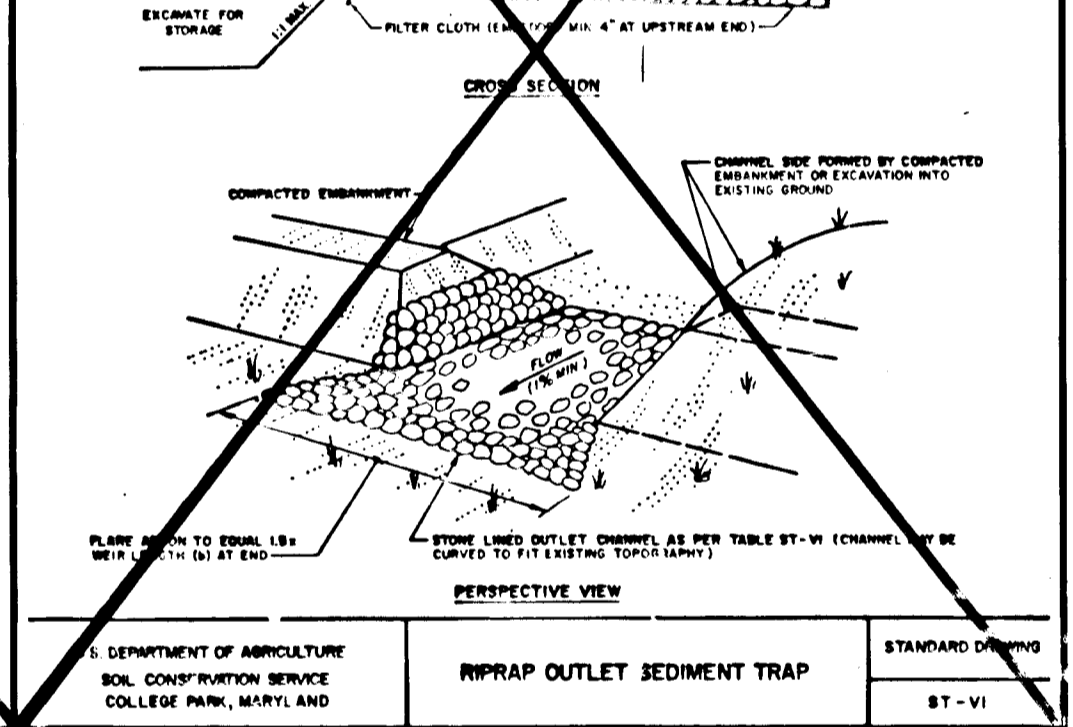
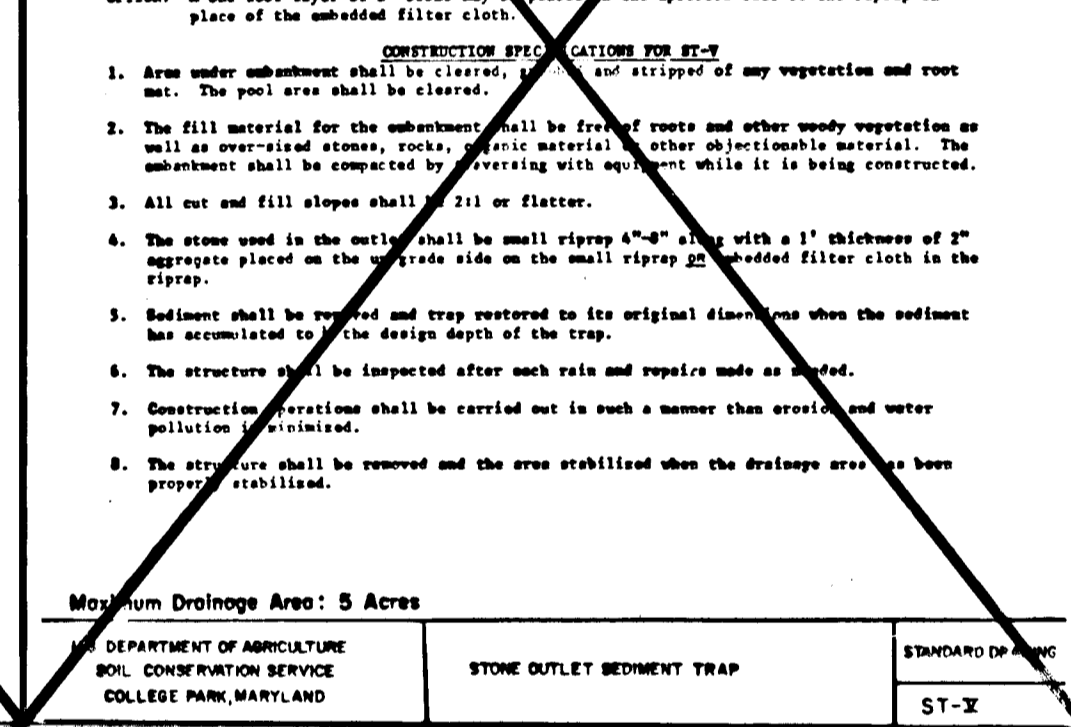
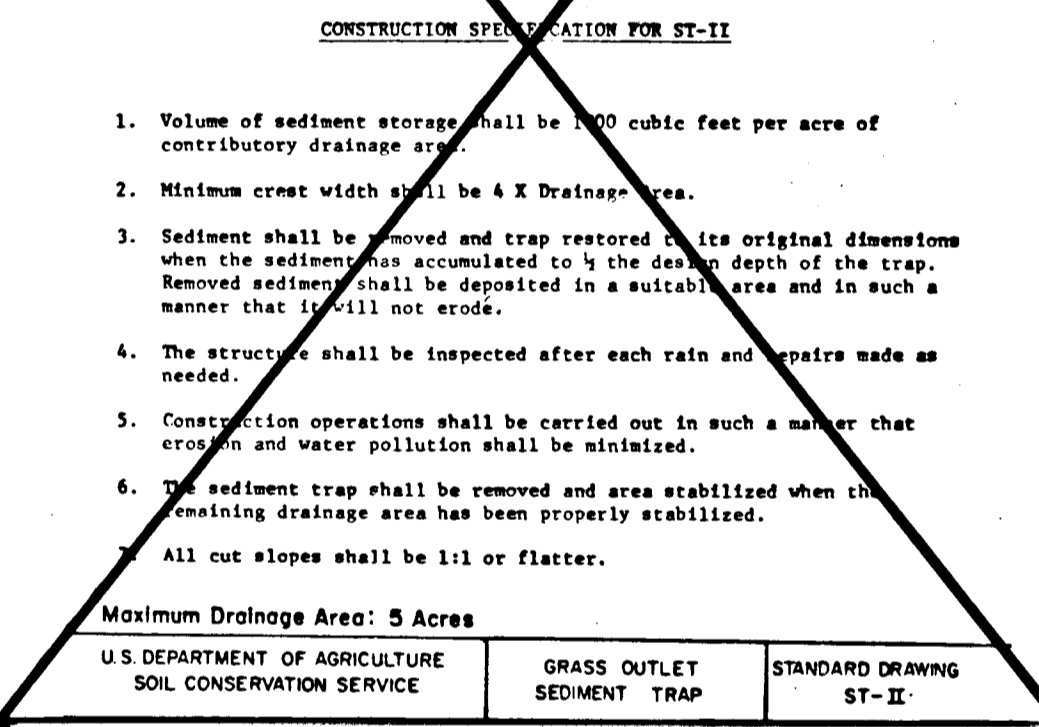
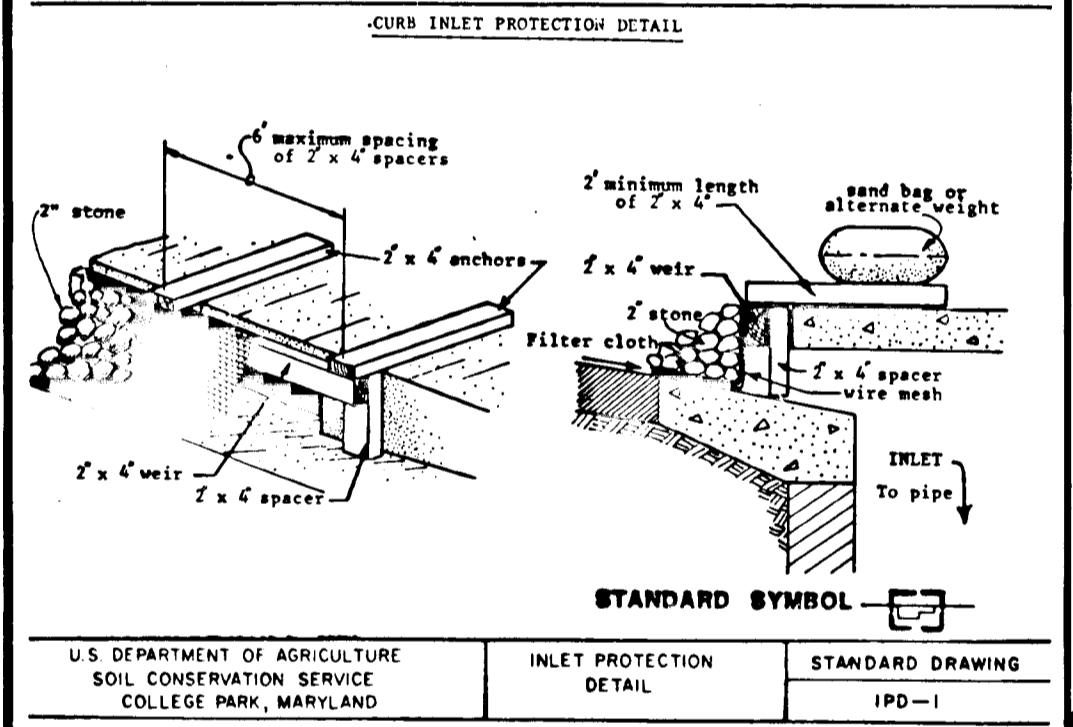
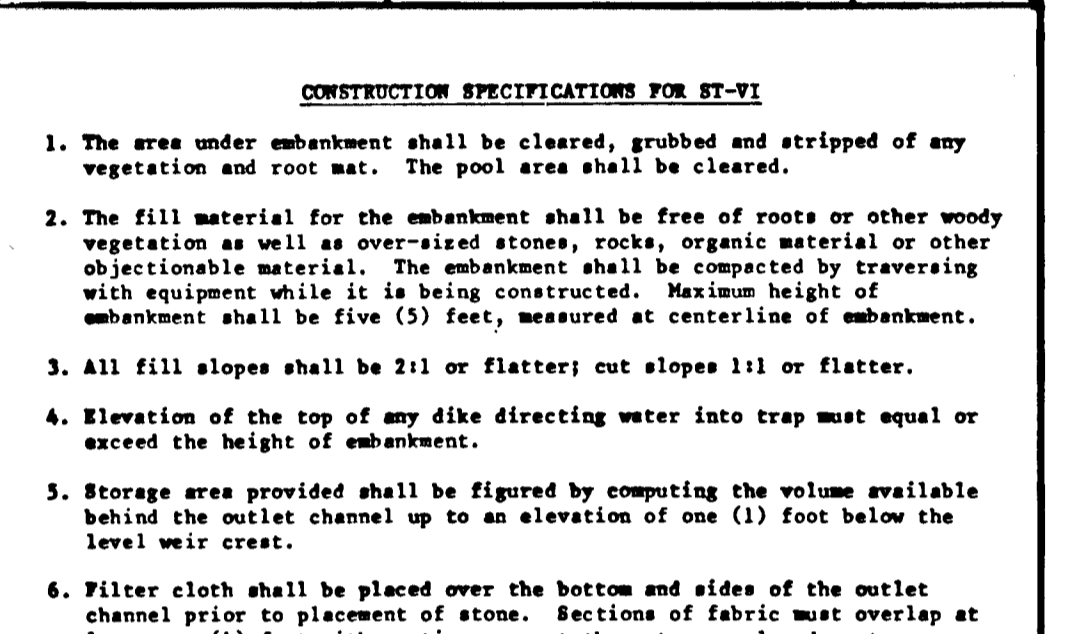
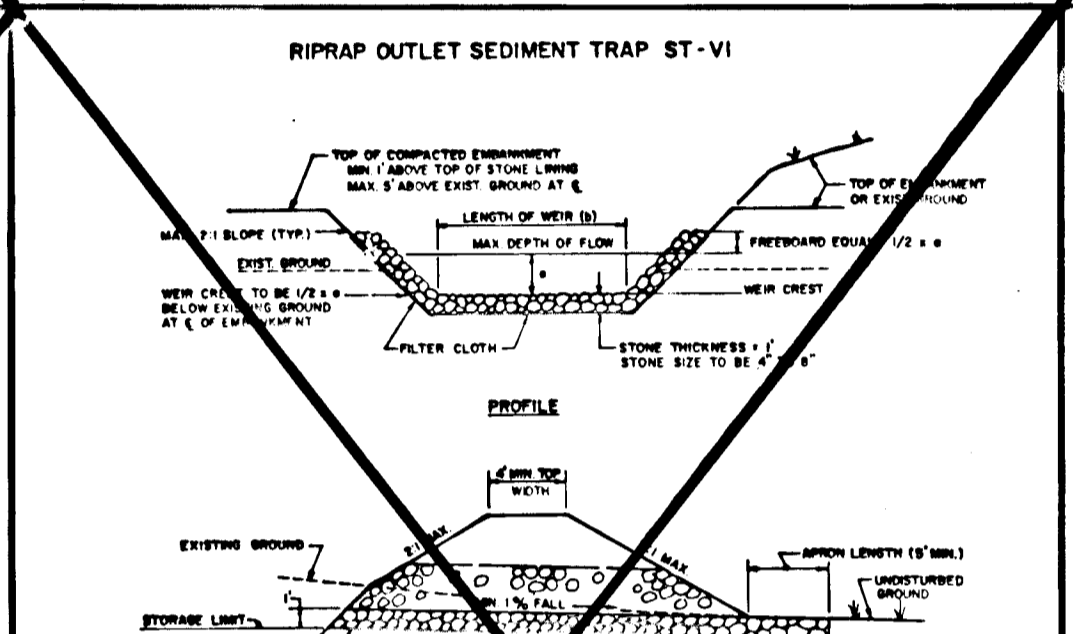
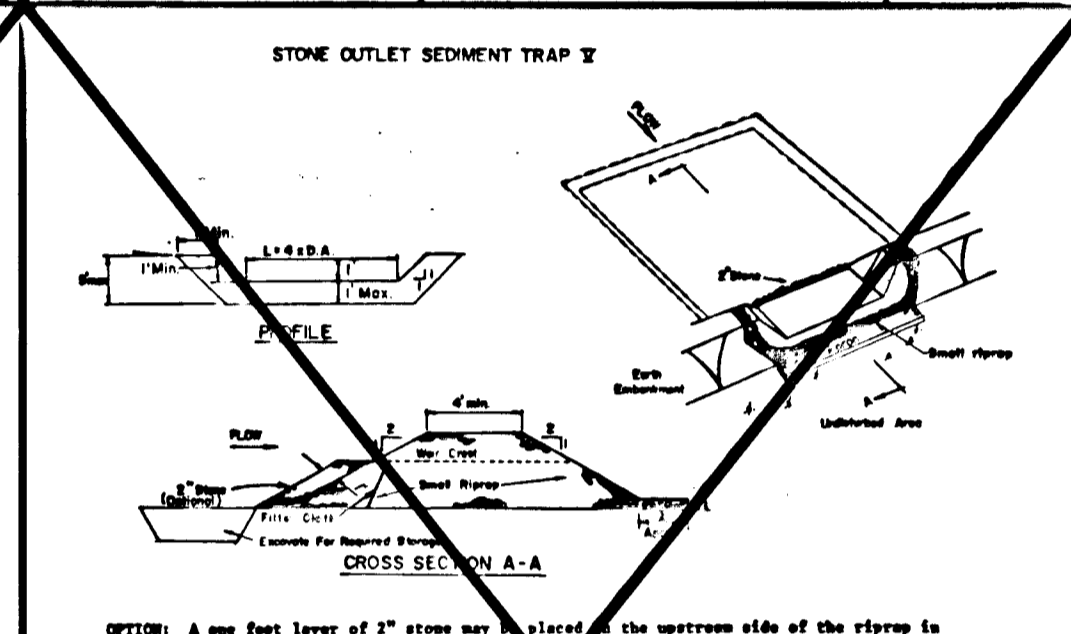
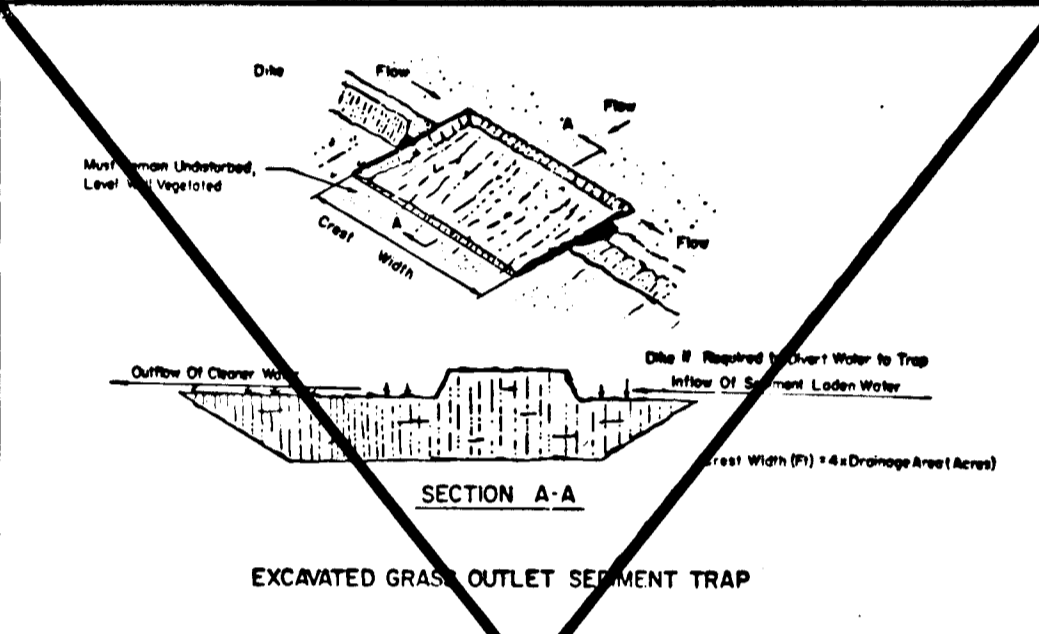
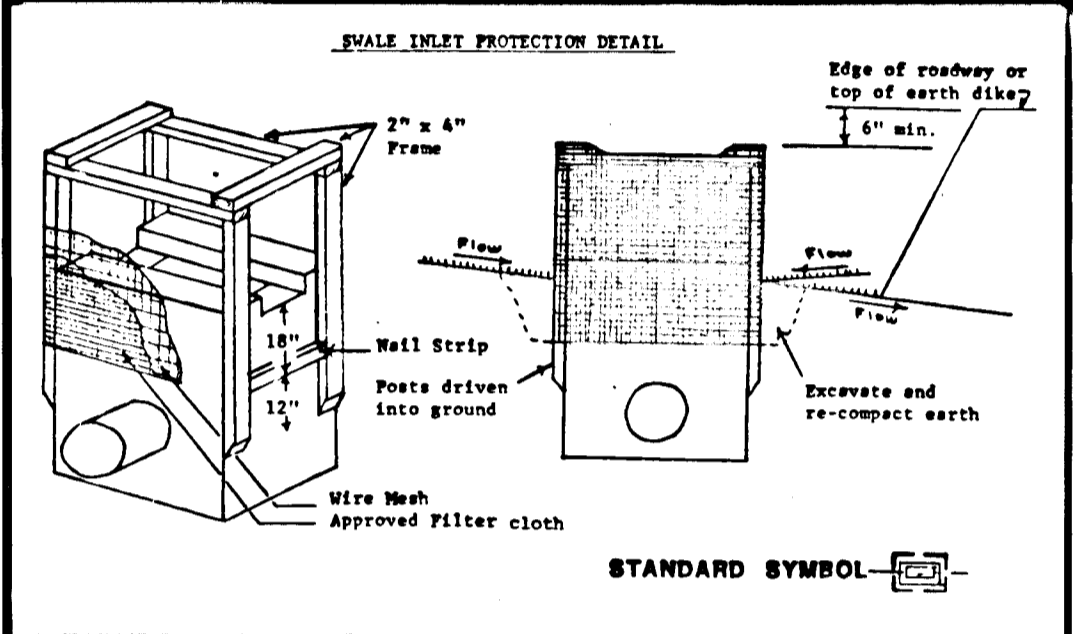
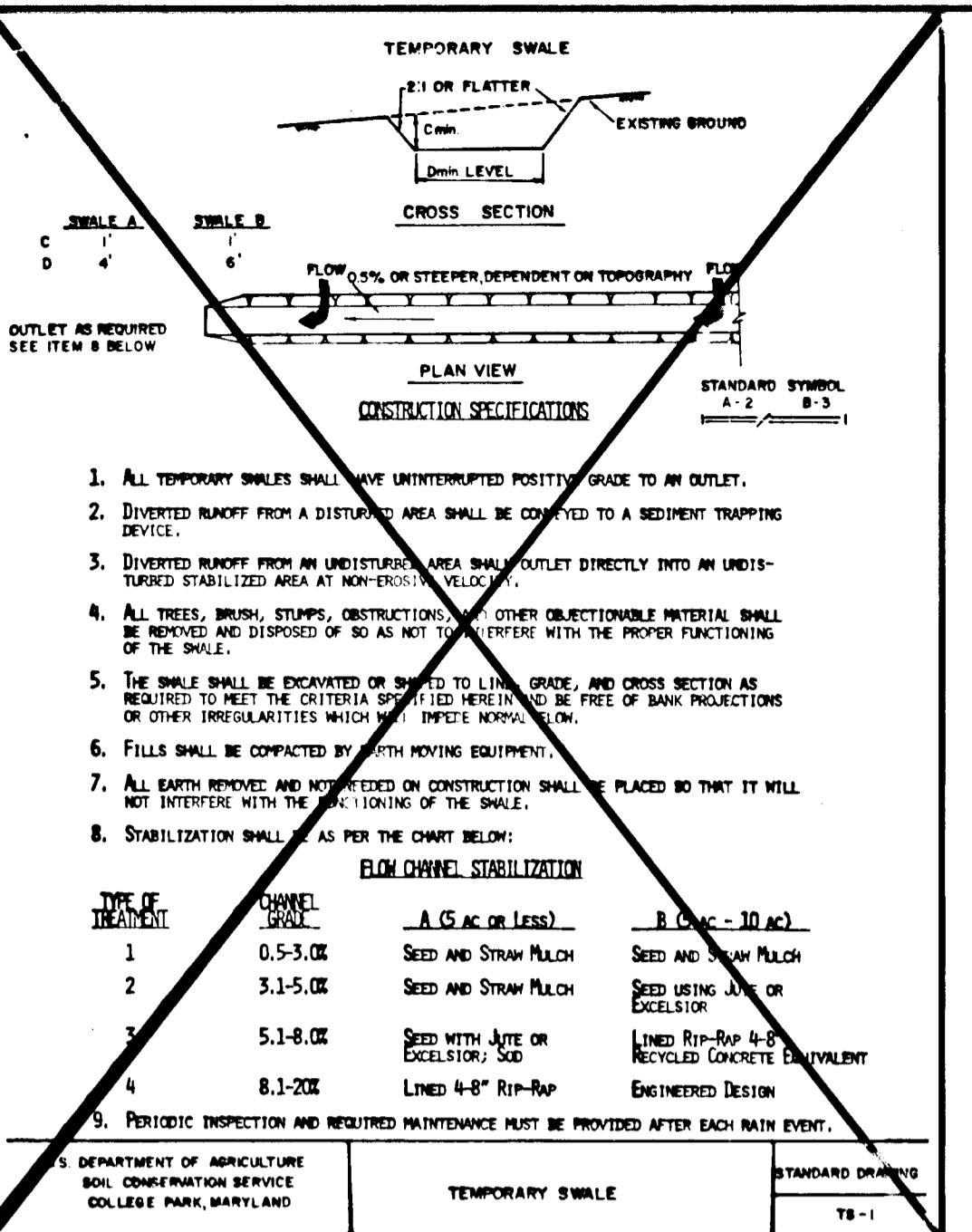
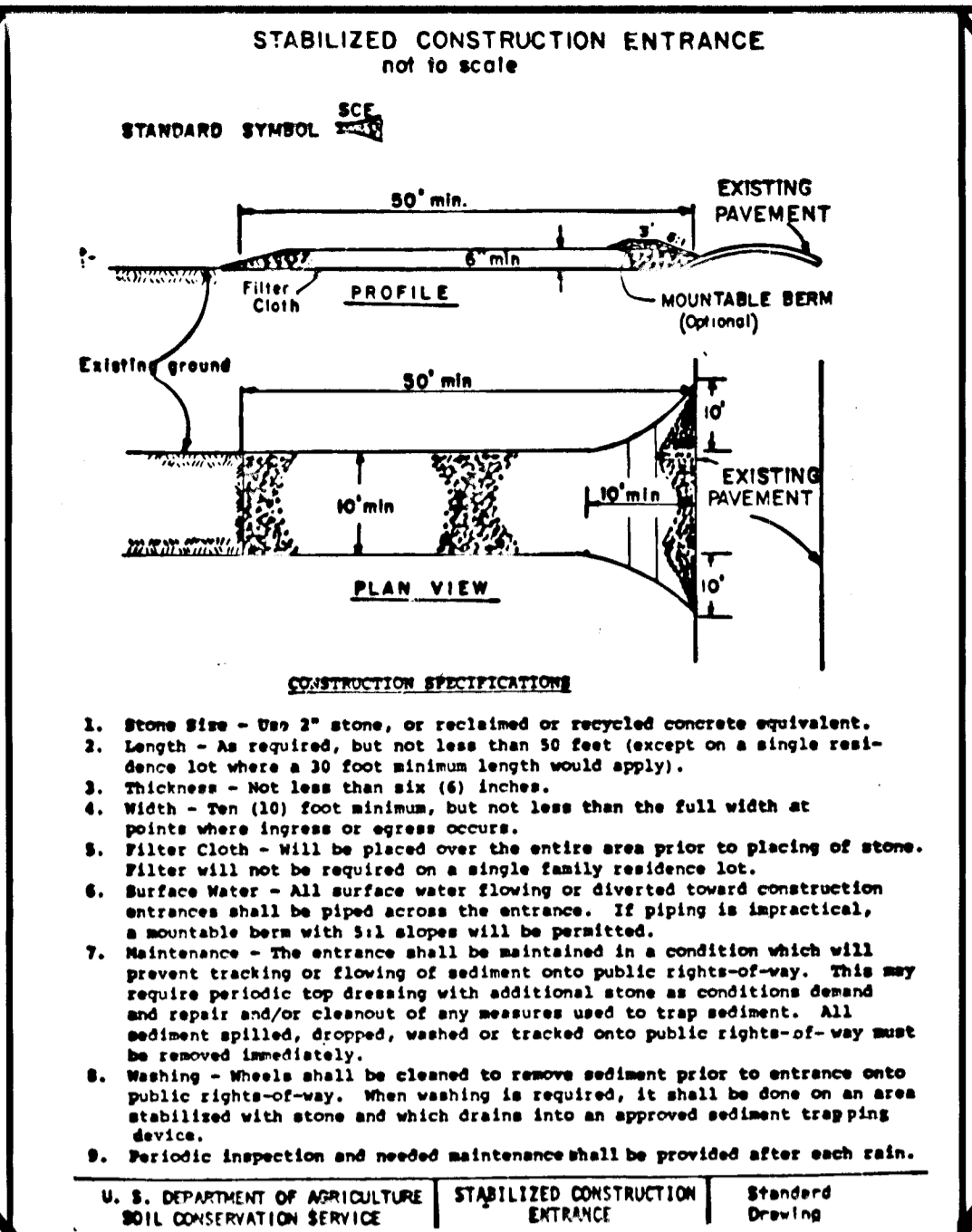
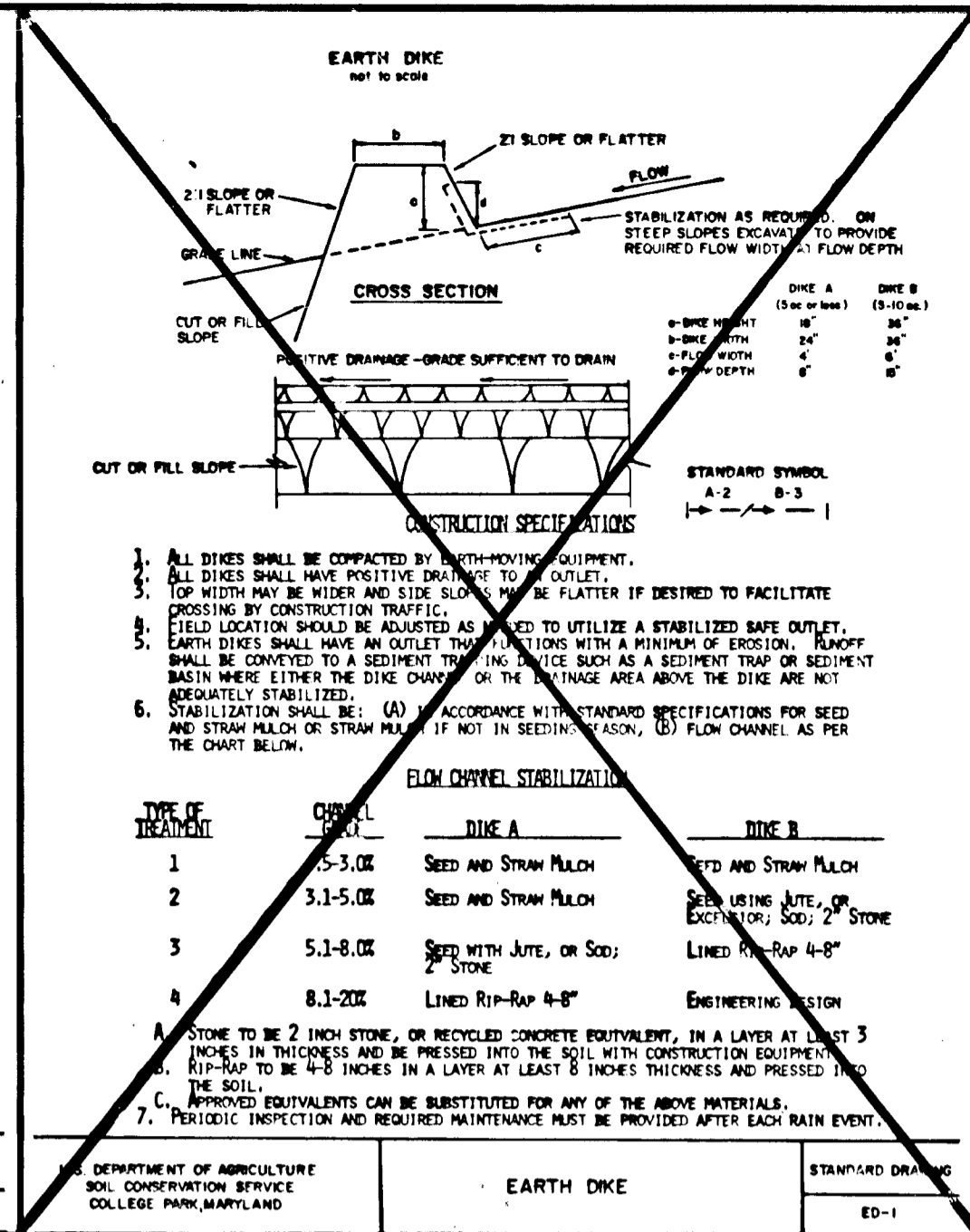
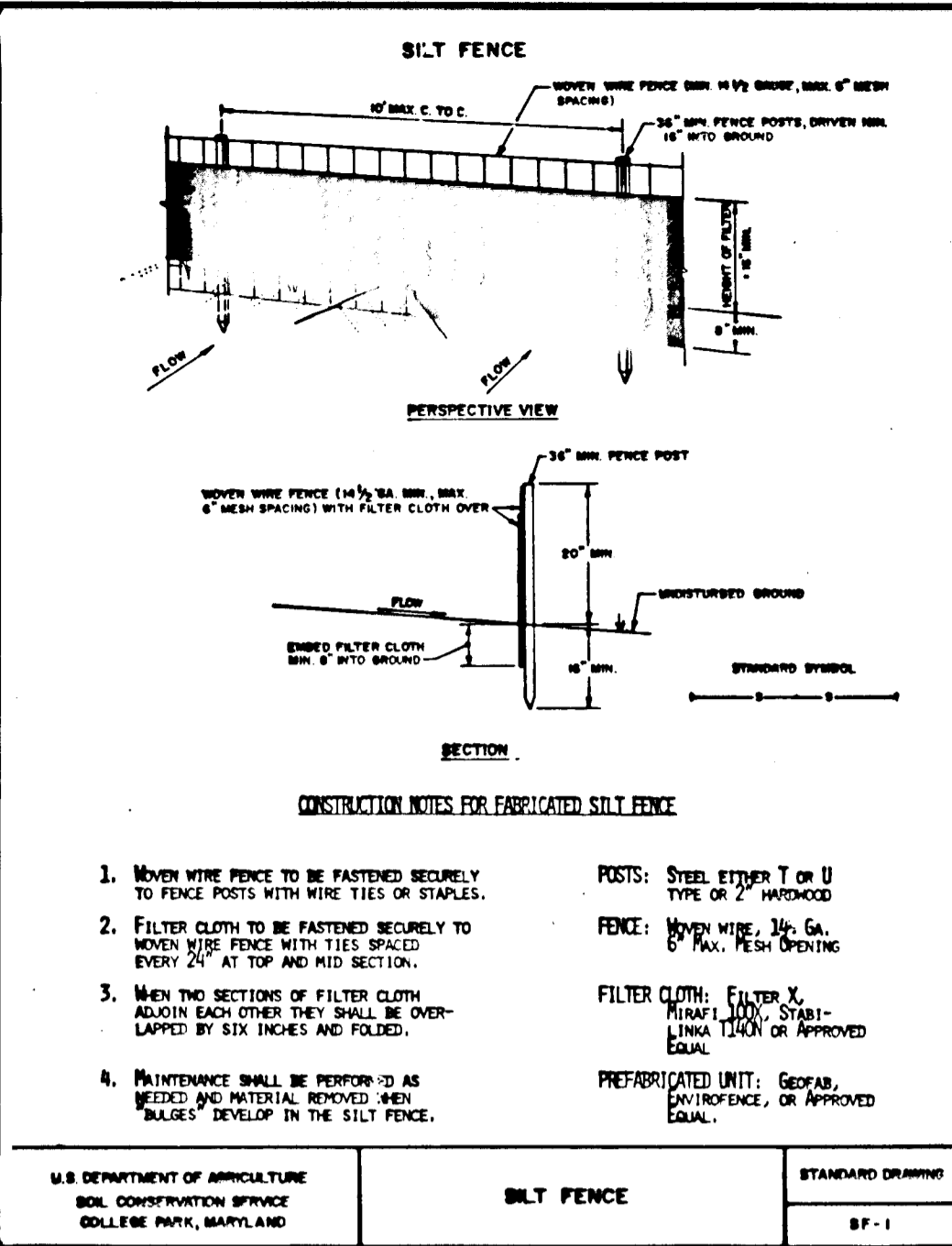
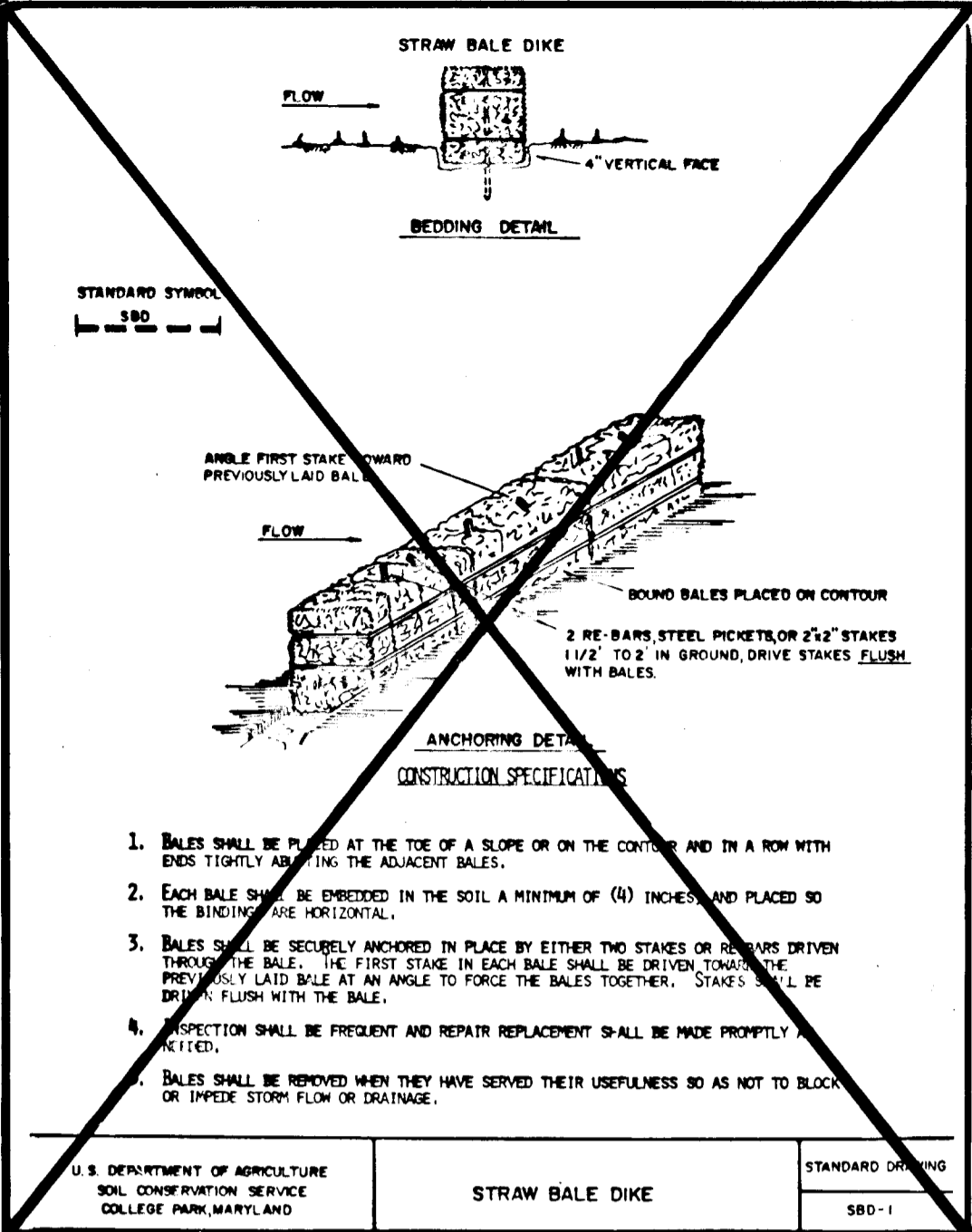
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT

AMERICAN ENGINEERING, INC.
 671 A MAIN STREET LAUREL, MARYLAND 20707
 301-953-1221 301-980-3039

PROJECT NAME: OAKTREE
 LOCATION: Tr. 42 Par. 4 and 262 6th Elect. Dist. H.Co. MD.
 TITLE: DETAIL SHEET
 DATE: 05-01-89 PROJECT PS8802
 SCALE: 1" = 50' DRAWING 5 OF 10



1639



Riprap Outlet Sediment Trap

ST-VI (for Stone Lined Channel)

Contributing Drainage Area (Acres)	Depth of Channel (Feet)	Length of Weir (B) (Feet)
1	1.5	4.0
2	1.5	6.0
3	1.5	8.0
4	1.5	10.0
5	1.5	12.0
6	1.5	14.0
7	1.5	16.0
8	2.0	10.0
9	2.0	12.0
10	2.0	14.0
11	2.0	16.0
12	2.0	18.0
13	2.0	20.0
14	2.0	22.0
15	2.0	24.0

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, discing or other acceptable means before seeding, if not previously loosened.

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:

- Preferred - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 square ft) and 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft) before seeding. Harrow or disc into upper three inches of soil. At time of seeding, apply 400 lbs per acre 30-0-0 urea-form fertilizer (9 lbs/1000 sq ft).
- 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. Harrow or disc 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/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 (.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 sod. Option (3) 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 unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 ft or higher, use 348 gallons per acre (8 gal/1000 sq ft) for anchoring.

Maintenance - Inspect all seeded areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

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

Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not 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 24 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 (.07 lbs/1000 sq ft). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching: Apply 1 1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted 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 ft or higher, use 348 gal per acre (8 gal/1000 sq ft) for anchoring. Refer to the 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rates and methods not covered.

SEDIMENT CONTROL NOTES

- A minimum of 24 hours notice must be given to the Howard County Office of Inspection and Permits prior to the start of any construction. (992-2437)
- 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.
- 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.
- 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.
- 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 seedings (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.
- 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.
- Site Analysis:
Total Area of Site: 11.24 Acres
Area Disturbed: 11.24 Acres
Area to be roofed or paved: 3.0 Acres
Area to be vegetatively stabilized: 8.24 Acres
Total Cut: 25007 Cu. yds
Total Fill: 250210 Cu. yds
Offsite waste/borrow area location: _____
- Any sediment control practices which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment controls must be provided, if deemed necessary by the Howard County DPW sediment control inspector.

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.

NOTE: FOR SEQUENCE OF CONSTRUCTIONS, SEE SHEET 2 OF 2

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

[Signature] 2/24/92 DATE

U.S. SOIL CONSERVATION SERVICE

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

[Signature] 2/24/92 DATE

Approved Howard S.C.D.

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3/23/92 DATE

CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT-DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3/23/92 DATE

CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT-DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3/23/92 DATE

CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT-DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3/23/92 DATE

CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT-DATE

SEDIMENT CONTROL DETAIL SHEET

"OAK TREE"

LOT 1-34
TAX MAP 42 PARCEL 44262
6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

Drawing	DATE	REVISIONS	SHEET	DATE	JOB NUMBER
Design			6	9-20-90	
Check			OF	SCALE	
Check			10	N/A	

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[Signature] 2/24/92 DATE

CHIEF, LAND DEVELOPMENT DIVISION

[Signature] 3/5/92 DATE

CHIEF, BUREAU OF HIGHWAYS

[Signature] 3-4-92 DATE

CHIEF, BUREAU OF ENGINEERING

OWNER'S/ DEVELOPER'S CERTIFICATION

"I/We certify that all development and construction will be done according to this plan, and that any responsible personnel involved in the construction project will have a Certificate of Attendance as a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District."

Signature *[Signature]* Date 2/19/92

Name *[Name]* Phone No. 7210034

Firm *[Firm]* Complete Address _____

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 and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

[Signature] 4/1/92 DATE

Registered Professional Engineer # _____

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 and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

[Signature] 4/1/92 DATE

Registered Professional Engineer # _____

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 and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

[Signature] 4/1/92 DATE

Registered Professional Engineer # _____

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 and that it was prepared in accordance with the requirements of the Howard Soil Conservation District."

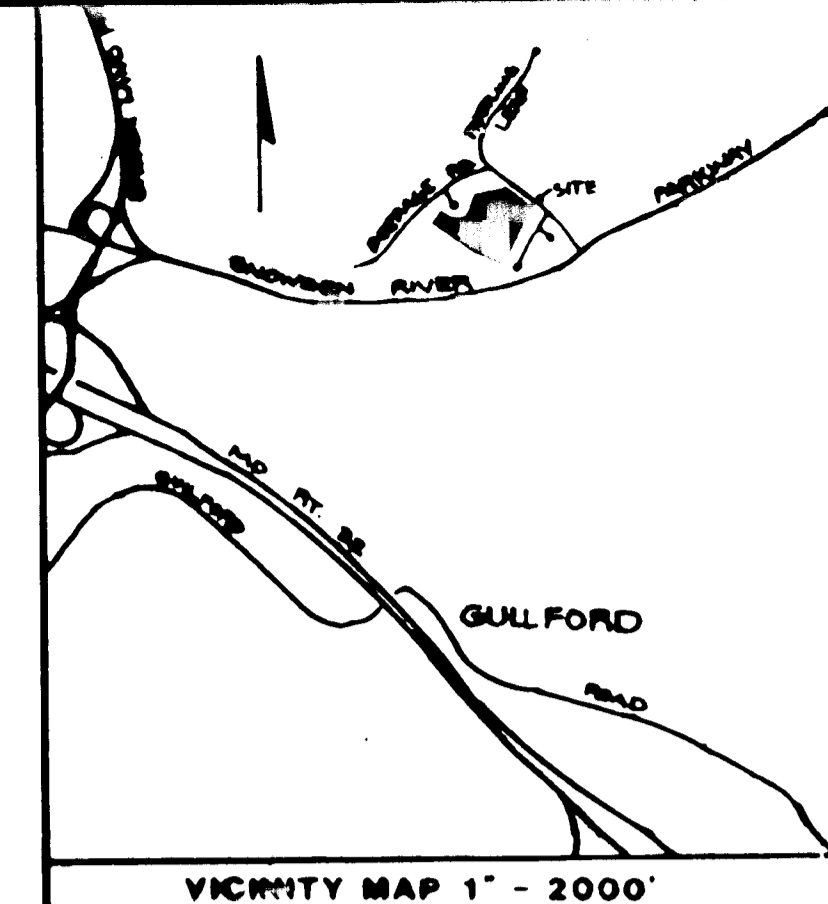
[Signature] 4/1/92 DATE

Registered Professional Engineer # _____

1639

F-92-68

SYMBOL	DESCRIPTION	SOIL TYPE
ChB2	Chester Silt Loam, 3-8 percent slopes, moderately eroded	B
ChC3	Chester Silt Loam, 8-15 percent slopes, moderately eroded	B
CuB	Comus Silt Loam, local alluvium, 3-8 percent slopes	B
GnA	Glenville Silt Loam, 0-3 percent slopes	B
NeB2	Neshaminy silt loam, 3-8 percent slopes, moderately eroded	B
NeC2	Neshaminy silt loam, 8-15 percent slopes, moderately eroded	B
SIB2	Sassafras loam, 1-5 percent slopes, moderately eroded	B



- SEQUENCE OF CONSTRUCTION
1. OBTAIN GRADING PERMIT
 2. CONSTRUCT STABILIZED CONSTRUCTED ENTRANCE AS SHOWN ON PLAN.
 3. INSTALL ALL SEDIMENT CONTROL DEVICES, INCLUDING SILT FENCE AND SEDIMENT TRAP (BY USING THE SWM POND WITH DRAINAGE DEVICE AS TRAP).
 4. CONSTRUCT STORM DRAIN SYSTEM AS SHOWN ON PLAN AND INLET PROTECTION DEVICES.
 5. GRADE ROADS, CONSTRUCT PAVING, INSTALL HOWARD COUNTY MODIFIED STABILIZER SHOULDERS WITH PERMANENT SEED AND MULCH. STABILIZED CONSTRUCTION ENTRANCE MAY BE REMOVED WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR TO FACILITATE PAVING ACTIVITIES.
 6. ALL SEDIMENT SHALL BE REMOVED FROM SEDIMENT TRAP WHEN THE CLEANOUT ELEVATION HAS BEEN REACHED.
 7. INSPECT ALL SEDIMENT CONTROL DEVICES DAILY AND AFTER EACH RAINFALL. REPAIR AS NECESSARY.
 8. GRADE THE SITE AS PER PLANS.
 9. STABILIZE ALL DISTURBED AREAS WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH.
 10. AFTER PERMISSION HAS BEEN GIVEN BY THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL SEDIMENT CONTROL FEATURES AND EXCAVATE REMAINDER OF SWM POND.
 11. ALL DISTURBED AREAS DUE TO REMOVAL OF SEDIMENT CONTROL MEASURES SHALL BE GRADED AND STABILIZED WITH PERMANENT SEEDING MIXTURE.

By the Engineer:

"I certify that this plan for pond construction, 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."

David Weiss 1/1/92
Signature of Engineer Date

Print name below signature

By the Developer:

"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. I will provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion."

Richard Kobler 8/1/91
Signature of Developer Date

Print name below signature

SEDIMENT TRAP DATA

DRAINAGE AREA	: 10.30 AC.
STORAGE REQUIRED	: 18652.70 CU. FT.
STORAGE PROVIDED	: 51694.00 CU. FT.
CREST ELEV.	: 550.00 FT.
BOTTOM ELEV.	: 546.00 FT.
CLEAN OUT ELEV.	: 545.00 FT.
DEPTH	: 4.00 FT.

* USING THE PROPOSED RETENTION SWM POND AS TEMP. TRAP. DURING GRADING.

NOTE:
EXCESS WATER TO BE REMOVED BY PUMPING DURING CONSTRUCTION OF CORE TRENCH.

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

John H. Hester 2/24/92
Soil Conservation Service Date

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

Robert Zielke 2/24/92
Howard Soil Conservation District Date

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

John D. Williams 3/3/92
CHIEF, LAND DEVELOPMENT DIVISION DATE

Alan M. Pennington 3/5/92
CHIEF, BUREAU OF HIGHWAYS DATE

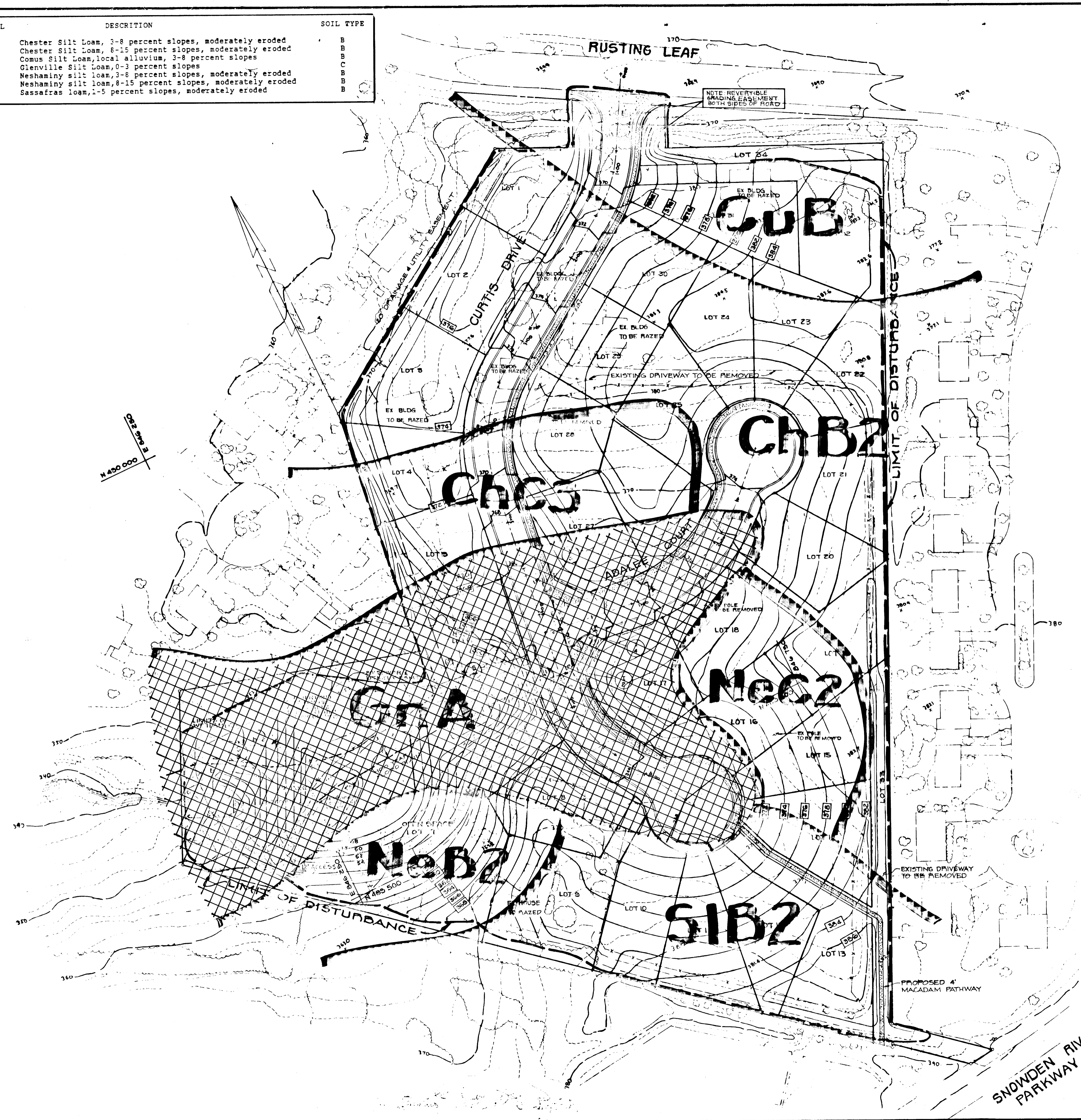
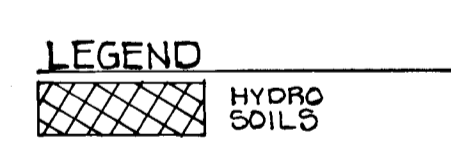
W.S. ... 3.4.92
CHIEF, BUREAU OF ENGINEERING DATE

APPROVED : HOWARD COUNTY DEPT. OF PLANNING AND ZONING

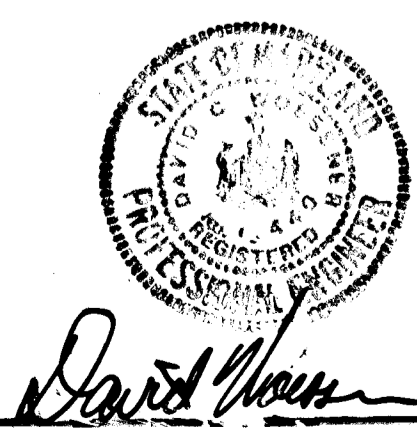
Anna H. ... 3/5/92
CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT DATE

AMERICAN ENGINEERING, INC.
671 A MAIN STREET LAUREL, MARYLAND 20707
301-953-1221 301-880-3039

OWNER	PROJECT NAME	"OAKTREE"
MR. JOHN PUFFENBERGER MR. & MRS. BATHGATE 7316 SNOWDEN RIVER PKWY COLUMBIA, MARYLAND 21046	LOCATION	TM # 42 Parc. 4 and 5 6th Elect. Dist. ...
DEVELOPER	TITLE	SOILS MAP
RICHARD KOBLER 2127 ESPEN CT. LAUREL, MD 21114	DATE	05 01 89 PROJECT NUMBER WP 90 28 E-3020B
DES. RAB	DRW. RT	SCALE 1" = 50' DRAWING 7 OF 10



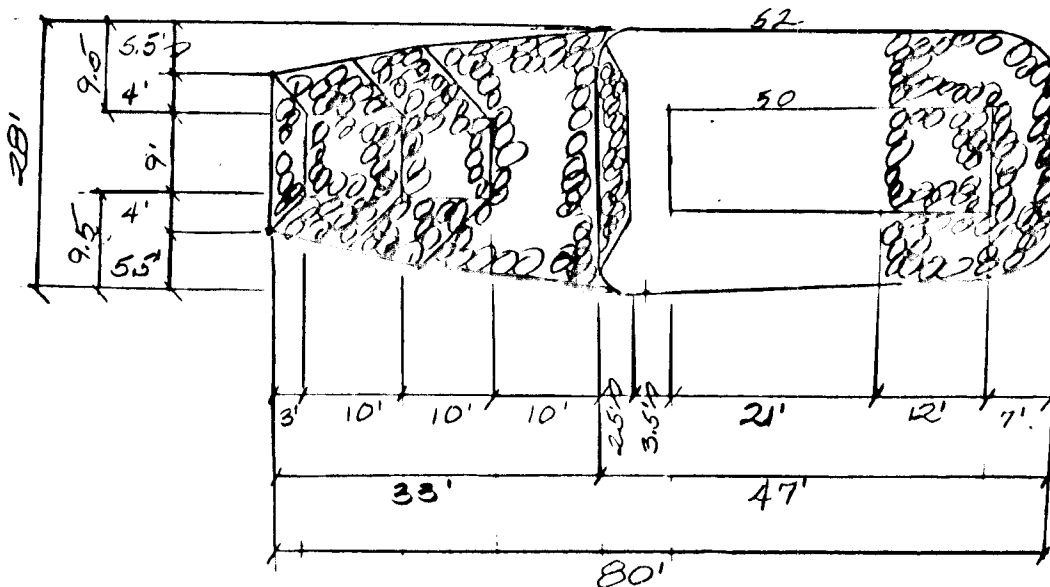
1639



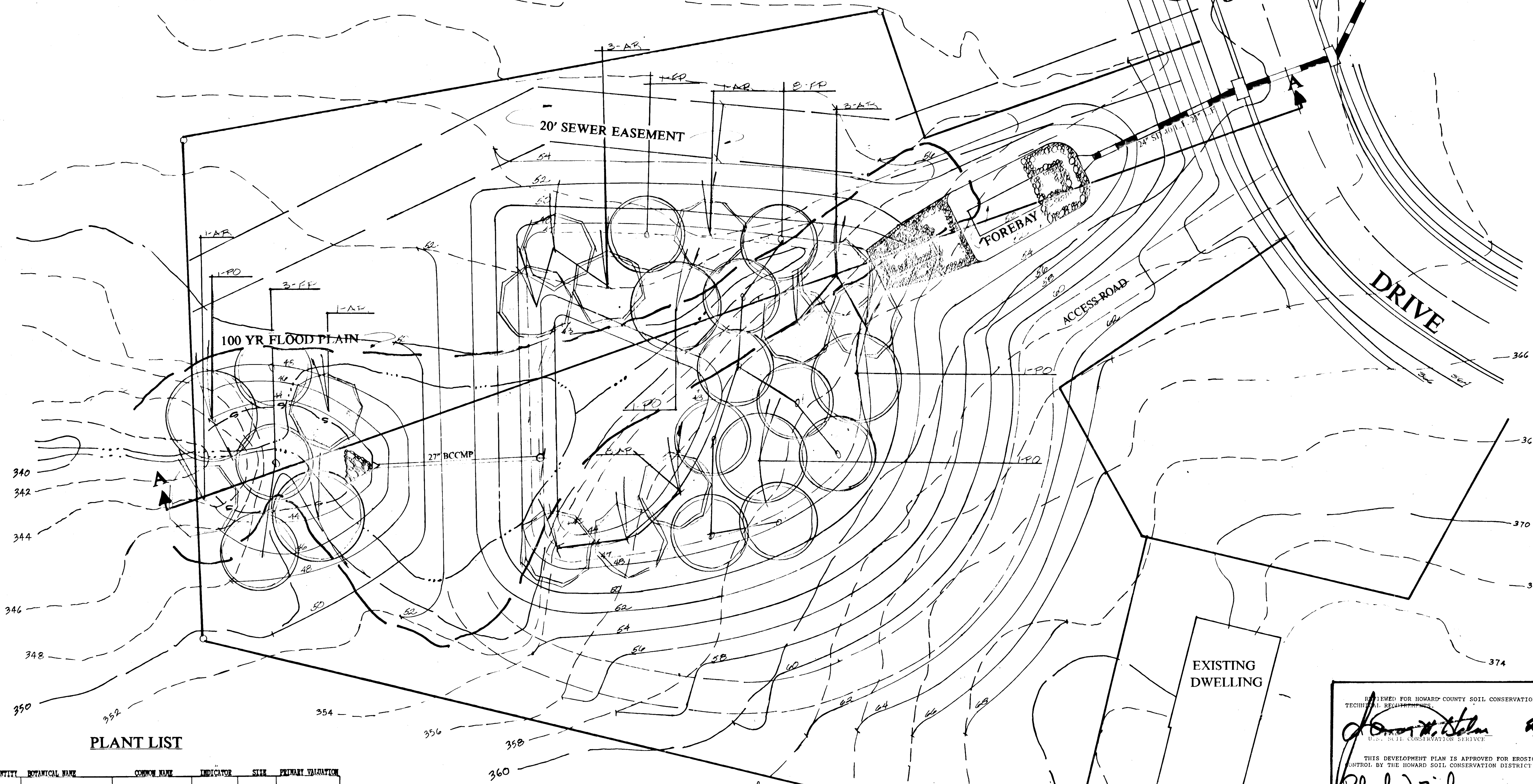
F-92-68

NOTES

1. ALL GRADING & SEDIMENT CONTROL WAS DESIGNED IN ACCORDANCE WITH HOWARD COUNTY REGULATIONS PLEASE REFER TO SHEET 2 OF 11 FOR ALL SIGNATURE BLOCKS & OTHER INFORMATION.
2. FOREBAY TO BE LINED WITH 4" MIN. RIP RAP IN DESIGNATED AREA. SEE DETAIL ON THIS SHEET.
3. FOREBAY OUTFALL TO BE 9" DEPTH TYPICAL RENO MATRESS. SEE DETAIL ON THIS SHEET FOR DIMENSIONS.
4. FILTER CLOTH WILL BE INSTALLED UNDER ALL RENO MATTRESSES AND RIP-RAP.



FOREBAY AND OUTFALL DETAIL
SCALE 1" = 20'



PLANT LIST

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	INDICATOR	SIZE	PRIMARY VALUATION
AR	12	ACER RUBRON	RED MAPLE	FAC	6'-8" HT.	EROSION CONTROL WILDLIFE
FP	11	FRAXINUS PENNSYLVANICA	GREEN ASH	FACM	6'-8" HT.	EROSION CONTROL WILDLIFE
PO	5	PLATANUS OCCIDENTALIS	STAGHORE	FACM	6'-8" HT.	EROSION CONTROL
	60	CORNUS AMOMUM	SILKY DOGWOOD	FACM	2'-3" HT.	WILDLIFE WINTER COLOR
	20	SAMBUCUS CANADENSIS	ELDERBERRY	FACM	3' HT.	WILDLIFE EROSION CONTROL
	150	VIBURNUM DENTATUM	ARROWWOOD	FAC	3' HT.	EROSION CONTROL WILDLIFE

*The Elderberries are to be planted at the edge of the permanent pool.

**The Silky Dogwood and Arrowwood are to be planted strandom within the shaded area. (5' on center)

DEVELOPER'S CERTIFICATE

I HEREBY 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. I WILL PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS BUILT" PLAN OF THE POINTS WITHIN 30 DAYS OF COMPLETION.

David Wilson
Signature of Developer
Date: 2/1/92

ENGINEER'S CERTIFICATE

I CERTIFY THIS PLAN FOR POINT CONSTRUCTION, 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 POINTS WITHIN 30 DAYS OF COMPLETION.

David Wilson
Signature of Engineer
Date: 1/29/92

APPROVED FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

Robert Zielman 2/10/92
HOWARD COUNTY SOIL CONSERVATION DISTRICT

APPROVED FOR HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Robert Zielman 2/24/92
HOWARD COUNTY SOIL CONSERVATION DISTRICT

APPROVED FOR HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

David Wilson 2/24/92
HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

EXPLORATION RESEARCH, INC.
Environmental Consultants
8318 Forrest Avenue, Suite 101
Historic Ellicott City, Maryland 21043
Tel: (301) 750-1150, FAX # (301) 750-7350

OAK TREE
HOWARD COUNTY, MARYLAND
WQC# 89-WO-0903
CNAB-OP-RW
(PUFFENBERGER SITE)
89-0835-3

WETLAND MITIGATION PLAN

David Wilson

LOCATION
TM # 42 PAR 4 & 262
6TH ELECTION DISTRICT

OWNER
MR. JOHN PUFFENBERGER
MR. & MRS. BATHGATE
9316 SNOWDEN RIVER PKWY.
COLUMBIA, MARYLAND 21046

Drawn By: J.L.B. Scale: 1" = 20'
Designed By: M.A.M. Date: 9/21/90
Checked By: D.E.R. Sheet: 8 of 10

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PROJECT DATA

- All information contained on this map is current as of August, 1990.
- Wetland areas were identified and delineated using a multi-parameter approach. This approach requires positive identification of WETLAND PLANTS, HYDRIC SOILS, and WETLAND HYDROLOGY for a determination that the area is a wetland.
 - WETLAND PLANTS:** A variety of hydrophytic plants were identified within the wetland limits and adjacent land areas.
 - HYDRIC SOILS:** Color and mottle characteristics of the undisturbed "B" horizon were used to roughly approximate the limits of the hydric soil.
 - WETLAND HYDROLOGY:** The topography of the area is characteristic of a low depression with a distinct stream channel.
- WETLAND CLASSIFICATIONS**
 - EXISTING CONDITIONS:**

System.....Palustrine
 Class.....Forested/Emergent
 Subclass.....Broadleaf/deciduous
 Modifiers.....
 Water regime.....Temporarily flooded
 Salinity.....Fresh
 - PROPOSED CONDITIONS**

System.....Palustrine
 Class.....Forested
 Subclass.....Broadleaf/deciduous
 Modifiers.....
 Water regime.....Temporarily flooded
 Salinity.....Fresh
- WATERBODY:** Unnamed stream
- ANTICIPATED CONSTRUCTION DATE:** Fall, 1990
- ANTICIPATED RESTORATION CONSTRUCTION DATE:** Summer, 1990
- DEVELOPERS:** Centex Homes
 14435 Cherry Lane Court
 Laurel, Maryland 20707
- REFER FILE NO. 80WQ0803 (STATE DEPT. OF THE ENVIRONMENT) & CENAB-OP-RW-800835-3 (CORP. OF ENGINEERS) FOR MITIGATION INFORMATION.** (DATED 1-24-87) (2-21-90)

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

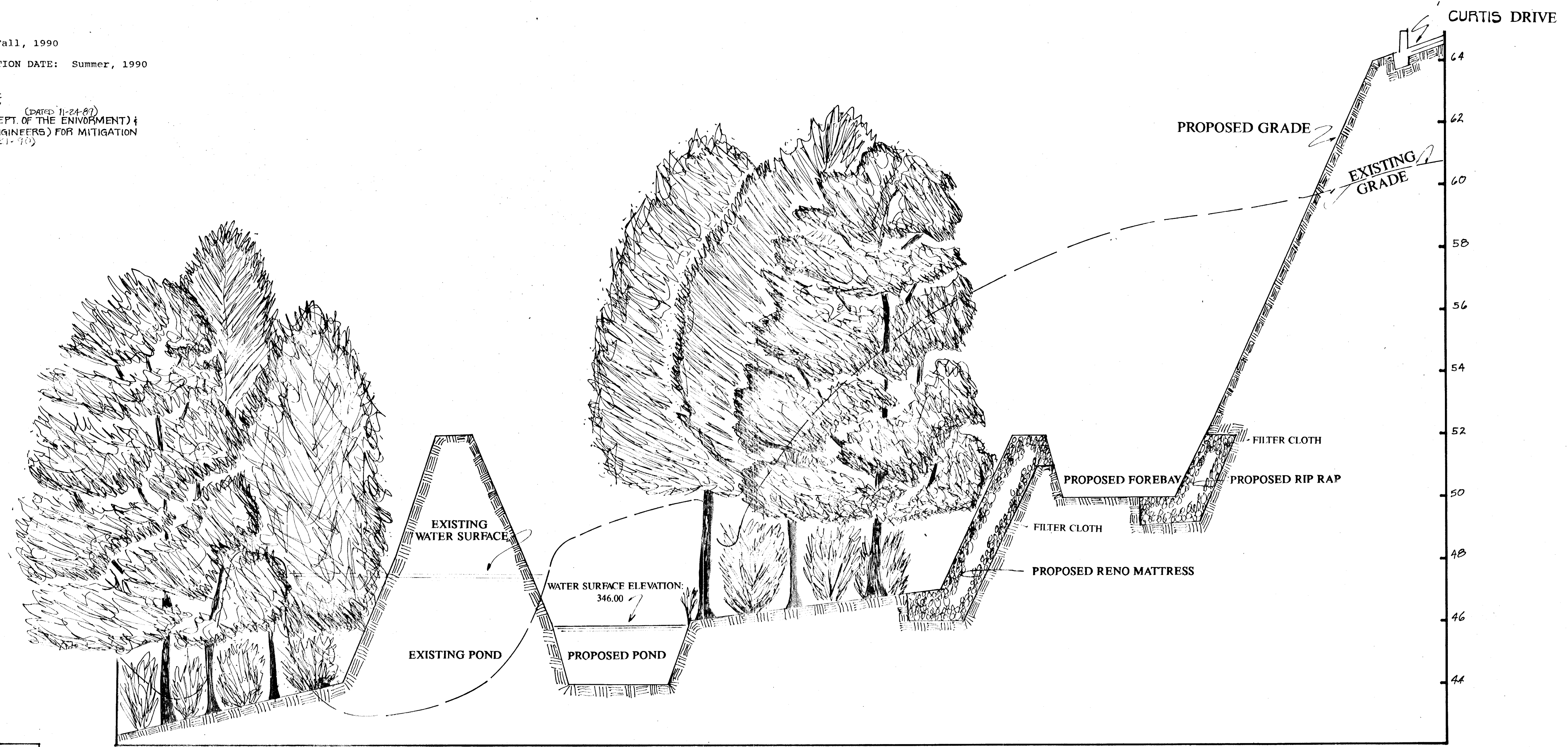
Robert W. Zielhuis 2/24/92 Date
 Howard Soil Conservation District

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
Robert W. Zielhuis 2/24/92 DATE
 CHIEF, LAND DEVELOPMENT DIVISION

N/A
 CHIEF, BUREAU OF HIGHWAYS DATE
 CHIEF, BUREAU OF ENGINEERING DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
James J. Fernald 2/23/92 DATE
 CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT

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DEVELOPER'S CERTIFICATE
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[Signature] 2/14/92

ENGINEER'S CERTIFICATE
 I CERTIFY THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SOIL 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.

[Signature] 11/4/91

SECTION AA
 SCALE: HORIZ 1" = 20'
 VERT 1" = 2'

OAKTREE
 HOWARD COUNTY, MARYLAND
 WQC# 89-WQ-0903
 CNAB-OP-RW
 (PUFFENBERGER SITE)
 89-0835-3

WETLAND MITIGATION PLAN



LOCATION
 TM # 42 PAR 4 & 262
 6TH ELECTION DISTRICT

OWNER
 MR. JOHN PUFFENBERGER
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 9316 SNOWDEN RIVER PKWY.
 COLUMBIA, MARYLAND 21046

Drawn By: J.L.B. Scale: AS SHOWN
 Designed By: M.A.M. Date: 9/21/90
 Checked By: D.E.P. Sheet: 9 of 10

CONSTRUCTION REQUIREMENTS

The site to be restored as emergent Wetland shall be graded, planted, and fertilized as shown on the plans and in accordance with these special provisions:

- A. Planting schedule shall conform to the following conditions:
 Planting shall commence after final grading, adjacent construction has been completed, and all sediment control measures have been removed. In order to coordinate the planting work with the entire construction schedule, plant material will not be shipped from the supplier until directed to do so by Exploration Research, Inc. All emergent Wetland plantings (peat plants and bare root-stock) shall be installed between September 15 to November 15 or as directed by Exploration Research, Inc.
- B. Plant Materials:
 1) Root-stock of the plant material shall be kept moist during transport from the source to the job site and until planted.
 2) Plant material shall be plated in existing soil with each planting pit excavated to size sufficient to contain the entire root-stock or the entire root-mass without cramping.
- C. Planting bed preparation:
 The contractor shall prepare the area to be planted in Wetland plant materials by spreading a uniform layer of 6 inches of topsoil over the existing soil without disturbing the grade. Planting areas shall be approved by Exploration Research, Inc. prior to the installation of the plant material.
- D. Clean-up:
 Final clean up shall be the responsibility of the contractor and consist of removing all trash and materials incidental to the project, and disposing of them off-site. In addition, the construction procedure shall not damage any areas of existing plants which are to remain.
- E. The planting grids are approximate and may be varied upon the approval of Exploration Research, Inc., provided the relative ratios are maintained.
- F. Plant material selections are based upon availability at time of design. If specific plants are unavailable at time of planting, substitute plants conforming to above specifications will be made. All substitute plant materials are subject to the approval of Exploration Research, Inc. and the Army Corps of Engineers.

CONSTRUCTION SEQUENCE

- All grading to be done under approved grading permit for Oak Tree.
- After pond is constructed and slopes stabilized, begin construction of mitigation.
- Establish stabilized channel from pond outfall for drainage relief.
- Install silt fence.
- Remove topsoil and stockpile on site.
- Excavate mitigation area to within six inches (6") below finish grade and replace with topsoil up to finish grade.
- Haul excess material to approved on site location.
- Remove modified earth dike/swale.
- Plant mitigation area in accordance with planting plan.
- Remove silt fence and stabilize.

CONSTRUCTION RESTRICTIONS

All work in flood plain must be done in strict accordance with applicable State permit requirements.

Work in streams is prohibited during certain times of the year as follows:

Class I Streams	March 1 thru June 15
Class II Streams	June 1 thru September 30 or December 16 thru March 14
Class III Streams	October 1 thru April 30
Class IV Streams	March 1 thru May 31

NOTES/SPECIFICATIONS

- Compact subgrade by rolling and compacting with approved multiple-wheel pneumatic tire rollers vibratory rollers or other types of approved rollers.
- The basin bottom shall be excavated eight inches (8") below finished grade and eight inches (8") of topsoil shall be uniformly spread to finished elevation. Topsoil shall be free of stones, lumps, plants, roots, and other debris including toxic substances. Topsoil shall have a pH range of 5.0 - 7.0.

WETLAND PLANT MATERIAL

DESCRIPTION:

This work shall consist of furnishing and planting emergent wetland plants and shrubs as shown on the plans and/or as directed by Exploration Research, Inc. and all planting operations and care and replacement as necessary to complete the work specified.

Prior to the start of the work on this project, Exploration Research, Inc. shall submit to the Army Corps of Engineers for review, the proposed planting schedule for the wetland vegetation.

MATERIALS:

- A. Plant material - As shown on the plans, shall conform to the following specifications: The plant species required are normally unavailable from standard landscape nursery sources. Exploration Research, Inc. will make arrangements to insure a supply of the required plant material. This shall be done five (5) months prior to planting time to allow for plant collection, storage, and preparation.
- B. Fertilizer - As required.
- C. Substitute plants - Shall conform to the above specifications and approval of Exploration Research, Inc. and the Army Corps of Engineers.

WETLAND MANAGEMENT NOTES

In order to establish a productive, functioning wetland ecosystem, an effective wetland management plan has been developed. The objectives of the management plan include:

- Re-establish a healthy, self-sustaining vegetative cover.
- Re-establish self-sustaining hydrological conditions.
- Enhance and promote maximum wildlife habitat.

In order to establish an effective, workable, and practical wetland management plan, the following strategy is recommended:

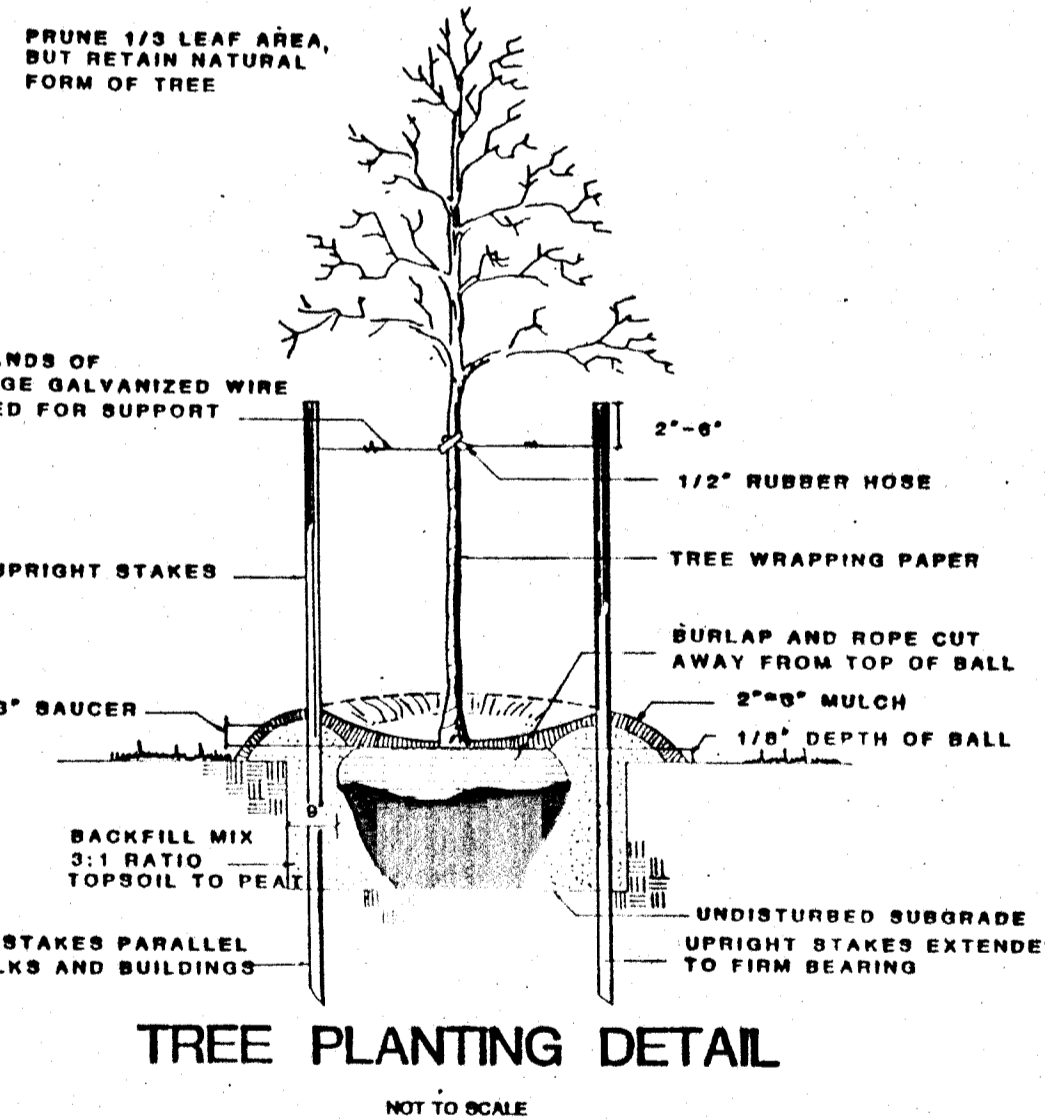
- During and immediately proceeding construction of the wetland areas, potential or existing problems will be identified and corrective management techniques will be implemented.

CLEANING AND GRUBBING

- All vegetation, trash, and debris not marked in the field or on the plans, within the limits of disturbance, are to be disposed of off site in an approved landfill site.

GRADING

- All topsoil and excess cut is to be removed and disposed of off site.
- Grade tolerance shall be within 0.15 feet.
- Specific field elevations for the basin bottom may be adjusted slightly during construction to allow for unanticipated field conditions.
- Side slopes shall be excavated eight inches (8") below finished grade and eight inches (8") of topsoil shall be uniformly spread to finished elevation. Topsoil shall be free of stones, lumps, plants, roots, and other debris including toxic substances. Topsoil shall have a pH range of 5.0 - 7.0.
- The basin bottom shall be excavated eight inches (8") below finished grade and eight inches (8") of a topsoil shall be uniformly spread to finished elevation.
- All final elevations shall be field checked by Exploration Research, Inc. prior to the contractor removing equipment from the site.



TREE PLANTING DETAIL
NOT TO SCALE

NATURAL CYCLE

Natural cycles must be maintained to prevent "succession" from wetland to solid ground. Although this is a long term goal exceeding the limits of this management program, several techniques can be implemented over the two year period enhance stability.

IMMEDIATE MANAGEMENT TECHNIQUES

No management strategies planned.

SHORT TERM MANAGEMENT TECHNIQUES

Wetland area will be periodically monitored for altered hydrologic conditions, invasive plant species, transition of wetland species to upland plants, and cultural impacts such as human disturbance, filling, non-point, and point source pollution. Management techniques will be recommended to stabilize unnatural ecological successions including:

- Altering the hydrological regime.
- Removing undesirable plant species.
- Restricting or discouraging destructive human interaction.

LONG TERM MANAGEMENT TECHNIQUES

Overall ecology and stability of the restored wetland areas will be assessed in comparison to similar adjacent areas. Recommendations and strategies will be planned to enhance and protect the overall ecology of the site.

HYDROLOGIC REGIME

The duration, timing, and source of surface inundation determines and regulates wetland functions and their characteristics.

IMMEDIATE MANAGEMENT TECHNIQUES

Vegetation demonstrating immediate stress or dieback will be replaced. In addition, soil and climatic factors will be analyzed in relation to plant growth. The following management techniques will be utilized:

- Replace plant species with similar vegetation.
- Add soil amendments to enhance survivability.
- Replace plant species with specified alternative.
- Prune plant species to establish desired growth characteristics and enhance survivability.

SHORT TERM MANAGEMENT TECHNIQUES

Survey vegetation after major storm events or droughts to determine appropriate management techniques as specified in Immediate Management Techniques.

LONG TERM MANAGEMENT TECHNIQUES

Re-assess vegetation for its functional value in relation to wetland cycles and habitat enhancement. Recommend and implement corrective and preventive action.

VEGETATION

Vegetation sustains wildlife species, filters and reduces flood velocity. A goal of 85% vegetative cover will be established in two (2) years.

IMMEDIATE MANAGEMENT TECHNIQUES

Vegetation demonstrating immediate stress or dieback will be replaced. In addition, soil and climatic factors will be analyzed in relation to plant growth. The following management techniques will be utilized:

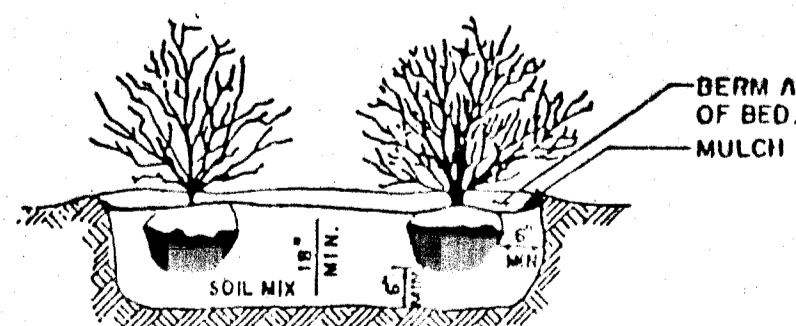
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SHORT TERM MANAGEMENT TECHNIQUES

Survey vegetation after major storm events or droughts to determine appropriate management techniques as specified in Immediate Management Techniques.



SHRUB BED PLANTING

PLANTING DETAIL

NO SCALE

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David Whelan 11/4/91

DEVELOPER'S CERTIFICATE

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2/14/92

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion, and sediment control.
 Robert W. Zolner 2/14/92
 Howard Soil Conservation District

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
 Robert W. Zolner 2/14/92
 CHIEF, LAND DEVELOPMENT DIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
 [Signature] 2/14/92
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
 [Signature] 2/14/92
 CHIEF, BUREAU OF ENGINEERING

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
 [Signature] 2/23/92
 CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMENT



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OAK TREE
HOWARD COUNTY, MARYLAND

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CNAB-OP-RW

(PUFFENBERGER SITE)

89-0835-3

WETLAND MITIGATION PLAN

LOCATION
 TM # 42 PAR 4 & 262
 6TH ELECTION DISTRICT

OWNER
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Drawn By: J.L.B. Scale: N/A
 Designed By: M.A.M. Date: 9/21/90
 Checked By: D.E.R. Sheet# of 10

F-92-68