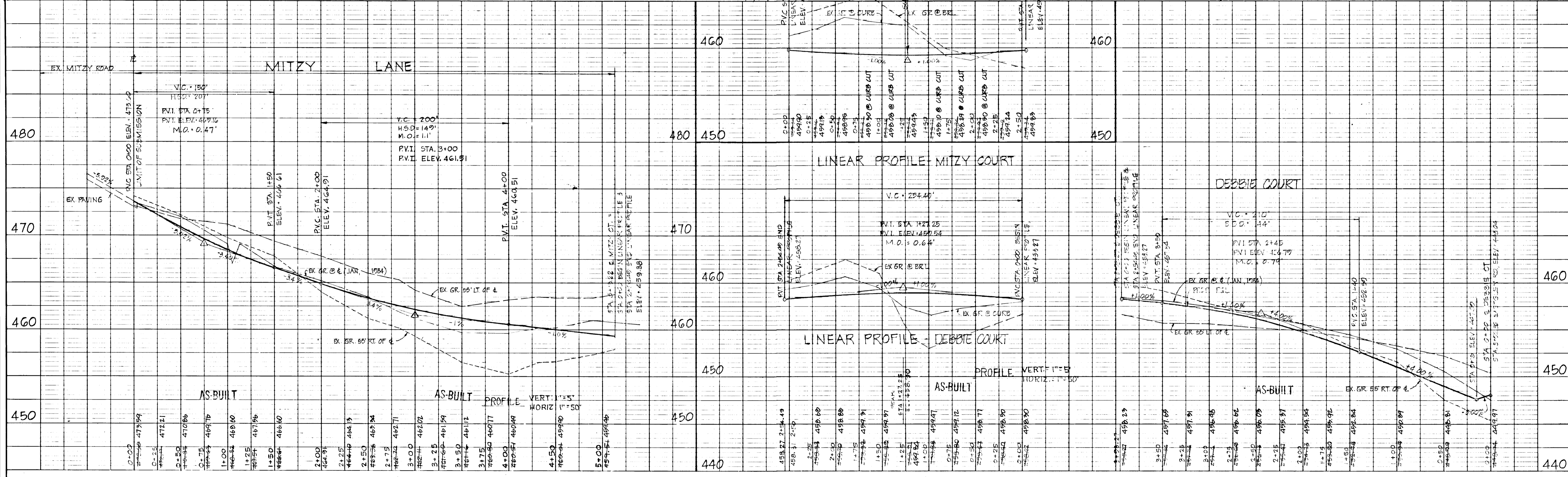
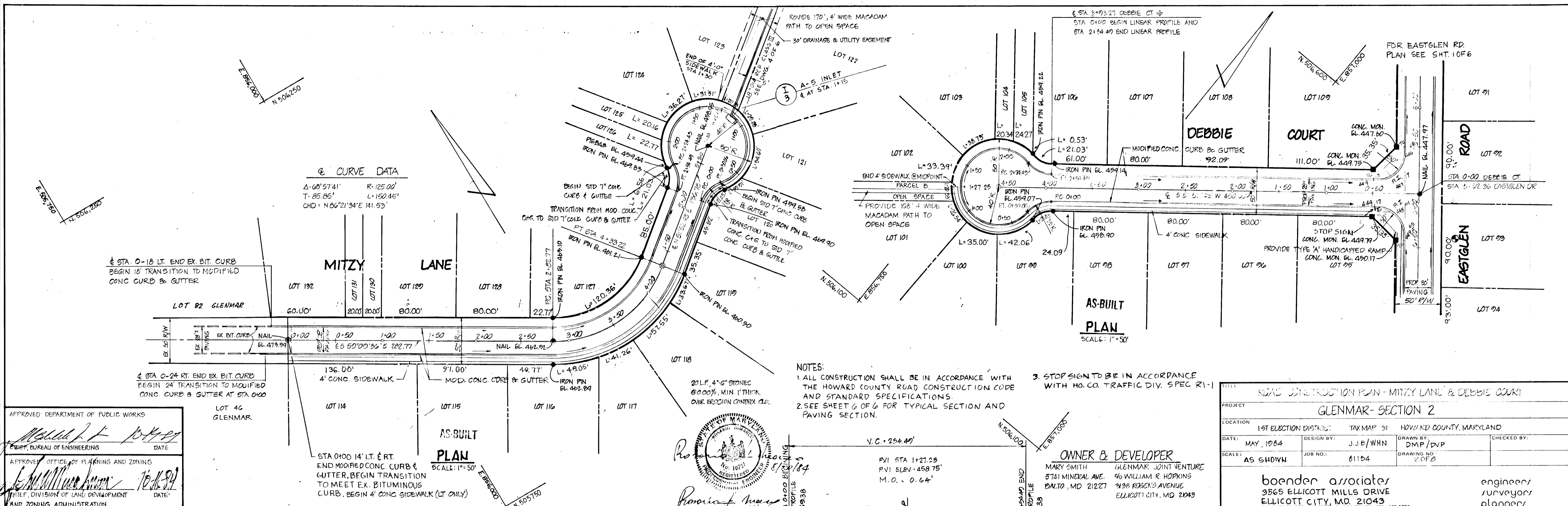


DATE	
BY	
REVISIONS	
NO.	
PLAN	
NOTE BOOK	
NO.	

DATE	
BY	
REVISIONS	
NO.	
PROFILE	
NOTE BOOK	
NO.	



APPROVED: HOWARD COUNTY OFFICE OF PLANNING & ZONING

William Marchman 10-16-84
CHIEF, DIV. OF LAND DEVELOPMENT
AND ZONING ADMINISTRATION
DATE

APPROVED: PER PUBLIC WATER, PUBLIC SEWERAGE AND STORM
DRAINAGE SYSTEMS AND PUBLIC ROAD, HOWARD COUNTY
DEPARTMENT OF PUBLIC WORKS.

William F. Papp
CHIEF, BUREAU OF ENGINEERING
DATE

NOTE: POND CLASSIFICATION - CLASS A
NO BUILDINGS IMMEDIATELY DOWNSTREAM
OF PONDS. OUTFALLS DRAIN TO OFFSITE EX. STREAMS

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 THIRTY DAYS OF COMPLETION.

William K. Hopkins 9/21/84
SIGNATURE OF DEVELOPER DATE

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 COUNTY 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 THIRTY DAYS OF COMPLETION

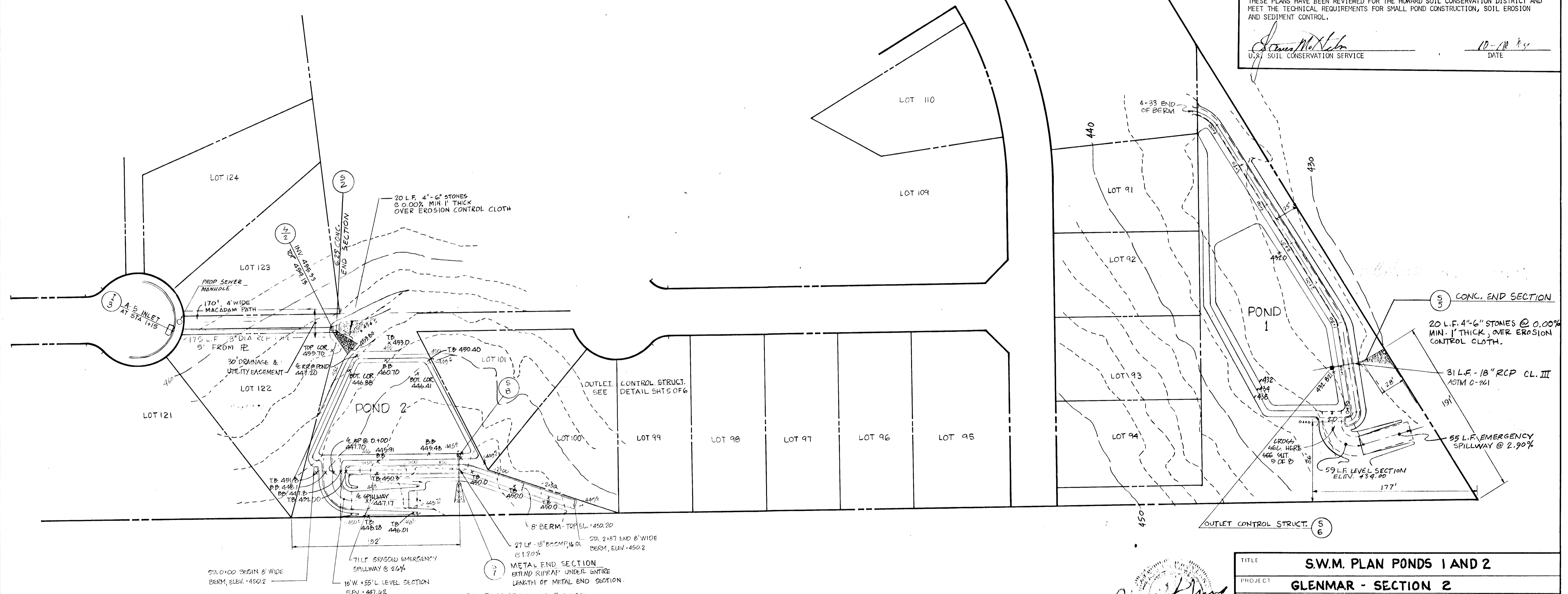
Robert W. Ziehm 9/21/84
SIGNATURE OF ENGINEER DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL
MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Robert W. Ziehm 10/10/84
HOWARD SOIL CONSERVATION DISTRICT DATE

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.

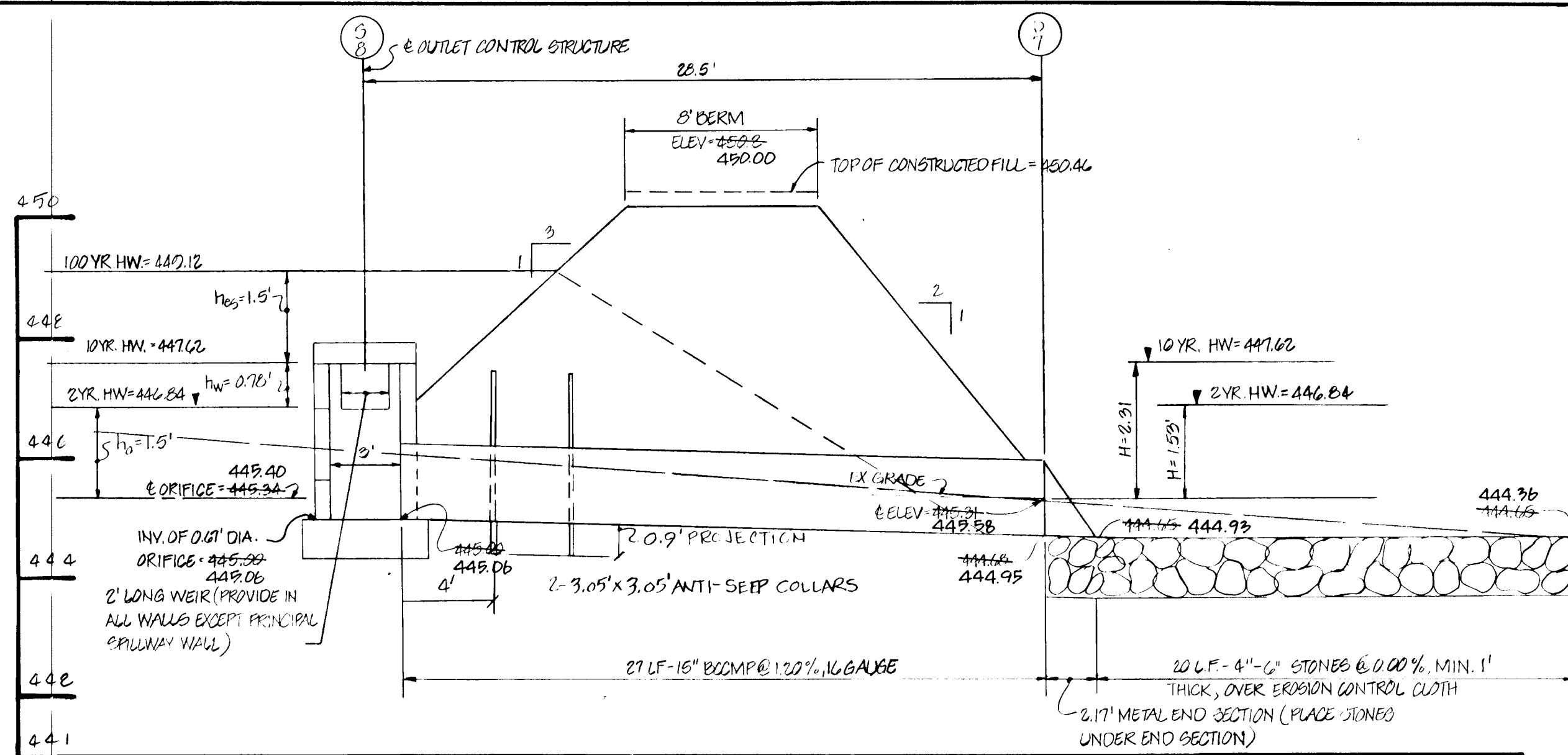
James McNeil 10-18-84
U.S. SOIL CONSERVATION SERVICE DATE



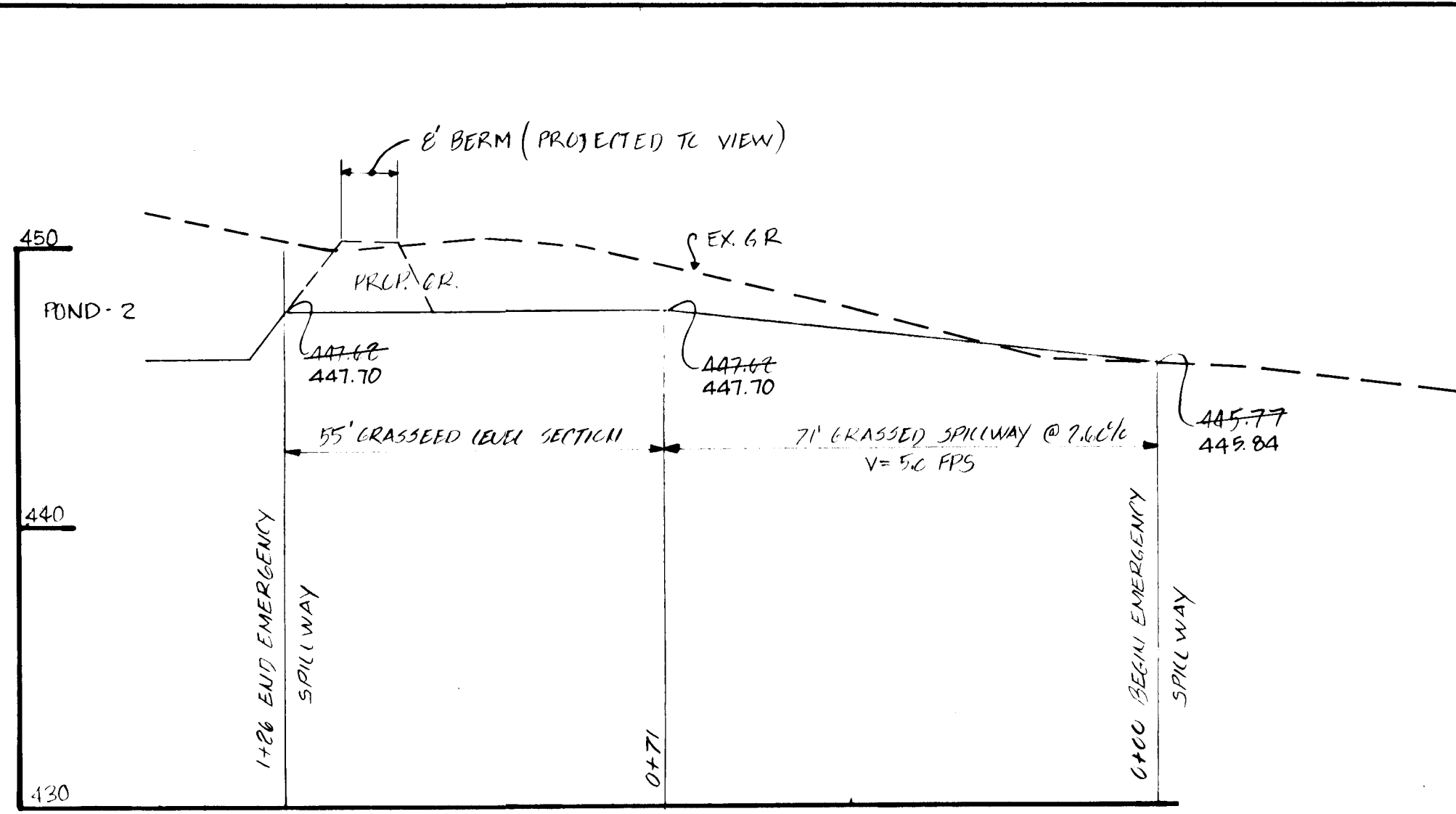
NOTE: FOR DRAINAGE & UTILITY EASEMENTS
SEE RECORD PLOT

Robert W. Ziehm
Professional Engineer
AS-1111

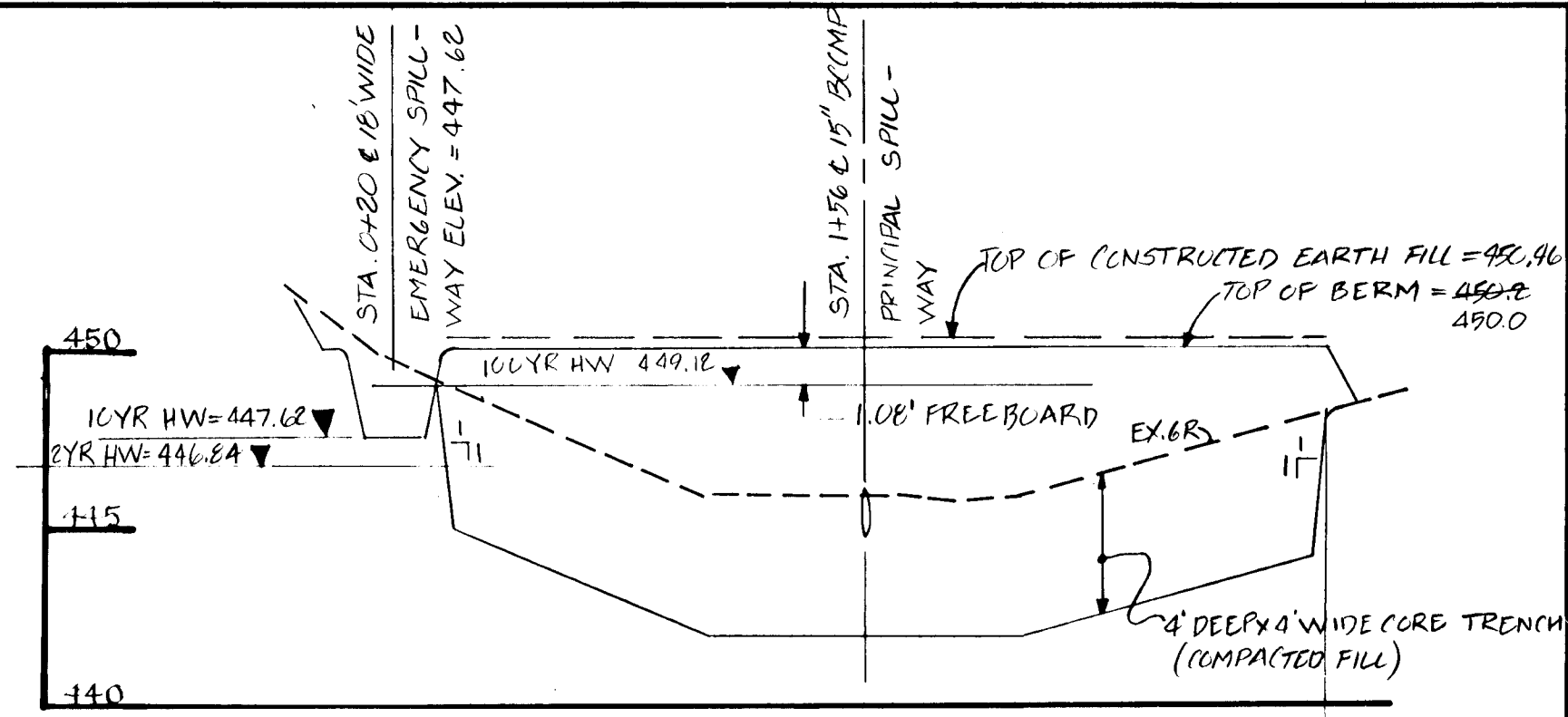
TITLE		S.W.M. PLAN PONDS 1 AND 2				
PROJECT		GLENMAR - SECTION 2				
LOCATION		1ST ELECTION DISTRICT TAX MAP 31 HOWARD COUNTY, MD				
DATE	SCALE	DESIGN BY	DRAWN BY	CHECKED BY	DRAWING NO.	JOB NO.
MAY 1984	AS SHOWN	FDM	D.V.P.	R.D.M.	4 OF 6	81154
boender associates		engineers surveyors planners				
3565 ELLICOTT MILLS DRIVE ELLICOTT CITY, MARYLAND 21043 301-465-7777						



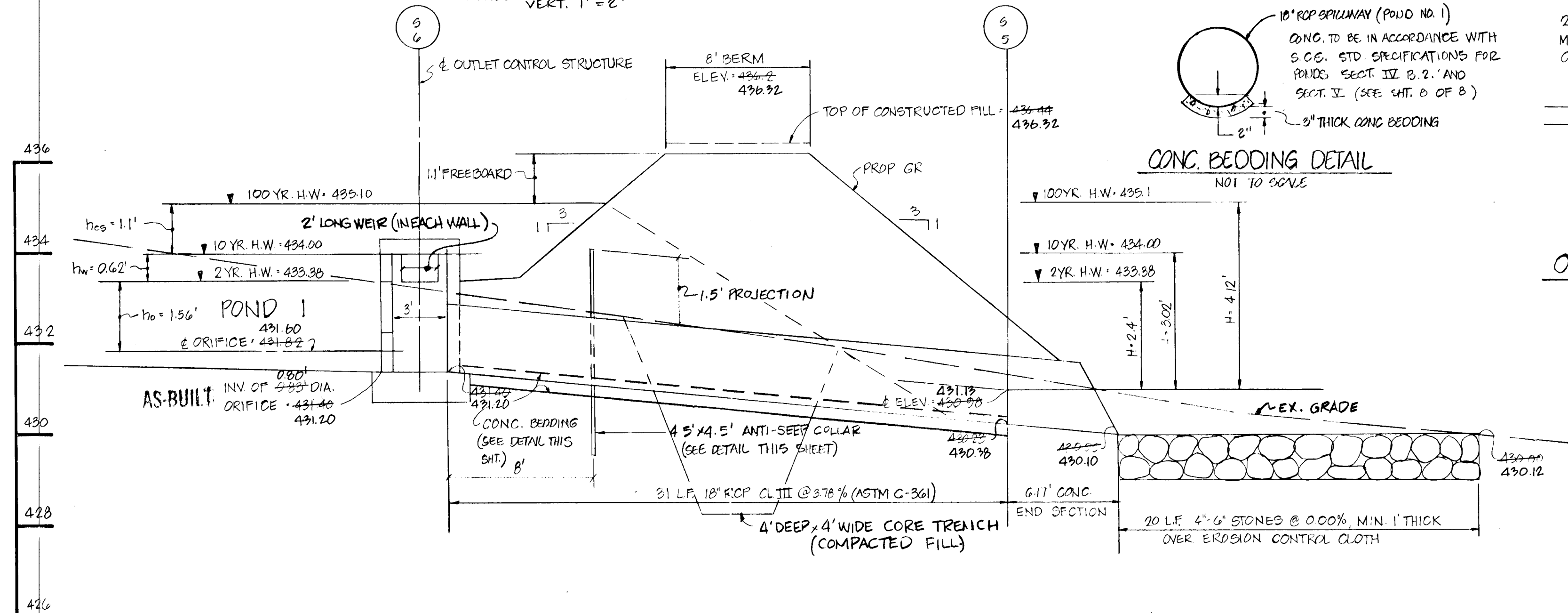
PROFILE: PRINCIPAL SPILLWAY - POND 2
SCALE: HORIZ. 1" = 5'
VERT. 1" = 2'



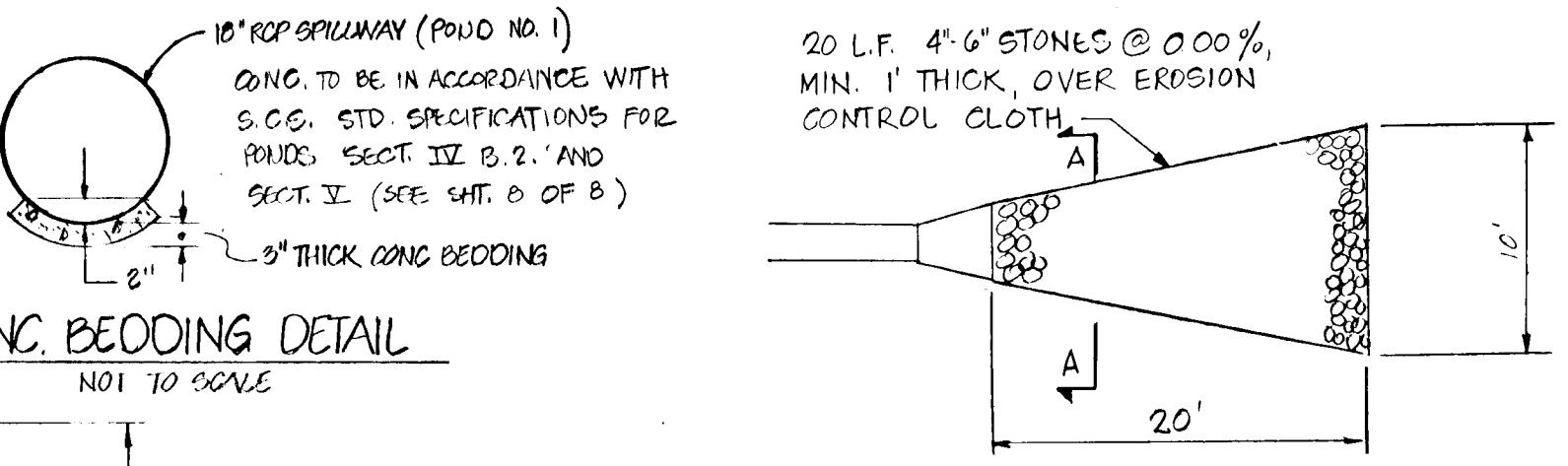
PROFILE: EMERGENCY SPILLWAY - POND 2
SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



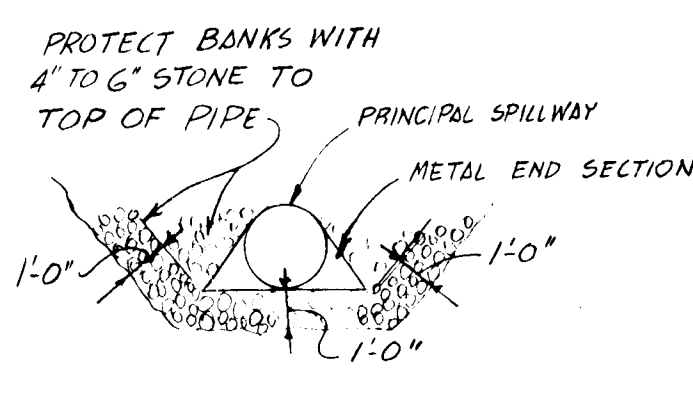
PROFILE: TOP OF BERM - POND 2
SCALE: VERT. 1" = 5'
HORIZ. 1" = 50'



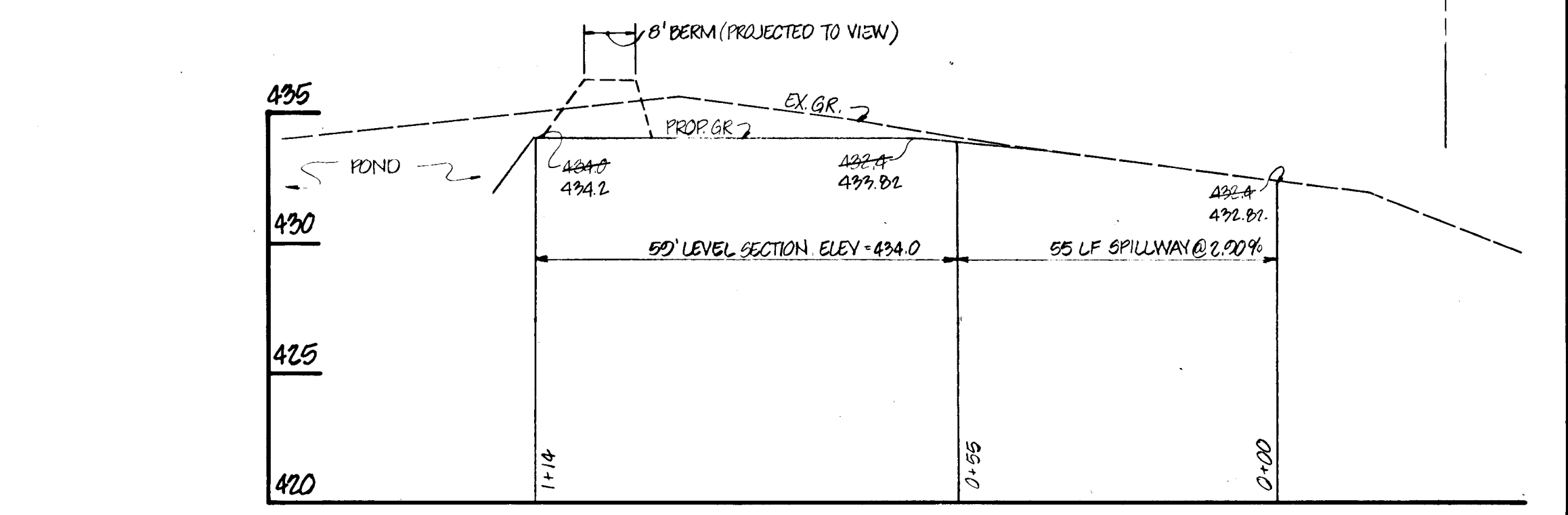
PROFILE: PRINCIPAL SPILLWAY - POND 1
SCALE: HORIZ. 1" = 5'
VERT. 1" = 2'



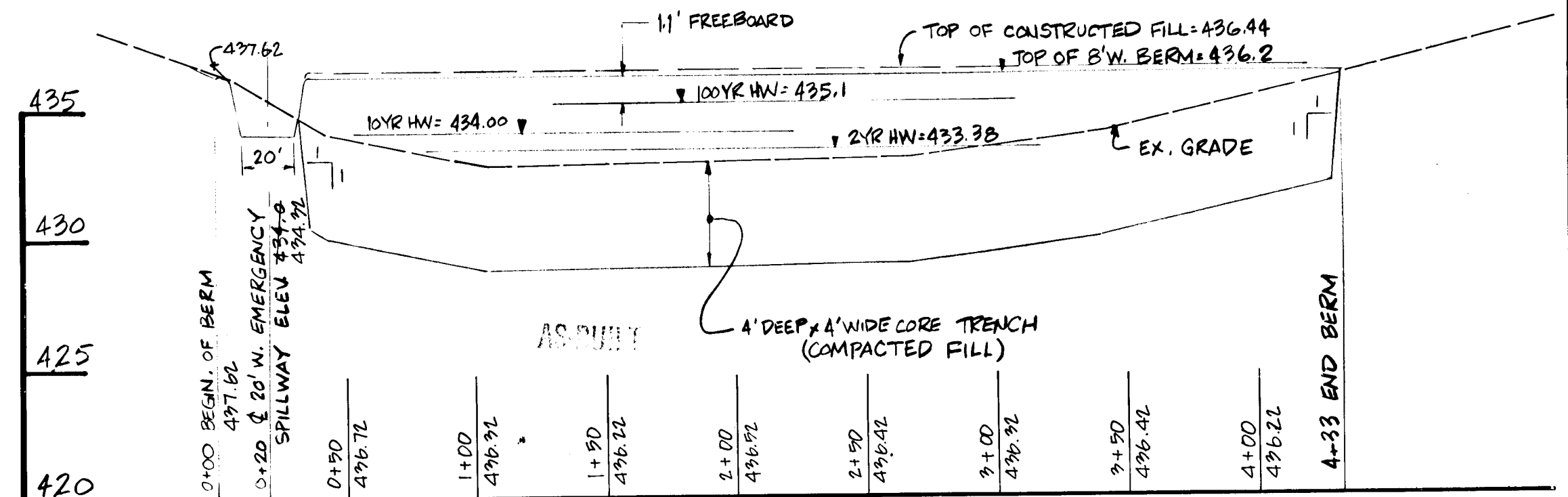
OUTLET PROTECTION @ S-5 & S-7
NOT TO SCALE



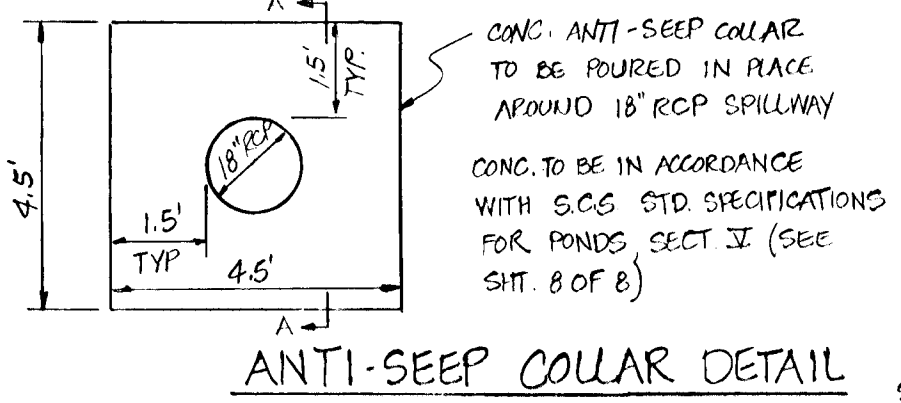
SECTION A-A @ PRINC. SPILLWAY
(N.T.S.)



PROFILE: EMERGENCY SPILLWAY - POND 1
SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



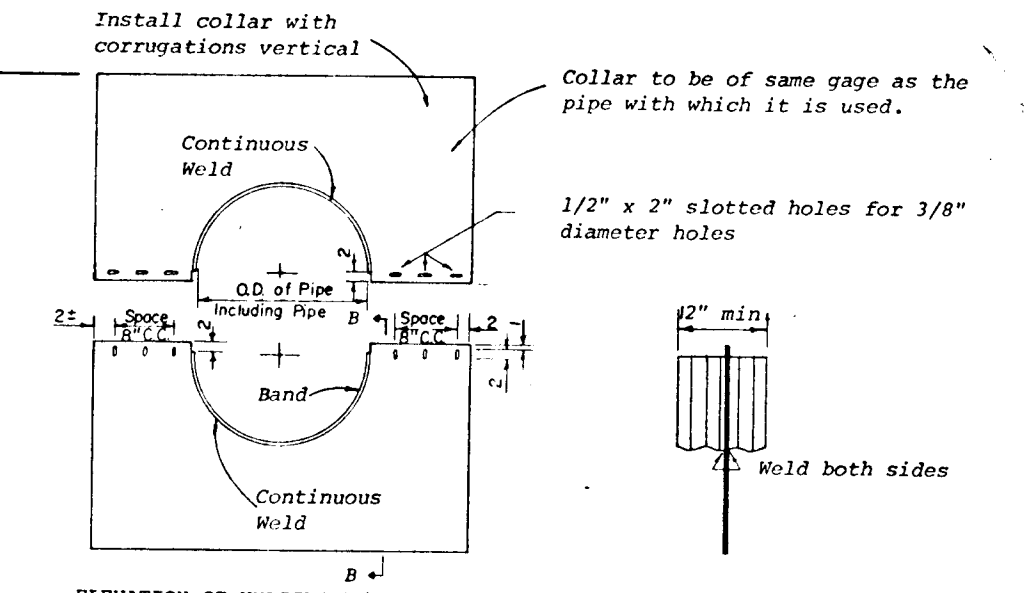
PROFILE: TOP OF BERM - POND 1
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



ANTI-SEEP COLLAR DETAIL
NOT TO SCALE

DIMENSION	A	B	C	D	E	F	G	H
POND 1	15'	15'	15'	15'	15'	15'	15'	15'
POND 2	15'	15'	15'	15'	15'	15'	15'	15'

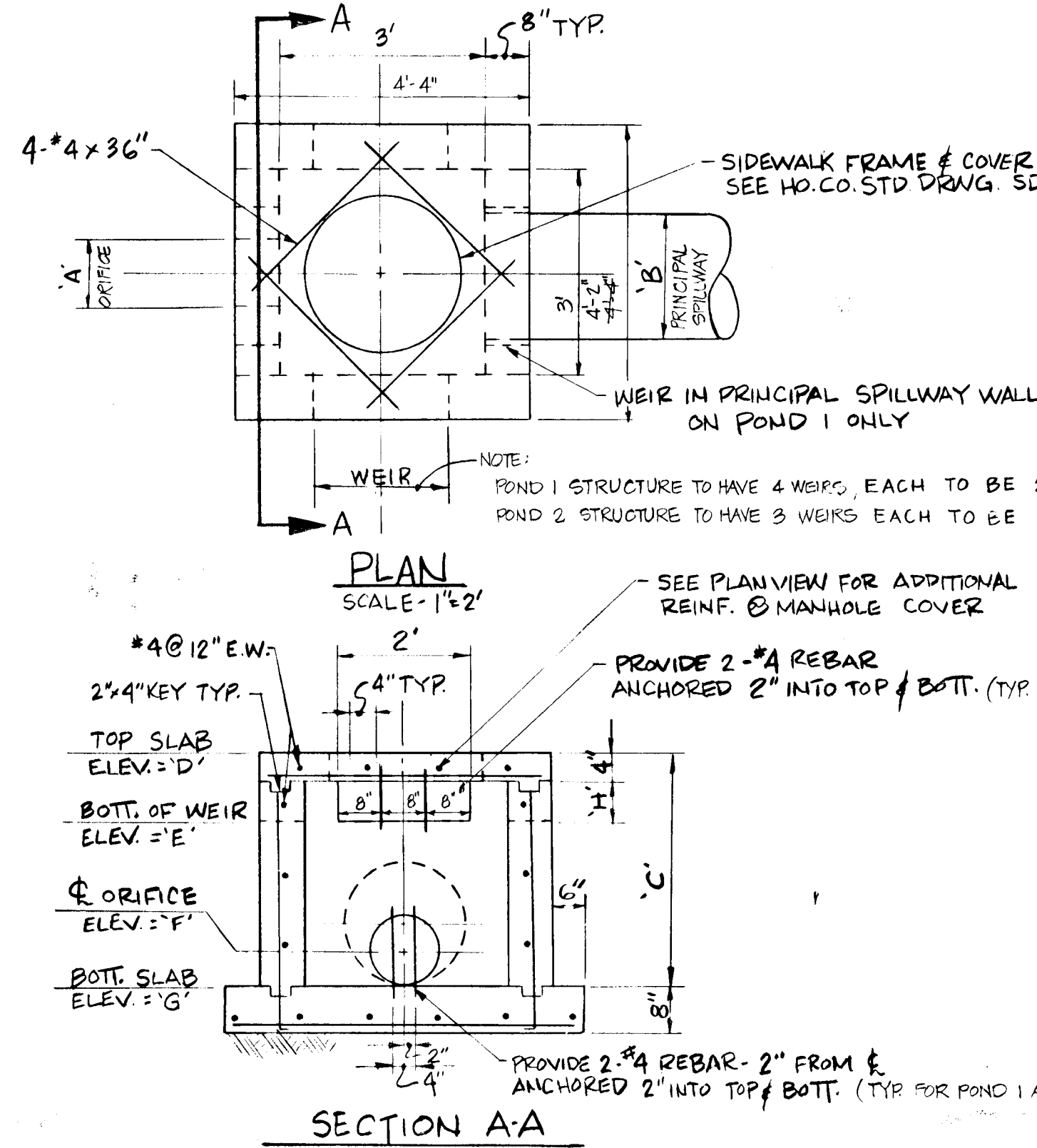
OUTLET CONTROL STRUCTS. S-6 & S-8
AS-BUILT



ELEVATION OF UNASSEMBLED COLLAR

- NOTES FOR COLLARS:
- All materials to be in accordance with construction and construction material specifications.
 - When specified on the plans, coating of collars shall be in accordance with construction and construction material specifications.
 - Unassembled collars shall be marked by painting or tagging to identify matching pairs.
 - The lap between the two half sections and between the pipe and connecting band shall be caulked with asphalt mastic at time of installation.
 - Each collar shall be furnished with two 1/2" diameter rods with standard tank lugs for connecting collars to pipe.

POND 2
ANTI-SEEP COLLAR DETAIL
NOT TO SCALE



SECTION A-A

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Robert Zilman 10-10-84
HOWARD SOIL CONSERVATION DISTRICT

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 Zilman 10-11-84
U.S. SOIL CONSERVATION SERVICE

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

William M. ... 10-10-84
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE AND STORM DRAINAGE SYSTEMS AND PUBLIC ROADS, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

Michael H. ... 10-11-84
CHIEF, BUREAU OF ENGINEERING

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS.

Robert Zilman 10-11-84
U.S. SOIL CONSERVATION SERVICE

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

Robert Zilman 10-11-84
U.S. SOIL CONSERVATION DISTRICT

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 THIRTY DAYS OF COMPLETION.

William R. ... 9/21/88
SIGNATURE OF DEVELOPER DATE

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 COUNTY 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 THIRTY DAYS OF COMPLETION.

Robert Zilman 9/21/88
SIGNATURE OF ENGINEER DATE

OWNER: MARY SMITH, 5741 MINERAL AVE, BALTO., MD. 21227

DEVELOPER: GLENMAR JOINT VENTURE, 56 WILLIAM R. HOPKINS, 3138 ROGERS AVE, ELLICOTT CITY, MD. 21043

TITLE: S.W.M. DETAILS

PROJECT: GLENMAR-SECTION 2

LOCATION: 101 ELECTION DISTRICT, TAX MAP: 31, HOWARD COUNTY, MARYLAND

DATE: APRIL, 1984

SCALE: AS SHOWN

DESIGN BY: J.J.B.

DRAWN BY: D.M.P./D.V.P.

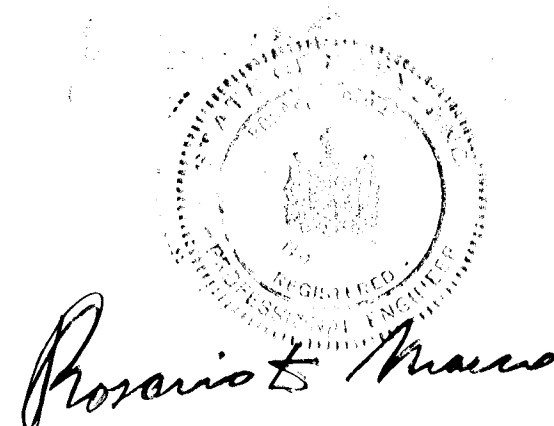
CHECKED BY: R.M.

DRAWING NO.: 5 OF 8

JOB NO.: 81194

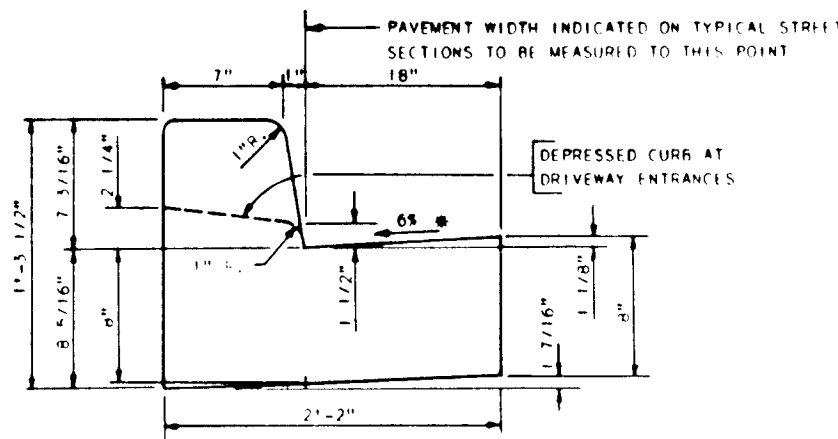
boender associates
3645 ELLICOTT MILLS DRIVE
ELLICOTT CITY, MARYLAND 21043
301-465-7777

engineers
surveyors
planners



SEDIMENT CONTROL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH "STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL IN DEVELOPING AREAS," PREPARED BY THE U.S.D.A. SOIL CONSERVATION SERVICE.
- APPLY FOR GRADING PERMIT.
- NOTIFY THE BUREAU OF LICENSE INSPECTIONS AND PERMITS 24 HRS. PRIOR TO GRADING OPERATIONS.
- CONSTRUCTION SHALL ADHERE TO THE CONSTRUCTION SEQUENCE.
- CUT AND FILL SLOPES SHALL BE 3:1 MAXIMUM.
- ELEVATIONS MARKED THUS (X) SHALL BE FINISHED GRADE.
- ANY EXCESS MATERIAL SHALL BE STOCKPILED IN A CLEARED LOCATION ON SITE WHICH IS PROTECTED BY SEDIMENT CONTROL STRUCTURE(S). MAXIMUM FILL SLOPE SHALL BE 3:1. STOCKPILED MATERIAL SHALL BE STABILIZED ACCORDING TO SEEDING SPECIFICATIONS BELOW.
- SEDIMENT CONTROL STRUCTURES SHALL BE REMOVED ONLY WITH PERMISSION OF THE BUREAU OF LICENSE, INSPECTIONS AND PERMITS.
- STABILIZATION MEASURES
 TEMPORARY STABILIZATION:
 APPLY: 2000 LBS./AC. OR 46 LBS. OF PULVERIZED DOLOMIC LIMESTONE, 500 LBS./AC OR 11.5 LBS./1000 SQ. FT. OF 10-10-10 FERTILIZER. PLANT WITH RYEGRASS AT 40 LBS./AC. MULCH ALL DISTURBED AREAS IMMEDIATELY AFTER GRADING.
 PERMANENT STABILIZATION:
 APPLY: 2000 LBS./AC. OF PULVERIZED DOLOMIC LIMESTONE, 500 LBS./AC. OF 10-10-10 FERTILIZER.
 SEED: 85 LBS./AC. OF KENTUCKY 31 TALL FESCUE, 40 LBS./AC. OF KENTUCKY BLUE GRASS, 25 LBS./AC. OF ANNUAL RYEGRASS.
 NOTE: SEEDING MAY BE DONE BETWEEN MARCH 1 - MAY 1, OR AUG. 1 - OCT. 1 ONLY. MULCH ALL DISTURBED AREAS IMMEDIATELY AFTER GRADING.
 MULCH: 2 TONS/AC. OF UNWEATHERED WHEATSTRAW. TIE MULCH DOWN WITH 480 GAL./AC. OF LIQUID ASPHALT.



STD. 7" COMB CURB & GUTTER

SEE HOWARD CO. DETAIL R-301
NOT TO SCALE



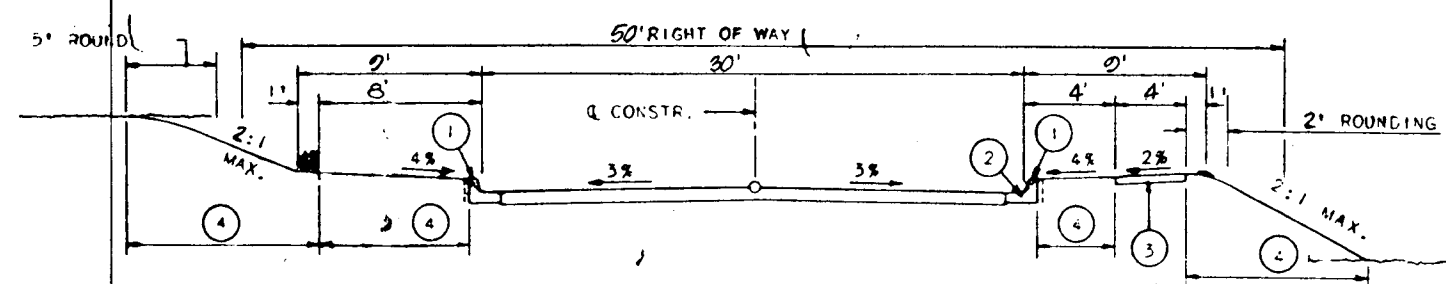
TYPICAL PAVING SECTION-P-2

SEE HOWARD CO. DETAIL R-201

SITE ANALYSIS

AREA OF SITE:
 AREA PAVED:
 AREA REVEGETATED:
 AREA DISTURBED:
 AREA UNDISTURBED:

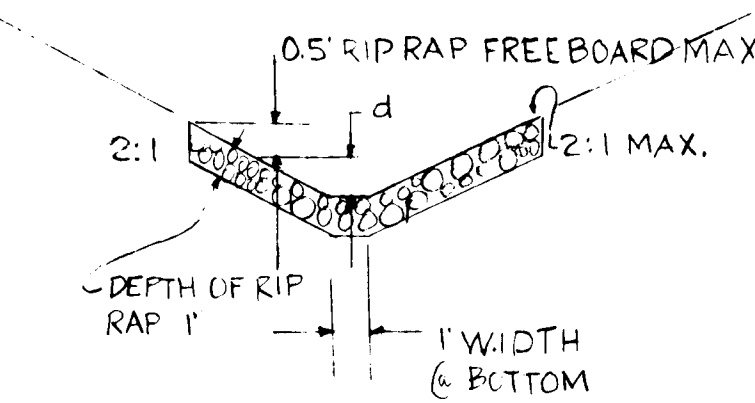
NO	TYPE	STRUCTURE			REMARKS
		INV. IN	INV. OUT	TOP EL.	
S-1	CONC. END SECTION CIRCULAR CONC. PIPE	432.71	435.67	437.51	HO. CO. STD. SD-5.51 (18")
S-2	CONC. END SECTION CIRCULAR CONC. PIPE	450.70	450.70	452.95	HO. CO. STD. SD-5.51 (24")
S-3	CONC. END SECTION CIRCULAR CONC. PIPE	441.50	441.50	443.75	HO. CO. STD. SD-5.51 (30")
S-4	CONC. END SECTION CIRCULAR CONC. PIPE	441.50	441.50	443.75	HO. CO. STD. SD-5.51 (30")
I-1	A-5 INLET, SUMP	438.47	438.47	440.72	HO. CO. STD. DRWG. SD-4.01
I-2	A-10 INLET, SUMP	438.47	438.47	440.72	HO. CO. STD. DRWG. SD-4.02
I-3	A-5 INLET, SUMP	438.47	438.47	440.72	HO. CO. STD. DRWG. SD-4.01
I-4	A-10 INLET, SUMP	455.10	455.10	457.35	HO. CO. STD. DRWG. SD-4.02
M1	STORM DRAIN MANHOLE	437.51	437.51	439.76	HO. CO. STD. DRWG.
M2	STORM DRAIN MANHOLE	453.64	453.64	455.89	HO. CO. STD. DRWG.
S-5	CONC. END SECTION	430.23	430.23	432.48	HO. CO. STD. DRWG. SD 5.51
S-6	OUTLET CONTROL STRUCT.	441.49	441.49	443.74	SEE SHEET 5 OF 6
S-7	METAL END SECTION	445.13	445.13	447.38	HO. CO. STD. DRWG. SD-5.61 (5')
S-8	OUTLET CONTROL STRUCT.	445.16	445.16	447.41	SEE SHEET 5 OF 6



TYPICAL SECTION - EASTGLEN ROAD

LOCAL ROAD - ZONED R-20 - DESIGN SPEED 30 M.P.H.
 SEE HOWARD CO. DETAIL R-102
 NOT TO SCALE

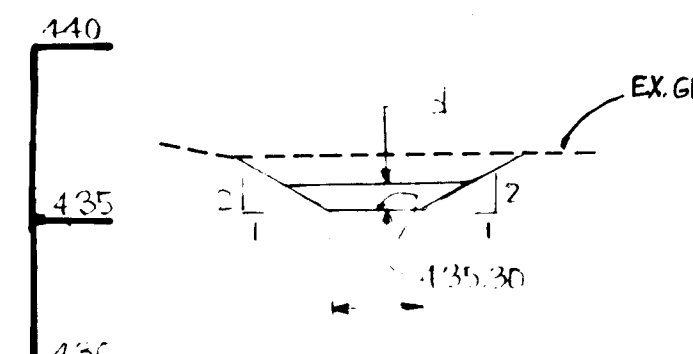
- PROFILE GRADE LINE (PGL), SEE DESIGN MANUAL.
- STANDARD COMB CURB AND GUTTER - SEE DESIGN MANUAL.
- 4" CONCRETE SIDEWALK AS REQUIRED BY SUB-DIVISION REGULATIONS.
- INDICATES 2" TOPSOIL, SEED AND MULCH.



SECT. A-A CHANNEL ABOVE S-4

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

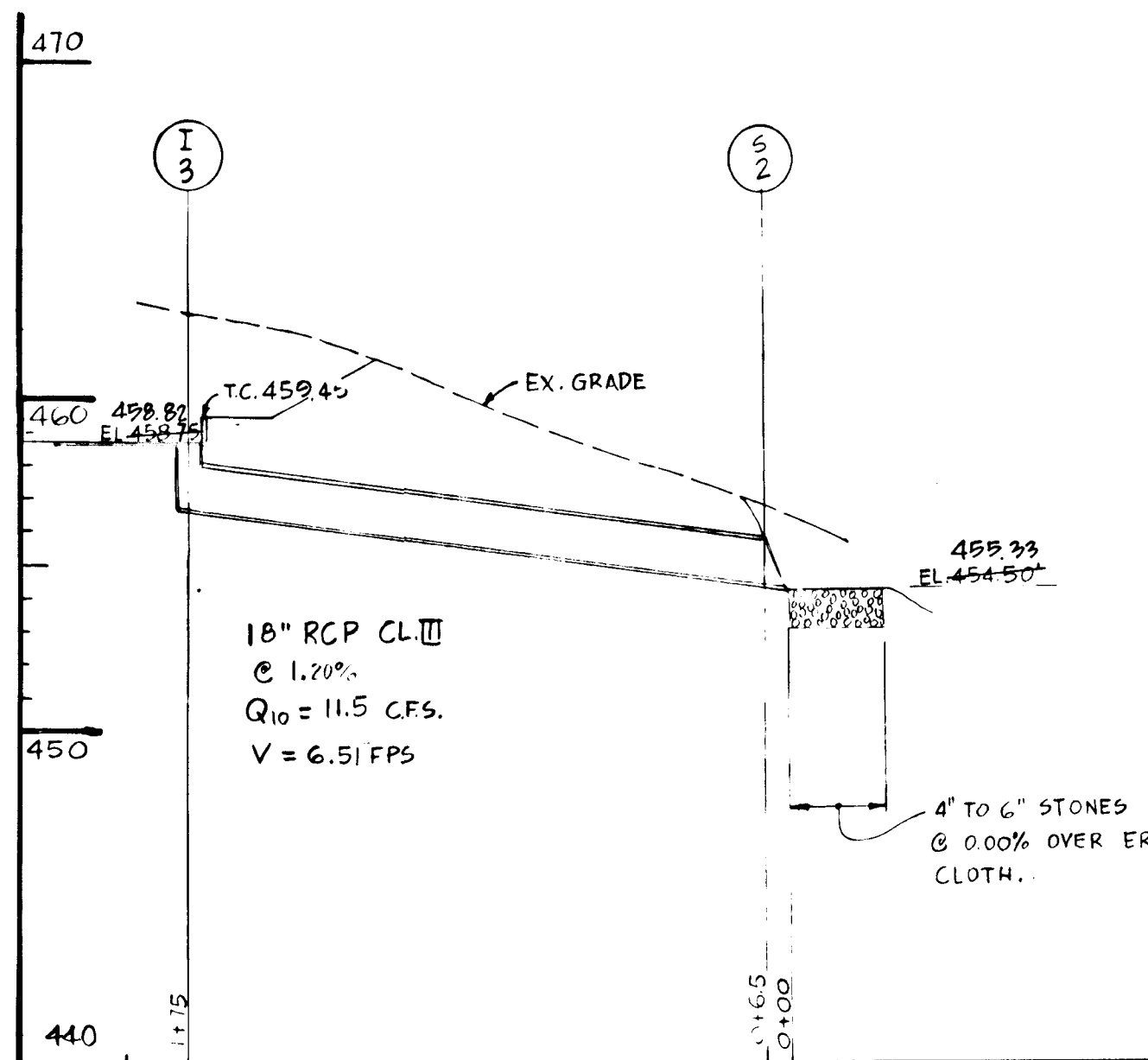
d = 1.0'
 A = 3.0 SQ. FT.
 WP = 5.47
 r = .548'
 r' = .668
 V = 9.8 FPS
 Q = 29.4 CFS
 SLO = .0875 5/2 = 0.2958
 n = .030'



SECT. B-B CHANNEL BELOW S-1

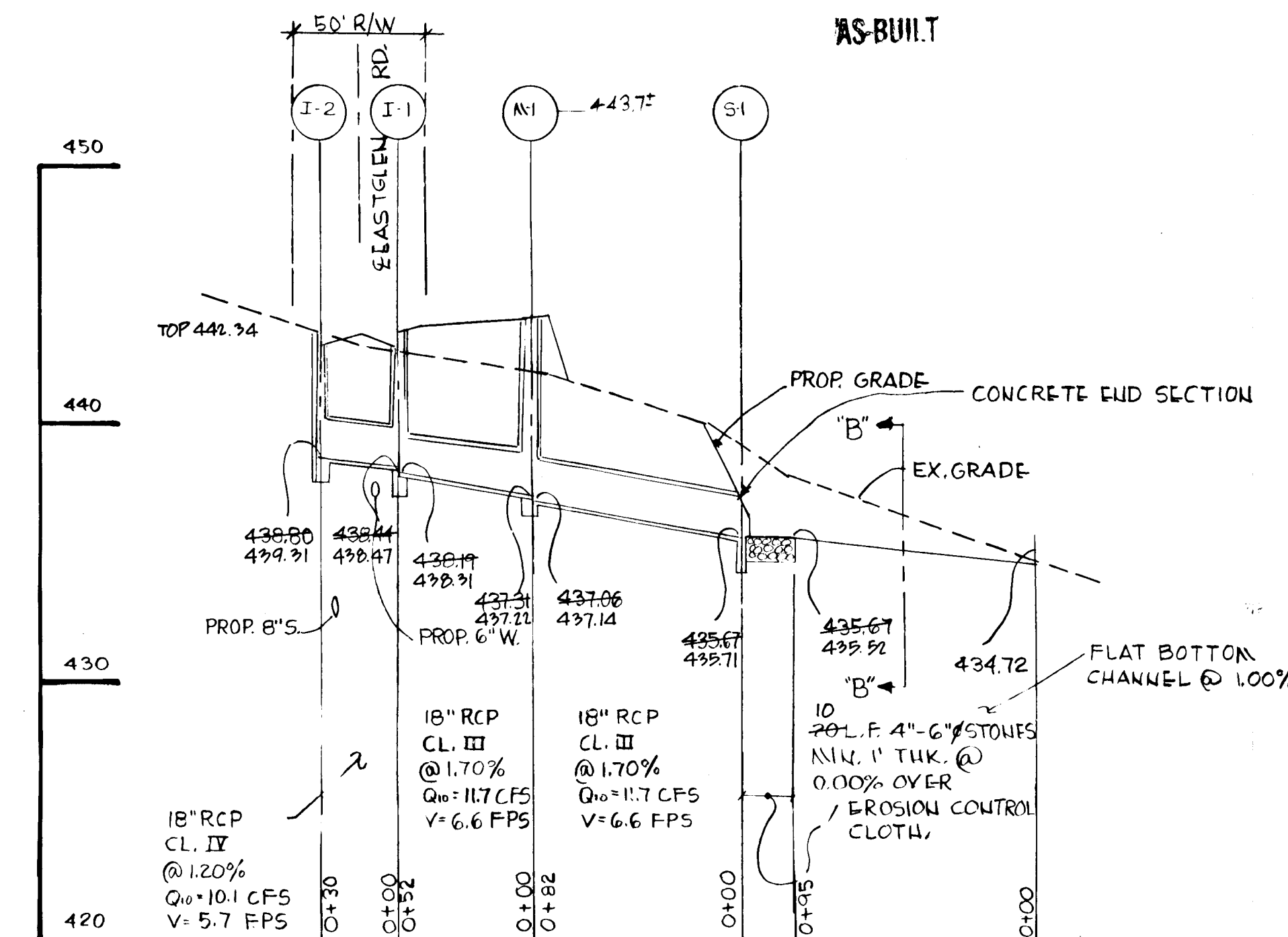
SCALE: HORIZ. 1" = 5'
 VERT. 1" = 5'

d = 1.0'
 A = 3.0 SQ. FT.
 WP = 5.47
 r = .548'
 r' = .668
 V = 9.8 FPS
 Q = 29.4 CFS
 SLO = .0875 5/2 = 0.2958
 n = .030'



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

AS-BUILT

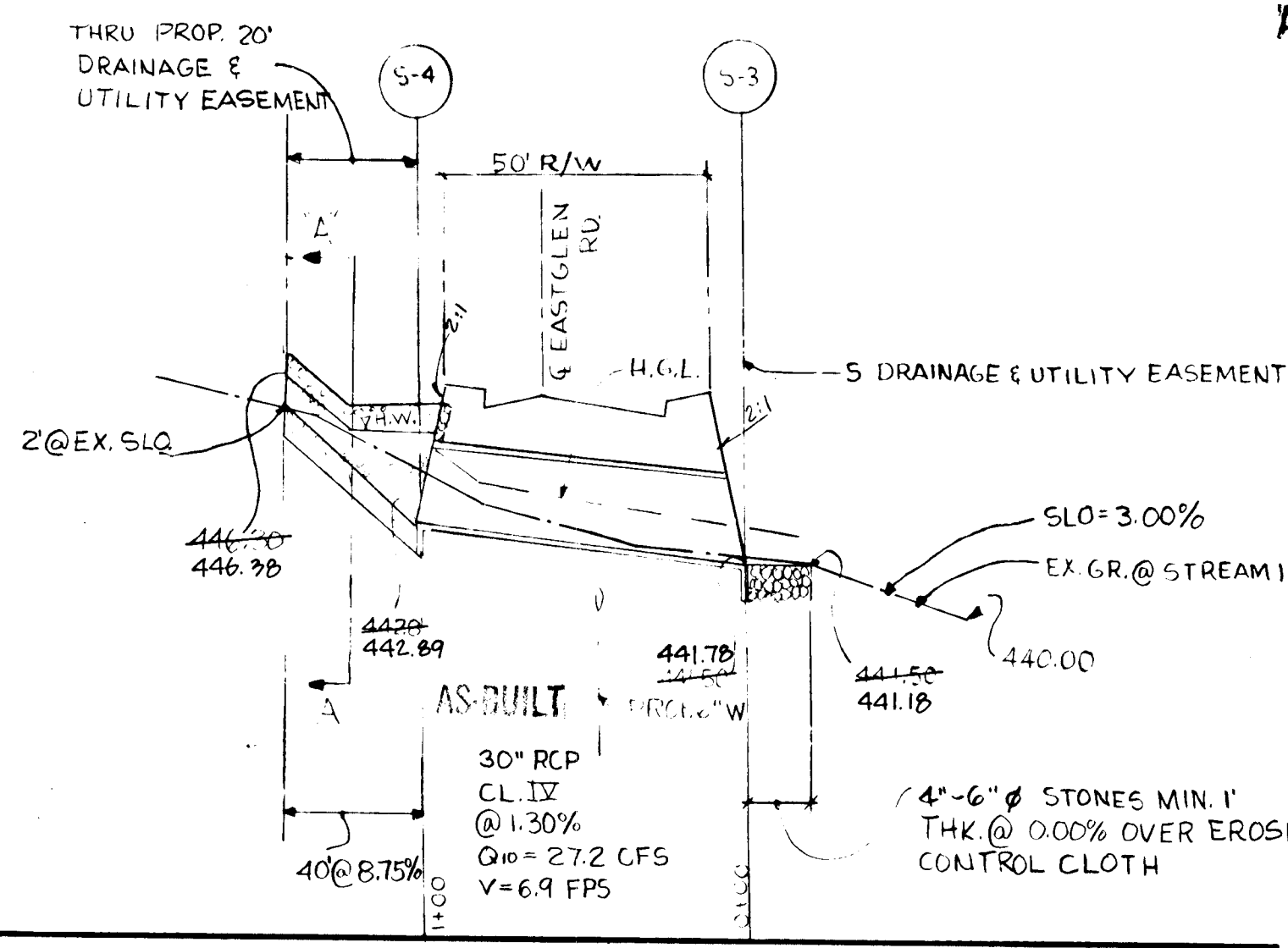


PROFILE SCALE: HORIZ. 1" = 50'
 VERT. 1" = 5'

AS-BUILT

TYPICAL SECTION - MITZY LA. & DEBBIE CT.

CUL-DE-SAC - ZONED R-20 - DESIGN SPEED 25 M.P.H.
 SEE HOWARD CO. DETAIL R-101
 NOT TO SCALE



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

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

[Signature] 10-10-84
 CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

APPROVED: FOR PUBLIC WATER, PUBLIC SEWERAGE AND STORM DRAINAGE SYSTEMS AND PUBLIC ROADS. HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

[Signature] 10-10-84
 ENGINEER, BUREAU OF ENGINEERING

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.

[Signature] 10-11-84
 U.S. SOIL CONSERVATION SERVICE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 10-10-84
 HOWARD SOIL CONSERVATION DISTRICT

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 THIRTY DAYS OF COMPLETION.

[Signature] 9/11/84
 SIGNATURE OF DEVELOPER

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 COUNTY 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 THIRTY DAYS OF COMPLETION.

[Signature] 9/11/84
 SIGNATURE OF ENGINEER

OWNER
 MARY SMITH
 5741 MINERAL AVENUE
 BALTIMORE, MARYLAND 21227

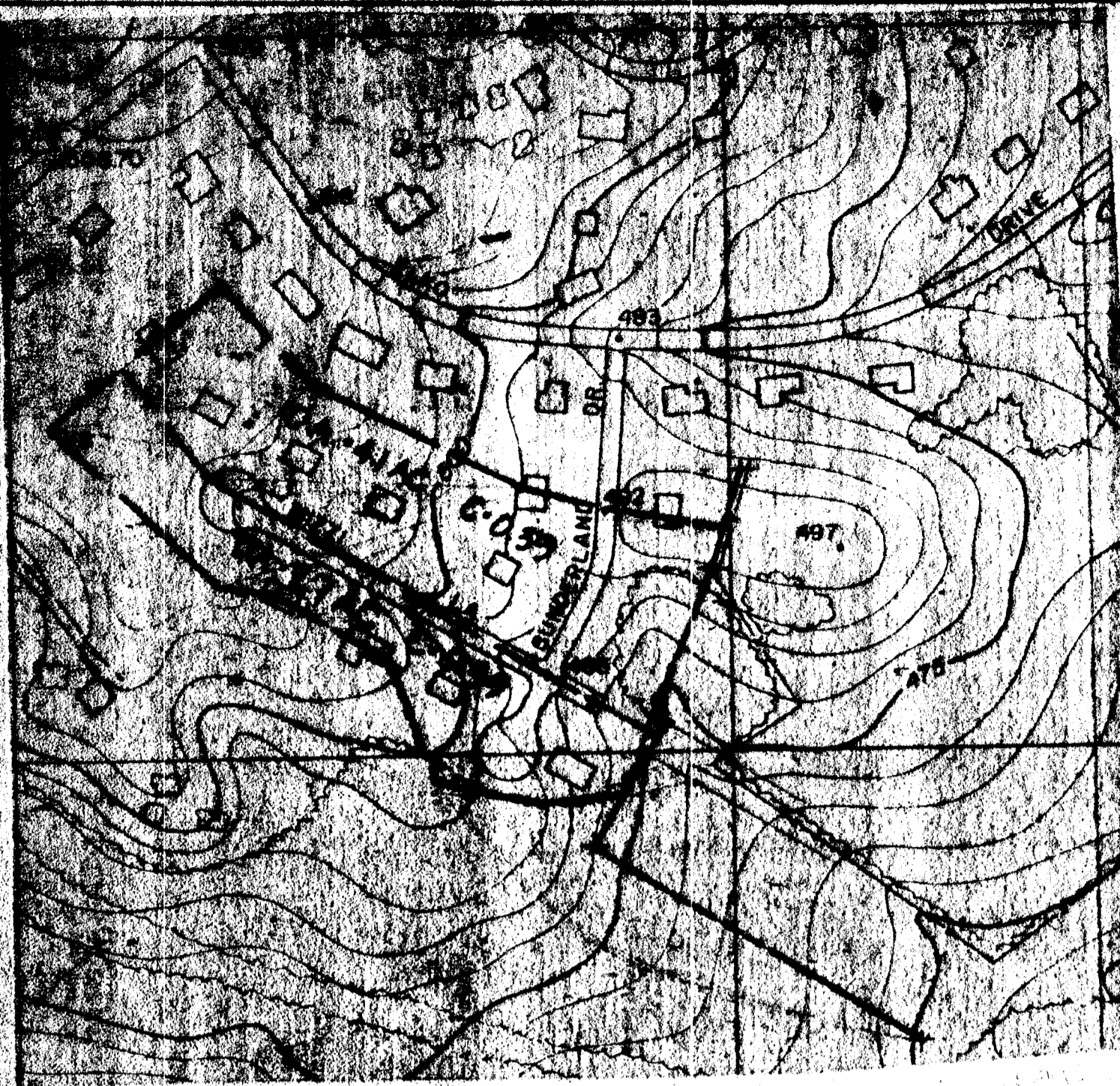
DEVELOPER
 GLENMAR JOINT VENTURE
 3138 ROGERS AVE.
 ELLICOTT CITY, MARYLAND 21043

TITLE STORM DRAIN PROFILES AND STORM DRAIN, ROAD & SEDIMENT CONTROL DETAILS

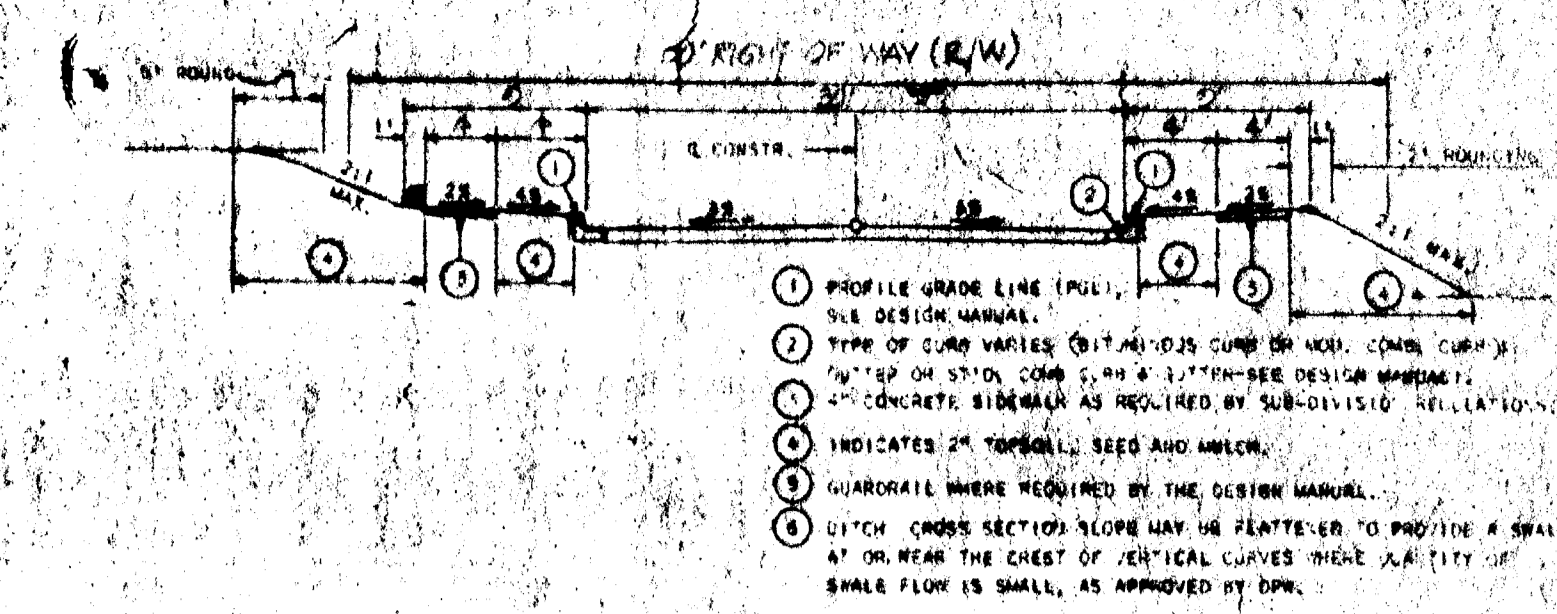
PROJECT: GLENMAR-SECTION 2					
LOCATION: 1ST ELECTION DISTRICT TAX MAP: 31 HOWARD COUNTY, MARYLAND					
DATE: APRIL 1984	SCALE: AS NOTED	DESIGN BY: JJB	DRAWING BY: DMP/DYP	CHECKED BY: RDM	JOB NO. 81154
boender associates			engineers surveyors planners		
3505 ELLICOTT MILLS DRIVE ELLICOTT CITY, MARYLAND 21043 301-465-7777					



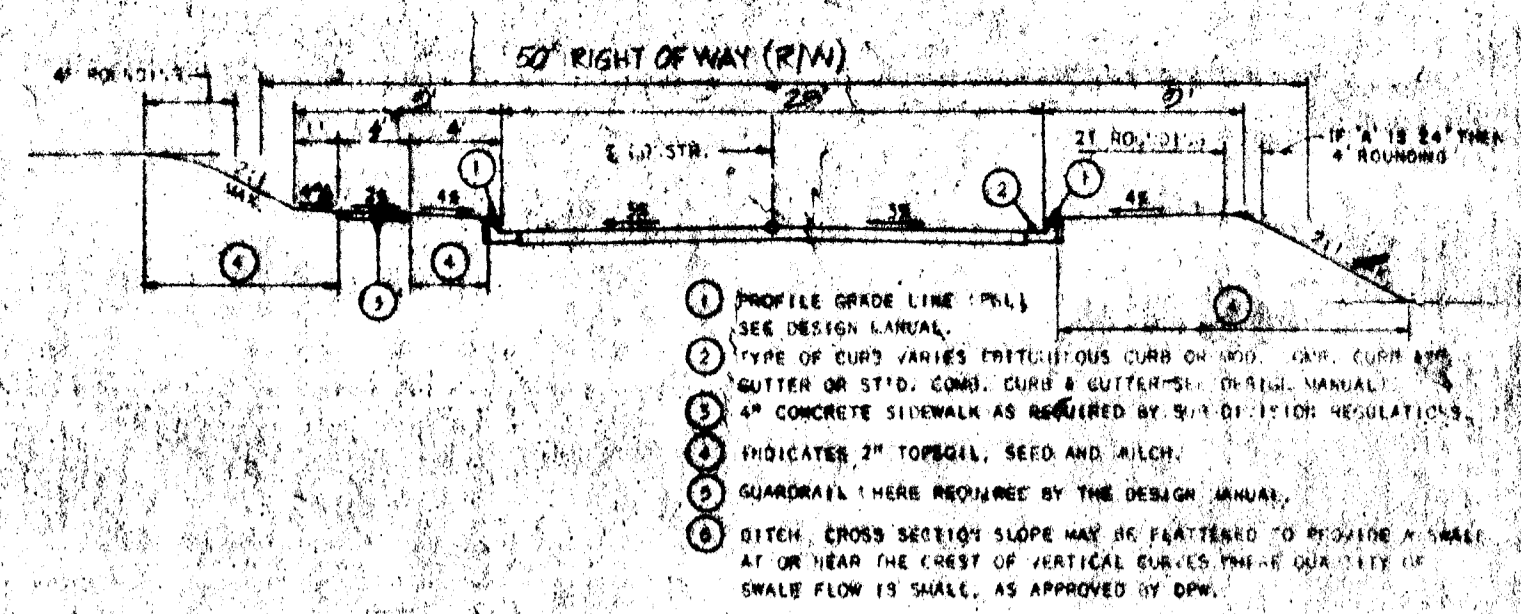
AS-BUILT



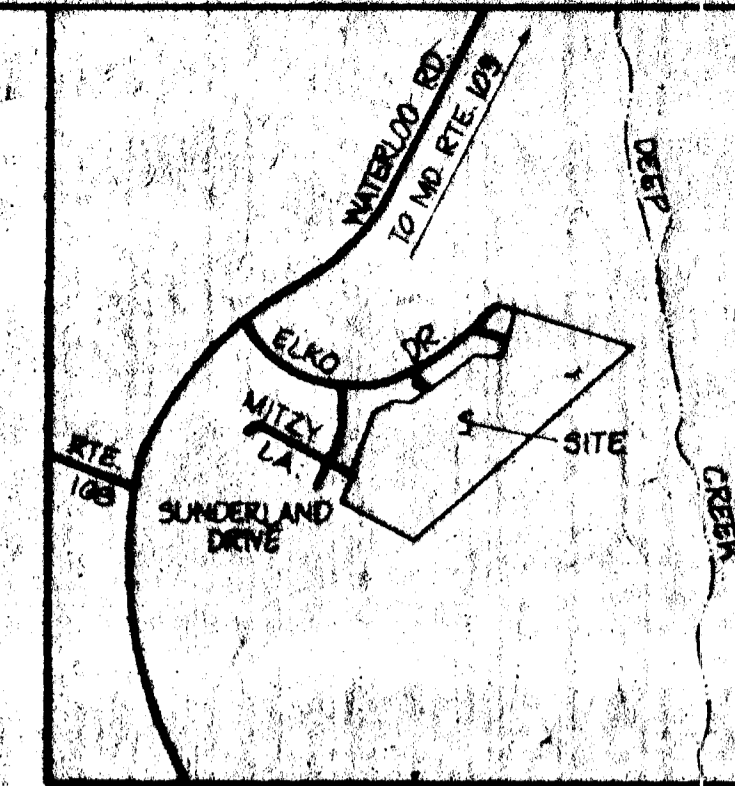
OFFSITE DRAINAGE AREA MAP
SCALE: 1" = 200'



TYPICAL SECTION-EASTGLEN RD.

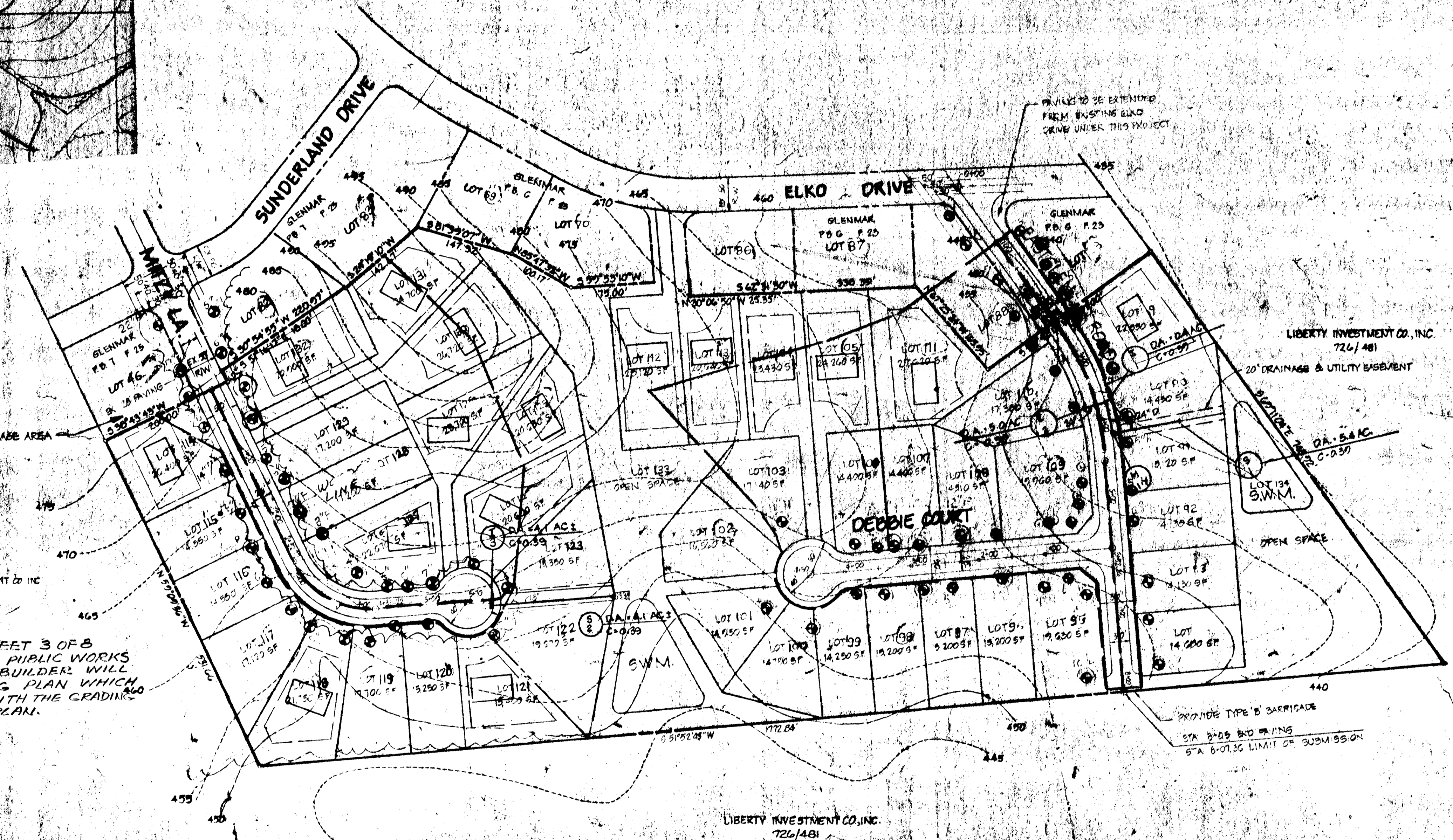


TYPICAL SECTION-MITZY LA. & DEBBIE CT.



GENERAL NOTES

- TAX MAP: 31; PARCEL: 185
- PROPERTY DEED REFERENCE: 246/412
- EX ZONING: R-20
- PUBLIC WATER AND PUBLIC SEWERAGE TO BE UTILIZED.
- MIDDLEGLEN ROAD, MITZY LANE AND EASTGLEN ROAD ARE EXISTING PUBLIC ROADS.
- TOTAL AREA OF SITE: 24.847 AC.
- TOTAL NO. OF LOTS: 44
- TOTAL AREA OF R/W DEDICATION: 175 AC.
- TOTAL AREA OF OPEN SPACE: 4.2 AC.
- TOPO SHOWN HEREON IS BASED ON HOWARD COUNTY 1" = 200' AERIAL TOPO MAPS.
- BOUNDARY SHOWN HEREON IS BASED ON DEED, LOTTING AND PLATS FOR EXISTING GLENMAR DEVELOPMENT.



NOTE: THE GRADING ON SHEET 3 OF 8 IS NOT COVERED IN PUBLIC WORKS AGREEMENT. THE BUILDER WILL SUBMIT A GRADING PLAN WHICH WILL CONFORM WITH THE GRADING SHOWN ON THIS PLAN.

- INDICATES APPROX. LOCATION OF EXISTING TREES
- INDICATES PROPOSED HOUSE LOCATION ON LOTS OVER 20,000 SQUARE FEET

APPROVED HOWARD COUNTY OFFICE OF PLANNING AND ZONING	
<i>John M. ...</i>	10-16-84
CHIEF, DIV. OF LAND DEVELOPMENT AND ZONING ADMINISTRATION	DATE
APPROVED FOR PUBLIC WATER, PUBLIC SEWERAGE AND STORM DRAINAGE SYSTEMS AND PUBLIC ROADS, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS	
<i>Walter ...</i>	
CHIEF, BUREAU OF ENGINEERING	DATE
REVIEWED FOR HOWARD COUNTY AGREEMENTS TECHNICAL REQUIREMENTS	
<i>...</i>	10-11-84
DATE	
THIS DEVELOPMENT IS APPROVED SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT	
<i>Robert ...</i>	10-10-84
SOIL CONSERVATION DISTRICT	DATE

OWNER
MARY SMITH
5741 MINERAL AVENUE
BALTIMORE, MARYLAND 21227

DEVELOPER
GLENMAR JOINT VENTURE
WILLIAM R. HOPKINS
23 LOGGERS AVE
ELLCOTT CITY, MARYLAND 21043

TITLE: STREET TREES & HOUSE LOCATION	
PROJECT: GLENMAR - SECTION 2	
LOCATION: 1ST ELECTION DISTRICT TAX MAP 31, HOWARD COUNTY, MARYLAND	
DATE: JAN, 1984	SCALE: 1" = 100'
DESIGN BY: J.B.	DRAWN BY: D.M.P.
CHECKED BY: J.B.	DATE: 7/28/84
JOB NO. 81134	
boender associates engineers/surveyors/planners	
3525 COURTHOUSE SQUARE - SUITE A ELLCOTT CITY, MARYLAND 21043 301.485.1771	

F-84-200

SOIL CONSERVATION SERVICE
MARYLAND
CONSTRUCTION SPECIFICATIONS
FOR
PONDS

I. SITE PREPARATION

Areas under the borrow areas, embankment, and structural works shall be cleared, grubbed and the topsoil stripped to remove all trees, vegetation, roots or other objectionable material. Channel banks and sharp breaks 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 material unless otherwise designated on the plans. Trees, brush and stumps shall be cut approximately level with the ground surface.

All cleared and grubbed material shall be disposed of outside the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

II. EARTH FILL

Material

The fill material shall be taken from approved designated borrow area 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.

Placement

Areas on which fill is to be placed shall be scarified prior to placement of 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 borrow material shall be placed in the downstream portions of the embankment.

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 tread track of the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepfoot, 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.

Cutoff Trench

Where specified, a cutoff trench shall be excavated along or parallel to the centerline 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 or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill material for the cutoff trench shall be the most impervious material available and shall be compacted with equipment or rollers to assure maximum density and minimum permeability.

III. STRUCTURAL BACKFILL

Backfill material shall be of the type and quality conforming to that 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 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 the contractor drive equipment over any part of a concrete structure or pipe unless there is a compacted fill of twenty-four inches or greater over the structure or pipe.

IV. PIPE CONDUITS

A. Corrugated Metal Pipe

1. Materials - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of AASHTO Specification M-190 Type A with watertight coupling bands. Any bituminous 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 watertight coupling bands. Coupling bands, anti-seep collars, end 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. 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 less than 9 and greater than 4.

Helically corrugated pipe in addition to the requirements above shall have either continuously welded seams or have lock seams which are caulked, during fabrication, with a neoprene bead.

2. 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. Watertight coupling bands shall be used at all joints. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight.

3. 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.

4. Laying pipe - The pipe shall be placed with inside circumferential laps pointing downstream and with the longitudinal laps at the sides.

5. Backfilling shall conform to structural backfill as shown above.

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

B. Reinforced Concrete Pipe

1. Materials - Reinforced concrete pipe shall have a rubber gasket joint and shall equal or exceed ASTM Specification C-361. Approved equivalents are AWA Specification C-300, 301, and 302.
2. 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 up the sides of the pipe at least 1/8 of its diameter with a minimum thickness of 3", or as shown on the drawings.
3. 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.
4. Backfilling shall conform to structural backfill as shown above.
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

V. CONCRETE

1. Materials

- a. Cement - Normal Portland cement shall conform to the latest ASTM Specification C-150.
- b. Water - The water used in concrete shall be clean, free from oil, acid, alkali, scales, organic matter or other objectionable substances.
- c. Sand - The sand used in concrete shall be clean, hard, strong and durable, and shall be well graded with 100 percent passing a one-quarter inch sieve. Limestone sand shall not be used.
- d. Coarse Aggregate - The coarse aggregate shall be clean, hard, strong and durable, and free from clay or dirt. It shall be well graded with a maximum size of one and one-half (1-1/2) inches.
- e. Reinforcing Steel - The reinforcing steel shall be deformed bars of intermediate grade billet steel or rail steel conforming to ASTM Specification A-615.

2. Design Mix - The concrete shall be mixed in the following proportions, measured by weight. The water-cement ratio shall be 5-1/2 to 6 U. S. gallons of water per 94 pound bag of cement. The proportion of materials for the trial mix shall be 1:2:3-1/2. The combination of aggregates may be adjusted to produce a plastic and workable mix that will not produce harshness in placing or honeycombing in the structure.

3. Mixing - The concrete ingredients shall be mixed in batch mixers until the mixture is homogeneous and of uniform consistency. The mixing of each batch shall continue for not less than one and one-half minutes after all the ingredients, except the full amount of water, are in the mixer. The minimum mixing time is predicted on proper control of the speed of rotation of the mixer and of the introduction of the materials, including water, into the mixer. Water shall be added prior to, during, and following the mixer-charging operations. Excessive overmixing requiring the addition of water to preserve the required concrete consistency shall not be permitted. Truck mixing will be allowed provided that the use of this method shall cause no violation of any applicable provisions of the specifications given here.

4. Forms - The forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary tamping, and vibration without deflection from the prescribed lines. They shall be mortar-tight and constructed so that they can be removed without hammering or prying against the concrete.

The inside of forms shall be oiled with a non-staining mineral oil or thoroughly wetted before concrete is placed. Forms may be removed 24 hours after the placement of concrete. All wire ties and other devices used shall be recessed from the surface of the concrete.

5. Reinforcing Steel - All reinforcing material shall be free of dirt, rust, scale, oil, paint or any other coatings. The steel shall be accurately placed and securely tied and blocked into position so that no movement of the steel will occur during placement of concrete.

6. Consolidating - Concrete shall be consolidated with internal type mechanical vibrators. Vibration shall be supplemented by spading and hand tamping as necessary to insure smooth and dense concrete along form surfaces, in corners, and around embedded items.

7. Finishing - Defective concrete, honeycombed areas, voids left by the removal of tie rods, ridges on all concrete surfaces permanently exposed to view or exposed to water on the finished structure, shall be repaired immediately after the removal of forms. All voids shall be reamed and completely filled with dry-patching mortar.

8. Protection and Curing - Exposed surfaces of concrete shall be protected from the direct rays of the sun for at least the first three (3) days. All concrete shall be kept continuously moist for at least ten (10) days after being placed. Moisture may be applied by spraying or sprinkling as necessary to prevent the concrete from drying. Concrete shall not be exposed to freezing during the curing period. Curing compounds may also be used.

9. Placing Temperature - Concrete may not be placed at temperatures below 37° F with the temperature falling, or 34° with the temperature rising.

VI. STABILIZATION

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, fertilizing and mulching (if required) in accordance with the vegetative treatment specifications shown on or accompanying the drawings.

APPROVED: HOWARD COUNTY OFFICE OF PLANNING AND ZONING

Shirley M. ... 10-16-84
CHIEF, DIV. OF LAND DEVELOPMENT AND ZONING ADMINISTRATION DATE

APPROVED FOR PUBLIC WATER, PUBLIC SEWERAGE AND STORM DRAINAGE SYSTEMS AND PUBLIC ROADS, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

W. ... 10-29-84
CHIEF, BUREAU OF ENGINEERING DATE

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 THIRTY DAYS OF COMPLETION.

W. ... 9/16/84
SIGNATURE OF DEVELOPER DATE

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 COUNTY 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 THIRTY DAYS OF COMPLETION.

R. ... 9/16/84
SIGNATURE OF ENGINEER DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

R. ... 10-10-84
HOWARD SOIL CONSERVATION DISTRICT DATE

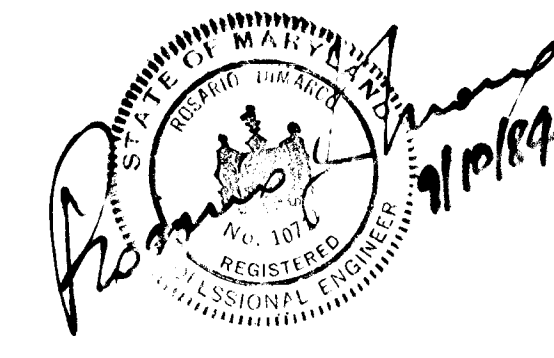
THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

J. ... 10-11-84
U.S. SOIL CONSERVATION SERVICE DATE

OWNER & DEVELOPER

MARY SMITH GLENMAR JOINT VENTURE
574 MINERAL AVE. 46 WILLIAM R. HOPKINS
BALTO, MD. 21221 9150 ROGERS AVE.
ELLICOTT CITY, MD. 21043

TITLE	S.W.M. POND CONSTRUCTION SPECS.						
PROJECT	GLENMAR - SECTION TWO						
LOCATION	1ST ELECTION DISTRICT	TAX MAP: 91	HOWARD COUNTY, MARYLAND				
DATE	SCALE	DESIGN BY	DRAWN BY	CHECKED BY	DRAWING NO.	JOB NO.	
SEPT. 1984	AS SHOWN		DMP		8 OF 8	81154	
boender associates engineers							
3565 - A COURT SQUARE							
ELLICOTT CITY, MARYLAND 21043							
301-465-7777							
planners							



AS-BUILT

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