



**100 YEAR FLOOD ELEVATIONS**

SECTION #	ELEV.
1	407.45
2	407.25
3	407.43
4	408.16
5	411.78
6	407.45
7	405.85
8	418.83
9	446.00

FOLLOWING INITIAL SOIL DISTURBANCE OR REPEAT URBAN, PERMANENT OR TEMPORARY DISTURBANCE, SHALL BE COMPLETED WITHIN (1) SEVEN (7) CALENDAR DAYS FOR ALL PERIMETER EROSION CONTROL STRUCTURES, DITCHES, SWALES, DITCHES, PERMITTED DITCHES AND ALL SLOPES GREATER THAN 2:1 (2) REPEATEDLY FOR ALL OTHERS. DISTURBANCE TO GRASSY AREAS ON PROJECT SITES.

NOTE: THE CONTRACTOR OR DEVELOPER SHALL CONTACT THE CONSTRUCTION INSPECTION (SURVEY DIVISION) 24 HOURS IN ADVANCE OF COMMENCEMENT OF WORK AT 702-1272.

DESIGNER'S CERTIFICATE:  
 I HEREBY CERTIFY THAT ALL REQUIREMENTS AND CONDITIONS OF THIS PLAN FOR SOIL EROSION AND SEDIMENT CONTROL MEASURES ARE 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 COUNTY CONSERVATION DISTRICT.

*Richard J. Bennett* 1-4-90  
 CIVIL ENGINEER



REVIEWED BY HOWARD COUNTY AND MUST MEET TECHNICAL REQUIREMENTS

*John M. Nelson* 1/5/90  
 CIVIL ENGINEER

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

*John R. Rabiner* 1/5/90  
 CIVIL ENGINEER

APPROVED HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

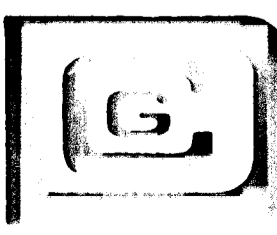
*Franklin J. Jagan* 1/24/90  
*Franklin W. Weiland* 1/12/90  
 CIVIL ENGINEER

APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*David J. Cayle* 2/5/90  
 CIVIL ENGINEER

**DRAINAGE AREA MAP**  
 SCALE: 1"=200'

Owner/Developer:	NO.	REVISIONS	DATE
HIGHLAND DEVELOPMENT CORP. P.O. BOX 208 CLARKSVILLE, MD. 21029 301-531-5539			



**DEVELOPMENT CONSULTANTS GROUP, INC.**  
 17904 GEORGIA AVENUE # 102  
 OLNEY, MARYLAND 20832  
 301-924-4570

DRAINAGE AREA MAP  
**HIGHLAND OAKS**  
 5<sup>TH</sup> ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 TAX MAP 40 PARCEL 36

DATE: 6-1-1989	SHEET: 3
DRAWN: E.M.	OF 3
CHECKED: J.D.L.	PROJECT NO.: 136-07
SCALE: 1"=200'	

1538

PLAN  
 SURVIVED  
 NOTED  
 NOTE BOOK  
 CHECKED  
 ALIGNMENT CHECKED  
 AT OF PLAN CHECKED  
 No.

PROFILE  
 SURVIVED  
 NOTED  
 NOTE BOOK  
 CHECKED  
 GRADES CHECKED  
 SPEC. OR NOTATIONS CHECKED  
 No.

DATE: \_\_\_\_\_ REVISION: \_\_\_\_\_

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Arnold J. Jenson* 3/1/90  
 Chief, Bureau of Highways

*Frank W. Wehland* 2/28/90  
 Chief, Bureau of Highways

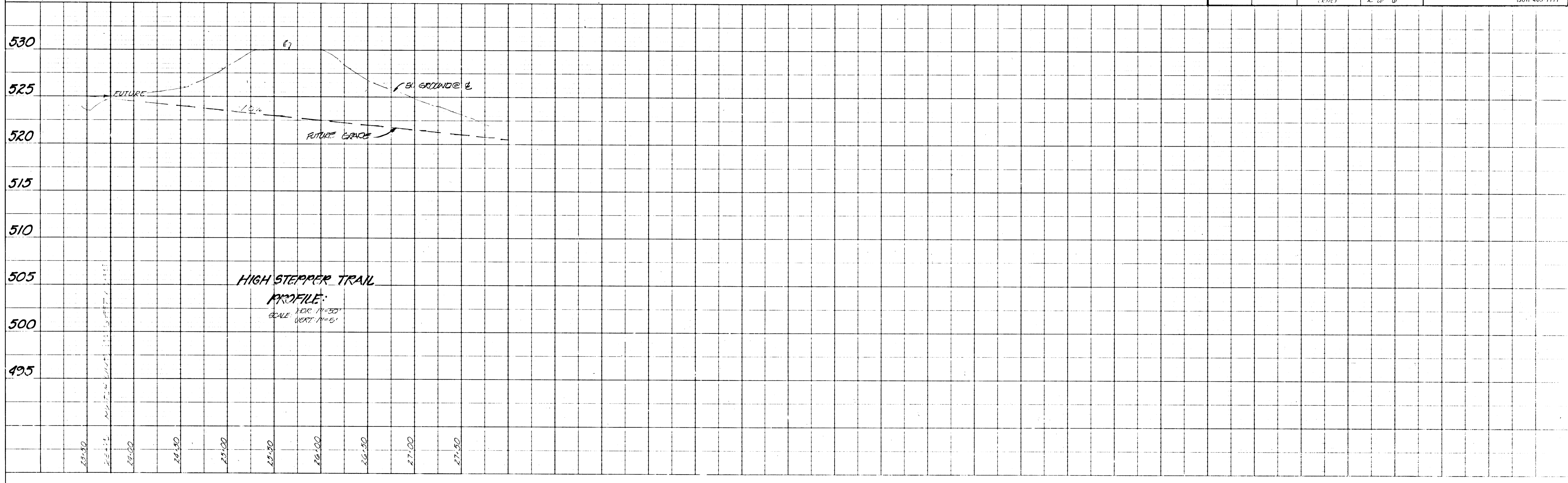
*James E. Ray* 3-2-90  
 Chief, Bureau of Engineering

APPROVED: COUNTY OF PLANNING AND ZONING  
*Mark J. Langley* 3/2/90  
 Chief, Division of County Planning  
 And Land Development

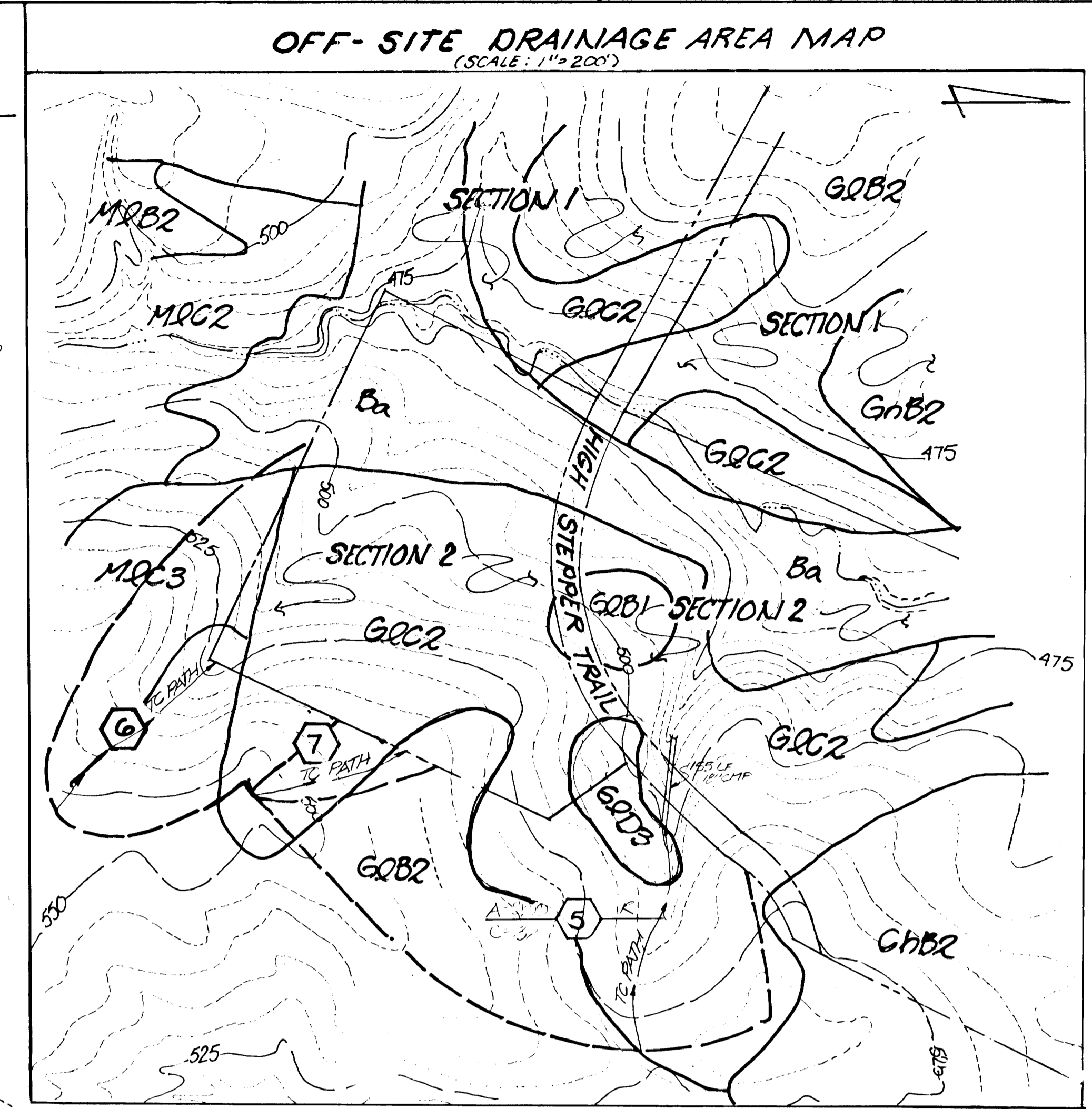
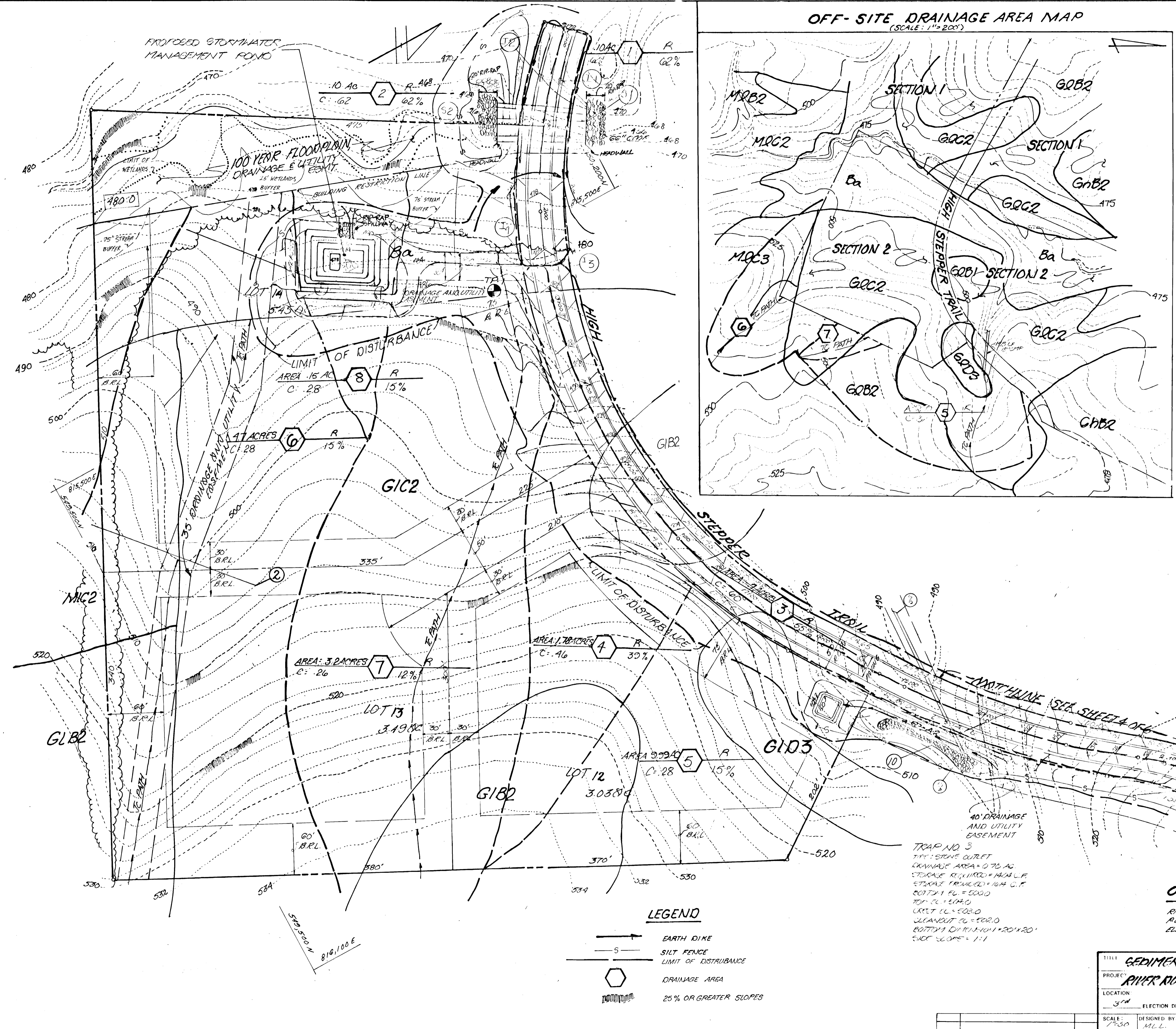
*W. H. L.*

TITLE: FINAL ROAD CONSTRUCTION PLAN  
 PROJECT: RIVER DOWNS (SUC. 2 LOTS 7, 14)  
 LOCATION: 3-80 ELECTION DISTRICT: HOWARD CO., MD.  
 SCALE: H.S. NOTED DESIGNED BY: D. WELSH DRAWN BY: D. WELSH CHECKED BY: M.L.L. DATE: SEPT, 1990  
 FIELD BOOK: PAGE NO.: JOB NO.: 8913 DRAWING NO.: 2 OF 6

boender associates inc.  
 consulting engineers  
 land surveyors  
 land planners  
 3030 BETHANY LAKE  
 ELK GORT CITY, MD 21042  
 (301) 465-7777



1537



DEVELOPER'S CERTIFICATE  
 I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE PROVISIONS OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS APPROVED PERMITS AND PERMITS. I HAVE REVIEWED THE PLANS AND SPECIFICATIONS AND HAVE DETERMINED THAT THE PROPOSED CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS APPROVED PERMITS AND PERMITS. I HAVE REVIEWED THE PLANS AND SPECIFICATIONS AND HAVE DETERMINED THAT THE PROPOSED CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS APPROVED PERMITS AND PERMITS.  
 Howard Parish, Inc. 12/21/87  
 (INCORPORATED IN GEORGIA)  
 ENGINEER  
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 3/1/90  
 Date  
 Chief, Bureau of Highways  
 2/28/90  
 Date  
 Chief, Bureau of Engineering

APPROVED: DEPT. OF PLANNING AND ZONING  
 2/2/90  
 Date  
 Chief, Division of Community Planning  
 And Land Development Com

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.  
 2/7/90  
 DATE  
 THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
 2/7/90  
 DATE

NO.	INV. IN	INV. OUT	700' ELEV.	TYPE	DEPTH
I-1	470.76	470.49	470.28	A-5	50' x 40'
I-2	471.37	471.28	471.28	A-6	50' x 40'
I-3	476.44	476.24	476.06	A-10 W/RT	50' x 40'
I-4	476.76	476.66	476.66	A-6 W/RT	50' x 40'
S-1	468.96	---	471.00	---	HEADWALL
S-2	465.10	---	471.00	---	HEADWALL
S-3	474.10	---	476.50	---	---
S-4	488.06	---	490.50	---	---
S-5	498.57	---	498.50	---	---

STRUCTURE	LOCATION
I-1	12' LEFT & STA. 10+53
I-2	12' RIGHT & STA. 10+53
I-3	12' LEFT & STA. 12+00
I-4	12' RIGHT & STA. 12+00
S-1	50' LEFT & STA. 10+64
S-2	40' RIGHT & STA. 10+67
S-3	202' RIGHT & STA. 12+23
S-4	75' LEFT & STA. 18+35
S-5	40' RIGHT & STA. 19+65

**LEGEND**

- EARTH DIKE
- SILT FENCE
- LIMIT OF DISTURBANCE
- DRAINAGE AREA
- 25% OR GREATER SLOPES

TRAP NO. 3  
 7" x 1" STONE OUTLET  
 DRAINAGE AREA = 0.75 AC  
 STORAGE REQUIRED = 1444 L.F.  
 STORAGE REQUIRED = 164 C.F.  
 20" x 1" PL = 500.0  
 TOP CL = 104.0  
 URET CL = 103.0  
 CLEANOUT CL = 50.0  
 BOTTOM DRAIN = 1" x 20" x 20"  
 SLOPE = 1:1

**OWNER/DEVELOPER:**

RIVER ROADS JOINT VENTURE  
 P.O. BOX 1422  
 ELLICOTT CITY, MARYLAND 21043

**TITLE: SEDIMENT CONTROL PLAN**  
**PROJECT: RIVER ROADS SEC. 2 LOTS 7-14**  
**LOCATION: 3rd ELECTION DISTRICT HOWARD CO., MD.**  
 SCALE: 1/4" = 1'-0"  
 DESIGNED BY: M.L.L.  
 DRAWN BY: S.P.C.  
 CHECKED BY: M.L.L.  
 DATE: SEPT. 1989  
 FIELD BOOK: PAGE NO.: JOB NO.: 8818  
 DRAWING NO.: 3 OF 6  
 SHOWN BY: LORRA ENGINEERING INC. 9/26/91  
 AS-BUILT F-70-18  
 12-20-91

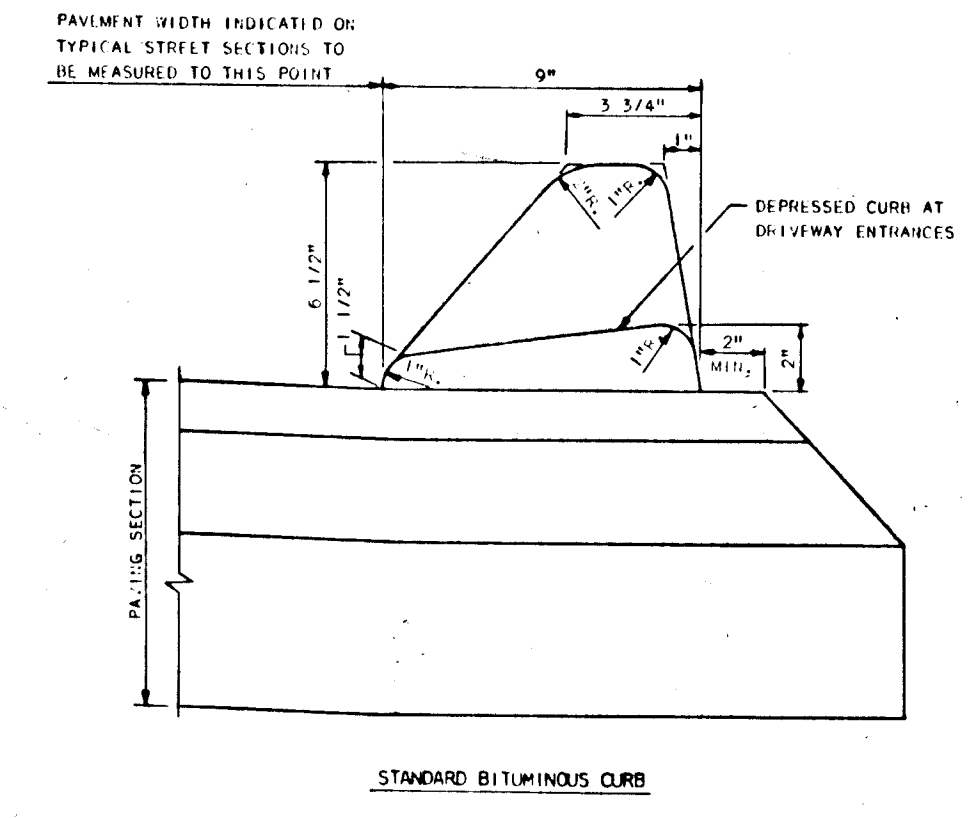
1537



ZONING DISTRICT	ACTIVITY	PERMITS	REQUIREMENTS
COMMERCIAL PROFESSIONAL	ACTIVITY 1000	100	100
COMMERCIAL GENERAL	ACTIVITY 2000	200	200
RESIDENTIAL SINGLE-FAMILY	ACTIVITY 3000	300	300
RESIDENTIAL MEDIUM-DENSITY	ACTIVITY 4000	400	400
RESIDENTIAL SINGLE-FAMILY	ACTIVITY 5000	500	500
RESIDENTIAL SINGLE-FAMILY	ACTIVITY 6000	600	600
RESIDENTIAL SINGLE-FAMILY	ACTIVITY 7000	700	700
RESIDENTIAL SINGLE-FAMILY	ACTIVITY 8000	800	800
RESIDENTIAL SINGLE-FAMILY	ACTIVITY 9000	900	900
RESIDENTIAL SINGLE-FAMILY	ACTIVITY 10000	1000	1000

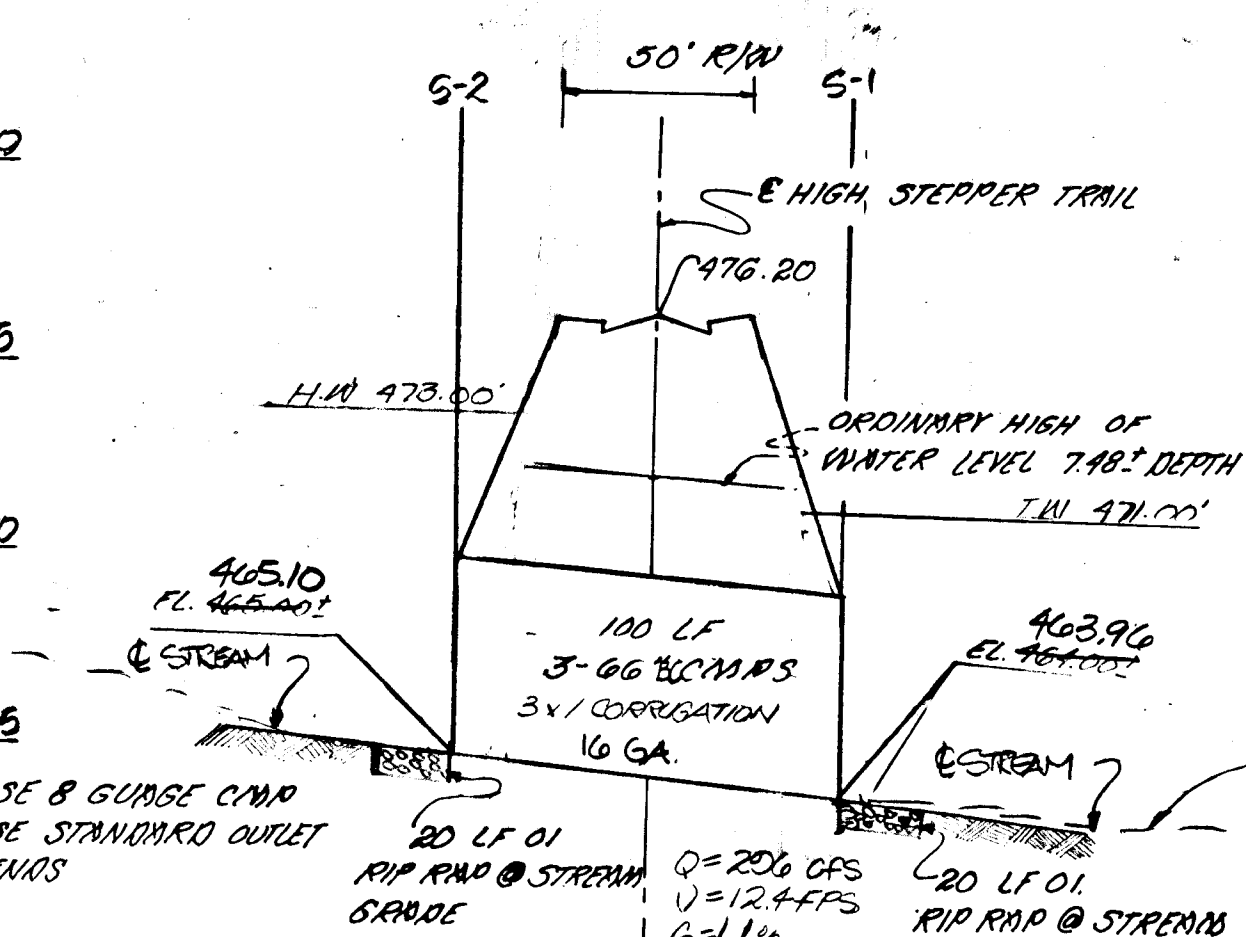
**TYPICAL SECTION**

HIGH STEPPER TRAIL: LOCAL ROAD  
DESIGN SPEED: 30 MPH  
EXISTING ZONING: R  
N.T.S.



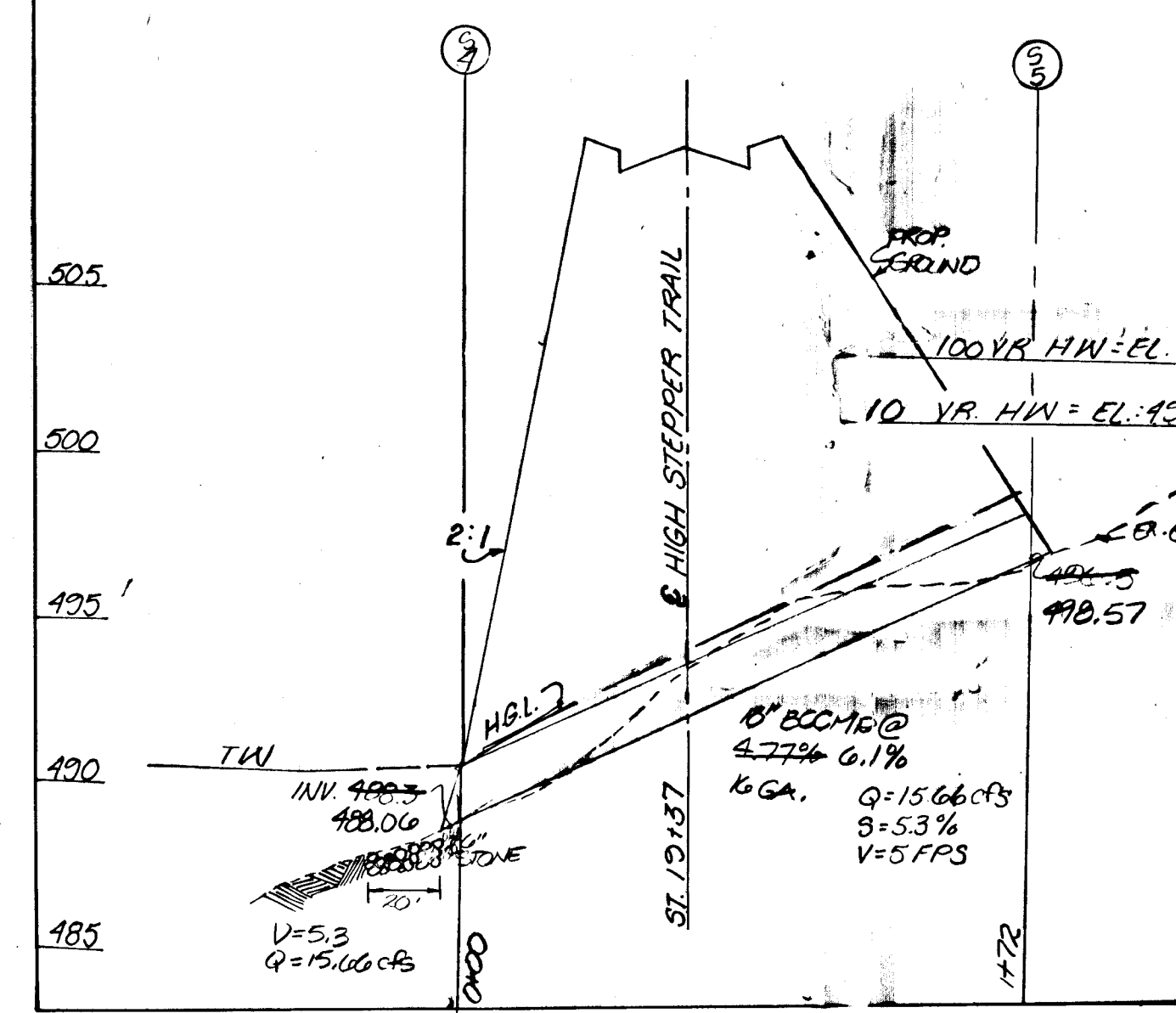
**PAVING SECTION**

HIGH STEPPER TRAIL: P-2 PAVING  
EXISTING ZONING: R



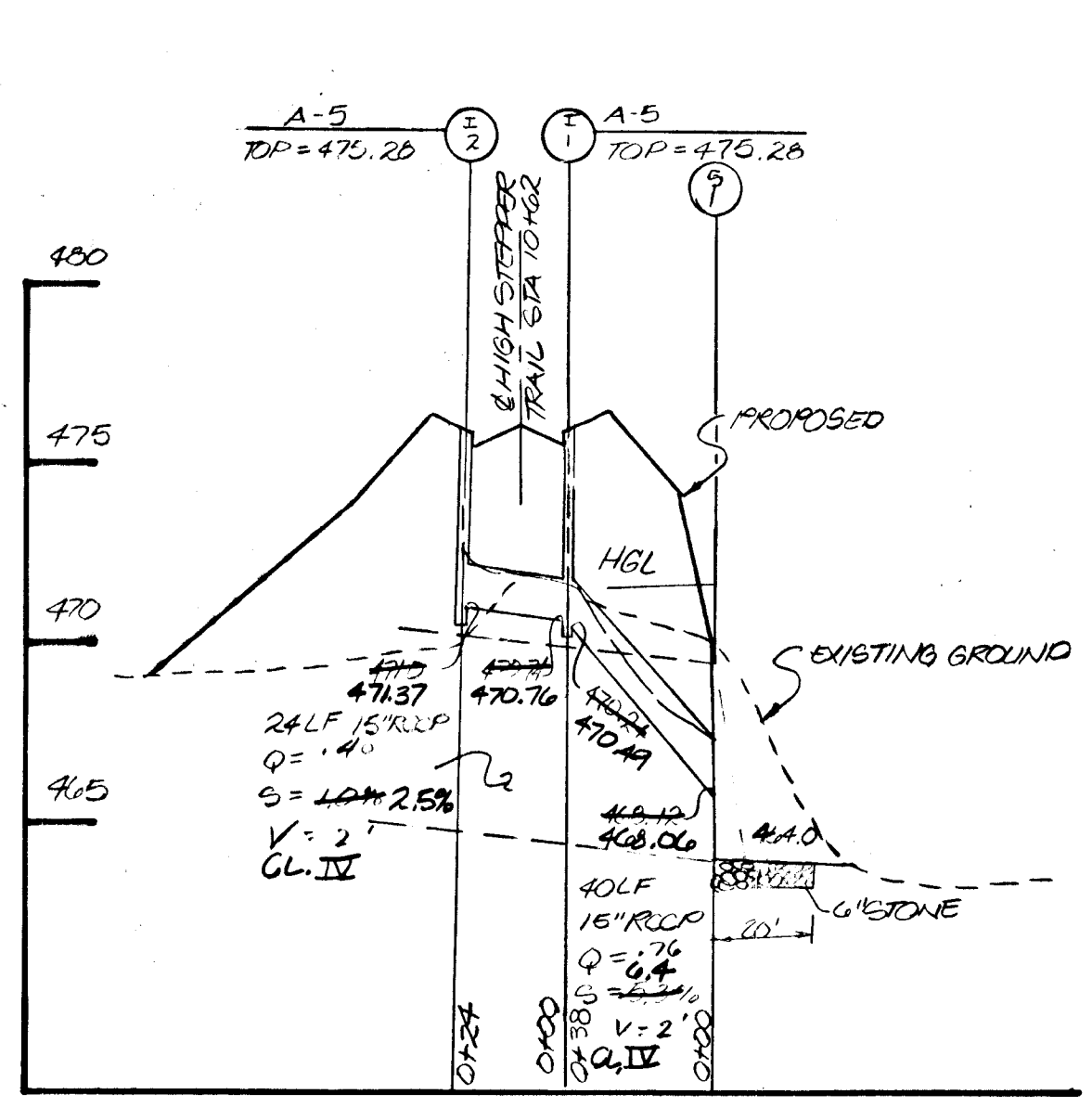
**E STREAM AT HIGH STEPPER TRAIL**

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



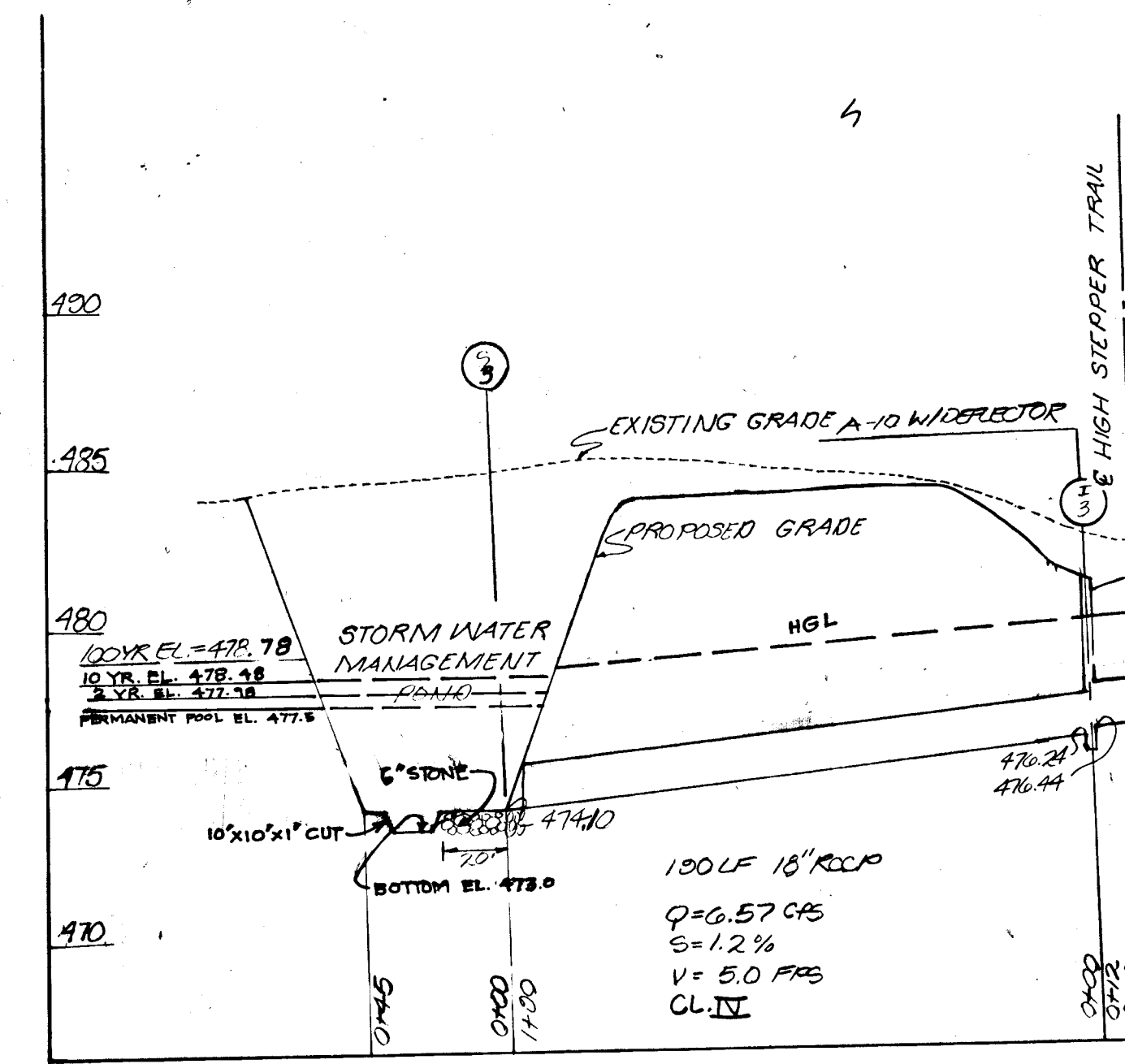
**PROFILE**

SCALE: 1"=5' VERT.  
1"=60' HORT.



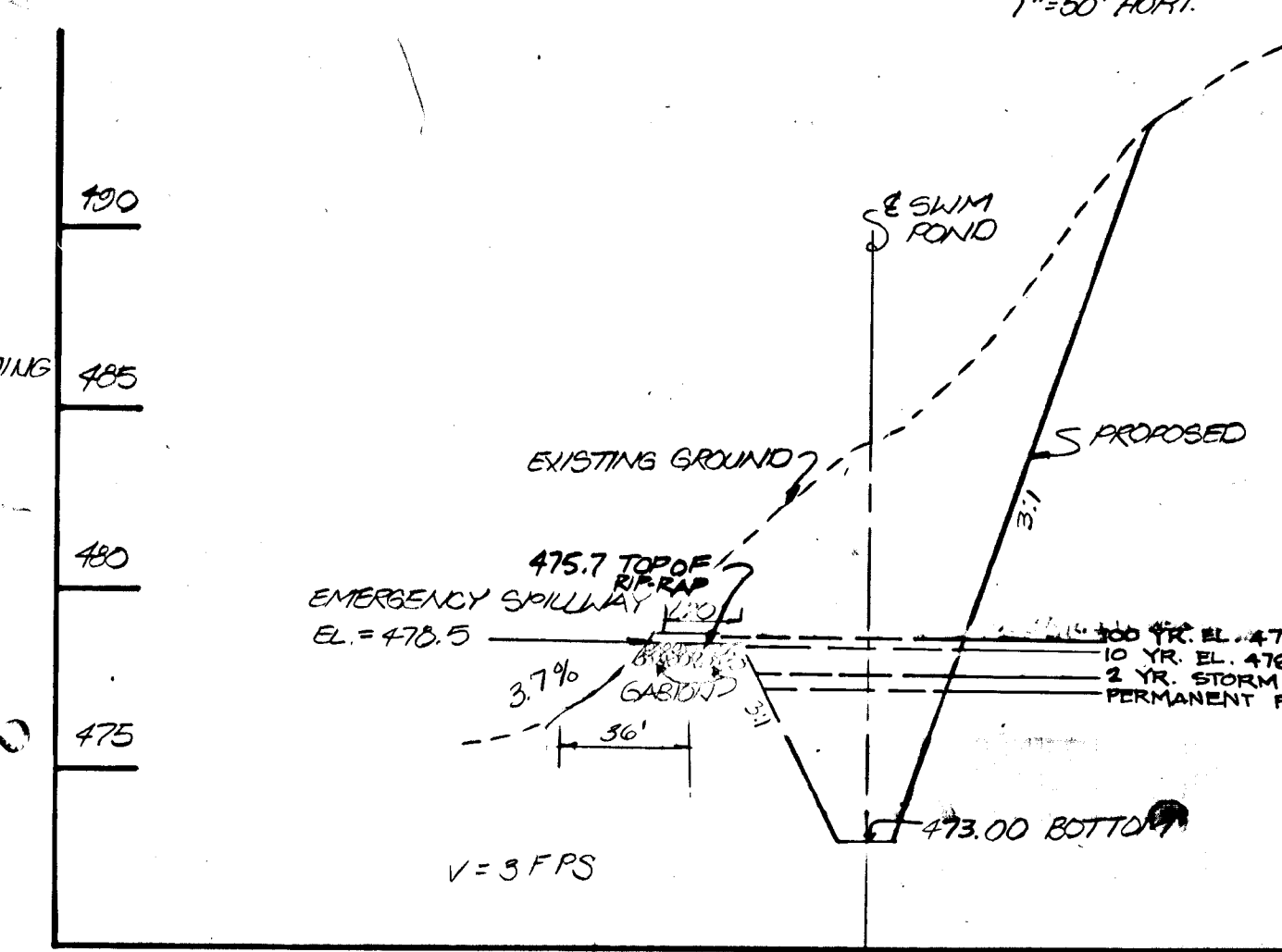
**PROFILE**

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



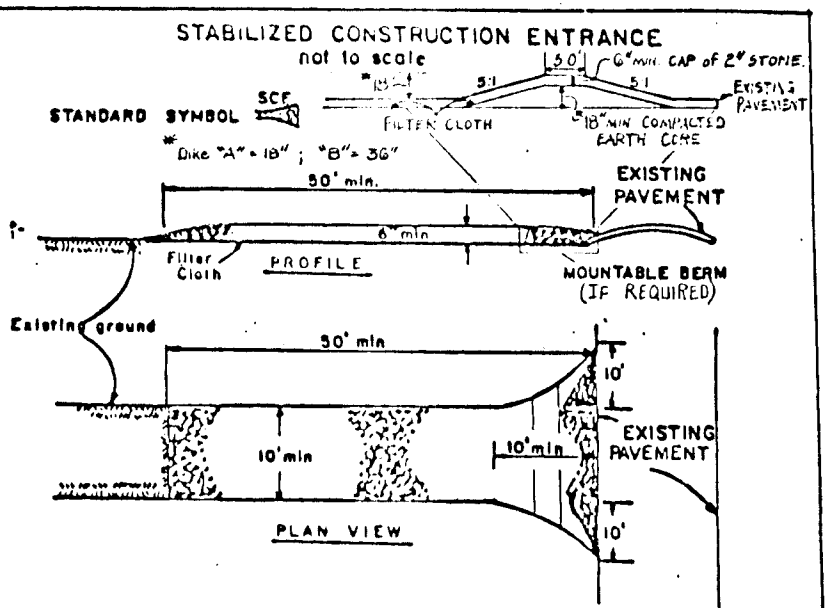
**PROFILE**

SCALE: 1"=5' VERT.  
1"=60' HORT.

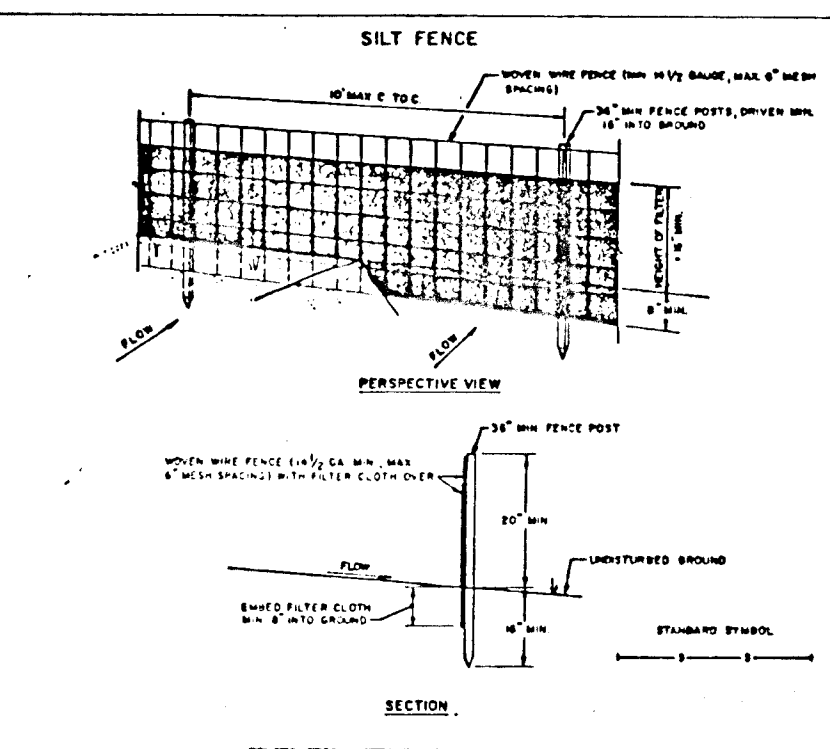


**PROFILE THRU EMERGENCY SPILLWAY**

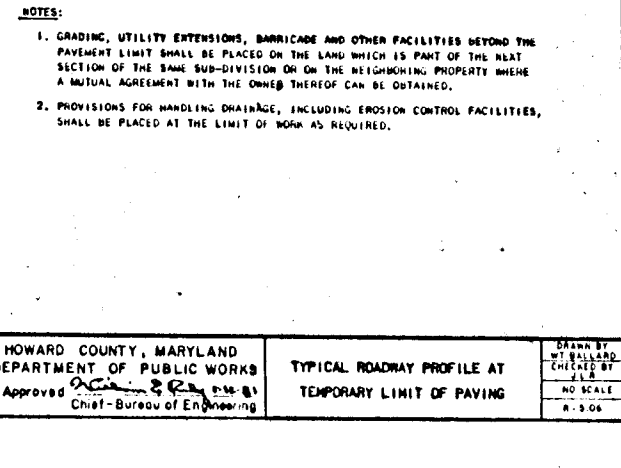
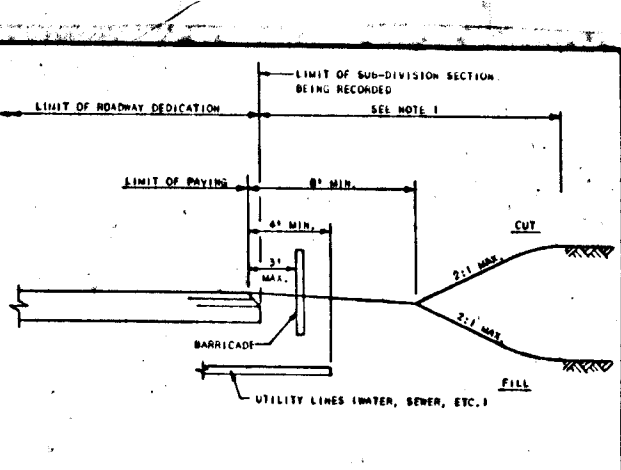
SCALE: HOR. 1"=50'  
VERT. 1"=5'



- STABILIZED CONSTRUCTION ENTRANCE**
- Some Size - Use 2" stone, or include of recycled concrete aggregate.
  - Length - As required, but not less than 50' for a single residence lot where a 30 ft minimum length would apply.
  - Thickness - Not less than 6" (6) inches.
  - Width - Ten (10) ft. minimum, but not less than the full width at points where ingress or egress occurs.
  - Filter Cloth - Will be placed over the entire area prior to placing of stone. Filter will not be required on a single family residence lot.
  - Surface Water - All surface water flowing or diverted toward construction entrances shall be held across the entrance. If piping is installed, a manhole with 3" slopes will be provided.
  - Permeability - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public right-of-way. This may require periodic top dressing with additional stone as conditions demand and until surface erosion of any nature used to trap sediment. All sediment which is tracked onto public right-of-way must be removed immediately.
  - Maintenance - Entrances shall be cleaned to remove sediment prior to entrance into public right-of-way. When mowing is required, it shall be done on an area stabilized with stone and mulch.
  - Permitting - Inspection and record maintenance shall be provided after each rain.



- CONSTRUCTION NOTES FOR FABRICATED SILT FENCE**
- WOOD FRAME FENCE TO BE FASTENED SECURELY TO FACE POSTS WITH NINE TIES OR STAPLES.
  - FILTER CLOTH TO BE FASTENED SECURELY TO WOOD FRAME FENCE WITH STAPLES EVERY 24" AT TOP AND MID SECTION.
  - WOOD FRAME FENCE TO BE FASTENED TO FACE POSTS WITH NINE TIES OR STAPLES EVERY 24" AT TOP AND MID SECTION.
  - PAINTED SURFACE SHALL BE REPAIRED AS SOON AS POSSIBLE TO PREVENT WEATHERING.



- SEDIMENT CONTROL GENERAL 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. (592-2437).
  - 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	37.300 Acres
Area to be roofed or paved	0.00 Acres
Area to be vegetatively stabilized	2.60 Acres
Total Cut	200.00 Cu. Yds.
Total Fill	200.00 Cu. Yds.
Offsite waste/borrow area location	
  - Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
  - 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 inspecting 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 inspecting agency is made.

- PERMANENT SEEDING NOTES**
- Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.
- Seeding Preparation:** Loosen up 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 sq. ft.) before seeding. Harrow or disc into upper three inches of soil. At time of seeding, apply 400 lbs per acre 30-0-0 ureaform fertilizer (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 15 thru February 28, protect site by: Option (1) 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring. Option (2) Use seed. 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 feet 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.
- Seeding Preparation:** Loosen up three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.
- Soil Amendments:** Apply 500 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.).
- Seeding:** For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2 1/2 bushel per acre of annual ryegrass (3.2 lbs/1000 sq. ft.). For the period May 1 thru August 14, seed with 3 lbs. per acre of weeping lovegrass (0.7 lbs/1000 sq. ft.). For the period November 1 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 seed.
- Mulching:** Apply 1 1/2 to 2 tons per acre 670 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 rate and methods not covered.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 [Signature] 3/1/90  
 Chief, Land Development Division  
 [Signature] 2/28/90  
 Chief, Bureau of Highways  
 [Signature] 3-2-90  
 Chief, 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] 2/7/90  
 SOIL CONSERVATION SERVICE

APPROVED: DEPT. OF PLANNING AND ZONING  
 [Signature] 2/20/90  
 Chief, Division of Community Planning and Land Development

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT  
 [Signature] 2-7-90  
 HOWARD SOIL CONSERVATION DISTRICT

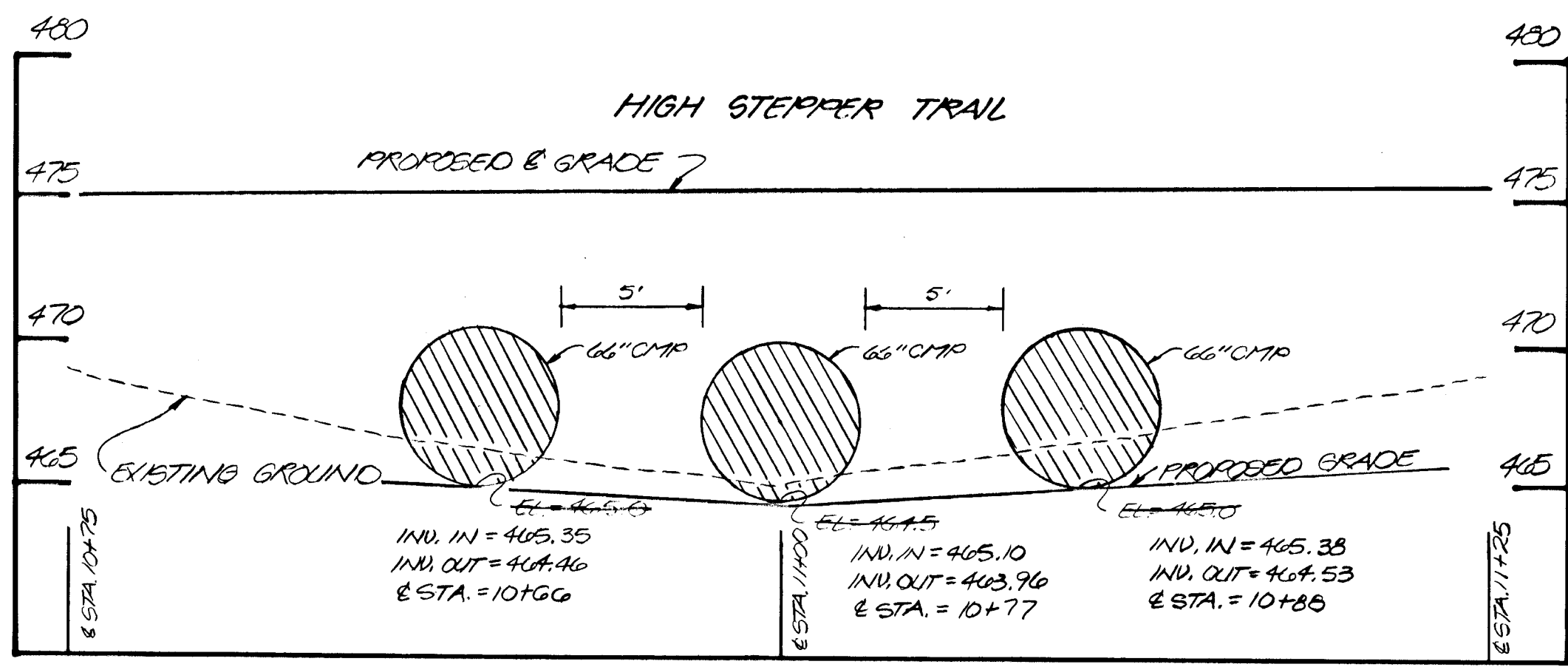
DEVELOPER'S CERTIFICATE  
 I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT MY RESPONSIBLE PERSONNEL EMPLOYED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE 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. I ALSO ASSURE THE TERRITORIAL DISTRICT INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 [Signature] 2/21/90  
 DEVELOPER

ENGINEER'S CERTIFICATE  
 I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND USABLE 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 ADVISED 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] 2-7-90  
 ENGINEER

**OWNER/DEVELOPER**  
 RIVER DOWNS JOINT VENTURE  
 P.O. BOX 1422  
 ELLICOTT CITY, MARYLAND 21048

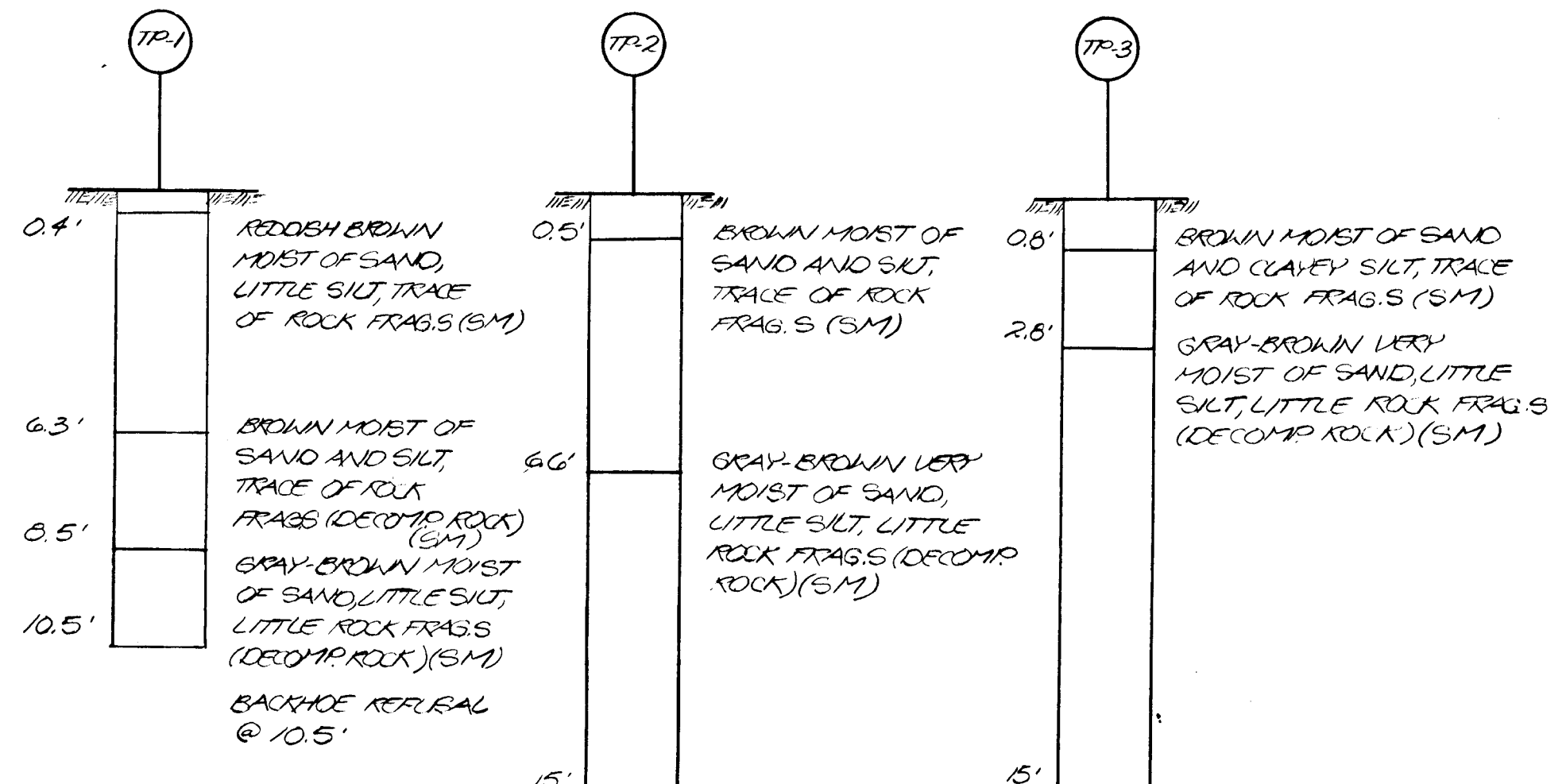
TITLE		PROJECT	
DETAIL SHEET		RIVER DOWNS, SECTION 2	
LOCATION	ELECTION DISTRICT	HOWARD CO MD	
SCALE	DESIGNED BY	DRAWN BY	CHECKED BY
AS SHOWN	M.C.L.	J.C.D.	M.L.L.
FIELD BOOK	PAGE NO.	JOB NO.	DRAWING NO.
		89/3	5 OF 6
boender associates, inc.		consulting engineers land surveyors land planners	
3320 BETHANY LANE ELLICOTT CITY, MD 21048		AS-BUILT 12-20-91	

1531



**PROFILE**

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



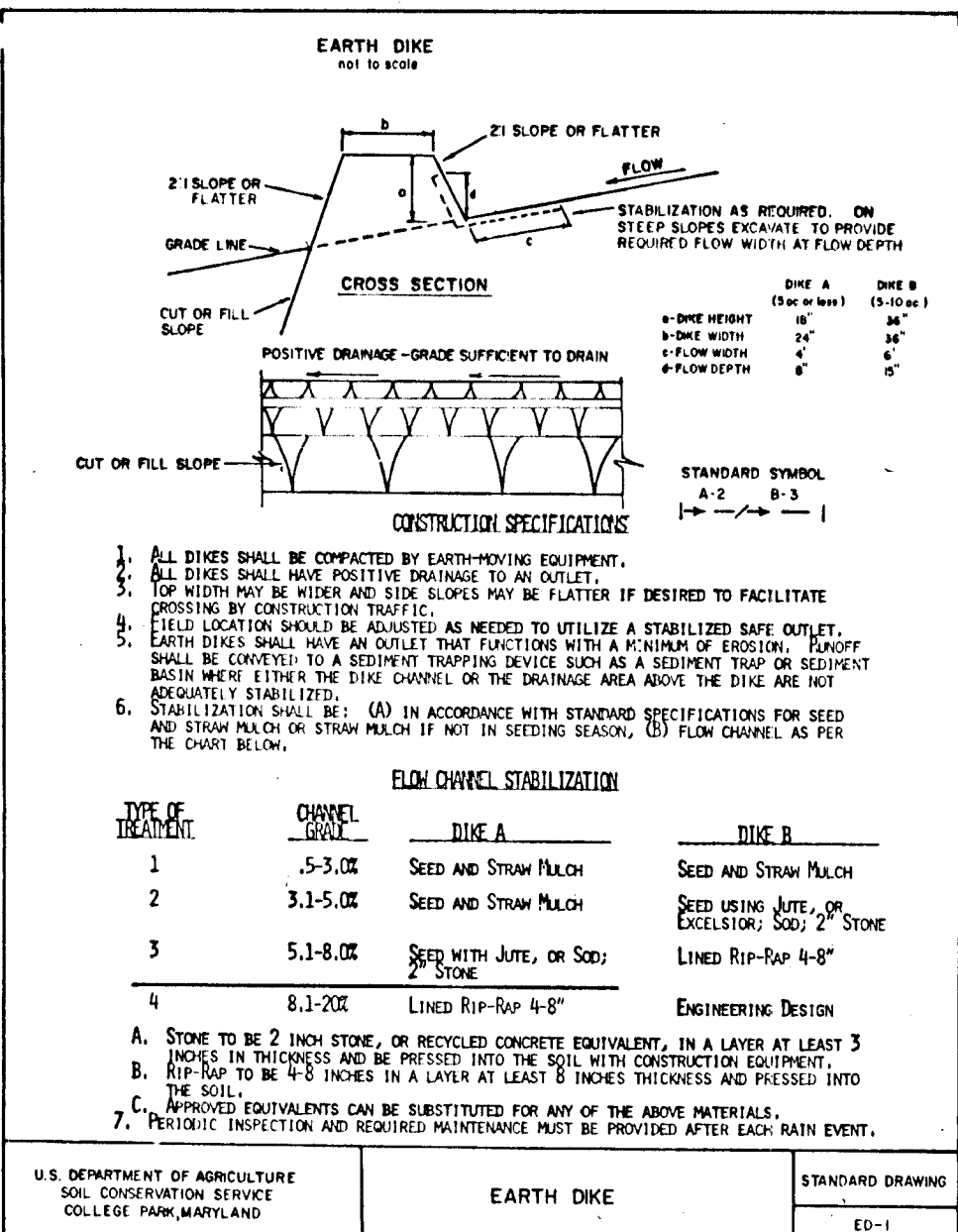
**SWIM BORING PROFILES**

NOT TO SCALE

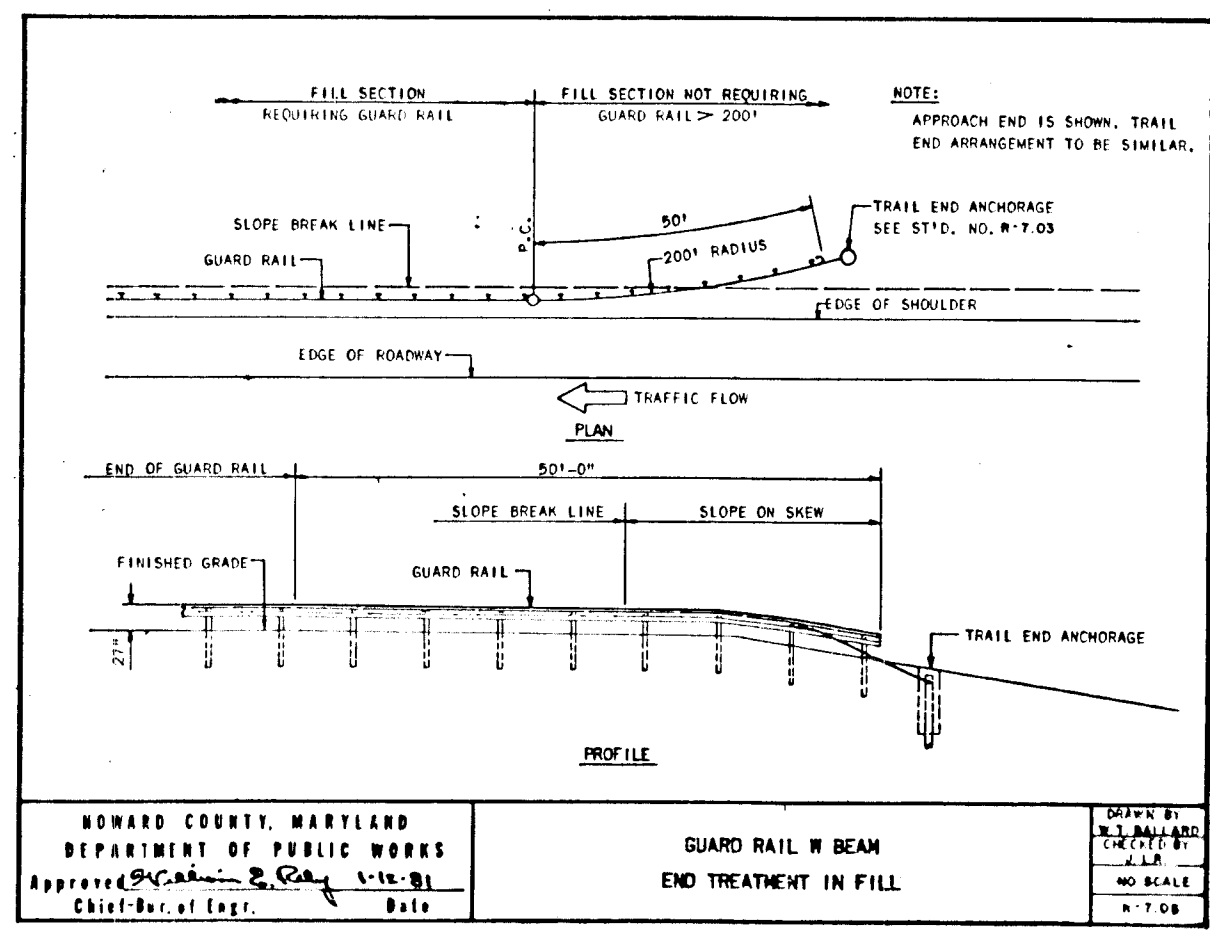
RESULT: 1 DAY AFTER COMPLETION; MOISTURE DRY AND CALLED @ 10.5'

(WATER SEEPAGE DURING @ 11.0')  
RESULT: 1 DAY AFTER COMPLETION; WATER @ 5.0'

(WATER SEEPAGE NOTED @ 10.5')  
RESULT: 1 DAY AFTER COMPLETION; WATER @ 6.5', CALLED @ 6.8'



EARTH DIKE  
STANDARD DRAWING  
ED-1



GUARD RAIL IN BEAM  
END TREATMENT IN FILL

**CONSTRUCTION SEQUENCE:**

1. OBTAIN GRADING PERMIT
2. INSTALL ALL SEDIMENT AND EROSION CONTROL SHOWN ON THIS PLAN
3. STABILIZE ALL DISTURBED AREAS IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION SERVICE
4. INSTALL THE STORMWATER MANAGEMENT FACILITY

**SOIL CONSERVATION SERVICE  
MARYLAND  
CONSTRUCTION SPECIFICATIONS  
POND**

These specifications are appropriate for ponds within the scope of the Standard for practice 378.

**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 destroyed 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 sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction can be obtained with the equipment used.

**Cutoff Trench**  
Where specified, a cutoff trench shall be excavated along or parallel to the crestline 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 shall any 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 the 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 be galvanized 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.
  2. **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, and sections, etc., must be composed of the same material as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness. Aluminum surfaces that are to be in contact with concrete shall be treated 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.
- Helicly 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.
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 AAMA 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 10% 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.
6. For pipes of other materials, specific specifications shall be 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 through 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 1/2:1 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 prescribed 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 mixing-charging operations. Excessive overloading 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 pressure, 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.
  5. **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.
  6. **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.
  7. **Placing Temperature** - Concrete may not be placed at temperatures below 37° F with the temperature falling, or 36° 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.

**OWNER/DEVELOPER:**

RIVER DOANNE JOINT VENTURE  
P.O. BOX 1422  
ELLIOTT CITY, MARYLAND 21043

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Donald E. Pappas* 3/1/90  
Chief, Land Development Division Date

*Christelle W. Williams* 2/28/90  
Chief, Bureau of Highways Date

*William S. Pappas* 3-2-90  
Chief, Bureau of Engineering Date

DEVELOPER'S CERTIFICATE

"I/WE 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. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

*Harold Paris, Jr. (Pres.)* 12-21-89  
Pack, Inc. (Gen'l. Partner) 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.

*Robert W. Ziehm* 2/7/90  
HOWARD SOIL CONSERVATION SERVICE DATE

APPROVED: CERT. OF PLANNING AND ZONING

*David J. Langley* 2/2/90  
Chief, Division of Community Planning And Land Development Date

ENGINEER'S CERTIFICATE

"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."

*William S. Pappas* 1-24-90  
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* 2-7-90  
HOWARD SOIL CONSERVATION DISTRICT DATE

BY	REVISION	DATE

**DETAIL SHEET**

PROJECT: RIVER DOANNE, SECT. 2

LOCATION: 5 RD ELECTION DISTRICT HOWARD CO. MD

SCALE: AS SHOWN

DESIGNED BY: M.L.L.

DRAWN BY: JCD

CHECKED BY: CMK

DATE: 2/27/90

FIELD BOOK: PAGE NO. JOB NO. 0810 DRAWING NO. 6 OF 6

**boender associates inc.**  
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land surveyors  
land planners

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