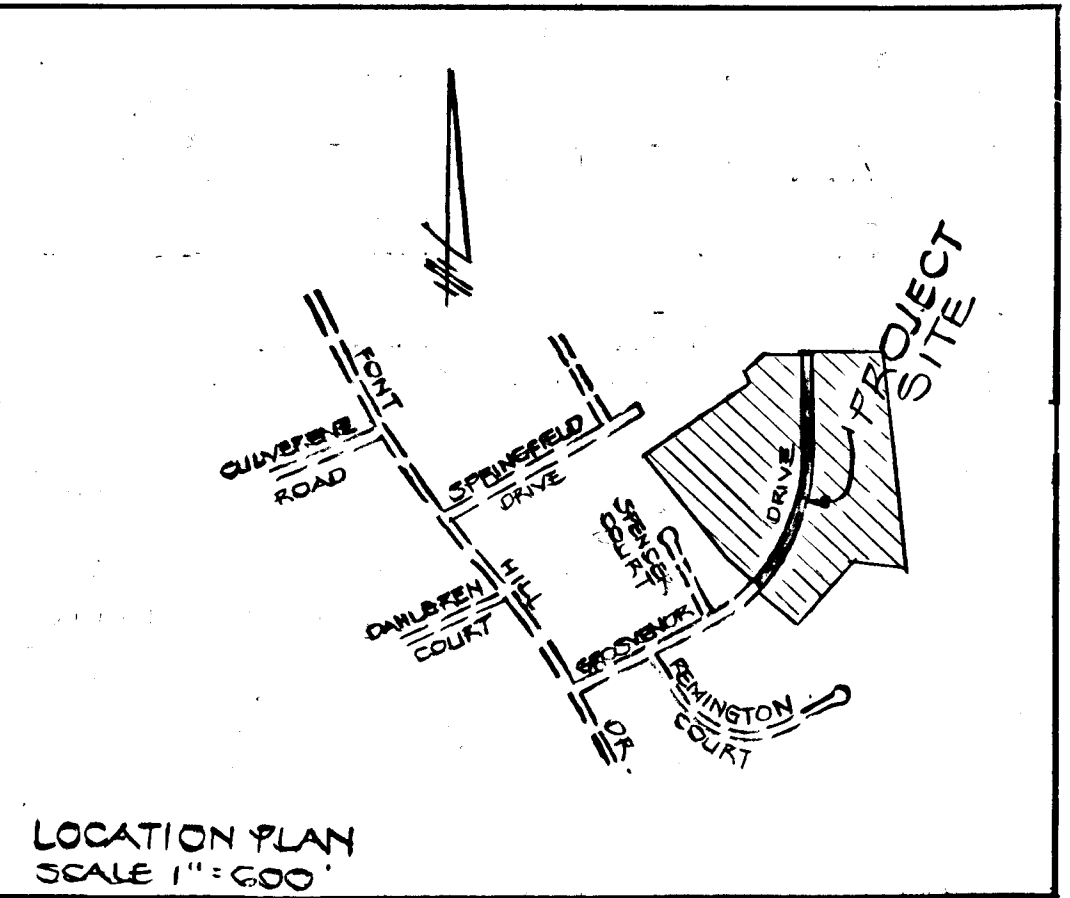
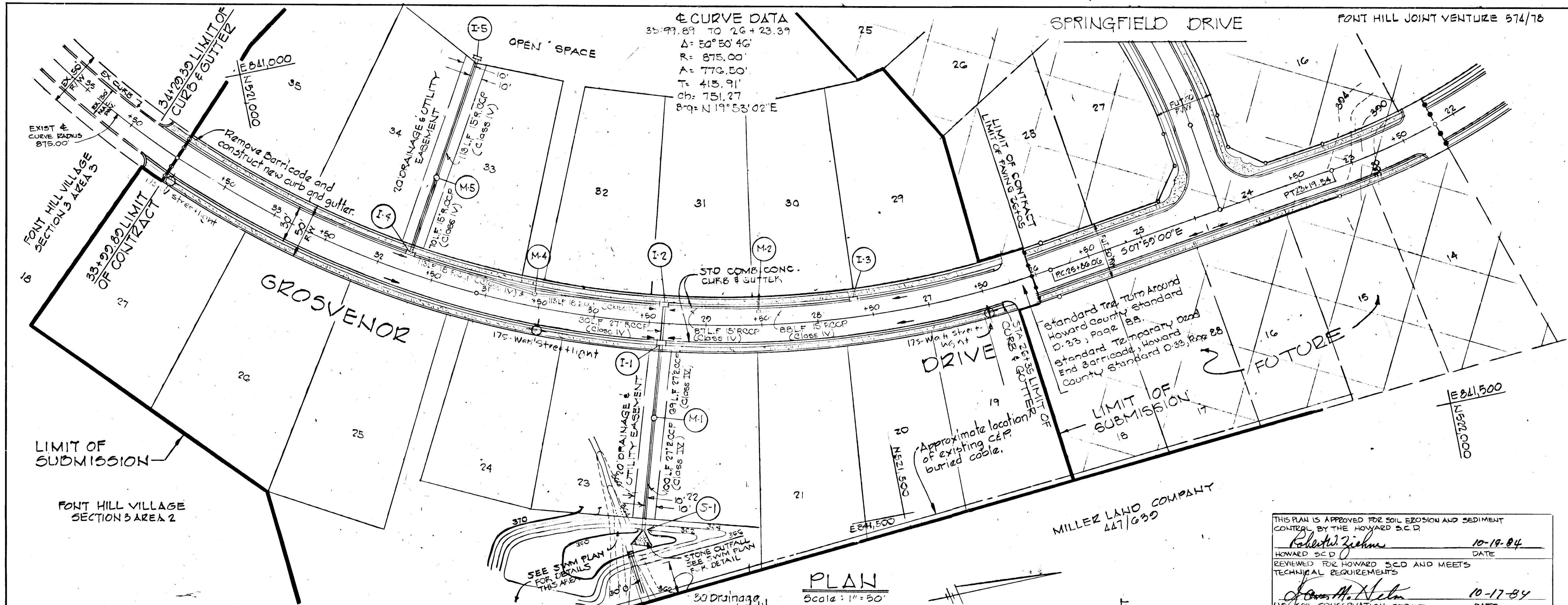


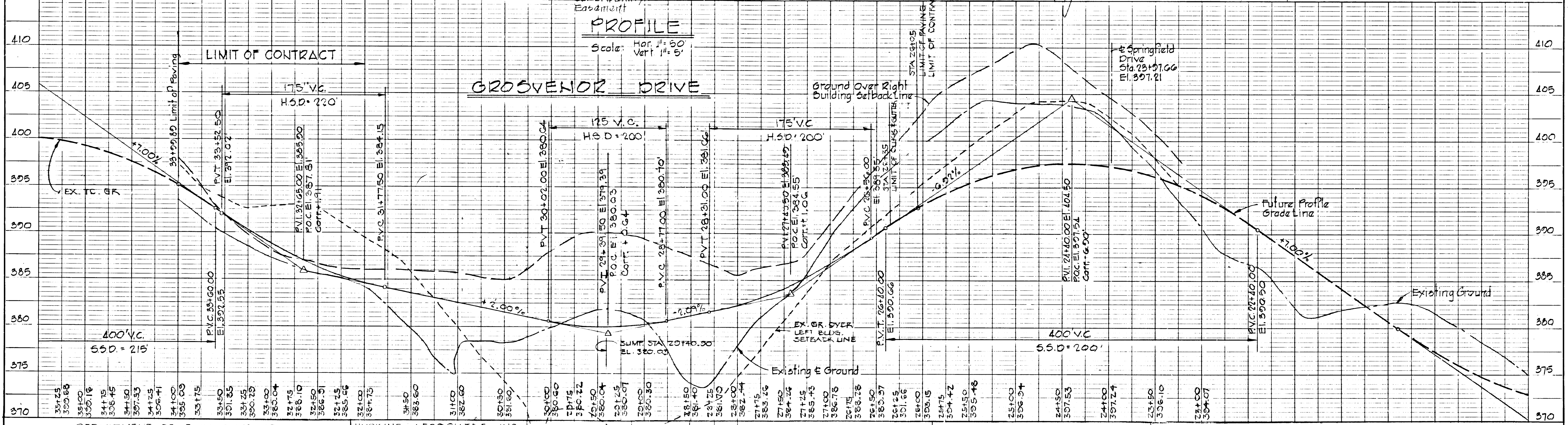
DATE: \_\_\_\_\_  
 BY: \_\_\_\_\_  
 SUPERVISOR: \_\_\_\_\_  
 NOTE BOOK: \_\_\_\_\_  
 NO. \_\_\_\_\_



- GENERAL NOTES**
1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH HOWARD COUNTY STANDARDS, SPECIFICATIONS & DETAILS FOR CONSTRUCTION.
  2. ALL UTILITY COMPANIES MUST BE NOTIFIED 24 HRS IN ADVANCE OF CONSTRUCTION.
  3. STORM DRAIN TRENCHES WITHIN ROAD RIGHTS-OF-WAYS SHALL BE BACKFILLED & COMPACTED IN ACCORDANCE WITH HOWARD COUNTY STANDARDS, SPECIFICATIONS & DETAILS FOR CONSTRUCTION.
  4. ANY DAMAGE TO PUBLIC RIGHTS-OF-WAYS OR PAVING WILL BE DONE AT THE DEVELOPER'S EXPENSE.
  5. APPROXIMATE LOCATIONS OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES & TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
  6. THE CONTRACTOR SHALL TEST PIT EXISTING UTILITIES WHERE DIRECTED BY THE ENGINEER AT LEAST 2 WEEKS IN ADVANCE OF ANY CONSTRUCTION.
  7. CONTRACTOR SHALL NOTIFY HOWARD CO. DEPT. OF INSPECTION & PERMITS AT LEAST 3 DAYS BEFORE STARTING WORK - 502-2436

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD S.C.D.  
*Robert Ziehm* 10-19-84 DATE  
 HOWARD S.C.D. REQUIRED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS  
*James M. Nelson* 10-17-84 DATE  
 U.S. SOIL CONSERVATION SERVICE

DATE: \_\_\_\_\_  
 BY: \_\_\_\_\_  
 SUPERVISOR: \_\_\_\_\_  
 NOTE BOOK: \_\_\_\_\_  
 NO. \_\_\_\_\_



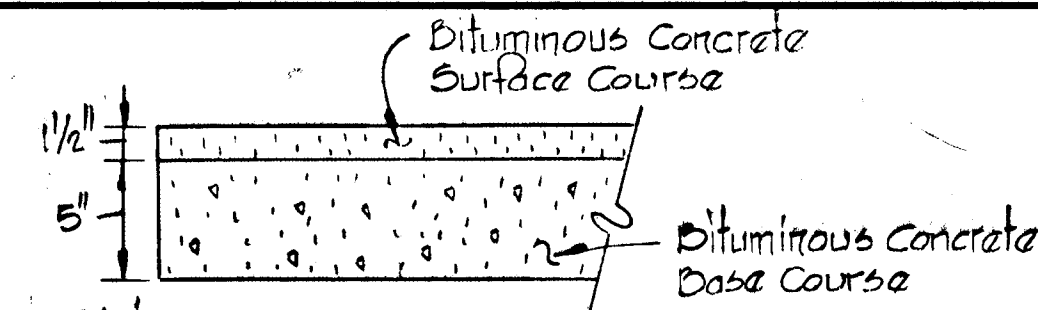
DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Chief, Bureau of Engineering  
 10-26-84 DATE  
 10-19-84 DATE

HUCKINS ASSOCIATES, INC.  
 101 SHELL BUILDING  
 200 EAST UPTON ROAD  
 TOWSON, MARYLAND 21204  
 828-0060  
 5-11-84

DES: DWB	DATE: 8-3-84
DRN: DWB	
CHK: AL	
NO.	
REVISIONS	
DATE	

ROAD & STORM DRAIN  
 PLAN AND PROFILE

GROSVENOR DRIVE  
 SECTION 4 AREA 1  
 FONT HILL VILLAGE  
 ELECT. DIST. 2  
 HOWARD CO., MD  
 SCALE AS SHOWN  
 SHEET 1 OF 2

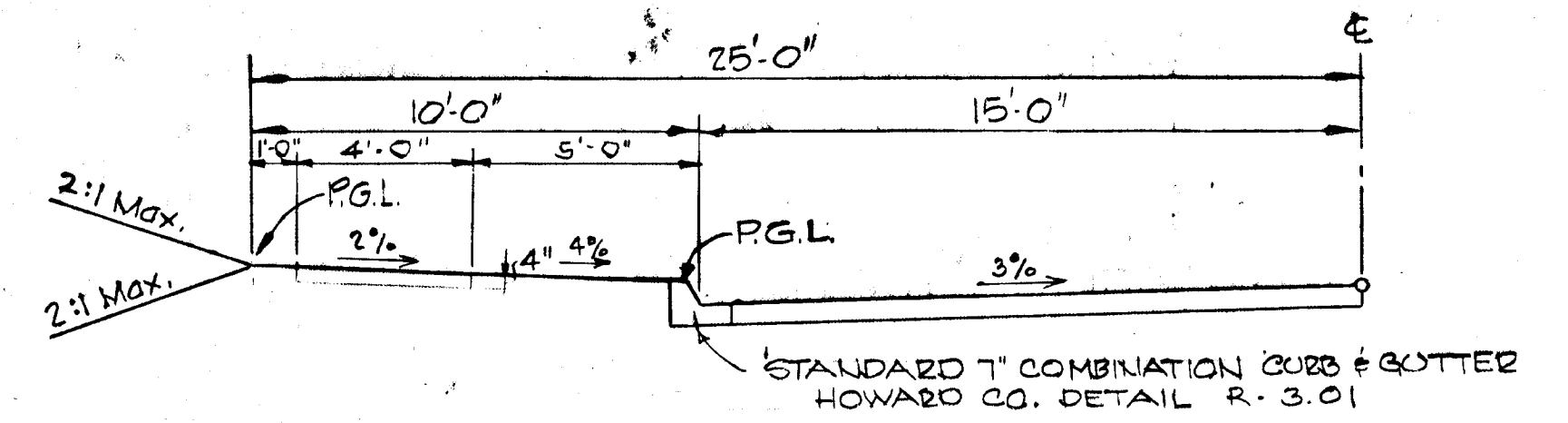


- Notes:
1. See Howard County Standard Detail R-2.01, SECTION # P.2
  2. Base will be primed in accordance with C-30.3 as provided in the Howard County Road Construction Code and Standard Specifications.
  3. A tack coat is required in accordance with C-31.4 of the Howard County Road Construction Code and Standard Specifications.

All roadway construction shall be in accordance with Howard County Road Construction Code and Standard Specifications. **50' ROW, HALF SECTION APPLIES TO: GROSVENOR DRIVE STA 23+10.53 - STA 33+99.67**

**TYPICAL PAVING SECTION**  
No Scale

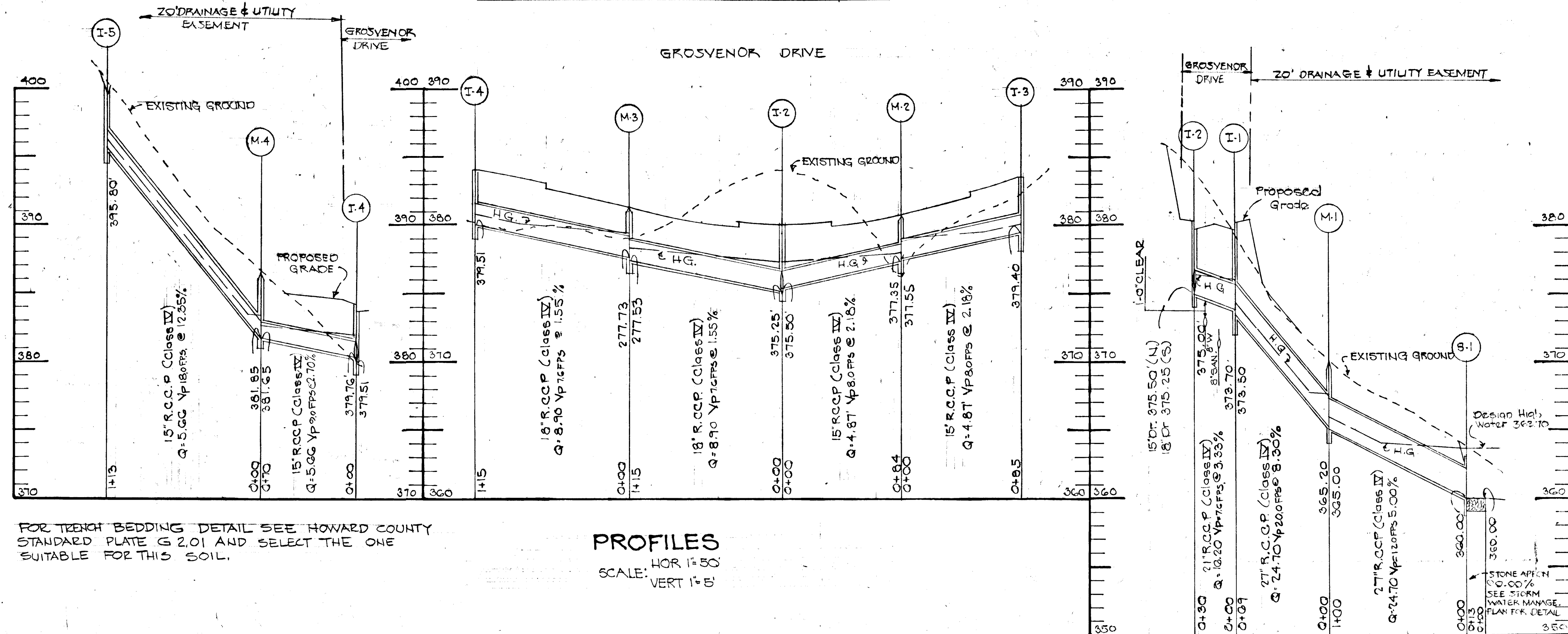
Roads are designed for 30 M.P.H. Speed Limit.



**50' ROW TYPICAL HALF SECTION-30' PAVING**

LOCAL STREET - R-20 ZONING  
Scale: 1/4" = 1'-0"

STRUCTURE							
NO	TYPE	INV. IN	INV. OUT	STA	Q	TOP ELEV	
I-1	A-10 INLET	373.70	373.00	21+39.06	15' RT	10.2	380.18
I-2	A-10 INLET	375.50 (N) 375.15 (S)	375.00	21+39.06	15' RT	4.42	380.18
I-3	A-10 INLET	---	379.40	21+66.45	15' RT	4.87	383.59
I-4	A-10 INLET	379.76	379.51	31+73.42	15' RT	3.82	384.07
I-5	TYPE 'C' INLET GATE	---	395.80	31+73.42	178' RT	5.66	399.80
M-1	SHALLOW MANHOLE	365.20	365.00	29+39.06	84' LT	---	370.21
M-2	SHALLOW MANHOLE	377.55	377.35	26+52	11' RT	---	380.93
M-3	SHALLOW MANHOLE	377.73	377.53	30+56	11' RT	---	381.29
M-4	SHALLOW MANHOLE	381.85	381.65	31+73.42	85' RT	---	382.83
S-1	TYPE 'C' HEADWALL	---	390.00	29+39.06	184' LT	---	363.13



FOR TRUNK BEDDING DETAIL SEE HOWARD COUNTY STANDARD PLATE G 2.01 AND SELECT THE ONE SUITABLE FOR THIS SOIL.

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

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD S.C.D.  
*Robert J. Zick* 10-18-84  
HOWARD S.C.D. DATE  
REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS  
*James Mettlem* 10-17-84  
US SOIL CONSERVATION SERVICE DATE

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

HUDKINS ASSOCIATES, INC.  
200 EAST JOPPA ROAD  
ROOM 101, SHELL BUILDING  
TOWSON, MARYLAND 21284

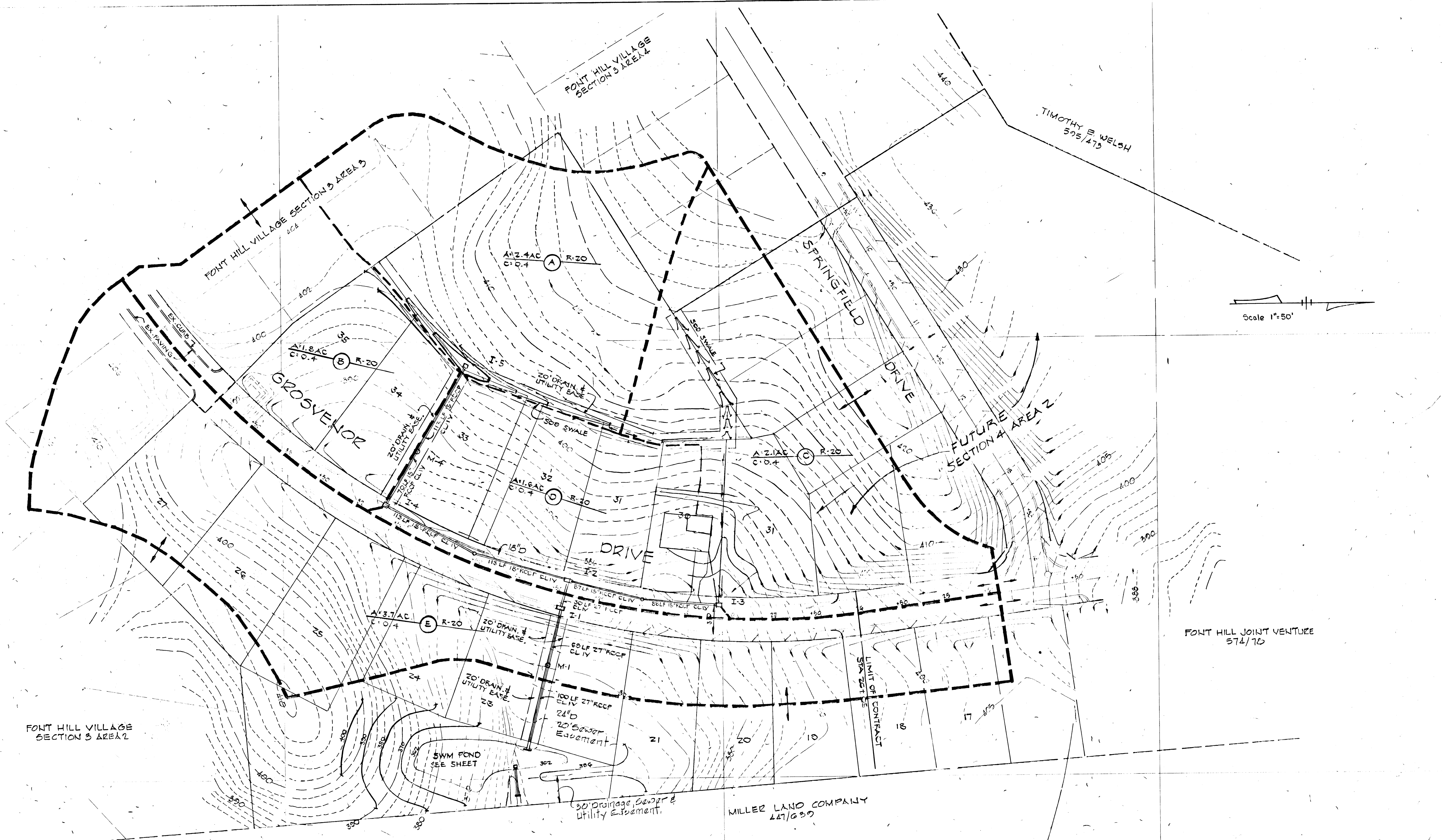


DES: SB			
DRN: SB			
DHK: AL			
DATE: 8-3-84	BY	NO	REVISIONS

**ROAD & STORM DRAIN  
PLAN AND PROFILE**

GROSVENOR DRIVE  
SECTION 4 AREA I  
FONT HILL VILLAGE  
ELECT. DIST Z  
HOWARD CO., MD

SCALE AS SHOWN  
SHEET 2 OF 3



Scale 1"=50'

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD S.C.D.  
 Robert W. Zehner 10-18-84  
 HOWARD S.C.D. DATE  
 REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS  
 James M. Helm 10-17-84  
 U.S. SOIL CONSERVATION SERVICE DATE

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

HUDKINS ASSOCIATES, INC.  
 101 SHELL BUILDING  
 200 EAST JOPPA ROAD  
 TOWSON, MARYLAND 21204  
 828-3000



DES: DWB	BY	NO.	REVISIONS	DATE
DRN: DWB				
CHK: AL				
DATE: 8-3-84				

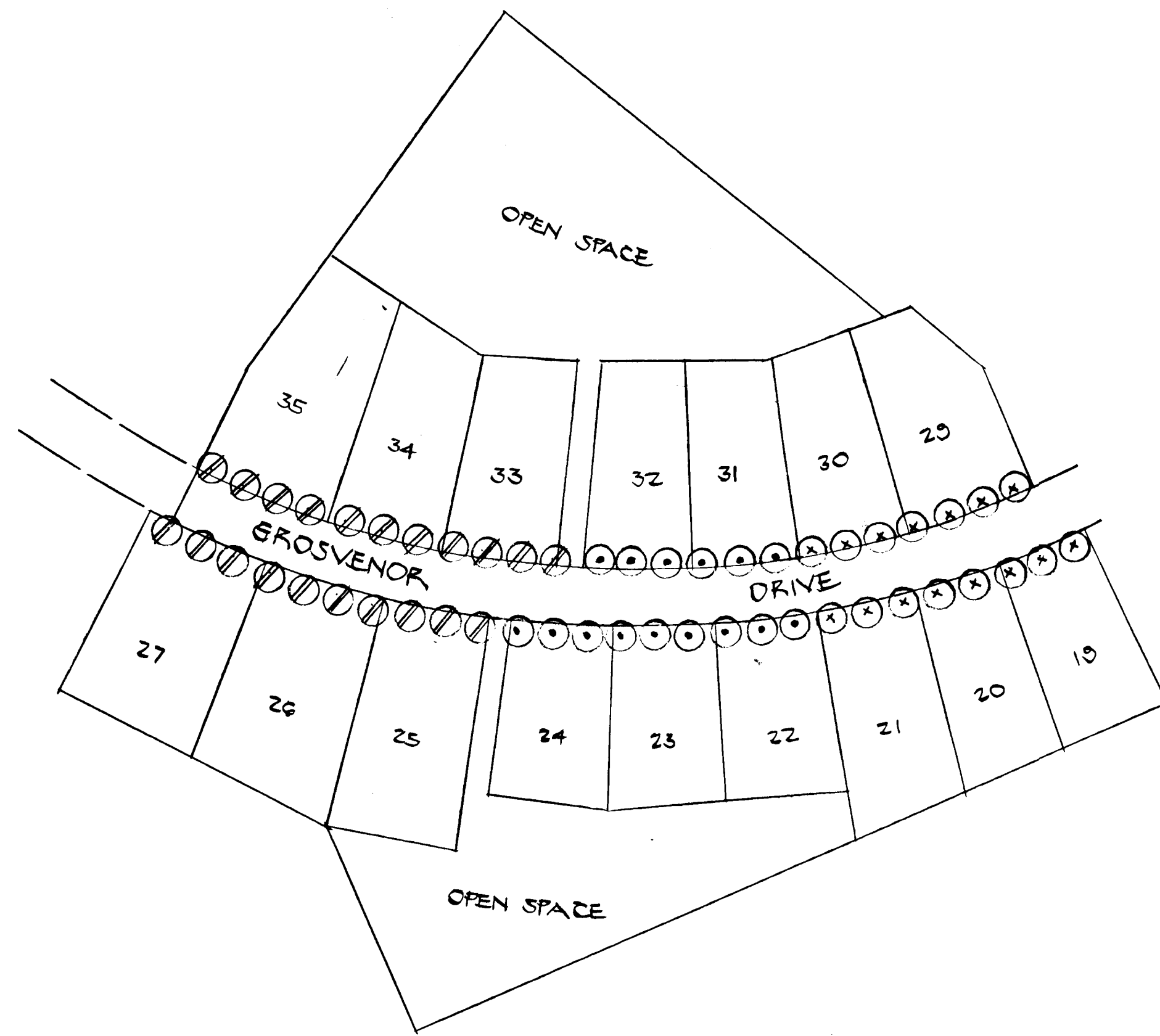
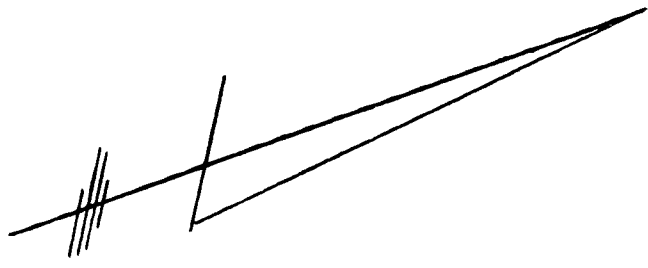
DRAINAGE AREA MAP

GROSVENOR DRIVE  
 SECTION 4 AREA 1  
 FONT HILL VILLAGE  
 ELECT. DIST. 2  
 HOWARD CO., MD.

SCALE AS SHOWN  
 SHEET 3 OF 9

F-84-139

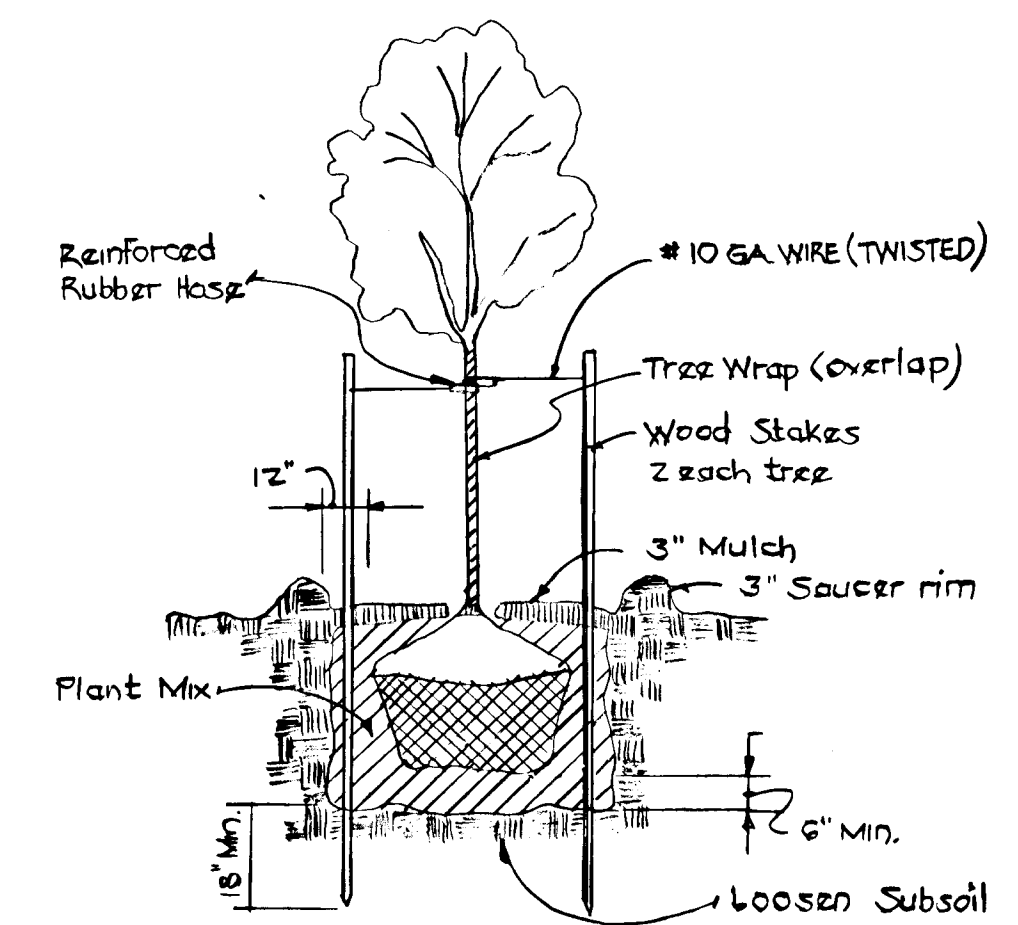
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SYMBOL	NAME	QUANTITY
⊘	LIQUIDAMBER STYRACIFLUA - SWEET GUM	21
⊙	PYRUS CALLERYANA, BRADFORD BRADFORD PEAR	15
⊗	QUERCUS PALUSTR PIN OAK	15

**NOTES :**

1. FINAL LOCATION OF TREES IS SUBJECT TO WALKS, DRIVEWAYS, UTILITIES, ETC.
2. ALL TREES SHALL BE BALLED & BURLAPPED.
3. PLANT MIX PER CUBIC YARD  
3 PARTS TOPSOIL, 1 PART PEAT MOSS  
2 POUNDS FEAT. (10-6-4)
4. ALL TREE PLANTING TO BE GUARANTEED FOR ONE (1) CALANDER YEAR FROM TIME OF ACCEPTANCE.



**TREE STAKING DETAIL**  
No Scale

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD S.C.D.  
*Robert W. Zickler* 10-18-84  
 HOWARD S.C.D. DATE  
 REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS  
*James M. Helm* 10-17-84  
 US SOIL CONSERVATION SERVICE DATE

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

HUDKINS ASSOCIATES, INC.  
101 SHELL BUILDING  
200 EAST JOPPA ROAD  
TOWSON, MARYLAND 21284  
828 - 9000



DES: DWB

DRN: DWB

CHK: AL

DATE: 8-3-84

BY NO. REVISION DATE

**STREET TREE PLANTING DETAILS**

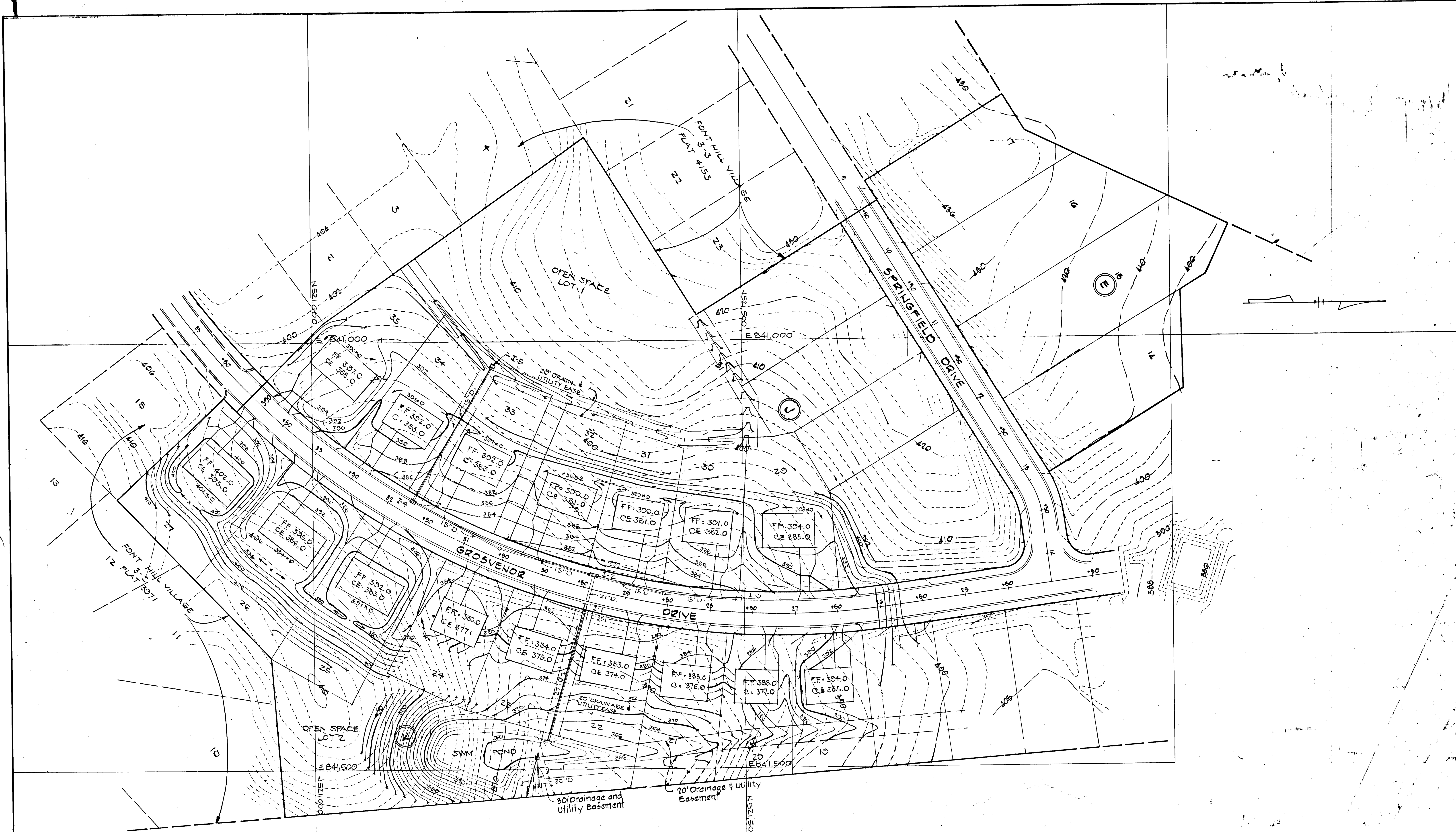
SECTION 4, AREA I  
FONT HILL VILLAGE  
SECOND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 4 OF 2

F-84-139

82

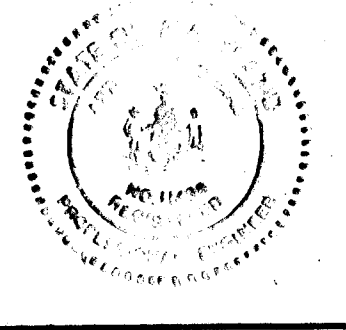


PLAN  
SCALE: 1" = 50'

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SCD  
*Robert W. Ziehm* 10-18-84  
 HOWARD SCD DATE  
 REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS  
*James M. Hahn* 10-17-84  
 U.S. SOIL CONSERVATION SERVICE DATE

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
*McCauley & Edgar* 10/18/84  
 CHIEF, BUREAU OF ENGINEERING  
*John F. Jones* 10/17/84  
 CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION DATE

7001 LEE JEFFERSON  
 ROOM 100, SMALL BUILDING  
 TOWSON, MARYLAND 21284  
*Arthur E. Leonard* 6-1-84



DES: DWS				
DRN: DWS				
CHK: AL				
DATE: 8-3-84	MY	NO.	REVISIONS	DATE

GRADING  
 PLAN

GROSVENOR DRIVE  
 SECTION 4 AREA 1  
 FONT HILL VILLAGE  
 ELECT. DIST. Z  
 HOWARD CO., MD.

SCALE  
 AS  
 SHOWN  
 SHEET  
 5 OF 9

F-84-139

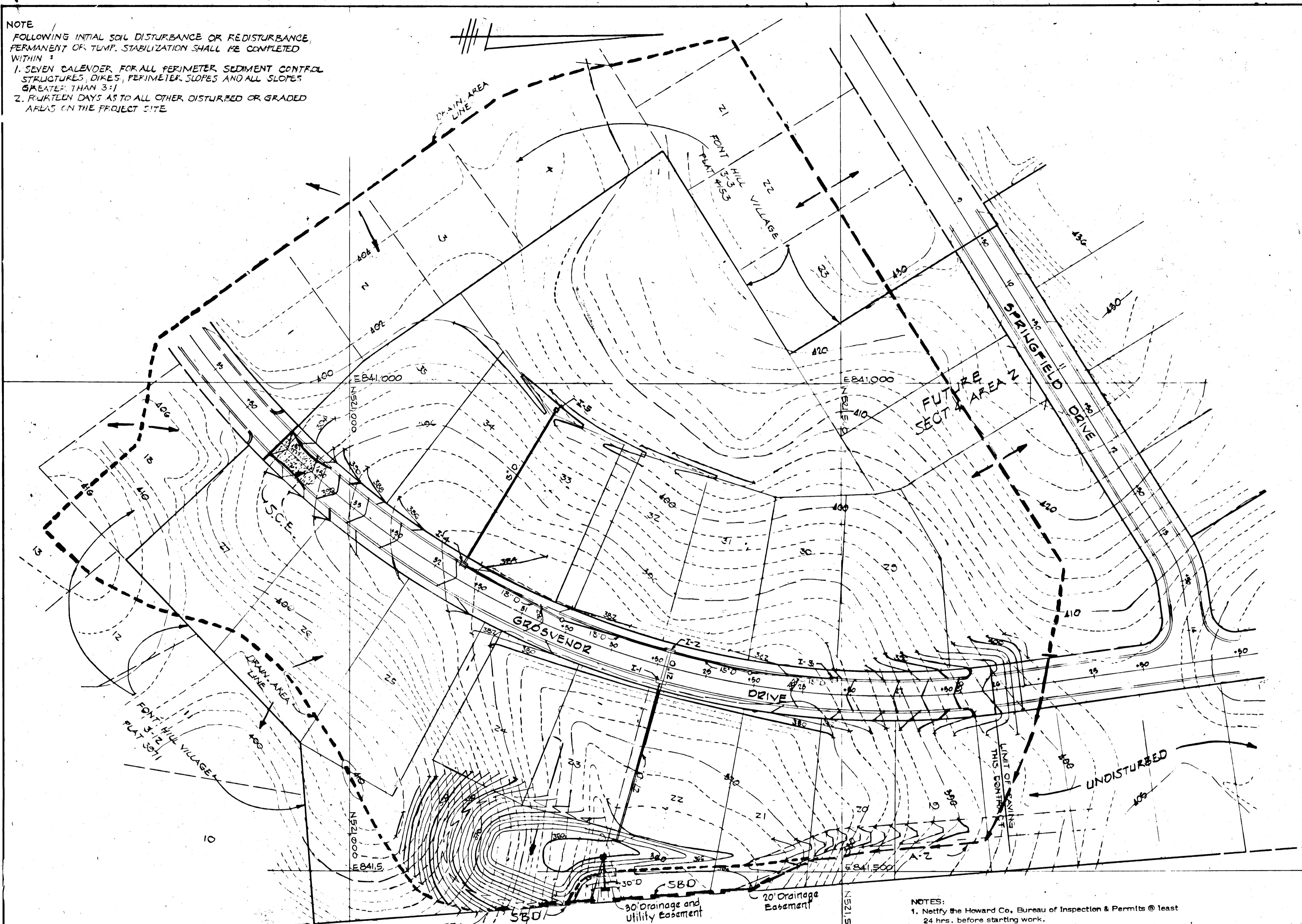
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**NOTE**  
 FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMP. STABILIZATION SHALL BE COMPLETED WITHIN:  
 1. SEVEN CALENDAR FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1  
 2. FOURTEEN DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE

- SEQUENCE OF CONSTRUCTION**
1. OBTAIN GRADING PERMIT, EROSION & SEDIMENTATION PERMITS # UCENCS 48 HRS. BEFORE STARTING WORK.
  2. NOTIFY HOWARD COUNTY BUREAU OF INSPECTION & PERMITS 48 HRS. BEFORE STARTING WORK.
  3. INSTALL STONE CONSTRUCTION ENTRANCE.
  4. INSTALL STRAW BALE DIKE BELOW POND LOCATION.
  5. INSTALL DIVERSION DIKES.
  6. EXCAVATE POND PER S.W.M. PLAN. (SHEETS 7 & 8)
  7. INSTALL 30" B.C.C.M.P. AND POND OUTFALL STRUCTURE PER S.W.M. PLAN. NOTE: POND OUTFALL STRUCTURE TO BE CONSTRUCTED TO ELEV. 363.8' FOR PURPOSE OF ADDITIONAL STORAGE FOR SEDIMENT CONTROL. OPENING IN WEST SIDE OF STRUCTURE TO BE BLOCKED PER DETAIL THIS SHEET.
  8. ROUGH GRADE SITE.
  9. INSTALL UTILITIES.
  10. FINE GRADE SITE.
  11. PLACE SUB-BASE MATERIAL ON STREETS.
  12. STABILIZE REMAINING AREAS PER SEEDING PROCEDURES THIS SHEET.
  13. FLUSH STORM DRAINS.
  14. CONVERT POND TO S.W.M. POND PER SHEETS 7 & 8.
  15. REMOVE SEDIMENT CONTROL DEVICES AFTER APPROVAL OF INSPECTOR.

- TEMPORARY SEEDING NOTES:**
1. Seed immediately upon construction with 1 lb. rye grass per 1000 s.f.
  2. Apply 46 lbs./1000 s.f. of pulverized dolomitic limestone and 115 lbs. to 18.4 lbs./1000 s.f. of 10x10x10 of equivalent fertilizer.
  3. Harrow or disc lime and fertilizer into the soil to a depth of at least 3 inch contour tillage until a reasonably uniform fine firm seeded the final harrowing or disking should be on the contour.
  4. Mulch with straw @ 75 lbs./1000 s.f.

- SEDIMENT CONTROL SEEDING NOTES:**
1. Notify Howard County Bureau of Inspection 48 hrs. before starting work.
  2. Install Sediment Control measures in accordance with "Standards & Specifications for Soil Erosion & Sediment Control in developing areas" prior to any grading.
  3. All Sediment Control measures to remain in place until permission for their removal has been obtained from the Sediment Control Inspector.
  4. Inspect & maintain all Sediment Control measures to ensure proper functioning.
  5. All graded areas not to be paved are to be stabilized as follows:
    - a. Spread 3" layer compacted topsoil to finished grade.
    - b. Spread 90 lbs./1000 s.f. Dolomitic limestone & 25 lbs./1000 s.f. 10x10x10 fertilizer.
    - c. Seed with 3 lbs./1000 s.f. of the following 40% Kentucky Blue, 20% Chewing Fescue, 20% Kentucky 91, & 20% Annual Rye, Rake with York Rake (Min. 2 passes), cover & compact with cultipacker or other approved method.
    - d. Mulch with 70 lbs./1000 s.f. small grain straw. Spray with 0.04 gal./sq. yd. emulsified asphalt.
    - e. If no germination within 4 weeks, then reseed.



THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SCD  
*Robert Zehm* 10-18-84  
 HOWARD SCD DATE  
 REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS  
*John M. Smith* 10-17-84  
 US SOIL CONSERVATION SERVICE DATE

PLAN SCALE: 1" = 50'

- NOTES:**
1. Notify the Howard Co. Bureau of Inspection & Permits @ least 24 hrs. before starting work.
  2. All sediment control devices are to remain in place until permission for removal has been obtained from the Howard Co. Bureau of Inspections & Permits.
  3. Structural measures such as berms, dikes, traps, basins, etc., will be installed & stabilized according to the plan prior to any disturbance of the existing surface of the site.
  4. On site inspection and maintenance of all sediment control measure including cleanup of traps and berms and proper establishment of all planned vegetative measures will be the responsibility of the developer or his representative on the site on a continuing day to day basis.

**ENGINEER**  
 I certify that this plan of development, 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.  
*William J. Howard*  
 Signature Date 10-16-84

**DEVELOPER**  
 I certify that all development and/or construction will be done according to these plans of development and erosion and sediment control. I also authorize periodic on-site inspection by the Howard Soil Conservation District or their authorized Agents, as are deemed necessary, deviation from this plan will not be made unless authorized by the Howard Soil Conservation District. Responsible personnel involved in the construction Project will have a certificate of attendance at a Dept. of Natural Resources approved training program for the control of Sediment & Erosion before beginning the Project.  
 Signature Date  
 Signature Date

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
*Richard R. R. R.* 10-12-84  
 CHIEF BUREAU OF ENGINEERING DATE  
*William J. Howard* 10-16-84  
 CHIEF DIVISION OF DEVELOPMENT DATE  
 ENGINEERING ADMINISTRATION

HICKINS ASSOCIATES, INC.  
 200 EAST JOPPA ROAD  
 ROOM 101, SHELL BUILDING  
 TOWSON, MARYLAND 21284  
*Arthur P. J. Howard* 10-16-84



DES: DWS					
DRN: DWS					
CHK: AL					
DATE	BY	NO.	REVISIONS	DATE	

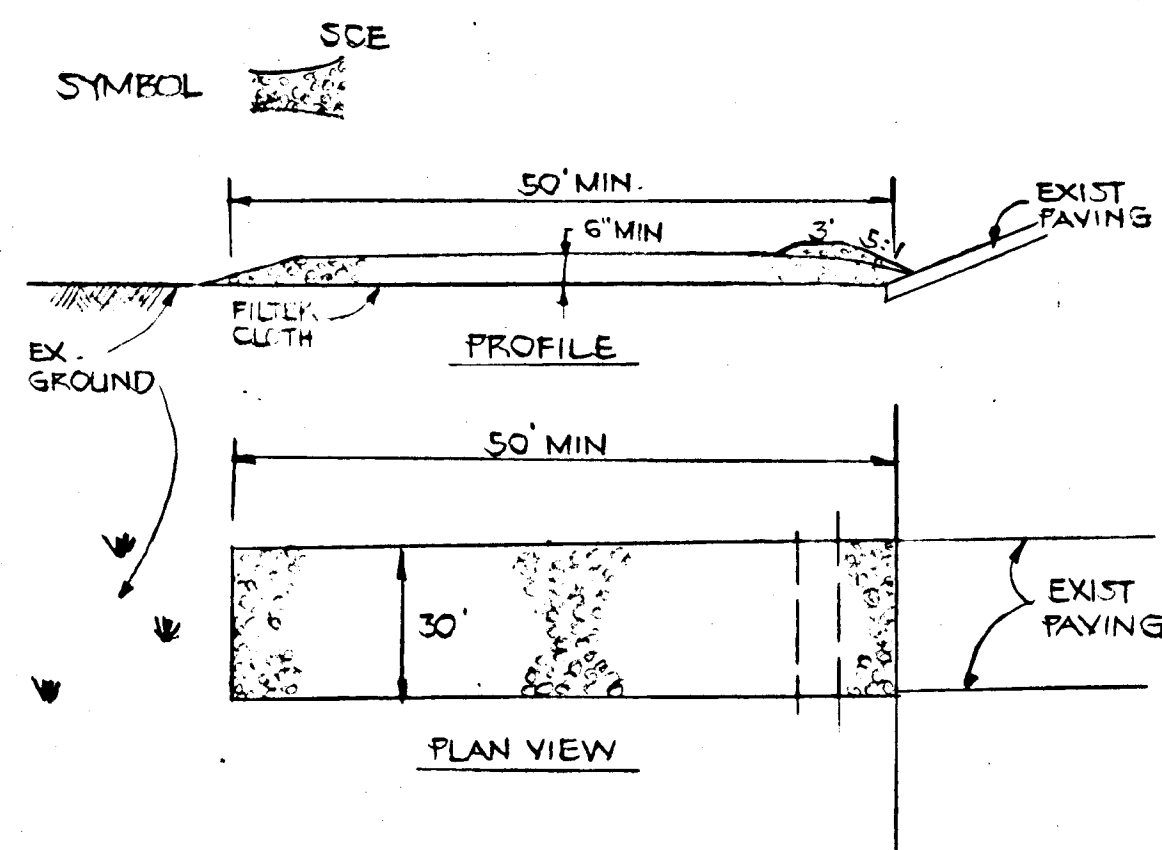
SEDIMENT CONTROL PLAN

GROSVENOR DRIVE  
 SECTION 4 AREA 1  
 FONT HILL VILLAGE  
 ELECT. DIST. Z HOWARD CO., MD.

SCALE AS SHOWN  
 SHEET 6 OF 9

F-84-139

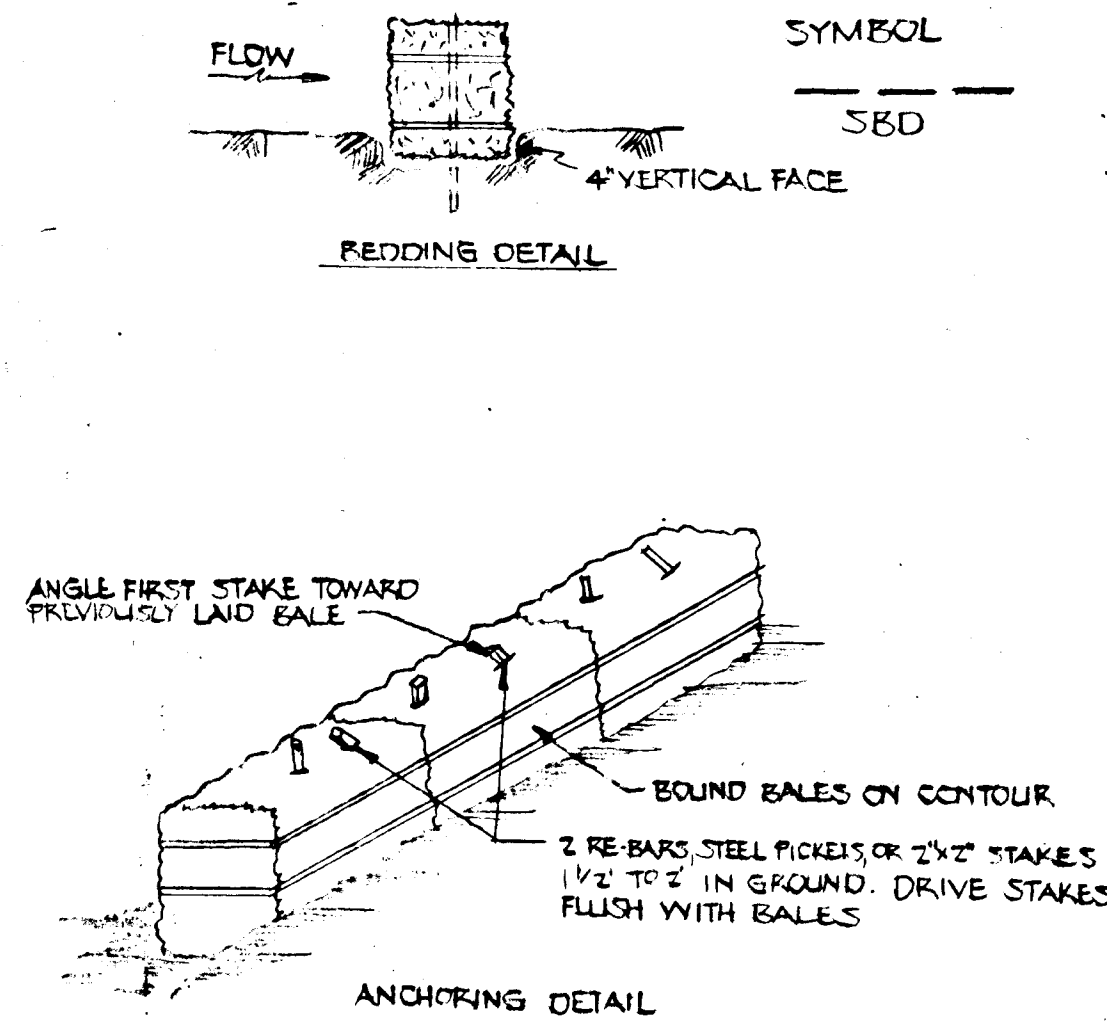
**STABILIZED CONSTRUCTION ENTRANCE**



**CONSTRUCTION SPECIFICATIONS**

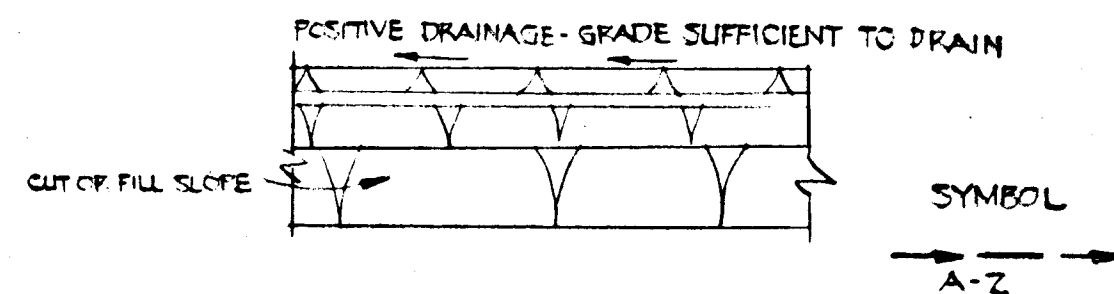
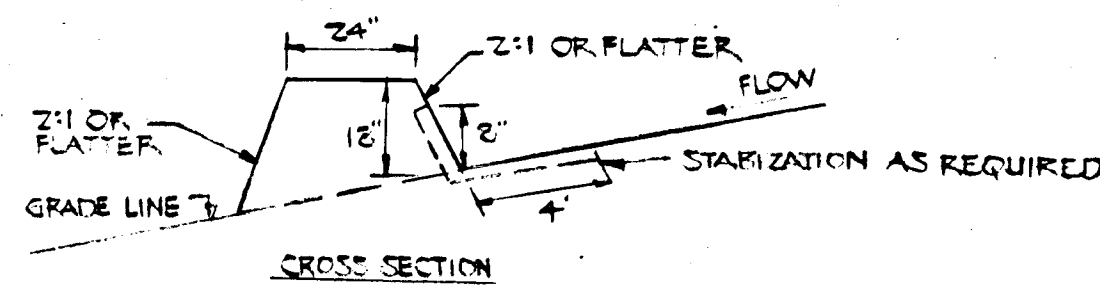
1. Stone size - Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Filter Cloth - Will be placed over the entire area prior to placing of stone. Filter will not be required on a single family residence lot.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mounded berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measure used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

**STRAW BALE DIKE**



**CONSTRUCTION SPECIFICATIONS**

1. Bales shall be placed at the toe of a slope or on the contour and in a row with ends tightly abutting the adjacent bales.
2. Each bale shall be embedded in the soil a minimum of (4) inches, and placed so the bindings are horizontal.
3. Bales shall be securely anchored in place by either two stakes or re-bars driven through the bale. The first stake in each bale shall be driven toward the previously laid bale at an angle to force the bales together. Stakes shall be driven flush with the bale.
4. Inspection shall be frequent and repair replacement shall be made promptly as needed.
5. Bales shall be removed when they have served their usefulness so as not to block or impede storm flow or drainage.



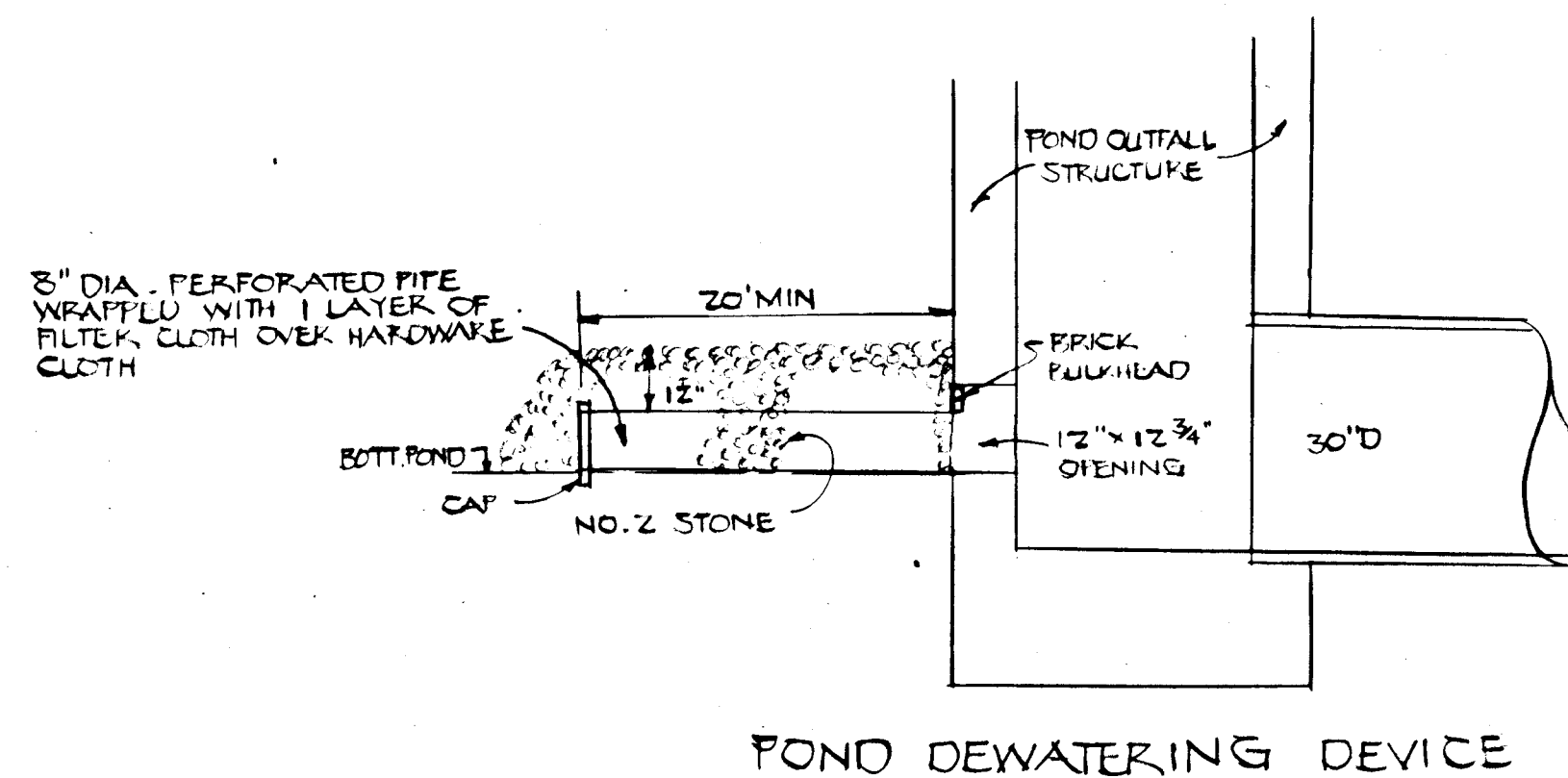
**CONSTRUCTION SPECIFICATIONS**

1. All dikes shall be compacted by earth-moving equipment.
2. All dikes shall have positive drainage to an outlet.
3. Top width may be wider and side slopes may be flatter if desired to facilitate crossing by construction traffic.
4. Field location should be adjusted as needed to utilize a stabilized safe outlet.
5. Earth dikes shall have an outlet that functions with a minimum of erosion. Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin where either the dike channel or the drainage area above the dike are not adequately stabilized.
6. Stabilization shall be: (A) In accordance with standard specifications for seed and straw mulch or straw mulch if not in seeding season, (B) Flow channel as per the chart below.

**FLOW CHANNEL STABILIZATION**

Type of Treatment	Channel Grade	Dike A	Dike B
1	.5-3.0%	Seed and Straw Mulch	Seed and Straw Mulch
2	3.1-5.0%	Seed and Straw Mulch	Seed using Jute, or Excelstior; Sod; 2" Stone
3	5.1-8.0%	Seed with Jute, or Sod; 2" Stone	Lined Rip-Rap 4-8"
4	8.1-20%	Lined Rip-Rap 4-8"	Engineering Design

7. Periodic inspection and required maintenance must be provided after each rain event.



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

HUDKINS ASSOCIATES, INC.  
200 EAST JOPPA ROAD  
ROOM 101, SHELL BUILDING  
TOWSON, MARYLAND 21284



DES: SLB

DRN: SLB

CHK: DB

DATE: 8-5-84

BY: NO

REVISION

DATE

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

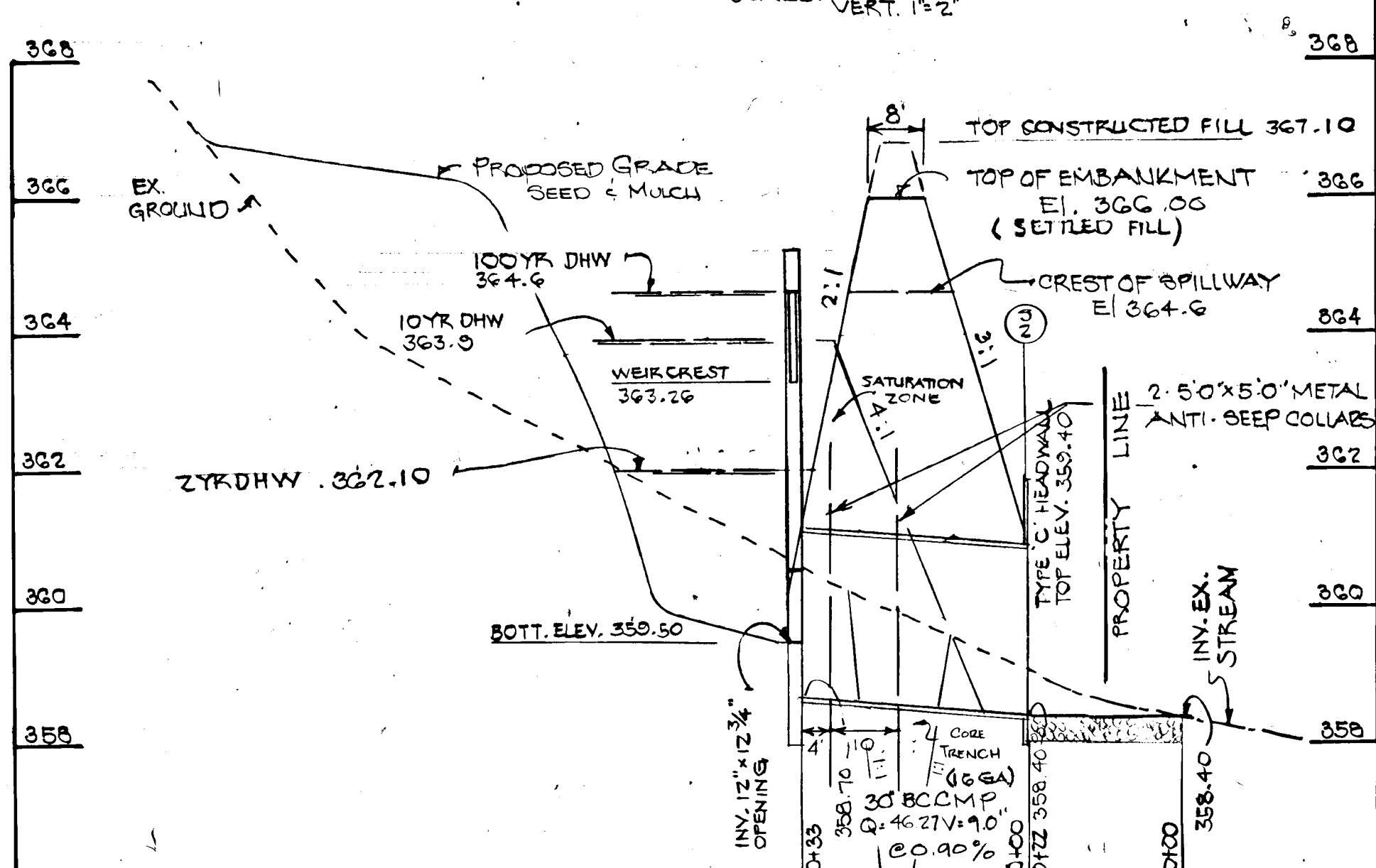
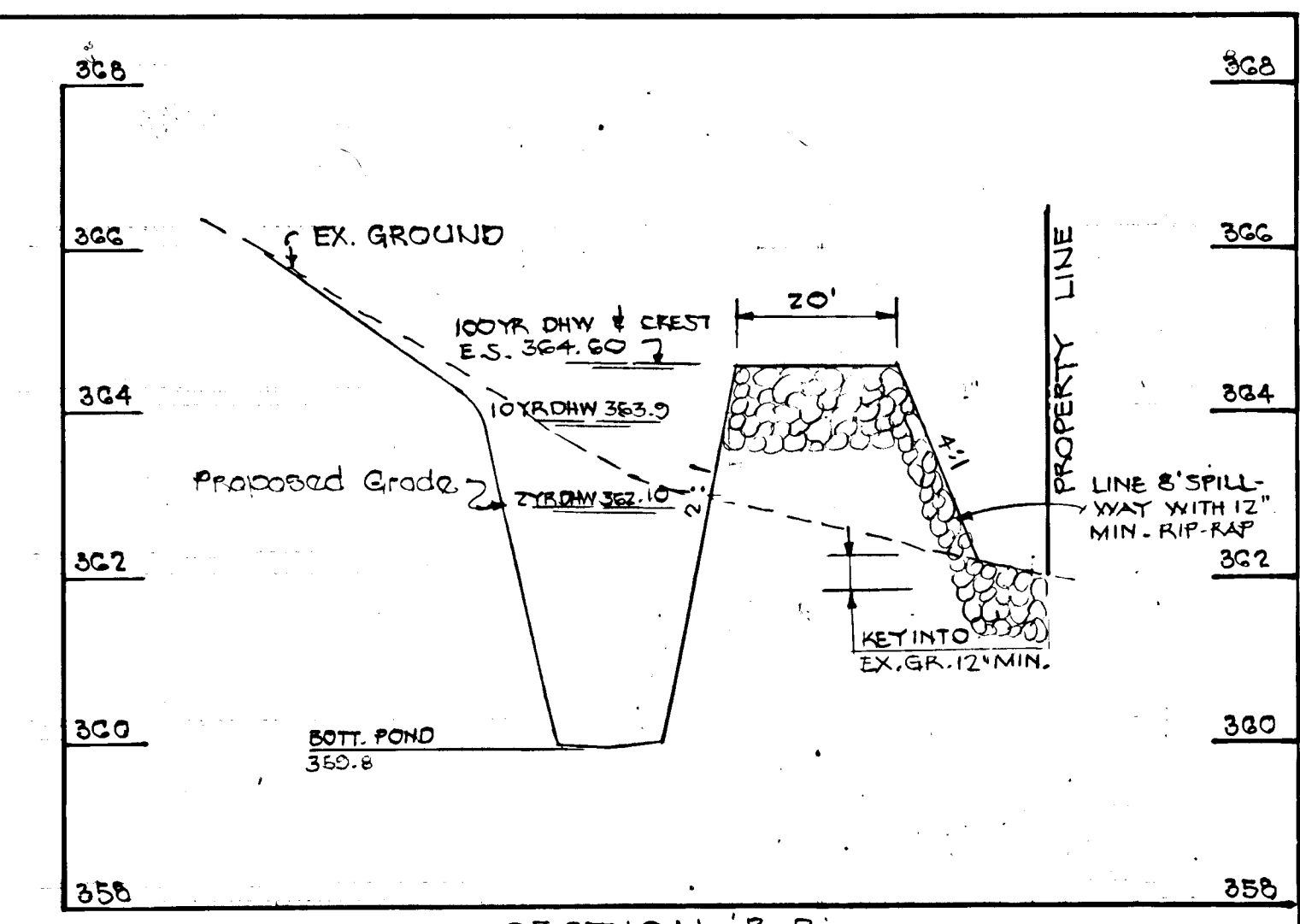
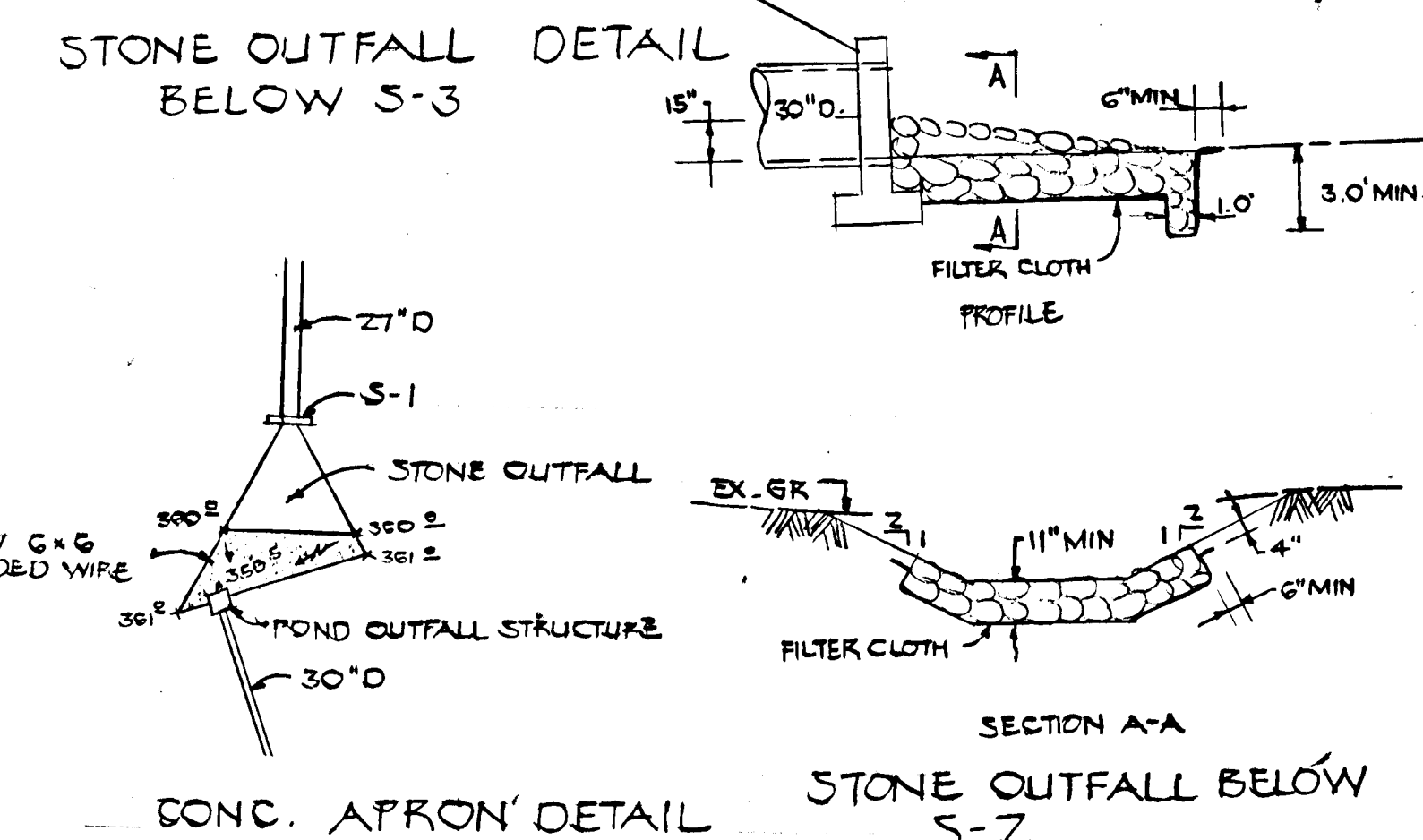
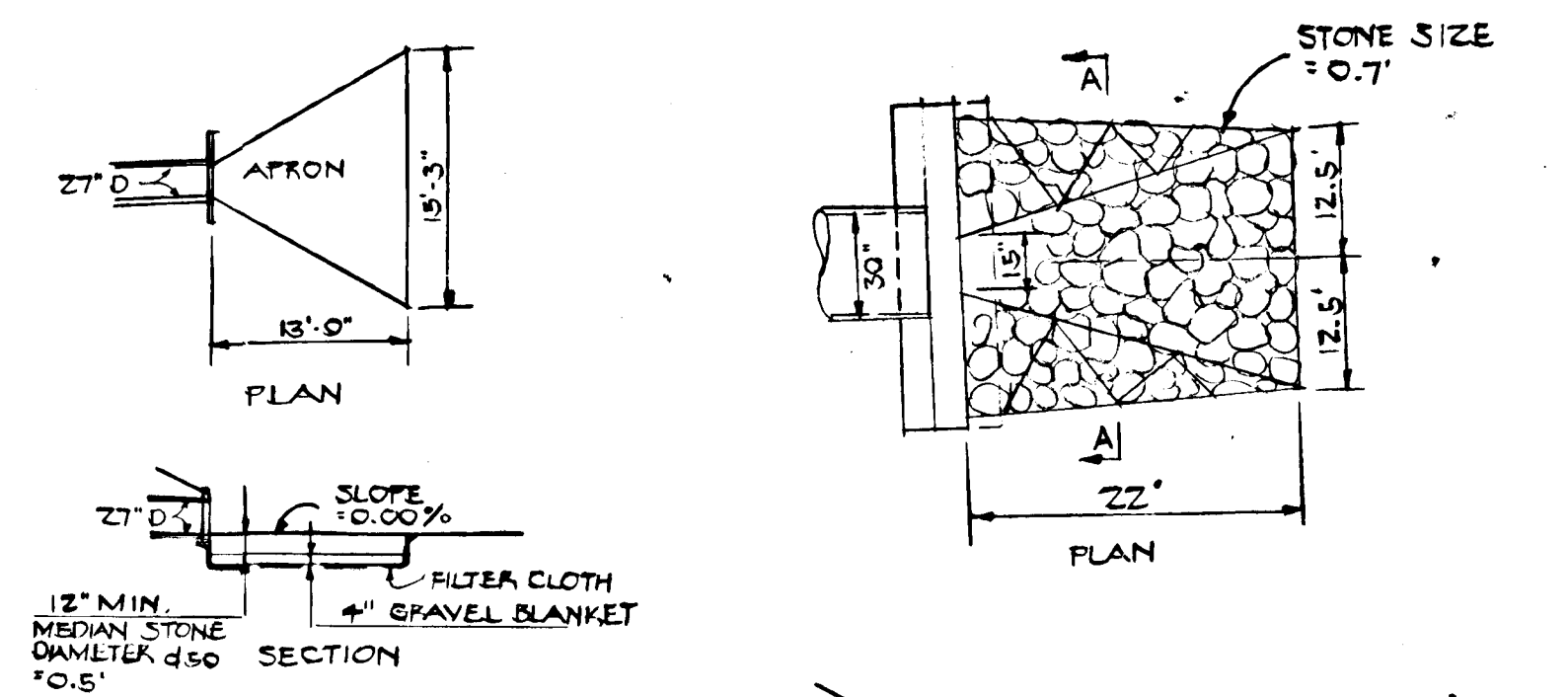
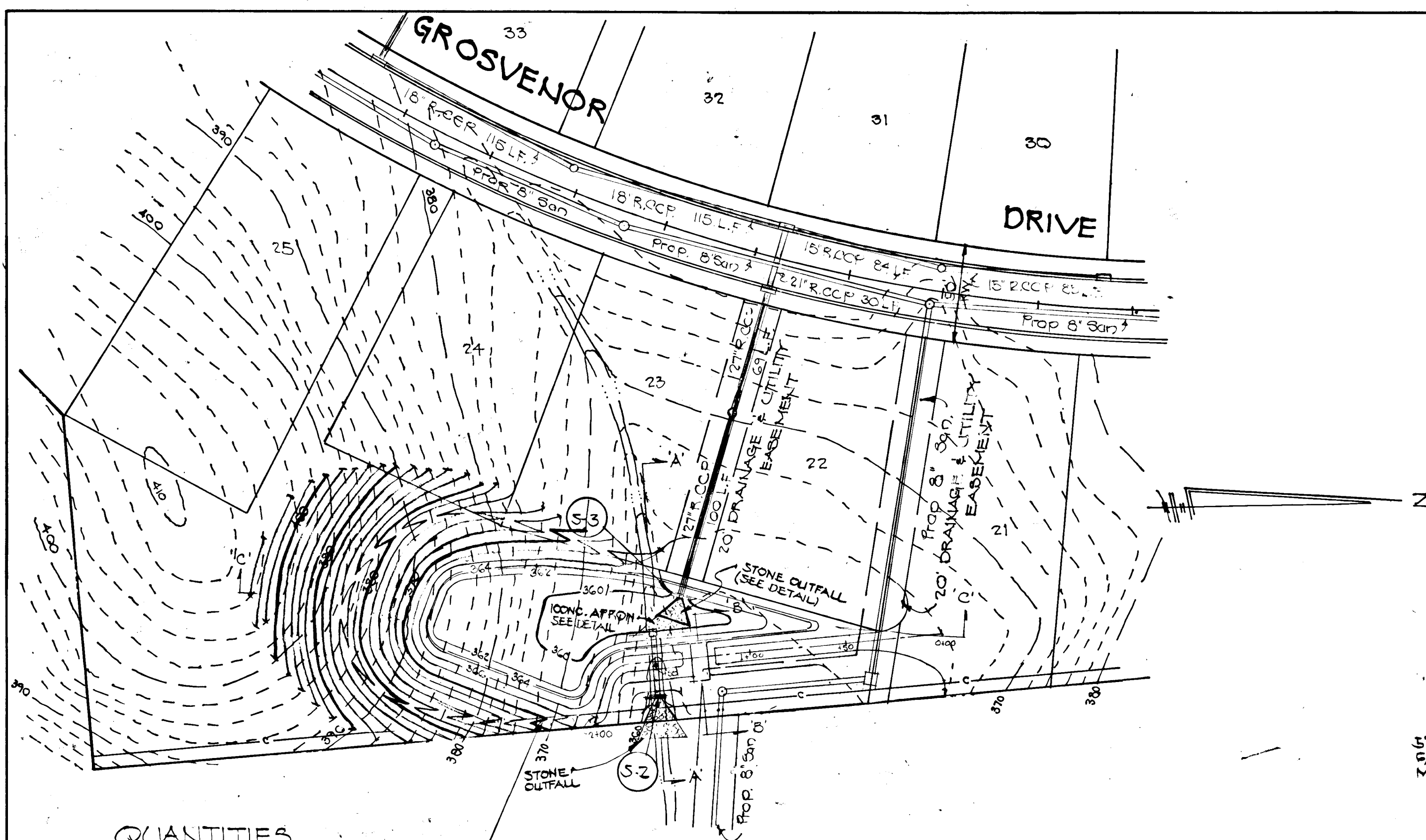
SEDIMENT CONTROL PLAN

SECTION 4, AREA 1  
FONT HILL VILLAGE  
SECOND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 1 OF 3

82



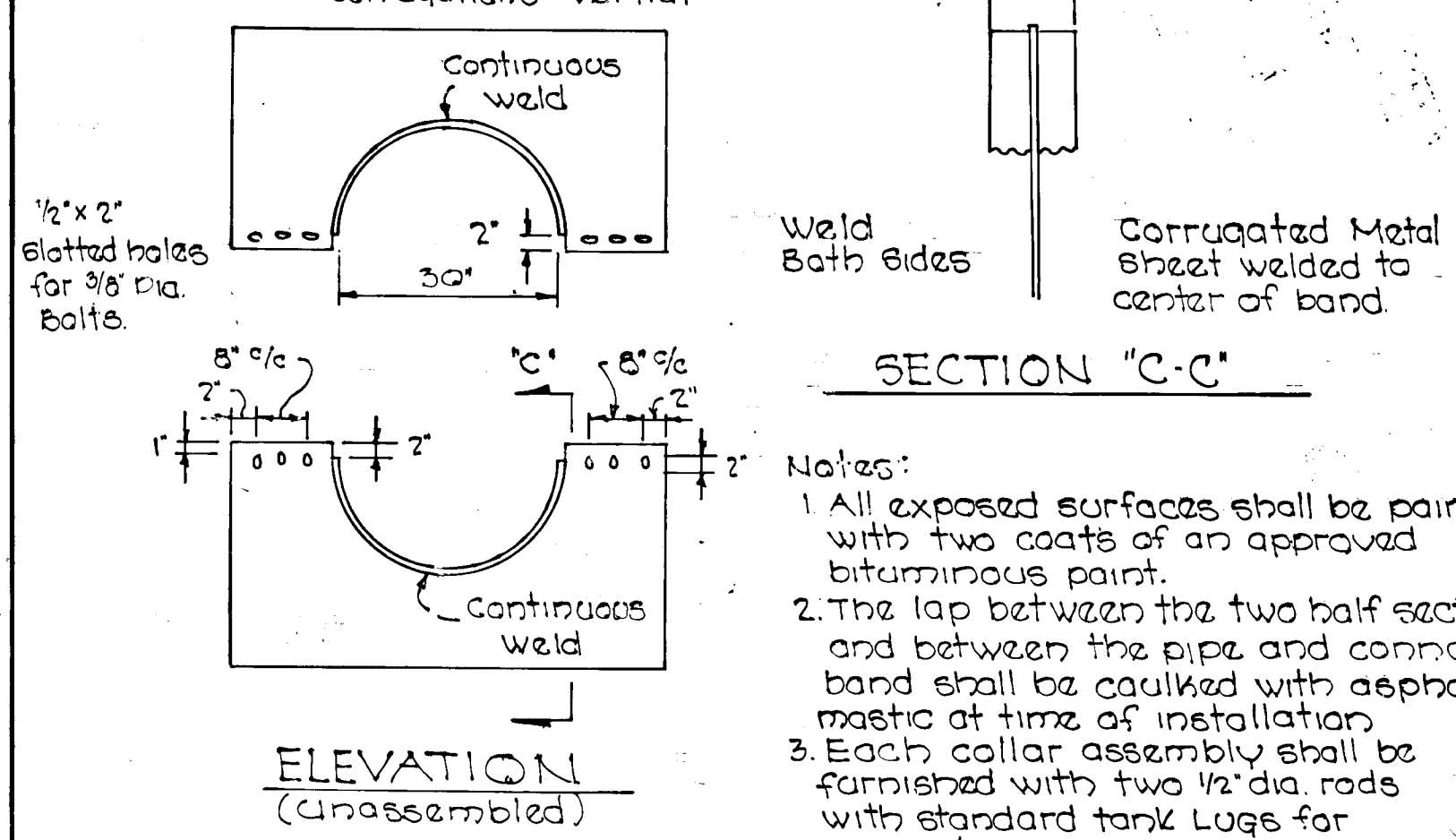
- QUANTITIES**
- 33 L.F. 30" B. COMP. (Grage)
  - 1 EA. TYPE 'S' INLET
  - 1 EA. 30" TYPE 'C' ENDWALL
  - 12.8 AC. DRAINAGE AREA
  - 0.72 AC. DISTURBED AREA
  - 350 SY. SEED & MULCH
  - 18 SY. SOD (EARTH SPILLWAY)
  - 13.5 SY. RIP-RAP
  - EXCAVATION
  - 752 C.Y. CUT
  - 290 C.Y. FILL

NOTE: CONTRACTOR TO VERIFY LOCATION & DEPTH OF EXISTING CABLE PRIOR TO CONSTRUCTION

LAND OF PAUL L. MILLER  
**PLAN**  
SCALE: 1" = 50'

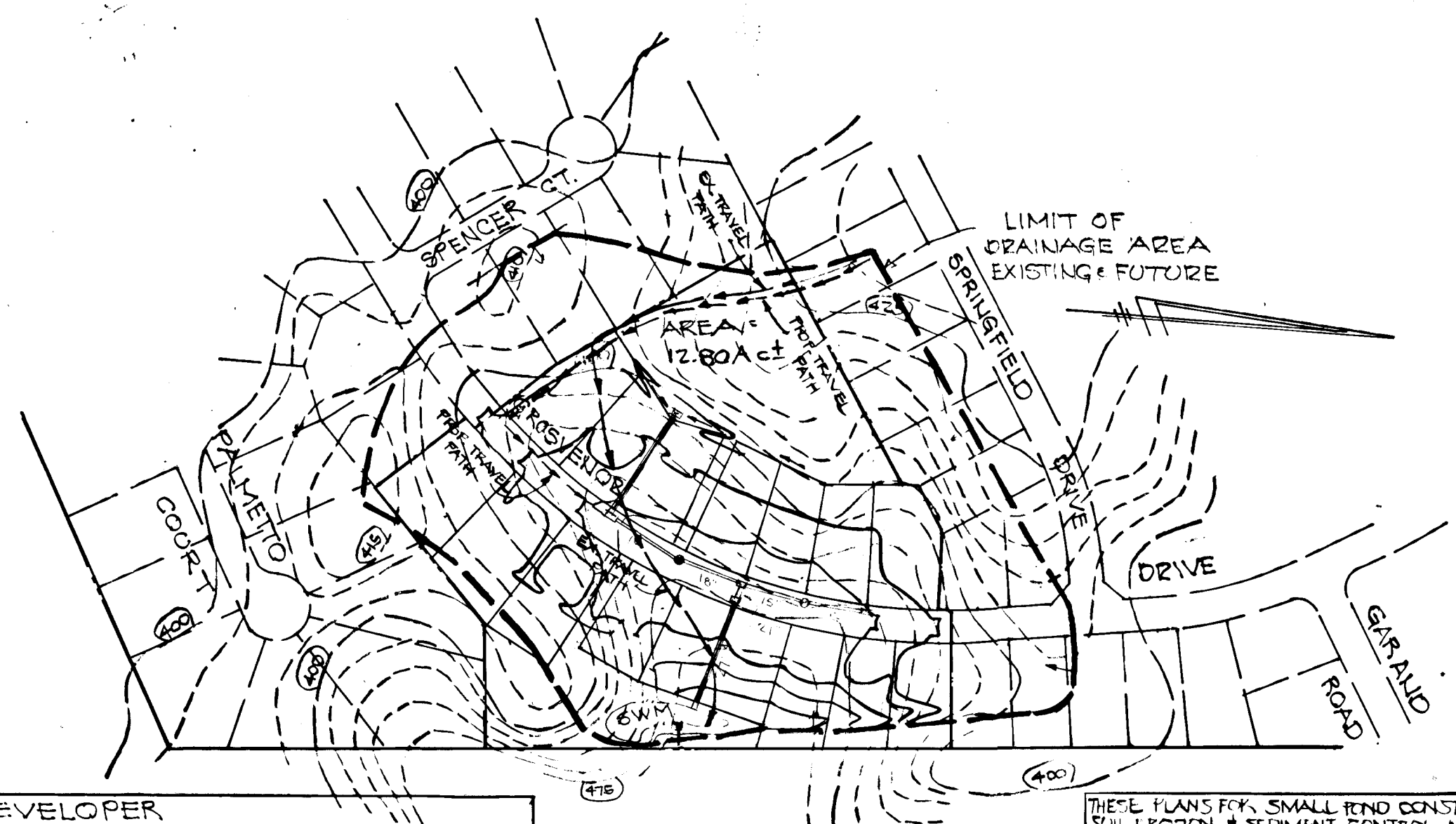
NOTE: HAZARD CLASS. 'A'

Install Anti-Seep Collar with corrugations vertical



- Notes:
- All exposed surfaces shall be paint with two coats of an approved bituminous paint.
  - 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 assembly shall be furnished with two 1/2" dia. rods with standard tank lugs for connecting collars to pipe. See detail this sheet.

**DETAIL - CORRUGATED METAL ANTI-SEEP COLLAR**



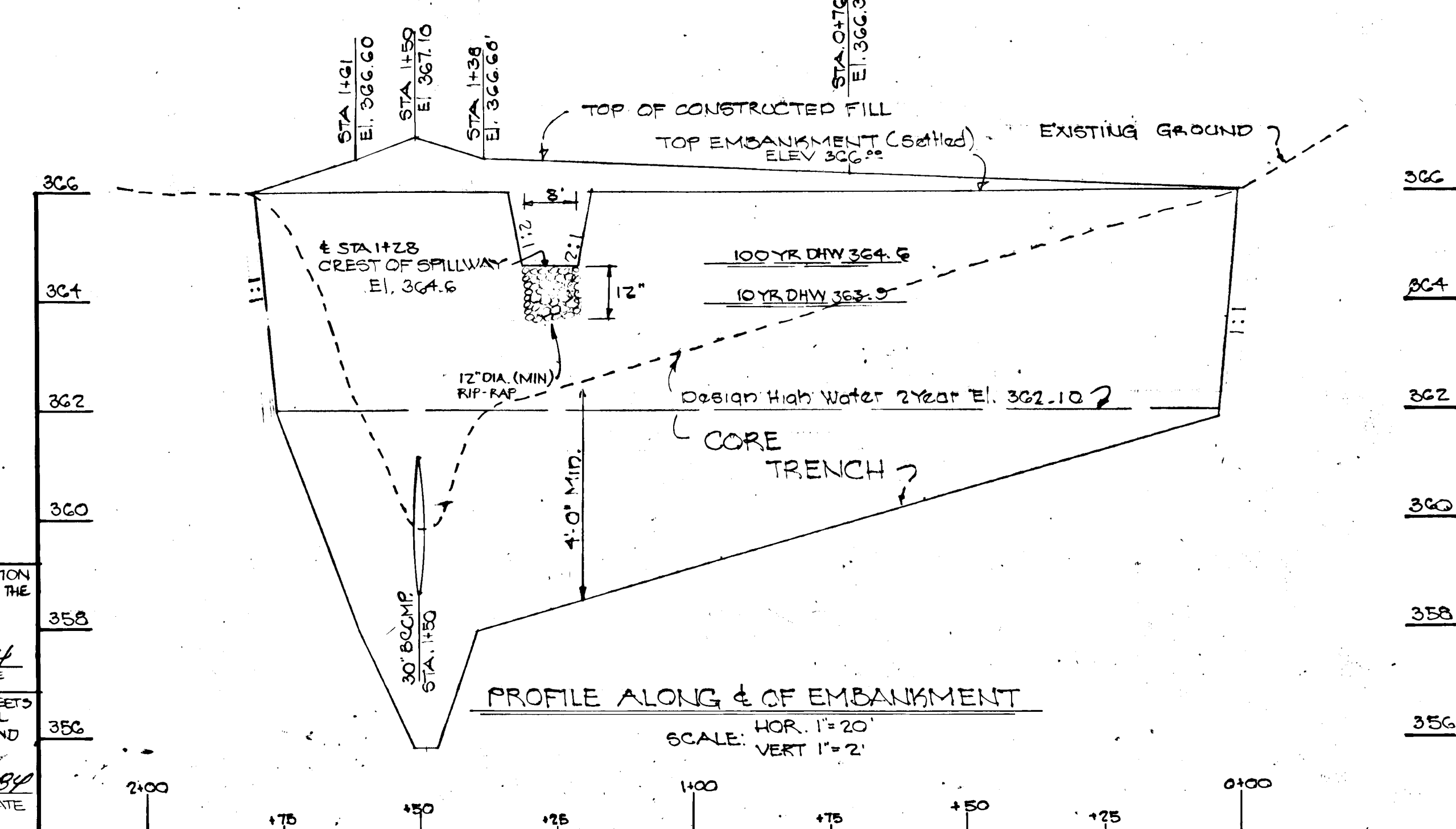
**DRAINAGE MAP**  
SCALE: 1" = 200'

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

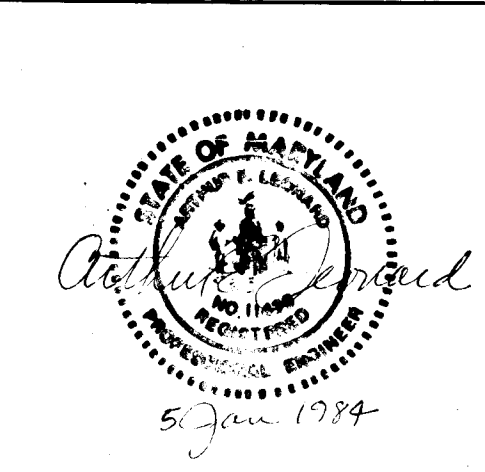
*Robert J. Zickler* 10-18-84  
HOWARD SCD DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

*Wanda Newmyer* 7-28-84  
HOWARD SCD DATE



**PROFILE ALONG & OF EMBANKMENT**  
SCALE: HOR. 1" = 20' VERT. 1" = 2'



**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 a Red Lined As-Built of the pond within 30 Days of completion.

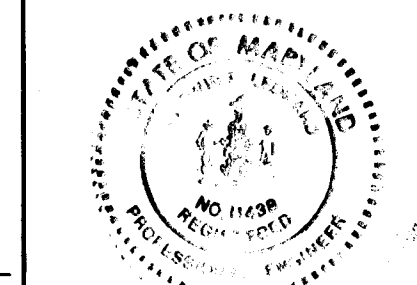
**DEVELOPER**  
I certify that all Development and/or construction will be done according to these plans of development, Pond construction and erosion and sediment control. I also authorize periodic on-site inspection by the Howard soil conservation district or their authorized agents. As soon as deemed necessary. Deviation from this plan will not be made unless authorized by the Howard soil conservation district. I will provide the Howard soil conservation district with a Red Lined As-Built of the pond within 30 days of completion. Responsible personnel involved in the construction project will have a certificate of Attendance at A Dept. of Natural Resources Approved Training Program for the control of sediment erosion before beginning the project.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Robert J. Zickler* 10/18/84  
CHIEF, BUREAU OF ENGINEERING

HUPKING ASSOCIATES, INC.  
200 EAST NORTH ROAD  
ROOM 101 SHELL BUILDING  
TOWSON, MARYLAND 21284

*Arthur E. Leonard, P.E.* 5-11-84



DES: S.L.B.	
DRN: S.L.B.	
CHK: D.B.	
DATE: 8-3-84	BY NO. REVISION DATE

**STORM WATER MANAGEMENT**

600' SCALE MAP NO. \_\_\_\_\_ BLOCK NO. \_\_\_\_\_

SECTION 14, AREA 1  
**FONT HILL VILLAGE**  
SECOND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 3 OF 3



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, f.ices, 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 areas or areas. It shall be free of roots, stumps, wood, rubbish, over-size stones, frozen or other objectionable materials. The embankment shall be constructed to an elevation which provides for anticipated settlement to the design elevation. The fill height all along the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.

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 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.

C. 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 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 predicated 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 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.

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.

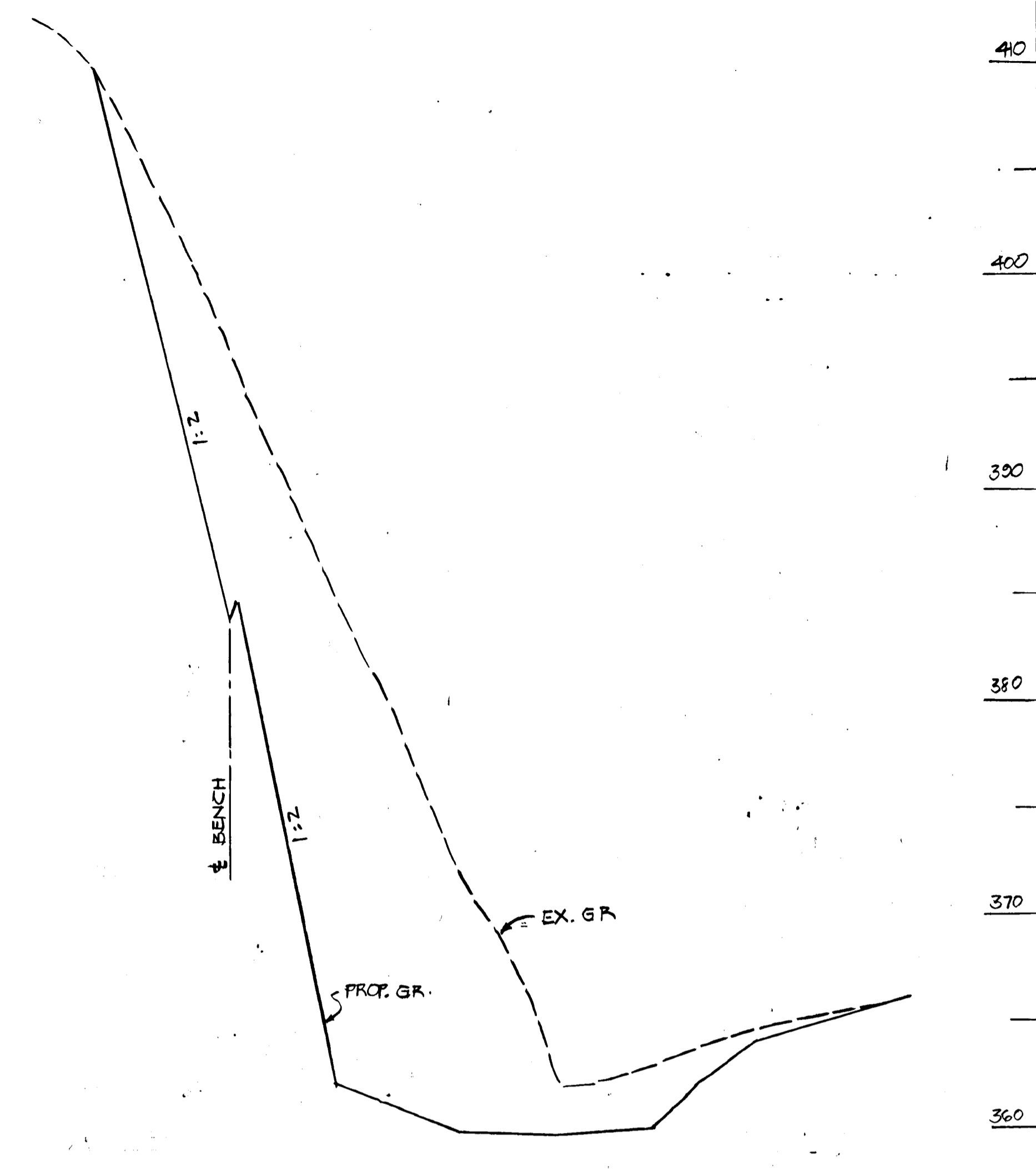
7. Finishing - Defective concrete, honeycombed areas, voids left by the removal of tie rods, ridges on all concrete surfaces permanently exposed to view or exposed to water on the finished structure, shall be repaired immediately after the removal of forms. All voids shall be reamed and completely filled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

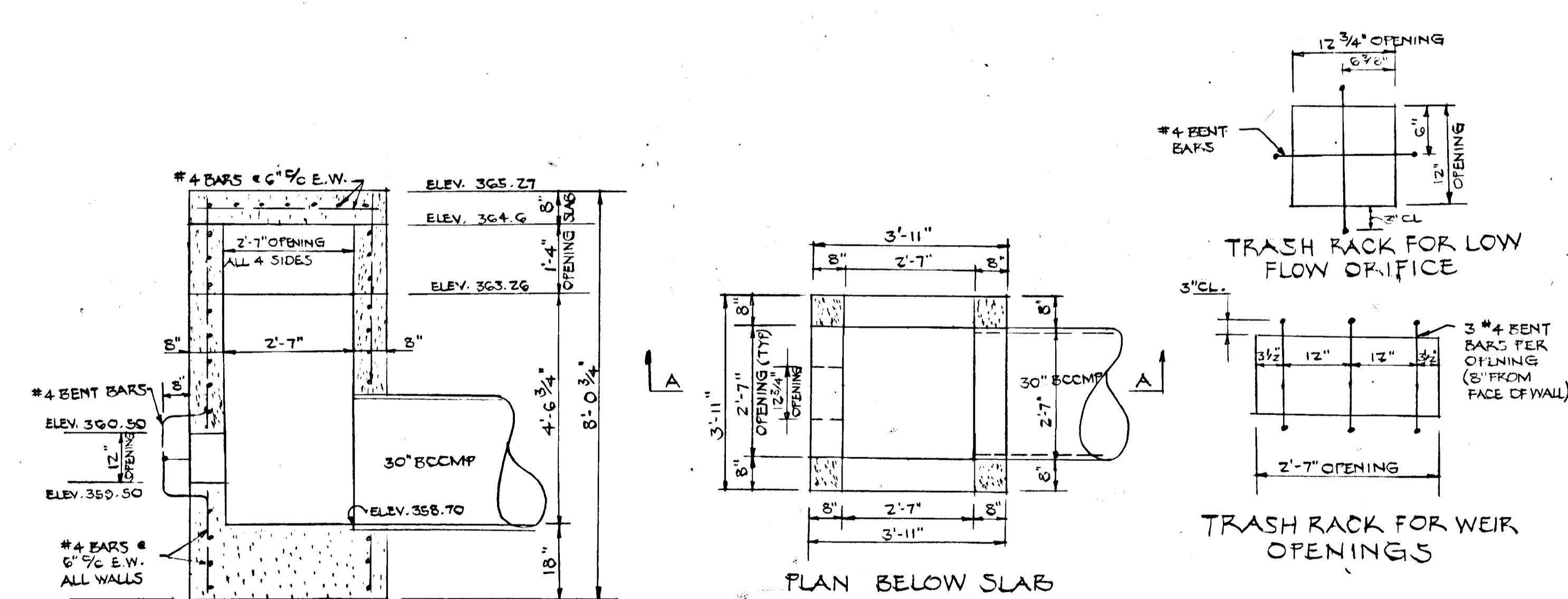
9. Placing Temperature - Concrete may not be placed at temperatures below 37° F with the temperature falling, or 34° with the temperature rising.

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.



SECTION C-C SCALE VERT 1"=5' HORIZ 1"=50'



SECTION A-A POND OUTFALL STRUCTURE SCALE 1"=2'

HUDKINS ASSOCIATES, INC. 200 EAST JOPPA ROAD ROOM 101, SHELL BUILDING TOWSON, MARYLAND 21284  <i>Arthur P. Howard, P.E. 5-11-84</i>		DES: SLB				THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  HOWARD S.C.D. DATE REVIEWED FOR HOWARD S.C.D. AND MEET'S TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.  US SOIL CONSERVATION SERVICE DATE
		DRN: SLB				
		CHK: DB				
		DATE 8-3-84	BY NO	REVISION		
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  <i>William R. Ray 10/26/84</i> CHIEF ENGINEER DATE 10-19-84 CHIEF OF LAND DEVELOPMENT & ZONING ADMINISTRATION			STORM WATER MANAGEMENT		FONT HILL VILLAGE SECT. 4 AREA 1 ELECT. DIST. 2 HOWARD CO., MD.	
					SCALE AS SHOWN	SHEET 2 OF 3

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