STRUCTURE SCHEDULE					
NO	TYPE	INV. IN	INV. OUT	TOP	REMARKS
I-6	S COMB DEP.	346.05	345.83	352.68	S.D. 4.32
I-7	A-5	-	348.50	352.68	SD 4.01
I-8	A-10	355.48	355.23	360.58	SD 4.02
I-9	A-10	-	358.54	362.68	SD 4.02
I-10	DBLE. S. COMB	-	354.12	360.53	SD 4.34
I-11	A-10	-	354.12	360.53	SD 4.02
I-12	A-5	359.68	359.43	364.35	SD 4.01
I-13	A-5	-	360.78	364.35	SD 4.01
M-5	STD. MH	346.40 347.65	346.20	352.80	G 5.02
M-6	STD. MH	352.13 354.38	351.88	359.60	G 5.02
M-7	STD. MH	353.22	352.97	360.40	G 5.02
M-8	STD. MH	356.44	356.24	362.30	G 5.01
S-2	'C' ENDWALL	-	345.33	348.83	S.D. 5.21

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	HUDKINS ASSOCIATES, INC. 200 EAST JOPPA ROAD ROOM 101, SHELL BUILDING TOWSON, MARYLAND 21204	DES: DWB DRN: DWB CHK: AL DATE:	ROAD AND STORM DRAIN PLAN AND PROFILE	DURHAM ROAD EAST, FLATTAIL COURT, BEAVERTAIL COURT, WOODAM COURT, AND LYNNGATE ROAD BEAVERBROOK SECTION 11 AREA 1 ELECT. DIST. 5 HOWARD COUNTY, MD	SCALE AS SHOWN SHEET 1 OF 10

CHIEF ENGINEERING DATE 10/31/84
CHIEF DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION - DATE 10-26-84

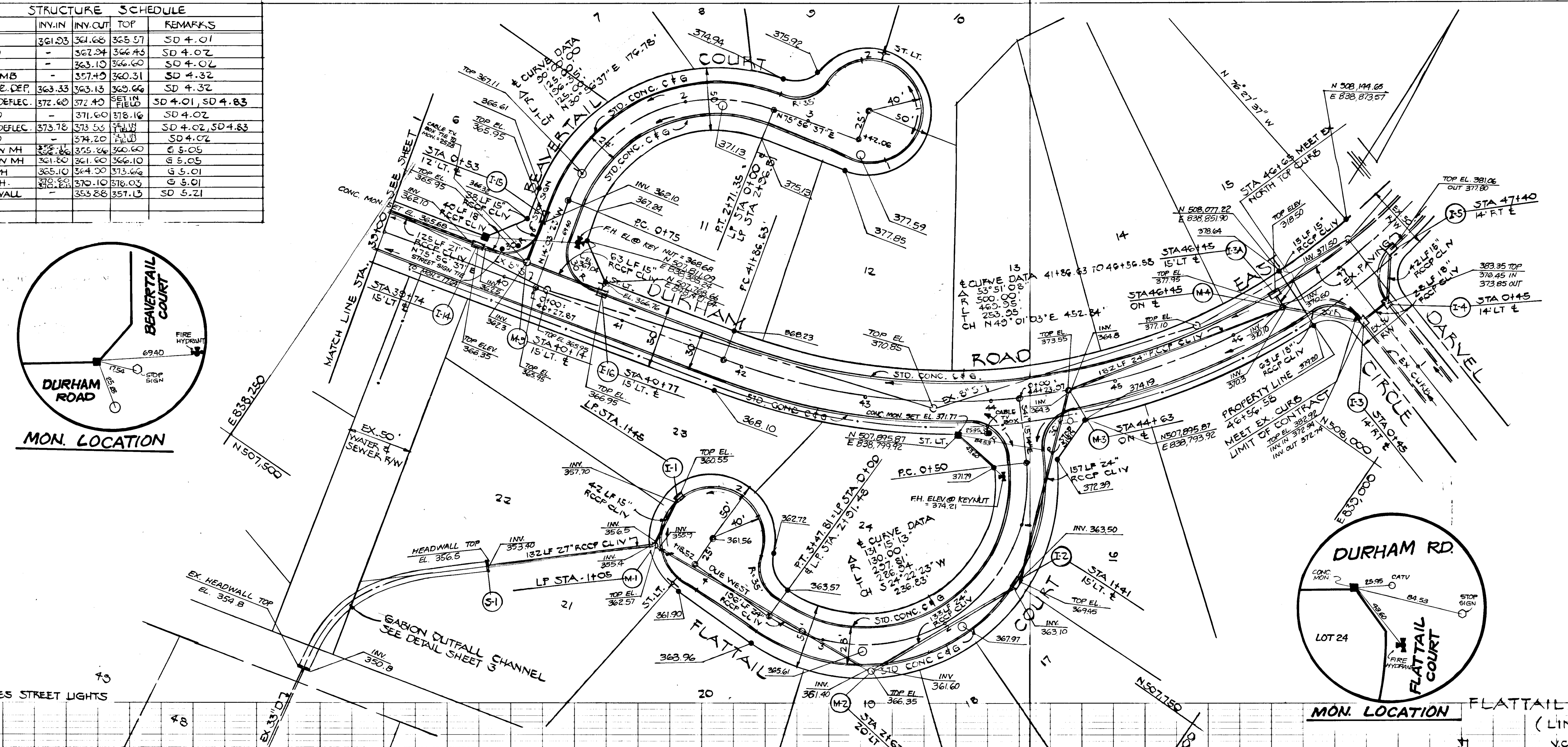
BY | NO | REVISION | DATE | 600' SCALE MAP NO. | BLOCK NO.

F-84-158

AS-BUILT 10-27-88

110

STRUCTURE SCHEDULE					
NO	TYPE	INV.IN	INV.OUT	TOP	REMARKS
I-14	A-5	361.93	361.68	365.57	SD 4.01
I-15	A-10	-	362.94	366.43	SD 4.02
I-16	A-10	-	363.19	366.60	SD 4.02
I-1	S COMB	-	357.49	360.31	SD 4.32
I-2	S.COMB.DEP.	363.33	363.13	369.66	SD 4.32
I-3	A-5 W/DEFLEC.	372.69	372.49	SET IN FIELD	SD 4.01, SD 4.83
I-3A	A-10	-	371.60	378.16	SD 4.02
I-4	A-10 W/DEFLEC.	373.78	373.53	SET IN FIELD	SD 4.02, SD 4.83
I-5	A-10	-	374.20	SET IN FIELD	SD 4.02
M-1	SHALLOW MH	356.11 356.86	355.86	360.60	G 5.05
M-2	SHALLOW MH	361.80	361.60	366.10	G 5.05
M-3	STD. MH	365.10	364.90	373.66	G 5.01
M-4	STD. MH.	370.60 370.85	370.10	378.03	G 5.01
S-1	'C' ENDWALL	-	353.88	357.13	SD 5.21



GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH HOWARD CO. 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 CO. STANDARDS, SPECIFICATIONS & DETAILS FOR CONSTRUCTION.
4. ANY DAMAGE TO PUBLIC RIGHTS-OF-WAYS OR PAVING WILL BE REPAIRED AT THE DEVELOPERS 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 CONTRACTORS OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTORS EXPENSE.
6. THE CONTRACTOR SHALL TEST PIT EXISTING UTILITIES WHERE DIRECTED AT LEAST 2 WEEKS IN ADVANCE OF ANY CONSTRUCTION
7. CONTRACTOR SHALL NOTIFY HOWARD CO. DEPT. OF INSPECTION & PERMITS @ LEAST 3 DAYS BEFORE STARTING WORK 992-2436

STREET LENGTHS

DURHAM RD (THIS SHEET)	
BEAVERTAIL COURT	342.06
FLATTAIL COURT	418.52

HOR. AND VERT. CONTROL HOWARD CO.
CONC. MON. 2840002
CONC. MON. 2840003

AS-BUILT SURVEY CERTIFIED BY WILLIAM ONSLOW COLLINS, MD. P.E. No. 18017, ON 10-27-88

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, DIVISION OF ENGINEERING 10/31/84 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION 10-26-84 DATE

HUDKINS ASSOCIATES, INC.
200 EAST JOPPA ROAD
ROOM 101, SHELL BUILDING
TOWSON, MARYLAND 21204

STATE OF MARYLAND — ARTHUR E. LEONARD — NO. 11438 — REGISTERED PROFESSIONAL ENGINEER — 7-17-84

DES:	DWB
DRN:	DWB
CHK:	A.L.
DATE:	

BY	NO	REVISION	DATE

ROAD AND STORM DRAIN PLAN AND PROFILE

600' SCALE MAP NO. ____ BLOCK NO. ____

DURHAM ROAD EAST, FLATTAIL COURT, BEAVERTAIL COURT, WOODAM COURT, AND LYNNGATE ROAD
BEAVERBROOK
SECTION 11 AREA 1
ELECT. DIST. 5 HOWARD COUNTY, MD

SCALE AS SHOWN

SHEET 2 OF 10

F-84-158

AS-BUILT 10-27-88

110

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD S.C.D.

HOWARD S.C.D. — 10-25-84 — DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

U.S. SOIL CONSERVATION SERVICE — 10-25-84 — DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF ENGINEERING — 10/31/84 — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — 10-26-84 — DATE

HUDKINS ASSOCIATES INC.
200 EAST JOPPA ROAD
ROOM 101, SHELL BUILDING
TOWSON, MARYLAND 21204

DES: DWB
DRN: DWB
CHK: AL
DATE:

BY	NO.	REVISION	DATE
W.B.	1	REV'D. VELOCITIES AND INCOMING PIPE @ MH 17	2-25-85

ROAD AND STORM DRAIN PLAN AND PROFILE

600' SCALE MAP NO. ______ BLOCK NO. ______

DURHAM ROAD EAST, FLATTAIL COURT, BEAVERTAIL COURT, WOODAM COURT, AND LYNNGATE ROAD
BEAVERBROOK
SECTION 11 AREA 1
ELECT. DIST. 5 HOWARD COUNTY, MD.

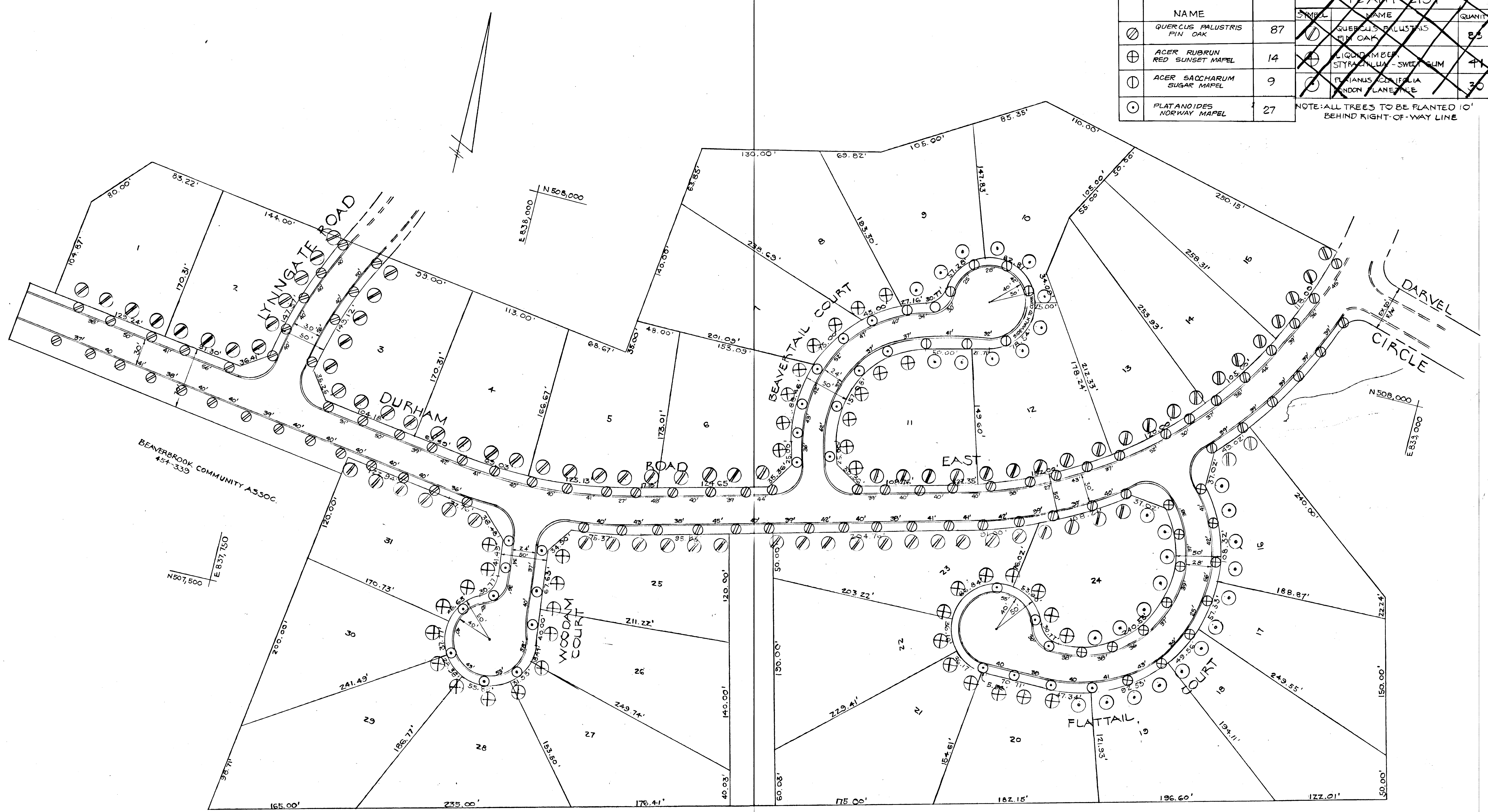
SCALE AS SHOWN

SHEET 3 OF 10

F-84-158

AS-BUILT 10-27-88

110



	NAME	
⊘	QUERCUS PALUSTRIS PIN OAK	87
⊕	ACER RUBRUN RED SUNSET MAPEL	14
⦶	ACER SACCHARUM SUGAR MAPEL	9
⊙	PLATANOIDES NORWAY MAPEL	27

PLANT LIST (crossed out)

SYMBOL	NAME	QUANITY
⊘	QUERCUS PALUSTRIS PIN OAK	83
⊕	LIQUIDAMBER STYRACIFLUA - SWEET GUM	41
⊙	PLATANUS ACERIFOLIA LONDON PLANETREE	30

NOTE: ALL TREES TO BE PLANTED 10' BEHIND RIGHT-OF-WAY LINE

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD S.C.D.
HOWARD SCD — DATE 10-25-84

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
U.S. SOIL CONSERVATION SERVICE — DATE 10-25-84

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF ENGINEERING — DATE 10/31/84

CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION — DATE 10-26-84

HUDKINS ASSOCIATES, INC.
200 EAST JOPPA ROAD
ROOM 101, SHELL BUILDING
TOWSON, MARYLAND 21204

STATE OF MARYLAND — ARTHUR E. LEONARD — REGISTERED PROFESSIONAL ENGINEER

DES. DWB
DRN DWB
CHK AL
DATE:

BY	NO	REVISION	DATE

LANDSCAPE PLAN

600 SCALE MAP NO ______ BLOCK NO ______

BEAVERBROOK

SECTION 11 AREA 1
ELECT. DIST. 5 HOWARD COUNTY, MD

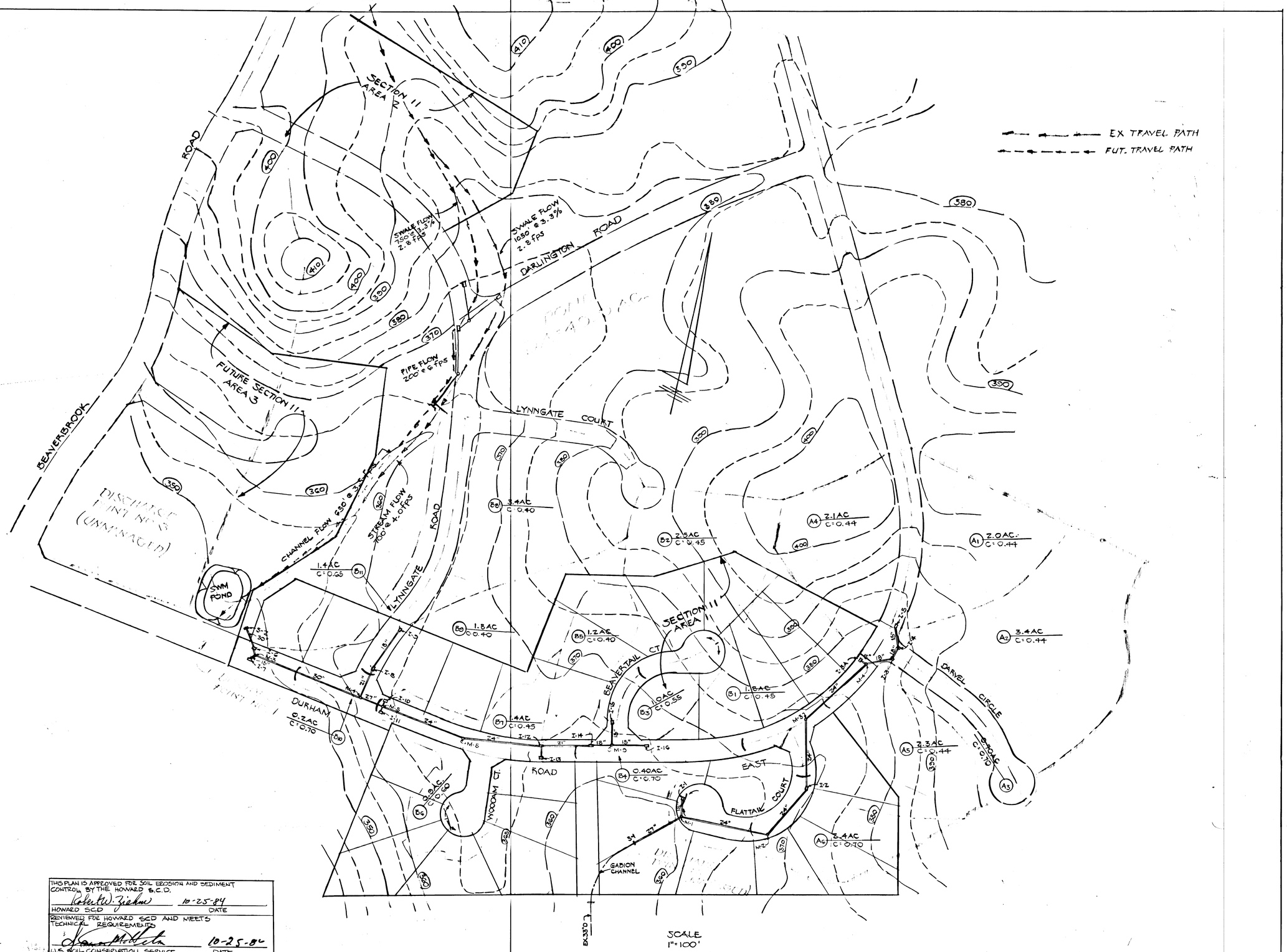
SCALE AS SHOWN

SHEET 4 OF 10

F-84-158

AS-BUILT

110



THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD S.C.D.

Robert W. Ziehm — 10-25-84
HOWARD SCD — DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

[signature] — 10-25-84
U.S. SOIL CONSERVATION SERVICE — DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[signature] 8/20/84
CHIEF, BUREAU OF ENGINEERING — DATE

[signature] 10-26-84
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

HUDKINS ASSOCIATES, INC.
200 EAST JOPPA ROAD
ROOM 101, SHELL BUILDING
TOWSON, MARYLAND 21204

Arthur E. Edmonds
7-17-84

	BY	NO	REVISION	DATE
DES. DWB				
DRN DWB				
CHK AL				
DATE				

DRAINAGE AREA MAP

BEAVERBROOK
SECTION II AREA 1
ELECT. DIST. 5 HOWARD COUNTY, MD.

6'00 SCALE MAP NO. ____ BLOCK NO. ____

SCALE AS SHOWN

SHEET 5 OF 10

F-84-158

110

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD S.C.D.

Robert W. Ziehm 10-25-84
HOWARD SCD DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

James M. Nelm 10-25-84
U.S. SOIL CONSERVATION SERVICE DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

William E. Riley 10/31/84
CHIEF, BUREAU OF ENGINEERING DATE

John W. Marshman 10-26-84
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

HUDKINS ASSOCIATES, INC.
200 EAST JOPPA ROAD
ROOM 101, SHELL BUILDING
TOWSON, MARYLAND 21204

Arthur E. Leonard
7-17-84

DES. DWB				
DRN. DWB				
CHK AL				
DATE	BY	NO	REVISION	DATE

GRADING PLAN

600 SCALE MAP NO ______ BLOCK NO ______

BEAVERBROOK

SECTION 11 AREA 1
ELECT. DIST. 5 HOWARD COUNTY, MD.

SCALE AS SHOWN

SHEET 6 OF 10

110

F-84-158

SEQUENCE OF CONSTRUCTION:

1. Obtain grading permit
2. Notify Howard Co. Dept. of Permits & Licenses
3. Install stone construction entrances
4. Clear and grub areas for installation of sediment control features
5. Construct sediment basin and outfall structure, diversion dike and stone outlet sediment trap
6. Rough grade site
7. Install utilities, provide inlet protection
8. Place stone base on streets
9. Pave roads
10. Stabilize remaining areas per permanent seeding procedures
11. Remove sediment control devices and stabilize those areas.
12. Convert sediment basin to storm water management pond

DEVELOPER'S CERTIFICATE

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 County Soil Conservation District or their authorized representatives as are deemed necessary. Responsible personnel involved in the construction project will have a certificate of attendance at a Dept. of Natural Resources approved training program for the sediment control of Sediment & Erosion before beginning the project.

William Coale

ENGINEER'S CERTIFICATE

I certify that this plan for development and 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.

Arthur E. Leonard 10-01-84
ARTHUR E. LEONARD, PE.

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD S.C.D.

Robert W. Ziehm — 10-25-84
HOWARD SCD — DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

James M. Helm — 10-25-84
U.S. SOIL CONSERVATION SERVICE — DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

William E. Riley 10/31/84
CHIEF, BUREAU OF ENGINEERING — DATE

John W. Musselman 10-26-84
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION

110

HUDKINS ASSOCIATES, INC.
200 EAST JOPPA ROAD
ROOM 101, SHELL BUILDING
TOWSON, MARYLAND 21204

DES DWB			
DRN. DWB			
CHK AL			
DATE	BY	NO	REVISION

DATE | 600 SCALE MAP NO ______ BLOCK NO ______

SEDIMENT CONTROL PLAN

BEAVERBROOK

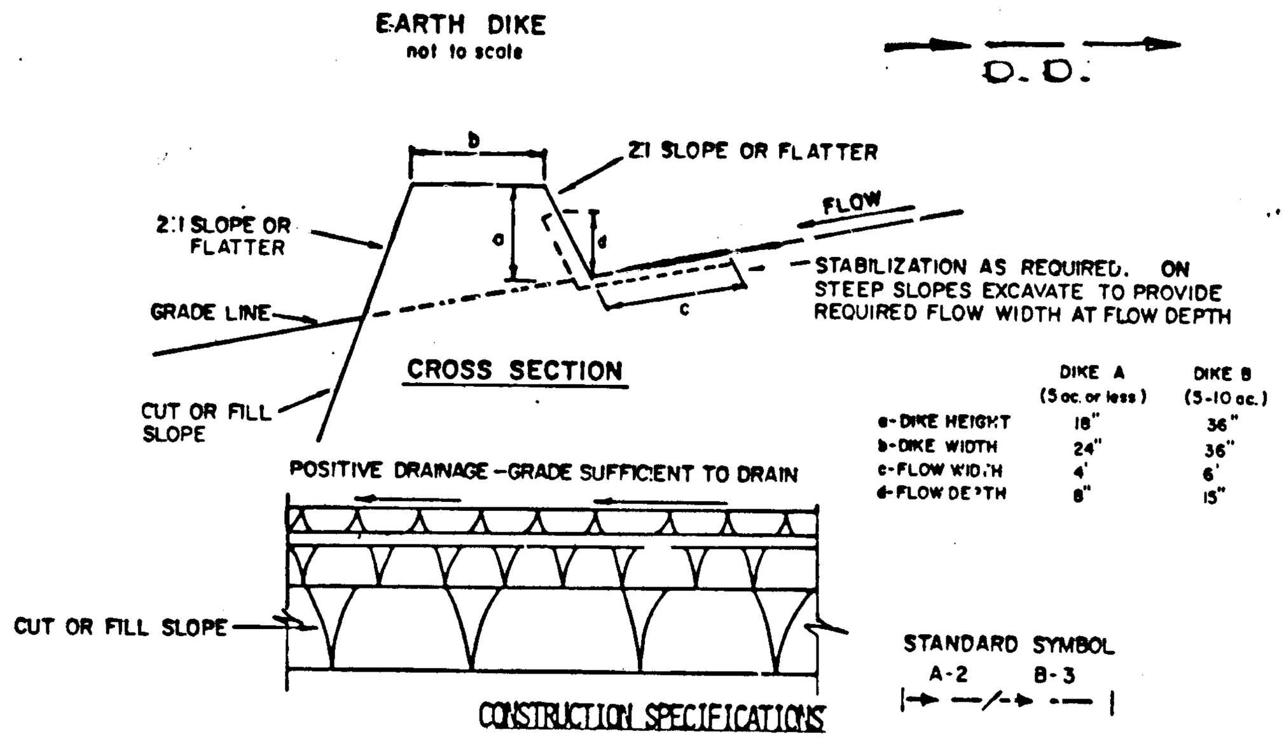
SECTION II AREA 1
ELECT. DIST. 5 HOWARD COUNTY, MD

SCALE AS SHOWN

SHEET 7 OF 10

F-84-158

EARTH DIKE
not to scale

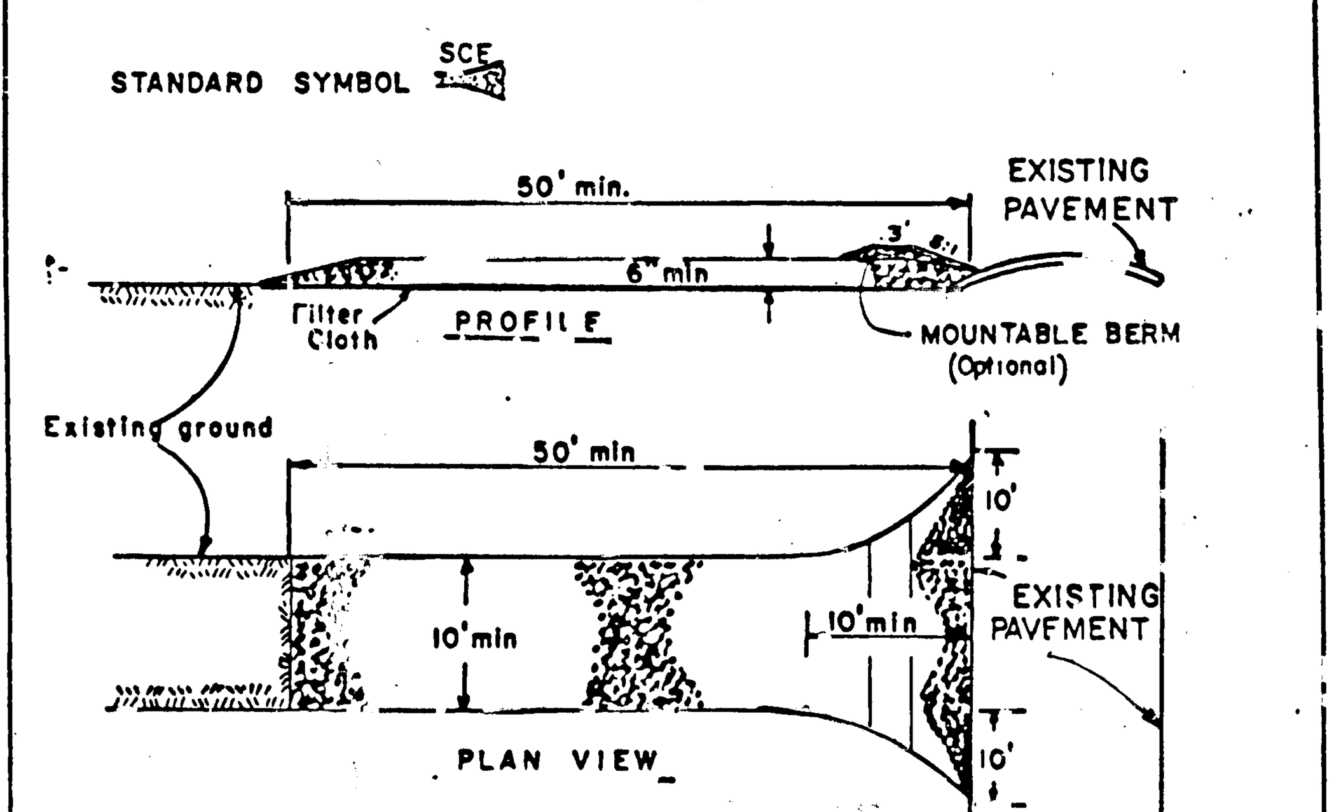


CONSTRUCTION SPECIFICATIONS

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.

STABILIZED CONSTRUCTION ENTRANCE
not to scale

STANDARD SYMBOL SCE



CONSTRUCTION SPECIFICATIONS

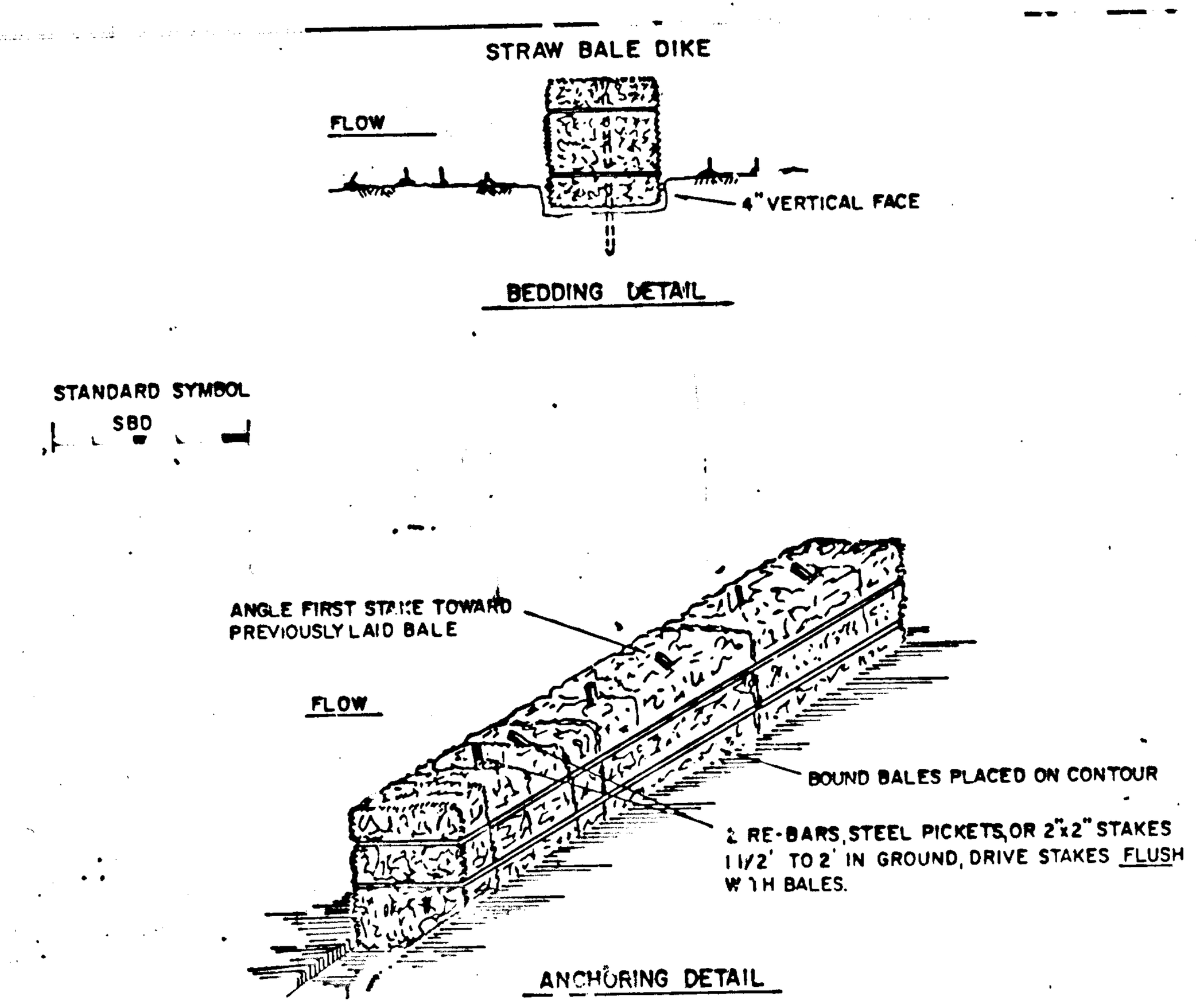
1. Stone Size - Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than 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 mountable 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 measures 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.

U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE College Park, Md.	STABILIZED CONSTRUCTION ENTRANCE	Standard Drawing SCE-1

14.03

Following initial soil disturbance or redisturbance, permanent or temporary stabilization shall be completed within:
1. Seven calendar days 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.

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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE COLLEGE PARK, MARYLAND	STRAW BALE DIKE	STANDARD DRAWING SBD-1

11.02

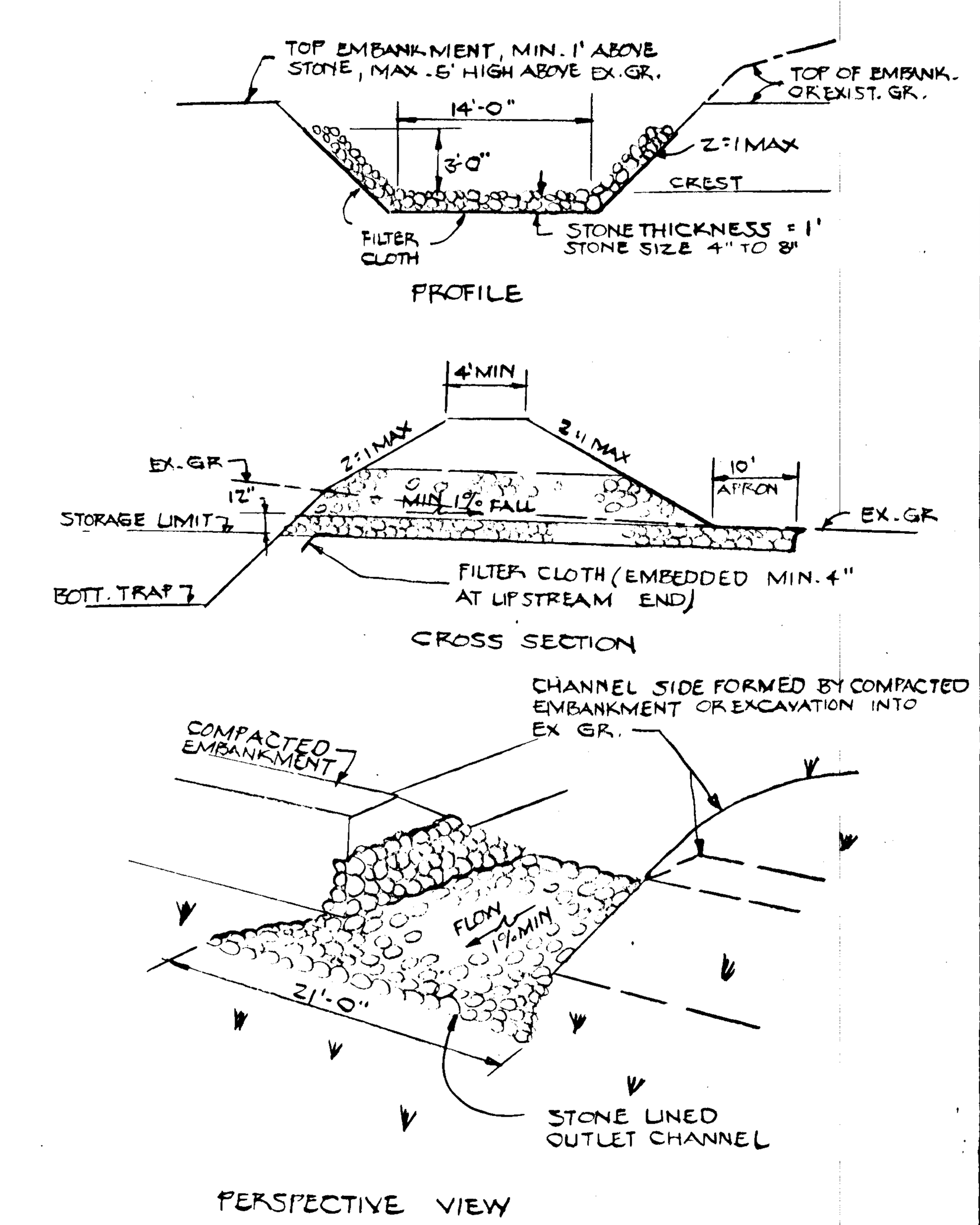
SEDIMENT CONTROL SEEDING NOTES:
1. Notify Howard County Bureau of Inspections 48 hrs. before starting work.
2. Install Sediment control measures in accordance with "Standards & Specifications for Soil Erosion & Sediment Control in developing areas" prior to any grading.
3. All Sediment control measures 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 31, & 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.

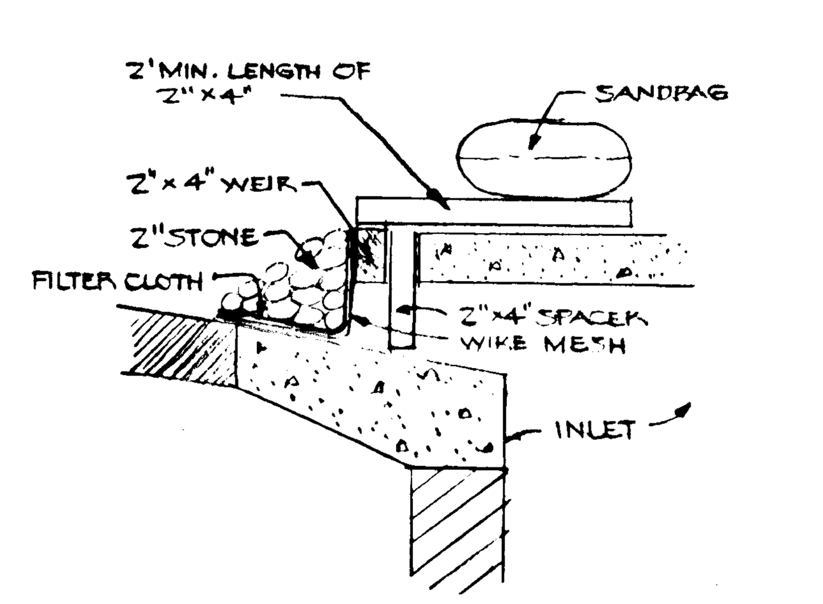
NOTES:
1. Notify the Howard Co. Bureau of Inspection & Permits @ least 48 hrs. before starting work.
2. All sediment control devices are to remain in place until permission for removal has been obtained from The Howard Co. Bureau of Inspections & Permits.
3. Structural measures such as berms, dikes, 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 cleanout 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.

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 or equivalent fertilizer.
3. Harrow of disc lime and fertilzer into the soil to a depth of at least 3 inch continue tillage until a reasonably fine firm seed bed has been prepared on sloping land the final harrowing should be on the contour.
4. Mulch with straw @75 lbs./1000 s.f.

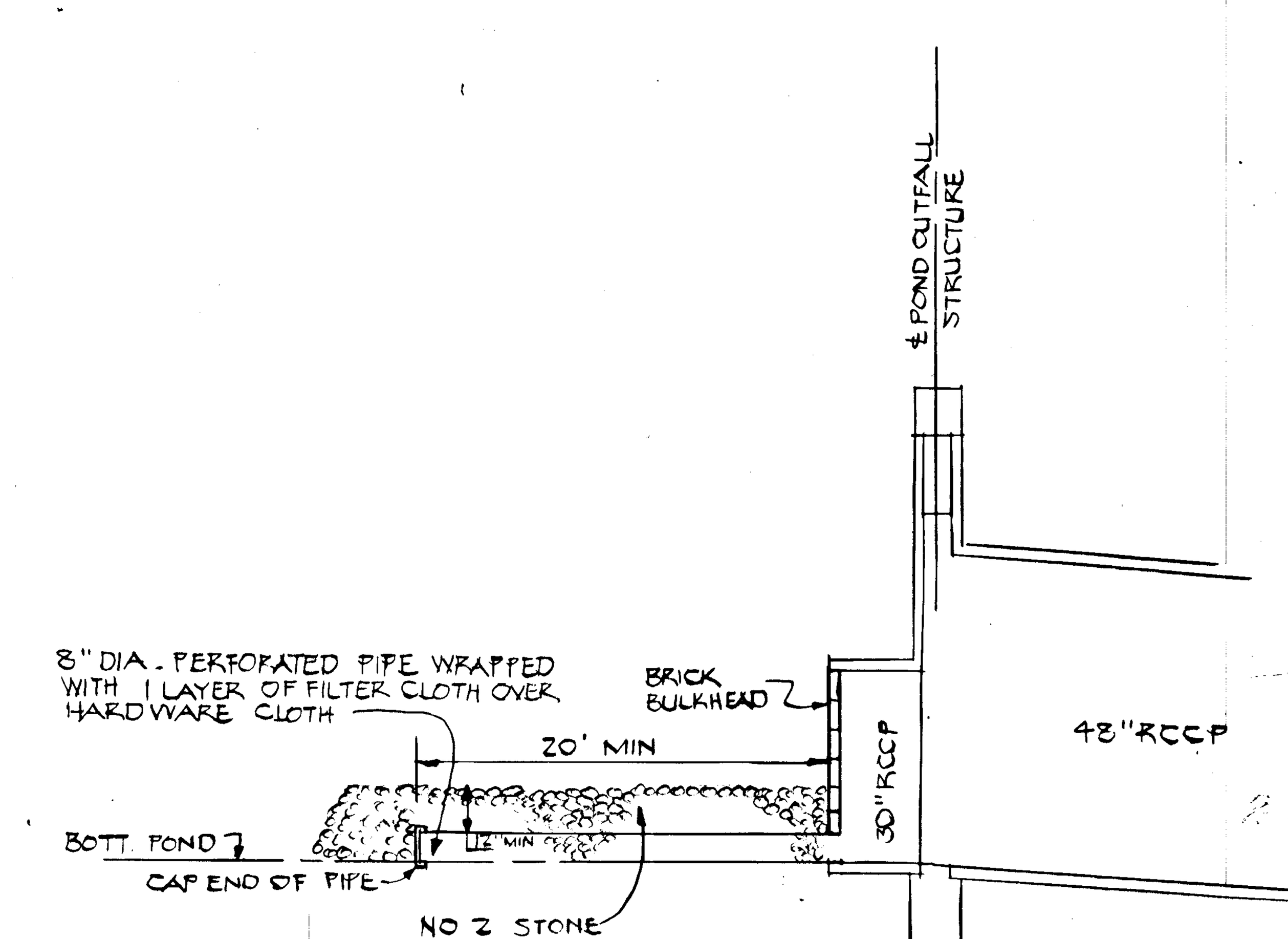
THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD S.C.D.
Robert W. Ziehm 10-26-84
HOWARD S.C.D. DATE
REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
James M. Nelson 10-25-84
U.S. SOIL CONSERVATION SERVICE DATE

RIPRAP OUTLET SEDIMENT TRAP
ST-VI





INLET PROTECTION DETAIL

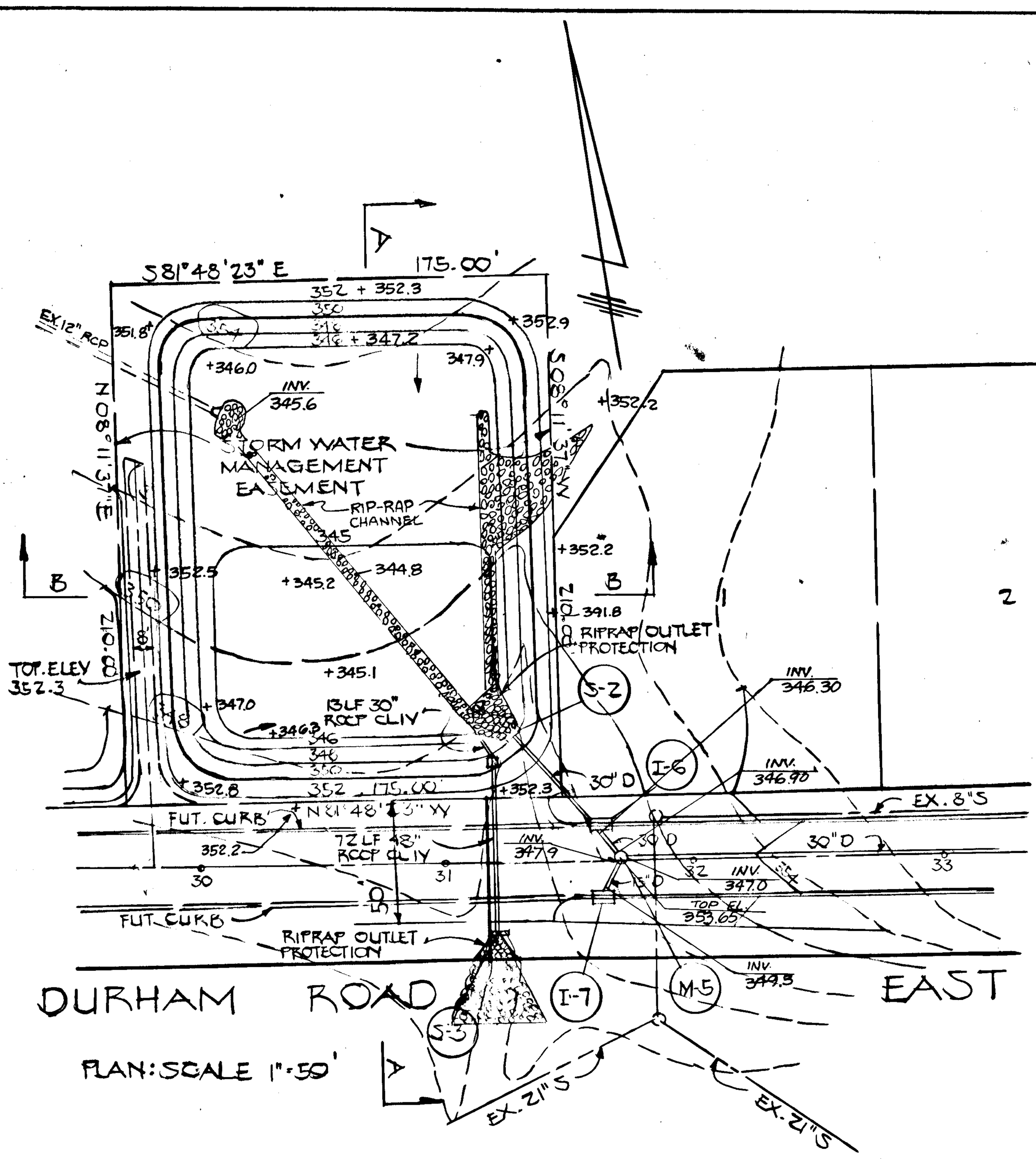


POND DEWATERING DEVICE

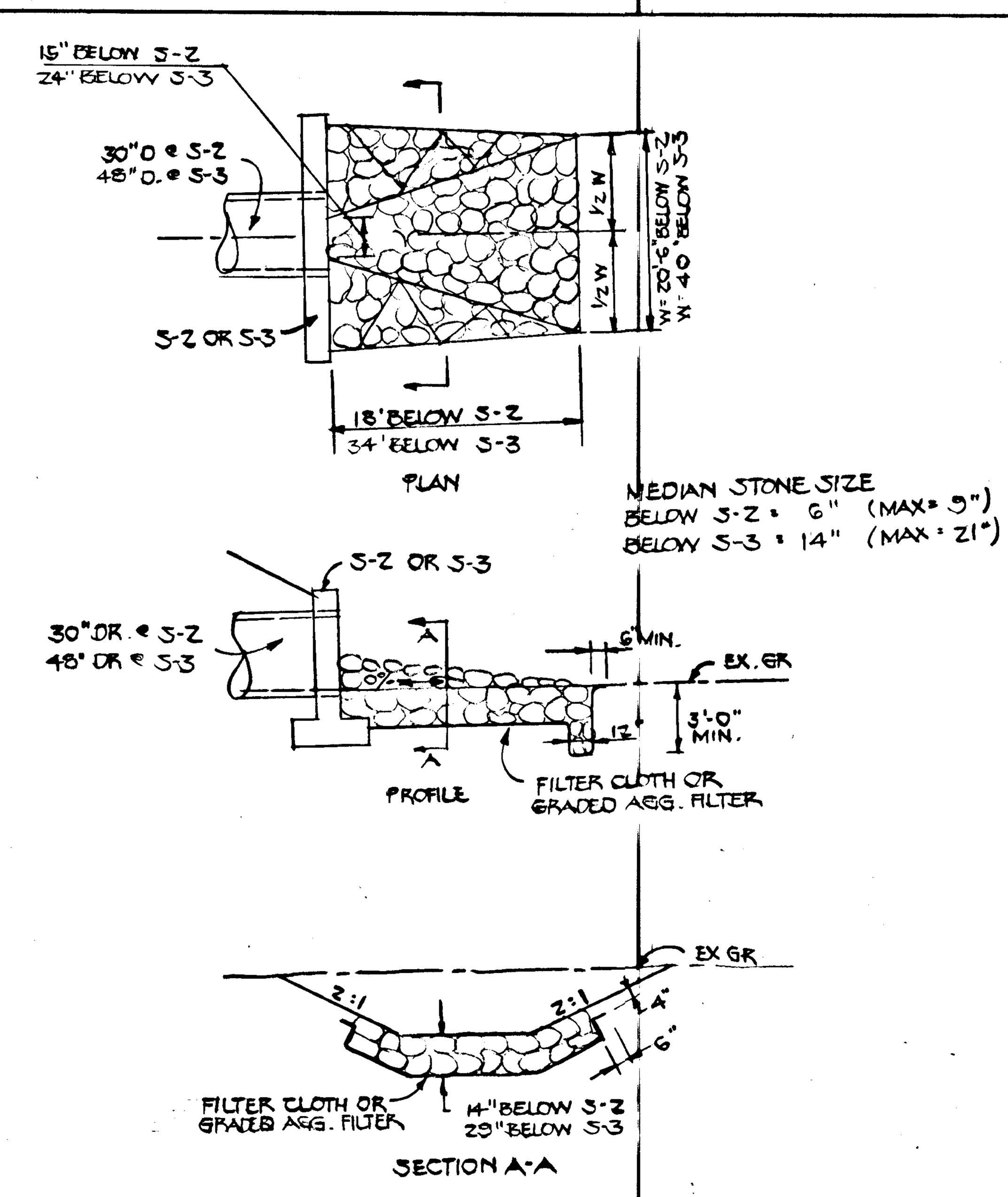
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	DES. DWB				SEDIMENT CONTROL PLAN	BEAVERBROOK SECTION 11 AREA 1 ELECT. DIST. 5 HOWARD COUNTY, MD	SCALE AS SHOWN
[signature] 10/31/84 CHIEF, BUREAU OF ENGINEERING DATE	DRN. DWB						SHEET 8 OF 10
[signature] 10-26-84 CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION DATE	CHK. A.L.						
	DATE	BY	NO	REVISION	DATE	600' SCALE MAP NO ___ BLOCK NO ___	

110

F-84-158



PLAN: SCALE 1"=50'



RIPRAP OUTLET PROTECTION

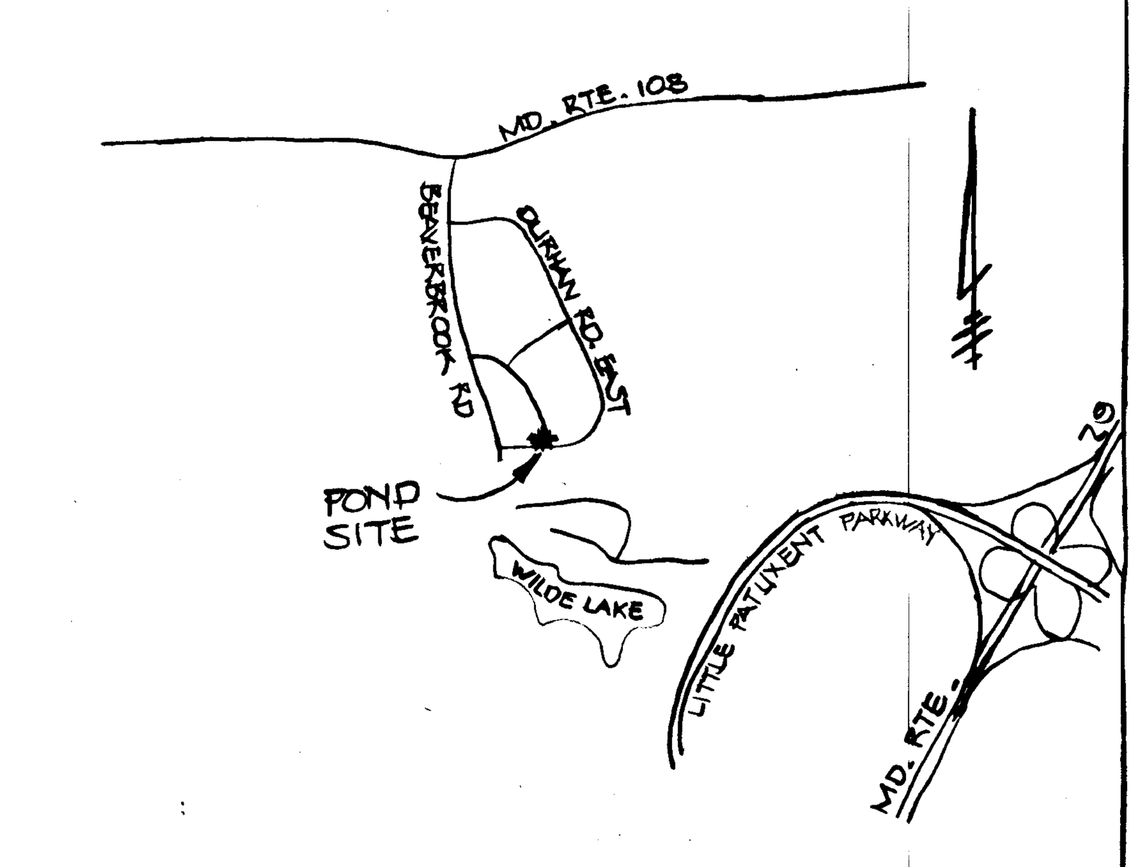
THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL

10-25-84
U.S. SOIL CONSERVATION SERVICE DATE

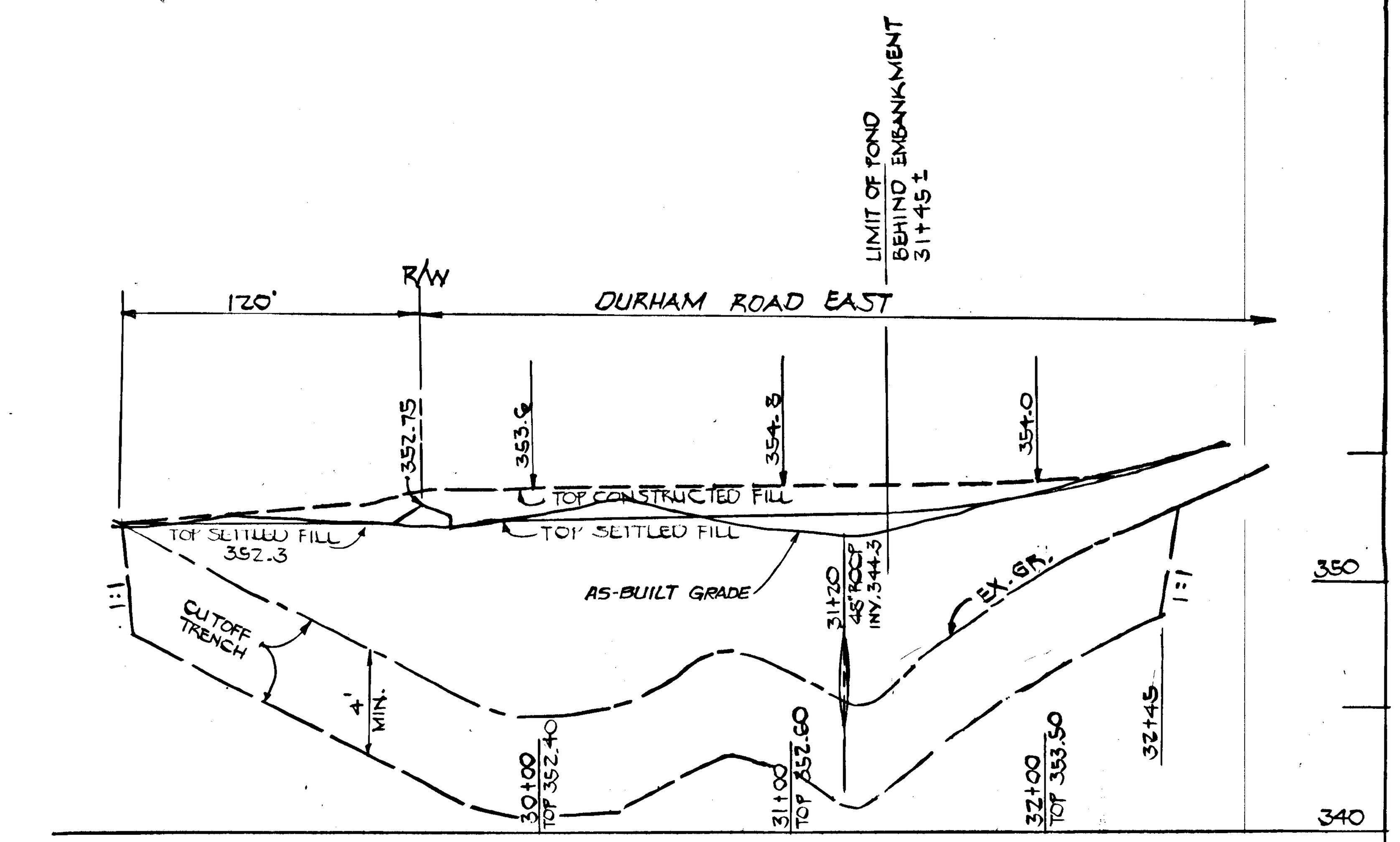
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION & SEDIMENT CONTROL, MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT

10-25-84
HOWARD CO. S.C.D. DATE

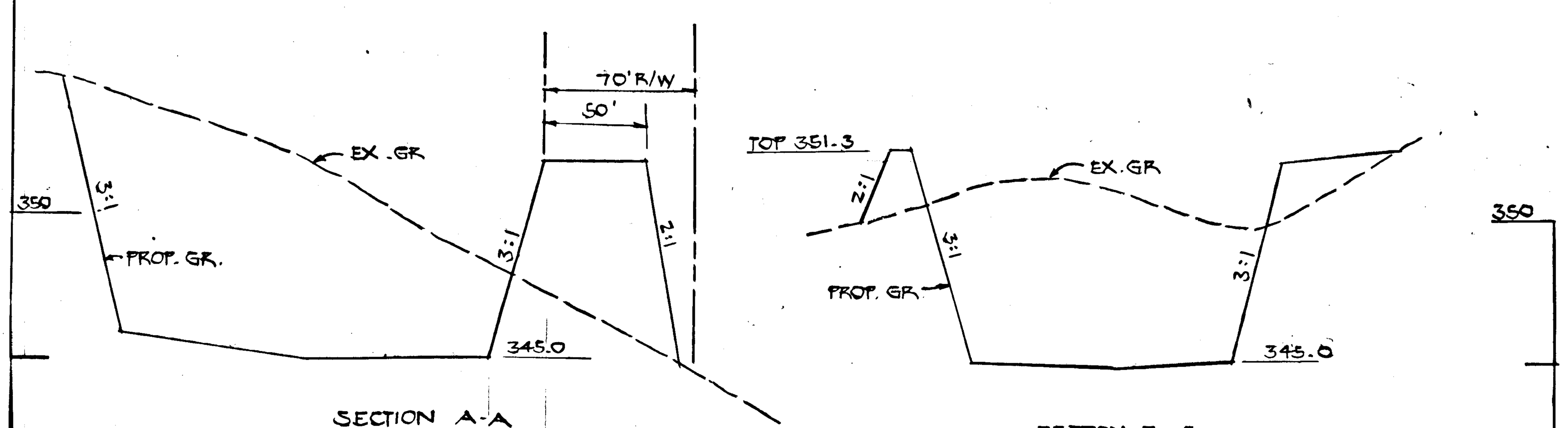
NOTE: CONSTRUCTION SHOWN HEREON SHALL NOT BEGIN UNTIL HOWARD S.C.D. IS IN RECEIPT OF LETTER FROM BEAVERBROOK COMM. ASSOC. APPROVING CONSTRUCTION OF RIP-RAP OUTLET PROTECTION.



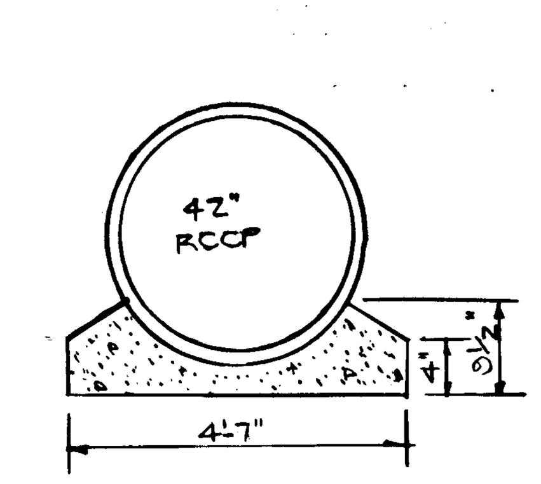
VICINITY MAP
SCALE 1"=2000'



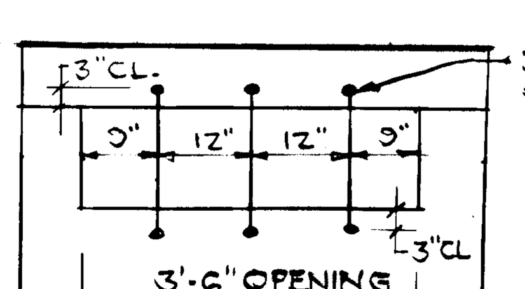
PROFILE ALONG EMBANKMENT
SCALE HORZ. 1"=50' VERT. 1"=5'



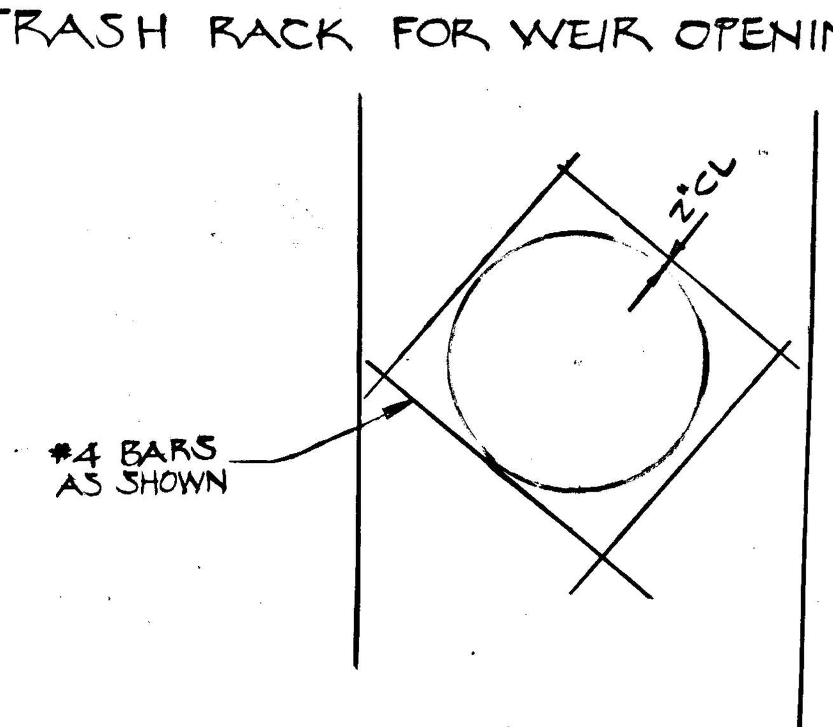
SECTIONS
SCALE VERT 1"=5' HORZ 1"=50'



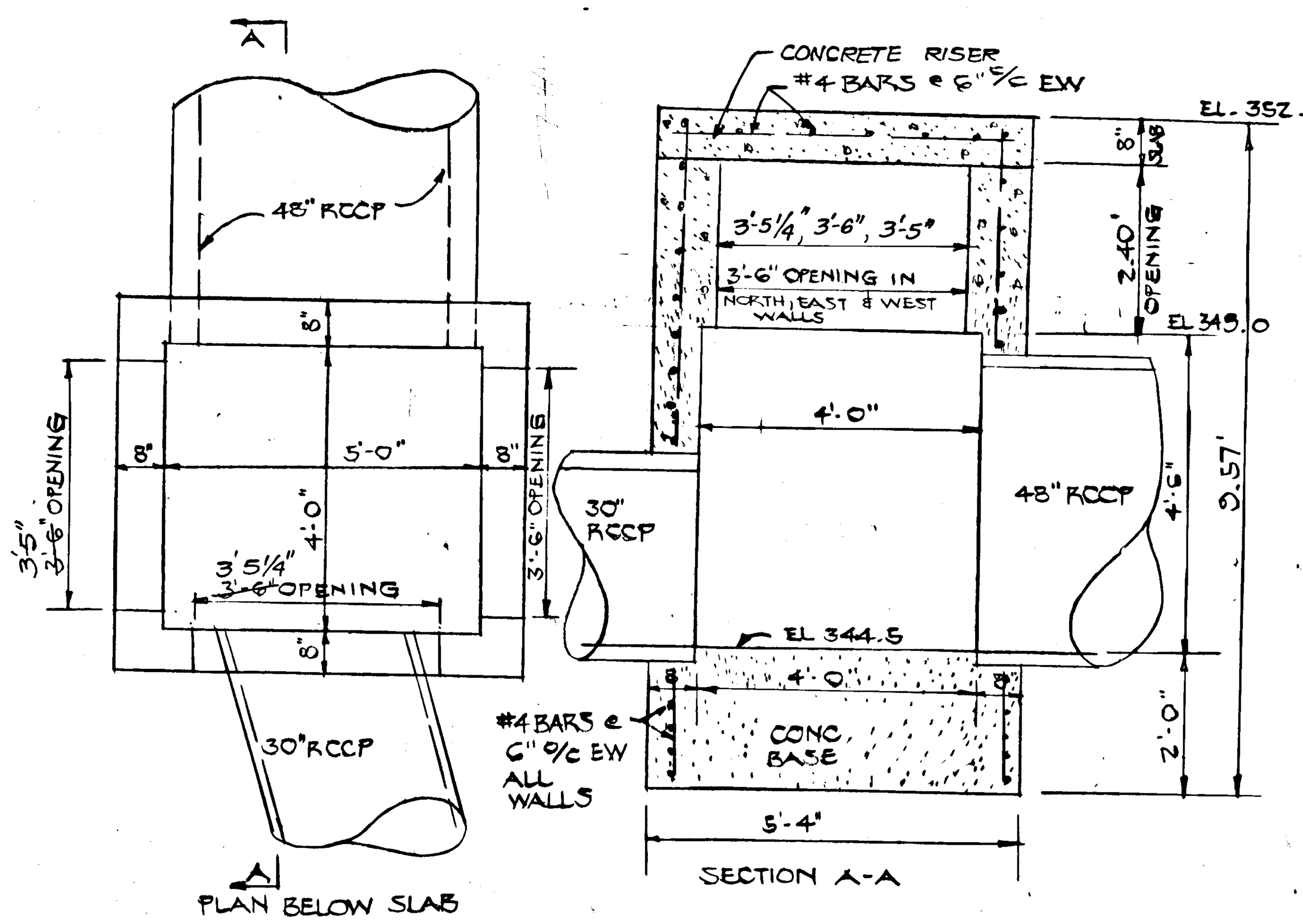
CONCRETE BEDDING



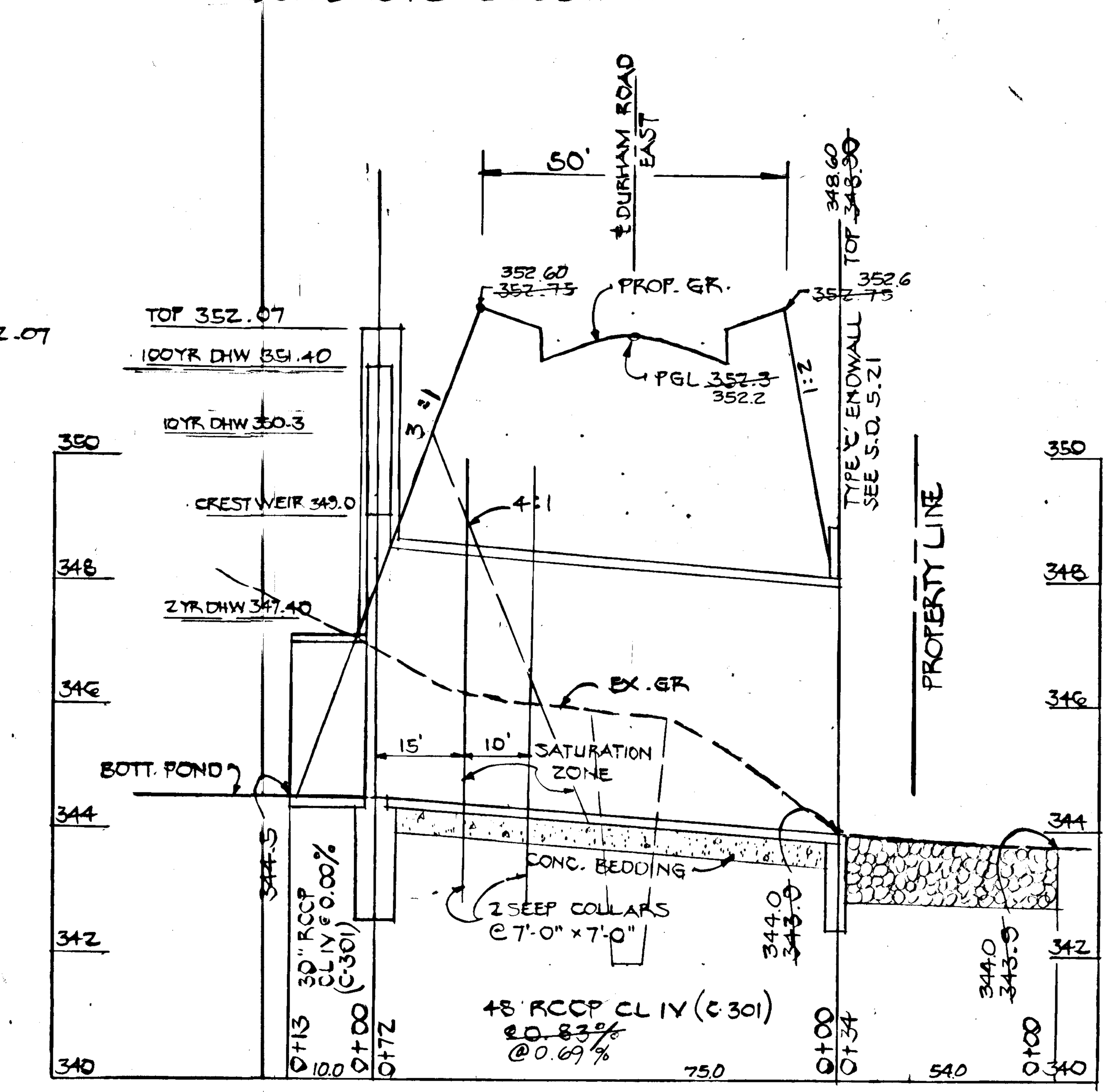
TRASH RACK FOR WEIR OPENINGS



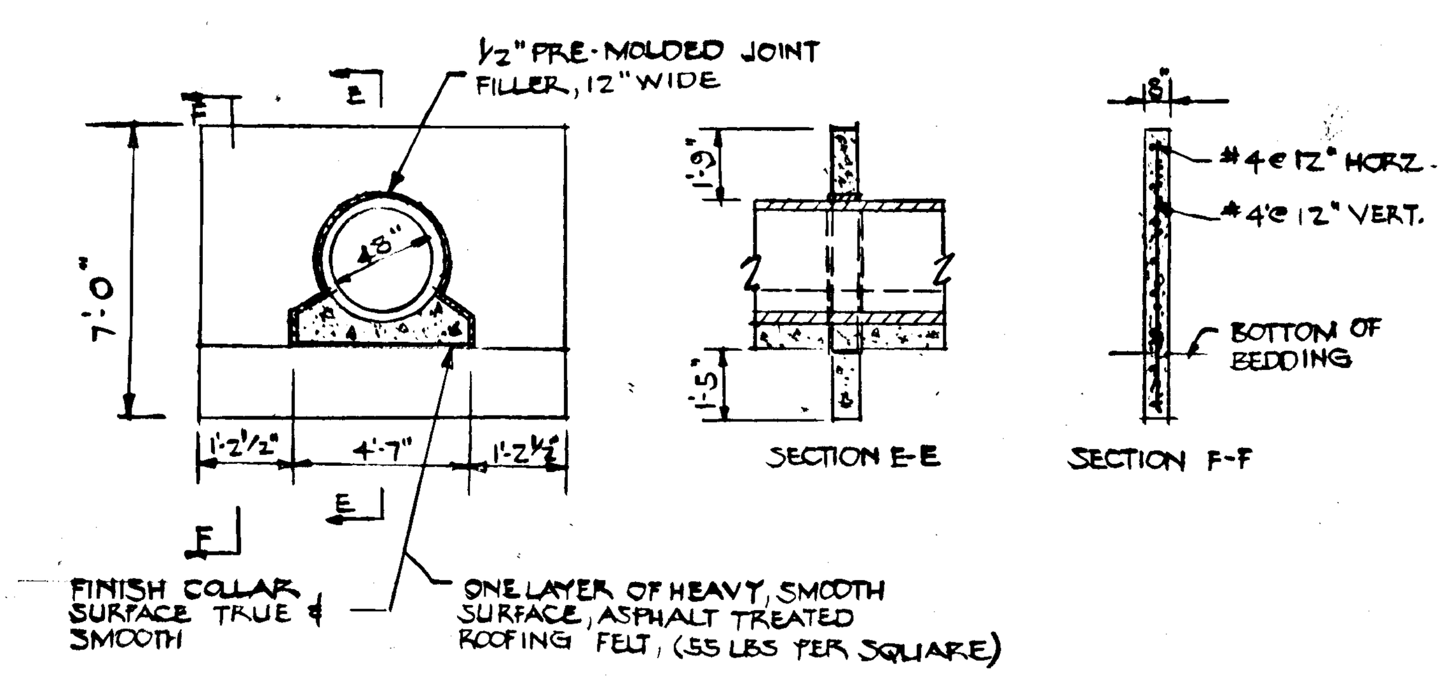
DETAIL
REINFORCING AROUND PIPES



POND OUTFALL STRUCTURE
SCALE 1"=2'-0"



PROFILE OF PIPE SPILLWAY SCALE VERT. 1"=2' HORZ 1"=20'



ANTI-SEEP COLLAR

AS-BUILT SURVEY OF PONDS CERTIFIED BY WILLIAM ONSLOW COLLINS, JR. MD. P.E. NO. 15017, ON 10-27-88

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	HUDKINS ASSOCIATES, INC. 200 EAST JOPPA ROAD ROOM 101, SHELL BUILDING TOWSON, MARYLAND 21204	STORM WATER MANAGEMENT	BEAVERBROOK SECTION II AREA I ELECT. DIST. 5 HOWARD COUNTY, MD	SCALE AS SHOWN
CHIEF, BUREAU OF ENGINEERING 10/31/84	DES. / DRN / CHK / DATE	600 SCALE MAP NO	BLOCK NO	SHEET 9 OF 10
CHIEF, DIVISION OF LAND DEVELOPMENT AND ZONING ADMINISTRATION 10-26-84	BY / NO / REVISIONS / DATE			

F-84-158 AS-BUILT 10-27-88

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 area or areas. It shall be free of roots, stumps, wood, rubbish, oversize 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 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 AWWA Specification C-301

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 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 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 suplemented 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 sightly 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.

PERMANENT SEEDING NOTES:

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 31, & 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.

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 bls./1000 s.f. of 10x10x10 or equivalent fertilizer.
3. Harrow or disc lime and fertilizer into the soil to a depth of at least 3 inch continue tillage until a reasonably fine firm seed beed has been prepared on sloping land the final harrowing should be on the contour.
4. Mulch with straw @75 lbs./1000 s.f.

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

10-25-84
U.S. SOIL CONSERVATION SERVICE DATE

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

10-25-84
HOWARD CO. SCD. DATE

Date	By	Revision
9-16-88	WDL	Revised outfall at ex 12" RCP + added riprap channels

HUDKINS ASSOCIATES, INC.
200 EAST JOPPA ROAD
ROOM 101, SHELL BUILDING
TOWSON, MARYLAND 21204

10-01-84

STATE OF MARYLAND – REGISTERED PROFESSIONAL ENGINEER

DES: SLB
DRN: SLB
CHK: DB
DATE

BY	NO	REVISION	DATE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

10/31/84
CHIEF, BUREAU OF ENGINEERING DATE

10-26-84
CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION DATE

STORM WATER MANAGEMENT

BEAVERBROOK
SECTION II AREA I
ELECT. DIST. No 5
HOWARD COUNTY, MD

SCALE AS SHOWN

SHEET 10 OF 10

F-84-158

#110