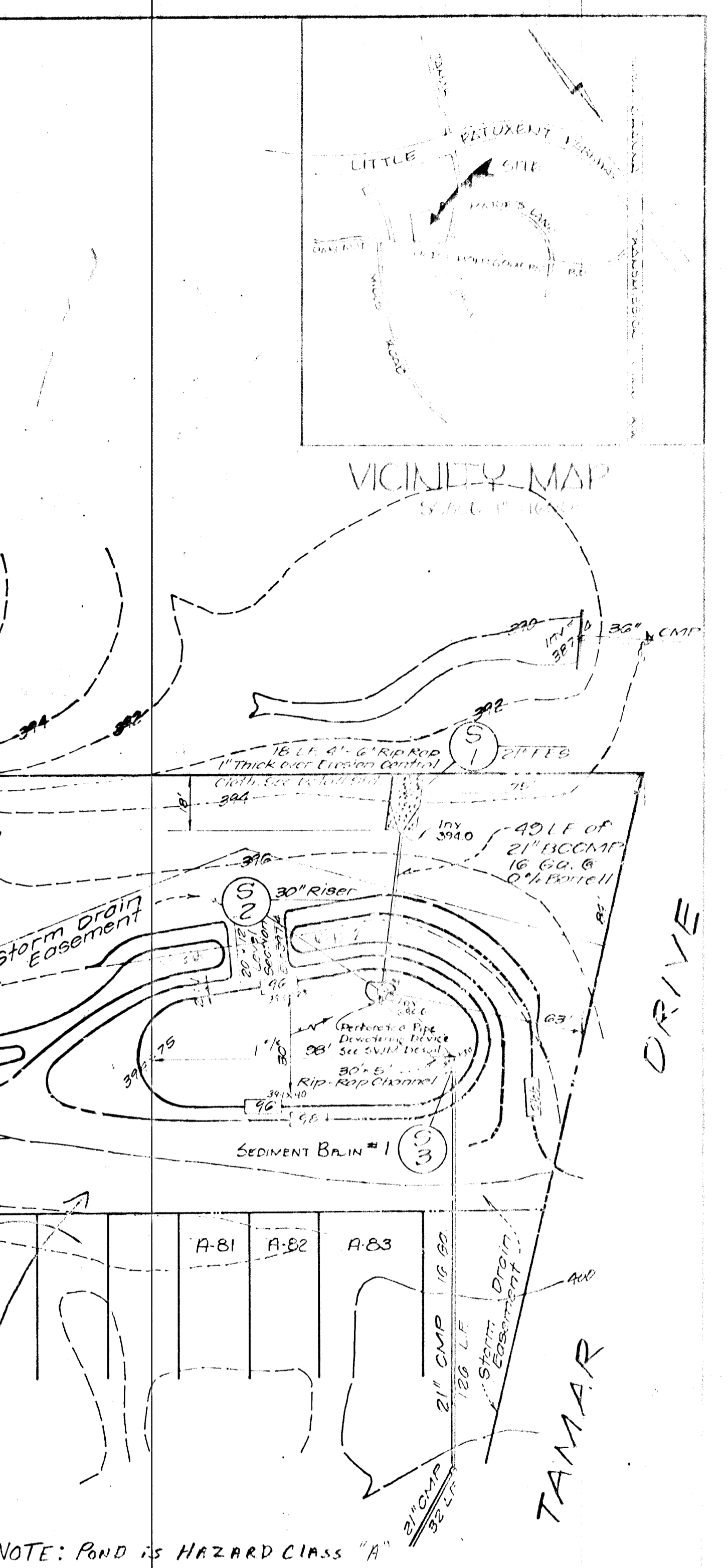


SEQUENCE OF CONSTRUCTION

Phase I	Notify the Bureau of Inspections and Permits at least 24 hours before starting any work.
Phase II	Repair or replace, as necessary, all sediment control devices existing under approved plan F-31-21 C. Clear for and construct all sediment control measures as shown. "Limits of Disturbance" noted on plan shall be inside along property line. Construct storm water management pond as temporary sediment control basin. Clear remaining area to be disturbed.
Phase	Rough grade site and construct roads to subgrade.
Phase	Construct water and sanitary sewer systems. Construct all remaining utilities.
Phase VI	Construct storm drain system. All inlet openings shall be blocked and remain so until all contributing areas have been stabilized.
Phase VII	Construct curb and gutter, fine grade and stabilize graded areas, base course paving.
Phase	Remove inlet opening blocking from all inlets.
Phase	Upon sediment control inspector's approval remove all sediment control devices and stabilize all remaining disturbed areas immediately. Clean and convert sed. control basin to S.W.M. basin.
Phase	Maintenance.



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

James M. Helm 3-21-85
U.S. Soil Conservation Service Date

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

Robert W. Ziehm 3-21-85
Howard Soil Conservation District Date

DEVELOPER'S CERTIFICATE

"I certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project. I will provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion."

Michael Baylin 12/19/84
MICHAEL BAYLIN

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."

Rodolph May Jr 12/19/84
RODOLPH L. MAY

APPROVED

John Marchman 3-21-85
CHIEF ENGINEER

Robert W. Ziehm 3-22-85
CHIEF ENGINEER

DESIGNED BY: *James M. Helm*, *Robert W. Ziehm*, *Michael Baylin*
DRAWN BY: *James M. Helm*
CHECKED BY: *James M. Helm*
DATE: 12/21/84

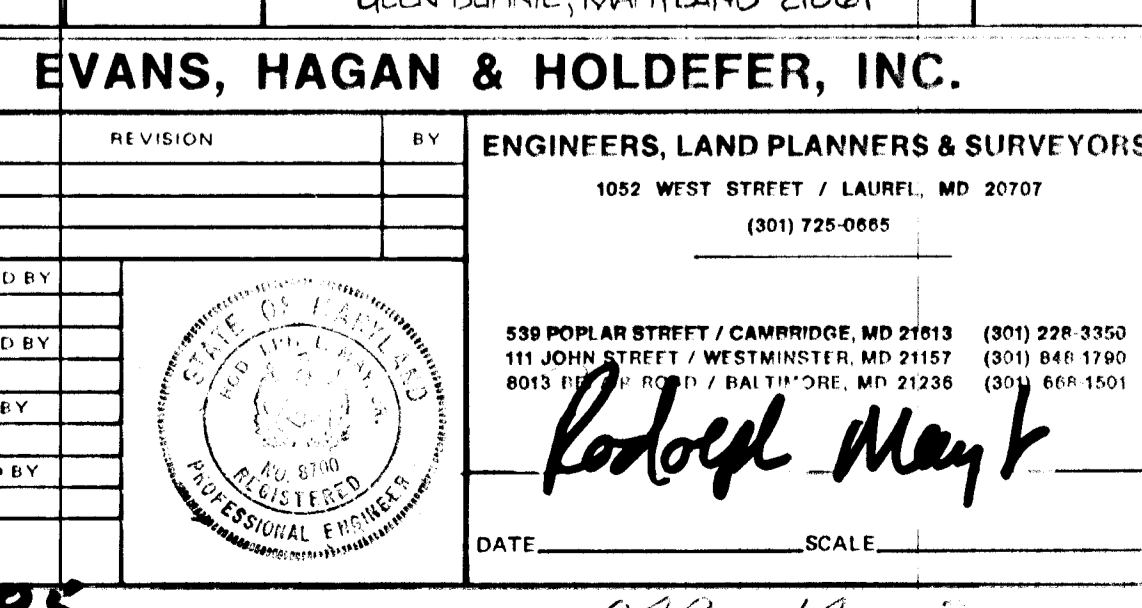
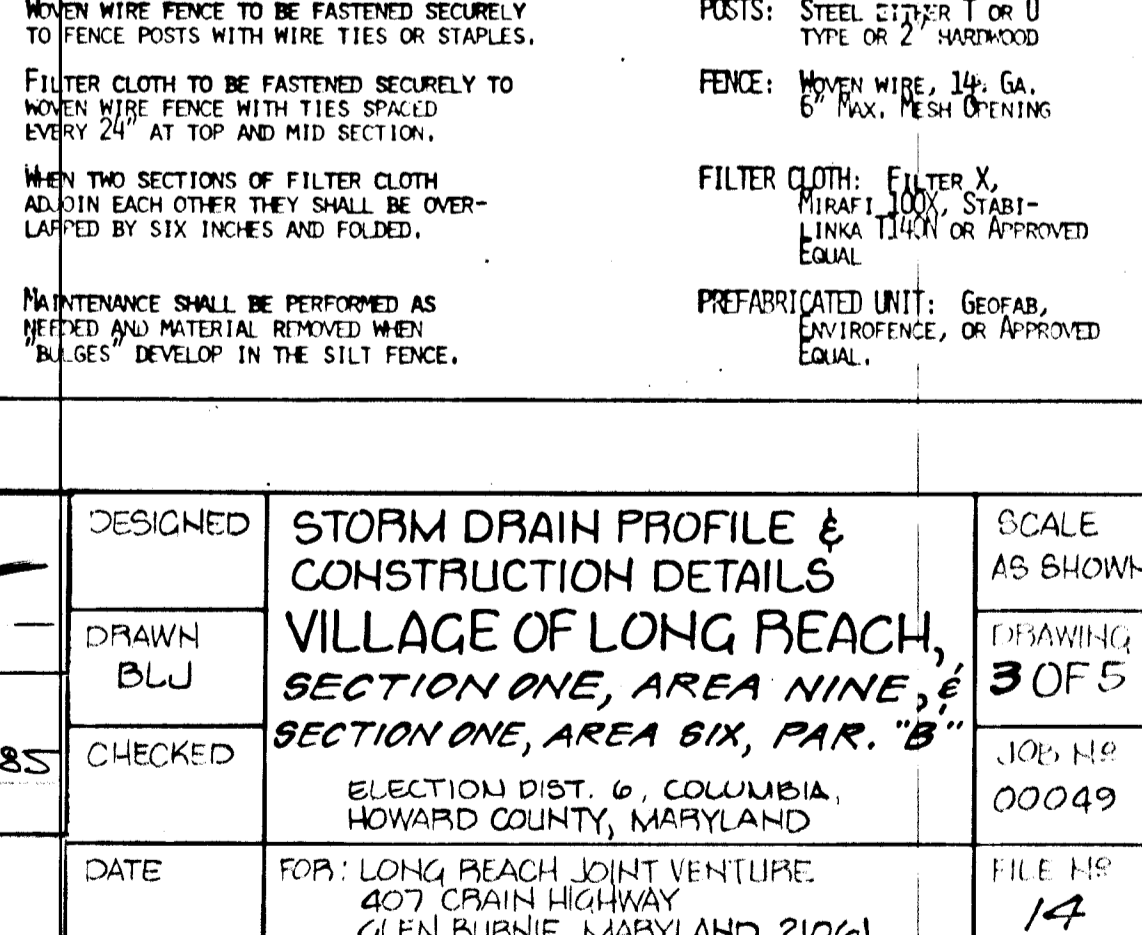
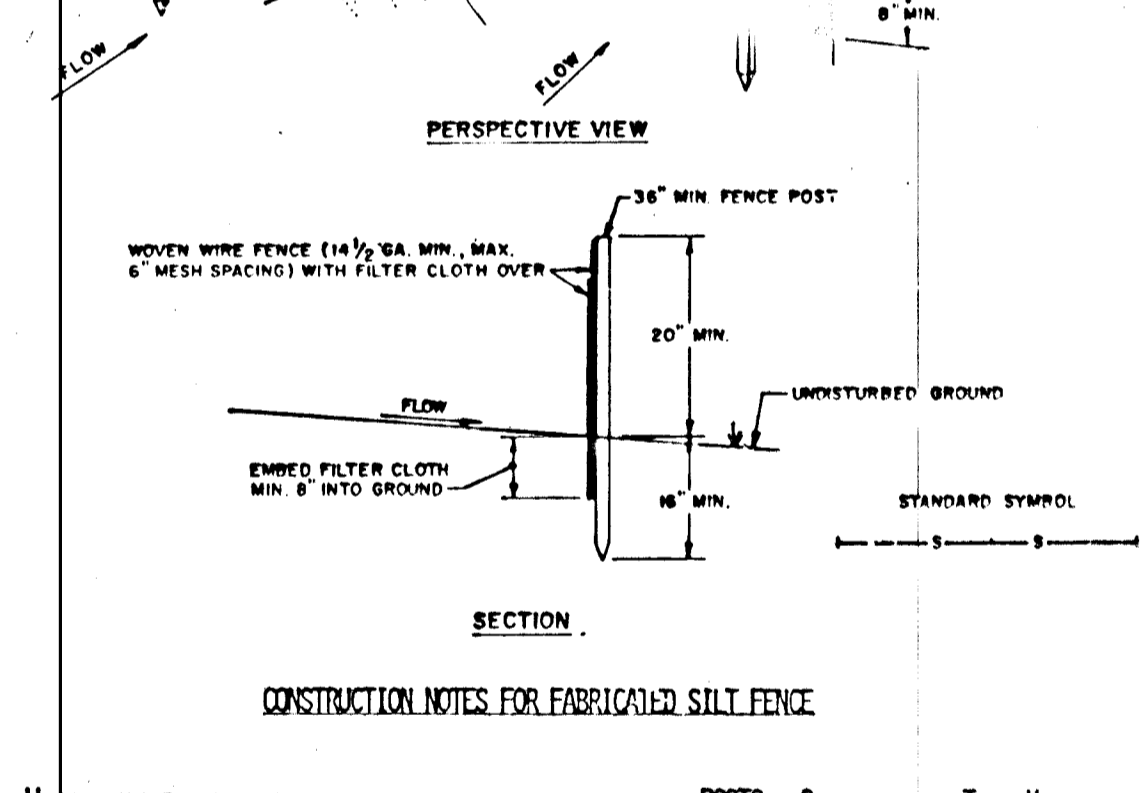
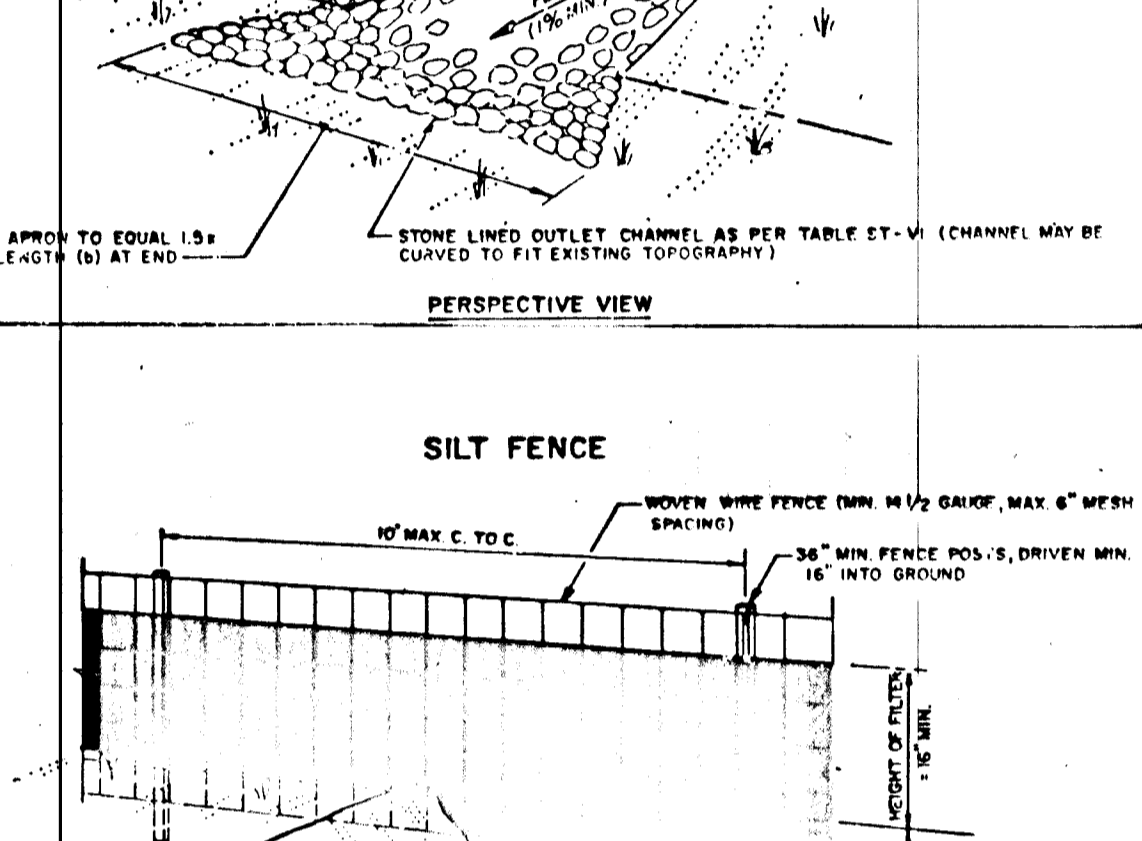
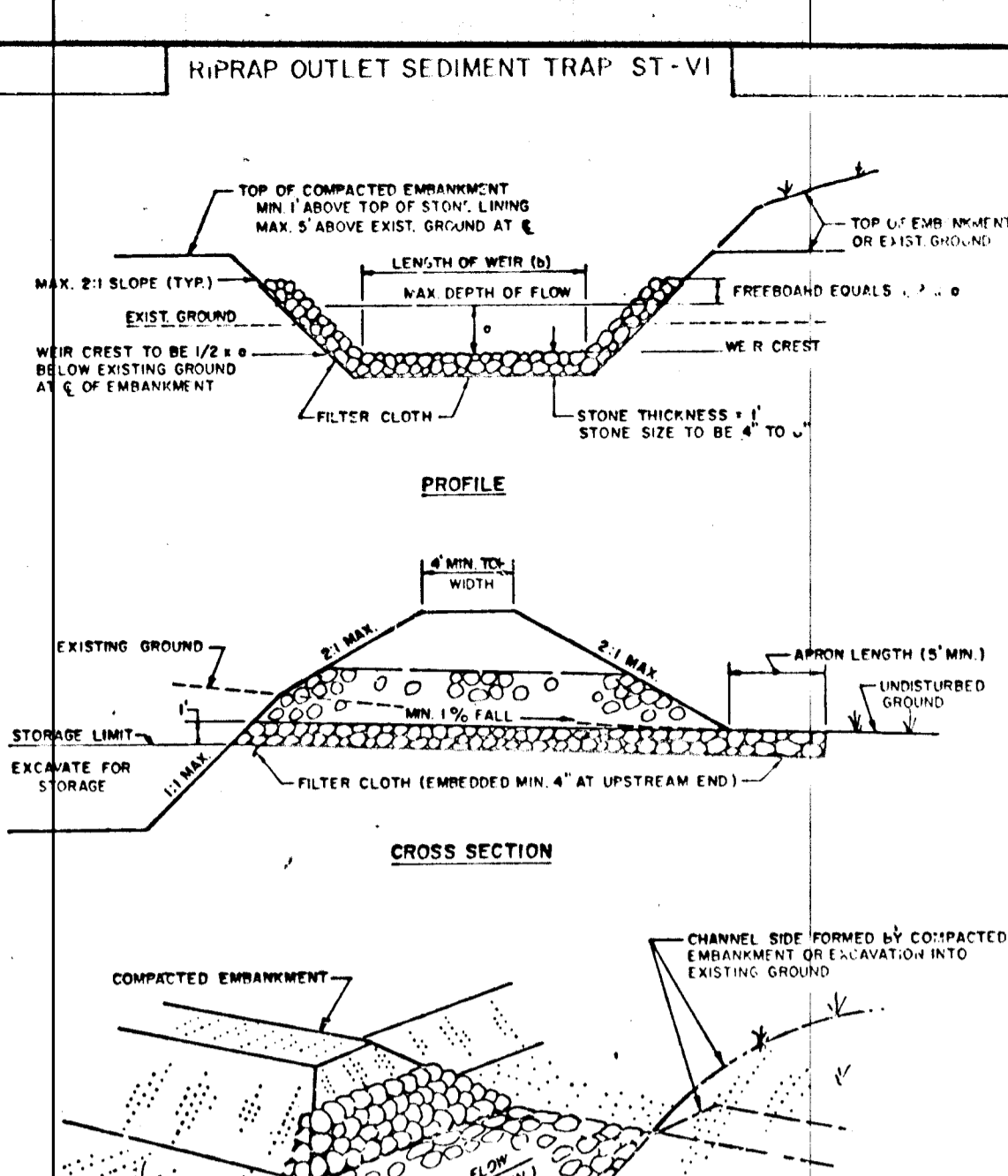
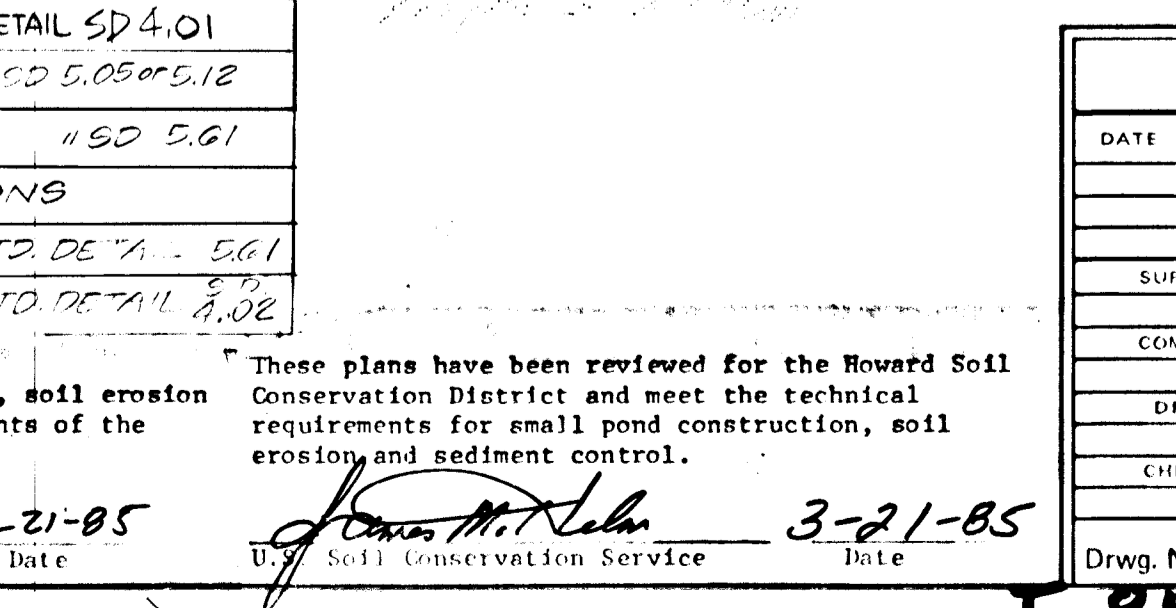
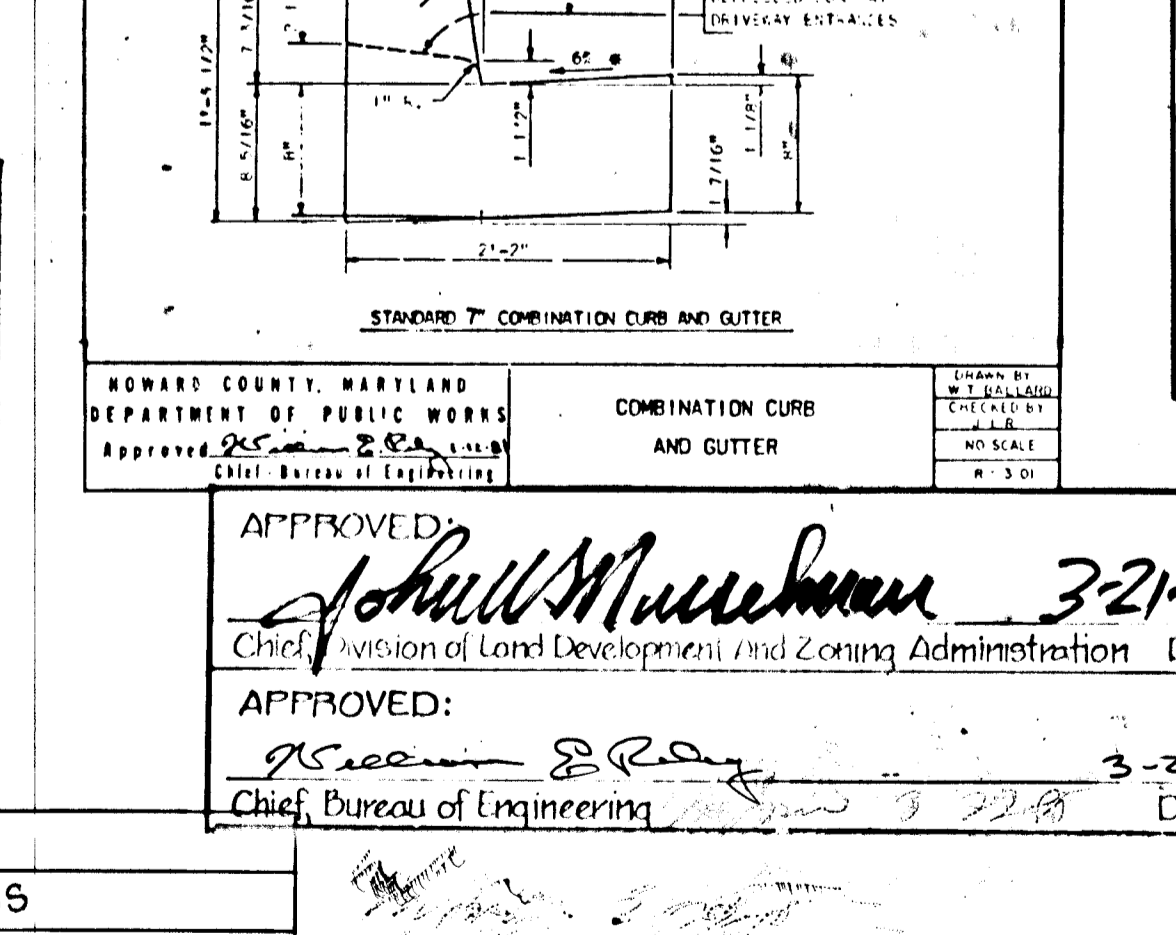
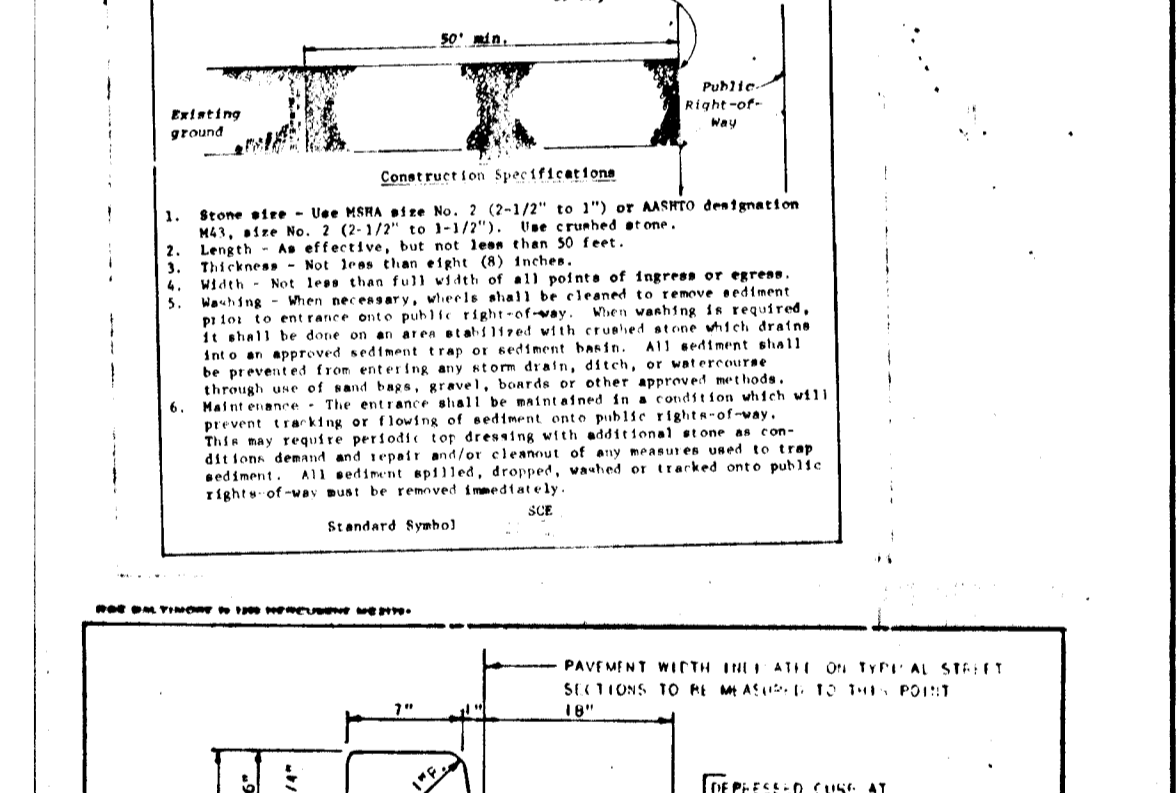
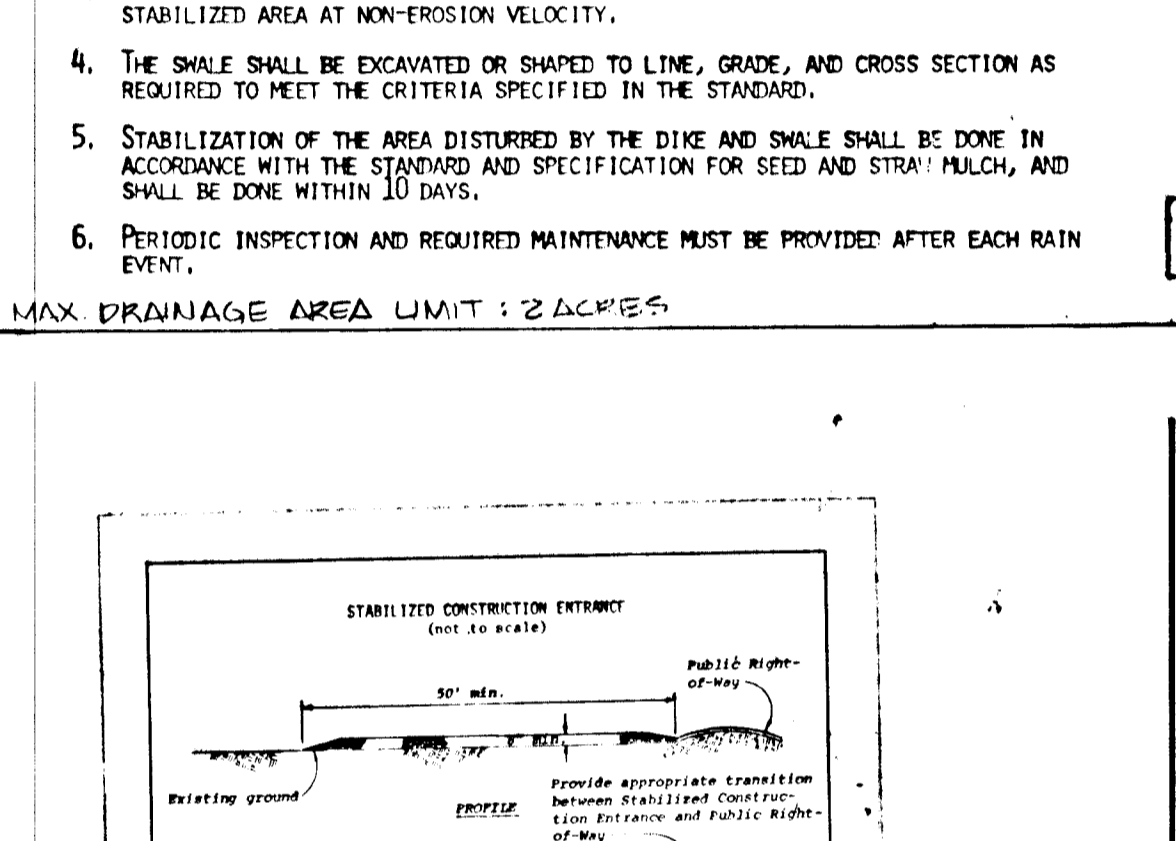
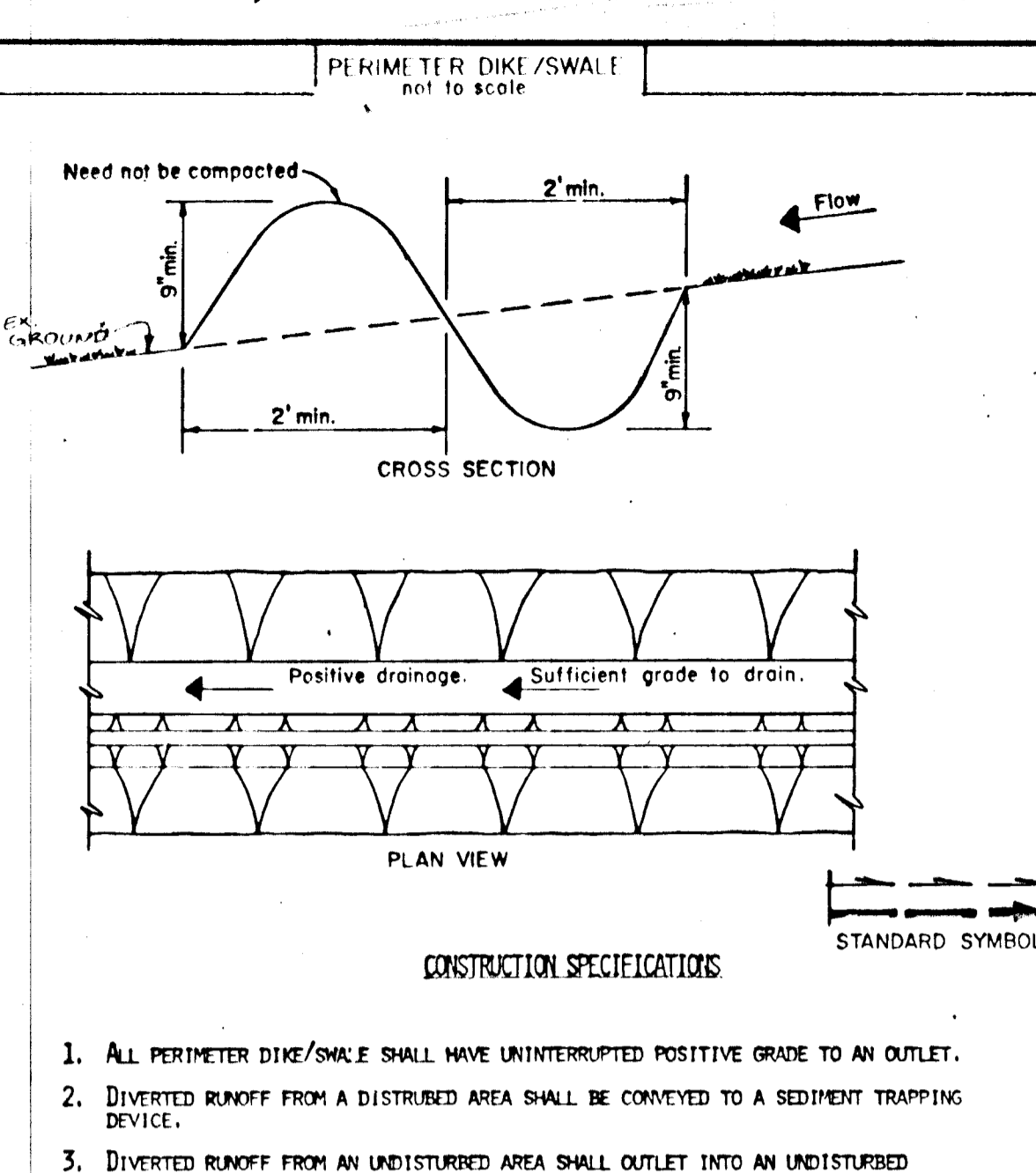
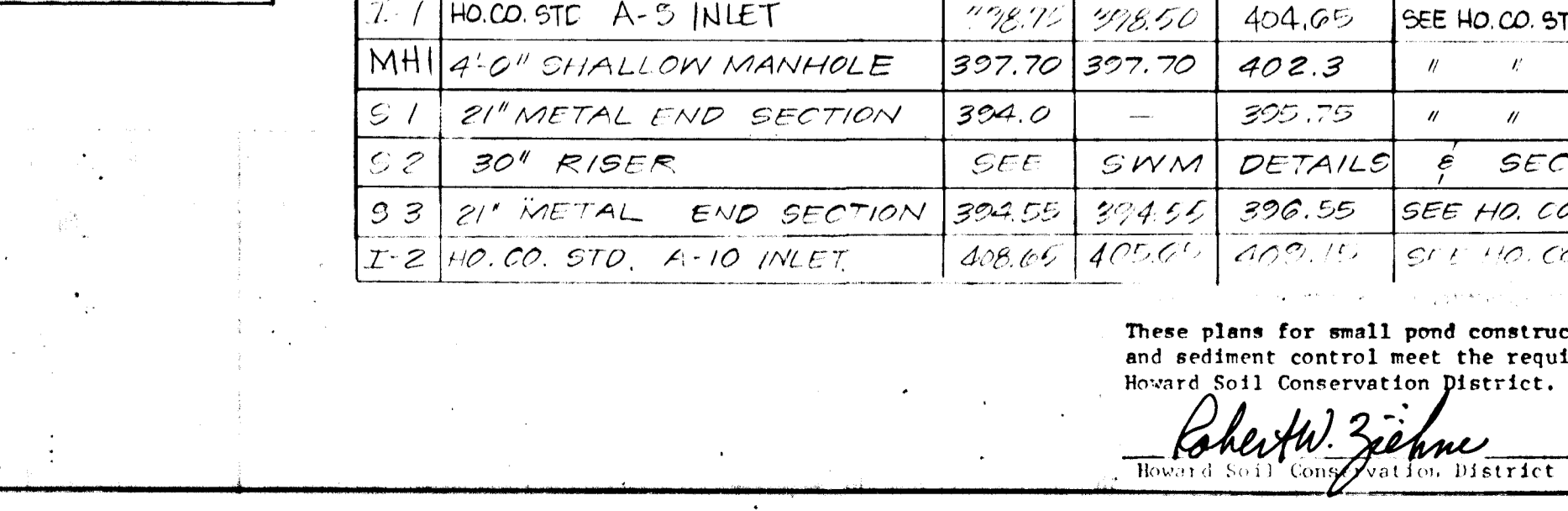
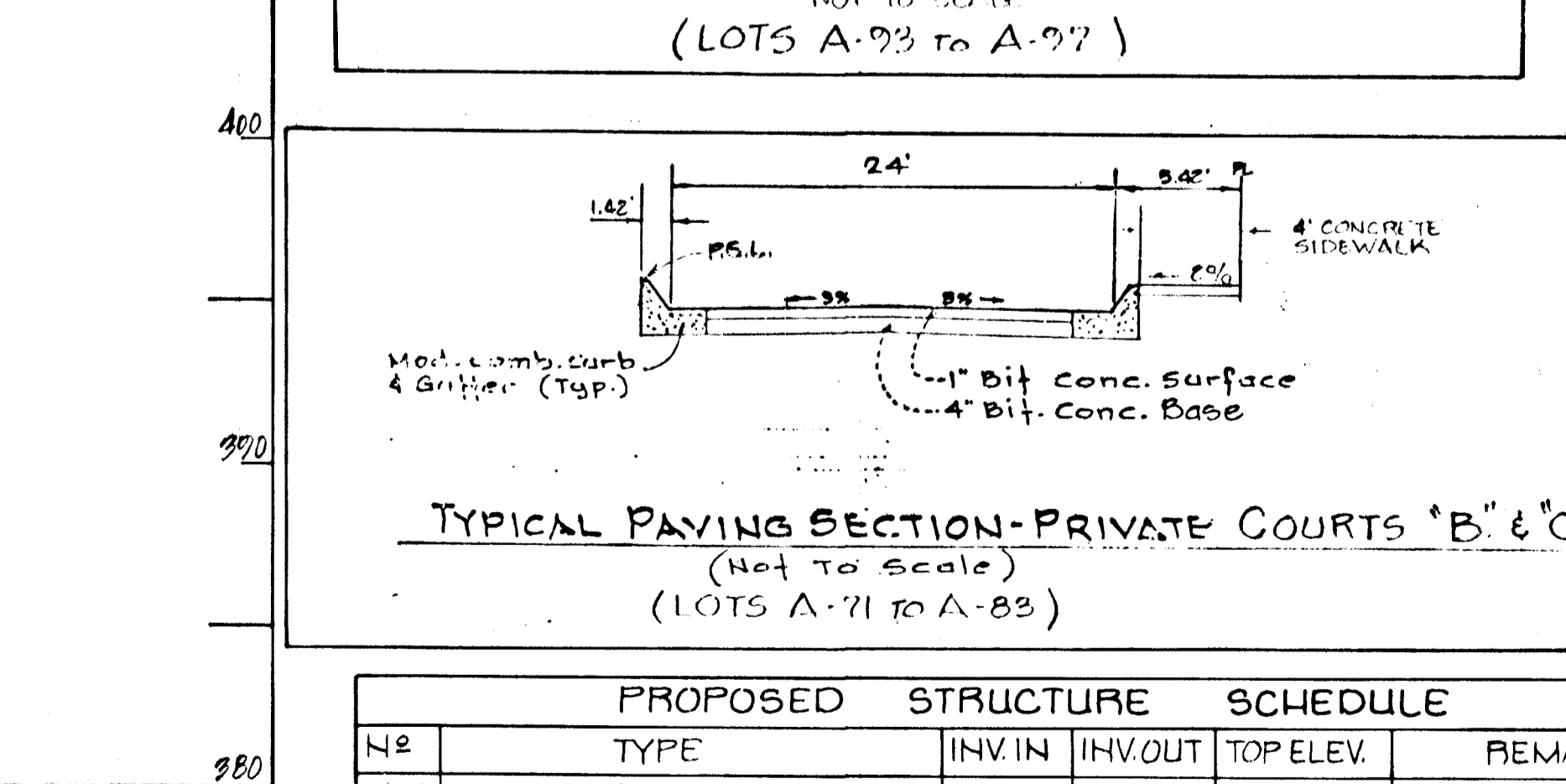
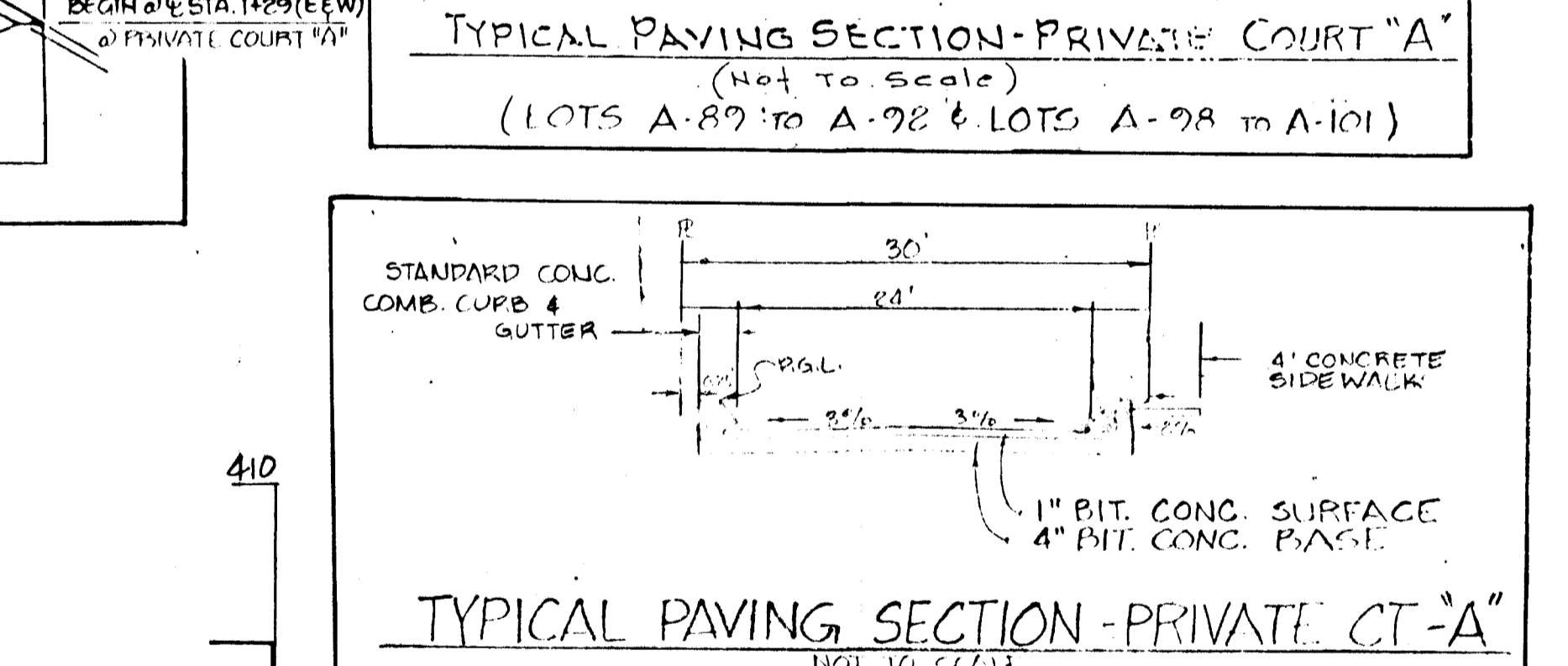
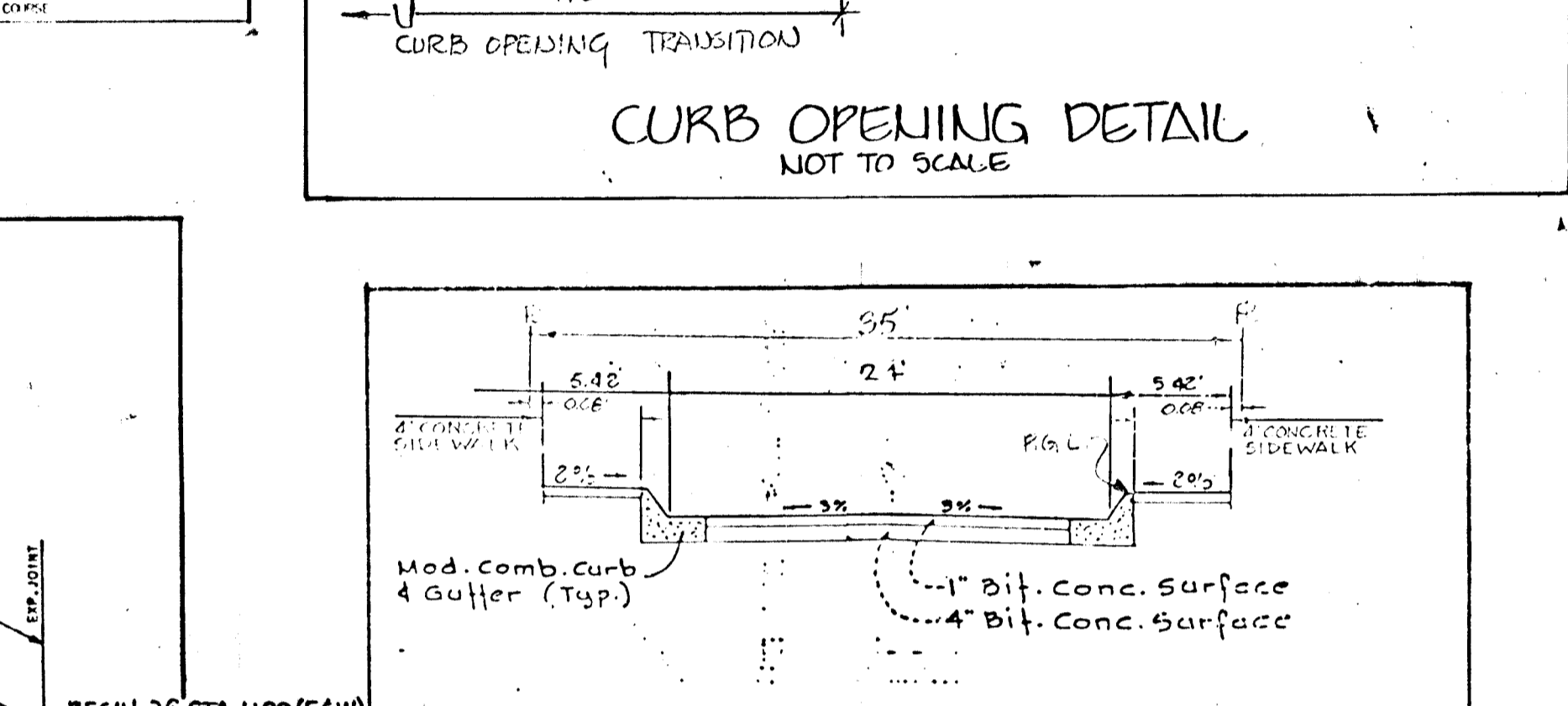
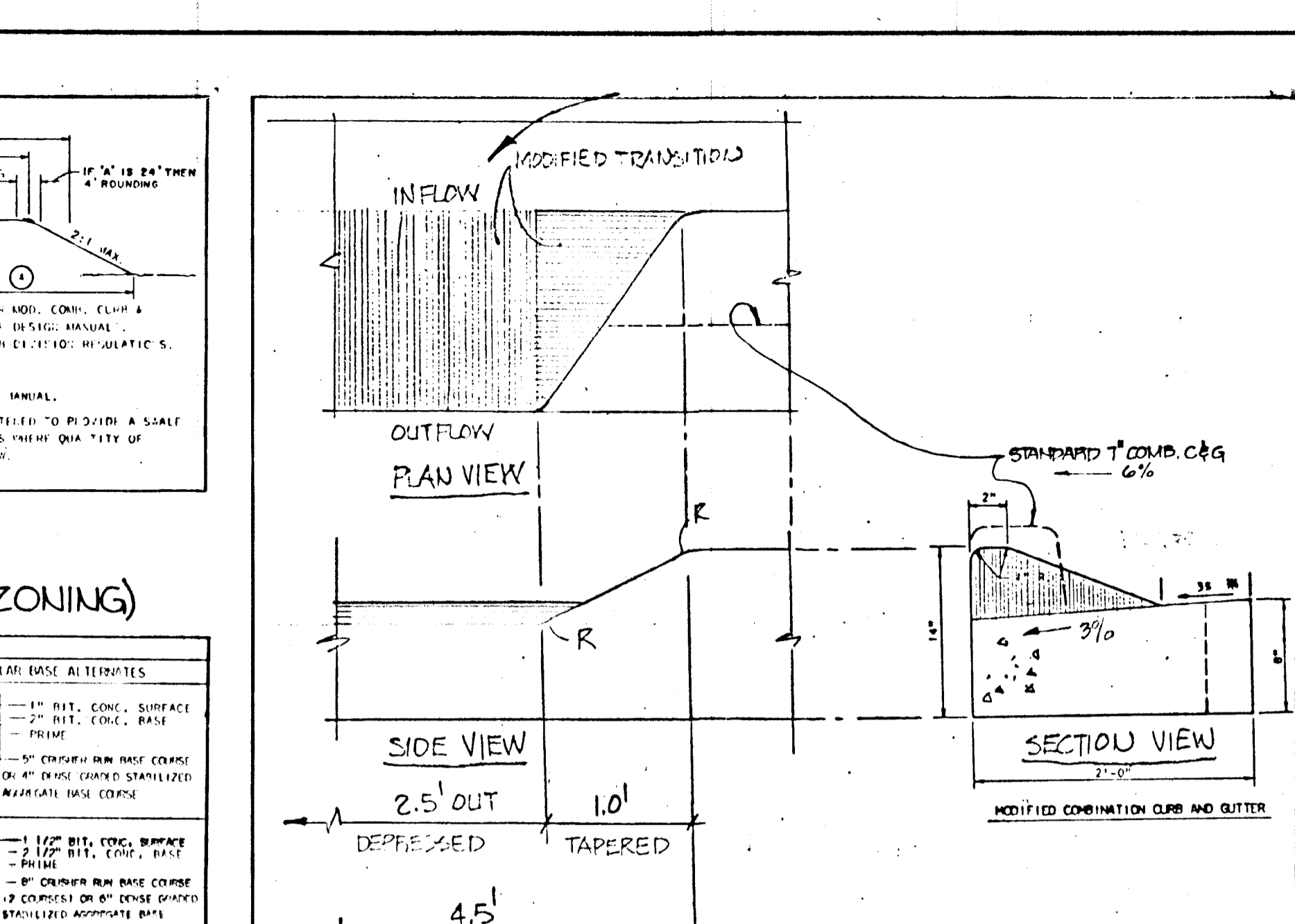
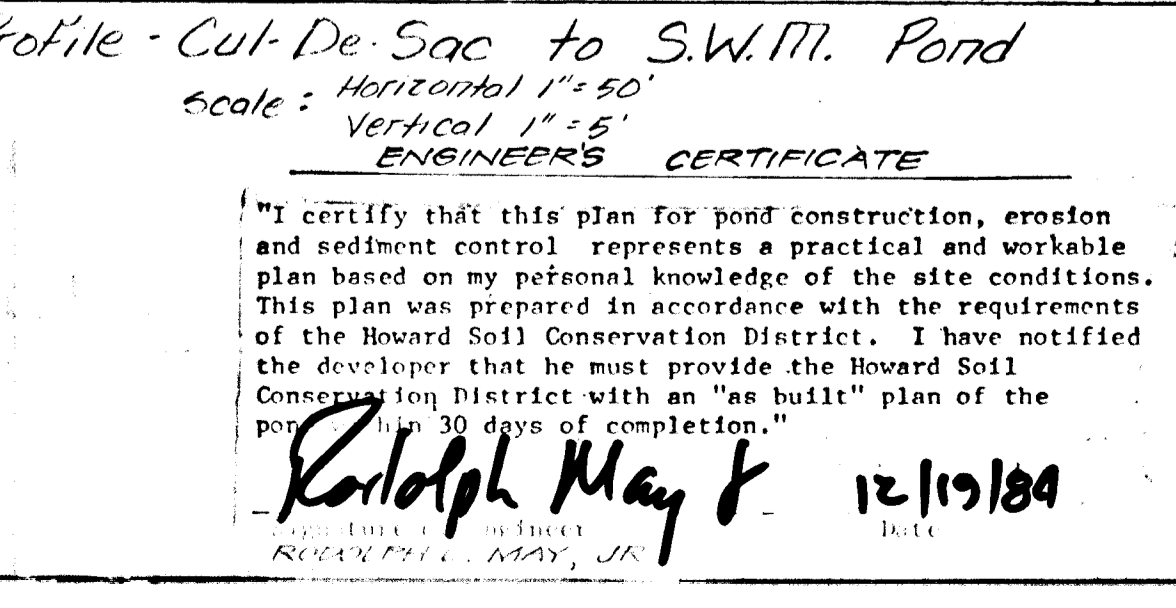
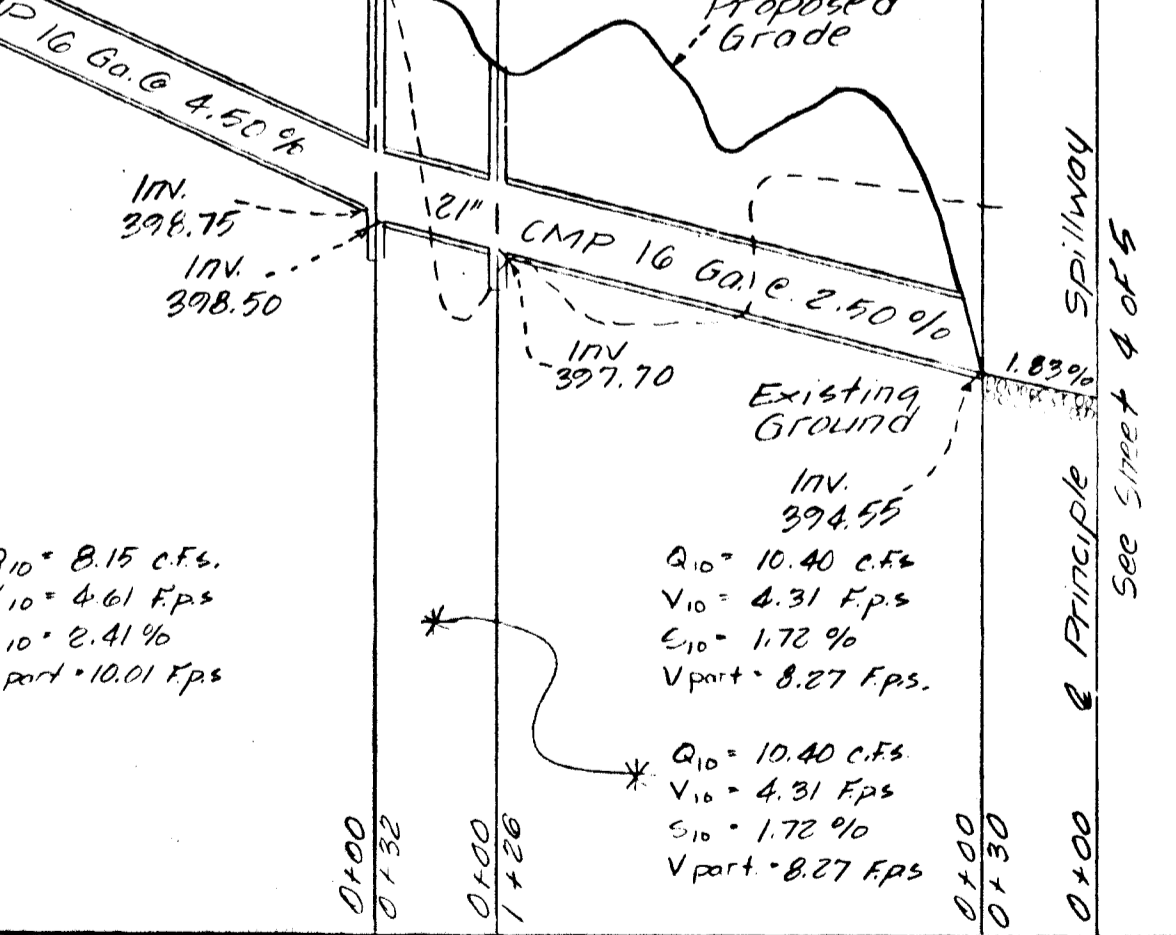
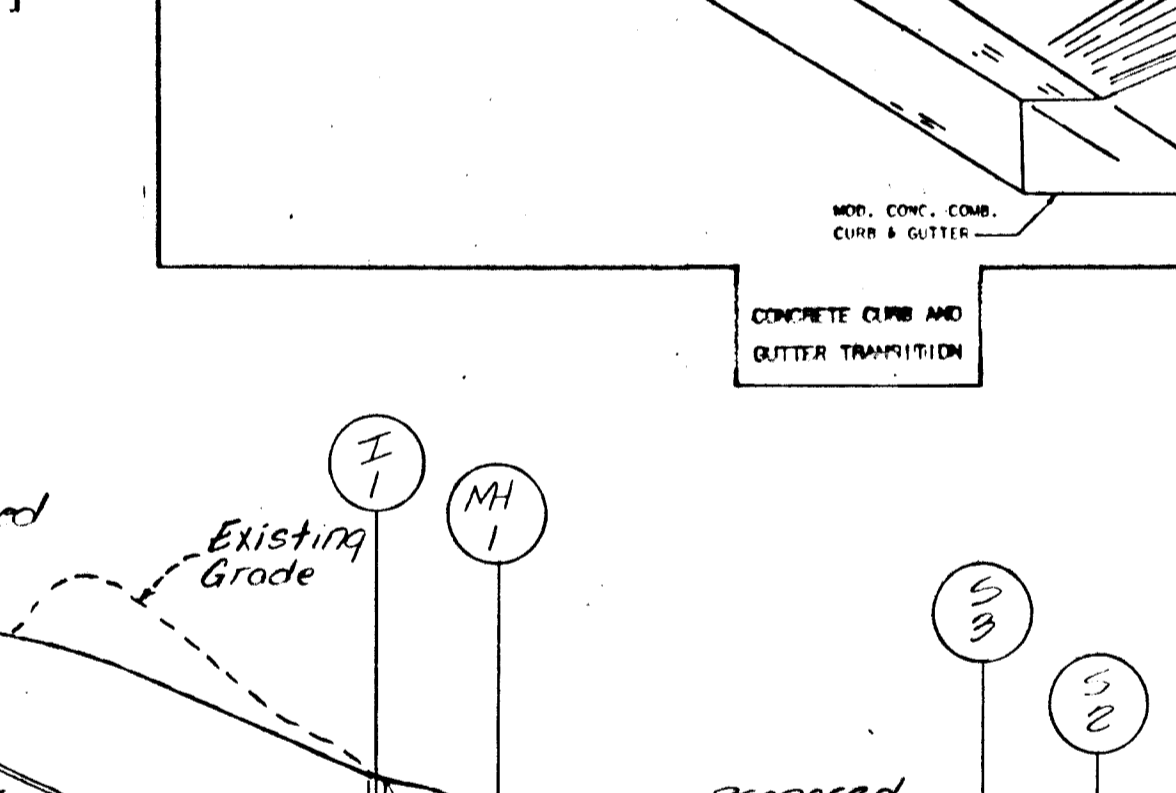
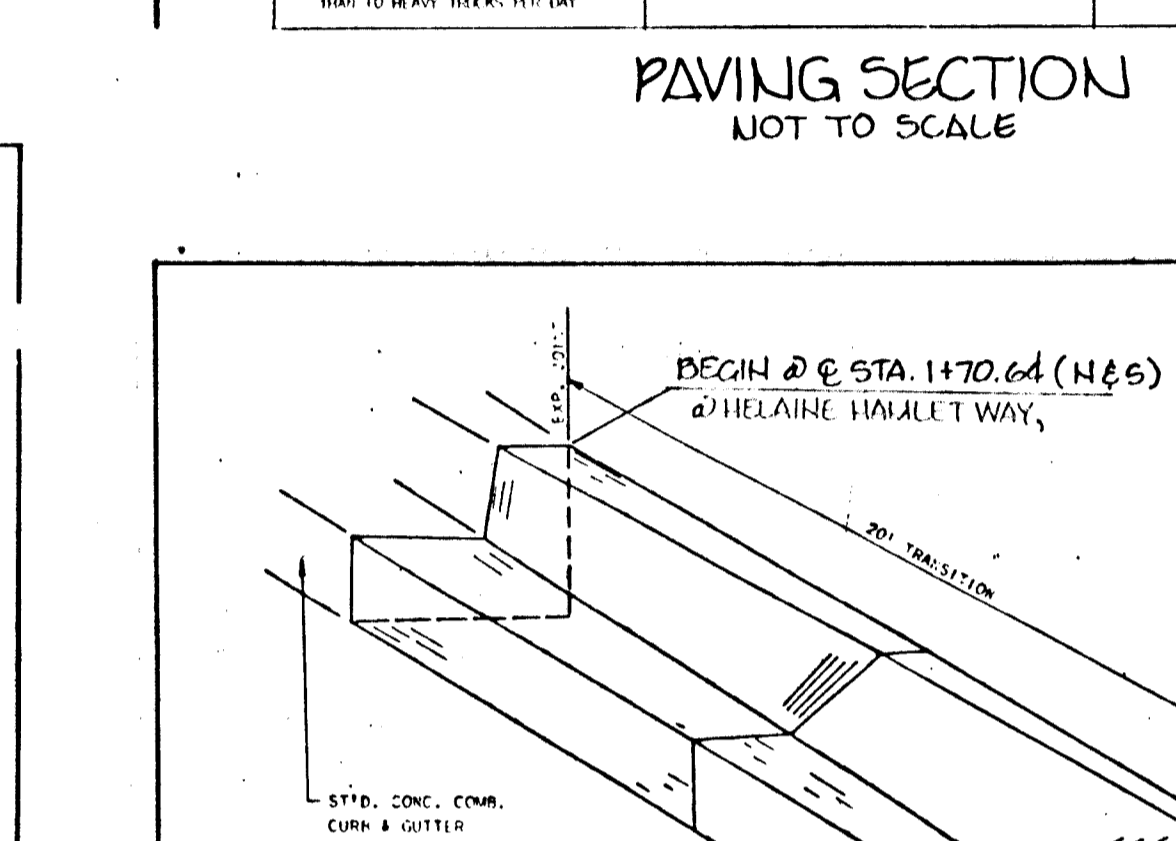
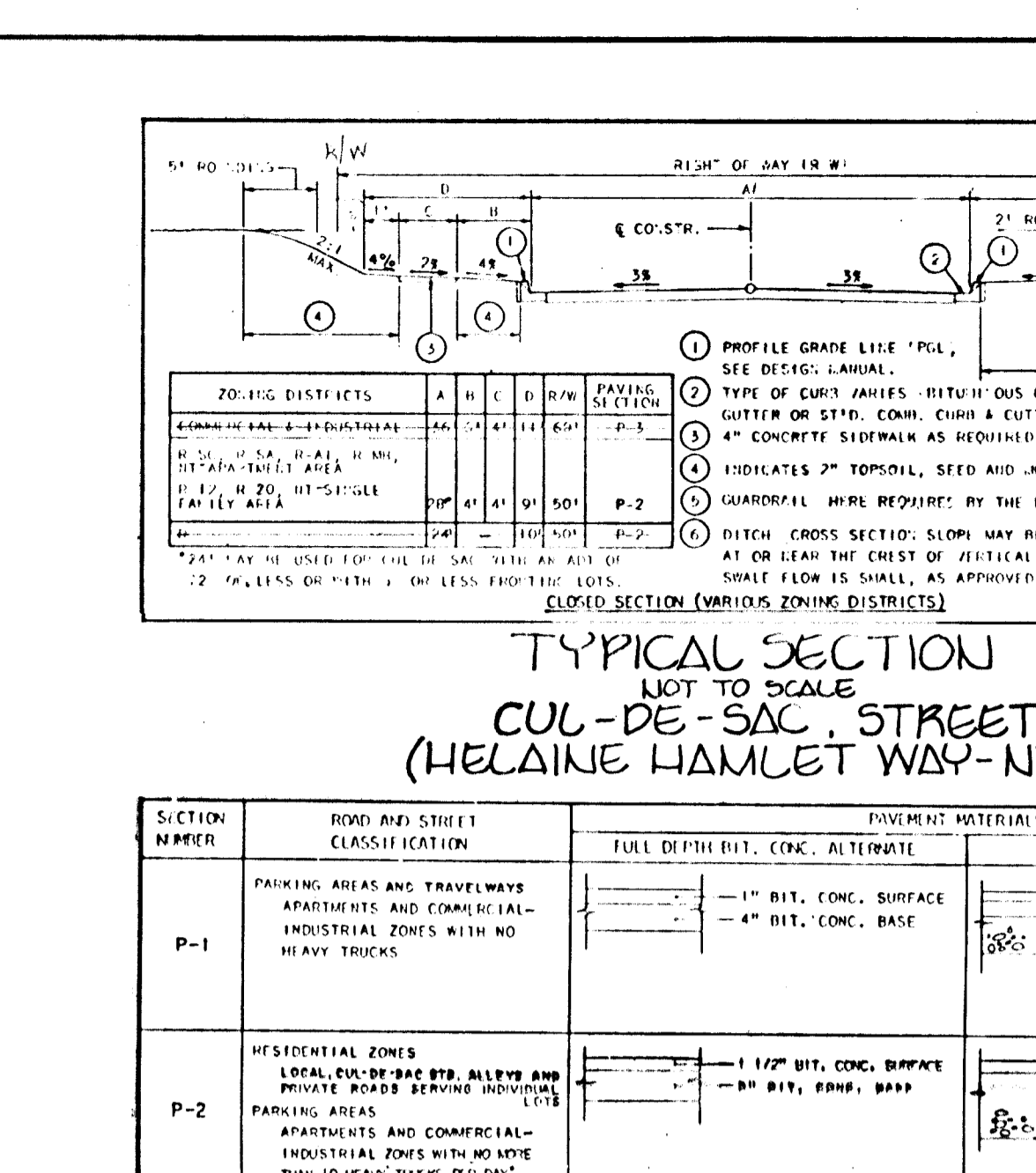
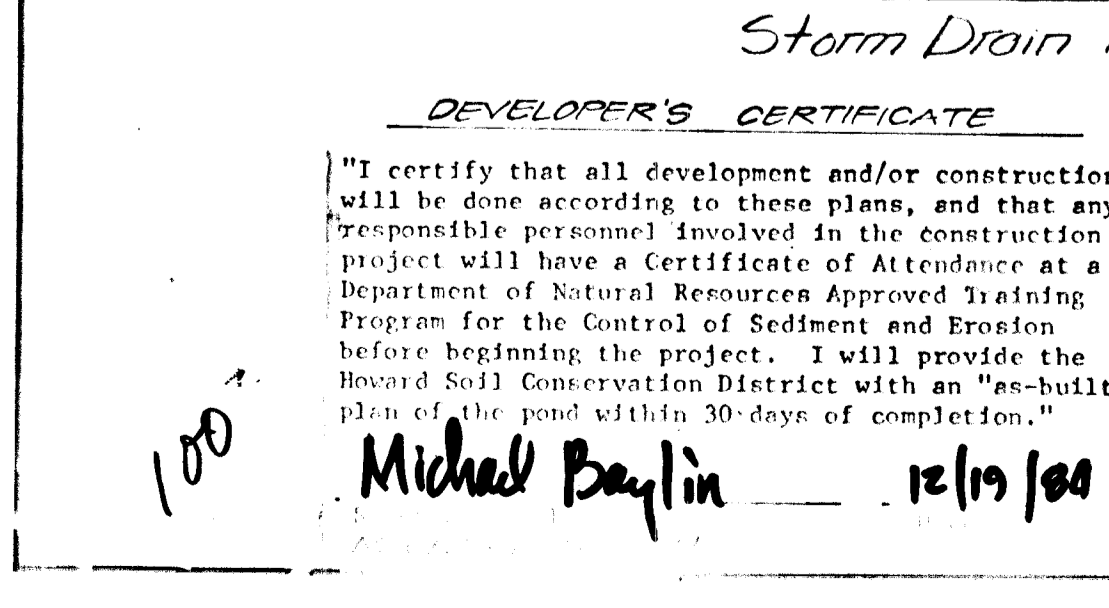
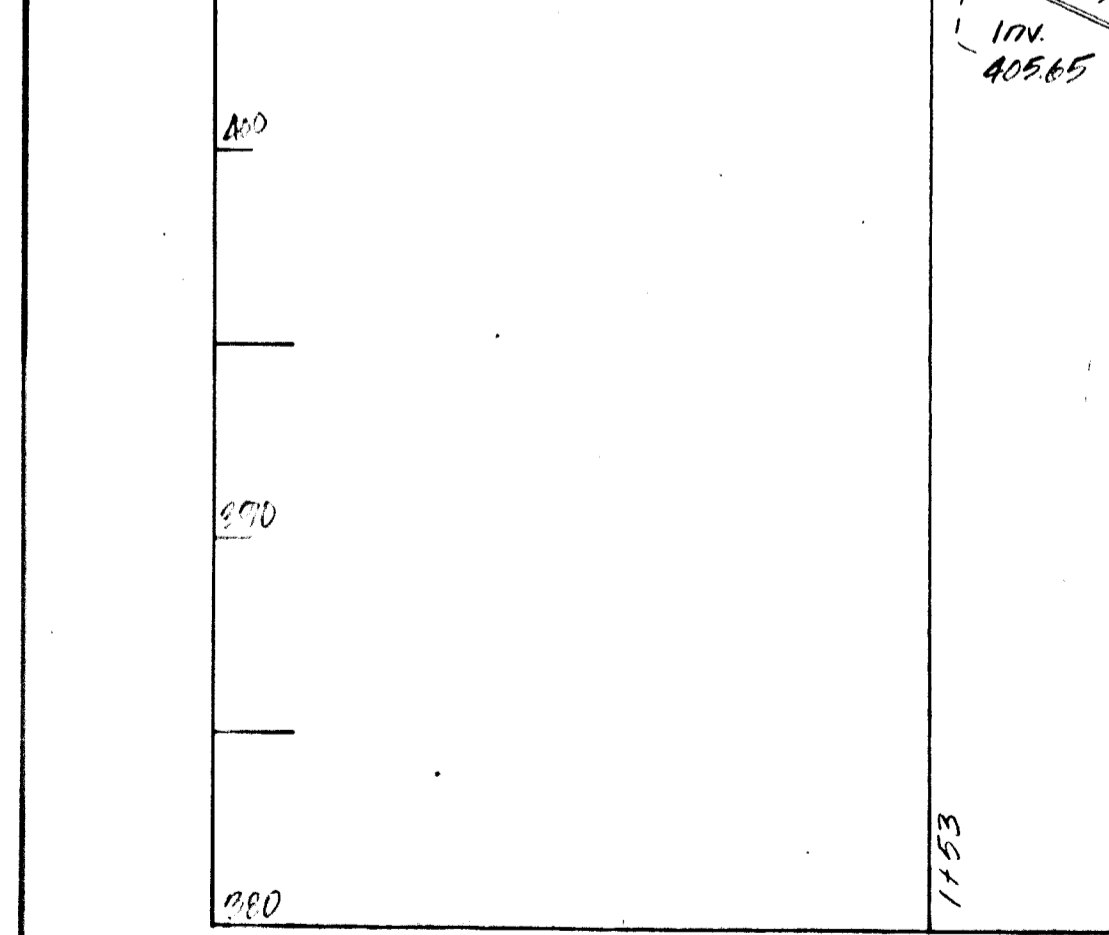
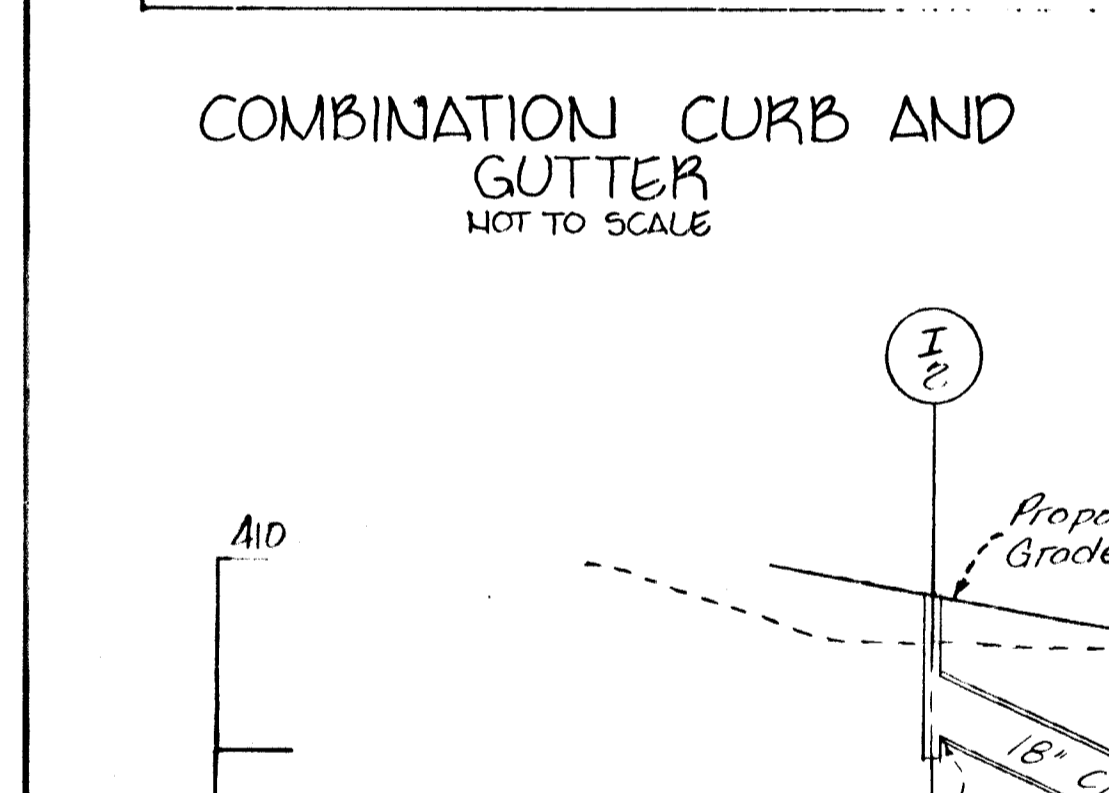
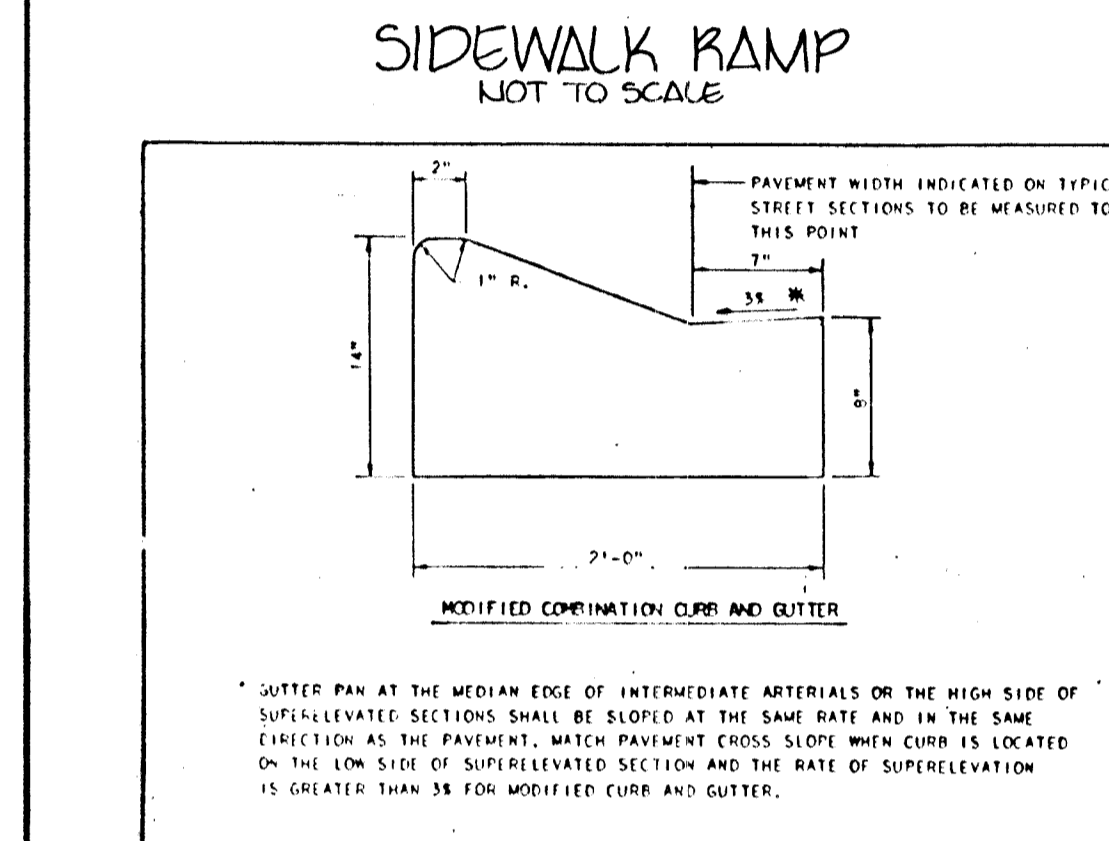
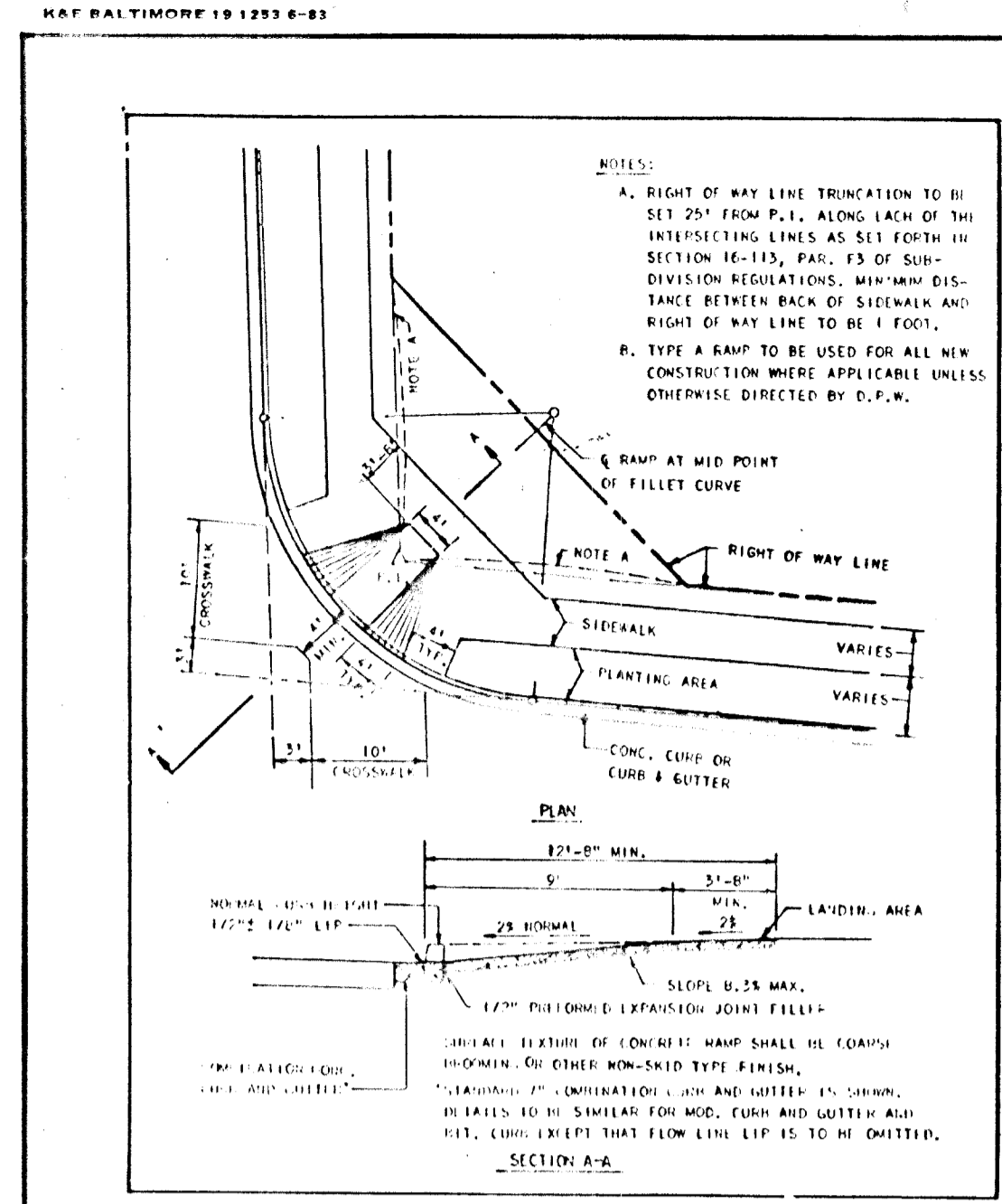
SECTION ONE AREA NINE
VILLAGE OF LONG REACH
SIXTH ELECTION DISTRICT
COLUMBIA, HOWARD COUNTY, MARYLAND

LONG REACH JOINT VENTURE
FOR: 417 CROWN HIGHWAY
EIGLE BOWLING HIGHWAY 21061

PREPARED BY: *James M. Helm*, *Robert W. Ziehm*, *Michael Baylin*
DATE: 12/21/84

SEAL OF ENGINEER

Rodolph May Jr



DEVELOPER'S CERTIFICATE

"I certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project. I will provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30-days of completion."

Michael Baylin 12/19/88

ENGINEER'S CERTIFICATE

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Rodolph May 12/19/88

PROPOSED STRUCTURE SCHEDULE

NO	TYPE	INV IN	INV OUT	TOP ELEV.	REMARKS
I-1	HO.CO. STD. A-5 INLET	398.75	398.50	404.65	SEE HO.CO. STD. DETAIL SD 4.01
MH1	4'0" SHALLOW MANHOLE	397.70	397.70	402.3	" " " " SD 5.05 & 5.12
S1	21" METAL END SECTION	394.0	-	395.75	" " " " SD 5.61
S2	30" RISER	SEE SWM DETAILS	SEE SWM DETAILS	SEE SWM DETAILS	SEE SWM DETAILS
S3	21" METAL END SECTION	394.55	394.55	396.55	SEE HO.CO. STD. DET. A-5.61
I-2	HO.CO. STD. A-10 INLET	408.65	408.00	409.15	SEE HO.CO. STD. DETAIL SD 4.02

APPROVED:

John M. Macek 3-21-85
Chief, Division of Land Development and Zoning Administration

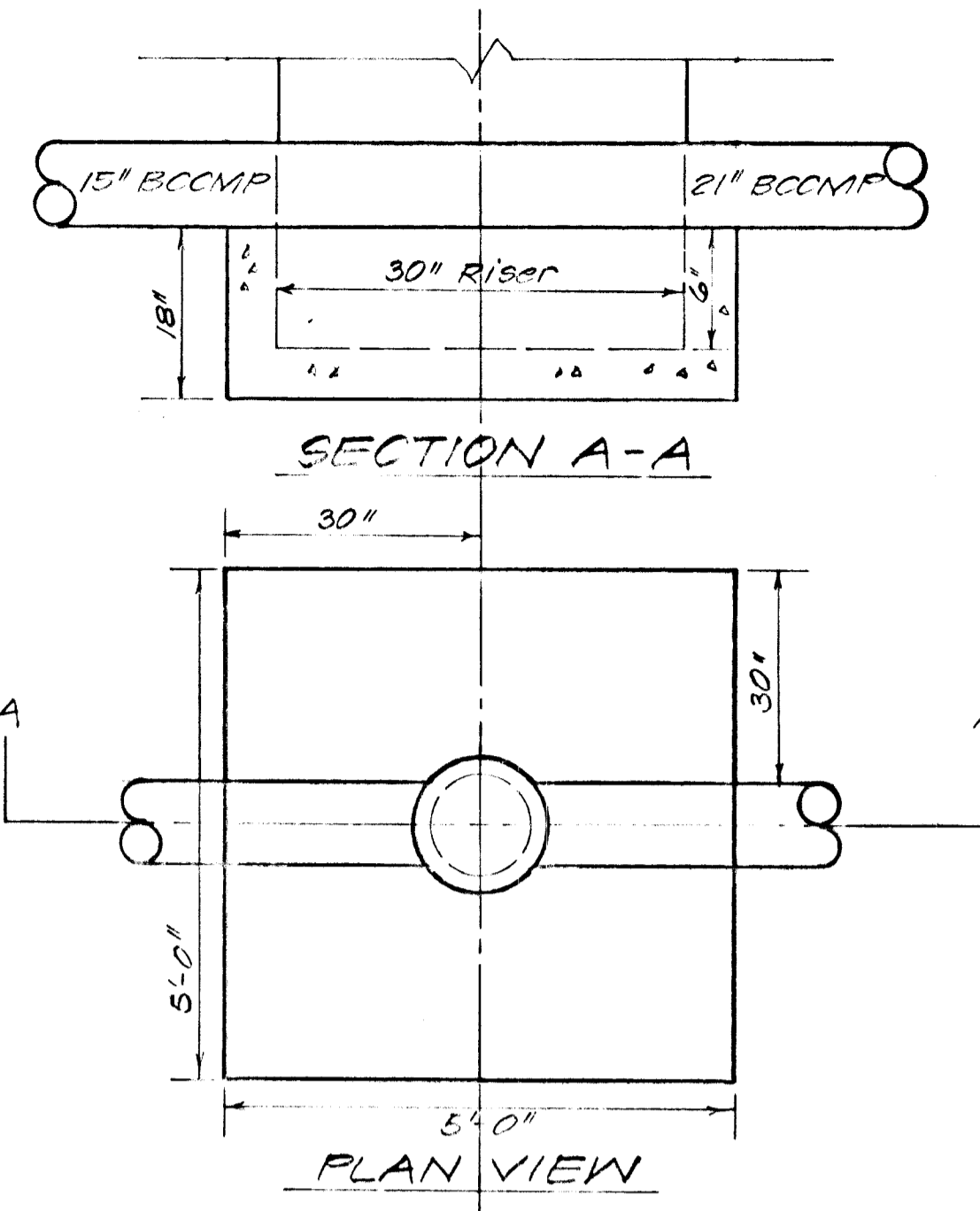
APPROVED: Robert W. Ziehm 3-21-85
Howard Soil Conservation District

EVANS, HAGAN & HOLDEFER, INC.

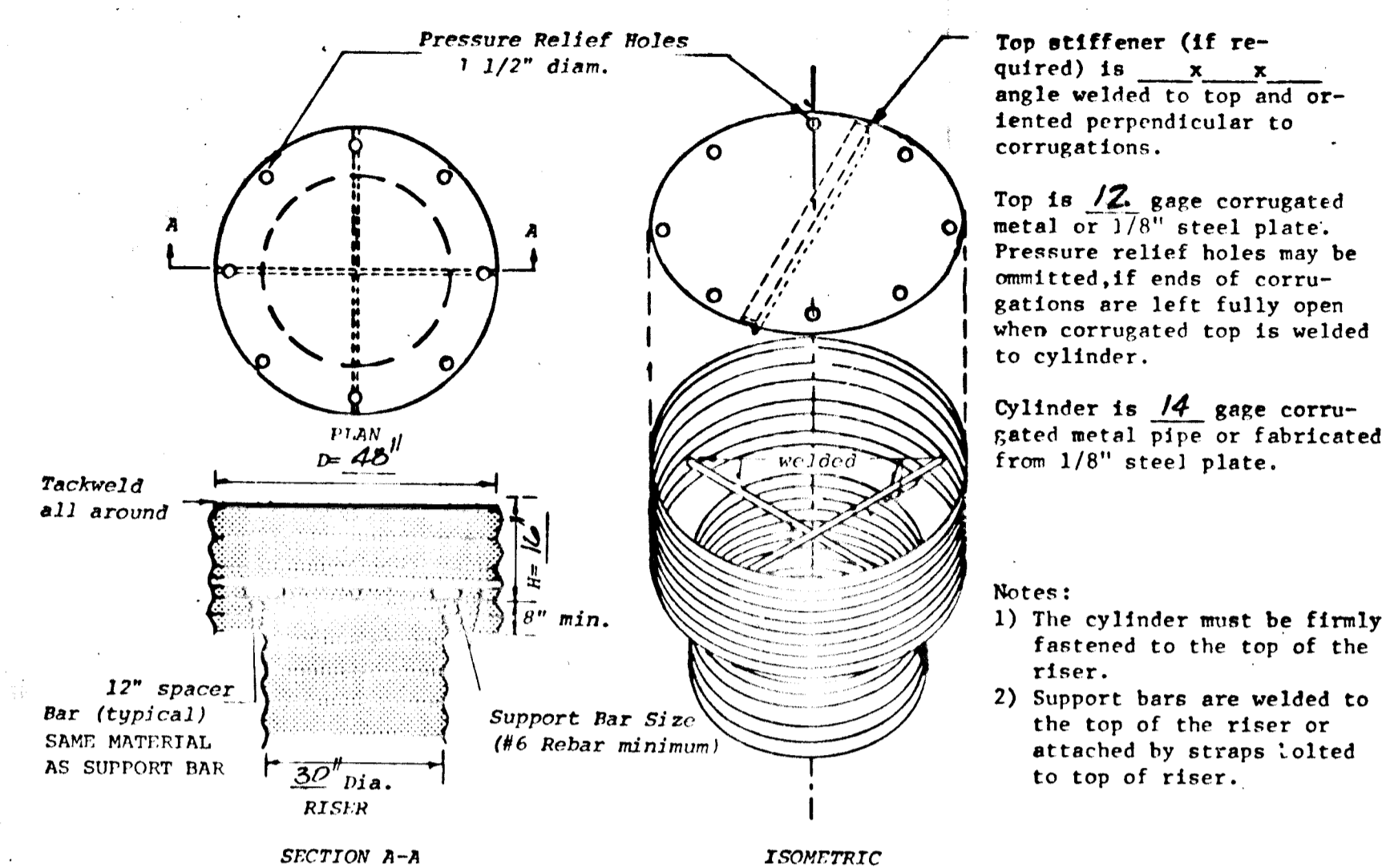
ENGINEERS, LAND PLANNERS & SURVEYORS

1052 WEST STREET / LAUREL, MD 20707
(301) 726-0665

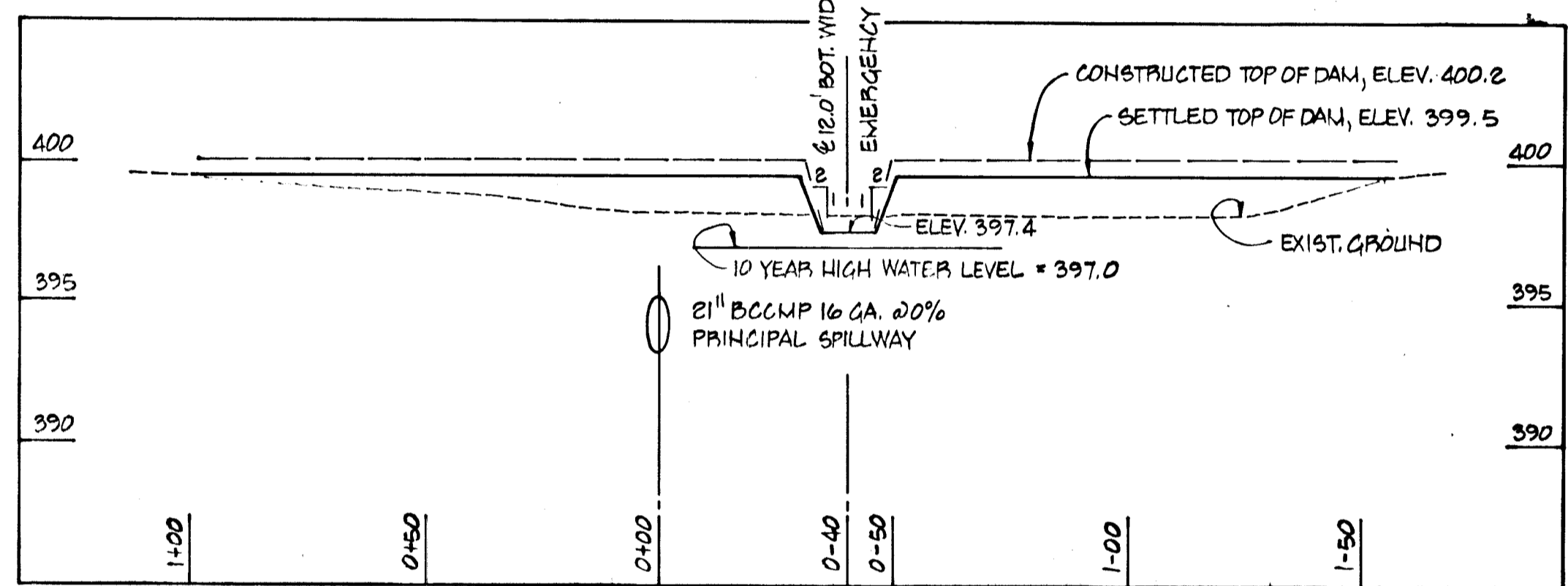
530 POPLAR STREET / CAMBRIDGE, MD 21613 (301) 228-3350
111 JOHN STREET / WESTMINSTER, MD 21157 (301) 846-1780
8013 HILL ROAD / BALTIMORE, MD 21238 (301) 666-1501



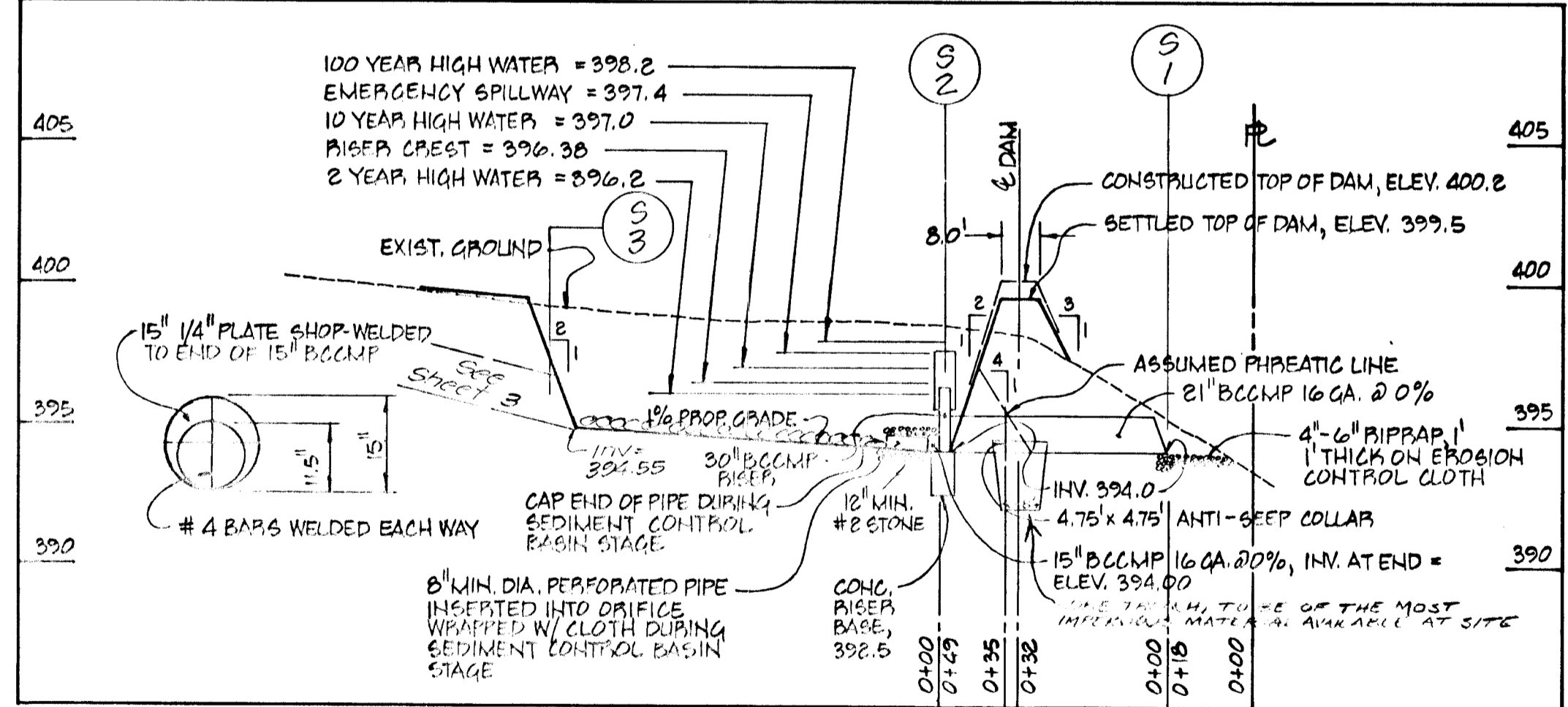
CONCRETE RISER BASE
no scale



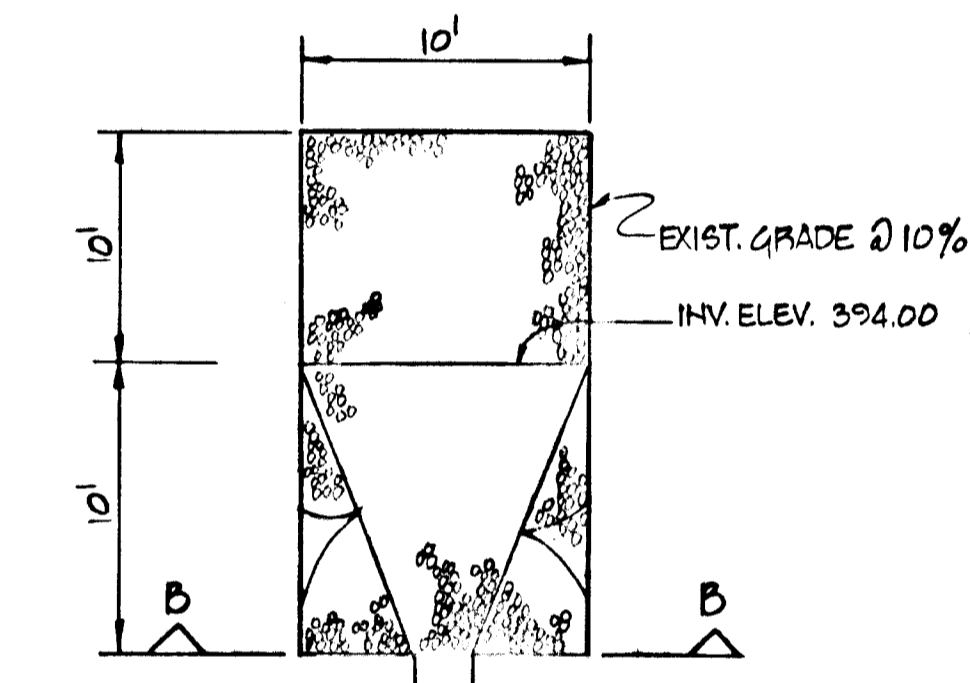
Notes:
1) The cylinder must be firmly fastened to the top of the riser.
2) Support bars are welded to the top of the riser or attached by straps bolted to top of riser.



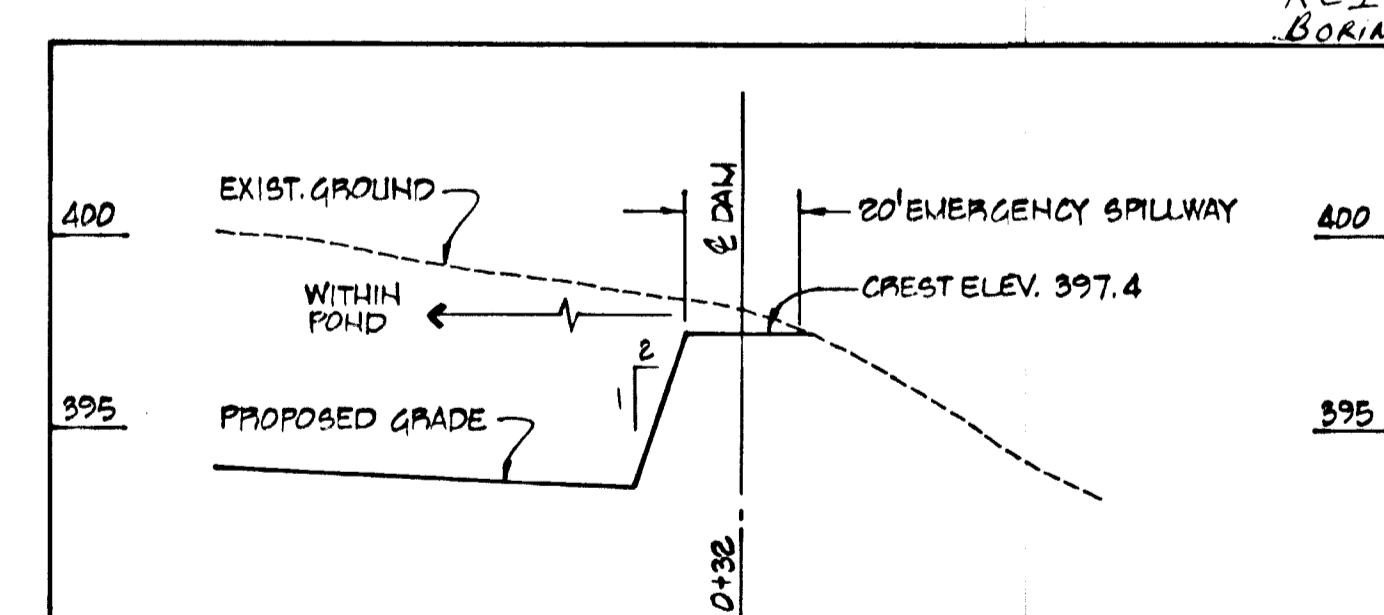
PROFILE: SECTION ALONG E OF DAM
scale: horiz. - 1\"/>



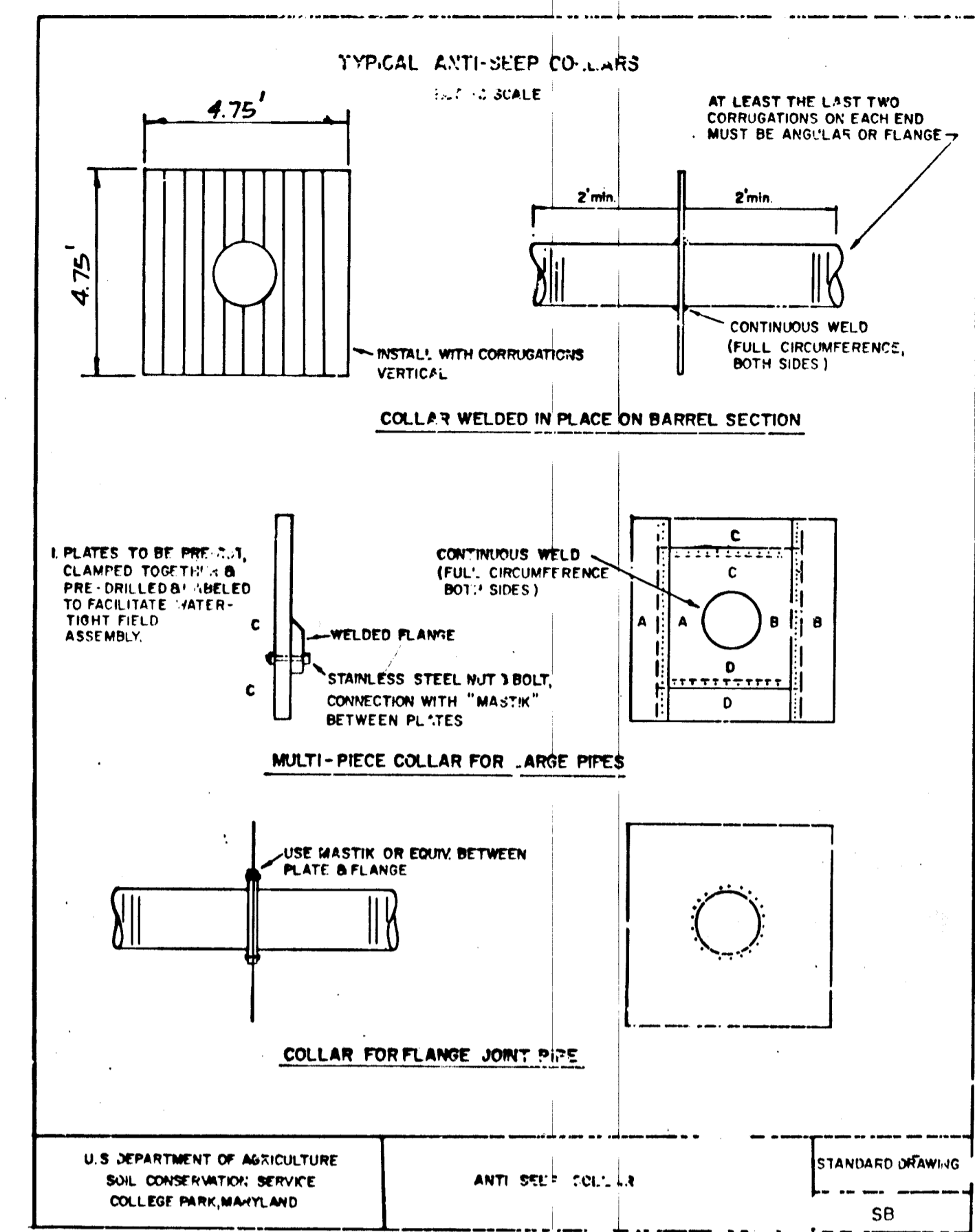
PROFILE: SECTION ALONG PRINCIPAL SPILLWAY
scale: horiz. - 1\"/>



PLAN ROCK OUTLET PROTECTION
no scale



PROFILE: SECTION THRU EMERGENCY SPILLWAY
scale: horiz. - 1\"/>



U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
COLLEGE PARK, MARYLAND

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

1. SITE PREPARATION
Areas designated for borrow areas, embankments, and structural works shall be cleared, grubbed and stumped to stumps. All trees, brush, vegetation, roots and other objectionable material shall be removed. Grubbed banks and steep slopes shall be sloped to no steeper than 1:1.
Areas to be covered by the pond or reservoir will be cleared of all trees, brush, logs, fences, rocks and other objectionable material. All areas 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 and below the limits of the dam and reservoir or directed by the owner and 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. BARTH FILL
Material
The fill material shall be taken from approved designed borrow areas or areas. It shall be free of roots, stumps, wood, rubbish, gravel, stones, bones or other objectionable material. The embankment shall be constructed to an elevation which provides for anticipated settlement to the design elevation. The fill height shall be the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.

Placement
Areas in which fill is to be placed shall be specified prior to placement of fill. Fill materials shall be placed in such narrow thickness (before compaction) layers which are to be continuous over the full length of the fill. The most porous borrow material shall be placed in the downstream portion 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 two tracks of the equipment or equipment shall be equipped with 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 will be obtained with the equipment used.
Where a minimum required density is specified, each layer of fill shall be compacted as necessary to obtain that density and is to be certified by the Engineer.

Outlet Trench
Where specified, a cutoff trench shall be constructed along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be shown on the drawings and 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 of filler. The backfill material for the cutoff trench shall be the same material as the embankment and shall be compacted with equipment or rollers to assure uniform 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 tamp or mechanical equipment. The material used to fill "pockets" all spaces under and adjacent to the pipe. At no time during construction shall any portion of the structure be allowed to operate under a load greater than that specified. The structure shall be driven over by a concrete mixer truck or pipe unless there is a compacted fill of every-four inches or greater over the structure or pipe.

IV. PIPE CONDUITS
All pipes shall be circular in cross section.

A. GALVANIZED METAL PIPE
Material - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of ASTM Specification A133 Type A with water tight coupling bands. Any bituminous coating damaged or otherwise removed shall be replaced with acid applied bituminous coating immediately.
Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. The following coatings are commercially available: Epoxy, Plastic, Zinc, Bituminous, and Rubber-Coated. Galvanized corrugated steel pipe shall meet the requirements of ASTM A242 and A243.
Material - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of ASTM Specification A133 Type A with water tight coupling bands or flanges. The material used to fill "pockets" all spaces under and adjacent to the pipe. At no time during construction shall any portion of the structure be allowed to operate under a load greater than that specified. The structure shall be driven over by a concrete mixer truck or pipe unless there is a compacted fill of every-four inches or greater over the structure or pipe.

B. Connections - All connections with pipes must be completely water tight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Water tight coupling bands or flanges shall be used at all joints. Anti-seep collars shall be connected to the pipe in such a manner as to completely water tight. Dip bands are not considered to be water tight.
C. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or other material is encountered, all such material shall be removed and replaced with suitable earth compacted to provide a grade of quite support.
D. Laying Pipe - The pipe shall be placed with inside circumference of low joints and maximum and minimum longitudinal lap at the sides.
E. Backfilling shall conform to structural backfill as shown above.
F. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

V. REINFORCED CONCRETE PIPE
1. Materials
a. Concrete - 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 substance.
c. Sand - The sand used in concrete shall be clean, hard, sharp and durable, and shall be well graded with 100 percent passing No. 20 sieve and 80 percent passing No. 40 sieve.
d. Coarse Aggregate - The coarse aggregate shall be clean, hard, strong and durable, and free from dirt, organic matter, and shall be well graded with a maximum size of 1 1/2 inches.
e. Reinforcing Steel - The reinforcing steel shall be deformed bars of intermediate grade hot rolled steel or rail steel conforming to ASTM Specification A615.
2. Design Mix - The concrete shall be mixed in the following proportions, measured by weight. The water-cement ratio shall be 5-7/8 to 0.5. The quantity of water per cubic yard of concrete shall be 28 gallons. The proportion of aggregate may be adjusted to produce a plastic and workable mix that will not produce honeycombs in placing or honeycombs in the structure.
3. Mixing - The concrete ingredients shall be mixed in batches 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 specified on proper control of the apparatus. The addition of water to the mixture shall be after the concrete has been thoroughly mixed. Water shall be added in small quantities and the mixture shall be thoroughly mixed. Excessive overmixing requiring the addition of water to produce 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 specification given here.
4. Forms - The forms shall have sufficient strength and rigidity to hold the concrete to withstand the necessary pressure, tapping, and vibration without deflection from the prescribed lines. They shall be watertight 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 removed from the surface of the concrete.
5. Reinforcing Steel - All reinforcing material shall be free of dirt, rust, scale, oil, paint or any other coating. The steel shall be correctly placed and correctly 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 will be supplemented by spading and hand tamping to correct for honeycombs and dense concrete along corners, surfaces, in corners, and around embedded items.
7. Finishing - Defective concrete, honeycombed areas, voids left by the removal of wire ties, 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 repaired and completely filled with deterring mortar.
8. Protection and Curing - Top 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 continuously moist for at least ten (10) days after being placed. Moisture may be applied by spraying or applying an approved curing compound. 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 32°F with the temperature falling, or 34°F with the temperature rising.

VI. SPILLWAYS
All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All borrow surface of the embankment, spillways, spill and borrow areas, and borrow shall be stabilized by seeding, liming, fertilizing and mulching (if required) in accordance with the vegetative treatment specifications or as shown on the accompanying drawings.

VII. EROSION AND SEDIMENT CONTROL
Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.

APPROVED: *John W. Muehlen* 3-21-85
Chief, Division of Land Development and Zoning Administration Date

APPROVED: *Michael Baylin* 3-22-85
Chief, Bureau of Engineering Date

DESIGNED DEF	TORMWATER MANAGEMENT DETAILS	SCALE AS SHOWN
DRAWN LWG	VILLAGE OF LONG REACH	SHEET NO. 4055
CHECKED MJP	SECTION 1 AREA 9 & SECTION 1 AREA 6, PARCEL B SIXTH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	JOB NO. 000 49
DATE 12-20-84	LONG REACH VENTURE FOR: 407 Crain Highway Glen Burnie, Maryland 21061	FILE NO. 14

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.
Robert J. Zehn 3-21-85
District Engineer

These plans have been reviewed for the Howard Soil Conservation District and meet the technical requirements for small pond construction, soil erosion and sediment control.
John W. Muehlen 3-21-85
District Engineer

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."
Rudolph Mayt 12/19/84

Developer's Certificate
"I certify that all development and/or construction will be done according to these plans, and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project. I will provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion."
Michael Baylin 12/19/84

EVANS, HAGAN & HOLDEFER, INC.
ENGINEERS, LAND PLANNERS & SURVEYORS
8101 SANDY SPRING RD./ LAUREL, MD. 20707
(301) 725-0665 / 729-8086

2013 BELAIR ROAD / BALTIMORE, MD 21286 (301) 668-1501
539 POPLAR STREET / CAMBRIDGE, MD 21613 (301) 228-3300
111 JOHN ST. / WESTMINSTER, MD 21157 / (301) 876-2017

Rudolph Mayt
DATE: 12-20-84 SCALE AS SHOWN

