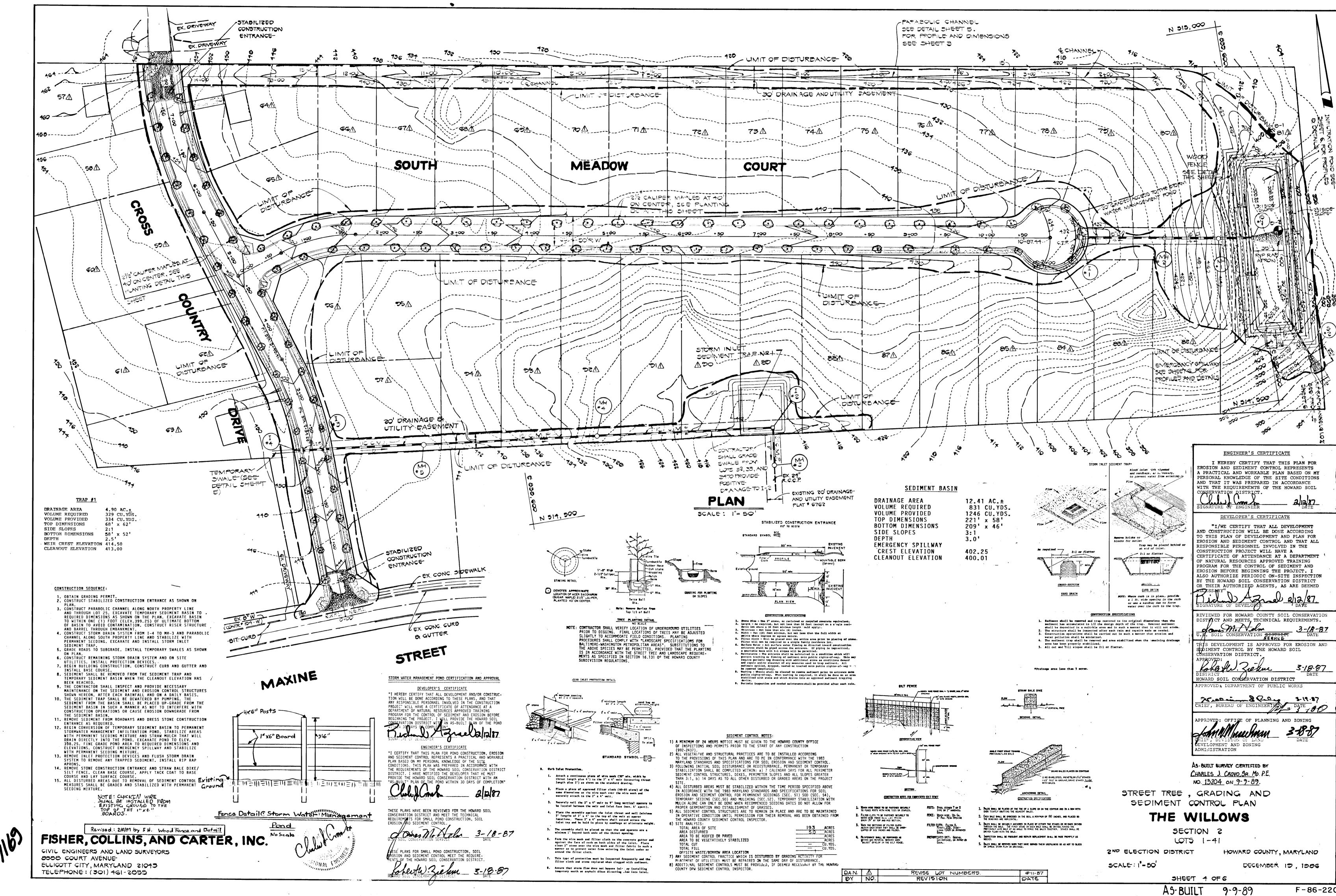


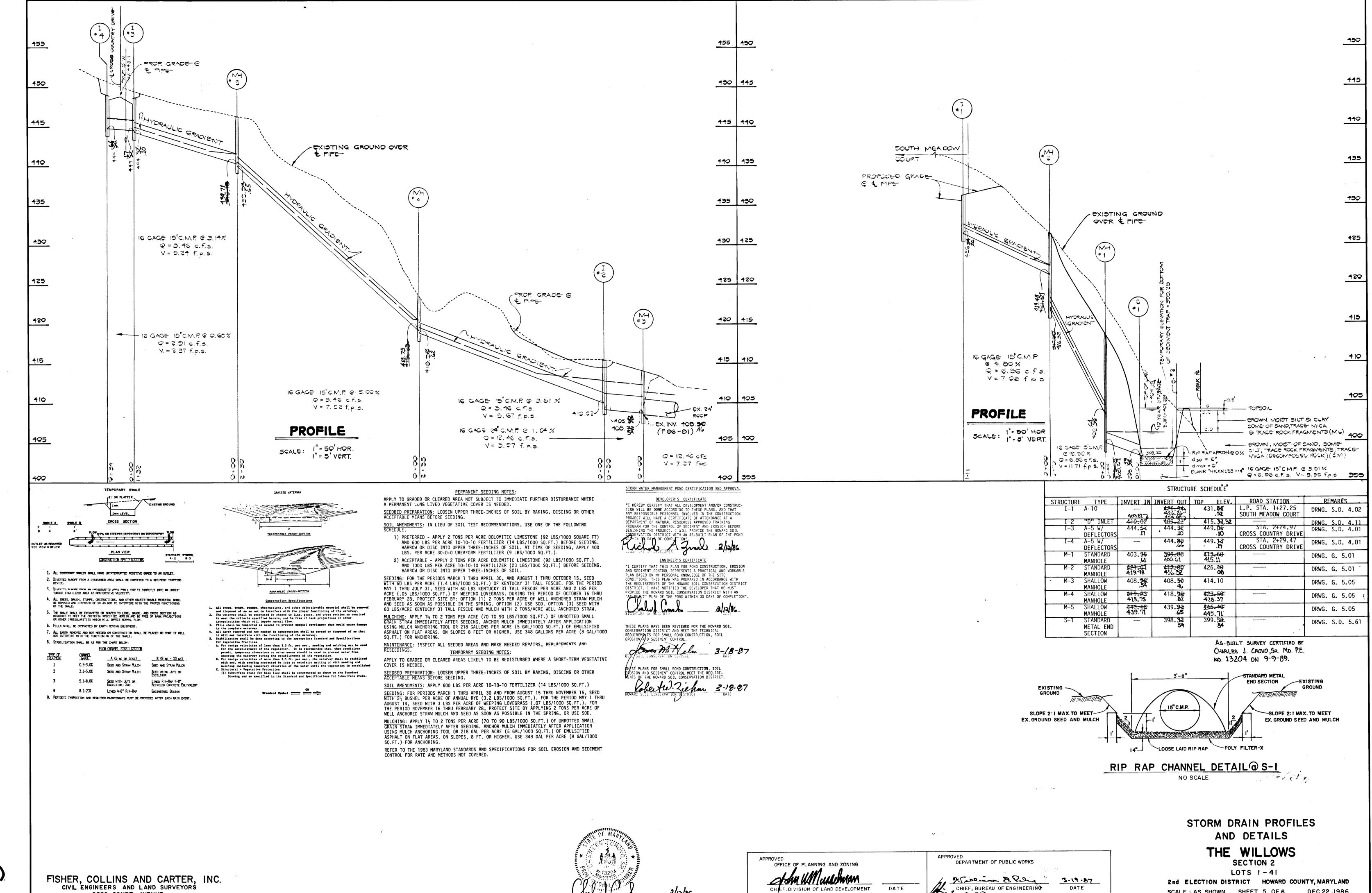
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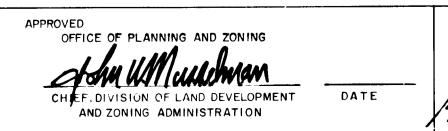


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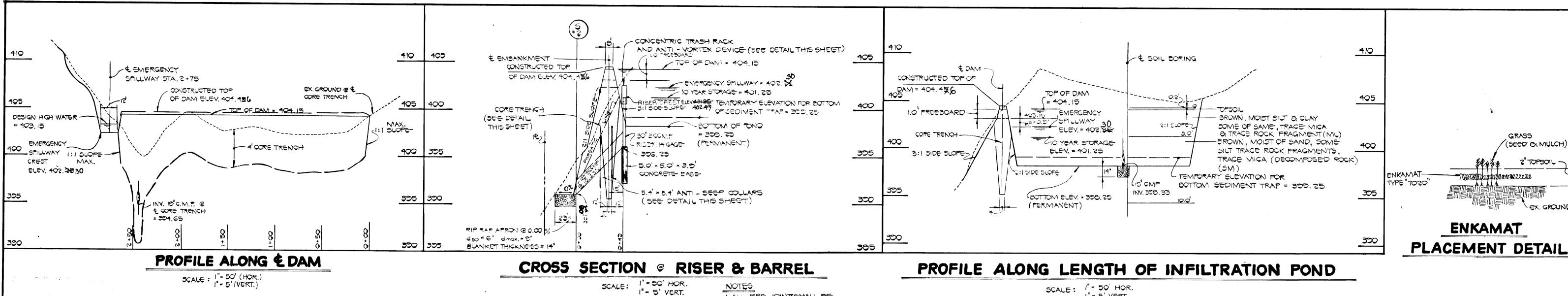


8388 COURT AVENUE ELLICOTT CITY, MARYLAND 21043





SCALE : AS SHOWN SHEET 5 OF 6 DEC.22,1986



I. ALL PIPE JOINTS SHALL BE

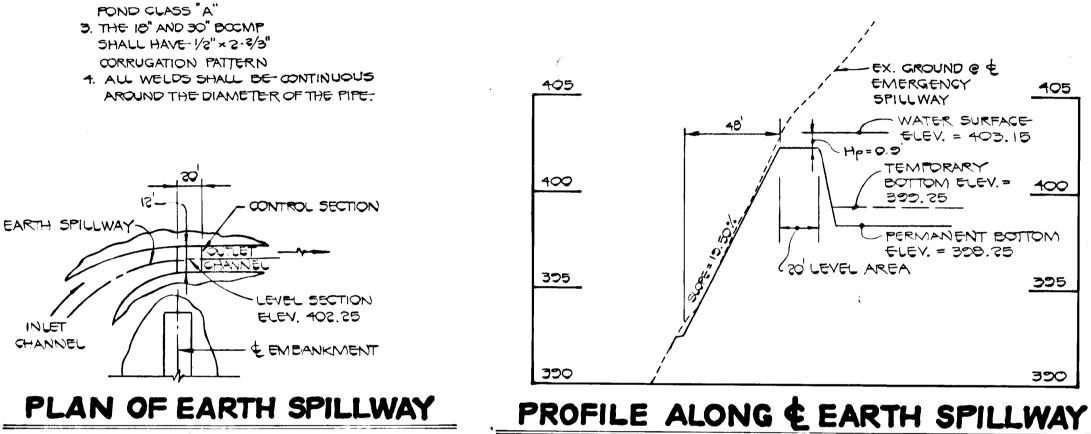
2. HAZARD CLASSIFICATION OF

NO SCALE

WATERTIGHT

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

NOTE: THE HAZARD CLASSIFICATION FOR THE PROPOSED INFILTRATION FOND WILL BE CLASS 'A'



Pressure Relief Hole Pressure relief holes may b ommitted, if ends of corrugations are left fully open when corrugated top is weld Cylinder is 14 gage corru gated metal pipe or fabricated rom 1/8" steel plate .) The cylinder must be firmly fastened to the top of the the top of the riser or SAME MATERIAL attached by straps bolted AS SUPPORT BAR

(SEED & MULCH)

10003/100 adatal accordence

ENKAMAT

2"TOP501L -

EX. GROUND

CONCENTRIC TRASH RACK AND ANTI - VORTEX DEVICE

NOT TO SCALE

ENKAMAT (SEE DETAIL THIS SHEET) CROSS SECTION OF EARTH

EMBED RISER 9"

INTO CONCRETE SLAD

SPILLWAY AT CONTROL SECTION

/18" BCCMP

16 GAGE

NO SCALE CONSTRUCTION SPECIFICATIONS

13,

SITE PREPARATION Areas under the embankment and structural works shall be cleared, grubbed and the topsoil stripped to remove all trees, vegetation, roots or other objectionable material. To facilitate clean out and restoration, it is recommended that the permanent pool area be cleared of all brush and trees.

30"

RISER

BCCMP

5'×5'

NO SCALE

EXISTING GROUND

RISER DETAIL

14 GAGE-

/ WELD

II. EARTH FILL Material

5. H. A. MIX NO. 3

The fill material shall be taken from approved designated borrow area or areas. It shall be free from 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 at least 10 percent above the design elevation (including freeboard) unless otherwise shown on the plans. All fill material shall be CL or ML, as approved by Soils

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.

Placement

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 so that it can be formed into a ball without crumbling. If water can be squeezed out of the ball, it is too wet to compact properly. Compact all fill material to 95% of AASHTO T-99 density.

Where specified, a core 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 4-feet. The depth shall be at least 4-feet or as shown on the plans. The side slopes of the trench shall be 1:1 or flatter. The backfill material for the core trench shall be the most impervious material available and shall be compacted with equipment or rollers to assure maximum density and minimum permeability. Compact to 95% of AASHTO T-99 density. Materials shall be ML as approved by Soils

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 4-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 4-feet to any part of a structure. Under no circumstances shall the contractor drive equipment over any part of a structure or pipe unless there is a compacted fill of 2-feet or greater over the structure

Maintenance

CORE TRENCH FOLLOWS

& OF DAM

4 MIN.-

CORE TRENCH DETAIL

NO SCALE

NOTE: THE EARTH SPILLWAY CHANNE SHALL BE LINED WITH

1. Materials - Metal Pipe - This pipe and its appurtenances

M-196 or M-211, with watertight coupling bands.

shall conform to the requirements of AASHTO Specification

2. Connections - All connections with pipes must be completely

structure shall be mortared all around. Watertight coupling

connected to the pipe in such a manner as to be completely

out its entire length. Where rock or soft, spongy or other

ferential laps pointing downstream and with the longitudinal

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

straw mulch in accordance with "Standards and Specifications for Soil

Erosion and Sediment Control in Urbanizing Areas" immediately after

@ 11.5 1bs./1000 sg.ft.

@ 80 lbs./1000 sq.ft.

@ 8 gal./1000 sq.ft.

@ 5 gal./1000 sq.ft.

Crownvetch inoculated @ 0.5 lbs./1000 sq.ft.

'KY-31' Tall Fescue @ 1.5 lbs./1000 sq.ft.

. Backfilling shall conform to structural backfill as shown above.

4. Laying pipe - The pipe shall be placed with inside circum-

laps at the sides.

Mixtures). Mix No. 3.

finish grading.

Fertilizer:

Asphalt Tie-down: Slopes

shown on the drawings.

Inspection Schedule

BACKFILL MATERIAL SHALL BE ML.

SOIL BORINGS I AND ? SHOW M L

MATERIAL AT A DEPTH FROM Q.2

TO 3.0' BELOW THE SURFACE.

Drainage systems must be inspected on a routine basis to ensure that they are functioning properly. Inspections can be on a semiannual basis but should always be conducted following major storms.

Sediment Control Effect on Vegetated Basins

Cleanout frequency of infiltration basins will depend on whether they are vegetated or nonvegetated and will be a function of their storage capacity. recharge characteristics, volume of inflow, and sediment load. Infiltration basins should be inspected at least once a year. Sedimentation basins and traps may require more frequent inspection and cleanout.

watertight. The drain pipe or barrel connection to the control Grass bottoms on infiltration-basins seldom need replacement since grass serves as a good filter material. This is particularly true of Kentucky 31 bands shall be used at all joints. Anti-seep collars shall be Tall Fescue, which is extremely hardy and can withstand several days of submergence. If silty water is allowed to trickle through the turf, most of 3. Bedding - The pipe shall be firmly and uniformly bedded through- the suspended material is strained out within a few yards of surface travel. Well established turf on a basin floor will grow up through sediment deposits, unstable soil is encountered, all such material shall be removed forming a porous turf and preventing the formation of an impermeable layer. and replaced with suitable earth compacted to provide adequate Grass filtration would work well with long, narrow, shoulder-type (swales, ditches, etc.) depressions where highway runoff flows down a grassy slope between the roadway and the basin. Kentucky 31 Tall Fescue demands very little attention and looks attractive when trimmed. Grass planted on basin side slopes will also prevent erosion.

Sediment Removal From Nonvegetated Basin

(a) Technique. Remove sediment only when the basin floor is completely Concrete shall meet minimum requirements set forth in Maryland State dry, after the silt layer has mud-cracked and separated from the basin floor. Highway Administration Specifications for Materials, Highways, Bridges, Equipment maneuverability and precise blade control are essential in small and Incidental Structures, Article 20.07 (Portland Cement Concrete areas and can greatly reduce the quantity of material to be removed.

VI. STABILIZATION

(b) Frequency. All sediment must be removed prior to triving

All borrow areas shall be graded to provide proper drainage and left in operations. As tilling is required periodically and at least once annually, a sightly condition. All exposed surfaces of the embankment, spillway the frequency of sediment removal will be reduced to small operations on a and borrow areas shall be stabilized by permanent seeding and applying regular basis.

Tilling of Nonvegetated Basin Floor

sediment as previously above.

In all cases, tilling must be preceded by thorough removal of surface

capacity by overcoming the effects of surface compaction, and to control

(a) Purposes. It is necessary to restore the natural infiltration weed growth on the basin floor. Weld 1 1/8"x1 1/8"x1/8" angles to collar or bend a 90° angle 1 1/8" wide as Size and spacing of slotted shown in drawing openings shall be the same as NOTE FOR BANDS AND COLLARS: shown for CM collar Modifications of the details Use rods and lugs to shown may be used providing clamp bands securely equal watertightness is 12 Min. 1 to pipe N maintained and detailed drawings are submitted and TIME IN approved by the Engineer Band of prior to delivery. helical pipe Sheet metal collar shall be cut to fit corrugations of helical band, and Metal collar to be welded with a continuous weld. welded to center of helical pipe band ISOMETRIC VIEW NOTE: For details of fabrication dimensions, minimum gages, NOTES FOR COLLARS: slotted holes, and notes, see detail above. 1. All materials to be in accordance with

DETAILS OF HELICAL PIPE ANTI-SEEP COLLAR

PARTIAL ELEVATION Ref: Engr. Field Manual NOTE: Two other types of anti-seep collars are: 1. Corrugated metal, similar to upper detail, except shop welded to a short (4 ft.) section of the pipe and connected with connecting bands to the pipe. 2. Concrete, six inches thick formed around the pipe with #3 rebar spaced 15" horizontally and vertically.

(a) Purposes. It is necessary to restore the natural infiltration capacity by overcoming the effects of surface compaction, and to control weed growth on the basin floor.

(b) Technique. Rotary tillers or disc harrows will normally serve this purpose. Light tractors should be employed for these operations. In the event that heavy equipment has caused deeper than normal compaction of the surface, these operations should be preceded by deep plowing. In its final condition after tilling, the basin floor should be level, smooth, and free of ridges and furrows to ease future removal of sediment and minimize the material to be removed during future cleaning operations. A levelling drag, towed behind the equipment on the last pass, will accomplish this.

(c) Frequency. In the spring, the basin surface is usually quite porous due to the effects of frost and subsequent thewing. The infiltration capacity diminishes rapidly thereafter. To enhance infiltration capacity, tilling should be thorough once each season, from late June through September. To control vegetative growth, an additional light tillage may be advisable during the growing meason. Precautions must be observed, however, to avoid any possibility of working sediment accumulations into the basin floor as a part of light cultivation for the purpose of weed control. It is therefore stressed again that any cultivation or tilling operation be preceded in all cases by careful sediment removal.

Side Slope Maintenance

(a) Purpose. To promote a dense turf with extensive root growth, thereby enhancing infiltration through the slope surface and prevent weeds from gradually taking over the slope areas.

(b) Frequency. Grasses of the fescue family are recommended for seeding primarily due to their adaptability to dry sandy soils, drought resistance, hardiness, and ability to withstand brief inundations. The use of fescues will also permit long intervals between mowings. This is important due to the relatively steep slopes which make mowing difficult. Mowing twice a year, once in June and again in September, is generally satisfactory. Refertilization with 10-6-4 ratio fertilizer at a rate of 500 lb per acre (il lb per 1000 sq ft) may be required the second year after seeding.

construction and construction material

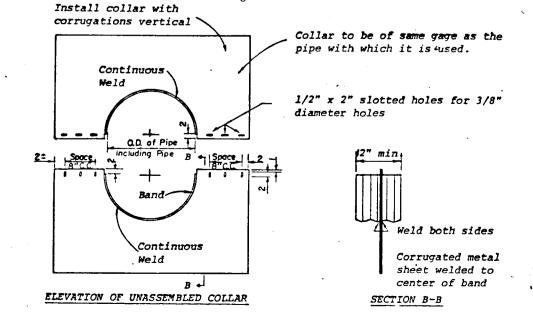
When specified on the plans, coating

of collars shall be in accordance with

construction and constfuction material

specifications.

specifications.



DETAILS OF CORRUGATED METAL ANTI-SEEP COLLAR

Unassembled collars shall be marked by painting or tagging to identify matching The lap between the two half sections and between the pipe and connecting band shall be caulked with asphalt mastic at time of installation. 5. Each collar shall be furnished with two 1/2" diameter rods with standard tank

lugs for connecting collars to pipe.

Construction Specifications

The construction of all infiltration basins should comply with the criteria set forth in the Maryand SCS Standards and Specifications 378-Ponds dated July, 1981 or subsequent revisions and the additional criteria provided

400

Schedule

The sequence of various phases of basin construction shall be coordinated with the overall project construction schedule. A program should schedule rough excavation of the basin with the rough grading phase of the project to permit use of the material as fill in earthwork areas. The partially excavated basin could serve as a sedimentation basin in order to assist in erosion and sediment control during construction. However, basins near final stages of excavation should never be used prematurely for runoff disposal. Drainage from untreated, freshly constructed slopes within the watershed area would load the newly formed oasin with a heavy concentration of fine sediment. This could seriously impair the natural infiltration characteristics of the basin floor. Final grade of an infiltration basin shall not be attained until after its use as a sediment control basin is completed.

Specifications for basin construction should state: (1) the earliest point in progress when storm drainage may be directed to the basin, and (2) the means by which this delay in use is to be accomplished. Due to the wide variety of conditions encountered among projects, each should be separately evaluated in order to postpone use as long as is reasonably possible.

Excavation

Initial basin excavation should be carried to within 1 foot of the final elevation of the basin floor. Final excavation to the finished grade should be deferred until all disturbed areas on the watershed have been stabilized or protected. The final phase excavation should remove all accumulated sediment. Relatively light tracked equipment is recommended for this operation to avoid compaction of the basin floor. After the final grading is completed, the basin floor should be deeply tilled by means of rotary tillers or disc harrows to provide a well-aerated, highly porous surface texture.

Lining Material

Infiltration basins may be lined with a 6- to 12-inch layer of filter material such as coarse sand to help prevent the buildup of impervious deposits on the soil surface. The filter layer can be replaced or cleaned when it becomes clogged. When a 6-inch layer of coarse organic material is specified for discing (such as hulls, leaves, stems, etc.) or spading into the basin floor to increase the permeability of the soils, the basin floor should be soaked or inundated for a brief period, then allowed to dry subsequent to this operation. This induces the organic material to decay rapidly, loosening the upper soil laver

Establishing dense vegetation on the basin side slopes and floor is recommended. A dense vegetative stand will not only prevent erosion and sloughing, but will also provide a natural means of maintaining relatively high infiltration rates. Erosion protection of inflow points to the basin shall also be provided. Removal of accumulated sediment is a problem only at the basin floor. Little maintenance is normally required to maintain the infiltration capacity of slope areas.

Selection of suitable vegetative materials for the side slope and all other areas to be stabilized with vegetation and application of required fertilizer and mulches shall be done in accordance with the Maryland Standards and Specifications for Soil Erosion and Sediment Control. Local Extension Agencies should also be consulted.

> AS-BUILT SURVEY CERTIFIED BY CHARLES J. CROVO, SR. MD. P.E. NO. 13204 ON 9-9-89.



STORM WATER MANAGEMENT POND CERTIFICATION AND APPROVAL

DEVELOPER'S CERTIFICATE "I HEREBY CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUC-TION 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 FROSION REFORE BEGINNING THE PROJECT. I WILL PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN AS-BUILT PLAN OF THE POND WITHIN 30 PAYS OF COMPLETION".

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 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"

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.

LÉSE PLANS FOR SMALL POND CONSTRUCTION, SOIL ROSION AND SEDIMENT CONTROL MEET THE REQUIRE-MENTS OF THE HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS

LANGE MANAGERS SHEET AND SHEET AND SHEET

SEDIMENT CONTROL DETAILS

THE WILLOWS

SECTION 2

LOTS 1-41 2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND SCALE : AS SHOWN SHEET 6 OF 6 DEC. 19,1986



FISHER, COLLINS AND CARTER, INC. Civil Engineers and Land Surveyors

8388 Court Avenue Ellicott City, Maryland 21043 Telephone: (301) 461-2855

> AS-BUILT 9-9-89 _ F-86-220